JOHN DEERE
WORLDWIDE CONSTRUCTION AND FORESTRY DIVISION

Skid Steer
240 and 250
TM1747 FEB03

TECHNICAL MANUAL



JOHN DEERE

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This technical manual is written for an experienced technician and contains sections that are specifically for this product. It is a part of a total product support program.

The manual is organized so that all the information on a particular system is kept together. The order of grouping is as follows:

- Table of Contents
- Specifications
- Theory of Operation
- Troubleshooting Diagram
- Diagnostics
- Tests & Adjustments
- Repair

Note: Depending on the particular section or system being covered, not all of the above groups may be used.

Each section will be identified with a symbol rather than a number. The groups and pages within a section will be consecutively numbered.

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.

We appreciate your input on this manual. To help, there are postage paid post cards included at the back. If you find any errors or want to comment on the layout of the manual please fill out one of the cards and mail it back to us.

Safety

Specifications and Information

Engine (Diesel)

Electrical

Power Train (Chain Case and Axles)

Power Train (Hydrostatic)

Steering

Brakes

Hydraulics

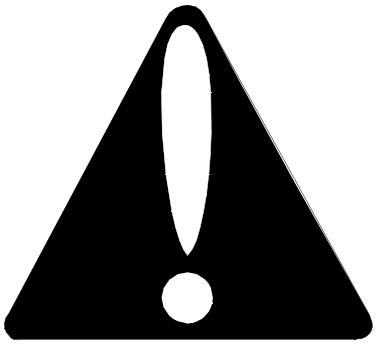
Miscellaneous M

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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 to the potential for personal injury.

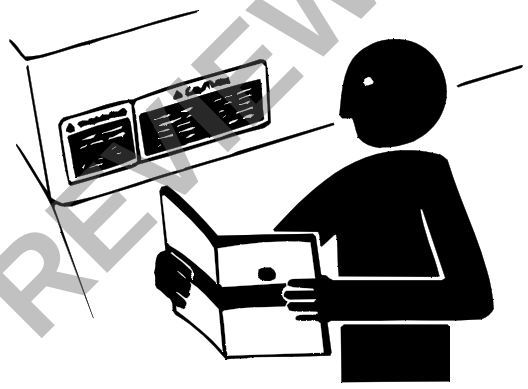
Follow recommended precautions and safe servicing practices.

Understand Signal Words

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

DANGER or WARNING safety signs are located near specific hazards. General precautions are listed on CAUTION safety signs. CAUTION also calls attention to safety messages in this manual.

REPLACE SAFETY SIGNS

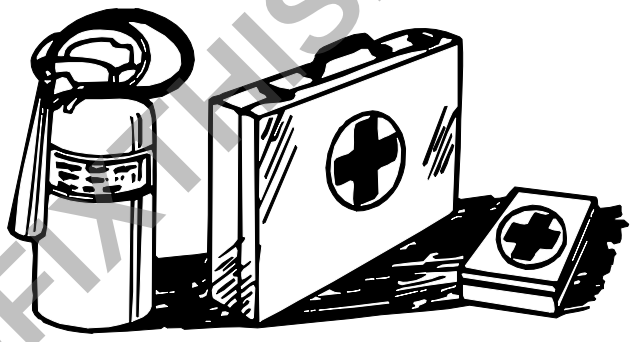


Replace missing or damaged safety signs. See the machine operator's manual for correct safety sign placement.

HANDLE FLUIDS SAFELY—AVOID FIRES

Be Prepared For Emergencies





When you work around fuel, do not smoke or work near heaters or other fire hazards.

Store flammable fluids away from fire hazards. Do not incinerate or puncture pressurized containers.

Make sure machine is clean of trash, grease, and debris.

Do not store oily rags; they can ignite and burn spontaneously.

Be prepared if 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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SPECIFICATIONS

ENGINE

Make	John Deere
Type	Diesel
Engine Model Number	
• 240	3029D
• 250	3029T
Net Horsepower at Rated Engine RPM (2400 RPM)	
• 240 (S.N. —240852)	34.3 kW (46 hp)
• 240 (S.N. 240853—)	38 kW (51 hp)
• 250	45.5 kW (61 hp)
Cylinders	3
Bore	106 mm (4.17 in.)
Stroke	110 mm (4.33 in.)
Displacement	2.9 L (179 cu in.)
Compression Ratio	17.8:1
Rated Engine RPM	2400
Lubrication	Full pressure
Oil Filter	Full flow (replaceable)
Air Cleaner	Dry paper with primary and secondary elements
Cooling System	Liquid-cooled

FUEL SYSTEM

Fuel	Diesel #2
Fuel Filter	In-line replaceable filter
Fuel Pump	Electric
Fuel Delivery	Rotary injection

ELECTRICAL SYSTEM

Type	12-volt, electric start
Charging System	Alternator, 55 amp
Battery	750 CCA (cold cranking amps)

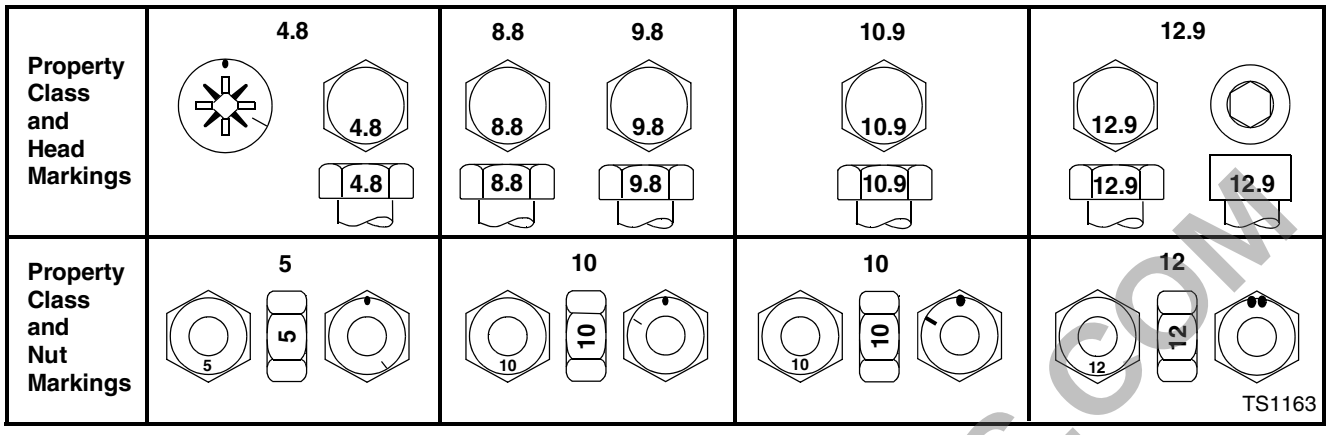
CAPACITIES

Fuel Tank	56.7 L (15 gal)
Hydraulic Reservoir	15.6 L (4.1 gal)
Hydraulic System	23 L (6 gal)
Cooling System	9.5 L (10 qt)
Engine Oil (with Filter)	6.5 L (6.9 qt)
Chain Case (per Side)	11.4 L (3 gal)

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METRIC FASTENER TORQUE VALUES



	Class 4.8				Class 8.8 or 9.8				Class 10.9				Class 12.9			
	Lubricated[a]		Dry[a]		Lubricated[a]		Dry[a]		Lubricated[a]		Dry[a]		Lubricated[a]		Dry[a]	
SIZE	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft
M6	4.8	3.5	6	4.5	9	6.5	11	8.5	13	9.5	17	12	15	11.5	19	14.5
M8	12	8.5	15	11	22	16	28	20	32	24	40	30	37	28	47	35
M10	23	17	29	21	43	32	55	40	63	47	80	60	75	55	95	70
M12	40	29	50	37	75	55	95	70	110	80	140	105	130	95	165	120
M14	63	47	80	60	120	88	150	110	175	130	225	165	205	150	260	109
M16	100	73	125	92	190	140	240	175	275	200	350	225	320	240	400	300
M18	135	100	175	125	260	195	330	250	375	275	475	350	440	325	560	410
M20	190	140	240	180	375	275	475	350	530	400	675	500	625	460	800	580
M22	260	190	330	250	510	375	650	475	725	540	925	675	850	625	1075	800
M24	330	250	425	310	650	475	825	600	925	675	1150	850	1075	800	1350	1000
M27	490	360	625	450	950	700	1200	875	1350	1000	1700	1250	1600	1150	2000	1500
M30	675	490	850	625	1300	950	1650	1200	1850	1350	2300	1700	2150	1600	2700	2000
M33	900	675	1150	850	1750	1300	2200	1650	2500	1850	3150	2350	2900	2150	3700	2750
M36	1150	850	1450	1075	2250	1650	2850	2100	3200	2350	4050	3000	3750	2750	4750	3500

DO NOT use these hand torque values if a different torque value or tightening procedure is given for a specific application. Torque values listed are for general use only and include a ±10% variance factor. Check tightness of fasteners periodically. DO NOT use air powered wrenches.

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

Fasteners should be replaced with the same class. Make sure fastener threads are clean and that you properly start thread engagement. This will prevent them from failing when tightening.

When bolt and nut combination fasteners are used, torque values should be applied to the **NUT** instead of the bolt head.

Tighten toothed or serrated-type lock nuts to the full torque value.

a. "Lubricated" means coated with a lubricant such as engine oil, or fasteners with phosphate and oil coatings. "Dry" means plain or zinc plated (yellow dichromate - Specification JDS117) without any lubrication.

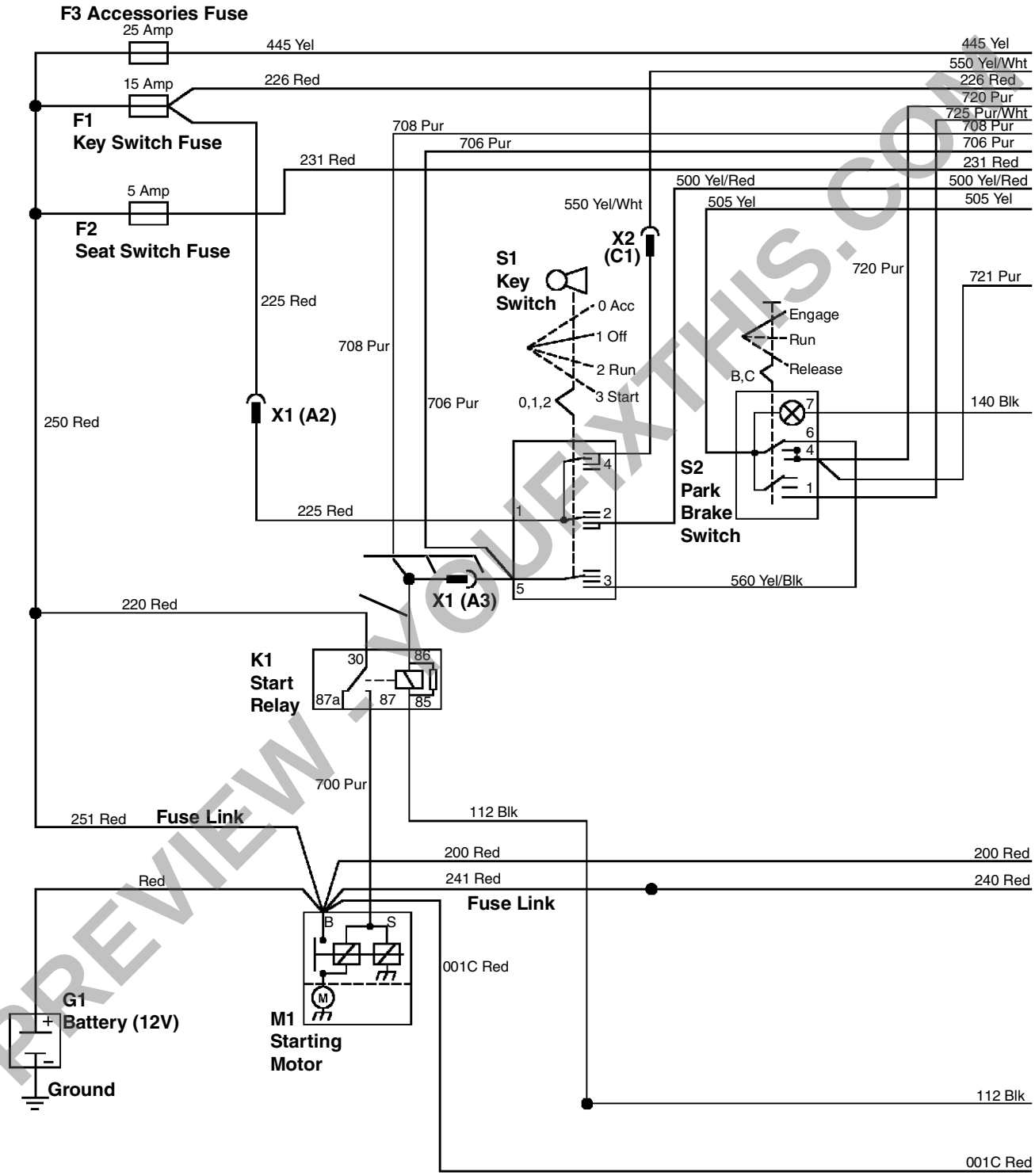
Reference: JDS—G200.

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ELECTRICAL SCHEMATICS

MAIN SCHEMATIC



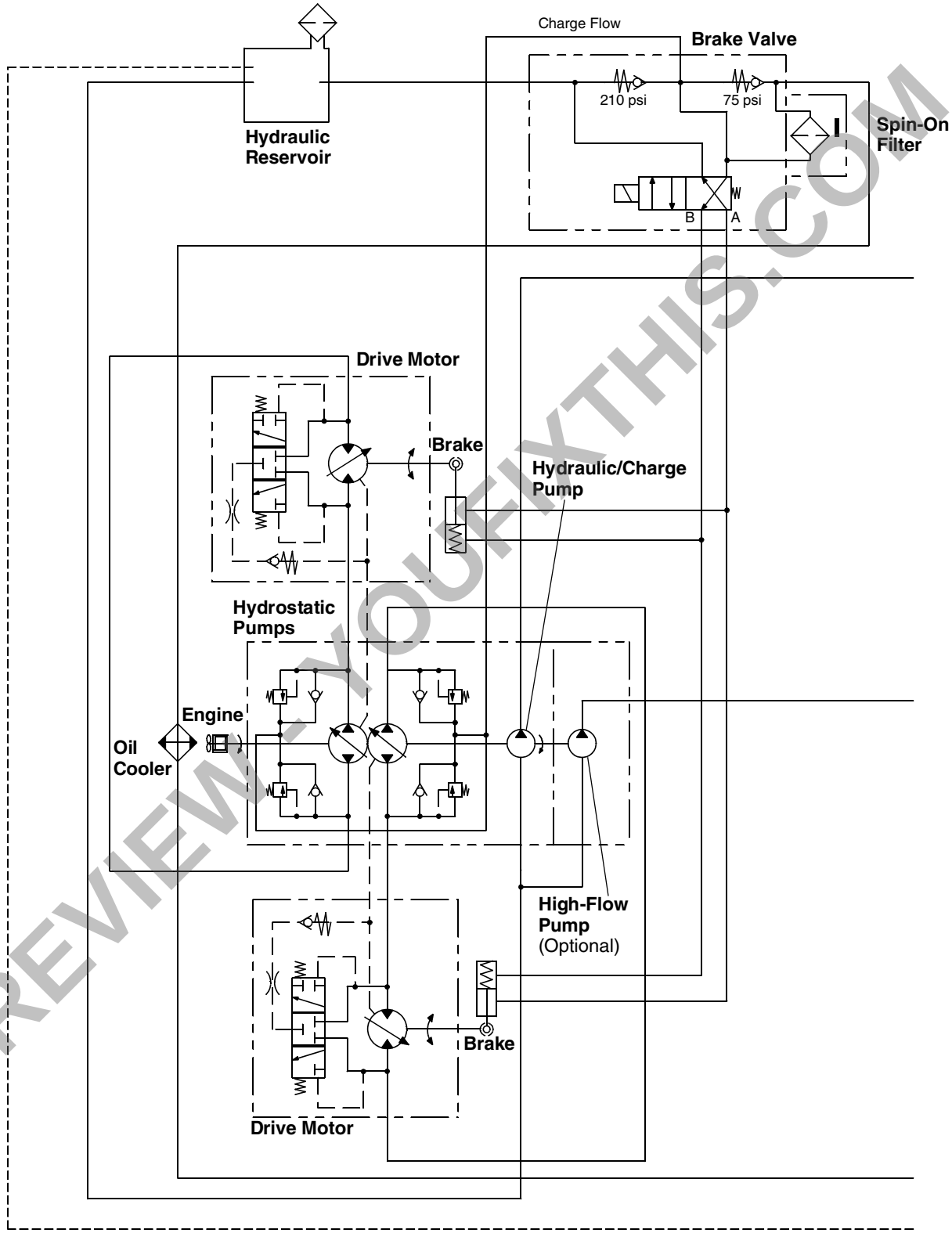
SE1 - POWER AND CRANKING CIRCUIT

KV31775

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HYDROSTATIC SYSTEM SCHEMATIC

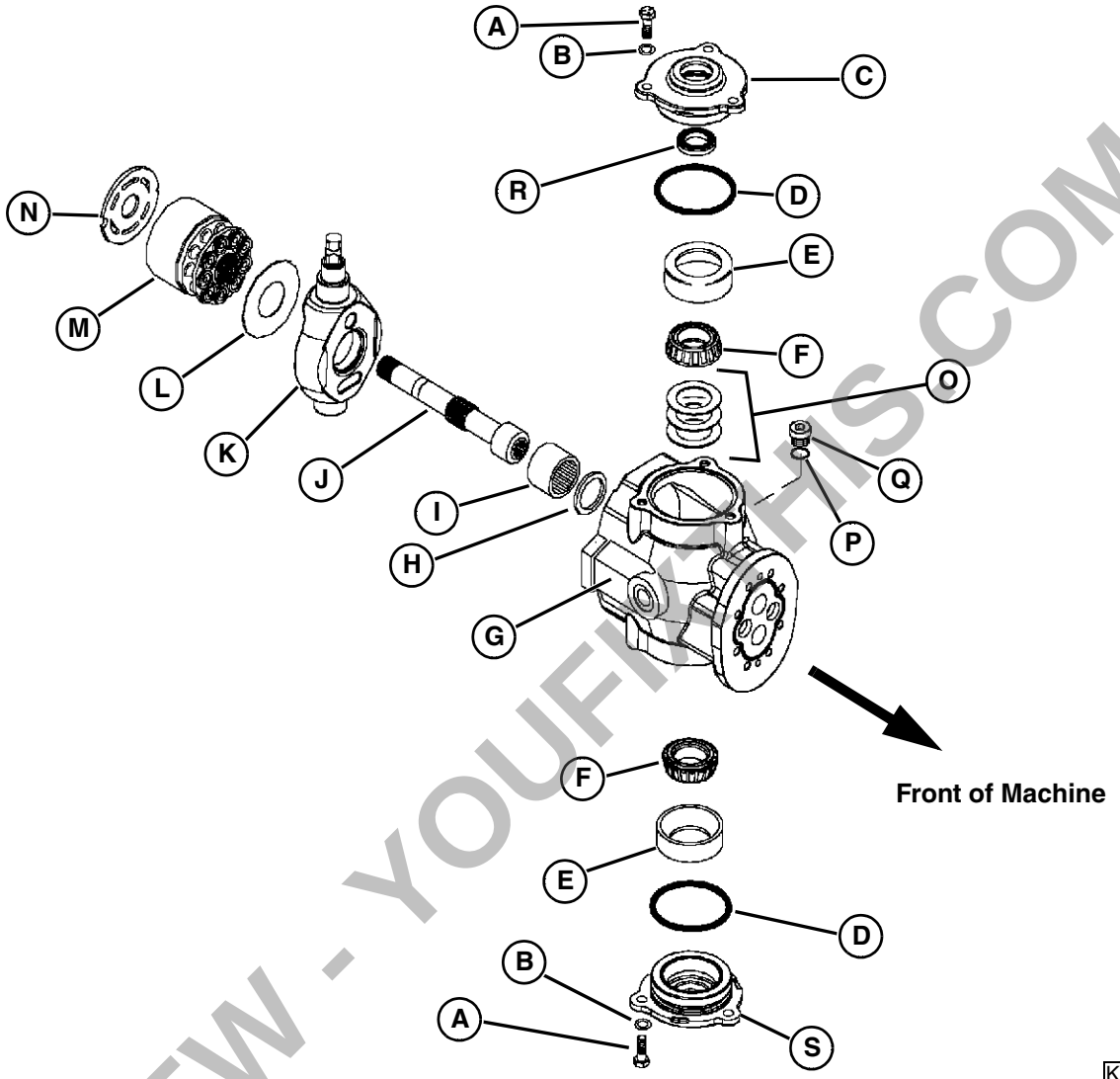


KV31129A

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FRONT HYDROSTATIC PUMP EXPLODED VIEW



A. Screw (6 used)
B. Washer (6 used)
C. Cover Plate
D. O-Ring
E. Bearing Race
F. Bearing Cone
G. Front Pump Housing
H. Ring
I. Needle Bearing
J. Drive Shaft
K. Cam Plate (or Swash Plate)
L. Insert
M. Rotating Assembly
N. Valve Plate
O. Shim(s)
P. O-Ring
Q. Plug
R. Seal
S. Cover Plate

NOTE: The front hydrostatic pump drives the left hydrostatic motor.

Early models have factory installed shims (O). Later models use a crush washer. The crush washer is not a serviced part and must be replaced by shims from a shim kit if pump repair is necessary.

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TROUBLESHOOTING

Problem or Symptom / Check or Solution	Engine will not start	Engine starts but does not continue to run	Low engine output	Exhaust smoke white when under load	Exhaust smoke black when under load	Engine surges at idle	Engine surges under load	High fuel consumption	High oil consumption	Coolant in oil/oil in coolant	Fuel in oil	Low oil pressure	Air intake pressure drop	Air intake pressure rise
Improper intake/exhaust valve clearance	●	●	●											●
Intake/exhaust valve leaking			●		●			●						●
Intake/exhaust valve seized	●	●	●		●		●				●			
Cylinder head gasket leaking			●							●				
Broken or seized piston ring	●	●		●		●			●		●			●
Piston ring, piston, or cylinder worn	●	●		●					●		●			
Crankshaft pin or bearing seized	●	●				●	●							
Ring gaps not positioned properly		●	●						●					
Improper piston ring placement			●	●					●					
Crankshaft pin or bearing worn						●	●					●		
Connecting rod bolt loose												●		
Foreign matter trapped in combustion chamber	●								●					
Excessive timing gear backlash						●	●							
Intake/exhaust valve guide worn			●	●					●					
Governor not functioning properly		●				●	●							
Improper injection timing, intake/exhaust valves	●		●	●	●									
Engine running too cool				●				●						
Engine running too hot			●											
Coolant level low			●											
Cracked water jacket										●				
Fan belt loose			●											
Improper engine oil viscosity/ type	●	●	●						●			●		

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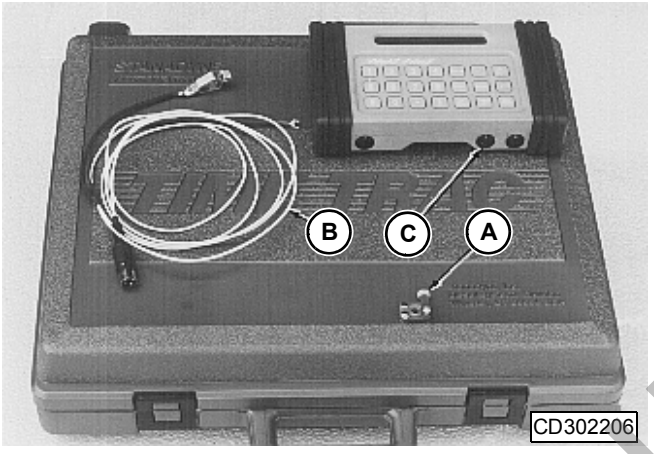
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TESTS AND ADJUSTMENTS

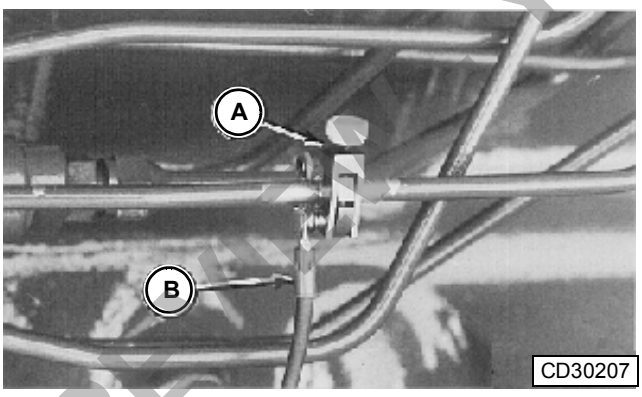
FOR ENGINE REPAIR USE CTM125

FOR STARTER AND ALTERNATOR REPAIR USE CTM77

USING THE TIME TRAC METER AS A TACHOMETER



A. Clamp-On Transducer
B. Cable
C. Timing Meter Socket "SR"



The TIME TRAC meter can be used as a tachometer by using clamp-on transducer (A) on any high-pressure line.

Operating Instructions:

1. Remove paint and thoroughly clean the area of the high-pressure line to which the clamp-on transducer is to be attached.
2. Install transducer (A) and connect cable (B) between transducer and socket "SR" (C) on meter. Also connect ground wire.
3. Switch on the meter by pressing the "ON/CLEAR" key, then start the engine.

PRELIMINARY ENGINE TESTING

The following preliminary tests will help determine if the engine can be tuned-up to restore operating efficiency, or if engine overhaul is required.

- After engine has stopped for several hours, loosen crankcase drain plug and watch for any water to drain out. A few drops due to condensation is normal, but more than this would indicate problems which require engine repair.
- With engine stopped, inspect engine coolant for oil film. With engine running, inspect coolant for air bubbles. Either condition would indicate problems which require engine repairs rather than just a tune-up.
- Perform compression test. Pressure below specifications indicates problems which require engine repair.

GENERAL TUNE-UP RECOMMENDATIONS

As a general rule, an engine tune-up is not necessary if all recommended Operator's Manual hourly service procedures are performed on schedule. If your engine performance is not within the rated application guidelines and if engine condition does not require overhaul, the following service procedures are recommended to help restore engine to normal operating efficiency.

1. Change engine oil and filter.
2. Replace fuel filter and water separator.
3. Clean crankcase vent tube.
4. Clean and flush cooling system.
5. Test thermostat and pressure cap.
6. Check condition of coolant hoses and fan belt.
7. Check air intake system. Replace air cleaner elements.
8. Check exhaust system.
9. Inspect turbocharger and check boost pressure.
10. Check fuel injection system:
    - Have injection pump checked by your Authorized Stanadyne workshop.
    - Clean injection nozzles and adjust opening pressure.
    - Adjust slow idle speed and perform a dynamic timing.
11. Check engine oil pressure.
12. Check engine valve clearance.
13. Check electrical system.

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IMPORTANT: To prevent engine damage, DO NOT use pure anti-freeze or less than a 50% anti-freeze mixture in the cooling system. Water used to dilute engine coolant concentrate must be of high quality—clean, clear, potable water (low in chloride and hardness—see table below) is generally acceptable. DO NOT use salt water. Deionized or distilled water is ideal to use. Coolant that is not mixed to these specified levels and water purity can cause excessive scale, sludge deposits, and increased corrosion potential.

Water Quality

Property	Requirements
Total Solids, Maximum	340 ppm (20 grns/gal)
Total Hardness, Max.	170 ppm (10 grns/gal)
Chloride (as Cl), Max.	40 ppm (2.5 grns/gal)
Sulfate (as SO_4), Max.	100 ppm (5.8 grns/gal)

Mix 50 percent anti-freeze concentrate with 50 percent distilled or deionized water. This mixture and the pre-diluted mixture (TY16036) will protect the cooling system down to –37°C (–34°F) and up to 108°C (226°F).

Certain geographical areas may require lower air temperature protection. See the label on your anti-freeze container or consult your John Deere dealer to obtain the latest information and recommendations.

SUPPLEMENTAL COOLANT ADDITIVES

The concentration of coolant additives is gradually depleted during engine operation. For all recommended coolants, replenish additives between drain intervals by adding a supplemental coolant additive every 12 months or as determined necessary by coolant testing.

John Deere COOLANT CONDITIONER is recommended as a supplemental coolant additive in John Deere engines.

IMPORTANT: Do not add a supplemental coolant additives when the cooling system is drained and refilled with John Deere ANTIFREEZE/ SUMMER COOLANT or John Deere COOL-GARD.

If other coolants are used, consult the coolant supplier and follow the manufacturer's recommendation for use of supplemental coolant additives.

The use of non-recommended supplemental coolant additives may result in additive drop-out and gelation of the coolant.

Add the manufacturer's recommended concentration of supplemental coolant additive. DO NOT add more than the recommended amount.

DIESEL AND GASOLINE ENGINE COOLANT DRAIN INTERVAL—NORTH AMERICA

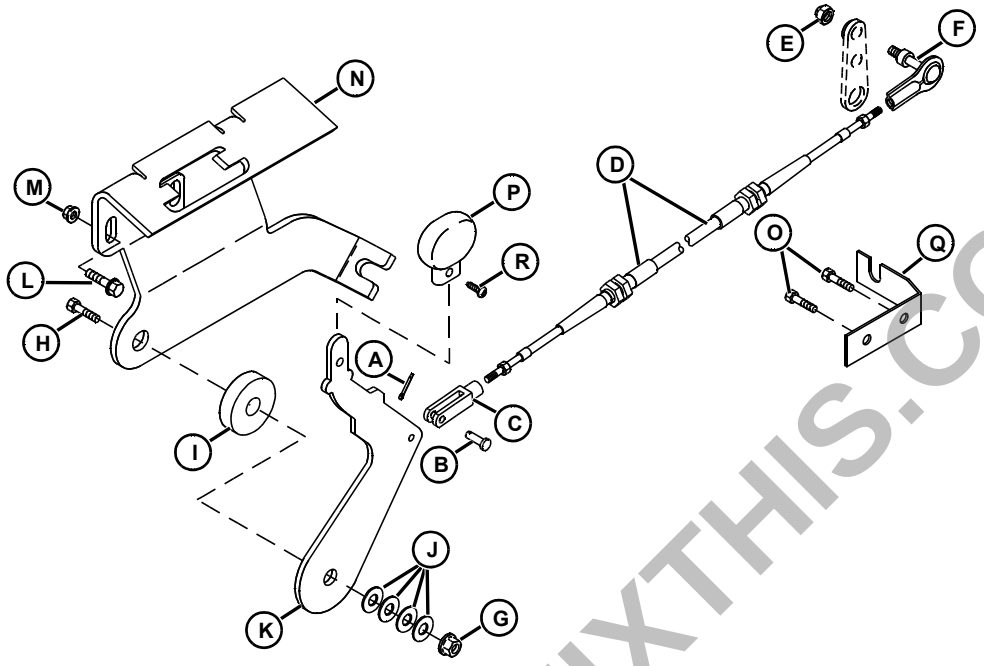
When using **John Deere Concentrate (TY16034)** Automobile and Light Duty Engine Service coolants, drain and flush the cooling system and refill with fresh coolant mixture every **24 months or 2,000 hours** of operation, whichever comes first.

If above John Deere Automobile and Light Duty Engine Service coolants **are not** being used, drain, flush, and refill the cooling system according to instructions found on product container or in equipment operator's manual or technical manual.

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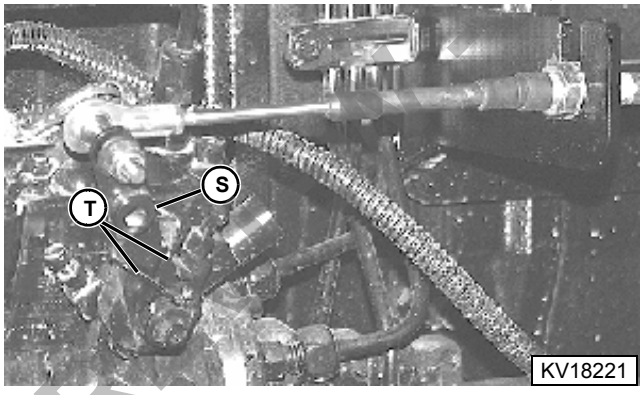
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THROTTLE CONTROL AND CABLE ADJUSTMENT



KV18820

A. Cotter Pin
B. Pin
C. Yoke
D. Cable
E. Lock Nut
F. Ball Stud
G. Lock Nut
H. Cap Screw
I. Ring
J. Washer (4 used)
K. Control Lever
L. Cap Screw (2 used)
M. Nut (2 used)
N. Bracket
O. Cap Screw (2 used)
P. Knob
Q. Bracket
R. Screw



KV18221

S. Throttle Lever
T. Overtravel Spring

Reason:

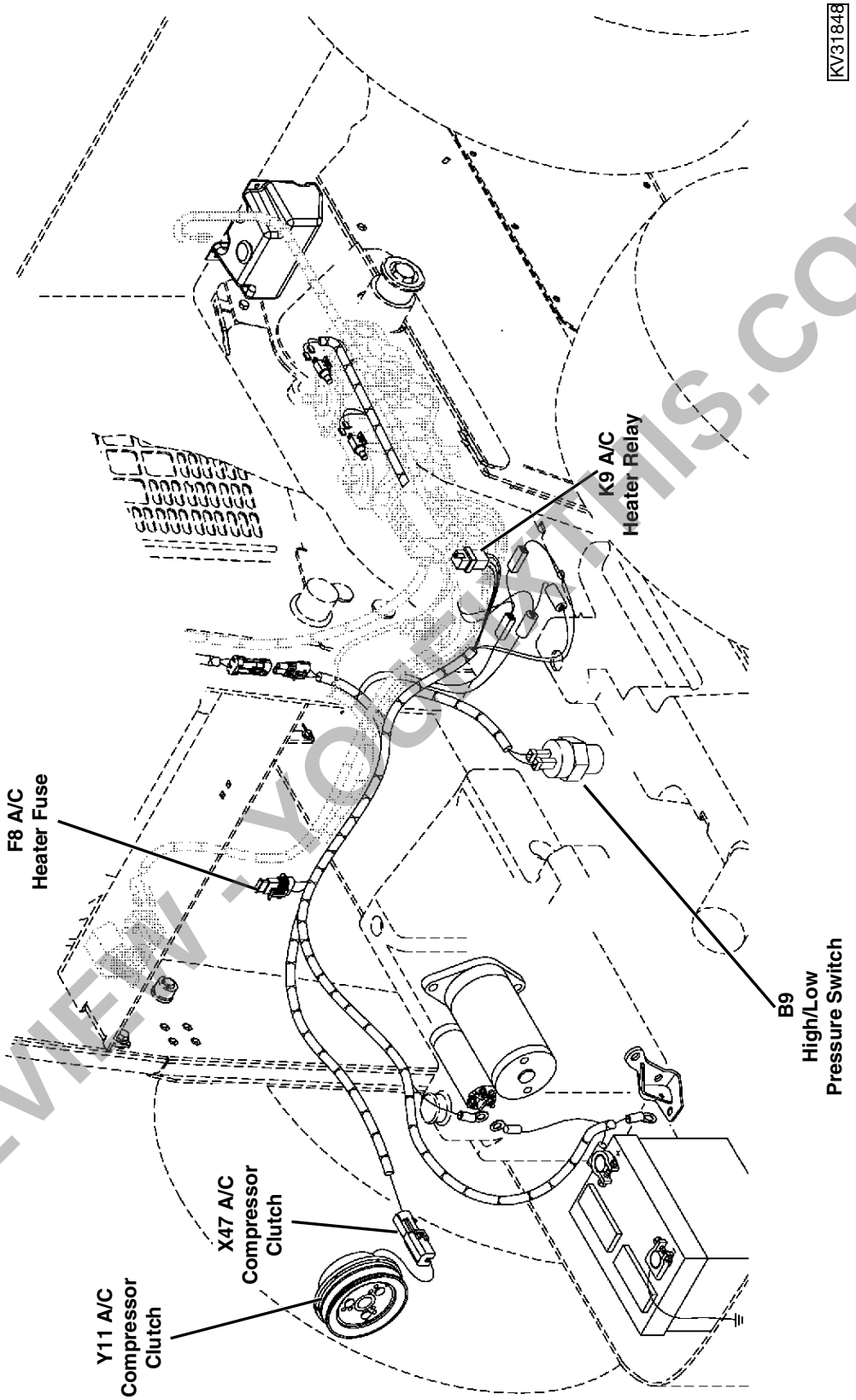
To make sure injection pump throttle lever is against the slow idle stop when control lever is in the slow idle position, and against the fast idle stop when control lever is in the fast idle position.

Procedure:

Adjust throttle cable (D) at cable mounting nuts, yoke (C), and ball stud (F), so throttle lever (S) is against one side of the overtravel spring (T) when control lever (K) is in the slow and fast idle positions.

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TROUBLESHOOTING CHART

Problem or Symptom / Check or Solution	Engine will not crank	Engine will not start	Preheater not working properly	Engine will not shut off	Fuel pump will not run	Battery not charging or overcharging	Warning lamps or fuel gauge stay on or will not light	Hour meter does not operate	Road/work lights do not operate	Fuel shutoff solenoid not working properly	Boom/bucket control not working properly
See cranking circuit diagnosis	●										
Test battery and connections	●					●	●				
See charging circuit diagnosis						●					
See lights circuit diagnosis									●		
See hydraulic boom and bucket lockout circuit diagnosis											●
See preheat circuit diagnosis		●	●								
Check fuel shutoff solenoid circuit See fuel circuit diagnosis		●		●						●	
See power circuit diagnosis	●	●	●		●	●	●	●	●	●	●
Check fuel pump ground circuit		●			●						
See appropriate circuit diagnosis indicated by warning light that is on		●				●	●	●			

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SEAT BELT WARNING LIGHT CIRCUIT DIAGNOSIS

Test Conditions:

- Key switch in RUN position.
- Test meter set to read DC voltage.
- Meter negative (–) lead on battery negative (–) terminal.
- Meter positive (+) lead on numbered test point.
- Check connections for corrosion and loose terminals when testing.

Test/Check Point	Normal	If Not Normal
1. Terminal 1 on (S1) key switch.	Battery voltage.	See POWER AND CRANKING CIRCUIT DIAGNOSIS in this section.
2. Wire 500 yel at terminal 2 on (S1) key switch.	Battery voltage.	Replace (S1) key switch.
3. Wire 503 yel at terminal D on (X8) instrument cluster connector.	Battery voltage.	Test wires 503 yel and 500 yel between (X8) instrument cluster connector and (S1) key switch.

Test Conditions:

- Key switch in OFF position.
- Test meter set to read resistance (ohms).

Test/Check Point	Normal	If Not Normal
4. Wire 128 blk at terminal C on (X8) instrument cluster connector.	Maximum 0.1 ohms.	Test wire 128 blk from (X8) instrument cluster connector to ground.

Test Conditions:

- Test meter set to read DC voltage.

Test/Check Point	Normal	If Not Normal
5. Wire 231 red on (F2) seat switch/seat belt fuse.	Battery voltage.	Test (F2) seat switch/seat belt fuse. Replace if necessary. If fuse is good, see POWER AND CRANKING CIRCUIT DIAGNOSIS in this section.
6. Wire 231 red at terminal A1 on (X1) engine/ROPS harness connector.	Battery voltage.	Test wire 231 red between (F2) seat switch/seat belt fuse and (X1) engine/ROPS harness connector.
7. Wire 231 red at terminal A1 on (X1) engine/ROPS harness connector.	Battery voltage.	Test connector (X1) engine/ROPS harness connector. Make sure wires are properly crimped in the terminals.
8. Wire 231 red at terminal 2 on (S5) seat belt switch.	Battery voltage.	Test wire 231 red between (X1) engine/ROPS harness connector and (S5) seat belt switch.
9. Wire 230 red at terminal 1 on (S4) seat switch.	Battery voltage.	Test wire 230 red and 232 red between (S4) seat switch and (S5) seat belt switch, including terminals at X21 seat switch pigtail connector.

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Test Conditions:

- Replace light bulbs and sockets previously removed.
- Test meter set to read DC voltage.
- Key switch in RUN or ACC position.
- Work lights switch in FRONT/REAR WORK/TAIL LIGHTS (up) position.
- Remove socket from (E5) rear work light and then remove bulb from socket.

Test/Check Point	Normal	If Not Normal
26. Center terminal of bulb socket on (E5) rear work light.	Battery voltage.	Check for loose or corroded connections between harness connector and socket. Test wire 475 brn/wht between (E5) rear work light and (S6) work lights switch.

Test Conditions:

- Key switch in OFF position.
- Work lights switch in OFF (down) position.
- Test meter set to read resistance (ohms).

Test/Check Point	Normal	If Not Normal
27. Outer contact of bulb socket on (E5) rear work light.	Maximum 0.1 ohms.	Check for loose or corroded connections between harness connector and socket. Test wire 105 blk from (E5) rear work light to ground.

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HYDRAULIC QUIK-TATCH CIRCUIT (OPTIONAL) OPERATION

Function

Provides power to hydraulic Quik-Tatch circuit.

Operating Conditions

- Key switch in RUN position.

Theory of Operation

POWER CIRCUIT

When the key switch (S1) is in the RUN or ACC position, current flows to accessory relay (K4), energizing relay (K4). With accessory relay (K4) energized, power is available to ROPS accessory power connector. The following provides power to the hydraulic Quik-Tatch circuit:

- Wire 453 yellow
- Hydraulic Quik-Tatch Fuse (F9)
- Wire 454 yellow

LOCK SOLENOID CIRCUIT

When the hydraulic Quik-Tatch switch (S20) in the LOCK position, current flows through Quik-Tatch lock solenoid (Y9). To energize the lock solenoid, current flows through the following:

- Hydraulic Quik-Tatch Switch (S20), terminals (2B and 3)
- Wire 455 yellow
- Quik-Tatch Lock Solenoid (Y9)
- Wire 129 black

UNLOCK SOLENOID CIRCUIT

When the hydraulic Quik-Tatch switch (S20) in the UNLOCK position, current flows through Quik-Tatch unlock solenoid (Y10). To energize the unlock solenoid, current flows through the following:

- Hydraulic Quik-Tatch Switch (S20), terminals (2B and 1)
- Wire 456 yellow
- Quik-Tatch Unlock Solenoid (Y10)
- Wire 130 black

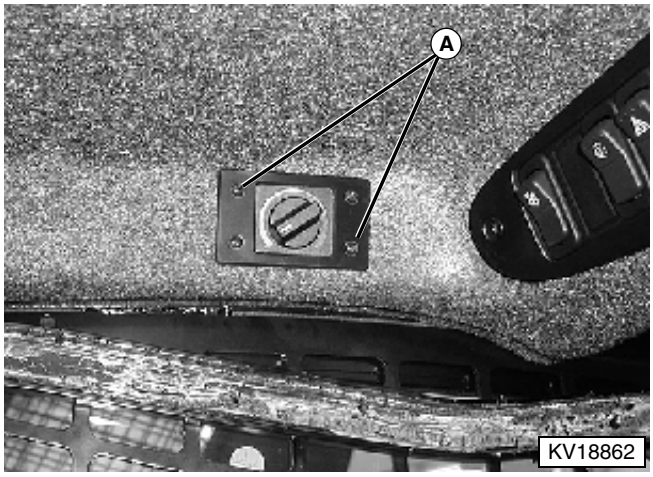
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CAB HEATER THERMOSTAT (2-SPEED BLOWER) (IF EQUIPPED)

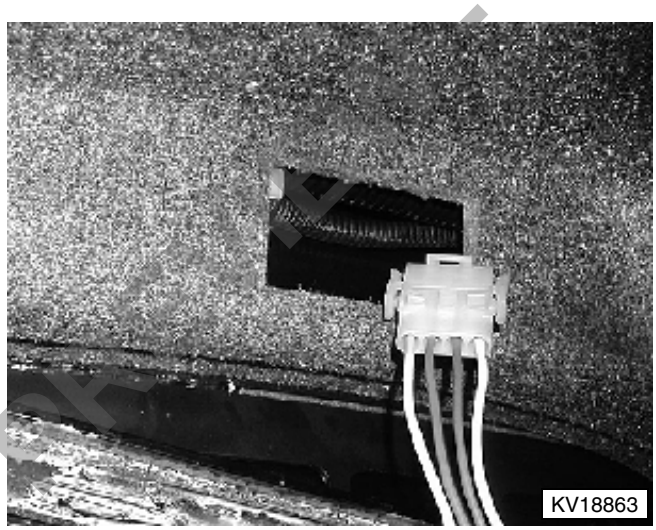
Replace:

1. Park skid steer on flat level surface. Lower boom to the at-rest ground position, engage park brake switch and turn engine off.
2. Disconnect battery negative (–) terminal.

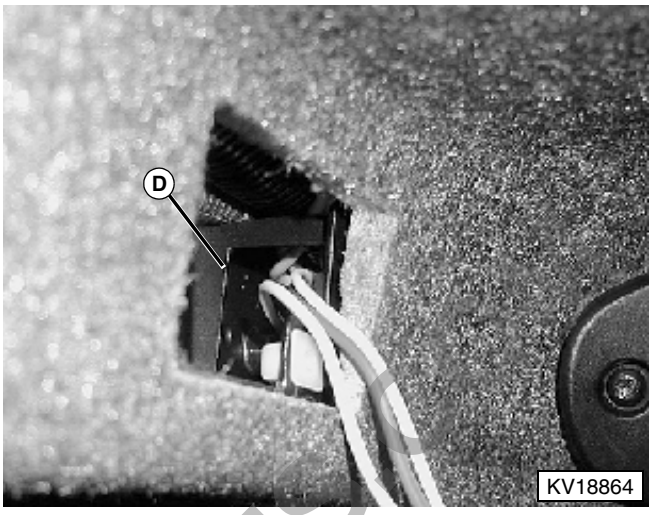


IMPORTANT: Only remove two screws as shown. Damage to the thermostat could occur if the other two screws are removed.

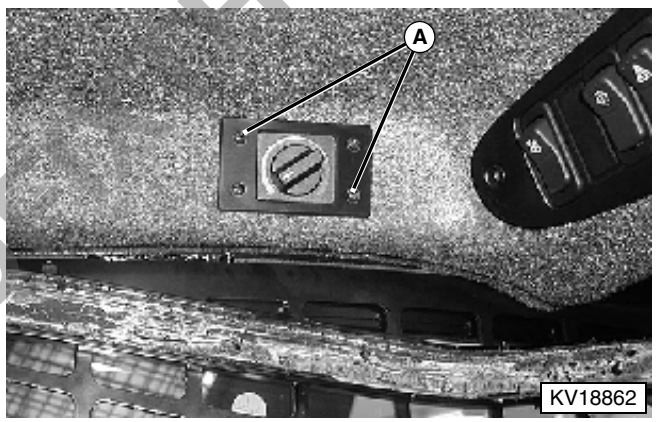
3. Remove two screws (A).



4. Pull connector through headliner and disconnect.
5. Connect new heater control.



6. Push connector forward through hole (D) in frame.



7. Install controller and secure with screws (A).
8. Connect battery, positive (+) cable first.

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TROUBLESHOOTING

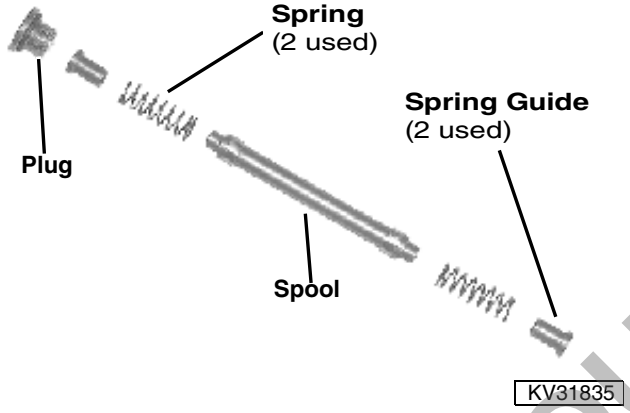
Problem or Symptom / Check or Solution	Machine will not move in either direction	Noisy pump or motor	Sluggish response to changes in speed	Low power	One side drives, other does not
Hydraulic oil level low in reservoir Check and top off oil level	●	●		●	
Hydrostatic pump not running Check engine coupling	●				
Low charge pressure Check charge pump	●	●		●	
Oil too heavy Cold weather	●		●	●	
Shuttle valve stuck open Check valve			●	●	●
Air in system Purge	●	●		●	
Output pressure too low Check output pressure	●		●	●	●
Internal pump or motor damage	●	●	●		●
Park brake engaged or dragging	●	●	●		●
Pump linkage not centered for neutral on one or both pumps		●	●		
Broken drive chain					●
Linkages loose or broken	●		●		●

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KV31828



KV31835

17. Remove plug on end cap for shuttle valve.
18. Remove spring guide, spring, spool, spring, and spring guide from end cap.
19. Remove and discard o-ring from plug.

HYDROSTATIC MOTOR INSPECTION–SAUER-DANFOSS MOTORS

1. 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.
2. Inspect disc valve and balance plate for scoring or wear.
3. Inspect wheel, rim, and rollers for scoring or wear.
4. Inspect shuttle valves springs, spool, and guides for wear.
5. Inspect splines on driveshaft, disc valve driver, and internal splines on wheel.

HYDROSTATIC MOTOR ASSEMBLY–SAUER-DANFOSS MOTORS

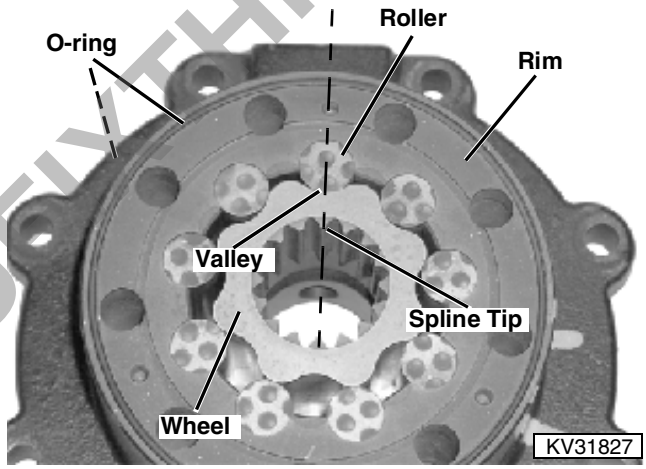
NOTE: Use petroleum jelly to hold seals and O-rings in place during assembly.

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

Apply clean HY-GARD hydraulic oil to all internal surfaces during motor assembly. DO NOT use John Deere BIO HY-GARD.

NOTE: Always use new seals and O-rings when assembling motor. Used O-rings and seals will leak

1. Set motor mounting plate on a flat surface.
2. When assembling motor make sure that scribe marks on each section are aligned.



KV31827

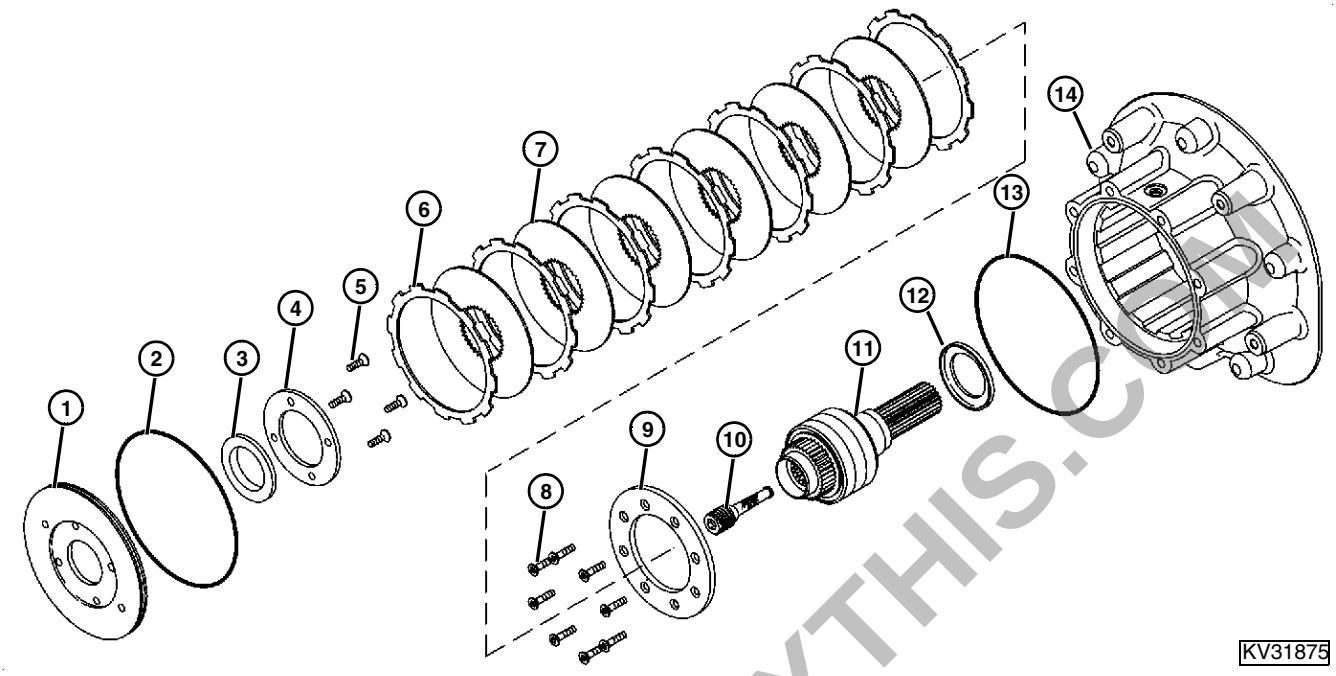
3. Install new O-ring on mounting plate
4. Install rim, wheel, and rollers onto mounting plate. Splines on wheel must face up.
5. Install new O-ring on rim.
6. Install a spacer 19 mm (3/4 in.) diameter X 76 mm (3 in.) long into ID of wheel. This will aid in assembly by not allowing disc valve driver to slide down in wheel. Spacer can be a wood dowel, socket, or a piece of pipe.

IMPORTANT: The wheel, rollers, disc valve, and disc valve driver must be properly timed during assembly.

7. Rotate wheel so a roller rests in the bottom of a valley on the wheel. The tip on an internal spline should be aligned with the bottom of the valley.

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(240 S.N. KV0240A341300—) and (250 S.N. KV0250A351825—) Shown

1. **Brake Piston**
2. **O-Ring**
3. **Piston Seal**
4. **Seal Retainer**
5. **Screw (4 used)**
6. **Brake Disk (7 used)**
7. **Spacer Plate (6 used)**
8. **Screw (8 used)**
9. **Shaft Retainer**
10. **Orifice/Screen**
11. **Drive Shaft Assembly**
12. **Shaft Seal**
13. **O-Ring**
14. **Brake Housing**

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TROUBLESHOOTING

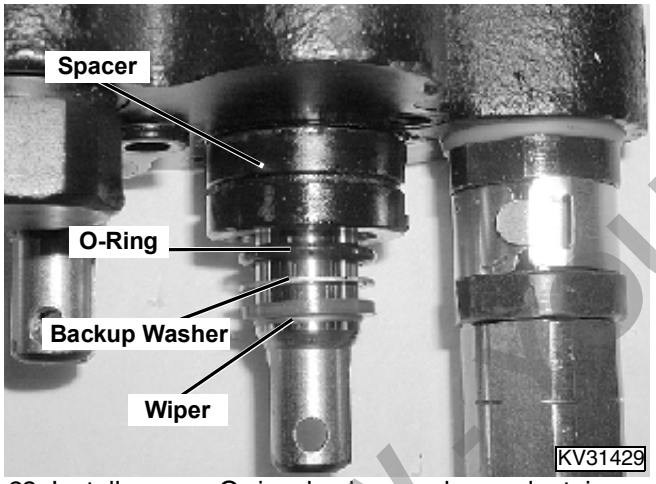
Problem or Symptom / Check or Solution	Boom will not rise	Boom will not lower	Boom drifts up or down	Bucket will not dump	Bucket will not roll back	Bucket drifts up or down	Hydraulics slow, low power	Jerky or spongy movement	Hydraulic system noisy	Pedals will not move	Charge pressure low	Hydraulic system hot
Hydraulic oil level low in reservoir Check and add oil	●			●	●		●	●	●		●	●
Hydraulic/charge pump damaged or worn Check flow	●			●	●		●	●	●		●	●
Control valve linkage or spool binding or damaged	●	●	●	●	●	●	●	●	●	●		●
Control valve not functioning properly	●	●	●	●	●	●	●	●	●			●
Check cylinders for bent or damaged rods	●	●	●	●	●	●	●	●				●
Stuck pivot pins	●	●		●	●		●	●				●
Leaking cylinder packing	●		●	●	●	●	●	●				●
Low system pressure Check system relief valve pressure setting	●				●		●	●				
Air in hydraulic cylinders Check fluid level and run hydraulics to bleed system							●	●	●		●	
Boom or bucket hydraulic lockout solenoid malfunctioning	●	●		●	●		●					
Bucket overloaded	●				●		●		●			●
High system pressure Check system relief valve pressure setting							●		●			●
Hydraulic oil cooler restricted												●
Charge pressure relief valve damaged or setting incorrect											●	
Hydrostatic pump damaged or leaking								●	●		●	
Malfunctioning overcenter valve (KV 0240A440001— and KV0250A450001—)				●	●							

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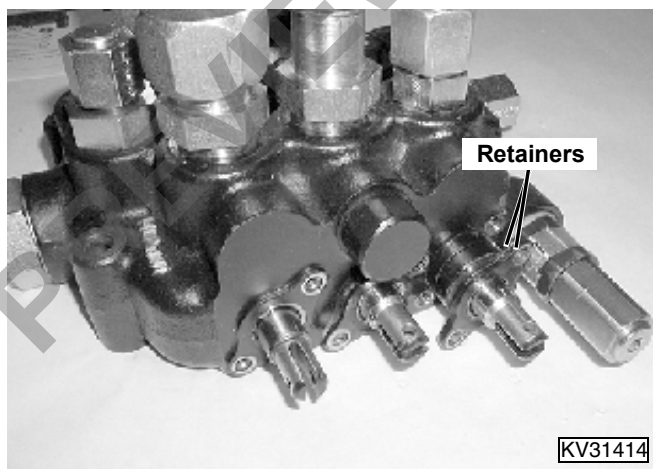
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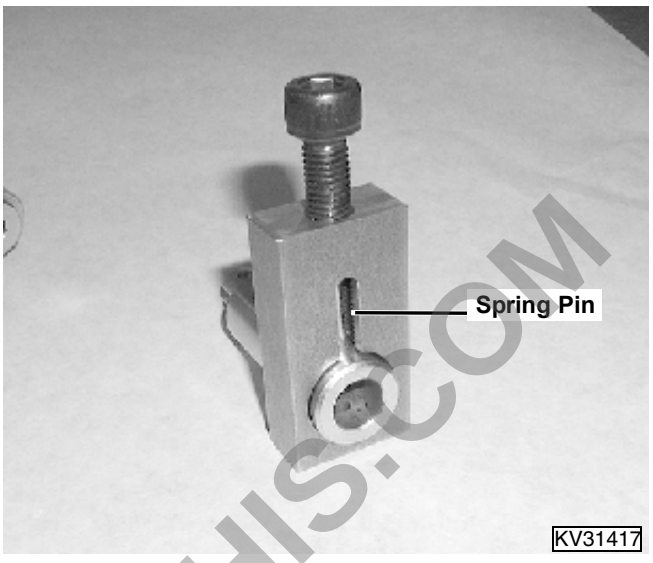
22. Install new O-ring on boom spool spacer.



23. Install spacer, O-ring, backup washer and retainers on boom spool.

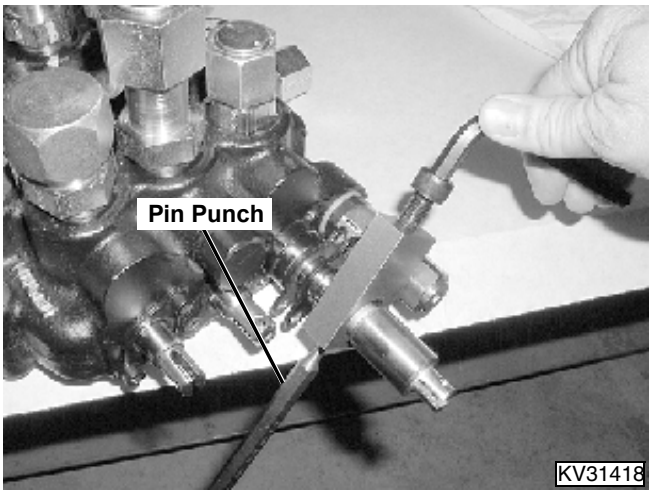


24. Install retainers (2 used) on boom spool.
25. Install two screws that secure auxiliary spool retainer. Tighten to **9.5 N•m (84 lb-in.)**.
26. Rotate boom and bucket spools so that pin hole is facing up.



27. Place Spring Pin Installation Tool (KV21435/MPKV00130) on spool extension as shown.

NOTE: If spring pin did not remain in spool extension during disassembly process, or if new pin is being installed, use KV21435/MPKV00130 to "start" spring pin in extension. Press spring pin only until it is flush with bore of extension.

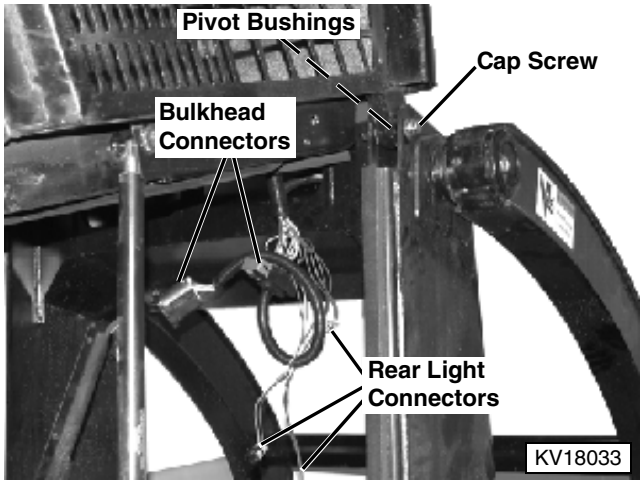


IMPORTANT: Install using Spring Pin Installation Tool (KV21435/MPKV00130). DO NOT use hammer to drive pin into place.

28. Place spool extension onto the boom or bucket spool, using a 3/16 in. pin punch to align spring pin holes. Install spring pin using Spring Pin Installation Tool (KV21435/MPKV00130) as shown, pushing pin punch out as spring pin is installed. Repeat installation on other spool.

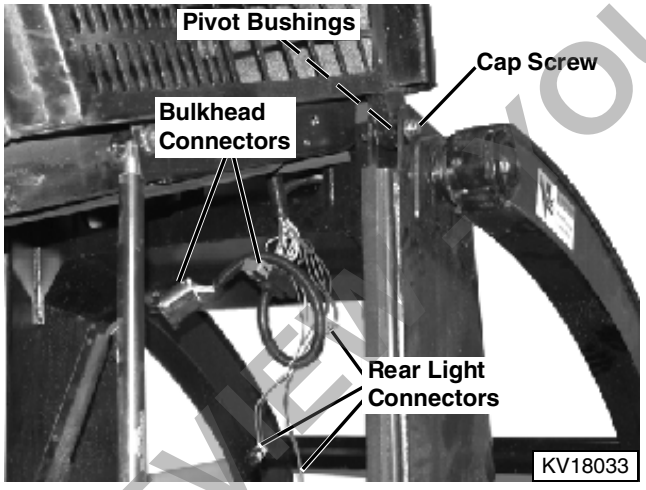
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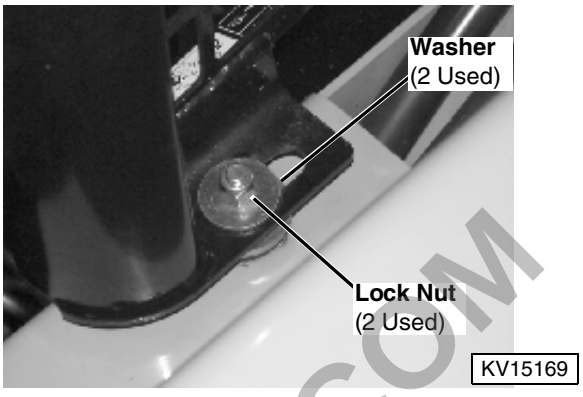


14. Pull bulkhead connectors and rear light connectors out of upper skid steer frame.
15. Remove cap screw and nut from both sides of ROPS.
16. Remove ROPS. Make repairs as necessary.
17. Inspect ROPS pivot bushings for wear or damage. Remove only if replacement is necessary.

Installation:



1. Install ROPS and tighten cap screws to **140 N•m (105 lb-ft).**
2. Install right and left ROPS cylinders. Make sure ROPS is in the locked position.
3. Remove lifting strap, hoist, and JT01748 Lifting Eyelets.



4. Lower ROPS into position. Install left and right flat washers and nuts. Tighten lock nuts to **105 N•m (77 lb-ft)**.
5. Push bulkhead connectors and rear light connectors through upper skid steer frame.
6. Connect ROPS-to-engine bulkhead connectors. Secure with tie bands as required.
7. Install rear tail and work light mounting bracket.
8. Connect wire connectors and install rear tail and work lights.
9. Connect negative (–) battery cable.

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