SERVICE MANUAL

D180C
Tier 4
Crawler Dozer

Part number 47645621
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NEW HOLLAND CONSTRUCTION

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Schematic legend			
(1)	**24 V** battery supply to fuse **F-020**	(2)	**UCM** connector **X-016** Pin 7 and pin 13

A. The connectors are secure and the harness is free of damage. Go to step **3**.

B. The connectors or the harness has damage. Repair or replace the harness or connectors as required. Return to step **1** to confirm elimination of fault.

3. Measure the voltage at the UCM connector.

Turn the ignition switch OFF.

Disconnect UCM connector **X-016**.

Turn the ignition switch ON.

Measure the voltage between **X-016** pin 7 and chassis ground. The chassis ground must clean and free of paint, oil and dirt. The voltage should be approximately **24 V**. Wiggle the harness during measurement to reveal an intermittent condition.

Measure the voltage between **X-016** pin 13 and chassis ground. The chassis ground must clean and free of paint, oil and dirt. The voltage should be approximately **24 V**. Wiggle the harness during measurement to reveal an intermittent condition.

A. Both voltage measurements are greater than **20 V**. There is a problem in the **UCM**. Temporarily replace the **UCM** and retest. Return to step **1** to confirm elimination of the fault.

B. The voltage is less than **20 V**. There is a problem in the wiring to the **UCM**. Check fuse **F-020**. Repair as required. Return to step **1** to confirm elimination of the fault.

Harnesses and connectors - Electrical schematic sheet 08 (55.100-C.20.E.08)

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19605-CAN Receive Frame ET1 - Timeout

Possible failure modes:

1. Controller communication error.

Solution:

1. Check for other error codes being displayed. Are there other time out error codes displayed. Are there other can bus communication error issues.

   A. If any other error code is being displayed, continue to these tests.

   B. If no other error code is displayed, continue to step **2**.

2. Ensure all connectors are secured properly on the denox module/supply module connector , the denox terminator connector (located top of right front fender) and engine control module connector. Check for damage, loose connections or broken can bus wires.

   A. A connector/wiring issue was located and corrected. Erase fault code and return unit to field operation.

   B. No connector/wiring issues were located. Continue with step **3**.

3. Check the can bus terminators. Disconnect denox terminator connector . Check the terminators resistance from pin 1 to pin 2. The expected reading is **120 Ω**.

   A. Expected reading is not found. Replace denox terminator. Erase fault code and return unit to field operation.

   B. Reading is as expected. Continue with step **4**.

4. Next, check the harness end resistance on the denox terminator from pin 1 to pin 2. This will be checking the engine control modules internal terminator. The expected reading is **120 Ω**.

   A. Expected reading not found. There may be a short to ground, or open wire between denox terminator and engine control module connector, or the engine control module terminator is faulty. Troubleshoot the wiring harness make repairs, or replace engine control module.

   B. Reading is as expected. Erase fault code. If the fault code reoccurs contact ASIST.

Harnesses and connectors - Electrical schematic sheet 28 (55.100-C.20.E.28)

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Important Note:
Check and verify that the vehicle status is correct. Potential ECU damage could result when removing main ECU connectors if this is not followed.

Test Type	From	To	Expected Results
1. Continuity	WTF (Pin: 1)	2 (Pin: 15)	Approx. **0 - 0.10 ohms**
2. Continuity	WTF (Pin: 2)	2 (Pin: 26)	Approx. **0 - 0.10 ohms**
3. Short Circuit	2 (Pin: 15)	2 (Pin: 32)	Open Circuit
4. Short Circuit	2 (Pin: 15)	2 (Pin: 33)	Open Circuit
5. Short Circuit	2 (Pin: 15)	2 (Pin: 26)	Open Circuit

A. If continuity/shorts test is successful, go to step **5**.

B. If continuity/shorts test is unsuccessful, find and repair the damaged section(s) of the wiring harness.

5. Operation: Coolant temp sensor test
Vehicle Status: Key Off Engine Off.

Remove WTF connector and test resistance of coolant temp sensor using the table of resistance vs. temp. below. Approximate the temperature when performing test. Coolant temp sensor failures are typically at the extreme ends of the table or off the table entirely. Use the test lead labeled "Coolant/Fuel Temp Sensor" from the Tier II (NEF) Diagnostic Repair Kit 380040185 to access the pins on the sensor.

Coolant Temperature	Resistance Value
-20 °C (-4 °F)	**10.5 kOhm**
0 °C (32 °F)	**7500 ohms**
20 °C (68 °F)	**4200 ohms**
40 °C (104 °F)	**980 ohms**
60 °C (140 °F)	**780 ohms**
80 °C (176 °F)	**500 ohms**
100 °C (212 °F)	**280 ohms**
120 °C (248 °F)	**97 ohms**

A. If the resistance measurement does not approximately match the table, replace the sensor.

B. If the resistance measurement does approximately match the table, proceed to step **6**.

6. Operation: Check for ECU Voltages and Ground Continuity.
Vehicle Status (when removing connector 1): Key Off Engine Off.
Vehicle Status (when performing test): Key On Engine Off.
Vehicle Status (when replacing connector 1): Key Off Engine Off.

Use product schematic for a reference, remove connector 1 from the ECU and check for **12 volts** and continuity at the appropriate pins defined in the test table below. Use the **0.4 mm** (**0.017 in**) diameter test probes from the Tier II (NEF) Diagnostic Repair Kit 380040185 when connecting the DMM to the connector 1. Make sure the DMM's test lead resistance is taken into account when making any continuity measurements.

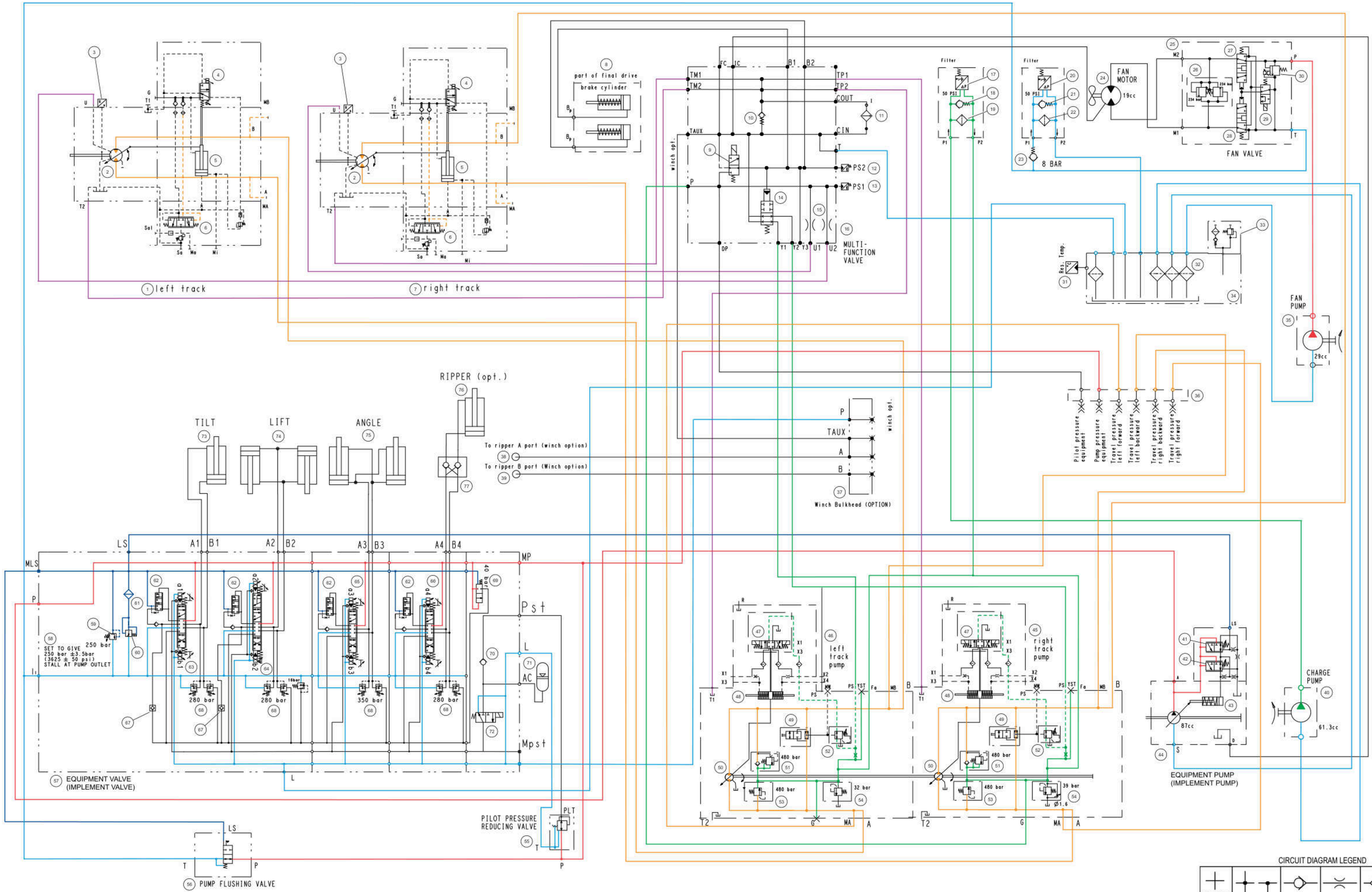
Important Note:
Check and verify that the vehicle status is correct for each operation. Potential ECU damage could result when removing and replacing main ECU connectors if this is not followed.

Test Type	From	To	Expected Results
1. Voltage	1 (Pin 2, 3, 8, 9, 40)	Ground (engine block)	Approx. **12 volts**
2. Continuity	1 (Pin 5, 6, 10, 11)	Ground (engine block)	Approx. **0 - 0.10 ohms**

A. If the voltages and ground paths are correct and the coolant temp sensor was not replaced on a prior diagnostic of this type, replace the sensor.

B. If the voltages and ground paths are correct and the coolant temp sensor was replaced on a prior diagnostic of this type, re-initialize the ECU as if it was blank (new) and load the appropriate data-set.

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1	Left Track Drive Motor Assembly	12	Brake Release Pressure Switch	23	Backpressure Check Valve	34	Hydraulic Reservoir	45	Right Track Pump Assembly	56	Pump Flushing Valve	67	Regeneration Check Valve
2	Track Drive Motor	13	Charge Pressure Switch	24	Fan Drive Pump	35	Fan Drive Pump	46	Left Track Pump Assembly	57	Equipment valve (Implement)	68	Circuit Relief w/ Anticavitation
3	Track Drive Motor Speed Sensor	14	Neutral Override Valve	25	Fan Reverse Valve	36	Hydraulic Test Points	47	Pump Control Solenoid Valve	58	Set to give 250 bar +/-3.5, stall at pump outlet	69	Pressure Spike Clipper
4	Motor Control Solenoid Valve	15	Motor Cooling Orifice	26	Fan Reversing Pressure Relief	37	Winch Bulkhead (option)	48	Pump Control Piston	59	Load Sense Relief Valve	70	Pilot Pressure Check Valve
5	Motor Speed Control Piston	16	Brake Release (Multi-function) Valve	27	Reverse Pilot Control Valve	38	To Ripper A Port (option)	49	Tow Valve	60	Signal Bleed Down Orifice	71	Pilot Accumulator
6	Motor Flushing Valve	17	Charge Filter Pressure Switch	28	Forward Pilot Control Valve	39	To Ripper B Port (option)	50	Track Drive Pumps	61	Screen	72	Pilot On/Off Solenoid Valve
7	Right Track Drive Motor Assembly	18	Charge Filter Bypass Valve	29	Fan Reverse Solenoid	40	Charge Pump	51	High Pressure Relief/Check Valve	62	Flow Compensator Spool	73	Tilt Cylinder
8	Park Brake Release Piston	19	Charge Filter	30	Fan Speed Control Solenoid	41	Flow Control Spool	52	High Pressure Cut-off (Inactive)	63	Tilt Spool	74	Lift Cylinders
9	Park Brake Release Solenoid	20	Hydraulic Filter Pressure Switch	31	Reservoir Temperature Sensor	42	High Pressure Cut-Off Spool	53	High Pressure Relief	64	Lift Spool	75	Angle Cylinders
10	Oil Cooler Bypass	21	Filter Bypass Valve	32	Reservoir Suction Screen	43	Destroke Pistons	54	Charge Pressure Relief	65	Angle Spool	76	Ripper Cylinder
11	Oil Cooler	22	Hydraulic Filter	33	Reservoir Pressure Cap	44	Equipment Hydraulic Pump	55	Pilot Pressure Reducing Valve	66	Ripper Spool	77	Ripper Lock Check Valve

CIRCUIT DIAGRAM LEGEND

SHOWS CIRCUIT CROSSING NOT CONNECTED | SHOWS CIRCUIT CONNECTED | CHECK VALVE | RESTRICTOR | FILTER OR SCREEN | OIL COOLER

LINE TYPES

- HYDRAULIC PRESSURE
- CHARGE PUMP PRESSURE
- RETURN TO TANK/ PUMP INLET
- TRACK DRIVE
- TRACK DRIVE CASE DRAIN
- LOAD SENSE

HYDRAULIC SCHEMATIC D180C CRAWLER DOZER

Additional copies of this Schematic can be ordered through Technical Publications Distribution System. Part # RAC 4771431?

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