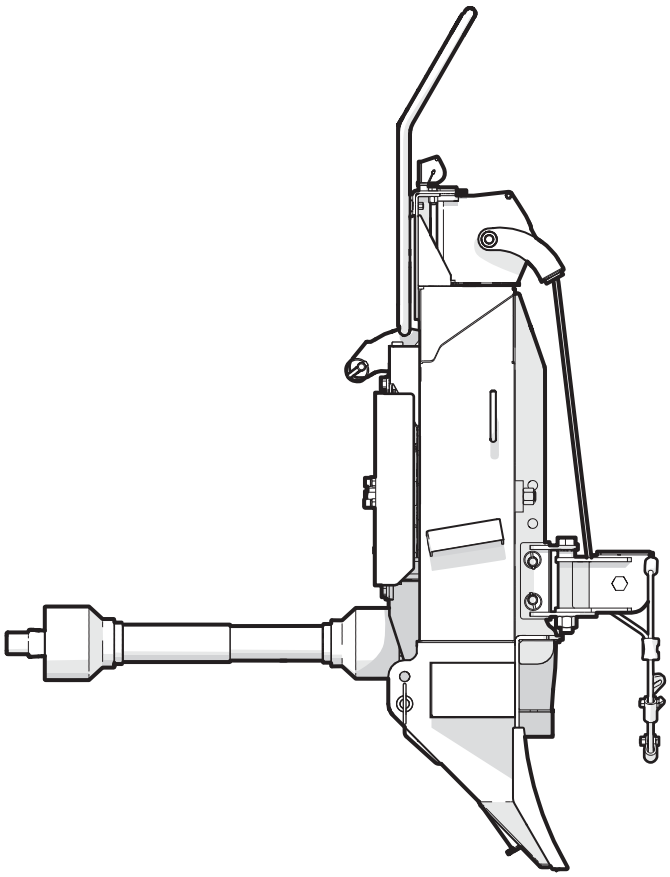
OPERATOR'S MANUAL

FX Series
Skidding Winch



Rev Jan-2024

Part Number: Z97090_En

WALLENSTEIN

Table of Contents

1. Introduction

⚠ WARNING!

Do not attempt to start or operate the machine before you read this manual thoroughly. Make sure that you understand how to operate the machine correctly and safely before you use it.

Keep this manual with the machine at all times.

W034

Congratulations on your choice of a Wallenstein Skidding Winch!

FX Series skidding winches are designed to pull logs, even if they are hard to reach, on a steep hill, or through a swamp.

This manual gives you information about the following FX Series models:

Model	Features
FX85	Manual control, steel cable
FX85R	Remote control, steel cable
FX85S	Manual control, synthetic winch rope
FX85RS	Remote control, synthetic winch rope
FX110	Manual control, steel cable
FX110S	Manual control, synthetic winch rope
FX110R	Remote control, steel cable
FX110RS	Remote control, synthetic winch rope
FX140	Manual control, steel cable
FX140R	Remote control, steel cable
FX140S	Manual control, synthetic winch rope
FX140RS	Remote control, synthetic winch rope

For available accessories, go to WallensteinEquipment.com.

For safe, efficient, and problem-free operation of this Wallenstein Equipment product, make sure that everyone who uses or maintains the machine has read and understands the information in this manual and in the engine manufacturer's manual.

Keep this manual available for frequent reference and to give to new operators or owners. Call your local Wallenstein dealer or the distributor if you need assistance, information, or additional copies of the manuals.

Units of measurement in Wallenstein technical manuals are written as: US Customary (SI metric)

For support or service, contact your local Wallenstein Equipment dealer or distributor.

This manual is subject to change without notice. For the most current information, go to WallensteinEquipment.com.

1.1 Delivery Inspection Report

Wallenstein FX Series Skidding Winch

To register your product and start the warranty, go to WallensteinEquipment.com.

This form must be completed by the dealer at the time of delivery, and then signed by the dealer and customer.

I received the product manuals and was thoroughly instructed about the care, adjustments, safe operation, and applicable warranty policy.

_____
Customer

_____
Address

_____
City, State/Province, ZIP/Postal Code

( )
_____
Phone Number

_____
Contact Name

_____
Model

_____
Serial Number

_____
Delivery date

I thoroughly instructed the customer about the equipment care, adjustments, safe operation, and applicable warranty policy, and reviewed the manuals with them.

_____
Dealer

_____
Address

_____
City, State/Province, ZIP/Postal Code

( )
_____
Phone Number

Dealer Inspection Checklist

_____ Drive chain tension is correct.
_____ PTO shaft extends and retracts, and the guard turns.
_____ Clutch is adjusted and functions correctly.
_____ All fasteners are torqued to the correct specification.
_____ All grease points are lubricated.
_____ Purchased accessories are included, if applicable.
_____ Operator's manual is in the storage tube.
_____ Winch rope or steel cable is in working condition and is wound correctly.
_____ Clutch and brake ropes move freely.

FX85R/FX85RS, FX110R/FX110RS, FX140R/FX140RS

_____ Remote control functions correctly.
_____ Clutch hydraulic cylinder functions correctly.
_____ Hydraulic connections are in working condition.
_____ Electrical wires are connected and in working condition.

Safety Checks

_____ All safety labels are applied and legible.
_____ All guards, shields, and covers are installed and tight.
_____ A retainer is installed through each hitch point.
_____ Operating and safety instructions were reviewed.

1.2 Serial Number Location

Always provide the model and serial number of your Wallenstein product when ordering parts, or requesting service or other information. The product information plate location is shown in the following illustration.

Record the model and serial number of your product here:

Model	
Serial Number	

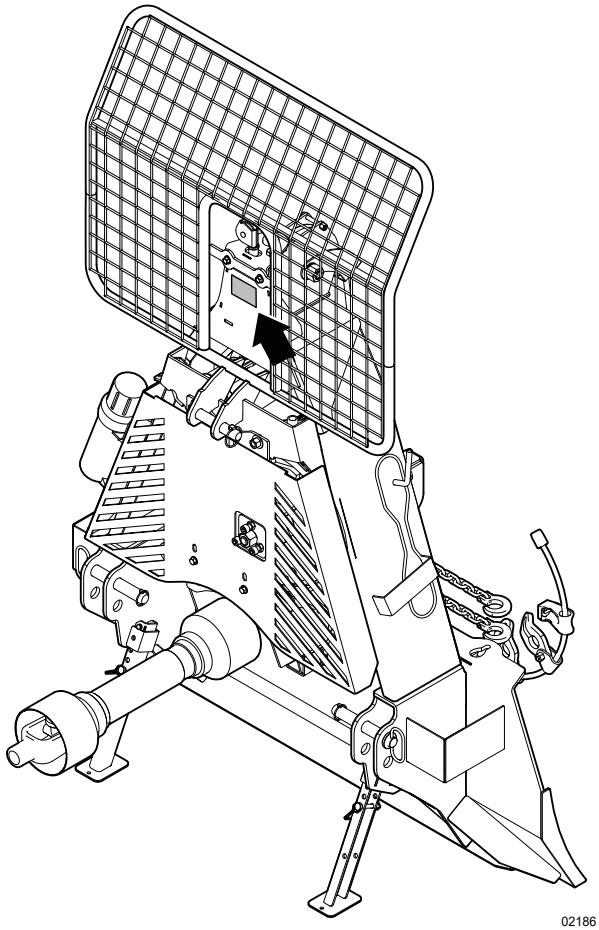
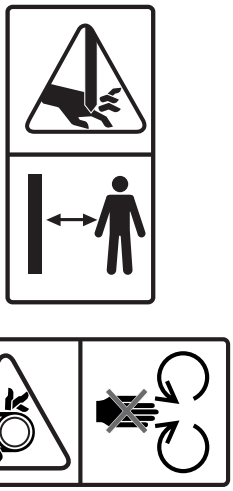


Figure 1– Serial number location

1.3 Types of Labels on the Machine

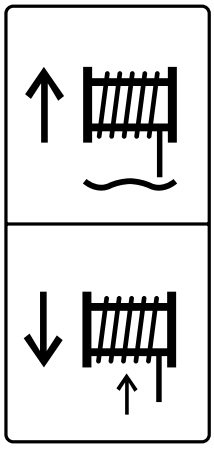
When getting familiar with the Wallenstein product, notice that there are numerous labels located on the machine. There are different types of labels for safety, information, and product identification. The following section explains what they are for and how to read them.

Safety labels have a yellow background and are generally two panel. A safety label can be vertical or horizontal.



Mandatory action labels are pictorial with a blue background and usually rectangular with single or multiple symbols. This label shows the type of personal protective equipment (PPE) that is necessary for safe operation.

Information labels are usually pictorial with a white background and the number of panels can be different. This type of label provides information for the operator or shows the operation of a control.



Product labels show the machine model and serial number. For more product information, scan the quick response (QR) code.

For safety label definitions, see *Safety Label Explanations on page 14*. For illustrations of the decals and the decal locations, download the parts manual for your Wallenstein product at WallensteinEquipment.com.

2. Safety

Read and understand all safety information before operating the machine.

2.1 Safety Alert Symbol

This Safety Alert Symbol means:

ATTENTION! BE ALERT!

YOUR SAFETY IS INVOLVED!

The safety alert symbol identifies important safety messages on the machine and in the manual.

When you see this symbol, be aware of the possibility of personal injury or death. Follow the instructions in the safety message.

2.2 Signal Words

The signal words **DANGER**, **WARNING** and **CAUTION** identify the severity of a hazard to anyone who uses the machine. The applicable signal word for each message was selected using the following guidelines:

DANGER

Identifies a hazardous situation that, if not avoided, **will** result in serious injury or death. This signal word is used to tell anyone who uses the machine about the most hazardous situations and machine components that cannot be guarded against.

WARNING

Identifies a hazardous situation that, if not avoided, **could** result in serious injury or death. This signal word includes hazards that occur when guards are removed and can be used to tell anyone who uses the machine about unsafe practices.

CAUTION

Identifies a hazardous situation that, if not avoided, **could** result in minor or moderate injury. It can also be used to tell anyone who uses the machine about unsafe practices.

IMPORTANT – Identifies a situation that could result in damage to the machine or property, but is not a personal injury hazard.

☞ Provides additional information that is helpful.

2.3 Why Safety is Important

- **Accidents disable and kill people.**
- **Accidents cost money.**
- **Accidents are preventable**

YOU are responsible for the safe operation and maintenance of your Wallenstein product. **YOU** must make sure that you and anyone else who uses, maintains, or works around the machine is familiar with the operation and maintenance procedures and related **SAFETY** information contained in this manual. Follow the safety best practices included in this manual while using your machine.

YOU are responsible for your own safety. Follow safety best practices to protect yourself and the people around you. Make these practices part of your safety program. Make sure that **EVERYONE** who uses this machine is familiar with the recommended operation and maintenance procedures, and obeys all the safety instructions. Most accidents can be prevented.

Do not risk injury or death by ignoring safety instructions and best practices.

2.4 Safety Rules

WARNING!

Never bypass or remove a safety function. Never operate the machine when a safety function does not work. Safety functions are intended to protect people from hazards that can cause serious injury or death. Keep safety components maintained and in working condition.

Wallenstein Equipment puts considerable effort into designing products that are safe to use; however, it is also the responsibility of the operator to use the equipment safely.

For safety information that is specific to machine operation, service, or maintenance, see the applicable section in this manual.

- It is the operator's responsibility to read, understand, and follow ALL safety and operating instructions in this manual.
- If you do not understand any part of this manual or need assistance, contact your local dealer, the distributor, or Wallenstein Equipment.
- Do not let anyone to use this machine until they have read this manual. Operator's must have a thorough understanding of the safety precautions and how the machine works. Review the safety instructions with all users annually.
- Operators must be responsible, familiar with, and physically able to use the machine. Each operator must be trained before using the machine. Before operation, evaluate the physical and/or mental limitations of each operator to make sure that they can use the machine safely. Never let a child operate the machine.
- Make sure that all users understand the safety labels on the machine before operating, servicing, adjusting, or cleaning it. For safety label definitions, see *Safety Label Explanations on page 14*.
- Learn the controls and know how to stop the machine and tractor if there is an emergency.
- Keep a first-aid kit available and know how to use the contents of it.

- Keep a fire extinguisher available and know how to use it.

- Wear the appropriate PPE when operating, servicing, or maintaining the machine.
  This includes, but is not limited to:
  - A hard hat.
  - Heavy gloves.
  - Hearing protection.
  - Protective shoes with steel toes and slip resistant soles.
  - Protective glasses, goggles, or a face shield.
- Prolonged exposure to loud noise may cause permanent hearing loss. Power equipment with or without a vehicle attached can often be noisy enough to cause permanent, partial hearing loss.

- Wear hearing protection on a full-time basis if the noise in the operator's position exceeds 80 dB. Noise over 85 dB on a long-term basis can cause severe hearing loss. Noise over 90 dB adjacent to the operator on a long-term basis may cause permanent, total hearing loss.
- Avoid wearing loose fitting clothing, loose or uncovered long hair, jewelry, and loose personal articles. These can get caught in moving parts and cause injury. Jewelry may also ground a live electrical circuit causing injury and machine damage.
- Never consume alcohol or drugs before or during machine operation. Alertness or coordination can be affected. Consult your doctor about operating this machine while taking prescription medications.
- Only use the machine in daylight or good artificial light.
- Make sure that all guards and shields are installed, and the covers are closed. If removal is necessary for repair, replace them before using the machine.
- Never let anyone to ride on the machine during transport.
- Do not let anyone within 20 ft (6 m) of the machine or load during operation.

2.5 Equipment Safety Guidelines

Safety is one of the main concerns in designing and developing equipment. However, every year many accidents occur which could have been avoided by a few seconds of thought and a more careful approach to handling equipment.

Avoid hazards by observing the following precautions. Insist anyone working with you follow them as well.

- Replace safety or instruction labels that are not readable or are missing. For locations and explanations, see *Safety Labels on page 11*.
- Make sure that the machine is correctly stationed, adjusted, and in working condition.

- Keep the machine free of accumulated debris to prevent machine damage.
- Do not modify the equipment in any way. Unapproved modification can result in serious injury or death. In addition, unapproved modification can cause incorrect operation and decrease the life of the machine. Unapproved modification voids the warranty.
- Look for and avoid overhead hazards (for example; branches, cables, and electrical wires).
- If the machine has a synthetic winch rope, always connect the hook end to a synthetic choker or choker chain. Never wrap the synthetic winch rope around a log or attach the hook end onto the synthetic winch rope. Incorrect use of a synthetic winch rope causes damage and the synthetic winch rope can break.
- FX-R and FX-RS models:
  - Make sure that all hydraulic system components are kept clean and in working condition.
  - Replace a hydraulic hose that shows signs of swelling, wear, leaks, or damage immediately. A swollen, worn, damaged, or leaking hose can burst and cause a hazardous and unsafe condition.
  - Do not bend or hit high-pressure hydraulic hoses.
  - Never adjust a pressure relief valve or other pressure-limiting device to a pressure that is greater than the specified rating.
- Never exceed the limitations of the machine. If the machine is not operating normally or you feel unsafe, **stop the machine!**

2.6 Safe Condition

The term **safe condition** is referenced throughout this manual. This means that the machine is in a condition that makes it safe to service or maintain.

Before you start service or maintenance, do the following:

SAFE CONDITION

1. Disengage the tractor PTO.
2. Apply the tractor parking brake.
3. Stop the tractor engine, remove the ignition key, and block the tractor wheels.
4. Wait for all moving components to stop.
5. Remove the load from the cable or winch rope.
   Make sure that the cable or winch rope does not have tension on it.

2.7 Safety Training

An untrained operator can cause serious injury or death to them self or others. Review the safety instructions with all users annually. The *Sign-Off Form on page 10* can be used to keep a training record.

- An employer has the responsibility to train employees how to operate the machine they are using. When someone does not understand the operation of a machine, they can create dangerous situations very quickly. Operators must understand the safety information in this manual and the safety labels that are on the machine
- The owner has the responsibility to provide instruction to anyone who is going to operate the machine. This machine is dangerous to anyone who is unfamiliar with its operation.
- If the machine is loaned or rented, it is the owner's responsibility to make sure that, before using the machine, every operator:
  - Reads and understands this manual.
  - Is instructed in the safe and correct use of the machine.
  - Understands and knows how to set the machine to a **Safe Condition**.
    For instructions, see *Safe Condition on page 9*.

2.8 Sign-Off Form

Everyone who uses this machine must read and fully understand all safety, operation, and maintenance information in this manual. An untrained operator should never use this machine.

Schedule an annual review of machine safety and operation for all operators. The following sign-off form can be used to record the completed training.

The design and manufacture of this product conforms to the applicable provisions in the following standards:

- ISO 4254-1:2013, Agricultural machinery - Safety - Part 1: General requirements.
- ISO 3600 Tractors, machinery for agriculture and forestry, powered lawn and garden equipment – Operator's manuals – Content and format.

Training Sign-Off Form

Date	Owner's signature	Operator or technician's signature

3. Safety Labels

WARNING!

Replace all safety labels that are missing, damaged, or illegible. If a component is replaced and it has a safety label on it, apply a safety label to the new component. Operating the machine with missing, damaged, or illegible safety labels puts the operator at risk of serious injury or death.

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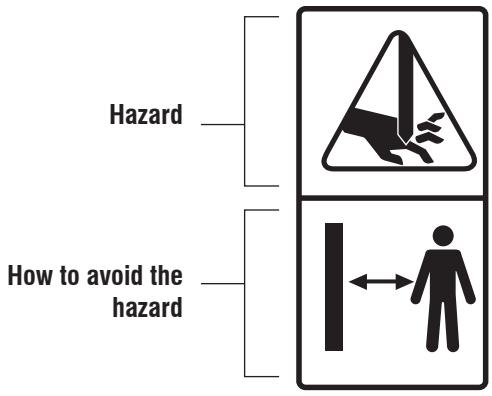
For your safety, you must be familiar with the safety labels and warnings, and be aware of unsafe situations.

The top panel (or left panel for horizontal labels) shows the safety alert. The bottom (or right) panel shows the message.



Think SAFETY! Work SAFELY!

Safety

3.1 Safety Label Locations

The numbers correspond with the *Safety Label Explanations on page 14*.

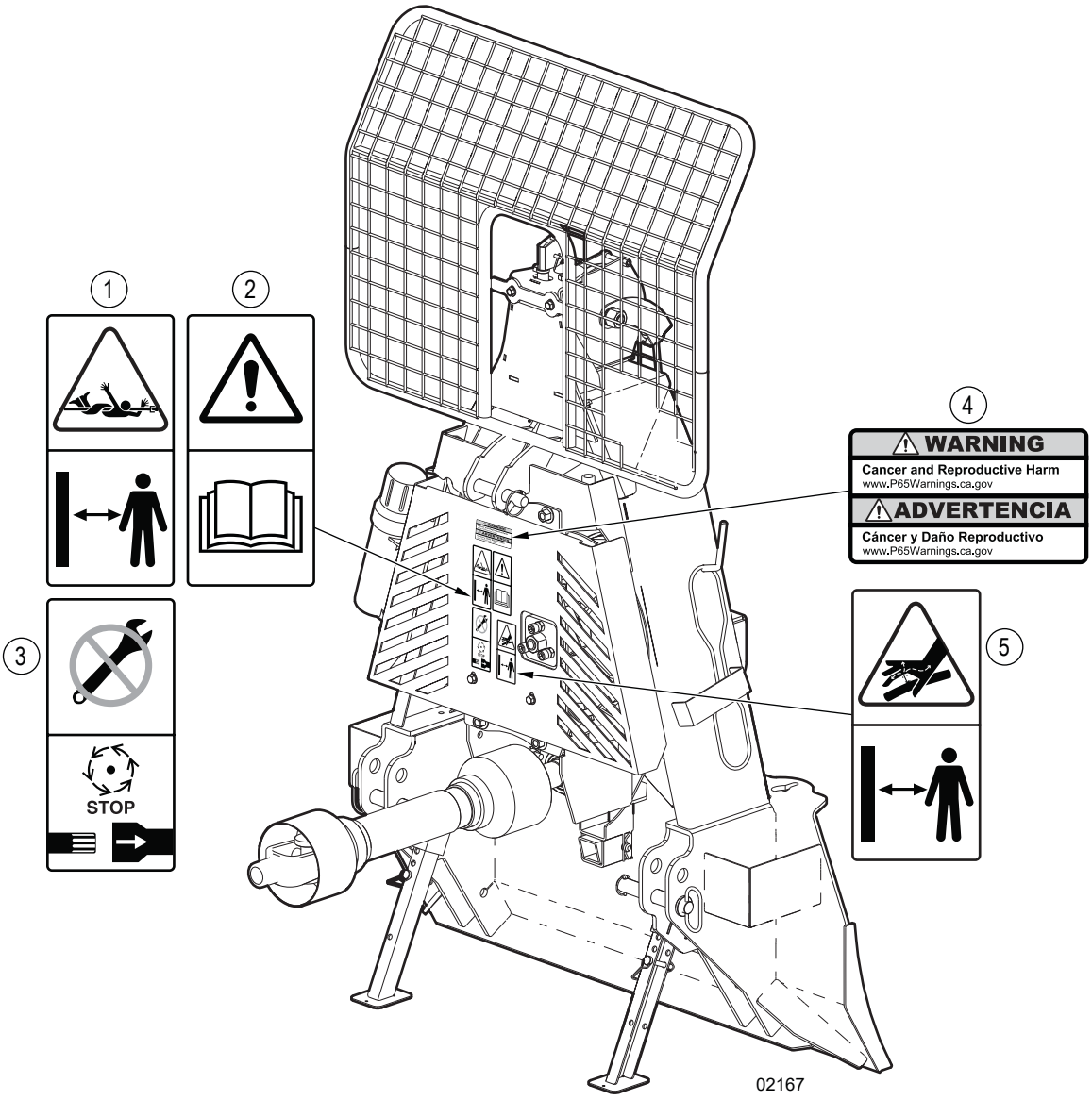


Figure 2–Safety label locations - front

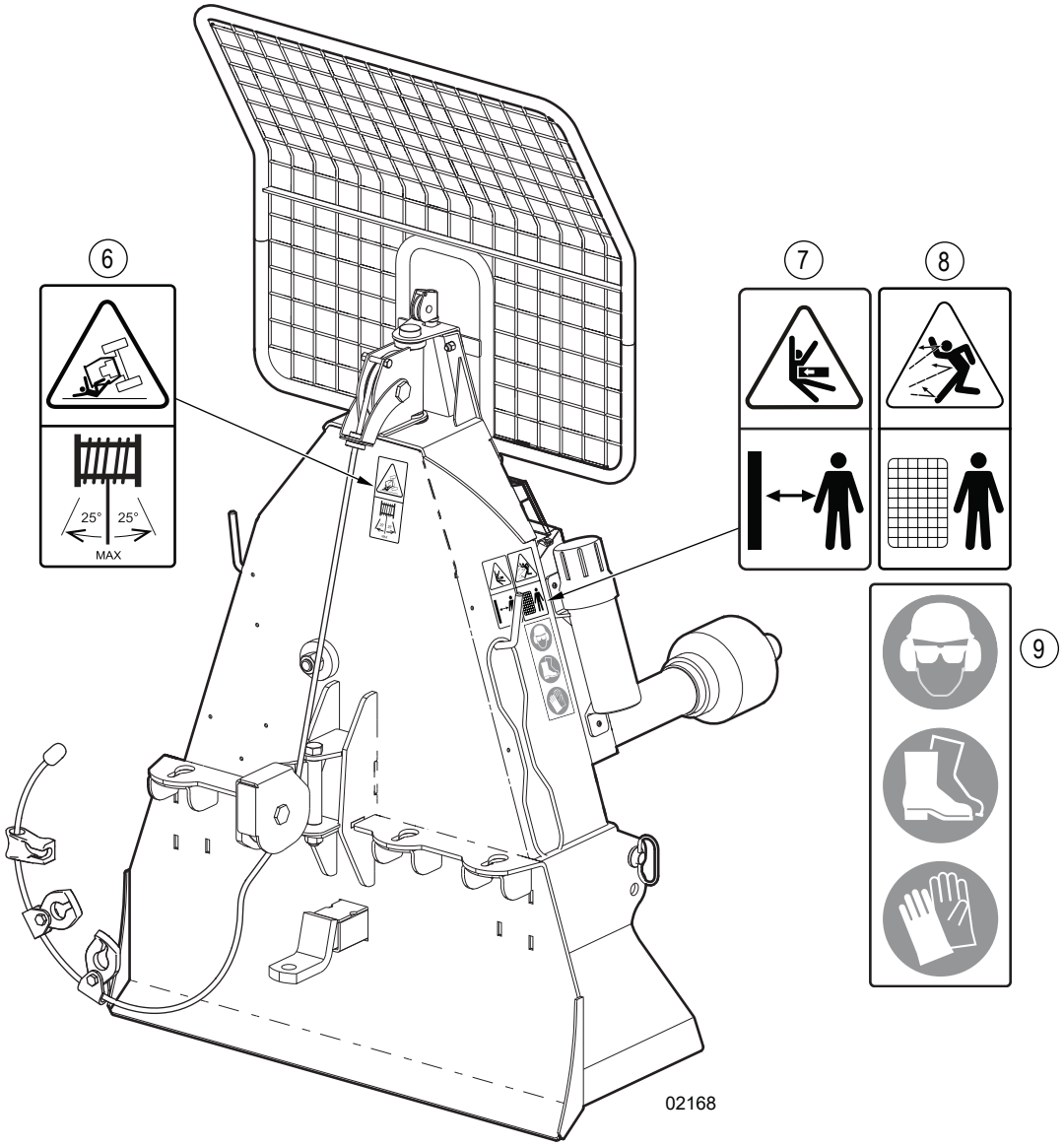


Figure 3– Safety label locations - rear

3.2 Safety Label Explanations

1. Warning!

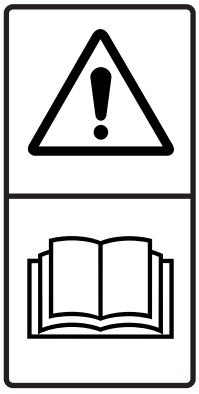
Entanglement hazard

Hands, feet, clothing, hair, jewelry, and other items can get entangled in the PTO shaft and cause serious injury or death.

Stay away from the PTO shaft when it is turning.

2. Caution!

Read the Operator's Manual

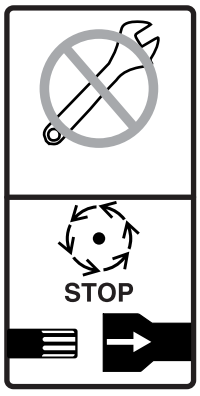


There is important safety information and instructions in the Operator's Manual.

Read all the safety information and instructions in the Operator's Manual. Know what all the safety labels mean.

3. Warning!

Entanglement and pinch hazards



Hands, feet, clothing, hair, jewelry, and other items can get entangled in the PTO shaft and cause serious injury or death.

Disconnect the PTO shaft from the tractor before you start service or maintenance.

4. Warning!

Carcinogen and reproductive harm hazard

The machine materials contain chemicals or machine operation can produce gases or dust that are identified by the state of California as causes of cancer, birth defects, or other reproductive harm.

This warning is a requirement of the state of California, USA to comply with Proposition 65: the Safe Drinking Water and Toxic Enforcement Act of 1986.

5. Warning!

High-pressure injection hazard

Injection of hydraulic fluid can cause serious illness, injury, or death.

FX-R and FX-RS models have a concealed hydraulic fluid connection. Hydraulic fluid is under pressure. Use caution when removing a guard or panel.

If you think there is a hydraulic fluid leak, move away from the area. Do not use your hands to check for hydraulic fluid leaks. Wear the correct hand and eye protection, and always use a piece of cardboard, wood, or plastic to find a leak.

6. Warning!

Crush hazard

Keep the cable or winch rope as straight as possible. Never operate the machine with the cable or winch rope at an angle greater than 25° from the center of the machine (in either direction).

If necessary, use a self-releasing directional pulley. Self-releasing directional pulleys are available to purchase through your Wallenstein dealer or distributor.

7. Warning!

Crush hazard

Never stand between the machine and the load. The load can move unexpectedly and cause serious injury or death.

Stand to the side, a minimum 10 ft (3 m) away from the machine.

8. Warning!

Impact, cut, and puncture hazards

Stay a minimum of 10 ft (3 m) to the side of the machine or behind the safety screen.

The cable or winch rope can break and move fast enough to cause serious injury or death.

9. Warning!

Wear the necessary PPE

- A hard hat.
- Heavy gloves.
- Hearing protection.
- Protective footwear with steel toes and slip resistant soles.
- Protective goggles or a face shield.

3.3 Replace a Safety Label

- Always replace safety labels that are missing or have become illegible. Replacement safety labels are available from your local Wallenstein Equipment dealer or distributor.
- Keep the safety labels clean and legible at all times.
- When a part that has a safety label on it is replaced, the correct safety label must be applied to the replacement part.

3.3.1 Conditions

- The installation area must be clean and dry.
- The application surface must be clean and free of grease or oil.
- The ambient temperature must be above 50 °F (10 °C).

3.3.2 Tool

Use a squeegee, plastic card, or similar tool to smooth out the label.

3.3.3 Procedure

1. Identify the label location.
2. Peel the label off the backing paper.
3. Hold the label above the location where you are going to apply it.
   Align the edges of the label with an edge of the machine.
4. Start at one edge and carefully press the center of the adhesive side of the label onto the machine.
5. Use an appropriate tool to smooth the label. Work from one side to the other.
6. If there are small air pockets:
   a. Use a pin to pierce the air pocket.
   b. Use a piece of the label backing paper to smooth the air pocket.

4. Familiarization

IMPORTANT! Before starting work with the winch, become familiar with the location and function of all controls.

4.1 New Operator

It is the responsibility of the owner or operator to read this manual and to train all other operators before they start working with the machine. Follow all safety instructions exactly.

By following recommended procedures, a safe working environment is provided for the operator, bystanders and the area around the work site. Untrained operators are not qualified to use the machine.

4.2 Operator Orientation

IMPORTANT! When describing controls as mentioned throughout this manual, the directions for left-hand, right-hand, backward and forward, are determined when sitting in the tractor seat, facing the direction of forward travel.

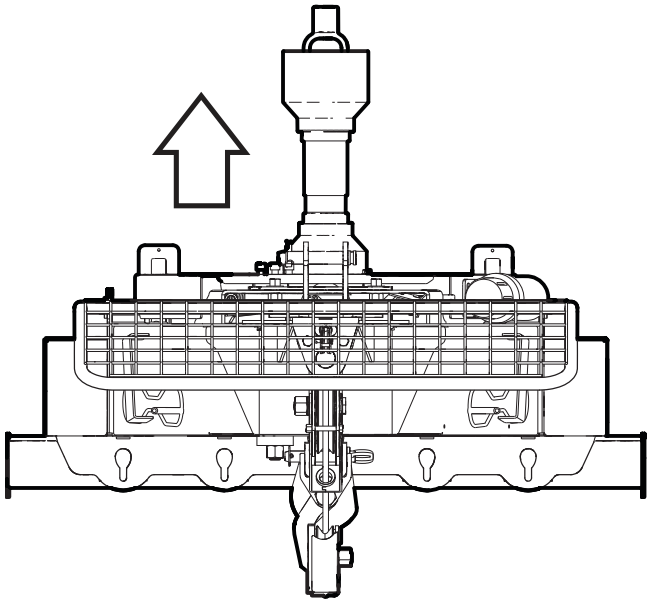


Figure 4–Direction of forward travel

Each operator must be trained in the correct operating procedures before using the machine. The *Sign-Off Form on page 10* can be used to keep a training record.

1. Teach the new operator the control locations, functions, and movement directions.
2. Put the machine in a large open area and let the new operator learn the control functions and machine responses.
3. After the new operator knows and is comfortable with the machine, they can start work.

4.3 Work Site Familiarization

It is the responsibility of the operator to be thoroughly familiar with the work site before operating the machine. Some items the operators should check include but are not limited to:

1. Make sure that there is a sufficient amount of space and clearance for the machine to winch the load.
2. Organize the work area to minimize the winch and log removal distances. The shorter the distances, the faster the work will be finished.
3. Use care when pulling logs off of a pile. The logs can roll when you attach the cable or winch rope, or during operation.
4. Position the tractor so prevailing winds blow engine exhaust fumes away from operator.

4.4 Machine Components

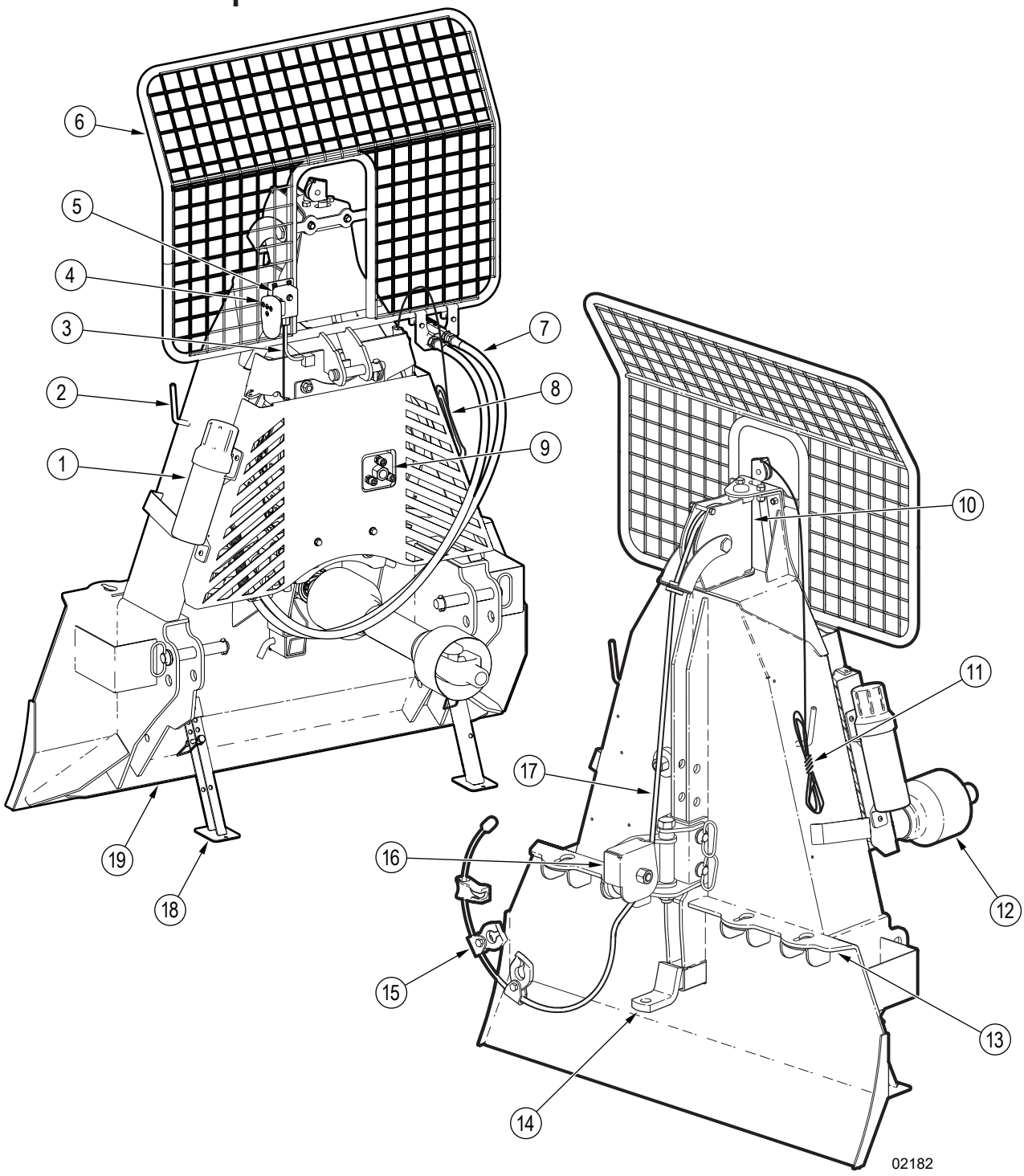


Figure 5–Machine components

1. Operator's manual tube
2. Chain hook
3. Electrical wires
4. Remote control hand-held transmitter (FX-R and FX-RS models)
5. Remote control receiver (FX-R and FX-RS models)
6. Safety screen
7. Hydraulic hoses (FX-R and FX-RS models)
8. Drum-lock rope (green)
9. Clutch adjustment
10. Top directional pulley
11. Clutch-control rope (white)
12. PTO shaft
13. Chain tow bar
14. Trailer hitch
15. Keyhole sliders
16. Bottom directional pulley
17. Steel cable (FX and FX-R models) or synthetic winch rope (FX-S and FX-RS models)
18. Support stand (1 of 2)
19. Anchor blade

5. Controls

⚠ WARNING!

Do not operate the machine until you are thoroughly familiar with the position and function of the various controls. Read the operator's manual thoroughly. Your safety is involved!

W065

5.1 Winch Clutch

The white clutch-control rope (1) controls the winch clutch. The clutch-control rope is routed through the top directional pulley. The top directional pulley gives the operator the option to use the clutch-control rope from each side of the machine.

1. Stand on one side of the machine, a minimum of 10' (3 m) away.
2. Firmly pull and hold the end of the clutch-control rope to engage the clutch and wind the cable or winch rope.
3. Release the clutch-control rope to disengage the clutch and stop winding the cable or winch rope.

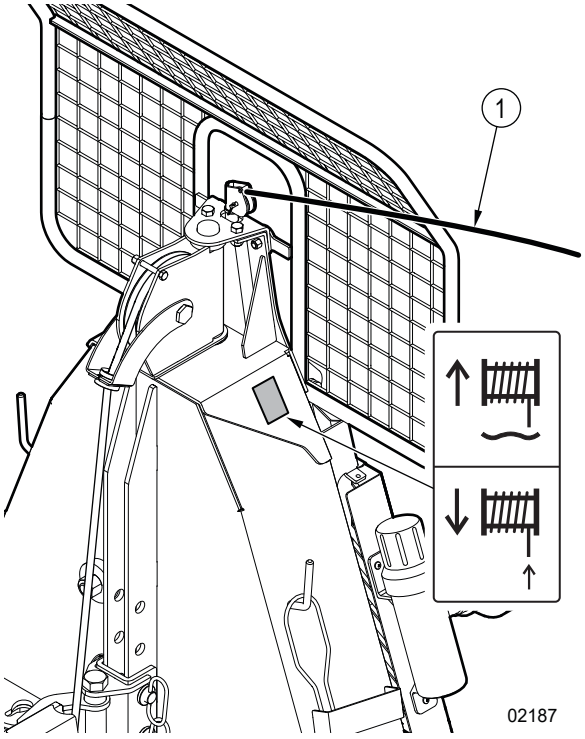


Figure 6–Winch clutch-control rope

5.2 Winch Drum Lock

Lock the winch drum to prevent the cable or winch rope from unwinding while skidding. The winch drum must be locked for the machine to skid a log.

5.2.1 Engage the Drum Lock

The drum lock can disengage if the tractor stops moving forward.

1. Take the end of the green drum-lock rope (1) to the tractor's operator position.
   Make sure that the drum-lock rope routing is safe.
2. Pull and hold the drum-lock rope.
3. Move the tractor forward until the drum lock contacts the winch-drum cog.
   The forward motion keeps the winch drum locked.
4. Release tension on the drum-lock rope.

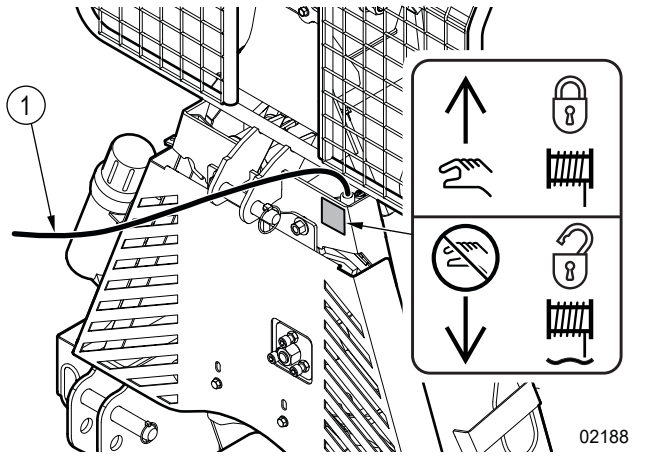


Figure 7–Drum-lock control rope

5.2.2 Disengage the Drum Lock

When the drum lock is disengaged, the winch drum can move freely (the cable or winch rope can be pulled out).

1. Stop the tractor.
2. Do one of the following:
   - If stopping the tractor disengaged the drum lock, no more action is necessary.
   - If stopping the tractor did not disengage the drum lock, continue with the following steps.
3. Engage the PTO shaft.
4. Pull the clutch-control rope firmly.

5. When the clutch engages, release the clutch-control rope. The clutch disengages and the drum lock releases the cable or winch rope.

5.3 Forged Cable End

IMPORTANT! Do not use the forged end ferrule on the cable as an end stop.

The ferrule is designed to be used in the choker hook only. If the end ferrule is used incorrectly it can cause damage.

A steel cable has a heavy-duty forged steel end and choker.

- Wrap the cable end around a log and put the forged cable end into the choker.

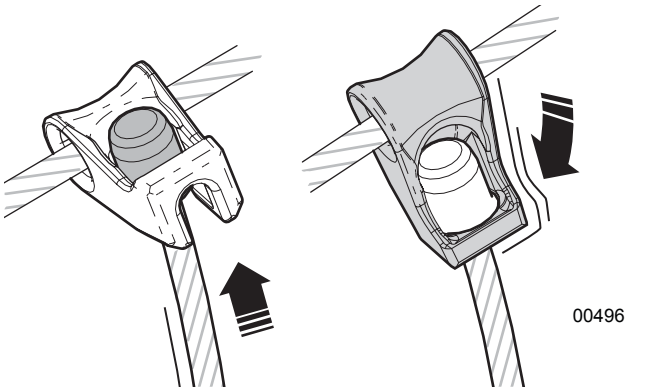


Figure 8–Cable forged end and ferrule

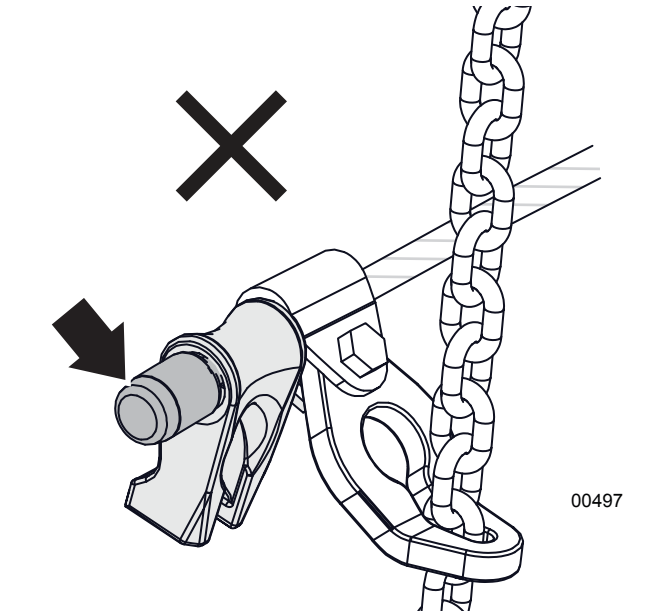


Figure 9–Incorrect use of the forged end and ferrule

5.4 Keyhole Sliders

IMPORTANT! If the winch has a synthetic winch rope, always connect the hook end to a choker chain or synthetic choker. Never wrap a synthetic winch rope around a log or attach the hook end onto the synthetic winch rope. Incorrect use of a synthetic winch rope causes damage that is not covered by warranty.

A steel cable has two keyhole sliders that are used to attach a synthetic choker or choker chain to the cable.

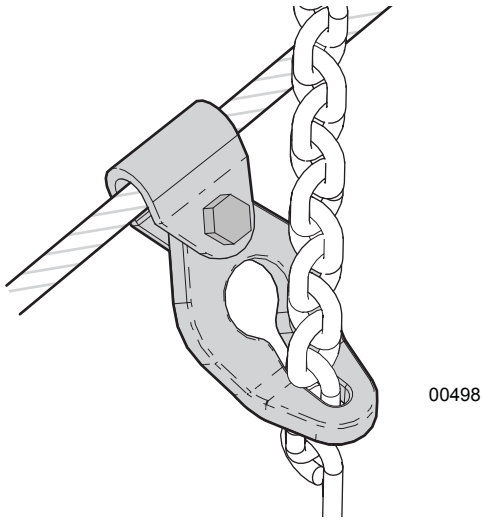


Figure 10–Cable keyhole slider

A synthetic winch rope has two keyhole sliders with a forged hook end.

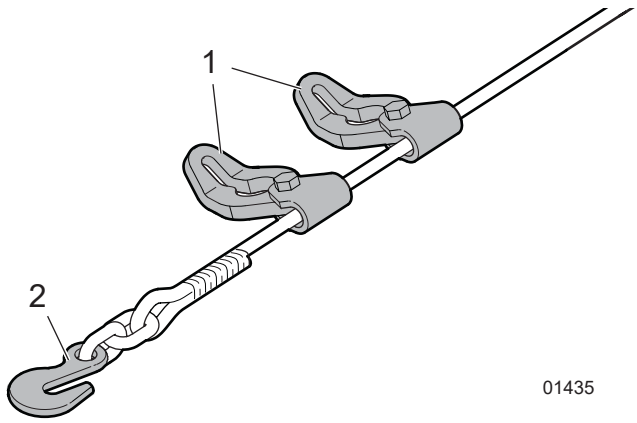


Figure 11–Synthetic winch rope keyhole sliders

1. Keyhole sliders
2. Forged hook end

5.5 Keyhole Slots

The chain tow bar is on the back of the machine. Use the keyhole slots to attach a choker chain and skid more than one log.

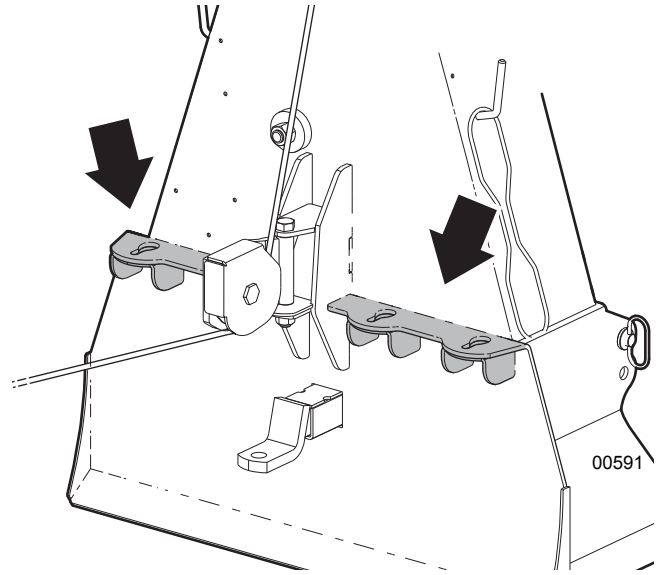


Figure 12–Keyhole slots

5.6 Choker Chains

IMPORTANT! If the winch has a synthetic winch rope, always connect the hook end to a choker chain or synthetic choker. Never wrap a synthetic winch rope around a log or attach the hook end onto the synthetic winch rope. Incorrect use of a synthetic winch rope causes damage that is not covered by warranty.

All of the machines come with two choker chains. The heavy duty 5/16" choker chains are 7-1/2 ft (2.3 m) long with a steel probe for sliding under logs.

1. Push the probe end of the choker chain under the log.
2. Pull the ends together and put the hook end over the choker chain.
3. Attach the probe end of the choker chain to the keyhole slider on the cable or winch rope.

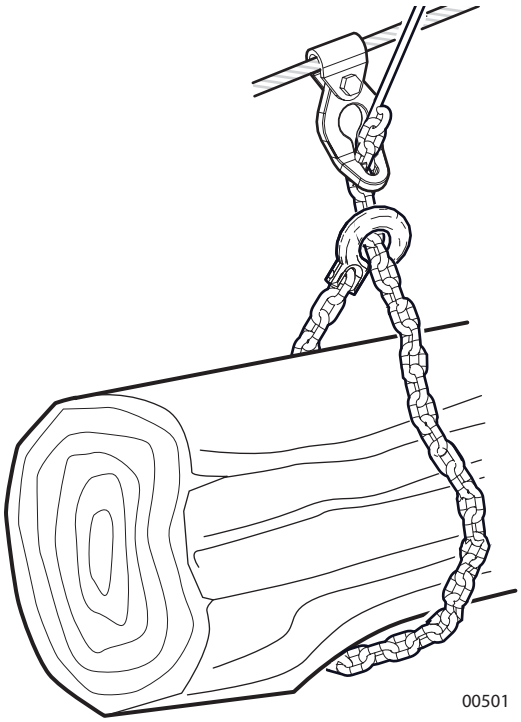


Figure 13–Choker chain

5.7 Synthetic Chokers

⚠ WARNING!

A steel cable or synthetic winch rope that fails under tension can snap back with great force causing injury or death. Avoid sudden jerks, and quick starts or stops. Start slowly and smoothly. Replace a cable or winch rope that is kinked, badly frayed, has knots, cuts, or broken strands.

Synthetic chokers are available as an accessory (purchased separately). A synthetic choker weighs less than a steel choker chain. Synthetic chokers are easier to handle; however, they are more susceptible to damage.

A synthetic choker is very susceptible to damage from rubbing on or sliding along rough ground or surfaces. The strength of a synthetic choker can be reduced by sudden jerking, or quick starts and stops. Avoid high shock loads on the synthetic choker by starting slowly and smoothly.

Before each use, check the condition of the synthetic choker for damage. If a synthetic choker is kinked, frayed, has knots, cuts, or any broken strands, replace it. A damaged synthetic choker can brake and cause serious injury.

1. Push the probe end of the synthetic choker under the log.
2. Pull the ends together and push the probe end through the loop.
3. Attach the chain that is on the probe end to a keyhole slider on the cable or winch rope.

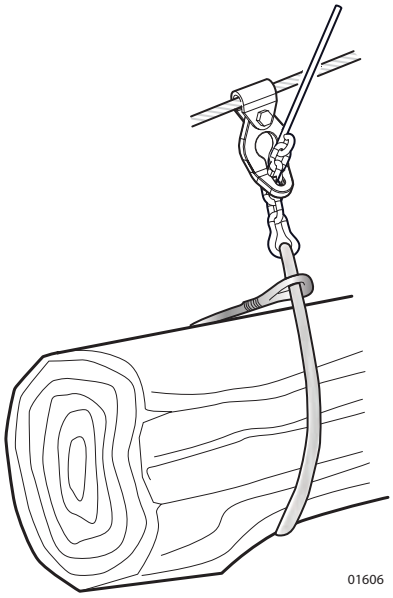


Figure 14–Synthetic choker

5.8 Bottom Directional Pulley

All of the machines have a bottom directional pulley. The primary use for the bottom directional pulley is to lower the pulling point, and make skidding more stable. This enables larger loads to be skidded. On FX110/FX110R/FX110S/FX110RS or FX140/FX140R/FX140S/FX140RS models the bottom directional pulley has three positions.

When you finish winching, move the cable or winch rope to the bottom directional pulley for skidding the load. To use the bottom directional pulley, loosen the cable or winch rope, and then put it around the bottom directional pulley.

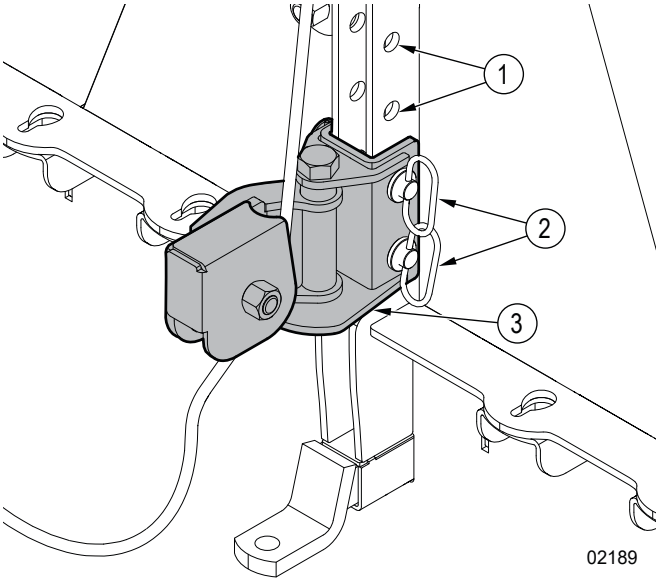


Figure 15–Bottom directional pulley

1. Position holes (FX110 series and FX140 series models)
2. Pins
3. Bottom directional pulley

Change the bottom directional pulley position:

1. Remove the two pins.
2. Move the bottom directional pulley up or down. Align the two holes with two holes in the machine.
3. Install the two pins.

5.9 Trailer Hitch

All skidding winches come with a heavy-duty trailer hitch that fits into the 2-inch square receiver on the winch frame.

The trailer hitch is attached with a pin and clip.

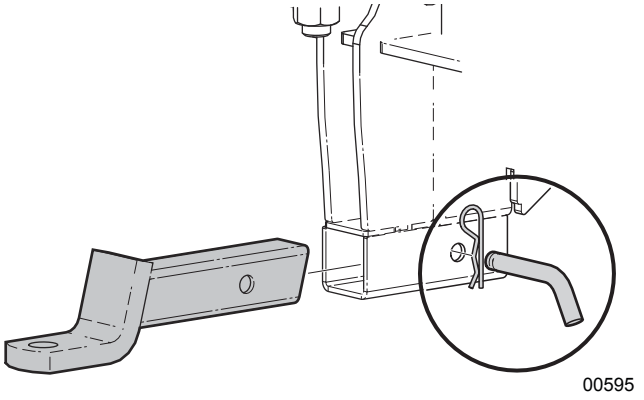


Figure 16–Trailer hitch

5.10 Safety Screen

Each machine has a safety screen that protects the operator from flying material, twigs, branches, and cable or winch rope recoil during operation. Keep the safety screen in working condition.

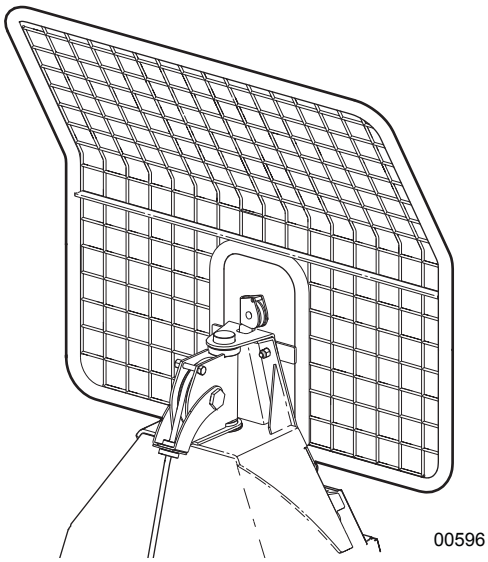


Figure 17–Safety screen

5.11 Remote Control

⚠ WARNING!

If it is safe to do so, disconnect the cable or winch rope from the load before using the manual override button. Use of the manual override button when the cable or winch rope is attached to a load can result in serious injury or death. There are flying object, hit, crush, and entanglement hazards in the manual override button location.

FX85R, FX85RS, FX110R, FX110RS, FX140R, and FX140RS models have a remote control.

Use the remote control to engage or disengage the winch clutch from a distance.

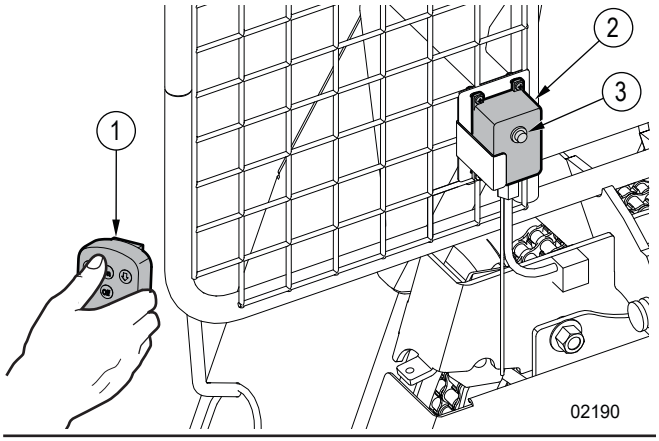


Figure 18–Remote control system

1. Hand-held transmitter
2. Receiver
3. Manual override button

5.11.1 Hand-held Transmitter

CAUTION!

- **Never leave a transmitter unattended.**
- **Always switch the transmitter off when not in use. Store in a safe place.**
- **Keep a clear view of the work area at all times.**

W054

IMPORTANT! Do not recharge the batteries. Attempting to recharge the batteries can cause the batteries to rupture or hazardous liquids to leak, and can damage the machine.

IMPORTANT! Use the On or Off button to start or stop the hand-held transmitter. Do not use the I/O switch.

Each hand-held transmitter is programmed with a unique code. The receiver is programmed to respond only to the transmitter that it is paired with. Therefore, multiple radio-controlled systems can work in close proximity without causing interference.

There are three LED indicator lights on the hand-held transmitter. The green light in the centre flashes to indicate that there is communication between the hand-held transmitter and the receiver. The red lights flash to indicate that there is a low battery or a system error.

The hand-held transmitter has two replaceable 1.5 V, AAA non-rechargeable alkaline batteries. The battery cover is on the rear of the hand-held transmitter.

Change the hand-held transmitter batteries:

1. Move the **I/O** switch to the **O** position.
2. Remove the rear battery cover.
3. Remove the batteries.
4. Install new batteries.
5. Install the rear battery cover.
6. Move the **I/O** switch to the **I** position

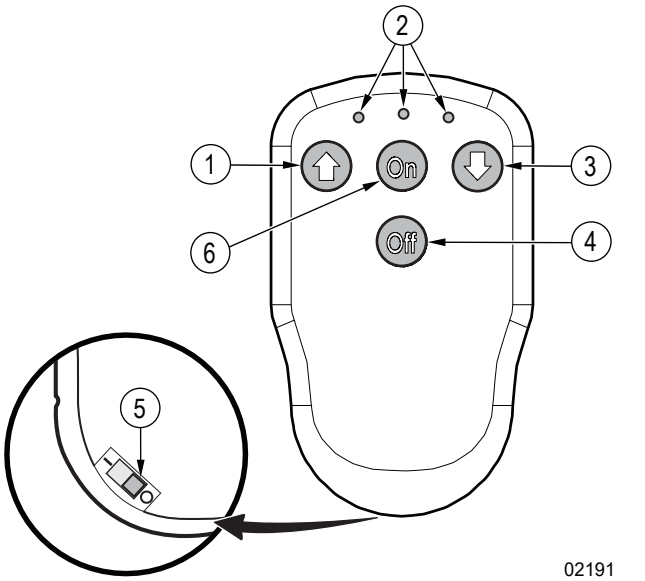


Figure 19–Hand-held Transmitter

1. Up arrow (clutch engage button)
2. Indicator lights
3. (not used)
4. **Off** button
5. I/O switch
6. **On** button

On Button

On	Push to turn the hand-held transmitter on.

Up Arrow (Clutch Engage) Button

⇧	Push and hold to start the machine and wind the cable or winch rope. The machine stops when you release the button.

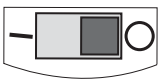
Indicator Lights

The indicator lights communicate the system status. The centre light illuminates green during normal operation. When 10% of battery life remains, the light changes to red. The left and right side lights are red and illuminate to indicate a system error.

Off Button

Off	Push to turn the transmitter off.

I/O Switch



The **I/O** switch is on the back of the hand-held transmitter. The **I/O** switch connects or disconnects the battery power. The switch must be in the **I** position for the transmitter to operate.

5.11.2 Receiver

The receiver is attached to the safety screen. The signal from the hand-held transmitter is sent to the receiver, and then to the hydraulic actuator to engage or disengage the winch clutch. It is necessary to have a 12 VDC electrical connection from the tractor for the receiver. The receiver enclosure is weather, vibration, and shock resistant.

The receiver includes a manual override button. For more information, see *Manual Override Button*.

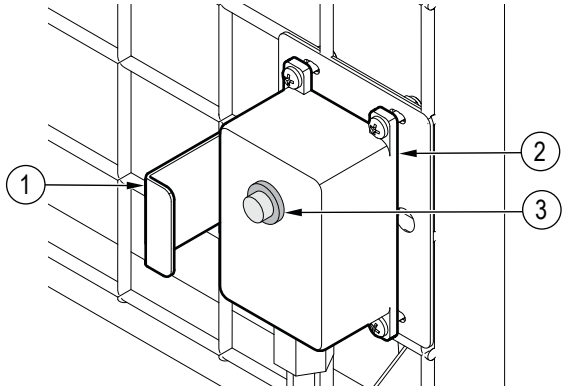


Figure 20–Receiver

1. Receiver
2. Manual override button
3. Transmitter storage mount

5.11.3 Manual Override Button

⚠ WARNING!

If it is safe to do so, disconnect the cable or winch rope from the load before using the manual override button. Use of the manual override button when the cable or winch rope is attached to a load can result in serious injury or death. There are flying object, hit, crush, and entanglement hazards in the manual override button location.

The manual override button is available for temporary (one-time) use in a situation where the remote-control transmitter does not operate, and it is necessary to wind the cable or winch rope. Repair or replace the remote-control transmitter before using the skidding winch again.

Manual Override Button Hazards

If the cable or winch rope cannot safely be disconnected from the load, continuously watch for the following and other possible hazards during winch operation:

- A cable or winch rope can break when there is tension on it. A broken cable or winch rope moves quickly with high force in many directions.
- The tractor can move unexpectedly and hit or crush the operator.
- The PTO shaft turns during operation and can entangle loose clothing, hair, hands, or feet.

Manual Override Button Procedure

1. Push the button to wind the winch rope.
2. Release the button to stop the winch.

For more information, see *Wind the Cable or Winch Rope Without a Load on page 33*.

5.11.4 Hand-Held Transmitter Operation

When the **up arrow** is released the winch clutch disengages. The winch drum can move freely and the cable or winch rope can be pulled out.

The hand-held transmitter turns off after three minutes of inactivity.

On	Push and hold the **On** button until the green light illuminates, and then release the button. The green light flashes rapidly when communication with the receiver is established. The green light flashes slowly when the receiver is off or there is no communication between the transmitter and the receiver.
⇧	Push and hold the **up arrow** to engage the clutch and retract the cable or winch rope. Release the **up arrow** to disengage the clutch and stop the machine.

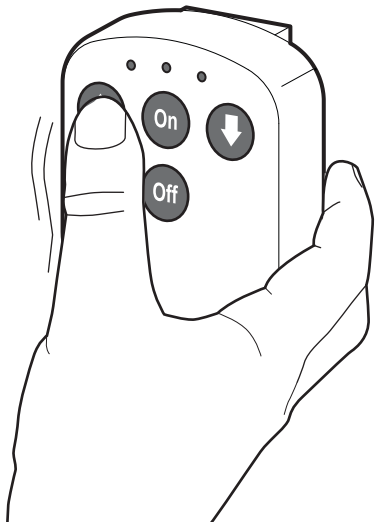


Figure 21 – Hand-held transmitter operation

5.11.5 Synchronize a Transmitter and Receiver

If it is necessary to synchronize a transmitter and receiver, do the following:

1. Remove the cover from the receiver.
2. On the receiver circuit board, push the function (**F**) button. The **F** indicator light illuminates red.

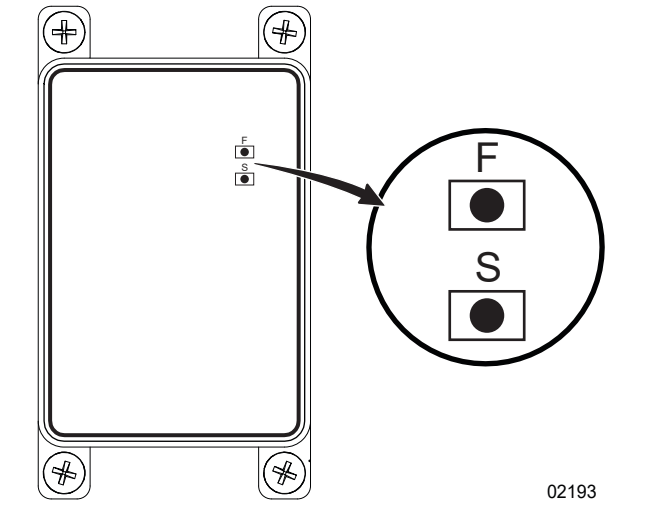


Figure 22 – Receiver function and select buttons

3. Push the select (**S**) button. The **S** indicator light illuminates red.
4. On the transmitter, push and hold the **up arrow** and **down arrow** simultaneously. The indicator lights inside the receiver flash three times to acknowledge that the signal is being received.
5. Release the **up arrow** and **down arrow** on the transmitter. The indicator lights flash red one time to indicate that the receiver and transmitter are synchronized. If no transmitter is found within approximately 10 seconds, the receiver exits to normal operation.

5.11.6 Disconnect the Transmitter from the Receiver

If it is necessary to disconnect the transmitter from the receiver, do the following:

1. Remove the cover from the receiver.
2. On the receiver circuit board, push the function (**F**) button. The **F** indicator light illuminates red.
3. Push and hold the select (**S**) button for a minimum of four seconds. The lights illuminate red, and then go off.
4. Release the **S** button. All transmitters are disconnected from the receiver.

If the **F** indicator light flashes red, one or more transmitters remain connected to the receiver. Do this procedure again.

6. Operating Instructions

Read and understand the operating instructions before using the machine.

6.1 Operating Safety

⚠ WARNING!

Wear the personal protective equipment (PPE) that is required to complete the work safely.

This includes, but is not limited to a hard hat, hearing protection, a face shield, protective footwear, a respirator, and heavy gloves.

W101

- Read and understand this manual before you start the machine. Review all safety information annually.
- Keep the work area clean and free of debris.
- Never climb on any part of the machine.
- Keep bystanders a minimum of 20 ft (6 m) from the machine and winch path. Mark the safe zone with safety cones.
- Keep your hands, feet, clothing, and long hair away from the PTO shaft and clutch assembly. These mechanisms can entangle your hands, feet, clothing, or long hair causing serious injury or death.
- Do not let anyone within 20 ft (6 m) of machine or load during operation.
- Stand a minimum of 10 ft (3 m) to the side to operate the machine.
- Do not touch or stand directly in line with the cable or winch rope during operation.
- Before operating the machine, do the *Pre-Start Checklist*.
- Keep the rear tractor wheels on level ground and lower the skidding winch to the ground for stability.
- Do not winch at an angle of more than 25° from the centre of the machine.
- Always winch on level ground or up a slope. Never winch down or across a slope. The load can roll unpredictably.
- If the machine has a synthetic winch rope, always connect the hook end to a synthetic choker or choker chain. Never wrap the synthetic winch rope around a log or attach the hook end onto the synthetic winch rope. Incorrect use of a synthetic winch rope causes damage and the synthetic winch rope can break.
- Replace a cable or winch rope that is kinked, badly frayed, has knots, cuts, or broken strands. If a cable or winch rope fails under tension it can move with great force and cause serious injury or death. Avoid sudden jerks, quick starts, or quick stops. Use the controls slowly and smoothly.
- Do not operate the machine on a hillside or in an area that is cluttered, wet, muddy or icy to prevent slipping and tripping.
- Keep all the PTO shaft guards and shields installed.
- Turn the PTO shaft guards on a regular basis to make sure that they are not stuck to the shaft.
- Disengage the PTO, stop the tractor engine, and apply the parking brake before you get off the tractor to clean, service, maintain, or adjust the machinery.
- Never step over a rotating PTO shaft. Walk around the tractor or machine.
- Transport the machine at a safe travel speed.

6.2 Pre-Start Checklist

Complete the following before you use the machine the first time and every time thereafter:

Items to compete	✓
Read and obey the safety information in this manual.	
Make sure that the PTO shaft guard is installed and can turn freely.	
Examine and grease the PTO shaft. For instructions, see *Grease Points on page 44*.	
Check the cable or winch rope for damage. Replace a cable or winch rope that is kinked, frayed, has knots, cuts, or any broken strands. For more information, see *Synthetic Winch Rope Safety on page 30*.	
Check the winch clutch and make sure that it is in working condition.	
Make sure that all the bearings turn freely. Replace bearing that are rough or seized.	
Make sure that all the machine guards are installed. Replace any missing guards.	
Make sure that all of the fasteners are installed and torqued to the correct torque. For more information, see *Bolt Torque on page 53*.	
Make sure that the machine is in working condition. For FX-R and FX-RS models, move the hand-held transmitter **I/O** switch to the **I** position.	

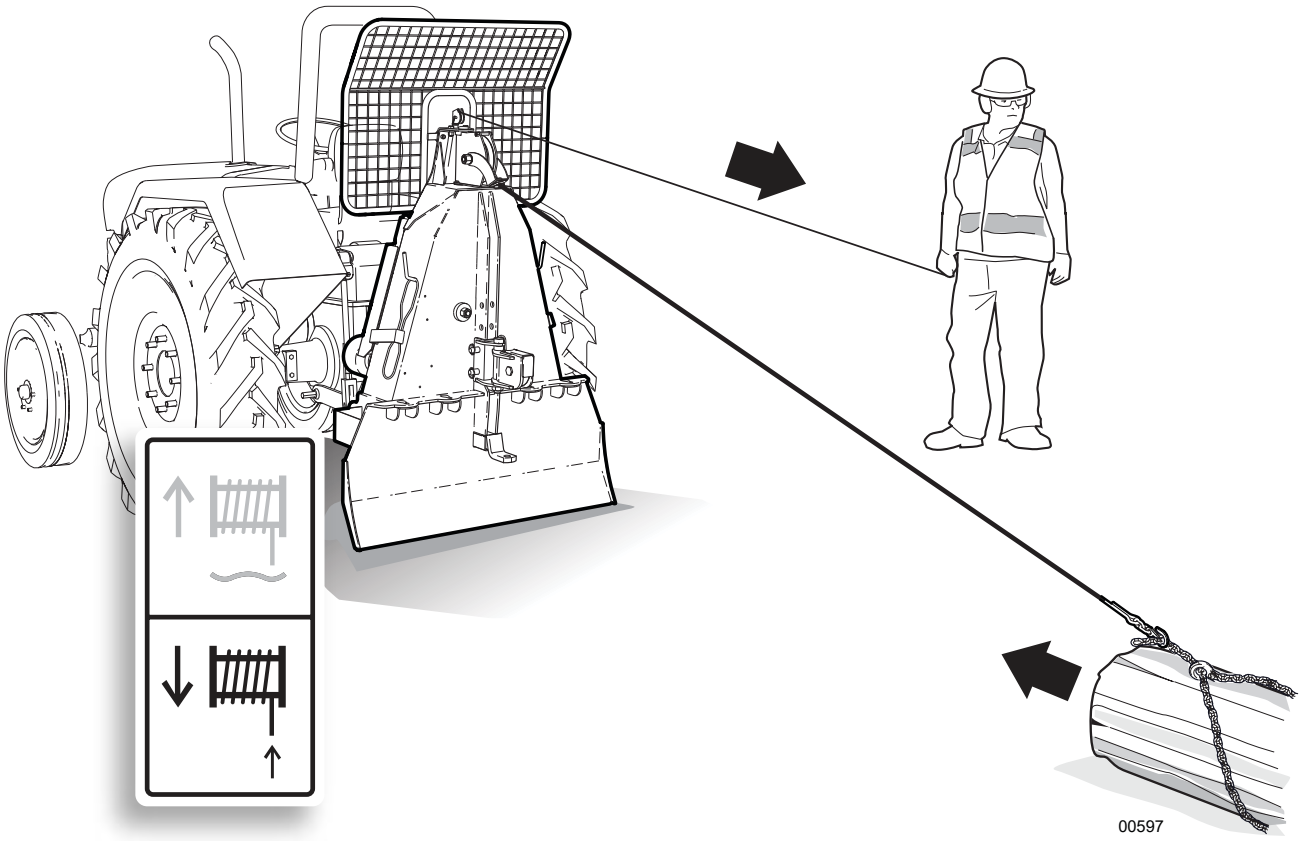


Figure 31 – Manual skidding winch operation

6.3 Machine Break-In

Before and during the first five hours of operation, do the following tasks.

6.3.1 Before Initial Startup

1. Read and understand all safety and break-in information in this manual.
2. Review the *Machine Components on page 17*.
3. Review the operation and function of the *Controls on page 18*.
4. Complete the *Pre-Start Checklist on page 26*.
5. Apply tension to the cable or winch rope.
   For instructions, see *Apply Tension to a New Cable or Winch Rope on page 30*.

6.3.2 After One to Five Hours of Operation

1. Check all nuts, bolts and other fasteners. Tighten to specified torque.
2. Check condition of winch clutch.
3. Check the condition of the cable or winch rope. Replace if kinked, frayed or if it has any broken strands.
4. Check for entangled material. Remove all entangled material before resuming work.
5. Check the condition of the clutch rope. Replace if cut, knotted, worn or if it has any broken strands.

6.4 Winch Safety

⚠ WARNING!

Never stand in line with the path of a steel cable or winch rope that is under tension. Stand a minimum of 10 ft (3 m) to the side before you start the winch. If a steel cable or winch rope breaks under tension, it can snap back in an unpredictable direction with great force. The recoil can cause serious injury or death to a person in its path.

IMPORTANT! If the winch has a synthetic winch rope, always connect the hook end to a choker chain or synthetic choker. Never wrap a synthetic winch rope around a log or attach the hook end onto the synthetic winch rope. Incorrect use of a synthetic winch rope causes damage that is not covered by warranty.

- **Do not risk a rollover by exceeding a winching angle of ±25° from the centerline of the tractor. If you are unsure of the winch angle, reposition the tractor or use a self-releasing directional pulley. As much as possible, keep the cable or winch rope as straight as possible.**
- **Do not let anyone within 20 ft (6 m) of logs when winching. Logs can roll in unpredictable ways.**
- **Choose a flat, solid skidding route for the tractor. Avoid steep slopes.**
- **Check that the winching trail is clear of other trees and obstructions so logs can be winched in easily.**
- **Make sure the winch is lowered and that the tractor parking brake is applied. Operate with the winch anchor blade on level ground for stability.**

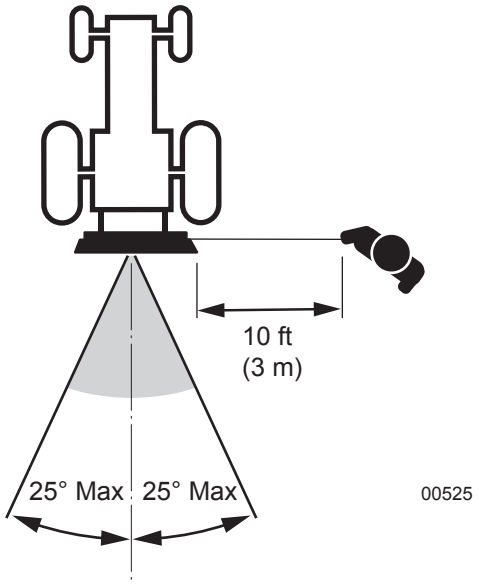


Figure 23–Safe winch angle

- When using a self-releasing directional pulley, be aware of danger zone created between the log, the self-releasing directional pulley, and tractor.

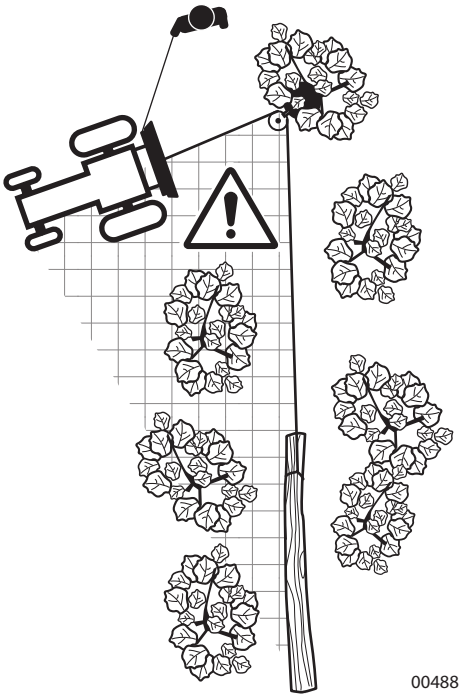


Figure 24–Use a self-releasing directional pulley

- Do not winch with the tractor sitting sideways on a slope or hillside. Tractor could roll over. Always position the tractor in line with the direction of pull.

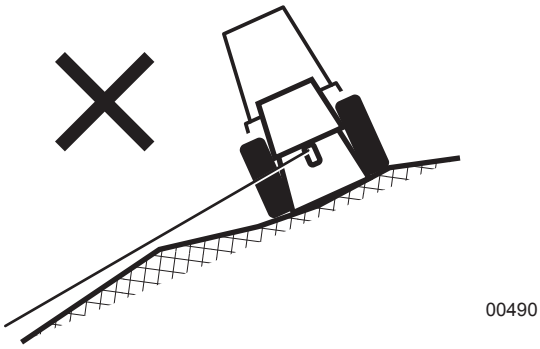


Figure 25–Never winch on the side on a slope

- Never winch down a slope. Winching down a slope could cause the log to roll or slide causing crushing injuries. Always winch up-slope when possible.

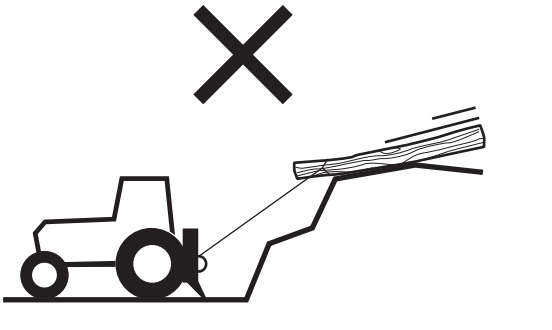


Figure 26–Never winch down a slope

6.5 Synthetic Winch Rope Safety

⚠ WARNING!

A steel cable or synthetic winch rope that fails under tension can snap back with great force causing injury or death. Avoid sudden jerks, and quick starts or stops. Start slowly and smoothly. Replace a cable or winch rope that is kinked, badly frayed, has knots, cuts, or broken strands.

IMPORTANT! Heat and exposure to ultra-violet (UV) light break down the fibers of synthetic rope, which weakens the rope and makes it brittle over time. Frequent use in mud, dirt, and sandy conditions can also damage a synthetic rope if it is not thoroughly cleaned and cared for.

Models that come with a synthetic rope from the factory are FX85S, FX85RS, FX110S, FX110RS, FX140S, FX140RS.

The synthetic winch rope that is included with the machine is a plastic-based rope. Due to its construction, it is lighter than steel cable; however, it is necessary to do more to maintain a synthentic winch rope. It is susceptible to abrasion and becomes brittle over time. Use caution when winching or skidding logs with a synthetic winch rope or synthetic choker.

When using a synthetic winch rope, avoid the following:

- Walking on the winch rope.
- Winching or skidding through abrasive or sharp surfaces (for example: rocks, concrete, mud, sand).
- Winching with low rope tension.
- Excessive exposure to heat and UV radiation.
- Exposure to harsh chemicals.

Regular cleaning and inspection of the winch rope's condition is necessary. For more information, see *Synthetic Winch Rope Maintenance on page 49.*

6.6 Apply Tension to a New Cable or Winch Rope

IMPORTANT! Leave a minimum of 3 ft (1 m) of cable or winch rope on the winch drum. If you pull the cable or winch rope out fully, the end can pull off the anchor.

Before it is used for the first time, a cable or winch rope must have tension applied to prevent additional stretch during operation.

1. Attach the machine to a tractor.
   For instructions, see *Attach to a Tractor on page 34*.
2. Find a large, solid tree that is safe to use as a winch anchor and a clear path from it that is the same length as the cable or winch rope.
3. Park the tractor three feet closer to the tree then the length of the cable or winch rope.
4. Disengage the tractor PTO and apply the parking brake.
5. Stop the tractor engine and remove the ignition key.
6. Pull the cable or winch rope to the selected tree.
   Leave a minimum of 3 ft (1 m) of cable or winch rope on the winch drum.
7. Attach the cable or winch rope to the tree.
   For a cable that does not have a forged end or a synthetic winch rope, use a choker chain or synthetic choker.
8. Start the tractor engine and engage the PTO.
9. Set the tractor PTO speed to approximately 200 rpm (the winch speed is based on the tractor PTO speed).
10. Optional: If you want to increase the tension that is applied to the cable or winch rope, lower the tractor front-end loader bucket to the ground.
    Do not apply more weight than the cable or winch rope can hold.
11. Lift the three-point hitch to keep the skidding winch off the ground.
12. Disengage the tractor parking brake.
13. Do one of the following to wind the cable or winch rope and winch the tractor:
    - Pull firmly and hold the clutch-control rope.
    - On the hand-held transmitter, push and hold the up arrow button.
14. When the tractor is near the tree, do one of the following:
    - Release the clutch-control rope.
    - Release the hand-held transmitter up arrow.
15. Do steps 4 and 5 again.
16. Disconnect the cable or winch rope from the tree.

6.7 Winch Logs

CAUTION!

Put on heavy work gloves before you handle the cable or winch rope. The cable or winch rope can pull through your hand and burn your skin. Cable has sharp burrs that can cut your hands.

IMPORTANT! Keep a steady, firm pull on the clutch-control rope. If you let the clutch to slip it causes wear on the brake pads.

IMPORTANT! Always leave a minimum of five wraps of cable or winch rope on the winch drum. When pulling the cable or winch rope out of the winch, do not unwind it fully to the end. If you put tension on the cable or winch rope in this position it can pull out of the anchor.

IMPORTANT! If the winch has a synthetic winch rope, always connect the hook end to a choker chain or synthetic choker. Never wrap a synthetic winch rope around a log or attach the hook end onto the synthetic winch rope. Incorrect use of a synthetic winch rope causes damage that is not covered by warranty.

IMPORTANT! If you wind the cable or winch rope without a load attached, keep a light tension on it to prevent the cable or winch rope from being tangled. Make sure that the cable or winch rope is tightly and evenly layered on the winch drum.

6.7.1 Points to Remember

- Make sure that the tractor has weights on the front or a front-end loader installed for stability. Weight on the front of the tractor reduces the chance of the tractor tipping back or to the side.
- Set the tractor parking brake when the machine is being used or the operator is leaving the seat. If you operate on steep slopes, it is necessary to put blocks behind all the tires to prevent the tractor from rolling or slipping.
- When operating the machine, always stay a minimum of 10 ft (3 m) to the side of the of machine.
- Lower the three-point hitch and machine to the ground before you winch. The weight of the load helps to push the anchor blade into the ground. This gives the machine and the tractor stability.
- Use the bottom directional pulley to keep the load low and reduce the risk of the tractor tilting.
- Always wind the cable or winch rope with a load attached. The cable or winch rope does not wind correctly when it does not have tension on it.
  For instructions, see *Wind the Cable or Winch Rope Without a Load on page 33*.
- Use the keyhole sliders on the cable or winch rope to winch more than one log at one time.
- Use a choker chain or synthetic choker to connect a log to the cable or winch rope. Do not use the winch rope or a strap to prevent breakage from abrasion or snagging. Choker chains and synthetic chokers have a probe on the end that makes it easier to pass the chain underneath the log.

6.7.2 Winching Procedure

1. Position the tractor and machine at the work site.
2. Lower the machine until the anchor blade is on the ground.
3. Disengage the tractor PTO.
4. Apply the tractor parking brake.
5. Stop the tractor engine and remove the ignition key.
6. Pull the cable or winch rope out to the load.
   Do not twist the cable or winch rope.
7. Wrap the cable (only if it has a forged end), choker chain, or synthetic choker around the log.
   For example, see *Figure 27 on page 32*.
8. Attach the cable forged end, choker chain, or synthetic choker to a keyhole slider on the cable or winch rope.
9. Start the tractor engine and engage the PTO.
10. Set the tractor throttle to between 1/4 and 1/2 of the maximum throttle speed.
    Winch speed is based on the tractor PTO speed and can operate up to 540 rpm.
11. Stand a minimum of 10 ft (3 m) the side of the skidding winch.
12. Do one of the following to wind the cable or winch rope and winch the load:
    - Pull firmly and hold the clutch-control rope.
    - On the hand-held transmitter, push and hold the up arrow button.
13. When the load is at the machine, do one of the following:
    - Release the clutch-control rope.
    - Release the hand-held transmitter up arrow.
14. Do one of the following:
    - Disconnect the load from the cable or winch rope.
    - Skid the load.
      For instructions, see *Skid Logs on page 32*.

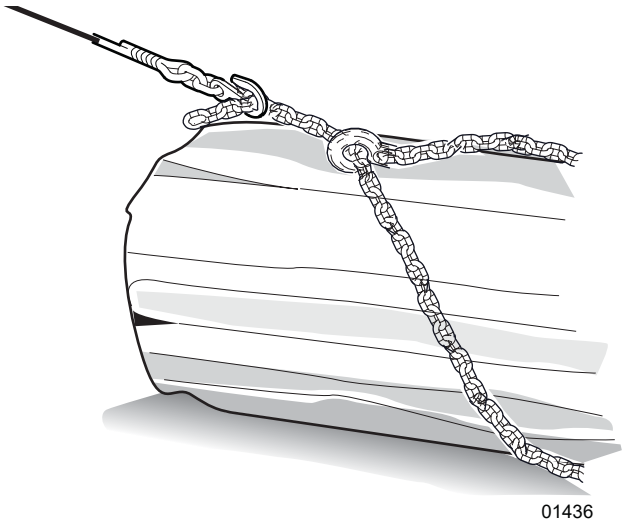


Figure 27 – Choker chain

6.8 Skid Logs

⚠ WARNING!

A steel cable or synthetic winch rope that fails under tension can snap back with great force causing injury or death. Avoid sudden jerks, and quick starts or stops. Start slowly and smoothly. Replace a cable or winch rope that is kinked, badly frayed, has knots, cuts, or broken strands.

6.8.1 Points to Remember

- Raise the skidding winch above the ground to clear obstacles when skidding.
- Use a choker chain or synthetic choker to connect to the cable or winch rope. Do not use a winch rope or strap to prevent breakage from abrasion or snagging.
- Skid logs after they are winched to the tractor. Be cautious of hills and rough terrain.

6.8.2 Skidding Procedure

1. Stop the tractor PTO.
2. Lift the machine off the ground.
3. Lock the winch drum.
   For instructions, see *Winch Drum Lock on page 18*.
4. Drive the tractor forward to pull the load to where you want it.
5. Stop the tractor engine and apply the parking brake.
6. Release the winch drum lock.
7. Pull the clutch-control rope to disengage the winch clutch and loosen the tension on the cable or winch rope.
8. Disconnect the load.

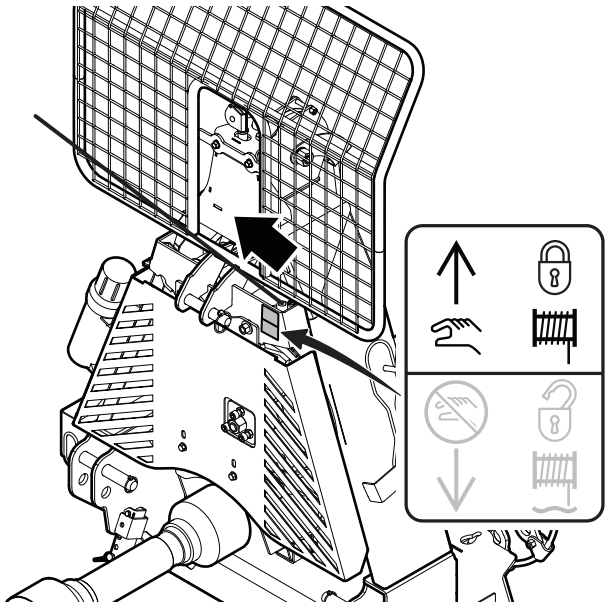


Figure 28 – Lock the winch drum

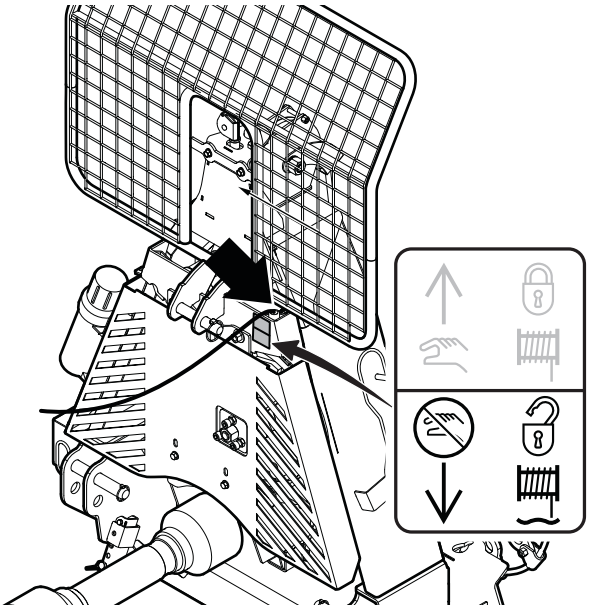


Figure 29 – Unlock the winch drum

6.8.3 Skid Over Rough Ground

Avoid skidding over rough ground.

1. Disengage the drum lock to let the winch drum move freely. Leave the log connected to the skidding winch.
2. Drive the tractor over the rough ground.
3. Stop the tractor and winch the log over the rough ground.
4. Engage the drum lock and continue skidding.

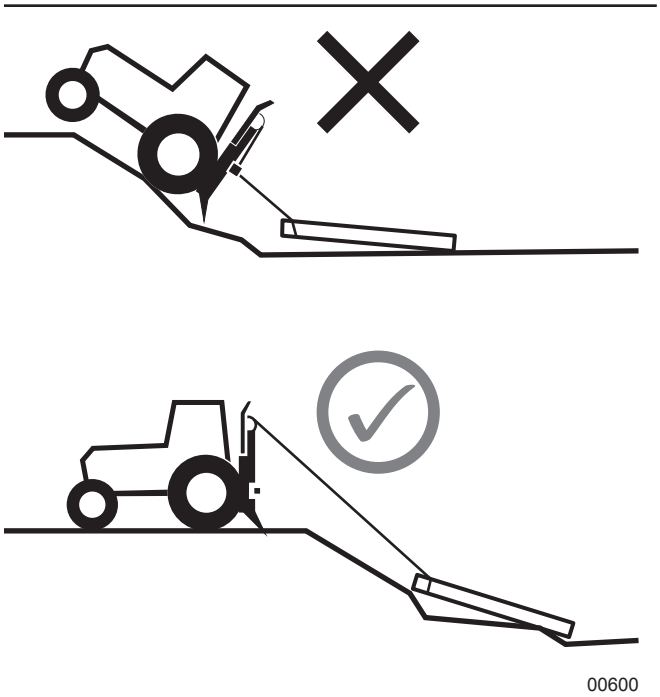


Figure 30– Winch Log over Rough Ground

6.8.4 If the Tractor Gets Stuck

- If the tractor can move:
  a. Disengage the winch lock to let the winch drum move freely.
  b. Drive the tractor to firm ground, then winch the load.
- If the tractor cannot move, release the load and winch the tractor out.

6.9 Wind the Cable or Winch Rope Without a Load

CAUTION!

Keep your hands away from the directional pulley, when the winch is winding. Hands or fingers can be pinched in the directional pulley or entangled in the cable or winch rope causing injury.

CAUTION!

Put on heavy work gloves before you handle the cable or winch rope. The cable or winch rope can pull through your hand and burn your skin. Cable has sharp burrs that can cut your hands.

1. Hold the cable or winch rope to apply tension to it.
2. Use the remote-control to wind the cable or winch rope into the winch.
3. Stop the winch.
4. Move your hand on the cable or winch rope.
5. Do steps 2 through 5 again until the cable or winch rope is fully wound.

7. Transport

IMPORTANT! Equipment that is transported on a public roadway must comply with the local laws that govern the safety and transport of machinery.

Before taking the machine on a public roadway, make sure that it has the necessary markings, and that they are in good, working condition.

For specific requirements, contact your local transportation authority.

7.1 Transport Safety

- Make sure that the machine is safely attached to the tractor with hitch pins through the hitch points and the linchpins installed.
- Never let people ride on the machine.
- Do not exceed a safe travel speed. Decrease your speed for rough terrain and around corners.
- Plan your route to avoid heavy traffic.
- Remove all debris from the machine.
- When the machine is ready for transport, do a circle check to make sure that everything is safe.

7.2 Attach to a Tractor

⚠ WARNING!

Never let anyone stand between the tractor and the implement during hitching. Too fast of an approach or the operator's foot slipping from the clutch can lead to injury or fatality to the person standing nearby.

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IMPORTANT! For safety and to maximize the PTO life, the PTO shaft should be as level as possible when the machine is in the lowered, working position.

☞ FX-R and FX-RS models have a remote control. 1–2 gpm of hydraulic flow and a 12 VDC electrical power source are necessary.

☞ Before you attach the machine to a tractor, make sure that the PTO shaft length is correct. For instructions, see *Size a PTO Shaft on page 38*.

All of the machine models are three-point hitch mount. The machines are not quick hitch or iMatch™ compatible.

For information about the three-point hitch category of each FX Series model, see the *Machine Specifications on page 52*.

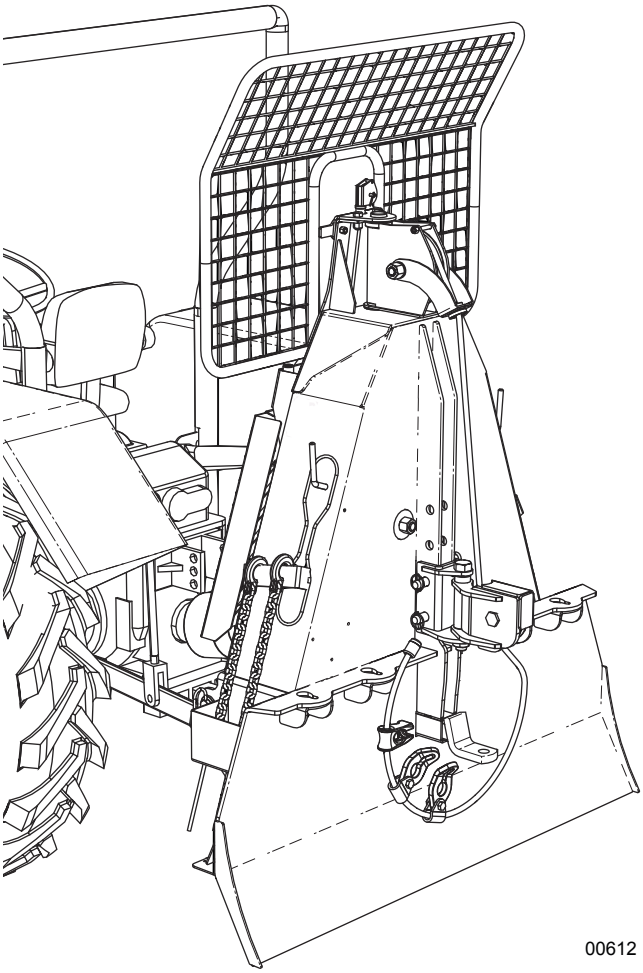


Figure 32–Attach the machine to a tractor

7.2.1 Connect to a Tractor

Make sure that there is enough space and clearance to safely reverse the tractor to the machine.

1. Move the tractor drawbar forward for clearance, if necessary.
2. Put the tractor lift arms in the full sway position.
3. Remove the three hitch pins from the machine.
   Set aside the hitch pins and linchpins. They are necessary for installation.
4. At the slowest speed, reverse the tractor and align it with the machine.
   While you reverse the tractor, raise or lower the lift arms to align them with the machine hitch-pin holes.

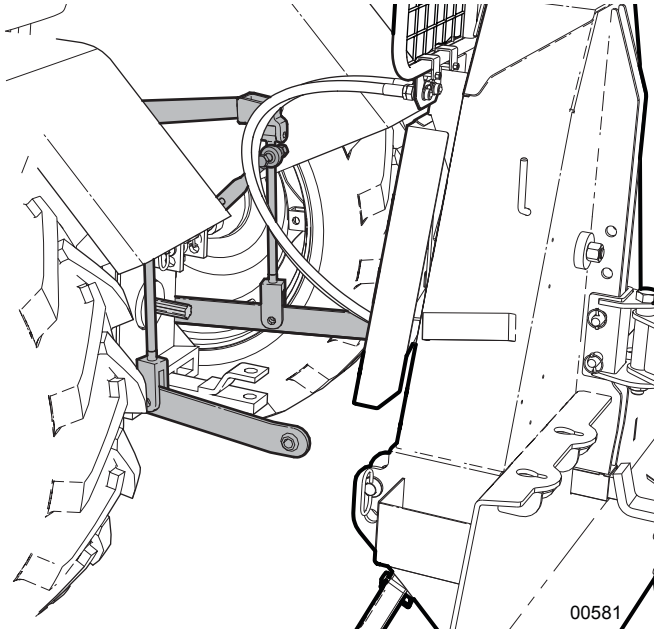


Figure 33–Align the tractor with the machine

5. When the tractor is in the correct position, disengage the tractor PTO.
6. Apply the tractor parking brake.
7. Stop the tractor engine and remove the ignition key.
8. On each side of the machine, install a hitch pin through the lift arm holes and machine hitch-pin holes. Install a linchpin through each hitch pin.

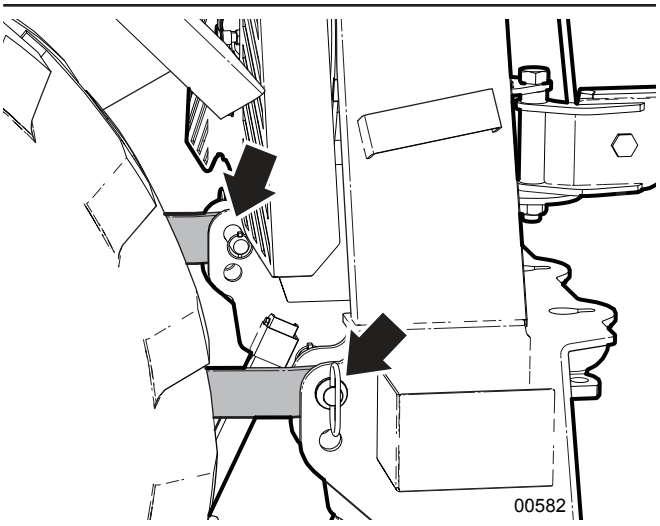


Figure 34–Install the lift-arm hitch pins and linchpins

9. Adjust the toplink turnbuckle to align the end of the toplink with the top hitch-pin hole on the machine.
10. Install a hitch pin through the toplink and machine hitch-pin holes. Install a linchpin through the hitch pin.
11. Adjust the hitch points until the machine is level.

Figure 35–Three-point hitch attachment locations

12. Move the collar off the PTO shaft connection.
13. Align the PTO shaft connection with the tractor PTO driveline.

14. Attach the PTO shaft to the tractor PTO driveline.
Press the lock-pin button and push the PTO shaft onto the tractor's output shaft. Make sure that you hear the click when the lock pin engages.

15. Attach the safety chain that is on the PTO shaft guard to the anchor point. Make the safety chain distance as short as possible to prevent the PTO shaft guard from turning.
For more information, see *Figure 36*.

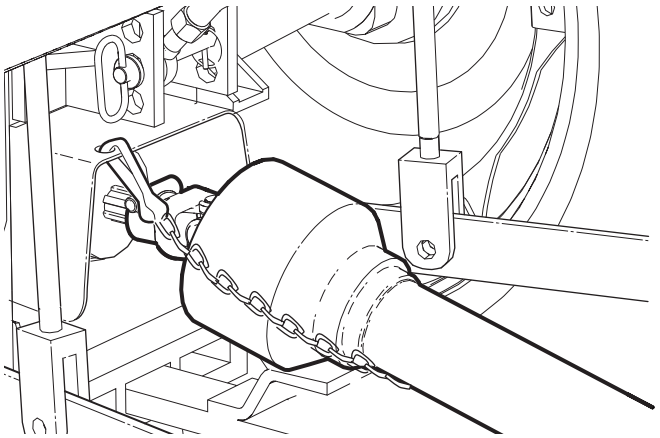


Figure 36–PTO shaft installed

16. Retract the machine support stands. Insert a snap lock pin in each support stand.
The FX85/FX85R/FX85S/FX85RS models do not have support stands.

17. If your model has a remote control:
    - Connect the hydraulic hoses.
      For more information, see *Hydraulic Connections on page 37*.
    - Connect the electrical wires.
      For more information, see *Electrical Connections on page 37*.

18. Start the tractor and slowly lift the machine through the working range.
Make sure that the PTO shaft does not fully extend or retract.

7.2.2 Disconnect from a Tractor

Make sure that there is enough space and clearance for the tractor to safely drive away from the machine.

1. Put the machine in position, and then lower it to the ground.
2. Disengage the tractor PTO.
3. Apply the tractor parking brake.
4. Stop the tractor engine and remove the ignition key.
5. Operate the remote hydraulic valve to relieve the pressure.
6. Wait for the PTO shaft to stop turning.
7. Extend the machine support stands. Insert the snap lock pins.
Make sure that the machine is stable.
8. Disconnect the PTO shaft guard safety chain from the anchor point.
9. Move the collar off the PTO shaft connection.
10. Disconnect the PTO shaft from the tractor driveline.
11. If your model has a remote control:
    - Disconnect the hydraulic hoses.
    - Disconnect the electrical wires.
12. Disconnect the toplink from the top hitch point on the machine:
    a. Remove the linchpin and hitch pin.
    b. Move the toplink.
    c. Install the hitch pin and linchpin on the machine.
13. Disconnect the lift arms from the machine. On each side of the machine:
    a. Remove the linchpin and hitch pin.
    a. Move the lift arm.
    b. Install the hitch pin and linchpin on the machine.
14. Slowly, drive the tractor forward, away from the machine.
15. Move the tractor lift arms and drawbar to the necessary positions.

7.3 Machines with a Remote Control

The following machine models each have a wireless remote control:

- FX85R and FX85RS
- FX110R and FX110RS
- FX140R and FX140RS

The remote control system includes a hand-held transmitter and a receiver that is attached to the skidding winch.

For the remote control to operate, connect electrical and hydraulic sources to the machine.

7.3.1 Electrical Connections

A **12 VDC, 1.5 amp** source from the tractor electrical system is necessary. The wire ends do not have connectors because there are can be different connection configurations.

- Connect the white wire from the remote-control receiver to positive current.
- Connect the black wire to ground.

7.3.2 Hydraulic Connections

If the pressure and return hoses are not identifiable, look at the connection on the control valve. There is a **T** on the return port. There is a **P** on the pressure port.

A valve on the skidding winch controls the winch clutch. The system is designed for an open-center hydraulic system. The necessary hydraulic fluid flow is **1–2 gpm (3.8–7.5 L/m)**. This flow rate gives the best start or stop speeds to prolong the useful life of the cable or winch rope.

The 1/2" pressure and return hoses have quick-disconnect ends and must be connected to the tractor's rear remote power supply.

The hydraulic hoses have colored, protective caps that indicate their function:

- The pressure hose has a red cap.
- The return hose has a black cap.

7.4 Size a PTO Shaft

⚠ WARNING!

Avoid the risk of personal injury or machine damage! Read the operator's manual before using the equipment. Carefully read all safety messages in the manual and follow all safety labels on the machine.

⚠ CAUTION!

Wear the correct eye protection when you cut a steel tube.

IMPORTANT! It can be necessary for the PTO shaft that came with your machine to be cut shorter. A longer shaft is supplied because tractor lift arms have different lengths.

The PTO shaft must be able to telescope and not reach its limit (bottom out) when it moves through the working range. The PTO shaft should never fully collapse in use. There should always be a minimum of 2" (50 mm) available for the PTO shaft to retract.

If the PTO shaft gets to the limit, the bearings on each end can overload and fail causing damage or injury.

IMPORTANT! Using a drive shaft that was not supplied with your machine can result in it being assembled out of phase (the universal joint yokes are not aligned with each other). Make sure that the drive shaft is assembled with the u-joints in phase. If the u-joints are out of phase, the unbalances can cause wear and eventually the drive shaft will fail.

IMPORTANT! The two PTO shaft halves should overlap inside at a minimum of 6" (150 mm).

1. Remove the PTO shaft from the machine.
2. Attach the machine to the tractor three-point hitch.
   For instructions, see *Attach to a Tractor on page 34*.
3. Start the tractor.
4. Raise the three-point hitch off the ground until the machine's input shaft is level with the tractor's PTO output shaft.
   This is the shortest distance between the input and output shafts.
5. Disengage the tractor PTO.
6. Apply the tractor parking brake.
7. Stop the tractor engine and remove the ignition key.
8. Wait for the PTO shaft to stop.
9. Separate the PTO shaft into two sections.
10. Put one section of the PTO shaft on the tractor **output** shaft, and put the other section on the machine **input** shaft.

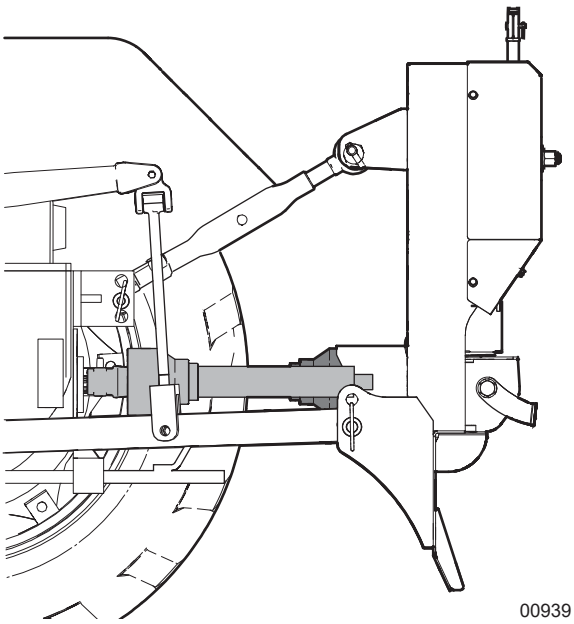


Figure 37–PTO shaft on the input shaft and output shaft

11. Lift the ends of the PTO shaft until they are as parallel to each other as possible. Support the PTO shafts with blocks or tie them together.
    If the PTO shafts are too long or there is not enough room, see, *Alternate Method on page 40*.

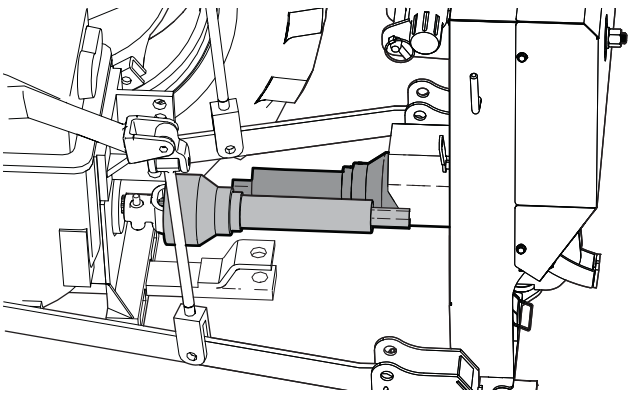


Figure 38–Lift the PTO shafts until they are parallel

12. Use a straight edge to transfer a mark from the end of one tube section to the other section as shown.

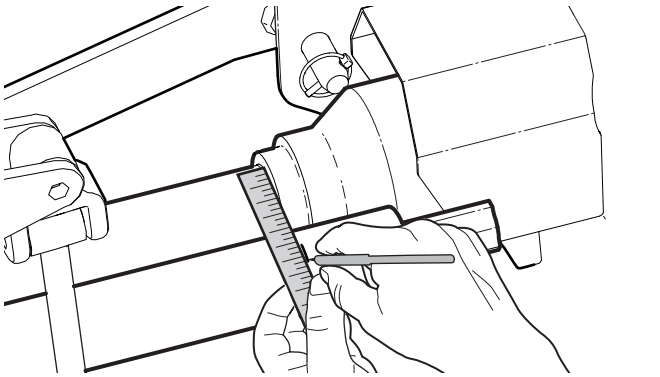


Figure 39–Transferring the mark

13. Add 2 inches (50 mm) to that measurement and place a second mark on the outer plastic tube. This is where the plastic shielding needs to be cut off.

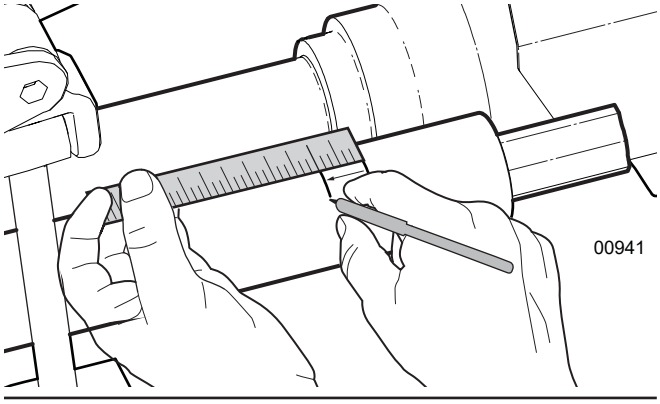


Figure 40–Place mark to cut plastic tube

14. Cut the plastic tube at the mark, leaving the steel shaft inside.

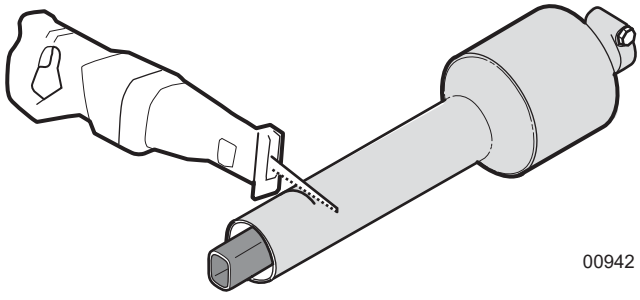


Figure 41–Cut plastic tube at the mark

15. Use the cut-off length of the plastic tube as a guide to mark the steel tube. Align the end of the plastic tube with the end of the steel shaft.

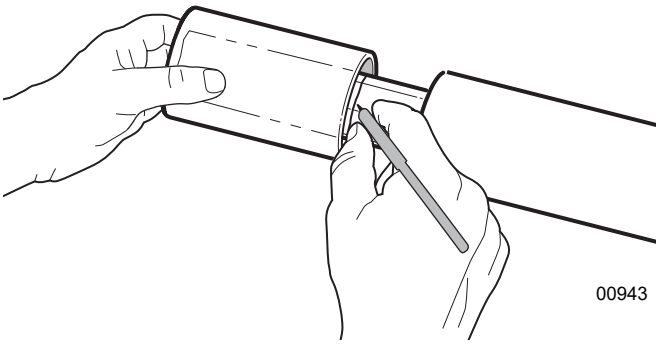


Figure 42–Marking steel tube.

16. Cut the steel tube off at the mark.

17. Use the cut length of plastic tube to mark the remaining cuts, repeat this process for **both** PTO shaft sections.

☞ Put the end of the steel shaft to be removed in a vice, so that it is easier to control your cut.

18. Remove the burrs from the edges of the steel shaft that was cut. Clean the steel shaft sections.

19. Grease the inner tube, so that the tube sections slide together easier.

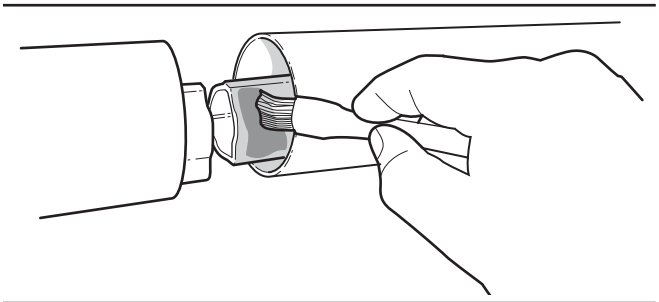


Figure 43–Grease the inner tube

20. Assemble the two sections of the PTO shaft.

21. Make sure that the shaft can telescope freely before installing it. If the shaft does not telescope freely, separate the two sections and examine them for burrs or cuttings on the shaft ends.

7.4.1 Alternate Method

This method can be used if the two sections of the PTO shaft cannot be put close enough together to measure.

1. Attach the machine to the tractor three-point hitch.
   For instructions, see *Attach to a Tractor on page 34*.
2. Start the tractor.
3. Raise the three-point hitch off the ground until the machine's input shaft is level with the tractor's PTO output shaft.
4. Take the PTO shaft that came with your machine, fully collapse it, and measure the distance between the locking yokes.
   Call this measurement **A**.

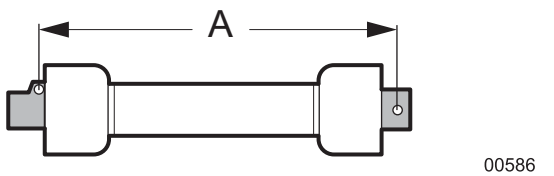


Figure 44–Measurement A

5. Measure the distance between the grooves for the locking collars on each input. Subtract 2 inches (50 mm) from this measurement. Call this measurement **B**.

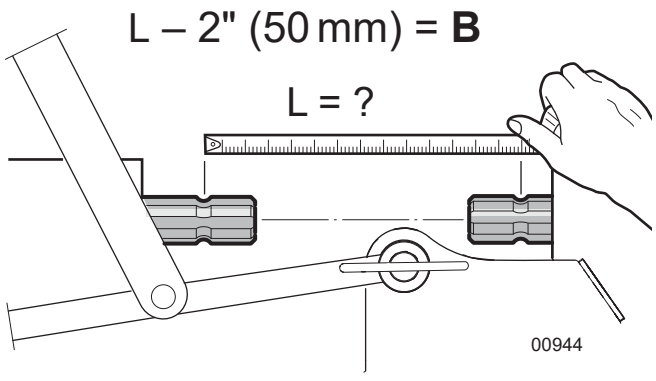


Figure 45–Measurement B

6. If the collapsed length **A** is longer than measurement **B** from Step 5, the PTO shaft must be shortened.
7. Subtract **B** from the uncut PTO shaft measurement **A**. **(A – B)**

The result is length that **both** sections of the PTO shaft need to be shortened. Call this value **C**.
A – B = C

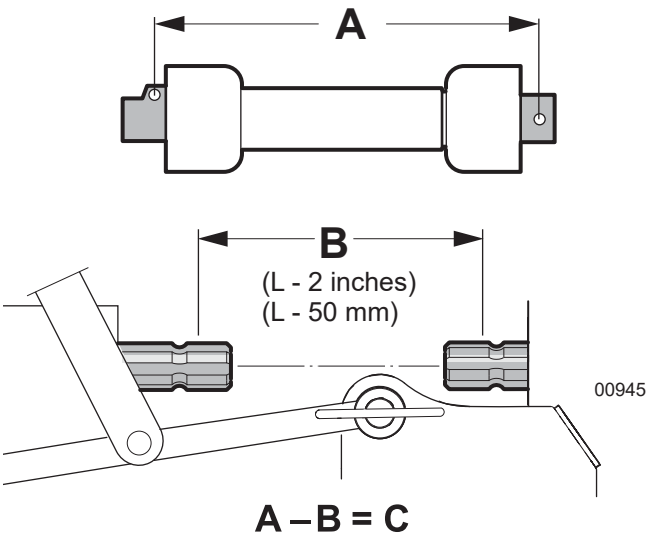


Figure 46–C = Cut length

8. Separate the PTO shaft into two sections.
9. Measure and cut the length **C** from the outer plastic covers and the inner metal tubes of each section.

Tip: Use the cut piece of outer shielding to mark the inner tube. Leave the steel center tubes longer than the plastic outer tubes, otherwise they can be harder to assemble.

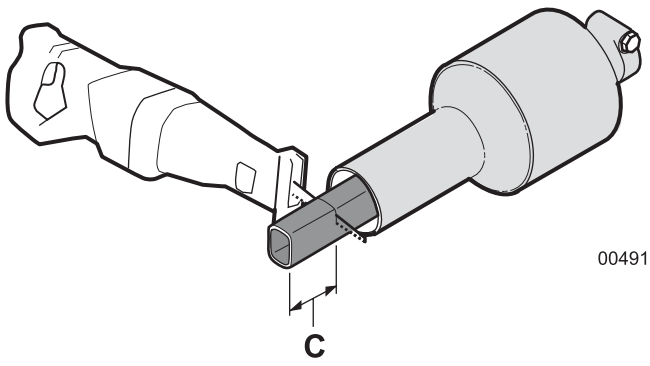


Figure 47–Cut the length C from both PTO shaft sections

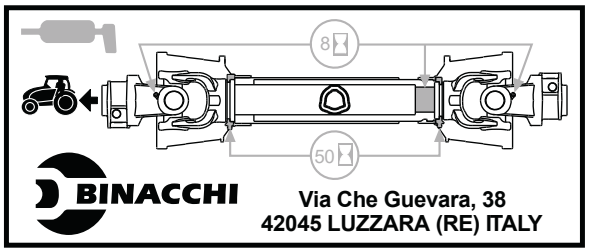
7.5 Install a PTO Shaft

IMPORTANT! Check the drive shaft alignment. During operation, the working angle should not be greater than 15° between the tractor and the machine. Misalignment can cause premature wear and PTO shaft failure.

Make sure that the PTO shaft guard is in good condition and able to turn freely, independent of the PTO shaft.

Make sure that the PTO yoke ends are clean. Add a small amount of lubricant to the splines to help them slide on.

A label on the PTO guard shows the tractor-end of the drive shaft.



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1. Attach the machine to the tractor three-point hitch.
   For instructions, see *Attach to a Tractor on page 34*.
2. Lower the machine fully to the ground.
3. Disengage the tractor PTO.
4. Apply the tractor parking brake.
5. Stop the tractor engine and remove the ignition key.
6. Wait for the PTO to stop.
7. Attach the PTO shaft to the machine.
   Press the lock-pin button and push the PTO shaft onto the machine's input shaft. Make sure that you hear the click when the lock pin engages.
8. With the lock-pin engaged, pull on the PTO shaft to make sure that it is attached correctly.
9. Attach the safety chain that is on the PTO shaft guard to the anchor point. Make the safety chain distance as short as possible to prevent the PTO shaft guard from turning.

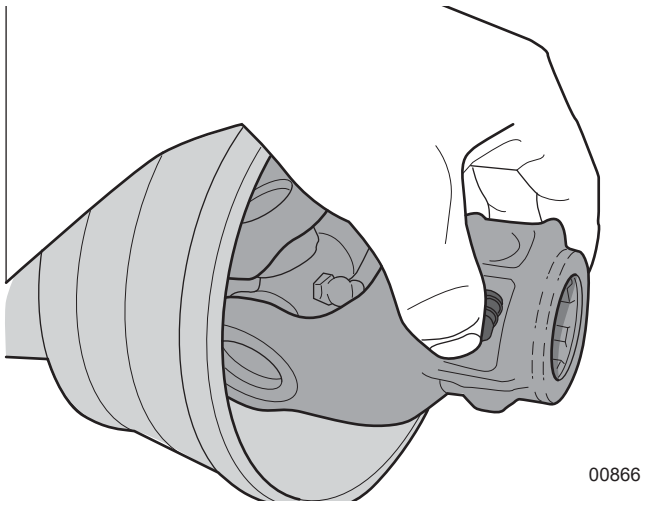

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Figure 48–Lock-pin button

10. Attach the PTO shaft to the tractor driveline.
    Press the lock-pin button and push the PTO shaft onto the tractor's output shaft. Make sure that you hear the click when the lock pin engages.
11. Do step 8 again.
12. Attach the safety chain that is on the PTO shaft guard to the anchor point. Make the safety chain distance as short as possible to prevent the PTO shaft guard from turning.
    For more information, see *Figure 36 on page 36*.
13. Start the tractor and slowly lift the machine through the working range. Make sure that the telescoping portion of the PTO shaft does not reach its limit.

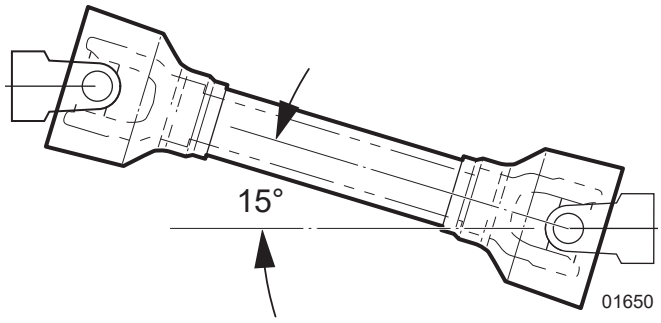

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Figure 49–Drive shaft alignment

14. Check the direction that the PTO shaft turns.
    A label on the machine shows the correct direction.

8. Storage

The FX85 has a wide base and does not have support stands.

At the end of the season or when the machine is not going to be used for an extended length of time, store the machine correctly to prevent damage.

For reference, see *Figure 50*.

8.1 Storage Safety

⚠ WARNING!

Do not permit children to play on or around stored machinery or equipment. Sharp edges, unexpected movement, trips, falls, and other hazards can cause serious injury or death.

W105

IMPORTANT! A pressure washer can damage the machine's product identification plate and make it unreadable. Do not direct the spray from a pressure washer onto the product identification plate. Use a clean, soft cloth that is dampened with water to remove dirt.

- Store the machine in a dry, level location away from human activity.
- Store the machine indoors, if possible.
- Support the with blocks for stability, if necessary.

8.2 Put the Machine in Storage

Store the machine away from human activity in a dry, level area.

1. Lower the machine to the ground.
2. Extend and lock the support stands.
   If the ground is soft, put a board or plate under the support stands.
3. Remove the machine from the tractor.
   For instructions, see *Disconnect from a Tractor on page 36*.
4. Put a block of wood under the PTO shaft to keep it out of the dirt.
5. FX-R and FX-RS models: on the hand-held transmitter, move the **I/O** switch to the **O** position to extend the battery life.
6. Clean the machine to remove all dirt and debris.
7. Examine all the moving parts and remove any entangled material.
8. Examine the machine fully, including internal components. Replace or repair any worn or damaged components.
9. Paint scratches and dents to prevent rust.
10. If the machine must be stored outdoors, cover the machine with a waterproof tarp.
    The machine should be stored indoors, if possible.

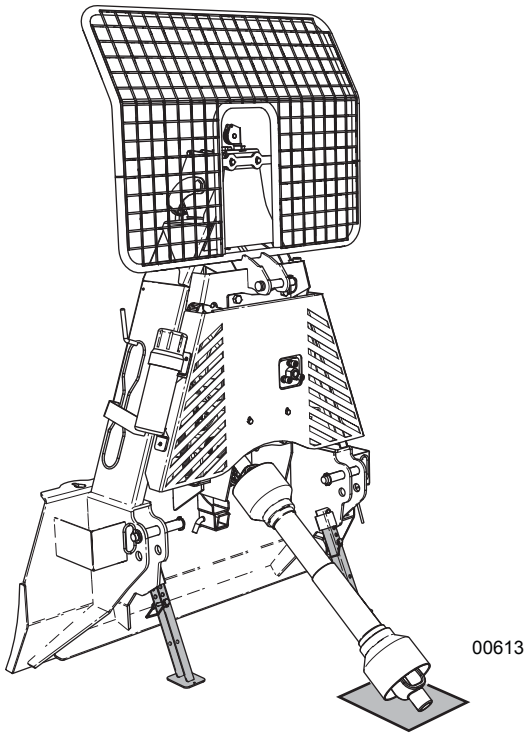


Figure 50–Storage Position

8.3 Remove the Machine from Storage

1. Do the *Pre-Start Checklist on page 26*.
2. Do the necessary maintenance.
   For maintenance requirements, see *Maintenance Schedule on page 44*.

9. Service and Maintenance

Regular preventive maintenance can improve performance and prolong the life of the machine. Machine maintenance is your responsibility.

9.1 Service and Maintenance Safety

⚠ WARNING!

Before you start service or maintenance work:

- **Set the machine to a safe condition.**
- **Wait for the machine to cool down. Engine components and fluids may be hot enough to cause burns.**
- **Read and understand all of the service and maintenance safety information.**

W041

⚠ WARNING!

Wear the personal protective equipment (PPE) that is required to complete the work safely.

This includes, but is not limited to a hard hat, hearing protection, a face shield, protective footwear, a respirator, and heavy gloves.

W101

Set the machine to a safe condition before you start any service or maintenance:

SAFE CONDITION

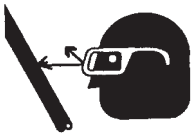
1. Disengage the PTO.
2. Apply the tractor parking brake.
3. Stop the tractor engine, remove the ignition key, and block the tractor wheels.
4. Make sure that all components are stopped.
5. Make sure that the cable or winch rope is not under tension.

- Follow good shop practices:
  - Keep the work area clean and dry.
  - Ground electrical outlets and tools.
  - Have adequate light for good visibility.
- Use tools that are in working condition and correct for the task. Make sure that you know how to use the tools before you use them.
- Never work under equipment unless it is safely supported with blocks.
- Never do service or maintenance work alone. Always have a minimum of two people in case an emergency situation occurs.
- Keep a fire extinguisher and first aid kit available at all times.
- When service or maintenance is complete, do the following:
  - Replace all guards and shields, and close the covers.
  - Torque the fasteners to the correct torque.
  - For models with a remote control: make sure that all the electrical and hydraulic connections are in safe working condition.
- Do not use gasoline or diesel fuel to clean parts. Use a regular cleanser.
- When replacement parts are necessary, use genuine factory replacement parts to restore your machine to the original specifications. The manufacturer cannot be responsible for injuries or damages caused by use of unapproved parts or accessories.

9.1.1 Hydraulic System Safety

- Make sure that all the components in the hydraulic system are kept clean and in good condition.
- Make sure all connections are tight, and that lines, hoses and couplings are not damaged before applying pressure to the system.
- Do not use a hand to check for hydraulic oil leaks. Hydraulic fluid escaping under pressure can penetrate the skin causing serious injury. Use a piece of cardboard.

- Wear proper hand and eye protection when searching for a high pressure hydraulic leak.



- Seek medical attention immediately if injured by a concentrated high-pressure stream of hydraulic fluid. Serious infection or toxic reaction can develop from hydraulic fluid piercing the skin surface.
- Do not attempt any makeshift repairs to the hydraulic lines, fittings or hoses by using tape, clamps or cements. Doing so can cause sudden failure and create a hazardous and unsafe condition.
- Relieve pressure on the hydraulic system before working it. The hydraulic system operates under extremely high pressure.

- Replace any hydraulic hose immediately that shows signs of swelling, wear, leaks or damage before it bursts.
- Do not bend or strike high-pressure lines, tubes or hoses, or reinstall them in a bent or damaged condition.
- Check to make sure hydraulic hoses are not worn or damaged, and are routed to avoid chafing.
- Never adjust a pressure relief valve or other pressure-limiting device to a higher pressure than specified.

9.2 Maintenance Schedule

Perform maintenance procedures at time shown or hour interval, whichever comes first.

As Necessary
Remove any entangled material from the machine.
Check that all fasteners are torqued to the correct torque.
Check the condition of all cables, ropes, and chains.
Check the clutch adjustment. See *page 34*.

Every 50 hours or weekly	
Grease the PTO shaft	See *page 44*
Examine and lubricate the chain drive	*See page 45*
Check the condition of the clutch rope.	—

Every 100 hours or Annually	
Clean the machine. Remove debris and entangled material.	—
Check the drive chain tension	*See page 46*
Clean and lubricate the PTO shaft.	—
Examine the cable or winch rope.	—

9.3 Grease Points

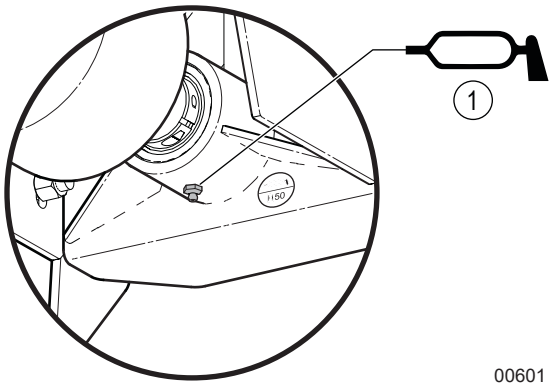
IMPORTANT! Do not over grease a bearing. More than one pump of grease can push grease out of the bearing seals. Too much grease can cause the bearing seals to fail.

Look for this type of label on the machine. Each label identifies a grease point and shows the greasing interval in hours.

Use an SAE multi-purpose high temperature grease with extreme pressure (EP) performance. Also acceptable is an SAE multipurpose lithium-based grease.

- Use a clean cloth to clean each grease fitting before you apply grease. This prevents grease and dirt from getting inside the component.
- Use a hand-held grease gun to apply **one pump** of grease to each grease point.
- If a grease fitting is damaged, replace it immediately.
- If a grease fitting does not accept grease:
  a. Remove the grease fitting.
  b. Clean the passageway behind the grease fitting.
  c. Clean the grease fitting thoroughly or get a new grease fitting.
  d. Install the grease fitting.

Location	Grease every 50 hours of operation or weekly
1	Drive shaft, PTO shaft shield and U-joints (2 places)
2	Drive shaft slip joint



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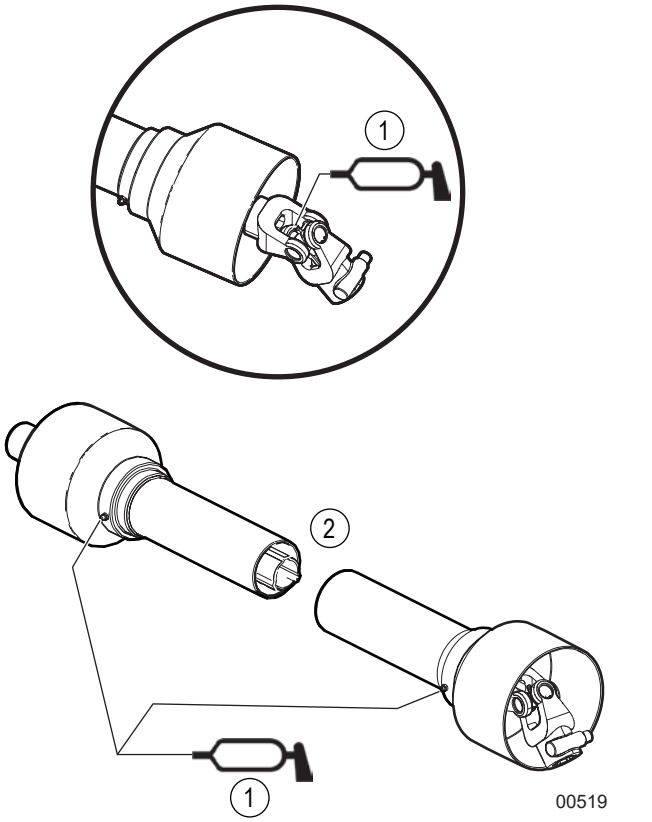


Figure 51 – Grease points

The PTO shaft is designed to telescope while the three-point hitch goes through its operational range. A heavy duty plastic tubular guard encloses the driving components.

The PTO shaft should telescope easily and the guard should turn freely on the shaft at all times. Annual disassembly, cleaning, and lubrication is recommended to make sure that all components function correctly.

Make sure that the universal joints are lubricated, examine and lubricate them every 50 hours.

The PTO shaft has a shear pin at the input yoke to prevent overloading the drive system. The skidding winch is designed to perform well without the shear pin failing. However, if the pin fails, usually it is because the skidding winch was overloaded.

9.4 Lubricate the Drive Chain

IMPORTANT! Do not get lubricant on the clutch-brake pads. Lubricant on the clutch-brake pads can cause the clutch to slip.

IMPORTANT! Make sure that the lubricant reaches the joints (pins and bushings). These components wear during operation.

Lubricate the drive chain every 50 hours of operation.

Without the correct amount of lubrication, the drive chain can wear excessively and fail.

For more information, see *Figure 52 on page 46*.

1. On the front of the machine, remove the bottom guard.
2. Spray or brush a good quality dry film lubricant onto the drive chain and joints.
3. Install the bottom guard and fasteners.
4. Use a calibrated torque wrench to torque the fasteners to **33 lbf•ft (45 N•m)**.

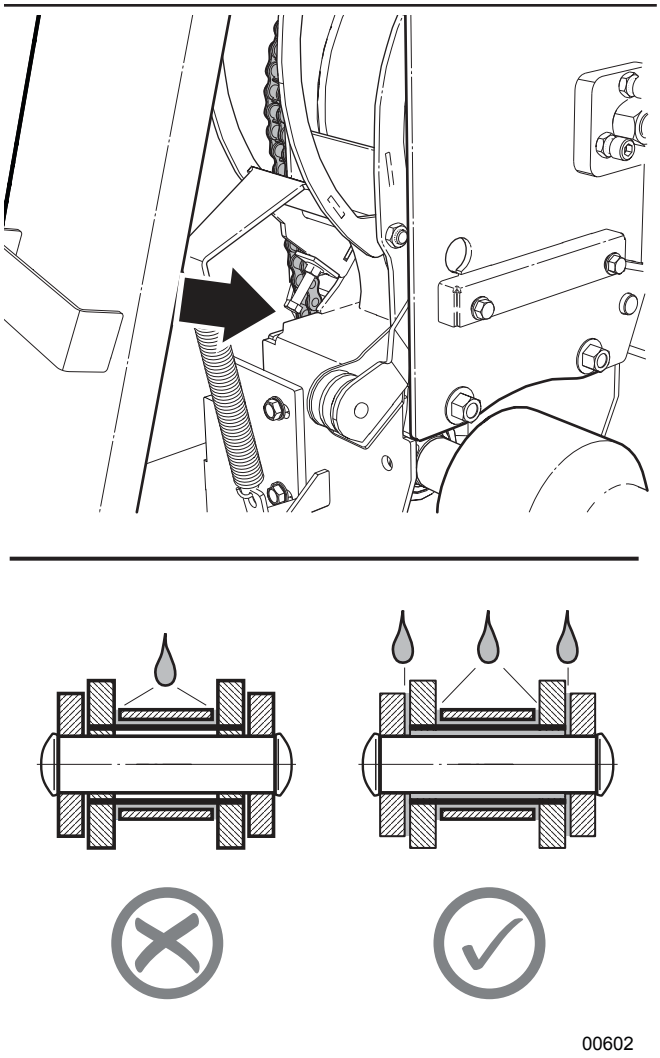


Figure 52–Drive chain lubrication

9.5 Drive Chain Tension

The machine has a drive chain that transfers power from the PTO input shaft to the machine.

The drive chain tensioning system is designed with an internal compression spring that sets the maximum drive chain tension during operation. No tension adjustment is necessary.

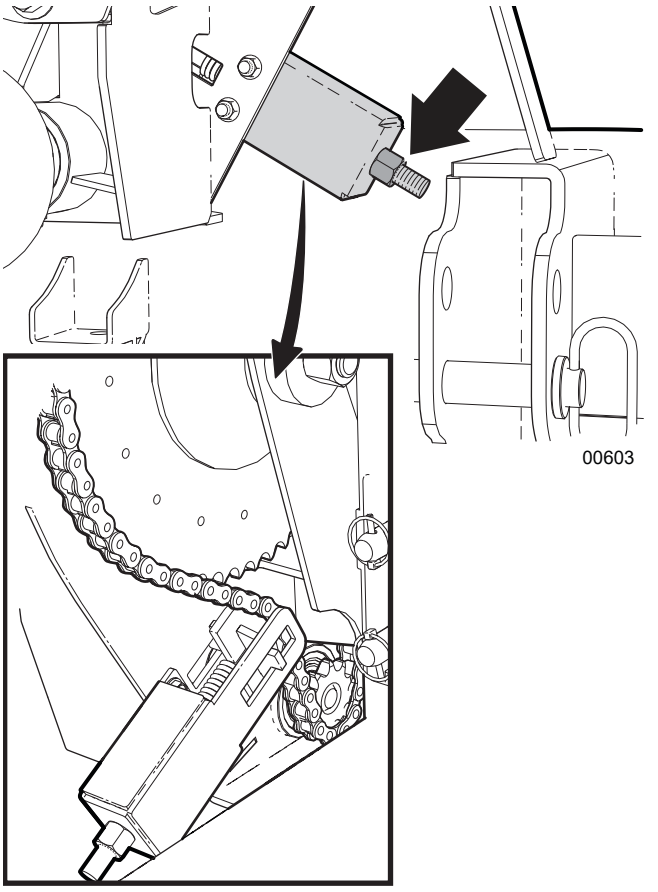


Figure 53–Drive chain tension adjustment

9.6 Replace the Drive Chain

1. On the front of the machine, remove the bottom guard.
2. Tighten the nut on the tension adjustment bolt to reduce tension on the drive chain (minimum tension).
3. Remove the drive chain.
4. Install a new drive chain.
5. Set the maximum tension on the drive chain.
   Loosen the nut on the tension adjustment bolt until it is 1/4" (6 mm) from the end of tension adjustment bolt.
6. Install the bottom guard and fasteners.
7. Use a calibrated torque wrench to torque the fasteners to **33 lbf•ft (45 N•m)**.

9.7 Adjust the Clutch

IMPORTANT! The clutch function is set at the factory. Adjustment should not usually be necessary. The clutch is designed to slip when the machine pulls the maximum weight. Adjustment of the clutch changes the maximum pull capacity of the machine.

If it is necessary to adjust the clutch:

1. On the front of the machine, loosen the three jam nuts.
2. Tighten the socket-head capscrews by hand until they slightly contact the pressure plates.
3. Equally tighten the socket-head capscrews (in a pattern) until the clutch lever moves freely.
   Pull the cable or winch rope to feel the movement in the clutch and adjust as necessary.
4. Tighten the three jam nuts.
5. Check the clutch setting.
6. Start the PTO and check for resistance on the clutch. Resistance can cause the cable or winch rope to wind slowly when there is no tension on the cable or winch rope. If the cable or winch rope winds when the clutch is disengaged, do the previous procedure again.

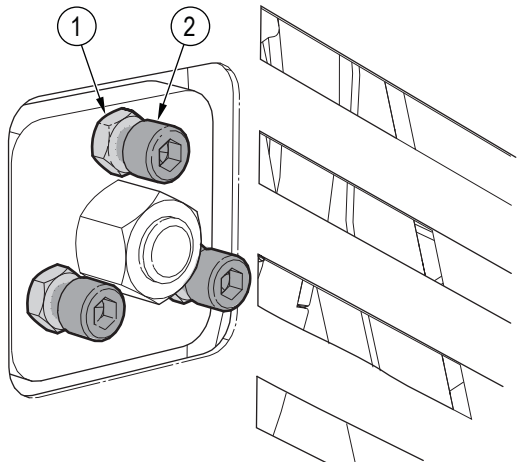


Figure 54–Clutch adjustment

1. Jam nut
2. Socket-head cap screw

9.8 Drum Brake Maintenance

Set the drum brake to prevent the winch drum from turning and the cable or winch rope from becoming tangled.

9.8.1 Drum Brake Operation

The drum brake has two positions:

- Engaged
  When there is no tension on the cable or winch rope, the spring moves the drum-brake arm to engage the drum brake. The drum brake applies a small amount of tension on the cable or winch rope.
- Disengaged
  When there is tension on the cable or winch rope, the cable or winch rope applies force to the roller. The drum-brake arm moves to disengage the drum brake.

The cable or winch rope routing is between the drum-brake arm and over the roller.

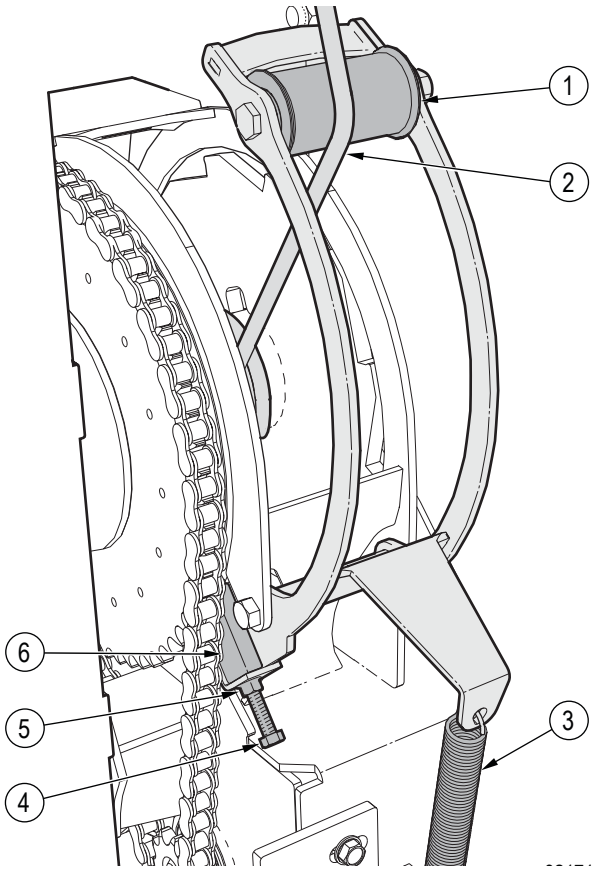


Figure 55–Drum brake

1. Roller
2. Cable or winch rope
3. Spring
4. Adjustment bolt
5. Jam nut
6. Drum-brake block

9.8.2 Adjust the Drum Brake

1. On the front of the machine, remove the bottom guard.
2. On the adjustment bolt, loosen the jam nut.
3. Tighten the adjustment bolt until the brake block contacts the winch drum.
4. Tighten the jam nut.
5. Install the bottom guard and fasteners.
6. Use a calibrated torque wrench to torque the fasteners to **33 lbf•ft (45 N•m)**.

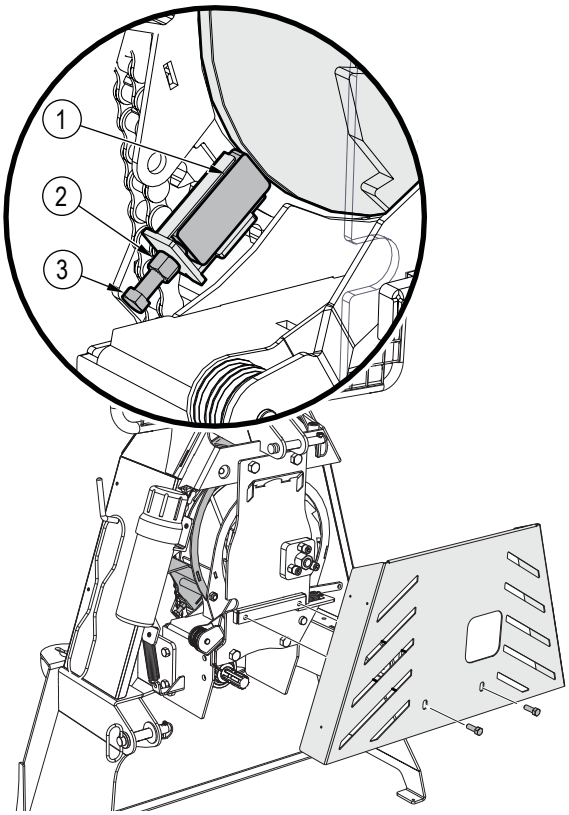


Figure 56–Adjust the drum brake

1. Drum-brake block
2. Jam nut
3. Adjustment bolt

9.9 Replace a Steel Cable or Winch Rope

⚠ CAUTION!

Replace a synthetic winch rope with the correct type of synthetic rope. Use of an incorrect type of synthetic rope can result in the rope breaking and causing personal injury. For information about the correct replacement synthetic winch rope, see the Wallenstein Equipment Parts Manual.

W094

1. Guide the cable or winch rope through the eye of the cable guide (2) and over the pulley into the drum.
   Before feeding a synthetic winch rope, wrap the end of the winch rope with electrical tape to hold the ends of the winch rope together.
2. Route the cable or winch rope over the roller (3) onto the drum-band coiler.
3. Insert the cable or winch rope through the hole in the drum into the anchor (5).

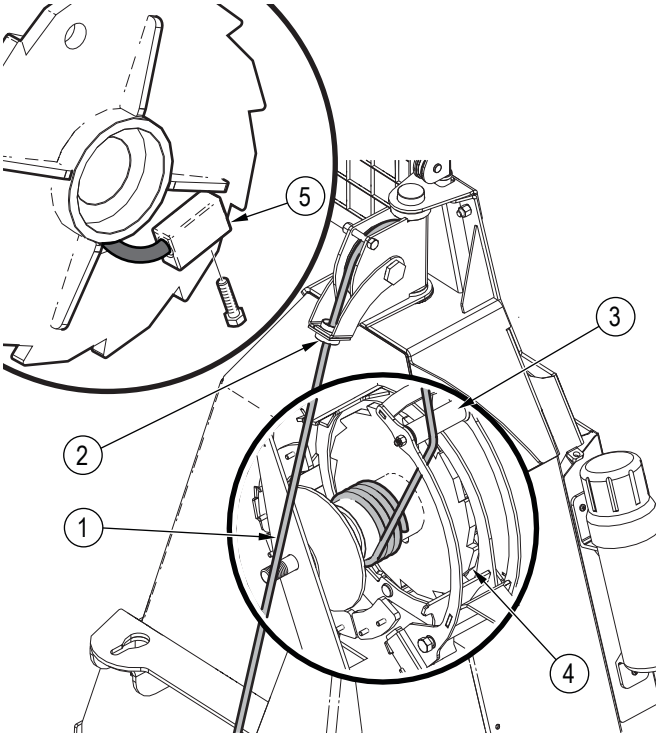


Figure 57–Installing the Synthetic Winch Rope or Steel Winch Cable

1. Cable or winch rope
2. Cable guide
3. Drum-brake roller
4. Winch drum
5. Anchor

9.10 Synthetic Winch Rope Maintenance

IMPORTANT! Heat and exposure to ultra-violet (UV) light break down the fibers of synthetic rope, which weakens the rope and makes it brittle over time. Frequent use in mud, dirt, and sandy conditions can also damage a synthetic rope if it is not thoroughly cleaned and cared for.

9.10.1 Examine the Synthetic Winch Rope

Check the entire synthetic winch rope for wear and wind it neatly (under tension) after every use. Check the synthetic winch rope for any cut strands, fraying parts, abrasion, or heat damage from the winch. After some use, all winch ropes get a little fuzzy from abrasion. This is normal. However, **if an entire strand is cut, the synthetic winch rope must be replaced or repaired**. All strands must be intact for the synthetic winch rope to work properly and maintain its strength.

9.10.2 Clean the Synthetic Winch Rope

When dirt and grit become lodged between the strands of the synthetic winch rope, they cause abrasion to the fibers when the winch rope operates under load. Over time, this can cause the synthetic winch rope to lose integrity and strength.

1. Remove the winch rope from the winch.
2. Lay the winch rope on a clean surface.
3. Use a water hose to rinse the winch rope.
4. To remove dirt and grit from the strands:
   a. Fill a bucket with water and mild soap.
   b. Place the rope in the bucket.
   c. Lay a clean towel beside the bucket to place the clean portion of the rope on.
   d. Starting at one end of the rope, push the rope strands together to open them up and rinse between them.
   e. Work your way through the entire rope until the clean rope is laying on the towel.
   f. Examine the winch drum and fairlead for sharp or rough surfaces that could damage the winch rope. If necessary, remove or repair sharp or rough surfaces.
5. Dry the winch rope.
6. Wind the winch rope neatly (under tension) onto the winch. For instructions, see *Wind the Cable or Winch Rope Without a Load on page 33*.

9.11 Drum-Lock Rope and Clutch-Control Rope Routing

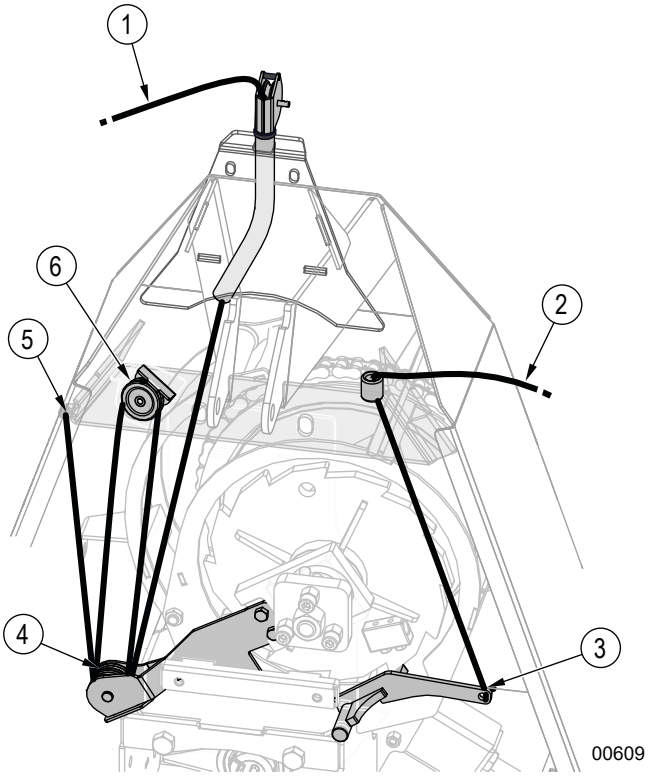


Figure 58 – Clutch-control and drum-lock rope routing

1. Clutch-control rope (white)
2. Drum-lock rope (green)
3. Connection point
4. Double pulley
5. Connection point
6. Single pulley.

10. Troubleshooting

⚠ WARNING!

**Before troubleshooting, read and understand the *Service and Maintenance Safety on page 43*.
Set the machine to a safe condition.**

The following table lists some of the problems that you may encounter and provides possible causes and solutions.

If you encounter a problem that is difficult to solve, even after reading this information, please contact your local dealer, the distributor, or Wallenstein Equipment. Before you call, please have the serial number for your product handy.

To find the serial number on your machine, see *Serial Number Location on page 5*.

Problem	Cause	Solution
Cable or winch rope does not retract.	Cable or winch rope is blocked.	Disengage the winch or release the drum lock, pull the cable or winch rope out, and then wind the cable or winch rope onto the winch drum. Check the winch brake.
	Winch clutch is disengaged.	Engage the clutch.
	PTO not operating.	Turn the tractor PTO on.
	Clutch brake pads are worn.	Replace the brake pads.
	Clutch is out of adjustment.	Adjust the clutch.
	Broken PTO shaft shear pin.	Replace the shear pin and reduce the size of the load.
	Remote control.	Check that the transmitter is on.
		Check that the receiver is on.
		Check the electrical connection to the receiver.
		Check the transmitter indicator lights for a low battery or an error (red flashing).
		Check the electrical circuit ground wire.
		Check the hydraulic system function.
Cable or winch rope does not pull out.	Winch drum lock is engaged.	Disengage the winch lock.
	Cable is blocked.	Disengage the winch or release the drum lock, pull the cable or winch rope out, and then wind the cable or winch rope onto the winch drum. Check the winch brake.
Slow cable or winch rope retraction.	PTO shaft speed is too slow.	Increase the PTO speed (maximum 540 rpm).
	Clutch is slipping.	Pull harder on the clutch-control rope.
		Adjust the clutch.
		Brake pads are worn. Replace the brake pads.
		Decrease the load size.
		There is grease or oil on the clutch brake pads. Clean or replace the clutch brake pads.
Winch does not lock.	Clutch is not engaged.	Pull harder on the clutch-control rope.
	Clutch brake pads are worn.	Examine or replace the brake pads.
	Drum lock is broken	Examine and repair or replace the drum lock.
Drive chain comes off.	Drive chain is too loose.	Check the drive chain for alignment and damage. Adjust the drive chain tension. Replace the drive chain, if necessary.
Cable twists, does not wind, or does not wind in correctly.	Drum brake is not working correctly.	Clean the brake block. Remove any grease.
		Adjust the brake block.
		Replace the brake block if it is worn or damaged.
		Repair or replace damaged brake parts.

Problem	Cause	Solution
Cable or winch rope unwinds when the clutch is engaged.	Clutch is out of adjustment.	Adjust the clutch to prevent the cable or winch rope from pulling out.
Winch jerks and shakes during operation.	Drive chain is loose.	Check the drive chain tension and adjust if necessary.
	Drive chain sprocket is misaligned or the PTO shaft is too long.	Check the PTO shaft length. Size the PTO shaft, if necessary.
Front of the tractor comes off ground when winching.	Tractor is too light in the front.	Add weight to the front of the tractor.
Tractor slides to the rear when winching	Tractor parking brake is not applied.	Apply the parking brake.
	Winch anchor blade is not on the ground and cannot anchor firmly in the ground.	Lower the machine to the ground.

11. Specifications

For available accessories, go to WallensteinEquipment.com.

11.1 Machine Specifications[1]

Specification	FX85 / FX85R	FX85S / FX85RS	FX110 / FX110R	FX110S / FX110RS	FX140 / FX140R	FX140S / FX140RS
Weight	470 lb (213 kg)		796 lb (361 kg)		898 lb (407 kg)	
Machine dimensions L x W x H	27" x 40" x 76" (68 x 101 x 193 cm)		28" x 50-1/2" x 79" (71 x 128 x 200 cm)		28" x 58-1/2" x 80" (71 x 149 x 203 cm)	
Pulling capacity	8,500 lb (3 855 kg)		11,000 lb (4 989 kg)		14,000 lb (6 350) kg	
Horsepower range	30–60 hp (13–45 kW)		45–100 hp (34–75 kW)		60–140 hp (45–104 kW)	
PTO input speed (maximum)	540 rpm					
Winch type	Mechanical, dry disk adjustable clutch					
Winch line speed	96–238 ft/min (29–72 m/min)		98–253 ft/min (30–77 m/min)		98–246 ft/min (30–75 m/min)	
Steel cable length	165 ft (50 m)	N/A[2]	165 ft (50 m)	N/A	165 ft (50 m)	N/A
Steel cable maximum length capacity	239 ft (73 m)	N/A	207 ft (63 m)	N/A	165 ft (50 m)	N/A
Steel cable diameter	3/8" (9.5 mm)	N/A	7/16" (11 mm)	N/A	1/2" (12.7 mm)	N/A
Synthetic winch rope length	N/A	200 ft (61 m)	N/A	200 ft (61 m)	N/A	200 ft (61 m)
Synthetic winch rope diameter	N/A	7/16" (11 mm)	N/A	1/2" (12.7 mm)	N/A	1/2" (12.7 mm)
Maximum input torque	265 lbf•ft (360 N•m)		351 lbf•ft (476 N•m)		450 lbf•ft (610 N•m)	
Maximum bare drum pull	8,553 lb (3 879 kg)		11,130 lb (5 048 kg)		14,053 lb (6 374 kg)	
Maximum full drum pull	2,992 lb (1 357 kg)		3,673 lb (1 666 kg)		4,733 lb (2 146 kg)	
Hydraulic flow necessary for the remote control (FX-R and FX-RS models only)	1–2 gpm (3.8–7.6 Lpm)					
Mounting system category	CAT I		CAT I and II		CAT II	

1 Specifications subject to change without notice.
2 N/A indicates that a specification is not applicable.

11.2 Bolt Torque

IMPORTANT! If you replace hardware, use fasteners of the same grade.

IMPORTANT! The torque specifications in these tables are for non-greased or non-oiled threads. Do not grease or oil fastener threads unless otherwise indicated. When using a thread lock, increase the specified torque 5%.

☞ Bolt grades are identified by the marks on top of the bolt head.

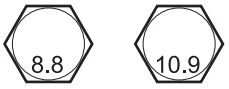
These bolt torque specification tables provide the correct torque settings for common bolts and capscrews. Tighten all bolts to the torque that is specified in the table, unless otherwise indicated. Check the bolt tightness periodically.

Imperial Bolt Torque Specifications

Bolt Diameter	Torque					
	SAE Gr. 2		SAE Gr. 5		SAE Gr. 8	
	lbf•ft	N•m	lbf•ft	N•m	lbf•ft	N•m
1/4 inch	6	8	9	12	12	17
5/16 inch	10	13	19	25	27	36
3/8 inch	20	27	33	45	45	63
7/16 inch	30	41	53	72	75	100
1/2 inch	45	61	80	110	115	155
9/16 inch	60	95	115	155	165	220
5/8 inch	95	128	160	215	220	305
3/4 inch	165	225	290	390	400	540
7/8 inch	170	230	420	570	650	880

Metric Bolt Torque Specifications

Bolt Diameter	Torque			
	Gr. 8.8		Gr. 10.9	
	lbf•ft	N•m	lbf•ft	N•m
M3	0.4	0.5	1.3	1.8
M4	2.2	3	3.3	4.5
M6	7	10	11	15
M8	18	25	26	35
M10	37	50	52	70
M12	66	90	92	125
M14	83	112	116	158
M16	166	225	229	310
M20	321	435	450	610
M30	1,103	1,495	1,550	2,100



11.3 Hydraulic Fitting Torque

Tighten flare-type tube fittings:

1. Check the flare and flare seat for defects that might cause leaks.
2. Align the tube with the fitting before tightening.
3. Hand-tighten the swivel nut until it is snug.
4. To prevent the tube from twisting, use two wrenches. Place one wrench on the connector body and tighten the swivel nut with the second wrench. Torque the fitting to the correct specification.

If a torque wrench is not available, use the flats from finger tight (FFFT) method.

Hydraulic Fitting Torque Specifications

Tube size OD	Hex size across flats	Torque		Flats from finger tight	
Inches	Inches	lbf•ft	N•m	Flats	Turns
3/16	7/16	6	8	2	1/6
1/4	9/16	11–12	15–17	2	1/6
5/16	5/8	14–16	19–22	2	1/6
3/8	11/16	20–22	27–30	1-1/4	1/6
1/2	7/8	44–48	59–65	1	1/6
5/8	1	50–58	68–79	1	1/6
3/4	1-1/4	79–88	107–119	1	1/8
1	1-5/8	117–125	158–170	1	1/8

Specifications are for non-lubricated connections.

12. Product Warranty

LIMITED WARRANTY

Wallenstein products are warranted to be free of defects in materials and workmanship under normal use and service, for a period of

Five Years for Consumer Use

Two Years for Commercial/Rental Use

from the date of purchase, when operated and maintained in accordance with the operating and maintenance instructions supplied with the unit. Warranty is limited to the repair of the product and/or replacement of parts.

This warranty is extended only to the original purchaser and is not transferable.

Repairs must be done by an authorized dealer. Products will be returned to the dealer at the customer's expense. Include the original purchase receipt with any claim.

This warranty does not cover the following:

1) Normal maintenance or adjustments
2) Normal replacement of wearable and service parts
3) Consequential damage, indirect damage, or loss of profits
4) Damages resulting from:
   - Misuse, negligence, accident, theft or fire
   - Use of improper or insufficient fuel, fluids or lubricants
   - Use of parts or aftermarket accessories other than genuine Wallenstein parts
   - Modifications, alteration, tampering or improper repair performed by parties other than an authorized dealer
   - Any device or accessories installed by parties other than an authorized dealer
5) Engines. Engines are covered by the manufacturer of the engine for the warranty period they specify. For the details of your engine warranty, see your engine owner's manual. Information about engine warranty and service is also available in the FAQ section at www.wallensteinequipment.com

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