

How To Buy A Great Used Combine

With the high cost of buying a new combine, farmers across the country are looking for ways to rebuild and revamp older machines or purchase used models with low hours. The used market is getting tighter every year because manufacturers aren't building as many new machines and dealer inventories of used machines are down. Buyers often have to search many lots or auctions for a model with the options and/or accessories they want.

Once you find a machine, you can't assume that it's "field ready" just because the dealer or auction bill says so. George Kuchar, who has more than 35 years of combine mechanical experience as a farmer, a custom harvester and most recently as a performance parts supplier, helped us develop a "checklist" of what to look for when you're evaluating a used combine.

Check Hours, Not Acres

The real test of a machine's use isn't the number of acres the machine has harvested, it's the total hours on the engine and the hours on the separator. The total hours show the length of time the engine has run, while the separator hours indicate the actual hours the machine has spent threshing. Kuchar says a high hour machine isn't a problem, as long as the unit has been well maintained. Without proper care, however, even low hour machines can have problems.

George's rule of thumb is that most machines will operate without major repairs for 1,000-1,200 separator hours. Beyond that, an owner can expect to replace the concave, the rasp bars, the chopper knives, and worn belts in the next 1,000 hours. Machines that have 4,000 hours or more may be totally re-built and have 1,500-3,000 more usable hours.

When looking at used machines, thoroughly check the available maintenance records and look for any "red flags" that might indicate repeated problems. If you're not confident in reviewing the records or examining the machine yourself, have an experienced mechanic go over the records and machine with you.

Look For Chaff & Worn Parts

Physical appearance is the first way to judge a machine. If there's evidence that chaff has collected around the bearings, behind the shields and on the frame, and if that chaff looks like it has been matted down and rained in place, that's a sign of poor upkeep. Kuchar says any chaff that stays on a machine over winter collects moisture, even if the machine was shedded. That moisture buildup, says Kuchar, reduces bearing and seal life.

Even if a machine looks clean, Kuchar says to remove or look behind every shield. If wear points show up next to pulleys, that could be a sign the machine wasn't cleaned during harvest.

Another area to check for discolored paint is on the engine and in the engine compartment. If paint on the header covers or underneath the engine hood is discolored or burned, the engine may have been overheated. You may want to seriously inquire about the condition of the engine to determine if it has been overhauled or worked on recently.

Check Lubrication

Examine the lube fittings on shafts and greaseable bearings. If they look dry and unused, perhaps the operator neglected daily and seasonal greasing. If the machine you're examining is on a dealer lot, ask to lube the machine and see if fittings accept grease. Any that don't should be "flagged" and repaired or replaced by the dealer.

Check Fluid Levels

Regular oil and fluid changes should be a part of preventive maintenance, but some of today's fast-paced operators may overlook that job and just top-off the engine oil, the transmission fluid, and the radiator fluid. If the machine you're serious about is on a dealer lot, pull a sample of the engine oil and the transmission fluid. Have an oil analyst check the oil for purity, acid content and small metal or dirt particles. If the oil checks out, the fluids were probably changed at recommended intervals. If it doesn't, the engine and/or transmission may be experiencing irregular wear, a costly problem you may not want to assume. Also check the color of the radiator fluid and be sure that hoses and connections are sound.

Header

- Examine the sickle and wobble box drive for excessive wear.
- Examine the reel, its bearings and teeth for wear.
- Examine auger flighting, fingers and bearings.



Kuchar travels across North America working on combines of all kinds. He says you can find an excellent used combine if you just spend a little time going over it before writing a check.

- Examine the frame and be sure the mounting brackets aren't cracked.
- Examine pulleys, shafts, sprockets, chains and belts for wear.
- Make sure fittings accept grease.
- Check under the head to determine the condition of the wear plates.

Feederhouse

- With the head removed, examine the chain. Check for wear on the bars and in the links.
- Determine if there is wear or damage to the rear sprockets.
- Check the feederhouse floor for wear and determine if it needs to be replaced.
- Examine the drive shaft, gears, bearings, and belts.
- Examine the housing sidewalls for stress fractures.

Harvester

- Gradually roll the cylinder and look for cracks on the drive spiders.
- If rasp bars appear worn, bent or out of shape they should be replaced.
- Filler plates should be clean and firmly bolted in place. Any fillers with stress cracks around bolt holes should be replaced.
- Examine the concave from the front and from inside the machine. Determine how many hours the concave has been used and make a decision on whether or not the concave should be removed and visually checked. If the concave is pulled, examine the ribs and the pins and bushings to make sure they aren't cracked or broken.
- Kuchar says that some machines he works on show stress cracks on the concave mounting bolts. One Deere 9000 machine with only 200 hours had a stress crack on the bolt that the operator hadn't noticed. He tightened the mounting bolt several times, but continued to run the machine, which resulted in a stress fracture on the housing wall. The repair bill was well over \$2,000.

- Examine the beater and check for excessive wear and bent wings.
- Open and close the sieves to check for ease of adjustment.
- Check the fan for stress cracks. On new models with plastic fans, make sure all louvers are in place.
- Examine walkers and bearings for wear and stress cracks.
- Check the exterior housing of the machine for any signs of stress cracks or excessive wear.
- Examine bearings, seals and pulleys. Check the pulley sidewalls because machine operation with poor belts may have caused uneven wear.
- Examine the augers and auger flighting for wear patterns. Bent flighting on the header auger indicates that obstructions such as rocks or stumps have been encountered. It should be straightened. That's also a good indication you need to check the feederhouse chain, the floor of the feederhouse, and the cylinder for possible damage.
- The discharge auger should be rotated into unloading position and run at regular operating speed. Listen and watch the auger to be sure it operates smoothly. Check the base of the auger for stress cracks and check to be sure the drain

- door opens properly and that it isn't plugged.
- Examine the tank frame for stress cracks. Tanks with oversize extensions are susceptible to stress around the support brackets.

Chopper

Check the sheet siding around the bearings on the chopper. If the chopper was operated while out of balance, cracks may be showing on the rear hood. Also look at the hammers for uneven wear.

Belts

Most likely to wear are the beater belt and the variable speed cylinder belt. If they are burned, or if the pulley is burned, that means there was slippage caused by plugging or overloading and not having the belt tight enough. If the belts have a burned spot, they'll have to be replaced.

Power Train

- Examine the engine for oil leaks around the heads and for water leaks around the water pump and hoses.
- Remove the belt from the alternator and roll the pulley by hand. If it's difficult to turn or if there's a grinding sound, the alternator needs replacing.
- Check the radiator liquid for color and clarity.
- Check the battery cable connections, the ground to the machine, and the cable to the starter.
- Start the engine and run it at idle speed until it reaches normal operating temperature. Then run it up to full throttle and back. Check idle speed and listen for unusual sounds around the engine. Start the harvester and observe operation at idle speed and at full throttle. Visually check bearings, belts and shafts. Listen for unusual sounds inside the machine and around the feederhouse and the head.
- Drive the machine in all gears or throughout the range of the variable speed drive. Check the brakes and clutch operation.
- Check the transmission fluid level and look closely at the fluid color. It should be clear and clean.

Cab

- Check all electronic controls, including switches, lights, and gauges.
- Be sure sensors and monitors all work.
- Check that air conditioning, heater and fan all work.
- Check seat and adjustments.
- Turn on lights and hazard lighting.
- Check GPS system.

Kuchar's Operating Tips

Older machines with smaller engines needed to run the cylinder faster. Now the newer machines have more horsepower and they can take material faster. With the faster ground speed, you need to run the cylinder faster, too. If you don't, there will be a bottleneck because the harvester is not moving material away fast enough. When you run the cylinder faster, you're cracking less grain, because the concave is kept clean. With the slower speed, you can slug the machine and that cracks the grain. You need to have an even flow, and without it you're in trouble.

A combine is made to run full, not at half capacity. It's just like a race car....they're made to run full throttle to utilize their power.