SERVICE MANUAL

L218
L220
Tier 4B (final)
200 Series Skid Steer Loader

L218 PIN NEM476231 and above
L220 PIN NEM475087 and above

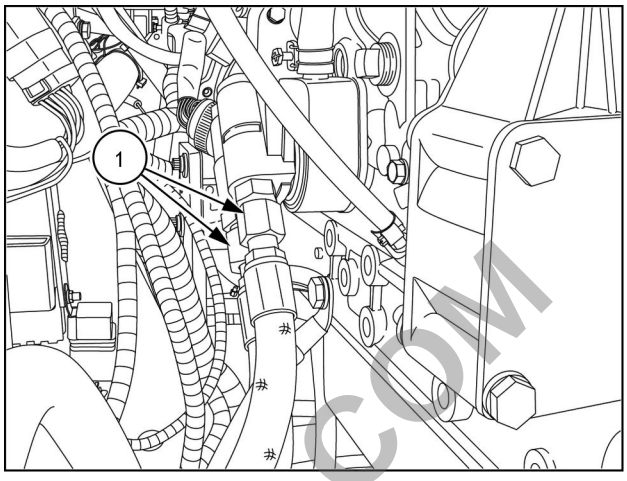
PREVIEW - YOUFIXTHIS.COM

Part number 47711684
1st editon English
May 2014

NEW HOLLAND CONSTRUCTION

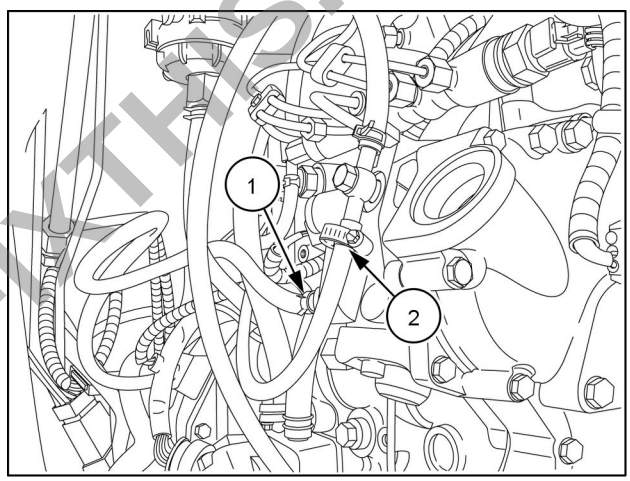
Copyright © 2014 CNH Industrial America LLC. All Rights Reserved.

27. Disconnect and cap the lines **(1)** for the remote, oil filter housing.



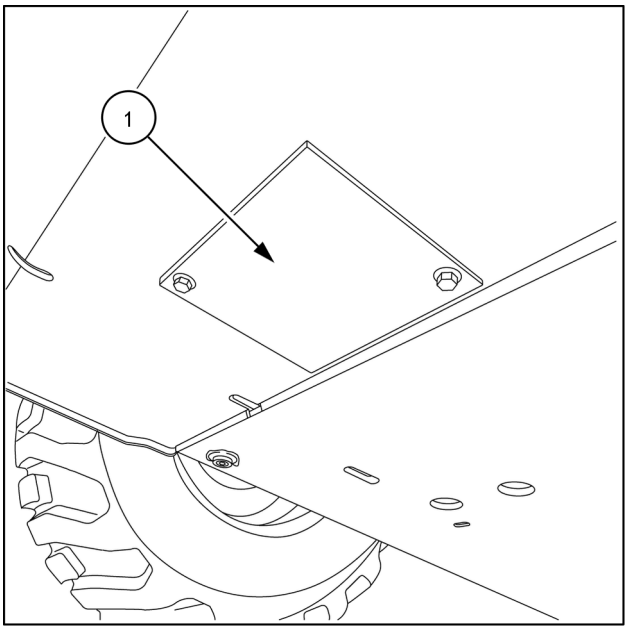
RAIL13SSL0129AA 14

28. Disconnect and cap the fuel feed line **(1)** and the fuel return line **(2)**.



RAIL13SSL0132AA 15

29. Remove the access plate **(1)** for the engine oil pan.

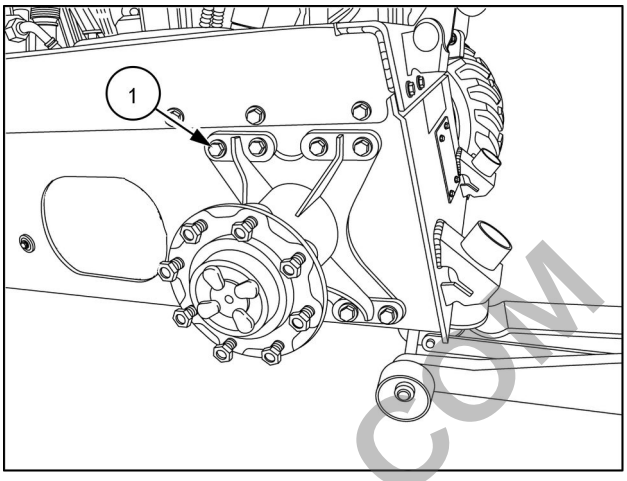


RAPH12SSL0233AA 16

PREVIEW - YOUFIXTHIS.COM

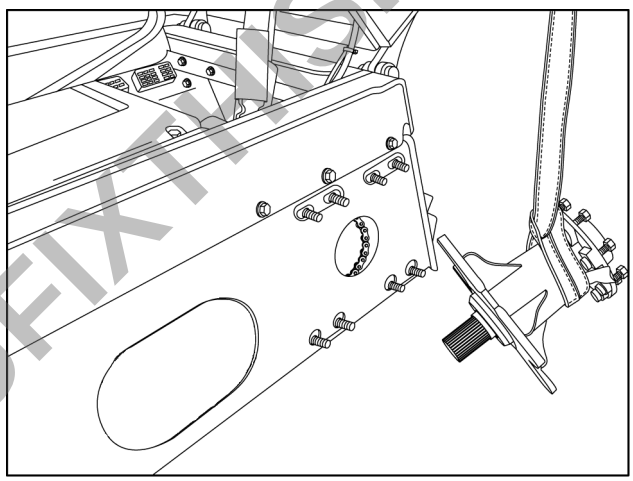
Download full manual at youfixthis.com

4. Support the axle with suitable lifting device. Remove the nuts **(1)**.



RAIL13SSL0562BA 3

5. Disconnect the axle from the sprocket.

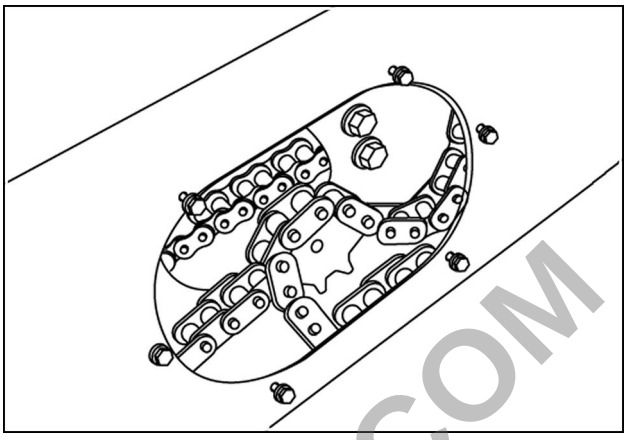


RAIL13SSL0384BA 4

PREVIEW - YOUFIXTHIS.COM

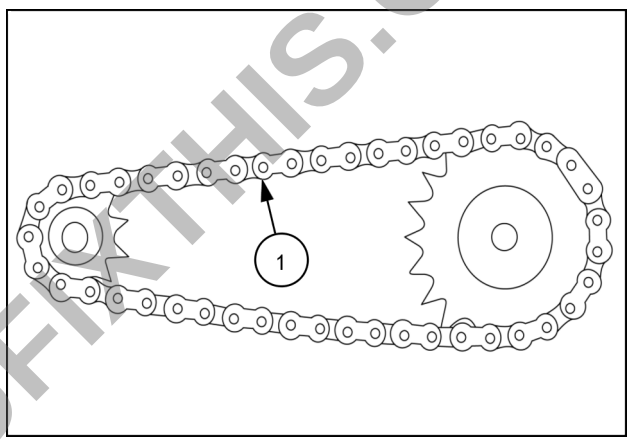
Download full manual at youfixthis.com

4. The drive chain will need adjustment. Either remove the chain tank cover and proceed to step **5** or see **Chain drive - Check (25.450)** for alternative adjustment procedures.



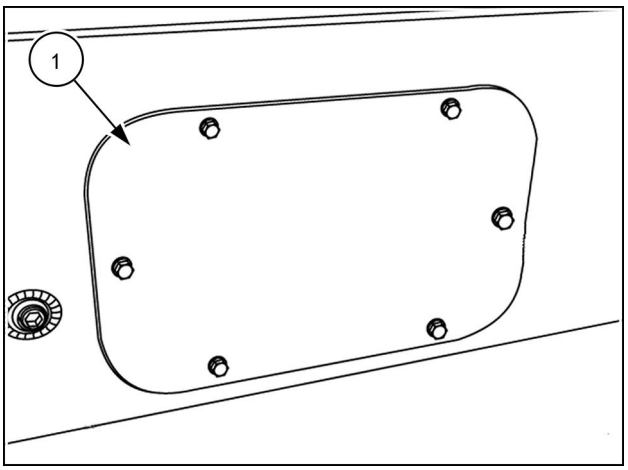
RAIL13SSL0561BA 3

5. Adjust the axle so the chain has **10 - 15.0 mm** (**13/32 - 19/32 in**) of slack at the center **(1)** of the chain.



96091469 4

6. Apply a bead of **LOCTITE® RTV SILICONE CLEAR** to the bolt holes and to the chain tank opening. Install the chain tank cover **(1)**.



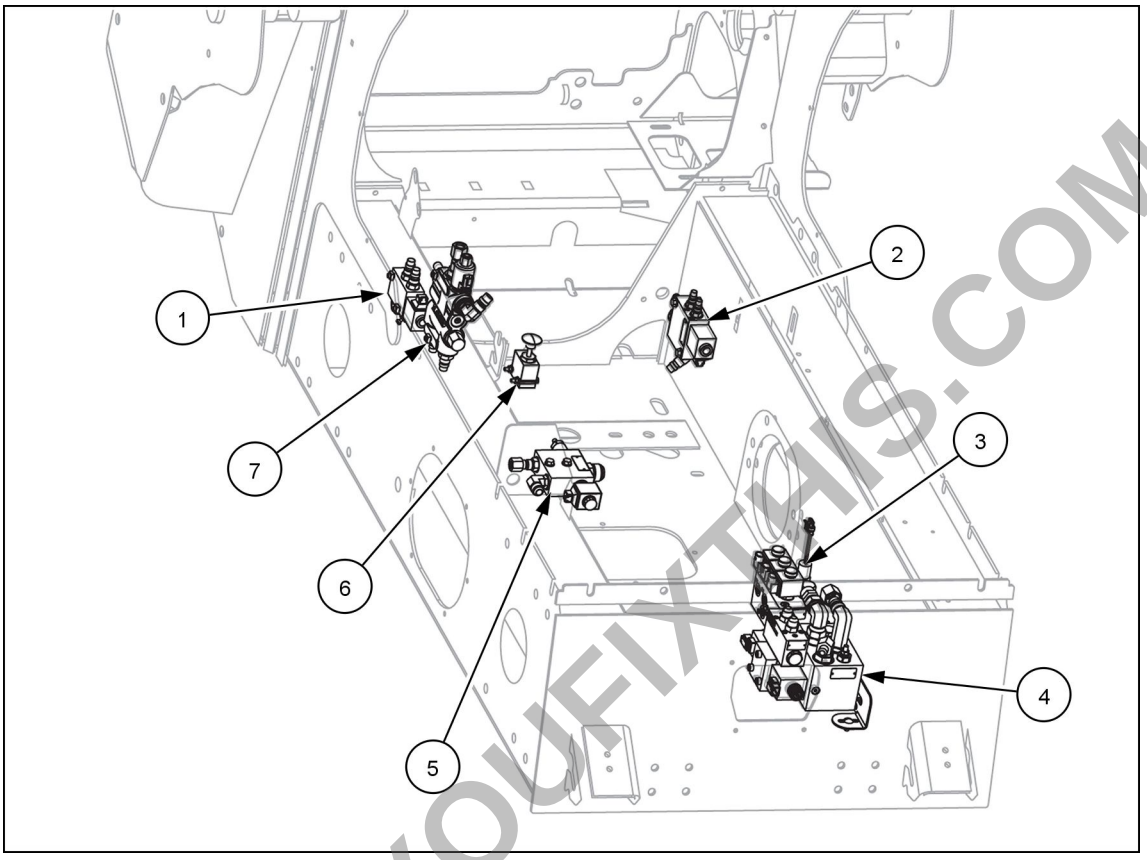
RAPH13SSL0563BA 5

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Control valve - Component localisation

L218	WE
L220	WE



RAPH13SSL0863FA 1

Valve location

Valve identification

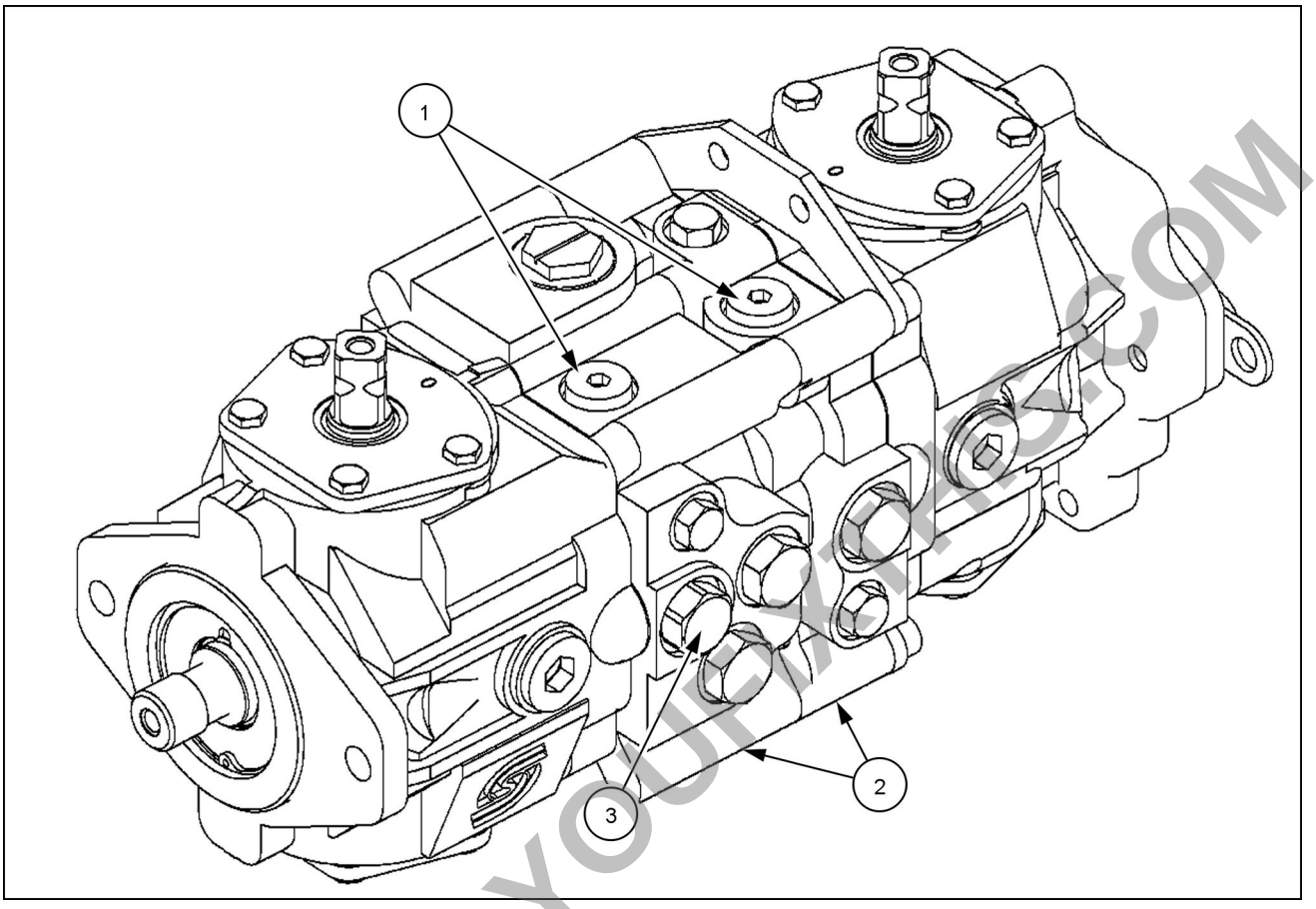
(1) Ride control valve	**(3)** Loader pilot interlock, brake, two speed valve	**(5)** High flow valve	**(7)** Self level valve
(2) Hydraulic coupler valve	**(4)** Second auxiliary valve	**(6)** Loader arm lockout valve	

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Pump - General specification

L218	WE Mechanical hydraulic controls
L220	WE Mechanical hydraulic controls



RAPH12SSL0357HA 1

Hydrostatic pump

Manufacturer	Sauer-Danfoss
Type	Axial piston/swash plate
Pump displacement	**35 cm³** (**2.1 in³**)
Charge pump displacement	**19.7 cm³** (**1.2 in³**)
Charge pressure relief **(3)**	**24 - 26 bar** (**350 - 370 psi**)
Main relief **(1)**, **(2)** NOTE: **(2)** not shown	**345 - 362 bar** (**5000 - 5250 psi**)
Charge pump flow at **1800 RPM**	**27 l** (**7 US gal**) minimum
Port identification	**M3 -** System pressure for port C
	E - Charge pressure
	M1 - System pressure for port A
	M4 - System pressure for port D
	L2 - Case outlet
	L1 - Case outlet
	M2 - System pressure for port B

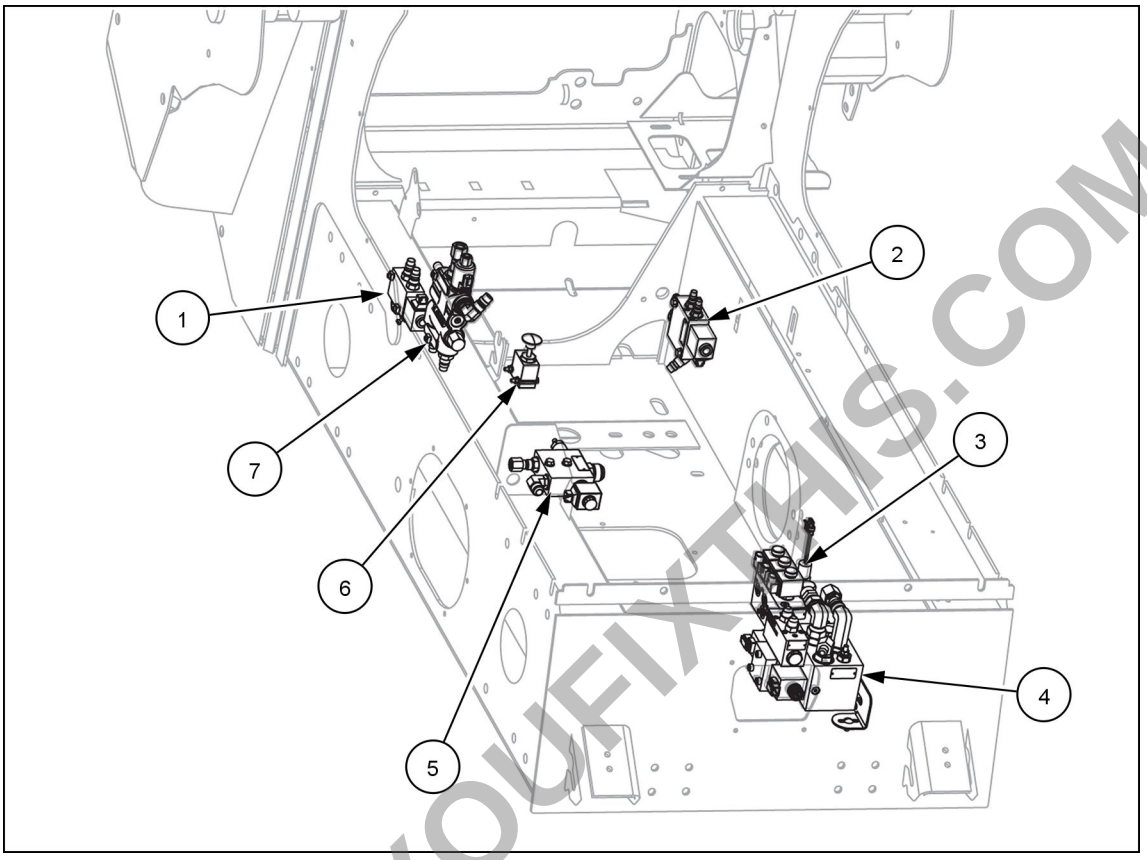
Pump - General specification

L218	WE Electro hydraulic controls
L220	WE Electro hydraulic controls

Download full manual at youfixthis.com

Parking brake control valve - Component localisation

L218	WE
L220	WE



RAPH13SSL0863FA 1

Valve location

Valve identification

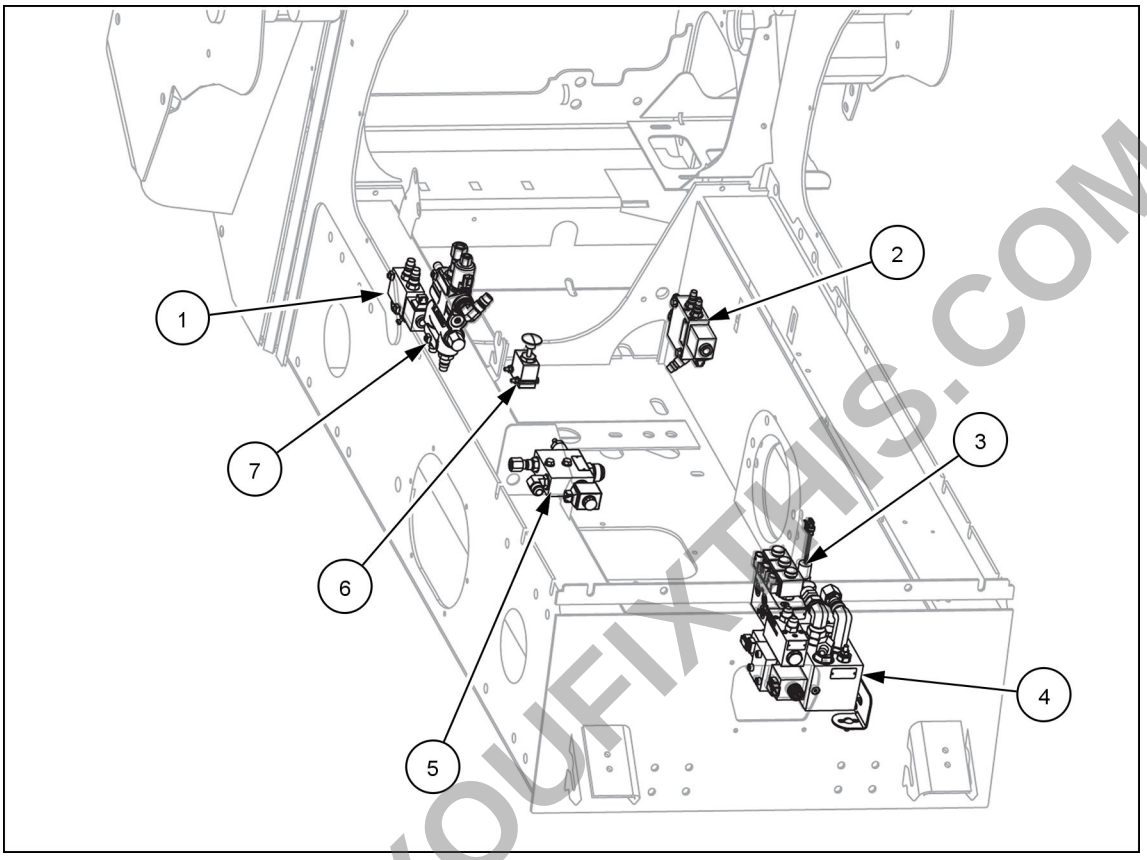
(1) Ride control valve	**(3)** Loader pilot interlock, brake, two speed valve	**(5)** High flow valve	**(7)** Self level valve
(2) Hydraulic coupler valve	**(4)** Second auxiliary valve	**(6)** Loader arm lockout valve	

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Hydraulic systems - Component localisation

L218	WE
L220	WE



RAPH13SSL0863FA 1

Valve location

Valve identification

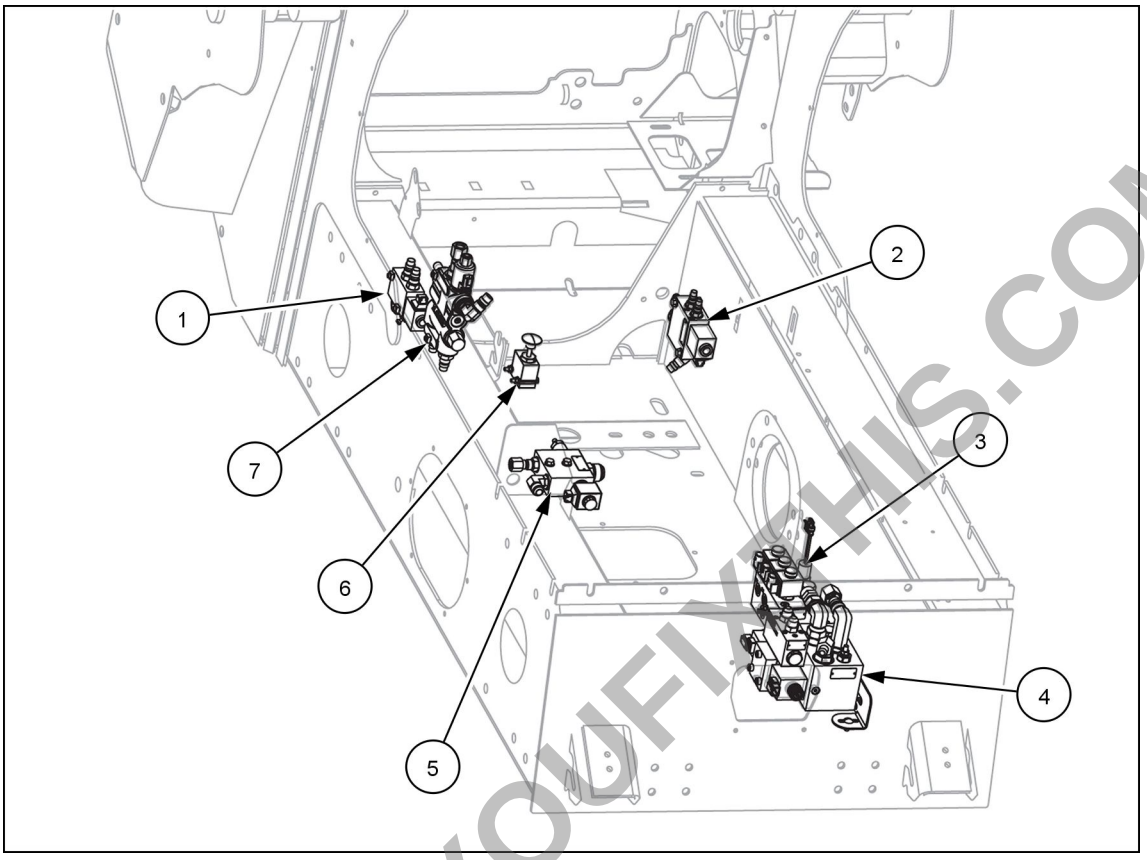
(1) Ride control valve	**(3)** Loader pilot interlock, brake, two speed valve	**(5)** High flow valve	**(7)** Self level valve
(2) Hydraulic coupler valve	**(4)** Second auxiliary valve	**(6)** Loader arm lockout valve	

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Control valve - Component localisation

L218	WE
L220	WE



RAPH13SSL0863FA 1

Valve location

Valve identification

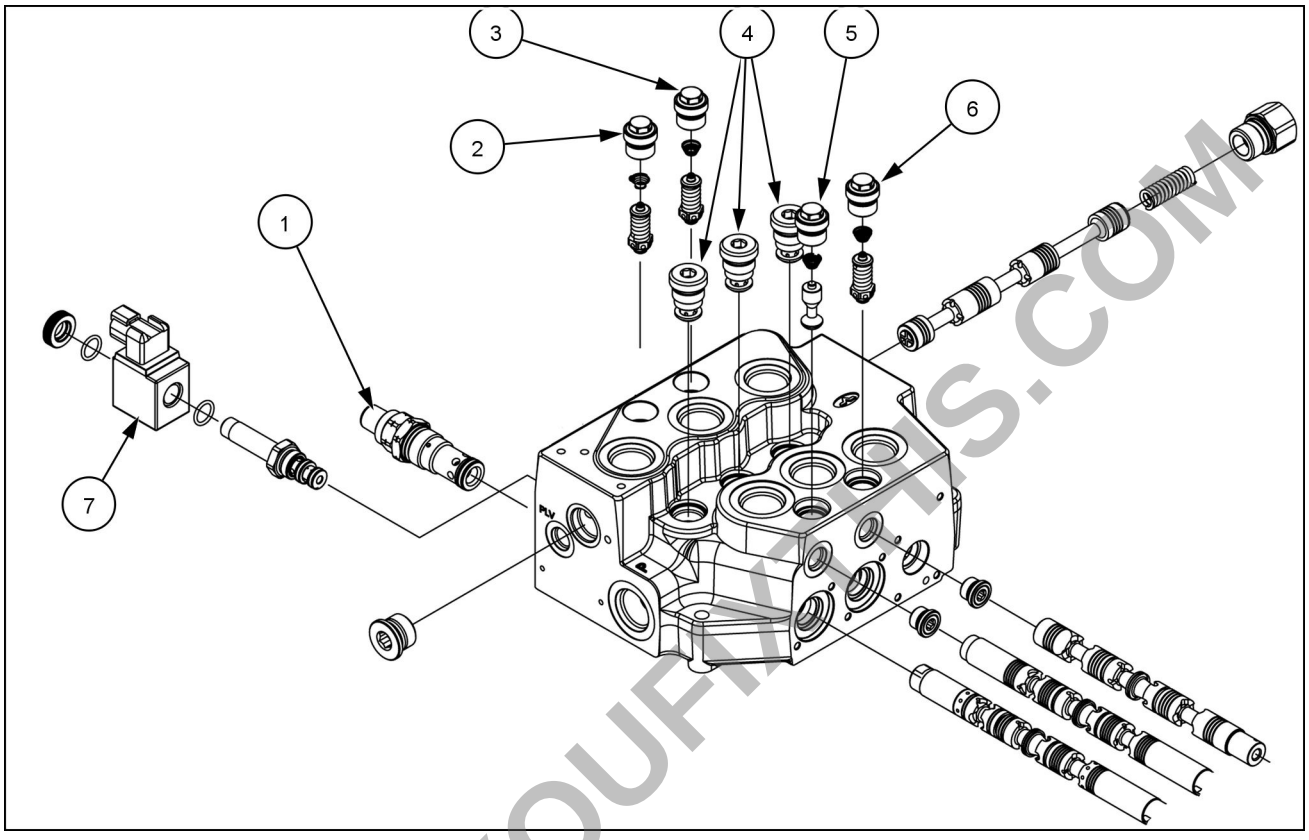
(1) Ride control valve	**(3)** Loader pilot interlock, brake, two speed valve	**(5)** High flow valve	**(7)** Self level valve
(2) Hydraulic coupler valve	**(4)** Second auxiliary valve	**(6)** Loader arm lockout valve	

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Main control valve - General specification

L218	WE
L220	WE



RAIL12SSL0332GA 1

Main control valve

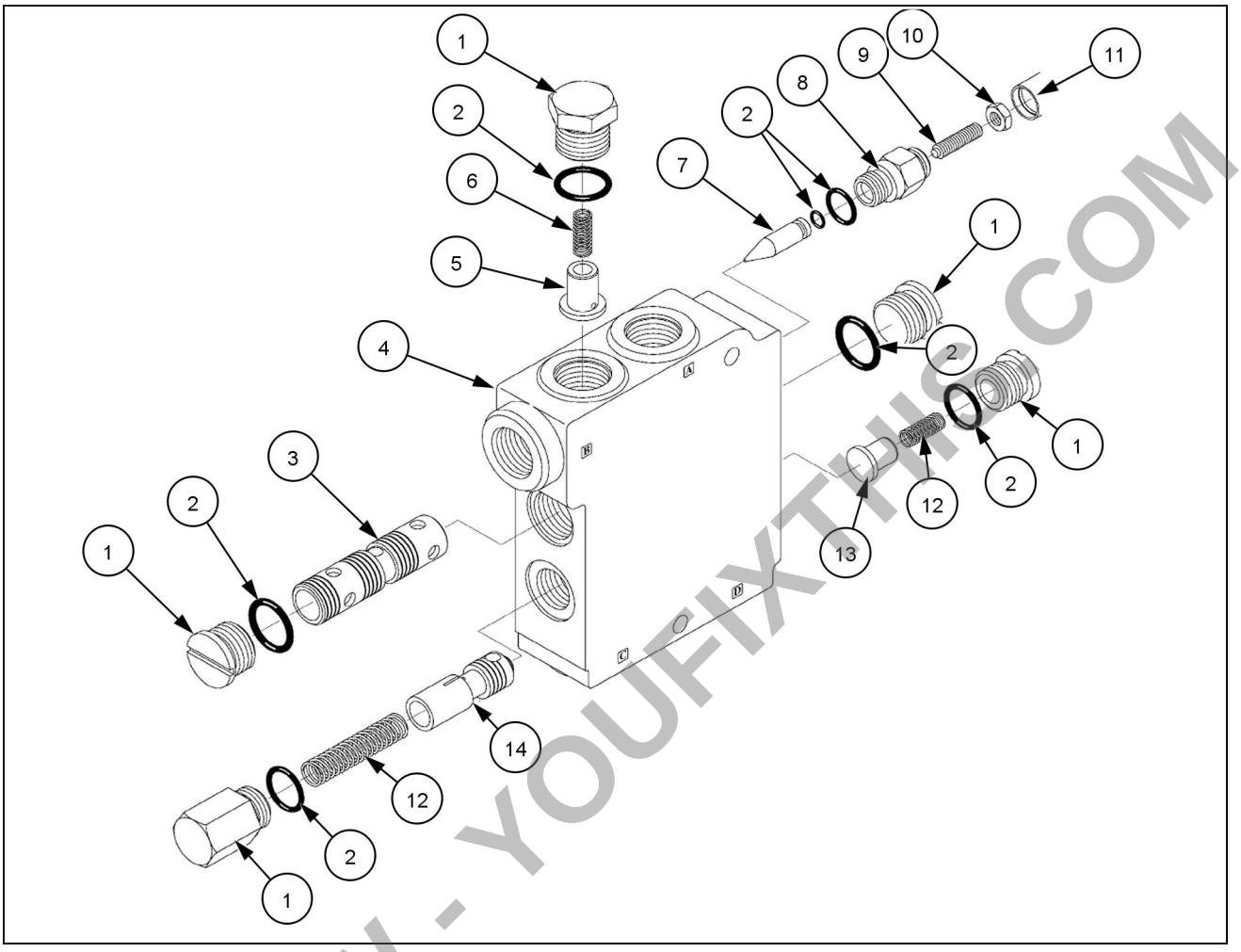
Main relief setting	**207 - 217 bar** (**3000 - 3145 psi**)
Circuit relief setting	**A1** = **220 - 235 bar** (**3190 - 3408 psi**)
	A2 = **255 - 270 bar** (**3698 - 3916 psi**)
	B2 = **225 - 240 bar** (**3263 - 3481 psi**)
Valve identification	**(1)** Main relief
	(2) A1, pressure relief
	(3) A2, pressure relief
	(4) Load check
	(5) B1, hydraulic, anti-cavitation
	(6) B2, pressure relief
Port identification	**P** – Supply inlet
	T – Tank return
	A1 – Lift cylinder base end
	B1 – Lift cylinder rod end
	A2 – Tilt cylinder rod end
	B2 – Tilt cylinder base end
	A3 – Auxiliary male coupler
	B3 – Auxiliary female coupler
	PLV – Work port lockout pilot supply
	PLV Drain – Work port lockout tank return
	P2 – High flow inlet
	V – EH PRV supply
	L – EH PRV tank return
Solenoid identification	**(7)** Port lock

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Loader bucket self-leveling controls - Exploded view

L218	WE
L220	WE



RAPH12SSL0328FA 1

Self-leveling valve

Self-leveling valve identification

(1) Plug	**(2)** O-ring	**(3)** Flow divider spool
(4) Valve body	**(5)** Load check plunger	**(6)** Load check spring
(7) Pin	**(8)** Adjustment cap	**(9)** Set screw
(10) Jam nut	**(11)** Cap	**(12)** Spring
(13) Plunger	**(14)** Unloading spool	

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Counterweight - Install

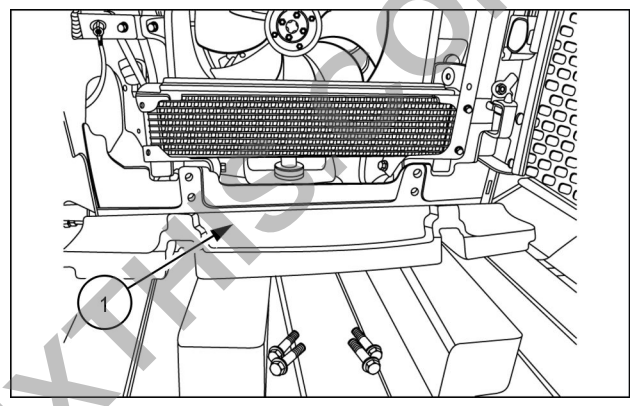
L218	WE
L220	WE

⚠ DANGER

Heavy objects!
Lift and handle all heavy components using lifting equipment with adequate capacity. Always support units or parts with suitable slings or hooks. Make sure the work area is clear of all bystanders. Failure to comply will result in death or serious injury.

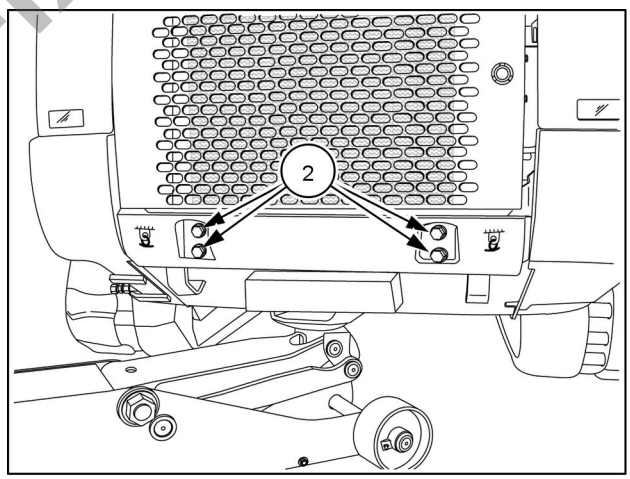
D0076A

1. Place rear center bumper **(1)** in position.



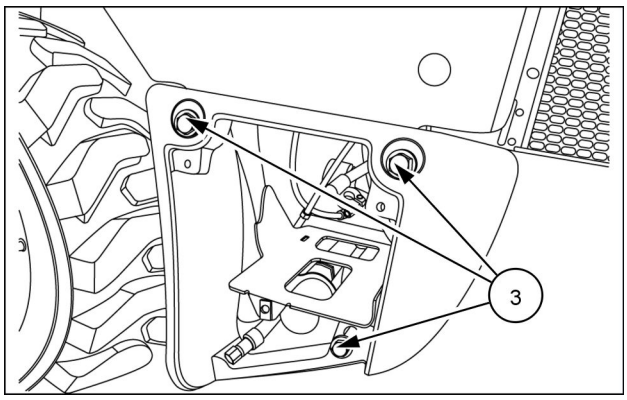
931001656 1

2. Install center bumper mounting hardware **(2)**.



RAPH12SSL0040AA 2

3. Install left hand side counterweight and secure in place with mounting hardware **(3)**.



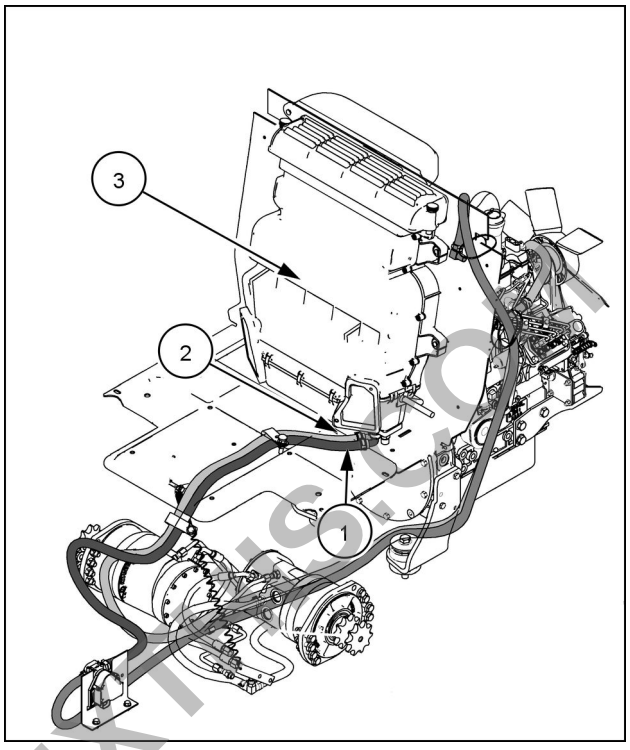
931001655 3

NOTE: *Perform the same operation on right hand side.*

Next operation:
Battery - Install (55.302).

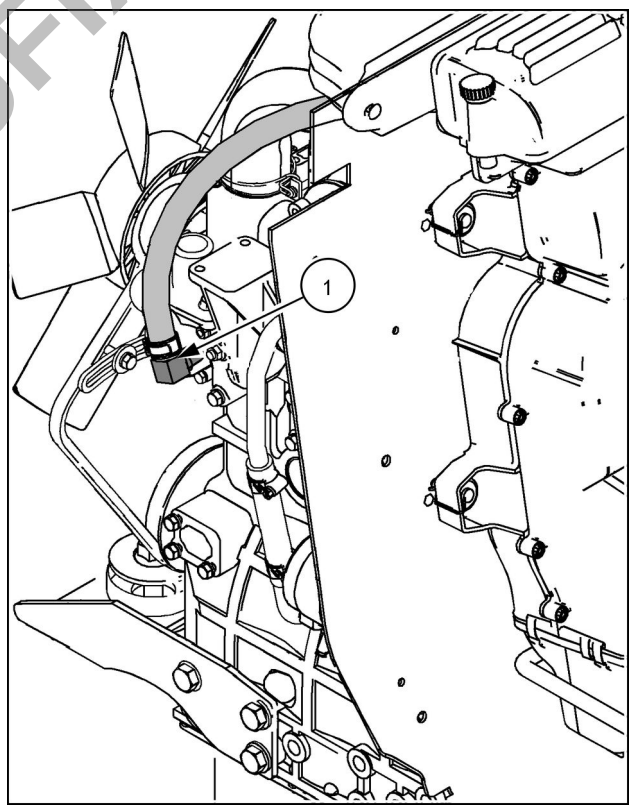
PREVIEW - YOUFIXTHIS.COM
Download full manual at youfixthis.com

6. Disconnect the cab supply hose **(1)**, and cab return hose **(2)** from the heater box **(3)**.



23112382 4

7. Disconnect the heater supply hose **(1)**, from the thermostat housing and install plug fitting.



23112385 5

PREVIEW - YOUFIXTHIS.COM

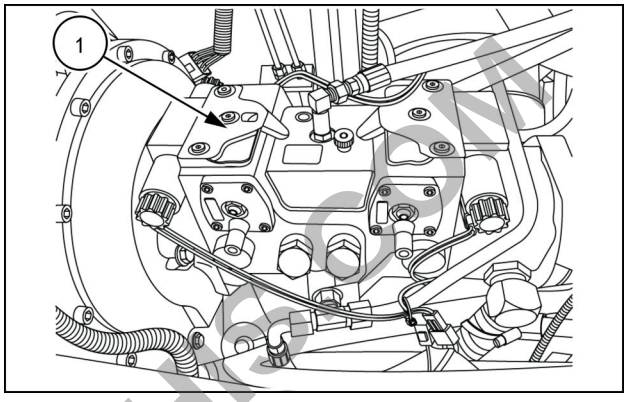
Download full manual at youfixthis.com

Hydrostatic control solenoids - Remove – Right-hand side

L218	WE Electro hydraulic controls
L220	WE Electro hydraulic controls

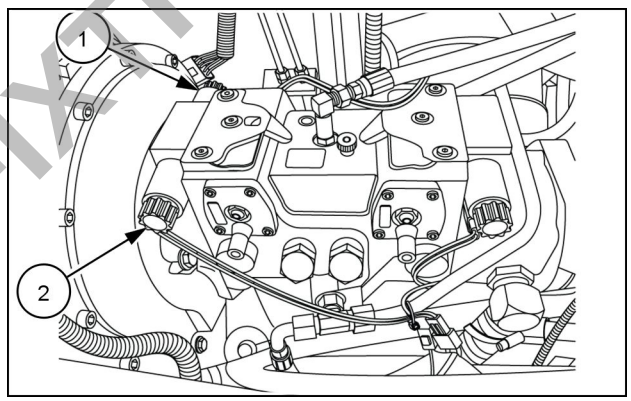
NOTE: *This procedure covers how to remove the right hand forward and right hand reverse drive solenoids located on the electro-hydraulic hydrostatic pump.*

1. Locate the electro-hydraulic hydrostatic pump **(1)**.



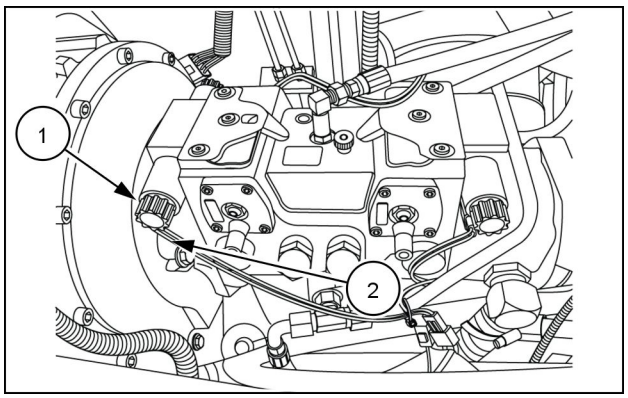
931001814 1

2. Locate the drive solenoid that needs to be removed. The right hand reverse **(1)** and right hand forward **(2)** solenoids are located on the input shaft side of the hydrostatic pump.



931001814 2

3. Disconnect the connector **(2)** from the solenoid. Unscrew the cap **(1)**.



931001814 3

4. Slide the solenoid off.

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Electrical systems - 55

Harnesses and connectors - 100

L218 TIER 4 [NEM476231 -]
L220 TIER 4 [NEM475087 -]

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Wire harnesses - Electrical schematic sheet 01 Main Power Distribution - EH Units

L218 TIER 4 [NEM476231 -]	WE Electro hydraulic controls
L220 TIER 4 [NEM475087 -]	WE Electro hydraulic controls

PREVIEW - YOUFIXTHIS.COM

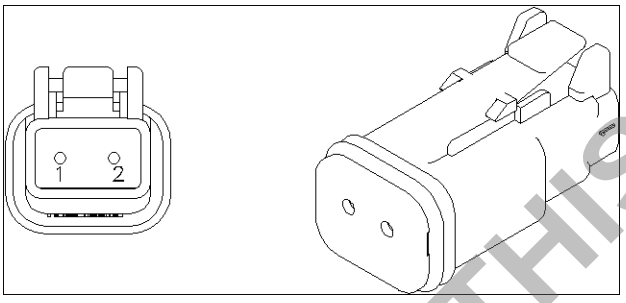
Download full manual at youfixthis.com

Wire connectors - Component diagram 01

L218 TIER 4 [NEM476231 -]	WE Electro hydraulic controls
L220 TIER 4 [NEM475087 -]	WE Electro hydraulic controls

CONNECTOR X-010 - GLOW RELAY DIODE

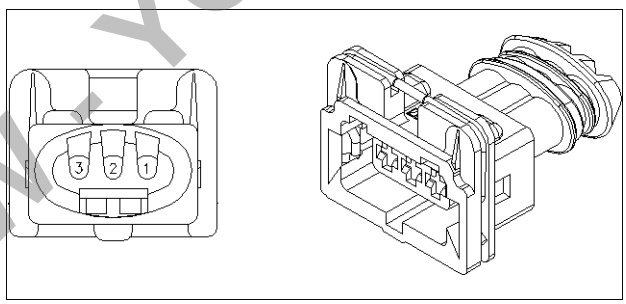
CONNECTOR X-010 - GLOW RELAY DIODE		
PIN NUMBER	**WIRE NUMBER**	**CIRCUIT REFERENCE**
1	641B (WH)	GLOW RELAY DIODE
2	944 BK	GLOW RELAY DIODE



87695582 1

CONNECTOR X-011 - WATER IN FUEL SWITCH

CONNECTOR X-011 - WATER IN FUEL SWITCH		
PIN NUMBER	**WIRE NUMBER**	**CIRCUIT REFERENCE**
1	384 (YE)	WATER IN FUEL SWITCH SIGNAL
2	908D (WH)	WATER IN FUEL SWITCH GROUND
3	133E OR	WATER IN FUEL SWITCH POWER



87709663 2

CONNECTOR X-14 - FUEL LEVEL SENDER

CONNECTOR X-14 - FUEL LEVEL SENDER		
PIN NUMBER	**WIRE NUMBER**	**CIRCUIT REFERENCE**
A	956 (BK)	FUEL LEVEL SENDER GROUND
B	234 RD	FUEL LEVEL SENDER SIGNAL X-CC1A/1B PIN 8

PREVIEW - YOUFIXTHIS.COM

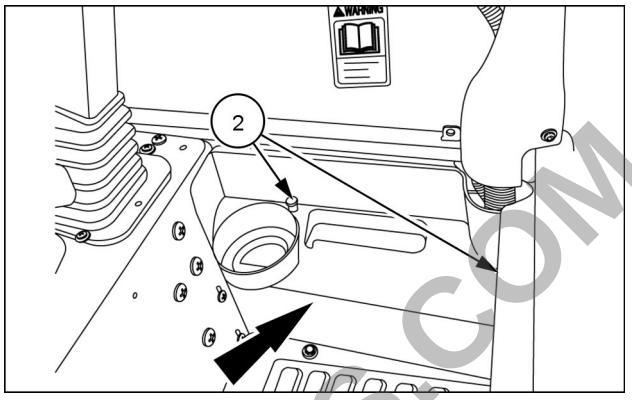
Download full manual at youfixthis.com

Fuse and relay box - Component localisation

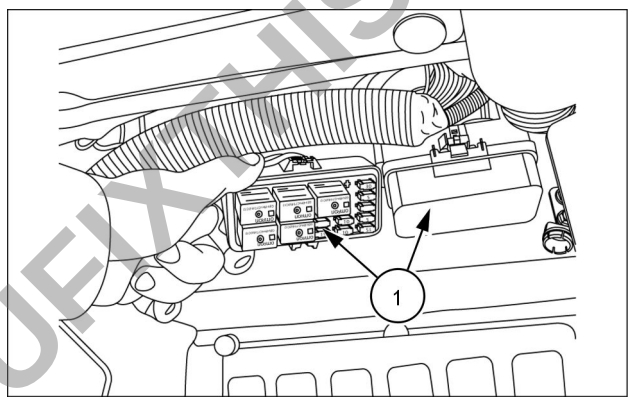
Fuses and relays located in the cab.

Remove the thumbscrews **(2)** on the cup holder panel to remove the cover to expose the fuses **(1)**.
The fuse and relay decal is located at lower left as seen from the operators seat.

NOTE: *Not all machines have two fuse blocks.*

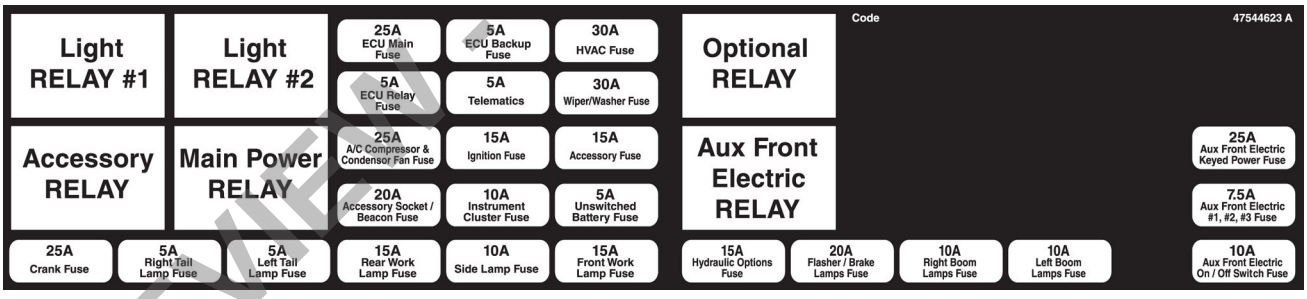


93106923 1

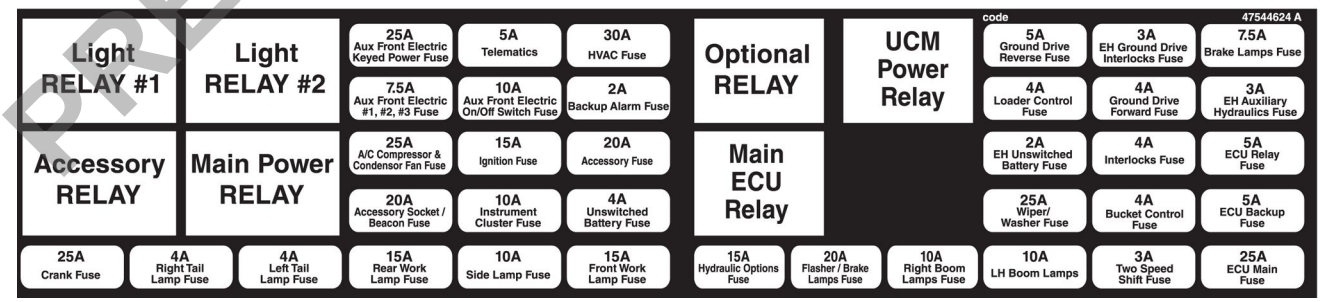


93107475 2

Fuse and relay configuration for the fuse block located in the cab area.



RAIL13SSL0616EA 3



RAIL13SSL0617EA 4

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Instrument cluster - Configure

Use the four switch buttons to navigate through the instrument cluster Menu by following the setup menu functions.

(1) TEXT DISPLAY

Displays the menu text.

(2) START

Navigates selections on every menu level.

Certain menus will prompt the user to enter an access code or allow the user to change a numerical value.

NOTE: *Pushing the Start button will increment the flashing digit 1,2,3 for number entry.*

(3) OPERATE

Increments the flashing digit 7,8,9,0 for number entry.

(4) AUX OVERRIDE

Exits the sub-menu and moves top level to the next option.

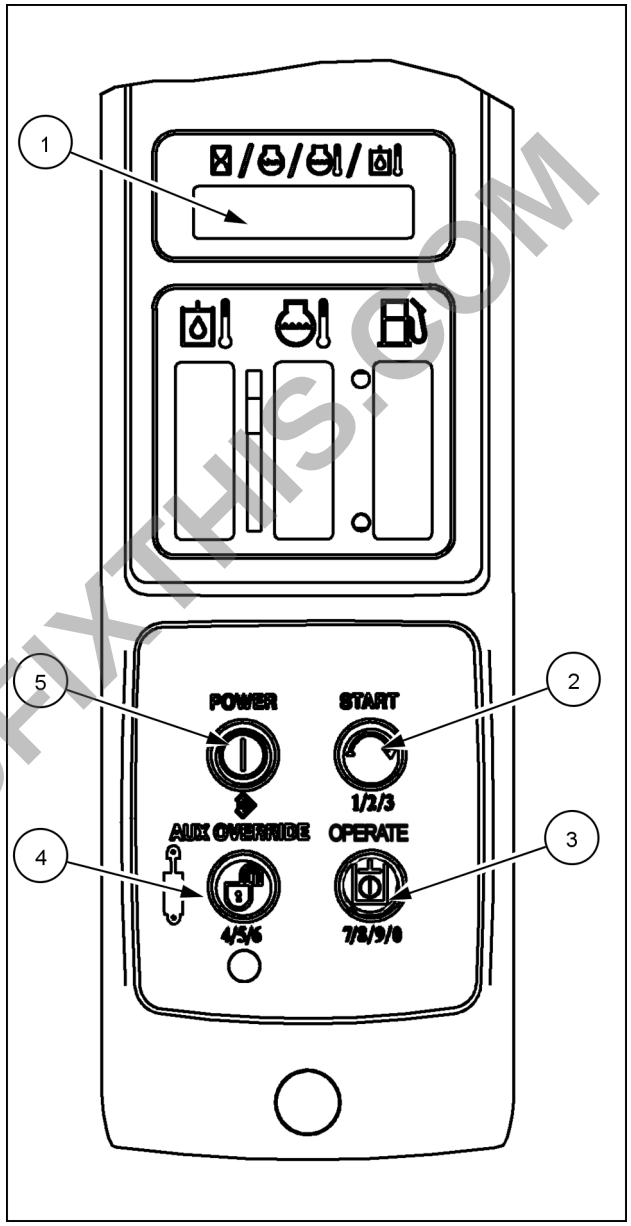
Increments the flashing digit 4,5,6 for number entry.

(5) POWER

For number entry, moves flashing digit to the next place.

Saves entry.

Enters the sub-menu.



931002267 1

Top level menu options

- **EXIT** - Exit the setup menu.
- **EH** - Customize the speed of the machine's Electro hydraulic controls (if equipped).
- **dSPLY** - Alternate method to select between the selected display parameters.
- **UNITS** - Allows the operator to select between Fahrenheit/Imperial units and Celsius/SI units.
- **JTIME** - Job timer. Timer that displays engine operating hours since last reset. Ideal for rentals or job tracking.
- **dPF** or **REGEN** - Used to Inhibit regeneration of the Diesel Particulate Filter (DPF) for one key cycle.
- **OIL** - Used to reset the oil life monitoring status after an oil change.
- **LOCK** - Used to create/change owner and user codes

NOTE: *The Advanced Instrument Cluster (AIC) images are shown in this section for the four switch buttons* ***(2)****,* ***(3)****,* ***(4)*** *and* ***(5)*** *used to navigate through the instrument cluster. The top two switch buttons on the Electronic Instrument*

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

Electrical systems - 55

FAULT CODES - DTC

L218 TIER 4 [NEM476231 -]
L220 TIER 4 [NEM475087 -]

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

4781-Solenoid Valve - Solenoid Supply Open Circuit Two Speed Solenoid

L218 TIER 4 [NEM476231 -]	WE Electro hydraulic controls
L220 TIER 4 [NEM475087 -]	WE Electro hydraulic controls

Context:
The UCM has sent a signal to the Two Speed Solenoid to energize, but the UCM does not sense proper voltage. Diagnostic Trouble Code 4781 has an error priority of White. White errors are not displayed on the Instrument Cluster and are not known to the Owner/Operator. They will appear in the EST when the technician checks for active trouble codes.
Two Speed operating mode is disabled while Diagnostic Trouble Code 4781 is active.

Cause:
The UCM has sent a signal to the Two Speed Solenoid to energize, but the UCM does not sense proper voltage. The fault is active when the Engine is on and solenoid output X-CN3A pin 25 is greater than **8 V** or less than **1 V**.

Possible failure modes:

1. Open wire in circuit.
2. Two Speed solenoid has failed.
3. UCM has internal failure.

Solution:

1. Verify that the fault code is active.

   Connect the Electronic Service Tool to the service tool connector.

   To check for fault code: Start and operate the machine.

   A. The fault code is not recorded again. OK to return the machine to service.

   B. Fault code 4781 is recorded again. Go to step **2**.
2. Verify that the wiring and connectors are free of damage.

   Inspect the **UCM** and Two Speed solenoid connections. All connections should be secure, tight, free of corrosion, abrasion and damage.

   Inspect the harness from the **UCM** to the Two Speed solenoid. Verify that the harness is free of damage, corrosion, abrasion and incorrect attachment.

   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 resistance through the harness.

   Fabricate a jumper wire that will connect between the Two Speed solenoid connector X-2SPD pin A and X-2SPD pin B.

   Turn the ignition switch OFF.

   Disconnect UCM connectors X-CN3A.

   Use the jumper wire to short X-2SPD pin A to X-SPD pin B.

   Measure the resistance between X-CN3A pin 25 and chassis ground. The resistance should be less than **10 Ω**. Wiggle the harness during measurement to reveal an intermittent condition.

   A. The resistance is less than **10 Ω**. Go to step **4**.

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

1010-Battery 5V reference 1 circuit low

Control Module : ECU

Context:
When retrieving this fault code using Service Tool D, display code is P0642. The Engine Control Unit (ECU) uses two power supply circuits to supply **5.0 V** to the engine electrical components. The **5.0 V** sensor power supply 1 circuit supplies the following sensors; Differential pressure sensor and the Rail pressure sensor.

Cause:
The ECU is sensing the power supply 1 circuit is less than **4.37 V**.

Possible failure modes:

1. The differential pressure sensor has failed.
2. The rail pressure sensor has failed.
3. The circuit wiring harness has failed.
4. The ECU has failed internally.

Solution:

1. Use the Service Tool D to verify that the fault is present and active.

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

   B. If the fault code is no longer present or active, 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 differential pressure sensor connector.

   Inspect the wiring harness from the ECU to the rail pressure 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. Use the Service Tool D to monitor the voltage range.

   Place the key switch ON.

   Disconnect the wiring harness from the rail pressure sensor.

   Monitor for voltage fluctuation in the circuit.

   A. If the voltage is less than **4.37 V**, continue with Step **4**.

   B. If the voltage reading changes to **4.5 - 5.5 V**, the sensor has failed. Replace the sensor.
4. Use the Service Tool D to monitor the voltage range.

   Place the key switch ON.

   Disconnect the wiring harness from the differential pressure sensor.

   Monitor for voltage fluctuation in the circuit.

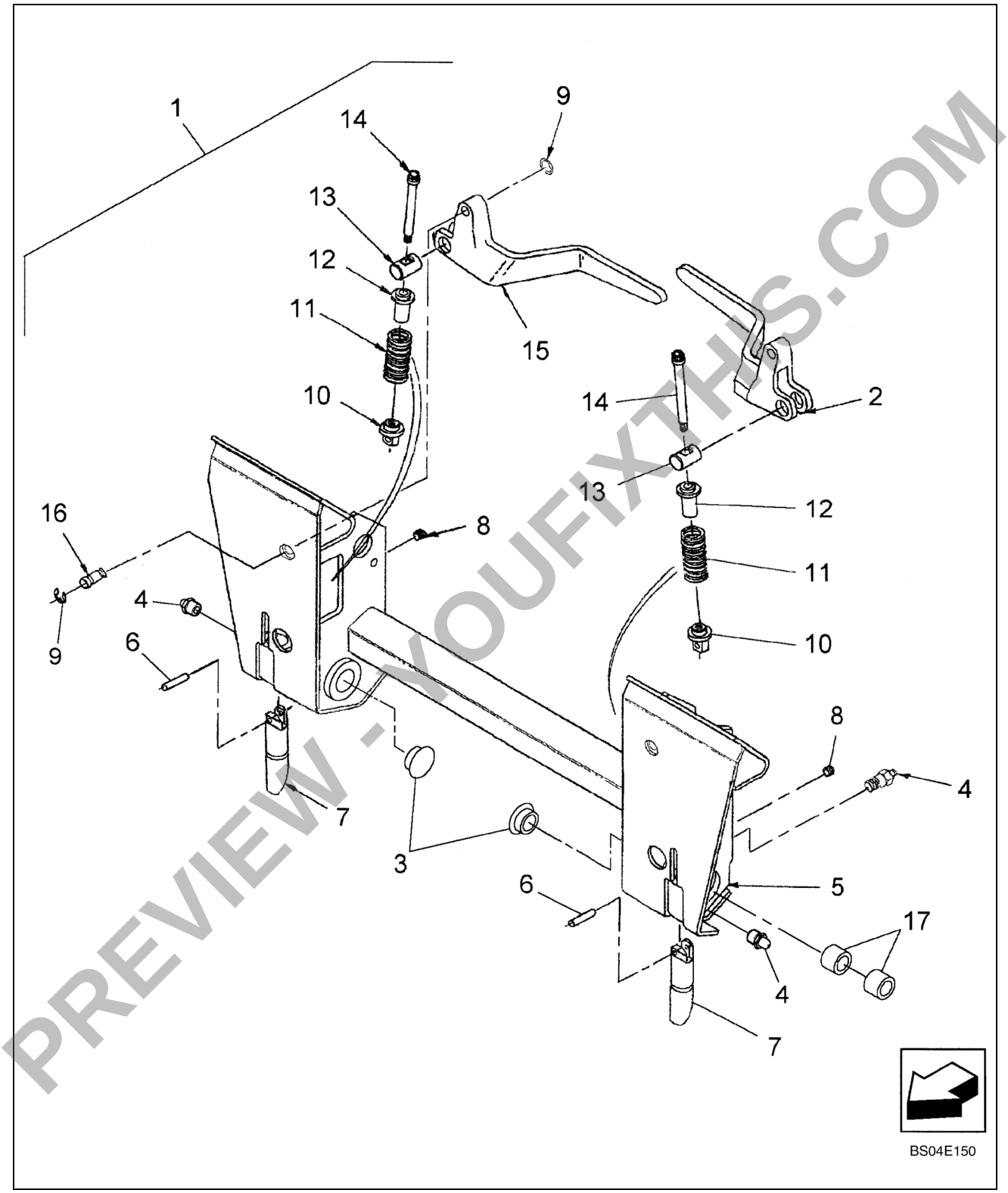
   A. If the voltage is less than **4.37 V**, continue with Step **5**.

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Bucket release device - Exploded view

L218	WE
L220	WE



BS04E150 1

Mechanical coupling mounting plate assembly

(1) Mounting Plate	**(7)** Latch Pin	**(13)** Pin
(2) Left Hand Handle	**(8)** Plug	**(14)** Bolt
(3) Dust Cap	**(9)** Clip	**(15)** Right Hand Handle

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

Platform, cab, bodywork, and decals - 90

Cab doors and hatches - 154

L218 TIER 4 [NEM476231 -]
L220 TIER 4 [NEM475087 -]

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Contents

INTRODUCTION

Engine 10

[10.001] Engine and crankcase 10.1

[10.414] Fan and drive 10.2

Front axle system 25

[25.450] Chain drive system 25.1

Rear axle system 27

[27.650] Chain drive system 27.1

Hydrostatic drive 29

[29.202] Hydrostatic transmission 29.1

[29.134] Two-speed assembly 29.2

[29.200] Mechanical control 29.3

[29.218] Pump and motor components 29.4

Brakes and controls 33

[33.110] Parking brake or parking lock 33.1

Hydraulic systems 35

[35.000] Hydraulic systems 35.1

[35.104] Fixed displacement pump 35.2

[35.128] Auxiliary hydraulic function control 35.3

[35.300] Reservoir, cooler, and filters 35.4

[35.350] Safety and main relief valves 35.5

[35.359] Main control valve 35.6

[35.600] High flow hydraulics 35.7

[35.701] Front loader arm hydraulic system 35.8

[35.723] Front loader bucket hydraulic system 35.9

[35.724] Front loader hydraulic system control 35.10

Download full manual at youfixthis.com

PREVIEW - YOUFIXTHIS.COM

PREVIEW ONLY

You're viewing 25 of 1559 pages

The full manual includes:

- All 1559 pages, complete
- Searchable PDF (find any keyword)
- No watermarks
- Instant download
- Print-ready quality

GET FULL MANUAL NOW

New Holland L218, L220 Service Manual

Scan or click anywhere
youfixthis.com

Click anywhere on this page to get the full manual