SERVICE MANUAL

T3.60F / T3.70F / T3.80F

Tractor

Part number 51517507
English
July 2018

© 2018 CNHI International. All Rights Reserved.

Order the manual at mid-west-tech.com >

Contents

INTRODUCTION

Engine 10

[10.001] Engine and crankcase 10.1

Clutch 18

[18.110] Clutch and components 18.1

Transmission 21

[21.114] Mechanical transmission 21.1

[21.130] Mechanical transmission external controls 21.2

[21.112] Power shuttle transmission 21.3

[21.120] Gearbox 21.4

[21.160] Creeper 21.5

Four-Wheel Drive (4WD) system 23

[23.101] Mechanical control 23.1

[23.202] Electro-hydraulic control 23.2

[23.314] Drive shaft 23.3

Front axle system 25

[25.100] Powered front axle 25.1

[25.102] Front bevel gear set and differential 25.2

[25.108] Final drive hub, steering knuckles, and shafts 25.3

Rear axle system 27

[27.100] Powered rear axle 27.1

[27.106] Rear bevel gear set and differential 27.2

[27.120] Planetary and final drives 27.3

Hydrostatic drive 29

[29.300] Rear hydrostatic transmission 29.1

Power Take-Off (PTO) 31

MidWestTech | New Holland T3.60F, T3.70F, T3.80F Tractor Service Manual | Publica... Order the manual at mid-west-tech.com >

[31.101] Rear mechanical control 31.1
[31.225] Clutches 31.2
Brakes and controls 33
[33.202] Hydraulic service brakes 33.1
[33.110] Parking brake or parking lock 33.2
[33.220] Trailer brake hydraulic control 33.3
Hydraulic systems 35
[35.525] Auxiliary hydraulic valves and lines 35.1
[35.100] Main lift system 35.2
[35.162] Front hitch cylinders and lines 35.3
Steering 41
[41.101] Steering control 41.1
[41.216] Cylinders 41.2
Wheels 44
[44.511] Front wheels 44.1
Electrical systems 55
[55.000] Electrical system 55.1
[55.100] Harnesses and connectors 55.2
[55.201] Engine starting system 55.3
[55.301] Alternator 55.4
[55.302] Battery 55.5
[55.013] Engine oil system 55.6
[55.512] Cab controls 55.7
[55.408] Warning indicators, alarms, and instruments 55.8
[55.DTC] FAULT CODES 55.9
Platform, cab, bodywork, and decals 90
[90.110] Operator platform less cab 90.1

MidWestTech | New Holland T3.60F, T3.70F, T3.80F Tractor Service Manual | Publica... Order the manual at mid-west-tech.com >

Battery - Static description

Relative density

The relative density of the battery electrolyte shows the charge level of the battery. When the battery is fully charged, the relative density of the electrolyte, at **25 °C** (**77 °F**), is at least 1.280.

Alternatively, approximate charge can be measured using a digital voltmeter (+/- **0.01 V**) as follows:

Less than	**10.5 V** Unusable battery*
Less than	**11.8 V** Flat battery
Less than	**12.3 V** Half-charged
More than	**12.6 V** Fully-charged

*See notes to paragraph TESTS for instructions on how to recuperate a slightly sulphurize battery.

Battery voltage must be registered on a flat battery considering the following:
A) The battery must be flat for at least **4 h**.
B) If the vehicle has been used recently, or if the battery has been charged recently, switch the headlights on for **2 min**.

When a battery is flat, the sulfuric acid in the electrolyte combines chemically with the plates and this decreases the relative density of the solution.

A battery densimeter will determine the relative density of the electrolyte in an element. A reduction in the amount of sulfuric acid in the solution will show the degree of charge of that element.

The lower the temperature at which the battery operates, the more necessary it is to keep the battery fully charged. For example, a battery with a relative density of 1.225 at **27 °C** (**80.6 °F**) can start the engine at mild outside temperatures but might not do so at lower temperatures because of lower battery performance.

Below table, shows the effect of temperature on battery performance.

Temperature	Fully charged battery performance
25 °C	100%
-4.5 °C	82%
-24.0 °C	64%
-27.5 °C	58%
-31.0 °C	50%
-34.5 °C	40%
-37.5 °C	33%

Maximum battery life can be obtained by paying the right attention and by carrying out regular checks. The energy capacity output must not be exceeded by constant overload and charging requirements must be respected.

MidWestTech | New Holland T3.60F, T3.70F, T3.80F Tractor Service Manual | Publica... Order the manual at mid-west-tech.com >

3688 (DTC 11C-02) - Water in fuel sensor or sensor circuit failure

Control Module: ECU

NOTE: *This fault code is for the Water in Fuel switch with black connector housing.*

Context:
The water in fuel switch **S-9102** provides a diagnostic self-test signal (less than **3.9 V** for **2.5 +/- 20% s**) at key-ON. If the Engine Control Unit (ECU) **A-9000** does not sense the diagnostic self-test signal, this fault will occur and there will be no monitoring of water content in the fuel supply.

Cause:
The ECU **A-9000** has not received an acceptable water in fuel switch **S-9102** self-test signal.

Possible failure modes:

1. Faulty water in fuel switch **S-9102** circuit wiring, damaged.
2. Faulty water in fuel switch **S-9102**, internal failure.
3. Faulty ECU **A-9000**, software.

Solution:

1. Verify this fault code is still present and in an active state.

   Use the Easy Engine software provided on the Electronic Service Tool (EST) to check the fault status.

   A. If the fault is still present and active, continue with Step **2**.

   B. If the fault is no longer present or is in an inactive state, Continue with Step **7**.
2. Use the EST to check for related faults that may have caused this fault to occur.

   A. If any other faults that may have caused this fault to occur are active, resolve those faults first and then return to this fault.

   B. If no other faults are active,continue with Step **3**.
3. Check the water in fuel switch **S-9102** for the initial self-test voltage pulse.

   Carefully back probe the water in fuel switch **S-9102** at connector **X-9125 (Receptacle) pin 1**.

   With the help of an assistant, use a multimeter to perform the following test at Key-ON:

From	To	Value
X-9125 (Receptacle) pin 1	Chassis ground	There should be less than **3.9 V** for **2.5 +/- 20% s**.
NOTE: *The signal line should switch to battery voltage after the self-test period.*		

   A. If the self-test is successful, continue with Step **4**.

   B. If the self-test is not successful, the water in fuel switch **S-9102** has failed internally. Replace the switch.
4. Check for open, short and grounded circuit conditions in the water in fuel switch **S-9102** circuit.

   Disconnect the water in fuel switch **S-9102** at connector **X-9125**.

   Disconnect the engine harness 1 (EN1) from the ECU **A-9000** at connector **X-9122**.

   With the key switch in the OFF position, use a multimeter to perform the following tests, on the engine harness 2 (EN2) from :

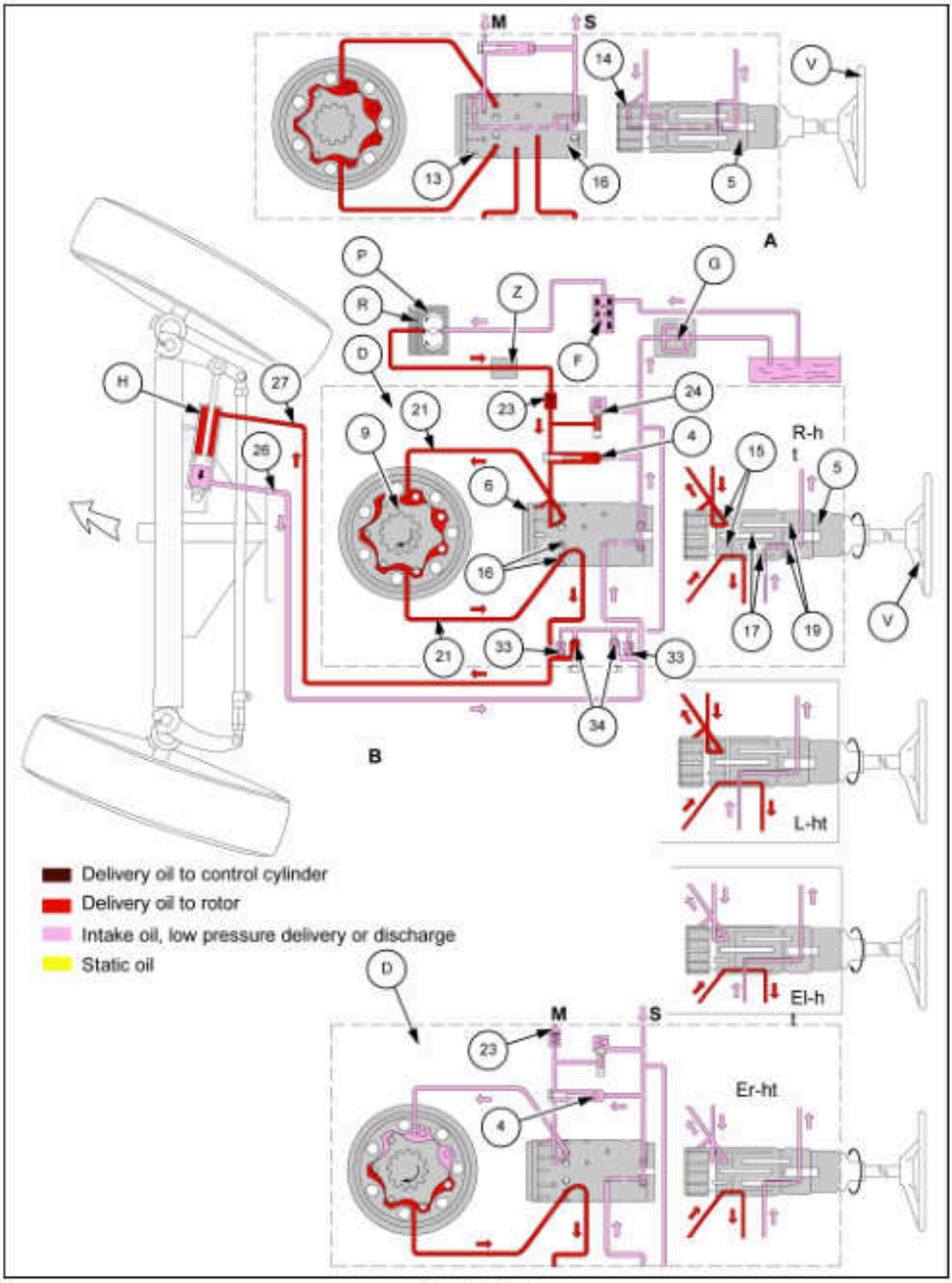
MidWestTech | New Holland T3.60F, T3.70F, T3.80F Tractor Service Manual | Publica... Order the manual at mid-west-tech.com >

Wiring harnesses - Electrical schematic sheet 15 ANALOG DIGITAL INSTRUMENT CLUSTER (ADIC) 1 (55.100.DP-C.20.E.15)

Wiring harnesses - Electrical schematic sheet 15 ANALOG DIGITAL INSTRUMENT CLUSTER (ADIC) 1 (55.100.DP-C.20.E.15)

MidWestTech | New Holland T3.60F, T3.70F, T3.80F Tractor Service Manual | Publica... Order the manual at mid-west-tech.com >

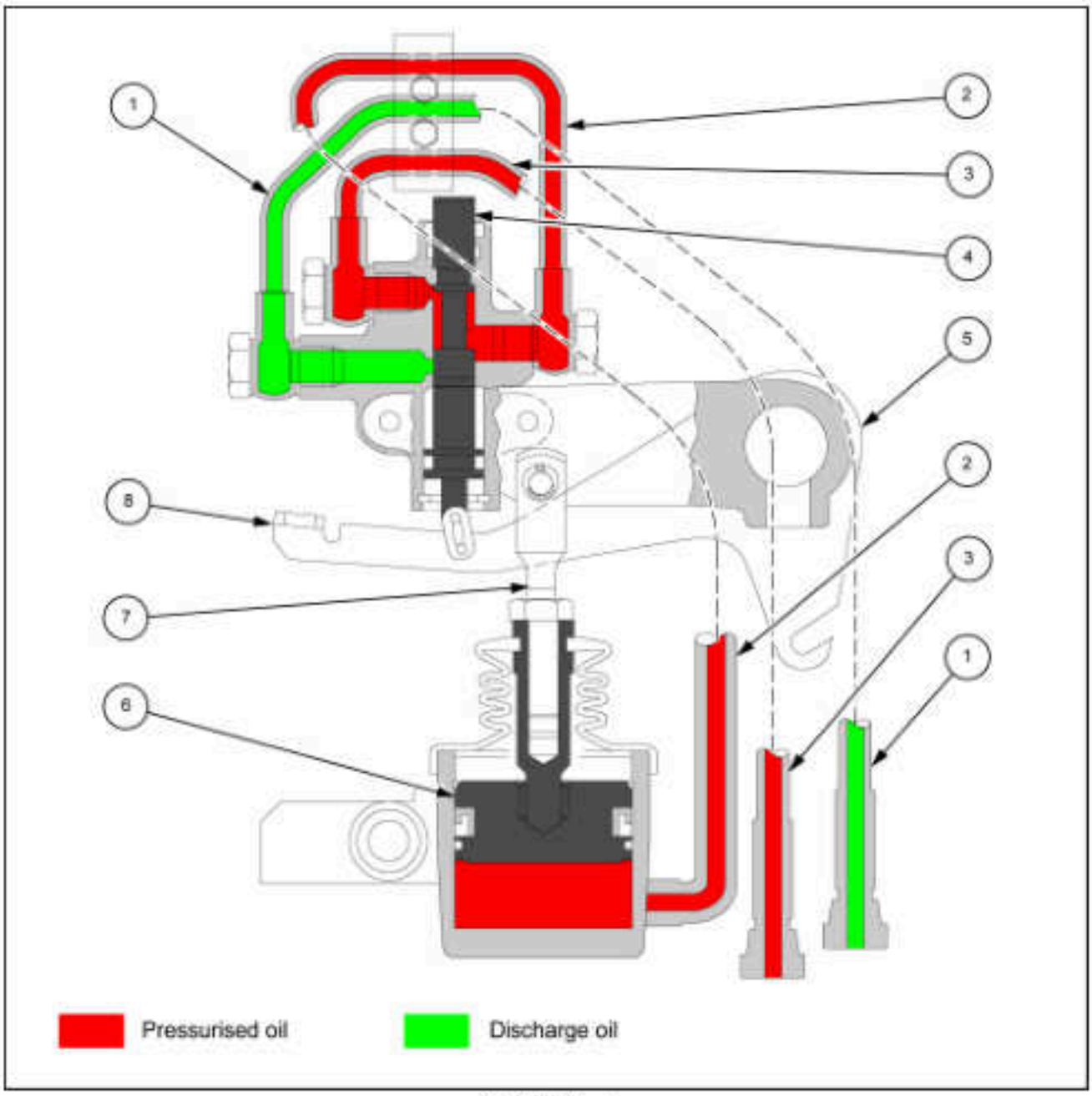
Steering control - Detailed view



MidWestTech | New Holland T3.60F, T3.70F, T3.80F Tractor Service Manual | Publica... Order the manual at mid-west-tech.com >

Clutches - Dynamic description

Description and operation



ANL15TR03260CB 1

Engaging the PTO control clutch

The PTO clutch control system consists of a control lever (in the cab) and a cable connecting the lever to the servo control unit.

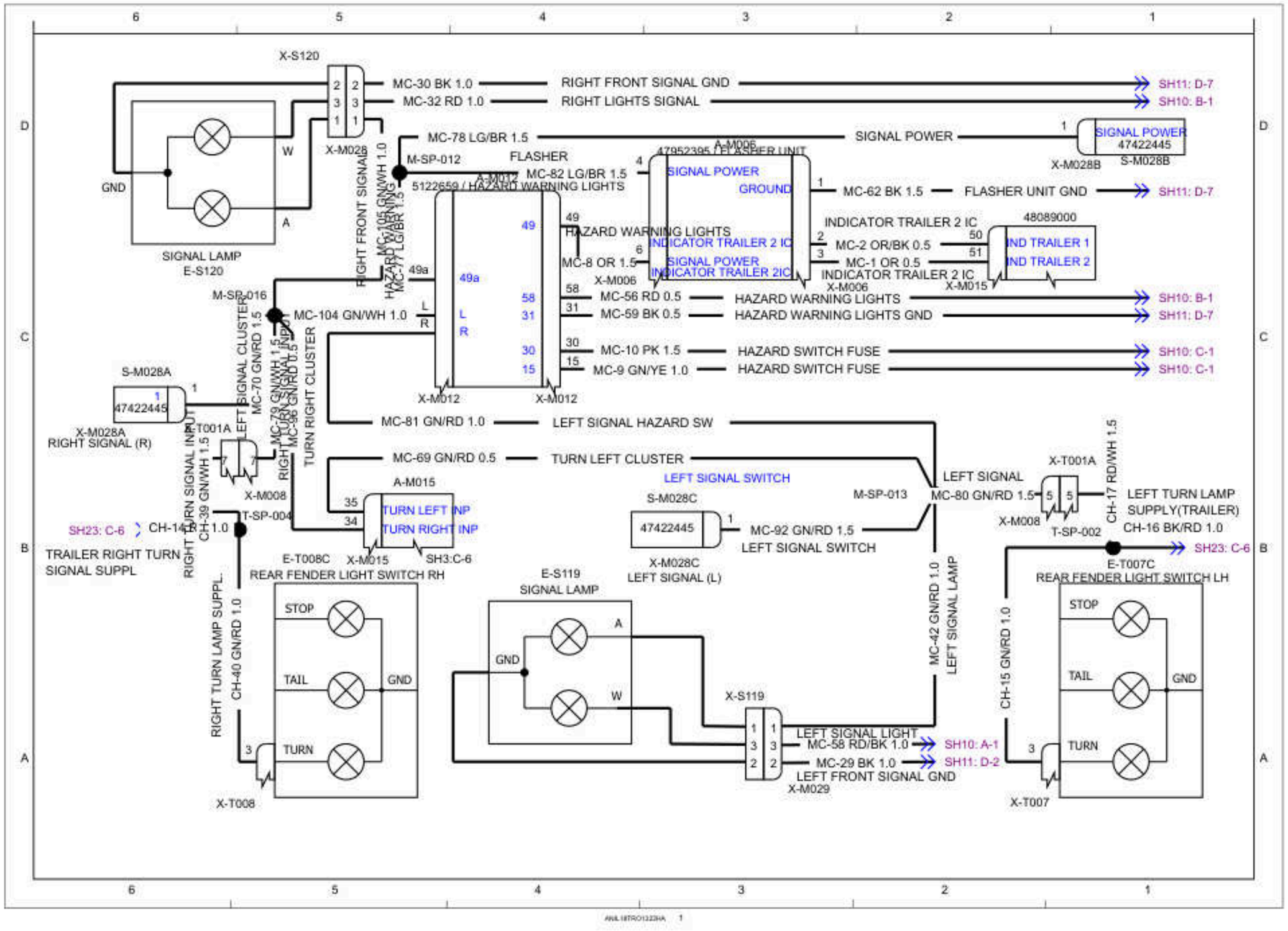
The servo control unit consists of a hydraulic control valve and piston.

When the PTO clutch is engaged with the control lever in the cab, the connecting cable acts on the lever **(8)** which, as it moves, pushes up the control valve drive pin **(4)**.

When the pin **(4)** moves up it closes the hole leading to the oil discharge pipe **(1)**.

The oil from the pump passes through line **(3)**, line **(2)**, and acts on the piston **(6)**.

MidWestTech | New Holland T3.60F, T3.70F, T3.80F Tractor Service Manual | Publica... Order the manual at mid-west-tech.com >



MidWestTech | New Holland T3.60F, T3.70F, T3.80F Tractor Service Manual | Publication 51517507
Order the manual at mid-west-tech.com >