204K and 304K Loader Repair

REPAIR TECHNICAL MANUAL

iT4 models 204K (PIN:1LU204K***B030899-) and 304K (PIN:1LU304K***B030847-)

TM12988 09 APR 15 (ENGLISH)

For complete service information also see:

204K and 304K Compact Loader Diagnostic	**TM12985**
JDLink (MTG) Technical Manual	**TM114519**
4TNV98 and 4TNV98T Diesel Engines(Interim Tier 4/Stage IIIB platform)	**CTM130319**
Hydrostatic Motor Repair Manual	**CTM10079X19**
Hydrostatic Pump Repair Manual	**CTM10078X19**
Front and Rear Axle Repair Manual	**CTM10077X19**
Service Brake Discs Inspection	**CTM10076X19**
Rear Axle Reduction Gear Case Repair Manual	**CTM10075X19**
JDLINK/ZXLINK Machine Monitoring System	**CTM10006**

John Deere Construction and Forestry
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Table of contents

FOREWORD
MANUAL IDENTIFICATION—READ THIS FIRST!
Section 00 - GENERAL INFORMATION
Group 0001 - Safety Information
Group 0003 - Torque Values
Section 01 - WHEELS
Group 0110 - Wheels and Fasteners
Section 02 - AXLES AND SUSPENSION SYSTEMS
Group 0200 - Removal and Installation
Group 0225 - Axle Shafts and U-Joints
Group 0250 - Axle Shaft, Bearings, and Rear Axle Reduction Gears
Section 03 - TRANSMISSION
Group 0300 - Hydrostatic Components Removal and Installation
Group 0360 - Hydrostatic Components Repair
Section 04 - ENGINE
Group 0400 - Removal and Installation
Section 05 - ENGINE AUXILIARY SYSTEMS
Group 0510 - Cooling System
Group 0520 - Intake System
Group 0530 - External Exhaust System
Group 0560 - External Fuel Supply Systems
Section 07 - DAMPER DRIVE
Group 0700 - Removal and Installation
Section 09 - STEERING SYSTEM
Group 0960 - Hydraulic System
Section 10 - SERVICE BRAKES
Group 1011 - Active Elements
Group 1060 - Hydraulic System
Section 11 - PARK BRAKE
Group 1160 - Hydraulic System
Section 17 - FRAME OR SUPPORTING STRUCTURE
Group 1740 - Frame Installation
Group 1749 - Chassis Weights
Section 18 - OPERATOR´S STATION
Group 1800 - Removal and Installation
Group 1810 - Operator Enclosure
Group 1821 - Seat and Seat Belt
Group 1830 - Heating and Air Conditioning System
Section 19 - SHEET METAL AND STYLING
Group 1910 - Hood or Engine Enclosure
Group 1913 - Miscellaneous Shields
Section 21 - MAIN HYDRAULIC SYSTEM
Group 2160 - Hydraulic System
Section 31 - LOADER
Group 3102 - Bucket
Group 3104 - Attachment Coupler
Group 3140 - Frames
Group 3160 - Hydraulic System

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Group 0001 - Safety Information

Recognize Safety Information



Safety alert Symbols



Safety Alert Symbols

This is the safety alert symbol. When you see this symbol on your machine or in this manual, be alert for the potential of personal injury.

Follow the precautions and safe operating practices highlighted by this symbol.

A signal word — DANGER, WARNING, or CAUTION — is used with the safety alert symbol. DANGER identifies the most serious hazards.

On your machine, DANGER signs are red in color, WARNING signs are orange, and CAUTION signs are yellow. DANGER and WARNING signs are located near specific hazards. General precautions are on CAUTION labels.

Follow Safety Instructions



Safety Messages

Carefully read all safety messages in this manual and on your machine safety signs. Keep safety signs in good condition. Replace missing or damaged safety signs. Use this operator’s manual for correct safety sign placement. Be sure that new equipment components and repair parts include the current safety signs. Replacement safety signs are available from your John Deere dealer.

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has a 17-character PIN (2) shown on PIN plate.

The PIN identifies the producing factory, machine model number, machine option, year of manufacture, and machine serial number.

PIN Identification Table

17-Character PIN Example																
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**
1	L	U	3	0	4	K	X	_	_	B	1	2	3	4	5	6

- **(1—3) World Code:** Identifies location where machine is manufactured.

(1—3) World Code

1LU	**World Code** (manufacturing location)
1DW	Davenport Works
1T8	Thibodaux Works
1T0	Dubuque Works
1FF	Deere—Hitachi
1LU	Liebherr

- **(4—7) Machine Model Identifier:** Identifies model number.

(4—7) Machine Model Identifier

304K	**Machine Model Identifier**

- **(8) Model Identifier Suffix, Machine Configuration Code, or Additional Machine Information:** Contains additional machine information for overall machine identification.

(8) Machine Identifier Code

X	**Machine Option Code**
X	Base Machine

- **(9) Check Letter:** This is a random character assigned by the factory. This is not used in machine identification.

(9) Check Letter

_	**Check Letter** (variable)

- **(10) Manufacturing Year Code:** Identifies year of machine manufacture.

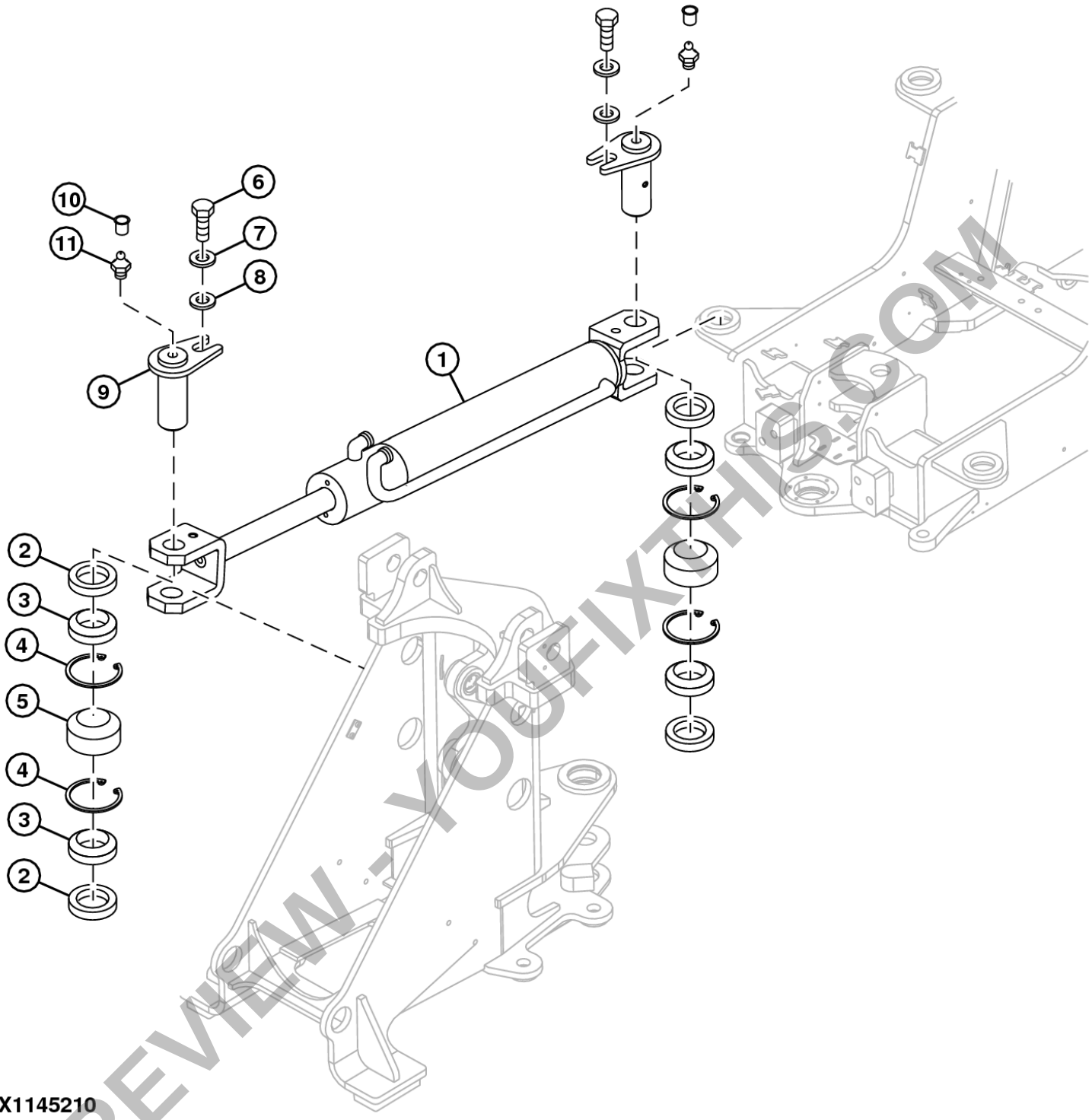
(10) Manufacturing Year Code

_	**Manufacturing Year Code** (variable)
D	2013
E	2014
F	2015
G	2016

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Steering Cylinder Remove and Install



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TX1145210

Steering Cylinder

LEGEND:

1	Steering Cylinder
2	Sealing Ring (4 used)
3	Spacer (4 used)
4	Snap Ring (4 used)
5	Bearing (2 used)
6	Cap Screw (2 used)
7	Lock Washer (2 used)
8	Washer (2 used)
9	Pin (2 used)
10	Cap (2 used)
11	Lubrication Fitting (2 used)

[1] -

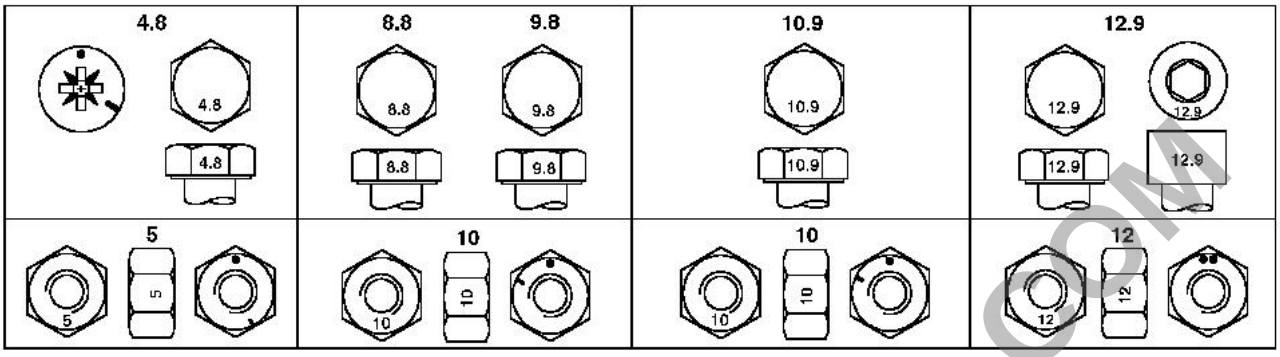
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Group 0003 - Torque Values

Metric Bolt and Cap Screw Torque Values

Metric Bolt and Cap Screw Torque Values

METRIC BOLT AND CAP SCREW TORQUE VALUES—Tolerance is ±10% unless otherwise specified



Top—Property Class and Head Markings; Bottom—Property Class and Nut Markings

	Class 4.8		Class 8.8 or 9.8		Class 10.9		Class 12.9	
Thread Size	Lubricated [a] Nm (lb-ft)	Dry [b] Nm (lb-ft)	Lubricated [a] Nm (lb-ft)	Dry [b] Nm (lb-ft)	Lubricated [a] Nm (lb-ft)	Dry [b] Nm (lb-ft)	Lubricated [a] Nm (lb-ft)	Dry [b] Nm (lb-ft)
M6	4.7 (3.5)	6 (4.4)	9 (6.6)	11.5 (8.5)	13 (9.5)	16.5 (12.2)	15.5 (11.5)	19.5 (14.5)
M8	11.5 (8.5)	14.5 (10.7)	22 (16)	28 (20.5)	32 (23.5)	40 (29.5)	37 (27.5)	47 (35)
M10	23 (17)	29 (21)	43 (32)	55 (40)	63 (46)	80 (59)	75 (55)	95 (70)
M12	40 (29.5)	50 (37)	75 (55)	95 (70)	110 (80)	140 (105)	130 (95)	165 (120)
M14	63 (46)	80 (59)	120 (88)	150 (110)	175 (130)	220 (165)	205 (150)	260 (190)
M16	100 (74)	125 (92)	190 (140)	240 (175)	275 (200)	350 (255)	320 (235)	400 (300)
M18	135 (100)	170 (125)	265 (195)	330 (245)	375 (275)	475 (350)	440 (325)	560 (410)
M20	190 (140)	245 (180)	375 (275)	475 (350)	530 (390)	675 (500)	625 (460)	790 (580)
M22	265 (195)	330 (245)	510 (375)	650 (480)	725 (535)	920 (680)	850 (625)	1080 (800)
M24	330 (245)	425 (315)	650 (480)	820 (600)	920 (680)	1150 (850)	1080 (800)	1350 (1000)
M27	490 (360)	625 (460)	950 (700)	1200 (885)	1350 (1000)	1700 (1250)	1580 (1160)	2000 (1475)
M30	660 (490)	850 (625)	1290 (950)	1630 (1200)	1850 (1350)	2300 (1700)	2140 (1580)	2700 (2000)
M33	900 (665)	1150 (850)	1750 (1300)	2200 (1625)	2500 (1850)	3150 (2325)	2900 (2150)	3700 (2730)
M36	1150 (850)	1450 (1075)	2250 (1650)	2850 (2100)	3200 (2350)	4050 (3000)	3750 (2770)	4750 (3500)

[a] "Lubricated" means coated with a lubricant such as engine oil, or fasteners with phosphate and oil coatings.

[b] "Dry" means plain or zinc plated without any lubrication.

Metric Bolt and Cap Screw Torque Value Instructions

CAUTION:
Use only metric tools on metric hardware. Other tools may not fit properly. Tool may slip and cause injury.
DO NOT use these values if a different torque value or tightening procedure is given for a specific application. Torque values listed are for general use only. Check tightness of fasteners periodically.
Shear bolts are designed to fail under predetermined loads. Always replace shear bolts with identical property class.

Fasteners should be replaced with the same or higher property class. If higher property class fasteners are used, these should only be tightened to the strength of the original.
Make sure fastener threads are clean and that you properly start thread engagement. This will prevent them from failing when tightening.
Tighten plastic insert or crimped steel-type lock nuts to approximately 50 percent of the dry torque shown in the chart, applied to the nut, not to the bolt head.
Tighten toothed or serrated-type lock nuts to the full torque value.

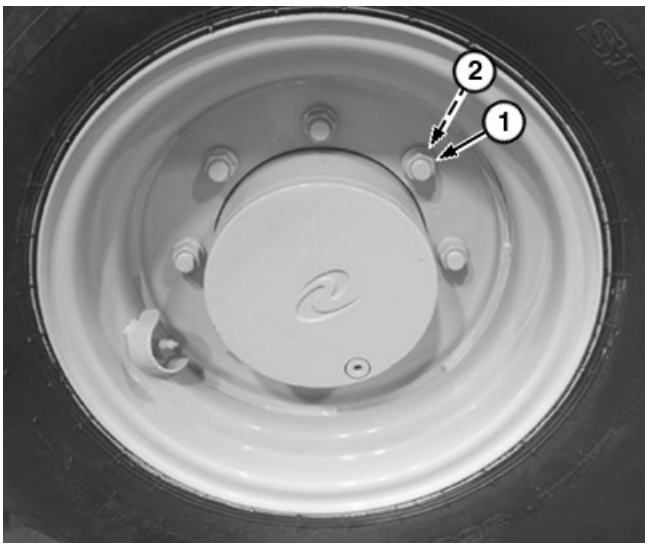
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Group 0110 - Wheels and Fasteners

Wheel Remove and Install

[1] -



LEGEND:

1	Lug Nut (8 used)
2	Washer (8 used)

Wheel

Raise machine and install 10-ton floor stands under axle.

Floor Stands, 10-Ton

Used to support machine while removing and installing wheels.

[2] -

CAUTION:

Prevent possible crushing injury from heavy component. Use appropriate lifting device.

Item	Measurement	Specification
Wheel	Weight (approximate)	77 kg
		170 lb.

Position wheel lift under wheel. Fasten safety chain around upper part of tire.

Wheel Lift

Used to remove and install wheels.

[3] - Remove lug nuts (1), washers (2), and wheel.

[4] - Clean mounting surface on wheel and axle flange.

[5] - Install wheel, washers, and lug nuts. Tighten to specification.

Item	Measurement	Specification
Wheel-to-Axle Lug Nuts	Torque	450 N·m
		330 lb.-ft

Tire Remove and Install

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attached.

[8] - Remove mounting plate socket head screws (5) and mounting plate (6).

[9] - Remove O-ring (7) and seal (8).

[10] - Clean and inspect parts for wear or damage. Replace parts as necessary.

[11] - Install O-ring (7) and seal (8) with lip facing in as shown. Apply petroleum jelly to seal and O-ring.

[12] - Install mounting plate. Apply PM37418 Thread Lock and Sealer (medium strength) to threads of mounting plate socket head screws. Install and tighten to specification.

Item	Measurement	Specification
Mounting Plate Socket Head Screw	Torque	122 N•m 90 lb-ft

Number	Name	Use
• PM37418 (us) • PM38621 (canadian) • 242 LOCTITE ™ (loctite)	Thread Lock and Sealer (Medium Strength)	Apply to threads of mounting plate socket head screws.

[13] - Install backing plate. Apply PM37418 Thread Lock and Sealer (medium strength) to threads of backing plate socket head screws. Install and tighten to specification.

Item	Measurement	Specification
Backing Plate Socket Head Screw	Torque	122 N•m 90 lb-ft

Number	Name	Use
• PM37418 (us) • PM38621 (canadian) • 242 LOCTITE ™ (loctite)	Thread Lock and Sealer (Medium Strength)	Apply to threads of backing plate socket head screws.

[14] - Install input flange and O-ring. Apply PM37418 Thread Lock and Sealer (medium strength) to threads of input shaft. Install input shaft nut and tighten to specification.

Item	Measurement	Specification
Input Shaft Nut	Torque	295 N•m 218 lb-ft

Number	Name	Use
• PM37418 (us) • PM38621 (canadian) • 242 LOCTITE ™ (loctite)	Thread Lock and Sealer (Medium Strength)	Apply to threads of input shaft.

[15] - Connect positioning spring to left and right brake shoes and install brake shoes into notches of brake cylinder and brake adjuster.

[16] -

→NOTE:

Push and turn keeper springs to engage backing plate.

Install keeper springs and return springs.

[17] - Center brake shoes on backing plate as necessary.

[18] - Install brake drum.

[19] - Connect brake line and bleed drum brake. See Drum Brake Bleed . (Group 1060.)

[20] - Apply brakes several times and adjust brakes as needed.

[21] - Install transmission-to-front axle drive shaft. See Drive Shaft Remove and Install . (Group 0225.)

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Group 0200 - Removal and Installation

Front Axle Remove and Install

Specifications

SPECIFICATIONS	
Machine Weight (approximate)	6000 kg 13 230 lb.
Front Axle Weight (approximate)	227 kg 500 lb.
Front Axle-to-Frame Cap Screw Torque	490 N·m 360 lb.-ft.
Drive Shaft-to-Front Axle Cap Screw Torque	68 N·m 50 lb.-ft.

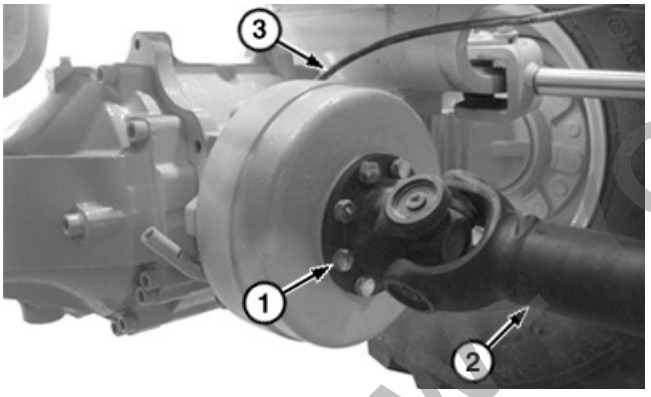
[1] - Install frame locking bar.

[2] -

CAUTION:

Prevent possible crushing injury from heavy component. Use appropriate shop stands.

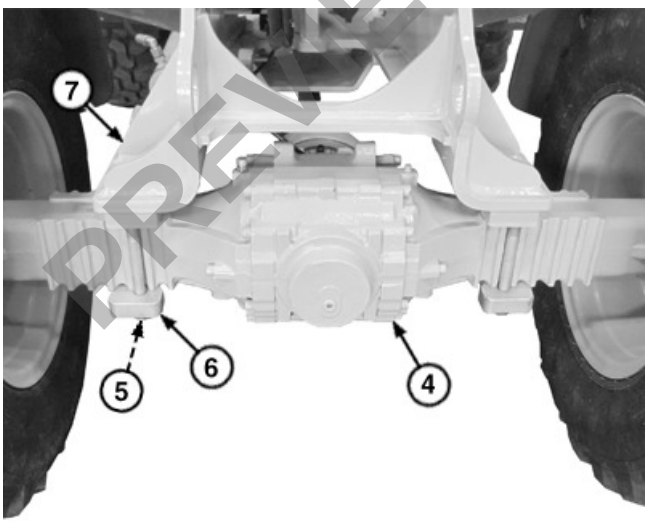
Prevent possible injury from unexpected machine movement. Block rear tires to prevent machine from rolling.



LEGEND:

1	Cap Screw (8 used)
2	Drive Shaft
3	Drum Brake Line
4	Front Axle
5	Cap Screw (4 used)
6	Mounting Plate (2 used)
7	Front Frame

Drive Shaft and Brake Line



Front Axle and Frame

Using boom, raise front of machine until tires are off of floor. Install shop stands under front frame (7).

Item	Measurement	Specification
Machine	Weight (approximate)	6000 kg

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Engine Remove and Install

Specifications

SPECIFICATIONS	
Cooling System Capacity	12 L 3.1 gal.
Hydraulic Oil Reservoir and Filter Capacity	90 L 23.7 gal.
Fuel Tank Capacity	50 L 13.2 gal.
Engine Weight (approximate)	372 kg 820 lb.
Engine Isolator Nut Torque	250 N·m 184 lb.-ft.

[1] - Park and prepare machine for service safely. See Park and Prepare for Service Safely . (Group 0001.)

[2] - Turn battery disconnect switch to the OFF position. See Battery Disconnect Switch . (Operator's Manual.)

[3] -

CAUTION:

Avoid personal injury from high-pressure fluid. High-pressure release of oil from pressurized system can cause serious burns or penetrating injury. Relieve pressure from hydraulic system before servicing.

Release hydraulic oil pressure. See Hydraulic System Pressure Discharge Procedure . (Group 9025-25.)

[4] - Drain cooling system. See Drain Cooling System . (Operator's Manual.)

Item	Measurement	Specification
Cooling System	Capacity	12 L 3.1 gal.

[5] - Drain hydraulic system.

Item	Measurement	Specification
Hydraulic Oil Reservoir and Filter	Capacity	90 L 23.7 gal.

[6] -

IMPORTANT:

Prevent fuel system contamination. Use a clean container to collect fuel.

Drain fuel tank.

Item	Measurement	Specification
Fuel Tank	Capacity	50 L 13.2 gal.

[7] - Remove hood. See Hood Remove and Install . (Group 1910.)

[8] - Remove counterweight. See Counterweight Remove and Install . (Group 1749.)

[9] - Remove cooling package. See Cooling Package Remove and Install . (Group 0510.)

[10] - 304K Machine Only: Remove air conditioner compressor. See Air Conditioner Compressor Remove and Install . (Group 1830.)

[11] - Remove fan. See Fan Remove and Install . (Group 0510.)

[12] - Remove air intake system. See Air Intake System Remove and Install . (Group 0520.)

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Foreword

This manual is written for an experienced technician. Essential tools required in performing certain service work are identified in this manual and are recommended for use.

Live with safety: Read the safety messages in the introduction of this manual and the cautions presented throughout the text of the manual.



CAUTION:

This is the safety-alert symbol. When you see this symbol on the machine or in this manual, be alert to the potential for personal injury.

Technical manuals are divided in two parts: repair and operation and tests. Repair sections tell how to repair the components. Operation and tests sections help you identify the majority of routine failures quickly.

Information is organized in groups for the various components requiring service instruction. At the beginning of each group are summary listings of all applicable essential tools, service equipment and tools, other materials needed to do the job, service parts kits, specifications, wear tolerances, and torque values.

Technical Manuals are concise guides for specific machines. They are on-the-job guides containing only the vital information needed for diagnosis, analysis, testing, and repair.

Fundamental service information is available from other sources covering basic theory of operation, fundamentals of troubleshooting, general maintenance, and basic type of failures and their causes.

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Drum Brake Bleed

Bleeding of the brake system will be necessary any time the drum brake lines have been disconnected.

[1] - Park machine on level surface.

[2] - Install frame locking bar.

[3] - Lower bucket to ground.

[4] - Engage park brake. Stop engine.

[5] -

CAUTION:

Prevent possible injury from unexpected machine movement. Never rely on loader bucket to keep machine from moving. Machine can unexpectedly roll, resulting in death or serious injury. Always block wheels to hold machine when working on park brake.

Put blocks in front and rear of tires.

[6] -

IMPORTANT:

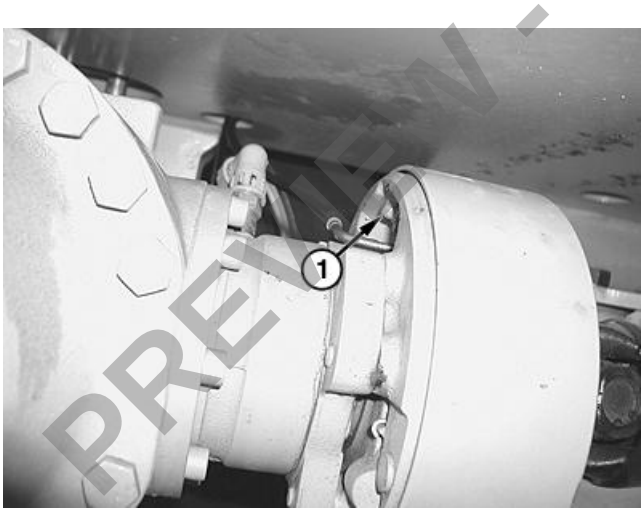
Use SAE 10W engine oil in the service brake system. DO NOT use DOT type brake fluid or damage to brake system will occur.

The following are approved alternative oils that may be used if SAE 10W engine oil is not available:

- ***SAE 5W engine oil***
- ***SAE 5W20 engine oil***
- ***SAE 5W30 engine oil***

→NOTE:

Add SAE 10W oil to service brake reservoir as necessary during brake bleeding procedure.



Bleed screw

LEGEND:

1	Bleed Screw

Fill service brake reservoir with SAE 10W oil. See Service (Drum) Brake Oil (Operator´s Manual.)

[7] - Connect one end of a clear plastic hose to bleed screw (1) and put other end of hose into a suitable container to catch oil.

[8] -

→NOTE:

Two technicians are needed to bleed the brake system—one to operate the brake pedal and the other to open and close bleed screws.

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