SERVICE MANUAL

Wheel Loader
W270C
W300C

Print No. 84547255A

NEW HOLLAND CONSTRUCTION

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CNH Italia S.p.A.
Via Plava, 80
10135 Torino
Italia

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Assembly

1. Install bearing (5) in gland (1).
2. Install buffer seal (4) in gland (1) so that lips of seal are toward small end of gland.
3. Install rod seal (3) in gland (1). Rod seal must be installed so that lips of seal are toward small end of gland. Seal can be difficult to install. Use tools that will not damage seal. See illustration on page 4.
4. Install rod wiper (2) in gland (1) with wiper lips toward large end of gland.
5. Install O-ring (7) on gland (1).
6. Install backup ring (6) on gland (1). The backup ring must be toward large end of gland. If backup ring is not flat on both sides, the side that is not flat must be toward O-ring (7).
7. Fasten piston rod (14) yoke in vise.
8. Lubricate piston rod (15) and bore in gland (1) with clean hydraulic oil.

NOTE: *If a new gland (1) is being installed, write part number of cylinder on gland.*

9. Push gland (1) onto piston rod (14) large end first. If necessary, use a soft hammer to drive the gland onto piston rod.
10. Put a support below and near the end of piston rod (14). Put a cloth between support and piston rod to prevent damaging piston rod.
11. Install new cast iron ring (10) on piston (9).
12. Install new wear ring (11) on piston (9).
13. Install a new loader ring (12) on piston (9).
14. Install a new seal (13-20) over loader ring (12).
15. Clean the threads on the end of piston rod (14) and threads of bolt (8) using Loctite cleaning solvent. Allow to dry. Apply Loctite 243 to piston rod threads 6.4 mm (1/4 inch) from open end of piston rod so that there is 12.7 mm (1/2 inch) of Loctite 243 on piston rod threads. DO NOT apply Loctite to first 6.4 mm (1/4/inch) of piston rod threads.
16. Install bolt and hardened washer (8) in piston (9).
17. Install piston (9) on piston rod (14) and start bolt (8) into piston rod.
18. Tighten bolt (8) to a torque of 1600 to 1830 Nm (1180 to 1349.7 pound feet).
19. Fasten tube (18) in vise. Be careful not to damage tube.
20. Apply petroleum jelly to O-rings (7) and backup ring (6) on gland (1) and to sealing surface in tube (18).
21. Lubricate piston (9) and inside of tube (18) with clean hydraulic oil.
22. Push the piston (9) straight into tube (18). Be careful not to damage cast iron ring (10), wear ring (11), and seal (13) on piston (9).
23. When piston (9) is in smooth part of tube (18), start gland (1) into tube (18).
24. If the original parts are being assembled:
    A. Tighten gland to a torque of 407 ± 68 Nm (300 ± 50 pound-feet).
    B. Install and tighten self-tapping screw (19) to a torque of 2.3 Nm (20 inch-pounds).
    C. If, after tightening gland, the self-tapping screw (19) holes are not aligned, a new hole for self-tapping screw must be drilled. See Step 25.
25. If a new gland (1) or a new tube (18) are being assembled:
    A. Tighten gland (1) to a torque of 407 ± 68 Nm (300 ± 50 pound-feet).
    B. Use a No. 27 drill bit and drill a hole half in gland (1) and half in tube (18). Drill to a depth of 11 mm (7/16 inch). Do not drill within 13 mm (1/2 inch) of a hole for gland wrench.
    C. Install and tighten self-tapping screw (19) to a torque of 2.3 Nm (20 inch-pounds).
26. If hoses were removed with cylinder, install new O-rings, if equipped, on hose fittings. Lubricate O-rings with clean oil. Install hoses.

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Installation

NOTE: *The transmission must be installed with the engine. See Section 2000 for engine installation.*

1. Fasten acceptable lifting equipment to the transmission.
2. Install bracket (6), bolts (7) and washer (8), torque bolts to 1125 to 1274 Nm (830 to 940 pound-feet), refer to illustration on page 14.
3. Replace the cap screws (13) that hold the transmission to the flywheel housing. Tighten the cap screws to 54 to 60 Nm (40 to 44 pound-feet).
4. Turn the flywheel to access, install and tighten the twelve bolts (10) and hardened washers (11) for the flex plate to 33 to 41 Nm (24 to 30 pound-feet).
5. Place the engine and transmission in the machine.
6. Install the self-locking nuts (4), hardened washers (5), isolators (1), washers (3), and bolts (2) that hold the transmission mounting brackets (6) to the machine. Tighten the self-locking bolts to 929 to 1044 Nm (685 to 770 pound-feet).
7. Lower the ROPS cab or canopy and tighten the front mounting bolt nuts to 773 to 854 Nm (570 to 630 pound-feet).
8. Place the wiring harness into position over the transmission, refer to illustration on page 11 and 12.
9. Connect the differential lock solenoid (18).
10. Connect the parking brake declutch pressure switch (17).
11. Connect the transmission to cab connector (16).
12. Connect the output speed sensor (15).
13. Connect the PRB1 redundant brake switch (14).
14. Connect the PRB2 redundant brake switch (13).
15. Connect the engine speed sensor (12).
16. Connect the turbine speed sensor (11).
17. Connect the intermediate speed sensor (10).
18. Install the harness retaining clamp (9).
19. Connect the transmission ground (8).
20. If equipped, connect the secondary steering harness (7).
21. Connect the torque converter output sender (6).
22. Connect the transmission controller (5).
23. Install the harness retaining clamp (4).
24. Connect the hydraulic filter clogged switch (3).
25. Connect the transmission filter clogged switch (2).
26. Connect hydraulic oil temperature sender (1).

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WHEELS AND BOLTS

General Information

The wheel bolts must be tightened after every 20 hours of operation until the wheel bolts stay tight:

A. If the machine is new.

B. If a wheel has been removed and installed.

Torque Specification

Tighten the wheel bolts to 298 Nm (220 pound-feet) in the sequence shown in Figure. Then a final torque of 640 to 720 Nm (475 to 530 pound-feet) in the same sequence.

TIRE PRESSURES

W270C Service Specifications - Normal Work Tire Inflations		
Tire Type	**Front Pressure**	**Rear Pressure**
26.5 X 25 Bias Ply	3.5 bar (50.0 psi)	2.8 bar (40.0 psi)
26.5 X 25 Radial	4.5 bar (65.0 psi)	3.2 bar (47.0 psi)

W300C Service Specifications - Normal Work Tire Inflations		
Tire Type	**Front Pressure**	**Rear Pressure**
26.5 X 25 Bias Ply	4.5 bar (50.0 psi)	3.2 bar (47.0 psi)
26.5 X 25 Radial	5.0 bar (73 psi)	3.5 bar (50.0 psi)

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COMPONENT NUMBERS

#	SHT	COMPONENT	#	SHT	COMPONENT	#	SHT	COMPONENT	#	SHT	COMPONENT
1	4	STARTING RELAY	61	8	DIAGNOSTIC CONNECTOR	119	12	DIAGNOSTIC CONNECTOR	177	13	ARM POS
2	4	RESISTOR - 75 OHM	62	1	INSTRUMENT CLUSTER CONNECTOR 1	121	12	POWER CONVERTER - 24 TO 12 VOLT	178	13	FNR SWITCH (OPTION)
3	4	ALTERNATOR	63	9	WARNING BUZZER	122	12	12 VOLT POWER OUTLETS (OPTION)	179	13	FNR RELAY
4	4	CRANK CONTROL RELAY	64	9	PARKING BRAKE RELAY	123	12	RADIO	180	13	PILOT DUMP VALVE
5	4	BATTERIES	65	9	FUEL LEVEL SENDER	124	12	RIGHT SPEAKER	181	13	JSS VALVE
6	4	CRANK REQUEST RELAY	66	9	AIR FILTER RESTRICTION SWITCH	125	12	LEFT SPEAKER	182	13	LOAD SENSE PRESSURE SENSOR
8	4	MASTER DISCONNECT SWITCH	67	9	PARKING BRAKE SOLENOID	126	12	AIR SEAT	183	13	PILOT PRESSURE SWITCH
9	4	STARTER	68	9	RADIATOR COOLANT TEMPERATURE SENDER	127	12	CIGAR LIGHTER	184	13	JSS RELAY
10	4	IGNITION SWITCH	69	9	BRAKE PRESSURE WARNING SWITCH	128	12	AIR CONDITIONING CLUTCH RELAY	185	13	JOYSTICK STR SWITCH (OPTION)
11	4	NEUTRAL START RELAY	70	1	SWITCH PAD	129	12	AIR CONDITIONING HIGH-LOW PRESSURE SWITCH	186	13	JSS CONTROLLER
13	4	POWER RELAY MODULE A	71	1	INSTRUMENT CLUSTER CONNECTOR 2	130	12	AIR CONDITIONING COMPRESSOR CLUTCH			
14	4	POWER RELAY MODULE B	72	9	HYDRAULIC FILTER RESTRICTION SWITCH	131	NA	ELECTRONIC PANEL			
15	4	POWER RELAY MODULE C	73	9	HYDRAULIC OIL TEMPERATURE SENDER	132	NA	EXTERNAL AIR TEMPERATURE SENSOR			
16	4	GRID HEATER RELAY	74	9	PARK BRAKE SWITCH	133	NA	INTERNAL AIR TEMPERATURE SENSOR			
17	4	GRID HEATER	75	9	REDUNDANT BRAKE PRESSURE SWITCH 1	134	NA	SUN SENSOR			
18	4	POWER RELAY MODULE D	76	9	REDUNDANT BRAKE PRESSURE SWITCH 2	135	NA	BLOWER FAN RESISTOR			
20	4	WATER SEPARATOR HEATER	78	6	BACKUP ALARM RELAY	136	NA	BLOWER MOTORS			
21	4	FUEL FILTER HEATER	79	6	BACKUP ALARM DISABLE SWITCH	137	NA	THERMOCOUPLE SENSOR			
22	5	WATER IN FUEL SENSOR	80	7	WORK LAMPS SWITCH	138	NA	MIXED AIR SENSOR			
23	5	THROTTLE POTENTIOMETER	81	7	DOOR SWITCH	139	NA	COMPRESSOR RELAY			
24	5	ENGINE CONTROLLER	82	7	ROTATING BEACON (OPTIONAL)	140	NA	RECYCLING MOTOR			
25	10	RETURN TO TRAVEL FLOAT SWITCH	83	7	DOME LAMP	141	NA	ELECTRONIC WATER VALVE			
26	10	HEIGHT CONTROL SWITCH	84	7	ROTATING BEACON SWITCH (OPTIONAL)	142	NA	24 TO 12 VOLT CONVERTER			
27	10	ELECTROMAGNETIC DETENTS	85	7	LEFT HAND FRONT WORK LAMP	143	14	ACTUATOR			
28	10	RETURN TO DIG PROXIMITY SWITCH	86	7	RIGHT HAND FRONT WORK LAMP	144	14	DRIVER			
29	10	PILOT CONTROL RELAY ECD-K3	87	7	LEFT HAND REAR WORK LAMP	145	14	ELECTRONIC WATER VALVE			
30	10	HEIGHT CONTROL AND RETURN TO TRAVEL PROXIMITY SW	88	7	RIGHT HAND REAR WORK LAMP	146	14	BLOWER FAN RESISTOR			
31	10	RETURN TO DIG SWITCH	89	7	DIODES	147	14	BLOWER MOTOR			
32	10	PIN ENGAGE SWITCH (OPTION)	90	6	BRAKE LAMP SWITCH	148	14	THERMOSTAT			
33	10	PILOT PRESSURE SOLENOID	91	6	BRAKE LAMP RELAY	149	14	FAN SPEED SWITCH			
34	10	PIN ENGAGE SOLENOID (OPTION)	92	6	FLASHER MODULE	150	14	AIR CONDITIONING SWITCH			
35	10	RIDE CONTROL SWITCH (OPTION)	93	6	HAZARD SWITCH	151	14	CONTROL PANEL LAMPS			
36	10	RIDE CONTROL RELAY (OPTION)	94	6	TURN SIGNAL, HIGH-LOW BEAM, AND HORN SWITCH	152	14	WATER VALVE POTENTIOMETER			
37	10	FAN CONTROL SWITCH (OPTION)	95	6	DRIVING LAMPS SWITCH	153	14	AIR RECIRCULATING SWITCH			
38	10	FAN REVERSE RELAY (OPTION)	96	6	LEFT HAND FRONT COMBINATION LAMPS	154	11	HOOD UP RELAY			
39	10	PILOT CONTROL SWITCH	97	6	RIGHT HAND FRONT COMBINATION LAMPS	155	11	HOOD DOWN RELAY			
40	10	RIDE CONTROL SOLENOID (OPTION)	98	10	HORN RELAY	156	11	HOOD SWITCH			
41	10	ROLLBACK PRESSURE SW (XT WITH RIDE CONTROL ONLY)	99	10	HORN RELAY	157	11	HOOD MOTOR			
42	10	ROLLBACK JUMPER	100	6	RIGHT HAND REAR COMBINATION LAMPS	158	4	IGNITION POWER LATCH			
43	10	FAN PWM SOLENOID	101	6	LEFT HAND REAR COMBINATION LAMPS	159	4	IGNITION POWER CONTROL			
44	10	FAN REVERSE SOLENOID (OPTION)	102	6	LICENSE PLATE LAMP	160	4	START LOCKOUT			
45	8	OUTPUT SPEED SENSOR	103	6	BACKUP ALARM	161	5	NOX SENSOR			
46	8	TRANSMISSION SOLENOID VALVE AND TEMP SENDER	104	11	FRONT WIPER HIGH SPEED RELAY	162	5	HUMIDITY AND AMBIENT TEMPERATURE SENSOR			
47	8	FILTER MAINTENANCE SWITCH	105	11	WIPER CUTOUT RELAY	163	5	NOX SENSOR (NOXS)			
48	8	TORQUE CONVERTER OUTPUT TEMPERATURE SENDER	106	11	FRONT WIPER LOW SPEED RELAY	164	5	TANK HEATER CONTROL VALVE			
49	8	ENGINE SPEED SENSOR	107	11	REAR WIPER AND WASHER SWITCH	165	5	DEF LEVEL AND TANK TEMPERATURE			
50	8	INTERMEDIATE SPEED SENSOR	108	11	FRONT WIPER AND WASHER SWITCH	166	5	UPSTREAM TEMPERATURE SENSOR			
51	8	TURBINE SPEED SENSOR	109	11	FRONT WIPER MOTOR	167	5	DOWNSTREAM TEMPERATURE SENSOR			
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