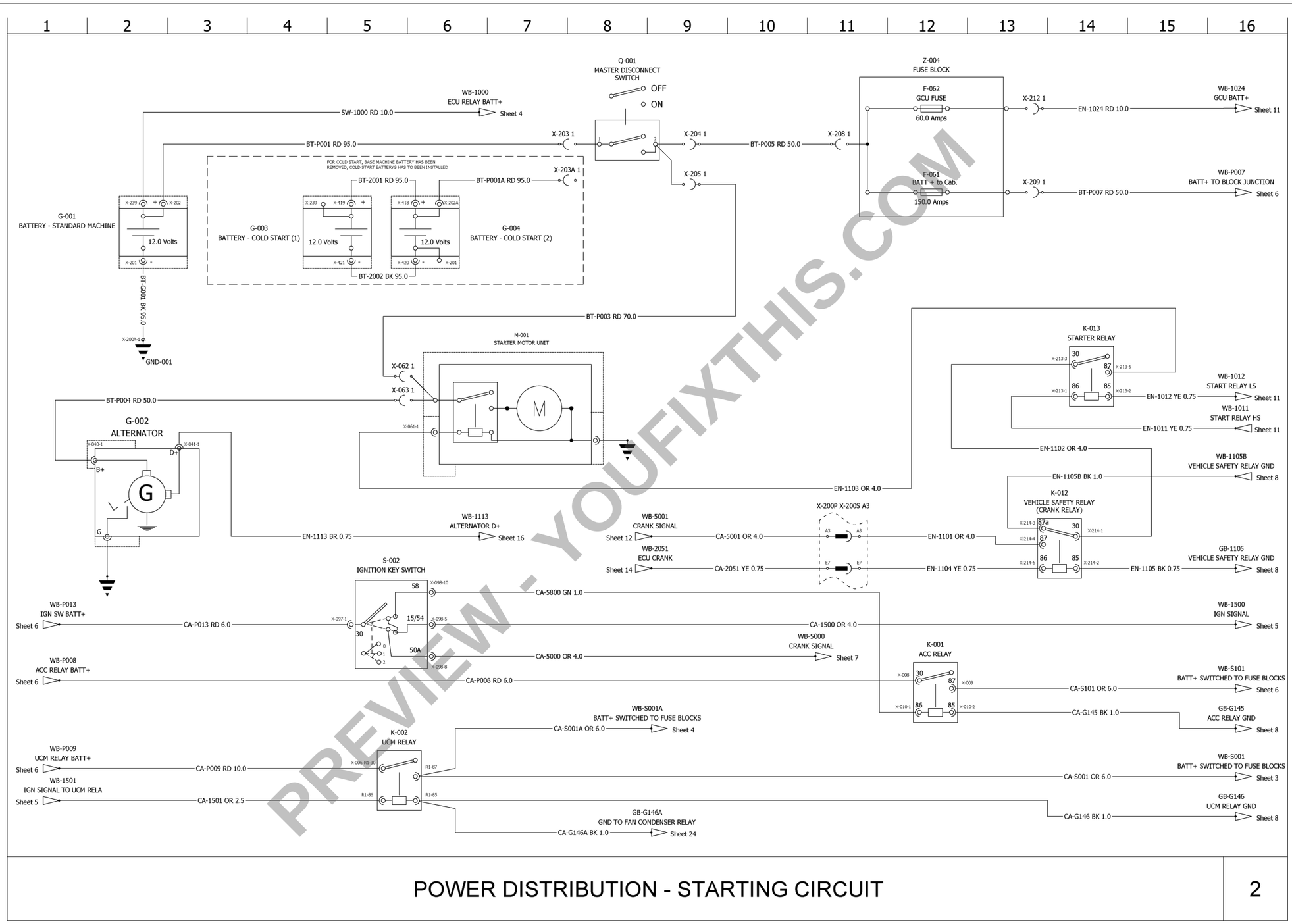
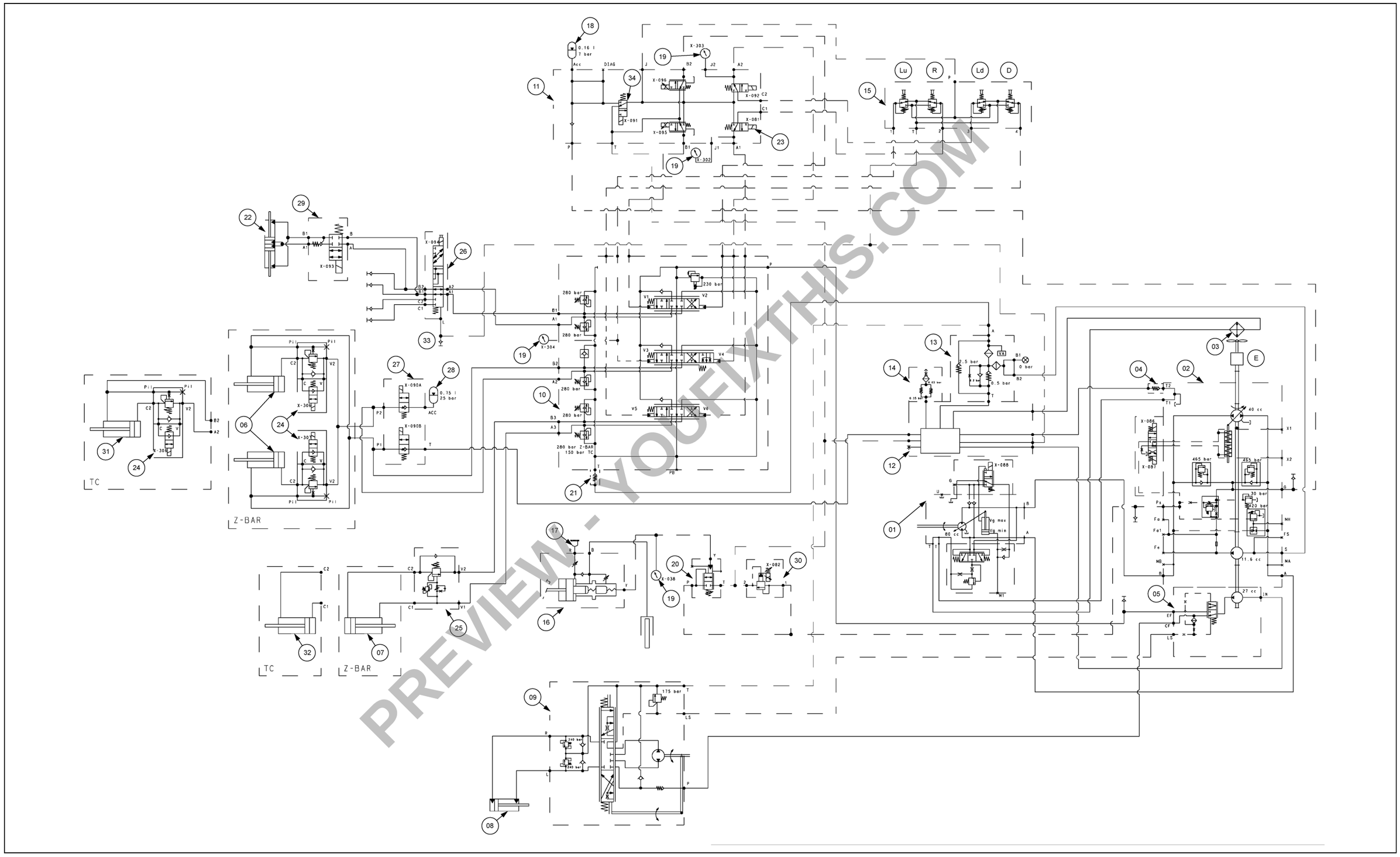


YOUFIXTHIS.COM

LEIL14CWL0662JA 1

Download full manual at youfixthis.com

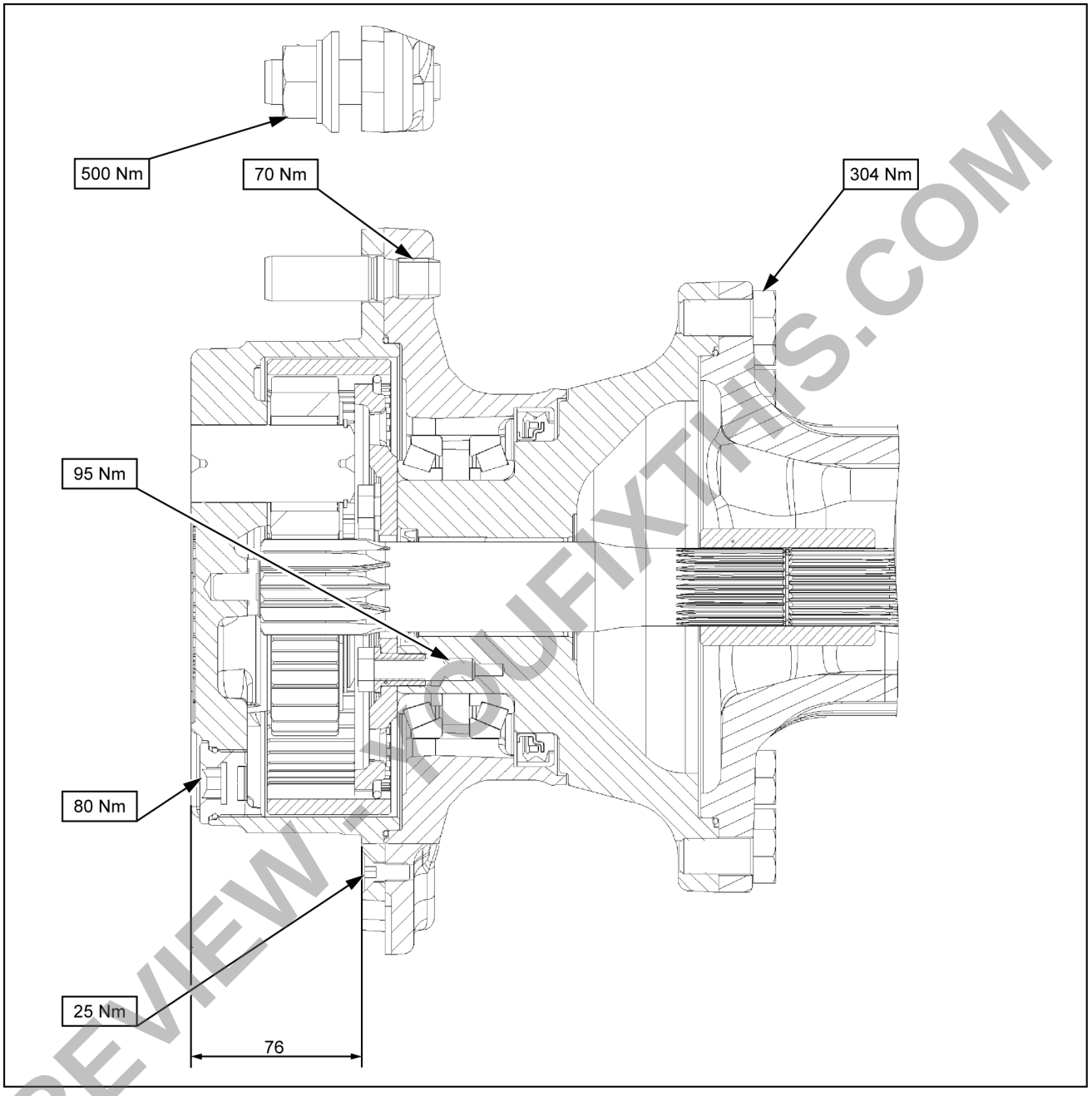


LEIL14CWL0774JB 1

Download full manual at youfixthis.com

Powered front axle - Torque

NOTE: *for axle with 3 planetary epicyclic reduction gear the height is* ***76 mm*** *(****3 in****).*



LEIL14CWL0277GB 1

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Consumables

Engine		
	Type of oil	**CASE AKCELA UNITEK NO. 1™ SBL CJ-4 SAE 10W-40**
	Capacity (with filter change)	**7.0 L** (**7.4 US qt**)
Cooling system		
	Type of coolant	**CASE AKCELA PREMIUM ANTI-FREEZE** (conventional coolant) or **CASE AKCELA ACTIFULL™ OT EXTENDED LIFE COOLANT** (OAT coolant) *
	Total system capacity (50% coolant - 50% water)	**13 L** (**3.4 US gal**)
Fuel system		
	System capacity	**25.0 L** (**6.6 US gal**)
Hydraulic system and transmission		
	Type of fluid	**CASE AKCELA HYDRAULIC EXCAVATOR FLUID** (conventional fluid) **CASE AKCELA HY-TRAN® ULTRA™ SSL TRANSMISSION OIL** (low temperature fluid)
	Total system capacity	**53 L** (**14 US gal**)
	Reservoir capacity	**40.0 L** (**10.6 US gal**)
Axles		
	Type of oil	**CASE AKCELA GEAR 135 H EP 80W-90**
	Front axle	Use amount required to top off the axle
	Rear axle	Use amount required to top off the axle
Brake system		
	Type of oil	**BRAKE LHM FLUID**
	Service capacity	**1.0 L** (**1.1 US qt**)
Grease fittings, as required		
	Type of grease	**TUTELA MULTI-PURPOSE EP GREASE 251H, GR-9**

NOTE: ** see the Operator Manual for replacement of coolant.*

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Hydraulic systems - Troubleshooting

Problem	Possible Cause	Correction
Engine does not come under load	Operation faults in the pressure control circuit of travel pump	Consult your Dealer
	Travel motor not connected with rear axle	Recheck installation of travel motor
	Parking brake still applied	Release the parking brake
	Parking brake switch still stuck in opening position	Replace the switch
	Travel direction lever faulty	Replace the lever
Engine under load	Rear axle locked	Check axle
	Brake locked	Release the brake
Hydraulics of steering and working system does not react	Transmission coupling faulty	Replace the coupler
Machine does not move	Oil level low	Top up oil level
Hydraulic system does not operate regularly	Oil level low	Top up oil level
	Oil filter clogged	Replace the oil filter
	Hydraulic system faulty	Consult your Dealer
Hydraulic oil overheated	Oil level low	Top up oil level
	Oil filter clogged	Replace the oil filter
	Delivery control wrongly adjusted	Adjust delivery control for lower delivery
Machine does not move either forward or back	Travel direction valve faulty	Replace the solenoid
	Travel direction lever faulty	Replace the lever
On a flat surface the machine starts only with high engine speed	Supply filter contaminated	Clean or replace the filter, if necessary
Insufficient acceleration in both travelling directions	Supply filter contaminated	Clean or replace the filter, if necessary
	Unsuitable oil	Replace with correct oil.
	Oil temperature too high	Check and try to lower the temperature
	Friction loss in the axle traction	Consult your Dealer
	Operation faults in the pressure control circuit of travel pump	Consult your Dealer
	Operation faults in the high pressure circuit of transmission	Consult your Dealer.
	Operation faults in the pressure feed circuit of travel pump	Consult your Dealer
Maximum travelling speed not reached	Supply filter contaminated	Clean or replace the filter, if necessary
	Unsuitable oil	Replace with correct oil
	Oil temperature too high	Check and try to lower the temperature
	Friction loss in the axle traction	Consult your Dealer
	Operation faults in the pressure control circuit of travel pump	Consult your Dealer
	Operation faults in the high pressure circuit of transmission.	Consult your Dealer
	Operation faults in the pressure feed circuit of travel pump	Consult your Dealer

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Variable displacement pump - General specification

	21F - 121F	221F - 321F
System	Pump with adjustment depending on engine RPM	
Model	A4VG40DA1D2/32R	A4VG56DA1D2/32R
Displacement	**40.0 cm³/rev** (**2.44 in³/rev**)	**56.0 cm³/rev** (**3.42 in³/rev**)
Power (useful)	**43 - 48 kW** (**58 - 65 Hp**)	**55 kW** (**75 Hp**)
Transmission through	Diesel engine direct drive, i = 1.0	
Service revolutions (= engine rated speed)	**2300 RPM**	**2500 RPM**
Maximum oil delivery	**88.8 l/min** (**23.46 US gpm**)	**136.0 l/min** (**35.93 US gpm**)
Supply pressure (rotation speed at full load)	**25 bar** (**363 psi**)	**27 bar** (**392 psi**)
Adjustment start	**50 bar** (**725 psi**) (at **1100 RPM**)	**50 bar** (**725 psi**) (at **1100 RPM**)
Adjustment end	**400 bar** (**5800 psi**) (at **1800 RPM**)	**400 bar** (**5800 psi**) (at **1900 RPM**)
Pressure cut-off	**430 bar** (**6235 psi**)	
High-pressure relief valves - opening -	**465 bar** (**6743 psi**)	**467 bar** (**6772 psi**)
Hydraulic motor adjustment start	**245 bar** (**3553 psi**)	**245 bar** (**3553 psi**) (**190 bar** (**2755 psi**)“high speed” models)
Voltage	**12 V**	

PREVIEW - YOUFIXTHIS.COM

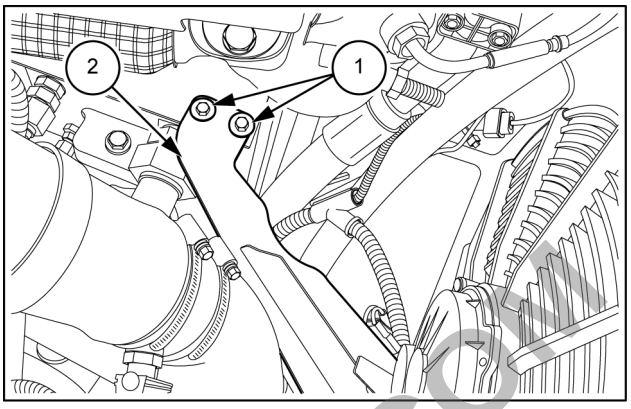
Download full manual at youfixthis.com

[35.357] Pilot system 35.6
[35.600] High flow hydraulics 35.7
[35.353] Hydraulic travel system 35.8
[35.701] Front loader arm hydraulic system 35.9
[35.723] Front loader bucket hydraulic system 35.10
[35.734] Tool quick coupler hydraulic system 35.11
Frames and ballasting 39
[39.140] Ballasts and supports 39.1
Steering 41
[41.101] Steering control 41.1
[41.200] Hydraulic control components 41.2
[41.216] Cylinders 41.3
Electrical systems 55
[55.000] Electrical system 55.1
[55.100] Harnesses and connectors 55.2
[55.045] Front axle control system 55.3
[55.408] Warning indicators, alarms, and instruments 55.4
[55.DTC] FAULT CODES 55.5
Platform, cab, bodywork, and decals 90
[90.150] Cab 90.1

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

2. Tighten the two under bolts **(1)** of the condenser bracket **(2)**.

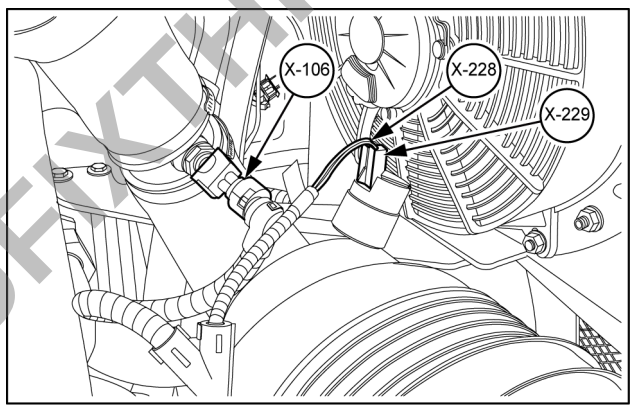


LEIL14CWL0160AB 38

3. Connect the condenser hoses **(2)** and **(3)**.
   Connect the fan electrical connector **(1)**.

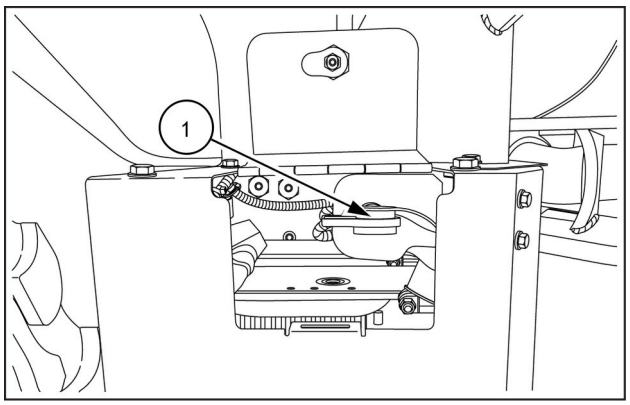
For all version

1. Connect the wiring harness (X-228) and (X- 229) to the engine air filter.
   Connect the wiring harness (X-106) to the air temperature sensor.



LEIL14CWL0171AB 39

2. Refill the engine with recommended oil.
   Refill the cooling system with a 50 % ethyleneglycol and 50 % water coolant solution. Install radiator cap.
3. Switch the master disconnect switch **(1)** to the ON position.



LEIL14CWL0017AA 40

PREVIEW - YOUFIXTHIS.COM

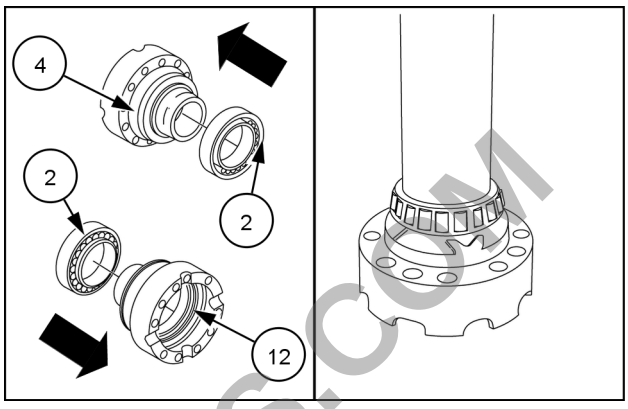
Download full manual at youfixthis.com

Differential - Assemble

100% lock differential

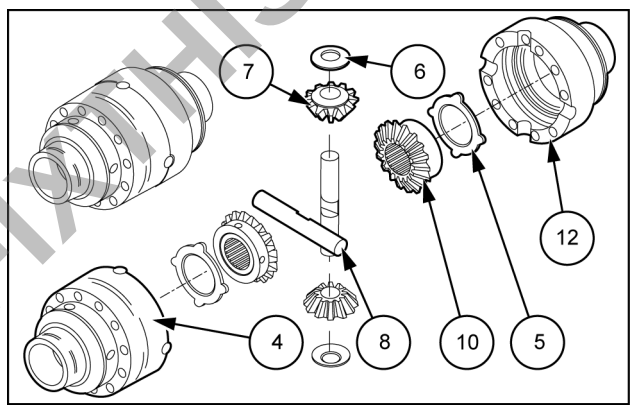
1. Assemble the bearing cones **(2)** on the half housing **(4)** and **(12)**, using the driver **380002216** and a hammer.

NOTE: *the driver must be used with the handle* ***380002211*** *. Wear protective gloves.*



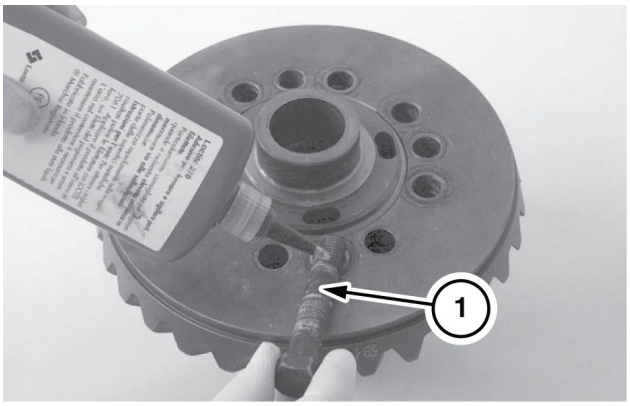
LEIL14CWL0298AA 1

2. Position a half housing **(4)** on a workbench and assemble all inner components (locking differential counter-discs **(5)**, sun gears **(9)** and **(10)**, spiders **(8)**, spider gears **(7)**, thrust washers **(6)**), as shown in figure.
Join the two half boxes, aligning the reference marks made during disassembly.



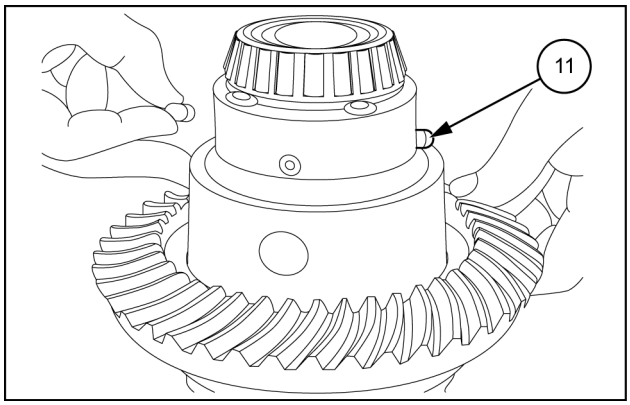
LEIL14CWL0303AB 2

3. Before matching surfaces, make sure that they are perfectly clean, without grease and clean them with appropriate detergents.
Place the bevel gear on the differential housing.
Apply sealant on the threads and tighten the bolts **(1)** to the requested torque.



LEPH12WHL0534AB 3

4. Insert the pins **(11)** into their seats.

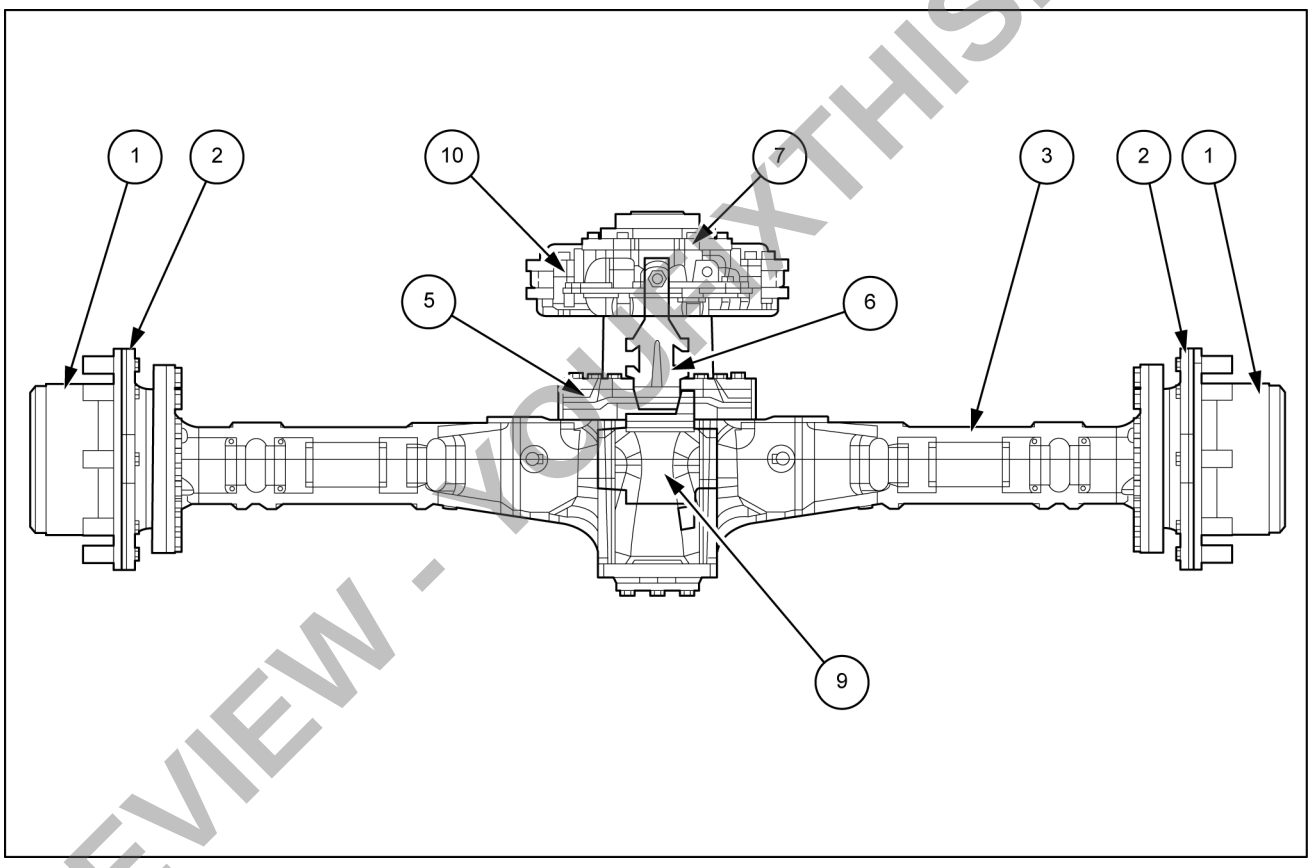


LEIL14CWL0304AB 4

PREVIEW - YOUFIXTHIS.COM
Download full manual at youfixthis.com

Powered rear axle - General specification

	21F - 121F	221F - 321F	221F - 321F High Speed (HS)
28.20 - Differential: Limited Slip (LSD) With TB172 transmission	X	X	–
28.20 - Differential: Open With TB172 transmission	X	X	–
28.20 - Differential: Lock 100% With TB172 transmission	X	X	–
28.20 - Differential: Limited Slip (LSD) With TB138.5 transmission	–	–	X
28.20 - Differential: Open With TB138.5 transmission	–	–	X
28.20 - Differential: Lock 100% With TB138.5 transmission	–	–	X



LEIL14CWL0370FB 1

1. EPICYCLIC REDUCTION GEAR: planetary carrier with reduction/transmission parts
2. WHEEL HUB: wheel support part containing the epicyclic reduction gears
3. AXLE BEAM TRUMPET: load-bearing shell structure of the axle
4. TRANSMISSION BOX: structure with reduction gear
5. DIFFERENTIAL SUPPORT: differential housing with ring bevel gear adjusting system
6. PINION: pinion with relative adjusting and support parts
7. FLANGE: flange and relative fastening parts
8. DIFFERENTIAL: differential parts with ring bevel gear

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Contents

Rear axle system - 27

Rear bevel gear set and differential - 106

TECHNICAL DATA

Differential
Special tools 4

FUNCTIONAL DATA

Bevel pinion
Component identification 5

Differential
Component identification - Differential support 6
Component identification 7
Component identification 8

Limited slip differential
Component identification 9

Differential lock
Component identification 10

SERVICE

Bevel gear
Check 11

Bevel pinion
Disassemble 12
Assemble 14

Differential
Disassemble - Differential support 18
Assemble - Differential support 20
Disassemble 24
Assemble 26
Disassemble 29
Assemble 30

Limited slip differential
Disassemble 31
Assemble 34

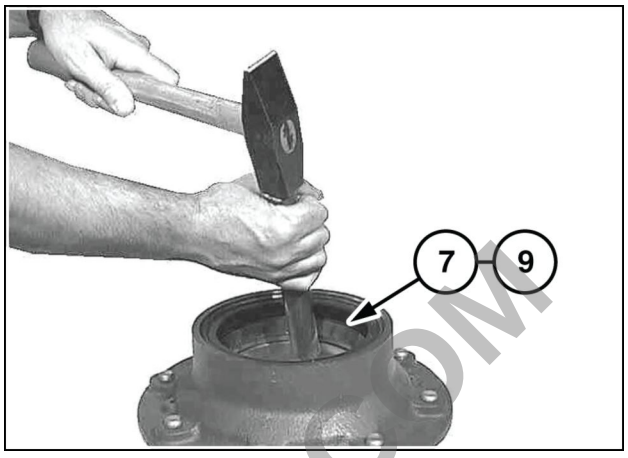
Differential lock
Disassemble 38

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

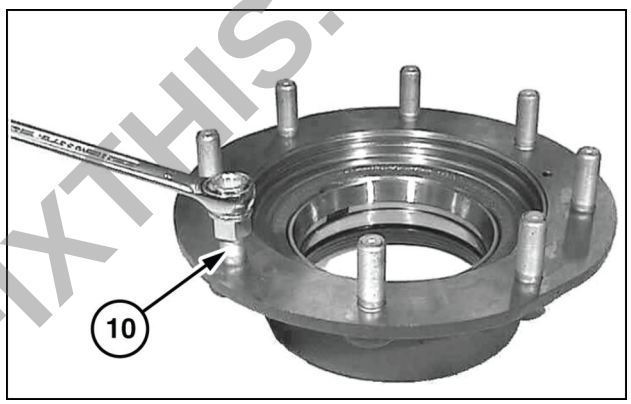
Take out the bearing cups **(7)** and **(9)** with a driver and a hammer.

NOTE: *wear protective gloves.*



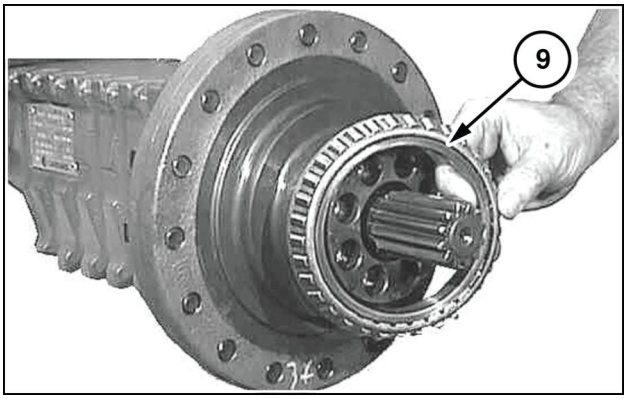
LEPH12WHL0751AB 8

To unscrew and replace the worn stud bolts **(10)** of the wheel hub, use a nut and a locknut. Warm up the screwed part, if necessary.



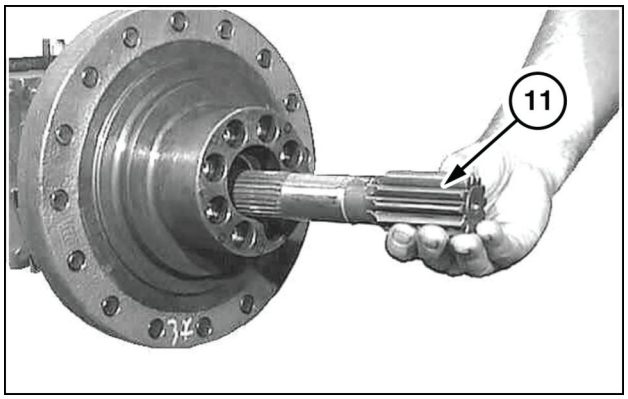
LEPH12WHL0752AB 9

Remove the bearing **(9)**.



LEPH12WHL0753AB 10

Extract the short half axle **(11)**.



LEPH12WHL0754AB 11

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Hydraulic systems - 35

High flow hydraulics - 600

121F XT , 121F ZB , 21F XT , 21F ZB , 221F HS , 221F STD , 321F HS , 321F STD

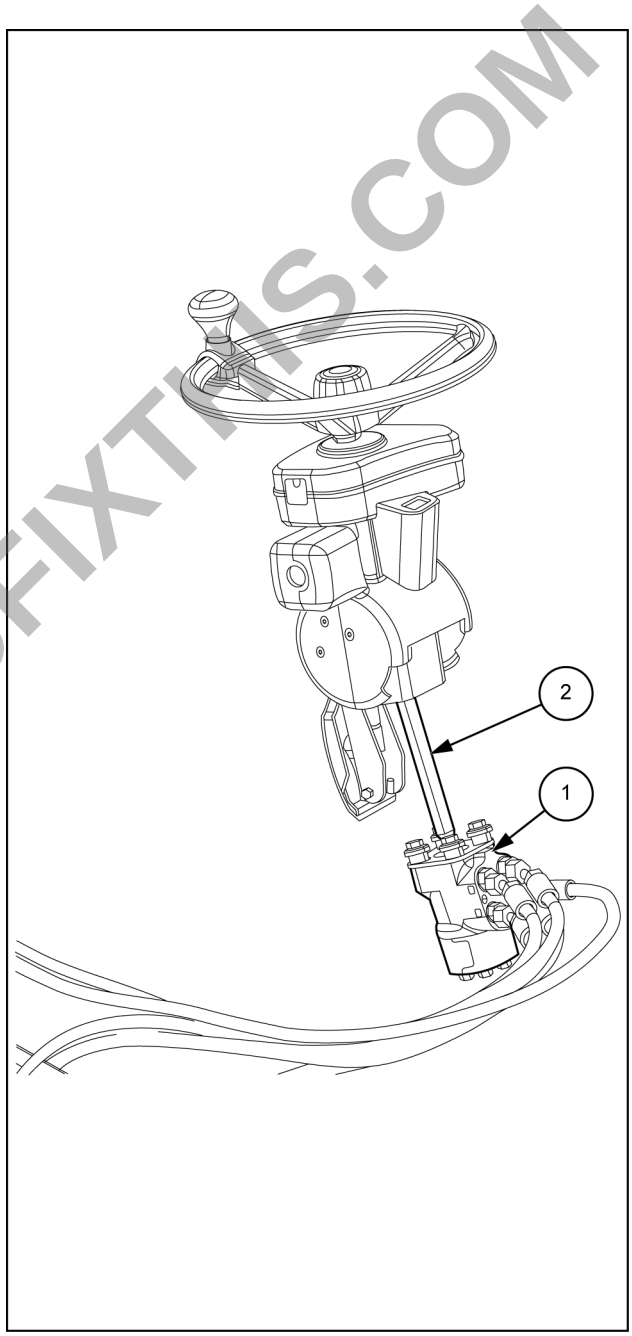
PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Steering control - General specification

Power Steering Hydrostatic, Load Sensing relief and shock valves located in power steering control valve **(1)**.
Load Sensing operates on dynamic priority valve of the main valve.
Relief valve setting (integrated in steering motor): **175 bar** (**2538 psi**)
Shock valve setting: **235 - 245 bar** (**3408 - 3552 psi**)
Steering capacity: **250 cm³/rev** (**15.3 in³/rev**)
Emergency steering capacity: **125 cm³/rev** (**7.6 in³/rev**)

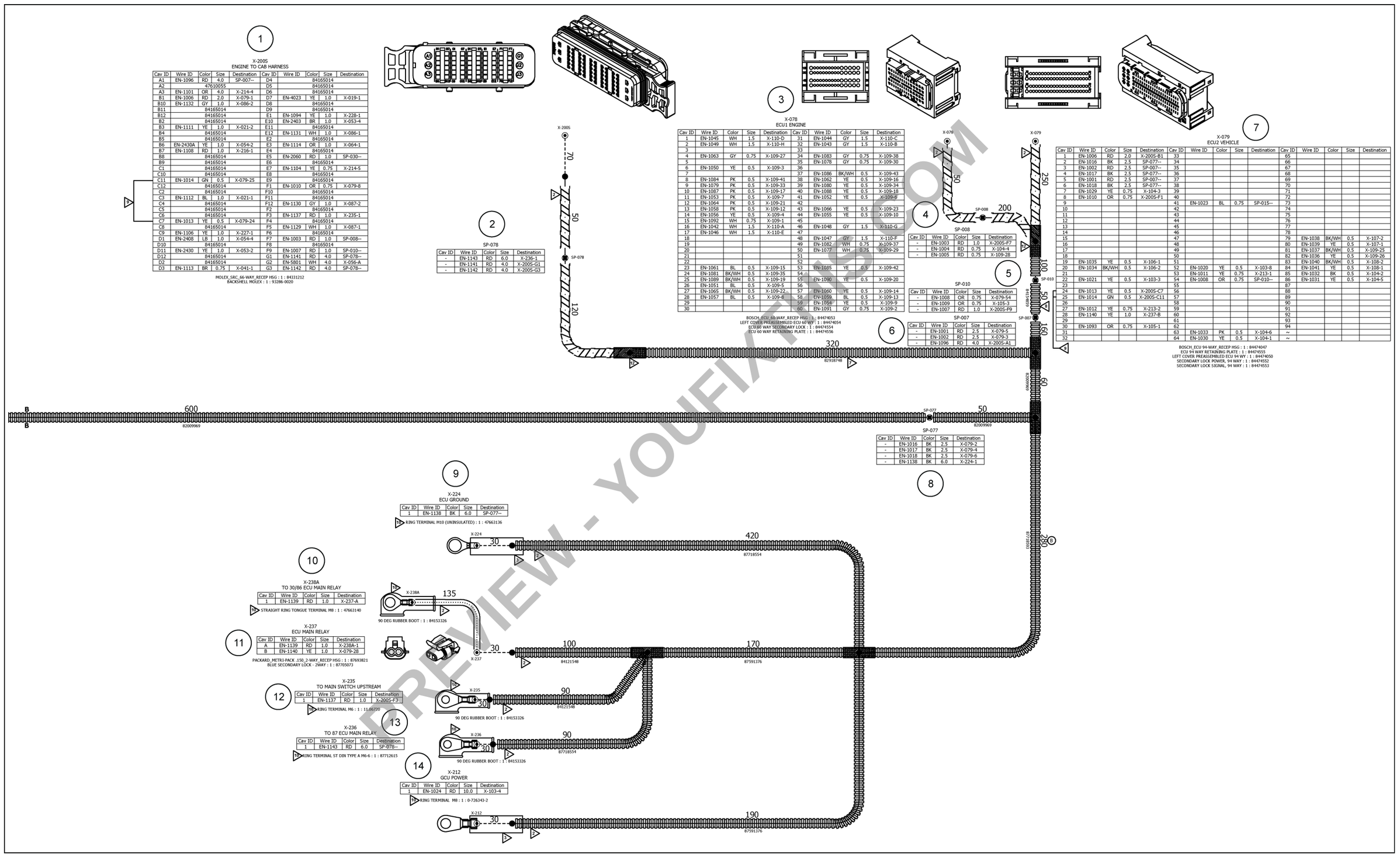
1. Power steering control valve
2. Column steering



LEIL13TLH1646CB 1

PREVIEW - YOUFIXTHIS.COM

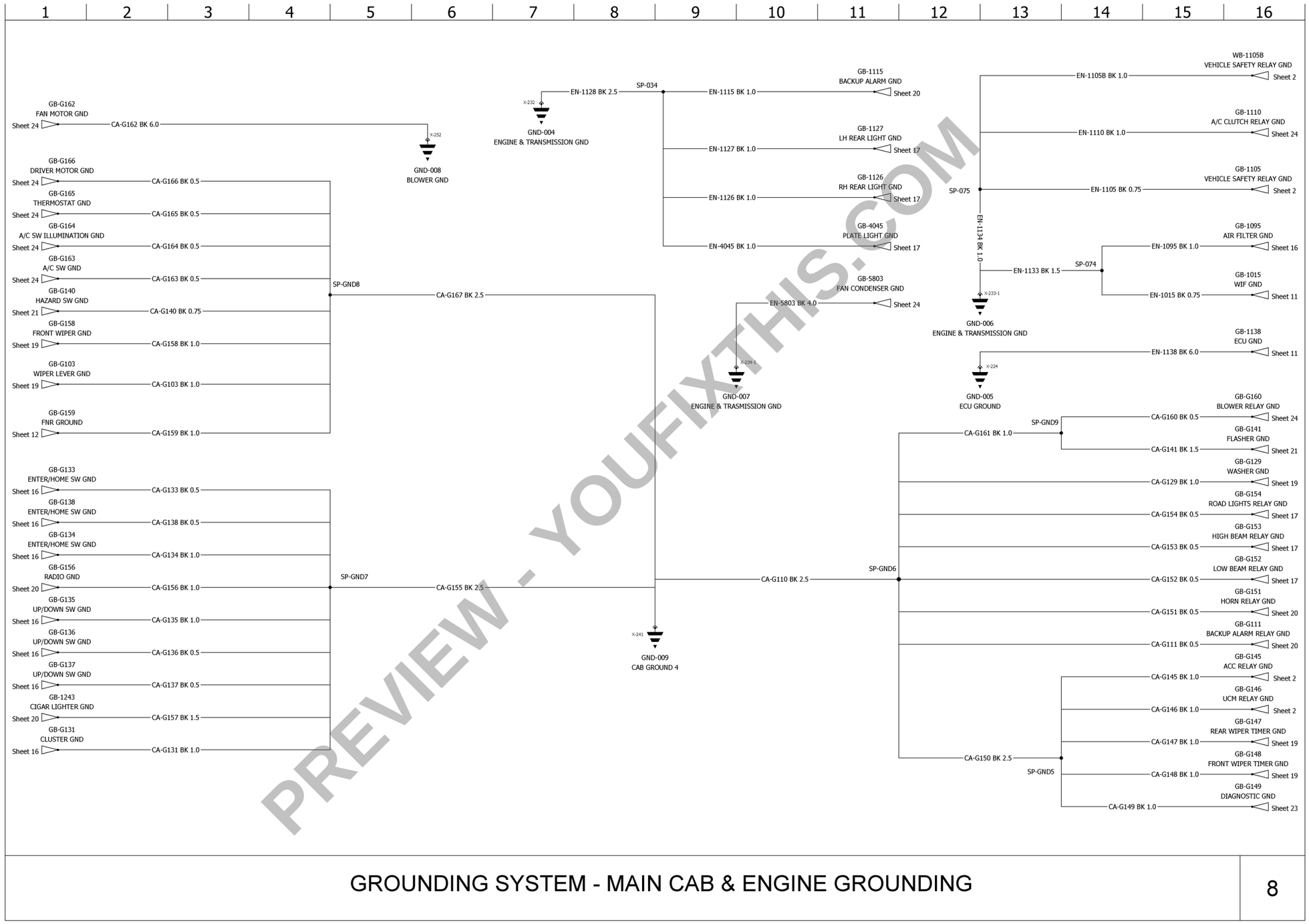
Download full manual at youfixthis.com



PREVIEW - YOUFIXTHIS.COM

LEIL14CWL0707JB 1

Download full manual at youfixthis.com



PREVIEW - YOUFIXTHIS.COM

LEIL14CWL0668JA 1

Download full manual at youfixthis.com

Connector CN2 (X-072)

PIN	ITEM	FUNCTION	SIGNAL
CN2–1	–	+5V	Not used
CN2–2	–	SW-1 (wake up)	Not used
CN2–3	23	Engine Intake Air Filter	INP. Negative
CN2–4	–	SW-3 / [CAN_B-L]	Not used
CN2–5	–	SW-4	Not used
CN2–6	10	Main High Beam Lamp	INP. Positive
CN2–7	–	SW-6	Not used
CN2–8	–	SW-7 (wake up)	Not used
CN2–9	6	Turn Left	INP. Positive
CN2–10	19	Turn Right	INP. Positive
CN2–11	–	SW-15	Not used
CN2–12	–	SW-16	Not used
CN2–13	26	D+ Alternator Charging	OUT.Neg./INP Pos.
CN2–14	–	[Battery] / +5V	Not used
CN2–15	–	Power GND	Ground
CN2–16	–	SW-22	Not used
CN2–17	–	Cranking Detection	INP. Positive
CN2–18	16	Brake Fluid Level	INP. Positive
CN2–19	11	Side Lights	INP. Positive
CN2–20	–	Battery Power Supply Voltage (+12VP)	INP. Positive
CN2–21	–	+12V Switched Power Supply	INP. Positive
CN2–22	–	LIN	Not Used
CN2–23	9	Front Work Lamps	INP. Positive
CN2–24	–	[SW-33] / FQ-1	Not used
CN2–25	–	[SW-34] / FQ-2	Not used
CN2–26	8	Rear Work Lamps	INP. Positive

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

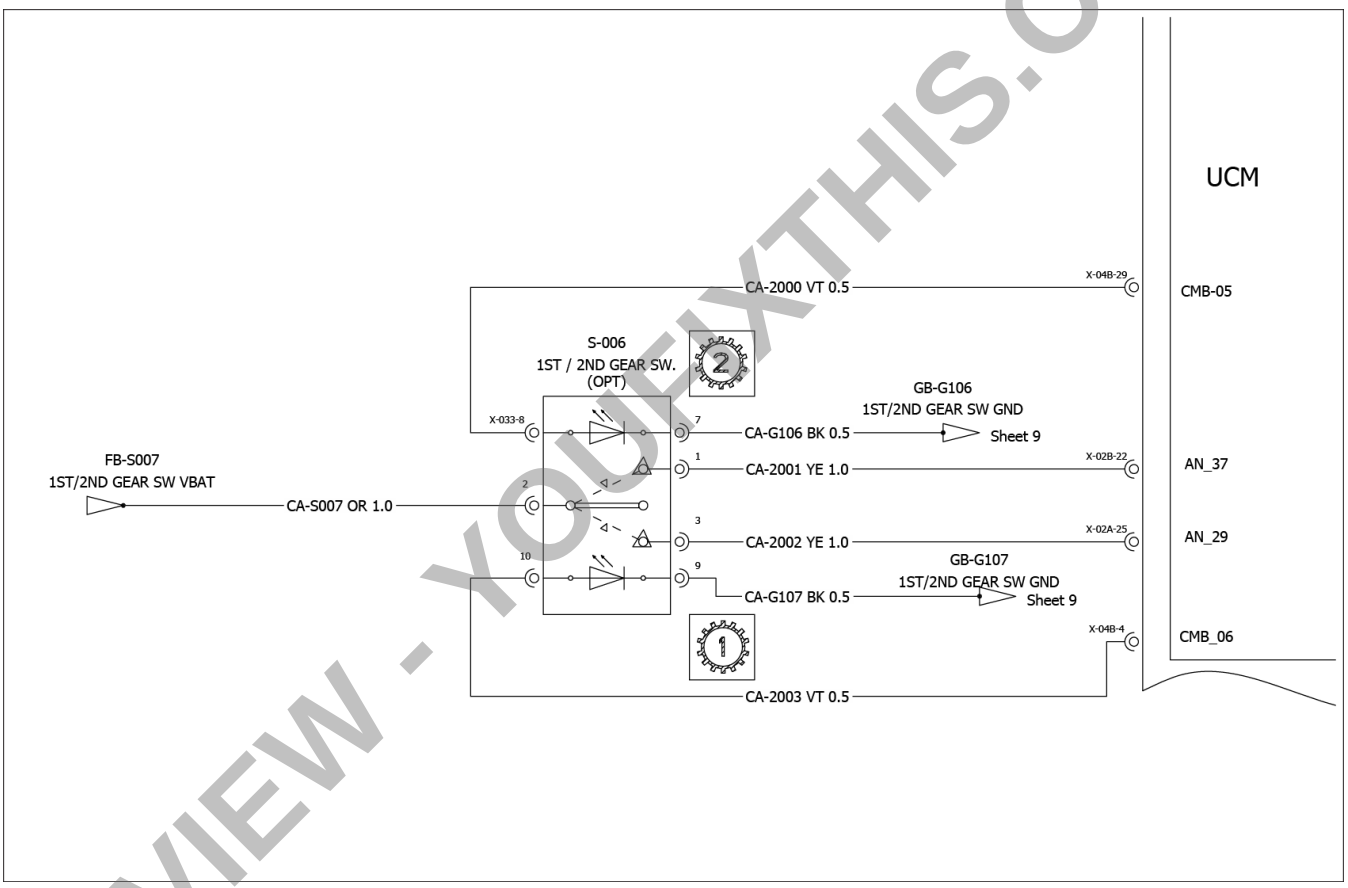
2853-Open circuit on 1st Gear LED (CMB)

Control Module : UCM

Context:
UCM has detected an open circuit on the 1st Gear LED supply line.

Solution:

1. Check the pin X-033-8 of the switch S-006.
2. Check the pin X-04B-29 of the UCM.
3. Check the connection between X-033-8 and X-04B-29 (wire CA-2000).



LEIL15CWL0018FA 1

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Test Type	From	To	Expected Results
1. Voltage	ECU vehicle harness connector 1, (Pin: 2, 3, 8, 9, 40)	Ground (engine block)	Approx. **12 V** (DC)
2. Continuity	ECU vehicle harness connector 1, (Pin: 5, 6, 10, 11)	Ground (engine block)	Approx. **0 - 0.1 Ω**

A. If the voltages and ground paths are correct, proceed to step **14**.

B. If the voltages and ground paths are not correct, refer to schematics and determine root cause of power and/or continuity problem(s).

14. Operation: Re-Initialize the ECU .
Vehicle Status: Key On Engine Off.

Using the EST service tool, re-initialize the ECU and load the appropriate data-set for this engine type. A call will have to be made to CNH TSS to get an authorization code for the ECU initialization download. Check to see if the fault code has cleared.

A. If the fault code did not clear, replace the ECU.

15. 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 monitoring the Display.

A. If damage is found or other than normal display readings are indicated, 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 no damage or other than normal display readings are indicated, erase the fault code and continue operation.

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

3293-Fuel Metering Unit: maximum positive deviation of rail pressure exceeded

Cause:
The fault is cause by a problem in the high pressure fuel supply.

Possible failure modes:

1. Leakage in the high pressure system.
2. Injection nozzle stuck in open position.
3. Low efficiency of high pressure pump.
4. Internal leakage of injector.
5. Leaking pressure control valve.
6. Low pressure at High pressure pump inlet due clogged filter.
7. Leaking low pressure tubes.
8. Electric pre supply pump defective or gear pump defective.

Solution:

1. Check low pressure system for clogging (specially fuel filter).
   Refer to the Operator’s Manual to check the fuel filter system.
2. Check tubing between pre supply and gear pump.
3. Check feeding of pre supply pump (possibly low due to clogged tubes at tank outlet).
4. Check high pressure part for leakages (internal / external).
5. Check PCV for tightness in closed position (100% PWM).
6. Check high pressure pump for efficiency.
7. Check injectors for tightness.

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

B. The resistance is greater than **10 Ω**. There is an open circuit in the wire. Repair or replace the wire as required. Return to step **1** to confirm elimination of fault.

4. Measure the resistance through the valve

   Turn the ignition switch OFF.

   Disconnect the EGR valve connector.

   Measure the resistance through the motor windings. The resistance should be less than **100 Ω**.

   A. The resistance is less than **100 Ω**. Temporarily replace the ECU and retest. Return to step **1** to confirm elimination of the fault.

   B. The resistance is greater than **100 Ω**. There is an open circuit in the valve windings. Temporarily replace the valve and retest. Return to step **1** to confirm elimination of fault.

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

3750-Injection control: Error in the plausibility of the injection energizing time

Context:
The energizing time request from the injectors is monitored by the Engine Control Unit (ECU).

Cause:
Implausible injection energizing time.

Possible failure modes:

1. Faulty ECU.

Solution:

1. Verify the fault is still active and present.
   A. If the fault is still active, try to update the ECU software with the proper data set. If the fault is still is present, replace the ECU.
   B. If the fault is not present, the fault may be intermittent. Check for an intermittent fault. If no faults are found, clear the fault code. Return the machine to service.

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

3844-Zero fuel calibration by lambda (ZFL) : DFC reporting error state on comparing energizing time to max value injector 1

Context:
This fault has been generated due to the injector (1, 2, 3 or 4) programming being incorrect. This failure can be the result of wrong programming / flashing of the ECU or an internal defect of the injector. Using the Electronic Service Tool (EST), Easy-Engine software, check the injector code matches the injector code used for that cylinder. Reprogram the engine control unit (ECU) to the proper injector code. Try to flash the ECU correctly with the proper data set. If the error persists, replace the injector.

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

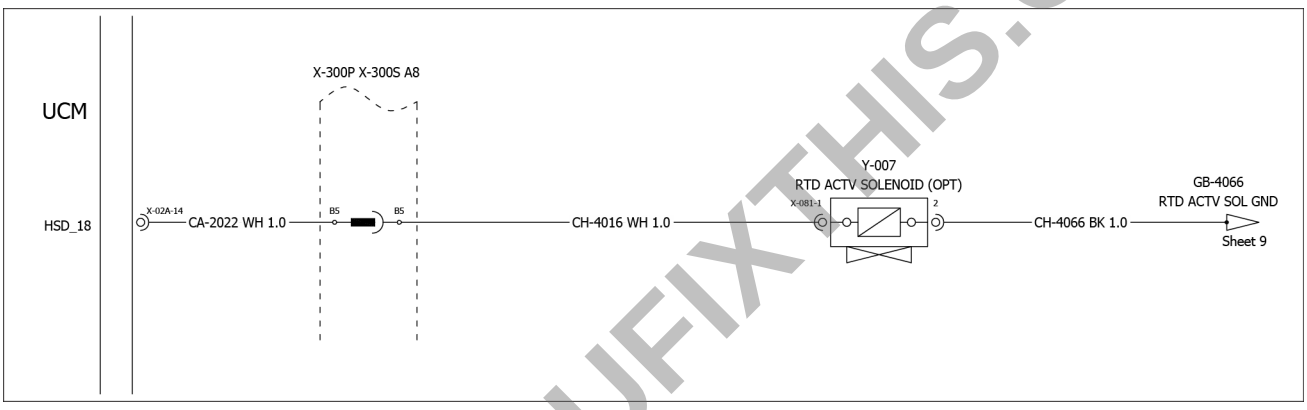
4754-Short circuit to ground on Return-to-dig solenoid (HSD)

Control Module : UCM

Context:
UCM has detected a short circuit to ground on the Return-to-dig (RTD) supply line.

Solution:

1. Check if the connection X-02A-14 of UCM is shorted to ground
2. Check if the connection X-300-B5 is shorted to ground.
3. Check if the connection X-081-1 of the valve Y-007 is shorted to ground.
4. Check if the solenoid Y-007 is shorted to ground.



LEIL15CWL0040EA 1

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

PREVIEW ONLY

You're viewing 24 of 1287 pages

The full manual includes:

- All 1287 pages, complete
- Searchable PDF (find any keyword)
- No watermarks
- Instant download
- Print-ready quality

GET FULL MANUAL NOW

Case 21F, 121F, 221F, 321F Service Manual

Scan or click anywhere
youfixthis.com

Click anywhere on this page to get the full manual