



NEW HOLLAND



TD5010 - TD5020 - TD5030 - TD5040 - TD5050 MODEL TRACTORS SERVICE MANUAL

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S E R V I C E

INTRODUCTION

- *This manual is divided into sections identified by two-figure numbers and each section has independent page numbering.*
- *The different sections can easily be found by consulting the table of contents on the following pages.*
- *The document number of the manual and the edition/update dates are given at the bottom of each page.*
- *Pages updated in the future will be identified by the same document number followed by an additional digit: first standard manual edition 84176561A - 1st update 84176561A1 - 2nd update 84176561A2 - etc. Updated pages can replace or supplement the pages of the standard manual; the necessary information for the procedure by which to add or replace the pages is given on the frontispiece of the update. An appropriately updated index will complete the publication. If it is necessary to issue a new updated manual (2nd edition) this will have the document number 84176561B, which indicates that the manual is composed of the standard version 87749051A complete with all the updates: 1st update 84176561A1 - 2nd update 84176561A2 - etc.*
- *The information contained in this manual was current on the date printed on each section. As NEW HOLLAND constantly improves its product range, some information may be out of date subsequent to modifications implemented for technical or commercial reasons, or to meet legal requirements in different countries.
In the event of conflicting information, consult the NEW HOLLAND Sales and Service Departments.*

IMPORTANT WARNINGS

- ◇ *All maintenance and repair work described in this manual must be performed exclusively by NEW HOLLAND service technicians in strict accordance with the instructions given and using any specific tools necessary.*
- ◇ *Anyone who performs the operations described herein without strictly following the instructions is personally responsible for resulting injury or damage to property.*
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Repair Manual - TD Series Tractors

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Bodywork And Driver Position

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GENERAL INSTRUCTIONS

IMPORTANT NOTICE

All maintenance and repair operations described in this manual should be carried out exclusively by the NEW HOLLAND authorised workshops. All instructions detailed should be carefully observed and special equipment indicated should be used if necessary.

Everyone who carries out service operations described without carefully observing these prescriptions will be directly responsible of deriving damages.

SHIMMING

At each adjustment, select adjusting shims, measure them individually using a micrometer and then sum up recorded values. Do not rely on measuring the whole shimming set, which may be incorrect, or on rated value indicated for each shim.

ROTATING SHAFT SEALS

To correctly install rotating shaft seals, observe the following instructions:

- Let the seal soak into the same oil as it will seal for at least half an hour before mounting;
- Thoroughly clean the shaft and ensure that the shaft working surface is not damaged;
- Place the sealing lip towards the fluid. In case of a hydrodynamic lip, consider the shaft rotation direction and orient grooves in order that they deviate the fluid towards the inner side of the seal;
- Coat the sealing lip with a thin layer of lubricant (oil rather than grease) and fill with grease the gap between the sealing lip and the dust lip of double lip seals;
- Insert the seal into its seat and press it down using a flat punch. Do not tap the seal with a hammer or a drift;
- Take care to insert the seal perpendicularly to its seat while you are pressing it. Once the seal is settled, ensure that it contacts the thrust element if required.;
- To prevent damaging the sealing lip against the shaft, place a suitable protection during installation.

O RINGS

Lubricate the O rings before inserting them into their seats. This will prevent the O rings from rolling over and twine during mounting which will jeopardise sealing.

SEALERS

Apply one of the following sealers: RTV SILMATE, RHODORSIL CAF 1, or LOCTITE PLASTIC GASKET over the mating surfaces marked with an X.

Before applying the sealer, prepare the surface as follows:

- remove possible scales using a metal brush;
- thoroughly degrease the surfaces using one of the following cleaning agent: trichlorethylene, petrol or a water and soda solution.

BEARINGS

It is advisable to heat the bearings to 80 to 90°C before mounting them on their shafts and cool them down before inserting them into their seats with external tapping.

ROLL PINS

When fitting straight roll pins, ensure that the pin notch is oriented in the direction of the effort to stress the pin. Coil roll pins can be installed in any position.

SAFETY RULES

PAY ATTENTION TO THIS SYMBOL



This warning symbol points out important messages involving personal safety. Carefully read the safety rules contained herein and follow advised precautions to avoid potential hazards and safeguard your safety and personal integrity.

In this manual you will find this symbol together with the following key-words:

WARNING - *it gives warning about improper repair operations and deriving potential consequences affecting the service technician's personal safety.*

DANGER - *it gives specific warning about potential dangers for personal safety of the operator or other persons directly or indirectly involved.*



TO PREVENT ACCIDENTS

Most accidents and personal injuries taking place in workshops are due from non-observance of some simple and essential prudential rule and safety precautions. For this reason, **IN MOST CASES THEY CAN BE AVOIDED.** It suffices to foresee possible causes and act consequently with necessary caution and care.

The possibility that an accident might occur with any type of machines should not be disregarded, no matter how well the machine in question was designed and built.

A wise and careful service technician is the best precautions against accidents.

Careful observance of this only basic precaution would be enough to avoid many severe accidents.

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

SAFETY RULES

GENERALITIES

- ◇ Carefully follow specified repair and maintenance procedures.
- ◇ Do not wear rings, wristwatches, jewels, unbuttoned or flapping clothing such as ties, torn clothes, scarves, open jackets or shirts with open zips which could get hold into moving parts. We advise to use approved safety clothing such as anti-slipping footwear, gloves, safety goggles, helmets, etc.
- ◇ Never carry out any repair on the machine if someone is sitting on the operator's seat, except

if they are certified operators to assist in the operation to be carried out.

- ◇ Never operate the machine or use attachments from a place other than sitting at the operator's seat.
- ◇ Never carry out any operation on the machine when the engine is running, except when 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 should 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 warn that the tractor is being serviced. Block the machine and all equipment which should be raised.
- ◇ Never check or fill fuel tanks and accumulator batteries, nor use starting liquid if you are smoking or near open flames as such fluids are flammable.
- ◇ Brakes are inoperative when they are manually released for maintenance purposes. In such cases, the machine should be kept constantly under control using blocks or similar devices.
- ◇ The fuel filling gun should remain always in contact with the filler neck. Maintain this contact until the fuel stops flowing into the tank to avoid possible sparks due to static electricity buildup.

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ENGINE TROUBLESHOOTING

Problems	Possible Causes	Solutions
Engine does not start.	1. Batteries partially discharged.	Check and recharge batteries. Replace if necessary.
	2. Battery terminal connections corroded or loose.	Clean, inspect and tighten terminal nuts. Replace terminals and nuts if excessively corroded.
	3. Injection pump timing incorrect.	Adjust injection pump timing.
	4. Impurities or water in fuel lines.	Disconnect fuel lines from injection pump and clean thoroughly. If necessary clean and dry the fuel tank.
	5. No fuel in tank.	Fill tank.
	6. Fuel supply pump malfunction.	Check and replace pump if necessary.
	7. Air in fuel system.	Check fuel lines, unions, supply pump, filters and injection pump for air; then bleed the air from the circuit.
	8. Starter motor faulty.	Repair or replace starter motor.
	9. Thermostarter faulty.	Check and replace thermostarter if necessary.
Engine stalls.	1. Idle speed too low.	Adjust idle speed.
	2. Injection pump delivery irregular.	Check injection pump delivery on test bench.
	3. Impurities or water in fuel lines.	Disconnect fuel lines from injection pump and clean thoroughly. If necessary clean and dry the fuel tank.
	4. Fuel filters clogged.	Replace the filter cartridges.
	5. Incorrect valve - rocker arm clearances.	Adjust the clearance between the rocker arms and the valves.
	6. Burnt or cracked valves.	Replace the valves.
	7. Air in fuel system.	Check fuel lines, unions, supply pump, filters and injection pump for air; then bleed the air from the circuit.
	8. Injection pump drive mechanism damaged.	Replace damaged parts.

(continued)

ENGINE TROUBLESHOOTING

(cont)

Problems	Possible Causes	Solutions
Engine overheating.	1. Coolant pump malfunction.	Overhaul pump and replace if necessary.
	2. Thermostat faulty.	Replace the thermostat.
	3. Radiator inefficient.	Remove internal deposits by flushing. Check for leaks and repair.
	4. Deposits in cylinder head and crankcase coolant passages.	Flush out coolant system.
	5. Coolant pump and fan drive belt slack.	Check and adjust belt tension.
	6. Coolant level low.	Top up expansion tank with specified coolant mixture.
	7. Incorrect engine timing.	Check and adjust engine timing.
	8. Injection pump calibration incorrect - delivering too much or too little fuel.	Calibrate pump on test bench to values specified in calibration tables.
	9. Air filter clogged.	Clean filter unit and replace filter element if necessary.
Engine lacks power and runs unevenly.	1. Injection pump timing incorrect.	Adjust injection pump timing.
	2. Auto advance regulator in injection pump damaged.	Overhaul injection pump and adjust on test bench to values specified in calibration table.
	3. Control valve journal worn.	Overhaul injection pump and adjust on test bench to values specified in calibration table.
	4. Injection pump delivery irregular.	Overhaul injection pump and adjust on test bench to values specified in calibration table.
	5. All-speed governor damaged.	Overhaul injection pump and adjust on test bench to values specified in calibration table.
	6. Injectors partially obstructed or damaged.	Clean and overhaul injectors and adjust pressure setting.
	7. Impurities or water in fuel lines.	Disconnect fuel lines from injection pump and clean thoroughly. If necessary clean and dry the fuel tank.

(continued)

ENGINE TROUBLESHOOTING

(cont)

Problems	Possible Causes	Solutions
Engine produces abnormal knocking noises.	8. Fuel supply pump damaged.	Replace fuel supply pump.
	9. Incorrect valve - rocker arm clearances.	Adjust the clearance between the rocker arms and the valves.
	10. Cylinder compression low.	Test compression and overhaul engine if necessary.
	11. Air filter clogged.	Clean filter unit and replace filter element if necessary.
	12. Tie-rod in linkage between accelerator and injection pump incorrectly adjusted.	Adjust to correct length.
	13. Fast idling speed screw on injection pump incorrectly adjusted.	Adjust fast idling speed screw.
	1. Injectors partially obstructed or damaged.	Clean and overhaul injectors and adjust pressure setting.
	2. Impurities accumulating in fuel lines.	Clean fuel lines and replace severely dented pipes; clean injection pump if necessary.
	3. Injection pump timing incorrect.	Adjust injection pump timing.
	4. Crankshaft knocking due to excessive play in one or more main or big-end bearings or excessive endfloat.	Re-grind crankshaft journals and crankpins. Fit oversize shell bearings and thrust washers.
5. Crankshaft out of balance.	Check crankshaft alignment and balance; replace if necessary.	
6. Flywheel bolts loose.	Replace any bolts that have worked loose and tighten all bolts to the specified preliminary and angular torque values.	
7. Connecting rod axes not parallel.	Straighten connecting rods, check axes parallelism; replace con rods if necessary.	
8. Pistons knock due to excessive wear.	Rebore cylinder liners and fit oversize pistons.	
9. Noise caused by excessive play of gudgeon pins in small-end and piston bushings. Loose fit of small-end bushing.	Fit oversize gudgeon pin, rebore piston seats and small-end bushings. Replace with new bushings.	
10. Excessive tappet / valve noise.	Check for broken springs or excessive play between valve stems and guides, cam followers and bores; adjust valve clearances.	

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ENGINE TROUBLESHOOTING

(cont)

Problems	Possible Causes	Solutions
Engine produces excessive black or dark grey smoke.	1. Maximum delivery of injection pump too high.	Calibrate pump on test bench to values specified in calibration tables.
	2. Injection pump delivery excessively retarded or automatic advance regulator damaged.	Adjust injection pump timing or check automatic advance regulator.
	3. Injection pump delivery excessively advanced.	Adjust injection pump timing.
	4. Injectors partially or totally obstructed or incorrectly adjusted.	Clean and overhaul injectors and adjust pressure setting; replace if necessary.
	5. Air filter clogged.	Clean filter unit and replace filter element if necessary.
	6. Loss of engine compression due to: - piston rings sticking; - cylinder liner wear; - worn or incorrectly adjusted valves.	Replace damaged parts or, if necessary, overhaul the engine.
	7. High-pressure fuel lines damaged.	Inspect and replace if necessary.
Blue, grey-blue or grey-white smoke.	1. Injection pump delivery excessively retarded or automatic advance regulator damaged.	Adjust injection pump timing or check automatic advance regulator.
	2. Injectors obstructed or damaged.	Clean, overhaul and calibrate injectors, replace if necessary.
	3. Oil leaking past piston rings due to sticking rings or cylinder liner wear.	Replace damaged parts or, if necessary, overhaul the engine.
	4. Oil leaking through the inlet valve guides due to guide or valve stem wear.	Overhaul cylinder head.
	5. Engine does not reach correct operating temperature (thermostat faulty).	Replace the thermostat.
Engine runs on after switching off.	1. Engine stop electromagnet damaged.	Replace electromagnet.
	2. All-speed governor damaged.	Overhaul injection pump and adjust on test bench to values specified in calibration table.

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