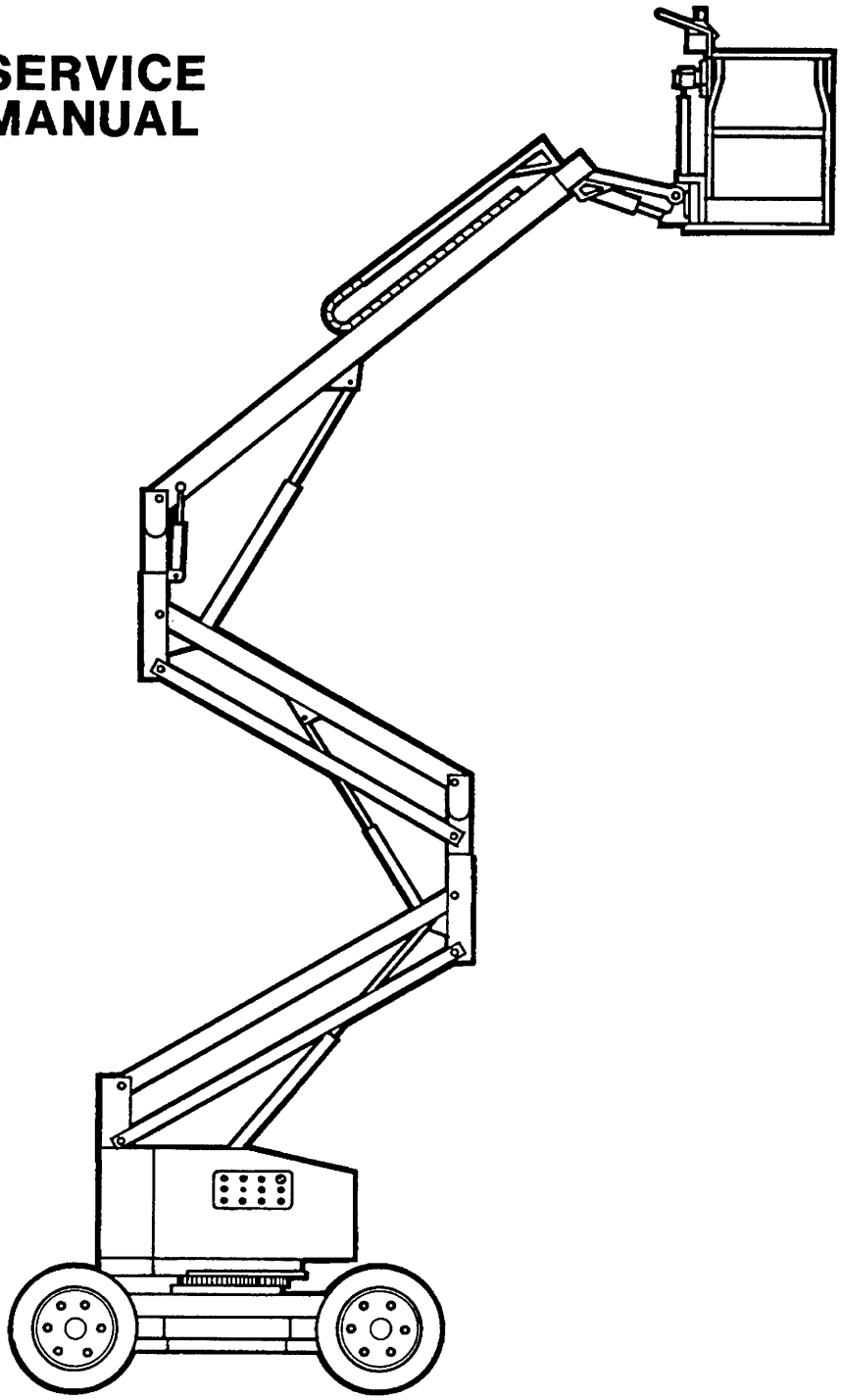
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SIMON

MODEL 41/24 Gas, Dual Fuel & Diesel

SERVICE MANUAL



89-412507

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INTRODUCTION

THIS MANUAL CONTAINS INSTRUCTIONS FOR THE SERVICE AND MAINTENENCE OF THE GAS/DUAL FUEL POWERED SIMON -EAGLE SELF PROPELLED AERIAL PLATFORM MODEL 41/24.

IT IS INTENDED TO BE USED IN CONJUNCTION WITH AND AS A SUPPLEMENT TO THE OPERATORS, PARTS AND COMPONENT REPAIR MANUALS WHICH ARE PROVIDED SEPARATELY.

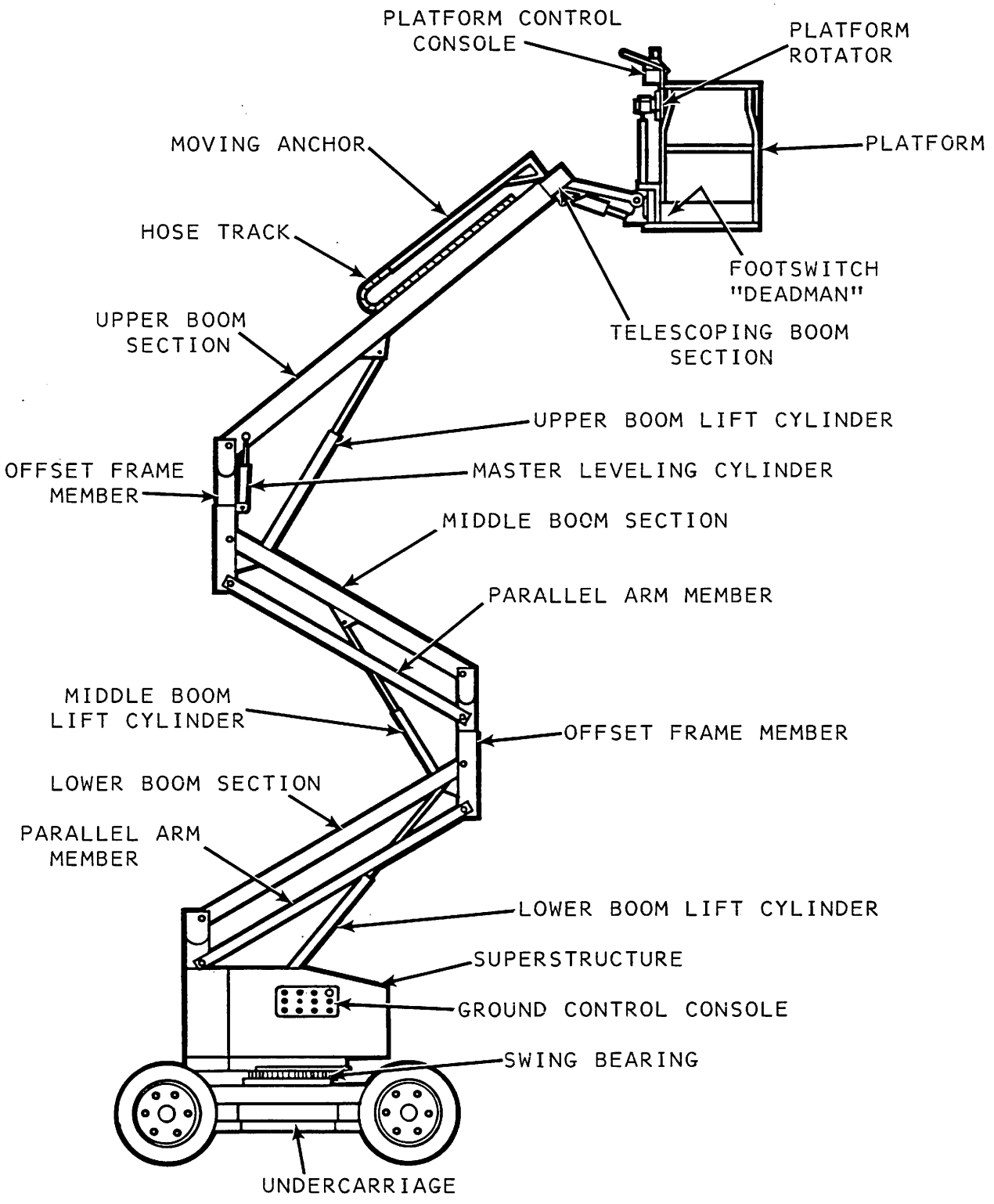
THE SIMON-EAGLE SERIES MOBILE PLATFORM HAS BEEN DESIGNED AND BUILT TO PROVIDE THE CUSTOMER WITH MANY YEARS OF DEPENDABLE SERVICE. THE FULL BENIFITS PROVIDED BY THIS MACHINE CAN DERIVED ONLY BY FOLLOWING THE PROPER OPERATING AND MAINTENANCE PROCEDURES. ONLY TRAINED AND AUTHORIZED PERSONNEL SHOULD OPERATE AND SERVICE THIS EQUIPMENT. OPERATOR AND SERVICE PERSONNEL SHOULD STUDY THESE MANUALS TO ASSURE THAT THEY HAVE A THOROUGH UNDERSTANDING OF THE CONTENTS WHICH PERTAIN TO THEIR PARTICULAR RESPONSIBILITIES.

OPERATORS MUST ALSO UNDERSTAND ALL WARNINGS AND INSTRUCTIONS ON THE BODY OF THE MACHINES AND CONTROL CONSOLES.

MODIFICATIONS FROM THE ORIGINAL DESIGN OF THIS EQUIPMENT ARE STRICTLY FORBIDDEN WITHOUT WRITTEN PERMISSION FROM SIMON AERIALS INC.

SIMON AERIALS INC. RESERVES THE RIGHT TO IMPROVE AND EXPAND PRODUCT FEATURES ON ITS EQUIPMENT. THEREFORE, SPECIFICATIONS AND/OR EQUIPMENT IS SUBJECT TO CHANGE WITHOUT PRIOR NOTICE. THESE MANUALS ARE PERIODICALLY UPDATED TO REFLECT ANY CHANGES THAT OCCURED BETWEEN PRINTINGS. IT IS THEREFORE RECOMMENDED THAT USERS CONTACT SIMON AERIALS INC. FOR LATEST INFORMATION REGARDING THIS EQUIPMENT.

SIMON EAGLE MODEL 41/24



This machine is specifically designed for light industrial and maintenance applications and should be used accordingly.

SIMON EAGLE MODEL 41/24

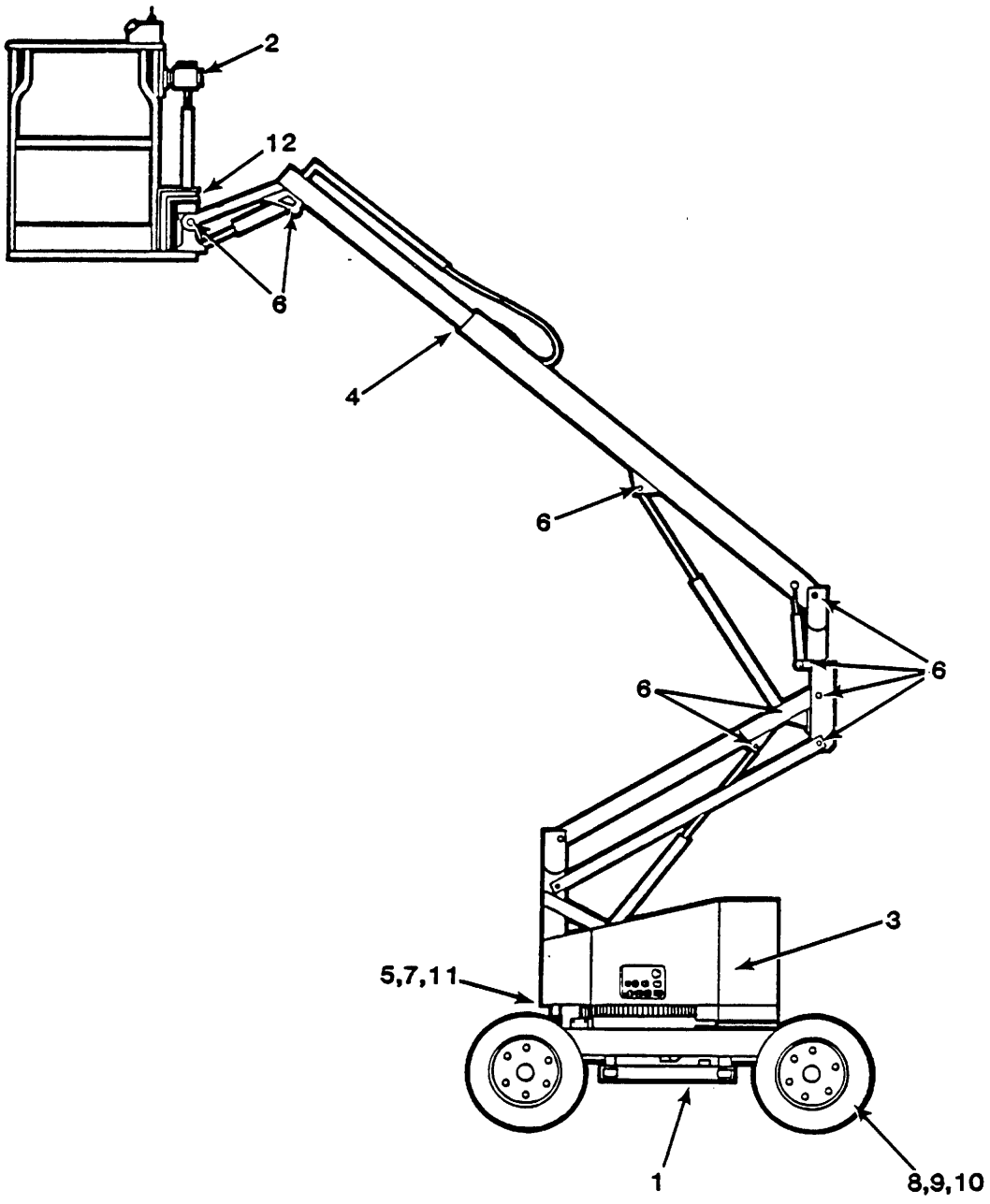
WORKING HEIGHT	48'/14.62M
PLATFORM HEIGHT	41'/12.50M
HORIZONTAL OUTREACH	24'/7.32M
PLATFORM CAPACITY (UNRESTRICTED)	500LBS./227KG
PLATFORM DIMENSIONS	60"x30"/1.52M x.76M
STOWED LENGTH	16'2"/4.93M
STOWED HEIGHT	6'7"/2.01M
WIDTH	5'11"/1.8M
WHEELBASE	6'3"/1.91M
OUTSIDE TURNING RADIUS	13'6"/4.12M
INSIDE TURNING RADIUS	6'1"/1.85M
TRAVEL SPEED-STOWED	3.6MPH/5.8KPH
TRAVEL SPEED-ELEVATED	0.5MPH/.08KPH
GROUND CLEARANCE	8"/0.20M
GROSS WEIGHT	12200 LBS./5534 KG.
GRADEABILITY	14°/23%
PLATFORM ROTATION	180°
TIRES	L78 X 15 6PLY
HYDRAULIC SYSTEM OPERATING PRESSURE	2465 PSI /176 BARS
MAIN TURNTABLE ROTATION	360°NON-CONTINUOUS

LUBRICATION CHART (SEE DIAGRAM)

LOCATION ON DIAGRAM	ITEM	SPECIFICATION AND QUANTITY	FREQUENCY OF LUBRICATION
1	AXLE DIFFERENTIAL	GEARMITE SAE85-140W TO FILL PLUG	CHECK BI-MONTHLY OR EVERY 200 HRS.* CHANGE YEARLY OR EVERY 1,000 HRS.*
2	PLATFORM ROTATOR GEAR BOX	EP - 90W HALF FULL	CHECK MONTHLY OR EVERY 100 HRS.* CHANGE YEARLY OR EVERY 1,000 HRS.*
3	HYDRAULIC RESERVOIR	MOBILE DTE-13 TO FULL MARK WITH ALL CYLINDERS RETRACTED	CHECK DAILY, ANALYZE EVERY 6 MONTHS CHANGE YEARLY
4	BOOM SLIDE SPRAY	WD-40 OR SILICON SPRAY	MONTHLY OR EVERY 100 HRS.*
5	SWING BEARING	LUBRIPLATE 630-2 PURGE OLD GREASE	MONTHLY OR EVERY 100 HRS.*
6	PIVOT PINS	EP N.L.G.I. #2 PURGE OLD GREASE	MONTHLY OR EVERY 100 HRS.*
7	SWING BEARING GEAR TEETH	EP N.L.G.I. #2 GREASE OR DRI-LUBE	EVERY 6 MONTHS OR 500 HRS.*
8	STEERING SPINDLES	EP N.L.G.I. #2 PURGE OLD GREASE	MONTHLY OR EVERY 100 HRS.*
9	STEERING HUB BEARINGS	LUBRICATE 630-2 CLEAN AND REPACK	YEARLY OR EVERY 1,000 HRS.*
10	STEERING LINKAGE	EP N.L.G.I. #2 PURGE OLD GREASE	MONTHLY OR EVERY 100 HRS.*
11	SWING DRIVE GEAR BOX	GEARMITE SAE85-140W TO FILL PLUG	CHECK BI-MONTHLY OR EVERY 200 HRS.* CHANGE EVERY 2 YEARS OR 2,000 HRS.*
12	PLATFORM ROTATOR DRIVE SHAFT	EP N.L.G.I. #2 PURGE OLD GREASE	MONTHLY OR EVERY 100 HRS.*

* WHICHEVER OCCURS FIRST

LUBRICATION DIAGRAM (SEE CHART)



POWER SYSTEM

The engine powered Eagle Series models are powered by either a gas, diesel or dual fuel engine. This engine drives a variable displacement pump which has load sensing capabilities and is pressure compensated.

The electrical system is powered by a single 12 volt battery which is charged by an intregal alternator mounted in the engine flywheel. This internal alternator produces a maximum charging rate of 16 amps.

HYDRAULIC SYSTEM

As the engine runs, it turns a variable displacement pump which delivers hydraulic fluid to the variable volume flow controller (ABEX). The hydraulic oil flow is split before the 5 GPM flow control valve. The diverted flow is directed to the drive control valve and the flow from the 5 GPM flow control valve is directed to the main mainfold. The valves on the main mainfold control steering and all boom functions

Function speed is controlled by the (ABEX) variable volume flow controller located in the unit undercarriage. Because the unit's pump is load sensing, output matches the flow controller setting. Pump pressure is 200 PSI higher than load pressure. All function valves are closed center and are in parallel with each other. System cleanliness is maintained by a full flow, 10 micron (nominal) return line filter which is located at the reservoir.

DRIVE

Hydraulic flow is first delivered to the variable flow control valve located on the undercarriage. This regulated flow is tapped before the full flow reaches the 5 GPM flow control valve for the upper control functions of the superstructure. This tapped flow then is diverted to the directional control valve which facilitates the drive function. As this directional control valve shifts, the hydraulic fluid is directed to the motion control valve assembly. This valve is located in the undercarriage of the unit.

The motion control valve places a restriction on returning oil from the drive motors allowing a back pressure in the system to prevent hydraulic motor overspeed.

Hydraulic flow enters the motion control valve shifting the shuttle ball assembly to allow fluid to flow to the brake assembly. This flow will release the brake. Incorporated into this line is a flow control valve which is free flow in one direction checking flow in the other. This valve allows for normal adjustment of the braking application. Flow then leaves the motion control valve and enters the drive motor. After leaving the drive motor, remaining fluid again passes through the motion control valve. It passes through the counter-balance valve cartridges which place the back pressure on the hydraulic drive circuits. The flow then returns to tank through the directional control valve.

STEERING

The steering function is powered by a double-acting hydraulic cylinder. Steering direction is controlled by a solenoid operated, 4 way, directional control valve. This valve can only be energized when the function selector switch is in the drive position. Steering speed is constant and operates at maximum speed at all times. The cylinder ports of the directional valve are closed in the neutral position to prevent any free drift of the steering cylinder. Two cross port relief valves provide overload protection for the steering circuit.

UPPER AND LOWER BOOM HOIST

These functions are individually powered by double-acting hydraulic cylinders. Each cylinder has an integral-mounted counterbalance valve which provides smooth and controlled lowering of the booms. These valves hold the cylinders in a locked position unless hydraulic power is applied to the cylinder. Function speed is controlled electrically utilizing a potentiometer (speed control knob) which in turn controls the variable volume flow controller (Abex valve). These cylinders are individually raised or lowered by energizing the solenoid-operated, directional control valves.

SWING

A bi-directional gear type hydraulic motor powers a worm gear reduction box with an output spur pinion which, in turn, drives a gear on the outer race of the swing bearing. Swing rotation is 360^{o} non-continuous with mechanical and electrical stops to prevent over travel. Speed and directional control is the same as described for the boom hoist function. Cross port relief valves provide overload protection for this circuit.

BOOM TELESCOPE

The upper boom is telescoped by means of a double-acting hydraulic cylinder with an integral-mounted, double pilot-operated check valve. The check valves prevent free movement of the boom in either direction. Speed and directional control is the same as described for the boom hoist function.

PLATFORM LEVEL

A master leveling cylinder is mechanically connected between the upper boom and the offset post and operates as a bi-directional pump. A slave leveling cylinder is mechanically connected between the upper boom tip and the platform and operates as a bi-directional linear motor in a closed loop. Hoisting motion of the upper boom activates the master/slave system, which in turn, automatically levels the platform. A pilot-operated check valve on the slave cylinder prevents any free downward movement of the platform. A switch located in the platform energizes a pair of solenoid-operated leveling valves in conjunction with the telescope solenoid valve to provide manual leveling of the platform. A cross port relief valve provides overload protection for this circuit.

DRIVE, LIFT AND BRAKE INTERLOCK SYSTEM

The drive, lift and brake functions are interlocked utilizing the foot switch and the function selector switch located on the platform control panel. The drive and steering functions will not operate unless the foot switch is depressed (on position) and the function selector switch is in the drive position. The boom functions (upper and lower boom hoist, telescope, swing and platform leveling) will not operate unless the foot switch is depressed and the function selector switch is in the lift position. The drive brake will release only when the machine is being driven (drive control lever moved off center). If drive control lever is moved to the neutral (center) position, the drive brake will be applied automatically, even if the machine is still moving.

PROBLEM

WHEEL DRIVE MOTOR DOES NOT RUN.

CAUSE	SOLUTION
"Power" key switch is turned off.	Turn "power" key switch on.
One or both of the emergency stop buttons are in the off position.	Release the buttons at both the platform and ground control panels by turning buttons clockwise. Power lamp should be illuminated.
Platform/ground selector switch is in ground position.	Turn the platform/ground selector switch to the platform position.
Lift/drive selector switch is in "lift" mode.	Select "drive" mode position.
Foot "deadman" switch is not depressed.	Depress foot switch and move drive control lever to desired travel position.

NOTE: Raise the drive wheels off the ground. Restart engine and continue with the following procedure:

Turn the "lift/drive" selector switch to "lift" and actuate a boom function. If a boom function operates, then a possible wiring problem exists to the drive electrical system. Move the "lift/drive" selector back to the "drive" mode and with the foot pedal activated, manually operate the directional valve. The drive controller must be in the "full speed" position to give full voltage to the variable flow control valve. If the unit operates by manually operating the spool, the existing problem is electrical in nature. If function can still not be achieved, check for flow from the variable flow valve and the directional control valve.

PROBLEM

WHEEL DRIVE MOTOR RUNS BUT THE MACHINE DOES NOT MOVE.

CAUSE	SOLUTION
Broken differential or axle shaft.	Try to drive the machine and check whether the propeller shaft is turning. If it is, then one of the axle shafts or parts in the differential are broken. Disassemble the axle and replace the broken parts.
Broken drive (propeller) shaft.	Replace the broken drive shaft.

PROBLEM

WHEEL DRIVE MOTOR CONTINUES TO RUN.

CAUSE	SOLUTION
Drive control (forward and reverse) lever is not returning to neutral.	Check spring return mechanism inside of platform control console.
Hydraulic spool in directional control valve stuck in power mode.	Push manual override buttons to manually slide valve spool. If it is sticking, disassembly will be required to inspect spool and main valve body.
If spool is not sticking and valve spool can be manually operated, an electrical short is probable.	Refer to the gas Eagle electrical schematic to determine possible short in wiring.

PROBLEM

MOTOR/PUMP RUNS BUT STALLS UNDER LOAD OR RUNS SLOWLY.

CAUSE	SOLUTION
Speed selector turned to (zero) lowest setting.	Turn speed selector to a higher (#6) setting.
Platform is overloaded.	Remove overload from platform. Refer to serial number plate to determine maximum rated capacity.
Hydraulic oil level too low.	Check oil level in hydraulic reservoir.
Hydraulic oil leak.	Check hydraulic system for leaks.
Relief valve pressure set too low.	Locate the pressure relief valve on the main pressure line. Increase pressure to 2,200 PSI by turning the adjustment screw clockwise.
Restriction in pump suction line.	Check to see if the suction strainer located inside the hydraulic reservoir is clogged.

NOTE: If all of the above check out, then the hydraulic pump is defective. Replace pump unit and re-test.

PROBLEM

MOTOR/PUMP RUNS BUT STEER FUNCTION DOES NOT OPERATE. NOTE: ALL OTHER FUNCTIONS OPERATE.

CAUSE	SOLUTION
Steering cylinder is not mechanically connected to the wheels. Tie rod is disconnected.	Check whether any part of the steering mechanism is damaged or disconnected.
The steering directional control valve is not shifting. Valve spool is obstructed or solenoids are not being energized.	Locate steering directional valve on main valve bank. Shift valve spool manually by pressing either one of the over-ride buttons located on each end of the valve body.

If steer function still does not operate or only operates in one direction, check the cross port relief valve settings. One of these relief valves could be set too low or stuck in an open position. If steer function operates when using the manual over-ride buttons, then check to see if the solenoids, which are located on each end of this valve, are being energized. If there is power to the solenoids, then either the solenoid is defective or the valve spool is being obstructed. Remove valve and clean, repair or replace as required. If the solenoids are not being energized, then check the continuity of the wiring to the steering control switch located on top of the drive control (forward and reverse) lever.

PROBLEM

MOTOR/PUMP RUNS BUT BOOM HOIST FUNCTION DOES NOT OPERATE. ALL OTHER FUNCTIONS OPERATE INCLUDING THE DRIVE AND STEER FUNCTIONS.

TROUBLESHOOTING PROCEDURE

If the symptom applies to both the upper and lower boom hoist functions, then the probable cause is with the main relief valve being set too low. Locate the main relief valve on the main pressure line and increase pressure to 2,200 PSI by turning the adjustment screw clockwise. If this does not solve the problem, then check to see if the platform is overloaded. Refer to serial number plate to determine the maximum rated load. If symptom applies to only one of the boom hoist functions, then try to operate this function manually. Locate the directional control valve for this function on the main valve bank. Shift the valve spool manually by pressing either one of the over-ride buttons located on each end of the valve body. If the boom hoist function operates when using this procedure, then check to see if the solenoids, which are located on each end of this valve, are being energized. If there is power to the solenoids, then either the solenoid is defective or the valve spool is being obstructed. Remove valve and clean, repair or replace as required. If the solenoids are not being energized, then check the continuity of the wiring to the selector switches located on the ground or platform control consoles. If the wiring checks out to the switch, then check power to the switch and continuity through the switch.

PROBLEM

UPPER OR LOWER BOOM HOIST RAISES BUT DOES NOT LOWER. ALL OTHER FUNCTIONS OPERATE INCLUDING THE DRIVE OR STEER FUNCTIONS.

TROUBLESHOOTING PROCEDURE

Try lowering the boom manually by pressing the appropriate over-ride button on the end of directional control valve. If this procedure lowers the boom, then troubleshoot the solenoid portion of this valve and the solenoid circuit as described previously. If the boom still does not lower, then the problem could be with the counterbalance valve which is located on base end of the boom hoist cylinder. The boom can be lowered manually by slowly opening the manual descent valve which is located on the counterbalance valve. Using this procedure, lower the boom until the boom hoist cylinder is completely retracted (bottomed out). Unscrew the counterbalance valve cartridge from the valve body and clean, repair or replace as required.

PROBLEM

UPPER OR LOWER BOOM HOIST CYLINDER DOES NOT HOLD. BOOM DRIFTS DOWN UNDER ITS OWN POWER. ALL OTHER FUNCTIONS OPERATE NORMALLY.

TROUBLESHOOTING PROCEDURE

Locate the manual descent valves (knurled thumb screws) on the counterbalance valves located on the base end of each boom hoist cylinder. Both of these valves should be tightly closed. To close these valves, rotate the knurled thumb screws clockwise until they are finger tight. Turn key switch off and re-check the symptom. If the boom does not drift down with the power off, then the source of the problem is electrical. Check to see if boom hoist control levers, on platform and ground control consoles, are returning to neutral. Check for a short in the boom hoist solenoid circuit. If the boom drifts down with the power key switch off, then the extend oil, trapped in the boom hoist cylinder, is either by-passing the counterbalance valve or the cylinder rod piston. To check whether oil is leaking past the piston (piston seal worn or damaged), disconnect the hydraulic hose which is connected to the retract port of the hoist cylinder.

NOTE: Cylinder should continue to retract or drift down. While cylinder is retracting, observe the open retract port for any flow of oil. If oil continues to flow from the retract port, then the piston seal is leaking and should be replaced. If there is not any oil flow from the retract port, then oil must be leaking past the closed counterbalance valve. Re-connect the hose to the retract port and retract boom hoist cylinder until it is bottomed out. Slowly open the manual descent valve to relieve any induced pressure in the cylinder. Unscrew the counterbalance valve cartridge from the valve body and clean, repair or replace as required.

PROBLEM

MOTOR/PUMP RUNS BUT SWING FUNCTION DOES NOT OPERATE. ALL OTHER FUNCTIONS OPERATE INCLUDING THE DRIVE AND STEER FUNCTIONS.

CAUSE	SOLUTION
Limit switch is preventing rotation in one direction.	Try operating the swing function in the opposite direction. NOTE: The swing function provides 360° of rotation but is prevented from continuous rotation by two limit switches. Two mechanical stops prevent over travel in the event of a limit switch failure.
Swing pinion shaft is broken.	Remove and disassemble worm drive swing reducer and replace pinion shaft.
Hydraulic swing motor shaft is broken.	Remove and replace swing motor.
Spool in directional control valve is not shifting.	Try operating the valve spool manually as described in troubleshooting the boom hoist function. If the swing function operates manually, then troubleshoot the solenoid circuit accordingly.

NOTE: If the swing function operates only in one direction, then try operating the valve spool manually in the opposite direction. If the swing function still does not operate, then the probable cause is with the cross port relief valve. This relief valve is either set too low or is jammed open. Both cross port relief valves should be set at 2,000 PSI.

PROBLEM

MOTOR/PUMP RUNS BUT BOOM TELESCOPE FUNCTION DOES NOT OPERATE. ALL OTHER FUNCTIONS OPERATE NORMALLY INCLUDING THE DRIVE AND STEER FUNCTIONS.

TROUBLESHOOTING PROCEDURE

Check the hydraulic system pressure. Main relief valve should be set at 2,200 PSI. If system pressure is set correctly, then try operating this function manually. Locate the directional control valve for this function on the main valve bank. Shift the valve spool manually by pressing either one of the over-ride buttons located on each end of the valve body. If the boom telescope function operates when using this procedure, then check to see if the solenoids, which are located on each end of this valve, are being energized. If there is power to the solenoids, then either the solenoid is defective or the valve spool is being obstructed. Remove valve and clean, repair or replace as required. If the solenoids are not being energized, then check the continuity of the wiring to the selector switches located on the ground or platform control consoles. If the wiring checks out to the switch, then check power to the switch and continuity through the switch.

If the boom does not telescope even when operating the directional valve manually, then check the boom to see if there is any kind of mechanical obstruction within the boom. If the boom is free to move but still does not telescope, then disconnect both the extend and retract hoses from the telescope cylinder. Place the ends of these hoses in a bucket and try to telescope the boom in both directions. Oil should flow freely and alternately out of each one of these hoses. If one hose appears to be plugged, then replace that hose and re-test. If both hoses are unobstructed, then sequentially remove and clean, repair or replace each of the cartridge type, pilot-operated check valves located at the base of end of the telescope cylinder.

PROBLEM

BOOM TELESCOPE EXTENDS BUT DOES NOT RETRACT. ALL OTHER FUNCTIONS OPERATE NORMALLY INCLUDING THE DRIVE STEER FUNCTIONS.

TROUBLESHOOTING PROCEDURE

Check the hydraulic system pressure. Main relief valve should be set at 2,200 PSI. If system pressure is set correctly, then try retracting the boom manually by pressing the appropriate over-ride button on the end of the directional control valve. If this procedure retracts the boom then troubleshoot the solenoid portion of the boom telescope valve and the solenoid circuit as described previously in troubleshooting the boom hoist function. If the boom still does not retract, then try operating the platform leveling function in both directions. If the platform leveling function operates correctly, then the problem is probably with the pilot operated check valve located at the extend port of the telescope cylinder. When retracting the telescope cylinder, this check valve is opened hydraulically by a pilot pressure signal from the retract line. If the pilot section of this check valve is defective, then the valve will not open.

NOTE: There are two, cartridge type, pilot-operated check valves located at the base end of the telescope cylinder. Unscrew the extend check valve cartridge from the cylinder and clean, repair or replace as required.

PROBLEM

BOOM TELESCOPE CYLINDER DOES NOT HOLD. BOOM DRIFTS IN (RETRACTS) UNDER ITS OWN POWER. ALL OTHER FUNCTIONS OPERATE NORMALLY.

TROUBLESHOOTING PROCEDURE

Turn key switch off and re-check the symptom. If boom telescope does not drift in with the power off, then the source of the problem is electrical. Check to see if the boom telescope control levers, on the platform and ground control consoles, are returning to neutral. Check also for a short in the boom telescope solenoid circuit. If the boom telescope drifts in with the power key switch off, then the source of the problem is with hydraulic oil leaking past the pilot operated check valve or the cylinder rod piston. To check whether oil is leaking past the piston (piston seal worn or damaged), disconnect the hydraulic hose which is connected to the retract port of the telescope cylinder. Then after plugging both the retract port of the cylinder and the disconnected retract hose, try to extend the boom. Hold the telescope control lever in the extend position long enough to observe whether the boom is slowly inching out or extending. If it is, then the piston seal is leaking and should be replaced. If the boom does not extend at all (even slightly), under these conditions, then the pilot-operated check valve is defective and is allowing oil to by-pass. Unscrew the extend check valve cartridge from the cylinder and clean, repair or replace as required.

PROBLEM

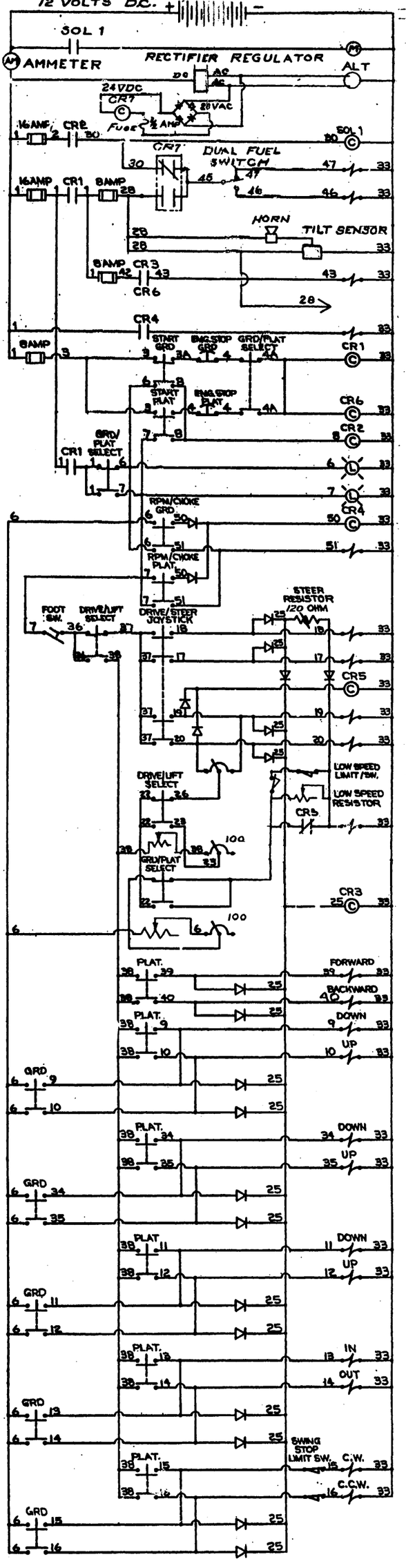
MOTOR/PUMP RUNS BUT PLATFORM LEVELING FUNCTION DOES NOT OPERATE. ALL OTHER FUNCTIONS OPERATE NORMALLY INCLUDING THE TELESCOPE FUNCTION.

CAUSE	SOLUTION
The solenoid operated diverter valves for the platform leveling function are not operating.	Locate the two diverter valves which are mounted on the side of the offset frame member located above the lower boom. Check to see if there is power to the solenoids. If the solenoids are not being energized, then troubleshoot the solenoid circuit.
The cross port relief is set too low or is stuck in an open position.	Locate the cartridge type, cross port relief valve which is screwed into the diverter valve manifold. Increase the pressure setting to 3,000 PSI by turning the adjustment screw clockwise.

If the platform leveling function still does not operate, then disconnect the two hoses which extend and retract the slave leveling cylinder. Disconnect these hoses at the slave cylinder which is located at the boom tip. Place the ends of the hoses in a bucket and try to level the platform in both directions. Oil should flow freely and alternately out of each one of these hoses. If one hose appears to be plugged, then replace that hose and re-test. If both hoses are unobstructed, then remove and clean, repair or replace the pilot operated check valve mounted on the base end of the slave cylinder.

ENGINEERING DRAWING SEQUENCE:
41/24 Eagle Fuel Gala

1. SDS-212422-0 Electric Schematic, Gas/Dual Fuel
2. SDS-213753-0 Electric Schematic Time Delay Starter Interlock
3. SDS-212412-0 Hydraulic Schematic, Gas/Diesel/Dual Fuel



NOTES:
1. CR1 CONTACTS APPEAR LINES 6 & 16.
2. GROUND/PLATFROM SELECTOR SWITCH DRAWN IN GROUND POSITION, APPEARS LINES 12, 16 & 31.
3. DRIVE/LIFT SELECTOR SWITCH DRAWN IN DRIVE POSITION, APPEARS LINES 22 & 28.

ITEM	QTY.	PART NO.

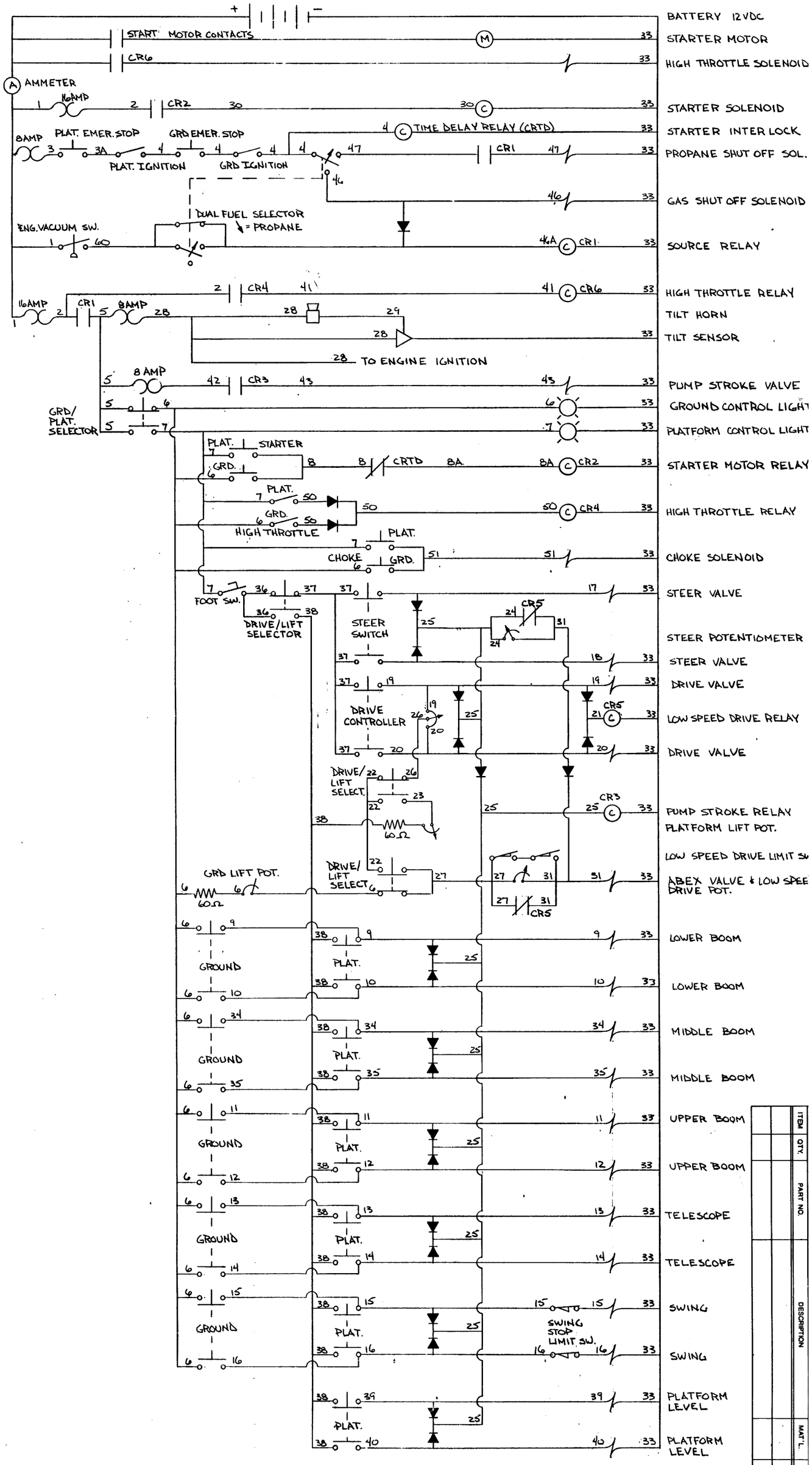
SIMON-AERIALS INC. MILWAUKEE, WI 53224

TITLE: ELECTRICAL SCHEMATIC GAS/DUAL FUEL

DATE 4-2-87

SDS 212.422-0

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES. TOLERANCES: FRACTIONAL ±1/64, ANGULAR ±0.5°, X.X ±0.1, X.XX ±0.06, X.XXX ±0.010. MATERIAL. FINISH. DO NOT SCALE DRAWING. REMOVE ALL BURRS AND SHARP EDGES. INTERPRET DRAWING IN ACCORDANCE WITH ANSI Y14.5M-1982. THIS DRAWING AND ALL THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF SIMON-AERIALS INC. AND SHALL NOT BE REPRODUCED, USED OR DISCLOSED TO OTHERS WITHOUT THE WRITTEN PERMISSION OF SAME.



ITEM	QTY.	PART NO.	DESCRIPTION	MAT'L.	WT.

REVISION	BY	DATE	DESCRIPTION

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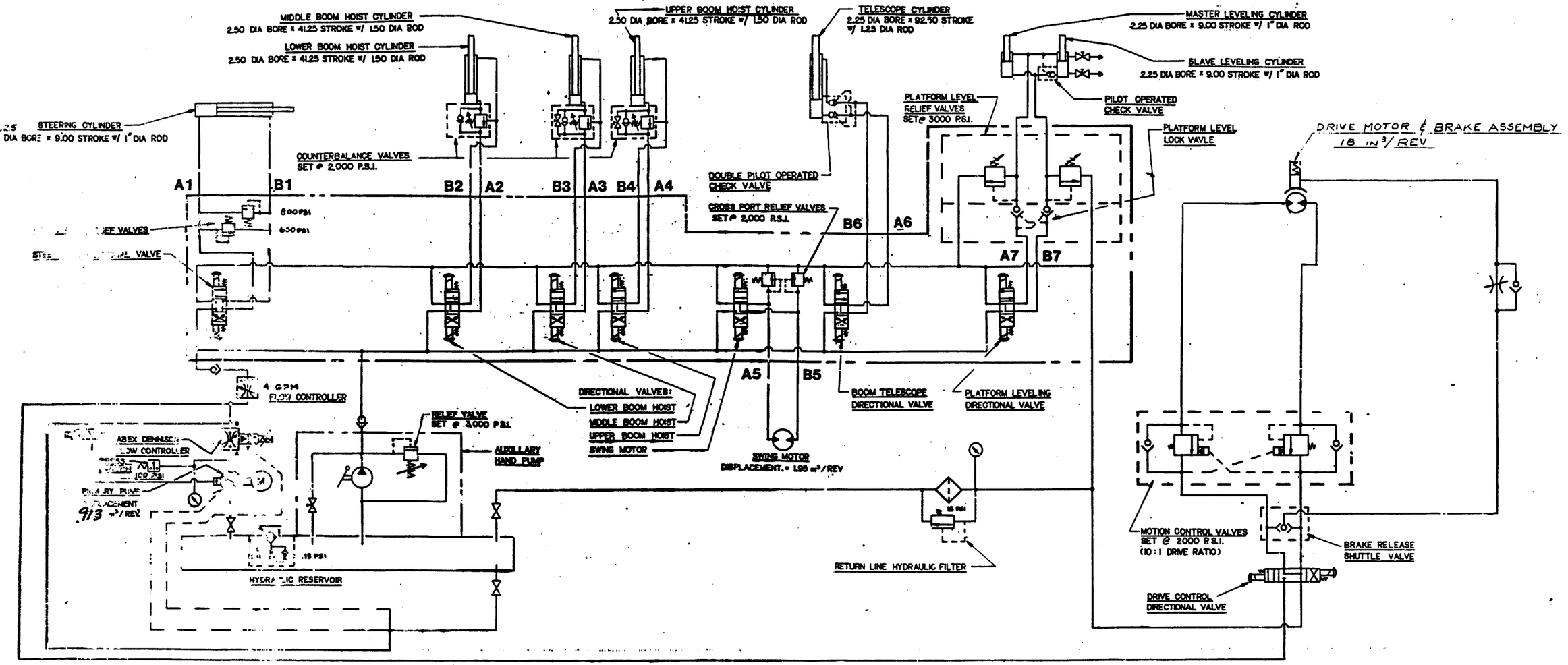
ALL WELDS MUST BE IN ACCORDANCE WITH A.W.S. STAND. ARM D1.1-1972 EDITION OR NEWER

IMPLIED TOLERANCE	
X.X	±.1
X.XX	±.05
X.XXX	±.015
FRACTIONAL	±1/16
ANGULAR	±.05°
DO NOT SCALE PRINT	

DRAWN: BJB
DATE: 2-5-88
APPROVED:
DRAWING NO. SNS-213753-0

TITLE: ELECTRICAL SCHEMATIC-EAGLE 41/42' GAS WITH TIME DELAY STARTER INTERLOCK

BILL OF MATERIAL				TOTAL WT.	
ITEM	QTY	PART NO.	DESCRIPTION	MAT'L	WT.



SIMON-AERIALS INC. MILWAUKEE, WI 53224

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IMPLIED TOLERANCE	
X.X	± 1
X.XX	± .05
X.XXX	± .015
FRACTIONAL	± 1/8
ANGULAR	± 0.5°
SCALE	~ (DO NOT SCALE PRINT)

TITLE HYDRAULIC SCHEMATIC GAS/DIESEL/DUAL FUEL

BY	DATE	DESCRIPTION	DRAWN	DATE	CHECKED	APPROVED	DRAWING NO
				4-1-87	MJC	MJC	SDS 212412-0