

MANUAL SUPPLEMENT



Hydrostatic ChipSpreader with Variable Width Spread Hopper

Maintenance Adjustments Integrated Control Circuits

**Supplement to Manual No. M-210-91
Chipspreader Operation, Maintenance and Safety Manual**

This supplement contains maintenance adjustments for Integrated Control Circuits on Etnyre Hydrostatic Drive Chipspreaders with Variable Width Spread Hoppers, for other operations and service procedures refer to "Chipspreader Variable Width Hopper Operation, Maintenance and Safety Manual" No. M-210-91.

The information in this supplement applies to hydrostatic driven ChipSpreaders with Integrated Control Circuits and replaces; "Belt Speed Controls" pages 20 & 21 and pages 27, 28, 29, 30 and 31 of ChipSpreader Operation, Maintenance and Safety Manual No. M-210-91.

⚠ WARNING

**Unsafe operation of equipment may
cause injury.
Read, understand and follow the manuals
when operating or performing
maintenance.**

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REPORTING SAFETY DEFECTS

If you believe that your vehicle has a defect which could cause a crash or could cause injury or death you should immediately inform the National Highway Traffic Safety Administration (NHTSA) in addition to notifying E. D. Etnyre & Co.

If NHTSA receives similar complaints, it may open an investigation, and if it finds that a safety defect exists in a group of vehicles, it may order a recall and remedy campaign. However, NHTSA

cannot become involved in individual problems between you, your dealer, or E. D. Etnyre & Co.

To contact NHTSA, you may either call the Auto Safety Hotline toll-free at 1-800-424-9393 (or 366-0123 in Washington, D.C. area) or write to: NHTSA, U.S. Department of Transportation, Washington, D.C. 20696. You can also obtain other information about motor vehicle safety from the hotline.

Safety Precautions

CAUTION

Make certain everyone is clear of machine before starting engine or operation.

Always use steps, platforms and handrails provided.

Remain clear of moving or rotating parts.

Always have shields, covers and guards in place when operating.

Keep loose clothing away from conveyor area.

Always install locking control box cover and chock wheels when leaving machine unattended as protection against vandalism and accidental movement.

Before operating the chipspreader, make an inspection of the machine to be sure that the machine is in a safe condition to operate.

The seat must always be latched during travel.

To avoid potential damage to electrical components disconnect batteries before welding.

Since all functions except power steering and brakes are electrically controlled, turning the ignition key to "off" results in an emergency stop.

Do not transport ChipSpreaders with Variable Width Hoppers without mechanically securing the two movable hoppers.

Extraordinary contamination of the hydraulic system may allow system oil leakage resulting in possible movement of the hopper sections.

WARNING

Unsafe operation of equipment may cause injury.

Read, understand and follow the manuals when operating or performing maintenance.

Remain clear of all moving parts.

The fuel tank is part of the crosswalk. Do not drill or weld in this area.

Never put hands in between gate and spread roll or gate and rear of hopper. The gate could move at any time and cause severe injury.

Do not travel with the seat unlatched. Seat movement could occur causing disorientation and possible loss of control.

Shift in and out of "travel" only while stopped or moving at a very slow rate of speed. Shifts between "2nd" and "travel" are very abrupt and could cause personal injury.

When two people are required to perform adjustments or maintenance operations or two people are simultaneously performing different operations, the work must be coordinated between the two people to avoid possible injuries.

IMPORTANT

Do not tow the chipspreader before reading the towing instructions contained in this manual. Improper towing may damage the hydraulic motors.

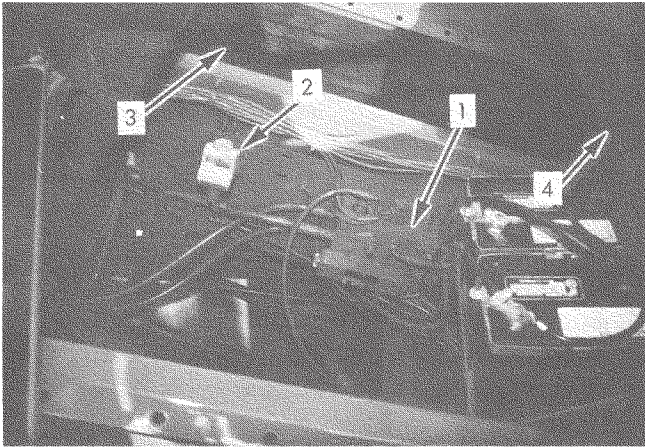
General Identification

Integrated Control Circuits (hydraulic manifolds)

Integrated control circuits are used on current model hydrostatic drive ChipSpreaders. They streamline the hydraulic system and allow most of the pressure checks and adjustments to be accomplished at the circuit block (manifold). The major circuit systems are identified below.

It is especially important from the safety standpoint that this manual be thoroughly read and understood before performing any operation or maintenance functions.

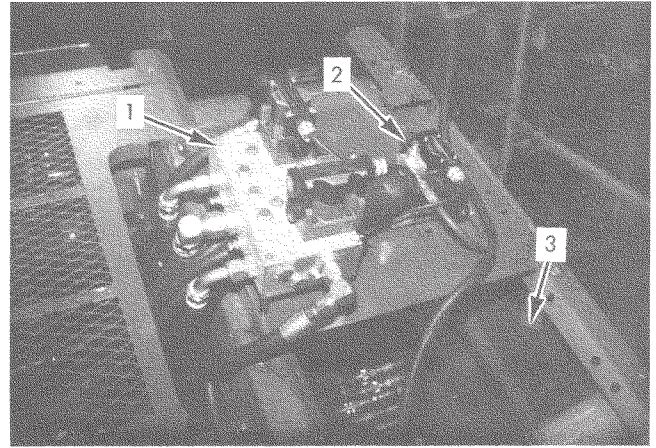
This supplement contains maintenance adjustments for integrated control circuits on Etnyre hydrostatic drive ChipSpreaders with variable width spread hoppers, for other operations and service procedures, refer to "ChipSpreader Variable Width Spread Hopper Operation, Maintenance and Safety Manual" No. M-210-91



Hydraulic Control Assembly

Located between conveyor frames, forward of rear wheels. For access remove rear deck walk plate sections.

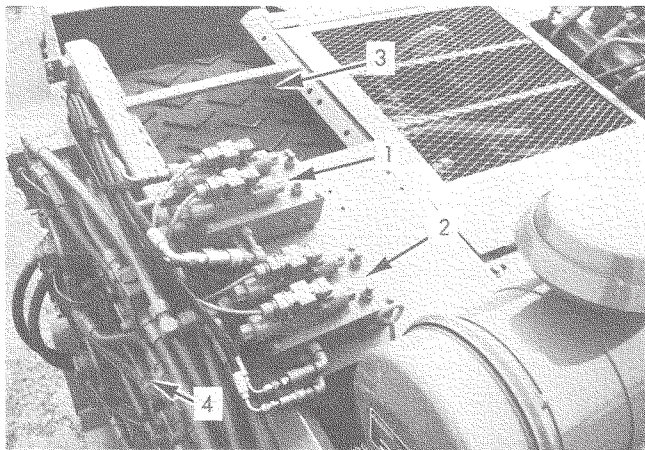
- | | |
|-----------------------------|--------------------------|
| 1. Integrated Circuit Block | 3. Right Conveyor |
| 2. Charge Pressure Switch | 4. Rear Deck Walk Plates |



Conveyor Controls

Contains conveyor and powered seat valves. Located on top of right conveyor

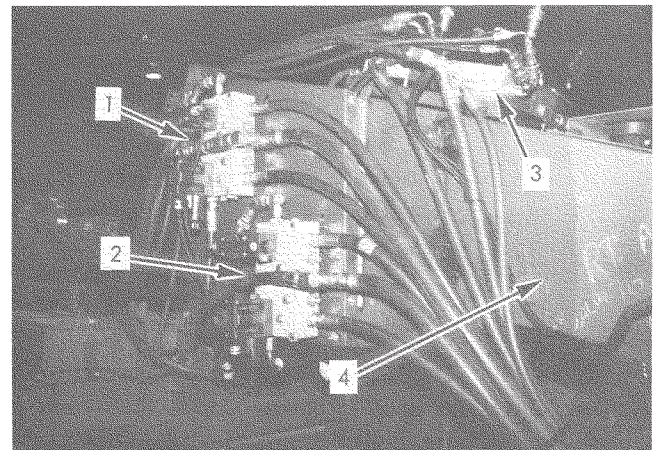
- | | |
|-----------------------------|-------------------|
| 1. Integrated Circuit Block | 3. Right Conveyor |
| 2. Powered Seat Valve | |



Upper Valve Plate Assembly

Contains hopper positioning and hopper gate valves.

- | | |
|---------------------------------------|------------------------------|
| 1. Circuit Block — Hopper Positioning | 3. Left Conveyor |
| 2. Circuit Block — Gate Control | 4. Side Valve Plate Assembly |



Side Valve Plate Assembly

Contains spread roll and auger valves. Located on side of left conveyor.

- | | |
|---------------------------------------|-------------------------------|
| 1. Circuit Block — Hopper Spread Roll | 3. Upper Valve Plate Assembly |
| 2. Circuit Block — Hopper Augers | 4. Left Conveyor |

The following information replaces "Belt Speed Controls" pages 20 & 21 of manual No. M-210-91 for units with integrated control circuits (manifolds).

Belt Speed Controls (Figure 17)

This feature allows the operator located on the right catwalk to vary the speed of each conveyor independently to provide a uniform distribution of material to the front hopper. Valves for this operation are incorporated in the integrated circuit block on top of the right conveyor, outboard of each conveyor's solenoid valve. Each valve has an adjustment knob and a locking knob.

With the knob screwed fully in, the conveyor will run at its highest speed. Unscrewing the knob counter-clockwise to its full out position will slow the conveyor down to approximately half of its full speed. The knob may be positioned anywhere in between and locked at the desired speed with the lock knob. The knob is much easier to rotate with the engine running at idle, and a greatly reduced oil flow, than may be experienced with full oil flow.

This feature is particularly useful in doing shoulder work or in operations requiring less than full hopper width. It is also useful in trying to smooth out delivery of material to match the rate being spread. (Figure 17).

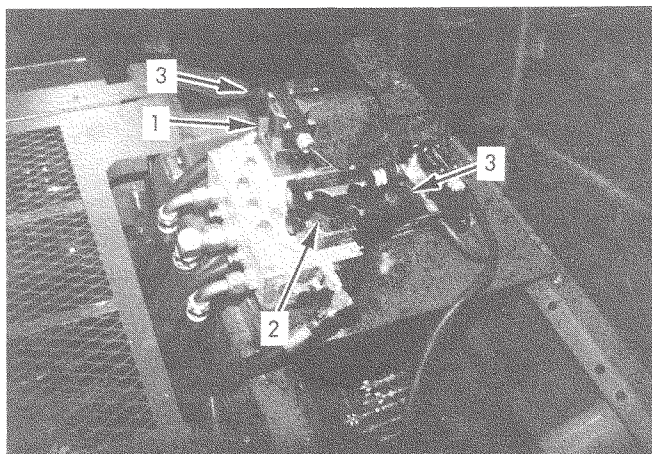


Figure 17. Conveyor Belt Speed Controls Integrated Circuit

- 1. Right Conveyor Speed Control Valve
- 2. Left Conveyor Speed Control Valve
- 3. Speed Adjustment Knobs



Remain clear of all moving parts.

The following information replaces pages 27, 28, 29, 30 & 31 of manual No. M-210-91 for units with integrated control circuits (manifolds).

1. Left Hopper Spread Roll Relief Valve (Figure 23)

- a) With engine off remove plug (2) and install a 3000 psi gage with necessary adapters to hook to a 1/4 SAE o ring port (04MB). Disconnect quick coupler (7).
- b) Start the engine and run at governed speed (2300 RPM).
- c) Use the manual override to actuate the valve (Ref. 3, Fig. 23).
- d) Adjust this relief valve (Fig 23, Ref 1) to a setting of 2000 psi.
- e) If relief pressure cannot be obtained, shut down the engine and remove left spread roll relief valve cartridge and check for contamination. Clean or replace as necessary.
- f) Shut engine off.
- g) Remove gage, reinstall plug and reconnect quick disconnect.

2. Right Hopper Spread Roll Relief Valve (Figure 23)

- a) With engine off remove plug (6) and install a 3000 psi gage with necessary adapters to hook to a 1/4 SAE o ring port (04MB). Disconnect the 2nd from the bottom quick coupler on the right side of the chipspreader.
- b) Start the engine and run at governed speed (2300 RPM).
- c) Use the manual override to actuate the valve (Ref. 5, Fig. 23).
- d) Adjust this relief valve (Fig 23, Ref 4) to a setting of 2000 psi.
- e) If relief pressure cannot be obtained, shut down the engine and remove right spread roll relief valve cartridge and check for contamination. Clean or replace as necessary.
- f) Shut engine off.
- g) Remove gage, reinstall plug and reconnect quick disconnect.

3. Left Auger Relief Valve (Figure 23)

- a) With engine off remove plug (9) and install a 3000 psi gage with necessary adapters to hook to a 1/4 SAE o ring port (04MB). Disconnect quick coupler (14).
- b) Start the engine and run at governed speed (2300 RPM).

- c) Use the manual override to actuate the valve (Ref. 10, Fig. 23).
- d) Adjust this relief valve (Fig 23, Ref 8) to a setting of 2000 psi.
- e) If relief pressure cannot be obtained, shut down the engine and remove left auger relief valve cartridge and check for contamination. Clean or replace as necessary.
- f) Shut engine off.
- g) Remove gage, reinstall plug and reconnect quick disconnect.

WARNING

The auger may start automatically at any time and cause severe injury. Never put hands in auger area when engine is running. Make certain everyone is clear of augers before operating.

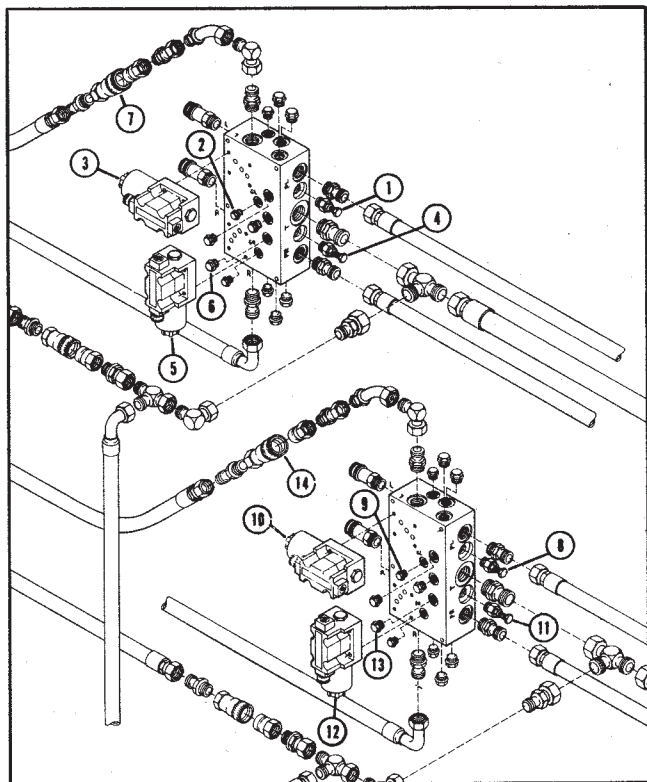


Figure 23. Side Valve Plate Integrated Circuit

- 1. Relief Valve — Left Hopper Spread Roll
- 2. Plug "GL" — Left Hopper Spread Roll Relief Pressure Port
- 3. Manual Override — Left Spread Roll Valve
- 4. Relief Valve — Right Hopper Spread Roll
- 5. Manual Override — Right Spread Roll Valve
- 6. Plug "GR" — Right Hopper Spread Roll Relief Pressure Port
- 7. Quick Coupler — Left Spread Roll
- 8. Relief Valve — Left Auger
- 9. Plug "GL" — Left Auger Relief Pressure Port
- 10. Manual Override — Left Auger Valve
- 11. Relief Valve — Right Auger
- 12. Manual Override — Right Auger Valve
- 13. Plug "GL" — Right Auger Relief Pressure Port
- 14. Quick Coupler — Left Auger

4. Right Auger Relief Valve. (Figure 23)

- a) With engine off remove plug (13) and install a 3000 psi gage with necessary adapters to hook to a 1/4 SAE o ring port (04MB). Disconnect the top quick coupler on the right side of the chipspreader.
- b) Start the engine and run at governed speed (2300 RPM).
- c) Use the manual override to actuate the valve (Ref. 12, Fig. 23).
- d) Adjust this relief valve (Fig 23, Ref 11) to a setting of 2000 psi.
- e) If relief pressure cannot be obtained, shut down the engine and remove right auger relief valve cartridge and check for contamination. Clean or replace as necessary.
- f) Shut engine off.
- g) Remove gage, reinstall plug and reconnect quick disconnect.

5. Left Hopper Positioning Relief Valve (Figure 24)

- a) With the engine off, remove plug (3) and install a 3000 psi gage with the necessary adapters to hook to 1/2" SAE o ring port (08MB). Disconnect quick couplers (10) and (11).
- b) Start the engine and run it at full rpm.
- c) Loosen locknut on relief valve (6)
- d) Use the manual override button to actuate the valve (Fig. 24, Ref. 8).
- e) Use a box wrench to adjust the cartridge in valve (6). This relief valve pressure at port "G2" should be set at 2000 psi. Retighten the locknut to hold the setting.
- f) If relief pressure cannot be obtained, shut down the engine and remove left hopper in/out relief valve cartridge and check for contamination. Clean or replace as necessary.
- g) Shut engine off.
- h) Remove gage and reinstall plug.
- i) Reconnect quick couplers.

6. Right Hopper Positioning Relief Valve (Figure 24)

- a) With the engine off, remove plugs (1) and (2) and install 3000 psi gages with the necessary adapters to hook to 1/4" SAE o ring port (04MB).
- b) Disconnect quick coupler (9).
- c) Loosen locknuts on relief valves (4, 5).
- d) Start the engine and run at 2300 RPM (governed speed).
- e) Turn the relief valve (5) all the way in.
- f) Use the manual override button to actuate the valve (Fig. 24, Ref. 7).
- g) Use a box wrench to adjust the cartridge in valve (4). This relief valve pressure should be set at

2300 psi at "G1". Retighten the locknut to hold the setting.

- h) Use a box wrench to adjust the cartridge in valve (5). This relief valve pressure should be set at 2000 psi at "G3". Retighten the locknut to hold the setting.
- i) If relief pressure cannot be obtained, shut down the engine and remove hopper in/out relief valve cartridges and check for contamination. Clean or replace as necessary.
- j) Shut engine off.
- k) Remove gages and reinstall plugs.
- l) Reconnect the quick coupler.

7. Left Hopper Gate Relief Valve (Figure 24)

- a) With the engine off, remove plug (14) and install a 3000 psi gage with the necessary adapters to hook to 1/2" SAE o ring port (08MB). Disconnect quick couplers (23) and (20) and the 6 pin metal connector on the left side of the chipspreader.
- b) Start the engine and run it at 1000 rpm.

WARNING

Never put hands in between gate and spread roll or gate and rear of hopper. The gate could move at any time and cause severe injury.

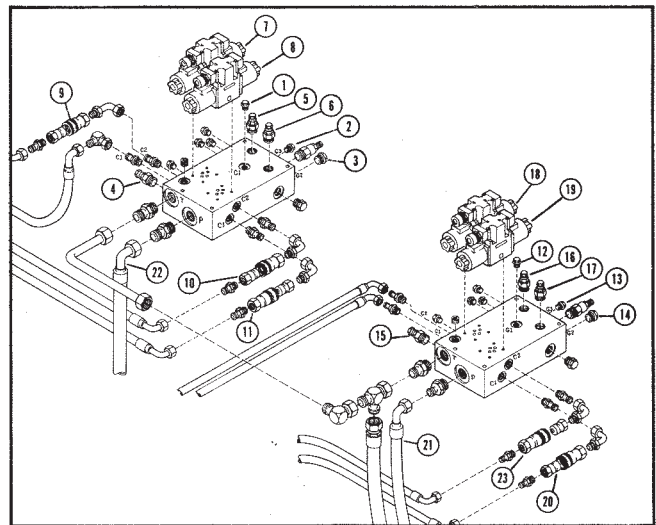
- c) Loosen locknut on relief valve (17).
- d) Use the manual override button to actuate the valve (Fig. 24, Ref. 19) if the valve is not already activated due to disconnecting the 6 pin metal connector.
- e) Use a box wrench to adjust the cartridge in valve (17). This relief valve pressure at port "G2" should be set at 900 psi. Retighten the locknut to hold the setting.
- f) If relief pressure cannot be obtained, shut down the engine and remove left hopper gate relief valve cartridge and check for contamination. Clean or replace as necessary.
- g) Shut engine off.
- h) Remove gage and reinstall plug.
- i) Reconnect quick couplers (23) and (20) and the metal 6 pin connector on the left side of the chip-spreader.

8. Right Hopper Gate Relief Valve (Figure 24)

- a) With the engine off, remove plugs (12) and (13) and install 3000 psi gages with the necessary adapters to hook to 1/4" SAE o ring port (04MB).
- b) Disconnect the 1/4" quick couplers on the right side of the chipspreader and also disconnect the 6

pin metal electrical connector on the right side of the chipspreader.

- c) Loosen locknuts on relief valves (15, 16).
- d) Start the engine and run at 1000 RPM.
- e) Turn the relief valve (16) all the way in.
- f) Use the manual override button to actuate the valve (Fig. 24, Ref. 18), if the valve is not already activated due to the disconnection of the 6 pin metal connector.
- g) Use a box wrench to adjust the cartridge in valve (15). This relief valve pressure should be set at 1250 psi at "G1". Retighten the locknut to hold the setting.
- h) Use a box wrench to adjust the cartridge in valve (16). This relief valve pressure should be set at 900 psi at "G3". Retighten the locknut to hold the setting.
- i) If relief pressure cannot be obtained, shut down the engine and remove hopper gate relief valve cartridges and check for contamination. Clean or replace as necessary.
- j) Shut engine off.
- k) Remove gages and reinstall plugs.



**Figure 24. Upper Valve Plate
Integrated Circuit**

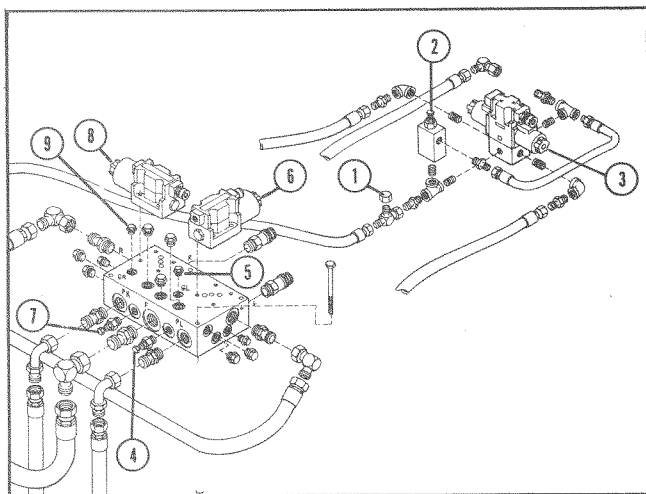
- | | |
|--|---|
| 1. Plug "G1"—Hopper Positioning Pressure Check Port | 14. Plug "G2"—Left Hopper Gate Relief Pressure Port |
| 2. Plug "G3"—Right Hopper Positioning Press Check Port | 15. Relief Valve — Hopper Gate |
| 3. Plug "G2"—Left Hopper Positioning Press Check Port | 16. Relief Valve — Right Gate |
| 4. Relief Valve — Hopper Positioning | 17. Relief Valve — Left Gate |
| 5. Relief Valve — Right Hopper Positioning | 18. Manual Override Button — Right Gate |
| 6. Relief Valve — Left Hopper Positioning | 19. Manual Override Button — Left Gate |
| 7. Manual Override Button — Right Hopper Positioning | 20. Quick Coupler — Left Gate |
| 8. Manual Override Button — Left Hopper Positioning | 21. Input Hose — Hopper Gate |
| 9. Quick Coupler — Rt Hopper | 22. Input Hose — Hopper Positioning |
| 10. Quick Coupler — Lt Hopper | 23. Quick Coupler — Left Gate |
| 11. Quick Coupler — Lt Hopper | |
| 12. Plug "G1"—Gate Relief Pressure Port | |
| 13. Plug "G3"—Right Hopper Gate Relief Pressure Port | |

9. Left Conveyor Relief Valve (Figure 25, Ref. 4)

- With engine off remove plug (5) and install a 3000 psi gage with necessary adapters to hook to a 1/4 SAE o ring port (04MB).
- Hold (lock) the left conveyor head pulley with a pipe wrench or other suitable tool. (Fig. 27) **Use caution when doing this operation. Be sure wrench is securely positioned on U-joint rotated by hand against supporting steel so it cannot rotate further.**
- The engine should be run at governed speed (approximately 2300 RPM).
- Use the manual override to actuate the valve (Fig. 25, Ref. 6).
- Adjust this relief valve (Fig 25, Ref 4) to a setting of 2100 psi.
- If relief pressure cannot be obtained, shut down the engine and remove left conveyor relief valve cartridge and check for contamination or damaged cartridge pieces. Clean and replace as necessary.
- g) Shut engine off.
- h) Remove gage and reinstall plug.

WARNING

Conveyor must be running during this procedure. To avoid personal injury, be sure to remain clear of moving belt.



**Figure 25. Conveyor Controls
Integrated Circuit**

- Cap — Powered Seat Relief Pressure Port
- Relief Valve
- Manual Override — Powered Seat Valve
- Relief Valve — Left Conveyor
- Plug "GL" — Left Conveyor Relief Pressure Port
- Manual Override — Left Conveyor Valve
- Relief Valve — Right Conveyor
- Manual Override — Right Conveyor Valve
- Plug "GR" — Right conveyor Relief Pressure Port

10. Right Conveyor Relief Valve (Figure 25, Ref. 7)

- With engine off remove plug (9) and install a 3000 psi gage with necessary adapters to hook to a 1/4 SAE o ring port (04MB).
- Hold (lock) the left conveyor head pulley with a pipe wrench or other suitable tool. (Fig. 27). **Use caution when doing this operation. Be sure wrench is securely positioned on U-joint & rotated by hand against supporting steel so it cannot rotate further.**
- The engine should be run at governed speed (approximately 2300 RPM).
- Use the manual override to actuate the valve (Fig. 25, Ref. 8).
- Adjust this relief valve (Fig. 25, Ref. 7) to a setting of 2100 psi.
- If relief pressure cannot be obtained, shut down the engine and remove left conveyor relief valve cartridge and check for contamination or damaged cartridge pieces. Clean and replace as necessary.
- g) Shut engine off.
- h) Remove gage and reinstall plug.

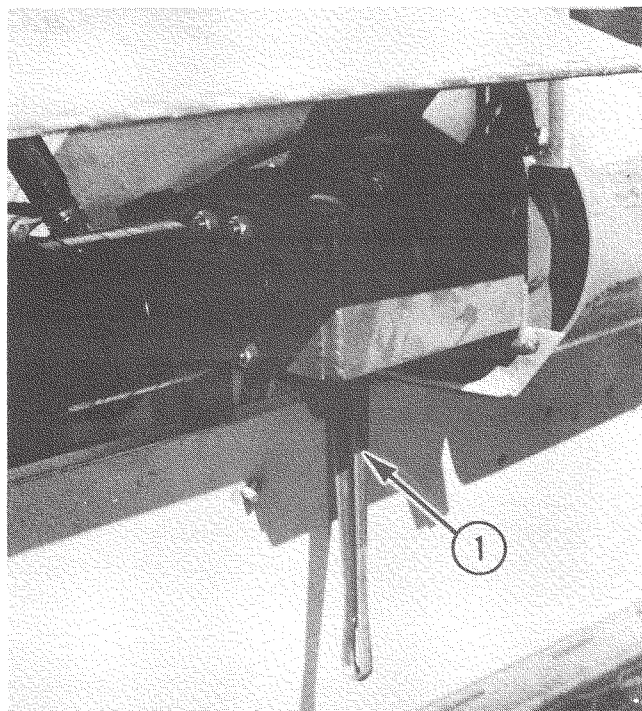


Figure 27. Lock Left Conveyor Head Pulley
1. Large Pipe Wrench Secure Against Unit Frame

CAUTION

Use caution when doing this operation. Be sure wrench is securely positioned on u-joint and rotated by hand against supporting steel so it cannot rotate further.

11. Powered Seat Relief Valve (Fig. 25)

- With the engine off remove cap (1) (Fig. 25) and install a 3000 psi gage with necessary adapters to hook to 1/2" JIC (08MJ) male fitting.
- Run the engine at its governed speed, 2300 RPM. Position the seat full left or right, and insert the lock pin.
- Use the manual override button to actuate the valve (Fig. 25, Ref. 3).
- Use a box wrench to adjust the cartridge. This relief valve should be set to 1200 psi. (Fig. 25, Ref. 2).
- If relief pressure cannot be obtained, shut down the engine and remove the relief valve cartridge and check for contamination or damaged cartridge. Clean or replace as necessary.

WARNING

Remain clear of all moving parts.

WARNING

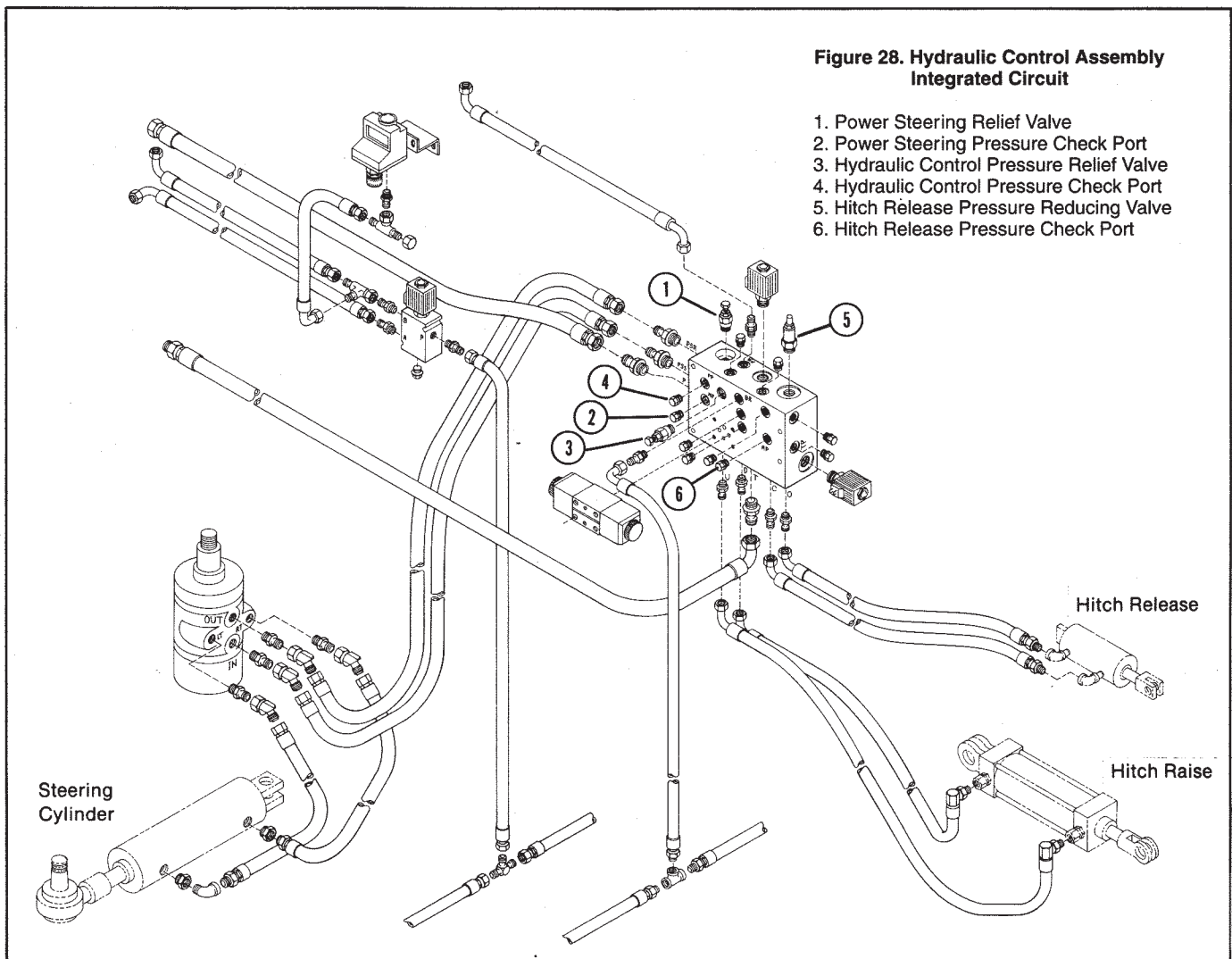
Do not travel with the seat unlatched. Seat movement could occur causing disorientation and possible loss of control.

12. Power Steering Relief Valve (At Hydraulic Control Assembly) (Fig. 28, Ref. 1)

- With engine "off", remove plug (2) on integrated control circuit and install a 3000 psi gage with necessary adapters to hook up to a 1/4" SAE o ring port (04MB).
- The engine must be run at or above 950 RPM.

CAUTION

Before starting, securely chock the chipspreader wheels to prevent accidental movement of chipspreader.



- c) Turn the front wheels full left or right until the the cylinder is fully stroked.
- d) While holding the wheels full left or right set the relief valve (1) pressure to 1950 psi

WARNING

When two people are required to perform adjustments or maintenance operations or two people are simultaneously performing different operations, the work must be coordinated between the two people to avoid possible injuries.

- e) If the relief valve pressure cannot be reached, the secondary relief valve within the pump may be set at or too close to 1950 psi. In order to verify and set this relief valve, the relief valve on the integrated circuit must be screwed all the way in and then the relief valve at the pump may be adjusted to 2250 psi by referring to (Fig. 26). Remove cap (5), loosen locknut (6) and adjust relief valve (7) to 2250 psi (Fig. 26) while holding the wheels full left or right.
- f) Return to the relief valve at the hydraulic control integrated circuit (Fig. 24, Ref. 1) and repeat steps 4b, c and d. If the pressure cannot be set at 1950 psi without the control pressure dropping below 400 psi then set this pressure lower than 1950 psi but not lower than 1800 psi.
- g) If relief pressure cannot be obtained at either cartridge, shut down the engine, remove appropriate cartridge and check for contamination or damaged cartridge pieces. Clean or replace as necessary.
- h) Shut engine off
- i) Remove gage and reinstall plug.

13. Hydraulic Control Pressure Relief (Fig. 28, Ref. 3)

- a) With the engine off, remove plug (4) and insert a 3000 psi gage with adapters to hook to a 1/4" SAE o ring port (04MB).
- b) Run the engine at idle RPM.
- c) Loosen locknut and adjust pressure to approximately 600 psi (Fig. 28, Ref. 3).
- d) Shut engine down, remove 3000 psi gage, and install 1000 psi gage.
- e) Restart engine and run at or above 950 RPM.
- f) Adjust relief valve to 400 psi and retighten locknut.
- g) If relief pressure cannot be obtained, shut down the engine and remove the control pressure relief valve cartridge and check for contamination or damaged cartridge pieces. Clean or replace as necessary.

- h) Shut engine off.
- i) Remove gage and reinstall plug.

14. Hitch Release Pressure Reducing Valve (Fig. 28, Ref. 5)

- a) With the engine off, remove plug (6) and insert a 1000 psi gage with the necessary adapters to hook to a 1/4" SAE o ring port (04MB).
- b) Run the engine at or above 950 RPM.
- c) Loosen locknut and set reduced pressure to 100 psi (Fig. 4, Ref. 5). You may not be able to get as low as 100 psi due to back pressure. If this is the case, reduce the pressure to its lowest point and then go back up 10-15 psi.
- d) If reduced and/or relief pressures cannot be set, shut down engine and recheck hydraulic control pressure to be sure it is at 400 psi. If it is, shut down engine and remove the reducing valve or relief valve cartridge and check for contamination or damaged cartridge pieces. Clean or replace as necessary.
- e) Shut engine off.
- f) Remove gage and reinstall plug.

15. Rear Pump Built in Relief Valve (Fig. 28)

- a) With engine "off", remove plug (Fig. 28, Ref. 2) on integrated control circuit and install a 3000 psi gage with the necessary adapters to hook to a 1/4" SAE o ring port (04MB).
- b) Disconnect the input hose to the rear integrated circuit (Fig. 24, Ref. 21), cap the adapter in the integrated circuit and insert an adapter with cap in the hose end.
- c) The engine must be run at or above 950 RPM.
- d) Set the relief valve pressure to 2000 psi.
- e) If relief pressure cannot be obtained, shut down the engine, remove the cartridge and check for contamination or damaged cartridge pieces. Clean or replace as necessary.

WARNING

Unsafe operation of equipment may cause injury.

Read, understand and follow the manuals when operating or performing maintenance.