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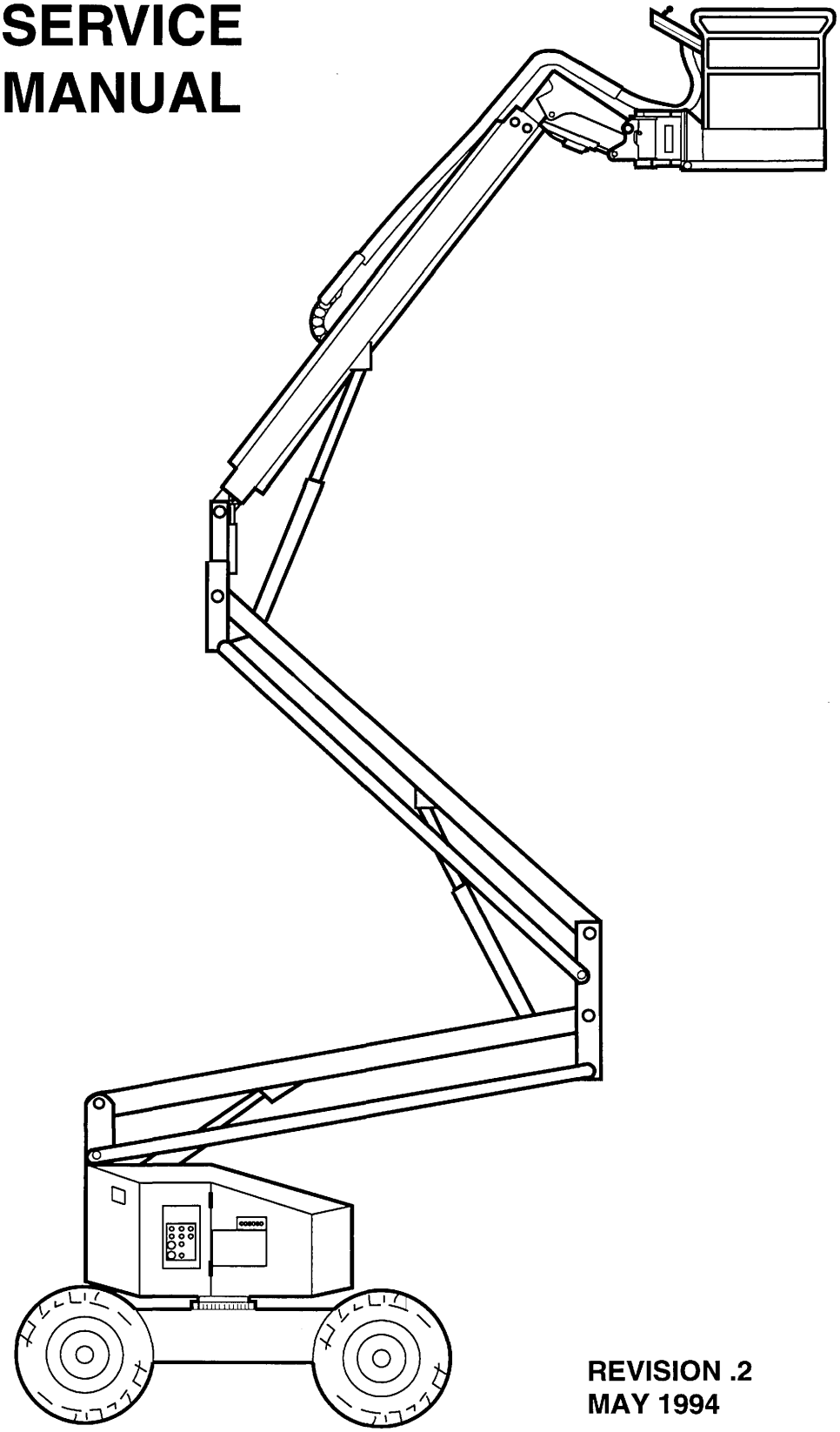
SIMON

SERVICE MANUAL



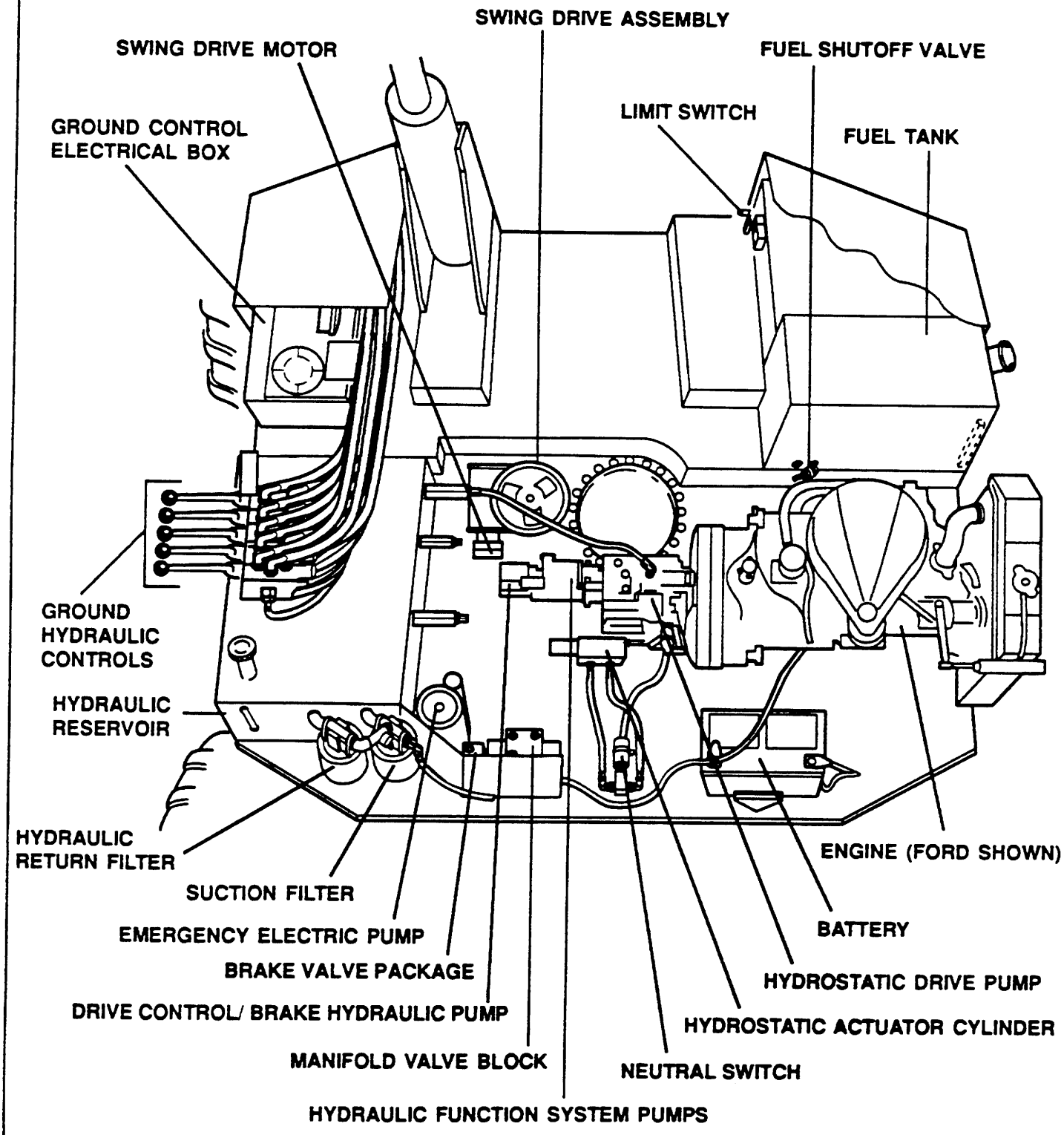
MODEL
CONSTRUCTOR AT60C

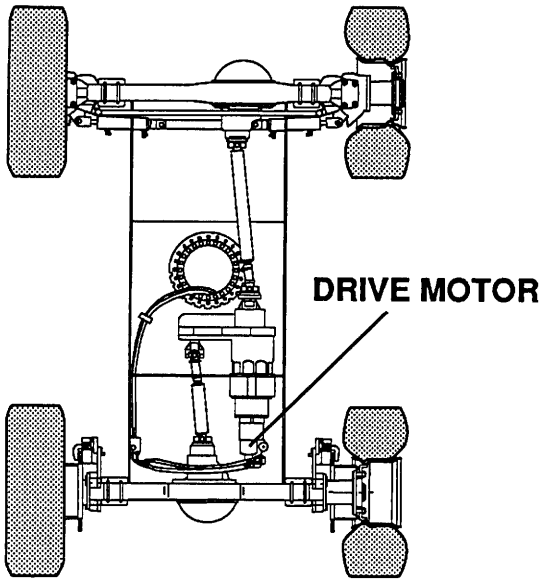
CCA01486 and above

PART NO. 89-446007

REVISION .2
MAY 1994

SUPERSTRUCTURE COMPONENT LOCATOR





Drive Motor Location.

B. DRIVE MOTOR

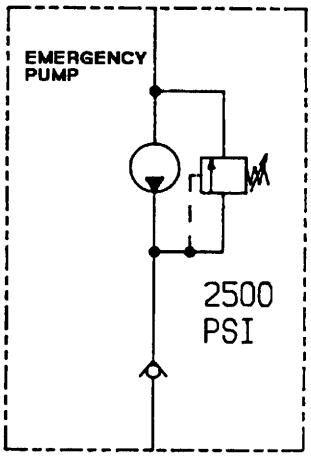
A two speed axial piston motor is mounted to the drive train located in the undercarriage of the machine. This motor is driven by hydraulic fluid flow provided by the hydrostatic drive pump. The direction of rotation and speed of this motor depend on the flow from the hydrostatic drive pump. Drive system pressure is dependent on the load on the machine.

C. MAIN FUNCTION SYSTEM AND DRIVE CONTROL TANDEM PUMP

This tandem pump, mounted on the end of the hydrostatic drive pump, opposite engine, consists of two gear pumps coupled back to back.

The larger pump (forward or closest to engine) provides fluid to operate all the machine functions except "DRIVE" and the drive controller. This pump supplies the system manifold block to operate the functions as selected by the operator, when either the ground control power switch or platform foot switch are activated.

Fluid from the smaller pump is split at a flow divider. One branch controls brake function. The other branch supplies flow to the system controller circuit in the manifold block. When the foot switch is activated, fluid in the control circuit branch is supplied to the drive control handle which controls the actuator cylinder that controls hydrostatic pump output. When the hydrostatic pump is actuated the brake function branch supplies pressure to the hydraulic release/ spring applied brakes at wheels and in the drive line.

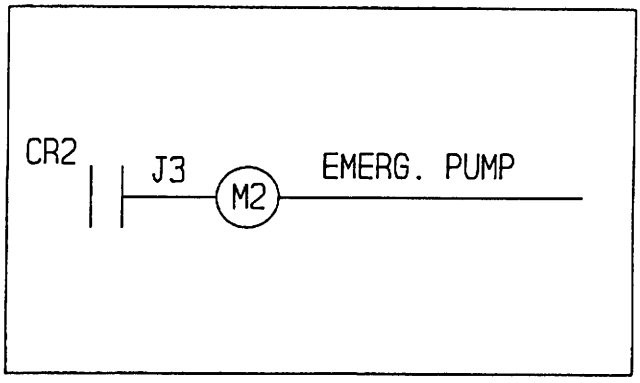


Emergency Pump Hydraulic Schematic.

D. EMERGENCY PUMP

This is a 12 volt electric hydraulic pump, used to provide fluid to operate all boom functions and superstructure swing in case of engine failure. The pump has a built in relief valve and is connected to the ground and platform control valve banks. To operate the emergency pump, turn the emergency pump switch clockwise and operate the desired valve function. This system can be operated from either the ground or platform control station.

The emergency pump is meant to be used only under emergency conditions, to safely lower the operator's platform to the ground.



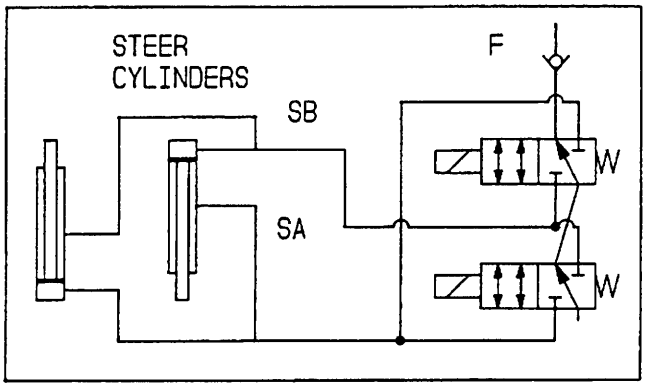
Emergency Pump Electrical Schematic.

STEER SYSTEM

The steering circuit is controlled by two solenoid operated directional control valves mounted on the hydraulic system manifold block (indicated **"S1"** and **"S2"**). These valves are activated by a thumb button on top of the drive control lever. When the thumb button is pressed to steer "LEFT" or "RIGHT", the valve spools shift to allow fluid flow to the steer cylinders.

The base end of the steer cylinders are attached to the undercarriage, while the rod ends are connected to the steering axle. Dual cylinder steering is achieved by hydraulic fluid flow to the base of one cylinder and the rod end of the other cylinder.

The relief valve for this system is shared with the lift system, and is in the manifold block.



Steer System Hydraulic Schematic.

STEER SYSTEM MAINTENANCE

Lubricate linkage and axle as per Lubrication Chart. Check steering cylinder pins for excessive play. Check cylinder and hoses for hydraulic fluid leakage and security.

STEER SYSTEM TROUBLESHOOTING

Problem: Unit will not steer; all other functions operate.

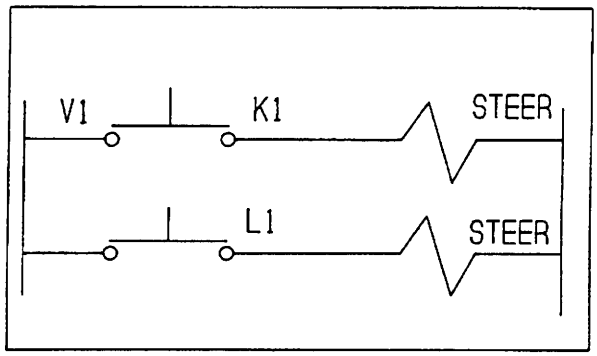
Steer cylinders may not be mechanically connected to steering linkage. Check for disconnected or damaged steering linkage.

The steering solenoid valves may not be shifting. The valve spools may be stuck, the solenoid may not be energizing, or there may be open wires in the steering circuit.

Locate steering valves on manifold. Check to see if the solenoids located on these valves are being energized. If power is reaching the solenoids, either one or both solenoids are defective or a valve spool is obstructed. Remove valve and inspect, clean, repair or replace as needed. If solenoids are not being energized, check for continuity in the wire harness to the steering control switch on the drive lever.

NOTE

On units with the Tow Package option, check the steering tow release valve for proper position.



Steer System Electrical Schematic.

CHARGE PUMP REMOVAL AND INSTALLATION

Note orientation of the pump housing to adjacent assembly, and scribe lines or make punch marks to insure proper relocation.

Remove hex head screws and washers retaining the flange adapter. Remove the adapter.

Remove the steel check ball from the gerotor spacer with a magnet.

Remove the gerotor spacer o-rings.

Lift the gerotor spacer out of the end cap. Take care to avoid damaging the gerotor spacer. Note the orientation of the gerotor spacer and pin for assembly.

Remove the gerotor assembly from the end cap.

Examine wear surfaces of gerotor assembly for excessive scratching or heavy wear patterns. If replacement is necessary, both parts of the gerotor MUST BE REPLACED AS A UNIT. DO NOT REPLACE OR EXCHANGE INDIVIDUAL PARTS OF THE GEROTOR ASSEMBLY. The o-ring is not reusable, and should always be replaced.

Lubricate the gerotor assembly with clean hydraulic oil.

Slide the gerotor assembly into position on the shaft spline.

NOTE

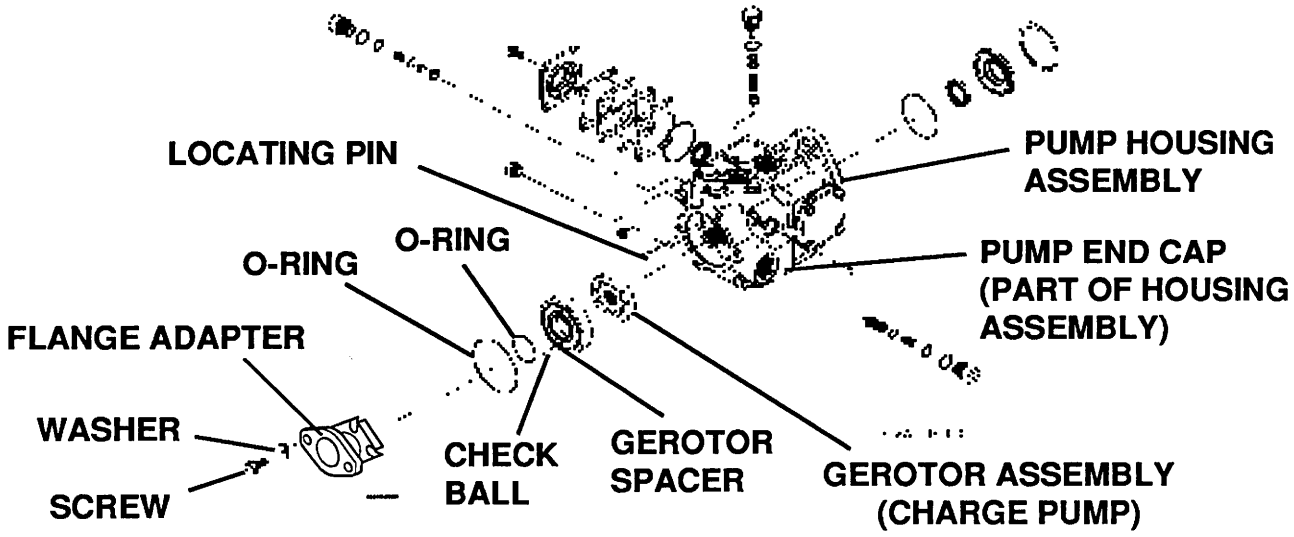
The charge pump rotation is determined by the position of the gerotor spacer and locating pin in the pump end cap.

Install the gerotor spacer (with locating pin), over the gerotor assembly and into the pump end cap, orienting them for the proper input shaft rotation direction. The pin in the gerotor spacer should be located in the end cap hole farthest away from the charge pump inlet port for clockwise input rotation, and closest to the inlet port for counterclockwise input rotation.

Install the o-rings into the grooves of the gerotor spacer.

Install the steel check ball into the gerotor spacer. The ball must always be located next to the inlet side of the charge pump to allow balance pressure to build up on the gerotor spacer.

Install the o-ring and flange adapter and tighten the screws.



Charge Pump Removal and Installation.

BOOM TELESCOPE (EXTEND) CYLINDER

The boom telescope (extend) cylinder is a double acting cylinder. It must be removed from the machine before a thorough inspection can be carried out.

TELESCOPE CYLINDER REMOVAL

Elevate the upper boom to the horizontal position. Extend the boom just enough to expose the upper cylinder pivot pin on the inner boom. Disconnect the hydraulic hoses from the cylinder. Remove the pivot pins from the inner and outer boom, and withdraw the cylinder from the boom.

⚠ CAUTION

With the extend cylinder disconnected, CARE MUST BE TAKEN TO PREVENT THE INNER BOOM FROM SLIDING OUT OF THE OUTER BOOM. Wedges placed between boom sections will secure the outer boom.

TELESCOPE CYLINDER SEAL REPLACEMENT

Remove the end cap from the cylinder. Pull the cap and rod straight out of the cylinder barrel. Remove the split pin and nut from the end of the rod. Slip off the collar. Examine the rod and seals for signs of damage or wear.

Remove the old seals, and install a new set.

TELESCOPE CYLINDER INSTALLATION

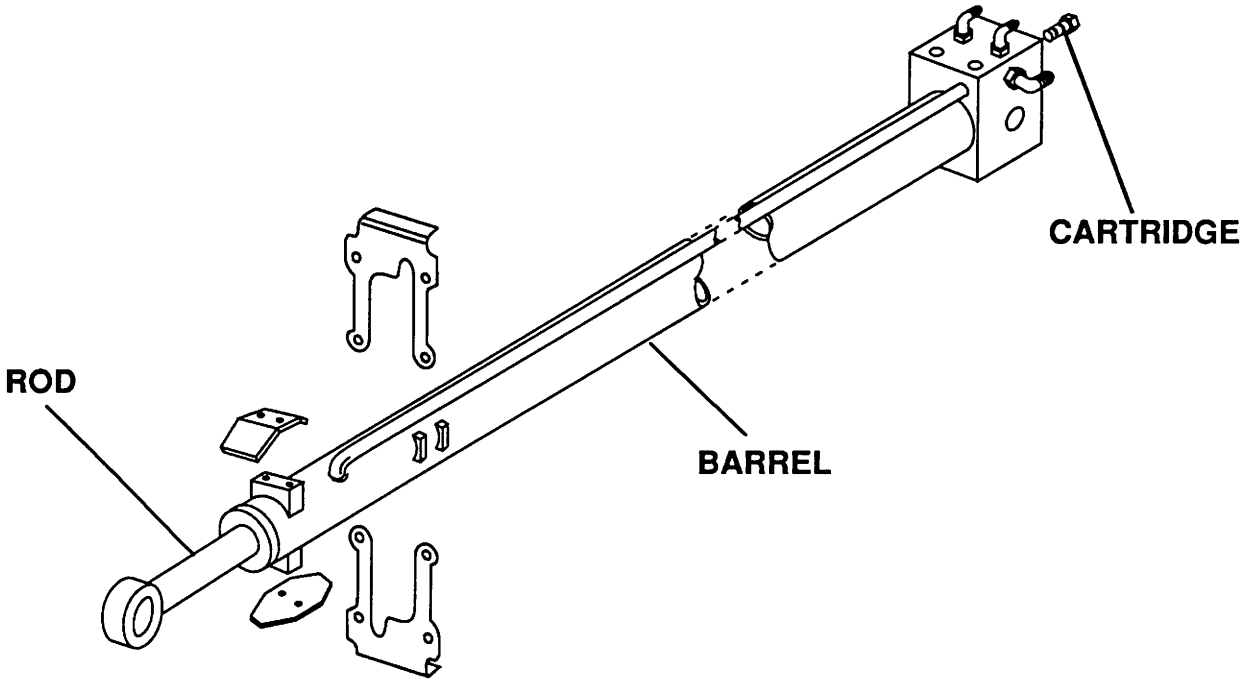
WITH THE UPPER BOOM IN THE HORIZONTAL POSITION, slide the telescope cylinder into the boom. Install the pivot pins and hoses.

CHECKING HOLDING VALVES

Stop the engine, and activate the appropriate control lever several times to dissipate residual pressure. If the cylinder subsequently begins to move, the valve is faulty and the cartridge should be removed and cleaned.

⚠ NOTE

The holding valve is pre-set at the factory, and adjustment is NOT RECOMMENDED.



Telescope Cylinder .

Test All Machine Systems

Test the operation of the drive assembly, including drive shafts, transfer case, axles, couplings and gearbox. Check operating speeds.

Test the operation of the swing bearing, motor and gearbox.

Test the operation of the platform rotator.

Test the operation of all machine boom functions.

Engine

Check engine oil and fuel level. Check the engine manual provided with the machine for daily service requirements.

WEEKLY SERVICE

Control Valves

Platform and ground control valves must be checked for correct operation. Check that all control valve handles automatically return to the center (neutral) position.

Steering

Check the steering cylinder for fluid leakage. Inspect steering linkage for signs of wear.

Battery

Check the battery electrolyte level. Replenish the electrolyte with distilled water, if necessary.

Engine

Check the engine manual provided with the machine for weekly service requirements.

MONTHLY SERVICE

Hydraulic System

Check fluid color. If the hydraulic fluid does not flow clear amber, but has a cloudy appearance, it is usually an indication that water is present. A dark brown color, accompanied by a strong "burnt" smell, indicates that the fluid has overheated. If either condition occurs, a complete hydraulic fluid change will be necessary.

Check for hydraulic system leaks.

Chassis Bolts

Check all bolts for signs of looseness.

Front and Rear Axles

Torque bolts on axle mounting blocks. Check differential housing oil level. Top off as required.

Swing Bearing

Remove any dirt from between the swing bearing gear teeth, and lubricate.

NOTE

If solvents or a high-pressure washer are used for cleaning, grease the swing gear teeth, pinion and bearings.

Lubricate the swing gearbox top bearing with a quality bearing grease.

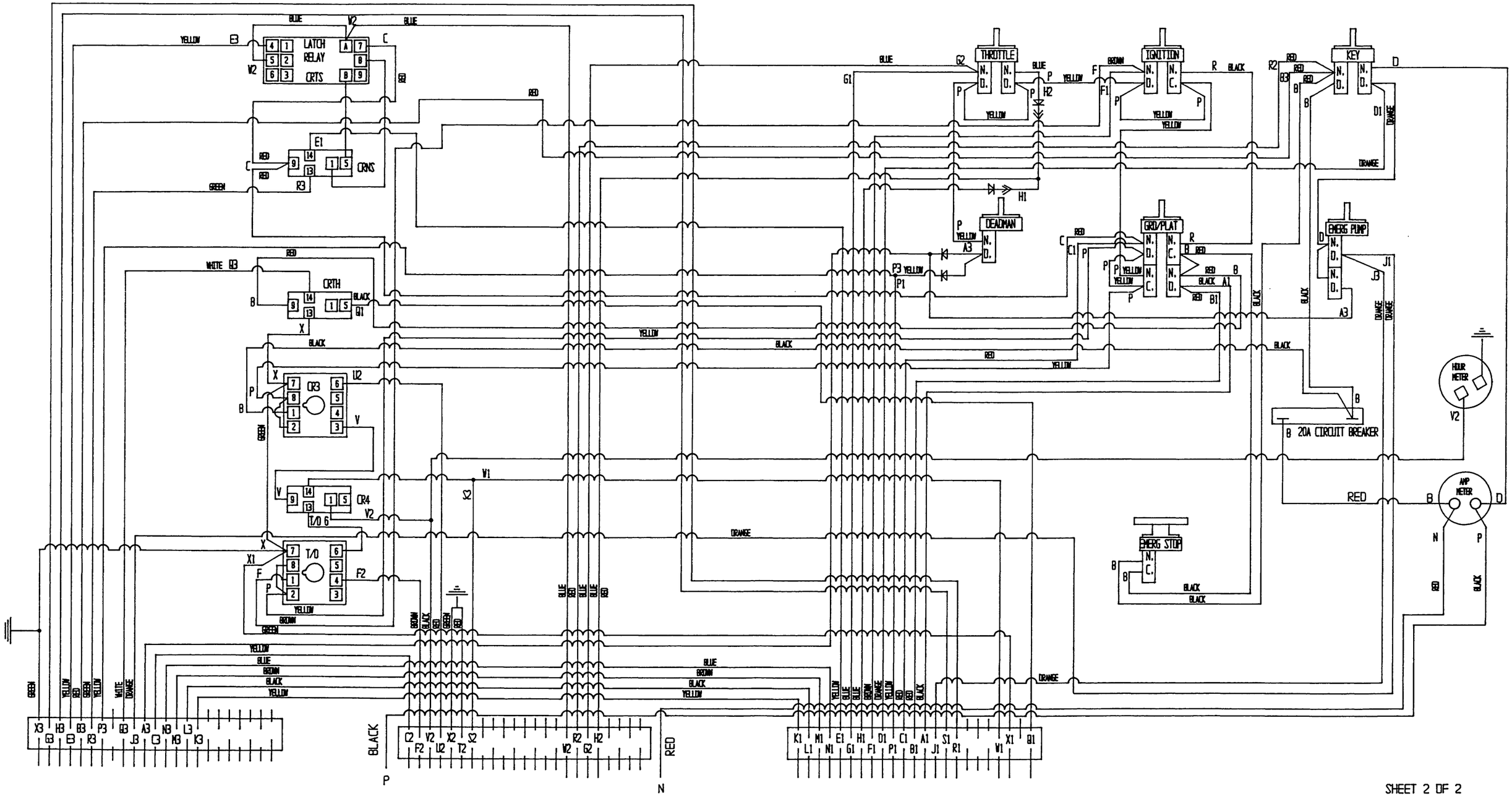
Check torque of swing bearing bolts.

Swing Drive

Check swing drive adjustment. Check torque of swing drive mounting bolts.

MAINTENANCE CHART

Maintenance Item	Daily	Weekly	Monthly	Semi-Annual	Annual	4 Year
Check control valves		X				
Check steering system		X				
Check for tangled hoses			X			
Check chassis bolts			X			
Check moving anchor			X			
Check boom/cylinder pins			X			
Check torque on swing bearing bolts			X			
Torque bolts on axle mounting blocks			X			
Check drive gearbox fluid			X			
Check swing gearbox fluid level			X			
Check axles and transfer case fluid level			X			
Check hydraulic fluid contamination			X			
Lubricate all grease fittings			X			
Clean and lubricate valve controls			X			
Grease swing gear teeth			X			
Lubricate pivot pins			X			
Check engine RPM				X		
Replace fuel filter				X		
Engine tune-up				X		
Check platform mountings				X		
Check boom gland nuts				X		
Check swing drive mounting bolts				X		
Check electrical system				X		



SHEET 2 OF 2

SIMON-AERIALS INC.
MILWAUKEE, WI. 53224

TITLE
WIRING DIAGRAM
AT60C / DUEL FUEL - FORD LSG-423

REVISION

DRWG. NO.
SDS 2326360