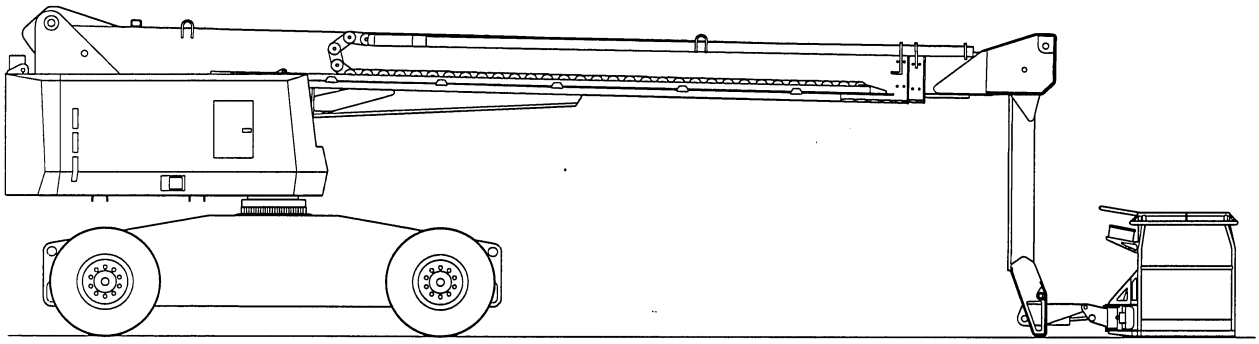
TEREX AERIALS

SELF-PROPELLED BOOM LIFT
MODEL TB86



Art # A00.00311E

FOR PARTS OR SERVICE CONTACT:

SERVICE AND MAINTENANCE MANUAL

Terex Aerials
10600 W. Brown Deer Road
Milwaukee, WI 53224
U.S.A.

Telephone: (414) 362-9300
Facsimile: (414) 355-0832

Terex Aerials
106 12th Street S. E.
Waverly, IA 50677
U.S.A.

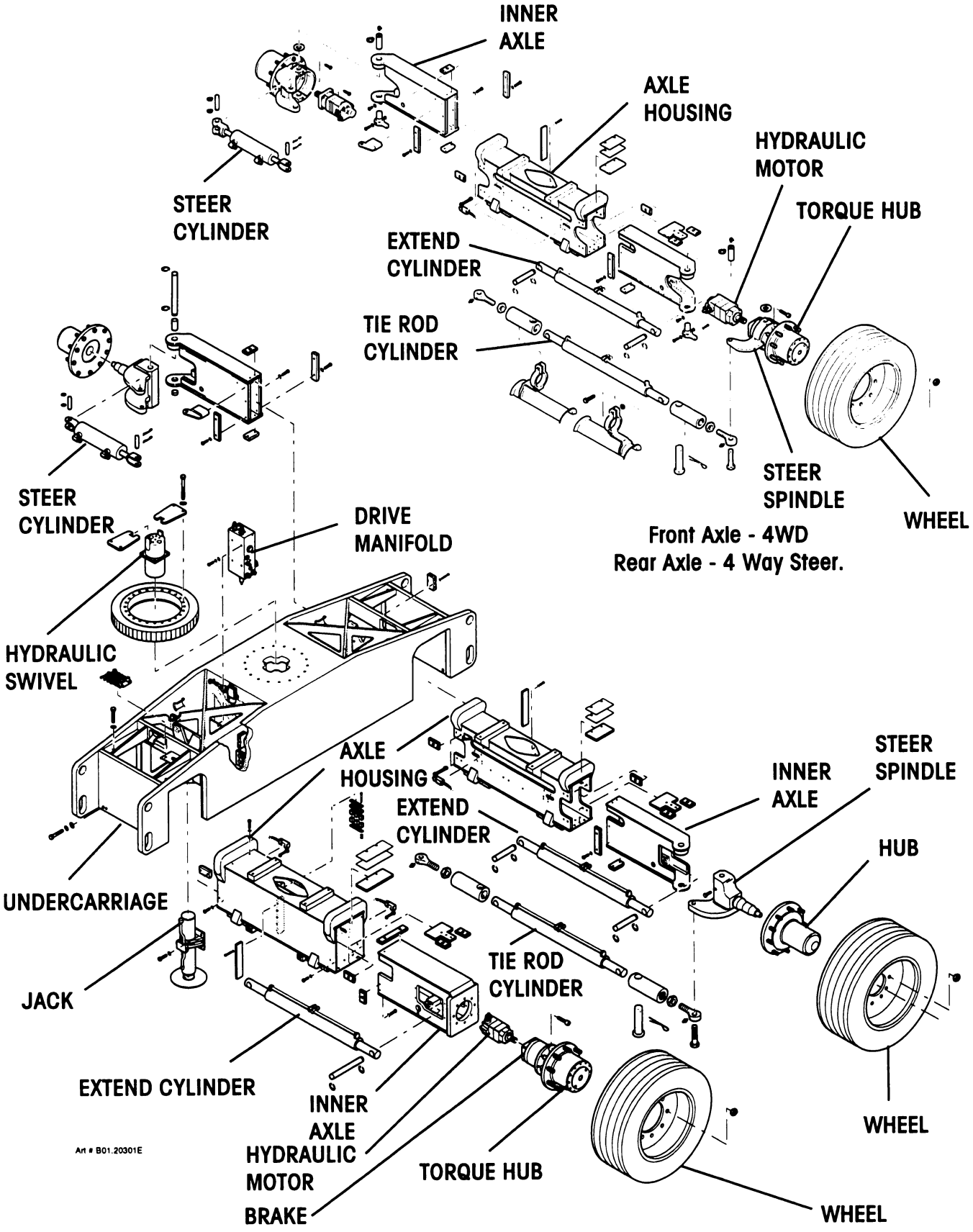
Telephone: (319) 352-3920
Facsimile: (319) 352-5727

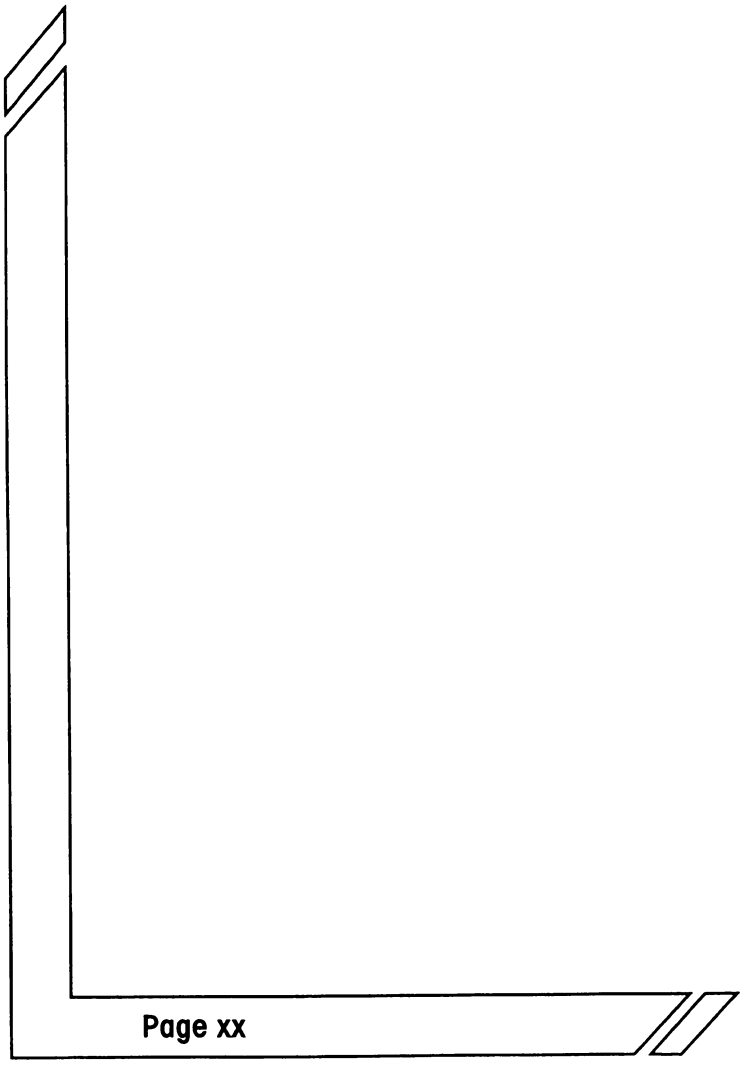
Terex Aerials
Courtstown Industrial Park
Little Island, Co.
Cork, Ireland

Telephone: (353) 21-353011
Facsimile: (353) 21-353368

Issued: July '98
P/N 17159

UNDERCARRIAGE COMPONENT LOCATOR





SITUATION: Unit elevated, with operator incapacitated at platform controls.

⚠ DANGER

DO NOT TOUCH UNIT !!!

DETERMINE THE CAUSE OF THE PROBLEM BEFORE YOU TOUCH THE MACHINE.

CORRECTIVE ACTION

1. Check for contact with power lines.
2. Have someone summon first aid or rescue squad.
3. Attempt to talk to operator before taking any rescue measures.
4. **Check to see if the operator is in a pinned position, or would be endangered if platform is moved, before attempting emergency lowering procedure.**
5. After establishing that the machine is not in contact with live power lines, lower the platform using the emergency lowering procedure (see "Emergency Pump", earlier in this section).
6. Render first aid to the operator.
7. **Report the incident to your supervisor immediately.**

IMPORTANT: Any incident involving personal injury must be immediately reported to the local Simon Aerials Distributorship as well as to Simon Aerials Inc.

SITUATION: Platform in contact with live power lines and operator incapacitated.

⚠ DANGER

DO NOT TOUCH UNIT !!!!

ELECTROCUTION HAZARD!!!

CORRECTIVE ACTION

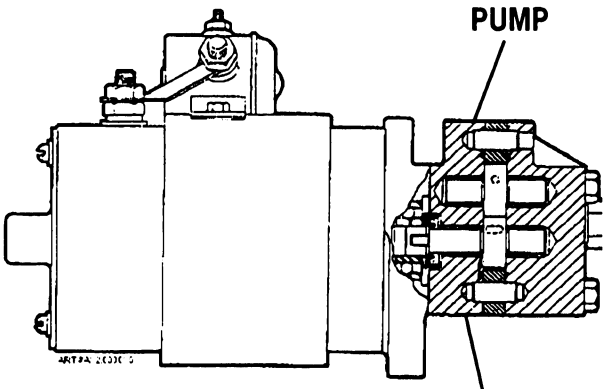
1. Contact authorized personnel to disconnect power supply touching unit.
2. Have someone summon first aid or rescue squad.
3. If operator is unconscious, check to see if he is in a pinned position, or would be endangered if platform is moved.
4. **AFTER POWER IS CUT,** use the emergency lowering procedure to bring platform with operator to a safe location to render first aid (see "Emergency Pump").
5. **Report the incident to your supervisor immediately.**

IMPORTANT: Any incident involving personal injury must be immediately reported to the local Simon Aerials Distributorship as well as to Simon Aerials Inc.

EMERGENCY PUMP

The emergency pump is driven by a 12 volt DC electric motor. This pump delivers hydraulic fluid, under pressure, to the manifold assembly. The electric motor is rated for non-continuous duty and will fail prematurely if activated continuously for extended time periods.

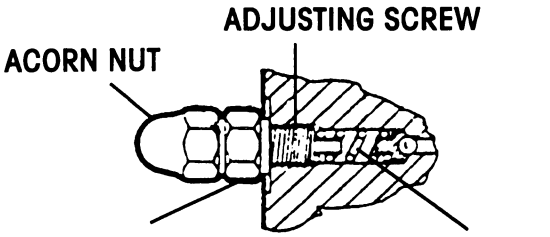
NOTE: This pump should only be used in emergency situations.



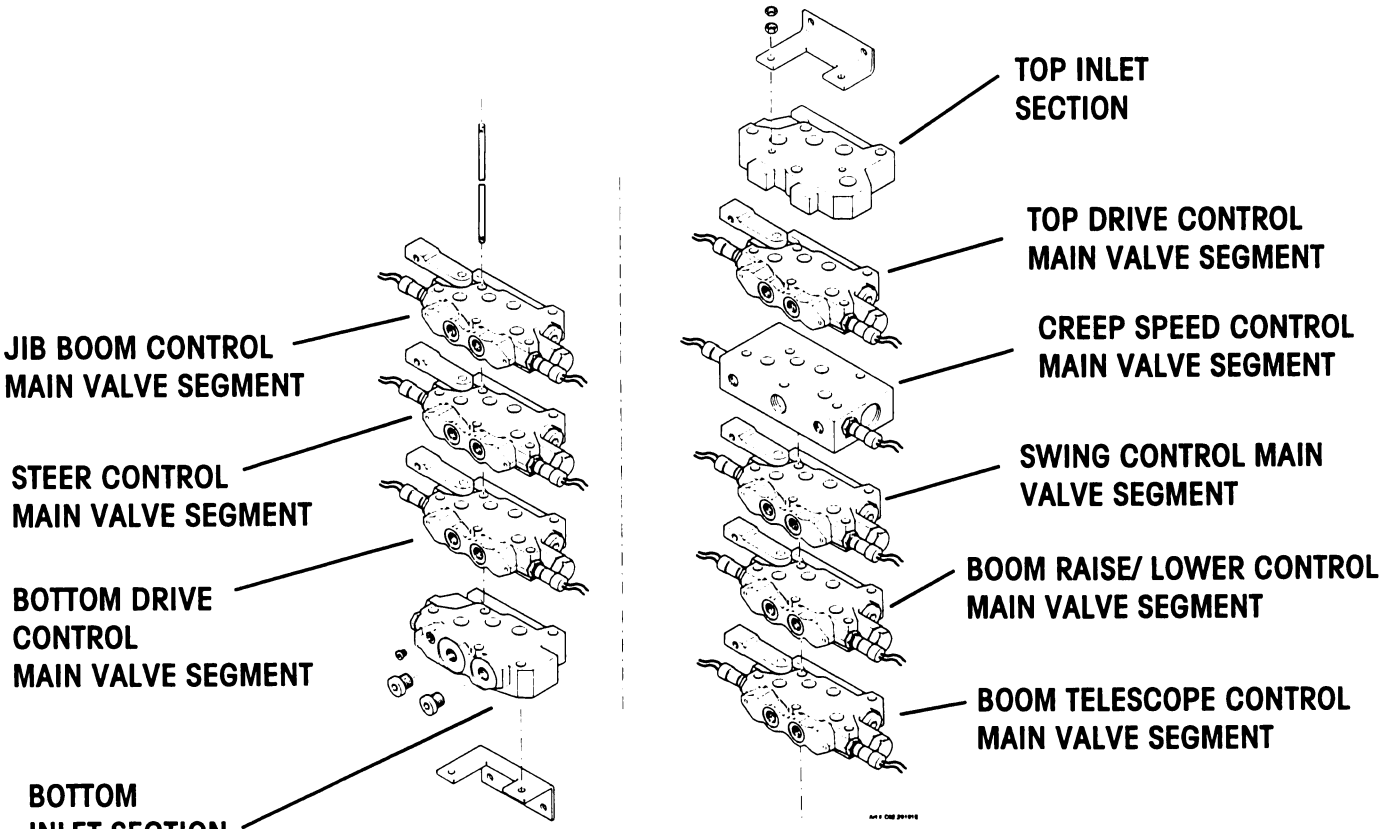
Emergency Pump.

EMERGENCY PUMP ADJUSTMENT

The emergency pump pressure setting screw is located on the side of the adapter plate. To adjust the relief pressure on the pump, remove the acorn nut, loosen the jam nut and turn the adjusting screw in to increase pressure. To decrease pressure, turn the adjusting screw out. (See "Machine Specification" for correct setting.)



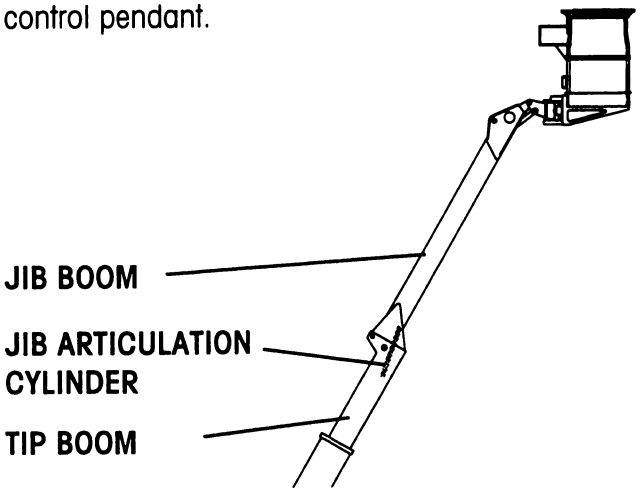
Emergency Pump Adjustment.



Ground Valve Bank Assembly.

JIB BOOM SYSTEM

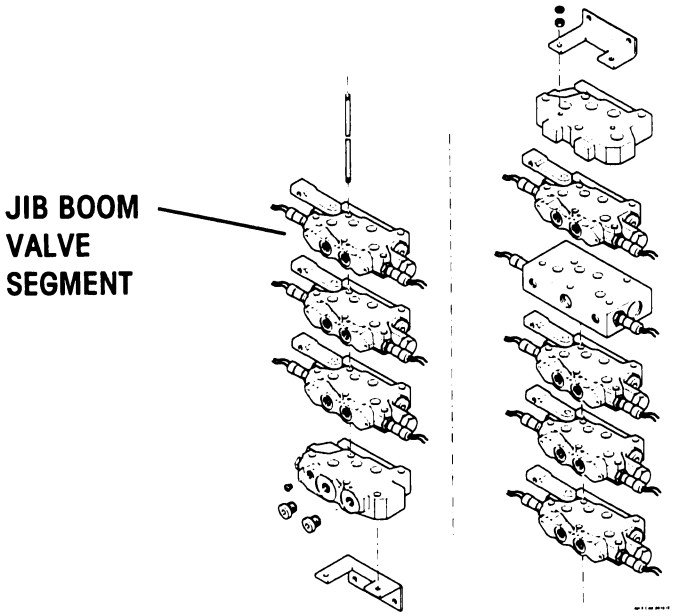
The jib boom system consists of a hydraulic valve segment on the ground valve bank, a cylinder with a counterbalance valve, and a control lever on the platform console and a toggle switch on the remote control pendant.



Jib Boom System Components.

JIB BOOM VALVE SEGMENT

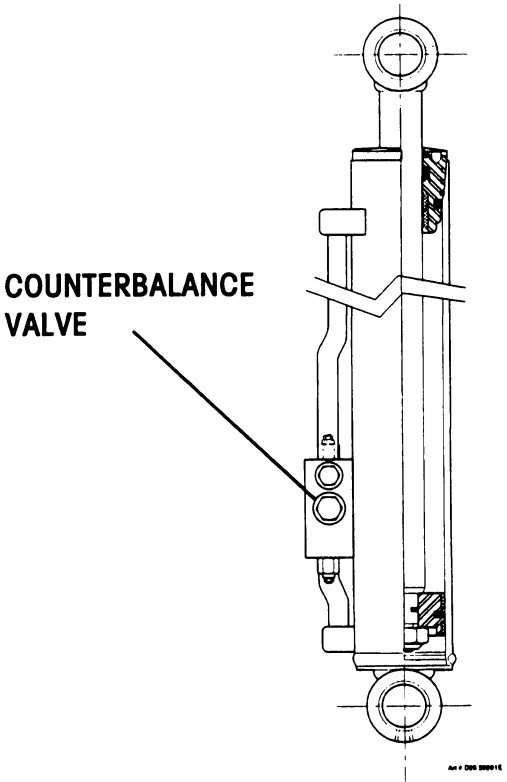
When the jib boom control lever on the platform console or ground control station is activated, an electrical signal is transmitted to the valve cartridge in the jib boom valve segment. This allows hydraulic fluid at the selected flow to be sent to the proper end of the cylinder to raise or lower the jib boom.



Ground Valve Bank Assembly.

JIB ARTICULATION CYLINDER

The jib boom function is controlled by a double acting cylinder. The cylinder contains a counterbalance valve, which will prevent unintended movement of the cylinder should a hose or fitting develop a leak. When the boom is lowered, fluid flows to the rod end cylinder port and to the counterbalance valve, opening this valve and allowing fluid in the base end of the cylinder to flow back to the hydraulic reservoir. When the jib boom section is raised, fluid flows to the base end cylinder port and to the counterbalance valve, opening this valve and allowing fluid in the rod end of the cylinder to flow back to the hydraulic reservoir.



Jib Articulation Cylinder.

DRIVE VALVE MANIFOLD - TWO WHEEL DRIVE

NOTE: Refer to "Machine Specifications" to determine maximum system pressure for your RP.

HI SPEED DRIVE ENABLE VALVE

The hi speed drive enable valves are 2 position, 2 way solenoid valves that bypass the flow divider valve and are used to control the fluid flow for travel speed. The valves require no adjustment and seal kits are available (see Illustrated Parts Catalog).

FLOW DIVIDER/ COMBINER VALVE

In the forward direction, this valve divides flow, and in the reverse direction it combines the flow. The single flow divider directs the flow so that 50% goes to the left and 50% goes to the right. The valve requires no adjustment and a seal kit is available (see Illustrated Parts Catalog).

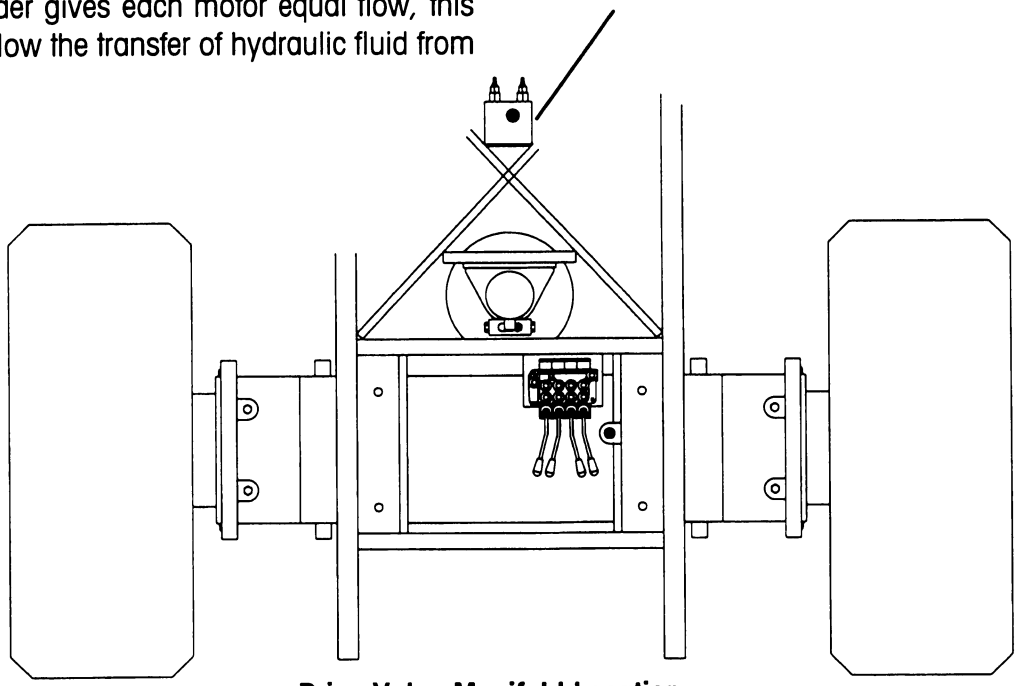
There is a non-serviceable, fixed orifice that allows hydraulic fluid to transfer from one drive motor to the other. When making turns, the outside tire turns faster and requires more hydraulic fluid flow. Since the flow divider gives each motor equal flow, this orifice will allow the transfer of hydraulic fluid from the inside wheel to the outside wheel and prevent tire scrubbing on hard surfaces.

COUNTERBALANCE VALVE

The counterbalance valves are used as a secondary brake circuit that controls the machines movement unless enough drive pressure is supplied to open the valve. It prevents runaway and cavitation when coasting down a slope. The valves require no adjustment and seal kits are available (see Illustrated Parts Catalog).

BRAKE VALVE CIRCUIT

The brake valve circuit consists of a shuttle valve, a pressure reducing valve and a flow control valve. The shuttle valve diverts maximum pressure from either the forward or reverse supply ports and sends it to the pressure reducing valve which reduces it to 500 PSI maximum. The flow control valve delays the application of the spring applied hydraulically released brake when releasing the drive handle. This delay allows for a smooth stop by restricting the return flow of oil. The valves require no adjustment and seal kits are available (see Illustrated Parts Catalog).



Drive Valve Manifold Location.

GROUND CONTROL BOX SWITCH REMOVAL

To replace a ground control switch or button, disengage the ground control cover retaining screws to gain access for switch or button removal. Remove the appropriate button mounting screws and wires.

PLATFORM CONTROL CONSOLE SWITCH REMOVAL

To replace a platform switch, joystick or light, remove the six platform console screws and swing the console up on its hinges, to gain access for removal. Remove the appropriate switch, joystick, or light mounting screws and wires.

PLATFORM CONTROL BOARD

The platform control board contains the microprocessor and related electronics for the control of platform lights and sending data to the electronics control module.

To replace the platform control board remove the six platform console screws and swing the console up on its hinges, to gain access for removal. Unlatch the individual connectors by pressing on top of the connector locks and remove connectors. Remove tfour bolts holding the board in place.

ELECTRONICS CONTROL MODULE

The electronics control module, located in the ground control box, contains the microprocessor and related electronics for the control of all of the machine functions. It is a non-serviceable unit. If the module is suspected of being faulty, remove the four bolts that secure it in place inside the ground control box. Also, unplug the two connectors. Return the module to Simon Aerials, Inc.

Opening the sealed screws of the ground control module cover, will void any warranty claims.

When installing the electronics control module, secure it in place with the four bolts, and plug in the two cable connectors. The connectors are keyed so they cannot be interchanged.

Refer to the Troubleshooting section for electronics control module fault code identifications and diagnostic procedures.

BOOM

Clean the boom once a year and inspect along the boom structure, especially all welds and brackets.

BOOM PIVOT PIN AND BUSHING REPLACEMENT

IMPORTANT: It is NECESSARY TO MAINTAIN THE CORRECT ALIGNMENT between the boom and pylon weldment during this operation. Any relative movement will make fitting of the pin more difficult.

⚠WARNING

THE BOOM WILL FALL IF NOT SUPPORTED WHEN THE PIVOT PIN IS REMOVED.

1. SUPPORT THE BOOM securely (on a boom stand or similar rigid platform).
2. Remove the retaining rings, capscrew and locknut, and drive out the boom pivot pin, taking care not to damage the inner bore, bushings, sleeve bearings or thrust bearings.
3. Check bushings, sleeve bearings and thrust bearings and replace if necessary.
4. Install new pivot pin.
5. Install capscrew, locknut and retaining rings.
6. Apply grease to pin through the grease fitting.

WEAR PADS

Wear to boom sections is prevented by the installation of wear pads at several points along the boom length. The wear pads should be checked for wear approximately every six months. Fully retract the boom, and check the gap between the wear pad and the boom section.

Wear pads are located at the top front of the tip boom and at the top front of the mid boom, and at the top, bottom and side rear of the mid boom, and at the top, bottom and side rear of the base boom. There is also a moving anchor wear pad mounted on a weldment located on the side of the base boom.

⚠ CAUTION

If a pad wears to approximately 3/8" (9.5 mm) thick, it should be replaced or shimmed. Generally, only the bottom pad at the upper end and the top pad at the lower end of the boom will show wear.

PLATFORM LEVELLING CYLINDERS

The platform levelling system automatically keeps the platform level, using a master/ slave cylinder arrangement. Whenever the boom is raised or lowered, the master cylinder is forced to move. The fluid displacement from the master cylinder is in turn sent up the boom to the slave cylinder. This forces the slave cylinder to move the same distance as the master cylinder, which keeps the platform parallel to the ground in any boom position.

The platform levelling cylinders (master and slave) are of the double acting type. The pivot pins should be checked for wear. Check the pivot pin locking bolts for tightness. The cylinders should be inspected for fluid leakage, damage and security. The seals should be replaced whenever the cylinder is serviced.

LEVELLING CYLINDER PIN REPLACEMENT

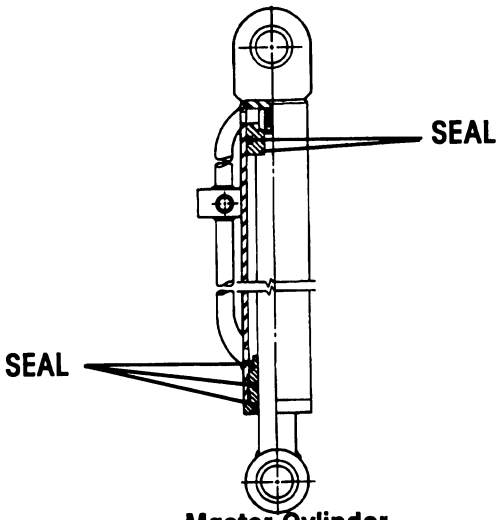
SUPPORT THE PLATFORM to remove the load on both master and slave cylinders. Remove the retaining ring, the pin locking bolts and nuts, and remove the pin.

Install new pin, locking bolts and nuts (lubricate bolts before installation) and retaining ring. Apply grease to pin.

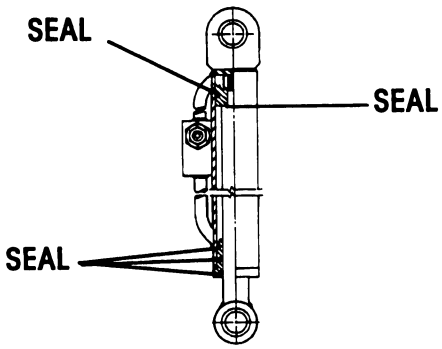
LEVELLING CYLINDER SEAL REPLACEMENT

Lower the main boom. SUPPORT THE PLATFORM to remove the load on both master and slave cylinders. Remove the lock collar and pin. Slave cylinder seals can be replaced on the machine. Master cylinder must be removed for seal replacement.

Clean the end of the cylinder. Unscrew the end cap and pull the cap and rod straight out of the cylinder barrel. TAKE CARE NOT TO DAMAGE THE ROD SURFACE, AND GUARD AGAINST DIRT ENTERING THE SYSTEM. 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 seal kit.



Master Cylinder.



Slave Cylinder.

SHIFT OPERATIONAL CHECKLIST (CONTINUED)

INITIAL	DESCRIPTION
_____	21. Check emergency pumps for operation and pressure (see Machine Specifications).
_____	22. Check platform controls for proper operation.
_____	23. With the main boom raised, check for the smooth operation of drive, creep speed.
_____	24. Follow instructions for servicing engine daily. Refer to the Engine Maintenance Manual supplied with your machine.

ADDITIONAL MAINTENANCE REQUIREMENTS FOR HARSH ENVIRONMENTS

NOTE: Do not lubricate wear pads or boom cables in dusty or sandblast environments. There are boots and guards available to extend unit's life in these applications. Consult Simon Aerials Service Department.

INITIAL	DESCRIPTION
_____	• Inspect cylinder boots, valve spool boots, etc., for cuts or other damage after every eight (8) hours of service. Repair or replace if necessary.
_____	• Check hydraulic system for leakage after every eight (8) hours of operation.
_____	• Follow instructions for servicing engine when used severely. Refer to the Engine Maintenance Manual supplied with your machine.

TROUBLESHOOTING CHART

Problem	Probable Cause	Solution
• All hydraulic functions inoperable.	• Check error code at ground control.	• Correct electrical problem.
	• Hydraulic enable valve.	• Check valve wiring and operation.
	• Pump stroker valve.	• Check valve wiring and operation.
	• Low fluid in reservoir.	• Fill to proper level.
	• Hydraulic pump defective.	• Repair or replace.
	• Faulty Deadman button or foot switch.	• Replace or repair.
	• Water in hydraulic fluid.	• Drain and flush hydraulic system.
	• Improper oil viscosity.	• Use correct fluid. See Lubrication Chart.
	• Hydraulic fittings loose or ports open.	• Close ports and tighten fittings. Drain and flush hydraulic system.
	• Faulty compensator valve.	• Check for improper compensator adjustment or replace valve.
	• Fluid leaks.	• Check for circuit leakage and fluid at pump inlet.
	• Faulty pump coupler.	• Replace coupler.
	• Pump intake restricted or plugged.	• Remove, clean or replace filter and/or strainer.
	• Dirt or sludge in pump.	• Drain and flush hydraulic system.

TROUBLESHOOTING CHART (CONTINUED)

Problem	Probable Cause	Solution
• Jib function - none.	• Check error code at ground control. • Jib spool valve stuck. • Holding valves not operating properly. • Faulty cylinder. • Faulty valve coil or electrical connections.	• Correct electrical problem. • Manually engage jib spool and check for operation. • Remove, clean, inspect, replace and test unit operation. • Possibly plugged lines, cylinder ports or damaged cylinder packings. Inspect, repair or replace cylinder. • Check coil and electrical connections for operation.
• Jib cylinder drifts down without footswitch operated.	• Holding valve cartridge dirty or faulty. • Cylinder packing is damaged.	• Clean, repair or replace the holding valve. • Replace cylinder packing.

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