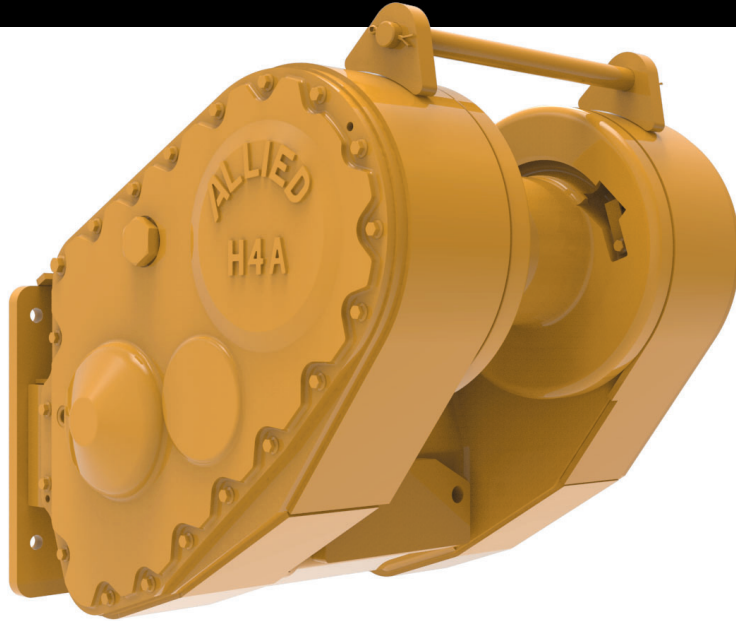


Operating Manual



H4A

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, OR USA

P/N 599014W

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03/05/2021

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’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.



WARNING

The winch shall not be used for hoisting.



WARNING

Use hearing protection when operating winches.

Operation, Inspection, and Maintenance Warnings

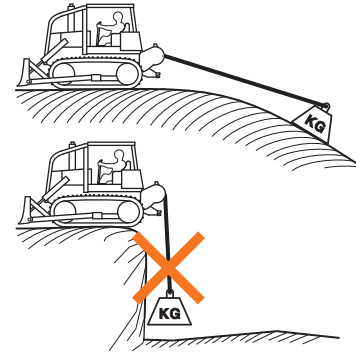


Obey the following cautions and warnings before using your winch to avoid equipment damage, personal injury or death.

- 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 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 parts manual 599015W.
- 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.



- 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 Figure 17 on Page 29.
- 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.

 **WARNING**

Maximum permissible pressure and flow:

Winch Type	Pressure		Flow	
	(psi)	kPa	(gpm)	l/min
Standard (H4AT)	3,980	27,440	25	95
High Performance (H4AH)	5,000	34,475	30	114





Notes

General

Introduction

This Operating Manual contains basic information necessary for the operation and maintenance of the H4A winch.

Operating Principles of the Winch

A winch is normally installed on a skidder or a tractor to:

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

The H4A is a hydraulic winch with a maximum line pull of 45,000 lbs (21,319 kg) on the first layer of wire rope. The winch is powered by an internal hydraulic motor utilizing either tractor supplied hydraulic flow or a dedicated winch pump driven by the tractor engine. Motor torque is transmitted through a holding brake and three gear

reductions to turn the winch drum. Hydraulic supply to the winch motor comes from one of the following configurations:

Standard Winch - The standard winch (serial numbers starting with **H4AT****), use the tractor implement pump and ripper controls to supply hydraulic power to operate the winch motor. Winch speed and direction are controlled by the ripper control lever.

High-Performance Winch - The high-performance winch, (serial numbers starting with **H4AH*Y**) is a hydrostatic winch using a tractor mounted pump connected directly to the winch motor. The winch shares hydraulic oil and cooling with the tractor's circuit. Winch speed and direction are controlled by a console mounted, hydraulic control lever supplied with the winch.

High-Performance, Self Contained Hydraulics (SCH) Winch - The SCH winch (serial numbers starting with **H4AH*R**) is a high-performance winch with the hydrostatic pump contained inside the winch and is driven by a PTO shaft connected to the tractor.



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 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.

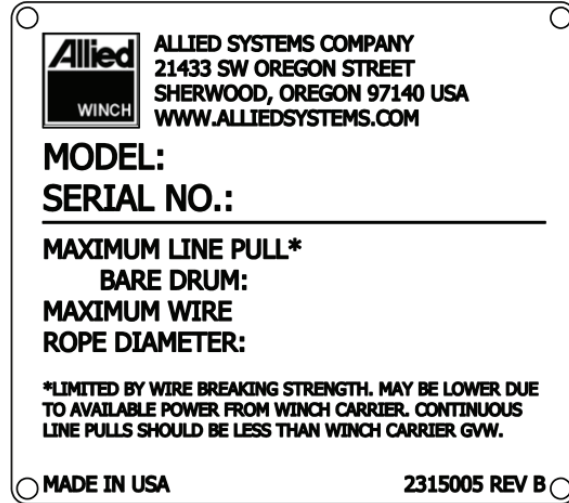


Figure 1 - Nameplate

Wire Rope Selection

The H4A 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 2 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 ferrule. The ferrule is held in the drum pocket by the lip of the pocket and by a breakaway ferrule retainer. The breakaway retainer allows the ferrule to be pulled out of the pocket by a runaway load. The correct ferrule size is

2 inches long with a 1.5-inch diameter and is commonly known as a “Bantam” ferrule.

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. ALWAYS USE A REAR SCREEN FOR OPERATOR PROTECTION AGAINST WIRE ROPE BREAKING.

Wire Rope Diameter	Capacity
1/2 in. (13mm)	422 ft. (129m)
5/8 in. (16mm)	277 ft. (84m)
3/4 in. (19mm)	195 ft. (59m)

NOTE: Loosely or unevenly spooled line will reduce capacities.

Figure 2 - Wire Rope Sizes and Drum Line Capacities
(See *Note on page 14)

Winch Descriptions

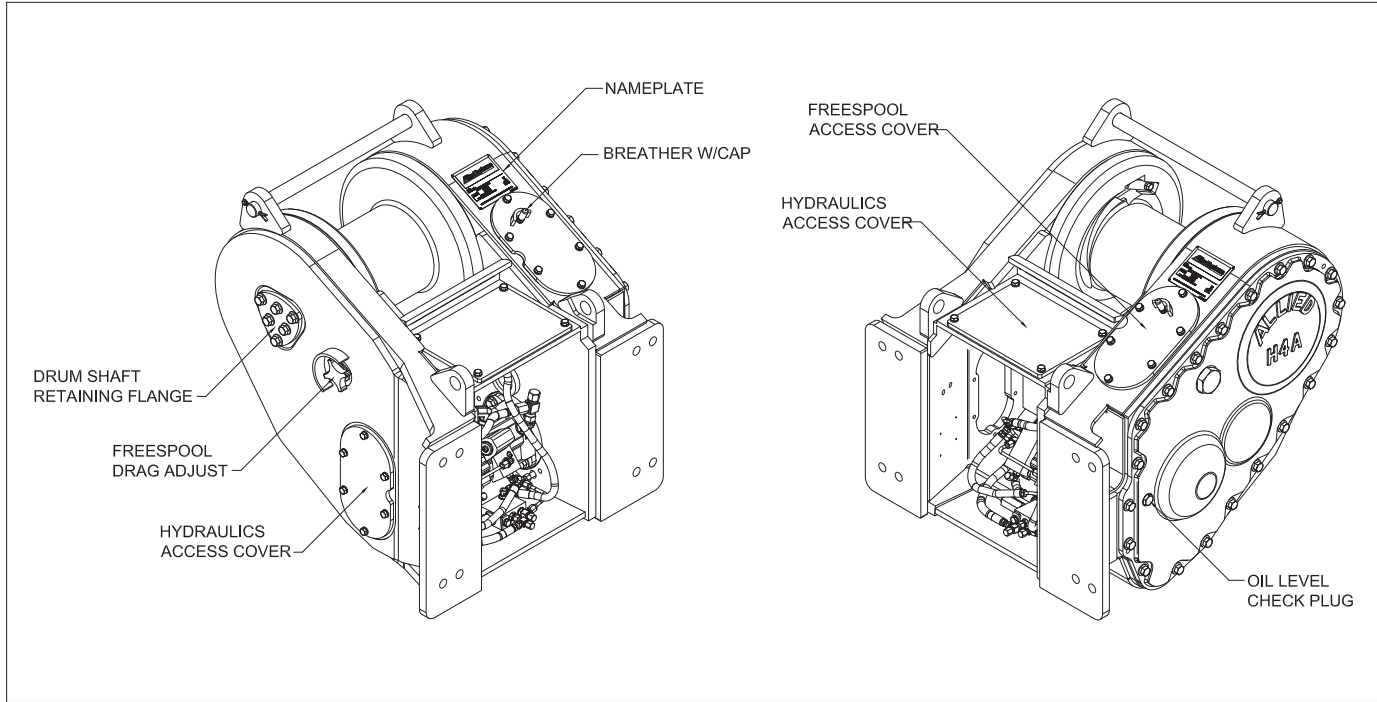


Figure 3 - H4A Standard Winch and External Pump, High-Performance Winch Configuration

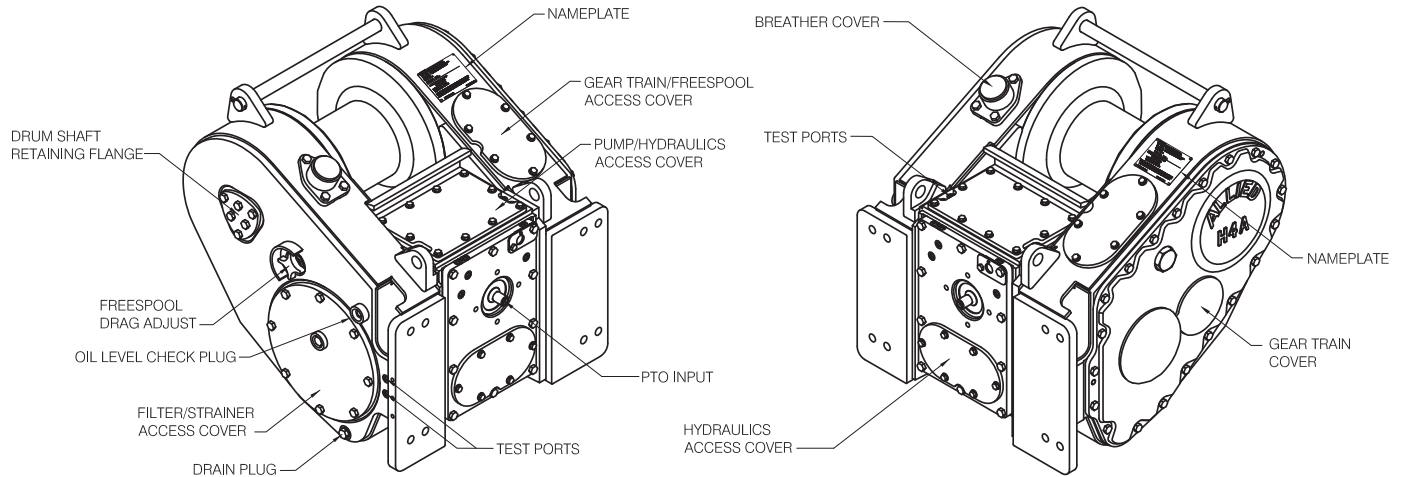


Figure 4 - H4A High-Performance Winch, Self-Contained Hydraulics (SCH) Configuration



Controls

The following winch functions are controlled at operator console:

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

LINE-IN - releases holding brake and rotates drum to reel wire rope onto the drum.

LINE-OUT - releases holding brake and rotates drum to reel wire rope off of the drum.

FREESPOOL - mechanically disconnects to allow pulling wire rope off of the drum by hand,

BRAKE-ON, LINE-IN and LINE-OUT are controlled by a control lever located on the tractor console. **FREESPOOL** is also controlled by the control lever on early production winches or by a rocker switch on later production winches. See Figures 5, 6, and 7, illustrating various control configurations.

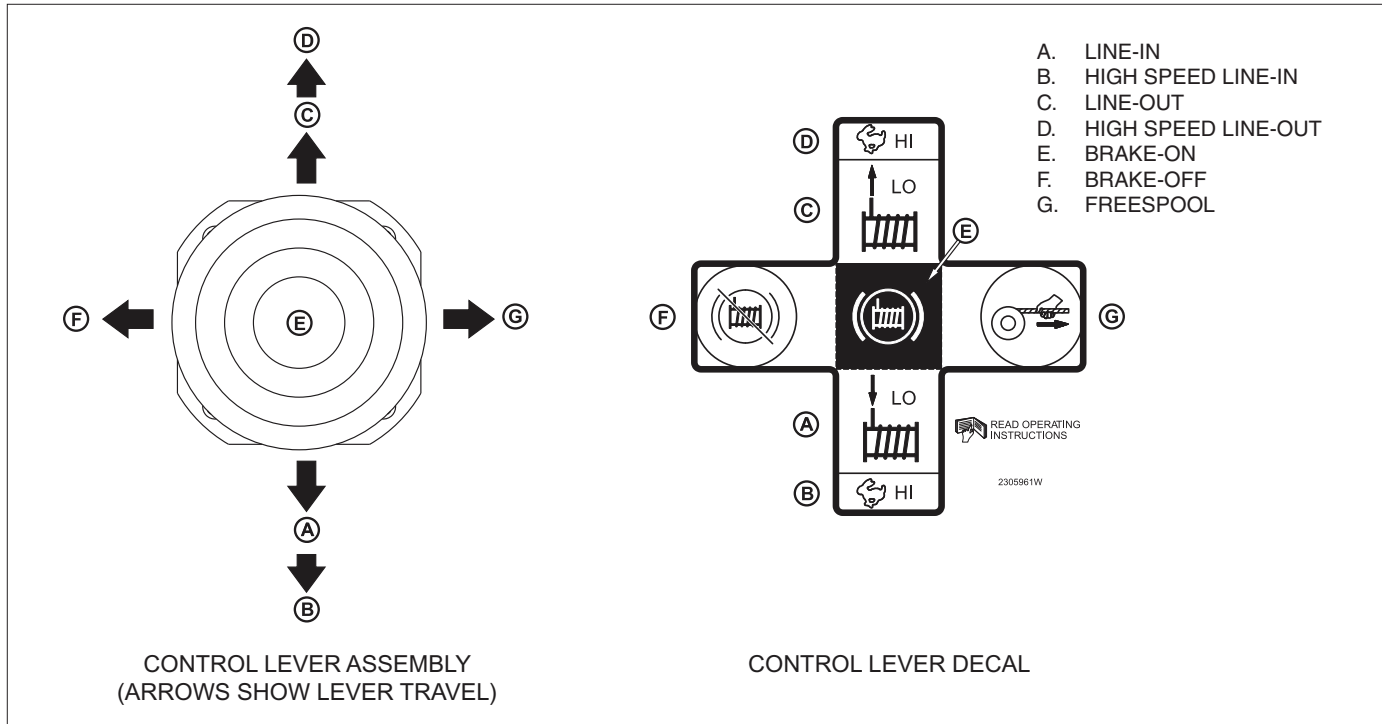


Figure 5 - Controls (S/N Code B & E; S/N H4A-1000 thru 1014)

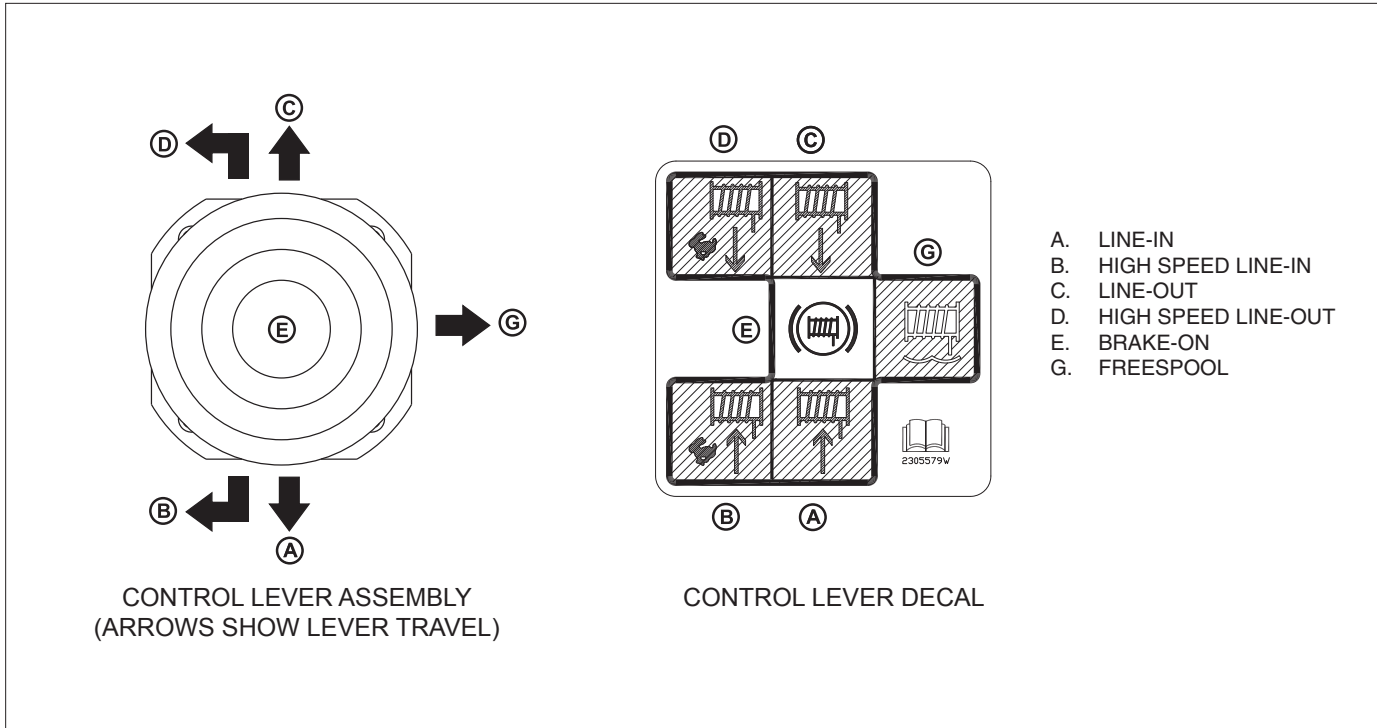


Figure 6 - Controls (Vehicle Codes: C16, C17, C18, K12; S/N H4A-1015 through H4A-1161. R15 All Serial Numbers)

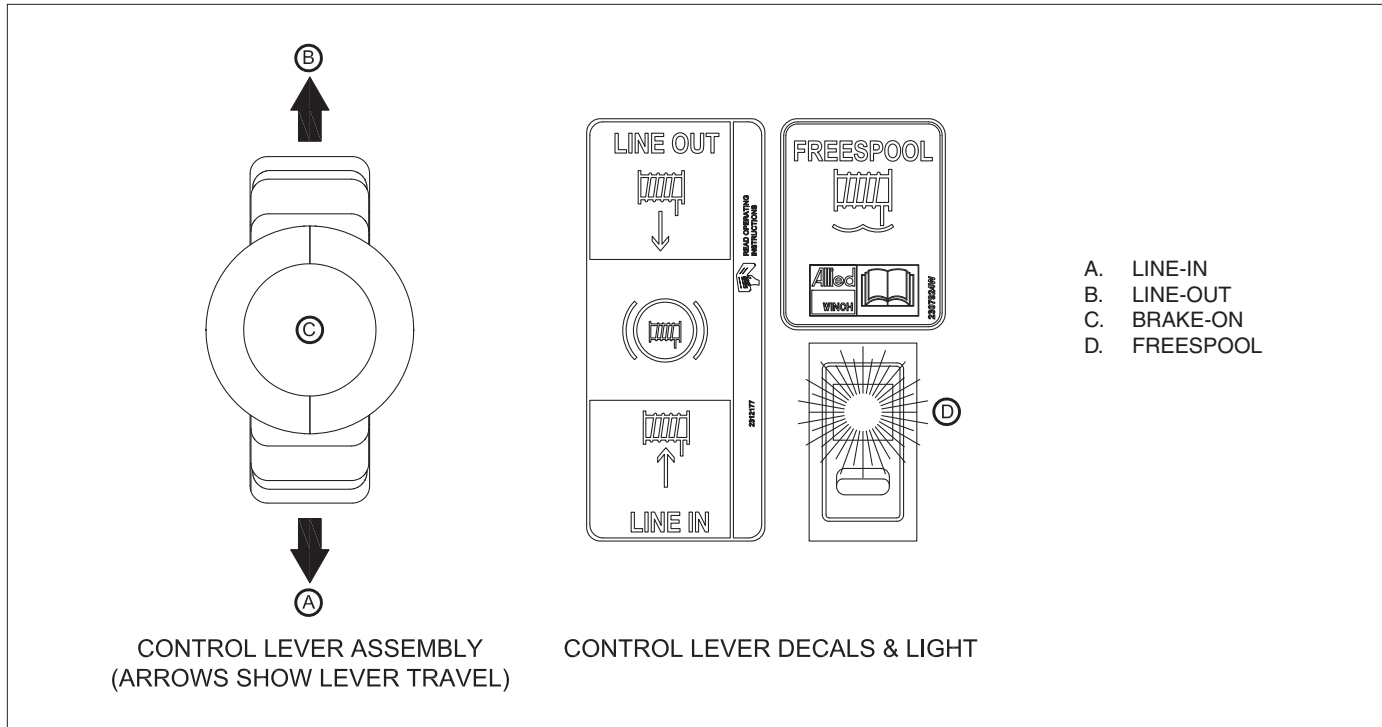


Figure 7 - Single Axis Control Lever
(Vehicle Codes: C17, C18, C19, C20, C201, K13, K14, R16 & R17; S/N H4A-1162 & Up)



Recommended Oil List

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 a non-recommended oil may void warranty.

** For winches using tractor-supplied hydraulics for winch operation, recommended oil is used only in the winch gear case.

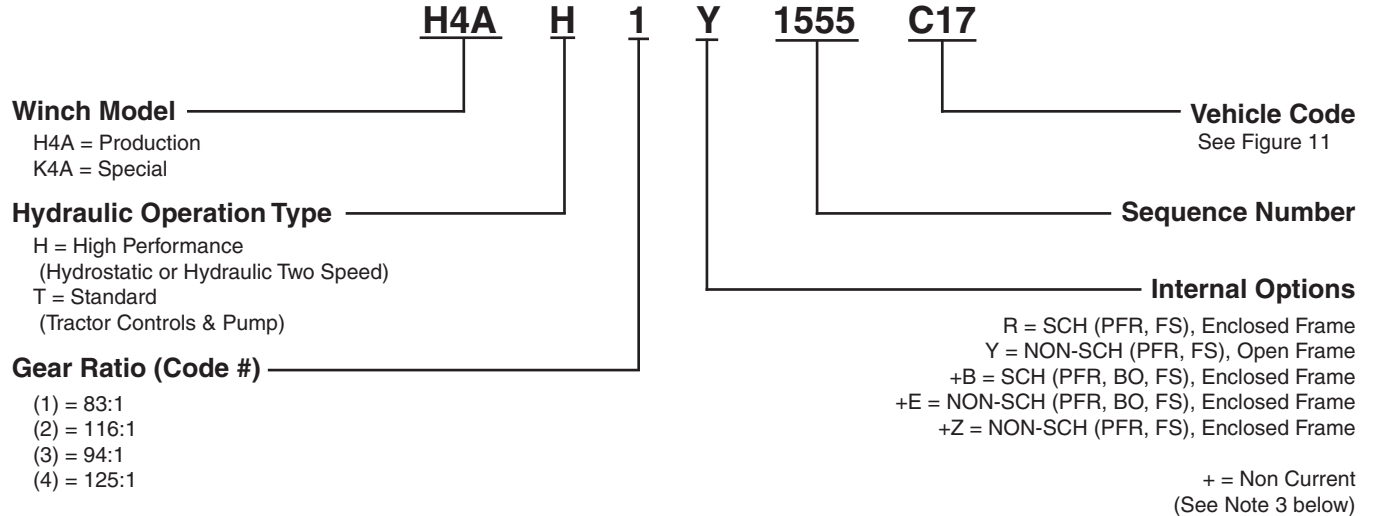
Figure 9 - Recommended Oil List

Oil Capacity

	SCH Winch	Non-SCH Winch
Capacity	20 gallons	4 gallons

Figure 10 - Oil Capacity

Serial Number Codes



Abbreviation List

SCH = Self-Contained Hydraulics
 NON-SCH = External (Pump) Hydraulics
 PFR = Power Forward and Reverse
 BO = BRAKE-OFF
 FS = FREESPOOL

- Notes:**
- In addition to the nameplate, the serial number is stamped on the top right-hand side of the frame.
 - Circled numbers in Figure 11 indicate possible gear ratios.
 - BRAKE-OFF option was last used on S/N H4A-1014.

Figure 11 - Tractor Identification and Winch Gear Ratios

C O D E	A New Holland & Fiat	C Caterpillar	E John Deere	H Dressta	K Komatsu	R Case	U Shantui
12					KOMSTAT D31/37/39 E-21 & E21-A ② ③		
13					D31/37/39 E-22 ① ② ③		SD-10 ④
14					D37/39 E-23 ②		
15			450-650J ① ② ③	TD7S, TD8S ④		650/750/850K, 750/850L ① ② ③	
16		HYSTAT D3/4/5C ① ② ③	550-650K ① ② ③	TD9S ④		650L ① ② ③	
17		D3/4/5G *a ① ② ③				750/850M ① ② ③	

Figure 11 - Tractor Identification and Winch Gear Ratio

C O D E	A New Holland & Fiat	C Caterpillar	E John Deere	H Dressta	K Komatsu	R Case	U Shantui
18		D4/5G *b ① ② ③					
19		D3/4/5K ① ② ③ ④					
191		D3/4/5K2 T4f *c ① ② ③ ④					
20		D5K & D5K2 T4i ① ② ③ ④					
201		D5K2 With Fireplow ① ② ③ ④					
39			700H/J ① ② ③				
391			700K ① ② ③				
<p>*a <u>D3/4/5G</u> with tractor s/n prefix CFC, CKA, CFF, CLB, CFN, FDC, FDH, CLF, FDW, CLW, JMH, ZDN, BYR, CXT *b <u>D4/5G</u> with tractor s/n prefix HYD, TLX, WGB, DKT, RKG, RSC *c With tractor s/n prefix <u>D3K2</u>: FT3, JPJ, KF2, KL2, LT3 <u>D4K2</u>: KM2, KR2, MT3, RT3 <u>D5K2</u>: KW2, KY2, RRE, WT3, YT3</p>							

Optional Equipment

The H4A winch may be equipped with the following options:

- Integral Arch*
- Four-Roller fairlead Assembly
- Standard Drawbar
- Heavy Duty Drawbar

* When winch is fitted with an arch, wire rope diameter shall be reduced one size from maximum recommended wire rope diameter.

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

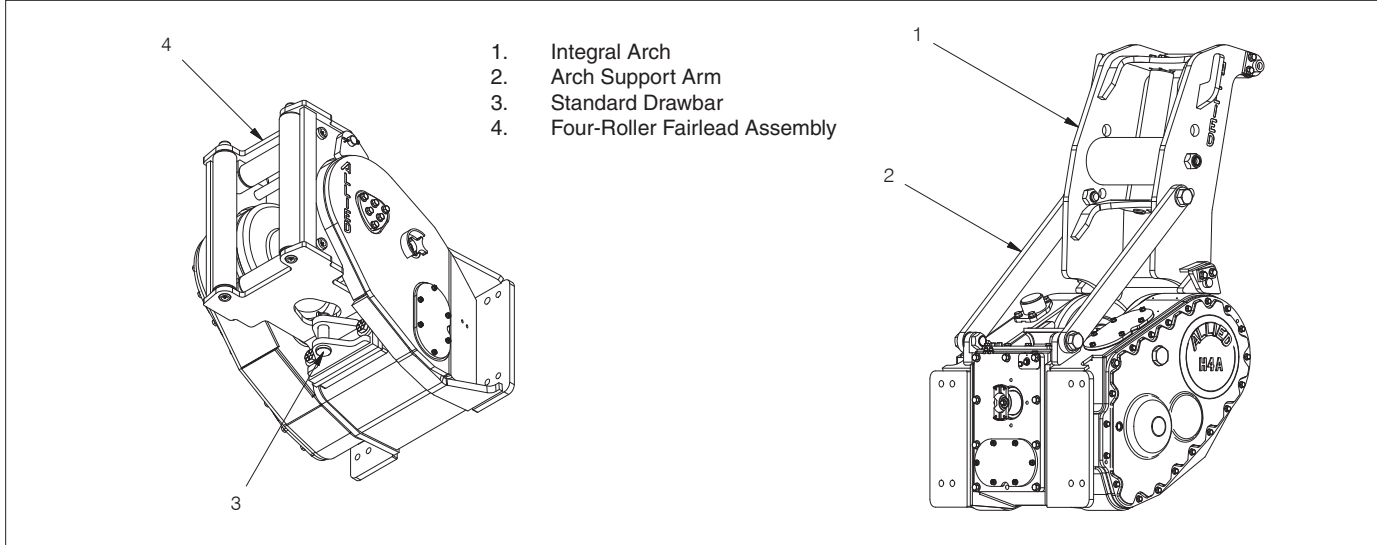


Figure 12 - H4A Hydrostatic Winch Optional Equipment

Operation

Checks before Operation

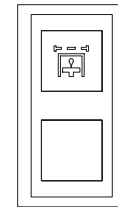
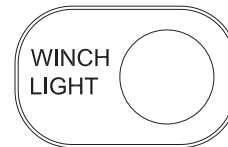
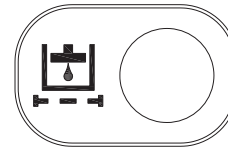
- Check that the wire rope and hook are not worn or damaged.
- Check the oil level. Check for oil leaks if level is down. If oil level is too high on model with external pump, check for internal leaks in the winch.
- Clean dirt and debris away from breather.
- Lubricate the rollers on the arch or fairlead every 50 hours, if equipped.
- Check the hourmeter to see if the winch is due for periodic inspection and maintenance. See the Maintenance Schedule later in this manual.
- Check the control lever for proper motion prior to startup.
- After winch has warmed up, check the oil filter bypass light.

Filter Bypass Warning Light (High Performance Winches)

The high-performance winches have a red LED mounted on the console that illuminates to indicate that hydraulic oil

is bypassing the filter. Figure 13 shows three styles of the filter bypass LED. A bypass condition means that either the oil is too thick or the filter is restricted and should be replaced. If the oil is too thick, it is either cold oil or an incorrect viscosity grade is being used.

To heat cold oil, operate the tractor at low to mid-throttle setting. The winch is ready for operation when the filter indicator light is not illuminated. See Figure 8, Oil Selection Chart, for the correct viscosity oil for ambient temperature.



(For E15, E16, E39,
E391, R15, R16 & R17)

(For C19, C191, C20, C201)

Figure 13 - Filter Bypass Warning Lights

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 bare drum line pull (see the nameplate for rated load). If excessive loads are encountered use a multi-part line and sheave blocks. When using a multipart line, the hook must be connected directly to the frame or blade of the tractor. **DO NOT** attach the hook to the winch drawbar; the force generated could exceed the holding capacity of the winch mounting.

To operate the winch, the tractor must be running and the auxiliary hydraulic function switch (or lever) must be in the “ON” or “UNLOCKED” position. Through the operator controls, hydraulic power from the tractor is sent to the winch motor to control direction and speed of the winch drum rotation.

BRAKE-ON - The control lever, at rest, is spring loaded to the center position. The automatic holding brake is applied preventing drum rotation.

LINE-IN - Pulling the control lever towards the operator releases the brake and begins the drum turning to reel wire rope onto the drum. Releasing the lever causes it to return to the **BRAKE-ON** position, which stops drum rotation and applies the holding brake.

Moving the lever a small amount produces slow drum rotation for inching. As the control lever is moved farther, more flow is sent to the motor thus increasing line speed. At full control lever stroke, the winch automatically reduces displacement of the winch motor and produces the greatest line speed. (Note: early winches employed a four-axis control lever with a distinct **HI-SPEED** position. By moving the control lever to the left, the winch is placed in **HI-SPEED** mode.)

HI-SPEED operation is achieved at the expense of winch pulling force. While pulling at high speed, if the load increases, the winch will automatically adjust the motor to maximum displacement to increase pulling force. The operator will notice the line speed slowing down but the winch will continue pulling.

LINE-OUT - Pushing the control lever away from the operator releases the brake and reels wire rope off the drum. Releasing the lever causes it to return to the **BRAKE-ON** position, which stops drum rotation and applies the holding brake. Moving the control lever a small amount produces slow drum rotation for inching. Line speed increases proportionally to maximum speed as the lever is moved farther. **HI-SPEED** operation is the same as **LINE-IN**.

FREESPOOL - When the operator selects **FREESPOOL** mode, hydraulic pressure releases a mechanical clutch on the intermediate shaft. This allows the drum, the drum gear and the drum pinion to rotate freely permitting wire rope to be pulled from the drum. An adjustable, spring-applied wear pad bearing against the drum flange provides resistance to drum rotation in **FREESPOOL**.

FREESPOOL is controlled by a console mounted rocker switch with a yellow LED indicator. To operate the switch,

slide the locking tab, then push the rocker switch. The winch remains in **FREESPOOL** mode until the switch is turned off.

Note: On early production winches, FREESPOOL is selected by moving the control lever sideways to a detented position. The winch remains in FREESPOOL mode until the control lever is returned to the BRAKE-ON position.



WARNING

FREESPOOL should not be used if there is a load on the wire rope. An uncontrolled release of the load will occur. Loss of the load can result in injury and/or equipment damage.

BRAKE-OFF - a few early winches incorporate a **BRAKE-OFF** feature to allow wire rope to be pulled off of the drum as the tractor drives away from a towed load. **BRAKE-OFF** is achieved by moving the control lever sideways to a detented position which releases a hydraulic clutch and allows the drum and gear train to rotate. The winch remains in **BRAKE-OFF** mode until the control lever is returned to the centered position.



WARNING

BRAKE-OFF should not be used to lower a suspended load or a load that can slide down a slope.



WARNING

Activating **FREESPOOL** or **BRAKE-OFF** will result in an uncontrolled release of the load. Loss of load can result in injury and damage.



WARNING

During **LINE-OUT**, **FREESPOOL** or **BRAKE-OFF** operation, it is possible for the wire rope to be spooled out completely to the end. If this occurs, the wire rope ferrule (knob) may release suddenly from the winch like a compressed spring, and cause an injury.



CAUTION

When deactivating **FREESPOOL**, do not move the control lever into the **LINE-IN** position until the drum has stopped rotating. Possible winch damage may occur.

Operational Adjustments

FREESPOOL Drag Adjustment: A wear pad pressing against the drum flange controls the resistance to drum rotation during **FREESPOOL** operation. A knob located on the right side of the winch is used to adjust the drum drag. Clockwise rotation of the knob increases the drag. Refer to Figures 3 and 4 for the location of the freespool drag adjust.

Arch Adjustments: The arch for the H4A has two adjustments for the main roller position. The arch can be pivoted about the rear mounting ears by relocating the support arm bolts in the arch frame. See Figure 14. This shifts the main roller towards the front of the winch, therefore providing better balance for light tractors. The

main roller also has two mounting heights. The upper height is used for lighter line pulls to raise the end of the load higher off the ground. For heavier line pulls, use the lower roller height for better tractor stability.

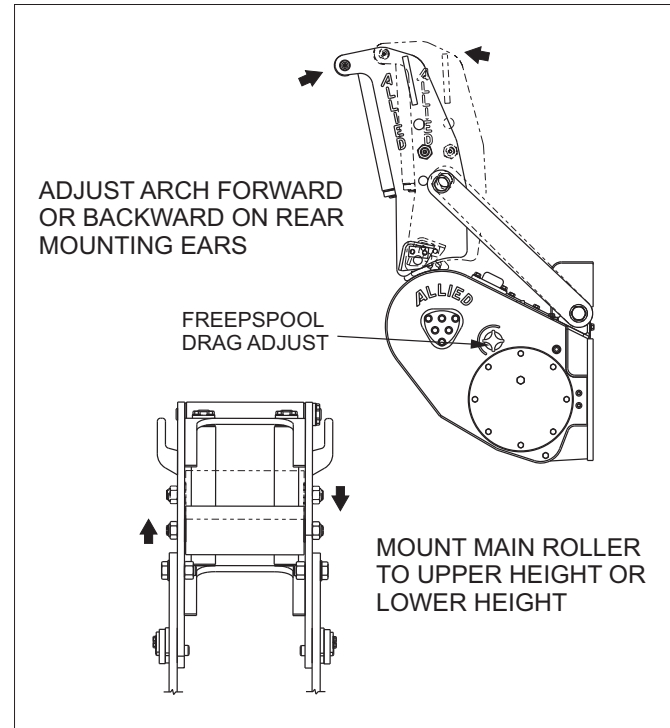


Figure 14 - **FREESPOOL** Drag & Arch Adjustments

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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.

A filter bypass indicator light is used with the H4A. Some winches are supplied with the indicator light, and others utilize the tractor indicator light. The indicator light will illuminate when the filter becomes too dirty or if the oil viscosity is too thick. If the light is illuminated because the oil viscosity is too high, it will go out when the oil has reached a high enough temperature. Operate winches only at low mid RPM to warm oil. Use oil with the proper viscosity for the operating temperature to avoid the filter bypass condition. See Figure 8 for the Oil Selection Chart.

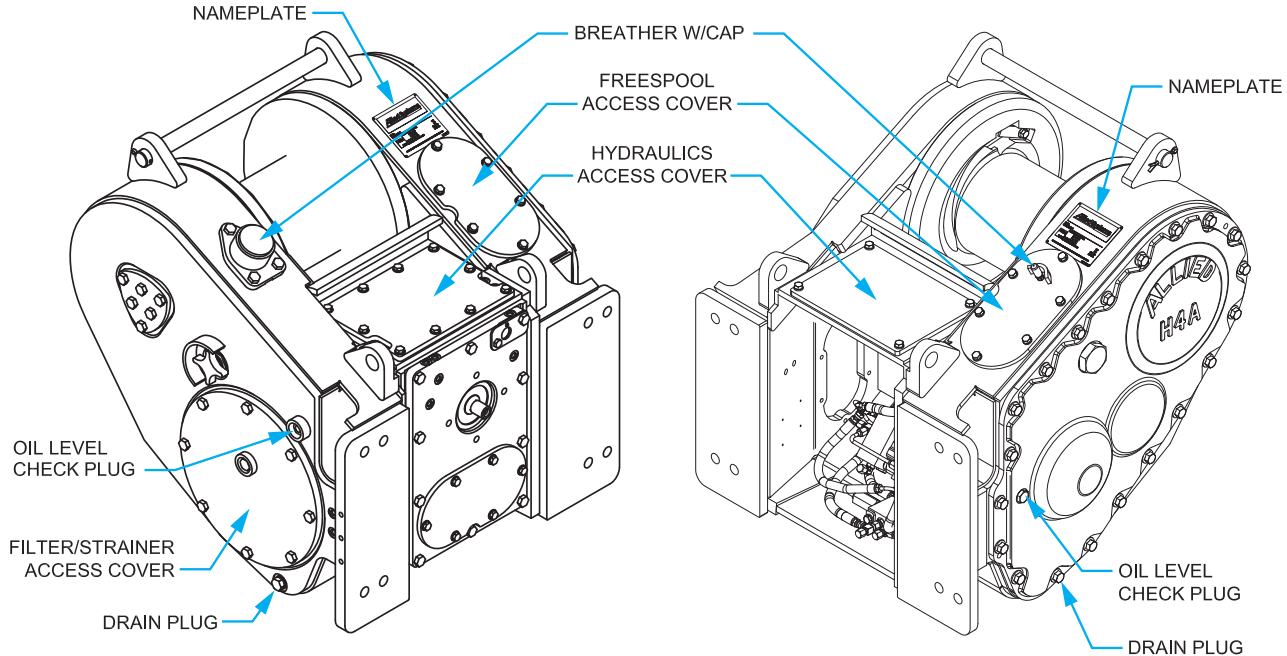


CAUTION

Operating the winch with the filter indicator light illuminated may cause pump and motor damage.

Hydraulic pumps and motors are relatively low-maintenance. The only regular maintenance tasks are oil and filter element changes. Both of these measures promote system cleanliness. Monitoring and periodic maintenance of the systems can prevent premature breakdowns and repairs. Under normal application conditions, the following maintenance intervals are suggested. Under dusty conditions or in situations with severe temperature fluctuations, the oil change interval should be shortened accordingly.

Maintenance Points



SCH WINCH

EXTERNAL PUMP WINCH

Figure 15 - H4A Maintenance Points

Maintenance Schedule

INTERVAL	PROCEDURE	SPECIFICATION & QUANTITY
Daily	Clean the area around the breather.	
	Check the oil level.	See Figure 8 for approved oils.
	Check the oil filter warning light.	Change filter if light remains lit after warming-up period.
50 Hours or Weekly	Lubricate the arch and fairlead rollers.	Use multi-purpose grease.
500 hours or when filter indicator shows element needs changing	Change oil filter.	See Parts Manual for appropriate filter.
	Check freespool drag pad.	Replace pad if worn.
	Lubricate driveline (if so equipped)	Mobilith SHC 220 Grease
2000 hours or yearly	Change hydraulic oil.*	See Figure 8 for approved oils.
	Clean magnet and strainer.	SCH winch needs approximately 20 gallons (76 liters) of oil. External pump winch needs approximately 4-5 gallons (15-19 liters) of oil. See Figure 8 for approved oils. Change oil more frequently if the winch runs above 180°F or if there are large fluctuations in ambient temperature.
	Clean reservoir of dirt and sludge.	
	Check filter bypass indicator light.	See Service Manual for check procedure.
* Change oil more frequently for extreme-duty applications such as continuous high line pull.		

Figure 16 - Maintenance Schedule

Troubleshooting

Winch problems generally fall into one of three categories: controls, hydraulic system, or mechanical system. Follow the troubleshooting steps below to isolate the probable location of the malfunction, then refer to Figure 17, Troubleshooting Chart.

1. Make sure the control lever is functioning properly, with a full range of motion. See the operation instructions earlier in this manual for correct control lever operation.
2. Check the oil level and type. Ensure the operating temperature range for the oil is suitable for the conditions. Check the filter indicator.
3. Check winch hydraulic pressures. Start with control pressures, then check main system pressures.
4. Inspect the winch gear train for problems.



CAUTION

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

Maintenance

PROBLEM	POSSIBLE CAUSE	CORRECTION
Winch gets very hot (H4A will operate at 180°F)	Low oil level.	Add oil; refer to Figure 17, Oil Selection Chart.
	Improper oil viscosity.	Use correct oil grade; refer to Figure 17, Oil Selection Chart.
	Winch coated with dirt.	Clean winch.
	Clogged filter or strainer.	Replace filter and/or clean strainer.
	Charge pressure too high.	See Service Manual.
	Winch usage very high.	Add oil cooler and additional 3 gallons (11 L) of oil.
Will not LINE-IN or LINE-OUT	Pump not stroking, or brake not releasing, due to: <ol style="list-style-type: none"> 1. Low charge pressure. 2. Leak in charge circuit. 3. Low oil level. 4. Clogged filter. 5. Wrong oil. 	<ol style="list-style-type: none"> 1. See Service Manual. 2. Fix leak in system. 3. Add oil; refer to Figure 17, Oil Selection Chart. 4. Replace filter. 5. Use correct oil grade; refer to Figure 17, Oil Selection Chart.
	BRAKE-OFF clutch slipping.	Repair BRAKE-OFF clutch; see Service Manual.
	Stuck in FREESPOOL .	Repair FREESPOOL ; see Service Manual.

Figure 17 - Troubleshooting Chart

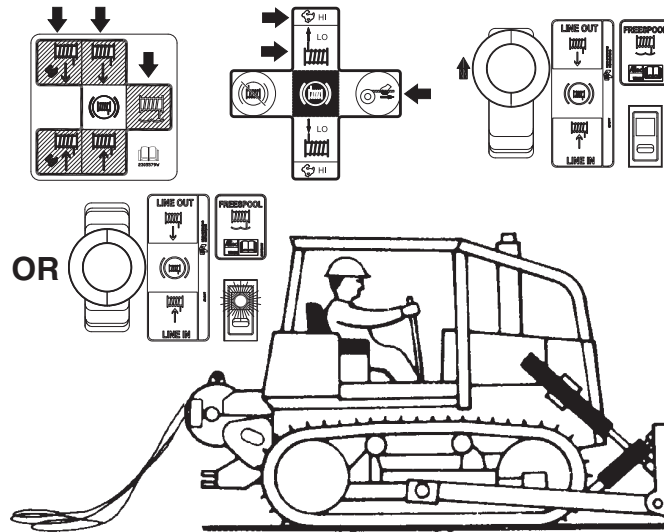
(Continued on next page)

PROBLEM	POSSIBLE CAUSE	CORRECTION
Operation is rough	Low oil level.	Add oil; refer to Figure 8.
	Low charge pressure.	See Service Manual.
	Motor hunting between high and low speed.	Motor speed orifice too large. See Service Manual for further information.
Drum continues to rotate after lever is returned to BRAKE-ON	Pump staying on stroke too long.	<ol style="list-style-type: none"> 1. Cold oil. Refer to warm-up procedure in the Operating Procedures section of the Operation chapter. 2. Wrong pump stroking orifice. Use larger size.
Lever won't stay in BRAKE-OFF or FREESPOOL	Low detent force.	Screw in ball plunger to increase force; see Service Manual for details.
Winch case oil level too high	Too much oil added.	Drain oil down to oil level plug.
	Internal oil leak in winch (external pump models only)	Repair leak (see Service Manual).

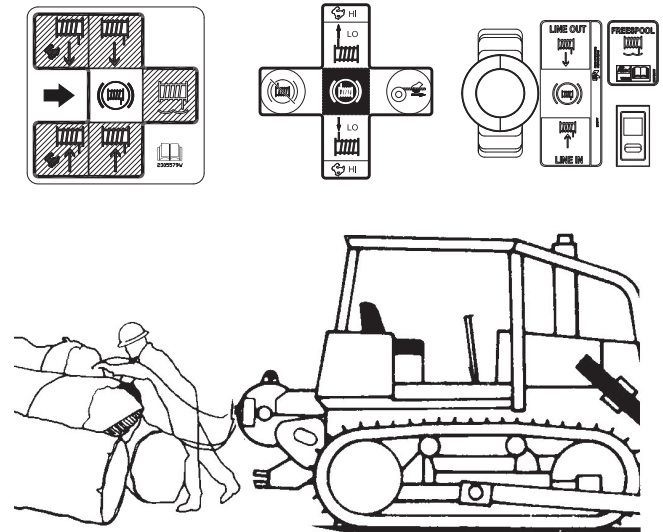
Figure 17 - Troubleshooting Chart

Operating Techniques

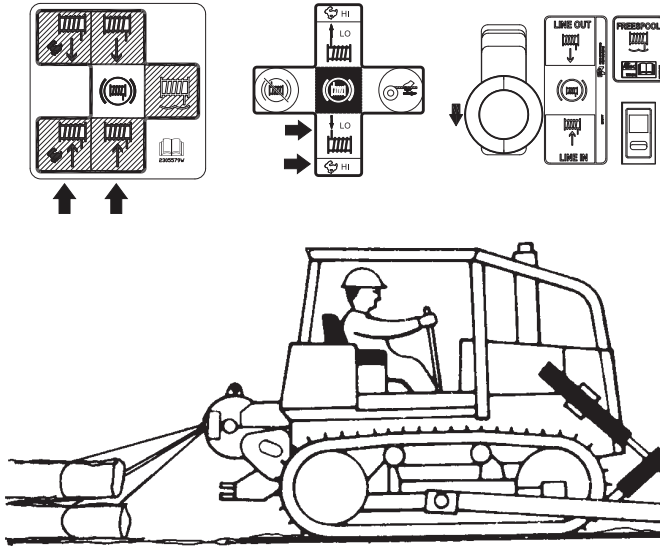
Tractor or Skidder Operation



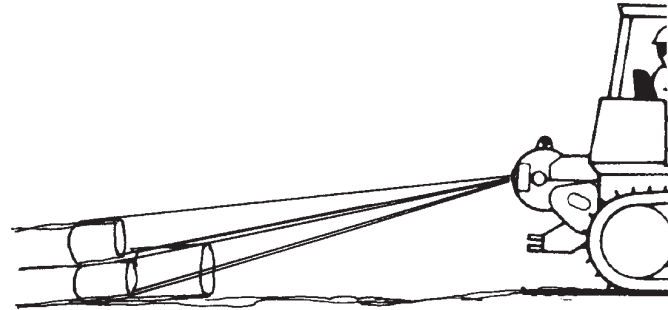
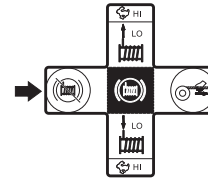
Step 1. The tractor or skidder is moved to an area where a load will be connected. The operator moves the control lever to the **LINE-OUT**, **HIGH SPEED LINE-OUT** or **FREESPOOL** position so that the wire rope can be pulled from the winch drum.



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

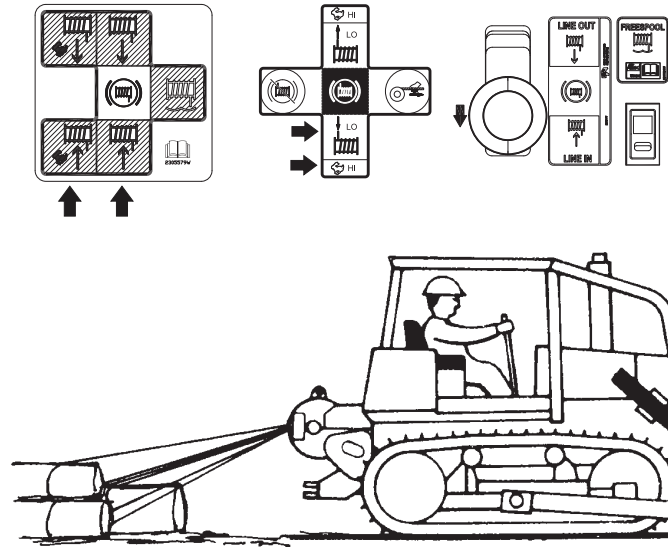


Step 3. The operator can move the control lever to the **LINE- IN** or **HIGH SPEED LINE-IN** position. If the load is less than approximately 75% of the maximum line pull, the operator can begin traveling with the vehicle at the same time. The winch will wind the load toward the vehicle as it travels.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

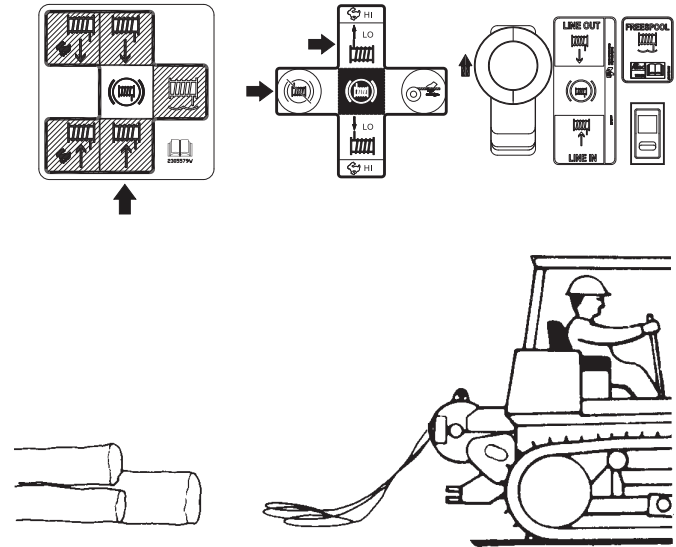


Step 4. If the tractor or skidder must travel through an area with bad traction conditions and the winch is equipped with the **BRAKE-OFF** option, the operator can move the control lever to the **BRAKE-OFF** position. This allows the vehicle to move through the bad traction area without pulling the load at the same time. (Note: **BRAKE-OFF** option was last used on serial number H4A-1014.)

Operating Techniques



Step 5. When the vehicle is on firm ground, the operator can move the control lever to **LINE-IN** or **HIGH SPEED 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 **LINE-OUT** position to loosen the wire rope. If the winch is equipped with the **BRAKE-OFF** option, the **BRAKE-OFF** function may be used instead. The wire rope is then disconnected from the load.

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 18. 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. Put the control lever in the **LINE-IN** position to tighten the winch wire rope. When the winch wire rope is tight, put the vehicle transmission in reverse* and engage the tracks or drive wheels. With the winch still in **LINE-IN**, 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 vehicle uses a PTO from the transmission case and the tracks or drive wheels on the vehicle stop turning, it is possible 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.**

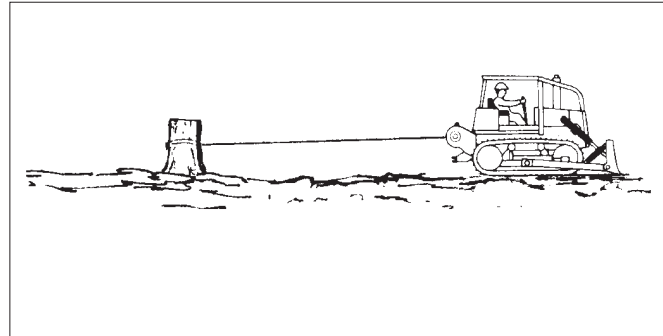


Figure 18 - Moving a Disabled Vehicle (Step A)

Operating Techniques

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 19. 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. Put the control lever in **LINE-IN** to tighten the winch wire rope. When the winch 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 rope does not pass under the drive wheels or tracks of the vehicle being towed.

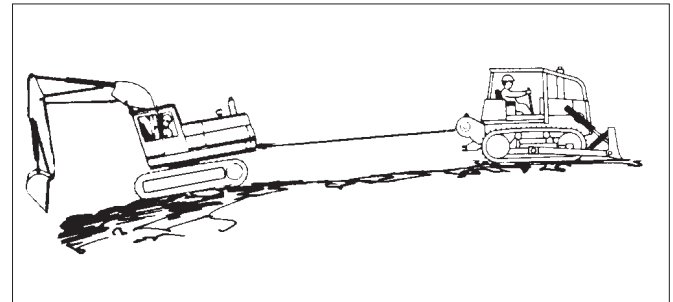


Figure 19 - Moving a Disabled Vehicle (Step B)

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. Use only 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, or wire rope while working on a steep slope can cause death or injury and loss of equipment.

Tractor is Down the Slope (See Figure 20).

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 **LINE-OUT** slightly to control the speed of the tractor down the slope.

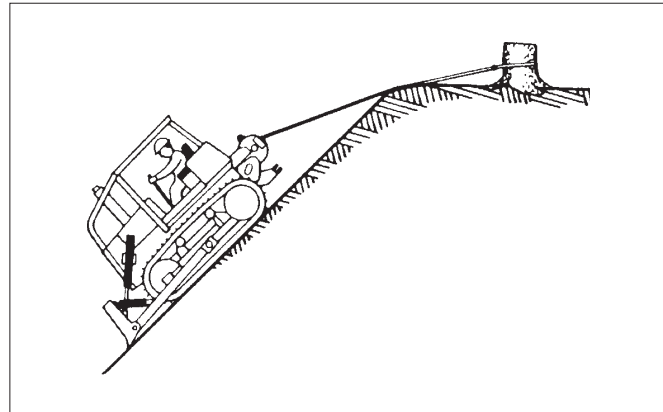


Figure 20 - Working on a Steep Slope

Operating Techniques

B. Moving up the slope:

1. Set the throttle on the tractor for the required engine speed.
2. Put the control lever in **LINE-IN** to tighten the winch wire rope. When the winch 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 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 **LINE-IN** as necessary. 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 21).

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.



WARNING

The H4A is a towing winch and should not be used for hoisting. Down slope vehicles should never be completely supported by the winch wire rope. Always check the wire rope condition and wire rope manufacturer's working load limit before attempting any down the slope assistance.

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.

A. Lowering the equipment on the slope:

1. Set the throttle on the tractor for the required engine speed.
2. Keep the winch wire rope tightened between the tractor and the equipment being lowered down the slope. Put the control lever in the **LINE-OUT** position to control the lowering of the equipment down the slope.

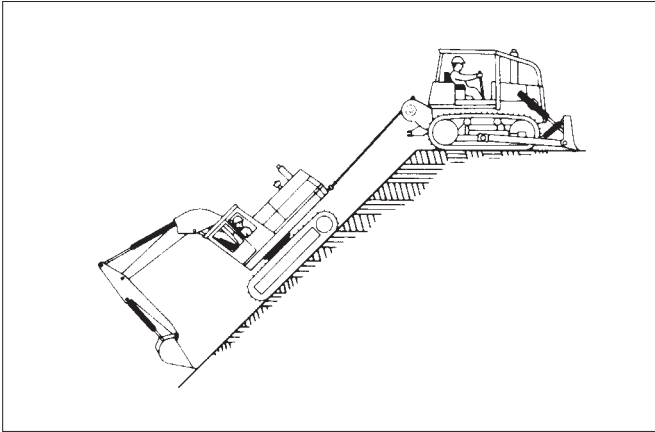


Figure 21 - Other Equipment on a Steep Slope

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 **LINE-IN** to control the raising of the equipment down the slope.
3. 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.

Notes

Notes

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 रिहा रहौ ।

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