Hitching – Drawbar Connection Safety Talk



WHAT'S AT STAKE?

One of the most common tasks on the farm is hitching or unhitching equipment. The two most common tractor-hitching methods use the drawbar or the 3-point hitch assembly. In either case, there can be multiple elements involved in the process including: connecting the implement using a hitch pin, adjusting a jack stand, attaching safety chains, connecting the PTO shaft, connecting hydraulic couplings, or plugging in electrical connections.

WHAT'S THE DANGER?

Improper Hitching-Fatalities

There are common injuries that occur during hitching like pinch points, crush points, blunt trauma, and run over.

According to the National Institute for Occupational Safety and Health (NIOSH), farmers and others who use tractors are at risk for severe injury or death if proper hitching methods are not used when towing or pulling objects with tractors.

In a recent article in the Centers for Disease Control and Prevention's Morbidity and Mortality Weekly Report, NIOSH warned that improperly attaching a tow chain to a point above the tractor's drawbar can cause tractors to suddenly flip backward. These rear rollovers often result in injury or death.

Between April 1991 and June 1996, 28 incidents of sudden rear rollover of tractors were documented in New York by NIOSH's Occupational Health Nurses in Agricultural Communities program. Sixteen of these incidents resulted in death. Improperly hitching equipment or material for towing caused the rollovers in 60% of these incidents. Environmental circumstances such as muddy conditions, wet ground, snow-covered, hilly or uneven terrain may have contributed to some of the incidents.

As the number of people using tractors for towing and hauling increases during the winter months, it is important that they are informed of the hazards associated with hitching and the proper prevention measures.

SPECIFIC RISKS/DANGERS

Tractor Stability

Tractors are used in farming regions where there is tough terrain. Steep, rough,

slippery or loose ground and towing implements increase the risk of losing control.

The tractor could become unstable because of sudden changes in direction and the tractor’s centre of gravity.

Drivers can easily lose control of tractors after hitting an object, finding poor ground conditions or when towing implements and trailers. The driver can fall off the tractor and hit the ground, another object or the tractor itself.

Towing a Trailer/Heavy Farm Implements

The trailer’s or mounted implement’s weight behind the tractor can cause instability and affect the steering:

- The weight on the rear wheels can make the tractor keep going in a straight line when the steering wheel is turned.
- A load that is too heavy to control, or a trailer without a good braking system, can jack-knife.
- Mounted spray tanks cause more instability because of the liquid’s movement.

Smaller Farm Equipment

Smaller farm equipment may be more susceptible to hitching failure or loss of a hitch pin, due in part to the hitching configuration (size and type of hitch pin used). Small tractors, 150PTO horsepower and smaller, typically have category 0, 1, or 2 drawbar hitches. Larger row-crop tractors, 250-400+PTO horsepower, have category 3 or 4 drawbar hitching systems that typically use a specific hitch pin and locking mechanism.

HOW TO PROTECT YOURSELF

GENERAL SAFETY GUIDELINES

When Hitching or Unhitching Equipment follow these guidelines:

- Review the equipment manual of the tractor and implement before use.
- Ensure hitch attachments match the tractor hitch category.
- Assess the situation and make a plan prior to attempting to hitch the implement.
- Place the tractor in a lower gear and lower the RPMs to reduce sudden quick movements when approaching or pulling away from the implement.
- When assisting the operator, keep visual contact and communicate with the operator at all times.
- The ground person should stay outside of the wheels of the tractor until the hitch and drawbar are lined up correctly.
- Leave yourself an escape route. Plan a travel path to get out of the way should the tractor lurch towards you.
- Use only approved hitch pins. If hitch pins are damaged or bent, take them out of service.
- Make sure the hitch pin is locked in place or secured with a retainer clip.
- Once the implement is attached, make sure the tractor is in PARK and shut off the engine to complete additional hitching tasks such as connecting PTO or hydraulic lines.
- Before connecting or disconnecting hydraulic lines, ensure the pressure has been released from the system.
- Use proper lifting techniques to reduce sprains / strains when lifting or moving the implement tongue.
- Ensure there is sufficient tongue weight to stabilize the implement when

unhitching.
- Use an approved size tongue jack to support the tongue weight of the implement.
- Only use jacks that are attached to the tongue. Temporary jacks can kick out or fail with minimal implement movement.
- Remove all additional connections prior to pulling away from equipment.
- When unhitching on slopped areas, chock the wheels of the implement to prevent unwanted movement.

Make a Good Connection

Regardless of tractor size, here are some hitch pin tips to ensure you are making a good connection:

- Use safety hitch pins that have a locking device to keep them in place.
- Use the largest diameter hitch pin that will fit through the tractor drawbar and implement hitch.
- NEVER use bolts or fasteners as hitch pins.
- Hitch pins supplied by the equipment dealer are preferred; low-cost hitch pins may be of inferior strength (currently no standardized testing protocol). Note that hitch pins are sold by shaft diameter and length rather than actual load capacity.
- ALWAYS attach a safety chain between the tractor and equipment when transporting on the road; this won’t stop the hitch pin from coming out or failing, but will minimize damage if the pin does fail.
- Discard worn or damaged (e.g. bent) hitch pins to avoid the temptation to use them; throw them in the scrap heap, not in the toolbox.

Finale – Steps for Prevention

Steps for Prevention

- Use farm tractors equipped with ROPS, and wear a safety belt.
- Carefully select the hitching point to a tractor.
- Don’t alter the drawbar by raising or shortening it.
- Never attach the load directly to the axle.
- Never use a two or three-point hitch as a single-point hitch instead of the drawbar.
- If the load attaches by a single point, attach it only to the drawbar.
- Ensure that the tractor operator is familiar with safe use of the equipment.
- Select a strong tow chain with a length sufficient to allow adequate stopping distance between the towed object and the towing vehicle to avoid collision and rear rollover.
- Ensure a cleared work area for greater maneuvering.
- Use slow, steady pull.
- When using a tractor to free an embedded vehicle, hitch the vehicles front-to-front and drive the towing tractor in reverse to minimize the risk of rollover.

FINAL WORD

Hitching and unhitching causes countless injuries on Canadian farms every year. It only takes a few moments longer to do a job safely, rather than spending a lifetime regretting an injury to yourself or someone else.