

NEW HOLLAND TJ Series

Complete Contents

REPAIR MANUAL



NEW HOLLAND

SERVICE

TJ SERIES REPAIR MANUAL COMPLETE CONTENTS

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The following pages are the collation of the contents pages from each section and chapter of the TJ Series Repair manual.

The sections used through out all New Holland product Repair manuals may not be used for each product. Each Repair manual will be made up of one or several books. Each book will be labeled as to which sections are in the overall Repair manual and which sections are in each book.

The sections listed above are the sections utilized for the TJ Series Tractors.

Section 00

Chapter 1

Standard Torque Specification

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TORQUE SPECIFICATIONS - DECIMAL HARDWARE

Use the torques in this chart when special torques are not given. These torques apply to fasteners with both UNC and UNF threads as received from suppliers dry, or when lubricated with engine oil. Not applicable if special graphites, Molydisulfide greases, or other extreme pressure lubricants are used.

Grade 5 Bolts, Nuts, and Studs		
  		
Size	Pound-Inches	Newton metres
1/4 inch	108 to 132	12 to 15
5/16 inch	204 to 252	23 to 28
3/8 inch	420 to 504	48 to 57
Size	Pound-Feet	Newton metres
7/16 inch	54 to 64	73 to 87
1/2 inch	80 to 96	109 to 130
9/16 inch	110 to 132	149 to 179
5/8 inch	150 to 180	203 to 244
3/4 inch	270 to 324	366 to 439
7/8 inch	400 to 480	542 to 651
1.0 inch	580 to 696	787 to 944
1-1/8 inch	800 to 880	1085 to 1193
1-1/4 inch	1120 to 1240	1519 to 1681
1-3/8 inch	1460 to 1680	1980 to 2278
1-1/2 inch	1940 to 2200	2631 to 2983

Grade 8 Bolts, Nuts, and Studs		
  		
Size	Pound-Inches	Newton metres
1/4 inch	144 to 180	16 to 20
5/16 inch	288 to 348	33 to 39
3/8 inch	540 to 648	61 to 73
Size	Pound-Feet	Newton metres
7/16 inch	70 to 84	95 to 114
1/2 inch	110 to 132	149 to 179
9/16 inch	160 to 192	217 to 260
5/8 inch	220 to 264	298 to 358
3/4 inch	380 to 456	515 to 618
7/8 inch	600 to 720	814 to 976
1.0 inch	900 to 1080	1220 to 1465
1-1/8 inch	1280 to 1440	1736 to 1953
1-1/4 inch	1820 to 2000	2468 to 2712
1-3/8 inch	2380 to 2720	3227 to 3688
1-1/2 inch	3160 to 3560	4285 to 4827
NOTE: Use thick nuts with Grade 8 bolts.		

TORQUE SPECIFICATIONS - METRIC HARDWARE

Use the following torques when specifications are not given.

These values apply to fasteners with coarse threads as received from supplier, plated or unplated, or when lubricated with engine oil. These values do not apply if graphite or Molydisulfide grease or oil is used.

Grade 8.8 Bolts, Nuts, and Studs		
		
Size	Pound-Inches	Newton metres
M4	24 to 36	3 to 4
M5	60 to 72	7 to 8
M6	96 to 108	11 to 12
M8	228 to 276	26 to 31
M10	456 to 540	52 to 61
Size	Pound-Feet	Newton metres
M12	66 to 79	90 to 107
M14	106 to 127	144 to 172
M16	160 to 200	217 to 271
M20	320 to 380	434 to 515
M24	500 to 600	675 to 815
M30	920 to 1100	1250 to 1500
M36	1600 to 1950	2175 to 2600

Grade 10.9 Bolts, Nuts, and Studs		
		
Size	Pound-Inches	Newton metres
M4	36 to 48	4 to 5
M5	84 to 96	9 to 11
M6	132 to 156	15 to 18
M8	324 to 384	37 to 43
Size	Pound-Feet	Newton metres
M10	54 to 64	73 to 87
M12	93 to 112	125 to 150
M14	149 to 179	200 to 245
M16	230 to 280	310 to 380
M20	450 to 540	610 to 730
M24	780 to 940	1050 to 1275
M30	1470 to 1770	2000 to 2400
M36	2580 to 3090	3500 to 4200

Grade 12.9 Bolts, Nuts, and Studs



Usually the torque values specified for grade 10.9 fasteners can be used satisfactorily on grade 12.9 fasteners.

TORQUE SPECIFICATIONS - STEEL HYDRAULIC FITTINGS

Tube OD Hose ID	Thread Size	Pound- Inches	Newton metres
37 Degree Flare Fitting			
1/4 inch 6.4 mm	7/16-20	72 to 144	8 to 16
5/16 inch 7.9 mm	1/2-20	96 to 192	11 to 22
3/8 inch 9.5 mm	9/16-18	120 to 300	14 to 34
1/2 inch 12.7 mm	3/4-16	180 to 504	20 to 57
5/8 inch 15.9 mm	7/8-14	300 to 696	34 to 79
Tube OD Hose ID	Thread Size	Pound- Feet	Newton metres
3/4 inch 19.0 mm	1-1/16-12	40 to 80	54 to 108
7/8 inch 22.2 mm	1-3/16-12	60 to 100	81 to 135
1.0 inch 25.4 mm	1-5/16-12	75 to 117	102 to 158
1-1/4 inch 31.8 mm	1-5/8-12	125 to 165	169 to 223
1-1/2 inch 38.1 mm	1-7/8-12	210 to 250	285 to 338

Tube OD Hose ID	Thread Size	Pound- Inches	Newton metres
Straight Threads with O-ring			
1/4 inch 6.4 mm	7/16-20	144 to 228	16 to 26
5/16 inch 7.9 mm	1/2-20	192 to 300	22 to 34
3/8 inch 9.5 mm	9/16-18	300 to 480	34 to 54
1/2 inch 12.7 mm	3/4-16	540 to 804	57 to 91
Tube OD Hose ID	Thread Size	Pound- Feet	Newton metres
5/8 inch 15.9 mm	7/8-14	58 to 92	79 to 124
3/4 inch 19.0 mm	1-1/16-12	80 to 128	108 to 174
7/8 inch 22.2 mm	1-3/16-12	100 to 160	136 to 216
1.0 inch 25.4 mm	1-5/16-12	117 to 187	159 to 253
1-1/4 inch 31.8 mm	1-5/8-12	165 to 264	224 to 357
1-1/2 inch 38.1 mm	1-7/8-12	250 to 400	339 to 542

Split Flange Mounting Bolts		
Size	Pound- Inches	Newton metres
5/16-18	180 to 240	20 to 27
3/8-16	240 to 300	27 to 34
7/16-14	420 to 540	47 to 61
Size	Pound- Feet	Newton metres
1/2-13	55 to 65	74 to 88
5/8-11	140 to 150	190 to 203

TORQUE SPECIFICATIONS - STEEL HYDRAULIC FITTINGS

Nom. SAE Dash Size	Tube OD	Thread Size	Pound- Inches	Newton metres	Thread Size	Pound- Inches	Newton metres
O-ring Face Seal End					O-ring Boss End Fitting or Lock Nut		
-4	1/4 inch 6.4 mm	9/16-18	120 to 144	14 to 16	7/16-20	204 to 240	23 to 27
-6	3/8 inch 9.5 mm	11/16-16	216 to 240	24 to 27	9/16-18	300 to 360	34 to 41
-8	1/2 inch 12.7 mm	13/16-16	384 to 480	43 to 54	3/4-16	540 to 600	61 to 68
					Thread Size	Pound- Feet	Newton metres
-10	5/8 inch 15.9 mm	1-14	552 to 672	62 to 76	7/8-14	60 to 65	81 to 88
Nom. SAE Dash Size	Tube OD	Thread Size	Pound- Feet	Newton metres	1-1/16-12	85 to 90	115 to 122
					1-3/16-12	95 to 100	129 to 136
-12	3/4 inch 19.0 mm	1-3/16-12	65 to 80	90 to 110	1-5/16-12	115 to 125	156 to 169
-14	7/8 inch 22.2 mm	1-3/16-12	65 to 80	90 to 110	1-5/8-12	150 to 160	203 to 217
-16	1.0 inch 25.4 mm	1-7/16-12	92 to 105	125 to 140	1-7/8-12	190 to 200	258 to 271
-20	1-1/4 inch 31.8 mm	1-11/16-12	125 to 140	170 to 190			
-24	1-1/2 inch 38.1 mm	2-12	150 to 180	200 to 254			

Section 00

Chapter 2

Safety

SAFETY



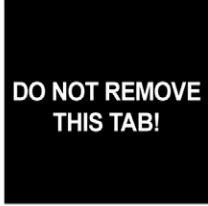
WARNING: THIS SAFETY ALERT SYMBOL INDICATES IMPORTANT SAFETY MESSAGES IN THIS MANUAL. WHEN YOU SEE THIS SYMBOL, CAREFULLY READ THE MESSAGE THAT FOLLOWS AND BE ALERT TO THE POSSIBILITY OF PERSONAL INJURY OR DEATH.**

M171B

To prevent injury always follow the Warning, Caution and Danger notes in this section and throughout the manual.

Put the "Do Not Operate" tag shown below on the key for the key switch when keys are removed for servicing or repairing the machine. Tags are available from your service parts supplier.

Before servicing a machine, park the machine on hard level ground. Turn off the engine, apply the parking brake and remove the key from the key switch. Put blocks in front of and behind either the front or rear wheels.

 DO NOT OPERATE Reason _____ _____ _____ Signed by _____	 DO NOT REMOVE THIS TAB! See Other Side Printed in U.S.A.
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MS99B001



WARNING: Read the operators manual to familiarize yourself with the correct control functions.

M489



WARNING: Operate the machine and equipment controls from the seat position only. Any other method could result in serious injury.

M490



WARNING: This is one man machine, no riders allowed.

M491



WARNING: Before starting engine study Operators Manual safety messages. Read all safety signs on machine. Clear the area of other persons. Learn and practice safe use of controls before operating. It is your responsibility to understand and follow manufacturers instructions on machine operation, service, and to observe pertinent laws and regulations. Operator and Service Manuals may be obtained from your equipment dealer.

M103A



WARNING: If you wear clothing that is too loose or do not use the correct safety equipment for your job, you can be injured. Always wear clothing that will not catch on objects. Extra safety equipment that can be required includes hard hat, safety shoes, ear protection, eye or face protection, heavy gloves and reflector clothing.

M492



WARNING: When working in the area of the fan belt with the engine running, avoid loose clothing if possible, and use extreme caution.

M493



WARNING: When doing checks and tests on the equipment hydraulics, follow the procedures as they are written. DO NOT change the procedure.

M494



WARNING: When putting the hydraulic cylinders on this machine through the necessary cycles to check operation or to remove air from a circuit, make sure all people are out of the way.

M495



WARNING: Always wear heat protective gloves to prevent burning your hands when handling heated parts.

SM121A



WARNING: Lower all attachments to the ground or use stands to safely support the attachments before you do any maintenance or service.

M496



WARNING: Hydraulic oil or diesel fuel leaking under pressure can penetrate the skin and cause infection or other injury.

To Prevent Personal Injury:

Relieve all pressure, before disconnecting fluid lines. Before applying pressure, make sure all connections are tight and components are in good condition.

Never use your hand to check for suspected leaks under pressure.

Use a piece of cardboard or wood for this purpose. If injured by leaking fluid, see your doctor immediately.

SM171A



WARNING: When removing hardened pins such as a pivot pin, or a hardened shaft, use a soft head (brass or bronze) hammer or use a driver made from brass or bronze and a steel head hammer.

M497



WARNING: When using a hammer to remove and install pivot pins or separate parts using compressed air or using a grinder, wear eye protection that completely encloses the eyes (approved goggles or other approved eye protectors).

M498



WARNING: Use suitable floor (service) jacks or chain hoist to raise wheels or tracks off the floor. Always block machine in place with suitable safety stands

M499



WARNING: When servicing or repairing the machine. Keep the shop floor and operators compartment and steps free of oil, water, grease, tools, etc. Use an oil absorbing material and or shop cloths as required. Use safe practices at all times.

M500



WARNING: Some components of this machine are very heavy. Use suitable lifting equipment or additional help as instructed in the Service Manual.

M501



WARNING: Engine exhaust fumes can cause death. If it is necessary to start the engine in a closed place, remove the exhaust fumes from the area with an exhaust pipe extension. Open the door and get outside air into the area.

M502



WARNING: When the battery electrolyte is frozen, the battery can explode if (1), you try to charge the battery, or (2), you try to jump start and run the engine. To prevent the battery electrolyte from freezing, try to keep the battery at full charge. If you do not follow these instructions, you or others in the area can be injured.

M503



WARNING: Batteries contain acid and explosive gas. Explosions can result from sparks, flames or wrong cable connections. To connect the jumper cables correctly to the battery of this machine see the Operators Manual. Failure to follow these instructions can cause serious injury or death.

M504

ROLL OVER PROTECTIVE STRUCTURE (ROPS)

ROPS, the operators seat, the seat belts and all mounting, accessories and wiring inside the operators protective system must be carefully checked after a tractor accident and all parts with damage must be replaced immediately. DO NOT TRY TO MAKE REPAIRS OR WELD THE ROPS.

Safety Rules:

1. Do not make modifications to the ROPS. Example, welding an accessory to the ROPS or drilling a hole in the ROPS.
2. Special fasteners are used to install the operator protective parts. Replacement parts must be the same as given in the Parts Catalog.

Section 00

Chapter 3

GENERAL INFORMATION AND SPECIFICATIONS

All TJ Series Tractors

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GENERAL SPECIFICATIONS

DIESEL ENGINE

Tractor Model	TJ 275	TJ 325	TJ 375-450
Engine Manufacturer	CDC	CDC	Cummins
Engine Model	6TAA-8304	6TAA-9004	QSX 15
Type	In-Line, Six Cylinder, Four Stroke Cycle		
Aspiration	Turbo Charged, Air To Air After Cooled		
Firing Order	1-5-3-6-2-4		
Bore - inch (mm)	4.49 (114)	4.49 (114)	5.4 (137)
Stroke - inch (mm)	5.31 (135)	5.69 (144.5)	6.7 (168)
Displacement - inch ³ (L)	506 (8.3)	543 (9)	912 (15.0)
Compression Ratio	17.1:1	16.6:1	16.5:1
Cylinder Sleeves	Replaceable Wet Type		
High Engine Idle RPM	2100-2145 RPM	2100-2145 RPM	2125-2165 RPM
Rated Engine Speed	2000 RPM	2000 RPM	2000 RPM
Engine Idle Speed	850 RPM	850 RPM	875 RPM
Engine Power Rating-HP (kw) at 2000 RPM	278 (205)	325 (242)	TJ375 375 (279) TJ450 450 (335)
Peak Torque - lb-ft (Nm) at 1400 RPM	1022 (1386)	1150 (1559)	TJ375 1380 (1871) TJ450 1669 (2263)
Torque Rise - %	40	35	TJ375 40 TJ450 41

Engine Lubrication System

Oil Pressure at Idle Speed (Minimum)

TJ 275-325 10 PSI (69 kPa)

TJ 375-450 20 PSI (138 kPa)

Oil Pressure at High Idle

TJ 275-325 40 to 50 PSI (276 TO 344 kPa)

TJ 375-450 35-40 PSI (240-276 kPa)

Type of System Pressure and Spray

Fuel System

Fuel Injection Pump CUMMINS

Fuel Injectors CUMMINS

Tank Capacity

TJ 275-325 200 Gallons (758 Liters)

TJ 375-450 300 Gallons (1136 Liters)

Air Intake System

Type Dry Type, Two Stage Aspirator System with
Service Indicator in Instrument Cluster

Transmission - Power Shift

Type 16 Speed Full Power Shift, 16 Forward and 2 Reverse Speeds
Shift Control..... Electronically Controlled, Hydraulically Operated

Transmission - Manual Shift

Type 24 Speeds Forward, 6 Speeds in Reverse,
Constant Mesh, Synchronized Shift
Gear Shift Control..... Lever Actuated
Rangeshift Control..... Lever Actuated
HI-LO Power Shift Control Actuated Electrically by Switch on Throttle Control

Brakes

Service Brake Hydraulic Multiple Disc Wet Brake Integral with
Front and Rear Differentials
Park Brake Electrically Controlled. Spring Applied and
Pressure Released. Integral with
Front/Rear Differentials

Axle Differential And Final Drives

Type Bar Type with Integral Wet Brake, Spiral Bevel
Ring/Pinion Gears. Pressure Lubed and Oil Cooled
Final Drive
TJ 275-325 3-Pinion Planetary
TJ 375 4-Pinion Planetary
TJ 375HD-TJ450 Compound Planetary
Total Axle Reduction (Ratio)
TJ 275-325.....25.7:1
TJ 375 25.396:1
TJ 375HD-TJ 450 25.193:1
Axle Bar Diameter
TJ 275-325 4.0 Inch (101.6 mm)
TJ 375-450 4.5 inch (115 mm)
Bar Length 120 Inch (3048 mm)

Power Takeoff (If Equipped)

PTO Type..... Live Independent System
Integral with Transmission
Type Clutch..... Electro/Hydraulically Actuated
Rotation Clockwise from Rear of Tractor
1000 RPM.....20 Splines 1.75 Inch Diameter
Engine Speed for 1000 RPM 2000 RPM

Hydraulic System

Type	Closed Center, Load Sensing, Pressure Compensating System
Remote Valve	
Standard	Mechanically Operated, Closed Center Stack Type with Line Locks on Lift Ports
Optional	Electro/Hydraulic Controlled, Closed Center Stack Type with In-Cab Variable Flow Control for Each Section Also Line Locks on all Lift Ports
Standard System Pump Capacity (at 2000 PSI - 2000 RPM)	40 GPM (151.4 L/min)
High Output Pump Capacity (If Equipped) (at 2000 PSI - 2000 RPM)	55 GPM (208 L/min)
Steering	Articulated, Full Priority, Two Double Acting Cylinders
Maximum Steering Pressure	2700 PSI (186 bar)
Couplings	ISO Standard Couplers
Maximum System Pressure	2900 PSI (200 bar)

MegaFlow Hydraulics (If Equipped)

Type System	PFC Piston Pump
Pump Capacity (at 2000 PSI - 2000 RPM)	35 GPM (132 L/Min)
Remote Valve	Two-Electro/Hydraulic Controlled
Couplers	ISO Standard 7241-1 Series A

Hitch System (If Equipped)

Type Control	Manual or Electronic
Type Valve	Three Position - Lift, Hold and Lower
Type Draft Arms	Rigid, Swing Type with Manual Float Adjustment
Type Hitch	Three Point Category IV-N
Hitch Coupler (adjustable)	Category III or IV-N
Lift Capacity (OECD Static)	
24 Inch (610 mm) Back	
TJ 275-325	16 000 lb (3080 Kg)
TJ 375-450	19 500 lb (8833 Kg)

Drawbar

Type	Yoke Type, Side Swing and Extendable
Pin Diameter	2.0 Inch (51 mm)
Pin Length	8.7 Inch (220 mm)
Static Load Rating (vertical)	
Standard	
TJ 275-325	4500 lb (2039 Kg)
TJ 375-450	5300 lb (2400 Kg)
Optional HD	11 000 lb (4983 Kg)

TRACTOR WEIGHTS

Approximate Base Shipping Weights

TJ 275-TJ 325 with 20.8 R-42 Duals	29 760 lbs (13 499 Kg)
TJ 375 with 20.8 R42 Duals	35 075 lbs (15 889 Kg)
TJ 375HD with 620/70 R42 Duals	38 340 lbs (17 368 Kg)
TJ 450 with 20.8 R-42 Duals	36 700 lbs (16 625 Kg)

NOTE: *Estimated base shipping weights listed are with 20 gal. (76 L) of fuel, less operator, no TPH, PTO or other operational equipment.*

Approximate Component Weights

Three Point Hitch	2097 lb (950 kg)
Hitch Coupler	458 lb (207 kg)
PTO System	700 lb (318 kg)

NOTE: *Calculate fuel weight at 7.2 lb (3.3 kg) per gallon.*

Maximum Tractor Operating Weight

The maximum recommended tractor operating weight includes the operator, tractor, tractor equipment and ballast. The maximum weight is with a 60% front and 40% rear static weight distribution.

Maximum Tractor Operating Weight

TJ 275	33 000 lbs (14 968 Kg)
TJ 325	39 000 lbs (17 690 Kg)
TJ 375	45 000 lbs (20 385 Kg)
TJ 450	52 800 lbs (23 918 Kg)



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Section 10

Chapter 1

ENGINE REMOVAL AND INSTALLATION

TJ 275 - 325

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