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The Hercules Engine News

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In the design and construction of the double flywheel gas engines it was the accepted practice to keep the outer flywheel rim speed below 60 miles per hour. This was the safety factor considered necessary to prevent centrifugal force caused flywheel explosions.

You may wonder just how fast the rim speed is for the various Hercules built engines. Here is the formula for determining the outer flywheel rim speed. Take the flywheel diameter in inches times 3.14 and then divide by 12. This gives the rim circumference in feet. Multiply this by the RPM and then by 60. This gives the rim speed in feet per hour. Divide by 5280 to get the rim speed in miles per hour.

Shown below is a chart for the model E Economy engines.

HP	Flywheel Diameter in inches	Flywheel RPM	Rim speed in MPH
1.5	18	550	29
2.5	22	450	29
5	28	425	35
7	34	375	43
9	38	325	37
12	44	300	39

You can see that all the flywheel rim speeds on these engines fall within the guidelines.

To continue the story, shown below is a similar chart for the model T Thermoil engines which were also built by Hercules.

HP	Flywheel Diameter in inches	Flywheel RPM	Rim speed in MPH
1.5	18	575	31
2.5	22	500	33
5	28	450	37
7	34	375	43

Again, there is plenty of safety factor. But there is a complication. These early Thermoils were built on a modified gas engine chassis. These Thermoils were also subject to erratic speed control. If the engine speeds are increased 1.5 times, the resulting rim speeds are 46, 49, 56 and 64 MPH. At twice rated speed the numbers are 62, 66, 74 and 86. Add to that the increased vibration from an engine that has begun to hop about, not only did flywheels come apart, other parts of these weak framed engines also began to break.

A line of engines sold by the Cummins Engine Company, which were identical to the later model U Thermoils sold by Sears, were governed to run at even higher engine speeds.

In searching through history of the Cummins Engine Company there is a story about a Cummins representative who went out to a farm to service a complaint on an engine. While he was there watching the engine under discussion running in the barn it sped up and the flywheels came apart and it is said that, "the pieces cut right through the boards."

So much for the discussion. I am sure that there is more to the flywheel safety thing than is reported here, but it does point out a hazard that can occur when any of these old engines begin to run wild. Cracks in the flywheel or loose fits on the crankshaft can complicate the matter. ○