621F
721F
Tier 4
Wheel Loader

from PIN NBF213602 and above

SERVICE MANUAL

Part number 84605841
1st edition English
May 2012

CASE CONSTRUCTION

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19379-Urea temperature too low during commissioning - temperatures not plausible during commissioning

Context:
The denox module/supply module has detected the temperatures are not correct within **30 min** of operation. The module box temperature is less than **-9 °C** (**16 °F**) or greater than **75 °C** (**167 °F**), or the DEF/AdBlue® tank is less than **-17 °C** (**2 °F**) or greater than **75 °C** (**167 °F**). Bring temperature to a normal level, between **0 - 30 °C** (**32 - 86 °F**).

Possible failure modes:

1. Extreme cold ambient conditions
2. DEF/AdBlue® tank temperature sensor is faulty

Solution:

1. Verify this error code is still present, and in an active state.
   A. If the error is still present and active, continue with step **2**.
   B. If the error is no longer present or is in an inactive state, return machine to service.
2. Check to see if other DEF/AdBlue® temperature sensor fault codes are present.
   A. If no other errors are present, continue with step **3**.
   B. If errors are present, correct these errors first. Verify original error has been corrected.
3. Check temperature sensor resistance. Disconnect connector at top of DEF/AdBlue® tank. Use a multi-meter to measure the resistance of the level sensor from pin 2 to pin 3. See expected resistance at given temperatures in table below.

-30 °C (-22.0 °F)	**12850 Ω**
-20 °C (-4.0 °F)	**7500 Ω**
0 °C (32.0 °F)	**2800 Ω**
20 °C (68.0 °F)	**1215 Ω**
30 °C (86.0 °F)	**825 Ω**
50 °C (122.0 °F)	**410 Ω**

   A. If resistance is correct continue with step **4**.
   B. If the resistance is not correct, replace the level sensor.
4. If the machine is operating in an extreme cold environment, shutdown and restart for another warm up cycle.
   A. If no other errors are present after warm up return unit to field operation.
   B. If same fault code error is present, contact ASIST before replacing denox module/supply module.

Wire harnesses - Electrical schematic frame 05 (55.100.DP-C.20.E.05)

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3091-Camshaft sensor phase synchronization failure

NOTICE: *When available use special tool 380040185 harness diagnostic/repair kit and 380040188 electro injector test fixture.*

NOTE: *See engine repair manual for electrical schematic information.*

Cause:

1. Connectors not mated fully, pins not pushed into connector fully, bent pin or broken wire at rear of connector.
2. Wiring or circuits open.
3. Wiring or circuits shorted.
4. Faulty reading from component.
5. Faulty Electronic Controller.

Solution:

1. Verify that the fault code is still active, refer to **0000 - Retrieving fault codes, Wheel Loaders**.
   Prior to clearing fault codes write down all fault codes, number of occurrences, and engine hours at last occurrence.

   (1) Turn ignition switch to RUN position.

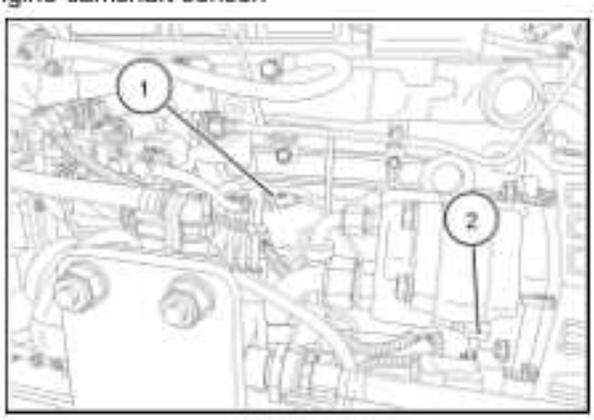
   (2) Clear all fault codes.

   (3) To check for fault code: Start and operate machine.

   A. NOT OK – Fault code 3091 is recorded again. Go to Step **2**.

   B. OK – Fault is not recorded again. OK for return to service.

2. Disconnect connector from engine camshaft sensor.



(1)	Connector engine camshaft sensor
(2)	Camshaft sensor

(1) Inspect pins on camshaft sensor and connector. Clean connections.

(2) Clean female pins by installing and removing.

(3) Measure the resistance between pins 1 and 2 on the sensor. The resistance should be approximately, **900 Ω** ± 10%.

A. The resistance is not **900 Ω** ± 10%. Temporarily replace sensor and retest. Return to Step **1** to confirm elimination of fault.

B. The resistance value is within specifications. Go to Step **3**.

3. Check circuit

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3283-Sensor Supply Voltage 2 - High

NOTICE: *When available use special tool 380040185 harness diagnostic/repair kit and 380040188 electro injector test fixture.*

NOTE: *Check alternator output voltage, if above 28 volts refer to* ***Alternator - Testing (55.301)*** *and troubleshoot charging system before proceeding. See engine repair manual for electrical schematic information.*

Cause:

1. The hardware has detected the sensor voltage supply 2 to exceed an upper limit over 100 ms.
2. Faulty reading from component.
3. Connectors not mated fully, pins not pushed into connector fully, bent pin or broken wire at rear of connector.
4. Wiring or circuits open.
5. Wiring or circuits shorted.

Solution:

1. Verify that the fault code is still active, refer to **0000 - Retrieving fault codes, Wheel Loaders**.
   Prior to clearing fault codes write down all fault codes, number of occurrences, and engine hours at last occurrence.

   (1) Turn ignition switch to RUN position.

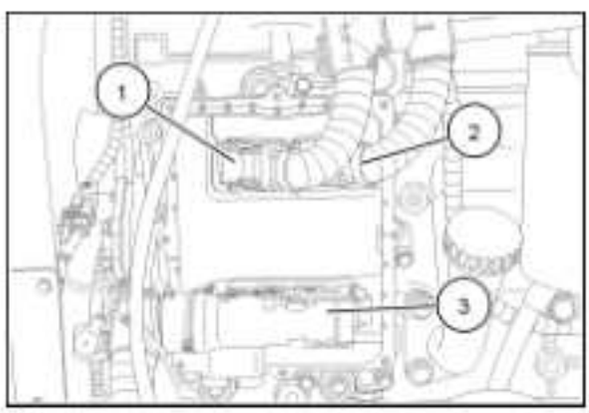
   (2) Clear all fault codes.

   (3) To check for fault code: Start and operate machine.

   A. NOT OK – Fault code 3283 is recorded again. Go to Step **2**.

   B. OK – Fault is not recorded again. OK for return to service.

2. Check input power.



BD070GD01 1

(1)	Connector C
(2)	Connector A
(3)	Connector EDC7

(1) Turn ignition OFF. Disconnect Engine Controller connector EDC7 from engine controller.

(2) Inspect pins on EDC7 connector and controller. Clean connections.

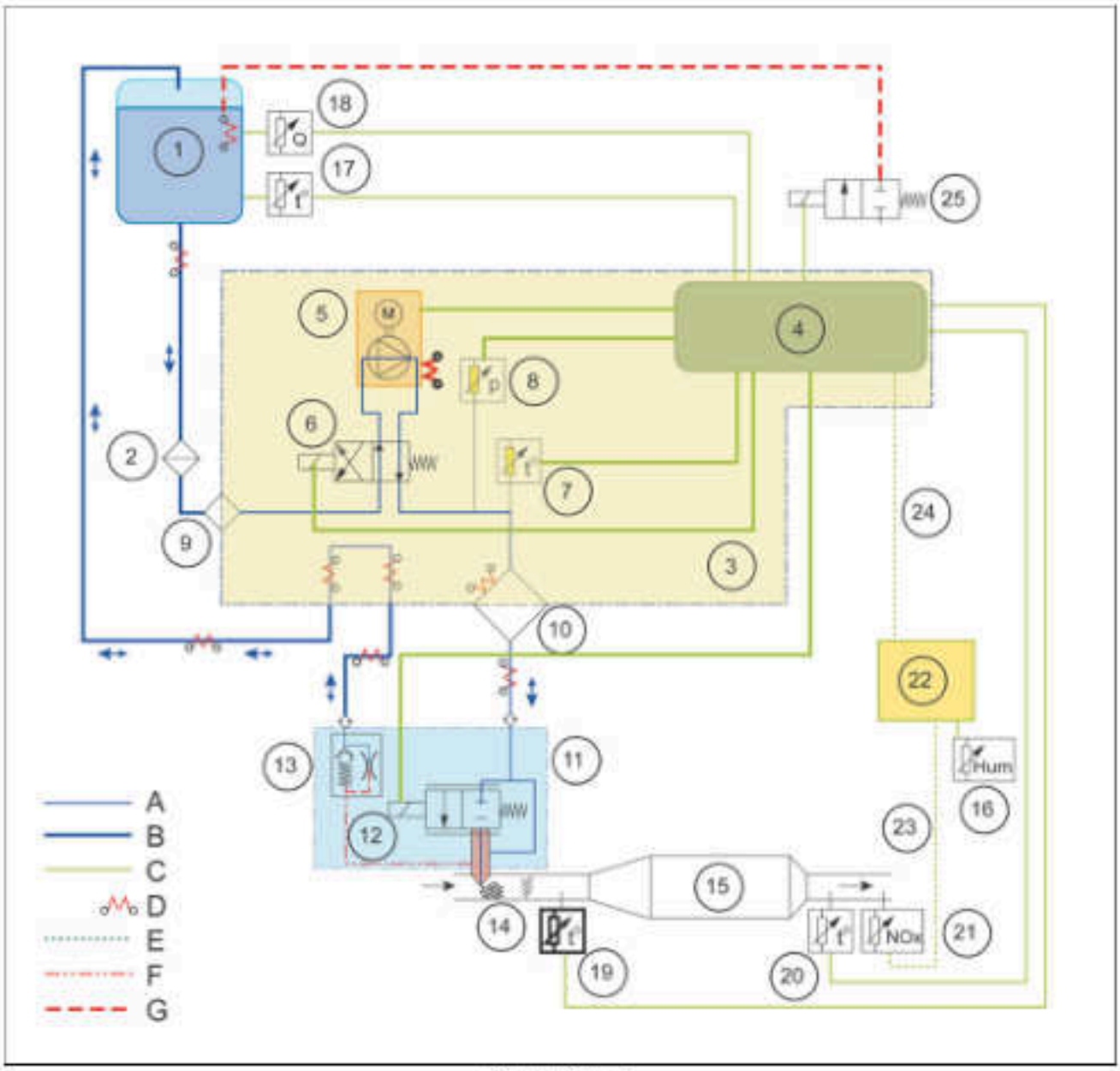
(3) Turn the ignition ON.

(4) Check pins 2, 3, 8, and 9 of EDC7 to ground, a reading of 24 volts should be obtained.

A. NOT OK – Check fuse PRM D-F2. Return to Step **1** to confirm elimination of fault.

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shutdown. This after run draws the DEF fluid from the system and sends it back to tank. Do not turn the master disconnect off until the pump has stopped this after run cycle.

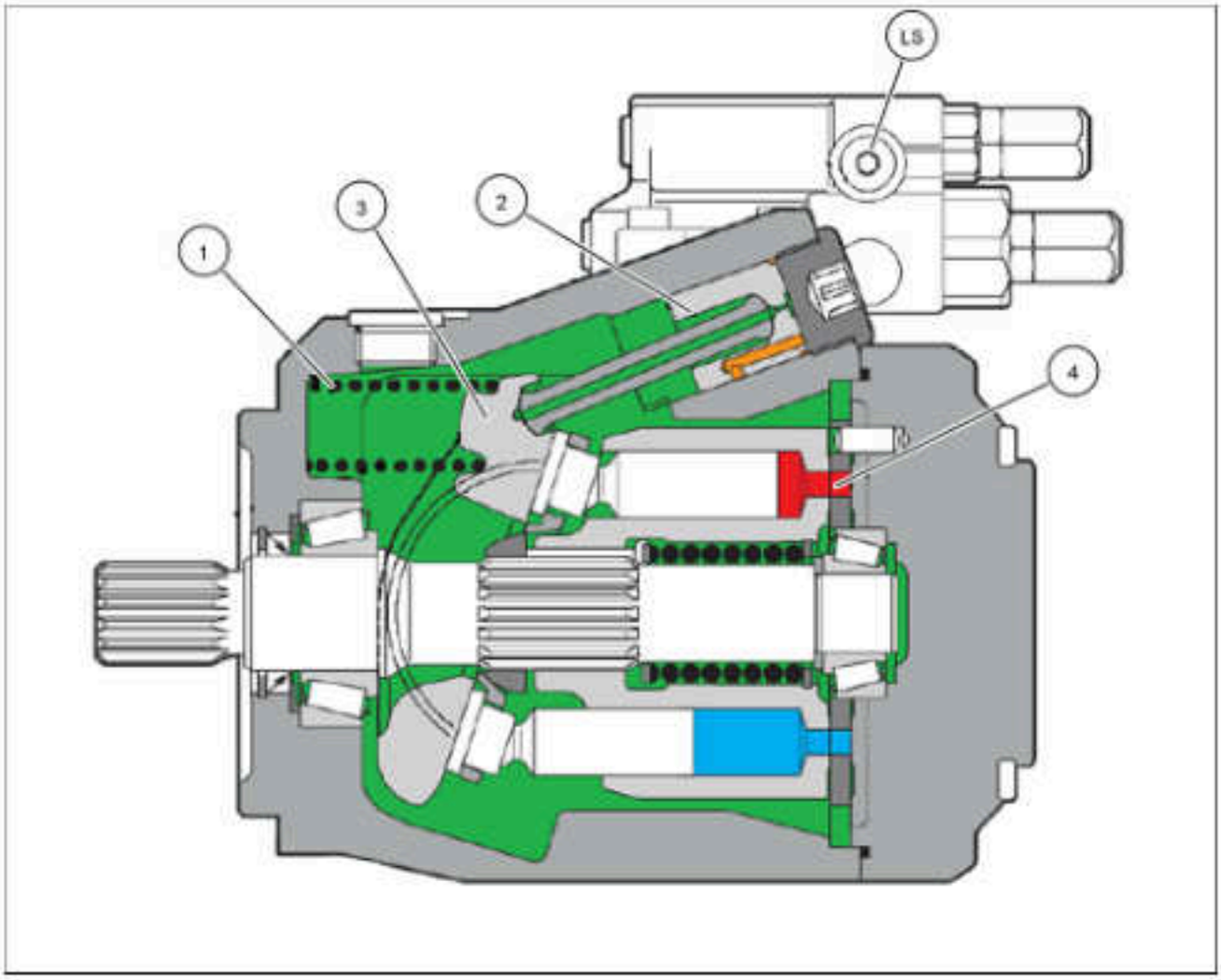


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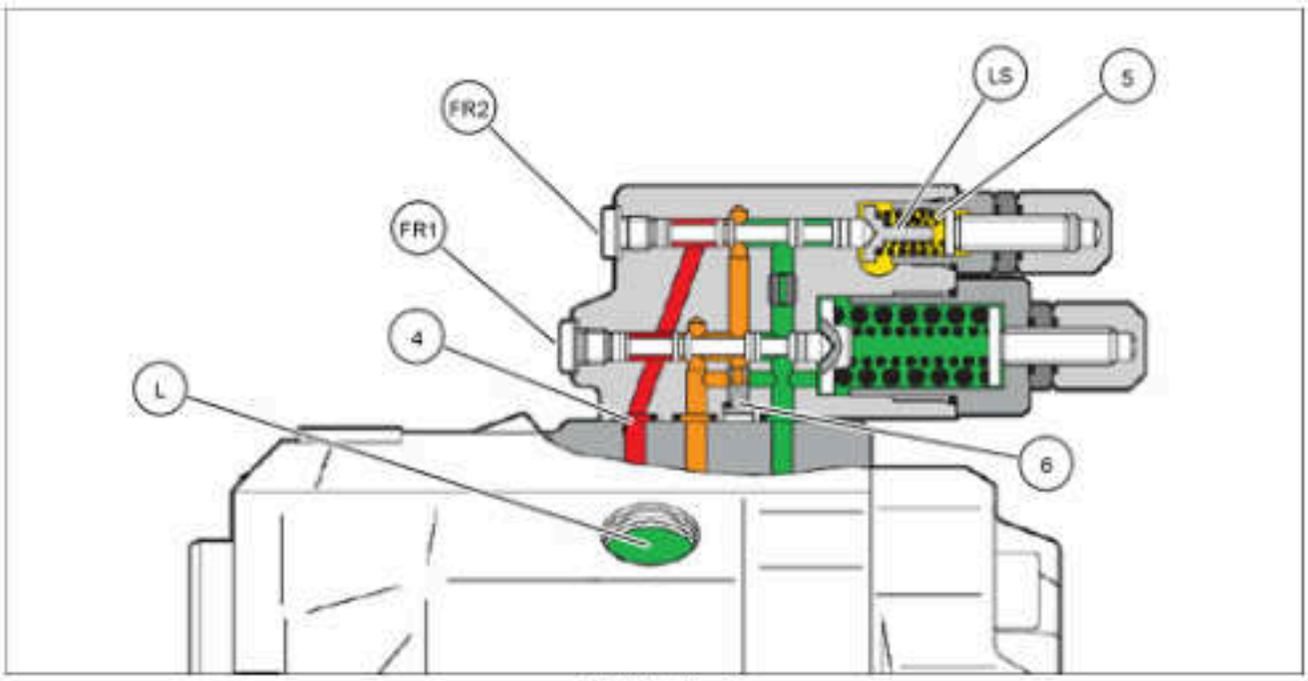
SCR System Components

Graphic Legend	
A – DEF fluid passage	D – Heater
B – DEF fluid hose	E – CAN wire
C – Electrical wiring	F – Dosing module cooling
Components	
1 – Diesel Exhaust Fluid (DEF) tank	14 – Mixer
2 – Inline filter	15 – Catalyst
3 – Supply module	16 – Humidity sensor
4 – Denox Controller Unit (DCU)	17 – DEF tank temperature sensor
5 – Pump	18 – DEF tank level sensor
6 – Reversing valve	19 – Catalyst inlet temperature sensor
7 – DEF temperature sensor	20 – Catalyst outlet temperature sensor
8 – DEF pressure sensor	21 – NOx sensor
9 – Prefilter	22 – Engine Controller Unit (EDC7UC31)
10 – Filter	23 – CAN wire (from NOx sensor to ECU)
11 – Dosing module	24 – CAN wire (between DCU and ECU)
12 – Dosing valve	25 – DEF tank heater solenoid
13 – Return flow valve	

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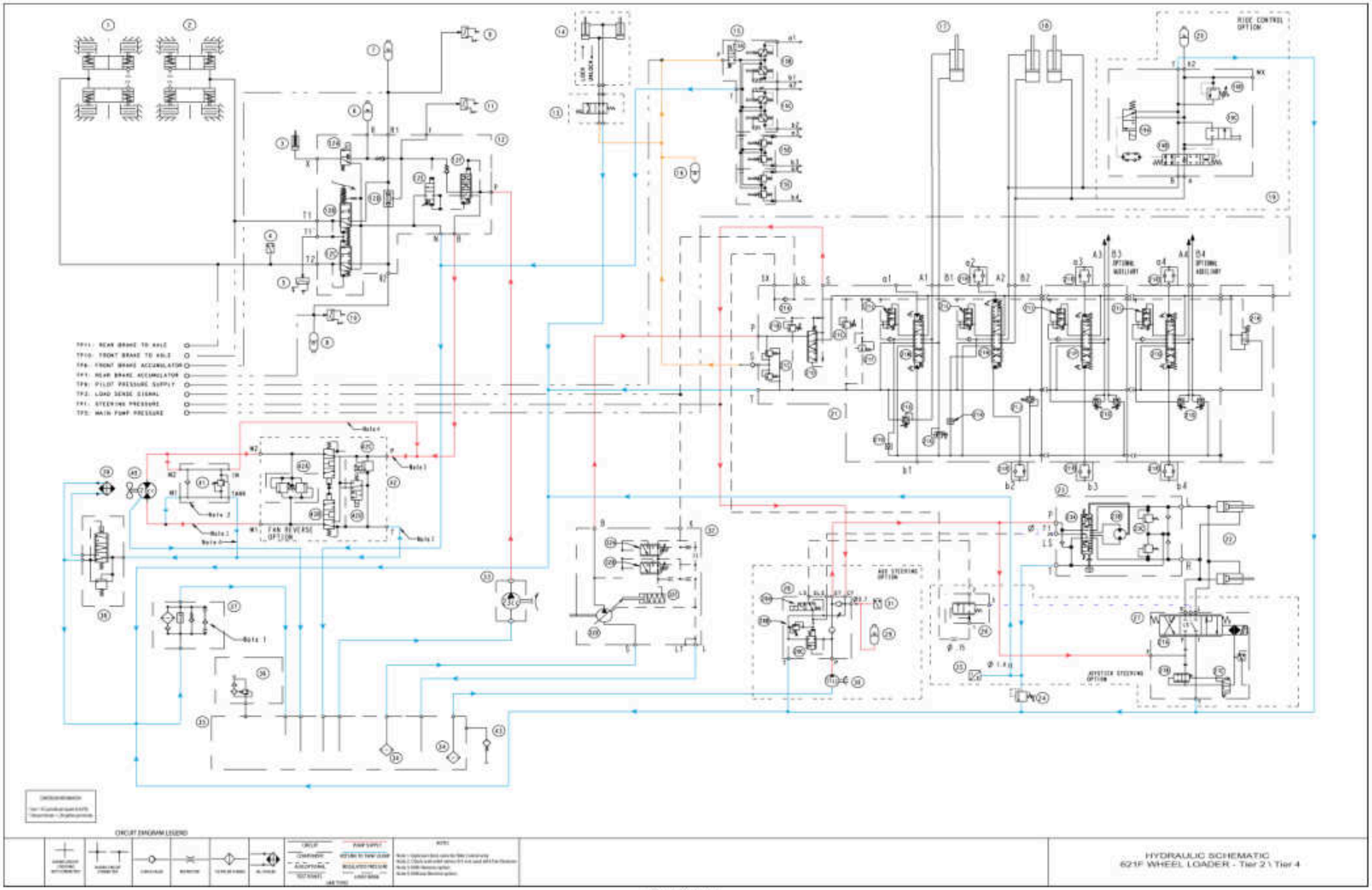


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