Hallco Mfg. Co., Inc., through continued research and development, brings state-of-the-art design to the live floor industry.

Hallco will custom design and build the hydraulic drive mechanism to fit your individual needs. The Hallco Live Floor systems lend themselves to many different conveyor applications. Whether for mobile or stationary operation, Hallco can supply the system to fulfill your needs.

FEATURES:
• LIGHT WEIGHT.
• LOW MAINTENANCE.
• AVAILABLE IN ONE AND TWO WAY SYSTEMS.
• UNITIZED CONSTRUCTION EASING INSTALLATION.
• MODULAR DESIGN REDUCES THE NUMBER OF EXTERNAL FITTINGS REQUIRED.
• VARIABLE SPEED FOR CONTROLLED LOADING AND UNLOADING.
## TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>TITLE</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>How they work</td>
<td>3</td>
</tr>
<tr>
<td>2000 series hydraulic power unit requirements</td>
<td>4</td>
</tr>
<tr>
<td>Operation</td>
<td>6</td>
</tr>
<tr>
<td>Trouble shooting</td>
<td>8</td>
</tr>
<tr>
<td>Setting the control rod stops</td>
<td>10</td>
</tr>
<tr>
<td>Trouble shooting (cont.)</td>
<td>11</td>
</tr>
<tr>
<td>Theoretical unload times</td>
<td>13</td>
</tr>
<tr>
<td>Exploded assembly - Drive unit</td>
<td>14</td>
</tr>
<tr>
<td>Repairing unit - Seal placement</td>
<td>15</td>
</tr>
<tr>
<td>Repairing unit - Torqueing manifold bolts</td>
<td>16</td>
</tr>
<tr>
<td>2000 Two Way Plumbing</td>
<td>17</td>
</tr>
<tr>
<td>Switching valve break down</td>
<td>18</td>
</tr>
<tr>
<td>Deck bolt torques</td>
<td>19</td>
</tr>
<tr>
<td>Warranty</td>
<td>20</td>
</tr>
</tbody>
</table>

## HOW THEY WORK
The Hallco Live Floor is hydraulically operated. Three hydraulic cylinders mounted horizontally, provide the muscle to move the load. During operation, all deck slats move out together, moving the load with them.

Then the deck slats return to their starting position sequentially, with every third slat moving in unison.
2000 SERIES HYDRAULIC POWER UNIT REQUIREMENTS

HALLCO RECOMMENDS CONSULTING A HYDRAULIC SPECIALIST TO MATCH THE “PTO” AND PUMP TO YOUR TRACTOR’S TRANSMISSION.

THE WET KIT MUST PROVIDE NOT LESS THAN 2800 PSI NOR MORE THAN 3000 PSI. THE FLOW RATE SHOULD MATCH THE JOB.

HYDRAULIC RESERVOIR: 20 TO 30 GALLON MINIMUM CAPACITY
The hydraulic reservoir should have facilities to mount the relief valve and a return line filter. Both of these items must dump the oil into the reservoir below the low level line. Hallco suggests a down draft be installed in the reservoir on the return line to limit the turbulence. The pump supply oil should be taken from 1” to 2” above the bottom of the reservoir. This outlet should be screened or baffled, to prevent a whirlpool. The whirlpool could result in air being introduced into the system. A sight gauge or other means of visually checking oil level should be installed. NOTE: When operating in warmer climates a 30 gallon minimum capacity reservoir is preferred.

OIL: A GOOD GRADE OF HYDRAULIC OIL, CLIMATIZED TO YOUR AREA

FILLER CAP: BREATHER TYPE, WITH FILTER

HYDRAULIC PUMP: 25 TO 25 GPM AT 1200 RPM
An industrial quality vane type pump such as the Vickers Model 25V or 35V is recommended. The supply line from the reservoir should be 1 1/2” ID minimum. The supply line from the pump should be no smaller than 1” two wire type (Example Weatherhead 425-16).

PTO: 100% OUTPUT WITH CAB MOUNTED AIR OR CABLE SHAFT
The PTO should be able to direct mount the pump. Therefore, a Bottom Mount will be necessary in most cases. Control of the PTO from the cab can be either a cable or air shift. A dash mounted indicator light is also needed.

RELIEF VALVE: EXTERNAL, TANK MOUNTED, SET AT 2800 MINIMUM to 3000 MAXIMUM PSI
The relief valve must be able to handle the system oil flow. Set at 2800 to 3000 PSI.

FILTER: RETURN LINE, TANK MOUNTED, 25 MICRON, RATED AT 45-50 GPM MIN.
A return line filter with a nominal rating of 45 to 50 GPM and a paper element of 25 micron or finer is needed to assure clean oil and a long system life.

QUICK CONNECTS: CAPABLE OF HANDLING SYSTEM OIL FLOW (30-40 GPM)

PRESSURE GAUGE: 0 TO 5000 PSI GLYCERINE FILLED
Example of a typical tractor wet kit.
OPERATION

Before initial start-up, inspect the entire unit. Check floor for improperly seated bearings and deck slats. Check front and rear of floor for proper end clearances (12” front & 14” rear). Check hydraulic fittings for tightness. Make sure the control rod on the switching valve is straight and that the stops are locked in place.

Check the hydraulic lines between the truck and trailer, making sure that they are fully connected and matched.

Check the live floor hand control valve, making sure that it is in the neutral position.

The hand control valve operation is illustrated below:

- **UNLOAD MODE:** Pull the handle all the way out
- **NEUTRAL:** Push handle in until it hits valve body
- **LOAD MODE:** Turn handle forward and push all the way in

Start the truck engine and engage the pump. Move the truck hydraulic valve to supply pressure to the trailer.

Pull the hand control valve on the trailer to the UNLOAD MODE (fully out) the floor will begin to move erratically at first, but after a few minutes should begin to sequence properly.

Allow the system to run steadily while checking floor. The floor should be allowed to run for about 30 minutes unladen.
NORMAL OPERATION IN UNLOAD MODE:

1. Drivers side cylinder shaft and forward-most crossdrive (Crossdrive #1) travel forward.
2. Center cylinder shaft and center crossdrive (Crossdrive #2) travel forward.
3. Curb side cylinder shaft and rear-most crossdrive (Crossdrive #3) travel forward.
4. All three cylinder shafts and all three crossdrives travel rearward in unison.

NORMAL OPERATION IN LOAD MODE:

1. Curb side cylinder shaft and rear-most crossdrive (Crossdrive #3) travel forward.
2. Center cylinder shaft and center crossdrive (Crossdrive #2) travel rearward.
3. Drivers side cylinder shaft and forward-most crossdrive (Crossdrive #1) travel rearward.
4. All three cylinder shafts and all three crossdrives travel forward in unison.
TROUBLE SHOOTING

Your Hallco Live Floor is designed for long trouble free operation.

The heart of the system is the hydraulic wet kit. The system requires a wet kit that will provide not less than 2800 PSI nor more than 3000 PSI.

Hallco recommends that you consult a hydraulic specialist to match the PTO and Pump to your truck’s transmission.

Remember - Experience has shown that nearly all problems originate with the wet kit.

CHECK THE SIMPLE THINGS FIRST!

PROBLEM: Unit does not operate or operates slow.

CHECK:  
(A) PTO, is it fully engaged?  
(B) OIL, is the oil reservoir full?  
(C) QUICK CONNECTS, are they fully connected? Are they a matched set?  
(D) PUMP, is the pump operating? Does it deliver 20-40 GPM at 2800-3000 PSI?  
(E) RELIEF VALVE, is it set at 2800-3000 PSI?  
(F) PLUMBING, is the entire system plumbed correctly?

2000 SERIES PLUMBING, (2-WAY)  
BOTTOM VIEW

TROUBLE SHOOTING
IF ALL THE SIMPLE THINGS CHECK OUT, OK...

Disconnect the quick-connect on the pressure line to the Trailer. Engage the PTO and let the pump turn with the engine idling. The pressure gauge on the wet kit should read 2800 PSI with the engine idling.

IF IT DOES, THE POWER UNIT IS OK.

IF IT DOES NOT, the pump or the relief valve needs servicing. If the pump ONLY becomes hot, that is the culprit. If the relief valve becomes hot, it may be defective, or have debris holding it partially open.

One clue to a bad pump, is having to rev up the engine to get enough pressure to operate the Unit.

THE POWER UNIT CHECKS OUT, OK... AND STILL NO ACTION...

CHECK: The Switching Valve Control Rod stops. Proper adjustment of the stops on the control rod will move the rod as far as possible.
1. Release and move stops “A” and “B” away from the front and rear triggers.

2. Push the control rod rearward toward the switching valve until it stops.

3. Apply hydraulic pressure until rear cylinder shafts are fully extended, then shut off pressure.

4. Pull the control rod away from the switching valve until it stops. Move and set stop “A” firmly against the rear trigger.

5. Apply hydraulic pressure until the rear cylinder shafts are fully retracted, then shut off the pressure.

6. Push the control rod rearward toward the switching valve until it stops. Move and set stop “B” firmly against the front trigger.

7. Mark the position of the stops “A” and “B” on the control rod.

8. Apply hydraulic pressure to the cylinders until triggers are free of the stops. Shut off the pressure. Move stop “A” 3/8” toward the rear trigger and tighten firmly. Move stop “B” 3/8” toward the front trigger and tighten firmly.
TROUBLE SHOOTING

THE SWITCHING VALVE CONTROL ROD STOPS ARE ADJUSTED PROPERLY AND STILL NO ACTION...

CHECK: The switching valve temperature. If it becomes very hot, but the cylinders do not, there may have been some debris pass through the oil and damage this valve.

If only the hydraulic cylinders become hot, there may be a failure there.

BOTTOM VIEW -FRONT SIDE, CYLINDER UNIT

BOTTOM VIEW -BACK SIDE, CYLINDER UNIT
TROUBLE SHOOTING

THE SYSTEM OPERATES AS IT SHOULD EXCEPT WHEN SEQUENCING...

CHECK: The cylinder barrels temperature. If one or more become very hot, then you are experiencing oil by-pass. Replace seals.

CHECK: The hand control valve temperature. If it becomes very hot, then you are experiencing oil by-pass there. Replace valve.

NO HEAT BUILD UP... AND STILL HAVING PROBLEMS...

SEQUENCING IN UNLOAD MODE:

PROBLEM: Crossdrive #1 and #2 travel forward together.

CHECK: Poppet valve located between cylinder shafts #1 and #2 in head manifold.

PROBLEM: Crossdrive #2 and #3 travel forward together.

CHECK: Poppet valve located between cylinder shafts #2 and #3 in head manifold.

SEQUENCING IN LOAD MODE:

PROBLEM: Crossdrive #2 and #3 travel rearward together.

CHECK: Poppet valve located between cylinder shafts #2 and #3 in front manifold.

PROBLEM: Crossdrive #1 and #2 travel rearward together.

CHECK: Poppet valve located between cylinder shafts #1 and #2 in front manifold.

CHECKING POPPET VALVES...

When one of the sequencing problems listed above occurs, it is usually caused by debris preventing the poppet valve from seating properly. To correct this, remove the poppet valve body and spring, replace the cap and cycle the system a few times. This should flush the debris through the system to be stopped at the filter.

IF ALL THESE THINGS HAVE NOT RESTORED FULL AND CORRECT FLOOR OPERATION, CONTACT YOUR DEALER OR CALL HALLCO MANUFACTURING AT 1-800-5-HALLCO
THEORETICAL UNLOADING TIMES
FOR 45’-0” TRAILER

These times are approximate and should be used ONLY as a guide!!!
Breakdown of material will extend unloading time.

<table>
<thead>
<tr>
<th>OIL FLOW GPM</th>
<th>SECONDS PER CYCLE</th>
<th>CONVEYING FEET PER MIN</th>
<th>UNLOADING TIME (MINUTES)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>41.31</td>
<td>1.03</td>
<td>43.74</td>
</tr>
<tr>
<td>4</td>
<td>20.65</td>
<td>2.06</td>
<td>21.87</td>
</tr>
<tr>
<td>6</td>
<td>13.77</td>
<td>3.09</td>
<td>14.58</td>
</tr>
<tr>
<td>8</td>
<td>10.33</td>
<td>4.12</td>
<td>10.93</td>
</tr>
<tr>
<td>10</td>
<td>8.26</td>
<td>5.14</td>
<td>8.75</td>
</tr>
<tr>
<td>12</td>
<td>6.88</td>
<td>6.17</td>
<td>7.29</td>
</tr>
<tr>
<td>14</td>
<td>5.90</td>
<td>7.20</td>
<td>6.25</td>
</tr>
<tr>
<td>16</td>
<td>5.16</td>
<td>8.23</td>
<td>5.47</td>
</tr>
<tr>
<td>18</td>
<td>4.59</td>
<td>9.26</td>
<td>4.86</td>
</tr>
<tr>
<td>20</td>
<td>4.13</td>
<td>10.29</td>
<td>4.37</td>
</tr>
<tr>
<td>22</td>
<td>3.76</td>
<td>11.32</td>
<td>3.98</td>
</tr>
<tr>
<td>24</td>
<td>3.44</td>
<td>12.35</td>
<td>3.64</td>
</tr>
<tr>
<td>26</td>
<td>3.18</td>
<td>13.37</td>
<td>3.36</td>
</tr>
<tr>
<td>28</td>
<td>2.95</td>
<td>14.40</td>
<td>3.12</td>
</tr>
<tr>
<td>30</td>
<td>2.75</td>
<td>15.43</td>
<td>2.92</td>
</tr>
</tbody>
</table>

**IMPORTANT SERVICE TIPS**

During the first few weeks of operation, it will be necessary to frequently check and tighten all deck bolts to 35 ft/lbs for 3/8” bolts and 55 ft/lbs for 1/2” bolts. Eventually the bolts should remain tight. However, they should be checked occasionally to insure that they have not worked loose. Loose deck bolt will cause serious damage to the deck slats.

After the first week of operation you must check and tighten the cylinder tie bolts to 120 ft/lbs.

Change the filter element after the first 50 hours of operation and every 250 hours thereafter.
REPAIRING UNIT
SEAL PLACEMENT

- Cylinder Shaft
- Cylinder Shaft Wiper (3 req'd per unit)
- Cylinder Shaft Seal (3 req'd per unit)
- Head Manifold
- Cylinder Barrel Seal (o-ring 6 req'd per unit)
- Piston Seal (o-ring 3 req'd per unit)
- Piston
- 1" Stover Nut
- Cylinder Barrel
- Cylinder Barrel Seal
- Base Manifold
Starting with the center nuts (Tie Bolts) bring them up snug. Snug up the outer nuts (Anchor Bolts) as well. Now begin to torque down the center nuts (Tie Bolts) using a criss cross pattern. Bring these nuts to 120 ft/lbs. When the tie bolts are to the proper torque, bring the outer nuts (Anchor Bolts) to 120 ft/lbs torque using a criss cross pattern.

**TORQUEING PISTON NUTS**

1" Stover Nut
Torque 300 lbs/ft
**Key Letter** | **No. Req.** | **Part No.** | **Description**
--- | --- | --- | ---
A | 1 | 85-2665 | Pipe Plug, ¾” MP
B | 4 | 85-2662 | 90 Swivel Fitting, ¾”MP - ¾”FP
C | 3 | 85-2663 | 45 Swivel Fitting, ¾”MP - ¾”FP
D | 4 | 85-3952 | Straight Swivel Fitting, ¾” M O-Ring - ¾”FP
E | 2 | 85-2666 | 90 Street Elbow, ¾”MP - ¾”FPSW
F | 2 | 85-3953 | 90 Swivel Fitting, ¾” M O-Ring - ¾”FPsw
L | 2 | 86-2697 | Hose Assy, MB600-12 60”, ¾” MP Ends
M | 1 | 86-2698 | Hose Assy, MB720-12 72”, ¾” MP Ends
N | 1 | 86-2696 | Hose Assy, MB480-12 48”, ¾” MP Ends
S | 1 | 86-2719 | Hose Assy, MB140-12 14”, ¾” MP Ends
P | 4 | 85-3471 | Poppet Valve Cap
 | 4 | 56-2714 | Poppet Valve Spring
 | 4 | 56-2783 | Poppet Valve
Q | 1 | 56-3632 | 2-Way On/Off Valve (replaces 56-2718)
R | 1 | 56-3964 | Switching Valve, with O-ring ports
### Switching Valve Breakdown

<table>
<thead>
<tr>
<th>ITEM</th>
<th>PART NO.</th>
<th>DESCRIPTION</th>
<th>SIZE</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>VALVE BODY</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>FORWARD ENDCAP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>REAR END CAP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>VALVE SPOOL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>VALVE PILOT ROD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>SPACER COLLAR</td>
<td>5/8&quot; LONG</td>
<td></td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>DOG LEG ADAPTER</td>
<td></td>
<td></td>
<td>PERIMETER FRAME UNITS</td>
</tr>
<tr>
<td>H</td>
<td>LONG STOP ASSEMBLY</td>
<td>3/8&quot; x 1 7/8&quot; SPACER</td>
<td>BEFORE 1987</td>
<td></td>
</tr>
<tr>
<td>H1</td>
<td>FLAT WASHER</td>
<td>3/8&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H2</td>
<td>CAP SCREW</td>
<td>5/16&quot; NC x 2&quot;</td>
<td>USE WITH 1 3/8&quot; SPACER</td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>SHORT STOP ASSEMBLY</td>
<td>3/8&quot; x 1 3/8&quot; SPACER AFTER 1987</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I1</td>
<td>FLAT WASHER</td>
<td>3/8&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I2</td>
<td>CAP SCREW</td>
<td>5/16&quot; NC x 2 1/2&quot;</td>
<td>USE WITH 1 7/8&quot; SPACER</td>
<td></td>
</tr>
<tr>
<td>J</td>
<td>SEAL KIT</td>
<td>#959-5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>J1</td>
<td>WIPER SECTION</td>
<td>#2-210N674</td>
<td></td>
<td></td>
</tr>
<tr>
<td>J2</td>
<td>O-RING</td>
<td>1&quot; OD x 1/8&quot;</td>
<td>SECTION #2-117N674</td>
<td></td>
</tr>
<tr>
<td>J3</td>
<td>O-RING</td>
<td>1&quot; OD x 3/32&quot;</td>
<td>SECTION #2-136N674</td>
<td></td>
</tr>
<tr>
<td>J4</td>
<td>O-RING</td>
<td>2 3/16&quot; OD x 3/32&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>K</td>
<td>CAP SCREW</td>
<td>3/8&quot; NC x 2 1/2&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L</td>
<td>CAP SCREW</td>
<td>3/8&quot; NC x 5&quot;</td>
<td>MOUNTING BOLT</td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>FLAT WASHER</td>
<td>3/8&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>CAP SCREW</td>
<td>5/16&quot; NC x 1&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>O</td>
<td>NUT</td>
<td>5/16&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P</td>
<td>SWITCH ROD</td>
<td>5/16&quot; x 39&quot;</td>
<td>CENTER FRAME UNITS</td>
<td></td>
</tr>
<tr>
<td>R</td>
<td>SWITCH ROD</td>
<td>5/16&quot; x 34&quot;</td>
<td>PERIMETER FRAME UNITS</td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:** In kit, (2) 1 1/4" OD x 1/8" O-ring. Goes between Switching Valve and Rear Base Manifold.

---

**Diagram and Notes:**

- Diagram showing the components of the switching valve and their assembly.
- Notes explaining the assembly process and the use of O-rings.
IMPORTANT

KEEP DECK BOLTS TIGHT AT ALL TIMES! LOOSE BOLTS WILL DAMAGE YOUR DECK

TORQUE 3/8” TO 35 FT/LBS
TORQUE 1/2” TO 55 FT/LBS
Hallco Manufacturing Company, Incorporated warrants each of the Hallco Live Floor systems sold by it or any of its authorized distributors, when properly assembled and installed, to be free from defects in material and workmanship under normal use and service. This warranty expressly excludes deck seal, when used. The manufacturer’s obligation under this warranty being limited to repairing or replacing, as herein provided, at its option, any part or parts of said system manufactured by Hallco Manufacturing Company, Incorporated which within twelve (12) months after delivery shall be found to the manufacturer’s satisfaction to be defective upon examination by it, provided such part or parts shall be returned, at customer’s expense, to manufacturer’s factory at 6605 Ammunition Road, Tillamook, Oregon 97141.

This warranty shall not apply to any unit which has been subject to misuse, negligence or accident, or which shall have been altered or repaired outside the factory in anyway, which in the manufacturer’s judgment might affect the reliability of said systems.

_This warranty is mad expressly in lieu of any other warranties, expressed or implied, including any implied warranty of merchantability or fitness for any particular purpose, and of any other obligation or liability on the part of the manufacturer including, without limitation of the foregoing, consequential and incidental damages._ The manufacturer neither assumes nor authorizes any person to assume for it any other liability in connection with the sale of such new Hallco Live Floor systems.
Home Office:
Hallco Mfg. Co., Inc.
P.O. Box 505
Tillamook, Oregon 97141
Phones: 800-542-5526  503-842-8886  FAX 503-842-8499

East Coast Distribution Warehouse:
Hallco Mfg. - East
606-B Performance Road
Mooresville, North Carolina 28115
Phones: 800-230-0190  704-662-9615  FAX 704-662-9603