

Buying Used Machinery

Pressure to reduce input costs for farm products has led to an active market of quality used machinery. It is relatively simple to determine the condition of many types of field implements, but tractor and combine evaluation can present more difficulties. Much of the problem stems from wear points being located inside the machine.

In general, a cleanness, slickness, and tightness about the machine can be a primary indicator (e.g., tight gear operation, lack of external leak signs, etc.). Have a healthy suspicion of newly applied paint that may be masking welds, cracks, or repairs.

Used tractors

In a first visual once-over of a used tractor, check the following:

- Inspect for any cooling system leaks, fan blade damage to the radiator, and the thermostat. Note oil condition. If it's milky, water is present; heavy oil indicates burning or combustion problems. Commercial oil analysis is an option if an oil sample can be obtained. Air cleaner condition helps indicate care of machine.
- Beware of "souping-up" after the tractor has left the factory (turning up the fuel injection pump or the addition of over-size sleeves, high compression pistons, or turbo-charger on an older tractor). Rear end problems may develop. For tractors originally fitted with turbochargers, condition and lubrication should be well maintained.
- Check final drive for leaks and transmission oil for metal particles (dilute small amount with diesel fuel and stir with magnet; a small quantity is normal).
- Has the frame been sprung or ever repaired?
- Look at condition of hydraulic oil and lines.

- Is the tractor equipped with a ROPS and wide front-end to avoid rollover hazards?
- What is tire condition? Will replacement be soon required?
- Wear around the drawbar pinhole or balls in the 3-pt. hitch helps indicate usage.
- Is the air-conditioning system using current refrigerant or an older version? If still using an older version, future conversion may be needed.

Next, if at all possible, drive the tractor.

Check operation of indicator gauges or lights and the functions they are indicating.

Now is the time to note transmission operation (clutch and gearshift on older tractors). Doing this under load is preferable. It should be smooth and tight. The same goes for PTO, 3-point hitch, and remote hydraulic response and operation. Check hydraulic pressure (e.g. lift ability) and flow rate (e.g. speed of larger motor) under load if possible.

Newer tractors and combines keep user-accessible failure codes stored electronically. Check an operator's manual if possible for potential access to these codes.

Used combines

Combine engine, frame, and drive inspections are similar to that for a tractor. Also be sure to take note of the following items, many of which indicate combine life:

- Check the wear on rotor/cylinder bars and concave.
- Look at cleaning shoe and sieve assemblies (also straw walkers if present). Are there broken parts or spot weld repairs? Note any play in bearings or slots. Thin auger flighting indicates long use.

- Check the head to see if it has been sprung or misaligned and the condition of all drive mechanisms.
- General areas to check are use of grease zerks (particularly zerks with less accessibility) and wear on large belts, chains, and sprockets.
- Compare engine hours vs. separator hours. If engine hours are considerably greater, spend additional time checking drive train wear (transmission and driving response at various speeds, oil condition).

Electronic considerations

Many used tractors and combines will include factory installed and aftermarket electronic systems for machine control and precision agriculture applications. When evaluating these make sure to consider:

- Integrated electronic steering valves and steering sensors can reduce the cost of upgrading to autosteering. These integrated components are also easier to service and will be familiar to your equipment dealer.
- Check the routing of wires into the cab. Ensure that they are not frayed or crimped.
- Ask for a detailed list of the electronics that are provided. If a GPS is included, ask if it has been unlocked for a dual frequency correction or if any other software unlocks are included.
- Check with the manufacturer to make sure that the used electronics are still supported. Some older displays are not supported by the manufacturer.
- Check to see if the tractor has a standard ISOBUS connector on the rear. If so this will make it more adaptable to upgraded electronic systems.

Used implements

General guidelines for other field implements include checking the frame condition for alignment and major repairs and noting any repairs needed for moving parts and common wear points. Planter seed-metering mechanisms, soil-engaging tools such as sweeps, points, and coulters, and sprayer pumps and

plumbing, and implement tires all are replaceable wear items. Are shields present to protect people from power transmission elements and exposed moving parts?

General considerations

A few important and frequently overlooked things are also important tools of the good used machinery buyer. Doing these things often can keep several thousand dollars in the buyer's pocket after the purchase of a big ticket item:

- Do your homework before buying. What is the going price (check auctions, dealers, large used implement lots, classified advertisements)? Searching internet sites can help.
- Are features you require available with this machine? Despite a good price, a machine is no bargain if it won't meet your needs. For example, increasing hydraulic requirements for many farm implements require specific hydraulic flow rates and operating pressures from the tractor. Heavy drawbar loads (e.g., grain cart or manure tank) require a certain size tractor (i.e. adequate weight) for braking and control.
- Know potential weak spots in any model machine and check for them. Spending a few dollars in consultation with a mechanic can help you discover potential weak spots in machinery. Shop repairs are not cheap; look for overall quality.
- Possible warranty protection and your ability to evaluate prior use will likely vary depending on the sales source (dealer, estate sale, machinery auction, etc.). If the source is a neighbor or acquaintance, evaluate their care of equipment rather than simply overall farming skills.

Don't get hung up on small accessories (e.g., an extra remote hydraulic outlet can easily be added to most tractors).

Have fun but use common sense when shopping for used machinery.

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