

**8900 & 9000 Series
Floating Hitch
Cultivator**

Operation



Figure 1

CAUTION — Lock-up devices provided must be installed when wings are in elevated position, to ensure operator safety.

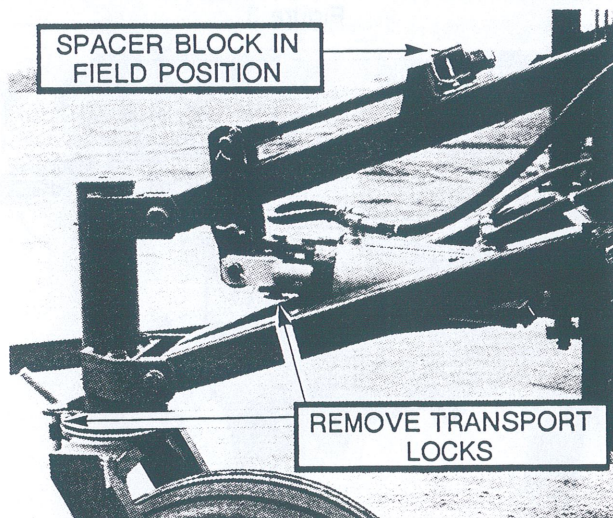


Figure 2

From Transport To Field Working Position

- As a precaution, check surrounding area to be sure it is safe to lower wings.
- **Remove Wing Transport Lock Pins.** Do not walk under the wings when removing the pin.



IMPORTANT

43' - 47' • 49' - 59'

If pins are not removed irreparable damage will occur to the frames and transport rests.

- Operate hydraulics until wings are lowered and the cylinder shafts are completely extended to allow wings to float when working in uneven land.
- Extend main frame depth cylinders.
- Remove two transport Lock Pins from Main frame Gauge Wheel. Figure 2.
- Next, remove two transport lock pins from the cylinders on the main frame and disengage by swinging Transport Lock Brackets up and away.
- Pin Transport Lock Brackets to the wing rests as shown in Figure 1.
- Lower machine fully, raising wheels off the ground. Place transport spacer block between the adjustment nut and the lug on bracket. Figure 2.
- Raise machine fully, holding hydraulic lever for several seconds to phase the system.

CAUTION — Transport Locks are provided on the Depth Control Cylinders for use when transporting machine.

MORRIS INDUSTRIES LTD. WILL NOT BE RESPONSIBLE FOR ANY DAMAGES OR OPERATOR INJURY RESULTING FROM NON-USE OR IMPROPER USE OF TRANSPORT LOCKS.

Operation

Levelling

There are 2 steps necessary to level the unit:

- (1) An initial levelling where certain measurements must be checked.
- (2) A final levelling procedure that **must** and can **only** be done in the field.

NOTE: INITIAL LEVELLING MAY be the only levelling required. It will definitely be very close and only minor additional levelling may be required. If additional levelling is required, follow the procedure as set out in Step #2.

STEP 1 INITIAL LEVELLING

- (a) Check that the tires are properly inflated. See Page 42.
- (b) With spacer block in working position on the main frame gauge wheel, tighten the nut on the adjustment rod so that 5/8" of rod is past the Jam nut. See Figure 3.
- (c) **3 Frame:** Adjust the Main Frame wheel control rods so that 1/2" of rod is past the Jam Nut. See Figure 4.

5 Frame: Adjust the Main Frame wheel control rods so that 1 5/8" of rod is past the Jam Nut. See Figure 5.

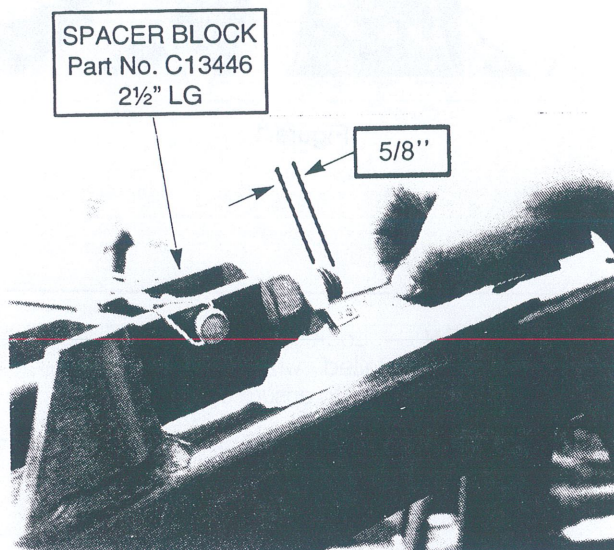


Figure 3

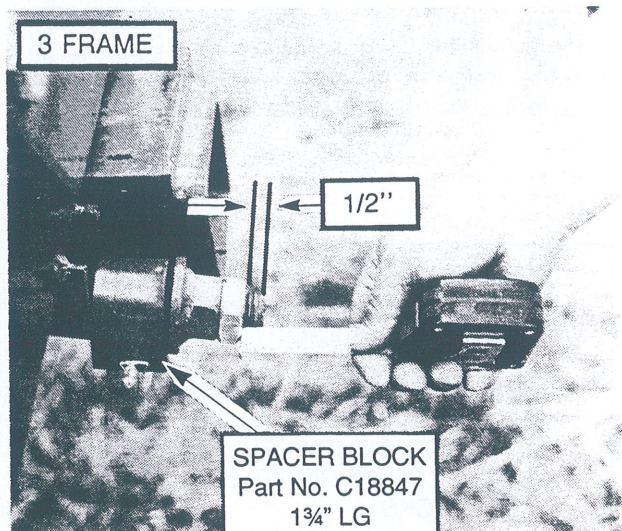


Figure 4

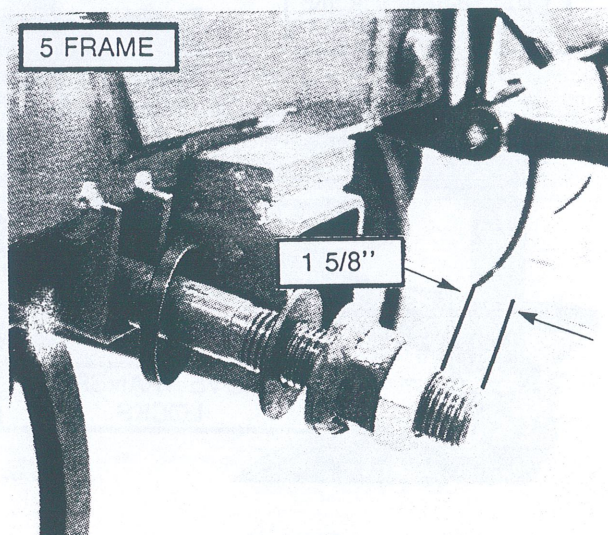


Figure 5

Levelling - Continued

- (d) Wing Frame Wheel Rear adjustment links are adjusted as follows:

3 FRAME

- **Single Axle** Dimension "X" is 8". See Figure 6.
- **Dual Axle** Dimension "X" is 11 1/2". See Figure 7.

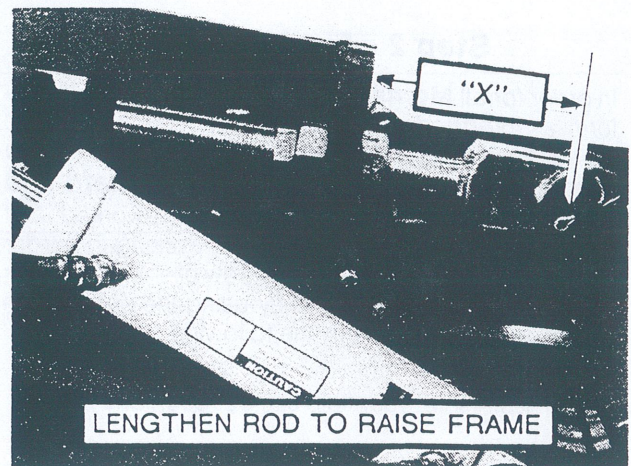


Figure 6

5 FRAME

- **Inner Wing** Dimension "X" is 6 3/8". See Figure 6.
- **Outer Wing** Dimension "X" is 7". See Figure 6.

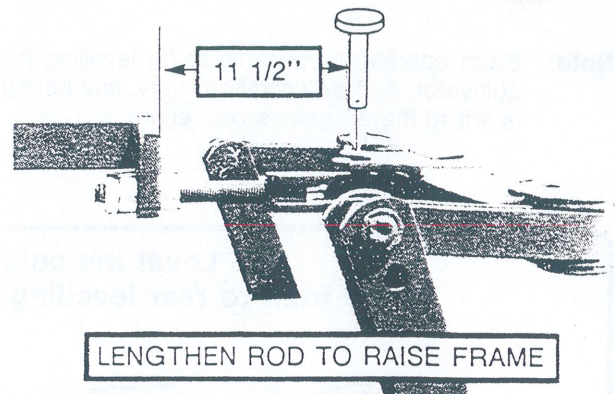


Figure 7

- (e) Adjust the Wing Gauge Wheel adjusting rod to measure 16" between the front of the pin and the rear of the lug. See Figure 8. Ensure front adjusting nut is tightened fully.

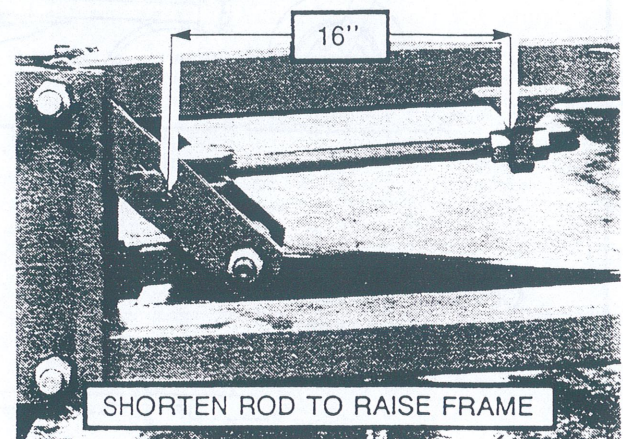


Figure 8

Operation

Levelling - Continued

Step 2 - Final Levelling

In order for all **Morris** Floating Hitch Cultivators to perform as intended to, it must be properly levelled. To do so, the **final levelling must be done in the field with ground conditions being hard and unworked**. If the unit is levelled in preworked, soft conditions, the front may dip when working in harder conditions. This causes the back row of shanks to work shallower than the front and by using the cultivator in this manner can result in the following:

- (1) The finish of your field can be rough and uneven.
- (2) The back row of shanks can ridge, which when used in conjunction with an airseeder could result in strips appearing resulting in uneven seed depth.

Note: Each operator is responsible for levelling his cultivator. As field conditions vary, fine tuning is left to the operator's discretion.

IMPORTANT

**Final Levelling is
"VERY IMPORTANT"**

**It is suggested that the operator
read carefully and carry out the
procedures exactly as described.**

**Level the cultivator front to back.
Poor front to rear levelling causes ridging as shown below.**

**Check adjacent
sweeps front
to back.**

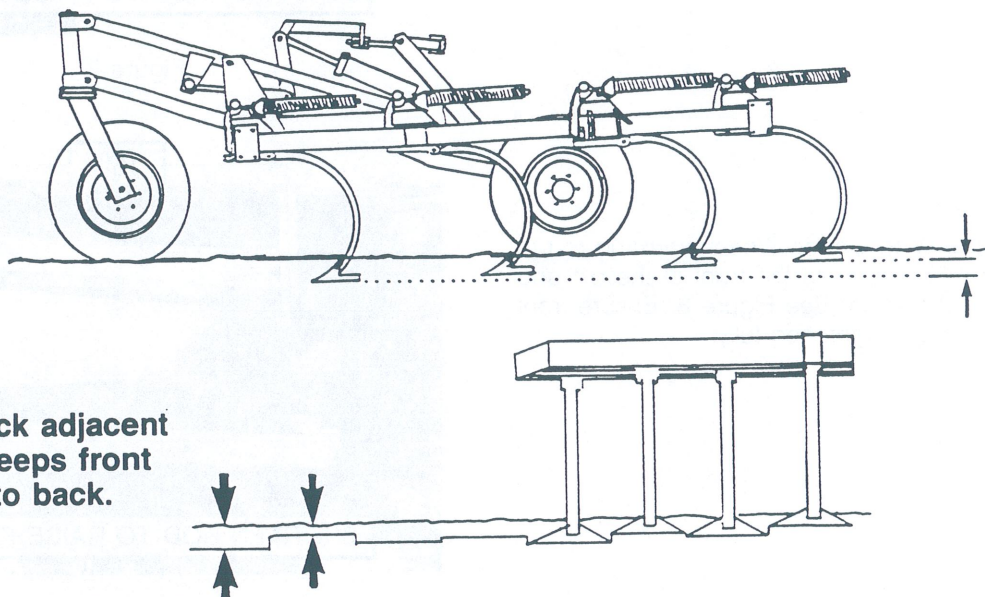


Figure 10

Levelling - Continued

Step 2 Final Levelling Continued

Final levelling requires the following six basic steps to be followed:

(For more detailed information, see pages 20 - 22)

1. **Raise Wing Gauge Wheels 1" Off The Ground.**
2. Rephase hydraulic depth system. See page 23.
3. Pull the unit a 100 feet at the desired depth at approximately 2 m.p.h. or less. Stop the unit in the ground. See page 21.

4. Check the depth on the main frame, Front to Back, Side to Side. See page 21.

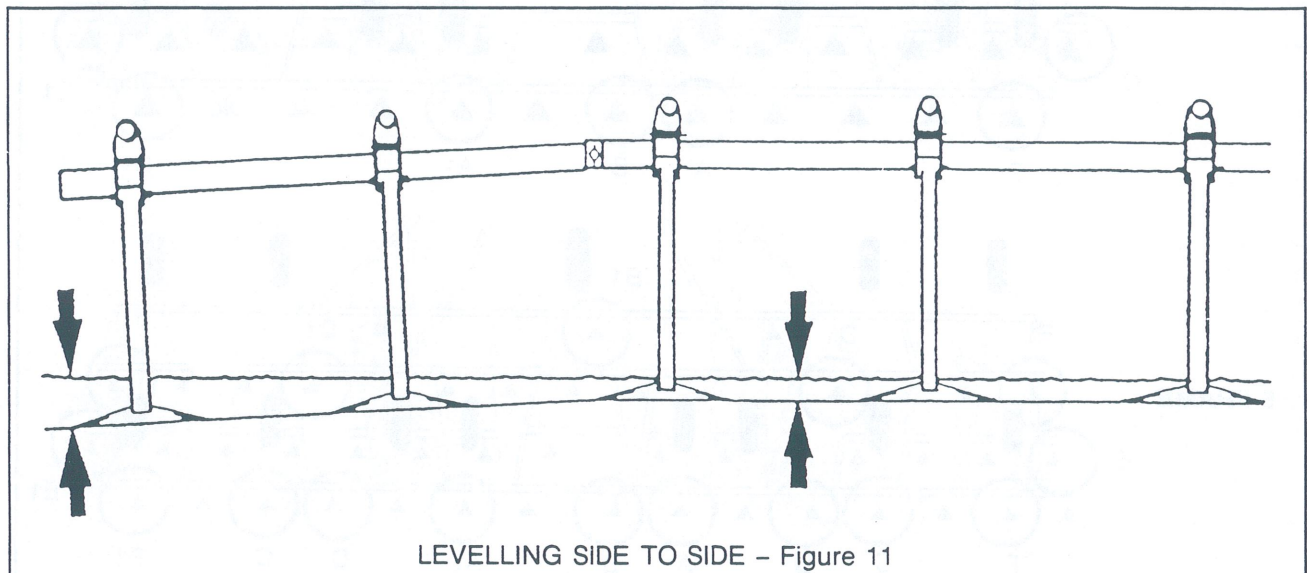
Adjust the main frame cylinder control rods as required to level the main frame. Shorten rods to raise frame. See Figure 11.

5. Once the main frame is level, proceed to each wing. Adjust wing axle control rod (top adjusting link) as required until wing is level Side to Side with main frame. See page 21 and 22. Lengthen rod to raise frame.
6. The last adjustment is the Wing Gauge Wheels. Travel at operating speed for proper Gauge Wheel adjustment. Adjust the Gauge Wheel control rod as required to level wing Front to Back. See Figure 11. See page 21 and 22. Shorten rod to raise frame.

IMPORTANT

**Keep tire air pressure at the listed specifications to achieve and maintain proper level.
See page 44.**

Note: On 25 to 29 ft. units, the wing gauge wheels should be adjusted after any levelling, that the wheel carries no load. Having the gauge wheels loaded will adversely affect the level of the unit when it goes through different soil conditions.



Operation

Levelling - Continued

Step 2 - Final Levelling Continued

NOTE: STEP 1 must be completed BEFORE proceeding with STEP 2.

1. Adjust spring bar adjustment to 2" (2 1/4" maximum). See Figure 14.
2. **Check** tire pressures before adjusting any linkages. Ensure the centre gauge wheel is set to the 5/8" dimension as outlined in Step 1.
3. Slacken the adjusting rods on **all** the wing gauge wheels so that the gauge wheel tires clear the ground by at least 1 inch.
4. Lower the cultivator on the go to the desired depth.
5. Pull the unit at the set depth at **approx. 2 m.p.h. or less** for a distance of approx. 100 feet. Stop with the unit in the ground.

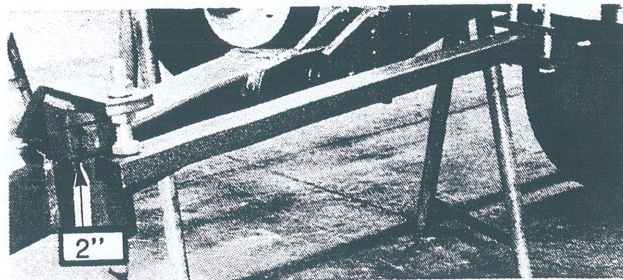


Figure 14

IMPORTANT

Accurate and Correct Levelling cannot be done unless steps 1 to 5 are followed.

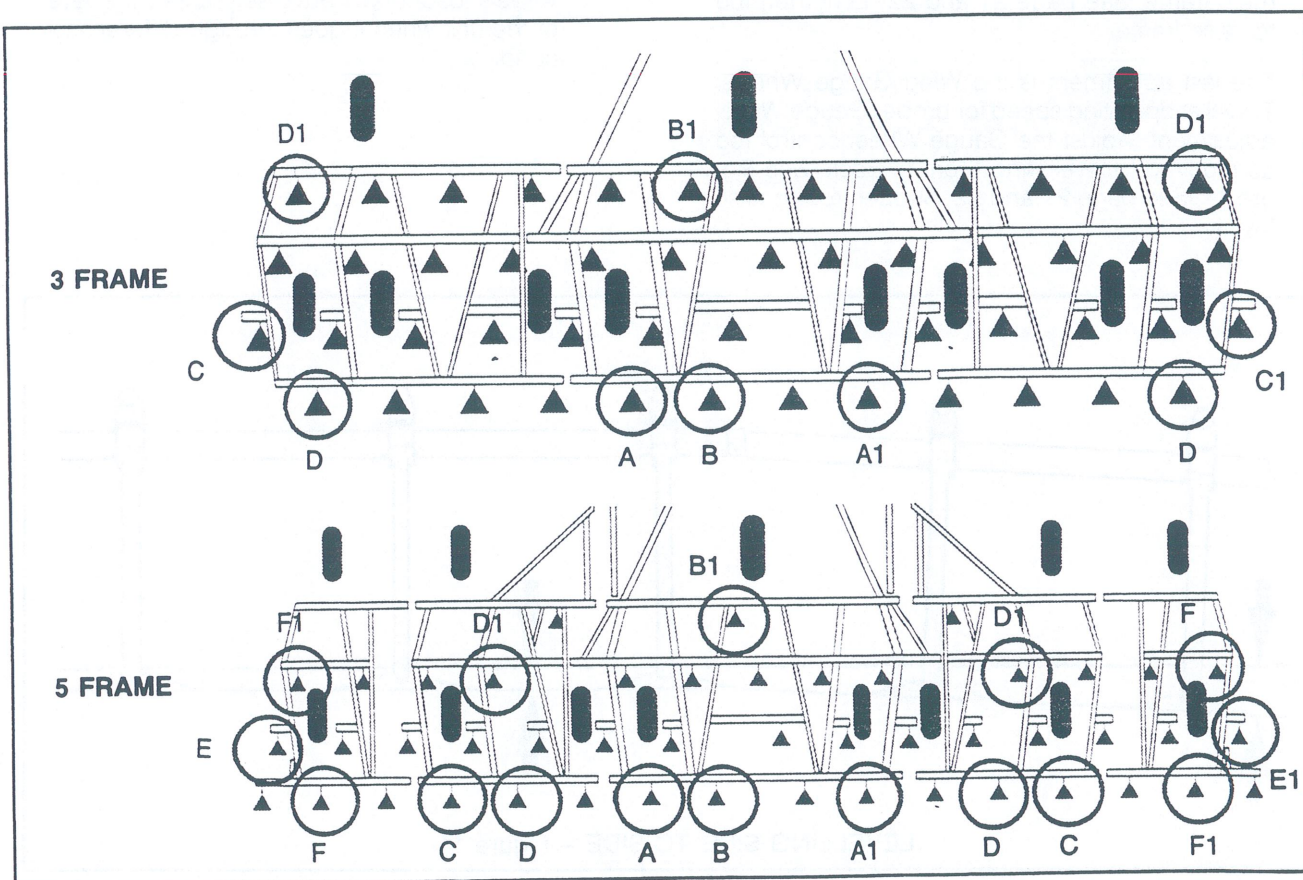


Figure 15

Levelling - Continued

STEP 2 Final Levelling Continued

6. Always begin with the main frame. Check depth side to side and front to back.
7. **Side to Side:** Place a 2" x 4" board (3 ft. long) behind the two outer most shanks of the main frame, (A & A1). See Figure 15 & 16.

Kneel down on board and carefully brush the soil away from the board down to where the bottom of the sweeps cut through the soil. See Figure 16. CHECK depth by measuring from the bottom sweep cut to the bottom of the board. See Figure 17. Adjust the main frame cylinder control rods as required to level the main frame. See Figure 18.

NOTE: Do not change the adjustment on the main frame gauge wheel.

8. **Front to Back:** Using the board as in (7) check the level of two adjacent shanks (B & B1). See Figure 15. If the frame is not level, then adjust the two main frame control rods equally. See Figure 18. Clockwise to raise

NOTE: Do not adjust the centre gauge wheel control rod.

9. Once the main frame is level, proceed to the wing frames.
10. Repeat Step 5.
11. Check the wing frames for side to side level and adjust the wing wheel control rods as is necessary. See Figure 19

NOTE: On 5 frame units check the **INNER** Wings first, then the **OUTER** Wings. Ensure the correct shanks are checked for side to side level. See Figure 15 C & C1 (three frame); 5 frame, inner wing C & C1; 5 frame, outer wing E & E1.

12. Repeat steps 7 and 11 as is necessary until the back row of wings are running at the same level as the rear row of the main frame.

NOTE: Adjustment of wing frame axle is independent of the gauge wheel.

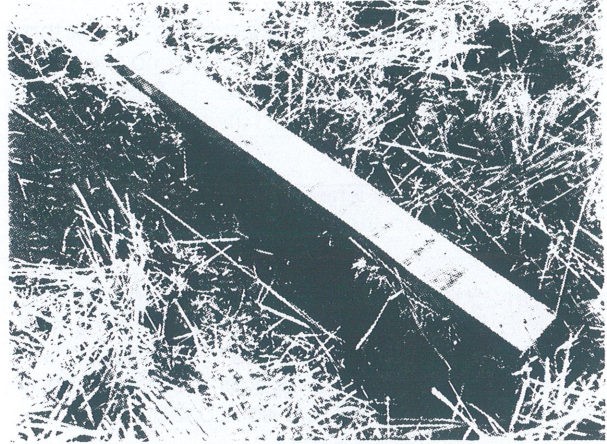


Figure 16

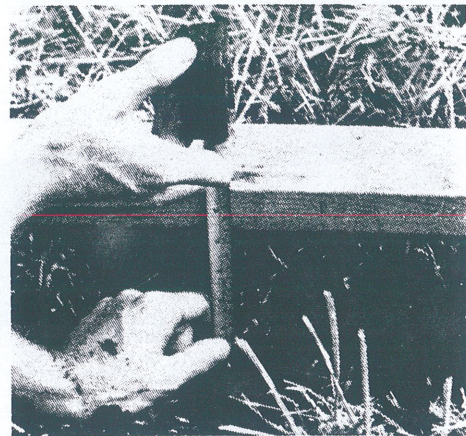


Figure 17

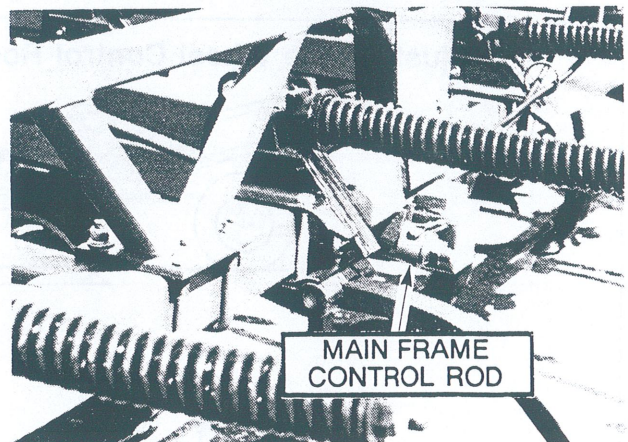


Figure 18

Operation

Levelling - Continued

Step 2 - Final Levelling Continued

13. Once side to side level is satisfactory, check the unit for front to back level by checking the front and rear trips. See Figure 16. D & D1 (three frame); D & D1 and F & F1 (five frame).

14. Lower the gauge wheels and adjust down until there is load on the tires. See Figure 19.

Note: On 25 to 29 ft. units, the wing gauge wheels should be adjusted so that the wheel carries no load. Having the gauge wheel loaded will adversely affect the level of the unit when it goes through different soil conditions.

15. Pull the unit ahead 100 ft. **at normal working speed** and check for front to back level. See Step 13 for trips to check.

16. Repeat Steps 14 and 15 as is necessary.

17. Once levelling has been completed, pull the cultivator in the ground for a short distance. Check for machine level side to side and front to back, also check working depth. Make any final adjustments that may be required. Ensure all nuts, jam nuts, etc., are properly locked and/or tightened.

The machine normally will be level at any working depth. Small adjustments may be required if running very deep in primary tillage. In this situation, all the gauge wheels may have to be tightened to increase their loading, countering the torque caused by the increased draft load of deep tilling.

NOTE: This is the only time that the main frame gauge wheel would be adjusted.

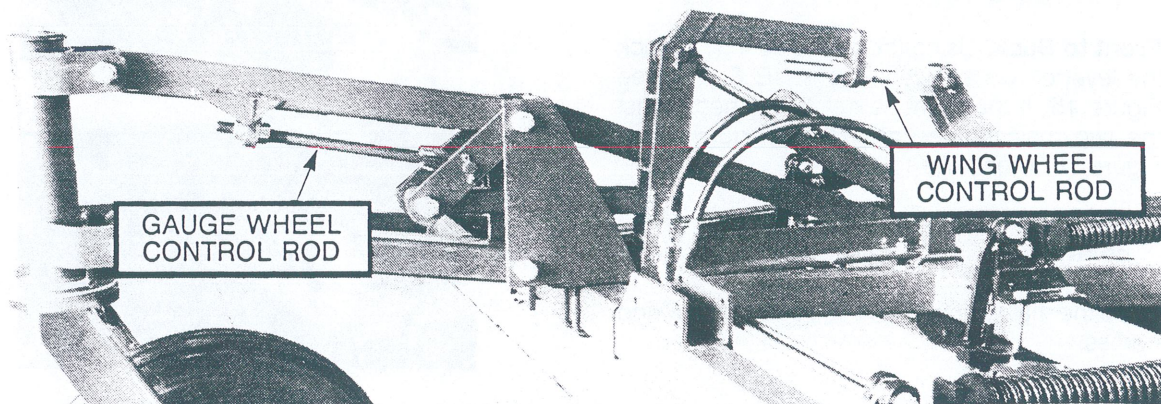
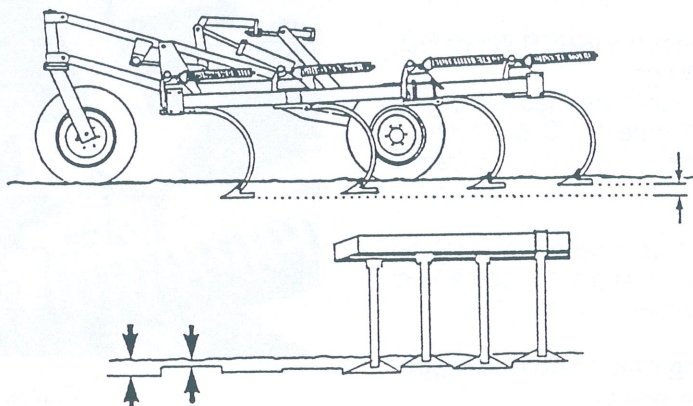


Figure 19

Adjust Gauge Wheel Control Rod to level wing frame Front to Back



Operation

Depth Stop Adjustment

- Consistant machine depth will depend on whether the depth stop valves are closed or open.

If they are **Closed** the operating depth will remain consistant.

If the depth stops are **Not Closed** that is the depth control rod is not used to maintain the working depth, then cylinder fading will occur. This will give the impression that a cylinder is leaking and will cause the unit to run out of level.

Always ensure the depth stops are closed by holding the hydraulic lever momentarily longer after the cultivator has reached its preset working depth.

- To increase or decrease the working depth, move the depth control rod as desired so that the depth stop plunger will be depressed when the desired working depth is acquired.
- **DO NOT OVERTIGHTEN ROD TIGHTENER.** The depth valve operates hydraulically and very little pressure is required on the poppet to stop oil flow.

Rephasing

- Raise machine fully, holding hydraulic lever for several seconds to phase the system.
- This will maintain equal pressure, cylinder stroke, and synchronize cylinders.
- **It is recommended that the unit be rephased at each turn on the headland.**

Oil Level

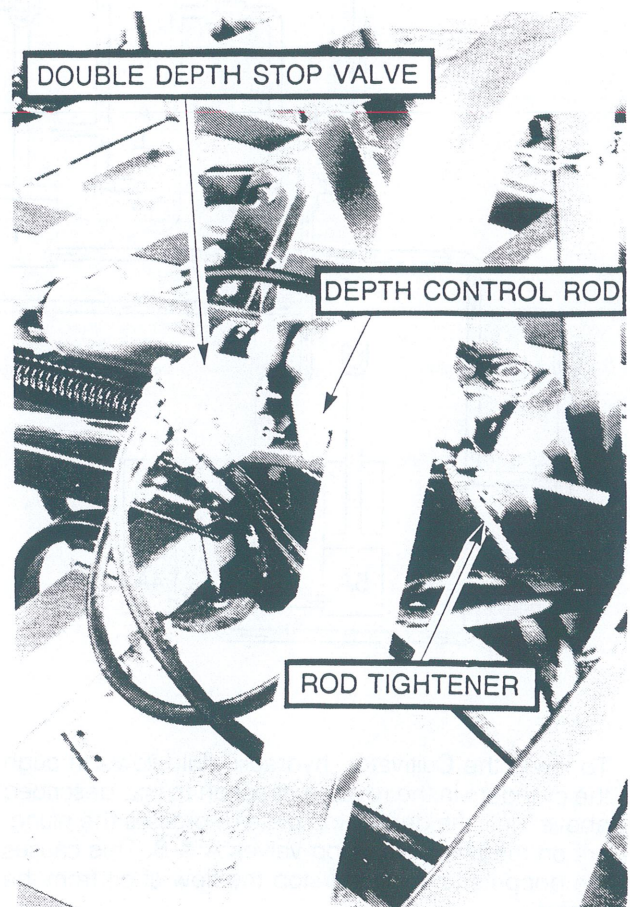
The hydraulic system draws its oil supply from the tractor reservoir.

- Check the oil level after the Cultivator system has been filled.

IMPORTANT

- The 8900 and 9000 Series Floating Hitch Cultivators are equipped with a double depth stop valve, it is essential that the valve be engaged while the cultivator is moving forward, **not while the machine is stationary.** This will ensure consistant closing of the valve poppets.
- The valve should remain engaged at all times while working in the field. If the above is not followed, the cultivator will creep down which will eventually lead to certain sections going deeper than others.

NOTE: This can cause uneven germination and crop growth when the unit is being used as a seeding tool.



Operation

Hydraulic Depth Control System 43' - 47' • 49' - 59'

The Hydraulic depth control system is a Series system.

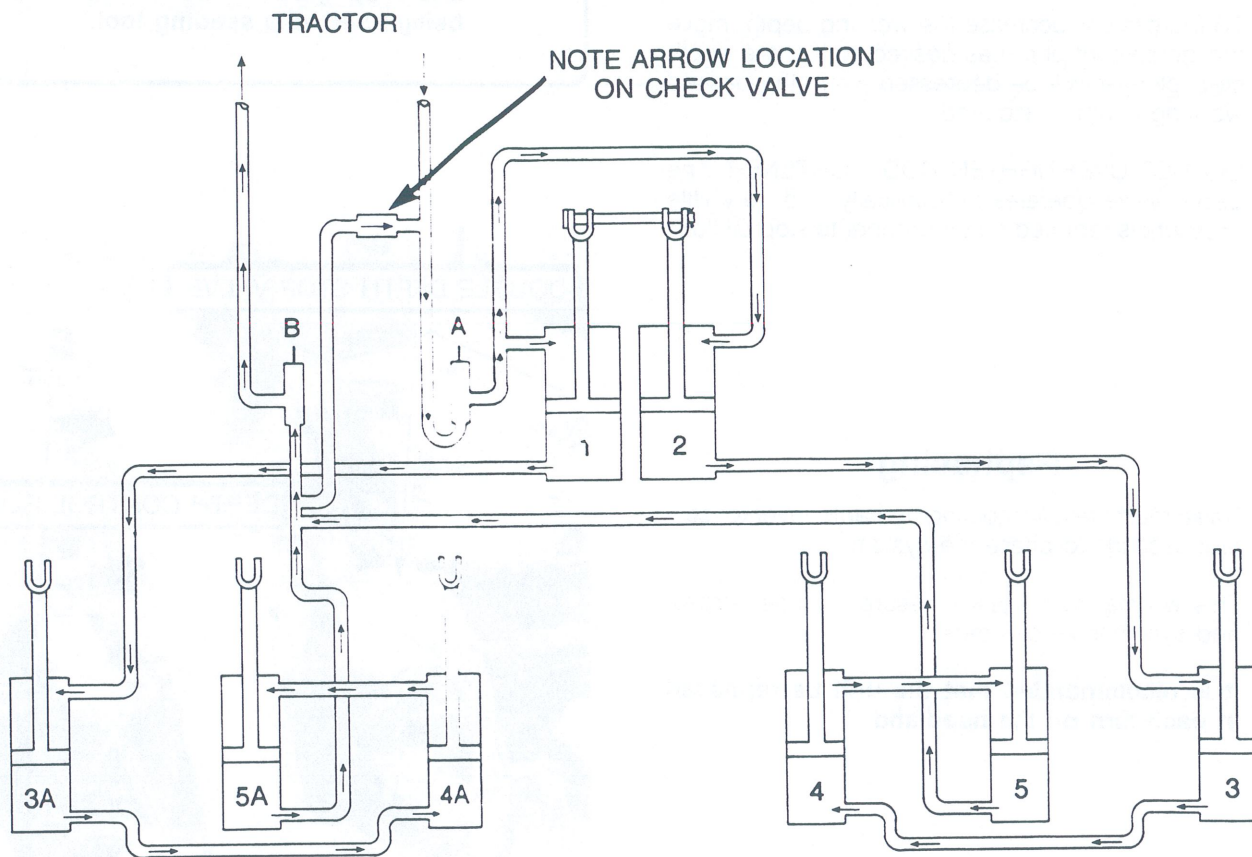
To lift the Cultivator, hydraulic fluid is forced through depth Stop Valve A into the gland end of cylinders 1 & 2 of the Flow Divider. This causes the piston rods to retract and force oil from the Flow Divider cylinders butt ends into the gland ends of cylinders 3 & 3A, causing them to retract, pivoting the axles down and lifting the outer wings.

Simultaneously, hydraulic fluid is forced from the butt

end of cylinders 3 & 3A to the butt end of cylinders 4 & 4A, causing them to extend, pivoting the axles down and lifting the main frame.

Fluid continues to flow from the gland end of 4 & 4A Cylinders to the gland end of cylinders 5 & 5A causing them to retract, pivoting the axles down and lifting the inner wings.

Finally the fluid exits the butt end of cylinders 5 & 5A into a common line and then through depth stop valve (B) to the tractor.



To lower the Cultivator, hydraulic fluid flows through the cylinders in the reverse direction to that described above, until the depth stop plate depresses the plungers on the two depth stop valves A & B. This causes the poppets to seat and stop the flow of oil from the tractor.

When the poppets seat, flow is stopped, the depth stop valves hold the cylinders at this working depth until the tractor hydraulic controls are activated to lift the machine.

Operation

Hydraulic Depth Control System 25' - 35' • 31' - 41'

The Hydraulic depth control system is a Series system.

To lift the Cultivator, hydraulic fluid is forced through depth Stop Valve A into the gland end of cylinders 1 & 2 of the Flow Divider. This causes the piston rods to retract and force oil from the Flow Divider cylinders butt ends into the gland end of cylinders 3 & 3A, causing them to retract, pivoting the axles down and lifting the wings.

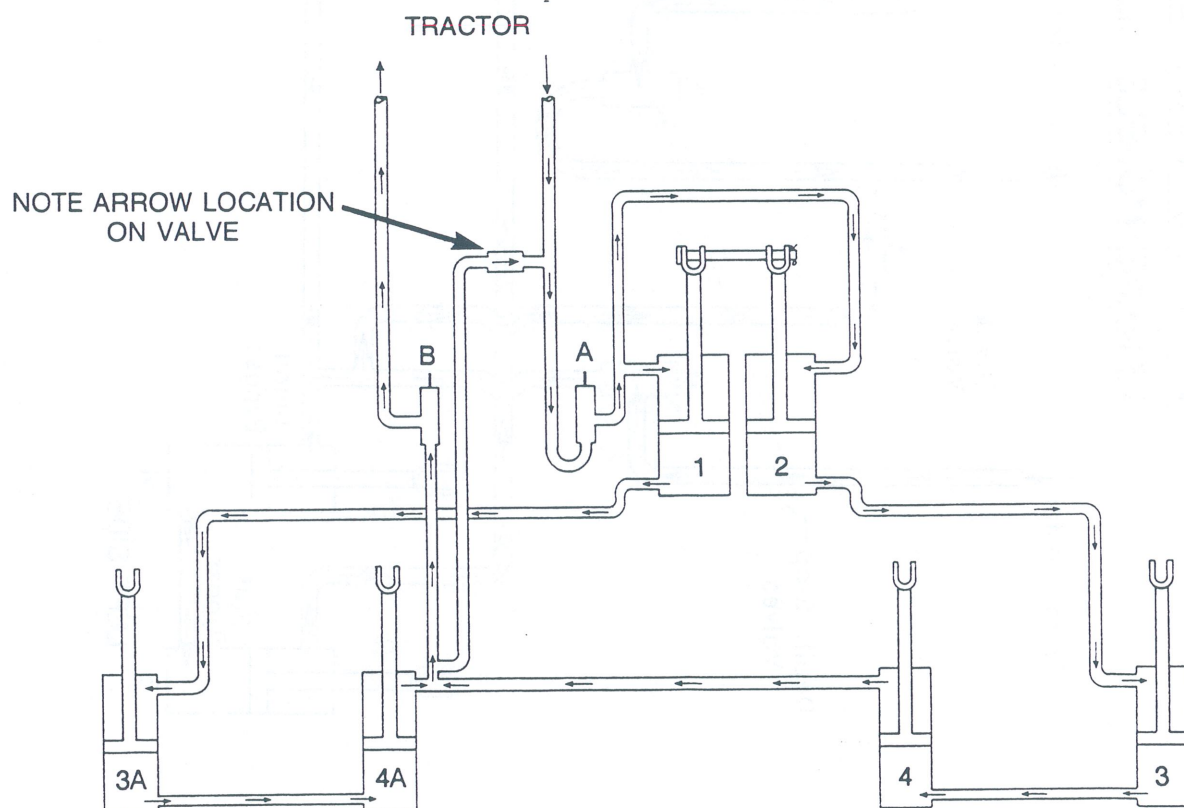
Simultaneously, hydraulic fluid is forced from the butt end of cylinders 3 & 3A to the butt end of cylinders 4 & 4A, causing them to extend, pivoting the axles down and lifting the main frame.

Finally the fluid exits the gland end of Cylinders 4 & 4A into a common line and then through the depth stop valve (B) to the tractor.

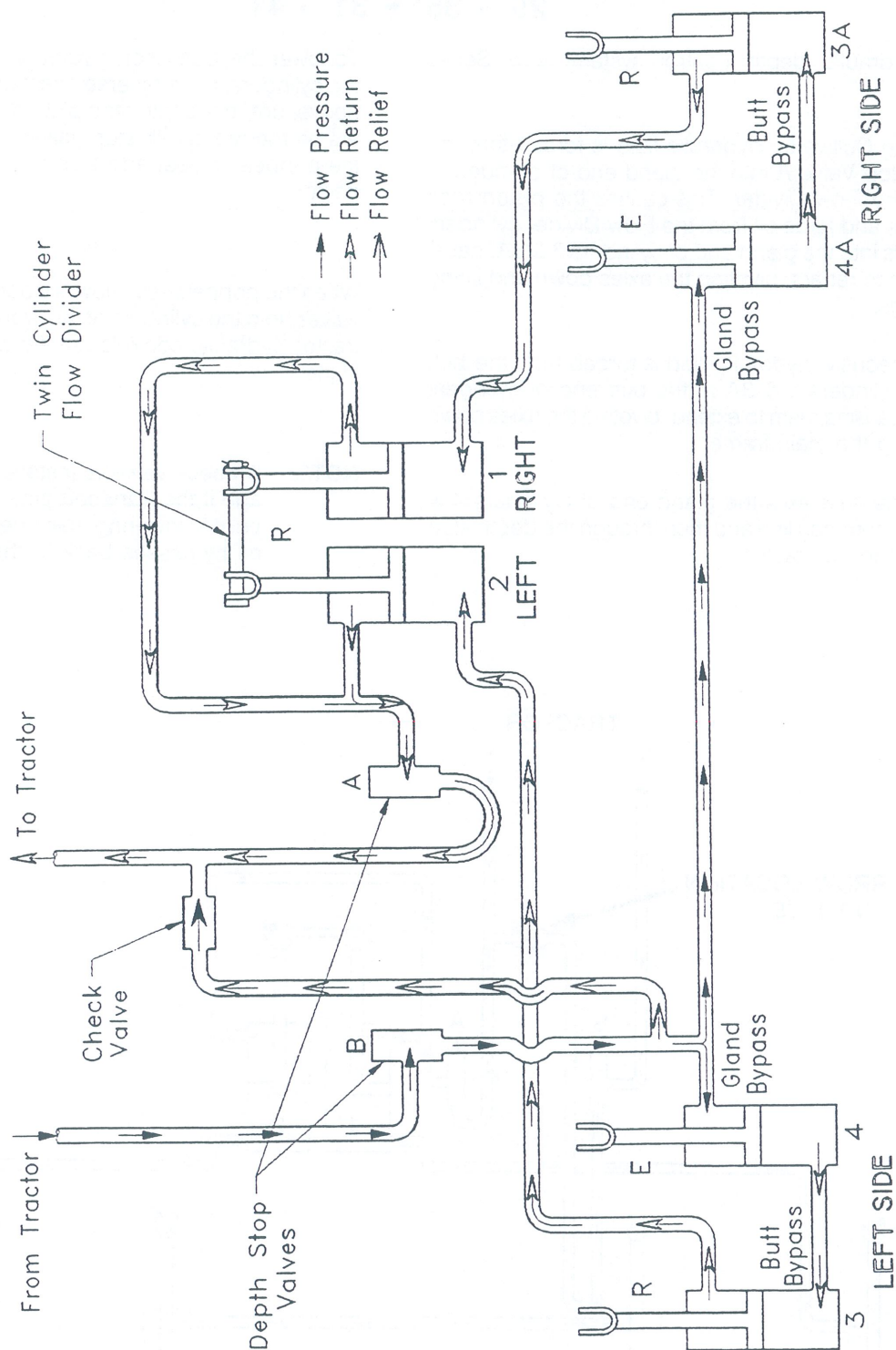
To lower the Cultivator, hydraulic fluid flows through the cylinders in the reverse direction to that described above, until the depth stop plate depresses the plungers on the two depth stop valves A & B. This causes the poppets to seat and stop the flow of oil from the tractor.

When the poppets seat, flow is stopped, the depth stop valves hold the cylinders at this working depth until the tractor hydraulic controls are activated to lift the machine.

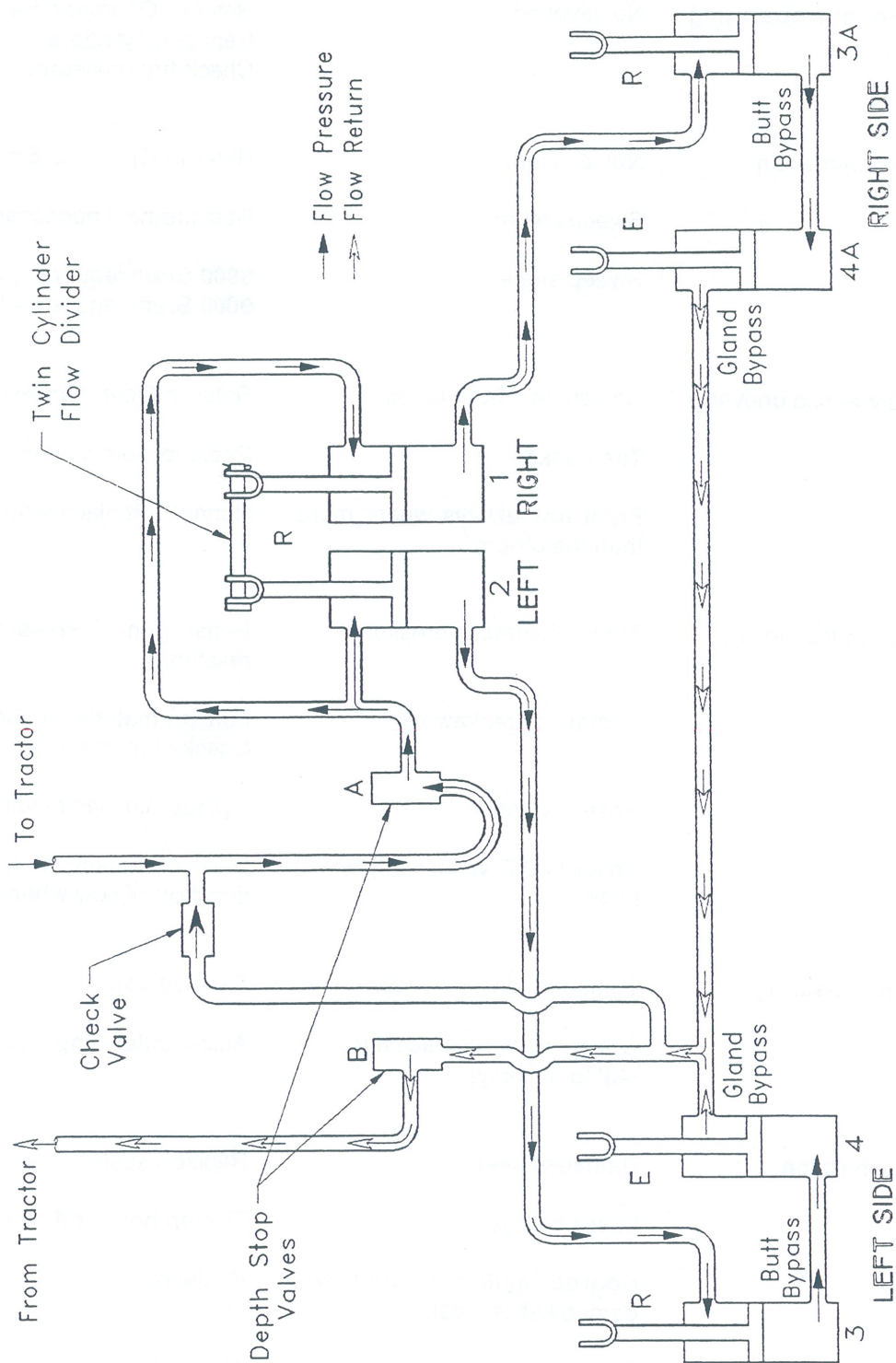
NOTE: A check valve is installed to prevent damage if the transport pins were not removed prior to lowering machine. If this occurs, the oil by-passes back to the tractor.



DEPTH CONTROL HYDRAULIC SCHEMATIC 3 FRAME MODELS (LOWERING CULTIVATOR)



DEPTH CONTROL HYDRAULIC SCHEMATIC 3 FRAME MODELS (LIFTING CULTIVATOR)



Troubleshooting

Problem	Cause	Correction
Machine not operating straight.	Not levelled.	Refer to Operation Section on levelling. Rephase cylinders. Check tire pressure.
Lack of penetration.	Not levelled.	Refer to Operation Section on levelling.
	Sweeps worn.	Replacement necessary.
	Sweep angle.	8900 Stem requires 50 degree tools. 9000 Stem requires 47 degree tools.
Sweeps wearing unevenly	Not levelled front to rear.	Refer to Operation Section on levelling.
	Tire tracks.	Replace worn sweeps.
	Front row always wears more than the others.	Normal. Replace worn sweeps.
Wing lifting too slowly.	Tractor hydraulic pressure.	Repair pump. Pressure relief valve needs resetting.
	Hydraulic breakaways.	Foreign material or sticking. Check compatibility.
	Hose restriction.	Cylinder linkage binding.
	Check C-957 valve (Only on 25' to 41')	Clean or replace. Make sure arrow points in direction of flow when lowering wings.
Wings not lowering.	Transport pins installed.	Remove pins.
	Gravity Lock not releasing. (43' to 59' only)	Adjust outer wing rest out. (43' to 59' only)
Oil accumulation.	Damaged seal.	Replace seals.
	Loose fittings.	Tighten hose and pipe connections.
	Scored cylinder shaft will damage shaft seal.	Replace.
	Side pressure.	Align linkage.
	Normal.	Slight seepage from seal is normal.

Troubleshooting

Problem	Cause	Correction
One wing will lift, other will not.	Assembly.	Hoses reversed at cylinder.
	Restriction in line.	Clean.
	Internal cylinder leak.	Repair cylinder.
Depth control not working.	Cylinders not phased.	Refer to Operation Section on rephasing.
	Leaks.	Use hand and eye protection - Check for external leaks.
	Internal Leaks.	Raise the machine and level off. Run the machine at operating depth for 50 feet. Stop with machine in ground and mark cylinder shafts with felt marker. run at operating depth, observing the cylinder movement and direction. The leaking cylinder will normally be the first in the series to move.
	Low oil level.	Fill tractor reservoir.
	Hydraulics clogged.	Replace filter.
	Depth control plungers not fully closed/retracted.	Adjust depth stop to ensure both plungers close.
	O-ring on cartridge on valve damaged.	Replace cartridge on rear depth stop valve.
Wings not lining up with transport locks properly.	Load Sensing Systems create a void in the cylinders	Install C15975 restrictor valve on return line. See Service Bulletin #194.
	Transport rests not adjusted properly.	Refer to " <i>Wing Lift Adjustments</i> " in Maintenance Section.
Tire damage.	Sweeps too close to tires.	Check shank spacing. Readjust axles to provide adequate clearance. Refer to Maintenance Section for correct axle placement diagram.
Trips not tripping freely 8900 only.	Adjustment Lack of lubrication.	See Maintenance Section for spring settings. Grease lower pivot pin every 50 hours.
Trips tripping too freely 8900 only.	Adjustment nut on the connecting strap over-tightened.	See Maintenance Section for proper procedure.

Troubleshooting

Problem	Cause	Correction
Excessive rocking in transport.	Spring rod Adjustment.	Adjust spring rod bolt. See page 18.
After being raised machine creeps down evenly some times quite fast.	The check valve (C-5545) in the hydraulic depth control system is leaking.	Clean debris from valve. Replace damaged valve.