MOVING AND STEERING THE TRACTOR

HOSTA Task Sheet 4.10 Core

NATIONAL SAFE TRACTOR AND MACHINERY OPERATION PROGRAM

Introduction

A safe and effective tractor operator can move the tractor in the proper direction and maneuver around field obstacles without damage to the tractor. A well-trained operator can:

- Start the tractor moving without stalling, jerking, or lunging
- Steer the tractor with attached implements in and around buildings, fences, and crops without damage to the equipment or property

Important: Tractors are traction machines. They are not made for speed or for fun. "Popping the clutch" or doing "wheelies" to show off can result in damage, injury or death. You must be able to engage the clutch (let out the clutch) pedal without rearing up the front end of the tractor.

Important: Tractors and implements are wider and longer than cars. You must judge how much room you need to turn or to drive between objects.

This task sheet discusses moving and steering the tractor by smooth clutch use and attention to the space occupied by the equipment.

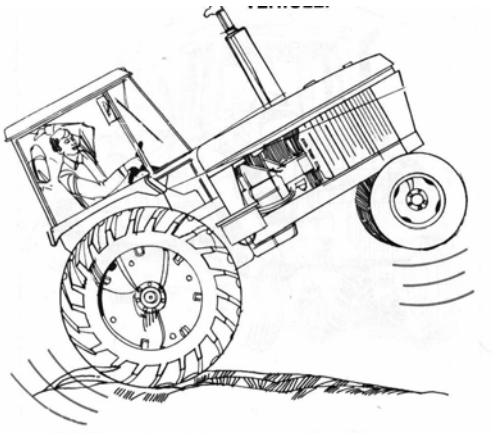

Figure 4.10.a. When starting the tractor to move, increase the throttle slightly; then let out the clutch slowly and completely. Get the feel of the clutch engagement point on each tractor you drive. If the clutch is "popped," rearward overturns can result. *Farm and Ranch Safety Management, John Deere Publishing, 1994. Illustrations reproduced by permission. All rights reserved.*

Before the Tractor Moves

Do you know how the clutch operates?

The clutch is a link between the engine and transmission. The clutch functions as a switch to disconnect the rotating crankshaft of the engine from the transmission gears. Transmission gears control speed and direction. The clutch pedal controls the clutch linkage and clutch.

When you push the clutch pedal in, you release a friction disk from contact with the flywheel of the engine and pressure plate of the clutch. This keeps the transmission gears from turning. When you let out the clutch, you are forcing the spring-loaded pressure plate, friction disk, and engine flywheel to press together to send power through the transmission to make the tractor move.

An expert tractor operator moves the tractor without stalling or jerking.

Learning Goals

- To move a tractor without stalling or jerking through proper use of the clutch pedal
- To steer a tractor without damaging the tractor or towed or attached machine

Related Task Sheets:

Ground Motion Controls	4.5.2
Positioning and Adjusting Controls	4.5.4
Operating the Tractor on Public Roads	4.14

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Figure 4.10.b. Be sure to study the gear shift pattern on the tractor you are operating. Use a lower gear to start moving. Use a higher gear for operation. Higher gear use with heavy loads may stall the engine or can cause rearward overturns. If the shift pattern is hard to locate, ask someone who is familiar with the tractor to show you the shift pattern.

Know the gear-shift pattern of the tractor you are using.

Skills for Moving the Tractor

Before attempting this skill, have a qualified operator demonstrate what you must do. Each tractor clutch may engage at a slightly different point with a slightly different feel.

To start moving the tractor:

1. Check all controls as you have learned in Section 4.5 Task Sheets, adjust the seat, and fasten the seat belt.

2. Start the engine with the brake and clutch fully depressed You may need to be in PARK or a neutral-start position on many tractors.

3. Select a low starting gear to begin moving the tractor with or without a load.

4. After checking the area around the tractor, increase engine speed slightly; slowly release the clutch until you feel the tractor begin to move.

5. Release the clutch and brakes fully. Do not rest your foot on the clutch as “riding the clutch” can damage the pressure plate, fly-wheel, and friction disc.

6. To change gears, push in the clutch, reduce the throttle setting, move the shift lever to the selected gear, and let out the clutch slowly.

Important: Know the gear shift pattern of the tractor you are using. It is permanently marked on or nearby the gear shift.

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Steering Involves Many Concepts

Steering involves several concepts each dealing with spacing. You must have knowledge of:

- Width and length of the tractor
- Width and length of the tractor and an attached implement
- Space needed to corner the tractor and equipment around a building or object
- Difference in the turning radius of narrow front-end versus wide front-end tractor steering
- Individual wheel brakes on the tractor that can also be used to steer or control slippage on steeper slopes

Brakes can help make steering corrections in tight places. Since the tractor's brakes are used to brake each wheel separately, they can be used to make slight steering adjustments. Do not overdo this practice, as brakes can wear out quickly.

Caution: Lock brakes together for highway travel. Pushing one brake at high speeds can cause the tractor to be thrown sideways resulting in a side overturn.

Figure 4.10.c. Use both hands to steer the tractor. If you hit a hole in the field, the wheel can be jerked from your hand.

Cornering

Before attempting this skill, have a qualified operator demonstrate what you must do before you attempt cornering. Each tractor and implement will occupy a different space and corner differently as well. Know the relationship between the tractor and any towed implement.

To turn a corner with the tractor and towed implement:

- Move as far away from a building and object as the roadway will permit
- Drive in a long arc around the corner to prevent jack-knifing the tractor and machine
- Observe the inside turning radius of the tractor and implement. Too tight of a turn can cause damage to the tractor, the tires, or to the towed equipment.
- As you complete the turn, observe the outside or opposite side of the tractor to be sure it has clearance from any other objects

Wide turns on public roads will place the tractor and equipment into the opposite lane of traffic. This creates a hazard.

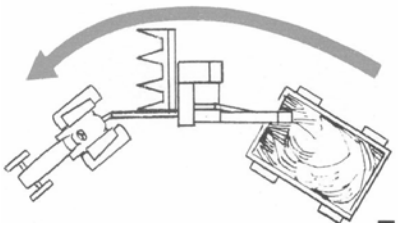

Figure 4.10.d. Too tight of a turning radius can damage tractor, tires, or implement.

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Safety Activities

For Moving and Steering the Tractor:

1. With a clutch-type tractor, practice pushing the clutch down all the way, and then releasing the clutch slowly to get the feel of the clutch pressure. Be sure the seat is adjusted. Practice without the tractor engine running. Then practice the same thing with the tractor engine running and the area clear (you may move the tractor forward in this practice).
2. In a large open area, practice starting a tractor, moving it forward, and slowly steering it in a figure 8 pattern. Then place the tractor in reverse gear and slowly back through the figure 8 pattern. Use a low range gear and a low-speed throttle adjustment.
3 Ask an experienced operator to show you how to move a tractor and implement uphill and downhill from a standing start.

For Steering the Tractor:

1. Use a 4-H or FFA Tractor Driving Course layout to practice driving a tractor through the course. You can also use one from the Hobar manual “Safety Operation of Agricultural Equipment” or the Driving Course Exam Layout from this program.

2. Complete the obstacle course by using the reverse gear and backing through the course using the tractor alone.

3. Make the obstacle course a little larger; repeat the practice with a tractor towing a two-wheeled implement. As you develop skill, reduce the size of the opening and practice further. You may make the course smaller as you achieve greater skill.

References

1. Farm and Ranch Safety Management, John Deere Publishing, 1994. Illustrations reproduced by permission. All rights reserved.
2. Safe Operation of Agricultural Equipment, Student Manual, 1988, Silletto and Hull, Hobar Publications.

Contact Information

National Safe Tractor and Machinery Operation Program
The Pennsylvania State University
Agricultural and Biological Engineering Department
246 Agricultural Engineering Building
University Park, PA 16802
Phone: 814-865-7685
Fax: 814-863-1031
Email: NSTMOP@psu.edu

Credits

Developed, written and edited by WC Harshman, AM Yoder, JW Hilton and D J Murphy, The Pennsylvania State University. Reviewed by TL Bean and D Jepsen, The Ohio State University and S Steel, National Safety Council. Version 4/2004

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