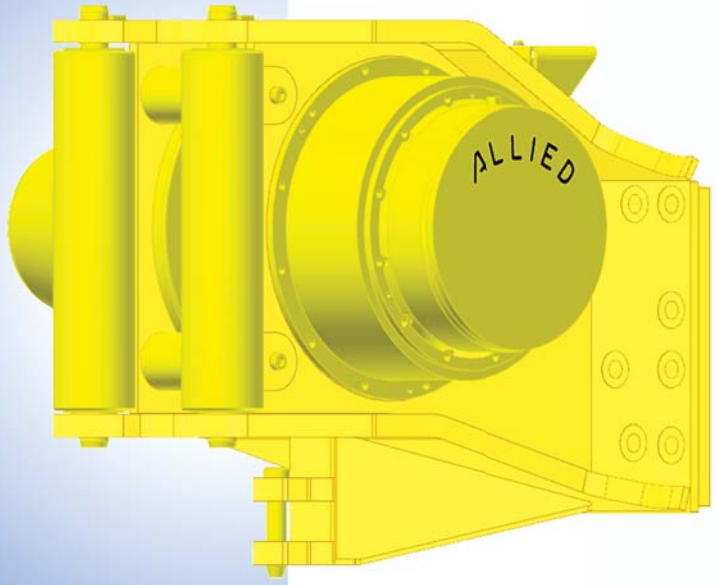
Allied® WINCH

OPERATION, PARTS & MAINTENANCE MANUAL



Allied H12A

Hydraulic Towing Winch

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

CUSTOMER EDITION

A PRODUCT OF Allied Systems COMPANY
SHERWOOD, OREGON USA

P/N 599016W Printed in USA 09/27/2011

Safety Precautions

Read, understand and observe the precautions on the following pages to prevent injury to personnel and damage to equipment.

Winch serial number _____

Date put into service _____

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

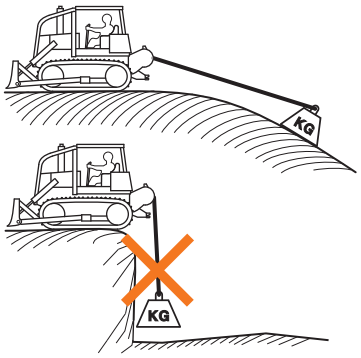
Winch protected with internal pressure relief valves set to 3500 psi max.

Operation, Inspection, and Maintenance Warnings

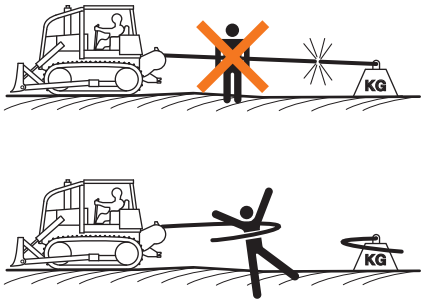
Obey the following cautions and warnings before using your winch to avoid equipment damage, personal injury or death.

- 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.
- 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.
- 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 Page 3-1 in Section 3.
- 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.
- 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.

Ordering Parts:

When ordering replacement parts, give the unit serial number,
part number, name of part and quantity required.

For any further information on parts, service or ordering, consult 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: 503-625-5132
E-Mail: parts@alliedsystems.com

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

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.

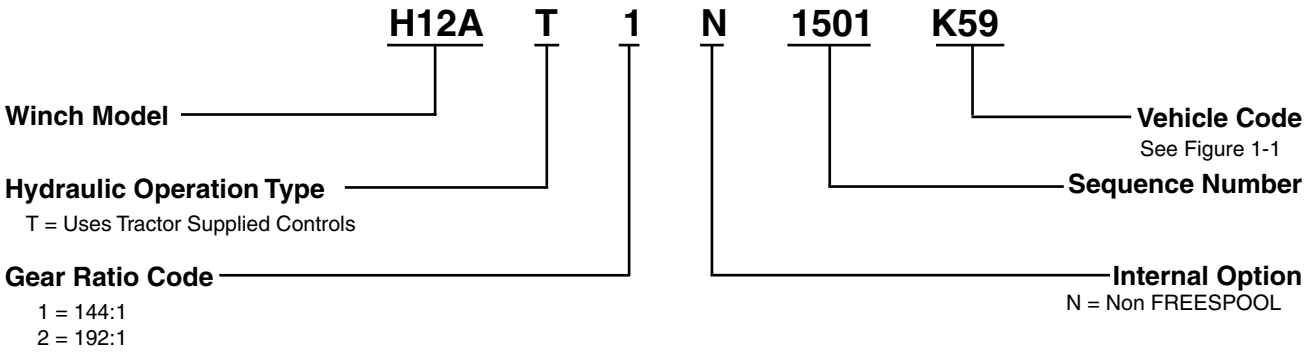
Contents

Notes

General Introduction

Unit Identification

Allied Winch S/N Nameplate Data For Tractor Mountings



Notes: **1.** In addition to the nameplate, the serial number is stamped on the top right-hand side of the frame.

2. Circled numbers in **Figure 1-1** indicate possible gear ratios.

Tractor Make Model and Starting Tractor Serial Number Where Applicable

CODE	A New Holland & Fiat	C Caterpillar	E John Deere	H Dressta	K Komatsu	R Case
50					D85E/PX-15 (51) ①②	
59					D155AX-5 ①②	
64					D155AX-6 ①②	
65					D275AX-5 ①	

Figure 1-1 Tractor or Skidder Identification Codes and Available Gear Ratios

To supplement the following descriptions, consult the Winch General Arrangement Drawings on pages 1-3 through 1-5.

Winch Components

This Allied Winch consists of the following components:

1. Motor – Two-speed vane with 15 in^3/rev. and 7.5 in^3/rev. displacements or two-speed vane with 9.5 in^3/rev. and 4.75 in^3/rev. displacements
2. Clutch – Sprag (Cam) type one way
3. Brake – wet multi-disc type
4. Planetary gear reductions
5. Drive Shaft
6. Winch Drum
7. Winch Housing

This winch is “power in/power out” with equal speed in both directions.

Winch Wire Rope Capacity

Barrel Diameter	Wire Rope Diameter			Ferrule		
	1 inch	1.12 inch	1.25 inch	Name	Length	Diameter
12.50 in.	333 ft.	253 ft.	234 ft.	Junior	2 3/8 in.	2 1/4 in.
Wire rope capacity of drum is based on SAE J1157 JAN 85						

Figure 1-2 Winch Wire Rope Capacity

2311487 H12A/LANTEC COMMON PARTS

ITEM	QTY	PART NO	DESCRIPTION
1	1	113586 W	O-RING
2	2	2304649 W	SEAL-OIL SL
3	1	2304646 W	BEARING-CRB FULL COMP
4	1	8401397	NUT-ADJUSTMENT
5	1	8401380	HOUSING-GEAR
6	3	235691 W	PLUG-SOCKET HEAD
7	1	8401389	GEAR-INTERNAL
8	1	2304620 W	O-RING
9	24	221771 W	WASHER-FLAT
10	12	16085 W	CAPSCREW-HEX
11	1	8401378	HOUSING-BRAKE
12	1	8200987	SPACER-BRAKE
13	1	2304656 W	LOCKSCREW-SOC
14	1	8100884	SPRING-CONIC-LEFT
15	1	21278 W	BALL-STEEL
16	1	39763 W	O-RING
17	1	8401379	PISTON-BRAKE
18	1	2304650 W	CLUTCH-SPRAG
19	1	104506 W	O-RING
20	1	2304652 W	VALVE-RELIEF (INCLUD. CAP)
21	3	222442 W	PLUG-SOCKET HEAD
22	1	8200980	HUB-BRAKE
23	1	2304632 W	O-RING
24	20	8100885	SPRING-COMPRESSION
25	1	2304657 W	SPRING-DIE
26	1	2304633 W	O-RING
27	4	2304642 W	DISC-DIVIDER
28	3	2304658 W	DISC-FRICTION
29			
30	3	40692 W	NUT-BEARING LOCK

2311487 H12A/LANTEC COMMON PARTS

ITEM	QTY	PART NO	DESCRIPTION
31	3	2304655 W	WASHER-BEARING LOCK
32	3	8101025	SPACER - BEARING
33	3	58921 W	RING-RETAINING
34	6	2304654 W	BEARING-CRIB
35	12	16813 W	CAPSCREW-HEX
36	3	8101024	SPACER BEARING
37	3	8201078	PIN-PLANET
38	2	12944 W	RING-RETAINING
39	2	8200981	BUSHING-SPRAG CLUTCH
40	1	12928 W	RING-RETAINING
41	1	43210 W	BEARING-BALL
42	1	2304648 W	SEAL-OIL DL
43	3	33657 W	NUT-BEARING LOCK
44	3	2304651 W	WASHER-BEARING LOCK
45	3	8100862	SPACER-BEARING
46	1	230152	VENT
47	6	2304645 W	BEARING-TRB CONE
48	6	2304644 W	BEARING-TRB CUP
49	3	233683 W	PLUG-SOCKET HEAD
50			
51			
52	1	8401381	HUB-DRUM
53	6	16665 W	CAPSCREW-SOC
54	1	15483 W	HCE-716 FTG. #2

2305388W 750 COMMON PARTS W/ STEEL GEAR HSG.

ITEM	QTY	PART NO	DESCRIPTION
61			
62	1	8401394	HUB-DRUM
66	1	18976 W	O-RING
67	3	2305197 W	PIN-DOWEL R#2305195W
68	1	2304640 W	SEAL-OIL SL
69	3	33657 W	NUT-BEARING LOCK
70	3	2304651 W	WASHER-BEARING LOCK
71	12	12448 W	CAPSCREW-HEX
72	6	8100862	SPACER - BEARING
73	6	2304645 W	BEARING-TRB CONE
74	6	2304644 W	BEARING-TRB CUP
75	3	8200978	GEAR-PLANET
76	3	8100864	SPACER-BEARING
77	3	8200984	PIN-PLANET
78	12	221621 W	HCE-509 CPSCR. 5/8 UNC X 1.625
79	1	2304621 W	O-RING
80	1	8401396	GEAR-SUN
81	1	233683 W	PLUG-SOCKET HEAD
82	1	8401395	HUB-PLANET
83	1	8401391	GEAR-INTERNAL
84	1	2305181 W	HOUSING-GEAR
85	1	2304622 W	O-RING

2305388W 750 COMMON PARTS W/ STEEL GEAR HSG.

ITEM	QTY	PART NO	DESCRIPTION
86	1	8401392	HOUSING-BEARING
87	9	221630 W	CAPSCREW-HEX
88	1	2304647 W	BEARING-CRB FULL COMP
89	33	221775 W	WASHER-FLAT

2305387W 200 & 750 CMN PARTS W/ STEEL GEAR HSG.

ITEM	QTY	PART NO	DESCRIPTION
91	1	8401390	GEAR-INTERNAL
92	1	8401385	HUB - PLANET
93	1	8200979	GEAR-SUN
94	3	8200977	GEAR-PLANET
95	3	8200983	PIN - PLANET
96	1	2305182 W	HOUSING - GEAR

8501459 BRAKE COOLING

ITEM	QTY	PART NO	DESCRIPTION
100	1	8100889	PLUG-ORIFICE

8501375 GEAR RATIO 6.00:1 NON-STD MOTOR

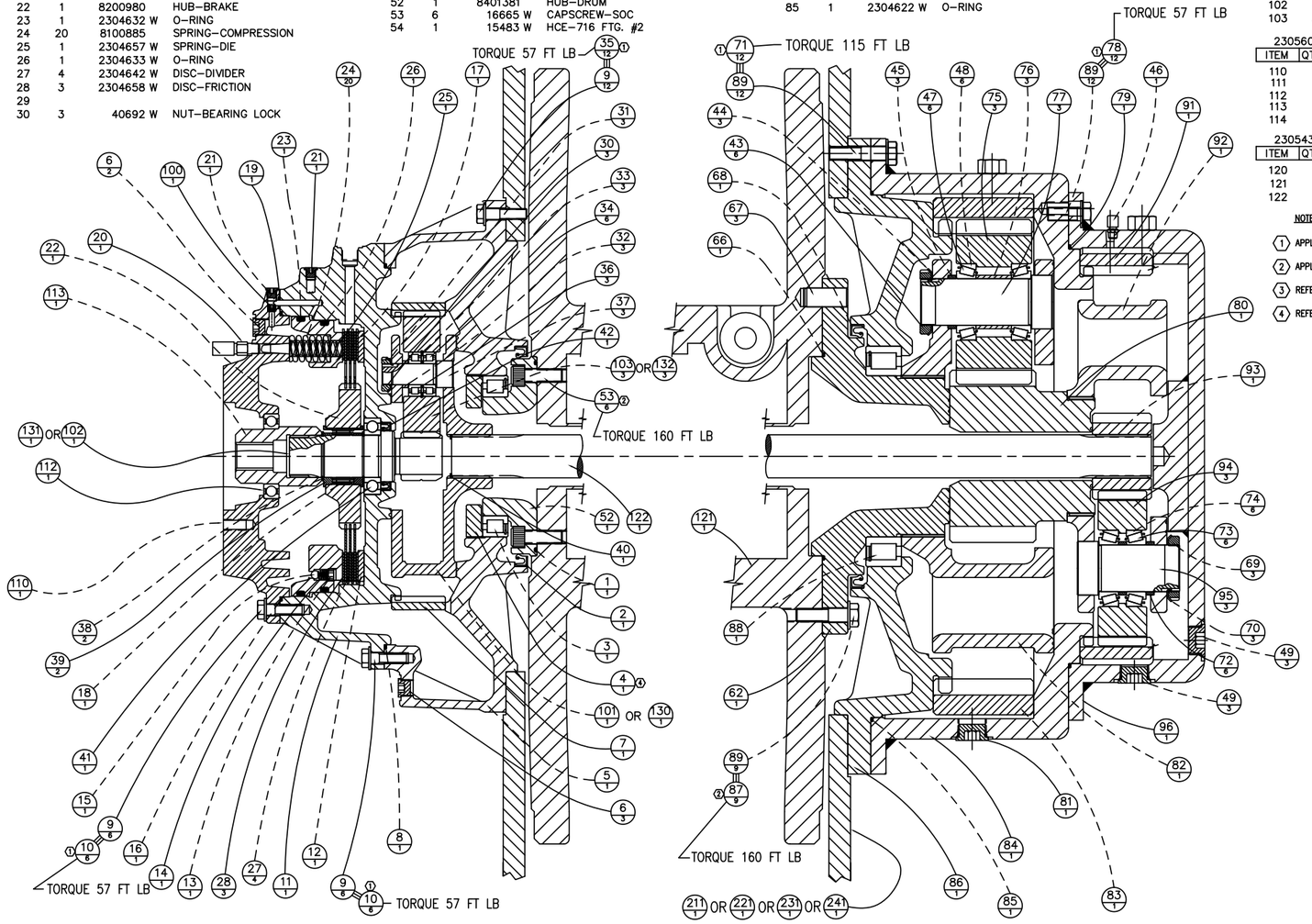
ITEM	QTY	PART NO	DESCRIPTION
101	1	8401588	HUB-PLANET
102	1	8401502	SHAFT-SUN GEAR
103	3	8201080	GEAR-PLANET

2305603W C-MOUNT MOTOR GROUP

ITEM	QTY	PART NO	DESCRIPTION
110	1	2305601 W	ADAPTER-MOTOR
111			
112	1	44313 W	BEARING - BALL
113	1	8201034	COUPLING - SHAFT, C-MNT.
114	1	2305604 W	GASKET

2305436W DRUM SHAFT

ITEM	QTY	PART NO	DESCRIPTION
120			
121	1	2305385 W	DRUM 750 (H12A)
122	1	2305386 W	DRUM SHAFT - H12A



NOTES:

1. APPLY MEDIUM STRENGTH THREADLOCKER COMPOUND HCE-67 (LOCTITE 242).
2. APPLY HIGH STRENGTH THREADLOCKER COMPOUND HCE-66 (LOCTITE 271).
3. REFER TO SERVICE MANUAL FOR MOTOR BOLT TORQUING PROCEDURE.
4. REFER TO SERVICE MANUAL FOR BEARING ENDPLAY ADJUSTMENT PROCEDURE.

Figure 1-3 H12A General Arrangement - 1

2305360W H12A PARTS K50 & K59

ITEM	QTY	PART NO	DESCRIPTION
150	1	17063 W	HCE–788 FTG–ORING #10
151	16	134328 W	HCE–509 CPSCR. 7/16 UNC X 1.50
152	16	15157 W	HCE–554 WASHER 7/16
153	1	16567 W	HCE–791 FTG–ORING 6 X 6
155	1	2305402 W	HOSE ASSY. – BRAKE
156			
157	2	16540 W	HCE–789 FTG – ORING 6 X 6
158			
159	2	16558 W	HCE–792 FTG–ORING 6 X 6
160	1	2305400 W	HOSE ASSY. – CASE DRAIN
161	1	2305401 W	HOSE ASSY. – VENT/TANK
162	1	16559 W	HCE–792 FTG–ORING 8 X 8
163	1	2305361 W	HOSE ASSY. – LINE IN
164	8	398817 W	FLANGE SCREW 1/2 UNC X 1.00
165	4	93166 W	PLATE – KEEPER
166	2	93981 W	SHAFT
167	6	16001 W	HCE–819 FTG–LUBE, THREADED
168	2	38672 W	WASHER R#2301947W
169	2	93658 W	SHAFT
170	8	92720 W	WASHER
171	2	92212 W	ROLLER ASSY.
172	2	93980 W	ROLLER ASSY.
173	1	228680	FITTING; ST–A10–C6–S
174	1	16560 W	HCE–792 FTG – ORING 10 X 10
175	1	2305362 W	HOSE ASSY. – LINE OUT
176	1	95959 W	PIN – DRAWBAR
177	1	2303221 W	PIN – RETAINING
178	8	17764 W	HCE–821 FTG–HOSE 20
179	1	2305161 W	COVER – L.H. SIDE
180	14	221623 W	HCE–509 CPSCR. 5/8 UNC X 1.75
181	14	221775 W	HCE–552 WASHER 5/8
182	4	200454 W	HCE–509 CPSCR. 1/2 UNC X 1.50
183	12	221771 W	HCE–552 WASHER 1/2
184	2	230353 W	BEARING R#210594W
185	4	221569 W	HCE–509 CPSCR. 1/2 UNC X 1.75
186	1	2312754	WELDMENT–TOP GUARD
187	4	221576 W	HCE–509 CPSCR 1/2 UNC X 2.500
188	4	16983 W	HCE–800 ORING #20
189	1	16989 W	HCE–786 FTG – 37° #8
190	1	2305404 W	HOSE ASSY.
191	1	2305661 W	HOSE ASSY.
192	1	2305660 W	HOSE ASSY.
193	1	2305403 W	HOSE ASSY.
194	1	211367	FITTING; TE–CCA8–S
195	1	2305669 W	VALVE – PRESSURE REDUCING
196	1	2305670 W	MANIFOLD – PRESS. RED. VALVE
197	2	221474 W	HCE–509 CPSCR. 5/16 UNC X 2.00
198	4	18515 W	HCE–551 WASHER 5/16
199	2	221705 W	HCE–536 NUT 5/16 UNC
200	1	211550	FITTING; ST–C8–G6–S
201	2	201779 W	HCE–789 FTG – ORING 6 X 4
202	2	239784 W	HCE–792 FTG – ORING 6 X 4

8501374 GEAR RATO – 8.00:1 NON–STD. MOTOR

ITEM	QTY	PART NO	DESCRIPTION
130	1	8401587	HUB – PLANET
131	1	8401501	SHAFT – SUN GEAR
132	3	8201079	GEAR – PLANET

2306012W H12A PARTS – KOMATSU D155AX–5 (K59)

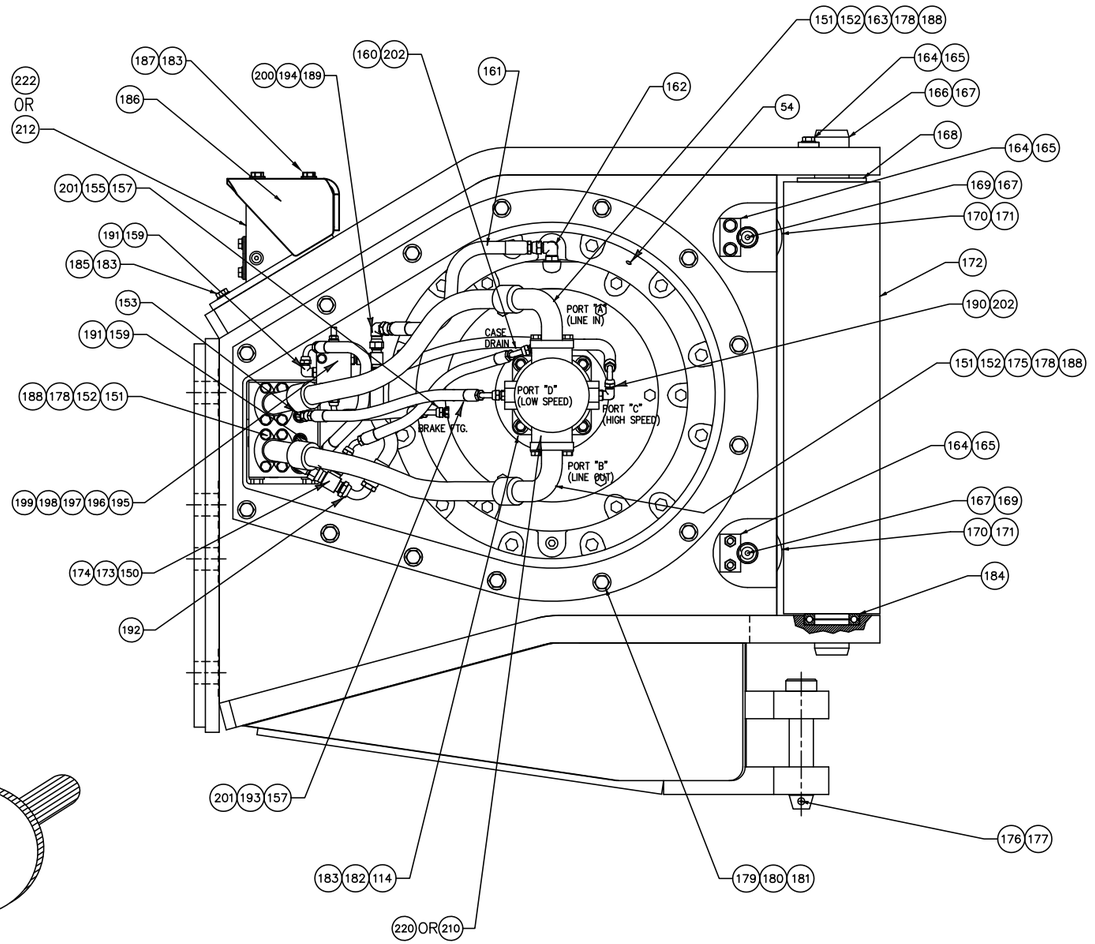
ITEM	QTY	PART NO	DESCRIPTION
220	1	2305610 W	MOTOR – HYDRAULIC
221	1	2305148 W	FRAME, MACHINED, H12A (K50) & (K59)
222	1	2306007 W	MANIFOLD ASSY

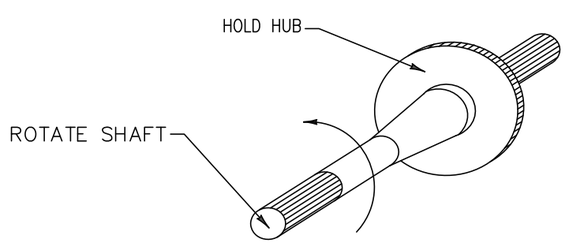
2306013W H12A PARTS – KOMATSU D85EX–15 (K50)

ITEM	QTY	PART NO	DESCRIPTION
210	1	2305363 W	MOTOR – HYDRAULIC
211	1	2305148 W	FRAME, MACHINED, H12A (K50) & (K59)
212	1	2306007 W	MANIFOLD ASSY

RATIO #	WINCH RATIO	PRIMARY RATIO	LIST #
1	144/1	6.00/1	8501375
2	192/1	8.00/1	8501374

NOTE:
ALL UNPAINTED STEEL SURFACES TO BE PRIME PAINTED, INCLUDING STEEL CASTINGS (GEAR HOUSINGS) AND MOTOR HOUSINGS.





SPRAG CLUTCH ORIENTATION VIEW

K50, K59, K64*

* UP TO SERIAL NO 1004

Figure 1-4 H12A General Arrangement - 2

2312716 H12A PARTS K64 & K65

ITEM	QTY	PART NO	DESCRIPTION
300	1	17063 W	HCE–788 FTG–ORING #10
301	16	134328 W	HCE–509 CPSCR. 7/16 UNC X 1.50
302	16	15157 W	HCE–554 WASHER 7/16
303	3	16567 W	HCE–791 FTG–ORING 6 X 6
304	1	2312777	HOSE ASSY–BRAKE; 36–AF6–6–15
305	1	16558 W	HCE–792 FTG–ORING 6 X 6
306	1	2305400 W	HOSE ASSY. – CASE DRAIN
307	1	2312778	HOSE ASSY; 36–A8–E10–10–28
308	1	16559 W	HCE–792 FTG–ORING 8 X 8
309	1	2305361 W	HOSE ASSY. – LINE IN
310	8	398817 W	FLANGE SCREW 1/2 UNC X 1.00
311	4	93166 W	PLATE – KEEPER
312	2	93981 W	SHAFT
313	8	16001 W	HCE–819 FTG–LUBE, THREADED
314	2	38672 W	WASHER R#2301947W
315	2	93658 W	SHAFT
316	8	92720 W	WASHER
317	2	92212 W	ROLLER ASSY.
318	2	93980 W	ROLLER ASSY.
319	1	228680	FITTING; ST–A10–C6–S
320	1	16560 W	HCE–792 FTG – ORING 10 X 10
321	1	2305362 W	HOSE ASSY. – LINE OUT
322	1	95959 W	PIN – DRAWBAR
323	1	2303221 W	PIN – RETAINING
324	8	17764 W	HCE–821 FTG–HOSE 20
325	1	2305161 W	COVER – L.H. SIDE
326	14	Y17C–1028 W	HCE–509 CPSCR. 5/8 UNC X 1.75
327	14	221775 W	HCE–552 WASHER 5/8
328	4	200454 W	HCE–509 CPSCR. 1/2 UNC X 1.50
329	12	221771 W	HCE–552 WASHER 1/2
330	2	230353 W	BEARING R#210594W
331	4	221569 W	HCE–509 CPSCR. 1/2 UNC X 1.75
332	1	2312754	WELDMENT–TOP GUARD
333	4	221576 W	HCE–509 CPSCR 1/2 UNC X 2.500
334	4	16983 W	HCE–800 ORING #20
335	1	2305404 W	HOSE ASSY.
336	1	2305403 W	HOSE ASSY.
337	2	222886	HCE–789 FTG – ORING 6 X 4
338	2	239784 W	HCE–792 FTG – ORING 6 X 4

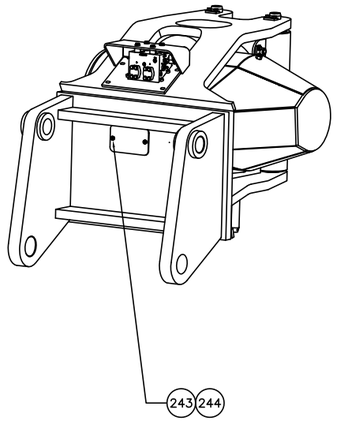
2311074 H12A PARTS – KOMATSU D155AX–6 (K64)

ITEM	QTY	PART NO	DESCRIPTION
230	1	2305610 W	MOTOR – HYDRAULIC
231	1	2312757	FRAME, MACHINED, H12A (K64)
232	1	2312715	MANIFOLD ASSY

2312709 LIST – FRAME, MOTOR & MANIFOLD, KOM D275AX–5 (K65)

ITEM	QTY	PART NO	DESCRIPTION
240	1	2305610 W	MOTOR – HYDRAULIC; 15 CU IN DOUBLE PILOT
241	1	2312707	FRAME, MACHINED, H12A (K65)
242	1	2312715	MANIFOLD ASSY, H12A (K65)
243	1	2312727	COVER
244	2	16829 W	CAPSCREW; ASC–508, 1/2 UNC X 1

NOTE:
ALL UNPAINTED STEEL SURFACES TO BE PRIME PAINTED, INCLUDING STEEL CASTINGS (GEAR HOUSINGS) AND MOTOR HOUSINGS.



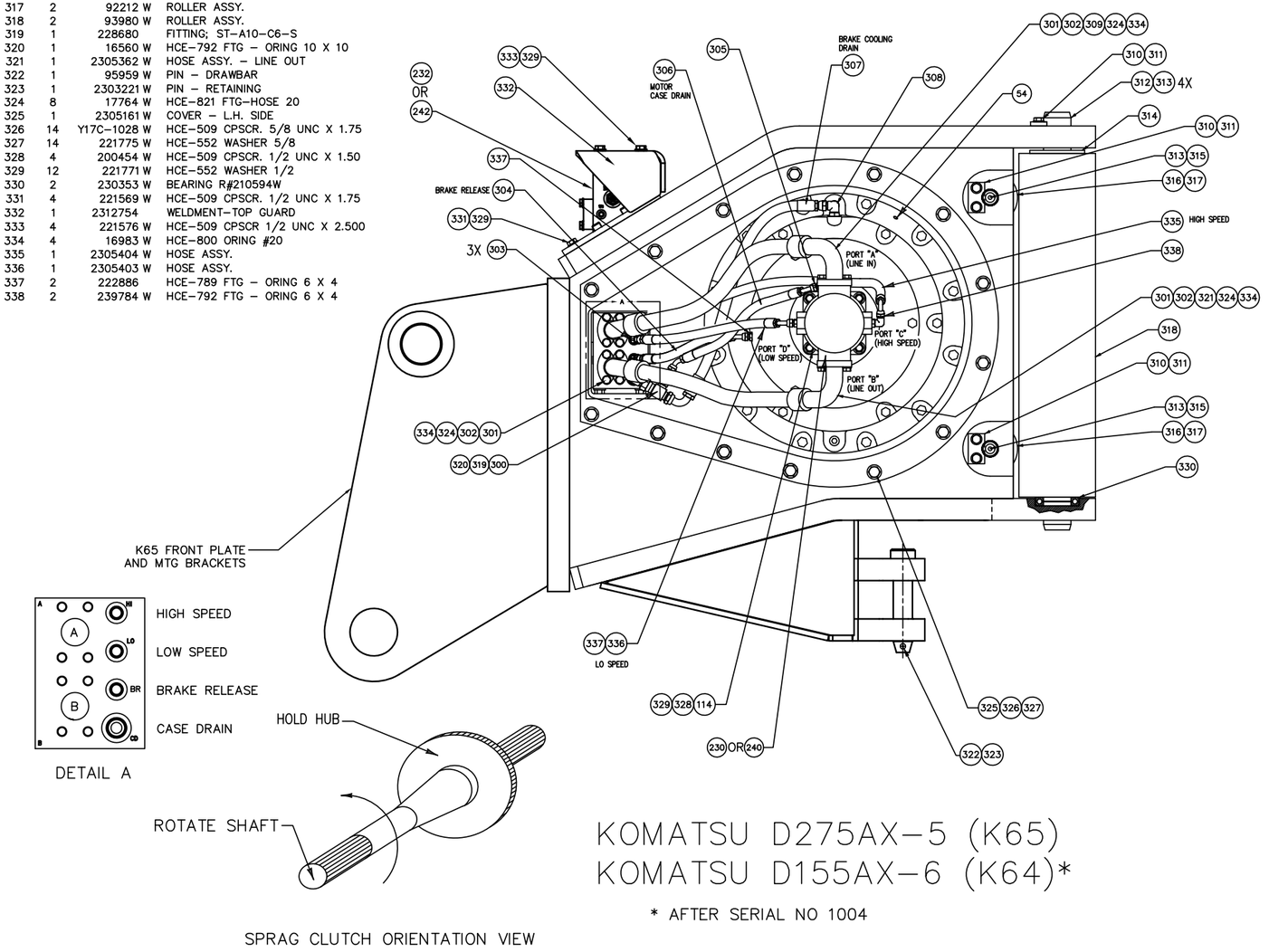


Figure 1-5 H12A General Arrangement - 3

Notes

Notes

Winch Operation

The Allied H12A Winch is made up of these basic assemblies:

1. Hydraulic controls and motor
2. Primary drive: motor mount, spring applied/hydraulically released fail-safe brake, primary planetary reduction
3. Final reduction: 1 or 2 planetary reductions
4. Drum group: winch drum, winch housing, drive shaft

The main hydraulic hoses from the tractor's ripper circuit supply oil to the two-speed motor for **LINE-IN** and **LINE-OUT** functions. Pilot oil pressure is routed through an electrically operated solenoid. The solenoid directs oil flow to one of two ports, which then engages either a high or low motor speed. An electrical switch located on the operator's compartment allows the operator to control the solenoid and, therefore, the winch motor speed.

The hydraulic motor drives the sun gear of the primary planetary reduction. The output of this reduction is transmitted by the drive shaft that passes through the center of the winch drum to the sun gear of the final planetary reduction in the final drive gear housing. The output from the final planetary reduction is transmitted directly to the winch drum by a spline connecting the final drive planet hub to the winch drum.

The primary drive also contains a wet multi-disc type brake that runs in hydraulic oil. The brake is connected to the sun gear of the primary planetary reduction by a cam-type overrunning clutch. The brake is held engaged by springs and is released by an annular hydraulic piston. This brake piston is connected to the motor port, which is pressurized during reverse (lowering) rotation, and becomes the exhaust port during forward (hoisting) rotation. In this way the brake is held engaged at all times until the winch is powered in reverse (lowering).

The brake hub forms the outer race of the sprag clutch. The shaft of the primary sun gear forms the inner race for the overrunning clutch. When the winch is powered in forward (hoisting) rotation, the overrunning clutch permits the sun gear to run free and the full power from the hydraulic motor is transmitted to the winch drum. When hydraulic oil is supplied to the motor for reverse (lowering) rotation, the overrunning clutch will "lock up" and the motor will not rotate until the pressure builds up and releases the brake sufficiently to permit the primary sun gear and brake plates to rotate together.

The winch can be used to lower any load (up to the designed maximum load) with smooth acceleration and deceleration. This is achieved by the special design of the self-regulating friction brake. When a load is applied to the cable on the winch drum it causes the overrunning clutch to "lock up" and the load is held entirely by the friction brake. In order to lower the load, hydraulic pressure is applied to the reversing side of the motor. The brake piston also senses this pressure, and when the pressure becomes high enough, the brake releases sufficiently to allow itself to slip. If the load on the winch drum tries to drive the motor faster than the supply of oil will permit (i.e., if the motor tries to act as a pump), the hydraulic pressure will decrease in the brake piston, causing an increase in braking effort. In this way a balanced pressure is supplied to the brake piston according to the load on the winch drum. The speed of the winch in either direction is dependent on the volume of oil supplied to the motor through the control valve and the selected motor speed.

Notes

Installation

Winch Mounting

Winch should be installed according to the installation print supplied with the winch. All hardware should be properly tightened.

⚠ WARNING

Do not weld to any part of the winch.

⚠ WARNING

Do not operate or perform any lubrication, maintenance or repair on this product, until you have read and understood the operation, lubrication, maintenance and repair information.

Gear Cavity Lubrication

The pour point of the oil should be lower than the lowest expected starting temperature.

The following table gives the recommended viscosity in relation to speed and ambient temperature:

Ambient Temperature		
-10° to +15° C +14° to +59° F	0° to +30° C 32° to +86° F	+10° to +50° C +50° to +122° F
AGMA 3EP ISO VG100 100 cSt at 40° C	AGMA 5EP ISO VG220 220 cSt at 40° C	AGMA 6EP ISO VG320 320 cSt at 40° C

Note: cSt is the same as mm2/s.
For special conditions consult factory for recommendations.

Figure 3-1 Gear Cavity Lubrication

The recommended working temperature of the sump should be between 50° and 70°C (122° to 158°F).

The intermittent peak temperature of the sump should be no greater than 95°C (203°F).

The winch gear cavities are filled via the filler plug. Fill with gear oil (est. 20 US gallons, or 75.7 liters) until it reaches the filler/level plug. **DO NOT OVERFILL** as this may cause the gear reductions to overheat. Use 85W-140 gear oils containing EP additives, which increase the oil film load carrying capacity of the oil.

The winch gear cavity is supplied with a VENT (shown on the right end of Figure 3-2). It is necessary that the oil sump be vented at the highest possible point above the oil level.

Lubrication For Storage

Allied routinely ships winches with a small amount of vaporizing storage oil (oxidization inhibitor) in the drive compartments to protect the components during shipping. This protection is sufficient for temporary storage indoors of up to two weeks prior to startup.

For storage up to two years indoors or up to six months outdoors the following must be done (refer to Figure 3-2 for locations of plugs and vents):

- If stored outdoors, protect unit from any direct exposure to weather.
- Replace vent and any plastic plugs with appropriate metal plugs and O-Rings.
- Fill gear cavity to approximately 25% capacity (5 US gallons, or 19 liters total) with Shell VSI circulating oil 68 (or equivalent rust inhibiting vaporizing oil).
- Fill brake completely via vent port with hydraulic oil.
- Fill brake piston cavity completely via the bleed port with hydraulic oil.
- Seal off manifold ports with steel blanking plates that have gaskets.

Prior to Operation:

- Replace metal plugs with appropriate fittings, including vent.
- Drain gear cavity of rust inhibiting oil and fill with gear oil as per subsection of Gear Cavity Lubrication.

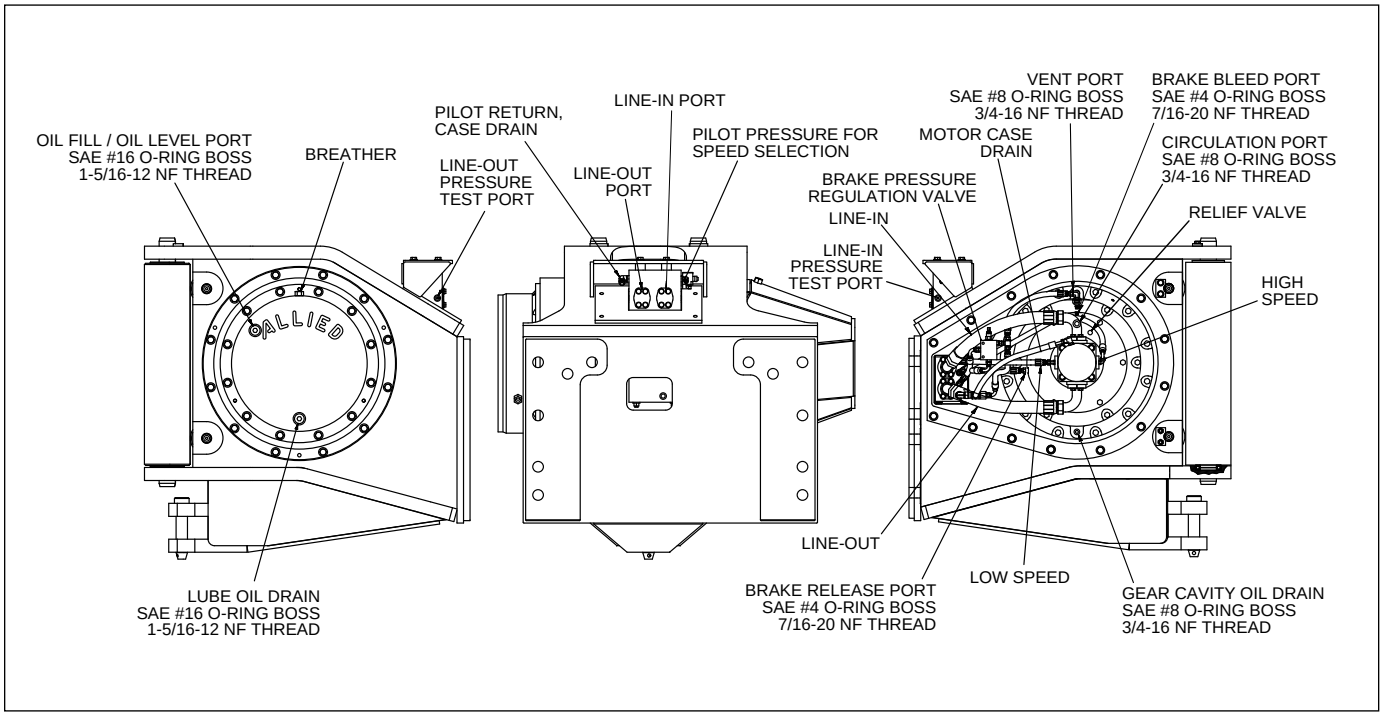


Figure 3-2 Winch Lubrication Ports
K50, K59 & K64*
(*Up to Serial Number 1004)

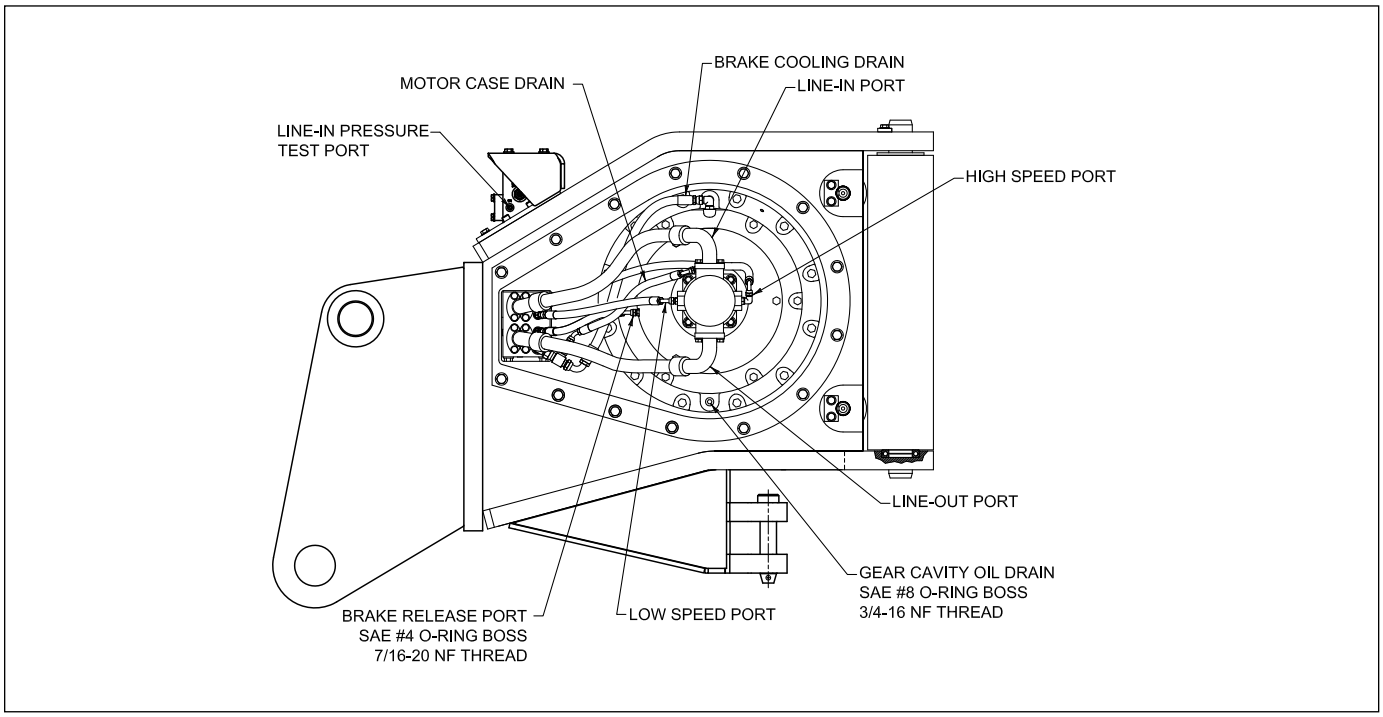


Figure 3-3 Winch Lubrication Ports
K65 & K64*
(*Up to Serial Number 1004)

Notes

Hydraulic Components

The basic components to be used with the winch (not supplied by Allied Hydraulic Winch) are:

Control Valve

The control valve used to operate this winch should be a four-way, spring return to neutral valve. This control valve should have good metering characteristics in order to provide smooth winch control and have a built-in relief valve suitable for the maximum operating pressure.

Hoses

The main oil supply for the H12A is supplied through the ripper lift circuit. These hoses connect directly to the winch manifold. All hoses and fittings required for connecting pilot pressure and a drain line to the winch are supplied with the winch.

Special consideration should be given to hose size and length depending on the oil flow characteristics to the winch. Figure 4-1 is a table that outlines the requirements.

Hydraulic Oils

Allied Hydraulic Winch makes the following recommendations concerning hydraulic oils:

1. Anti-wear type hydraulic oils. These oils are generally developed and evaluated on the basis of pump wear tests such as ASTM-D2882. These oils offer superior protection against pump and motor wear. They also provide good demulsibility as well as protection against rust.
2. Automotive type engine oils having letter designation “SC,” “SD” or “SE.” These oils in the 10W viscosity range are excellent for severe hydraulic service where the ambient air has low humidity.

Hydraulic Circuit

In order to cool the brake and remove contaminants, oil is normally circulated through the brake housing by means of internal circulation that leaves from the vent port. The hose from the vent port may be a low pressure hose with “push on” fittings and must go directly to the reservoir.

The hydraulic and electrical schematic in Figure 4-2 on page 4-3 shows a partial flow micro-filter being used to both filter the oil and create backpressure to cause circulation through the brake housing.

The vent port should be connected directly to the reservoir as shown (below the oil level).

⚠ CAUTION

The pressure in the brake housing must not exceed 10 psi (0.7 bar). Excessive pressures will damage the oil seals.

Once the hydraulic circuit has been completed, bleed all air from the brake housing before running the drive (refer to Bleeding Brake System in Section 6 for instructions).

⚠ CAUTION

The temperature of oil at any point in the system must not be allowed to exceed 180° F (82° C). It is recommended that the pump inlet temperature be limited to 130° F (54° C). Definite operational advantages will be obtained by operating below 130° F (54° C).

Hose Requirements		
Oil Flow	**Pressure Lines Inside Diameter**	**Return Lines inside Diameter**
45-69 gpm (170-264 l/min)	1.25” (32 mm)	1.50” (38 mm)

Note: The size shown in the table are to be used as a guide only. If trouble is experienced due to excessively long hoses, it will be necessary to use hoses one size larger than listed above.

Figure 4-1 Hose Requirements

Notes

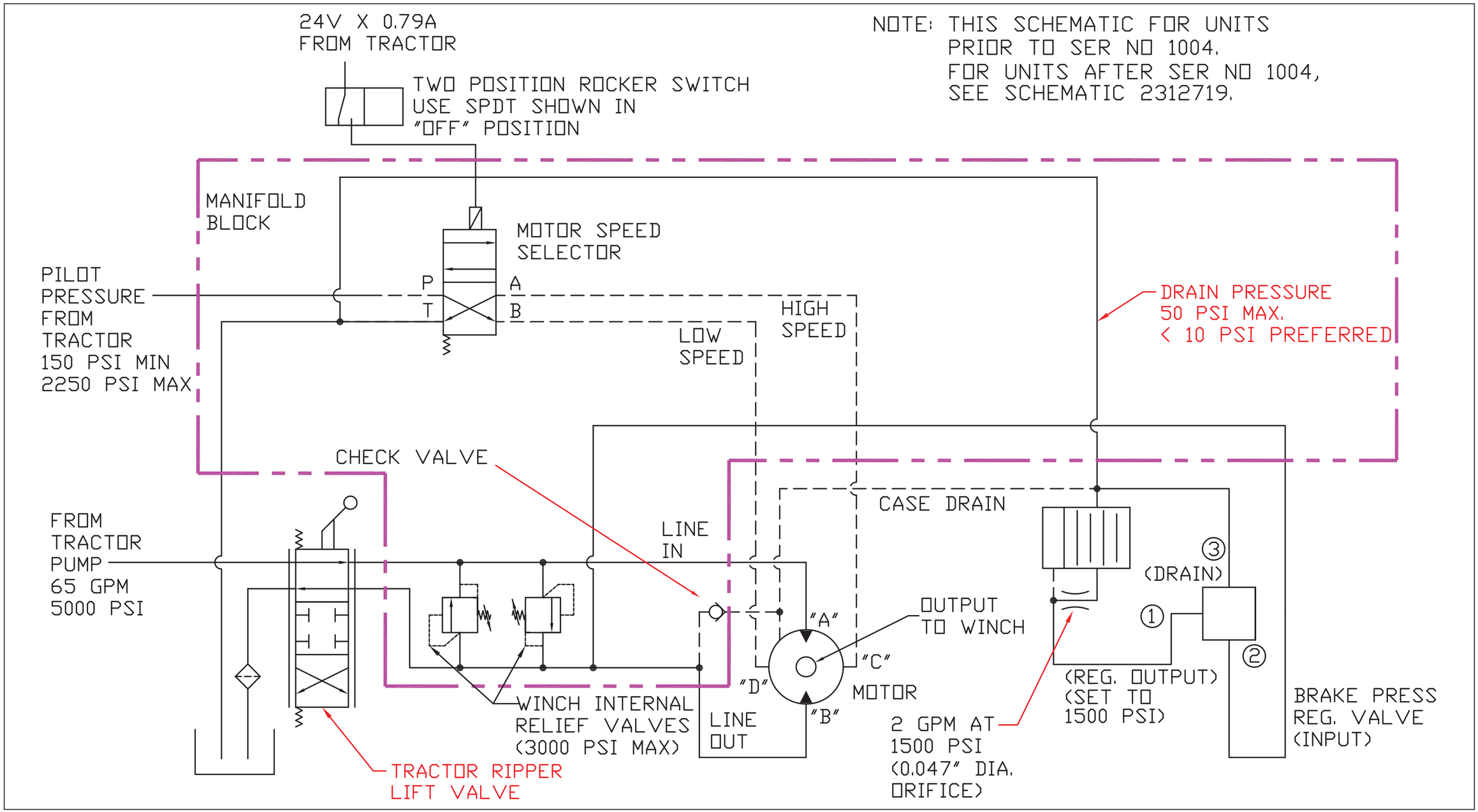


Figure 4-2 H12A Hydraulic & Electrical Schematic (For H12A Winch Prior to Serial Number 1004)

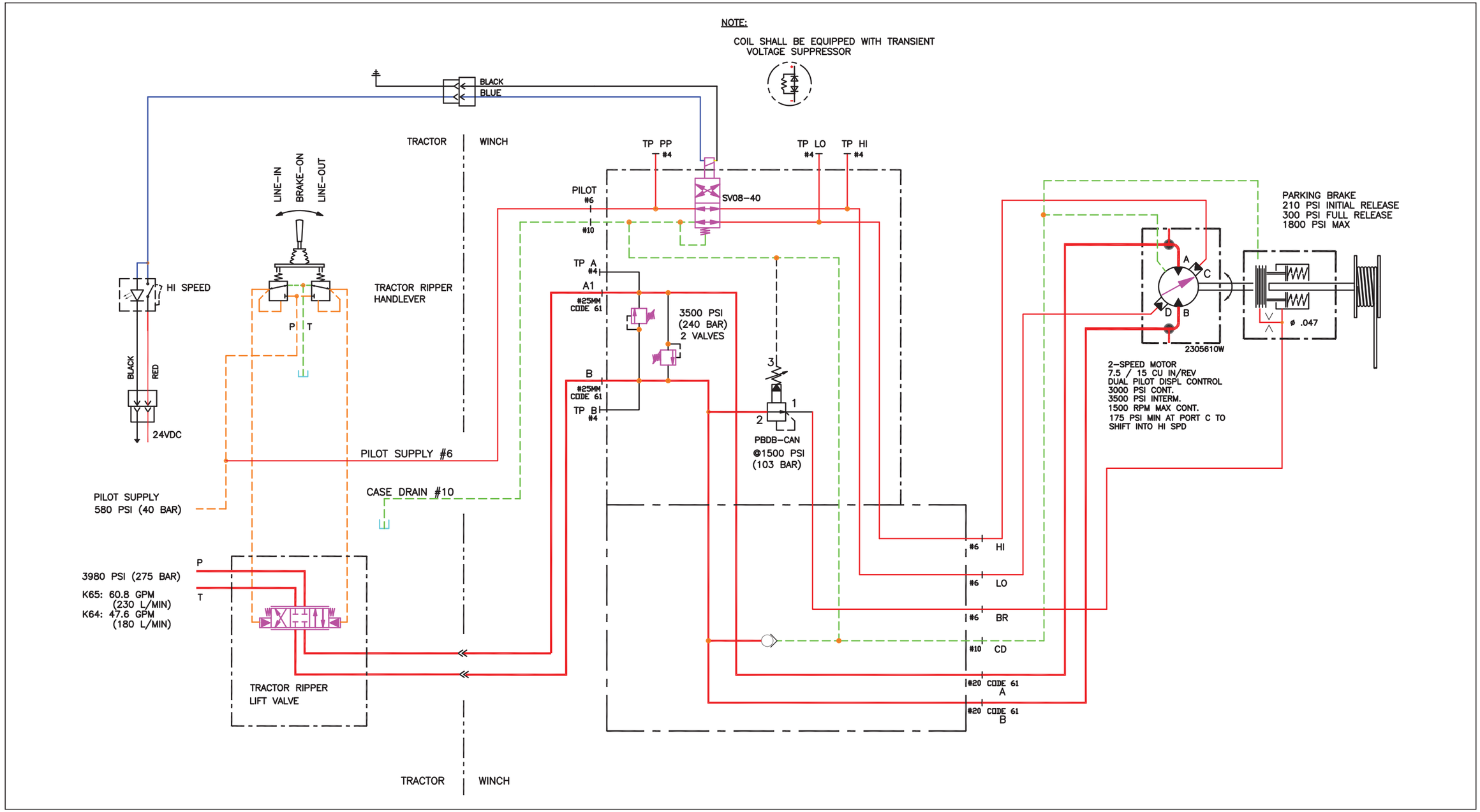


Figure 4-2 H12A Hydraulic & Electrical Schematic (For H12A Winch After Serial Number 1004)

Start-Up Procedure

DO NOT operate the winch until all conditions in previous sections have been completed. **DO NOT** install wire rope on drum until this Start-Up procedure is complete.

- Run motor for 2 to 3 minutes in hoisting direction with no load to check that everything is functioning correctly. The pressure at the hoisting port of the motor should be approximately 30-180 psi (2-12 bar)
- Operate motor for 2 to 3 minutes in lowering direction with no load. The pressure at the lowering port of the motor should be approximately 700-800 psi (48-55 bar).
- Bleed brake piston of air (refer to Bleeding Brake System in Section 6 for instructions).
- Check that the pressure at the vent port (refer to Figure 3-2) is less than 10 psi (0.7 bar).
- Check that when the control valve is placed in the neutral position after operating in the lowering direction, the pressure at either motor port returns immediately to zero (i.e., oil returns to tank and brake is applied).

⚠ WARNING

Do not operate or perform any lubrication, maintenance or repair on this product, until you have read and understood the operation, lubrication, maintenance and repair information.

Notes

Service and General Maintenance

Once per week the following tasks should be performed:

- Check gear cavity lubricant level; fill as required.
- Check for leaks.
- Check the gear cavity vent periodically for cleanliness, especially in dirty or dusty conditions.

Bleeding Brake System (Removing Air)

Bleeding the brake system is to be performed as required by the startup or service procedures given in this manual.

Bleed the pressure release circuit of the brake by pressurizing it, then cracking open the top port fitting, allowing air to escape. Repeat until all air has been removed.

Gear Lubrication Schedule

The first gear oil change is to be done after 300 hours of operation.

It is recommended to have an oil analysis performed every six months to evaluate the oil's condition. Retain analysis statements for warranty records.

When operating the winch continuously at high temperatures and/or in dusty or dirty atmospheres, oil analyses should be performed frequently as directed by the lubricant manufacturer.

If oil analysis indicates a potential problem, it is recommended that the winch be disassembled, inspected and reassembled as described in Section 7, DISASSEMBLY/ ASSEMBLY.

Maintenance Schedule

Allied recommends the following maintenance be carried out every 12 months or after 500 hours of actual operation, whichever occurs first:

- Disconnect all hydraulic hoses and wire rope. Remove the winch from tractor.
- Disassemble the winch per the instructions in Section 7.
- Inspect and replace any worn parts.
- Assemble the winch per instructions in Section 7.
- Refill with NEW Lubricating Oil.
- Re-install winch on tractor.
- Reconnect hydraulic hoses and wire rope.
- Follow start-up instructions in Section 5, START-UP PROCEDURE.

Notes

Disassembly/Assembly

General Procedure Before Starting

- A clean work area, with dust- and grit-free work bench, should be available.
- Thoroughly clean all parts in a good quality, clean solvent, and air dry.
- Discard all disassembled O-Rings, Oil Seals, Motor Ring Seals, Teflon Seals, Gasket Seals, and replace with new, well-greased parts.
- See Winch Assembly drawing for Seal Kit part number.

Removal Of Motor Assembly

- Drain oil from Brake Housing using cavity drain port. (See Figure 3-2)

⚠ CAUTION

Part is under spring load.

- Unless the Motor has been diagnosed as requiring service or repair, remove the Motor complete with Motor Adapter as instructed in the following:

  - Unscrew the 6 hex head capscrews one or two turns at a time in sequence, until the load on the brake springs is removed.

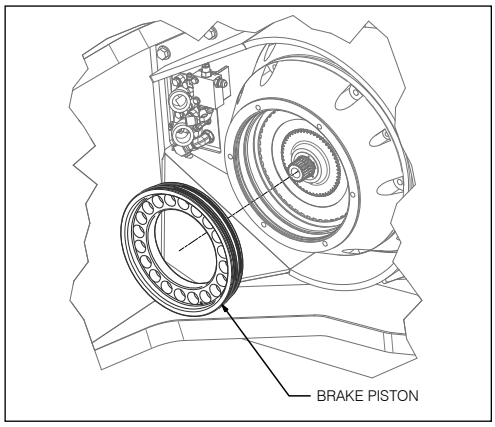
  - Remove capscrews and washers and discard O-Rings.

  - For reassembly, torque capscrews to 57 ft.-lb.

Disassembly Of Brake

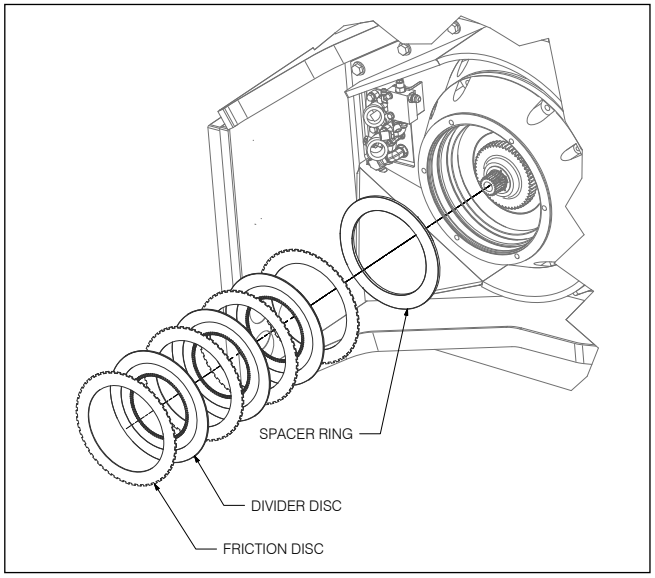
Following removal of the Brake, proceed as follows:

- Remove the Brake Piston from the housing.



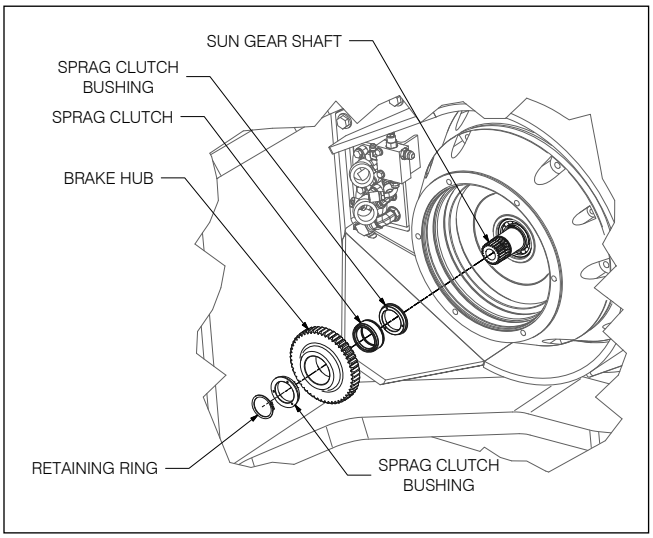
Note: Three 1/2-13NC tapped holes are provided in the Brake Piston to faciliate easy renoval.

- Remove the Friction Disc, the Divider Disc and the Spacing Ring from the housing.



Note: Be sure to note orientation of Sprag Clutch prior to disassembly. This is determined by the direction of relative rotation between the Brake Hub and Sun Gear Shaft, which causes either freewheel action or lock-up of the two parts.

- To remove the Brake Hub, Sprag Clutch Assembly and the two Sprag Bearings from the Sun Gear Shaft, the Retaining Ring must first be removed. The Ball Bearing can now be removed if required.



Assembly Of Brake

- Inspect the Sun Gear Shaft in the region where the Sprag Clutch runs. If there are visible signs of wear (max .001" [0.25mm]), or indentations, IT MUST BE REPLACED. Replace Friction Plates and Divider Plates if there are signs of wear (wear beyond groove depth, or Friction Plate thickness less than 0.114" thick).
- Reassemble by following the reverse procedure of Disassembly and Removal.

Disassembly Of Gear Reductions

Following the removal of Gear Reductions proceed as follows (see Figure 7-1):

- For Primary and Intermediate Reductions, remove Sun Gears, Thrust Bearing Washers, and Spacers, as appropriate.
- Straighten Tabs on Lockwasher, loosen and remove Locknut and Lockwasher on three Planet Pins. Lightly tap Planet Pins out of Hub and remove Planet Gears complete with Bearing Assemblies and Spacers.
- Pull Bearings if required. Note which spacers fit between Bearings and which fit between Hub and Bearing.
  Note: The disassembly procedure is identical for all Gear Reductions.

Adjustment of Drum Bearings

Tighten Adjustment Nut to remove all end play in the Bearings, then loosen Adjustment Nut 1/4 turn. This will give the required 0.020"-0.030" bearing end play.

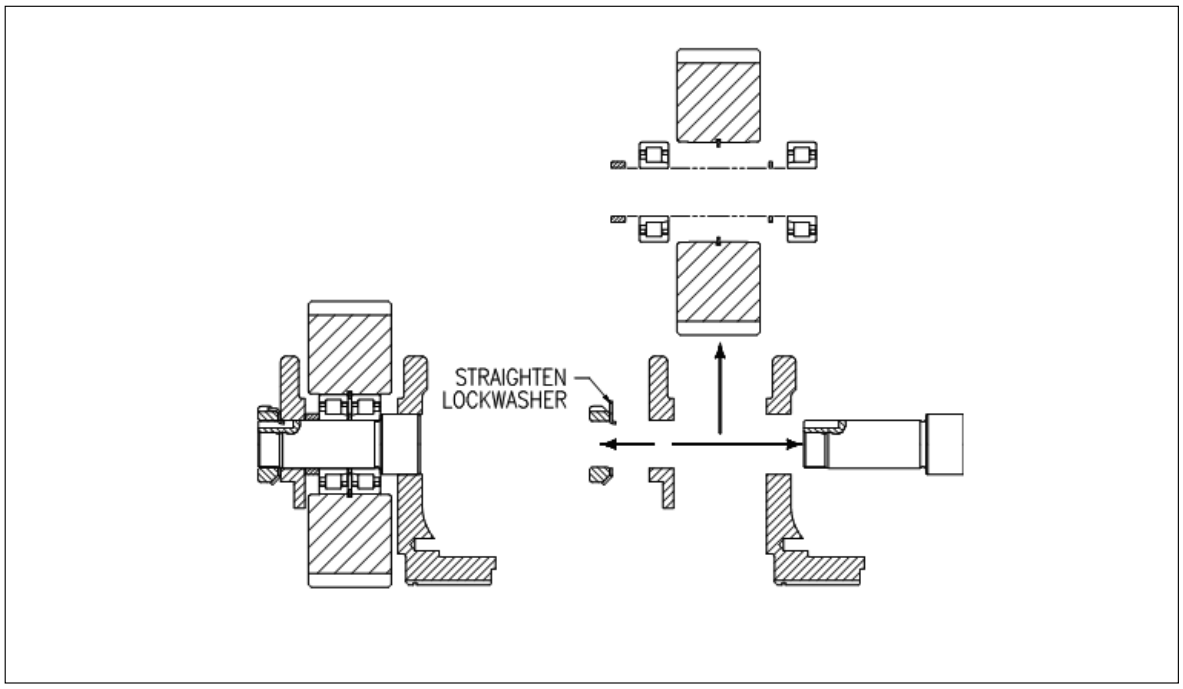


Figure 7-1 Removal of Gear Reductions

Notes

Troubleshooting

8.1 Winch Will Not Pull Load		
Probable Cause		**Remedy**
1. Tractor or winch relief valve may be set too low.		Install a pressure gauge in the **LINE-IN** circuit (refer to Figure 8-1) and apply a stall pull on the winch. If pressure is low, increase relief valve setting until recommended pressure is obtained (refer to Figure 4-2).
2. Worn motor.		Replace motor.
3. If this trouble occurs suddenly after working at maximum pull, a particle of dirt may be lodged under the relief valve, holding it partially open. If this is the cause, a considerable loss in line speed may be noticed as the load on the wire rope increases.		Remove relief valve, disassemble and clean parts thoroughly in a suitable solvent. Reassemble and install relief valve. Reset pressure according to remedy under Trouble 8.1, Cause 1. Clean hydraulic system.
4. The oil level in the reservoir may be too low. The suction line may be restricted or have an air leak causing cavitation at the inlet port. This will cause the pump to make a whining noise.		Check oil level in the reservoir. Check the suction line for damage externally and internally. Replace suction line if necessary.
5. After all the causes listed above have been investigated, and it is found that the winch will stall at maximum pressure without developing the maximum pull on the bare drum, the trouble may be in the winch.		Install a pressure gauge in the **LINE-IN** circuit (refer to Figure 8-1), and apply a stall pull on the winch. If the pressure is up to a maximum and the bare drum line pull is less than the specified line pull, the trouble will be in the winch. Disassemble winch according to disassembly instructions and inspect. Check that all gears turn freely for “winching in” rotation. If gears are found to be satisfactory, inspect the hydraulic motor, according to the service instructions for the hydraulic motor.

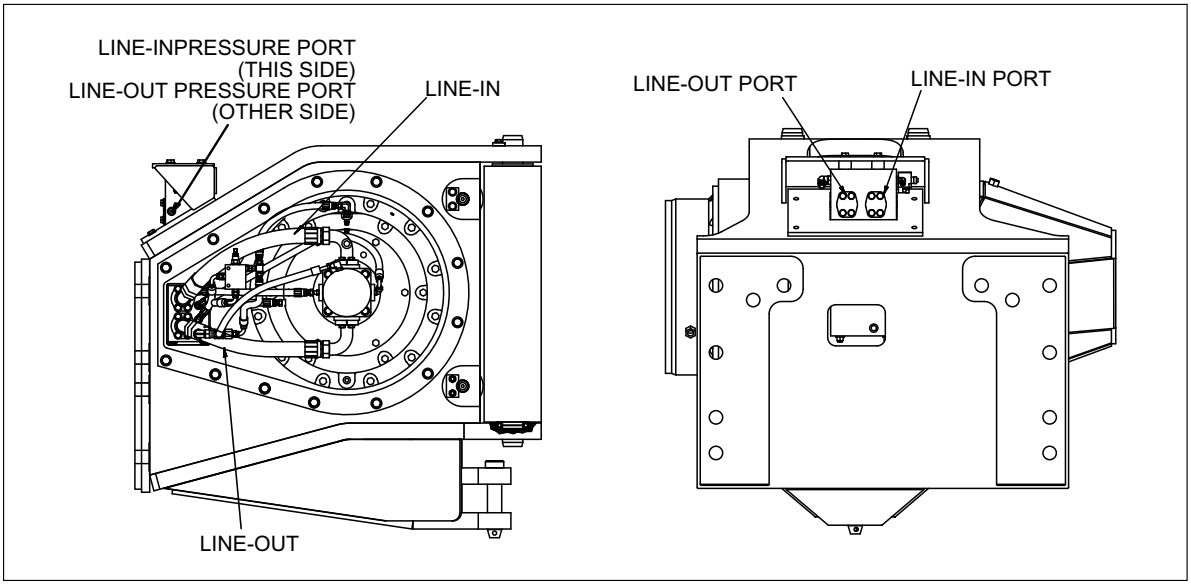


Figure 8-1 Winch Ports

8.2 Considerable Reduction In Line Speed		
Probable Cause		**Remedy**
1. Worn motor.		Replace motor.
2. If this trouble occurs suddenly after working at maximum pull, a particle of dirt may be lodged under the relief valve, holding it partially open. If this is the cause, a considerable loss in line speed may be noticed as the load on the wire rope increases.		Remove relief valve, disassemble and clean parts thoroughly in a suitable solvent. Reassemble and install relief valve. Reset pressure according to remedy under Trouble 8.1, Cause 1. Clean hydraulic system.
3. After all the causes listed above have been investigated and it is found that the winch will stall at maximum pressure without developing the maximum pull on the bare drum, the trouble may be in the winch.		Install a pressure gauge in the **LINE-IN** circuit (refer to Figure 8-1), and apply a stall pull on the winch. If the pressure is up to a maximum and the bare drum line pull is less than the specified line pull, the trouble will be in the winch. Disassemble winch according to disassembly instructions and inspect. Check that all gears turn freely for "winching in" rotation. If gears are found to be satisfactory, inspect the hydraulic motor, according to the service instructions for the hydraulic motor.
4. If this trouble has increased gradually, the hydraulic pump or winch motor may be worn.		Remove and inspect pump. If satisfactory, consult the disassembly instructions for the winch, and remove and inspect the motor according to the service instructions for the hydraulic motor.

8.3 Reverse Speed Is Slower Than Forward Speed		
Probable Cause		**Remedy**
1. Control valve may be restricted in its travel.		Check the travel of the control valve spool. The spool travel should be the same in both directions.
2. Tractor or winch relief valve may be set too low.		Install a pressure gauge in the **LINE-IN** circuit (refer to Figure 8-1) and apply a stall pull on the winch. If pressure is low, increase relief valve setting until recommended pressure is obtained
3. Hydraulic oil in Brake Housing may be too thick causing a high resistance to rotation at the brake plates and causing the relief valve to by-pass.		Change to a lighter weight oil in the Hydraulic System (and therefore Brake Housing). Check the flow of oil from the vent line of the winch while the winch is run at full speed reverse for 2 or 3 minutes. If the flow continues, remove the motor as per disassembly instructions. Disassemble and inspect O-Rings in the brake cylinder according to the service instructions for the hydraulic motor.
4. Pressure relief valve for brake not set correctly.		Adjust to 1500 psi.
5. Restriction in brake orifice fitting.		Remove, clean and reinstall fitting.
6. Brake plates worn and warped, causing excessive drag.		Replace damaged brake components.

8.4 Brake Will Not Hold In Neutral When Pulling a Load		
Probable Cause		**Remedy**
1. There is excessive back pressure acting on the reverse port of the winch motor. This back pressure is usually caused by the use of a control valve and hoses that are too small. It can also be caused by a restriction in the return line from the control valve to the reservoir.		Install a pressure gauge in the **LINE-OUT** circuit (refer to Figure 8-1). Run the pump at its maximum RPM and with the control valve in neutral position, read the pressure gauge. If the pressure is greater than 95 psi (6.5 bar), it is too high. Consult Section 4 for the recommended control valve and hose size, and install the correct size if necessary. If the hose and control valve are as recommended, check for restriction in the return line from the control valve to the reservoir.
2. After the cause listed above has been investigated and found to be satisfactory, the trouble may be found in the winch.		Disassemble the winch assembly according to the disassembly instructions. Inspect the brake springs, brake plate and brake hub assembly. Check that the brake hub assembly will “lock up” in the required direction of rotation.

8.5 Brake Will Not Control or Stop Load When Lowering		
Probable Cause		**Remedy**
1. There is excessive back pressure acting on the reverse port of the winch motor. This back pressure is usually caused by the use of a control valve and hoses that are too small. It can also be caused by a restriction in the return line from the control valve to the reservoir.		Install a pressure gauge in the **LINE-OUT** circuit (refer to Figure 8-1). Run the pump at its maximum RPM and with the control valve in neutral position, read the pressure gauge. If the pressure is greater than 95 psi (6.5 bar), it is too high. Consult Section 4 for the recommended control valve and hose size, and install the correct size if necessary. If the hose and control valve are as recommended, check for restriction in the return line from the control valve to the reservoir.
2. Winch is being overloaded.		Install a pressure gauge in the **LINE-IN** circuit (refer to Figure 8-1) and apply a stall pull on the winch. If the pressure is higher than the maximum specified, reduce the pressure.
3. After the causes listed above have been investigated and found to be satisfactory, the trouble may be found in the winch.		Disassemble the winch assembly according to the disassembly instructions. Inspect the brake springs, brake plate and brake hub assembly. Check that the brake hub assembly will “lock up” in the required direction of rotation.
4. Back pressure on return line.		Brake will slip at 390-400 psi.

8.6 Brake Vibrates When Lowering A Load		
Probable Cause		**Remedy**
1. Hydraulic pump RPMs too slow.		Operate hydraulic pump at maximum RPM.
2. Control valve handle being operated too quickly.		Operate the valve smoothly when starting and stopping a load.
3. Control valve does not have good metering characteristics.		See Section 4 for control valve specifications.
4. No oil circulating through the brake housing.		See Section 4 and Section 5.
5. Air in the brake housing or brake piston.		See section 4.

Notes

Notes

To find a dealer in your area,
Call: (503) 625-2560,
Fax: (503) 625-7269 , or
E-mail: marketing@alliedsystems.com, or
Visit our website: http://www.alliedsystems.com

599016W 09/27/2011 Printed in USA