



FLOW CONTROL VALVE
M-19, L-19
Operator's Manual 9-50813

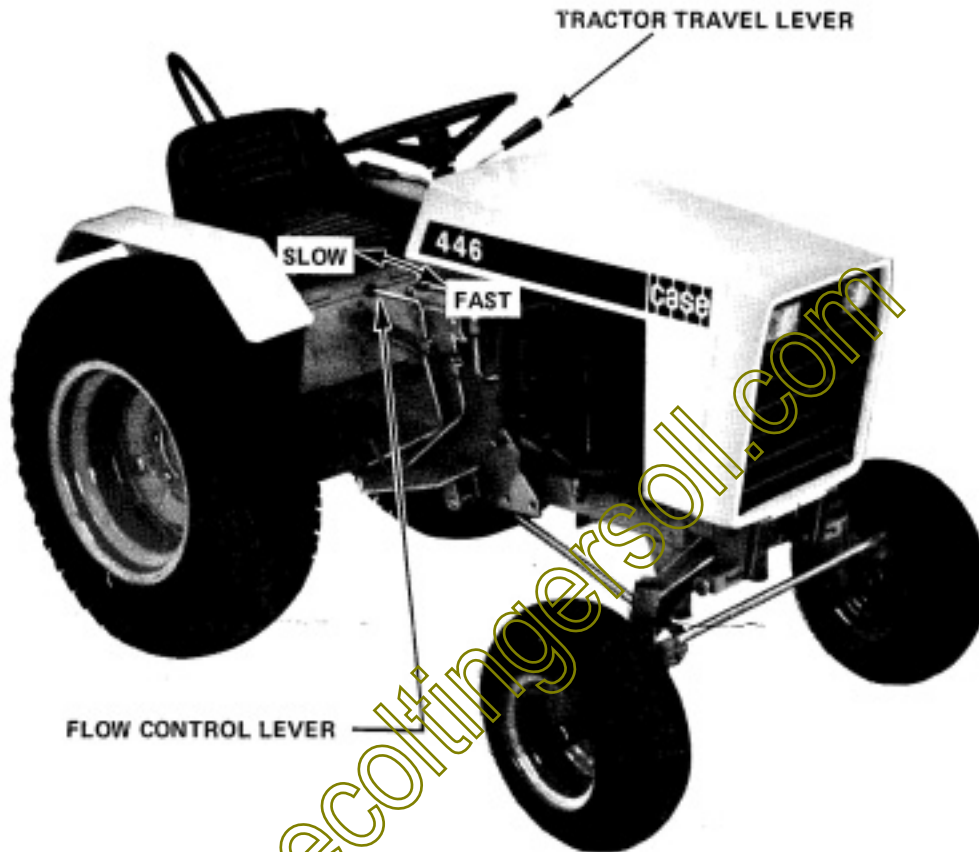
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INTRODUCTION

Read this manual and Operator's Manual supplied with your tractor carefully before operating your tractor with the Flow Control Valve installed.



Model 446 Tractor equipped with L-19 Flow Control Valve and J-17 Hydraulic PTO

The L-19 kit fits the following models:

- 220 - PIN 9656747 and After
- 222 - PIN 9658189 and After
- 224 - PIN 9667000 and After
- 226 - All
- 444 - Prior to PIN 9766840
- 446 - Prior to PIN 9770165

The M-19 kit fits the following models:

- 220 - PIN 9656747 and After
- 222 - PIN 9658189 and After
- 224 - PIN 9667000 and After
- 226 - All
- 444 - PIN 9661261 and After
- 446 - All
- 448 - All

The definitions "Right, Left, Front and Rear" as used throughout this manual relate to the tractor and flow control valve when the operator is seated facing forward in the normal operation position.

The flow control valve mounts on the right hand side of the control tower and is to be used in conjunction with either the J-17, K17 or L-17 Hydraulic PTO.

PURPOSE

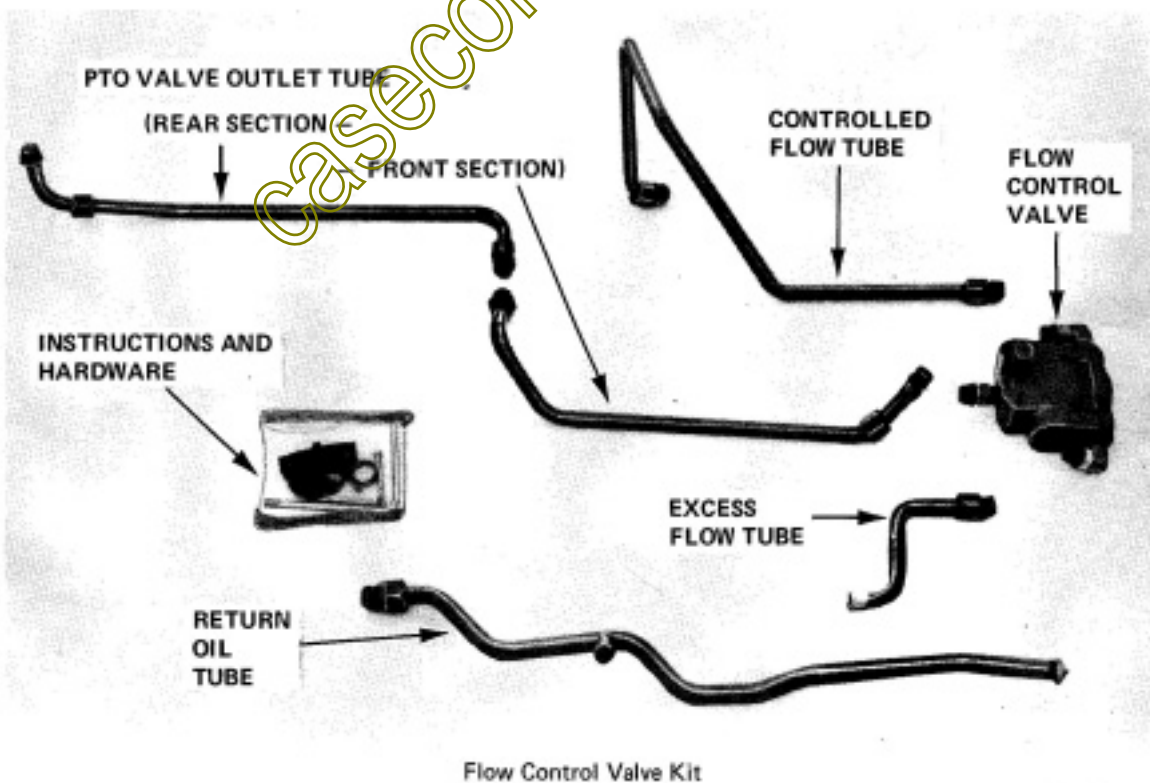
The optional flow control valve provides more precise ground speed control when the tiller is used in adverse soil conditions or for commercial users. This is accomplished by metering oil to the tractor travel valve. The amount of metered oil depends on the position of the control valve handle and does not change with pressure requirements at the tractor drive motor.

OPERATION

Ground travel speed should be kept slow to insure a good tilling job. Always till with the two speed transaxle in low range. Additional information on proper use of your rotary tiller can be found in your tiller owner's manual.

Proper use of the flow control valve is as follows:

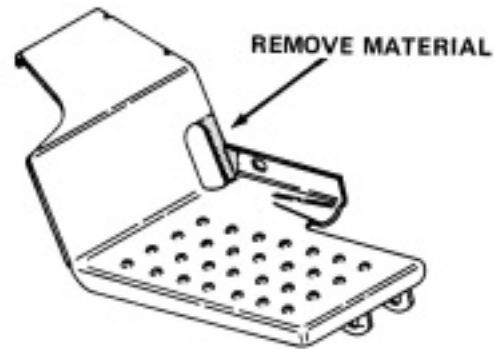
1. Position the flow control valve lever all the way rearward (off).
2. Position the tractor travel lever full forward (or reverse if desired).
3. Move the flow control valve lever forward to obtain the desired ground speed.
4. The tractor travel lever may be moved from forward to reverse or neutral with the flow control valve lever in any position.
5. The flow control valve lever may be left in the full speed position and travel speed and direction may then be controlled solely with the travel control lever.
6. The hydraulic attachment lift **WILL NOT** function with the flow control valve lever in the off position. The speed of the hydraulic attachment lift is directly related to the flow control valve lever position.
7. Maximum obtainable ground speed may be slightly less on a tractor equipped with the flow control valve.



INSTALLATION

Unpackage your Flow Control Valve Kit and all components as shown in the illustration.

Leave all fittings loose during the installation procedure for convenience. Be sure to tighten all fittings snugly before starting the tractor and check for leaks before putting the system under load.



R.H. Foot Rest

- c. Remove R.H. foot rest.

For M-19 only: See the illustration and cut out the material to the left of the brake rod slot in the R.H. foot rest. This will permit a route for the flow control tubes to the bottom of the tractor.

- d. Disconnect front end of brake rod.

3. After the reservoir has finished draining, wrap the socket plug threads with Teflon tape and re-install.

4. Remove the original "return oil" tube between the tractor travel control valve and the heat exchanger.

Closely observe the location of this tube between the frame and steering support before removal since the new tube must be installed in the same manner.

For L-19 only: The excess flow tube and 3" hose must be clamped to the brazed-in nipple on the new "return oil" tube before it is installed between the travel valve and heat exchanger. The hose clamps must be positioned so the screw heads will be accessible for final tightening after the flow control valve is installed.

For M-19 only: Do not install the short hose and excess flow tube until after the "return oil" tube is installed.

5. Install the new "return oil" tube, between the tractor travel control valve and the heat exchanger. To permit more room for installation of the return oil tube, disconnect the hydraulic lift lever. Remove the cotter pin from the bottom of the lever, lift the lever up.

6. Remove the pump to valve hose at the travel control valve inlet connection.



CAUTION: Hydraulic systems are highly pressurized. Escaping hydraulic oil, even in invisible pinhole leak, can penetrate body tissues causing serious injury. Use a piece of wood or cardboard when looking for leaks - never use the hands or other parts of the body.

Relieve hydraulic pressure before disconnecting circuits. When re-assembling, make absolutely certain that all connections are tight.

If injured by hydraulic oil escaping under pressure, see a doctor immediately. Serious complications may arise if medical attention is not given at once.

1. Drain the hydraulic system reservoir into a clean pan of at least 8 quart (6 l) capacity by removing the socket plug from the bottom of the tractor travel control valve. Be sure the travel lever is in the neutral position.

2. While the reservoir is draining:

- a. Remove the battery.



CAUTION: When removing a battery, always disconnect the (-) negative ground cable first.

When installing a battery, always connect the (-) negative ground cable last.

For L-19 only: Remove the solenoid and battery tray bolts. Lift and prop battery tray up on right side being careful not to stretch voltage-regulator wires.

- b. Remove the screws from the left side of rear seat support and install mounting bracket with PTO valve attached using new, longer screws provided.

7. Install the swivel elbow included with your PTO kit (attached to PTO valve outlet port fitting) to the travel control valve inlet fitting.
8. Connect the controlled flow tube to the travel control valve inlet fitting elbow. This tube is routed between the hydraulic motor tubes and tractor frame and up right side of tractor tower.
9. Connect the two piece PTO valve outlet tube as shown in tubing installation diagram. The rear section is routed between the High-Low range shift lever and chassis before going over the hydraulic drive motor and axle. The offset end is connected to the PTO control valve.

The front section (with the brazed on male connector) is routed between the hydraulic motor tubes and tractor chassis and up the right side of the tower.

For M-19 only: Two tubes are included for the PTO valve outlet tube rear section.

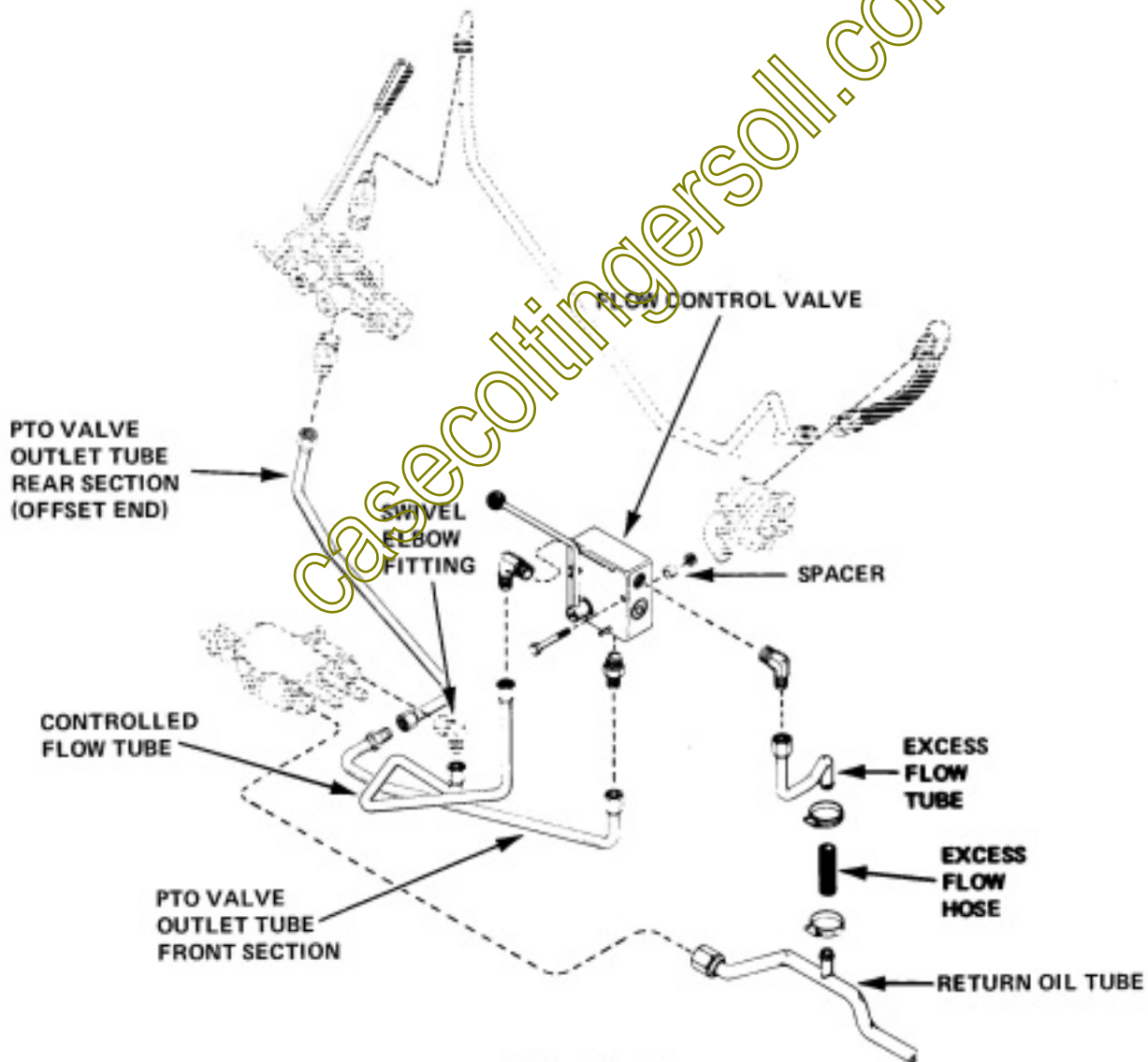
Use the shorter tube for installation on:

- 220, 222, 224, 226 - All
- 444 - before S/N 9766840
- 446 - before S/N 9770165

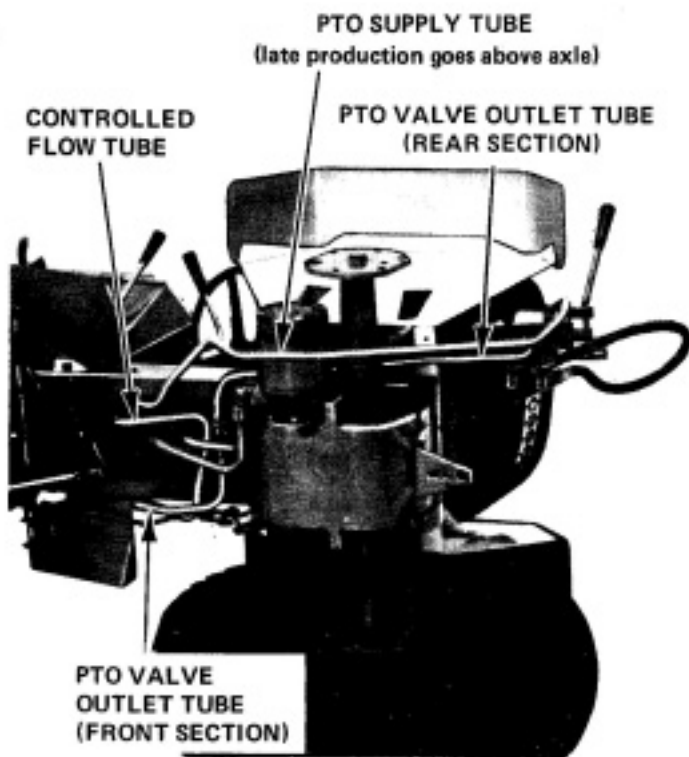
Use the longer tube for installation on:

- 444 - S/N 9766840 and after
- 446 - S/N 9770165 and after
- 448 - All

10. For L-19 only: Install the flow control valve temporarily to the tubes so its top is parallel to the bend in the side tower.



Tubing Schematic



Tubing Installation

For M-19 only: Install the mounting bracket on the flow control valve before you install the tubes to the valve. The mounting bracket must protrude above the flow control valve with the bolts heads to the inside.

11. Mark the bolt hole locations by inserting one of the bolts through each hole in turn and tapping lightly.
12. Remove the valve and drill two 9/32" holes for the mounting bolts. Be careful to keep all drill chips out of open tube ends or hydraulic areas.

For L-19 only: Also be careful to avoid drilling into the oil reservoir. A wood or metal shield should be placed between the tower side and oil reservoir while drilling.

NOTE: Insert R.H. battery tray bolts before installing flow control valve.

13. For L-19 only: Install the flow control valve using the two 1/4" x 2-1/2" bolts and spacers between the valve and side tower.

For M-19 only: Install the flow control valve mounting bracket using the nuts and bolts provided.

Reconnect all three tubes to the flow control valve. Torque to 8 pound foot (10 Nm). Over tightening may cause the valve to bind.

14. Reinstall the brake rod and R.H. foot pad.
15. Connect the PTO valve inlet tube from the pump outlet hose to the PTO valve inlet (upper) port.

If a J-17 PTO kit is installed, this tube will pass under the hydraulic motor and axle.

If a K or L-17 PTO kit is installed this tube will pass above the hydraulic motor and axle and between the hydraulic motor tubes and tractor chassis.

16. Tighten all fittings and clamps.
17. Reinstall battery tray, battery and solenoid.
18. Refill hydraulic reservoir.

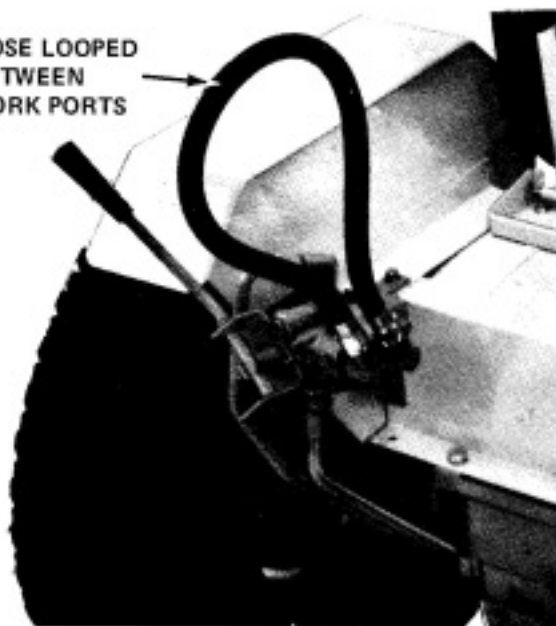
Consult your tractor operator's manual for proper oil type and level.

IMPORTANT: Check all hydraulic fittings for tightness before starting engine.

Be sure pump outlet hose does not interfere with or contact steering gear or travel lever.

VERY IMPORTANT: If the tiller is not being installed at this time, one tiller hose must be looped between the hydraulic PTO valve ports. Failure to observe this procedure will result in oil loss (ports left open) or pump damage (ports plugged) if the valve is actuated.

HOSE LOOPED BETWEEN WORK PORTS



J-17 Hydraulic PTO