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Predator Repowered Cub Cadet

Bob Schaefer works his 1962 Cub Cadet hard. He mows, plows, tills and occasionally blades dirt. While the original 7-hp Kohler did the job, it lacked the power Schaefer wanted.

No stranger to repowering Cub Cadets, Schaefer has been featured in FARM SHOW (Vol. 49, No. 5).

"I had a chance to pick up a display model 22-hp Predator V-Twin at a store closeout for only \$400," recalls Schaefer. "I decided to replace the Kohler with the Predator."

Schaefer took out the Kohler and replaced

it with the Predator, positioning the flywheel at the front. This made it easier to power the front cooling fan, and he liked how it looked.

"Positioning and mounting were easy," says Schaefer. "It only required drilling four new holes in the frame to match the motor bolt pattern. The motor output drive could be readily adapted to drive the original clutch pulley input to the final drive."

The only issue was that the engine drive was rotating clockwise relative to the clutch pulley. The Kohler rotated counterclockwise (viewed from the front of the tractor).

Schaefer chose a planetary gear setup to produce an output rotation opposite to the input.

"The planetary drive chain includes the center sun gear, the ring gear, the planetary gears, and the planetary gear carrier," explains Schaefer. "When the planetary carrier is held fixed and the input is to the sun gear, the ring gear rotates in the opposite direction to the input."

Schaefer found a Chrysler automotive transmission with a planetary gear setup on eBay. It was compact and could be adapted for the Predator repower.

"I fabricated an aluminum plate to capture the planetary carrier and lock it to the tractor frame to prevent rotation," says Schaefer. "I also modified the 29-tooth sun gear to attach it to the motor shaft."

He increased the sun gear bore diameter to fit the 1-in. shaft and added a keyway to lock it to the shaft. An unnecessary second-stage 36-tooth gear was removed. The inside diameter of the 61-tooth internal ring gear was enlarged to allow it to rotate freely relative to the motor shaft, as they rotate in opposite directions.

"The planetary also provides speed reduction," adds Schaefer. "With the Kohler, the Cub had a 0.6 speed reduction created by the 3.4-in. engine pulley versus the 5.6-in. clutch pulley (approximate sizes). The planetary provided a reduction and reversal to the rotating gear of 4.75."

To maintain the original ratio, a 7-in. dia. drive pulley was coupled to the ring gear as the output. Schaefer modified a Grainger quick-disconnect pulley and sleeve for the job.

"With the modifications and the custom housing, I had a very compact, rugged drive conversion," says Schaefer. "I decided to stay with the belt drive interface to the clutch pul-

ley, as it was quiet and handled the increased power. I did increase the belt cross-section to ensure no slipping."

Two sealed bearings in the custom housing and drive pulley support the planetary off the motor driveshaft and handle side loading from the drive belt. Inside the custom housing, thrust bearings run against the washer to properly contain axial load from the gear train. A grease fitting allows lubrication of the drive system with the sealed bearings and the shaft seal holding the lubricant.

"The planetary and housing are very compact and fit easily into available space," says Schaefer. "Only a little flaring was required on the original hood. A sheet metal enclosure completed the installation."

Schaefer also replaced the original gas tank with one that better fit the available space. The Predator's built-in starter/generator had to be rewired to the Cub's console, along with throttle and choke controls.

Schaefer modified a Kohler V-twin PTO stub shaft to attach it to the Predator flywheel, providing the output drive for the tiller and mower. The drive belt is twisted to provide the correct rotation to the implement drive pulley. For the mower, he added a simple bearing idler to prevent the belt from rubbing on itself at the crossing point.

Schaefer has made a few additional modifications over time. He installed custom exhaust pipes to keep the heat farther away from his legs while mowing. He also switched to 10.5 rear wheels on 8.5 rims to better handle the increased power.

"They clear the fenders by only a 1/4-in., but give great traction," says Schaefer.

Contact: FARM SHOW Followup, Robert Schaefer, 17931 Bluegate Ln., Huntington Beach, Calif. 92647 (ph 714-458-7041; rdschaefer46@gmail.com).



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