CRAWLER EXCAVATOR

SERVICE MANUAL

HX220LL

HYUNDAI

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GENERAL

WARNING

AVOID DEATH OR SERIOUS INJURY

Diesel fuel is highly flammable and can be potentially explosive. To prevent fires or explosion, keep arcs, sparks or other ignition sources away from diesel fuel or fuel containers.

Specification

Fuel Tank 1

Volume (Full)	400 L (106 U.S. gal)		
Tank Size (mm)	772 x 820 x 979		
Tank Weight	about 189 kg (416 lb) (Empty)		
Fuel Strainer Filter (4, Figure 1)	Filtration Ratio		24 mesh
	Working Oil Temp.		-40 – 80°C
Fuel Cap (5, Figure 1)	Check Valve	Positive Pressure	0.25 – 0.05 bar (0.25 – 0.05 kg/cm², 3.63 – 0.73 psi)
		Negative Pressure	below 0.035 bar (0.035 kg/cm², 0.51 psi)
Fuel Sensor (18, Figure 1)	Working Voltage		V max. 48 V
	Working Current		I max. 300 mA
	Rating Power		125 mW

Fuel Tank 2

Volume (Full)	606 L (160 U.S. gal)		
Tank Size (mm)	2,710 x 330 x 979		
Tank Weight	about 439 kg (968 lb) (Empty)		
Fuel Strainer Filter (4, Figure 2)	Filtration Ratio		24 mesh
	Working Oil Temp.		-40 – 80°C
Fuel Cap (5, Figure 2)	Check Valve	Positive Pressure	0.25 – 0.05 bar (0.25 – 0.05 kg/cm², 3.63 – 0.73 psi)
		Negative Pressure	below 0.035 bar (0.035 kg/cm², 0.51 psi)

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Hydraulic Circuit

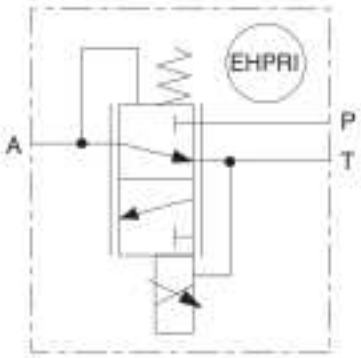


Figure 3

TROUBLESHOOTING

Symptoms	What to check	Possible Solution
Pressure setting at port A constant setting regardless of changes in current at approximately 0 bar.	Remove cartridge and inspect O-rings for possible damage or degradation.	Replace the EPPR valve or solenoid cartridge (part no: 410116-00646).
	Remove cartridge and inspect for contamination.	Clean or replace with new cartridge. DO NOT DISASSEMBLE CARTRIDGE TO ATTEMPT TO REPAIR.
	Check coil resistance (20.9 Ohms @ 20°C)	If shorted or open circuit, replace with new valve
Pressure setting at port A constant setting regardless of changes in current at a very high-pressure.	Remove cartridge and inspect for contamination collected on the screen inlet to the valve.	Clean off the screen or replace with new cartridge. DO NOT DISASSEMBLE CARTRIDGE TO ATTEMPT TO REPAIR.

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PROCEDURAL TROUBLESHOOTING BASELINE RECOMMENDATIONS

Initial Checks and Tests to Establish Operating Condition of the Excavator

Troubleshooting Recommendations

An excavator that fails to deliver designed performance must be checked for the following:

- First hydraulic flow.
- Then hydraulic pressure in a specified order of priority through different points of the system.

To verify adequate available hydraulic flow, before any other tests are performed through the circuit:

Check engine operation -

- at 1,950 rpm with no load.
- at 1,950 rpm stall load.

If engine rpm drops excessively with a load or fails to surpass rated speed (1,900 rpm), performance problems may be because of inadequate hydraulic flow caused by lagging rotational speed.

NOTE: *Verify actual flow on the excavator against rated performance, with a flow meter.*

If engine tests meet specifications and adequate torque and horsepower are available at the pump drive flex coupling, pull out the electrical tray under the operator's seat to inspect the self-diagnostic display.

If the EPOS trouble code display is clear, check hydraulic functions in the following sequence:

- Pilot pressure.
- Negacon, negative control pressure.
- Main relief pressure (P1 and P2 pump)
- Swing pressure.
- Port relief pressure (individual control functions; boom, arm, bucket, swing, and travel)
- Power boost circuit.
- Standard performance tests; cylinder speed, hydraulic motor (travel and swing) speed, cylinder oil tightness "permissible drift" test.

  NOTE: *System specification performance tests of individual activator function are determined by flow rate through the component or circuit, not the control pressure or system pressure*

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13. Open the right side door.

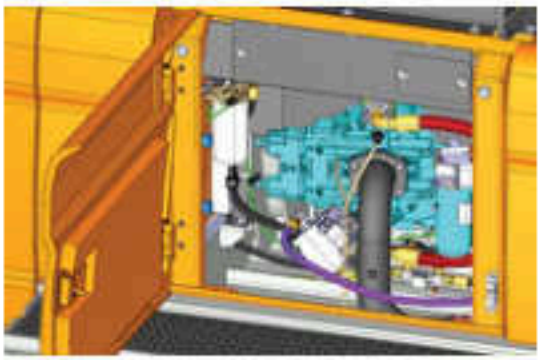


Figure 33 DS1602769

14. Remove bolts and washers (1, Figure 34) (4 ea) with oil filter assembly (2).
Do not remove hoses (3).
    - Tool: 17 mm
    - Torque: 63.7 N.m (6.5 kg.m, 47 ft lb)

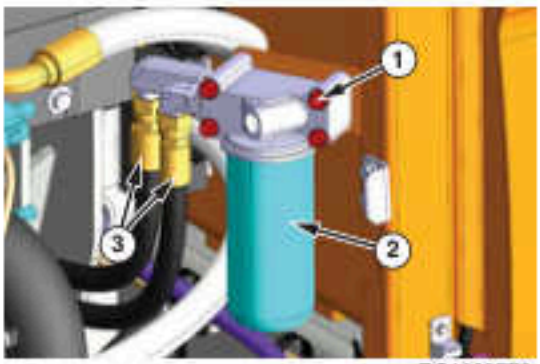


Figure 34 DS1602770

15. Remove bolts (1, Figure 35) (11 ea) and remove baffle cover (2) from pump room.
    - Tool: 19 mm
    - Torque: 107.9 N.m (11 kg.m, 79.6 ft lb)
    - Cover weight: 7 kg (15.4 lb)

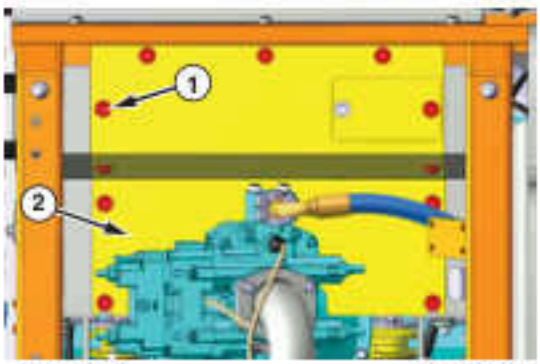


Figure 35 DS1602771

16. Open the engine cover. Remove bolts (1, Figure 36) (10 ea) with muffler cover (2) and tail pipe cover (3).
    - Tool: 19 mm
    - Torque: 107.9 N.m (11 kg.m, 79.6 ft lb)
    - Cover weight: about 20 kg (44 lb)

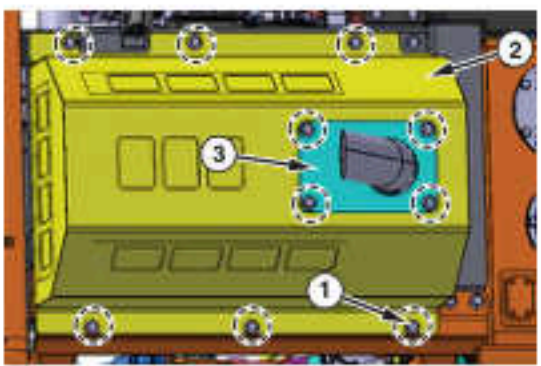


Figure 36 EX1404076

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⚠ WARNING

AVOID DEATH OR SERIOUS INJURY

Release any pressure in the hydraulic oil tank before doing any work.

12. Loosen the oil tank air breather slowly to release the pressure inside the hydraulic oil tank.

    Pulling the breather cap upward, the check valve (0.45 bar) opens, and the air is discharged to the atmosphere from the top of the hydraulic oil tank.

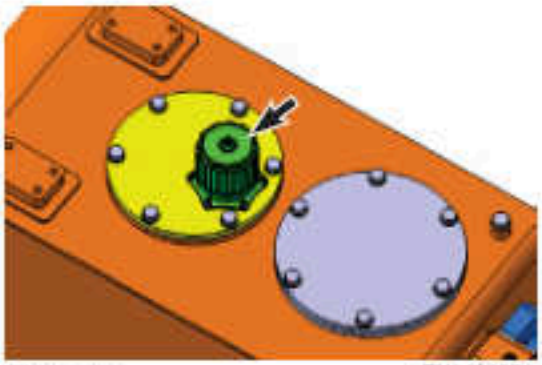
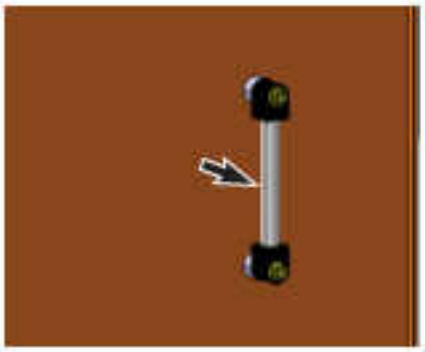


Figure 7 EX1404054

13. Oil drain method.

    NOTE: *Check the level on the oil level gauge before draining the oil.*



EX1402303

Figure 8

A. Remove cover (2 ea) on oil tank (bolt: 12 ea) and drain hydraulic oil using oil pump. (Figure 9)
Also pump oil from the suction pipe.

- Tool: 17 mm ( )
- Torque: 63.7 N.m (6.5 kg.m, 47 ft lb)

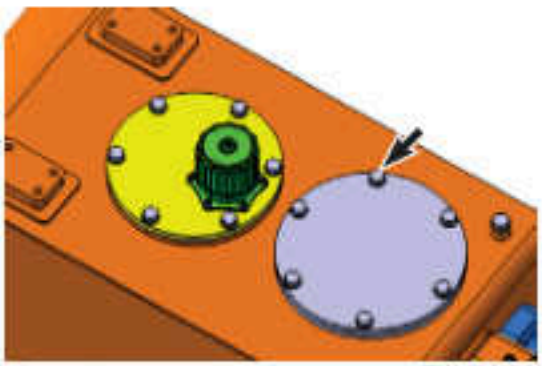
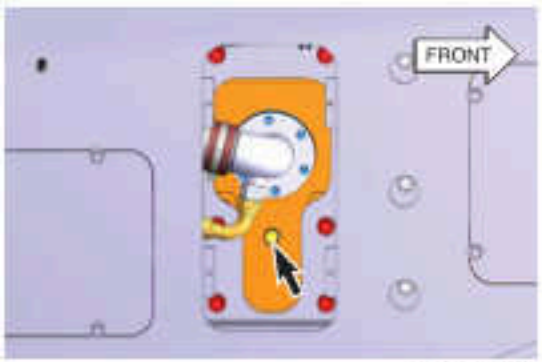


Figure 9 EX1404072

B. Drain hydraulic fluid using drain plug.
(without oil pump) (Figure 10)

- Tool: 27 mm ( )
- Torque: 93.1 N.m (9.5 kg.m, 68.7 ft lb)
- Hydraulic oil tank volume
  - Approximately: 195 L (52 U.S. gal)
  - Effective level: 131 L (35 U.S. gal)

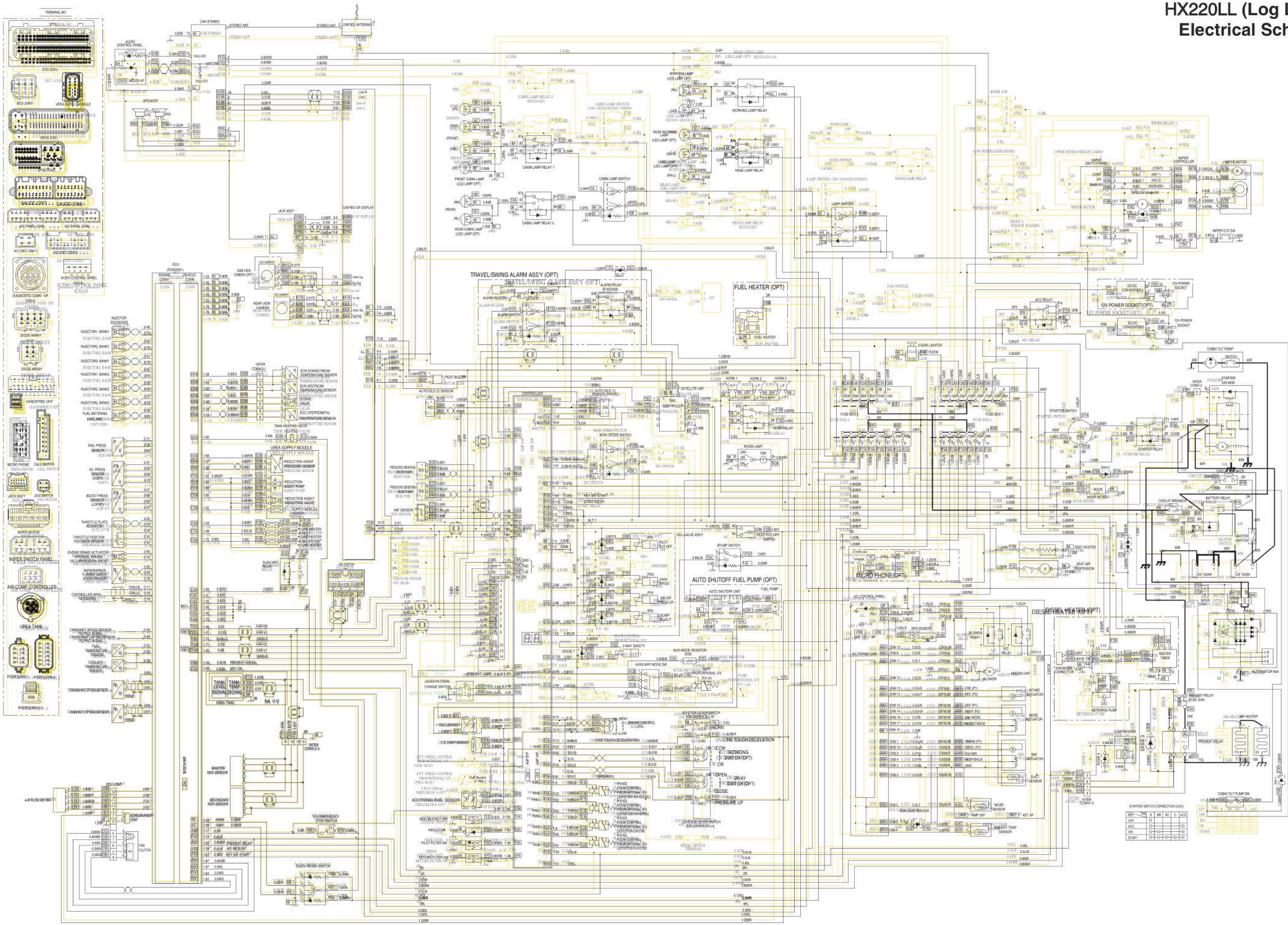


DS1602639

Figure 10 Bottom of Main Frame

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HX220LL (Log Loader)
Electrical Schematic



Hydraulic Schematic / Electrical Schematic