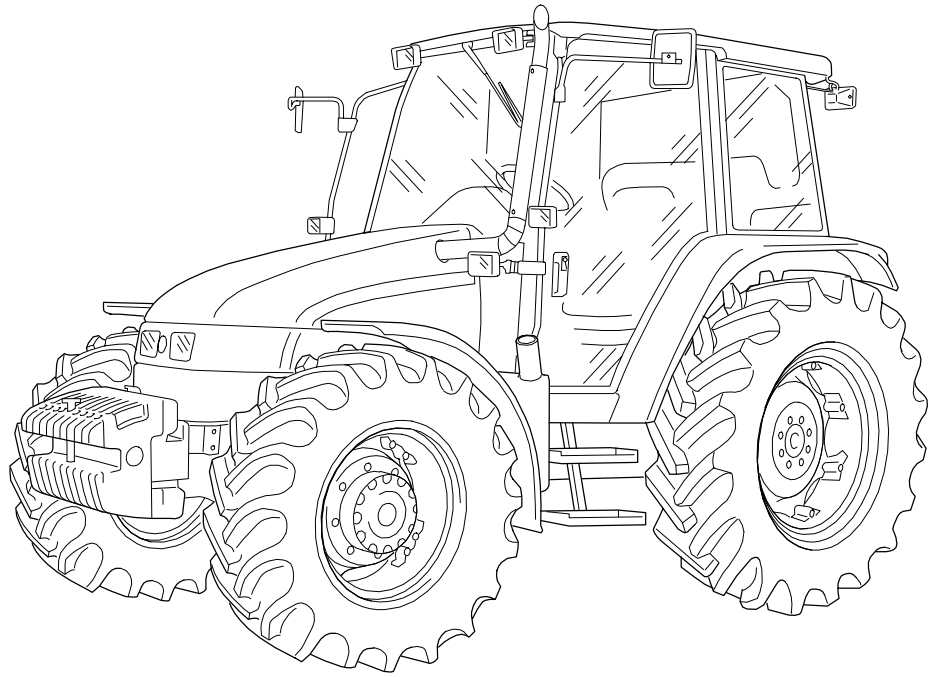




**NEW HOLLAND**



# **TRACTORS**

## **TL70A - TL80A - TL90A - TL100A SERVICE MANUAL**

### **SECTIONS**

<b>GENERAL GUIDELINES</b> .....	<b>00</b>
<b>ENGINE</b> .....	<b>10</b>
<b>CLUTCH</b> .....	<b>18</b>
<b>TRANSMISSION</b> .....	<b>21</b>
<b>DRIVE LINES</b> .....	<b>23</b>
<b>FRONT MECHANICAL TRANSMISSION</b> .....	<b>25</b>
<b>REAR MECHANICAL TRANSMISSION</b> .....	<b>27</b>
<b>POWER TAKE-OFF</b> .....	<b>31</b>
<b>BRAKES</b> .....	<b>33</b>
<b>HYDRAULIC SYSTEMS</b> .....	<b>35</b>
<b>STEERING</b> .....	<b>41</b>
<b>AXLE AND WHEELS</b> .....	<b>44</b>
<b>CAB AIR CONDITIONING SYSTEM</b> .....	<b>50</b>
<b>ELECTRICAL SYSTEM</b> .....	<b>55</b>
<b>PLATFORM, CAB, BODYWORK</b> .....	<b>90</b>

**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.  
For easy reference, these sections have the same numbers and names as the Repairs Rate Book sections.*
- ◇ *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 a two-figure update number (e.g., 1<sup>st</sup> Update 603.54.511.01; 2<sup>nd</sup> Update 603.54.511.02; etc.) and by the corresponding issue date.  
These pages will be supplemented by a reprint of the updated contents page.*
- ◇ *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 As NEW HOLLAND constantly improves its product range, some information may be out of date subsequent to modifications implemented for technical or commercial reasons, or to meet legal requirements in different countries.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 performing the operations described herein without strictly following the instructions is personally responsible for any eventual injury or damage to property.*
- ◇ *The Manufacturer and all organisations belonging to the Manufacturer's distribution network, including but not restricted to national, regional or local distributors, will accept no responsibility for personal injury or damage to property caused by abnormal function of parts and/or components not approved by the Manufacturer, including those used for maintenance and/or repair of the product manufactured or marketed by the Manufacturer.  
In any case, the product manufactured or marketed by the Manufacturer is covered by no guarantee of any kind against personal injury or damage to property caused by abnormal function of parts and/or components not approved by the Manufacturer.*

TEXT AND ILLUSTRATIONS ARE THE PROPERTY  
OF CNH ITALIA S.p.A.



No part of the text or illustrations  
may be reproduced

PRINTED IN ITALY

**CNH ITALIA S.p.A. - Viale delle Nazioni, 55 - 41100 MODENA - Italy**  
Product Support - Technical Information  
Print No. **603.54.511.00** - 03 - 2006

**CONTENT VOLUME 1**

	Page	Date		Page	Date
<b>00 - GENERAL GUIDELINES</b>			Checks and measurements - pistons .....	86 to 89	03-06
General instructions .....	1-2	03-06	Checks and measurements - camshaft, tappets and valves .....	90 to 93	03-06
Safety regulations .....	3-4-5	03-06	Checks and measurements - cylinder head ....	94	03-06
Consumables .....	6	03-06	Functional testing on low engine oil pressure indicator .....	95	03-06
<b>10 - ENGINE</b>			Checks and measurements - cooling system ..	96	03-06
Summary .....	1	03-06	Replacing crankshaft front seal .....	97 to 99	03-06
General specifications ....	2 to 4	03-06	Replacing crankshaft rear seal .....	100 to 102	03-06
Fuel system data .....	5	03-06	Adjusting tappet, valve and rocker arm clearance ....	103 to 105	03-06
Crankshaft and engine block data .....	6	03-06	Removal-Installation - injectors .....	106 to 108	03-06
Connecting rod data .....	7	03-06	Removal - Installation - Bosch injection pump ....	109 to 113	03-06
Piston data .....	7-8	03-06	Bosch injection pump - timing .....	114 to 118	03-06
Timing gear data .....	8-9	03-06	Bosch injection pump - air bleeding .....	118	03-06
Cylinder head data .....	9-10	03-06	Removal-Installation - coolant pump .....	119-120	03-06
Tightening Torques .....	11-12	03-06	Removal-Installation - thermostat valve .....	121-122	03-06
Tools .....	13	03-06	Removal-Installation - radiator .....	123 to 128	03-06
View of 4-cylinder engine mod. TL70A and TL80A ..	14	03-06	Coolant pump drive belt adjustment .....	129 to 130	03-06
View of 4-cylinder engine mod. TL90A and TL100A .	15	03-06	<b>18 - CLUTCH</b>		
Engine cooling and lubrication diagrams .....	16-17	03-06	Summary .....	1	03-06
Component parts of cylinder head mod. TL70A and TL80A .....	18	03-06	Data .....	2	03-06
Component parts of cylinder head mod. TL90A and TL100A .....	19	03-06	Tightening Torques .....	3	03-06
Component parts of additional counterweights ....	20	03-06	Tools .....	3	03-06
Troubleshooting .....	21 to 24	03-06	Cross-sectional views ...	4	03-06
Engine removal-installation .....	25 to 44	03-06	Troubleshooting .....	5	03-06
Engine disassembly-assembly .....	45 to 78	03-06	Checks and measurements - clutch .....	6-7	03-06
Checks and measurements - cylinder block and liners .....	79 to 81	03-06	Adjustments - clutch pedal	8	03-06
Checks and measurements - crankshaft, bearings and flywheel .....	82 to 83	03-06	Removal-Installation - clutch .....	9 to 11	03-06
Checks and measurements - connecting rods .	84 to 85	03-06	Clutch Overhaul .....	12 to 15	03-06

**<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>**

	Page	Date		Page	Date
Adjustments – clutch disengagement levers . . . . .	16	03-06	Control rod adjustments . .	36	03-06
<b>21 - TRANSMISSIONS</b>			Removal-Installation - Dual Command (2 Speed Power Shift) solenoid valve	37 to 40	03-06
<b>CHAPTER 1 - Transmission and range gear (12x4)</b>			Working pressure test . . . .	40	03-06
Summary . . . . .	1	03-06	Removal-Installation - Dual Command (2 Speed Power Shift) control valve	41 to 44	03-06
Data . . . . .	2	03-06	Disassembly-Assembly - Dual Command (2 Speed Power Shift) control valve .	45-46	03-06
Tightening Torques . . . . .	3	03-06	Transmission longitudinal cutaway section view . . . .	47	03-06
Tools . . . . .	4-5	03-06	<b>CHAPTER 4 - Reverser and creeper unit</b>		
Cross-sectional views . . .	6-7	03-06	Summary . . . . .	1	03-06
Description & Operation . .	8	03-06	Data . . . . .	2	03-06
Troubleshooting . . . . .	8	03-06	Tightening torque . . . . .	3	03-06
Transmission longitudinal cutaway section view . . . .	9	03-06	Tools . . . . .	4 to 5	03-06
<b>CHAPTER 2 - Reverser</b>			Cross-sectional views . . .	6 to 7	03-06
Summary . . . . .	1	03-06	Description & Operation . .	8	03-06
Data . . . . .	2	03-06	Troubleshooting . . . . .	8	03-06
Tightening Torques . . . . .	3	03-06	Replacing clutch casing- reverser and creeper unit .	9 to 13	03-06
Tools . . . . .	4	03-06	End float adjustment be- tween shaft and support . .	14 to 15	03-06
Cross-sectional views . . .	4-5	03-06	Transmission longitudinal cutaway section view . . . .	16	03-06
Description & Operation . .	6	03-06	<b>CHAPTER 5 - Power Shuttle tran- smission with Dual Command (2 Speed Power Shift) function</b>		
Troubleshooting . . . . .	6	03-06	Summary . . . . .	1	03-06
Disassembly-Assembly - clutch casing-reverser . . .	7 to 10	03-06	Data . . . . .	2-3	03-06
Transmission longitudinal cutaway section view . . . .	11-12	03-06	Tightening torque . . . . .	4-5	03-06
<b>CHAPTER 3 - Dual Command (2 Speed Power Shift)</b>			Tools . . . . .	6-7	03-06
Summary . . . . .	1	03-06	Cross-sectional views . . .	8 to 10	03-06
Data . . . . .	2-3	03-06	Description & Operation . .	11 to 17	03-06
Tightening Torques . . . . .	4	03-06	Range and gear lever posi- tion sensor adjustment	18-19	03-06
Tools . . . . .	5	03-06	Disassembly-Assembly - clutch casing with power shuttle and Dual Command (2 Speed Power Shift) . . . .	20 to 26	03-06
Cross-sectional views . . .	6 to 8	03-06	Disassembly-Assembly - clutch (A) and (B) . . . . .	27-32	03-06
Description & Operation . .	10 to 15	03-06			
Troubleshooting . . . . .	16-17	03-06			
Removal-Installation - clutch casing with Dual Command (2 Speed Power Shift) . . . . .	18 to 26	03-06			
Disassembly-Assembly - clutch casing with Dual Command (2 Speed Power Shift) . . . . .	27 to 35	03-06			

	Page	Date		Page	Date
Calibrations .....	33	03-06	Disassembly-Assembly - front epicyclic final drive with brake .....	40-41	03-06
HH MENU access .....	33-34	03-06	Replacing wheel hub seal with brake. ....	42	03-06
Clutch calibration H1 menu transmission .....	35 to 37	03-06	Replacing steering knuckle pins and bearings .....	43	03-06
Transmission fault codes .	38 to 40	03-06	Stub axle adjustments ....	44-45	03-06
<b>23 - DRIVE LINES</b>			Adjustments - bevel drive	46 to 52	03-06
Summary .....	1	03-06	<b>27 - REAR MECHANICAL TRANSMISSION</b>		
Data .....	2	03-06	Summary .....	1	03-06
Tightening Torques .....	3	03-06	Data .....	2-3	03-06
Tools .....	3	03-06	Tightening Torques .....	3-4	03-06
Cross-sectional views ...	4	03-06	Tools .....	5 to 9	03-06
Description & Operation ..	5	03-06	Cross-sectional views ...	10 to 14	03-06
Troubleshooting .....	6	03-06	Description & Operation ..	15	03-06
Removal-Installation - services control valve .....	7 to 9	03-06	Troubleshooting .....	16-17	03-06
Disassembly-Assembly - services control valve ....	10 to 11	03-06	Removal-Installation - transmission-gearbox casing .....	18 to 31	03-06
Removal-Installation - drive gear casing .....	12 to 16	03-06	Disassembly-Assembly - transmission-gearbox casing .....	32 to 39	03-06
Disassembly-Assembly - drive gear casing .....	17 to 20	03-06	Gearbox driving shaft end float adjustment .....	40	03-06
<b>25 - FRONT MECHANICAL TRANSMISSION</b>			Adjustments - differential lock engagement sleeve position .....	41	03-06
Summary .....	1	03-06	Determining the bevel pinion positioning adjustment ring .....	42 to 43	03-06
Data .....	2 to 4	03-06	Tapered roller bearings adjustment for pinion shaft	44	03-06
Tightening Torques .....	4-5	03-06	Adjusting the bevel crown wheel bearings and checking the clearance between the sides of the bevel drive teeth .....	45 to 48	03-06
Tools .....	6 to 8	03-06	Differential pinion and side gear backlash adjustment .	49-50	03-06
Cross-sectional views ...	9 to 13	03-06	Differential lock pedal travel adjustment .....	51	03-06
Description & Operation ..	14-15	03-06	Removal-Installation - final drive .....	52 to 55	03-06
Rules for correctly fitting the axle support to the engine	16	03-06	Disassembly-Assembly - epicyclic final drive .....	55	03-06
Troubleshooting .....	17	03-06	Disassembly-Assembly - drive wheel shaft .....	56-57	03-06
Removal-Installation - front axle .....	18 to 21	03-06			
Disassembly-Assembly - front axle .....	22 to 30	03-06			
Overhaul - front differential	31	03-06			
Overhaul - front axle differential with LIM-SLIP .....	32-33	03-06			
Overhaul - differential lock unit .....	34-35	03-06			
Disassembly-Assembly - front epicyclic final drive without brake .....	36 to 38	03-06			
Replacing wheel hub seal without brake. ....	39	03-06			



	Page	Date		Page	Date
LIFT-O-MATIC device up-ward travel adjustment . . .	23	03-06	Removal-Installation - BOSCH auxiliary control valves . . . . .	19 to 21	03-06
Disassembly-Assembly - external lift controls . . . . .	24	03-06	Disassembly-Assembly - BOSCH auxiliary control valves . . . . .	22 to 26	03-06
Removal-Installation - lift .	25 to 31	03-06			
Disassembly-Assembly - lift . . . . .	32 to 36	03-06	<b>CHAPTER 4 - Trailer brake auxiliary control valve</b>		
Adjusting the lift . . . . .	37 to 42	03-06	Summary . . . . .	1	03-06
Removal-Installation - lift control valve . . . . .	43-44	03-06	Cross-sectional views . . .	1	03-06
Disassembly-Assembly - lift control valve . . . . .	45 to 49	03-06	Description & Operation . .	1-9	03-06
Lift pressure relief valve - removal/installation and setting . . . . .	50	03-06	Troubleshooting . . . . .	10 to 12	03-06
			<b>CHAPTER 5 - Supplementary Cylinder</b>		
<b>CHAPTER 2 - Open centre system auxiliary control valves</b>			Summary . . . . .	1	03-06
Summary . . . . .	1	03-06	Data . . . . .	1	03-06
Data . . . . .	1	03-06	Cross-sectional views . . .	1	03-06
Tools . . . . .	1	03-06	Description & Operation . .	1	03-06
Tightening Torques . . . . .	2	03-06	Removal-Installation/Dis-assembly-Assembly - supplementary cylinder . . .	2	03-06
Cross-sectional views . . .	3 to 5	03-06			
Description & Operation . .	6 to 9	03-06	<b>CHAPTER 6 - Electronic Lift</b>		
Disassembly-Assembly - auxiliary control valves . . .	10-11	03-06	Summary . . . . .	1	03-06
Rod hardening test . . . . .	11	03-06	Precautions . . . . .	1	03-06
Blow-by test . . . . .	12	03-06	Data . . . . .	2-3	03-06
Adjustment of the auto-matic detent release pres-sure . . . . .	12	03-06	Tightening Torques . . . . .	4	03-06
Removal-Installation - flow control valve . . . . .	13	03-06	Tools . . . . .	4	03-06
Adjustments - flow control valve . . . . .	14-15	03-06	View of electronic lift com-ponents . . . . .	5	03-06
			Electronic lift control layout	6-7	03-06
<b>CHAPTER 3 - Auxiliary control valves (BOSCH)</b>			Description & Operation . .	8 to 11	03-06
Summary . . . . .	1	03-06	Anti-damping device for implements carried on the lift . . . . .	12 to 13	03-06
Data . . . . .	2	03-06	Fault code decoding . . . . .	13 to 14	03-06
Tools . . . . .	2	03-06	Diagnostics . . . . .	14 to 54	03-06
Tightening Torques . . . . .	3	03-06	Lift electronic control unit .	55	03-06
View of BOSCH auxiliary control valve components .	4	03-06	Removal-Installation - electronic lift control panel	56	03-06
Description & Operation . .	4-5	03-06	Lift arm potentiometer re-placement . . . . .	57	03-06
Control valve components	6 to 9	03-06	Removal -Installation - draft sensor . . . . .	58-59	03-06
Description & Operation . .	10 to 18	03-06	Calibration of the elec-tronic lift arms potentio-meter . . . . .	60-61	03-06

	Page	Date
Removal-Installation - electronic lift . . . . .	62 to 67	03-06
Removal-Installation - hy- draulic control valve . . . . .	68-69	03-06
<b>CHAPTER 7 - Ventral control valves for Walvoil-type open centre system</b>		
Summary . . . . .	1	03-06
Ventral control valve spec- ifications . . . . .	1	03-06
Tightening Torques . . . . .	2	03-06
Ventral control valve . . . . .	3-4	03-06
Ventral control valve joy- stick . . . . .	5 to 7	03-06
Control valve circuit . . . . .	8	03-06
Hydraulic diagram . . . . .	9	03-06
Description and operation of ventral control valve . . .	10 to 18	03-06

**CONTENTS VOLUME 2**

	Page	Date		Page	Date
<b>35 – HYDRAULIC SYSTEMS(*)</b>			<b>41 – STEERING</b>		
<b>CHAPTER 8 – Front Loader</b>			Summary .....	1	03-06
Summary .....	1	03-06	Data .....	2 to 4	03-06
Specifications .....	2-3	03-06	Tightening Torques .....	5	03-06
Maximum permissible front axle weights .....	3	03-06	View of hydraulic pump components .....	5	03-06
Tightening Torques .....	4	03-06	View of hydrostatic steering control valve components .....	6	03-06
Diagrams .....	5 to 7	03-06	Description & Operation ..	7 to 10	03-06
Ventral control valve specifications .....	8-9	03-06	Fault diagnosis .....	11-12	03-06
Ventral control valve joystick .....	10 to 12	03-06	Tools .....	12	03-06
System switching full and dipped beam headlights on lights fitted on handrails ..	13 to 16	03-06	Removal-Installation – hydrostatic steering control valve .....	13 to 17	03-06
Ballasting the tractor for front loader operation ....	17	03-06	Disassembly-Assembly – hydrostatic control valve ..	18 to 31	03-06
Loader general description	18 to 27	03-06	Hydrostatic steering control valve bench testing ...	32-33	03-06
Loader installation – removal .....	28 to 32	03-06	Pressure relief valve testing .....	33	03-06
Implement installation – removal .....	33 to 36	03-06	Power steering pump components .....	34-35	03-06
Lift arm types and functions	37 to 45	03-06	Disassembly – Assembly of hydraulic pump to replace seal kit .....	35	03-06
Smooth ride control .....	46 to 48	03-06	Removal-Installation – steering cylinder .....	36-37	03-06
Multi Quick coupler connection – disconnection ..	49 to 60	03-06	<b>44 – AXLES AND WHEELS</b>		
Hydraulic functions and flow diagram of loaders ..	61 to 71	03-06	Summary .....	1	03-06
Hydraulic Flow Diagrams ..	72 to 88	03-06	Data .....	1	03-06
Repair instructions .....	89 to 94	03-06	Front wheel track diagram	2	03-06
Hydraulic components ...	95 to 99	03-06	Cross-sectional views ...	3	03-06
Troubleshooting .....	100 to 105	03-06	Tightening Torques .....	4-5	03-06
			Tools .....	5	03-06
			Fault diagnosis .....	5	03-06
			Disassembly-Assembly – wheel axle hub .....	6 to 8	03-06
			Removal-Installation – front axle .....	9 to 11	03-06
			Stub axle hub overhaul ...	12 to 14	03-06
			Checking leading wheel alignment .....	15-16	03-06

(\*) Chapters prior to section 35 are in **volume 1**.

	Page	Date		Page	Date
<b>50 – SUBSIDIARY PARTS</b>					
Summary .....	1	03-06	Control panel .....	2-3	03-06
Safety regulations .....	2	03-06	Analog/digital instruments	4	03-06
Data .....	3-4	03-06	Liquid crystal display .....	5 to 7	03-06
Tools .....	4	03-06	Access to the setup menu via keypad .....	8-13	03-06
Operating principles .....	5-6	03-06	Calling up functions from keypad .....	13 to 16	03-06
Conditioning system com- ponents .....	7 to 11	03-06	Access to the setup menu with the CAL button .....	17-18	03-06
Warnings for air condition- ing system repair oper- ations .....	11	03-06	Calling up functions with the CAL button .....	18	03-06
Cab controls .....	12 to 14	03-06	Transmitters, sensors and switches .....	19-26	03-06
Instructions for use – air conditioning system .....	15	03-06	Maintenance .....	26	03-06
Air-conditioning system charging and evacuation recovery/recycling station	15	03-06	<b>CHAPTER 2 – Components</b>		
Leak detector .....	16	03-06	Summary .....	1	03-06
Air conditioning system maintenance .....	17	03-06	Introduction .....	1	03-06
Troubleshooting .....	18	03-06	Dashboard controls .....	2 to 8	03-06
Fault diagnosis .....	19 to 22	03-06	Right mudguard controls .	9 to 11	03-06
System functional testing .	23	03-06	In-Cab Controls .....	12 to 14	03-06
Checking for and eliminat- ing gas leaks .....	24	03-06	Controls on right-hand cab upright .....	15-16	03-06
Compressor drive belt ten- sion adjustment .....	25-26	03-06	External controls .....	17	03-06
Removal-Installation – compressor .....	27 to 29	03-06	Maintenance .....	18-19	03-06
Heating and air condition- ing systems piping re- placement .....	30-31	03-06	<b>CHAPTER 3 – Components</b>		
Air conditioning piping re- placement .....	32 to 37	03-06	Summary .....	1	03-06
Condenser replacement	38	03-06	Technical data .....	1	03-06
Dryer filter replacement ..	39-40	03-06	Tightening Torques .....	1	03-06
Removal-Installation – heater unit .....	41 to 43	03-06	Description and Operation	2	03-06
Replacing the air-condi- tioner evaporator .....	44 to 46	03-06	Fault diagnosis .....	3	03-06
Removal-Installation – electric fan .....	47-48	03-06	Starting and recharging cir- cuit (pre-modification) ...	4-5	03-06
<b>55 – ELECTRICAL SYSTEM</b>			Starting and recharging cir- cuit (post-modification) ..	6-7	03-06
<b>CHAPTER 1 – Instruments</b>			System testing .....	8 to 10	03-06
Summary .....	1	03-06	Starter motor removal, in- stallation and overhaul ...	10 to 13	03-06
			Bench testing .....	13-14	03-06
			<b>CHAPTER 4 – Charging system</b>		
			Summary .....	1	03-06
			Technical data .....	1	03-06
			Tightening Torques .....	1	03-06
			Description and Operation	2-3	03-06
			System testing and troubleshooting .....	4 to 9	03-06

	Page	Date		Page	Date
Removal, Installation and Overhaul .....	10	03-06	Power Shuttle ISO deck version .....	107 to 130	03-06
Alternator components ...	11	03-06	Power Shuttle NASO deck version .....	131 to 154	03-06
Tests .....	12 to 14	03-06	Dual Command (2 Speed Power Shift) ISO deck version .....	155 to 178	03-06
Disassembly .....	15	03-06	Dual Command (2 Speed Power Shift) NASO deck version .....	179 to 202	03-06
Electronic voltage regulator	15 to 16	03-06	Control unit input – output diagrams .....	203 to 208	03-06
Inductor winding insulation test .....	16-17	03-06			
Overhaul, installation ....	17-18	03-06			
<b>CHAPTER 5 – Battery</b>			<b>CHAPTER 7 – Electrical circuits (post-modification)</b>		
Summary .....	1	03-06	Summary .....	1	03-06
Technical data .....	1	03-06	Maxi power fuses box ....	02 to 04	03-06
Description & Operation ..	1	03-06	Fuse and relay box .....	04 to 22	03-06
Removal-Installation – battery .....	2-3	03-06	Power sockets .....	23	03-06
Battery maintenance .....	4 to 5	03-06	Grid Heater .....	24	03-06
Battery Charging .....	5-6	03-06	Electronic flasher .....	24	03-06
Battery testing .....	6 to 8	03-06	How to use the linear wiring diagrams .....	25 to 27	03-06
Battery problems – frequent causes .....	8	03-06	Ground location points ...	28-29	03-06
			Electric wire colour code .	30	03-06
<b>CHAPTER 6 – Electrical circuits (pre-modification)</b>			Symbols used in electrical circuits .....	31-32	03-06
Summary .....	1	03-06	Wiring diagram components .....	33 to 40	03-06
Maxi power fuses box ....	2 to 4	03-06	Power Shuttle cab version	41 to 76	03-06
Fuse and relay box .....	4 to 16	03-06	Dual Command (2 Speed Power Shift) cab version .	77 to 112	03-06
Power sockets .....	17	03-06	Power Shuttle ISO deck version .....	113 to 136	03-06
Operator safety circuit ...	18	03-06	Power Shuttle NASO deck version .....	137 to 160	03-06
Grid Heater .....	18-19	03-06	Dual Command (2 Speed Power Shift) ISO deck version .....	161 to 184	03-06
Electronic flasher .....	19	03-06	Dual Command (2 Speed Power Shift) NASO deck version .....	185 to 207	03-06
Ground location points ...	20-21	03-06	Control unit input – output diagrams .....	208 to 214	03-06
How to use the linear wiring diagrams .....	22 to 24	03-06			
Symbols used in electrical circuits .....	25-26	03-06			
Electric wire colour code .	26	03-06			
Wiring diagram components .....	27 to 34	03-06			
Power Shuttle cab version	35 to 70	03-06			
Dual Command (2 Speed Power Shift) cab version .	71 to 106	03-06			

**CONTENTS VOLUME 3**

	Page	Date		Page	Date
<b>55 - ELECTRICAL SYSTEM (*)</b>			14001-15000 (Analog-digital control panel) . . . . .	336 to 404	03-06
<b>CHAPTER 8 - Connectors</b>			Electronically controlled hydraulic lift (EDC) . . . . .	405 to 482	03-06
Summary . . . . .	1	03-06	<b>CHAPTER 11 - HH menu and calibrations</b>		
Electrical circuits components . . . . .	2 to 6	03-06	Summary . . . . .	1	03-06
Wirings (pre-modification) . . . . .	7 to 26	03-06	Calibrations . . . . .	2	03-06
Wirings (post-modification) . . . . .	27 to 46	03-06	HH MENU access . . . . .	3-4	03-06
List of connectors . . . . .	47 to 94	03-06	HH MENU of the control panel . . . . .	5 to 11	03-06
<b>CHAPTER 9 - Components Testing</b>			HH MENU of the transmission . . . . .	12 to 25	03-06
Summary . . . . .	1	03-06	HH MENU of the advanced keypad . . . . .	25-26	03-06
Tests on switches, sensors and pressure switches . . . . .	02 to 18	03-06	<b>90 - BODYWORK AND DRIVING POSITION</b>		
Removal-Installation wind-screen wiper motor . . . . .	19	03-06	Summary . . . . .	1	03-06
<b>CHAPTER 10 - Error codes</b>			Removal-Installation - bonnet . . . . .	2-3	03-06
Summary . . . . .	1	03-06	Removal-Installation - platform . . . . .	4 to 11	03-06
Introduction . . . . .	2	03-06	Removal-Installation - driver's seat . . . . .	12	03-06
Special Attachments . . . . .	3	03-06	Cab Removal-Installation . . . . .	13 to 25	03-06
Repairing the wiring . . . . .	3	03-06	Removal-Installation - door . . . . .	26	03-06
Digital multimeter . . . . .	6 to 8	03-06	Replacement of glued cab windows . . . . .	27-28	03-06
Electrical test procedures . . . . .	9-11	03-06	Replacement of cab rear window . . . . .	29 to 31	03-06
Circuit components . . . . .	11 to 20	03-06	Replacement of seal on left-hand upright . . . . .	32	03-06
CAN system . . . . .	21	03-06	Replacement of seal on right-hand upright . . . . .	33-34	03-06
Control unit location . . . . .	21	03-06	Replacement of fixed padding on right-hand wall . . . . .	35 to 37	03-06
Error code display . . . . .	22 to 24	03-06	Replacement of fixed padding on left-hand wall . . . . .	38-39	03-06
"H" menu diagnostic mode . . . . .	24	03-06	Replacing hydraulic control lever guard . . . . .	40-41	03-06
Error codes lists . . . . .	25 to 30	03-06	Replacing cab ceiling fittings . . . . .	42-43	03-06
<b>Error codes charts</b>					
Calibration U-Codes . . . . .	31 to 34	03-06			
2001-3000 (Transmission) . . . . .	35 to 280	03-06			
5001-6000 (Rear PTO) . . . . .	281 to 308	03-06			
6001-7000 (4WD) . . . . .	309 to 319	03-06			
7001-8000 (Differential lock) . . . . .	320 to 335	03-06			

(\*) Chapters prior to section **55** are in **volume 2**.

## GENERAL INSTRUCTIONS

### IMPORTANT NOTICE

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 performing the operations described herein without strictly following the instructions is personally responsible for any eventual injury or damage to property.

### SHIMMING

For each adjustment operation, select adjusting shims and measure 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 indicated for each shim.

### ROTATING SHAFT SEALS

For correct rotating shaft seal installation, proceed as follows:

- before assembly, allow the seal to soak in the oil it will be sealing for at least thirty minutes;
- thoroughly clean the shaft and check that the working surface on the shaft is not damaged;
- position the sealing lip facing the fluid; with hydrodynamic lips, take into consideration the shaft rotation direction and position the grooves so that they will deviate the fluid towards the inner side of the seal;
- coat the sealing lip with a thin layer of lubricant (use oil rather than grease) and fill the gap between the sealing lip and the dust lip on double lip seals with grease;
- insert the seal in its seat and press down using a flat punch; do not tap the seal with a hammer or mallet;
- whilst inserting the seal, check that it is perpendicular to the seat; once settled, make sure that it makes contact with the thrust element, if required;
- to prevent damaging the seal lip on the shaft, position a protective guard during installation operations.

### “O-RING” SEALS

Lubricate the O-RING seals before inserting them in the seats, this will prevent them from overturning and twisting, which would jeopardise sealing efficiency.

### SEALING COMPOUNDS

Apply one of the following sealing compounds on the mating surfaces marked with an X: RTV SILMATE, RHO-DORSIL CAF 1 or LOCTITE PLASTIC GASKET.

Before applying the sealing compound, prepare the surfaces as follows:

- remove any incrustations using a wire brush;
- thoroughly de-grease the surfaces using one of the following cleaning agents: trichlorethylene, petrol or a water and soda solution.

## BEARINGS

When installing bearings it is advised to:

- heat the bearings to 80 ÷ 90 °C before fitting on the shafts;
- allow the bearings to cool before installing them.

## SPRING PINS

When fitting split socket spring pins, ensure that the pin notch is positioned in the direction of the force required to stress the pin.

Spiral spring pins do not require special positioning.

## SPARE PARTS

Use solely **genuine parts**, which guarantee the same quality, duration and safety as the original parts as they are identical to the ones fitted during production.

Only **genuine parts** can offer this guarantee.

When ordering spare parts, always provide the following information:

- tractor model (commercial name) and frame number;
- engine type and number;
- part number of the ordered part, which can be found in the "Microfiches" or the "Spare Parts Catalogue", used for order processing.

## TOOLS

The tools that NEW HOLLAND offer and illustrate in this manual are:

- specifically researched and designed for use with NEW HOLLAND vehicles;
- essential for reliable repair operations;
- accurately built and rigorously tested so as 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.

## IMPORTANT NOTES

Wear limit values indicated for certain parts are recommended, but not binding. The terms "front", "rear", "right-hand" and "left-hand" (when referred to different parts) are intended as seen from the driving position with the vehicle in the normal direction of movement.

## MOVING THE TRACTOR WITH THE BATTERY REMOVED

External power supply cables should only be connected to the respective positive and negative cable terminals, using efficient clamps that guarantee adequate and secure contact.

Disconnect all services (lights, windshield wipers, etc.) before starting the vehicle.

If the vehicle electrical system requires checking, carry out operations with the power supply connected. Once checking is completed, disconnect all services and switch off the power supply before disconnecting the cables.

## SECTION 10 - ENGINE

## Chapter 1 - Engine

## CONTENTS

Operation	Description	Page
	General specifications .....	2
	Data .....	5
	Tightening torques .....	11
	Tools .....	13
	Engine views .....	14
	Lubrication diagram .....	16
	Cooling system diagram .....	17
	Fault diagnosis .....	21
10 001 10	Engine R.I. ....	25
10 001 53	Engine D.A. Checks, measurements and repairs .....	45
10 102 70	Crankshaft front seal - Replacement .....	97
10 102 74	Crankshaft rear seal - Replacement .....	100
10 106 12	Valve tappet and rocker arm clearance - Adjustment .....	103
10 218 30	Engine injector R.I. ....	106
10 246 14	Bosch injection pump R.I. Timing. Air bleed .....	109
10 402 10	Coolant pump R.I. ....	119
10 402 30	Thermostat valve R.I. ....	121
10 406 10	Radiator R.I. ....	123
10 414 10	Coolant pump and generator drive belts. Tension adjustment .....	129

GENERAL SPECIFICATIONS	4 Cylinders
Engine, technical type:	
- model TL70A - type F4CE0404D*D601 (BOSCH pump) .	-
- model TL70A - type F4CE0404D*D681 (BOSCH pump) .	-
- model TL80A - type F4CE0404C*D601 (BOSCH pump) .	-
- model TL80A - type F4CE0404C*D681 (BOSCH pump) .	-
- model TL90A - type F4CE0454E*D601 (BOSCH pump) .	-
- model TL90A - type F4CE0454E*D681 (BOSCH pump) .	-
- model TL100A - type F4CE0454D*D601 (BOSCH pump)	-
- model TL100A - type F4CE0454D*D681 (BOSCH pump)	-
Cycle .....	diesel, 4-stroke
Fuel injection .....	direct
Number of cylinders in line .....	4
Piston diameter	
- model TL70A - TL80A - TL90A - TL100A .....	4.0944 in. (104 mm)
Piston stroke .....	5.1968 in. (132 mm)
Total displacement:	
- model TL70A - TL80A - TL90A - TL100A .....	273.67 in <sup>3</sup> . (4485 cm <sup>3</sup> )
Compression ratio for Models TL70A - TL80A - TL90A - TL100A .....	17.5:1
Maximum power:	
- model TL70A - type F4CE0404D*D601 .....	53 kW (70 HP)
- model TL70A - type F4CE0404D*D681 .....	53 kW (70 HP)
- model TL80A - type F4CE0404C*D601 .....	60 kW (80 HP)
- model TL80A - type F4CE0404C*D681 .....	60 kW (80 HP)
- model TL90A - type F4CE0454E*D601 .....	67 kW (90 HP)
- model TL90A - type F4CE0454E*D681 .....	67 kW (90 HP)
- model TL100A - type F4CE0454D*D601 .....	73,5 kW (100 HP)
- model TL100A - type F4CE0454D*D681 .....	73,5 kW (100 HP)
Maximum power speed .....	2500 rev/min
- Maximum torque: model TL70A - type F4CE0404D*D601	280 (Nm)
- Maximum torque: model TL70A - type F4CE0404D*D681	280 (Nm)
- Maximum torque: model TL80A - type F4CE0404C*D601	320 (Nm)
- Maximum torque: model TL80A - type F4CE0404C*D681	320 (Nm)
- Maximum torque: model TL90A - type F4CE0454E*D601	350 (Nm)
- Maximum torque: model TL90A - type F4CE0454E*D681	350 (Nm)
- Maximum torque: model TL100A - type F4CE0454D*D601	370 (Nm)
- Maximum torque: model TL100A - type F4CE0454D*D681	370 (Nm)
Maximum torque speed .....	1400 rev/min
Number of main bearings .....	5
Sump .....	structural, cast iron

(continued)



**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**

(cont)

GENERAL SPECIFICATIONS	4 Cylinders
<b>Lubrication</b> ..... Pump drive ..... Engine speed/oil pump speed ratio ..... Oil cleaning ..... Normal oil pressure with motor warmed-up at slow idling speed ..... at fast idling speed .....	forced, with lobe pump camshaft 1:1 mesh filter on oil intake and filtering cartridge on delivery line 17.4 psi (1.2 bar) 55.1 psi (3.8 bar)
<b>Cooling system</b> ..... Radiator on Models TL70A - TL80A - TL90A - TL100A ..... Fan, attached to the pulley ..... Coolant pump ..... Engine speed/coolant pump speed ratio ..... Coolant thermometer ..... Temperature ranges corresponding to each section: - Initial blue section ..... - Middle green section (normal working conditions) ..... - Final red section ..... Temperature control ..... - initial opening .....	coolant circulation 4 lines of vertical pipes with copper fins intake, in plastic with 11 blades centrifugal vane-type 1:1.977 coloured scale divided into 3 sections 104 to 140 °F (40° to 60 °C) 140 to 230 °F (60° to 110 °C) 230 to 248 °F (110° to 120 °C) via thermostat valve 177.0 ± 35.6 °F (81 ± 2 °C)
<b>Timing system</b> ..... Intake: - start: before T.D.C. .... - end: after B.D.C. .... Exhaust: - start: before B.D.C. .... - end: after B.D.C. .... Valve-rocker arm clearance (with engine cold): - intake ..... - exhaust ..... For further timing system technical data .....	overhead valves operated by tappets, rods and rocker arms via the camshaft located in the engine block; the camshaft is driven by the crankshaft using straight-tooth gears 10° ± 30' 10° ± 30' 64° 26° (0.30 ± 0.05 mm) (0.55 ± 0.05 mm) see page 8

(continued)

**<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>**