317 and 320 Skid Steer Loader CT322 Compact Track Loader Repair

TECHNICAL MANUAL

317 and 320 Skid Steer Loader CT322 Compact Track Loader Repair

TM2152 28APR11 (ENGLISH)

For complete service information also see:

317 and 320 Skid Steer Loader and CT322 Compact Track Loader Operation and Test	TM2151
317 and 320 Skid Steer Operator's Manual	OMT205050
CT322 and CT332 Compact Track Loader Operator's Manual	OMT215996
POWERTECH™ 2.4 L & 3.0 L Diesel Engines ..	CTM301
120 Series Hydraulic Cylinders	CTM114319
Undercarriage Appraisal Manual Volume 1	SP326VOL1
Specifications Manual	SP458

Worldwide Construction And Forestry Division
LITHO IN U.S.A.

Introduction

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.

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.

TX,INTR,MB52 -19-12SEP97-1/1

Technical Information Feedback Form

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THANK YOU!

TX,TM,FAX -19-03JUL01-1/1

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Original Instructions. All information, illustrations and specifications in this manual are based on the latest information available at the time of publication. The right is reserved to make changes at any time without notice.

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General Information

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Recognize Safety Information

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.

T133555 —UN—28AUG00

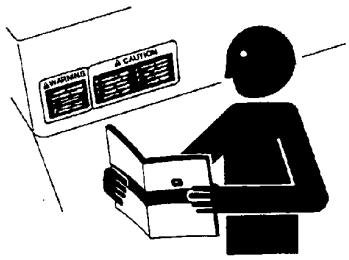
T133588 —19—28AUG00

MX10672,0000059 -19-09FEB04-1/1

Follow Safety Instructions

Read the safety messages in this manual and on the machine. Follow these warnings and instructions carefully. Review them frequently.

Be sure all operators of this machine understand every safety message. Replace operator's manual and safety labels immediately if missing or damaged.



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Operate Only If Qualified

Do not operate this machine unless the operator's manual has been read carefully, and you have been qualified by supervised training and instruction.

Operator should be familiar with the job site and surroundings before operating. Try all controls and machine functions with the machine in an open area before starting to work.

Know and observe all safety rules that may apply to every work situation and work site.

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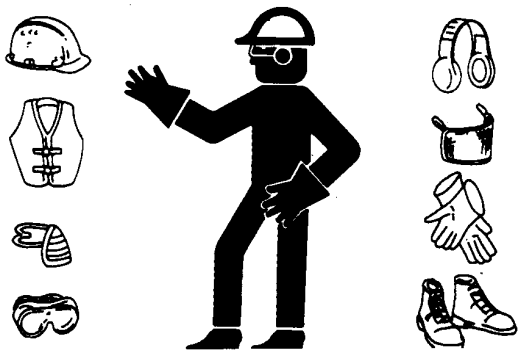
Wear Protective Equipment

Guard against injury from flying pieces of metal or debris; wear goggles or safety glasses.

Wear close fitting clothing and safety equipment appropriate to the job.

Prolonged exposure to loud noise can cause impairment or loss of hearing. Wear suitable hearing protection such as earmuffs or earplugs to protect against objectionable or uncomfortable loud noises.



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Avoid Unauthorized Machine Modifications

Modifications of this machine, or addition of unapproved products or attachments, may affect machine stability or reliability, and may create a hazard for the operator or others near the machine. The installer of any modification which may affect this machine is responsible for establishing that the modification does not adversely affect the machine or its performance. This applies to all aspects of the machine, including electronic controls.

Always contact an authorized dealer before making machine modifications that change the intended use, weight or balance of the machine, or that alter machine controls, performance or reliability.

TX14740,00000FC -19-27FEB04-1/1

Inspect Machine

Inspect machine carefully each day by walking around it before starting.

Keep all guards and shields in good condition and properly installed. Fix damage and replace worn or broken parts immediately. Pay special attention to hydraulic hoses and electrical wiring.

T6607AQ —UN—18OCT88

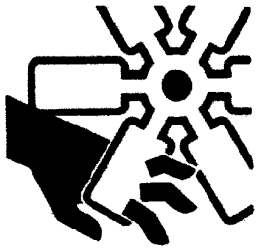
TX03679,0001734 -19-03JAN07-1/1

Stay Clear of Moving Parts

Entanglements in moving parts can cause serious injury.

Stop engine before examining, adjusting or maintaining any part of machine with moving parts.

Keep guards and shields in place. Replace any guard or shield that has been removed for access as soon as service or repair is complete.



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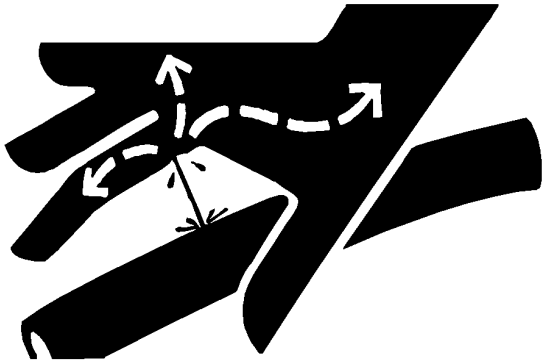
Avoid High-Pressure Oils

This machine uses a high-pressure hydraulic system. Escaping oil under pressure can penetrate the skin causing serious injury.

Never search for leaks with your hands. Protect hands. Use a piece of cardboard to find location of escaping oil. Stop engine and relieve pressure before disconnecting lines or working on hydraulic system.

If hydraulic oil penetrates your skin, see a doctor immediately. Injected oil must be removed surgically within hours or gangrene may result. Contact a knowledgeable medical source or the Deere & Company Medical Department in Moline, Illinois, U.S.A.



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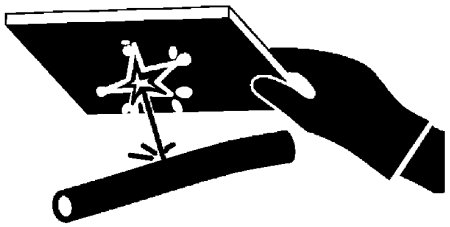

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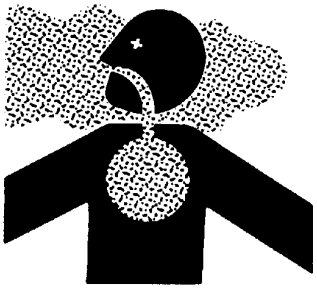
Beware of Exhaust Fumes

Prevent asphyxiation. Engine exhaust fumes can cause sickness or death.

If you must operate in an enclosed space, provide adequate ventilation. Use an exhaust pipe extension to remove the exhaust fumes or open doors and windows to bring outside air into the area.



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Prevent Fires

Handle Fuel Safely: Store flammable fluids away from fire hazards. Never refuel machine while smoking or when near sparks or flame.

Clean Machine Regularly: Keep trash, debris, grease and oil from accumulating in engine compartment, around fuel lines, hydraulic lines and electrical wiring. Never store oily rags or flammable materials inside a machine compartment.

Maintain Hoses and Wiring: Replace hydraulic hoses immediately if they begin to leak, and clean up any oil spills. Examine electrical wiring and connectors frequently for damage.

Keep A Fire Extinguisher Available: Always keep a multi-purpose fire extinguisher on or near the machine. Know how to use extinguisher properly.

Keep Machine Away From Fire: Maintain a safe distance between sources of fire and the machine so elevated heat, flames or glowing embers never contact any part of the machine, including airborne glowing embers.

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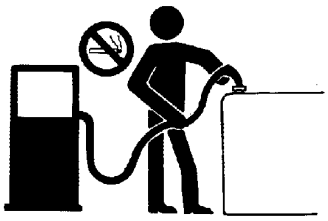

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Prevent Battery Explosions

Battery gas can explode. Keep sparks, lighted matches, and open flame away from the top of battery.

Never check battery charge by placing a metal object across the posts. Use a voltmeter or hydrometer.

Do not charge a frozen battery; it may explode. Warm battery to 16°C (60°F).

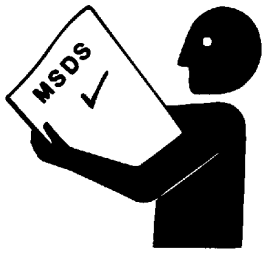
TS204 —UN—23AUG88

TX03679,000174A -19-03NOV08-1/1

Handle Chemical Products Safely

Exposure to hazardous chemicals can cause serious injury. Under certain conditions, lubricants, coolants, paints and adhesives used with this machine may be hazardous.

If uncertain about safe handling or use of these chemical products, contact your authorized dealer for a Material Safety Data Sheet (MSDS). The MSDS describes physical and health hazards, safe use procedures, and emergency response techniques for chemical substances. Follow MSDS recommendations to handle chemical products safely.



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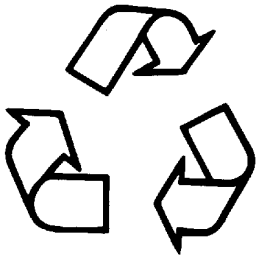
Dispose of Waste Properly

Improper disposal of waste can threaten the environment. Fuel, oils, coolants, filters and batteries used with this machine may be harmful if not disposed of properly.

Never pour waste onto the ground, down a drain, or into any water source.

Air conditioning refrigerants can damage the atmosphere. Government regulations may require using a certified service center to recover and recycle used refrigerants.

If uncertain about the safe disposal of waste, contact your local environmental or recycling center or your authorized dealer for more information.



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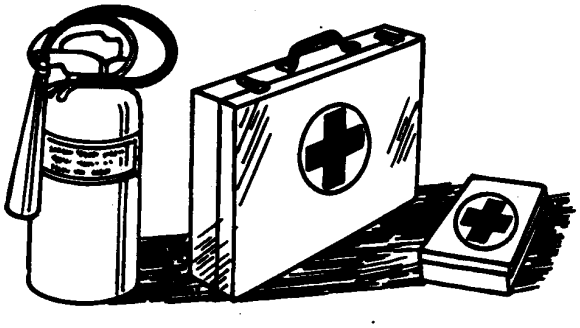
TX03679,0001733 -19-31JAN07-1/1

Prepare for Emergencies

Be prepared if an emergency occurs or a fire starts.

Keep a first aid kit and fire extinguisher handy.

Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone.



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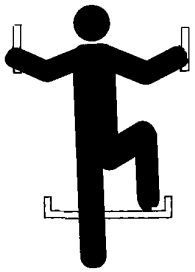
Use Steps and Handholds Correctly

Prevent falls by facing the machine when getting on and off. Maintain 3-point contact with steps and handrails. Never use machine controls as handholds.

Use extra care when mud, snow, or moisture present slippery conditions. Keep steps clean and free of grease or oil. Never jump when exiting machine. Never mount or dismount a moving machine.



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Start Only From Operator's Seat

Avoid unexpected machine movement. Start engine only while sitting in operator's seat. Ensure all controls and working tools are in proper position for a parked machine.

Never attempt to start engine from the ground. Do not attempt to start engine by shorting across the starter solenoid terminals.

T133715 —UN—07SEP00

TX03679,0001799 -19-22APR10-1/1

Use and Maintain Seat Belt

Use seat belt when operating machine. Remember to fasten seat belt when loading and unloading from trucks and during other uses.

Examine seat belt frequently. Be sure webbing is not cut or torn. Replace seat belt immediately if any part is damaged or does not function properly.

The complete seat belt assembly should be replaced every 3 years, regardless of appearance.

T133716 —19—14SEP00

TX03679,00016DD -19-03NOV08-1/1

Prevent Unintended Machine Movement

Be careful not to accidentally actuate controls when co-workers are present.

Lower all equipment to the ground during work interruptions. Press park brake to park position “P” to engage park brake before allowing anyone to approach the machine.

Follow these same precautions before standing up, leaving the operator’s seat, or exiting the machine.

T194377A —UN—26AUG03

TX14740,000006A -19-09JUL03-1/1

Avoid Work Site Hazards

Avoid contact with gas lines, buried cables and water lines. Call utility line location services to identify all underground utilities before starting work.

Prepare work site properly. Avoid operating near structures or objects that could fall onto the machine. Clear away debris that could move unexpectedly if run over.

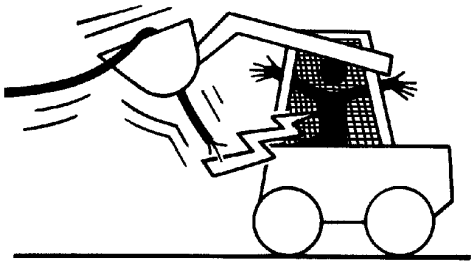
Avoid boom or attachment contact with overhead obstacles or overhead electrical lines. Never move machine closer than 3 m (10 ft) plus twice the line insulator length to overhead wires.

Keep bystanders clear at all times. Use barricades or a signal person to keep vehicles and pedestrians away. Use a signal person if moving machine in congested areas or where visibility is restricted. Always keep signal person in view. Coordinate hand signals before starting machine.

Operate only on solid footing with strength sufficient to support machine. Be especially alert working near embankments or excavations.

Avoid working under over-hanging embankments or stockpiles that could collapse under or on machine.

Reduce machine speed when operating with tool on or near ground when obstacles may be hidden (ie, during snow removal).



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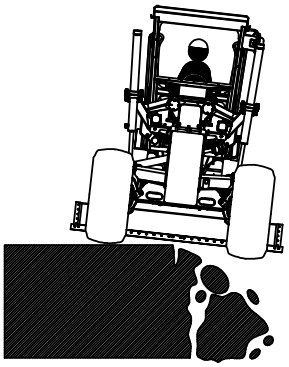

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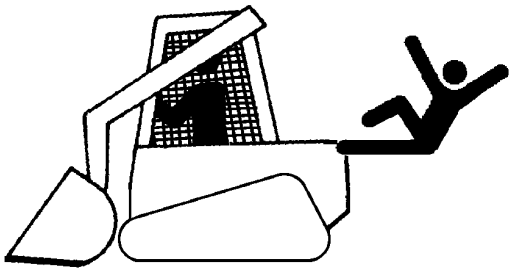
Keep Riders Off Machine

Only allow operator on machine.

Riders are subject to injury. They may fall from machine, be caught between machine parts, or be struck by foreign objects.

Riders may obstruct operator's view or impair his ability to operate machine safely.



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Avoid Backover Accidents

Before moving machine, be sure all persons or vehicles are clear of machine path. Turn around and look directly for best visibility. Keep windows clean.

Be certain reverse warning alarm is working properly (if equipped).

Use a signal person when backing if view is obstructed or when in close quarters. Keep signal person in view at all times. Use prearranged hand signals to communicate.

T211523 —UN—02JUN05

VD76477,0000044 -19-02JUN05-1/1

Avoid Machine Tip Over

Use seat belt at all times.

Do not jump if the machine tips. You will be unlikely to jump clear and the machine may crush you.

Load and unload from trucks or trailers carefully. Be sure truck is wide enough and on a firm level surface. Use loading ramps and attach them properly to truck bed.

Be careful on slopes. Avoid sharp turns. Balance loads so weight is evenly distributed and load is stable. Carry tools and loads close to the ground to aid visibility and lower center of gravity. Use extra care on wet, soft, rocky, or frozen ground.

Know the capacity of the machine. Do not overload. Be careful with heavy loads. Using oversize buckets or lifting heavy objects reduces machine stability.

Ensure solid footing. Use extra care in soft ground conditions or on structures that may not uniformly support the tracks especially when raising the boom. Do not operate close to banks or open excavations that may cave in and cause machine to tip or fall.

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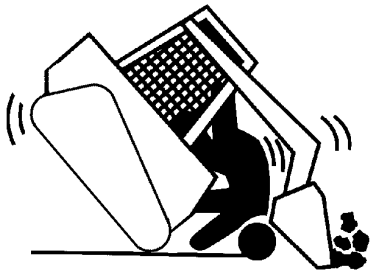

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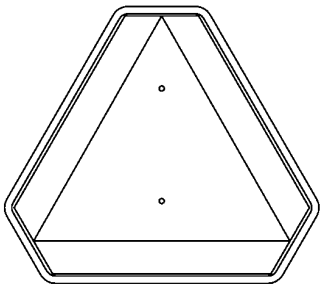
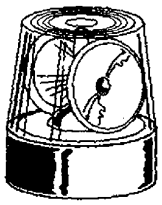
Operating or Traveling On Public Roads

Machines that work near vehicle traffic or travel slower than normal highway speeds must have proper lighting and markings to assure they are visible to other drivers.

Install additional lights, beacons, slow moving vehicle (SMV) emblems, or other devices and use as required to make the machine visible and identify it as a work machine. Check state and local regulations to assure compliance. Keep these devices clean and in working condition.





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Add and Operate Attachments Safely

Always verify compatibility of attachments by contacting your authorized dealer. Adding unapproved attachments may affect machine stability or reliability, and may create a hazard for others near the machine.

Ensure that a qualified person is involved in attachment installation. Add guards to machine if operator protection is required or recommended. Verify that all connections are secure and attachment responds properly to controls.

Carefully read attachment manual and follow all instructions and warnings. In an area free of bystanders and obstructions, carefully operate attachment to learn its characteristics and range of motion.

TX17994,0000225 -19-09AUG06-1/1

Park And Prepare For Service Safely

Warn others of service work. Always park and prepare your machine for service or repair properly.

- Park machine on a level surface and lower equipment to the ground.
- Engage park brake. Stop engine and remove key.
- Attach a “Do Not Operate” tag in an obvious place in the operator’s station.

Securely support machine or attachment before working under it.

- Do not support machine with any hydraulically actuated equipment.
- Do not support machine with cinder blocks or wooden pieces that may crumble or crush.
- Do not support machine with a single jack or other devices that may slip out of place.

Understand service procedures before beginning repairs. Keep service area clean and dry. Use two people whenever the engine must be running for service work.

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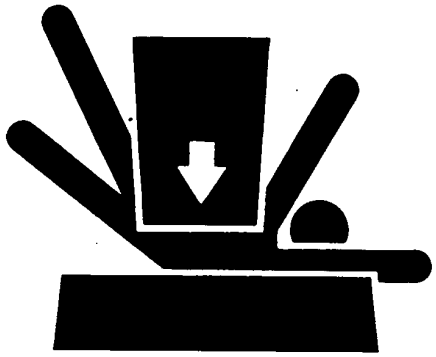

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Service Cooling System Safely

Explosive release of fluids from pressurized cooling system can cause serious burns.

Shut off engine. Only remove filler cap when cool enough to touch with bare hands. Slowly loosen cap to first stop to relieve pressure before removing completely.

TS281 —UN—23AUG88

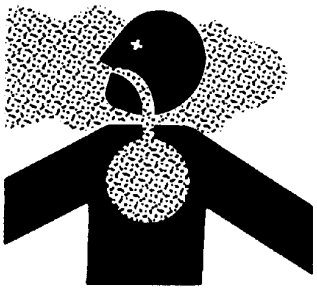
TX17994,0000227 -19-11MAR02-1/1

Remove Paint Before Welding or Heating

Hazardous fumes can be generated when paint is heated by welding or using a torch. Dust from sanding or grinding paint can also be hazardous.

Remove paint to at least 76 mm (3 in.) from area to be heated. Wear an approved respirator when sanding or grinding paint. If a solvent or paint stripper is used, wash area with soap and water. Remove solvent or paint stripper containers from work area and allow fumes to disperse at least 15 minutes before welding or heating.

Work outside or in a well-ventilated area. Dispose of waste, paint and solvents properly.



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TX17994,0000228 -19-11MAR02-1/1

Make Welding Repairs Safely

IMPORTANT: Disable electrical power before welding. Turn off main battery switch or disconnect positive battery cable. Separate harness connectors to engine and vehicle microprocessors.

Avoid welding or heating near pressurized fluid lines. Flammable spray may result and cause severe burns if pressurized lines fail as a result of heating. Do not let heat go beyond work area to nearby pressurized lines.

Remove paint properly. Do not inhale paint dust or fumes. Use a qualified welding technician for structural repairs.

T133547 —UN—31AUG00

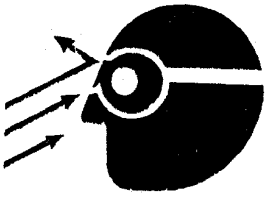
Make sure there is good ventilation. Wear eye protection and protective equipment when welding.

TX17994,0000229 -19-06FEB08-1/1

Drive Metal Pins Safely

Always wear protective goggles or safety glasses and other protective equipment before striking hardened parts. Hammering hardened metal parts such as pins and bucket teeth may dislodge chips at high velocity.

Use a soft hammer or a brass bar between hammer and object to prevent chipping.



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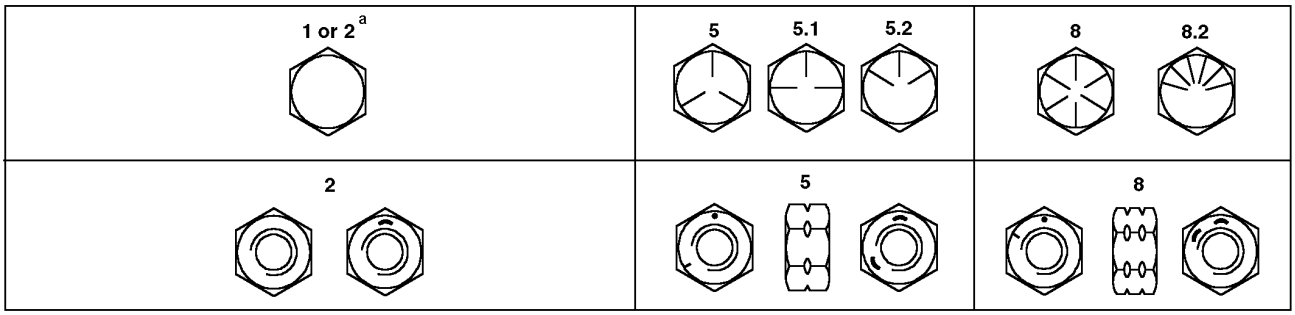
Unified Inch Bolt and Cap Screw Torque Values

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



TORQ1A —UN—27SEP99

Top—SAE Grade and Head Markings; Bottom—SAE Grade and Nut Markings

	Grade 1 (No Mark)		Grade 2[a] (No Mark)		Grade 5, 5.1 or 5.2		Grade 8 or 8.2	
Thread Size	Lubricated[b] N·m (lb-ft)	Dry[c] N·m (lb-ft)	Lubricated[b] N·m (lb-ft)	Dry[c] N·m (lb-ft)	Lubricated[b] N·m (lb-ft)	Dry[c] N·m (lb-ft)	Lubricated[b] N·m (lb-ft)	Dry[c] N·m (lb-ft)
1/4	3.8 (2.8)	4.7 (3.5)	6 (4.4)	7.5 (5.5)	9.5 (7)	12 (9)	13.5 (10)	17 (12.5)
5/16	7.7 (5.7)	9.8 (7.2)	12 (9)	15.5 (11.5)	19.5 (14.5)	25 (18.5)	28 (20.5)	35 (26)
3/8	13.5 (10)	17.5 (13)	22 (16)	27.5 (20)	35 (26)	44 (32.5)	49 (36)	63 (46)
7/16	22 (16)	28 (20.5)	35 (26)	44 (32.5)	56 (41)	70 (52)	80 (59)	100 (74)
1/2	34 (25)	42 (31)	53 (39)	67 (49)	85 (63)	110 (80)	120 (88)	155 (115)
9/16	48 (35.5)	60 (45)	76 (56)	95 (70)	125 (92)	155 (115)	175 (130)	220 (165)
5/8	67 (49)	85 (63)	105 (77)	135 (100)	170 (125)	215 (160)	240 (175)	305 (225)
3/4	120 (88)	150 (110)	190 (140)	240 (175)	300 (220)	380 (280)	425 (315)	540 (400)
7/8	190 (140)	240 (175)	190 (140)	240 (175)	490 (360)	615 (455)	690 (510)	870 (640)
1	285 (210)	360 (265)	285 (210)	360 (265)	730 (540)	920 (680)	1030 (760)	1300 (960)
1-1/8	400 (300)	510 (375)	400 (300)	510 (375)	910 (670)	1150 (850)	1450 (1075)	1850 (1350)
1-1/4	570 (420)	725 (535)	570 (420)	725 (535)	1280 (945)	1630 (1200)	2050 (1500)	2600 (1920)
1-3/8	750 (550)	950 (700)	750 (550)	950 (700)	1700 (1250)	2140 (1580)	2700 (2000)	3400 (2500)
1-1/2	990 (730)	1250 (930)	990 (730)	1250 (930)	2250 (1650)	2850 (2100)	3600 (2650)	4550 (3350)

[a] Grade 2 applies for hex cap screws (not hex bolts) up to 6 in. (152 mm) long. Grade 1 applies for hex cap screws over 6 in. (152 mm) long, and for all other types of bolts and screws of any length.

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

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

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 grade.

Fasteners should be replaced with the same or higher grade. If higher grade fasteners are used, these should only be tightened to the strength of the original.

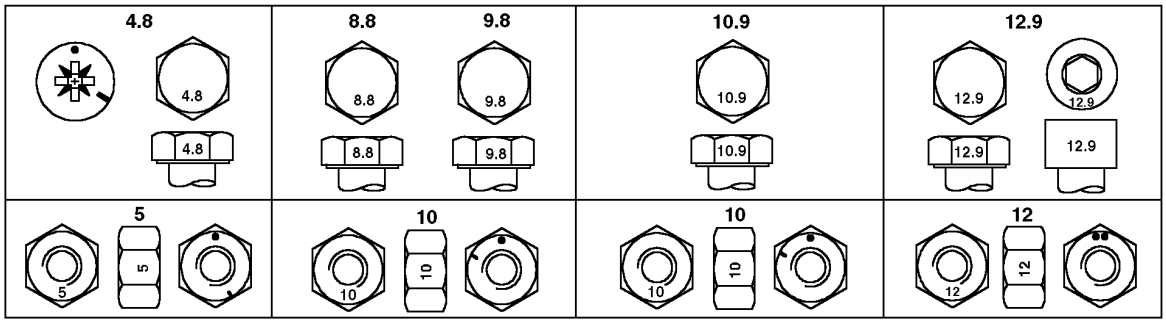
Make sure fastener threads are clean and that you properly start thread engagement. This will prevent them from failing when tightening.

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.

OUT3035,TORQUE1 -19-14JAN04-1/1

Metric Bolt and Cap Screw Torque Values

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



TORQ2 —UN—07SEP99

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] N·m (lb-ft)	Dry[b] N·m (lb-ft)	Lubricated[a] N·m (lb-ft)	Dry[b] N·m (lb-ft)	Lubricated[a] N·m (lb-ft)	Dry[b] N·m (lb-ft)	Lubricated[a] N·m (lb-ft)	Dry[b] N·m (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.*

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.

MX10672,0000075 -19-10FEB04-1/1

Additional Metric Cap Screw Torque Values

CAUTION: Use only metric tools on metric hardware. Other tools may not fit properly. They may slip and cause injury.

Check tightness of cap screws periodically. Torque values listed are for general use only. Do not use these values if a different torque value or tightening procedure is listed for a specific application.

Shear bolts are designed to fail under predetermined loads. Always replace shear bolts with identical grade.

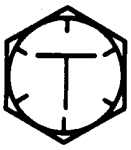
Fasteners should be replaced with the same or higher grade. If higher grade fasteners are used, these should only be tightened to the strength of the original.

Make sure fastener threads are clean and you properly start thread engagement. This will prevent them from failing when tightening.

Tighten cap screws having lock nuts to approximately 50 percent of amount shown in chart.

[a]METRIC CAP SCREW TORQUE VALUES						
	T-Bolt		H-Bolt		M-Bolt	
Nominal Dia	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft
8	29	21	20	15	10	7
10	63	46	45	33	20	15
12	108	80	88	65	34	25
14	176	130	137	101	54	40
16	265	195	206	152	78	58
18	392	289	294	217	118	87
20	539	398	392	289	167	125
22	735	542	539	398	216	159
24	931	687	686	506	274	202
27	1372	1012	1029	759	392	289
30	1911	1410	1421	1049	539	398
33	2548	1890	1911	1410	735	542
36	3136	2314	2401	1772	931	687

[a] *Torque tolerance is ±10%.*



T6873AA

T6873AA —UN—18OCT88

T6873AB

T6873AB —UN—18OCT88

T6873AC

T6873AC —UN—18OCT88

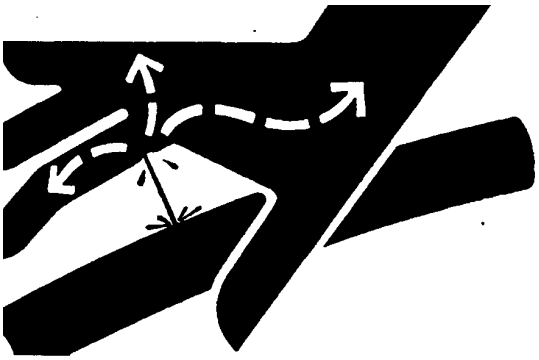
04T,90,M170 -19-29SEP99-1/1

Check Oil Lines And Fittings

CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury may call the Deere & Company Medical Department in Moline, Illinois, or other knowledgeable medical source.

Check all oil lines, hoses, and fittings regularly for leaks or damage. Make sure all clamps are in position and tight. Make sure hoses are not twisted or touching moving machine parts. If abrasion or wear occurs, replace immediately.



X9811 —UN—23AUG88

Tubing with dents may cause the oil to overheat. If you find tubing with dents, install new tubing immediately.

IMPORTANT: Tighten fittings as specified in torque chart.

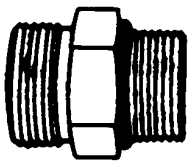
When you tighten connections, use two wrenches to prevent bending or breaking tubing and fittings.

TX,90,DH1559 -19-01AUG94-1/1

Service Recommendations for O-Ring Boss Fittings

Straight Fitting

1. Inspect O-ring boss seat for dirt or defects.
2. Lubricate O-ring with petroleum jelly. Place electrical tape over threads to protect O-ring. Slide O-ring over tape and into O-ring groove of fitting. Remove tape.
3. Tighten fitting to torque value shown on chart.



T6243AE —UN—18OCT88

Continued on next page

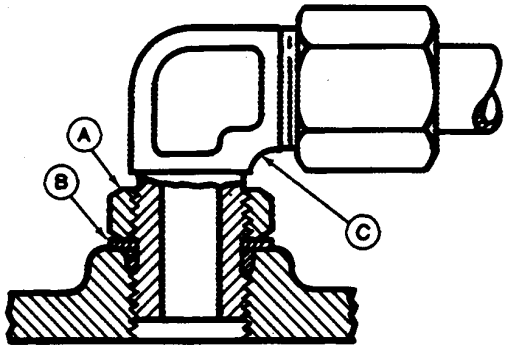
04T,90,K66 -19-29SEP99-1/2

Angle Fitting

1. Back-off lock nut (A) and back-up washer (B) completely to head-end (C) of fitting.
2. Turn fitting into threaded boss until back-up washer contacts face of boss.
3. Turn fitting head-end counterclockwise to proper index (maximum of one turn).

NOTE: Do not allow hoses to twist when tightening fittings.

4. Hold fitting head-end with a wrench and tighten locknut and back-up washer to proper torque value.



T6520AB —UN—18OCT88

STRAIGHT FITTING OR SPECIAL NUT TORQUE CHART		
Thread Size	**N·m**	**lb-ft**
3/8-24 UNF	8	6
7/16-20 UNF	12	9
1/2-20 UNF	16	12
9/16-18 UNF	24	18
3/4-16 UNF	46	34
7/8-14 UNF	62	46
1-1/16-12 UN	102	75
1-3/16-12 UN	122	90
1-5/16-12 UN	142	105
1-5/8-12 UN	190	140
1-7/8-12 UN	217	160

NOTE: Torque tolerance is ± 10%.

04T,90,K66 -19-29SEP99-2/2

Service Recommendations for 37° Flare and 30° Cone Seat Connectors

1. Inspect flare and flare seat. They must be free of dirt or obvious defects.
2. Defects in tube flare cannot be repaired. Overtightening a defective flared fitting will not stop leaks.
3. Align tube with fitting before attempting to start nut.
4. Lubricate male threads with hydraulic fluid or petroleum jelly.
5. Index angle fittings and tighten by hand.
6. Tighten fitting or nut to torque value shown on torque chart. Do not allow hoses to twist when tightening fittings.

T6234AC —UN—18OCT88

STRAIGHT FITTING OR SPECIAL NUT TORQUE CHART		
Thread Size	**N·m**	**lb-ft**
3/8 - 24 UNF	8	6
7/16 - 20 UNF	12	9
1/2 - 20 UNF	16	12
9/16 - 18 UNF	24	18
3/4 - 16 UNF	46	34
7/8 - 14 UNF	62	46
1-1/16 - 12 UN	102	75
1-3/16 - 12 UN	122	90
1-5/16 - 12 UN	142	105
1-5/8 - 12	190	140
1-7/8 - 12 UN	217	160

NOTE: Torque tolerance is ± 10%.

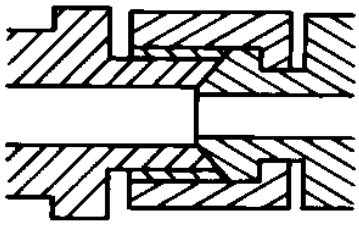
T82,BHMA,EL -19-29SEP99-1/1

Service Recommendations For Flared Connections—Straight or Tapered Threads

1. Inspect flare and flare seat. They must be free of dirt or obvious defects.
2. Defects in the tube flare cannot be repaired. Overtightening a defective flared fitting will not stop leaks.
3. Align the tube with the fitting before attempting to start the nut.
4. Lubricate the male threads with hydraulic fluid or petroleum jelly.
5. Index angle fittings and tighten by hand.
6. Tighten fitting or nut to torque value shown on the chart. Do not allow hoses to twist when tightening fittings.

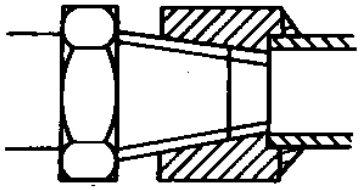
TORQUE CHART [a]				
	Straight Thread [b]		Tapered Thread	
Thread Size	N·m	lb-ft	N·m	lb-ft
1/8	15	11		
1/4	20	15	45	33
3/8	29	21	69	51
1/2	49	36	93	69
3/4	69	51	176	130
1	157	116	343	253
1-1/2	196	145	539	398
2	255	188	588	434

[a] *Torque tolerance is ±10%.*
[b] *With seat face.*



T6873AE —UN—18OCT88

Straight Thread



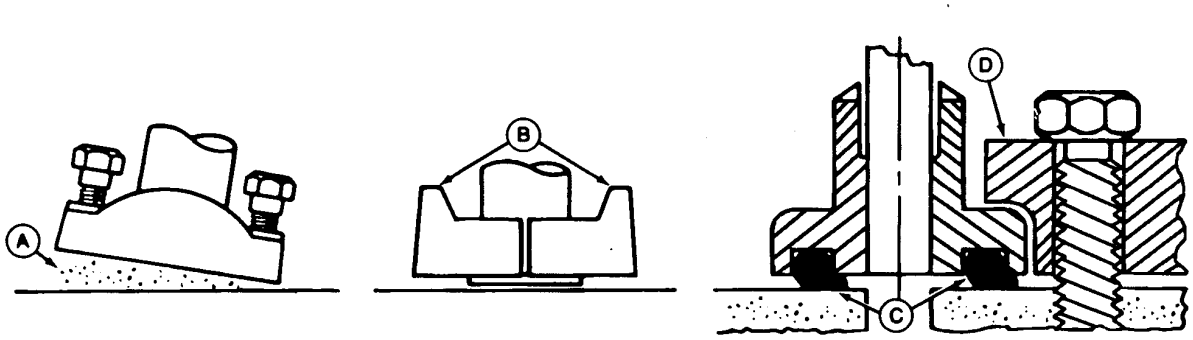
T6873AD —UN—18OCT88

Tapered Thread

NOTE: If female thread is cast iron (control valves, brake valves motors, etc.), torque must be reduced approximately 10%.

04T,90,M171 -19-28JAN92-1/1

Inch Series Four Bolt Flange Fitting For High Pressure Service Recommendations



T6890BB —UN—01MAR90

A—Sealing Surface **B—Split Flange** **C—Pinched O-Ring** **D—Single Piece Flange**

INCH SERIES FOUR BOLT FLANGE FITTING FOR 41 400 kPa (414 bar) (6000 psi) PRESSURE SERIES TORQUE VALUES—Tolerance is ± 10% unless otherwise specified

Nominal Flange Size	Cap Screw Size[a]	Min—Max Torque
in.	in.	Nm (lb-ft)[b]
1/2	5/16-18 UNC	20—31 (15—23)
3/4	3/8-16 UNC	34—54 (25—40)
1	7/16-14 UNC	57—85 (42—63)
1-1/4	1/2-13 UNC	85—131 (63—97)
1-1/2	5/8-11 UNC	159—264 (117—195)
2	3/4-10 UNC	271—468 (200—345)

[a] JDM A17D, SAE Grade 5 or better cap screws with plated hardware. Lock washers are permissible but not recommended.

[b] Minimum torques given are enough for the given size connection with the recommended working pressure. Torques can be increased to the maximum shown for each cap screw size if desired. Increasing cap screw torque beyond the maximum will result in flange and cap screw bending and connection failures.

1. Clean sealing surfaces (A). Inspect. Scratches, nicks, and burrs cause leaks. Roughness causes O-ring wear. Out-of-flat causes O-ring extrusion. If imperfection cannot be polished out, replace component.
2. Install the O-ring (and backup ring, if used) into groove. Use petroleum jelly to hold it in place.

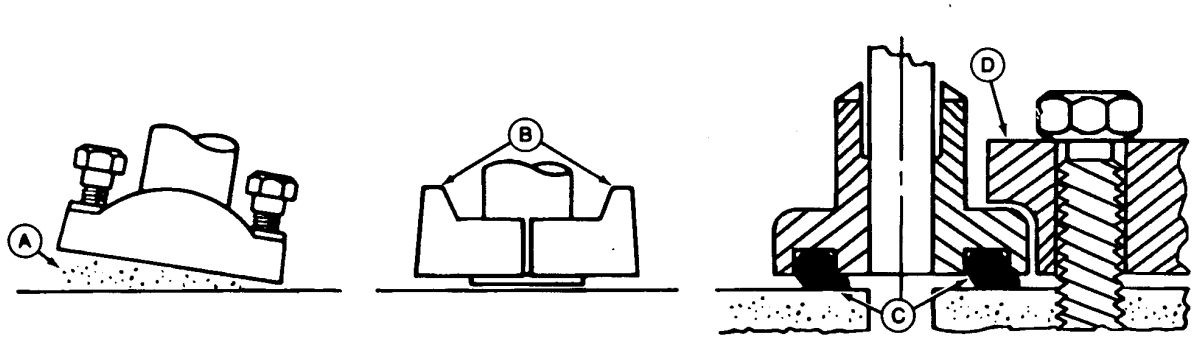
IMPORTANT: DO NOT use air wrenches. DO NOT tighten one cap screw fully before tightening the others. DO NOT over tighten.

3. Split flange: Loosely assemble split flange (B) halves. Make sure split is centrally located and perpendicular to port. Hand tighten cap screws to hold flange halves and line in place. Do not pinch O-ring (C).

   Single piece flange (D): Make sure flange is centrally located on port and line is centered in flange. Install the cap screws. Hand tighten cap screws to hold flange and line in place. Do not pinch O-ring.
4. Tighten one cap screw and then the diagonally opposite cap screw. Tighten the two remaining cap screws. Tighten cap screws within the specified torque values.

OUT3035,0000422 -19-05MAR09-1/1

Service Recommendations For Inch Series Four Bolt Flange Fittings



T6890BB —UN—01MAR90

A—Sealing Surface **B—Split Flange** **C—Pinched O-Ring** **D—Single Piece Flange**

1. Clean sealing surfaces (A). Inspect. Scratches cause leaks. Roughness causes seal wear. Out-of-flat causes seal extrusion. If defects cannot be polished out, replace component.
2. Install O-ring (and backup washer if required) into groove using petroleum jelly to hold it in place.
3. Split flange: Loosely assemble split flange (B) halves. Make sure split is centrally located and perpendicular to port. Hand tighten cap screws to hold parts in place. Do not pinch O-ring (C).
4. Single piece flange (D): Place hydraulic line in center of flange and install cap screws. Flange must be centrally located on port. Hand tighten cap screws to hold flange in place. Do not pinch O-ring.
5. Tighten one cap screw, then tighten the diagonally opposite cap screw. Tighten two remaining cap screws. Tighten all cap screws as specified in the chart below.

   DO NOT use air wrenches. DO NOT tighten one cap screw fully before tightening the others. DO NOT over tighten.

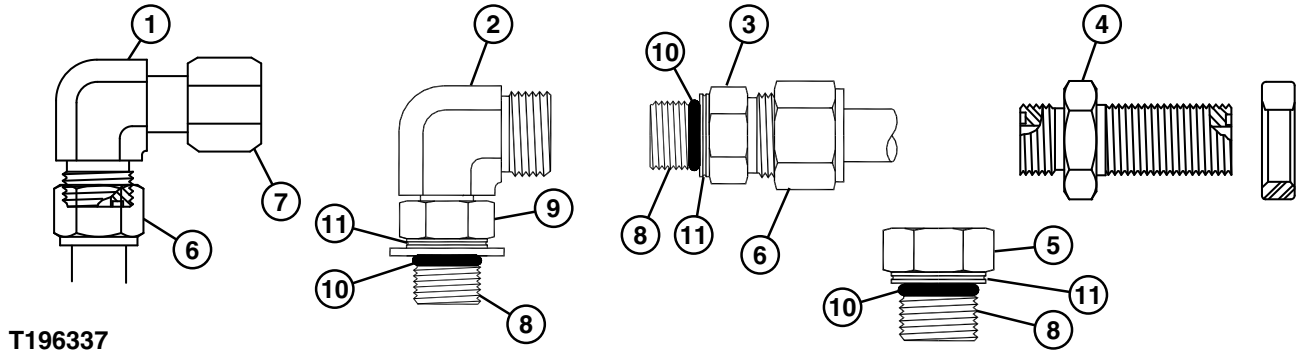
TORQUE CHART

		N·m		lb-ft	
Nominal Flange Size	**Cap Screw Size**	**Min**	**Max**	**Min**	**Max**
1/2	5/16-18 UNC	20	31	15	23
3/4	3/8-16 UNC	28	54	21	40
1	3/8-16 UNC	37	54	27	40
1-1/4	7/16-14 UNC	47	85	35	63
1-1/2	1/2-13 UNC	62	131	46	97
2	1/2-13 UNC	73	131	54	97
2-1/2	1/2-13 UNC	107	131	79	97
3	5/8-11 UNC	158	264	117	195
3-1/2	5/8-11 UNC	158	264	117	195
4	5/8-11 UNC	158	264	117	195
5	5/8-11 UNC	158	264	117	195

04T,90,K174 -19-01AUG94-1/1

O-Ring Face Seal Fittings With Metric Hex Nut And Stud End For Standard Pressure Service Recommendations

O-RING FACE SEAL AND FITTINGS WITH METRIC HEX NUT AND STUD END FOR STANDARD PRESSURE, BELOW 27 600 kPa (275.8 bar) (4,000 psi), TORQUE VALUES—Tolerance is +15 -20% unless otherwise specified



1— 90° Swivel Elbow
2— 90° Adjustable Stud Elbow
3— Stud Straight
4— Bulkhead Union and Nut
5— External Hex Stud End Plug
6— Tube Nut
7— Swivel Nut
8— Stud End
9— Hex Nut
10— O-Ring
11— Identification Groove

Nominal Tube OD or Hose ID			O-Ring Face Seal Hose or Tube Swivel Nut			Bulkhead Nut	
Metric Tube OD	Inch Tube OD or Hose ID		Thread Size	Hex Size	Torque	Hex Size	Torque
mm	Dash Size	mm (in.)	in.	mm	Nm (lb-ft)	mm	Nm (lb-ft)
4	-2	3.18 (0.125)	—	—	—	—	—
5	-3	4.78 (0.188)	—	—	—	—	—
6	-4	6.35 (0.250)	9/16-18	17	16 (12)	22	32 (24)
8	-5	7.92 (0.312)	—	—	—	—	—
10	-6	9.53 (0.375)	11/16-16	22	24 (18)	27	42 (31)
12	-8	12.70 (0.500)	13/16-16	24	50 (37)	30	93 (69)
16	-10	15.88 (0.625	1-14	30	69 (51)	36	118 (87)
20	-12	19.05 (0.750)	1-3/16-12	36	102 (75)	41	175 (129)
22	-14	22.23 (0.875)	1-3/16-12	36	102 (75)	41	175 (129)
25	-16	25.40 (1.000)	1-7/16-12	41	142 (105)	46	247 (182)
28	—	—	—	—	—	—	—
32	-20	31.75 (1.250)	1-11/16-12	50	190 (140)	50	328 (242)
38	-24	38.10 (1.500)	2-12	60	217 (160)	60	374 (276)
50	-32	50.80 (2.000)	—	—	—	—	—

O-RING STRAIGHT, ADJUSTABLE, AND EXTERNAL HEX PLUG WITH METRIC STUD END FOR STANDARD PRESSURE, BELOW 27 600 kPa (275.8 bar) (4,000 psi), TORQUE VALUES—Tolerance is +15 -20% unless otherwise specified

Thread Size[a]	Straight Hex Size[b]	Adjustable Nut Hex Size	Steel or Gray Iron Torque	Aluminum or Brass Torque
mm.	mm	mm	Nm (lb-ft)	Nm (lb-ft)
M8 x 1	12	12	8 (6)	5 (4)
M10 x 1	14	14	15 (11)	10 (7)
M12 x 1.5	17	17	25 (18)	17 (12)
M14 x 1.5	19	19	40 (30)	27 (20)
M16 x 1.5	22	22	45 (33)	30 (22)
M18 x 1.5	24	24	50 (37)	33 (25)
M22 x 1.5	27	27	69 (51)	46 (34)
M27 x 2	32	32	100 (74)	67 (49)
M30 x 2	36	36	130 (96)	87 (64)
M33 x 2	41	41	160 (118)	107 (79)
M38 x 2	46	46	176 (130)	117 (87)
M42 x 2	50	50	210 (155)	140 (103)

Continued on next page

OUT3035,0000366 -19-28MAY09-1/2

O-RING STRAIGHT, ADJUSTABLE, AND EXTERNAL HEX PLUG WITH METRIC STUD END FOR STANDARD PRESSURE, BELOW 27 600 kPa (275.8 bar) (4,000 psi), TORQUE VALUES—Tolerance is +15 -20% unless otherwise specified				
Thread Size[a]	**Straight Hex Size[b]**	**Adjustable Nut Hex Size**	**Steel or Gray Iron Torque**	**Aluminum or Brass Torque**
mm.	**mm**	**mm**	**Nm (lb-ft)**	**Nm (lb-ft)**
M48 x 2	55	55	260 (192)	173 (128)
M60 x 2	65	65	315 (232)	210 (155)
[a] Stud end threads are identified as metric by an identification groove in the hex nut next to the O-ring.				
[b] Straight hex size applies to fittings only and may not be the same as the corresponding plug of the same thread size.				

1. Inspect fitting and connector sealing surfaces and the O-rings. They must be free of dirt, scratches, nicks, and burrs. O-ring must be free of dirt, cuts, cracks, swelling or flatten condition.
2. Back the stud end hex nut off as far as possible. Push backup washer towards the nut to fully expose the turn down section. Washer must fit turned down section and not be too loose
3. Lubricate O-rings using a thin film of clean hydraulic oil or as needed, petroleum jelly to hold O-ring in place.

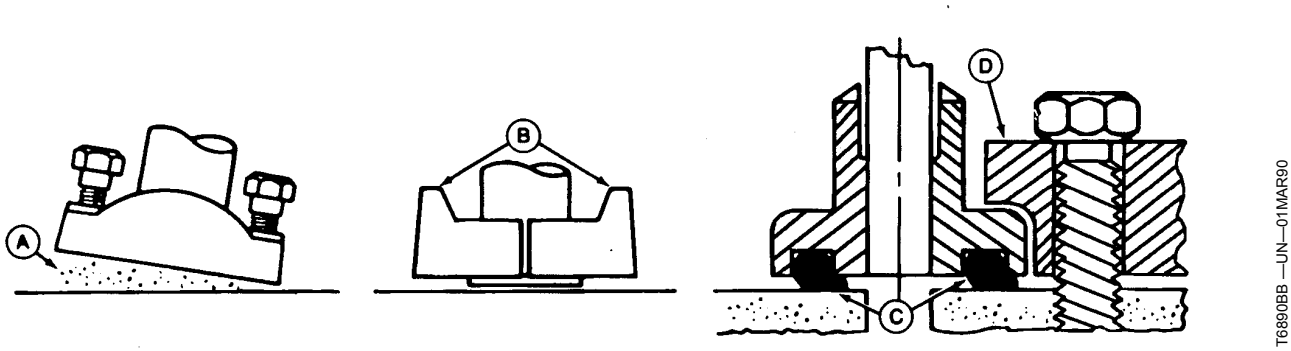
   Install O-ring into groove making sure it is seated at the bottom. Excess petroleum jelly will prevent seating of O-ring and cause it to pop out.

   To protect an O-ring from threads, wrap electrical tape over the threads. Slide O-ring over the tape into the turned down section. Remove the tape.
4. Turn fitting into the boss by hand until face of nut or washer squeezes the O-ring into the seat and contacts face of boss. Loosen adjustable fittings no more than one turn for alignment.

   Hold connections together while tightening nut to ensure O-ring remains in place.
5. Tighten fitting or nut to torque value shown. Use a second wrench to hold the fitting in position or to keep hose from twisting while tightening nut.

OUT3035,0000366 -19-28MAY09-2/2

Service Recommendations for Metric Series Four Bolt Flange Fitting



A—Sealing Surface **B—Split Flange** **C—Pinched O-Ring** **D—Single Piece Flange**

1. Clean sealing surfaces (A). Inspect. Scratches cause leaks. Roughness causes seal wear. Out-of-flat causes seal extrusion. If defects cannot be polished out, replace component.
2. Install the correct O-ring (and backup washer if required) into groove using petroleum jelly to hold it in place.
3. Split flange: Loosely assemble split flange (B) halves. Make sure split is centrally located and perpendicular to the port. Hand tighten cap screws to hold parts in place. Do not pinch O-ring (C).
4. Single piece flange (D): Place hydraulic line in center of flange and install four cap screws. Flange must be centrally located on port. Hand tighten cap screws to hold flange in place. Do not pinch O-ring.
5. After components are properly positioned and cap screws are hand tightened, tighten one cap screw, then tighten the diagonally opposite cap screw. Tighten two remaining cap screws. Tighten all cap screws as specified in the chart below.

DO NOT use air wrenches. DO NOT tighten one cap screw fully before tightening the others. DO NOT over tighten.

[a]TORQUE CHART		
[b]Thread	**N·m**	**lb-ft**
M6	12	9
M8	30	22
M10	57	42
M12	95	70
M14	157	116
M16	217	160
M18	334	246
M20	421	318

[a]Tolerance ± 10%. The torques given are enough for the given size connection with the recommended working pressure. Increasing cap screw torque beyond these amounts will result in flange and cap screw bending and connection failures.
[b]Metric standard thread.

04T,90,K175 -19-29SEP99-1/1

Section 01
Tracks

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Measure Rubber Track Lugs

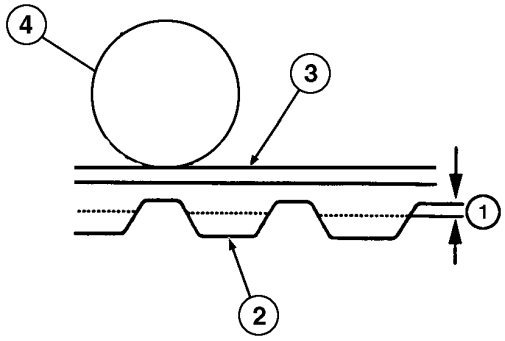
NOTE: For additional information on rubber track lug wear see CT322 and CT332 Lug Height—Rubber Track in SP326 Undercarriage Appraisal Manual.

Measure lug height (1) where indicated.

Replace rubber track if measurement is less than specification.

Rubber Track—Specification

Rubber Track Lug—Height	5 mm (0.2 in.) minimum



T213966 —UN—09SEP05

Track Lug Measurement

1— Lug Height
2— Lug
3— Rubber Track
4— Track Roller

KK70125,0000095 -19-12SEP05-1/1

Rubber Track Remove and Install

1. Park machine on a flat level surface.
2. Raise and block compact track loader. See Raising and Blocking Machine. (Operator's Manual.)
3. Remove track adjuster cover plate on track frame.

CAUTION: High pressure grease is in track adjuster cylinder. Do not loosen track adjuster valve (2) quickly or too much. High pressure grease may cause serious injury. Never loosen grease fitting (1) to release grease.

IMPORTANT: If gravel or mud is packed between sprocket and track, it must be removed before loosening track.

4. Loosen track adjuster valve (2) 1—2 turns to discharge grease from track adjuster cylinder. Allow track to sag completely.
5. Lay three steel pipes (6) in an even spacing on rubber track (4) below track frame (5).

CAUTION: Adjust engine speed to the slowest speed. Stand clear of steel pipes while moving drive sprocket to prevent injury.

6. Rotate drive sprocket in reverse direction until rubber track is raised off of front idler (3) by the three steel pipes.

CAUTION: Heavy component; use a hoist.

Rubber Track—Specification

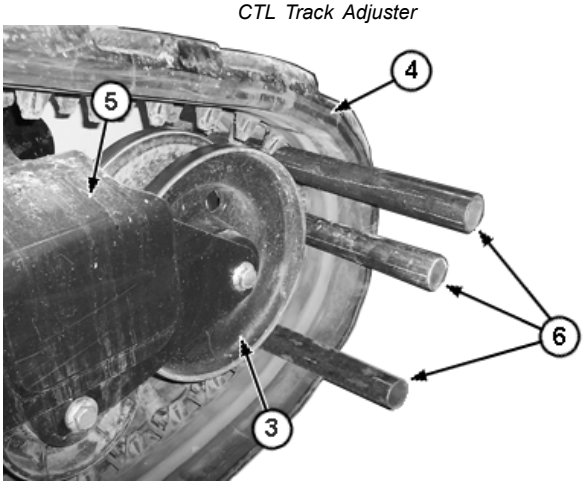
CT322 Track—Individual Weight	173 kg (380 lb) Approximate

7. Pry and slide rubber track away from front idler and track frame to remove.
8. Inspect lugs and area between lugs for cracks that exceed 3 mm (0.1 in.) in depth, reach steel core or exceed 30 mm (1.2 in.) in length. Inspect for any signs of exposed steel core. Inspect roller side of track for cracks that reach steel core. Inspect for separation of steel core anywhere on track.
9. Repair or replace as necessary.
10. Install rubber track on drive sprocket teeth and rear idler. Slip other end over front idler.

CAUTION: Adjust engine speed to the slowest speed. Stand clear of steel pipe while moving drive sprocket to prevent injury.

T211663A —UN—25FEB10

CTL Track Adjuster



T212134A —UN—14JUN05

CTL Track Removal

1— Grease Fitting
2— Adjuster Valve
3— Front Idler
4— Rubber Track
5— Track Frame
6— Steel Pipe (3 used)

IMPORTANT: Make sure rubber track is securely engaged on drive sprocket, rear idler and front idler when finished.

11. Lay three steel pipes in an even spacing on rubber track below track frame. Rotate drive sprocket in reverse to guide rubber track completely onto front idler.
12. Pry and slide rubber track so that center guide lugs on track fit properly into front idler.
13. Adjust track sag. See Check and Adjust Track Sag. (Group 9020-25.)
14. Raise machine and remove blocks. See Raising and Blocking Machine. (Operator's Manual.)

KK70125,00000A0 -19-12SEP05-1/1

Track Roller Remove and Install

1. Park machine on a flat level surface.
2. Raise and block compact track loader. See Raising and Blocking Machine. (Operator's Manual.)
3. Remove rubber track. See Rubber Track Remove and Install. (Group 0130.)

CAUTION: Heavy component; use a hoist.

Specification

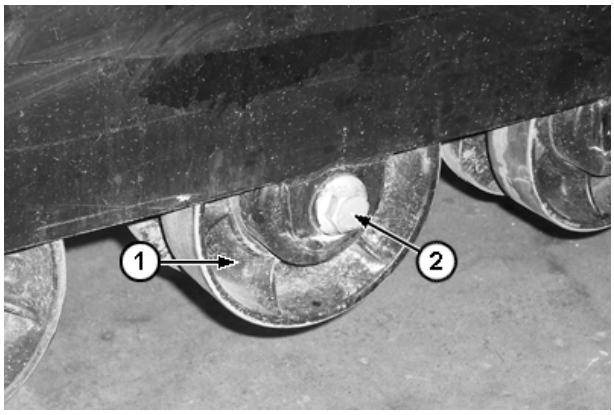
Track Roller—Weight..... 26.3 kg (58 lb) approximate

CAUTION: Support track roller before removing cap screws. Track roller will drop once cap screws have been removed.

4. Remove cap screws (2) and track roller (1).
5. Repair or replace parts as necessary. See Track Roller Disassemble and Assemble. (Group 0130.)
6. Apply threadlock and sealer (medium strength) to threads of cap screws.
7. Install track roller and tighten cap screws.

Track Roller—Specification

Track Roller-to-Frame
Cap Screw—Torque..... 592—696 N·m (437—513 lb-ft)



T212208A —UN—14JUN05

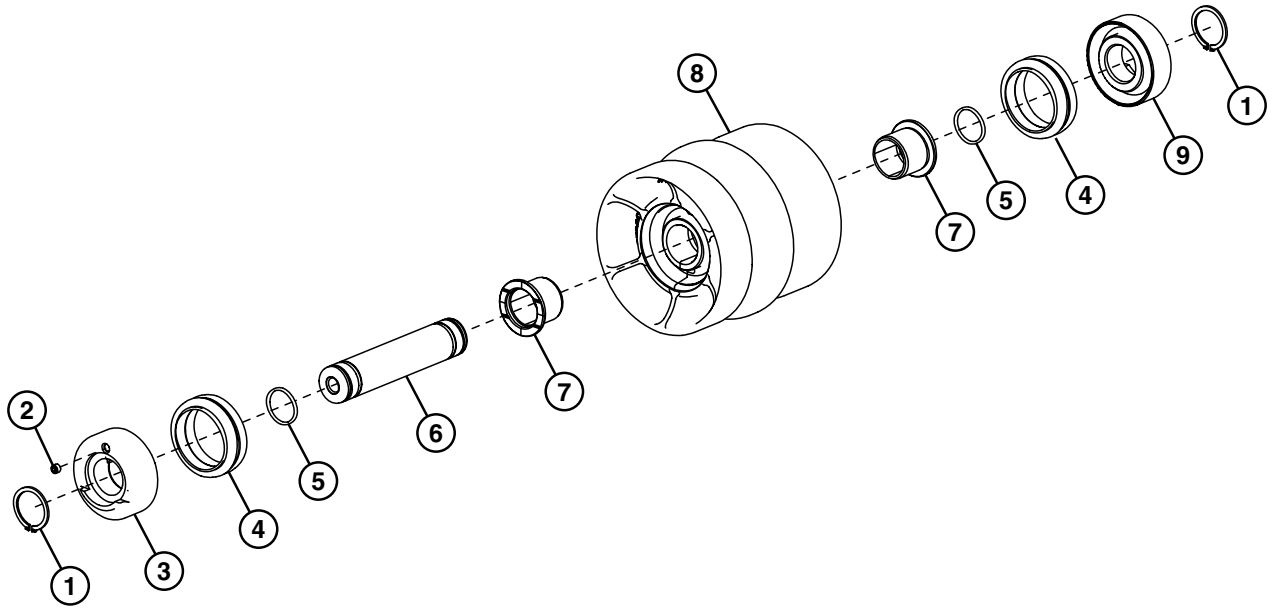
CTL Track Roller

1— Track Roller **2— Cap Screw (2 used)**

8. Install rubber track. See Rubber Track Remove and Install. (Group 0130.)
9. Adjust track sag. See Check and Adjust Track Sag. (Group 9020-25.)
10. Raise machine and remove blocking. See Raising and Blocking Machine. (Operator's Manual.)

KK70125,0000097 -19-06NOV08-1/1

Track Roller Disassemble and Assemble



T210900 —UN—11AUG05

T210900

Track Roller

1— Snap Ring (2 used)
2— Plug
3— Collar (with Plug Hole)
4— Metal Face Seal (2 used)
5— O-Ring (2 used)
6— Axle Shaft
7— Bushing (2 used)
8— Track Roller
9— Collar

CAUTION: Heavy component; use a hoist.

Specification

Track Roller—Weight..... 26.3 kg (58 lb) approximate

1. Remove plug (2) and drain oil from track roller.
2. Remove snap rings (1) from both ends of axle shaft (6).
3. Press axle shaft from track roller (8).
4. Press remaining collar (9) from axle shaft.

NOTE: If bushings (7) are worn or damaged complete roller must be replaced.

5. Inspect track roller bushings (7) and axle shaft. Replace track roller if bushings or axle shaft are worn or damaged.

IMPORTANT: Metal face seals can be reused if they are not worn or damaged. A used seal must be kept together as a set because of wear patterns on seal ring face.

6. Remove metal face seal (4) from roller and collar. Keep seal rings together as a matched set with seal ring faces together to protect surfaces.
7. Inspect metal face seals. See Inspect Metal Face Seals. (Group 0130.) For seals that will be reused, put a piece of cardboard between seal rings to protect seal face.
8. Remove O-rings (5) from axle shaft.
9. Install new O-rings on axle shaft.
10. Install snap ring on one end of axle shaft.
11. Tap axle shaft into collar (9).

IMPORTANT: Metal face seal O-rings and seat surfaces for O-rings must be clean, dry, and oil free so O-rings do not slip when roller is turning.

12. Thoroughly clean O-ring and seat surfaces using volatile, non-petroleum base solvent and lint-free tissues.
13. Wipe finger prints and foreign material off seal ring face using clean oil and lint-free tissues.
14. Apply a thin film of oil to each seal ring face.

Continued on next page

KK70125,0000098 -19-08FEB08-1/3

15. Install metal face seals in collars and roller. Apply equal pressure with fingers at four equally spaced points on seal face. Seal must “pop” down into place so O-ring is tight against seal bore. A volatile, non-petroleum base solvent or talcum powder may be used as a lubricant.
16. Tap axle shaft into roller.
17. Install collar (3) on axle shaft.

KK70125,0000098 -19-08FEB08-2/3

18. Support axle shaft and press on collar (3) to install snap ring.
19. Fill track roller with 225 mL (7.6 oz) of SAE 80W-90 gear oil meeting API Service GL-5. Use graduated beaker or syringe to fill roller housing.

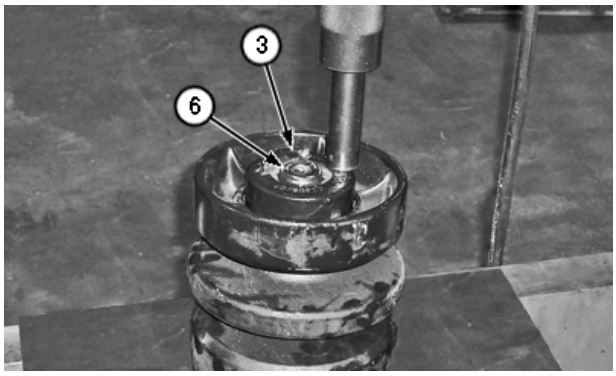
Track Roller—Specification

Track Roller Gear Oil—Capacity	225 mL (7.6 oz)

20. Clean threads of plug. Apply cure primer.
21. Apply pipe sealant to plug threads. Install and tighten plug.

Track Roller—Specification

Plug—Torque	21—26 N·m (16—19 lb-ft.)



T213179A —UN—04AUG05

Snap Ring Installation

3— Collar
6— Axle Shaft

KK70125,0000098 -19-08FEB08-3/3

Test Track Roller for Leakage

⚠ CAUTION: Heavy component; use a hoist.

Specification

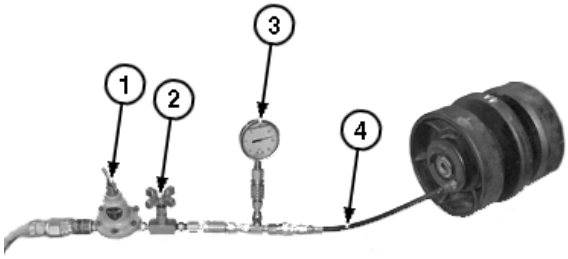
Track Roller—Weight	26.3 kg (58 lb) approximate

1. Hold the axle assembly and rotate track roller several turns to seat metal face seals.
2. Remove the plug.
3. Install parts (1—4).
4. Slowly pressurize oil cavity using air.

Track Roller—Specification

Oil Cavity Air Test—Pressure	160 kPa (1.6 bar) (23 psi)

5. Close valve and wait for a minimum of 30 seconds. Check for oil leakage. Check gauge to see if air pressure has decreased.
6. If there is leakage, disassemble track roller and replace parts as necessary. See Track Roller Disassemble and Assemble. (Group 0130.)
7. Clean threads of plug. Apply cure primer.



T213172A —UN—04AUG05

Track Roller Leakage Test Components

1— Air Pressure Regulator
2— Snubber (Needle) Valve
3— Pressure Gauge
4— Adapter Fittings and Hose to Connect to Track Roller

8. Apply pipe sealant to threads. Install plug.

Track Roller—Specification

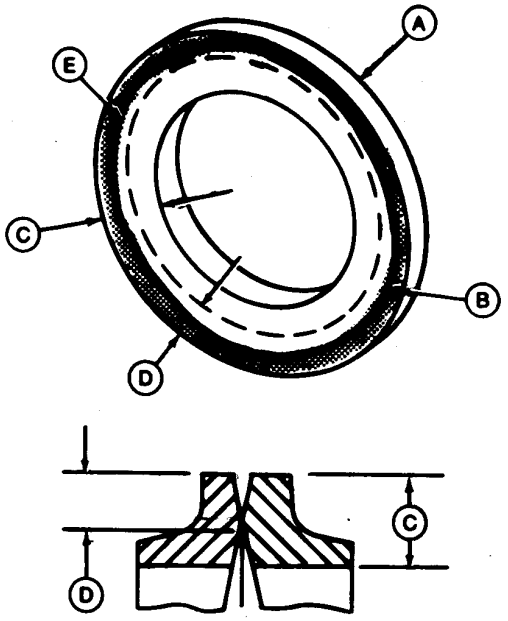
Plug—Torque	21—26 N·m (16—19 lb-ft.)

KK70125,0000099 -19-08FEB08-1/1

Inspect Metal Face Seals

1. Inspect for the following conditions to determine if seal ring (A) can be reused:
   - The narrow, highly polished sealing area (E) must be in the outer half of seal ring face (D).
   - Sealing area must be uniform and concentric with the ID and OD of seal ring (A).
   - Sealing area must not be chipped, nicked, or scratched.

A—Seal Ring
B—Worn Area (Shaded Area)
C—Seal Ring Face
D—Outer Half of Seal Ring Face
E—Sealing Area (Dark Line)



T85079 —UN—24AUG93

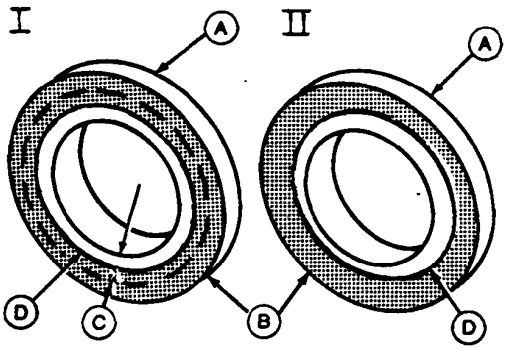
KK70125,0000029 -19-08FEB08-1/3

2. Illustration shows examples of worn seal rings (A).

   I—Sealing area (D) is in inner half of seal ring face (C).

   II—Sealing area (D) not concentric with ID and OD of seal ring.

A—Seal Ring
B—Worn Area (Shaded Area)
C—Inner Half of Seal Ring Face
D—Sealing Area (Dark Line)



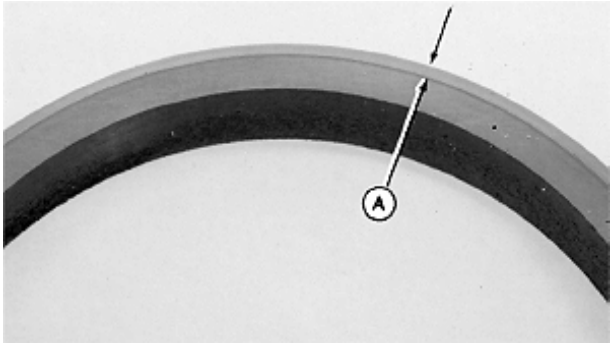
T85080 —UN—05DEC96

KK70125,0000029 -19-08FEB08-2/3

3. Clean reusable seals by removing all foreign material from seal rings, except seal face (A), using a scraper or a stiff bristled fiber brush.
4. Wash seal rings and O-rings using a volatile, non-petroleum base solvent to remove all oil. Thoroughly dry parts using a lint-free tissue.

   Apply a thin film of oil to seal ring face. Put face of seal rings together and hold using tape.

A—Seal Face



T82840 —UN—23FEB89

KK70125,0000029 -19-08FEB08-3/3

Drive Sprocket Remove and Install

1. Park machine on a flat level surface.
2. Raise and block compact track loader. See Raising and Blocking Machine. (Operator's Manual.)
3. Remove rubber track. See Rubber Track Remove and Install. (Group 0130.)
4. Remove cap screws (1).
5. Remove drive sprocket (2).

Specification

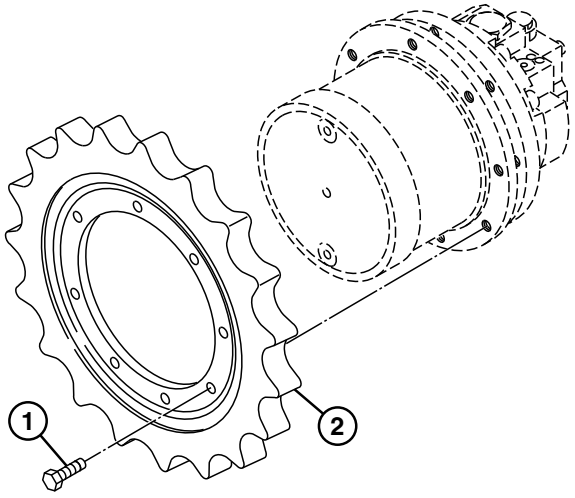
Drive Sprocket—Weight..... 18 kg (40 lb) approximate

6. Repair or replace parts as necessary.
7. Install drive sprocket and cap screws. Tighten cap screws.

Drive Sprocket—Specification

Cap Screw—Torque.....300 N·m
220 lb-ft

8. Install rubber track. See Rubber Track Remove and Install. (Group 0130.)
9. Adjust track sag. See Check and Adjust Track Sag. (Group 9020-25.)



T212201 —UN—23JUN05

CTL Drive Sprocket

1— Cap Screw (8 used) **2— Drive Sprocket**

10. Raise machine and remove blocking. See Raising and Blocking Machine. (Operator's Manual.)

KK70125,000003C -19-11NOV08-1/1

Front or Rear Idler Remove and Install

1. Park machine on a flat level surface.
2. Raise and block compact track loader. See Raising and Blocking Machine. (Operator's Manual.)
3. Remove rubber track. See Rubber Track Remove and Install. (Group 0130.)

CAUTION: Heavy component; use a hoist.

Specification

Front or Rear Idler—Weight ..... 33.5 kg (74 lb) approximate

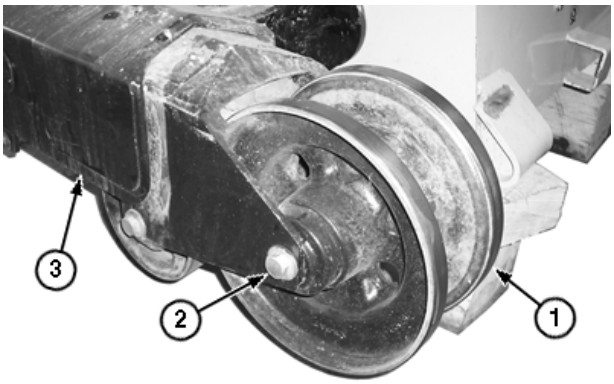
CAUTION: Support idler (1) before removing cap screws (2). Idler will drop once cap screws have been removed.

4. Remove cap screws (2) holding idler (1) in place.
5. Using a shop hoist, remove idler from track frame.
6. Repair or replace as necessary. See Front or Rear Idler Disassemble and Assemble. (Group 0130.)
7. Apply threadlock and sealer (medium strength) to threads of cap screws.
8. Install rear idler into track frame.
9. Tighten cap screws.

Front or Rear Idler—Specification

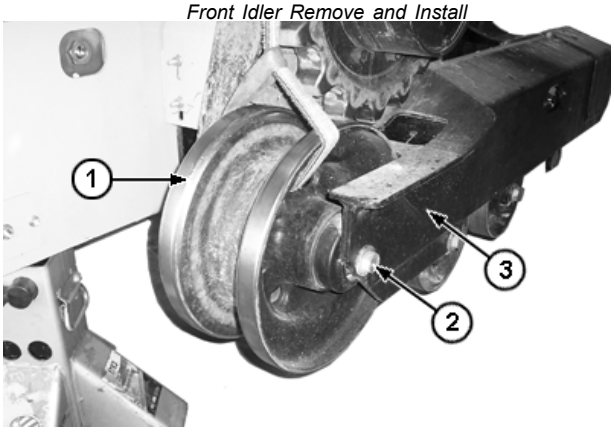
Cap Screw—Torque ..... 592—696 N·m (437—513 lb-ft)

10. Install rubber track. See Rubber Track Remove and Install. (Group 0130.)
11. Adjust track sag. See Check and Adjust Track Sag. (Group 9020-25.)
12. Raise machine and remove blocking. See Raising and Blocking Machine. (Operator's Manual.)



T212588A —UN—01JUL05

Front Idler Remove and Install



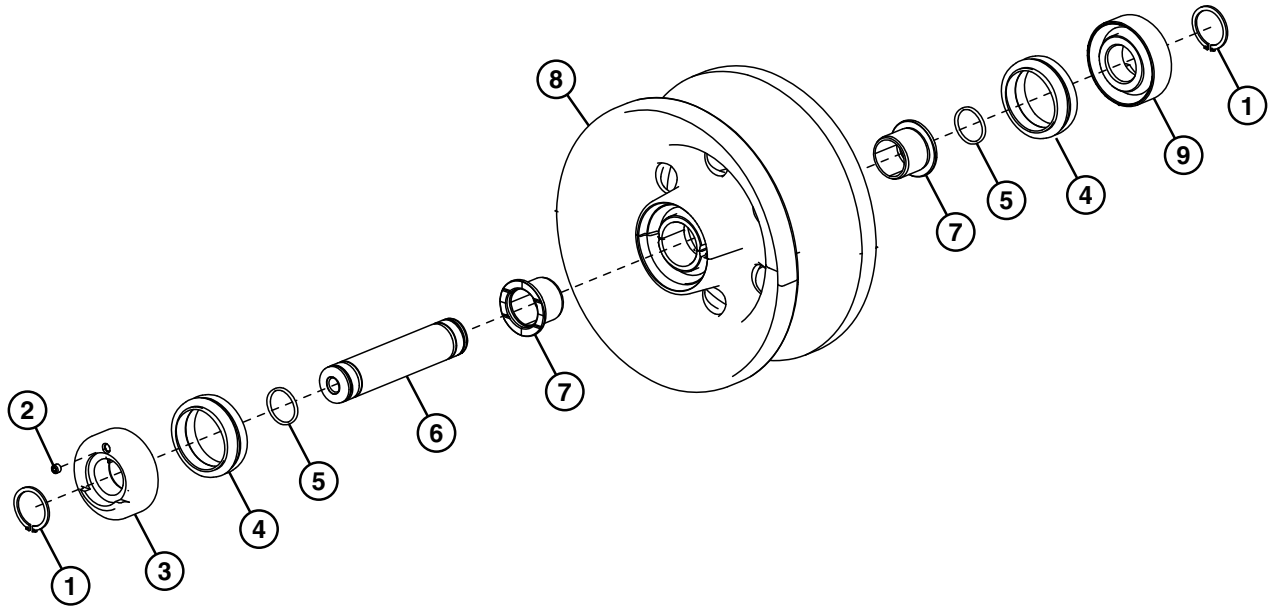
T212249A —UN—15JUN05

Rear Idler Remove and Install

1— Idler
2— Cap Screw (2 used)
3— Track Frame

KK70125,000009A -19-11NOV08-1/1

Front or Rear Idler Disassemble and Assemble



T210902 —UN—11AUG05

T210902

Front or Rear Idler

1— Snap Ring (2 used)
2— Plug
3— Collar (with Plug Hole)
4— Metal Face Seal (2 used)
5— O-Ring (2 used)
6— Axle Shaft
7— Bushing (2 used)
8— Idler
9— Collar

CAUTION: Heavy component; use a hoist.

Specification

Front or Rear
Idler—Weight..... 33.5 kg (74 lb) approximate

1. Remove plug (2) and drain oil from idler.
2. Remove snap rings (1) from both ends of axle shaft (6).
3. Press axle shaft from idler (8).
4. Press remaining collar (9) from axle shaft.

NOTE: If bushings (7) are worn or damaged complete idler must be replaced.

5. Inspect idler bushings (7) and axle shaft. Replace idler if bushings or axle shaft are worn or damaged.

IMPORTANT: Metal face seals can be reused if they are not worn or damaged. A used seal must be kept together as a set because of wear patterns on seal ring face.

6. Remove metal face seals (4) from idler and collar. Keep seal rings together as a matched set with seal ring faces together to protect surfaces.
7. Inspect metal face seals. See Inspect Metal Face Seals. (Group 0130.) For seals that will be reused, put a piece of cardboard between seal rings to protect seal face.
8. Remove O-rings (5) from axle shaft.
9. Install new O-rings on axle shaft.
10. Install snap ring on one end of axle shaft.
11. Tap axle shaft into collar (9).

IMPORTANT: Metal face seal O-rings and seat surfaces for O-rings must be clean, dry, and oil free so O-rings do not slip when roller is turning.

12. Thoroughly clean O-ring and seat surfaces using volatile, non-petroleum base solvent and lint-free tissues.
13. Wipe finger prints and foreign material off seal ring face using clean oil and lint-free tissues.
14. Apply a thin film of oil to each seal ring face.

Continued on next page

KK70125,000009B -19-08FEB08-1/2

15. Install metal face seals in collars and idler. Apply equal pressure with fingers at four equally spaced points on seal face. Seal must “pop” down into place so O-ring is tight against seal bore. A volatile, non-petroleum base solvent or talcum powder may be used as a lubricant.
16. Tap axle shaft into idler.
17. Install collar (3) on axle shaft.
18. Support axle shaft and press on collar (3) to install snap ring.
19. Fill idler with 225 mL (7.6 oz) of SAE 80W-90 gear oil meeting API Service GL-5. Use graduated beaker or syringe to fill idler housing.

Front or Rear Idler—Specification

Idler Gear Oil—Capacity..... 225 mL (7.6 oz)

20. Clean threads of plug. Apply cure primer.
21. Apply pipe sealant to plug threads. Install and tighten plug.

Front or Rear Idler—Specification

Plug—Torque..... 21—26 N·m (16—19 lb-ft.)

KK70125,000009B -19-08FEB08-2/2

Test Front or Rear Idler for Leakage

CAUTION: Heavy component; use a hoist.

Specification

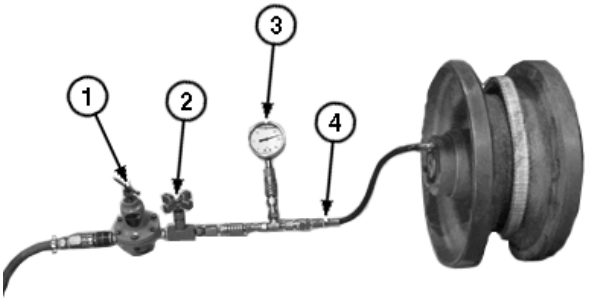
Front or Rear Idler—Weight..... 33.5 kg (74 lb) approximate

1. Hold axle assembly and rotate idler several turns to seat metal face seals.
2. Remove plug.
3. Install parts (1—4).
4. Slowly pressurize oil cavity using air.

Front or Rear Idler—Specification

Oil Cavity Air Test—Pressure..... 160 kPa (1.6 bar) (23 psi)

5. Close valve and wait for a minimum of 30 seconds. Check for oil leakage. Check gauge to see if air pressure has decreased.
6. If there is leakage, disassemble idler and replace parts as necessary. See Front or Rear Idler Disassemble and Assemble. (Group 0130.)
7. Clean threads of plug. Apply cure primer.



T213175A —UN—04AUG05

Idler Oil Leakage Test Components

1— Air Pressure Regulator
2— Snubber (Needle) Valve
3— Pressure Gauge
4— Adapter Fittings and Hose to Connect to Track Roller

8. Apply pipe sealant to threads. Install plug.

Front or Rear Idler—Specification

Plug—Torque..... 21—26 N·m (16—19 lb-ft.)

KK70125,000009C -19-08FEB08-1/1

Front Idler Yoke Assembly Remove and Install

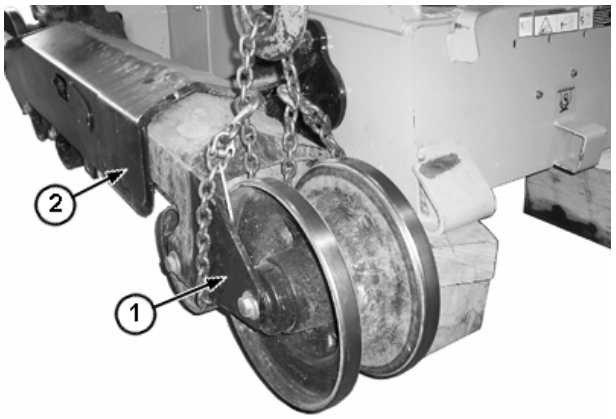
1. Park machine on a flat level surface.
2. Raise and block compact track loader. See Raising and Blocking Machine. (Operator's Manual.)
3. Remove rubber track. See Rubber Track Remove and Install. (Group 0130.)

CAUTION: Heavy component; use a hoist.

Specification	
Front Idler Yoke Assembly—Weight	86 kg (190 lb) approximate

CAUTION: The front idler yoke assembly may be under spring force from track adjuster and can be pushed out from track frame. Make sure area in front of idler is clear.

4. Using a shop hoist, slide front idler yoke assembly (1) forward and remove from track frame (2).
5. Repair or replace parts as necessary.
6. Clean and apply grease to sliding surfaces inside track frame.
7. Install front idler yoke assembly into track frame.



T212247A —UN—15JUN05

Front Idler Yoke Assembly Remove and Install

1— Front Idler Yoke Assembly 2— Track Frame

8. Install rubber track. See Rubber Track Remove and Install. (Group 0130.)
9. Adjust track sag. See Check and Adjust Track Sag. (Group 9020-25.)
10. Raise machine and remove blocking. See Raising and Blocking Machine. (Operator's Manual.)

KK70125,000005F -19-06NOV08-1/1

Track Adjuster and Recoil Spring Assembly Remove and Install

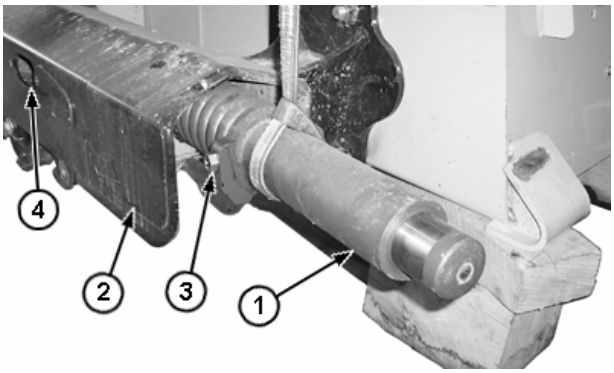
1. Park machine on a flat level surface.
2. Raise and block compact track loader. See Raising and Blocking Machine. (Operator's Manual.)
3. Remove rubber track. See Rubber Track Remove and Install. (Group 0130.)
4. Remove front idler yoke assembly. See Front Idler Yoke Assembly Remove and Install. (Group 0130.)

CAUTION: Spring or rod may break if dropped while handling, transporting or disassembling. Nicks or weld craters in spring and rod assembly can cause stress concentration resulting in a weak spot. Weak spots may result in immediate or eventual failure creating a risk of personal injury. Put a heavy protective covering around spring assembly when handling, transporting, or disassembling.

CAUTION: Heavy component; use a hoist.

Specification	
Track Adjuster and Recoil Spring Assembly—Weight	31.8 kg (70 lb) approximate

5. Slide track adjuster (1) and recoil spring assembly out of track frame (2).
6. Repair or replace parts as necessary.



T212253A —UN—15JUN05

Track Adjuster and Recoil Spring Assembly Remove and Install

1— Track Adjuster and Recoil Spring Assembly
2— Track Frame
3— Track Adjuster Valve
4— Access Hole

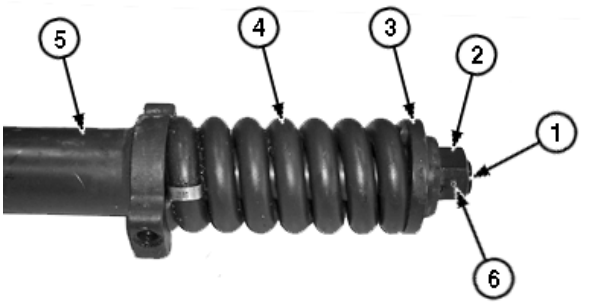
7. Slide track adjuster and recoil spring assembly into track frame and push into place until track adjuster valve (3) is centered in access hole (4) in track frame.
8. Install front idler yoke assembly. See Front Idler Yoke Assembly Remove and Install. (Group 0130.)
9. Install rubber track. See Rubber Track Remove and Install. (Group 0130.)
10. Adjust track sag. See Check and Adjust Track Sag. (Group 9020-25.)
11. Raise machine and remove blocking. See Raising and Blocking Machine. (Operator's Manual.)

KK70125,000009D -19-11NOV08-1/1

Track Adjuster Recoil Spring Remove and Install

1. Remove track adjuster and recoil spring assembly from machine. See Track Adjuster and Recoil Spring Assembly Remove and Install. (Group 0130.)
2. Mark position of spring pin hole on nut (2) and cylinder shaft (1) to aid in assembly.
3. Remove spring pin (6) from nut on track adjuster and recoil spring assembly.

1— Cylinder Shaft
2— Nut
3— Retainer Plate
4— Recoil Spring
5— Cylinder



T213238A —UN—04AUG05

Recoil Spring

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KK70125,000009E -19-08FEB08-1/4

CAUTION: Spring or rod may break if dropped while handling, transporting or disassembling. Nicks or weld craters in spring and rod assembly can cause stress concentration resulting in a weak spot. Weak spots may result in immediate or eventual failure creating a risk of personal injury. Put a heavy protective covering around spring assembly when handling, transporting, or disassembling track adjuster.

A compression tool must be used for disassembly and assembly because of the extreme preload on spring.

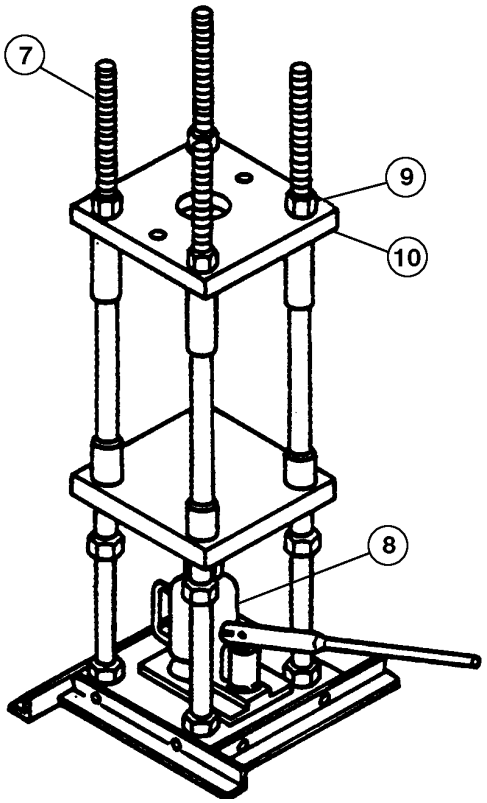
CAUTION: Heavy component; use a hoist.

Specification	
ST4920 Track Recoil Spring Tool—Weight	225 kg (496 lb) approximate
Track Adjuster and Recoil Spring Assembly—Weight	31.8 kg (70 lb) approximate

4. Place an 18-t (20-ton) jack (8) on bottom of ST4920 Track Recoil Spring Tool (7). See ST4920 Track Recoil Spring Disassembly and Assembly Tool for instruction to make tool. (Group 9900.)

NOTE: It is not necessary to remove recoil spring to replace seals on piston rod. See Track Adjuster Cylinder Disassemble and Assemble. (Group 0130.)

5. Remove nuts (9). Remove top plate (10).

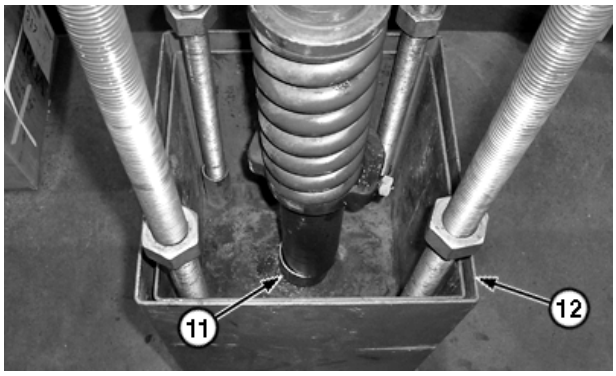


T212514 —UN—04AUG05

7— ST4920 Track Recoil Spring Tool
8— Jack
9— Nut (4 used)
10— Top Plate

KK70125,000009E -19-08FEB08-2/4

6. Put track adjuster and recoil spring assembly in ST4920 Track Recoil Spring Tool with cylinder end on spacer (11).
7. Install DFT1087 Track Recoil Spring Guard (12). See DFT1087 Track Recoil Spring Disassembly and Assembly Guard Tool for instructions to make tool. (Group 9900.)
8. Install top plate with smallest opening to allow access to nut (2).



T213239A —UN—04AUG05

11— Spacer
12— DFT1087 Track Recoil Spring Guard

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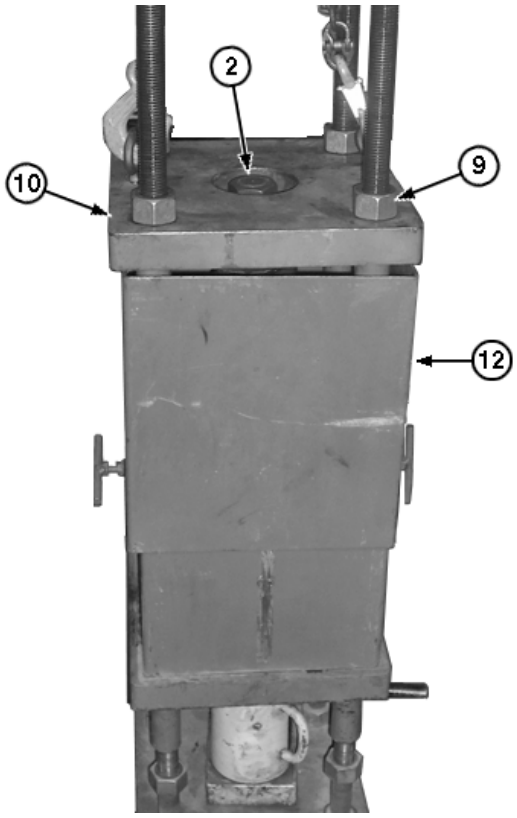
KK70125,000009E -19-08FEB08-3/4

9. Hand tighten nuts (9) so top plate (10) is tight against retainer plate (3).
10. Raise upper half of DFT1087 Track Recoil Spring Guard. Tighten T-handles.
11. Operate jack to compress recoil spring (4) just enough so nut (2) can be removed.
12. Lower jack ram to release spring force.
13. Remove nuts (9) and top plate to remove track adjuster and recoil spring assembly from ST4920 Track Recoil Spring Tool.
14. If disassembly of track adjuster cylinder is necessary, see Track Adjuster Cylinder Disassemble and Assemble. (Group 0130.)
15. Repair or replace parts as necessary.
16. Place track adjuster cylinder in ST4920 Track Recoil Spring Tool with cylinder end on spacer (11).
17. Install spring retainer plate on recoil spring.
18. Install DFT1087 Track Recoil Spring Guard.
19. Install top plate. Install and hand tighten nuts (9).
20. Raise upper half of DFT1087 Track Recoil Spring Guard. Tighten T-handles.
21. Operate jack to compress spring.
22. Install nut (2) so holes for spring pin are aligned in nut and cylinder shaft.
23. Install spring pin in nut (2).
24. Lower jack ram to relieve pressure.
25. Remove nuts (9) and top plate.
26. Remove track adjuster and recoil spring assembly from ST4920 Track Recoil Spring Tool.



T212515A —UN—04AUG05

2— Nut
9— Nut (4 used)
10— Top Plate
12— DFT1087 Track Recoil Spring Guard

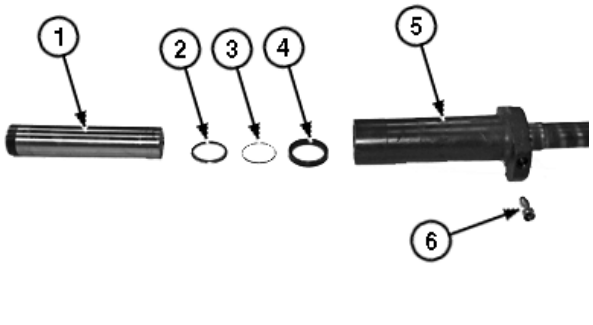
KK70125,000009E -19-08FEB08-4/4

Track Adjuster Cylinder Disassemble and Assemble

CAUTION: Spring or rod may break if dropped while handling, transporting or disassembling. Nicks or weld craters in spring and rod assembly can cause stress concentration resulting in a weak spot. Weak spots may result in immediate or eventual failure of spring or rod creating a risk of personal injury. Put a heavy protective covering around spring assembly when handling, transporting, or disassembling.

A compression tool must be used for disassembly and assembly because of the extreme preload on spring.

NOTE: It is not necessary to remove recoil spring to replace cylinder seals (2 and 4).



T213214A —UN—04AUG05

Track Adjuster Cylinder

1— Piston Rod
2— Outer Seal
3— Seal Retaining Ring
4— Inner Seal
5— Cylinder
6— Track Adjuster Valve

CAUTION: Heavy component; use a hoist.

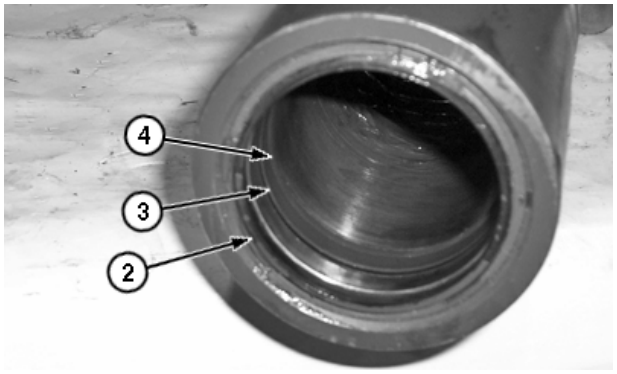
Specification

Track Adjuster and Recoil Spring Assembly—Weight..... 31.8 kg (70 lb) approximate

1. Remove track adjuster and recoil spring assembly from machine. See Track Adjuster and Recoil Spring Assembly Remove and Install. (Group 0130.)
2. Remove recoil spring, if necessary. See Track Adjuster Recoil Spring Remove and Install. (Group 0130.)
3. Tighten track adjuster valve (6).
4. Pump cylinder (5) with grease to remove piston rod (1) from cylinder.
5. Clean out excess grease from cylinder to access seals in cylinder end.

KK70125,000009F -19-08FEB08-1/2

6. Remove outer seal (2) from cylinder.
7. Remove seal retaining ring (3) from inner seal (4) before removing seal from cylinder.
8. Repair or replace parts as necessary.
9. Install inner seal in cylinder with retaining ring groove facing outward.
10. Install seal retaining ring into groove of inner seal.
11. Install outer seal in cylinder.
12. Loosen track adjuster valve.
13. Apply grease to piston rod and install in cylinder.
14. Completely compress piston rod.
15. Tighten track adjuster valve.
16. Install recoil spring, if necessary. See Track Adjuster Recoil Spring Remove and Install. (Group 0130.)
17. Install track adjuster and recoil spring assembly in machine. See Track Adjuster and Recoil Spring Assembly Remove and Install. (Group 0130.)



T213208A —UN—04AUG05

Cylinder Seals

2— Outer Seal
3— Seal Retaining Ring
4— Inner Seal

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Section 02
Axles and Suspension Systems

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Axle Housing Remove and Install

1. Park machine on flat level surface.
2. Raise and block machine. See Raising and Blocking Machine. (Operator's Manual.)
3. Remove wheel from axle being serviced.
4. Drain chain case oil. See Change Chain Case Oil. (Operator's Manual.)
5. Clean area around axle housing to prevent debris from entering chain case.

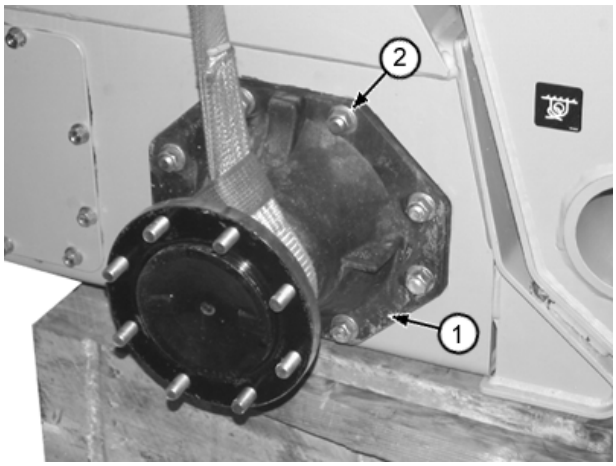
CAUTION: Prevent possible crushing injury from heavy component. Use appropriate lifting device.

6. Support axle housing (1) using appropriate lifting device. Remove axle housing.

Specification

Axle Housing—Weight..... 33 kg
72 lb

7. Clean and inspect parts. Repair or replace parts as necessary. See Axle Disassemble and Assemble. (Group 0201.)



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Axle Housing

1— Axle Housing **2— Nut (8 used)**

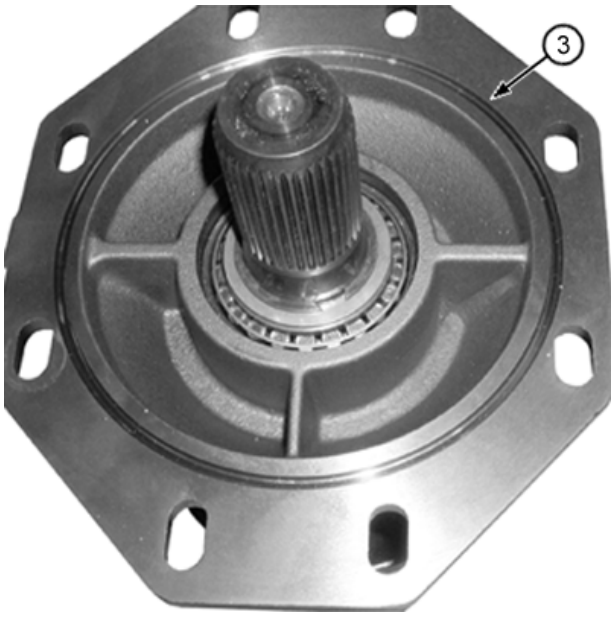
TX19495,000009D -19-25MAR04-1/3

8. Install new O-ring (3) in groove on axle housing.
9. Fill axle housing with oil.

Specification

Axle Housing—Capacity..... 237 mL
8 oz

3— O-Ring



T198847A —UN—26MAR04

Axle Housing O-Ring

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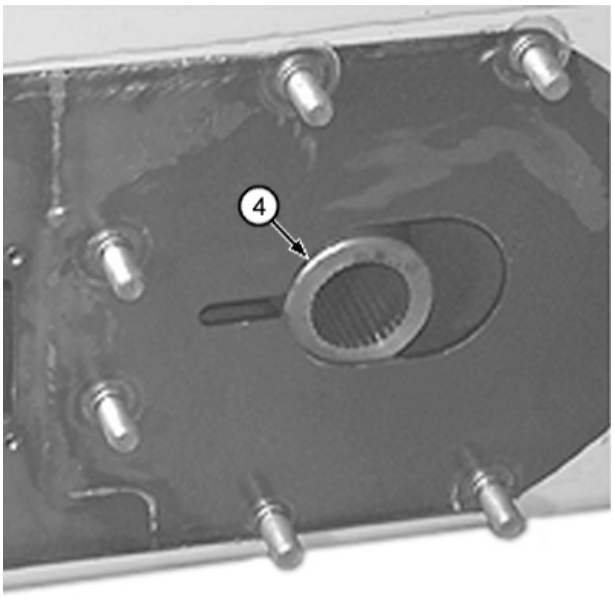
TX19495,000009D -19-25MAR04-2/3

10. Position chain sprocket with splined hub (4) visible through hole in chain case.
11. Install axle housing with UP mark facing up.
12. Engage axle shaft into splined hub and slide axle housing over mounting studs. Loosely install nuts.
13. Slide axle housing to tighten drive chain. See Drive Chain Tension Check and Adjustment. (Group 9020-25.)
14. Install wheel. Tighten nuts to specification. See Check Wheel Lug Nut Torque. (Operator's Manual.)
15. Fill chain case with oil. See Change Chain Case Oil. (Operator's Manual.)
16. Lower machine to ground. See Raising and Blocking Machine. (Operator's Manual.)

4— Chain Sprocket Hub

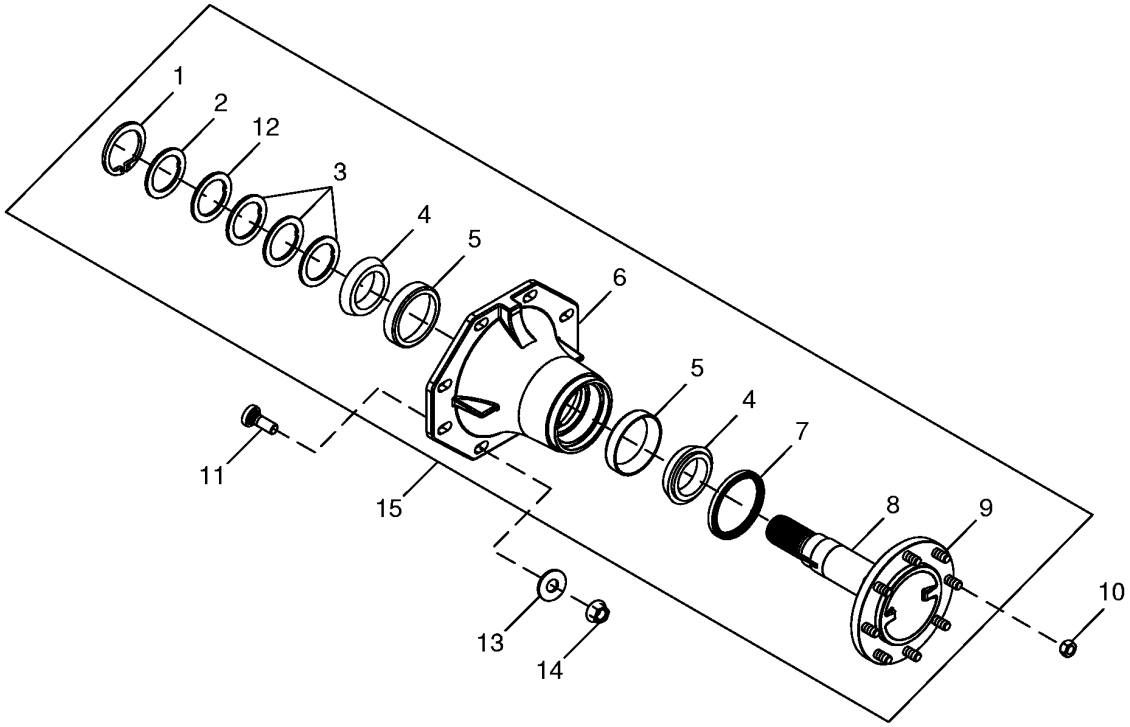


T198848A —UN—26MAR04

Chain Sprocket Position

TX19495,000009D -19-25MAR04-3/3

Axle Housing Disassemble and Assemble



T198395

Axle Housing Assembly

1— Snap Ring
2— Washer
3— Shim (as required)
4— Bearing (2 used)
5— Bearing Race (2 used)
6— Axle Housing
7— Seal
8— Axle Shaft
9— Stud (8 used)
10— Nut (8 used)
11— Cap Screw (8 used)
12— Washer
13— Washer (8 used)
14— Nut (8 used)

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TX19495,000009E -19-09JUN04-1/5

1. Place axle housing in a press. Remove snap ring, washer and shims.

1— Snap Ring

T198859A —UN—26MAR04

Axle Housing

TX19495,000009E -19-09JUN04-2/5

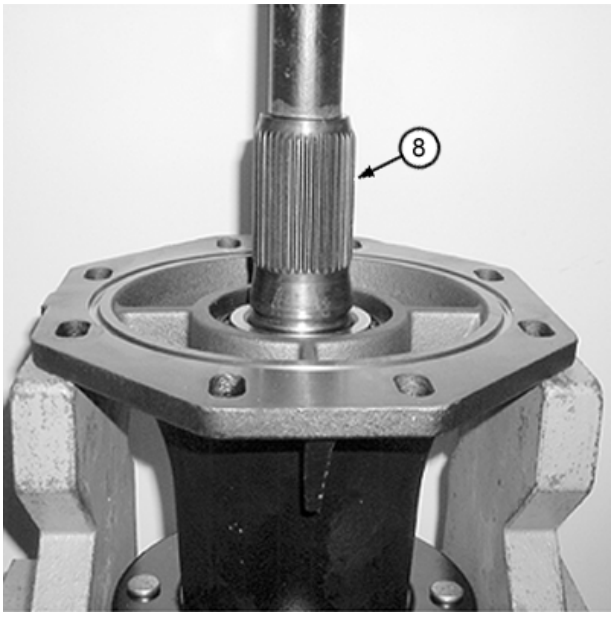
2. Place axle housing in a press with support under housing flange. Press axle shaft (8) down until axle shaft drops free of inner bearing.
3. Remove inner axle bearing.

IMPORTANT: Outer axle bearing will be destroyed when removed. Remove bearing only if replacement is necessary. Replace bearing and race as a set.

4. Remove outer axle bearing and race only if necessary. Do not reuse bearing and race.
5. Remove inner bearing race.
6. Inspect axle housing seal. Remove seal if necessary.
7. Clean and inspect parts. Repair or replace parts as necessary.
8. If removed, install new outer axle bearing with taper facing up. Press bearing onto shoulder of axle shaft.
9. If removed, install outer bearing race.
10. If removed, install axle housing seal.
11. Install axle housing and new inner bearing over axle shaft.

NOTE: Rotate axle housing while installing bearing.

12. Press bearing onto axle until resistance is felt.



T198862A —UN—26MAR04

Axle Housing

8— Axle Shaft

13. Install washer and snap ring. Push snap ring to top of groove. Do not install shims at this time.

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TX19495,000009E -19-09JUN04-3/5

14. Install a temporary cap screw and nut in one hole of the mounting flange and tighten.
15. Place torque wrench on temporary cap screw at a right angle to the centerline. Check rolling drag torque. Apply pressure until rolling drag torque is reached.

Specification

Axle Bearing—Rolling
Drag Torque.....4.52—13.56 N·m
40—120 lb-in.

T198863A —UN—26MAR04

Rolling Drag Torque

TX19495,000009E -19-09JUN04-4/5

16. While maintaining pressure, measure distance between washer and snap ring. Add 0.025 mm (0.001 in.) to the measured value to determine the number of shims required for bearing pre-load.
17. Remove snap ring and washer. Install required shims and washer.
18. Install snap ring.
19. Apply force to axle shaft to seat bearing and shims against snap ring.

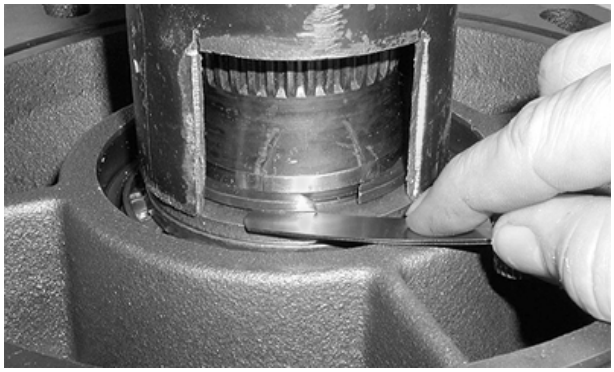
Specification

Axle Shaft—Force.....44 482 N
10,000 lb-force

20. Check rolling drag torque. Repeat procedure until specification is reached.

Specification

Axle Bearing—Rolling
Drag Torque.....4.52—13.56 N·m
40—120 lb-in.



T198864A —UN—26MAR04

Bearing Pre-Load Measurement

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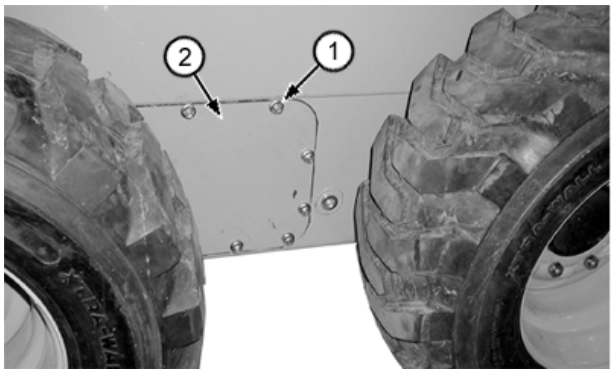
Chain Case Access Plate Remove and Install

1. Park machine on flat level surface.
2. Drain chain case oil. See Change Chain Case Oil. (Operator's Manual.)
3. Remove nuts (1) and access plate (2).
4. Clean and inspect parts.
5. Apply flexible gasket sealant to access plate.
6. Install access plate. Tighten nuts to specification.

Specification	
Chain Case Access Plate Nut—Torque	48 N·m 35 lb-ft

7. Fill chain case with oil. See Change Chain Case Oil. (Operator's Manual.)



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Chain Case Access Plate

1— Nut (12 used)
2— Access Plate

TX19495,000009F -19-26MAR04-1/1

Drive Chain and Sprocket Remove and Install

1. Park machine on flat level surface.
2. Raise and block machine. see Raising and Blocking Machine. (Operator's Manual.)
3. Drain chain case oil. See Change Chain Case Oil. (Operator's Manual.)
4. Remove chain case access plate. See Chain Case Access Plate Remove and Install. (Group 0250.)
5. Remove axle housing for each drive chain being serviced. See Axle Housing Remove and Install. (Group 0201.)

NOTE: It is necessary to remove rear axle housing and rear drive chain from drive sprocket before removing front drive chain.

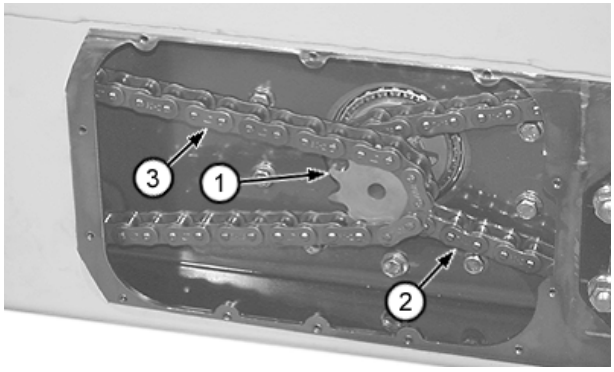
6. Slide rear axle sprocket forward. Remove rear drive chain (3) from drive sprocket (1) and rear axle sprocket.

NOTE: To remove rear axle sprocket, lift sprocket to top of chain case and pull bottom of sprocket out over lip of chain case.

7. Remove rear axle sprocket.
8. Slide front axle sprocket rearward. Remove front drive chain (2) from drive sprocket and front axle sprocket.

NOTE: If removal of front axle sprocket is necessary, hydrostatic motor must be removed. See Hydrostatic Motor and Park Brake Remove and Install. (Group 0360.)

9. Remove front axle sprocket.



T198879A —UN—29MAR04

Chain Case

1— Drive Sprocket
2— Front Drive Chain
3— Rear Drive Chain

10. Clean and inspect parts. Repair or replace parts as necessary.
11. If removed, install front axle sprocket.
12. Install front drive chain.
13. Install rear axle sprocket and rear drive chain.
14. Install axle housing. See Axle Housing Remove and Install. (Group 0201.)
15. Install chain case access plate. See Chain Case Access Plate Remove and Install. (Group 0250.)
16. Fill chain case with oil. See Change Chain Case Oil. (Operator's Manual.)
17. Lower machine to ground. see Raising and Blocking Machine. (Operator's Manual.)

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Section 03
Transmission

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Centering Plate Remove and Install

1. Park machine on flat level surface.
2. Raise boom and engage boom lock.
3. Set park brake switch to off position.
4. Turn engine off.
5. Raise cab. For skid steer loader, see Raising Operator's Station. (Operator's Manual.) For compact track loader, see Raising Operator's Station. (Operator's Manual.)
6. Install M8 x 30 cap screws in tab at the rear of both yokes of steering levers to secure steering assembly during adjustment procedure.

NOTE: Front centering plate must be removed to access rear centering plate spring bolt assembly.

7. Remove front spring bolt assembly (2) from front centering plate (1).
8. Remove left side guide pin nut (3).
9. Lift left side of centering plate (1) from lower centering bracket slot (4).
10. Remove centering plate by prying it from right guide pin bushing.

NOTE: Removal of the bracket retaining screws can allow the cover to dislodge and cause difficulty in assembly. Put at least one screw back into place once the guide pin has been removed.

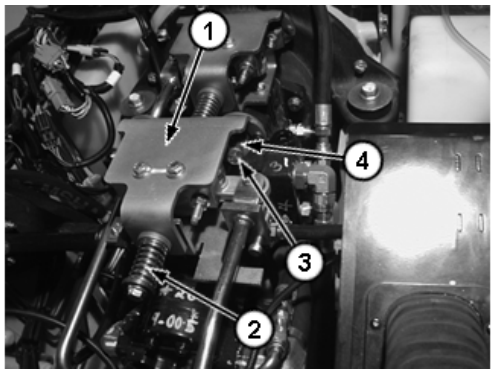
11. To remove right rear guide pin:
    - Remove pump lever from pump shaft.
    - Remove cap screws (2 used) and one nut retaining bracket to pump and remove bracket.
    - Remove guide pin.

NOTE: Installation of front and rear plates is similar. Rear centering plate must be installed first.

12. Install right rear guide pin.
13. Install bracket.
14. Install pump lever.
15. Loosen lock nut on each centering screw. Adjust centering screws until each bearing surface protrudes approximately 3.2 mm (1/8 in.).
16. Apply medium strength thread lock to the guide pin threads and install nut. Install right guide pin, bushing and nut in mounting plate. Ensure guide pin is fully seated in groove and tighten nut to specification.

Specification

Guide Pin Nut—Torque.....54 N·m
40 lb-ft



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Centering Plate

1— Front Centering Plate
2— Spring Bolt Assembly
3— Left Guide Pin Nut
4— Lower Centering Bracket Slot

17. Apply medium strength thread lock to mounting plate cap screws. Rotate mounting plate into position and install cap screws (2) and flange nut (1). Tighten mounting plate cap screws to specification.

Specification

Mounting Plate Hardware—Torque.....38 N·m
28 lb-ft

18. Install guide pin bushing in left side of centering plate.
19. Slide centering plate onto right guide pin bushing.
20. Install left guide pin into bushing.
21. Lower left side of centering plate onto centering bracket, placing guide pin in groove.
22. Apply medium strength thread lock to the guide pin threads and install nut. Ensure guide pin is fully seated in groove and tighten to specification.

Specification

Guide Pin Nut—Torque.....54 N·m
40 lb-ft

23. Apply medium strength thread lock to threads of spring bolt and install spring bolt assembly onto centering plate assembly. Tighten spring bolt to specification.

Specification

Spring Bolt—Torque.....67 N·m
50 lb-ft

24. Repeat procedure for front centering plate.
25. Perform centering plate adjustment. See Centering Plate Adjustment—Skid Steer Loader, or see Centering Plate Adjustment—Compact Track Loader. (Group 9026-25.)

MX10672,000005E -19-14APR05-1/1

Centering Plate Inspection

1. Remove centering plate. See Centering Plate Remove and Install. (Group 0315.)
2. Inspect bushing and spacer for wear and or breakage. Replace if required.
3. Inspect guide pin and guide pin bushings for wear.
4. Inspect pump control lever bearings for excessive play in bearing race. If replacement is necessary, apply medium strength thread lock to bearing retaining cap screws and torque to specification.

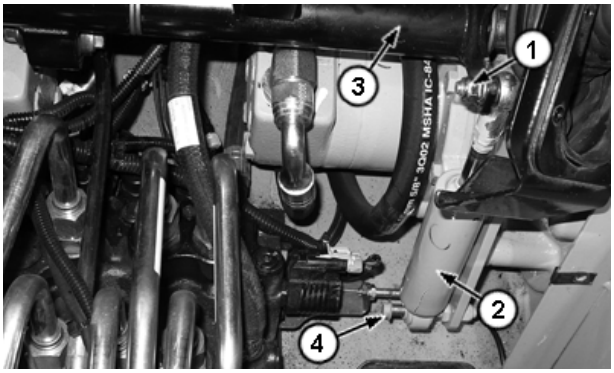
Specification	
Pump Control Lever Bearing Retaining Cap Screw—Torque	73 N·m 54 lb-ft

5. Inspect centering screw bearing surface. Surfaces should be smooth and free of deep scratches or wear. Replace as necessary.

MX10672,00000B8 -19-19JUL05-1/1

Steering Dampener Remove and Install

1. Park machine on flat level surface.
2. Raise boom and engage boom lock.
3. Set park brake switch to off position.
4. Turn engine off.
5. Raise cab. For skid steer loader, see Raising Operator's Station. (Operator's Manual.) For compact track loader, see Raising Operator's Station. (Operator's Manual.)
6. Remove panels to access steering dampeners.
7. Remove mounting hardware (1) from top of steering dampener (2) from cross-shaft bellcrank (3).
8. Remove push-nut (4) from lower dampener mount. Lift dampener out of machine.
9. Inspect dampener. See Steering Dampener Inspection. (Group 0315.)
10. Slide tube end of dampener onto lower mounting stud. Install push-nut (4), making sure it is fully seated.
11. Fasten rod end of dampener (2) to bellcrank (3) using a cap screw and nut.
12. Make sure the steering lever contacts the stop screws in both forward and reverse positions before dampener reaches its travel limit. Install or remove shim washer(s) on rod end as required.
13. Tighten dampener mounting cap screws to specification.



T198085A —UN—26FEB04

Steering Dampener

1— Steering Dampener Mounting Hardware
2— Steering Dampener
3— Cross Shaft Bellcrank
4— Push Nut

Specification	
Dampener Mounting Hardware—Torque	40 N·m 30 lb-ft

MX10672,00000BA -19-14SEP05-1/1

Steering Dampener Inspection

1. Stroke dampener through full range of motion. Dampeners should operate smoothly with some resistance to movement. If no resistance is noted, or if dampener is leaking, replace dampener.
2. Test dampener as follows:
   - With dampener fully extended, apply 9 kg (20 lb) of force to rod-end. It must take 1—5 seconds for dampener to fully retract.
   - With dampener full retracted, apply 9 kg (20 lb) of pull to rod-end. It must take 1—5 seconds for dampener to fully extend.
3. Replace dampener if not within specification.

MX10672,00000BB -19-17FEB04-1/1

Steering Lever Remove and Install

1. Park machine on flat level surface.
2. Raise boom and engage boom lock.
3. Set park brake switch to off position.
4. Turn engine off.
5. Raise cab. For skid steer loader, see Raising Operator's Station. (Operator's Manual.) For compact track loader, see Raising Operator's Station. (Operator's Manual.)
6. Remove cap screw from steering lever link rod.
7. Remove cap screws (2) from pivot bearing block.
8. Remove steering lever assembly.
9. Clean and inspect parts. Repair or replace parts as necessary.
10. Install steering lever assembly.
11. Install pivot bearing block retaining cap screws and tighten to specification.

Specification

Pivot Bearing Mounting Cap Screw—Torque ..... 40 N·m (30 lb-ft)

12. Install steering lever link rod with cap screw. Tighten to specification.

Specification

Link Rod Cap Screw—Torque ..... 40 N·m (30 lb-ft)

13. Lower cab. For skid steer loader, see Raising Operator's Station. (Operator's Manual.) For compact track loader, see Raising Operator's Station. (Operator's Manual.)
14. Release boom locks and lower boom.

MX10672,00000BC -19-14APR05-1/1

Steering Lever Disassemble and Assemble

1. Park machine on flat level surface.
2. Raise boom and engage boom lock.
3. Set park brake switch to off position.
4. Turn engine off.
5. Raise cab. For skid steer loader, see Raising Operator's Station. (Operator's Manual.) For compact track loader, see Raising Operator's Station. (Operator's Manual.)
6. Remove steering lever assembly. See Steering Lever Remove and Install. (Group 0315.)

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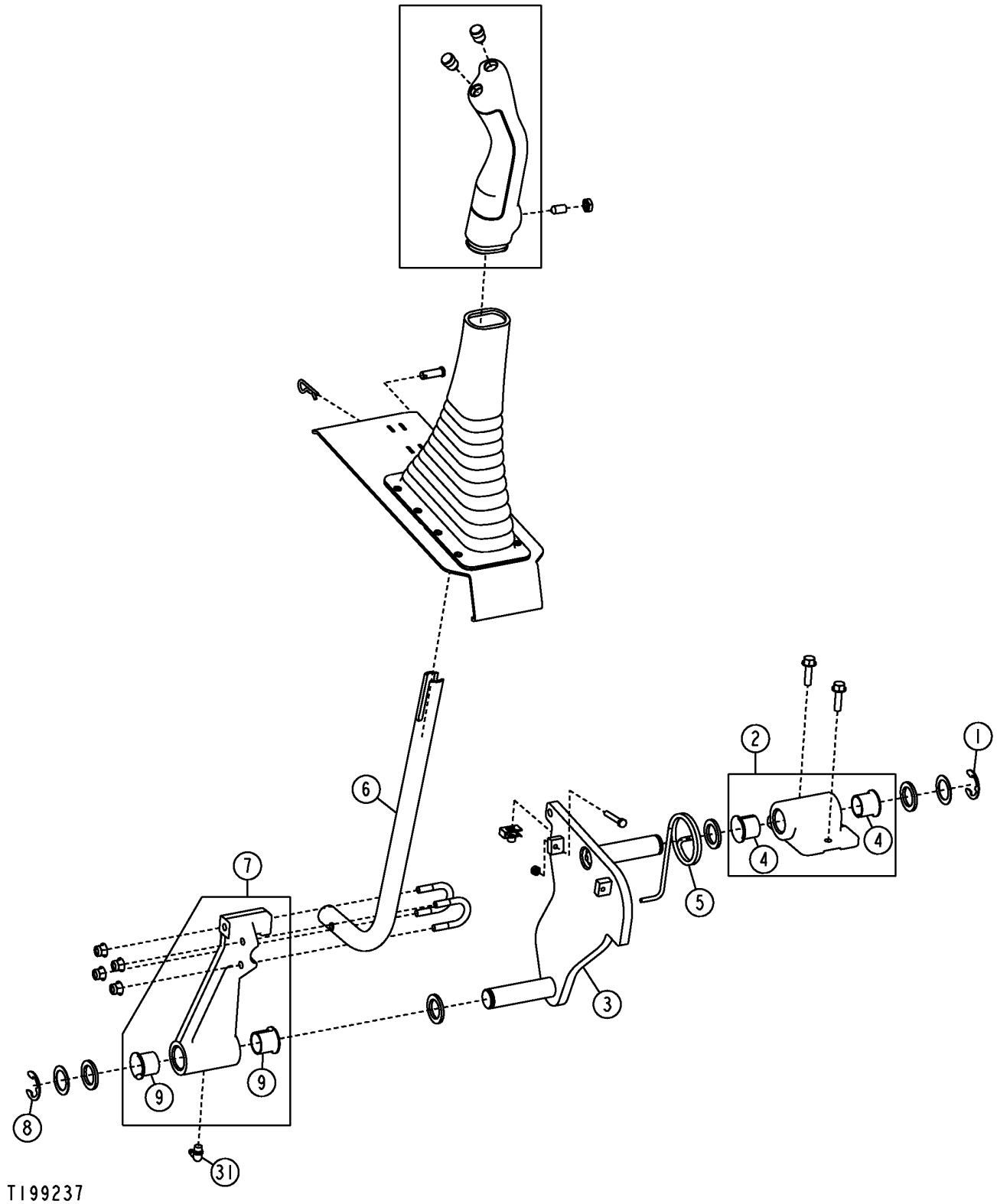
MX10672,00000BD -19-19JUL05-1/2



Steering Lever Assembly

MX10672,00000BD -19-19JUL05-2/2

1— Snap Ring
2— Pillow Block
3— Yoke with Shaft Assembly
4— Pillow Block Bushing (2 used)
5— Torsion Spring
6— Lever
7— Steering Arm
8— Retaining Clip
9— Steering Arm Bushing (2 used)

7. Remove snap ring (1) retaining pillow block (2) to yoke and shaft assembly (3).

IMPORTANT: Note torsion spring position for assembly purposes.

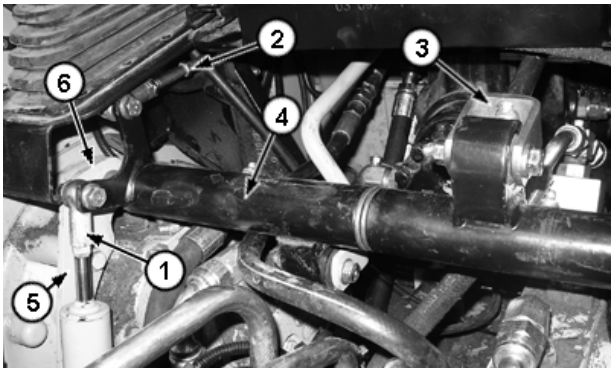
8. Inspect pillow block bushings (4) for wear and damage. Replace as needed.
9. Remove torsion spring (5), inspect and replace as needed.
10. Inspect lever (6) for damage. Replace as needed.
11. Remove steering arm (7) retaining clip (8) to yoke and shaft assembly (3).
12. Inspect steering arm bushings (9) for wear and damage. Replace as needed.
13. Install steering arm (7) on yoke and shaft assembly (3) and install retaining clip (8).
14. Install lever (6) on steering arm (7).
15. Install torsion spring (5) on yoke and shaft assembly (3).
16. Install pillow block (2) on yoke and shaft assembly (3) and install snap ring (1).
17. Install steering lever assembly. See Steering Lever Remove and Install. (Group 0315.)

MX10672,00000BD -19-19JUL05-3/2

Steering Cross Shaft Assembly Remove and Install

1. Park machine on flat level surface.
2. Raise boom and engage boom lock.
3. Set park brake switch to off position.
4. Turn engine off.
5. Raise cab. For skid steer loader, see Raising Operator's Station. (Operator's Manual.) For compact track loader, see Raising Operator's Station. (Operator's Manual.)
6. Remove cover plates to access the control linkage.
7. Disconnect dampeners (1), link rods, and control rods from cross shaft assembly.
8. Push control rods to rear and move to side.
9. Disconnect cross shaft assembly from right support bracket by removing one cap screw.
10. Lift right side of cross shaft assembly and slide assembly out from left support bracket.
11. Inspect bellcrank, bushings and drive shaft for damage or wear. Repair or replace as required.
12. Slide cross shaft assembly into left support bracket.
13. Fasten cross shaft assembly to right support bracket and tighten cap screw to specification.

Specification	
Cross Shaft Mounting Cap Screw—Torque	40 N·m 30 lb-ft



T198570A —UN—22MAR04

Cross Shaft Removal.

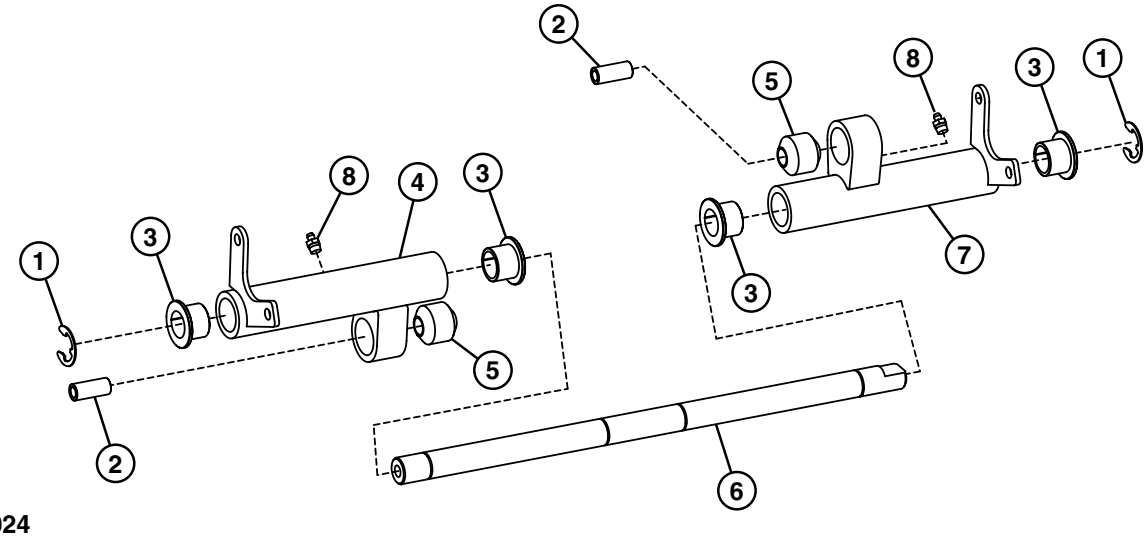
1— Dampener
2— Link Rod
3— Control Rod
4— Cross Shaft Assembly
5— Right Support Bracket
6— Cap Screw Location

14. Connect dampeners, link rods, and control rods from cross shaft assembly.
15. Check and adjust link rods.
16. Check and adjust steering lever stops. See Tracking Adjustment—Skid Steer Loader, or see Tracking Adjustment—Compact Track Loader. (Group 9026-25.)

MX10672,00000BF -19-14SEP05-1/1

Steering Cross Shaft Disassemble and Assemble

1. Remove cross shaft assembly. See Steering Cross Shaft Assembly Remove and Install. (Group 0315.)



T198024

Cross Shaft Assembly

1— Snap Ring (2 used)
2— Spacer (2 used)
3— Cross Shaft Bushing
4— Right Bellcrank
5— Link Bushing (rubber)
6— Drive Shaft
7— Left Bellcrank
8— Lubrication Fitting

2. Remove snap ring (1) and slide right bellcrank (4) from driveshaft (6). Remove cross shaft bushing (3) from each end of right bellcrank (4).
3. Repeat procedure for left bellcrank (7).
4. Clean and inspect driveshaft (6) for wear or damage. Replace as necessary.
5. Inspect bellcrank bushings (3) and (5) for wear or damage. Replace as necessary.
6. Inspect bellcrank bushing spacer (2) for wear or damage. Replace as necessary.
7. Inspect bellcrank lubrication fitting (8) for damage. Replace as necessary.
8. Assemble left bellcrank with bushings (2), (3), and (5). Install snap ring (1) on driveshaft (6) and slide left bellcrank (7) assembly onto driveshaft (6).
9. Repeat procedure for right bellcrank (4).
10. Install cross-shaft assembly in machine. See Steering Cross Shaft Assembly Remove and Install. (Group 0315.)

MX10672,00000C2 -19-14SEP05-1/1

Steering Lever Handle Remove and Install

NOTE: For hands-only machines:

- *Lock knob is not used.*
- *Use first three steps for both left and right handles.*

1. Remove cable bracket on steering lever.
2. Remove spring pin from handle. Remove cable assembly from handle.

NOTE: If equipped with buttons in handle, a wire harness near the bottom of the lever will need to be disconnected.

3. Loosen handle lock nut and set screw to remove handle from steering lever.
4. Assemble components in reverse order of removal. Tighten set screw to specification.

Specification

Handle Set Screw—Torque ..... 9 N·m (80 lb-in.)

5. Tighten lock nut to specification.

Specification

Set Screw Lock —Torque ..... 13.5 N·m (120 lb-in.)

MX10672,00000C1 -19-17FEB04-1/1

Hub Coupler Remove and Install

1. Remove hydrostatic pumps. See Hydrostatic Pump Remove and Install. (Group 0360.)
2. Measure or mark position of coupler on pump input shaft to aid in assembly.
3. Loosen two set screws in coupler and slide coupler from pump shaft.
4. Inspect hub for wear or damage repair or replace parts as necessary.
5. Install hub coupler on input shaft and set gap between the pump and the hub coupler to specification.

Specification	
Distance Between Hub Coupler and Pump—Gap	6 mm 0.250 in.

6. Apply medium strength thread lock to set screws and tighten to specification.

Specification	
Coupler-to-Pump Shaft Set Screw—Torque	37 N·m 27 lb-ft

7. Install hydraulic pump. See Hydrostatic Pump Remove and Install. (Group 0360.)

MX10672,000005F -19-09FEB04-1/1

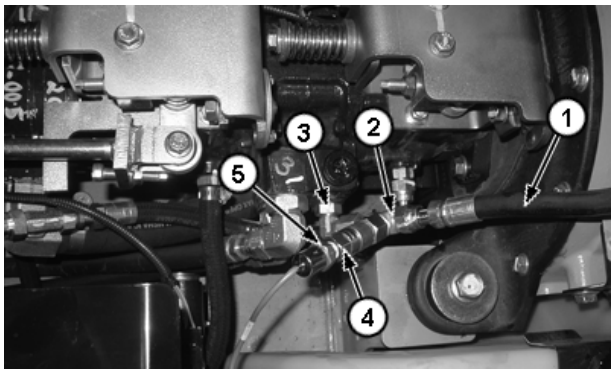
Hydrostatic and Hydraulic Start-Up Procedure

1. Park machine on flat level surface.
2. Raise and block machine. For skid steer loader, see Raising and Blocking Machine. (Operator's Manual.) For compact track loader, see Raising and Blocking Machine (Operator's Manual.)
3. Raise boom and engage boom lock. Shut off machine.
4. Raise cab. For skid steer loader, see Raising Operator's Station. (Operator's Manual.) For compact track loader, see Raising Operator's Station. (Operator's Manual.)
5. Install remote start box. See Remote Start Box Installation. (Group 9025-25.)
6. Flush hydraulic system. See Super Caddy Oil Clean-Up Procedure. (CTM310.)
7. Check hydraulic oil tank level. For skid steer loader, see Check Hydraulic Tank Oil Level. (Operator's Manual.) For compact track loader, see Check Hydraulic Tank Oil Level. (Operator's Manual.)
8. Disconnect wires to fuel shut-off solenoid.
9. Turn remote start box key to START and crank engine for 10 seconds.
10. Connect wires to fuel shut-off solenoid. See Engine Harness (W1) Component Location. (Group 9015-10.)
11. Remove charge flow line (1) from left side of hydrostatic pump center manifold.
12. Connect tee fitting (2) to charge flow outlet fitting (3) and attach charge flow line (1) to opposite end of tee fitting (2).
13. Install quick coupler (4) to JT07042 gauge (0-600 psi) (5) and connect to tee fitting (2).
14. Put steering levers in neutral position. Start engine using remote start box and operate at slow idle. Charge pressure should reach specification within 5 to 10 seconds.

Specification	
Charge Pressure—Pressure	1965 kPa 19.6 bar 285 psi

IMPORTANT: If charge pressure remains below 350 kPa (3.5 bar) (50 psi) for more than 10 seconds, stop engine and check for cause of low pressure. Failure to stop engine when charge pressure is low may cause severe damage to pumps and motors.

15. Stop engine after charge pressure reaches specification.



T197383A —UN—11FEB04

Charge Pressure Relief Test Location

1— Charge Flow Line
2— Tee Fitting
3— Charge Flow Outlet Fitting
4— Quick Coupler
5— Pressure Gauge Coupler

CAUTION: To avoid injury from escaping fluid under pressure, stop engine and relieve the pressure in the system before disconnecting or connecting hydraulic or other lines. Tighten all connections before applying pressure.

16. Relieve hydraulic system pressure. See Hydraulic System Pressure Release. (Group 9025-25.)
17. Remove gauge and connect hydraulic lines.
18. Remove remote start box. See Remote Start Box Installation. (Group 9025-25.)
19. Lower cab. For skid steer loader, see Raising Operator's Station. (Operator's Manual.) For compact track loader, see Raising Operator's Station. (Operator's Manual.)
20. Disengage boom lock and lower boom with boom and bucket cylinders fully retracted.
21. Start and run engine at half idle for 20 minutes.
22. Stop engine. Check hydraulic oil tank level. For skid steer loader, see Check Hydraulic Tank Oil Level. (Operator's Manual.) For compact track loader, see Check Hydraulic Tank Oil Level. (Operator's Manual.)
23. Start engine and operate at half idle. Operate steering, boom and arm functions for 3 minutes to remove air from the hydraulic system.
24. Stop engine. Check hydraulic oil tank level. For skid steer loader, see Check Hydraulic Tank Oil Level. (Operator's Manual.) For compact track loader, see Check Hydraulic Tank Oil Level. (Operator's Manual.)
25. Check all hydraulic line connections. Tighten as necessary.

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TX19495,00000B3 -19-14APR05-1/2

26. Adjust steering. See Steering Lever Adjustment—Centering. (Group 9026-25.) See Tracking Adjustment—Skid Steer Loader, or see Tracking Adjustment—Compact Track Loader. (Group 9026-25.)
27. Operate engine for an additional 30 minutes to circulate hydraulic oil through the hydraulic oil filter.
28. Stop engine. Replace hydraulic oil filter. For skid steer loader, see Replace Hydraulic Oil Filter. (Operator's Manual.) For compact track loader, see Replace Hydraulic Oil Filter. (Operator's Manual.)

TX19495,00000B3 -19-14APR05-2/2

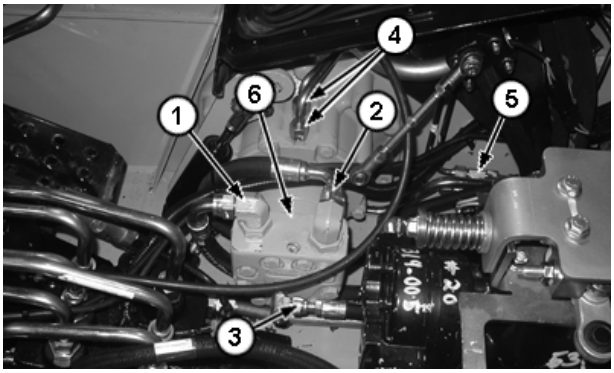
Hydrostatic Motor and Park Brake Remove and Install—Skid Steer Loader

1. Park machine on flat level surface.
2. Raise and block skid steer loader. See Raising and Blocking Machine. (Operator's Manual.)
3. Raise boom and engage boom lock. Shut off machine.
4. Raise cab. See Raising Operator's Station. (Operator's Manual.)
5. Remove cover plates to access hydrostatic motor.

NOTE: Remove only the upper steering dampener mounting hardware. Remove steering links and rods from handles and hydrostatic pumps, allowing ends to remain on cross shaft.

6. Remove steering cross shaft. See Steering Cross Shaft Assembly Remove and Install. (Group 0315.)
7. Remove steering lever from side being serviced.
8. Disconnect forward (1), reverse (2) and case drain (3) lines from hydrostatic motor (6) being removed.
9. Remove brake lines (4) from brake housing to tee connector (5) and cap and seal lines.
10. Remove wheels from side being serviced.
11. Drain chain case.
12. Remove chain case access plate. See Chain Case Access Plate Remove and Install. (Group 0250.)

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



T198419A —UN—12MAR04

Disconnect Hoses

1— Forward Hydraulic Line
2— Reverse Hydraulic Line
3— Case Drain Line
4— Brake Line (2 used)
5— Tee Connector
6— Hydrostatic Motor

13. Using appropriate lifting device support front axle housing assembly and remove retaining hardware. See Axle Housing Remove and Install. (Group 0201.)

Specification

Axle Housing Assembly—Weight	33 kg (72 lbs)

14. Repeat procedure for rear axle housing assembly.
15. Slide wheel sprockets toward brake sprocket.

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MX10672,0000060 -19-03NOV06-1/3

16. Remove drive chains (7) from brake sprocket (8).
17. Remove brake sprocket cap screw (9) and washer (10) and slide brake sprocket (8) from drive shaft.

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

18. Using appropriate lifting device, support hydrostatic motor and remove mounting hardware from chain case opening.

Specification

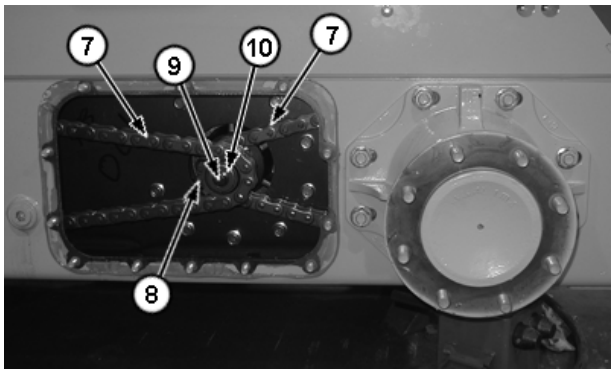
Hydrostatic Motor—Weight ..... 48 kg (105 lbs)

19. Remove hydrostatic motor (6) from machine using appropriate lifting device.
20. Remove hydrostatic motor from brake assembly. See Hydrostatic Motor and Park Brake Disassemble and Assemble. (Group 0360.)
21. Align hydrostatic motor to brake assembly install cap screws. Tighten to specification.

Specification

Hydrostatic Motor Mounting Cap Screw—Torque ..... 70 N·m (52 lb-ft)

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



T198420A —UN—12MAR04

Chain and Brake Sprocket

7— Drive Chain
8— Brake Sprocket
9— Brake Sprocket Cap Screw
10— Washer

22. Using appropriate lifting device, install hydrostatic motor and install mounting hardware through chain case opening. Tighten to specification.

Specification

Hydrostatic Motor—Weight ..... 48 kg (105 lbs)

Specification

Hydrostatic Motor Mounting Cap Screw—Torque ..... 110 N·m (80 lb-ft)

Continued on next page

MX10672,0000060 -19-03NOV06-2/3

23. Install brake sprocket (8) on hydrostatic motor drive shaft.

    Install washer (10) and brake sprocket cap screw (9). Tighten brake sprocket cap screw (9) to specification.

Specification	
Brake Sprocket Cap Screw—Torque	90 — 120 N·m 65 — 90 lb-ft

24. Install drive chains on brake sprocket.

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

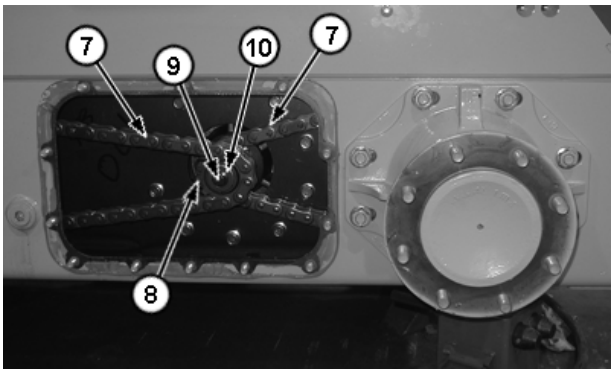
25. Using appropriate lifting device install axle housing assemblies. Tighten hardware to specification. See Axle Housing Remove and Install. (Group 0201.)

Specification	
Axle Housing Assembly—Weight	33 kg 72 lbs

Specification	
Axle Housing Mounting Cap Screw—Torque	305 N·m 225 lb-ft

26. Install chain case plate. See Chain Case Access Plate Remove and Install. (Group 0250.)
27. Fill chain case with correct fluid. See Change Chain Case Oil. (Operator's Manual.)
28. Install front and rear wheels. Tighten wheel nuts to specification.

Specification	
Wheel Nut—Torque	237 N·m 175 lb-ft



T198420A —UN—12MAR04

Chain and Brake Sprocket

7— Drive Chain
8— Brake Sprocket
9— Brake Sprocket Cap Screw
10— Washer

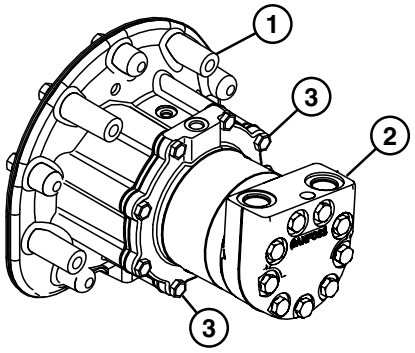
29. Install brake lines to brake housing.
30. Connect forward, reverse and case drain lines to hydrostatic motor.
31. Install steering lever.
32. Install steering cross shaft. See Steering Cross Shaft Assembly Remove and Install. (Group 0315.)
33. Install cover plates.
34. Lower cab. See Raising Operator's Station. (Operator's Manual.)
35. Lower boom and bucket.
36. Remove skid steer loader from blocks. See Raising and Blocking Machine. (Operator's Manual.)

MX10672,0000060 -19-03NOV06-3/3

Hydrostatic Motor and Park Brake Disassemble and Assemble—Skid Steer Loader

1. Clean exterior of hydrostatic motor and park brake before disassembling.
2. Separate park brake housing (1) from wheel motor (2) by removing eight motor flange-to-brake housing cap screws (3).

1— Park Brake Housing
2— Wheel Motor
3— Cap Screw (8 used)



T200169 —UN—19MAY04

Wheel Motor Assembly

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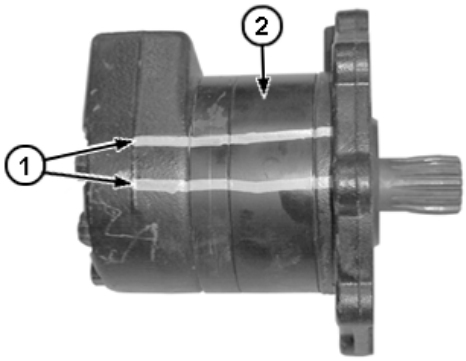
MX10672,00000C3 -19-30OCT07-1/27

3. Scribe two lines (1) on hydrostatic motor (2) approximately 25 mm (1 in.) apart, to aid in assembly.
4. Remove driveshaft from motor and set motor on mounting flange standing upright.
5. Remove cap screws. Carefully lift off end cap. Balance plate and spacer may not be firmly attached.

1— Scribed Line **2— Hydrostatic Motor**



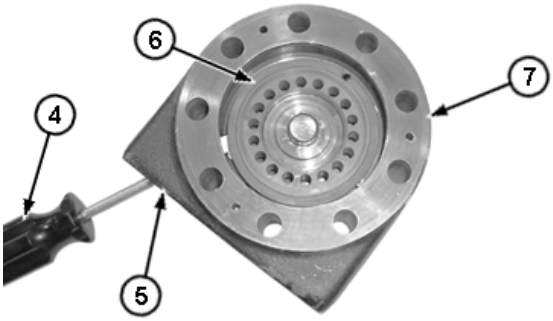
T197938A —UN—19FEB04

Hydrostatic Motor

MX10672,00000C3 -19-30OCT07-2/27

6. Use a screwdriver (4) through port (5) to aid in separating balance plate (6) from end cap (7).
7. Remove back-up rings and O-rings from balance plate and discard.
8. Remove spacer.

4— Screw Driver **6— Balance Plate**
5— Port **7— End Cap**



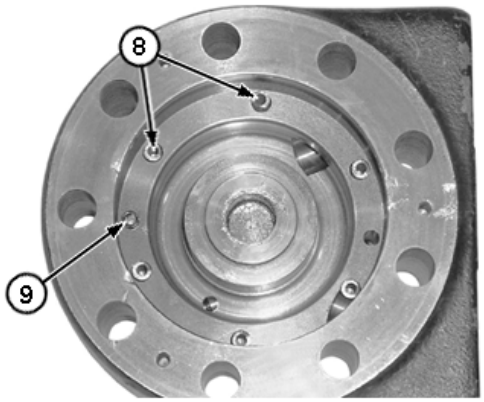
T197940A —UN—19FEB04

Separating Balance Plate and End Cap

MX10672,00000C3 -19-30OCT07-3/27

9. Remove and inspect springs (8).
10. Check that roll pin (9) is not worn or loose in bore.

8— Spring **9— Roll Pin**



T197941A —UN—19FEB04

Spring and Roll Pin Inspection

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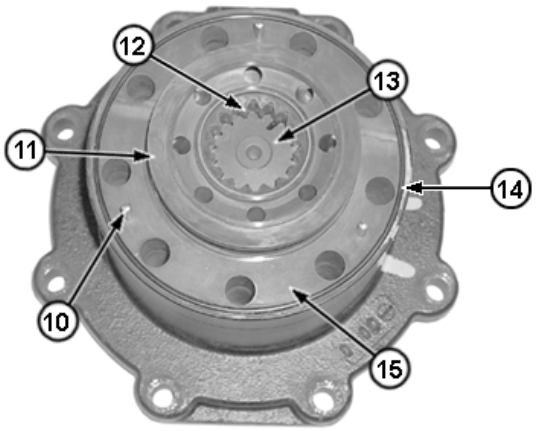
MX10672,00000C3 -19-30OCT07-4/27

11. Remove guide pins (10), disk valve (11), retainer (12), and disk valve driver (13).
12. Remove and discard O-ring (14).
13. Remove channel plate (15).

10— Guide Pin (3 used)
11— Disk Valve
12— Retainer
13— Disk Valve Driver
14— O-Ring
15— Channel Plate



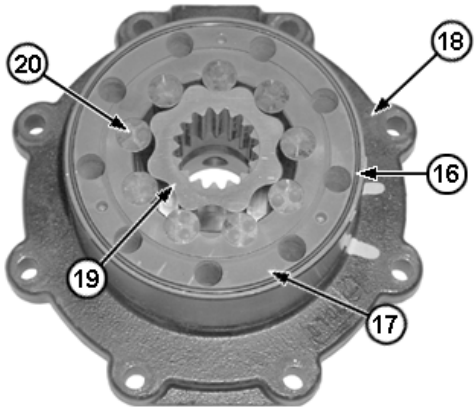
T197942A —UN—19FEB04

Guide Pin Location

MX10672,00000C3 -19-30OCT07-5/27

14. Remove and discard O-rings (16) from both sides of rim (17).
15. Carefully lift rim from mounting adapter (18) so rotor (19) and rollers (20) do not slip out.

16— O-Ring (3 used)
17— Rim
18— Mounting Adapter
19— Rotor
20— Roller (9 used)



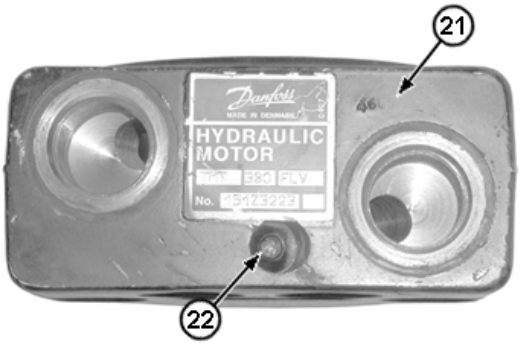
T197943A —UN—19FEB04

Removing O-Rings From Rim

MX10672,00000C3 -19-30OCT07-6/27

16. Remove plug (22) on end cap (21) for shuttle valve.

21— End Cap
22— Plug



T197944A —UN—19FEB04

End Cap Shuttle Valve Plug

Continued on next page

MX10672,00000C3 -19-30OCT07-7/27

NOTE: Early production motors use two spring guides (23). Later production motors do not use spring guides.

17. For later production motors, remove spring (24), spool (25), and spring (24) from end cap.

    For early production motors, remove spring guide (23), spring (24), spool (25), spring (24), and spring guide (23) from end cap.

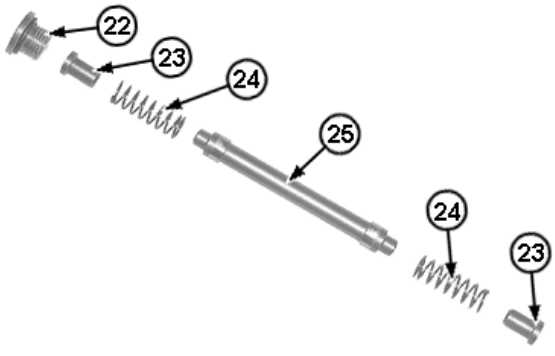
18. Remove and discard O-ring from plug (22).

NOTE: Clean all parts in a suitable solvent and dry with compressed air. Do not wipe parts with paper towels or rags. Lint in hydraulic system will cause damage.

19. Clean and inspect all parts for wear or scoring. Repair or replace parts as necessary.

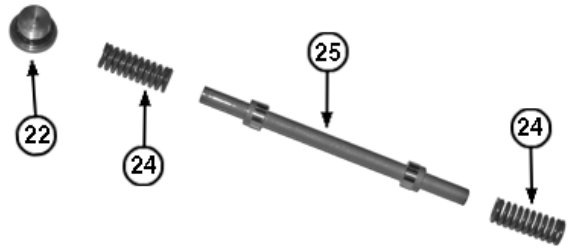
IMPORTANT: Due to extremely tight tolerances and surface finish of hydrostatic motor internal surfaces it is very important to maintain absolute cleanliness during assembly of the hydrostatic motor.

20. Set hydrostatic motor mounting plate on a flat surface.
21. During assembly of hydrostatic motor, make sure the scribe marks on each section are aligned.
22. Install new O-ring (16) on mounting plate.
23. Install rim (17), rotor (19), and rollers (20) onto mounting plate. Splines on rotor (19) must face up.
24. Install new O-ring (16) on rim.
25. Install a spacer 19 mm (3/4 in.) diameter x 76 mm (3 in.) long into ID of rotor (19). This will aid in assembly by not allowing disk valve driver to slide down in rotor.



T197945A —UN—20FEB04

Shuttle Valve Spool (early motors)



TX1031145A —UN—26OCT07

Shuttle Valve Spool (later motors)

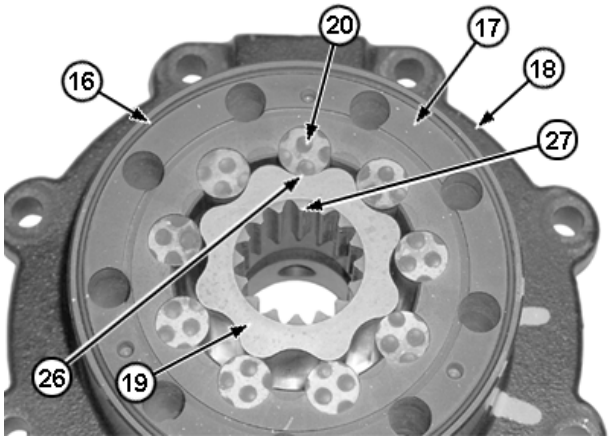
22— Plug
23— Spring Guide (2 used on early motors)
24— Spring (2 used)
25— Spool

MX10672,00000C3 -19-30OCT07-8/27

IMPORTANT: The rotor, rollers, disk valve, and disk valve driver must be properly timed during assembly.

26. Rotate rotor (19) so a roller (20) rests in the bottom of a valley (26) on the rotor (19). The tip on an internal spline (27) should be aligned with the bottom of the valley (26).

16— O-Ring
17— Rim
18— Mounting Plate
19— Rotor
20— Roller
26— Wheel Valley
27— Spline Tip



T197956A —UN—19FEB04

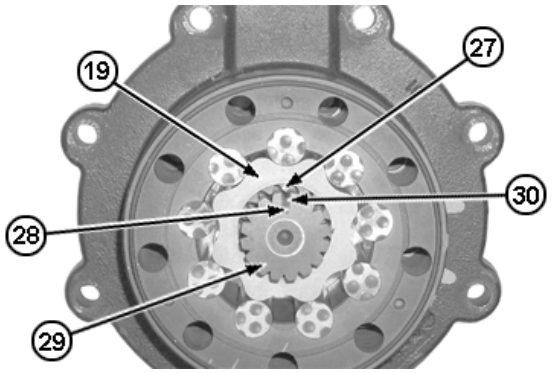
Hydrostatic Motor Assembly

Continued on next page

MX10672,00000C3 -19-30OCT07-9/27

27. Make a mark (28) on disk valve driver (29) in line with a spline groove (30) between two teeth.
28. Install disk valve driver (29) into splines on rotor (19), aligning mark (28) on driver with spline tip (27) that is directly in line with the roller (26) in the valley.
29. Install channel plate (15) onto rim, lining up scribe marks.

19— Wheel
27— Wheel Spline Tip
28— Disk Valve Driver Mark
29— Disk Valve Driver
30— Spline Groove



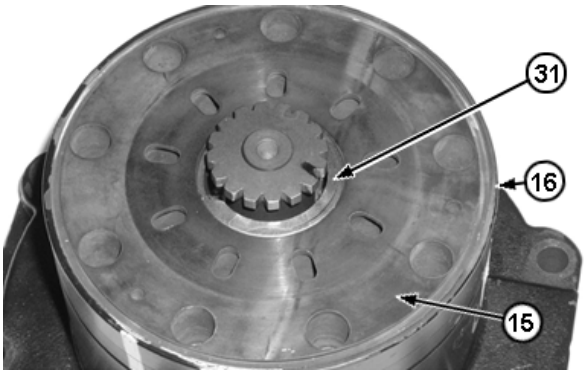
T197958A —UN—20FEB04

MX10672,00000C3 -19-30OCT07-10/27

IMPORTANT: Disk valve drive retainer must be installed with convex side up. If installed incorrectly disk valve driver can slip out of disk valve and change disk valve timing.

30. Install disk valve driver retainer (31) into channel plate (15) with convex side facing up.
31. Install new O-ring (16).

15— Channel Plate
16— O-Ring
31— Disk Valve Driver Retainer



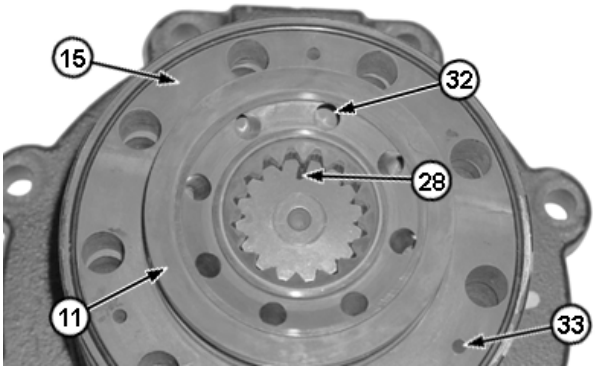
T197963A —UN—20FEB04

Disk Valve Driver Retainer

MX10672,00000C3 -19-30OCT07-11/27

32. Install disk valve (11) onto driver (29). When correctly installed an oil port (32) will be just to the right of the mark (28) on the disk valve driver (11).
33. Install guide pins in holes (33), through channel plate (15) and into rim (17).
34. Install new O-ring (16) on channel plate (15).

11— Disk Valve
15— Channel Plate
28— Disk Valve Mark
32— Oil Port
33— Guide Pin Hole



T197964A —UN—20FEB04

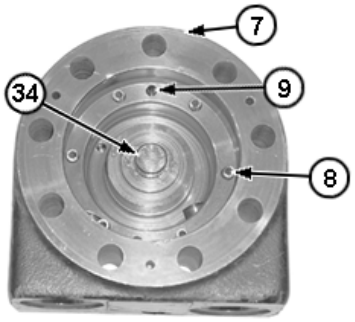
Timing Disk Valve Driver

Continued on next page

MX10672,00000C3 -19-30OCT07-12/27

35. Apply petroleum jelly to springs (8) and spacer (34). Install springs and spacer into end cap.
36. Install new back-up rings and O-rings (16) onto balance plate (6).
37. Apply petroleum jelly to balance plate. Install into end cap (7) making sure that roll pin (9) fits into cut-out in balance plate.

7— End Cap
8— Spring
9— Roll Pin
34— Spacer



T197965A —UN—20FEB04

End Cap Assembly

MX10672,00000C3 -19-30OCT07-13/27

IMPORTANT: Avoid machine steering problems. Shuttle valve spools and springs must be the same for both motors. Springs used for early and later production shuttle valve spools are not interchangeable, and can cause steering problems if used together in different motors.

NOTE: Early production motors use two spring guides (23). Later production motors do not use spring guides.

38. For later production motors, install spring (24), spool (25), and spring (24) into end cap.

    For early production motors, install spring guide (23), spring (24), spool (25), spring (24) and spring guide (23) into end cap.

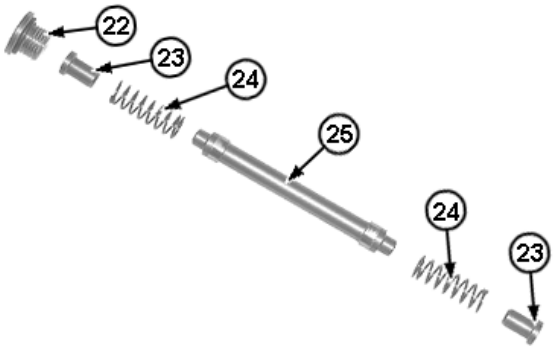
39. Install new O-ring on plug (22) and install into end cap (21).

Specification	
Shuttle Valve Plug—Torque	13 N·m 115 lb-in

40. Install end cap. In a crossing pattern tighten end cap cap screws to specification in two stages.

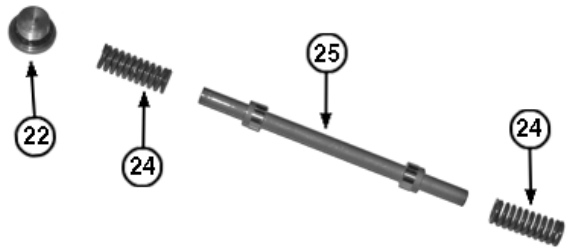
Specification	
End Cap Cap Screw—Initial Torque	55 N·m 41 lb-ft

Specification	
End Cap Cap Screw—Final Torque	110 N·m 81 lb-ft



T197945A —UN—20FEB04

Shuttle Valve Spool (early motors)



TX1031145A —UN—26OCT07

Shuttle Valve Spool (later motors)

22— Plug
23— Spring Guide (2 used on early motors)
24— Spring (2 used)
25— Spool

Continued on next page

MX10672,00000C3 -19-30OCT07-14/27

41. Remove brake spring (1) and O-ring (2).

1— Brake Spring **2— O-Ring**

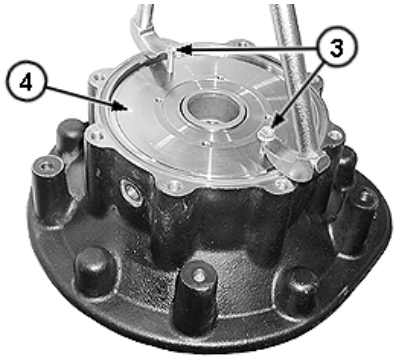
T199197A —UN—15APR04

Brake Spring and O-Ring Removal

MX10672,00000C3 -19-30OCT07-15/27

42. Install two M6 cap screws (3) in brake piston (4) and remove brake piston using two pry bars.

3— M6 Cap Screw (2 used) **4— Brake Piston**



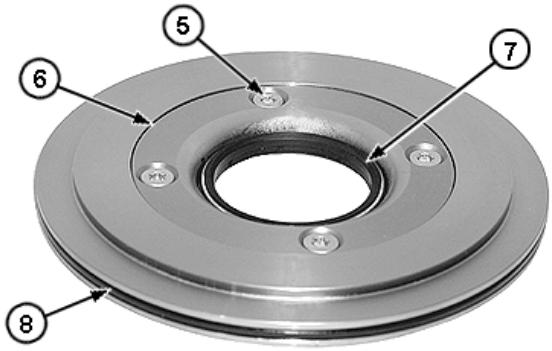
T199198A —UN—15APR04

Brake Piston Remove

MX10672,00000C3 -19-30OCT07-16/27

43. Remove four screws (5), seal retainer (6), piston seal (7), and O-ring (8).

5— Screw (4 used) **7— Piston Seal**
6— Seal Retainer **8— O-Ring**



T199202A —UN—15APR04

Brake Piston Seal Retainer

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MX10672,00000C3 -19-30OCT07-17/27

44. Remove seven brake disks and six spacer plates (9).

9— Spacer Plate (6 used)

T199204A —UN—15APR04

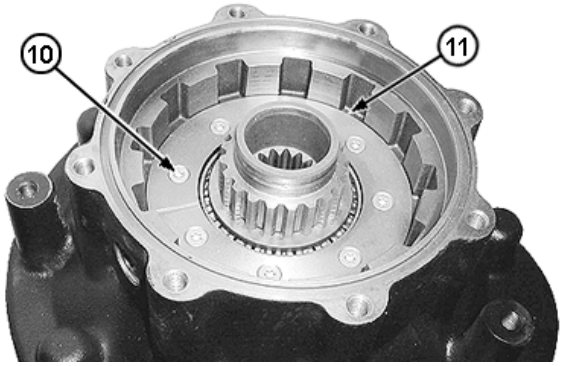
Brake Disks and Spacer Plates

MX10672,00000C3 -19-30OCT07-18/27

45. Remove eight screws (10) and shaft retainer (11).

10— Screw (8 used)

11— Shaft Retainer



T199207A —UN—15APR04

Shaft Retainer

MX10672,00000C3 -19-30OCT07-19/27

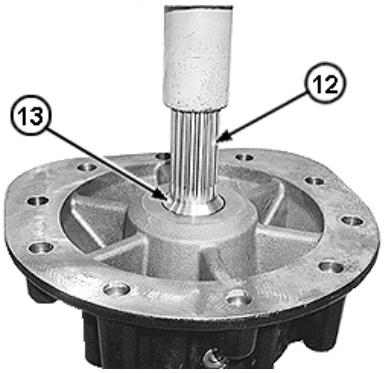
NOTE: Driveshaft and bearings are an assembly. If shaft or bearings are found to be worn or damaged, they must be replaced as an assembly.

46. Remove shaft and bearing assembly (12) using a press.

47. Remove shaft seal (13).

12— Shaft and Bearing Assembly

13— Shaft Seal



T199208A —UN—15APR04

Shaft and Bearing Removal

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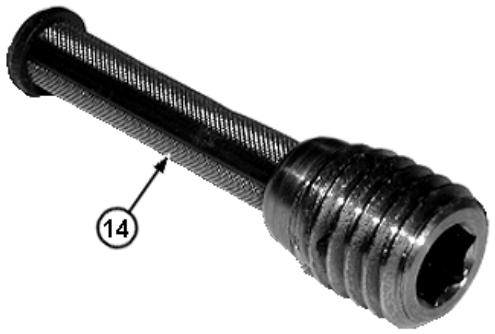
MX10672,00000C3 -19-30OCT07-20/27

48. Remove orifice/screen (14) from input end of shaft using a 6 mm hex socket.

IMPORTANT: Do not clean brake disks with solvent. Use clean brake system oil only.

49. Clean and inspect all parts for wear or damage.

14— Orifice/Screen



T199209A —UN—15APR04

Orifice Screen

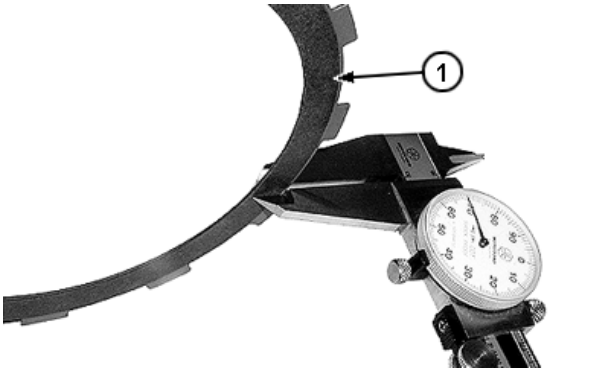
MX10672,00000C3 -19-30OCT07-21/27

50. Measure brake disks and spacer plates for thickness and flatness. Check brake disks for discoloration. If not to specification, replace with new.

Specification	
Brake Disk—Thickness—Minimum	1.60 mm 0.063 in.
Flatness—Maximum	0.20 mm 0.008 in.
Spacer Plate—Thickness—Minimum	1.50 mm 0.059 in.
Flatness—Maximum	0.20 mm 0.008 in.

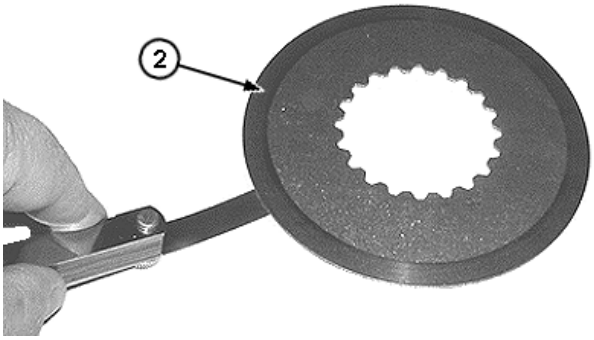
51. Apply petroleum jelly to seal lip. Install shaft seal into brake housing with lip facing brake pack.

1— Brake Disk **2— Spacer Plate**



T199212A —UN—15APR04

Measure Brake Disks



T199214A —UN—15APR04

Measure Spacer Plate

Continued on next page

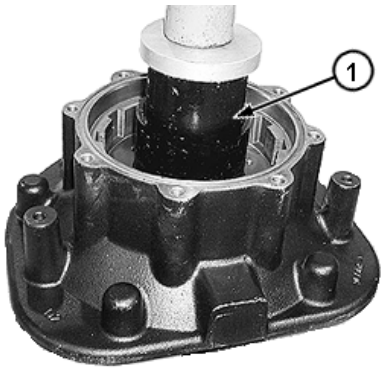
MX10672,00000C3 -19-30OCT07-22/27

IMPORTANT: Press on outer race of bearing assembly only. Pressing on inner race of bearing or shaft will cause damage to bearing assembly.

52.

Install driveshaft and bearing assembly (1) using a press.

1— Driveshaft and Bearing Assembly



T199217A —UN—15APR04

Install Drive Shaft Assembly

MX10672,00000C3 -19-30OCT07-23/27

53. Install shaft retainer. Groove on top of retainer must line up with notch in housing. Tighten screws to specification.

Specification

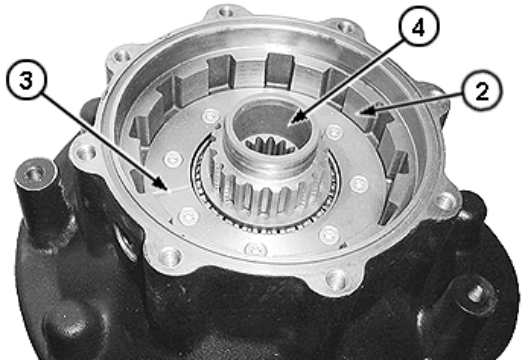
Shaft Retainer Screw—Torque ..... 7—10 N·m
62—88 lb-in.

54. Install orifice/screen. Tighten to specification.

Specification

Orifice/Screen—Torque ..... 25—35 N·m
18—26 lb-ft

2— Shaft Retainer
3— Groove
4— Orifice/Screen



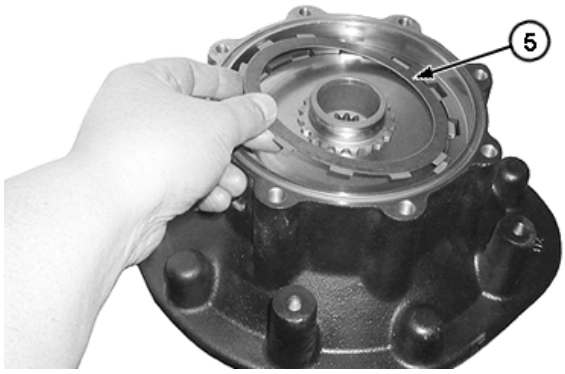
T199221A —UN—15APR04

Install Shaft Retainer

MX10672,00000C3 -19-30OCT07-24/27

55. Starting with a brake disk (5), install brake pack by alternating brake disks and spacer plates.

5— Brake Disk (7 used)



T199222A —UN—15APR04

Install Brake Disks and Spacers

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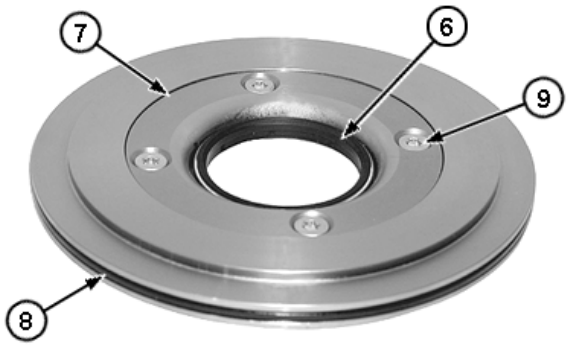
MX10672,00000C3 -19-30OCT07-25/27

IMPORTANT: Brake piston seal must be installed so lip will face brake pack.

56. Apply petroleum jelly to brake piston seal lip. Install brake piston seal (6) using a press.
57. Install seal retainer (7). Tighten screws (9) to specification.

Specification	
Seal Retainer Screw—Torque	25—35 N·m 62—88 lb-in.

58. Apply petroleum jelly to brake piston O-ring (8). Install brake piston O-ring.
59. Install brake piston into housing using a press.



T199223A —UN—15APR04

Assemble Brake Piston

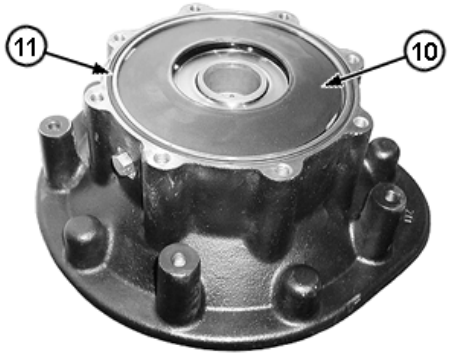
6— Piston Seal
7— Seal Retainer
8— O-Ring
9— Screw (4 used)

MX10672,00000C3 -19-30OCT07-26/27

60. Install brake spring (10) with outer edge of spring against piston.
61. Apply petroleum jelly to housing O-ring (11) and install in housing.
62. Install park brake (1) to wheel motor (2) using eight cap screws (3). Tighten to specification.

Specification	
Motor Flange-To-Brake Housing Cap Screws—Torque	70 N·m 52 lb-ft

10— Brake Spring
11— Housing O-Ring



T199224A —UN—15APR04

Install Brake Spring

MX10672,00000C3 -19-30OCT07-27/27

Hydrostatic Motor, Park Brake and Gearbox Remove and Install—Compact Track Loader

1. Park machine on a flat level surface.
2. Raise and block machine. See Raising and Blocking Machine. (Operator's Manual.)
3. Raise boom and engage boom lock.
4. Remove rubber track. See Rubber Track Remove and Install. (Group 0130.)
5. Remove drive sprocket. See Drive Sprocket Remove and Install. (Group 0130.)
6. Remove line covers from between track frame and machine.
7. Clean dirt and debris away from line connections on hydrostatic motor.
8. Mark and tag hydrostatic lines to hydrostatic motor to aid in assembly.
9. Disconnect hydrostatic lines from hydrostatic motor.
10. Cap and plug lines and hydrostatic motor ports.

CAUTION: Avoid possible crushing or pinching injury. Use an appropriate lifting device to remove hydrostatic motor. Support motor with appropriate lifting device before removing mounting cap screws. Motor will drop from track frame if screws are removed.

11. Attach an appropriate lifting device to hydrostatic motor.

Specification

Hydrostatic Motor, Park Brake and Gearbox Assembly—Weight	68 kg (150 lb) approximate

12. Remove cap screws mounting hydrostatic motor to track frame.
13. Repair or replace parts as necessary. See Hydrostatic Motor, Park Brake and Gearbox Disassemble—Single Speed Compact Track Loader. See Hydrostatic Motor, Park Brake and Gearbox Disassemble—Two Speed Compact Track Loader. (Group 0360.)
14. Clean motor mounting area on track frame and drive sprocket mounting area on hydrostatic motor.
15. Install hydrostatic motor in track frame.

Hydrostatic Motor—Specification

Cap Screw—Torque	230—270 N·m (170—200 lb-ft)

16. Install hydrostatic lines to hydrostatic motor.
17. Install line covers.
18. Install drive sprocket. See Drive Sprocket Remove and Install. (Group 0130.)
19. Install rubber track. See Rubber Track Remove and Install. (Group 0130.)
20. Adjust track sag. See Check and Adjust Track Sag. (Group 9020-25.)
21. Raise machine and remove blocks. See Raising and Blocking Machine. (Operator's Manual.)
22. Check hydraulic oil. See Check Hydraulic Tank Oil Level. (Operator's Manual.)
23. Lower boom.
24. Perform hydrostatic and hydraulic start-up procedure. See Hydrostatic and Hydraulic Start-Up Procedure. (Group 0360.)

KK70125,0000062 -19-22AUG07-1/1

Hydrostatic Motor, Park Brake and Gearbox Disassemble—Single Speed Compact Track Loader

CAUTION: Avoid possible crushing or pinching injury. Use an appropriate lifting device to move hydrostatic motor, park brake and gear box.

1. Remove hydrostatic motor, park brake and gearbox from machine. See Hydrostatic Motor, Park Brake and Gearbox Remove and Install—Compact Track Loader. (Group 0360.)
2. Clean exterior of hydrostatic motor, park brake and gearbox housing before disassembling.
3. Remove all plugs and allow hydraulic oil to drain.
4. Remove plugs (1) from gearbox end cover (3) and drain oil.
5. Remove snap ring (2) retaining gearbox end cover and remove end cover.

T213763A —UN—29AUG05

Gearbox End Cover

1— Plug (3 used)
2— Snap Ring
3— End Cover

KK70125,0000037 -19-28APR08-1/15

6. Remove sun gear (4) from drive shaft (5).
7. Place hydrostatic motor, park brake and gearbox on bench with gearbox housing facing downward.
8. Scribe or mark a line across hydrostatic motor and park brake housings to aid in assembly.

4— Sun Gear
5— Drive Shaft

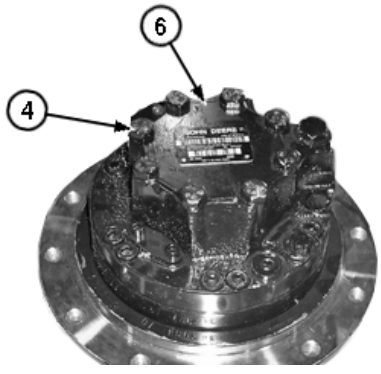
T213780A —UN—29AUG05

Gearbox

KK70125,0000037 -19-28APR08-2/15

9. Remove motor end cover cap screws (6). Remove end cover (8).

6— End Cover Cap Screw (8 used)



T213123A —UN—30AUG05

Hydrostatic Motor End Cover

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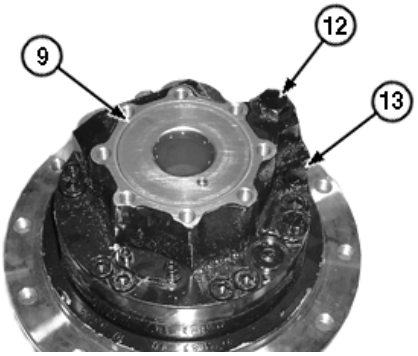
KK70125,0000037 -19-28APR08-3/15

10. Remove and discard O-ring (9).
11. Drain remaining oil from motor housing.
12. Remove shuttle valve plug (12).

9— O-Ring
12— Shuttle Valve Plug
13— Flushing Valve Plug



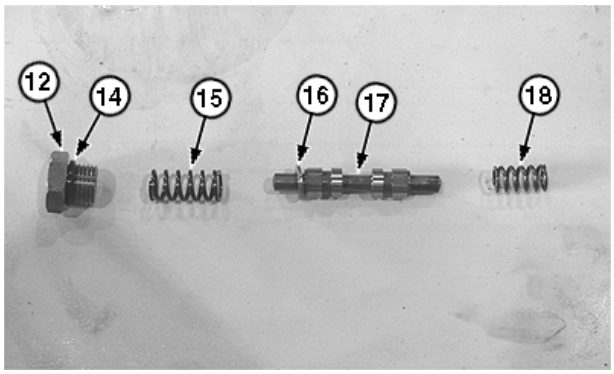
T213124A —UN—29AUG05

Distributor Housing

KK70125,0000037 -19-28APR08-4/15

13. Remove shuttle valve assembly (14—18). Remove spring (18) using a magnet.

12— Plug
14— O-Ring
15— Spring
16— Washer
17— Spool
18— Spring



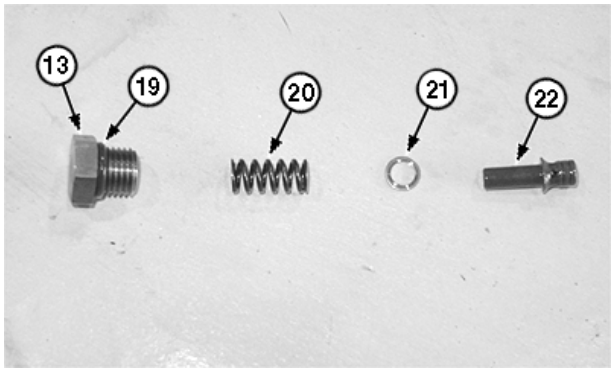
T213151A —UN—30AUG05

Shuttle Valve Assembly

KK70125,0000037 -19-28APR08-5/15

14. Remove flushing valve plug (13).
15. Remove flushing valve assembly (19—22). Remove poppet (22) and shim (21) using a magnet.

13— Plug
19— O-Ring
20— Spring
21— Shim
22— Poppet



T213152A —UN—30AUG05

Flushing Valve Assembly

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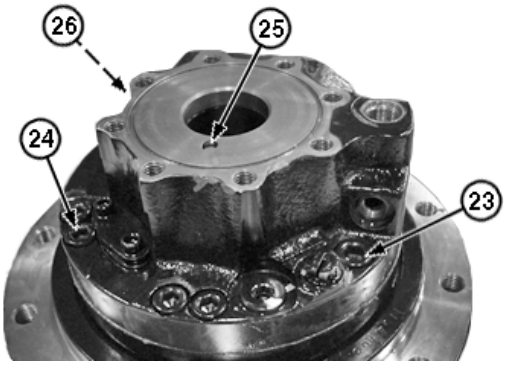
KK70125,0000037 -19-28APR08-6/15

16. Remove cap screws (23 and 24). Remove distributor housing.
17. Mark position of distributor in housing using a marking pen.

IMPORTANT: Do not damage distributor timing face or locating pin.

IMPORTANT: Distributor has springs located around top end. Do not lose springs when removing distributor.

18. Gently tap locating pin (25) with soft steel drift to remove distributor from housing.
19. Remove cap screw (26) attaching cam ring to distributor housing and remove cam ring.



T213127A —UN—29AUG05

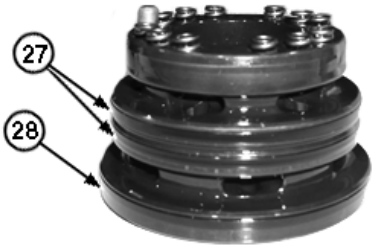
Distributor Housing

23— Cap Screw (2 used)
24— Cap Screw (8 used)
25— Distributor Locating Pin
26— Cap Screw

KK70125,0000037 -19-28APR08-7/15

20. Remove seals (27 and 28) from distributor.

27— Seal (2 used)
28— Seal



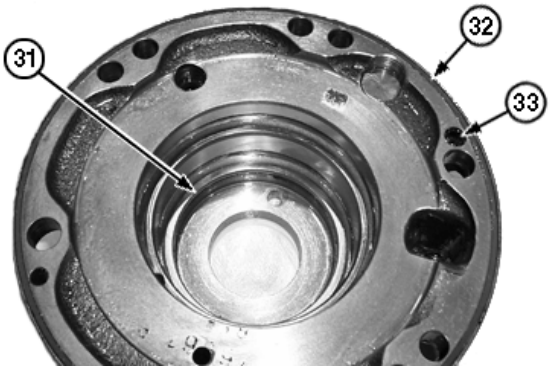
T213128A —UN—29AUG05

Distributor

KK70125,0000037 -19-28APR08-8/15

21. Remove seal (31) and O-rings (32 and 33) from distributor housing.

31— Seal
32— O-Ring
33— O-Ring



T213142A —UN—29AUG05

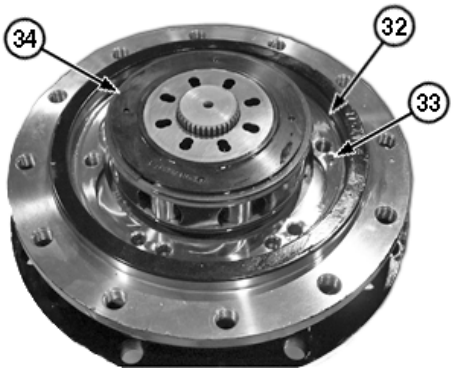
Distributor Housing

Continued on next page

KK70125,0000037 -19-28APR08-9/15

22. Remove cylinder block (34).
23. Remove O-rings (32 and 33) from park brake housing.
24. Remove cylinder block spacer from bearing.

32— O-Ring
33— O-Ring
34— Cylinder Block



T213791A —UN—30AUG05

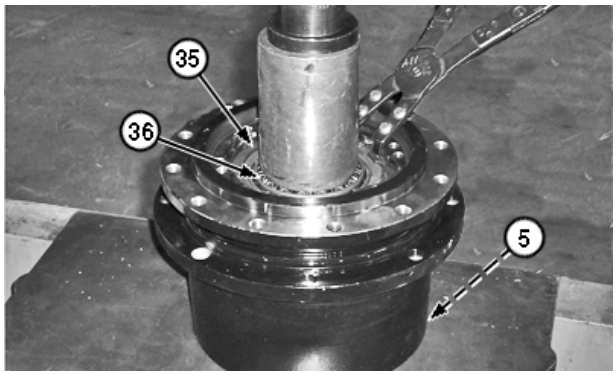
Cylinder Block

KK70125,0000037 -19-28APR08-10/15

IMPORTANT: Apply only 2—4 tons of pressure to remove snap ring. Applying more pressure can damage bearing.

25. Using a press, remove large snap ring (35) from park brake housing. Support drive shaft from below and press on bearing.
26. Gently tap drive shaft out of park brake housing.
27. Remove bearing retainer snap ring from drive shaft.
28. Press bearing off of drive shaft.
29. Remove brake piston needle bearing from drive shaft.

5— Drive Shaft (supported)
34— Snap Ring
35— Bearing



T213788A —UN—30AUG05

Snap Ring Removal

KK70125,0000037 -19-28APR08-11/15

30. Remove bearing support ring (37) from park brake housing.
31. Remove disc spring (38). Note position of disc spring before removing.
32. Remove brake piston (39).
33. Remove brake disc stack (40). Keep discs in correct order for assembly.

37— Bearing Support Ring
38— Disc Spring
39— Brake Piston Assembly
40— Brake Disc Stack

T213789A —UN—30AUG05

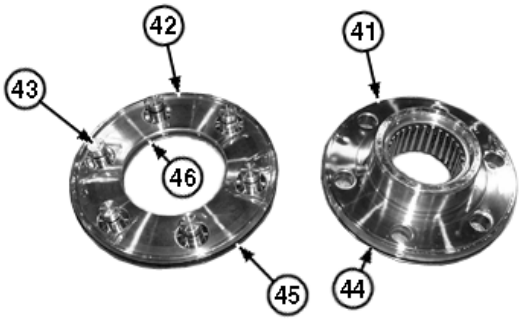
Park Brake Housing

Continued on next page

KK70125,0000037 -19-28APR08-12/15

34. Separate seal ring (41) from brake piston (42).
35. Remove seal (44) from seal ring.
36. Remove seals (45 and 46) from brake piston.

41— Seal Ring
42— Brake Piston
43— Brake Pin (6 used)
44— Seal
45— Seal
46— Seal



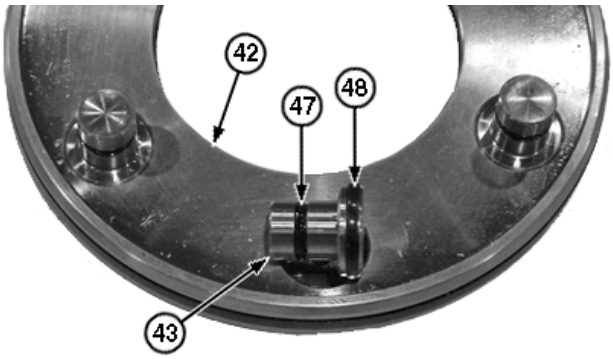
T213799A —UN—30AUG05

Brake Piston Assembly

KK70125,0000037 -19-28APR08-13/15

37. Remove brake pins (43) from brake piston (42) and remove O-rings (47 and 48).

42— Brake Piston
43— Brake Piston Pin (6 used)
47— O-Ring (6 used)
48— O-Ring (6 used)



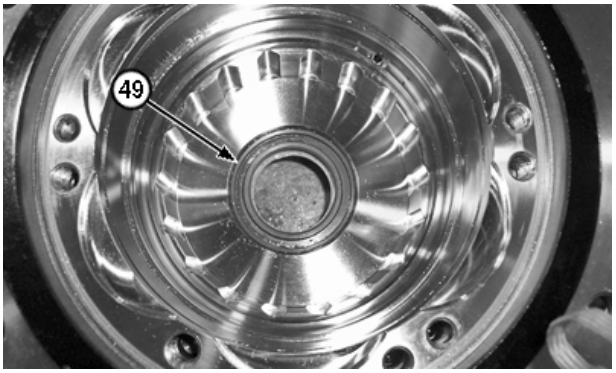
T213150A —UN—29AUG05

Brake Piston

KK70125,0000037 -19-28APR08-14/15

38. Remove shaft seal (49) from inside of housing.

49— Shaft Seal



T213157A —UN—29AUG05

Shaft Seal

KK70125,0000037 -19-28APR08-15/15

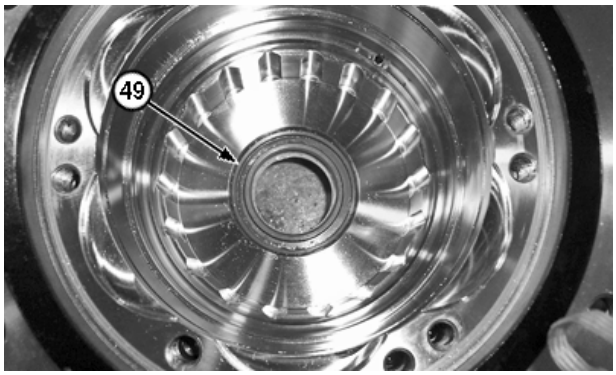
Hydrostatic Motor, Park Brake and Gearbox Assemble—Single Speed Compact Track Loader

1. Clean and inspect parts. Repair or replace parts as necessary.

NOTE: Apply hydraulic oil to parts to aid in assembly.

2. Install shaft seal (49) in housing.

49— Shaft Seal



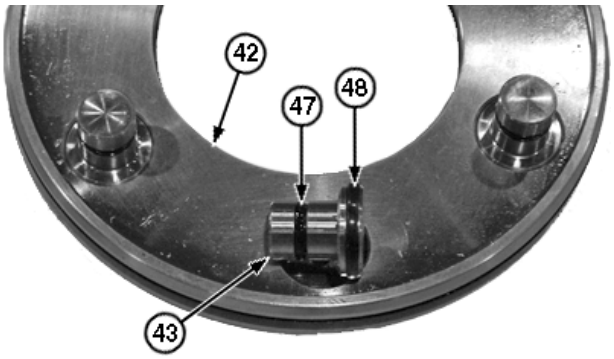
T213157A —UN—29AUG05

Shaft Seal

MR50960,0000174 -19-21NOV06-1/13

3. Install O-rings (47 and 48) on brake pins (43) and install pins in brake piston (42).

42— Brake Piston
43— Brake Pins (6 used)
47— O-Ring (6 used)
48— O-Ring (6 used)



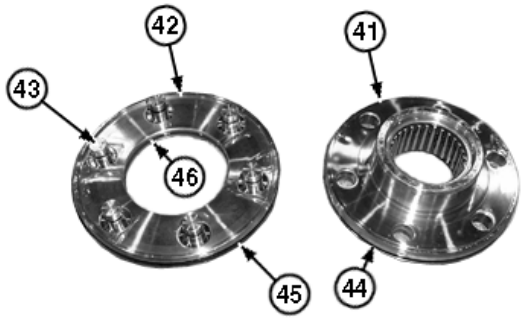
T213150A —UN—29AUG05

Brake Piston

MR50960,0000174 -19-21NOV06-2/13

4. Install seals (45 and 46) on brake piston.
5. Install seal (44) on seal ring (41).
6. Assemble seal ring and brake piston together.

41— Seal Ring
42— Brake Piston
43— Brake Pin (6 used)
44— Seal
45— Seal
46— Seal



T213799A —UN—30AUG05

Brake Piston Assembly

Continued on next page

MR50960,0000174 -19-21NOV06-3/13

7. Press needle bearing in brake piston assembly. Bearing must sit 3.5 mm (0.14 in.) below lip of seal ring.

50— 3.5 mm (0.14 in.)

T213802A —UN—30AUG05

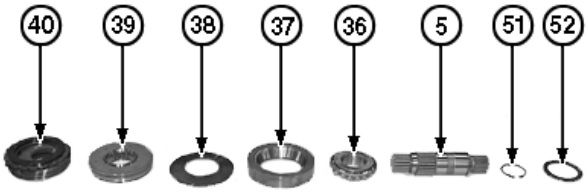
Needle Bearing Depth

MR50960,0000174 -19-21NOV06-4/13

8. Install brake disc stack (40) into park brake housing.

IMPORTANT: Align brake disc splines with park brake drive shaft and sun gear with planet gears to prevent misalignment during assembly. Do not damage shaft seal when installing park brake drive shaft. Splines on shaft can damage seal during installation.

9. Install drive shaft (5) and align brake disc splines.
10. Install sun gear on drive shaft to align sun gear with planet gears.
11. Install brake piston assembly (39) in park brake housing.
12. Install disc spring (38) concave side up.
13. Install bearing support ring (37). Gently tap in place with rubber hammer.
14. Install bearing (36) on drive shaft.



T213149A —UN—29AUG05

Park Brake and Drive Shaft Components

5— Drive Shaft
36— Bearing
37— Bearing Support Ring
38— Disc Spring
39— Brake Piston Assembly
40— Brake Disc Stack
51— Snap Ring
52— Cylinder Block Spacer

Continued on next page

MR50960,0000174 -19-21NOV06-5/13

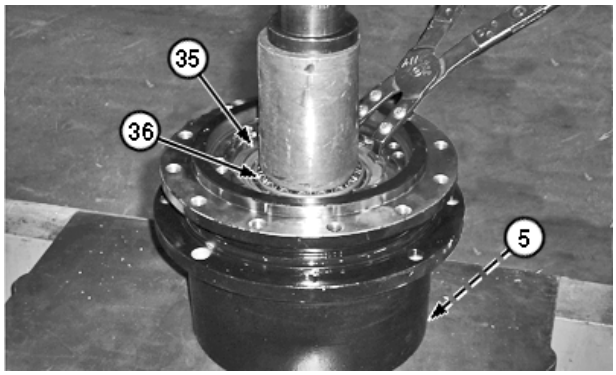
IMPORTANT: Apply only 2—4 tons of pressure to install snap ring. Applying more pressure can damage bearing.

15. Using a press, seat bearing and install snap ring (35). Press on bearing with appropriate press disc to compress park brake assembly for snap ring installation.
16. Install bearing retainer snap ring (51) on drive shaft.

CAUTION: Avoid possible crushing or pinching injury. Support gearbox housing to prevent hydrostatic motor, park brake and gearbox from tipping over when filling with lubricant and installing gearbox end cover.

17. Set motor, park brake and gearbox on bench with gearbox up.
18. Fill gearbox with lubrication oil meeting API Service Classification GL-5.

Specification	
Gearbox Lubrication Oil—Volume	0.55 L 0.58 qt



T213788A —UN—30AUG05

Snap Ring Installation

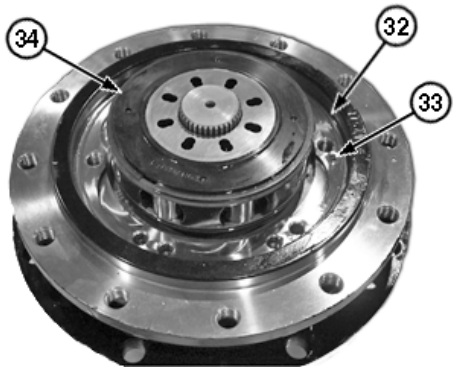
5— Drive Shaft (supported)
35— Snap Ring
36— Bearing

19. Install gearbox end cover, snap ring and plugs.
20. Turn motor, park brake and gearbox back over (with gearbox end cover facing downward).

MR50960,0000174 -19-21NOV06-6/13

21. Install O-rings (32 and 33) in park brake housing.
22. Install cylinder block spacer (52) on bearing.
23. Install cylinder block (34) on drive shaft with timing face up.

32— O-Ring
33— O-Ring
34— Cylinder Block



T213791A —UN—30AUG05

Cylinder Block

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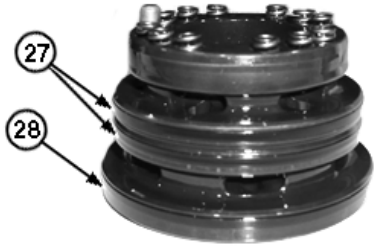
MR50960,0000174 -19-21NOV06-7/13

24. Install seals (27 and 28) in distributor.

27— Seal (2 used)
28— Seal



T213128A —UN—29AUG05

Distributor

MR50960,0000174 -19-21NOV06-8/13

25. Install seal (31) in distributor housing.

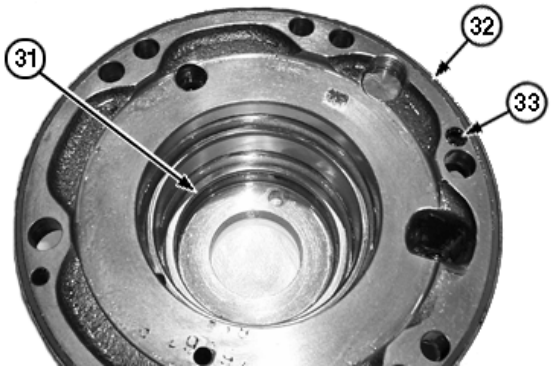
IMPORTANT: Allow seals to relax for a minimum of 20 minutes after installation before assembling distributor in distributor housing. This delay will prevent damage resulting from stretched seals.

26. Align pin in top of distributor with locating hole in distributor housing. Install distributor.

IMPORTANT: Do not damage distributor timing face or locating pin during assembly.

27. Carefully press distributor into housing.

28. Install O-rings (32 and 33) in distributor housing.



T213142A —UN—29AUG05

Distributor Housing

31— Seal
32— O-Ring
33— O-Ring

MR50960,0000174 -19-21NOV06-9/13

29. Install cam ring to distributor housing.

Apply medium strength thread lock and sealer to cap screw (26). Tighten cap screw to specification.

Cam—Specification

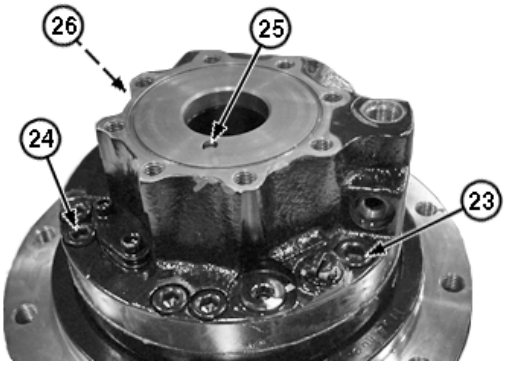
Cap Screw—Torque	14—16 N·m
	124—142 lb-in.

30. Install cam ring and distributor housing assembly.

Apply medium strength thread lock and sealer to cap screws (23 and 24). Tighten cap screws evenly to specification.

Distributor Housing—Specification

Cap Screw (23)—Torque	150—155 N·m
	111—114 lb-ft
Cap Screw (24)—Torque	87—93 N·m
	64—69 lb-ft



T213127A —UN—29AUG05

Distributor Housing

23— Cap Screw (2 used)
24— Cap Screw (8 used)
25— Distributor Locating Pin
26— Cap Screw

Continued on next page

MR50960,0000174 -19-21NOV06-10/13

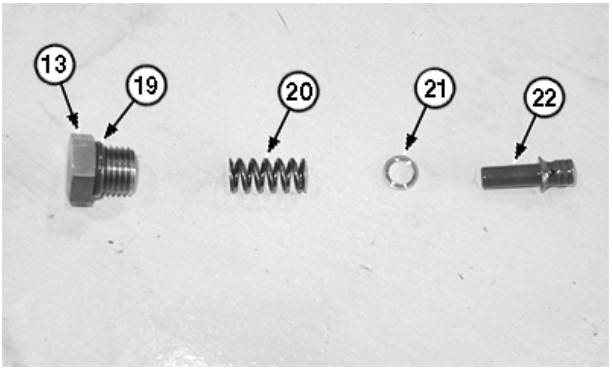
31. Apply one drop of medium strength thread lock and sealer to plug (13) threads.

    Install flushing valve assembly (19—22) and plug (13). Tighten plug to specification.

Specification

Flushing Valve
Plug—Torque.....30 N·m
22 lb-ft

13— Plug
19— O-Ring
20— Spring
21— Shim
22— Poppet



T213152A —UN—30AUG05

Flushing Valve Assembly

MR50960,0000174 -19-21NOV06-11/13

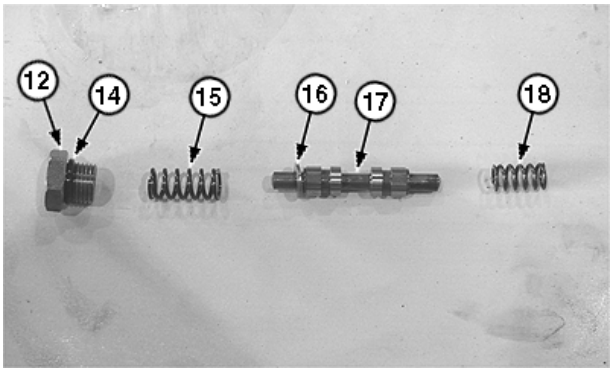
32. Install shuttle valve assembly (14—18) and plug (12). Tighten plug to specification.

Specification

Shuttle Valve
Plug—Torque.....40 N·m
30 lb-ft

33. Install motor end cover O-ring.

12— Plug
14— O-Ring
15— Spring
16— Washer
17— Spool
18— Spring



T213151A —UN—30AUG05

MR50960,0000174 -19-21NOV06-12/13

34. Install motor end cover (8).

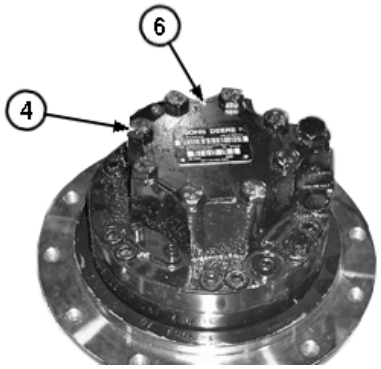
    Apply medium strength thread lock and sealer to cap screws (6). Tighten cap screws evenly to specification.

Motor End Cover—Specification

Cap Screw—Torque.....40—45 N·m
30—33 lb-ft

35. Install hydrostatic motor, park brake and gearbox in machine. See Hydrostatic Motor, Park Brake and Gearbox Remove and Install—Compact Track Loader. (Group 0360.)

6— End Cover Cap Screw (8 used)
8— End Cover



T213123A —UN—30AUG05

Hydrostatic Motor End Cover

MR50960,0000174 -19-21NOV06-13/13

Hydrostatic Motor, Park Brake and Gearbox Disassemble—Two Speed Compact Track Loader

CAUTION: Avoid possible crushing or pinching injury. Use an appropriate lifting device to move hydrostatic motor, park brake and gear box.

1. Remove hydrostatic motor, park brake and gearbox from machine. See Hydrostatic Motor, Park Brake and Gearbox Remove and Install—Compact Track Loader. (Group 0360.)
2. Clean exterior of hydrostatic motor, park brake and gearbox housing before disassembling.
3. Remove all plugs and allow hydraulic oil to drain.
4. Remove plugs (1) from gearbox end cover (3) and drain oil.
5. Remove snap ring (2) retaining gearbox end cover and remove end cover.

T213763A —UN—29AUG05

Gearbox End Cover

1— Plug (3 used)
2— Snap Ring
3— End Cover

KK70125,000007A -19-28APR08-1/15

6. Remove sun gear (4) from drive shaft (5).
7. Place hydrostatic motor, park brake and gearbox on bench with gearbox housing facing downward.
8. Scribe or mark a line across hydrostatic motor and park brake housings to aid in assembly.

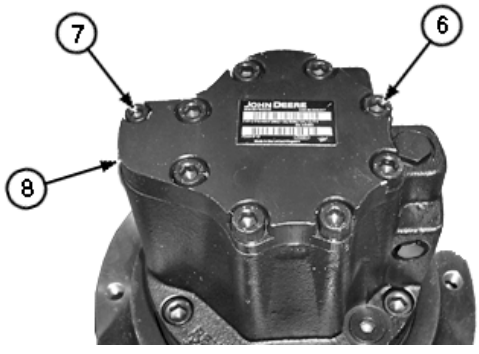
T213780A —UN—29AUG05

Gearbox

KK70125,000007A -19-28APR08-2/15

9. Remove motor end cover cap screws (6 and 7). Remove end cover (8).

6— Cap Screw (8 used)
7— Cap Screw
8— End Cover



T213194A —UN—30AUG05

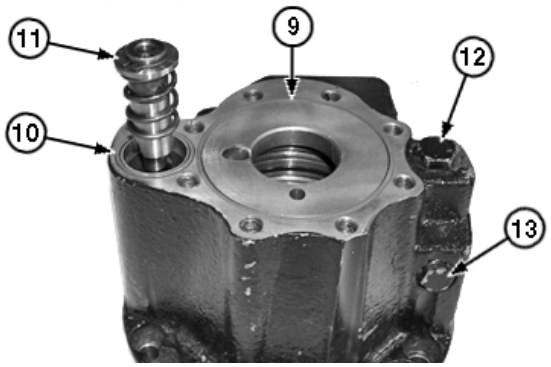
Hydrostatic Motor End Cover

Continued on next page

KK70125,000007A -19-28APR08-3/15

10. Remove and discard O-rings (9 and 10).
11. Remove speed shift spool (11).
12. Drain remaining oil from motor housing.
13. Remove shuttle valve plug (12).

9— O-Ring
10— O-Ring
11— Speed Shift Spool
12— Shuttle Valve Plug
13— Flushing Valve Plug



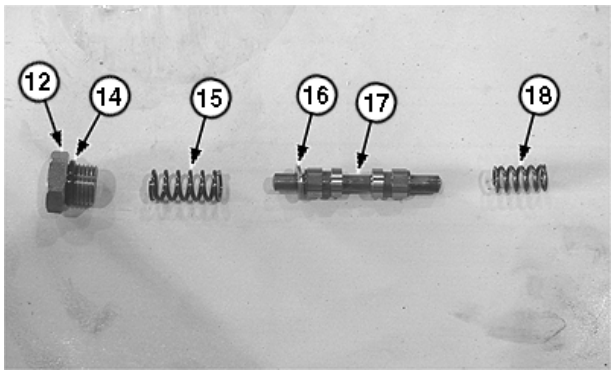
T213778A —UN—29AUG05

Distributor Housing

KK70125,000007A -19-28APR08-4/15

14. Remove shuttle valve assembly (14—18). Remove spring (18) using a magnet.

12— Plug
14— O-Ring
15— Spring
16— Washer
17— Spool
18— Spring



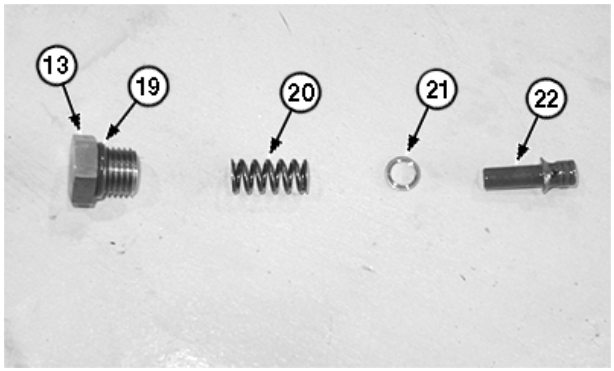
T213151A —UN—30AUG05

Shuttle Valve Assembly

KK70125,000007A -19-28APR08-5/15

15. Remove flushing valve plug (13).
16. Remove flushing valve assembly (19—22). Remove poppet (22) and shim (21) using a magnet.

13— Plug
19— O-Ring
20— Spring
21— Shim
22— Poppet



T213152A —UN—30AUG05

Flushing Valve Assembly

Continued on next page

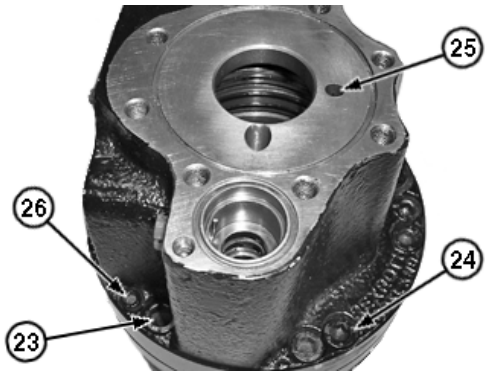
KK70125,000007A -19-28APR08-6/15

17. Remove cap screws (23 and 24). Remove distributor housing.
18. Mark position of distributor in housing using a marking pen.

IMPORTANT: Do not damage distributor timing face or locating pin.

IMPORTANT: Distributor has springs located around top end. Do not lose springs when removing distributor.

19. Gently tap locating pin (25) with a soft steel drift to remove distributor from housing.
20. Remove cap screw (26) attaching cam ring to distributor housing and remove cam ring.



T213199A —UN—29AUG05

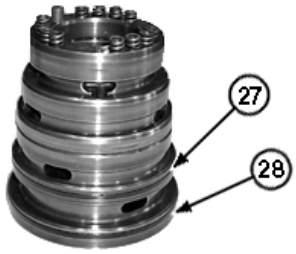
Distributor Housing

23— Cap Screw (2 used)
24— Cap Screw (8 used)
25— Distributor Locating Pin
26— Cap Screw

KK70125,000007A -19-28APR08-7/15

21. Remove seals (27—28) from distributor.

27— Seal
28— Seal



T213198A —UN—29AUG05

Distributor

KK70125,000007A -19-28APR08-8/15

22. Remove seals (29—31) and O-rings (32 and 33) from distributor housing.

29— Seal (2 used)
30— Seal
31— Seal
32— O-Ring
33— O-Ring

T213200A —UN—29AUG05

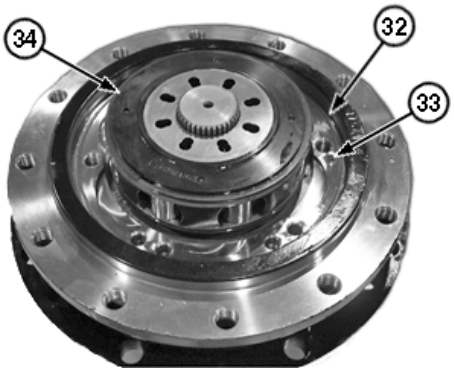
Distributor Housing

Continued on next page

KK70125,000007A -19-28APR08-9/15

23. Remove cylinder block (34).
24. Remove O-rings (32 and 33) from park brake housing.

32— O-Ring
33— O-Ring
34— Cylinder Block



T213791A —UN—30AUG05

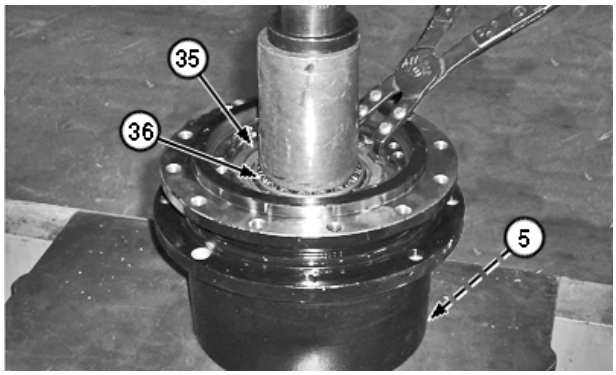
Cylinder Block

KK70125,000007A -19-28APR08-10/15

IMPORTANT: Apply only 2—4 tons of pressure to remove snap ring. Applying more pressure can damage bearing.

25. Using a press, remove large snap ring from park brake housing. Support drive shaft from below and press on bearing.
26. Gently tap drive shaft out of park brake housing.
27. Remove bearing retainer snap ring from drive shaft.
28. Press bearing off of drive shaft.
29. Remove brake piston needle bearing from drive shaft.

5— Drive Shaft (supported)
35— Snap Ring
36— Bearing



T213788A —UN—30AUG05

Snap Ring Removal

KK70125,000007A -19-28APR08-11/15

30. Remove bearing support ring (37) from park brake housing.
31. Remove disc spring (38). Note position of disc spring before removing.
32. Remove brake piston (39).
33. Remove brake disc stack (40). Keep discs in correct order for assembly.

37— Bearing Support Ring
38— Disc Spring
39— Brake Piston Assembly
40— Brake Disc Stack

T213789A —UN—30AUG05

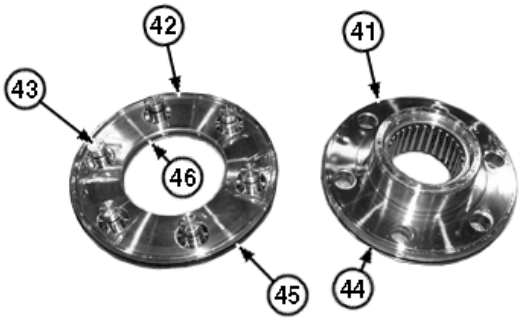
Park Brake Housing

Continued on next page

KK70125,000007A -19-28APR08-12/15

34. Separate seal ring (41) from brake piston (42).
35. Remove seal (44) from seal ring.
36. Remove seals (45 and 46) from brake piston.

41— Seal Ring
42— Brake Piston
43— Brake Pin (6 used)
44— Seal
45— Seal
46— Seal



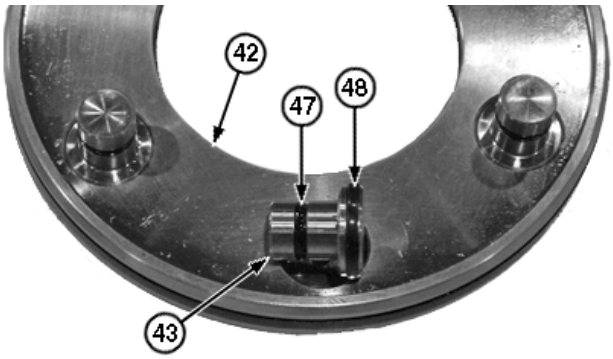
T213799A —UN—30AUG05

Brake Piston Assembly

KK70125,000007A -19-28APR08-13/15

37. Remove brake pins (43) from brake piston (42) and remove O-rings (47 and 48).

42— Brake Piston
43— Brake Piston Pin (6 used)
47— O-Ring (6 used)
48— O-Ring (6 used)



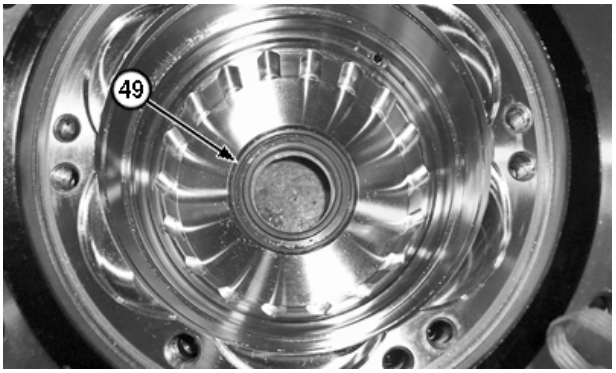
T213150A —UN—29AUG05

Brake Piston

KK70125,000007A -19-28APR08-14/15

38. Remove shaft seal (49) from inside of housing.

49— Shaft Seal



T213157A —UN—29AUG05

Shaft Seal

KK70125,000007A -19-28APR08-15/15

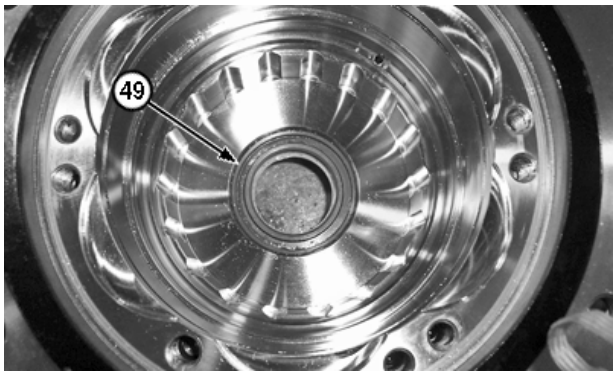
Hydrostatic Motor, Park Brake and Gearbox Assemble—Two Speed Compact Track Loader

1. Clean and inspect parts. Repair or replace parts as necessary.

NOTE: Apply hydraulic oil to parts to aid in assembly.

2. Install shaft seal (49) in housing.

49— Shaft Seal



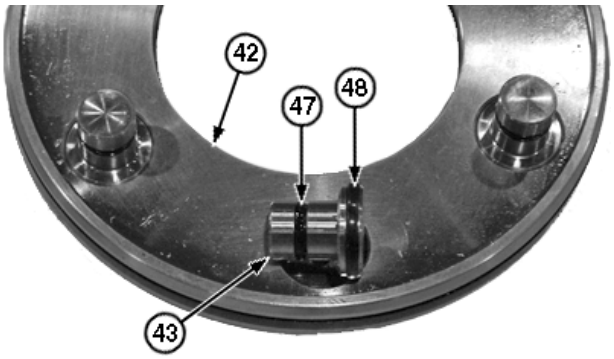
T213157A —UN—29AUG05

Shaft Seal

MR50960,0000175 -19-21NOV06-1/14

3. Install O-rings (47 and 48) on brake pins (43) and install pins in brake piston (42).

42— Brake Piston
43— Brake Pins (6 used)
47— O-Ring (6 used)
48— O-Ring (6 used)



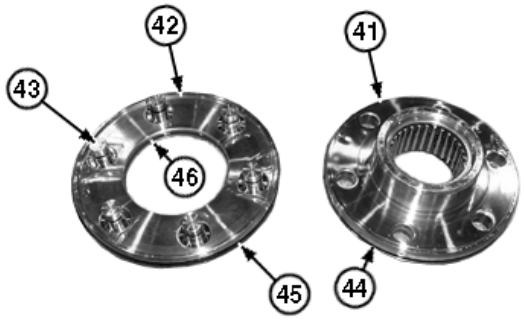
T213150A —UN—29AUG05

Brake Piston

MR50960,0000175 -19-21NOV06-2/14

4. Install seals (45 and 46) on brake piston.
5. Install seal (44) on seal ring (41).
6. Assemble seal ring and brake piston together.

41— Seal Ring
42— Brake Piston
43— Brake Pin (6 used)
44— Seal
45— Seal
46— Seal



T213799A —UN—30AUG05

Brake Piston Assembly

Continued on next page

MR50960,0000175 -19-21NOV06-3/14

7. Press needle bearing in brake piston assembly. Bearing must sit 3.5 mm (0.14 in.) below lip of seal ring.

50— 3.5 mm (0.14 in.)

T213802A —UN—30AUG05

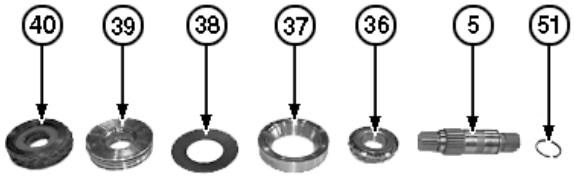
Needle Bearing Depth

MR50960,0000175 -19-21NOV06-4/14

8. Install brake disc stack (40) into park brake housing.

IMPORTANT: Align brake disc splines with park brake drive shaft and sun gear with planet gears to prevent misalignment during assembly. Do not damage shaft seal when installing park brake drive shaft. Splines on shaft can damage seal during installation.

9. Install drive shaft (5) and align brake disc splines.
10. Install sun gear on drive shaft to align gear with planet gears.
11. Install brake piston assembly (39) in park brake housing.
12. Install disc spring (38) concave side up.
13. Install bearing support ring (37). Gently tap in place with rubber hammer.
14. Install bearing (36) on drive shaft.



T213803A —UN—30AUG05

Park Brake and Drive Shaft Components

5— Drive Shaft
36— Bearing
37— Bearing Support Ring
38— Disc Spring
39— Brake Piston Assembly
40— Brake Disc Stack
51— Snap Ring

Continued on next page

MR50960,0000175 -19-21NOV06-5/14

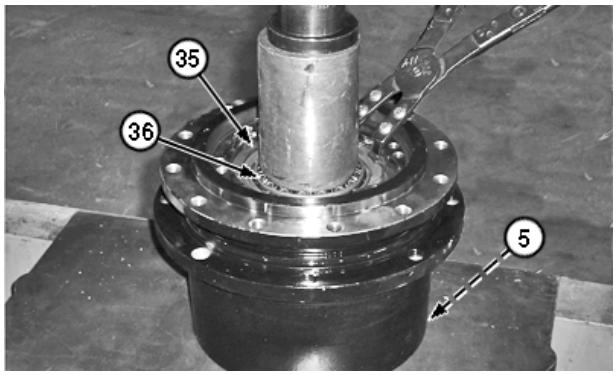
IMPORTANT: Apply only 2—4 tons of pressure to install snap ring. Applying more pressure can damage bearing.

15. Using a press, seat bearing and install snap ring (35). Press on bearing with appropriate press disc to compress park brake assembly for snap ring installation.
16. Install bearing retainer snap ring (51) on drive shaft.

CAUTION: Avoid possible crushing or pinching injury. Support gearbox housing to prevent hydrostatic motor, park brake and gearbox from tipping over when filling with lubricant and installing gearbox end cover.

17. Set motor, park brake and gearbox on bench with gearbox up.
18. Fill gearbox with lubrication oil meeting API Service Classification GL-5.

Specification	
Gearbox Lubrication Oil—Volume	0.55 L 0.58 qt



T213788A —UN—30AUG05

Snap Ring Installation

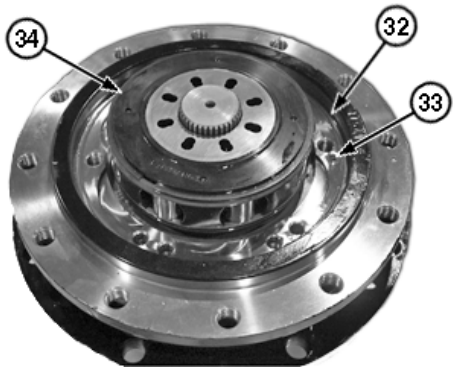
5— Drive Shaft (supported)
35— Snap Ring
36— Bearing

19. Install gearbox end cover, snap ring and plugs.
20. Turn motor, park brake and gearbox back over (with gearbox end cover facing downward).

MR50960,0000175 -19-21NOV06-6/14

21. Install O-rings (32 and 33) in park brake housing.
22. Install cylinder block (34) on drive shaft with timing face up.

32— O-Ring
33— O-Ring
34— Cylinder Block



T213791A —UN—30AUG05

Cylinder Block

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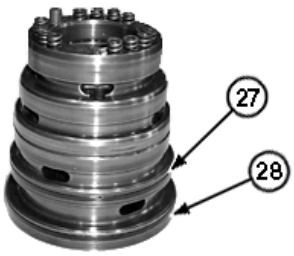
MR50960,0000175 -19-21NOV06-7/14

23. Install seals (27 and 28) in distributor.

27— Seal **28— Seal**



T213198A —UN—29AUG05

Distributor

MR50960,0000175 -19-21NOV06-8/14

24. Install seals (29—31) in distributor housing.

IMPORTANT: Allow seals to relax for a minimum of 20 minutes after installation before assembling distributor in distributor housing. This delay will prevent damage resulting from stretched seals.

25. Align pin in top of distributor with locating hole in distributor housing. Install distributor.

IMPORTANT: Do not damage distributor timing face or locating pin during assembly.

26. Carefully press distributor into housing.

27. Install O-rings (32 and 33) in distributor housing.

T213200A —UN—29AUG05

Distributor Housing

29— Seal (2 used)
30— Seal
31— Seal
32— O-Ring
33— O-Ring

MR50960,0000175 -19-21NOV06-9/14

28. Install cam ring to distributor housing.

Apply medium strength thread lock and sealer to cap screw. Tighten cap screw (26) to specification.

Cam—Specification

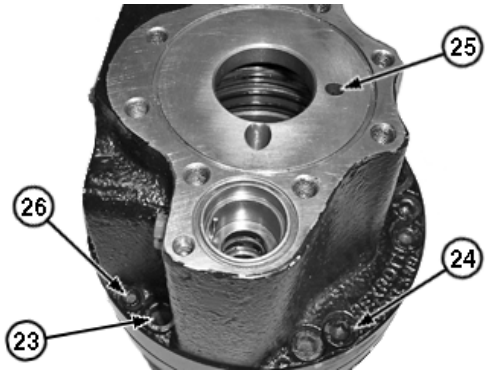
Cap Screw—Torque	14—16 N·m
	124—142 lb-in.

29. Install cam ring and distributor housing assembly.

Apply medium strength thread lock and sealer to cap screws (23 and 24). Tighten cap screws evenly to specification.

Distributor Housing—Specification

Cap Screw (23)—Torque	150—155 N·m
	111—114 lb-ft
Cap Screw (24)—Torque	87—93 N·m
	64—69 lb-ft



T213199A —UN—29AUG05

Distributor Housing

23— Cap Screw (2 used)
24— Cap Screw (8 used)
25— Distributor Locating Pin
26— Cap Screw

Continued on next page

MR50960,0000175 -19-21NOV06-10/14

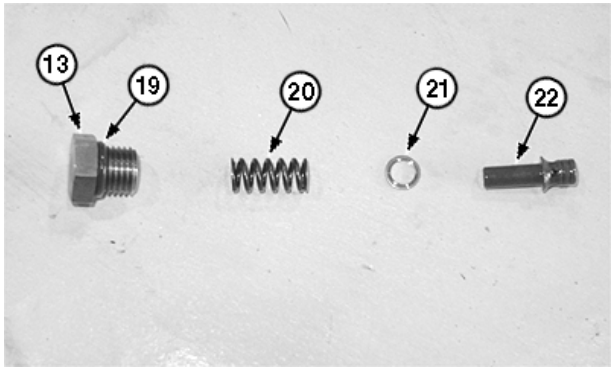
30. Apply one drop of medium strength thread lock and sealer to plug (13) threads.

    Install flushing valve assembly (19—22) and plug (13). Tighten plug to specification.

Specification

Flushing Valve
Plug—Torque.....30 N·m
22 lb-ft

13— Plug
19— O-Ring
20— Spring
21— Shim
22— Poppet



T213152A —UN—30AUG05

Flushing Valve Assembly

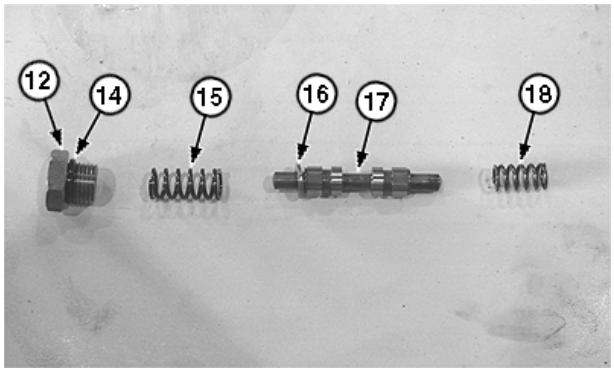
MR50960,0000175 -19-21NOV06-11/14

31. Install shuttle valve assembly (14—18) and plug (12). Tighten plug to specification.

Specification

Shuttle Valve
Plug—Torque.....40 N·m
30 lb-ft

12— Plug
14— O-Ring
15— Spring
16— Washer
17— Spool
18— Spring



T213151A —UN—30AUG05

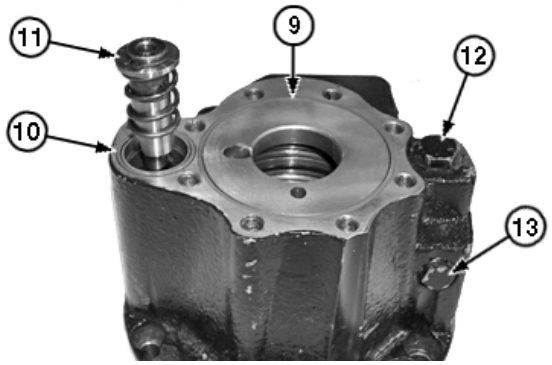
Shuttle Valve Assembly

MR50960,0000175 -19-21NOV06-12/14

32. Install speed shift spool (11).

33. Install end cover O-rings (9 and 10).

9— O-Ring
10— O-Ring
11— Speed Shift Spool
12— Shuttle Valve Plug
13— Flushing Valve Plug



T213778A —UN—29AUG05

Distributor Housing

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MR50960,0000175 -19-21NOV06-13/14

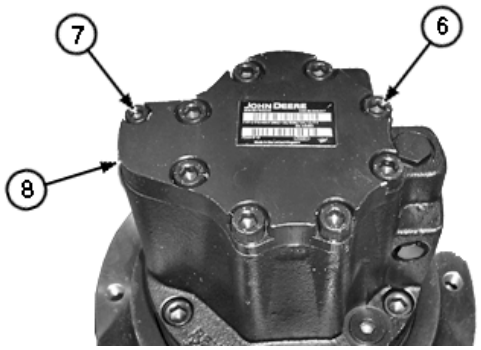
34. Install motor end cover (8).

    Apply medium strength thread lock and sealer to cap screws (6 and 7) and tighten cap screws to specification.

Motor End Cover—Specification

Cap Screw (6)—Torque	70—77 N·m
	52—57 lb-ft
Cap Screw (7)—Torque	35—39 N·m
	26—29 lb-ft

35. Install hydrostatic motor, park brake and gearbox in machine. See Hydrostatic Motor, Park Brake and Gearbox Remove and Install—Compact Track Loader. (Group 0360.)



T213194A —UN—30AUG05

Motor End Cover

6— Cap Screw (8 used)
7— Cap Screw
8— End Cover

MR50960,0000175 -19-21NOV06-14/14

Hydrostatic Pump Remove and Install

1. Park machine on flat level surface.
2. Raise boom and engage boom lock.
3. Set park brake switch to off position.
4. Turn engine off.
5. Raise cab. For skid steer loader, see Raising Operator's Station. (Operator's Manual.) For compact track loader, see Raising Operator's Station. (Operator's Manual.)
6. Remove cover plates to access the control linkage.
7. Remove steering cross shaft. See Steering Cross Shaft Assembly Remove and Install. (Group 0315.)
8. Drain hydraulic oil tank.

NOTE: Mark or tag all hydrostatic pump hoses to aid in assembly. For hose routing or port identification, see Hydrostatic System Operation for component location. (Group 9026-25.)

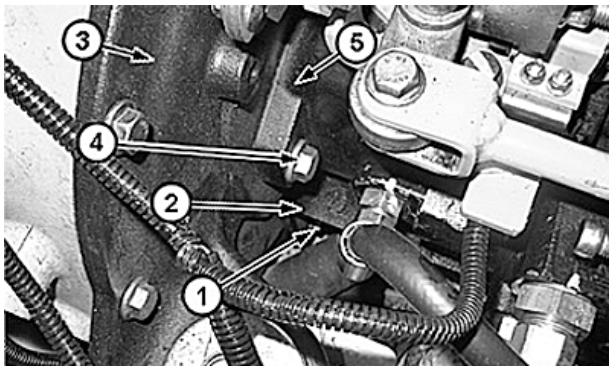
9. Mark and disconnect hoses from hydrostatic pump assembly. Cap and plug lines.
10. From beneath the hydrostatic pump mounting bracket (2), remove two cap screws from the hydrostatic pump assembly mounting bracket to the hydrostatic pump manifold.
11. Loosen two hydrostatic pump mounting cap screws (4) holding the pump assembly (5) to the flywheel adapter plate (3).

CAUTION: Prevent crushing injury from heavy component. Use appropriate lifting device.

12. Attach a sling and hoist to pump assembly (5).

Specification	
Hydrostatic Pump Assembly—Weight	54 kg (120 lb)

13. Remove two hydrostatic pump mounting cap screws (4) from pump assembly flange. Use appropriate lifting device and remove hydrostatic pump assembly from machine.
14. Place hydrostatic pump assembly on a suitable work station for disassembly.
15. Remove hub coupler. See Hub Coupler Remove and Install. (Group 0325.)
16. Clean and inspect parts. Repair or replace parts as necessary. See Hydrostatic Pump Disassemble. (Group 0360.)
17. Install hub coupler. See Hub Coupler Remove and Install. (Group 0300.)



T198084A —UN—05FEB10

Hydrostatic Pump Mounting Hardware

1— Hydrostatic Pump Mounting Bracket Cap Screw
2— Hydrostatic Pump Mounting Bracket
3— Flywheel Adapter Plate
4— Hydrostatic Pump Mounting Cap Screw

CAUTION: Prevent crushing injury from heavy component. Use appropriate lifting device.

18. Attach appropriate lifting device to hydrostatic pump assembly.

Specification	
Hydrostatic Pump Assembly—Weight	54 kg (120 lb)

19. Install hydrostatic pump assembly.
20. Install two cap screws through front pump flange into flywheel adapter plate. Tighten pump flange mounting cap screws to specification.

Specification	
Flange-to-Flywheel Housing Cap Screw—Torque	118 N·m (87 lb-ft)

21. Install cap screws through mounting bracket into hydrostatic pump manifold and tighten to specification.

Specification	
Mounting Bracket Cap Screw—Torque	76 N·m (56 lb-ft)

22. Connect hoses to hydrostatic pump assembly.
23. Install steering cross shaft. See Steering Cross Shaft Assembly Remove and Install. (Group 0315.)
24. Install cover plates to control linkage.
25. Lower cab and install cab retaining nuts.

Continued on next page

MX10672,00000C6 -19-31AUG05-1/2

26. Fill hydraulic oil tank. For skid steer loader, see Hydraulic and Hydrostatic Oil. (Operator's Manual.)

    For compact track loader, see Hydraulic and Hydrostatic Oil. (Operator's Manual.)

MX10672,00000C6 -19-31AUG05-2/2

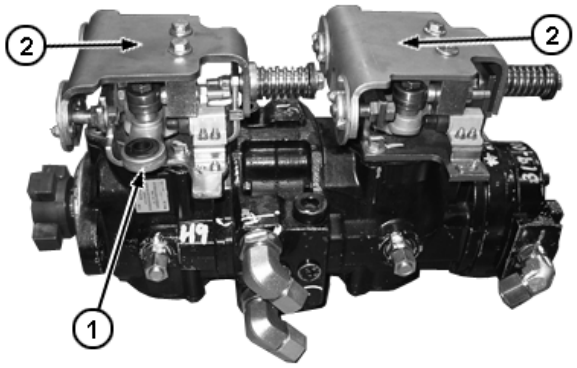
Hydrostatic Pump Disassemble

1. Measure or mark position of hub coupler on hydrostatic pump input shaft to aid in assembly.
2. Loosen two set screws and remove hub coupler from input shaft.
3. Remove control levers (1) and front and rear centering plates (2). See Centering Plate Remove and Install. (Group 0315.)

CAUTION: Prevent crushing injury. Use appropriate lifting device.

4. Mount hydrostatic pumps on D01006AA bench-mounted holding fixture using two cap screws and nuts.

Specification	
Hydrostatic Pump Assembly—Approximate Weight	45 kg 100 lb



T198571A —UN—25MAR04

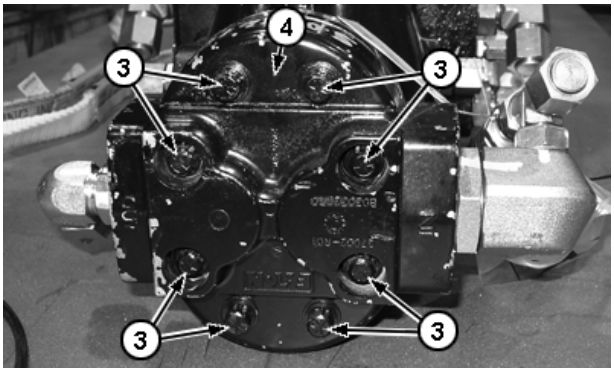
Centering Plates And Control Levers

1— Control Lever **2— Centering Plates**

MX10672,00000C7 -19-31AUG05-1/9

5. Remove eight cap screws (3) and remove hydraulic pump (4).

3— Cap Screw (8 used) **4— Hydraulic Pump**



T198577A —UN—22MAR04

Hydraulic Pump

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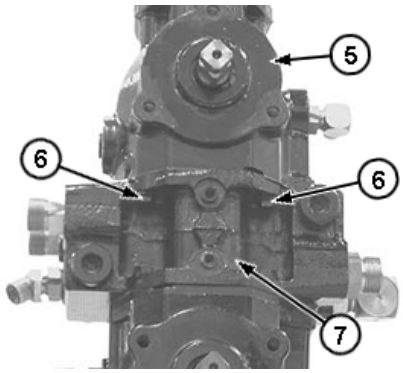
MX10672,00000C7 -19-31AUG05-2/9

CAUTION: Note location and orientation of hydrostatic pump components. Components are not interchangeable between front and rear hydrostatic pumps.

6. Remove four cap screws (6) securing left hydrostatic pump housing (5) to center manifold (7).
7. Lift left hydrostatic pump housing (5) straight up and off from center manifold (7).

5— Left Hydrostatic Pump Housing
6— Cap Screw (4 used)
7— Center Manifold



T198578A —UN—22MAR04

Pump Housing

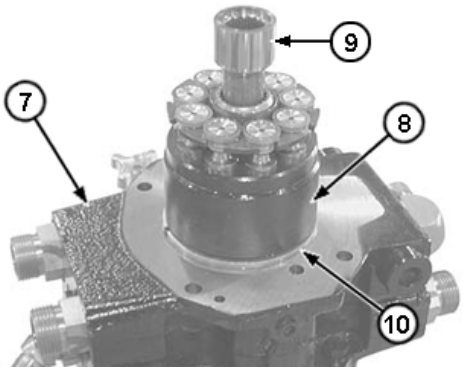
MX10672,00000C7 -19-31AUG05-3/9

8. Pull out drive shaft (9) from center manifold (7) and rotating assembly (8).

IMPORTANT: Valve plates are not interchangeable. Note location of each valve plate.

9. Lift rotating assembly (8) from valve plate (10).
10. Remove front valve plate from center manifold.

7— Center Manifold
8— Rotating Assembly
9— Drive Shaft
10— Valve Plate



T198449A —UN—18MAR04

Rotating Assembly

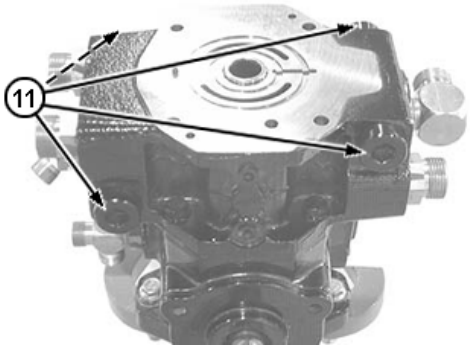
MX10672,00000C7 -19-31AUG05-4/9

11. Loosen four relief valves (11) for ease of removal later.
12. Remove four cap screws holding center manifold to right hydrostatic pump.

NOTE: Rotating assembly might "stick" to center manifold due to hydraulic oil adhesion. Be careful not to let rotating assembly fall unexpectedly.

13. Lift center manifold off from right hydrostatic pump.
14. Remove rear valve plate from center manifold.

11— Relief Valve (4 used)



T198450A —UN—18MAR04

Relief Valve Location

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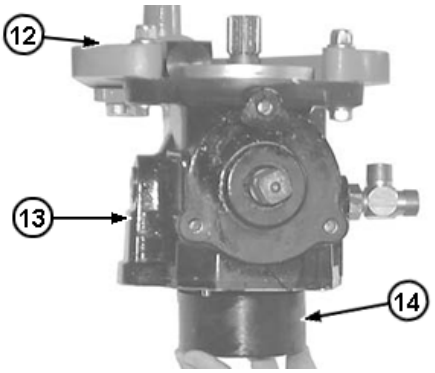
MX10672,00000C7 -19-31AUG05-5/9

15. Using your hand, hold rotating assembly (14) in housing (13).
16. Rotate holding fixture 180 degrees and slowly slide out rotating assembly (14).

12— Holding Fixture
13— Housing
14— Rotating Assembly



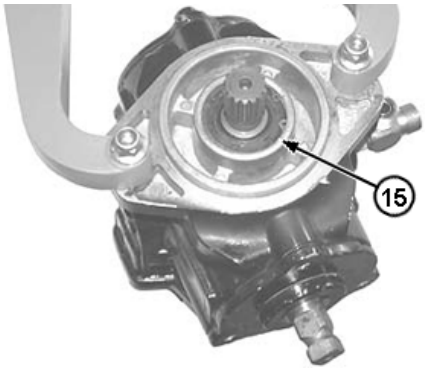
T198451A —UN—18MAR04

Removing Right Hydrostatic Pump Rotating Assembly

MX10672,00000C7 -19-31AUG05-6/9

17. Remove snap ring (15) holding seal and shaft.

15— Snap Ring



T198452A —UN—18MAR04

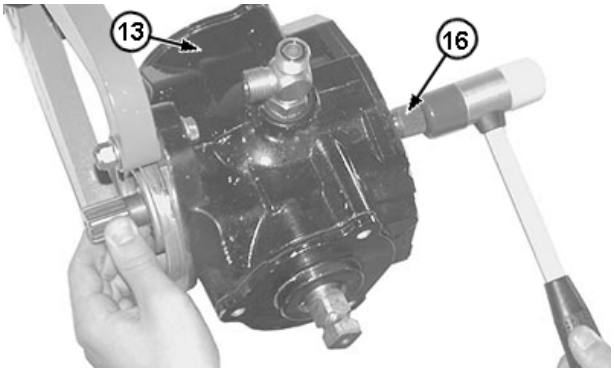
Snap Ring for Seal and Shaft

MX10672,00000C7 -19-31AUG05-7/9

NOTE: Right hydrostatic pump housing shown. The procedure is the same for the left hydrostatic pump housing.

18. Using a soft-faced hammer, tap shaft (16) from housing (13).

13— Housing
16— Shaft



T198453A —UN—18MAR04

Removing Shaft from Housing

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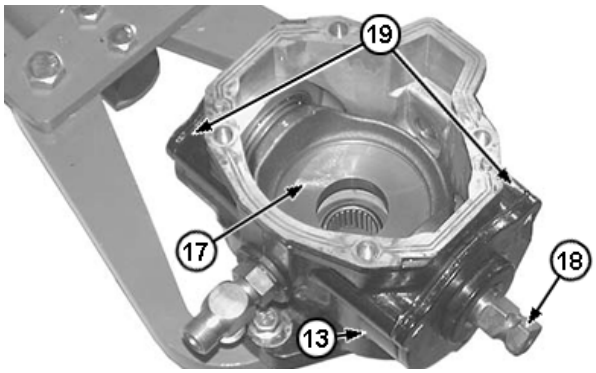
MX10672,00000C7 -19-31AUG05-8/9

19. To aid in assembly, mark the side of the housing (13) where the trunnion shaft (18) is located.
20. Remove cover plates (19).
21. Remove swash plate (17).
22. Clean and inspect parts. See Hydrostatic Pump Inspection. (Group 0360.)

13 — Housing
17— Swash Plate
18 — Trunnion Shaft
19— Cover Plate (2 used)



T198455A —UN—18MAR04

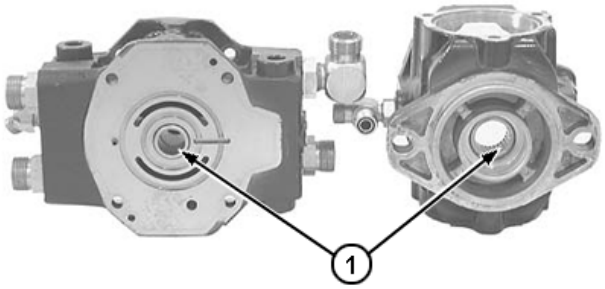
Swash Plate

MX10672,00000C7 -19-31AUG05-9/9

Hydrostatic Pump Inspection

1. Inspect the needle bearings in the center manifold and the left and right hydrostatic pump housings. Replace the needle bearing if needles do not remain in the bearing cage, are discolored, broken, pitted, or are not free to move.

1— Needle Bearings

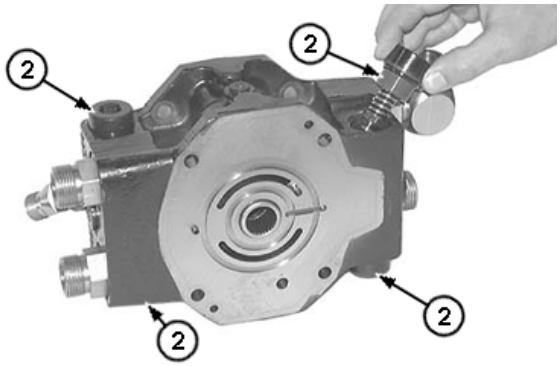


T198583A —UN—22MAR04

MX10672,00000D7 -19-19JUL05-1/7

2. Inspect four relief valves in center manifold.

2— Relief Valve



T198584A —UN—22MAR04

Relief Valves

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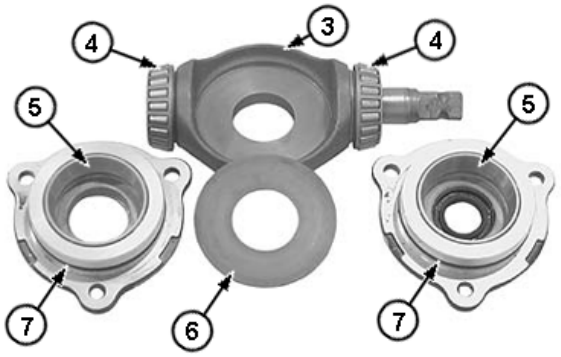
MX10672,00000D7 -19-19JUL05-2/7

3. Inspect swash plate bearings (4) and bearing outer (5) in cover plates.
4. Inspect swash plate (3) and swash plate insert (6). Surfaces should be smooth and free of deep scratches.
5. Discard O-Rings (7) and seal (8) in cover plates.

3— Swash Plate
4— Bearing
5— Outer Race
6— Swash Plate Insert
7— O-Ring
8— Seal



T198585A —UN—22MAR04

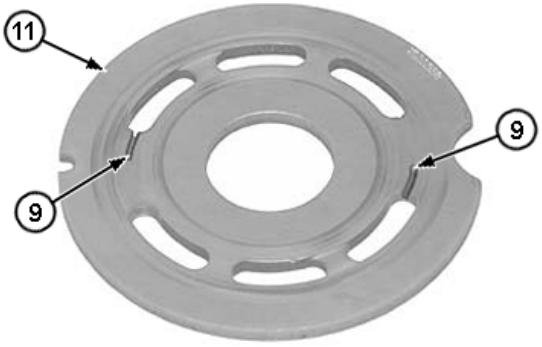
Swash Plate

MX10672,00000D7 -19-19JUL05-3/7

6. Inspect bronze side of left hydrostatic pump valve plate (9) and right hydrostatic pump valve plate (11) for wear. Replace valve plate if any scoring or scratches are present.

9— Left Hydrostatic Pump Valve Plate
10— Metering Slots
11— Right Hydrostatic Pump Valve Plate

T198586A —UN—22MAR04



T198587A —UN—22MAR04

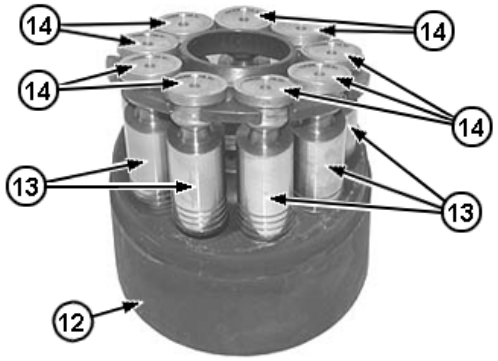
Right Hydrostatic Pump Valve Plate

Continued on next page

MX10672,00000D7 -19-19JUL05-4/7

NOTE: Rotating assembly is not serviceable. Replace assembly if any components are damaged.

7. Inspect piston block (12) surface that makes contact with valve plate. Surface should be smooth and free of deep scratches.
8. Check piston (13) movement in block bore. If pistons do not move freely in bore, examine bore for scoring or contamination.
9. Examine the OD of the pistons for finish condition. Pistons should not show wear or deep scratches.
10. Inspect the slippers (14) for a snug fit on the ball end of the pistons (13). Check the face of the slippers for a flat, smooth surface.



T198588A —UN—22MAR04

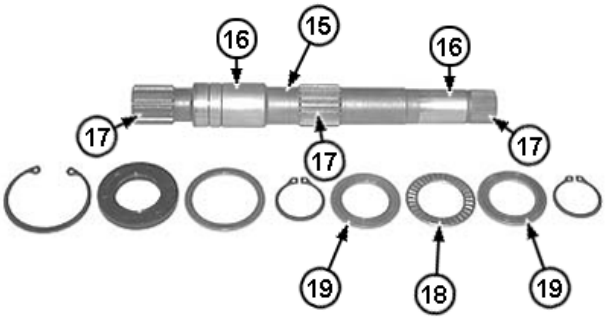
Rotating Assembly

12— Piston Block
13— Piston
14— Slipper

MX10672,00000D7 -19-19JUL05-5/7

11. Inspect right hydrostatic pump input shaft (15) bearing surfaces (16) and spline areas (17).
12. Inspect thrust bearings (18) and thrust washers (19).

15— Right Hydrostatic Pump Input Shaft
16— Bearing Surface
17— Spline Area
18— Thrust Bearing
19— Thrust Washer



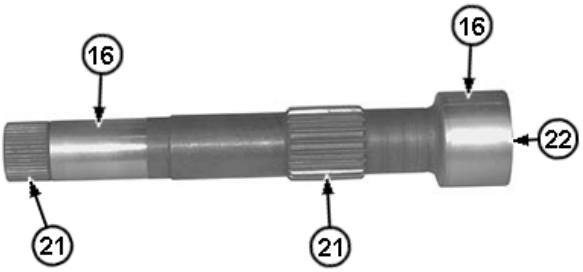
T198589A —UN—22MAR04

Right Hydrostatic Pump Input Shaft

MX10672,00000D7 -19-19JUL05-6/7

13. Inspect left hydrostatic pump input shaft (20) bearing surfaces (16).
14. Inspect external spline areas (21) and internal splines (22) which drive hydraulic pump.

16— Bearing Surfaces
20— Left Hydrostatic Pump Input Shaft
21— External Spline Areas
22— Internal Spline Location



T198590A —UN—22MAR04

Left Hydrostatic Pump Input Shaft

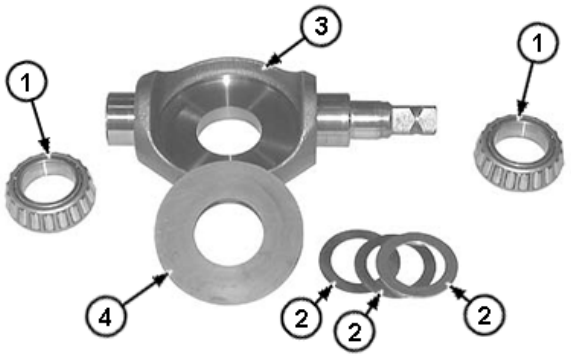
MX10672,00000D7 -19-19JUL05-7/7

Hydrostatic Pump Assemble

1. Clean all parts in a suitable solvent and dry using compressed air or a lint-free rag.

IMPORTANT: Due to extremely tight tolerances and surface finish of pump internal surfaces, it is very important to maintain absolute cleanliness during the assembly of the pump.

2. Install bearings (1) and shims (2) onto swash plate (3). Install the same thickness of shims taken off of each side. When new bearings are being installed, add or subtract shims to obtain proper bearing preload. Preload will be determined when cover plates are installed.
3. Install swash plate insert (4) onto swash plate. Use petroleum jelly to hold in place during assembly.



T198902A —UN—30MAR04

Swash Plate Bearings

1— Swash Plate Bearings
2— Shim
3— Swash Plate
4— Swash Plate Insert

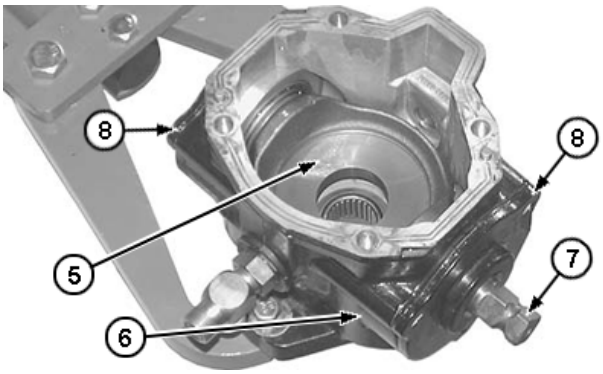
MX10672,00000D8 -19-22NOV10-1/12

4. Install swash plate assembly (5) into pump housing (6) with trunnion shaft (7) through the previously noted or marked side of the housing.
5. Install new seal in cover plate (8) for trunnion shaft side.
6. Install cover plates to housing. Tighten cap screws to specification.

Specification	
Cover Plate Mounting Cap Screw—Torque	41 N·m 30 lb-ft

7. Install V-ring seal on trunnion shaft with sealing surface towards outside of pump.
8. Install torque wrench on the square of the trunnion shaft. Rolling torque should be within specification. Add or remove shims to obtain the correct adjustment.

Specification	
Trunnion Shaft—Rolling Drag Torque	2.3—3.4 N·m 20—30 lb-in.



T198905A —UN—30MAR04

Pump Housing With Swash Plate

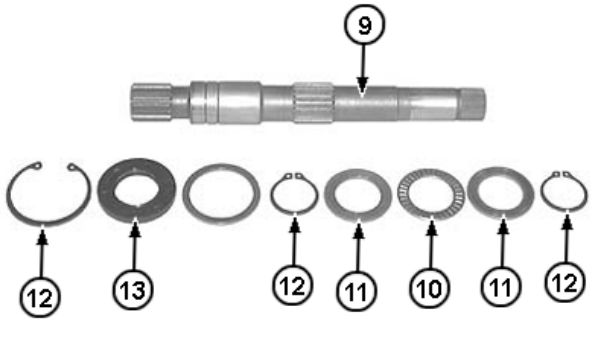
5— Swash Plate Assembly
6— Pump Housing
7— Trunnion Shaft
8— Cover Plate

Continued on next page

MX10672,00000D8 -19-22NOV10-2/12

9. Apply petroleum jelly to thrust bearing (10) and thrust washers (11).
10. Install thrust bearings (10), thrust washers (11), and snap rings (12) on right hydrostatic pump input shaft (9). Remove and discard old seal (13).

9— Rear Pump Input Shaft
10— Thrust Bearing
11— Thrust Washers
12— Snap Ring
13— Seal



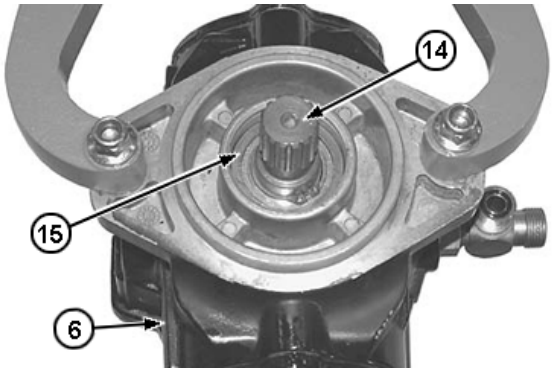
T198906A —UN—30MAR04

Pump Input Shaft Assembly

MX10672,00000D8 -19-22NOV10-3/12

11. Apply petroleum jelly to needle bearings in housing and install shaft assembly (14) in housing (6) by tapping lightly with soft-faced hammer.
12. Install spacer (15) over shaft and into housing (6).

6— Pump Housing
14— Input Shaft Assembly
15— Spacer



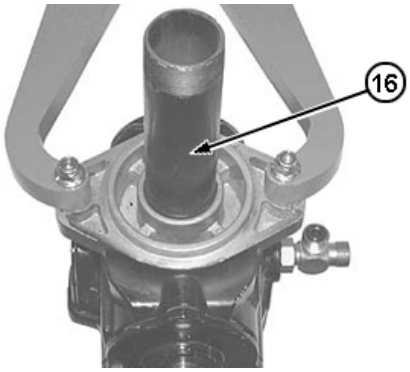
T198910A —UN—30MAR04

Install Input Shaft

MX10672,00000D8 -19-22NOV10-4/12

13. Using a piece of pipe (16) of appropriate diameter, light tap new seal into housing until it bottoms out on spacer.

16— Pipe



T198911A —UN—30MAR04

Installing Pump Seal

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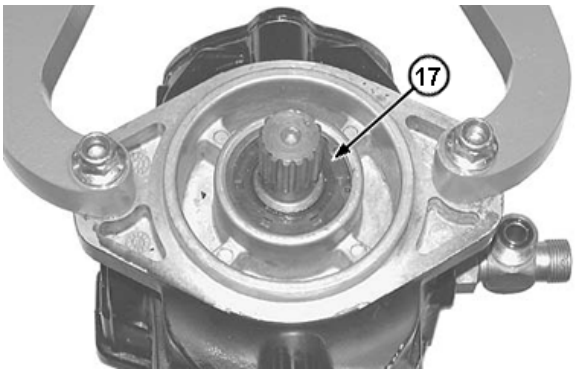
MX10672,00000D8 -19-22NOV10-5/12

14. Install snap ring (17).

17— Snap Ring



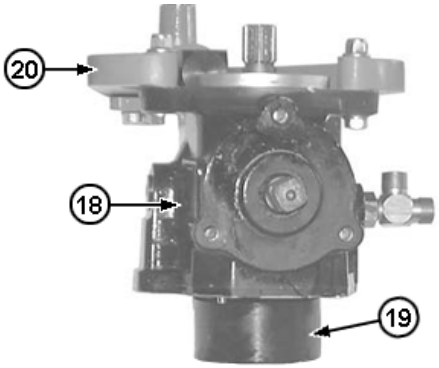
T198913A —UN—30MAR04

Installing Snap Ring

MX10672,00000D8 -19-22NOV10-6/12

15. Push rotating assembly (19) onto shaft and into housing (18). Align splines on shaft and rotating assembly as assembly is inserted into housing.
16. Hold rotating assembly (19) in housing (18) and rotate holding fixture (20), 180 degrees.

18— Housing
19— Rotating Assembly
20— Holding Fixture



T198914A —UN—30MAR04

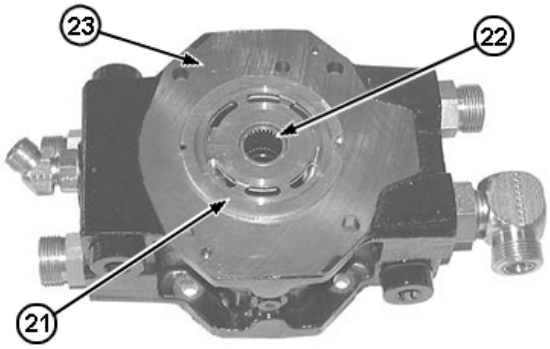
Installing Rotating Assembly

MX10672,00000D8 -19-22NOV10-7/12

IMPORTANT: Valve plates are not interchangeable.

17. Apply petroleum jelly to back of side of valve plate (21) to hold in place during assembly.
18. Apply a light coat of petroleum jelly to needle bearing (22). Install valve plate on center manifold (23).

21— Valve Plate
22— Needle Bearing
23— Center Manifold



T198916A —UN—30MAR04

Center Manifold

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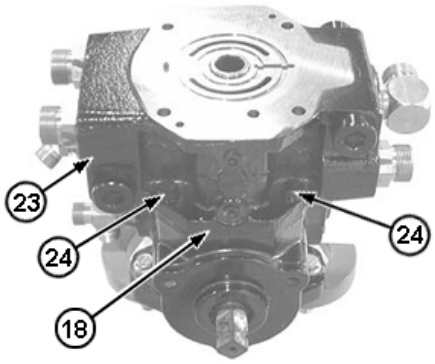
MX10672,00000D8 -19-22NOV10-8/12

19. Install new gasket and install center manifold (23) onto pump housing (18).
20. Apply 242 medium strength thread lock and sealer to the four center manifold mounting cap screws (24). Install cap screws and tighten to specification.

Specification	
Center Manifold Mounting Cap Screw—Torque	56 N·m 41 lb-ft

18— Pump Housing
23— Center Manifold
24— Cap Screws



T198918A —UN—30MAR04

Installing Center Manifold onto Pump Housing

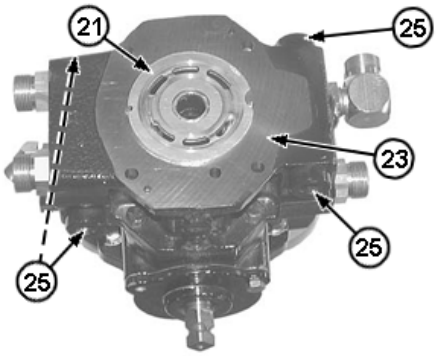
MX10672,00000D8 -19-22NOV10-9/12

21. Install new O-rings on relief valves (25) and install into center manifold (23). Tighten to specification.

Specification	
Relief Valve—Torque	135 N·m 100 lb-ft

22. Apply a light coat of petroleum jelly to needle bearing (22) and back side of valve plate (21). Install valve plate on center manifold (23).

21— Valve Plate
23— Center Manifold
25— Relief Valve
26— Needle Bearing



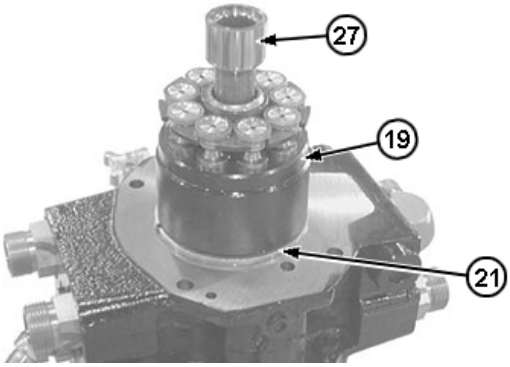
T198919A —UN—30MAR04

Relief Valves

MX10672,00000D8 -19-22NOV10-10/12

23. Install rotating assembly (19) onto valve plate (21).
24. Align splines on drive shaft (27) with rotating assembly (19) and install into center manifold (23).

19— Rotating Assembly
21— Valve Plate
23— Center Manifold
27— Drive Shaft



T198921A —UN—30MAR04

Rotating Assembly and Valve Plate

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MX10672,00000D8 -19-22NOV10-11/12

25. Looking at the pump as it would be mounted in the machine, look for passages (30) in the two round oil ports. The oil port at the 3:00 o'clock position (29) will always have passages (30). If there are passages (30) in the port at the 9:00 o'clock position (28), a plug (31) must be installed or the pump will not prime. If there are no passages (30) in the port at the 9:00 o'clock position (28) no plug (31) is required.
26. Install new gasket and lower left hydrostatic pump housing over rotating group onto center manifold.
27. Apply 242 medium strength thread lock and sealer to the four pump-to-manifold cap screws. Install cap screws and tighten to specification.

Specification	
Pump-to-Manifold Cap Screw—Torque	56 N·m 41 lb-ft

28. Install hydraulic pump onto left hydrostatic pump and tighten cap screws to specification.

Specification	
Hydraulic Pump Mounting Screw—Torque	35 N·m 26 lb-ft

CAUTION: Prevent possible crushing injury, use appropriate lifting device.

29. Remove pump assembly from holding fixture.

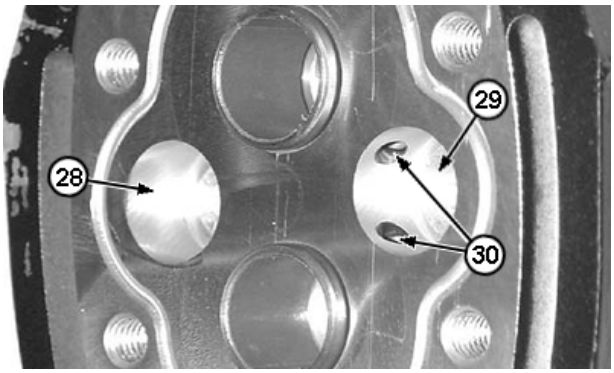
Specification	
Hydrostatic Pump Assembly—Weight	54 kg 120 lb

30. Apply 242 medium strength thread lock and sealer to the centering plate mount cap screws. Install centering plate mount and tighten to specification.

Specification	
Centering Plate Mounting Cap Screw—Torque	38 N·m 28 lb-ft

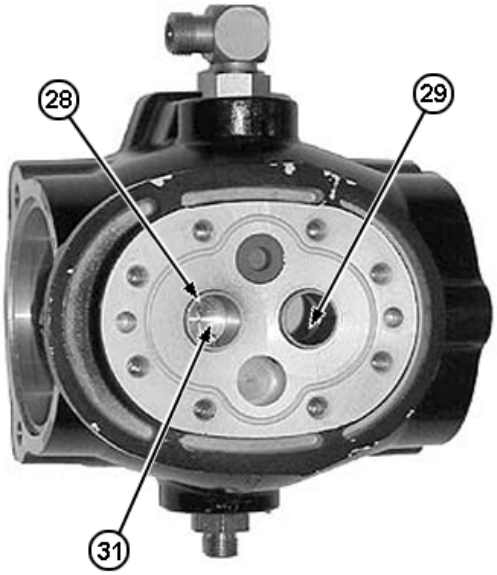
31. Apply 242 medium strength thread lock to the control lever clamping screw threads. Install control levers and tighten to specification.

Specification	
Control Lever Clamping Screw—Torque	73 N·m 54 lb-ft



T198925A —UN—30MAR04

Pump Ports



T198926A —UN—30MAR04

Port with Plug Installed

28— 9:00 O'clock Port
29— 3:00 O'clock Port
30— Passages
31— Plug

32. Install coupler on input shaft. See Hub Coupler Remove and Install. (Group 0325.)

MX10672,00000D8 -19-22NOV10-12/12

Park Brake Solenoid Valve Manifold Remove and Install—Compact Track Loader

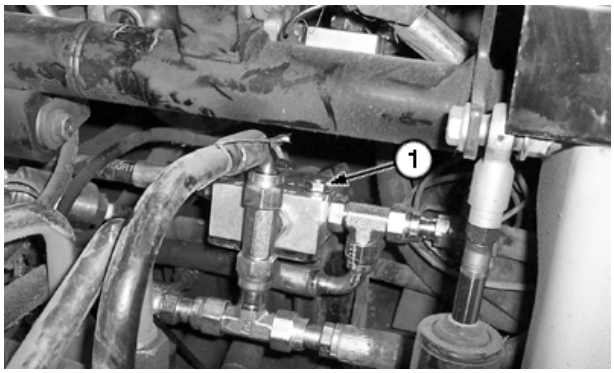
1. Park machine on flat level surface.
2. Raise boom and engage boom lock.

CAUTION: To avoid injury from escaping fluid under pressure, stop engine and relieve the pressure in the system before disconnecting or connecting hydraulic or other lines. Tighten all connections before applying pressure.

3. Relieve hydraulic system pressure. See Hydraulic System Pressure Release. (Group 9025-25.)
4. Raise cab. See Raising Operator's Station. (Operator's Manual.)
5. Remove cover plates to access park brake solenoid valve manifold.
6. Disconnect wiring harness from park brake solenoid valve.

IMPORTANT: Cap and plug openings and hose ends to prevent contamination of hydraulic system.

7. Disconnect hydraulic lines.
8. Remove bolts (1) and nuts and then remove solenoid valve manifold.
9. Clean and inspect parts. Repair or replace parts as necessary.



T211977A —UN—06JUL05

Park Brake Solenoid Valve Manifold

1— Bolt (2 used)

10. Install solenoid valve manifold, bolts and nuts. Tighten nuts on bolts.
11. Connect hydraulic lines.
12. Connect wiring harness.
13. Install cover plates.
14. Lower cab. See Raising Operator's Station. (Operator's Manual.)
15. Check hydraulic oil level. See Check Hydraulic Tank Oil Level. (Operator's Manual.)

KK70125,0000033 -19-26AUG05-1/1

Two Speed Solenoid Valve Remove and Install—Compact Track Loader

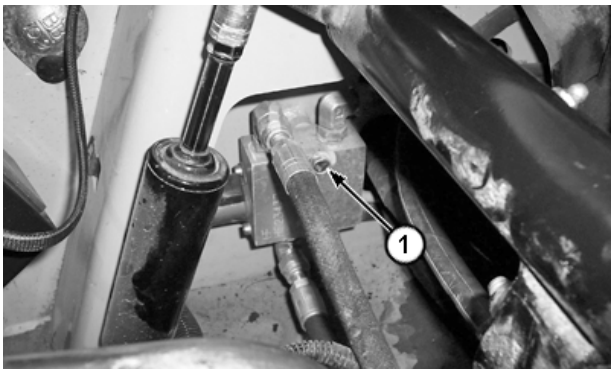
1. Park machine on a flat level surface.
2. Raise boom and engage boom lock.

CAUTION: To avoid injury from escaping fluid under pressure, stop engine and relieve the pressure in the system before disconnecting or connecting hydraulic or other lines. Tighten all connections before applying pressure.

3. Release hydraulic system pressure. See Hydraulic System Pressure Release. (Group 9025-25.)
4. Raise cab. See Raising Operator's Station. (Operator's Manual.)
5. Remove cover plates to access two speed solenoid valve.
6. Disconnect wiring harness from two speed solenoid.

IMPORTANT: Cap and plug openings and hose ends to prevent contamination of hydraulic system.

7. Disconnect hydraulic lines from two speed solenoid valve. Cap and plug lines.
8. Remove cap screws (1) holding two speed solenoid valve in machine and remove valve.
9. Repair or replace parts as necessary.



T212282A —UN—16JUN05

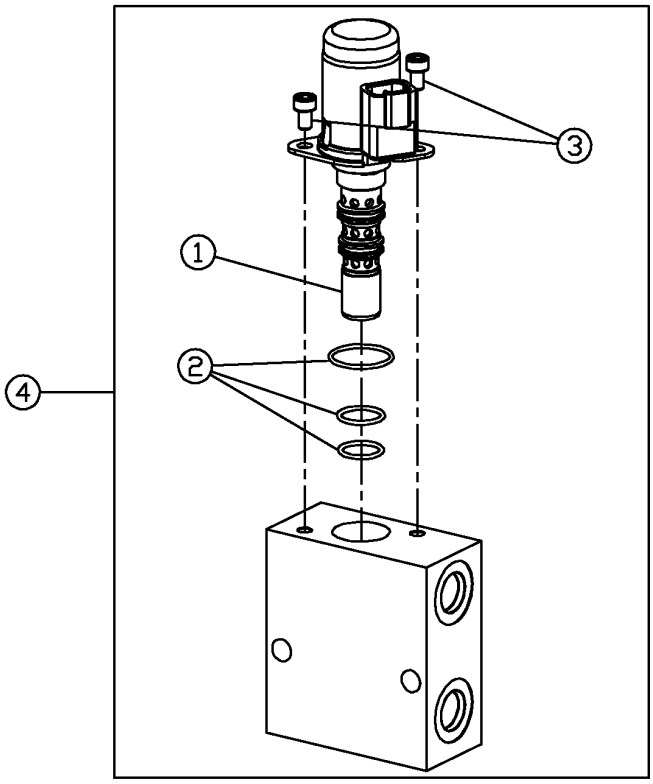
Two Speed Solenoid Valve—Compact Track Loader

1— Cap Screw (2 used)

10. Install solenoid valve and cap screws to machine.
11. Install hydraulic lines to solenoid valve.
12. Connect harness to two speed solenoid.
13. Install cover plates.
14. Lower cab. See Raising Operator's Station. (Operator's Manual.)
15. Check hydraulic oil level. See Check Hydraulic Tank Oil Level. (Operator's Manual.)

KK70125,0000035 -19-26AUG05-1/1

Two Speed Solenoid Valve Disassemble and Assemble—Compact Track Loader



T197045

T197045 —UN—19DEC03

Two Speed Solenoid

1— Two Speed Solenoid **2— Seal (3 used)** **3— Cap Screw (2 used)** **4— Two Speed Solenoid Valve**

1. Remove cap screws (3).
2. Remove solenoid (1) from valve body.
3. Remove seals (2) from solenoid.
4. Repair or replace parts as necessary.
5. Install seals to solenoid.
6. Install solenoid to valve body.
7. Install cap screws.

KK70125,0000034 -19-26AUG05-1/1

Section 04
Engine

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POWERTECH® 2.4 L & 3.0 L (4024 & 5030) John Deere Engines

For more information on John Deere engines and components, see the following Component Technical Manuals.

- PowerTech 2.4 L & 3.0 L Diesel Engines (CTM301.)
- Alternators and Starting Motors (CTM77.)

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LD30992,0000035 -19-28JAN04-1/1

Engine Remove and Install

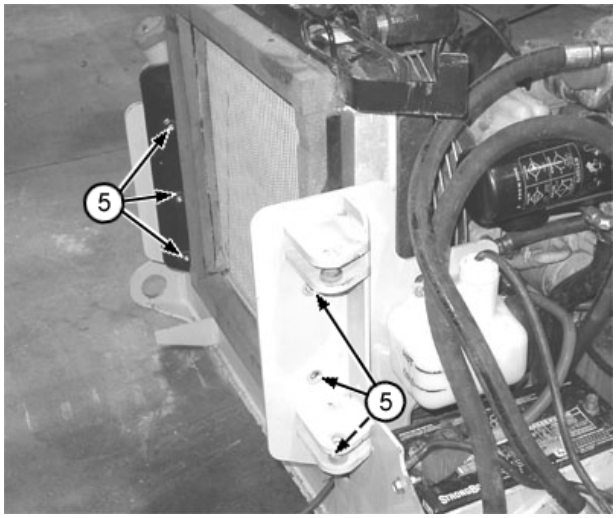
1. Park machine on a flat level surface.
2. Raise boom and engage boom lock.
3. Raise cab. For skid steer loader, see Raising Operator's Station. (Operator's Manual.) For compact track loader, see Raising Operator's Station. (Operator's Manual.)
4. Open engine cover and remove side shields.
5. Disconnect negative (-) battery cable.
6. Drain engine coolant.
7. Remove hydraulic lines to oil cooler in rear door. Cap and plug lines.

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

8. Remove rear door.

Specification	
Rear Door With Oil Cooler—Weight	56 kg (123 lb)

9. Remove air cleaner and mounting bracket.
10. Remove muffler and mounting bracket.
11. Remove upper and lower radiator hoses.
12. Remove heater water lines from engine.
13. Remove fuel filter and fuel tank bracket from radiator assembly.
14. Remove cap screws (5) holding radiator assembly to frame.



T198900A —UN—30MAR04

Radiator Assembly

5— Cap Screw (6 used)

15. Remove radiator assembly.
16. Remove harness from alternator, fuel shut-off solenoid, fuel level sensor and air conditioner compressor clutch.

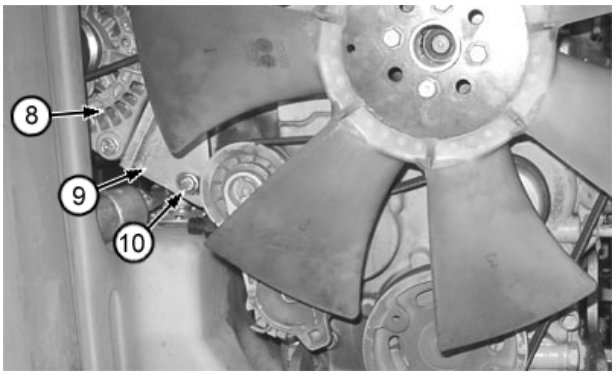
Continued on next page

LD30992,000006B -19-13APR04-1/12

NOTE: Bottom cap screw of alternator and air conditioner compressor bracket is easier to remove before belt is removed.

17. Remove bottom cap screw (10) from alternator and air conditioner compressor bracket.
18. Remove belt.
19. Remove air conditioner compressor from mounting bracket and move aside.
20. Remove alternator (8) and mounting bracket (9).
21. Disconnect engine speed control cable.

8— Alternator
9— Mounting Bracket
10— Cap Screw



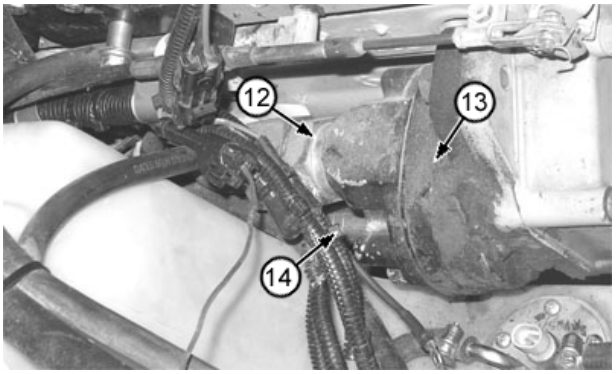
T198899A —UN—30MAR04

Alternator

LD30992,000006B -19-13APR04-2/12

22. Remove hydraulic lines (12 and 14) from high flow hydraulic pump (13), if equipped.
23. Disconnect and plug fuel lines to engine.
24. Disconnect harness from oil pressure switch and starter.

12— High Flow Hydraulic Pump Suction Line
13— High Flow Hydraulic Pump
14— High Flow High Pump High Pressure Line



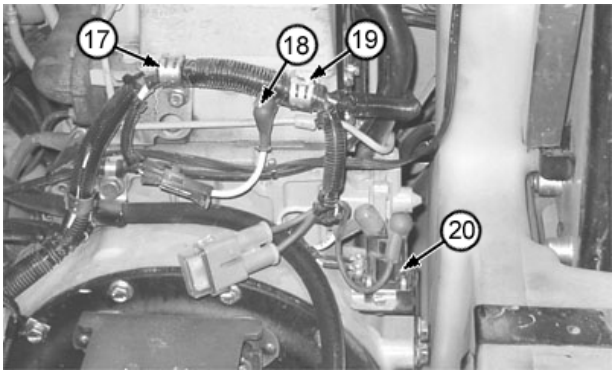
T198897A —UN—30MAR04

High Flow Hydraulic Pump

LD30992,000006B -19-13APR04-3/12

25. Remove glow plug relay (20) from flywheel housing.
26. Disconnect harness from glow plug terminal (18) on engine head.
27. Remove harness and clamps (17 and 19) from engine.
28. Disconnect back-up alarm, if equipped, and remove harness from engine cover.
29. Remove air conditioner condenser from engine cover and carefully move aside.

17— Harness Clamp
18— Glow Plug Terminal
19— Harness Clamp
20— Glow Plug Relay



T198896A —UN—30MAR04

Glow Plug Relay and Harness

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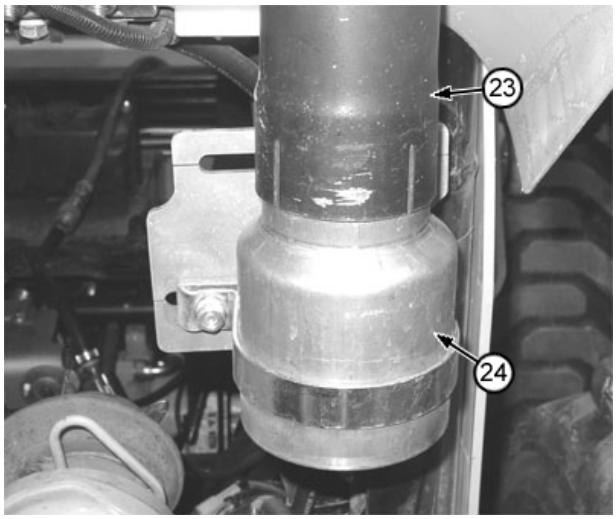
LD30992,000006B -19-13APR04-4/12

30. Remove exhaust stack (23) from adapter bracket (24).

23— Exhaust Stack **24— Exhaust Stack Adapter**



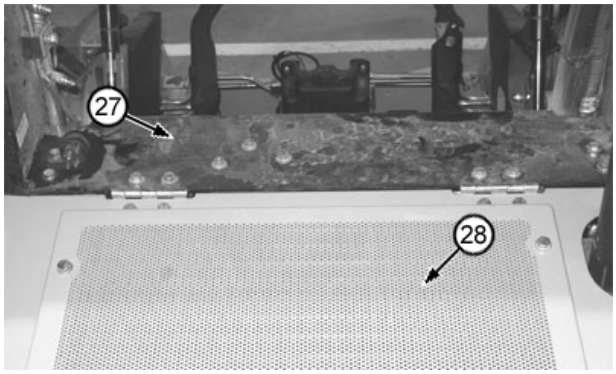
T198895A —UN—30MAR04

Exhaust Stack

LD30992,000006B -19-13APR04-5/12

31. Remove engine cover (28) and center panel (27).

27— Center Panel **28— Engine Cover**

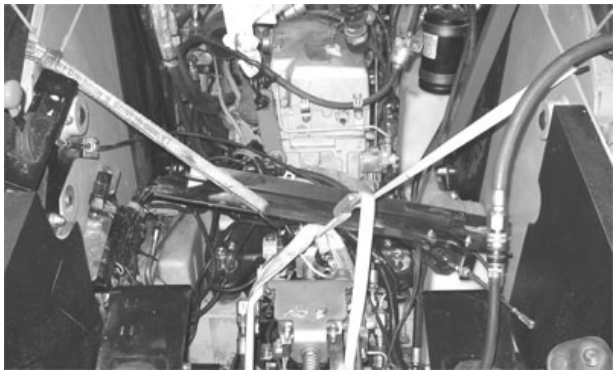


T198891A —UN—30MAR04

Engine Cover and Center Panel

LD30992,000006B -19-13APR04-6/12

32. Attach lifting straps to hydrostatic pump and machine frame to support hydrostatic pump after it is disconnected from engine.
33. Disconnect hydrostatic pumps from engine flywheel housing.



T198892A —UN—30MAR04

Hydrostatic Pump Support

Continued on next page

LD30992,000006B -19-13APR04-7/12

34. Disconnect remote engine oil drain (31) line from machine frame.

31— Remote Engine Oil Drain

T198893A —UN—30MAR04

Remote Engine Oil Drain—Skid Steer Loader

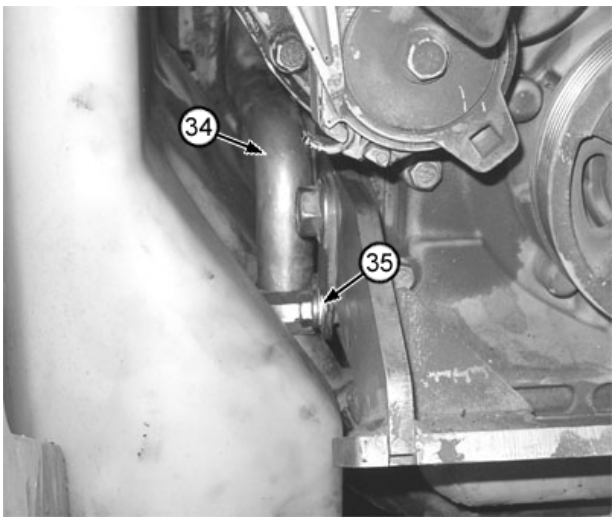
T210884A —UN—26APR05

Remote Engine Oil Drain—Compact Track Loader

LD30992,000006B -19-13APR04-8/12

35. Remove high flow suction line (34), clamp and cap screw (35) from engine.

34— High Flow Suction Line **35— Cap Screw and Clamp**



T198894A —UN—30MAR04

High Flow Suction Line

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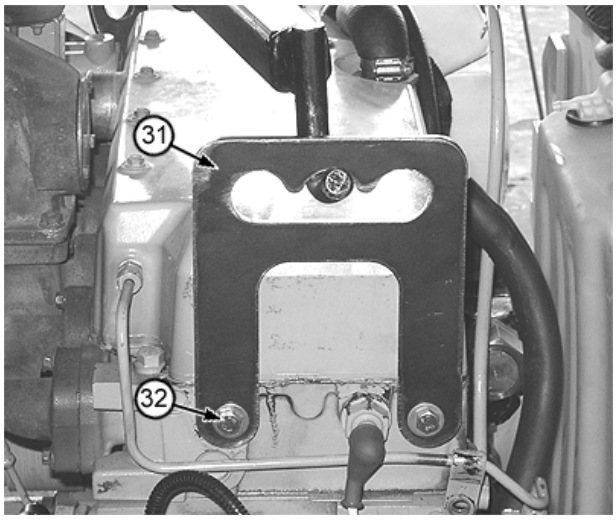
LD30992,000006B -19-13APR04-9/12

36. Attach DFT1245 Engine Lifting Bracket (31) to front of engine using M8 x 30 mm cap screws (32). See DFT1245 Engine Lifting Bracket for instruction to make bracket. (Group 9900.)

31— DFT1245 Engine Lifting Bracket

32— M8 x 30 mm Cap Screw (2 used)



T199847A —UN—12MAY04

DFT1245 Engine Lifting Bracket

Continued on next page

LD30992,000006B -19-13APR04-10/12

37. Attach lifting bracket (33) to rear of engine.
38. Attach a suitable lifting device to engine lifting brackets.

Specification

Engine—Weight..... 240 kg
530 lb

39. Remove engine mount cap screws.
40. Lift and remove engine.
41. Repair or replace parts as necessary. See POWERTECH 2.4 L & 3.0 L (4024 & 5030) John Deere Engines. (CTM301.)
42. Pull high flow high pressure line (lower line on high flow hydraulic pump) to front of machine.
43. Align coupler on engine to hydrostatic pump and slide into place.
44. Lower engine into place and install hydrostatic pump to engine flywheel housing cap screws.
45. Remove support straps from hydrostatic pumps.
46. Install high flow pump suction line (upper line on high flow hydraulic pump) clamp and cap screw to engine. Route high flow high pressure line (lower line on high flow hydraulic pump) between fuel tank and engine to high flow hydraulic pump.
47. Install engine mount cap screws.

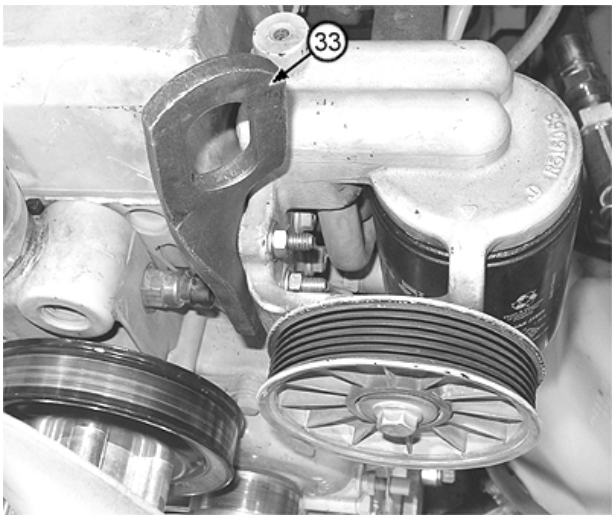
Specification

Engine Mount Cap Screw—Torque.....320 N·m
235 lb-ft

48. Install engine oil remote drain line to frame.
49. Install muffler and bracket.
50. Install engine cover and center plate.
51. Install air conditioner condenser and back-up alarm, if equipped, to engine cover.
52. Install exhaust stack to adapter bracket.
53. Install glow plug relay and connector to glow plugs.
54. Connect harness to engine oil pressure switch and starter.
55. Connect engine speed control cable.

NOTE: Bottom cap screw of alternator and air conditioner compressor bracket will install easier after belt is installed.

56. Install alternator and mounting bracket.
57. Install fuel lines to engine.
58. Install air conditioner compressor to mounting bracket.



T199848A —UN—12MAY04

Lifting Bracket

33— Lifting Bracket

59. Connect harness to alternator, fuel level sensor, fuel shut-off solenoid and air conditioner compressor clutch.

Specification

Alternator Ground Cap Screw—Torque.....4.3 N·m
38 lb-in.

60. Install air cleaner and bracket.
61. Install belt.
62. Install alternator and air conditioner mounting bracket lower cap screw.
63. Install heater water lines.
64. Install radiator assembly and connect upper and lower radiator hoses.
65. Install fuel filter and fuel tank bracket to radiator assembly.

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

66. Install rear door and hydraulic oil cooler.

Specification

Rear Door With Oil Cooler—Weight..... 56 kg
123 lb

67. Connect hydraulic lines to hydraulic oil cooler.
68. Install side shields, close engine cover, and lower cab.

Continued on next page

LD30992,000006B -19-13APR04-11/12

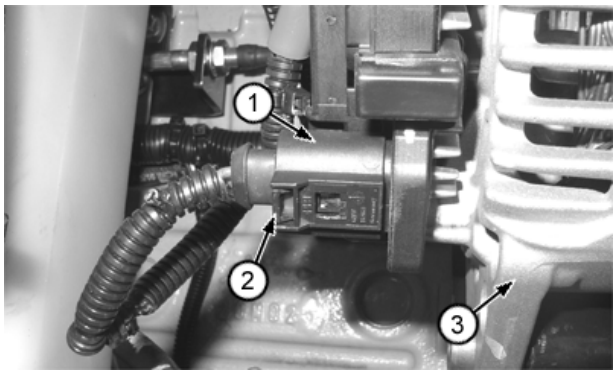
69. Fill radiator and check hydraulic oil level. For skid steer loader, see Fill Cooling System and see Check Hydraulic Tank Oil Level. (Operator's Manual.) For compact track loader, see Fill Cooling System and see Check Hydraulic Tank Oil Level. (Operator's Manual.)

LD30992,000006B -19-13APR04-12/12

Alternator Remove and Install

1. Park machine on a flat level surface.
2. Raise boom and engage boom lock.
3. Lift engine cover and remove side shields.
4. Disconnect battery negative (-) cable.
5. Remove harness from alternator. Pull connector tab (2) back and towards connector (1) body to remove connector from alternator.
6. Remove alternator mounting cap screws.
7. Repair or replace as necessary.
8. Install alternator and mounting cap screws.
9. Install harness and battery negative cable.

Specification	
Alternator Ground Cap Screw—Torque	4.3 N·m (38 lb-in.)



T198388A —UN—09MAR04

Alternator Connector

1— Connector
2— Tab
3— Alternator

10. Install side shields, lower engine cover and boom.

LD30992,0000056 -19-16FEB04-1/1

Section 05
Engine Auxiliary Systems

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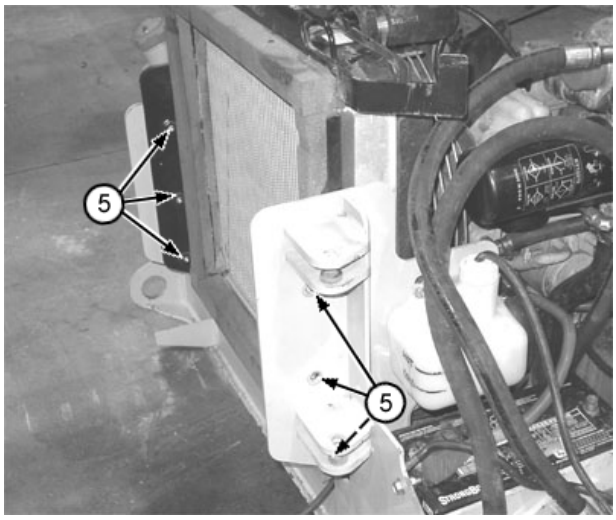
Auxiliary Water Separator Fuel Filter Remove and Install—If Equipped 05-0560-3

Radiator Remove and Install

1. Park machine on a flat level surface.
2. Drain engine coolant.
3. Remove rear door. See Rear Door Remove and Install. (Group 1900.)
4. Remove upper and lower radiator hoses.
5. Remove radiator assembly mounting cap screws (5).
6. Remove radiator.
7. Repair or replace parts as necessary.
8. Install radiator assembly and mounting cap screws.
9. Install upper and lower radiator hoses.
10. Install rear door. See Rear Door Remove and Install. (Group 1900.)
11. Refill radiator. For skid steer loader, see Fill Cooling System. (Operator's Manual.) For compact track loader, see Fill Cooling System. (Operator's Manual.)



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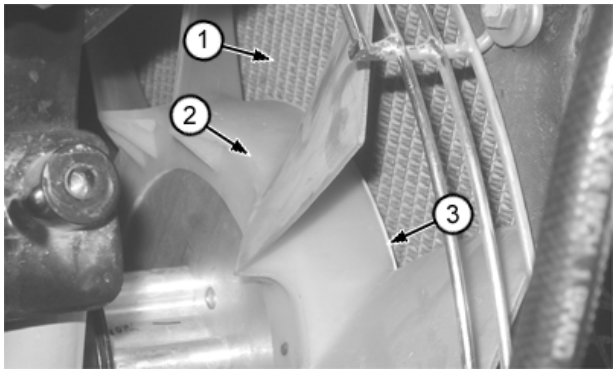
Radiator Assembly

5— Cap Screw (6 used)

MX10672,0000063 -19-09FEB04-1/1

Fan, Fan Guard, and Fan Shroud Remove and Install

1. Park machine on a flat level surface.
2. Remove radiator. See Radiator Remove and Install. (Group 0500.)
3. Remove fan from engine. Note which side of fan faces radiator
4. Remove fan guard and fan shroud from radiator assembly.
5. Repair or replace parts as necessary.
6. Install fan guard and shroud to radiator assembly.
7. Install fan (2) to engine with flush side of fan (3) hub facing radiator (1).
8. Install radiator. See Radiator Remove and Install. (Group 0500.)



T198901A —UN—30MAR04

Radiator Fan (Early version fan shown)

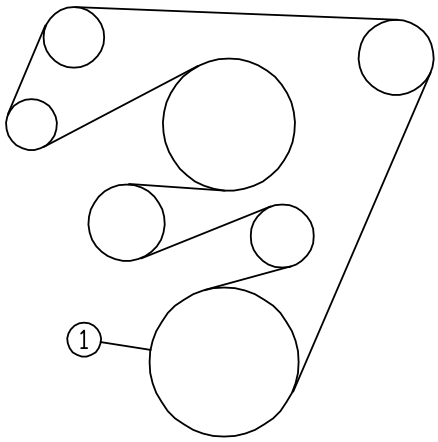
1— Radiator
2— Fan
3— Flush Side of Fan

LD30992,0000057 -19-07NOV06-1/1

Fan Belt Remove and Install

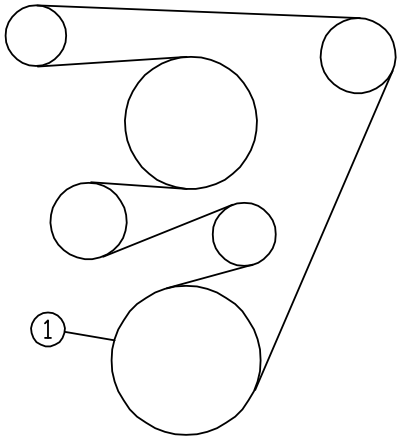
1. Release belt auto tensioner.
2. Replace parts as necessary. See Checking Belt Tensioner Spring Tension and Belt Wear (Automatic Tensioner) to check tensioner tension. (CTM301.)
3. Install belt as shown.

1— Crank Pulley



T199065 —UN—07APR04

Fan Belt Routing With Air Conditioning



T199066 —UN—07APR04

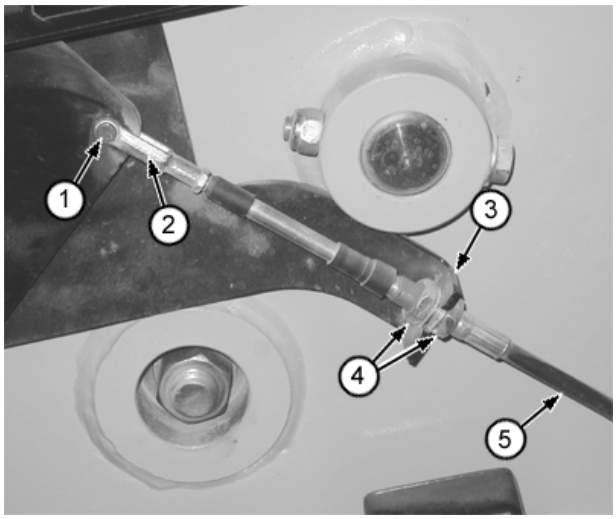
Fan Belt Routing Without Air Conditioning

LD30992,0000058 -19-08FEB08-1/1

Speed Control Linkage Remove and Install

1. Park machine on a flat level surface.
2. Raise cab. For skid steer loader, see Raising Operator's Station. (Operator's Manual.) For compact track loader, see Raising Operator's Station. (Operator's Manual.)
3. Remove pin (1) from clevis (2).
4. Loosen nuts (4) and remove engine speed control linkage (5) from bracket (3).
5. Raise hood and remove side shields.

1— Pin
2— Clevis
3— Bracket
4— Nut (2 used)
5— Engine Speed Control Cable



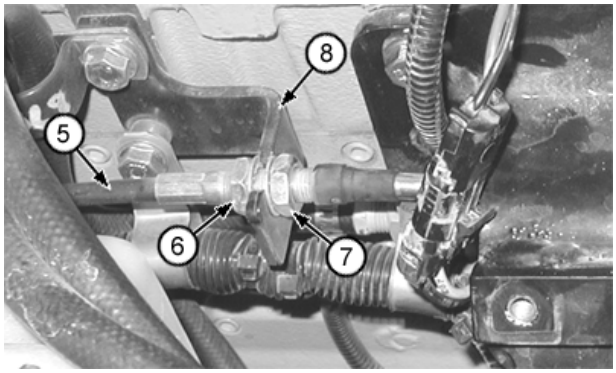
T198964A —UN—31MAR04

Engine Speed Control Lever

MX10672,0000064 -19-09FEB04-1/3

6. Loosen nut (6 and 7) and remove engine speed control linkage (5) from bracket (8).

5— Engine Speed Control Cable
6— Nut
7— Nut
8— Bracket



T198965A —UN—31MAR04

Engine Speed Control Cable

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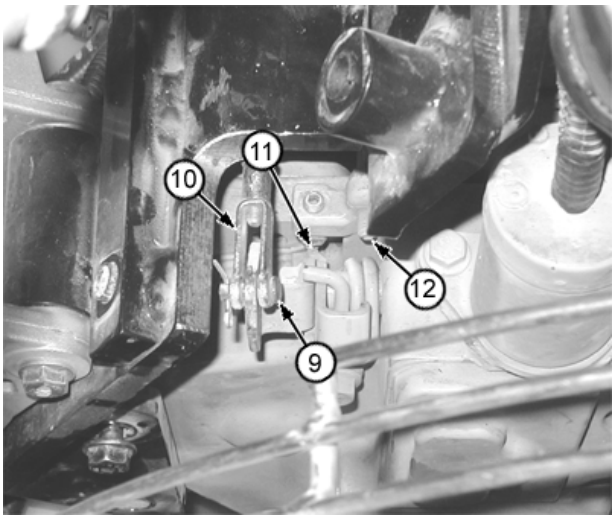
MX10672,0000064 -19-09FEB04-2/3

NOTE: Air conditioner compressor or alternator may need to be removed to gain access to pin and clevis.

7. Remove pin (9) from clevis (10) and remove cable.
8. Repair or replace parts as necessary.
9. Install speed control linkage cable (5) to brackets (3 and 8).
10. Install pins (1 and 9) to clevis (2 and 10).

IMPORTANT: DO NOT adjust slow and fast idle speed stop screws. Idle speed stop screws are set at the factory.

11. Move speed control lever. Make sure governor control lever makes contact with both the fast (12) and slow (11) idle speed stop screws. If governor control lever does not make contact with stop screws, adjust nuts (4, 6, and 7).
12. Install side shields and lower engine cover.
13. Lower cab and lower boom. For skid steer loader, see Raising Operator's Station. (Operator's Manual.) For compact track loader, see Raising Operator's Station. (Operator's Manual.)



T198963A —UN—31MAR04

Engine Governor

9— Pin
10— Clevis
11— Slow Idle Speed Stop Screw
12— Fast Idle Speed Stop Screw

MX10672,0000064 -19-09FEB04-3/3

Fuel Tank Remove and Install

1. Park machine on a flat level surface.
2. Drain fuel.
3. Remove engine with hydrostatic pumps. See Engine Remove and Install (Group 0400.) and see Hydrostatic Pump Remove and Install. (Group 0360.)
4. Remove fuel level sensor. See Fuel Level Sensor Remove and Install. (Group 0560.)
5. Remove receiver-dryer and refrigerant line clamps from frame upright. Move receiver-dryer aside.
6. If machine is equipped with auxiliary fuel tank, loosen clamps and disconnect fuel lines to auxiliary tank. Plug and cap lines.
7. Remove remaining fuel tank retaining brackets.
8. Remove fuel tank.
9. Repair or replace parts as necessary.
10. Install fuel tank and retaining brackets.
11. If machine is equipped with auxiliary fuel tank, attach fuel lines from auxiliary tank and tighten clamps.
12. Install receiver-dryer and refrigerant lines.
13. Install fuel level sensor. See Fuel Level Sensor Remove and Install. (Group 0560.)
14. Install engine and hydrostatic pumps. See Engine Remove and Install (Group 0400.) and see Hydrostatic Pump Remove and Install. (Group 0360.)

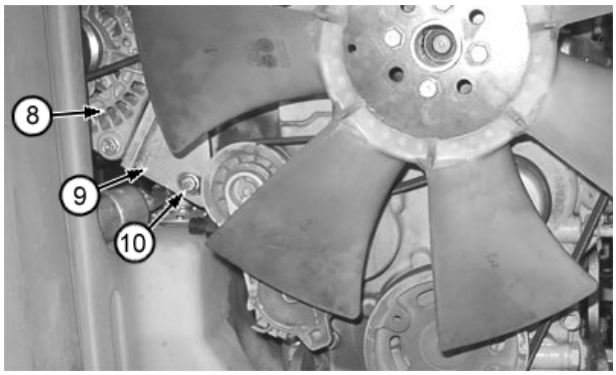
LD30992,000006C -19-14APR05-1/1

Fuel Level Sensor Remove and Install

1. Park machine on a flat level surface.
2. Raise boom and engage boom lock.
3. Open engine cover and remove side shields.
4. Disconnect battery negative (-) cable.
5. Remove air cleaner cover and air cleaner element.

NOTE: Remove bottom cap screw from alternator mounting bracket before removing the belt. Once belt is removed, cap screw will not clear the idler pulley.

6. Remove bottom cap screw (10) from alternator and air conditioner mounting bracket (9).
7. Remove belt.
8. Remove air conditioner compressor mounting cap screws. Move aside and secure.



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Alternator

8— Alternator
9— Mounting Bracket
10— Cap Screw

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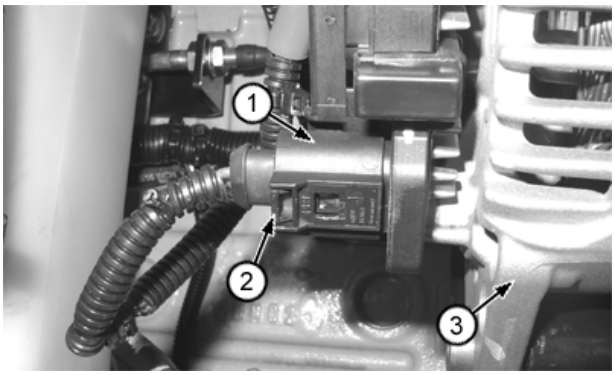
LD30992,0000065 -19-08MAR04-1/2

9. Pull tab (2) back while gently pulling on connector (1) to disconnect electrical connectors from alternator. Remove wire from terminal post.
10. Remove oil fill tube and dipstick bracket from alternator and air conditioner compressor bracket.
11. Remove remaining cap screws holding alternator and air conditioner compressor bracket to engine. Remove alternator and mounting bracket as an assembly.
12. Remove high flow hydraulic pump, if equipped. See High Flow Hydraulic Pump Remove and Install. (Group 3160.)
13. Remove fuel lines from fuel level sensor.
14. Remove fuel level sensor mounting screws and remove fuel level sensor.
15. Repair or replace parts as necessary.
16. Install fuel level sensor and mounting screws.
17. Connect fuel lines.
18. Install alternator and mounting bracket.
19. Install oil fill tube and dipstick bracket.
20. Connect wire harness to alternator.

Specification	
Alternator Ground Cap Screw—Torque	4.3 N·m 38 lb-in.

21. Install belt.



T198388A —UN—09MAR04

Alternator Connector

1— Connector
2— Tab
3— Alternator

NOTE: Install bottom cap screw for mounting bracket after installing the belt. Once belt is installed, cap screw will clear the idler pulley.

22. Install bottom cap screw to alternator and air conditioner mounting bracket.
23. Install air cleaner element and cover. Connect battery negative (-) cable.
24. Install side shields, close engine cover, and lower boom.

LD30992,0000065 -19-08MAR04-2/2

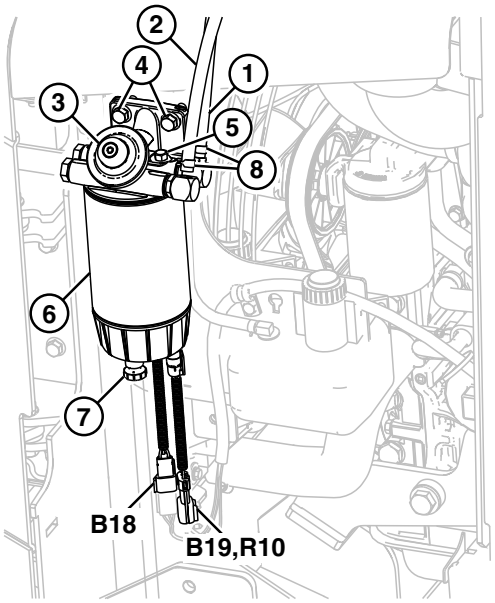
Auxiliary Fuel Tank Remove and Install—CT322 Only

1. Park machine on a flat level surface.
2. Drain fuel.
3. Remove engine with hydrostatic pumps. See Engine Remove and Install (Group 0400.) and see Hydrostatic Pump Remove and Install. (Group 0360.)
4. Loosen clamps and disconnect fuel lines to auxiliary tank. Plug and cap lines.
5. Remove auxiliary fuel tank retaining brackets.
6. Remove auxiliary fuel tank.
7. Repair or replace parts as necessary.
8. Install auxiliary fuel tank and retaining brackets.
9. Attach fuel lines to auxiliary tank and tighten clamps.
10. Install engine and hydrostatic pumps. See Engine Remove and Install (Group 0400.) and see Hydrostatic Pump Remove and Install. (Group 0360.)

KK70125,0000061 -19-04FEB09-1/1

Auxiliary Water Separator Fuel Filter Remove and Install—If Equipped

1. Raise boom and engage boom lock. See Boom Lock. (Operator's Manual.)
2. Open engine cover and remove right side shield. See Opening and Closing Engine Cover and see Removing Side Panels. (Operator's Manual.)
3. Open air vent (5) and drain (7). Drain fuel into container.
4. Attach identification tags to fuel hoses (1 and 2). Remove clamps (8) and disconnect fuel hoses. Close all openings using caps and plugs.
5. Disconnect water-in-fuel sensor 3-pin connector (B18).
6. Disconnect fuel heater 2-pin connector (R10).
7. Remove cap screws (4) and auxiliary water separator fuel filter (6).
8. Inspect and replace as necessary. See Replace Auxiliary Water Separator Fuel Filter—If Equipped. (Operator's Manual.)
9. Install auxiliary water separator fuel filter and cap screws.
10. Connect fuel heater 2-pin connector.
11. Connect water-in-fuel sensor 3-pin connector.
12. Connect fuel hoses and clamps.
13. Bleed fuel system. See Bleed Fuel System. (Operator's Manual.)
14. Install right side shield and close engine cover. See Opening and Closing Rear Service Door and see Removing Side Panels. (Operator's Manual.)



TX1055411 —UN—09FEB09

Auxiliary Water Separator Fuel Filter

1— Filter Hose—If Equipped
2— Tank Hose—If Equipped
3— Priming Pump
4— Cap Screw (2 used)
5— Air Vent
6— Auxiliary Water Separator Fuel Filter
7— Drain
8— Clamp (2 used)
B18— Water-in-Fuel Sensor 3-Pin Connector
B19— Fuel Heater Temperature Switch
R10— Fuel Heater 2-Pin Connector

15. Lower boom. See Boom Lock. (Operator's Manual.)

JW40272,00004B0 -19-10FEB09-1/1

Section 17
Frame or Supporting Structure

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Welding On Machine

IMPORTANT: Disconnect battery ground strap or turn battery disconnect switch to OFF (if applicable).

Disconnect both negative and positive battery cables and microprocessor unit (if applicable).

IMPORTANT: Have only a qualified welder do this job. Connect welder ground clamp close to each weld area so electrical current does not pass through any bearings.

Remove or protect all parts that can be damaged by heat or weld splatter.

WELD METAL SPECIFICATIONS	
Item	**Specification**
Tensile Strength	482.6 mPa (70 000 psi)
Yield Strength	413.7 mPa (60 000 psi)
Elongation	22%

Use one of the following weld processes:

- AWS-E-7018 covered electrode with shielded metal arc welding (SMAW) process.
- AWS-ER-70S-3f wire electrode with gas metal arc welding (GMAW) process.
- AWS-E70T-1 or E71T-1 wire electrode with flux core arc welding (FCAW) process.

TX,WELD,II -19-11APR95-1/1

Welding Repair of Major Structure

CAUTION: Avoid potentially toxic fumes and dust. Hazardous fumes can be generated when paint is heated by welding, soldering, or using a torch. Do all work outside or in a well ventilated area. Dispose of paint and solvent properly.

If you sand or grind paint, avoid breathing the dust. Wear an approved respirator. If you use solvent or paint stripper, remove stripper with soap and water before welding. Remove solvent or paint stripper containers and other flammable material from area. Allow fumes to disperse at least 15 minutes before welding or heating.

1. Remove paint before welding or heating.

IMPORTANT: Electrical current traveling from the welder through the machine electrical system may damage the machine electrical system, including battery, machine information center, and pump and valve controller. Disconnect battery ground cable, machine information center, and pump and valve controller electrical connectors before welding on the machine.

Have only a qualified welder do this job. Connect welder ground clamp close to each weld area so electrical current does not pass through any bearings. Remove or protect all parts that can be damaged by heat or weld splatter.

2. Use one of the following weld processes:

   - AWS-E-7018 covered electrode with shielded metal arc welding (SMAW) process.
   - AWS-ER-70S-3 wire electrode with gas metal arc welding (GMAW) process.
   - AWS-E70T-1 or E71T-1 wire electrode with flux core arc welding (FCAW) process.

Welding Repair of Major Structure—Specification

Weld Metal—Tensile Strength	482.6 mPa 70,000 psi
Yield Strength	413.7 mPa 60,000 psi
Elongation	22%

IMPORTANT: Area to be repaired must be preheated to allow better weld penetration.

3. To repair weld metal failure, remove failed weld metal using arc or grinding equipment. Thoroughly clean area to be welded. Preheat structural assemblies to a minimum of 38°C (100°F). Preheat ground engaging tools (cutting edges, skid shoes, and teeth shanks) to 177°C (350°F).

   To repair base metal failure remove enough material to allow weld to penetrate to the bottom of crack. Preheat structural assemblies to a minimum of 38°C (100°F). Preheat ground engaging tools (cutting edges, skid shoes, and teeth shanks) to 177°C (350°F).

Welding Repair of Major Structure—Specification

Structural Assemblies—Preheat Temperature	38°C 100°F
Ground Engaging Tools—Preheat Temperature	177°C 350°F

LD30992,0000008 -19-17FEB03-1/1

Section 18
Operators's Station

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Cab Remove and Install

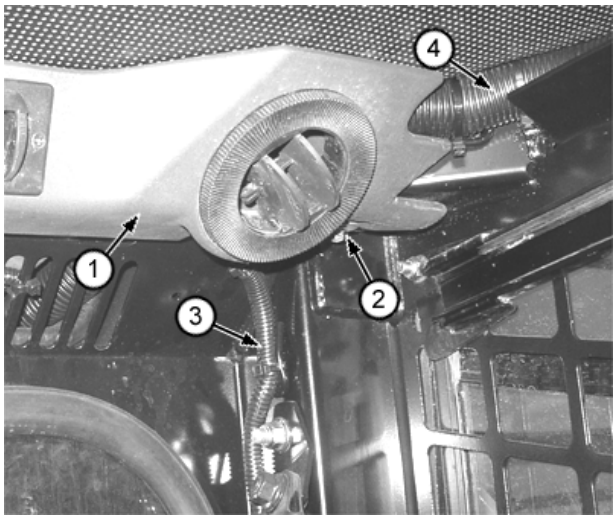
1. Park machine on flat level surface. Lower boom to ground position.
2. Disconnect negative (-) battery cable.
3. Remove instrument panel from cab. Disconnect instrument panel and switches from cab harness. See Instrument Panel, Engagement and Monitor Unit, and Key Switch Remove and Install. (Group 9015-20.)
4. Disconnect seat, seat belt, and cab door switch.
5. Remove cap screws (2) and air duct (1).
6. Remove all cab harness tie downs.
7. Raise cab. For skid steer loader, see Raising Operator's Station. (Operator's Manual.) For compact track loader, see Raising Operator's Station. (Operator's Manual.)
8. Pull cab harness (3 and 4) out from cab through duct.
9. Attach hoist to cab with lifting straps.

CAUTION: Avoid crushing injury from cab. Use appropriate lifting device when lifting and removing cab.

10. Raise hoist and lifting straps to remove weight from cab support cylinders.

Specification

Cab With Enclosure With Seat—Weight..... 210 kg 463 lb



T199253A —UN—14APR04

Air Duct

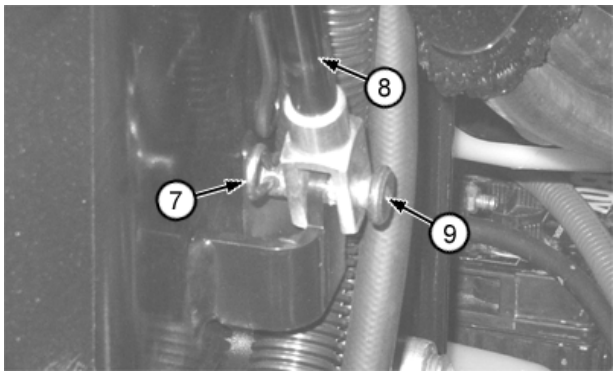
1— Air Duct
2— Cap Screw (2 used)
3— Cab Harness to Seat and Seat Belt Switch
4— Cab Harness to Instrument Panel

Cab Without Enclosure With Seat—Weight..... 144 kg 317 lb

LD30992,000006E -19-26AUG05-1/3

11. Remove spring locking pins (7) and pin (9) to remove cab support cylinders (8) from machine frame.

7— Spring Locking Pin (2 used)
8— Cab Support Cylinder (2 used)
9— Pin (2 used)



T199254A —UN—14APR04

Cab Support Cylinders—Left Side Shown

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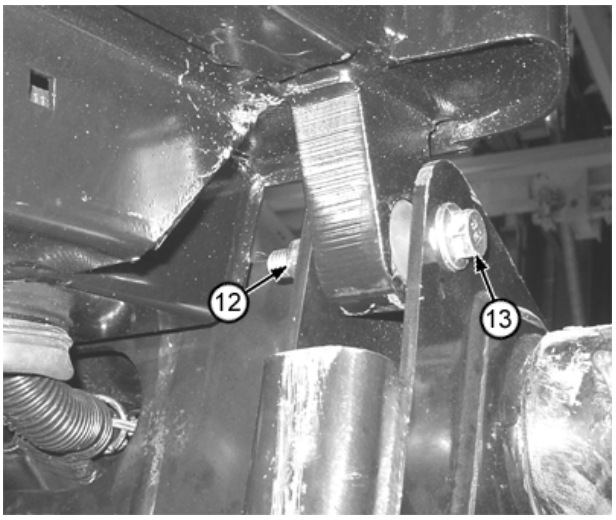
LD30992,000006E -19-26AUG05-2/3

12. Remove cap screw (13) and nut (12) from both sides of cab.
13. Remove cab and repair as necessary.
14. Inspect cab pivot bushings for wear or damage. Remove only if repair is necessary.
15. Install cab and tighten cap screws.

Specification	
Cab Pivot Cap Screw—Torque	140 N·m 105 lb-ft

CAUTION: Prevent possible crushing injury from unexpected machine movement. Make sure cab support cylinder locking mechanism functions correctly before lowering hoist or removing lifting straps.

16. Install cab support cylinders. Make sure cab support cylinders are in the locked position.
17. Remove hoist and lifting straps.
18. Pull cab harness back through duct into cab.
19. Lower cab. For skid steer loader, see Raising Operator's Station. (Operator's Manual.) For compact track loader, see Raising Operator's Station. (Operator's Manual.)
20. Install cab harness to cab.



T199255A —UN—14APR04

Cab Pivot—Left Side Shown

12— Nut (2 used) **13— Cap Screw (2 used)**

21. Install air duct.
22. Install instrument panel and connect to cab harness. See Instrument Panel, Engagement and Monitor Unit, and Key Switch Remove and Install. (Group 9015-20.)
23. Connect negative (-) battery cable.

LD30992,000006E -19-26AUG05-3/3

Cab Door Remove and Install

1. Park machine on a flat level surface.

NOTE: This procedure requires two people.

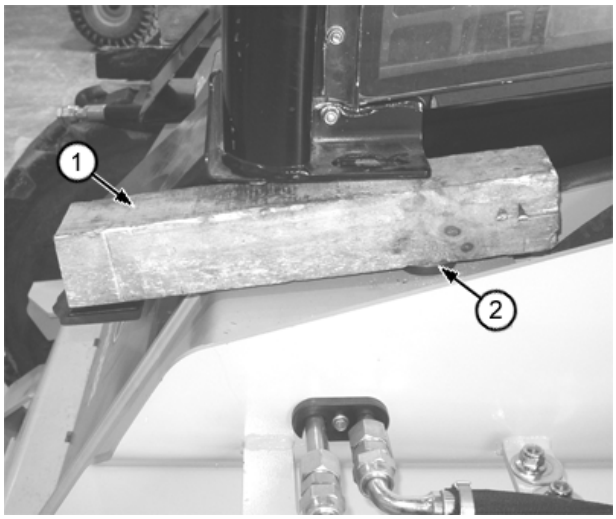
2. Raise cab. For skid steer loader, see Raising Operator's Station. (Operator's Manual.) For compact track loader, see Raising Operator's Station. (Operator's Manual.)
3. Place two wood blocks between cab and machine frame. Drill a 5/8" hole in the wood block and slide block over cab hold down stud.
4. Lower cab onto wood blocks.

CAUTION: Avoid possible injury from door closing. When gas cylinders are removed from door, door will fall to the closed position. Have an assistant hold the door in the open position when gas cylinders are removed.

5. With an assistant holding the cab door open, remove gas cylinders from ball studs on cab door handles.
6. Close door.
7. Remove ball studs.
8. Remove upper cap screws and lower nuts that retain left door roller brackets to door.

CAUTION: Cab door weighs 23 kg (50 lb). Two people are required to remove cab door from machine.

9. Open door half way. With second person assisting from outside, slide left roller brackets inward to disengage rollers from track. Move door to the left to disengage right rollers from track. Lower (drop) right side of door and remove from machine.
10. Repair or replace parts as necessary.
11. One person sit on operator's seat.
12. With the second person assisting from the outside, tilt cab door so the right side is lower. Slide cab door into machine.
13. Insert top right roller into track.



T199128A —UN—08APR04

Wood Blocks

1— Wood Block (2 used)

2— Cab Hold Down Stud (2 used)

14. Insert bottom right roller into track.
15. Adjust left roller brackets outward to engage left roller track.
16. Adjust left roller brackets to provide maximum track engagement without binding.
17. Install ball studs to cab door.
18. Attach both gas cylinders to ball studs on cab door handle.
19. Open and close door several times to verify operation. Adjust as necessary.
20. Raise cab and remove wood blocks.
21. Lower cab. For skid steer loader, see Raising Operator's Station. (Operator's Manual.) For compact track loader, see Raising Operator's Station. (Operator's Manual.)
22. Test for proper operation of cab door switch. Park brake should engage and hydraulics should lock when cab door is opened.

LD30992,000004D -19-14APR05-1/1

Seat Remove and Install

NOTE: It is not necessary to remove seat to replace seat switch. Remove spring locking pins and raise seat cushion.

1. Park machine on a flat level surface.
2. Remove seat belt from seat. See Seat Belt Remove and Install. (Group 1821.)
3. Raise cab. For skid steer loader, see Raising Operator's Station. (Operator's Manual.) For compact track loader, see Raising Operator's Station. (Operator's Manual.)
4. Remove seat mounting nuts from under cab. Lower cab.
5. Slide seat forward and disconnect seat switch from harness. Remove seat from machine.
6. Place seat in machine and connect seat switch connector to harness.
7. Raise cab slightly and start nut on seat mounting cap screws.
8. Raise cab completely and install remaining nuts.
9. Lower cab. For skid steer loader, see Raising Operator's Station. (Operator's Manual.) For compact track loader, see Raising Operator's Station. (Operator's Manual.)
10. Install seat belt to seat. See Seat Belt Remove and Install. (Group 1821.)

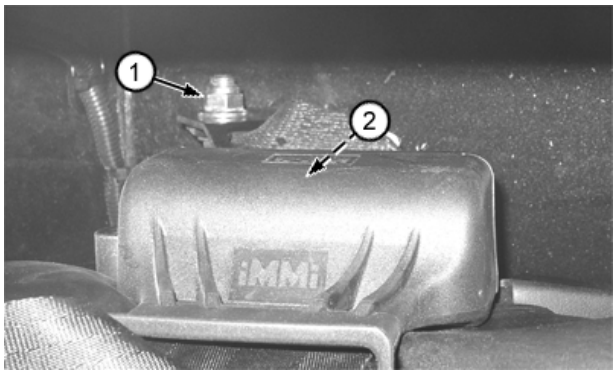
LD30992,000006D -19-14APR05-1/1

Seat Belt Remove and Install

1. Slide seat forward.
2. Remove left lap belt anchor nut and cap screw (1) and left lap belt-to-seat nut (2).

1— Left Lap Belt Anchor Nut and Cap Screw

2— Left Lap Belt-to-Seat Nut



T199100A —UN—07APR04

Seat Belt Anchor

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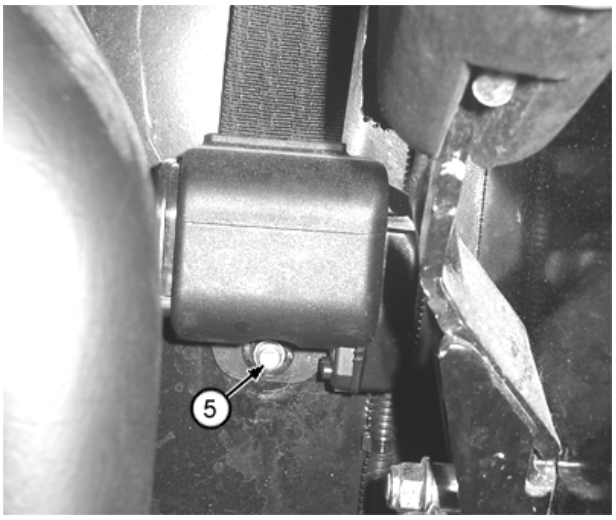
LD30992,000006A -19-06APR04-1/3

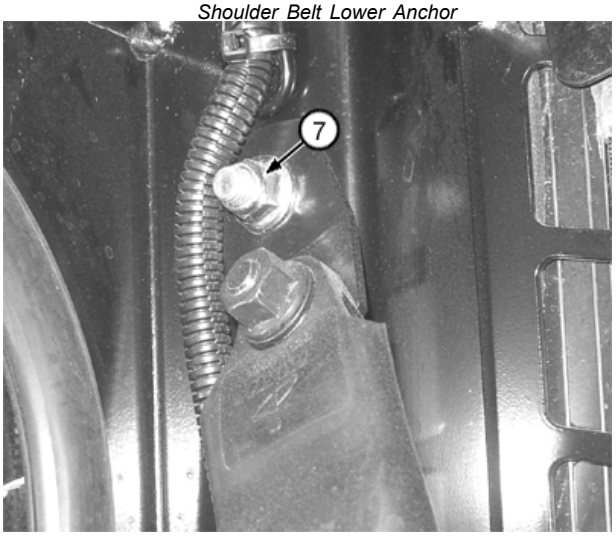
3. Remove shoulder belt lower (5) and upper (7) anchor nut.

5— Lower Anchor Nut **7— Upper Anchor Nut**



T199098A —UN—07APR04

Shoulder Belt Lower Anchor



T199099A —UN—07APR04

Shoulder Belt Upper Anchor

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LD30992,000006A -19-06APR04-2/3

4. Disconnect seat belt switch connector (11).
5. Remove right seat belt latch anchor nut and cap screw (10) and right seat belt latch-to-seat nut (9).
6. Replace parts as necessary.
7. Install right seat belt latch anchor nut (10) and right seat belt latch-to-seat nut (9).

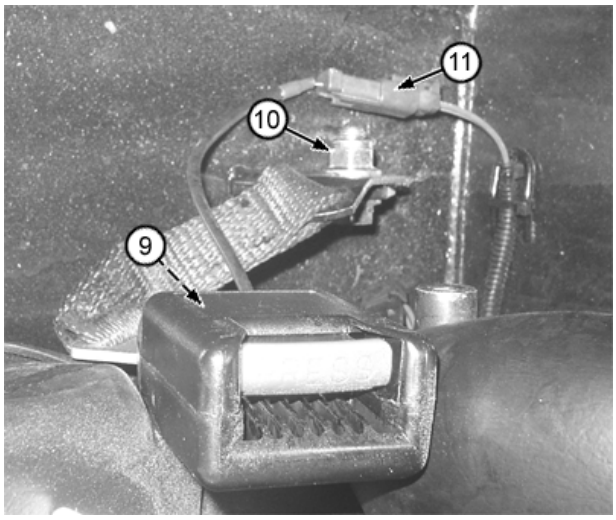
Specification	
Seat Belt Anchor Nut and Cap Screw—Torque	130 N·m 96 lb-ft
Seat Belt Latch-to-Seat Nut—Torque	140 N·m 105 lb-ft

8. Connect seat belt switch connector (11) to harness.
9. Install shoulder belt upper (7) and lower (5) anchor nut.

Specification	
Shoulder Belt Upper and Lower Anchor Nut—Torque	80 N·m 59 lb-ft

10. Install left lap belt anchor nut (1) and left lap belt-to-seat nut (2).

Specification	
Seat Belt Anchor Nut and Cap Screw—Torque	130 N·m 96 lb-ft



T199097A —UN—07APR04

Seat Belt Latch

9— Right Seat Belt Latch-to-Seat Nut
10— Right Seat Belt Latch Anchor Nut and Cap Screw
11— Seat Belt Switch Connector

Lap Belt-to-Seat Nut—Torque	140 N·m 105 lb-ft

LD30992,000006A -19-06APR04-3/3

Refrigerant Cautions and Proper Handling

CAUTION: DO NOT allow liquid refrigerant to contact eyes or skin. Liquid refrigerant will freeze eyes or skin on contact. Wear goggles, gloves and protective clothing.

If liquid refrigerant contacts eyes or skin, DO NOT rub the area. Splash large amounts of COOL water on affected area. Go to a physician or hospital immediately for treatment.

DO NOT allow refrigerant to contact open flames or very hot surfaces such as electric welding arc, electric heating element and lighted smoking materials.

DO NOT heat refrigerant over 52°C (125°F) in a closed container. Heated refrigerant will develop high pressure which can burst the container.

Keep refrigerant containers away from heat sources. Store refrigerant in a cool place.

DO NOT handle damp refrigerant container with your bare hands. Skin may freeze to container. Wear gloves.

If skin freezes to container, pour COOL water over container to free the skin. Go to a physician or hospital immediately for treatment.

IMPORTANT: To meet government standards relating to the use of refrigerants, R134a is used in the air conditioning system. Because it does not contain chlorine, R134a is not detrimental to the ozone in the atmosphere. However, it is illegal to discharge any refrigerant into the atmosphere. It must be recovered using the appropriate recovery stations.

Use correct refrigerant recovery, recycling and charging stations. Never mix refrigerants, hoses, fittings, components or refrigerant oils.

Use only John Deere approved R134a refrigerant products. Mixing of products not compatible will cause system damage and contaminate recovery, recycling and charging station equipment. Care must be taken to identify and use equipment, refrigerant oil and refrigerant designed only for R134a refrigerant systems. Refrigerant should be tested for type and purity before recovery, recycling or charging of system. JT02167A refrigerant test instrument should be used before any testing or repair to system is performed.

TX,9031,DY5073 -19-16JUN10-1/2

Prism Pro Refrigerant Identification Instrument.. JT02167A	To safely identify type and check purity of refrigerant prior to recovery, recycling and recharging of A/C systems.

TX,9031,DY5073 -19-16JUN10-2/2

Flush and Purge Air Conditioner System

CAUTION: Liquid refrigerant will freeze eyes or skin on contact. Wear goggles, gloves and protective clothing.

See Refrigerant Cautions and Proper Handling. (Group 1830.)

NOTE: Flushing can be performed on machine.

1. Perform Recover R134a Refrigerant. (Group 1830.)

   Add flushing solvent to system with JT02075 Flusher and JT02098 Flusher Fitting Kit.

2. Remove and discard receiver/dryer.
3. Connect flusher outlet hose to inlet end of compressor discharge line using JT02102 Adapter.
4. Fill flusher tank with solvent and fasten all connections. Dispose of solvent properly.

Specification	
Flusher Tank—Capacity	4 L 1 gal

NOTE: Air pressure must be at least at specification for flushing and purging.

Specification	
Air Pressure—Minimum Pressure	620 kPa for flushing and purging 90 psi for flushing and purging 6.2 bar for flushing and purging

5. Connect supply line of moisture-free compressed air or dry nitrogen to flusher air valve.
6. Open air valve to force flushing solvent into condenser circuit. Flusher tank is empty when hose pulsing stops. Additional flushing cycles are required if system is heavily contaminated with burned oil or metal particles.
7. **Clean compressor as follows:**
   a. Remove compressor and measure oil drained from both manifold ports.
   b. Connect flusher outlet hose to inlet end of compressor discharge line using JT02102 Adapter.
   c. Pour flushing solvent into suction port and discharge port. Plug both ports in compressor manifold, using JT02099 and JT03194 Caps.

Specification	
Flushing Solvent in Suction Port—Volume	240 mL 8 fl oz
Flushing Solvent in Discharge Port—Volume	120 mL 4 fl oz

   d. Turn compressor end for end and roll it side to side.
   e. Remove both plugs from manifold ports and drain solvent from compressor.
   f. Connect battery power to compressor clutch coil. Rotate pulley at least five revolutions to move solvent out of cylinders.
   g. Invert compressor. Roll end for end and side to side. Drain thoroughly.
   h. Repeat previous two steps at least three times.
8. **Divide system into two circuits:**
   - Condenser circuit, including inlet and outlet hoses.
   - Evaporator circuit, including inlet and outlet hoses.
9. **Condenser:**

IMPORTANT: DO NOT attempt to flush through compressor or receiver/dryer. Flushing through expansion valve is acceptable if refrigerant oil has a normal odor and appearance.

   a. Flush/Purge Condenser:
   b. Remove and discard receiver/dryer.
   c. Connect flusher outlet hose to inlet end of compressor discharge line using JT02102 Adapter.
   d. Fill flusher tank with solvent and fasten all connections.

Specification	
Flusher Tank—Capacity	4 L 1 gal

NOTE: Air pressure must be at least to specification for flushing and purging.

Specification	
Air Pressure—Minimum Pressure	620 kPa for flushing and purging. 90 psi for flushing and purging. 6.2 bar for flushing and purging.

   e. Connect supply line of moisture-free compressed air or dry nitrogen to flusher air valve.
   f. Open air valve to force flushing solvent into condenser circuit. Flusher tank is empty when hose pulsing stops. Additional flushing cycles are required if system is heavily contaminated with burned oil or metal particles.
   g. Attach return hose and aerator nozzle to end of receiver/dryer inlet hose using JT03197 Adapter. Put nozzle in container to collect flushing solvent.

NOTE: Purging the condenser circuit takes 10—12 minutes to thoroughly remove solvent.

Continued on next page

h. Disconnect hose from aeration nozzle to check circuit for solvent. Hold hose close to piece of cardboard; continue purging until cardboard is dry.

10. See flush evaporator, if evaporator requires flushing.

    If system is contaminated with burned refrigerant oil or debris, remove and bench flush evaporator. See following steps to flush evaporator through expansion valve, if oil appears normal.

11. **Flush evaporator:**

    a. Remove evaporator and expansion valve. See Air Conditioner and Heater Remove and Install. (Group 1830.)

    b. Force flushing solvent through evaporator inlet with compressed air.

    c. Purge system until dry.

    d. Install evaporator and then go to step 13.

12. **Flush evaporator through expansion valve:**

    a. Connect flusher outlet hose to connection of receiver/dryer outlet hose using JT03188 adapter.

    b. Fill flusher tank and fasten all connections.

Specification	
Flusher Tank—Capacity	4 L 1 gal

NOTE: Air pressure must be at least to specification for flushing and purging.

Specification	
Air Pressure—Minimum Pressure	620 kpa for flushing and purging. 90 psi for flushing and purging. 6.2 bar for flushing and purging.

    c. Connect supply line of moisture-free compressed air or dry nitrogen to flusher air valve.

    d. Attach hose and aerator nozzle to compressor inlet line using JT02101 adapter. Put nozzle in container to collect solvent.

NOTE: Purging evaporator circuit takes 12—15 minutes to thoroughly remove solvent.

13. Disconnect hose from aeration nozzle to check circuit for solvent. Hold hose close to piece of cardboard and continue purging until cardboard is dry.

14. Install new receiver/dryer compatible with R134a refrigerant. Fasten connections and mounting bracket. See Receiver-Dryer Remove and Install. (Group 1830.)

15. Add required oil. See R134a Refrigerant Oil Information. (Group 1830.)

16. Install compressor and connect refrigerant lines to manifold.

17. Connect clutch coil wire and install drive belt.

TX,18,DU2461 -19-08FEB08-2/2

R134a Refrigerant Oil Information

CAUTION: All new compressors are charged with a mixture of nitrogen, R134a refrigerant and TY22025 (R134a) refrigerant oil. Wear safety goggles and discharge the compressor slowly to avoid possible injury.

IMPORTANT: Do not add any more oil than required or maximum cooling will be reduced.

DO NOT leave system or R134a compressor oil containers open. Refrigerant oil easily absorbs moisture. DO NOT spill R134a compressor oil on acrylic or ABS plastic. This oil will deteriorate these materials rapidly. Identify R134a oil containers and measures to eliminate accidental mixing of different oils.

New compressor from parts depot contains new oil. Oil level visible through suction port normally is below drive shaft.

Normal operating oil level of compressor removed from operation cannot be seen through suction port of compressor.

Compressors can be divided into three categories when determining correct oil charge for system.

- New compressor from parts depot
- Used compressor removed from operation
- Compressor internally washed with flushing solvent

Determining amount of system oil charge prior to installation of compressor on machine.

When complete system, lines, and components are flushed add correct amount of oil as described.

Specification	
Oil—Total System Volume	232 mL (7.85 fl oz)
Compressor Precharge Volume	220 mL (7.43 fl oz)
R134a—Weight	1475 g (3.25 lb)

If any section of hose is removed and flushed or replaced, measure length of hose and use formula 3 mL per 30 cm (0.1 fl oz per ft) to determine correct amount of oil to be added.

Drain compressor oil into graduated container while rotating compressor shaft and record amount.

If oil drained from compressor removed from operation is very black or amount of oil is less than 6 mL (0.2 fl oz), perform the following and discard oil properly:

- ☐ Determine if R134a leakage was detected, remove component and repair or replace component.
- ☐ Remove and discard receiver/dryer.
- ☐ Flush complete system with TY16134 Air Conditioning Flushing Solvent.

If component is serviceable, pour flushing solvent in ports and internally wash out old oil and discard oil properly.

Install new receiver-dryer. See Receiver-Dryer Remove and Install. (Group 1830.)

Install required amount of TY22025 Refrigerant Oil in compressor.

Connect all components. Perform Evacuate R134a System and Perform Charge R134a System. (Group 1830.)

LD30992,0000011 -19-03MAR03-1/1

R134a Refrigerant Recovery/Recycling and Charging Station Installation Procedure

CAUTION: Liquid refrigerant will freeze eyes or skin on contact. Wear goggles, gloves and protective clothing.

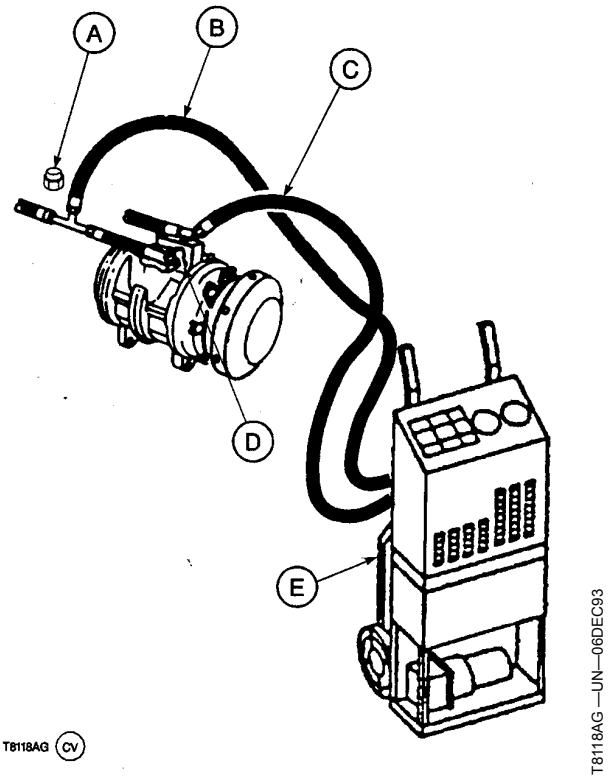
See Refrigerant Cautions and Proper Handling. (Group 1830.)

IMPORTANT: Use only John Deere approved R134a refrigerant products. Mixing of products not compatible will cause system damage and contaminate recovery, recycling and charging station equipment.

CAUTION: Do not remove high pressure relief valve (D). Air conditioning station will discharge rapidly causing possible injury.

IMPORTANT: Use only John Deere approved refrigerant recovery/recycling and charging stations. DO NOT mix refrigerant, hoses, fittings, components or refrigerant oils.

1. Follow procedures. See Refrigerant Cautions and Proper Handling. (Group 1830.)
2. Close both high-side and low-side valves on refrigerant recovery/recycling and charging station (E).
3. Remove cap from low-side charge port.
4. Connect blue hose (C) from refrigerant recovery/recycling and charging station (E) to low-side test port.
5. Remove cap (A) from charge port on high pressure hose and connect red hose (B).



A—High Pressure Hose Charge Port Cap
B—Red Hose
C—Blue Hose
D—High Pressure Relief Valve
E—Refrigerant Recovery/Recycling and Charging Station

6. Follow the manufacturers' instructions when using refrigerant recovery/recycling and charging station.

TX,9031,DU1693 -19-08FEB08-1/1

Recover R134a Refrigerant

CAUTION: Liquid refrigerant will freeze eyes or skin on contact. Wear goggles, gloves and protective clothing.

See Refrigerant Cautions and Proper Handling. (Group 1830.)

CAUTION: Do not remove high pressure relief valve. Air conditioning system will discharge rapidly causing possible injury.

IMPORTANT: Use correct refrigerant recovery/recycling and charging stations. DO NOT mix refrigerant, hoses, fittings, components or refrigerant oils.

1. Run air conditioning system for three minutes to help in recovery process. Turn air conditioning system off before proceeding with recovery steps.
2. With engine OFF identify refrigerant type using JT02167A Refrigerant Identification Instrument.
3. Connect refrigerant recovery system. See R134a Refrigerant Recovery/Recycling and Charging Station Installation Procedure. (Group 1830.)
4. Follow manufacturers' instructions when using refrigerant recovery/recycling and charging station.

TX,9031,DU1694 -19-08FEB08-1/1

Evacuate R134a System

CAUTION: Liquid refrigerant will freeze eyes or skin on contact. Wear goggles, gloves and protective clothing.

See Refrigerant Cautions and Proper Handling. (Group 1830.)

Do not remove high pressure relief valve. Air conditioning system will discharge rapidly causing possible injury.

1. Connect refrigerant recovery system. See R134a Refrigerant Recovery/Recycling and Charging Station Installation Procedure. (Group 1830.)
2. Open low-side and high-side valves on refrigerant recovery/recycling and charging station.
3. Follow manufacturers' instructions and evacuate system.

NOTE: Vacuum specifications listed are for sea level conditions. Subtract 3.4 kPa (34 mbar) (1 in. Hg) from 98 kPa (980 mbar) (29 in. Hg) for each 300 m (1000 ft) elevation above sea level.

Specification

Evacuate System—Vacuum ..... Subtract 3.4 kPa from 98 kPa for each 300 m elevation above sea level
Subtract 34 mbar from 980 mbar for each 300 m elevation above seal level
Subtract 1 in. Hg from 29 in. Hg for each 1000 ft elevation above sea level

4. Evacuate system until low-side gauge registers 98 kPa (980 mbar) (29 in. Hg) vacuum.

Specification

Evacuate System—Vacuum ..... 98 kPa
980 kPa
29 in. Hg

If above specification vacuum cannot be obtained in 15 minutes, test the system for leaks. See Refrigerant Leak Test. (Group 9031-25.)

5. When vacuum reaches above specification, close low-side and high-side valves. Turn vacuum pump off.
6. If vacuum decreases more than specification in 5 minutes, there is a leak in system.

Specification

Evacuate System—Vacuum ..... 3.4 kPa
34 mbar
1 in. Hg

7. Repair leak.
8. Evacuate system for 30 minutes after 98 kPa (980 mbar) (29 in. Hg) vacuum is reached.
9. Close low-side and high-side valves. Stop evacuation.
10. Perform Charge R134a System. (Group 1830.)

OUOE054,0000031 -19-08FEB08-1/1

Charge R134a System

CAUTION: Liquid refrigerant will freeze eyes or skin on contact. Wear goggles, gloves and protective clothing.

See Refrigerant Cautions and Proper Handling. (Group 1830.)

IMPORTANT: Use only John Deere approved refrigerant recovery/recycling and charging stations. DO NOT mix refrigerant, hoses, fittings, components or refrigerant oils.

1. Identify refrigerant type using JT02167A Refrigerant Identification Instrument.
2. Connect R134a Refrigerant Recovery/Recycling and Charging Station. See R134a Refrigerant Recovery/Recycling and Charging Station Installation Procedure. (Group 1830.)
3. Perform Evacuate R134a System . (Group 1830.)

NOTE: Before beginning to charge air conditioning system, the following conditions must exist: Engine STOPPED, the pump must be capable of pulling at least 28.6 in. Hg vacuum (sea level).

Subtract 3.4 kPa (34 mbar) (1 in. Hg) from 98 kPa (980 mbar) (29 in. Hg) for each 300 m (1000 ft) elevation above sea level.

Specification	
Evacuate System—Vacuum	Subtract 3.4 kPa from 98 kPa for each 300 m elevation above sea level Subtract 34 mbar from 980 mbar for each 300 m elevation above seal level Subtract 1 in. Hg from 29 in. Hg for each 1000 ft elevation above sea level

4. Follow manufacturer's instructions and charge system.
5. Add refrigerant to system.

Specification	
Air Conditioning System Refrigerant—Refrigerant Quantity	1474 g 3.25 lb

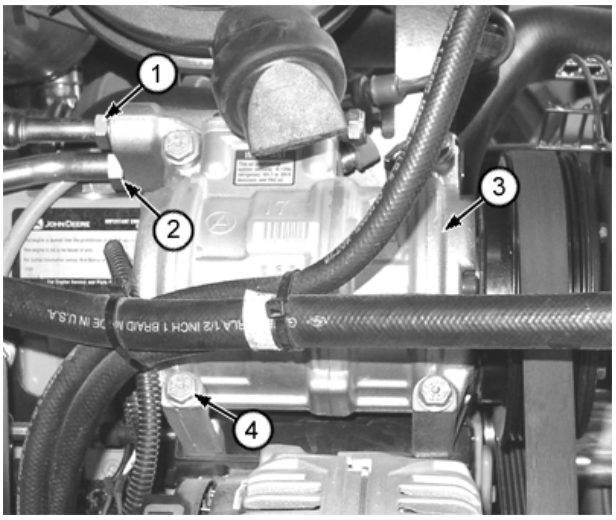
6. Check air conditioning for proper function. See Diagnose Air Conditioning System Malfunctions. (Group 9031-25.)

OUOE054,000002E -19-08FEB08-1/1

Air Conditioner Compressor Remove and Install

1. Park machine on a flat level surface.
2. Raise boom and engage boom lock.
3. Open engine cover and remove side shields.
4. Recover refrigerant. See Recover R134a Refrigerant. (Group 1830.)
5. Remove air cleaner cover, primary and secondary element.
6. Remove the high pressure (1) and low pressure (2) line from air conditioner compressor (3).
7. Remove belt and disconnect harness from air conditioner compressor clutch.
8. Remove cap screws (4) and air conditioner compressor (3).
9. Repair or replace parts as necessary.
10. Install air conditioner compressor (3) and tighten cap screws (4).
11. Install belt and connect harness.
12. Install high pressure (1) and low pressure (2) lines to air conditioner compressor.

Specification	
High Pressure Output Line Nut—Torque	20—27 N·m 177—239 lb-in.
Low Pressure Input Line Nut—Torque	24—33 N·m 18—24 lb-ft



T199000A —UN—01APR04

Air Conditioner Compressor

1— High Pressure Output Line
2— Low Pressure Input Line
3— Air Conditioner Compressor
4— Cap Screw (4 used)

13. Install air cleaner secondary and primary elements and air cleaner cover.
14. Evacuate air conditioning system and charge. See Evacuate R134a System, and see Charge R134a System. (Group 1830.)
15. Install side shields and lower engine cover.

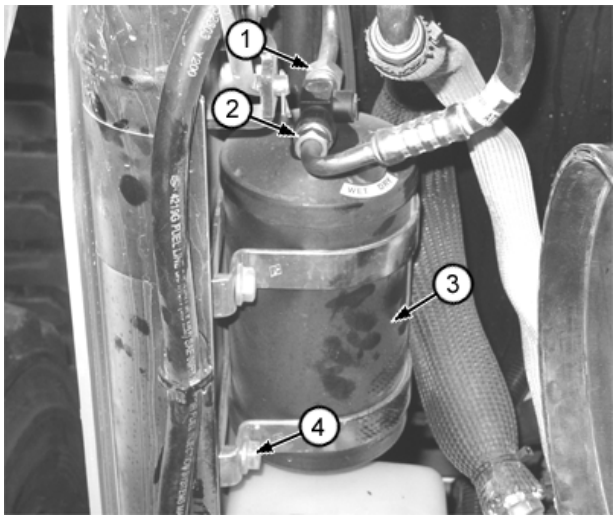
LD30992,0000066 -19-12FEB09-1/1

Receiver-Dryer Remove and Install

1. Park machine on a flat level surface.
2. Raise boom and engage boom lock.
3. Raise engine cover and remove side shields.
4. Recover refrigerant. See Recover R134a Refrigerant. (Group 1830.)
5. Remove air cleaner cover, primary and secondary element.
6. Remove refrigerant lines (1 and 2) from receiver-dryer (3).
7. Remove cap screws (4), receiver-dryer (3), and clamps.
8. Repair or replace parts as necessary.
9. Install clamps, receiver-dryer, and cap screws.
10. Install refrigerant lines to receiver-dryer.

Specification	
High Pressure Input Line—Torque	14—20 Nm 139—177 lb-in.
High Pressure Output Line—Torque	14—20 Nm 139—177 lb-in.

11. Install air cleaner secondary and primary elements and air cleaner cover.



T199001A —UN—01APR04

Receiver-Dryer

1— High Pressure Output Line
2— High Pressure Input Line
3— Receiver-Dryer
4— Cap Screw (2 used)

12. Evacuate air conditioning system and charge. See Evacuate R134a System, and see Charge R134a System. (Group 1830.)
13. Install side shields and lower engine cover.

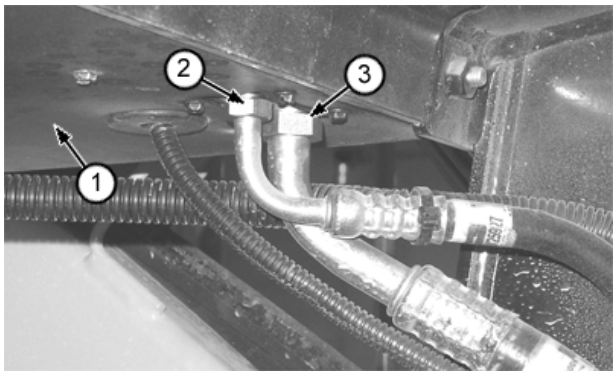
LD30992,0000067 -19-08FEB08-1/1

Air Conditioner and Heater Remove and Install

1. Park machine on a flat level surface.
2. Recover refrigerant. See Recover R134a Refrigerant. (Group 1830.)
3. Remove air conditioner cover.

NOTE: Foam gasket between air conditioner and heater and cover should be replaced any time air conditioner and heater cover is removed.

4. Remove foam gasket from air conditioner and heater.
5. Remove tail lights, work light, and remove harness from air conditioner and heater box.
6. Disconnect air conditioner and heater harness from cab harness.
7. Remove refrigerant lines (2 and 3) from expansion valve.
8. Remove and plug hot water lines from hot water valve and heater core. Note location of lines.



T199004A —UN—01APR04

Refrigerant Lines to Air Conditioner

1— Air Conditioner and Heater
2— High Pressure Input Line
3— Low Pressure Output Line

Continued on next page

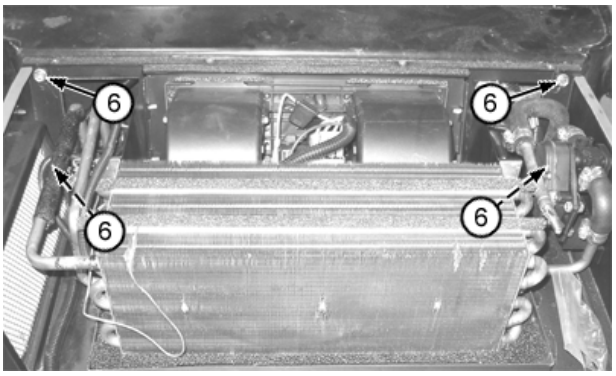
LD30992,0000068 -19-08FEB08-1/2

9. Remove cap screws (6) and remove air conditioner and heater.
10. Repair or replace parts as necessary.
11. Install air conditioner and heater and tighten cap screws (6).
12. Install hot water lines to hot water valve and heater core.
13. Install refrigerant lines (2 and 3) to expansion valve.

Specification	
Low Pressure Output Line Nut—Torque	24—33 Nm (18—24 lb-ft)
High Pressure Input Line Nut—Torque	14—20 Nm (139—177 lb-in.)

14. Connect air conditioner and heater harness to cab harness.
15. Install tail lights, rear work light, and connect harness.

NOTE: In dusty or harsh environments, additional sealant may be needed. Apply PM37463 silicon rubber adhesive to perimeter of cover, rear corners of air conditioner and heater box, and around lights.



T199002A —UN—01APR04

Air Conditioner and Heater

6— Cap Screw (4 used)

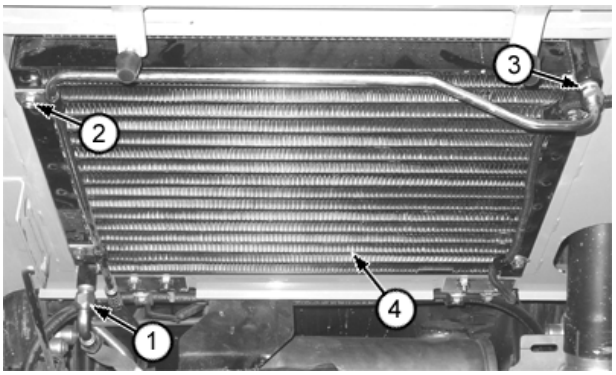
16. Install new foam gasket between air conditioner and cover.
17. Install air conditioner and heater cover.
18. Evacuate air conditioning system and charge. See Evacuate R134a System, and see Charge R134a System. (Group 1830.)

LD30992,0000068 -19-08FEB08-2/2

Condenser Remove and Install

1. Park machine on a flat level surface.
2. Raise boom and engage boom lock.
3. Recover refrigerant. See Recover R134a Refrigerant. (Group 1830.)
4. Open engine cover.
5. Remove refrigerant lines (1 and 3) from condenser (4).
6. Remove cap screws and clamps (2) and remove condenser.
7. Repair or replace parts as necessary.
8. Install condenser, clamps and cap screws (2).
9. Install refrigerant lines (1 and 3).

Specification	
High Pressure Gas Input Line Nut—Torque	20—27 Nm (177—239 lb-in.)
High Pressure Liquid Output Line Nut—Torque	14—20 Nm (139—177 lb-in.)



T199003A —UN—01APR04

Air Conditioner Condenser

1— High Pressure Gas Input Line
2— Cap Screw and Clamp (4 used)
3— High Pressure Liquid Output Line
4— Condenser

10. Evacuate air conditioning system and charge. See Evacuate R134a System, and see Charge R134a System. (Group 1830.)

LD30992,0000069 -19-08FEB08-1/1

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Sheet Metal and Styling

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Rear Door Remove and Install 19-1910-1

Rear Door Remove and Install

SPECIFICATIONS	
Rear Door With Hydraulic Oil Cooler Weight	56 kg 123 lb

ESSENTIAL TOOLS
JDG1885 Snap To Connect (STC) Tool Kit—Needed For Compact Track Loader Only

1. Park machine on a flat level surface.
2. Open rear door and remove hydraulic oil lines (2) from oil cooler in door. Cap and plug lines.

   For compact track loader, use JDG1885 STC tool kit to disconnect front oil cooler line. Remove rear oil cooler line at hydraulic oil filter manifold.

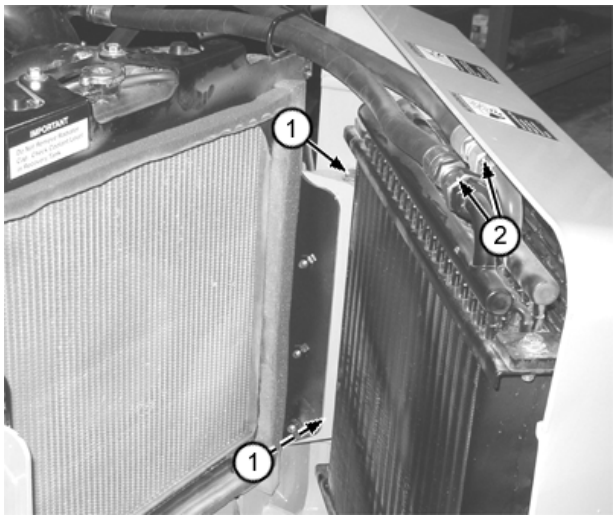
CAUTION: Avoid possible crushing injury from heavy component. Use appropriate lifting device when lifting or moving rear door.

3. Attach hoist to rear door.

Specification

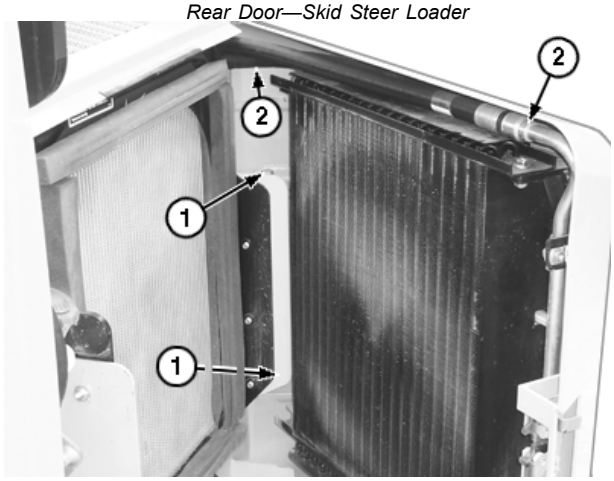
Rear Door With Hydraulic Oil Cooler—Weight ..... 56 kg 123 lb

4. Remove rear door hinge cap screws (1) and remove rear door.
5. Repair or replace parts as necessary.
6. Install rear door and hinge cap screws.
7. Install hydraulic oil cooler lines.
8. Check hydraulic oil level. For skid steer loader, see Check Hydraulic Tank Oil Level. (Operator's Manual.) For compact track loader, see Check Hydraulic Tank Oil Level. (Operator's Manual.)



T199113A —UN—07APR04

Rear Door—Skid Steer Loader



T210849A —UN—13JUL05

Rear Door—Compact Track Loader

1— Rear Door Hinge Cap Screw (2 used) 2— Hydraulic Oil Cooler Lines

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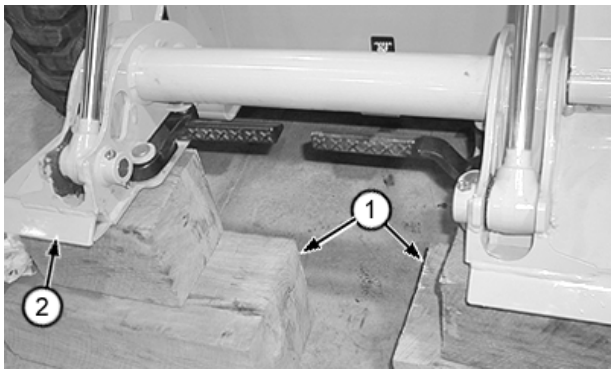
Quik-Tatch Coupler Remove and Install

NOTE: Front attachment must be removed from Quik-Tatch coupler.

1. Park machine on flat level surface.
2. Place blocking (1) in front of machine as shown.
3. Roll coupler (2) full forward and lower boom within 7 mm (0.25 in.) of blocking.
4. Engage park brake and turn engine off.

1— Blocking **2— Quik-Tatch Coupler**



T199656A —UN—03MAY04

Quik-Tatch Coupler Removal

TX19495,00000B7 -19-19JUL05-1/2

5. Remove plug (3) from both sides of coupler.
6. Remove cap screw and nut at boom-to-coupler pivot points.
7. Remove head from a M20 x 220 cap screw. Cap screw will be used as a driver to remove pin.

CAUTION: Avoid possible crushing injury from heavy component.

8. Insert driver through boom pivot boss until it contacts shoulder of pin. Strike driver and remove pin.

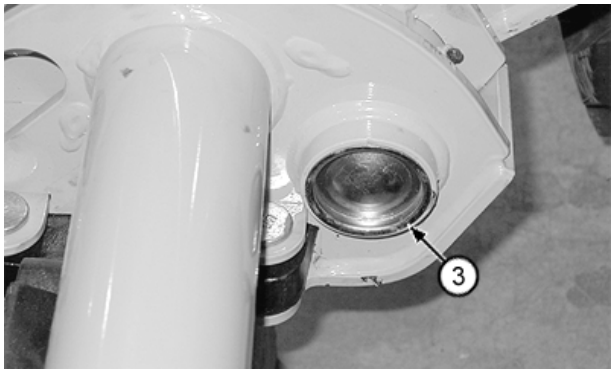
Specification

Quik-Tatch Coupler—Weight..... 66 kg
145 lb

9. Remove cap screw and nut from each bucket cylinder pin.
10. Remove pins and coupler.
11. Clean and inspect parts. Repair or replace parts as necessary.
12. Place coupler on blocking.
13. Install boom-to-coupler pins. Install cap screws and nuts. Tighten cap screw to specification.

Specification

Boom-To-Coupler Pin Cap Screw—Torque.....320 N·m
236 lb-ft



T199657A —UN—03MAY04

Right Side Shown

3— Plug (2 used)

14. Position bucket cylinders and install pins. Install cap screws and nuts. Tighten cap screw to specification.

Specification

Bucket Cylinder Pin Cap Screw—Torque.....73 N·m
54 lb-ft

15. Lubricate all pivot points. Actuate bucket cylinders to verify operation.

TX19495,00000B7 -19-19JUL05-2/2

Hydraulic Quik-Tatch (S.N. —131876) Cylinder Remove and Install

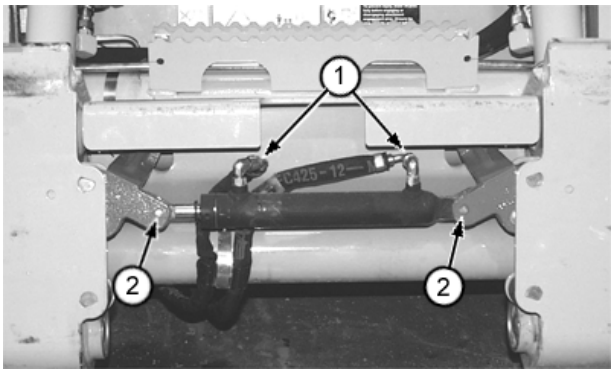
1. Park machine on flat level surface.
2. Lower boom to ground.
3. Retract Quik-Tatch cylinder.

CAUTION: To avoid injury from escaping fluid under pressure, stop engine and relieve the pressure in the system before disconnecting or connecting hydraulic or other lines. Tighten all connections before applying pressure.

4. Relieve hydraulic system pressure. See Hydraulic System Pressure Release. (Group 9025-25.)

IMPORTANT: Cap and plug openings and hose ends to prevent contamination of hydraulic system.

5. Disconnect hoses (1) from cylinder.
6. Remove snap ring and pin (2) from each end of cylinder. Remove cylinder.
7. Clean and inspect parts. Repair or replace parts as necessary.



T199436A —UN—03MAY04

Hydraulic Quik-Tatch Cylinder

1— Hose (2 used)
2— Snap Ring (2 used)
— Pin (2 used)

8. Place cylinder into position and install pins and snap rings.
9. Connect hoses.
10. Perform hydraulic cylinder bleed procedure. See Hydraulic Cylinder Bleed Procedure. (Group 3160.)

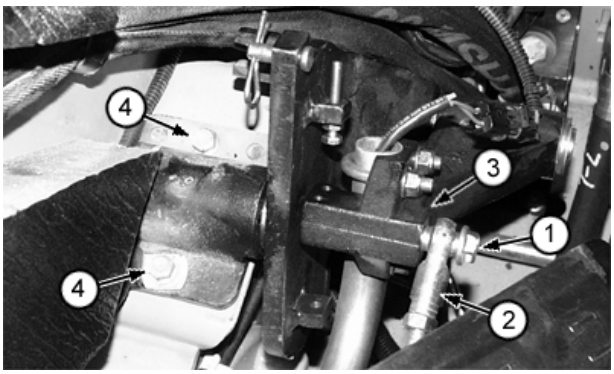
TX19495,00000B4 -19-11NOV08-1/1

Hydraulic Quik-Tatch (S.N. —131876) Solenoid Valve Remove and Install

1. Park machine on flat level surface.
2. Raise boom and engage boom lock.

CAUTION: To avoid injury from escaping fluid under pressure, stop engine and relieve the pressure in the system before disconnecting or connecting hydraulic or other lines. Tighten all connections before applying pressure.

3. Relieve hydraulic system pressure. See Hydraulic System Pressure Release. (Group 9025-25.)
4. Raise cab. For skid steer loader, see Raising Operator's Station. (Operator's Manual.) For compact track loader, see Raising Operator's Station. (Operator's Manual.)
5. Remove cap screw (1). Disconnect steering linkage (2) from steering lever (3).
6. Remove cap screws (4). Remove right steering lever and set aside.
7. Disconnect wiring harness from Quik-Tatch solenoid valve.



T199474A —UN—22APR04

Right Steering Lever

1— Cap Screw
2— Steering Linkage
3— Right Steering Lever
4— Cap Screw (2 used)

IMPORTANT: Cap and plug openings and hose ends to prevent contamination of hydraulic system.

8. Disconnect hydraulic lines from Quik-Tatch solenoid valve.

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9. Loosen nuts (5). Remove valve assembly from machine.
10. Remove valve from bracket.
11. Clean and inspect parts. Repair or replace parts as necessary.
12. Attach valve to bracket.
13. Slide cap screws into slots. Tighten nuts to specification.

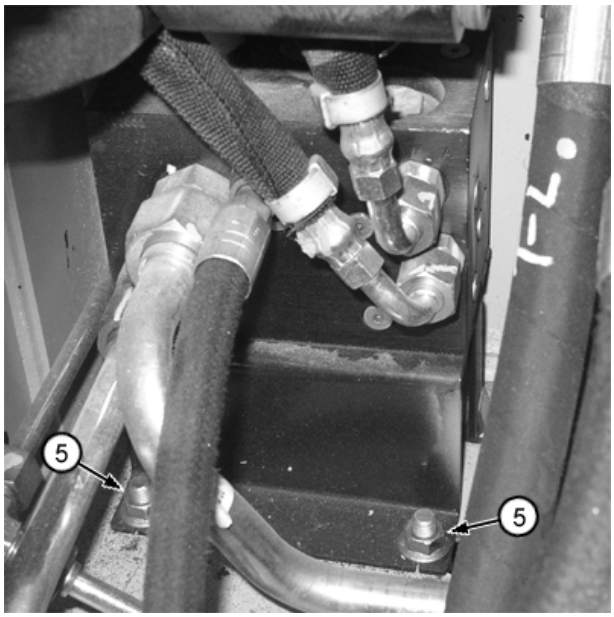
Specification	
Hydraulic Quik-Tatch Solenoid Valve Bracket Cap Screw—Torque	80 N·m 60 lb-ft

14. Connect hydraulic lines.
15. Connect wiring harness.
16. Install steering lever. Tighten cap screws to specification.

Specification	
Steering Lever Mounting Cap Screw—Torque	40 N·m 30 lb-ft

17. Connect steering linkage to steering lever. Tighten cap screw to specification.

Specification	
Steering Lever Linkage Cap Screw—Torque	40 N·m 30 lb-ft



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Hydraulic Quik-Tatch Solenoid Valve

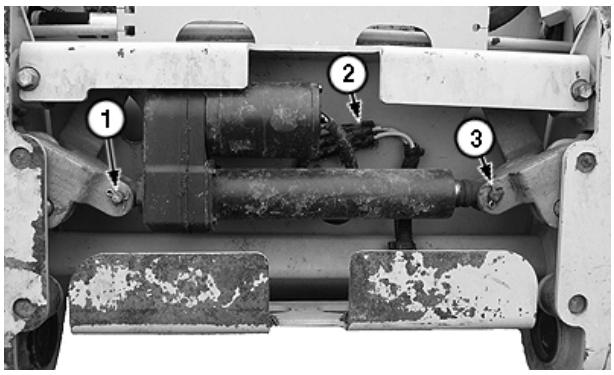
5— Nut (2 used)

18. Lower cab. For skid steer loader, see Raising Operator's Station. (Operator's Manual.) For compact track loader, see Raising Operator's Station. (Operator's Manual.)

TX19495,00000B5 -19-15AUG06-2/2

Electric Quik-Tatch (S.N. 131877—) Cylinder Remove and Install

1. Park machine on level surface.
2. Lower boom to ground.
3. Retract Quik-Tatch cylinder.
4. Disconnect wiring harness connector (2) from electric motor.
5. Remove cotter pins.
6. Remove pins (1 and 3) from each end of cylinder.
7. Remove cylinder.
8. Clean and inspect parts. Repair or replace parts as necessary.
9. Install cylinder.
10. Install pins (1 and 3) into each end of cylinder.
11. Install cotter pins.



TX1009291A —UN—13JUL06

Electric Quik-Tatch Cylinder

1— Pin
2— Wiring Harness Connector
3— Pin

12. Connect wiring harness connector (2) to electric motor.

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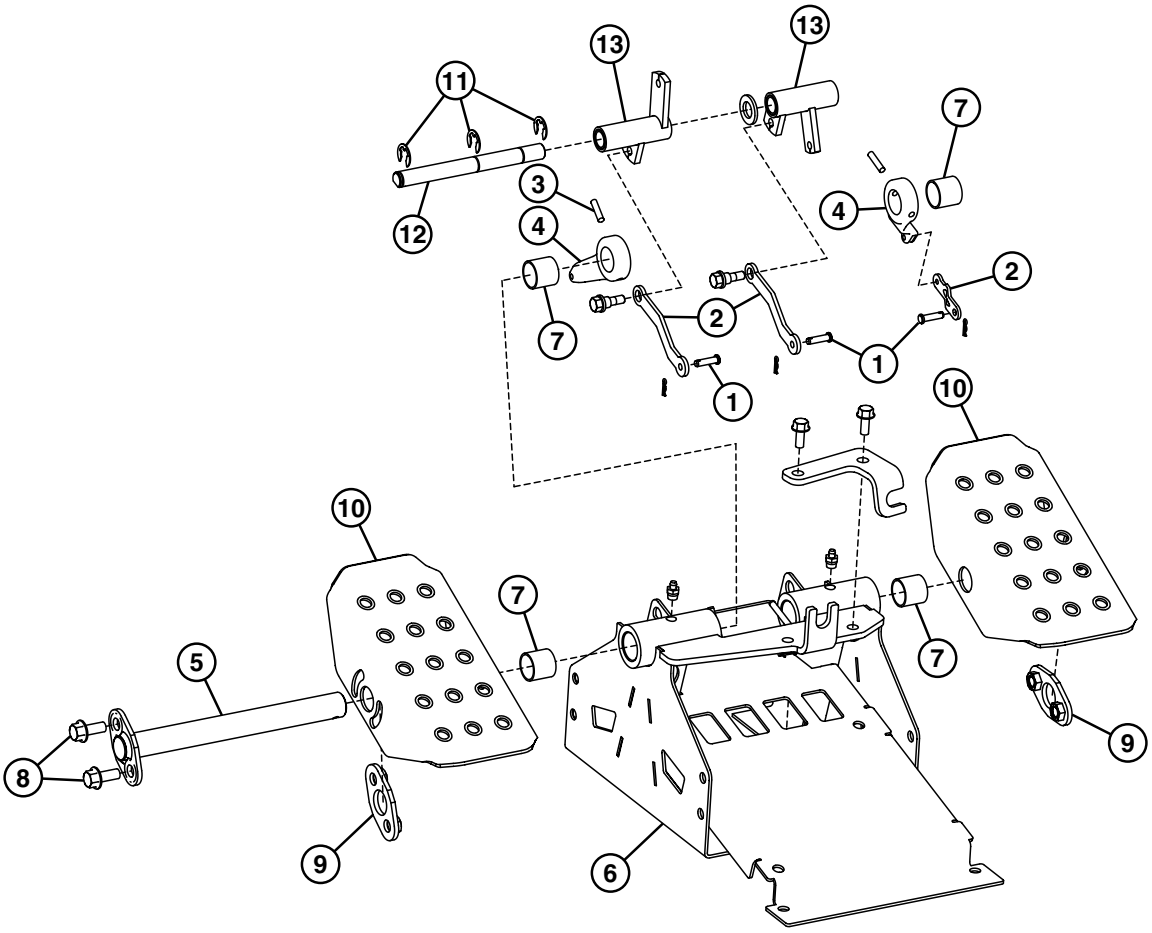
Pedal Assembly Disassemble and Assemble (S.N. —150522)



T199837

Pedal Assembly

1— Pin Fastener (3 used)
2— Links
3— Spring Pin
4— Crank
5— Pedal Shaft
6— Bracket
7— Bushing (4 used)
8— Cap Screw (4 used)
9— Plate
10— Pedal (2 used)
11— C-Clip (3 used)
12— Steering Shaft
13— Bellcrank (2 used)

NOTE: Pedal assembly is removed with control valve. See Control Valve Remove and Install (S.N. —150522). (Group 3160.)

1. Place pedal assembly on clean work bench.
2. Remove pin fasteners (1) from links (2). Inspect links (2) for wear. Replace as needed.
3. Remove spring pin (3) retaining crank (4) to pedal shaft (5).
4. Remove shaft and pedal assembly from bracket (6).
5. Inspect bushings (7) in frame for wear or damage. Replace as needed.

NOTE: Mark pedal location for ease of assembly.

6. Remove cap screws (8) from plate (9), retaining pedal shaft (5) to pedal (10).
7. Inspect pedal shaft (5) for wear or damage. Replace as needed.
8. Remove C-clips (11) from steering shaft (12).
9. Slide steering shaft (12) from bracket (6) and bellcrank (13).
10. Inspect steering shaft (12) and bellcrank (13) for wear. Replace as needed.
11. Install steering shaft (12) into bracket (6) and bellcrank (13). Install C-clips (11) on steering shaft (12).
12. Install pedal (10) on shaft (5) with cap screws (8) and plate (9).

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13. Lubricate bushings (7) in frame.
14. Install pedal assembly into bushings (7) in bracket (6).
15. Install crank (4) on shaft (5) with pin (3).
16. Install links (2) between crank (4) and bellcrank (13).

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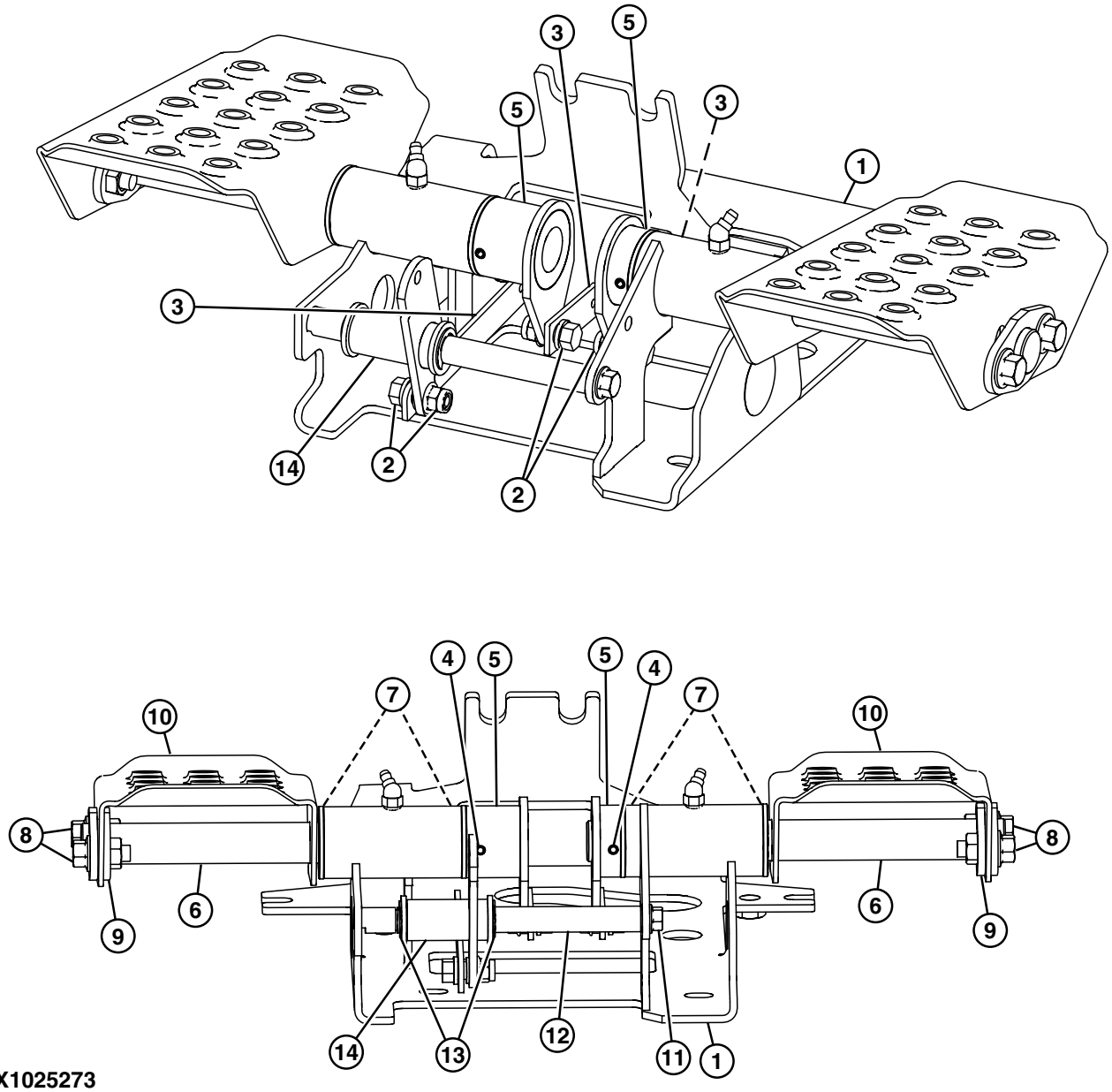
Pedal Assembly Disassemble and Assemble (S.N. 150523—)



Pedal Assembly Component Location (foot control machine shown—hand control machine similar)

1— Frame
2— Cap Screw (3 used)
3— Spool Link
4— Spring Pin (2 used)
5— Bell Crank
6— Pedal Shaft
7— Bushing (4 used)
8— Cap Screw (4 used)
9— Plate (2 used)
10— Pedal (2 used)
11— Cap Screw
12— Shaft
13— C-Clip (2 used)
14— Bell Crank

NOTE: Procedure is for pedal assembly from foot control machine. Procedure for hand control machine is similar.

1. Remove pedal assembly with control valve. See Control Valve Remove and Install (S.N. 150523—). (Group 3160.)
2. Place pedal assembly on clean work bench.
3. Remove cap screws (2) to remove spool links (3) from bell cranks (5 and 14). Inspect links for wear. Replace as needed.

NOTE: Mark pedal location to aid in assembly.

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KK70125,0000B36 -19-21AUG07-1/2

4. Remove spring pins (4) retaining bell cranks (5) to pedal shafts (6).
5. Remove shaft and pedal assemblies from frame (1).
6. Inspect pedal shaft bushings (7) in frame for wear or damage. Replace as needed.

NOTE: Mark pedal location to aid in assembly.

7. Remove cap screws (8) from plates (9) retaining pedal shafts to pedals (10).
8. Inspect pedal shafts for wear or damage. Replace as needed.
9. Remove cap screw (11) securing shaft (12) to frame (1).
10. Remove C-clips (13) from shaft.
11. Slide bell crank (14) from shaft.
12. Inspect shaft and bell crank for wear. Replace as needed.
13. Install bell crank (14) on to shaft (12).
14. Install C-clips (13) on shaft.
15. Install shaft in frame (1) with cap screw (11).
16. Install pedals (10) on shafts (6) with cap screws (8) and plates (9).
17. Lubricate bushings (7) in frame.
18. Install pedal assemblies into bushings in frame.
19. Install cranks (5) on shafts (6) with spring pins (4).
20. Install spool links (3) to bell cranks (5 and 14) with cap screws (2).

KK70125,0000B36 -19-21AUG07-2/2

Hand Control Linkage Remove and Install (S.N. —150522)

1. Park machine on flat level surface.
2. Raise and block machine. For skid steer loader, see Raising and Blocking Machine. (Operator's Manual.) For compact track loader, see Raising and Blocking Machine. (Operator's Manual.)
3. Raise boom and engage boom lock. Shut off machine.
4. Raise cab. For skid steer loader, see Raising Operator's Station. (Operator's Manual.) For compact track loader, see Raising Operator's Station. (Operator's Manual.)
5. Remove cover plate to access pedal assembly.

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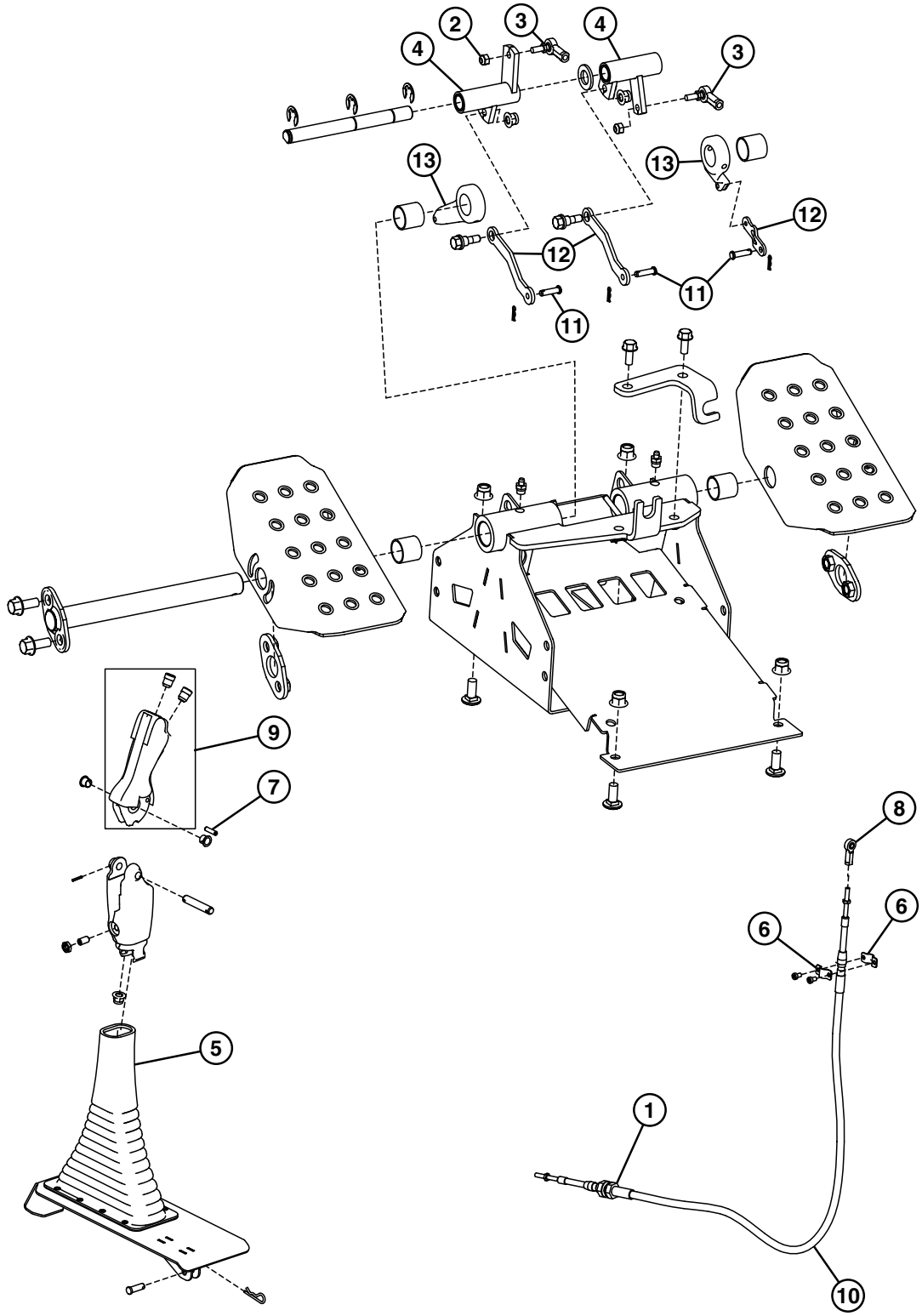


T199375

Hydraulic Control Lever Linkage

1— Cable Adjusting Nut (2 used)
2— Lock Nut
3— Eyelet
4— Bellcrank
5— Steering Lever Boot
6— Cable Bracket
7— Spring Pin
8— Cable Eyelet
9— Hydraulic Control Handle
10— Hydraulic Control Cable
11— Pin Fastener
12— Spool Link (2 used)
13— Crank (2 used)

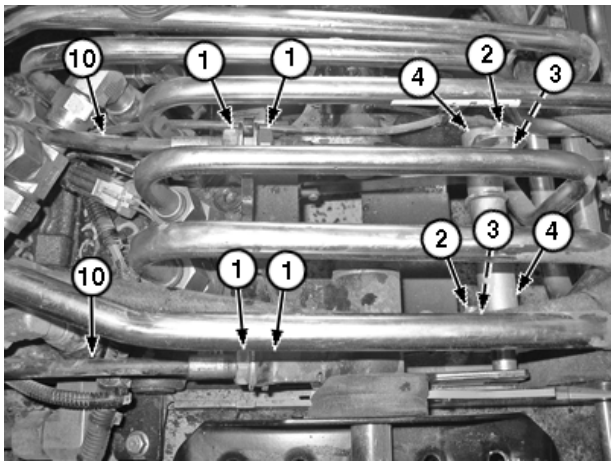
KK70125,0000B2E -19-19JUN07-2/2

6. Loosen cable adjusting nuts (1) on cable bracket at control valve.
7. Remove lock nut (2) from eyelet (3) at bellcrank (4).
8. Slide steering lever boot (5) down and remove cable bracket (6).
9. Remove spring pin (7) to release cable eyelet (8) from hydraulic control handle (9).
10. Inspect hydraulic control cable (10) for damage, replace as needed.
11. Inspect pin fasteners (11), spool links (12), and cranks (13) at control valve for wear. Replace as needed.
12. Install eyelet (8) into hydraulic control handle (9) with spring pin (7).
13. Install cable bracket (6) on handle and slide steering lever boot (5) up.
14. Connect cable end eyelet (3) on bellcrank (4) and tighten lock nut (2).
15. Slide cable into bracket at control valve and tighten cable adjusting nuts (1).
16. Repeat procedure for opposite cable.
17. Install cover plate.
18. Lower cab. For skid steer loader, see Raising Operator's Station. (Operator's Manual.) For compact track loader, see Raising Operator's Station. (Operator's Manual.)
19. Lower boom.

KK70125,0000B2E -19-19JUN07-3/2

Hand Control Linkage Remove and Install (S.N. 150523—)

1. Park machine on flat level surface.
2. Raise and block machine. For skid steer loader, see Raising and Blocking Machine. (Operator's Manual.) For compact track loader, see Raising and Blocking Machine. (Operator's Manual.)
3. Raise boom and engage boom lock. Shut off machine.
4. Raise cab. For skid steer loader, see Raising Operator's Station. (Operator's Manual.) For compact track loader, see Raising Operator's Station. (Operator's Manual.)
5. Remove cover plate to access pedal assembly.
6. Loosen cable adjusting nuts (1) on cable bracket at control valve.
7. Remove lock nut (2) from cable end (3) at bellcrank (4).



TX1025311A —UN—21JUN07

Hand Control Cables at Control Valve (CT322 shown)

1— Cable Adjusting Nut (4 used)
2— Lock Nut (2 used)
3— Cable End (2 used)
4— Bellcrank
10— Hydraulic Control Cable

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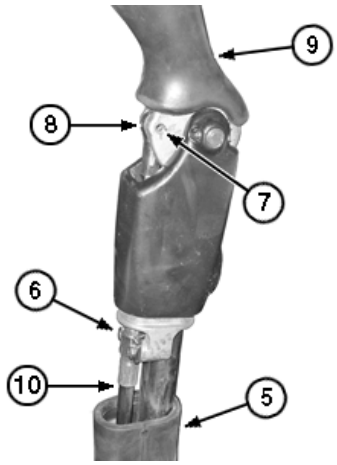
KK70125,0000B2F -19-20JUN07-1/2

8. Slide steering lever boot (5) down and remove cable bracket (6).
9. Remove spring pin (7) to release cable eyelet (8) from hydraulic control handle (9).
10. Inspect hydraulic control cable (10) for damage, replace as needed.
11. Inspect spool links and cranks at control valve for wear. Replace as needed.
12. Install eyelet (8) into hydraulic control handle (9) with spring pin (7).
13. Install cable bracket (6) on handle and slide steering lever boot (5) up.
14. Connect cable end (3) on bellcrank (4) and tighten lock nut (2).
15. Slide cable into bracket at control valve and hand-tighten cable adjusting nuts (1).
16. Repeat procedure for opposite cable.
17. Adjust cables. See Hydraulic Control Handle Adjustment—Hands Only Machine. (Group 9026-05.)
18. Install cover plate.
19. Lower cab. For skid steer loader, see Raising Operator's Station. (Operator's Manual.) For compact track loader, see Raising Operator's Station. (Operator's Manual.)
20. Lower boom.



TX1025316A —UN—21JUN07

Hand Control Cable (left side shown)

5— Lever Boot
6— Cable Bracket
7— Spring Pin
8— Cable Eyelet
9— Hydraulic Control Handle
10— Hydraulic Control Cable

KK70125,0000B2F -19-20JUN07-2/2

Upper Boom Link Remove and Install

1. Park machine on flat level surface.
2. Lower boom to the ground.

CAUTION: To avoid injury from escaping fluid under pressure, stop engine and relieve the pressure in the system before disconnecting or connecting hydraulic or other lines. Tighten all connections before applying pressure.

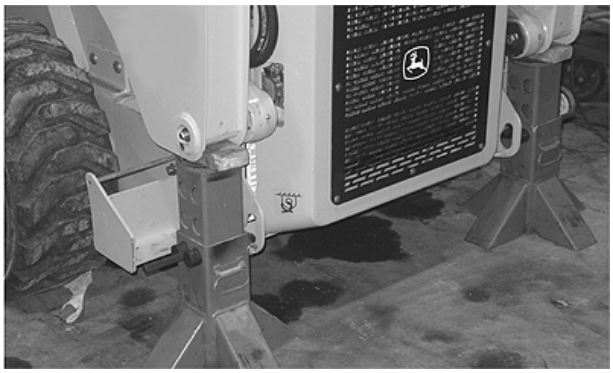
3. Relieve hydraulic system pressure. See Hydraulic System Pressure Release. (Group 9025-25.)
4. Support rear of boom as shown.

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

5. Attach lifting device to upper boom link crossmember.

Specification	
Upper Boom Link—Weight	70 kg (154 lb)

6. Remove lower pin cap screws and nuts.



T199663A —UN—05MAY04

Boom Support

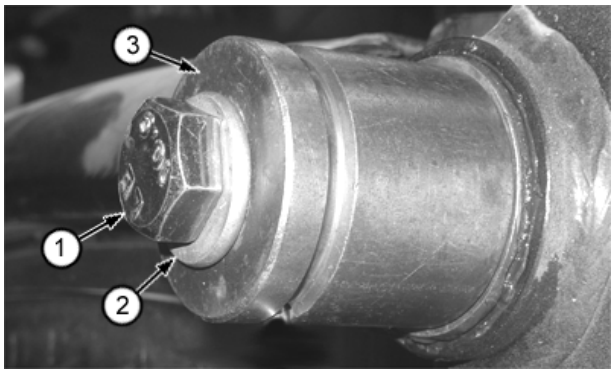
7. Remove head from a M20 x 220 cap screw. Cap screw will be used as a driver to remove pin.
8. Insert driver through boom pivot boss until it contacts shoulder of pin. Strike driver and remove pin.
9. Remove upper pin cap screws and nuts.
10. Raise lifting device to support upper boom link.

TX19495,00000B1 -19-15APR04-1/2

NOTE: Upper pin has a threaded bore that is used for removal. A M20 cap screw, washer, and spacer are used to remove pin.

11. Assemble cap screw (1), washer (2), and spacer (3) as shown. Turn cap screw to remove upper pin.
12. Remove upper boom link.
13. Clean and inspect parts. Repair or replace parts as necessary.
14. Lower upper boom link into position.
15. Apply anti-seize lubricant to upper and lower pins. Install pins.
16. Install upper and lower pin cap screws and nuts. Tighten cap screws to specification.

Upper Boom Link—Specification	
Upper Pin Cap Screw—Torque	320 N·m (236 lb-ft)
Lower Pin Cap Screw—Torque	320 N·m (236 lb-ft)



T199724A —UN—05MAY04

Upper Pin Removal

1— Cap Screw
2— Washer
3— Spacer

17. Lubricate all pivot points.

TX19495,00000B1 -19-15APR04-2/2

Lower Boom Link Remove and Install

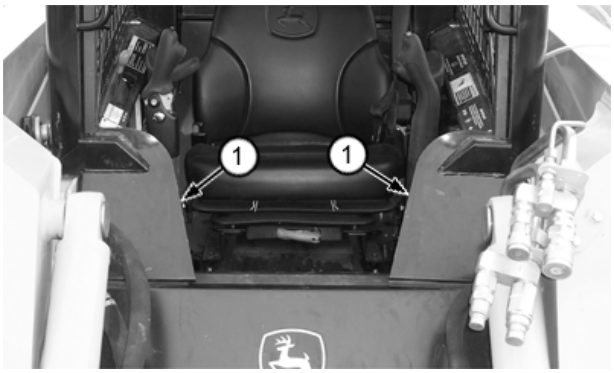
1. Park machine on flat level surface.
2. Raise boom and engage boom lock.

CAUTION: To avoid injury from escaping fluid under pressure, stop engine and relieve the pressure in the system before disconnecting or connecting hydraulic or other lines. Tighten all connections before applying pressure.

3. Relieve hydraulic system pressure. See Hydraulic System Pressure Release. (Group 9025-25.)

NOTE: For machine with cab enclosure, perform the next three steps.

4. Raise cab. For skid steer loader, see Raising Operator's Station. (Operator's Manual.) For compact track loader, see Raising Operator's Station. (Operator's Manual.)
5. Remove panels (1).
6. Lower cab. For skid steer loader, see Raising Operator's Station. (Operator's Manual.) For compact track loader, see Raising Operator's Station. (Operator's Manual.)



T199582A —UN—30APR04

Machine with Cab Enclosure

1— Panel (2 used)

NOTE: Rear door does not have to be removed when removing lower link from left side of machine.

7. Remove rear door. See Rear Door Remove and Install. (Group 1910.)

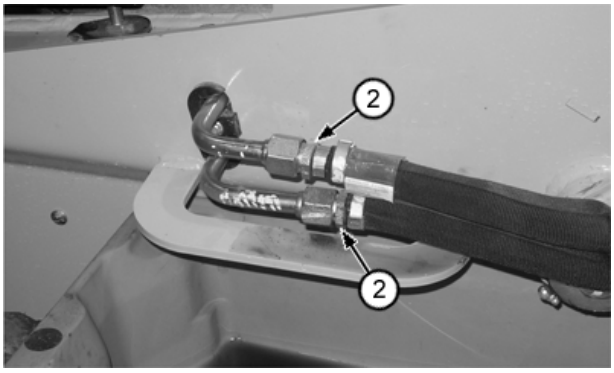
TX19495,00000B0 -19-14APR05-1/6

NOTE: Mark hydraulic lines to aid in assembly.

IMPORTANT: Cap and plug openings and hose ends to prevent contamination of hydraulic system.

8. Disconnect boom hydraulic lines (2).

2— Boom Hydraulic Line (2 used)



T199583A —UN—30APR04

Left Side Shown

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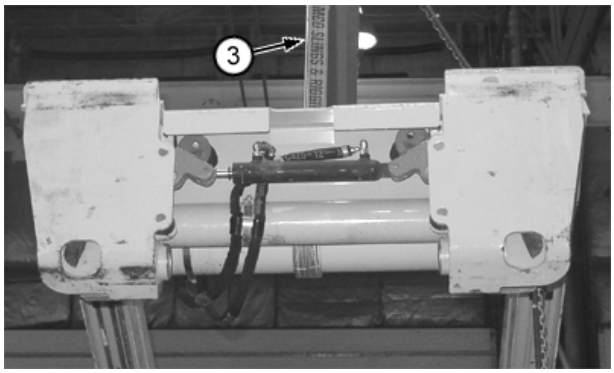
TX19495,00000B0 -19-14APR05-2/6

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

9. Attach lifting device to front of boom. Raise boom.

CAUTION: Prevent possible crushing injury from heavy component. Do not enter cab.

10. Push in boom lock pin.
11. Lower boom to the ground.
12. Raise cab. For skid steer loader, see Raising Operator's Station. (Operator's Manual.) For compact track loader, see Raising Operator's Station. (Operator's Manual.)



T199584A —UN—30APR04

Lifting Area

3— Lifting Device

Continued on next page

TX19495,00000B0 -19-14APR05-3/6

IMPORTANT: Do not hit bottom of cab with boom.

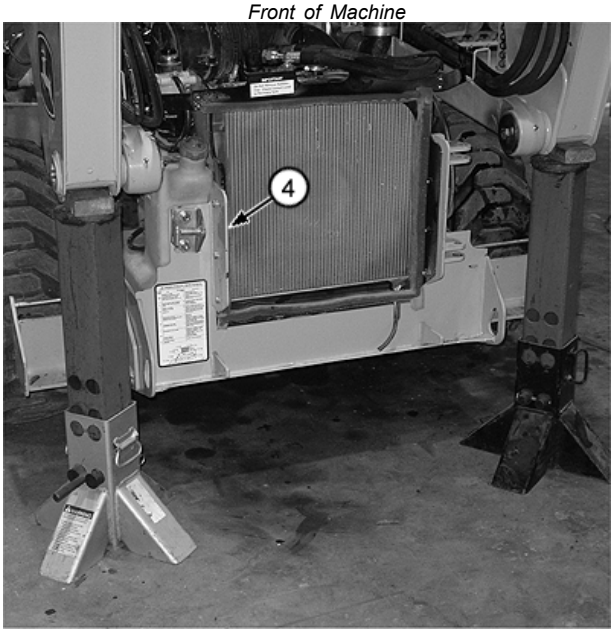
NOTE: Boom must be raised high enough to allow rear lower link cap screw to clear radiator bracket (4).

13. Raise and support front and rear of boom as shown.

4— Radiator Bracket

T199586A —UN—30APR04

Front of Machine



T199585A —UN—30APR04

Rear of Machine

Continued on next page

TX19495,00000B0 -19-14APR05-4/6

14. Remove clamp (5).
15. Remove wiring harness, if equipped.

IMPORTANT: Cap and plug openings and hose ends to prevent contamination of hydraulic system.

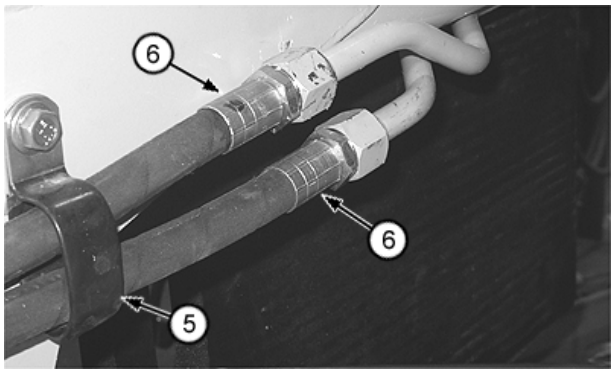
16. Disconnect auxiliary hydraulic lines (6) and pull forward through loops.

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

17. Attach lifting device to lower link.

Specification	
Lower Boom Link—Weight	33.5 kg (75 lb)

18. Remove front lower link pin cap screw.
19. Remove rear lower link pin cap screw.



T199647A —UN—30APR04

Left Side Shown

5— Clamp

6— Auxiliary Hydraulic Line (2 used)

Continued on next page

20. Install JDG1929 Threaded Driver as shown. Tighten nut against cup.
21. Strike end of driver with hammer to remove rear pin.
22. Remove front pin and lower link.
23. Clean and inspect parts. Repair or replace parts as necessary.
24. Place lower link into position.
25. Apply anti-seize lubricant to front and rear pins. Install pins.
26. Install front and rear pin cap screws. Tighten to specification.

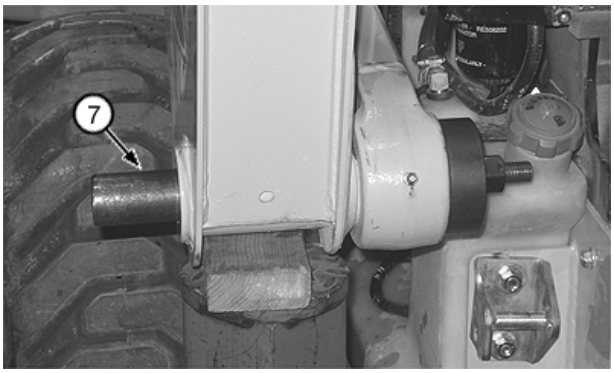
Lower Boom Link Pin—Specification

Front Pin Cap Screw—Torque	73 N·m
	54 lb-ft
Rear Pin Cap Screw—Torque	620 N·m
	457 lb-ft

27. Route auxiliary hydraulic lines through loops and connect.
28. Install wiring harness, if equipped.
29. Install clamp.
30. Lower cab. For skid steer loader, see Raising Operator's Station. (Operator's Manual.) For compact track loader, see Raising Operator's Station. (Operator's Manual.)

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

31. Raise boom. Support front of boom.
32. Engage boom lock.
33. Lower boom onto boom lock.



T199648A —UN—30APR04

Driver Installation

7— JDG1929 Threaded Driver

34. Connect boom hydraulic lines.
35. Install rear door. See Rear Door Remove and Install. (Group 1910.)

NOTE: For machine with cab enclosure, perform the next three steps.

36. Raise cab. For skid steer loader, see Raising Operator's Station. (Operator's Manual.) For compact track loader, see Raising Operator's Station. (Operator's Manual.)
37. Install panels.
38. Lower cab. For skid steer loader, see Raising Operator's Station. (Operator's Manual.) For compact track loader, see Raising Operator's Station. (Operator's Manual.)
39. Perform hydrostatic and hydraulic start-up procedure. See Hydrostatic and Hydraulic Start-Up Procedure. (Group 0360.)

TX19495,00000B0 -19-14APR05-6/6

Boom Remove and Install

1. Park machine on a flat level surface.

CAUTION: To avoid injury from escaping fluid under pressure, stop engine and relieve the pressure in the system before disconnecting or connecting hydraulic or other lines. Tighten all connections before applying pressure.

2. Relieve hydraulic system pressure. See Hydraulic System Pressure Release. (Group 9025-25.)

NOTE: If boom is not being replaced, removal of bucket cylinders and Quik-Tatch is not necessary.

3. Remove bucket cylinders. See Bucket Cylinder Remove and Install. (Group 3100.)
4. Remove Quik-Tatch coupler. See Quik-Tatch Coupler Remove and Install. (Group 3100.)
5. Remove engine side shields.
6. Support boom cylinder (1) with lifting strap (2) and hoist.
7. Remove cap screw and pin from boom cylinder rod end with boom in the lowered position. See Boom Cylinder Remove and Install. (Group 3100.)

T199790A —UN—10MAY04

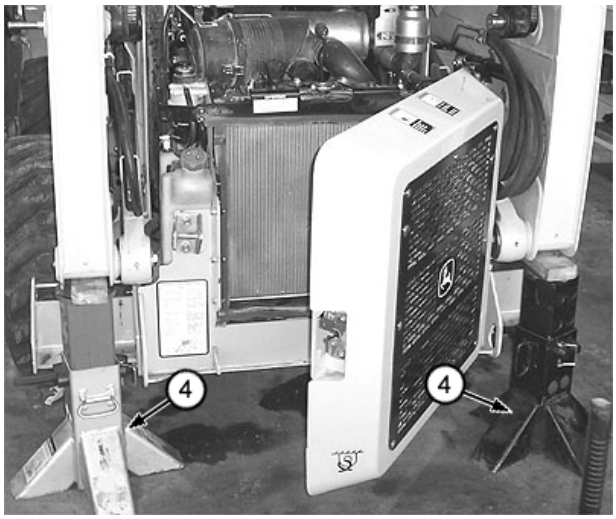
Support Boom Cylinder

1— Boom Cylinder **2— Lifting Strap**

TX19495,00000AF -19-26OCT07-1/7

8. Support boom with shop stands (4). Boom will settle when upper boom link pins are removed.
9. Remove upper boom link rear cap screw and pin from both sides of machine. See Upper Boom Link Remove and Install. (Group 3100.)

4— Shop Stand (2 used)



T199791A —UN—10MAY04

Boom Support

Continued on next page

TX19495,00000AF -19-26OCT07-2/7

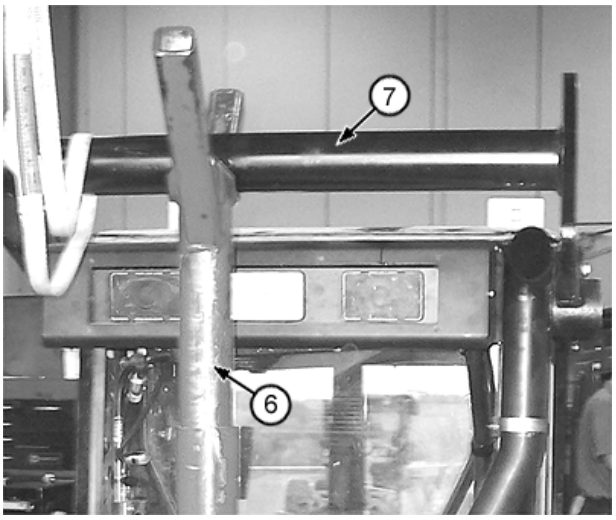
10. Support upper boom link (7) with Y-stand (6).

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

11. Attach hoist and DFT1101 Cab and ROPS Lift Bracket to boom. See DFT1101 Cab and ROPS Lift Bracket for instructions to fabricate bracket. (Group 9900.)

Specification	
Boom With Bucket Cylinders and Quik-Tatch—Weight	375 kg 827 lb

6— Y-Stand **7— Upper Boom Link**



T199792A —UN—10MAY04

Y-Stand

TX19495,00000AF -19-26OCT07-3/7

12. Raise boom so front of boom lifts before rear of boom to prevent front of boom from binding with frame.

T199793A —UN—10MAY04

Boom With Hoist And Lifting Straps

T199794A —UN—10MAY04

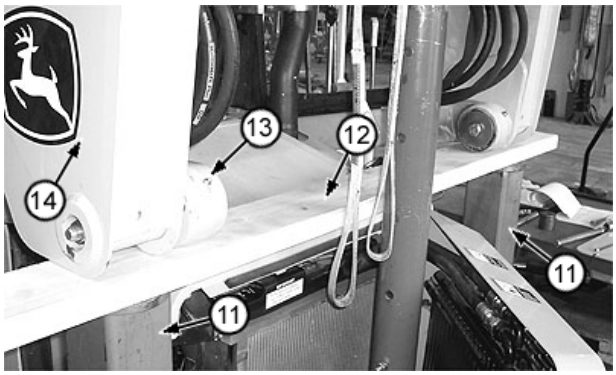
Bind Point Between Boom And Frame

Continued on next page

TX19495,00000AF -19-26OCT07-4/7

13. Place shop stands (11) behind machine to support boom (14) and lower boom link (13). Use a wood plank (12) on shop stands to support lower boom link after link pin is removed.

11— Shop Stand (2 used)
12— Wood Plank
13— Lower Boom Link
14— Boom



T199795A —UN—10MAY04

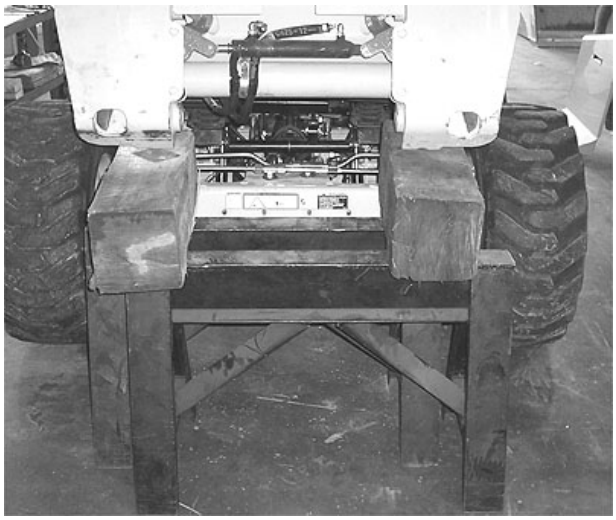
Shop Stands With Wood Plank

TX19495,00000AF -19-26OCT07-5/7

14. Place shop stand under front of boom and lower boom onto front and rear stands.
15. Tag and remove hydraulic lines and retaining brackets from rear of boom. Cap and plug lines.
16. Remove rear lower link pin and cap screw from both sides of machine. See Lower Boom Link Remove and Install. (Group 3100.)

NOTE: Leave shop stands in place to aid in boom installation.

17. Carefully remove boom from machine.
18. Repair or replace parts as necessary.
19. Move boom into place and support boom on stands high enough to insert rear lower link pin and cap screw.
20. Install lower boom link cap screws and pins. See Lower Boom Link Remove and Install. (Group 3100.)
21. Install hydraulic lines and retaining brackets to rear of boom.
22. Raise boom and remove shop stands from front and rear of machine.



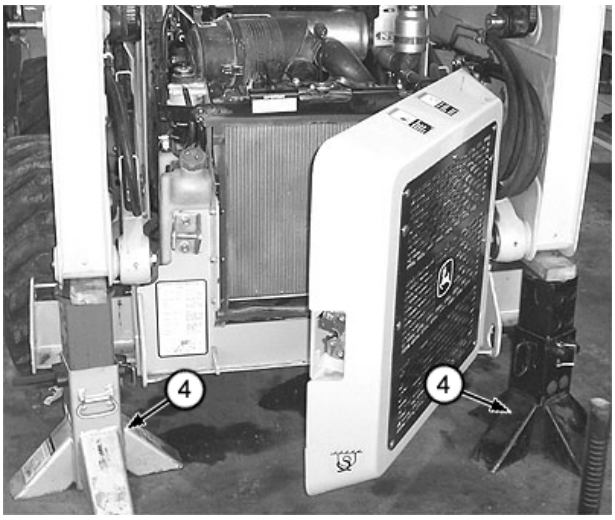
T199796A —UN—10MAY04

Front Boom Support

Continued on next page

TX19495,00000AF -19-26OCT07-6/7

23. Lower boom onto shop stands (4).
24. Install pin, cap screw, and boom cylinder rod end to boom. See Boom Cylinder Remove and Install. (Group 3100.)
25. Remove hoist and DFT1101 Cab and ROPS Lift Bracket from boom.
26. Install upper boom link to boom. See Upper Boom Link Remove and Install. (Group 3100.)
27. Install Quik-Tatch. See Quik-Tatch Coupler Remove and Install. (Group 3100.)
28. Install bucket cylinders. See Bucket Cylinder Remove and Install. (Group 3100.)
29. Perform hydrostatic and hydraulic start-up procedure. See Hydrostatic and Hydraulic Start-Up Procedure. (Group 0300.)



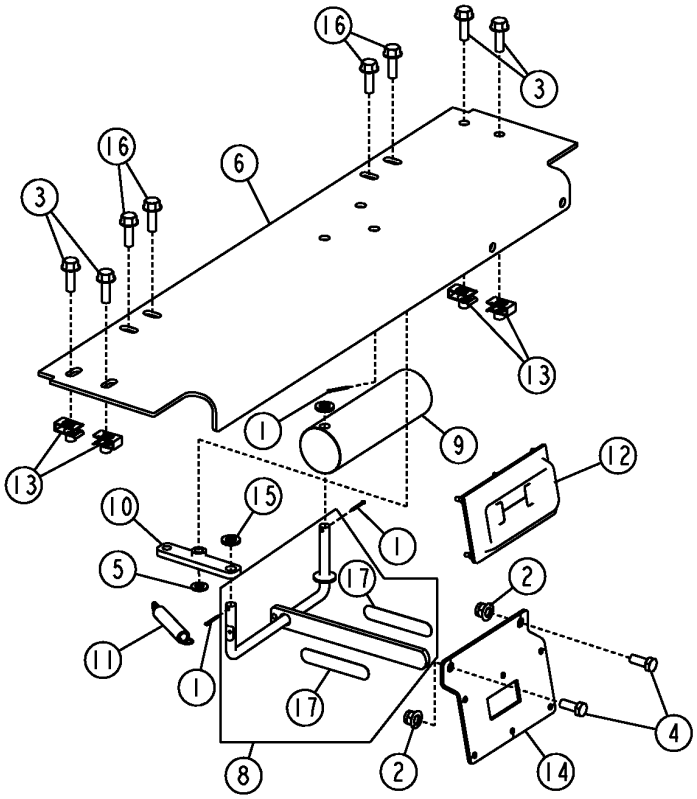
T199791A —UN—10MAY04

Boom Support

4— Shop Stand (2 used)

TX19495,00000AF -19-26OCT07-7/7

Boom Lock Remove and Install



Boom Lock

1— Cotter Pin (3 used)
2— Lock Nut (2 used)
3— Cap Screw (4 used)
4— Cap Screw (2 used)
5— Washer
6— Bracket
8— Handle
9— Pin
10— Lever
11— Spring
12— Grommet
13— Nut (4 used)
14— Plate
15— Washer (2 used)
16— Cap Screw (4 used)
17— Safety Decal (2 used)

1. Park machine on flat level surface.
2. Lower boom to ground.
3. Raise cab. For skid steer loader, see Raising Operator's Station. (Operator's Manual.) For compact track loader, see Raising Operator's Station. (Operator's Manual.)
4. Remove plate (6).
5. Remove spring (11).
6. Remove pins (1).
7. Remove parts (2, 4, 5, 8—10, 12, 14, and 15).
8. Repair or replace parts as required.
9. Install parts (2, 4, 5, 8—10, 12, 14, and 15).
10. Install pins (1).
11. Install spring (11).
12. Install plate (6).
13. Lower cab. For skid steer loader, see Raising Operator's Station. (Operator's Manual.) For compact track loader, see Raising Operator's Station. (Operator's Manual.)

TX19495,00000AE -19-14APR05-1/1

Hydraulic Pump Remove and Install

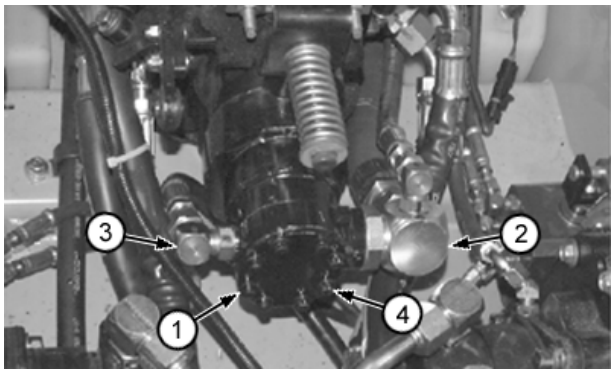
1. Park machine on flat level surface.
2. Raise boom and engage boom lock.

CAUTION: To avoid injury from escaping fluid under pressure, stop engine and relieve the pressure in the system before disconnecting or connecting hydraulic or other lines. Tighten all connections before applying pressure.

3. Relieve hydraulic system pressure. See Hydraulic System Pressure Release. (Group 9025-25.)
4. Raise cab. For skid steer loader, see Raising Operator's Station. (Operator's Manual.) For compact track loader, see Raising Operator's Station. (Operator's Manual.)
5. Remove floor cover plates.
6. Remove steering cross shaft. See Steering Cross Shaft Assembly Remove and Install. (Group 0315.)

IMPORTANT: Cap and plug openings and hose ends to prevent contamination of hydraulic system.

7. Disconnect hydraulic lines (2 and 3) from hydraulic pump (1).



T198966A —UN—31MAR04

Hydraulic Pump

1— Hydraulic Pump
2— Inlet Hydraulic Line
3— High Pressure Hydraulic Line
4— Cap Screw (8 used)

8. Remove cap screws (4). Remove hydraulic pump.
9. Clean and inspect parts. Repair or replace parts as necessary. See Hydraulic Pump Disassemble. (Group 3160.)

TX19495,00000A1 -19-19JUL05-1/2

10. Install new O-ring (5) on left hydrostatic pump.
11. Install hydraulic pump. Tighten cap screws to specification.

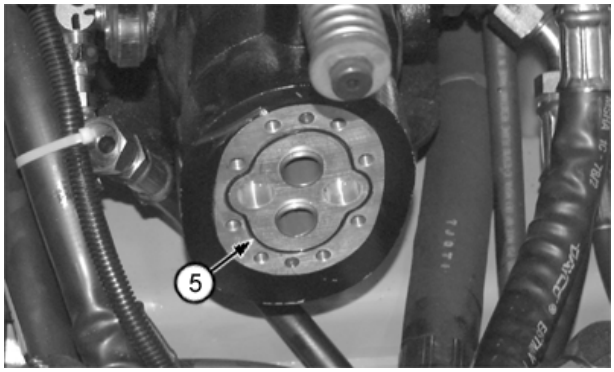
317 Hydraulic Pump—Specification

Hydraulic Pump Cap Screw—Torque	35 N·m 26 lb-ft

320/CT322 Hydraulic Pump—Specification

Hydraulic Pump Cap Screw—Torque	64 N·m 47 lb-ft

12. Connect hydraulic lines to hydraulic pump.
13. Install steering cross shaft. See Steering Cross Shaft Assembly Remove and Install. (Group 0315.)
14. Perform hydrostatic and hydraulic start-up procedure. See Hydrostatic and Hydraulic Start-Up Procedure. (Group 0360.)
15. Install floor cover plates.
16. Lower cab. For skid steer loader, see Raising Operator's Station. (Operator's Manual.) For compact track loader, see Raising Operator's Station. (Operator's Manual.)



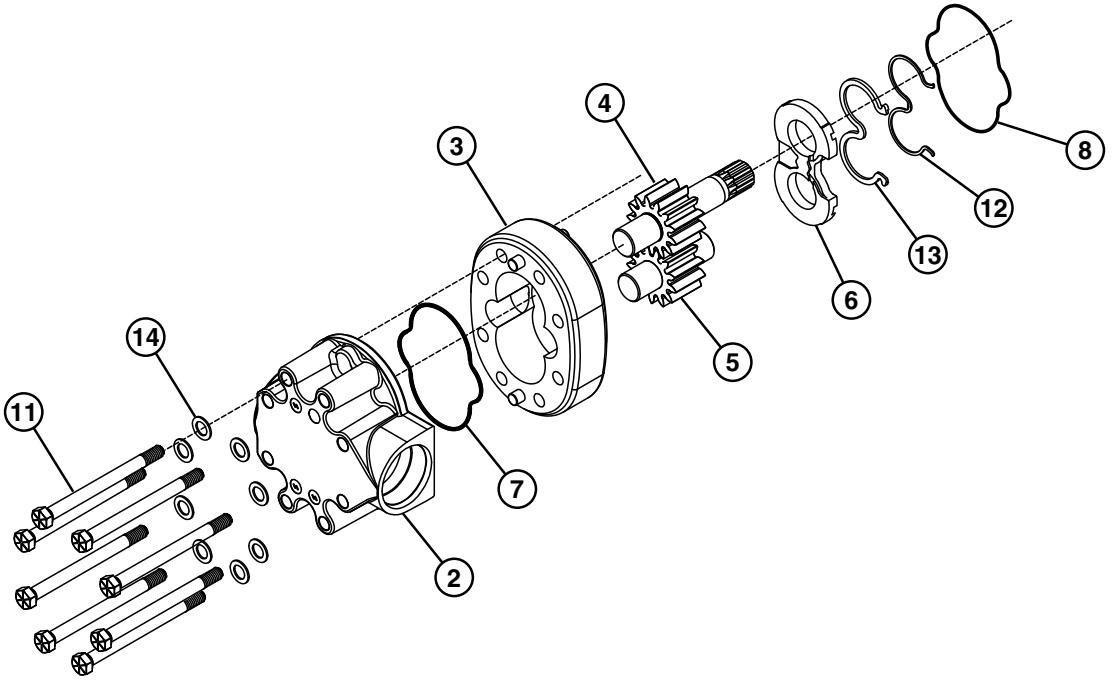
T198967A —UN—31MAR04

Left Hydrostatic Pump

5— O-Ring

TX19495,00000A1 -19-19JUL05-2/2

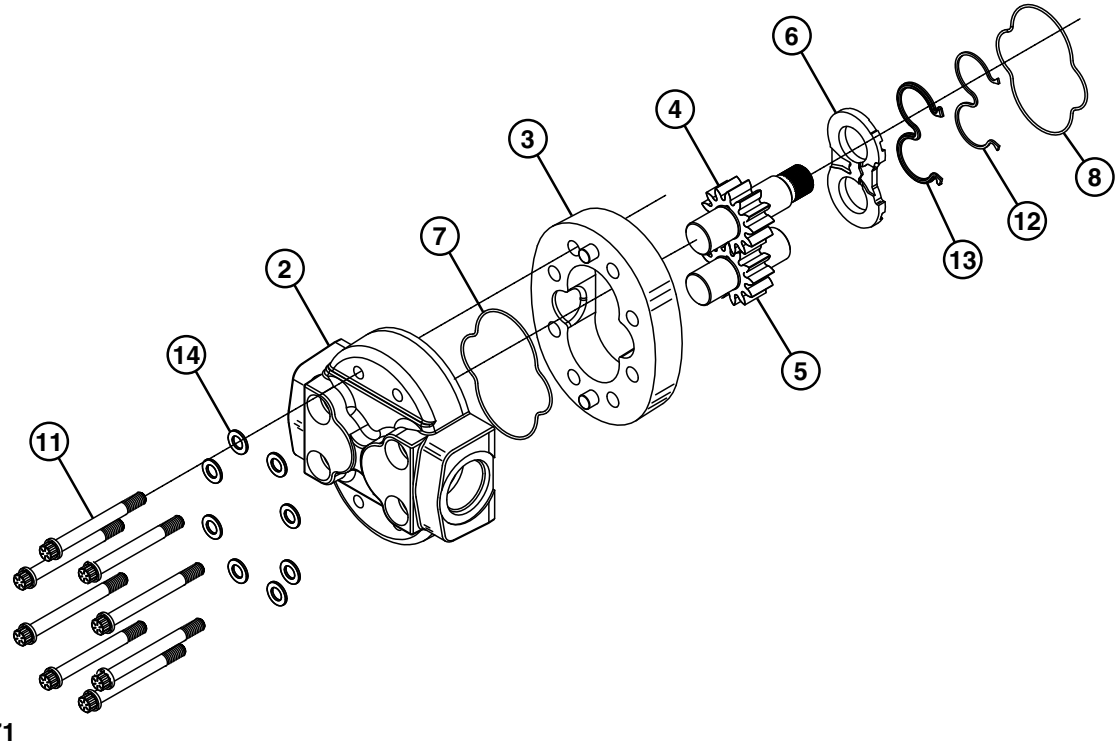
Hydraulic Pump Disassemble



T198970 —UN—25MAY04

T198970

Hydraulic Pump—317



T198971 —UN—01APR04

T198971

Hydraulic Pump—320/CT322

2— End Plate
3— Pump Body
4— Drive Gear
5— Idler Gear
6— Wear Plate
7— O-Ring
8— O-Ring
11— Cap Screw (8 used)
12— Gasket
13— Seal
14— Washer (8 used)

Continued on next page

TX19495,00000A2 -19-19JUL05-1/2

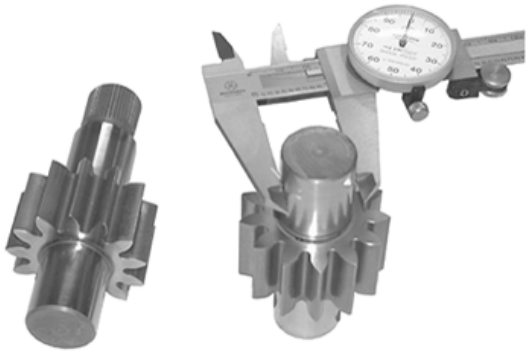
1. Scribe a line across pump assembly to aid in assembly.
2. Remove parts.
3. Discard gasket and seal (12 and 13) O-rings (7 and 8).
4. Clean and inspect parts. See Hydraulic Pump Inspection. (Group 3160.)

TX19495,00000A2 -19-19JUL05-2/2

Hydraulic Pump Inspection

1. Clean parts in a suitable solvent. Dry parts.
2. Remove nicks and burrs using emery cloth.
3. Inspect drive gear splines for twisted, broken, or worn teeth.
4. Inspect gear shafts at bushing area and seal area for rough surfaces and excessive wear.
5. Measure gear shaft diameter in bushing area. Replace gear assembly if less than specification.

Specification	
Hydraulic Pump Gear Shaft—Diameter	19.00 mm 0.748 in.



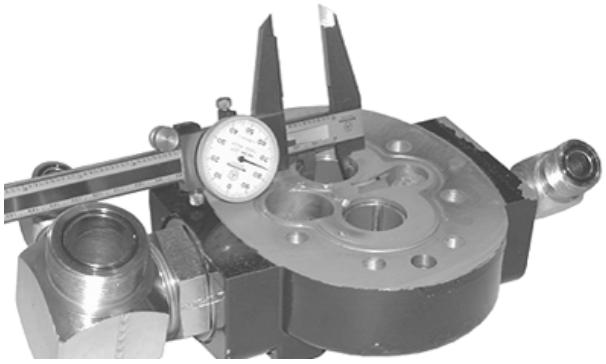
T198938A —UN—31MAR04

TX19495,00000A3 -19-19JUL05-1/4

6. Measure inside diameter of bushings in end plate and left hydrostatic pump housing. Replace bushings if greater than specification.

Specification	
Hydraulic Pump Bushing—Diameter	19.20 mm 0.755 in.

NOTE: Bushings can not be field installed in left hydrostatic pump housing. Left hydrostatic pump housing must be replaced if bushings do not meet specification.



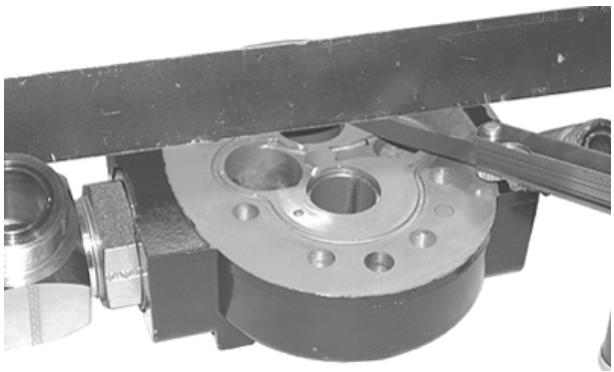
T198939A —UN—31MAR04

Hydraulic Pump Bushing Inspection

TX19495,00000A3 -19-19JUL05-2/4

7. Inspect end plate and wear plate for scoring and wear. Replace parts as necessary if greater than specification.

Specification	
Hydraulic Pump End Plate—Wear	0.0381 mm 0.0015 in.



T198940A —UN—30MAR04

Hydraulic Pump End Plate Inspection

Continued on next page

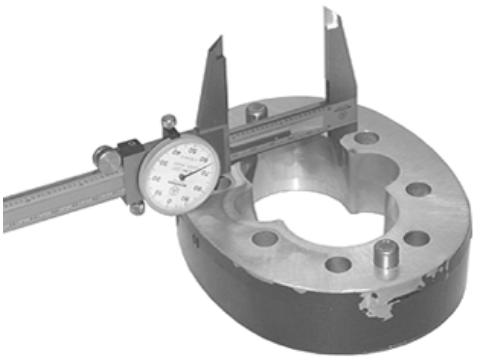
TX19495,00000A3 -19-19JUL05-3/4

8. Measure inside diameter of pump body gear pockets. Replace pump body if greater than specification.

Specification

Hydraulic Pump Body—Diameter	43.70 mm 1.719 in.

9. Assemble parts. See Hydraulic Pump Assemble. (Group 3160.)

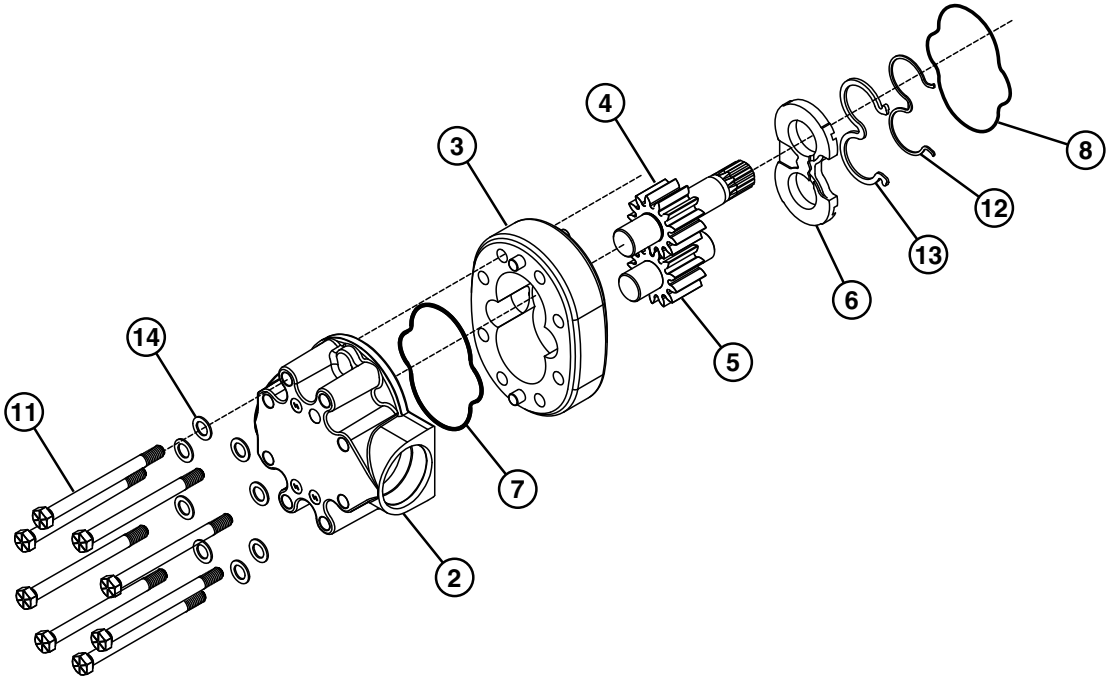


T198941A —UN—31MAR04

Hydraulic Pump Body Inspection

TX19495,00000A3 -19-19JUL05-4/4

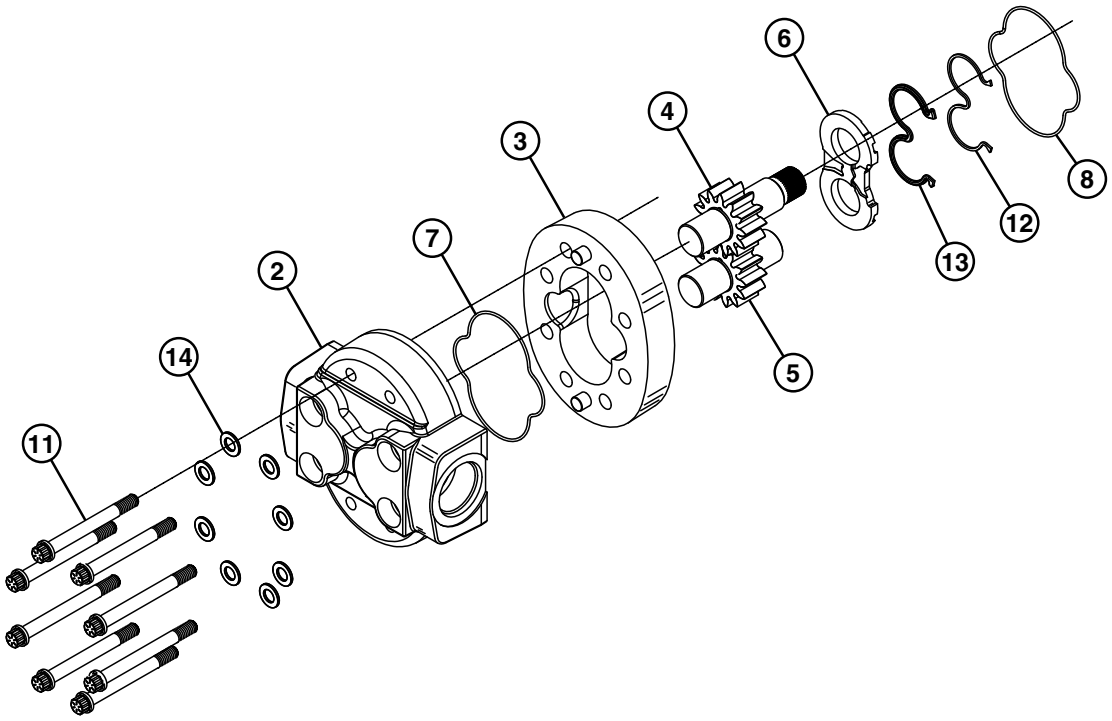
Hydraulic Pump Assemble



T198970

T198970 —UN—25MAY04

Hydraulic Pump—317



T198971

T198971 —UN—01APR04

Hydraulic Pump—320/CT322

2— End Plate
3— Pump Body
4— Drive Gear
5— Idler Gear
6— Wear Plate
7— O-Ring
8— O-Ring
11— Cap Screw (8 used)
12— Gasket
13— Seal
14— Washer (8 used)

Continued on next page

TX19495,00000A4 -19-19JUL05-1/2

1. Apply petroleum jelly to new O-ring (7) and install on end plate.
2. Install pump body (3) on end plate (2) using line scribed during disassembly as a guide.

IMPORTANT: Apply clean hydraulic oil to all internal parts before assembling.

3. Install idler gear and drive gear (5 and 4) in pump body.

IMPORTANT: Apply petroleum jelly to seal and gasket before installing.

4. Install wear plate, seal and gasket (6, 13 and 12).

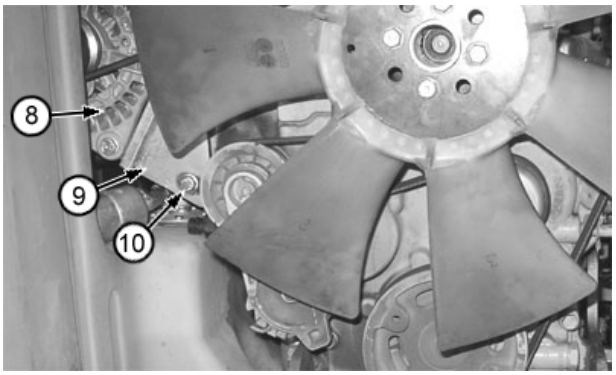
TX19495,00000A4 -19-19JUL05-2/2

High Flow Hydraulic Pump Remove and Install

1. Park machine on flat level surface.
2. Raise boom and engage boom lock.

CAUTION: To avoid injury from escaping fluid under pressure, stop engine and relieve the pressure in the system before disconnecting or connecting hydraulic or other lines. Tighten all connections before applying pressure.

3. Relieve hydraulic system pressure. See Hydraulic System Pressure Release. (Group 9025-25.)
4. Open rear cover and remove left engine side panels.
5. Remove air filter cover and filter element.
6. Remove lower alternator mounting bracket cap screw (10).
7. Remove fan belt.



T198899A —UN—30MAR04

Alternator Mounting Bracket

8— Alternator
9— Mounting Bracket
10— Cap Screw

8. Remove air conditioner compressor mounting cap screws. Set aside air conditioner compressor.

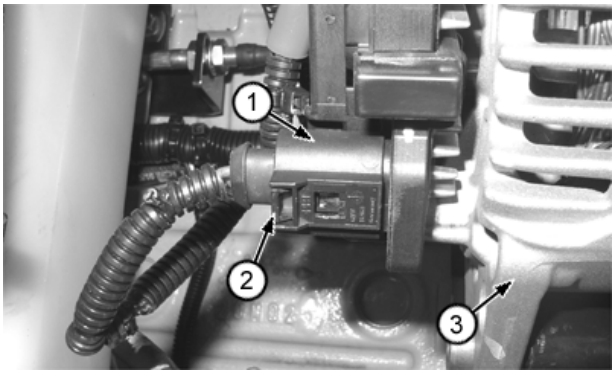
TX19495,00000A5 -19-26FEB08-1/4

9. Remove harness from alternator. Pull connector tab back and towards connector body to remove connector from alternator.

NOTE: Alternator does not need to be removed from mounting bracket.

10. Remove alternator and alternator mounting bracket.

1— Connector
2— Tab
3— Alternator



T198388A —UN—09MAR04

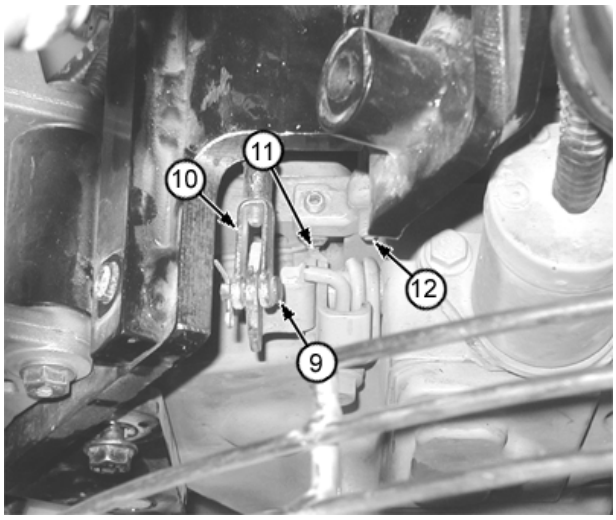
Alternator Connector

Continued on next page

TX19495,00000A5 -19-26FEB08-2/4

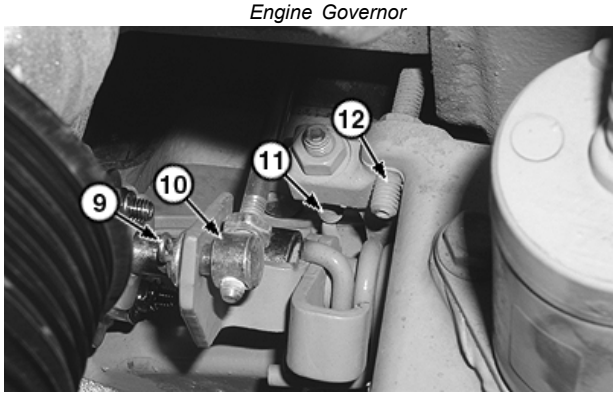
11. Remove pin (9) from clevis (10) and remove cable.

9— Pin
10— Clevis
11— Slow Idle Speed Stop Screw
12— Fast Idle Speed Stop Screw



T198963A —UN—31MAR04

Engine Governor



TX1037343A —UN—25FEB08

Engine Governor—EH Controls Machine

Continued on next page

TX19495,00000A5 -19-26FEB08-3/4

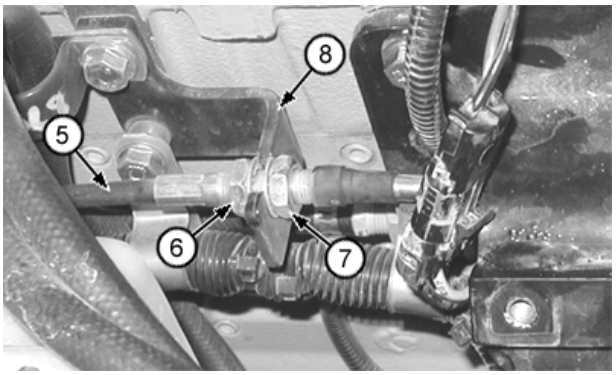
12. Loosen nut (6 and 7) and remove engine speed control linkage (5) from bracket (8). Set aside engine speed control linkage.

IMPORTANT: Cap and plug openings and hose ends to prevent contamination of hydraulic system.

13. Disconnect hydraulic lines from high flow hydraulic pump.
14. Remove cap screws. Remove hydraulic pump.
15. Clean and inspect parts. Repair or replace parts as necessary. See High Flow Hydraulic Pump Disassemble and Assemble. (Group 3160.)
16. Install new O-ring.
17. Install high flow hydraulic pump. Tighten cap screws to specification.

Specification	
High Flow Hydraulic Pump Cap Screw—Torque	50 N·m 35 lb-ft

18. Connect hydraulic lines to high flow hydraulic pump.
19. Install engine speed control linkage.
20. Install alternator and alternator mounting bracket. Tighten cap screws.
21. Install harness to alternator.
22. Install air conditioner compressor. Tighten cap screws.



T198965A —UN—31MAR04

Engine Speed Control Cable

5— Engine Speed Control Cable
6— Nut
7— Nut
8— Bracket

23. Install fan belt.
24. Install and tighten lower alternator mounting bracket cap screw.
25. Perform hydrostatic and hydraulic start-up procedure. See Hydrostatic and Hydraulic Start-Up Procedure. (Group 0360.)
26. Install filter element and air filter cover.
27. Install left engine side panels and close rear cover.

TX19495,00000A5 -19-26FEB08-4/4

High Flow Hydraulic Pump Disassemble and Assemble

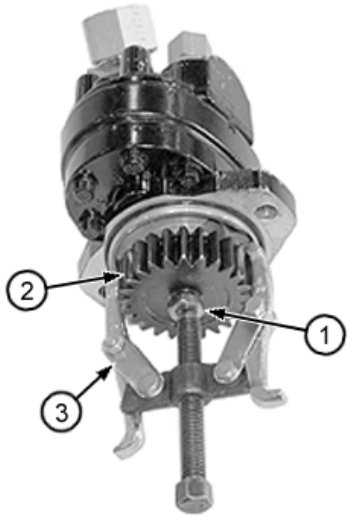
NOTE: Gear is keyed onto tapered shaft.

1. Loosen nut (1) until flush with end of shaft.
2. Using a gear puller (3), put tension on gear (2). Tap end of puller to loosen the taper.
3. Remove nut and gear.

NOTE: Pump has no serviceable components and must be replaced as an assembly.

4. Inspect gear and shaft for wear. Repair or replace parts as required.
5. Install gear and nut on shaft. Tighten nut to specification.

Specification	
High Flow Hydraulic Pump Nut—Torque	40 N·m 30 lb-ft



T198997A —UN—20APR04

High Flow Hydraulic Pump

1— Nut
2— Gear
3— Gear Puller

TX19495,00000A6 -19-24APR08-1/1

High Flow Solenoid Valve Remove and Install

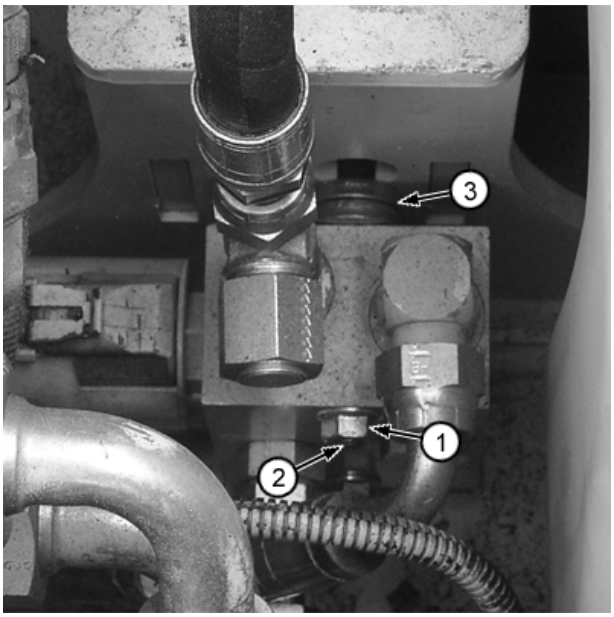
1. Park machine on flat level surface.
2. Raise boom and engage boom lock.

CAUTION: To avoid injury from escaping fluid under pressure, stop engine and relieve the pressure in the system before disconnecting or connecting hydraulic or other lines. Tighten all connections before applying pressure.

3. Relieve hydraulic system pressure. See Hydraulic System Pressure Release. (Group 9025-25.)
4. Raise cab. For skid steer loader, see Raising Operator's Station. (Operator's Manual.) For compact track loader, see Raising Operator's Station. (Operator's Manual.)
5. Disconnect wiring harness from high flow solenoid valve.

IMPORTANT: Cap and plug openings and hose ends to prevent contamination of hydraulic system.

6. Disconnect hydraulic lines.
7. Loosen nuts (1). Slide valve assembly upward and remove from machine.
8. Clean and inspect parts. Repair or replace parts as necessary. See High Flow Solenoid Valve Disassemble and Assemble. (Group 3160.)
9. Install cap screws and washers (2 and 3). Loosely install nuts.
10. Slide cap screws into slots. Tighten nuts.



T199361A —UN—20APR04

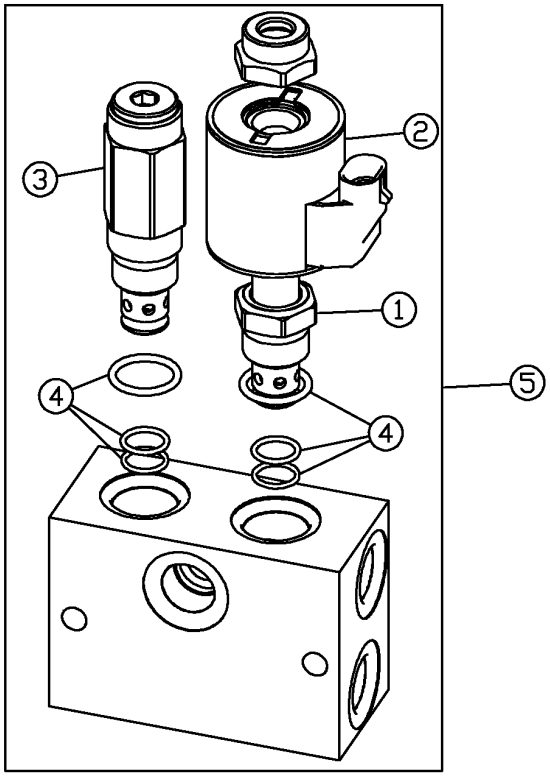
High Flow Solenoid Valve

1— Nut (2 used)
2— Cap Screw (2 used)
3— Washer (4 used)

11. Connect hydraulic lines.
12. Connect wiring harness.
13. Lower cab. For skid steer loader, see Raising Operator's Station. (Operator's Manual.) For compact track loader, see Raising Operator's Station. (Operator's Manual.)

TX19495,00000A7 -19-19JUL05-1/1

High Flow Solenoid Valve Disassemble and Assemble



T197523

T197523 —UN—28APR04

High Flow Solenoid Valve

1— Solenoid Valve
2— Solenoid Valve Coil
3— High Flow Relief Valve
4— O-Ring (6 used)
5— High Flow Solenoid Valve

1. Remove parts (1—4).
2. Repair or replace parts as required.
3. Install solenoid valve (1). Tighten to specification.

Specification	
High Flow Solenoid Valve—Torque	34—37 N·m 25—27 lb-ft

4. Install solenoid valve coil (2). Tighten nut to specification.

Specification	
Solenoid Valve Coil Nut—Torque	7 N·m 62 lb-in.

5. Install high flow relief valve. Tighten to specification.

Specification	
High Flow Relief Valve—Torque	34—37 N·m 25—27 lb-ft

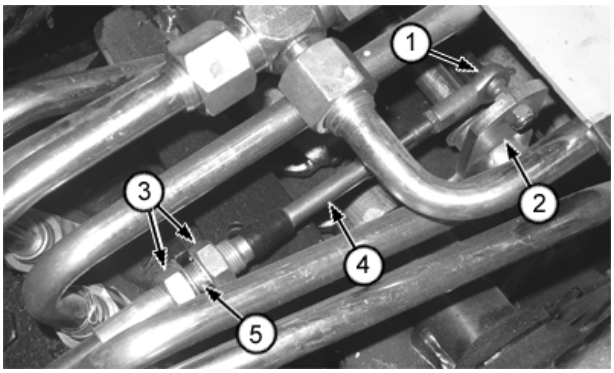
TX19495,00000AD -19-24APR08-1/1

Control Valve Remove and Install (S.N. —150522)

1. Park machine on flat level surface.
2. Raise boom and engage boom lock.

CAUTION: To avoid injury from escaping fluid under pressure, stop engine and relieve the pressure in the system before disconnecting or connecting hydraulic or other lines. Tighten all connections before applying pressure.

3. Relieve hydraulic system pressure. See Hydraulic System Pressure Release. (Group 9025-25.)
4. Raise cab. For skid steer loader, see Raising Operator's Station. (Operator's Manual.) For compact track loader, see Raising Operator's Station. (Operator's Manual.)
5. Remove floor cover plates.
6. Lock auxiliary hydraulic handle or pedal in the OFF position.
7. Disconnect rod end (1) from bell crank (2).



T199144A —UN—08APR04

Auxiliary Hydraulic Cable

1— Rod End
2— Bell Crank
3— Jam Nut (2 used)
4— Auxiliary Hydraulic Cable
5— Bracket

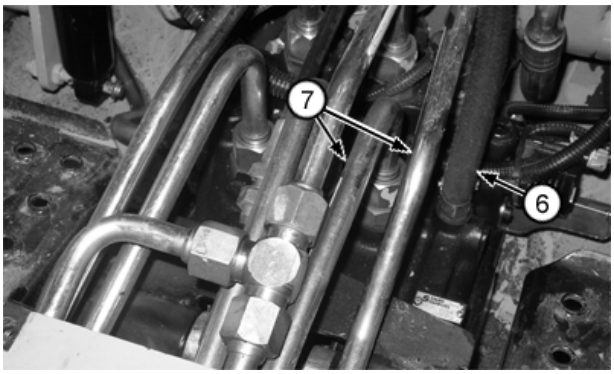
8. Loosen jam nuts (3) and remove auxiliary hydraulic cable (4) from bracket (5).
9. Disconnect front chassis harness from lockout solenoids.

KK70125,0000B1F -19-19JUN07-1/10

IMPORTANT: Cap and plug port openings and hose ends to prevent contamination of hydraulic system.

10. Disconnect case drain hose (6) from control valve.
11. Disconnect and remove boom lines (7) from control valve.

6— Case Drain Hose
7— Boom Line (2 used)



T199145A —UN—08APR04

Control Valve Line Connections

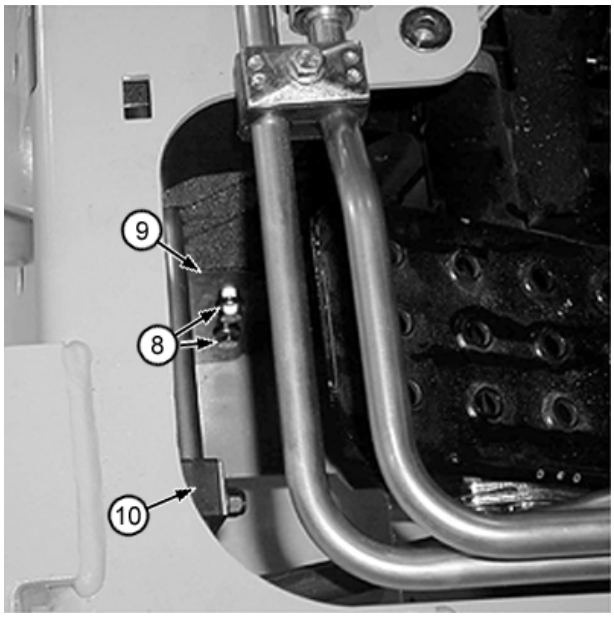
Continued on next page

KK70125,0000B1F -19-19JUN07-2/10

NOTE: Loosen two cap screws that attach each pedal to the pedal shaft. This will allow the pedal to rotate and allow access to the isolator plate cap screws. Mark location of pedals for alignment purposes during installation.

12. Remove cap screws (8) and isolator plate (9) from left and right sides of pedal assembly.
13. Remove clamp (10).

8— Cap Screw (2 used)
9— Isolator Plate
10— Clamp



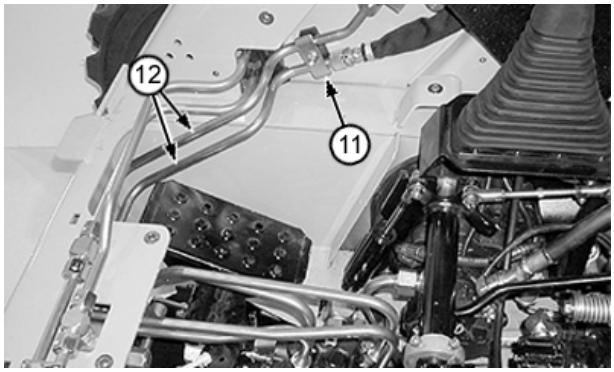
T199133A —UN—08APR04

Left Side Shown

KK70125,0000B1F -19-19JUN07-3/10

14. Remove clamp (11).
15. Disconnect and remove bucket lines (12) from control valve.

11— Clamp
12— Bucket Line (2 used)



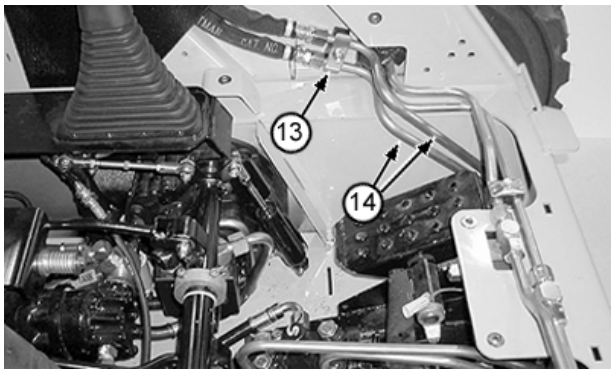
T199146A —UN—08APR04

Bucket Lines

KK70125,0000B1F -19-19JUN07-4/10

16. Remove clamp (13).
17. Disconnect and remove auxiliary lines (14) from control valve.

13— Clamp
14— Auxiliary Line (2 used)



T199147A —UN—08APR04

Auxiliary Lines

Continued on next page

KK70125,0000B1F -19-19JUN07-5/10

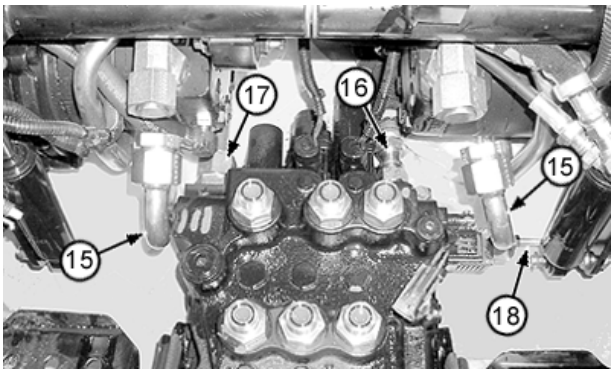
18. For skid steer loader, disconnect front hydrostatic lines (15) from hydrostatic motors to gain access to hydraulic pressure and return lines.

NOTE: Disconnecting left steering dampener from cross shaft will improve access to pressure line connector.

19. Disconnect pressure and return lines (16 and 17) from control valve.

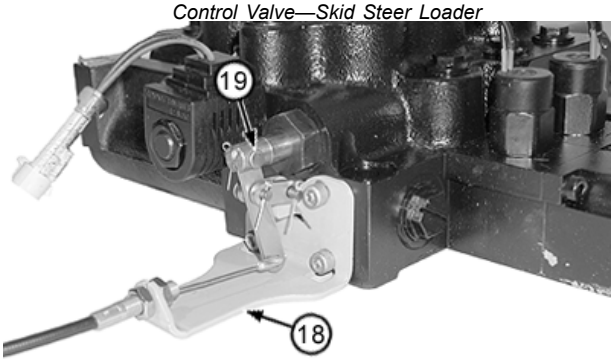
20. Remove pressure release cable bracket (18) from control valve.
    - Remove clevis pin (19) from plunger.
    - Remove the upper and loosen the two lower cap screws and remove pressure release cable bracket (18) from control valve.

15— Hydrostatic Motor Line (2 used)
16— Pressure Line
17— Return Line
18— Pressure Release Cable Bracket
19— Clevis Pin



T199136A —UN—08APR04

Control Valve—Skid Steer Loader



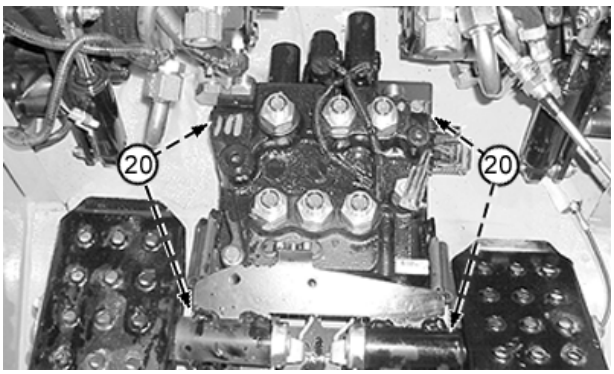
T199138A —UN—08APR04

Pressure Release Cable Bracket

KK70125,0000B1F -19-19JUN07-6/10

21. Loosen lock nuts (20). Slide control valve and pedal assembly rearward. Lift assembly from attachment holes and lay in the bottom of machine.

20— Lock Nut (4 used)



T199139A —UN—08APR04

Pedal Assembly Mounting

Continued on next page

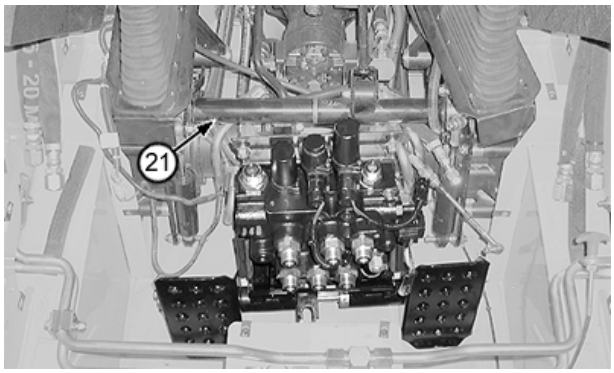
KK70125,0000B1F -19-19JUN07-7/10

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

22. Remove control valve and pedal assembly from machine. Lift rear of assembly to clear cross shaft (21).

Specification	
Control Valve and Pedal Assembly—Weight	36 kg (80 lb)

21— Cross Shaft



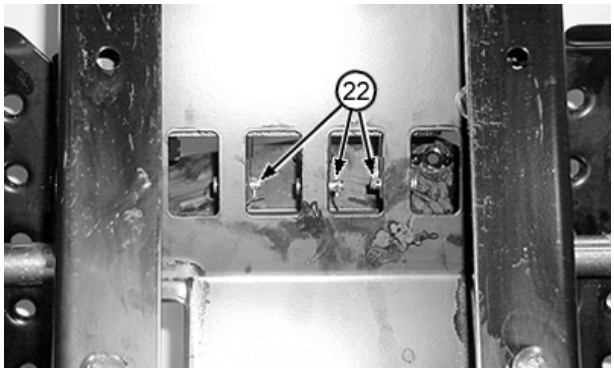
T199140A —UN—08APR04

Pedal Assembly

KK70125,0000B1F -19-19JUN07-8/10

23. Stand control valve and pedal assembly on pedal end to gain access to clevis pins (22). Remove clevis pin to disconnect link from each valve spool.

22— Clevis Pin (3 used)



T199141A —UN—08APR04

Valve Spool Linkage

Continued on next page

KK70125,0000B1F -19-19JUN07-9/10

24. Set assembly flat and remove cap screws and nuts (23). Remove control valve from pedal assembly.
25. Clean and inspect parts. See Control Valve Disassemble and Assemble (S.N. —150522). (Group 3160.) See Pedal Assembly Disassemble and Assemble (S.N. —150522). (Group 3115.)
26. Install control valve to pedal assembly. Tighten cap screws (23) to specification.

Specification

Control Valve Mounting Cap Screw—Torque ..... 80 N·m (59 lb-ft)

27. Stand control valve and pedal assembly on pedal end to gain access to clevis pins (22). Connect clevis pin to connect link to each valve spool.
28. Install control valve and pedal assembly in machine. Slide assembly forward into slots. Tighten lock nuts (20) to specification.

Specification

Pedal Assembly Lock Nut—Torque ..... 24 N·m (212 lb-in.)

29. Install pressure release cable bracket (18) to control valve.
    - Install cap screws. Tighten cap screws to specification.

Specification

Cable Bracket Cap Screw—Torque ..... 13.5 N·m (120 lb-in.)

    - Install clevis pin (19) in plunger.

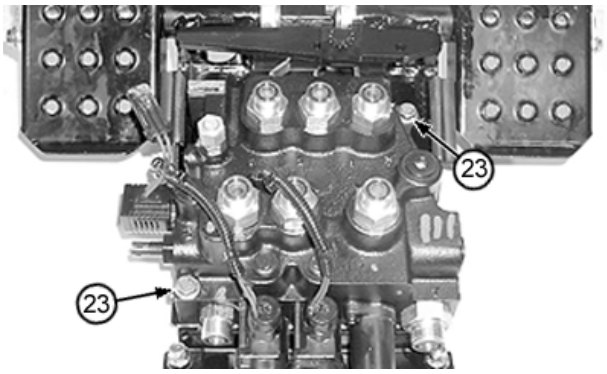
NOTE: Disconnecting left steering dampener from cross shaft will improve access to pressure line connector.

30. Connect pressure and return lines (16 and 17) to control valve.
31. For skid steer loader, connect front hydrostatic lines (15) to hydrostatic motors.
32. If removed, connect left steering dampener to cross shaft. Tighten cap screw to specification.

Specification

Steering Dampener Cap Screw—Torque ..... 40 N·m (30 lb-ft)

33. Install and connect auxiliary lines (14) to control valve.



T199142A —UN—08APR04

Control Valve and Pedal Assembly

23— Cap Screw and Nut (2 used)

34. Install clamp (13).
35. Install and connect bucket lines (12) to control valve.
36. Install clamp (11).
37. Install isolator plate (9) and cap screws (8) to left and right sides of pedal assembly.
38. Install clamp (10).
39. If loosened, tighten pedal cap screws. Align marks for proper pedal position.
40. Install and connect boom lines (7) to control valve.
41. Connect case drain hose (6) to control valve.
42. Connect front chassis harness to lockout solenoids.
43. Connect rod end (1) to bell crank (2).
44. Install and adjust auxiliary hydraulic cable. See Auxiliary Hydraulic Handle Adjustment. (Group 9026-25.)
45. Install floor cover plates.
46. Lower cab. For skid steer loader, see Raising Operator's Station. (Operator's Manual.) For compact track loader, see Raising Operator's Station. (Operator's Manual.)
47. Perform hydrostatic and hydraulic start-up procedure. See Hydrostatic and Hydraulic Start-Up Procedure. (Group 0360.)

KK70125,0000B1F -19-19JUN07-10/10

Control Valve Remove and Install (S.N. 150523—)

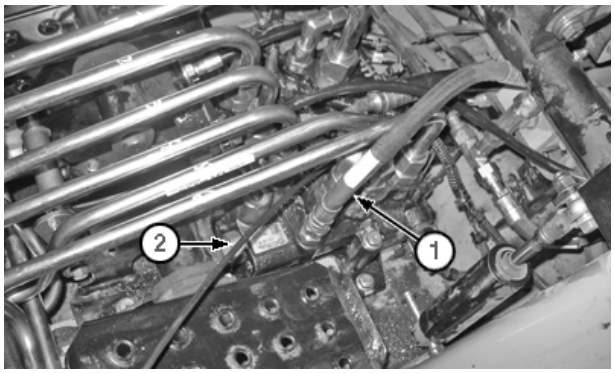
1. Park machine on flat level surface.
2. Raise boom and engage boom lock.

CAUTION: To avoid injury from escaping fluid under pressure, stop engine and relieve the pressure in the system before disconnecting or connecting hydraulic or other lines. Tighten all connections before applying pressure.

3. Relieve hydraulic system pressure. See Hydraulic System Pressure Release. (Group 9025-25.)
4. Raise cab. For skid steer loader, see Raising Operator's Station. (Operator's Manual.) For compact track loader, see Raising Operator's Station. (Operator's Manual.)
5. Remove cap screws holding pressure release cable handle to machine (leave cable attached to control valve). Remove lock for auxiliary foot control pedal, if equipped. Remove windshield washer fluid reservoir, if equipped.
6. Remove floor and side cover plates to access control valve and hydraulic lines around valve.
7. Remove tie-bands and move electrical harness and hose for windshield washer fluid reservoir out of the way and secure, if equipped.

IMPORTANT: Cap and plug port openings and hose ends to prevent contamination of hydraulic system.

8. Mark all hydraulic hoses and lines to aid in assembly.
9. Disconnect case drain hose (1) from control valve (2). Move drain hose out of the way and secure.



TX1025022A —UN—25JUN07

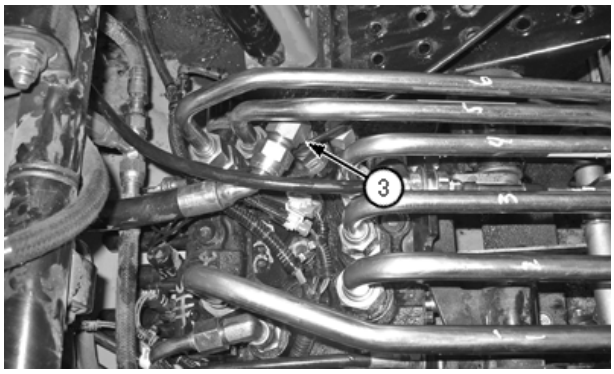
Control Valve Connections

1— Case Drain Hose **2— Control Valve**

KK70125,0000B20 -19-24OCT07-1/11

10. Disconnect pump pressure hose (3) at control valve. Move hose out of the way and secure.

3— Pump Pressure Hose



TX1025025A —UN—25JUN07

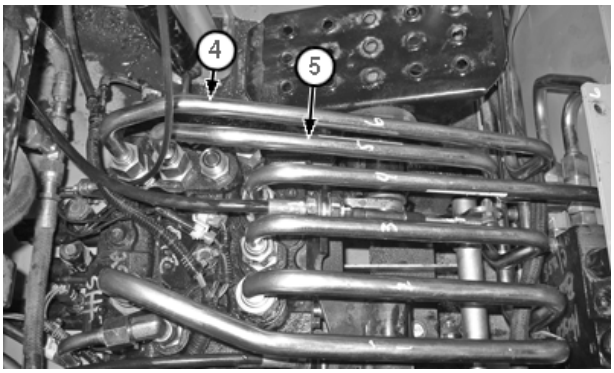
Control Valve Connections

Continued on next page

KK70125,0000B20 -19-24OCT07-2/11

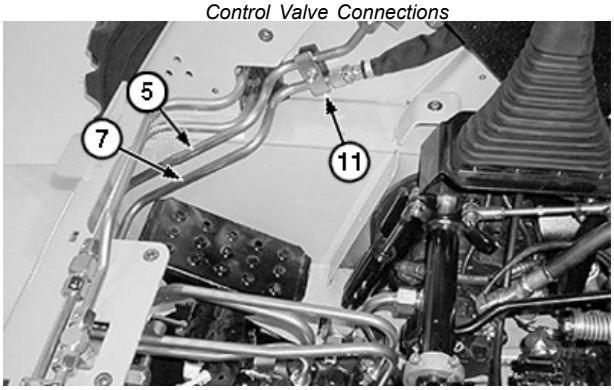
11. Disconnect and remove boom up line (4) and bucket rollback line (5) from control valve. For machines with self-level valve, disconnect bucket rollback line at self-level valve. For machines without self-level valve, remove clamp (11) on right side of machine to remove bucket rollback line.

4— Boom Up Line
5— Bucket Rollback Line
7— Bucket Dump Line
11— Clamp



TX1025026A —UN—25JUN07

Control Valve Connections



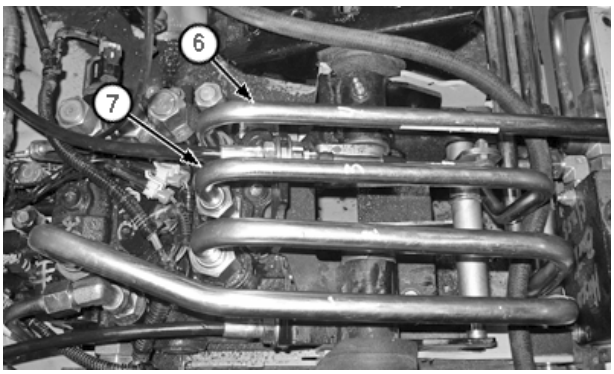
TX1025050A —UN—19JUN07

Bucket Lines

KK70125,0000B20 -19-24OCT07-3/11

12. Disconnect and remove boom down line (6) from control valve.

6— Boom Down Line
7— Bucket Dump Line



TX1025034A —UN—25JUN07

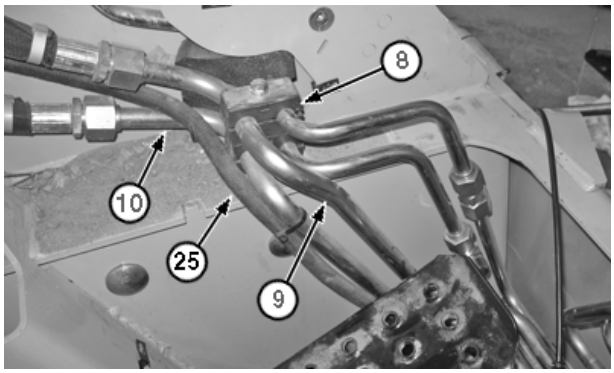
Control Valve Connections

Continued on next page

KK70125,0000B20 -19-24OCT07-4/11

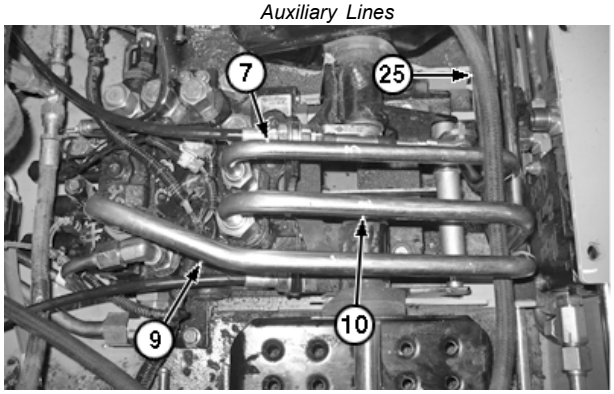
13. If machine is not equipped with self-level valve, disconnect and remove bucket dump line (7) from control valve.
14. Remove clamp (8) holding auxiliary lines (9 and 10) on left side of machine.
15. Remove tie bands and move auxiliary hydraulics case drain hose (25) out of the way and secure, if equipped.
16. Disconnect and remove auxiliary lines (9 and 10) from control valve.
17. If machine is equipped with self-level valve, disconnect and remove bucket dump line (7) from control valve.

7— Bucket Dump Line
8— Clamp
9— Auxiliary Line
10— Auxiliary Line
25— Auxiliary Hydraulics Case Drain Hose (if equipped)



TX1025043A —UN—19JUN07

Auxiliary Lines



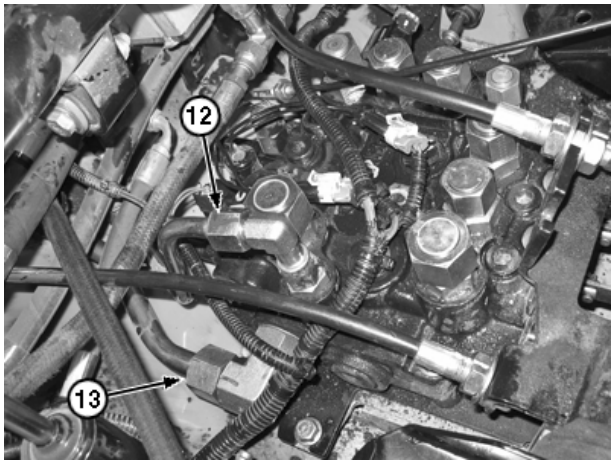
TX1025053A —UN—19JUN07

Control Valve Connections

KK70125,0000B20 -19-24OCT07-5/11

18. Disconnect high flow pressure line (12) from control valve, if equipped. Move line out of the way and secure.
19. Disconnect tank return line (13) from control valve. Move line out of the way and secure.

12— High Flow Pressure Line (if equipped)
13— Return Line



TX1025071A —UN—19JUN07

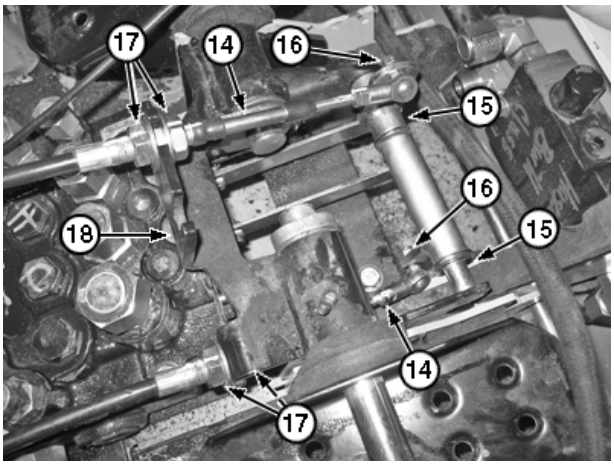
Control Valve Connections

Continued on next page

KK70125,0000B20 -19-24OCT07-6/11

20. Disconnect control cables from pedal assembly, as necessary.
    a. Disconnect rod end (16) from bell crank (15).
    b. Loosen jam nuts (17) and remove control cable (14) from bracket (18).
21. Disconnect front chassis electrical harness from lockout solenoids. Move harness out of the way and secure.

14— Control Cable
15— Bell Crank
16— Rod End
17— Jam Nuts (2 used per cable)
18— Bracket



TX1025073A —UN—19JUN07

Control Cables (hand control machine shown)

KK70125,0000B20 -19-24OCT07-7/11

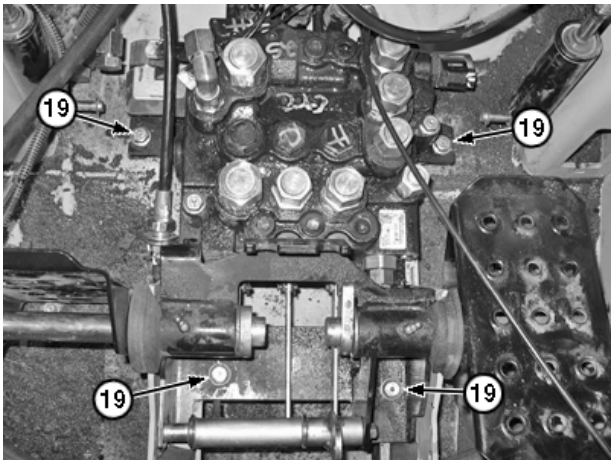
22. Remove four cap screws (19) securing control valve and pedal assembly to machine floor.

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

Specification	
Control Valve and Pedal Assembly—Weight (approximate)	34 kg 75 lb

23. Remove control valve and pedal assembly from machine.

19— Cap Screw (4 used)



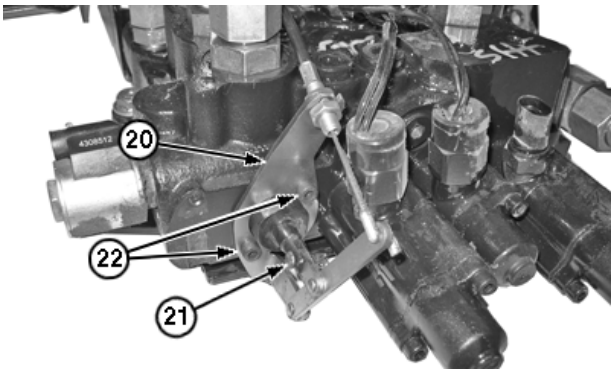
TX1025078A —UN—19JUN07

Control Valve and Pedal Assembly

KK70125,0000B20 -19-24OCT07-8/11

24. Remove pressure release cable bracket (20) from control valve.
    a. Remove clevis pin (21) from plunger.
    b. Remove two cap screws (22) and remove pressure release cable bracket from control valve.

20— Pressure Release Cable Bracket
21— Clevis Pin
22— Cap Screw (2 used)



TX1025083A —UN—19JUN07

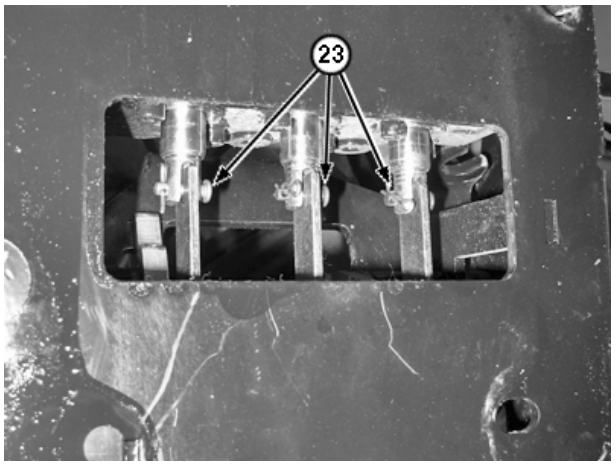
Pressure Release Cable

Continued on next page

KK70125,0000B20 -19-24OCT07-9/11

25. Stand control valve and pedal assembly on pedal end to gain access to clevis pins (23). Remove clevis pin to disconnect link from each valve spool.

23— Clevis Pin (3 used)



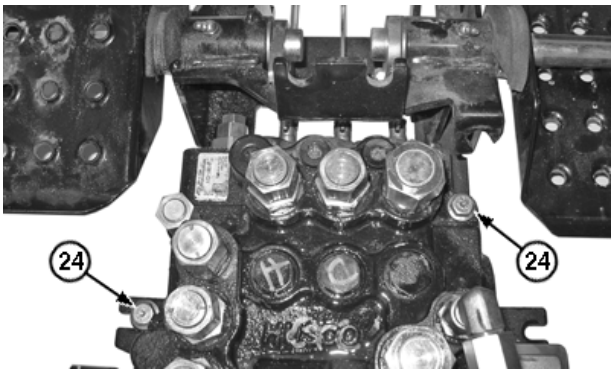
TX1025085A —UN—19JUN07

Valve Spool Linkage

Continued on next page

KK70125,0000B20 -19-24OCT07-10/11

26. Set assembly flat and remove cap screws (24). Remove control valve from pedal assembly.
27. Clean and inspect parts. See Control Valve Disassemble and Assemble (S.N. 150523—). (Group 3160.) See Pedal Assembly Disassemble and Assemble (S.N. 150523—). (Group 3115.)
28. Install control valve to pedal assembly using cap screws (24).
29. Stand control valve and pedal assembly on pedal end to gain access to clevis pins (23). Connect clevis pin to connect link to each valve spool.
30. Install pressure release cable bracket (20) to control valve.
    - Install cap screws (22).
    - Install clevis pin (21) in plunger.
31. Install control valve and pedal assembly in machine and secure with cap screws (19).
32. Connect front chassis electrical harness to lockout solenoids.
33. Connect control cables to pedal assembly, as necessary.
    a. Connect rod end (16) to bell crank (15).
    b. Install control cable (14) in bracket (18) and hand tighten jam nuts.
    c. Adjust cables. See Hydraulic Control Handle Adjustment—Hands Only Machine. See Auxiliary Hydraulic Control Handle Adjustment. (Group 9026-05.)
34. Connect tank return line (13) to control valve.
35. Connect high flow pressure line (12) to control valve, if equipped.
36. If machine is equipped with self-level valve, install and connect bucket dump line (7) to control valve.
37. Install and connect auxiliary lines (9 and 10) to control valve.
38. Secure auxiliary hydraulics case drain hose (25) with tie bands, if equipped.
39. Install clamp (8) to secure auxiliary lines (9 and 10) on left side of machine.
40. If machine is not equipped with self-level valve, install and connect bucket dump line (7) to control valve.
41. Install and connect boom down line (6) to control valve.
42. Install and connect boom up line (4) and bucket rollback line (5) to control valve.



TX1025087A —UN—19JUN07

Control Valve and Pedal Assembly

24— Cap Screw (2 used)

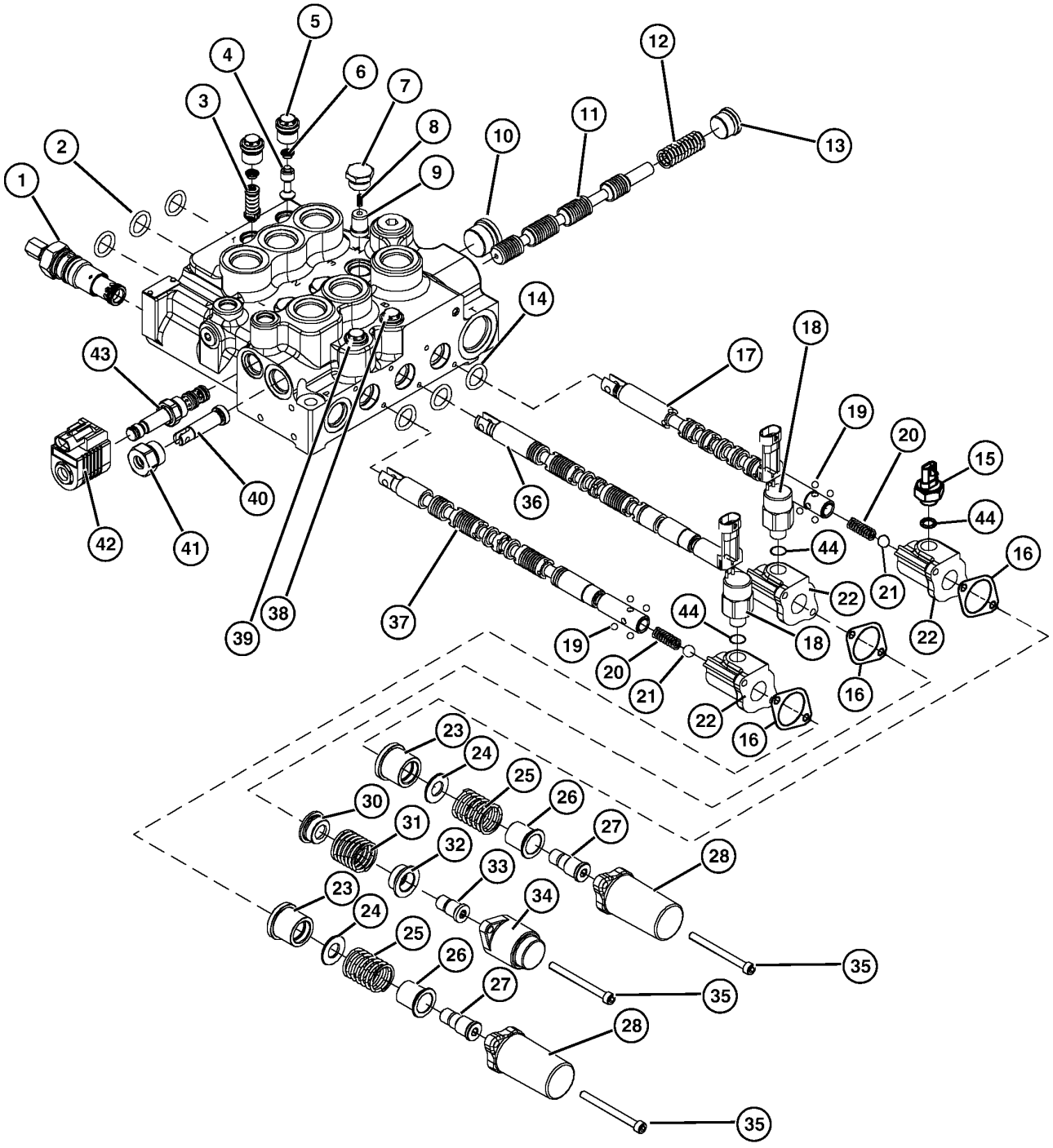
For machines with self-level valve, connect bucket rollback line at self-level valve.

For machines without self-level valve, install clamp (11) on right side of machine to secure bucket lines.

43. Connect pump pressure hose (3) to control valve.
44. Connect case drain hose (1) to control valve (2).
45. Route and secure with tie bands the electrical harness and hose for windshield washer fluid reservoir, if equipped.
46. Install floor cover plates. Do not install control valve cover plate at this time.
47. Install pressure release cable handle to machine. Install lock for auxiliary foot control pedal, if equipped. Install windshield washer fluid reservoir, if equipped.
48. Lower cab. For skid steer loader, see Raising Operator's Station. (Operator's Manual.) For compact track loader, see Raising Operator's Station. (Operator's Manual.)
49. Operate machine and hydraulic functions to remove air from system. See Hydraulic Cylinder Bleed Procedure. (Group 3160.)
50. Check control valve area for leaks. Repair as necessary.
51. Install control valve cover plate.
52. Check hydraulic oil tank level. For skid steer loader, see Check Hydraulic Tank Oil Level. (Operator's Manual.) For compact track loader, see Check Hydraulic Tank Oil Level. (Operator's Manual.)

KK70125,0000B20 -19-24OCT07-11/11

Control Valve Disassemble and Assemble (S.N. —150522)



T199186

Control Valve

Continued on next page

KK70125,0000A36 -19-21AUG07-1/8

1— System Relief Valve
2— O-Ring (3 used)
3— Bucket Dump Circuit Relief and Anti-Cavitation Valve
4— Anti-Cavitation Valve
5— Anti-Cavitation Valve Cap (4 used)
6— Anti-Cavitation Valve Spring
7— Check Valve Cap (3 used)
8— Check Valve Spring (3 used)
9— Check Valve Poppet (3 used)
10— Plug
11— Port Lock Spool
12— Spring
13— Plug
14— O-Ring (3 used)
15— Auxiliary Hydraulic Neutral Switch
16— Retainer (3 used)
17— Auxiliary Spool
18— Spool Lock Solenoid (2 used)
19— Detent Ball (8 used)
20— Spring (2 used)
21— Detent Ball (2 used)
22— Spool Lock Solenoid Housing (3 used)
23— Detent Ring (2 used)
24— Washer (2 used)
25— Spring (2 used)
26— Spring Retainer (2 used)
27— Screw (2 used)
28— Cover (2 used)
30— Spring Retainer
31— Spring
32— Spring Retainer
33— Screw
34— Cover
35— Cap Screw (6 used)
36— Bucket Spool
37— Boom Spool
38— Bucket Rollback Circuit Relief and Anti-Cavitation Valve
39— Boom Up Circuit Relief and Anti-Cavitation Valve
40— Pressure Release Valve Plunger
41— Retainer
42— Port Lock Solenoid
43— Port Lock Solenoid Valve
44— O-Ring (3 used)

KK70125,0000A36 -19-21AUG07-2/8

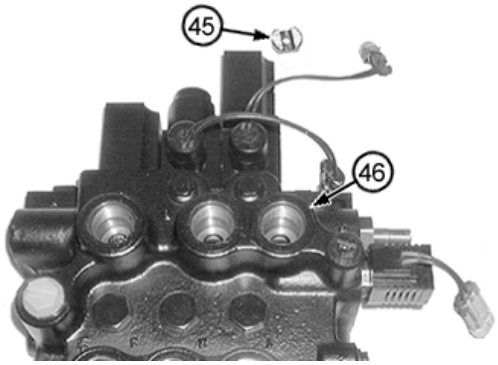
NOTE: Boom up port has an orifice installed under hydraulic fitting.

1. If required, remove work port fittings. Remove orifice (45) from boom up port (46).
2. Remove port lock solenoid (42) and port lock solenoid valve (43).
3. Remove pressure release assembly (40 and 41).
4. Remove plug, spring and port lock spool (11—13).
5. Remove plug (10).
6. Remove auxiliary hydraulic neutral switch (15) and spool lock solenoids (18) from spool lock solenoid housings (22).
7. Remove cap screws (35) and cover (28) from boom and auxiliary spools.

   Remove cap screws (35) and cover (34) from bucket spool.
8. Remove spool assemblies from control valve housing.
9. Remove system relief valve (1).
10. Remove O-ring (2) from each spool bore.
11. Remove check valve caps, springs and poppets (7—9).
12. Remove anti-cavitation valve cap (5). Do not remove poppets at this time.

IMPORTANT: Installing circuit relief and anti-cavitation valves in the wrong circuit could cause hydraulic system malfunction. Each circuit relief and anti-cavitation valve is identified by a pressure setting stamped on its surface.

13. Identify and record the location of each circuit relief and anti-cavitation valve.
14. Remove circuit relief and anti-cavitation valve assemblies (3, 4, 38 and 39).
15. Remove O-ring (14) from each spool.



T199211A —UN—13APR04

Control Valve

45— Orifice **46— Boom Up Port**

NOTE: Boom and auxiliary spools have detent balls that are retained by a detent ring. Be careful not to lose detent balls during disassembly.

16. Mark spool lock solenoid housing to identify orientation before removing.

    Remove spool lock solenoid housings (22) from boom and auxiliary spools (37 and 17).

    Remove retainer (16) and spool lock solenoid housing (22) from bucket spool (36).

NOTE: Spring tension will exist once screw threads (27 and 33) are disengaged. Hold tension against screw during disassembly.

17. Remove parts (24—27) from boom and auxiliary spools.

    Remove parts (30—33) from bucket spool.
18. Remove parts (19—21 and 23) from boom and auxiliary spools.
19. Clean parts. Inspect parts for scratches, burrs, and debris. Repair or replace parts as required.

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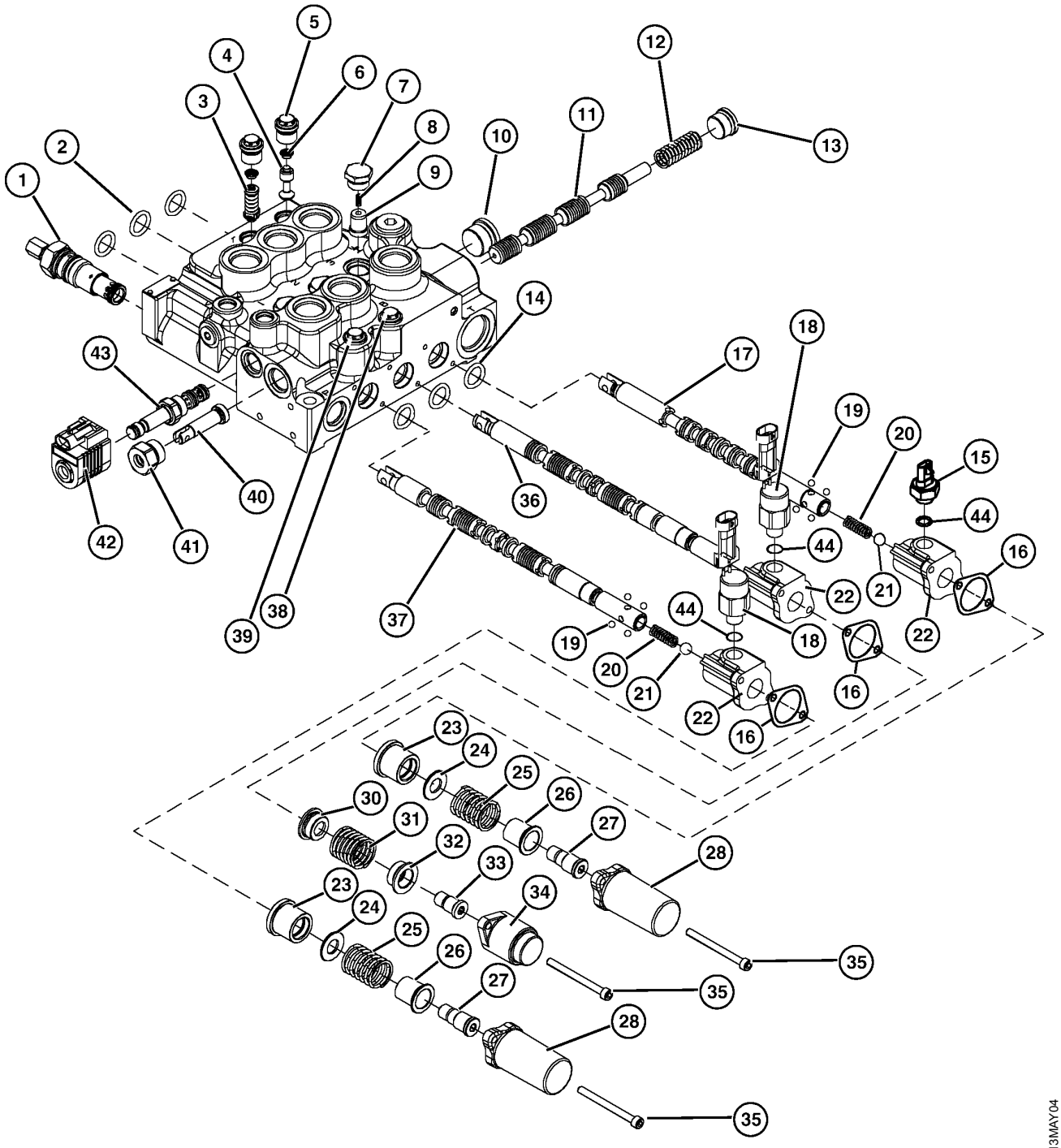
KK70125,0000A36 -19-21AUG07-3/8



T199186

Control Valve

Continued on next page

KK70125,0000A36 -19-21AUG07-4/8

1— System Relief Valve
2— O-Ring (3 used)
3— Bucket Dump Circuit Relief and Anti-Cavitation Valve
4— Anti-Cavitation Valve
5— Anti-Cavitation Valve Cap (4 used)
6— Anti-Cavitation Valve Spring
7— Check Valve Cap (3 used)
8— Check Valve Spring (3 used)
9— Check Valve Poppet (3 used)
10— Plug
11— Port Lock Spool
12— Spring
13— Plug
14— O-Ring (3 used)
15— Auxiliary Hydraulic Neutral Switch
16— Retainer (3 used)
17— Auxiliary Spool
18— Spool Lock Solenoid (2 used)
19— Detent Ball (8 used)
20— Spring (2 used)
21— Detent Ball (2 used)
22— Spool Lock Solenoid Housing (3 used)
23— Detent Ring (2 used)
24— Washer (2 used)
25— Spring (2 used)
26— Spring Retainer (2 used)
27— Screw (2 used)
28— Cover (2 used)
30— Spring Retainer
31— Spring
32— Spring Retainer
33— Screw
34— Cover
35— Cap Screw (6 used)
36— Bucket Spool
37— Boom Spool
38— Bucket Rollback Circuit Relief and Anti-Cavitation Valve
39— Boom Up Circuit Relief and Anti-Cavitation Valve
40— Pressure Release Valve Plunger
41— Retainer
42— Port Lock Solenoid
43— Port Lock Solenoid Valve
44— O-Ring (3 used)

20.

IMPORTANT: Installing circuit relief and anti-cavitation valves in the wrong circuit could cause hydraulic system malfunction. Each circuit relief and anti-cavitation valve is identified by a pressure setting stamped on its surface.

Install circuit relief and anti-cavitation valve assemblies (3, 4, 38 and 39).

21. Install anti-cavitation valve caps (5). Tighten caps to specification.

Specification

Anti-Cavitation Valve Cap—Torque ..... 35—45 N·m
26—33 lb-ft

22. Install check valve poppets, springs, new O-rings and caps (7—9). Tighten caps to specification.

Specification

Check Valve Cap—Torque ..... 20—27 N·m
177—239 lb-in.

23. Install new O-ring on system relief valve (1). Install system relief valve. Tighten to specification.

Specification

System Relief Valve—Torque ..... 61—68 N·m
45—50 lb-ft

24. Install new O-rings (2).

KK70125,0000A36 -19-21AUG07-5/8

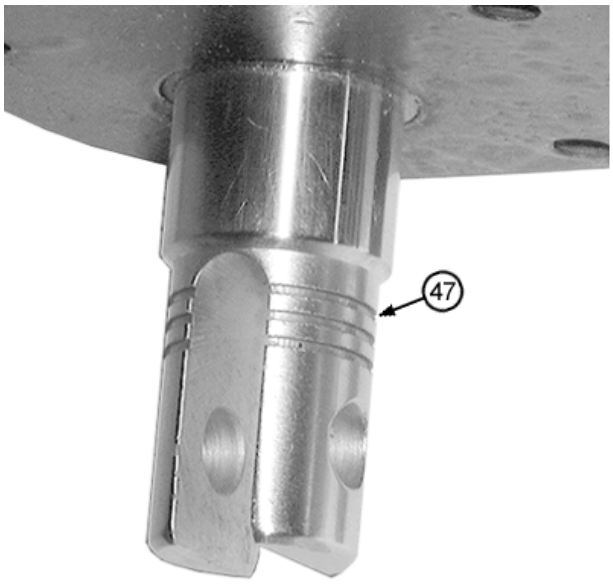
NOTE: Valve spools can be identified by the number of grooves on the clevis end of the spool.

- *Boom spool has one groove*
- *Bucket spool has two grooves*
- *Auxiliary spool has three grooves*

25. Install parts (19—21) to boom and auxiliary spools (37 and 17).

NOTE: Use petroleum jelly to retain detent balls (19) while assembling boom and auxiliary spools.

47— Groove



Auxiliary Spool Shown

Continued on next page

KK70125,0000A36 -19-21AUG07-6/8

26. Install detent ring (23) while depressing detent ball (21) with a punch. Install detent ring until it is flush with end of spool.

27. Install parts (24—27). Tighten screw (27) to specification.

Specification

Spool Centering Spring
Screw—Torque ..... 26—30 N·m
19—22 lb-ft

28. Install parts (30—33). Tighten screw (33) to specification.

Specification

Spool Centering Spring
Screw—Torque ..... 26—30 N·m
19—22 lb-ft

NOTE: Use marking made during disassembly to correctly orient spool lock solenoid housing. The spool lock solenoid housing has a chamfer that fits into a pilot bore in the control valve housing.

29. Install spool lock solenoid housings (22) and retainers (16) on boom and auxiliary spools (37 and 17).

    Install spool lock solenoid housing (22) and retainer (16) on bucket spool (36).

30. Install new O-rings (14).

IMPORTANT: Be careful not to damage O-ring when installing spool.

31. Thoroughly coat spools and bores with oil. Install spools into control valve housing.

32. Install covers (28 and 34). Apply medium strength thread lock and sealer to cap screws (35). Tighten cap screws to specification.

Specification

Spool Cover Cap
Screw—Torque ..... 12—15 N·m
106—133 lb-in.

33. Install spool lock solenoids (18) in spool lock solenoid housings (22). Tighten solenoids to specification.

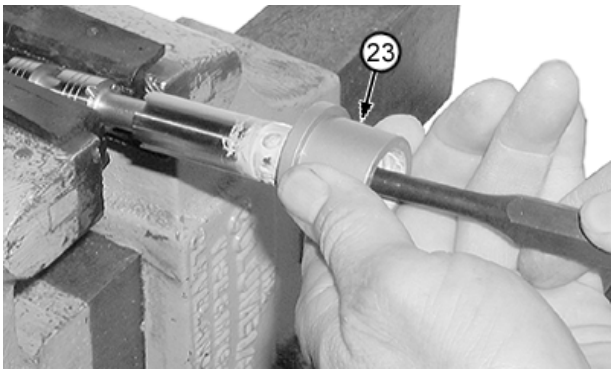
Specification

Spool Lock
Solenoid—Torque ..... 26—30 N·m
19—22 lb-ft

34. Install auxiliary hydraulic neutral switch (15) in spool lock solenoid housings (22). Tighten to specification.

Specification

Auxiliary Hydraulic
Neutral Switch—Torque ..... 20 N·m
180 lb-in.



T199215A —UN—13APR04

Detent Ring Installation

23— Detent Ring

35. Install plug (10). Tighten to specification.

Specification

Control Valve
Plug—Torque ..... 61—68 N·m
45—50 lb-ft

36. Install port lock spool, spring and plug (11—13). Tighten plug to specification.

Specification

Port Lock Spool
Plug—Torque ..... 34—41 N·m
25—30 lb-ft

37. Install pressure release assembly (40 and 41). Tighten retainer to specification.

Specification

Pressure Release
Assembly
Retainer—Torque ..... 34—41 N·m
25—30 lb-ft

38. Install port lock solenoid valve (43). Tighten to specification.

Specification

Port Lock Solenoid
Valve—Torque ..... 34—41 N·m
25—30 lb-ft

39. Install port lock solenoid (42). Tighten to specification.

Specification

Port Lock
Solenoid—Torque ..... 5—8 N·m
44—71 lb-in.

Continued on next page

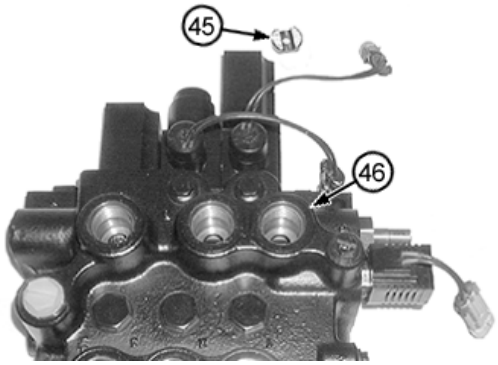
KK70125,0000A36 -19-21AUG07-7/8

40. Install orifice (45) in boom up port (46).

41. Install new O-rings in hydraulic work ports. Install work port fittings. Tighten to specification.

	Specification
Hydraulic Work Port Fitting—Torque	176 N·m 130 lb-ft

45— Orifice **46— Boom Up Port**



T199211A —UN—13APR04

Control Valve

KK70125,0000A36 -19-21AUG07-8/8

Control Valve Disassemble and Assemble (S.N. 150523—)

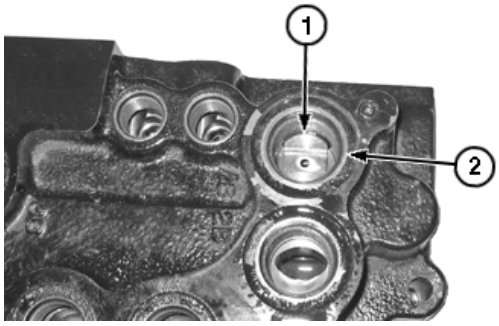
IMPORTANT: Prevent possible system contamination. Absolute cleanliness is essential when working on hydraulic components.

1. Clean exterior of control valve.

NOTE: Boom up port has an orifice installed under hydraulic fitting.

2. If required, remove work port fittings. Remove orifice (1) from boom up port (2).

1— Orifice **2— Boom Up Port**



TX1030610A —UN—24OCT07

Control Valve Ports

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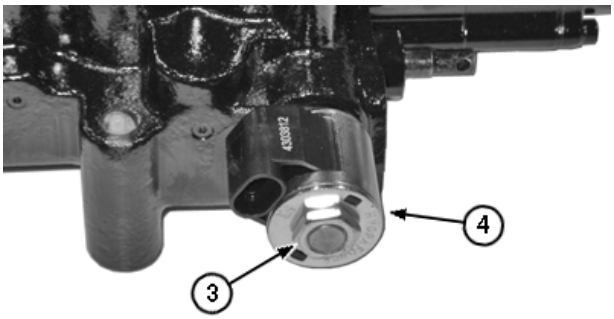
KK70125,0000A37 -19-30OCT07-1/24

3. Mark position of electrical connector for port lock solenoid (4) to aid in assembly.
4. Remove nut (3). Remove port lock solenoid and port lock solenoid valve (5).

3— Nut
4— Port Lock Solenoid
5— Port Lock Solenoid Valve
6— O-Ring
7— O-Ring
8— Backup Ring (2 used)
9— O-Ring
10— Backup Ring (2 used)



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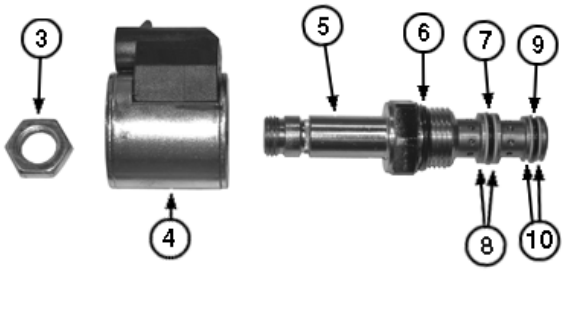


TX1030786A —UN—24OCT07

Port Lock Solenoid Valve

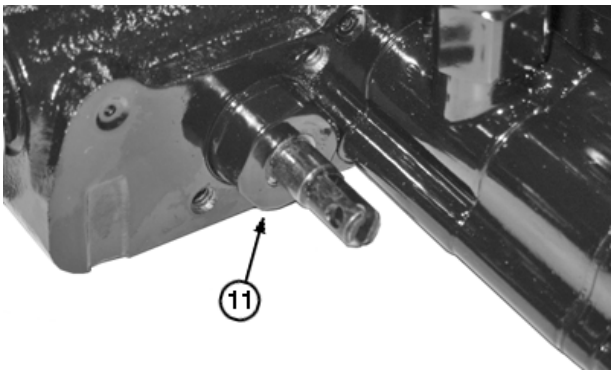
KK70125,0000A37 -19-30OCT07-2/24

5. Remove pressure release base (11) and plunger assembly.
6. Gently tap on clevis end of pressure release plunger (12) to remove plunger from base.

NOTE: Close tolerances between control valve body and spool may prevent easy removal of spool from plunger end. Spool may be removed from control valve body after removing system relief valve (18) and plug (60). Remove spring (14) and gently tap on spool end to remove.

7. Remove spool (13) and spring (14) from control valve body.

11— Pressure Release Base
12— Pressure Release Plunger
13— Spool
14— Spring
15— Seal
16— O-Ring
17— Backup Ring



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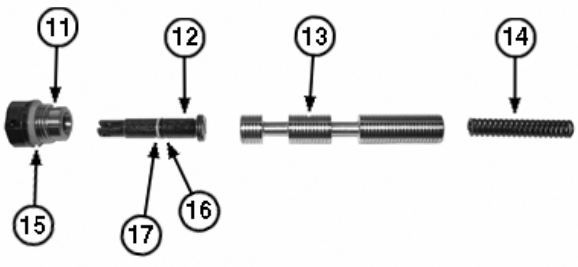

TX1030784A —UN—24OCT07

Pressure Release Assembly

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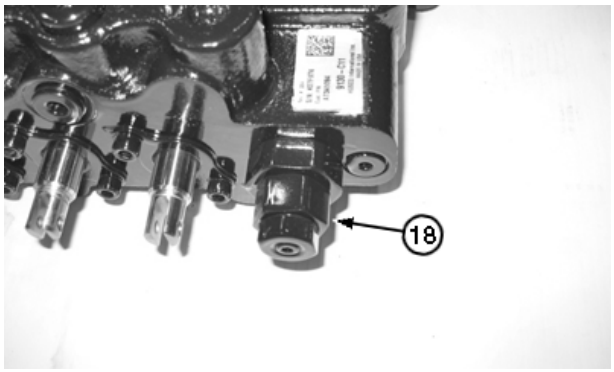
KK70125,0000A37 -19-30OCT07-3/24

8. Remove system relief valve (18).

18— System Relief Valve



TX1030638A —UN—24OCT07

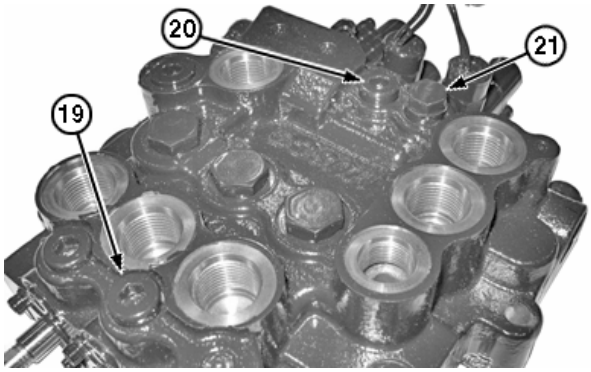
System Relief Valve

KK70125,0000A37 -19-30OCT07-4/24

IMPORTANT: Prevent possible hydraulic system malfunction from installing circuit relief valves in the wrong circuit. Label each circuit relief valve to aid in proper assembly.

9. Identify and record the location of each circuit relief valve.
10. Remove circuit relief valves (19—21).

19— Bucket Dump Circuit Relief Valve
20— Bucket Rollback Circuit Relief Valve
21— Boom Up Circuit Relief Valve



TX1030790A —UN—24OCT07

Circuit Relief Valves

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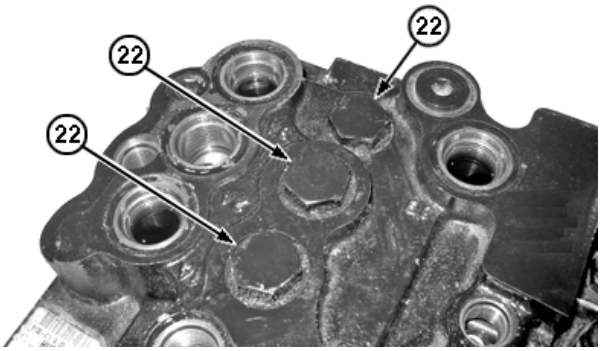
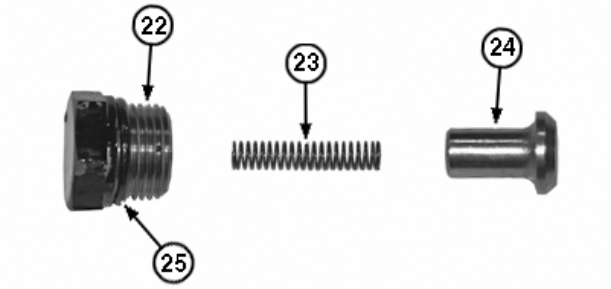
KK70125,0000A37 -19-30OCT07-5/24

11. Remove lift check valve caps, springs, and poppets (22—24) from control valve.

22— Cap (3 used)
23— Spring (3 used)
24— Poppet (3 used)
25— O-ring (3 used)



TX1030793A —UN—24OCT07



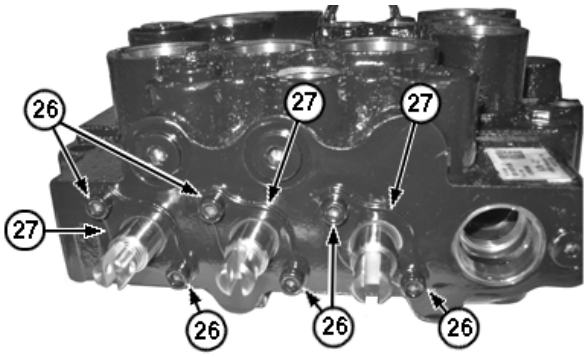
TX1030890A —UN—24OCT07

Lift Check Valves

KK70125,0000A37 -19-30OCT07-6/24

12. Remove socket head cap screws (26) and remove spool seal plates (27).

26— Socket Head Cap Screw (6 used)
27— Spool Seal Plate (3 used)



TX1030865A —UN—24OCT07

Control Valve (spool clevis side)

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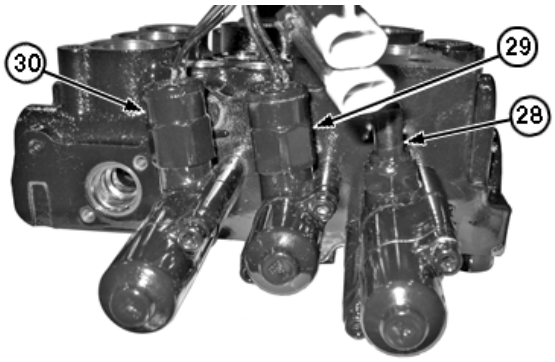
KK70125,0000A37 -19-30OCT07-7/24

13. Mark spool lock solenoid housings to identify orientation to control valve body before removing.
14. Remove auxiliary hydraulic neutral switch (28) and spool lock solenoids (29 and 30) from spool housings.

28— Auxiliary Hydraulic Spool Neutral Switch
29— Bucket Spool Lock Solenoid
30— Boom Spool Lock Solenoid



TX1030871A —UN—24OCT07

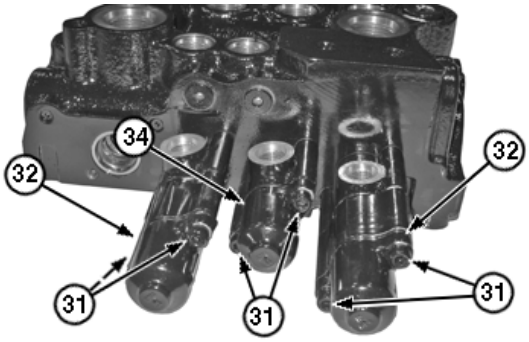
Control Valve (spool cap side)

KK70125,0000A37 -19-30OCT07-8/24

15. Remove socket head cap screws (31) and spool cap (32) from boom and auxiliary spools.

    Remove socket head cap screws (33) and spool cap (34) from bucket spool.
16. Remove spool assemblies from control valve housing.

31— Socket Head Cap Screw (4 used)
32— Spool Cap (2 used)
33— Socket Head Cap Screw (2 used)
34— Spool Cap



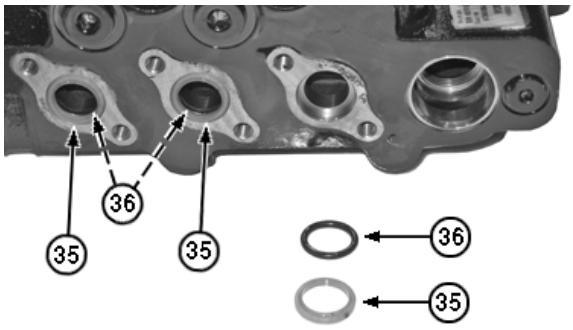
TX1030880A —UN—24OCT07

Control Valve (spool cap side)

KK70125,0000A37 -19-30OCT07-9/24

17. Remove wiper (35) and O-ring (36) from each spool bore.

35— Wiper (3 used)
36— O-Ring (3 used)



TX1030892A —UN—24OCT07

Control Valve (spool clevis side)

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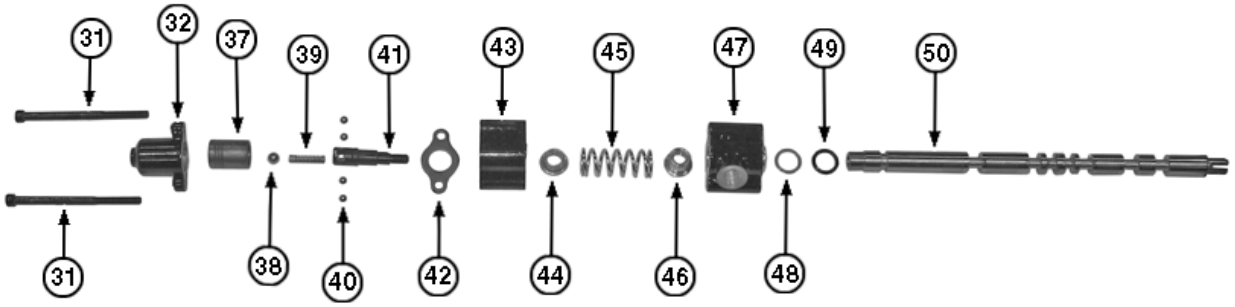
KK70125,0000A37 -19-30OCT07-10/24



TX1030936A —UN—24OCT07

Boom and Auxiliary Spool Assemblies (auxiliary spool shown)

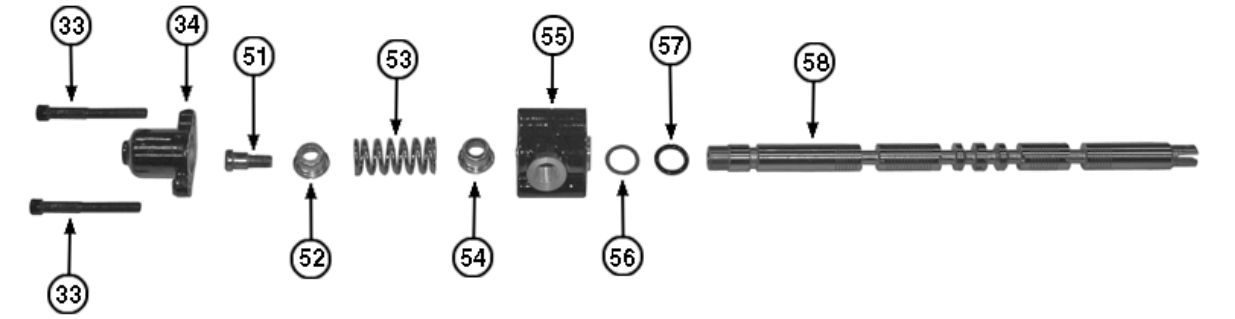
31— Socket Head Cap Screw (2 used)
32— Spool Cap
37— Detent Ring
38— Large Detent Ball
39— Spring
40— Small Detent Ball (4 used)
41— Spool End
42— Seal Plate
43— Spacer
44— Spring Seat (outer)
45— Spring
46— Spring Seat (inner)
47— Spool Housing
48— Washer
49— O-Ring
50— Spool

NOTE: Boom and auxiliary spools have detent balls that are retained by a detent ring (under spring pressure). Be careful not to lose detent balls during disassembly.

NOTE: Spring tension will exist once spool end (41 and 51) threads are disengaged. Hold tension against spool end during disassembly.

18. For boom and auxiliary spools, remove detent ring (37), four small detent balls (40), large detent ball (38), and spring (39). Unscrew spool end (41) and disassemble parts (42—49).

KK70125,0000A37 -19-30OCT07-11/24



TX1030937A —UN—24OCT07

Bucket Spool Assembly

33— Socket Head Cap Screw (2 used)
34— Spool Cap
51— Spool End
52— Spring Seat (outer)
53— Spring
54— Spring Seat (inner)
55— Spool Housing
56— Washer
57— O-Ring
58— Spool

19. For bucket spool, remove spool end (51) and disassemble parts (52—57).

Continued on next page

KK70125,0000A37 -19-30OCT07-12/24

20. Remove plugs (59—66) from control valve body.
21. Clean parts. Inspect parts for scratches, burrs, and debris. Repair or replace parts as required.

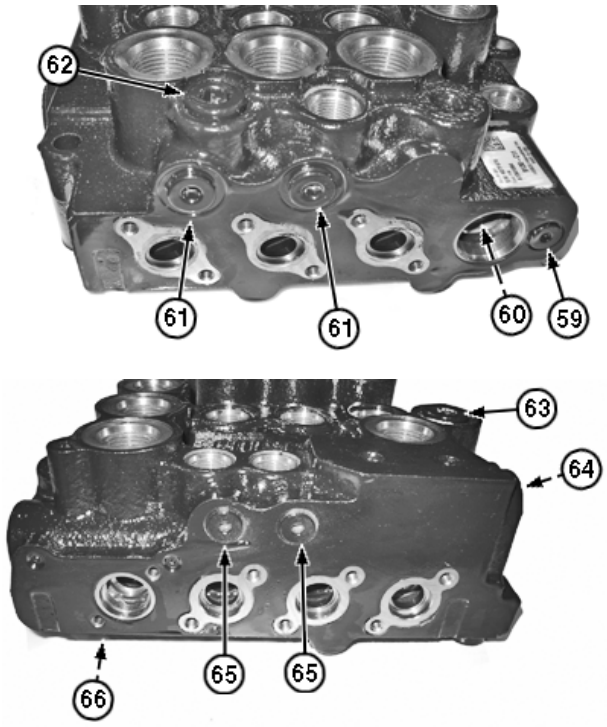
IMPORTANT: Apply clean hydraulic oil to all internal parts before assembling.

22. Install new O-rings on plugs (59—61, 63—66). Install plugs in control valve. Tighten plugs to specification.

Specification	
Plug (59)—Torque	14 N·m 120 lb-in.
Plug (60)—Torque	45 N·m 33 lb-ft
Plug (61)—Torque	24 N·m 216 lb-in.
Plug (63)—Torque	65 N·m 48 lb-ft
Plug (64)—Torque	100 N·m 74 lb-ft
Plug (65)—Torque	14 N·m 120 lb-in.
Plug (66)—Torque	24 N·m 216 lb-in.

23. Install new O-rings and backup ring on plug (62). Install plug and torque to specification.

Specification	
Plug (62)—Torque	34 N·m 25 lb-ft



Control Valve Plugs

59— Plug
60— Plug (within control valve)
61— Plug (2 used)
62— Plug (auxiliary circuit)
63— Plug (if not equipped with high flow hydraulics)
64— Plug (power beyond port)
65— Plug (2 used)
66— Plug (on bottom of control valve)

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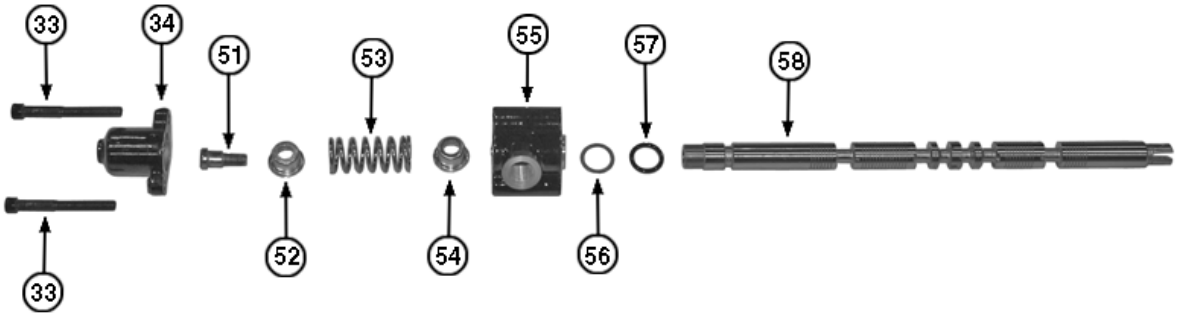
KK70125,0000A37 -19-30OCT07-13/24



TX1030937A —UN—24OCT07

Bucket Spool Assembly

33— Socket Head Cap Screw (2 used)
34— Spool Cap
51— Spool End
52— Spring Seat (outer)
53— Spring
54— Spring Seat (inner)
55— Spool Housing
56— Washer
57— O-Ring
58— Spool

24. Assemble bucket spool:
    a. Install new O-ring (57) on bucket spool (58).
    b. Assemble parts (52—56).
    c. Install spool end (51) and tighten to specification.

Specification	
Spool End (51)—Torque	9 N·m 84 lb-in.

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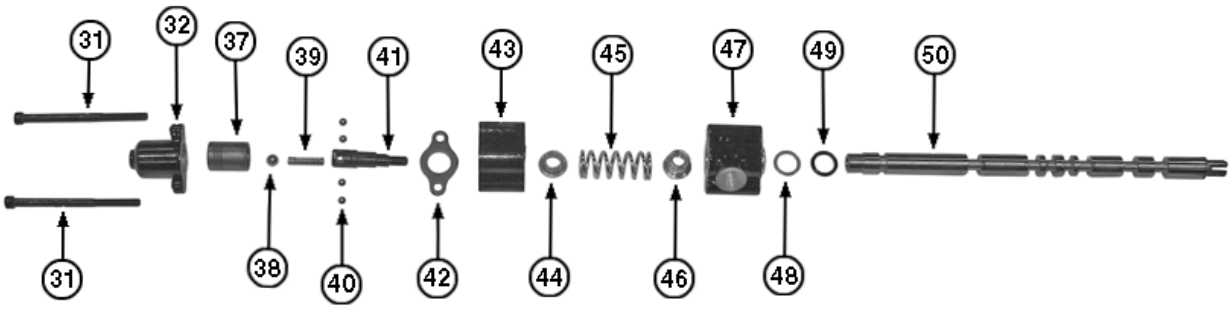
KK70125,0000A37 -19-30OCT07-14/24



TX1030936A —UN—24OCT07

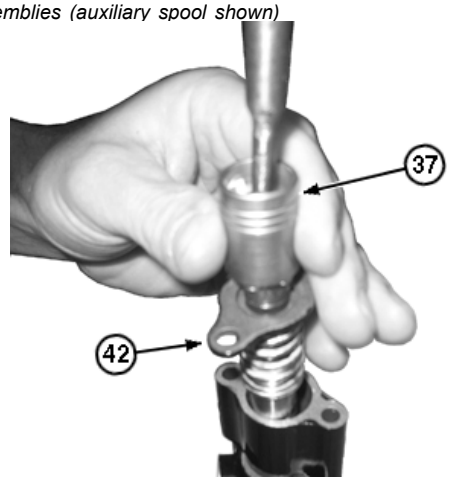
Boom and Auxiliary Spool Assemblies (auxiliary spool shown)

25. Assemble boom and auxiliary spools:
    a. Install new O-ring (49) on spool (50).
    b. Assemble parts (42—48).
    c. Install spool end (41) and tighten to specification.

Specification

Spool End (41)—Torque.....9 N·m
84 lb-in.

    d. Lubricate small detent balls (40) with white lithium grease to retain balls in spool end during assembly.
    e. Install small detent balls, spring (39), and large detent ball (38) in spool end.
    f. With spool held upright, place detent ring (37) over spool end while depressing large detent ball with a punch. Install detent ring until it is flush with seal plate (42).



TX1030938A —UN—24OCT07

Detent Ring Installation

31— Socket Head Cap Screw (2 used)
32— Spool Cap
37— Detent Ring
38— Large Detent Ball
39— Spring
40— Small Detent Ball (4 used)
41— Spool End
42— Seal Plate
43— Spacer
44— Spring Seat (outer)
45— Spring
46— Spring Seat (inner)
47— Spool Housing
48— Washer
49— O-Ring
50— Spool

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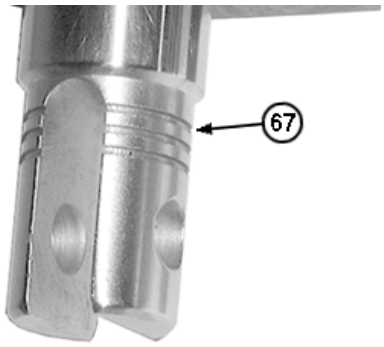
KK70125,0000A37 -19-30OCT07-15/24

NOTE: Valve spools can be identified by the number of grooves on the clevis end of the spool.

- *Boom spool has one groove.*
- *Bucket spool has two grooves.*
- *Auxiliary spool has three grooves.*

26. Install spool assemblies in control valve housing.

67— Groove



TX1030943A —UN—24OCT07

Auxiliary Spool Shown

KK70125,0000A37 -19-30OCT07-16/24

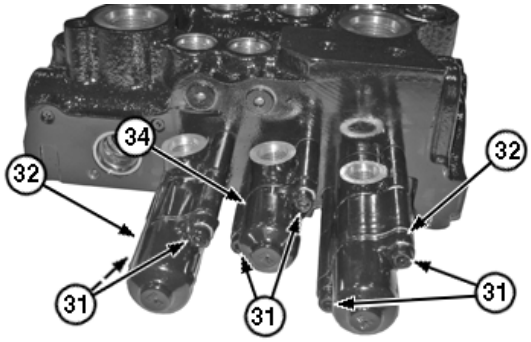
27. Install spool caps (32) with socket head cap screws (31) for boom and auxiliary spools.

    Install spool cap (34) with socket head cap screws (33) for bucket spool.

    Tighten cap screws to specification.

Specification	
Socket Head Cap Screw—Torque	9 N·m 84 lb-in.

31— Socket Head Cap Screw (4 used)
32— Spool Cap (2 used)
33— Socket Head Cap Screw (2 used)
34— Spool Cap



TX1030880A —UN—24OCT07

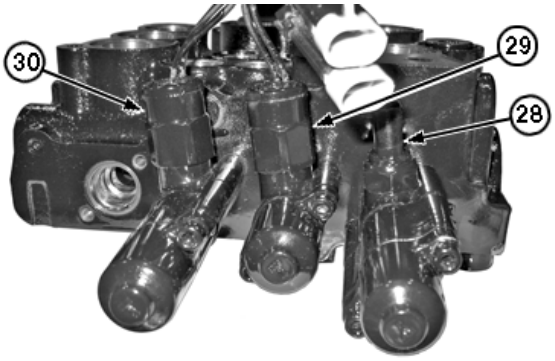
Control Valve (spool cap side)

KK70125,0000A37 -19-30OCT07-17/24

28. Install auxiliary hydraulic neutral switch (28) and spool lock solenoids (29 and 30) in spool housings. Tighten to specification.

Specification	
Auxiliary Hydraulic Neutral Switch—Torque	24 N·m 216 lb-in.
Spool Lock Solenoid—Torque	24 N·m 216 lb-in.

28— Auxiliary Hydraulic Spool Neutral Switch
29— Bucket Spool Lock Solenoid
30— Boom Spool Lock Solenoid



TX1030871A —UN—24OCT07

Control Valve (spool cap side)

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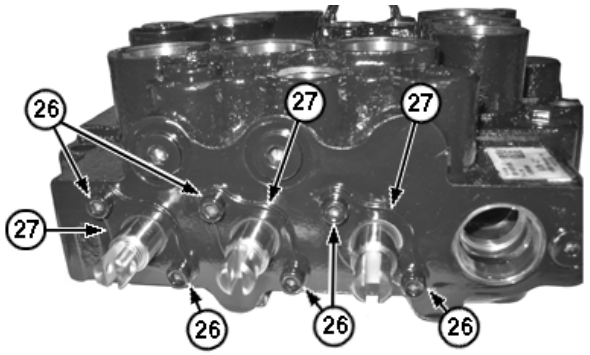
KK70125,0000A37 -19-30OCT07-18/24

29. Install new O-ring (36) and wiper (35) on clevis end of each spool.
30. Install spool seal plates (27) with socket head cap screws (26). Tighten socket head cap screws to specification.

Specification	
Socket Head Cap Screw—Torque	9 N·m 84 lb-in.

26— Socket Head Cap Screw (6 used) **27— Spool Seal Plate (3 used)**



TX1030865A —UN—24OCT07

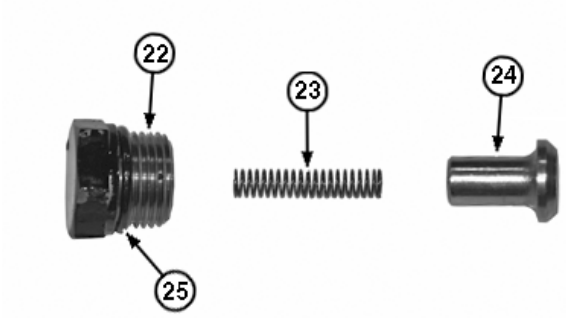
Control Valve (spool clevis side)

KK70125,0000A37 -19-30OCT07-19/24

31. Install new O-rings (25) on lift check valve caps, and install poppets, springs, and caps (22—24) in control valve. Tighten lift check valve caps to specification.

Specification	
Lift Check Valve Cap—Torque	65 N·m 48 lb-ft

22— Cap (3 used) **24— Poppet (3 used)**
23— Spring (3 used) **25— O-ring (3 used)**



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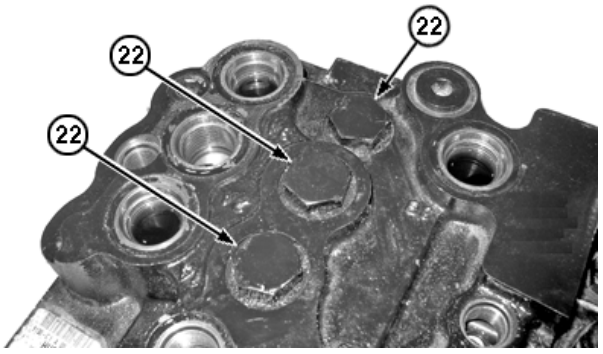

TX1030793A —UN—24OCT07

Lift Check Valves

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KK70125,0000A37 -19-30OCT07-20/24

32. Install new O-rings on circuit relief valves (19—20). Install new O-rings and backup ring on boom up circuit relief valve (21).

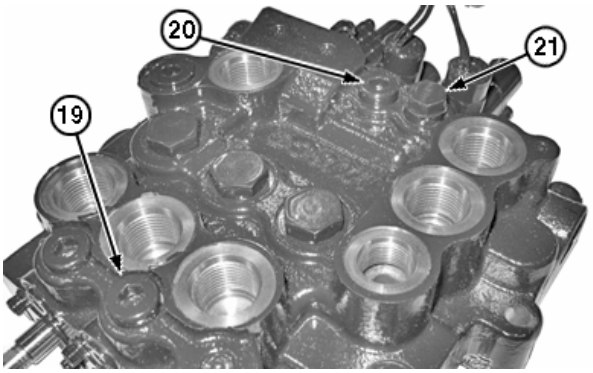
IMPORTANT: Installing circuit relief valves in the wrong circuit could cause hydraulic system malfunction.

33. Install circuit relief valves in control valve. Tighten valves to specification.

Specification	
Circuit Relief Valve—Torque	34 N·m 25 lb-ft

34. Install new O-rings and backup rings on system relief valve (18). Install system relief valve. Tighten to specification.

Specification	
System Relief Valve—Torque	65 N·m 48 lb-ft



TX1030790A —UN—24OCT07

Circuit Relief Valves

19— Bucket Dump Circuit Relief Valve
20— Bucket Rollback Circuit Relief Valve
21— Boom Up Circuit Relief Valve

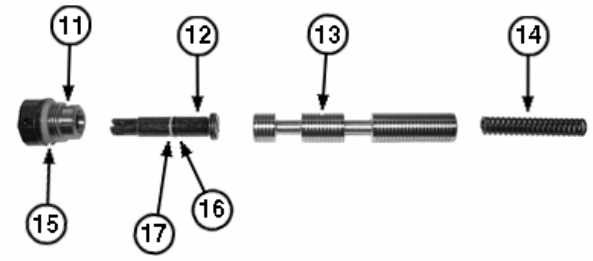
35. Install spring (14) and spool (13) in control valve body.

KK70125,0000A37 -19-30OCT07-21/24

36. Install new O-ring (16), backup ring (17), and seal (15) on pressure release base (11) and plunger assembly. Install pressure release base and plunger assembly in control valve. Tighten to specification.

Specification	
Pressure Release Base and Plunger Assembly —Torque	45 N·m 33 lb-ft

11— Pressure Release Base
12— Pressure Release Plunger
13— Spool
14— Spring
15— Seal
16— O-Ring
17— Backup Ring



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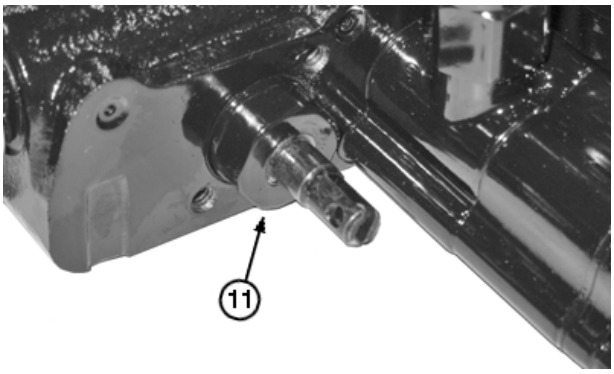

TX1030637A —UN—24OCT07

Pressure Release Assembly

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KK70125,0000A37 -19-30OCT07-22/24

37. Install new O-rings (6, 7, and 9) and backup rings (8 and 10) on port lock solenoid valve (5).

38. Install port lock solenoid valve in control valve body. Tighten to specification.

Specification

Port Lock Solenoid Valve—Torque.....26 N·m
228 lb-in.

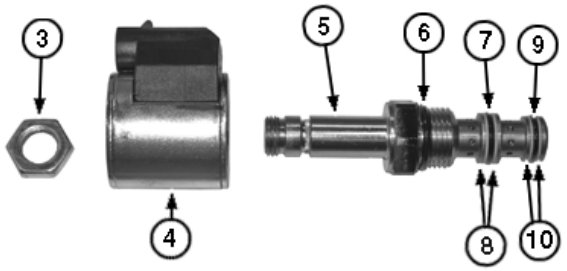
IMPORTANT: Avoid damage to solenoid (4) and solenoid valve (5). Do not overtighten nut (3) during assembly.

39. Install port lock solenoid (4) on solenoid valve, aligning solenoid to control valve body with mark made during disassembly. Apply 242 medium strength thread lock and sealer, and tighten nut (3) to specification.

Specification

Port Lock Solenoid Nut—Torque.....6 N·m
54 lb-in.

3— Nut
4— Port Lock Solenoid
5— Port Lock Solenoid Valve
6— O-Ring
7— O-Ring
8— Backup Ring (2 used)
9— O-Ring
10— Backup Ring (2 used)



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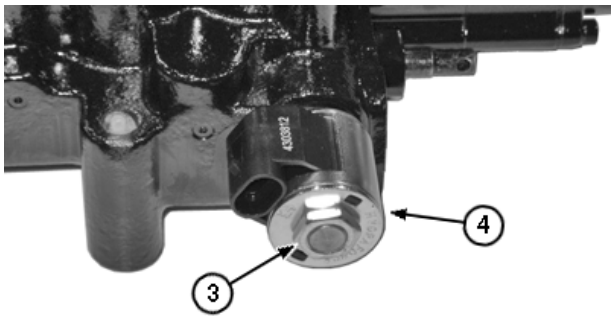


TX1030636A —UN—24OCT07

Port Lock Solenoid Valve

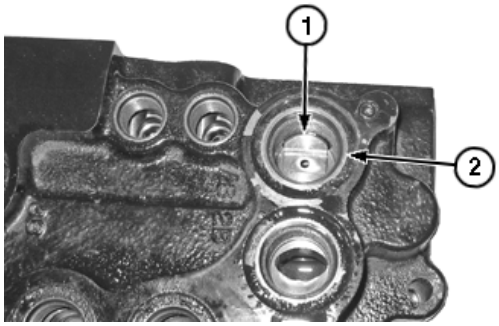
KK70125,0000A37 -19-30OCT07-23/24

NOTE: Boom up port has an orifice installed under hydraulic fitting.

40. Install orifice (1) in boom up port (2).

41. Install work port fittings as necessary.

1— Orifice
2— Boom Up Port



TX1030610A —UN—24OCT07

Control Valve Ports

KK70125,0000A37 -19-30OCT07-24/24

Self-Level Valve Remove and Install

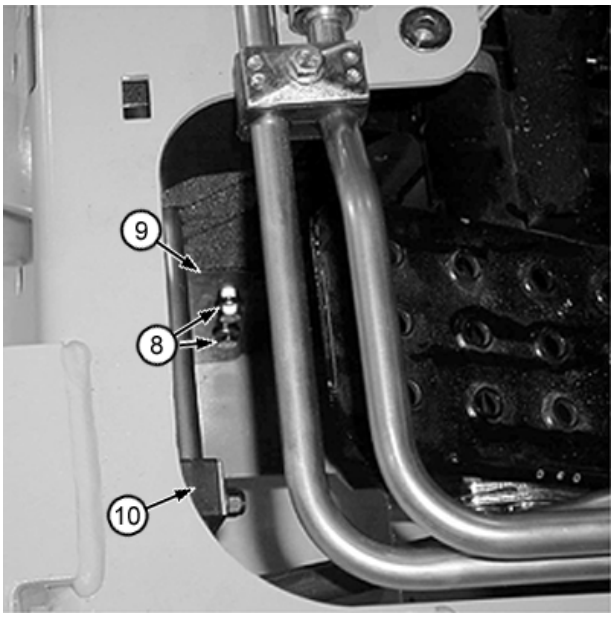
1. Park machine on flat level surface.
2. Raise boom and engage boom lock.

CAUTION: To avoid injury from escaping fluid under pressure, stop engine and relieve the pressure in the system before disconnecting or connecting hydraulic or other lines. Tighten all connections before applying pressure.

3. Relieve hydraulic system pressure. See Hydraulic System Pressure Release. (Group 9025-25.)
4. Raise cab. For skid steer loader, see Raising Operator's Station. (Operator's Manual.) For compact track loader, see Raising Operator's Station. (Operator's Manual.)
5. Remove floor cover plates.

NOTE: Loosen two cap screws that attach each pedal to the pedal shaft. This will allow the pedal to rotate and allow access to the isolator plate cap screws. Mark location of pedals for alignment purposes during installation.

6. Remove cap screws (8) and isolator plate (9) from left and right sides of pedal assembly.



T199133A —UN—08APR04

Left Side Shown

8— Cap Screw (2 used)
9— Isolator Plate
10— Clamp

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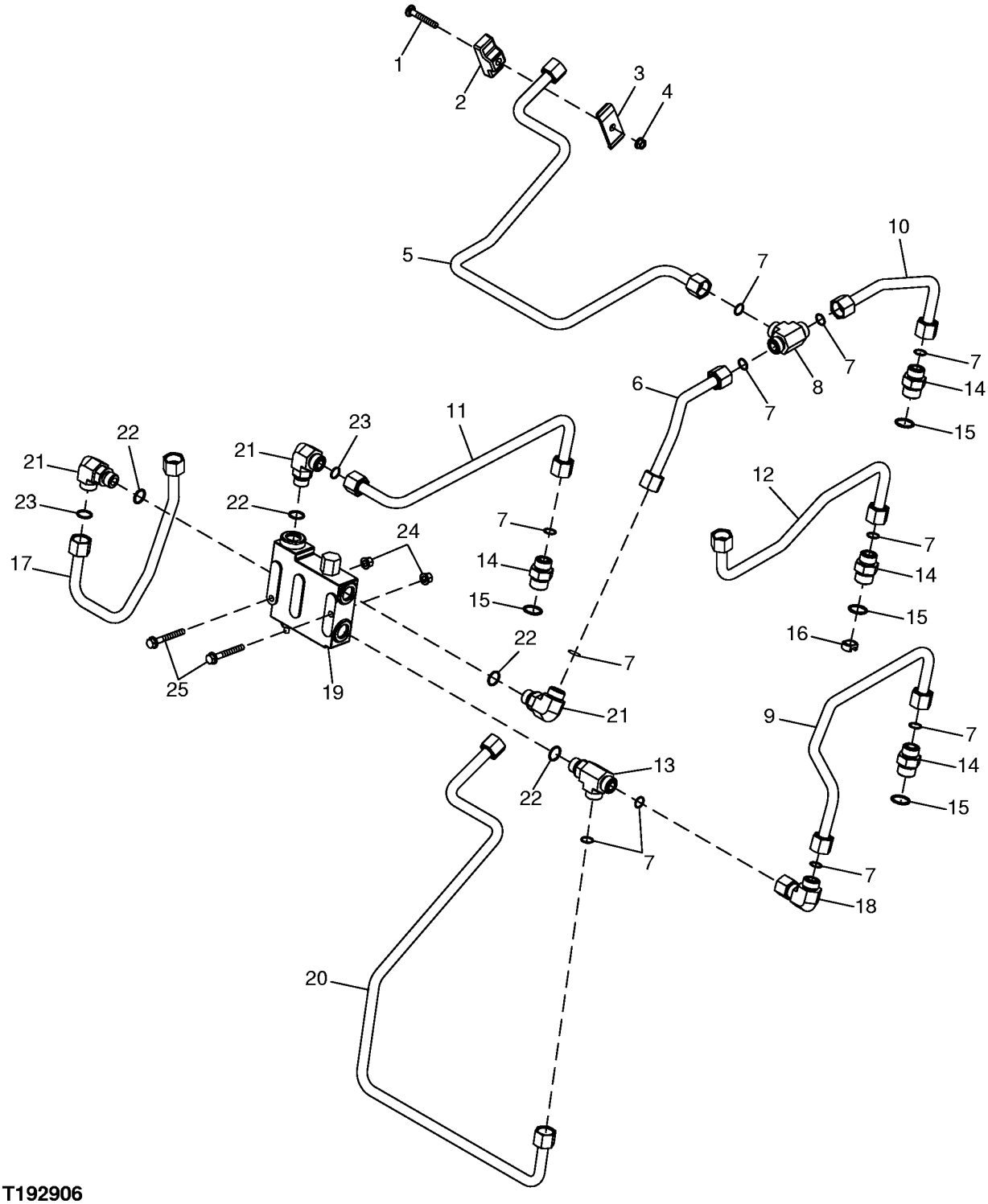
TX19495,00000AA -19-19JUL05-1/3



Self-Level Valve

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TX19495,00000AA -19-19JUL05-2/3

1— Cap Screw
2— Clamp
3— Hose Clamp
4— Nut
5— Hydraulic Line
6— Hydraulic Line
7— O-Ring (11 used)
8— Tee Fitting
9— Hydraulic Line
10— Hydraulic Line
11— Hydraulic Line
12— Hydraulic Line
13— Tee Fitting
14— Adapter (4 used)
15— O-Ring (4 used)
16— Orifice
17— Hydraulic Line
18— Elbow Fitting
19— Self-Level Valve
20— Hydraulic Line
21— Elbow Fitting (3 used)
22— O-Ring (4 used)
23— O-Ring (2 used)
24— Nut (2 used)
25— Cap Screw (2 used)

IMPORTANT: Cap and plug openings and hose ends to prevent contamination of hydraulic system.

7. Disconnect hydraulic lines (6, 9, 11, 17 and 20) from self-level valve (19).
8. Remove cap screws (25). Remove self-level valve.
9. Repair or replace parts as required.
10. Install self-level valve. Tighten cap screws to specification.

Specification	
Self-Level Valve Mounting Cap Screw—Torque	28 N·m 21 lb-ft

11. Connect hydraulic lines to self-level valve.
12. Install left and right isolator plates.
13. Install floor cover plates.
14. Lower cab. For skid steer loader, see Raising Operator's Station. (Operator's Manual.) For compact track loader, see Raising Operator's Station. (Operator's Manual.)
15. Perform hydrostatic and hydraulic start-up procedure. See Hydrostatic and Hydraulic Start-Up Procedure. (Group 0360.)

TX19495,00000AA -19-19JUL05-3/3

Counterbalance Valve Remove and Install—Skid Steer Loader

1. Park machine on flat level surface.
2. Raise boom and engage boom lock.

CAUTION: To avoid injury from escaping fluid under pressure, stop engine and relieve the pressure in the system before disconnecting or connecting hydraulic or other lines. Tighten all connections before applying pressure.

3. Relieve hydraulic system pressure. See Hydraulic System Pressure Release. (Group 9025-25.)

IMPORTANT: Cap and plug openings and hose ends to prevent contamination of hydraulic system.

4. Disconnect lines from counterbalance valve.
5. Repair or replace parts as required. See Counterbalance Valve Disassemble and Assemble—Skid Steer Loader. (Group 3160.)
6. Connect lines to counterbalance valve. Tighten to specification.

Specification	
Counterbalance Valve Line Connection—Torque	103 N·m 76 lb-ft

7. Perform hydrostatic and hydraulic start-up procedure. See Hydrostatic and Hydraulic Start-Up Procedure. (Group 0360.)

TX19495,00000AB -19-19JUL05-1/1

Counterbalance Valve Disassemble and Assemble—Skid Steer Loader

1. Remove valve.
2. Repair or replace parts as required.
3. Install valve. Tighten to specification.

Specification	
Counterbalance Valve—Torque	54 N·m 40 lb-ft

TX19495,00000AC -19-19JUL05-1/1

Boom Cylinder Remove and Install

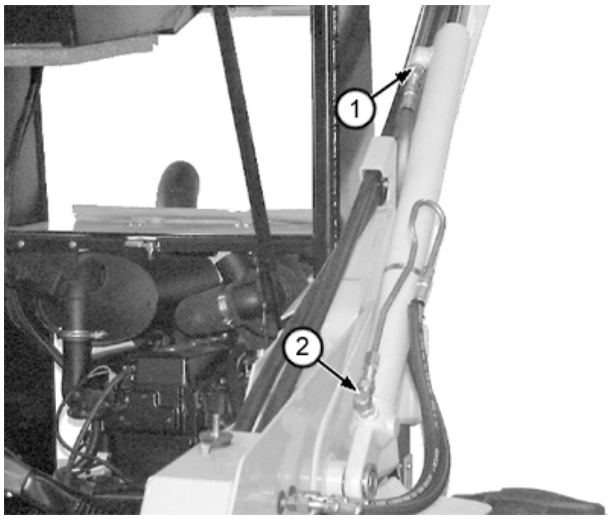
1. Park machine on a flat level surface.
2. Raise boom and engage boom lock.

CAUTION: To avoid injury from escaping fluid under pressure, stop engine and relieve the pressure in the system before disconnecting or connecting hydraulic or other lines. Tighten all connections before applying pressure.

3. Release hydraulic system pressure. See Hydraulic System Pressure Release. (Group 9025-25.)
4. Raise cab. For skid steer loader, see Raising Operator's Station. (Operator's Manual.) For compact track loader, see Raising Operator's Station. (Operator's Manual.)

IMPORTANT: Cap and plug openings and hose ends to prevent contamination of hydraulic system.

5. Disconnect boom cylinder hydraulic lines (1 and 2) at cylinder.



T199517A —UN—27APR04

Boom Cylinder Hydraulic Lines

1— Boom Down Hydraulic Line 2— Boom Up Hydraulic Line

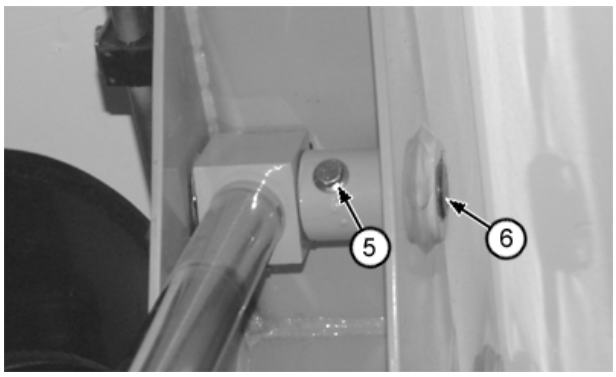
MX10672,0000072 -19-04NOV10-1/3

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

6. Remove cap screw (5) on top cylinder pivot pin (6). Remove pin (6).

Specification	
Boom Cylinder—Weight	18 kg 40 lb

5— Cap Screw **6— Pin**



T199518A —UN—27APR04

Boom Cylinder Upper Pivot

Continued on next page

MX10672,0000072 -19-04NOV10-2/3

IMPORTANT: Do not remove nut from lower cap screw until cylinder pivot is loose.

7. Loosen lower pivot cap screw (8).
8. Rotate cylinder to an upright position.
9. Rock cylinder back and forth perpendicular to normal rotation to loosen lower pivot.
10. Remove lower pivot cap screw. Remove cylinder.
11. Repair or replace parts as necessary. See Disassemble Cylinder. (CTM114319.)
12. Install cylinder and lower pivot pin.

Specification	
Lower Pivot Pin Nut—Torque	620 N·m 460 lb-ft

13. Install upper pivot pin.

Specification	
Upper Pivot Pin Cap Screw—Torque	73 N·m 54 lb-ft

IMPORTANT: Inspect O-rings on hydraulic fittings for wear or damage. Replace if necessary.

14. Connect hydraulic lines. Install rubber spacer block and secure tube to cylinder with hose clamp.
15. Lower cab. For skid steer loader, see Raising Operator's Station. (Operator's Manual.) For compact track loader, see Raising Operator's Station. (Operator's Manual.)
16. Perform hydraulic cylinder bleed procedure. See Hydraulic Cylinder Bleed Procedure. (Group 3160.)

T199519A —UN—27APR04

Boom Cylinder Lower Pivot

8— Cap Screw

MX10672,0000072 -19-04NOV10-3/3

Bucket Cylinder Remove and Install

NOTE: Bucket cylinders can only be removed with boom lowered to ground.

1. Park machine on a flat level surface.

CAUTION: To avoid injury from escaping fluid under pressure, stop engine and relieve the pressure in the system before disconnecting or connecting hydraulic or other lines. Tighten all connections before applying pressure.

2. Release hydraulic system pressure. See Hydraulic System Pressure Release. (Group 9025-25.)

IMPORTANT: Cap and plug openings and hose ends to prevent contamination of hydraulic system.

3. Disconnect hydraulic lines from bucket cylinder.

T199520A —UN—27APR04

Bucket Cylinder Hydraulic Lines

1— Bucket Rollback Hydraulic Line

2— Bucket Dump Hydraulic Line

Continued on next page

LD30992,000005C -19-04NOV10-1/4

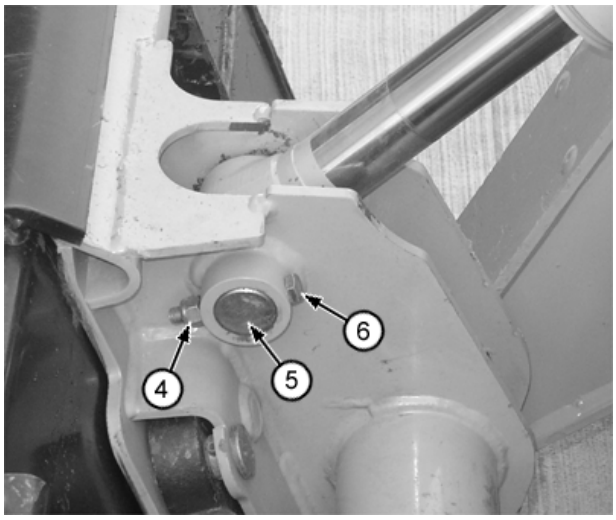
CAUTION: Prevent possible crushing injury from heavy component. Use appropriate lifting device.

4. Remove nut (4) and cap screw (6) retaining lower cylinder pivot pin (5).

Specification	
Bucket Cylinder—Weight	12 kg (27 lb)

5. Remove lower cylinder pivot pin.

4— Nut
5— Pin
6— Cap Screw



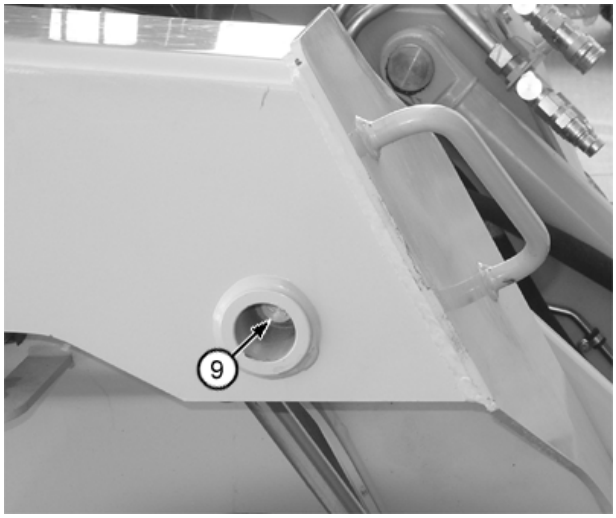
T199521A —UN—27APR04

Bucket Cylinder Lower Pivot

LD30992,000005C -19-04NOV10-2/4

6. Remove cap screw (9) from upper bucket cylinder pivot.

9— Cap Screw



T199523A —UN—27APR04

Bucket Cylinder Upper Pivot

Continued on next page

LD30992,000005C -19-04NOV10-3/4

7. Thread 19M8817 hardened cap screw or equivalent (M20 X 2.5 X 350 cap screw) into taper pin. Drive taper pin from machine.
8. Remove cap screw, tapered pin, and bucket cylinder.
9. Repair or replace parts as necessary. See Disassemble Cylinder. (CTM114319.)
10. Install bucket cylinder, tapered pin and cap screw.

Specification	
Tapered Pin Cap Screw—Torque	620 N·m 460 lb-ft

11. Position cylinder and install lower pivot pin. Install cap screw and nut.

Specification	
Lower Pivot Pin Cap Screw—Torque	73 N·m 54 lb-ft

IMPORTANT: Inspect O-rings on hydraulic fittings for wear or damage. Replace if necessary.

12. Connect hydraulic lines.
13. Perform hydraulic cylinder bleed procedure. See Hydraulic Cylinder Bleed Procedure. (Group 3160.)

T199522A —UN—27APR04

Bucket Cylinder Upper Pivot Taper Pin

11— Taper Pin

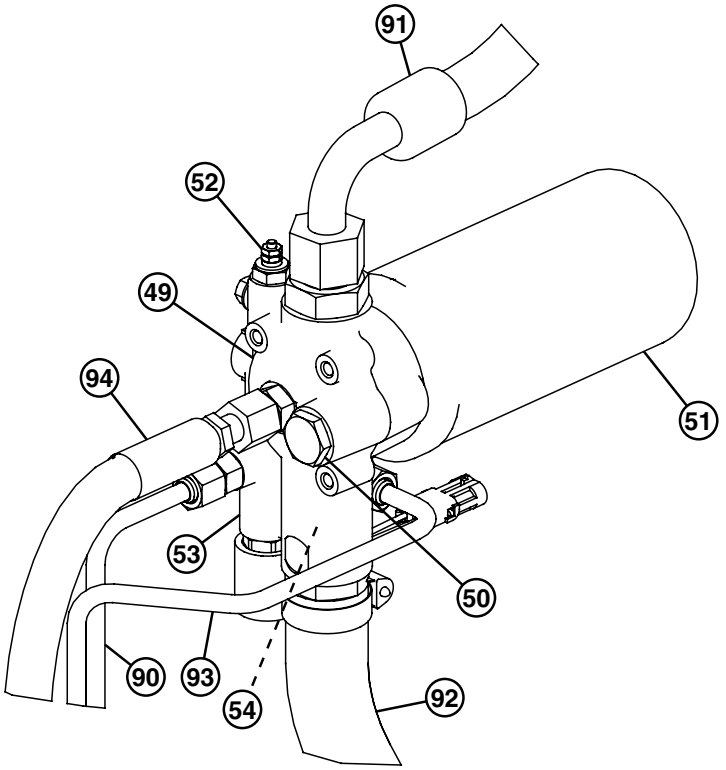
LD30992,000005C -19-04NOV10-4/4

Hydraulic Oil Filter and Park Brake Solenoid Valve Manifold Remove and Install—Skid Steer Loader

1. Park machine on flat level surface.
2. Raise boom and engage boom lock.

⚠ CAUTION: To avoid injury from escaping fluid under pressure, stop engine and relieve the pressure in the system before disconnecting or connecting hydraulic or other lines. Tighten all connections before applying pressure.

3. Relieve hydraulic system pressure. See Hydraulic System Pressure Release. (Group 9025-25.)
4. Raise engine cover and remove right side shield.
5. Disconnect harness from park brake solenoid, hydraulic oil filter restriction switch, and ground from manifold housing.



T197450 —UN—02FEB04

T197450

Hydraulic Oil Filter and Park Brake Solenoid Manifold—Skid Steer Loader

49— Hydraulic Oil Filter and Park Brake Solenoid Valve Manifold
50— Hydraulic Oil Filter Bypass Valve
51— Hydraulic Oil Filter
52— Hydraulic Oil Filter Restriction Switch
53— Park Brake Solenoid Valve
54— Charge Pressure Relief Valve
90— To Park Brake (piston side)
91— From Hydraulic Oil Cooler
92— To Hydraulic Oil Tank
93— To Park Brake (spring side)
94— To Hydrostatic Pumps

6. Note location of hydraulic and hydrostatic lines and remove from manifold. Cap and plug lines.
7. Remove hydraulic oil filter restriction switch.
8. Remove cap screws holding manifold to bracket.
9. Repair or replace parts as necessary.
10. Install manifold to bracket.

Specification	
Hydraulic Oil Filter and Park Brake Solenoid Valve Manifold Cap Screw—Torque	18.5 N·m 164 lb-in.

11. Connect hydraulic and hydrostatic lines to manifold.
12. Install hydraulic oil filter restriction switch.

Specification	
Hydraulic Oil Filter Restriction Switch—Torque	2.7—5.4 N·m 24—48 lb-in.

13. Connect harness to park brake solenoid, hydraulic oil filter restriction switch, and ground to manifold housing.
14. Install side shield and close engine cover.

Continued on next page

LD30992,0000076 -19-19JUL05-1/2

15. Perform hydrostatic and hydraulic start-up procedure.
    See Hydrostatic and Hydraulic Start-Up Procedure.
    (Group 0360.)

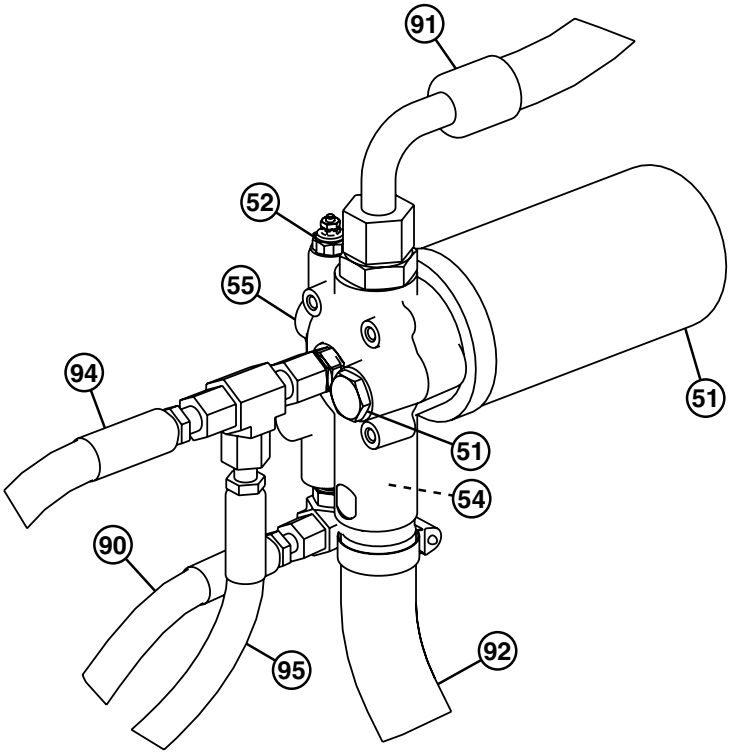
LD30992,0000076 -19-19JUL05-2/2

Hydraulic Oil Filter Manifold Remove and Install—Compact Track Loader

1. Park machine on flat level surface.
2. Raise boom and engage boom lock.

⚠ CAUTION: To avoid injury from escaping fluid under pressure, stop engine and relieve the pressure in the system before disconnecting or connecting hydraulic or other lines. Tighten all connections before applying pressure.

3. Relieve hydraulic system pressure. See Hydraulic System Pressure Release. (Group 9025-25.)
4. Raise engine cover and remove right side shield.
5. Disconnect harness from hydraulic oil filter restriction switch and ground from manifold housing.



T209887

T209887 —UN—27APR05

Hydraulic Oil Filter Manifold—Compact Track Loader (Two Speed Shown)

50— Hydraulic Oil Filter Bypass Valve
51— Hydraulic Oil Filter
52— Hydraulic Oil Filter Restriction Switch
54— Charge Pressure Relief Valve
55— Hydraulic Oil Filter Manifold
90— To Park Brake Solenoid Valve Manifold
91— From Hydraulic Oil Cooler
92— To Hydraulic Oil Tank
94— To Hydrostatic Pumps
95— To Two Speed Valve Solenoid (Two Speed Models Only)

6. Note location of hydraulic and hydrostatic lines and remove from manifold. Cap and plug lines.
7. Remove hydraulic oil filter restriction switch.
8. Remove cap screws holding manifold to bracket.
9. Repair or replace parts as necessary.
10. Install manifold to bracket.

Specification	
Hydraulic Oil Filter Manifold Cap Screw—Torque	18.5 N·m 164 lb-in.

11. Connect hydraulic and hydrostatic lines to manifold.
12. Install hydraulic oil filter restriction switch.

Specification	
Hydraulic Oil Filter Restriction Switch—Torque	2.7—5.4 N·m 24—48 lb-in.

13. Connect harness to hydraulic oil filter restriction switch and ground to manifold housing.
14. Install side shield and close engine cover.
15. Perform hydrostatic and hydraulic start-up procedure. See Hydrostatic and Hydraulic Start-Up Procedure. (Group 0360.)

KK70125,0000032 -19-14APR05-1/1

Hydraulic Oil Tank Remove and Install

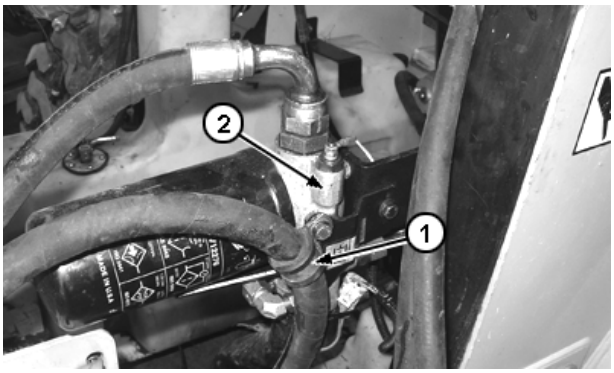
1. Park machine on flat level surface.
2. Remove engine without the hydrostatic pumps. See Engine Remove and Install. (Group 0400.)

IMPORTANT: Use clean container to prevent hydraulic oil contamination.

3. Drain hydraulic oil tank.
4. Remove oil cooler line clamp (1) at hydraulic oil filter manifold (2).

IMPORTANT: Cap and plug openings and hose ends to prevent contamination of hydraulic system.

5. Disconnect high flow return oil line in front of tank if equipped.
6. Seal opening on tank and cap oil line if equipped.



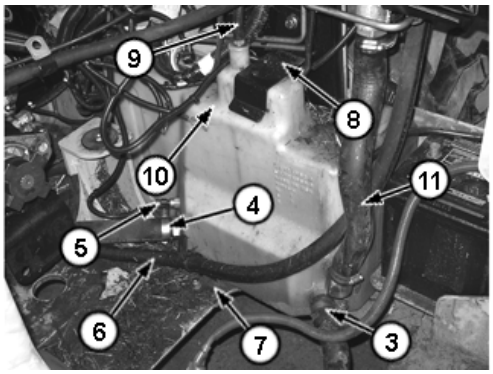
T198999A —UN—02APR04

Oil Cooler Hose Clamp

1— Oil Cooler Hose Clamp
2— Oil Filter Manifold

MX10672,00000DD -19-26AUG05-1/2

7. Disconnect high flow pump supply hose (3) if equipped.
8. Remove hydraulic pump supply line (4) and temperature sensor wiring harness (5) from the sensor.
9. Remove hydraulic oil return line (11).
10. Remove hydraulic oil tank breather hose (9).
11. Remove tie band (6) from oil cooler line to lower mounting bracket (7).
12. Remove hydraulic oil tank mounting brackets (7) and (8).
13. Remove hydraulic oil tank (10) from machine.
14. Inspect tank and repair or replace as needed.
15. Install hydraulic oil tank (10).
16. Install hydraulic oil tank mounting brackets (7) and (8).
17. Connect high flow return line at front of hydraulic tank, if equipped.
18. Connect hydraulic pump supply line (4) and connect temperature sensor wiring harness (5) to sensor.
19. Connect high flow supply hose (3) if equipped.
20. Connect oil cooler line clamp (1) to oil filter manifold (2).
21. Fill hydraulic oil tank (10).



T199024A —UN—16APR04

Hydraulic Oil Tank

3— High Flow Supply Line
4— Hydraulic Pump Supply Line
5— Hydraulic Oil Temperature Sensor Wiring Harness
6— Tie Band
7— Lower Mounting Bracket
8— Upper Hydraulic Oil Tank Mounting Bracket
9— Hydraulic Oil Tank Breather Hose
10— Hydraulic Oil Tank
11— Hydraulic Oil Return Line

22. Check hydraulic oil level. For skid steer loader, see Check Hydraulic Tank Oil Level. (Operator's Manual.) For compact track loader, see Check Hydraulic Tank Oil Level. (Operator's Manual.)
23. Install engine. See Engine Remove and Install. (Group 0400.)

MX10672,00000DD -19-26AUG05-2/2

Hydraulic Cylinder Bleed Procedure

IMPORTANT: Trapped air suddenly compressed in a cylinder is heated and ignites the oil used for assembly causing cap seal and ring damage. Start with cylinder rod retracted and the rod end filled with clean oil. Connect the cylinder head end and lines. Operate function to slowly extend rod. Procedure will eliminate most of the air and reduce the possibility of damage.

NOTE: Bleed air at initial start-up, whenever major repairs or maintenance (oil change) is done on hydraulic system, or when machine has been in storage for a period of time.

1. Run engine at slow idle.
2. Slowly operate function to move cylinder to the most horizontal position possible.
3. Slowly extend and retract cylinder several times to approximately 100 mm (4 in.) from end of stroke.
4. Operate cylinder several times to full stroke.
5. Check hydraulic oil level. For skid steer loader, see Check Hydraulic Tank Oil Level. (Operator's Manual.) For compact track loader, see Check Hydraulic Tank Oil Level. (Operator's Manual.)

TX,33,GG2374B -19-11MAY04-1/1

Section 99
Dealer Fabricated Tools

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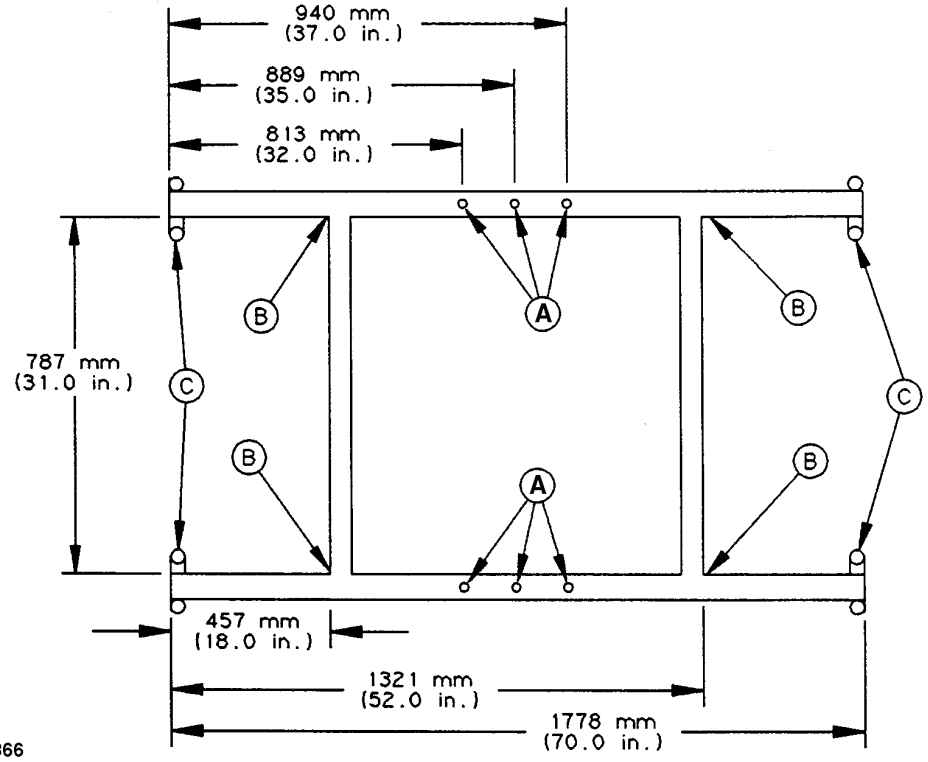
DFT1101 Cab and ROPS Lift Bracket



T117366 —UN—23SEP98

A—Drill Six Holes (0.625 in.) **B—Weld** **C—U46161 Lift Eyes Welded to Tube with 0.25 in. Fillet Weld**

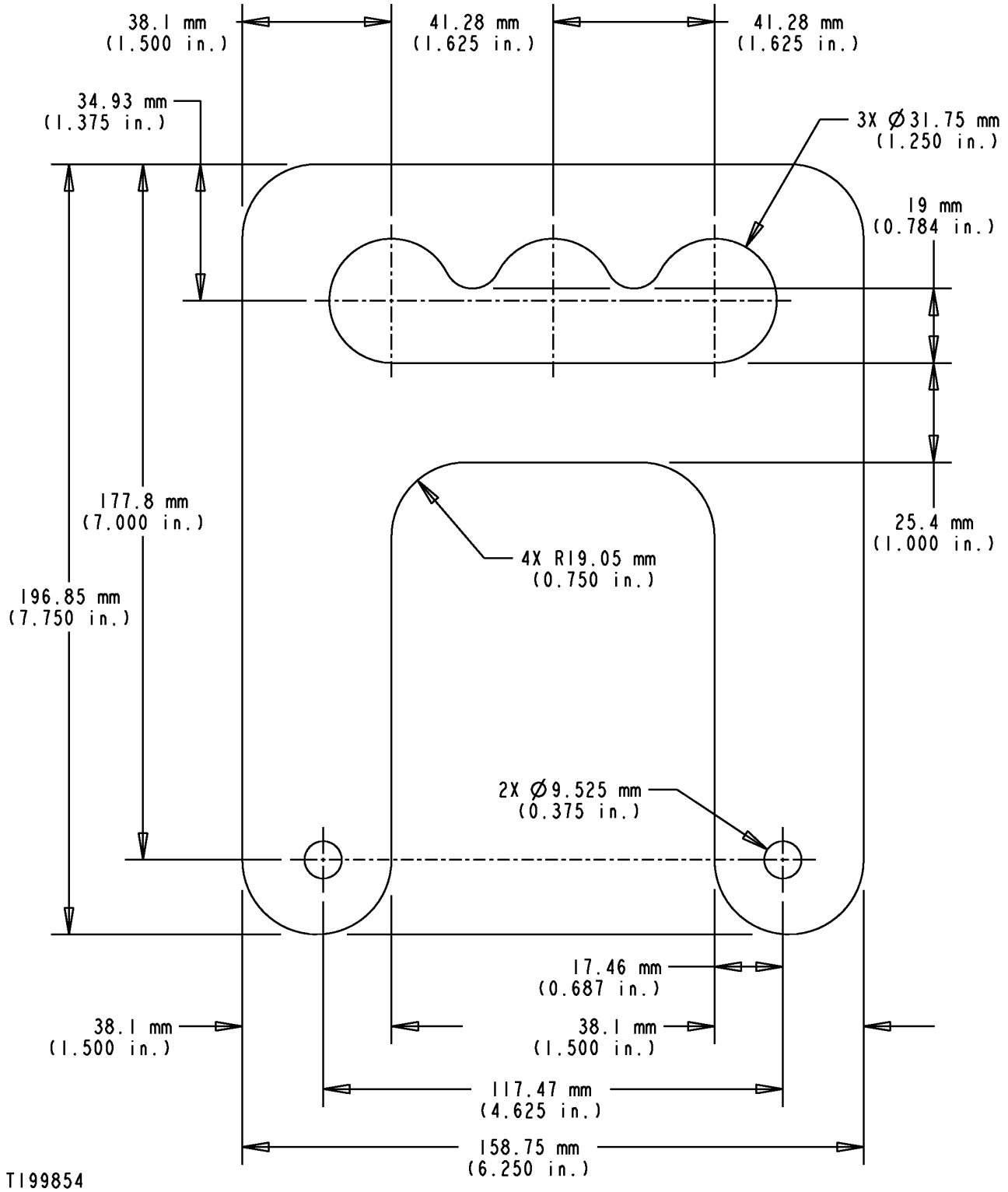
Used to remove and install cab or ROPS.

Material:

- 2.0 in. x 2.0 in. x 0.250 in. Square Tube
- U46161 U-Bolts (4 used)
- JT01748 Lift Brackets (2 used)
- 0.625 in. x 3.00 in. "F" Grade Cap Screws (2 used)

MX10672,0000073 -19-26AUG05-1/1

DFT1245 Engine Lifting Bracket



DFT1245 Engine Lifting Bracket

Used to remove engine from machine.

Material:

Continued on next page

LD30992,000008A -19-12MAY04-1/2

- 1020 Steel Plate [196.9 x 158.8 x 6.35 mm (7-3/4 x 6-1/4 x 1/4 in.)]
- M8 x 30 mm cap screw (2 used)
- M8 washer (2 used)

LD30992,000008A -19-12MAY04-2/2

ST4920 Track Recoil Spring Disassembly and Assembly Tool

NOTE: See DFT1087 Track Recoil Spring Disassembly and Assembly Guard Tool that is recommended to be used with track recoil spring disassembly and assembly tool.

Dimensions given are metric.

Tool is the same as used on other machines except the holder (C). For each track adjuster use the holder with the correct size hole for the nut on that track adjuster.

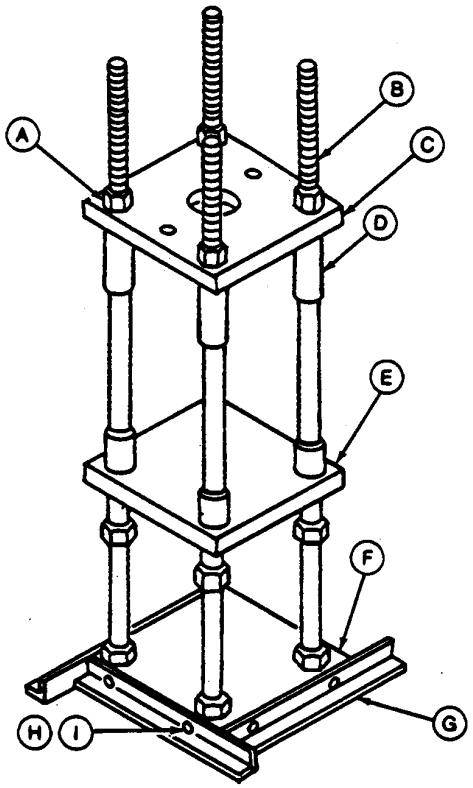
Track Recoil Spring Disassembly and Assembly Tool (compression tool) is used with hydraulic jack to compress recoil spring in track adjuster repair.

Material required:

- 1020 HR Steel for Holder (C), Supporting Plate (E), Base Plate (F), and Base (G).
- “D” Grade (SAE Grade 5) for Eyebolts (D), Nuts (A), and Cap Screws (H).
- “F” Grade (SAE Grade 8) for Studs (B).

Print Numbers:

- A-ST4050 Nut
- B-ST4045 Bolt
- C-ST4035 Holder (Plate)
- -ST4036 Holder (Plate)
- -ST4037 Holder (Plate)
- D-ST4047 Eyebolt
- E-ST4040 Supporting Base
- F-ST4042 Base Plate
- G-ST4041 Base
- H-ST4046 Cap Screw
- I-ST4049 Lock Washer



T6585UY —UN—24MAR98

A—Nut (12 used)
B—Stud (4 used)
C—Holder
D—Eyebolt (2 used)
E—Supporting Plate
F—Base Plate
G—Base (4 used)
H—Cap Screw (8 used)
I— Lock Washer (8 used)

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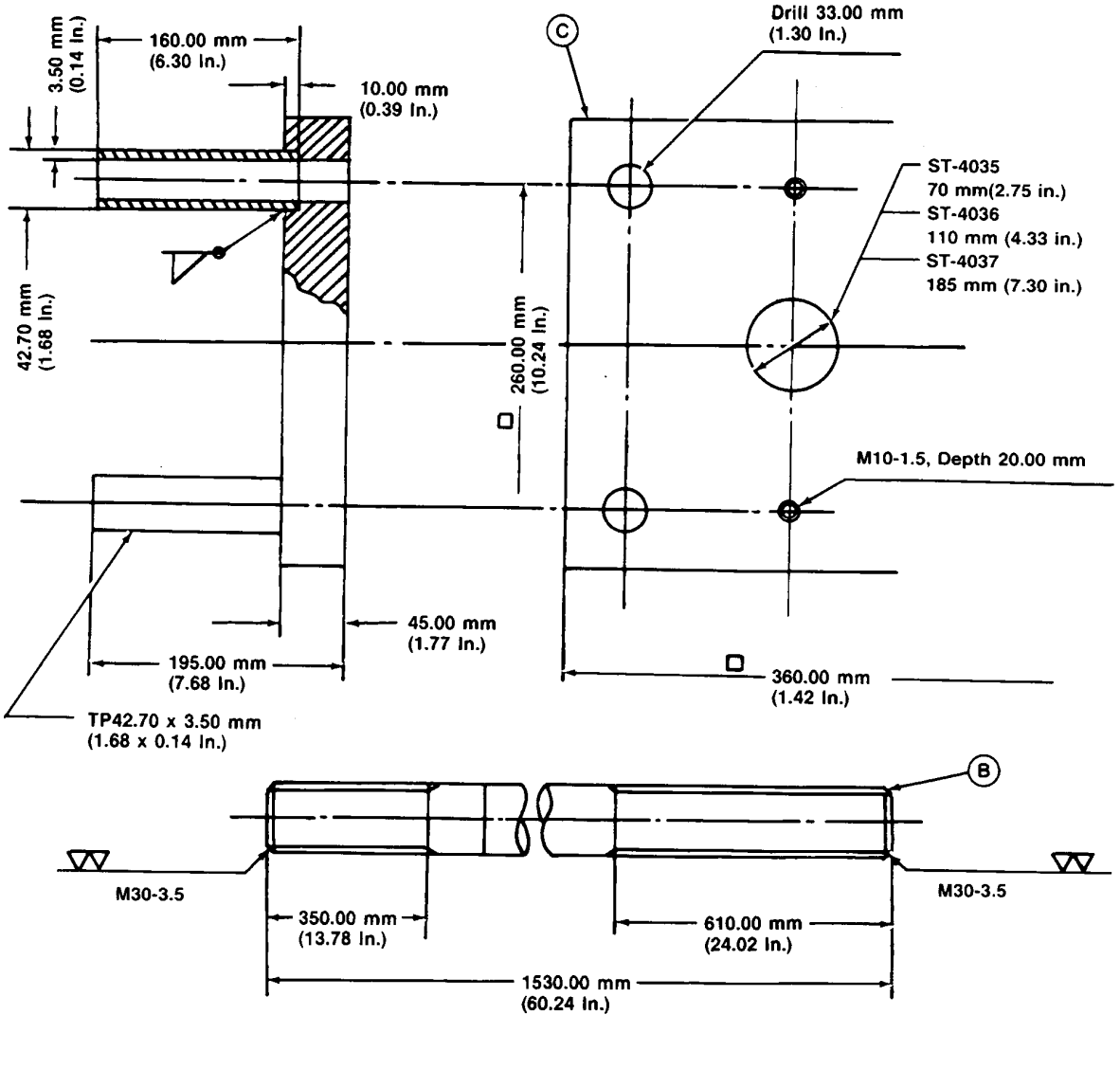
TX,9900,AA3574 -19-20FEB92-1/4



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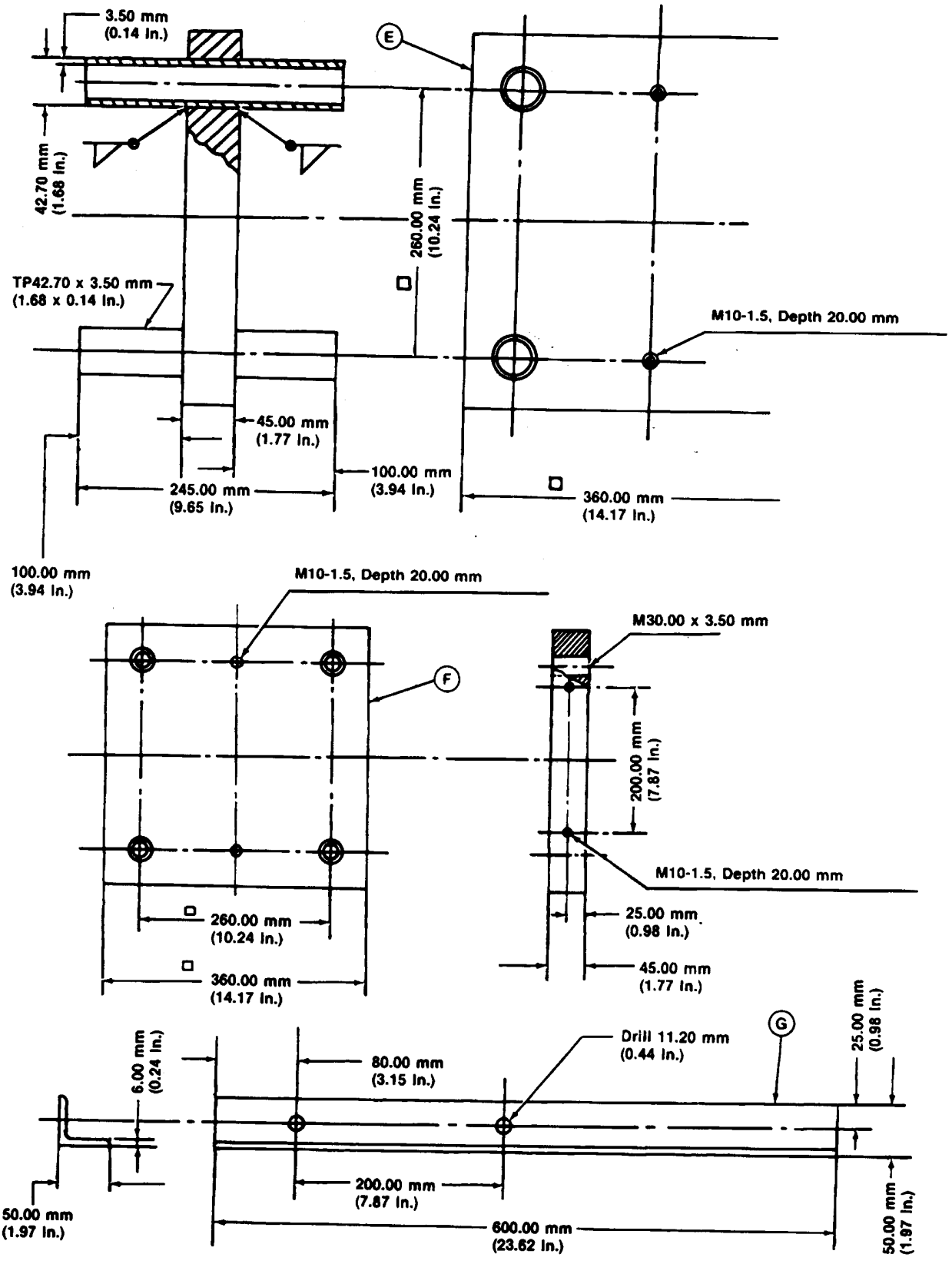

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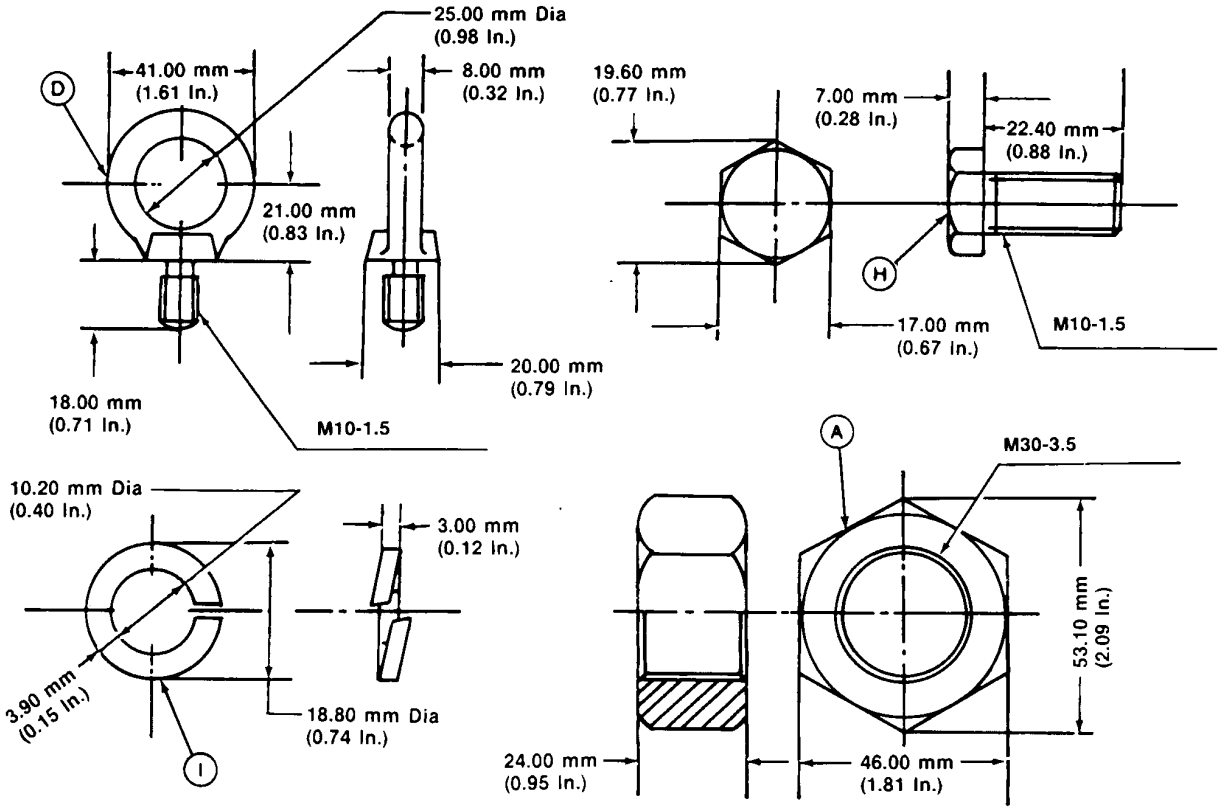
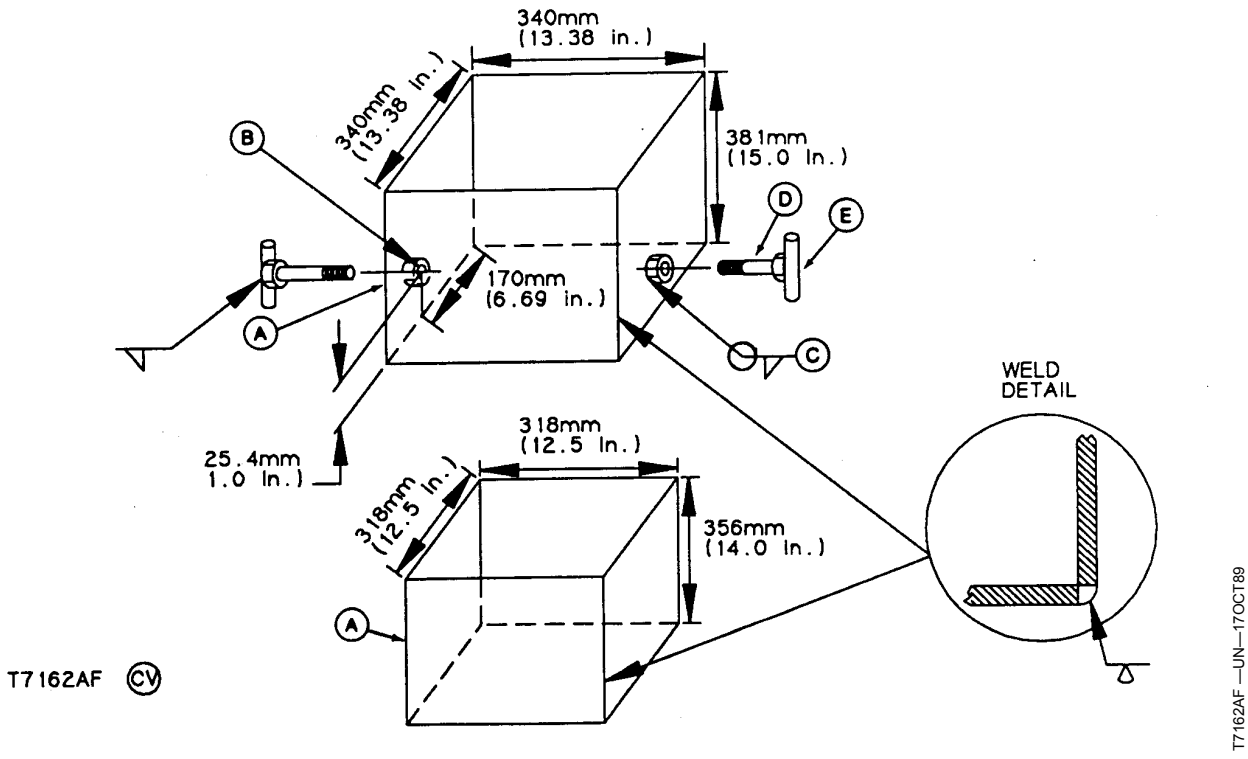


T7029CG —UN—06JUL89

TX,9900,AA3574 -19-20FEB92-4/4

DFT1087 Track Recoil Spring Disassembly and Assembly Guard Tool



A—3/16 in. 1020 CR Steel Plate
B—9/16 in. Hole (2 places)
C—1/2 in. Nut (2 used)
D—1/2 x 2 in. Cap Screw (2 used)
E—1/2 x 3 in. Steel Round Stock (2 used)

Track Disassembly and Assembly Guard Tool is used with ST4920 Track Recoil Spring Disassembly and Assembly Tool.

Material required:

- 3/16 in. 1020 CR Steel Plate (A)
- 1/2 in. Nut (C) (2 used)
- 1/2 x 2 in. Cap Screw (D) (2 used)
- 1/2 x 3 in. Steel Round Stock (E) (2 used)

TX,9900,BA499 -19-26AUG05-1/1

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