FORD

Service Manual

FORD
NEW HOLLAND

Tractors
1200, 1300, 1500, 1700, 1900

Vol. 1

40130040A

Reprinted

FORD

1100
1300
1500
1700
1900

TRACTOR REPAIR MANUAL

SUPPLEMENT

FOREWORD

This supplement contains service and repair information not included in the 1000 Series Tractor Repair Manual, SE 3771.

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REMOTE HYDRAULIC VALVE (Double Acting)
1100-1300-1500-1700-1900 Tractors

FUNCTION
Single Acting Cylinders

Pressurized oil from the gear pump flows through the control valve and the relief valve in the cover assembly, returning to sump. When the control lever is in neutral, the oil trapped in the line and the remote cylinder (and implement) will not raise or lower. See Figure 1.

When the control lever is moved to the lift position, the spool moves permitting oil to flow through the relief valve, the load check valve, to the cylinder. If the oil pressure exceeds 130 kg/cm^2 (1849 psi) for the 1100 Tractor or 150 kg/cm^2 (2133 psi) for the 1300-1900 Tractors, the relief valve pops, releasing oil to the sump. See Figure 2.

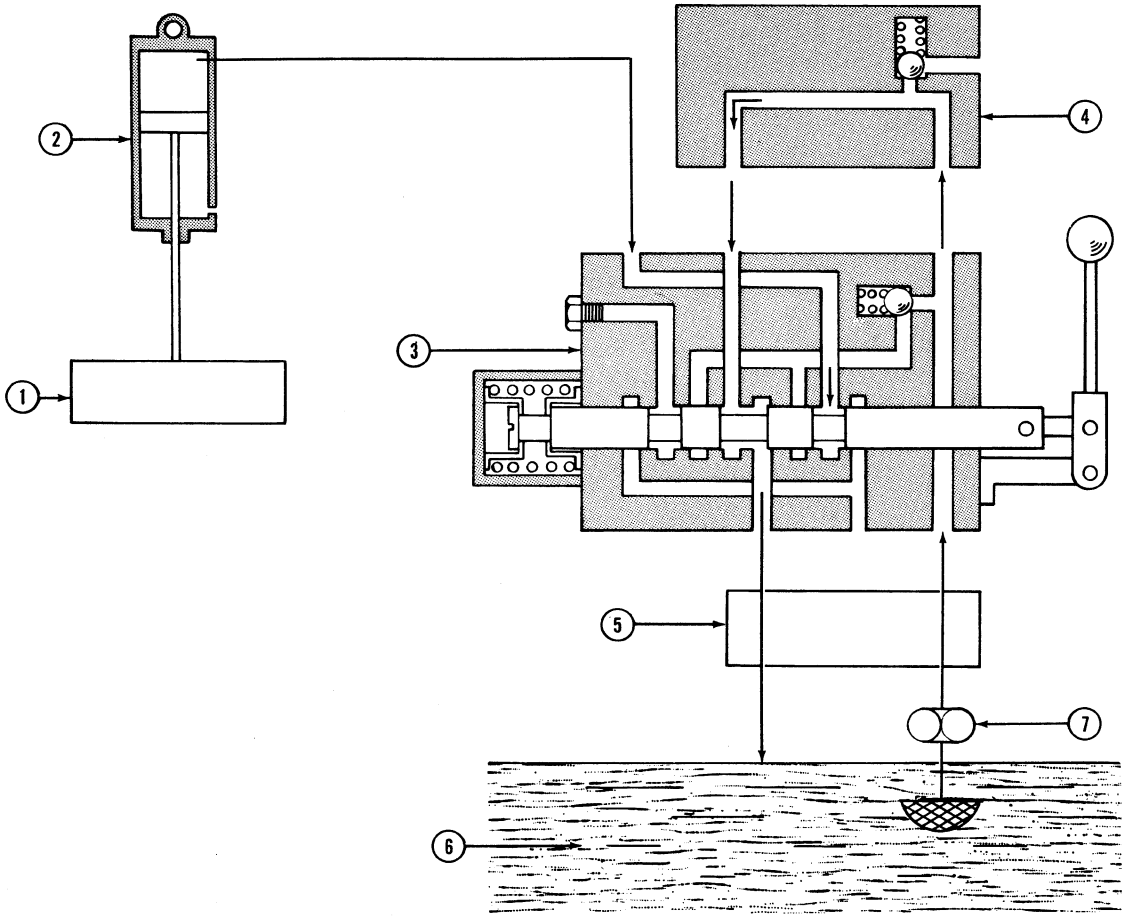

Figure 1
Remote Valve Oil Flow - Neutral Position

1. Implement
2. Remote Cylinder
3. Remote Control Valve
4. Relief Valve
5. Main Control Valve
6. Sump
7. Oil Pump

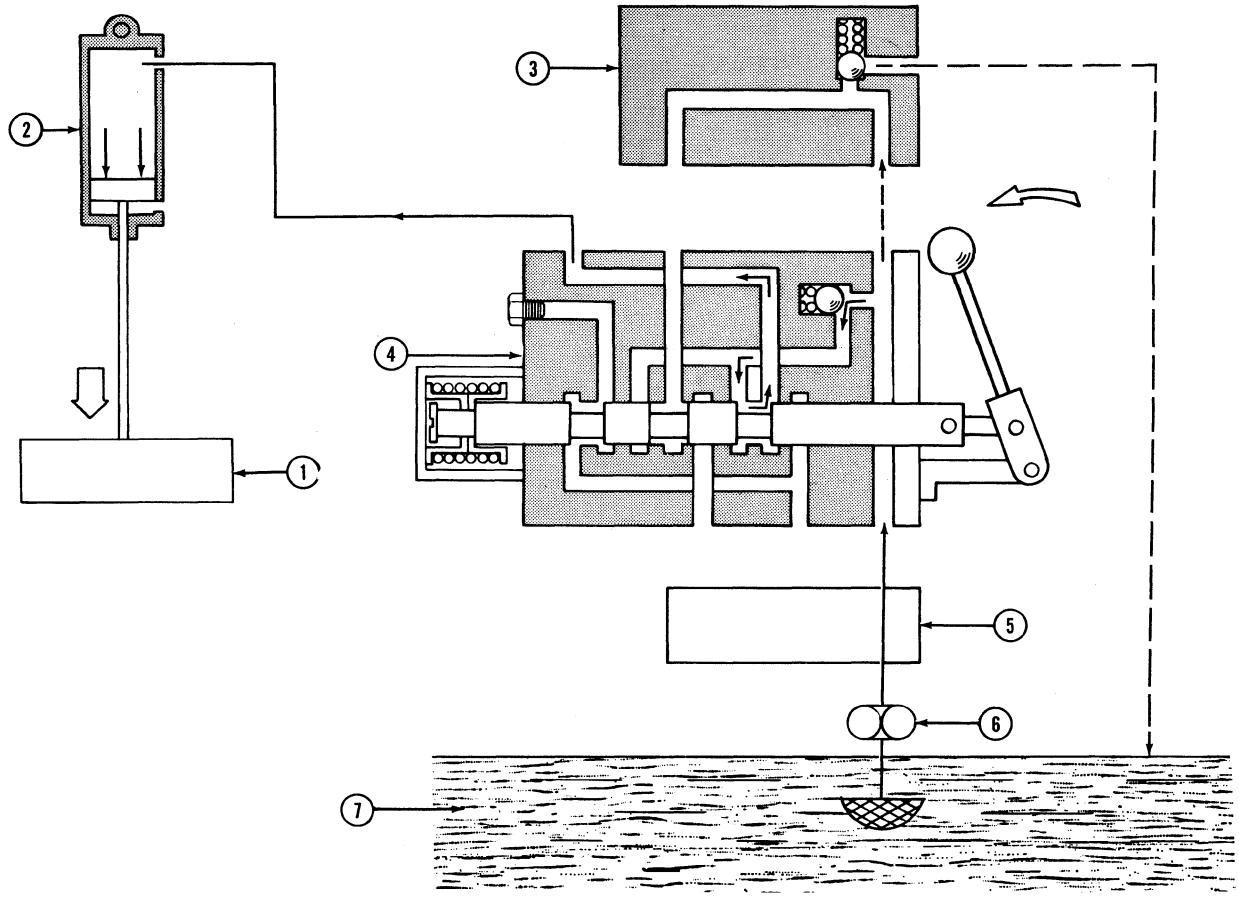

Figure 2
Remote Valve Oil Flow - Lift Position

1. Implement
2. Remote Cylinder
3. Relief Valve
4. Remote Control Valve
5. Main Control Valve
6. Oil Pump
7. Sump

When the control lever is moved to the lowering position, the flow of oil is the same as in neutral except oil from the cylinder is allowed to flow back through the remote valve to sump. See Figure 3.

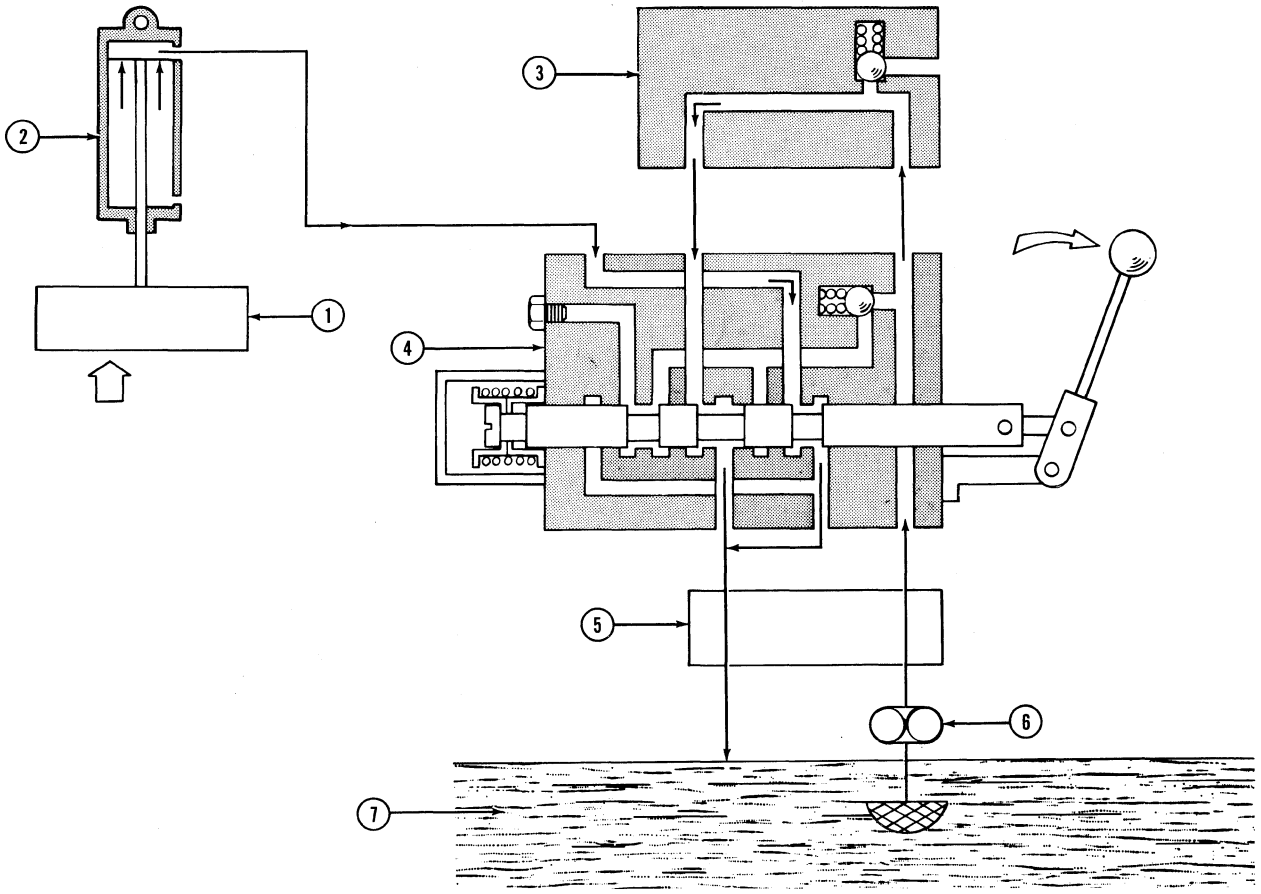

Figure 3
Remote Valve Oil Flow - Lowering Position

1. Implement
2. Remote Cylinder
3. Relief Valve
4. Remote Control Valve
5. Main Control Valve
6. Oil Pump
7. Sump

Double Acting Cylinders

Pressurized oil from the gear oil pump flows through the control valve and the relief valve in the cover assembly, returning to sump. When the control lever is in neutral, the oil is trapped in the line and the remote cylinder (and implement) will not raise or lower. See Figure 4.

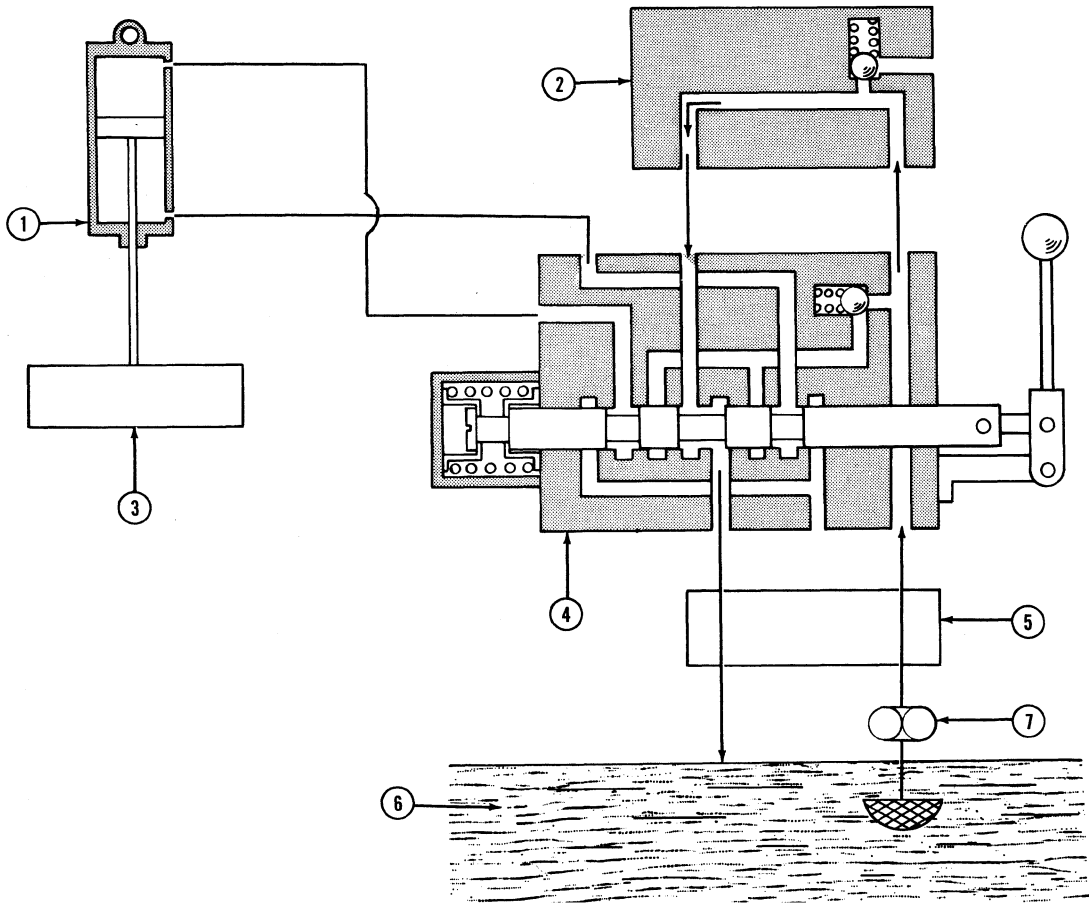

Figure 4
Remote Valve Oil Flow - Neutral Position

1. Remote Cylinder
2. Relief Valve
3. Implement
4. Remote Control Valve
5. Main Control Valve
6. Sump
7. Oil Pump

When the control lever is moved to the lift position, Figure 5, oil under pressure opens the check valve and the spool permits oil to flow to the cylinder. If oil pressure exceeds 130 kg/cm^2 (1849 psi) for the 1100 Tractor or 150 kg/cm^2 (2133 psi) for 1300-1900 Tractors, the relief valve "pops", releasing oil to sump. Oil on the rod side of the piston returns to sump through the valve as shown.

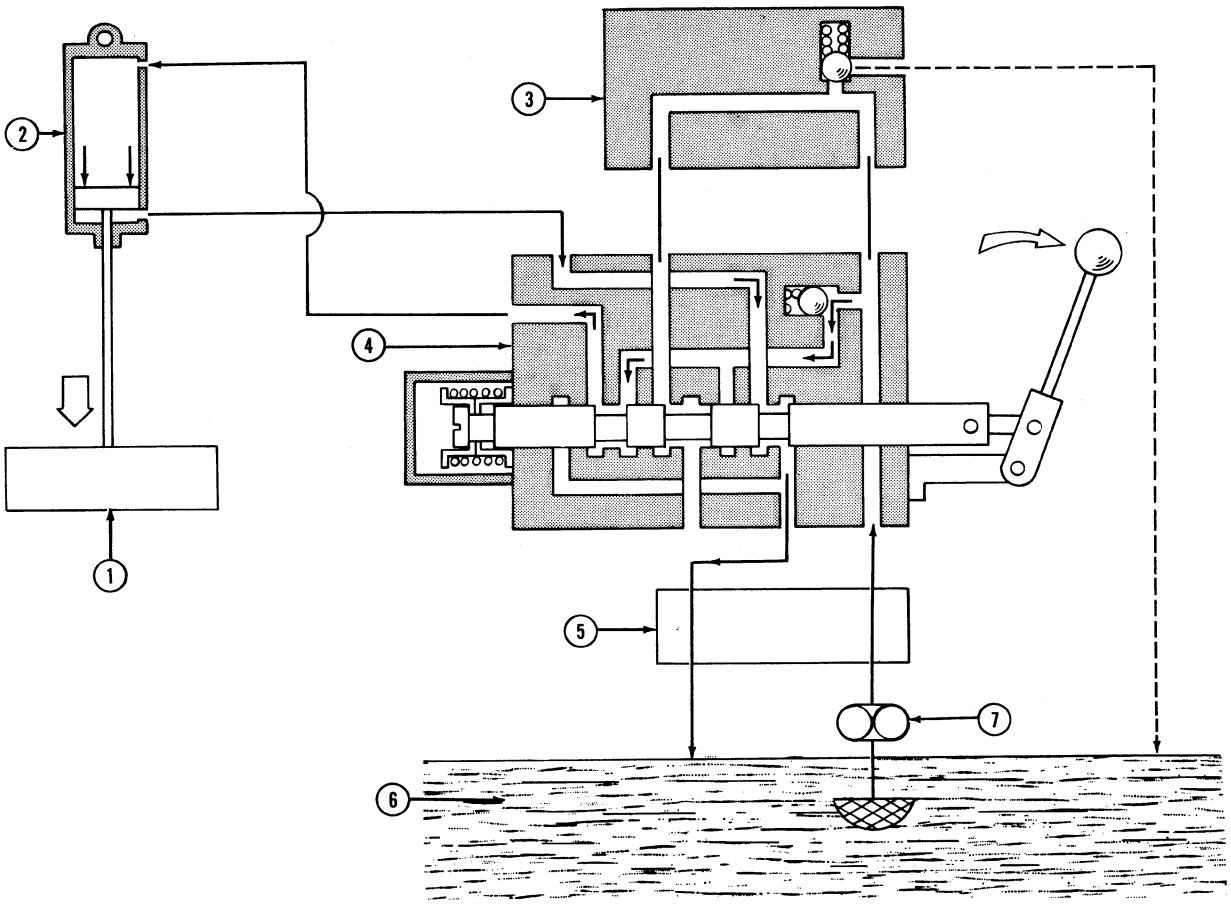

Figure 5
Remote Valve Oil Flow - Lift Position

1. Implement
2. Remote Cylinder
3. Relief Valve
4. Remote Control Valve
5. Main Control Valve
6. Sump
7. Oil Pump

When the control lever is moved to the lowering position, oil under pressure opens the check valve and flows to the remote cylinder, lowering the implement. If oil pressure exceeds 130 kg/cm^2 (1849 psi) for the 1100 Tractor or 150 kg/cm^2 (2133 psi) for 1300-1900 Tractors, the relief valve releases oil to sump. Oil from the rod side of the piston returns to sump through the spool as shown.

DISASSEMBLY

1. Remove the split pin and the control lever.
2. Remove the screws and remove cap (1) and bracket (5), Figure 7.
3. Remove seal plate (4), wiper (3) and O-ring (2) from the bracket side, Figure 7.
4. Remove the spool (4), Figure 8, from the cap side. Remove the seal plate (1), wiper (2) and O-ring (3) with the spool.

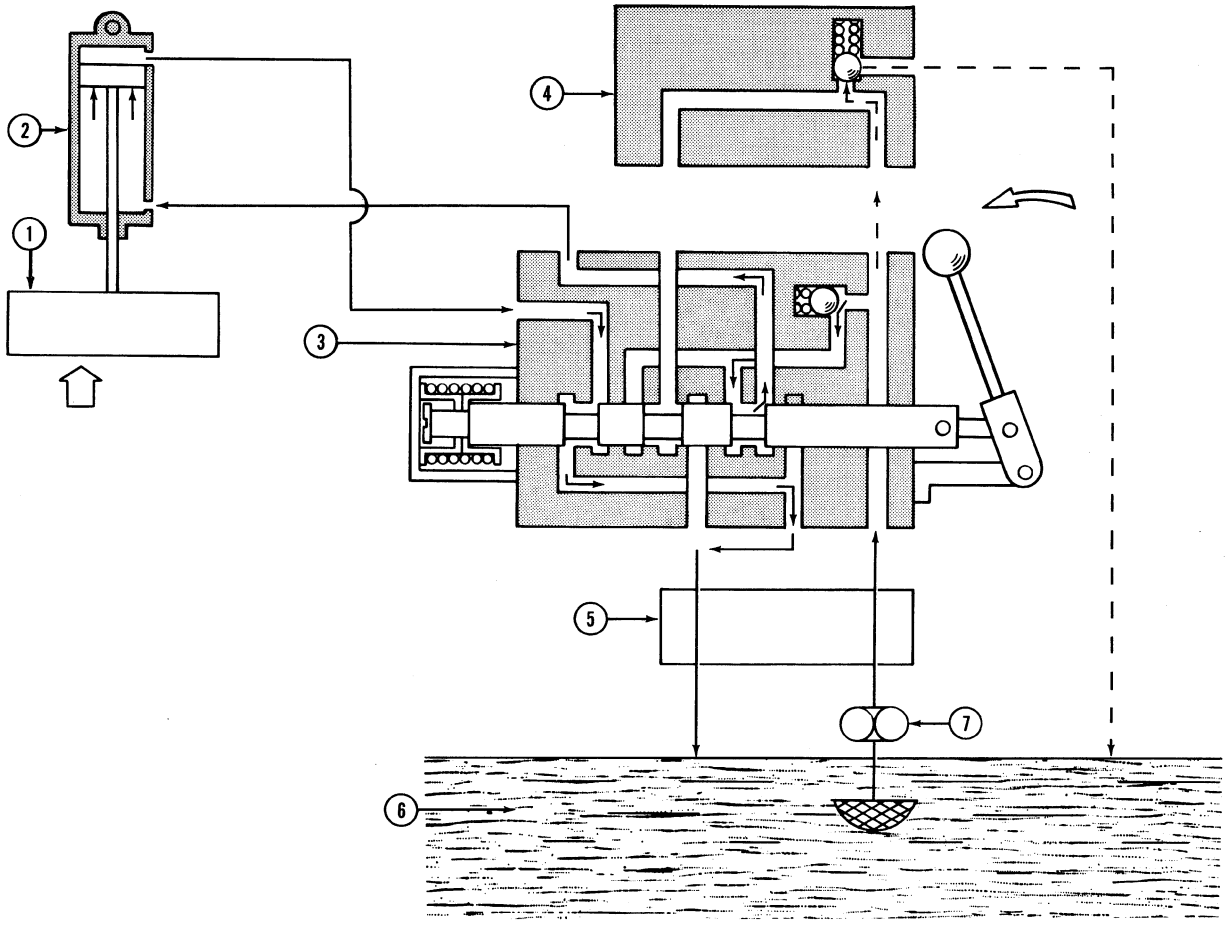

Figure 6
Remote Valve Oil Flow - Lowering Position

1. Implement
2. Remote Cylinder
3. Remote Control Valve
4. Relief Valve
5. Main Control Valve
6. Sump
7. Oil Pump

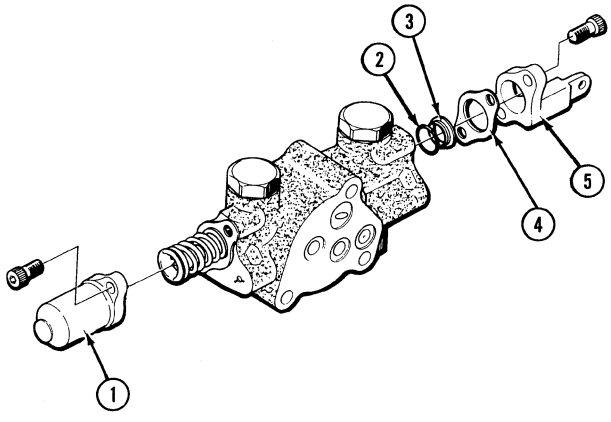

Figure 7
Remote Valve Disassembly

1. Cap
2. O-Ring
3. Wiper
4. Seal Plate
5. Bracket

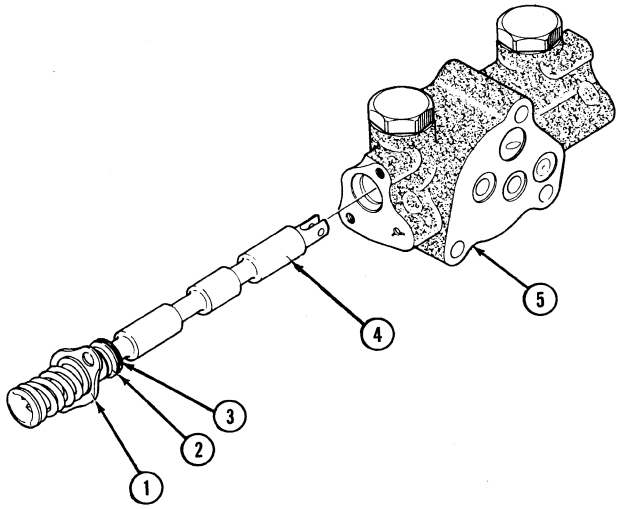

Figure 8
Remote Valve Disassembly

1. Seal Plate
2. Wiper
3. O-Ring
4. Spool
5. Valve Body

5. Remove the cap screw and remove the spring seats (2), spring (3), seal plate (4), wiper (5) and O-ring (6) from the spool (7), Figure 9.

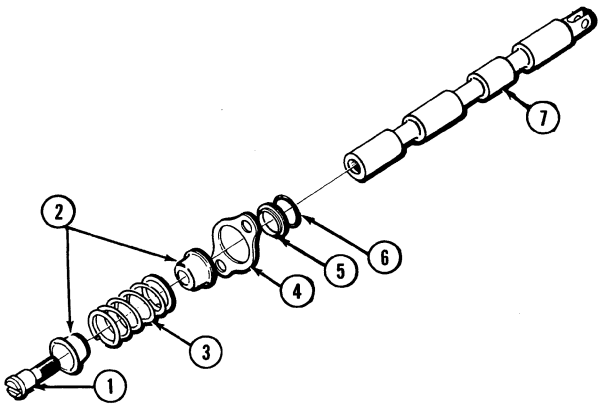

Figure 9
Remote Valve Disassembly

1. Cap Screw
2. Spring Seats
3. Spring
4. Seal Plate
5. Wiper
6. O-Ring
7. Spool

6. Remove the plug (1) and O-ring (2) in the bottom of the valve and remove the spring (3), and poppet (4), Figure 10.

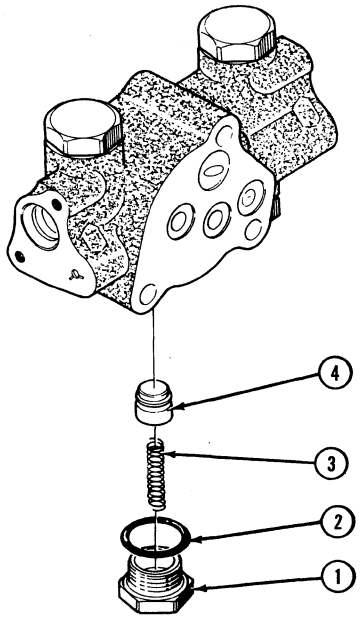

Figure 10
Load Check Valve Disassembly

1. Plug
2. O-Ring
3. Spring
4. Poppet

INSPECTION

Body and Spool

1. Inspect the grooves and passages of the body for foreign particles.
2. Inspect the spool for burrs and scratches. Superficial burrs and scratches can be removed by lapping with an oil stone.

   NOTE: *The body and spool must be replaced as an assembly if replacement is required.*

Poppet (Load Check Valve), Ring and Wiper

1. Inspect the top of the poppet for step wear, the circumference for burrs and scratches. Minor burrs and scratches can be removed by lapping with an oil stone.

O-Ring and Wiper

Replace All O-Rings and Wipers

ASSEMBLY

Assembly is the reverse of disassembly, taking care to observe the following precautions.

1. First install the O-ring (7), wiper (6) and seal plate (5) on the spool (8), Figure 11.
2. Install the bottom spring seat (3), spring (4), top spring seat (2), and cap screw (1) in this order, Figure 11.
3. Install the assembled spool in the valve housing.

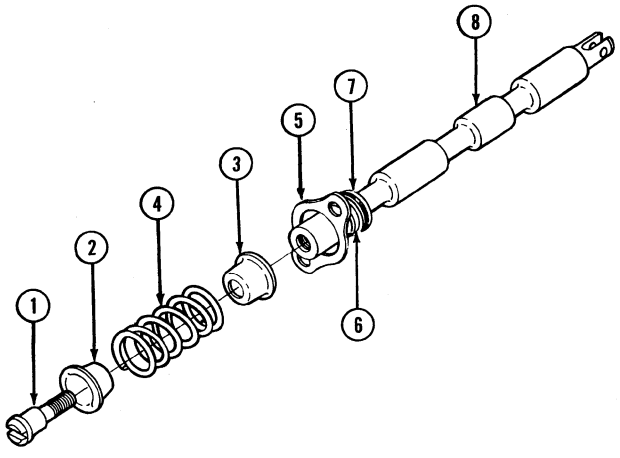

Figure 11
Remote Valve Assembly

1. Cap Screw
2. Top Spring Seat
3. Bottom Spring Seat
4. Spring
5. Seal Plate
6. Wiper
7. O-Ring
8. Spool

TROUBLE SHOOTING GUIDE

CONDITION	CAUSE	REMEDY
1. Implement will not lift with lever in lift position.	(1) Implement weight greater than maximum tractor lift capacity.	(1) Check weight of implement.
	(2). No delivery from hydraulic oil pump.	(2) Replace or repair the pump.
	(3) Relief valve pressure low.	(3) Adjust relief valve pressure.
2. Working response of implement too slow.	(1) Oil leak at relief valve seat.	(1) Repair relief valve.
	(2) Low volume of oil from oil pump.	(2) Replace or repair pump.
	(3) Clogged filter.	(3) Wash or replace.
	(4) Wrong hydraulic oil.	(4) Use M2C53A oil.
3. Implement leaks down in neutral position.	(1) Worn body and spool.	(1) Replace as an assembly.
	(2) Wrong hydraulic oil.	(2) Use M2C53A oil.
	(3) Hydraulic cylinder leaking inside.	(3) Replace seal parts.
	(4) Leak between valve and cylinder.	(4) Tighten fittings.
4. Control lever will not return to neutral automatically.	(1) Broken spring.	(1) Replace the spring.
	(2) Foreign particles in the sliding parts of valve body and spool.	(2) Clean and wash valve, replace hydraulic oil.

—FRONT PTO—

IMPORTANT: *These repair instructions Do Not cover front PTO units that are included with the implement.*

FUNCTION

Ford 1100 Tractor (Figure 12)

Power is transmittted from the drive shaft pulley (4) through a V-belt (3) to a lower sheave (6) and shaft to the magnetic clutch (1). The PTO, located under the tractor, is driven by a V-belt from the magnetic clutch pulley.

Ford 1300, 1500, 1700 & 1900 Tractors (Figure 13)

Power is transmitted from the drive shaft pulley (4) to a coupling (3) and shaft (2) to the magnetic clutch (1). The PTO, located under the tractor, is driven by a V-belt from the magnetic clutch pulley.

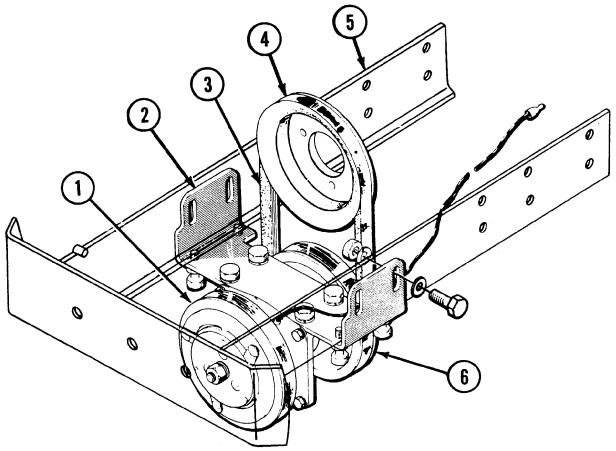

Figure 12
Front PTO (Ford 1100)

1. Magnetic Clutch & Sheave
2. PTO Support Bracket
3. V-Belt
4. Drive Shaft Sheave
5. Front Axle Support
6. Lower Drive Sheave

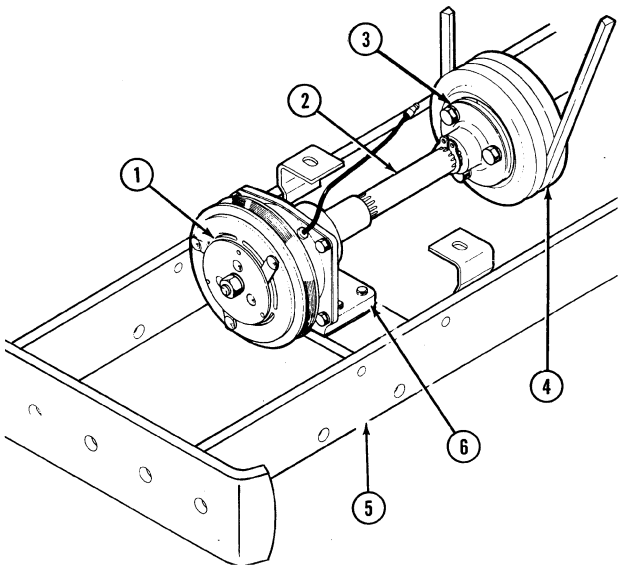

Figure 13
Front PTO Drive

1. Magnetic Clutch
2. Drive Shaft
3. Coupling
4. Crankshaft Drive Pulley
5. Front Wheel Support
6. PTO Support Bracket

All Ford 1000 Series Tractors

Operation of the magnetic clutch is shown in Figure 14. Current is supplied the field coil (3), locking the drive shaft to the magnetic clutch drive pulley (2). When current is turned off the magnetic clutch drive pulley stops while the armature plate (1) continues to turn. Current is provided by a switch on the instrument panel.

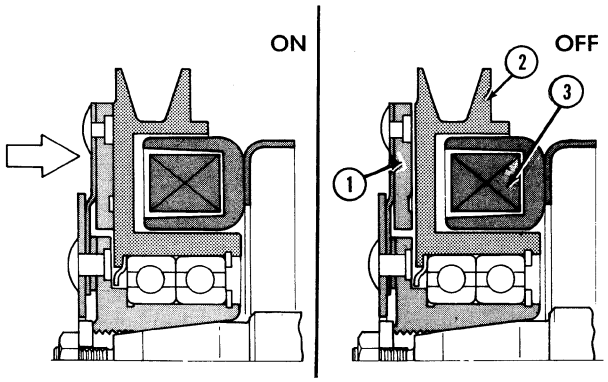

Figure 14
Magnetic Clutch

1. Armature Plate
2. Rotor (sheave)
3. Field Coil

REMOVING THE PTO

1. Disconnect the wire harness at the connector.

2. Remove the PTO support bracket (2), Figure 12 or (6), Figure 13 and remove the assembly from the tractor.

NOTE: *The Ford 1100 PTO drive has shims between the support bracket (1) and frame (2), Figure 15. When disassembling note the number and thickness of the shims to facilitate assembly. Remove the coupling (4), Figure 15, from the crankshaft.*

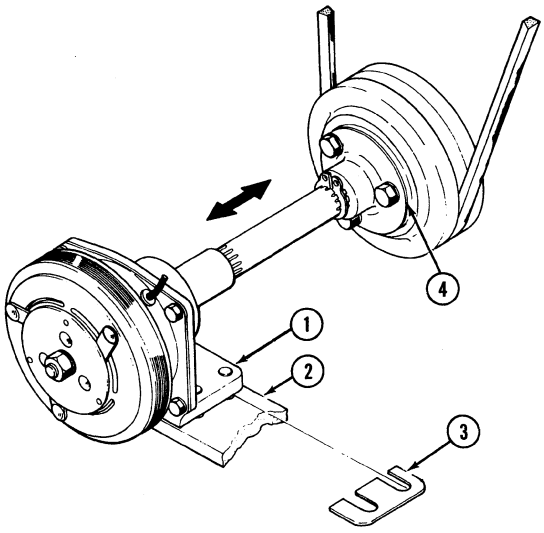

Figure 15
PTO Drive - Ford 1100

1. Support Bracket
2. Frame
3. Shims, 1.0 mm (.040 in.) and 0.5 mm (.020 in.) thick

DISASSEMBLING THE MAGNETIC CLUTCH FORD 1300-1900 TRACTORS

1. Remove the nut, lockwasher, flat washer and magnetic clutch (1), Figure 16.

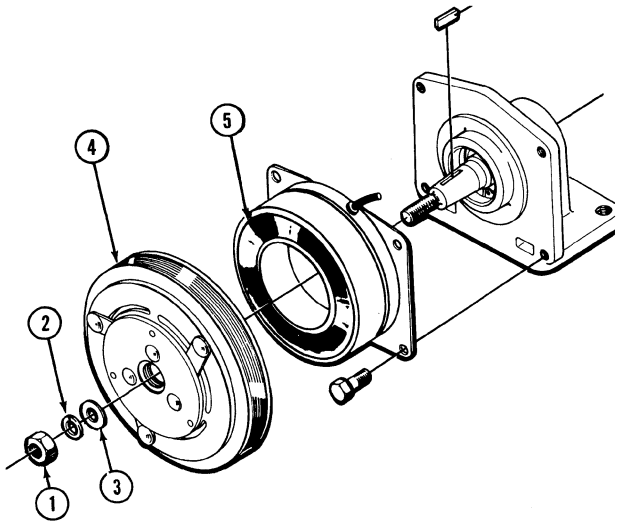

Figure 16
Magnetic Clutch Disassembled (Ford 1300-1900)

1. Nut
2. Lockwasher
3. Flat Washer
4. Magnetic Clutch
5. Field Coil

2. Unbolt and remove the field coil (5), Figure 16.

Ford 1100 Tractor

Disassembly is similar to the Ford 1300, 1500, 1700 & 1900 Tractors. See Figure 17.

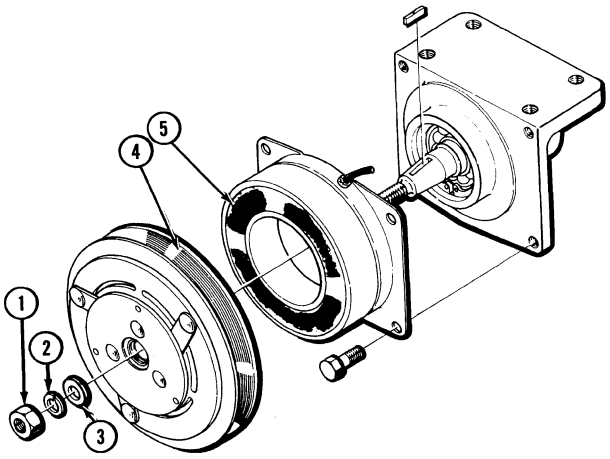

Figure 17
Magnetic Clutch Disassembled (Ford 1100)

1. Nut
2. Lockwasher
3. Flat Washer
4. Magnetic Clutch
5. Field Coil

DISASSEMBLING THE PTO SHAFT FORD 1300-1900 TRACTORS

1. Remove the two snap rings (1), Figure 18.

2. Drive out the shaft and bearing toward the front of the tractor.

3. Drive out the bearing (4) in the support bracket (3), Figure 18.

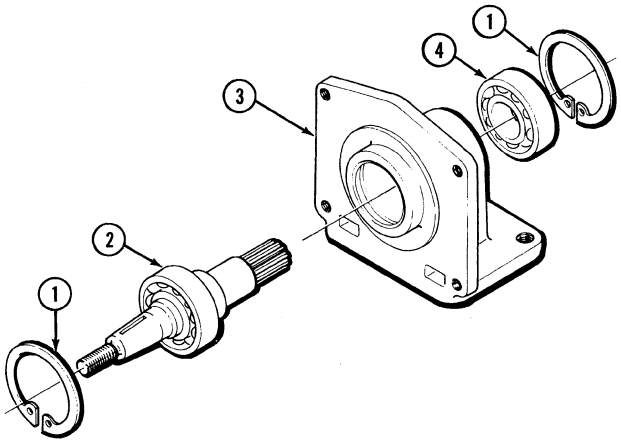

Figure 18
PTO Disassembled (Ford 1300-1900 Tractors)

1. Snap Ring (2)
2. Shaft and Bearing
3. Support Bracket
4. Bearing

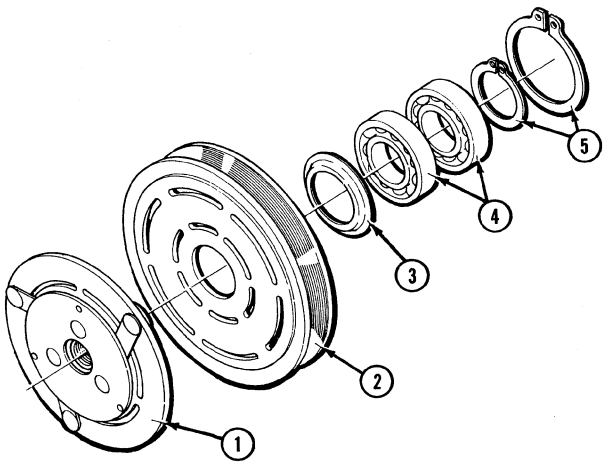

Figure 20
Magnetic Clutch Disassembled

1. Armature
2. Pulley
3. Dust Shield
4. Bearings
5. Snap Rings

INSPECTION

1. Inspect both bearings (2 and 4), Figure 19, for visible damage, wobble and noise when the bearings are turned.

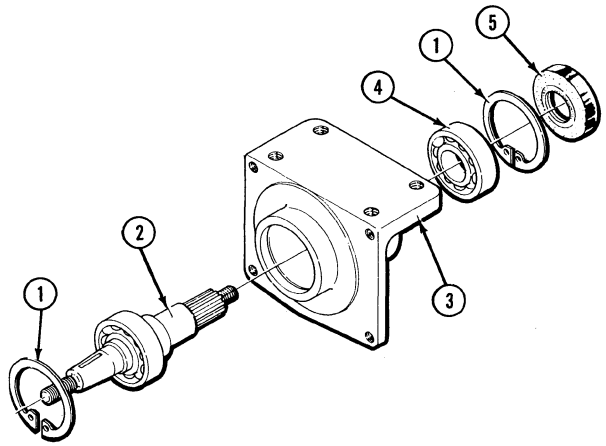

Figure 19
PTO Disassembled (Ford 1100 Tractor)

1. Snap Ring (2)
2. PTO Shaft and Bearing
3. Support Bracket
4. Bearing
5. Oil Seal

2. Measure the distance between the armature (1) and pulley (2), Figure 20. Clearance should be .014-.025 in. (0.35-0.65 mm).

3. Turn the pulley on its bearings. If excessive noise or wobble exists, replace the bearings (4), Figure 20 (to remove the bearings, remove snap rings (5), Figure 20, and remove the bearings from the armature shaft.)

ASSEMBLY

Assemble the PTO In reverse order of disassembly.

1. Grease the bearings before assembly.

2. Align the PTO shaft to the crankshaft with shims on the Ford 1300-1900 tractors. Refer to Figure 15.

3. Make sure the field coil wire is installed so it will not be caught in the rotating parts.

4. After assembly of the armature and pulley is complete, confirm that the pulley turns freely and evenly.

5. Connect the electrical wire and engage the PTO several times to assure that the magnetic clutch is operating properly.

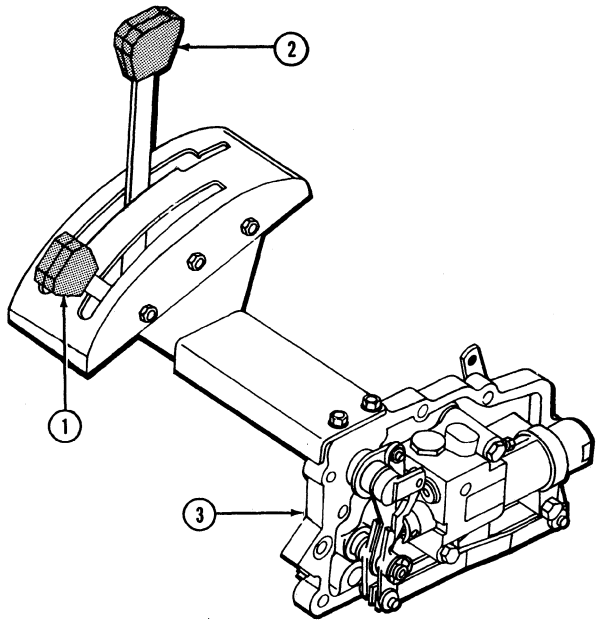

Figure 21
Hydraulic Control Quadrant and Valve

1. Draft Control Lever
2. Position Control Lever
3. Valve

DRAFT CONTROL

GENERAL

The main hydraulic system valve is located on the right side of the center housing near the operator's seat. A quadrant with draft control and position control levers is attached to the hydraulic valve. See Figure 21.

OPERATION

Oil Flow - Neutral Position (Figure 22)

Oil flows from the sump (3) through the oil pump (2), through the relief valve (1), to the control valve. In the control valve oil flows to the back of the shut-off spool (6) and positions the pilot spool (7) so oil will flow around the pilot spool (7) to sump. Oil on the cylinder side of the valve is held stationary by the check valve (8) and the lowering valve (5), thus maintaining the implement at a constant height.

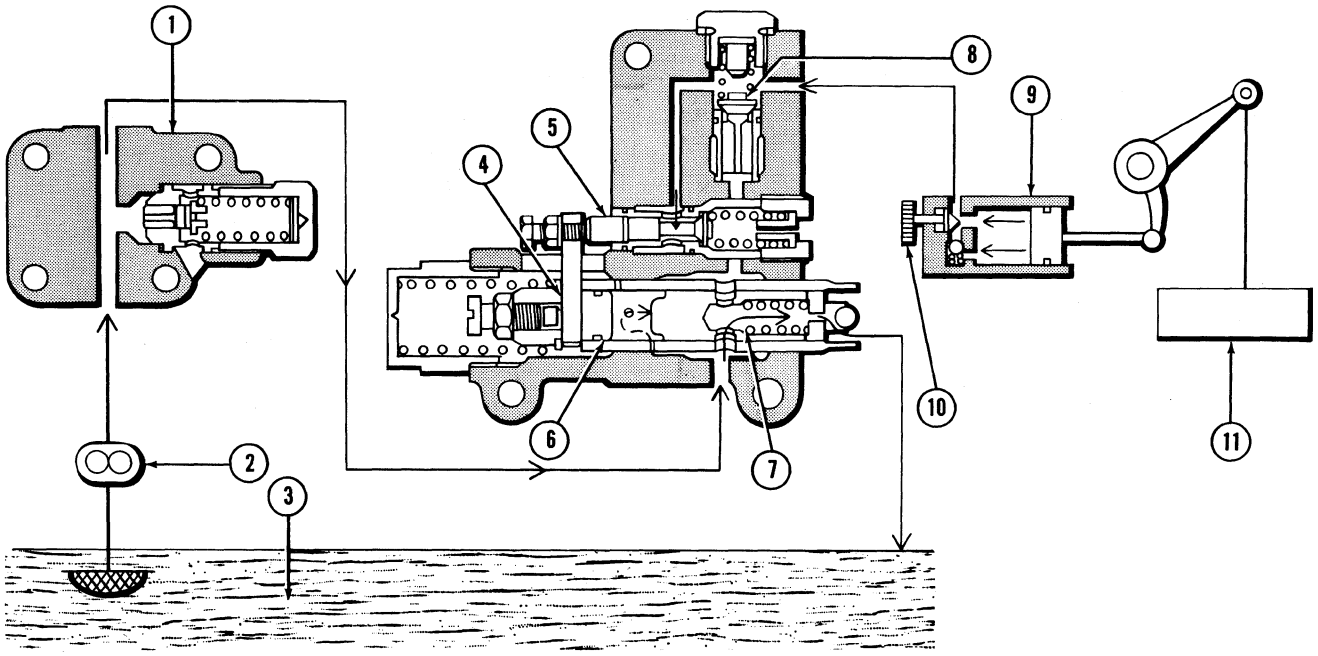

Figure 22
Hydraulic Oil Flow - Neutral Position

1. Relief Valve
2. Oil Pump
3. Sump
4. Control Lever
5. Lowering Valve
6. Shut-Off Spool
7. Pilot Spool
8. Check Valve
9. Remote Cylinder
10. Flow Control Valve
11. Implement

Lifting Position (Figure 23)

When the control lever (4) is moved to the lift position, the spool (7) moves to the position shown in Figure 23. Oil passes through the relief valve (1) and acts on the pilot spool (7) and check valve (8). Concurrently, the pilot spool is forced to close by the pilot spool spring (12). Since the spring pressure has more force than the oil pressure opposing the pilot spool, oil flows to the cylinder to lift the implement. When oil pressure in the system exceeds, 130 kg/cm^2 (1849 psi) on the 1100 Tractor or 150 kg/cm^2 (2133 psi) on the 1300-1900 Tractors, the relief valve (13) opens and oil is returned to the sump.

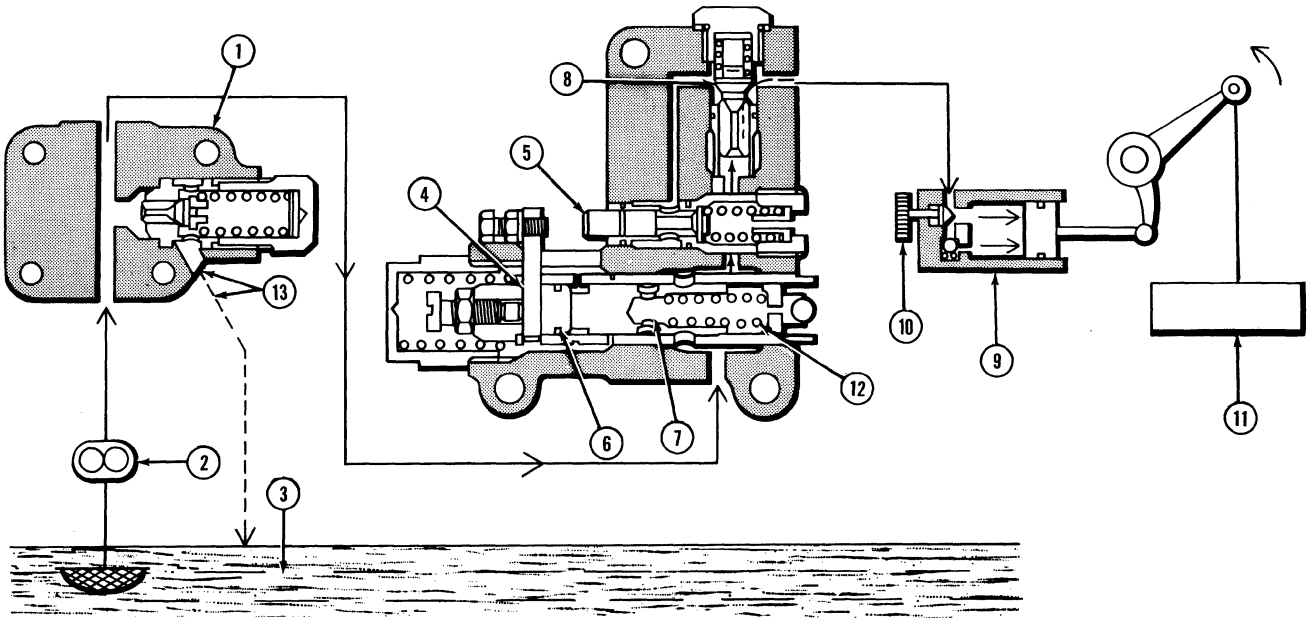

Figure 23
Hydraulic Oil Flow - Lifting Position

1. Relief Valve
2. Oil Pump
3. Sump
4. Control Lever
5. Lowering Valve
6. Shut-Off Spool
7. Pilot Spool
8. Check Valve
9. Remote Cylinder
10. Flow Control Valve
11. Implement
12. Pilot Spool Spring
13. Relief Valve Open

Lowering Position (Figure 24)

When the control lever (4) is shifted to the lowering position, the pilot spool (7) and lowering valve (5) move to the positions shown in Figure 24. Oil flows through the pilot spool (7) and returns to sump. Oil also flows from the implement (11), through the check valve (8), through the now open lowering valve (5), to the transmission sump (3).

Linkage System Position Control

1. **From Neutral to Lift Position (Figure 25)**

   When the position control lever (1) is moved to the lift position (arrow), cam A (2) is rotated between cam B (3) and the pilot spool (4), forcing the pilot spool into a lifting position and feeding oil to the lift cylinder.

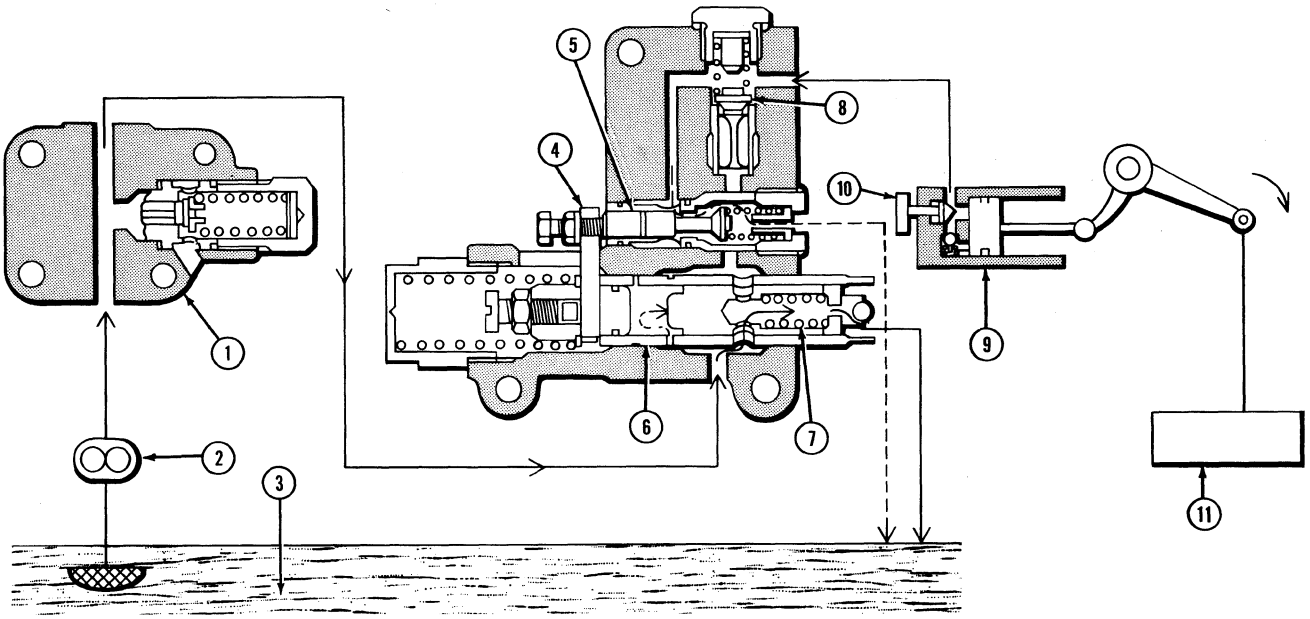

Figure 24
Hydraulic Oil Flow - Lowering Position

1. Relief Valve
2. Oil Pump
3. Sump
4. Control Lever
5. Lowering Valve
6. Shut-Off Spool
7. Pilot Spool
8. Check Valve
9. Remote Cylinder
10. Flow Control Valve
11. Implement

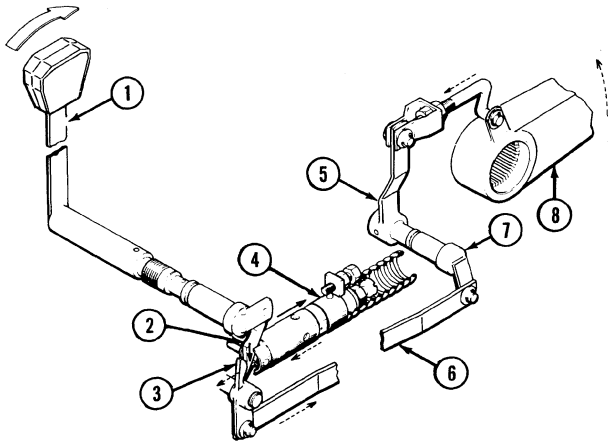

Figure 25
Linkage System - Position Control

1. Position Control Lever
2. Cam A
3. Cam B
4. Pilot Spool
5. Feedback Link
6. Connecting Rod
7. Control Shaft
8. Lift Arm

2. From Lift Position to Neutral (Figure 25)

When the lift arm (8) is raised the connecting rod (6) moves in the direction of the dotted arrow allowing the spring loaded pilot spool (4) gradually to return to neutral (dotted arrow), fixing the implement in position.

3. From Neutral to Lowering Position (Figure 25).

When the control lever (1) is moved to the lowering position (opposite of arrow), cam A pressure on the pilot spool (4) is relieved. Since the pilot spool is spring loaded it moves to a lowering position (dotted arrow), allowing the implement to lower.

When the control lever is moved to the limit of the lowering position, the implement will not receive hydraulic down pressure, but will float until a raise signal is received.

Linkage System - Draft Control

1. **Link Operation With a Compressive Force Received From the Top Link (Figure 26)**

   With the draft lever (1) set to operate (sufficient force to compress the responsive spring) and a strong compressive force applied to the top link (8), the draft feedback link (6), connecting rod (5), and cam A and B are moved in the direction of the solid arrow. This moves the pilot spool (4) to the lift position, causing oil to flow to the hydraulic cylinder to lift the implement.

2. **Link Operation With the Compressive Force Reduced.**

   When the implement is lifted as described in (1) above, and the tractive resistance of the tractor decreases, the compressive force of the top link decreases causing the draft feedback link (6), the connecting rod (5), and cams A and B to move in the direction of the dotted arrows. This relieves pressure on the pilot spool (4) and it is moved to the lowering position by the pilot spool spring.

   Lifting and lowering are repeated with the changing forces applied by the implement through the top link.

3. **Link Operation With Various Draft Control Settings (Figure 26)**

   Force applied to the top link by the implement moves cam B (3) back and forth. Cam A (2) is moved up or down by the draft control lever. As cam A is moved down, the pilot spool (4) is moved closer to its lift position and lifting takes place with a small signal to cam B. As cam A is moved up a greater signal is required at cam B to cause raising or lowering of the implement.

   Thus, adjusting the draft control lever down (pulling cam A (2) up), or up (pushing cam A (2) down), provides the appropriate tractive resistance of the implement to suit operating conditions.

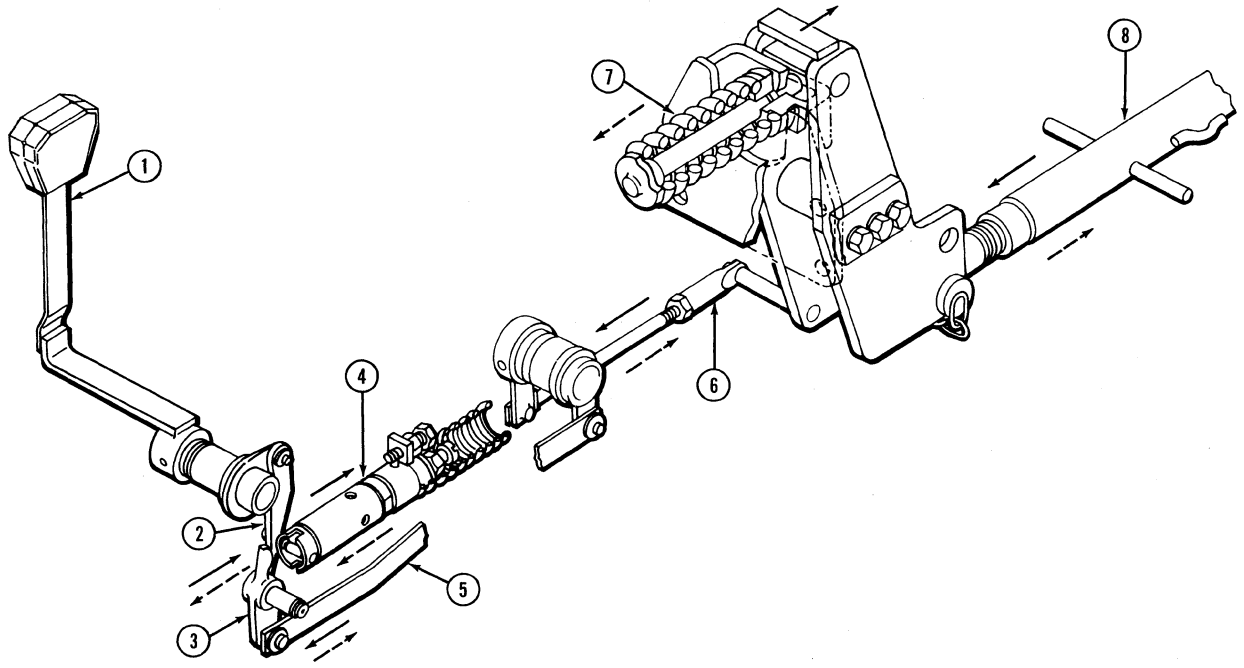

Figure 26
Linkage System - Draft Control

1. Draft Control Lever
2. Cam A
3. Cam B
4. Pilot Spool
5. Connecting Rod
6. Draft Feedback Link
7. Responsive Spring
8. Upper Link

4. Link Operation Using Both Position and Draft Control (Figure 27).

As illustrated in Figure 27, the resistance of the implement (sensitivity of implement to raising and lowering) is adjusted with the draft control lever (3).

If ground conditions remain constant (A), plow depth remains constant. If ground conditions become soft, tillage depth changes to (A^1) to maintain the resistance preset by the draft control lever. At this time the lift arm (5) drops from position (B) to (B^1), set by the position control lever (1). The lift arm (5) does not drop below (B^1) because oil in the hydraulic cylinder is retained as the pilot spool is shifted from the lowering position to the neutral position, thus limiting the distance the plow drops in the soft ground.

When the tractor passes the soft ground, pressure is applied on the responsive spring, activating cam B (3), (Figure 26) and lifting the plow.

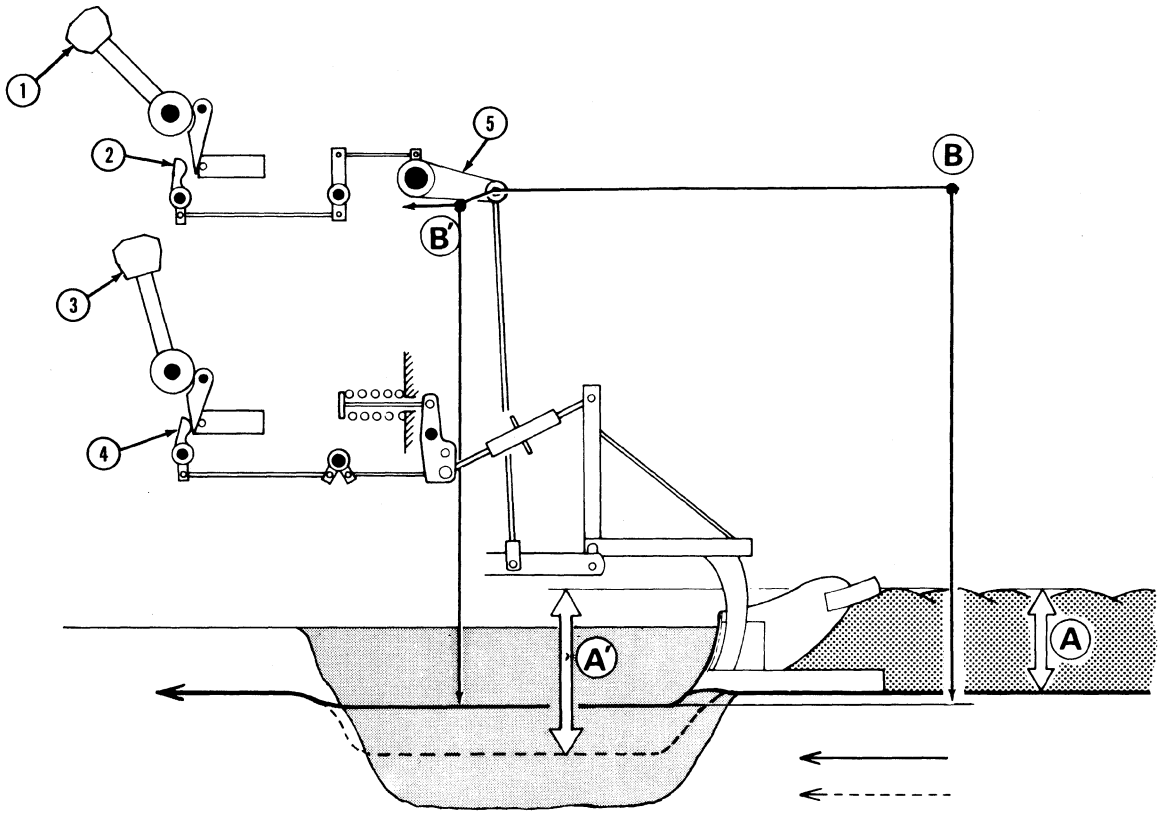

Figure 27
Linkage System - Position and Draft Control

1. Position Control Lever
2. Cam B
3. Draft Control Lever
4. Cam B
5. Lift Arm

5. Linkage with Cam B and Pilot Spool (Figure 28).

Two connecting rods, two cam B's and A's, one linked to position control and the other to draft control, both acting on the pilot spool, provide the mix control (combined draft control and position control action) described in paragraph 4 above.

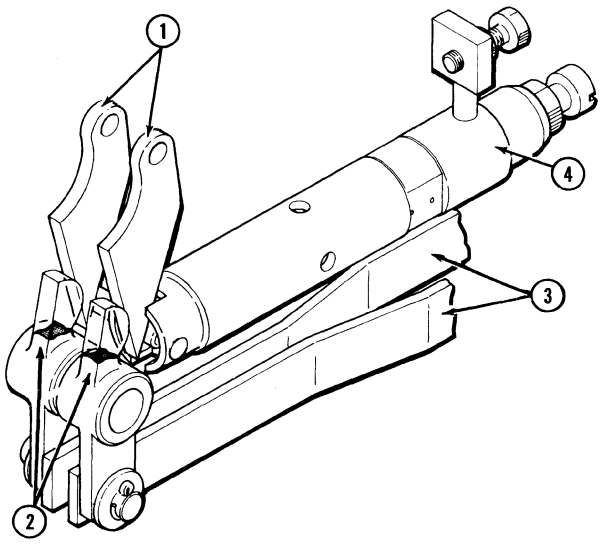

Figure 28
Dual Linkage

1. Cam A
2. Cam B
3. Connecting Rod
4. Pilot Spool

DISASSEMBLY

Cap & Spool (Figure 29)

1. Remove the cap (1) and spring (2), Figure 29.

2. Loosen the lock nut (4) and remove the screw (3) and plug (5) from the spool (8). Remove the spool from the valve body (6).

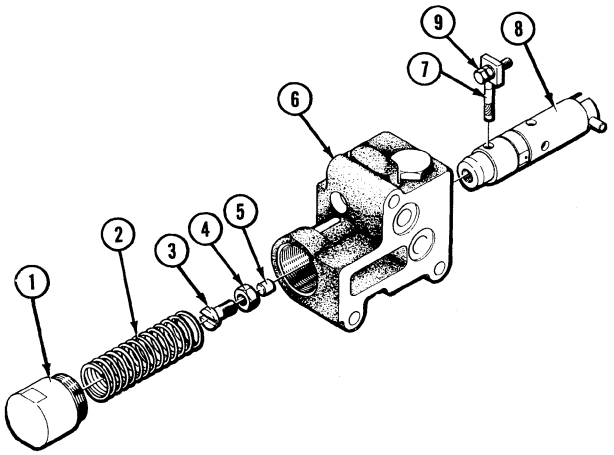

Figure 29
Disassembly of Control Valve

1. Cap
2. Spring
3. Screw
4. Locknut
5. Plug
6. Valve Body
7. Pin
8. Spool
9. Adjustment Bolt

3. Remove the pin (7).

NOTE: *Do not remove the adjustment bolt (9) from the pin if adjustment is not required.*

Lowering Valve (Figure 30)

1. Remove the plug (5) and take out the collar (4), spring seat (3), spring (2) and lowering valve (1).

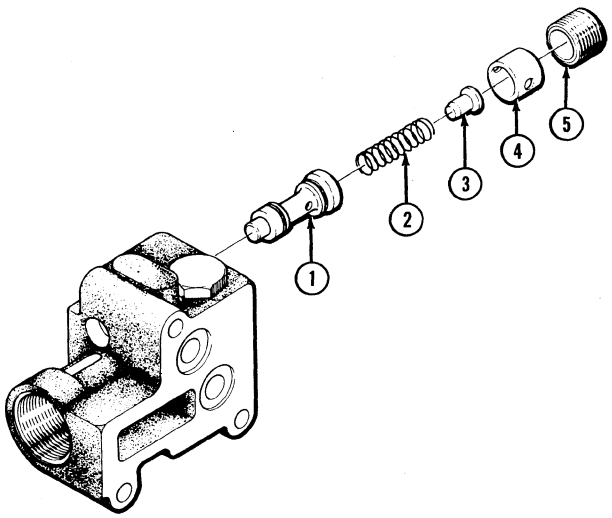

Figure 30
Removing Lowering Valve

1. Lowering Valve
2. Spring
3. Spring Seat
4. Collar
5. Plug

Check Valve and Bushing (Figure 31)

1. Remove the cap (1), spring seat (2), springs (3 & 4), and check valve (5).

2. Remove the bushing (6) from the housing (7).

Shut-Off Spool and Plug (Figure 32)

1. Remove the plug (1).

2. Push on the spring seat (7) and remove the pin (4) with a small driver.

3. Remove the spring seat (7), spacer (6), spring (5) and shut-off spool (2).

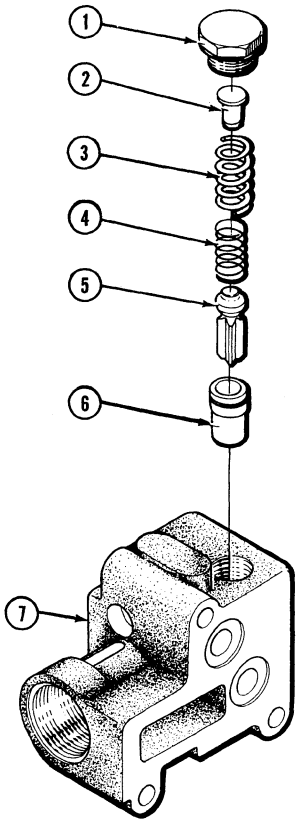

Figure 31
Removing Check Valve and Bushing

1. Cap
2. Spring Seat
3. Spring
4. Spring
5. Check Valve
6. Bushing
7. Valve Body

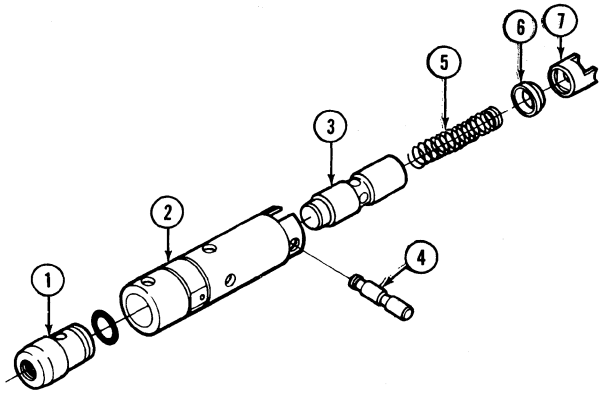

Figure 32
Shut-Off Spool

1. Plug
2. Spool
3. Shut-Off Spool
4. Pin
5. Spring
6. Spacer
7. Spring Seat

INSPECTION AND REPAIR

1. Check the grooves and passages of the valve housing and spool for foreign material. See Figure 29.

2. Check surfaces of all spools for burrs and scratches. Small imperfections can be corrected with an oil stone or by lapping.

   NOTE: *The spool and valve housing must be replaced together.*

3. Examine the check valve, Figure 31, for unevenness at the point end. Check for scratches in the sliding parts. Correct by lapping or replacing.

   NOTE: *Replace the check valve and bushing together.*

4. Replace all O-rings.

ASSEMBLY AND ADJUSTMENT

Assemble the valve and parts in reverse order to disassembly.

1. Torque Values

Part	Torque	
	Lbs. Ft.	Nm
Check Valve Cap	43	58
Lowering Valve Plug	18	24
Spool Cap	72	98

2. Adjusting the Position Control Linkage (Figure 33).

   (a) Loosen the rod locknuts (3).

   (b) Remove the pin (1) from the feedback link (5).

   (c) Start the tractor engine and set at 1000 to 1500 rpm.

   (d) Move the feedback link by hand in the direction of the arrow until the relief valve is heard to actuate. Then turn the locknut bracket one turn counterclockwise, extending the rod.

   (e) Secure the locknuts and the rod.

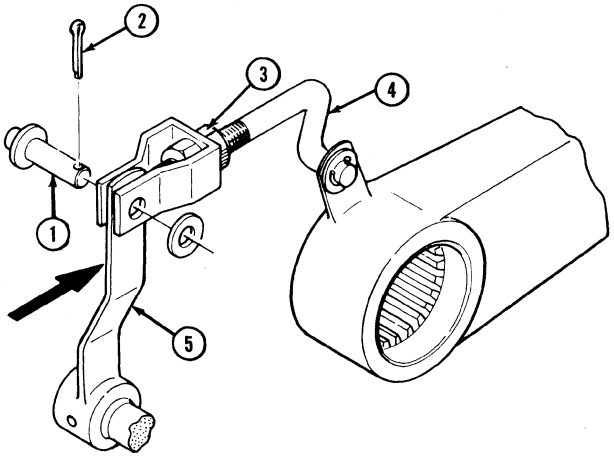

Figure 33
Adjusting Feedback Linkage

1. Pin
2. Cotter Pin
3. Locknut
4. Rod
5. Feedback Link

NOTE: *After the adjustment is completed, shift the position control lever from one extreme to another in the quadrant several times to be sure the relief valve does not actuate.*

3. Adjusting the Draft Control Linkage (Figure 34)

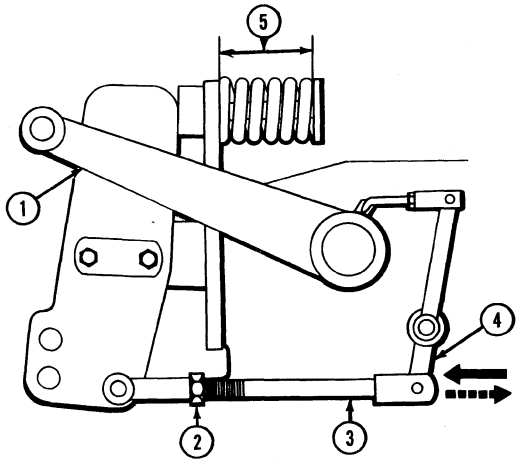

Figure 34
Adjusting Draft Control Linkage

1. Lift Arm
2. Locknut
3. Draft Feedback Link
4. Draft Feedback Lever
5. 96 mm (3.8 in.)

(a) After adjusting the position control linkage, set the position control lever in neutral.

(b) Set the draft control to the shallowest position.

(c) Loosen locknut (2) and disconnect link (3) from lever (4).

(d) Start the tractor engine and run at 1000 to 1500 rpm.

(e) Push the draft feedback lever in the direction of the solid arrow, raising the lift arm.

(f) Slowly return the draft feedback lever (3) in the direction of the broken arrow until the lift arm stops and the valve is in neutral.

(g) Lengthen the draft feedback lever two turns and attach the lever (4) to the link (3).

(h) Move the position control lever to the highest lift position and the draft control lever to the shallowest position.

(i) Move the position control lever to the down position. If the lift arm does not descend or descends slowly, extend the draft feedback link one more turn.

NOTE: *Be sure the control valve is fully open before making the above adjustment.*

4. *Adjusting the Position Control Lever*

Loosen the locknut, Figure 35, and adjust the bolt so the control lever has 10 mm (3/8 inch) play in the neutral position with the engine running 1000-1500 rpm.

NOTE: *Extending the adjusting bolt (2), Figure 35, increases play. Shortening the bolt decreases play.*

NOTE: *Insufficient control lever play will cause the implement to hunt in the neutral position.*

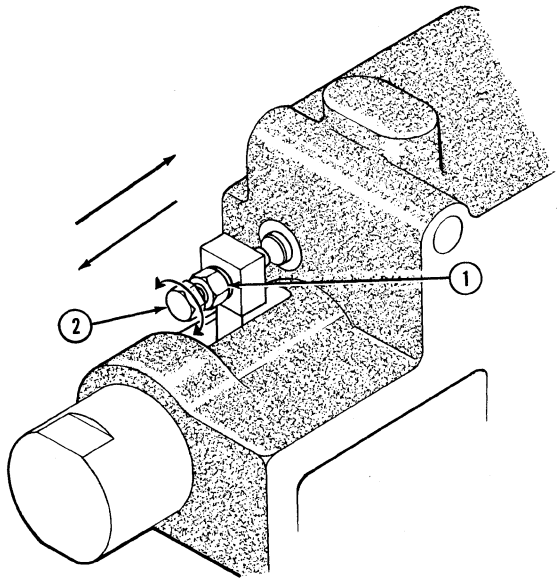

Figure 35
Adjusting Bolt - Control Lever
1. Locknut
2. Adjusting Bolt

RELIEF VALVE

Diassembly — Relief Valve (Figure 36)

1. Remove screw (1).
2. Remove spring, seat and shims.
3. Check the grooves and passages for foreign matter.

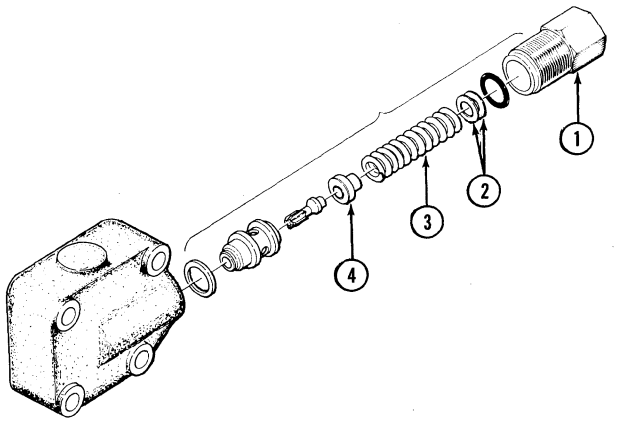

Figure 36
Relief Valve
1. Screw
2. Shims (0.2, 0.4, 1.0")
3. Spring
4. Spring Seat

4. Reassemble the relief valve as an assembly.

Setting the Relief Valve (Figure 37)

1. Remove the plug in the hydraulic cylinder head and fit a 0-3000 psi (0-200 kg/cm^2) pressure gauge.
2. Move the control lever to the lowering position and start the engine. Move the control lever to B, activating the relief valve.
3. Increase engine rpm to high idle speed. The pressure gauge should indicate 2133 psi (150 kg/cm^2).
4. Adjust the relief valve by adding or removing shims. Each 0.2 mm (.0078 in.) shim increases or decreases relief valve pressure about 57 psi (4 kg/cm^2).
5. After adjusting the relief valve pressure, return the control lever to position A.

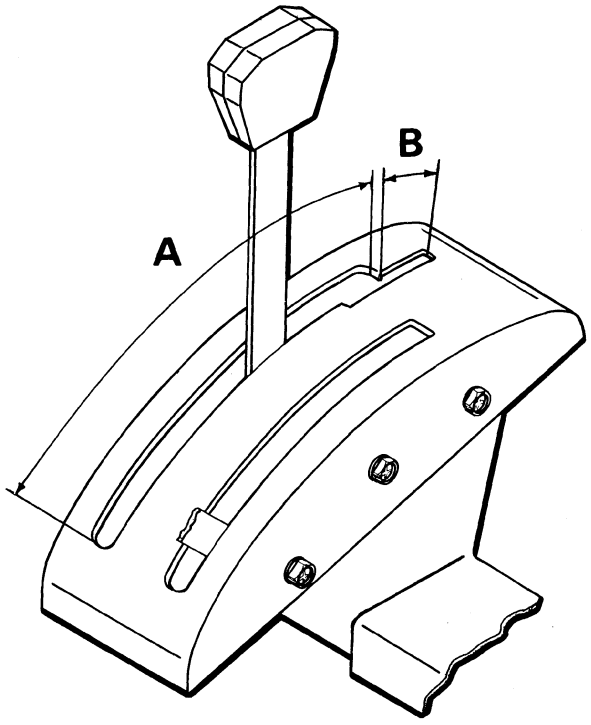

Figure 37
Setting Relief Valve
A. Position Control Range
B. Relief Valve Setting Range

—DRAFT CONTROL

TROUBLE SHOOTING

CONDITION	CAUSE	REMEDY
1. Implement does not lift.	(1) Implement too heavy. (2) Oil pump malfunction. (3) Incorrect (low) relief pressure.	(1) Use lighter implement. (2) Replace or repair oil pump. (3) Adjust relief valve pressure. (4) Examine spool for dust and siezure.
2. Implement lowers rapidly with control lever in neutral. Implement hunts for depth.	(1) Worn housing or spool. (2) Cylinder leaks. (3) Flaw on surface of check valve. (4) Lowering valve leaks.	(1) Replace assembly. (2) Replace packing, lines or piston as required. (3) Replace valve and bushing. (4) Replace valve assembly.
3. Implement lifts more slowly than specified.	(1) Sticking shut-off spool. (2) Cylinder leak. (3) Reduced volume from oil pump. (4) Plugged oil filter. (5) Wrong hydraulic oil.	(1) Replace. (2) Replace packing, liner or piston as required. (3) Replace oil pump if pump leaks. (4) Clean filter, replace. (5) Use proper hydraulic oil (M2C53A)
4. Oil temperature rises suddenly.	(1) Oil pump siezed. (2) Reduced volume from oil pump. (3) Relief valve working while implement is operating.	(1) Replace oil pump - check oil contamination. (2) Replace oil pump - check oil contamination. (3) Check position of control handle. (4) Faulty feedback link.
5. Abnormal noise.	(1) Pump siezed. (2) Insufficient pump intake. (3) Sucking air. (4) Wrong hydraulic oil.	(1) Replace the pump. (2) Clean the oil filter. (3) Inspect or replace suction pipe, filter or O-ring. (4) Inspect suction pipe for air intake. (5) Use proper hydraulic oil (M2C53A).
6. When the engine is stopped with the implement raised, the implement lowers too fast.	(1) See No. 2 above.	(1) See No. 2 above.
7. Implement lowers while tractor is running.	(1) Vibration causes control lever to move.	(1) Adjust friction spring on control lever.

FORD

TRACTOR REPAIR MANUAL

REMOTE VALVE . . . . . 1700—1900 SERIES WITH DRAFT CONTROL

POWER STEERING. . . 1700-1900 SERIES

SUPPLEMENT

FOREWORD

This supplement contains service and repair information not included in the 1000 Series Tractor Repair Manual, SE3771. It covers the information for remote valve service on draft control 1700 and 1900 tractors. Also included is the power steering for these tractors.