



OPERATING MANUAL

W3C
HYSTER

POWER CONTROLLED
SKIDDER WINCH

**THIS MANUAL MUST BE WITH THE VEHICLE
ON WHICH THIS WINCH IS INSTALLED**

Winch Model _____



Serial Number _____

Delivered _____

Installed _____

Special Equipment or Attachments



 Manufactured by Allied Systems Company
 Trademark under license from Hyster Company

Printed in USA (9-92)



FOREWORD

The safe and efficient operation of a winch requires skill and alertness on the part of the operator. To develop the skill 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 **WARNINGS** and **OPERATION 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.

NOTE: For repairs and overhaul, contact your Allied/Hyster winch dealer. If you maintain your own equipment, Service and Parts manuals are available for your specific winch.



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WARNING

WARNING

FAILURE TO FOLLOW THESE INSTRUCTIONS CAN CAUSE SERIOUS INJURY OR DEATH.

AUTHORIZED, TRAINED OPERATOR ONLY.

KNOW THE EQUIPMENT: Know the operating, inspection, and maintenance instructions in this **Operating Manual**. Do not operate the winch unless the vehicle is equipped with a screen to protect the operator if the cable breaks.

INSPECT THE WINCH BEFORE USE: Make sure that the controls and instruments operate correctly. Report the need for repairs immediately. Do not work with a damaged or worn cable. Do not use a winch that needs repairs. If the cable and ferrule must be removed from the drum, make sure the end of the cable and ferrule are controlled when the ferrule is released. The end of the cable can suddenly move from the drum like a compressed spring when the ferrule is released and cause an injury.

PROTECT YOURSELF: 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 do maintenance on a machine that is in motion. Stay in the operator's seat. Do not stand on the vehicle when operating the winch.

KEEP A CLEAR WORK AREA: Avoid winch operation near people or other machines. Never stand nor permit others to stand in the bight (loop) of a cable. Do not stand nor permit others to be near the winch or cable when there is tension on the cable. Observe jobsite rules. Be in complete control at all times.

USE COMMON SENSE: 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 cable 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 and 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.

WARNING

Indicates a condition that can cause personal injury!

CAUTION

Indicates a condition that can cause property damage!



INTRODUCTION

GENERAL

This **Operating Manual** contains basic information necessary for the operation and maintenance of the W3C Winch. Make sure the instructions provided here are understood and followed.

How the Winch Operates

A winch is normally installed on a skidder to:

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

The winch has a hydraulic clutch that is similar to a hydraulic (powershift) transmission. Most skidders have a power take-off (PTO) that is used to connect the power from the engine to the winch. When the engine is operating, a hydraulic pump takes hydraulic oil from the sump and sends it to the hydraulic control valve. The hydraulic control valve controls the operation of the winch.

The PTO is connected to the input shaft of the winch. The input shaft turns the input gear of the clutch. When the clutch is applied, power is transmitted by the gears to the drum. As the drum rotates, cable is pulled into the winch.

The W3C winch has a power forward (**LINE IN**) function. The **BRAKE OFF** and **FREESPOOL** functions permit the cable to be pulled from the drum.

The power through the winch to the drum for the cable is controlled by a **LINE IN** clutch. When the **LINE IN** clutch is applied, the drum rotates to pull the cable into the winch.

When the control lever is in the **BRAKE ON** position, an oil brake is automatically applied by two springs to hold the drum in its position. If the control lever is moved to apply the clutch, the brake is released by the same oil pressure that applies the clutch.

The winch has a gear assembly inside the drum. The inner gear can slide on splines and is engaged with the outer gear by a spring. When the control lever is in the **FREESPOOL** position the inner gear is disengaged from the outer gear by

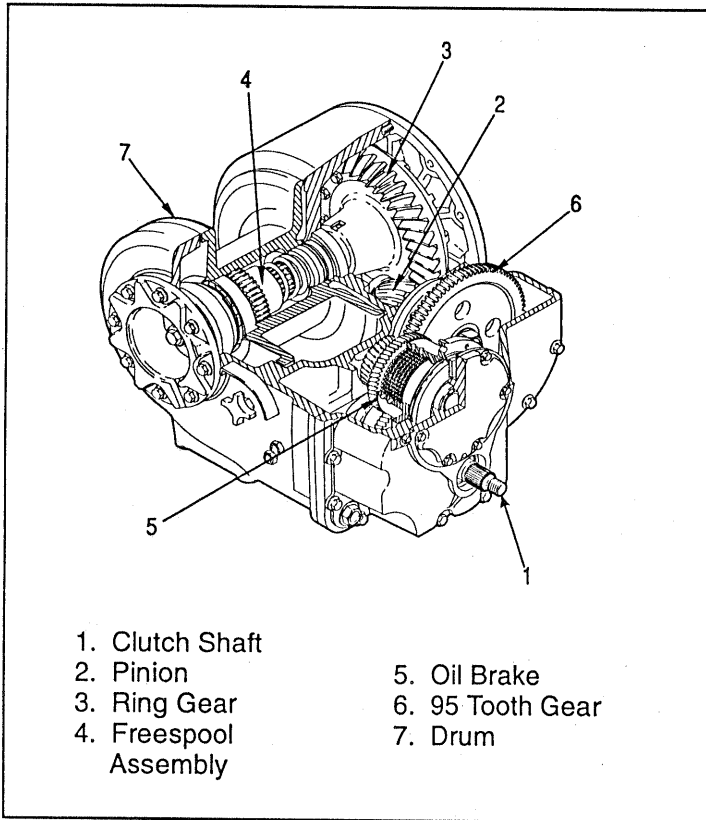


Fig. 1. Gear Train Components, W3C Skidder Winch

a hydraulically actuated piston. The drum rotates freely when the gear assembly is disengaged.

The W3C winch has a maximum line pull of 41,200 lbs., rated at 30,000 lbs.

Nameplate

The rated capacity for the winch, as it is equipped, is shown on the nameplate. Each winch is shipped from the factory with a nameplate as shown in Fig. 2. If the nameplate is missing, or the cable does not match the information on the nameplate, do not operate the winch until its capacity is known and a new nameplate is installed. Each winch must be operated within its rated capacity as shown on the nameplate.

INTRODUCTION

Cable Selection

This winch can have a variation of cable (wire rope) sizes installed by the user. The maximum cable size is shown on

the nameplate. The winch can generate a linepull greater than the strength of the cable. The user must be careful to select a cable that has enough strength and length for the job.

WARNING

During operation of the winch, the operator must know or estimate the line pull and make sure that the anticipated line pull is within the capacity of the winch and the specifications of the cable installed on the drum. A broken cable under high tension can return suddenly in the direction of the winch and cause injury and damage.

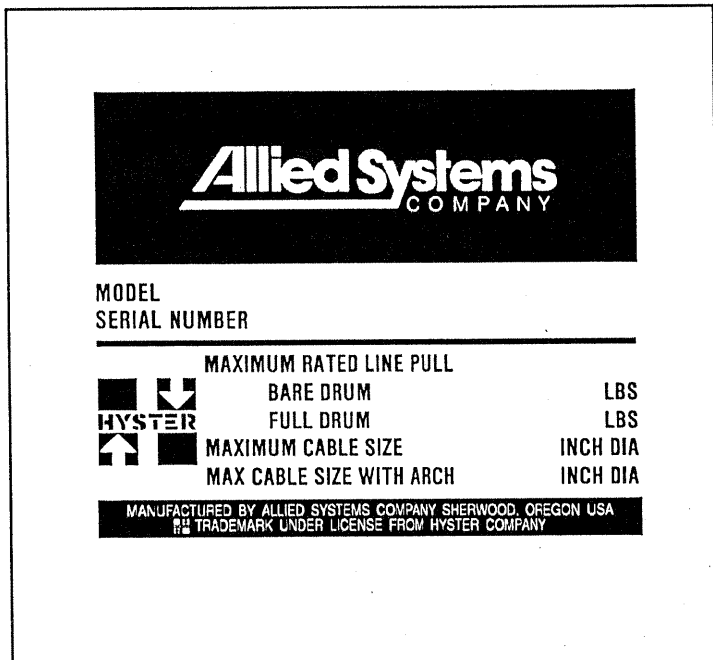


Fig. 2. Nameplate

CABLE DIAMETER	DRUM CAPACITY
5/8 in (16 mm)	227 ft (69 m)
3/4 in (19 mm)	160 ft (49 m)

Table 1 Drum Line Capacities for Evenly Spooled Cable

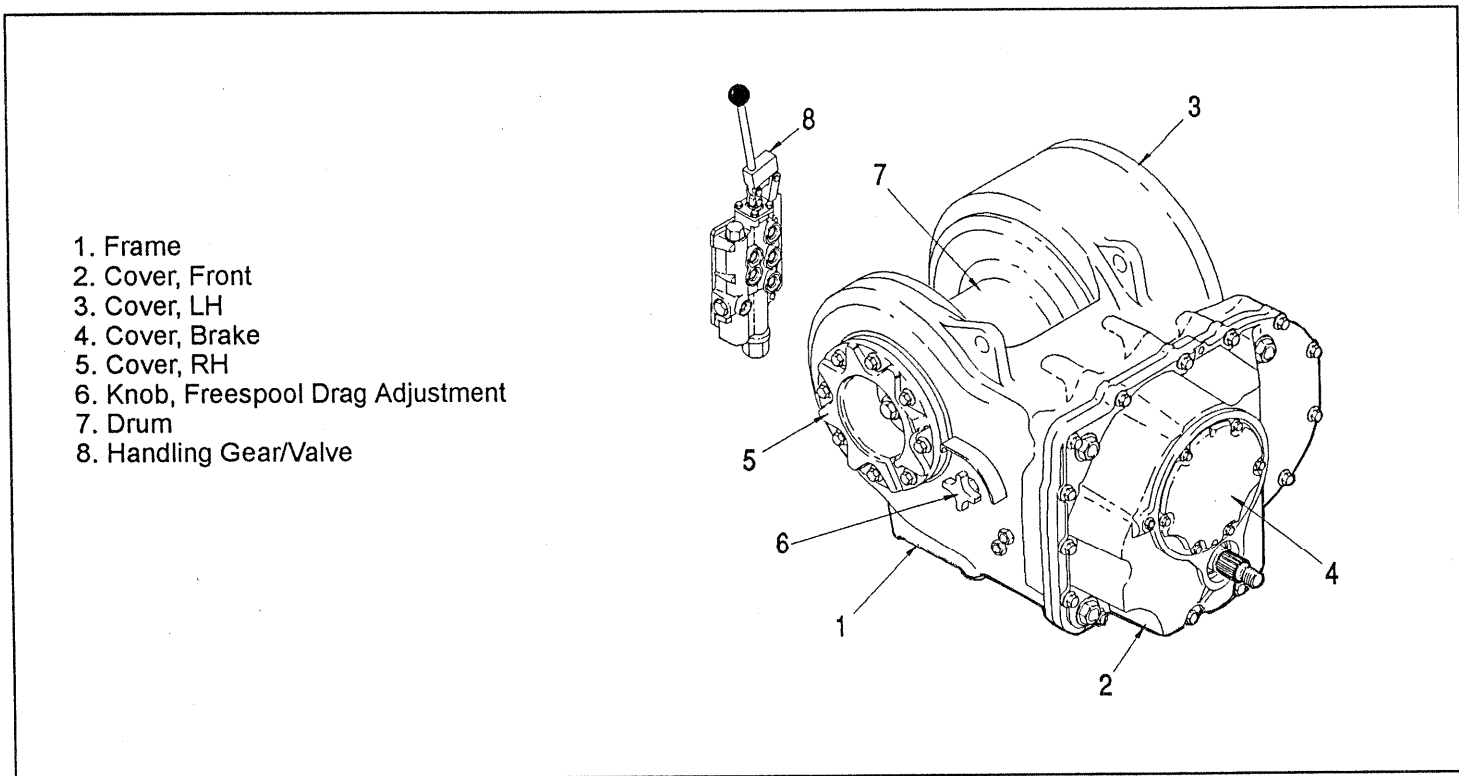


Fig. 3 W3C Skidder Winch

INTRODUCTION

SERIAL NUMBER CODES

The nameplate with the serial number code is found below the drum shaft on the right side of the winch case. A serial number indicates the following information:

AW3C P 4 A 1565 C12
 1 2 3 4 5 6

where:

- 1 = Winch model
- 2 = Type of winch drive (P=Power controlled winch)
- 3 = Gear ratio code (see TABLE 2)
- 4 = A=LINE IN only with FREESPOOL
- 5 = Sequence number of manufacture
- 6 = Application code for the model of skidder (see TABLE 2)

	CAT	FRANKLIN	J DEERE	TIMBER JACK	TREE FARMER	VALMET	GEAR RATIO CODE
CODE	C	N	E	D	U	V	○ Indicates gear ratios
11							3 = 15:1 4 = 21:1
12	518 *a ③						
13	518 *b ④						

*a Caterpillar 518 Skidder S/N 50S3203 & up & before 94U1297

*b Caterpillar 518 Skidder S/N 94U1297 & up

Table 2 Skidder Application Codes for W3C Winch



OPERATION

OPERATING PROCEDURES

A single control lever is used for winch control (see FIGURE 5). The control lever is used to select one of the following operations:

- **FREESPOOL**
- **BRAKE OFF**
- **BRAKE ON**
- **LINE IN**

The **BRAKE OFF** and **FREESPOOL** are detented positions. From the **LINE IN** position the lever will return to the **BRAKE ON** position when the control lever is released. A spring arrangement on the spool of the control valve returns the spool and control lever to the **BRAKE ON** position. A ball and detent will hold the spool and control lever in the **BRAKE OFF** and **FREESPOOL** positions. The operator must pull the control lever from the **BRAKE OFF** and **FREESPOOL** positions.

The **FREESPOOL** position disengages the gear train so that the cable can be pulled from the winch by hand.

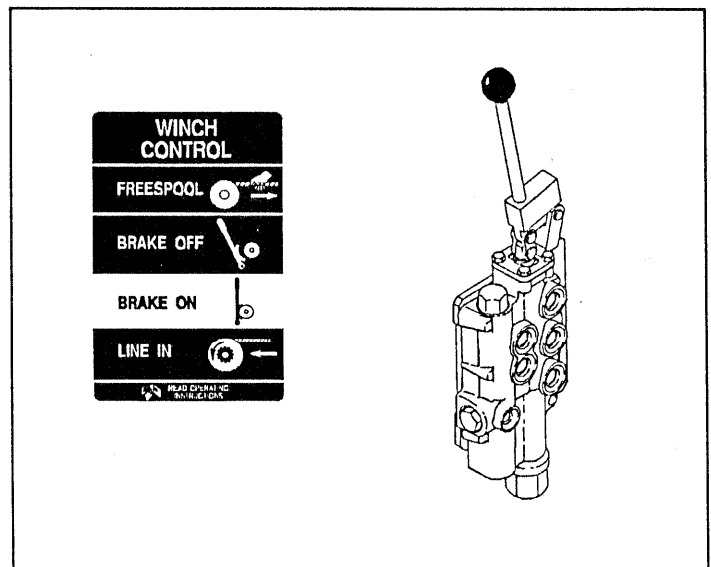


Fig. 5 Operator Controls

POWER OPERATION

The **BRAKE ON** position is a neutral position. The clutch is not applied. The springs in the brake fully apply the brake. The winch drum will not turn.

The **LINE IN** position applies the **LINE IN** clutch and releases the brake. The winch will wind the cable at a speed controlled by the engine rpm or the output RPM of the torque converter of the vehicle.

BRAKE OFF occurs when the operator moves the control lever towards the **BRAKE OFF** position. This action will slowly release the brake. The brake friction is controlled by the distance that the operator pushes the control lever toward the **BRAKE OFF** position. The engine of the skidder must be at low idle for best control.

The **BRAKE OFF** position completely releases the brake and does not apply hydraulic pressure to the clutch. If no load is on the cable while in the **BRAKE OFF** position, the cable will wind slowly onto the drum because of gear train drag.

FREESPOOL OPERATIONS

WARNING

When moving into **FREESPOOL** position while under load, an uncontrolled release of the load will occur. Loss of the load can result in injury and damage.

When the control lever is moved to the **FREESPOOL** position, the winch drum is disengaged from the gear train. The brake is also released. The **FREESPOOL** operation permits the cable to be pulled from the winch drum by hand.

FREESPOOL ADJUSTMENT

There is an external adjustment for the preload that controls the resistance to rotation of the drum during the **FREESPOOL** operation.

Freespool Drag Adjustment. See Fig. 6. Turn the knob to the right (clockwise) to increase the "drag" or turn the knob to the left (counterclockwise) to decrease the "drag".

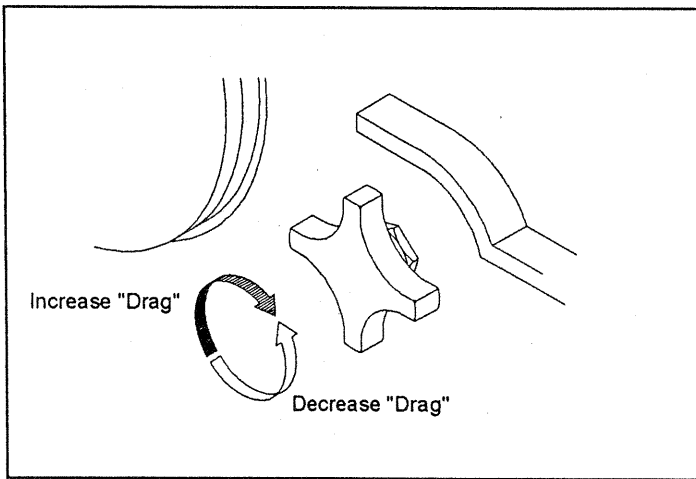


Fig. 6 Freespool "Drag" Adjustment

Test the "drag" on the drum. Make additional adjustments as necessary.

CHECKS BEFORE OPERATION

Check that the cable and hook are not worn or damaged. Also, see **Maintenance Recommendations** on page 15.

CHECKS DURING OPERATION

The following **Troubleshooting Chart** 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.

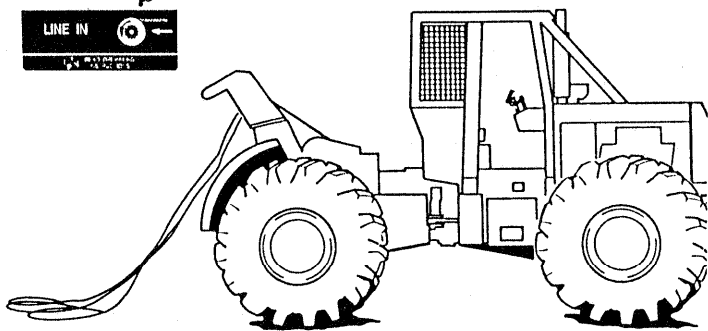
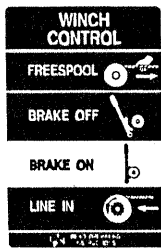
OPERATION

W3C TROUBLESHOOTING CHART		
PROBLEM	POSSIBLE CAUSE	CORRECTION
Operation is rough or irregular.	Hydraulic oil is too cold.	Put the control lever in the FREESPOOL 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.
Hydraulic oil becomes too hot.	Winch is operated in the BRAKE OFF or FREESPOOL position for long periods.	Use the BRAKE OFF and FREESPOOL position less. When the BRAKE OFF or FREESPOOL position is used, the hydraulic oil flows continuously through the relief valve. See the SERVICE MANUAL for additional Troubleshooting.
	Low oil level.	Add hydraulic oil to the correct level.
Winch brake does not apply or release correctly. or LINE IN clutch does not apply correctly or FREESPOOL does not operate correctly		See the SERVICE MANUAL for Troubleshooting, checks and adjustments

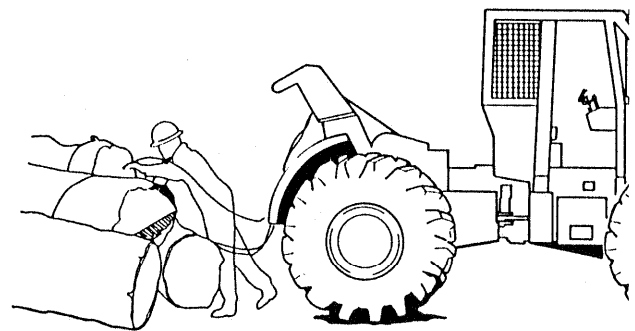
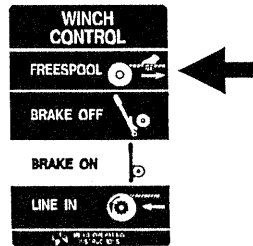


OPERATING TECHNIQUES

Skidder Operation

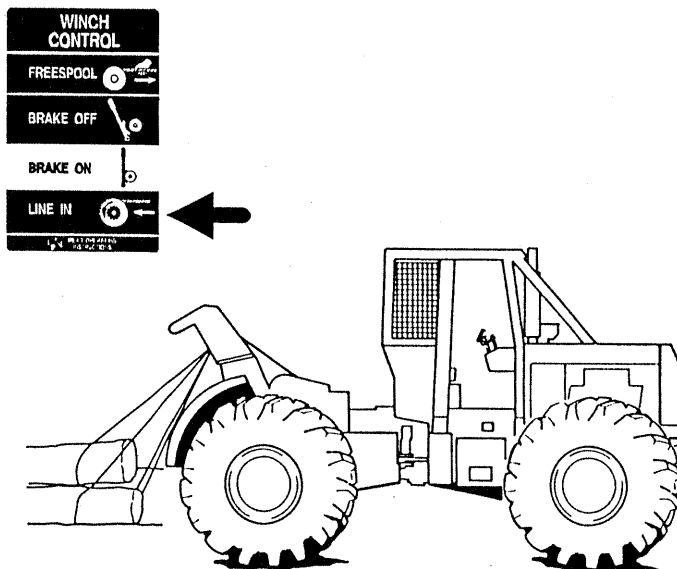


STEP 1. The skidder is moved to an area where a load will be connected. The operator moves the control lever to the **FREESPOOL** position so that the cable can be pulled by hand from the winch drum.

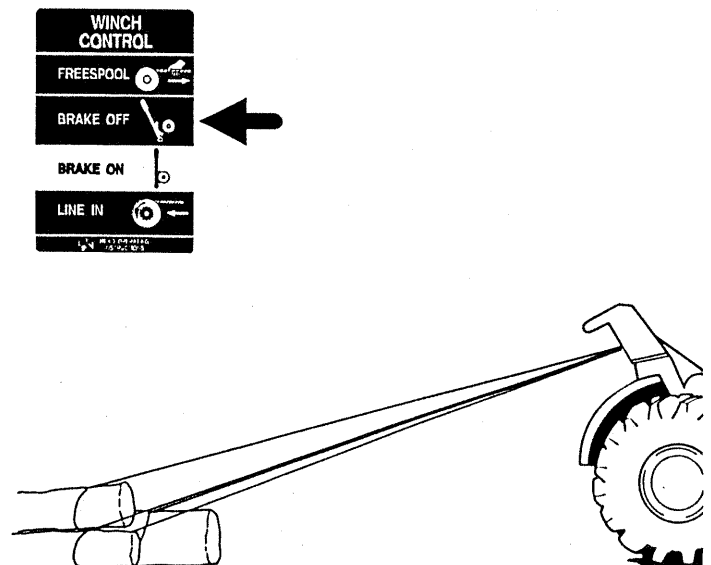


STEP 2. A load (logs) is connected to the cable.

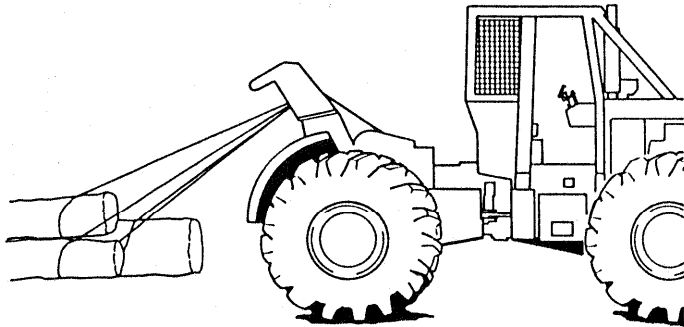
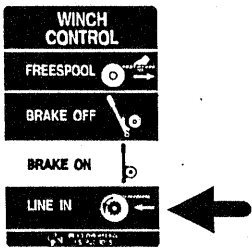
OPERATION



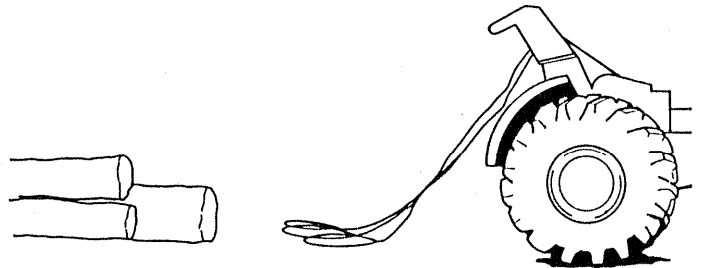
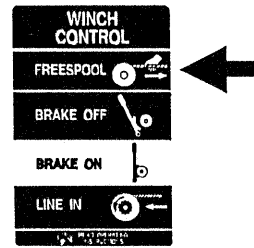
STEP 3. The operator can move the control lever to the **LINE IN** position. If the load is less than approximately 75% of the maximum line pull, the operator can begin traveling with the skidder at the same time. The winch will wind the load toward the skidder as it travels. If the load is nearly the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



STEP 4. If the skidder must travel through an area with bad traction conditions, the operator can move the control lever to the **BRAKE OFF** position. This procedure will permit the skidder to move through the bad traction area without pulling the load at the same time, and keep the cable tight.



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



STEP 6. When the operator wants to disconnect from the load, the skidder is stopped and the control lever is moved to the **FREESPOOL** position to lower the load. Move the skidder in reverse as necessary to loosen the cable. The cable is then disconnected from the load.

OPERATION

How to Move a Disabled Vehicle

A. A skidder often travels in areas where traction conditions are bad. A skidder 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 Fig. 7. Use the following procedure:

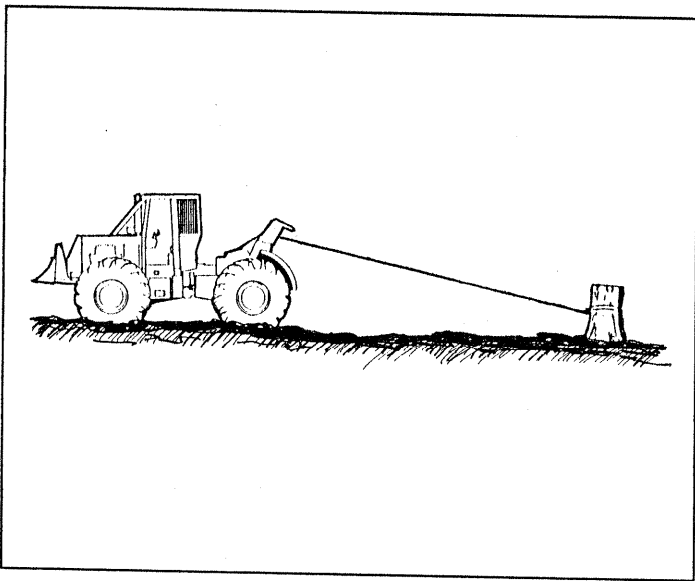


Fig. 7 Moving a Disabled Vehicle (Step A)

1. Fasten the winch cable to a structure, tow bar of another vehicle, or a tree that has enough strength for the line pull. The cable must be in a direction that is approximately parallel 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 cable. When the winch cable 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 tractor travels faster than the winch winds the cable, disengage the transmission until the winch cable is tightened again.

NOTE: If the tracks or drive wheels on the skidder stop turning, the torque converter in the transmission has stalled and the winch will stop also.

B. A skidder equipped with a winch can be used to pull another vehicle from mud or other area where it cannot move using only the drive wheels or tracks. See Fig. 8. Use the following procedure:



1. Fasten the winch cable to the tow bar of the other vehicle. The cable must be in a direction that is approximately parallel to the direction of travel of the vehicle. Apply the brakes on the towing vehicle. 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.)

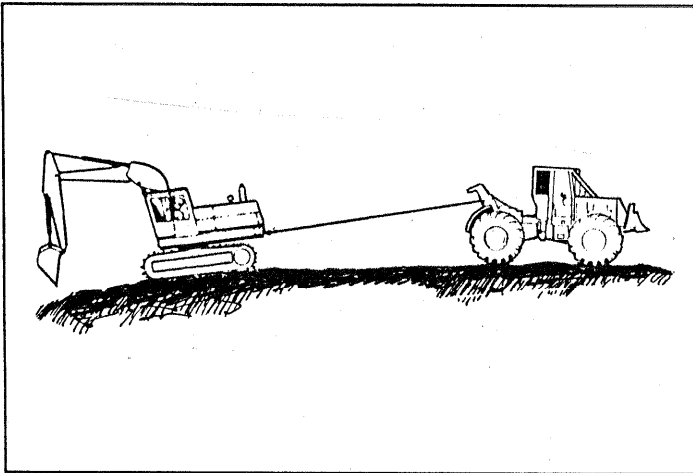


Fig. 8 Moving a Disabled Vehicle (Step B)

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 towing vehicle to slide. A slope can require additional distance to stop the vehicles.

Make sure the cable 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.

2. Use the **LINE IN** control lever to tighten the winch cable. When the winch cable 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 cable tight so that the cable does not pass under the drive wheels or tracks of the vehicle being towed.

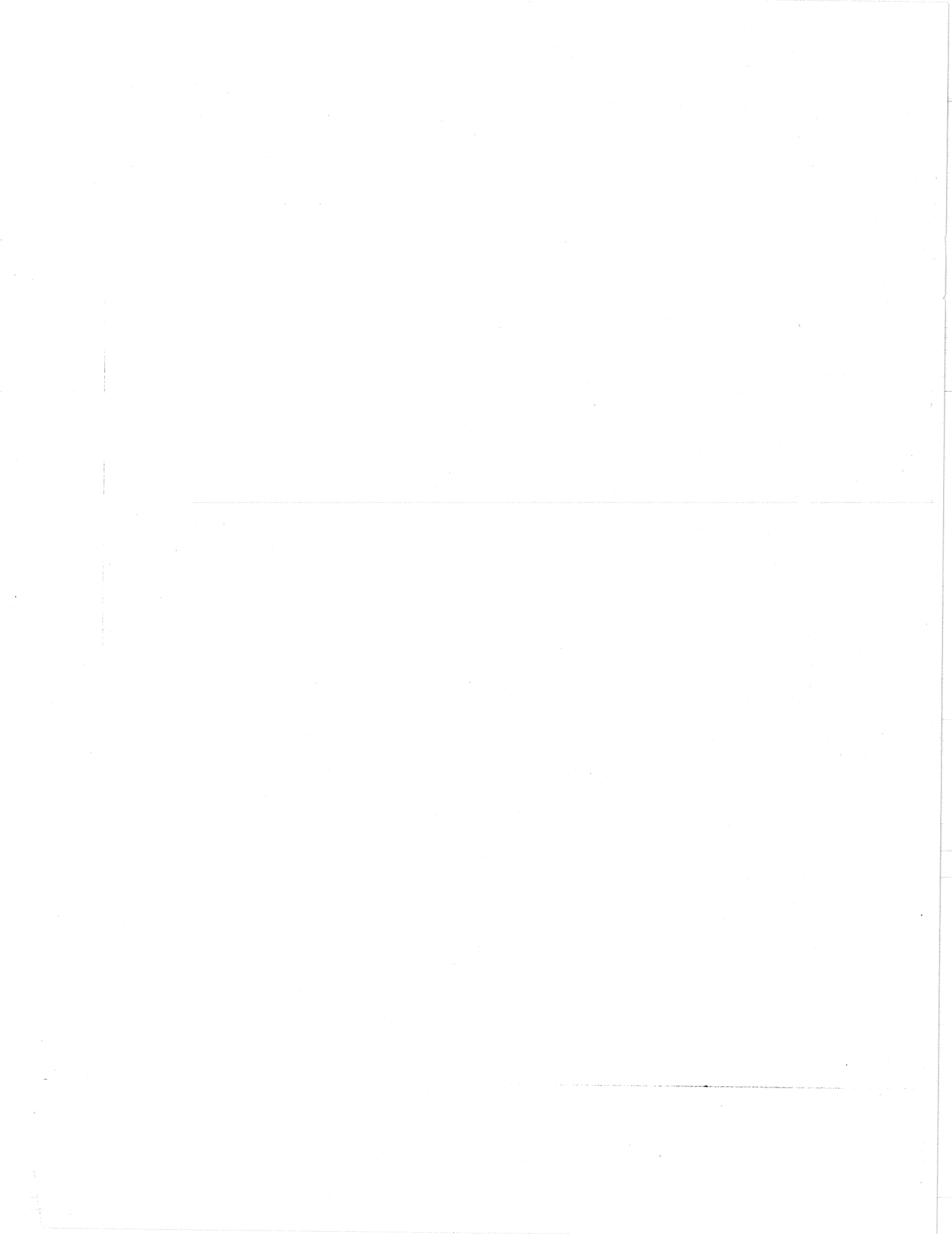
MAINTENANCE

MAINTENANCE

Maintenance on the W3C Skidder Winch is limited to hydraulic system maintenance of the skidder itself. The hydraulic oil and filter(s) should be maintained as indicated in the skidder's operating manual.


Periodically check the winch, control valve, and connecting hoses for damage or hydraulic oil leakage. If any problems are found, they should be corrected before operating the winch.





Allied Systems
WINCH DIVISION COMPANY



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