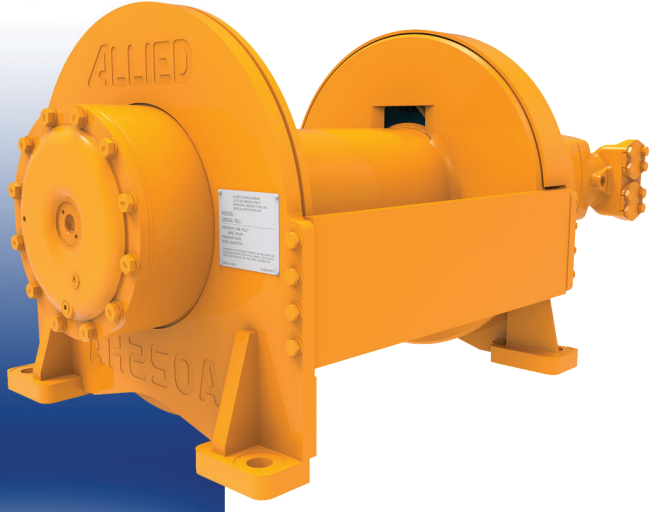
Allied® WINCH

Operating Manual



Allied AH250A

Hydraulic 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 COMPANY
SHERWOOD, OREGON USA

P/N 599063W

04/14/2017

Winch Model AH250A

Serial Number _____

Date Delivered _____

Date Installed _____

Special Equipment or Attachments

_____

_____

_____

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Allied Systems COMPANY

A Product of Allied Systems Company
Sherwood, Oregon
U.S.A.

Allied® WINCH

04/14/2017
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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, Oregon 97140
U.S.A.

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.

Contents

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's 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.

Operation, Inspection, and Maintenance Warnings

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

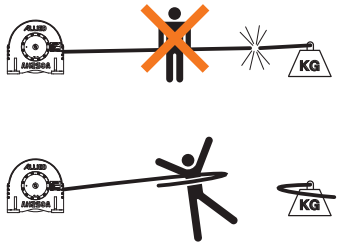
- Do not operate the winch unless you are authorized and trained to do so.

⚠ WARNING

Use hearing protection when operating winches.

- Read, understand, and follow the operating, inspection, and maintenance instructions in this Operating Manual.
- 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:
  - » Report the need for repairs immediately.
  - » Do not work with a damaged or worn wire rope.
  - » Do not use a winch that needs repairs.
  - » Should the wire rope be removed from the drum, make sure the end of the wire rope is controlled when released. The end of the wire rope can suddenly move from the drum like a compressed spring when it is released and cause an injury.
- 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 worksite rules.
- Be in complete control at all times.
- Do not pull the hook through the throat or over the drum, which will cause damage.
- 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.
- 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 connect 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.

- Make sure that 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 AH250A Parts Manual (P/N 599065W).
- 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 (5) 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.
- Avoid side loading the winch, and 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.
- 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.
- 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 Figure 5 on Page 6.
- Do not weld on any part of the winch. Contact Allied Systems Company if weld repairs are needed.
- The hydraulic system must be kept clean and free of contamination at all times.

- 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.

General

Introduction

This Operating Manual contains basic information necessary for the operation and maintenance of the AH250A winch.

Operating Principles of the Winch

The AH250A is a hydraulic winch with a maximum line pull of 24,445 lbs (11,088 kg) on the first layer of wire rope. See Figure 1 for line pull and line speed in various conditions. All values are based on hydraulic flow at 150 gpm (568 lpm), and hydraulic pressure at 5,000 psi (345 bar). The winch is powered by a hydraulic motor utilizing externally supplied hydraulic flow.

The winch has two speeds for **LINE-IN**, and a single high speed **LINE-OUT** for quick pay-out of wire rope.

For **LINE-IN** low speed operation, motor torque is transmitted through two planetary reducers. The holding brake is bypassed by means of a sprag brake.

For **LINE-IN** high speed operation, hydraulic pressure engages the two speed clutch, which eliminates one of the two planetary reducers. Motor torque is transmitted through a single reducer. The holding brake is bypassed by means of a sprag brake.

For **LINE-OUT** operation, hydraulic pressure releases the holding brake. Sprag clutches eliminate one of the two planetary reducers. Motor torque is transmitted through a single reducer.

Full Drum			
Lo-Speed		Hi-Speed	
Line Pull lbs [kg]	Line Speed fpm [mpm]	Line Pull lbs [kg]	Line Speed fpm [mpm]
11,560 [5,244]	1,155 [352]	4,270 [1,937]	3,225 [983]
Bare Drum			
Lo-Speed		Hi-Speed	
Line Pull lbs [kg]	Line Speed fpm [mpm]	Line Pull lbs [kg]	Line Speed fpm [mpm]
24,445 [11,088]	545 [166]	9,030 [4,096]	1,525 [465]

Figure 1 - Line Pull and Line Speed Chart

Nameplate

Each winch is shipped from the factory with a nameplate as shown in Figure 2. The nameplate is stamped with:

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

DO NOT operate the winch with larger diameter wire rope than is specified by Allied. 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.

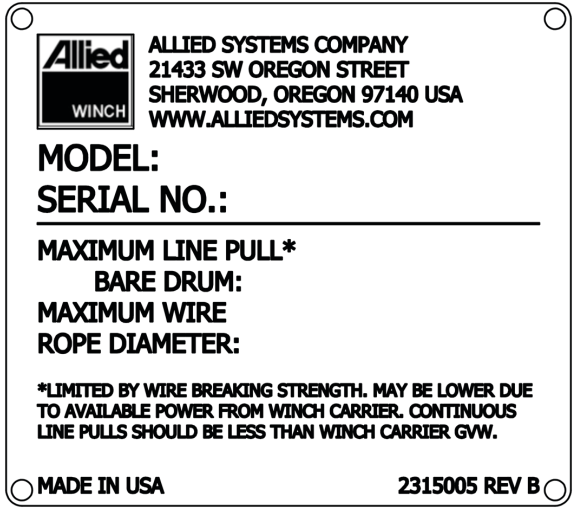


Figure 2 - Nameplate

Wire Rope Selection

The AH250A winch can have a variety of wire rope sizes installed by the user. The maximum wire rope size is shown on the nameplate. See Figure 3 for other recommended wire rope sizes and drum capacities. In some situations, 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. Wire rope made from Extra Improved Plow Steel (EIPS) with Independent Wire Rope Core (IWRC) is recommended.

⚠ WARNING

Wear gloves when handling wire rope, as broken strands in the wire rope cause severe lacerations. Never let the wire rope slide through your hands. Always use the hand over hand method for handling wire rope.

The wire rope is attached to the drum using a wire rope wedge in the socket located on the drum flange.

⚠ WARNING

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

Wire Rope Diameter	Capacity
5/8 in. (16mm)	1,590 ft. (485m)
3/4 in. (19mm)	1,040 ft. (317m)
7/8 in. (22mm)	800 ft. (244m)
NOTE: Loosely or unevenly spooled line will reduce capacities.	

Figure 3 - Wire Rope Sizes and Drum Line Capacities

Winch Descriptions

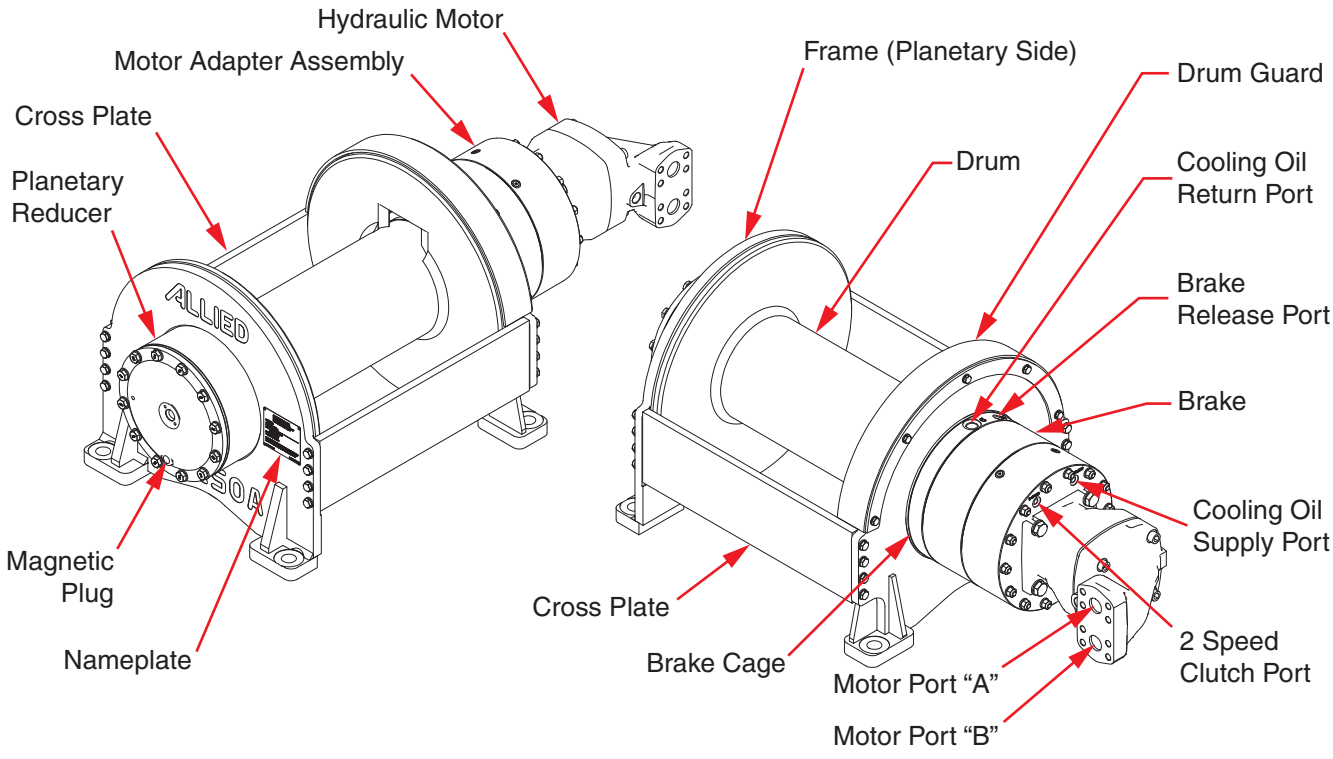


Figure 4 - AH250A Yarder Winch

Controls

The following winch functions are controlled at operator console:

BRAKE-ON - at rest condition, holding brake is automatically applied.

LINE-IN LOW SPEED - flow to motor turns the drum freely through sprag brake to reel wire rope into the drum.

LINE-IN HIGH SPEED - pressure to the 2-speed clutch shifts the winch into high speed. Flow to the motor turns the drum freely through the sprag brake to reel wire rope onto the drum.

LINE-OUT (HIGH SPEED ONLY) - brake is released and flow to the motor turns the drum to reel wire rope off of the drum. Sprag clutch automatically shifts winch into high speed.

Oil Specifications and Selection

Recommended Oils* - General Conditions			
Manufacturer	Oil Type	Ambient Temperature Range	
		°F	°C
ExxonMobil	Mobil Fluid 424 (Factory fill)	-13 to 105	-25 to 43
John Deere	Hy-Gard™	-13 to 122	-25 to 50
Chevron	1000 THF	-13 to 105	-25 to 43
Caterpillar	Multipurpose Tractor Oil (MTO)	-13 to 104	-25 to 40
Case	Hy-Tran Ultra	-20 to 122	-30 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 5 - Recommended Oil List

⚠ CAUTION

The winch oil should never exceed the maximum operating temperature of 239°F (115°C), as overheating will cause winch damage.

Serial Number Codes

AH 250 A - 020A - 150P - 05/07 - 10A - ST - N - NN - 1000

Winch Model
AH = Allied Hoist

Rated Line Pull
250 = 25,000 lbs

Revision Level

Reduction Ratio
020A = 20.2 / 7.2*

Hydraulic Motor
150P = 150cc Fixed Displacement Piston

Wire Rope Diameter Range
05/07 = 5/8" - 7/8"

Drum Options
10A = 10" Drum Dia., 22" Drum Length, 24" Flange Dia.

Brake Type
ST = Spring Applied / Pressure Release

Drum Rotation
A = Overwind
B = Underwind
N = Bi-Directional

Options
NN = None

Sequence #

Operation

Checks before Operation

- Check that the wire rope and hook are not worn or damaged.
- Check the winch and related hydraulic hoses for oil leaks.
- Inspect the winch for structural defects. Do not attempt to operate the winch if any defects are found. Take the winch out of service, and have any defects repaired before use.
- Check the hourmeter on the prime mover to see if the winch is due for periodic inspection and maintenance. See the Maintenance Schedule.

Operating Procedures

⚠ WARNING

A minimum of 3 wraps of wire rope must be maintained on the winch drum. Do not handle loads with less than 3 wraps, as injury or damage to equipment may result. Coloring the last 5 wraps of wire rope will allow the operator to see when he should stop removing wire rope.

⚠ WARNING

Do not operate the winch with loads that exceed the maximum rated line pull (see Figure 1 for rated load).

Maintenance

General

⚠ WARNING

The temperature of the oil and winch may reach 220°F (105°C). Let the winch cool down before performing maintenance. Severe burns can occur from hot oil.

As with any hydraulic system, cleanliness is extremely important. Ensure all surfaces are clean before performing maintenance tasks to prevent contamination.

Hydraulic motors are relatively low-maintenance. The only regular maintenance tasks are oil and filter element changes. Both of these measures promote system cleanliness. Follow the maintenance schedule specified for the prime mover regarding oil and filter changes. Change the oil and/or filter more often if necessary to due extreme conditions or heavy use.

See the maintenance schedule below for routine maintenance items for the winch.

INTERVAL	PROCEDURE	SPECIFICATION & QUANTITY
250 hours or monthly	Clean magnetic plug	Remove magnetic plug and clean
2000 hours or yearly	Disassemble winch and clean interior components	Inspect wear parts, and replace as necessary. Consult service manual.

Figure 6 - Maintenance Schedule

Troubleshooting

INTRODUCTION

The purpose of this chapter is to aid qualified technicians in isolating and correcting problems that can occur during operation of the winch and related equipment. This chapter provides general instructions for the inspection and isolation of mechanical and hydraulic problems as well as corrective maintenance procedures for restoring normal operation to the winch.

Safety

The safety summary in the front of this manual lists general precautions. In addition, any warnings and cautions provided in this chapter and throughout this manual shall be observed.

Problem Area Isolation

This chapter contains procedures for isolating malfunctions in the winch mechanical and hydraulic systems. You may be able to isolate a malfunction by operating the winch, and observing performance in sequential order. Additionally, listening for unusual noises and vibrations aids in isolating a malfunction to a specific component.

PRELIMINARY TROUBLESHOOTING

Verify that hydraulic power is available and that hoses are correctly connected. Should the winch fail to operate properly, use a flow meter and pressure gauge to ensure hydraulic oil is being delivered to the winch.

FAULT DETECTION

Probable Mechanical Causes

Mechanical malfunctions or failure can be attributed to any or all of the following:

1. Poor lubrication techniques and failure to perform preventive maintenance on a scheduled basis.
2. Dirt and accumulations of other foreign matter on moveable parts.
3. Worn and/or broken parts. Such parts must be repaired or replaced.
   - Unusual noise or vibration may indicate bearing or gear problems.
   - Brake slippage may indicate worn friction discs.
4. Overloaded or physically damaged components including the winch structure, wire rope, and hooks.

Probable Hydraulic Causes

Hydraulic malfunctions or failure can be attributed to any or all of the following:

1. Insufficient hydraulic pressure or flow, or contaminated hydraulic fluid.
2. Excessive internal leakage in components and/or component overheating.

Note: If any of the hydraulic components generates excessive heat, discontinue operation immediately and determine the cause of overheating. Operating temperature must not exceed 220° F (105° C).

PROBLEM	POSSIBLE CAUSE	CORRECTION
Insufficient line pull	Insufficient motor pressure	Check machine pump and relief settings
	Winch is in high speed	Take out of high speed
	Load is too heavy	Reduce load
	Worn brake	Replace friction discs in brake
	Trapped pressure in brake piston	Clear path for oil to return to tank
	Damaged or worn motor	Repair or replace motor
Winch will not line-out	Brake piston seals damaged	Replace seals
	Insufficient brake pressure	Brake requires 300 psi to release
Winch will not shift into high speed	Seal rings on clutch shaft damaged	Replace seals
	Clutch piston seal damaged	Replace seal
	Clutch friction discs worn	Replace discs
Leaking drum seals	Worn or damaged seals	Replace seals
	Worn or damaged seal sleeves	Replace sleeves
	Excessive back pressure in case	Reduce cooling flow
Brake not holding	Worn friction discs	Replace discs
	Trapped pressure in brake piston	Clear path for oil to return to tank
Operation is rough	Low oil	Add oil
	Wire rope jumps layers on drum	Spool wire rope more evenly
Operation is noisy	Motor damaged	Inspect and repair or replace as needed
	Bearings damaged or worn	Inspect and replace as needed

Figure 7 - Troubleshooting Chart

NO MATTER HOW YOU SAY IT . . .

La Prudence Paye
La Seguridad Paga
Betriebssicherheit Macht Sich Bezahlt
Passaa Olla Huolellinen
Veiligheid Voor Alles
Säkerhet Först
Essere Sicuro Paga
Segurança Paga
Sikkerhet Først
Pinter Be Awas
सावधान और हिन्दा रहो।
في التأني السلامة
安全第一

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