

SERVICE MANUAL

B95C / B95C LR / B95CTC / B110C

Tier 4B (final)

Tractor Loader Backhoe

B95C, B95C LR, B95C TC PIN NGHH02222 and above; B110C PIN NGHH02228 and above

Part number 48038049

1st edition English
November 2016





SERVICE MANUAL

B110C Four-Wheel Drive (4WD) Tier 4B (Final)
B110C Two-Wheel Drive (2WD) Tier 4B (Final)
B95C Four-Wheel Drive (4WD) Tier 4B (Final)
B95C TC Four-Wheel Drive (4WD) Tier 4B (Final)
B95C Two-Wheel Drive (2WD) Tier 4B (Final)

Link Product / Engine

Product	Market Product	Engine
B110C Two-Wheel Drive (2WD) Tier 4B (Final)	North America	F5BFL413A*B007
B110C Four-Wheel Drive (4WD) Tier 4B (Final)	North America	F5BFL413A*B007
B95C Two-Wheel Drive (2WD) Tier 4B (Final)	North America	F5BFL413A*B007
B95C Four-Wheel Drive (4WD) Tier 4B (Final)	North America	F5BFL413A*B007
B95C TC Four-Wheel Drive (4WD) Tier 4B (Final)	North America	F5BFL413A*B007

<https://www.ebooklibonline.com>

Hello dear friend!

Thank you very much for reading.

Enter the link into your browser.

The full manual is available for immediate download.

<https://www.ebooklibonline.com>

Contents

INTRODUCTION

Engine.....	10
[10.001] Engine and crankcase	10.1
[10.216] Fuel tanks	10.2
[10.206] Fuel filters	10.3
[10.218] Fuel injection system.....	10.4
[10.500] Selective Catalytic Reduction (SCR) exhaust treatment.....	10.5
[10.400] Engine cooling system	10.6
[10.414] Fan and drive	10.7
Transmission.....	21
[21.112] Power shuttle transmission.....	21.1
[21.134] Power shuttle transmission external controls	21.2
[21.104] Power shuttle transmission lubrication system.....	21.3
[21.154] Power shuttle transmission internal components	21.4
[21.113] Powershift transmission	21.5
[21.135] Powershift transmission external controls.....	21.6
[21.105] Powershift transmission lubrication system	21.7
[21.155] Powershift transmission internal components.....	21.8
[21.145] Gearbox internal components.....	21.9
Front axle system	25
[25.100] Powered front axle	25.1
[25.102] Front bevel gear set and differential	25.2
[25.108] Final drive hub, steering knuckles, and shafts	25.3
[25.400] Non-powered front axle	25.4
Rear axle system.....	27
[27.100] Powered rear axle.....	27.1

[27.106] Rear bevel gear set and differential	27.2
[27.120] Planetary and final drives	27.3
Brakes and controls	33
[33.202] Hydraulic service brakes	33.1
[33.110] Parking brake or parking lock	33.2
Hydraulic systems.....	35
[35.000] Hydraulic systems.....	35.1
[35.300] Reservoir, cooler, and filters.....	35.2
[35.104] Fixed displacement pump.....	35.3
[35.106] Variable displacement pump	35.4
[35.350] Safety and main relief valves	35.5
[35.355] Hydraulic hand control	35.6
[35.352] Hydraulic swing system	35.7
[35.724] Front loader hydraulic system control.....	35.8
[35.701] Front loader arm hydraulic system	35.9
[35.723] Front loader bucket hydraulic system	35.10
[35.726] Excavator and backhoe hydraulic controls.....	35.11
[35.736] Boom hydraulic system	35.12
[35.737] Dipper hydraulic system.....	35.13
[35.738] Excavator and backhoe bucket hydraulic system.....	35.14
[35.739] Swing arm hydraulic system	35.15
[35.703] Stabilizer hydraulic system.....	35.16
[35.740] Telescopic arm hydraulic system.....	35.17
Frames and ballasting	39
[39.100] Frame	39.1
[39.140] Ballasts and supports	39.2
Steering.....	41
[41.101] Steering control	41.1

[41.200] Hydraulic control components.....	41.2
[41.206] Pump.....	41.3
Wheels.....	44
[44.511] Front wheels.....	44.1
[44.520] Rear wheels.....	44.2
Cab climate control.....	50
[50.100] Heating.....	50.1
[50.104] Ventilation.....	50.2
[50.200] Air conditioning.....	50.3
Electrical systems.....	55
[55.100] Harnesses and connectors.....	55.1
[55.201] Engine starting system.....	55.2
[55.301] Alternator.....	55.3
[55.302] Battery.....	55.4
[55.988] Selective Catalytic Reduction (SCR) electrical system.....	55.5
[55.640] Electronic modules.....	55.6
[55.404] External lighting.....	55.7
[55.510] Cab or platform harnesses and connectors.....	55.8
[55.408] Warning indicators, alarms, and instruments.....	55.9
[55.991] Telematics.....	55.10
[55.DTC] FAULT CODES.....	55.11
Front loader and bucket.....	82
[82.100] Arm.....	82.1
[82.300] Bucket.....	82.2
Booms, dippers, and buckets.....	84
[84.910] Boom.....	84.1
[84.912] Dipper arm.....	84.2
[84.100] Bucket.....	84.3

Platform, cab, bodywork, and decals 90

[90.105] Machine shields and guards 90.1



INTRODUCTION

Foreword - Important notice regarding equipment servicing

All repair and maintenance work listed in this manual must be carried out only by qualified dealership personnel, strictly complying with the instructions given, and using, whenever possible, the special tools.

Anyone who performs repair and maintenance operations without complying with the procedures provided herein shall be responsible for any subsequent damages.

The manufacturer and all the organizations of its distribution chain, including - without limitation - national, regional, or local dealers, reject any responsibility for damages caused by parts and/or components not approved by the manufacturer, including those used for the servicing or repair of the product manufactured or marketed by the manufacturer. In any case, no warranty is given or attributed on the product manufactured or marketed by the manufacturer in case of damages caused by parts and/or components not approved by the manufacturer.

The manufacturer reserves the right to make improvements in design and changes in specifications at any time without notice and without incurring any obligation to install them on units previously sold. Specifications, descriptions, and illustrative material herein are as accurate as known at time of publication but are subject to change without notice.

In case of questions, refer to your NEW HOLLAND CONSTRUCTION Sales and Service Networks.

Safety rules

B110C	NA
B95C Four-Wheel Drive (4WD) Tier 4B (Final)	NA
B95C TC Four-Wheel Drive (4WD) Tier 4B (Final)	NA
B95C Two-Wheel Drive (2WD) Tier 4B (Final)	NA

Personal safety



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible death or injury.

Throughout this manual you will find the signal words DANGER, WARNING, and CAUTION followed by special instructions. These precautions are intended for the personal safety of you and those working with you.

Read and understand all the safety messages in this manual before you operate or service the machine.

 DANGER indicates a hazardous situation that, if not avoided, will result in death or serious injury.

 WARNING indicates a hazardous situation that, if not avoided, could result in death or serious injury.

 CAUTION indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.

FAILURE TO FOLLOW DANGER, WARNING, AND CAUTION MESSAGES COULD RESULT IN DEATH OR SERIOUS INJURY.

Machine safety

NOTICE: Notice indicates a situation that, if not avoided, could result in machine or property damage.

Throughout this manual you will find the signal word Notice followed by special instructions to prevent machine or property damage. The word Notice is used to address practices not related to personal safety.

Information

NOTE: Note indicates additional information that clarifies steps, procedures, or other information in this manual.

Throughout this manual you will find the word Note followed by additional information about a step, procedure, or other information in the manual. The word Note is not intended to address personal safety or property damage.

Safety rules

General safety rules

Use caution when you operate the machine on slopes. Raised equipment, full tanks and other loads will change the center of gravity of the machine. The machine can tip or roll over when near ditches and embankments or uneven surfaces.

Never permit anyone other than the operator to ride on the machine.

Never operate the machine under the influence of alcohol or drugs, or while you are otherwise impaired.

When digging or using ground-engaging attachments, be aware of buried cables. Contact local utilities to determine the locations of services.

Pay attention to overhead power lines and hanging obstacles. High voltage lines may require significant clearance for safety.

Hydraulic oil or diesel fuel leaking under pressure can penetrate the skin, causing serious injury or infection.

- DO NOT use your hand to check for leaks. Use a piece of cardboard or paper.
- Stop the engine, remove the key, and relieve the pressure before you connect or disconnect fluid lines.
- Make sure that all components are in good condition. Tighten all connections before you start the engine or pressurize the system.
- If hydraulic fluid or diesel fuel penetrates the skin, seek medical attention immediately.
- Continuous long term contact with hydraulic fluid may cause skin cancer. Avoid long term contact and wash the skin promptly with soap and water.

Keep clear of moving parts. Loose clothing, jewelry, watches, long hair, and other loose or hanging items can become entangled in moving parts.

Wear protective equipment when appropriate.

DO NOT attempt to remove material from any part of the machine while it is being operated or while components are in motion.

Make sure that all guards and shields are in good condition and properly installed before you operate the machine. Never operate the machine with shields removed. Always close access doors or panels before you operate the machine.

Dirty or slippery steps, ladders, walkways, and platforms can cause falls. Make sure these surfaces remain clean and clear of debris.

A person or pet within the operating area of a machine can be struck or crushed by the machine or its equipment. DO NOT allow anyone to enter the work area.

Raised equipment and/or loads can fall unexpectedly and crush persons underneath. Never allow anyone to enter the area underneath raised equipment during operation.

Never operate the engine in enclosed spaces as harmful exhaust gases may build up.

Before you start the machine, be sure that all controls are in neutral or park lock position with the backhoe swing lock pin in the lock position. The backhoe swing lock pin must be in the lock position when you are not using the backhoe.

Start the engine only from the operator's seat. If you bypass the safety start switch, the engine can start with the transmission in gear. Do not connect or short across terminals on the starter solenoid. Attach jumper cables as described in the manual. Starting in gear may cause death or serious injury.

Always keep windows, mirrors, all lighting, and Slow-Moving Vehicle (SMV) emblem clean to provide the best possible visibility while you operate the machine.

Operate controls only when seated in the operator's seat, except for those controls expressly intended for use from other locations.

From the operator's platform, install the backhoe swing lock pin when the backhoe is not in use and before all other operation.

Before you leave the machine:

1. Park the machine on a firm, level surface.
2. Put all controls in neutral or park lock position.
3. Engage the parking brake. Use wheel chocks if required.
4. Lower the loader bucket or other front attachment to the ground.
5. Move the operator's seat to the backhoe operating position and choose one of the following backhoe positions:
 - Move the backhoe into the stowed position and from the operator's seat install the backhoe swing lock pin. See **Cab - Localization overview (90.150)**.
 - Lower the backhoe bucket or other attachment to the ground.
6. Turn off the engine and remove the key.
7. Move the operator's seat into the driving position.

When, due to exceptional circumstances, you decide to keep the engine running after you leave the operator's station, then you must follow these precautions:

1. Bring the engine to low idle speed.
2. Disengage all drive systems.

WARNING

**Some components may continue to run down after you disengage drive systems.
Make sure all drive systems are fully disengaged.
Failure to comply could result in death or serious injury.**

W0113A



SERVICE MANUAL

Engine

B110C Four-Wheel Drive (4WD) Tier 4B (Final)
B110C Two-Wheel Drive (2WD) Tier 4B (Final)
B95C Four-Wheel Drive (4WD) Tier 4B (Final)
B95C TC Four-Wheel Drive (4WD) Tier 4B (Final)
B95C Two-Wheel Drive (2WD) Tier 4B (Final)

Engine - General specification

B95C Four-Wheel Drive (4WD) Tier 4B (Final)	NA
B95C TC Four-Wheel Drive (4WD) Tier 4B (Final)	NA
B95C Two-Wheel Drive (2WD) Tier 4B (Final)	NA

B95C, B95C LR, and B95C TC

Model	Diesel, F5BFL413B*B003, Tier 4B (Final) emissions compliant (base engine F5BFL413A*B007)
Type	Four cylinder, turbocharged
Firing order	1-3-4-2
Bore and stroke	99 mm x 110 mm (3.90 in x 4.33 in)
Displacement	3.4 l (207.5 in³)
Compression ratio	17 to 1
Fuel injection	Direct HPCR
Horsepower - rated at 2200 RPM	
Gross	72 kW (98 Hp)
Net with viscous fan	71 kW (97 Hp)
Peak torque at 1400 RPM	
Gross	459 N·m (339 lb ft)
Net with viscous fan	458 N·m (338 lb ft)
Maximum torque rise	45 % ± 5 RPM

Engine - General specification

B110C Four-Wheel Drive (4WD) Tier 4B (Final)	NA
B110C Two-Wheel Drive (2WD) Tier 4B (Final)	NA

B110C

Model	Diesel, F5BFL413A*B006, Tier 4B (Final) emissions compliant (base engine F5BFL413A*B007)
Type	Four cylinder, turbocharged
Firing order	1-3-4-2
Bore and stroke	99 mm x 110 mm (3.90 in x 4.33 in)
Displacement	3.4 l (207.5 in³)
Compression ratio	17 to 1
Fuel injection	Direct HPCR
Horsepower - rated at 2200 RPM	
Gross	82 kW (111 Hp)
Net with viscous fan	81 kW (110 Hp)
Peak torque at 1400 RPM	
Gross	467 N·m (344 lb ft)
Net with viscous fan	466 N·m (344 lb ft)
Maximum torque rise	30 % ± 5 RPM

Engine - Speeds Stall test check sheet

NOTE: The following specifications are for engines with more than 50 hours of operation.

NOTE: Engine RPM speed is based on the **ISO 14396** Cetane number of at least 51 and density between **820 - 845 kg/m³ (1382 - 1424 lb/yd³)**. Fuel inlet **36.0 - 40.0 °C (96.8 - 104.0 °F)**.

Results from stall test procedure (fill in values accordingly)

ID	RPM test valve	Stall test component (specified value)
1		Loader hydraulic stall speed (2220 - 2330 RPM)
2		Backhoe hydraulic stall speed (2220 - 2330 RPM)
3		Torque converter stall speed (2150 - 2310 RPM)
4		Combined - loader hydraulic and torque converter - stall speed (1810 - 2090 RPM)

Stall test reference chart

ID	RPM	Results
1 2 3 4	2220 - 2330 RPM 2220 - 2330 RPM 2150 - 2310 RPM 1810 - 2090 RPM	All systems operating within normal specified RPM values.
1 2 3 4	Above 2330 RPM 2220 - 2330 RPM Above 2310 RPM Above 2090 RPM	Engine problem. Check engine speeds. Refer to the engine service manual.
1 2 3 4	Below 2220 RPM 2220 - 2330 RPM Below 2150 RPM Below 1810 RPM	Engine problem. Check engine speeds. Replace the fuel and air filters Refer to the engine service manual.
1 2 3 4	Below 2220 RPM 2220 - 2330 RPM 2150 - 2310 RPM Below 1810 RPM	Hydraulic system problem(s). Check the setting of the main relief valve. Check the output of the hydraulic pump.
1 2 3 4	Above 2330 RPM 2220 - 2330 RPM 2150 - 2310 RPM Above 2090 RPM	Hydraulic system problem(s). Check the setting of the main relief valve. Check the output of the hydraulic pump. Check for leakage in the loader control valve.
1 2 3 4	2220 - 2330 RPM Below 2200 RPM 2150 - 2310 RPM 1810 - 2090 RPM	Hydraulic system problem(s). Check the setting of the main relief valve. Check the output of the hydraulic pump.
1 2 3 4	2220 - 2330 RPM Below 2220 RPM 2150 - 2310 RPM 1810 - 2090 RPM	Hydraulic system problem(s). Check the setting of the main relief valve. Check the output of the hydraulic pump.
1 2 3 4	2220 - 2330 RPM 2220 - 2330 RPM Above 2310 RPM Above 2090 RPM	Torque converter or transmission problems.
1 2 3 4	2220 - 2330 RPM 2220 - 2330 RPM Below 2150 RPM Below 1810 RPM	Torque converter or transmission problems.

Engine - Change fluid

⚠ WARNING

Avoid injury!

Avoid getting engine oil on your skin. In case of skin contact, wash with running water.

Failure to comply could result in death or serious injury.

W1336B

⚠ WARNING

Pressurized system!

Never attempt to drain fluids or remove filters when the engine is running. Turn off the engine and relieve all pressure from pressurized systems before servicing the machine.

Failure to comply could result in death or serious injury.

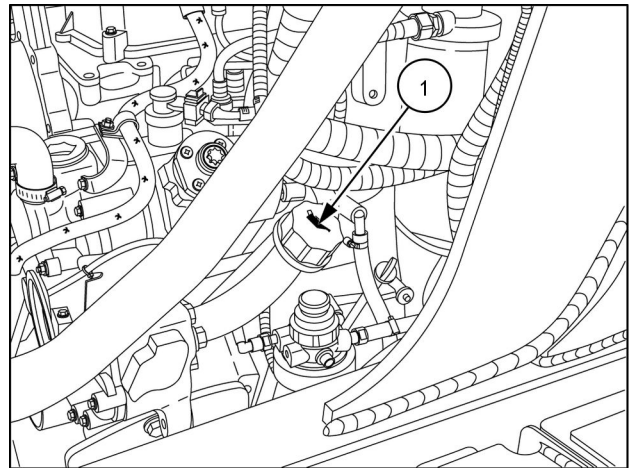
W0905A

1. Move the machine to a level and firm surface.
2. Raise the loader attachment and install the safety support strut.
3. Place the backhoe attachment in the road travel position.
4. Place the direction-of-travel lever and gearshift lever in the neutral position.
5. Engage the parking brake.
6. Stop the engine and remove the starter switch key.
7. Unlock and raise the engine hood.

Engine oil and oil filter - Replace

8. Remove the cap (1) from the the filler neck.
9. Place a suitable container under the engine crankcase drain plug located in the engine oil pan.

NOTE: Drain the engine oil when it is still warm. The oil will flow more easily.



RAIL15TLB0025AA 1



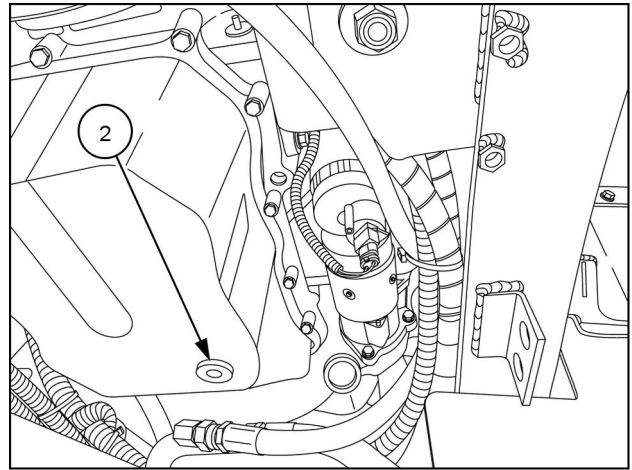
Suggest:

If the above button click is invalid.

Please download this document first, and then click the above link to download the complete manual.

Thank you so much for reading

10. Remove the drain plug (2) and drain the engine oil from the crankcase.

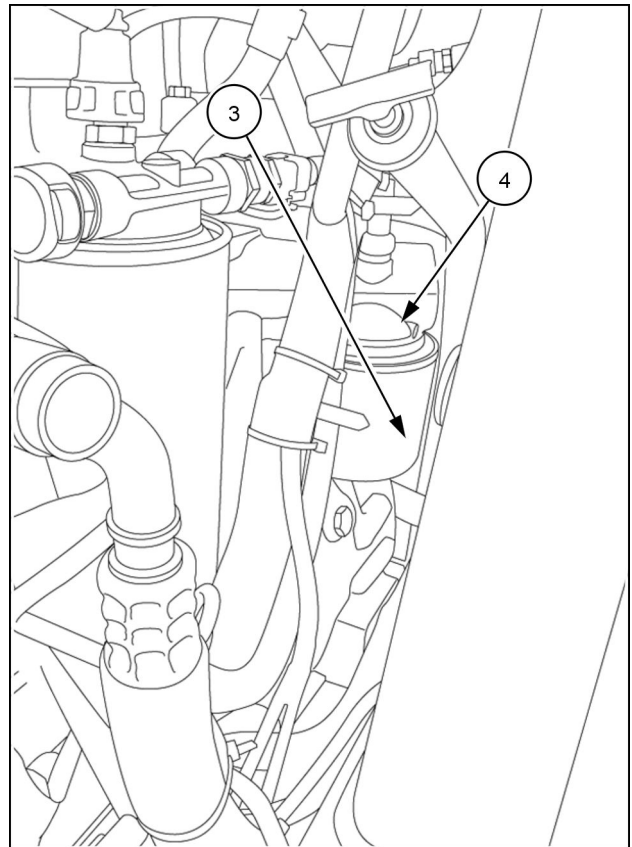


RAIL15TLB0028AA 2

11. Place a container with suitable capacity under the filter.

NOTE: Perform the fuel filter replacement service at the same time as the engine oil and filter replacement service. The fuel filter must be removed to access the oil filter.

12. Use a suitable tool to loosen and remove the cartridge oil filter (3).
13. Apply a thin layer of clean oil on the seal of the new cartridge oil filter.



LEEN11T0414BA_1 3

NOTICE: DO NOT fill the new filter with oil before installing it.

14. Install the new filter (3).
15. Tighten the filter until the seal touches the support (4). Then, by hand, tighten the filter 3/4 of a turn.

NOTICE: Overtightening can damage the filter seal.

<https://www.ebooklibonline.com>

Hello dear friend!

Thank you very much for reading.

Enter the link into your browser.

The full manual is available for immediate download.

<https://www.ebooklibonline.com>