John Deere 4510, 4610, 4710 Compact Utility Tractors Diagnostic and Repair Technical Manual (tm1986)

Fuel and Air System Operation

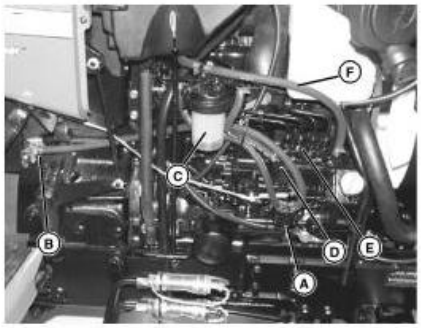
Function:

Fuel system supplies fuel to injection nozzles.

The air intake system filters and supplies air needed for combustion.

Theory of Operation:

Fuel System:



A mechanical fuel transfer pump (A) draws fuel from the tank outlet (B). The low pressure fuel from the fuel pump flows through the filter/water separator (C) to the fuel injection pump inlet (D). The injection pump then directs high pressure fuel through the injector lines (E) for combustion. Excess fuel is returned, along with fuel from the injectors, through the return line (F) to the fuel tank.

If the unit runs out of fuel, there are two air bleed lines that allow air to escape from the top of the filter and the injection pump. These two lines allow the system to be self bleeding.

The engine speed is controlled by the throttle lever and rod. The rod is connected to the injection pump governor control lever. The fuel shutoff solenoid controls the injection pump shutoff shaft. When the solenoid is retracted (key in the START or ON position), the engine can be started. When the key is turned off, return springs on the shutoff shaft, extend the solenoid, moving the shutoff lever to the [illegible]. The solenoid also closes if the machine is operated in an unsafe condition. See "Engine Shutoff [illegible]

The injection pump [illegible] nozzles.

The injection nozzle prevents [illegible] el into the combustion chamber. Injection [illegible]

A small amount of fuel leaks past the nozzle valve to lubricate the fuel injection nozzle. This leakage combines with excess fuel from the injection pump and is returned to tank. Any air in the fuel system is bled out with return fuel to the fuel tank.

A fuel level sensor mounted in the fuel tank informs the operator of the fuel level.

Air Intake System:

Covers: 4510,4610,4710

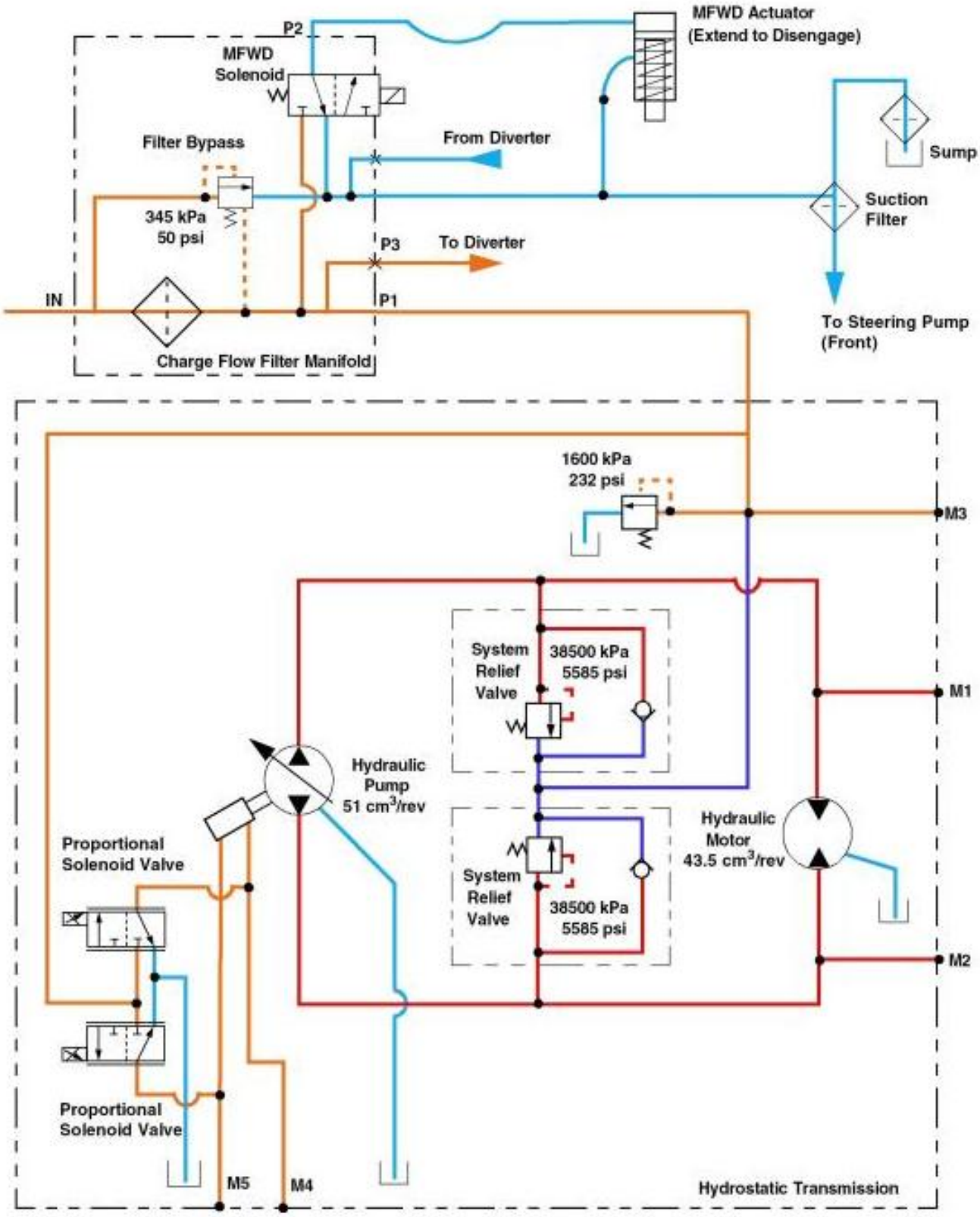
Type: Service Manual
Language: English
Pages: 1236
Format: PDF
Features: Bookmarked, searchable, printable
Compatibility: Windows/Mac/Tablet/Mobile
This service manual contains important information for the maintenance, troubleshooting and servicing of the **John Deere 4510, 4610, 4710 Compact Utility Tractors Diagnostic and Repair Technical Manual (tm1986)**

In this manual you will find detailed specifications, illustrations, schematics, diagrams and step-by-step procedures to properly service and diagnose the machine to the manufacturer's standards.

Contents:

- General Information
- Specifications
- Serial Number Location
- Engine Specifications
- Engine Diagnostics
- Engine Tests and Adjustments
- Engine Repair
- Power Train
- Transmission
- Axles
- Differential
- PTO
- Hydraulic System
- Electrical System
- Electrical Tests and Diagnostics
- Wiring Diagram / Schematic
- Ignition and Charging
- Steering
- Brakes
- Wheels
- Operator's Platform
- Body Panels
- Disassembly and Assembly
- Diagnostics, Tests and Adjustments
- Troubleshooting
- and much more...

Please note this manual is in **downloadable PDF format only.** If you have any questions about this product or would like to request sample pages, please contact us and reference the product name or SKU.


MFWD Actuator
(Extend to Disengage)
P2
MFWD
Solenoid
Filter Bypass
From Diverter
Sump
345 kPa
50 psi
Suction
Filter
P3
To Diverter
IN
P1
To Steering Pump
(Front)
Charge Flow Filter Manifold
1600 kPa
232 psi
M3
System
Relief
Valve
38500 kPa
5585 psi
M1
Hydraulic
Pump
51 cm³/rev
Hydraulic
Motor
43.5 cm³/rev
Proportional
Solenoid Valve
System
Relief
Valve
38500 kPa
5585 psi
M2
Proportional
Solenoid Valve
M5
M4
Hydrostatic Transmission

PTO Clutch and Brake Theory of Operation

Function:

The PTO clutch provides a means for disengaging the PTO output shaft from the engine. The PTO brake is provided to positively stop the rotation of the PTO system when the PTO clutch is disengaged. The PTO clutch and PTO brake work simultaneously. Both mid and rear Toes are affected by the operation of the PTO clutch and PTO brake.

Theory:

The PTO clutch (A) and PTO brake (B) are engaged or disengaged by the operator via the S5 switch on the control panel. This switch operates the Y4 PTO solenoid located on the valve mounted on the right side of the rear case.

The PTO brake contained inside the housing of the PTO clutch/brake unit is a spring loaded multi-plate wet brake and is normally engaged, preventing the PTO drive shaft (C) from rotating. The PTO clutch is a multi-plate wet clutch and is normally disengaged.

When the Y4 PTO solenoid is energized, pressure oil flows behind the piston (D) in the PTO clutch housing. Piston action compresses the PTO spring and applies pressure to the clutch pack; at the same time releasing pressure on the interlock pins (E) and disengaging the PTO brake (B). Pressure applied to the clutch pack locks the disks (splined to the PTO hub (F)), to the friction plates (locked to the clutch housing). Power is transferred from the input shaft to the PTO hub, through the clutch plates and disks, to the clutch housing, and finally to the PTO drive shaft. A brake lock pin (G) allows free rotation in one direction to aid in aligning the splines of an attachment drive shaft during hook-up.