

## TRACTOR SAFETY

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(For assistance, please contact EHS at (402) 472-4925, or visit our web site at <http://ehs.unl.edu/>)

### General Safety Considerations

- Restrict operation to adults. Prior to operation, read the owner's manual. Inexperienced operators should receive instruction and demonstrate competency to an experienced individual.
- Do not allow riders, unless specifically designed for such.
- Keep loads even, low, and within the manufacturer's specified limits.
- Avoid potentially dangerous terrain, such as deep mud or snow and steep hills and slopes. Be familiar with the terrain and potentially hidden hazards (e.g., gulches, ditches, sinks, etc.).
- Shut-off the tractor before dismounting.
- Avoid operating on public thoroughfares; but, if necessary, use flashers and ensure that the tractor is equipped with a Slow Moving Vehicle emblem.
- Avoid the risk of crushing/trapping – when backing up to attachments or structures, never allow an assistant to position themselves between the tractor and the attachment or structure.
- Regularly inspect the condition of the tractor and adhere to recommended preventative maintenance schedules.

### Power Take-Offs and Drivelines

Power Take-Offs (PTOs) are fast-revolving shafts used to power ancillary equipment on tractors and like equipment. PTOs present an entanglement hazard. The hazard can be controlled with a properly-installed shield or guard, which provides a barrier between the revolving shaft and the operator.

- Always disengage the PTO, turn off the tractor, and remove the keys before leaving the tractor seat and approaching the driveline to perform maintenance or adjustments.
- Do not perform maintenance or adjustments until the driveline and attached machinery have stopped moving completely.
- Never step over or reach under a moving power take off shaft or drive line, even one that is guarded. Wait until the shaft has stopped rotating.
- Make sure PTOs are shielded with an enclosing type guard. Some older equipment may have a U-shaped tunnel type guard. This type of guard is ineffective and therefore dangerous. U-shaped guards should be replaced with upgraded guards, as recommended by the manufacturer. Guards should also conform to the following:

- Guards must be situated so as to prevent the intentional or accidental exposure of body parts to the point of operation by reaching through, over, under, or around the guard.
  - Guards must not create additional hazards (for example, with sharp edges or protruding parts).
  - Guards must not create a pinch point between the guard and moving machine parts.
  - The possibility of bypassing a guard can be minimized by using guards that are difficult to remove or that are interlocked.
  - Maintain guards in accordance with the manufacturer's recommendations.
  - The master shield must have sufficient strength to prevent permanent deformation of the shield when a 250 pound operator mounts or dismounts the tractor using the shield as a step.
  - Signs must be placed at prominent locations on PTO driven equipment specifying that power drive system safety shields must be kept in place.
- Do not wear loose-fitting clothing or dangling jewelry when working with PTOs. Confine long hair to prevent entanglement and scalping. Shirts should be tucked in, jackets zipped, and sleeves buttoned.
  - Make sure the hitching position of equipment to the PTO is at the proper height, as described in the operator's manual.
  - Do not attach equipment to the PTO unless it is rated for the RPM of the PTO.

### **Roll-Over Protection Structures (ROPS)**

ROPS are designed to protect the operator in the event of a tractor rollover, and are generally advisable for tractors of 20 horsepower or greater. These structures, which include roll-bar, frame, and roll protective cab designs are important for preventing rollover injuries/fatalities. Strong consideration should be given to retrofitting older tractors, when retrofit kits are available from the manufacturer. Review and follow the recommendations in the owner's operational manual, as well as those listed below.

- ROPS design must meet the applicable American Society of Agricultural Engineers (ASAE) Standards and Society of American Engineers (ASE) Standards as listed in OSHA 1928.51(b)(1).
- Tractors should be provided with a seat belt to sufficiently confine the tractor operator to the area protected by the ROPS.

### **Tips for Reducing the Risk of a Side Rollover:**

- Set wheels as far apart as possible.
- Lock the brake pedals together before high-speed road travel.
- Match speed to operating conditions and loads. Do not let the front wheels bounce.
- Slow down before turning.
- Use engine braking when going downhill.
- Avoid crossing steep slopes. Watch for depressions on the downhill side and bumps on the uphill side. Turn downhill, not uphill, if stability becomes a problem.
- Stay at least as far from ditches and rivers as banks are deep.

- Keep front-end loader buckets as low as possible when moving.
- If right front tire goes off the road into the ditch – turn downward rather than attempting to turn back onto the roadway.

**Tips for Reducing the Risk for Rear Overturn:**

- Always hitch loads at the drawbar.
- Use front weights to increase tractor stability.
- Start forward motion slowly and change speed gradually.
- If possible, avoid backing downhill.
- Drive around ditches.
- Back out or be towed out of ditches or mud.