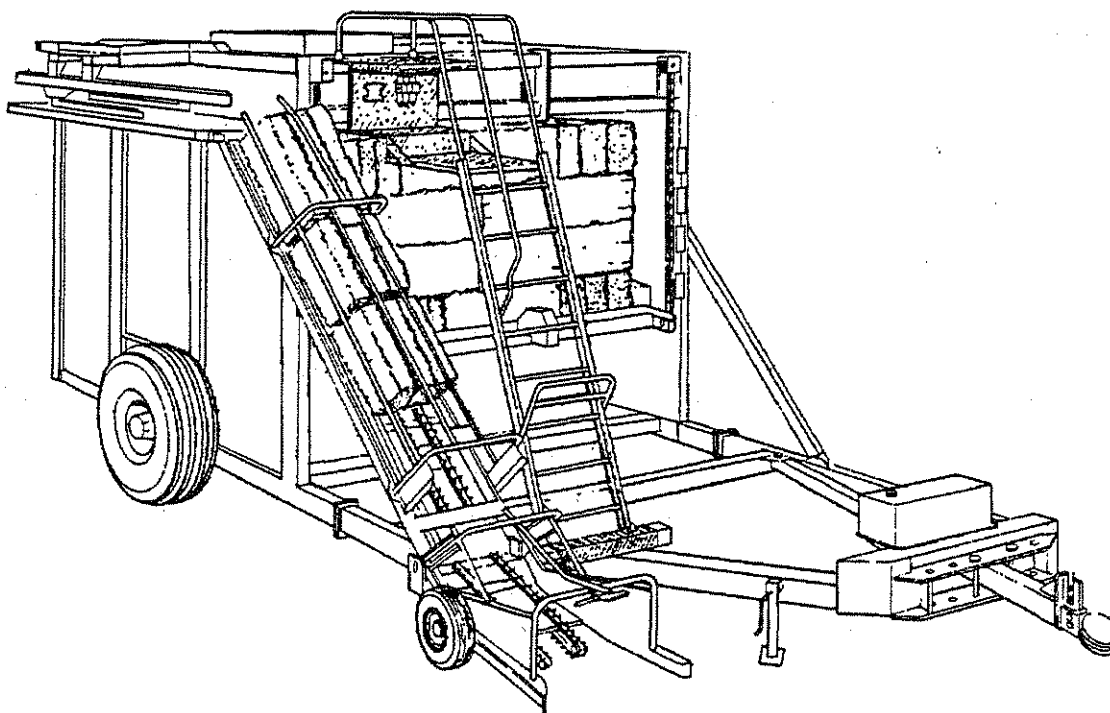


FREEMAN

MODEL 7000 BALE ACCUMULATOR



OPERATOR'S MANUAL

manufactured and distributed by



J. A. FREEMAN & SON, INC.

2034 N.W. 27TH AVE.
PORTLAND, OR. 97210

PORTLAND, OREGON



PB 7000

SAFETY

1. KEEP ALL SHIELDS IN PLACE AND IN SERVICEABLE CONDITION. ENSURE SAFETY WARNING SIGNS ARE IN PLACE, PROPERLY MAINTAINED AND REPLACED AS NECESSARY.
2. SHUT OFF TRACTOR, DISENGAGE P.T.O., AND LOCK TRACTOR TRANSMISSION AND/OR BRAKES BEFORE ADJUSTING, LUBRICATING, CLEANING OR SERVICING ACCUMULATOR.
3. KEEP HANDS, FEET, AND CLOTHING AWAY FROM POWER DRIVEN PARTS.
4. AVOID WEARING LOOSE CLOTHING WHICH CAN EASILY BE CAUGHT IN MOVING PARTS.
5. USE APPROPRIATE SIGNS OR WARNING LIGHTS WHEN OPERATING ON PUBLIC ROADWAYS.
6. MAKE CERTAIN EVERYONE IS CLEAR OF THE ACCUMULATOR BEFORE ENGAGING P.T.O. OR OPERATING ACCUMULATOR.
7. PERIODICALLY CHECK ALL NUTS AND BOLTS FOR TIGHTNESS.
8. ALWAYS USE LIGHTS FOR NIGHT WORK.
9. AT ALL TIMES CARRY A MINIMUM 2A-10B FIRE EXTINGUISHER.
10. AT ALL TIMES KEEP AWAY FROM PICKUP MECHANISM. KEEP ALL PERSONNEL AWAY FROM ACCUMULATOR.
11. REMEMBER SAFETY IS ONLY A WORD UNTIL IT IS PUT INTO PRACTICE.

SAFETY DECALS FALL INTO THREE CATEGORIES AS LISTED BELOW

CAUTION: GENERAL REMINDER OF GOOD SAFETY PRACTICE OR TO DIRECT ATTENTION TO UNSAFE PRACTICE. THE DECAL ON THE MACHINE WILL HAVE THE COLOR COMBINATION OF YELLOW AND BLACK.

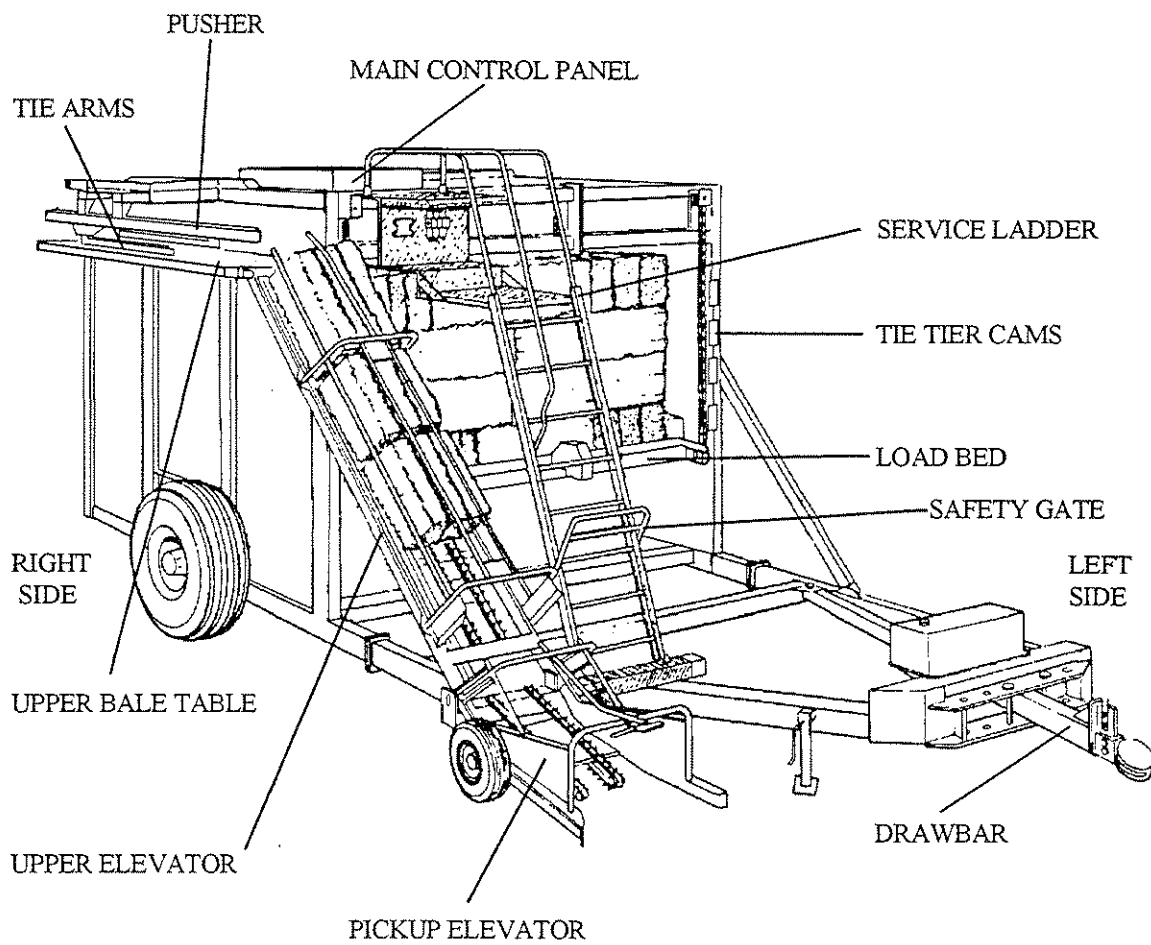
WARNING: DENOTES SPECIFIC POTENTIAL HAZARD. THE DECAL ON THE MACHINE WILL HAVE THE COLOR COMBINATION OF YELLOW AND BLACK.

DANGER: DENOTES MOST SERIOUS POTENTIAL HAZARD. THE DECAL ON THE MACHINE WILL HAVE THE COLOR COMBINATION OF RED AND WHITE.

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**FREEMAN MODEL 7000
BALE ACCUMULATOR**

PREPARATION

1. Connect drawbar to tractor, making sure hitch pins are in place.
2. Connect hydraulic pump to PTO shaft making sure that torque chain is connected to drawbar as to eliminate movement of the pump when PTO is engaged. Make sure to connect safety chain.
3. Connect the power cable to a 12 volt negative ground electric supply.
4. Mount the accumulator control box to a convenient location on the tractor.

The accumulator was designed to collect, mechanically load, and position bales into a tight square stack. Stacks can be 7 tiers high with 16" (39cm) bales, or 8 tiers high with 14" (35.5cm) bales. The stack is normally 9.3 feet (284cm) high and 8 feet (240 cm) square. These dimensions make it ideal for transporting by truck.

Stack patterns for 2 tie and 3 tie bales are different. A switch inside the relay chassis allows the operator select the proper mode for the bales being stacked. To stack 14" (35.5cm) bales instead of 16" (39cm) bales the tie sequence activating cams must be adjusted. See page 9 for further details on cam location.

Bales to be stacked must be square, solid and 45" to 48" (114cm to 123cm) long.

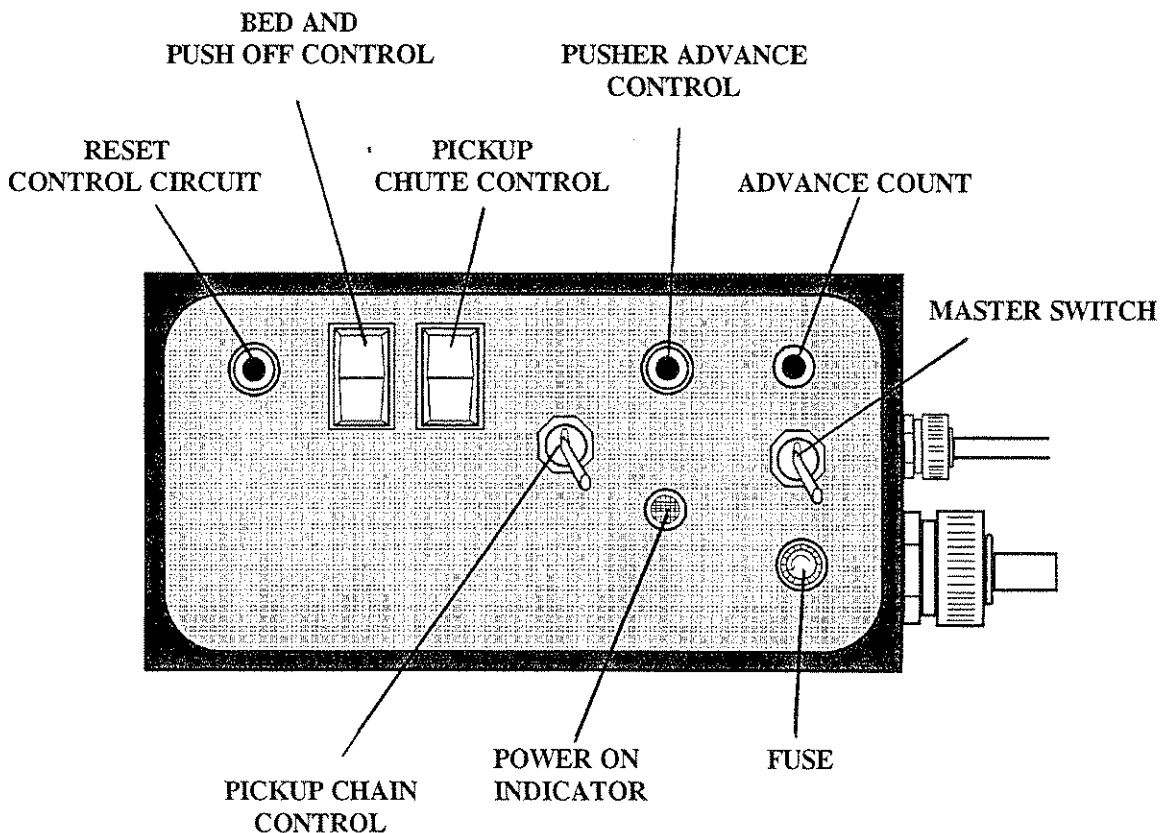


Fig. 1, CONTROL BOX

OPERATING INSTRUCTIONS:

1. On the control box locate the Master Switch. Move it to the "On" (see Fig. 1) position. Be certain all personnel are clear of the machine. The safety gate on the service ladder must be closed for the control circuit to be activated.
2. Engage tractor PTO.
3. Position the pickup chute down with the rocker switch on the control panel (Fig. 1).
4. Make sure that the load bed is in the highest position at the top of the Accumulator. This is controlled by the Bed and Push Off Switch on the control box.
5. With the Master Control "On" and the PTO engaged, lower the pickup mechanism and begin to load bales. As two bales enter the upper bale table, the pusher is activated and the bales will be moved on to the load bed. This process is repeated until ten two string bales are on the load bed. As the last two bales are moved onto the load bed the bales depress the index paddle. This signals the load bed to lower until the index paddle is released. This stops the load bed in position for the next tier to be formed.
6. The primary bale pattern as described in step 5 is referred to as pattern No. 1 (see Fig. 2). On selected tiers the control circuit is signaled to create a "Tie Tier". Two types of tie tier will occur. The tie patterns are referred to as No. 2 and No. 3. A panel near the top of the machine contains signal lights to indicate to the operator if a tie sequence is activated (see Fig. 3). This panel contains seven lights to represent each step of the tie sequence. Tie pattern No. 2 requires seven steps to complete the tier. Tie pattern No. 3 requires 6 steps to complete the tier. The number of lights lit represent each step of the process.

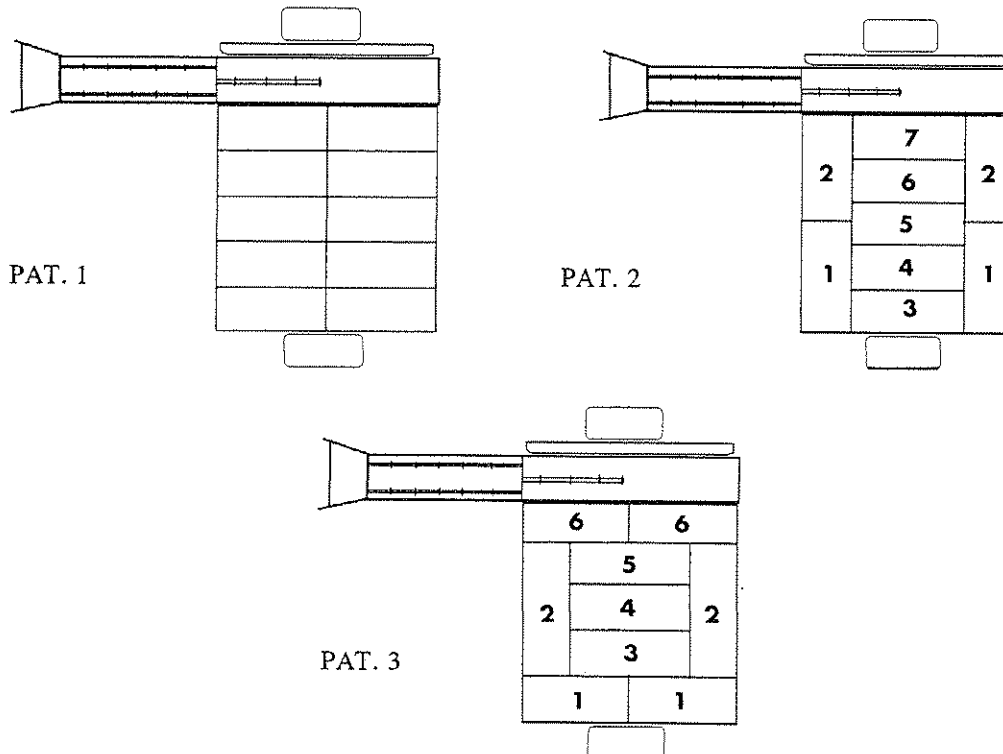


Fig. 2

INSTRUCTIONS FOR RESET OF PATTERN SEQUENCE:

If the loading sequence is interrupted on a tie tier it is necessary reset the control circuit. Use the Tie Light Advance Button on the Control Box to reset the control circuit and return the system to the proper step of the loading sequence. If a loading malfunction occurs the following process is used to re-establish correct loading pattern sequence.

1. Stop the tractor and lock tractor transmission and/or brakes. Disengage tractor PTO and shut off the tractor engine. Block wheels if necessary to prevent movement of the machine.

CAUTION: NEVER CLIMB ON OR AROUND ACCUMULATOR UNTIL THE PTO IS DISENGAGED !

2. Correct the problem or malfunction. Determine which step the control circuit should be operating to continue loading.
3. Press tie light Advance Button to move the indicator lights to the position that represents the step of the stack sequence the control circuit should be operating.
4. Engage PTO and resume stacking.

OPERATION TIPS:

1. Watch the Pickup Elevator and be sure bales do not hang or jam.
2. Each time the Load bed lowers to receive the next tier, visually check to see that it is positioned correctly.
3. Count the number of bales entering the Upper table for each tier and keep track of the sequence.
4. While the pusher is positioning bales on the load bed, the upper elevator chain does not operate. The pickup chain can continue to operate for it is controlled by the operator. The pickup control switch on the control box will start and stop the pickup chain. Bales entering the pickup can be placed on the upper elevator while it is stopped. These bales, held on the upper elevator are immediately ready to enter the upper table as soon as the pusher returns. Greatest stacking efficiency will be realized if two bales are always on the elevator, ready to enter the upper table.
5. As steps 3-7 of pattern No. 2 and 3 are being formed it will be necessary for the operator to allow only one bale at a time on the upper elevator waiting to enter the upper table. Use the pickup control switch to start and stop the pickup chain.
6. Operators learning to use the accumulator should select a ground speed that allows plenty of time for the stacking functions to occur. always operate the machine in a safe and cautious manner.
7. Count the bales that will form the last tier of the stack. Stop picking up bales as the 10th bale enters the pickup for 2 tie bales or as the eighth bale enters the pickup for 3 tie bales.
8. When moving from the field to the unloading area or from field to field be sure there is sufficient overhead clearance.

UNLOADING:

1. Select a level and accessible area to unload the accumulator.
2. On the control box locate the Bed Down and Pusher Out switch. Depress the switch. The load bed will lower and the Push Off Bar will push the stack off the accumulator. A warning tone will sound while the bed is in the down position.
3. When the stack is fully off the accumulator depress the Bed Up and Pusher in switch. Hold the switch until the bed has returned to the top of the accumulator and stopped.
4. Return to the loading site and resume stacking.

TIE TIER CAM ADJUSTMENT:

STACKING 14", 15", OR 16" HIGH BALES

To properly stack bales of a height different than what the machine is currently set up to handle it is necessary to reposition the Tie Tier activating cams. These cams activate limit switches that communicate the position of the load bed to the Control Circuit. The Control Circuit then determines which tie sequence should occur. See page 4, Fig.3 for the location of the Tie Tier activating cams.

To stack 14" high bales instead of 16" high bales the Tie Tier activating cams must be raised. Each cam must be positioned to correspond to the proper tier.

Tie Tiers may be added by installing additional cams.

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FREEMAN MODEL 7000 TROUBLESHOOTING

Control circuit will not operate

Indications:

Power indicator light on control box does not illuminate.

Pick-up chains do not operate.

Checks:

Inspect 15 amp fuse on control box. Replace if defective.

Check power connection to battery. Black power supply wire must be connected to 12 volt power source.

Check ground wire connection to battery. White ground wire must be connected to a sufficient ground.

Check battery voltage. Should be 12 to 14.5 volts.

Safety gate open. Close safety gate. Operate reset button to restart system.

Faulty safety gate limit switch or switch actuator. Check adjustment of limit switch arm.

Faulty safety gate relay. Replace relay.

Pusher will not operate

Pusher delay switches not released. Check switches at entry to bale table. Both switch paddles must be released for pusher to operate. Check switch paddles for mechanical faults. Check return springs on switch paddles.

Check switches. A released switch is normally closed (operated) and allows voltage to reach switches on bale table.

Pusher trip switches not depressed. Both switch paddles must be depressed for pusher to operate.

Check switch paddles for mechanical faults.

Check switches. Switches allow voltage to activate pusher when operated. These switches are normally open until a bale operates the switch and the switch is closed.

Relay 5 faulty. Replace relay

Relay 6 faulty. Replace relay

"A" valve not receiving voltage. Spool sticking. The "A" valve directs hydraulic flow to the pusher when energized. Hydraulic flow is directed to the pick-up and load bed when the "A" valve is not energized.

"B" valve not receiving voltage. Spool sticking. The "B" valve allows the pusher to extend when energized.

Pusher Fails to return

Limit switches 2 or 3 (pusher return switches) not being operated. When the pusher reaches the end of a short stroke limit switch 2 must be operated. At the end of a long stroke limit switch 3 must be operated. The switches are operated as the pusher frame contacts lever which depresses the switch.

Limit switch faulty.

"B" valve sticking. The "B" valve receives voltage and directs hydraulic fluid to extend the pusher. To retract the pusher no voltage is applied to the valve and spring pressure returns the spool to a centered position.

Relay 6 faulty. Replace relay.

Pusher operates too soon. Bales cut off at entry to bale table.

Pusher delay switches faulty. Pusher delay switches at the entry to the bale table signal the control circuit to start the pusher when they are released. If a bale does not adequately depress the delay switches while at the entry to the bale table the pusher may operate too soon and cut off the end of a bale. Check the switch mechanism and the limit switch and adjust or repair as necessary.

Bale length too long. Space is limited on the bale table. Excessive bale length may cause a bale to protrude into the entry to the bale table.

Table chain speed too slow. Chain speed of the upper elevator and bale table must be fast enough to allow the bale to enter the bale table area before the pusher begins to operate. The pusher operates as soon as the pusher delay switches are released.

TIE TIER TROUBLESHOOTING

No tie tier, pusher pushes short stroke as on normal cycle.

Tie cycle not activated. Tie cycle limit switches faulty. Limit switches 5 and 6 on the left front corner of the load bed signal the control circuit to operate in a tie mode. These switches are operated by stationary cams on the left front corner of the machine. Check limit switches and their actuators for problems should a tie cycle fail to occur. A major misalignment of the load bed may affect the operation of limit switches 5 and 6. Check the guide rollers and lift chains on the load bed to assure proper alignment.

No interlocking tie tier.

Cycle not activated or Limit switch faulty. Limit switch 6 on the left front corner of the load bed signals the control circuit to create an interlocking tie. If this switch is not operated the control circuit will operate in standard tie mode. See possibilities listed above for "Tie cycle not activated."

Relay 4 faulty. Replace relay.

Pusher operates, tie arms do not.

Tie arm linkage faulty. Check the mechanical linkage that operates the tie arms. Check for broken bolts or missing parts. Tie arms are keyed to the tie arm shafts. Check to see that the keys are still in place.

Relay 2 faulty. Replace relay.

"C" valve not operating. Voltage is applied to the "C" valve and hydraulic fluid is directed to the tie arm cylinder to operate the tie arms.

Control panel faulty. Circuitry in the control panel provides the path to ground for current required to activate the tie functions. A failure of the integrated circuit may cause malfunction of a tie cycle. The integrated circuit is a very small component (1mm x 2.5mm) that plugs in to the control panel. Extreme care must be used if this component is to be removed or installed. The installer must be sufficiently grounded with the control panel to prevent voltage spikes from damaging the integrated circuit.

Pusher operates on short stroke only when a long stroke is desired, tie arms operate correctly.

Relay 1 faulty. Replace relay.

Long stroke return switch (LS 3) faulty

Control panel faulty. Circuitry in the control panel provides the path to ground for current required to activate the tie functions. A failure of the integrated circuit may cause malfunction of a tie cycle. The integrated circuit is a very small component (1mm x 2.5mm) that plugs in to the control panel. Extreme care must be used if this component is to be removed or installed. The installer must be sufficiently grounded with the control panel to prevent voltage spikes from damaging the integrated circuit.

Pusher operates slow or stalls, Tie arms operate normally.

Pressure setting to high on sequence valve. Sequence valve faulty or misadjusted. The sequence valve allows the pusher to operate only after the tie arm cylinder is fully extended. Foreign material in the hydraulic system may cause the valve to stick. Adjustment or Disassembly and cleaning of the valve may be required.

Tie arms fail to extend fully before pusher extends.

Pressure setting to low on sequence valve. Sequence valve faulty or misadjusted. The sequence valve allows the pusher to operate only after the tie arm cylinder is fully extended. Foreign material in the hydraulic system may cause the valve to stick. Adjustment or Disassembly and cleaning of the valve may be required.

Tie arms fail to return when pusher returns.

Tie arm linkage faulty. Check the mechanical linkage that operates the tie arms. Check for broken bolts or missing parts. Tie arms are keyed to the tie arm shafts. Check to see that the keys are still in place.

Counter balance valve faulty or misadjusted. The counterbalance valve creates a condition in the hydraulic circuit that causes the pusher to return only after the tie arms return.

One or more Indicator lights on Tie indicator panel stay lit out of sequence.

Control panel faulty. Circuitry in the control panel provides the path to ground for current required to activate the tie functions. A failure of the integrated circuit may cause malfunction of a tie cycle. One or more of the seven transistors may be grounded to the control panel. Check the insulative gasket under the transistor.

Load bed will not index down or lower.

Index paddle defective or mis-adjusted. A full tier pushed against the index paddle causes Limit switch 7 to be operated. This signals the control circuit to lower the load bed. Check the paddle mechanism. It must operate the limit switch.

Limit switch faulty or mis-adjusted. Check limit switch 7 and its adjustment.

"A" valve sticking. The "A" valve directs hydraulic flow to the load bed when no voltage is applied.

"D" valve faulty or sticking. When energized the "D" valve directs hydraulic fluid to raise or lower the load bed.

Counter balance faulty or misadjusted. The counterbalance causes the load bed to lower slowly and smoothly unaffected by the weight of the stack on the load bed.

Load pushoff will not operate.

Bale retainer limit switch misadjusted or faulty. Limit switch 10 is mounted on the left rear top corner of the machine and is operated when the bale retainer raises. When LS 10 is operated current can reach the push off out solenoid. Check for proper operation of the bale retainer and the limit switch

Push off mechanism binding. A broken chain or misalignment may prevent the push off bar from operating.

Load bed will not raise.

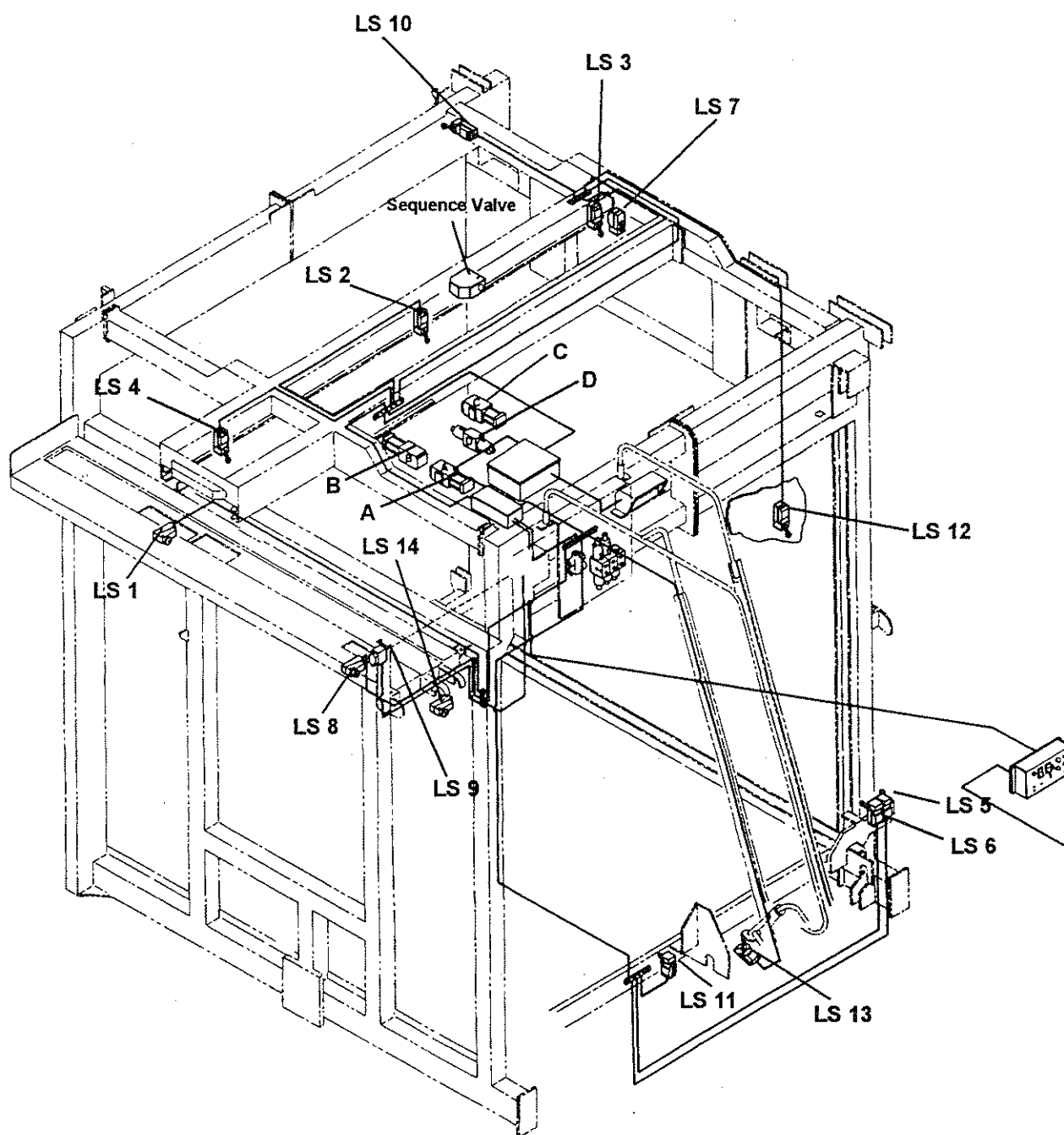
Push off bar will not return to operate limit switch. Limit switch 11 is operated by the push off bar in the returned or home position. When operated LS 11 allows current to reach the bed up solenoid.

Push off mechanism binding. A broken chain or misalignment may prevent the push off bar from operating.

LIMIT SWITCH FUNCTIONS

- LS 1** Limit switch 1 is located near the center of the bale table. If a standard tier is being formed LS 1 operates in conjunction with LS 8 to activate the pusher. When the center bales of a tie tier are being positioned LS 1 alone can activate the pusher. LS 1 can be moved forward or back to affect the position of the center bale in a tie tier.
- LS 2** Limit switch 2 is located at the top center of the machine near the rear pusher track. This switch is operated by the pusher frame as it extends and signals the pusher to return to it's home position. LS 2 signals the pusher to return when a short stroke is required.
- LS 3** Limit switch 3 is located at the top left of the machine near the rear pusher track. This switch is operated by the pusher frame as it extends and signals the pusher to return to it's home position. LS 3 signals the pusher to return when a long stroke is required during a tie cycle.
- LS 4** Limit switch 4 is located at the top right of the machine near the rear pusher track. This switch is operated by the pusher frame as it returns and signals the pusher to stop in the home position.
- LS 5** Limit switch 5 is located on the left front corner of the load bed. It is operated by a cam mounted to the left front corner of the machine. LS 5 signals the control circuit to form a standard tie tier.
- LS 6** Limit switch 6 is located on the left front corner of the load bed. It is operated by a cam mounted to the left front corner of the machine. LS 6 signals the control circuit to form an interlocking tie.
- LS 7** Limit switch 7 is located on the top left side near the center. LS 7 is operated by the index paddle. When operated LS 7 signals the load bed to lower.
- LS 8** Limit switch 8 is located near the front of the bale table. It is operated when the second bale enters the bale table. LS 8 and LS 1 operated together allow the pusher to extend.
- LS 9** Limit switch 9 is located on the right hand side of the machine at the top of the bale elevator. LS 9 prevents the pusher from operating until a bale has entered the bale table area.
- LS 10** Limit switch 10 is located on the left rear at the top of the machine. LS 10 is operated by the bale retainer as it opens when the load bed is lowered to unload a stack. When LS 10 is operated the control circuit directs power to the load pushoff bar to push a stack off the load bed.
- LS 11** Limit switch 11 is located at the front center of the load bed. LS 11 is operated by the pushoff bar as it is returned to the home position. When LS 11 is operated the load bed can be raised from the unload position to load position.
- LS 12** Limit switch 12 is located on the left hand side of the machine near the load bed lift cylinder. LS 12 is operated by a cam on the end of lift cylinder rod. When operated LS 12 stops the load bed at the uppermost position.
- LS 13** Limit switch 13 is located on the service ladder at the safety gate. LS 13 prevents the machine from being operated with the safety gate open.
- LS 14** Limit switch 14 is located at the top of the bale elevator near the entry to the bale table. LS 14 works the same as LS 9 to prevent the pusher from operating until the bale is completely on the bale table.

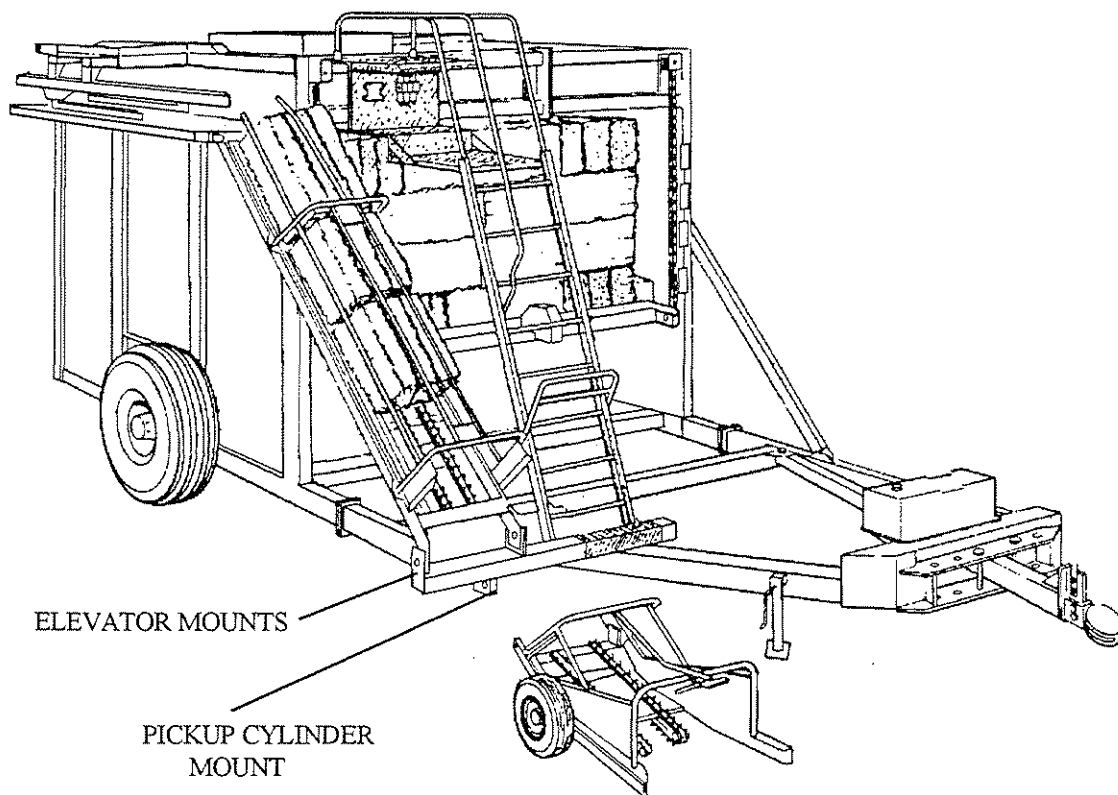
ELECTRICAL COMPONENT LOCATION



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ASSEMBLY INSTRUCTIONS FOR MODEL 7000

1. Remove tire, wheel and hub assembly on inside of left side of machine and remount on the outside of machine using new bolts and nuts supplied. See parts book illustration on page 1.
2. Remove Pickup lift cylinder from it's shipping position strapped to the frame in front of the elevator. Install the hydraulic cylinder base end to it's mounting point on the main frame. See illustration.
3. Remove Pickup assembly from the crate. Position the Pickup Elevator in front of the Upper Elevator. Slide the Pickup Elevator pivot pins out far enough to allow the Pickup to slide in between the elevator mounts. Slide the pivot pins in place and install cotter pins. Connect the hydraulic cylinder rod end to the Pickup. See parts book illustration on page 7.
4. Install Pickup tires and wheels on Pickup. See parts book illustration on page 7.
5. Install Pickup elevator chains and adjust. See parts book illustration on page 7. Item no. 23, Chute Sprocket Slide mounts are positioned to adjust chain tension.
6. Wipe protective sealant off all Hydraulic Cylinder Rods before operating machine.



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