



Winch Installation Guide

Every winching situation has the potential for personal injury. In order to minimize that risk, it is important to read this guide and The Basic Guide to Winching Techniques carefully. Please familiarize yourself with the operation of your winch before using it and be constantly safety oriented. In this guide we provide important safety information and instructions on how to install your winch. Please read the Basic Guide to Winching Techniques for information on how to properly use your winch and proper rigging techniques.

Please keep this manual and other product literature found in this kit for future reference. In this kit you will find the following pieces of literature: Winch Installation Guide, Basic Guide to Winching Techniques, Specification and Performance Data, Product Warranty, Replacement Parts List and other product literature specific to some products. Should any of these be missing, please visit www.warn.com or contact us at the number below.

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SYMBOL INDEX

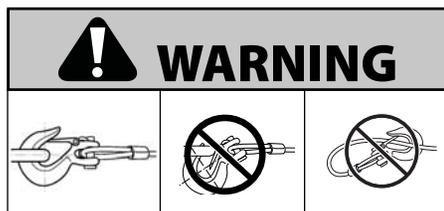
SYMBOL	EXPLANATION
	Read All Product Literature
	Always Wear Hearing and Eye Protection
	Never Use Winch as a Hoist
	Properly Seat Load in Throat of Hook
	Wind Rope on Bottom of Drum
	Finger/Fairlead Crushing Hazard
	Hand Piercing/Cutting Hazard
	Explosion/Bursting Hazard
	Never Route Electrical Cables through Sharp Edges Hazard
	Avoid Installing Electrical Cables around Pinch and Wear/Abrasion Points

SYMBOL	EXPLANATION
	Always Wear Leather Gloves
	Do Not Move People
	Always Use Supplied Hook Strap
	Never Apply Load to Hook Tip or Latch
	Never Wind Rope Over Top of Drum
	Fairlead Pinch Point
	Hot Surface Hazard
	Fire and Burn Hazard
	Never Route Electrical Cables through or near Moving Parts Hazard
	Exposed Wiring Hazard, Insulate Exposed Wiring and Terminals
	Never Hook Back on Rope

Warnings and Cautions



As you read these instructions, you will see WARNINGS, CAUTIONS, NOTICES and NOTES. Each message has a specific purpose. WARNINGS are safety messages that indicate a potentially hazardous situation, which, if not avoided could result in serious injury or death. CAUTIONS are safety messages that indicate a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. A CAUTION may also be used to alert against unsafe practice. CAUTIONS and WARNINGS identify the hazard, indicate how to avoid the hazard, and advise of the probable consequence of not avoiding the hazard. NOTICES are messages to avoid property damage. NOTES are additional information to help you complete a procedure. **PLEASE WORK SAFELY!**



MOVING PARTS ENTANGLEMENT HAZARD

Failure to observe these instructions could lead to serious injury or death.

- **Always** ensure hook latch is closed and not supporting load.
- **Never** apply load to hook tip or latch. Apply load only to the center of hook.
- **Never** use a hook whose throat opening has increased, or whose tip is bent or twisted.
- **Always** use a hook with a latch.
- **Always** ensure the operator and bystanders are aware of the stability of the vehicle and/or load.
- **Always** keep wired remote control lead and power cord clear of the drum, rope, and rigging. Inspect for cracks, pinches, frayed wires or loose connections. Damaged components must be replaced before operation.
- **Always** pass remote lead thru window when used in vehicle.
- **Never** hook back on rope.



MOVING PARTS ENTANGLEMENT HAZARD

Failure to observe these instructions could lead to serious injury or death.

General Safety:

- **Always** Know Your Winch. Take time to fully read the Instructions and/or Operations Guide, and/or Basic Guide to Winching Techniques, in order to understand your winch and its operations.
- **Never** exceed winch or winch rope rated capacity. Double line using a snatch block to reduce winch load.
- **Always** wear heavy leather gloves when handling winch rope.
- **Never** use winch or winch rope for towing. Shock loads can damage, overload and break rope.
- **Never** use a winch to secure a load.
- **Never** operate this winch when under the influence of drugs, alcohol or medication.
- **Never** operate this winch if you are under 16 years of age.

Installation Safety:

- **Always** choose a mounting location that is sufficiently strong to withstand the maximum pulling capacity of your winch.
- **Always** use class 8.8 metric (grade 5) or better hardware.
- **Never** weld mounting bolts.
- **Always** use factory approved mounting hardware, components, and accessories.
- **Never** use bolts that are too long.
- **Always** complete the winch installation and hook attachment before installing the wiring.
- **Always** keep hands clear of winch rope, hook loop, hook and fairlead opening during installation, operation, and when spooling in or out.
- **Always** position fairlead with warning readily visible on top.
- **Always** prestretch rope and respool under load before use. Tightly wound rope reduces chances of "binding", which can damage the rope.

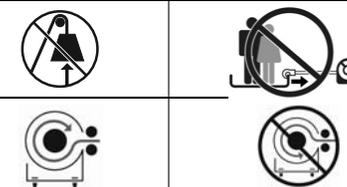


MOVING PARTS ENTANGLEMENT HAZARD

Failure to observe these instructions could lead to serious injury or death.

Winching Safety:

- **Always** inspect winch rope, hook, and slings before operating winch. Frayed, kinked or damaged winch rope must be replaced immediately. Damaged components must be replaced before operation. Protect parts from damage.
- **Always** remove any element or obstacle that may interfere with safe operation of the winch.
- **Always** be certain the anchor you select will withstand the load and the strap or chain will not slip.
- **Always** use supplied hook strap whenever spooling winch rope in or out, during installation and during operation.
- **Always** require operators and bystanders to be aware of vehicle and/or load.
- **Always** be aware of stability of vehicle and load during winching, keep others away. Alert all bystanders of an unstable condition.
- **Always** unspool as much winch rope as possible when rigging. Double line or pick distant anchor point.
- **Always** take time to use appropriate rigging techniques for a winch pull.
- **Never** touch winch rope or hook while someone else is at the control switch or during winching operation.
- **Never** engage or disengage clutch if winch is under load, winch rope is in tension or drum is moving.
- **Never** touch winch rope or hook while under tension or under load.
- **Always** stand clear of winch rope and load and keep others away while winching.
- **Never** use vehicle to pull load on winch rope. Combined load or shock load can damage, overload and break rope.
- **Never** wrap winch rope back onto itself. Use a choker chain or tree trunk protector on the anchor.



FALLING OR CRUSHING HAZARD

Failure to observe these instructions could lead to serious injury or death.

- **Always** stand clear, keep hands clear, keep others away.
- **Never** operate winch with less than 5 wraps of rope around the drum. Rope could come loose from the drum, as the rope attachment to the drum is not designed to hold a load.
- **Never** use winch as a hoist or to suspend a load.
- **Always** be certain anchor will withstand load, use appropriate rigging and take time to rig correctly.
- **Never** use winch to lift or move persons.
- **Never** use excessive effort to freespool winch rope.
- **Always** use proper posture/lifting technique or get lifting assistance while handling and installing product.
- **Always** wind the winch rope on bottom (mountside) of drum.
- **Never** wind rope over top of drum.
- **Always** spool the winch rope onto the drum in the direction specified by the drum rotation labels on the winch and/or in the documentation. This is required for the automatic brake (if so equipped) to function properly.



CUT AND BURN HAZARD

Failure to observe these instructions could lead to serious injury or death.

To avoid injury to hands and fingers:

- **Always** wear heavy leather gloves when handling winch rope.
- **Always** be aware of possible hot surfaces at winch motor, drum or rope during or after winch use.

GENERAL SAFETY PRECAUTIONS

SAFE WORKING CONDITIONS

 WARNING		
		
		
CHEMICAL AND FIRE HAZARD Failure to observe these instructions could lead to serious injury or death. <ul style="list-style-type: none">• Always remove jewelry and wear eye protection.• Never route electrical cables across sharp edges.• Never route electrical cables near parts that get hot.• Never route electrical cables through or near moving parts.• Always place the supplied terminal boots on wires and terminals as directed by the installation instructions.• Never lean over battery while making connections.• Never route electrical cables over battery terminals.• Never short battery terminals with metal objects.• Always verify area is clear of fuel lines, fuel tank, brake lines, electrical wires, etc., when drilling.• Always consult operator's manual for proper wiring details.• Always insulate and protect all exposed wiring and electrical terminals.		

 CAUTION	
	
CUT AND BURN HAZARD Failure to observe these instructions could lead to minor or moderate injury. <ul style="list-style-type: none">• Never let winch rope slip through your hands.	

 CAUTION	
	
MOVING PARTS ENTANGLEMENT HAZARD Failure to observe these instructions could lead to minor or moderate injury. To avoid injury to hands or fingers: <ul style="list-style-type: none">• Never leave remote control where it can be activated during free spooling, rigging, or when the winch is not being used.• Never leave the winch remote control plugged in when installing, freespooling, rigging, servicing or when the winch is not being used.	

NOTICE
AVOID WINCH AND EQUIPMENT DAMAGE <ul style="list-style-type: none">• Always avoid side pulls which can pile up winch rope at one end of the drum. This can damage winch rope or winch.• Always ensure the clutch is fully engaged or disengaged.• Always use care to not damage the vehicle frame when anchoring to a vehicle during a winching operation.• Never submerge winch in water.• Always store the remote control in a protected, clean, dry area.

This manual provides instructions on how to install your WARN winch system and initial operating instructions. Please read the Basic Guide To Winching Techniques for complete operational instructions for your WARN winch system.

Safety

When installing your WARN winch system, read and follow all mounting and safety instructions.

Always use caution when working with electricity and remember to verify that no exposed electrical connections exist before energizing your winch circuit.

For specifications and performance data, refer to the specification sheet supplied with your winch.

Know Your Winch

Before you begin, you should familiarize yourself with your WARN winch and each of its components:

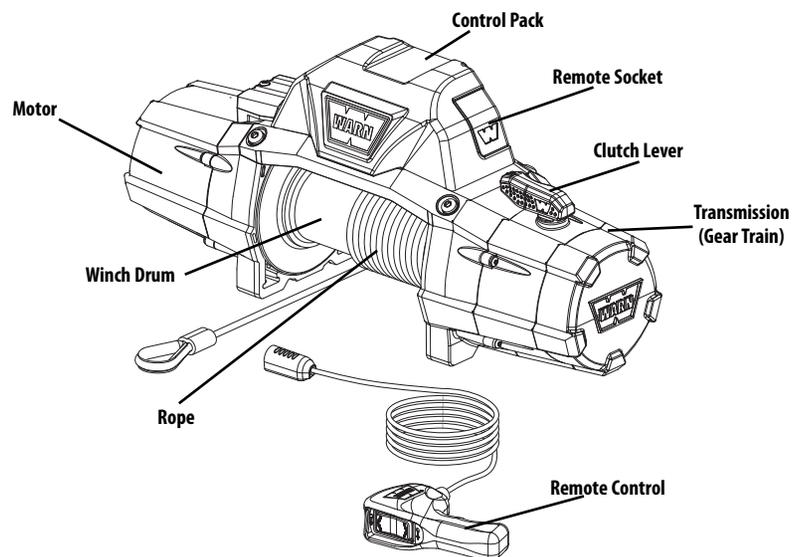


Figure 1

Motor: The winch motor is powered by the vehicle's battery. The motor provides power to the gear mechanism, which turns the winch drum and winds the winch rope.

Winch Drum: The winch drum is the cylinder onto which the winch rope feeds. The drum is driven by the motor and drive train. Its direction can be changed using the remote control.

Rope*: The winch rope's diameter and length are determined by the winch's load capacity and design. Wrapped around the winch drum and fed through the fairlead, the winch rope is looped at the end to accept the hook's clevis pin.

*** For synthetic rope models, be sure to fully read the WARN Synthetic Rope Installation Instruction manual, included in kit.**

Gear Train: The reduction gear converts the winch motor power into a large pulling force. The gear train design makes it possible for the winch to be lighter and more compact.

Clutch Lever: The clutch allows the operator to manually disengage the spooling drum from the gear train, enabling the drum to rotate freely (known as "freespooling"). Engaging the clutch "locks" the winch drum back onto the gear train.

Remote Socket: The remote socket is where the operator plugs in the wired remote control or optional wireless remote receiver, in order to control the winch.

Control Pack*: Using electrical power from the vehicle's battery, the control pack's contactor switches power to the motor, enabling the operator to change the direction of the winch drum rotation.

***For specific applications, the optional Control Pack Relocation Kit details can be found at your WARN Authorized Dealer or www.warn.com.**

Remote Control: The remote control plugs into the winch control pack, via the remote socket, allowing the operator to control the winch direction, as well as stand well clear of the wire rope while operating the winch.

Step 1 - Mount the Winch

Winch mounting kits are available from your WARN Dealer to satisfy nearly all applications. For information on available kits, contact your WARN product dealer.

NOTICE For optimal performance and the results you expect, WARN mounting plates are strongly recommended.

CAUTION To prevent accidental activation of the winch and serious injury, complete the winch installation and attach the hook before installing the wiring.

WARNING Always choose a mounting location that is sufficiently strong enough to withstand the maximum pulling capacity of your winch.

WARNING Never use bolts that are too long.

WARNING Always spool the winch rope onto the drum in the direction specified by the drum rotation labels on the winch and/or in the documentation. This is required for the automatic brake (if so equipped) to function properly.

WARNING Always wind the winch rope on the bottom (mount side) of the drum.

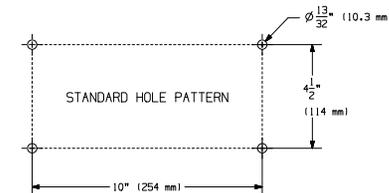
This winch should always be mounted in a horizontal orientation with the rope winding on/off the drum on the mount side of the drum and following the drum rotation arrow as labeled on the winch, see Figures 2 and 3.

Correct rotation is required for the automatic brake to function properly. Horizontal mounting helps prevent the rope from piling up on one end of the drum which can damage the winch.

The use of recommended bolt and lock washer combinations torqued to recommended levels will prevent vibration during operation. Specifications listed below. Mounting system will dictate bolt length.

Mounting Bolt Pattern:

Standard: 254 mm x 114.3 mm (10" x 4.5")



Smooth and flat mounting surface, minimum thickness = 6.4 mm (1/4")

Included Hardware:

- M10x1.5 flanged locknut 15mm hex
- M10-1.5 x 35 hex flange, 8.8, bolt (4x)
- M10-1.5 x 40 hex flange, 8.8, bolt (2x)

Torque: 41 to 47 Nm (30-35 ft. lbs.)

Choose a mounting location that is sufficiently strong enough to withstand the maximum pulling capacity of your winch.

1. Set flanged nuts into pockets of winch feet.
2. Set winch in mounting location. Confirm required bolt length.

Plate Thickness	Bolt Length
7 mm (1/4")	32 mm
10 mm (3/8")	40 mm
13 mm (1/2")	40 mm

3. Install bolts and tighten to 41 to 47 Nm (30-35 ft. lbs.)
 4. Cut elastic band retaining rope.
 5. Put clutch into free spool position.
 6. Manually feed rope loop through fairlead.
- WARNING** Always use supplied hook strap.
7. Attach hook to cable loop. Attach hook strap to hook.
 8. Rotate clutch back into fully engaged position.

Mounting Orientation

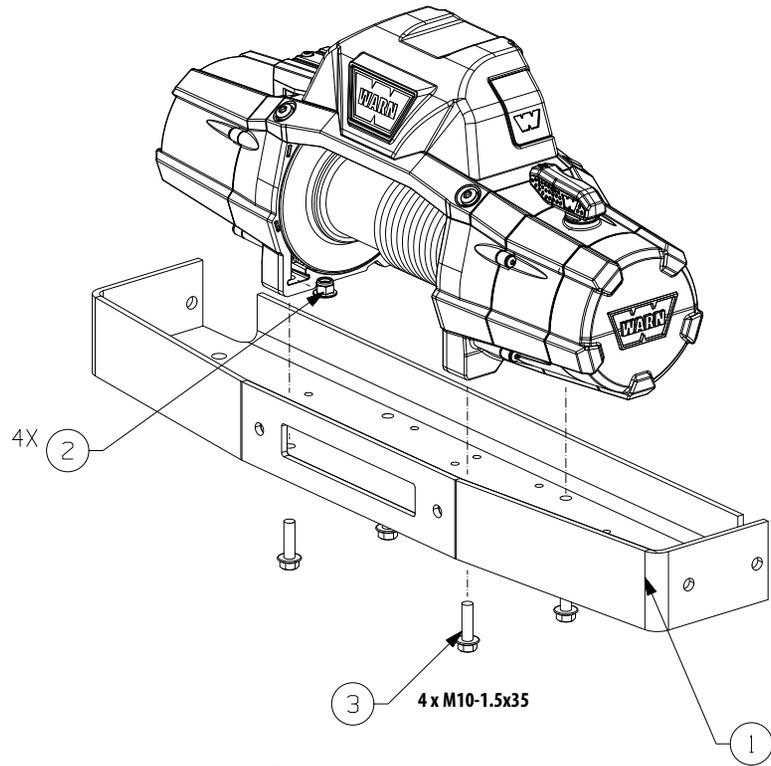


Figure 2 Horizontal Feet Down Orientation

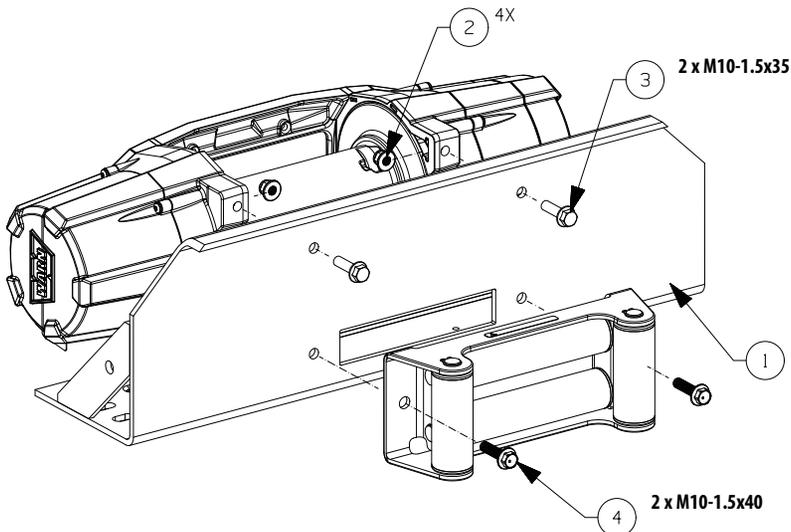


Figure 3 Horizontal Feet Forward Orientation

Step 2 - Install the Wiring

⚠ WARNING To prevent serious injury or death. Always place the supplied terminal boots on wires and terminals as directed by the installation instructions.

⚠ WARNING To prevent serious injury or death from electrical fire:

- Never route electrical cables across sharp edges.
- Never route electrical cables near parts that get hot.
- Never route electrical cables through or near moving parts.
- Avoid pinch and wear/abrasion points when installing all electrical cables.

⚠ WARNING Always insulate and protect all exposed wiring and electrical terminals.

NOTICE A fully charged battery and good connections are essential to the proper operation of your winch. The minimum requirement for a 12 volt DC battery is 650 Cold Cranking Amps.

Route battery connection cables in areas which will not cause them to chafe or cut through the insulation causing a potential short circuit.

The winch power wire must be routed to the battery. A direct battery connection of the power (red) and ground (black) cable is required. **WARNING! Do not connect ground to vehicle chassis.**

Routing the battery cables may require removal of vehicle fascia or body parts.

Always route battery cables along a path that allows the cables to be secured with zip ties.

⚠ WARNING Loose or unsecured power cables can cause serious injury or death.

Always protect power cables from sharp edges, areas that get too hot to touch with your hand and any moving parts.

1. Plan the routing path.
2. Loosely secure power cables along path.
3. Confirm power cables are protected from sharp edges, heat and moving parts. Consider chassis flex and vibration which might damage cable.
4. Carefully inspect electrical cable routing. Is it neat and tidy? Zip tie and secure electrical cables. Zip ties should be snug, but not cutting into wire insulation. Use electrical tape, pieces of rubber hose or electrical conduit to protect electrical cables and wire harness where needed to avoid electrical cable insulation wear or abrasion.
5. Attach battery cables, red (positive) cable FIRST, black (negative) second. Install boots as appropriate to protect connections. Torque battery terminal fasteners as directed by vehicle service manual.

Upon completion of installation, check winch for proper operation.

Step 3 - (Optional) Synthetic Rope Installation

For synthetic rope models, be sure to fully read the WARN Synthetic Rope Installation Instruction manual for detailed synthetic rope installation instructions.

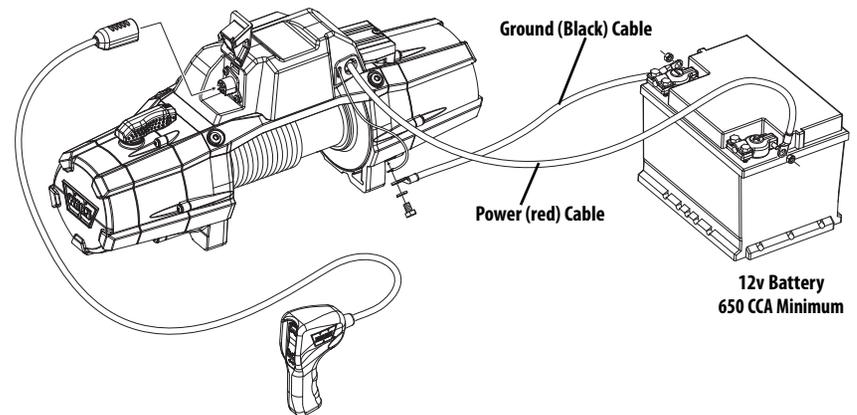


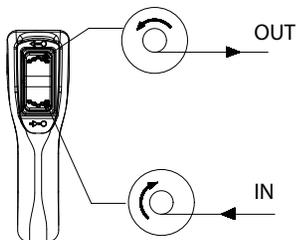
Figure 4 Electrical Diagram

Step 4 - System Check

Once you have performed a system check, you are ready to confirm winch function. Proceed to First Time Operation Instructions and Final Analysis and Maintenance sections in this booklet.

Step 5 - First Time Operating Instructions

WARNING Always understand your winch and the winching operation by reviewing The Basic Guide to Winching Techniques included with your winch.

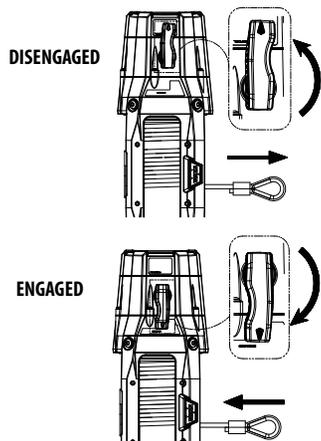


Remote Control Switch

Do not leave the remote plugged into the winch when not in use. Leaving the remote plugged in may result in a dangerous condition and/or battery drain.

Clutch Operation:

WARNING Never engage or disengage clutch if winch is under load, winch rope is in tension or drum is moving.



When the clutch is engaged, the gear train is coupled to the winch drum and power can be transferred from the winch motor. When the clutch is disengaged the drum is in the freespool position

and the gear train and winch rope drum are uncoupled allowing the drum to rotate freely.

The clutch lever, located on the winch housing opposite the motor, controls the clutch position. To prevent damage, always fully engage or fully disengage the clutch lever.

Spooling Out

WARNING Never operate winch with less than 5 wraps of rope around the drum. Rope could come loose from the drum, as the rope attachment to the drum is not designed to hold a load.

WARNING Always keep hands clear of winch rope, hook loop, hook and fairlead opening during installation, operation, and when spooling in or out.

WARNING Always wear heavy leather gloves when handling winch rope.

Freespooling is generally the quickest and easiest way to spool out winch rope. Before freespooling winch rope out from the winch, power out enough rope to remove any tension the winch rope might be under. Disengage the clutch. Then freespool by manually spooling out enough winch rope for the winching operation. See The Basic Guide to Winching Techniques for more information.

NOTICE Do NOT power out more than 30ft without allowing the winch to cool for 20 minutes before powering rope back in. Instead, place the clutch in freespool and pull the rope out by hand.

WARNING Always use supplied hook strap whenever spooling winch rope in or out, during installation or operation to avoid injury to hands and fingers.

Spooling In Under Load

WARNING Never exceed winch's rated line pull.

Power-in the winch rope evenly and tightly on the drum. This prevents the outer winch wraps from sinking into the inner wraps, binding, and damaging the winch rope.

Avoid shock loads when spooling, by pulsing the control switch to take up winch rope slack. Shock loads can momentarily far exceed the winch and rope ratings.

Spooling In Under No Load

WARNING Never touch winch rope or hook while someone else is at the control switch or during winching operation.

Spooling with an Assistant: Have the assistant hold the hook strap putting as much constant tension on the winch rope as possible. While keeping tension, the assistant should walk toward the winch while you operate the control switch spooling in the winch rope. Release the switch when the hook is a minimum of 6 ft. (2m) from the fairlead opening.

Spool in the remainder for storage as directed below.

Spooling Alone: Arrange the winch rope to be spooled so it will not kink or tangle when spooled. Be sure any winch rope on the drum is tightly and evenly layered. Spool enough winch rope to complete the next full layer on the drum. Tighten and straighten the layer. Repeat process until the hook is a minimum of 6 ft. (2 m) from the fairlead opening.

Spool in the remainder for storage as directed below.

Spooling Remainder for Storage

When the hook is within 6 ft. (2 m) of the fairlead, disconnect the hook from the anchor or load. Hold onto the supplied hook strap and hold tension on the winch rope. Slowly power-in the winch by "pulsing" the power-in switch on the remote control until the hook is within 3 ft. (1 m) of the fairlead.

Stop winching in and attach the hook to a suitable anchor point on the vehicle.

NOTICE Do not power the hook into the fairlead. This could cause damage to the fairlead.

Once the hook is suitably attached to the vehicle, power-in the remaining slack in the winch rope by "pulsing" the power-in switch on the remote control until there is minimal slack in the winch rope.

Overloading/Overheating

This winch is rated for intermittent duty. When the motor approaches stall speed, very rapid heat buildup occurs which may cause motor damage.

Double-line rigging (see The Basic Guide to Winching Techniques) will reduce the amperage draw, and reduce heat buildup in the motor. This allows longer continual use.

STRETCHING WINCH ROPE

WARNING Always prestretch rope and respool under load before use. Tightly wound rope reduces chances of "binding", which can damage the rope.

WARNING Never operate winch with less than 5 wraps of rope around the drum. Rope could come loose from the drum, as the rope attachment to the drum is not designed to hold a load.

The life of a winch rope is directly related to the use and care it receives. During its first use, a new winch rope must be spooled onto its drum under a load of at least 1000 lbs. (454 kgs). Use the following instructions to properly stretch the winch rope onto the winch drum.

- 1) Choose a FLAT AND LEVEL location that is large enough to run out the entire length of winch rope.
- 2) Turn the clutch lever on the winch to the "Free Spool" position. Spool out the winch rope to the last 5 wraps on the drum. Once the winch rope is spooled out, turn the clutch lever on the winch to the "Engaged" position.
- 3) Attach the hook end of the rope to a suitable anchor point and back the vehicle away from the anchor point until there is very little slack in the winch rope. Before getting out of the vehicle, set the parking brake, place the vehicle in gear or park and turn the vehicle off.

- 4) Connect the remote control to the winch. Standing approximately 8 ft. (2.44 m) away from the winch, power-in the winch until all of the slack is wound onto the winch drum. Disconnect the remote control from the winch. Hold tension on the winch rope with one hand; carefully push the winch rope to the side of the drum the winch rope is attached to so there are no gaps between each coil on the drum. Be sure to check that the winch rope is winding off the bottom of the drum, not the top, or the automatic load holding brake will not function properly. (If the winch rope is winding off the top you have powered the winch "out" instead of "in" on the remote control).

FIRST TIME OPERATING INSTRUCTIONS

5) The following steps should be done using two people for proper safety. If you attempt to tension your winch rope alone be sure to always engage the parking brake, place the transmission in gear or park and turn the vehicle off every time you exit the vehicle to inspect the winch rope. Never exit the vehicle with a load on the winch rope. Tensioning the winch rope is critical to ensure a long product life. Tensioning the winch rope will prevent outer layers of winch rope from pinching and deforming the inner layers.

6) Use care to evenly wrap each layer to prevent damage to the rope.

7) Pass the remote control through the driver's window for the driver of the vehicle to operate. Instruct your assistant to stand to the side of the vehicle and away from the winch rope. Your assistant should signal you if the winch rope is winding correctly by watching it move across the fairlead as the winch rope is powered in. Start the vehicle and place the transmission in neutral. Release the parking brake while applying moderate brake pedal pressure.

Press power-in on the remote control switch. After winching in for approximately 6 ft. (2m), stop winching. Slowly let up off of the brake pedal and then apply the parking brake. This will ensure that there is no load on the winch rope. Then place the transmission in park or in gear and turn the vehicle off. Exit the vehicle and inspect the winch to make sure that the winch rope is being evenly wound onto the winch drum and not sinking into the lower layer. If the winch rope is sinking, power the winch rope out and repeat this step from the beginning with more brake pedal pressure.

8) When you are convinced the winch rope is winding onto the winch drum properly, repeat step 6 until the vehicle is within 6 ft. (2 m) of the winch anchor. Once within 6 ft. (2 m), slowly let up off of the brake pedal and then apply the parking brake. This will ensure that there is no load on the winch rope. Then place the transmission in park or in gear and turn the vehicle off. Exit the vehicle. Disconnect the hook from the anchor. While holding onto the supplied hook strap, hold tension on the winch rope and slowly power-in the winch by "pulsing" the power-in switch on the remote control until the hook is within 3 ft. (1 m) of the fairlead. Stop winching in and attach the hook to a suitable anchor point on the vehicle.

NOTICE Do not power the hook into the fairlead. This could cause damage to the fairlead.

Once the hook is suitably attached to the vehicle, power-in the remaining slack in the winch rope by "pulsing" the power-in switch on the remote control until there is minimal slack in the winch rope.

FINAL ANALYSIS AND MAINTENANCE

Check	Before first operation	After each use	Every 90 days
Take time to fully read the Instructions and/or Operations Guide, and/or Basic Guide to Winching Techniques, in order to understand your winch and its operations	X		
Check fasteners and make sure they are tight and to proper torque. Replace damaged fasteners.	X		X
Verify wiring to all components is correct and be certain that all connections are tight.	X		X
Verify there is no exposed/bare wiring, terminals or cable insulation damage (chafing/cutting). Cover any exposures with terminal boots. Repair or replace damaged electrical cable.	X		X
Inspect rope for damage. Replace rope immediately if damaged.	X	X	X
Keep winch, rope and switch control free from contaminants. Use a clean rag or towel to remove any dirt and debris.		X	

WARNING To prevent serious injury or death:



Always spool the winch rope onto the drum as indicated by the drum rotation label.

Always Wind Rope on Bottom of Drum.



Never Wind Rope Over Top of Drum.

Take time to fully understand your winch and the winching operation by reviewing the Basic Guide to Winching Techniques included with your winch.

For further information or any questions contact:

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