

Operating Manual



W12E Towing Winch

This manual must be with the vehicle
on which this winch is installed.

Please check the Allied Systems website
regularly for updates to this manual.
www.alliedsystems.com

A Product of
Allied Systems
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Foreword

The safe and efficient operation of a winch requires skill and alertness on the part of the operator. To develop the skills required, the operator must:

- Receive training in the proper operation of the winch and the machine on which it is mounted.
- Understand the capabilities and limitations of the winch and the machine on which it is mounted.
- Become familiar with the winch and the machine on which it is mounted and see that they are maintained in good condition.
- Read and understand the SAFETY SUMMARY and OPERATING PROCEDURES contained in this Operating Manual.

In addition, a qualified person experienced in the operation of the winch must guide a new operator through several load handling applications before the new operator attempts to operate the equipment alone. It is the employer's responsibility to make sure that the operator can see, hear, and has the physical and mental ability to operate the equipment safely.

This Operating Manual contains basic information necessary for the operation and maintenance of a winch. Optional equipment is sometimes installed that can change the characteristics described in this manual. Make sure the necessary instructions are available and understood before operating the winch.

Some of the components described in this Operating Manual will NOT be installed on your winch. If you have questions about any item on your winch or described in this Operating Manual, contact your local winch dealer, or contact Allied Systems Company:

Allied Systems Company
21433 SW Oregon Street
Sherwood, OR 97140 USA

Phone: 503-625-2560

Fax: 503-625-7269

E-Mail: marketing@alliedsystems.com

Also visit our website, www.alliedsystems.com, where the most current copy of this manual is always available.



NOTE: For repairs and overhaul, contact your Allied winch dealer. If you maintain your own equipment, a service manual is available for your specific winch.

NOTE: This publication may be translated to different languages for sole purpose of easy reference in non-English speaking locations. Should there be differences in interpretations to the text, please refer to the English language edition published by Allied Systems Company as the controlling document.

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Safety Summary

General Safety Notices

The following pages contain general safety warnings which supplement specific warnings and cautions appearing elsewhere in this manual. All electrical and hydraulic equipment is dangerous. You must thoroughly review and understand the Safety Summary before attempting to operate, troubleshoot or service this winch.

The following symbols/terms are used to emphasize safety precautions and notices in this manual:



DANGER

The “**DANGER**” symbol indicates a hazardous situation which, if not avoided, will result in death or serious injury. Carefully read the message that follows to prevent serious injury or death.



WARNING

The “**WARNING**” symbol appears wherever incorrect operating procedures or practices could cause serious injury or death. Carefully read the message that follows to prevent serious injury or death.



CAUTION

The “**CAUTION**” symbol appears where a hazardous situation which, if not avoided, could result in minor to moderate injury and equipment damage.

NOTICE

This signal word alerts to a situation that is not related to personal injury but may cause equipment damage.

NOTE: ...

The term “NOTE” highlights operating procedures or practices that may improve equipment reliability and/or personnel performance.

Safety Regulations

Each country has its own safety legislation. It is in the operator’s own interest to be conversant with these regulations and to comply with them in full. This also applies to local bylaws and regulations in force on a particular worksite.

Should the recommendations in this manual deviate from those in the user’ country, the national regulations should be followed.

NOTE: All possible safety hazards cannot be foreseen so as to be included in this manual. Therefore, you must always be alert to potential hazards that could endanger personnel and/or damage the equipment.



WARNING

The winch shall not be used for hoisting.



WARNING

Use hearing protection when operating winches.



WARNING

Maximum permissible system pressure:
250 PSI.

Operation, Inspection, and Maintenance Warnings

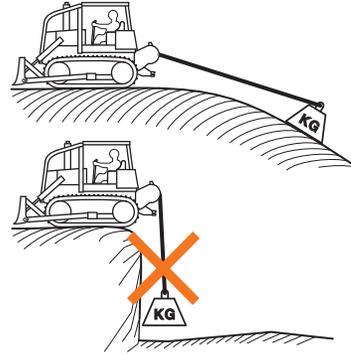


Obey the following cautions and warnings before using your winch to avoid equipment damage, personal injury or death.

- Do not operate the winch unless you are authorized and trained to do so.
 - Do not operate the winch unless the vehicle is equipped with a screen to protect the operator if the wire rope breaks.
 - Read, understand, and follow the operating, inspection, and maintenance instructions in this Operating Manual.
 - Do not use the control levers for hand holds when entering or leaving the vehicle.
 - Do not permit other people near the control area when you inspect or repair a machine.
 - Never inspect, repair, or perform maintenance on a machine that is in motion.
- Inspect the winch before each use:
 - » Make sure that the controls and instruments operate correctly.
 - » Report the need for repairs immediately.
 - » Do not work with a damaged or worn wire rope.
 - » Do not use a winch that needs repairs.
 - » If the wire rope and ferrule must be removed from the drum, make sure the end of the wire rope and ferrule are controlled when the ferrule is released. The end of the wire rope can suddenly move from the drum like a compressed spring when the ferrule is released and cause an injury.
 - Stay in the operator's seat when operating the winch.
 - Do not stand on the vehicle when operating the winch.
 - Avoid winch operation near people or other machines.

- Never stand nor permit others to stand in the bight (loop) of a wire rope.
- Do not stand nor permit others to be near the winch or wire rope when there is tension on the wire rope.
- Observe jobsite rules.
- Be in complete control at all times.
- Do not use the control levers as hangers for clothes, water bags, grease guns, lunch pails, etc.
- Do not leave the vehicle when the winch wire rope is under tension.
- Do not permit riders on the vehicle or load.
- Do not use the winch as an anchor for a double or two-part line.
- Do not pull the hook through the throat or over the drum, which will cause damage.
- When the winch is not in use, make sure the control lever is in **BRAKE-ON** position and the winch brake is applied.

- Do not use winch as a hoist. Tractor and skidder mounted winches are designed for towing.



- Always inspect wire rope, tail chain and other rigging components for wear, damage, broken strands or abuse before use.
- Never use wire rope, tail chain or other rigging that is worn-out, damaged or abused.
- Never overload wire rope, tail chain or rigging.

Safety Summary

- Wire rope and tail chain will fail if worn-out, overloaded, misused, damaged, improperly maintained or abused. Wire rope or tail chain failure may cause serious injury or death!



- Do not terminate wire rope to tail chain by the use of a knot.
- Do not handle wire rope if the hook end is not free. A load could break away, suddenly tensioning the wire rope, resulting in serious injury or death.
- Stay clear of wire rope entry areas (fairlead or arch rollers, winch drum etc).

- Make sure ground personnel are in plain view of the operator, and at a distance of at least 1½ times the working length of the wire rope.
- Make sure that any hand signals used by ground personnel are clearly defined and understood by everyone involved.
- Do not attempt to “jerk” or “shock” a load free. Doing so can cause loads in excess of the rated capacity of the wire rope, winch, or mounting hardware.
- Replace any parts only with genuine Allied Winch parts. Refer to parts manual 599782W.
- Maintain **a minimum of three (3) complete wraps of wire rope** on the drum for normal operation. It may help to paint the last five wraps of wire rope a contrasting color, to serve as a visual indicator.
- Do not handle wire rope with bare hands. Wear leather gloves at all times.
- Align the tractor with the load to prevent side loading the winch, and to maintain even spooling of the wire rope.



- If applying tension to the wire rope manually during spooling:
 - » ensure that the operator is winching in slowly,
 - » keep your hands and clothing well clear of any rollers or the winch drum,
 - » do not maintain tension by letting the wire rope to slip through your hands,
 - » use a hand-over-hand technique to maintain tension.
- Be aware of the ground conditions, and make sure the ground and tractor are stable enough to pull the intended load.
- Do not attempt to pull loads in excess of the rated capacity of the winch.
- Keep yourself informed of any applicable codes, regulations and standards for the job.
- Your winch may have temperature shut-off system for protection of tractor and winch. Manual override of high temperature shut-off will cause damage to tractor and winch.
- This winch is neither intended, designed, nor rated for any application involved in the lifting or moving of personnel.
- Use only the lubricants listed in the Recommended Oil List. See Page 5.
- Do not weld on any part of the winch. Contact Allied Systems if weld repairs are needed.
- The hydraulic system must be kept clean and free of contamination at all times.

Safety Summary

- Be aware of the hazards of pressurized hydraulics:
 - » Wear personal protective equipment, such as gloves and safety glasses, whenever servicing or checking a hydraulic system.
 - » Assume that all hydraulic hoses and components are pressurized. Relieve all hydraulic pressure before disconnecting any hydraulic line.
 - » Never try to stop or check for a hydraulic leak with any part of your body; use a piece of cardboard to check for hydraulic leaks.
 - » Small hydraulic hose leaks are extremely dangerous, and can inject hydraulic oil under the skin, even through gloves.
 - » Infection and gangrene are possible when hydraulic oil penetrates the skin. See a doctor immediately to prevent loss of limb or death.



Product Modifications

- Any alterations to the winch that have not been approved by Allied Systems Company, or use of any non-OEM replacement parts, will void the warranty, and may introduce serious safety hazards.
- Any non-OEM parts used, or any alterations made are done so at your own risk to personnel safety. This includes the addition of accessories and attachments not manufactured or approved by Allied Systems Company.



Notes

General

Introduction

This Operating Manual contains basic information necessary for the operation and maintenance of the W12E winch.

How the Winch Operates

A winch is normally installed on a skidder or tractor:

- to increase the pulling power of the skidder or tractor.
- to reach into an area where a skidder or tractor cannot go.
- to make lift functions available when special attachments are installed.

The winch has hydraulic clutches that are similar to a hydraulic (powershift) transmission. Most tractors and skidders have a power take-off (PTO) that is used to connect the power from the engine to the winch. The **SCH** (Self Contained Hydraulics) on the winch label indicates that the hydraulic system for control of the winch is inside of the winch case. When the PTO is operating,

a hydraulic pump in the winch case takes hydraulic oil from the winch sump and sends it to the hydraulic control valve. The hydraulic control valve controls the operation of the winch. Removable covers on the winch case allow access for repairs and adjustments. The design of the winch cases permits a variation in the arrangement of PTO assemblies to fit the different tractors and skidders that use these winches.

The PTO is connected to the pinion assembly in the winch. When the pinion rotates, a ring gear (bevel gear) rotates the shaft and pump gear, which turns the pump. The bevel gear is connected to an oil clutch for the **LINE-IN** (power forward) operation and another oil clutch for the **LINE-OUT** (power reverse) direction.

The power through the winch to the drum for the wire rope is controlled by a **LINE-IN** and a **LINE-OUT** clutch. When the **LINE-IN** clutch is applied, the drum rotates to pull the wire rope into the winch. When the **LINE-OUT** clutch is applied, the drum rotates to permit the wire rope to be pulled from the winch at the speed controlled by the engine rpm.



When the control lever is in the **BRAKE-ON** position, an oil brake is automatically applied by a spring to hold the drum in its position. If the control lever is moved to apply one of the clutches, the brake is released by the same oil pressure that applies the clutch. In the event that hydraulic power is lost, the brake remains applied and the winch will not turn.

Nameplate

Each winch is shipped from the factory with a nameplate as shown in Figure 1. The nameplate is stamped with:

- winch model
- winch serial number
- maximum rated bare drum line pull
- maximum wire rope diameter

DO NOT operate the winch with larger diameter wire rope. If the nameplate is missing, DO NOT operate the winch until its capacity is known.

The serial number for the winch is also stamped into the frame next to the nameplate.

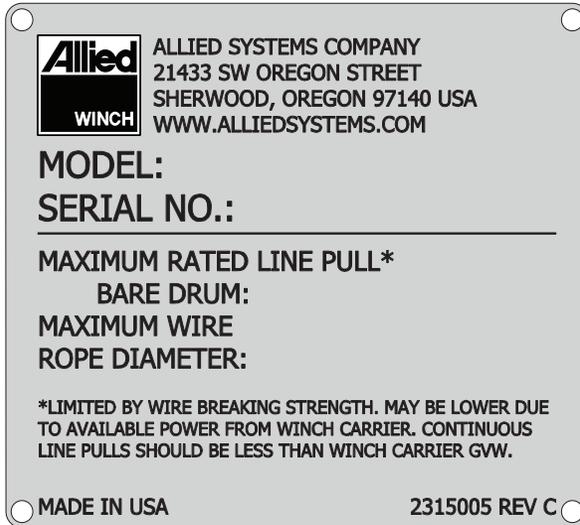


Figure 1 Nameplate

Wire Rope Selection

Each winch model can have a variety of wire rope sizes, lengths, or grades installed by the user. The maximum wire rope size is shown on the nameplate. The maximum rated line pull stamped into the nameplate is based on the maximum wire rope size, EEIPS grade. When a smaller diameter wire rope, or a different grade is installed, the line pull is limited by the capacity of the wire rope.

See Figure 2 for approved wire rope sizes, drum capacities and maximum rated line pulls. When a larger diameter wire rope is used, the length of wire rope installed on the drum will be shorter. Be aware that the winch can create a tension in the wire rope that is greater than the strength of the wire rope. The user must be careful to select a wire rope that has enough strength and length for the job.



WARNING

Load loss hazard.

A wire rope that breaks under high tension can suddenly whip back towards the winch, causing injury or product damage.

Be sure the operator knows the capacity of the wire rope and the winch.



WARNING

Load loss hazard.

A loaded wire rope with fewer than three complete wraps on the drum could disengage from the ferrule pocket, causing load loss and possible injury.

Paint the last five wraps of wire rope a contrasting color to alert the operator that end of the wire rope has been reached.

Wire Rope Diameter in (mm)	Capacity for Full Drum Fill ft (m)	Capacity for 2/3 Drum Fill ft (m)	EIPS Maximum Rated Line Pull Lbs (N)	EEIPS Maximum Rated Line Pull Lbs (N)
1 (25)	286 (87)	188 (57)	73,800 (328,200)	81,200 (361,100)
1 1/8 (28)	229 (70)	150 (46)	92,800 (412,700)	102,100 (454,100)
1 1/4 (32)	182 (55)	119 (36)	114,100 (507,500)	125,500 (558,200)
NOTE:				
1. Loosely or unevenly spooled line will reduce capacities.				
2. Use flexible wire rope with independent wire rope center.				
3. Ferrule size: 2 1/4 inches diameter, 2 3/8 inches long.				

Figure 2 Wire Rope Sizes and Capacities

Wire Rope Reel

When the wire rope is transferred from a reel to the drum, or from the drum back onto a reel, it must go from “top to top” for overwind winches, or “bottom to bottom” for underwind winches, as shown in Figure 3, to avoid putting a reverse bend into the wire rope.

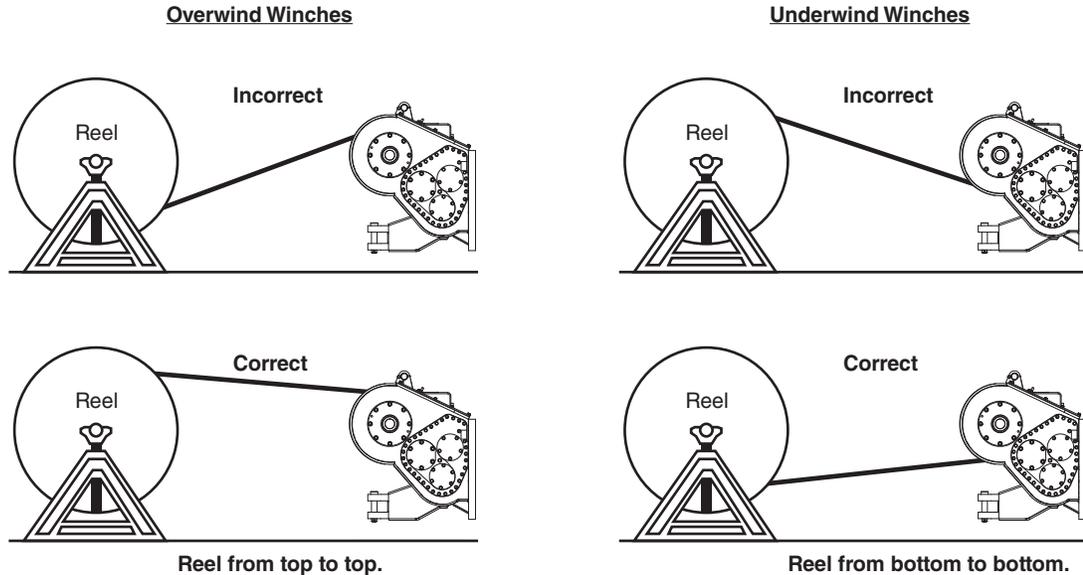


Figure 3 Transferring Wire Rope from or to Reel

Wire Rope Installation

WARNING

Gloves should be worn when working with or near wire rope to prevent cuts and abrasions.

NOTE: The illustrations in this section show a winch with an “overwind” configuration, which is standard. Some winches are configured for “underwind”, with the wire rope spooling onto the bottom of the drum instead of the top. The procedures for installation are the same.

Seat the ferrule on the drum end of the wire rope in the ferrule pocket in the drum. See Figure 4. Use the keeper and related hardware to secure the ferrule. Torque the capscrew to 115 ft-lbs.

Once the ferrule is properly secured in the pocket, the wire rope may be spooled slowly onto the drum. Apply enough tension to the wire rope as it is being spooled to ensure that it spools neatly and tightly on the drum.

Tension may be created by a variety of methods. The methods described here are not exclusive.

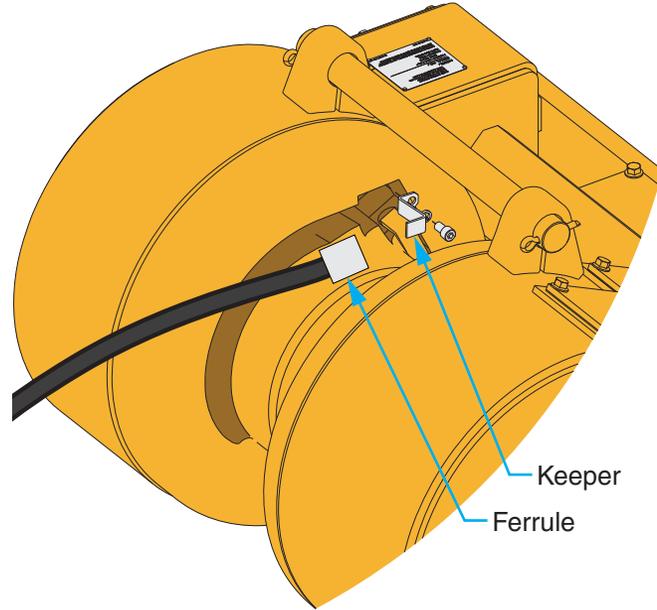


Figure 4 Secure Ferrule in Pocket with Keeper

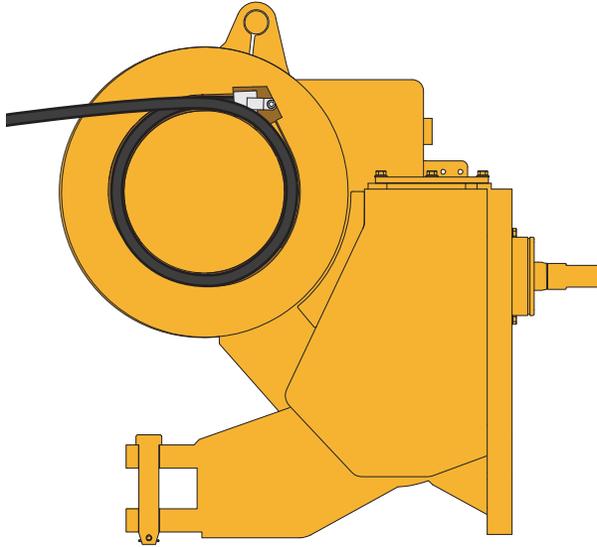


Figure 5 First Layer, Overwind Configuration

One method is to create a wooden plank lever, as shown in Figure 6 to apply pressure to the reel flange(s). The friction between the wooden plank and the reel flange(s) will create resistance to rotation of the reel, which will create tension in the wire rope as it is slowly spooled onto the winch drum.

Another method is to use the tines of a forklift to bear against the reel flange(s). Again, the friction generated between the tines and the flange(s) will create tension in the wire rope.

Finally, the end of the wire rope may be fastened to a forklift. The forklift may be driven away from the winch drum as the wire rope is paid out, and the forklift operator may use the brake on the forklift to provide tension on wire rope as the wire rope is spooled back onto the winch drum. The movement of the forklift and the paying out or spooling back onto the winch drum shall be coordinated to prevent the wire rope from contacting the ground.

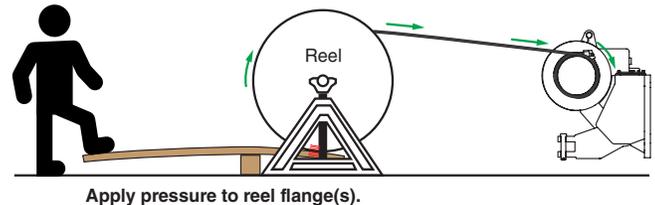


Figure 6 Create Tension

Recommended Oil List

The type of oil used in Allied winches affects the line control. Use the following oils in the W12E winch:

Recommended Oils* - General Conditions			
Manufacturer	Oil Type	Ambient Temperature Range	
		°F	°C
ExxonMobil	Mobil Fluid 424 (Factory fill)	-13 to 104	-25 to 40
John Deere	Hy-Gard™	-13 to 122	-25 to 50
Chevron	1000 THF	-13 to 104	-25 to 40
Caterpillar	Multipurpose Tractor Oil (MTO)	-13 to 104	-25 to 40
Case	Hy-Tran Ultra	-20 to 122	-29 to 50
Recommended Oils* - Low Temperature Conditions			
Manufacturer	Oil Type	Ambient Temperature Range	
		°F	°C
ExxonMobil	Mobil Fluid LT	-40 to 86	-40 to 30
John Deere	Low Viscosity Hy-Gard	-40 to 86	-40 to 30
Chevron	THF W	-40 to 86	-40 to 30

* Note: Use of non-recommended oils may void warranty.

Figure 7 Recommended Oil List

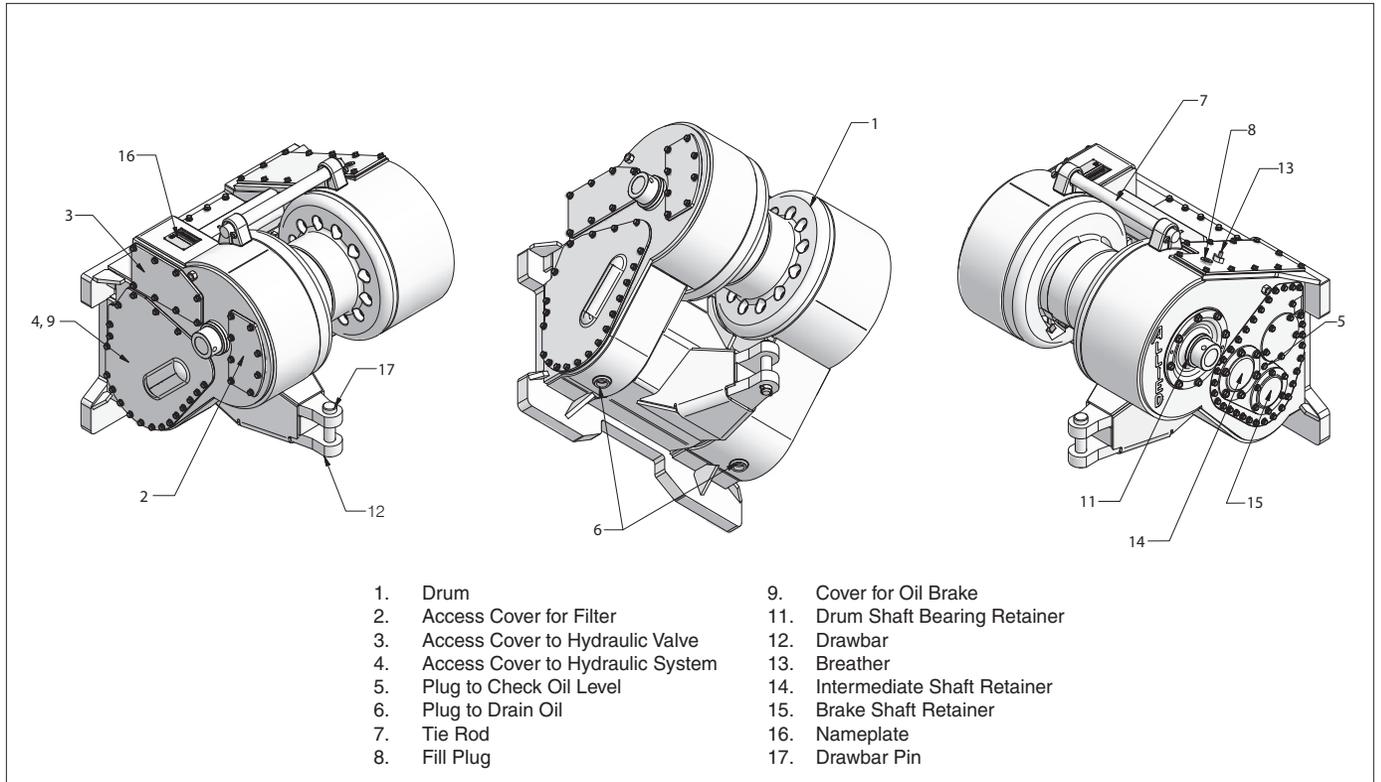


Figure 8 W12E Winch

Optional Equipment

The W12E winch may be equipped with the following options:

- Fairlead assembly - To protect wire rope and frame from damage at odd pull angles;

- Alternate gear ratio - To allow better line speed control.

NOTE: Not all optional equipment listed is available for each model of tractor.

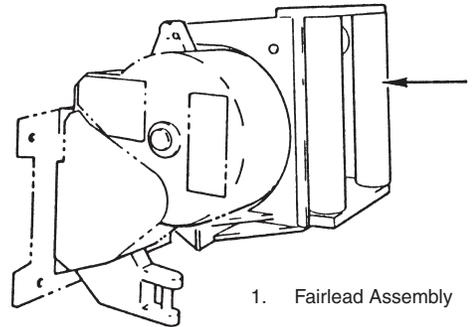
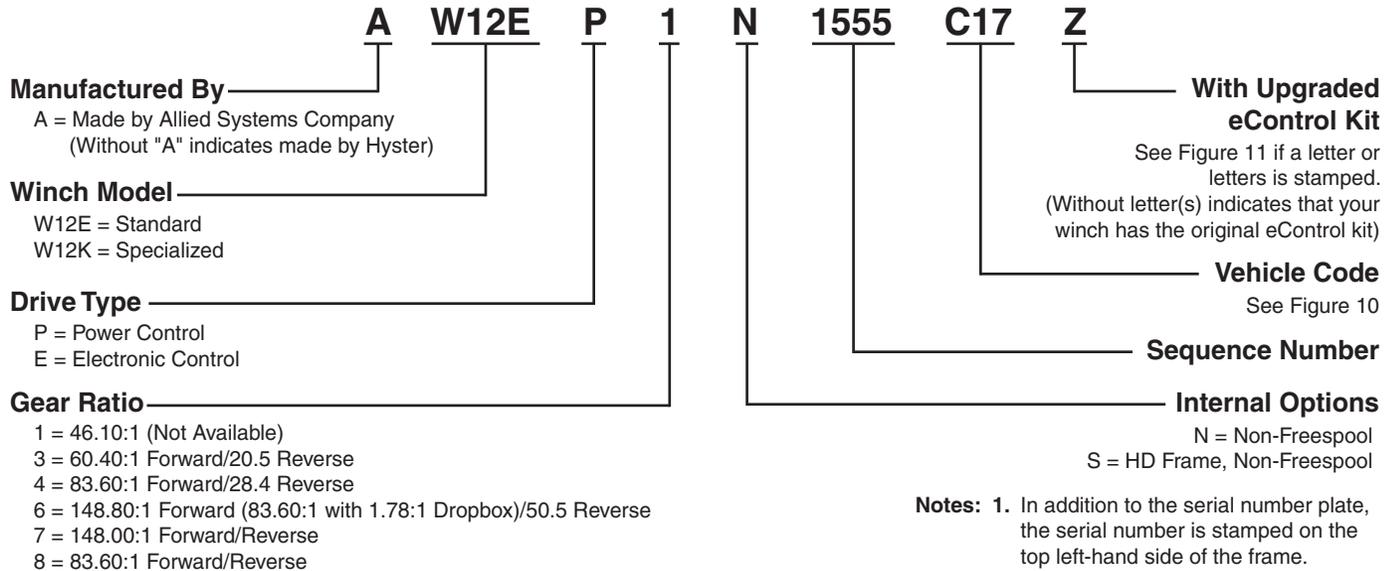


Figure 9 W12E Towing Winch, Optional Equipment

Serial Number Codes

The nameplate with the serial number code is found on the left front corner of the winch case. A serial number indicates the following information:



- Notes:**
1. In addition to the serial number plate, the serial number is stamped on the top left-hand side of the frame.
 2. Circled numbers in Figure 10 indicate possible gear ratios.

Figure 10 Tractor or Skidder Identification and Gear Ratio (Continued on next page)

Tractor Make Model and Starting Tractor Serial Number Where Applicable					
C O D E	A Fiat-Hitachi/ New Holland	C Caterpillar	G Terex	H Dresser/ Dressta	K Komatsu
59		D8R Series II ⑥			
60					D275A ④
61	21C ③ FD30 ③④	D8K PS ①③④	82-30, 82-30B, D750A ③	TD25C PS ③④	D155A-1 & 2 ③④
62	FD40B, FP120, 31 ③	D9 PS ①③④⑧	D800 ③④		
63	41-B ④	583 Serial No. 78V 61A ①③④ 583H/K ④		TD25E PS Serial No. 1001 & Up ③④	

Figure 10 (continued) Tractor or Skidder Identification and Gear Ratio (Continued on next page)

Tractor Make Model and Starting Tractor Serial Number Where Applicable					
C O D E	A Fiat-Hitachi/ New Holland	C Caterpillar	G Terex	H Dresser/ Dressta	K Komatsu
64	FD30B/C ① ③ ④	594 Serial No. 96V 62H ① ③ ④		TD25G/H/M ③ ④	D375A-1 ①
65	FD40 ④	D8L, D9N, D9R (Clutch Br. Steer) ④, ⑥*		TD40B/C ④	
66		D10N, D10R ④, ⑥			
67		583R ③ ④ ⑥			
68		D9R (Diff. Steering) ④, ⑥			
69		583T, D8T, ⑥, ⑦			

Figure 10 (continued) Tractor or Skidder Identification and Gear Ratio

Tractor Make Model and Starting Tractor Serial Number Where Applicable					
C O D E	A Fiat-Hitachi/ New Holland	C Caterpillar	G Terex	H Dresser/ Dressta	K Komatsu
74		583T, D8T PL83/PL87 ⑥, ⑦			
75		D9T ⑥, ⑦			
76		D10T ⑥, ⑦			
79		587T ⑥, ⑦			
* Available only for D9R Clutch Brake Steer with Dropbox.					

Figure 11 Winch eControls Modification Status

A LETTER AT THE END OF THE WINCH SERIAL NUMBER CODE INDICATES THAT THE WINCH HAS BEEN MODIFIED WITH AN UPGRADED eCONTROL KIT.	
<u>LETTER</u>	<u>MODIFICATION</u>
Z	WINCH HAS BEEN UPGRADED TO USE MANIFOLD P/N 2306547W
ZV	WINCH HAS BEEN UPGRADED TO USE MANIFOLD P/N 2311887
X	A KIT HAS BEEN INSTALLED THAT ADDS AN ACTIVATION SWITCH TO THE WINCH
REFER TO THE eCONTROLS PROGRAM SELECTION CHART, 2305227W, FOR MORE INFORMATION	

Operation, Power Controls

Checks Before Operation

- Check that the wire rope and hook are not worn or damaged. Check that the periodic inspection and maintenance have been done at the recommended operating hours. (See Figure 17 on page 35, Maintenance Schedule.)
- Check control lever adjustment.

Checks During Operation

The Troubleshooting Chart at the end of this subsection can be used by the operator to identify a problem with the winch operation. A trained service person is needed for additional troubleshooting and repair that requires disassembly of parts of the winch.

Operating Procedures

The control lever assembly has a power control lever for winch control. The control lever is connected to the winch through a control cable. The power control lever, which is connected to the spool in the control valve, is used to select one of the following operations:

- **BRAKE-OFF**
- **LINE-OUT**
- **BRAKE-ON**
- **LINE-IN**

BRAKE-OFF is the only detented position on the control lever (electronic controls) or control lever (power controls), and the operator must pull the lever to release it from that position. A spring arrangement on the lever returns the lever from the **LINE-IN** and **LINE-OUT** positions to the **BRAKE-ON** position. With the lever in the **BRAKE-OFF** position, oil pressure releases the brake but wire rope cannot be pulled from the winch by hand because of friction in the clutches, brake and gear train. The **BRAKE-OFF** position is used when the operator has a load attached to the winch wire rope. The operator can move the tractor forward without moving the load.

LINE-OUT position applies the reverse clutch and releases the brake. The winch will unwind the wire rope at a speed controlled by the PTO speed of the tractor and the weight of the load.

BRAKE-ON is a neutral position. No hydraulic pressure is applied to the brake or the clutches. Springs apply the brake so that the winch drum will not rotate.

LINE-IN position applies the forward clutch and releases the brake. The winch will wind the wire rope at a speed controlled by the PTO speed of the tractor.

Inching is used for fine control of the load. When the control lever is slowly moved to a position between **BRAKE-ON** and **LINE-IN** or between **BRAKE-ON** and **LINE-OUT**, inching occurs.

NOTE: Inching rapidly increases the temperatures of the clutch, the brakes and the oil, and will accelerate clutch and brake wear.

Inching (LINE-IN). This operation is used to slowly move a load toward the tractor. As the control lever is moved gradually towards the **LINE-IN** position, the control valve will cause the oil pressure to slowly release the brake and slowly apply the forward clutch. As the brake is released, the clutch takes control and begins to move the load.

Inching (LINE-OUT). This operation will release the brake as the reverse clutch is applied. This permits the weight of the load, with assistance from the reverse clutch, to unwind wire rope from the winch drum against the resistance of the brake. The operator controls the resistance of the brake by the position of the control lever.

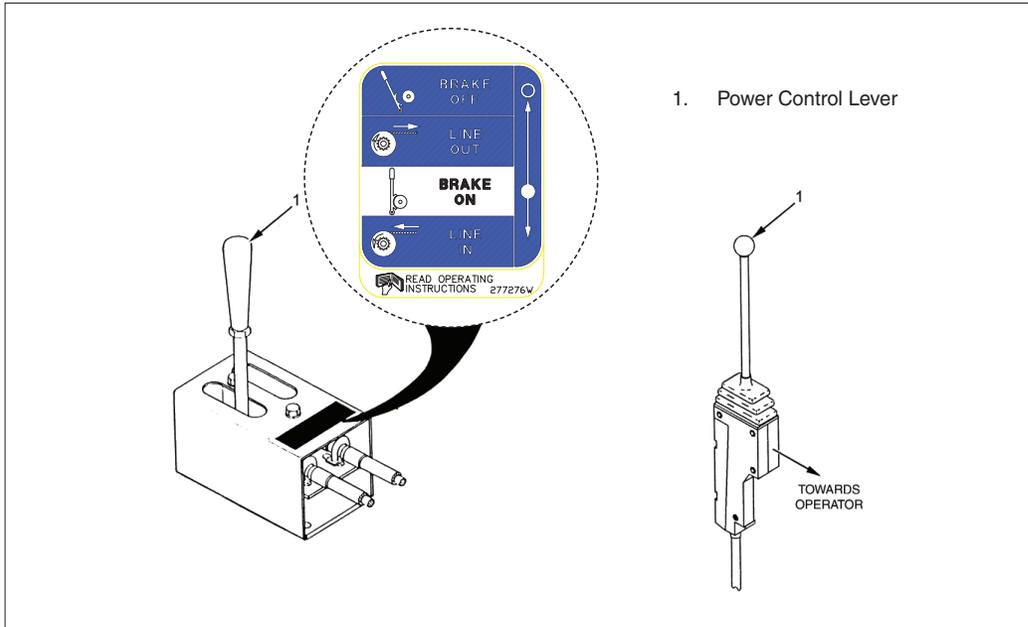
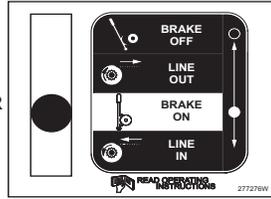


Figure 12 Winch Operator Controls

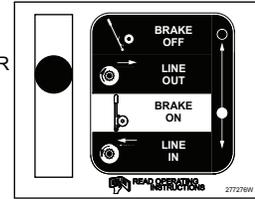
Power Operation

CONTROL LEVER POSITION



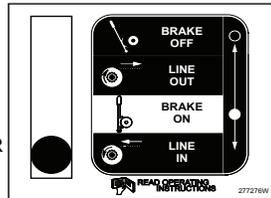
BRAKE-ON position is a neutral position. Neither clutch is applied. The brake is fully applied.

CONTROL LEVER POSITION



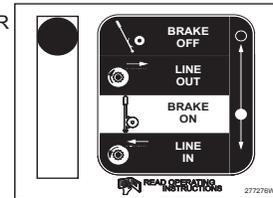
LINE-OUT position applies the **LINE-OUT** clutch and releases the brake. The winch will unwind the wire rope at a speed controlled by the PTO speed of the tractor and the weight of the load.

CONTROL LEVER POSITION



LINE-IN position applies the **LINE-IN** clutch and releases the brake. The winch will wind the wire rope at a speed controlled by the PTO speed of the tractor.

CONTROL LEVER POSITION



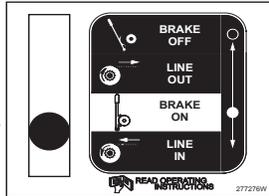
BRAKE-OFF position is a detent position. The clutches are released and the oil pressure has released the brake. This position will permit the wire rope to unwind from the winch against the friction of the clutches, brake, and gear train as the tractor moves away from the load.

Inching is used for a fine control of the winch speed. When the power control lever is slowly moved to a position between **BRAKE-ON** and **LINE-IN** or between **BRAKE-ON** and **LINE-OUT**, inching occurs. The normal adjustment of inching for **LINE-IN** is different from the adjustment for **LINE-OUT**. These adjustments can be modified by changing the overlap pressures of the modulator valves. This change is necessary for some customer operations. The following paragraphs describe the normal adjustments for inching.

WARNING

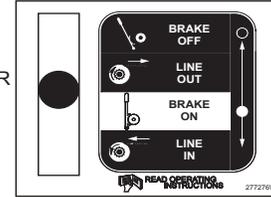
Excessive inching will accelerate clutch and brake wear, and cause winch overheating.

CONTROL LEVER POSITION



Inching (LINE-IN). This operation is used to slowly move a load toward the tractor. The control valve will cause the oil pressure to slowly release the brake and slowly apply the **LINE-IN** clutch. As the brake is released, the clutch takes control and begins to move the load.

CONTROL LEVER POSITION



Inching (LINE-OUT). This operation will release the brake before the **LINE-OUT** clutch is applied. This adjustment permits the weight of the load to unwind wire rope from the winch drum against the resistance of the brake. The operator controls the resistance of the brake by the position of the power control lever. The **LINE-OUT** clutch is not applied until the operator moves the power control lever more toward the **LINE-OUT** position. When the power control lever is moved so that the **LINE-OUT** clutch is engaged, the speed that the drum unwinds is controlled by the rpm of the tractor PTO.

Troubleshooting Chart

PROBLEM	POSSIBLE CAUSE	CORRECTION
Operation is rough or not regular.	Hydraulic oil is too cold.	Put the control lever in the BRAKE-OFF position. Run the engine at 1000 rpm to warm the oil to 80°F before operating the winch.
	Low oil level.	Add hydraulic oil to the correct level.
	Low oil pressure.	See the Service Manual for additional troubleshooting.
	Wrong oil.	Drain oil and replace with correct grade. Refer to Figure 7, Recommended Oil List.
	Control cables need adjustment.	Check for correct adjustment. Make sure the ends of the cables are fastened correctly.

Figure 13 Troubleshooting Analysis Check Chart (To be continued)

PROBLEM	POSSIBLE CAUSE	CORRECTION
Hydraulic oil becomes too hot.	Winch is operated in the BRAKE-OFF position for long periods.	Use the BRAKE-OFF position less. When the BRAKE-OFF position is used, the hydraulic oil flows continuously through the relief valve. See the Service Manual for additional troubleshooting.
	Low oil level.	Add oil.
	Clogged suction strainer.	Check and clean or replace the suction strainer.
	Defective or improperly adjusted oil relief valve.	See the Service Manual for additional troubleshooting.
Brake begins to release before clutch is applied.	Brake is worn or needs adjustment.	See the Service Manual for additional troubleshooting.
	Pressure modulator needs repair or adjustment.	
Winch brake does not apply or release correctly.	Brake is worn or needs adjustment.	See the Service Manual for additional troubleshooting.
	Low oil pressure.	

Figure 13 Troubleshooting Analysis Check Chart (continued)

PROBLEM	POSSIBLE CAUSE	CORRECTION
Clutch does not apply correctly.	Worn or damaged clutch.	See the Service Manual for additional troubleshooting, checks and adjustments.
	Control valve or control cable needs adjustment.	
	Low oil pressure.	
Clutch does not apply correctly at low PTO rpm.	Accumulator not charged.	Check accumulator.
	PTO stalled (0 rpm).	Increase tractor rpm.
	Worn or leaking pump.	Check pump and replace if necessary.
Winch stalls tractor engine during winch shift when tractor RPM is low.	Not enough engine torque.	Increase engine rpm.
	Low accumulator pressure.	See the Service Manual for additional troubleshooting, checks and adjustments.

Figure 13 Troubleshooting Analysis Check Chart (continued)

Operation, Electronic Controls

Checks Before Operation

- Check that the wire rope and hook are not worn or damaged.
- Check that the periodic inspection and maintenance have been done at the recommended operating hours. (See Figure 17 on page 35, Maintenance Schedule.)
- Turn activation switch ON, and check the winch indication light:
 - Light on means filter plugged or oil cold;
 - Light fast blink (1/2 second on and 1 second off) means system fault;
 - Light slow blink (3 second on and 3 second off) means controls not active.

Note: The winch oil should be warm (approximately 80°F) prior to operating a winch with a suspended load.

Checks During Operation

- Check the winch indication light:
 - Light steady on after oil warmup means problem(s) exist.

The following Troubleshooting Chart can be used by the operator to identify a problem with the winch operation. Check for light trouble codes if the chart does not cover the problem. A trained service person is needed for additional troubleshooting and repair that requires disassembly of parts of the winch.

Operating Procedures

The electronic control assembly has one control lever. The control lever is connected to the winch through electrical wiring, an electronic control module, a solenoid actuated control valve, and an activation switch. The activation switch is a locking rocker switch installed near the control lever. When the activation switch is in OFF position, the control lever is disabled. This prevents inadvertent winch operation if the control lever is bumped. The activation switch should be in the OFF position unless the winch is being used. This control lever is used to select one of the following operations:

- **BRAKE-OFF**
- **LINE-OUT**
- **BRAKE-ON**
- **LINE-IN**

BRAKE-OFF is the only detented position on the lever and the operator must pull the control lever to release it from that position. A collar and spring arrangement on the control lever returns the lever from the **LINE-IN** and **LINE-OUT** positions to the **BRAKE-ON** position.

NOTE: The filter LED illuminates briefly at startup. This is part of the normal system check. Consult the troubleshooting guide (see Figure 15) if the light does not turn off.

NOTE: The winch will not operate unless the control lever is centered at startup.



WARNING

Moving the control lever with the engine OFF and the keyswitch ON may result in accumulator discharge and brake release, which will cause loss of load.

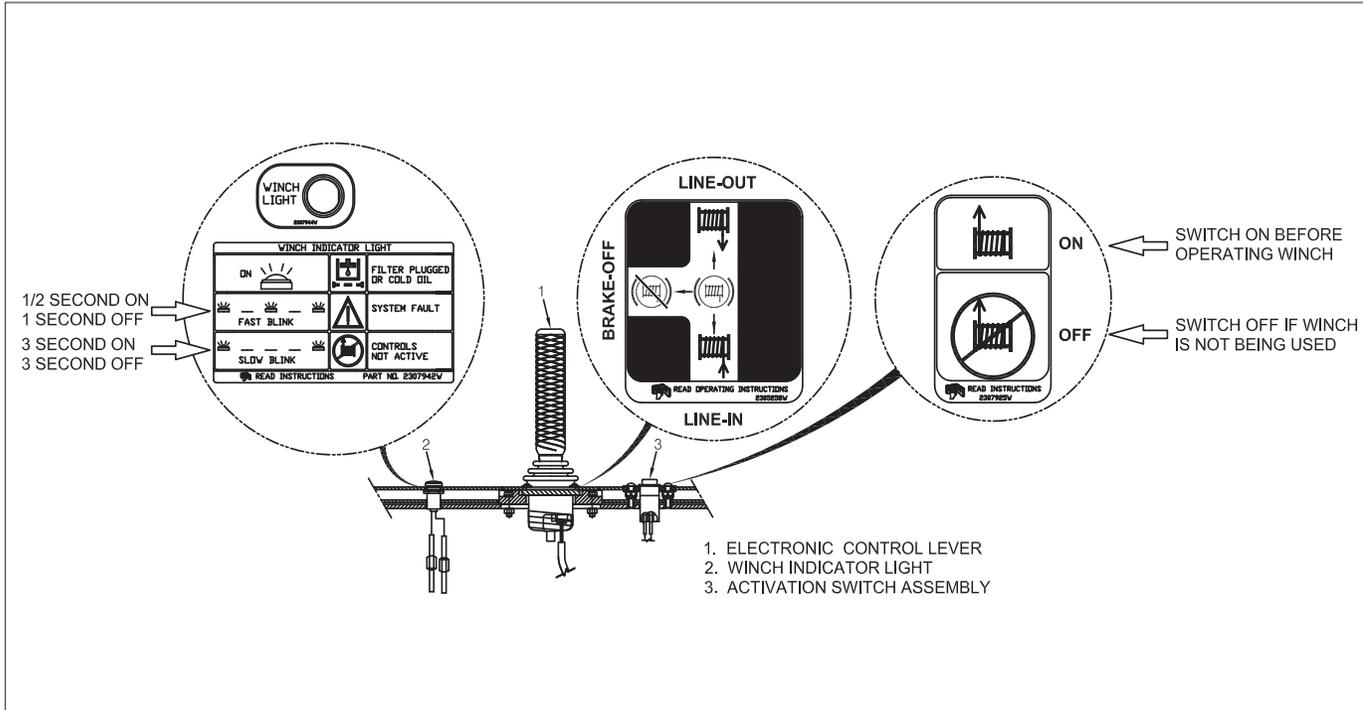
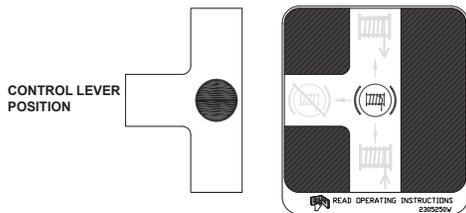
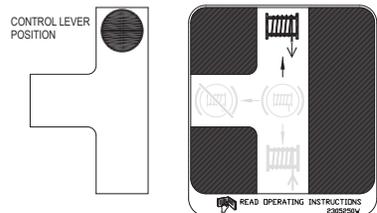


Figure 14 Operator Electronic Controls

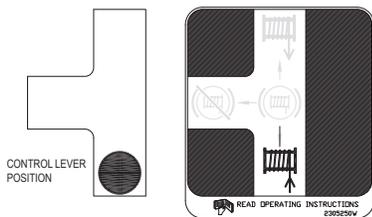
Power Operation



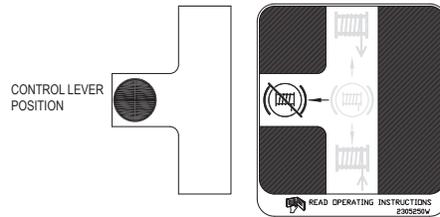
BRAKE-ON is a neutral position. No hydraulic pressure is applied to the brake or the clutches. Springs apply the brake so the winch drum will not rotate.



LINE-OUT position applies the reverse clutch and releases the brake. The winch will unwind the wire rope at a speed controlled by the PTO speed of the tractor and the weight of the load.



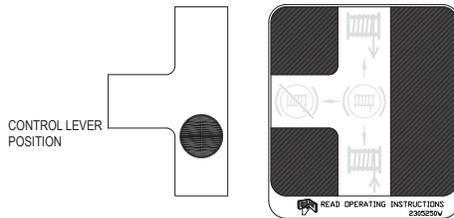
LINE-IN position applies the forward clutch and releases the brake. The winch will wind the wire rope at a speed controlled by the PTO speed of the tractor.



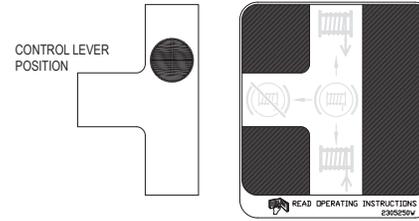
BRAKE-OFF is a detent position. Oil pressure has released the brake but wire rope cannot be pulled from the winch by hand because of friction in the clutches, brake and gear train. **BRAKE-OFF** is used to move the tractor away from the load while keeping the cable tight.

Inching is used for fine control of the winch speed. When the joystick is slowly moved to a position between **BRAKE- ON** and **LINE-IN** or between **BRAKE-ON** and **LINE-OUT**, inching occurs. Any adjustments require computer program changes and may be necessary for some customer operations. Contact Allied Systems Company if inching needs adjustment. The following paragraphs describe the normal procedures for inching.

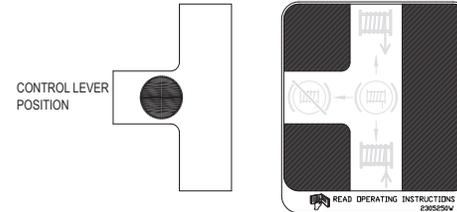
NOTE: Inching will add heat, and accelerate wear of the clutches and brake.



Inching (LINE-IN). This operation is used to slowly move a load toward the tractor. As the control lever is moved gradually towards the **LINE-IN** position, the control valve will cause the oil pressure to slowly release the brake and slowly apply the forward clutch. As the brake is released, the clutch takes control and begins to move the load.



Inching (LINE-OUT). This operation will release the brake as the reverse clutch is applied. This permits the weight of the load, with assistance from the reverse clutch, to unwind wire rope from the winch drum against the resistance of the brake. The operator controls the resistance of the brake by the position of the power control lever.



Inching (BRAKE-OFF). This operation is used to partially release a load. For example, when an operator wants to maintain the position of a load while climbing a slippery slope, partial brake off will allow the load to remain

stationary as the tractor climbs the hill. Brake pressure increases proportionately as the control lever moves toward the fully engaged (detented) **BRAKE-OFF** position, allowing controlled slipping of the brake.



WARNING

BRAKE-OFF inching is not intended for heavy suspended loads, as unintended load fallback can occur.

Troubleshooting Chart

PROBLEM	POSSIBLE CAUSE	CORRECTION
Operation is rough or not regular.	Hydraulic oil is too cold.	Put the control lever in the BRAKE-OFF position. Run the engine at 1000 rpm to warm the oil before operating the winch.
	Low oil level.	Add hydraulic oil to the correct level.
	Low oil pressure	See the Service Manual for additional troubleshooting.
	Wrong oil.	Drain oil and replace with correct grade. Refer to the approved oil list.
Hydraulic oil becomes too hot.	Winch is operated in the BRAKE-OFF position for long periods.	Use the BRAKE-OFF position less. When the BRAKE-OFF position is used, the hydraulic oil flows continuously through the relief valve. See the Service Manual for additional troubleshooting.
	Low oil level.	Add oil.
	Clogged suction strainer/filter.	Check and clean or replace the suction strainer.
	Defective or improperly adjusted oil relief valve.	See the Service Manual for additional troubleshooting.

Figure 15 Troubleshooting Analysis Check Chart (To be continued on next page)

PROBLEM	POSSIBLE CAUSE	CORRECTION
Winch brake does not apply or release correctly.	Brake is worn.	See the Service Manual for additional troubleshooting.
	Low oil pressure.	
Clutch does not apply correctly.	Worn or damaged clutch.	See the Service Manual for additional troubleshooting, checks and adjustments.
	Control valve failure.	
	Low oil pressure.	
Brake begins to release before clutch is applied.	Brake is worn.	See the Service Manual for additional troubleshooting.
	Low oil pressure.	
Clutch does not apply correctly at low PTO rpm.	Accumulator not charged.	Check accumulator.
	PTO stalled (0 rpm).	Increase tractor rpm.
Noisy buzz emanating from winch.	Air in relief cartridge.	This is not a detrimental condition. Noise may be intermittent.
Filter LED blinking.	Control module fault.	See the Service Manual for more information.
Filter LED illuminated.	Filter is clogged.	Change filter and oil.
	Cold oil is causing filter bypass.	Monitor LED condition. If LED remains illuminated after normal operating temperature has been reached, change oil and filter.
	Electrical short circuit.	Check appropriate section of wiring harness.

Figure 15 Troubleshooting Analysis Check Chart (continued)

PROBLEM	POSSIBLE CAUSE	CORRECTION
Winch will not operate in any function.	Control lever off-center at startup.	Return control lever to neutral position and attempt function again.
	Control module not powered.	Check fuse & replace if necessary.
	Control lever DC-DC converter malfunction.	Replace converter if the red & green LEDs are not lit.
	Control module fault.	Check status indicator on module. Red LED should not be illuminated. If it is, consult factory.
	Coil open or shorted.	Check module output LEDs. Flashing LED indicates open or shorted circuit. Check wiring harness continuity. Replace faulty coil. Note: A working coil will have 15 to 50Ω resistance and will be magnetized when energized.
	Cartridge valve plugged.	Replace cartridge if pressure at appropriate gage port is not close to relief pressure with coil energized.
	Loose or worn connector.	Check and replace as needed.
	Relief pressure not being reached.	Check bypass coil & cartridge, and/or replace faulty parts.

Figure 15 Troubleshooting Analysis Check Chart (continued)

PROBLEM	POSSIBLE CAUSE	CORRECTION
Control lever will not detent in BRAKE-OFF .	Detent mechanism worn or broken.	1. Replace control lever assembly.
Control lever does not return to neutral when released.	Defective return spring, worn detent parts, or lubricant evacuation.	2. Lubricate detent pin (see Service Manual for procedure). 3. Remove knob and adjust detent force (see Service Manual for procedure).
	Control lever is in detented position (BRAKE-OFF).	Move control lever out of detent.
Winch does not engage and tractor engine draws down in FWD or REV.	Plugged brake cartridge.	Replace cartridge.
	Faulty brake coil.	Replace coil.
	Open or shorted brake circuit.	Check wiring harness. See “winch will not operate...” above.
Winch does not engage and/or load rolls out in FWD or REV.	Plugged FWD or REV cartridge.	Replace cartridge.
	Faulty FWD or REV coil.	Replace coil.
	Open or shorted FWD/REV circuit.	Check wiring harness. See “winch will not operate...” above.

Figure 15 Troubleshooting Analysis Check Chart (continued)

Maintenance

The Maintenance Schedule is a program that includes periodic inspection and lubrication. Use the operating time

on the hour meter of the tractor to find the maintenance time for the winch.

Maintenance Points

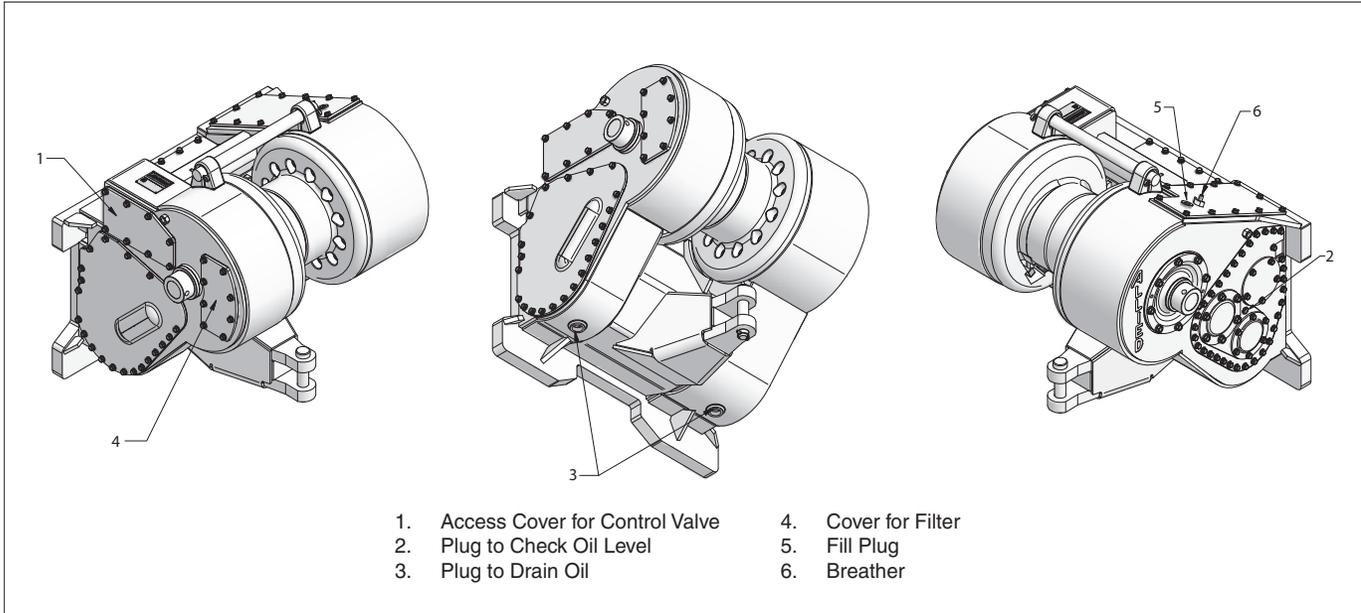


Figure 16 Maintenance Points

Maintenance Schedule

INTERVAL	PROCEDURE OR QUANTITY	SPECIFICATION
50 hours or weekly	Check oil level at plug (item 2). Add oil as necessary through fill plug (item 5). Do not operate tractor when checking the oil level.	See Figure 7 – Recommended Oil List.
	Check winch control lever.	Refer to Control lever Detent Pin Lubrication and Adjusting Control lever Detent Force on page 39.
	Check oil filter light, if continuously illuminated with winch warm, replace the filter	Replace the filter. ^{*a}
	Clean the breather (item 6).	Remove debris around breather.
	Lubricate the rollers on the fairlead assembly, if the winch is so equipped.	Use multi-purpose grease with 2-4% molybdenum disulfide.
250 hours or monthly ^b	Check hydraulic system pressure	See Service Manual for procedure.
	Check e-Controls program	Ensure the e-Controls program installed is correct. Use Software Updating Kit 2307755W. Refer to: <ul style="list-style-type: none"> eControls Utility Instructions^{*c} Programmed Control Module Selection Charts^{*d}
<p>*a NOTE: Clean the oil strainer screen and change the oil filter after the first 250 hours on new and rebuilt winches.</p> <p>*b Monthly checks are suggested for units working on a steep slope.</p> <p>*c Available at http://www.alliedsystems.com/pdf/Winch/Manuals/599035W.pdf</p> <p>*d Available at http://www.alliedsystems.com/pdf/Winch/chart/2305227W.pdf</p>		

Figure 17 Maintenance Schedule

INTERVAL	PROCEDURE OR QUANTITY	SPECIFICATION
500 hours or every 3 months	Clean the oil suction screen and magnets. ^{*a}	Use a new gasket between the cover and the suction tube.
	Clean the breather in the fill plug.	Clean the breather with solvent if needed.
	Replace the filter. ^{*a}	See the Parts Manual for filter element and cover gasket. When replacing, be sure to lubricate filter seal ring between element and filter head.
1000 hours or every 6 months	Change the hydraulic oil. Drain oil from plug (item 3). Clean the oil strainer. Through fill plug (item 5), add 30 gallons (114 liters) ^{*e} . Check the oil level at item 2.	See Figure 7 – Recommended Oil List.
<p>^{*a} NOTE: Clean the oil strainer screen and change the oil filter after the first 250 hours on new and rebuilt winches.</p> <p>^{*e} Amount of oil may vary slightly with tractor.</p>		

Figure 17 Maintenance Schedule (continued)

Control Cable Adjustments

A single control cable connects the power control lever to the hydraulic control valve spool. Check the operation of the power control lever to make sure it moves smoothly and will return to the **BRAKE-ON** position. The power control lever will stay in **BRAKE-OFF** when pushed into DETENTED position. Cable adjustment is not necessary except to ensure full spool travel. To adjust control levers depicted in Figure 18 and Figure 19, proceed as follows:

1. Ensure that the cable bracket at winch end of control cable is securely attached to the winch housing.
2. Check the position of the control lever with control valve in **BRAKE-ON**. The lever should be approximately vertical. If not, loosen nuts on U-Bolt that clamps the control cable to the control lever housing. Move U-Bolt up or down the elongated slots to improve position of control lever. Tighten nuts securely.
3. Move control lever to **LINE-IN** and **BRAKE-OFF** positions and ensure that the lever holds in the **BRAKE-OFF** position. Check to ensure that the control lever does not hit the housing in either position. If interference is found, repeat step 2.

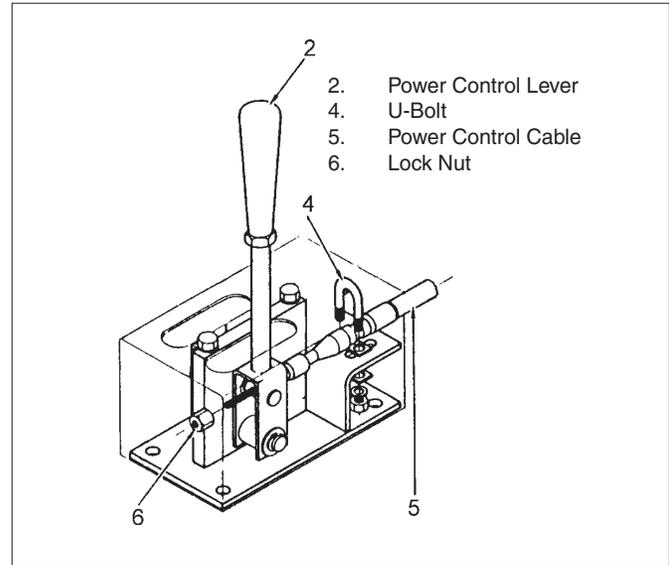


Figure 18 Control Cable Adjustments

To adjust the control lever depicted in Figure 20, proceed as follows:

1. Adjust control lever position so full valve spool stroke is attained by screwing cable in or out of tall nut.

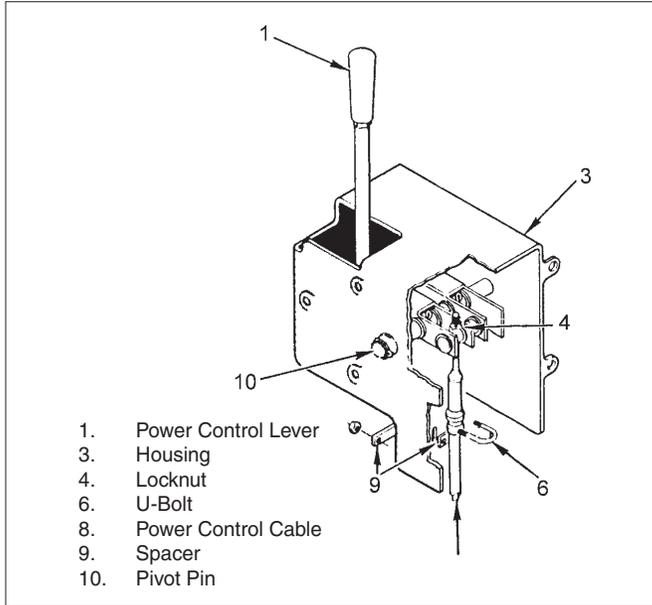


Figure 19 Control Cable Adjustments
(This Configuration Last Used in 1993)

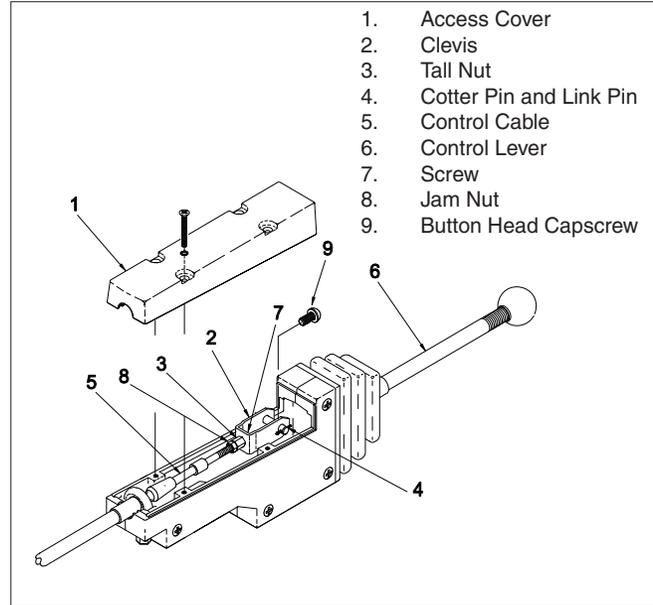


Figure 20 Control Cable Adjustments

2. Install cable adapter in groove on control lever cover and attach cover.
3. Check for complete lever travel. Repeat steps 1 and 2 if adjustment is still incorrect.

Control Lever Detent Force Adjustment



CAUTION

Make sure vehicle engine is OFF before performing any of these procedures.



CAUTION

Removing the Detent Plate from the control Lever may cause a calibration error, which will prevent proper winch response.

1. Remove screw on control lever knob. Lift knob and boot from control lever.
2. Using an Allen wrench, turn the setscrew inwards to increase detent force, or outwards to decrease detent force.
3. Move control lever from **BRAKE-ON** to **BRAKE-OFF** and back again. If detent force is still unsatisfactory, adjust setscrew again.

NOTE: Detent force is different with knob/handle installed, since the compressed return spring works against the detent force.

4. Place boot and knob over control lever assembly, ensuring boot is securely installed, then install knob/handle screw.

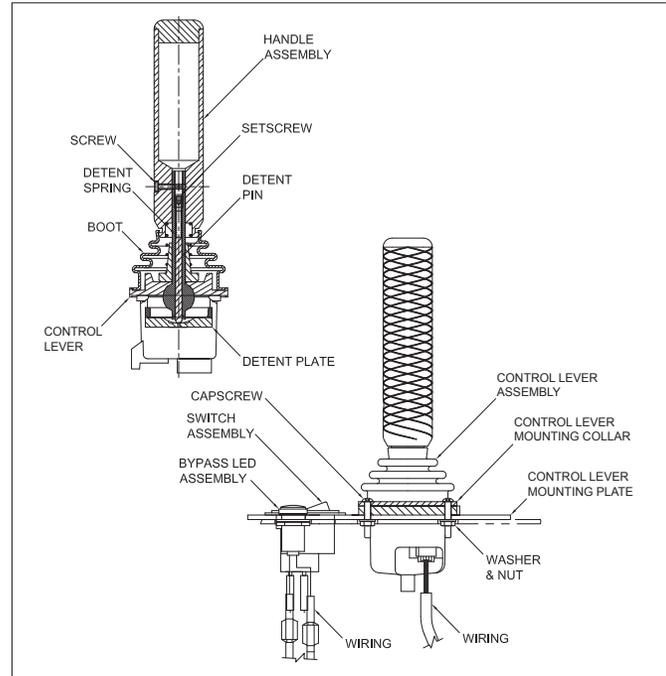
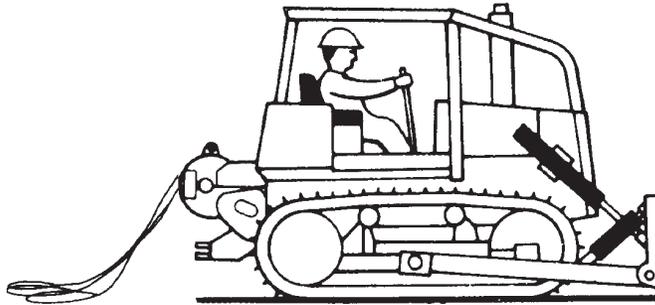
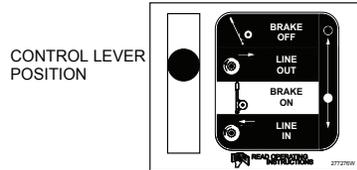


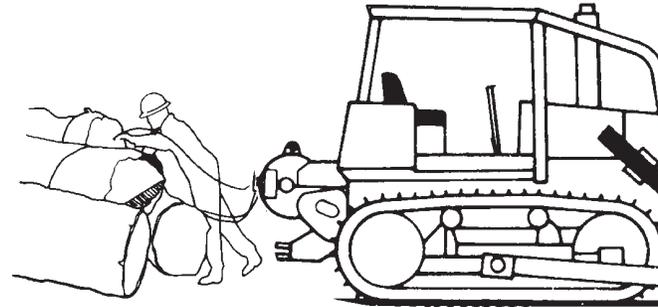
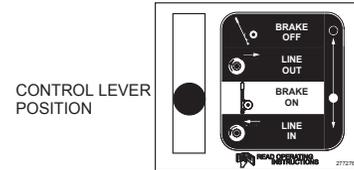
Figure 21 Control Lever

Operating Techniques

Tractor or Skidder Operation

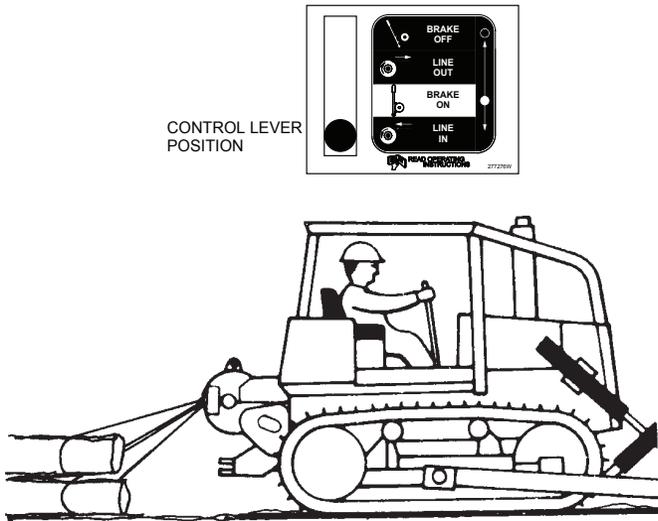


Step 1. The tractor or skidder is moved to an area where a load will be connected. The operator moves the control lever to the **LINE-OUT** position so that the wire rope can be pulled from the winch drum.

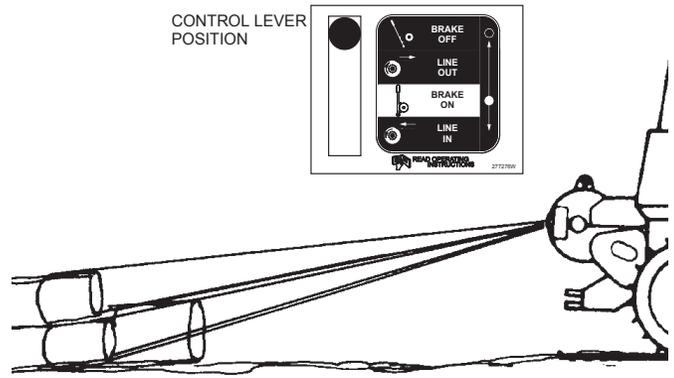


Step 2. A load (logs) is connected to the wire rope. The operator moves the control lever to the **BRAKE-ON** position.

Operating Techniques, Power Controls

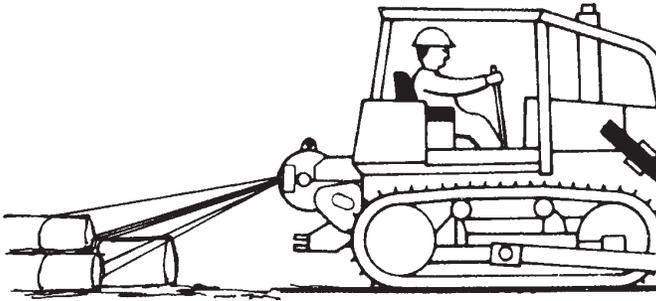
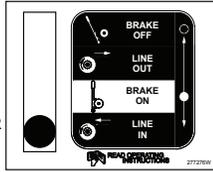


Step 3. The operator can move the control lever to the **LINE-IN** position. If the load is less than approximately 75% of the maximum line pull, the operator can begin traveling with the vehicle at the same time. The winch will wind the load toward the vehicle as it travels. If the load is nearly the capacity of the line pull, the operator must move the load close to the vehicle before beginning to travel.



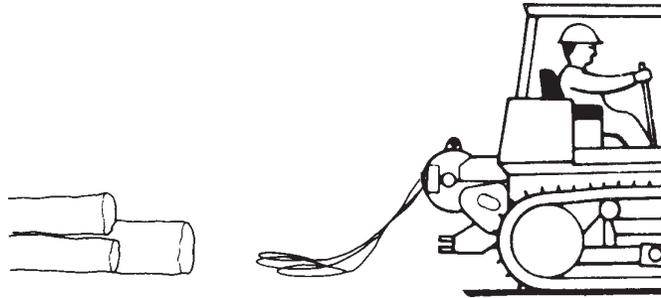
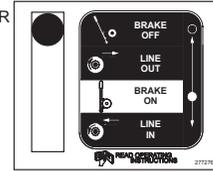
Step 4. If the tractor or skidder must travel through an area with bad traction conditions, the operator can move the control lever to the **BRAKE-OFF** (DETENT) position. This procedure will permit the vehicle to move through the bad traction area while keeping the wire rope tight without pulling the load at the same time.

CONTROL LEVER POSITION



Step 5. When the vehicle is on firm ground, the operator can move the control lever to **LINE-IN** to pull the load toward the vehicle.

CONTROL LEVER POSITION



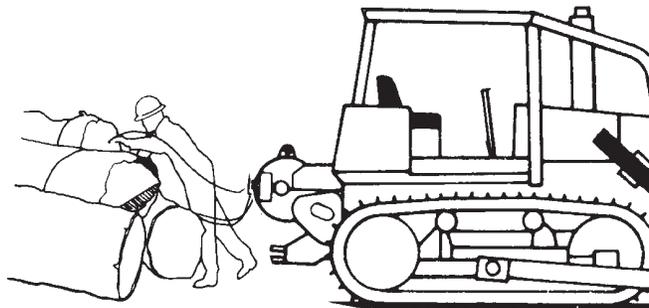
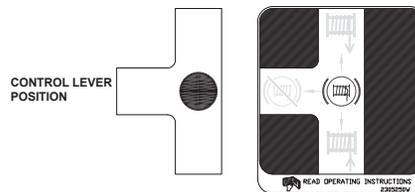
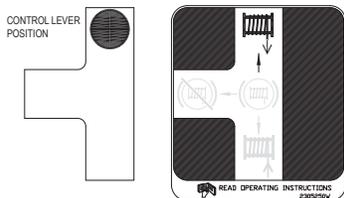
Step 6. When the operator wants to disconnect from the load, the vehicle is stopped and the control lever is moved to the **BRAKE-OFF (DETENT)** or **LINE-OUT** position to loosen the wire rope. The wire rope is then disconnected from the load.

Operating Techniques, Power Controls

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Operating Techniques

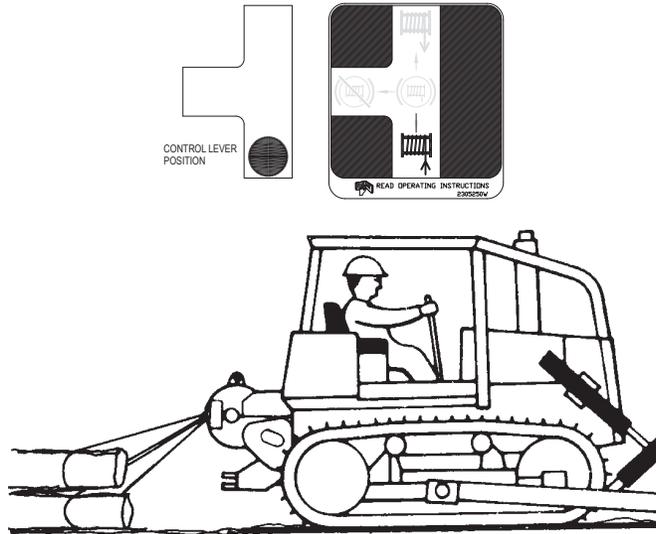
Tractor or Skidder Operation



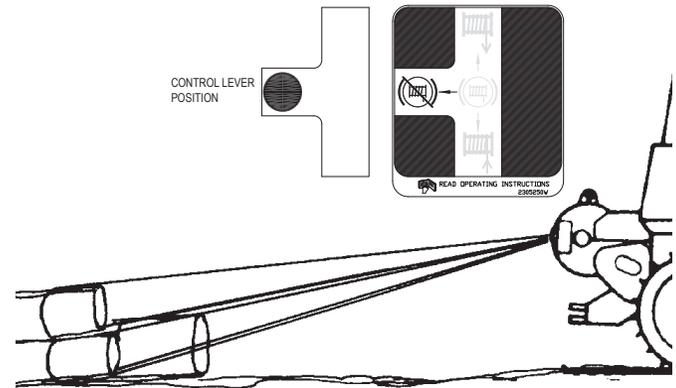
Step 1. The tractor or skidder is moved to an area where a load will be connected. The operator turns on the activation switch, and moves the control lever to the **LINE-OUT** position so that the wire rope can be pulled from the winch drum.

Step 2. A load (logs) is connected to the wire rope. The operator moves the control lever to the **BRAKE-ON** position.

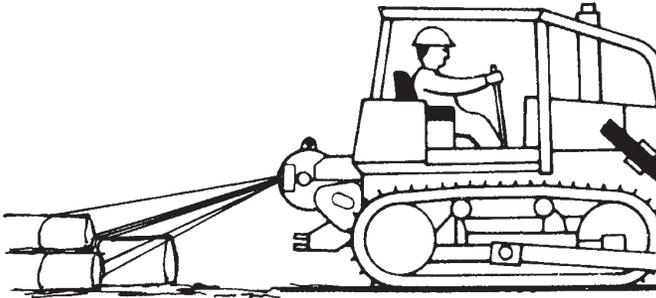
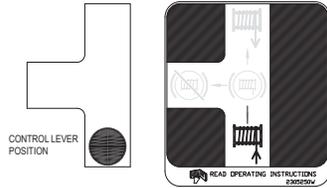
Operating Techniques, Electronic Controls



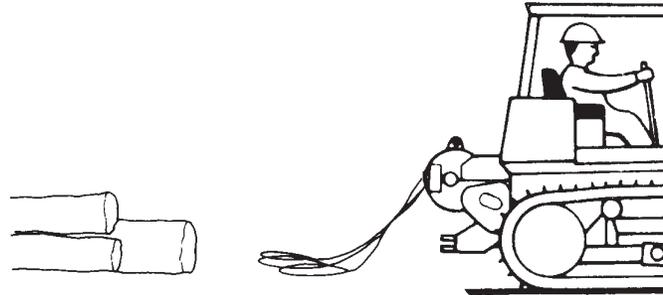
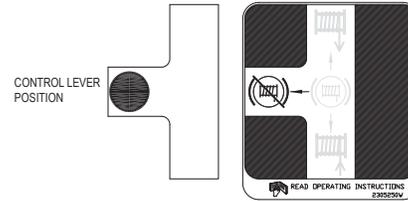
Step 3. The operator can move the control lever to the **LINE-IN** position. If the load is less than approximately 75% of the maximum line pull, the operator can begin traveling with the vehicle at the same time. The winch will wind the load toward the vehicle as it travels. If the load is nearly the capacity of the line pull, the operator must move the load close to the vehicle before beginning to travel.



Step 4. If the tractor or skidder must travel through an area with bad traction conditions, the operator can move the control lever to the **BRAKE-OFF (DETENT)** position. This procedure will permit the vehicle to move through the bad traction area while keeping the wire rope tight without pulling the load at the same time.



Step 5. When the vehicle is on firm ground, the operator can move the control lever to **LINE-IN** to pull the load toward the vehicle.



Step 6. When the operator wants to disconnect from the load, the vehicle is stopped and the control lever is moved to the **BRAKE-OFF (DETENT)** or **LINE-OUT** position to loosen the wire rope. The wire rope is then disconnected from the load. At the end of the winch usage period, turn off the activation switch.

Operating Techniques, Electronic Controls

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How to Move a Disabled Vehicle

A. A tractor or skidder often travels in areas where traction conditions are bad. A vehicle equipped with a winch can be used to remove itself from mud or other areas where it cannot move using only the drive wheels or tracks. See Figure 22. Use the following procedure:

1. Fasten the winch wire rope to a structure, tow bar of another vehicle, or a tree that has enough strength for the line pull. The wire rope must be in a direction that is approximately parallel (preferably slightly upward) to the direction of travel of the vehicle.
2. Use the throttle to set the engine speed at a power level to operate both the winch and the tracks or drive wheels. (Operator experience is required, because the winch can use most of the engine power in some vehicles.)
3. Use the **LINE-IN** control lever to tighten the winch wire rope. When the wire rope is tight, put the vehicle transmission in **REVERSE*** and engage the tracks or drive wheels. Use the power from the engine to the winch and tracks together to remove the vehicle from the bad area.

4. If the vehicle travels faster than the winch winds the wire rope, disengage the transmission until the winch wire rope is tightened again.

*** NOTE: If the tracks or drive wheels on the vehicle stop turning, the torque converter in the transmission has stalled and the winch will stop also. If this happens, put the vehicle in neutral to operate the winch.**

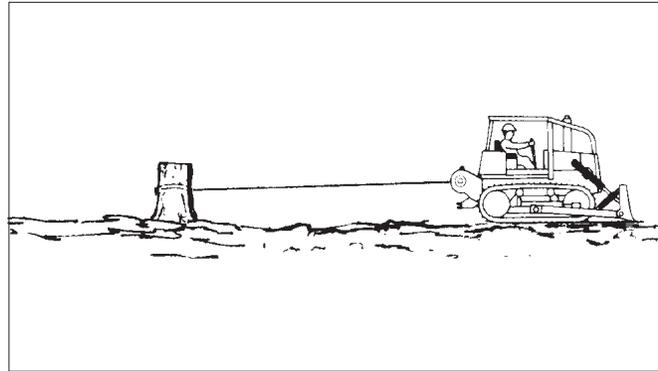


Figure 22 Moving a Disabled Vehicle (Step A)

Operating Techniques, General

B. A tractor or skidder equipped with a winch can be used to pull another vehicle from mud or other areas where it cannot move using only the drive wheels or tracks. See Figure 23. Use the following procedure:

WARNING

Use extra care if the traction conditions are bad or if the vehicles are on a slope. Bad traction conditions can cause the disabled vehicle or the tractor to slide. A slope can require additional distance to stop the vehicles.

Make sure the wire rope and tow chain have the capacity to do the job. If the disabled vehicle does not have a tow pin or other equipment for towing, carefully fasten the tow chain around the axle of the disabled vehicle. Make sure the tow chain is fastened so that the chain will not cause injury to people or damage to the vehicle.

An operator must be on the disabled vehicle to operate the steering and brakes when it is towed.

1. Fasten the winch wire rope to the tow bar of the other vehicle. The wire rope must be in a direction that is approximately parallel to the direction of travel of the vehicle. Apply the brakes on the tractor or skidder. Use the throttle to set the engine speed at a power level to operate the winch. (Operator experience is required, because the winch can use most of the engine power in some vehicles.)
2. Use the **LINE-IN** control lever to tighten the winch wire rope. When the wire rope is tight, use the power from the engine to the winch to pull the vehicle from the bad area. If the disabled vehicle moves under its own power, keep the towing wire rope tight so that the wire does not pass under the drive wheels or tracks of the vehicle being towed.

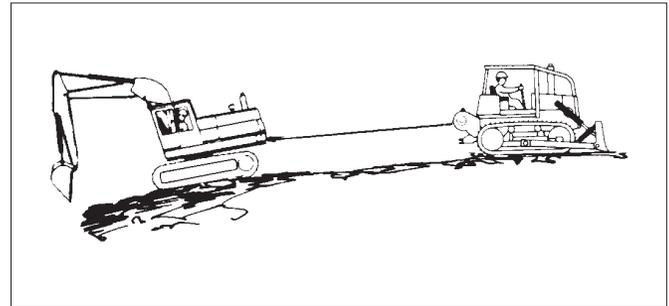


Figure 23 Moving a Disabled Vehicle (Step B)

Working on a Steep Slope



WARNING

The winch and the tractor must be in good condition for the following procedures. Make sure that the required maintenance has been done on the tractor and winch. Only use a wire rope that is in good condition. Make sure the wire rope and winch have enough capacity for the load. Make sure the anchor for the wire rope has enough capacity for the load. A failure of the tractor, winch, wire rope, or anchor system while working on a steep slope can cause death or injury and loss of equipment.

Tractor is Down the Slope (See Figure 24).

Sometimes a tractor must work on a steep slope and can use a winch to give assistance when moving on the slope. Fasten the winch wire rope to the drawbar of another tractor, a structure or a tree that has enough strength to hold the tractor on the slope.

A. Moving down the slope:

1. Set the throttle on the tractor for the required engine speed.
2. Put the tractor in **FORWARD**. At the same time, move the winch control lever to a position between **BRAKE-ON** and **LINE-OUT (inching)** to control the speed of the tractor down the slope.

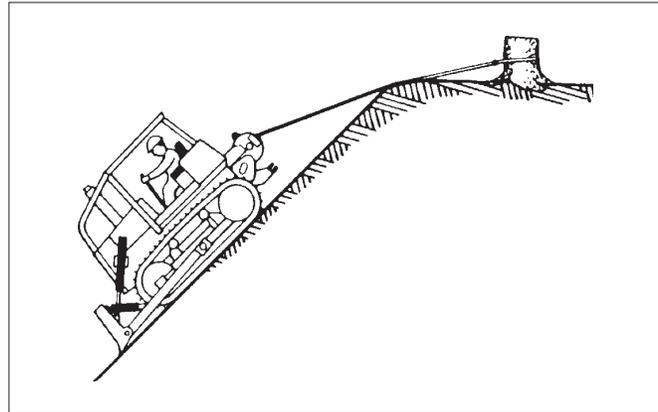


Figure 24 Working on a Steep Slope

Operating Techniques, General

B. Moving up the slope:

1. Set the throttle on the tractor for the required engine speed.
2. Use the **LINE-IN** control lever to tighten the winch wire rope. When the wire rope is tight, put the tractor transmission in the **FIRST** speed range and **REVERSE** and engage the tracks or drive wheels. At the same time, move the control lever on the winch to **LINE-IN**.
3. Use the steering on the tractor to keep the travel of the tractor in line with the winch wire rope.
4. Fully engage the **LINE-IN** clutch as necessary and use minimal inching to prevent additional heat and wear. Do not permit the winch wire rope to loosen and pass under the drive wheels or tracks of the tractor.

Other Equipment is Down the Slope (See Figure 25).

In this operation, the tractor and winch are on stable ground and other equipment is working on a steep slope. The winch is used to give additional control to the equipment working on the steep slope. A winch with a fairlead option is recommended for this operation if alignment of the other equipment with the winch and tractor is a problem.

Make sure the tractor and winch are on stable ground and will not slide when the load is applied. Align the tractor and winch with the load. Apply the parking brake on the tractor.

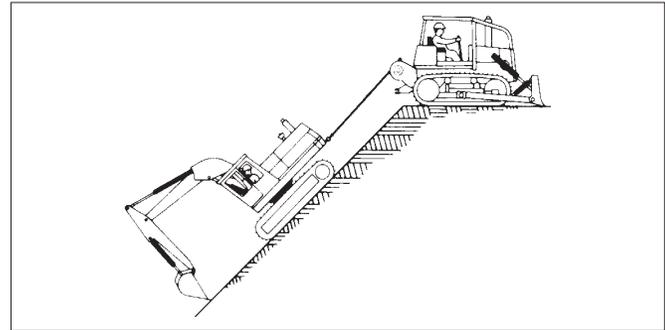


Figure 25 Other Equipment on a Steep Slope



A. Lowering the equipment on the slope:

1. Set the throttle on the tractor for the required engine speed. Operator experience is required for this operation so that the load is carefully controlled.
2. Keep the winch wire rope tightened between the tractor and the equipment being lowered down the slope. Use the control lever in the **LINE-OUT** position to control the lowering of the equipment down the slope.
3. Move the control lever between **LINE-OUT** and **BRAKE-ON** if inching is required. Use minimum inching to prevent additional heat and wear.

B. Raising the equipment on the slope:

1. Set the throttle on the tractor for the required engine speed. Operator experience is required for this operation so that the load is carefully controlled.
2. Keep the winch wire rope tightened between the tractor and the equipment being lowered down the slope. Use the control lever in the **LINE-IN** position to control the lowering of the equipment down the slope.
3. Move the control lever between **LINE-IN** and **BRAKE-ON** if inching is required. Use minimal inching to prevent additional heat and wear.
4. Keep the equipment being raised in alignment with the winch and tractor. Do not permit the winch wire rope to loosen and pass under the drive wheels or tracks of the tractor.

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Operational Differences, Optional Equipment

Integral Arch

When using an integral arch, the wire rope is routed over a raised horizontal roller and through a set of smaller vertical side rollers and an upper horizontal roller. This enables the winch to pull upwards versus horizontally on loads. In this way the load can be lifted slightly to reduce drag due to ground contact. The side and top rollers act as fairleads to protect the wire rope from damage and from damaging the frame.

Because of the line of action of the wire is higher than normal, the tipping moment applied to the tractor is increased, and the tractor will tip backwards at significantly lower line pulls. The operator must exercise care to not pull more than the tractor can handle stably, especially on side slopes.

Line pulls through the arch also exert higher loads on the fasteners holding the winch to the tractor. For this reason, the wire rope diameter is limited.

Fairlead

A fairlead consists of a set of top and bottom horizontal rollers and side rollers that the wire rope is fed through. With this attachment, if the direction of line pull is not within the small window of the fairlead, then the wire rope is pulled across one of the fairlead rollers instead of across the frame, thus protecting both the frame and the wire rope from excessive wear.

Stability of the tractor is affected somewhat by the fact that the fairlead rollers are more rearward than the drum, thus putting slightly more moment on the tractor during side pulls. The operator must take care to assure stability on slopes.

Operational Differences, Optional Equipment

Drawbar

Do not use the drawbar as an anchor point for a multipoint (over puller) line from the winch. Loads applied to the drawbar are transmitted to the bolts holding the winch to the tractor. Standard integral drawbars are designed to handle pulls of 66% of winch rated capacity; bolt on drawbars are 60%. Optional heavy duty and extended drawbars are available which increase the capacity of the drawbar and/or move the pin farther back so it is not under the winch drum.

Optional Gear Ratios

Lower speed ratios allow better operator control of line speed. They may also allow the winch to pull in excess of wire rope or winch rated capacity. They do not increase the durability or damaging load limit of the winch. Line pulls in excess of rated capacity will dramatically reduce the life of winch components.



Notes

NO MATTER HOW YOU SAY IT ...

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La Seguridad Paga
Betriebssicherheit Macht Sich Bezahlt
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Veiligheid Voor Alles
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Essere Sicuro Paga
Segurança Paga
Sikkerhet Først
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