SERVICE MANUAL

T5.90 / T5.100 / T5.110 / T5.120

Tier 4B (final)

Tractor

PIN HLRT5120AJLE00620 and above

Part number 51543579
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NEW HOLLAND AGRICULTURE

SERVICE MANUAL

T5.100 With cab, with Dual Command™ transmission [HLRT5100CJLE03039 -], T5.100 Without cab, with Dual Command™ transmission [HLRT5100JJLE03967 -], T5.110 With cab, with Dual Command™ transmission [HLRT5110CJLE04173 -], T5.110 Without cab, with Dual Command™ transmission [HLRT5110CJLE04139 -], T5.120 With cab, with Dual Command™ transmission [HLRT5120AJLE00620 -], T5.120 Without cab, with Dual Command™ transmission [HLRT5120EJLE00119 -], T5.90 With cab, with Dual Command™ transmission [HLRT5090AJLE03730 -], T5.90 Without cab, with Dual Command™ transmission [HLRT5090PJLE03963 -]

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Link Product / Engine

Product	Market Product	Engine
T5.100 Without cab, with Dual Command™ transmission [HLRT5100JJLE03967 -]	North America	F5GFL413H*C005
T5.100 With cab, with Dual Command™ transmission [HLRT5100CJLE03039 -]	North America	F5GFL413H*C005
T5.110 Without cab, with Dual Command™ transmission [HLRT5110CJLE04139 -]	North America	F5GFL413G*C005
T5.110 With cab, with Dual Command™ transmission [HLRT5110CJLE04173 -]	North America	F5GFL413G*C005
T5.120 Without cab, with Dual Command™ transmission [HLRT5120EJLE00119 -]	North America	F5GFL413F*C010
T5.120 With cab, with Dual Command™ transmission [HLRT5120AJLE00620 -]	North America	F5GFL413F*C010
T5.90 Without cab, with Dual Command™ transmission [HLRT5090PJLE03963 -]	North America	F5GFL413J*C005
T5.90 With cab, with Dual Command™ transmission [HLRT5090AJLE03730 -]	North America	F5GFL413J*C005

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INTRODUCTION

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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 Sales and Service Networks.

Note to the Owner WARNINGS FOR AIR CONDITIONING SYSTEM REPAIR OPERATIONS

Starting the system at low temperatures can damage the compressor. Only operate the air conditioner when the engine is hot and the temperature inside the cab is at least **20 °C** (**68.00 °F**).
When disconnecting the hoses, close the ends with plastic caps to prevent foreign matter and humidity from getting inside the hoses.
Handle the thermostatic sensor carefully to avoid damage that may prevent efficient system operation.
Always use two spanners to unscrew the hose fittings to avoid twisting the fitting.
Do not use any type of engine oil to lubricate the compressor and the system.
Never leave the compressor oil container open, always make sure that it is tightly closed. If left exposed the oil will absorb humidity from the air and may, subsequently, damage the system.
Do not transfer compressor oil from the original container to another container.
Do not introduce any additives to the compressor oil. Any additional substances could contain elements which are incompatible with the chemical base of the refrigerant and thus alter its characteristics.
Check that the thermostatic sensor is correctly inserted in the fins on the evaporator to ensure efficient system operation.

Safety rules

ACCIDENT PREVENTION

Most accidents or injuries that occur in workshops are the result of non-observance of simple and fundamental safety regulations.
For this reason, IN MOST CASES THESE ACCIDENTS CAN BE AVOIDED: by foreseeing possible causes and consequently acting with the necessary caution and care.
Accidents may occur with all types of machine, regardless of how well the machine in question was designed and built.
A careful and prudentmechanic is the best insurance against any accident.
Precise observance of the most basic safety rule is normally sufficient to avoid many serious accidents.

DANGER: Never carry out any cleaning, lubrication or maintenance operations when the engine is running.

GENERALITIES

- Carefully follow specified repair and maintenance procedures.
- Do not wear rings, wristwatches, jewellery, unbuttoned or loose articles of clothing such as: ties, torn clothing, scarves, open jackets or shirts with open zips that may remain entangled in moving parts.
  It is advised to wear approved safety clothing, e.g: non--slip footwear, gloves, safety goggles, helmets, etc.
- Do not carry out repair operations with someone sitting in the driver's seat, unless the person is a trained technician who is assisting with the operation in question.
- Operate the vehicle and use the implements exclusively from the driver's seat.
- Do not carry out operations on the vehicle with the engine running, unless specifically indicated.
- Stop the engine and ensure that all pressure is relieved from hydraulic circuits before removing caps, covers, valves, etc.
- All repair and maintenance operations must be carried out with the greatest care and attention.
- Service stairs and platforms used in a workshop or in the field should be built in compliance with the safety rules in force.
- Disconnect the batteries and label all controls to indicate that the vehicle is being serviced. Block the machine and all equipment which should be raised.
- Do not check or fill fuel tanks, accumulator batteries, nor use starting liquid when smoking or near naked flames, as these fluids are inflammable.
- Brakes are inoperative if manually released for repair or maintenance purposes.
  In such cases, the machine should be kept constantly under control using blocks or similar devices.
- The fuel nozzle should always be in contact with the filling aperture. Maintain this position until filling operations are completed in order to avoid possible sparks caused by the accumulation of static electricity.
- Only use specified towing points for towing the tractor. Connect the parts carefully and make sure that all pins and/or locks are secured in position before applying traction.
  Never remain near the towing bars, cables or chains that are operating under load
- To move a disabled machine, use a trailer or a low-boy, if available.
- When loading or unloading the vehicle from the trailer , or other means of transport, select a flat area capable of sustaining the trailer or truck wheels, firmly secure the tractor to the truck or trailer and lock the wheels in the position.
- For electrical heaters, battery-chargers and similar equipment use exclusive auxiliary power supplies with a efficient ground to avoid electrical shock hazard.
- Always use lifting equipment and similar of appropriate capacity to lift or move heavy components.
- Take extra care if bystanders are present.
- Never pour gasoline or diesel oil into open, wide and low containers.
- Never use gasoline, diesel oil or other inflammable liquids as cleaning agents. Use non-flammable non-toxic proprietary solvents.
- Wear safety goggles with side guards when cleaning parts with compressed air.

- Limit the air pressure to a maximum of **2.1 bar** (**30.5 psi**), according to local regulations.
- Do not run the engine in confined spaces without suitable ventilation.
- Do not smoke, use naked flames, or cause sparks in the area when fuel filling or handling highly inflammable liquids.
- Never use naked flames for lighting when working on the machine or checking for leaks.
- All movements must be carried out carefully when working under, on or near the vehicle and wear protective equipment: helmets, goggles and special footwear.
- When carrying out checks with the engine running, request the assistance of an operator in the driver's seat. The operator must maintain visual contact with the service technician at all times.
- If operating outside the workshop, position the machine on a flat surface and lock in position. If working on a slope, lock the vehicle in position and move to a flat area as soon as possible in order to ensure a safety position.
- Damaged or bent chains or cables are unreliable. Do not use them for lifting or trailing.
  Always use suitable protective gloves when handling chains or cables.
- Chains should always be safely secured. Ensure that the connection is strong enough to hold the expected load.
  No persons should stop near the fastening point, trailing chains or cables.
- Maintenance and repair operations must be carried out in a CLEAN and DRY area, eliminate any water or oil spillage immediately.
- Do not create piles of oil or grease--soaked rags as they represent a serious fire hazard; store them in a closed metal container.
  Before starting the vehicle or implements, make sure that the driver's seat is locked in position and always check that the area is free of persons or obstacles.
- Empty pockets of all objects that may unintentionally fall into the vehicle parts when disassembled.
- In the presence of protruding metal parts, use protective goggles or goggles with side guards, helmets, special footwear and gloves.
- Handle all parts carefully, do not put your hands or fingers between moving parts, wear suitable safety clothing -- safety goggles, gloves and shoes.

WELDING OPERATIONS

- When welding, use protective safety devices: tinted safety goggles, helmets, special overalls, gloves and footwear.
  All persons present in the area where welding is taking place must wear tinted goggles.
  DO NOT LOOK AT ARC WITHOUT PROPER EYE PROTECTION.
- Where possible, remove the part or tool that requires arc welding from the tractor.
- Disconnect both cables from the battery. Isolate the cable ends to avoid contact with each other and the tractor.
- Position the welder ground clamp as near as possible to the area where welding is taking place.
- Remove the electronic control units located on the tractor if welding is to be carried out near these control units.
- Never allow welding cables to lay on, near or across any electrical wiring or electronic component while welding is in progress.
- Metal cables tend to fray with repeated use. Always use suitable protective devices (gloves, goggles, etc.) when handling cables.

START UP

- Never start the engine in confined spaces that are not equipped with adequate ventilation for exhaust gas extraction.
- Never bring your head, body, arms, legs, feet, hands, fingers near fans or rotating belts.

MOTOR

- Always loosen the radiator cap slowly before removing it to allow any remaining pressure in the system to be discharged. Coolant should be topped up only when the engine is stopped or idle if hot.
- Never fill up with fuel when the engine is running, especially if hot, in order to prevent the outbreak of fire as a result of fuel spillage
- Never check or adjust fan belt tension when the engine is running.

Never adjust the fuel injection pump when the vehicle is moving.

- Never lubricate the vehicle when the engine is running.

ELECTRICAL SYSTEMS

- If it is necessary to use auxiliary batteries, the cables must be connected at both sides as follows: (+) with (+) and (-) with (-).
- Avoid short-circuiting the terminals. GAS RELEASED FROM BATTERIES IS HIGHLY INFLAMMABLE.
- During charging, leave the battery compartment uncovered to improve ventilation.
- Do not check change by placing metal articles across battery terminals.
- Avoid sparks or flames near the battery zone to prevent explosion hazards.
- Before servicing operations, check for fuel or current leaks. Eliminate any eventual leaks before starting work.
- Never charge batteries in confined spaces. Make sure that there is adequate ventilation in order to prevent accidental explosion hazards as a result of the accumulation of gases released during charging operations.
- Always disconnect the battery before performing any kind of servicing on the electrical system.

HYDRAULIC SYSTEMS

- Some fluid slowly coming out from a very small port can be almost invisible and be strong enough to penetrate the skin. Check for leaks using a piece of cardboard, NEVER USE HANDS.
- If any liquid penetrates skin tissue, call for medical aid immediately
- Serious skin infections may result if medical attention is not given.
- Use the specific tools when checking pressure values on the hydraulic system.

WHEELS AND TYRES

- Make certain that tires are correctly inflated to the pressure indicated by the Manufacturer.
  Periodically check possible damages to the rims and tires.
- Stand away from (at the side of) the tyre when checking inflation pressure.
- Only check pressure when the vehicle is unloaded and the tyres are cold, to avoid incorrect readings as a result of over-pressure.
- Do not re-use parts of recovered wheels as incorrect welding or brazing may heat the material, causing it to weaken and eventually damage or break the wheel.
- Never cut, nor weld a rim with the inflated tire assembled.
- When removing the wheels, lock both the front and rear vehicle wheels.
- Always position support stands when raising the vehicle, in order to conform to current safety regulations.
- Deflate the tyre before removing any object caught into the tyre tread.
- Never inflate tyres using inflammable gases; this could cause an explosion and put operator safety at risk.

REMOVAL AND RE-FITTING

- Lift and handle all heavy parts using suitable lifting equipment and make sure that all slings and hooks are correctly secured.
- Handle all parts carefully during lifting operations, be careful to personnel working near the load to be lifted. Never insert hands or fingers between parts, always wear approved accident prevention clothing (goggles, gloves and work boots).
- Avoid twisting chains or metal cables and always wear safety gloves when handling cables or chains.

Safety rules - Ecology and the environment

Soil, air, and water quality is important for all industries and life in general. When legislation does not yet rule the treatment of some of the substances that advanced technology requires, sound judgment should govern the use and disposal of products of a chemical and petrochemical nature.

Familiarize yourself with the relative legislation applicable to your country, and make sure that you understand this legislation. Where no legislation exists, obtain information from suppliers of oils, filters, batteries, fuels, anti-freeze, cleaning agents, etc., with regard to the effect of these substances on man and nature and how to safely store, use, and dispose of these substances.

Helpful hints

- Avoid the use of cans or other inappropriate pressurized fuel delivery systems to fill tanks. Such delivery systems may cause considerable spillage.
- In general, avoid skin contact with all fuels, oils, acids, solvents, etc. Most of these products contain substances that may be harmful to your health.
- Modern oils contain additives. Do not burn contaminated fuels and or waste oils in ordinary heating systems.
- Avoid spillage when you drain fluids such as used engine coolant mixtures, engine oil, hydraulic fluid, brake fluid, etc. Do not mix drained brake fluids or fuels with lubricants. Store all drained fluids safely until you can dispose of the fluids in a proper way that complies with all local legislation and available resources.
- Do not allow coolant mixtures to get into the soil. Collect and dispose of coolant mixtures properly.
- The air-conditioning system contains gases that should not be released into the atmosphere. Consult an air-conditioning specialist or use a special extractor to recharge the system properly.
- Repair any leaks or defects in the engine cooling system or hydraulic system immediately.
- Do not increase the pressure in a pressurized circuit as this may lead to a component failure.
- Protect hoses during welding. Penetrating weld splatter may burn a hole or weaken hoses, allowing the loss of oils, coolant, etc.

Battery recycling

Batteries and electric accumulators contain several substances that can have a harmful effect on the environment if the batteries are not properly recycled after use. Improper disposal of batteries can contaminate the soil, groundwater, and waterways. NEW HOLLAND strongly recommends that you return all used batteries to a NEW HOLLAND dealer, who will dispose of the used batteries or recycle the used batteries properly. In some countries, this is a legal requirement.

Mandatory battery recycling

NOTE: *The following requirements are mandatory in Brazil.*

Batteries are made of lead plates and a sulfuric acid solution. Because batteries contain heavy metals such as lead, CONAMA Resolution 401/2008 requires you to return all used batteries to the battery dealer when you replace any batteries. Do not dispose of batteries in your household garbage.

Points of sale are obliged to:

- Accept the return of your used batteries
- Store the returned batteries in a suitable location
- Send the returned batteries to the battery manufacturer for recycling

Personal safety CAB AIR CONDITIONING SYSTEM

SAFETY REGULATIONS

- The refrigerant must be handled with great care in order to avoid personal injury; always use safety goggles and gloves.
- Liquid refrigerant can cause freezing of the skin and serious damage to the eyes, sometimes resulting in permanent blindness.
- Keep the refrigerant container away from heat sources. Heat will cause an increase in pressure of the refrigerant and could cause the container to explode.
- If refrigerant comes into contact with a naked flame or a hot metal surface it produces a toxic gas, which is dangerous if inhaled.
- In order to avoid accidents follow the simple precautions described below.
- The operation of emptying and charging the system must be carried out in a well-ventilated area, well away from any naked flames.
- During the charging and emptying operations, take the necessary precautions to protect the face and above all the eyes from accidental contact with refrigerant.
- In the event of an accident, proceed as follows:
  - if refrigerant splashes into the eyes, wash immediately with a few drops of mineral oil, then wash them thoroughly with a solution of boric acid and water (one spoonful of acid in 1/4 cup of water) and seek medical assistance immediately.
  - freezing of the skin caused by contact with liquid refrigerant may be treated by gradually warming the injured area with cold water, followed by the application of a greasy cream. Request medical assistance.
  - the air conditioning system contains a mixture of refrigerant and oil under high pressure; under no circumstances loosen pipe fittings/unions or work on the pipes without having first drained the system.
  - do not loosen or remove the compressor oil level check cap with the system pressurized.
  - do not heat the refrigerant container. If the temperature exceeds **50 °C** (**122.00 °F**) the pressure will increase very rapidly.
  - keep the air conditioning system away from heat sources to prevent explosions as a result of an increase in pressure in the system piping.
- When transferring refrigerant from one container to another, only use homologated liquid refrigerant containers equipped with safety valves.
- Never fill liquid refrigerant containers over **80%** (**80.0%**) of their maximum capacity.
- Do not modify the settings of safety valves and the control devices.
- Never connect the recovery/recycling and evacuation/charging stations to electrical power outlets with voltages other than those specified; do not leave the stations powered up unless they are to be used immediately.

Engine cooling system - Basic instructions

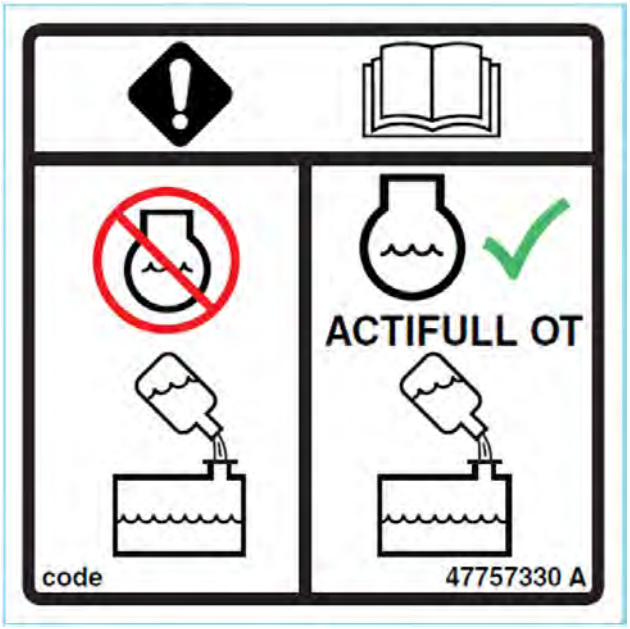
Depending on the date of manufacture, your cooling system may be equipped with conventional ethylene glycol coolant such as **NEW HOLLAND AMBRA AGRIFLU** or an Organic Acid Technology (OAT) coolant solution such as **NEW HOLLAND AMBRA ACTIFULL™ OT EXTENDED LIFE COOLANT**. You can easily identify **NEW HOLLAND AMBRA ACTIFULL™ OT EXTENDED LIFE COOLANT** by its yellow color. You should never mix the coolant types.

The coolant solution used must meet the following CNH Industrial material specifications for either coolant type:

- **MAT3624** for OAT coolant
- **MAT3620** for conventional coolant

The decal shown is located near the fill point of the cooling system whenever the factory fill is **NEW HOLLAND AMBRA ACTIFULL™ OT EXTENDED LIFE COOLANT**. This decal is available in three different sizes. See the table below for the associated part numbers.

CNH Industrial part number	Size
47757330	**50 mm** x **50 mm**
47757331	**75 mm** x **75 mm**
47757332	**100 mm** x **100 mm**



47757330 1

NOTICE: *NEVER mix OAT coolant with conventional coolant. Under no circumstances should you top off a cooling system with only water. You can use a refractometer to check the concentration level. You should not use Supplemental Coolant Additives (SCA) when using* ***NEW HOLLAND AMBRA ACTIFULL™ OT EXTENDED LIFE COOLANT****. Change the coolant solution at the change interval recommended.*

If you need to change a machine from conventional coolant to OAT coolant or vice versa, you should follow the “Changing coolant types” procedure below to attain the full benefit of the coolant.

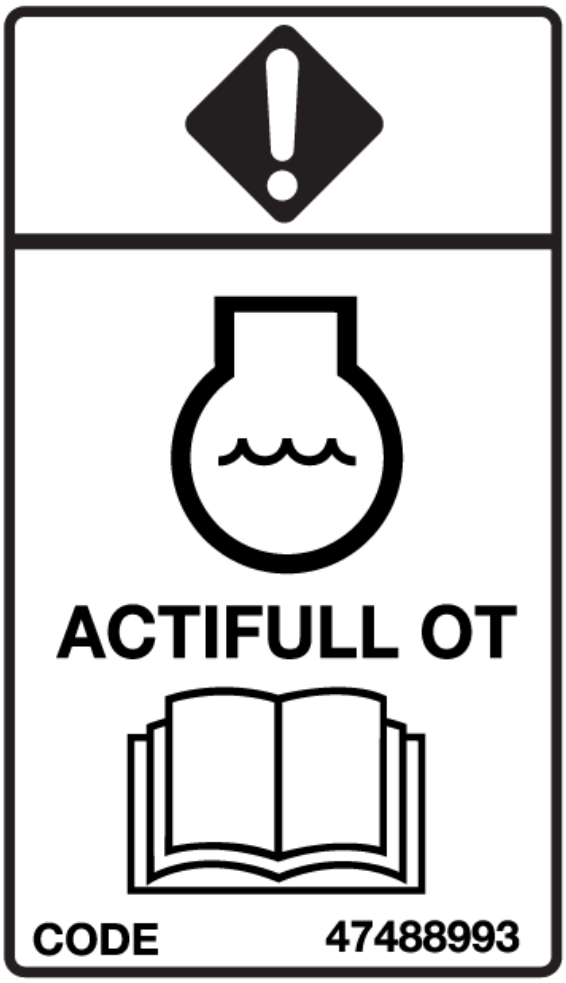
Changing coolant types

To change coolant from OAT coolant to conventional coolant (or vice versa):

1. Empty the engine cooling system by draining the coolant into a suitable container.
2. Fill the system with clean water.
3. Start the engine and run the engine for at least **30 min**.

   NOTE: *Make sure that you activate the heating system (if equipped) to circulate fluid through the heater core.*
4. Repeat Steps 1 to 3 for a total of two washes.
5. Fill the system with conventional coolant (or OAT coolant).
6. Operate the engine until it is warm. Inspect the machine for leaks.
7. If you are changing to OAT coolant, then attach the decal (CNH Industrial part number 47757330) to indicate the use of OAT coolant in the cooling system.

You may notice the older version of the OAT decal (CNH Industrial part number 47488993) on some applications.



47488993 2

Definitions

Conventional coolant:

A coolant that relies on inorganic inhibitors such as silicates, nitrites, and phosphates for corrosion and cavitation protection.

Organic Acid Technology (OAT) coolant:

A coolant that relies on inhibitors such as organic acid salts for corrosion and cavitation protection.

Torque - Standard torque data for hydraulic connections

General information

- Hydraulic connections require a minimum assembly torque in order to provide zero leakage at rated pressure with adequate fatigue resistance. Over-torquing of a hydraulic connection can also lead to leakage or failure. For some connections, NEW HOLLAND requires a different torque value than is listed in the ISO and SAE standards.
- The torque values in this document should be used whenever possible or applicable.

  NOTICE: *Always follow the instructions in this manual for specific torque values when you service components. The information in this section is for general guidance only when a procedure contains no specific torque value.*

Tolerance

- The tolerance for all torque values is ± **10%**. This tolerance must include all assembly variation, not only the torque wrench repeatability.

Lubrication

Application of grease or other lubricants to hydraulic connectors should be avoided. If clean hydraulic oil is already on the connection, it is not required to remove the oil. Generally, application of grease:

- May cause a significant change in the torque required to properly tighten the connection.
- May reduce the connection's resistance to vibration.
- Excessive grease may displace an elastomer seal during tightening.
- Grease extrusion when connection is tightened may be mistaken for leakage.

NEW HOLLAND products generally use O-Ring Boss (ORB) connectors that have Teflon™-coated O-rings, eliminating the need for O-ring lubrication during installation. For connections which are made into aluminum manifolds or with stainless steel connectors, it may be required to apply a lubricant to prevent galling.

Use of **LOCTITE®** and other thread-locking compounds is prohibited. These compounds:

- May cause a significant change in the torque required to properly tighten the connections.
- Reduce the serviceability of the joint.
- May prevent the O-ring from properly sealing if the compound gets on the O-ring.

Torque values for metric O-Ring Boss (ORB) port connections

	S-Series *		L-Series **	
Metric thread	**Ferrous N·m (lb ft) ± 10%**	**Non-Ferrous N·m (lb ft) ± 10%**	**Ferrous N·m (lb ft) ± 10%**	**Non-Ferrous N·m (lb ft) ± 10%**
M8 x 1	10.5 (7.7)	6.3 (4.6)	8.5 (6.3)	5 (3.7)
M10 x 1	21 (15.5)	12.5 (9.2)	15.5 (11.4)	9.3 (6.9)
M12 x 1.5	37 (27.3)	22 (16.2)	27 (19.9)	16 (11.8)
M14 x 1.5	47 (34.7)	28 (20.7)	37 (27.3)	22 (16.2)
M16 x 1.5	58 (42.8)	35 (25.8)	42 (31)	25 (18.4)
M18 x 1.5	74 (54.6)	44 (32.5)	47 (34.7)	28 (20.7)
M22 x 1.5	105 (77.4)	63 (46.5)	63 (46.5)	38 (28)
M27 x 2	178 (131.3)	107 (78.9)	105 (77.4)	63 (46.5)
M30 x 2	225 (166)	135 (99.6)	136 (100.3)	82 (60.5)
M33 x 2	325 (239.7)	195 (143.8)	168 (123.9)	101 (74.5)
M42 x 2	345 (254.5)	207 (152.7)	220 (162.3)	132 (97.4)
M48 x 2	440 (324.5)	264 (194.7)	273 (201.4)	164 (121)
M60 x 2	525 (387.2)	315 (232.3)	330 (243.4)	198 (146)

* S-Series connectors are used with O-Ring Face Seals (ORFS).

** L-Series connectors are used with **37°** flare.

Torque values for metric O-Ring Boss (ORB) port plugs

	Ferrous		Non-ferrous
Metric thread	**Internal hex N·m (lb ft) ± 10%**	**External hex N·m (lb ft) ± 10%**	**N·m (lb ft) ± 10%**
M8 x 1	8.5 (6.3)	10.5 (7.7)	6.3 (4.6)
M10 x 1	16 (11.8)	21 (15.5)	12.5 (9.2)
M12 x 1.5	23 (17)	37 (27.3)	22 (16.2)
M14 x 1.5	47 (34.7)	47 (34.7)	28 (20.7)
M16 x 1.5	58 (42.8)	58 (42.8)	35 (25.8)
M18 x 1.5	74 (54.6)	74 (54.6)	44 (32.5)
M22 x 1.5	105 (77.4)	105 (77.4)	63 (46.5)
M27 x 2	178 (131.3)	178 (131.3)	107 (78.9)
M30 x 2	225 (166)	225 (166)	135 (99.6)
M33 x 2	325 (239.7)	325 (239.7)	195 (143.8)
M42 x 2	345 (254.5)	345 (254.5)	207 (152.7)
M48 x 2	440 (324.5)	440 (324.5)	264 (194.7)
M60 x 2	525 (387.2)	525 (387.2)	315 (232.3)

Torque values for port connections (British Standard Pipe Parallel (BSPP) thread ports and stud ends)

	Metric tube Outside Diameter (OD) mm (in)		Ferrous		Non-Ferrous	
BSPP thread G- Gas; A- medium coarse threads	**S-Series ***	**L-Series ****	**S-Series N·m (lb ft) ± 10%**	**L-Series N·m (lb ft) ± 10%**	**S-Series N·m (lb ft) ± 10%**	**L-Series N·m (lb ft) ± 10%**
G 1/8 A	–	6 (0.236)	–	21 (15.5)	–	12.5 (9.2)
G 1/4 A	6 (0.236) or 8 (0.315)	8 (0.315) or 10 (0.394)	63 (46.5)	53 (39.1)	38 (28)	32 (23.6)
G 3/8 A	10 (0.394) or 12 (0.472)	12 (0.472)	95 (70.1)	84 (62)	57 (42)	50 (36.9)
G 1/2 A	16 (0.630)	15 (0.591) or 18 (0.709)	136 (100.3)	105 (77.4)	82 (60.5)	63 (46.5)
G 3/4 A	20 (0.787)	22 (0.866)	210 (154.9)	210 (154.9)	126 (92.9)	126 (92.9)
G 1 A	25 (0.984)	28 (1.102)	400 (295)	400 (295)	240 (177)	240 (177)
G 1 1/4 A	30 (1.181)	35 (1.378)	525 (387.2)	525 (387.2)	315 (232.3)	315 (232.3)
G 1 1/2 A	38 (1.496)	42 (1.654)	660 (486.8)	660 (486.8)	396 (292.1)	396 (292.1)

* S-Series connectors are used with O-Ring Face Seals (ORFS).

** L-Series connectors are used with **37°** flare.

Torque values for metric port connections (Metric face-seal ports and stud ends)

	Metric tube Outside Diameter (OD) mm (in)		Ferrous		Non-Ferrous	
Metric thread	**S-Series ***	**L-Series ****	**S-Series N·m (lb ft) ± 10%**	**L-Series N·m (lb ft) ± 10%**	**S-Series N·m (lb ft) ± 10%**	**L-Series N·m (lb ft) ± 10%**
M10 x 1	–	4 (0.157)	–	21 (15.5)	–	12.5 (9.2)
M12 x 1.5	4 (0.157)	6 (0.236)	47 (34.7)	32 (23.6)	28 (20.7)	19 (14)
M14 x 1.5	5 (0.197)	7 (0.276)	63 (46.5)	53 (39.1)	38 (28)	32 (23.6)
M16 x 1.5	7 (0.276)	9 (0.354)	84 (62)	63 (46.5)	50 (36.9)	38 (28)
M18 x 1.5	8 (0.315)	11 (0.433)	105 (77.4)	84 (62)	63 (46.5)	50 (36.9)
M20 x 1.5	10 (0.394)	–	147 (108.4)	–	88 (64.9)	–
M22 x 1.5	12 (0.472)	14 (0.551)	158 (116.5)	147 (108.4)	95 (70.1)	88 (64.9)
M26 x 1.5	–	18 (0.709)	–	210 (154.9)	–	126 (92.9)
M27 x 1.2	16 (0.630)	–	210 (154.9)		126 (92.9)	–
M33 x 2	20 (0.787)	23 (0.906)	400 (295)	400 (295)	240 (177)	240 (177)
M42 x 2	25 (0.984)	30 (1.181)	525 (387.2)	525 (387.2)	315 (232.3)	315 (232.3)
M48 x 2	32 (1.260)	36 (1.417)	630 (464.7)	630 (464.7)	396 (292.1)	396 (292.1)

* S-Series connectors are used with O-Ring Face Seals (ORFS).

** L-Series connectors are used with **37°** flare.

Torque values for Inch O-Ring Boss (ORB) port non-adjustable connections

			S-Series *		L-Series **	
SAE dash size	UN/UNF thread size	Inch tube OD mm (in)	Ferrous N·m (lb ft) ± 10%	Non-Ferrous N·m (lb ft) ± 10%	Ferrous N·m (lb ft) ± 10%	Non-Ferrous N·m (lb ft) ± 10%
2	5/16-24	3.18 (0.125)	–	–	8.5 (6.3)	5 (3.7)
3	3/8-24	4.76 (0.187)	15.5 (11.4)	9.3 (6.9)	10.5 (7.7)	6.3 (4.6)
4	7/16-20	6.35 (0.250)	37 (27.3)	22 (16.2)	19 (14)	11.5 (8.5)
5	1/2-20	7.94 (0.313)	42 (31)	25 (18.4)	26 (19.2)	15.5 (11.4)
6	9/16-18	9.52 (0.375)	47 (34.7)	28 (20.7)	32 (23.6)	19 (14)
8	3/4-16	12.7 (0.500)	89 (65.6)	53 (39.1)	53 (39.1)	32 (23.6)
10	7/8-14	15.88 (0.625)	121 (89.2)	73 (53.8)	63 (46.5)	38 (28)
12	1-1/16-12	19.05 (0.750)	178 (131.3)	107 (78.9)	100 (73.8)	60 (44.3)
14	1-3/16-12	22.22 (0.875)	225 (166)	135 (99.6)	131 (96.6)	79 (58.3)
16	1-5/16-12	25.4 (1.000)	283 (208.7)	170 (125.4)	156 (115.1)	94 (69.3)
20	1-5/8-12	31.75 (1.250)	300 (221.3)	180 (132.8)	210 (154.9)	126 (92.9)
24	1-7/8-12	38.1 (1.500)	388 (286.2)	233 (171.9)	220 (162.3)	132 (97.4)
32	2-1/2-12	50.8 (2.000)	388 (286.2)	233 (171.9)	315 (232.3)	189 (139.4)

* S-Series connectors are used with O-Ring Face Seals (ORFS).

** L-Series connectors are used with **37°** flare.

Torque values for inch O-Ring Boss (ORB) port adjustable connections

			S-Series *		L-Series **	
SAE dash size	UN/UNF thread size	Inch tube OD mm (in)	Ferrous N·m (lb ft) ± 10%	Non-Ferrous N·m (lb ft) ± 10%	Ferrous N·m (lb ft) ± 10%	Non-Ferrous N·m (lb ft) ± 10%
2	5/16-24	3.18 (0.125)	–	–	8.5 (6.3)	5 (3.7)
3	3/8-24	4.76 (0.187)	10.5 (7.7)	9.3 (6.9)	10.5 (7.7)	6.3 (4.6)
4	7/16-20	6.35 (0.250)	21 (15.5)	21 (15.5)	19 (14)	11.5 (8.5)
5	1/2-20	7.94 (0.313)	42 (31)	25 (18.4)	26 (19.2)	15.5 (11.4)
6	9/16-18	9.52 (0.375)	47 (34.7)	28 (20.7)	32 (23.6)	19 (14)
8	3/4-16	12.7 (0.500)	89 (65.6)	53 (39.1)	53 (39.1)	32 (23.6)
10	7/8-14	15.88 (0.625)	121 (89.2)	73 (53.8)	63 (46.5)	38 (28)
12	1-1/16-12	19.05 (0.750)	178 (131.3)	107 (78.9)	100 (73.8)	60 (44.3)
14	1-3/16-12	22.22 (0.875)	225 (166)	135 (99.6)	131 (96.6)	79 (58.3)
16	1-5/16-12	25.4 (1.000)	285 (210.2)	170 (125.4)	156 (115.1)	94 (69.3)
20	1-5/8-12	31.75 (1.250)	300 (221.3)	180 (132.8)	210 (154.9)	126 (92.9)
24	1-7/8-12	38.1 (1.500)	388 (286.2)	233 (171.9)	220 (162.3)	132 (97.4)
32	2-1/2-12	50.8 (2.000)	388 (286.2)	233 (171.9)	315 (232.3)	189 (139.4)

* S-Series connectors are used with O-Ring Face Seals (ORFS).

** L-Series connectors are used with **37°** flare.

Torque values for inch O-Ring Boss (ORB) port plugs

		Ferrous		Non-Ferrous
SAE dash size	UN/UNF thread size	Internal hex N·m (lb ft) ± 10%	External hex N·m (lb ft) ± 10%	N·m (lb ft) ± 10%
2	5/16-24	7.5 (5.5)	12.5 (9.2)	7.5 (5.5)
3	3/8-24	14.5 (10.7)	21 (15.5)	12.5 (9.2)
4	7/16-20	21 (15.5)	37 (27.3)	22 (16.2)
5	1/2-20	28 (20.7)	42 (31)	25 (18.4)
6	9/16-18	47 (34.7)	47 (34.7)	28 (20.7)
8	3/4-16	89 (65.6)	89 (65.6)	53 (39.1)
10	7/8-14	116 (85.6)	116 (85.6)	70 (51.6)
12	1-1/16-12	176 (129.8)	176 (129.8)	106 (78.2)
14	1-3/16-12	247 (182.2)	247 (182.2)	148 (109.2)
16	1-5/16-12	284 (209.5)	284 (209.5)	170 (125.4)
20	1-5/8-12	357 (263.3)	357 (263.3)	214 (157.8)
24	1-7/8-12	441 (325.3)	441 (325.3)	265 (195.5)
32	2-1/2-12	536 (395.3)	536 (395.3)	322 (237.5)

Torque values for four-bolt flange connections (Metric Screws, Class 10.9)

Metric size mm	Imperial size in	Screw code 61	Code 61 N·m (lb ft) ± 10%	Screw code 62	Code 62 N·m (lb ft) ± 10%
13	1/2	M8 x 1.25	34 (25.1)	M8 x 1.25	34 (25.1)
19	3/4	M10 x 1.5	74 (54.6)	M10 x 1.5	74 (54.6)
25	1	M10 x 1.5	74 (54.6)	M12 x 1.75	137 (101)
32	1-1/4	M10 x 1.5	74 (54.6)	M12 x 1.75	137 (101)
				M14 x 1.5	189 (139.4)
38	1-1/2	M12 x 1.75	137 (101)	M16 x 2	310 (228.6)
51	2	M12 x 1.75	137 (101)	M20 x 2.5	575 (424.1)
64	2-1/2	M12 x 1.75	137 (101)	M24 x 3	575 (424.1)
76	3	M16 x 2	310 (228.6)	M30 x 3.5	680 (501.5)
89	3-1/2	M16 x 2	310 (228.6)	–	–
102	4	M16 x 2	310 (228.6)	–	–
127	5	M16 x 2	310 (228.6)	–	–

Torque values for four-bolt flange connections (Metric Screws, Class 8.8)

Metric size mm	Imperial size in	Screw code 61	Code 61 N·m (lb ft) ± 10%	Screw code 62	Code 62 N·m (lb ft) ± 10%
13	1/2	M8 x 1.25	29 (21.4)	M8 x 1.25	29 (21.4)
19	3/4	M10 x 1.5	57(42)	M10 x 1.5	57(42)
25	1	M10 x 1.5	57(42)	M12 x 1.75	100 (73.8)
32	1-1/4	M10 x 1.5	57(42)	M12 x 1.75	100 (73.8)
				M14 x 1.5	160 (118)
38	1-1/2	M12 x 1.75	100 (73.8)	M16 x 2	250 (184.4)
51	2	M12 x 1.75	100 (73.8)	M20 x 2.5	500 (368.8)
64	2-1/2	M12 x 1.75	100 (73.8)	M24 x 3	575 (424.1)
76	3	M16 x 2	250 (184.4)	M30 x 3.5	680 (501.5)
89	3-1/2	M16 x 2	250 (184.4)	–	–
102	4	M16 x 2	250 (184.4)	–	–
127	5	M16 x 2	250 (184.4)	–	–

Torque values for four-bolt flange connections (Inch Screws, Grade 8)

Metric size mm	Imperial size in	Screw code 61	Code 61 N·m (lb ft) ± 10%	Screw code 62	Code 62 N·m (lb ft) ± 10%
13	1/2	5/16-18	34 (25.1)	5/16-18	34 (25.1)
19	3/4	3/8-16	63 (46.5)	3/8-16	63 (46.5)
25	1	3/8-16	63 (46.5)	7/16-14	97 (71.5)
32	1-1/4	7/16-14	97 (71.5)	1/2-13	158 (116.5)
38	1-1/2	1/2-13	158 (116.5)	5/8-11	310 (228.6)
51	2	1/2-13	158 (116.5)	3/4-10	473 (348.9)
64	2-1/2	1/2-13	158 (116.5)	–	–
76	3	5/8-11	310 (228.6)	–	–
89	3-1/2	5/8-11	310 (228.6)	–	–
102	4	5/8-11	310 (228.6)	–	–
127	5	5/8-11	310 (228.6)	–	–

Tapered thread connection tightening

British Standard Pipe Taper (BSPT) thread size (inch)	National Pipe Thread Fuel (NPTF) thread size (inch)	Turns from finger tight
1/8-28	1/8-27	2 - 3
1/4-19	1/4-18	2 - 3
3/8-19	3/8-18	2 - 3
1/2-14	1/2-14	2 - 3
3/4-14	3/4-14	2 - 3
1-11	1-11 1/2	1.5 - 2.5
1-1/4-11	1-1/4-11 1/2	1.5 - 2.5
1-1/2-11	1-1/2-11 1/2	1.5 - 2.5
2-11	2-11 1/2	1.5 - 2.5

Torque values for banjo bolt connections (Copper washer style)

Bolt thread (metric)	Hex size (mm)	Torque N·m (lb ft) ± 10%
M8 x 1.25	13	13 (9.6)
M10 x 1.25	17	16 (11.8)
M12 x 1.5	17	40 (29.5)
M14 x 1.5	19	45 (33.2)
M16 x 1.5	22	48 (35.4)
M18 x 1.5	24	50 (36.9)
M20 x 1.5	27	73 (53.8)
M22 x 1.5	32	73 (53.8)
M24 x 1.5	32	73 (53.8)

Torque values for O-Ring Face Seals (ORFS) connections

SAE dash size	UN/UNF thread size	Inch tube OD (mm)	Metric tube OD (mm)	Hex size (mm) (Reference only)	* Swivel nut torque N·m (lb ft) ± 10%	** Swivel nut torque N·m (lb ft) ± 10%
4	9/16-18	6.35	6	17	27 (19.9)	27 (19.9)
5	5/8-18	7.94	8	19	34 (25.1)	34 (25.1)
6	11/16-16	9.52	10	22	44 (32.5)	44 (32.5)
8	13/16-16	12.7	12	24	65 (47.9)	65 (47.9)
10	1-14	15.88	16	30	100 (73.8)	100 (73.8)
12	1-3/16-12	19.05	20	36	150 (110.6)	131 (96.6)
14	1-5/16-12	22.23	22	41	163 (120.2)	131 (96.6)
16	1-7/16-12	25.4	25	41	210 (154.9) ***	131 (96.9)
20	1-11/16-12	31.75	30	50	280 (206.5) ***	178 (131.3)
24	2-12	38.1	38	60	375 (276.6) ***	210 (154.9)

* High/Medium-pressure applications > **50 bar** (**725 psi**).

** Low-pressure applications < **50 bar** (**725 psi**).

*** It is recommended to use a four-bolt flange connection instead of O-Ring Face Seals (ORFS) sizes "16" and up.

Torque values for 37° flare connections - Joint Industry Council (JIC)

SAE dash size	UN/UNF thread size	Metric tube OD (mm)	Inch tube OD (mm)	Swivel nut torque N·m (lb ft) ± 10%
2	5/16-24	–	3.18	8.25 (6.1)
3	3/8-24	–	4.76	11.5 (8.5)
4	7/16-20	6	6.35	15.5 (11.4)
5	1/2-20	8	7.94	20 (14.8)
6	9/16-18	10	9.52	25 (18.4)
8	3/4-16	12	12.7	52 (38.4)
10	7/8-14	16	15.88	81 (59.7)
12	1-1/16-12	20	19.05	112 (82.6)
14	1-3/16-12	–	22.22	133 (98.1)
16	1-5/16-12	25	25.4	155 (114.3)
20	1-5/8-12	30/32	31.75	180 (132.8)
24	1-7/8-12	38	38.1	225 (166)
32	2-1/2-12	50	50.8	348 (256.7)

Torque values for 30° flare, 60° cone connections

Nominal size (mm)	British Standard Pipe Parallel (BSPP) thread size	Hex size (mm)	Swivel nut torque N·m (lb ft) ± 10%
5, 6, 6.3	G 1/4	17	25 (18.4)
8, 9, 10	G 3/8	19	34 (25.1)
12, 12.5	G 1/2	22	64 (47.2)
15, 16, 19	G 3/4	30	132 (97.4)
25	G 1	36	196 (144.6)
31.5, 32	G 1-1/4	46	225 (166)
38	G 1-1/2	50	255 (188.1)
50, 51	G 2	65	316 (223.1)

Basic instructions - Shop and assembly

Shimming

For each adjustment operation, select adjusting shims and measure the adjusting shims individually using a micrometer, then add up the recorded values. Do not rely on measuring the entire shimming set, which may be incorrect, or the rated value shown on each shim.

Rotating shaft seals

For correct rotating shaft seal installation, proceed as follows:

1. Before assembly, allow the seal to soak in the oil it will be sealing for at least thirty minutes.
2. Thoroughly clean the shaft and check that the working surface on the shaft is not damaged.
3. Position the sealing lip facing the fluid.

   NOTE: *With hydrodynamic lips, take into consideration the shaft rotation direction and position the grooves so that they will move the fluid towards the inner side of the seal.*
4. Coat the sealing lip with a thin layer of lubricant (use oil rather than grease). Fill the gap between the sealing lip and the dust lip on double lip seals with grease.
5. Insert the seal in its seat and press down using a flat punch or seal installation tool. Do not tap the seal with a hammer or mallet.
6. While you insert the seal, check that the seal is perpendicular to the seat. When the seal settles, make sure that the seal makes contact with the thrust element, if required.
7. To prevent damage to the seal lip on the shaft, position a protective guard during installation operations.

O-ring seals

Lubricate the O-ring seals before you insert them in the seats. This will prevent the O-ring seals from overturning and twisting, which would jeopardize sealing efficiency.

Sealing compounds

Apply a sealing compound on the mating surfaces when specified by the procedure. Before you apply the sealing compound, prepare the surfaces as directed by the product container.

Spare parts

Only use CNH Original Parts or NEW HOLLAND Original Parts.

Only genuine spare parts guarantee the same quality, duration, and safety as original parts, as they are the same parts that are assembled during standard production. Only CNH Original Parts or NEW HOLLAND Original Parts can offer this guarantee.

When ordering spare parts, always provide the following information:

- Machine model (commercial name) and Product Identification Number (PIN)
- Part number of the ordered part, which can be found in the parts catalog

Protecting the electronic and/or electrical systems during charging and welding

To avoid damage to the electronic and/or electrical systems, always observe the following practices:

1. Never make or break any of the charging circuit connections when the engine is running, including the battery connections.
2. Never short any of the charging components to ground.
3. Always disconnect the ground cable from the battery before arc welding on the machine or on any machine attachment.
   - Position the welder ground clamp as close to the welding area as possible.
   - If you weld in close proximity to a computer module, then you should remove the module from the machine.
   - Never allow welding cables to lie on, near, or across any electrical wiring or electronic component while you weld.
4. Always disconnect the negative cable from the battery when charging the battery in the machine with a battery charger.

   NOTICE: *If you must weld on the unit, you must disconnect the battery ground cable from the machine battery. The electronic monitoring system and charging system will be damaged if this is not done.*
5. Remove the battery ground cable. Reconnect the cable when you complete welding.

⚠ WARNING

Battery acid causes burns. Batteries contain sulfuric acid.
Avoid contact with skin, eyes or clothing. Antidote (external): Flush with water. Antidote (eyes): flush with water for 15 minutes and seek medical attention immediately. Antidote (internal): Drink large quantities of water or milk. Do not induce vomiting. Seek medical attention immediately.
Failure to comply could result in death or serious injury.

W0111A

Special tools

The special tools that NEW HOLLAND suggests and illustrate in this manual have been specifically researched and designed for use with NEW HOLLAND machines. The special tools are essential for reliable repair operations. The special tools are accurately built and rigorously tested to offer efficient and long-lasting operation.

By using these tools, repair personnel will benefit from:

- Operating in optimal technical conditions
- Obtaining the best results
- Saving time and effort
- Working in safe conditions

General specification

Engine main data		
Manufacturer		FPT
type	F5C, four cylinders, four valves per cylinder	
Engine Model		
T5.90		F5GFL413J*C001
T5.100		F5GFL413H*C001
T5.110		F5GFL413G*C001
T5.120		F5GFL413F*C002
Emission level		Stage IV
Clutch		**305 mm** (**12 in**)
Intake		Turbocharged
Number of cylinders		4
Bore		**99 mm** (**3.9 in**)
Stroke		**110 mm** (**4.3 in**)
Displacement		**3400 cm³**
Compression Ratio		17± 0,5:1
Ignition order		1. 3. 4. 2
Rated engine power (in accordance with **ECE R 120**)		
T5.90		**63 kW** (**86 Hp**)
T5.100		**73 kW** (**99 Hp**)
T5.110		**79 kW** (**107 Hp**)
T5.120		**86 kW** (**117 Hp**)
Torque increase:		
T5.90		**43%**
T5.100		**42%**
T5.110		**43%**
T5.120		**38%**
Rated Engine Speed		**2300 RPM**
Maximum torque		**1500 RPM**

Oil System	
Oil pressure with engine warm and running at maximum speed	**3.8 bar** (**55.1 psi**)

Hydraulic System		
Drive line **Dual Command™**		
Pump Capacity	High pressure circuit	**25 cm³** (**1.53 in³**)
	Low pressure circuit	**14 cm³** (**0.85 in³**)
Pump flow at rated engine speed and pressure	High pressure circuit	**63.80 L** (**16.85 US gal**)
	Low pressure circuit	**37 L** (**10 US gal**)
Max pump pressure at rated speed	High pressure circuit	**190.0 bar** (**2755.0 psi**)
	Low pressure circuit	**170.0 bar** (**2465.0 psi**)

Rear hitch lifting capacity		
Top link in lower position and lift link on horizontal arm in front hole		
Without supplementary cylinder	At ball joint	**2936 kg** (**6473 lb**)
	At **610 mm** (**24 in**) to rear	**2528 kg** (**5573 lb**)
With an additional cylinder	At ball joint	**3650 kg** (**8047 lb**)
	At **610 mm** (**24 in**) to rear	**3140 kg** (**6923 lb**)
With two supplementary cylinders	At ball joint	**4364 kg** (**9621 lb**)
	At **610 mm** (**24 in**) to rear	**3742 kg** (**8250 lb**)

Rear hitch lifting capacity		
Top link in upper position and lift link on horizontal arm in rear hole		
Without supplementary cylinder	At ball joint	**2936 kg** (**6473 lb**)
	At **610 mm** (**24 in**) to rear	**2641 kg** (**5822 lb**)
With an additional cylinder	At ball joint	**3650 kg** (**8047 lb**)
	At **610 mm** (**24 in**) to rear	**3283 kg** (**7238 lb**)
With two supplementary cylinders	At ball joint	**4354 kg** (**9599 lb**)
	At **610 mm** (**24 in**) to rear	**3915 kg** (**8631 lb**)

POWER TAKE-OFF

Operation at 540 RPM
540 RPM at **1938 RPM** engine speed
630 RPM at engine rated speed (*)

Operation at 1000 RPM
1000 RPM at **1926 RPM** engine speed
1170 RPM at engine rated speed (*)

NOTE: *(*) overspeed is managed by the electronic engine management.*

Towable loads

With drawbars	Reading
TD003 (e11 3013) - (e11 0237 NS)	**2000 kg** (**4409 lb**)

With implement linkage	Reading
non-braked equipment	**3500.0 kg** (**7716.2 lb**)

Axles

REAR AXLE

Axle width Flange to Flange	**1570.0 mm** (**61.8 in**)
Bevel gear pair ratio:	4.222 with R24, R30, R36 tires and transmission at **40 km/h** (**24.9 mph**)
	4.444 with R34, R38 tires and transmission at **40 km/h** (**24.9 mph**)
Size of disc/hub retaining nuts	M18

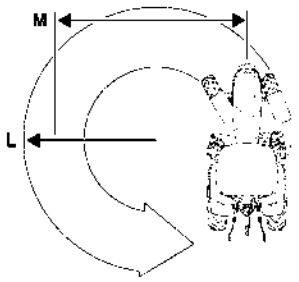
FRONT AXLE

Axle width Flange to Flange	**1584.0 mm** (**62.4 in**)
Bevel gear pair ratio:	3.000 with R24, R30, R36 tires and transmission at **40 km/h** (**24.9 mph**)
	3.222 with R34, R38 tires and transmission at **40 km/h** (**24.9 mph**)
Size of disc/hub retaining nuts	M16
Disc/hub tightening torque	**220 N·m** (**162.3 lb ft**)
Interaxle ratio *:	1.376 with transmission at **40 km/h** (**24.9 mph**)

* Ratio between the front axle rotation speed and the rear axle rotation speed, with 4-wheel drive engaged.

Turn radius*

(L): SAE turning radius measured from the center point of the circle to the center of the outside of the front tire.
(M): the turning circle is measured from the center point of the rear axle, in line with the drawbar.



Turning radius without brakes	**4235 mm** (**166.7 in**)
Turning circle with brakes	**5170 mm** (**203.5 in**)

* With 12.4 R24 front tires and **1750.0 mm** (**68.9 in**) track with a steering angle of **51°**

Weight of tractor

Without ballast, without driver, with fuel in the tank

Model without cab	**3480 kg** (**7672 lb**)
Cab models	**3700 kg** (**8157 lb**)

NOTE: *the weights indicated may vary according to the model version.*

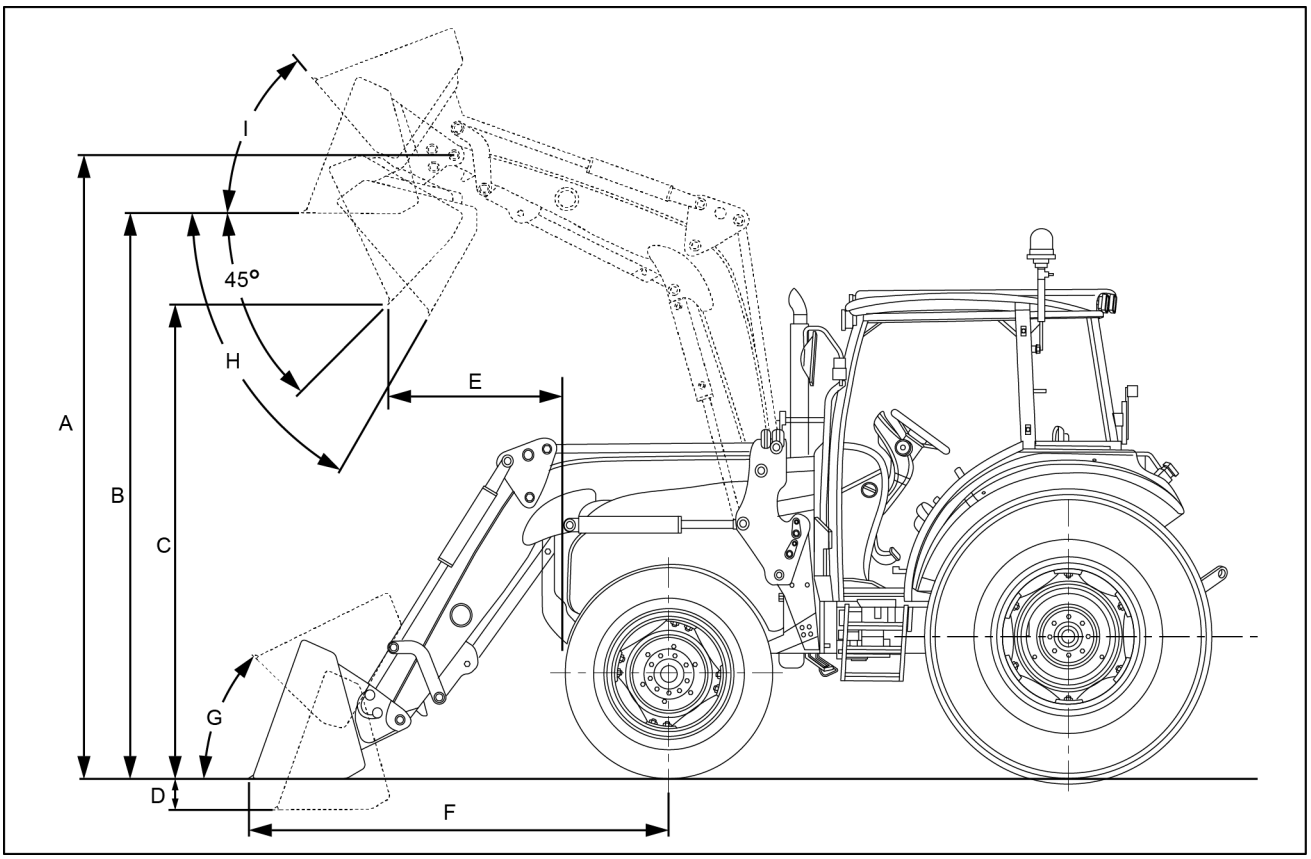
Electrical system

Battery	**12 V 140 A·h**
Starter motor	**4.2 kW**
Alternator	**120 A** (standard version) **200 A**

Lights

Headlights on hood	Low beam H7 **55 W** High beam H3 **55 W**
Work lights on hood	**55 W**
Headlights on handrail	H4 **55 W 60 W**
Hi-mount work lights (front and rear)	H3 **55 W**
Turn indicators	**P21 W**
Brake lights	**P21/5 W**
Reverse port	**21 W**
Number plate light	**R5 W**

General specification Front loader and bucket



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Dimensions with front tires 11.2 R 24 and rear tires 16.9 R 30.

		Model			
		655 TL		665 TL	
		No self leveling	Mechanical self leveling	No self leveling	Mechanical self leveling
	Max rear admissible tires	18.4 R 30		18.4 R 34	
A	Max lift height at pivot pins	3209 mm (126.3 in)	3199 mm (125.9 in)	3405 mm (134.1 in)	3430 mm (135.0 in)
B	Max lift height under bucket in horizontal position	2910 mm (114.6 in)	2913 mm (114.7 in)	3131 mm (123.3 in)	3149 mm (124.0 in)
C	Dumping distance at **45°**	2377 mm (93.6 in)	2364 mm (93.1 in)	2576 mm (101.4 in)	2597 mm (102.2 in)
C	Dumping distance at **60°**	2292 mm (90.2 in)	2285 mm (90.0 in)	2490 mm (98.0 in)	2513 mm (98.9 in)
D	Dig depth	210 mm (8.3 in)	205 mm (8.1 in)	179 mm (7.0 in)	162 mm (6.4 in)
E	Reach at maximum lift at **45°**	1004 mm (39.5 in)	1003 mm (39.5 in)	1097 mm (43.2 in)	1106 mm (43.5 in)
E	Reach at maximum lift at **60°**	850 mm (33.5 in)	825 mm (32.5 in)	857 mm (33.7 in)	—
F	Reach at ground level	2304 mm (90.7 in)	2300 mm (90.6 in)	2314 mm (91.1 in)	2361 mm (93.0 in)
G	Bucket rollback angle	45°	40°	44°	40°
H	Bucket dump angle	60°	60°	60°	60°
I	Bucket rollback at max height		44°		44°
	Lift capacity at max height at pivot pins	1572 kg (3466 lb)	1621 kg (3574 lb)	1746 kg (3849.3 lb)	1907 kg (4204.2 lb)

	Model			
	655 TL		665 TL	
	No self leveling	Mechanical self leveling	No self leveling	Mechanical self leveling
Lift capacity at max height, at **800 mm** (**31.5 in**)	**1124 kg** (**2478 lb**)	**1442 kg** (**3179 lb**)	**1194 kg** (**2632.3 lb**)	**1555 kg** (**3428.2 lb**)
Lift capacity at height **1498 mm** (**59.0 in**), at pivot pins	**1972 kg** (**4348 lb**)	**2005 kg** (**4420 lb**)	**2362 kg** (**5207.3 lb**)	**2527 kg** (**5571.1 lb**)
Lift capacity at height **1498 mm** (**59.0 in**), at **800 mm** (**31.5 in**)	**1397 kg** (**3080 lb**)	**1891 kg** (**4169 lb**)	**1650 kg** (**3637.6 lb**)	**2517 kg** (**5549.0 lb**)
Boom breakout force at pivot pins	**2508 kg** (**5529.2 lb**)	**2477 kg** (**5460.9 lb**)	**3008 kg** (**6631.5 lb**)	**3191 kg** (**7035.0 lb**)
Boom breakout force at **800 mm** (**31.5 in**)	**1692 kg** (**3730.2 lb**)	**2110 kg** (**4651.8 lb**)	**2019 kg** (**4451.1 lb**)	**2661 kg** (**5866.5 lb**)
Bucket Rollback force at max height	**1295 kg** (**2855.0 lb**)	**1325 kg** (**2921.1 lb**)	**2090 kg** (**4607.7 lb**)	**2518 kg** (**5551.2 lb**)
Bucket Rollback force at ground level	**1968 kg** (**4338.7 lb**)	**1743 kg** (**3842.7 lb**)	**2362 kg** (**5207.3 lb**)	**2794 kg** (**6159.7 lb**)

Weight - DT without cab (without ballast, without operator, with fuel) - Loader model 655 TL with 72" bucket.	
On front axle	**2639.0 kg** (**5818.0 lb**)
On rear axle	**1550.0 kg** (**3417.2 lb**)
Total weight	**4189.0 kg** (**9235.2 lb**)

Weight - DT with cab (without ballast, without operator, with fuel) - Loader model 665 TL with 84" bucket	
On front axle	**2786.0 kg** (**6142.1 lb**)
On rear axle	**1781.0 kg** (**3926.4 lb**)
Total weight	**4567.0 kg** (**10068.5 lb**)

Consumables

SYSTEMS OR COMPONENTS	RECOMMENDED PRODUCTS	SPECIFICATION NEW HOLLAND	INTERNATIONAL SPECIFICATION
Engine (cooling)	Conventional coolant: **NEW HOLLAND AMBRA AGRIFLU** mixed **50%** with distilled water	**MAT3620**	**ASTM D6210** Type 1-FF (ethylene glycol-based concentrate)
	NEW HOLLAND AMBRA ACTIFULL™ OT EXTENDED LIFE COOLANT (If the premixed coolant is not available, mix the concentrate with 50% distilled water)	**MAT3624**	ASTM 6210
Engine (lubrication)	**NEW HOLLAND AMBRA UNITEK MASTERGOLD SBL CJ-4 SAE 10W-40**	**MAT3521**	**API CJ-4**
	NEW HOLLAND AMBRA UNITEK SSL 0W-40		
Braking system	**NEW HOLLAND AMBRA BRAKE LHM**	NH 610 A	**ISO 7308**
Front axle Front final drives Drive line	**NEW HOLLAND AMBRA MULTI G™ HYDRAULIC TRANSMISSION OIL**	NH 410 B	**API GL-4** **ISO 32/46** **SAE 10W - 30**
Grease fittings	**NEW HOLLAND AMBRA GR-9 MULTI-PURPOSE GREASE**	NH 710 A	NLGI 2
Air-conditioning system	**R134A**	-	-
Air conditioning supercharger	-	-	SP10

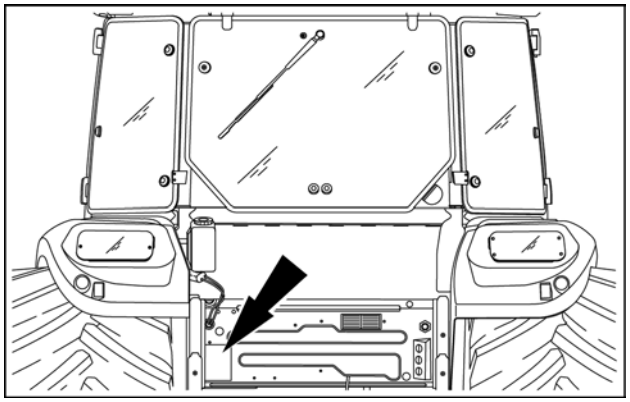
Capacities

		QUANTITY
Engine (cooling)		Cab models **16.0 L** (**4.2 US gal**) Model without cab **14.0 L** (**3.7 US gal**)
Engine (lubrication)	Filter included	**9.5 L** (**2.5 US gal**) **8.36 kg** (**18.43 lb**)
	Only oil sump (MIN-MAX)	**6.40 – 8.10 L** (**1.69 – 2.14 US gal**) **5.63 – 7.13 kg** (**12.41 – 15.72 lb**)
Braking system		**0.70 L** (**0.18 US gal**)
Front axle		**4.5 L** (**1.2 US gal**)
Front final drives (each)	Standard axle without brake	**1.0 L** (**0.3 US gal**)
	Standard axle with brake	**1.8 L** (**0.5 US gal**)
Drive line**Dual Command™**		**57.0 L** (**15.1 US gal**)
Air-conditioning system		**650 g** (**23 oz**)
Air conditioning supercharger		**0.185 L** (**0.049 US gal**)
Windscreen--washer reservoir		**2.00 L** (**0.53 US gal**)
Fuel tank		**160.0 L** (**42.3 US gal**)
DEF/ADBLUE® tank		**9.6 L** (**2.5 US gal**)

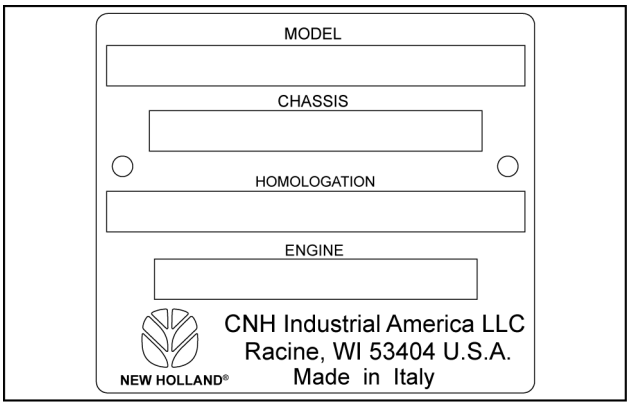
Identification plates

Product Identification Numbers (PIN) and serial numbers identify the tractor and its main components. The identification data must be supplied by the dealer for requests for spare parts or service operations. Identification data is of fundamental importance in the event of theft of the tractor. The following provides the locations of the identification data.

(1) Tractor type-approval data plate

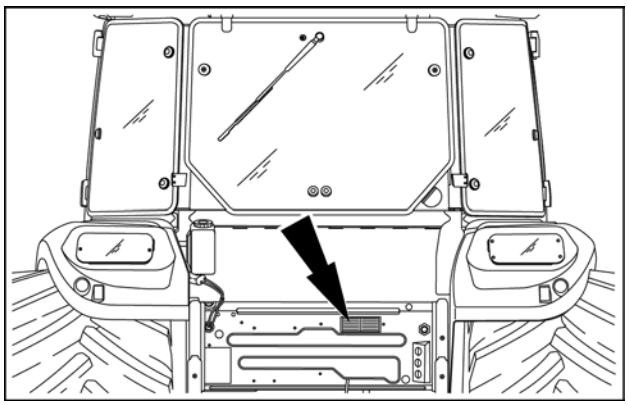


MOIL16TR03479AA 1

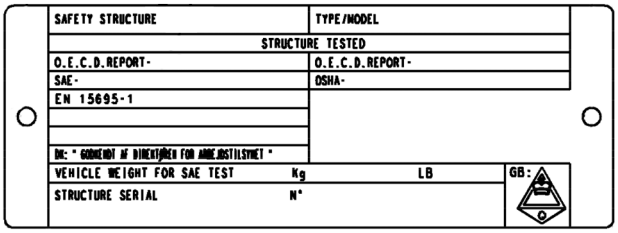


MOIL14TR00019AA 2

(2) Cab identification data plate

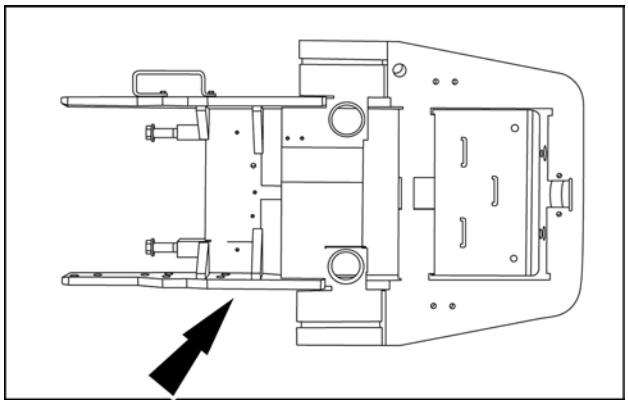


MOIL16TR03479AA 3



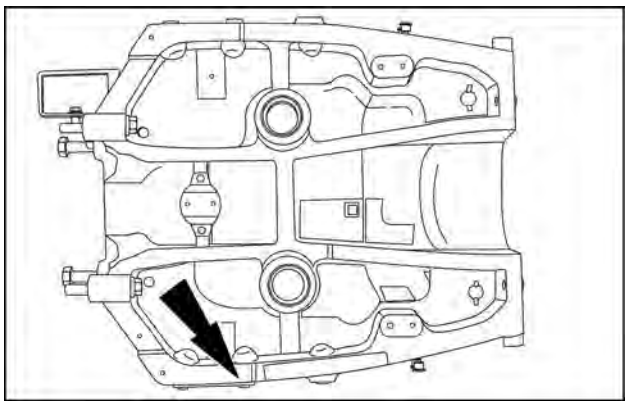
DCAPLT5NE008S1A 4

(3) Tractor frame number identification data with standard front axle support



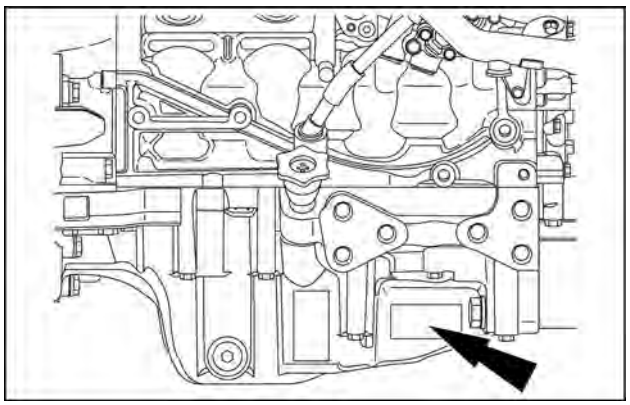
MOIL15TR02178AA 5

(3) Tractor frame number identification data with multi-function front axle support



MOIL15TR02176AA 6

(4) Engine identification data plates



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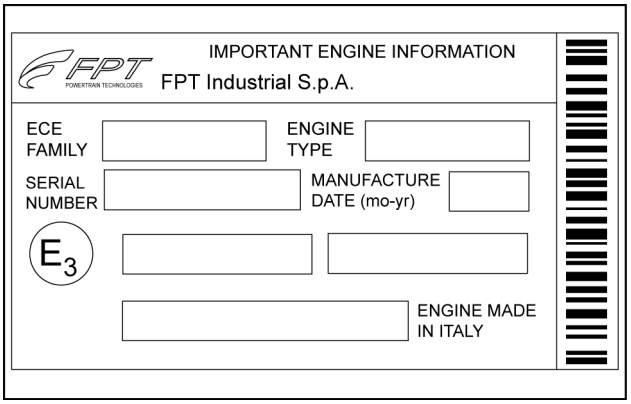
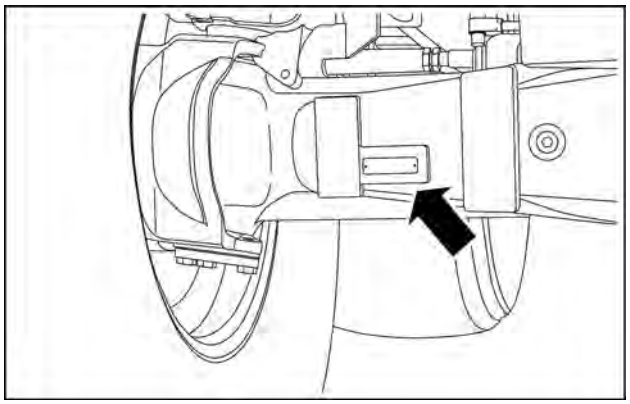


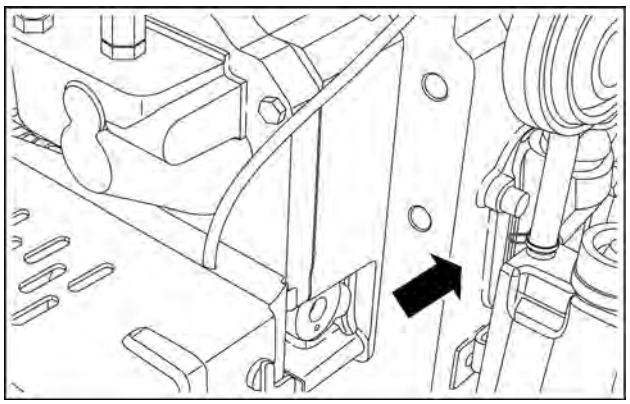
47726513 8

(5) Serial number 4WD Front axle



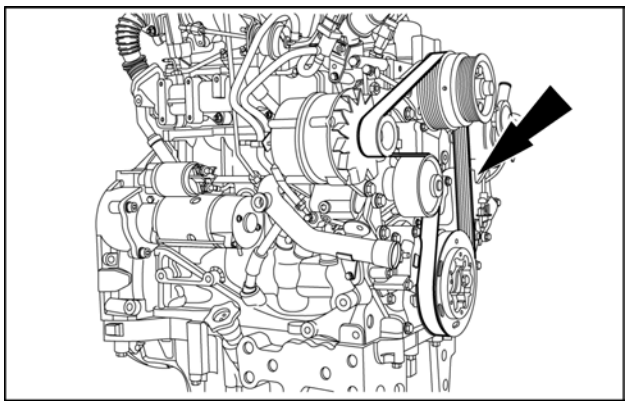
MOIL15TR01670AB 9

(6) Serial number driveline (only for Power shuttle transmission)



MOIL15TR01668AB 10

(7) Serial number of the engine .

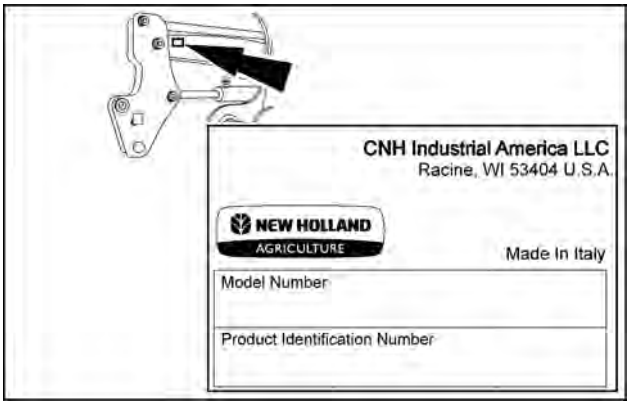


MOIL15TR01715AA 11

Loader identification plate

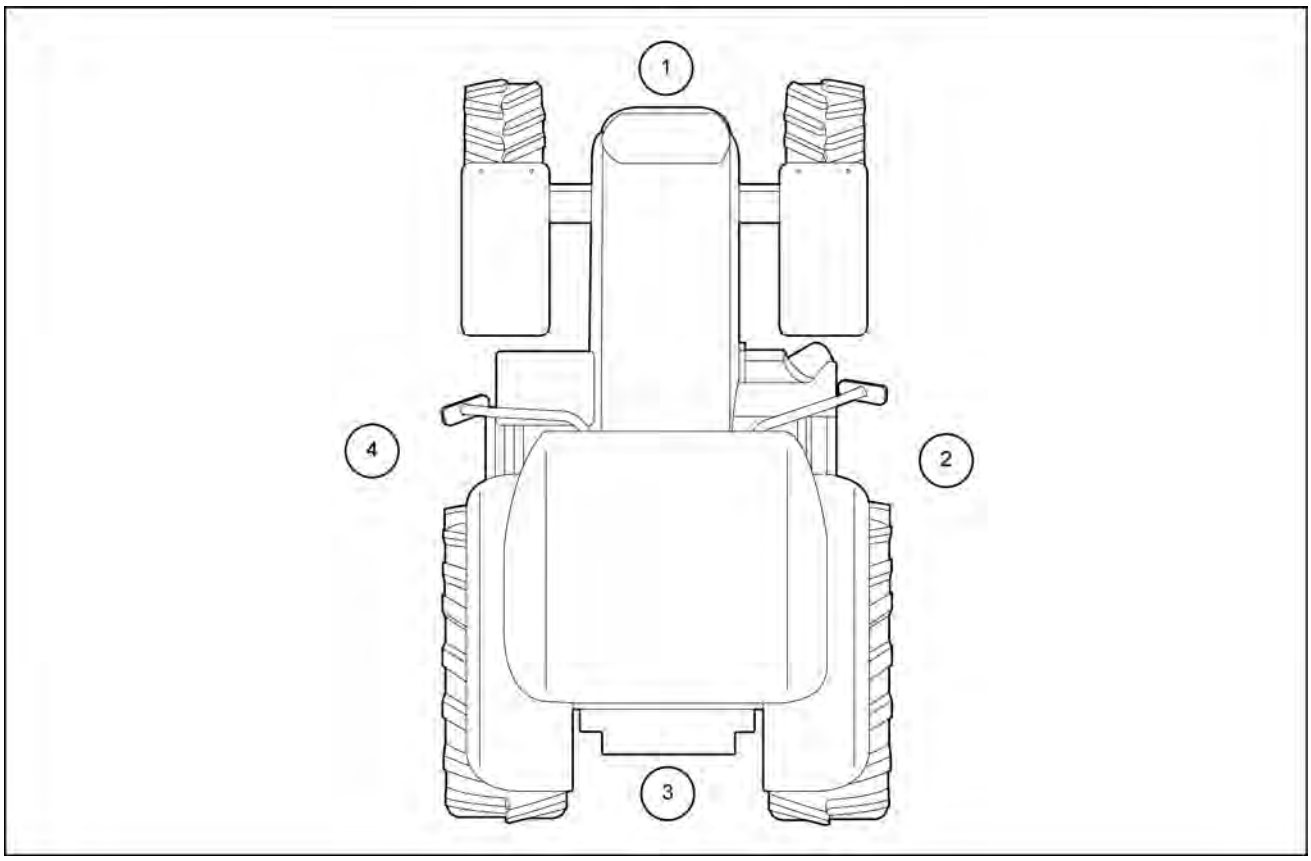
The loader chassis number is indicated on the plate applied on the loader.
Indicate below the corresponding serial number.

N° _____



MOIL13TR02933AC 12

Product identification



MOIL13TR01750FB 1

The following terms are used in this manual in order to indicate direction, as seen from the operator's seat:

(1) Front

(2) Right

(3) Rear

(4) Left

SERVICE MANUAL

Engine

T5.100 With cab, with Dual Command™ transmission [HLRT5100CJLE03039 -], T5.100 Without cab, with Dual Command™ transmission [HLRT5100JJLE03967 -], T5.110 With cab, with Dual Command™ transmission [HLRT5110CJLE04173 -], T5.110 Without cab, with Dual Command™ transmission [HLRT5110CJLE04139 -], T5.120 With cab, with Dual Command™ transmission [HLRT5120AJLE00620 -], T5.120 Without cab, with Dual Command™ transmission [HLRT5120EJLE00119 -], T5.90 With cab, with Dual Command™ transmission [HLRT5090AJLE03730 -], T5.90 Without cab, with Dual Command™ transmission [HLRT5090PJLE03963 -]

Contents

Engine - 10

Engine - 10

Engine and crankcase - 001

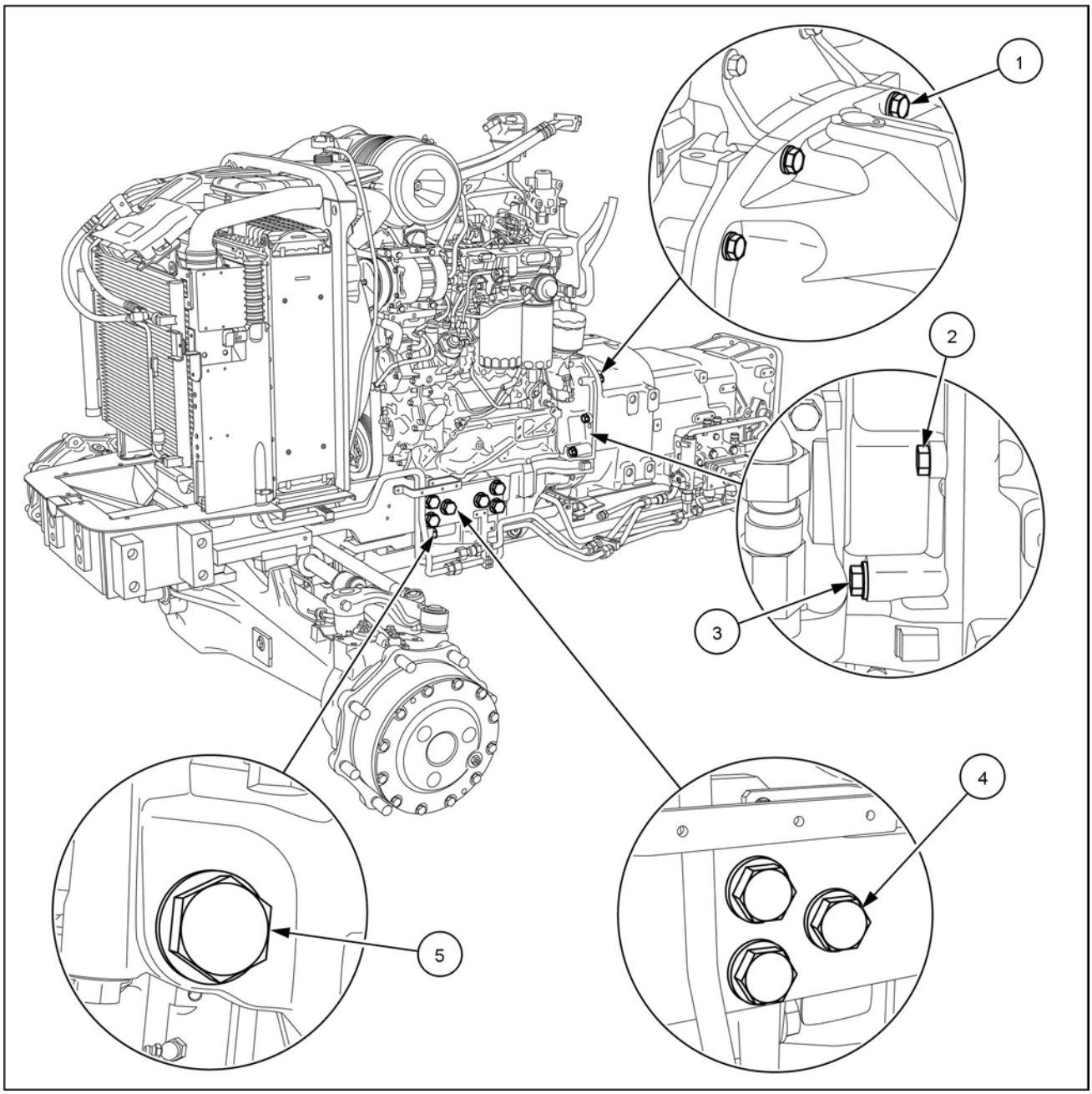
T5.100 With cab, with Dual Command™ transmission [HLRT5100CJLE03039 -], T5.100 Without cab, with Dual Command™ transmission [HLRT5100JJLE03967 -], T5.110 With cab, with Dual Command™ transmission [HLRT5110CJLE04173 -], T5.110 Without cab, with Dual Command™ transmission [HLRT5110CJLE04139 -], T5.120 With cab, with Dual Command™ transmission [HLRT5120AJLE00620 -], T5.120 Without cab, with Dual Command™ transmission [HLRT5120EJLE00119 -], T5.90 With cab, with Dual Command™ transmission [HLRT5090AJLE03730 -], T5.90 Without cab, with Dual Command™ transmission [HLRT5090PJLE03963 -]

Contents

Engine - 10

Engine and crankcase - 001

Engine - Torque



MOIL17TR02997GA 1

Part to tighten	Thread	Tighten torque
Bolt **(5)** securing the front axle to the engine block	M20 x 1.5 x 130	**587 N·m** (**432.95 lb ft**)
Bolt **(4)** securing the engine block to the front axle	M20 x 1.5 x 110	**587 N·m** (**432.95 lb ft**)
Bolt **(1)** securing the gearbox to the engine block	M12 x 1.25 x 50	**121 N·m** (**89.25 lb ft**)
Bolt **(2)** securing the engine block to the gearbox	M12 x 1.25 x 50	**121 N·m** (**89.25 lb ft**)
Bolt **(3)** securing the engine block to the gearbox	M12 x 1.25 x 90	**121 N·m** (**89.25 lb ft**)

Engine - Remove

⚠ WARNING

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 could result in death or serious injury.

W0398A

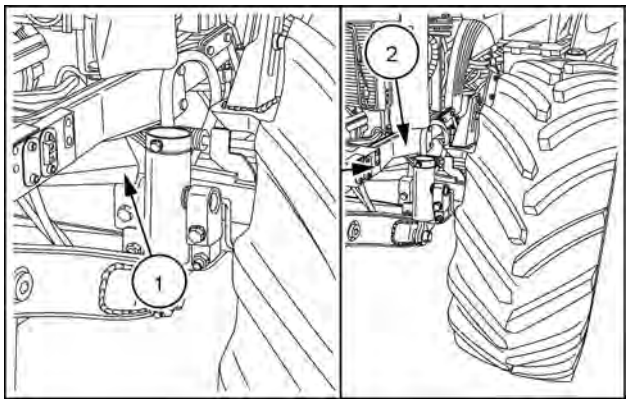
⚠ WARNING

Avoid injury!
Handle all parts carefully. Do not place your hands or fingers between parts. Use Personal Protective Equipment (PPE) as indicated in this manual, including protective goggles, gloves, and safety footwear.
Failure to comply could result in death or serious injury.

W0208A

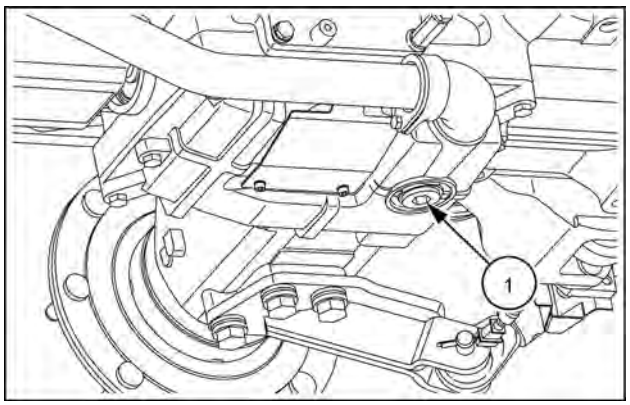
Prior operation:
Hood - Remove (90.100)
Side panels - Remove (90.100)
Fender - Remove - Front (90.116)
Selective Catalytic Reduction (SCR) muffler and catalyst - Remove (10.500)
Cab and platform - Remove (90.150)

1. Position wooden wedges **(1)** between the front axle and the front axle support **(2)** to prevent articulation.



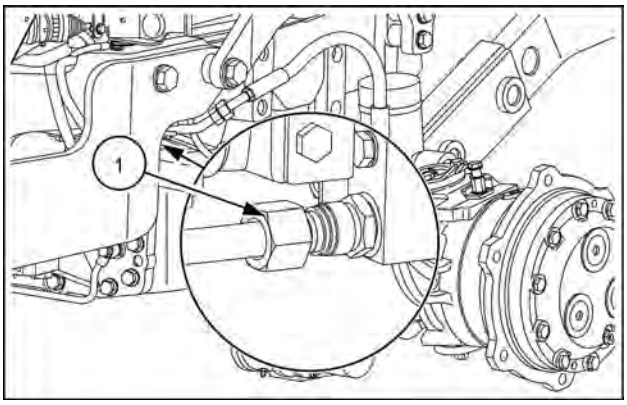
MOIL17TR00033AA 1

2. Position a container for transmission oil recovery under the transmission casing near the drain plug **(1)**.
3. Remove the plug **(1)** and drain the transmission oil.



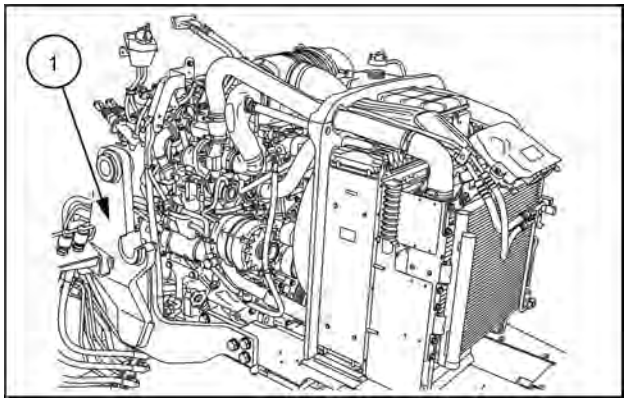
MOIL17TR00040AA 2

4. Disconnect the front lift coupling **(1)**, if present.



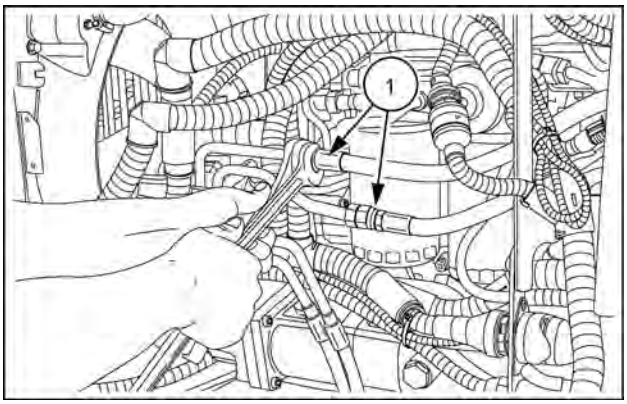
MOIL17TR00035AA 3

5. Remove both side members **(1)** of the front loader as described in **Front loader side member - Remove (82.100)**.



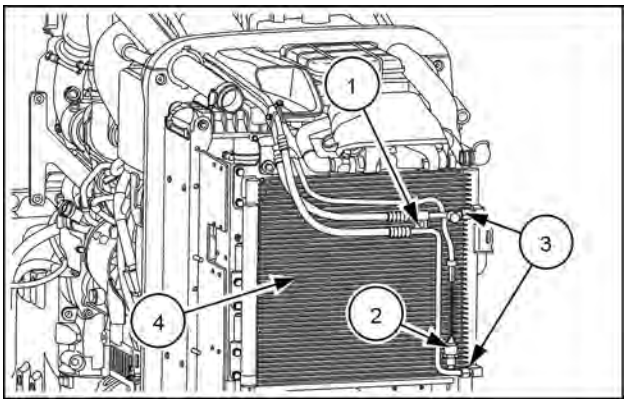
MOIL17TR02980AA 4

6. On the left-hand side of the engine, disconnect the steering cylinder control lines **(1)**.



MOIL17TR00029AA 5

7. Disconnect the hydraulic couplings **(3)** on the capacitor **(4)** and loosen the screw **(1)** on the retaining clamp.
8. Disconnect the sensor wiring **(2)**.



MOIL17TR00041AA 6

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