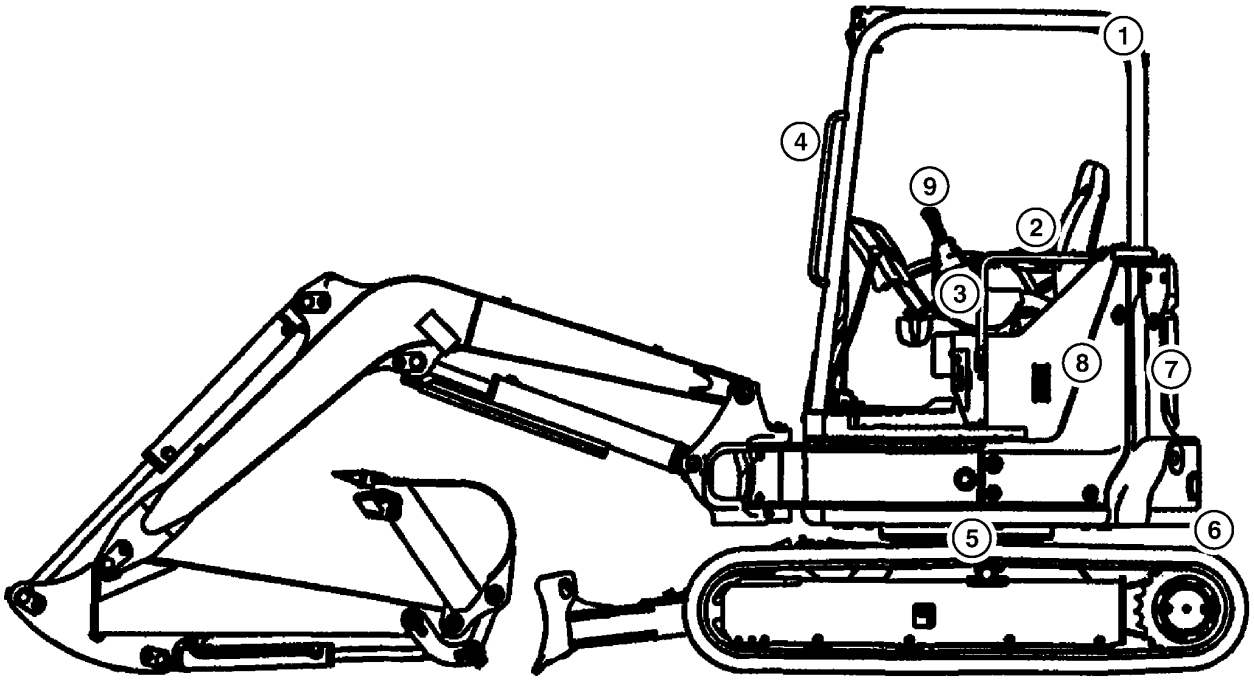
Safety and Operator Convenience Features



TX1126204 —UN—04DEC12

TX1126204

Canopy Model Shown

Please remember that the operator is the key to preventing accidents.

1. ROPS/TOPS/FOPS. A protective structure protects the operator of the compact excavator.

2. Seat Belt. A seat belt is provided for the operator.

3. Pilot Control Shutoff. A lever near the cab exit reminds the operator to deactivate hydraulic functions before leaving the machine and prevents engine start-up unless lever is in locked position.

4. Handholds. Large, conveniently placed handholds make it easy to enter or exit the operator's station or service area.

5. Hydraulic Hose Protection. Covered hoses in swing area improve durability and protect the operator.

6. Swing Brake. Swing brake is engaged when the pilot control shutoff lever is raised. Helps secure upperstructure when transporting the machine.

7. Travel Alarm. Alerts bystanders of machine movement when travelling.

8. Fan Guard. A fan guard inside the engine compartment helps prevent contact with the fan blades.

9. Horn. Standard horn is useful when driving or signaling co-workers.

Cab with Heater/Defroster/Air Conditioner—If Equipped. Circulates both outside and inside air through filters for a clean working environment. Built in defroster vents direct air flow for effective window defogging/deicing.

KR46761,00006B9 -19-18DEC12-1/1

Avoid Static Electricity Risk When Refueling

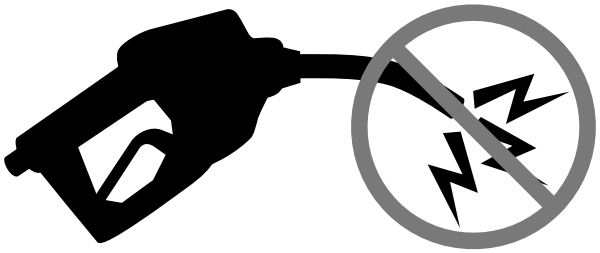
The removal of sulfur and other compounds in Ultra-Low Sulfur Diesel (ULSD) fuel decreases its conductivity and increases its ability to store a static charge.

Refineries may have treated the fuel with a static dissipating additive. However, there are many factors that can reduce the effectiveness of the additive over time.

Static charges can build up in ULSD fuel while it is flowing through fuel delivery systems. Static electricity discharge when combustible vapors are present could result in a fire or explosion.

Therefore, it is important to ensure that the entire system used to refuel your machine (fuel supply tank, transfer pump, transfer hose, nozzle, and others) is properly grounded and bonded. Consult with your fuel or fuel system supplier to ensure that the delivery system is in compliance with fueling standards for proper grounding and bonding practices.

RG22142 —UN—17MAR14



RG21992 —UN—21AUG13

DX,FUEL,STATIC,ELEC -19-12JUL13-1/1

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, exhaust components, 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 multipurpose fire extinguisher on or near the machine. Know how to use extinguisher properly.

T133552 —UN—15APR13

T133553 —UN—07SEP00

T133554 —UN—07SEP00

TX,PREVENT,FIRE -19-20JAN11-1/1

Remove Paint Before Welding or Heating

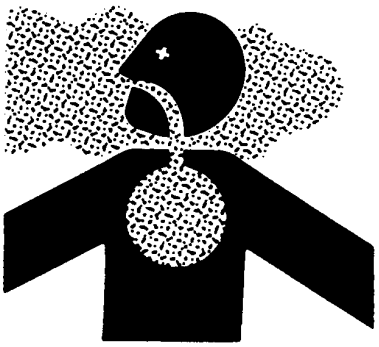
Avoid potentially toxic fumes and dust.

Hazardous fumes can be generated when paint is heated by welding, soldering, or using a torch.

Remove paint before heating:

- Remove paint a minimum of 100 mm (4 in.) from area to be affected by heating. If paint cannot be removed, wear an approved respirator before heating or welding.
- 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.

Do not use a chlorinated solvent in areas where welding will take place.



TS220 —UN—15APR13

Do all work in an area that is well ventilated to carry toxic fumes and dust away.

Dispose of paint and solvent properly.

DX,PAINT -19-24JUL02-1/1

Make Welding Repairs Safely

IMPORTANT: Disable electrical power before welding. Turn off main battery switch and disconnect positive (+) and negative (-) battery cables.

Do not weld or apply heat on any part of a reservoir or tank that has contained oil or fuel. Heat from welding and cutting can cause oil, fuel, or cleaning solution to create gases which are explosive, flammable, or toxic.

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—15APR13

Heating Near Pressurized Fluid Lines

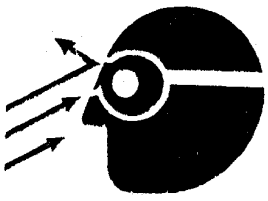
Make sure there is good ventilation. Wear eye protection and protective equipment when welding.

MB60223,0000212 -19-19FEB15-1/1

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 could dislodge chips at high velocity.

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



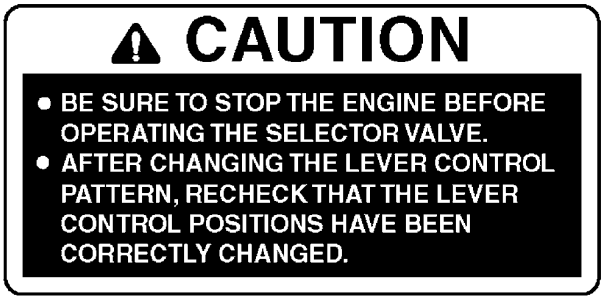
T133738 —UN—15APR13

TX,PINS -19-20JAN11-1/1

11. **CAUTION, Stop Engine**

Be sure to stop the engine before operating the selector valve.

This safety label is located inside the cab on the seat base.



TX1127626 —19—06DEC12

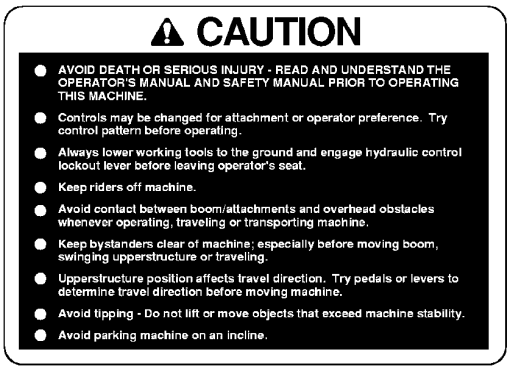
CAUTION, Stop Engine

MB60223,0000007 -19-11APR14-13/15

12. **CAUTION, Avoid Serious Injury or Death**

Read and understand the operator's manual and safety manual before operating this machine.

This safety label is located inside the cab on the seat base.



TX1127625 —19—19DEC12

CAUTION, Avoid Serious Injury or Death

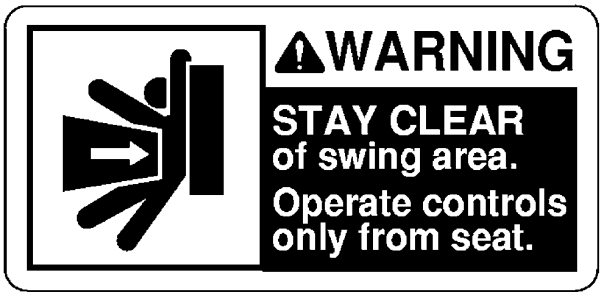
MB60223,0000007 -19-11APR14-14/15

13. **WARNING, Stay Clear**

Stay clear of swing area.

Operate controls only from seat.

This safety label is located on the front of machine.



TX1127624 —19—19DEC12

WARNING, Stay Clear

MB60223,0000007 -19-11APR14-15/15

Secondary Exit Tool—If Equipped

NOTE: For secondary exit of machine, use the secondary exit tool to break window. Always keep tool inside cab.

Secondary exit tool (1) is located inside the cab on the left rear cab post.

1— Secondary Exit Tool

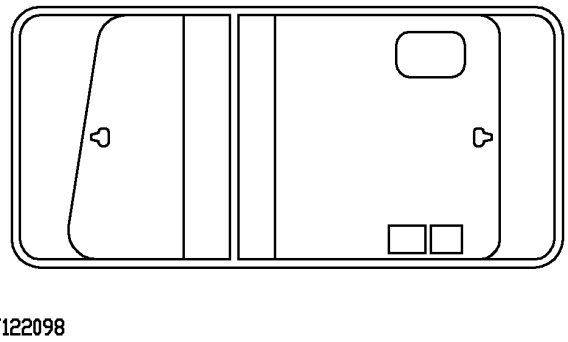
TX1125709A —UN—16NOV12

Secondary Exit Tool

KR46761,00007A1 -19-13DEC12-1/1

Opening Right Side Window—If Equipped

Slide front pane to the rear to open. Slide front pane to the front to close. Slide rear pane to the front to open. Slide rear pane to the rear to close.

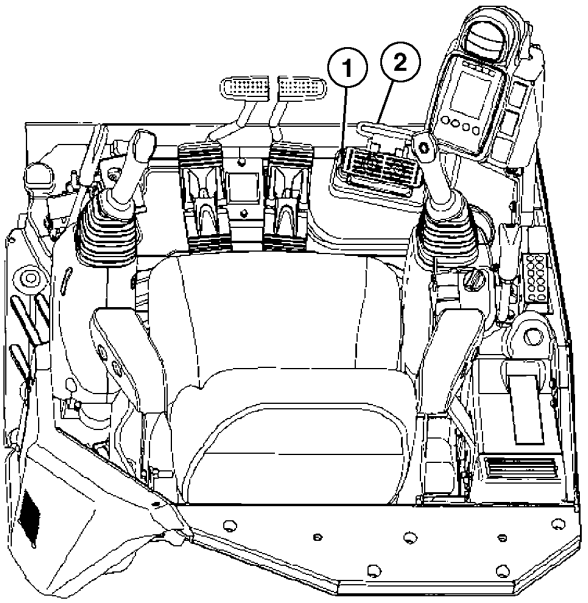


T122098 —UN—30JUN99

Right Side Window

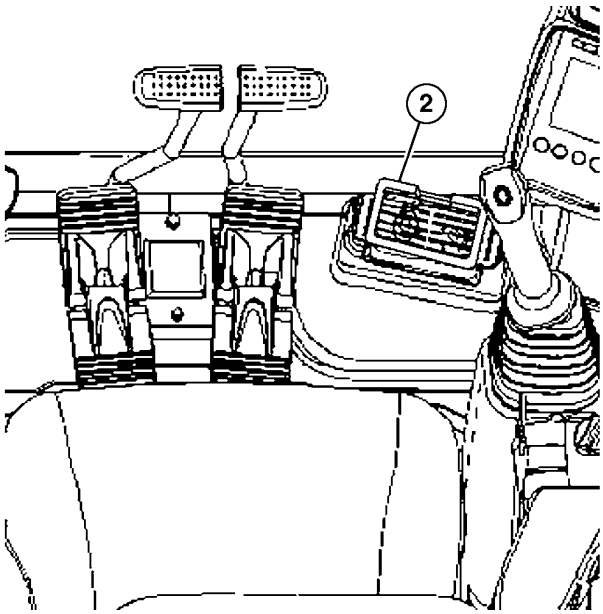
JS93577,0000067 -19-04DEC14-1/1

Boom-Swing Pedal



TX1125959 —UN—20NOV12

Unlocked Position



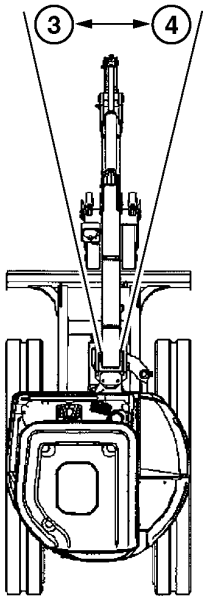
TX1125960 —UN—20NOV12

Locked Position

CAUTION: Avoid injury from unexpected machine movement. Keep boom-swing pedal locked during travel and when not in use.

1. Lift pedal cover (2) to unlock boom-swing pedal (1).
2. Push on left side of pedal to swing left (3).
3. Push on right side of pedal to swing right (4).
4. Lower pedal cover to lock boom-swing pedal when not in use.

1— Boom-Swing Pedal
2— Pedal Cover
3— Swing Left
4— Swing Right



TX1125961 —UN—20NOV12

Swing Direction

KR46761,00007A7 -19-19DEC12-1/1

Service Machine at Specified Intervals

Lubricate and make service checks and adjustments at intervals shown on the periodic maintenance chart (1) and on the following pages.

Perform service on items at multiples of the original requirement. For example, at 500 hours also service those items (if applicable) listed under 250 hours, 100 hours, 50 hours, and 10 hours or daily.

1— Periodic Maintenance Chart

TX1125750A —UN—16NOV12

Periodic Maintenance Chart

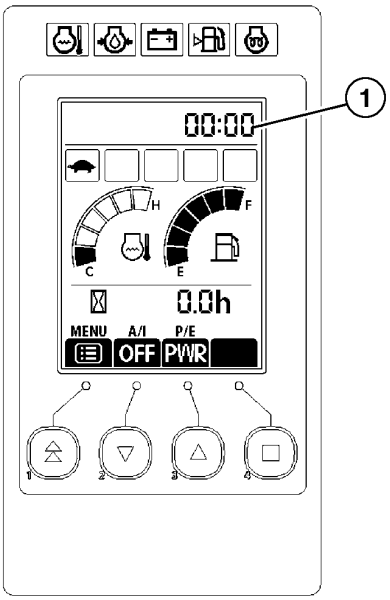
KR46761,00007A0 -19-14DEC12-1/1

Check the Hour Meter Regularly

Check the hour meter (1) to determine when your machine needs periodic maintenance.

Intervals on the periodic maintenance chart are for operating in normal conditions. If you operate your machine in difficult conditions, you should service it at SHORTER INTERVALS.

1— Hour Meter



TX1127749 —UN—10DEC12

Hour Meter

JS93577,000005E -19-10DEC12-1/1

Replace Engine Air Filter

IMPORTANT: Prevent possible engine damage. Do not clean engine air filter. Replace filter when air restriction indicator is illuminated on monitor. To prevent dirt from being sucked up into engine, do not remove filter when engine is running.

Do not start engine without engine air filter installed.

1. Open engine access door to access engine air filter (2).
2. Release engine air filter cover latches (1) to unlock cover.
3. Remove engine air filter.

IMPORTANT: DO NOT use compressed air to clean debris from air cleaner housing. Debris can enter engine, causing internal engine damage.

4. Clean the inside of the filter canister.
5. Install engine air filter, making sure filter element is centered in canister.

IMPORTANT: Prevent possible engine damage. If engine access door does not fit flush to air filter housing, engine air filter is not properly seated in housing.

6. Install cover and secure latches.
7. Close engine access door.

1— Latch (2 used) **2— Engine Air Filter**

TX1128450A —UN—19DEC12

Engine Air Filter Cover

TX1128451A —UN—19DEC12

Engine Air Filter

KR46761,00007FF -19-21DEC12-1/1

Check Engine Coolant Level

With the engine cold, coolant level must be between the FULL and LOW marks on the coolant recovery tank (2).

If coolant is below the LOW mark, add coolant to the coolant recovery tank.

CAUTION: Prevent possible injury from hot spraying water. DO NOT remove radiator filler cap (1) unless engine is cool. Then turn cap slowly to the stop. Release all pressure before you remove cap.

IMPORTANT: Avoid mixing different brands or types of coolant. Coolant manufacturers engineer their coolants to meet certain specifications and performance requirements. Mixing different coolant types can degrade coolant and machine performance.

If coolant recovery tank is full and radiator is low, check for leaks in radiator cap and hose connections between radiator and coolant recovery tank.

TX1125853A —UN—16NOV12

Coolant Recovery Tank

1— Radiator Filler Cap **2— Coolant Recovery Tank**

Coolant level must be at bottom of the radiator filler neck.

JS93577,000005F -19-10DEC12-1/1

Check Bucket Teeth

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

NOTE: Alternate buckets may use different tooth assemblies.

Check bucket teeth for wear. Replace tooth if tooth wear is below 65 mm (2.6 in.)

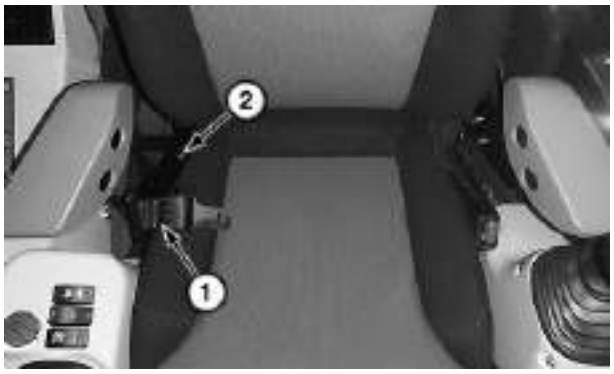
KR46761,0000764 -19-04DEC14-1/1

Check Seat Belt

Seat belt (1) and mounting hardware (2) must be inspected for wear or damage before operating the machine. Replace the belt or mounting hardware if worn or damaged.

Replace the complete seat belt assembly every 3 years regardless of appearance.

1— Seat Belt **2— Mounting Hardware**



TX1126028A —UN—21NOV12

Seat Belt

KR46761,000076E -19-21NOV12-1/1

Replace Primary Fuel Filter and Water Separator

1. Ensure key switch is in the OFF position.
2. Open right rear service door to access primary fuel filter and water separator assembly (1).
3. Close fuel shutoff valve (2).
4. Thoroughly clean exterior of primary fuel filter and water separator assembly and surrounding area.
5. Loosen drain valve (3) and air bleed plug (4) to relieve pressure and drain water and contaminants from water separator bowl into a suitable container. Dispose of waste properly.
6. Close drain valve and air bleed plug.
7. Remove water separator bowl from filter element. Clean and dry separator bowl.
8. Inspect bowl. Replace if necessary.
9. Remove filter element and seal from mounting base and discard.

IMPORTANT: DO NOT prefill fuel filters. Debris in unfiltered fuel will damage fuel system components.

Only lubricate filter seal with diesel fuel before installing.

10. Install new filter element.
11. Install water separator bowl. Tighten 1/2 turn after seal contacts mounting base.

TX1126445A —UN—21NOV12

Primary Fuel Filter and Water Separator Assembly

1— Primary Fuel Filter and Water Separator Assembly
2— Fuel Shutoff Valve
3— Drain Valve
4— Air Bleed Plug

12. Open fuel shutoff valve.
13. Bleed fuel system. See Bleed Fuel System. (Section 4-1.)
14. Close right rear service door.

KR46761,0000770 -19-03JAN13-1/1

Bleed Hydraulic System

1. Park and position machine on level surface.

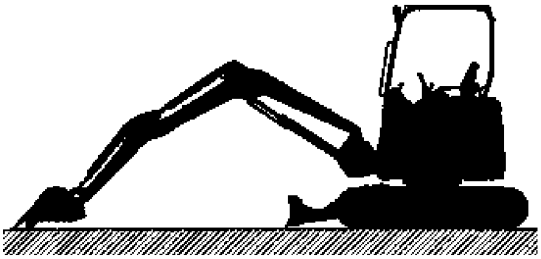
IMPORTANT: Avoid hydraulic pump damage. Perform the hydraulic system bleeding procedure every time you change the hydraulic filter, pilot system oil filter, or change hydraulic tank oil.

Do not operate any hydraulic functions, including unlocking pilot control shutoff lever, until you complete 1—5 in this procedure.

2. Loosen air bleed plug (1).
3. Purge air and tighten air bleed plug to specification.

Specification	
Air Bleed Plug—Torque	30—40 N·m 22—29 lb.-ft.

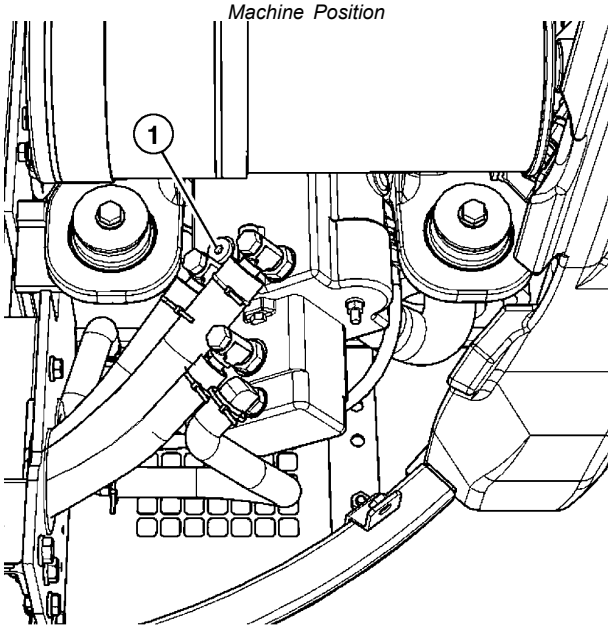
4. Turn engine speed control dial to slow idle position.
5. Start engine. Run for 5—10 seconds to ensure oil flow to hydraulic pump. Stop engine.
6. Check the hydraulic oil level at sight gauge. Add hydraulic oil if necessary. For specific hydraulic oil, see Hydraulic Oil. (Section 3-1.)
7. Start the engine again. Confirm oil level is above minimum point in hydraulic oil sight gauge. Run engine for approximately 1 minute to circulate oil through the system.
8. Stop engine and check hydraulic oil level. Add oil if necessary.
9. Start engine again. Operate each cylinder and swing motor repeatedly for 10—15 minutes to purge air from hydraulic system.
10. Park machine on a level surface and position machine with cylinders fully retracted.
11. Stop engine. Check hydraulic oil level. Add oil if necessary.



T205418 —UN—09DEC04

T205418

Machine Position



TX1127207 —UN—03DEC12

Air Bleed Plug

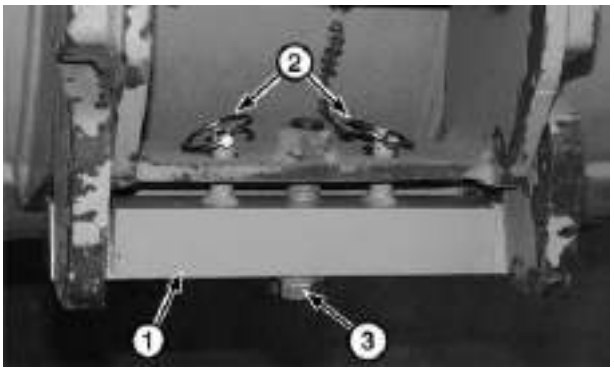
1— Air Bleed Plug

JS93577,0000054 -19-27DEC12-1/1

4. Install bucket or attachment and wedge bar (1). Two lynch pins (2) are installed on rear of mechanical quick coupler.
5. Tighten cap screw (3) to specification.

Specification	
Cap Screw—Torque	135 N·m 100 lb.-ft.

1— Wedge Bar
2— Lynch Pin (2 used)
3— Cap Screw



T130378C —UN—11JUL00

Wedge Bar and Lynch Pins

JS93577,0000068 -19-18DEC12-2/2

Track Sag General Information

To maximize undercarriage life, keep track sag within specification. Tracks may require adjustment several times during a working day due to changing soil type and moisture content.

Adjust tracks in the actual operating conditions.

TIGHT TRACK: Packing causes a tight track. If material packs in the undercarriage, adjust tracks with the material packed in the components.

While the track spring will recoil and the machine can continue to operate with a tight track, continued operation will result in excessive pin and bushing wear, sprocket popping, tooth tip wear, and excessive loads on the entire undercarriage and travel drive system.

Machine productivity and fuel consumption are also adversely affected because increased horsepower is needed to move the machine.

LOOSE TRACK: A loose track has more side to side motion, increasing side wear on the links, rollers and front idler. An excessively loose track will slap at high ground speeds, resulting in high impact loads on the sprocket teeth, bushings, and carrier rollers.

04T,90,M197 -19-18JUL06-1/1

Check Track Shoe Hardware

Tracks shoes should be checked periodically for loose or missing cap screws and nuts. For shoes with missing or loose cap screws and nuts, remove shoes and clean the mating surface of shoes and links before tightening cap screws and nuts. The cap screws should be replaced because they have been stretched to yield previously.

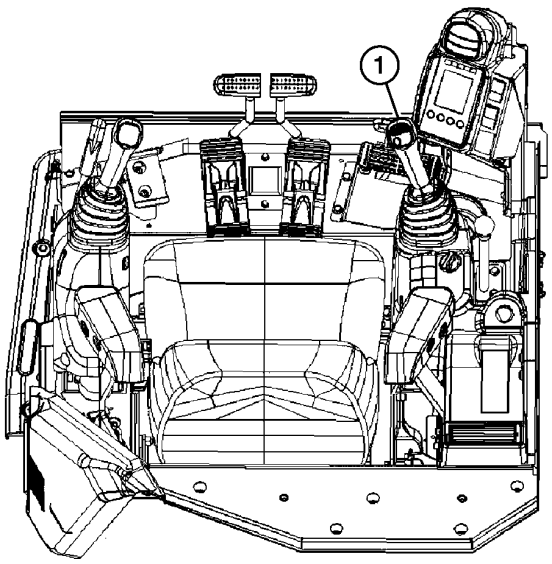
Operating a machine with loose shoes can cause the cap screws and holes in the shoes and links to wear making it difficult to keep the shoes tight. Loose shoes can also cause hardware malfunction and loss of shoes.

1. Clean the mating surface of shoe and links. Install shoes.
2. Apply a light coating of oil to cap screw threads before installing.
3. Install nuts with the rounded corners against milled surface of link and chamfered side is away from link.

   Check that nuts are square with the milled surface of link and there is full contact between nut and milled surface. As necessary, hold the nut so it does not turn.
4. Starting at any cap screw, tighten all cap screws in sequence to the torque specification, then 1/2 turn (180°) more.

KR46761,000076A -19-17DEC12-1/1

Horn Circuit Check



TX1126265 —UN—28NOV12

Horn Button

1— Horn Button

Key switch in OFF position.

Press horn button (1) on top of right pilot control lever.

LISTEN: Does horn sound?

YES: Go to next check.

NO: Check horn relay 5 A fuse (F1).

IF OK: See your authorized dealer.

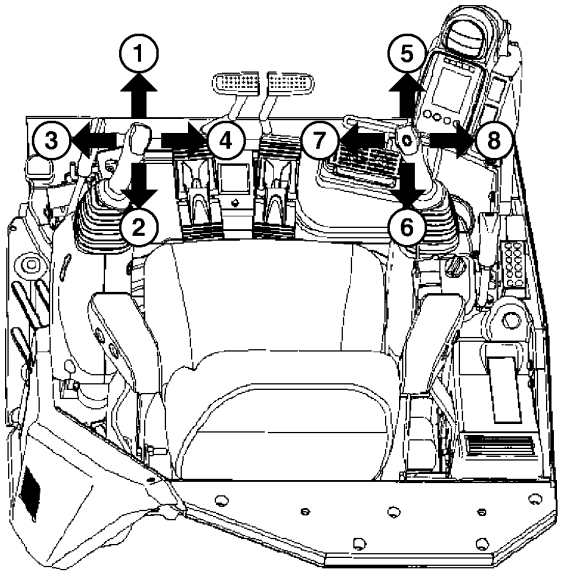
KR46761,000080C -19-26APR13-5/45

Operational Checks—Key Switch On, Engine Off Checks

Continued on next page

KR46761,000080C -19-26APR13-6/45

Pilot Control Pattern Check—SAE Backhoe Pattern



TX1126384 —UN—28NOV12

Backhoe Control Pattern

1— Boom Down
2— Boom Up
3— Swing Left
4— Swing Right
5— Arm Out
6— Arm In
7— Bucket Load
8— Bucket Dump

CAUTION: Prevent possible injury from unexpected machine movement. Clear all persons from the area before operating machine.

Turn engine speed dial to slow idle position.

Place pilot shutoff lever in unlocked (DOWN) position.

Slowly move hydraulic levers to all positions.

LOOK: Do bucket, boom, arm, and swing move according to pattern?

YES: Go to next check.

NO: See Control Lever Pattern Operation. (Section 2-3.)

Continued on next page

KR46761,000080C -19-26APR13-28/45

Item	Measurement	Specification
	Height—Cab	3310 mm 10 ft. 10 in.
	Height—Cab, Long Arm	3390 mm 11 ft. 1 in.
5—Machine	Transport Length—Canopy or Cab	4640 mm 15 ft. 3 in.
	Transport Length—Long Arm	4750 mm 15 ft. 7 in.
6—Minimum Swing	Radius—Canopy	2080 mm 6 ft. 10 in.
	Radius—Canopy, Long Arm	2190 mm 7 ft. 2 in.
	Radius—Cab	2240 mm 7 ft. 4 in.
	Radius—Cab, Long Arm	2300 mm 7 ft. 7 in.
7—Blade Bottom Highest Position (above ground level)	Distance	360 mm 1 ft. 2 in.
8—Blade Bottom Lowest Position (above ground level)	Distance	400 mm 1 ft. 4 in.
9—Offset Distance To Right	Maximum Distance—Canopy	735 mm 2 ft. 5 in.
	Maximum Distance—Cab	700 mm 2 ft. 4 in.
10—Offset Distance To Left	Maximum Distance	610 mm 2 ft. 0 in.

KR46761,00006F7 -19-04JAN13-2/2