FARMALL® 40C
FARMALL® 50C
Tier 4B (final)
Compact Tractor

SERVICE MANUAL

Part number 47941906
2nd edition English
March 2016
Replaces part number 47700459

CASE IH AGRICULTURE

MidWestTech | Case Farmall 40C, 50C Tier 4B Compact Tractor Service Manual | Publication 47941906
Order the manual at mid-west-tech.com >

Contents

INTRODUCTION

Engine 10

[10.001] Engine and crankcase 10.1

[10.202] Air cleaners and lines 10.2

[10.206] Fuel filters 10.3

[10.304] Engine lubrication system 10.4

[10.400] Engine cooling system 10.5

[10.501] Exhaust Gas Recirculation (EGR) exhaust treatment 10.6

Clutch 18

[18.100] Clutch mechanical release control 18.1

[18.110] Clutch and components 18.2

[18.112] Slip clutch or flywheel damper 18.3

Transmission 21

[21.114] Mechanical transmission 21.1

[21.140] Mechanical transmission internal components 21.2

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

[25.310] Final drives 25.4

Rear axle system 27

[27.106] Rear bevel gear set and differential 27.1

[27.120] Planetary and final drives 27.2

Hydrostatic drive 29

[29.100] Transmission and steering hydrostatic control 29.1

[29.202] Hydrostatic transmission 29.2

MidWestTech | Case Farmall 40C, 50C Tier 4B Compact Tractor Service Manual | Pub... Order the manual at mid-west-tech.com >

[29.218] Pump and motor components 29.3

Power Take-Off (PTO) 31

[31.101] Rear mechanical control 31.1

[31.104] Rear electro-hydraulic control 31.2

[31.110] One-speed rear Power Take-Off (PTO) 31.3

[31.120] Central Power Take-Off (PTO) 31.4

Brakes and controls 33

[33.110] Parking brake or parking lock 33.1

[33.120] Mechanical service brakes 33.2

Hydraulic systems 35

[35.000] Hydraulic systems 35.1

[35.104] Fixed displacement pump 35.2

[35.114] Three-point hitch control valve 35.3

[35.116] Three-point hitch cylinder 35.4

[35.204] Remote control valves 35.5

[35.300] Reservoir, cooler, and filters 35.6

[35.350] Safety and main relief valves 35.7

[35.355] Hydraulic hand control 35.8

Hitches, drawbars, and implement couplings 37

[37.108] Rear three-point hitch external controls 37.1

[37.110] Rear three-point hitch 37.2

Steering 41

[41.101] Steering control 41.1

[41.106] Tie rods 41.2

[41.200] Hydraulic control components 41.3

[41.216] Cylinders 41.4

Wheels 44

MidWestTech | Case Farmall 40C, 50C Tier 4B Compact Tractor Service Manual | Pub... Order the manual at mid-west-tech.com >

[44.511] Front wheels 44.1
[44.520] Rear wheels 44.2
Cab climate control 50
[50.100] Heating 50.1
[50.104] Ventilation 50.2
[50.200] Air conditioning 50.3
Electrical systems 55
[55.000] Electrical system 55.1
[55.011] Fuel tank system 55.2
[55.031] Parking brake electrical system 55.3
[55.048] Rear Power Take-Off (PTO) control system 55.4
[55.100] Harnesses and connectors 55.5
[55.201] Engine starting system 55.6
[55.202] Cold start aid 55.7
[55.302] Battery 55.8
[55.404] External lighting 55.9
[55.405] External lighting switches and relays 55.10
[55.408] Warning indicators, alarms, and instruments 55.11
[55.513] Cab transmission controls 55.12
[55.525] Cab engine controls 55.13
[55.610] Ground speed control 55.14
[55.640] Electronic modules 55.15
[55.989] Exhaust Gas Recirculation (EGR) electrical system 55.16
[55.DTC] FAULT CODES 55.17
Platform, cab, bodywork, and decals 90
[90.100] Engine hood and panels 90.1
[90.114] Operator protections 90.2
[90.116] Fenders and guards 90.3

MidWestTech | Case Farmall 40C, 50C Tier 4B Compact Tractor Service Manual | Pub... Order the manual at mid-west-tech.com >

Wiring harnesses - Electrical schematic sheet 14 – Heating, Ventilation and Air Conditioning (HVAC) and power outlets (mechanical transmission, cab models)

Farmall® 40C TIER 4B (FINAL), Cab	NA
Farmall® 50C TIER 4B (FINAL), Cab	NA

Type	Component	Connector / Link	Description
Lamp	**E-016**	**X-044**	ROOM LAMP
Fuse	**F-050**	**X-126**	AIRCON COMPRESSOR
Power outlet	**J-001**	**X-041**	BEACON SOCKET(RH)
Power outlet	**J-002**	**X-042**	BEACON SOCKET(LH)
Power outlet	**J-003**	**X-043**	CIGAR SOCKET
Switch	**S-022**	**X-152**	DPS SWITCH
Switch	**S-025**	**X-150**	BEACON LAMP SWITCH
Connector	X-040	**X-040**	
Connector	X-041	**X-041**	
Connector	X-042	**X-042**	
Connector	X-043	**X-043**	
Connector	X-044	**X-044**	
Connector	X-126	**X-126**	
Connector	X-150	**X-150**	
Connector	X-151	**X-151**	
Connector	X-152	**X-152**	
Connector	X-200	**X-200**	
Connector	X-213	**X-213**	
Connector	X-215	**X-215**	
Connector	X-220	**X-220**	
Solenoid	**Y-005**	**X-151**	AIRCON COMPRESSOR
Sub-Assembly	**Z-001**	**X-040**	AIR CONDITIONING

MidWestTech | Case Farmall 40C, 50C Tier 4B Compact Tractor Service Manual | Publication 47941906

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

110-4-Engine coolant temperature: voltage above normal

Farmall® 40C	NA
Farmall® 50C	NA

Control Module : ECU

Context:
The Engine Control Unit (ECU) supplies the coolant (water) temperature sensor with **5.0 V** from the ECU connector X-9000 pin 6, and ground reference at ECU connector X-9000 pin 26.

Cause:
The ECU is sensing the coolant temperature signal is less than **0.08 V**.

Possible failure modes:

1. The cooling system has a failure.
2. The coolant temperature sensor has failed.
3. The wiring harness has failed.
4. The ECU has an internal fault.

Solution:

1. Use the Service Tool I to verify the fault is active.

   Select the "Active Diagnostic Codes" icon.

   A. If the fault code is present, continue with Step **2**.

   B. If the fault is not present, the fault may be intermittent and not currently active. Continue with Step **6**.
2. Verify that the wiring harness and connectors are free of damage.

   Inspect the wiring harness from the ECU to the coolant temperature sensor connector.

   Verify that the wiring harness is free of damage, corrosion, abrasion and incorrect attachment.

   A. The connectors are secure and the wiring harness is free of damage. Continue with Step **3**.

   B. The connectors or the wiring harness has damage. Repair or replace the wiring harness or connectors as required.
3. Check the coolant temperature sensor.

   Disconnect the wiring harness from the sensor.

   Use a multimeter to measure the resistance of the temperature sensor from pin 1 to pin 2.

Temperature	Resistance
0 °C (32.0 °F)	**5.74 Ω**
10 °C (50.0 °F)	**3.7 Ω**
20 °C (68.0 °F)	**2.45 Ω**
30 °C (86.0 °F)	**1.66 Ω**
40 °C (104.0 °F)	**1.15 Ω**
50 °C (122.0 °F)	**0.811 Ω**
60 °C (140.0 °F)	**0.584 Ω**

   A. If the resistance is correct, continue with Step **4**.

   B. If the resistance is incorrect, replace the sensor.
4. Check the reference circuit.

MidWestTech | Case Farmall 40C, 50C Tier 4B Compact Tractor Service Manual | Pub... Order the manual at mid-west-tech.com >

Place the key switch ON.

Monitor the diagnostic screen for fault code 4201-4.

A. If the fault code 4201-4 is not present, continue with Step **5**.

B. If the fault code 4201-4 is present, the sensor has failed. Replace the sensor.

5. Check the wiring harness.

Place the key switch OFF.

Disconnect the wiring harness from ECU.

Use a multimeter to perform the following checks on the wiring harness.

From	To	Value
Connector X-9009 pin 1	Connector X-9000 pin 10	There should be continuity.
Connector X-9009 pin 2	Connector X-9000 pin 8	There should be continuity.
Connector X-9009 pin 3	Connector X-9000 pin 9	There should be continuity.
Connector X-9009 pin 1	Chassis ground	There should be no continuity.
Connector X-9009 pin 2	Chassis ground	There should be no continuity.
Connector X-9009 pin 2	Connector X-9009 pin 1	There should be no continuity.
Connector X-9009 pin 2	Connector X-9009 pin 3	There should be no continuity.

A. If the wiring harness test passes, see **Electronic module - Electrical test Engine Control Unit (ECU) verification (55.640)** to verify the ECU is working properly.

B. If the wiring harness test fails, locate and repair the broken conductor.

6. Visually inspect the relevant harnesses and connectors for damage, bent or dislocated pins, corroded terminals, or broken wires. Verify that the connectors are fully installed. Flex the harnesses involved to reveal intermittent breaks or shorts in the wiring concerned. Operate the machine while you monitor the display.

A. If you find damage or the display indicates other than normal display readings, then repair the damage discovered during the inspection or locate and repair the other than normal display condition and verify that the error has been resolved.

B. If you do not find damage and the display indicates only normal readings, then erase the fault code and continue operation.

Wiring harnesses - Electrical schematic sheet 05 – Engine Control Unit (ECU) (engine schematics) (55.100.DP-C.20.E.05)

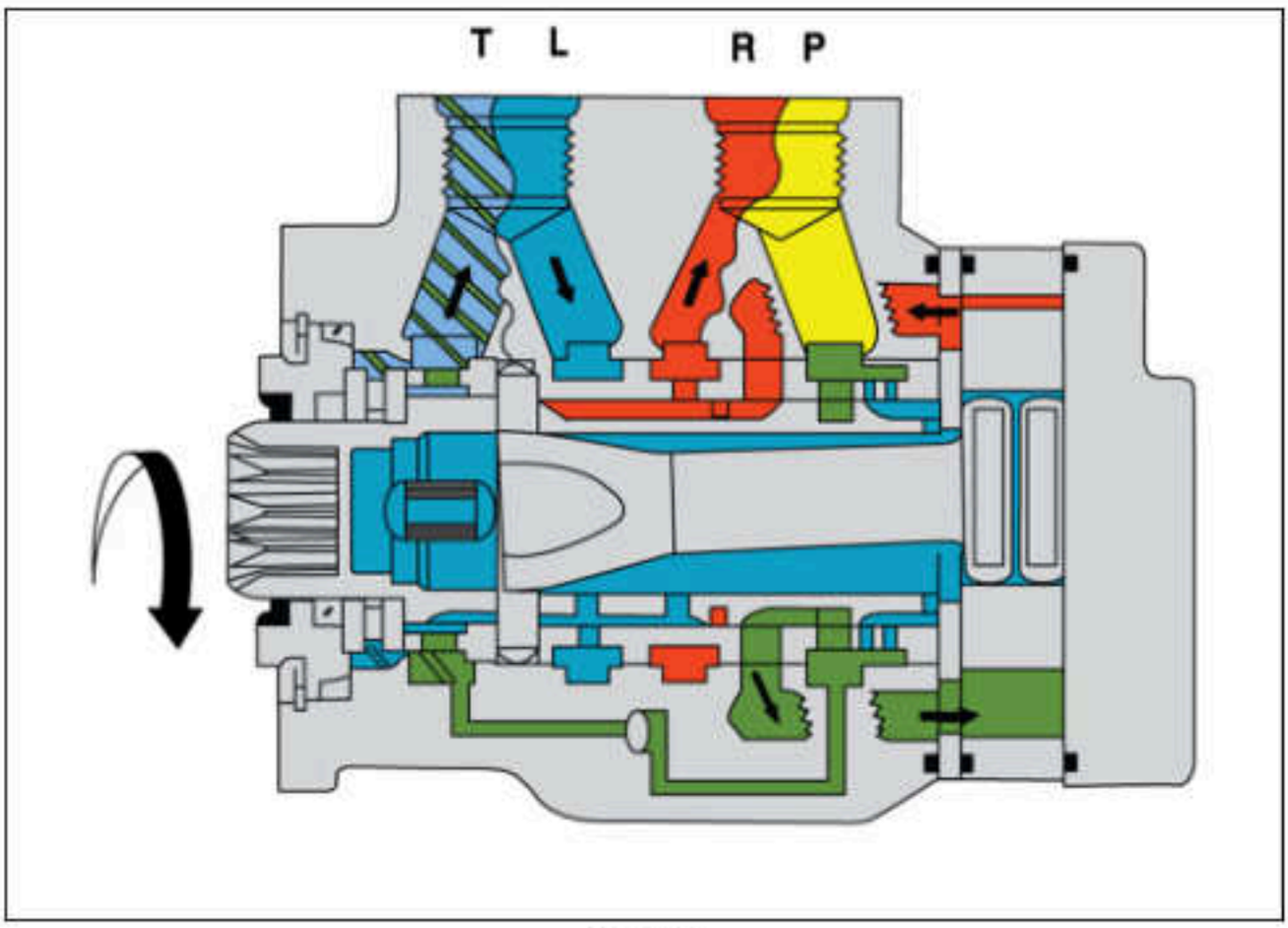
MidWestTech | Case Farmall 40C, 50C Tier 4B Compact Tractor Service Manual | Pub... Order the manual at mid-west-tech.com >

Emergency operation

⚠ WARNING

Loss of control hazard!
Because of the slow responsiveness of the steering in this condition, you should not travel at high speeds or on downhill roads.
Failure to comply could result in death or serious injury.

W0165A



14

Emergency mode steering manually

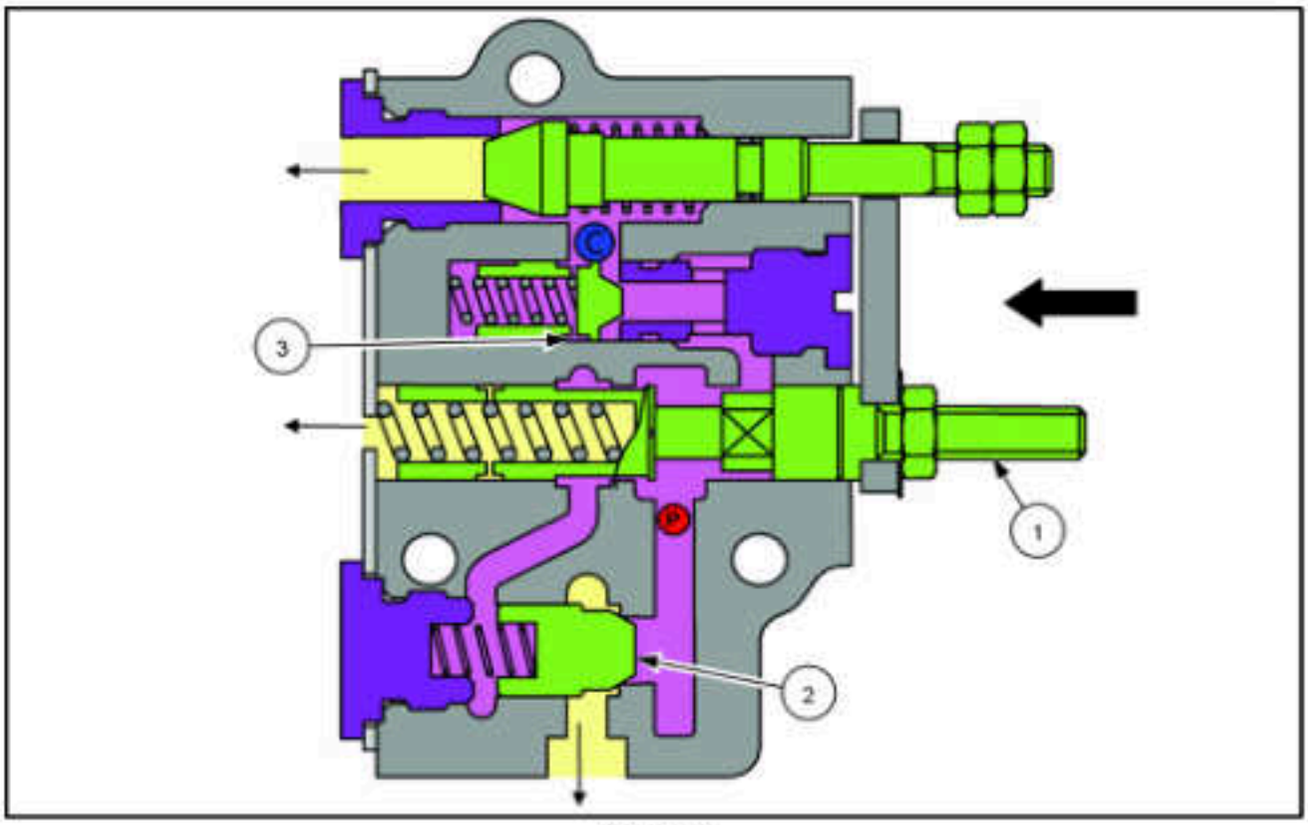
(T) - Tank
(L) - Left steer port
(R) - Right steer port
(P) - Pump discharge

- Pressurized oil from pump
- Oil from rotor
- Discharge
- Suction
- Suction or discharge
- Neutral

NOTICE: *In the EMERGENCY manual steering mode, if steering becomes difficult to do, STOP and transport the tractor by trailer.*

If hydraulic pressure is not generated by the hydraulic pump, the "Rocker" inside the valve serves as a hand pump, and allows the steering cylinder to operate.
The oil returning to the port **(T)** is sent to the rotor **(1)** through the check valve and the rotor sends oil to the cylinder. At this time, the oil in the opposite side returns to the port **(T)** again and repeats the procedure previously described.

MidWestTech | Case Farmall 40C, 50C Tier 4B Compact Tractor Service Manual | Pub... Order the manual at mid-west-tech.com >



03102003A 3

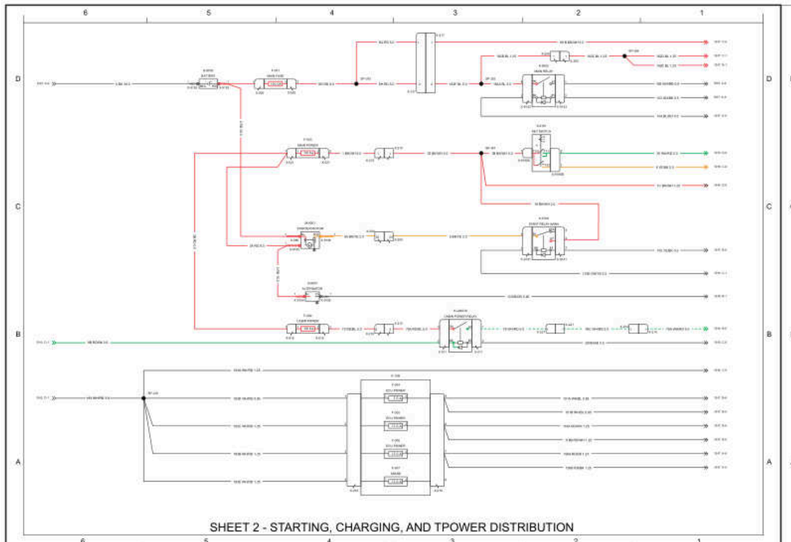
Raise position

When the valve spool **(1)** moves inward in the "RAISE" position, oil flow being supplied by the pump is route around the valve spool to the backside of the unload valve **(2)** allowing the unload valve to remain seated. When the unload valve remains seated, pressure increases in the valve passage until the pressure on the front side of the check valve **(3)** is greater than the pressure on the backside of the valve, allowing the check valve to open. When the check valve opens, the oil supplied by the pump is routed to the HPL lift cylinder and the 3pt hitch raises.

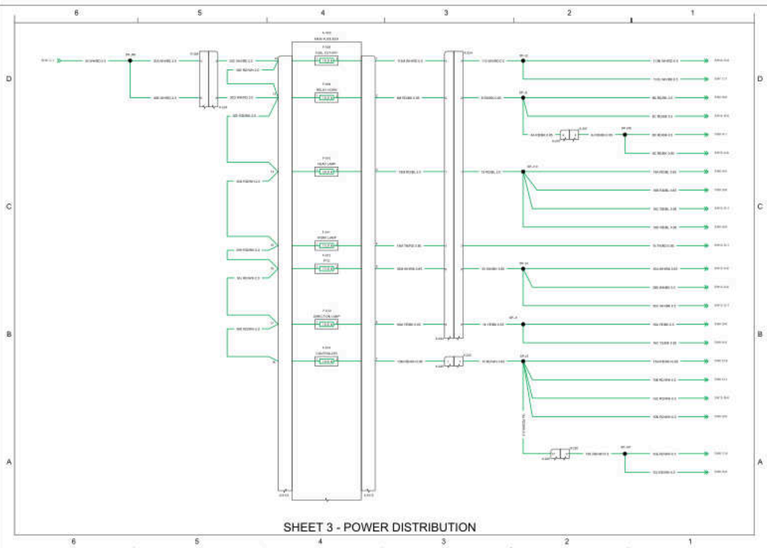
- Cylinder pressure
- High pressure
- Return oil

78106557 4

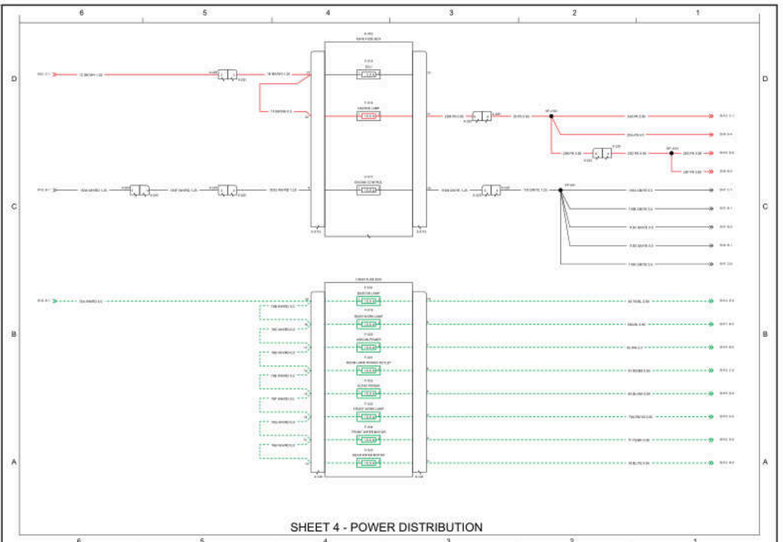
MidWestTech | Case Farmall 40C, 50C Tier 4B Compact Tractor Service Manual | Pub... Order the manual at mid-west-tech.com >



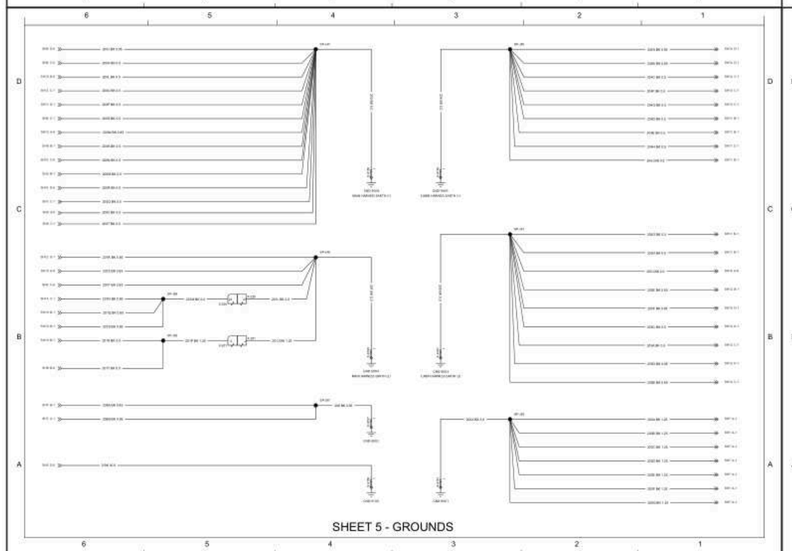
SHEET 2 - STARTING, CHARGING, AND TPOWER DISTRIBUTION



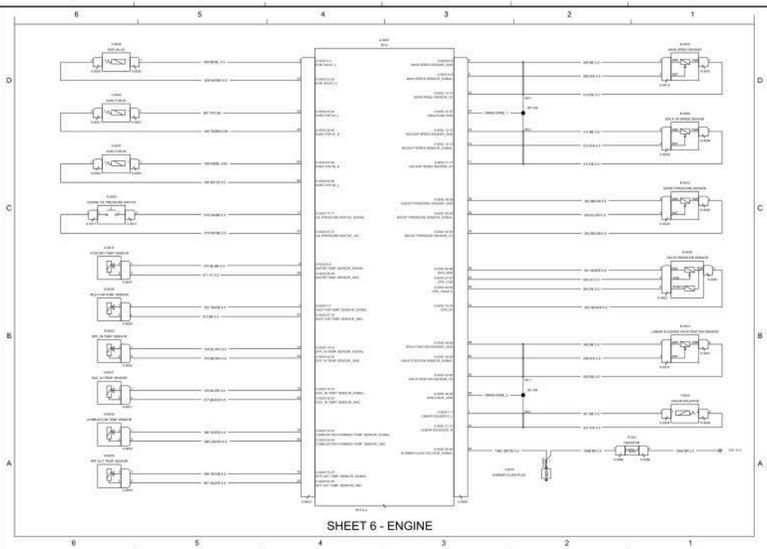
SHEET 3 - POWER DISTRIBUTION



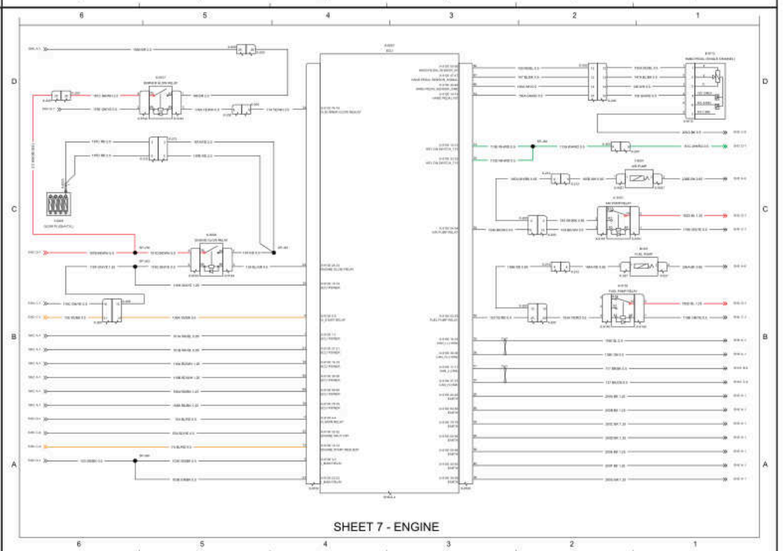
SHEET 4 - POWER DISTRIBUTION



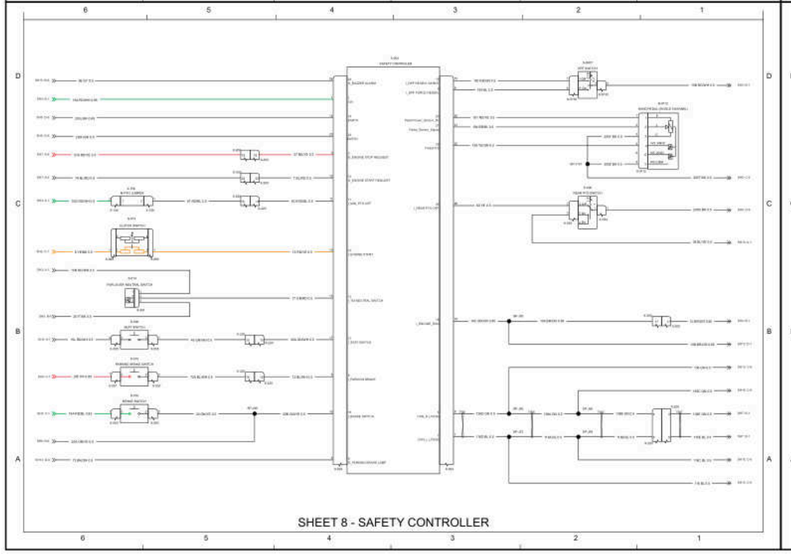
SHEET 5 - GROUNDS



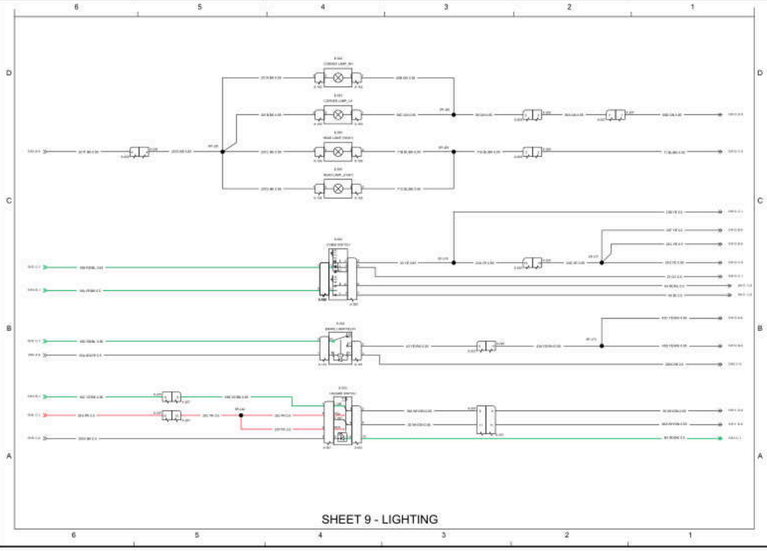
SHEET 6 - ENGINE



SHEET 7 - ENGINE



SHEET 8 - SAFETY CONTROLLER



SHEET 9 - LIGHTING

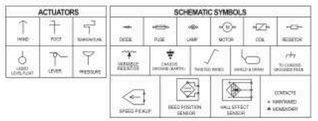
FARMALL® 35C / FARMALL® 40C / FARMALL® 50C COMPACT TRACTOR 47951357

ELECTRICAL SCHEMATIC
CAB - MECHANICAL TRANSMISSION
1ST EDITION

SCHEMATIC SHEET INDEX

Component	Sheet
SHEET NOT USED	1
STARTING, CHARGING, AND POWER DISTRIBUTION	2
POWER DISTRIBUTION	3
POWER DISTRIBUTION	4
GROUNDS	5
ENGINE	6
ENGINE	7
SAFETY CONTROLLER	8
LIGHTING	9
LIGHTING	10
LIGHTING	11
WASHER AND WIPER SYSTEM	12
ANALOG DIGITAL INSTRUMENT CLUSTER (ADIC)	13
BEACON AND AIR CONDITIONING	14
AUDIBLE DEVICES	15
DIAGNOSTIC CONNECTOR	16

SYMBOL LEGEND



CIRCUIT COLOR INDEX

- 12V UNSWITCHED POWER
- IGNITION KEY ON
- IGNITION KEY ON - AFTER CAB POWER RELAY
- CRANKING

COMPONENT LEGEND

Label Prefix	Component Type	Label Prefix	Component Type
A	Electronics	K	Relays
B	Sensors	M	Motors
D	Diodes	Q	Circuit Breakers
E	Lights	R	Resistive
F	Fuses	S	Switches
G	Generators	W	Splice Blocks
H	Audio	Y	Solenoids
J	Outlets		

MidWestTech | Case Farmall 40C, 50C Tier 4B Compact Tractor Service Manual | Publication 47941906

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