



Tailgate Safety Training for Landscaping and Horticultural Services

Agricultural Safety Program, 590 Woody Hayes Drive, Columbus, OH 43210

Safe Use of the Power-Take-Off

Objective: Use the power-take-off (PTO) safely.

How to Use This Module

Power-take-offs (PTOs) are used on various machines and lawn equipment. PTOs can be dangerous and must be used safely. For this module:

- Read the information below on PTOs, the hazards they present, and safe practices.
- Find protective shields on PTOs.
- Ask your supervisor to demonstrate how to hook up and unhook a PTO.
- Ask your supervisor to observe as you practice hooking up and unhooking a PTO.
- Discuss accidents and preventive measures to take with your supervisor and other workers.
- Review the important points.
- Take the True/False quiz to check your learning.

Note: Wear close-fitting clothing for this session.

Background

Most power shafts can be extended from the power source to another piece of equipment. This connection is called a power-take-off (PTO). The power source is whatever the PTO is connected to — a tractor, an all-terrain vehicle (ATV), lawnmower, or other equipment.

Power shafts are usually constructed with a square shaft inserted into a housing or casing. It is important that at least 5-1/2 inches of the sliding shaft remain in the housing when the power shaft is connected to the power source. This reduces the possibility of the shafts separating while the equipment is in motion. If the shaft splits, the portion of the shaft connected to the power source is free to whirl at high speeds, endangering the worker and equipment.

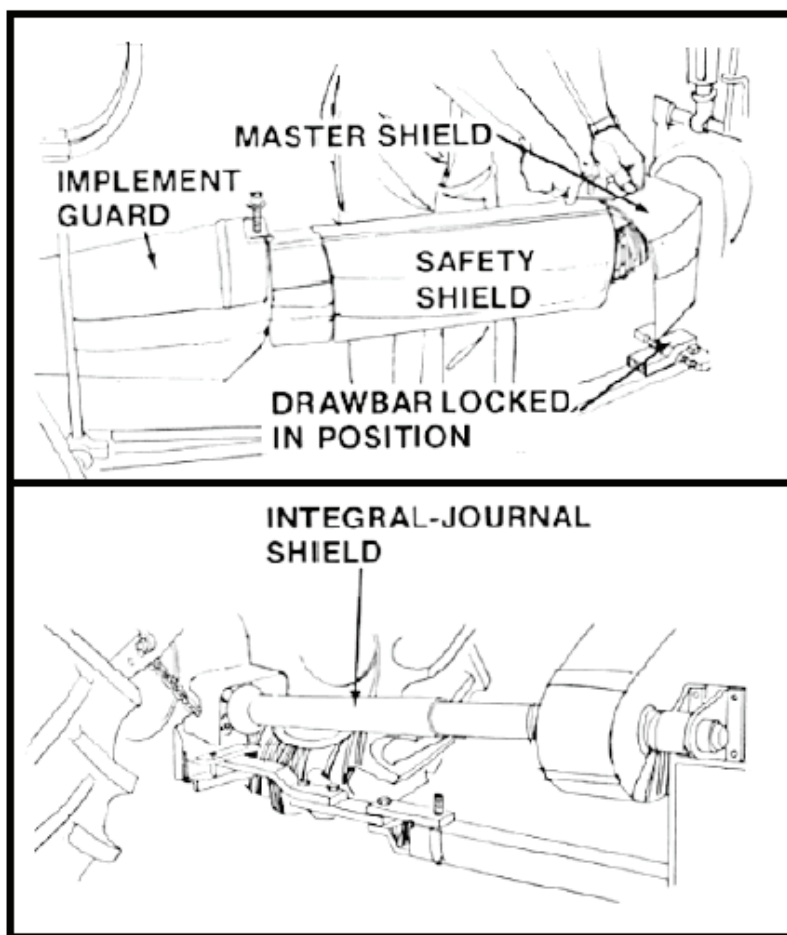
People cannot react fast enough to pull away from a spinning shaft, and most clothing is strong enough to pull a person into the spinning shaft. Very serious injury and, more frequently, death is the end result of these accidents.

PTO Safety Guidelines

Before you start the power source, **be sure the PTO is disengaged**. If the PTO is already engaged when you start the power source, the equipment powered by the PTO will begin to operate.

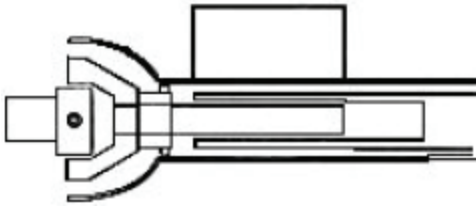
Use extreme caution when operating equipment with a separable PTO shaft. Never hook 540-rpm (revolutions per minute) equipment to a 1,000-rpm PTO or vice versa.

If the shaft does separate, **disengage the PTO immediately and stop the power unit**.

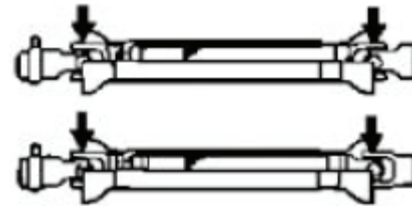


Keep safety shields securely fastened on the equipment. Periodic inspections and maintenance of the shields/guards may be necessary. Safe operation of the PTO is not possible without these shields in place. A sudden slip or fall could throw a worker directly onto the unshielded rotation shaft. Also, those who are unfamiliar with the equipment may not recognize the danger of the power shaft.

Wear snug-fitting clothes when working around power shafts. Loose clothing can catch in or be wrapped around the power shaft. Do not step over an operating PTO. A sudden slip or a loose shoestring could cause the worker to become entangled in the PTO shaft. Long hair may also become entangled in a PTO shaft. Hair should be pulled back out of the way and secured. Also avoid any type of jewelry that could become entangled, causing dismemberment or bodily injury.



Universal Joints Where
Clothing Can Get Caught



Shielding Covers Most
of the Spinning Shaft and Universal Joint

Review These Important Points

- Keep all PTO guards and shields in place, even when the PTO is not operating.
- Always disconnect the PTO when not in use.
- Never engage the PTO while the machine engine is shut off.
- Keep hands, feet, clothing, and long hair away from the PTO.
- Never operate PTO shafts at extreme angles.
- Be sure that the PTO spinner shields rotate freely at all times.
- Always disengage all power and shut off equipment before servicing.

About These Modules

The author team for the training modules in the landscape and horticultural tailgate training series includes Dee Jepsen, Program Director, Agricultural Safety and Health, Ohio State University Extension; Michael Wonacott, Research Specialist, Vocational Education; Peter Ling, Greenhouse Specialist; and Thomas Bean, Agricultural Safety Specialist. Modules were developed with funding from the Occupational Safety and Health Administration, U.S. Department of Labor, Grant Number 46E3-HT09.

Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the views of the U.S. Department of Agriculture or the U.S. Department of Labor.

Answer Key: 1 = T, 2 = F, 3 = T, 4 = T, 5 = T.

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Keith L. Smith, Associate Vice President for Agricultural Administration and Director, Ohio State University Extension

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Name _____

True or False?

- | | | |
|---|---|---|
| 1. Always disconnect the PTO when it is not in use. | T | F |
| 2. Wear loose-fitting clothing when working with PTOs. | T | F |
| 3. Always keep the PTO safety shields on the machine. | T | F |
| 4. Never hook 540-rpm equipment to a 1,000-rpm PTO or vice versa. | T | F |
| 5. Never engage the PTO while the machine engine is shut off. | T | F |