

**145X4 LC
145X4 DZ
HYDRAULIC EXCAVATOR
OPERATOR'S MANUAL**





THIS SAFETY ALERT SYMBOL INDICATES IMPORTANT SAFETY MESSAGES IN THIS MANUAL. WHEN THIS SYMBOL IS USED, CAREFULLY READ THE MESSAGE THAT FOLLOWS AND BE ALERT TO THE POSSIBILITY OF DEATH OR SERIOUS INJURY.

Safety Decals on this excavator use the words **Danger, Warning, or Caution**, which are defined as follows:

- **DANGER:** Indicates an immediate hazardous situation that, if not avoided, will result in death or serious injury. The color associated with Danger is RED.
- **WARNING:** Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury. The color associated with Warning is ORANGE.
- **CAUTION:** Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices. The color associated with Caution is YELLOW.



WARNING

IMPROPER OPERATION OF THIS EXCAVATOR CAN CAUSE DEATH OR SERIOUS INJURY.
BEFORE USING THIS EXCAVATOR, MAKE CERTAIN THAT EVERY OPERATOR:

Is instructed in safe and proper use of the excavator.

Reads and understands the Manual(s) pertaining to the excavator.

Reads and understands ALL Safety Decals on the excavator.

Clears the area of other persons.

Learns and practices safe use of excavator controls in a safe, clear area before operating this excavator on a job site.

It is the operator's responsibility to observe pertinent laws, regulations and follow the LBX Company, LLC instructions on excavator operation and maintenance.

CALIFORNIA PROPOSITION 65 WARNING



WARNING: BREATHING DIESEL ENGINE EXHAUST EXPOSES YOU TO CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER AND BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM.

- ALWAYS START AND OPERATE THE ENGINE IN A WELL VENTILATED AREA.
- IF IN AN ENCLOSED AREA, VENT THE EXHAUST TO THE OUTSIDE.
- DO NOT MODIFY OR TAMPER WITH THE EXHAUST SYSTEM.
- DO NOT IDLE THE ENGINE EXCEPT AS NECESSARY.

FOR MORE INFORMATION GO TO www.P65Warnings.ca.gov/diesel.



WARNING: CANCER AND REPRODUCTIVE HARM www.P65Warnings.ca.gov.

LBX Company reserves the right to make changes in the specification and design of the excavator without prior notice and without incurring any obligation to modify units previously sold. The description of the models shown in this manual has been made in accordance with the technical specifications known as of the date of design of this document. All data given in this manual is subject to production variations. Dimensions and weights are provided with approximate values and the excavator fitting shown in the illustrations may not correspond with standard models.

For precise information on specific excavator models and versions, please contact your LBX Company Dealer. Reproduction or translation, even partial, is prohibited without written authorization from LBX Company.

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LINK-BELT TECHNICAL MANUALS

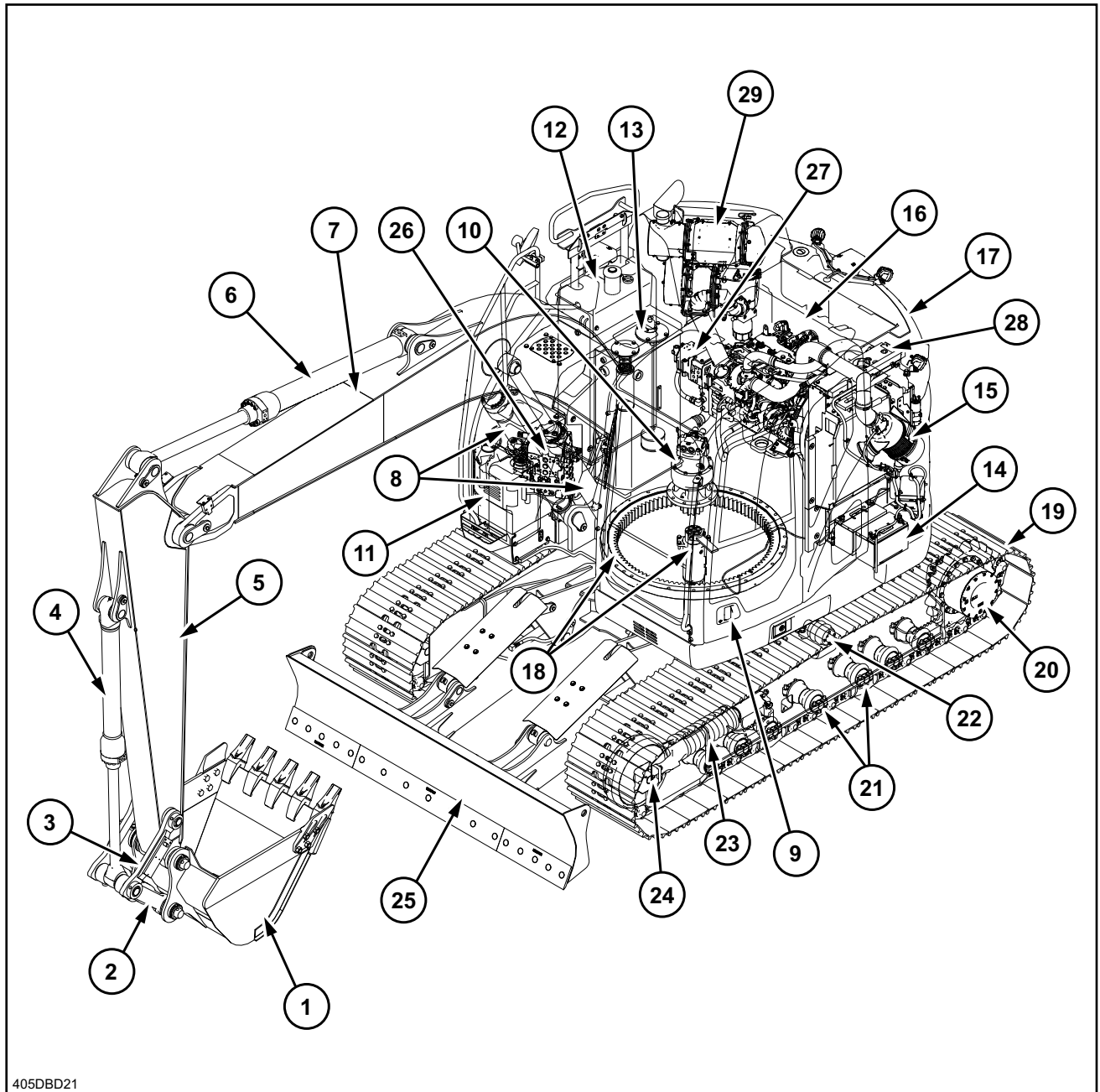
Manuals are available from the Dealer for the operation, service, and repair of the excavator. For prompt convenient service, contact the Dealer for assistance in obtaining the manuals for the excavator. The Dealer can expedite orders for Operator's Manuals, Parts Manuals, Service Manuals, and Maintenance records.

Always give the model number, model year, and manufacturer's number of your excavator so your Dealer can provide the correct manuals for your excavator.

NOTE: LBX COMPANY LLC reserves the right to make improvements in design or changes in specifications at any time without incurring any obligation to install them on units previously sold.

CHAPTER 2 - EXCAVATOR COMPONENTS

EXCAVATOR COMPONENTS



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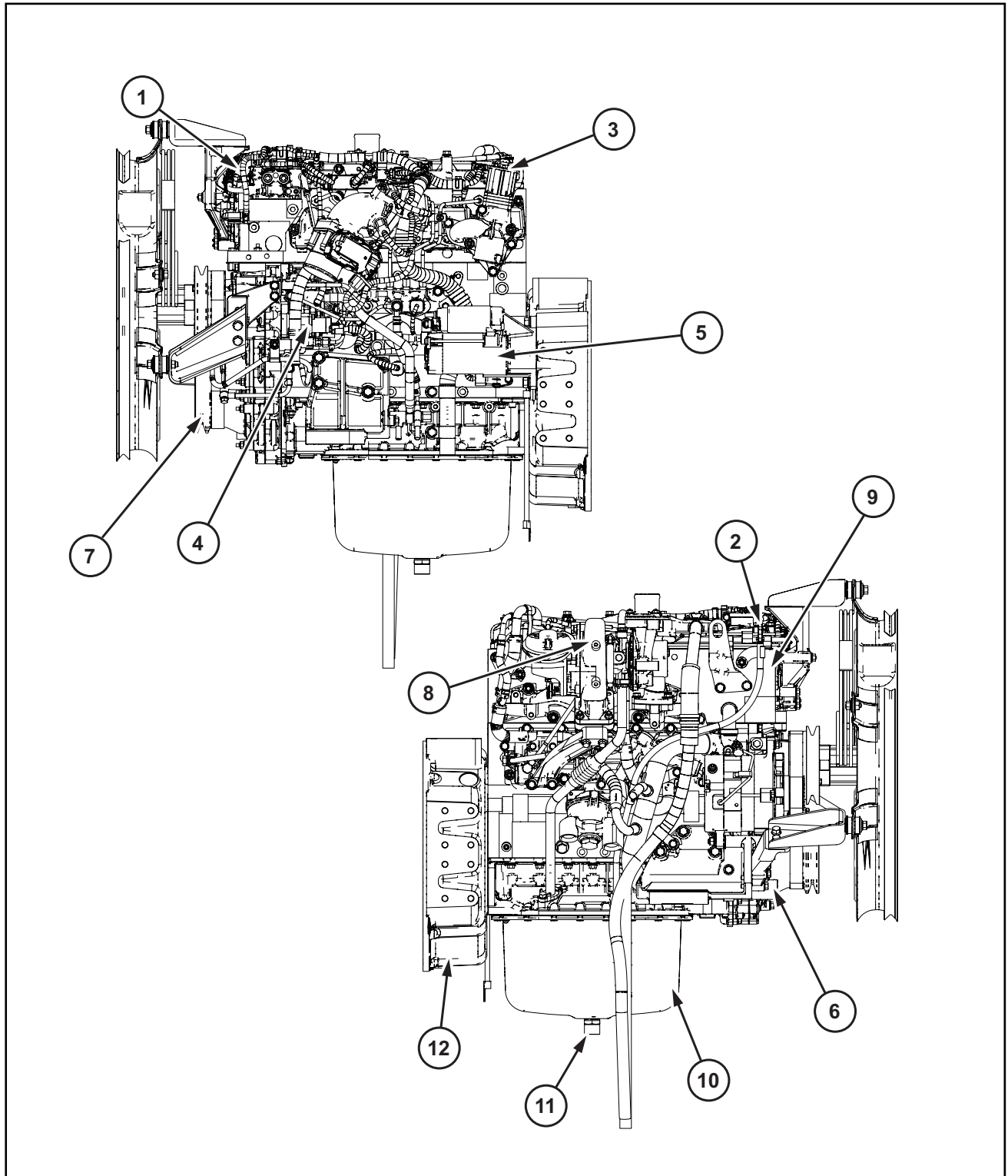
Figure 1

- | | | | | | |
|----|----------------------------|----|------------------------|----|----------------|
| 1 | BUCKET | 11 | DEF TANK | 21 | LOWER ROLLERS |
| 2 | CONNECTING ROD | 12 | FUEL TANK | 22 | UPPER ROLLERS |
| 3 | ARM LINK | 13 | HYDRAULIC RESERVOIR | 23 | RECOIL SPRING |
| 4 | BUCKET CYLINDER | 14 | BATTERIES | 24 | IDLER WHEELS |
| 5 | ARM | 15 | AIR FILTER | 25 | BLADE |
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| 7 | BOOM | 17 | COUNTERWEIGHT | 27 | HYDRAULIC PUMP |
| 8 | BOOM CYLINDERS | 18 | SWING COMPONENTS | 28 | RADIATOR |
| 9 | CAB/OPERATOR'S COMPARTMENT | 19 | TRACKS | 29 | SCR |
| 10 | SWING GEARCASE | 20 | TRAVEL REDUCTION GEARS | | |

MAIN COMPONENTS

This X4 excavator is a fully hydraulic excavator. It consists of an undercarriage fitted with tracks and a turntable bearing which supports the upperstructure frame. The upperstructure frame supports the attachment, at the front end of the excavator, plus the engine, hydraulics and cab. When the operator works the controls, the engine-driven pump delivers hydraulic fluid to the control valve. The control valve distributes the hydraulic fluid to the various cylinders and motors concerned. A cooling system maintains the hydraulic fluid at normal operating temperature.

ENGINE COMPONENTS

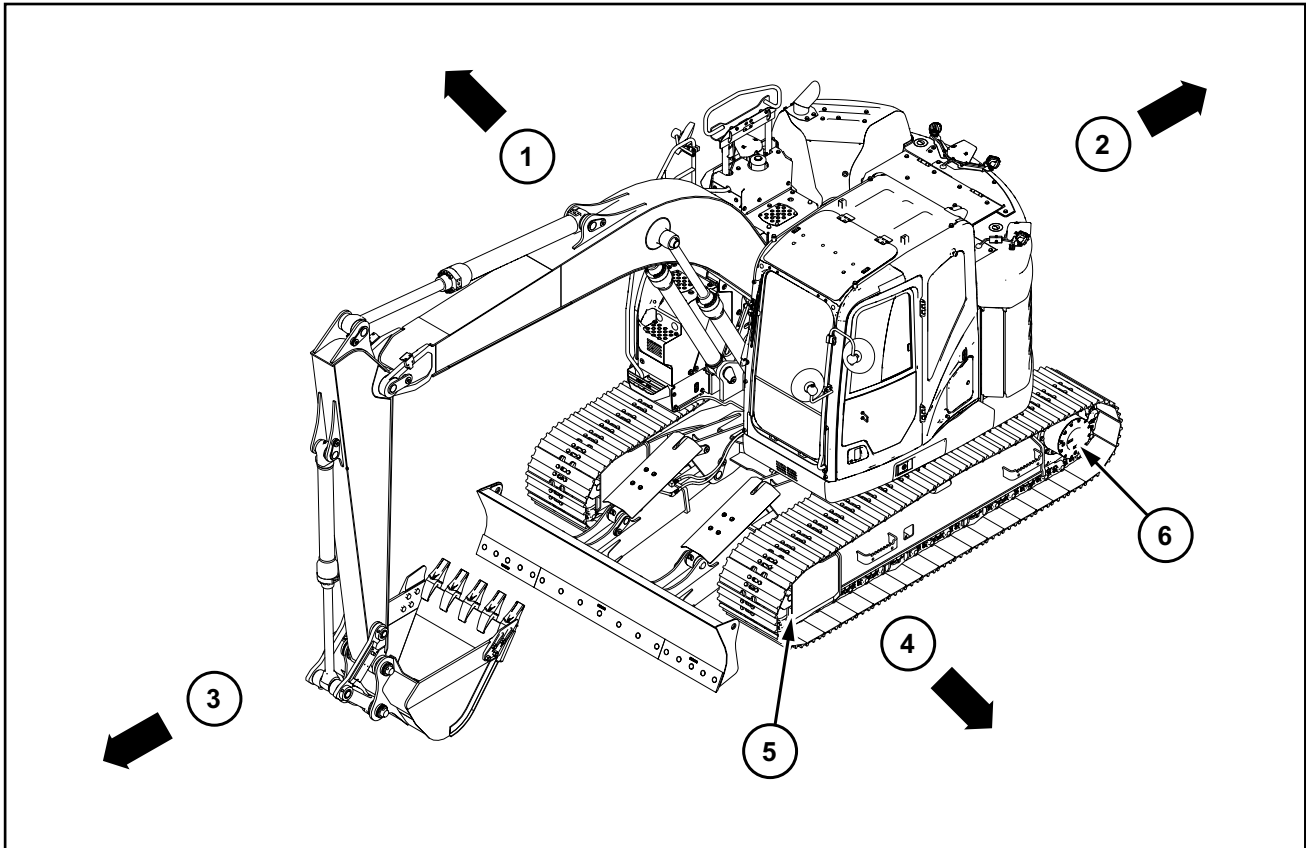


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Figure 2

- | | | | | | |
|---|------------------|---|---------------|----|----------------|
| 1 | WATER OUTLET | 5 | STARTER MOTOR | 9 | ALTERNATOR |
| 2 | OIL DIPSTICK | 6 | WATER INLET | 10 | OIL PAN |
| 3 | EGR VALVE | 7 | CRANK PULLEY | 11 | OIL DRAIN COCK |
| 4 | FUEL SUPPLY PUMP | 8 | TURBOCHARGER | 12 | FLYWHEEL HOUSE |

RIGHT, LEFT, FRONT AND REAR OF THE EXCAVATOR



464BD1F3

Figure 3

The terms Right-hand (1), Left-hand (4), Front (3), and Rear (2) are used in this manual to indicate the sides as they are seen from the operator's seat when the cab is over the idler wheels (5).

The illustration above shows the excavator in normal TRAVEL position. In normal TRAVEL position, the cab is over the idler wheels. The travel reduction gears (6) are at the rear of the upperstructure.

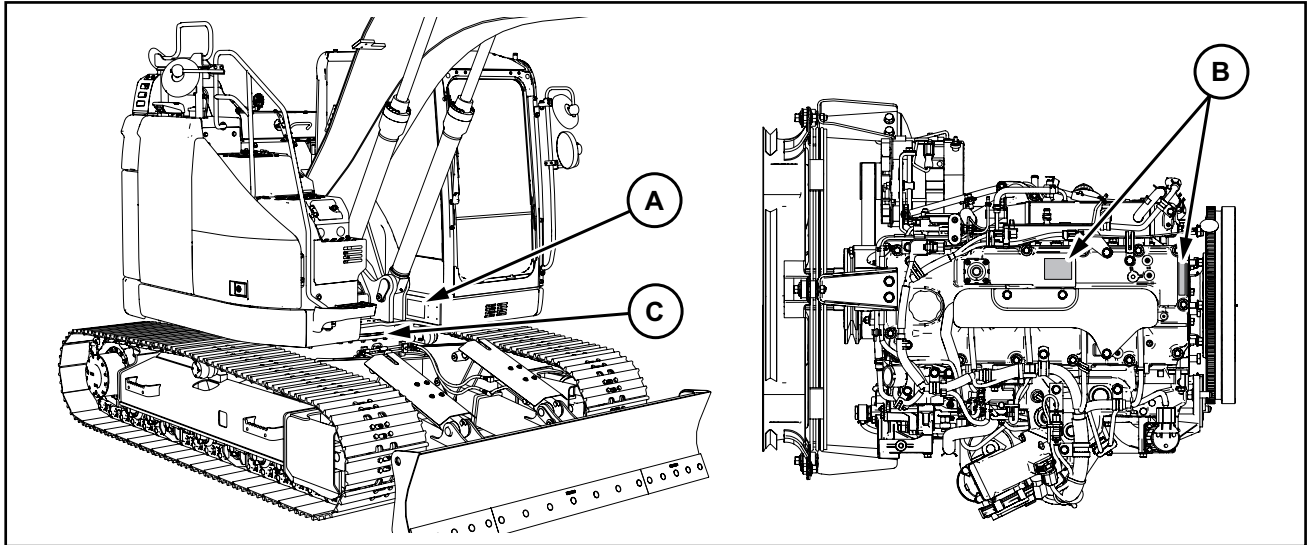
IDENTIFICATION NUMBERS

TYPE, SERIAL NUMBER AND YEAR OF MANUFACTURE

When ordering parts, obtaining information or assistance, always supply your Link-Belt dealer with the type and serial number of your excavator or accessories.

Write the following in the spaces below: The model number, model year, and manufacturer's number of your excavator, and the make/model and serial numbers of the engine.

EXCAVATOR IDENTIFICATION LOCATIONS



081A80A6

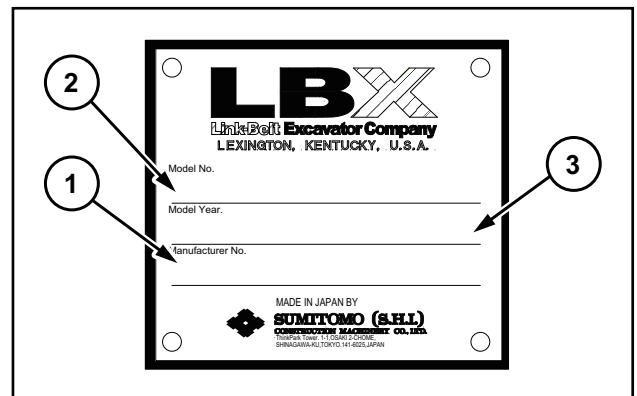
Figure 4

IMPORTANT: If the excavator serial number plate is missing or unreadable the manufacturer's number is stamped on the frame (C) on the excavator.

EXCAVATOR SERIAL NUMBER AND ENGINE SERIAL NUMBER

EXCAVATOR (A)

1. Manufacturer Number:
2. Model Number:
3. Model Year:



E5E0B54B

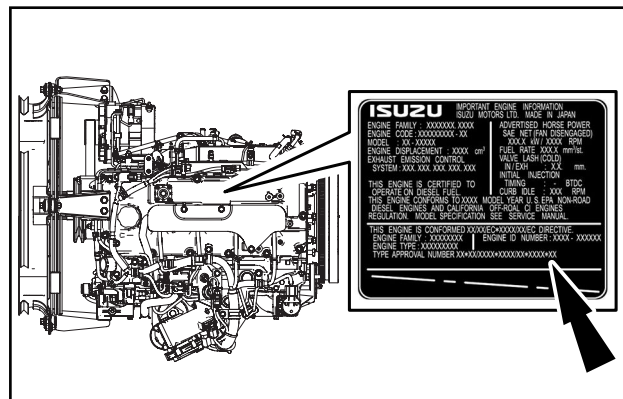
Figure 5

ENGINE (B)

Make and Model: **ISUZU AR-4JJ1X**

Serial Number:

Serial Number is shown on the emission label attached to the cylinder head cover.



A225A9D1

Figure 6

ID LABEL (B)

It is attached to the cylinder head cover.



349E4EE7

Figure 7

COMPONENT SERIAL NUMBERS

Hydraulic Pump:

Swing Reduction Gear:

Travel Reduction Gears:

Travel Control Valve:

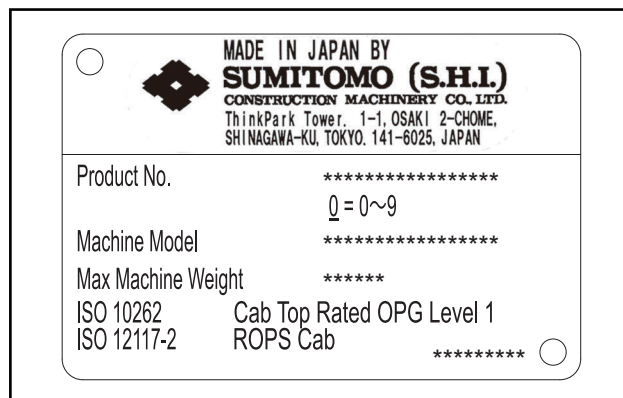
Attachment Control Valve:

Swing Control Valve:

STRUCTURE PROTECTION (ROPS)

ROPS complies with ISO 12117-2

Product Number:



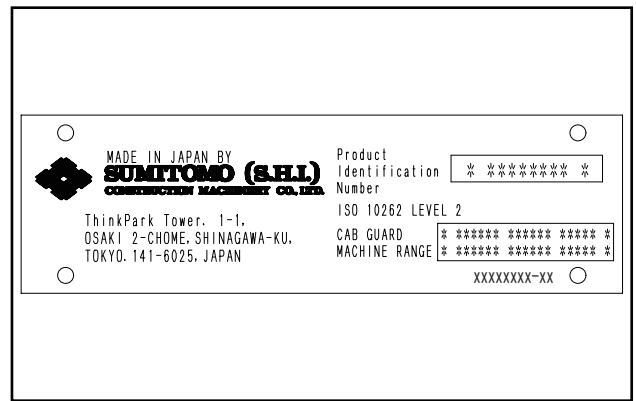
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Figure 8

CAB PROTECTION (FOPS) (OPTIONAL)

FOPS complies with ISO 10262 level 2 standard.

Product identification number:

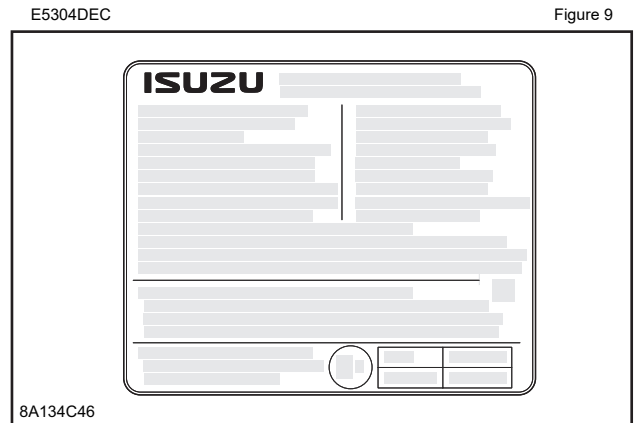


EMISSION LABEL

This is affixed on the cylinder head cover.

The emission decal describes important details for using the engine. Make sure to read before using the engine.

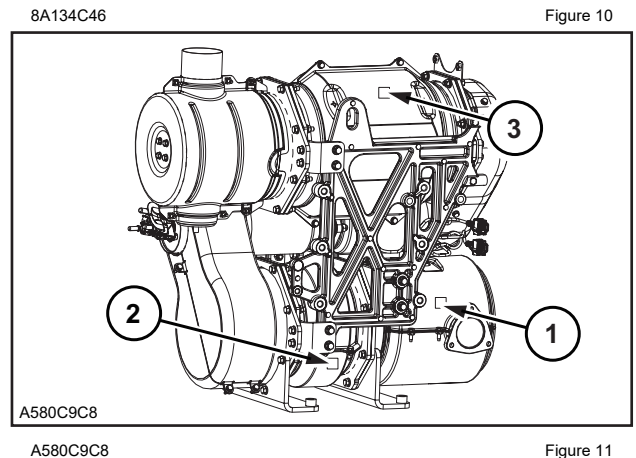
Also, the emission decal describes details regarding the engine only.



DEF SCR SERIAL NUMBER

The number is stamped on top of the DEF SCR.

1. DOC serial (front)
2. DOC serial (center)
3. SCR serial



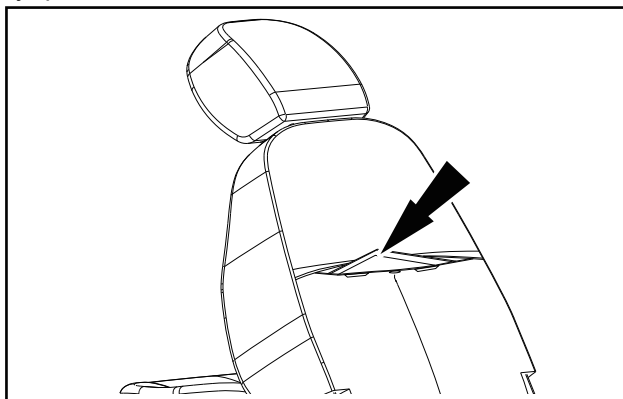
CHAPTER 3 - SAFETY, DECALS, AND HAND SIGNALS

SAFETY RULES

⚠ WARNING

This safety alert symbol indicates important safety messages in this manual. When you see this symbol, carefully read the message that follows and be alert to the possibility of death or serious injury.

Most accidents involving excavator operation and maintenance can be avoided by following basic safety rules and precautions. Read and understand all the safety messages in this manual, the safety manual and the safety signs on the excavator before you operate or service the excavator. Contact your dealer if you have any questions.



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Figure 1

READ THIS MANUAL COMPLETELY and make sure you understand the controls. All equipment has a limit. Make sure you understand the speed, stopping, steering, stability and load characteristics of this excavator before you start to operate.

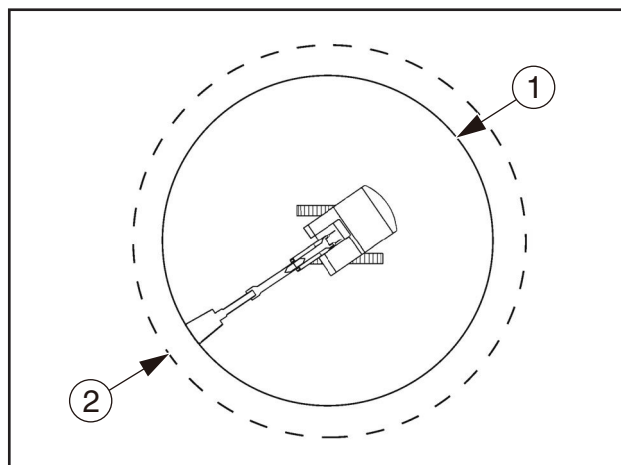
DO NOT remove this manual or the safety manual from the excavator. Contact your dealer for additional manuals. Also see the manual information on the inside of the rear cover of this manual.

The safety information given in this manual does not replace safety codes, insurance needs, federal, state or local laws. Make sure your excavator has the correct equipment according to these rules or laws.

Additional safety messages are used in the text of the manual to show specific safety hazards.

IMPORTANT: The safety messages in this chapter point out situations which can happen during the normal operation and maintenance of your excavator. These safety messages also give possible ways of dealing with these conditions.

SAFETY AREA



E2AFF9F3

Figure 2

- 1 WORKING AREA
- 2 SAFETY AREA

The safety area is the space necessary for the excavator to operate at the maximum range of the tool and a full 360° swing plus 6 feet (2 meters).

UTILITY SAFETY

Safety precaution **MUST** be followed when working near buried and over head utility lines.

During operation it is likely that you will be working around or near buried or over head utility lines which may include, but are not limited to:

- Electrical Power Line
- Gas Line
- Water Line
- Communication Line - Telephone or Cable Television

Before beginning any excavator operation, it is your responsibility to be aware of all such utility lines buried and over head in the area of your project and to avoid them.

ALWAYS have all local utility companies mark the location of their lines.

In U.S.A. and Canada call one of many "One Call System Director" services.

If you do not know the local number, call the national number (U.S.A. and Canada only): 811.

Check with local authorities for laws, regulations and/or strict penalties requiring you to locate and avoid existing utilities.

Know the utility color code (U.S.A. and Canada):

Electric	Red
Gas, Oil, or Petroleum	Yellow
Communication, Telephone, Television	Orange
Water	Blue
Sewer	Green/Brown
Proposed Excavation	White
Surveying	Pink
Reclaimed Water and Slurry	Purple

After locating any buried utility lines, carefully dig a hole by hand and/or automatic vacuum equipment to the utility line to verify the location and depth of the line.

OPERATOR PRECAUTIONS

PERSONNEL

- Be prepared for emergencies. Always have a first aid kit and a working fire extinguisher with you and know how to use each.
- Avoid loose fitting clothing, loose or uncovered long hair, jewelry and loose personal articles.
- Know and use the protective equipment that is to be worn when operating this excavator. Hard hats, protective glasses, protective shoes, gloves, reflector type vests, respirators and ear protection are examples of types of equipment that may be required.
- Certain protective equipment should be replaced and renewed upon age and wear. Old hard hats may not afford the original users intention. Faded and soiled vests are no longer as highly visible as original intended. See the manufacturer's recommendation.
- Do not rush. Walk, do not run.
- Know and use the hand signals required for particular jobs and know who has the responsibility for signaling.

GENERAL

- It is the responsibility of the operator to read and understand the operator's manual and other information provided and use the correct operating procedure. Excavators should be operated only by qualified operators.
- Do not operate this excavator or perform maintenance work if you have not had appropriate training and have not read and fully understand the instructions and warnings in this manual.
- Wear the seat belt at all times when operating the excavator.
- Inspect the seat belt end mounting bolts on a daily basis to ensure their integrity.
- Make sure all protective guards are in place and secure.
- Remove all loose objects stored in the excavator. Remove all objects which do not belong in or on the excavator and its equipment.

MOUNTING AND DISMOUNTING PRECAUTIONS

- Use the recommended hand holds and steps with at least three points of support when getting on and off the excavator. Keep steps and platform clean. Face the access system when climbing up and down.
- Do not jump off the excavator.
- Do not dismount while the excavator is in motion.
- Foreign material or grease on the steps and hand rails can cause an accident. Keep the steps and hand rails clean.

STARTING AND STOPPING PRECAUTIONS

- Walk around the excavator and warn all personnel who may be servicing the excavator and any other persons who are in the safety area prior to starting. Do not start until all persons are outside the safety area. Sound the horn before starting.
- Stones or other objects may be flying out when the machine is operating or travelling in the work site. Post "Entry prohibited" to prevent no one from entering the site. Also, take measures so that no one approaches the site.
- Walk around the excavator's tool, attachment, or furthestmost contact point to view operation danger area from the worksite personnel view and angle.
- Adjust, secure and latch the seat and fasten the seat belt before starting the excavator.
- Start and operate the excavator only from the operator's seat.
- Do not bypass the excavator's gate lock system. The gate lock system must be repaired if it malfunctions.
- Use jumper cables only in the recommended manner. Improper use can result in battery explosion or unexpected excavator motion. Ventilate the battery area before using jumper cables. Make sure that using jumper cables will not interfere or harm electronic processing or computer devices. See Connecting One or Two Booster Batteries Chapter 9 (Page 9-6).
- Do not operate the engine in an enclosed area without adequate ventilation.
- Park the excavator on level ground whenever possible and lower the attachment to the ground. The travel brakes will automatically apply. On grades, park the excavator with the tracks securely blocked.
- Before leaving the operator's cab, lower the equipment to the ground or put the gate lock in the locked position, and shut off the engine.
- Remove the starter key when leaving the excavator parked or unattended.

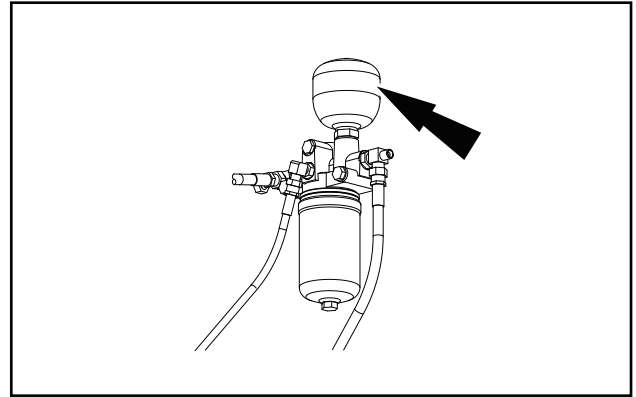
OPERATING PRECAUTIONS

- Ensure joysticks and foot pedals are in neutral position when unlocking gate lock lever (activating hydraulic controls) to prevent unintended movement.
- Lock gate lock lever (de-activate hydraulic controls) when joysticks and foot pedals are not in use or when machine is idle to prevent unintended movement.
- Check all excavator control devices in accordance with the manufacturer's instructions prior to starting operation. Observe all gauges or warning instruments for proper operation. Operate all controls to ensure proper operation. If any malfunctions are found, remove the starter key. Place a DO NOT OPERATE tag on the excavator until the malfunction is corrected.
- Understand the excavator limitations and keep the excavator under control.
- Operate the excavator with care and at a speed compatible with conditions. Use extra caution when operating over rough ground, on slopes, and when turning.
- Note and avoid all hazards and obstructions such as ditches, underground lines, trees, cliffs, overhead electrical wires or areas where there is danger of a slide.
- Carry loads in recommended positions for maximum stability.
- Never lift loads in excess of capacity.
- Know and understand the job site traffic flow patterns and obey signal persons, road signs and flagmen.
- Know and understand job site conditions may change on an hourly basis. Hills of dirt, debris or obstructions may grow and change from the time you began the day. It is your responsibility to monitor the changes and keep the excavator, tools and attachments, etc. at a safe distance.
- Do not allow anyone within the safety area. Stop all operations until everyone has moved away.
- Never allow anyone to be under or reach through any part of the machine or boom/arm/end attachments.
- When transporting an excavator, know and use the signaling devices required on the excavator. Provide an escort for transporting where required.
- Use the recommended transport devices when transporting the excavator. See Transporting the Excavator section for more details.
- Use an approved drawbar and/or attachment point when using the excavator for towing. If a cable or chain is used, keep people away from the tow line.
- Before you operate at night, check that all work lights illuminate.
- Engine exhaust fumes can cause death. If you operate this excavator in an enclosed area, make sure there is ventilation to replace the exhaust fumes with fresh air.
- Ensure that all windows are clean and the windshield wipers work correctly.
- Check all controls in a clear area and make sure the excavator is operating correctly.
- Dust, fog, smoke, etc. can decrease your vision and cause an accident. Stop the excavator or decrease the speed until you can see.
- Contact with high voltage power lines, underground cables, etc. can cause serious injury or death from electric shock.
- Before you travel or operate in an area with high voltage lines, cables, or a power station, tell the power or utility company what you are going to do. You **MUST HAVE THE POWER DISCONNECTED OR KEEP A SAFE WORKING DISTANCE** from the lines, cables, or power station. Keep all parts of the excavator at least 16.5 ft (5.0 m) away from the power source. You must also know any federal, state/provincial, or local safety codes or regulations that apply to the job site.
- If a part of the excavator touches high voltage power:
 - [1] Warn other workers **NOT TO TOUCH THE EXCAVATOR** and to stay away from the excavator.
 - [2] If you can break contact, reverse the operation that caused contact with the high voltage power, and move the excavator away from the danger area. If you cannot break contact stay in the excavator until the utility company de-energizes the line and tells you the power is off.
- If you have extreme conditions, such as a fire, etc., and you are forced to leave the excavator, do not step off the excavator. Jump as far from the excavator as possible with your feet together and do not touch the ground with your hands.
- Do not operate the excavator if you do not feel well. This can be dangerous for you and for the people around you.
- Determine if weather, road, or earth conditions will permit safe operation on or near, including but not limited to, a hill, ramp, cliff or rough ground. Machine weight and vibration must be considered.
- Stay away from hazardous areas including ditches, overhangs, highwalls, etc. Walk around the work area before you start and look for hazards.
- Be alert and always know the location of all workers in the area. Injury or death can result if these instructions are not followed.

MAINTENANCE PRECAUTIONS

- Do not attempt repairs unless trained. Refer to manuals and experienced repair personnel for help.
- Before you service the excavator, put a DO NOT OPERATE tag on the key switch.
- Wear protective glasses and other required safety equipment when servicing or repairing the excavator.
- Wear gloves to protect hands when handling cable.
- Disconnect the battery before working on the electrical system. Know the consequences of disconnecting any electronic or computer devices.
- Before performing maintenance for the electrical systems or electric welding, always turn the battery disconnect switch to "OFF" position or disconnect the negative (-) terminal of the battery, in order to cut off the electric circuit.
Refer to "BATTERY DISCONNECT SWITCH" (9-3).
- Avoid lubrication or mechanical adjustments with the excavator in motion or the engine operating. If the engine must be in operation to make certain adjustments, put the gate lock in the locked position, place the excavator in a safe position, securely block the tracks and use extreme caution.
- Securely block the excavator or any component that may fall before working on the excavator or component. If possible, use a back up or secondary blocking device, also.
- To prevent unexpected movement, securely block working elements when repairing or changing working tool parts such as cutting edges.
- Never make repairs on pressurized components, fluid, gas or mechanical until the pressure has been relieved according to the manufacturer's instructions.
- Use extreme caution when removing radiator caps, drain plugs, grease fittings or pressure taps. Park the excavator and let it cool down before opening a pressurized tank.

- Release all pressure before working on systems which have an accumulator. Use a piece of cardboard, newspaper, or wood to check for pressurized leaks to prevent fluid penetrating the skin. Pressurize accumulators with the proper gas according to manufacturer's recommendations. A label is on the accumulator. The label warns that the accumulator is filled with gas under high pressure and that anyone must not bring a flame or weld close to the accumulator. For any service work, contact your Link-Belt Dealer.



A8C115F8

Figure 3

- Never attempt to disassemble the recoil spring. Failure to comply could result in death or serious injury.
- When absolutely necessary to tow the excavator, contact your Link-Belt Dealer for proper procedures.
- Observe proper maintenance procedures.
- Whenever servicing or replacing hardened pins, etc., use a brass drift or other suitable material between the hammer and pin or use a brass hammer, or suitable material on the pin.
- Replace all missing, illegible or damaged safety decals. Keep all safety decals clean.

FUEL HANDLING PRECAUTIONS

- Do not smoke or permit open flames while fueling or near fueling operations.
- Never remove the fuel cap with the engine running or hot. Never allow fuel to spill on hot excavator components. Never allow fuel to spill on the environment.
- To avoid spilling fuel, maintain control of the fuel filler nozzle when filling the tank.
- Do not fill the fuel tank completely to the top. Allow room for expansion.
- Clean up spilled fuel immediately and dispose of contaminated material in an environmentally correct manner.
- Tighten the fuel tank cap securely. Should the fuel cap be lost, replace it only with the original manufacturer's approved cap. Use of a non-approved cap without proper venting may result in pressurization of the tank.
- Never use fuel for cleaning purposes.
- Use the correct fuel grade for the operating season.

BURN PREVENTION

WARNING

BATTERY ACID CAUSES SEVERE BURNS. Batteries contain sulfuric acid. Avoid contact with skin, eyes or clothing.

Antidote: EXTERNAL - Flush with water.

Antidote: INTERNAL - Drink large quantities of water or milk.

DO NOT induce vomiting. Seek medical attention immediately.

EYES - Flush with water for 15 minutes and seek medical attention immediately.

WARNING

BATTERIES PRODUCE EXPLOSIVE GASES. Keep sparks, flame, cigars and cigarettes away. Ventilate when charging or using in enclosed area. Always wear eye protection when working near batteries. Wash hands after handling. **KEEP OUT OF REACH OF CHILDREN.**

- When the battery electrolyte is frozen, the battery can explode if, you try to charge the battery, or you try to jump start and run the engine. To prevent the battery electrolyte from freezing, try to keep the battery at full charge. If you do not follow these instructions, you or others in the area can be injured.
- Hot coolant can spray out if the radiator cap is removed. To remove the radiator cap, let the cooling system cool, turn to the first notch, wait until the pressure is released, and then remove the radiator cap.

HAZARDOUS CHEMICAL PRECAUTIONS

- If you are exposed to or come in contact with hazardous chemicals you can be seriously injured. The fluids, lubricants, paints, adhesives, coolants, etc., used with your excavator can be hazardous.
- Material Safety Data Sheets (MSDS) provide information about the chemical substances within a product, safe handling procedures, first aid measures and procedures to be taken when the product is accidentally spilled or released. MSDS are available from your Link-Belt Dealer.
- Before you service your excavator, check the MSDS for each fluid, lubricant, etc. used in this excavator. This information indicates what the risks are and how to service the excavator safely. Follow this information when servicing the excavator.
- Before you service this excavator and before you dispose of the old fluids and lubricants, always remember the environment. **DO NOT** put oil or fluids into the ground or into containers that can leak.
- Check with your local environmental or recycling center or your dealer for correct disposal information.

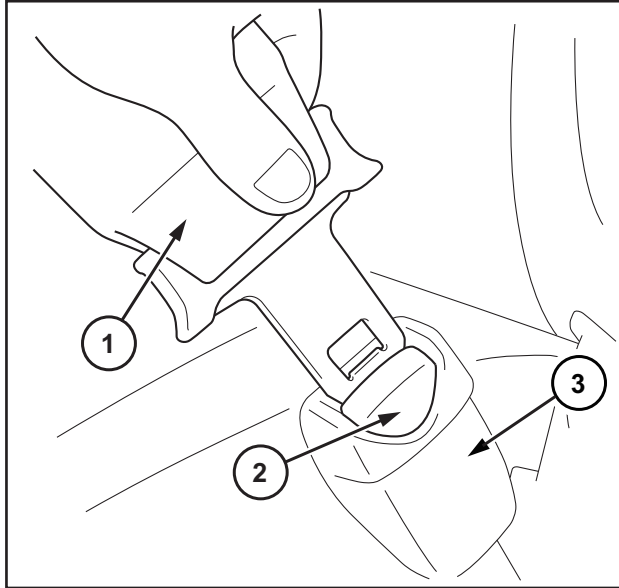
TRANSPORTING PRECAUTIONS

- Know the rules, laws, and safety equipment necessary for transporting this excavator on a road or highway.
- Travel the machine on a trailer, track or ramp at safe speed, and load or unload the machine, securing its stability.
- Make sure to stop the engine before tying down the machine.
- The door may open when the machine is being transported. Use the key to lock all the doors such as the operator's cab door, the left and right hand doors, and the engine hood, after loading the machine.
- When transporting the machine with its end attachment such as breaker mounted, if the outer dimensions are not satisfied with transport regulation, remove the end attachment before transporting the machine. Some end attachment may need to be split into pieces.
- Replace or repair a damaged part even if it is not a crucial component part.

FIRE EXTINGUISHER

- It is recommended you have a fire extinguisher on your excavator. The fire extinguisher is available from your dealer and can be installed on the excavator.

SEAT BELT PRECAUTIONS



E380B85C

Figure 4

- 1 RIGHT BELT STRAP
- 2 RELEASE LEVER
- 3 LATCH MECHANISM

1. To latch the seat belt, pull the right belt strap to the latch mechanism.
2. Insert the metal end into the latch mechanism on the left side of the seat.
3. To unlatch the seat belt, press the release lever on the right belt strap. The seat belt will come apart.

⚠ WARNING

Before starting the engine ensure seat belts are securely fastened. The seat belt can help ensure your safety if it is used and properly maintained. Never wear a seat belt loosely or with slack in the belt system. Never wear the belt in a twisted condition or pinched between the seat structural members.

QUICK COUPLER PRECAUTIONS

- Always follow the safety procedures of the quick coupler manufacturer if you have one on your excavator. See Hydraulic Excavator Quick Coupler Operation for more details.

ENGINE PRECAUTIONS

- The fuel delivery system on the engine is under high pressure. DO NOT OPEN the high pressure fuel lines with the engine running.

SPECIFIC PRECAUTIONS TO THIS EXCAVATOR

- Keep the load or tool, such as bucket, breaker, hammer, ripper, or other device as low as possible while moving the excavator around the jobsite.
- Never smoke while refueling.

OPERATOR PROTECTION

The excavator is equipped with a Roll-over Protective Structure (ROPS) and Falling Object Protective Structure (FOPS) integral to the cab. A FOPS Level II (option) can be added for further protection.

The protective structure, the fitting supports and fastening elements on the excavator are an integral part of the structure.

After a fire, corrosion, or collision, any possible damage to the cab protective structure must be carefully evaluated by specialized and qualified personnel.

In any case, all damaged parts must be replaced by genuine spare parts, so that the original conditions are reinstated.

Contact your Link-Belt Dealer to verify the functionality of the cab structure or the requirement for the replacement of the entire structure or parts of it.

⚠ DANGER

Do not change the Roll Over Protective Structure (ROPS) in any way.

Unauthorized changes such as welding, drilling, or cutting will weaken the ROPS and decrease your protection.

Have an authorized dealer replace the ROPS if damage of any kind occurs.

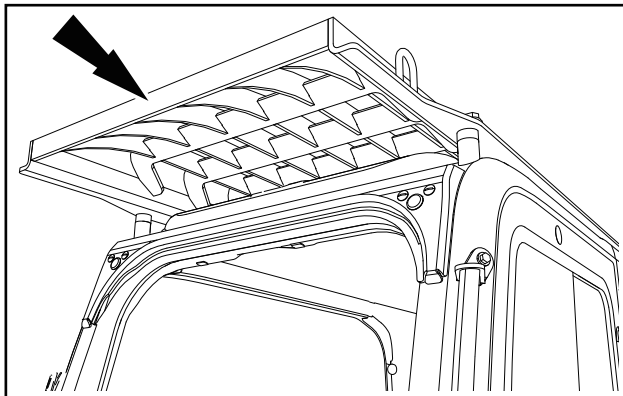
DO NOT TRY TO REPAIR THE ROPS.

Failure to comply will result in death or serious injury.

⚠ WARNING

After an accident, fire, tip over, or roll over, specialized and qualified personnel **MUST** determine if the cab protective structure has been compromised and if it must be replaced to maintain compliance.

Failure to comply could result in death or serious injury.



507D2076

Figure 5

⚠ DANGER

If the ROPS is damaged, specialized and qualified personnel **MUST** determine whether the structural integrity of the ROPS has been compromised.

When replacing the cab, check the parts list for the part number of the cab appropriate for the model.

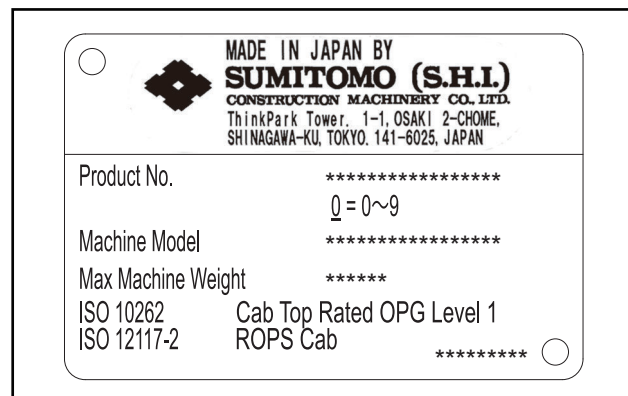
If the wrong cab part number is mounted, the level of ROPS protection could be inadequate, which could result in death or serious injury to the operator or damage to the excavator.

Adding non-genuine parts or modifying the cab main unit is prohibited in order to ensure strength.

IMPORTANT:

Match the part number.

Do not perform modifications.



8BE8421D

Figure 6

If the excavator is modified to have a cab riser, the cab will no longer be ROPS compliant, and the ROPS certification label must be removed.

There are different guards available that are used for added operator protection. Machine type, use and application must be considered to determine the guarding to be used.

Protection from flying, penetrating, and/or falling objects is necessary for certain applications. Approved front guard should be installed when using a work tool that creates flying objects. Windows should be closed during use of these tools. If the work material can extend above the cab, top and front guards should be used.

Check the guarding daily for damage or loose items. Never operate the machine with a damaged or loose guard.

Improper use or operation of the machine may expose the operator to a hazardous situation even when the machine is equipped with appropriate guarding. Follow the established operating procedures recommended for your machine.

 WARNING

The impact from objects that strike the front of the cab or the top of the cab could result in a crushing hazard with the potential for personal injury or death.

A front guard and top guard should be installed on the cab for applications where the hazard of falling object exist.

DECALS

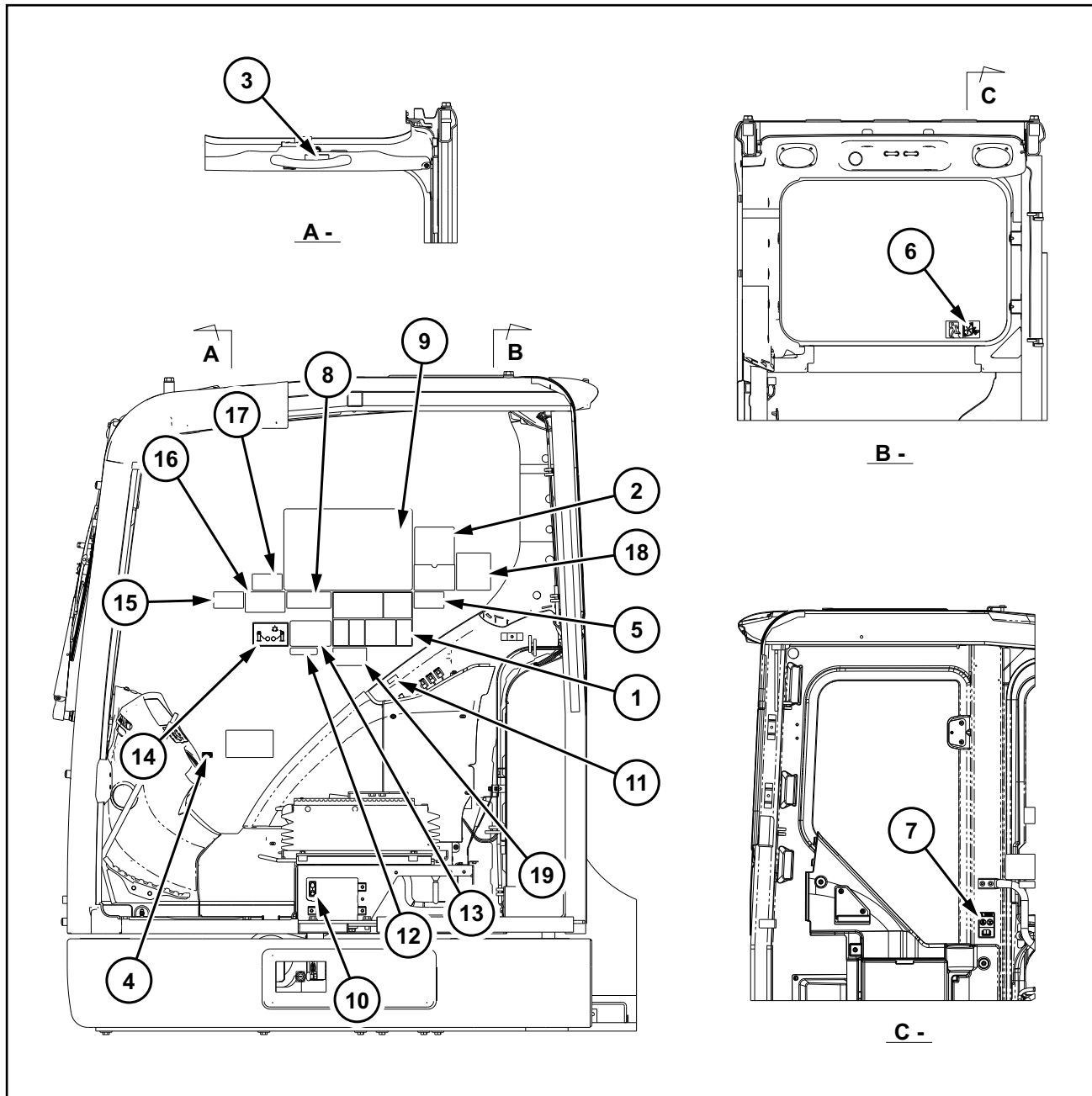
NOTE: This chapter only covers decals relating to safety and excavator operation and servicing. For information on all decals for the excavator, contact your authorized dealer.

NOTE: When you clean the decals, use only a cloth, water and soap. Do not use solvents, gasoline, etc.

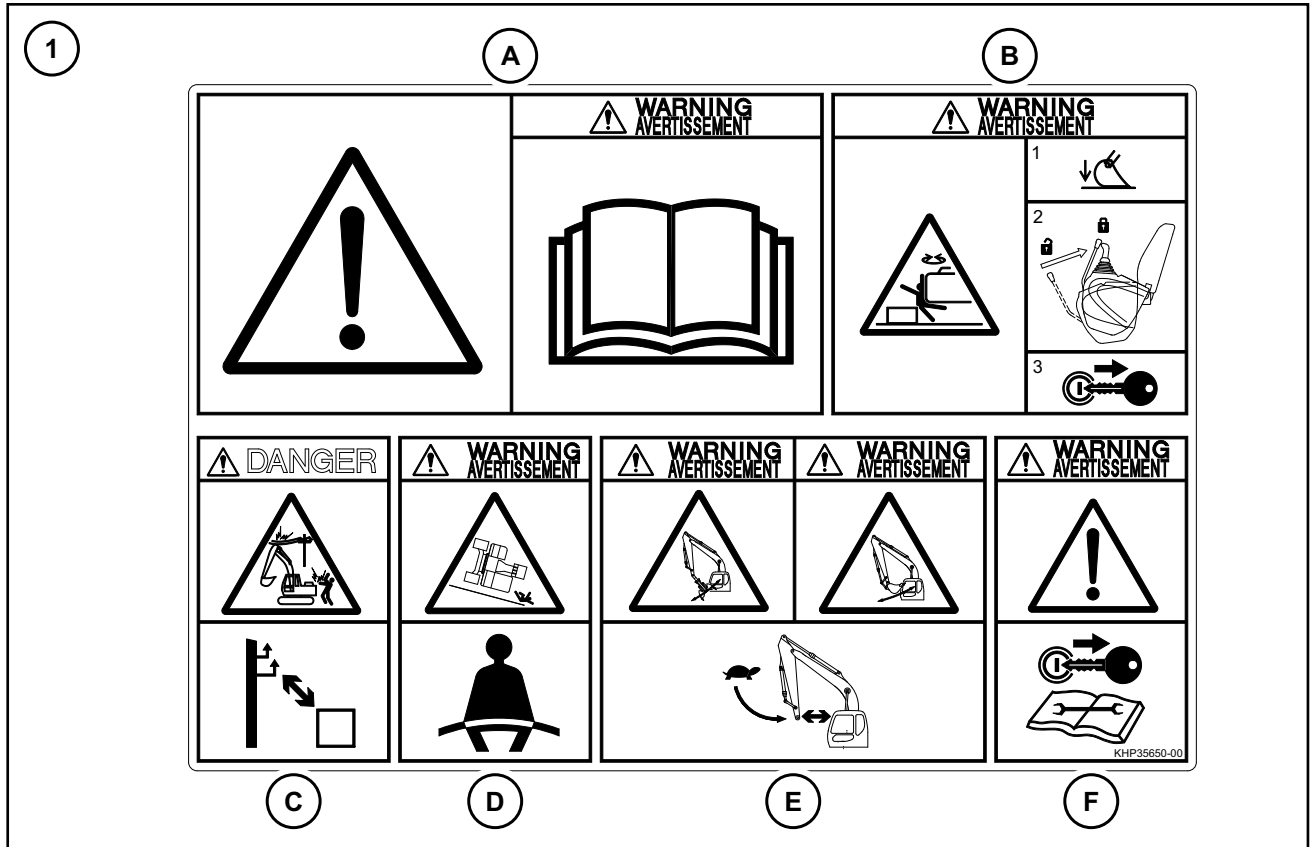
⚠ WARNING

Make sure that the decals are perfectly legible, clean them regularly and replace decals that are destroyed, lost, painted over or no longer legible, with new ones. When parts bearing decals are replaced, be sure to put new decals on each new part.

DECALS INSIDE THE CAB



1. KHP35650



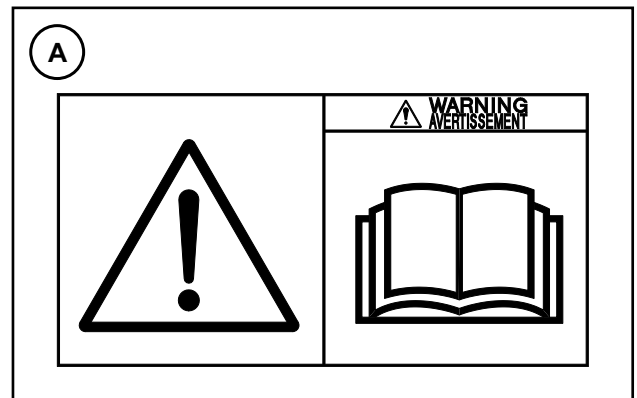
009415AF

Figure 8

(A)

This decal warns that you must read and understand this manual before using the machine.

Failure to do so could result in serious injury or death.



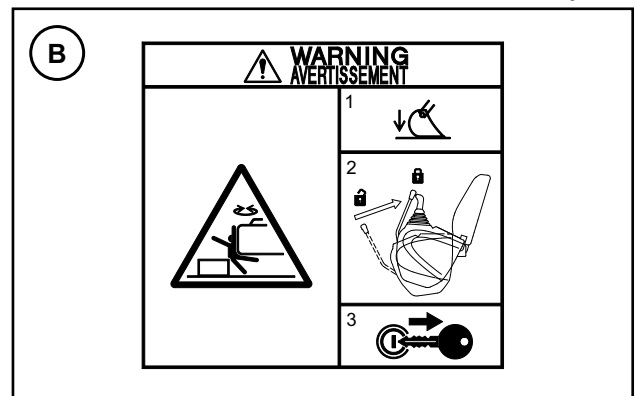
486502B4

Figure 9

(B)

This decal instructs the operator to lower the attachment to the ground, lock the gate lock lever, and remove the key before exiting the machine to ensure no sudden movement of the excavator.

Failure to do so could result in serious injury or death.



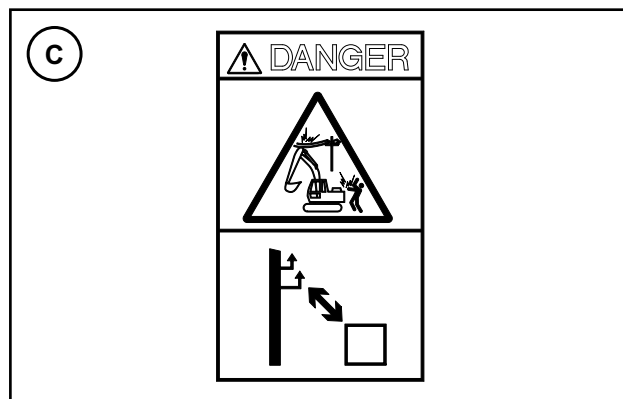
90EA59C7

Figure 10

(C)

This decal warns that work near overhead high-voltage electric lines must not be done without checking beforehand that all necessary measures have been taken to respect the minimum distances.

Failure to do so could result in serious injury or death.



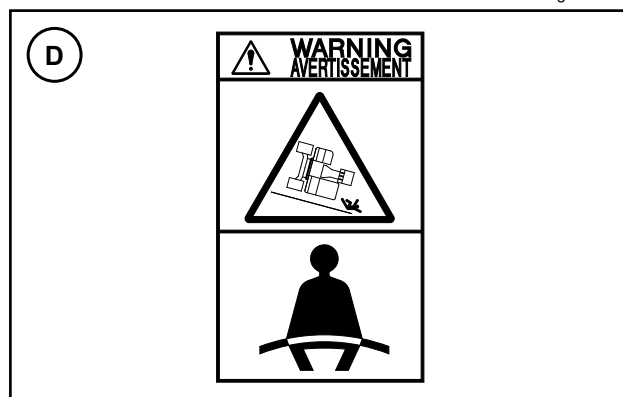
1C643FF1

Figure 11

(D)

This decal warns that the seat belt must always be fastened during operation of the machine.

Failure to do so could result in serious injury or death.



FF3FB501

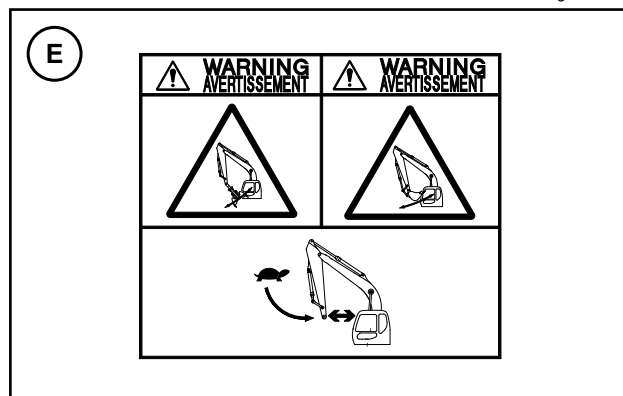
Figure 12

(E)

This decal warns that depending on the arm length, the bucket size, and the end attachment specifications, the attachment tip could interfere with the cab.

Avoid abrupt operation, and maintain an appropriate clearance so that it may not interfere with the cab.

Failure to do so could result in serious injury or death.



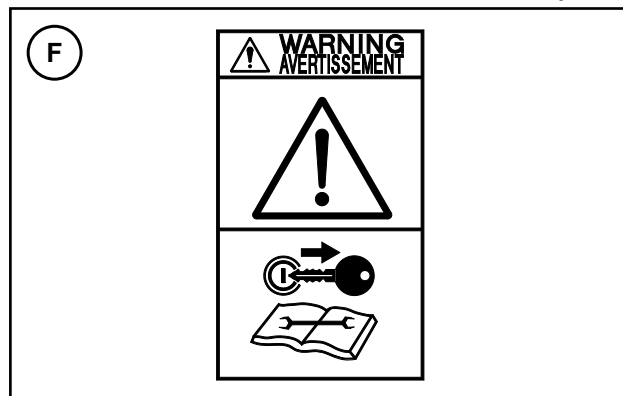
33F769FC

Figure 13

(F)

This decal warns that the engine must be stopped and the starter key switch removed during maintenance or inspection of the machine.

Failure to do so could result in serious injury or death.

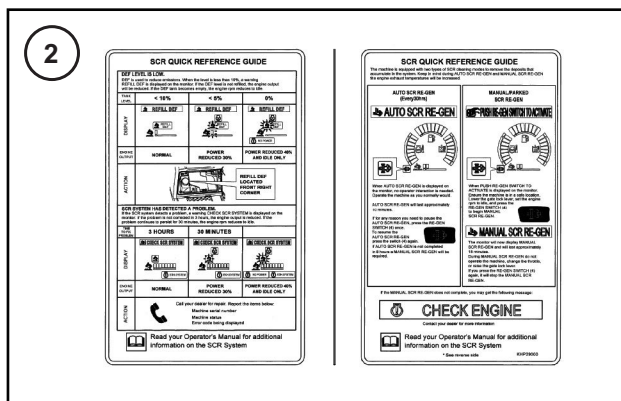


647FD26A

Figure 14

2. KHP29000

It is SCR Quick Reference guide.



F0FC7C3E

Figure 15

3. KHP35660

This decal warns of the danger involved if the front window is not properly locked into position.

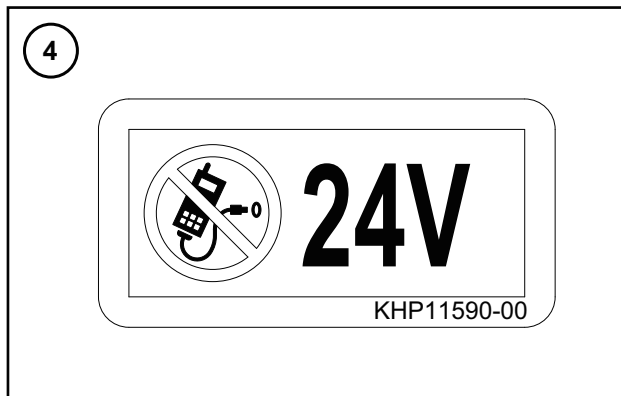


E1A162A9

Figure 16

4. KHP11590

This decal informs the operator that the cigar lighter in the front is a 24 volt rating. Do not plug in anything that is rated for 12 volts, like a phone charger.



48D61D40

Figure 17

5. KHP35680

This decal warns that the two-way radio communication equipment of RemoteCARE may be in danger of causing accidental blast in a vicinity of a blast site. Keep a safety distance from a blast site or a remote controlled explosive device.



E23F8111

Figure 18

6. KHP1247

This decal shows the location and way how to use the emergency exit (rear window).



1479FC7A

Figure 19

7. KHP35480

This decal warns that welding or modifying the cab can deteriorate its strength. Never attempt to weld or modify the cab. Doing so will void the structure protection standards.



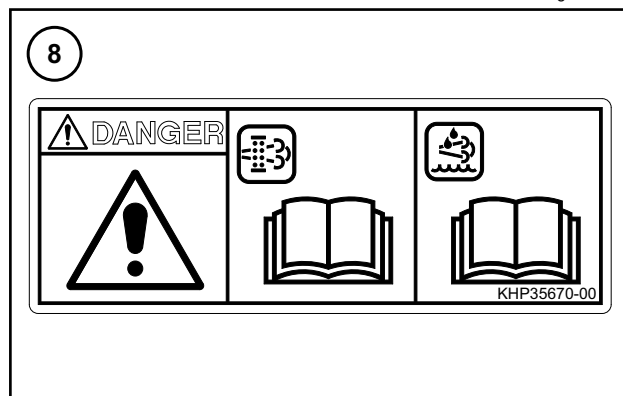
836F143C

Figure 20

8. KHP35670

This decal warns the possible hazards with the SCR REGEN (the middle panel) and SCR system (the right panel) must be avoided by reading and understanding the operator's manual.

Failure to do so could result in serious injury or death.



976989C4

Figure 21

9. KMP15040, KMP15050

This decal shows the different permitted loads which can be lifted, depending on the length and the type of attachment on the machine.

KMP15040 (145X4 LC)

9

The decal for KMP15040 (145X4 LC) features the Linds-Bell logo and the title "145X4 LIFT Capacity". It contains six tables arranged in a 2x3 grid, each representing a different attachment type: Forklift, Backhoe, Loader, Grapple, Pallet Fork, and Pallet Fork. Each table lists lifting capacity in pounds (lb) for various attachment lengths (e.g., 10', 12', 14', 16', 18', 20', 22', 24', 26', 28', 30', 32', 34', 36', 38', 40', 42', 44', 46', 48', 50', 52', 54', 56', 58', 60', 62', 64', 66', 68', 70', 72', 74', 76', 78', 80', 82', 84', 86', 88', 90', 92', 94', 96', 98', 100'). Below the tables, there are several safety notes and a warning section.

4271920A

Figure 22

KMP15050 (145X4 DZ)

9

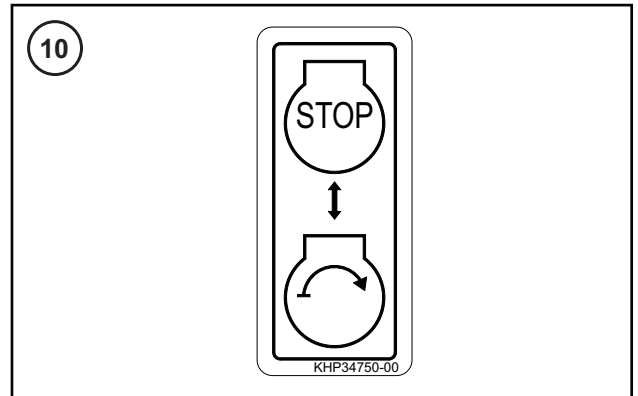
The decal for KMP15050 (145X4 DZ) features the Linds-Bell logo and the title "145X4 LIFT Capacity". It contains six tables arranged in a 2x3 grid, each representing a different attachment type: Forklift, Backhoe, Loader, Grapple, Pallet Fork, and Pallet Fork. Each table lists lifting capacity in pounds (lb) for various attachment lengths (e.g., 10', 12', 14', 16', 18', 20', 22', 24', 26', 28', 30', 32', 34', 36', 38', 40', 42', 44', 46', 48', 50', 52', 54', 56', 58', 60', 62', 64', 66', 68', 70', 72', 74', 76', 78', 80', 82', 84', 86', 88', 90', 92', 94', 96', 98', 100'). Below the tables, there are several safety notes and a warning section.

A369EA75

Figure 23

10. KHP34750

This decal indicates the use of the emergency engine stop switch.

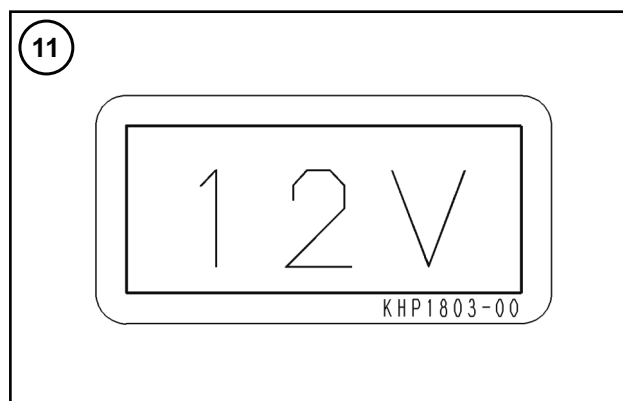


4CF5CD35

Figure 24

11. KHP1803

This socket is used to power electrical equipment of 12 volts. It is strictly prohibited to connect devices of a different voltage.

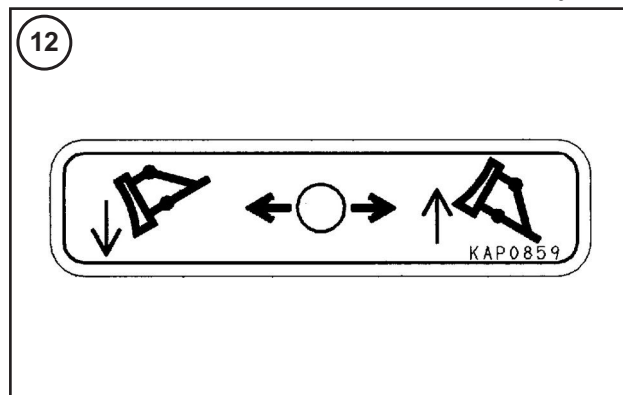


255B0169

Figure 25

12. KAP0859 (BLADE)

This decal shows the blade operation.

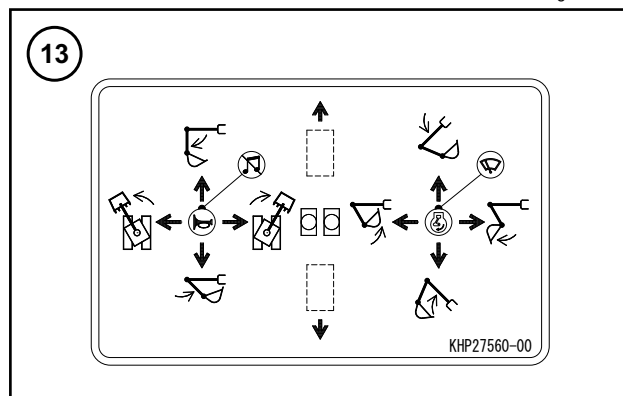


46A6D9EC

Figure 26

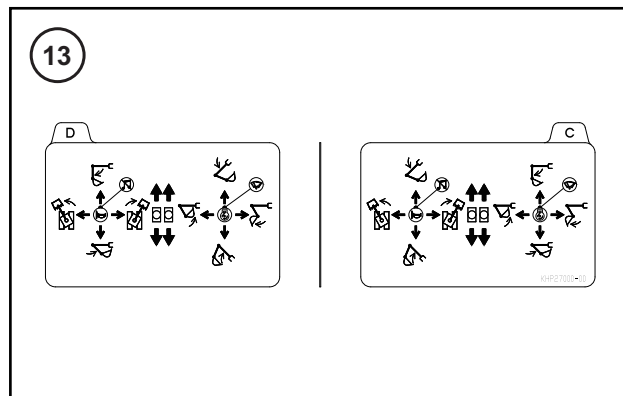
13. KHP27560, KHP27000

Operation pattern of the selector valve when switching.



4129B0A2

Figure 27



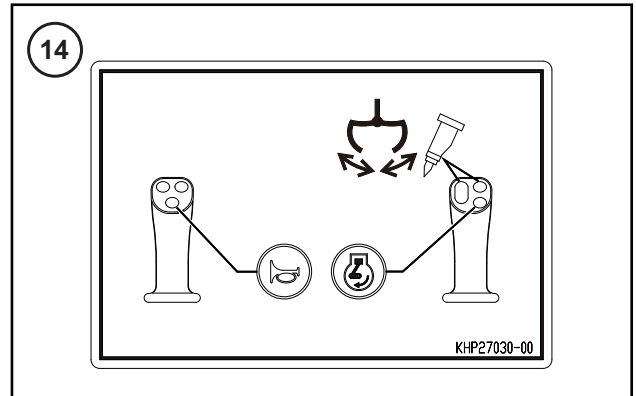
EE1D3133

Figure 28

14. KHP27030, KHP27240, KHP27250

KHP27030 (OPTION)

Right hand : Proportional type /AUX



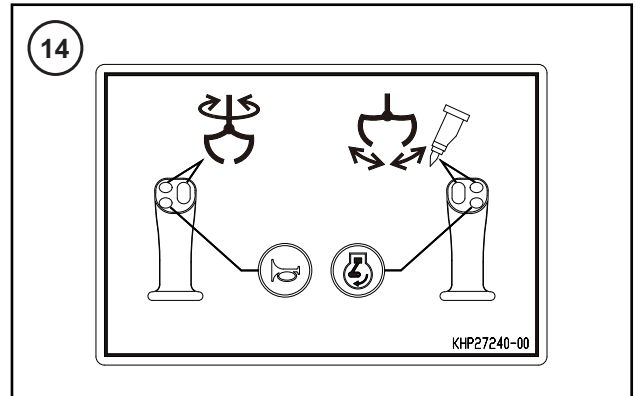
0BCCFA27

Figure 29

KHP27240 (OPTION)

Right hand : Proportional type /AUX

Left hand : Proportional type Second AUX

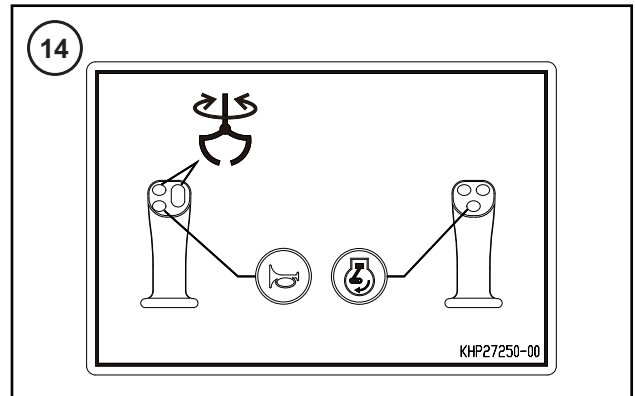


77A6D3E3

Figure 30

KHP27250 (OPTION)

Left hand : Proportional type Second AUX



D639C539

Figure 31

*(Lever) / (Function)

*AUX can be double-acting, single-acting or both (Multi-purpose)

*Second -AUX can be grapple rotation or tilt bucket, etc...

These decals show which configuration the control levers are.

15. KHP27070 (OPTION)

This decal warns that the operator must not perform swing operation on a slope with free swing ON. With free swing ON, the swing indicator is displayed on the monitor and it takes longer to stop swinging.

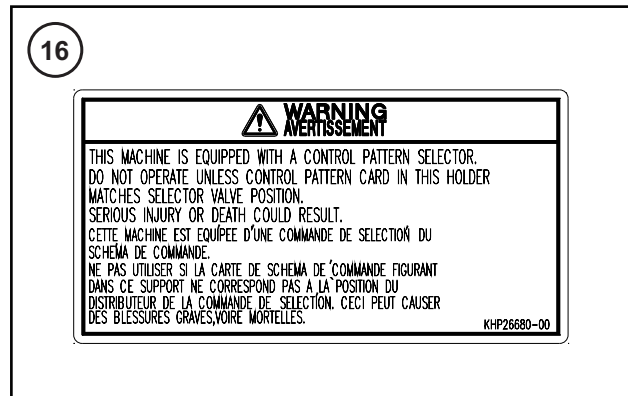


6FFF6591

Figure 32

16. KHP26680

This decal warns the operator of the control patterns selector valve and that there are two different control patterns. It is best to check the controls in an open area to make sure the controls match the card. This card located on the cab window shows both of the configurations of the controls. Before operating the excavator it is best to check the controls in an open area.



D79E2861

Figure 33

17. KHP28430

The images displayed on the monitor with WAVES are supplementary.

Before operating the machine, be sure to directly check the safety in the surroundings visually or through the mirrors.

In WAVES, there is also a blind spot that the camera cannot display.

See REAR VIEW CAMERA (4-62).



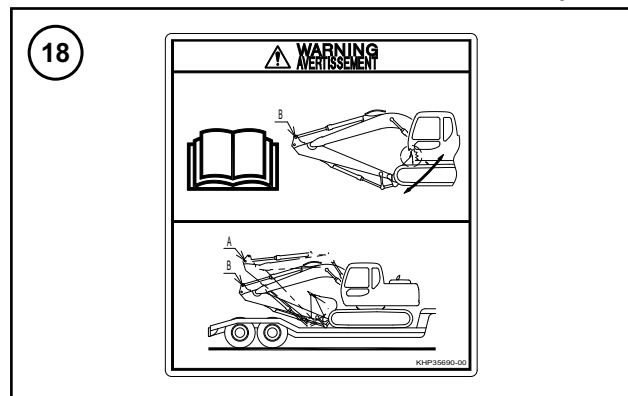
B727EACF

Figure 34

18. KHP35690

When transferring an object, take a proper posture.

Refer to TRANSPORT SETTING FOR LONG ARM EXCAVATOR.

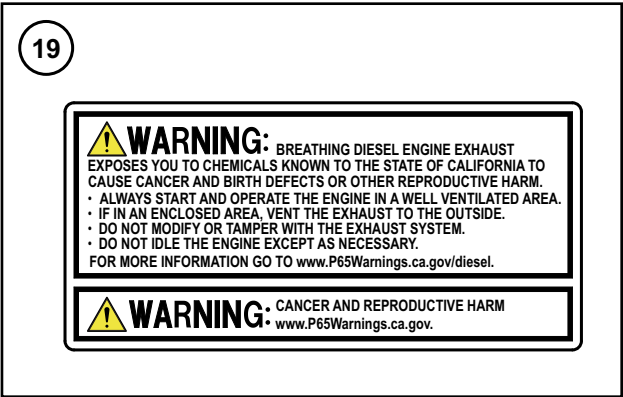


286EB471

Figure 35

19. KHP38510

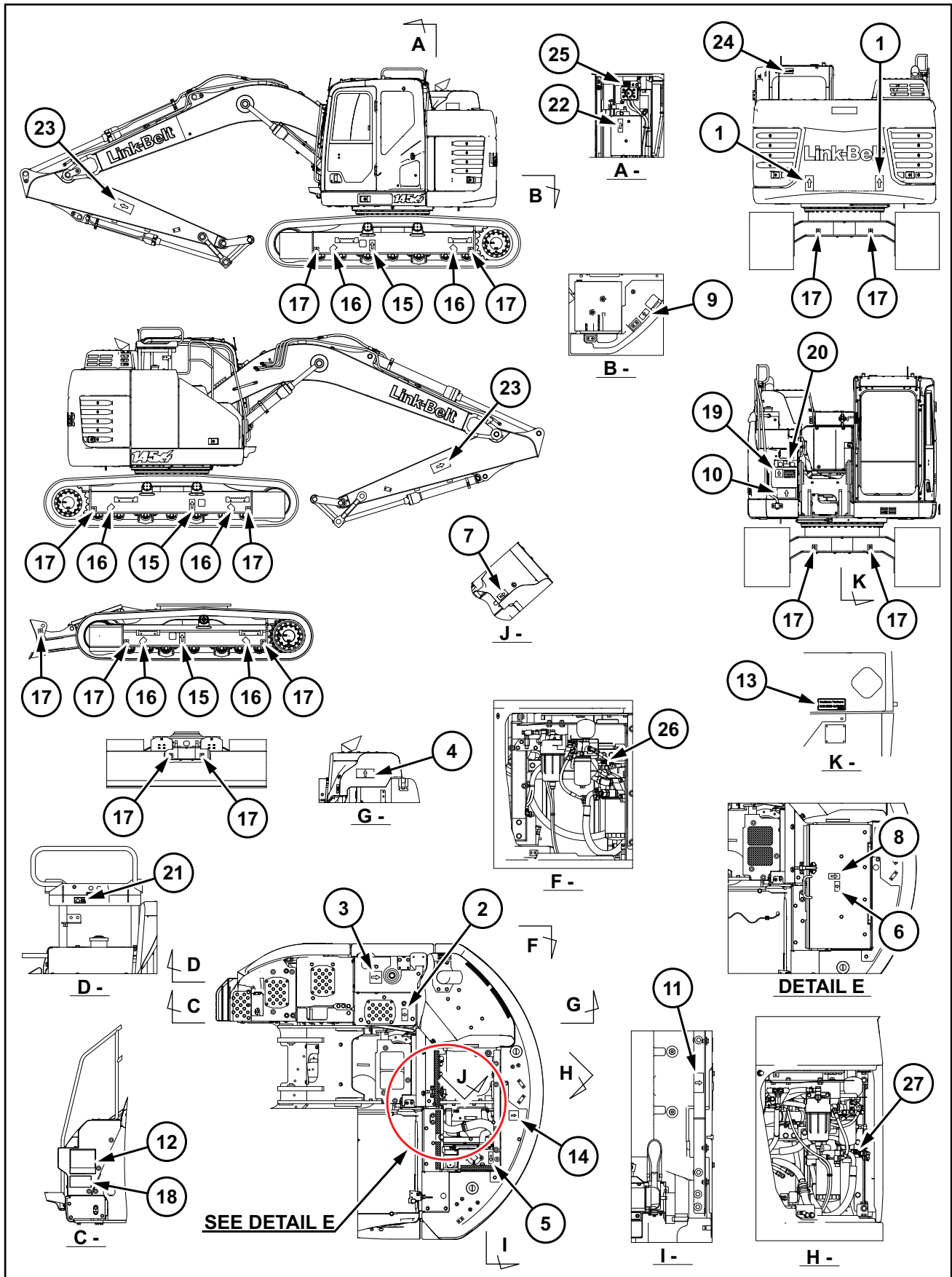
CALIFORNIA PROPOSITION 65 WARNING



C182A2FC

Figure 36

DECALS OUTSIDE OF THE CAB



1. KHP35710

This decal located on the counterweight warns of the swinging upper. Keep safe distance between counterweight and people.

Failure to do so could result in serious injury or death.



6BD5B0A9

Figure 38

2. KHP35720

This decal warns the operator of the hot hydraulic fluid that can cause burns if the pressure in the tank is not properly relieved.

Relieve tank pressure before opening cap.

Failure to do so could result in serious injury or death.

Further instructions are located in maintenance section. (7-33)



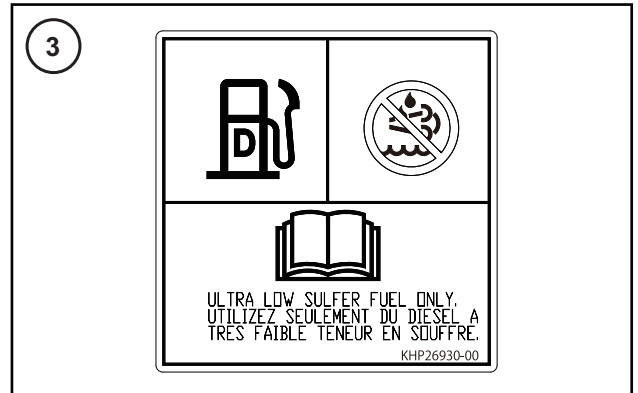
E2D3DC64

Figure 39

3. KHP26930

This decal instructs the operator to read the operator's manual for the recommended diesel fuel grade.

See the section for the correct grade (Page 7-3).



0E428E74

Figure 40

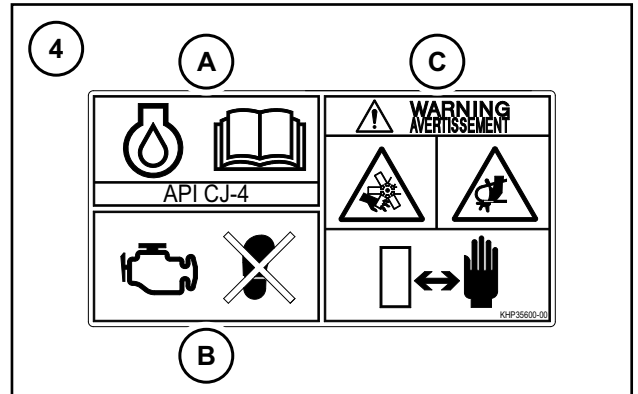
4. KHP35600

(A) Indication: Use only API CJ-4 Engine Oil or engine damage may occur. (7-1, 7-16)

(B) This decal instructs the operator to not walk on or step on the engine.

(C) This decal warns the operator of the rotating fan blades which could sever fingers and hands. Stop the engine before working on the fan or belt. Keep hands a safe distance from fan blades while the machine is on or being started.

Failure to do so could result in serious injury or death.



7DFA8122

Figure 41

5. KHP35500

This decal warns the operator to wait and relieve pressure before opening the radiator cap.

Failure to do so could result in serious injury or death.



9A3AEDA9

Figure 42

6. KHP35510

This decal warns the operator to stay off edge to prevent falling off the excavator.



FB150477

Figure 43

7. KHP35520

This decal warns the operator of a hot surface that could cause burns to the hands and feet.



E75F2D66

Figure 44

8. KHP35780

After opening the engine hood, lock the hood in order to prevent the hood from descending.

The descending engine hood may cause an injury.



0FBF88DC

Figure 45

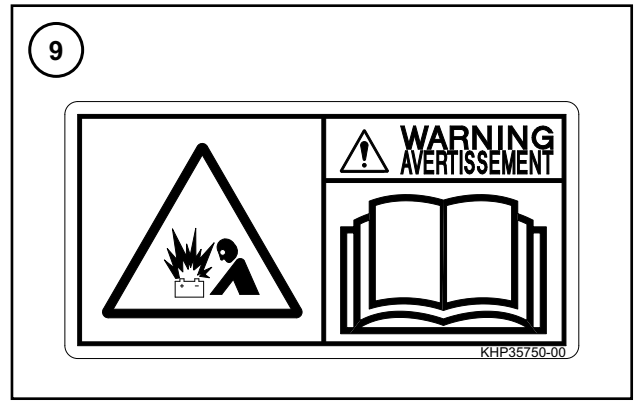
9. KHP35750

This decal warns that wrong handling of battery causes battery explosion.

Do not handle the battery improperly.

Failure to do so could result in serious injury or death.

See the BATTERY section (Page 9-4).



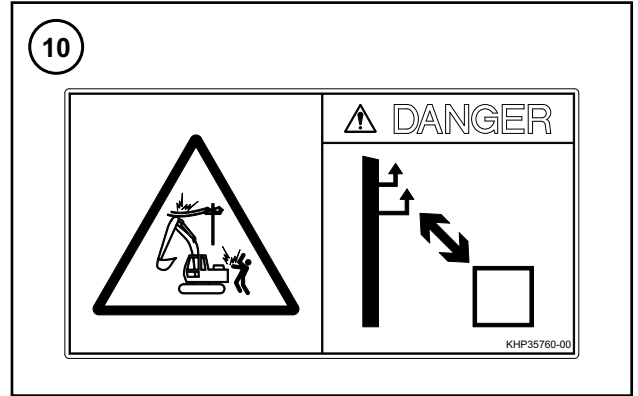
75E2EC97

Figure 46

10. KHP35760

This decal warns the operator not to perform work near high voltage lines. Be sure to maintain a safe distance.

Failure to do so could result in serious injury or death.



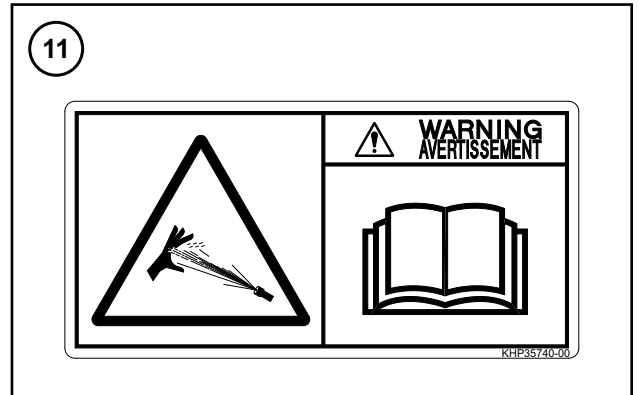
8129669E

Figure 47

11. KHP35740

This decal warns the operator of the high pressure fuel lines on the excavator.

See the SERVICE SPECIFICATIONS section (Page 7-20).



B02ECC0D

Figure 48

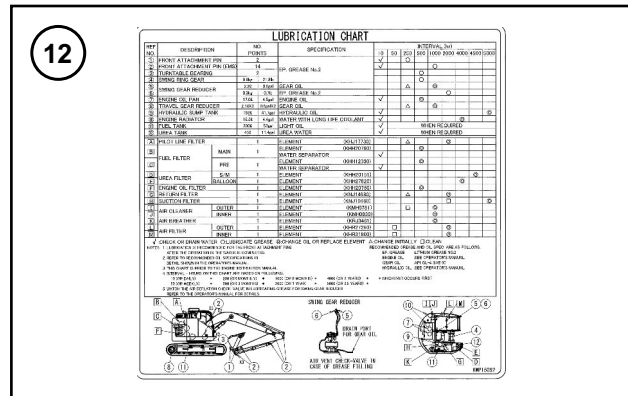
CHAPTER 3 - SAFETY, DECALS, AND HAND SIGNALS

12. KMP15092, KMP15102

This decal shows the lubricating points and intervals.

See the LUBRICATION CHART section for more details (Page 7-9).

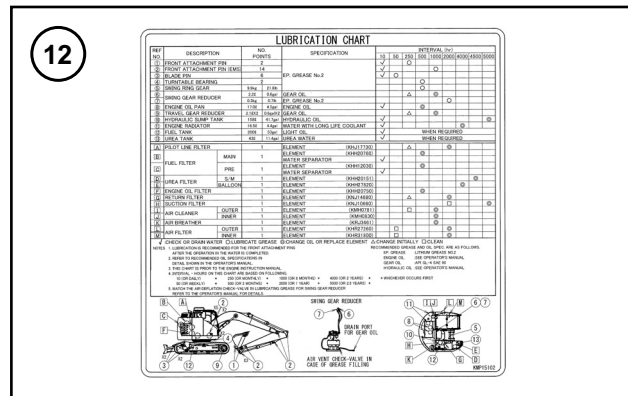
KMP15092 (145X4 LC)



2D4A8B92

Figure 49

KMP15102 (145X4 DZ)

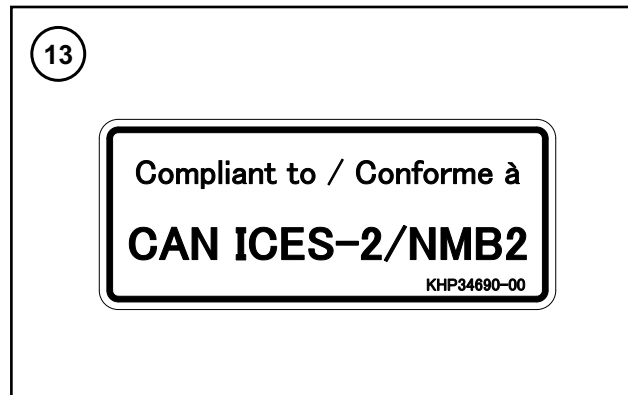


592DE91C

Figure 50

13. KHP34690

Innovation, Science and Economic Development
ICES-002 Compliance Label.



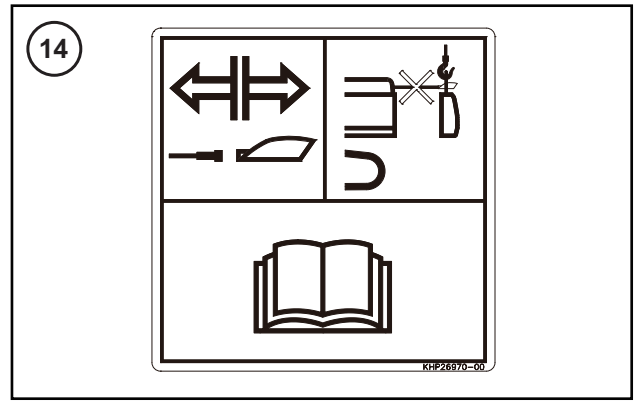
C7740D18

Figure 51

14. KHP26970

This decal instructs that the wiring harness of camera must be disconnected before removing the counterweight.

See the DISASSEMBLY BEFORE TRANSPORT section for more details (Page 10-11).



DB546EA4

Figure 52

15. KHP35770

This decal located on both tracks warns the operator to release the pressure on the track assembly before disassembly.

Failure to do so could result in serious injury or death.



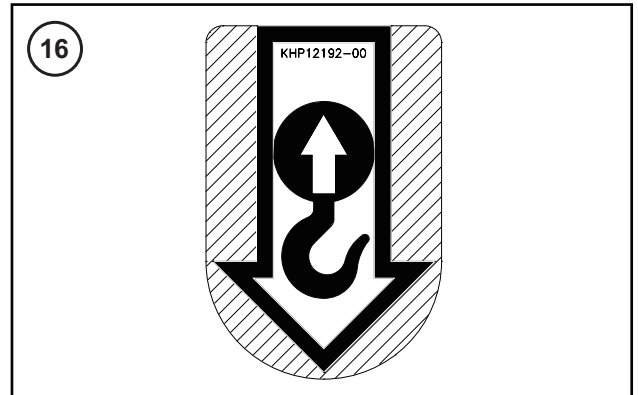
27C97E92

Figure 53

16. KHP12192

This decal shows where to attach slings when handling the excavator.

Never use any other slinging points apart from those designated by this decal.



C25EB1BA

Figure 54

17. KHP15191

This decal shows the tie-down points for transporting the excavator.



67F0060A

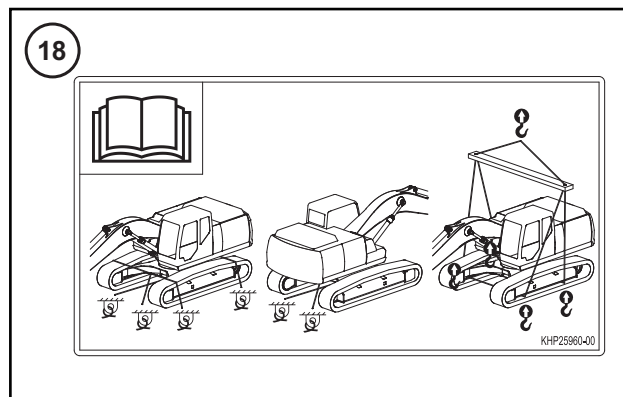
Figure 55

18. KHP25960, KHP30470, KHP38650

The decal illustrates proper machine tie down and lifting methodology.

See the TRANSPORTING THE EXCAVATOR section for more details (10-1).

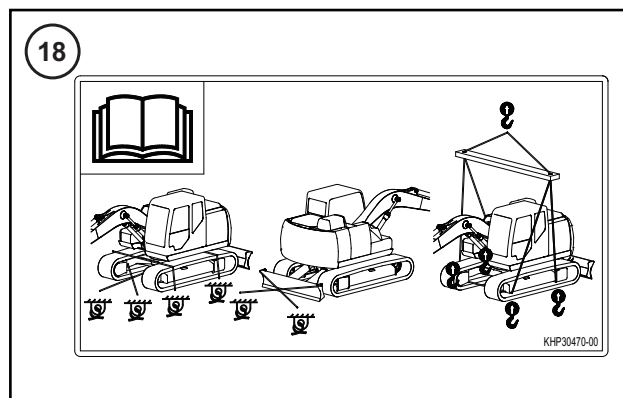
KHP25960 (No Blade)



BC25F9B3

Figure 56

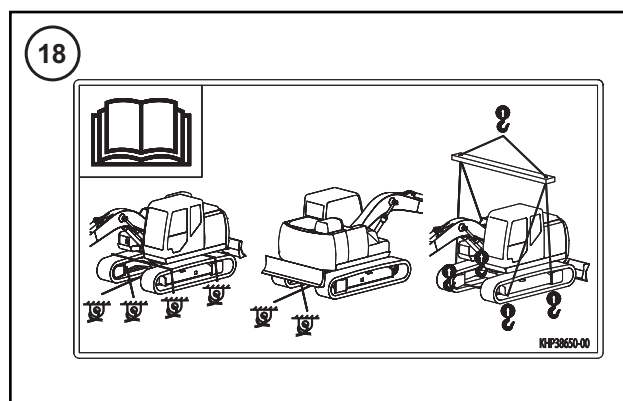
KHP30470 (Blade Pattern A)



AE35E3A1

Figure 57

KHP38650 (Blade Pattern B)

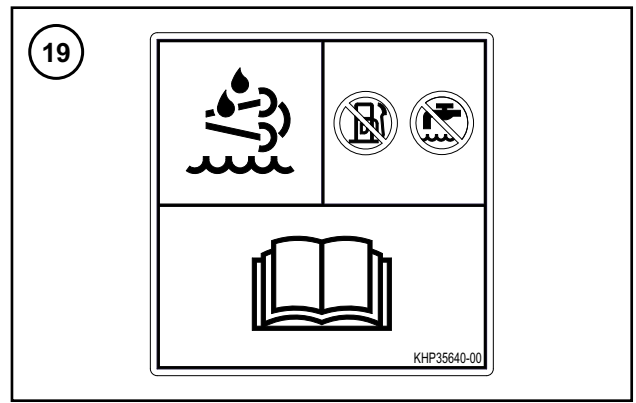


A8681D15

Figure 58

19. KHP35640

This decal identifies DEF tank for the SCR system.
See the ADDING DEF(7-6) for more details.

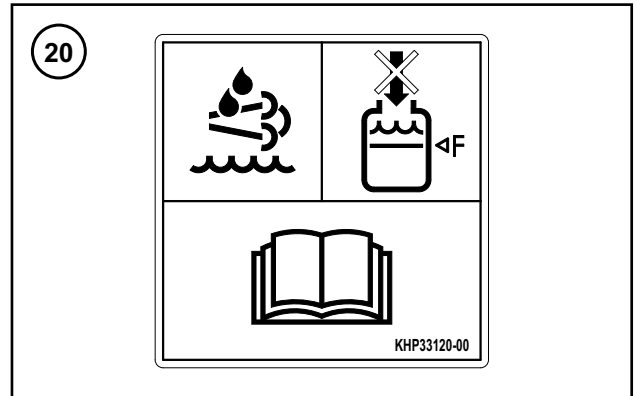


FA2D2A2A

Figure 59

20. KHP33120

This decal indicates the overfilling of the urea solution.
Refer to "ADDING DEF", page 7-6.

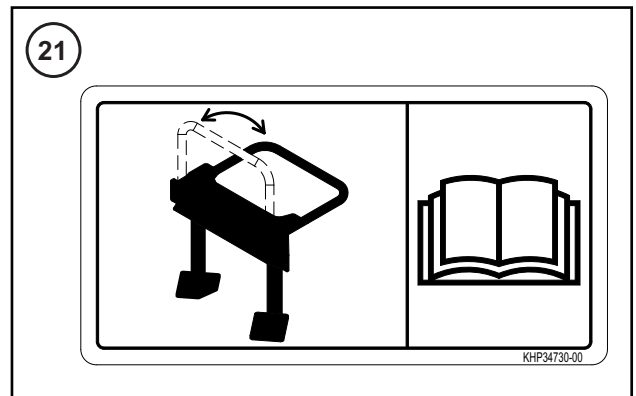


38BB0C27

Figure 60

21. KHP34730

This decal indicates cautions for folding of the handrail during transportation.



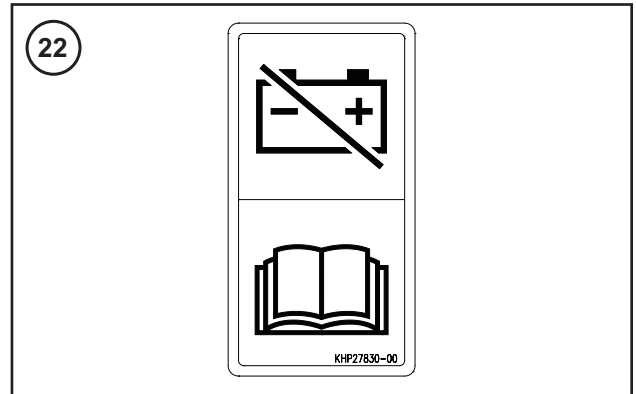
C3C58B04

Figure 61

22. KHP27830

This decal identifies the location of the battery disconnect switch.

See the BATTERY DISCONNECT SWITCH section for more details (Page 9-3).



8DE0A487

Figure 62

23. KHP35730

Keep clear of attachment to prevent serious bodily injury.

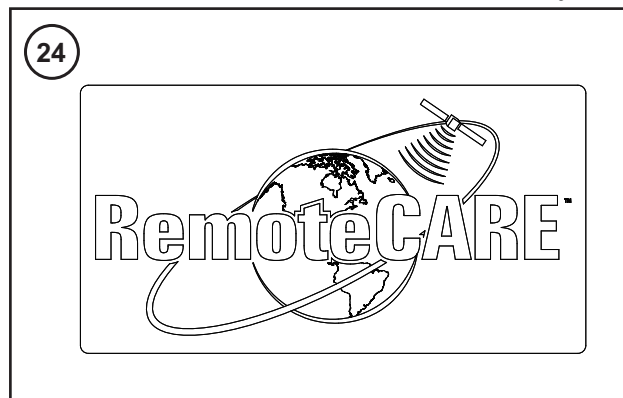


FA8F2470

Figure 63

24. KHP27820

This RemoteCARE decal is near the antenna on the cab to show whether the machine is equipped with RemoteCARE or not.



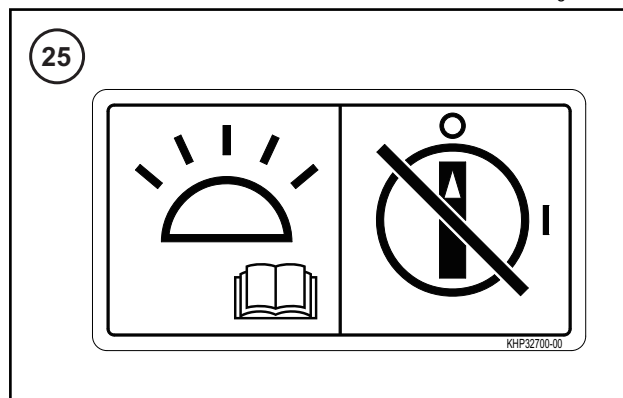
11A0303D

Figure 64

25. KHP32700

This decal indicates that you must not turn the switch "OFF" when the indicator lamp is lit.

See the BATTERY DISCONNECT SWITCH section for more details (Page 9-3).

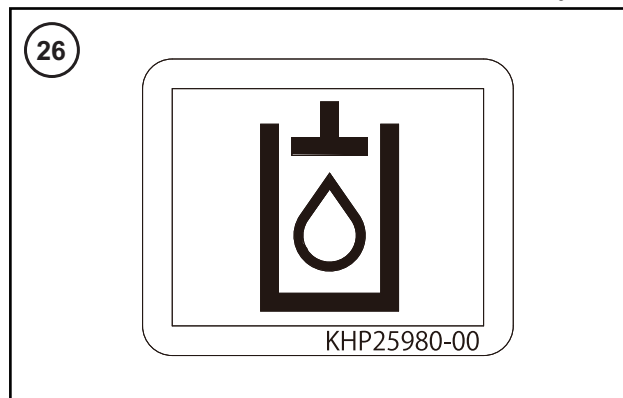


BA7E0EC1

Figure 65

26. KHP25980

This decal identifies the location of the sampling port of the hydraulic oil.

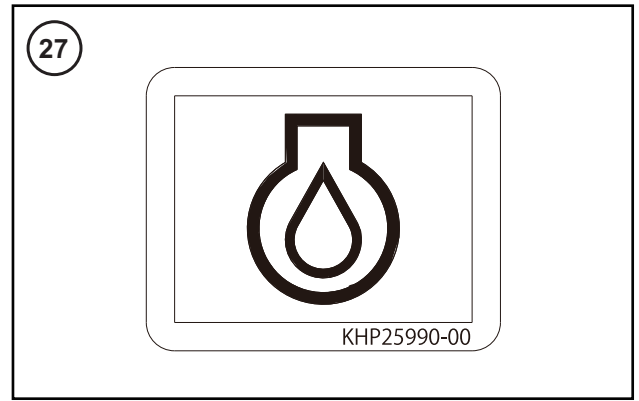


04059A10

Figure 66

27. KHP25990

This decal identifies the location of the sampling port of the engine oil.



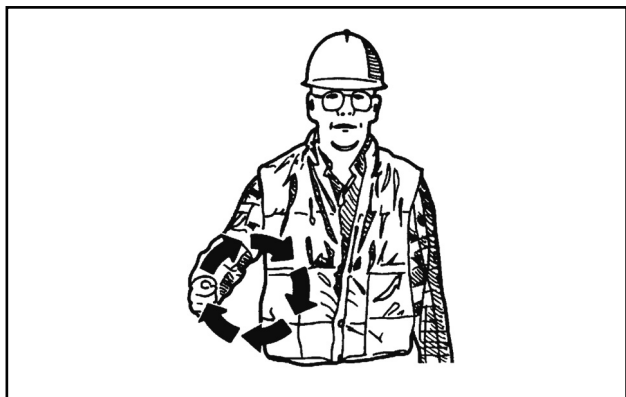
2430F4EA

Figure 67

HAND SIGNALS

When operating the excavator, never attempt to carry out tasks calling for fine control or to work in areas where visibility is poor or impaired without seeking the assistance of a signal person. Make perfectly sure you and the signal person understand the signals to be used.

START THE ENGINE - HAND SIGNAL

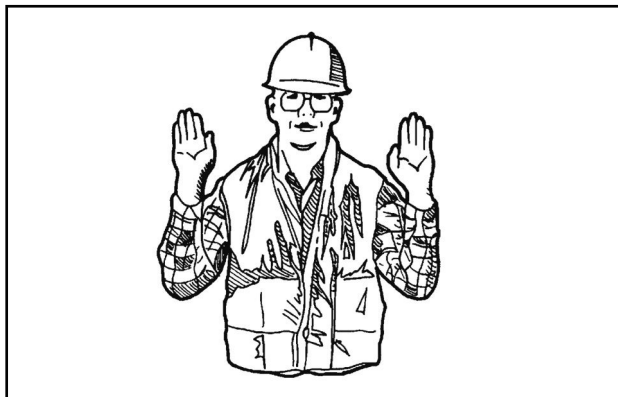


0888D0CC

Figure 68

MOVE AWAY FROM ME - HAND SIGNAL

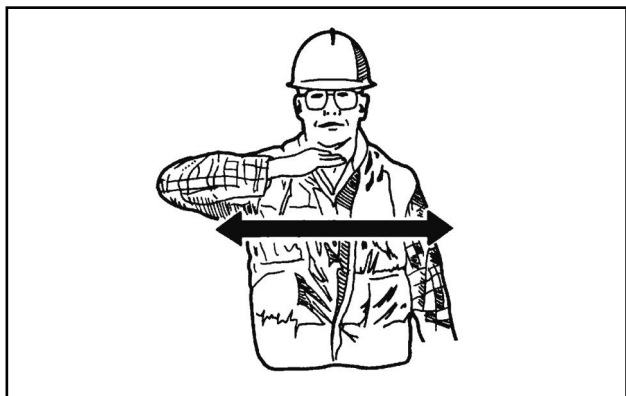
Wave hands back and forth (palms outward).



2434629B

Figure 71

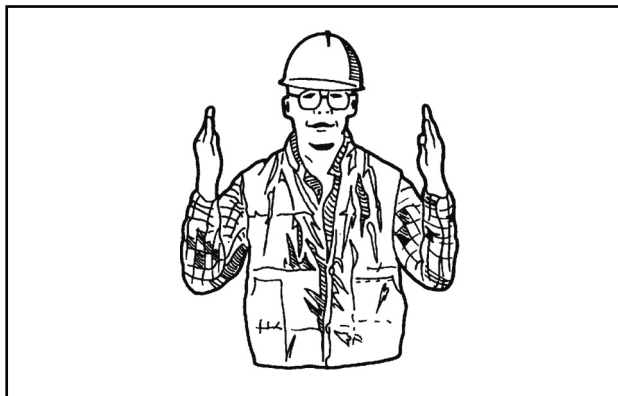
SHUT DOWN THE ENGINE - HAND SIGNAL



11B8B06C

Figure 69

GO THIS FAR - HAND SIGNAL



2C2227D4

Figure 72

COME TO ME - HAND SIGNAL

Wave hands back and forth (palms inward).

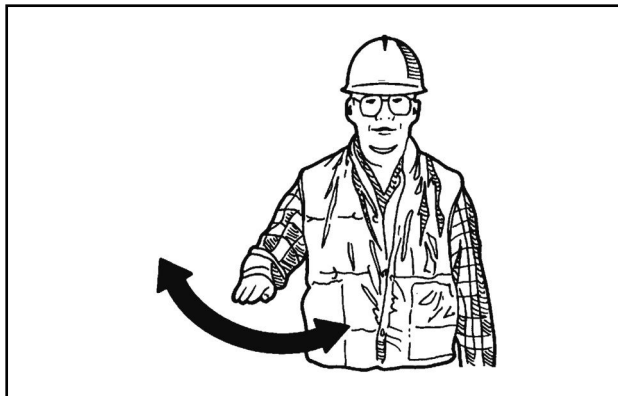


12BAA99A

Figure 70

RAISE LOAD OR TOOL - HAND SIGNAL

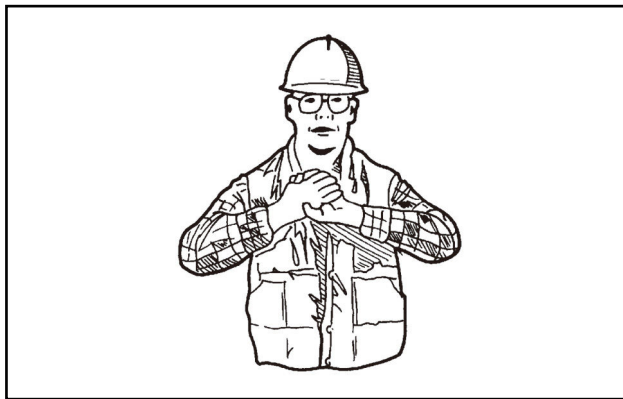
Wave hand back and forth.



381ADE55

Figure 73

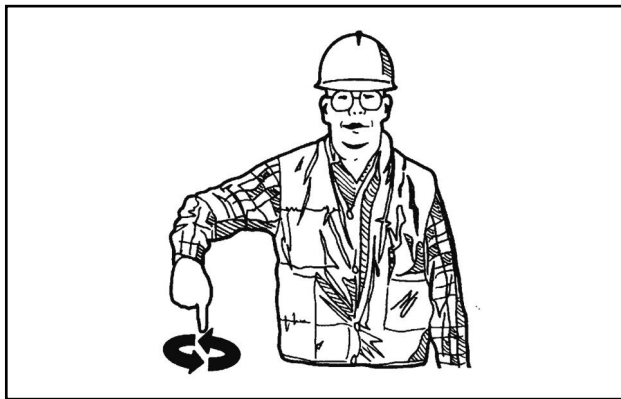
ALL STOP AND HOLD - HAND SIGNAL



4B9527F9

Figure 74

LOWER LOAD OR TOOL - HAND SIGNAL

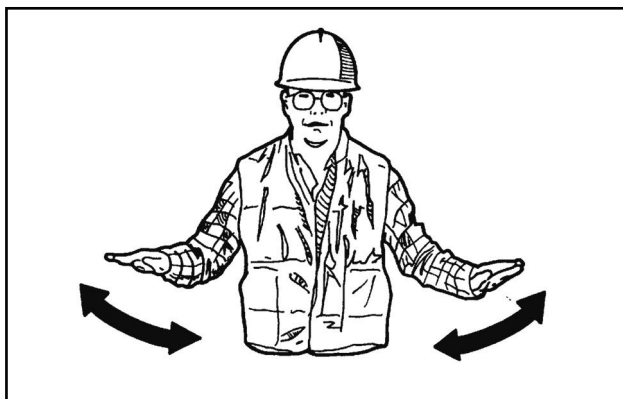


546F1ADB

Figure 77

EMERGENCY STOP - HAND SIGNAL

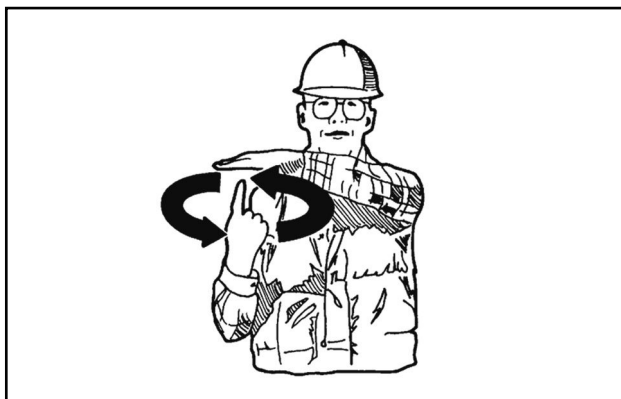
Wave hands back and forth.



51BFCC93

Figure 75

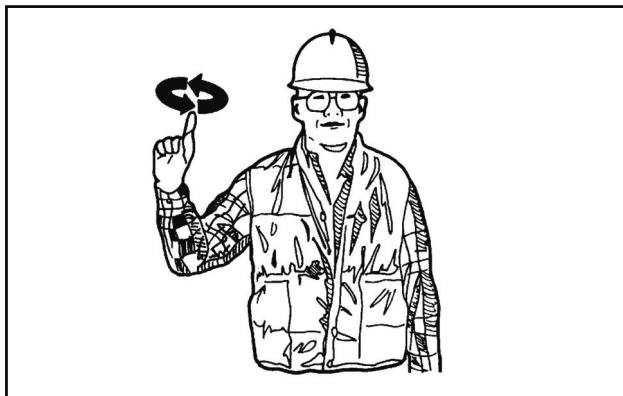
SLOWLY RAISE THE LOAD OR TOOL - HAND SIGNAL



5FF60502

Figure 78

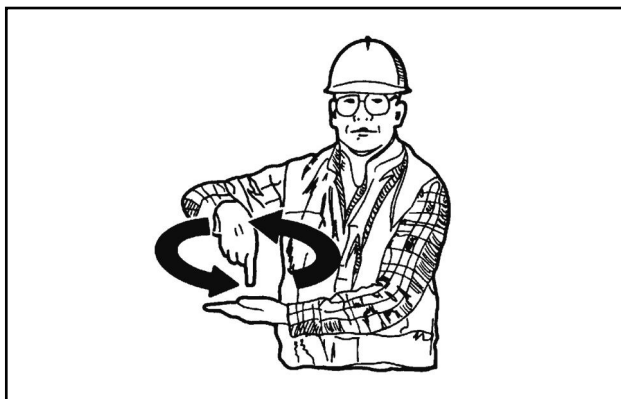
RAISE LOAD OR TOOL - HAND SIGNAL



53831FBB

Figure 76

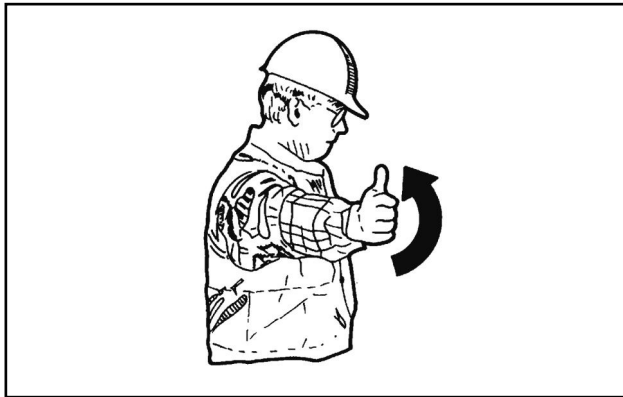
SLOWLY LOWER THE LOAD OR TOOL - HAND SIGNAL



63F88371

Figure 79

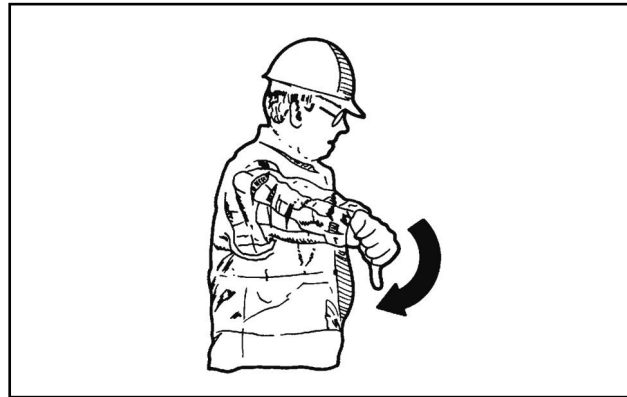
RAISE TOOL - HAND SIGNAL



828C5E13

Figure 80

LOWER TOOL - HAND SIGNAL

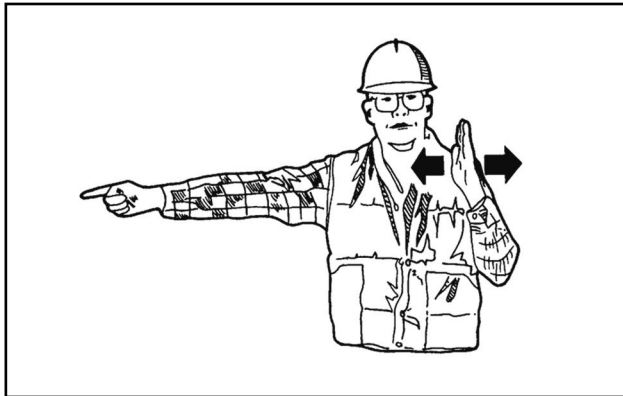


AE7BFF0C

Figure 83

TURN EXCAVATOR LEFT (SWING LOAD LEFT) - HAND SIGNAL

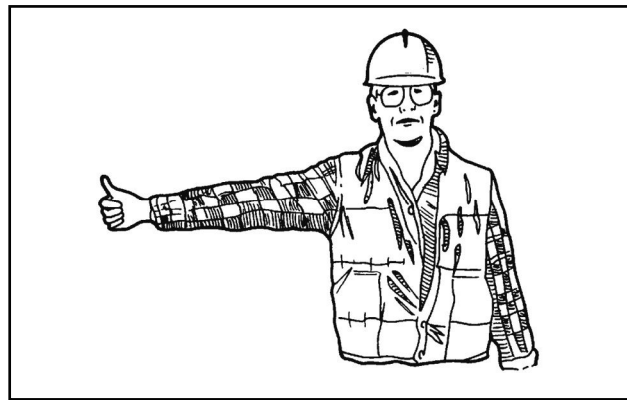
To stop movement, stop moving hand and clench fist.



94CE2996

Figure 81

RAISE TOOL - HAND SIGNAL

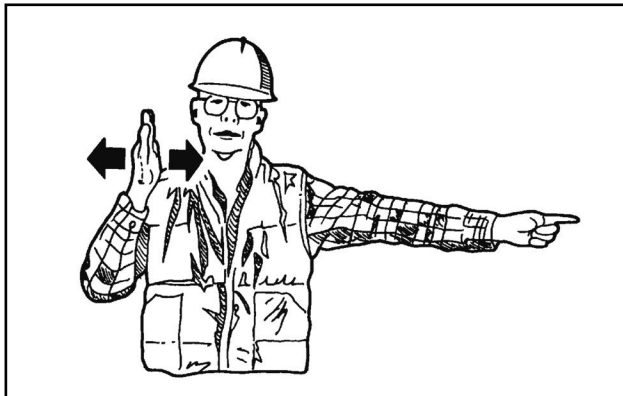


B3234731

Figure 84

TURN EXCAVATOR RIGHT (SWING LOAD RIGHT) - HAND SIGNAL

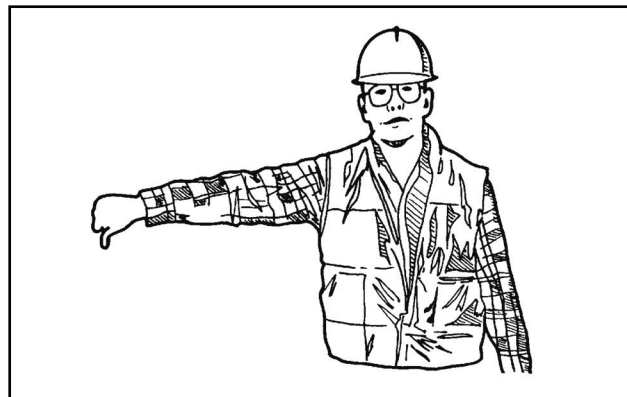
To stop movement, stop moving hand and clench fist.



A54372E8

Figure 82

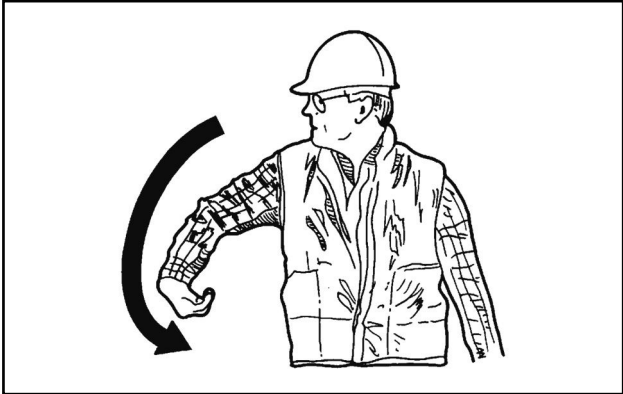
LOWER TOOL - HAND SIGNAL



D5B98899

Figure 85

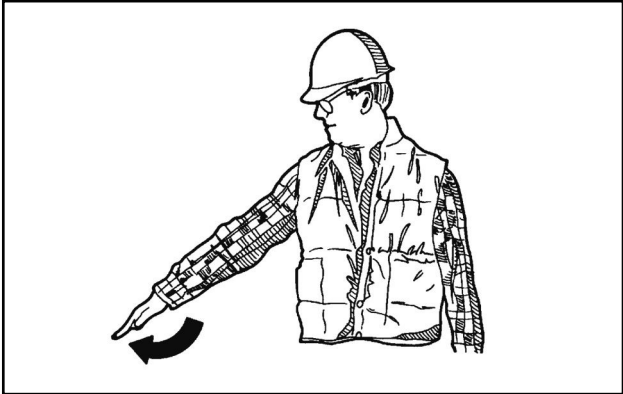
RETRACT ARM - HAND SIGNAL



E9E41709

Figure 86

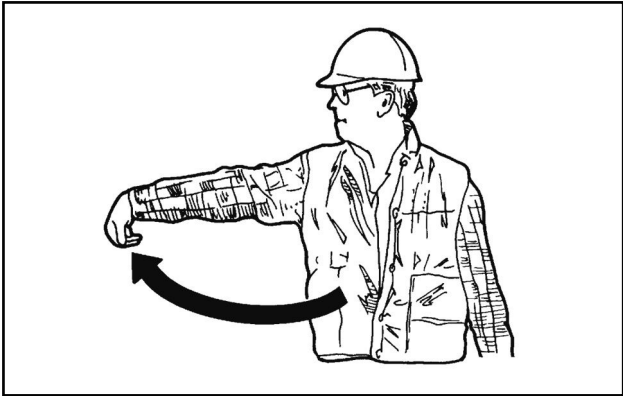
EMPTY TOOL - HAND SIGNAL



BD3C7BBF

Figure 89

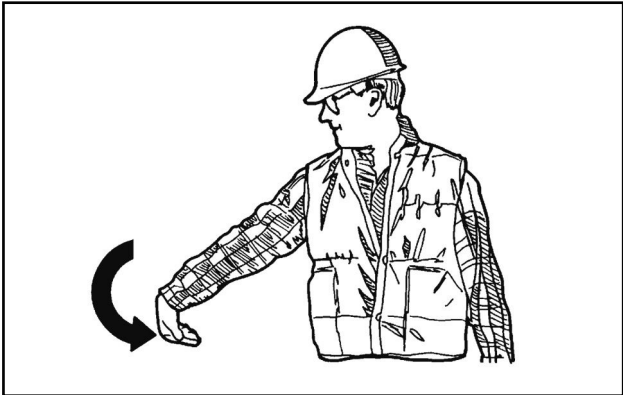
EXTEND ARM - HAND SIGNAL



4CC996B4

Figure 87

FILL TOOL - HAND SIGNAL



5CC0CCDC

Figure 88

CHAPTER 4 - INSTRUMENTS AND CONTROLS

CAB

⚠ WARNING

Be careful not to get your hand or anything caught in the door when closing it.

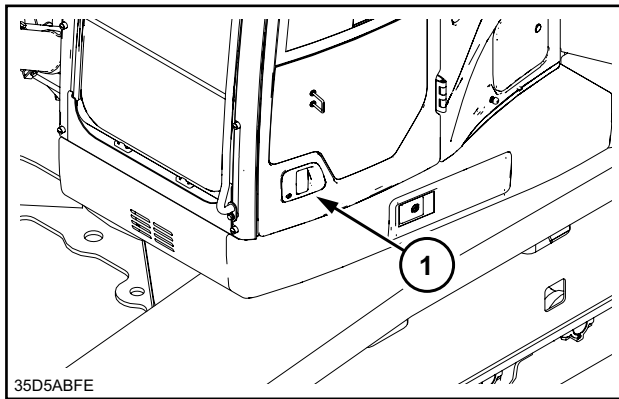
⚠ WARNING

Operating this machine, check that the door is closed firmly.

Running the machine with the door open increases the chance of an operator falling out of the cab or objects penetrating the cab and causing death or serious injury.

Also damage to the door may occur from running the machine with the door open.

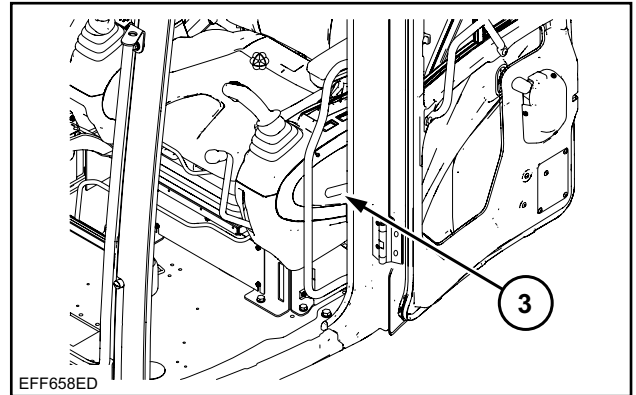
To open the door, use the handle (1) from the outside and use the handle (2) from the inside.



35D5ABFE

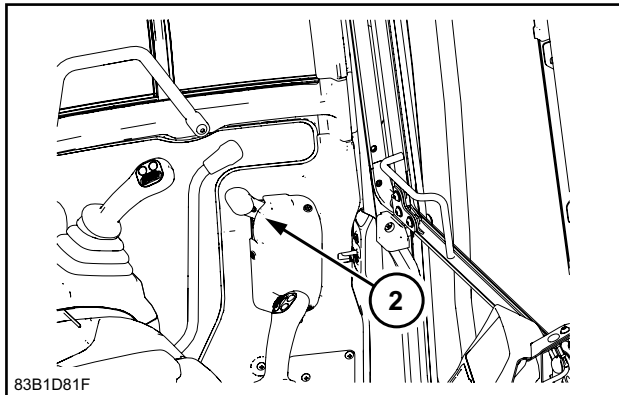
Figure 1

The door can be latched in completely open position. To unlatch the door, push the lever (3) downward.



EFF658ED

Figure 3



83B1D81F

Figure 2

STEPS AND ACCESS HANDLES

⚠ WARNING

Always maintain three point support while getting on and off the excavator and entering or exiting the operator's cab. A three point support system has been provided that enables a person to use simultaneously two hands and one foot or two feet and one hand while ascending, descending or moving about the excavator.

⚠ WARNING

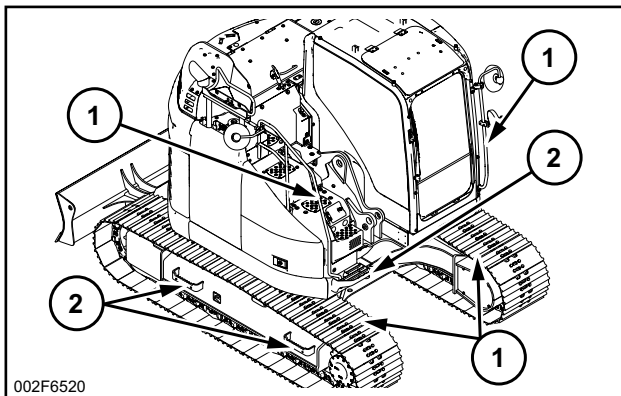
To get in or out of the cab, it is imperative the upperstructure frame is in line with the undercarriage.

⚠ WARNING

Clean the steps and access handles and remove all traces of grease, oil, mud, snow and ice.

⚠ WARNING

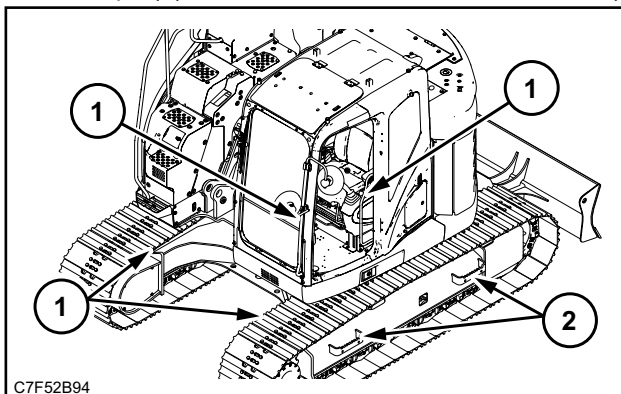
Never jump down from the excavator. When leaving the excavator or upperstructure, always face the excavator and use the steps, the tracks and the access handles.



002F6520

Figure 4

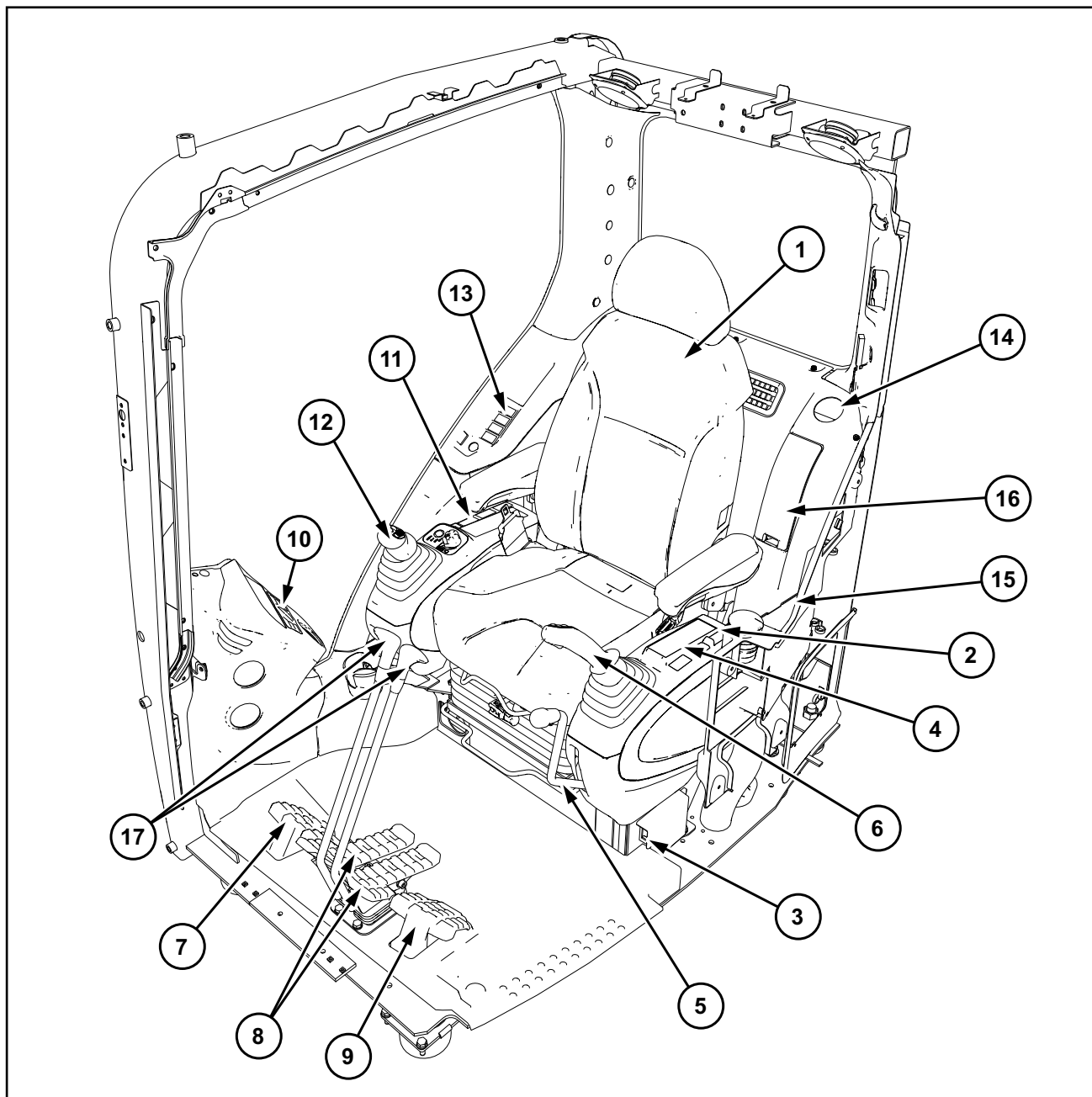
When getting down from or getting onto the excavator, use the steps (2), the tracks and the access handles (1).



C7F52B94

Figure 5

POSITION OF THE CAB CONTROLS AND ACCESSORIES



1DAFB553

Figure 6

1	OPERATOR'S SEAT	7	FOOT REST OR OPTION PEDAL	13	RIGHT-HAND CONTROL PANEL
2	LEFT-HAND CONSOLE	8	TRAVEL CONTROL PEDALS	14	AIR VENTS
3	EMERGENCY SHUTDOWN SWITCH	9	FOOT REST	15	MAGAZINE RACK
4	CLIMATE CONTROLS - AIR-CONDITIONER	10	COMPUTER MONITOR AND CONTROLS	16	FUSE BOX
5	GATE LOCK LEVER (SAFETY BAR)	11	RIGHT-HAND CONSOLE	17	TRAVEL CONTROL LEVERS
6	LEFT-HAND CONTROL LEVER	12	RIGHT-HAND CONTROL LEVER		

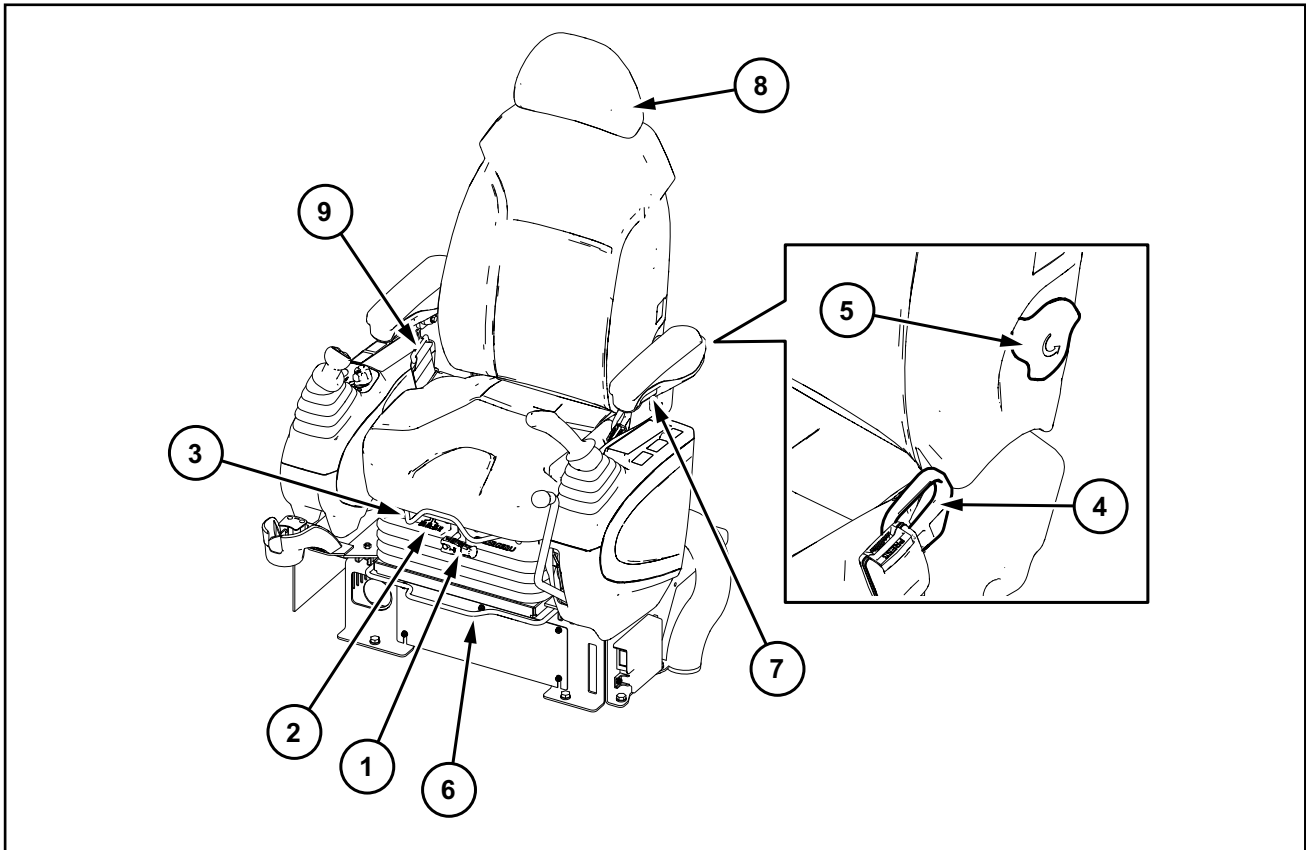
WARNING

Before starting the engine, make sure you are fully aware of the location of and the function of each control. Incorrect operation of the controls can cause serious injuries.

 CAUTION

To start the engine the safety bar must be in the lowered position for the engine to crank.

OPERATOR'S SEAT



C269CA2A

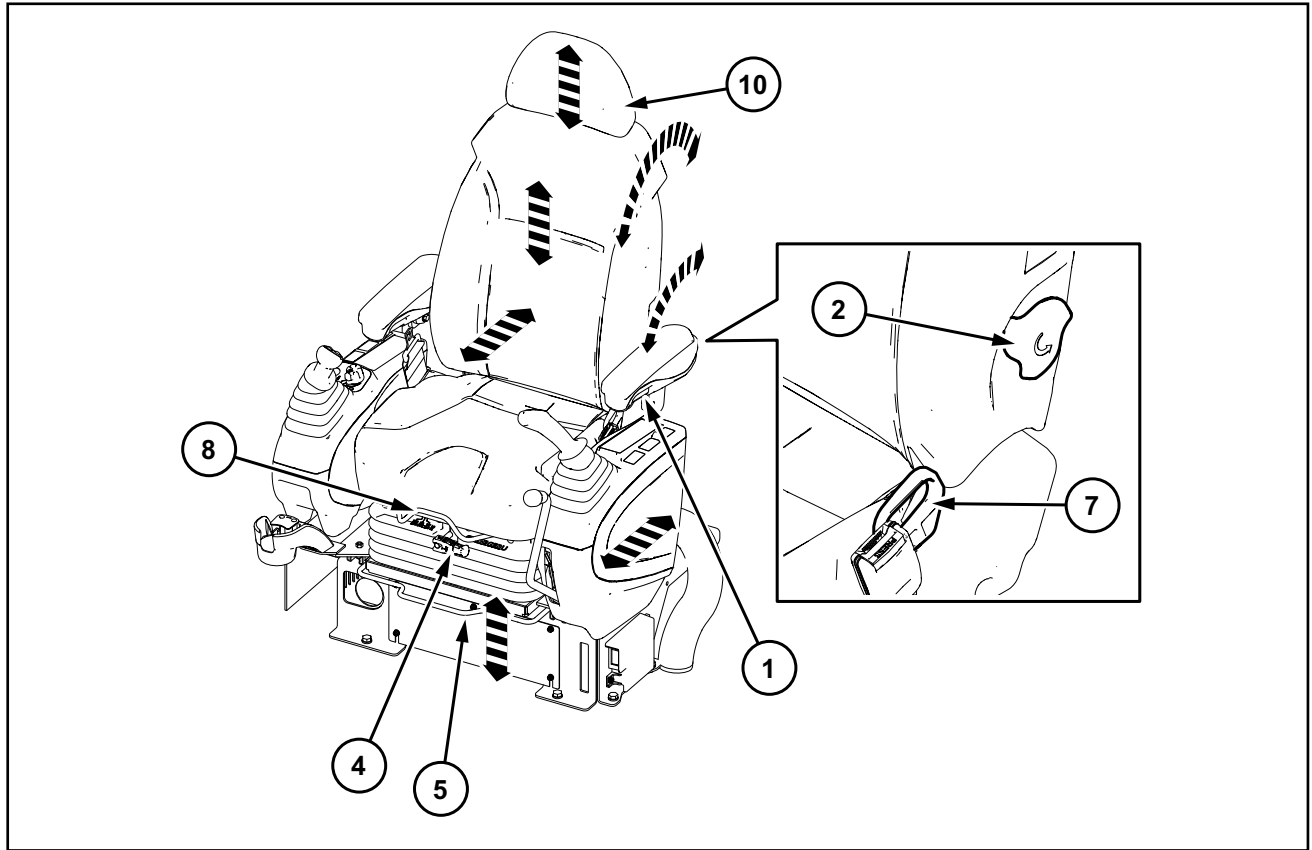
Figure 7

- 1 SEAT HEIGHT AND WEIGHT ADJUSTMENT
- 2 WEIGHT INDICATOR
- 3 SEAT SLIDE ADJUSTMENT
- 4 SEAT BACK ANGLE ADJUSTMENT
- 5 LUMBAR SUPPORT ADJUSTMENT BULB

- 6 SEAT AND CONSOLE SLIDE ADJUSTMENT
- 7 ARMREST ANGLE ADJUSTMENT
- 8 HEAD REST
- 9 SEAT BELT

SEAT CONTROLS

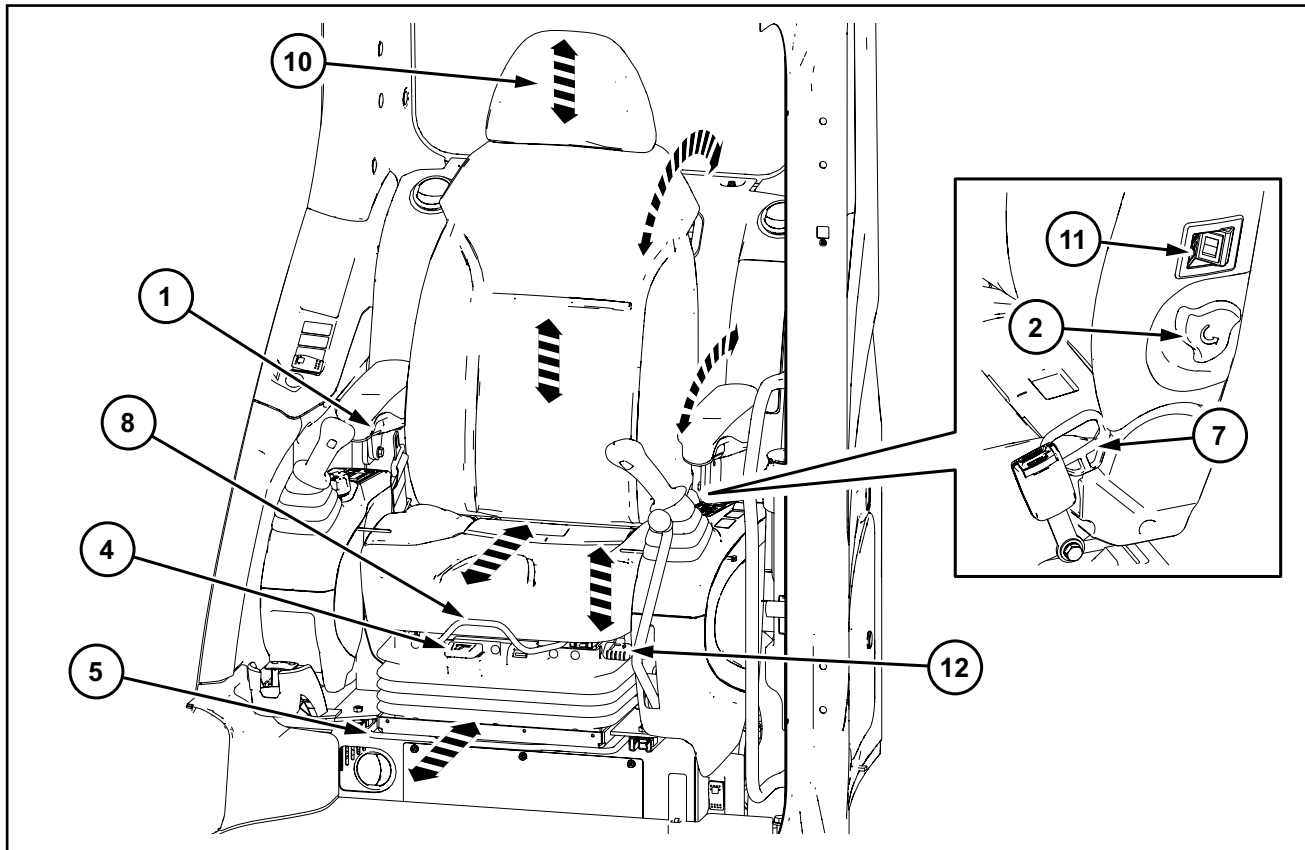
IMPORTANT: Always stop the excavator before attempting to adjust the seat. Put the gate lock lever in the locked position to avoid any unintentional movements of the excavator.

Mechanical suspension seat

0D33ED74

Figure 8

Air suspension seat



11320C78

Figure 9

SEAT HEIGHT ADJUSTMENT

To adjust the seat height, pull the knob (4) up to add height, and press the knob (4) to decrease the height.

SEAT ADJUSTMENT

To adjust the seat, you can move either the seat sliding adjustment (8) or the seat and console sliding adjustment (5) for a better feel working with the control levers and the control pedals. Pull each lever up and move the seat and console as needed.

RECLINING ADJUSTMENT

To adjust the seat back angle, pull the seat back angle adjustment lever (7) up and tilt the seat to the proper angle.

To fold the seat forward, get out of the seat and pull the lever (7) and fold the seat down.

ARMREST

To adjust the armrest, roll the knob (1) under the front of the armrest. The arm rests can push up to be out of the way if you do not want to use them. Be careful your arms do not accidentally push a button on either control arm.

HEADREST

To adjust the headrest (10), press the lock switch located at the top of the seat back to adjust the headrest.

LUMBAR SUPPORT

Press the bulb (2) to adjust the amount of lumbar support. To release pressure, press the button right behind the bulb.

Lumbar is changed by rotating knob.

SEAT HEATER

When the switch (11) is turned ON, both the backrest and the seat area will be warmed.

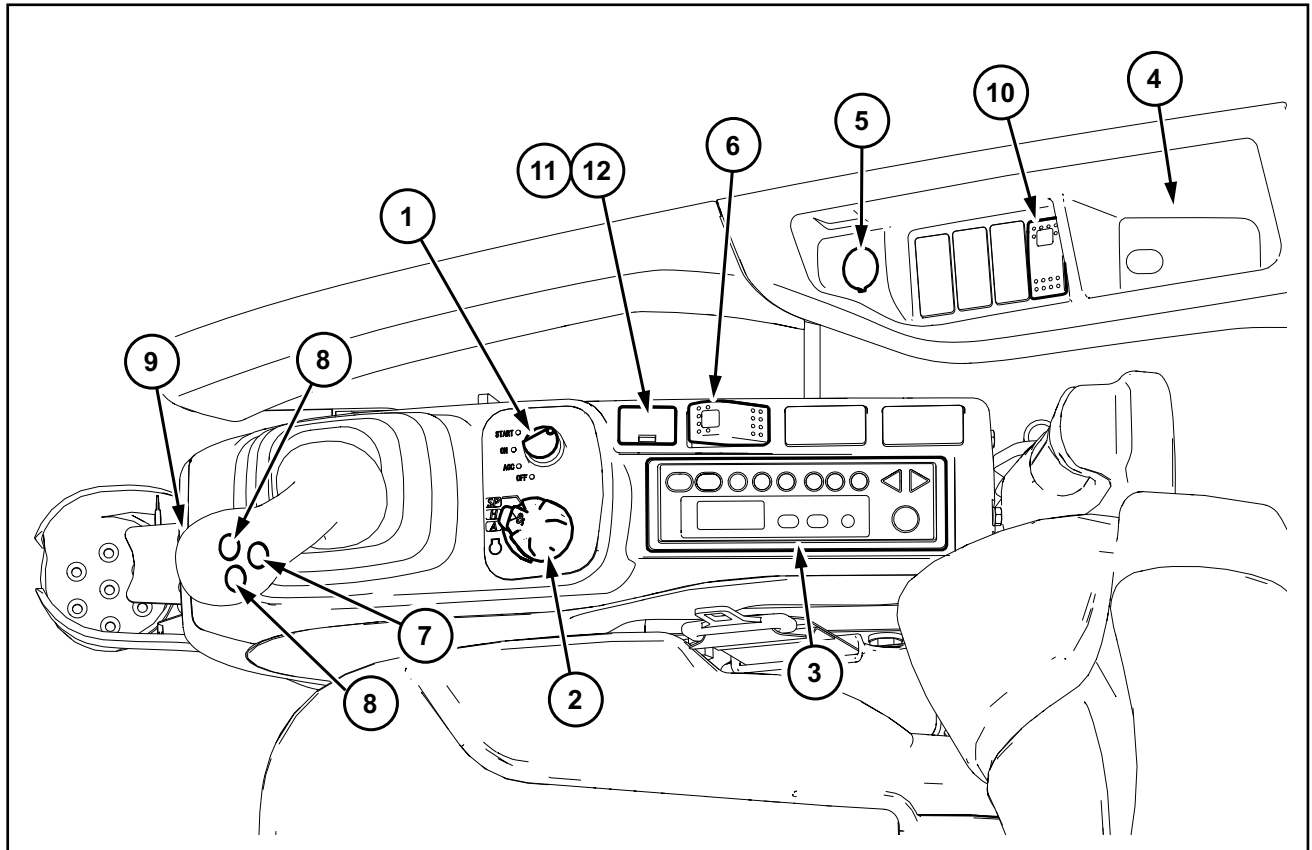
SEAT ANGLE ADJUSTMENT SECTION

Pull up the lever (12) to adjust the inclination of the seat. Release the lever at an appropriate angle.

SEATBELT

Always fasten your seat belt before operating the excavator. See Safety section for details on how to use the seat belt.

RIGHT CONSOLE AND CONTROL PANEL



EE94673C

Figure 10

1. Starter Switch

This switch has four positions, ON (contact), START (engine ignition), OFF (engine shut-down), and ACC (accessory current supply). Refer to "STARTING THE ENGINE" (5-5).

This key is also used to lock the cab door, the engine hood, the side doors, and the fuel tank cap.

2. Engine Throttle Volume

For more details, refer to "WORK MODE" (4-19).

If there is no change in engine speed, press and release the engine auto-idle speed selector. See item 10 for more details on the One-touch idle speed selector.

3. Radio

For more details, refer to "RADIO" (4-52).

4. Storage Compartment**5. 12 Volt Accessory Plug**

This plug is used for any 12 volt accessories, such as a cell phone charger.

6. Travel Alarm Switch

This two position switch has "CONT." which sounds the travel alarm on continuously, and "AUTO OFF" which will sound the travel alarm for 10 seconds then go off. Each time you stop travelling the alarm will reset and the travel alarm will sound for 10 seconds when you travel the excavator again.

7. One-touch Idle Speed Selector

This control enables engine idle without operating the engine throttle volume. For engine idle, press and release the control and the engine will be in LOW IDLE position. Press once again on the control and release it. The engine returns to its initial speed.

8. Optional Controls

These buttons are pre-wired for use with optional auxiliary controls. For more details, refer to "AUXILIARY HYDRAULIC CIRCUITS" (5-29).

9. One Touch Wiper Button

The button on the bottom of the control lever when pressed will activate the window wiper to move once over the window.

10. Ambient light extinguish switch

This is a switch that extinguishes the ambient light when sufficient brightness is secured. (The ambient light turns on and off in conjunction with the working light by pressing the working light switch on the monitor panel.)

As for working light switch refer to "WORKING LIGHT" (4-27).

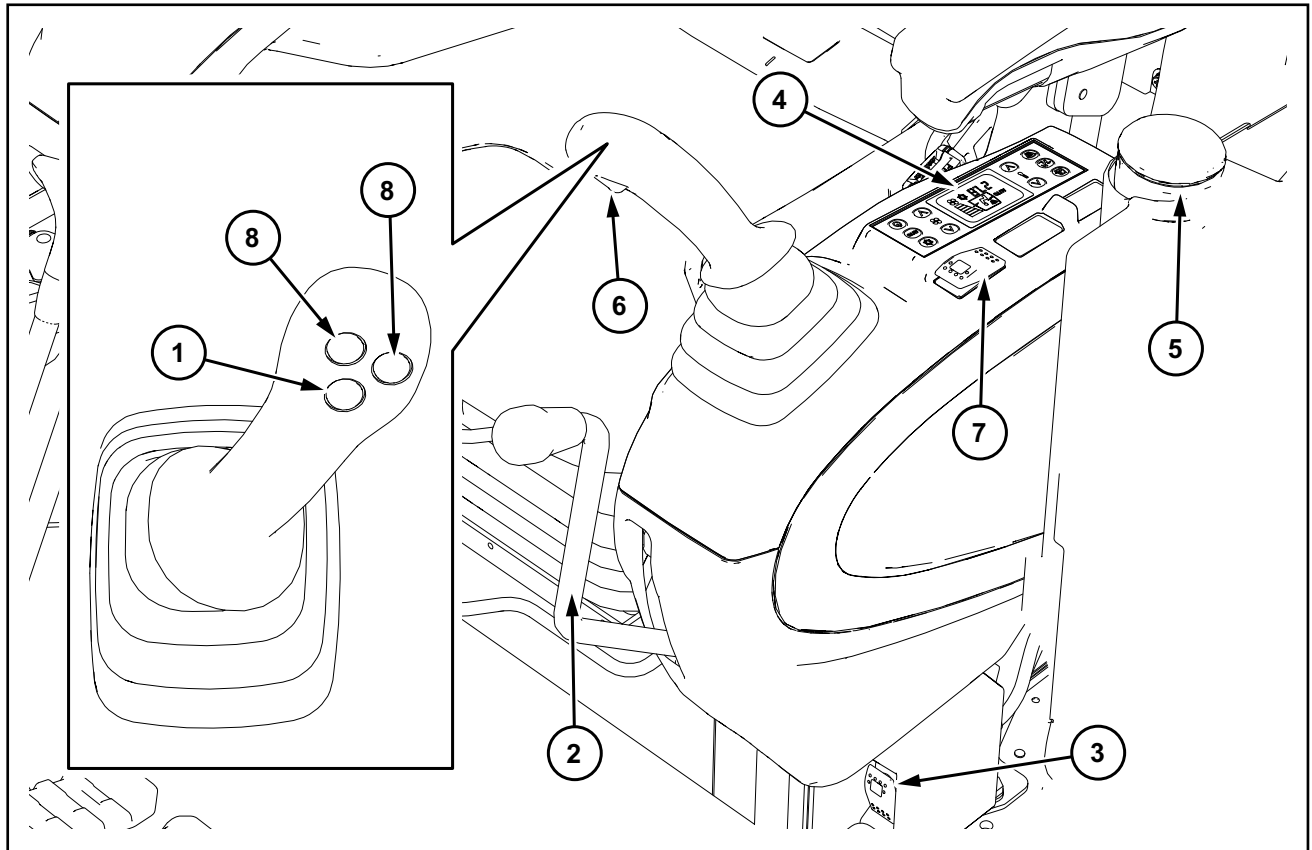
11. AUX external input

An input terminal for MP3 players is standard equipment.

12. USB external input

An input terminal for USB memory is standard equipment.

LEFT CONSOLE



EFEE9E4C

Figure 11

1. Horn

To sound the horn, press at the end of the Left-hand control lever.

IMPORTANT: Always sound the horn before operating the excavator.

2. Gate Lock Lever (Safety Bar)

The gate lock bar was designed to prevent the operator from leaving the cab with the hydraulic controls engaged (Page4-49).

⚠ WARNING

To access or exit the cab, the gate lock lever must be in the raised position. Never try to avoid this basic requirement.

3. Engine Emergency Stop Switch

This switch kills the engine. The "ENGINE STOP" will appear in the display window and the excavator will not start until the switch is pushed again.

4. Heating, Ventilation And Air-Conditioning Control

See Heating, Ventilation and Air-Conditioning Control for its use.

5. Ashtray

6. Radio Mute Switch

This button on the bottom side of the control lever will mute the radio. To resume listening to the radio press the button again. The radio mute will appear on the computer monitor screen.

7. Free swing (Option)

When Free Swing is activated the icon on the switch will light up and the symbol will appear on the monitor. When Free Swing is on the mechanical swing break is turned off. Using free swing on uneven ground could cause the upper to wing or drift. When the excavator is turned off free swing will default back to off.

8. Option Control (if equipped)

FRONT RIGHT CONSOLE

1. Sun load sensor

If an object is placed on the solar radiation sensor (installed on the console in the front right of the operator's seat), the temperature inside the cab will not be measured correctly.

Do not place any object on the solar radiation sensor.

2. Monitor display

The clock, fuel gauge, water temperature gauge and hydraulic oil temperature gauge are displayed.

The selection status of the functions is displayed.

The status (mode) of the machine is displayed.

The rear monitor is displayed.

The maintenance status of this machine is displayed.

3. Monitor switch

Select the mode of the machine.

Switch the monitor display.

4. Air-conditioner vent

The air-conditioner outlet is used to control the circulation and direction of air flow.

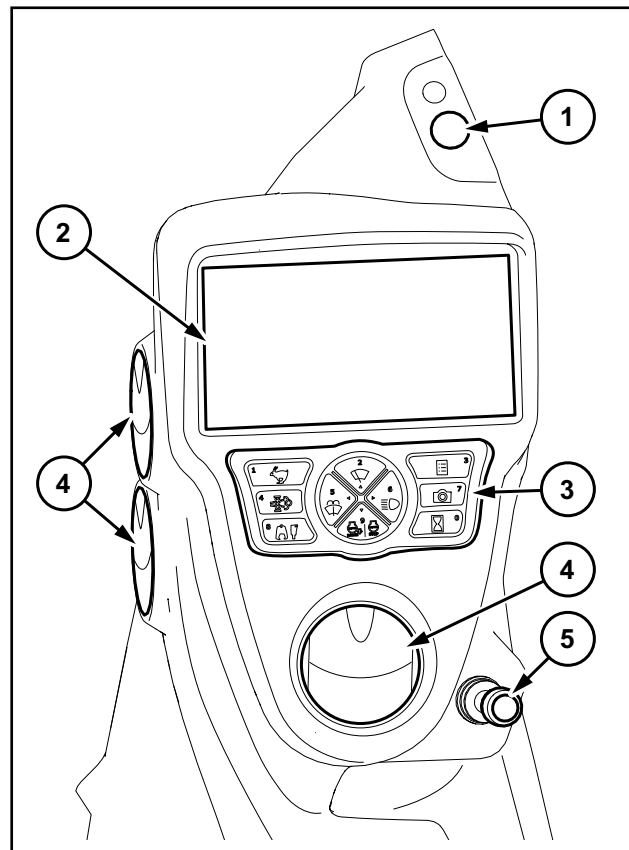
Manually open and control the air-conditioner outlet.

IMPORTANT: The ventilation holes must remain open while the air-conditioner is in use.

5. 24 Volt Cigarette Lighter

Press the cigarette lighter in to activate. The lighter will move outward when it is ready to light. Do not hold the lighter in.

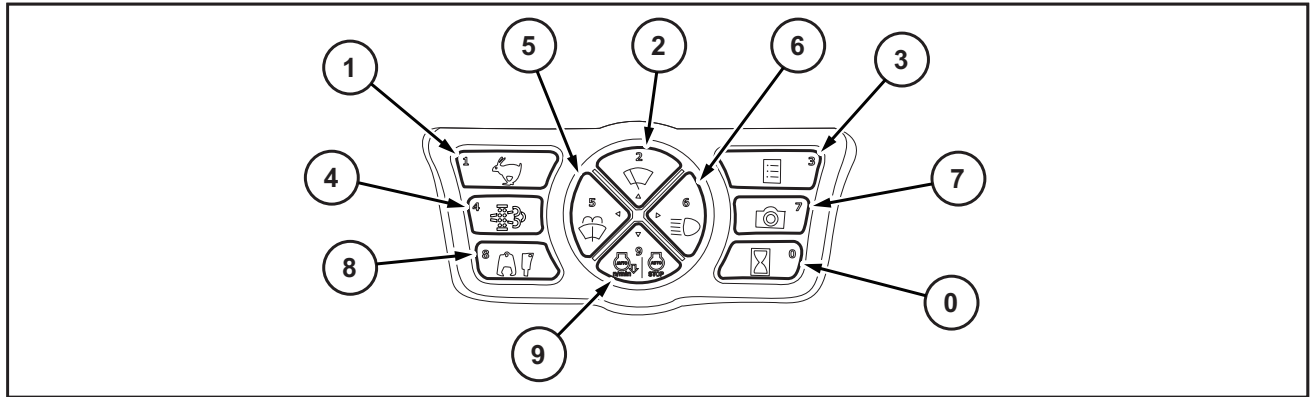
IMPORTANT: If the lighter does not move outward in 30 seconds, manually pull the lighter out to avoid damage to the electrical circuit. Contact your Link-Belt Dealer for more assistance.



96656C92

Figure 12

1	Sun load sensor
2	Monitor display
3	Monitor switch
4	Air-conditioner vent
5	24 Volt Cigarette Lighter

MONITOR SWITCH

963E09FB

Figure 13

You can use the monitor switch to operate and select the devices/units of this machine and items displayed on the monitor display.

No.	Name	Reference
1	Travel mode selector switch	4-19
2	Front wiper switch	4-27
3	Display mode selector switch	4-14
4	SCR RE-GEN switch	4-28
5	Windshield washer switch	4-68
6	Work light switch	4-27
7	Camera selector switch	4-26
8	Attachment selector switch	4-20
9	Idle mode switch	4-21
0	Hour meter switch	4-23

MONITOR DISPLAY

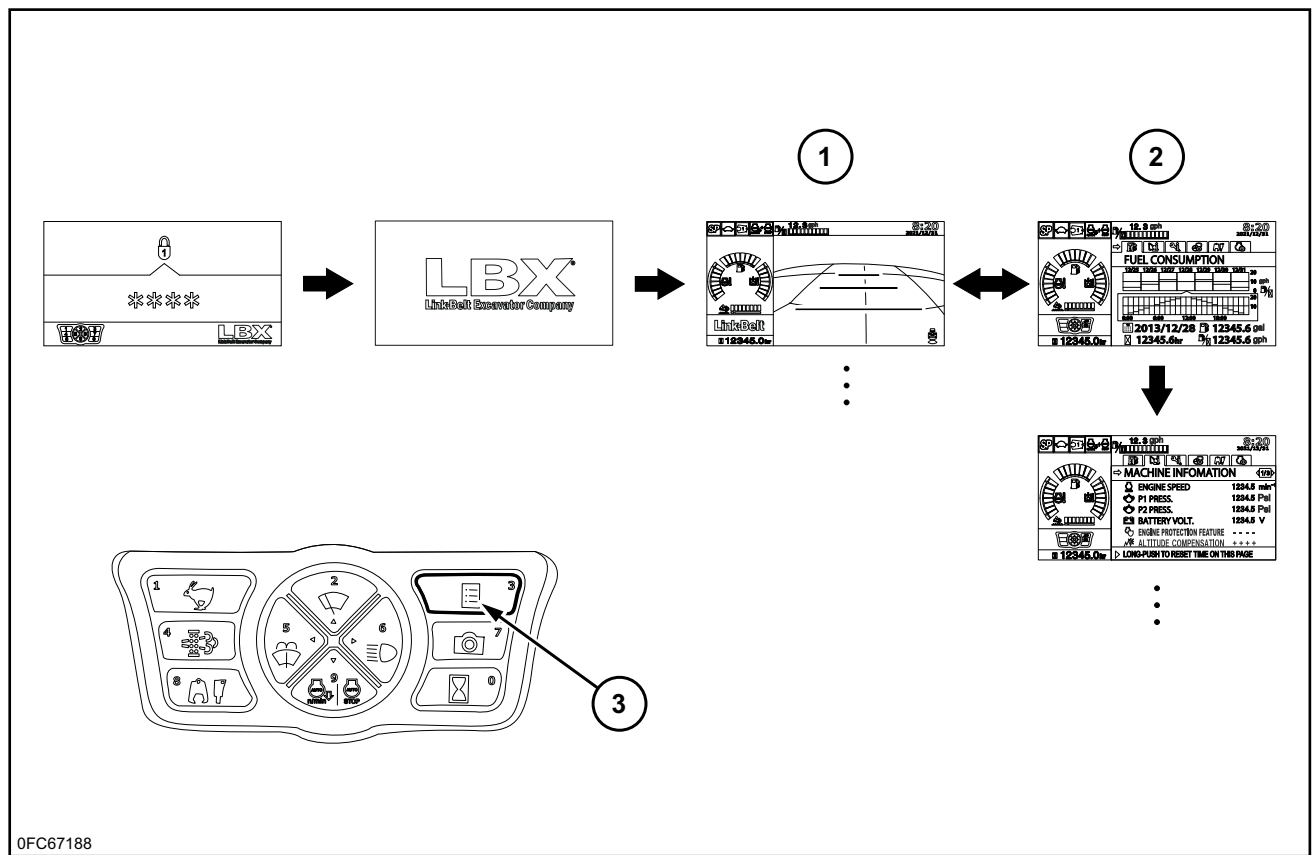
The monitor display has two modes: [Normal display mode] [1] where the status of the machine and the camera image during operation are displayed, and [User information mode] [2] where the items displayed on the monitor are set, among others.

Press the mode selector switch [3] to switch the mode.

The mode toggles every time the switch is pressed.

WARNING

- The monitor is used to display the status of the machine during operation and promptly notify the operator of any abnormality as it occurs, using a message and buzzer.
It is not used for the startup inspection or maintenance (service).
- For the startup inspection, refer to [CHAPTER 5 - OPERATING INSTRUCTIONS]-"BEFORE OPERATING THE EXCAVATOR"-(5-1).
- Water may cause the monitor display to malfunction.
Be careful not to let the monitor display come in contact with water.
- If the monitor is switched to the user information mode when the gate lock lever is in the normal operation position (not locked), the message, [SELECT CAMERA SCREEN DURING OPERATION], will be displayed to ensure safety.
Display the camera screen to ensure that you can sufficiently check the surrounding condition while operating the machine. Under this condition, operating the machine in the User information mode is extremely dangerous because you cannot check the area in the rear.



OFC67188

OFC67188

Figure 14

1	Normal display mode
2	User information mode
3	Mode selector switch

• Screen transition

(1) Normal Display Mode

- Vehicle Information and Camera Screen

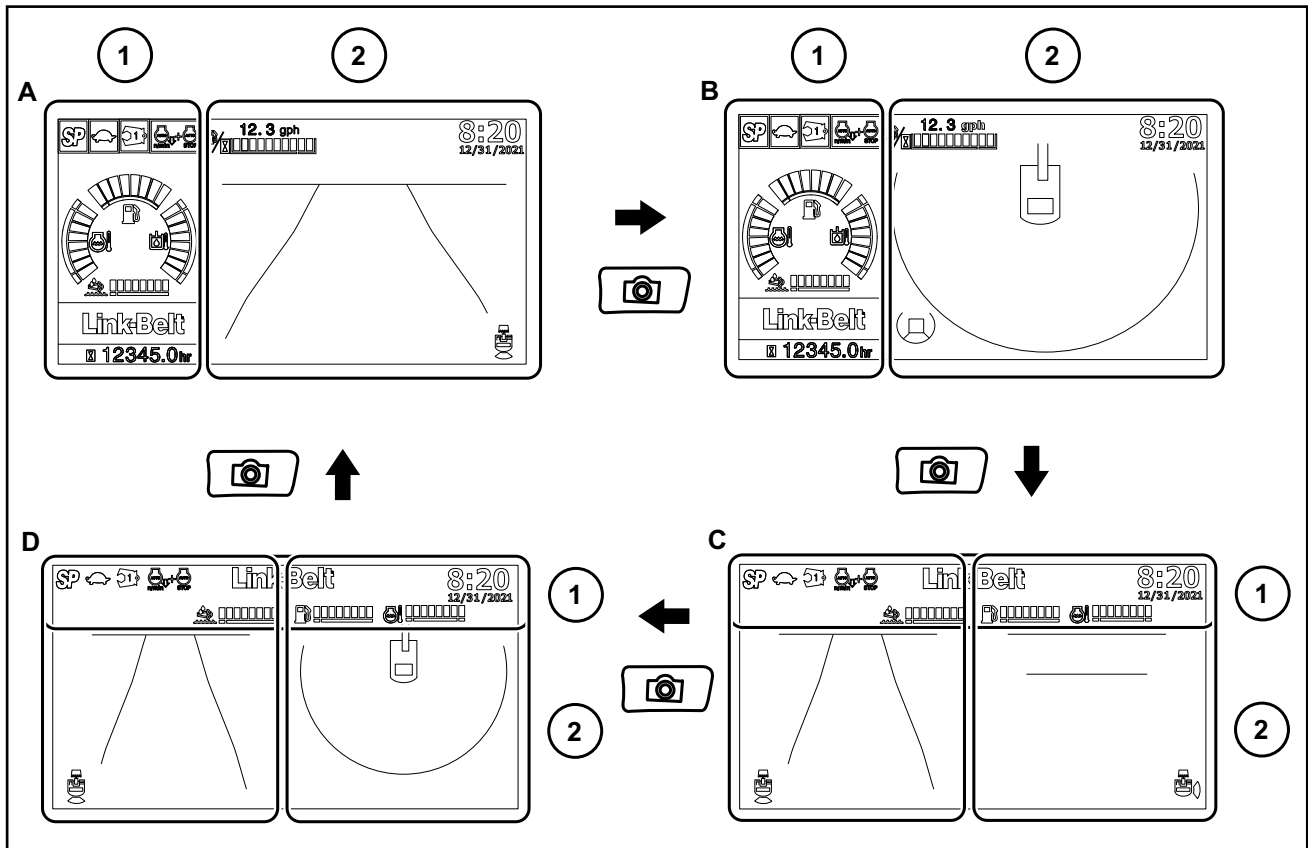
(2) User Information Mode

- Fuel consumption history
- Machine information
- Maintenance information (time until replacement)
- Display configuration
- Auxiliary hydraulics configuration (only visible if equipped with Aux Hydraulics)
- SCR configuration

NORMAL DISPLAY MODE

In the normal display mode, "Machine status" [1] and "Camera image" [2] are displayed.

What is shown on the monitor display cycles as follows every time the camera switch on the monitor is pressed:

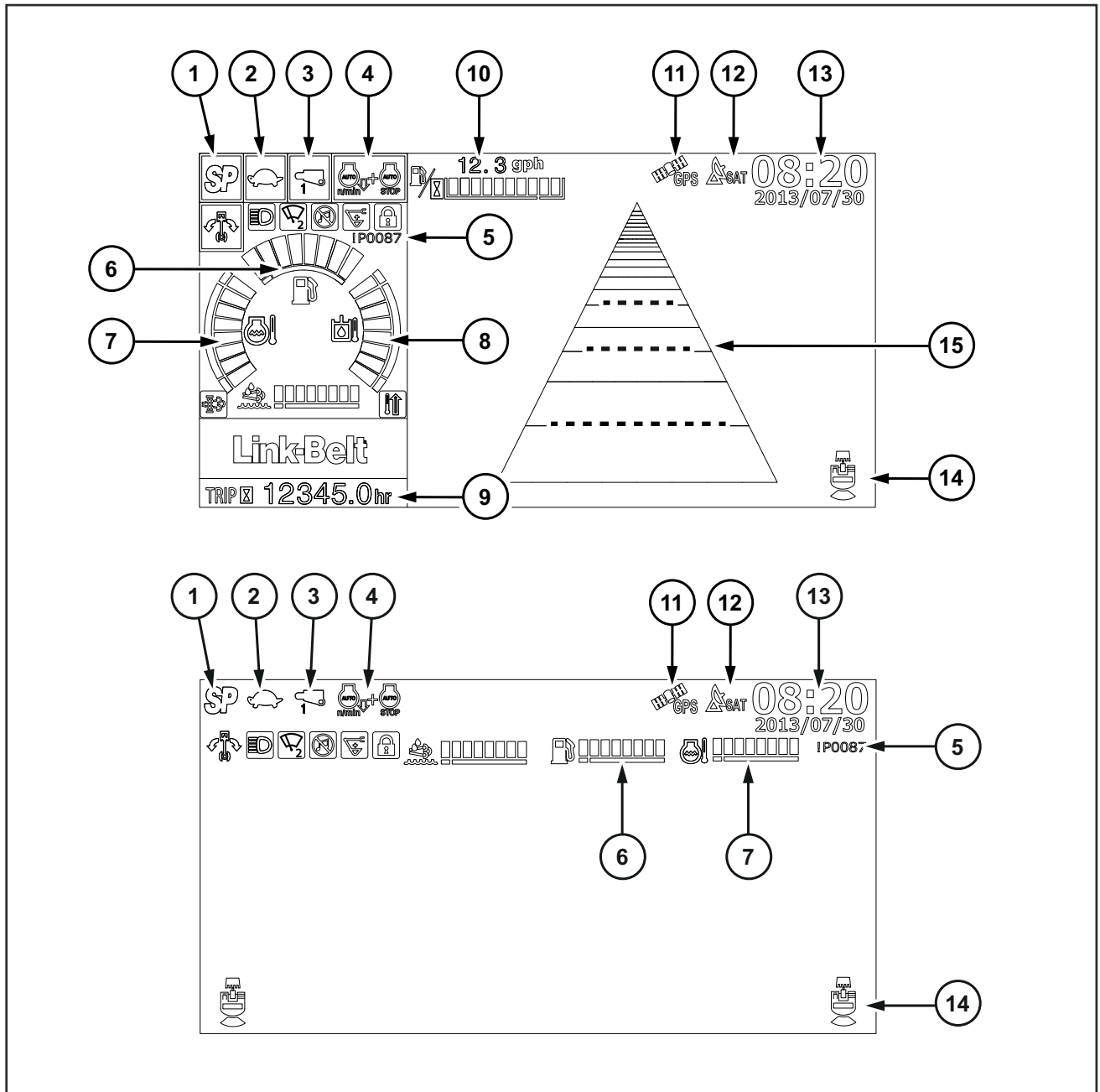


5C74659C

Figure 15

A	Vehicle information (left) + Rear camera screen
B	Vehicle information (left) + WAVES screen (if equipped)
C	Vehicle information (top) + Rear camera screen + Right camera screen (if equipped)
D	Vehicle information (top) + Rear camera screen + WAVES screen (if equipped)

LIST OF ICONS

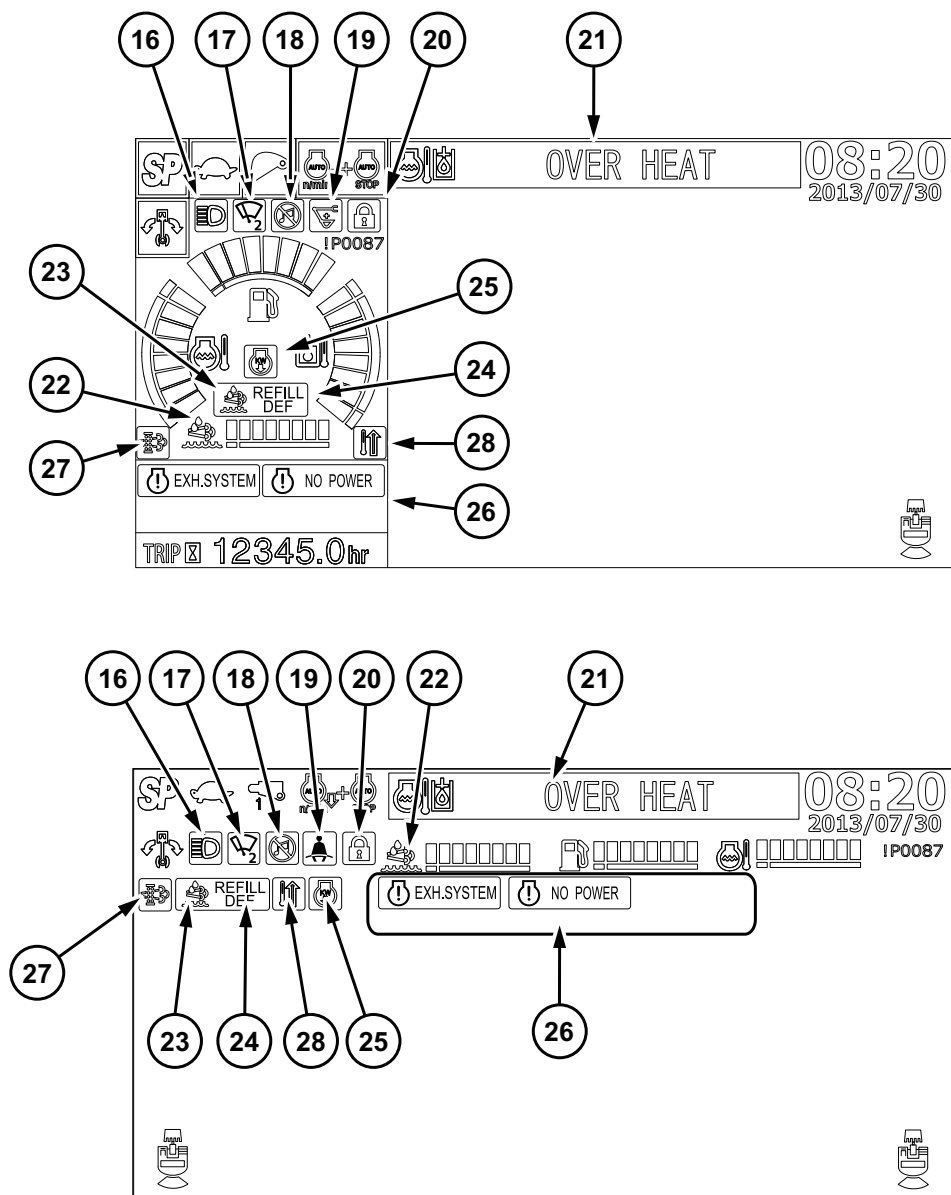


0EC989BF

Figure 16

No.	What is displayed	Reference page	No.	What is displayed	Reference page
1	Work mode	4-19	9*	Hour meter/trip meter	4-23
2	Travel mode	4-19	10*	Fuel display/fuel economy gauge	4-24
3	Auxiliary hydraulic mode	4-20	11	GPS icon	4-25
4	Idle mode	4-21	12	Antenna sensitivity icon	4-25
5	DTC * Contact your Link-Belt Excavator Dealer		13	Date/time	4-25
6	Fuel gauge	4-24	14	Camera angle	4-26
7	Engine coolant temperature gauge	4-22	15	Camera screen guide grid	4-62
8*	Hydraulic oil temperature gauge	4-22			

*[8] to [11] are not displayed when information of this machine is displayed at the top of the monitor.
If a diagnostic trouble code is displayed, contact your Link-Belt Excavator dealer.



EE278787

Figure 17

No.	What is displayed	Reference page	No.	What is displayed	Reference page
16	Working light	4-27	23	DEF icon	4-34
17	Front wiper	4-27	24	REFILL DEF	4-34
18	Radio mute	4-28	25	Output reduction icon	4-34
19	Auto pressure boost/seatbelt	4-28	26	Icons related to the flow rate/pressure or the DEF SCR system	4-35
20	anti-theft function	4-28	27	SCR RE-GEN(SCR regeneration)	4-28
21	Message screen	4-29	28	DEF heater/engine preheating	4-29
22	DEF level gauge	4-34			

*The message screen is displayed on top of the monitor by overlapping with other icons currently displayed.

EXPLANATION OF ICONS

WORK MODE

Each icon indicates the work mode currently selected.



Super Power
This icon is displayed when the machine output priority mode is selected.



Heavy
This icon is displayed when the high-load work mode is selected.

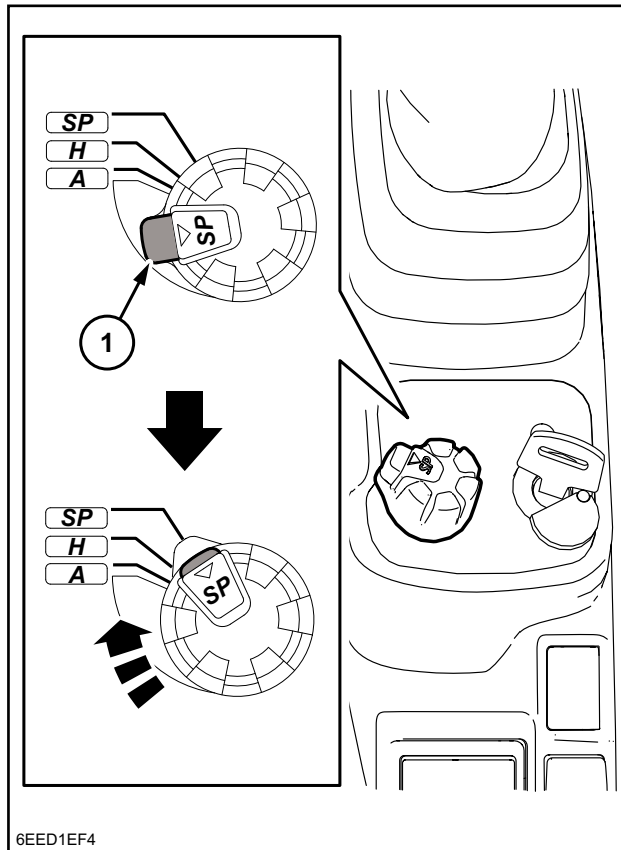


Auto
This icon is displayed when the fuel-economy priority mode is selected.

[Operation]

Turn the engine throttle volume on the right console and select the "SP," "H" or "A" mode.

NOTE: To select the "SP" mode, turn the engine throttle volume clockwise while holding down the push switch (1).

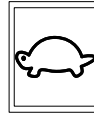


6EED1EF4

Figure 18

TRAVEL MODE

Each icon indicates the travel mode currently selected.



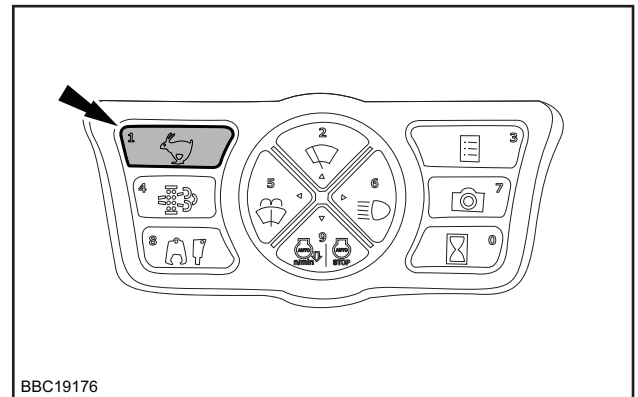
This icon is displayed when the slow-speed travel mode is selected.



This icon is displayed when the fast-speed travel mode is selected.

[Operation]

The selection toggles between slow speed and fast speed every time the "Travel Mode Selector Switch" on the monitor is pressed.



BBC19176

Figure 19

[Information]

Slow speed "Turtle": 0 km/h to 3.4 km/h

Use this mode to travel on slope, off road or soft ground.

Fast speed "Rabbit": 0 km/h to 5.6 km/h

Use this mode to travel on a hard, flat, maintained road.

NOTE: Slow speed is automatically selected when the engine is started.

NOTE: If the fast speed is selected on the machine, it automatically switches to slow-speed travel when the load increases on uphill road, and automatically returns to fast-speed travel as the load decreases.

! WARNING

Switching the travel mode while the machine is traveling may cause the travel direction to deviate. Switch the travel mode after the machine has stopped traveling.

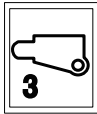
ATTACHMENTS

Each icon indicates the attachment (option) currently selected, such as the hydraulic breaker or crusher.



This icon is displayed when hydraulic breaker setting 1* is selected.

*The following is displayed when setting 2 to 5 are selected.



This icon is displayed when crusher setting 1* is selected.

*The following is displayed when setting 2 to 5 are selected.

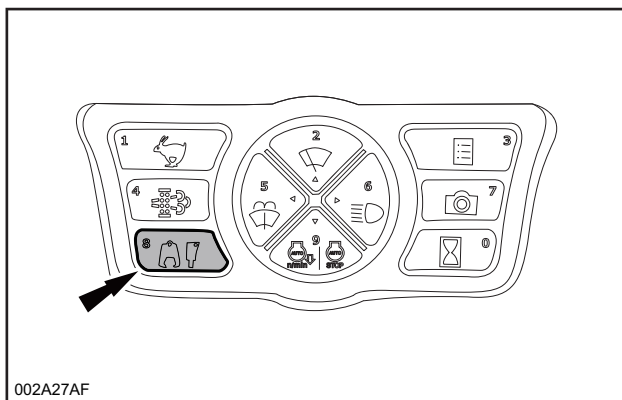


[Operation]

Five patterns of pump flow rate/pressure combinations can be set beforehand for the optional attachments, such as the hydraulic breaker and crusher. (4-41)

Pushing the attachment select switch switches set pattern.

Pushing and holding down the attachment select switch allows you to go to the setting screen for user information mode.



002A27AF

Figure 20

CAUTION

Stepping on the operation pedal without switching the work mode first will only produce the minimum flow rate. Before commencing work, be sure to select the special attachment and flow rate to use.

IMPORTANT:

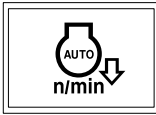
When working with the breaker or crusher installed, be sure to check on the monitor whether the selected work mode and pump flow rate are appropriate.

If the selections are not appropriate, press the switch and match the attachment used with the work mode and pump flow rate.

If the selected work mode and flow rate are not appropriate, malfunction or machine failure may occur or the special attachment may be damaged.

IDLE MODE

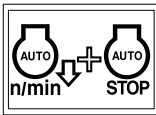
Each icon indicates the selection status of auto idle and idle shutdown.



This icon is displayed when auto idle is selected.



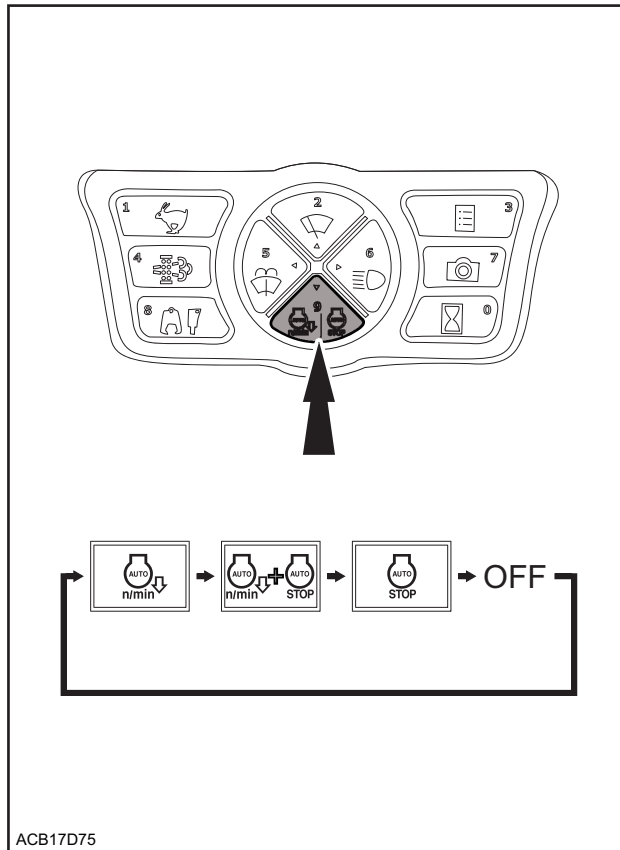
This icon is displayed when idle shutdown is selected.



This icon is displayed when auto idle and idle shutdown are selected.

[Operation]

The selection cycles as follows every time the idle mode switch on the monitor is pressed.



ACB17D75

Figure 21

[Information]

[Auto idle]

The engine speed will drop 5 seconds after the lever or option pedal operation is aborted.

To restore the throttle command speed, operate the operation lever or option pedal or turn the engine throttle volume, and the engine speed will be restored.

[Idle shutdown]

The message, "IDLE SHUT DOWN" will appear on the screen and an alarm will sound after 3 minutes of no throttle operation with the gate lock lever locked (not operated) and engine speed at 1200 rpm or below, and the engine will stop 10 seconds thereafter.

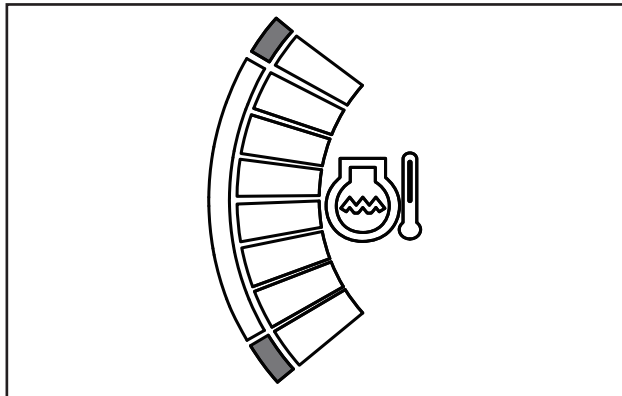
[Auto idle + Idle shutdown]

When selected, both Auto idle mode and Idle shutdown mode are set (The actuation conditions are the same as those described in the above two modes.)

IMPORTANT: To protect the engine, let idle continue for at least 3 minutes.

NOTE: To restart the engine that has stopped by idle shutdown, turn the starter switch key to the "OFF" position and then start the engine.

ENGINE COOLANT TEMPERATURE GAUGE



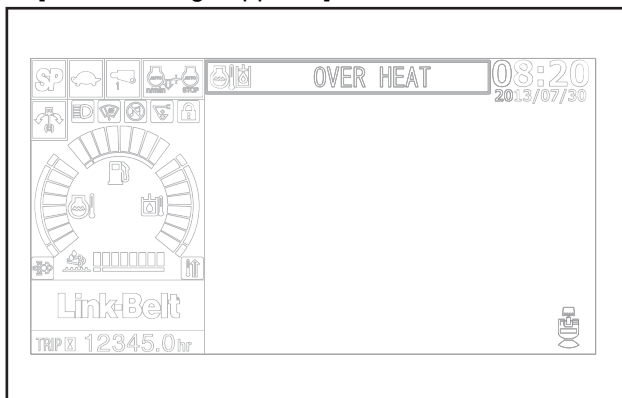
41A3B0E9

Figure 22

The number of lit segments indicates the temperature of engine coolant.

The greater the number of lit segments, the higher the coolant temperature is. If all segments are lit, an alarm will sound and the following message will appear on the screen:

[If the message appears]



05BC2630

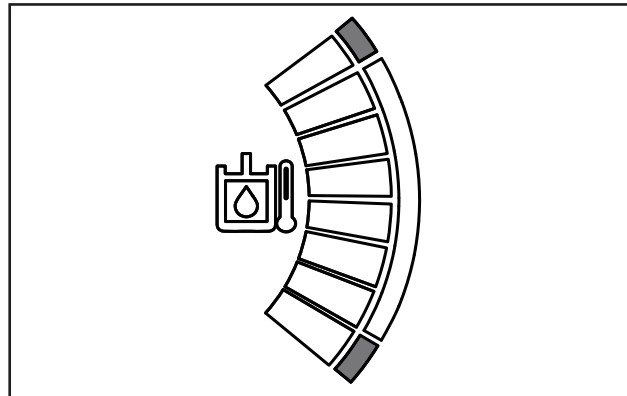
Figure 23

If the "OVER HEAT" message appears, lower the engine speed.

If the temperature does not drop, stop the engine, remove the starter switch key, and investigate the cause.

Action details: 4-30

HYDRAULIC OIL TEMPERATURE GAUGE



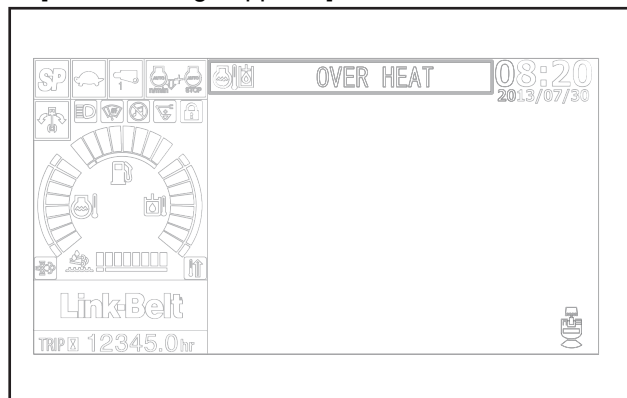
42EB124E

Figure 24

The number of lit segments indicates the temperature of hydraulic oil.

The greater the number of lit segments, the higher the hydraulic oil temperature is. If all segments are lit, an alarm will sound and the following message will appear on the screen:

[If the message appears]



05BC2630

Figure 25

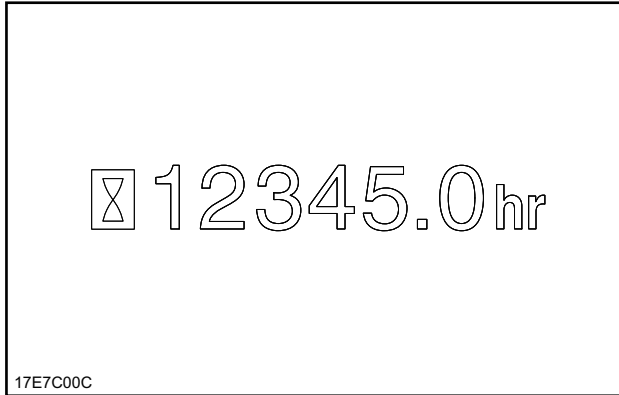
If the "OVER HEAT" message appears, lower the engine speed.

If the temperature does not drop, stop the engine, remove the starter switch key, and investigate the cause.

Action details: 4-30

HOUR METER/TRIP METER

1. Hour meter



17E7C00C

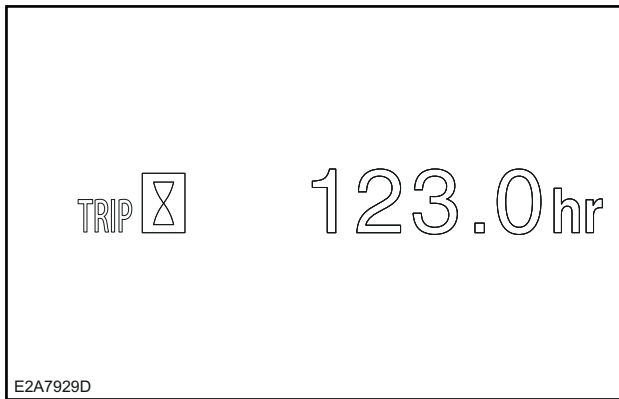
Figure 26

The hour meter displays the duration that the engine has operated in units of 0.1 hours (6 minutes).

The hour meter cannot be reset.

The hourglass flashes while the engine is running.

2. Trip meter



E2A7929D

Figure 27

The trip meter can be reset to "0 hr" at any time and indicates the total operating hours since the last reset in units of 0.1 hour (6 minutes).

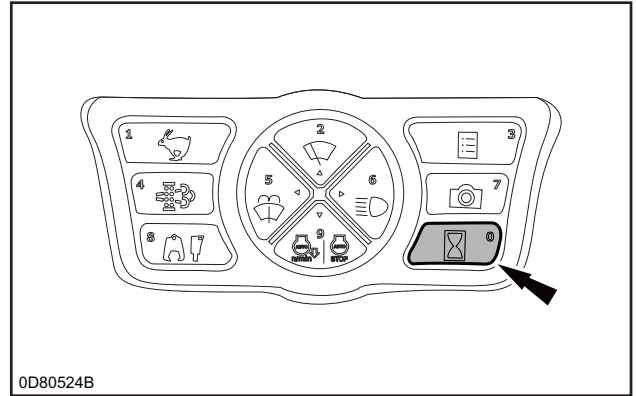
Resetting the trip meter

Press and hold the hour meter switch while the trip meter is displayed, and the displayed engine operating hours will be reset to "0 hr."

[Operation]

Press the hour meter switch on the monitor while the hour meter is displayed, and the trip meter will be displayed instead.

The trip meter will be displayed for approx. 1 minute, after which the hour meter will be displayed again.



0D80524B

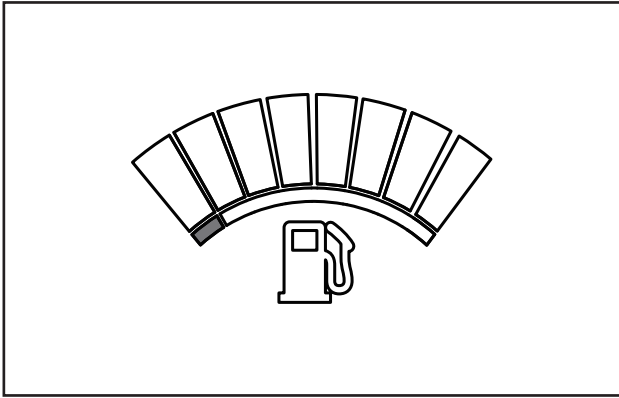
Figure 28

NOTE:

Turning the starter switch key to "OFF" position ends the hour meter count.

If the hour meter switch is pressed after the key is turned to the "OFF" position, the hour meter and clock are displayed for 20 seconds.

FUEL GAUGE



5B35444D

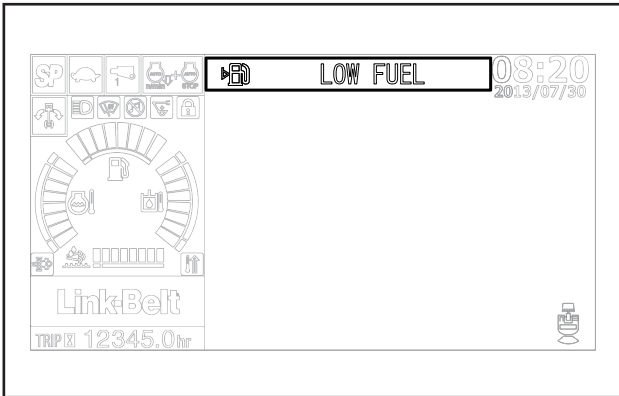
Figure 29

The number of blinking segments indicates the remaining level of fuel.

If all segments are lit, the fuel tank is full.

If only one segment is lit, an alarm will sound and the following message will appear on the screen:

[If the message appears]

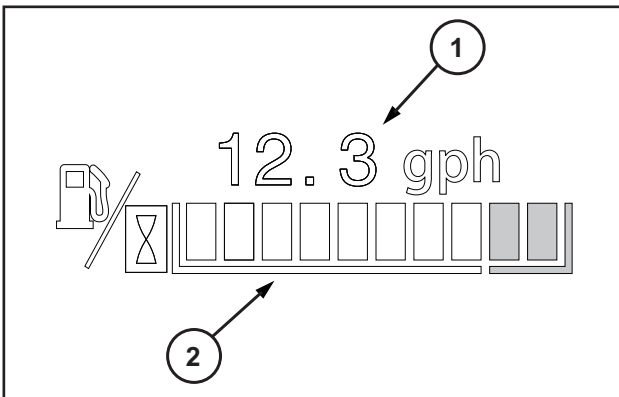


DE1D84BA

Figure 30

If the "LOW FUEL" message appears, add fuel to the fuel tank.

FUEL ECONOMY DISPLAY/FUEL ECONOMY GAUGE



070619F8

Figure 31

1	Fuel economy display
2	Fuel economy gauge

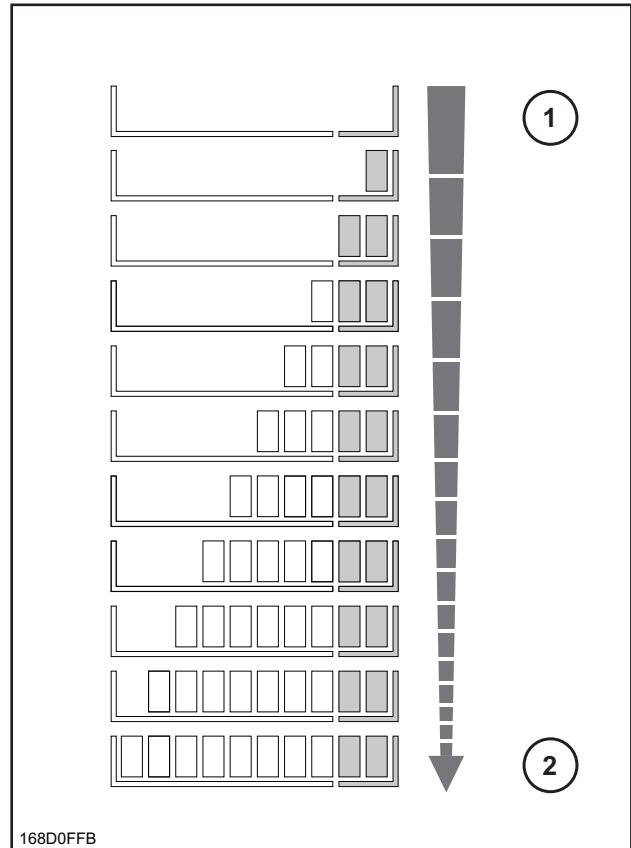
1. Fuel economy display

The Fuel economy display can be switched by selecting the hour meter or the trip meter. Normally, the fuel economy during the accumulated hours is displayed.

When the display is switched to the trip meter, the fuel economy for the hours displayed in the trip meter will be displayed.

2. Fuel economy gauge

The status of energy-saving operations can be checked by the gauge. The number of gauge indicators decreases when an energy-saving operation is performed. The number of gauge indicators increases during a high-load operation.



168D0FFB

Figure 32

1	Good fuel economy
2	Poor fuel economy

[Information]

The machine will not experience any failure even when the number of gauge indicators decreases. However, as long as energy saving operations do not interfere with work, please use energy saving operations for the sake of the environment. The fuel consumption history (4-39) can be useful for energy-saving operations.

Key points of energy-saving operations

- Use the H mode or A mode instead of the SP mode.
- Do not abruptly operate the lever.
- Do not perform high-load operations or relief operations.
- Use auto idle and one-touch idle.

Also use idle shutdown to stop unnecessary idling.

NOTE: For information on showing/hiding the fuel economy gauge, contact your Link-Belt Excavator dealer.

GPS ICON



This icon is displayed when connected to GPS communication.

SATELLITE ANTENNA LEVEL ICON



This icon is displayed immediately after the ignition key is turned ON (initial state).



This icon means RemoteCARE is online and satellite signals can be received.

NOTE: The icon is not displayed when the machine is connected to RemoteCARE for the first time.

DATE/TIME DISPLAY



E9BAA728

Figure 33

Date/time is displayed based on the year, month, day and time set by the customer.

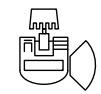
How to set: 4-41

CAMERA ANGLE DISPLAY

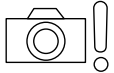
The angle of the camera image shown on the monitor is indicated.



This icon indicates that the image of the rear camera is displayed on the monitor.

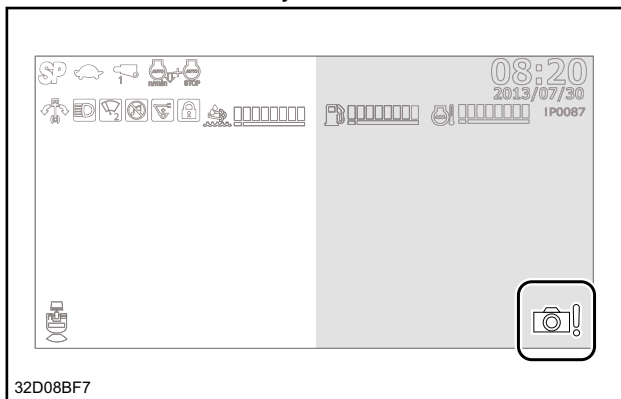


This icon indicates that the image of the side camera (right) is displayed on the monitor.
(if equipped)



This icon indicates that the connection of the monitor camera is shorted, disconnected or has other problem.

When the camera is faulty

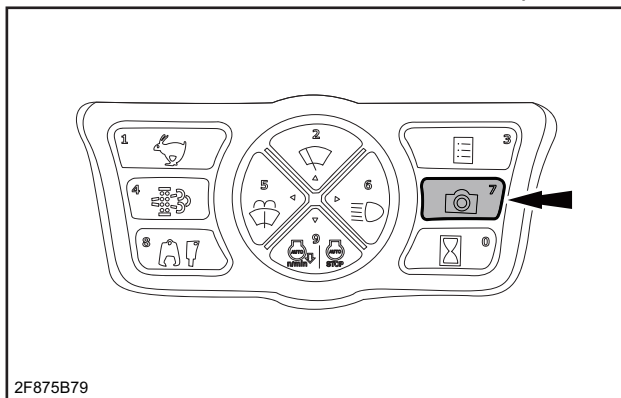


32D08BF7

Figure 34

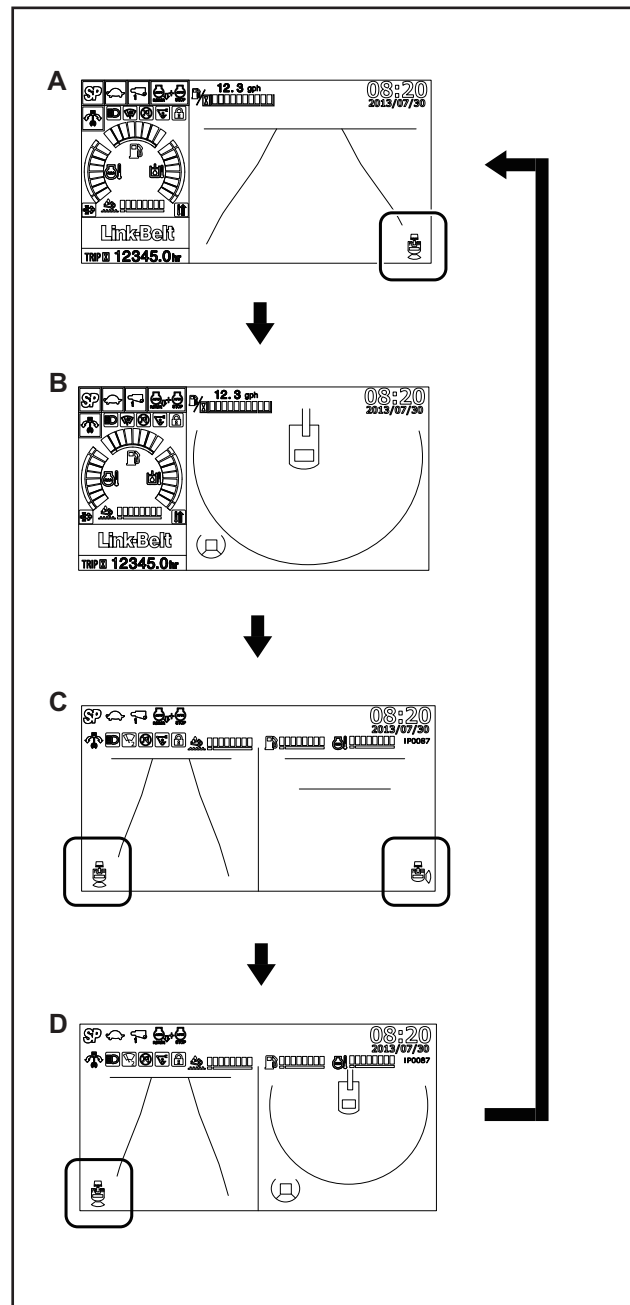
[Operation]

The selection cycles as follows every time the camera selector switch on the monitor is pressed:



2F875B79

Figure 35



1BA33C7D

Figure 36

A	Vehicle information (left) + Rear camera screen
B	Vehicle information (left) + WAVES screen (if equipped)
C	Vehicle information (top) + Rear camera screen + Right camera screen (if equipped)
D	Vehicle information (top) + Rear camera screen + WAVES screen (if equipped)

WORKING LIGHT

[Icon]



This icon indicates that the work light is ON. It is not displayed when the work light is OFF.

[Operation]

Pressing the work light switch on the monitor switches the work lights "ON"/"OFF".

Pressing the switch turns on the icon on the monitor display and the work light.

Press the switch again to turn them off.

The switch operates the following light :

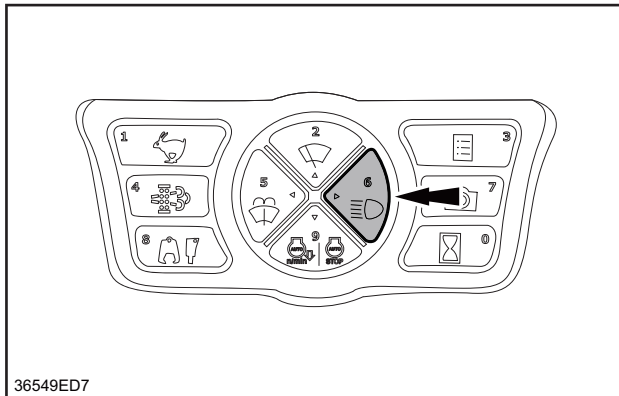
Upperstructure,

Boom lights,

Front cab lights * 2,

As for ambient light extinguish switch refer to (4-9).

Switches the work lights "ON" / "OFF".



36549ED7

Figure 37

[Information]

When the key switch is in the "ON" position, the work light is "OFF."

When the work light is turned "ON," the brightness of the monitor is automatically adjusted.

FRONT WIPER

This icon indicates the operating condition of the front wiper.



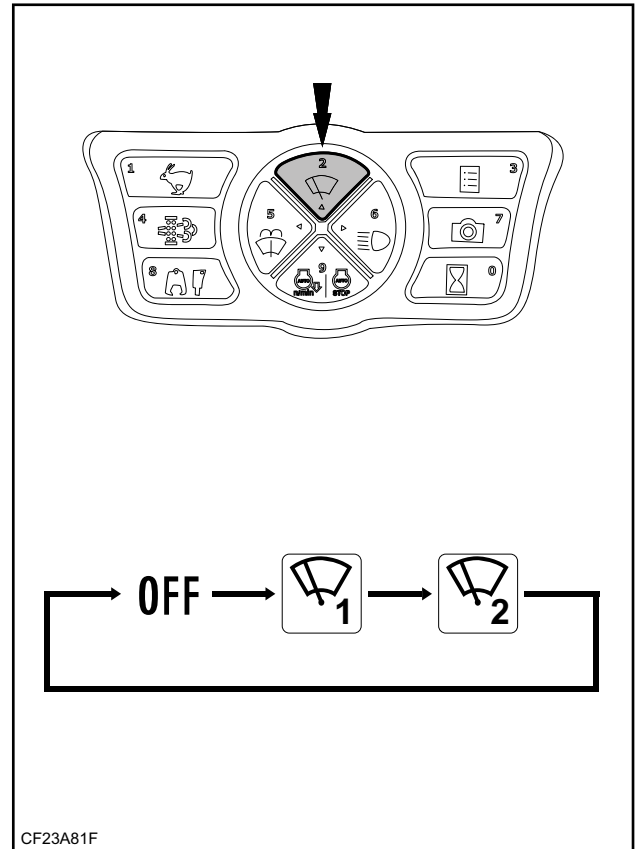
This icon is displayed when the wiper is operating intermittently.



This icon is displayed when the wiper is operating continuously.

[Operation]

The operating condition cycles as follows every time the front wiper switch on the monitor is pressed:

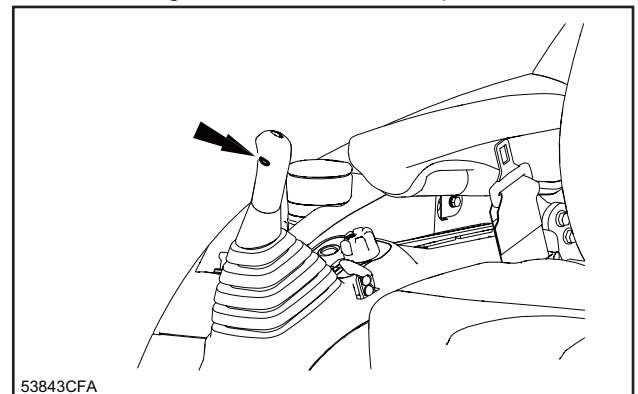


CF23A81F

Figure 38

When the wiper is operated with the one-time wiper switch on the right control lever, the wiper icon is not displayed.

The blade can be reciprocally operated by pressing and holding down the one-time wiper switch.



53843CFA

53843CFA

Figure 39

IMPORTANT:

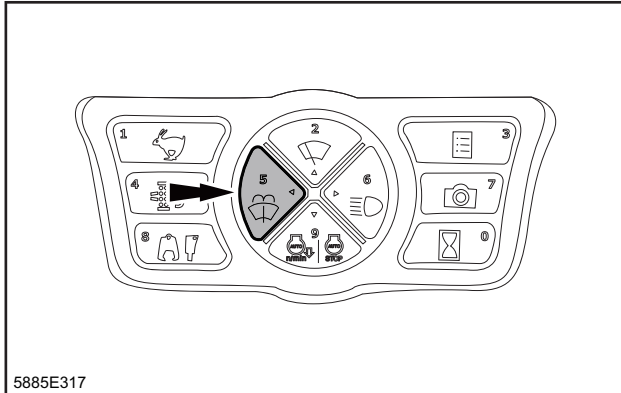
Do not operate the wiper when the windshield is dry. The wiper may crack.

IMPORTANT: If the front wiper is operated when the glass is covered with mud or snow, the wiper may be damaged.

Windshield washer

[Operation]

The washer and the wiper are activated when the front glass washer switch on the monitor is pushed. Release the switch, and the washer/wiper will stop.



5885E317

Figure 40

CAUTION

Do not push the washer switch and the wiper switch simultaneously. Also, do not turn OFF the ignition key while the washer switch is pushed. It may cause failure.

IMPORTANT:

Do not operate the washer when the reserve tank is empty. The electric pump may be damaged.

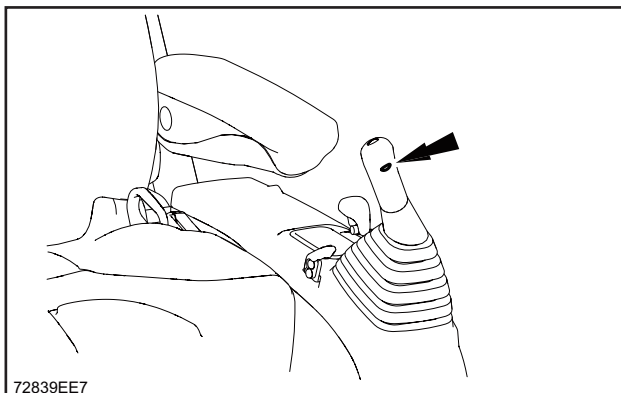
RADIO MUTE



This icon indicates that the radio is muted.

[Operation]

Press the radio mute control on the left console to mute the radio.



72839EE7

Figure 41

AUTO PRESSURE BOOST/SEATBELT



This icon indicates that the hydraulic circuit is in the boosting mode.



This icon is displayed for several seconds when the engine is started.

Those two icons are switched and displayed at the following timings, respectively:

For several seconds after the engine is started: Seatbelt icon turns on.



After the engine is started: Seatbelt icon turns off.

Then, when the hydraulic circuit is in the boosting mode, the auto pressure boost icon turns on.

ANTI-THEFT DEVICE



This icon indicates that the anti-theft function has actuated.

For the setting method, refer to [CHAPTER 5 - OPERATING INSTRUCTIONS]-"STARTING THE UNIT"-(5-4).

SCR RE-GEN (SCR regeneration)

This icon indicates that SCR RE-GEN is in progress or stopped.



Green . . . Displayed during AUTO SCR RE-GEN

Green (blinking) . . . Displayed when AUTO SCR RE-GEN is paused

Yellow . . . Displayed during MANUAL SCR RE-GEN

Yellow (blinking) . . . Displayed when MANUAL SCR RE-GEN is paused



Green . . . Displayed in MANUAL SCR RE-GEN mode "SCR RE-GEN (SCR regeneration)" (5-16)



Red . . . Displayed when SCR RE-GEN is not available because the system has broken down

Contact your Link-Belt Excavator dealer.

For details, refer to [CHAPTER 5 - OPERATING INSTRUCTIONS]-"SCR RE-GEN (SCR regeneration)"-(5-16).

DEF THAWING AND HEAT INSULATING DEVICE/ ENGINE PREHEATING/COOLING DOWN

Urea solution thawing and heat insulating device



This icon is displayed when the DEF is being thawed or kept warm.

ENG. Pre Heat



This icon is displayed when the engine is preheating*.

Cooling down



This icon is displayed when cooling down of turbocharger is completed (no trouble even if the engine is stopped).

Check that this icon is displayed and stop the engine.

*When using this machine in winter or when cold, turn the key switch to the "ON" position, and the engine preheat icon will be displayed and the engine will be preheated automatically.

Wait for the icon to disappear, and then start the engine.

Those three icons are displayed when the respective functions have actuated.

EXPLANATION OF MESSAGES AND ICONS

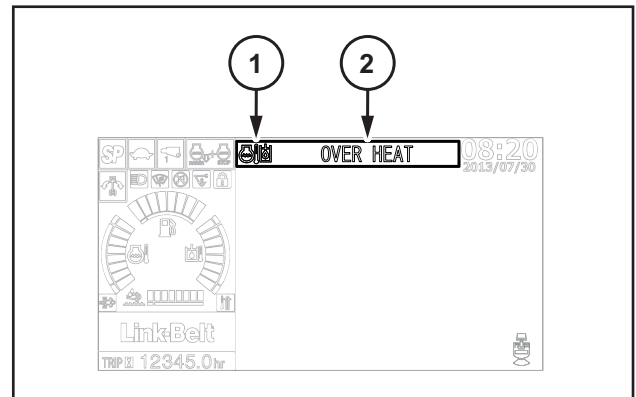
• Message screen

The message screen shows information icons [1] and messages [2].

If there are multiple messages, they are displayed repeatedly in order, starting from the latest message.

Some messages are accompanied by an alarm as they are displayed.

This section explains the icons, messages and remedial actions.



08E4B909

Figure 42

IMPORTANT:

The message screen is shown in red, yellow or green depending on the message, according to its level of urgency/importance.

Red	Warning	Warning for a trouble that occurred on the machine
Yellow	Caution	Caution for an operation
Green	Confirmation	Confirmation for an operation

If a red or yellow message screen appears, take an appropriate action by referring to the explanations below.

NOTE: If the message persists after the action has been taken, consult your Link-Belt Excavator dealer.

NOTE:

You can change the language used for displayed messages.

To change the message language, consult your Link-Belt Excavator dealer.

MESSAGE DISPLAY (RED)

Messages and icons	What is displayed	Remedial action
 LOW OIL PRESSURE 0F176BF3	This message indicates that the engine oil pressure is low. When this message appears, the engine automatically stops.	Stop the engine, and contact your Link-Belt Excavator dealer immediately.
 OVER HEAT 14370877	This message indicates that the engine coolant temperature is high or hydraulic oil temperature is too high. If no action is taken after this message appears, the engine automatically goes into idle at low speed. If the high-temperature condition continues further, the engine will automatically stop.	Idle the engine to decrease the temperature of coolant and hydraulic fluid. Refill the reserve tank with coolant if its level is low. Check for coolant leaks. If any leak is found, stop the engine. If the display persists, contact your Link-Belt Excavator dealer immediately.
 BOOST TEMP. HIGH 20EC0627	This message indicates that the temperature of turbocharger air supplied to the engine is abnormally high. If no action is taken after this message appears, the engine will automatically go into idle at low speed. If the high-temperature condition continues further, the engine will automatically stop.	Idle the engine and stop work to decrease the temperature of the turbocharger. If the display persists, contact your Link-Belt Excavator dealer immediately.
 ALTERNATOR 21FE5182	This message indicates that the battery or alternator has a problem.	Stop the engine, and contact your Link-Belt Excavator dealer immediately.
 CHECK ENGINE 1A555142	This message indicates that the engine's electrical system has suffered a short, disconnection, or other problem.	Stop the engine, and contact your Link-Belt Excavator dealer immediately.
 ELEC. PROBLEM 227F61D7	This message indicates a problem with the electrical system.	Stop the engine, and contact your Link-Belt Excavator dealer immediately.
 CHECK CAMERA 27568BEC	This message indicates that the camera or the camera wiring is abnormal.	Consult your Link-Belt Excavator dealer.
 LOW COOLANT 2B2A62A3	This message indicates that coolant level is low.	Idle the engine, and refill the reserve tank with coolant. Check for coolant leaks. If any leak is found, stop the engine. If the display persists, contact your Link-Belt Excavator dealer immediately.

Messages and icons	What is displayed	Remedial action
 AIR FILTER 34792E1D	This message indicates that the air cleaner element is clogged. If no action is taken after this message appears, the engine cannot produce a correct output.	Stop the engine, and clean or replace the air cleaner element. "AIR FILTER" (7-41)
 HYD. OIL FILTER 3D78AACC	This message indicates that the return filter in the hydraulic tank is clogged. (It only appears for the system where the genuine breaker line is set.)	Stop the engine and check the return filter. Replace it if any clogging is found. "HYDRAULIC SYSTEM" (7-34)
 FUEL FILTER 454DE27B	This message indicates that the fuel filter is clogged. If no action is taken after this message appears, the engine goes into idle at low speed to protect the engine.	Replace the fuel filter. "FUEL SYSTEM" (7-20)
 CHECK SCR SYSTEM 2D0B0485	This message indicates a problem with the DEF SCR system.	Stop the engine, and contact your Link-Belt Excavator dealer immediately.

MESSAGE DISPLAY (ORANGE)

Messages and icons	What is displayed	Remedial action
 ENGINE STOP 49432538	This message indicates that the emergency stop switch on the left console is pressed and the engine emergency stop function is activated.	The engine cannot be started with the switch held down. Check the surrounding conditions enough, reset the emergency stop switch, and start the engine.
 IMPROPER SHUT DOWN 5D916892	This message appears if the engine is stopped even when cooling down is required.	Restart the engine, and keep it at a low idle for at least 5 minutes.
 OVER LOAD 86967EAB	This message indicates that the lifting load has exceeded a tolerance.	The system may topple over. Reduce the lifting load or change the posture of the attachment to prevent it from toppling.
 LOW FUEL 87F13655	This message indicates that fuel level in the fuel tank is low.	Stop the engine, and add fuel to the fuel tank.
 CHECK FLOW RATE 8BBD1A4D	This message indicates that the flow setting in breaker mode is inappropriate.	Check the specifications of the current breaker, and set an appropriate flow again. (Link / Being created)
 AUXILIARY SET-UP REQUIRED 99FB5A71	This message appears when the operation for unselected crusher or breaker mode is performed.	Check the specifications of the current end attachment, and select an appropriate option line mode.
 SERVICE DUE 9EA087B6	This message appears when replacement timing of the periodical replacement component that is displayed in the maintenance information mode is due shortly.	Replace the periodic-replacement components appropriately. "SERVICING INTERVALS" (6-4)
 IDLE SHUT DOWN 9F1CC23B	This message appears before the engine stops automatically because idle shutdown is selected.	
 REFILL DEF C4ADC77C	This message indicates that DEF level is low.	Stop the engine, and add DEF to the DEF tank.
 PUSH SCR SWITCH TO ACTIVATE 82A470EC	This message appears when auto SCR regeneration is interrupted.	Press the SCR switch to resume the SCR regeneration. "SCR RE-GEN (SCR regeneration)" (5-16)
 MANUAL SCR RE-GEN 22DFE840	This icon indicates that the SCR manual regeneration is in operation. "SCR RE-GEN (SCR regeneration)" (5-16)	

Messages and icons	What is displayed	Remedial action
 SELECT CAMERA SCREEN DURING OPERATION C1A9012E	This message appears when the gate lock lever is in the normal operating position (the lever not locked) and the monitor display is set to the User information mode.	To switch to the User information mode, make sure that the gate lock lever is locked. Display the camera screen to ensure that you can sufficiently check the surrounding condition while operating the machine. Under this condition, operating the machine in the User information mode is extremely dangerous because you cannot check the area in the rear.
 OUTPUT REDUCTION CANCELED D82450C2	This message indicates that the output reduction cancel is actuated.	For details, refer to "OUTPUT REDUCTION CANCEL" (5-15) in [Operator's Manual].
 DO NOT OPERATE 615F459C	This message appears during SCR MANUAL RE-GEN. Suspend operation of the machine.	

MESSAGE DISPLAY (GREEN)

Messages and icons	What is displayed	Remedial action
 AUTO WARM UP DAE3B613	This message indicates that auto warm-up operation is in progress.	
 SCR AUTO WARM UP DFCCF71C	This message indicates that the automatic thawing (heat insulation) function for the DEF system is activated.	
 AUTO SCR RE-GEN 72B80073	This icon indicates that the SCR auto regeneration is operating.	For details, refer to "SCR Auto Regeneration" "AUTO SCR RE-GEN" (5-16) in [Operator's Manual].

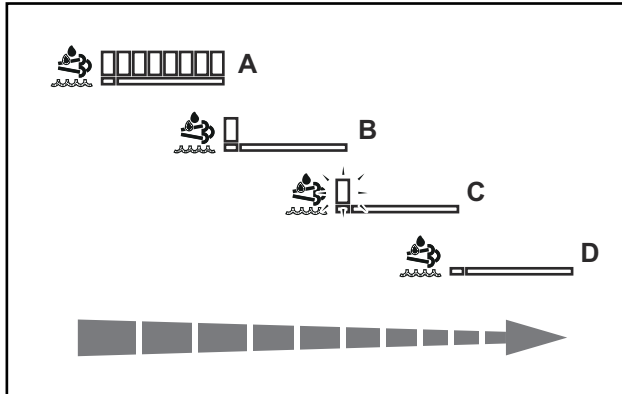
EXPLANATION OF ICONS WHEN DEF, SCR SYSTEM, OR ATTACHMENT IS USED

DEF LEVEL GAUGE

The remaining level of DEF is indicated by the number of lit segments.

If all segments are lit, the DEF tank is full.

The number of segments are lit changes depending on the remaining level of DEF.



045799CC

Figure 43

	A	B	C	D
Remaining level (%)	100 - 10	Below 10	Below 5	0
Color	White	Orange	Orange (blinking)	Red
Number of indicators	8 - 2	1	1	0

Add DEF in advance to make sure the DEF tank does not become empty.

It is recommended that you add DEF at the same time fuel is added.

Refer to (5-10) for information on how the engine output is limited by the remaining level of DEF.

REFILL DEF DISPLAY



**REFILL
DEF**

This is illuminated when remaining volume of DEF is less than 10%, and left portion of the icon blinks when it becomes less than 5%.

For details of icon lighting and blinking, refer to "SCR SYSTEM REFILL DEF" (Page 5-10).

If this icon is displayed, add DEF.

DEF ICON



This icon is lit or blinks when the SCR system is abnormal.

For icon lighting and blinking, refer to [CHAPTER 5 - OPERATING INSTRUCTIONS]-""CHECK SCR SYSTEM" Warning"-(5-12).

If this icon is displayed, contact your Link-Belt Excavator dealer.

OUTPUT REDUCTION ICON



This icon indicates that the engine output is limited.

For details of engine output limit, refer to "SCR SYSTEM" (Page 5-8) in [CHAPTER 5 - OPERATING INSTRUCTIONS].

If this icon is displayed, add DEF.

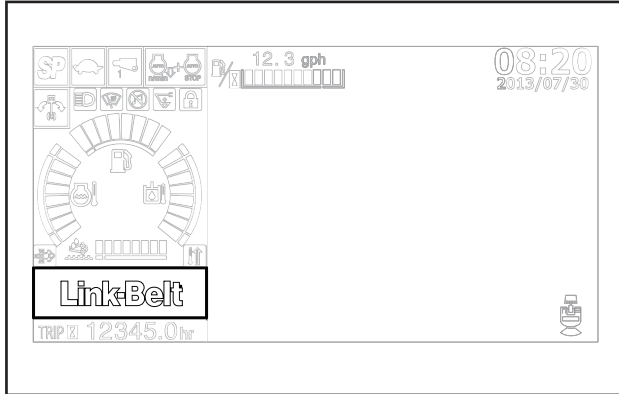
If the icon persists after adding DEF, contact your Link-Belt Excavator dealer.

ICONS RELATED TO USE ATTACHMENT OR DEF SCR SYSTEM

NORMAL SCREEN DISPLAY (When Machine Status Is Displayed on Left Side of Monitor Display)

When the machine status is displayed on the left side of the monitor display, three icons in (1) to (3) switch according to the use condition of this machine.

Note that the icon in (4) is displayed once the remaining level of DEF becomes low.



9F30B7C7

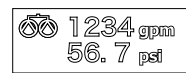
Figure 44

1.



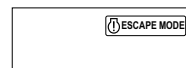
Normal display

2.

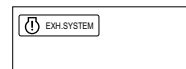


When an option line is used, the flow rate and pressure are displayed.

3.

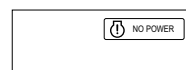


This icon is displayed when the output reduction cancel is actuated.



This icon is displayed when the DEF system is abnormal.

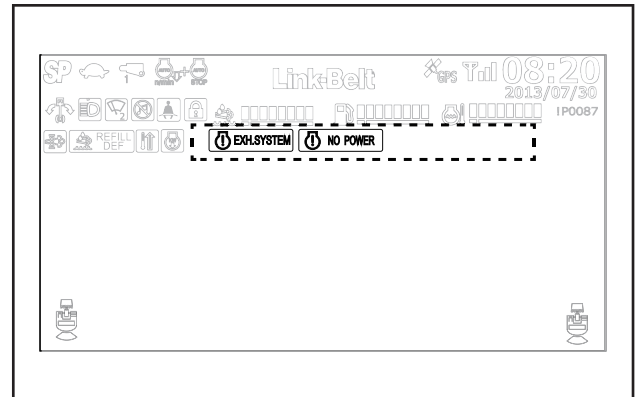
4.



This icon is displayed when the engine is limited and in idling only.

FULL SCREEN DISPLAY (When Machine Status Is Displayed in Upper Part of Monitor Display)

When machine information is displayed on top of the monitor display, the two icons in (2) and (3) switch according to the use condition of this machine.



B9C5B645

Figure 45

1. 1234 gpm 56.7 psi

When an option line is used, the flow rate and pressure are displayed.

2.



This icon is displayed in the escape mode.

3.



This icon is displayed when the DEF system is abnormal.



This icon is displayed when the engine is limited and in idling only.

USER INFORMATION MODE

In the user information mode, you can check the following information and perform display configuration, etc.:

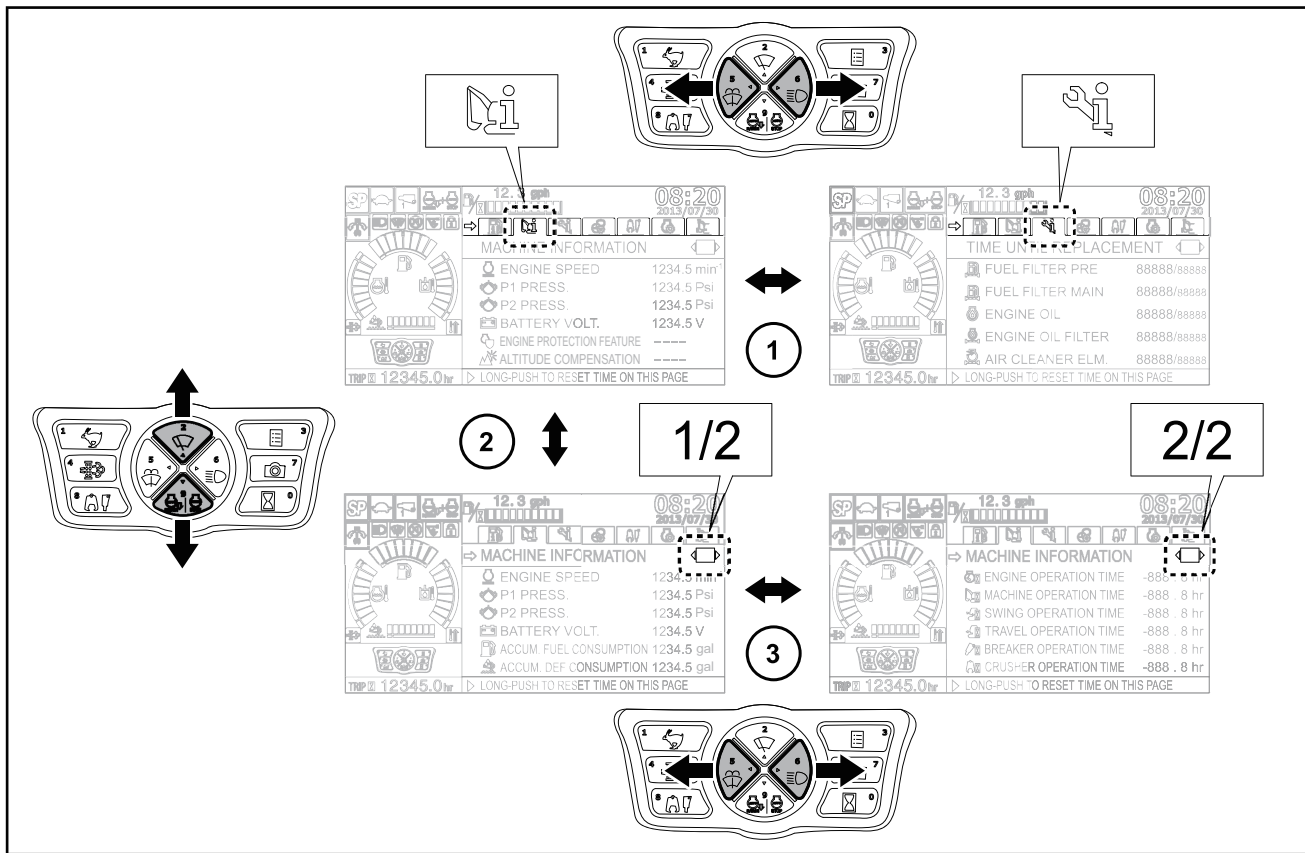
Fuel consumption history	Machine status
Maintenance information	Display configuration
Auxiliary hydraulics configuration	SCR configuration

Navigate through the information by switching between tabs.

Within a tab, use the up/down switches to move through the items or left/right switches to move through the pages.

WARNING

Make sure to display image of the back camera in normal display mode if the system is operated. Attempting to open the user information mode during normal work displays warning. Also, attempting to work with setting the gate lock lever in operation status during displaying the user information mode forces the screen to shift to the camera screen.

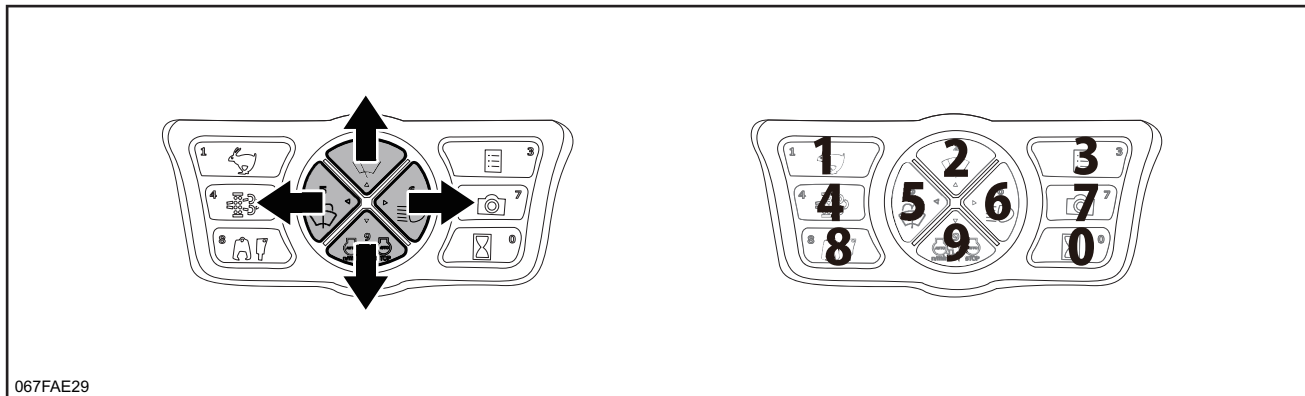


BF83F8C1

Figure 46

1	Switching between the tabs
2	Moving through the pages
3	Moving through the items

To switch between the tabs or move through the items and pages, use the up/down/left/right switches. To enter a value, use the monitor switches as a numeric keypad.



067FAE29

067FAE29

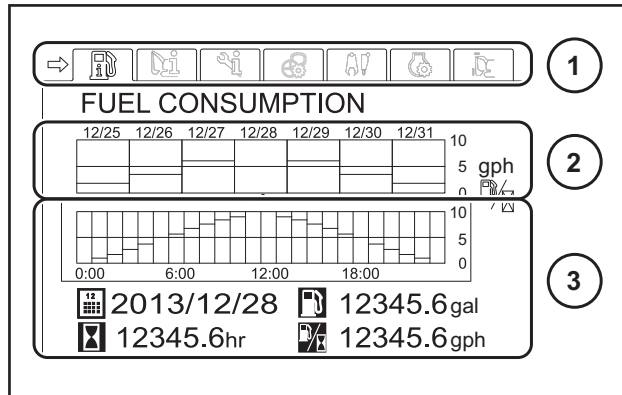
Figure 47

EXPLANATION OF USER INFORMATION MODE

FUEL CONSUMPTION HISTORY



Fuel consumptions (fuel economy) over the past 7 days can be checked.



702E92C1

Figure 48

Select the Fuel consumption history tab from [1].

Daily average fuel consumptions over the past 7 days can be checked in a simple graph in [2].

By selecting a day in [2], you can view the fuel consumptions, operating hours, and average fuel consumptions of the specified day in more details in [3].

Explanation of icon in the fuel consumption history screen



Year/month/day of cursor specified date is displayed.



Fuel consumption of cursor specified date is displayed.



Operating hour of cursor specified date is displayed.



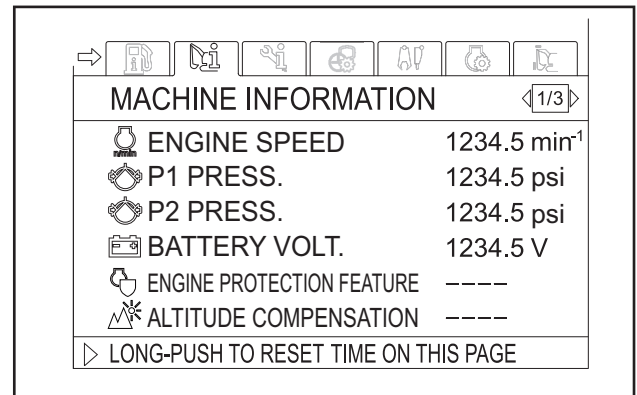
Fuel cost (= fuel consumption/operating hour) of cursor specified date is displayed.

NOTE: Press and hold the left and right switches together for 10 seconds, and the entire fuel history will be reset.

MACHINE STATUS



Detailed vehicle (machine) conditions can be checked.



438F8853

Figure 49

The following items can be checked:

Page	Item
1/3	ENGINE SPEED (min ⁻¹)
	P1 PRESS. (psi)
	P2 PRESS. (psi)
	BATTERY VOLT. (V)
	ENGINE PROTECTION FEATURE
	ALTITUDE COMPENSATION
2/3	ACCUM. FUEL CONSUMPTION (gal)
	ACCUM. DEF CONSUMPTION (gal)
	COOLING DOWN REMAINING TIME (Sec)
3/3	ENGINE OPERATION TIME (hr)
	MACHINE OPERATION TIME (hr)
	SWING OPERATION TIME (hr)
	TRAVEL OPERATION TIME (hr)
	BREAKER OPERATION TIME (hr)
	CRUSHER OPERATION TIME (hr)

ENGINE PROTECTION FEATURE

This machine monitors its engine operation and, in case excessive load is applied, controls the engine output for protection.

"++++" indicates that this function has been activated, "----", not activated.

ALTITUDE COMPENSATION

This machine is equipped with barometric sensor and, under the condition of extremely low atmospheric pressure (ex. high altitude area), optimize the engine operation.

"++++" indicates that this function has been activated, "----", not activated.

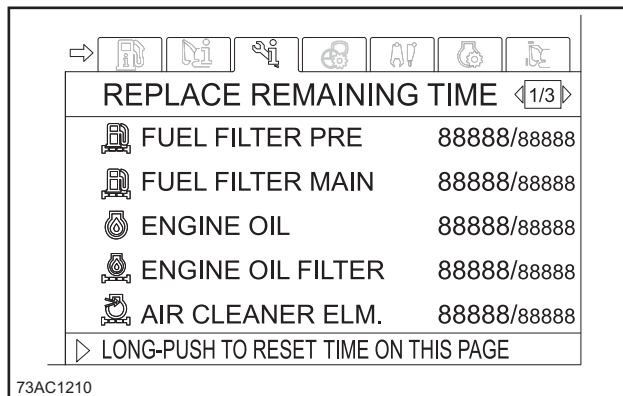
MAINTENANCE INFORMATION



Information regarding the replacement intervals of periodic-replacement parts can be checked.

NOTE:

- If any inspection and/or maintenance (service) is due shortly, the remaining time is shown in yellow and the buzzer is sounded to give warning. If the due date has passed, the remaining time field changes to red. In that case, perform maintenance immediately.
- To reset the remaining time after replacement (change) of components, grease, etc., select the applicable item and then press and hold the right switch for 3 seconds. An alarm will sound and the time will be reset.
- To reset the remaining time for all the items displayed on the page, select the title on the applicable page and then press and hold the right switch for 3 seconds. An alarm will sound and the time will be reset.



73AC1210

Figure 50

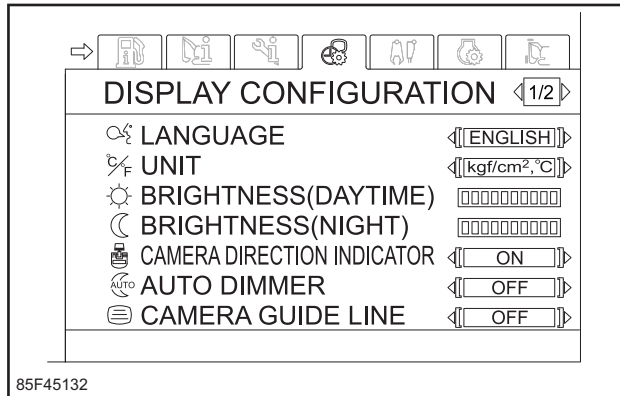
The following items can be checked:

page	Item
1/3	FUEL-FILTER PRE
	FUEL-FILTER MAIN
	ENGINE-OIL
	ENGINE-OIL FILTER
	AIR-CLEANER ELEMENT
2/3	AIR-BREATHER ELEMENT
	PILOT-OIL FILTER
	RETURN FILTER
	SUCTION FILTER
	HYDRAULIC OIL
3/3	SWING REDUCTION GEAR-OIL
	TRAVEL REDUCTION GEAR-OIL
	AIR CONDITIONER FILTER
	SUPPLY MODULE FILTER

DISPLAY CONFIGURATION



The brightness of the displayed screen, the camera settings and date/time can be changed.



85F45132

Figure 51

The following items can be checked:

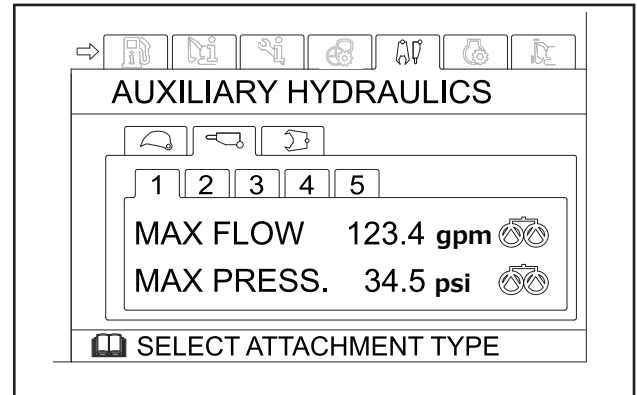
page	Item
1/2	LANGUAGE
	UNIT (MPa, °C/psi, °F/kgf/cm ² , °C)
	BRIGHTNESS(DAYTIME) (10 levels)
	BRIGHTNESS(NIGHT) (10 levels)
	CAMERA DIRECTION INDICATOR (ON/OFF)
	AUTO DIMMER (ON/OFF)
2/2	CAMERA GUIDE LINE (ON/OFF)
	AUTO TIME ADJUST (ON/OFF)
	DATE - YEAR
	DATE - MONTH / DAY
	TIME - HOUR / MIN. (Hr/Min)
	DATE FORMAT (Y/M/D, M/D/Y, D/M/Y, or no display)
	TIME FORMAT (12 hr/24 hr)
	DAYLIGHT SAVING TIME (ON/OFF)

Use the up/down switches to select an item and left/right switches to specify the setting.

AUXILIARY HYDRAULICS CONFIGURATION



You can select a breaker or a crusher, and specify flow and pressure.



F1A420E1

Figure 52

If the machine is equipped with any optional end attachment (breaker, crusher etc.) available for the specification of the machine, the flow rate/pressure of hydraulic oil can be set according to the equipment specifications used.

Up to five patterns can be set and stored beforehand, so you can change the flow rate/pressure of hydraulic oil by simply pressing a desired switch according to the end attachment used.

*To change the specification of the machine, contact your Link-Belt Excavator dealer.

NOTE:

- Use one of the following two methods to display the option line configuration screen.
 1. Set the monitor display to [User Information Mode] and switch the tab.
 2. Press and hold the Attachment selector switch for 1 second.
- These screens are not displayed if not equipped with the option line options.
- Attachment selection
Select "Breaker" or "Crusher."

NOTE:

If the machine is equipped with single acting auxiliary hydraulic or breaker, "Crusher" cannot be selected and is not displayed.

If the machine is equipped with thumb auxiliary hydraulic, "Breaker" cannot be selected and is not displayed.

If the machine is equipped with multi-functional auxiliary hydraulic, either one can be selected.

Note that the flow rate and the pressure cannot be changed when a bucket is used.

*To change the specification of the machine, contact our authorized service shop (factory).

Number selection

Up to five patterns can be set and stored for "Breaker" and "Crusher," respectively, so select the number under which to store each pattern.

Set the maximum flow rate value.

A desired flow rate can be selected from the settings provided in the table below:

1 pump flow		2 pumps flow	
Lv.	gpm	Lv.	gpm
1	8.9	11	42.2
2	10.0	12	43.3
3	13.4	13	46.4
4	16.3	14	49.6
5	19.2	15	52.5
6	22.4	16	55.4
7	25.6	17	58.9
8	28.5	18	61.8
9	30.9	19	63.9
10	33.2	20	66.5

The factory settings are as follows:

Breaker specification

[Breaker 1]: 28.5 gpm

[Crush 1]: 28.5 gpm

Combined specification

[Breaker 1]: 28.5 gpm

[Crush 1]: 61.8 gpm

NOTE:

Set the maximum flow rate for the reciprocal specification to a flow between Lv.1 and Lv.10.

If a flow of Lv.11 or above is specified, the message, "This exceeds the allowable flow rate," will appear at the bottom of the screen.

If you proceed to operate with this setting, the message, "Check the flow rate," will appear at the top of the screen.

Setting of the maximum pressure

Set the maximum pressure value.

A desired pressure can be selected from the settings provided in the table below:

Attachments	Pressure psi
breaker	2030 - 5005 psi
crusher	2390 - 5005 psi

The factory settings are as follows:

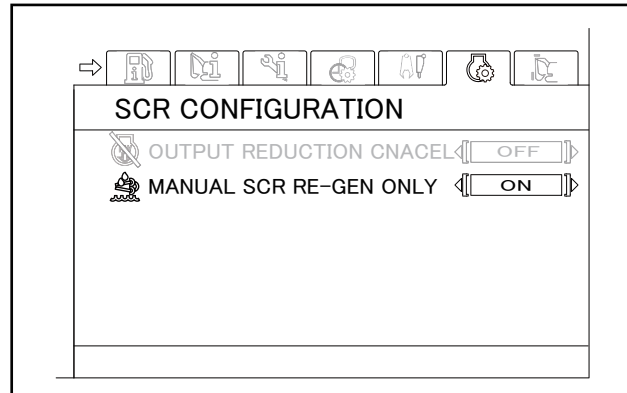
[Breaker 1]: 2030 psi

[Crush 1]: 2390 psi

SCR CONFIGURATION



SCR can be set.



95EF4EE9

Figure 53

The following items can be set:

OUTPUT REDUCTION CANCEL (ON/OFF)

MANUAL SCR RE-GEN ONLY (ON/OFF)

Use the up/down switches to select an item and left/right switches or numeric keypad to specify the setting. It cannot be selected in condition without operational limitation.

CONTROL PATTERN SELECTOR VALVE

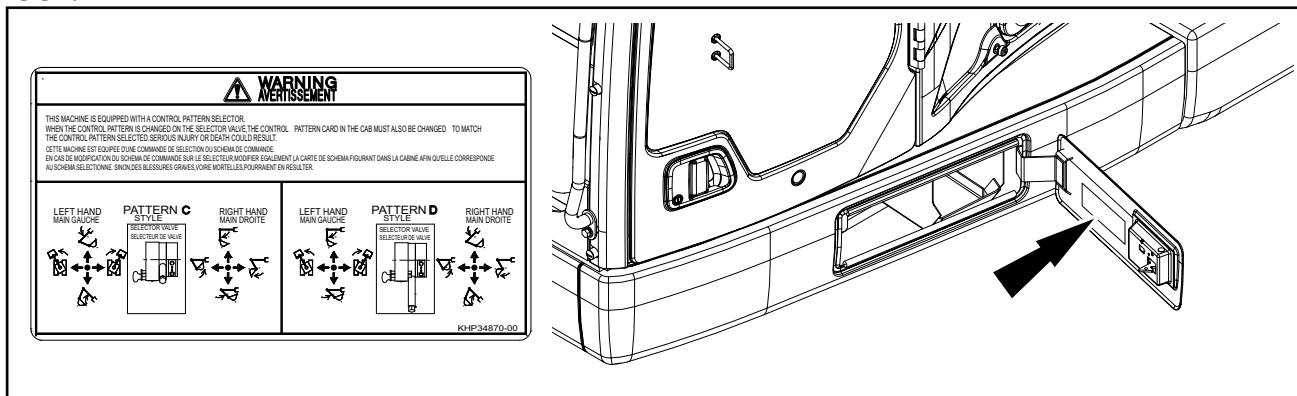
If the control pattern selector valve is equipped, selecting the C or D pattern will determine how the right-hand and left-hand control levers operate.

 WARNING

Neglecting to check control pattern before starting operation may cause erroneous operation and is very dangerous. Make sure to check that the machine operation matches the control pattern card before operation to avoid accident due to erroneous operation. If they do not match, replace the control pattern card with the appropriate one before operation. Or change control the pattern. Make sure to stop the engine before changing the control pattern.

Selection method

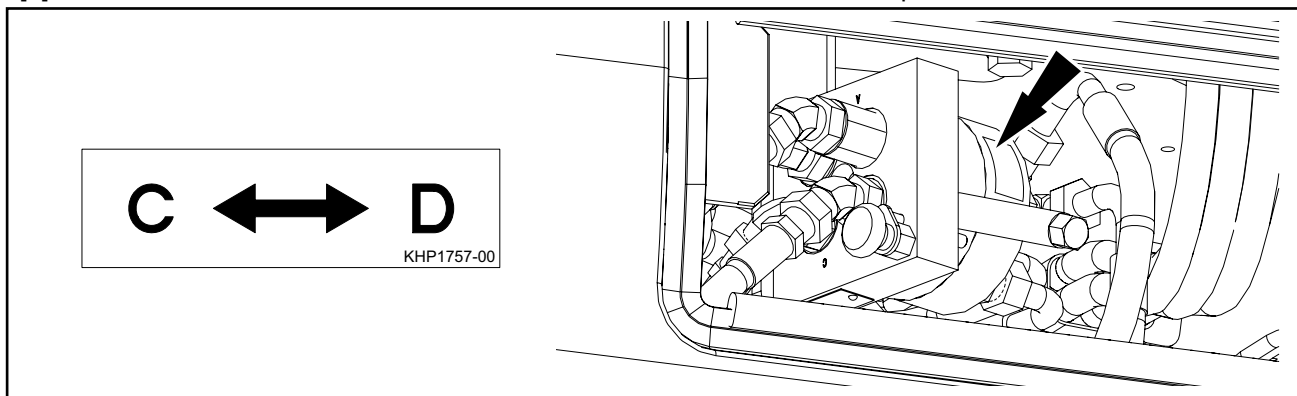
- [1] Ground the bucket and then stop the engine.
- [2] Open the house door under the cab.



AFE0D88A

Figure 54

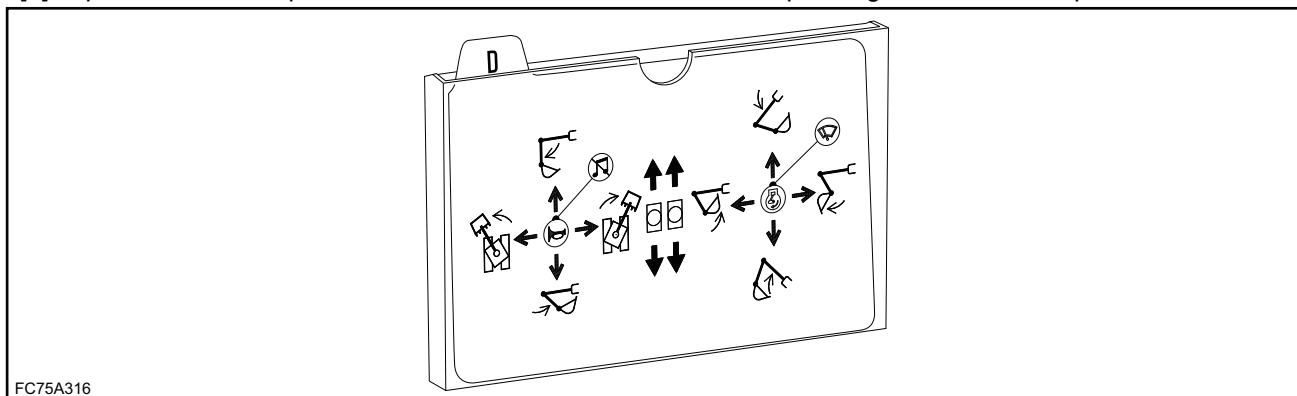
- [3] Pull the knob and then move the lever to set the lever to desired control pattern C or D.



FDC95D82

Figure 55

- [4] Close the house door under the cab.
- [5] Replace the control pattern card in the cab with the one corresponding to the switched pattern.



FC75A316

FC75A316

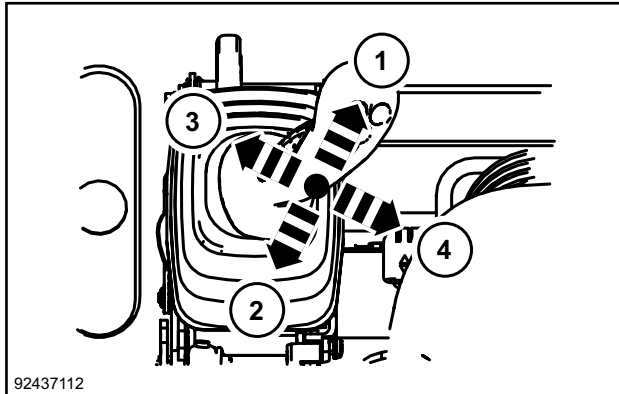
Figure 56

ARM AND UPPERSTRUCTURE SWING LEFT HAND CONTROL LEVER IN PATTERN D

The speed of movement of the arm or the upperstructure swing depends on the control lever tilt angle. In the intermediate position both movements can be obtained simultaneously.

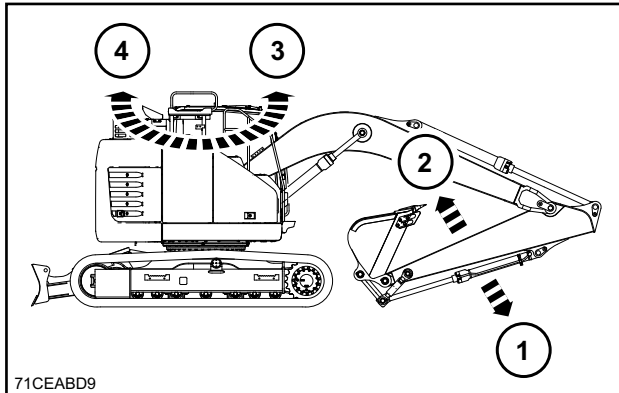
1. The arm extends.
2. The arm retracts.
3. The upperstructure swings towards the left.
4. The upperstructure swings towards the right.

NOTE: The movements of the excavator are shown in the Control functions decal. See Decals (Page 3-10).



92437112

Figure 57



71CEABD9

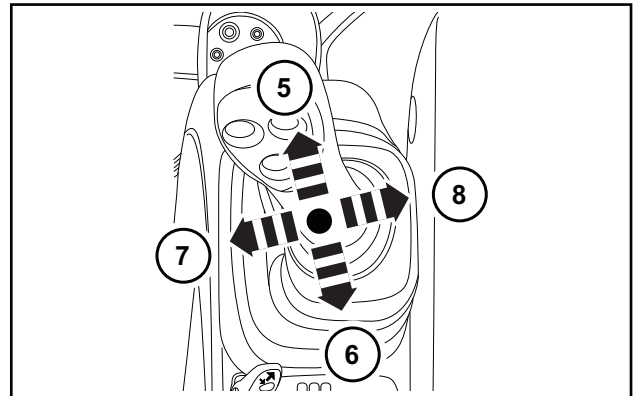
Figure 58

BOOM AND BUCKET RIGHT HAND CONTROL LEVER IN PATTERN D

The speed of movement of the boom or the tool depends on the control lever tilt angle. In the intermediate position both movements can be obtained simultaneously.

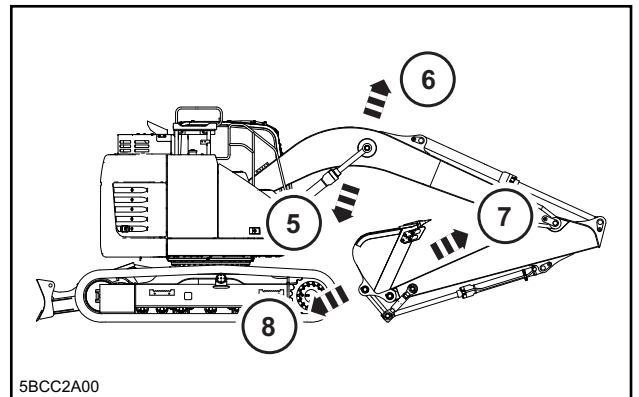
5. The boom lowers.
6. The boom raises.
7. The bucket retracts (filling).
8. The bucket extends (dumping).

NOTE: The movements of the excavator are shown in the Control functions decal. See Decals (Page 3-10).



84C27B86

Figure 59



5BCC2A00

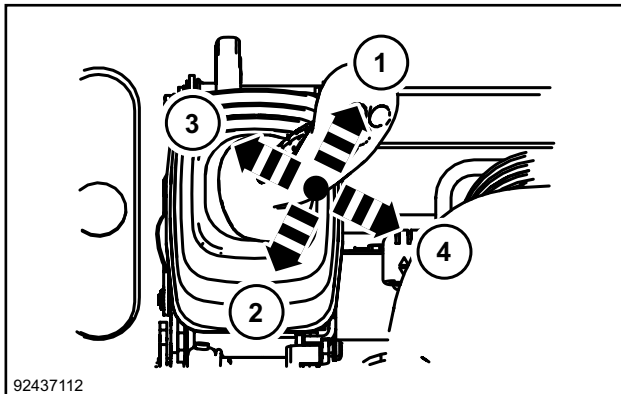
Figure 60

BOOM AND UPPERSTRUCTURE SWING LEFT HAND CONTROL LEVER IN PATTERN C

The speed of movement of the arm or the upperstructure swing depends on the control lever tilt angle. In the intermediate position both movements can be obtained simultaneously.

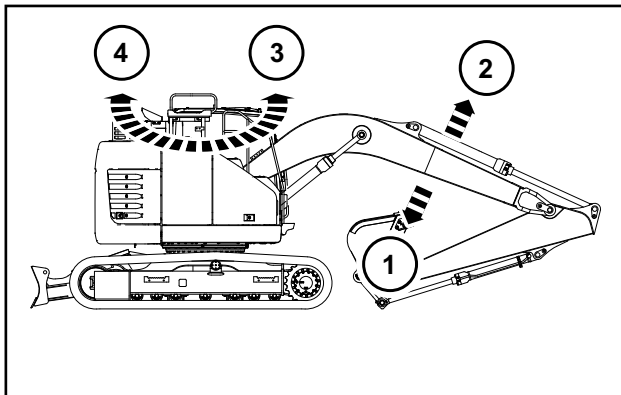
1. The boom lowers.
2. The boom raises.
3. The upperstructure swings towards the left.
4. The upperstructure swings towards the right.

NOTE: The movements of the excavator are shown in the Control functions decal. See Decals (Page 3-10).



92437112

Figure 61



BD7023B4

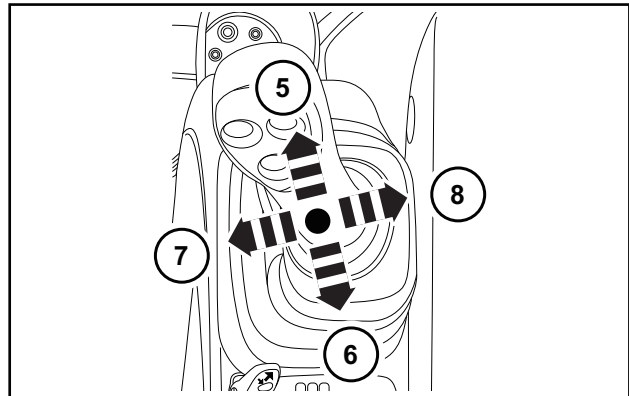
Figure 62

ARM AND BUCKET RIGHT HAND CONTROL LEVER IN PATTERN C

The speed of movement of the boom or the tool depends on the control lever tilt angle. In the intermediate position both movements can be obtained simultaneously.

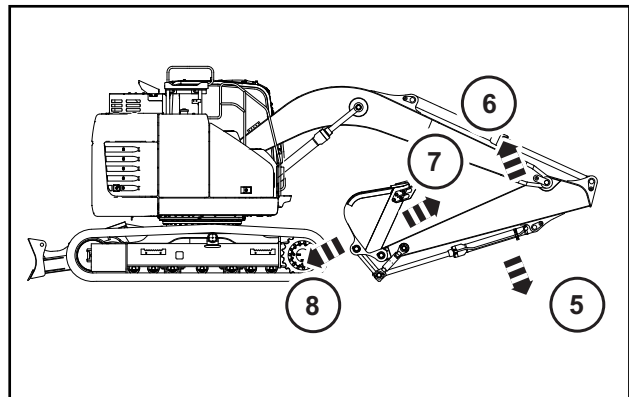
5. The arm extends.
6. The arm retracts.
7. The bucket extends (dumping).
8. The bucket retracts (filling).

NOTE: The movements of the excavator are shown in the Control functions decal. See Decals (Page 3-10).



0C002CDB

Figure 63



7CF63839

Figure 64

BLADE OPERATION (FOR BLADE SPECIFICATION)

PRECAUTIONS FOR BLADE OPERATION

Check the safety of the work range before operating the blade.

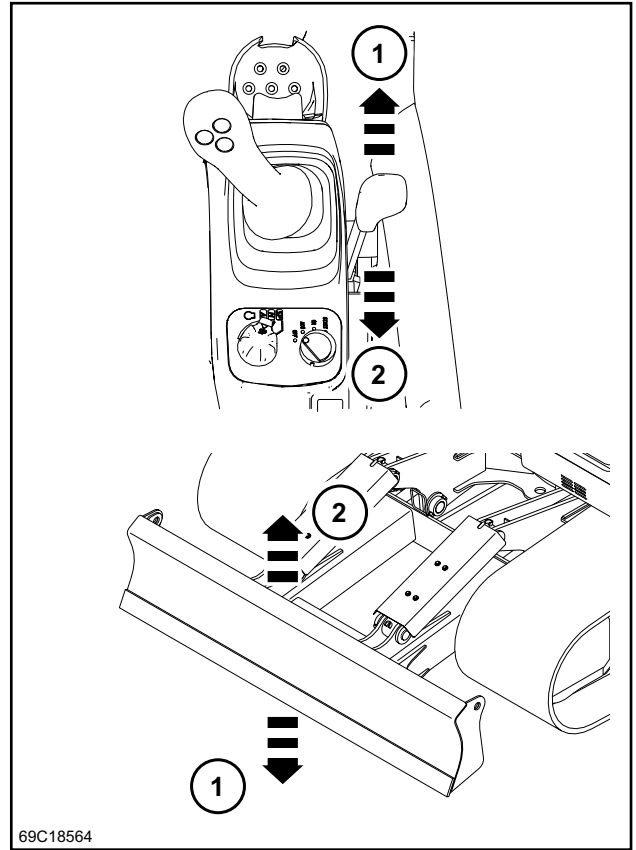
The attached blade is for simple dozing. Use it only for light work such as dozing soft soil or mud.

- Do not depress the blade strongly or dig down extremely deep. Failure to comply will cause damage to the blade and the leg.
- Avoid a collision with a mass of rock etc., and do not apply a concentrated load or an offset load (such as a lateral load) while working with the blade. Failure to comply will cause damage to the blade.
- Be aware that such work as applies a load to one side of the blade will damage the blade and the leg.
- When supporting the front of the machine with the blade during operation or using it as an outrigger, be sure to check that the ground has sufficient strength and then support the machine firmly with the entire blade.
Insufficient strength is very dangerous because the ground is easy to collapse.
Moreover, make sure the blade is put on the ground equally because supporting only on its one side will cause damage to the blade.
- During work at a rocky place, be careful not to damage the blade. Doing so can prevent damage to the blade.

BLADE LEVER

The movement speed of the blade is determined by a tilt angle of the control lever.

1. The blade lowers.
2. The blade rises.



69C18564

Figure 65

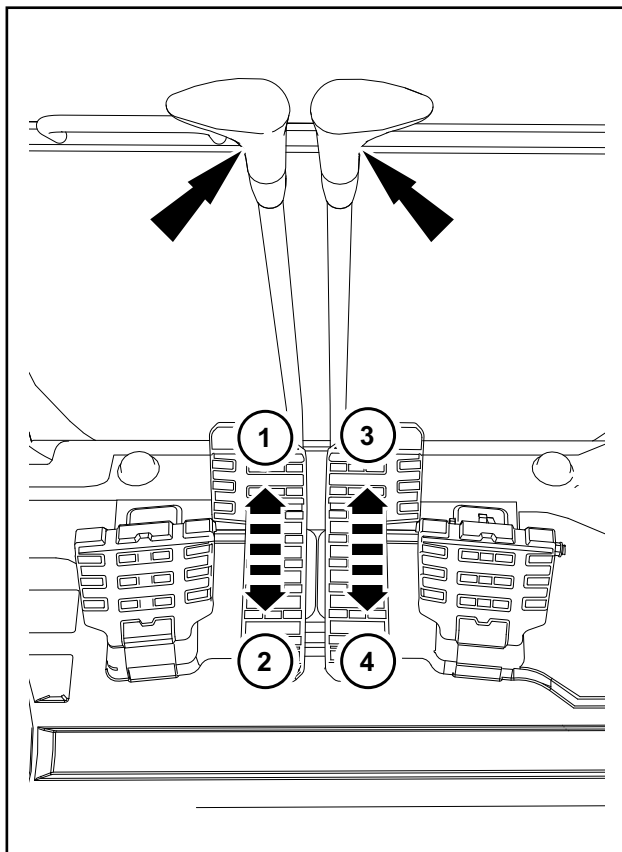
TRAVEL CONTROL

Travel control is done by using the levers or the pedals. To travel in a straight line, both levers have to be simultaneously operated, either forward or backward. Change of direction is done either by operating a single lever, or by operating simultaneously one lever forward and the other backward, so that the excavator pivots on the spot. See Moving the excavator in the Operating Instructions section (Page 5-1).

IMPORTANT: In the normal travel position, the cab is above the idler wheels and the travel reduction gears are to the rear of the upperstructure. If the upperstructure is turned 180 ° in relation to the undercarriage, to move the excavator forward, the levers have to be pulled towards yourself (in reverse) and vice versa.

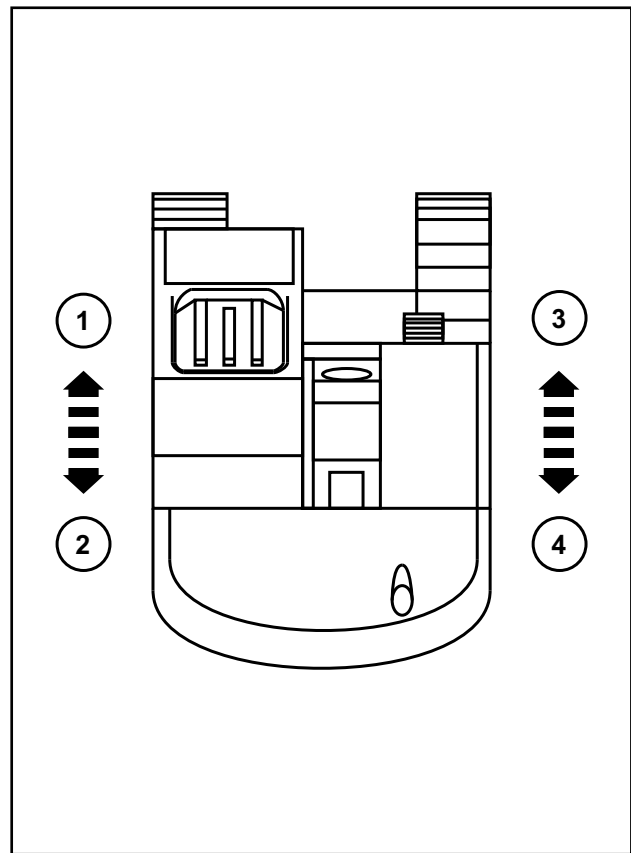
NOTE: The forward or reverse travel speed depends on whether the high speed travel switch is used or not. See High speed travel switch.

NOTE: The movements of the excavator are shown in the Control functions decal.



AB6BB86C

Figure 66



DD2567DE

Figure 67

1. The left-hand track moves forward.
2. The left-hand track moves backward.
3. The right-hand track moves forward.
4. The right-hand track moves backward.

GATE LOCK LEVER (SAFETY BAR)

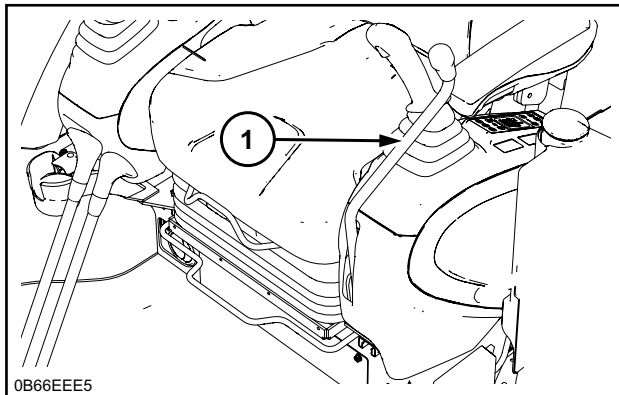
The gate lock lever (safety bar) (1) prevents the operator from leaving the operator's seat without restoring the control arm to the correct position. The operator cannot leave the operator's seat until the gate lock lever (safety bar) (1) is pulled up and the left-hand console is raised.

Raising the gate lock lever (safety bar) (1) will put control levers and pedals into the non-operation state, thereby disabling attachment, travel, and swing operations.

NOTE:

To start the engine, the gate lock lever (safety bar) (1) needs raising.

The engine cannot be started with the gate lock lever (safety bar) (1) lowered.



0B66EEE5

Figure 68

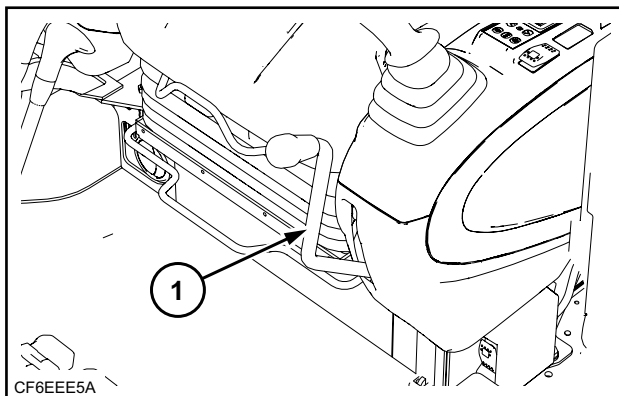
To restore attachment, travel, and swing functions, pull down the gate lock lever (safety bar) (1) and lower the left-hand console.

⚠ WARNING

Sudden movement of machine.

Before leaving the operator's seat, be sure to pull up the gate lock lever (safety bar) (1) to put control levers and pedals into the non-operation state.

Failure to comply may result in death or serious injury.



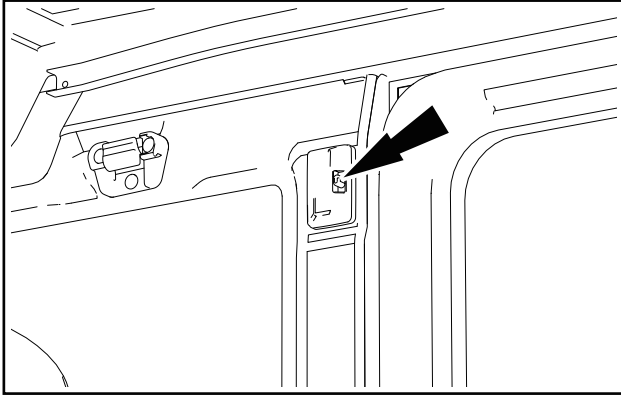
CF6EEE5A

Figure 69

CAB LIGHT

The cab light is located on inside the cab on the left-hand side. The light is controlled by a switch built into the lamp bracket.

NOTE: To replace bulbs, see Replacing a Bulb in the Electrical system section (Page 9-1).



09C1F1F4

Figure 70

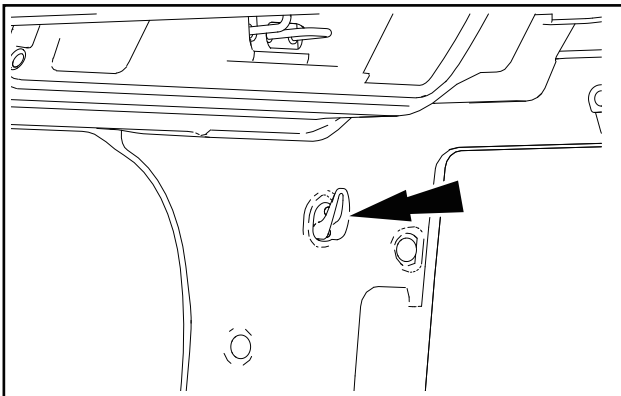
The light has three positions. In the top position the light will be on all the time. In the middle position it will come on when the door is opened and stay on for 30 seconds. In the bottom position it will stay off.

⚠ WARNING

Make sure when you leave the excavator for an extended amount of time that the light is in the off position because it may drain the battery.

COAT HANGER HOOK

The coat hanger hook is located on the rear left-hand cab upright.



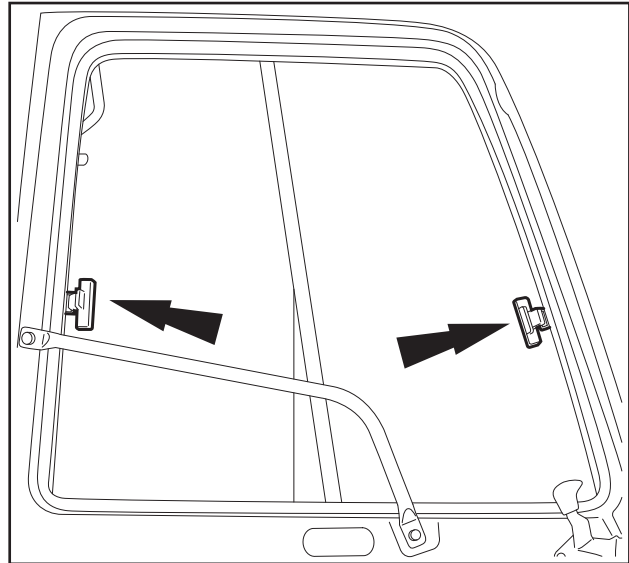
C4B356A5

Figure 71

IMPORTANT: Do not hang anything on the coat hanger that would block your view out the back or side window.

CAB DOOR WINDOWS

The cab door window can be opened from the front or the rear of the cab door. To open the window, pull the handle to release the latch and slide the window to open.



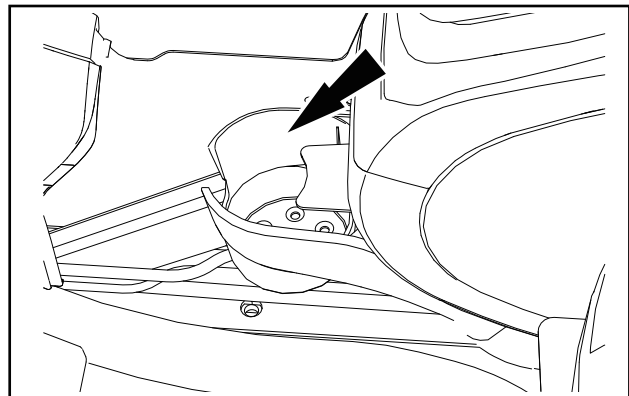
49479283

Figure 72

To close the window, bring the handle back toward the latch to secure the window closed.

CUP HOLDER

The cup holder is located on the right-hand side on the front of the console.

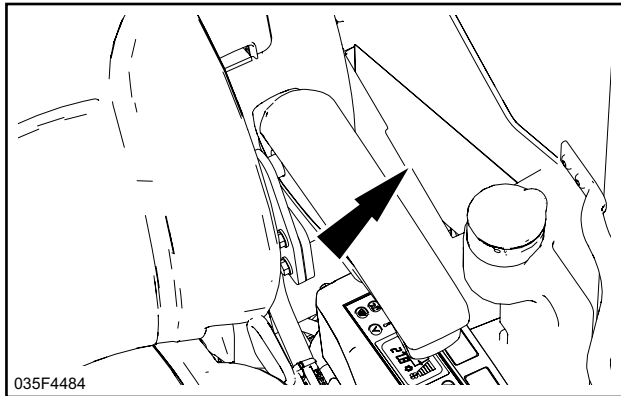


D0AD6C62

Figure 73

MAGAZINE RACK

This is located in the left of the operator's seat.

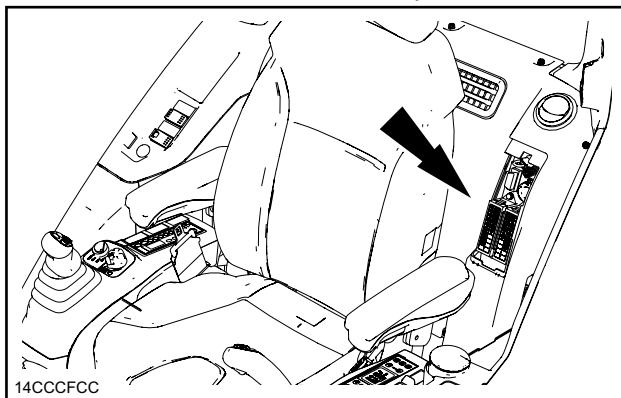


035F4484

Figure 74

FUSE BOX

The fuse box is located behind the operator's seat.



14CCCFCC

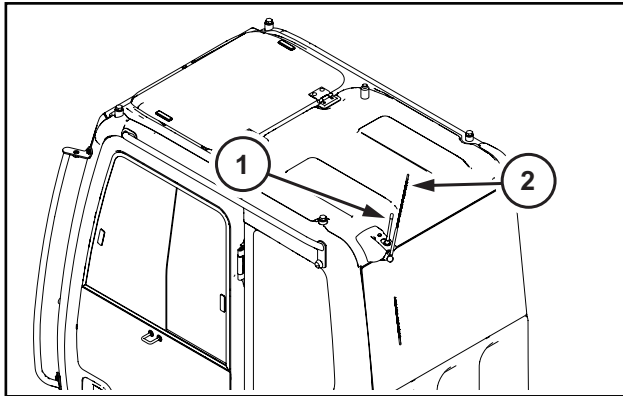
Figure 75

To replace a fuse, see the FUSE FUNCTION in the Electrical system section (Page 9-2).

RADIO

RADIO ANTENNA

The radio antenna is located in the left rear of the cab.



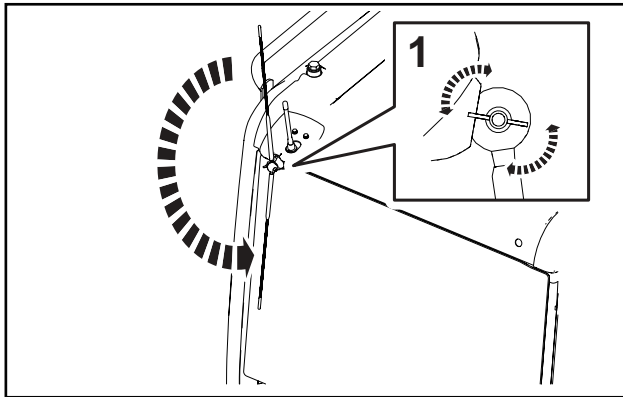
B16026C4

Figure 76

1	Radio antenna
2	Remote care antenna

NOTE: During movement or transport of the excavator, fold the antenna in order to avoid the risk of damaging the antenna.

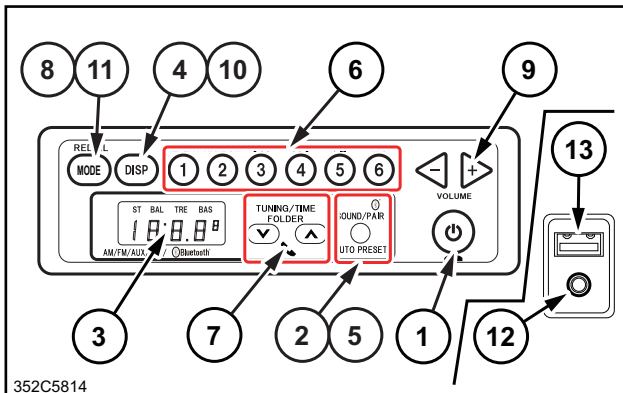
1. Loosen the screw (1) of the antenna moving part.
2. Fold the antenna, tighten the screw (1) of the moving part, and check that the antenna is fixed.



F316C4D2

Figure 77

NAMES OF THE SECTIONS



352C5814

352C5814

Figure 78

IMPORTANT:

- If water gets into a speaker case or the radio, it can cause an unexpected breakdown. Do not let water get on or in them.
In particular, keep the window closed when it rains and when washing the machine.
- Do not use benzene, paint thinner, or any other solvent to clean the display.
- Wipe it off with a soft, dry cloth.
- Do not try to disassemble the radio.

1. Power button (POWER)

Pressing the "POWER" button turns ON the power. The band is displayed, then the frequency is displayed. Pressing again turns OFF the power. The clock is displayed.

2. Sound adjustment (SOUND)

Pressing the button switches BAL → TRE → BAS. Pressing the button in the BAS state ends the sound adjustment.

- You can adjust the balance by pressing the tuning button in the BAL state.
Pressing the UP ▲ button increases the right speaker output; pressing the DOWN ▼ button increases the left speaker output. (Both the left and right can be raised to a maximum of 7.)
- You can adjust the treble by pressing the tuning button in the TRE state.
Pressing the UP ▲ button raises the treble 1 step. Pressing the DOWN ▼ button lowers the treble 1 step. (The treble can be moved UP or DOWN a maximum of 7.)
- You can adjust the bass by pressing the tuning button in the BAS state.
Pressing the UP ▲ button raises the bass 1 step. Pressing the DOWN ▼ button lowers the bass 1 step.

3. Display unit

The clock, radio frequency band name, and operation mode are displayed.

4. Clock/frequency switch button (DISP)

Pressing the button switches the display "Frequency" → "Clock" → "Band name". If you leave the display alone, it returns to the frequency display after 1 second.

5. Auto preset (SOUND/AUTO PRESET)

By holding down this button, receivable stations for preset buttons 1 through 6 can be registered.

6. Preset buttons 1 through 6 (PRESET STATION)
One station each for FM1, FM2, and AM can be preset for each button.
To preset a station, select its frequency, then hold down the desired preset button. (For information on automatic preset, refer to "Auto Preset".)
7. Tuning button (TUNE)
If you hold down the "TUNE" button, the radio begins to search automatically for a station and stops at the frequency where it finds a station.
To stop this search midway, press the button again. Pressing the "TUNE ▲" button raises the frequency; pressing the "TUNE ▼" button lowers the frequency.
Holding down either button changes the frequency continuously.
8. Mode switch button (MODE)
Pressing this button switches AM → FM1 → FM2 → AUX → USB → BT.
The reception band is shown on the display.
9. Volume adjustment buttons (VOL ◀, VOL ▶)
Pressing the "VOL ◀" button lowers the volume; pressing the "VOL ▶" button raises the volume.
Holding down either button changes the volume continuously.
10. Clock adjustment (DISP)
When the clock is shown on the display, holding down the DISP button starts the clock adjustment. Pressing the DISP button shifts from hour to minute adjustment.
Pressing this button again ends the clock adjustment.
 - Hour adjustment
While the hour display is flashing, you can adjust the hour by pressing the tuning button.
Pressing the UP ▲ button moves the hour forward.
Pressing the DOWN ▼ button moves the hour back.
 - Minute adjustment
While the minute display is flashing, you can adjust the minute by pressing the tuning button.
Pressing the UP ▲ button moves the minute forward.
Pressing the DOWN ▼ button moves the minute back.
11. REDIAL
Regardless of the current band, if you hold down the MODE button, "RE" is displayed for 3 seconds and redialing is performed. After redialing, "DL" flashes and ring sounds are output from the speaker.
Even when the radio unit power is OFF, if you hold down the MODE button, the power is automatically turned ON and redialing is started.

12. External input terminal (AUX IN); Vehicle body side
When using this terminal, use any commercially-available stereo mini-plug cord (3.5 dia.) to plug into the headphone terminal of your portable audio device or the like.
13. External input terminal (USB); Vehicle body side
When using this terminal, connect a commercially-available USB memory.

TO LISTEN TO RADIO

1. Turn the starter switch key to "ACC" or "ON", then press the power button to turn the radio power "ON".
2. With the band button, select either "MW (AM)" or "FM".
3. Select a station with a preset buttons or with the tuning buttons.
4. Adjust the volume with the volume adjustment buttons.
5. To switch "OFF" the radio, press the power button.

MANUAL TUNING

Pressing the "TUNE ▲" button once raises the reception frequency one step. Pressing the "TUNE ▼" button once lowers the reception frequency one step.

AUTOMATIC STATION SELECTION (SEEK)

Holding down the "TUNE ▲" button increases frequency automatically. Holding down the "TUNE ▼" button decreases frequency automatically. When a receivable broadcasting station is found, searching stops at that frequency and it is received.

TO PRESET

1. Press the band button to select "MW (AM)" or "FM," and press the tuning buttons to select a broadcasting station.
2. By holding down the desired numbered button, the same number appears on the display and the preset process is completed.
3. Repeat steps 1 and 2 to preset other broadcasting stations.

AUTO PRESET

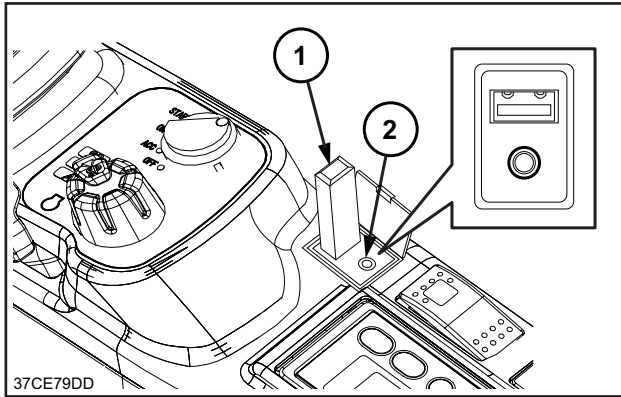
- By holding down the auto preset button, frequencies with good reception are detected and registered on the preset memories 1 to 6 automatically.

NOTE:

When the auto preset function is used, the registered broadcasting stations will be eliminated.
To register them on the desired buttons, use the preset function.

EXTERNAL INPUT

- Audio can be output from the speakers on the machine by connecting a commercially-available portable audio device.
- Always keep appropriate volume for the portable audio device.



37CE79DD

Figure 79

1	USB memory
2	AUX input terminal

AUX

- Press the MODE button to switch the audio source and check that "AUX" is shown on the display.
- Connect from the headphone terminal of your portable audio device using a commercially-available cord (without resistance).
- Use any commercially-available stereo mini-plug cord (D3.5) for external input terminal side. Do not use a connection cord with the wrong size or wrong shape jack.
- The volume also can be adjusted with the volume buttons on the radio unit.

USB

- Files in MP3/WMA/AAC formats are supported.
- Press the MODE button to switch the audio source and check that "USB" is shown on the display.
- Connect a USB memory to the USB input terminal. Playable data stored in the memory is played automatically.

Button operations for when USB is selected as an audio source

Button operations		Function
UP/DOWN		Folder up/down
PRESET1		REPEAT
PRESET2		RANDOM
PRESET3	Short press	Track down
	Long press	Fast forward (while being pressed)
PRESET4	Short press	Track up
	Long press	Rewind (while being pressed)
PRESET5		PLAY/PAUSE
Volume adjustment button +		Volume up
Volume adjustment button -		Volume down

Bluetooth

- Can be used when a Bluetooth unit is connected.
- Press the MODE button to switch the audio source and check that "BT" is shown on the display.
- To use the Bluetooth function, perform pairing of the devices to be connected with a wireless connection. For details on pairing, refer to "PAIRING OF BLUETOOTH" (4-55).
- For details on how to use a mobile phone connected via Bluetooth, refer to "USE OF CELLULAR PHONE CONNECTED VIA BLUETOOTH" (4-55).

Button operations for when Bluetooth is selected as an audio source

Button operations		Function
UP/DOWN		-
PRESET1		-
PRESET2		-
PRESET3	Short press	Track down
	Long press	-
PRESET4	Short press	Track up
	Long press	-
PRESET5		PLAY/PAUSE
Volume adjustment button +		Volume up
Volume adjustment button -		Volume down

PAIRING OF BLUETOOTH

IMPORTANT: For Bluetooth audio equipment, you need to register a pair of equipment to connect wirelessly beforehand. This registration is called pairing, which is required for the equipment that is paired with nothing.

1. When you hold down the auto preset button with "BT" displayed, "WA" will appear on the display, and this system will start preparations for pairing.
2. On completion of the preparations for pairing, "PA" appears on the display and the system goes on standby for pairing. Then, search for and pair the device, such as a cellular phone and a portable audio player, to connect wirelessly.
3. When the pairing is completed successfully, "PO" appears on the display. If the pairing is not completed within the time limit (180 seconds) or if any abnormality occurs, "PX" appears on the display.
If the pairing fails, retry the pairing procedure from step 1.

USE OF CELLULAR PHONE CONNECTED VIA BLUETOOTH

- When the paired cellular phone gets a call, "CL" will blink on the display and the speaker will output the ringtone.
Even if power to this system is OFF, its power will turn ON automatically and "CL" will appear when it gets a call.
- You can start talking by pressing any button other than the power and the volume adjustment button when it gets a call.
- To reject a call, press the power button.
The call will be interrupted, and the band will be restored to its original state.
- While talking, you can adjust the speaker volume by using the volume adjustment button. The preset button 6 allows you to turn ON/OFF the microphone function. With the microphone OFF, audio input from here will be stopped.
- To finish talking, press the power button. The band will be restored to its original state.
- By holding down the mode selector button, "RE" will appear on the display for 3 seconds. After redialing, "DL" will appear, and the speaker will output the ringing tone.

ELIMINATION OF MEMORIES

When the battery disconnect switch is set to the "OFF" position, or when connection with the battery is lost by service of the system, removal of the radio, etc., memories of the preset buttons will be lost in several days.

In this case, preset the stations again.

TIME ADJUSTMENT

1. Clock adjustment mode is established by holding down the clock/frequency selector button when a clock is displayed.
2. By pressing the clock/frequency selector button after step 1, the adjustment target can be changed: hour -> minute.
3. With the adjustment target blinking, press the tuning buttons to adjust time.
4. When the clock/frequency selector button is pressed in minute adjustment mode, clock adjustment will be quit.

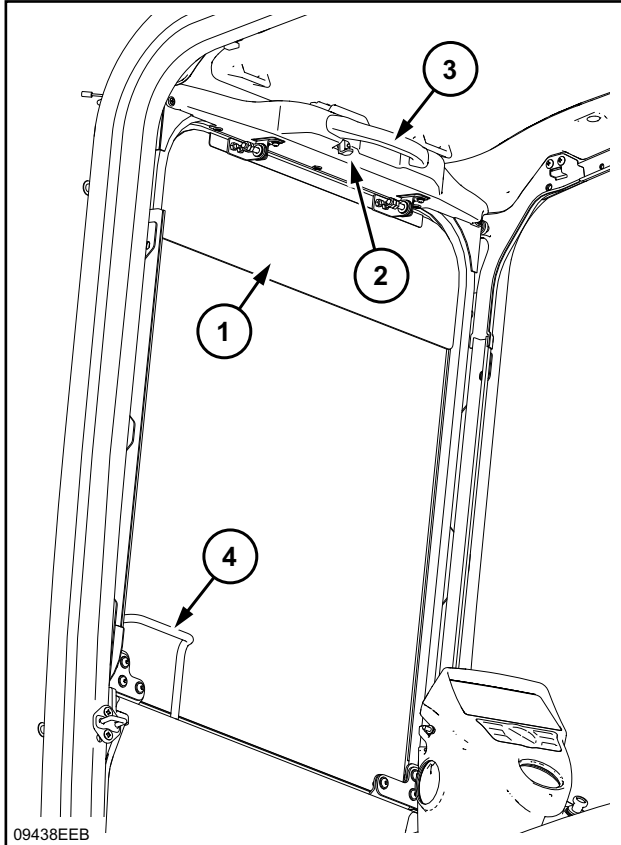
WINDSHIELD

⚠ WARNING

Make sure you follow the instructions below properly. If the windshield is not handled correctly it could slip and injure your fingers or hand.

OPENING THE WINDSHIELD

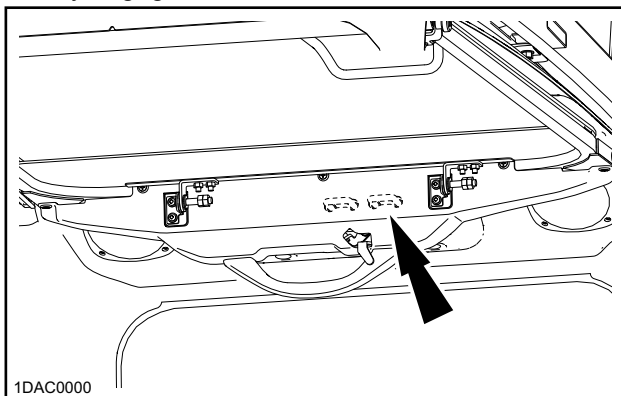
1. Fold the sun shield (1) towards the windshield and operate the lever (2). Hold the handles (3) and (4) and lift the windshield carefully.



09438EEB

Figure 80

2. Pull the windshield backward until the windshield is fully engaged in the rear of the cab.

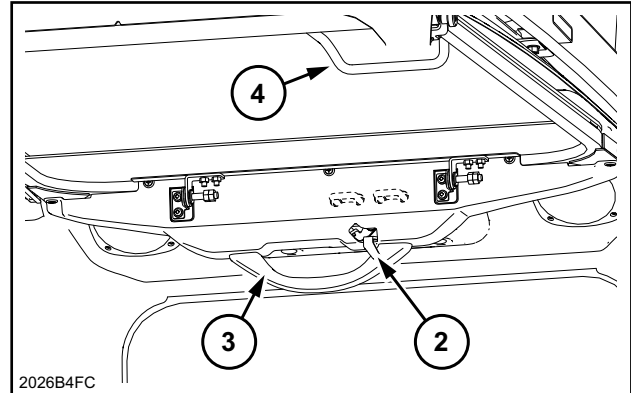


1DAC0000

Figure 81

CLOSING THE WINDSHIELD

1. Release the windshield with a lever (2).
2. Hold the handles (3) and (4) and lower the windshield carefully. Check whether the window is fully opened.
3. Check whether the upper part of windshield is fixed correctly.



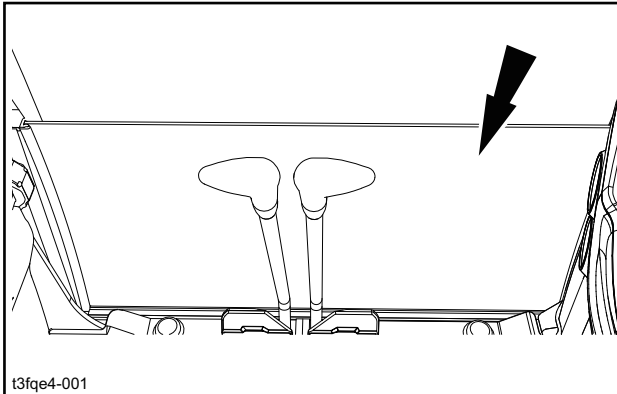
2026B4FC

Figure 82

LOWER FRONT WINDOW

The lower front window may only be removed when the upper windshield is open.

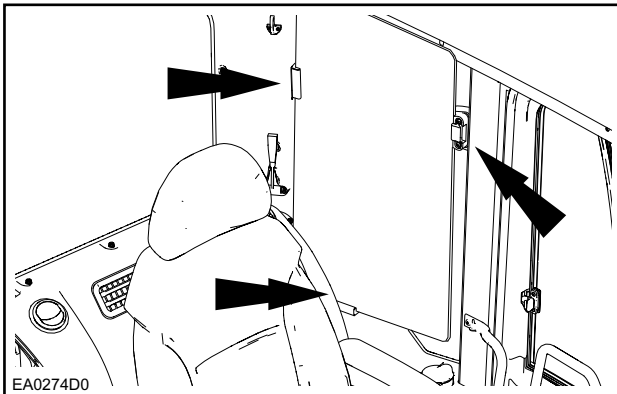
1. Pull the window upward to remove it.



t3fqe4-001

Figure 83

2. Place the window in the storage position provided to the left of the operator's seat and then engage it correctly.



EA0274D0

Figure 84

SUN ROOF

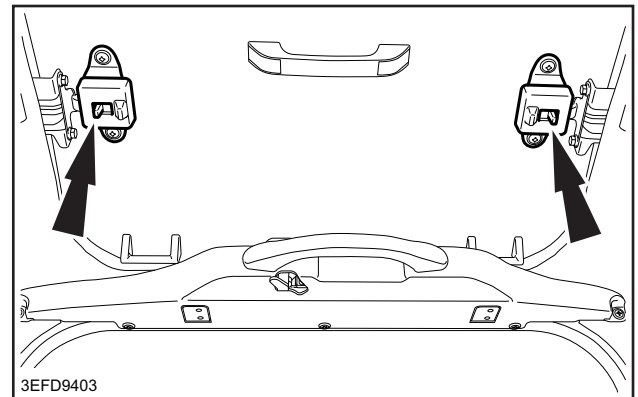
To open the sun roof, push the handle to release the sun roof.

To close the sun roof hatch, pull the handle to engage the sun roof.

IMPORTANT: Since sun roof opening is assisted by two gas struts, let the sunroof open completely before attempting to close it.

⚠ CAUTION

There is a danger that your hand could become trapped.



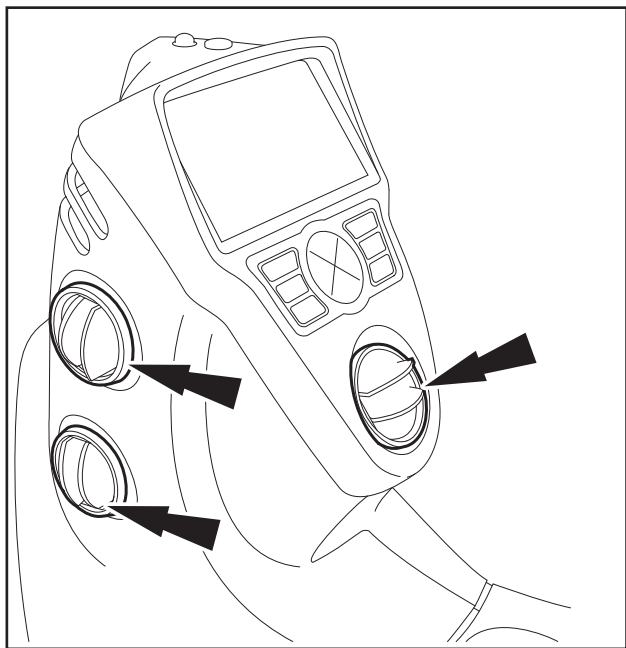
3EFD9403

Figure 85

AIR VENTS

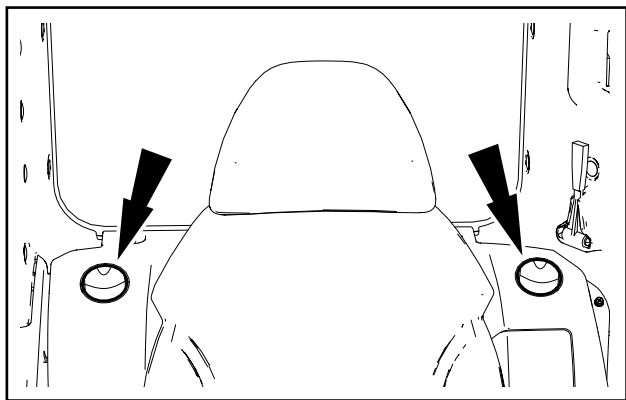
The air vents are located to the front and rear as well as under the cab, and allow the circulation and direction of air to be controlled. The air vents are opened and controlled manually.

NOTE: The air vents must always be open when the air conditioner is in use.



702BC8B0

Figure 86

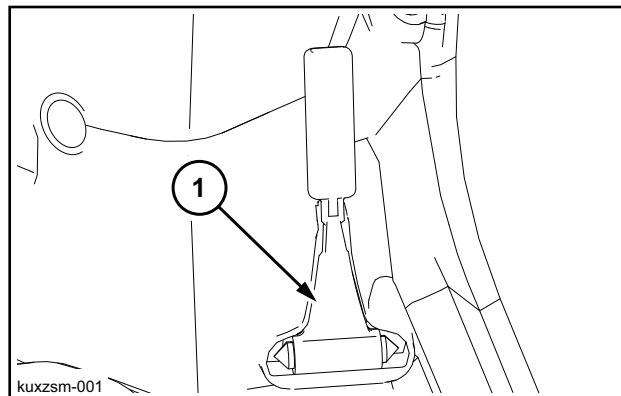


B7D5F932

Figure 87

REAR WINDOW

The rear window should only be opened if you cannot exit from the door.



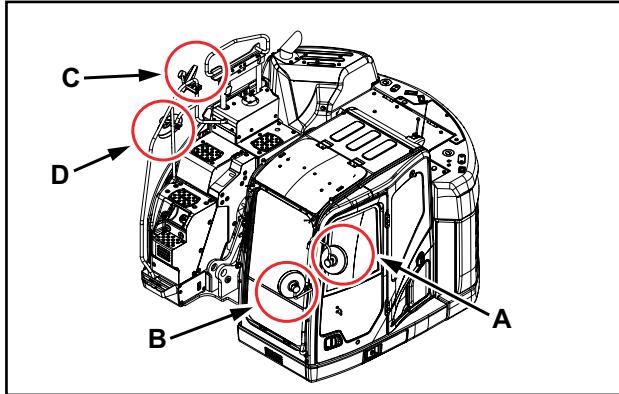
kuxzsm-001

Figure 88

To open the emergency exit use the hammer (1) to break the glass and exit the cab.

REAR VIEW MIRRORS

IMPORTANT: Before operation, make sure the rear view mirrors are correctly adjusted.



465CE483

Figure 89

! WARNING

When transporting the excavator, make sure the mirrors are not protruding from the excavator. Fold the mirrors inward to avoid an accident.

MIRROR INSTALLATION AND ADJUSTMENT

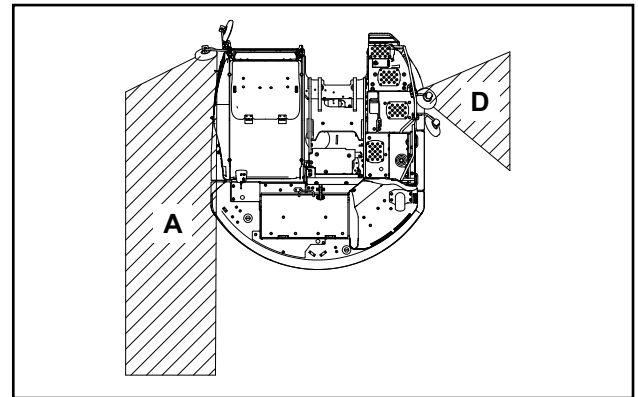
! WARNING

When transporting the machine, make sure the mirrors are not protruding from the machine. Fold the mirrors inward to avoid an accident.

! WARNING

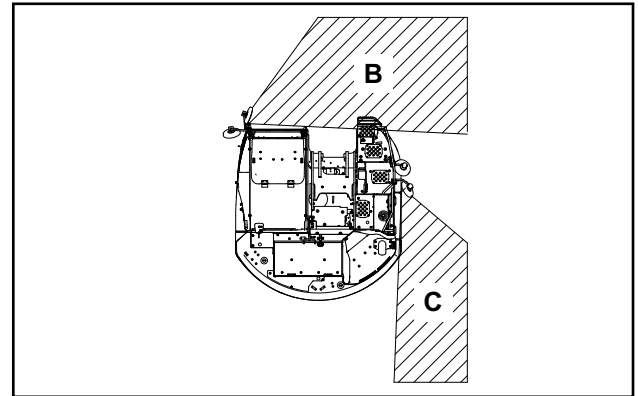
Before starting work, adjust the mirrors to ensure the visibility. Incorrect mirror adjustment could reduce the visibility. This can lead to a serious personal injury.

The illustrations below show the visibility zone that each rear view mirror must cover.



5B3D71CB

Figure 90



E591E1D4

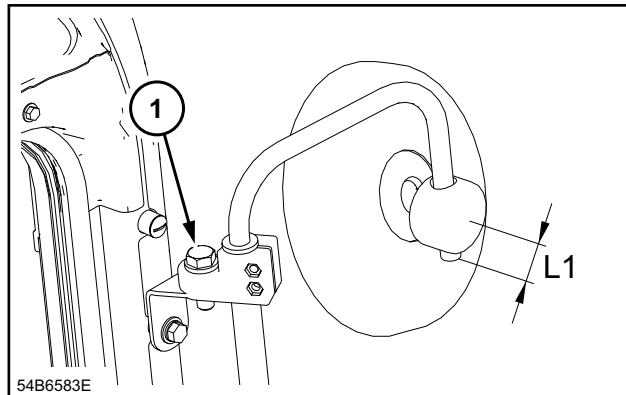
Figure 91

MIRROR A (ON THE CAB: UPPER)

When installing the mirror, adjust it to see the left rear end of the machine from the operator's seat by sight.

Tightening torque of bolt (1): 59.75 ± 6.64 lbf•ft (81 ± 9 N•m)

(L) dimension: 1.969 in. (50 mm)

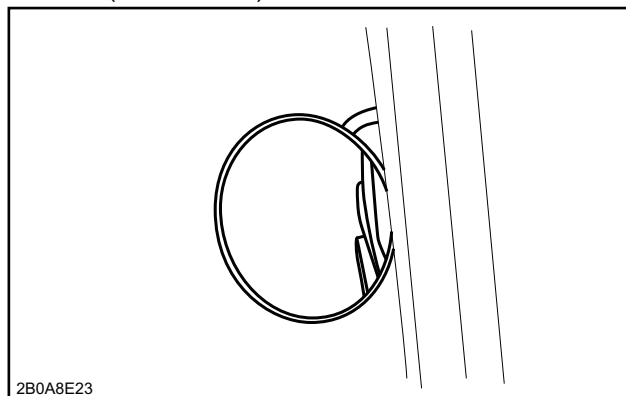


54B6583E

Figure 92

Adjust the mirror to see the side of the machine by sight.

Tightening torque of bolt to tight the mirror body: 3.69 ± 0.37 lbf•ft (5 ± 0.5 N•m)



2B0A8E23

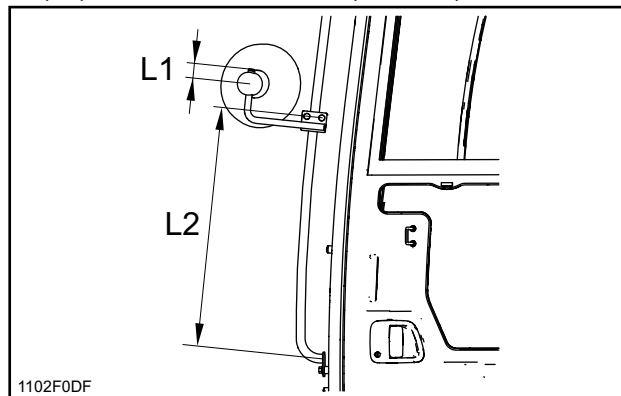
Figure 93

MIRROR B (ON THE CAB: UNDER)

When installing the mirror, adjust it to see the right front end of the machine from the operator's seat by sight.

(L1) dimension: 1.772 in. (45 mm)

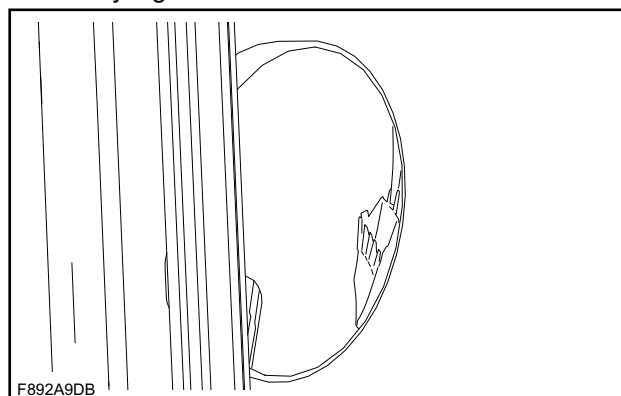
(L2) dimension: 28.898 in. (734 mm)



1102F0DF

Figure 94

Adjust the mirror to see the right front end of the machine by sight.



F892A9DB

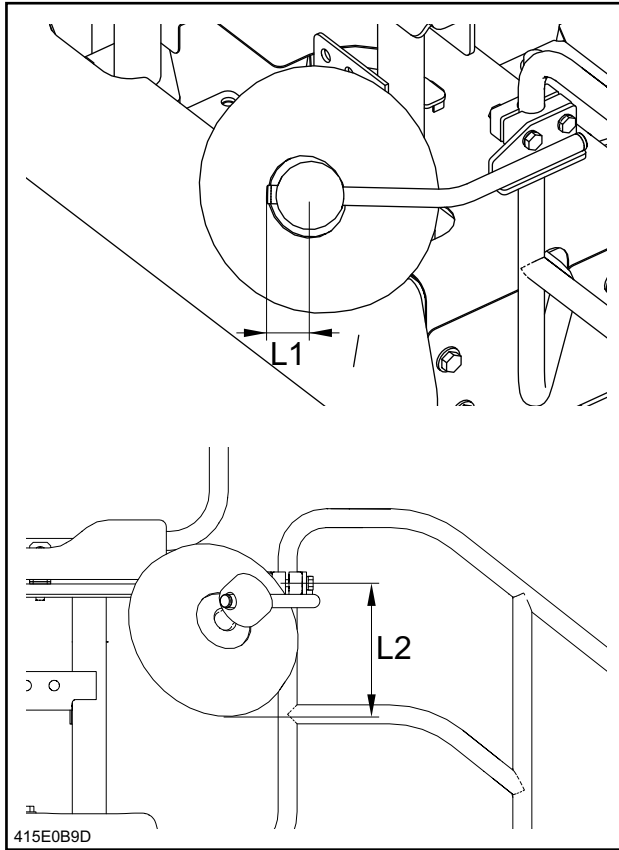
Figure 95

MIRROR C (ON THE HOUSE: RIGHT REAR)

When installing the mirror, adjust it to see the right rear end from the operator's seat by sight.

(L1) dimension: 1.772 in. (45 mm)

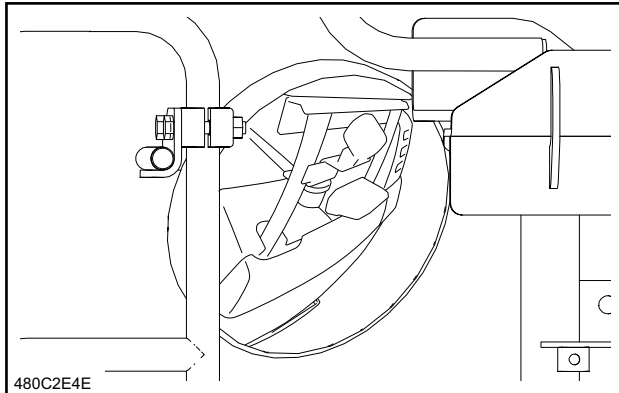
(L2) dimension: 7.362 in. (187 mm)



415E0B9D

Figure 96

Adjust the mirror to see the side of the machine by sight.



480C2E4E

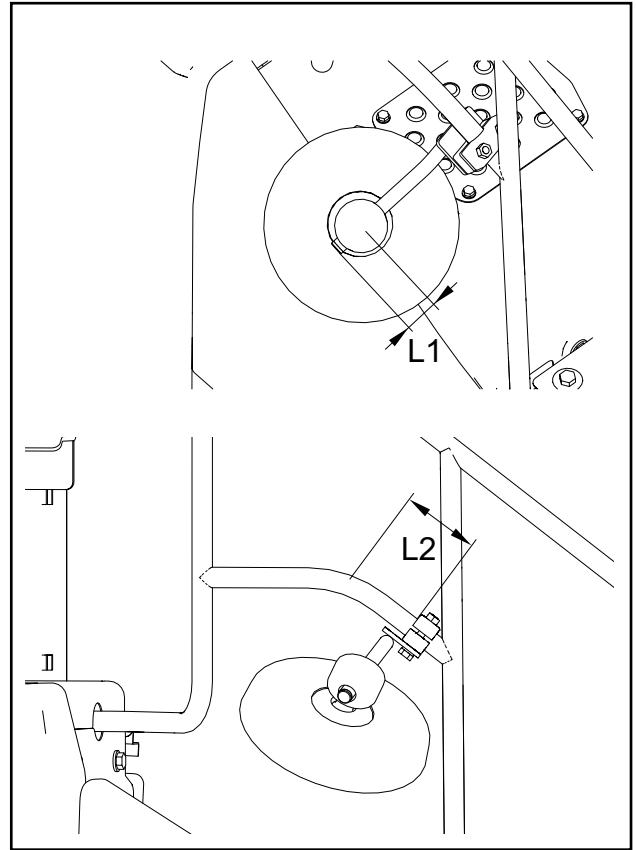
Figure 97

MIRROR D (ON THE HOUSE: RIGHT FRONT)

When installing the mirror, adjust it to see the right side from the operator's seat by sight.

(L1) dimension : 1.772 in. (45 mm)

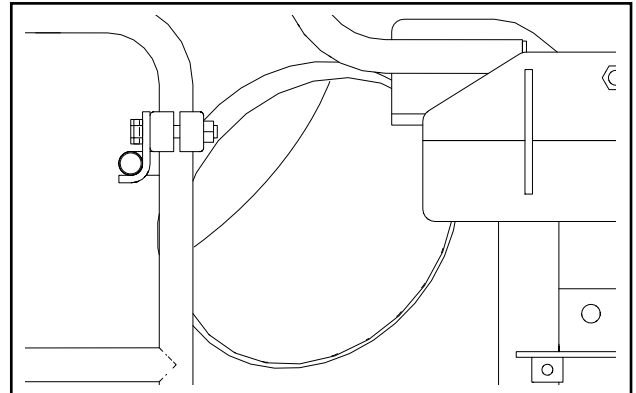
(L2) dimension : 4.843 in. (123 mm)



28C2D226

Figure 98

Adjust the mirror to see the side of the machine by sight.



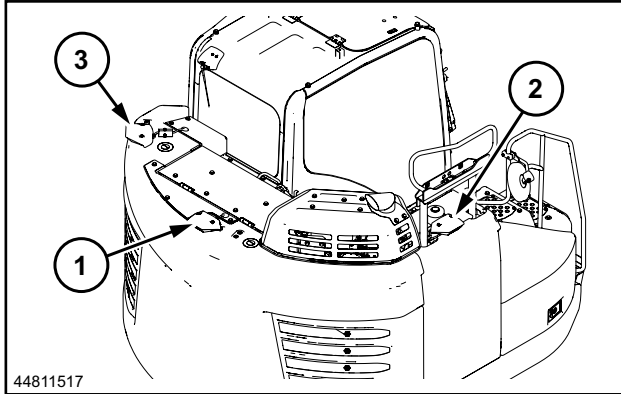
EBD17689

Figure 99

REAR VIEW CAMERA

REAR VIEW CAMERA

This camera is located on the counterweight. Before operation, check that the rear view camera can be displayed. (Option) A second camera is located on right side of the excavator.



44811517

Figure 100

1	Rear view camera
2	Right side camera (if equipped)
3	WAVES camera (if equipped)

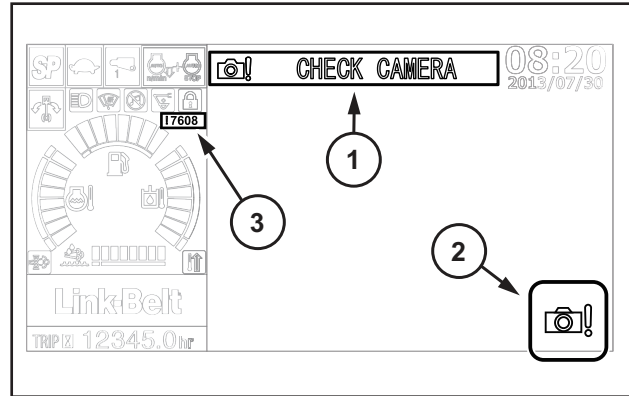
WARNING

- Images (rear view camera and side camera) on the monitor screen are supplementary. Never operate the machine while only viewing the images on the monitor screen.
- Since the images may be different from the actual situation, using only the camera's view could cause an accident. While operating this machine, be sure to check the safety in surroundings visually or through the mirrors, and give a signal by sounding the horn.
- When starting such operation as swinging and traveling, avoid abrupt operation for safety.

IMPORTANT:

- If any mud, raindrops, snow, etc. are adhered to the camera lens, the monitor displays deteriorated images. Therefore, wipe away dirt with a wet and soft cloth, and then wipe it with a dry and soft cloth.
- Do not scratch the camera lens. Doing so may affect the images on the screen.

If the camera or the camera wiring is abnormal, a warning buzzer sounds for about 5 seconds and the corresponding icon lights up.



E657BF8C

Figure 101

1	"CHECK CAMERA" lit
2	Camera failure indicator lit
3	Diagnostic trouble code: 7608

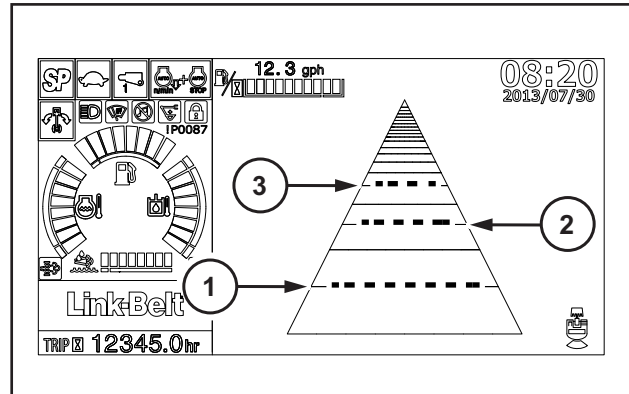
WARNING

Under this condition, operating the machine is extremely dangerous because you cannot check the safety in surroundings. Consult your Link-Belt Excavator dealer immediately.

CAMERA GUIDELINES

The menu allows you to show or hide the guidelines.

You can use the guidelines to check approximate distances from the CTWT rear end.



5D5B615A

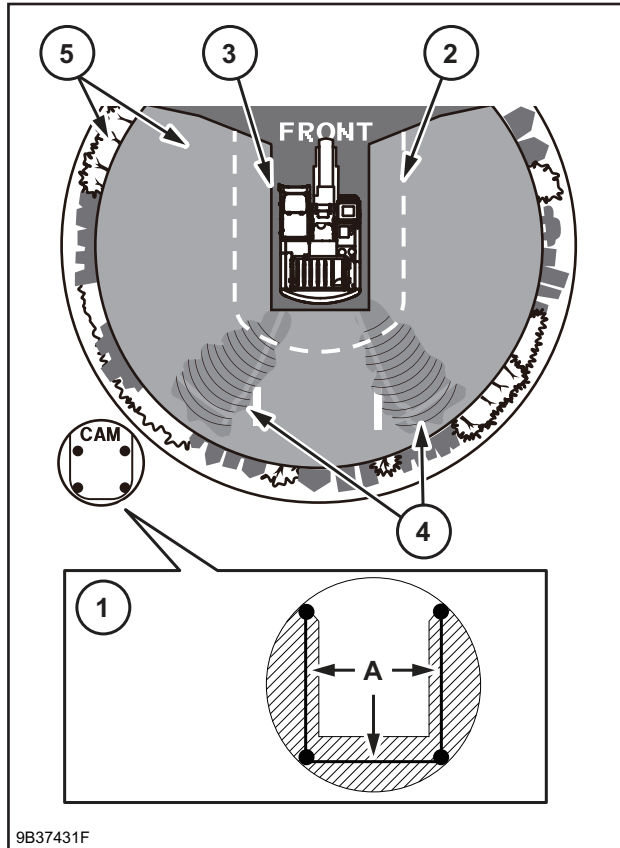
Figure 102

1	About 1 m (39.37 in.) from CTWT rear end
2	About 2 m (78.74 in.) from CTWT rear end
3	About 3 m (118.11 in.) from CTWT rear end

WAVES (IF EQUIPPED)

WAVES

WAVES system processes and combines the footage captured by the three cameras installed facing the rear, left, and right side of the machine presenting a bird's eye view equivalent to a view of the machine when seen from directly above it to provide a comprehensive view to check the machine periphery at a glance.



9B37431F

Figure 103

1. Camera Position Display

The cameras are installed at positions such that the cameras do not protrude from the main body. Due to characteristics of the construction machinery, however, excessive vibrations or shocks during operation may dislodge the cameras, shifting their positions and angles.

The WAVES system that processes and combines multiple camera footages may not be able to display the footage correctly if position or the angle of camera is dislodged. Therefore, the camera position display is displayed in the middle of the WAVES screen such that the operator can check the shift in the position of the cameras.

If the line "A" indicating the three directions of the machine terminal (left, right, and rear) is projected in a straight line toward the hatched area, the cameras are at the correct position and angle. If the line "A" is not displayed within the hatched area, the cameras are dislodged. Request the Link-Belt dealer to adjust the cameras.

2. Display of Machine Periphery (Guideline)

The guideline indicates the distance from the machine terminal.

Refer to "PERIPHERAL GUIDELINE OF MACHINE" for details.

WARNING

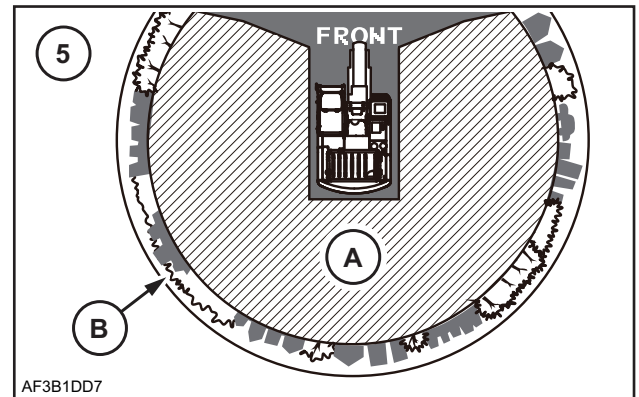
Do not perform operations if the cameras are dislodged.

Operations performed in a bad visibility state may lead to death or serious injury.

3. Approximately 11.81 in. (30 cm) of the machine periphery is not covered by the cameras.

4. The image linking process is performed on the footage captured from the left rear and right rear side, making the images appear distorted. This, however, is not a malfunction.

5. WAVES system enables simultaneous checking of the machine surroundings and the remote area by providing a footage that smoothly links a bird's eye view (machine surrounding area) that enables the operator to understand the positional relationship and a panoramic view (machine remote area) that covers a wide area.

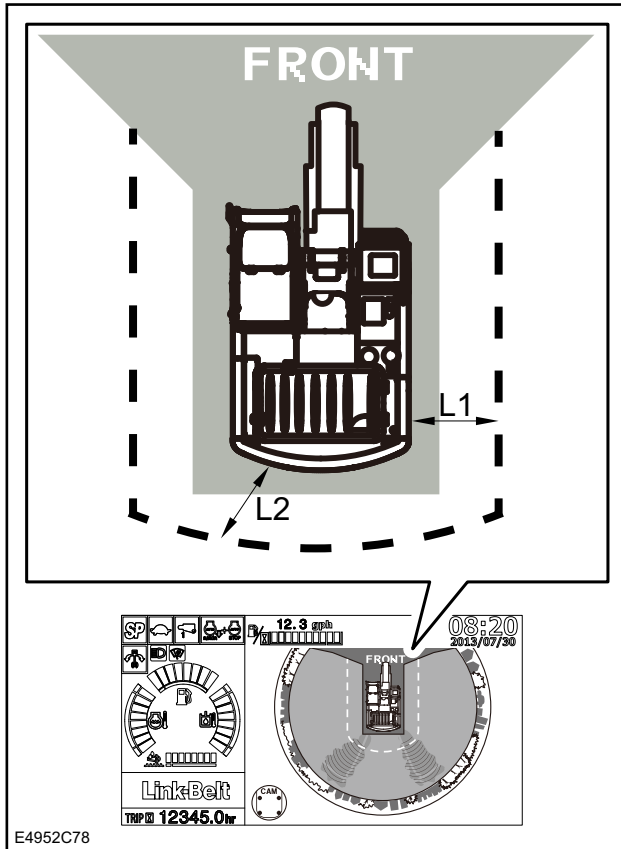


AF3B1DD7

Figure 104

A	Bird's eye view area (Hatched area)
B	Panorama view area

PERIPHERAL GUIDELINE OF MACHINE



E4952C78

Figure 105

L1	Distance from the upper swing body up to the guideline is 78.74 in. (2.0 m).
L2	Distance from CTWT up to the guideline is 78.74 in. (2.0 m)

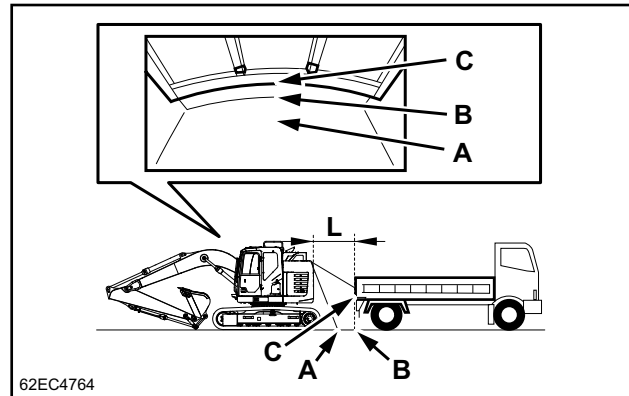
ERROR IN REAR VIEW MONITOR

Error between image and actual ground

In the following cases, an error occurs in the situations (distance, course, etc.) between the on-screen image and the actual ground.

When a three-dimensional object is approaching, the distance guideline targets a planar object (ground etc.). Therefore, if a three-dimensional object with an overhang is approaching, a distance different from the actual one may be displayed.

Although the position C appears farther from the position B, the distance to there is the same as that to the position A. For this reason, a collision may occur if the machine is backed to the position A.



62EC4764

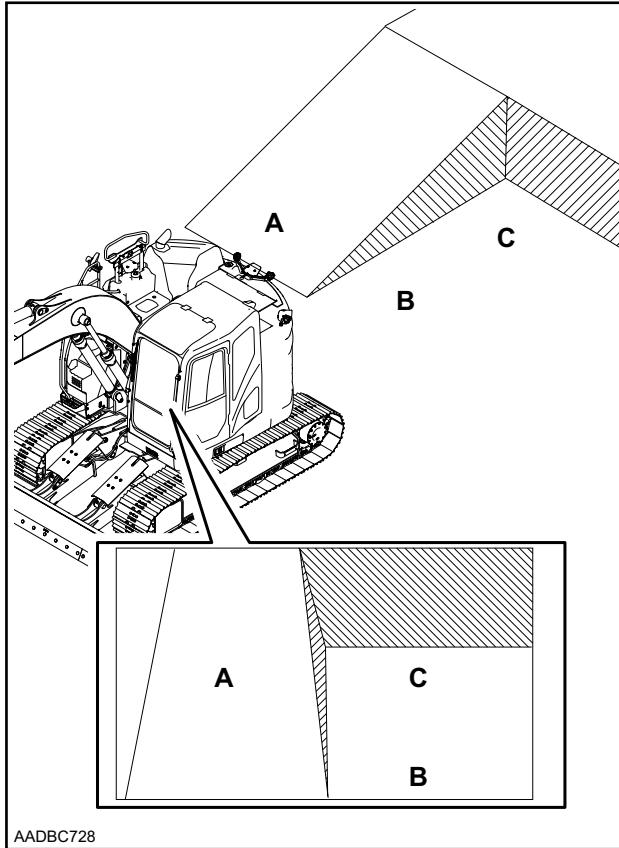
Figure 106

L	About 39.370 in. (1 m)
---	------------------------

If there is uphill road behind the machine, it is displayed behind the actual position.

On the image on the rear view monitor screen, the positions A and C appear the same. However, in actuality, the distance to the position A is the same as that to the position B.

If there is an obstacle on uphill road, it is displayed ahead of the actual position.



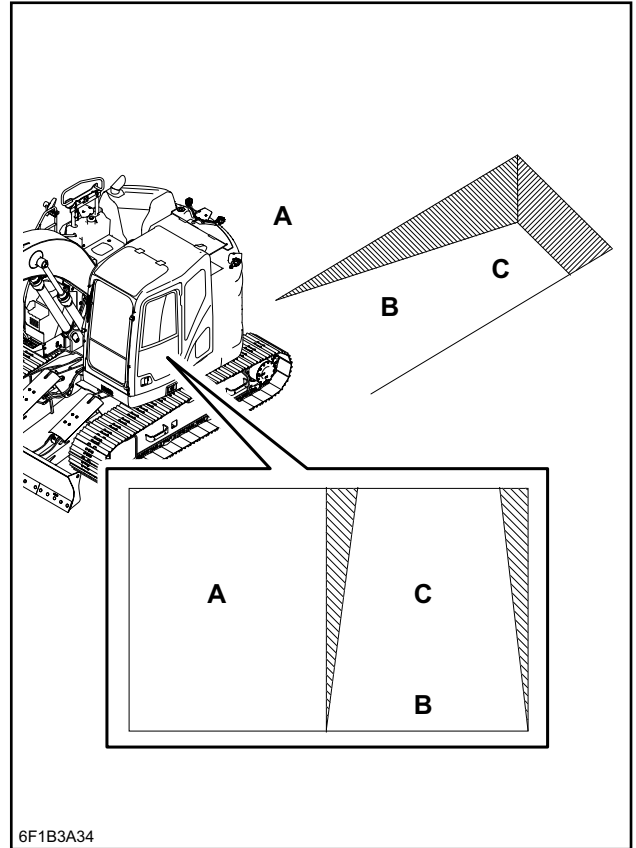
AADBC728

Figure 107

If there is downhill road behind the machine, it is displayed ahead of the actual position.

On the image on the rear view monitor screen, the positions A and C appear the same. However, in actuality, the distance to the position A is the same as that to the position B.

If there is an obstacle on downhill road, it is displayed ahead of the actual position.



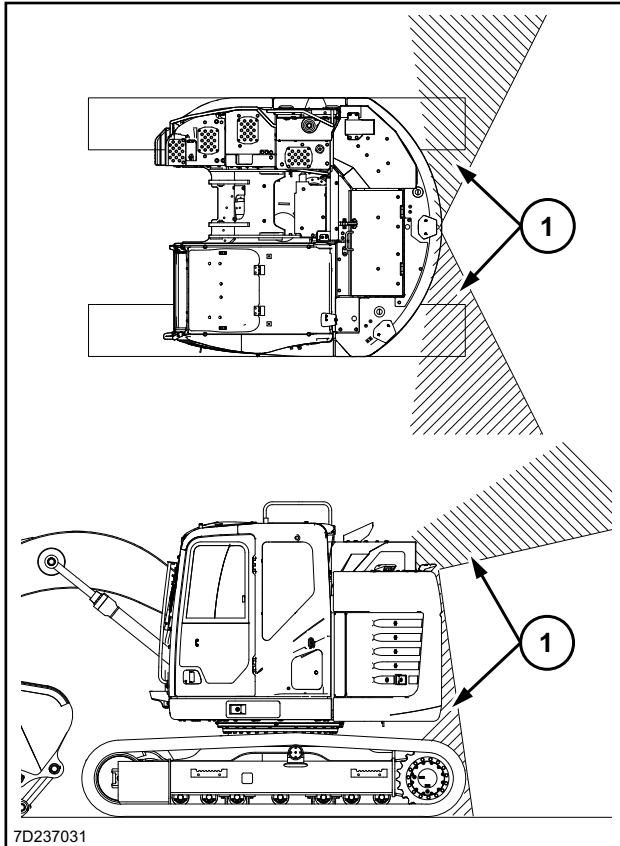
6F1B3A34

Figure 108

RANGE WHERE NO IMAGE IS DISPLAYED

NOTE: The camera system has a range where no image is displayed (blind spots).

Range where no image from the rear view camera is displayed

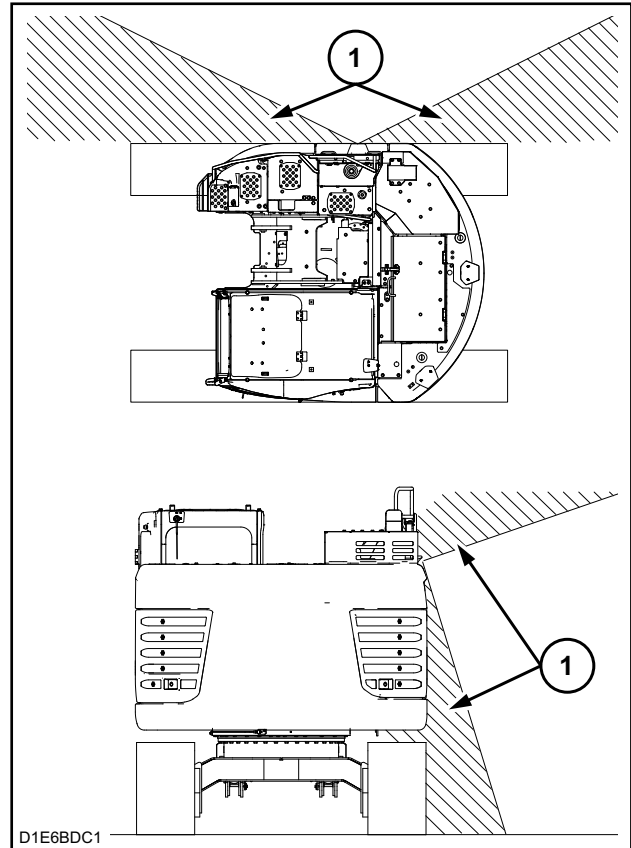


7D237031

Figure 109

1	Blind spot
---	------------

Range where no image from the right-rear view camera is displayed



D1E6BDC1

Figure 110

1	Blind spot
---	------------

FUEL TANK

NOTE: Clean around the fuel cap before refueling and do not remove the filter located in the filler orifice. See Fuel tank filter in the Maintenance/Adjustments section.

NOTE: In cold weather, use fuel corresponding to the ambient temperature. See the Lubrication/Filters/Fluids section (Page 7-1).

IMPORTANT: In cold weather, fill the fuel tank after each working day to prevent the formation of condensation.

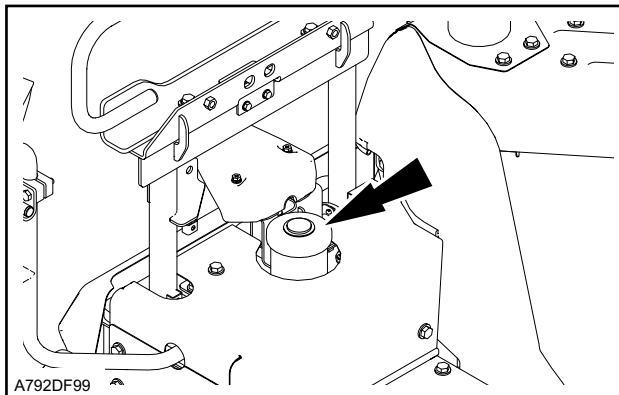
WARNING

Never refuel when the engine is running. Never smoke when refueling.

The fuel tank is located on the right-hand side of the excavator.

When installing the fuel cap, make sure it is correctly placed in the notches and then lock it by turning it up against the stop.

NOTE: Use the key to lock the fuel cap.



A792DF99

Figure 111

The fuel cap has the gauge that allows you to check the maximal level.

ENGINE HOOD

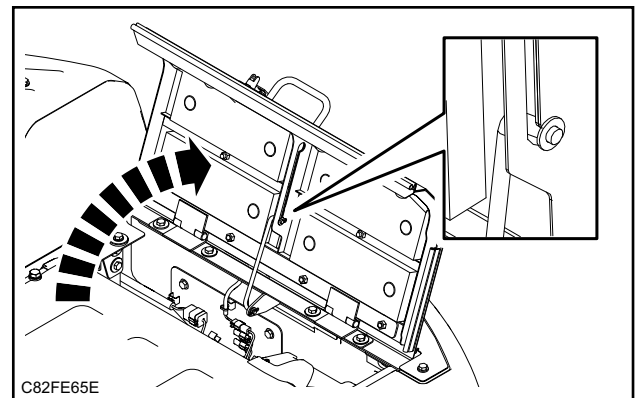
- Do not open the engine hood while the engine is running.
- When opening the engine hood or the cover, be sure to lock it.
- Do not open it during strong winds.

WARNING

Before operating this machine, check that the engine hood is closed firmly. Failure to observe this may result in death or serious injury.

Disengage a latch, and raise the engine hood until it is fixed with a stay.

IMPORTANT: After fully opening the engine hood, check that it is fixed firmly.

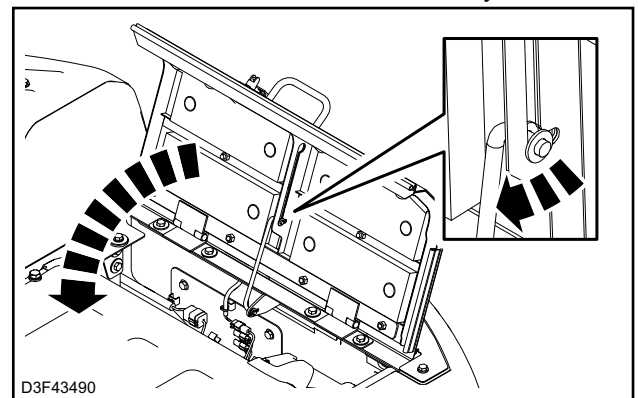


C82FE65E

Figure 112

Raise the engine hood a little to unlock the stay, and close the hood firmly until it is locked.

Close the lever cover and lock it with a key.



D3F43490

Figure 113

FRONT STORAGE BOX

This is located in the lower part of the cab.

It is used for storing emergency parts.

This storage box gives you access to the selector valve.

Pull the lever to open the box cover.

Make sure that it is fully opened or closed.

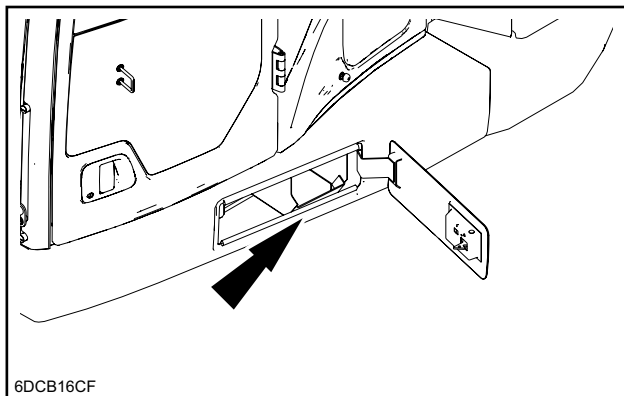
IMPORTANT: Use the starter switch key to lock the storage box cover.

WARNING

Moving parts!

Before operating the machine, check that the storage box cover is closed firmly.

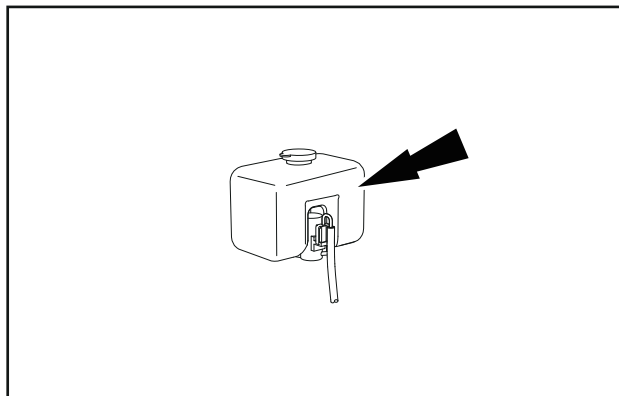
Failure to comply may result in death or serious injury.



6DCB16CF

Figure 114

WINDSHIELD WASHER RESERVOIR



9963CED8

Figure 115

In Cold weather, add anti-freeze to the windshield washer water.

Never operate the windshield washer control when the reservoir is empty. This could cause damage to the electric pump.

SIDE DOOR

When opening the door, unlock and open the door until it is fixed by the stay.

IMPORTANT: After fully opening the door, check that it is fixed firmly.

When closing the door, raise the stay a little to unlock it, close the door firmly, and then use the starter switch key to lock the door.

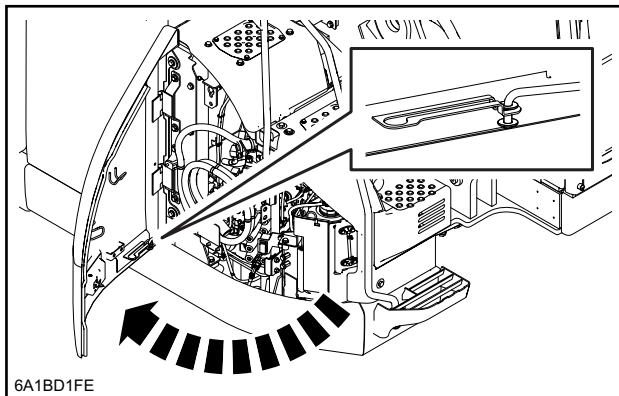
NOTE: Never leave tools in the door.

WARNING

Before operating this machine, check that the door is closed firmly.
Failure to observe this may result in death or serious injury.

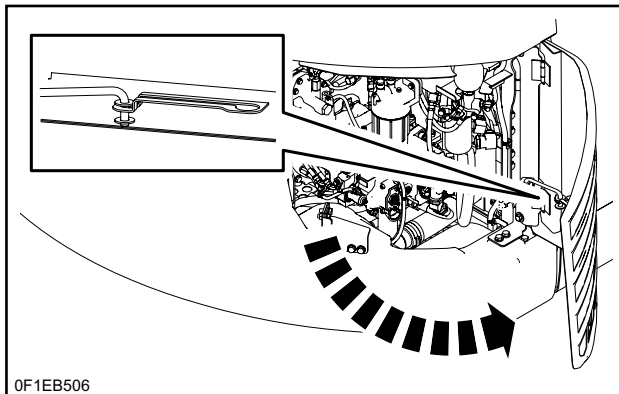
RIGHT DOOR

From the right door, you can access the engine fuel and the oil filter, as well as specific hydraulic components (pump, filter, etc.).



6A1BD1FE

Figure 116

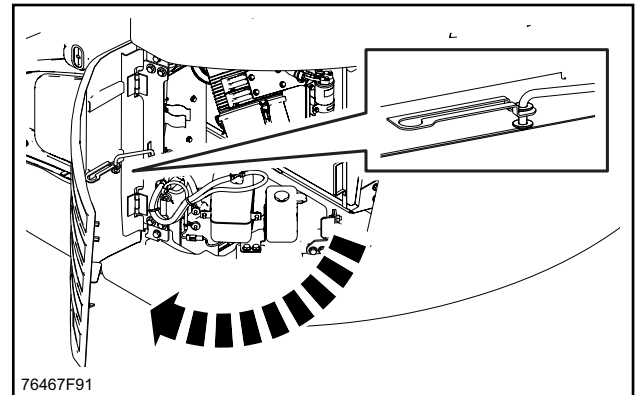


0F1EB506

Figure 117

LEFT DOOR

From the left door, you can mainly access the battery, the windshield washer tank, the air filter, the radiator, the oil cooler, etc.



76467F91

Figure 118

TOWING POINT

The towing points are located on the undercarriage in both the front and the back of the excavator.

This point is to be used for towing, see Towing the Excavator (Page 5-25).

Make sure that the slings, chains and accessories are in perfect condition and can bear the load to be moved.

⚠ WARNING

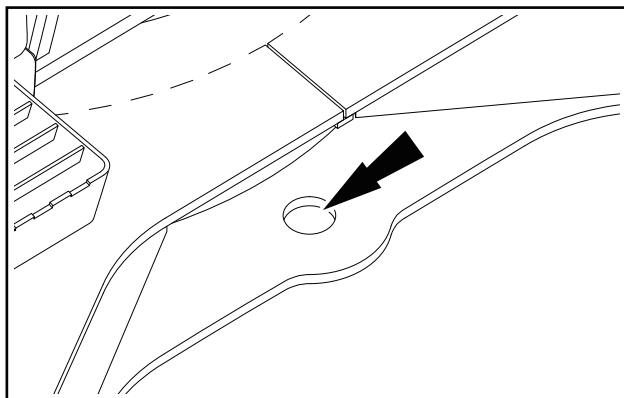
Towing is a delicate operation which is always carried out at the risk of the user. The manufacturer's warranty does not apply to incidents or accidents, which occur during towing.

⚠ WARNING

It is forbidden to use this point for towing another vehicle.

⚠ WARNING

The excavator must be towed very slowly, over a short distance and only if unavoidable.



457B2866

Figure 119

LIFTING EYES

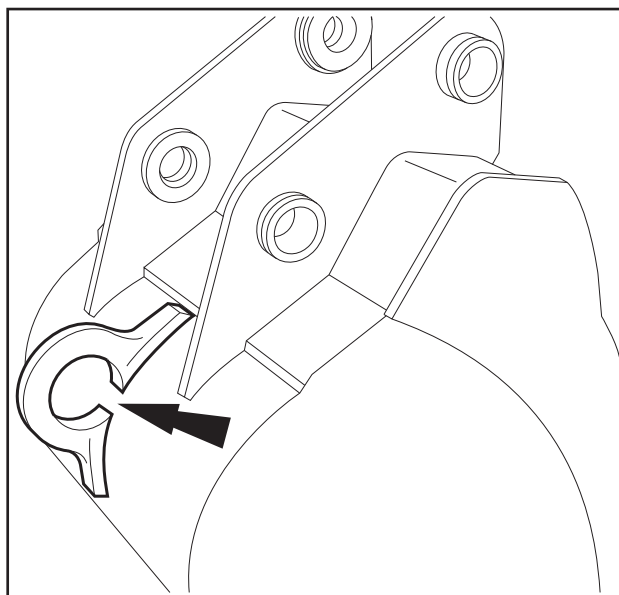
When lifting loads, slings and chains must be attached to the load handling eye on the bucket.

See Load Handling in the Operating Instructions section (Page 5-1).

IMPORTANT: This attachment point will only carry the load indicated in the maximum lift capacities table. See Maximum lift capacities tables in the Operating Instructions section (Page 5-1).

⚠ WARNING

Never weld hooks or lugs on the bottom plate of the bucket for handling operations. The only attachment point which may be used is the bucket eye.



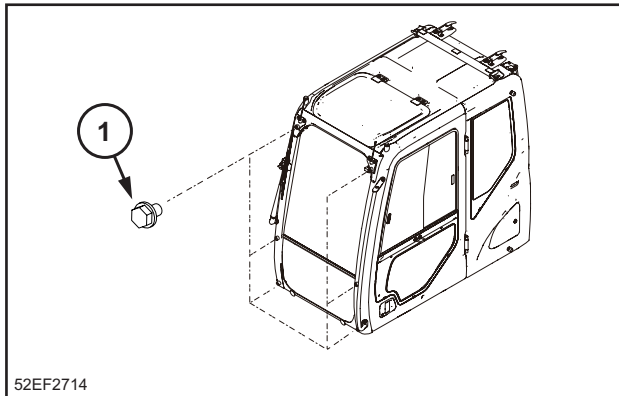
28178D25

Figure 120

ANTI-VANDAL COVER

TO INSTALL

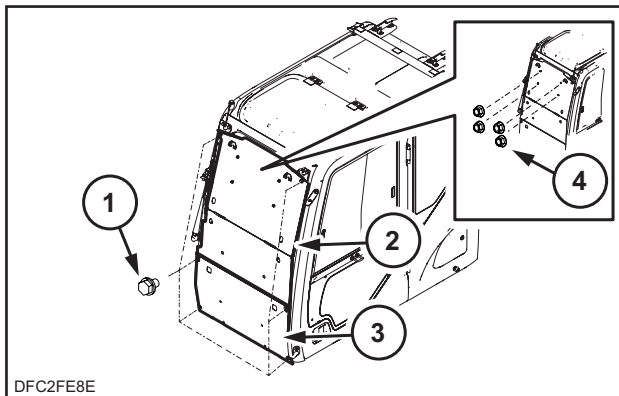
1. Remove the bolt (1) from front of the cab.



52EF2714

Figure 121

2. Secure the vandal guards (2), (3) with the bolt (1).
3. Secure the nut (4) for stowing lock in front of the vandal.

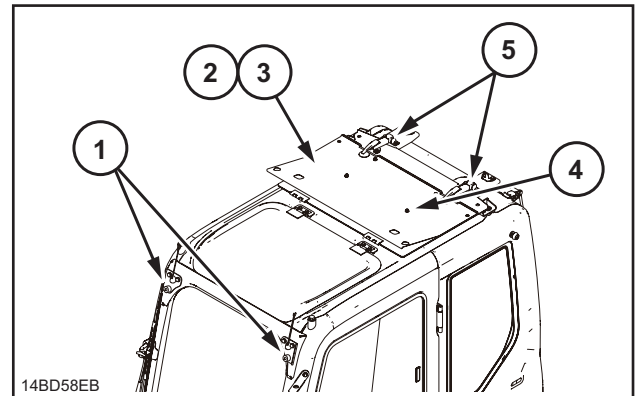


DFC2FE8E

Figure 122

TO REMOVE AND STORE

1. Remove the bolt (1) from front of the cab.
2. Remove the nut (4) for stowing lock.
3. Remove the vandal guards (2), (3).
4. Fold the vandal guard (2) and then secure the vandal guard (3) to the vandal guard (2) with the nut (4) for stowing lock.
5. Secure the vandal guards (2), (3) with the catch (5) on the cab.



14BD58EB

Figure 123

CHAPTER 5 - OPERATING INSTRUCTIONS

BEFORE OPERATING THE EXCAVATOR**⚠ WARNING**

Do not attempt to operate this excavator unless you have first read and perfectly understand the safety messages and instructions appearing in this manual.

Before operating this excavator, be sure to do the following:

1. Check the level of all fluids (engine oil, hydraulic fluid, DEF, and coolant solution) and make sure the fluids and lubricants are suitable for prevailing conditions. See Lubrication/Filters/Fluids section (Page 7-1) and Operating The EXCAVATOR IN COLD WEATHER section (Page 5-19).
2. Carry out the daily maintenance operations. See Servicing Intervals section (Page 6-1).
3. Inspect the excavator, look for any signs of possible leakage and check the hoses. Tighten or replace as necessary. See Maintenance/Adjustments section (Page 8-1).
4. See Run-in Period section if the excavator is new or if the engine has been reconditioned.
5. Check the track assemblies. See Tracks in the Maintenance/Adjustments section (Page 8-1).
6. Clean the steps and access handles. Grease, oil, mud, snow or ice (during winter) on the steps and access handles can cause accidents. Make sure they are kept clean at all times.
7. Clean or replace any decals which are illegible. See Decals in the Safety/Decals/Hand Signals section (Page 3-1).
8. Make sure the engine hood and the side doors are properly closed and latched.
9. Secure the cab door in fully closed position.
10. Remove any obstruction that disturbs visibility. Clean front glass, window, rear view mirror and camera.
11. Check that no tools or other items have been left on the excavator including on the undercarriage or the upperstructure and in the cab.
12. Make sure nobody is on or under the excavator. The operator must be alone on the excavator.
13. Make sure no one is in the safety area.
14. Follow current safety measures required for the work site.
15. Work out a convenient means of escape from the excavator (emergency exit via the rear escape window) in the event of the cab door being jammed or the excavator turning over. See Windshield in the Controls/Instruments/Accessories section (Page 4-56).
16. Before undertaking any travel or working operations during hours of darkness, make sure the lighting and signaling equipment is fully operational.

OPERATING THE EXCAVATOR

WARNING

Check all controls and safety devices in a safe, open area before starting work.

When operating the excavator, be sure to do the following:

1. Be alert and always know the location of all persons in the area. Injury or death can result if these instructions are not followed.
2. When starting the engine, be sure to use the correct procedure for the prevailing weather conditions. See Starting the engine (Page 5-5).
3. Regularly consult the hourmeter to ensure all servicing operations are carried out punctually. See Servicing Intervals sections (Page 6-1).
4. If you use your excavator in particularly harsh conditions, the servicing intervals should be reduced accordingly.
5. Take note of the locations of pipes and cables before starting work.
6. Do not work near overhead high-voltage electric lines without checking beforehand that all necessary measures have been taken to respect the safest distances:
Less than 57000 volts: 13.12 feet (4 meters)
57000 volts or more: 16.40 feet (5 meters)
7. Always know where any buried lines are and that they are properly marked. See Utility Safety section (Page 3-2).
8. When working on a public highway, use standard traffic signs and consider the safety area of the machine.
9. Never operate the working or travel controls unless you are properly seated in the operator's seat with the seat belt correctly fastened.
10. Modify your operation to suit the type of work and working conditions. See Operating instructions in the Job Site Operation section (Page 5-1).
11. Do not allow anyone within the safety area. Stop all operations until everyone has moved away.
12. Operate all controls gradually to ensure smooth excavator operation.
13. See Operating In Water section (Page 5-24) if the excavator will be standing in water during use.
14. See Transporting The Excavator section (Page 10-1) when driving the excavator onto a trailer.
15. See LIFTING THE EXCAVATOR section (Page 10-10) when it is necessary to lift the excavator.
16. In some configurations, the working range of the attachment allows the tool to interfere with the excavator. Always maintain a safe minimum distance between the tool and the excavator.
17. Never use the attachment for sweeping the ground to level out rubble or push objects (transversal stress on the attachment).
18. Avoid running the engine in a confined space. If there is no alternative, proper ventilation must be provided at all times.
19. Dust, smoke or mist can reduce visibility and cause an accident. Reduce speed or come to a complete halt until visibility has improved.
20. In the event of an operation problem or failure, move the excavator to a safe place, lower the attachment to the ground, shut down the engine and remove the starter switch key. Locate the problem, report it if necessary and take the necessary steps to warn others not to attempt to operate the excavator.
21. Do not stop the engine without taking prevailing weather conditions into consideration. See Stopping the engine (Page 5-7).
22. See Parking the excavator (Page 5-24) when you have to park the excavator.
23. Whenever load handling operations are to be carried out, it is imperative to adhere strictly to the instructions given in this manual. See Load handling (Page 5-27).
24. When traveling with a hydraulic breaker (optional), make sure it is not too close to and not pointing in the direction of the cab.

RUN-IN PERIOD

Your excavator will last longer and will give better and more economical performance if you pay particular attention to the engine during the first 20 hours of operation.

During this period:

Warm up the engine before using it under load.

Do not run the engine for a long period at idle speed.

Frequently check the instruments on the instrument panel.

Frequently check the oil levels and coolant solution level.

During the run-in period, the following checks and servicing operations should be carried out in addition to those specified in the service schedule:

AFTER THE FIRST 50 HOURS

Replace the pilot circuit filter and the hydraulic return filter. See Hydraulic System in the Lubrication/Filters/ Fluids section (Page 7-34).

Check that the pad screws are tightened to the correct torque. See Tracks in the Maintenance/Adjustments section (Page 8-1).

Check that all nuts and screws are tightened to the correct torque. See Hardware torque inspection in the Maintenance/Adjustments section (Page 8-16).

AFTER THE FIRST 250 HOURS

Change the oil in the travel reduction gears. See Travel Reduction Gears in the Lubrication/Filters/ Fluids section (Page 7-44).

STARTING THE UNIT

SECURITY FUNCTION

In order to prevent the theft of the machine, the security function is available. This function is selected when the ignition key is turned OFF (lock guidance screen). To operate the system with this function enabled, a password needs to be input.

For setup of the security function, consult the Link-Belt dealer.

Entering wrong passwords for 3 times or more, or starting up the engine before entering password causes generation of warning and activation of the system is subject to restriction.

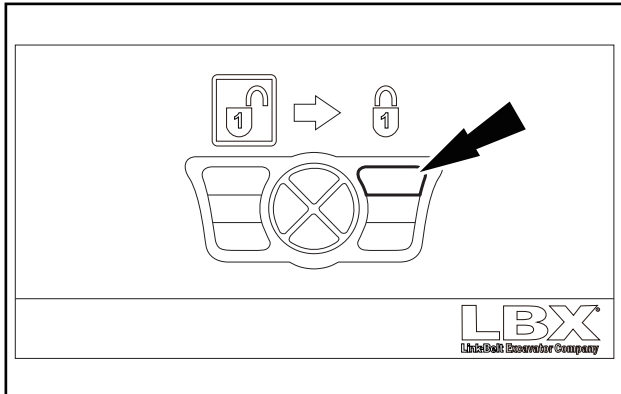
This is called immobilized status.

1. A travel alarm sounds.
2. A monitor buzzer sounds continuously.
3. The swing function is disabled.
4. Although the engine starts, its speed is fixed at a low idle.
5. When the operation lever is used in the state of 4, the engine will stop automatically.

NOTE: Be careful not to forget the recorded code. The code cannot be changed without prior consultation with the Link-Belt dealer.

USE OF SECURITY FUNCTION

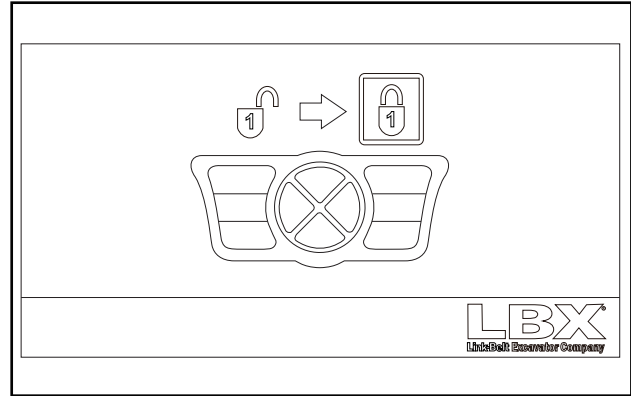
- To enable the security function
When turning the ignition key to the OFF position, the operator can lock the system by pressing the menu button (3) at the lock screen displayed on the monitor.



309E18F4

Figure 1

The box will move to the locked as seen below.



77346D42

Figure 2

- To disable the security function
When the operator turns the ignition key to the ON position, the password input screen will be displayed.
Enter the password on the input screen with monitor switches to unlock the system.
If the system cannot be unlocked
 - If password authentication fails a total of 3 times, the password cannot be entered. Turn the ignition key to the OFF position, wait 10 secs turn to the ON position again, and reenter the password from the start.
 - If you start the engine before entering the password, the system enters an anti-theft state. You can still enter the password to disarm the anti-theft.

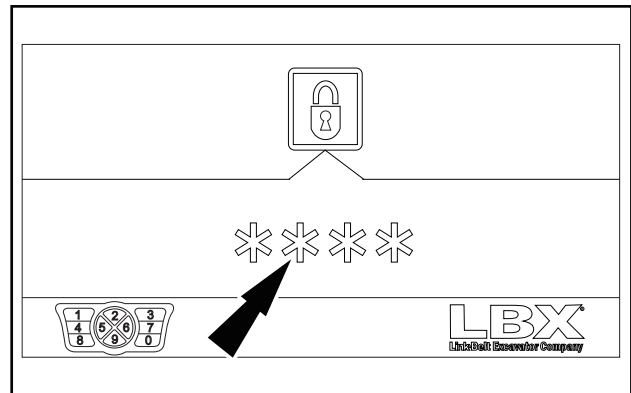
CAUTION

If having forgotten the password, consult the Link-Belt dealer.

NOTE:

This device is a security device that is different from the RemoteCARE lock.

For the RemoteCARE info, refer to "RemoteCARE" (11-14).



9DDA4895

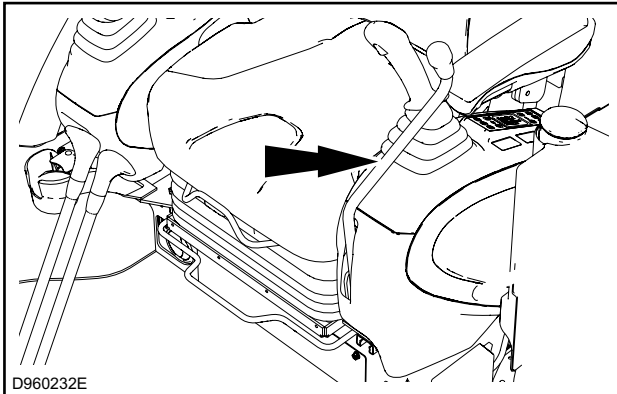
Figure 3

STARTING THE ENGINE

NOTE: If the excavator has been out of use for some time, see the WHEN USING AGAIN section in the excavator storage section (Page 10-15).

NOTE: If you need to start the engine using a booster battery, see the CONNECTING ONE OR TWO BOOSTER BATTERIES section in Chapter 9 Electrical Systems (Page 9-6).

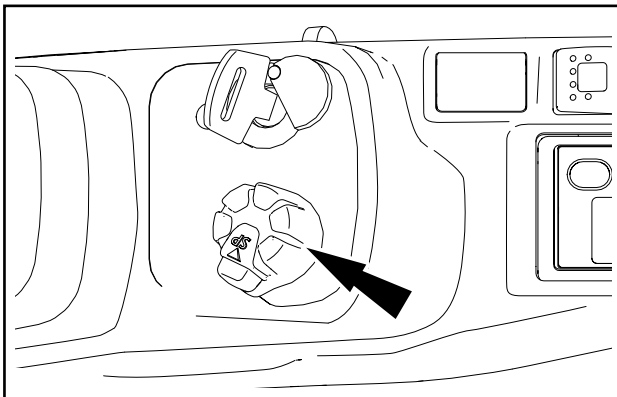
1. Take up position correctly in the operator's seat with the seat belt correctly fastened. See the SEAT CONTROLS section in CHAPTER 4 INSTRUMENTS AND CONTROLS (Page 4-7).
2. Make sure the gate lock lever is in the locked position.
Sound the horn before starting the engine.



D960232E

Figure 4

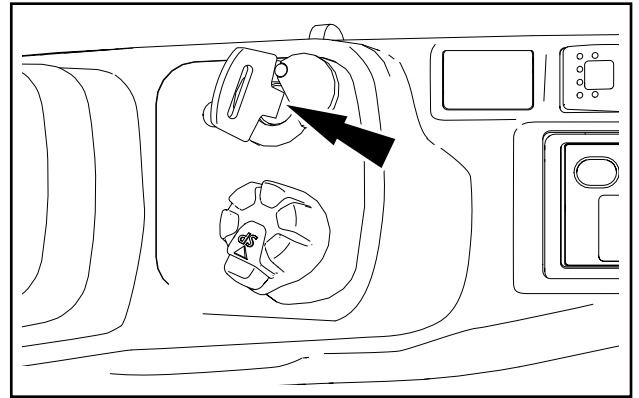
3. Make sure the engine throttle volume is in low idle position.



7C21E4B9

Figure 5

4. Insert the starter switch key, turn the key to the ON position, and check the monitor for any warning messages.



C2E7A510

Figure 6

5. Sound the horn and then turn the starter switch key to the START position. Release the key as soon as the engine starts to turn. If the engine stops, wait about a minute and start the operation again.

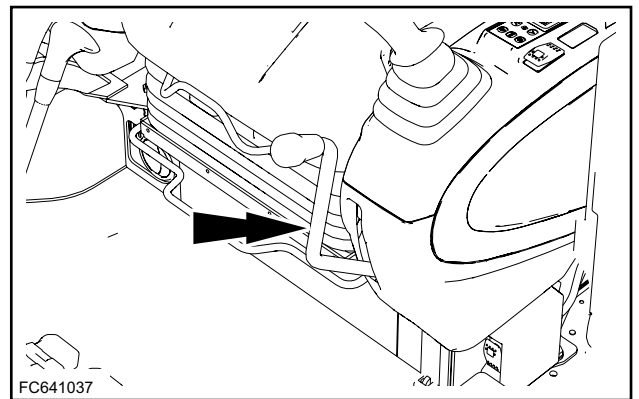
IMPORTANT: The engine is equipped with a high pressure fuel system to comply with Tier 4 engine emissions. Due to this it may take more time to start the engine.

IMPORTANT: Do not operate the starter motor for more than 10 seconds at one time. Do not operate the starter motor when the engine is running.

IMPORTANT: When the engine is running, let the engine warm up until the low idle mode for about 10 minutes.

IMPORTANT: When the engine is running, check the monitor for any problems.

6. Lower the gate lock lever to activate hydraulic controls.



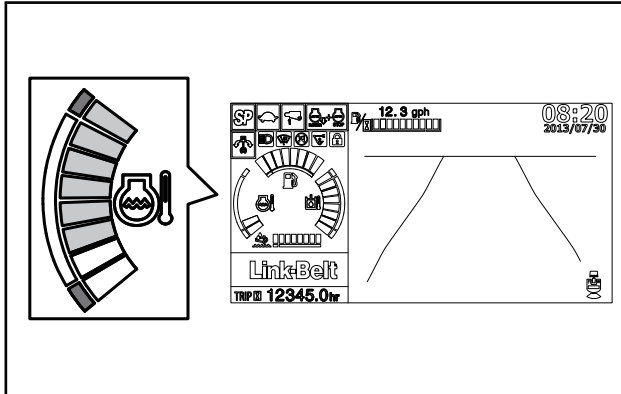
FC641037

Figure 7

BRINGING THE EXCAVATOR UP TO OPERATING TEMPERATURE

IMPORTANT: Normal operating temperature of the hydraulic fluid is between 122° F (50°C and 80°C) in the middle of the temperature indicator. If the excavator is used with the hydraulic fluid at a temperature below 68° F (20°C) damage can occur.

After starting the engine and before using the excavator, wait till the temperature of the hydraulic fluid reaches 68° F (20°C) or until the hydraulic temperature reaches two bars (1).



7F8CCF94

Figure 8

HYDRAULIC FLUID WARM-UP

Turn the engine throttle volume to half-open position. Operate the bucket control slowly until the bucket is completely closed. Operate the arm retracting control slowly until the arm is completely retracted and hold the control in this position for 30 seconds. During this time the temperature of the hydraulic fluid will increase.

After 30 seconds, extend the arm completely and hold the control in this position a further 30 seconds.

Repeat this operation of retraction and extension of the arm until the temperature increases.

Operate the travel and attachment controls 3 or 4 times to activate hydraulic fluid circulation.

ENGINE AUTOMATIC WARM-UP

⚠ WARNING

In cold weather, the attachment may move a little during a warming up operation, even if the machine is not being operated. Put the machine into the position for transport before starting a warming up operation.

Once the engine has started, the warming-up process begins automatically. At first, engine speed is held at a pre-determined, low level. As the temperature increases, engine speed increases in proportion.

It is possible to interrupt the warming-up process at any time, simply by manually changing engine speed or by operating one of the control levers.

Warming-up takes approximately 5 to 10 minutes.

MANUAL ENGINE WARM-UP

⚠ WARNING

In cold weather, the attachment may move a little during a warming up operation, even if the machine is not being operated. Put the machine into the position for transport before starting a warming up operation.

With the engine throttle volume a quarter open, start the engine and allow it to run approximately for 5 to 10 minutes. When the coolant temperature reaches the two bars, carry out the hydraulic fluid warm-up procedure.

ENGINE OPERATION

When the engine has started and before beginning work, the following procedure must be observed:

1. Let the engine idle for about 10 minutes until it has warmed up.
2. Move the engine throttle volume to the maximum speed position.

Once normal operating temperature has been reached, check the following:

1. The exhaust smoke is normal.
2. There is no abnormal noise or vibration.
3. There are no oil, fuel or water leaks.

The operating speed of the excavator and of the attachment should be controlled by the control levers.

Check the monitor for any problems.

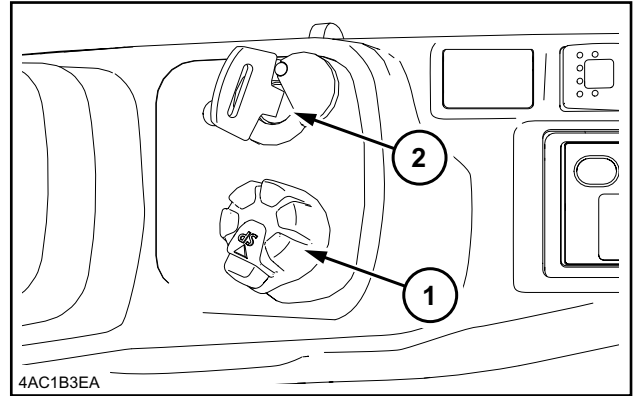
IMPORTANT: Stop the engine immediately if one of the following situations occurs:

1. Sudden increase or decrease in engine speed
2. Abnormal noise
3. Black smoke at the exhaust
4. Any engine warnings on the monitor

STOPPING THE ENGINE

1. Park the excavator on flat, solid ground and lower the attachment to the ground.
2. Turn the engine throttle volume (1) to low idle position and let the engine run for 10 minutes.

IMPORTANT: Always let the engine run at idle before switching off completely, except in emergency situations.



4AC1B3EA

Figure 9

3. Turn the starter switch key (2) to the OFF position and then remove it.

IMPORTANT: When the engine is to be shut down for a considerable length of time, see Parking the Excavator section (Page 5-24).

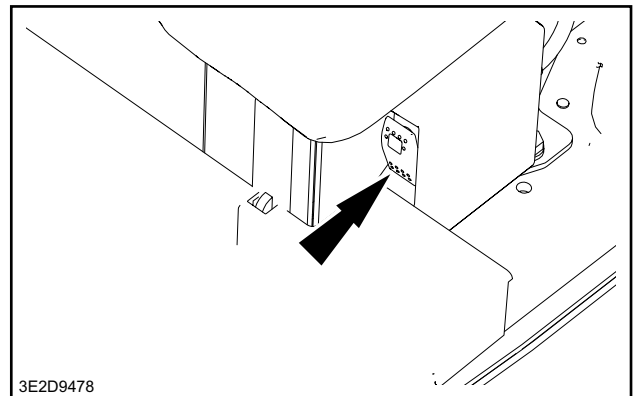
IN CASE OF EMERGENCY

In case of emergency or if the engine cannot be stopped by using the contact switch key, press the emergency stop switch in the lower left of the seat.

NOTE:

This switch should be used for emergency purpose only.

Do not usually use this switch to stop the engine.



3E2D9478

Figure 10

SCR SYSTEM

The SCR or Selective Catalytic Reduction system is used to meet the emission regulation set for Final Tier 4.

The system injects DEF (Diesel Exhaust Fluid) into the SCR Catalyst to break down the NOx (Nitrogen oxidation) in the exhaust gas into water and nitrogen which reduces the NOx and meets the emission regulation.

The SCR system automatically injects the DEF according to engine conditions so no operator interaction is needed.

IMPORTANT:

- Do not hit or stand on the muffler. The oxidation catalyst in the muffler can get damaged.
- Depending on machine usage, rust may form on the exhaust pipe and/or fasteners earlier than expected.
- Do not change the length or orientation of the exhaust pipe, muffler or air cleaner line, the function of the SCR system may be negatively affected. This engine has been certified for domestic and overseas exhaust emission regulations.
- DO NOT remove or modify any components of the exhaust emission control system.

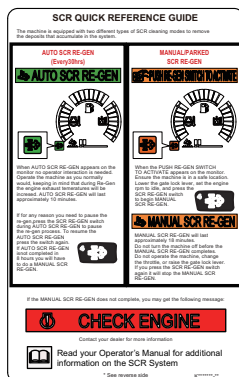
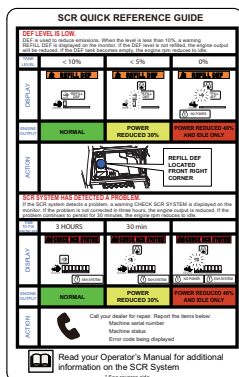
If you find any visible abnormality of the system, contact your Link-Belt dealer immediately.

CAUTION

- Do not touch the water released from the muffler. This water is slightly acidic due to the action of the oxidation catalyst built into the muffler. If the water from the muffler has come in contact with your skin, etc., rinse the affected area with ample water.

SCR QUICK REFERENCE GUIDE

There is a SCR quick reference guide card in your excavator for any operator to get an overview of the system and issues that may arise.



SCR SYSTEM WARNING MESSAGES

The SCR system is designed to reduce emissions and if any abnormalities occur it will show a message on the screen. The two messages that will appear are ("REFILL DEF") and ("CHECK SCR SYSTEM.")



The SCR System has three levels of inducements when an issue occurs. In the first inducement there is a warning or reminder that will be displayed on the monitor. In the second level of inducement the engine output will be reduced by 30%. In the final or third inducement the engine output will be reduced by 40% and the engine rpm will be reduced to idle until the issue is resolved.

There are three situations that could cause the SCR system to reduce the engine output.

1. DEF level is low
2. SCR System detects a problem
3. SCR system detects repeat problem that occurred within 40 hours since repair.

Each situation will be described over the next few pages.

SCR SYSTEM REFILL DEF

If the DEF tank gets low then the ("REFILL DEF") message will be displayed on the monitor.



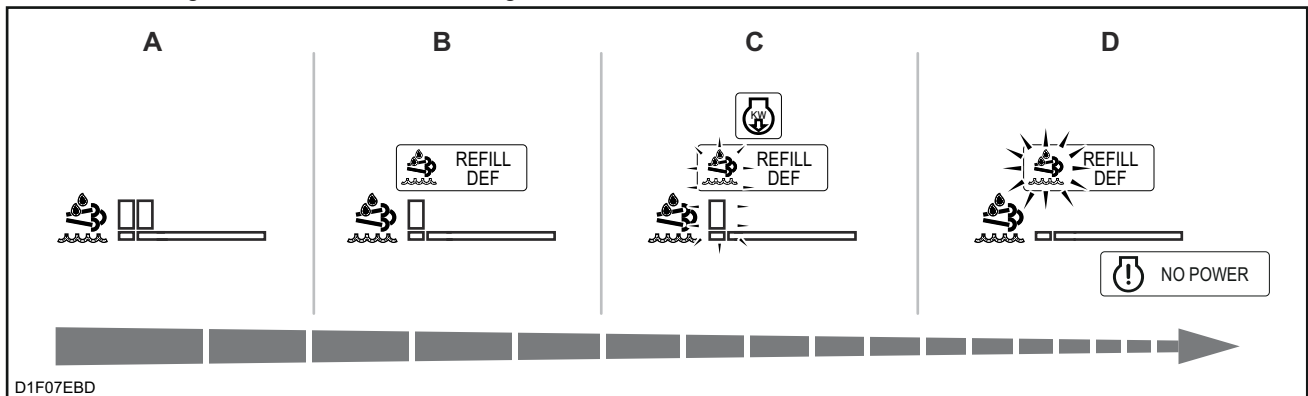
When the level of DEF is at 10% or more then the machine will be in condition A. It is always the best practice to fill up the DEF when you fill up the fuel to ensure the machine does not go into an inducement level that will reduce the SP output or engine speed.

When the remaining level of DEF is less than 10 % this machine will go into condition B with warning buzzer sounding one long beep. The message icon ("REFILL DEF") is displayed. The purpose is to prompt the operator to refill DEF.

If the remaining level decreases further below 5 %, the machine goes into condition C with warning buzzer sounding five short beeps. The engine is reduced 30% and the engine speed remains the same as on the engine throttle volume.

The ("ENGINE OUTPUT REDUCTION") is displayed and the ("REFILL DEF") gauge turns orange and starts to flash.

If the level of DEF tank gets to 0%, the machine will go into condition D with the warning buzzer sounding a continuous beep. The machine will display the ("NO POWER") icon and the ("REFILL DEF") will be red. In this condition the engine output will be reduced 40% and the engine speed will be reduced to idle only. In condition D the only way to correct this is to fill the tank above 10%. If the amount DEF added is insufficient, the restriction will continue according to the DEF tank remaining level.

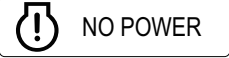


D1F07EBD

D1F07EBD

Figure 12

A	Normal
B	Abnormal
C	Early inducement
D	Final inducement

		A	B	C	D
DEF tank remaining level		10 % or more	Less than 10 %	Less than 5 %	0
Engine output		Normal	Normal	70 %	60 %
Engine speed		Unaffected	Unaffected	Unaffected	Idling only
Level gauge	(Indicator bar and icon)	2 or more	1	1 (flashing)	0
	(Indicator color)	White	Orange	Orange (flashing)	Red
REFILL DEF		None	Steady light	Flashing	Fast flashing
Output reduction icon		None	None	Displayed	None
Message icon		None	None	None	Displayed
Warning buzzer		None	One long beep	Five short beeps	Continuous beep
Text message		None	 REFILL DEF	 REFILL DEF	 REFILL DEF

WHEN DEF RUNS OUT

If the DEF tank becomes empty, follow the steps below to refill DEF:

1. Turn the starter switch to the "OFF" position and stop the engine.
2. Wipe clean any dirt, mud or other foreign objects attached around the filler port on the DEF tank.
3. Turn the cap counterclockwise to open.
4. Refill DEF up to 10 % of the DEF tank or more.
5. Turn the cap clockwise to close.
6. Once the system recognizes that DEF is added sufficiently (10 % or more), the applicable message icons turn off and the DEF gauge turns normal color (white).

NOTE:

- If the amount DEF added is insufficient, the restriction will continue according to the DEF tank remaining level.
- Please note that approx. 10 seconds is required for the system to recognize the added DEF.

"CHECK SCR SYSTEM" Warning

When the system judges that the DEF SCR system is failing to meet the requirements of the exhaust emission regulation, the machine will go into condition B and a DTC trouble code will be displayed.

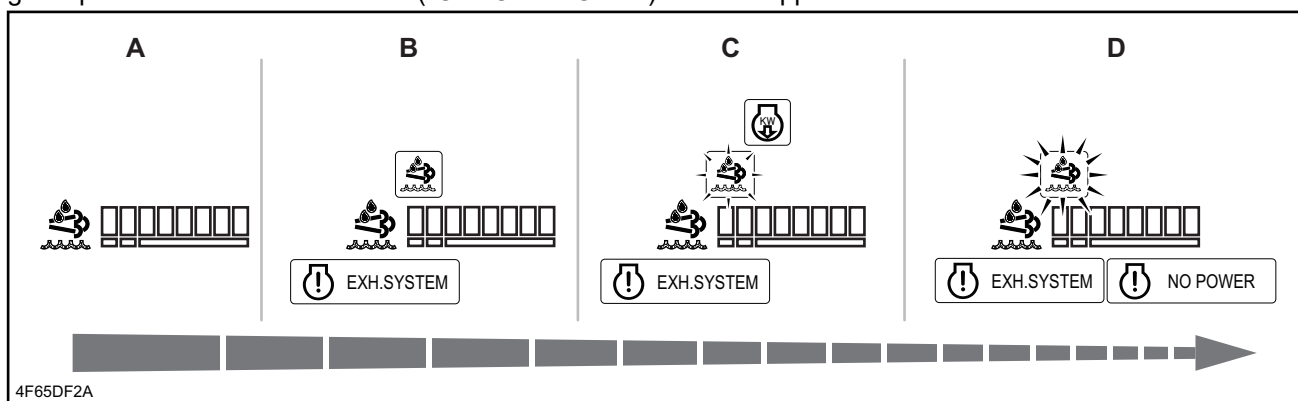


The Trouble code display determines how the problem should be handled. If ("P207F") is displayed then the system detects the DEF quality is not good enough for the system to work. Empty the tank and fill with quality DEF to correct the problem. If any other code is displayed you should contact your Link-Belt Excavator dealer immediately to correct the problem.

If the SCR system is working properly then the machine will be in condition A. If the machine detects a problem with the SCR system then ("CHECK SCR SYSTEM") will be displayed on the monitor and the machine will go into condition B, ("EXH.SYSTEM") and the SCR icon will be displayed and a warning buzzer will sound one long beep.

The machine will continue to be in condition B for 3 hours if no action to fix it is taken. After 3 hours the machine will go into condition C and the SCR icon will be flashing and the engine output icon will appear and a warning buzzer will sound three short beeps. The engine output will be reduced by 30% and engine speed will remain unaffected.

If no repairs are made to the SCR system in 30 minutes the machine will go into condition D. A warning buzzer will sound continuously and the ("NO POWER") icon will be displayed. The engine output will be reduced 40% and the engine speed will be reduced to idle. ("CHECK ENGINE") will also appear on the monitor.



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Figure 13

CHAPTER 5 - OPERATING INSTRUCTIONS

		A	B	C	D
DEF quality abnormality/SCR system abnormality			Occurred	3 hrs since B	30 min. since C
Engine output		Normal	Normal	70 %	60 %
Engine speed		Unaffected	Unaffected	Unaffected	Idling only
Level gauge	(Indicator color)	White	White	White	White
DEF icon		None	Displayed	Flashing	Fast flashing
Output reduction icon		None	None	Displayed	None
Message icon	 NO POWER	None	None	None	Displayed
Message icon	 EXH.SYSTEM	None	Displayed	Displayed	Displayed
Warning buzzer		None	One long beep	Three short beeps	Continuous beep
Text message		None	 CHECK SCR SYSTEM	 CHECK SCR SYSTEM	 CHECK SCR SYSTEM
			 CHECK ENGINE	 CHECK ENGINE	 CHECK ENGINE

SCR SYSTEM DETECTS REPEAT PROBLEM

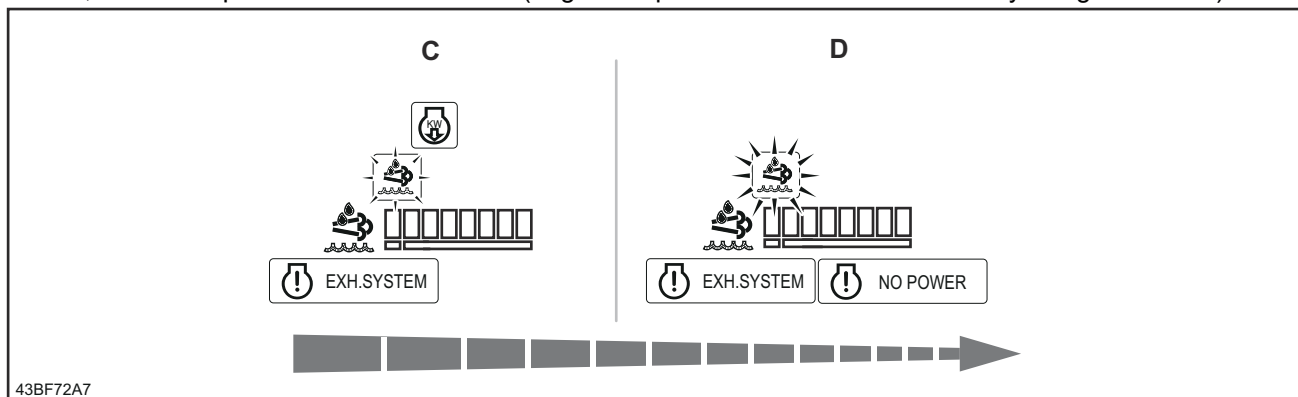
There is mandatory control required by law for the purpose of preventing attempts to avoid the operational limitations.

If any of the following occurs again within 40 hours after completion of repair or DEF (urea solution) replacement, the system immediately starts to limit machine operations.

- An SCR system abnormality is detected and the detection lasts for 10 seconds.
- The quality of DEF (urea solution) is abnormal and the detection lasts for 10 seconds.

If an abnormality is detected, the machine enters the state C immediately. The output reduction icon is displayed and the DEF icon will start to flash. In this condition, machine operation is limited (engine output is reduced to 70%).

If 30 minutes or more have elapsed in the state C without any action, this machine enters the state D. This machine displays the additional message icon ("NO POWER"). Also, the flashing speed of the DEF icon increases. In this condition, machine operation is limited further (engine output is reduced to 60% and only idling is allowed).



43BF72A7

Figure 14

C	Early inducement
D	Final inducement

		C	D
After completion of repair or DEF replacement, detection status of abnormality in SCR system is detected within 40 hours of DEF deterioration		10 seconds since the abnormality is detected	30 minutes passed. since C
Engine output		70 %	60 %
Engine speed		Unaffected	Idling only
DEF icon		Flashing	Fast flashing
DEF icon		Flashing	Fast flashing
Output reduction icon		Displayed	None
Message icon		None	Displayed
Message icon		Displayed	Displayed
Warning buzzer		Five short beeps	Continuous beep
Text message			

OUTPUT REDUCTION CANCEL

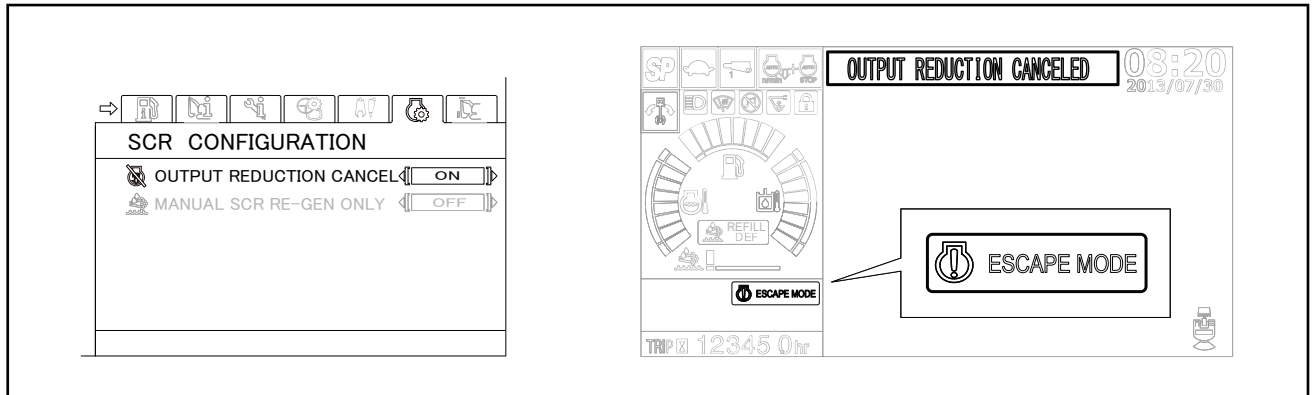
The machine is equipped with a function that overrides the engine output reduction due to "REFILL DEF" warning and "EXH.SYSTEM" warning for just 30 minutes to address an emergency situation, such as avoiding danger.

Use this function only in an emergency, and after using it, make sure to refill DEF and/or take the actions needed, immediately.

Follow the steps below to enable output reduction cancel:

With the machine in condition C, set OUTPUT REDUCTION CANCEL to "ON" in the SCR CONFIGURATION tab of the user information mode.

1. The message icon ("ESCAPE MODE") and the text message (OUTPUT REDUCTION CANCELED) are displayed. With this display, the limitation on engine output is cancelled for just 30 minutes.
2. Please note that this function is NOT available in condition D (engine output is reduced to 60 % and only idling is allowed).
3. After 30 minutes, the output will be limited again if the required actions are not taken.



99AC5E81

Figure 15

SCR RE-GEN (SCR regeneration)

The SCR system performs SCR RE-GEN automatically for each fixed operation time in order to maintain the function.

Observe the following in order to prevent deterioration of the SCR system function or damage to components.

Moreover, do not turn off the engine during SCR RE-GEN.

- Always use the recommended engine oil.
- Always use the recommended fuel.
- Always use the recommended DEF.

During AUTO SCR RE-GEN or MANUAL SCR RE-GEN (to be explained later), the operating characteristics of the engine and hydraulic systems will change and they may sound different. This is normal. During AUTO SCR RE-GEN or MANUAL SCR RE-GEN, make sure that the excavator is in a well-ventilated area.

IMPORTANT:

- Be sure to close the engine hood properly. Otherwise, the exhaust gas generated during AUTO SCR RE-GEN could melt the insulation and other material inside the engine hood, causing damage to the excavator.
- During manual SCR regeneration ⇒
The attachment may move a little during auto or manual SCR regeneration, even if the machine is not being operated. Put the machine into the position for transport before starting regeneration.

SCR RE-GEN icon

During AUTO SCR RE-GEN, an SCR RE-GEN icon is displayed to indicate the status of the operation.

According to the SCR RE-GEN status, the color and display pattern will be changed. (Refer to 4-28)

WARNING

SCR regeneration should be done in a well ventilated area to avoid accumulation of poisonous gases.

Keep away from and do not touch the SCR component, exhaust pipe, tail pipe and the exhaust gas when the engine is running, during SCR RE-GEN and immediately after the SCR RE-GEN process. Their temperatures may get high enough to burn people, ignite or melt materials.

During AUTO SCR RE-GEN, make sure that the machine is not near any flammable and explosive. Those flammables such as dried grass, paper scraps and any easily burned material near the machine could cause a fire.

Stop the engine while inspecting and carrying out maintenance on machine. Those activities during AUTO SCR RE-GEN can result in serious personal injury.

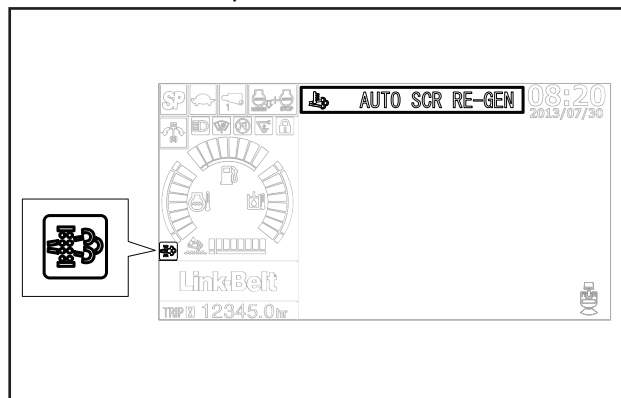
AUTO SCR RE-GEN

During AUTO SCR RE-GEN, the excavator can and should be operated. By applying a load of a working excavator, the duration of AUTO SCR RE-GEN is reduced. The operating characteristics of the engine and hydraulic systems including attachment speed may change and sound different, and white smoke may be seen from the tail pipe, but this is not an indication anything is wrong with your excavator -this is normal.

AUTO SCR RE-GEN occurs automatically about every 30 hours and does not require any operator interaction.

The text message ("AUTO SCR RE-GEN") and SCR RE-GEN icon (green) are displayed and an alarm sounds for approx. 2 seconds. AUTO SCR RE-GEN starts if the machine meets the following criteria;

- The coolant temperature is above 158 °F.
- The coolant temperature is below 194 °F.



A7F2612B

Figure 16

AUTO SCR RE-GEN takes approx. 10 minutes. The amount of time for AUTO SCR RE-GEN depends on the outside temperature, engine coolant temperature and engine load. Colder temperature will increase the amount of time to complete AUTO SCR RE-GEN.

When AUTO SCR RE-GEN completes, the SCR RE-GEN icon (green) and the text message ("AUTO SCR RE-GEN") disappears.

AUTO SCR RE-GEN will be stopped if any of the following occurs:

- Pressing the SCR RE-GEN switch will suspend AUTO SCR RE-GEN process. SCR RE-GEN icon disappears and a text message ("PUSH SCR SWITCH TO ACTIVATE") is displayed. Pressing the SCR RE-GEN switch again will resume the process.
- The coolant temperature drops below 149 °F. The SCR RE-GEN icon starts to flash in green and an alarm sounds for approx. 2 seconds. When the engine coolant temperature is above the 158 °F, AUTO SCR RE-GEN will be resumed.

- When the engine coolant temperature rises above 212 °F, SCR RE-GEN icon starts to flash in green. Lower the throttle to idle and check the coolant. If the engine coolant temperature drops below 194 °F, the AUTO SCR RE-GEN will be resumed.

NOTE:

Do not keep operating machine with SCR AUTO RE-GEN process suspended, otherwise, the SCR system could be damaged.

Resume the AUTO SCR RE-GEN process as soon as possible.

If AUTO SCR RE-GEN is suspended or not completed for 8 hours, the SCR RE-GEN icon will flash in orange and MANUAL SCR RE-GEN will be requested, but this is not an indication anything is wrong with your excavator - this is normal.

WARNING

Damage to the engine and the emissions system can occur if normal operation of the excavator occurs when the SCR RE-GEN icon is flashing in orange. Move the excavator to a well ventilated area and activate Manual SCR RE-GEN as soon as possible.

WARNING

Do not leave the excavator unattended during AUTO SCR RE-GEN.

During manual SCR regeneration ⇒

The attachment may move a little during auto or manual SCR regeneration, even if the machine is not being operated. Put the machine into the position for transport before starting regeneration.

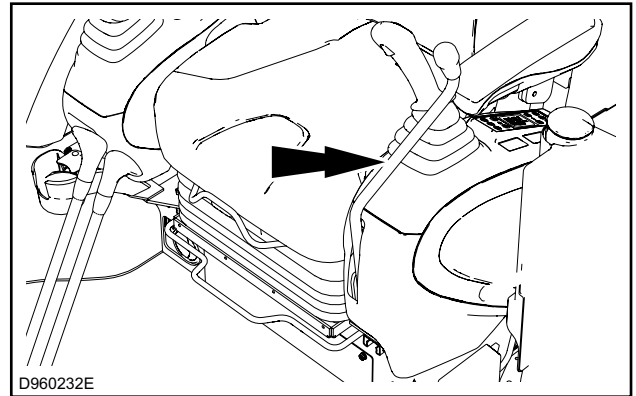
MANUAL SCR RE-GEN

During MANUAL SCR RE-GEN, the excavator cannot be operated. When MANUAL SCR RE-GEN is requested, the SCR RE-GEN icon flashes in orange, the audible alarm sounds for approx. 2 seconds and the text message ("PUSH SCR SWITCH TO ACTIVATE") is displayed.

To activate MANUAL SCR RE-GEN:

1. Move the excavator to a well ventilated area.

2. Set the gate lock lever to the locked position (controls inactive).

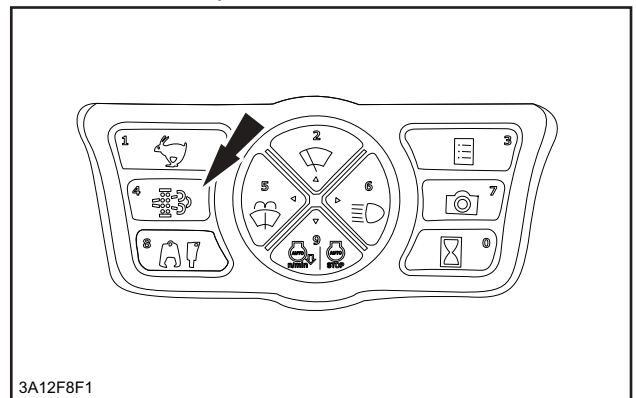


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Figure 17

3. Set the engine rpm throttle at idle.

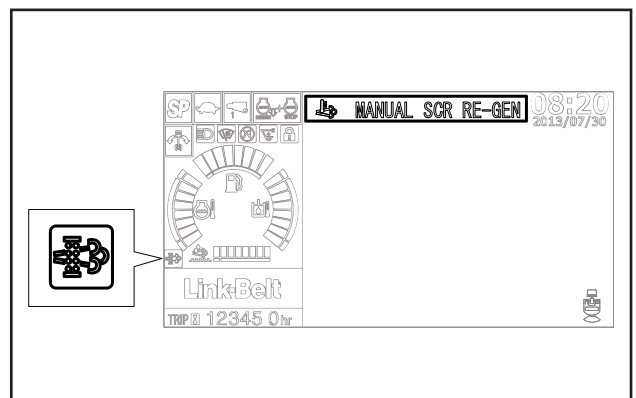
4. Press the SCR RE-GEN switch to start MANUAL SCR RE-GEN process.



3A12F8F1

Figure 18

When MANUAL SCR RE-GEN is initiated, the SCR RE-GEN icon will illuminate orange and the audible alarm will sound for 2 seconds.



85D9A006

Figure 19

The following messages will appear on the monitor during MANUAL SCR RE-GEN : "MANUAL SCR RE-GEN" and "DO NOT OPERATE".

MANUAL SCR RE-GEN may take approx.18 minutes. When MANUAL SCR RE-GEN is complete, the SCR RE-GEN icon and the messages will disappear, MANUAL SCR RE-GEN will be stopped if any of the following occurs:

- The gate lock lever is set to the unlocked position (controls active).
- The engine throttle position is changed.
- The SCR RE-GEN switch is pressed.

The SCR RE-GEN icon starts to flash in orange and the text message ("PUSH SCR SWITCH TO ACTIVATE") is displayed.

IMPORTANT:

Do not keep operating machine with MANUAL SCR RE-GEN process suspended, otherwise, the SCR system could be damaged.

Resume MANUAL SCR RE-GEN process as soon as possible.

MANUAL SCR RE-GEN will be disabled if any of the following occurs:

- MANUAL SCR RE-GEN is not started within 10 hours after the message to request MANUAL SCR RE-GEN ("PUSH SCR SWITCH TO ACTIVATE") is displayed.
- MANUAL SCR RE-GEN process is not completed within 40 minutes after it is started.

An alarm sounds for approx. 2 seconds and SCR RE-GEN icon ("CHECK ENGINE") turns red.

The text message ("CHECK ENGINE") and the error code are displayed on the monitor. This condition indicates failure, which requires repair. Contact your Link-Belt excavator dealer immediately.

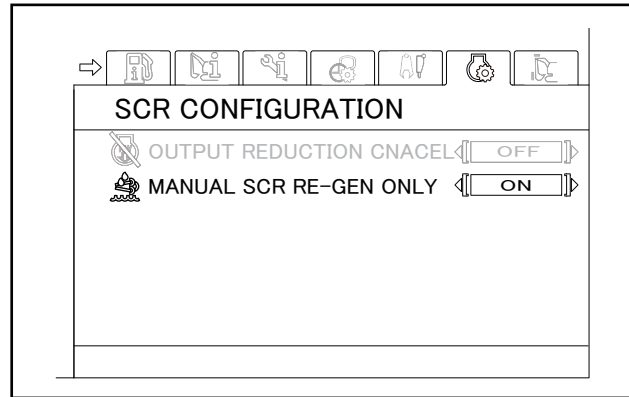
MANUAL SCR RE-GEN mode

The purpose of this function is to avoid high temperature exhaust under the situations below:

- Inside building
- In transit over a long period of time with the engine installed
- In an area near combustibles or explosives.

To activate MANUAL SCR RE-GEN mode:

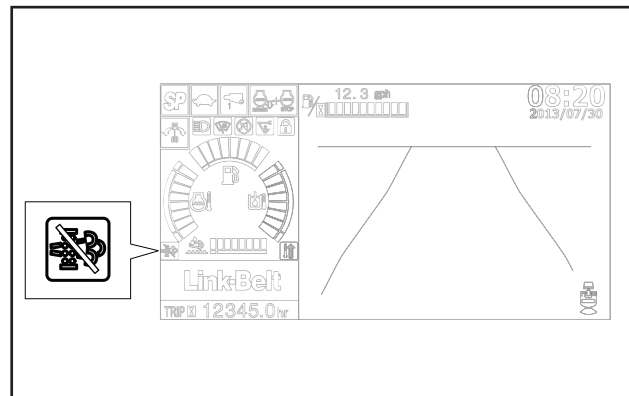
- Select the SCR CONFIGURATION tab in the user information mode, and select "ON".



AF5EAC4A

Figure 20

NOTE: This function is just suspending AUTO SCR RE-GEN that occurs every 30 hours. So, even with this function, the system will request MANUAL SCR RE-GEN if AUTO SCR RE-GEN is suspended for 8 hours. Use this function only when it is necessary to avoid AUTO SCR RE-GEN for safety purpose.



90A9D403

Figure 21

OPERATING THE EXCAVATOR IN COLD WEATHER

Follow the recommendations made below:

BATTERY

It must be fully charged.

FUEL

1. To prevent condensation forming and water getting into the fuel system, fill the fuel tank after each day's work and drain off any water before starting the next day's work.
2. To prevent crystals forming at 28.4 °F (-2°C), use fuel which is rated for the ambient temperature or add an appropriate antifreeze to the fuel. See the Lubrication/Filters/Fluids section (Page 7-1).

ENGINE OIL

Use only CJ4 low-ash. See the Lubrication/Filters/Fluids section (Page 7-1).

HYDRAULIC FLUID

The viscosity must correspond to the ambient temperature conditions. See the Lubrication/Filters/Fluids section (Page 7-1).

COOLANT SOLUTION

It should be suitable for the ambient temperature and contain a minimum of 50% ethylene glycol solution. See the Lubrication/Filters/Fluids section (Page 7-1).

OPERATING THE EXCAVATOR IN HOT WEATHER

Follow the recommendations made below:

1. Keep the coolant at the correct level in the coolant reservoir and in the radiator.
2. Use the correct solution of ethylene glycol and water in the cooling system.
3. Test the radiator cap before hot weather starts. Replace the cap as required.
4. Clean all dirt and debris from the radiator, cooler and engine area.
5. Check the condition of the fan belt.
6. Check the dust valve in the air cleaner frequently during extreme dust conditions.
7. Use lubricants of the correct viscosity. See Fluids and Lubricants section (Page 7-1).

BASIC OPERATION

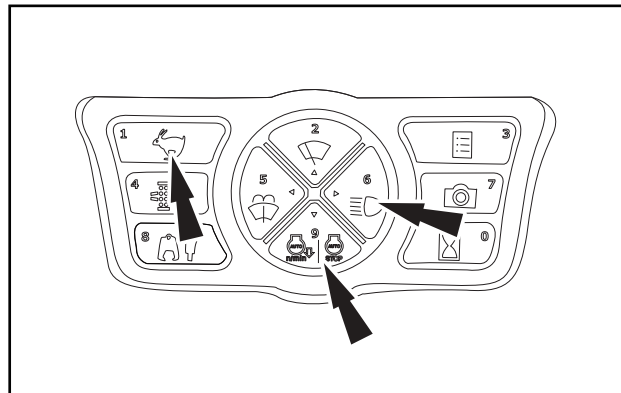
1. Take up position in the operator's seat and adjust it so all the controls are readily accessible. See Operator's Seat section (Page 4-6). Fasten your safety belt.
2. Make sure the cab door is firmly latched in closed position.
3. Sound the horn.
4. Start the engine, considering the prevailing weather conditions. See Starting the Engine section (Page 5-5).
5. Engage the gate lock lever.

SWING LOCK

The swing lock can be set to keep the upperstructure from swinging.

TO SET THE SWING LOCK

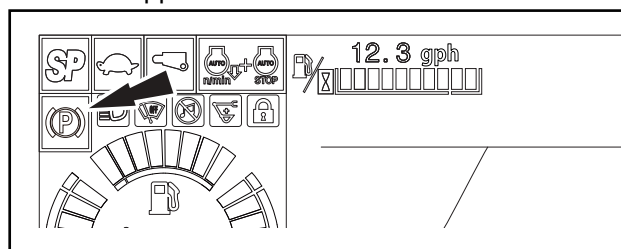
1. On the control panel press and hold the Auto-idle, working light, and the travel speed for 3 seconds.



44CA8380

Figure 22

2. "P" will appear on the monitor.



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Figure 23

3. To turn the swing lock off press the three buttons again to reset the lock.

BLADE INTERFERENCE (BLADE TYPE)**⚠ CAUTION**

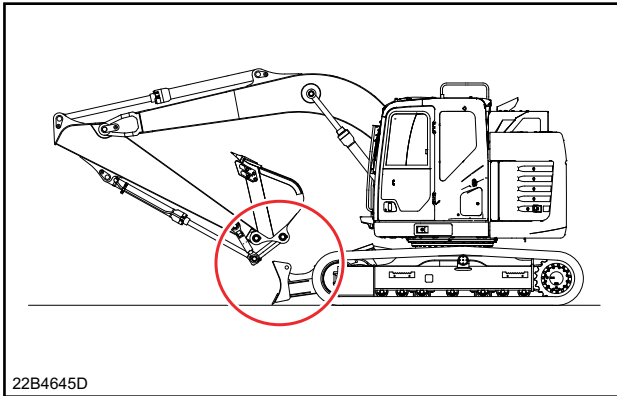
Check the safety of the work range before starting the blade operation.

Lift the blade before start traveling the machine.

Lower the blade while the machine is parked.

Check the safety during the operation. In addition, pay close attention to the lever operation.

When folding the attachment during travelling and transferring, pay close attention to the interference of the blade and the bucket.



22B4645D

Figure 24

EXCAVATOR TRAVEL

⚠ WARNING

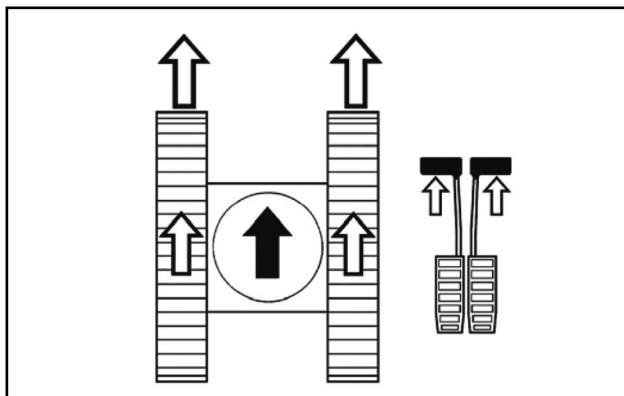
In normal travel position, the cab is above the idler wheels and the travel reduction gears are to the rear of the upperstructure. If the upperstructure is turned 180 ° in relation to the undercarriage, the controls are reversed.

IMPORTANT: Before any travel operation, raise the attachment.

NOTE: Travel speed depends on the tilting angle of the levers and the travel mode speed selected. See High Speed Travel Switch in Instruments and Controls (Page 4-48).

1. Straight line travel (Forward Travel)

Press the two pedals (or push the two levers) forward at the same time.

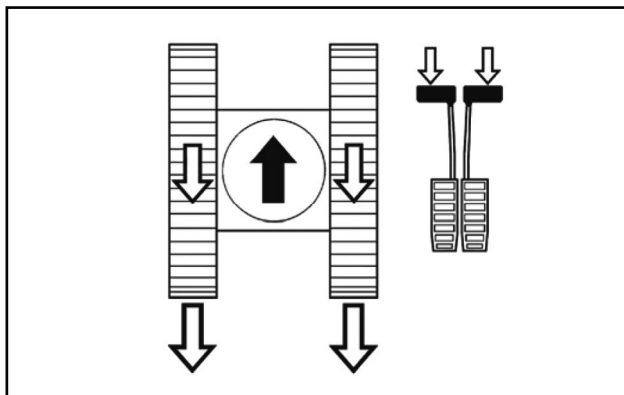


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Figure 25

2. Straight line travel (Reverse Travel)

Press the two pedals (or push the two levers) rearward at the same time.

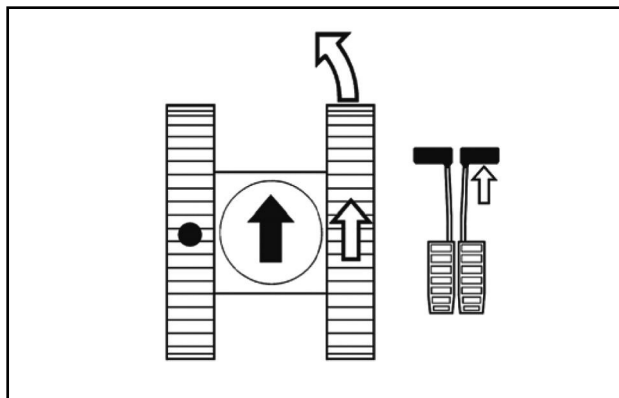


1AB79B49

Figure 26

3. Turning left (Forward Travel)

Simply press the right-hand pedal or the right-hand lever forward.

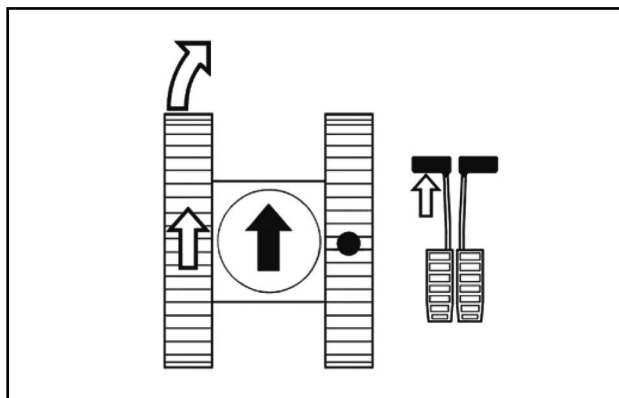


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Figure 27

4. Turning right (Forward Travel)

Simply press the left-hand pedal or the left-hand lever forward.

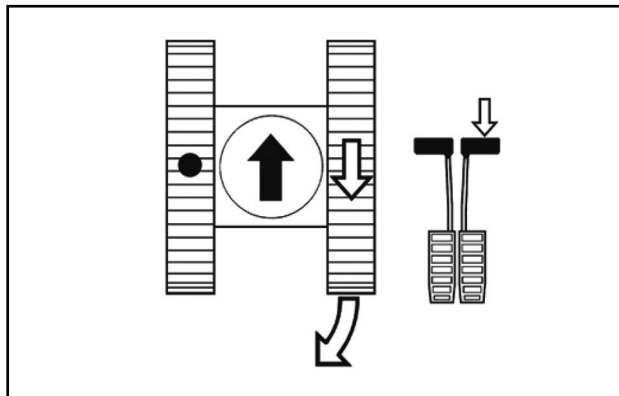


991F2D8F

Figure 28

5. Turning left (Reverse Travel)

Simply press the right-hand pedal or the right-hand lever rearward.

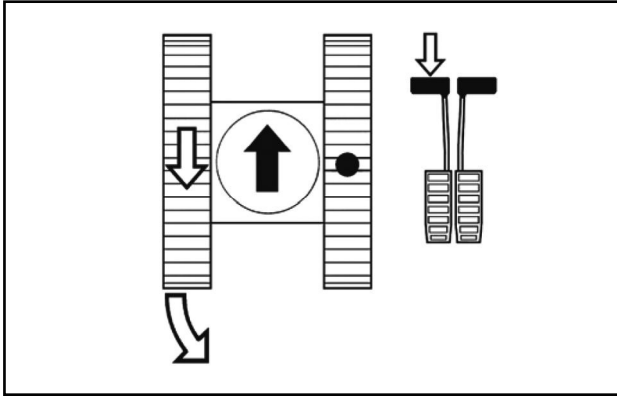


A33E3917

Figure 29

6. Turning right (Reverse Travel)

Simply press the left-hand pedal or the left-hand lever rearward.



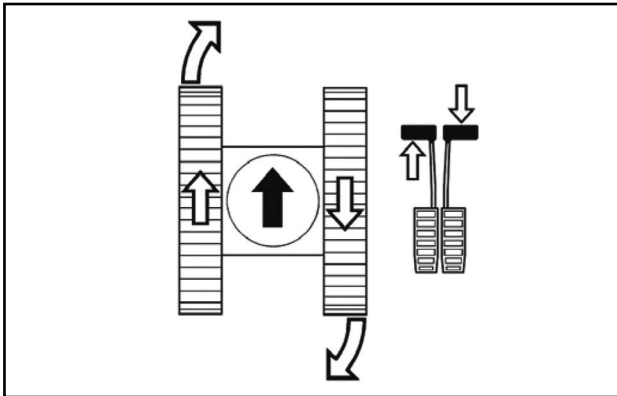
B8DD9902

Figure 30

7. Turning on the spot, to the right

Press the left-hand pedal or the left-hand lever forward and at the same time press the right-hand pedal or the right-hand lever rearward.

IMPORTANT: Turning on the spot cannot be done if high speed travel is selected.



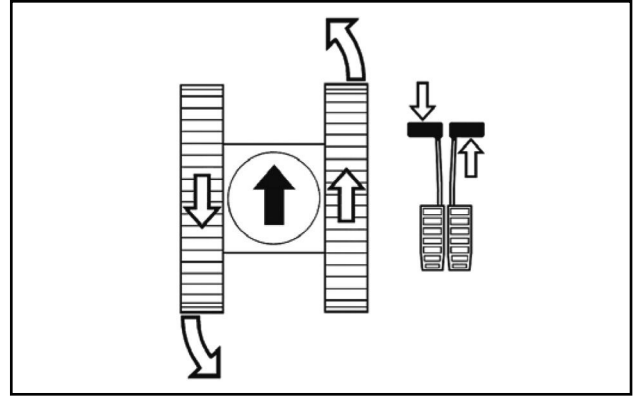
E9A94A47

Figure 31

8. Turning on the spot, to the left

Press the right-hand pedal or the right-hand lever forward and at the same time press the left-hand pedal or the left-hand lever rearward.

IMPORTANT: Turning on the spot cannot be done if high speed travel is selected.

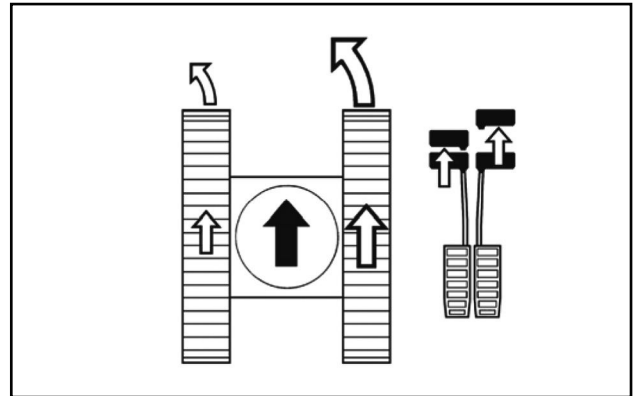


F00DD93F

Figure 32

9. Gradual turn on the move

Press one of the pedals or one of the levers and, at the same time, press the other pedal or the other lever in the same direction, but slightly harder.



F161FE57

Figure 33

10. Stopping travel

To come to a complete halt, simply release the levers or pedals and they will return to neutral.

SELECTION OF TRAVEL SPEED

Switch the travel mode in accordance with usage situation (Page 4-19).

The travel speed varies with a tilting angle of the travel control lever and pedal and with the selected travel speed mode.

! WARNING

- Switching the travel mode while the machine is traveling may cause the travel direction to deviate.
- Switch the travel mode after the machine has stopped traveling.

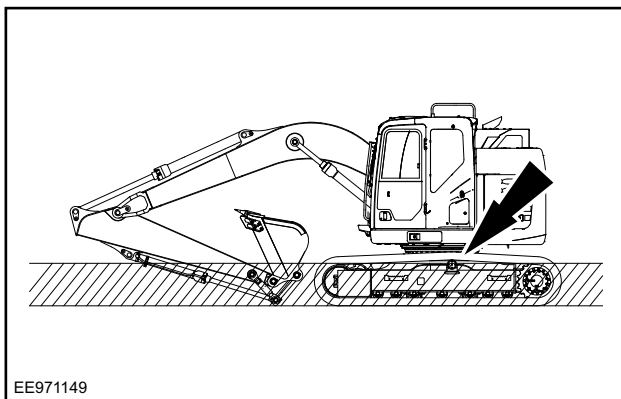
OPERATING THE EXCAVATOR IN WATER

1. Make sure that the bottom of the stream or stretch of water in which you will work can support the weight of the excavator.
2. Only the undercarriage may be below water level. The maximum water level can be up to the height of the tracks.

IMPORTANT: Never work in water if the water level is higher than the upper roller.

3. Before immersing the excavator, inject large quantities of fresh grease into the attachment linkages and also on the turntable and its gear teeth.

IMPORTANT: Do not operate in a fast flowing stream.



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EE971149

Figure 34

PARKING THE EXCAVATOR

1. Position the excavator on flat, level ground.
2. Place the upperstructure in line with the undercarriage.
3. Lower the attachment to the ground.
4. Turn the engine throttle volume to low idle position and let the engine run for approximately 5 minutes.
5. Shut down the engine and remove the key.

NOTE: There is a pump operation sound for sucking back DEF in hoses of DEF system back to the tank when the ignition key is turned OFF.

6. Raise the gate lock lever.
7. Lock the cab door and make sure the hoods, lower panels and side doors are properly fastened.
8. Check that no part of the excavator is encroaching on the highway. If this cannot be avoided, set up approved traffic signs.

WARNING

Never jump down from the excavator. When leaving from the cab, or from the upperstructure, always face the excavator and use the steps and access handles.

OPERATING THE EXCAVATOR ON SLOPING GROUND

WARNING

Hillside operations can be dangerous. Rain, snow, ice, loose gravel, soft ground, etc. modify terrain conditions. It is up to you to decide if the excavator can be used in perfect safety.

During hillside operations, be extra careful.

Make sure the low speed travel is selected.

When digging on a slope, avoid swinging the upperstructure towards the bottom of the slope with the bucket full. Always keep the travel reduction gears pointing towards the bottom of the slope.

Always travel in the same direction as the slope, to prevent the excavator from turning over.

TOWING THE EXCAVATOR

Towing is only authorized when the excavator has broken down.

Contact your Link-Belt Dealer for proper towing procedures.

First, make sure it can be towed without risk of further damage.

As much as possible try to carry out repairs on spot or contact your Link-Belt Dealer.

WARNING

Towing is a delicate operation which is always carried out at the risk of the user. The manufacturer's warranty does not apply to incidents or accidents which occur during towing. Where possible, carry out the repairs at the site.

WARNING

The excavator must be towed very slowly, over a short distance and only if it is unavoidable.

WARNING

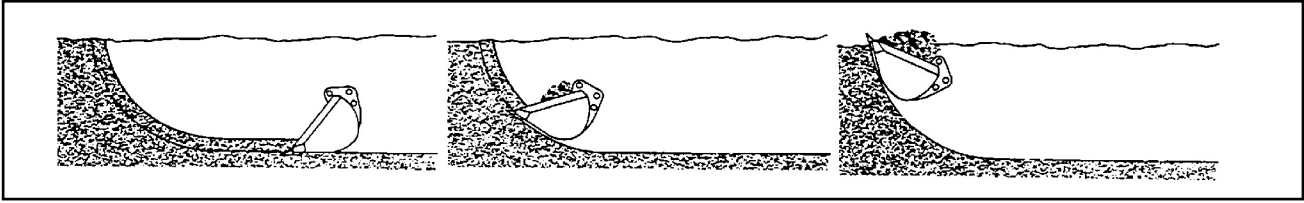
The operator must be the only person on the excavator when towing. Make sure nobody else is on the excavator or within its working range.

OPERATING THE BUCKET

FILLING

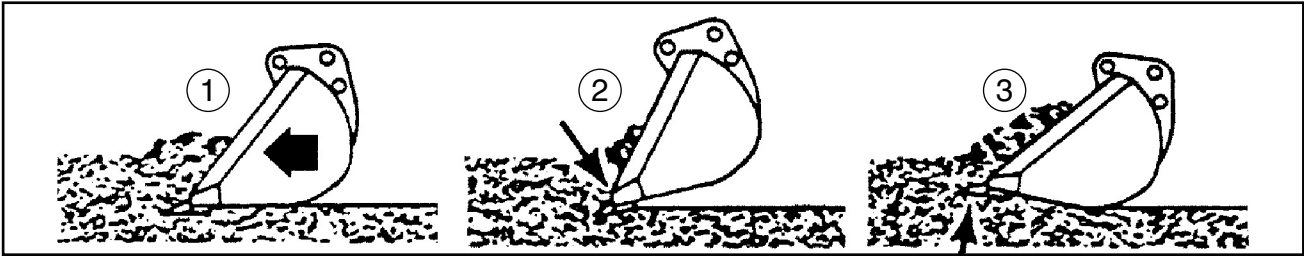
Fill the bucket by operating the arm. Keep the bottom of the bucket parallel to the cut. The bucket teeth and blade must cut the ground like the blade of a knife. The depth of dig varies depending on the type of material.

EXCAVATING METHOD



4041BCFD

Figure 35



6A2FD976

Figure 36

1. CORRECT
2. INCORRECT: The bucket will dig in and cause a stall.
3. INCORRECT: The bucket is pushed upward. This will also increase the cycle time.

LOAD HANDLING

WARNING

During load handling operations, it is very important to adhere strictly to the instructions given in this manual and local legislation.

Failure to comply could result in death or serious injury.

When handling loads, be sure to do the following:

- Park the excavator on a flat, firm, level surface.
- It is forbidden to weld hooks or lugs on the bottom plate of buckets.
- Use slings and chains which are in perfect condition, suitable for lifting the load to be handled and fitted with safety type hooks that will not accidentally open.
- Check that the safety valves function correctly.
The pressure setting must be checked every 6 months, in conformance with prevailing regulations and/or the maker's instructions.
Contact your Link-Belt Dealer.
- Select the "H" work mode. Refer to page 4-9.
- Do not exceed the limits shown on the lifting capacities chart.
To obtain a lifting capacities chart, contact your Link-Belt Dealer, giving full particulars of the excavator model number, the weight of the counterweight, plus the length and type of boom and arm.
- Do not allow anyone within the excavator's operating radius.
- Operate the controls smoothly to ensure precise movement of the attachment and the excavator.
- Stabilize the load a few centimeters above the ground to make sure it is perfectly balanced before trying to move it.
- All movements must be sure and smooth.

When travelling with a load, make sure you do the following: Place the upperstructure in line with the undercarriage.

- Bring the load as close as possible to the undercarriage and the ground.
- Be sure all travel is undertaken in slow speed only.

LIFTING CAPACITIES CHART

The lifting capacities chart (located in the cab) shows the different permitted loads which can be lifted, depending on the reach and the type of attachment on the excavator.

The excavator must be on a flat, level, hard surface.

Loads are in daN (1 daN = 2.25 lb) for an excavator with bucket, bucket cylinder rod completely extended and for full upperstructure swing, with a built-in safety margin factor of:

- 33% on stability,
- 15% on hydraulic limits,

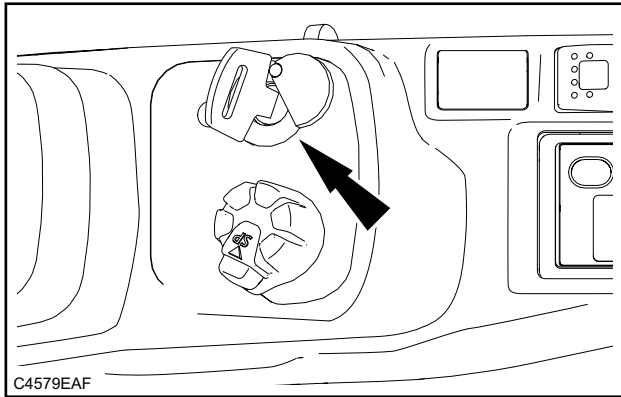
taking the connecting rod eye as the load fixing point.

NOTE: The loads given are valid for the total working range height at the reach point indicated.

LOWERING THE ATTACHMENT IN THE EVENT OF A EXCAVATOR FAILURE

If the engine fails, use the following procedure to lower the attachment:

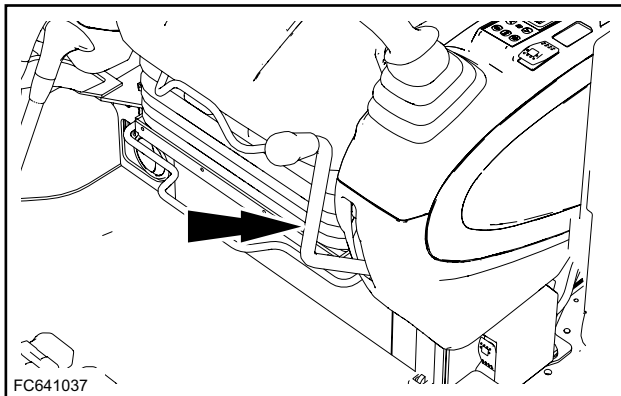
1. Turn the starter switch key to the ON position.



C4579EAF

Figure 37

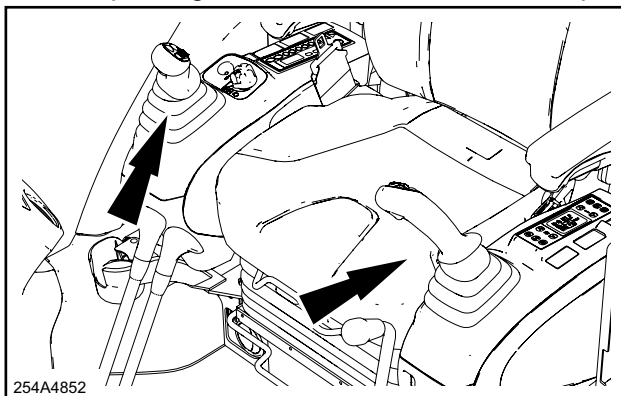
2. Lower the gate lock lever (safety bar) (operable state).



FC641037

Figure 38

3. Place the control lever(s) in the position corresponding to the downward movement required.



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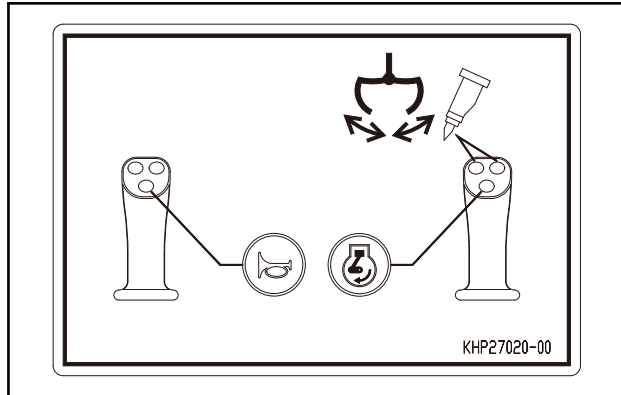
Figure 39

AUXILIARY HYDRAULIC CIRCUITS

The following factory installed auxiliary hydraulic circuits are offered on the X4 Series.

Contact your Link-Belt dealer to ensure what auxiliary hydraulic circuits are on your excavator.

The decal in the cab will show how the auxiliary hydraulics are controlled.



F87E1FF8

Figure 40

SINGLE-ACTING AUXILIARY HYDRAULICS (SAH)

SAH provides one-way hydraulic flow for tools such as breakers, vibratory pile drivers and plate compactors. Hydraulic oil flows in one direction only. Available with either control lever or foot pedal activation control of the hydraulic tool.

THUMB AUXILIARY HYDRAULICS (TAH)

TAH provides double-acting hydraulic flow for thumbs only. Hydraulic oil flows in either direction. Available with control lever button activation of the thumb only. Foot pedal activation is not available for TAH. Tubing extends to the end of the boom only.

! WARNING

The use of Thumb Auxiliary Hydraulics to operate single-acting hydraulic tools will cause damage to the tool if hydraulic flow is reversed. Never connect tools designated as single-acting flow to Thumb Auxiliary Hydraulics.

MULTI-FUNCTION AUXILIARY HYDRAULICS (MFH)

MFH provides both single-acting and double-acting hydraulic flow for tools such as breakers and grapples. Hydraulic oil flows one-way for single-acting tools; oil flows in both directions for double-acting tools.

Available with control lever button activation of the hydraulic tool foot pedal activation not available for MFH.

! WARNING

When single-acting hydraulic tools are installed on an excavator equipped with Multi-Function Auxiliary Hydraulics, care must be taken to select the proper auxiliary setting. Only use the auxiliary setting indicated by the breaker icon for single-acting hydraulic tools. The use of Multi-Function Auxiliary Hydraulics for single-acting hydraulic tools will cause damage to the tool if hydraulic flow is reversed. See TO SELECT THE FLOW RATE OF THE PUMP (Page 5-31).

MULTI-FUNCTION AUXILIARY HYDRAULICS WITH IN-CAB PRESSURE CONTROL

An optional In-Cab Pressure Control version of MFH is available from the factory. This system allows in-cab control of pressure settings to the auxiliary circuit.

SECONDARY AUXILIARY HYDRAULICS (SAH)

SAH provides low-flow for functions such as rotate or tilt. Hydraulic oil flows in either direction. Available with control lever button activation of the hydraulic tool (foot pedal activation not available for Secondary Auxiliary Hydraulics). In-cab flow control not available for SAH.

COMBINATION AUXILIARY HYDRAULICS (CAH)

CAH combines multi-function and secondary auxiliary hydraulics. Optional in-cab pressure control version available. Available with control lever button activation for both primary and secondary auxiliary functions (foot pedal activation not available for CAH).

AFTERMARKET AUXILIARY HYDRAULIC KITS

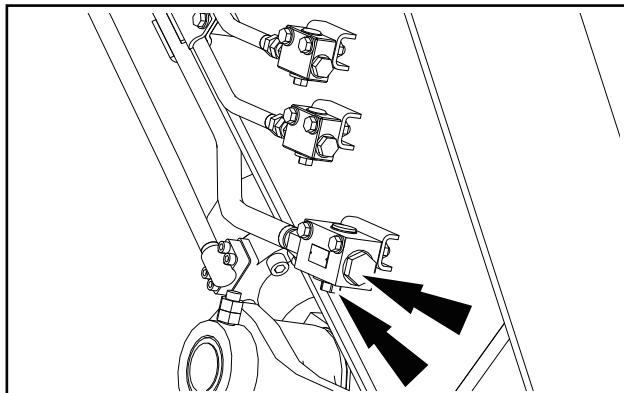
Contact your Link-Belt dealer for approved aftermarket auxiliary hydraulic kits.

From the factory, the X4 Series excavator is equipped with an auxiliary spool in the main control valve; brackets for auxiliary tubing on the attachment; control lever buttons are pre-wired for control of hydraulic tools.

ACTIVATING SINGLE-ACTING AUXILIARY HYDRAULICS

IMPORTANT: Always test the controls in a safe location before starting work.

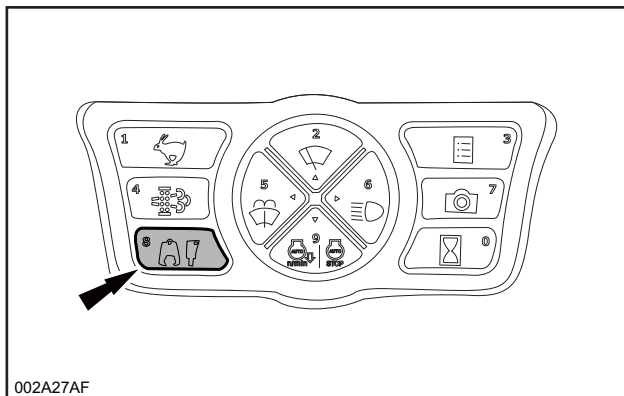
1. After the necessary tool connections are made open the supply valve at the end of the arm.



06A3107A

Figure 41

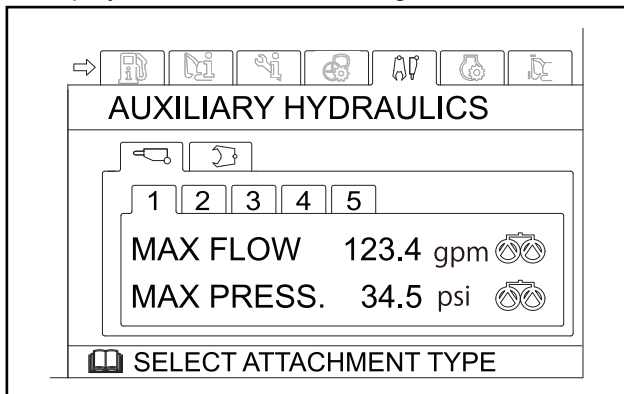
2. Press the auxiliary hydraulic attachment select button. The button will toggle between breaker or single acting mode, crusher or double acting mode, or digging mode which turns the auxiliary hydraulics off. The mode selected will be displayed on the monitor.



002A27AF

Figure 42

3. The icon of the auxiliary attachment hammer will be displayed on the monitor, along with the set flow.

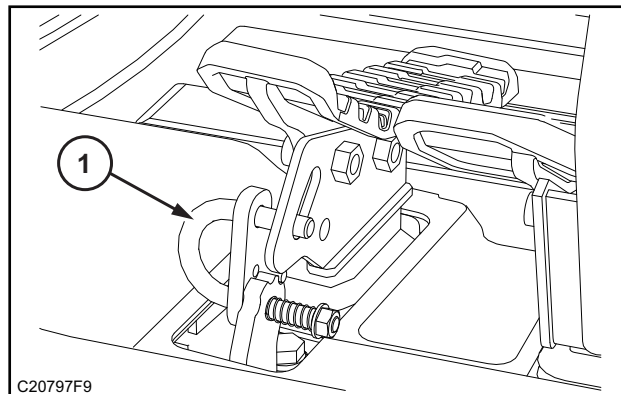


46EC244D

Figure 43

4. To activate the single flow hydraulics use the right pedal or the right control lever.

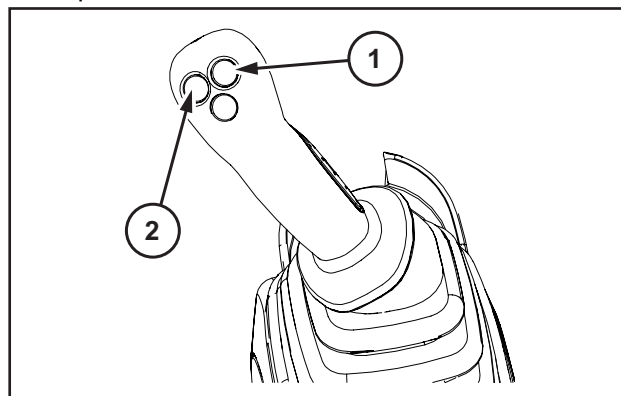
- To use the right pedal
Unlock the right pedal, and insert the pin (1) as shown in the figure to make it operable.



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Figure 44

- To use the right control lever
Use (1) and (2) on the right operation lever to operate it.



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Figure 45

IMPORTANT:

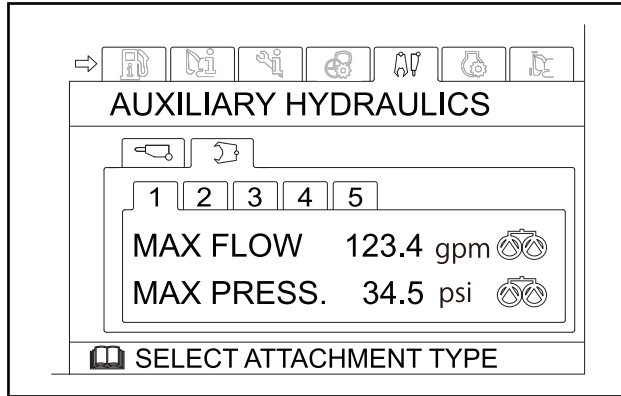
During work in bucket mode, do not use the hydraulic circuit of the option.

Otherwise, a buzzer sounds, and a warning message "AUXILIARY SET-UP REQUIRED" appears.

Stop work immediately, and check the hydraulic circuit settings of the option and the attachment.

AUXILIARY HYDRAULIC CRUSHER/DOUBLE FLOW

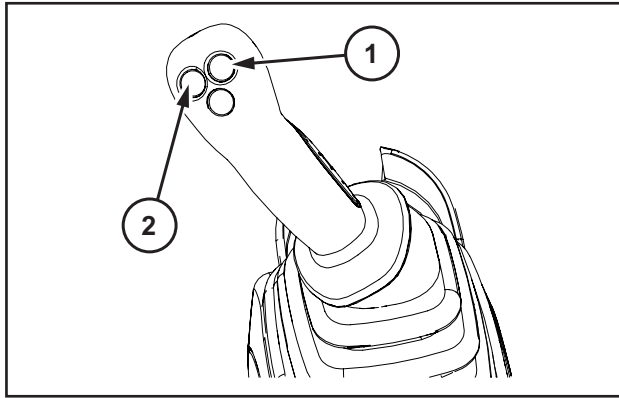
1. After the necessary tool connections are made open the supply valve at the end of the arm.
2. Select the auxiliary hydraulic attachment select button. Each time it is pressed one of the different types of flow patterns is displayed on the monitor.
3. The icon of the auxiliary attachment crusher will be displayed on the monitor, along with the set flow.



F57C25D9

Figure 46

4. To activate the double flow hydraulics use the right control lever buttons (1) and (2).



9173F7CC

Figure 47

TO SELECT THE FLOW RATE OF THE PUMP

If the machine is equipped with any optional end attachment (breaker, reciprocal, combined) available for the specification of the machine, the flow rate/pressure of hydraulic oil can be set according to the equipment specifications used.

Up to five patterns can be set and stored beforehand, so you can change the flow rate/pressure of hydraulic oil by simply pressing a desired switch according to the end attachment used.

Refer to "AUXILIARY HYDRAULICS CONFIGURATION"

NOTE: To change the specification of the machine, contact your Link-Belt Dealer.

HYDRAULIC EXCAVATOR QUICK COUPLER OPERATION

Quick couplers provide quick and easy removal and reinstallation of buckets, breakers, hammers, rippers, and other work tools/devices on the end of an excavator arm. With this convenience comes the responsibility to ensure these work tools/devices are properly secured and cannot accidentally or inadvertently be dropped thereby placing nearby workers in harms way.

- Read, understand, and follow the operating and safety instructions provided by the coupler manufacturer.
- Follow the coupler manufacturer's instructions for ensuring the bucket, breaker, hammer, ripper, or other device has been properly coupled to the excavator's arm.
- Conduct the coupler manufacturer's test to ensure the bucket, breaker, hammer, ripper, or other work tool/device has been properly coupled to the excavator's arm before use. Conduct this test each time a work tool/device is installed.
- Always use and install the independent secondary retention system if applicable.
- Never swing the bucket, breaker, hammer, ripper, or other work tool/device over anyone. Never let anyone under the bucket, breaker, hammer, ripper, or other work tool/device. Never allow the bucket, breaker, hammer, ripper, or other work tool/device to be used for transporting or lifting persons.
- Only use quick couplers recommended and sized for your excavator.
- Quick couplers decrease the lift capacity of your excavator.
- Quick couplers change the working ranges and the reach of the excavator. The bucket, breaker, hammer, ripper, or other device could come in contact with the cab or boom.
- Work tool/device lifting eyes are not to be used while the work tool/device is attached to the coupler.
- When using the coupler's lifting eye, the work tool/device must be removed from the coupler.

LONG FRONT ATTACHMENT OPERATION

The long front attachment is designed for operation in loose, light materials. The following are situations to avoid that could cause damage to your attachment:

- Avoid sudden stopping or starting of the attachment. Always come to a gradual stop with the attachment.
- Do not use the attachment to level or sweep any materials.
- Always work on a level ground.
- If the standard excavator is changed to a long front or a long front changed to a standard excavator, contact your Link-Belt Dealer for assistance. The attachment, counterweight, and pressure settings all have to be changed.
- Only use the specified bucket on the long front. Do not attach any special tools, like a hammer or breaker without first contacting your Link-Belt Dealer and the LBX Company LLC.
- Always use and install the transport link when traveling the excavator.
- When working in slurry material it may be necessary to open the bucket completely to dislodge the material. Continued banging of the bucket can cause damage to the arm. If necessary stop and clean the bucket.
- Do not load the bucket by traveling the excavator rearward.
- Never use the excavator with the counterweight or the attachment removed.
- Do not lift loads with the arm, attach slings, chains or ropes to the lifting eye of the bucket only.
- Do not apply down pressure on the attachment to lift the excavator.

CHAPTER 6 - SERVICING INTERVALS

SERVICING INTERVALS

Respect the maintenance intervals by checking the hourmeter every day. Before starting maintenance, park the excavator on flat, firm ground, away from any obstacles, with the arm retracted and the bucket on the ground. Unless otherwise specified, all maintenance operations must be carried out with the engine stopped, and the key removed from the starter switch. It is preferable to wait for all circuits to cool down before starting work.

Clean the grease fittings before lubrication. Clean around plugs and filler holes before adding fluid. No dust or dirt must enter the components or the circuits. Wear suitable clothing and remember to use the necessary safety equipment.

⚠ WARNING

There is a risk of serious injury if maintenance or repairs are not carried out correctly. If you do not understand maintenance procedures, contact your Link-Belt Dealer.

⚠ WARNING

If the attachment is raised or if the excavator moves without an operator, serious injury can result. Before performing any maintenance, proceed as follows:

1. Park the excavator on flat, level ground.
2. Lower the attachment until it is resting on the ground.
3. Shut down the engine and remove the starter key switch.
4. Lock the tracks to prevent any excavator movement.

⚠ WARNING

Be sure all the service operations in this section are carried out punctually at the intervals given, in order to ensure optimum performance levels and maximum safety when using the excavator.

When carrying out service work on the excavator, place a DO NOT OPERATE tag on the instrument panel. Never climb down from the cab leaving the engine running.

Any modification to this excavator without prior authorization could cause serious injury. Do not make any modifications without authorization. Contact your Link-Belt Dealer.

IMPORTANT: If you use your excavator in particularly harsh conditions (dusty or corrosive atmosphere, etc.), the servicing intervals should be reduced accordingly.

IMPORTANT: Take particular care to replace all filters regularly. Clean filters mean longer engine running life.

IMPORTANT: Oil and fluid should not be thrown on the ground. They must be stored and removed by a company which is responsible for their recycling or their disposal.

SERVICE SPECIFICATIONS

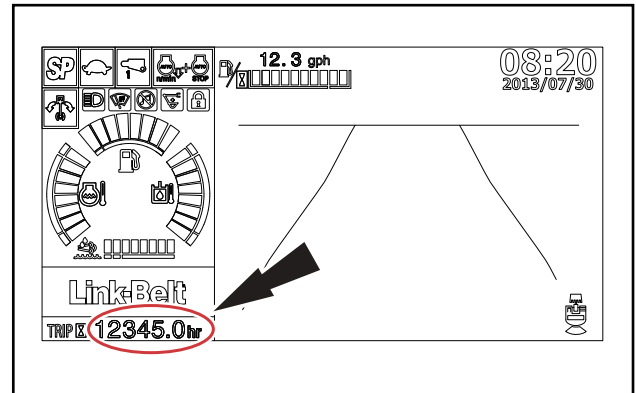
Intervals between overhauls are much more frequent for the following applications: construction of tunnels using a hydraulic breaker, scale stripping, foundry cleaning, and operation under water etc. For special applications contact your Link-Belt Dealer.

HOURLMETER

The hourmeter enables service operations to be scheduled. Its hourly indications are the same as those of a clock when the engine is running.

Servicing intervals are carefully calculated to guarantee safe and efficient excavator operation.

Be sure to carry out all the servicing operations properly as specified in this manual.



98302EBF

Figure 1

DAILY INSPECTIONS

Every day, before starting work, it is necessary to inspect the excavator and service certain of its components.

GENERAL REMARKS

- Check for water or oil leaks.
- Check that all screws and nuts are correctly tightened.
- Wipe off any dust (engine, cab, etc.).
- Check for any signs of damage.

ENGINE

- Check the oil level and change the oil if necessary.
- Check the coolant level.
- Check the DEF level.
- Check for clogging or damage to the radiator.
- Check the radiator fan belt tension.
- Check that the air filter is clean and not restricted.
- Check for water or oil leaks on the components.
- Check the condition of all lines.

UPPERSTRUCTURE

- Check the fuel tank level.
- Check the hydraulic reservoir level.
- Check that the hydraulic oil is clean.
- Check for water or oil leaks on the components.
- Check the condition of all lines.
- Check for electrical short-circuits.
- Check that the battery connections are properly tightened.
- Adjust the rear view mirrors.

UNDERCARRIAGE

- Check the pad hardware.
- Check the condition of the tracks.
- Check that upper and lower rollers and the idler wheels are not leaking oil.

ATTACHMENT

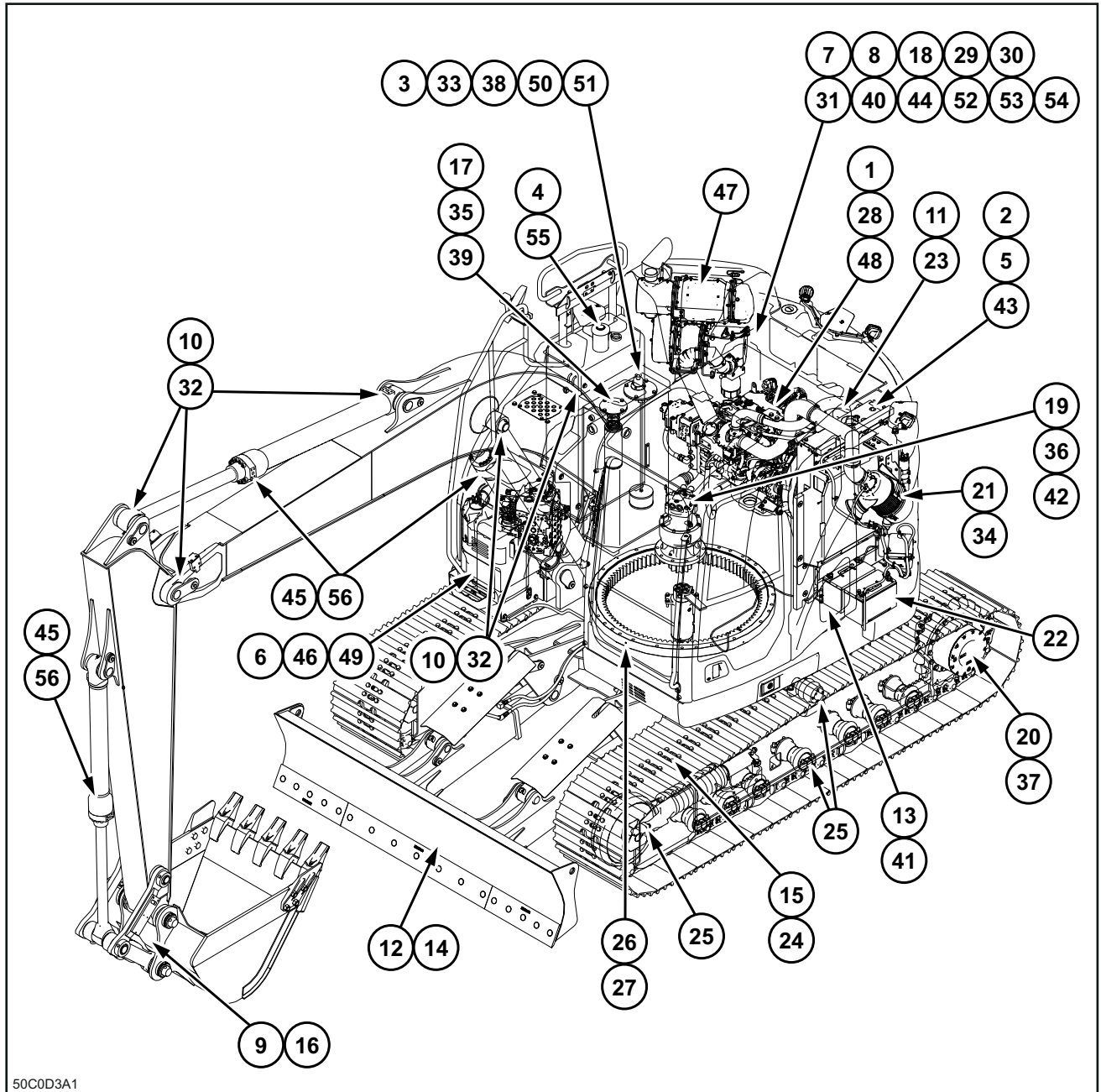
- Check for oil leaks on the cylinders.
- Check the condition of all lines.
- Check the condition of the bucket teeth.

AFTER STARTING THE ENGINE

- Check that the engine starts correctly.
- Check the exhaust fumes are normal.
- Check for any strange noises.
- Check for abnormal noise on the hydraulic components.
- Check for water or oil leaks on the components.
- Check the audible alarm devices, working lights and windshield wipers.
- Check that all circuits (travel, swing and tool) are functioning correctly.

IMPORTANT: If the slightest defect is found, repair it immediately before using the excavator or contact your Link-Belt Dealer.

MAINTENANCE CHART SERVICE POINTS



50C0D3A1

50C0D3A1

See next page for description and intervals of items.

Figure 2

CHAPTER 6 - SERVICING INTERVALS

SERVICING INTERVALS

Legend							
							
Check	Inspection of amounts of oil and coolant	Cleaning	Filter replacement	Replacement of oil, coolant, and consumables	Grease application	First replacement	Drainage / Air bleeding

Interval (Time)	Note	Indicated number	Service item	Quantity	Work	Reference page
10	(A)	1	Engine oil level, and dirt in it	1		7-16
		2	Coolant level	1		7-18
		3	Amount of Hydraulic fluid in Hydraulic fluid tank	1		7-34
		4	Drainage of water and sediment from fuel tank	1		7-20
		5	Damage and clogging in radiator, oil cooler, intercooler, and condenser	4		8-4
		6	Amount of DEF in DEF tank	1		7-28
		7	Drainage of water and sediment from water separator of fuel main filter	1		7-20
		8	Drainage of water and sediment from water separator of fuel pre-filter	1		
	(B)	9	Lubrication of front attachment (around bucket)	2		7-11
	(A)	10	Lubrication of front attachment (EMS specification)	14		8-5
		11	Tension of fan belt	1		
		12	Blade	6		7-11
50		13	Recirculate filter and refresh filter	2		8-13
		14	Blade	6		7-11
		15	Tension of shoe	-		8-1
250	(B)	16	Front attachment (around bucket)	2		7-11
	(G)	17	Return filter	1		7-34
		18	Pilot filter	1		7-43
		19	Swing reduction gear oil	1		7-44
		20	Travel reduction gear oil	2		7-41
	(C)	21	Cleaning of outer air cleaner element	1		9-4
	(D)	22	Battery fluid level (requiring water supply)	2		8-5
		23	Tension of fan and alternator belts	1		8-16
			Tightening torque for screw and nut	-		8-1
		24	Torque for shoe bolt	-		8-3
		25	Upper/Lower roller and idler wheel	-		

CHAPTER 6 - SERVICING INTERVALS

Interval (Time)	Note	Indicated number	Service item		Quantity	Work	Reference page
500		26	Turntable bearing		2		7-11
		27	Swing ring gear		1		
		28	Engine oil		1		7-16
		29	Engine oil filter		1		
		30	Fuel pre-filter element		1		
		31	Fuel main filter element		1		
1000		32	Front attachment (EMS specification)		14		7-11
		33	Hydraulic tank air breather element		1		7-34
	(F)	34	Outer/Inner air cleaner element		2		7-41
	(*)	35	Condition of hydraulic fluid		1		7-34
	(G)	36	Swing reduction gear oil		1		7-43
		37	Travel reduction gear oil		2		7-44
2000	(*)	38	Suction filter		1		7-34
	(G)	39	Return filter		1		
		40	Pilot filter		1		
		41	Recirculate filter and refresh filter		2		8-13
		42	Swing reduction gear		1		7-14
4000	(E)	43	Radiator coolant		2		7-18
	(I)	44	Main pump exit-side hydraulic hose		-		
		45	Hydraulic hoses of boom, arm, and bucket cylinder		-		
			46	Balloon filter		1	
4500	(H)	47	SCR system, dosing module		-		
		48	Engine-related equipment (turbocharger, EGR valve, EGR cooler)		-		
		49	Supply module filter		1		7-28
5000	(*)	50	Suction filter		1		7-34
		51	Hydraulic fluid		1		
As necessary		52	Air bleeding for fuel pre-filter		1		7-20
		53	Air bleeding for fuel filter		1		
		54	Electromagnetic feed pump filter	Metal mesh filter type	1		
				Paper filter type	1		
		55	Cleaning of filter of fuel tank feed port		-		8-7
		56	Leaks from cylinder		-		8-8
			Gas spring		2		8-15

(A) Or every day

(B) Grease application every 10 hours if any attachment other than the genuine bucket is installed

(C) Or when the message "AIR FILTER" appears on the message screen

(D) Inspection after 50 hours of operation in run-in period

(E) Or every 2 years, or 2 times a year (in fall/winter) when anti-freeze is used

- (F) Or after 5-time washing of the outer element
- (G) Replacement after 250 hours of operation in run-in period
- (H) Request to our dealer or authorized service shop for inspection
- (I) Or every 2 years, whichever comes first
- (*) When the machine is equipped with a hydraulic breaker, service intervals become short. Refer to "HYDRAULIC BREAKER (OPTIONAL) - REPLACING HYDRAULIC FLUID AND FILTERS WITH STANDARD HYDRAULIC FLUID," page (7-40).

NOTE:

When this machine is operated for 500 hours (hereafter, 1000 hours, 1500 hours ...), the message "SERVICE DUE" will appear on the screen, indicating the service timing.

Refer to [CHAPTER 5 - OPERATING INSTRUCTIONS], "MAINTENANCE INFORMATION," (4-40).

This interval can be lengthened.

Consult your Link-Belt Excavator dealer.

CHAPTER 7 - LUBRICATION, FILTERS, AND FLUIDS

FLUIDS AND LUBRICANTS

Lubricants must have the correct properties for each application.

The conditions of use for individual fluids and lubricants must be respected.

HYDRAULIC FLUID

The type of fluid to be used depends on the ambient temperature.

TEMPERATURE CLIMATES

-4°F (-20°C) to 104°F (40°C)

(MS 1230, ISO VG 46, DIN 51524 PART 2 HV)

HOT CLIMATES

32°F (0°C) to 122°F (50°C)

(MS 1216, ISO VG 68, DIN 51524 PART 3 CATEGORY HVLP)

COLD CLIMATES

-13°F (-25°C) to 68°F (20°C)

Please contact your LBX Link-Belt Dealer when using the machine in a cold region. Use the appropriate engine oil, hydraulic oil and coolant.

TRANSMISSION COMPONENT OIL

Extreme pressure oil used for enclosed transmission components.

GEAR 135H EP

(SAE 80W-90, API GL5, MIL-L-2105 D, MS 1316, ZF TE-ML 05A)

GREASE

MULTIPURPOSE GREASE 251H EP (NLGI 2)

Extreme pressure multipurpose grease with lithium soap and calcium.

ENGINE OIL

Only use the oil corresponding to one of the following categories:

API CJ-4.

FUEL

The fuel must conform Tier 4 Exhaust Gas Control Regulations.

Use grade number 2-D (S15) fuel. Only use ultra low sulfur diesel.

Using other types of fuel may lead to stalled engine output or deterioration in fuel economy.

During cold weather (lower than 19.4° F (-7°C)) it is temporarily acceptable to use a mixture of No. 1-D (S15) and No. 2-D (S15). Contact your Link-Belt Dealer or your fuel supplier.

If the temperature drops below the fuel cloud point output deficiency or engine start problems may occur due to wax crystals.

CONDITIONS APPLICABLE TO DIESEL FUEL

- No dust in the fuel
- Proper fuel viscosity
- High cetane rating
- Good flow properties in lower temperatures
- Low sulfur content
- Low carbon residue content

FUEL STANDARDS

Standard	Recommendation
ASTM	D 975
JIS	No. 2
DIN	DIN 51601
SAE - Based on SAE-J-313C	NO. 2-D (S15)
BS - Based on BS/2869-1970	Class A
EN 590	< 10 ppm sulfur

Using a non-recommended fuel may lead to damage of the fuel injection pump, injector, SCR and other fuel supply systems or to the engine.

Link-Belt Dealers and LBX Company LLC assume no responsibility for these damages. No warranty will be applied for these damages.

It is recommended that the following safety information be considered in order to prevent damage to the engine fuel supply system.

Some fuel suppliers mix old engine oil and diesel fuel.

Do not use diesel fuel contaminated with engine oil, it could damage the engine and the emission components.

Before using the diesel fuel confirm with the supplier whether the fuel complies with the standards.

IMPORTANT: Contact your Link-Belt Dealer regarding appropriate use of fuel additives.

IMPORTANT: In cold weather, fill the fuel tank at the end of the day's work, to prevent the formation of condensation.

FUEL STORAGE

Long storage can lead to the accumulation of impurities and condensation in the fuel. Engine trouble can often be traced to the presence of water in the fuel.

The storage tank must be placed outside and the temperature of the fuel should be kept as low as possible. Drain off water and impurities regularly.

BIODIESEL FUEL

Fatty Acid Methyl Ester Biodiesel (Biodiesel Fuel) consist of a family of fuels derived from vegetable oils treated with methyl esters.

IMPORTANT: Biodiesel fuel concentration up to a 5% (B5) in petroleum diesel fuel is approved for your engine ONLY IF the biodiesel fuel used for the blend conforms to ASTM D6751 (USA) or EN14214 (EUROPE) and the petroleum diesel fuel used for the blend to ASTM D975 (USA) or EN590 (EUROPE).

NOTE: "ASTM D6751" is the specification for biodiesel fuel and "ASTM D975" is for the petroleum diesel fuel.

IMPORTANT: Biodiesel meeting EN14214 (blended at the point of sale) used only in mixtures of up to a maximum 5% by volume with mineral diesel fuel complying with the EN590 diesel fuel standard are acceptable for use in this engine. The final product B5 must also comply with EN590.

It is imperative that you check which blend is approved for your engine with your Link-Belt Dealer.

Use of biodiesel fuel that does not comply with the standards mentioned above could lead to severe damage to the engine and fuel system.

The use of fuel that is not approved may void your warranty coverage.

BIODIESEL FUEL USAGE CONDITIONS

Biodiesel fuel must be purchased from a trusted fuel supplier that understands the product and maintains good fuel quality.

Biodiesel fuel must be pre-blended by the supplier. Mixing biodiesel fuels on-site can result in an incorrect mixture that can lead to problems with both engine and fuel system.

Engine performance is affected by the use of biodiesel fuel.

IMPORTANT: Do not modify the engine and/or injection pump settings to recover the reduced performance.

The reduction in power must be accepted if using a biodiesel fuel blend.

Some modification may be required to allow your engine to run biodiesel fuel.

Contact you Link-Belt Dealer for complete information on these modifications.

Biodiesel fuel has a higher cloud point than Diesel Fuel.

IMPORTANT: Use of biodiesel fuel blends is not recommended in cold weather conditions.

With biodiesel fuels, it may be necessary to change the engine oil, engine oil filter, and fuel filter elements more frequently than with other diesel fuels.

Biodiesel fuel can remove rust and particles from the inside of the fuel storage tanks that would normally adhere to the sides of the tank. These particle deposits can become trapped by the excavator fuel filters, causing blockage and shortening filter life. This is more likely to happen in cold weather.

BIODIESEL FUEL HANDLING

When handling biodiesel fuel take special care not to allow any water into the fuel supply. Biodiesel fuel will actually attract moisture from the atmosphere.

Fuel tanks should be kept as full as possible to limit the amount of air and water vapors in the tank. It may be necessary to drain the fuel filters more often to remove the water.

Potential oxidation and stability could be a problem with the fuel stored in an excavator.

IMPORTANT: Excavators must not be stored for more than 3 months with biodiesel fuel blends in the fuel system.

If long storage periods are necessary, the engine must run on diesel fuel for 20 hours to flush the biodiesel fuel out of the engine fuel system prior to storage.

Biodiesel fuel must not be stored on-site for more than 3 months.

ANTI-FREEZE/ANTI-CORROSION

Use anti-freeze in all seasons to protect the cooling system from corrosion and all risk of freezing.

For areas where the ambient temperature is over -36.4°F (-38°C), use a blend of 50% ethylene-glycol based anti-freeze.

For areas where the temperature is below -36.4°F (-38°C), it is advisable to use a blend of 40% water and 60% anti-freeze.

ENVIRONMENT

Before carrying out any maintenance operation on this excavator and before disposing of used fluids or lubricants, always think of the environment. Never throw oil or fluid on the ground and never place it in leaking receptacles.

Contact your local ecological recycling center or your Link-Belt dealer to obtain information on the correct method of disposing of these lubricants.

DEF

Be sure to use a DEF product conforming to the JIS (Japanese Industrial Standards) AUS 32 JIS K2247, ISO (International Organization for Standards) AUS 32 ISO 22241, or API (American Petroleum Institute).

If anything other than DEF or degraded DEF is used, the SCR system detects an abnormality. Refer to ""CHECK SCR SYSTEM" Warning" (5-12).

PROPERTIES OF DEF

IMPORTANT:

- Do not dilute DEF or mix it with other chemical.
It may damage the DEF SCR system.
- Dispose of DEF as industrial waste.
Releasing it directly to lake, sea or river may cause environmental pollution.

CAUTION

- DEF is a clear, odorless, harmless aqueous solution (consisting of 32.5 % urea and 67.5 % of water; freezing point 12.2 °F) that does not cause any problem if it comes in contact with the body. However, individual body constitution varies, and some people may develop inflammation. Take the following measures accordingly:
Wear impervious gloves (rubber or resin) and safety glasses for handling.
 - If DEF comes into contact with your skin, rinse the affected area with ample water.
If you notice a visible change in your skin or feel pain, promptly seek medical attention.
 - If you accidentally swallow DEF, drink a couple of glasses of water or milk and immediately seek medical attention.
 - If DEF has entered your eyes, immediately rinse your eyes with ample clean water and seek medical attention. Although DEF itself is a noncombustible liquid, it may generate an irritating odor if heated by fire, etc.
Promptly evacuate to a safe place in case fire breaks out.
- The quality of DEF should not change as long as it is kept in a sealed container to prevent the water content from evaporating.
 - DEF has a freezing point of 12.2 °F, so it may freeze in cold places.
However, even with DEF frozen, the machine will thaw the DEF and keep it warm when the engine starts, thereby starting injection automatically. Therefore, there are no particularly special measures required for DEF, even in cold places. Do not use antifreeze in the DEF tank.

STORING DEF

IMPORTANT:

- Store DEF in a sealed container in a well-ventilated indoor area away from direct sunlight and at an ambient temperature of below 77.0 °F.
It cannot be added if frozen or in a slushy state. Do not store DEF in a place where the temperature drops to 23.0 °F or below.
- Do not store DEF in a container other than the one specified.
If the solution is stored in a steel container, etc., corrosion may occur due to chemical reaction, and refilling such DEF may damage the SCR catalyst. Use exclusive containers and equipment to store/handle DEF. If dirty containers or equipment, or containers or equipment used with other solutions are used, the quality of DEF will drop and lead to the "EXH.SYSTEM" warning.

DEF tends to deteriorate with time.

Avoid long-term storage, long-term transport, and storage under high temperatures. Its shelf life depends on storage conditions. Refer to the following table.

Storage Temperature	Pot Life (estimate)
°F	
32	∞
50	75years
68	11years
86	23months
104	4months
122	1month
140	1week

If the storage temperature exceeds 104 °F, the shelf life is reduced significantly. Be sure to conduct a quality test before use.

For details, contact the Link-Belt dealer.

CAUTION

- Open the container filled with DEF outside (a well-ventilated area).
If DEF gives off an irritating odor, do not get close to it unless necessary.
- Do not store DEF under high temperatures.
DEF may generate harmful ammonia at high temperatures.

ADDING DEF

IMPORTANT:

- Do not put anything other than DEF in the DEF tank.
Particularly, never put diesel oil or gasoline in the DEF tank, because fire may occur or the DEF SCR system may get damaged.
If anything other than DEF is put in the DEF tank, it will be detected by the sensor and lead to the "EXH.SYSTEM" warning.
- Use DEF that complies with the standards of JIS (Japanese Industrial Standards) AUS 32 JIS K2247, ISO (International Organization for Standards) AUS 32 ISO 22241, or API (American Petroleum Institute).
- DEF is a transparent liquid with no color. Do not use any DEF with color due to concerns with deterioration or poor quality.
- DEF is available from your dealers, truck stations, authorized DEF dealers, etc. Make sure that DEF is added in advance, before shortage.
- The rate of consumption of DEF varies depending on the engine condition.
- It is recommended that you add DEF at the same time you refill fuel.
- If DEF spills while adding, wipe off the spillage with a cloth, etc., and then rinse the area with water.

Follow the steps below to add DEF:

IMPORTANT:

- Do not fill with DEF past the FULL position of the DEF tank. Doing so may result in leakage of DEF from the breather hose during use. In addition, if DEF freezes, sensors may be damaged.
- Refill the DEF only after the DEF gauge on the monitor changes (the amount remaining displayed decreases). If it is always filled to the "FULL" position, the DEF level sensor may be diagnosed as malfunctioning (illegally modified).
- It takes time for the DEF amount to be displayed correctly when DEF is added with the engine running or the starter switch in the "ON" position.

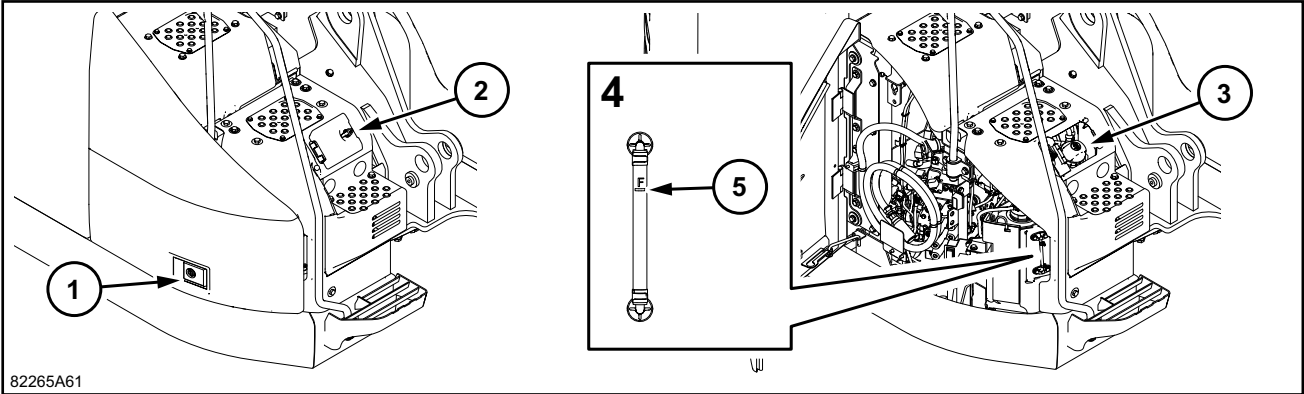
NOTE: It is normal for white powder deposits to form when DEF adheres and dries in such places as the supply inlet. Wipe off to prevent it from entering the DEF tank.

Follow the steps below to refill DEF:

- 1. Turn the starter switch to the "OFF" position and stop the engine. Check that you hear an actuation sound of the pump due to suction back to the DEF tank.
- 2. Unlock the right door (1) and the DEF tank cover (2) with the ignition key, and pull them open.

IMPORTANT: After fully opening the door, check that it is locked firmly.

- 3. Wipe the DEF tank cap (3) clean of dirt, mud, and foreign objects.
- 4. Turn and open the DEF tank cap (3) counterclockwise.
- 5. Refill DEF up to the upper-limit level (5) position on the DEF tank level gauge (4).
- 6. Turn and close the DEF tank cap (3) clockwise.



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Figure 1

1	Right Door	4	Level gauge of DEF tank
2	DEF tank cover	5	Upper-limit level of DEF to be refilled
3	DEF tank cap		

CAUTION

DEF rarely emits an odor when the tank cap is opened.
Do not attempt to smell the tank from the supply inlet.

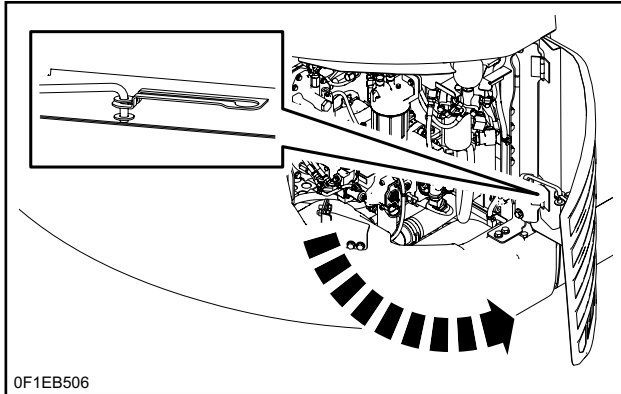
NOTE: The level gauge on the DEF tank is showing just whether the tank is already full (indicated as the bar with "F") or not, as for the remaining DEF amount to the tank capacity, refer to the gauge shown on the monitor.

SAMPLING PROCEDURE

ENGINE OIL SAMPLING

1. Open the right side door.

IMPORTANT: After fully opening the door, check that it is locked firmly.



0F1EB506

Figure 2

2. Prepare the sampling container underneath the sampling port (1).

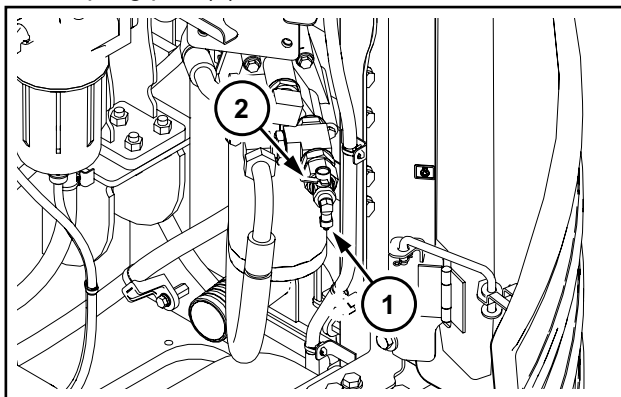


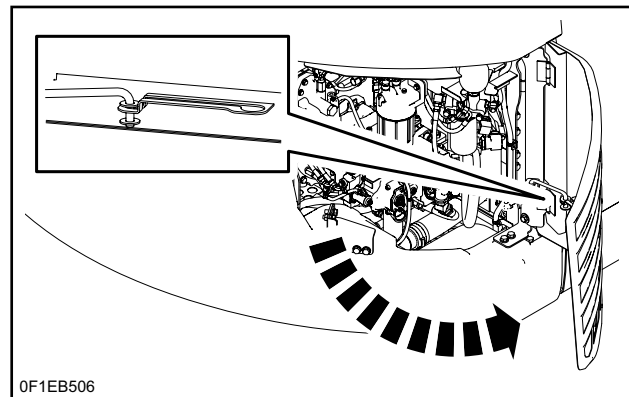
Figure 3

3. Open the valve (2) to drain adequate volume of oil.
4. Close the valve (2) to check that there is no leak.
5. Add oil in accordance with volume of drained oil as necessary.

HYDRAULIC OIL SAMPLING

1. Open the right side door.

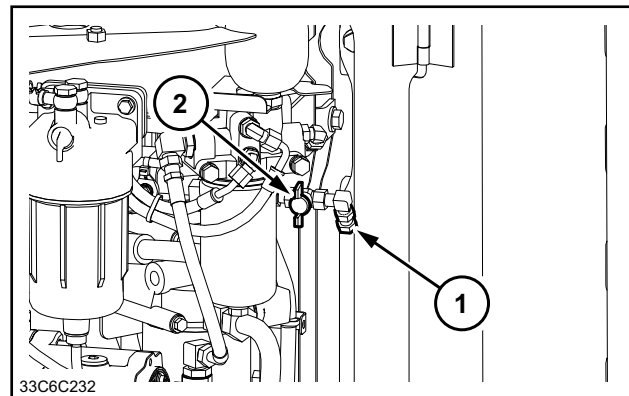
IMPORTANT: After fully opening the door, check that it is locked firmly.



0F1EB506

Figure 4

2. Prepare the sampling container underneath the sampling port (1).



33C6C232

Figure 5

3. Open the valve (2) to drain adequate volume of oil.
4. Close the valve (2) to check that there is no leak.
5. Add oil in accordance with volume of drained oil as necessary.

LUBRICATION CHART

KMP15092 (145X4 LC)

LUBRICATION CHART

REF NO.	DESCRIPTION	NO. POINTS	SPECIFICATION	INTERVAL (hr)									
				10	50	250	500	1000	2000	4000	4500	5000	
①	FRONT ATTACHMENT PIN	2	EP. GREASE No.2	✓		○							
②	FRONT ATTACHMENT PIN (EMS)	14		✓			○						
③	TURNABLE BEARING	2					○						
④	SWING RING GEAR	9.9kg 21.8lb					○						
⑤	SWING GEAR REDUCER	2.2ℓ 0.6gal	GEAR OIL			△		◎					
⑥		0.3kg 0.7lb	EP. GREASE No.2						○				
⑦	ENGINE OIL PAN	17.0ℓ 4.5gal	ENGINE OIL	✓			◎						
⑧	TRAVEL GEAR REDUCER	2.1ℓX2 0.6galX2	GEAR OIL			△		◎					
⑨	HYDRAULIC SUMP TANK	158ℓ 41.7gal	HYDRAULIC OIL	✓									◎
⑩	ENGINE RADIATOR	16.5ℓ 4.4gal	WATER WITH LONG LIFE COOLANT	✓							◎		
⑪	FUEL TANK	200ℓ 53gal	LIGHT OIL	✓									
⑫	UREA TANK	43ℓ 11.4gal	UREA WATER	✓									
				WHEN REQUIRED									
				WHEN REQUIRED									
A	PILOT LINE FILTER	1	ELEMENT (KHJ17730)			△		◎					
B	FUEL FILTER	MAIN	ELEMENT (KHH20760)				◎						
C		PRE	WATER SEPARATOR	✓				◎					
D	UREA FILTER	S/M	ELEMENT (KHH20151)									◎	
E		BALLOON	ELEMENT (KHH27820)									◎	
F	ENGINE OIL FILTER	1	ELEMENT (KHH20750)				◎						
G	RETURN FILTER	1	ELEMENT (KNJ14680)			△			◎				
H	SUCTION FILTER	1	ELEMENT (KNJ10660)							□			◎
I	AIR CLEANER	OUTER	ELEMENT (KMH0781)			□		◎					
J		INNER	ELEMENT (KMH0830)					◎					
K	AIR BREATHER	1	ELEMENT (KRJ3461)					◎					
L	AIR FILTER	OUTER	ELEMENT (KHR27260)		□				◎				
M		INNER	ELEMENT (KHR31800)		□				◎				

✓:CHECK OR DRAIN WATER ○:LUBRICATE GREASE ◎:CHANGE OIL OR REPLACE ELEMENT △:CHANGE INITIALLY □:CLEAN

NOTES

- LUBRICATION IS RECOMMENDED FOR THE FRONT ATTACHMENT PINS AFTER THE OPERATION IN THE WATER IS COMPLETED.
- REFER TO RECOMMENDED OIL SPECIFICATIONS IN DETAIL SHOWN IN THE OPERATOR'S MANUAL.
- THIS CHART IS PRIOR TO THE ENGINE INSTRUCTION MANUAL.
- INTERVAL - HOURS ON THIS CHART ARE BASED ON FOLLOWING.
10 (OR DAILY) * 250 (OR MONTHLY) * 1000 (OR 6 MONTHS) * 4000 (OR 2 YEARS) *
50 (OR WEEKLY) * 500 (OR 3 MONTHS) * 2000 (OR 1 YEAR) * 5000 (OR 2.5 YEARS) *
*WHICHEVER OCCURS FIRST
- WATCH THE AIR DEFLECTION CHECK-VALVE IN LUBRICATING GREASE FOR SWING GEAR REDUCER REFER TO THE OPERATOR'S MANUAL FOR DETAILS.

RECOMMENDED GREASE AND OIL SPEC. ARE AS FOLLOWS.

EP. GREASE :LITHIUM GREASE NO.2
ENGINE OIL :SEE OPERATOR'S MANUAL
GEAR OIL :API GL-4 SAE 90
HYDRAULIC OIL :SEE OPERATOR'S MANUAL

SWING GEAR REDUCER

DRAIN PORT FOR GEAR OIL

AIR VENT CHECK-VALVE IN CASE OF GREASE FILLING

KMP15092

KMP15102 (145X4 DZ)

LUBRICATION CHART

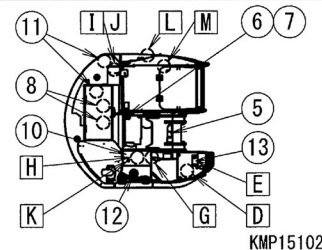
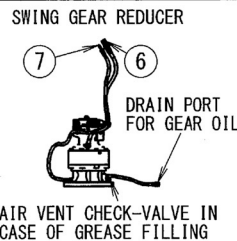
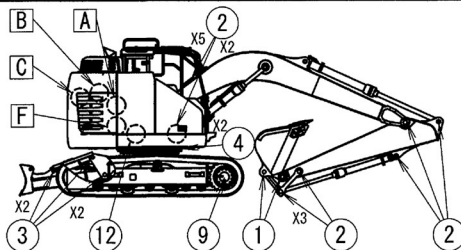
REF NO.	DESCRIPTION	NO. POINTS	SPECIFICATION	INTERVAL (hr)									
				10	50	250	500	1000	2000	4000	4500	5000	
①	FRONT ATTACHMENT PIN	2	EP. GREASE No.2	✓		○							
②	FRONT ATTACHMENT PIN (EMS)	14		✓				○					
③	BLADE PIN	6		✓	○								
④	TURNTABLE BEARING	2	GEAR OIL				○						
⑤	SWING RING GEAR	9.9kg 21.8lb					○						
⑥	SWING GEAR REDUCER	2.2ℓ 0.6gal				△		◎					
⑦	ENGINE OIL PAN	0.3kg 0.7lb	EP. GREASE No.2						○				
⑧	TRAVEL GEAR REDUCER	17.0ℓ 4.5gal	ENGINE OIL	✓			◎						
⑨	HYDRAULIC SUMP TANK	2.1ℓX2 0.6galX2	GEAR OIL			△		◎					
⑩	ENGINE RADIATOR	158ℓ 41.7gal	HYDRAULIC OIL	✓								◎	
⑪	ENGINE RADIATOR	16.5ℓ 4.4gal	WATER WITH LONG LIFE COOLANT	✓						◎			
⑫	FUEL TANK	200ℓ 53gal	LIGHT OIL	✓									
⑬	UREA TANK	43ℓ 11.4gal	UREA WATER	✓									
				WHEN REQUIRED									
[A]	PILOT LINE FILTER	1	ELEMENT (KHJ17730)			△			◎				
[B]	FUEL FILTER	MAIN	ELEMENT (KHH20760)				◎						
[C]		PRE	WATER SEPARATOR (KHH12030)	✓									
[D]	UREA FILTER	S/M	ELEMENT (KHH20151)									◎	
[E]		BALLOON	ELEMENT (KHH27820)							◎			
[F]	ENGINE OIL FILTER	1	ELEMENT (KHH20750)				◎						
[G]	RETURN FILTER	1	ELEMENT (KNJ14680)			△			◎				
[H]	SUCTION FILTER	1	ELEMENT (KNJ10660)							□		◎	
[I]	AIR CLEANER	OUTER	ELEMENT (KMH0781)			□		◎					
[J]		INNER	ELEMENT (KMH0830)					◎					
[K]	AIR BREATHER	1	ELEMENT (KRJ3461)					◎					
[L]	AIR FILTER	OUTER	ELEMENT (KHR27260)		□				◎				
[M]		INNER	ELEMENT (KHR31800)		□				◎				

✓:CHECK OR DRAIN WATER ○:LUBRICATE GREASE ◎:CHANGE OIL OR REPLACE ELEMENT △:CHANGE INITIALLY □:CLEAN

NOTES 1. LUBRICATION IS RECOMMENDED FOR THE FRONT ATTACHMENT PINS AFTER THE OPERATION IN THE WATER IS COMPLETED.
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 50 (OR WEEKLY) * 500 (OR 3 MONTHS) * 2000 (OR 1 YEAR) * 5000 (OR 2.5 YEARS) *
 5. WATCH THE AIR DEFLECTION CHECK-VALVE IN LUBRICATING GREASE FOR SWING GEAR REDUCER REFER TO THE OPERATOR'S MANUAL FOR DETAILS.

RECOMMENDED GREASE AND OIL SPEC. ARE AS FOLLOWS.
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 GEAR OIL :API GL-4 SAE 90
 HYDRAULIC OIL :SEE OPERATOR'S MANUAL

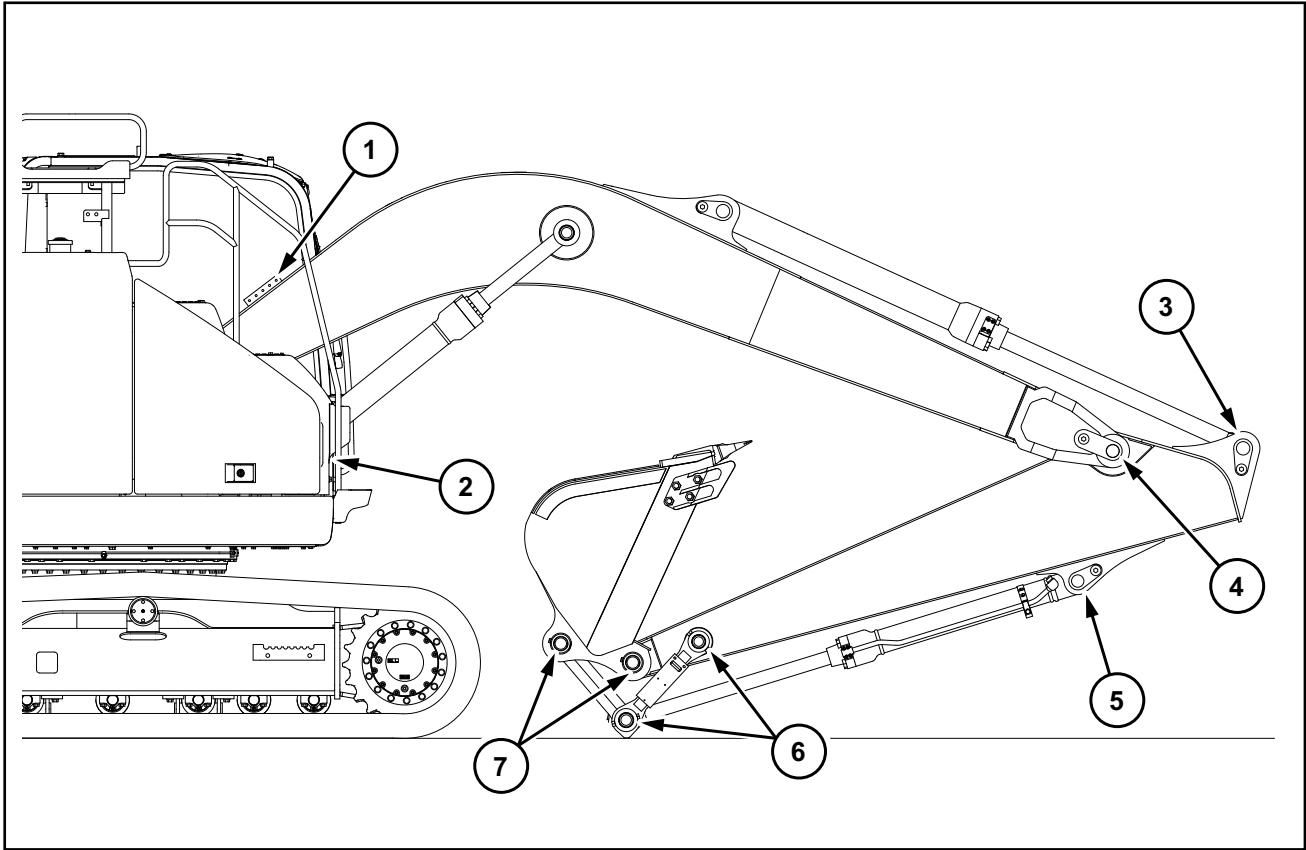
*WHICHEVER OCCURS FIRST



KMP15102

LUBRICATION POINTS

Boom / Arm / Bucket Lubrication



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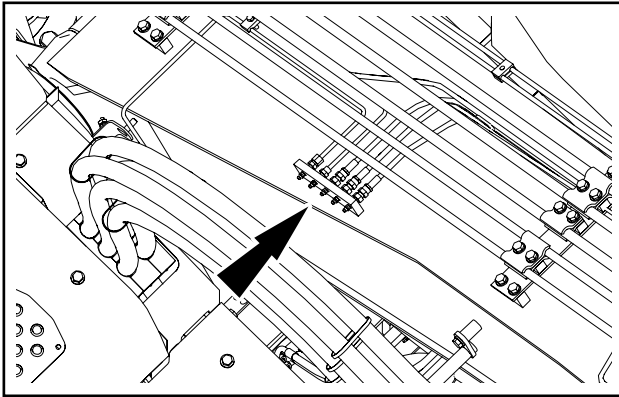
Figure 8

The numbers within brackets mentioned on the right of the description indicate the number of lubrication points.

EVERY 1000 HOURS (EMS: EASY MAINTENANCE SYSTEM)

NOTE: If the following linkage point is not equipped with original parts, this point must be greased every 50 hours.

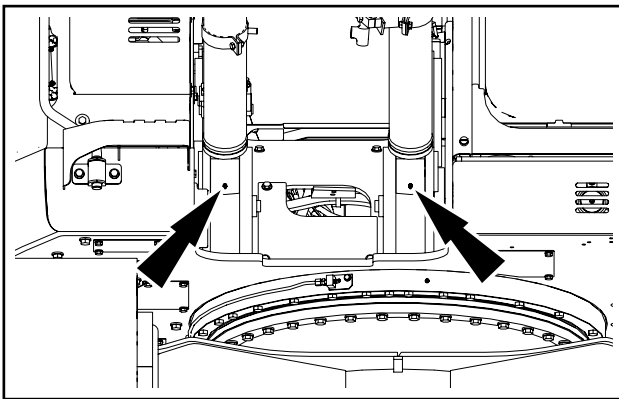
1	Boom foot pin (EMS)	(2)
	Boom cylinder top pin (EMS)	(2)
	Arm cylinder foot pin (EMS)	(1)



495BBB33

Figure 9

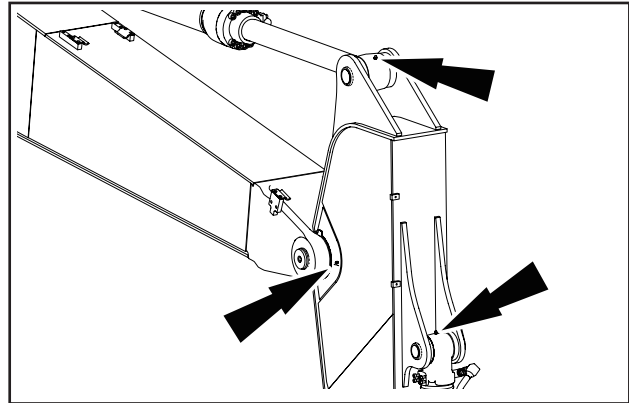
2	Boom cylinder foot pin (EMS)	(2)
---	------------------------------	-----



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Figure 10

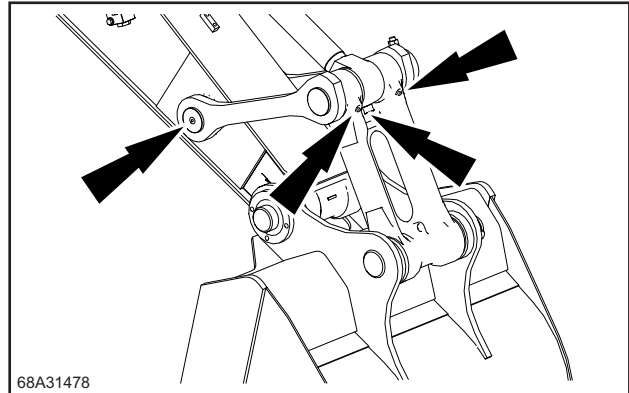
3	Arm cylinder top pin (EMS)	(1)
4	Boom tip linkage (EMS)	(1)
5	Bucket cylinder foot pin (EMS)	(1)



46CAC539

Figure 11

6	Bucket linkage (EMS)	(4)
---	----------------------	-----



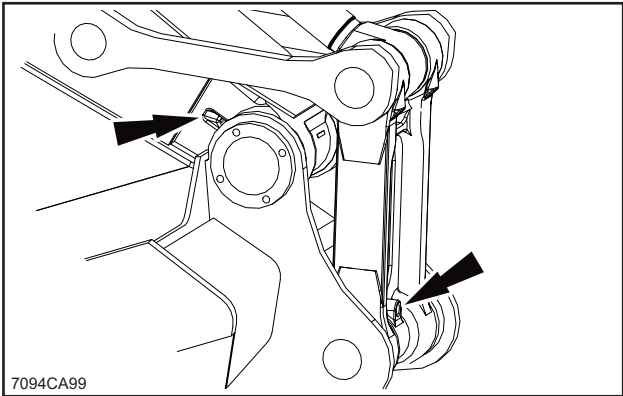
68A31478

68A31478

Figure 12

EVERY 250 HOURS

7	Bucket	(2)
---	--------	-----



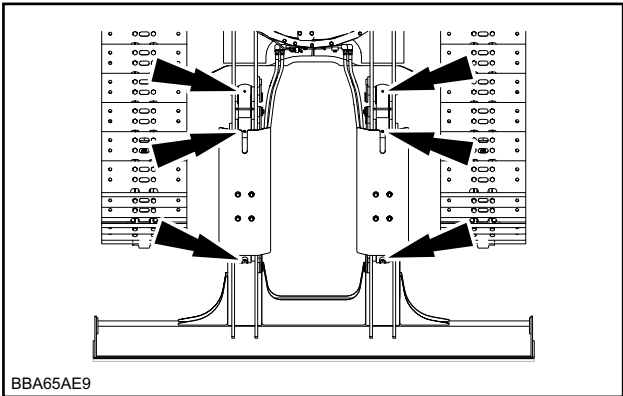
7094CA99

Figure 13

BLADE (FOR BLADE SPECIFICATION)

EVERY 50 HOURS

Blade	(2)
Blade cylinder bottom pin	(2)
Blade cylinder top pin	(2)



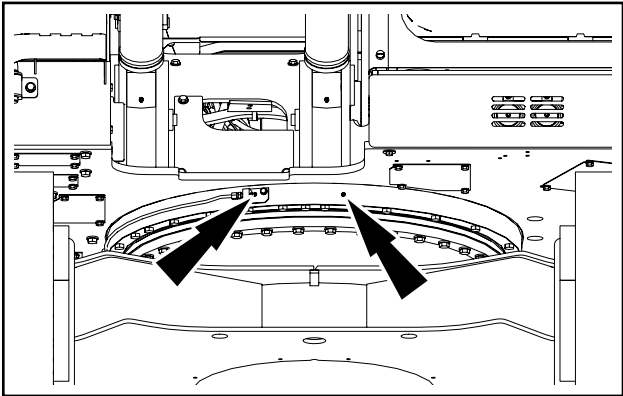
BBA65AE9

Figure 14

TURNTABLE BEARING

EVERY 500 HOURS

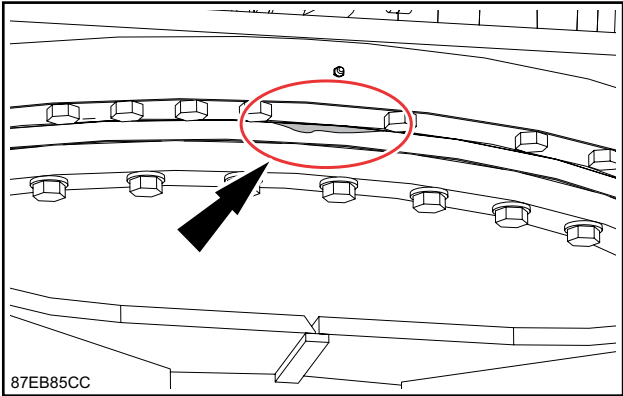
Turntable: (2)



BFD497AC

Figure 15

1. Clean the grease nipple and add grease until the grease oozes out of the ring seal.



87EB85CC

Figure 16

2. Wipe off the grease that oozed out thoroughly.
3. Swing the machine 90 degrees.
4. Add grease again until the new grease oozes out of the ring seal.
5. Repeat Steps 1 to 4 to add grease in all directions.
6. Repeat swing operations to spread the grease evenly.
7. Wipe off the grease that oozed out of the ring seal again.

GREASING THE TURNTABLE TEETH

Grease capacity: 21.8 lb (9.9 kg)

Type of grease: Refer to page 7-1.

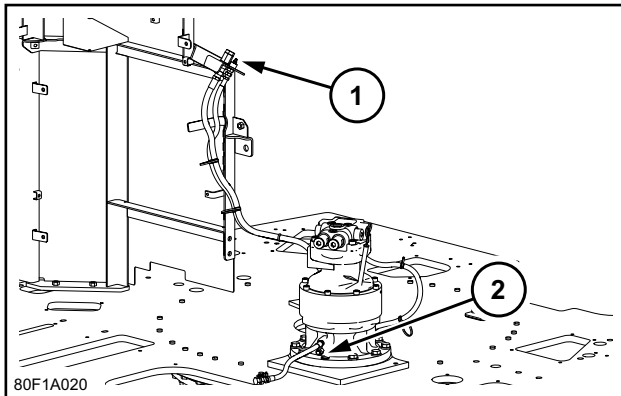
GREASING THE SWING REDUCTION GEAR

Grease capacity: 0.7 lb (0.3 kg)

Type of grease: Refer to page 7-1.

EVERY 2000 HOURS

1. Remove the lower panel.
2. Add grease from grease nipple (1). Add from the relief valve (2) for air bleeding until the grease overflows to some extent.
3. Install the lower panel.



80F1A020

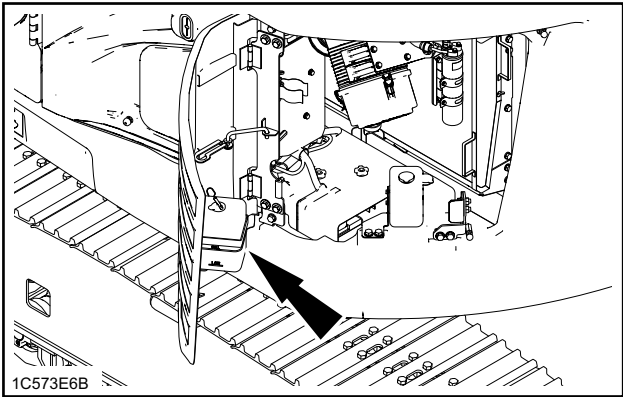
Figure 17

FLUID LEVELS

EVERY 10 HOURS

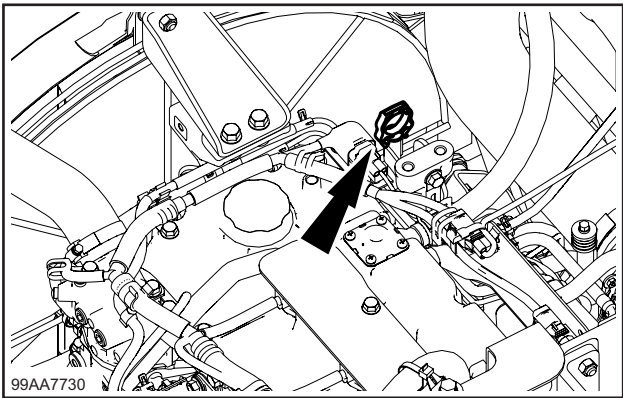
NOTE: The numbers within brackets on the right of the description indicate the number of levels.

Coolant solution expansion reservoir (1)



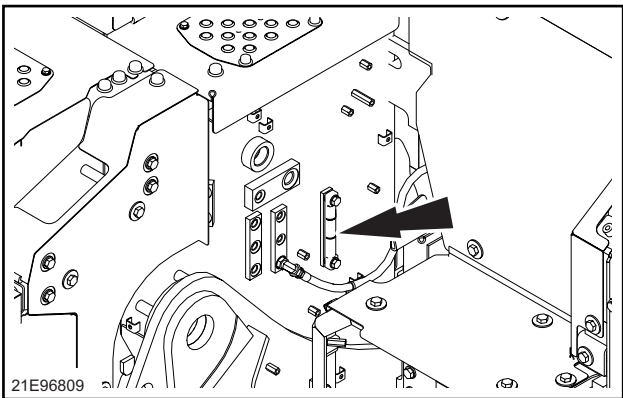
1C573E6B Figure 18

Engine oil (1)



99AA7730 Figure 19

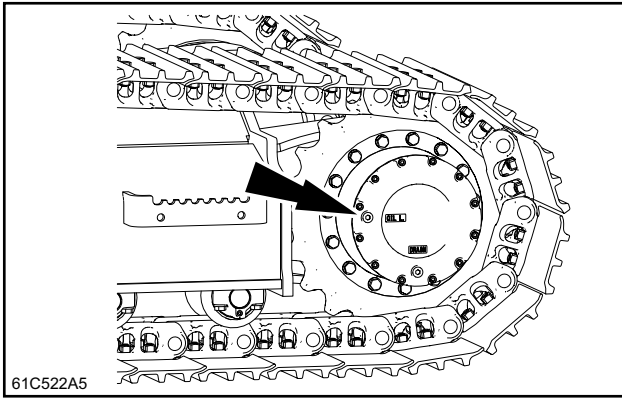
Hydraulic reservoir (1)



21E96809 Figure 20

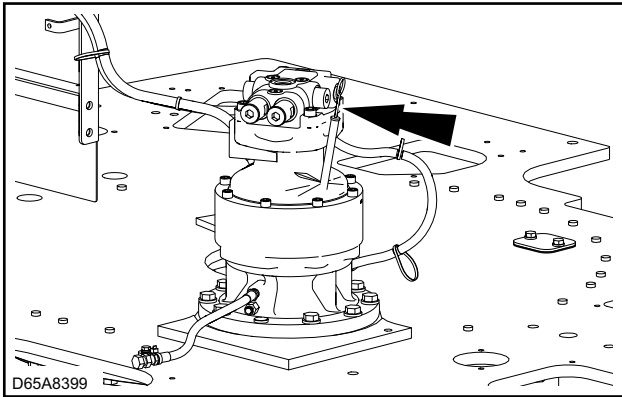
EVERY 250 HOURS

Travel reduction gears (2)



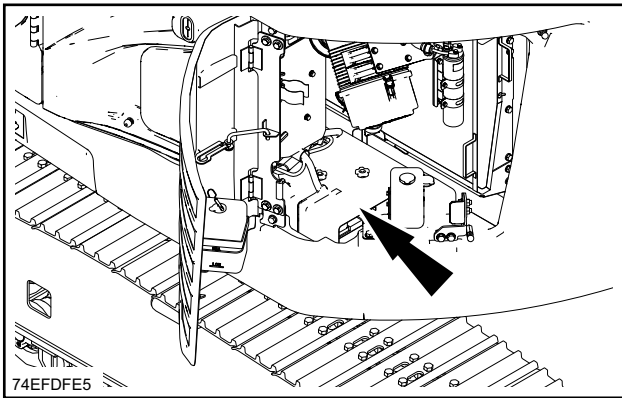
61C522A5 Figure 21

Swing Reduction Gear (1)



D65A8399 Figure 22

Batteries (2)



74EFDfE5 Figure 23

ENGINE

SERVICE SPECIFICATIONS

Engine oil level check	Every 10 hours or every day
Oil change	Every 500 hours
Oil filter replacement	Every 500 hours
Oil capacity	4.5 gal. (17.0 liters)
Oil type	See Fluids and Lubricants

IMPORTANT: Do not walk or climb on the engine. The head cover and various connectors may be damaged, leading to an engine failure.

ADJUSTMENT OF ENGINE VALVE ROCKER CLEARANCES

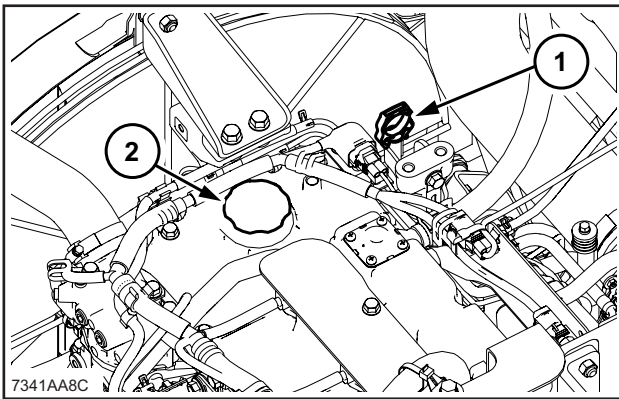
SERVICE SPECIFICATIONS

Check	Every 1000 hours
-------	------------------

NOTE: Contact your Link-Belt Dealer to check the adjustment.

ENGINE OIL LEVEL

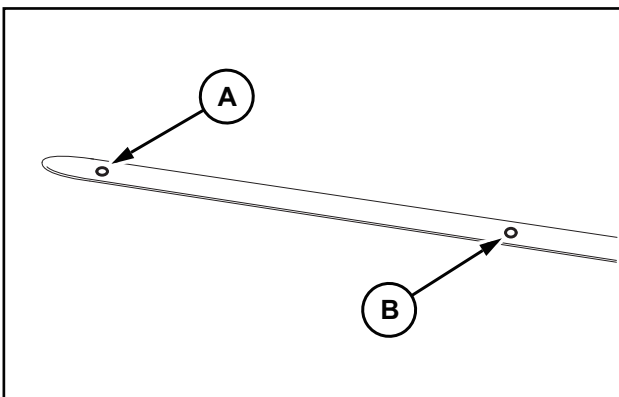
1. Park the excavator on flat, horizontal ground. Shut down the engine and remove the starter switch key.
2. When the engine has been stopped for 15 minutes, remove the dipstick (1), wipe it with a clean cloth and replace it in the guide tube as far as it will go. Then take it out again.



7341AA8C

Figure 24

If the level is situated between the marks (A) (minimum) and (B) (maximum) of the dipstick, the level is correct.



0CEBA925

Figure 25

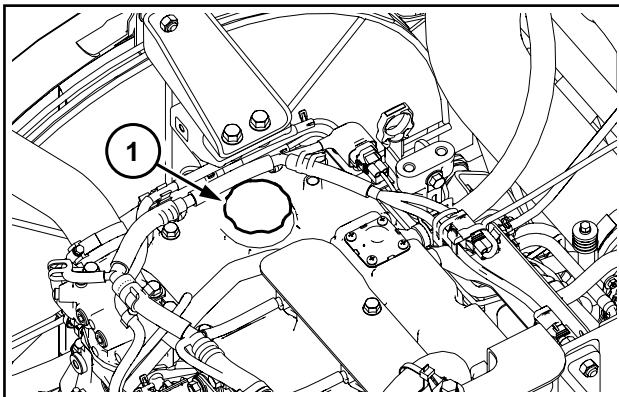
3. If the oil level is at the mark (A) (minimum) or below, remove the filler cap (2) and add oil up to the mark (B) (maximum) of the dipstick and install the cap.

NOTE: The level should not be higher than the mark (B) (maximum on the dipstick).

DRAINING, REPLACING THE OIL FILTER, AND FILLING

NOTE: Change the oil while the engine is still warm. The oil will flow more easily.

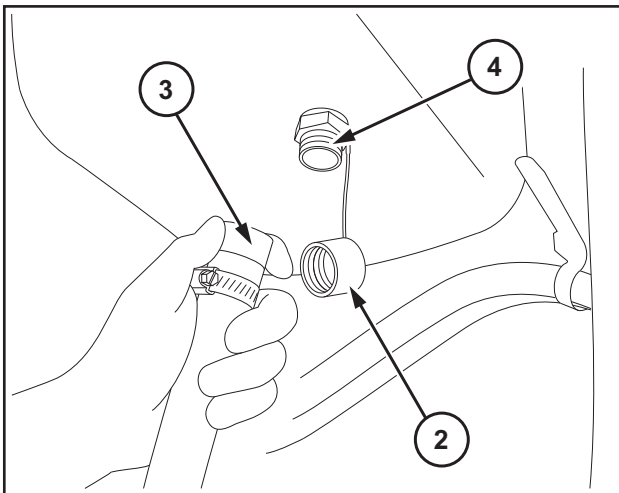
1. Park the excavator on flat, horizontal ground. Shut down the engine and remove the starter switch key.
2. Remove the oil filler cap (1).



B1C10B83

Figure 26

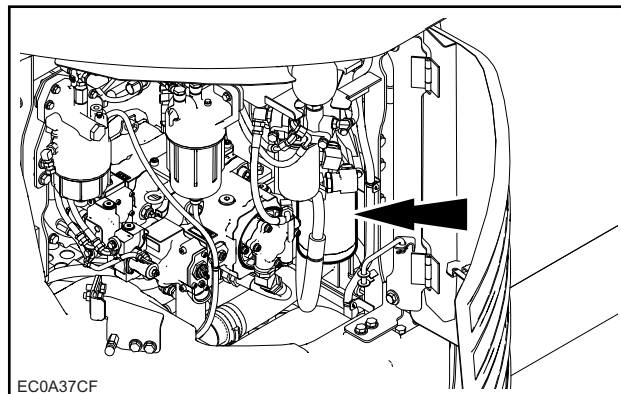
3. Remove the cover under the rear of the excavator.
4. Remove the cap (2) and place a receptacle under the excavator, connect the oil drain hose (3) to the green plug (4). When the hose is connected the oil will start to flow out the oil drain hose.



CD2A0E09

Figure 27

5. Open the right side door where the oil filter is located. Remove the old filter. The old filter will have some oil left in it, if you spill any of the oil be sure to wipe up any residue.



EC0A37CF

Figure 28

6. Coat the seal of the new filter with a fine film of oil.
7. Install the new filters. Turn each filter until the seal comes into contact with the filter head and then tighten one full turn with the filter wrench.
8. After draining the oil remove the oil drain hose (3) and put the cap (2) back on the drain plug. Be sure to wipe any old residue off the bottom of the engine.
9. Fill the engine with new engine oil.
Run the engine for a few minutes and check that there are no leaks. Check the level again and top up if necessary.

IMPORTANT: Always wait 15 minutes to allow the oil to return to the sump before checking the oil level.

COOLING SYSTEM

SERVICE SPECIFICATIONS

Expansion tank reservoir check	Every 10 hours or every day
Checking the tightening of clamps, of radiator hoses	Every 250 hours or every 6 months
Draining the system (long duration)	Every 4000 hours
Draining the system (with anti-freeze) (spring and autumn)	Twice a year
System capacity	4.4 gal. (16.5 liters)

⚠ WARNING

Boiling coolant solution can spray out if the radiator cap is removed while the system is still hot. To remove the cap, allow the system to cool down, turn the cap to the first notch and wait until there is no more pressure. Then remove the cap.

⚠ WARNING

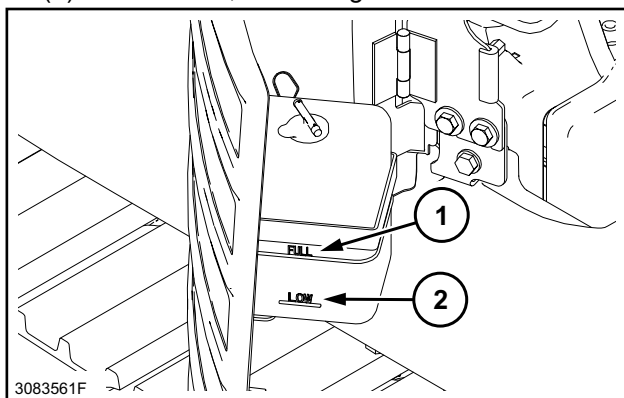
Check and service the cooling system according to the instructions given in this manual.

COOLANT SOLUTION

Put only ethylene-glycol coolant solution in the cooling system. Use good quality ethylene-glycol that has a high boiling point, with no additives to prevent leakage. Do not use non-approved anti-rust additives. Anti-rust additives and ethylene-glycol can mix and work against each other, thereby reducing anti-corrosion protection, forming deposits in the cooling system and causing damage to the cooling system and radiator.

LEVEL

The level of coolant solution should be checked when the engine is cold. On flat, level ground the level in the expansion reservoir should be between the Full (1) and Low (2) marks. If not, see Filling.



3083561F

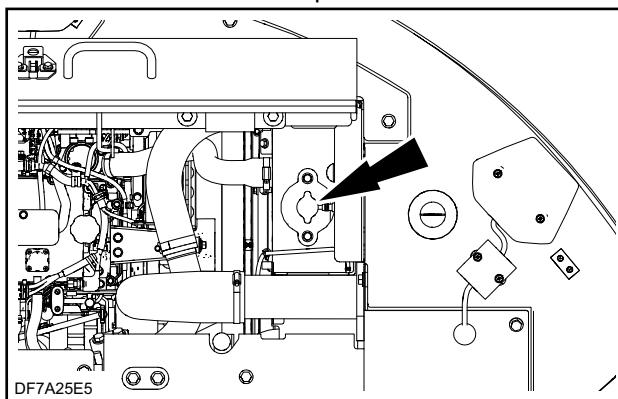
Figure 29

DRAINING

⚠ WARNING

Do not remove the radiator cap when the engine is hot. The system is still under pressure and you could be scalded.

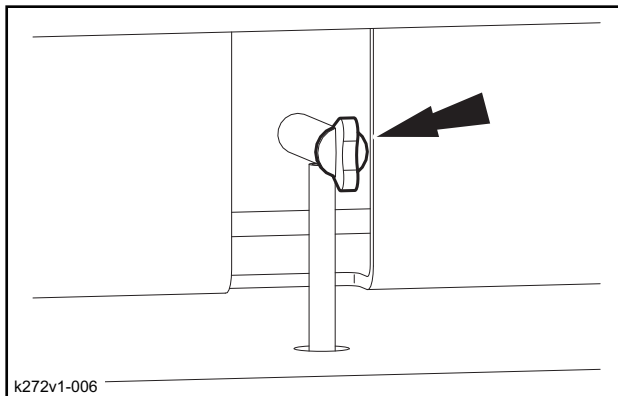
1. Remove the radiator cap.



DF7A25E5

Figure 30

2. Remove the panel located under the upperstructure and open the radiator bleed plug.

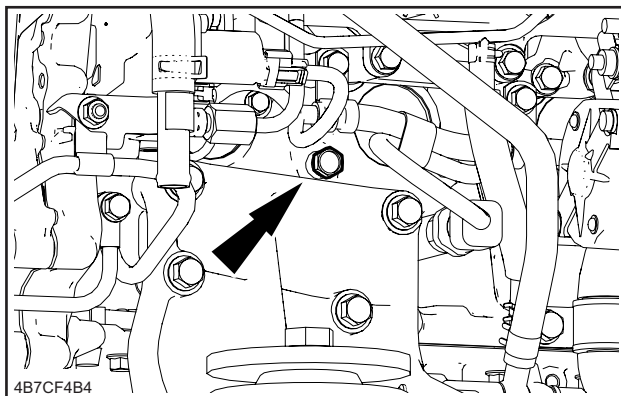


k272v1-006

Figure 31

3. Open the drain plug located on the engine block.

NOTE: Have a receptacle of a suitable capacity ready.



4B7CF4B4

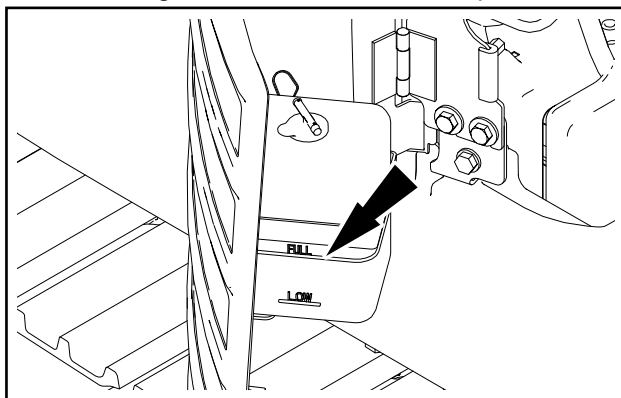
Figure 32

RINSING

1. Close the bleed plug when the radiator is completely empty. Install the plug on the engine block.
2. Fill the system with clean water. Install the radiator cap.
3. Start the engine. Let the engine run in low idle position for ten minutes to bring the engine temperature to about 176.0 °F (80°C).
4. Drain the system once more.
5. Repeat Step 1 to 4 until the water drained is clear.
6. Install the panel under the upperstructure.

FILLING

1. Fill with coolant solution via the radiator until overflowing and install the radiator cap.



7087DC6F

Figure 33

2. Fill the expansion tank to the Full mark and install the plug.

IMPORTANT: Use the correct coolant solution.

3. Run the engine at idle speed for about 5 minutes.
Add coolant solution if the level in the expansion reservoir drops.

NOTE: Do not fill the expansion reservoir above the Full mark.

FUEL SYSTEM SERVICE SPECIFICATIONS

Fuel tank draining		Every 10 hours or every day
Fuel main filter draining		When the float reaches the level (A)
Fuel pre-filter draining		When the float reaches the level (A)
Change the pre-filter element		Every 250 hours
Change the filter element		Every 500 hours
Electromagnetic feed pump filter cleaning	Metal mesh filter type	Periodically
Change electromagnetic feed pump filter	Paper filter type	Periodically
Fuel tank capacity		53 gal. (200 liters)
Type of fuel		Refer to page 7-1

NOTE: Take all necessary precautions during the following operations; no foreign matter must enter the fuel system.

IMPORTANT:

Do not work in any environment in which anything other than fuel will get into fuel lines. (Sites with strong wind, blowing dust, etc.).

Wash hands before operations.

Do not use gloves.

Do not open the packaging for the filter kit until you start the installation work.

Do not reuse any fuel remaining within the cover.

For persistent dirt within the cover, wipe it off with a clean rag, then clean with clean diesel fuel.

Do not use parts cleaner because it could affect the case cover.

Do not touch the inside of the element.

Completely wipe off any spilt fuel after changing a filter element or bleeding the system.

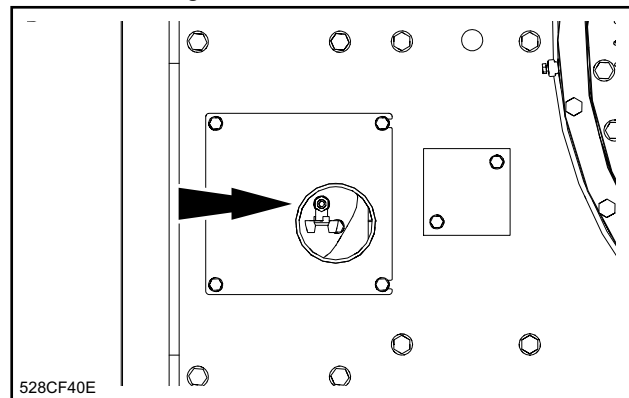
⚠ CAUTION

When you deal with fuel, please do not bring fire close.

After exchanging a filter, make sure to wipe off the fuel spill.

DRAINING THE FUEL TANK

1. Place a receptacle of a suitable capacity under the drain plug.
2. Open the drain valve located at the bottom of the tank and drain the accumulated sediment and water.
3. After draining, close the drain valve.



528CF40E

Figure 34

FUEL PRE-FILTER

When a float has reached the level line (A):

1. Place the container with an appropriate capacity under the pre-filter.
2. Loosen the drain plug (1) and the air bleed screw (2), and then drain water and sediment.
3. When the float (3) has reached the bottom, tighten the drain plug (1) and the air bleed screw (2) to the torque of $1.84 \pm 0.37 \text{ lbf}\cdot\text{ft}$ ($2.5 \pm 0.5 \text{ N}\cdot\text{m}$) and of $7.38 \pm 0.74 \text{ lbf}\cdot\text{ft}$ ($10 \pm 1 \text{ N}\cdot\text{m}$) respectively.

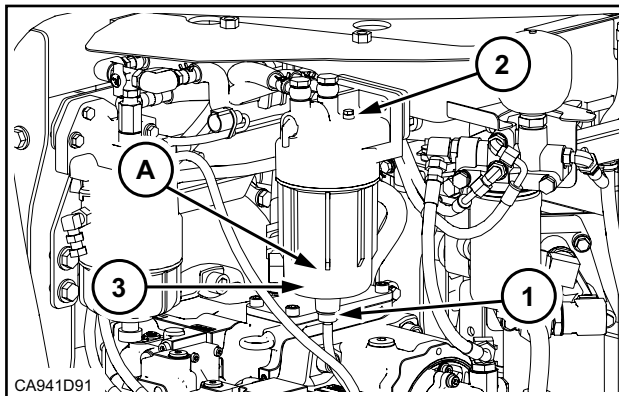
NOTE: Overtightening can damage the seal.

4. Check for a leak indication.

IMPORTANT:

In cold weather, water may freeze on top of the container.

Wait until ice melts before drainage.



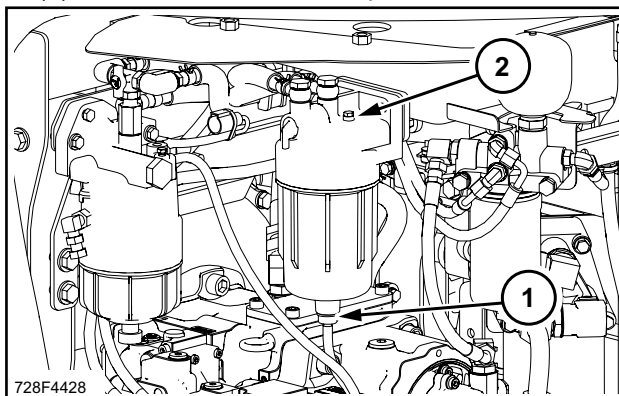
CA941D91

Figure 35

CHANGING THE PRE-FILTER ELEMENT

NOTE: If a fuel filter other than a genuine Link-Belt filter is used, the guarantee will not be applied to a fault caused by the use of a wrong filter.

1. Place the container with an appropriate capacity under the pre-filter.
2. Loosen the drain plug (1) and the air bleed screw (2), and then drain from the pre-filter.



728F4428

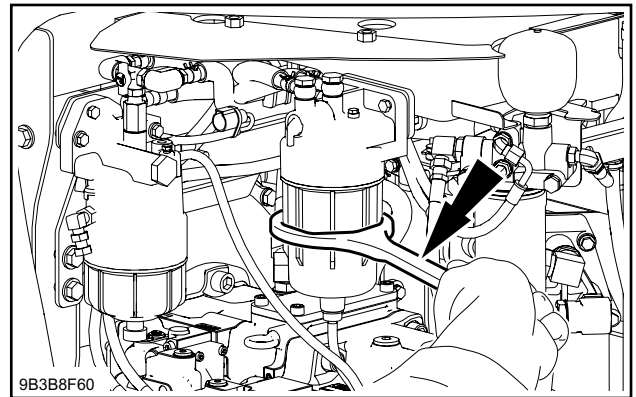
Figure 36

3. Clean the area around the pre-filter body, and then remove it with a wrench supplied with the system. Attach a new filter element.

4. Replace the seal of the filter body, and then turn and attach the body until it touches the pre-filter head.

NOTE: Do not add any fuel to the filter body before attached.

5. Tighten the body with a wrench. The tightening torque must be $22.13 \pm 0.74 \text{ lbf}\cdot\text{ft}$ ($30 \pm 1 \text{ N}\cdot\text{m}$).



9B3B8F60

Figure 37

6. Replace the seal of the drain plug (1), and then attach the drain plug (1). The tightening torque must be $1.84 \pm 0.37 \text{ lbf}\cdot\text{ft}$ ($2.5 \pm 0.5 \text{ N}\cdot\text{m}$).

NOTE: Overtightening can damage the seal.

NOTE: Never reuse the seal of the filter body or the drain plug (1). It must be replaced with a new seal.

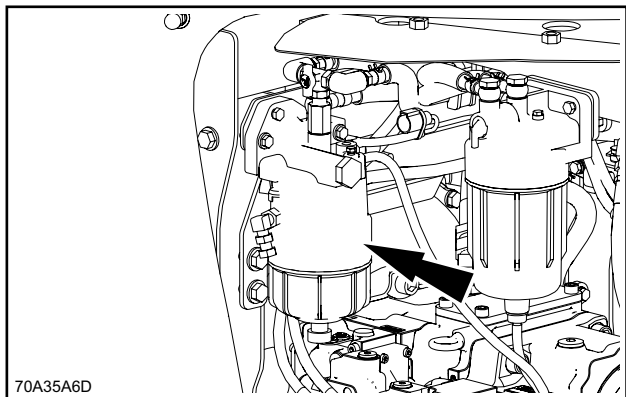
7. Drain from the system.

Refer to "AIR BLEEDING FOR FUEL LINE" (Page7-25).

FUEL MAIN FILTER

Proceed in the same manner as for the pre-filter.

See "FUEL PRE-FILTER" (Page 7-21).



70A35A6D

Figure 38

NOTE:

Tightening torque of the drain plug: 1.84 ± 0.37 lbf•ft (2.5 ± 0.5 N•m)

Tightening torque of the air bleed screw: 7.38 ± 0.74 lbf•ft (10 ± 1 N•m)

CHANGING THE FUEL MAIN FILTER ELEMENT

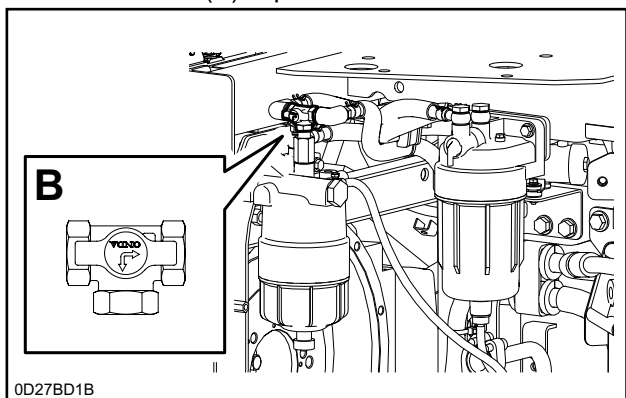
WARNING

- Keep fire away.
- After replacing the element or bleeding out the air, thoroughly wipe off any spilled diesel fuel.

CAUTION

- If a fuel filter other than a genuine Link-Belt filter is used, the guarantee will not be applied to a fault caused by the use of a wrong filter.
- When the fuel tank has been emptied, water drained from the fuel, the element or filter replaced, or other such work carried out, always bleed the air.
- Be sure to stop the engine before starting work.

Check if the valve (B) is present on the fuel main filter.

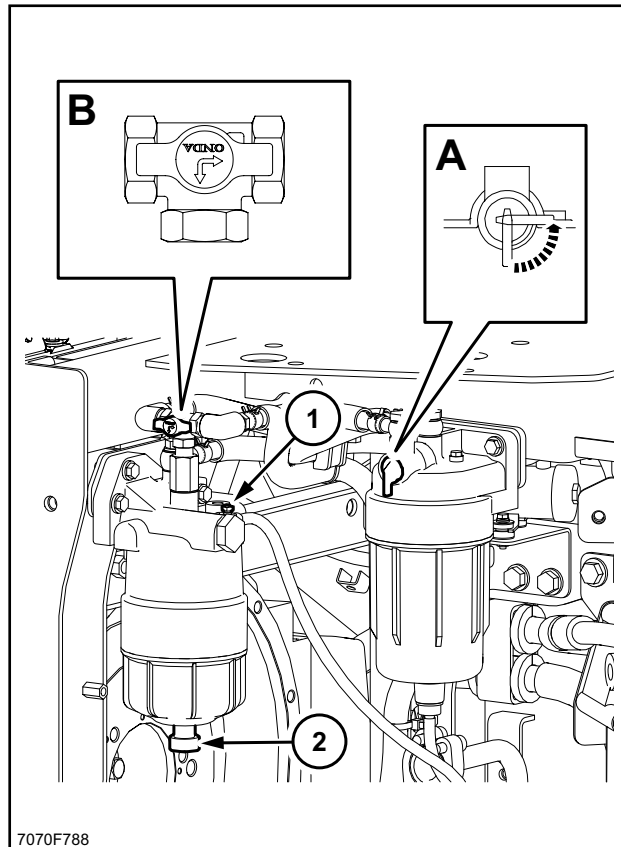


0D27BD1B

Figure 39

If the valve (B) of the fuel main filter is present
When replacing the fuel main filter element, replace the fuel pre-filter element at the same time.

1. Place the oil drain can under the fuel main filter.
2. Close the valve (A) of the fuel pre-filter.
3. Check if the valve (B) of the fuel main filter is in the horizontal position.

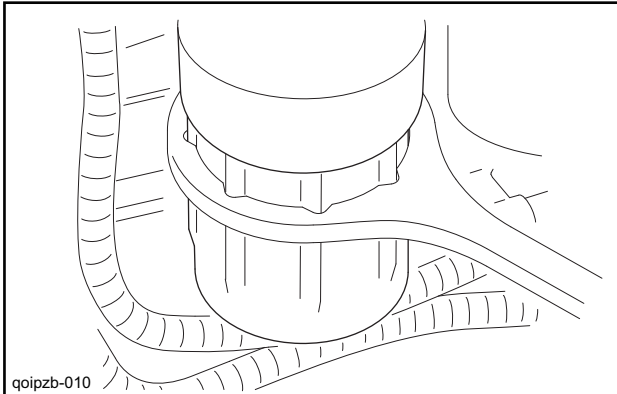


7070F788

Figure 40

4. Loosen the drain plug (2) and the air bleed plug (1) of the fuel main filter to drain sediment and fuel from the fuel main filter.
5. Clean the dirt accumulated around the fuel main filter case. (Do not use parts cleaner as it may damage the case.)

6. Remove the fuel main filter case with a dedicated wrench and clean the insides of the case with diesel oil.
Replace the used filter element with a new one while being careful not to get any dust or dirt on it.



qoipzb-010

Figure 41

7. Replace the O-ring of the drain plug with a new one.
8. Replace the O-ring of the filter case with a new one, and apply a thin layer of fuel to the O-ring and install it in the case.
9. Once the O-ring comes into contact with the sealing surface, tighten the case with the special wrench.
Case tightening torque: $22.13 \pm 0.74 \text{ lbf} \cdot \text{ft}$ ($30 \pm 1 \text{ N} \cdot \text{m}$)
10. Tighten the drain plug.
Drain plug tightening torque: $1.84 \pm 0.37 \text{ lbf} \cdot \text{ft}$ ($2.50 \pm 0.50 \text{ N} \cdot \text{m}$)

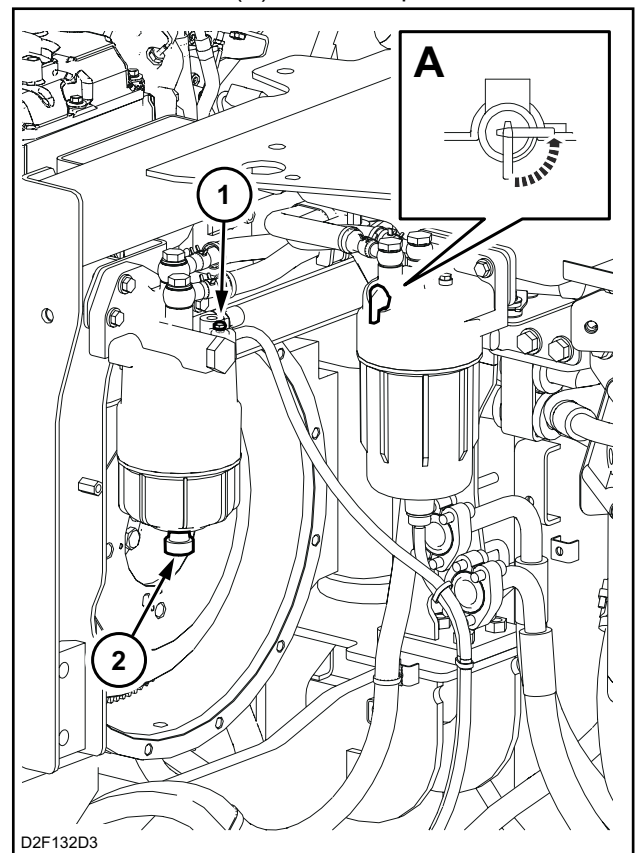
CAUTION

- Do not work in the environment where those other than fuel can enter the fuel line. (Such a site as is exposed to strong winds or dust)
- Wash your hands before work.
- Do not use cotton gloves.
- Do not open the filter KIT before starting installation.
- Do not reuse the fuel remaining in the cover.
- Persistent dirt in the cover should be wiped away with a clean rag and then washed away with clean diesel oil.
- Do not use parts cleaner because it may affect the cover.
- Do not touch the inside of the element.
- After the replacement work is completed, wipe off any spilled fuel and make sure there is no fuel leakage after starting the engine.

11. Bleed the air from the fuel line.

If the valve (B) of the fuel main filter is not present
When replacing the fuel main filter element, replace the fuel pre-filter element at the same time.

1. Place the oil drain can under the fuel main filter.
2. Close the valve (A) of the fuel pre-filter.

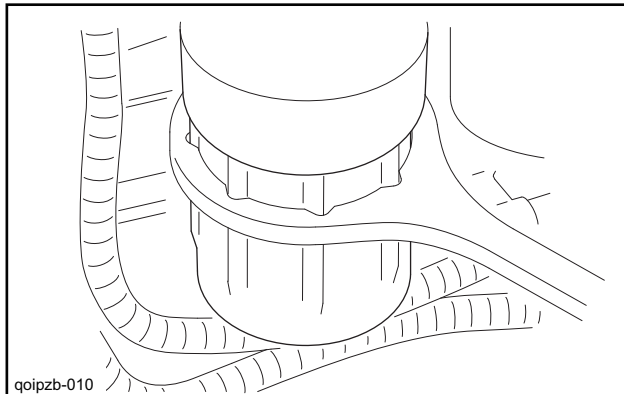


D2F132D3

Figure 42

3. Loosen the drain plug (2) and the air bleed plug (1) of the fuel main filter to drain sediment and fuel from the fuel main filter.
4. Clean the dirt accumulated around the fuel main filter case. (Do not use parts cleaner as it may damage the case.)

5. Remove the fuel main filter case with a dedicated wrench and clean the insides of the case with diesel oil.
Replace the used filter element with a new one while being careful not to get any dust or dirt on it.



qoipzb-010

Figure 43

6. Replace the O-ring of the drain plug with a new one.
7. Replace the O-ring of the filter case with a new one, and apply a thin layer of fuel to the O-ring and install it in the case.
8. Once the O-ring comes into contact with the sealing surface, tighten the case with the special wrench.
Case tightening torque: $22.13 \pm 0.74 \text{ lbf} \cdot \text{ft}$ ($30 \pm 1 \text{ N} \cdot \text{m}$)
9. Tighten the drain plug.
Drain plug tightening torque: $1.84 \pm 0.37 \text{ lbf} \cdot \text{ft}$ ($2.50 \pm 0.50 \text{ N} \cdot \text{m}$)

CAUTION

- Do not work in the environment where those other than fuel can enter the fuel line. (Such a site as is exposed to strong winds or dust)
- Wash your hands before work.
- Do not use cotton gloves.
- Do not open the filter KIT before starting installation.
- Do not reuse the fuel remaining in the cover.
- Persistent dirt in the cover should be wiped away with a clean rag and then washed away with clean diesel oil.
- Do not use parts cleaner because it may affect the cover.
- Do not touch the inside of the element.
- After the replacement work is completed, wipe off any spilled fuel and make sure there is no fuel leakage after starting the engine.

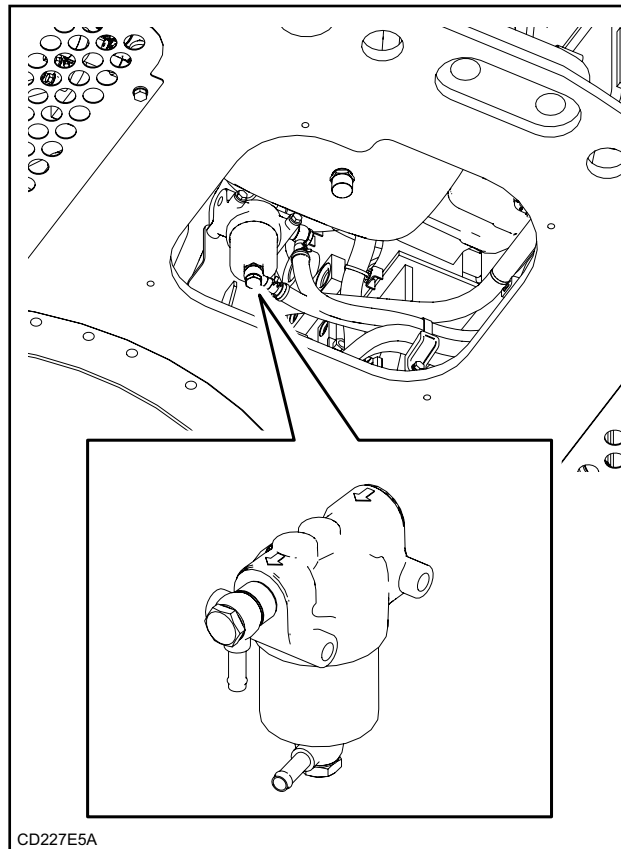
10. Bleed the air from the fuel line.

FINAL FILTER (IF EQUIPPED)

This filter is installed in order to reduce malfunctions caused by foreign matter entry during main filter replacement.

Generally, maintenance is not required.

NOTE: Do not disassemble.

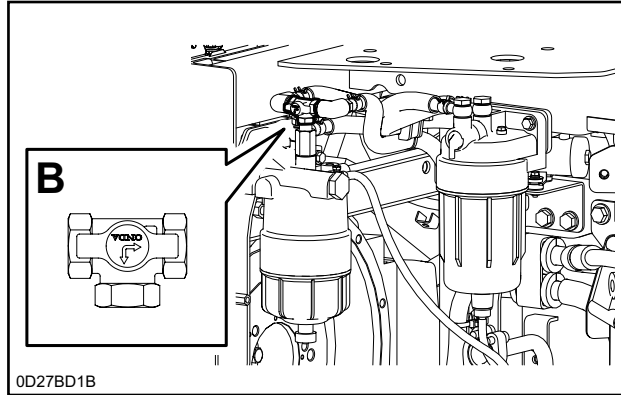


CD227E5A

Figure 44

AIR BLEEDING FOR FUEL LINE

Check whether there is a valve (B) of the fuel main filter.

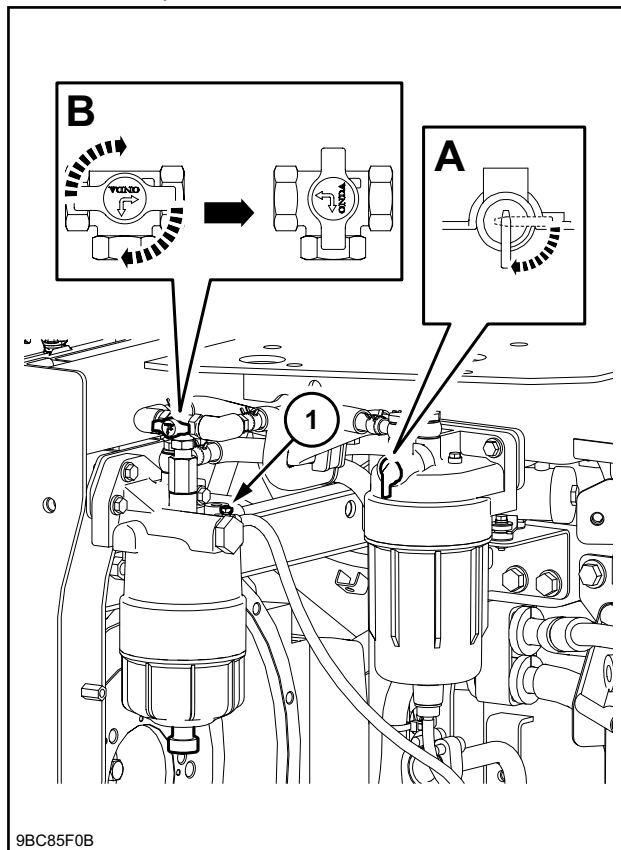


0D27BD1B

Figure 45

When there is a valve (B) of the fuel main filter
If the fuel pre-filter or the fuel filter is replaced, water is drained, or the fuel tank is emptied, bleed the air because the air can enter the pipe and interrupt a fuel flow.

1. Place the drain oil tray under the fuel main filter.
2. Open the valve (A) of the fuel pre-filter.
3. Turn the valve (B) of the fuel main filter to horizontal position to switch the valve.



9BC85F0B

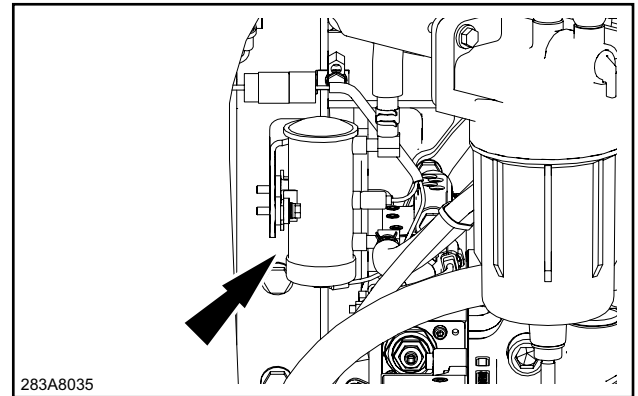
Figure 46

4. Loosen the air bleed plug (1) of the fuel main filter.
Do not loosen the air bleed plug of the fuel pre-filter.

5. Turn "ON" the starter switch to activate the electromagnetic feed pump.

IMPORTANT:

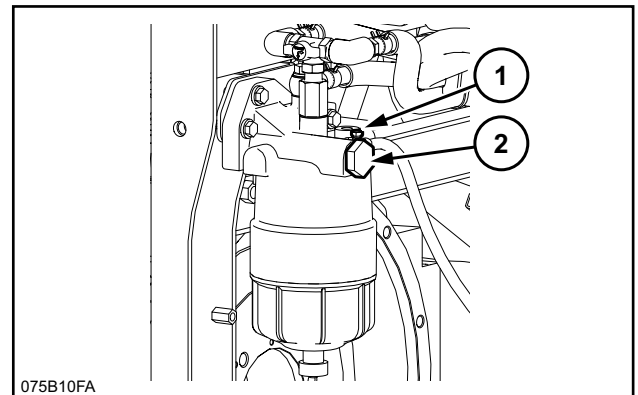
Do not turn "ON" the starter switch for 5 minutes or more without completing the air bleed operation.
It may cause failure of electromagnetic feed pump.



283A8035

Figure 47

6. Turning the handle (2) of the priming pump to the left pushes the handle (2) out due to the force of the internal spring.
7. Press the handles (2) to drain the air-bubble mixed fuel from the air bleed plug (1).
This operation is performed with the help of electromagnetic feed pump.
Perform this operation until there are no bubbles in the fuel.



075B10FA

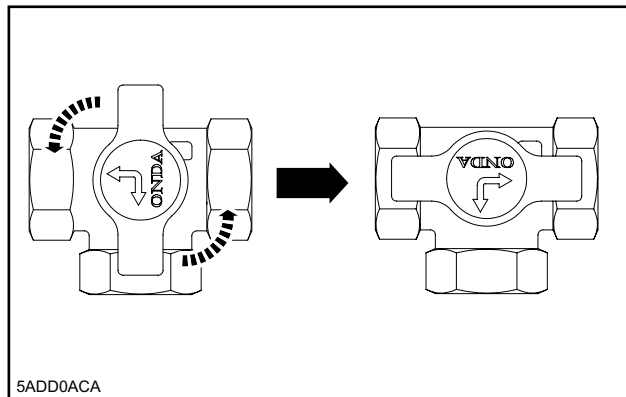
Figure 48

8. After completing the air bleed operation, turn "OFF" the starter switch.
9. Tighten the air bleed plug (1) loosened in step 3.
Tightening torque for air bleed plug: 7.38 ± 0.74 lbf · ft (10 ± 1 N · m)
10. Push the handle (2) until it feels heavy.

IMPORTANT: If the air bleed plug is tightened beyond the specified torque, the rubber portion of the gasket may get damaged.

11. Return the handle (2) of the priming pump to the original position.

12. Turn "ON" the starter switch and activate the electromagnetic feed pump for 30 seconds or more to discharge the dirt (impurities) in the fuel line.
13. Turn "OFF" the starter switch.
14. Return the valve (B) of the fuel main filter to the original position.



5ADD0ACA

5ADD0ACA

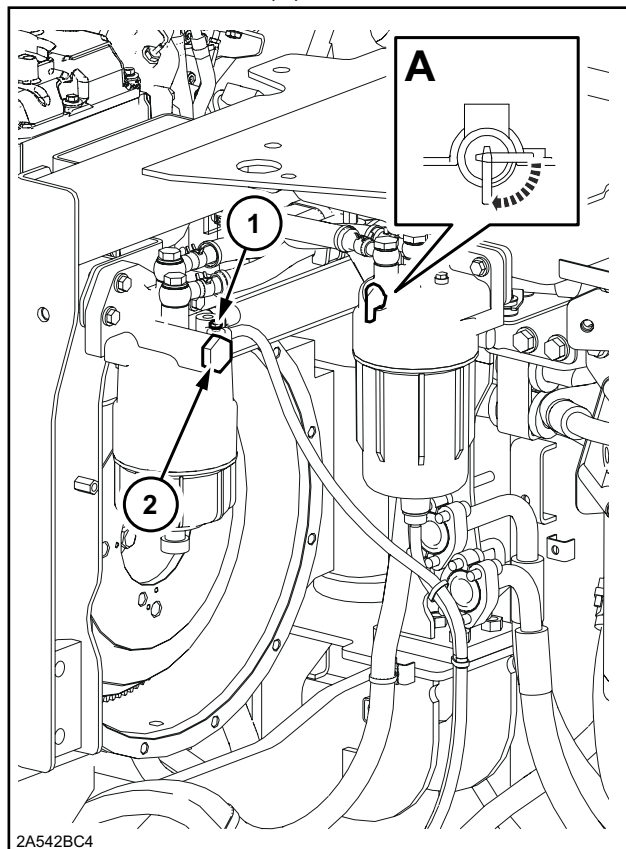
Figure 49

15. Wipe away the spilled fuel, and check that no fuel has leaked after the engine starts.

⚠ WARNING

After bleeding the air, inspect for leakage in the fuel system when starting the engine. Leakage may cause a fire.

When there is no valve (B) of the fuel main filter



2A542BC4

2A542BC4

Figure 50

If the fuel pre-filter or the fuel filter is replaced, water is drained, or the fuel tank is emptied, bleed the air because the air can enter the pipe and interrupt a fuel flow.

1. Place the drain oil tray under the fuel main filter.
2. Open the valve (A) of the fuel pre-filter.
3. Loosen the air bleed plug (1) of the fuel main filter. Do not loosen the air bleed plug of the fuel pre-filter.
4. Turn "ON" the starter switch to activate the electromagnetic feed pump.

IMPORTANT:

Do not turn "ON" the starter switch for 5 minutes or more without completing the air bleed operation. It may cause failure of fuel electromagnetic pump.

5. Turning the handle (2) of the priming pump to the left pushes the handle (2) out due to the force of the internal spring.
6. Press the handles (2) to drain the air-bubble mixed fuel from the drain hose. This operation is performed with the help of electromagnetic feed pump. Perform this operation until there are no bubbles in the fuel.
7. Tighten the air bleed plug (1). Tightening torque for air bleed plug: 7.38 ± 0.74 lbf · ft (10 ± 1 N · m)

IMPORTANT: If the air bleed plug is tightened beyond the specified torque, the rubber portion of the gasket may get damaged.

8. Push the handle (2) until it feels heavy.
9. Return the handle (2) of the priming pump to the original position.
10. Thoroughly wipe away the spilled fuel, and check that no fuel has leaked after the engine starts.

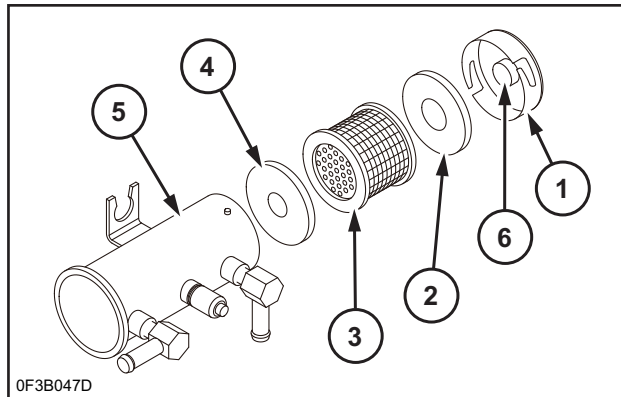
⚠ WARNING

After bleeding the air, inspect for leakage in the fuel system when starting the engine. Leakage may cause a fire.

CLEANING OR REPLACING ELECTROMAGNETIC FEED PUMP FILTER

The electromagnetic feed pump is located near the fuel pre-filter.

Metal mesh filter type



0F3B047D

Figure 51

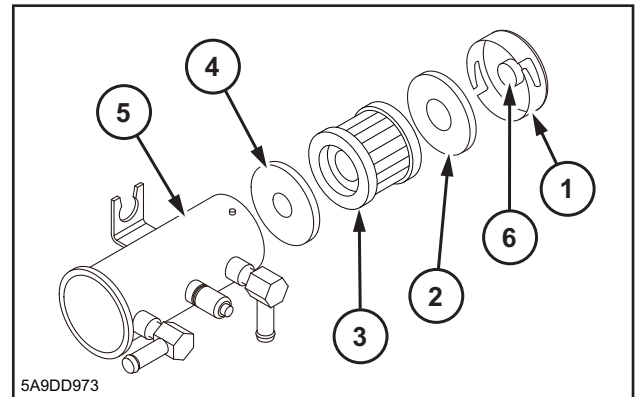
1. Place the container with an appropriate capacity under the electromagnetic feed pump.
2. Close the pre-filter cock.
3. Remove the cover (1) from the main unit (5) with a wrench 17 mm.
4. Remove the filter (3) and the gasket (2) (4) from the main unit (5).
5. Clean the inside and outside of the cover (1), magnet (6), and main unit (5).
6. Clean the filter (3) by compressed air or diesel oil. Replace if any damage or abnormality is observed.

WARNING

Flying debris! Dirt, rust, etc. are flown in the air by compressed air.
Wear eye and face protection when using compressed air.
Failure to comply will result in death or serious injury.

7. Replace the gaskets (2) (4) with new ones.
8. Attach the gasket (4) and the filter (3) sequentially to the main unit (5).
9. Install the gasket (2) in the cover (1).
10. Attach the cover (1) to the main unit (5) with a wrench 17 mm.
11. Check the airtightness after attachment without fail.
12. Open the pre-filter cock.
13. Perform air bleeding of the fuel system. Refer to "Bleeding Fuel System of Air."

Paper filter type



5A9DD973

Figure 52

CAUTION

Paper filter cannot be cleaned.
Replace the same without fail.

1. Place the container with an appropriate capacity under the electromagnetic feed pump.
2. Close the pre-filter cock.
3. Remove the cover (1) from the main unit (5) with a wrench 17 mm.
4. Remove the filter (3) and the gasket (2) (4) from the main unit (5).
5. Clean the inside and outside of the cover (1), magnet (6), and main unit (5).
6. Replace the filter (3) and gaskets (2) (4) with new ones.
7. Attach the gasket (4) and the filter (3) sequentially to the main unit (5).
8. Install the gasket (2) in the cover (1).
9. Attach the cover (1) to the main unit (5) with a wrench 17 mm.
10. Check the airtightness after attachment without fail.
11. Open the pre-filter cock.
12. Perform air bleeding of the fuel system. Refer to "Bleeding Fuel System of Air."

DEF SYSTEM

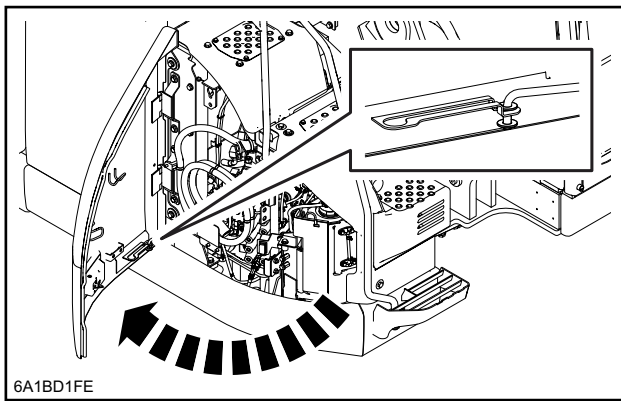
SERVICE SPECIFICATIONS

Check the DEF level	Every 10 hours or every day
Replacement of supply module filter	Every 4500 hours
Replacement of balloon filter	Every 4000 hours
DEF tank Capacity	11.4 gal. (43 liters)
Type of DEF	See DEF(Page 7-3)

REPLACEMENT OF SUPPLY MODULE FILTER

1. Turn OFF the ignition key and check that operation of the supply module has stopped. (It may take 3 minutes or more.)
Open the right front door.

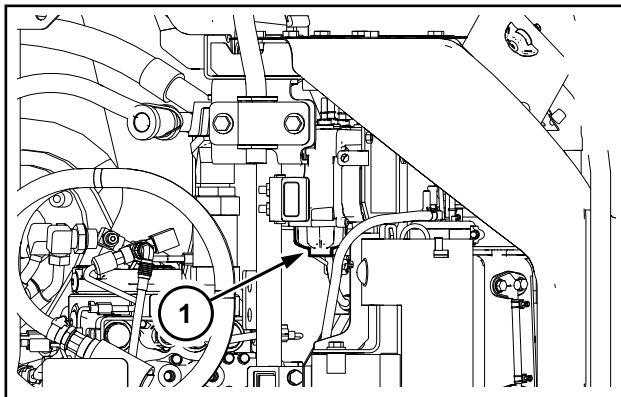
IMPORTANT: After fully opening the door, check that it is locked firmly.



6A1BD1FE

Figure 53

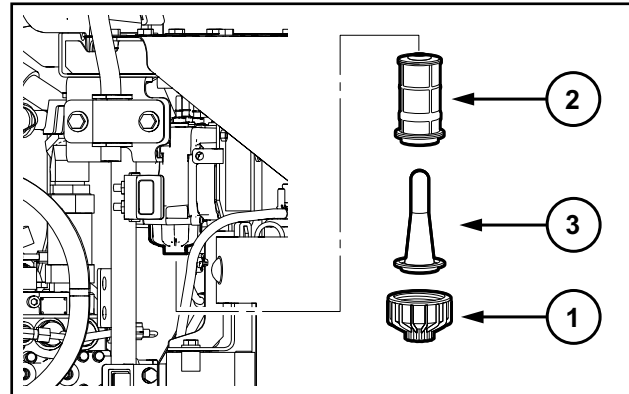
2. Place the container with an appropriate capacity under the supply module filter.
After that, loosen the supply module filter cap (1).



17877F85

Figure 54

3. Remove the filter element (2) and the equalizing element (3).



BF03F918

Figure 55

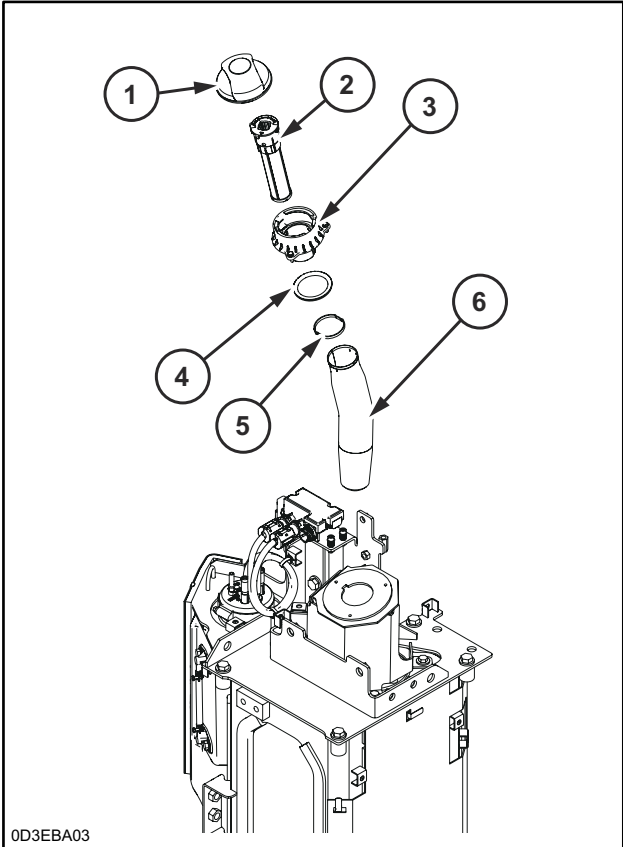
4. Assemble the new filter element (2) and equalizing element (3).
The cap should be tightened with a torque of $16.97 \pm 1.48 \text{ lbf}\cdot\text{ft}$ ($23 \pm 2 \text{ N}\cdot\text{m}$).
5. Completely remove the urea solution around it with running water, and blow compressed air to clean it.
6. Idle the engine for several minutes, and check that there is no leak.

REPLACEMENT OF BALLOON FILTER

IMPORTANT:

- Turn OFF the ignition key and check that operation of the supply module has stopped.
(It may take 3 minutes or more.)

Components



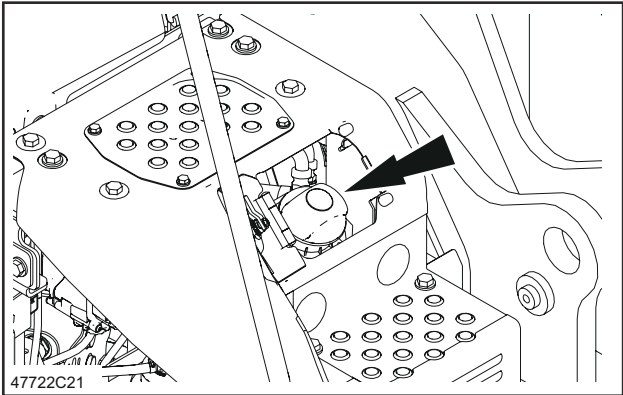
OD3EBA03

Figure 56

1	Cap
2	Strainer
3	Urea filler neck
4	O-ring
5	Wire band
6	Balloon filter

Replacement procedure

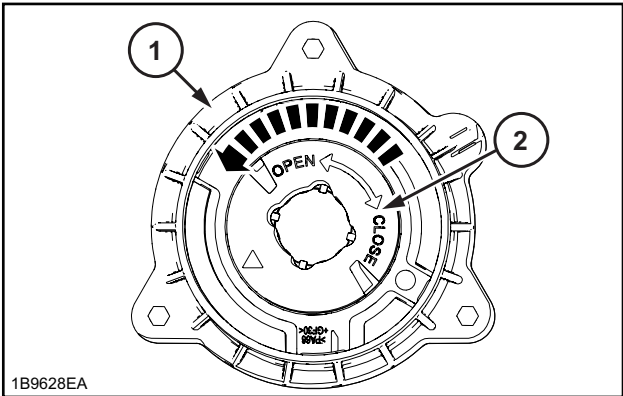
1. Remove cap of the urea solution tank.



47722C21

Figure 57

2. Remove the strainer (2) from the urea filler neck (1) by turning it in the OPEN direction.



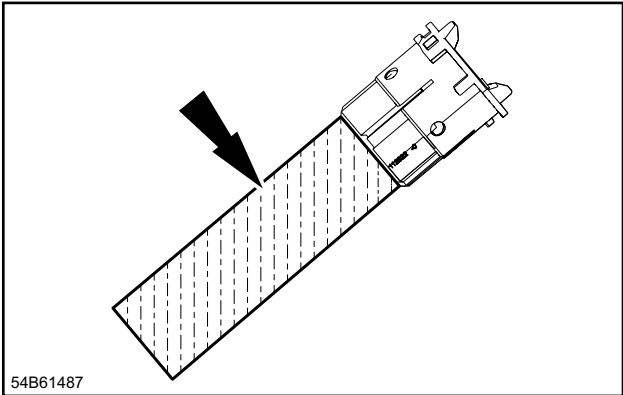
1B9628EA

Figure 58

3. Wash the strainer with clean water.

CAUTION

- It is normal for white powder deposits to form when DEF/AdBlue® (urea solution) adheres and dries. Wipe it away to prevent the entry into the urea solution tank.



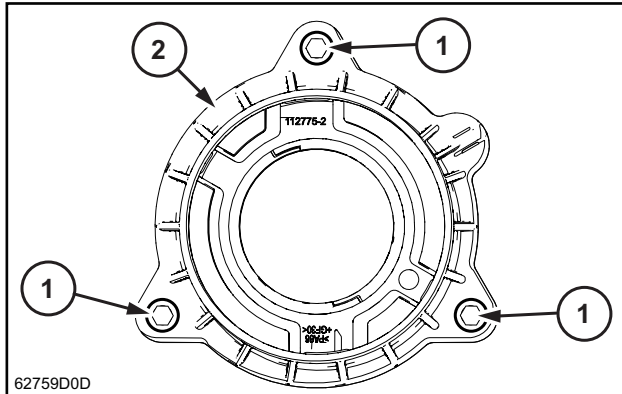
54B61487

Figure 59

4. Remove the 3 bolts (1), then remove the urea filler neck (2).

CAUTION

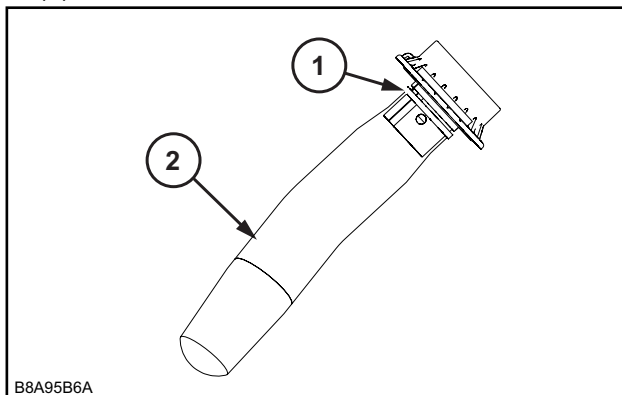
- When removing, be sure to remove wire band from the notch of the bracket as the head of the wire band will be caught in the bracket. Pulling forcibly will cause the filter to fall.
- It is normal for white powder deposits to form when DEF/AdBlue® (urea solution) adheres and dries. Wipe it away to prevent the entry into the urea solution tank.



62759D0D

Figure 60

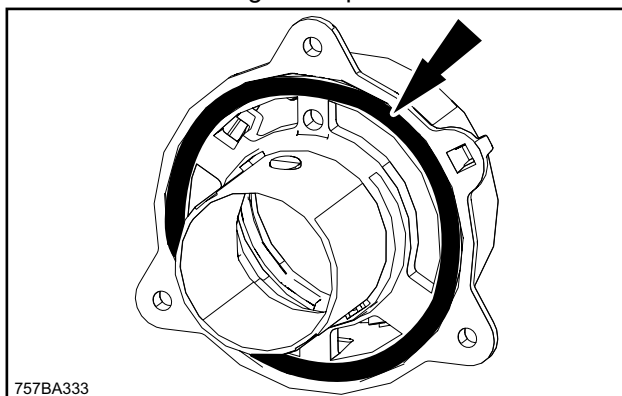
5. Cut the wire band (1) and remove the balloon filter (2).



B8A95B6A

Figure 61

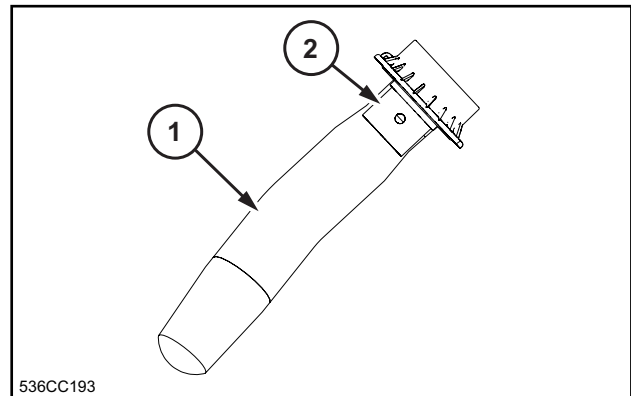
6. Remove the O-ring and replace it with a new O-ring.



757BA333

Figure 62

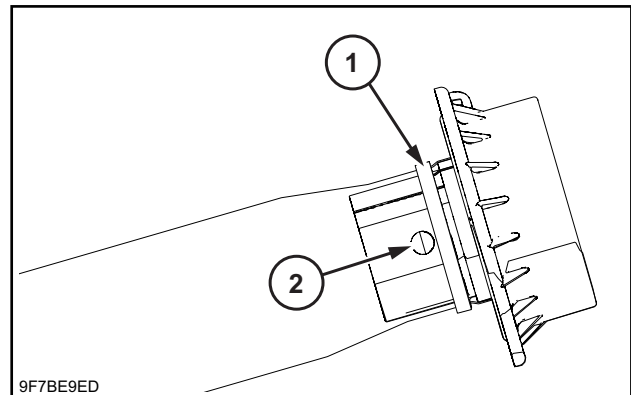
7. Install the new balloon filter (1) over the urea filler neck (2).



536CC193

Figure 63

8. Secure the new wire band (1) over the convex part (2) of the urea filler neck.



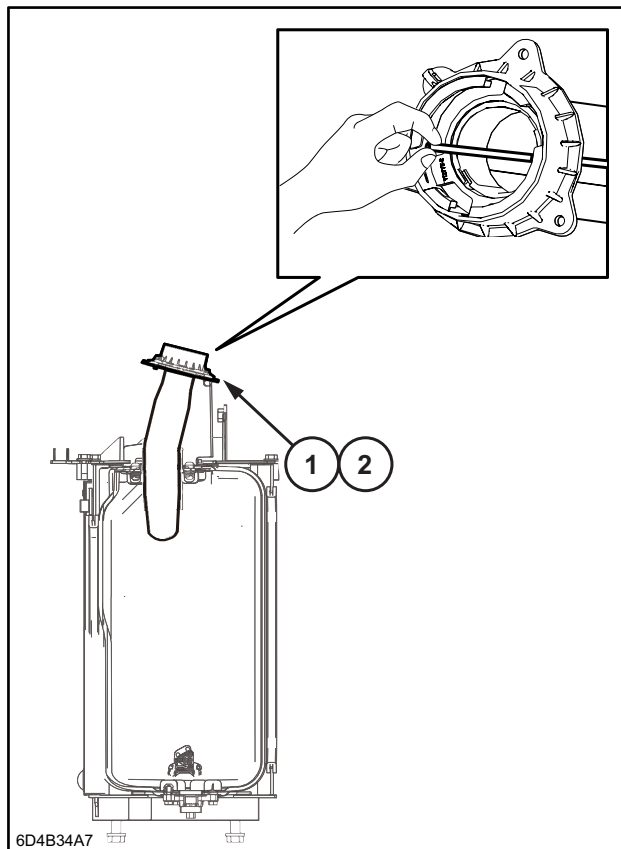
9F7BE9ED

Figure 64

9. Insert the balloon filter (1) and the urea filler neck (2).

CAUTION

- Be sure to align the notch on the bracket and the head of the wire band before inserting so that the head of the wire band does not get caught in the bracket during installation.
- When inserting, push the balloon filter (1) all the way in from the water inlet using a rod (about 40 cm (15.748 in.)) so that the balloon filter (1) does not curl up inside the filler hose.

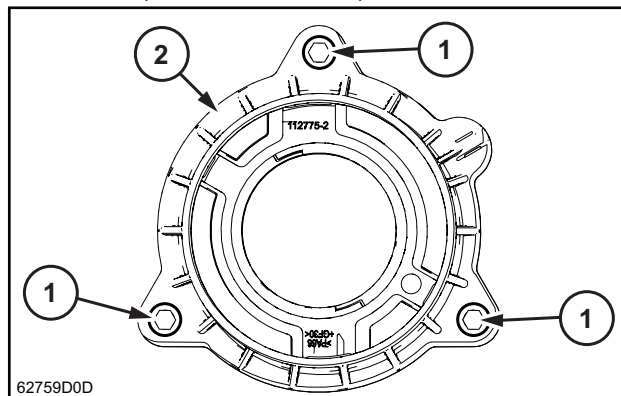


6D4B34A7

Figure 65

10. Tighten the 3 bolts (1) to the specified torque and install the urea filler neck (2).

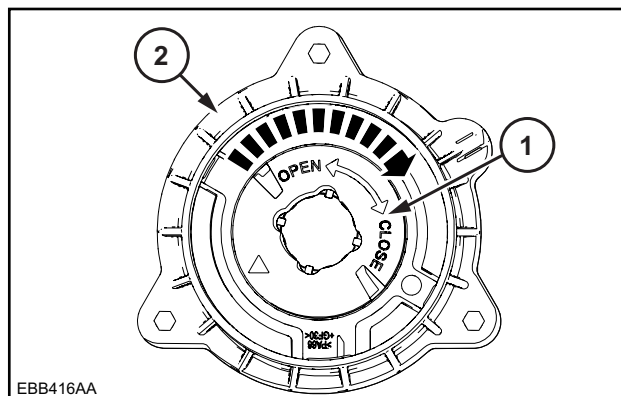
- Urea filler neck tightening torque: 2.95 ± 0.37 lbf · ft (4.00 ± 0.50 N · m)



62759D0D

Figure 66

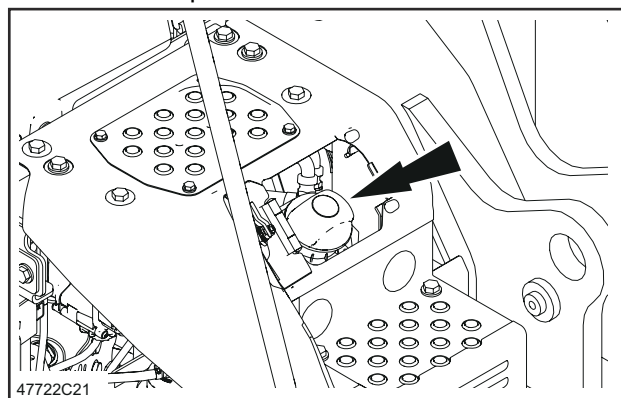
11. Insert the strainer (1) into the urea filler neck (2) and rotate in the CLOSE direction to install.



EBB416AA

Figure 67

12. Install the cap of the urea solution tank.



47722C21

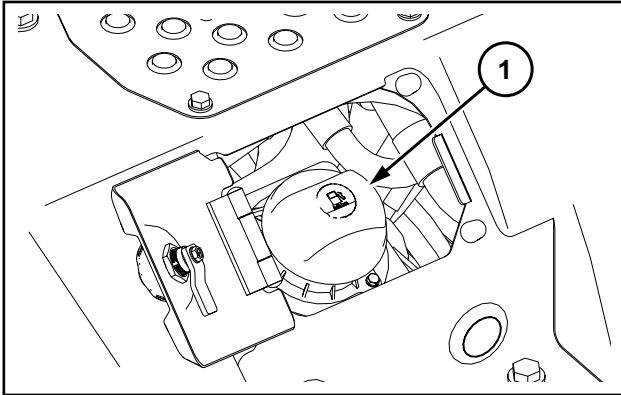
Figure 68

DRAINING

NOTE:

- Turn OFF the ignition key and check that operation of the supply module has stopped. (It may take for 3 minutes or more.)

1. Remove cap (1) of the DEF tank.



60FFA5C6

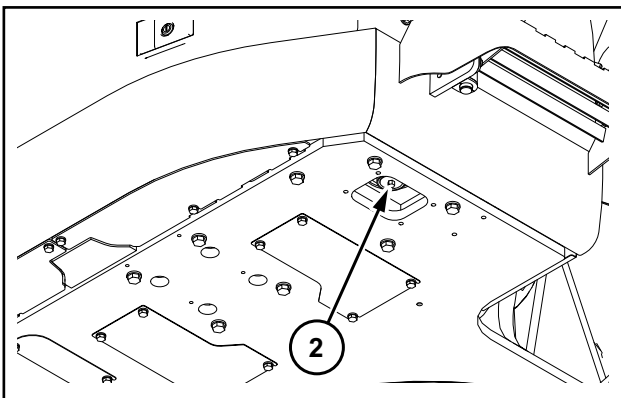
Figure 69

2. Install a container of a suitable capacity under the drain plug (2).

Remove the drain plug (2) and drain the DEF.

NOTE:

- Do not start the engine when no DEF is in the DEF tank.
- Discard and/or process the drained DEF with the specified method.



6414E66D

Figure 70

3. After draining, attach the cap (1) and the drain plug (2) of the DEF tank.

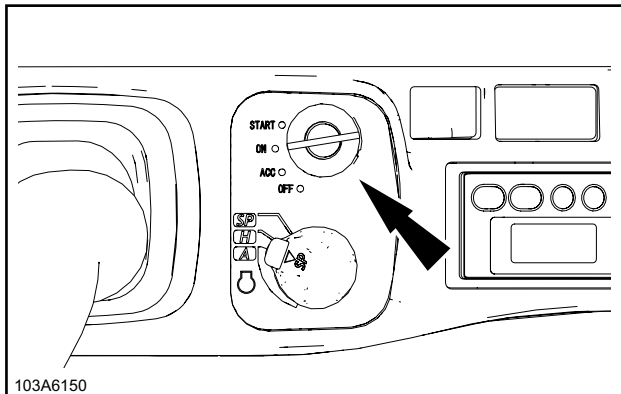
FILLING

Refilling ADDING DEF: Refer to page 7-6

RELEASING PRESSURE IN THE HYDRAULIC SYSTEM

IMPORTANT: Before carrying out any work on the hydraulic system, there should be no pressure in any of the circuits.

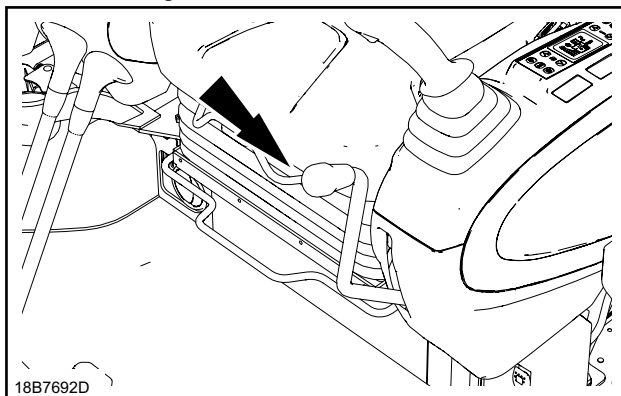
1. Place the excavator on flat, level ground, lower the attachment to the ground and stop the engine.
2. Turn the starter switch key to the ON position.



103A6150

Figure 71

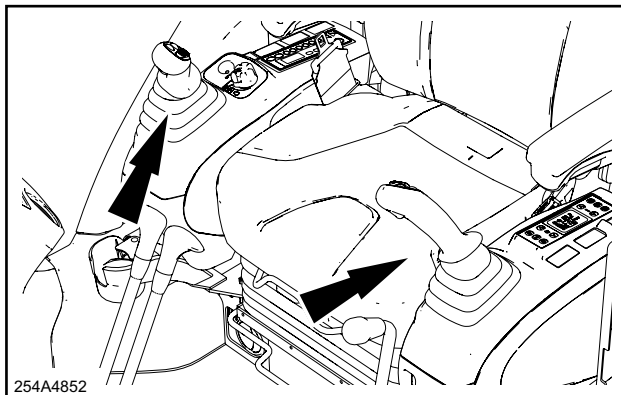
3. Lower the gate lock lever.



18B7692D

Figure 72

4. Operate the control levers from right to left and front to rear a dozen times approximately.

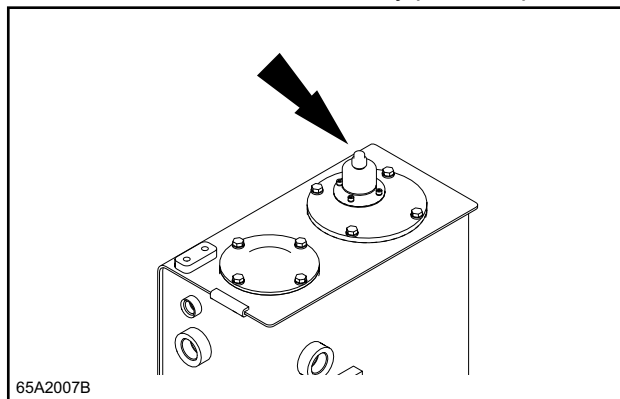


254A4852

Figure 73

5. Turn the starter switch key to the OFF position.

6. Press the button to release any possible pressure.



65A2007B

Figure 74

WARNING

Stop the engine, press the pressure release button and completely bleed air from the reservoir.

WARNING

Make sure you don't get scalded with the hydraulic fluid under high pressure. The temperature should not exceed 104.0 °F (40°C).

HYDRAULIC SYSTEM

SERVICE SPECIFICATIONS

Check the hydraulic reservoir fluid level	Every 10 hours or each day
Check the lines	Every 50 hours
Draining water and sediment from the hydraulic reservoir	Every 250 hours
Check the condition of the hydraulic fluid	Every 1000 hours
Replace the pilot filter	Every 2000 hours (after the first 250 hours during the run-in period)
Replace the reservoir breather	Every 1000 hours
Clean the suction filter	Every 2000 hours
Replace the suction filter	Every 5000 hours
Replace the return filter	Every 2000 hours (after the first 250 hours during the run-in period)
Change the hydraulic fluid	Every 5000 hours
Capacity of the hydraulic tank	20 gal. (75 liters)
Total capacity of the system	41.7 gal. (158 liters)
Oil type	See Fluids and Lubricants
Replace the hoses	Every 2 years or every 4000 hours (whichever comes first)

NOTE: If the excavator is new or if a major component has been overhauled or replaced in the hydraulic system, replace the pilot filter and return filter after 250 hours of operation. After that, replace these filters at the stipulated interval.

IMPORTANT: Every 1000 operating hours, it is necessary to have the hydraulic fluid analyzed. Contact your Link-Belt Dealer.

IMPORTANT: After replacing the hydraulic fluid, it is necessary to bleed all air from the hydraulic components. See Bleeding air from the hydraulic components.

IMPORTANT: If metal filings are discovered in the replaced filters, contact your Link-Belt Dealer.

WARNING

Before carrying out any service work on the hydraulic system it is necessary to allow it to cool down. The temperature should not be more than 104.0 °F (40°C).

WARNING

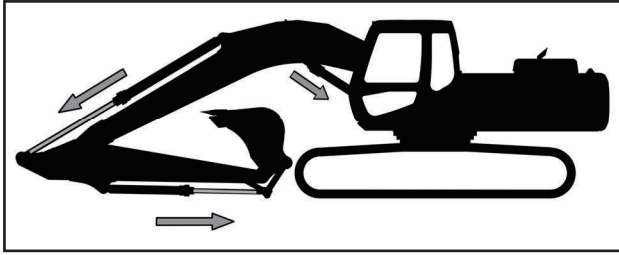
Hydraulic fluid or grease injected into your skin can cause severe injury or death. Keep your hands and body away from any pressurized leak. Use cardboard or paper to check for a leak. If fluid is injected into your skin, see a doctor immediately and have the fluid removed.

WARNING

Before carrying out any operation on the hydraulic filters or the hydraulic system, the pressure must be released from the system. Failure to observe this instruction can cause injury. See Releasing Pressure in the Hydraulic System (Page 7-33).

LEVEL IN THE RESERVOIR

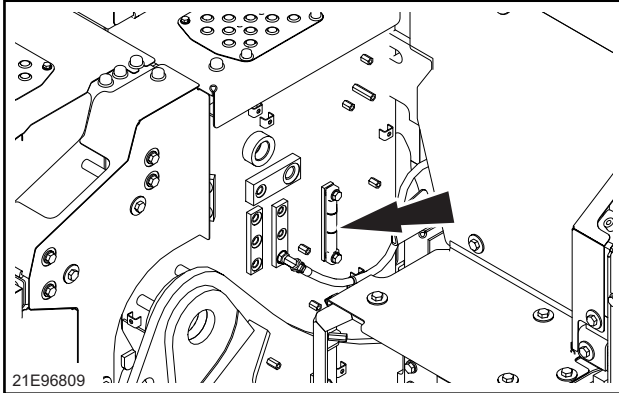
1. Park the excavator on flat, horizontal ground. Extend the bucket and arm cylinder rod completely. Lower the attachment to the ground. Shut down the engine and remove the starter switch key.



1A20F306

Figure 75

2. Using the starter switch key, open the right-hand side door.
3. The oil must be located in the middle of the indicator. Top off if necessary.

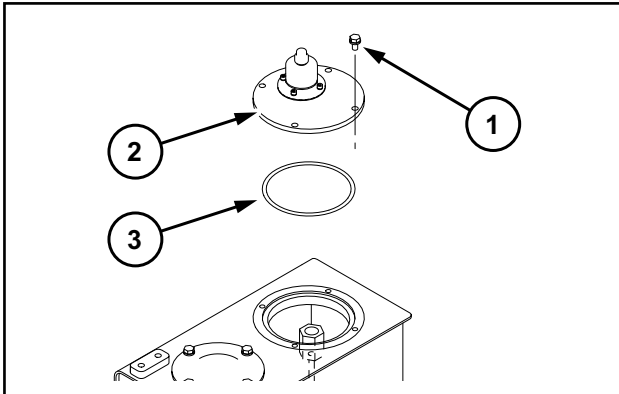


21E96809

Figure 76

FILLING THE HYDRAULIC RESERVOIR

1. Release all pressure in the hydraulic reservoir. See **RELEASING PRESSURE IN THE HYDRAULIC SYSTEM**(Page 7-33).
2. Clean the plate (2) and also around the plate. Remove the 4 bolts (1) and the plate and the O-ring (3). Add hydraulic fluid as required.



A4956EA8

Figure 77

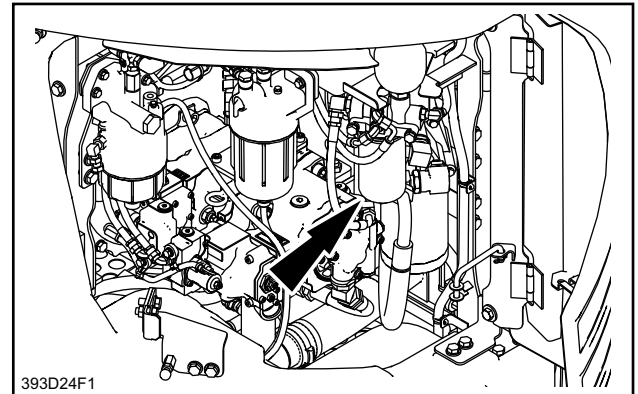
3. Check the maximum and minimum level by monitoring the sight gauge. Install the plate and the 4 bolts. Replace the O-ring if required.

IMPORTANT: When refilling the hydraulic oil, prevent dust, water, or other contaminants from entering the reservoir.

PILOT FILTER REPLACEMENT

1. Release all pressure in the hydraulic system. See **RELEASING PRESSURE IN THE HYDRAULIC SYSTEM**(Page 7-33).
2. Use a spanner wrench on the bottom of the filter body to loosen it.
3. Remove the old filter.
4. Coat the new filter with clean hydraulic fluid and install the filter on the head.
5. Install the filter body and tighten the bottom of the filter with a spanner wrench.

Tightening torque: 25.08 ± 2.95 lbf•ft (34 ± 4 N•m)

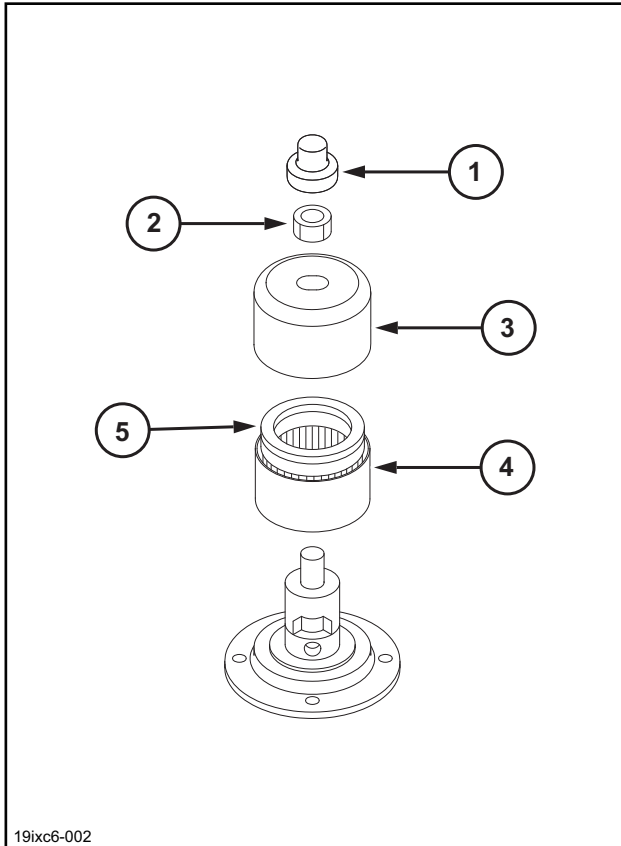


393D24F1

Figure 78

REPLACING THE RESERVOIR BREATHER

1. Press the button (1) to release all pressure in the hydraulic reservoir.
2. Remove the nut (2) and the cover (3) from the breather.
3. Remove and discard the used filter (4).
4. Install a new element, making sure the seal (5) is facing upwards.
5. Install the cover (3) as well as the nut (2).



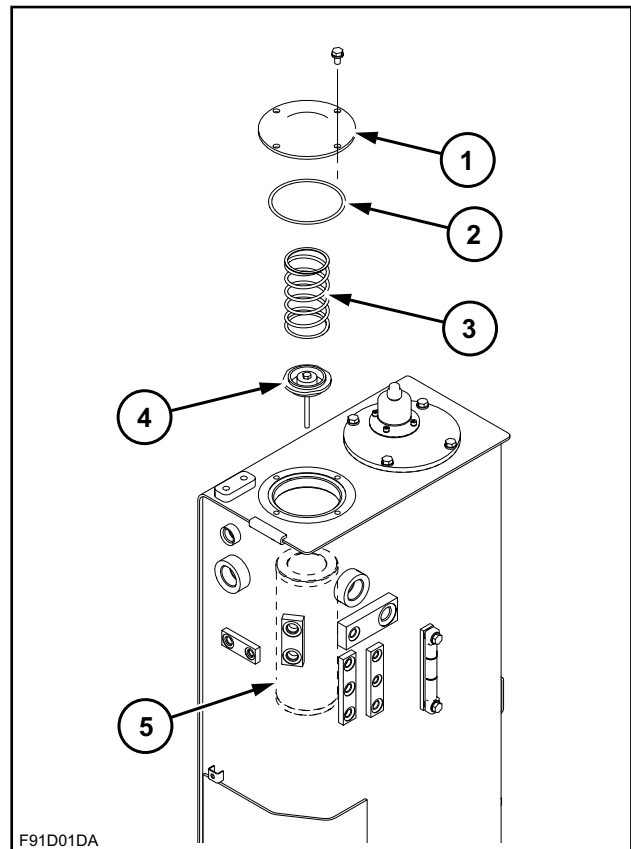
19ixc6-002

19ixc6-002

Figure 79

RETURN FILTER REPLACEMENT

1. Release all pressure in the hydraulic reservoir. See **RELEASING PRESSURE IN THE HYDRAULIC SYSTEM**(Page 7-33).
2. Clean the top of the hydraulic reservoir and clean the return filter cover.
3. Remove the cover (1) and O-ring (2).
4. Take out the spring (3), valve (4), and return filter (5) from the tank.
5. Install a new filter (5). Clean the spring (3) and valve (4) and install them.
6. Check the O-ring (2) and replace it if worn or damaged.
7. Install the cover (1).
8. Check the level of the hydraulic fluid and add more if necessary. See **FILLING THE HYDRAULIC RESERVOIR**(Page 7-35).



F91D01DA

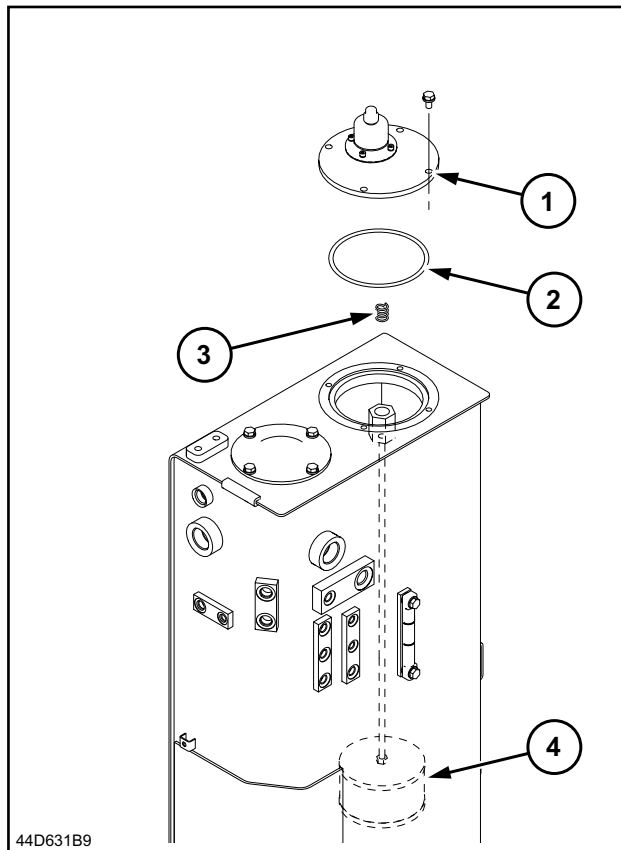
F91D01DA

Figure 80

CLEANING AND REPLACEMENT OF THE SUCTION SCREEN

1. Release all pressure in the hydraulic reservoir. See Releasing Pressure in the Hydraulic System.
2. Clean the top of the hydraulic reservoir and clean the inlet filter cover.
3. Remove the cover (1), O-ring (2) and spring (3) on the top of the suction filter rod assembly. Remove the suction filter (4) and clean with solvent. Dry it completely and check it for any damage. If there is any damage on the surface, replace it with a new one.
4. Install a new O-ring (2) and install the suction filter (4), spring (3) and rod assembly.
5. Install the cover (1).
6. Check the level of the hydraulic fluid and add more if necessary. See Filling the reservoir.

NOTE: Install a new suction filter every 5000 hours of operation or when the hydraulic fluid is replaced.

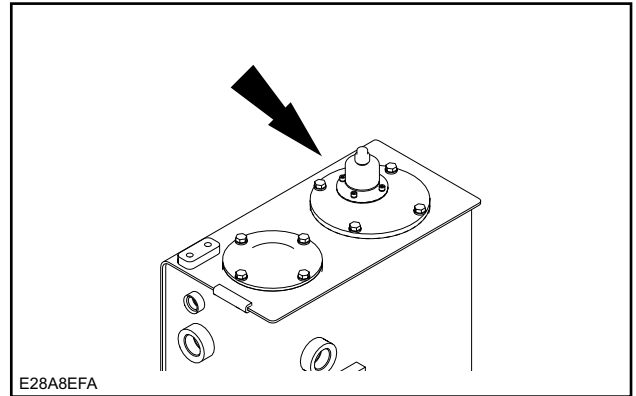


44D631B9

Figure 81

REPLACING THE HYDRAULIC FLUID

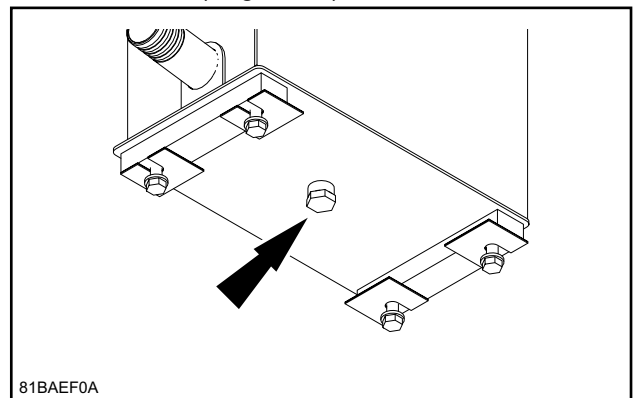
1. Release all pressure in the hydraulic tank. See **RELEASING PRESSURE IN THE HYDRAULIC SYSTEM**(Page 7-33).
2. Remove the reservoir cover plate.
3. Using a pump, remove the fluid from the hydraulic tank. Have a container with a suitable capacity ready.



E28A8EFA

Figure 82

4. Place a receptacle of a suitable capacity under the reservoir drain valve, open the reservoir drain valve and allow the remainder of the fluid to flow out.
5. Change the suction filter and the return filter. See **CLEANING AND REPLACEMENT OF THE SUCTION SCREEN**(Page 7-37)" and **RETURN FILTER REPLACEMENT**(Page 7-36).
6. Close the reservoir drain valve.
7. Fill the reservoir with new hydraulic fluid. See **FILLING THE HYDRAULIC RESERVOIR**(Page 7-35).



81BAEF0A

Figure 83

8. Replace the cover plate seal if required and install the cover plate on the reservoir.

NOTE:

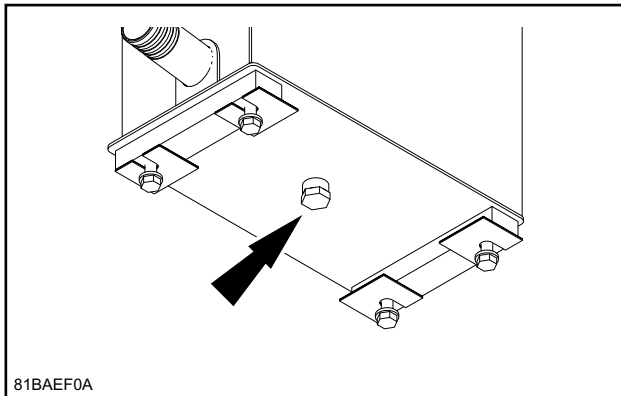
Before you start the engine, it is very important that you bleed air from all the hydraulic components. See **BLEEDING AIR FROM THE HYDRAULIC COMPONENTS**(Page 7-39).

9. Start and run the engine with no load for approximately 5 minutes.

10. Move each control several times to remove any air in the system.
11. Swing the upperstructure evenly left to right two complete turns or more.
12. Place the excavator in position and then stop the engine.
13. Check the oil level in the hydraulic tank and add oil as required and check that there are no air bubbles in the hydraulic tank.

RESERVOIR SEDIMENT REMOVAL

1. Release all pressure in the hydraulic tank.
See **RELEASING PRESSURE IN THE HYDRAULIC SYSTEM**(Page 7-33).
2. Place a receptacle of a suitable capacity under the drain plug.
3. Open the drain valve on the bottom of the reservoir and drain the sediment and water accumulated at the bottom of the reservoir.
4. After draining, close the drain valve.
5. Add hydraulic oil if necessary.
See **FILLING THE HYDRAULIC RESERVOIR**(Page 7-35).



81BAEF0A

Figure 84

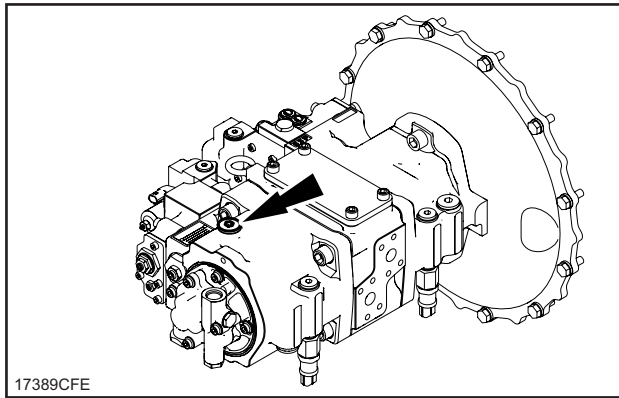
BLEEDING AIR FROM THE HYDRAULIC COMPONENTS

IMPORTANT: After bleeding air from the components, stop the engine for 5 minutes and check there are no bubbles at the surface of the hydraulic fluid in the reservoir.

HYDRAULIC PUMP

1. Using a solvent, clean the upper surface of the pump and the air bleed plug. Check to see if oil is coming out of the air bleeding port. If it is not remove the air bleed plug.
2. Fill the air bleed port with hydraulic fluid. Install the air bleed plug.
3. Start the engine and run it at low speed. Loosen the air bleed plug on the pump. Tighten the plug when air free fluid comes out of the bleed plug hole. Clean the area completely.

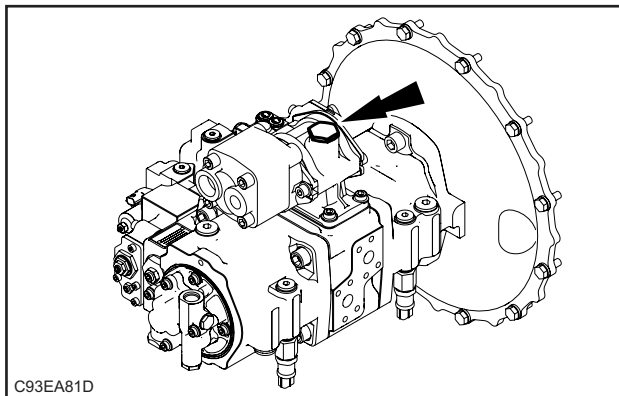
Standard specifications



17389CFE

Figure 85

2nd optional specifications



C93EA81D

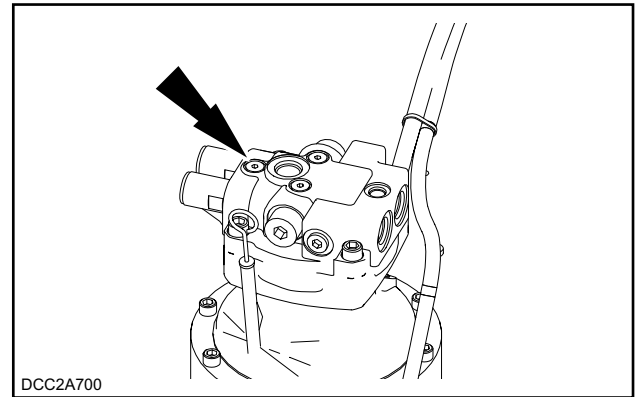
Figure 86

ATTACHMENT CYLINDERS

1. Start and run the engine at low idle speed.
2. Extend and retract the attachment cylinder rods 4 or 5 times without bringing them to end of stroke.
3. Repeat the operation 3 or 4 times, this time bringing the cylinder rods to end of stroke.

SWING REDUCTION GEAR

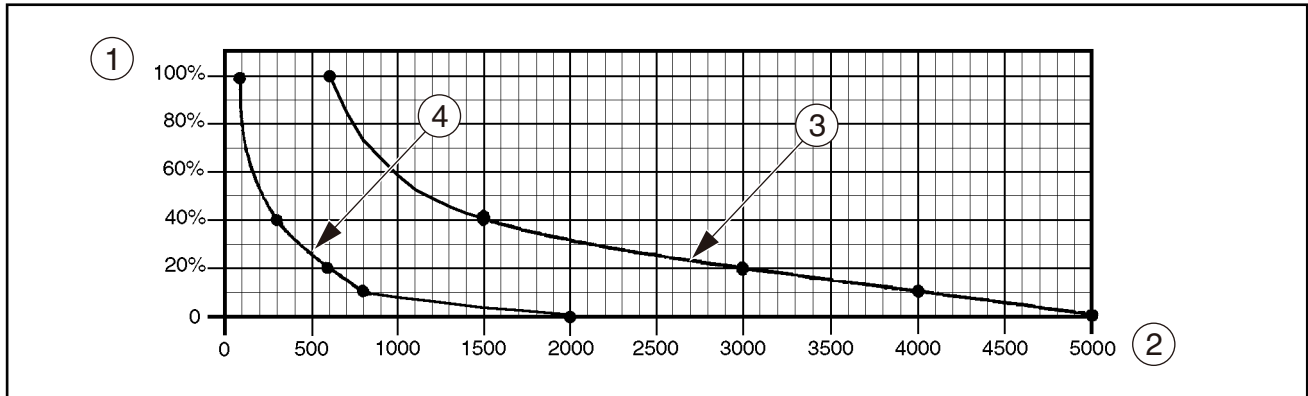
1. Start and run the engine at low idle speed.
2. Loosen the air bleed plug and make sure hydraulic fluid runs out through this port. If required, shut down the engine and add oil via this port.
3. Install the plug without tightening, and then start and run the engine at low idle, leaving it to run until oil begins to run from the orifice.
4. Tighten the air bleed plug completely. Swing the upperstructure 3 times completely to the right and 3 times completely to the left.



DCC2A700

Figure 87

HYDRAULIC BREAKER (OPTIONAL) - REPLACING HYDRAULIC FLUID AND FILTERS WITH STANDARD HYDRAULIC FLUID



D45B792D

Figure 88

1. Percentage of use 2. Interval in hours 3. Replacing hydraulic fluid 4. Replacing hydraulic filters

HYDRAULIC FLUID

- When using the hydraulic breaker, hydraulic fluid deteriorates more quickly than during ordinary digging. Check the hydraulic fluid level more frequently. In addition, when replacing the filters, also check the condition of the hydraulic fluid.
- Replace the hydraulic fluid and filter element using the graph above as a reference, depending on the operation frequency of the hydraulic breaker.
- Replace the return filter for the hydraulic breaker at the same interval as the element.

CHECKING THE HYDRAULIC SYSTEM LINES

Make sure there are no leaks from the hydraulic system hoses, pipes, plugs, connections and fittings and check that all nuts and screws are correctly tightened. In the event of problems, repair, replace or tighten the component(s) concerned.

AIR FILTER

SERVICE SPECIFICATIONS

Inspect and clean the outer element	Every 250 hours or when AIR FILTER is indicated on the monitor
Replace the outer element	Every 1000 hours or after cleaning 5 times
Replace the inner element	Every 1000 hours

IMPORTANT: The outer element can be cleaned. The inner element cannot be cleaned and must be replaced.

IMPORTANT: Observe the air filter service intervals shown above. Clean filters mean longer engine life.

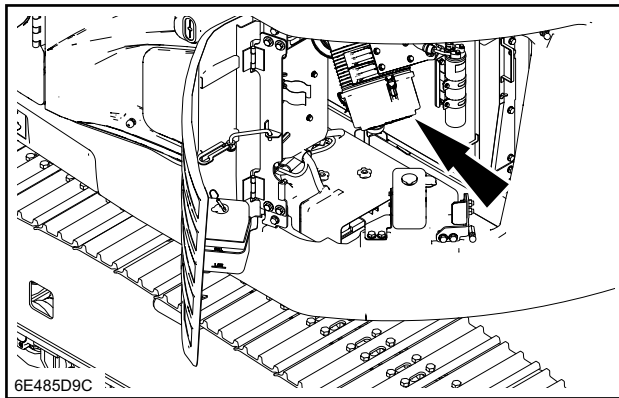
INSPECTION

Be sure to carry out regular checks on the air filter, intake manifold, seals, and hoses. At the same time, check the intake manifold screws and hose clamps for tightness.

The hoses should be replaced before they are worn.

CLEANING THE OUTER ELEMENT

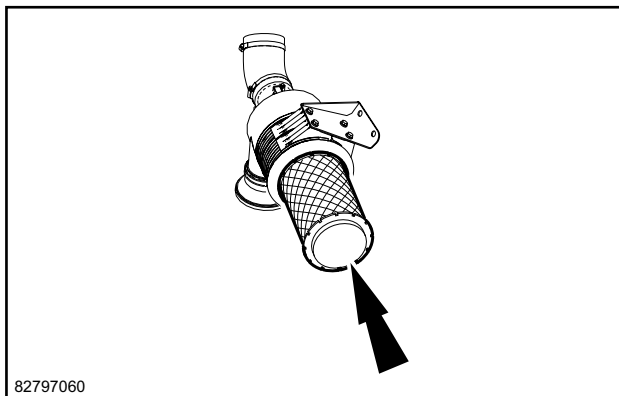
1. Unlatch the fasteners and remove the cover.



6E485D9C

Figure 89

2. Remove the outer element.



82797060

Figure 90

3. Clean the outer element.

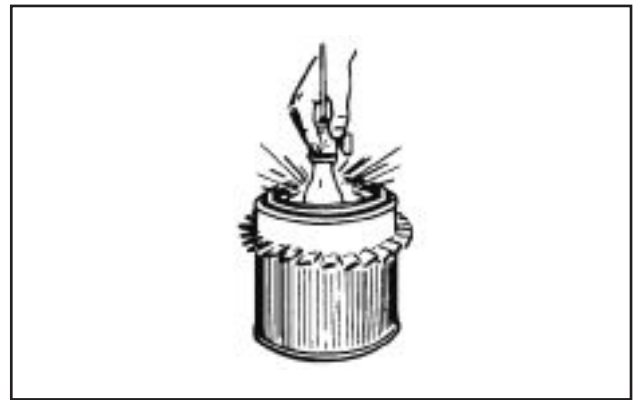
If you use:

- Air - use compressed air (30 psi or less) to the outer element along its flutes from the inside.

INSPECTING THE ELEMENT

Check the element for damage by placing an inspection lamp inside the element.

IMPORTANT: Replace the element if light can be seen through a hole, however small.

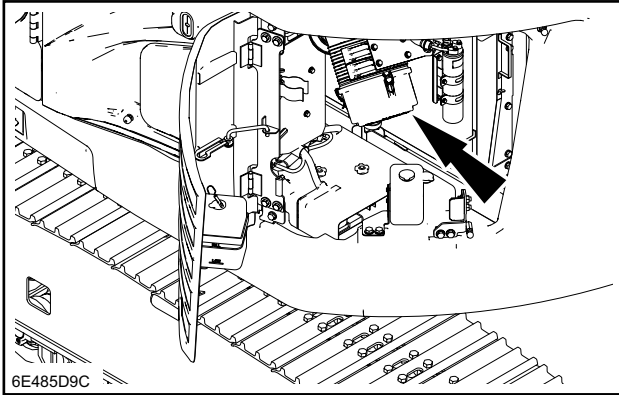


15D65390

Figure 91

REPLACING THE ELEMENTS

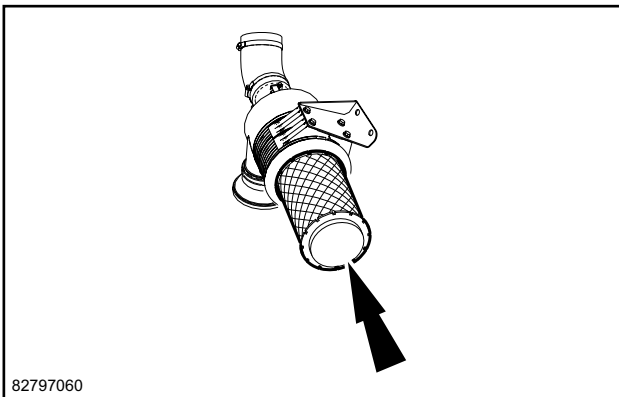
1. Release the fasteners and remove the cover.



6E485D9C

Figure 92

2. Remove the outer element.

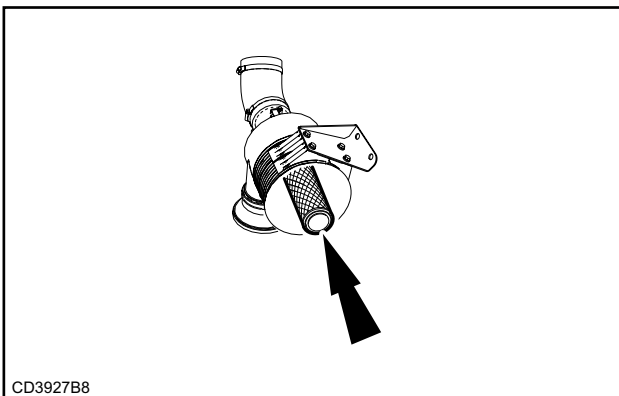


82797060

Figure 93

3. Remove the inner element if it needs replacing.

IMPORTANT: The inner element must be replaced, not cleaned.



CD3927B8

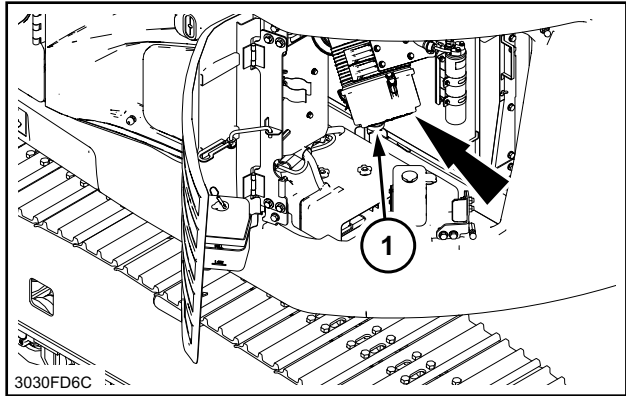
Figure 94

4. Insert the new inner element. Wipe down the sides of the air cleaner.

IMPORTANT: Do not let any dust or debris get in the air line when you replace the inner element.

5. Install the outer element.

6. Install the cover with the dust port (1) at the bottom.



3030FD6C

Figure 95

7. Check the dust port to make sure it is not clogged up and working properly.

SWING REDUCTION GEAR

SERVICE SPECIFICATIONS

Oil level check	Every 250 hours
Draining	Every 1000 hours (after the first 250 hours during the run-in period)
Grease	Every 2000 hours
Oil capacity	0.6 gal. (2.2 liters)
Oil type	See Fluids and Lubricants

⚠ WARNING

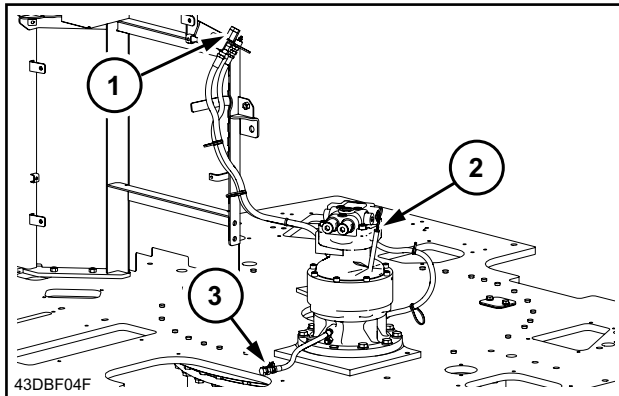
Wait until all components have cooled down before carrying out any operation.

⚠ WARNING

Loosen the dipstick slowly to release pressure, otherwise there is a risk of oil spurting out.

LEVEL

1. Remove the dipstick (2). The level should come up to the hatched area. If necessary, top off through the filler port (1).



43DBF04F

Figure 96

DRAINING AND REFILLING

1. Park the excavator on flat, horizontal ground. Stop the engine and remove the starter switch key.
2. Remove the dipstick (2).
3. Place a receptacle of a suitable capacity under the upperstructure and remove the drain plug (3).
4. After draining the oil, reinstall the drain plug (3).

NOTE: The oil takes a relatively long time to drain.

IMPORTANT: Check the condition of the drained oil. If it contains metal filings or foreign matter, contact your Link-Belt Dealer.

5. Remove the filler plug (1) and add the oil.
6. After about 10 minutes check the oil level, if the oil is satisfactory then install the filler plug (1).

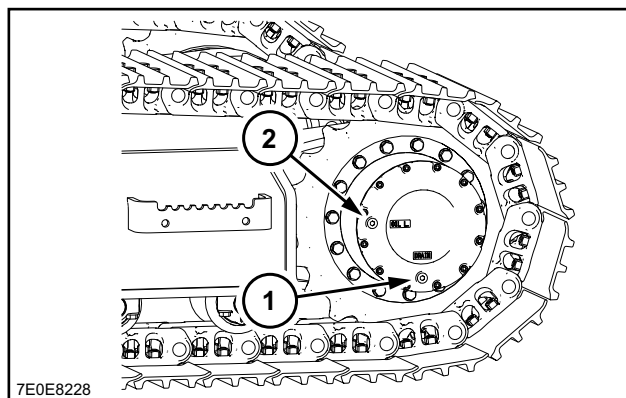
TRAVEL REDUCTION GEARS

SERVICE SPECIFICATIONS

Oil level check	Every 250 hours
Draining	Every 1000 hours (after the first 250 hours of operation)
Oil capacity (Per each reduction gear)	0.6 gal. (2.1 liters)
Oil type	See FLUIDS AND LUBRICANTS(Page 7-1)

LEVEL

1. Park the machine on flat, horizontal ground.
2. Move the machine so that plug (1) is in the lowest possible position.
3. Stop the engine and remove the starter switch key.
4. Remove the plug (2) and check the oil level.
The level must come up to the bottom edge of the port (2).
If the level comes up to the bottom edge of port (2), it is sufficient.
If necessary, fill oil through port (2) until the oil comes up to the bottom edge of port (2).
5. If necessary, replace the seals of plugs (2) then replace the plugs.
6. Repeat Steps 2 to 5 for the other travel reduction gear.
7. Travel slowly with the machine and make sure there are no leaks.



7E0E8228

Figure 97

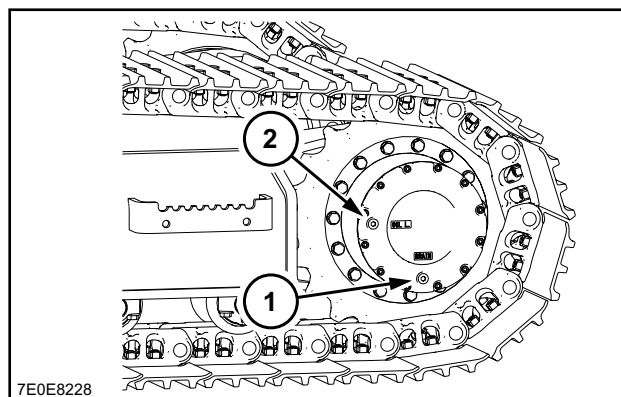
DRAINING AND REFILLING

1. Park the system on a flat and level place.
2. Move the system so that the plug (1) may be in the lowest possible position.
3. Stop the engine, and remove the starter switch key.
4. Place the receptacle with an appropriate capacity under the travel reduction gear.
5. Drain oil.

IMPORTANT:

Check the condition of the drained oil.
If it contains metal filings or foreign matter, contact your Link-Belt Dealer.

6. As necessary, replace the plug seal.
7. Attach the plug (1), and supply oil via this port until the oil level reaches the lower end of the port (2).
Next, attach the plugs (2).
8. Repeat steps 2 to 7 for the other travel reduction gears.
9. Run the system slowly to check that there is no leak.



7E0E8228

Figure 98

CHAPTER 8 - MAINTENANCE AND ADJUSTMENTS

TRACKS

MAINTENANCE SPECIFICATIONS

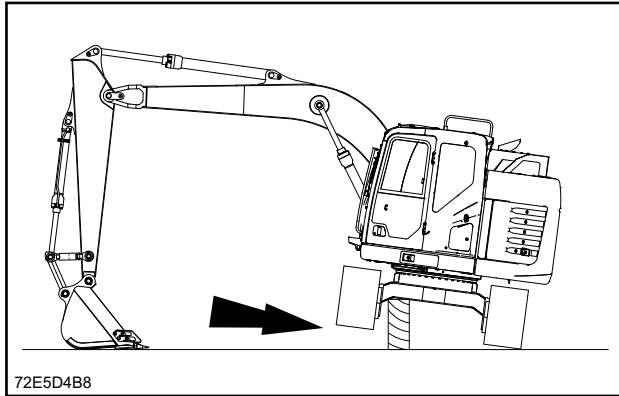
Clean	Every 50 hours or every week
Check tension	Every 50 hours or every week
Check Shoe Bolt torques	Every 250 hours (after the first 50 hours during the run-in period)

IMPORTANT: If the tracks are too tight, they wear quickly. If tracks are not tight enough, they wear quickly and the links can catch on the sprocket wheel or slide off the idler wheel or the sprocket wheel. Clean the tracks after work.

CLEANING

When the excavator has been working in mud, a reduction in temperature can cause the mud to solidify.

1. Place the upperstructure at right angles to the undercarriage. Use the attachment to press on the ground and lower the boom until the track is raised off the ground.
2. Place a block under the undercarriage to keep the excavator from drifting down.



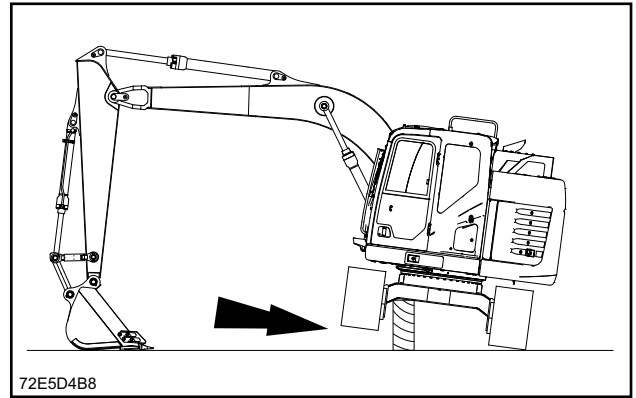
72E5D4B8

Figure 1

3. Put the engine throttle volume in the SP (1) mode and select the High speed travel (2).
4. Operate the travel control lever for the raised track forward and then in reverse, to remove the mud.
5. Repeat Step 1 to 4 for the other track.

CHECKING THE TENSION

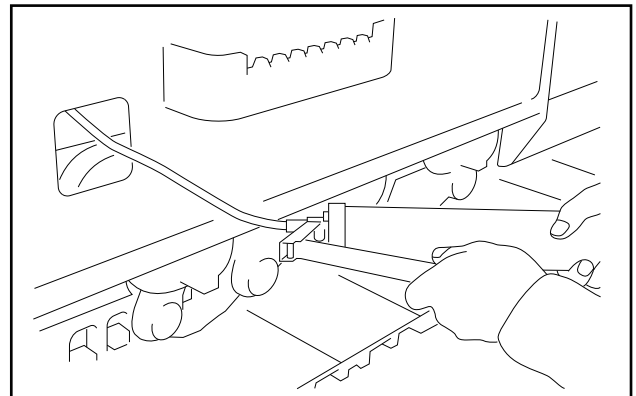
1. Park the excavator on flat, horizontal ground.
2. Clean the tracks.
3. Place the upperstructure at right angles to the under carriage. Use the attachment to press on the ground and lower the boom until the track is raised off the ground.
4. Place a block under the undercarriage to keep the excavator from drifting down.



72E5D4B8

Figure 2

5. Use the travel control lever to operate the raised track in reverse for a few moments.
6. Stop the engine and remove the starter switch key.



9B6D4ABD

Figure 3

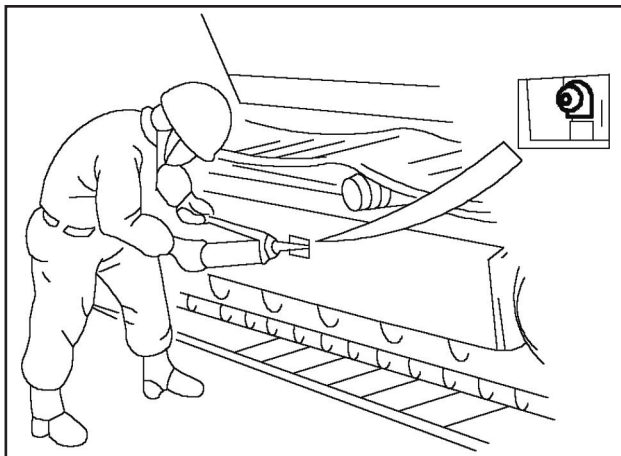
7. Measure the slack between the base of the undercarriage and the upper part of the track tread.
Track Tension Value
Track Tension:
8.614" - 9.448" (220 - 240 mm)
(When the link chain shoe (made of rubber) is installed, the value must be between 7.874" - 8.661" (200 - 220 mm).)
Track Tension (LC Lower Type):
10.236" - 11.023" (260 - 280 mm)
(When the link chain shoe (made of rubber) is installed, the value must be between 9.448" - 10.236" (240 - 260 mm).)
8. Adjust the tension if necessary and then lower the raised track to the ground.
9. Repeat Step 3 to 8 for the other track.

ADJUSTING THE TENSION

This operation is to be carried out after the tension has been checked.

TO INCREASE TENSION

1. With the track raised, clean the grease fitting adaptor and the grease fitting.
2. Connect the grease pump. Inject grease to obtain the right amount of track slack. See the CHECKING THE TENSION section (Page 8-1).
3. Remove the grease pump and clean the grease fitting.
4. Repeat Step 1 to 3 for the other track.



A95F95D4

Figure 4

TO REDUCE TENSION

1. With the track in raised position, loosen the grease fitting adaptor about 3 turns to allow grease to flow out of the cylinder.

! WARNING

Never unscrew the grease fitting adaptor completely to speed up the flow of grease. The grease in the cylinder is under high pressure.

2. As soon as the right track slack is obtained, tighten the adaptor. See Track Tension value (Page 8-5).
3. Clean the grease adaptor and fitting and then lower the raised track to the ground.
4. Repeat Step 1 to 3 for the other track.

IMPORTANT: If the grease fitting adaptor is damaged, grease may leak out. Check the condition of the grease fitting adaptor regularly and replace it if necessary.

TIGHTENING TORQUE OF THE TRACK SHOE

The tightening torque of the screws must be:

145X4 LC

Standard track pad
23.622 in. (600 mm)
Optional track pad
19.685 in. (500 mm)
27.559 in. (700 mm)

145X4 DZ

Standard track pad
23.622 in. (600 mm)
Optional track pad
19.685 in. (500 mm)
27.559 in. (700 mm)

Tightening torque of each

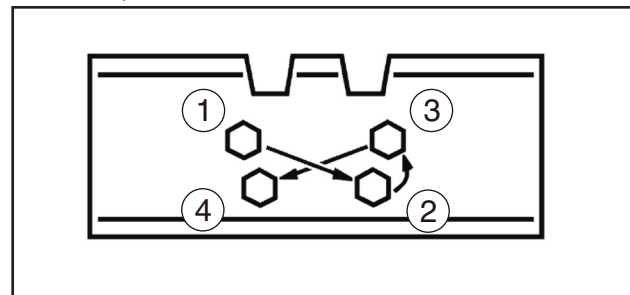
145X4 LC

$304 \pm 21 \text{ lbf} \cdot \text{ft.} (412 \pm 29 \text{ N} \cdot \text{m})$

145X4 DZ

$304 \pm 27 \text{ lbf} \cdot \text{ft.} (412 \pm 38 \text{ N} \cdot \text{m})$

Follow the prescribed order.



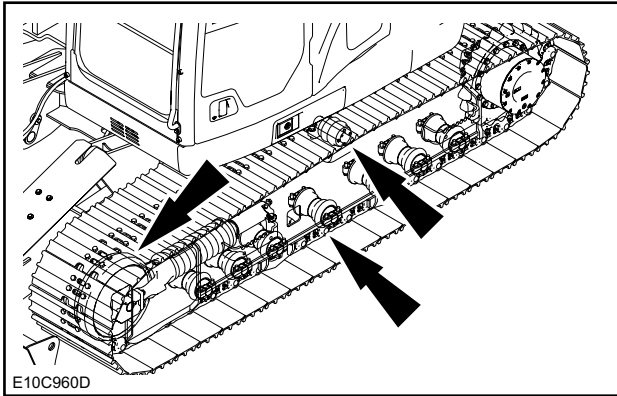
DCA9E130

Figure 5

TRACK ROLLERS AND IDLER WHEELS MAINTENANCE SPECIFICATIONS

Check	Every 250 hours
-------	-----------------

The upper and lower rollers and idler wheels use a permanent floating seal type sealing mechanism. The service life normally lasts until overhaul, but check visually from time to time before work for oil leakage. If oil leakage is found, component replacement is necessary. Contact your Link-Belt Dealer.



E10C960D

Figure 6

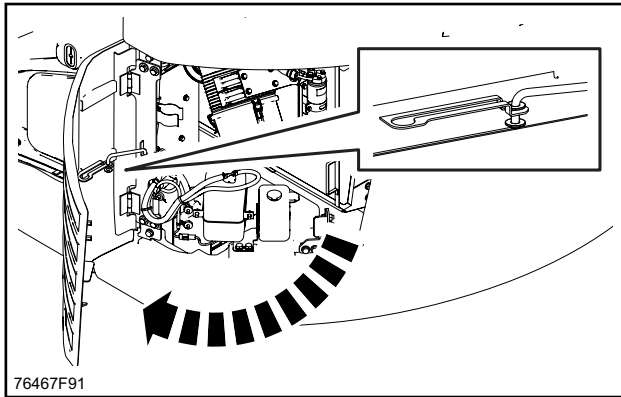
RADIATOR AND OIL COOLER MAINTENANCE SPECIFICATIONS

Check for leakage	Every 10 hours or every day
Clean	Every 500 hours

CLEANING

1. Stop the engine, and remove the starter switch key.
2. Open the left side door.

IMPORTANT: After fully opening the side door, check that it is locked firmly.



76467F91

Figure 7

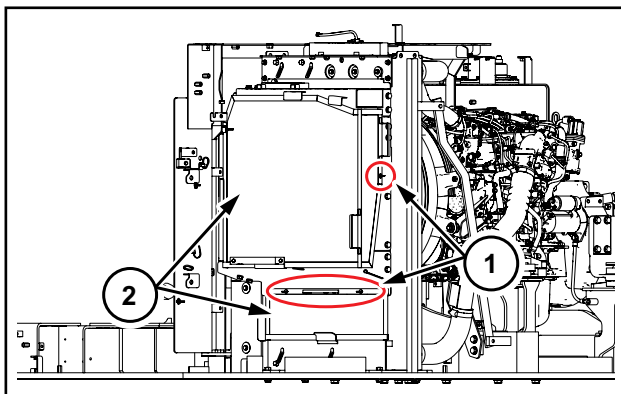
3. Remove the quick-connect clips (1) to remove the anti-dust nets (2).
The anti-dust nets are split. Remove the upper net first.
Then, remove the lower net.

WARNING

Flying dirt. Dirt, rust, etc. are flown in the air by compressed air.
When using compressed air, wear protective glasses and a protective mask.

4. Clean the radiator and the oil cooler as follows. Dry dust: Use compressed air.
Mud: Use water jets.
Greasy dust: Use perchloroethylene.

NOTE: Use of trichloroethylene is strictly forbidden.



A3A46E9C

Figure 8

5. Attach the lower net, and then attach the upper net.
During attachment, check that the nets are firmly fit on the guide rail.
After attaching the nets, fix them with the quick-connect clips.

WARNING

Moving components.
Before operating the system, check that all gates and system inspection doors are closed firmly.
Failure to observe this may result in death or serious injury.

WARNING

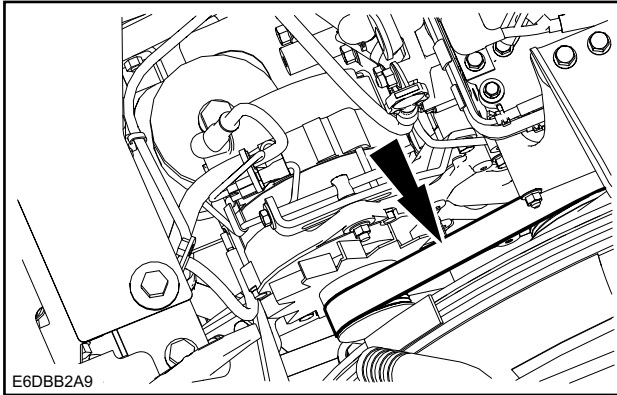
Moving components.
Before operating the system, check that the hood is closed firmly.
Failure to observe this may result in death or serious injury.

FAN AND ALTERNATOR BELT MAINTENANCE SPECIFICATIONS

Visual check	Every 10 hours or every day
Check belt tension	Every 250 hours

CHECKING THE TENSION

IMPORTANT: Operating the engine with loosened belt may cause over heat of the engine or insufficient charging of the battery due to slipping belt in its housing.



E6DBB2A9

Figure 9

Apply finger pressure of about 10 kg (22.0 lb) to center of the belt while the engine is shut down and the starter switch key is removed.

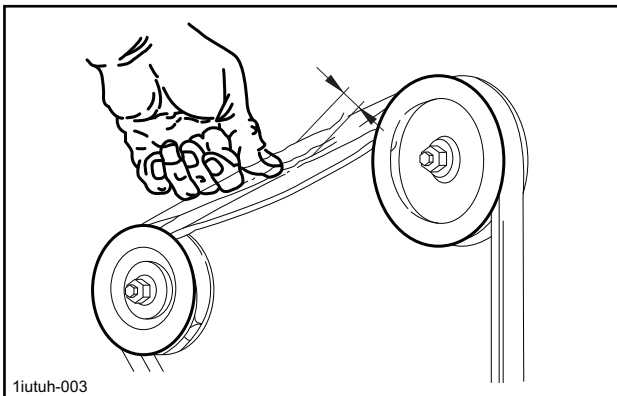
Tension slack should be about 6 - 8 mm (0.236 - 0.315 in.).

NOTE:

Check any indication of damage on the pulley or belt due to wear.

Check thoroughly to make sure that the belt is correctly engaged to groove of the pulley.

The belt must be replaced if it is elongated, it has cracks or it is worn out.



1iutuh-003

Figure 10

ADJUSTING THE TENSION

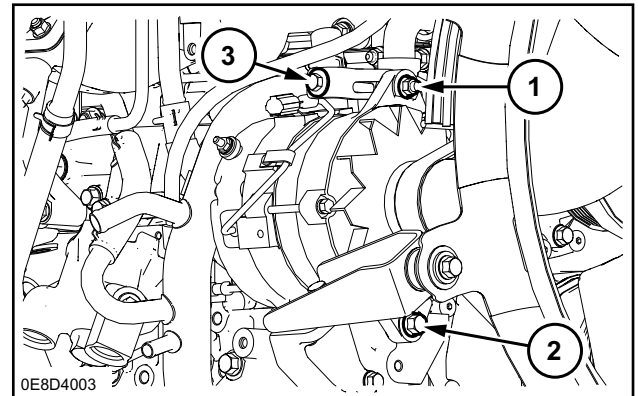
Tightening torque of the lock nut (1): 56.064 lbf · ft. (76 N · m)

Tightening torque of the mounting bolt (2): 93.686 lbf · ft. (127 N · m)

Loosen the lock nut (1) and the mounting bolt (2). Lightly tighten the lock nut (1) until its seating face touches.

Rotate the adjust bolt (3) to adjust tension of the belt to become standard value.

Tighten the lock nut (1) and the mounting bolt (2) that have been loosened with specified torque.



0E8D4003

Figure 11

REPLACING THE BELT

NOTE:

If the belt breaks, the message "ALTERNATOR" is displayed on the message screens.

Stop the engine, remove the starter switch key, and then replace the belt.

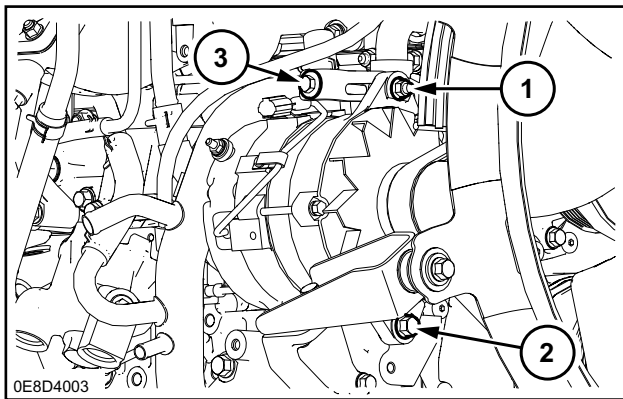
Loosen the lock nut (1) and the mounting bolt (2). Lightly tighten the lock nut (1) until its seating face touches.

Remove the belt from the pulley to pull it out from cut out portion of the fan guide.

Insert the new belt from the fan guide to mount it by aligning it to groove of each pulley. Rotate the adjust bolt (3) to adjust tension of the belt to become standard value.

Tighten the lock nut (1) and the mounting bolt (2) that have been loosened with specified torque.

After adjustment, run the engine in idling speed for approximately 5 minutes, and then stop the engine to re-check tension of the belt.



0E8D4003

Figure 12

INSPECTING AND CLEANING THE EXCAVATOR

MAINTENANCE SPECIFICATIONS

Inspect	Every 10 hrs or every day
Clean	Periodically

If any oil or grease has been spilled on the excavator, clean off with steam or a high pressure water jet.

Look for any leaks and check the condition of all pipes and hoses.

Take the opportunity during this operation to make a visual check of all the welded components (in case of appearance of cracks), the attachment linkages and check the teeth and tooth tips for correct retention and wear.

Also, clean the machine components and remove any debris that has accumulated in or on the machine.

Otherwise, the debris could lead to fire.

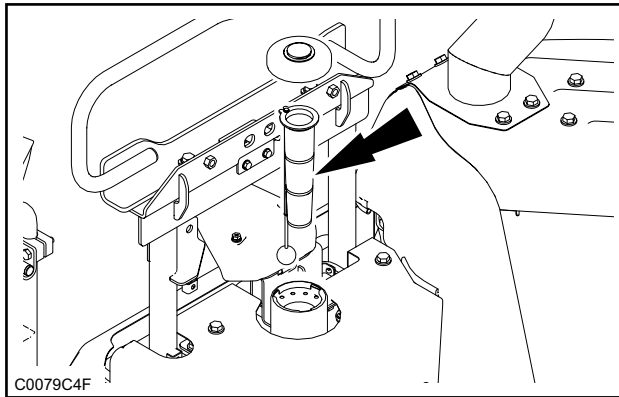
FUEL TANK FILTER

SERVICE SPECIFICATIONS

Cleaning of filter: Check periodically.

Remove the filter, and clean it with diesel oil.

NOTE: Add appropriate fuel to the fuel tank (refer to page 7-1).



C0079C4F

Figure 13

CAB PROTECTION (FOPS)

SERVICE SPECIFICATIONS

Check	Every 250 hours (after the first 50 hours during the run-in period)
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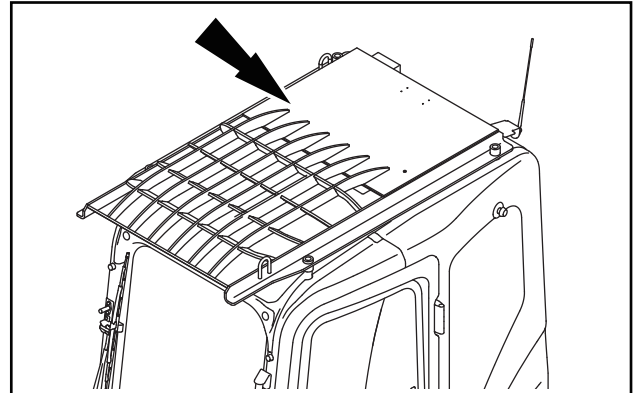
Check the retaining hardware, if necessary retighten the screws.

Check the absence of cracks, rust or holes in the protective structure and the components that constitute it.

Aging, bad weather and accidents can cause damage.

If you have even the slightest doubt regarding the condition of the structure, contact your Link-Belt Dealer.

If the protective structure has suffered any accident, it is necessary to replace the damaged components of the structure in order to restore the initial protection, contact your Link-Belt Dealer.



47AA8B86

Figure 14

PLASTIC AND RESIN PARTS

When cleaning the console, monitor, the indicators, etc. do not use gasoline, kerosene, paint solvents, etc. Only use water, soap and a soft cloth.

The use of gasoline, kerosene, paint solvents, etc. will cause discoloration, cracks or deformation of these parts.

CHECKING FOR CYLINDER LEAKAGE

ROD APPEARANCE	TEST	CONCLUSION
Dry	Slight traces of oil when a piece of paper is wiped over 1 inch (2.54 cm) of the rod.	Normal
Slightly greasy	Paper remains stuck to rod when run over rod.	Normal
Oily	Paper remains stuck when placed on rod.	Normal
Very oily or weeping	Each time the cylinder rod is extended, a ring of oil can be seen on the rod.	Contact your Link-Belt Dealer
Leakage	Each time the rod retracts, the excess oil drips from the gland.	Contact your Link-Belt Dealer

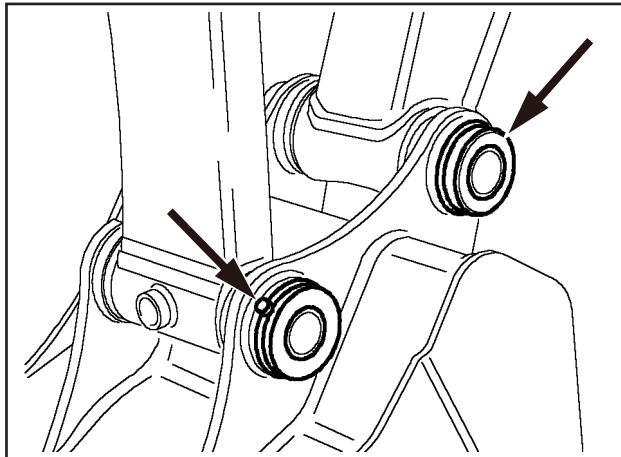
A cylinder rod should be slightly oily. Check for leaks after a period of work, when the whole hydraulic system is at normal operating temperature.

1. Wipe the rod and bearing on the cylinder to be cleaned.
2. Operate normally for 5 to 10 minutes.
3. Extend the cylinder rod.
4. Carry out the leak test.

REPLACING A BUCKET

REMOVAL - BUCKET

1. Place the bucket on flat, horizontal ground. Operate the attachment controls so the arm to bucket linkage pin is not gripped by the weight of the arm.
2. Stop the engine and remove the starter switch key.
3. Remove the snap rings and retaining pins and then remove the pins from the bucket.
4. Start the engine.
5. Disengage the attachment from the bucket and save the O-ring seals.

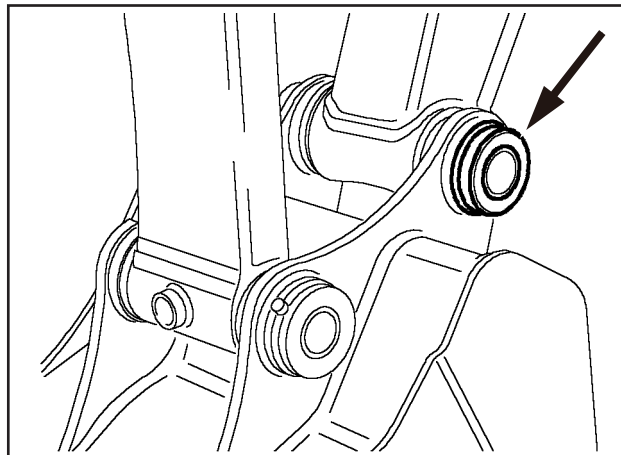


08D9983A

Figure 15

INSTALLATION - BUCKET

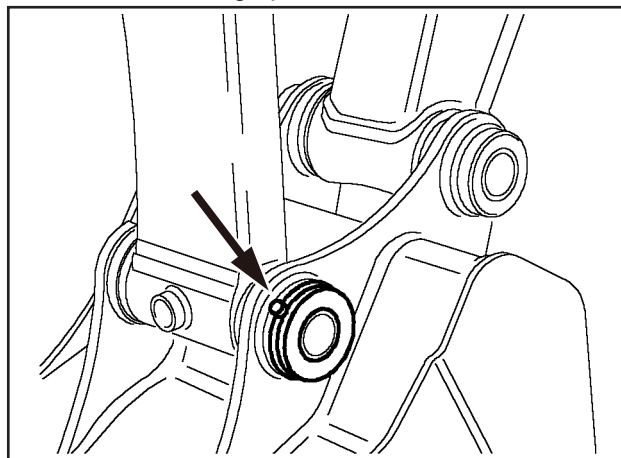
1. Install the O-ring seals on the arm bushing shoulders. Replace them if necessary.
2. Start the engine. Extend the bucket cylinder rod to bring it into its housing. Stop the engine and remove the starter switch key.
3. Install the arm to bucket linkage pin, and then the retaining pins and the rings.



3DAFF2ED

Figure 16

4. Start the engine. Remove the bucket cylinder rod to bring it in its housing. Shut down the engine and remove the starter switch key.
5. Install the connecting rod to bucket linkage pin and then the retaining pins and the snap rings.
6. Push the seals back into their housings.
7. Grease the linkage pins.



6572E4A5

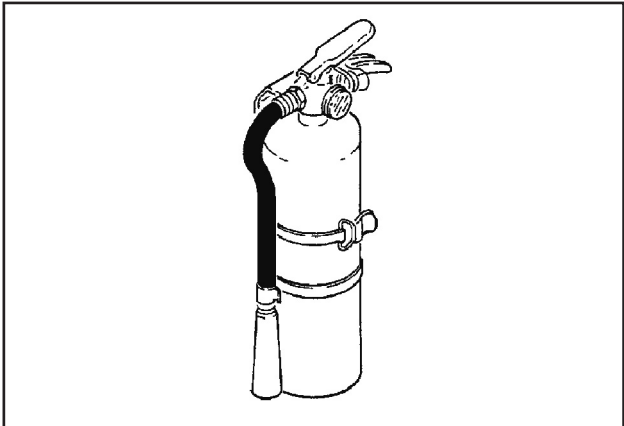
Figure 17

FIRE EXTINGUISHER (NOT SUPPLIED)

It is recommended to have a fire extinguisher on the excavator. The fire extinguisher is available from your Link-Belt Dealer and can be installed on the excavator.

MAINTENANCE SPECIFICATIONS

Every month	Examine the fire extinguisher and make sure it is not damaged
Every six months	Have an approved specialist empty and refill the powder in the fire extinguisher
Every year	Have an approved specialist examine the fire extinguisher.



955246CE

Figure 18

PROTECTION OF ELECTRIC/ELECTRONICS SYSTEM DURING CHARGING OR WELDING**⚠ DANGER**

Wrong operation or service of the machine may result in an accident.
 Unauthorized machine modification may cause serious influence to the machine.
 Consult with the authorized dealer for change, addition of equipment or modification to the machine.
 Do not modify the machine without permission.
 Doing so could result in serious injury or death.

Welding the undercarriage or the upper structure always requires permission from the manufacturer and needs to follow the following instructions without fail:

- Set the Battery disconnect switch to the "OFF" position or remove the minus terminal of the battery.
To set the Battery disconnect switch to "OFF", refer to "BATTERY DISCONNECT SWITCH" (9-3).
- Disconnect the B+ and D+ terminal of the alternator.
- Remove the SCR sub-harness connection connector or NOx sensor connection connector.
For connector position, refer to (8-12).
- Connect the ground cable of welding equipment to the component to be welded.
- Never connect a welding equipment to the undercarriage when welding the upper structure, and vice-versa.
- Never connect grounding of a welding device to the hydraulic system.
- A grounding clamp of a welding device should be connected as close as practicable to welding spot.
- Remove the computer module from the machine when welding close to the module.
- During welding operation, carefully maneuver the welding cable.

Ensure that the welding cables do not proximate or cross the electrical wiring or the electronic components.

Once the welding operation is completed, make sure to connect the removed terminal and harnesses.

NOTE:

While performing welding on this machine, strictly follow the points discussed above.
 Failure to observe this may result in damage to the electronic monitor system and the charging system.

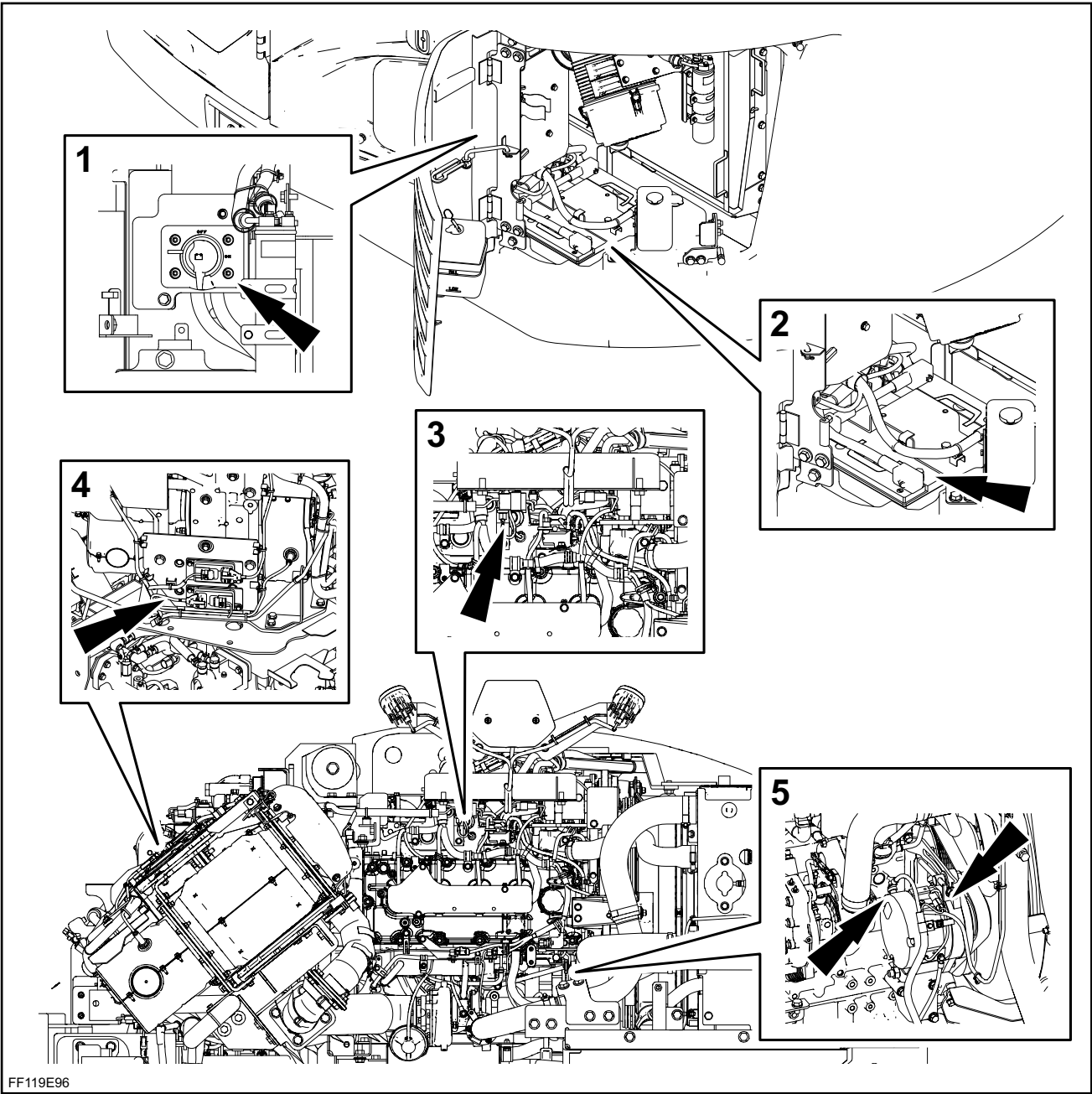
Always obey the following items to prevent damage to the electrical/electronics system.

- Do not connect or disconnect any charging circuit such as connection of the battery while the engine is running.
- Never connect component of a charger to the grounding.
- Make sure to disconnect the battery cable from minus terminal of the battery when charging the battery of the machine using a battery charger.

⚠ WARNING

Touching the battery fluid (acid) will result in burns.
 Batteries contain sulfuric acid.
 Keep it out of your skin, eyes, and clothes.
 In case of contact with your skin, etc.: Rinse the affected area with ample water.
 In case of eye contact: Flush your eyes with flowing water for 15 minutes, and seek medical attention immediately.
 In case of ingestion: Drink plenty of water or milk.
 Do not induce vomiting.
 Seek medical attention immediately.
 Failure to comply could result in serious injury or death.

DISCONNECTION OF ELECTRICAL CIRCUITS DURING CHARGING OR WELDING



FF119E96

Figure 19

1	Battery Disconnect Switch
2	Battery terminal
3	SCR sub-harness connection connector
4	Nox sensor connection connector
5	Alternator

AIR CONDITIONING MAINTENANCE SPECIFICATIONS

Clean the intake filter	Every 50 hours
Clean the air recycling filter	Every 50 hours
Have checked by a specialist	Every 6 months
Replace the filters	Every 2000 hours

The components of the air conditioning system need servicing at regular intervals. Make sure these intervals are respected, in order to ensure the air conditioning functions correctly and with maximum effectiveness. The air conditioning system contains gas which is subject to strict legislation. Any defect in the system must be fixed rapidly.

Operate the air conditioning system at least once a week, if only for a short time.

INSPECTION

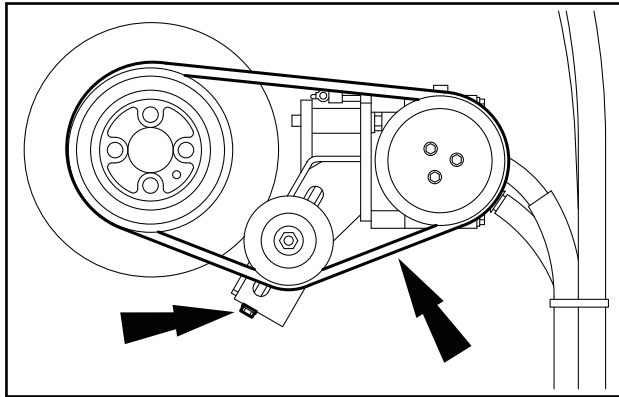
In order to ensure the air conditioning functions correctly, inspect the air conditioner using the procedure outlined below before starting work.

CLEANLINESS OF THE CONDENSER

If the condenser is dirty it will not dissipate heat properly. Clean the condenser with water.

Never use water under pressure to clean the condenser.

CHECKING THE BELT TENSION



0C62BA07

Figure 20

Use your finger to exert pressure of around 22 lbs (10 kg) on the center of the drive belt. The tension slack should be between about 0.24"- 0.31" (6 and 8 mm). If necessary, adjust the belt tension.

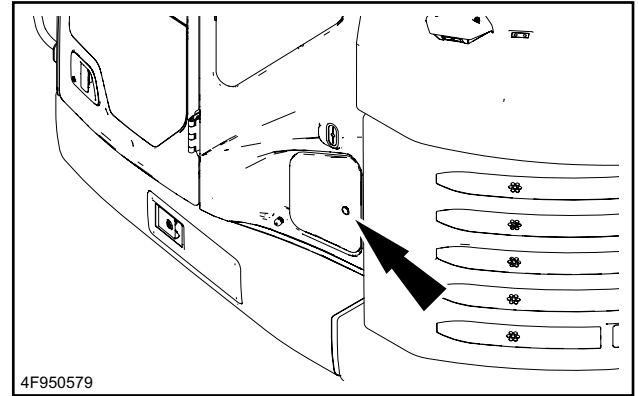
TENSION ADJUSTMENT

1. Loosen the pulley mounting bolt.
2. Use the adjustment screw to move the pulley outward until belt tension is correct and tighten pulley mounting bolt.

CHECKING THE LINES

Make a visual check of the lines and make sure there are no accumulations of dust, grease, etc.

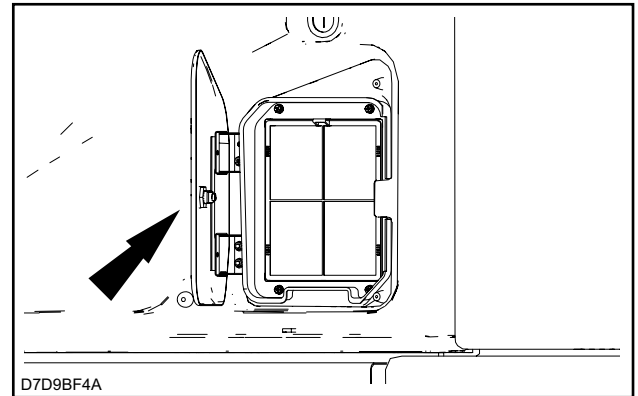
CLEANING THE FRESH AIR INTAKE FILTER



4F950579

Figure 21

1. To clean the fresh air intake filter open the filter cover door on the left side of the cab with the key.



D7D9BF4A

Figure 22

2. Remove the filter and use compressed air to clean the filter. If it is damaged, replace it.

IMPORTANT: Always protect your face before using compressed air.

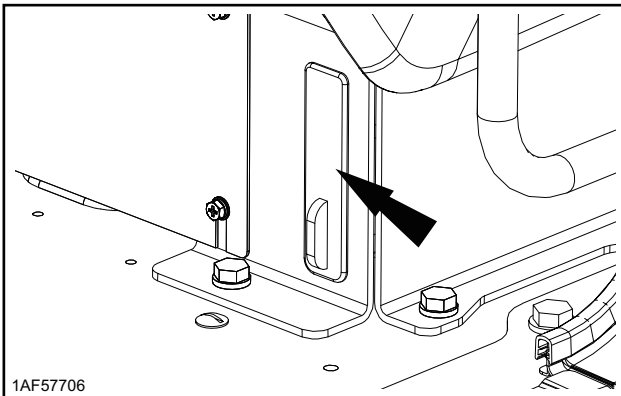
3. Place the filter back in the housing and close the cover door. Lock the cover door.

CLEANING THE INSIDE AIR INTAKE FILTER

1. Remove the filter in the lower left of the seat and clean it with compressed air.
If the filter is damaged, replace it.

⚠ WARNING

Flying debris! Compressed air can propel dirt, rust, etc. into the air.
Wear eye and face protection when using compressed air.
Failure to comply could result in death or serious injury.



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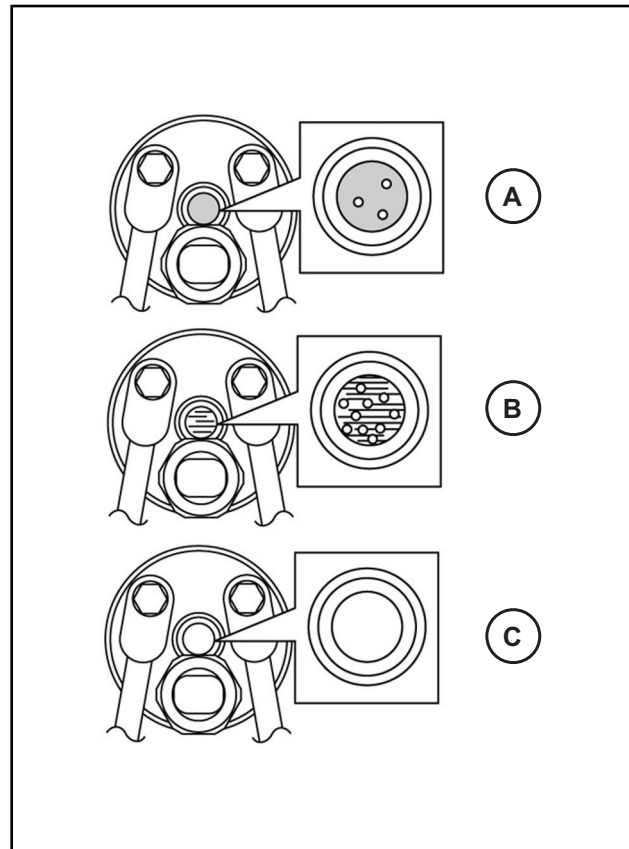
Figure 23

2. Install the filter.

CHECKING THE CHARGE STATE OF THE SYSTEM

1. Turn on the air conditioning system, increase engine speed slightly 1400 to 1600 min⁻¹ and look for bubbles through the sight glass.
2. This check should be made approximately 1 minute after turning on the air conditioning.
 - (A) Very few bubbles observed, then transparent at first, then whitish: "Normal".
 - (B) The bubbles are numerous: check the unions and contact your Link-Belt Dealer.
 - (C) No bubbles are visible: check the unions and contact your Link-Belt Dealer.

Check if the hydraulic line and air-conditioning hose connectors are dirty, dusty or in need of replacing.



7A622D28

Figure 24

INSPECTION OF GAS SPRING**⚠ WARNING**

Explosive gas.

High-pressure nitrogen gas is contained in the gas strut.

Improper handling could cause explosion.

- Do not disassemble it.
- Do not expose it to flame or fire.
- Drilling, welding, and melting are forbidden.
- Do not hit or turn it to give a shock.
- Before disposal, you must eliminate the gas.

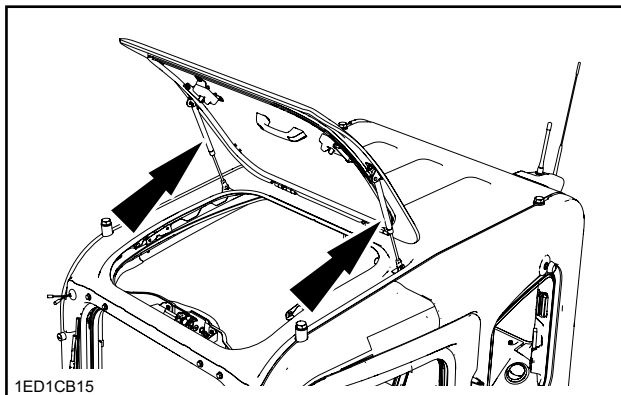
Consult the dealer.

Failure to observe this may result in death or serious injury.

A gas spring is located in the cab sunroof (2 locations in right and left).

For the following, request inspection, service, or replacement from the Link-Belt dealer.

- If the cab sunroof will not be opened without force.
- If the cab sunroof will not remain open.
- When an oil or gas leak is discovered from the gas spring.



1ED1CB15

Figure 25

RETIGHTENING OF BOLTS AND NUTS

[After the first 50 hours for a new machine]

[Service every 250 hours]

Tighten or retighten all the bolts and nuts according to the table.

Also, check for loose or missing bolts and nuts before and after daily operations. Retighten any that are loose and install new ones if any are missing.

For a new machine, perform inspection and retightening after the first 50 hours and then every 250 hours.

WARNING

Continuing to use the machine with loose, broken, or missing bolts could lead to an accident.

RETIGHTENING TORQUE TABLE

COMPONENT	SCREW	WRENCH		TORQUE SETTING	
	(D)	in.	mm	lbf · ft.	N · m
Travel reduction gear (*)	M16	0.945	24	214 ± 16	290 ± 22
Drive sprocket (*)	M16	0.945	24	214 ± 16	290 ± 22
Idler wheel (*)	M16	0.945	24	214 ± 16	290 ± 22
Upper roller (*)	M16	0.945	24	214 ± 16	290 ± 22
Lower roller (*)	M16	0.945	24	214 ± 16	290 ± 22
Track pad	M16	0.945	24	304 ± 27	412 ± 38
Track pad(LC lower)	M16	0.945	24	304 ± 21	412 ± 29
Counterweight (*)	M30	1.811	46	1138 ± 78	1543 ± 107
Turntable (lower frame)	M16	0.945	24	218 ± 11	296 ± 15
Turntable (swing frame)	M16	0.945	24	218 ± 11	296 ± 15
Swing reduction gear (*)	M16	0.945	24	218 ± 11	296 ± 15
Engine Rear bracket(*)	M12	0.748	19	87 ± 5	118 ± 8
Engine mount (front) (*)	M16	0.945	24	213 ± 17	289 ± 24
Engine mount (rear) (*)	M16	0.945	24	213 ± 17	289 ± 24
Radiator	M12	0.748	19	51 ± 3	69 ± 4
Hydraulic pump (*)	M10	0.669	17	50 ± 2	68 ± 3
	M16	0.551 (hexagon wrench)	14 (hexagon wrench)	173 ± 8	235 ± 11
Hydraulic tank (*)	M16	0.945	24	187 ± 15	254 ± 21
Fuel tank (*)	M16	0.945	24	187 ± 15	254 ± 21
DEF tank (*)	M16	0.945	24	180 ± 13	245 ± 19
Center joint (*) (lower frame)	M12	0.748	19	87 ± 5	118 ± 8
Center joint (*) (swing frame)	M12	0.748	19	72 ± 5	98 ± 8
Control valve (*)	M16	0.945	24	214 ± 16	290 ± 22
Cab	M16	0.945	24	119 ± 8	161 ± 11
Cab (Anchor bolt) (*)	M24	1.417	36	253 ± 35	343 ± 48
Battery	M10	0.669	17	18 ± 2	25 ± 4

NOTE:

For items marked with *, always apply Loctite #262 or equivalent and tighten to the specified torque.

The tightening torque in kgf·m is determined with N·m ÷ 9.8 (lbf·ft. ÷ 7.2).

CAUTION

Counterweight installation bolts may loosen if the counterweight hits a hard obstacle during a swing or travel operation.

Check the counterweight to see if it is properly tightened after the first 50 hours and then every 250 hours.

How to check: Tap on the bolt head with an inspection hammer. If it makes a dull sound, the counterweight may be loose.

Retighten.

If you have any questions, contact your dealer or the certified service plant.

ENGINE TROUBLESHOOTING

NOTE:

This chapter describes the easy diagnostic methods for engine-related problems and the remedies for them. If you cannot find the cause of a problem or solve a problem, consult the Link-Belt dealer.

PROBLEM	POSSIBLE CAUSE	SOLUTION
The engine does not start.	Defect in starter switch (Deactivation of starter)	Check the starter switch.
	Poor running of starter (Starter running slowly)	Discharged battery, defect in starter, dirt or looseness of connectors
	Poor viscosity of engine oil	Inspect and, as necessary, replace.
	Poor air bleeding for fuel system	Bleed it of air completely.
	Cold engine (in cold weather)	Preheat suction air, or warm coolant.
	No fuel in fuel tank	Add.
	Low-quality fuel	Inspect and, as necessary, replace.
	Clogging in fuel filter	Clean or replace.
	Engine stuck	Consult the Link-Belt dealer.
	Low compression	
	Defect in fuel injection pump	
	Battery disconnect switch OFF	Set to ON.
	No DEF remaining in DEF tank	Add.
	Other DEF than that of specified concentration added	Consult the Link-Belt dealer.
The engine stops during operation.	No fuel in fuel tank	Add.
	Clogging in fuel filter	Clean or replace.
	Air entry in fuel system	Retighten the connections of fuel lines.
Abnormal oil pressure	Low oil level	Add.
	Clogging in oil filter	Replace the oil filter.
	Low oil viscosity	Replace with the oil of suitable viscosity for temperature.
	Oil leaks from connections	Tighten the connections.
	Defect in oil pressure switch	Consult the Link-Belt dealer.
	Malfunction in oil pump	
Exhaust gas from the engine is white or blue.	Excess oil	Give an overhaul or replace components.
	Very low oil viscosity	Replace with the oil of correct viscosity.
	Overcooling by radiator	Adjust.
	Incorrect fuel injection timing	Consult the Link-Belt dealer.
	Low compression	
Exhaust gas from the engine is black or deep gray.	Wrong fuel	Replace with the correct fuel.
	Incorrect valve clearance	Adjust.
	Poor suction (Clogging in air cleaner)	Clean or replace the air cleaner.
	Defect in fuel injection pump	Consult the Link-Belt dealer.
	Low compression	

CHAPTER 8 - MAINTENANCE AND ADJUSTMENTS

PROBLEM	POSSIBLE CAUSE	SOLUTION
Excessive consumption of fuel	Wrong fuel	Replace with the correct fuel.
	Poor suction	Clean or replace the element.
	Defect in fuel injection pump	Consult the Link-Belt dealer.
	Poor injection of fuel injection nozzle	
	Incorrect fuel injection timing	
	Low compression	
Excessive consumption of engine oil	Excess oil	Drain the oil down to the correct level.
	Low oil viscosity	Replace with the oil of suitable viscosity for temperature.
	Oil leaks	Retighten and, as necessary, replace.
	Wear on cylinder piston ring	Consult the Link-Belt dealer.
Abnormal noise (from fuel or mechanical system)	Low-quality fuel	Replace.
	Damage inside muffler	Replace.
Engine overheat (Too high coolant temperature)	Low coolant level	Add.
	Coolant leaks	Repair.
	Wear or damage on belt	Replace.
	Wrong mixing ratio of anti-freeze	Replace.
	Problems with radiator	Consult the Link-Belt dealer.
	Damaged fan	
	Problems with thermostat	
	Problems with water pump	
	Problems with coolant temperature gauge	
Problems with battery charge	Incorrect belt tension	Adjust.
	Problems with electric wires	Repair.
	Problems with battery	Replace.
	Problems with regulator	Consult the Link-Belt dealer.
	Defect in alternator	

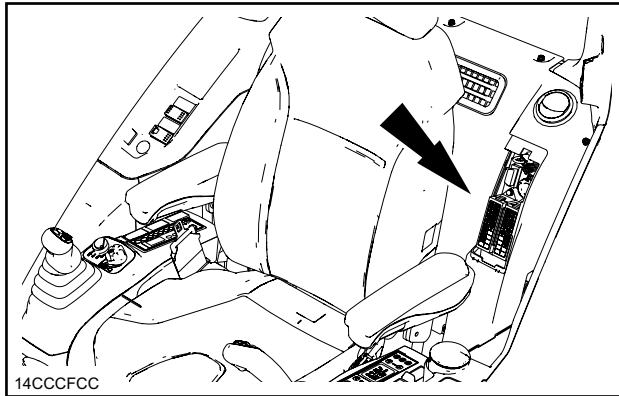
CHAPTER 9 - ELECTRICAL SYSTEMS

FUSES

NOTE: Before replacing fuses or relays, set the starter switch key to the "STOP" position.

NOTE: Never confuse the amperages during replacement.

When opening the cover in the rear of the operator's seat, you will find a fuse box.



14CCCFCC

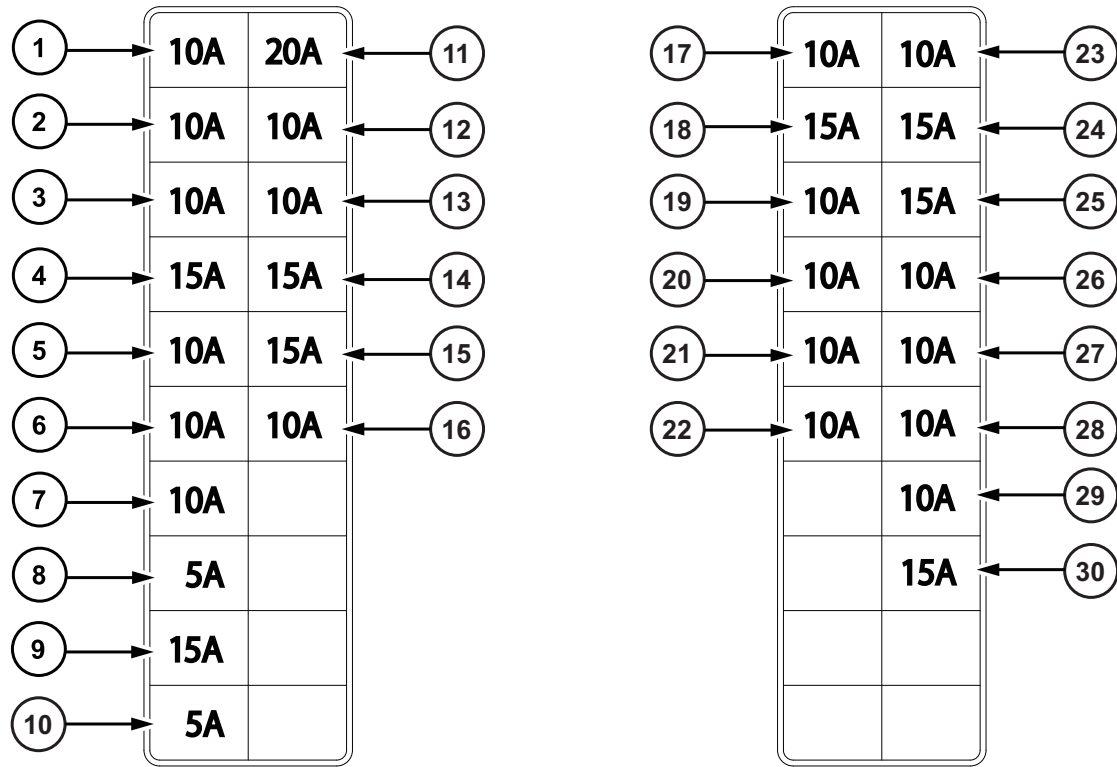
Figure 1

When opening the cover of the fuse box, you will find fuses.

The role, name, and amperage of each fuse are indicated on the cover.

NOTE: Dedicated jigs are provided for attachment and removal of fuses. Use the dedicated jigs during work.

FUSE FUNCTION



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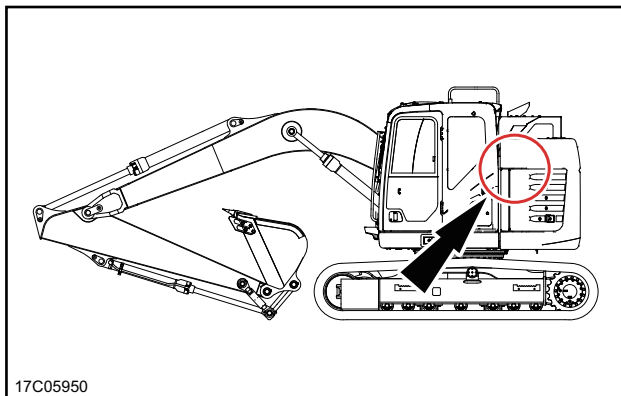
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Figure 2

FUSE BOX 1			FUSE BOX 2		
No.	Name		No.	Name	
1	key switch	(10 A)	17	Seat Heater	(10 A)
2	Accessory	(10 A)	18	Wiper, washer	(15 A)
3	GPS controller	(10 A)	19	Cigar lighter	(10 A)
4	ICT controller	(15 A)	20	DC converter	(10 A)
5	Monitor	(10 A)	21	Field view monitor	(10 A)
6	Controller	(10 A)	22	Spare	(10 A)
7	Gate lock lever	(10 A)	23	Beacon	(10 A)
8	Air conditioner unit	(5 A)	24	Lamp (cab)	(15 A)
9	Air conditioner blower motor	(15 A)	25	Lamp (boom, housing)	(15 A)
10	Air conditioner compressor	(5 A)	26	optional	(10 A)
11	Engine control	(20 A)	27	Spare	(10 A)
12	Backup (monitor)	(10 A)	28	indicator	(10 A)
13	Backup (radio)	(10 A)	29	Optional controller	(10 A)
14	Solenoid	(15 A)	30	Optional controller	(15 A)
15	Proportional solenoid	(15 A)			
16	Horn	(10 A)			

BATTERY DISCONNECT SWITCH

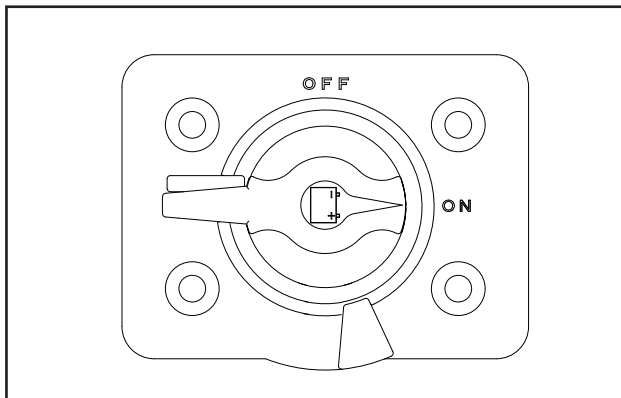
This switch is located near the battery behind the left side door.



17C05950

Figure 3

Except for long-term storage or service on the electrical system, make sure this switch is set to the "ON" position.



FAB90815

Figure 4

NOTE: When the switch is turned to "OFF" position, all the electric circuits are cut off and the stations stored on the radio presets and the time set for the clock will be all cleared.

⚠ CAUTION

- Never turn the battery disconnect switch to "OFF" position when the engine is running. The electrical systems can be damaged.

⚠ CAUTION

The DEF SCR system continues to operate for approximately 3 minutes after the starter switch is set to the "OFF" position in order to suck back the circulating DEF in the line to the DEF tank.

Also, the controllers are sending the location information to RemoteCARE system and storing the DTC information in its memory during this period of time.

Wait for at least 3 minutes when taking the actions below for inspection, repair and welding; The LED indicator above the switch is lit up in yellow while these controllers are operating.

When taking actions below for inspection, repair and welding, never turn the battery disconnect switch "OFF" position before this indicator goes out.

- removing the battery
- removing electrical system connectors
- setting battery disconnect switch to "OFF" position

Otherwise, the DEF may remain in the line and damage the DEF SCR system when frozen.

Also, RemoteCARE and the controllers may not function as expected.

BATTERY

MAINTENANCE SPECIFICATION

Checking the charge state	Every 50 hours
Checking the electrolyte level	Every 250 hours

NOTE: If the excavator needs to be started using a booster battery, see the CONNECTING ONE OR TWO BOOSTER BATTERIES section (Page 9-6).

⚠ WARNING

Batteries give off explosive gases. Keep all open flames, sparks and cigarettes away. Ensure adequate ventilation when charging batteries or when using in a confined place. Always protect your eyes when working near batteries.

⚠ WARNING

Do not reverse battery terminals. Connect positive (+) cable ends to positive (+) terminals and negative (-) cable ends to negative terminals (-).

⚠ WARNING

Before you service a battery, always wear face protection, protective gloves and protective clothing. Battery acid or battery explosion can cause serious injuries.

⚠ WARNING

Battery acid causes severe burns. Batteries contain sulfuric acid. Avoid contact with skin, eyes or clothing. Antidote - EXTERNAL: flush with water. INTERNAL: drink large quantities of water or milk. Follow with milk of magnesia, beaten egg or vegetable oil. Call a physician immediately. EYES: flush with water for 15 minutes and get prompt medical attention.

⚠ WARNING

When the battery electrolyte is frozen, the battery can explode if, (1) you try to charge the battery, or (2) you try to jump start and run the engine. To prevent the battery electrolyte from freezing, try to keep the battery at full charge. If you do not follow these instructions, you or others in the area can be injured.

⚠ WARNING

Before any operation on the components of the electrical circuit, put the key switch in the shut down position. When disconnecting the battery cables, always disconnect the negative (-) cable first. When reconnecting the battery cables, always connect the negative (-) cable last.

⚠ WARNING

Connecting auxiliary cables wrongly or short-circuiting batteries terminals can cause an accident. Connect auxiliary starting cables as per the following instructions.

⚠ WARNING

Sparks or flame can cause hydrogen gas in a battery to explode. To prevent an explosion, do the following:

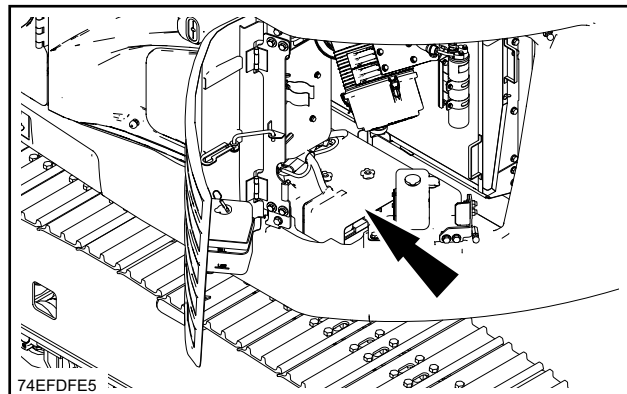
1. When you DISCONNECT the battery cables, always disconnect the negative (-) battery cable first.
2. When you CONNECT the battery cables, always connect the negative (-) cable last.
3. Do not short circuit the battery posts with metal items.
4. Do not weld, grind, or smoke near a battery.

⚠ WARNING

Always store batteries in a safe place, out of the reach of children.

ACCESS TO THE BATTERIES

To access the battery, open the door in the left rear, and then remove the skid plate.



74EFDfE5

Figure 5

CHECKING A BATTERY

Make sure the battery terminals are clean and coated with grease and the cables are properly tightened.

Checking the charging state and the electrolyte level is carried out using the indicator:

Green: Normal

Black: Recharge the battery.

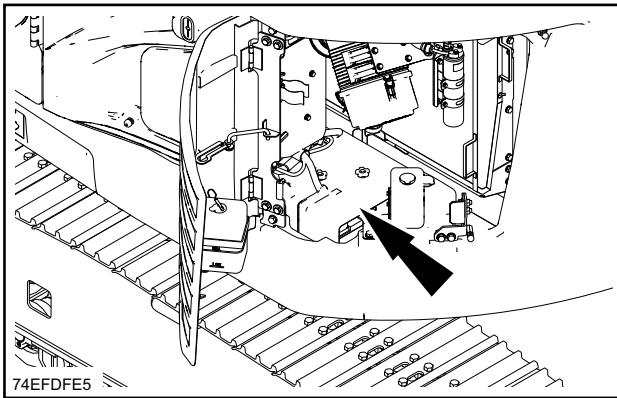
White: Change the battery.

REPLACING A BATTERY

IMPORTANT: When you change a battery replace both batteries at the same time. If you only change one it will shorten the life of the new battery.

REMOVAL - BATTERY

1. Remove the protective plate.



74EFD5

Figure 6

2. Remove the terminal sleeves, disconnect the cable (negative terminals) then the cable (positive terminals).
3. Remove the batteries.
4. Clean the battery compartment, remove all foreign bodies, and clean any spilled electrolyte.

INSTALLATION - BATTERY

1. Install a new battery. Clean the cables and battery terminals and coat them with grease.
2. Set the batteries in the excavator.
3. Connect the cable (positive terminals), then the cable (negative terminal) and install the terminal sleeves.

⚠ WARNING

Do not invert battery terminals. Connect positive (+) cable ends to positive (+) terminals and (negative) cable ends to negative terminals (-).

⚠ WARNING

Always store batteries in a safe place, out of the reach of children.

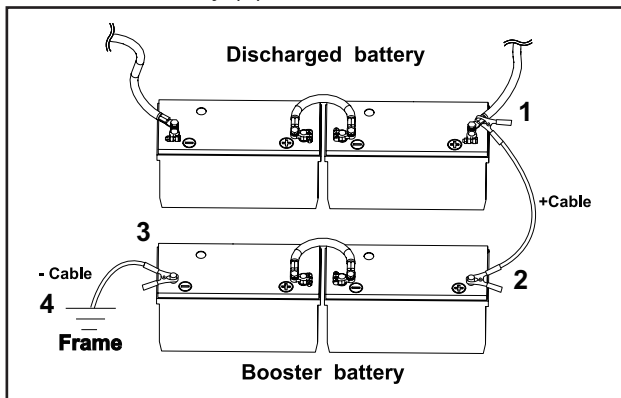
CONNECTING ONE OR TWO BOOSTER BATTERIES

⚠ WARNING

Connecting auxiliary cables wrongly or short-circuiting battery terminals can cause an accident. Connect auxiliary starting cables as per the following instructions.

Make sure the booster battery voltage corresponds to the voltage system of the excavator.

1. Connect the positive (+) auxiliary cable to the positive (+) terminal of the discharged battery of the excavator (1).
2. Connect the positive (+) auxiliary cable to the positive (+) terminal of the booster battery (2).
3. Connect the negative (-) auxiliary cable to the negative (-) terminal of the booster battery (3).
4. Connect the other negative (-) auxiliary cable to the discharged excavator's upper rotating frame away from the battery (4).



BBEC8E2A

Figure 7

5. Start the engine of the booster excavator and wait 4 to 5 minutes.
6. Try starting the excavator. If it does not start let the booster excavator run for 4 to 5 minutes longer.
7. Disconnect the negative (-) auxiliary cable from the excavator's upper rotating frame (4).
8. Disconnect the negative (-) auxiliary cable from the negative (-) terminal of the booster battery (3).
9. Disconnect the positive (+) auxiliary cable from the positive (+) terminal of the booster battery (2).
10. Disconnect the positive (+) auxiliary cable from the positive (+) terminal of the other battery (1).

ALTERNATOR

MAINTENANCE SPECIFICATION

Check

Every 1000 hours

⚠ WARNING

Whenever carrying out a welding operation on the excavator (authorized by the manufacturer and in accordance with its instructions) or any repairs on the electrical system, disconnect the B+ and D+ wires from the alternator. When reconnecting, check the markings on the wires.

Do not use steam cleaning equipment or a cleaning solvent to clean the alternator.

Contact your Link-Belt Dealer to check the alternator.

Make sure the terminal protectors are correctly installed.

STARTER MOTOR

MAINTENANCE SPECIFICATION

Check

Every 1000 hours

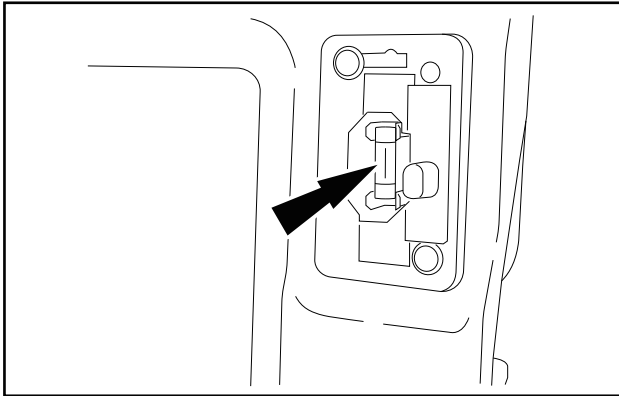
Contact your Link-Belt Dealer to check the starter motor.

NOTE: Make sure that the terminal protectors are correctly installed.

REPLACING A BULB

CAB LIGHTING

1. Remove the cover.
2. Remove the bulb and install a bulb of the same wattage.



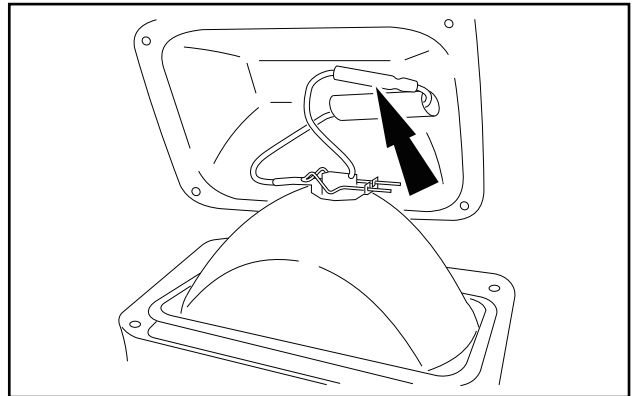
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Figure 8

3. Install the cover.

WORKING LIGHTS ON THE CAB AND ON THE ATTACHMENT

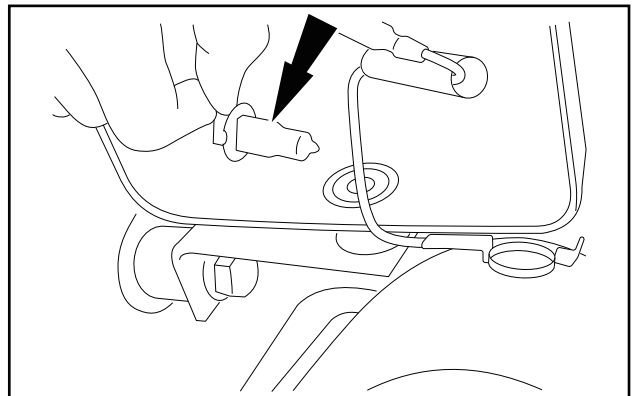
1. Remove the 4 mounting screws.
2. Tilt the working light forward and disconnect the plug.



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Figure 9

3. Pull the clip outward, remove the bulb and install a bulb of the same wattage.



EAEB19A9

Figure 10

IMPORTANT: Never put your fingers on a tungsten iodide bulb.

4. Install the clip and reconnect the plug.
5. Put the working light back into position and install the mounting screws.

CHAPTER 10 - TRANSPORTATION & STORAGE INSTRUCTIONS

TRANSPORTING THE EXCAVATOR

NOTE: For transporting the excavator without an attachment, the counterweight must be removed. Contact your Link-Belt Dealer.

REMOVING THE ATTACHMENT FROM THE EXCAVATOR

The use of lifting systems is necessary for removal and installation of the excavator attachment and counterweight.

Contact your Link-Belt Dealer.

! WARNING

Improper operation or service of this excavator can result in an accident.

Assign a supervisor to direct worksite operations.

Agree on all safety measures, procedures, and suitable hand signals.

Failure to comply could result in death or serious injury.

! WARNING

The lifting systems must be operated by qualified personnel who are aware of the correct procedures to follow.

Make sure all lifting equipment is in good condition, and all hooks are equipped with safety latches.

Failure to comply could result in death or serious injury.

! WARNING

This operation may be dangerous.

You are advised to wear suitable clothing and respect all relevant safety messages.

Failure to comply could result in death or serious injury.

! WARNING

Before removing the attachment from the excavator, make sure the air pressure and hydraulic oil pressure are at zero.

Failure to comply could result in death or serious injury.

IMPORTANT:

Prevent dust and contamination from entering open circuits.

Any contamination of circuits can cause malfunction of the excavator.

TRANSPORT BY RAIL

Since transport by rail is subject to special regulations, consult an approved organization.

TRANSPORTING THE EXCAVATOR - ON A TRAILER

! WARNING

The excavator can slip or fall from a ramp or trailer. Make sure the ramp and trailer are not slippery.

Remove all oil, grease, ice, etc.

Move the excavator on or off the trailer with excavator centered on the trailer or ramp.

Failure to comply could result in death or serious injury.

! WARNING

The counterweight **MUST** be removed before transporting the excavator without an attachment.

Contact your dealer.

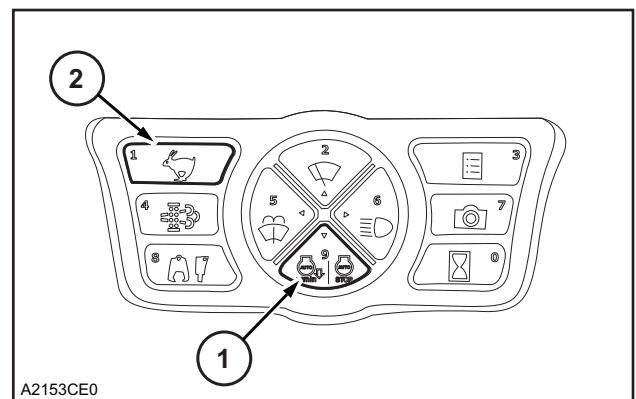
Failure to comply could result in death or serious injury.

Make sure you know the safety rules and regulations before transporting the excavator.

Make sure both trailer and excavator are fitted with the right safety equipment.

CONTROL PANEL OPERATION WHEN LOADING

1. Press the idle mode switch (1) to turn the auto idle switch to "OFF." At this point, the idling display on the monitor turns off.



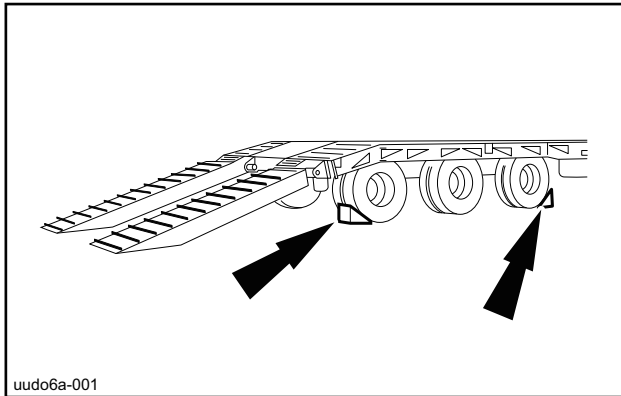
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Figure 1

2. Press the travel mode selector switch (2) to select the low-speed travel (mode). At this point, the indicator lamp turns off and the "Turtle" appears on the monitor screen.

LORDING THE EXCAVATOR WITH ATTACHMENT AND COUNTERWEIGHT INSTALLED

1. Put a block behind the front of a tire.
Attach the trailer's side extension (if equipped).

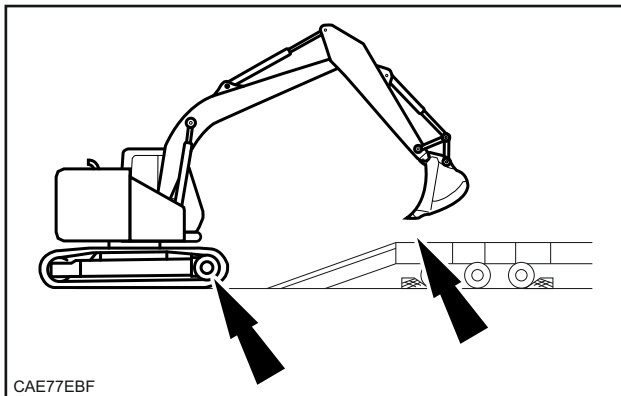


uudo6a-001

Figure 2

2. Lay a rubber mat on the trailer floor.
3. With the travel reduction gear facing the trailer ramp, orient the machine to the same direction as the trailer.
Raise the attachment by about 20 cm above the trailer bed.

NOTE: In this position, traveling and steering control are reversed.



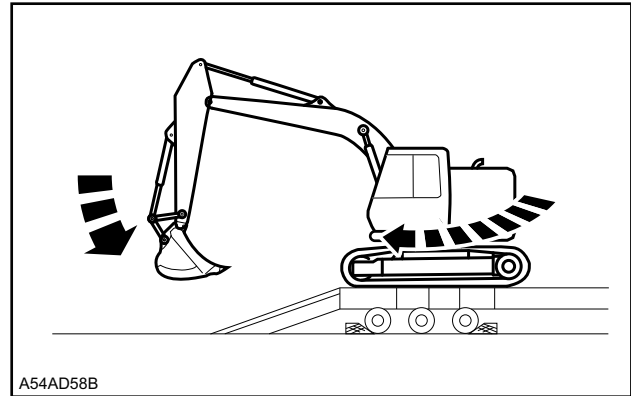
CAE77EBF

Figure 3

CAUTION

In this position, traveling and steering control are reversed.

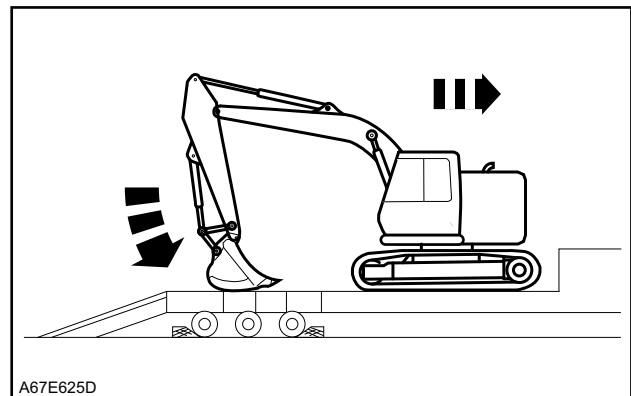
4. After the machine is completely loaded onto the trailer, swing the upper structure and lower the attachment to the lower end of the trailer ramp.



A54AD58B

Figure 4

5. Move the machine toward the front of the trailer, and lower the attachment to the trailer bed.

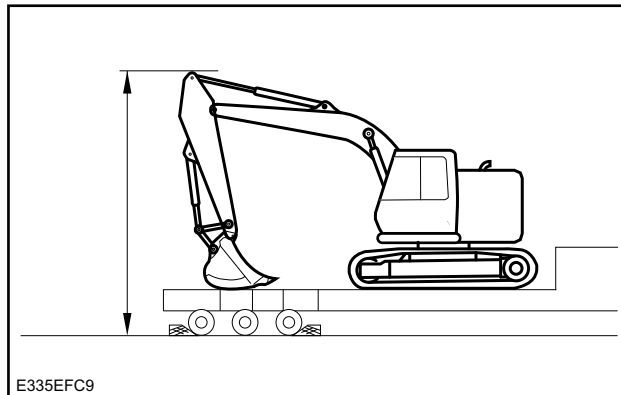


A67E625D

Figure 5

6. Stop the engine, remove the key, and set the gate lock lever to the locked position (the safety bar is raised).
7. Check that all the doors, hood, and inspection panels are fixed correctly.
8. Store the rear view mirror inside the cab.

9. Measure the height between the ground and the highest point of the machine.
Ensure any transportation route taken has ample clearance.

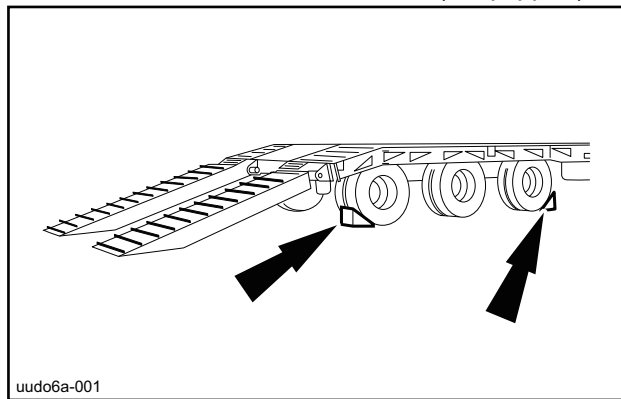


E335EFC9

Figure 6

LORDING THE EXCAVATOR WITHOUT AN ATTACHMENT AND COUNTERWEIGHT INSTALLED

1. Put a block behind the front of a tire.
Attach the trailer's side extension (if equipped).



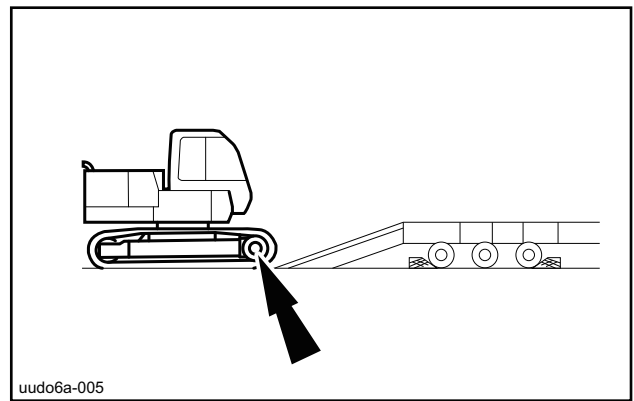
uudo6a-001

Figure 7

2. Lay a rubber mat on the trailer floor.
3. With the travel reduction gear facing the trailer ramp, orient the machine to the same direction as the trailer.

CAUTION

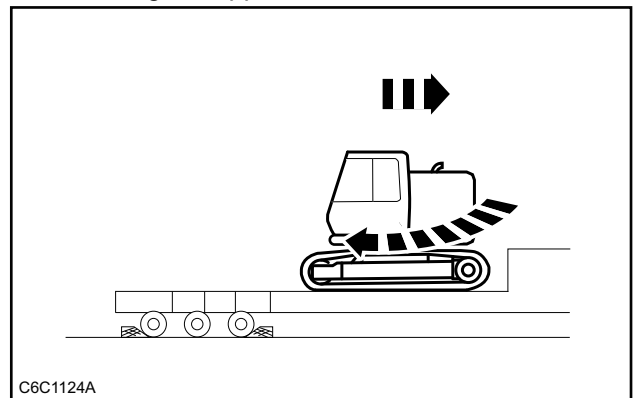
In this position, traveling and steering control are reversed.



uudo6a-005

Figure 8

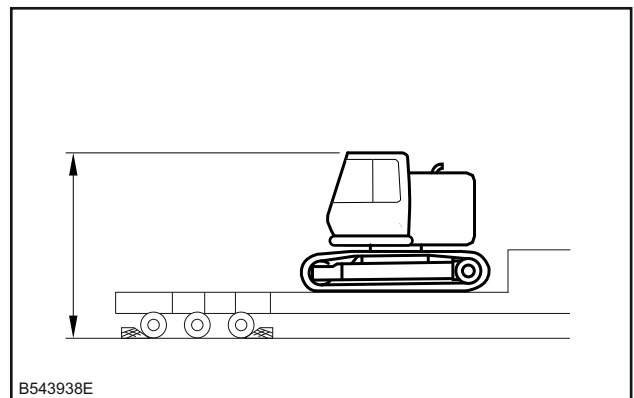
4. Move the machine toward the front of the trailer, and swing the upper structure.



C6C1124A

Figure 9

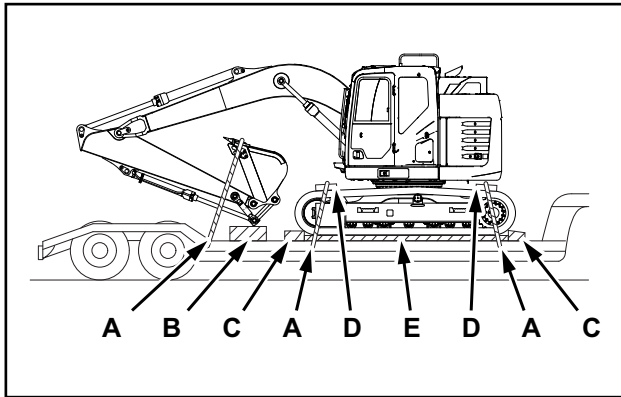
5. Stop the engine, remove the key, and set the gate lock lever to the locked position (the safety bar is raised).
6. Check that all the doors, hood, and inspection panels are fixed correctly.
7. Store the rear view mirror inside the cab.
8. Measure the height between the ground and the highest point of the machine.
Ensure any transportation route taken has ample clearance.



B543938E

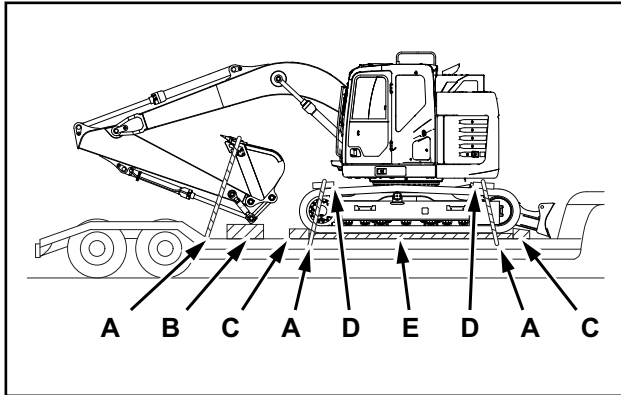
Figure 10

TIE DOWN ON TRANSPORT VEHICLE



2160D0FC

Figure 11



3C011D6E

Figure 12

A	Wire rope/Chain
B	Block
C	Chock
D	Padding
E	Rubber mat

1. Check if the machine is correctly loaded on the trailer, etc., at the specified position, or if the trailer, etc., is not tilted.
2. Curl the bucket and then retract the arm. Place block B on the trailer floor, and finally, lower the boom slowly. Adjust the position of block B so that the bucket and arm are on block B, and let the system rest on the floor.
3. Stop the engine.
 - Be sure to retract the antenna of the vehicle radio beforehand.
 - Adjust the mirrors so that they will not bump against the surrounding structures and objects during transport.
4. Lock the doors (operator's station, both sides of the housing).
5. After confirming absence of abnormality in the trailer, etc., secure the machine onto the trailer, etc., using chocks (C), wire ropes/chains (A), chains (D), etc., to prevent the machine from swaying (oscillation) during transport.

6. Finally, check that the machine has been loaded and secured completely.
Confirm there are no loose items in the bucket and all items are secured.

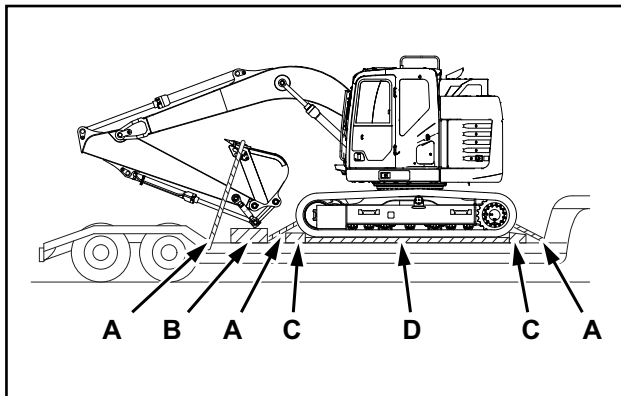
CAUTION

It will be dangerous if the machine moves during transport.

Firmly secure the machine using wire ropes, chains, etc., to prevent it from swaying (oscillation).

FIXING - SUPPORTING AT FOUR POINTS

Pattern A



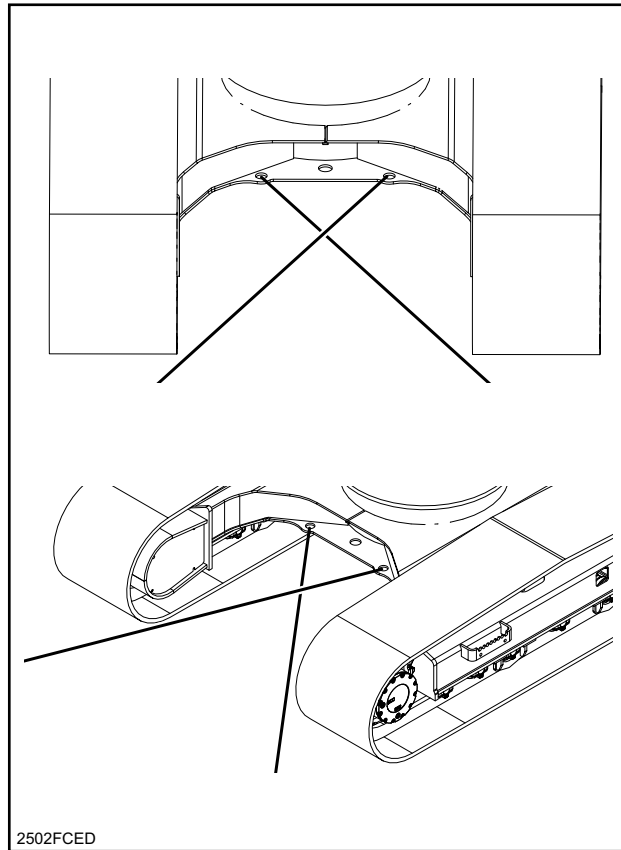
9E7CC0A8

Figure 13

A	Rope or chain
B	Block
C	Stop block
D	Rubber mat

1. Check if the machine is correctly loaded on the trailer, etc., at the specified position, or if the trailer, etc., is not tilted.
2. Curl the bucket and then retract the arm. Place block B on the trailer floor, and finally, lower the boom slowly. Adjust the position of block B so that the bucket and arm are on block B, and let the machine rest on the floor.
3. Stop the engine.
 - Adjust the mirrors so that they will not bump against the surrounding structures and objects during transport.
4. Lock the doors (operator's station, both sides of the housing).
5. After confirming absence of abnormality in the trailer, etc., secure the machine onto the trailer, etc., using stop block C, rope or chain A, etc., to prevent the machine from swaying (oscillation) during transport.

6. Secure the machine to the trailer by passing the rope or chain A through the securing hole of lower frame and tensioning the rope or chain A in an X shape. Secure both the front and rear of the lower frame in the same manner using rope or chain A.

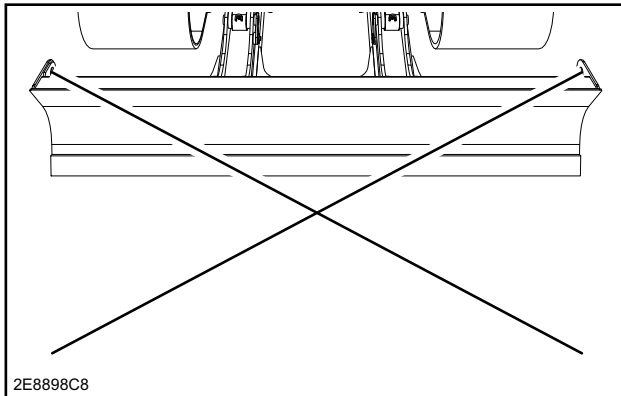


2502FCED

2502FCED

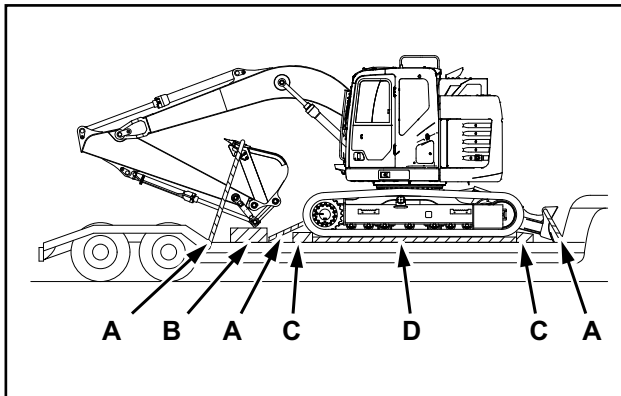
Figure 14

7. Secure the blade specification model to the trailer by passing rope or chain A through the securing holes of the blade and tensioning the rope or chain A in an X shape.



2E8898C8

Figure 15



AA501CD6

Figure 16

A	Rope or chain
B	Block
C	Stop block
D	Rubber mat

8. Finally, check if the machine has been loaded and secured completely.

CAUTION

It will be dangerous if the machine moves during transport. Firmly secure the machine using rope or chain A etc., to prevent it from swaying.

Pattern B

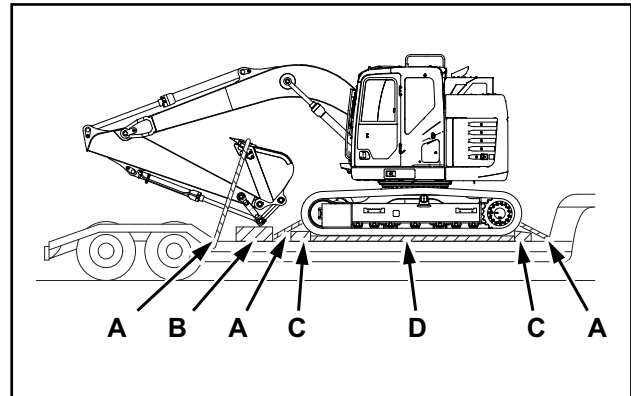
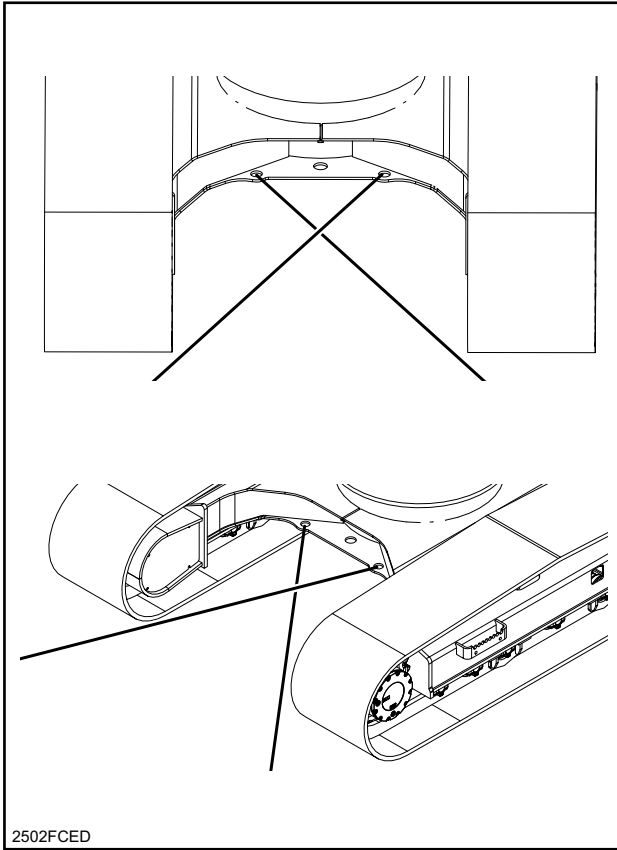


Figure 17

A	Rope or chain
B	Block
C	Stop block
D	Rubber mat

1. Check if the machine is correctly loaded on the trailer, etc., at the specified position, or if the trailer, etc., is not tilted.
2. Curl the bucket and then retract the arm. Place block B on the trailer floor, and finally, lower the boom slowly. Adjust the position of block B so that the bucket and arm are on block B, and let the machine rest on the floor.
3. Stop the engine.
 - Adjust the mirrors so that they will not bump against the surrounding structures and objects during transport.
4. Lock the doors (operator's station, both sides of the housing).
5. After confirming absence of abnormality in the trailer, etc., secure the machine onto the trailer, etc., using stop block C, rope or chain A, etc., to prevent the machine from swaying (oscillation) during transport.

6. Secure the machine to the trailer by passing the rope or chain A through the securing hole of lower frame and tensioning the rope or chain A in an X shape. Secure both the front and rear of the lower frame in the same manner using rope or chain A.

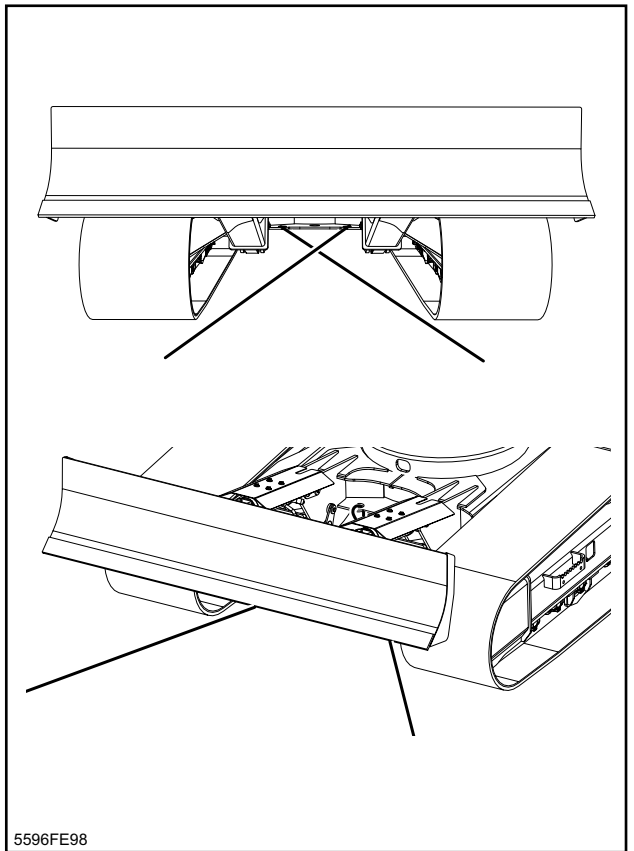


2502FCED

Figure 18

7. For the blade specification model, pass the rope or chain A in the securing hole of the lower frame and raise the blade.

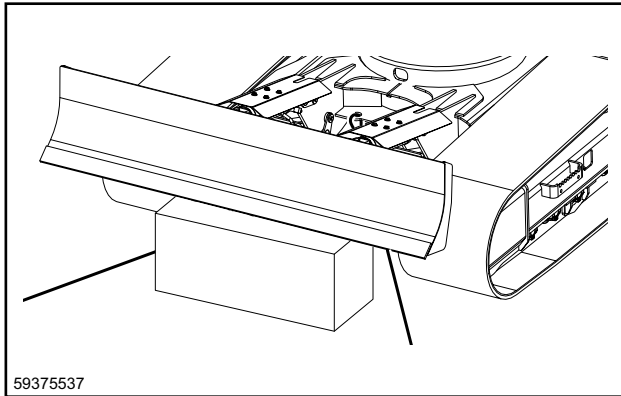
Pass the rope or chain A under the blade and create tension to the rope or chain A in an X shape to secure the trailer.



5596FE98

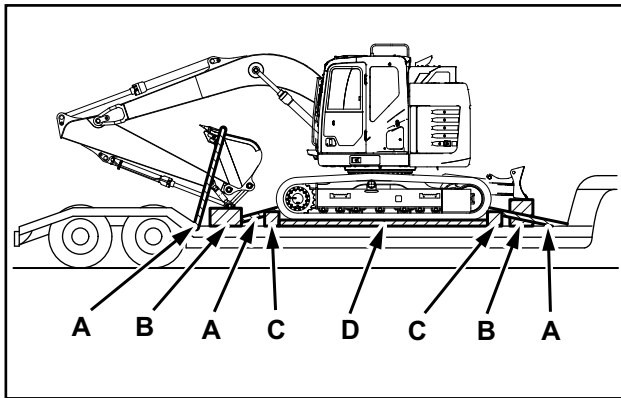
Figure 19

8. Lower the blade to the position where it does not touch the rope or chain A, and place the block and fix the blade.



59375537

Figure 20



466DEA5E

Figure 21

A	Rope or chain
B	Block
C	Stop block
D	Rubber mat

9. Finally, check if the machine has been loaded and secured completely.

CAUTION

It will be dangerous if the machine moves during transport. Firmly secure the machine using rope or chain A etc., to prevent it from swaying.

UNLOADING THE EXCAVATOR

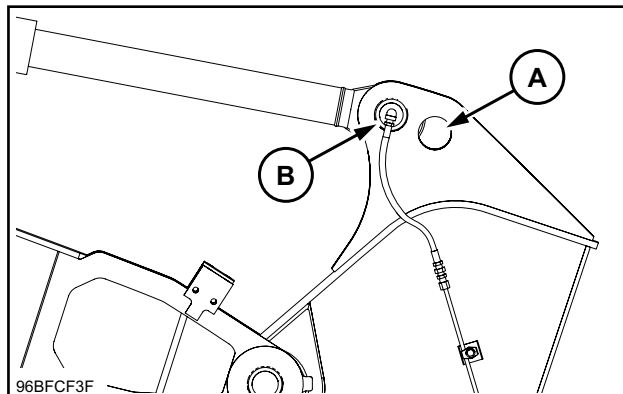
1. Remove the blocks and fastening wire ropes or chains.
2. Start the engine.
3. Push the gate lock lever forward.
4. (Excavator with attachment)
Raise the attachment to bring it a few inches above the trailer bed.
5. Select low travel speed.
6. Move the excavator forward slowly, raising the attachment (if equipped) so as to keep it a few inches above the ground.
7. Turn the rear view mirrors back to their correct position.
8. (Excavator without attachment)
Install the attachment and the counterweight.

IMPORTANT:

When the attachment has been installed, all air must be removed from the hydraulic circuit and the excavator must be tested for correct operation. Do not forget to check the oil level.

TRANSPORT SETTING FOR LONG ARM EXCAVATOR

With long arm (optional), there are 2 pin locations, transport position (B) and working position (A).

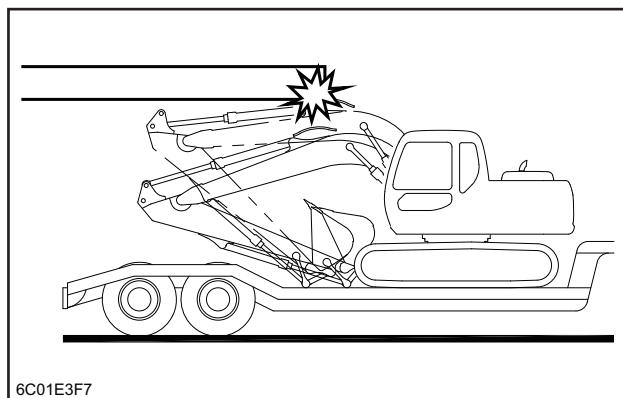


96BFCF3F

Figure 22

CAUTION

When transporting the excavator, ensure that the arm cylinder pin is in the transport position (B). Otherwise, the boom top will be higher than the cab and can cause interference with objects above the cab.

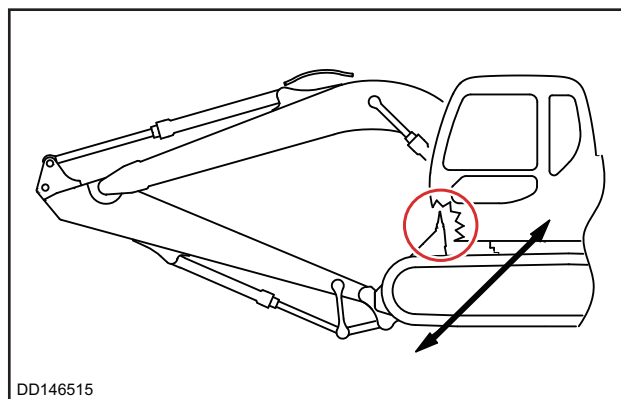


6C01E3F7

Figure 23

CAUTION

Before setting the excavator in transportation position, be sure to fold the bucket. Otherwise, the bucket may hit the cab.



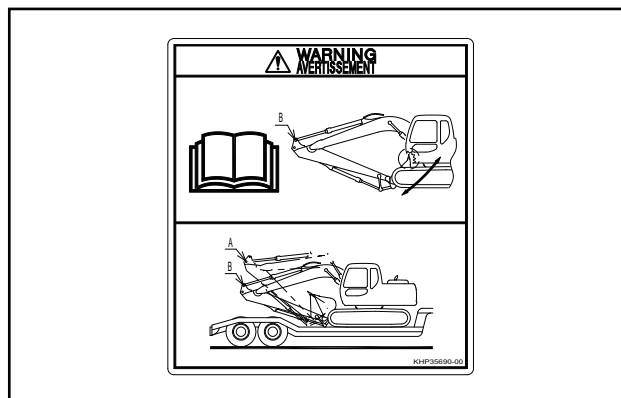
DD146515

Figure 24

CAUTION

Do not dig with the arm cylinder pin in the transport position. Otherwise, the excavator will be damaged.

DECAL



A3498AFC

Figure 25

LIFTING THE EXCAVATOR

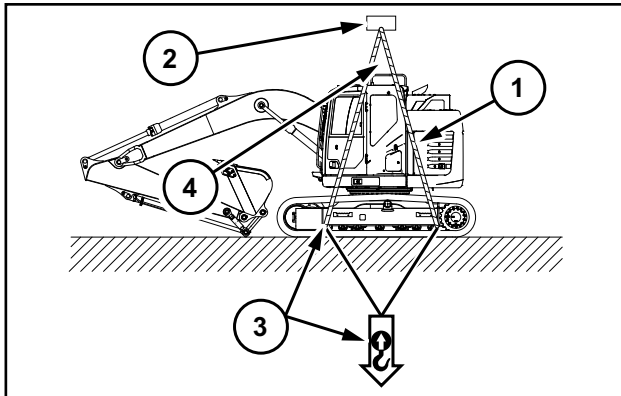
Before lifting the excavator always contact your Link-Belt Dealer for any special circumstances with your excavator.

IMPORTANT: Before handling the excavator, make sure the slings are in perfect condition and they are capable of supporting the weight of the excavator.

WARNING

Do not allow anyone near or under the excavator when lifting.

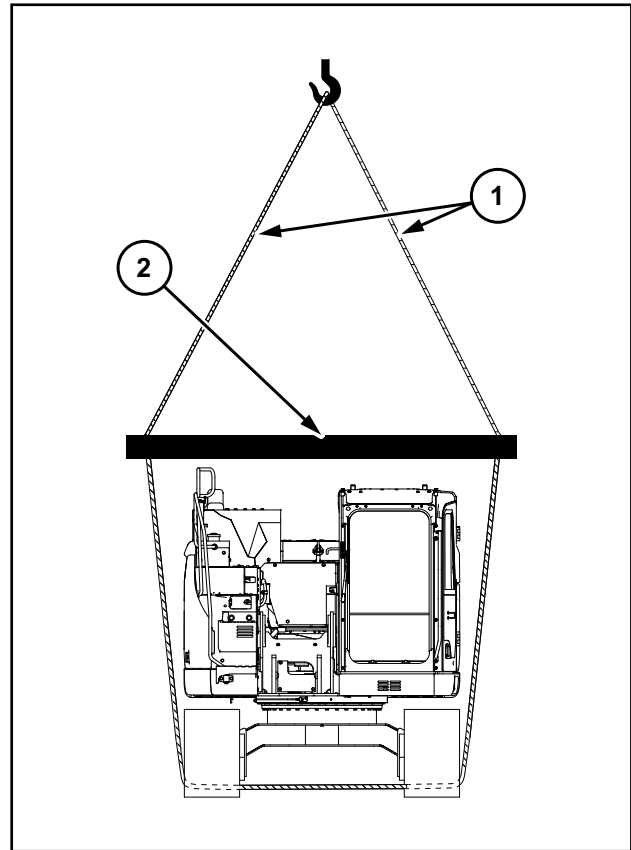
1. Fully extend the bucket and the arm cylinder. Lower the boom slowly. Turn off the engine.



A3E095C0

Figure 26

2. Use a wire rope with a sufficient strength for lifting, and route the wire through the lifting points (3). Use a supporting bar (2) that will keep the rope away from the excavator. Make sure the lifting angle (4) is between 30° and 40°.



E6A21E4F

Figure 27

Slowly lift the excavator off the ground, make sure the wire is not rubbing on the excavator and check the condition of the hook.

DISASSEMBLY BEFORE TRANSPORT

When transporting the machine, disassemble it appropriately according to the relevant laws and regulations. Disassembly of the machine is dangerous unless it is conducted by the educated service engineers in a place with such equipment as a liftcrane prepared.

When disassembling it, consult your local dealer.

WARNING

Precautions for disassembly and assembly work

- Before starting the work, designate a work instructor, check the safety items, and make arrangements for work procedures and signals.
- Since a risk is involved in the work, wear appropriate clothing also with protective gear.
- Before disassembly, be sure to release hydraulic-circuit pressure and air pressure.
- During disassembly, be careful to prevent the entry of dirt or dust into hoses or lines.
(The entry of dirt or foreign objects will cause a malfunction.)
- A liftcrane should be operated by the qualified operator.
- Check that lifting wire and lifting equipment are not damaged.
- Slings work should be conducted by the qualified operator.
- Take measures to forbid people to get under a lifted load.
- After assembly, bleed the hydraulic circuits of air, and also check that there is no abnormality by operational inspection.
- Also remember to check the hydraulic fluid level.

For disassembly, assembly or transportation, contact Link-Belt dealer.

GUARDRAIL

CAUTION

If any transport restrictions in the relevant laws and regulations are not met, removal of the guardrail is required.

For removal of attachment, contact Link-Belt dealer.

Bolt tightening torque for guardrail attachment is specified: 43.38 lbf · ft. (58.8 N · m)

HANDRAIL

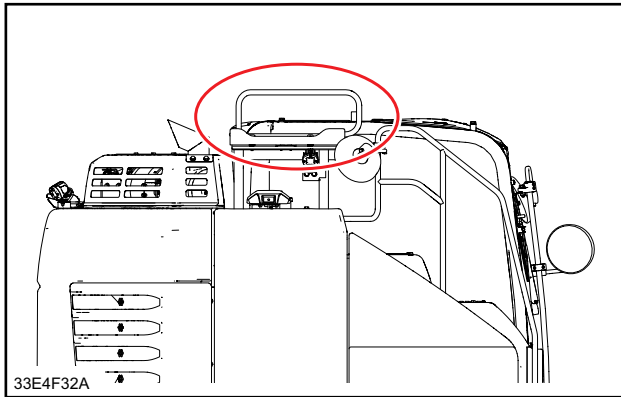
⚠ CAUTION

If any transport restrictions in the relevant laws and regulations are not met, folding of the hand rail is required.

FOLDING HANDRAIL

Fold the handrail during transportation as necessary.

Set the handrail in vertical position except during transportation.

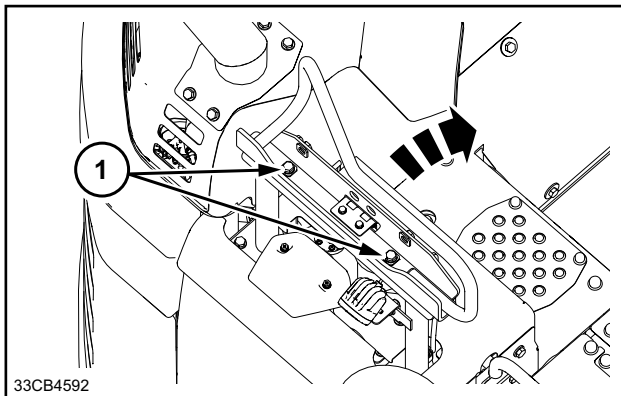


33E4F32A

Figure 28

HOW TO FOLD THE HANDRAIL

1. Remove the fixation bolt (1) and fold in the direction of the arrow.

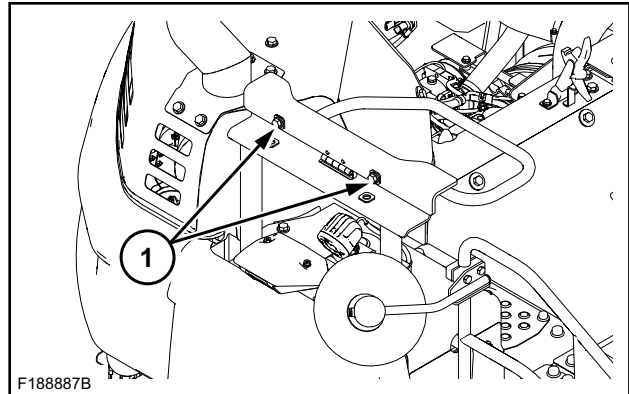


33CB4592

Figure 29

2. After folding, attach the fixation bolt (1).

NOTE: Firmly tighten the fixation bolt, such that the bolt does not loosen.



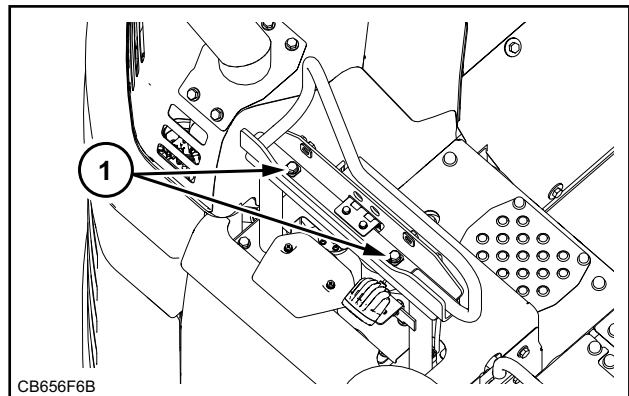
F188887B

Figure 30

HOW TO SET THE HANDRAIL IN VERTICAL POSITION

To set the handrail in vertical position, reverse the folding procedure.

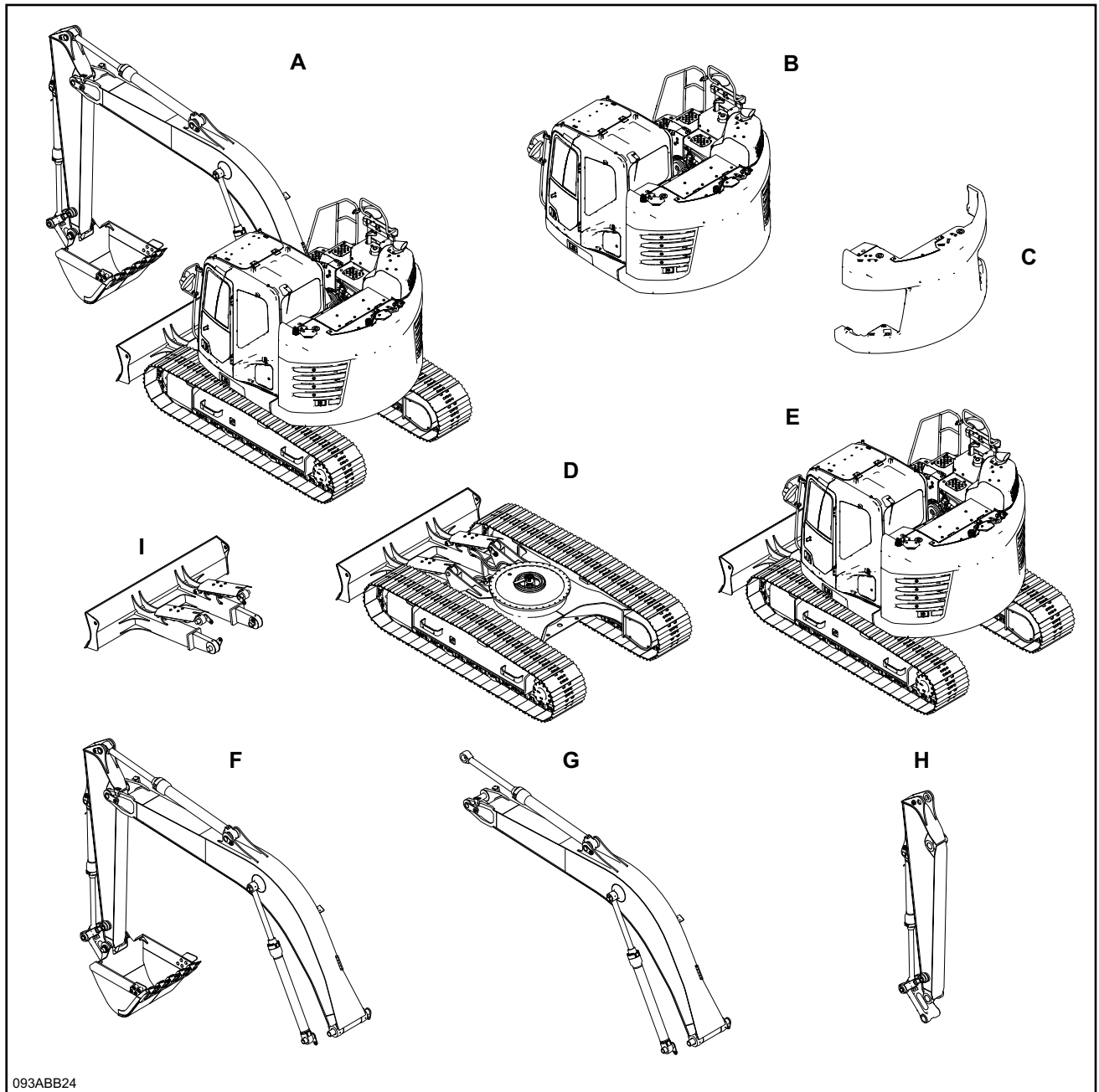
NOTE: (1) Tightening torque: 43.52 ± 2.95 lbf•ft (59 ± 4 N•m)



CB656F6B

Figure 31

DISASSEMBLY WEIGHT



093ABB24

093ABB24

Figure 32

Code	Part name	145X4 LC		145X4 DZ	
		Weight (lb)	Weight (kg)	Weight (lb)	Weight (kg)
A	Operating weight	32,100	14,600	33,600	15,200
B	Upper component (including CW and TTB)	17,400	7,890	17,500	7,930
C	Counterweight	7,860	3,570	7,860	3,570
D	Lower component (with grouser shoe)	9,630	4,370	11,000	4,990
E	Main unit weight	27,100	12,300	28,600	13,000
F	Attachment	4,910	2,230	4,910	2,230
G	Boom (including cylinder)	2,800	1,270	2,800	1,270
H	Arm (including cylinder and linkage)	1,230	560	1,230	560
I	Blade (including cylinder)	—	—	1,580	720

*The weights shown here are approximate values.

LONG-TERM STORAGE

When storing the machine for a long period of time, pay attention to the points below to prevent reduced functionality when the machine is used again.

⚠ WARNING

Before starting the engine, ensure that the operation levers are in the neutral position.
Failure to comply with these precautions could cause death or serious injury.

⚠ WARNING

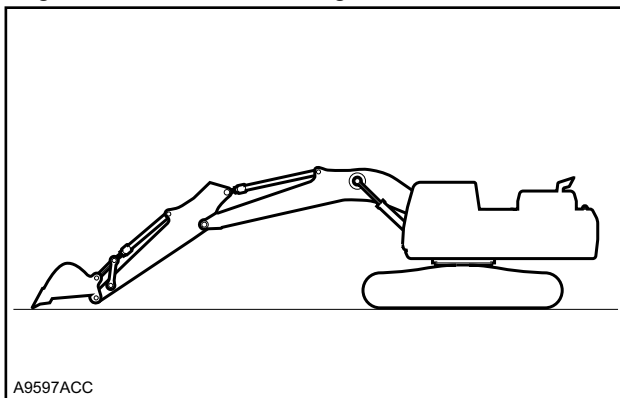
Do not run the engine in a confined space. Always check that the area is ventilated.
Failure to comply with these precautions could cause death or serious injury.

BEFORE STORAGE

Store the machine on flat, level ground in a dry, indoor location. If the machine cannot be stored indoors, cover it with a waterproof tarp.

Follow the instructions below before storing the machine.

1. Clean the machine.
2. Check for damage to the machine and missing parts.
Replace parts as necessary.
3. Retract the cylinder rods as much as possible to keep them from being exposed to outside air and lower the boom until the attachment touches the ground as shown in the figure.



A9597ACC

Figure 33

4. Apply grease to the applicable locations on the machine.
5. Apply antirust oil to the exposed surfaces of the cylinder rods and take other necessary measures to prevent rusting.
Consult your Link-Belt dealer for information on preventing cylinder rods from rusting.
6. In order to prevent rusting in the fuel tank, fill the fuel tank to full.
7. Check the engine oil level and top off as necessary.

8. Clean or replace the air filter element.
9. Check the coolant level.
If the time to change coolant will be reached during long-term storage, change the coolant before storing the machine.
10. Depending on the storage conditions, DEF (urea solution) may need to be drained from the urea solution tank.
For details on handling DEF (urea solution), refer to "DEF" (7-3) in [STORING DEF].

IMPORTANT:

The urea solution SCR system continues to operate for about 3 minutes after the key is turned OFF. Ensure that you wait for at least 3 minutes and confirm that the indicator on the battery disconnect switch has gone out, then disconnect the cable from the terminal or turn the battery disconnect switch to the "OFF" position.

11. Remove the battery and store it safely in a cool, dry location with a temperature of at least 0°C.
If you leave the battery on the machine, disconnect the cable from the battery negative (-) terminal or turn the battery disconnect switch to the "OFF" position.
12. If the paint is damaged or peeled, repaint.

DURING STORAGE

When storing a machine over a month, operate the machine once a month, following the instructions below to prevent engine rusting, seal deterioration and hydraulic component rusting.

- When operating the machine to prevent rusting, do it outdoors.
- Before operating the machine, wipe off the antirust oil applied to the hydraulic cylinder rods.
- Check that the coolant and DEF (urea solution) are at the correct level.
- Charge the battery.
- Keep the engine at low speed and perform slow attachment operations, swing operations, and travel operations.

⚠ WARNING

If the machine has to be operated to prevent rusting while in the indoor storage, be sure to open windows and doors to ventilate the storage and prevent the buildup of poisonous gas.

WHEN USING AGAIN

1. Check the fuel tank, pre-filter, and fuel filter for water accumulation. Drain some of the fuel if water has accumulated.
Replace the filter element as necessary.
2. Check the state of charge of the battery. If the charge level is too low, charge the battery.
3. Install the battery. Or connect the cable to the negative terminal of the battery.
If the battery disconnect switch is in the "OFF" position, turn it to the "ON" position.
4. Apply grease to the applicable locations on the machine.
5. Wipe off the antirust oil applied to the cylinder rods and wipe off all dirt if any.
6. Check the state of the fan belt and replace it as necessary.
7. Check the state of the V belt and replace it as necessary.
8. Check the fuel level and add fuel as necessary.
9. Check the coolant level and top off as necessary.
10. Check the hydraulic oil level and top off as necessary.
11. Check the DEF (urea solution) level and top off as necessary.
Add DEF (urea solution) if it has been drained.
For details on handling DEF (urea solution), refer to "DEF" (7-3) in [STORING DEF].
12. Check the engine oil level and top off as necessary.
If the machine has been stored for 6 month or longer, drain the engine oil from the engine, replace the oil filter, and add the specified oil.
13. Check the travel reduction gear and swing reduction gear oil levels and top off as necessary.
14. When starting the engine after the machine has been stored for a long period of time, check the turbocharger for missing oil film, then perform preparation procedures for engine startup. Make sure you consult your Link-Belt dealer.
15. Confirm that no warning messages or diagnostic trouble codes are displayed on the monitor.

IMPORTANT: Check that the machine has no oil leaks and no damaged, defective, or missing parts.

CHAPTER 11 - SPECIFICATIONS

ENGINE

Make	ISUZU
Type	AR-4JJ1X
Number of cylinders	4
SAE net horsepower	102 HP (76.4 kW) @ 2,000 rpm
Displacement	183 cu in (2.9 L)
Maximum Torque	257 lbf · ft (349 N · m) @ 1,800 rpm
Starter	24 V - 4.0 kW

ELECTRICAL SYSTEMS

Circuit	24 volts
Battery	72 amp hours
Alternator	50 amp

HYDRAULIC SYSTEM

Open-center system, two variable-displacement electronically controlled axial-piston pumps and one gear pump for pilot controls, main control valve with one 4-spool section and one 5-spool section with auxiliary spool: stackable, Auxiliary Control System, oil cooler, Auto-Power boost, boom and arm holding valves, 6 micron return filter, firewall, hydraulic oil sample port.

HYDRAULIC PUMPS:

Main pump max flow	2 × 34.1 gpm (2 × 129 l/min)
Pilot pump max flow	5.3 gpm (20 l/min)
Blade pump max flow (with blade)	16.4 gpm (62 l/min)

RELIEF VALVES PRESSURES:

Boom/Arm/Bucket	4,970 psi (34.3 MPa)
In Power Boost Mode	5,260 psi (36.3 MPa)
Swing	4,050 psi (27.9 MPa)
Travel	4,970 psi (34.3 MPa)
Blade (with blade)	2,990 psi (20.6 MPa)

HYDRAULIC CYLINDERS:

	Bore x Rod x Stroke
Boom	4.1" × 3.0" × 44.1" (D105 × D75 × 1120)
Arm	4.5" × 3.1" × 43.6" (D115 × D80 × 1108)
Bucket	3.7" × 2.6" × 34.7" (D95 × D65 × 881)

HYDRAULIC OIL FILTRATION:

Return filter	6 micron
Pilot filter	8 micron
Suction screen	105 micron

SWING:

Planetary reduction powered by axial-piston motor, Internal ring gear with grease cavity for swing pinion, Swing bearing is single-row, shear type ball bearing, Mechanical disc swing brake, Free swing.

Upperstructure swing speed	0 - 12.5 min ⁻¹
Tail swing	5'02" (1.53 m)
Swing torque	27,400 lbf · ft (37.0 kN · m)

CHAPTER 11 - SPECIFICATIONS

TRAVEL:

Two-speed independent hydrostatic travel with compact axial-piston motors, Hydraulic motor powered output shaft coupled to a planetary reduction drive and track sprocket, All hydraulic components mounted within the width of side frame, Automatic downshift for high torque to overcome obstacles, Spring-applied hydraulic release parking brake built into each motor, Travel motors equipped with counterbalance valve to prevent over-speeding down an incline.

Low speed	0 to 2.1 mph (0 to 3.4 km/h)
High speed	0 to 3.5 mph (0 to 5.6 km/h)
Drawbar pull	26,100 lbf (116 kN)

WEIGHTS

145X4 LC

with 8'2" (2.50 m) Arm , 30511.9 in ³ (0.5 m ³) Sumitomo Bucket , 23.6" (600 mm) grouser shoe , operator, lubricant, coolant and full fuel tank	32,100 lb (14,600 kg)
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145X4 DZ

with 8'2" (2.50 m) Arm , 30511.9 in ³ (0.5 m ³) Sumitomo Bucket , 23.6" (600 mm) grouser shoe , operator, lubricant, coolant and full fuel tank	33,600 lb (15,200 kg)
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UNDERCARRIAGE

SPECIFICATIONS PER TRACK ASSEMBLY

145X4 LC

Number of upper rollers	2 per Side
Number of lower rollers	7 per Side
Number of track pads	46 per side
Type of track pads	Triple grouser
Width of standard track pads	23.6" (600 mm)
Ground pressure	5.22 psi (0.036 MPa)
Gradeability	70 %

145X4 DZ

Number of upper rollers	1 per Side
Number of lower rollers	7 per Side
Number of track pads	43 per side
Type of track pads	Triple grouser
Width of standard track pads	23.6" (600 mm)
Ground pressure	5.95 psi (0.041 MPa)
Gradeability	70 %

CAPACITY OF SYSTEMS AND COMPONENTS

Hydraulic tank	20 gal. (75 liters)
Hydraulic system	41.7 gal. (158 liters)
Final drive (each)	0.6 gal. (2.1 liters)
Swing Drive	0.6 gal. (2.2 liters)
Engine oil (with filter change)	4.5 gal. (17.0 liters)
Fuel tank	53 gal. (200 liters)
Cooling system	4.4 gal. (16.5 liters)
DEF tank	11.4 gal. (43 liters)

ATTACHMENT

Boom	15' 2" (4.63 m)
Arms	6' 11" (2.11 m), 8' 2" (2.50 m), 9' 11" (3.01 m)

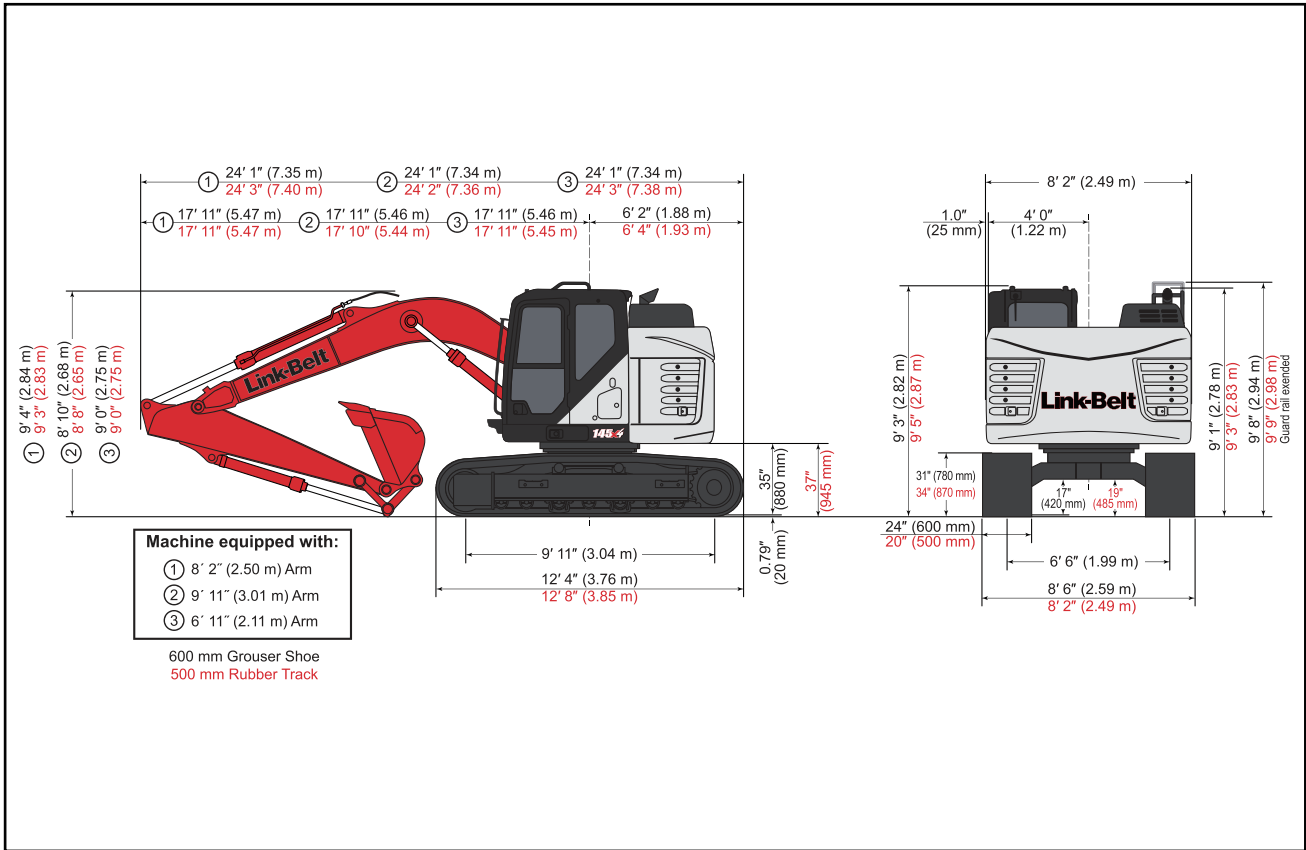
DIGGING FORCE

6' 11" (2.11 m) arm	15,700 lbf (70 kN)
with auto power boost mode applied	16,600 lbf (74 kN)
8' 2" (2.50 m) arm	13,900 lbf (62 kN)
with auto power boost mode applied	14,800 lbf (66 kN)
9' 11" (3.01 m) arm	12,600 lbf (56 kN)
with auto power boost mode applied	13,500 lbf (60 kN)
Bucket digging force	20,200 lbf (90 kN)
with auto power boost mode applied	21,400 lbf (95 kN)

NOTE: Digging force ratings are based on ISO 6015, "Earthmoving Machinery - Hydraulic Excavators - Tool Forces".

EXCAVATOR OVERALL DIMENSIONS

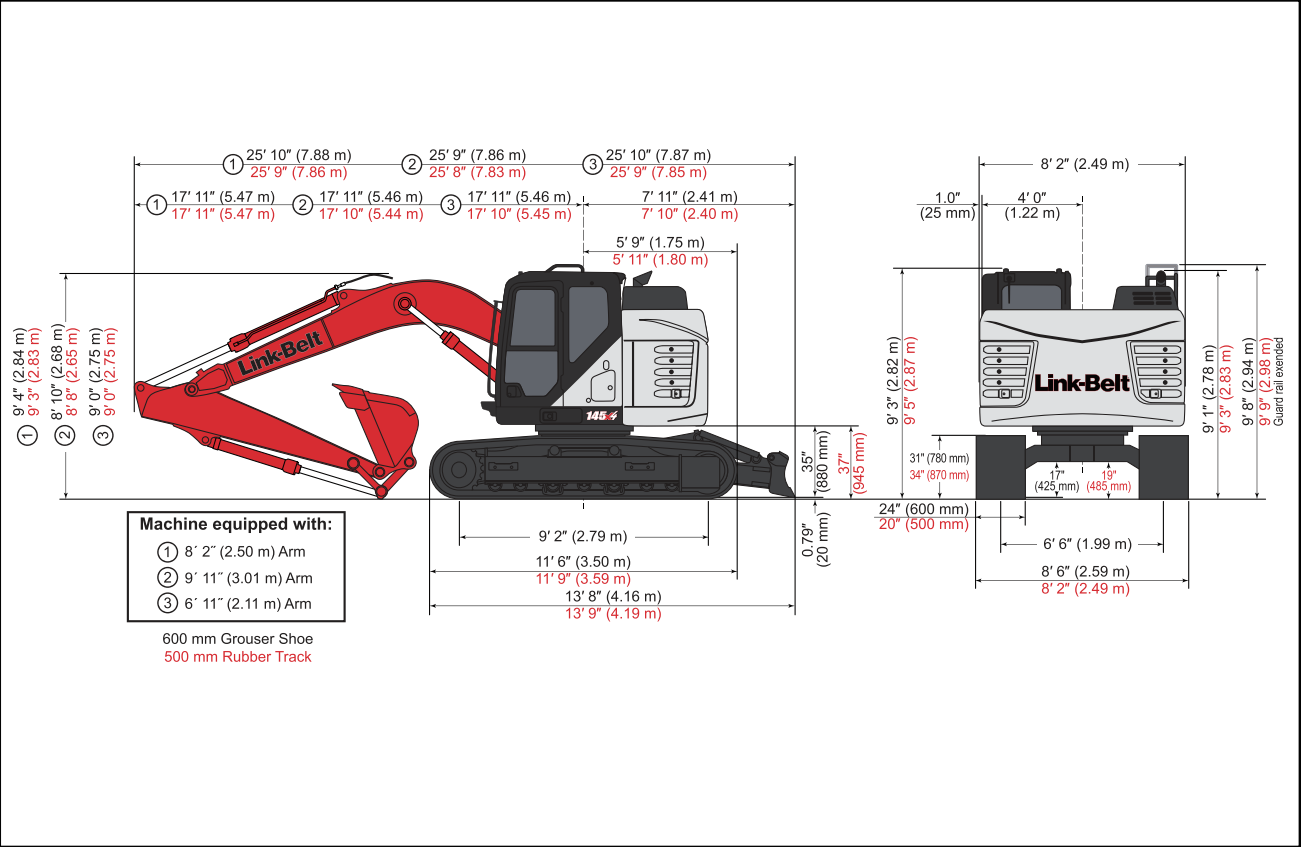
145X4 LC



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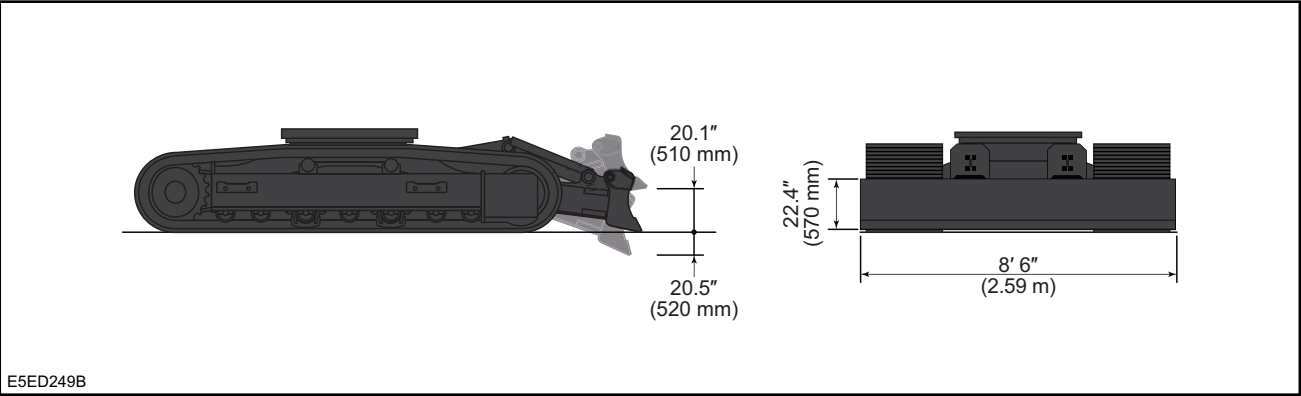
Figure 1

145X4 DZ



4F3F4CD3

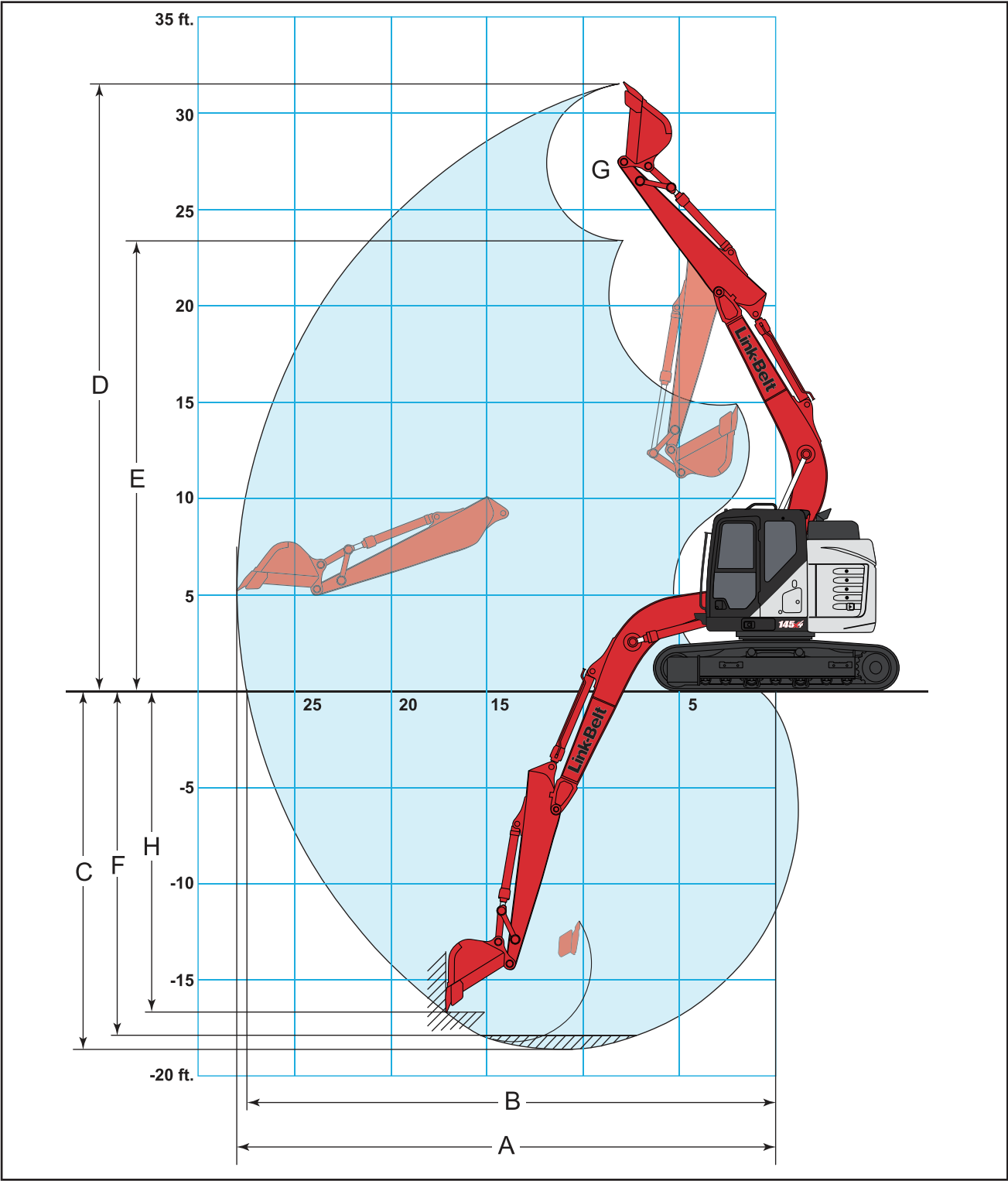
Figure 2



E5ED249B

Figure 3

WORKING RANGE



D60AE3F5

Figure 4

Machine Equipped with 15' 2" (4.63 m) Boom

Arms	8' 2" (2.50 m)	9' 11" (3.01 m)	6' 11" (2.11 m)
A. Maximum Reach	27' 2" (8.29 m)	28' 8" (8.74 m)	26' 1" (7.94 m)
B. Maximum Reach @ Ground Level	26' 8" (8.14 m)	28' 3" (8.60 m)	25' 6" (7.78 m)
C. Maximum Dig Depth	18' 1" (5.51 m)	19' 9" (6.01 m)	16' 9" (5.11 m)
D. Maximum Dig Height	30' 8" (9.34 m)	31' 9" (9.69 m)	29' 9" (9.06 m)
E. Maximum Dump Height	22' 9" (6.94 m)	23' 11" (7.29 m)	21' 10" (6.66 m)
F. Digging Depth - 8'(2.44 m) Level Bottom	17' 4" (5.29 m)	19' 2" (5.83 m)	16' 0" (4.87 m)
G. Bucket Rotation	178°	178°	178°
H. Maximum Vertical Wall Depth	16' 1" (4.90 m)	17' 4" (5.28 m)	15' 0" (4.56 m)

LIFTING CAPACITIES - ISO RATINGS

Radius of Load - Regular Undercarriage with Blade Down													
8' 2" (2.50 m) Arm with 15' 2" (4.63 m) Boom and 900 lb. (400 kg) Bucket with Power-Boost Applied - Standard Arm													
 End	 Side	5' 0" (1.5 m)		10' 0" (3.0 m)		15' 0" (4.5 m)		20' 0" (6.0 m)		25' 0" (7.5 m)		Max Reach	
		End	Side	End	Side	End	Side	End	Side	End	Side	End	Side
+25' 0"	lbs					4,850*	4,850*					2,950*	2,950*
(7.5 m)	kg					2 380*	2 380*					1 310*	1 310*
+20' 0"	lbs					6,350*	6,350*	4,800*	4,800*			2,500*	2,500*
(6.0 m)	kg					2 980*	2 980*	2 340*	2 340*			1 120*	1 120*
+15' 0"	lbs					8,050*	8,050*	6,400*	5,500			2,350*	2,350*
(4.5 m)	kg					3 720*	3 720*	2 960*	2 560			1 060*	1 060*
+10' 0"	lbs			15,700*	15,700*	11,450*	8,450	8,350*	5,300	4,500*	3,550	2,350*	2,350*
(3.0 m)	kg			7 280*	7 280*	5 290*	3 930	3 880*	2 460	2 330*	1 670	1 060*	1 060*
+5' 0"	lbs			21,350*	15,000	13,750*	7,900	10,300*	5,050	5,500*	3,450	2,450*	2,450*
(1.5 m)	kg			9 830*	6 970	6 350*	3 670	4 750*	2 340	2 790*	1 620	1 120*	1 120*
Ground	lbs	6,200*	6,200*	19,300*	14,000	14,650*	7,450	10,600*	4,800	4,450*	3,400	2,800*	2,800*
Line	kg	2 770*	2 770*	8 350*	6 520	6 770*	3 470	4 890*	2 240	2 500*	1 570	1 260*	1 260*
-5' 0"	lbs	11,500*	11,500*	21,350*	13,900	14,200*	7,250	10,050*	4,700			3,350*	3,350*
(1.5 m)	kg	5 180*	5 180*	9 630*	6 470	6 550*	3 380	4 670*	2 190			1 520*	1 520*
-10' 0"	lbs	18,300*	18,300*	17,250*	14,100	11,800*	7,400	6,750*	4,850			4,650*	4,650*
(3.0 m)	kg	8 120*	8 120*	8 010*	6 560	5 500*	3 430	3 540*	2 250			2 070*	2 070*
-15' 0"	lbs			9,400*	9,400*	5,000*	5,000*					4,700*	4,700*
(4.5 m)	kg			4 540*	4 540*	2 680*	2 680*					2 230*	2 230*

Radius of Load - Regular Undercarriage with Blade Up													
8' 2" (2.50 m) Arm with 15' 2" (4.63 m) Boom and 900 lb. (400 kg) Bucket with Power-Boost Applied - Standard Arm													
 End	 Side	5' 0" (1.5 m)		10' 0" (3.0 m)		15' 0" (4.5 m)		20' 0" (6.0 m)		25' 0" (7.5 m)		Max Reach	
		End	Side	End	Side	End	Side	End	Side	End	Side	End	Side
+25' 0"	lbs					4,850*	4,850*					2,950*	2,950*
(7.5 m)	kg					2 380*	2 380*					1 310*	1 310*
+20' 0"	lbs					6,350*	6,350*	4,800*	4,800*			2,500*	2,500*
(6.0 m)	kg					2 980*	2 980*	2 340*	2 340*			1 120*	1 120*
+15' 0"	lbs					8,050*	8,050*	6,400*	5,150			2,350*	2,350*
(4.5 m)	kg					3 720*	3 720*	2 960*	2 390			1 060*	1 060*
+10' 0"	lbs			15,700*	15,100	10,650	7,900	6,650	4,950	4,500*	3,300	2,350*	2,350*
(3.0 m)	kg			7 280*	7 030	4 960	3 660	3 090	2 290	2 110	1 550	1 060*	1 060*
+5' 0"	lbs			20,400	13,800	10,150	7,350	6,350	4,700	4,400	3,200	2,450*	2,450*
(1.5 m)	kg			9 540	6 410	4 710	3 410	2 960	2 170	2 060	1 500	1 120*	1 120*
Ground	lbs	6,200*	6,200*	19,050	12,800	9,650	6,900	6,150	4,450	4,300	3,100	2,800*	2,800*
Line	kg	2 770*	2 770*	8 350*	5 960	4 490	3 210	2 860	2 070	2 010	1 450	1 260*	1 260*
-5' 0"	lbs	11,500*	11,500*	19,100	12,700	9,450	6,700	6,050	4,350			3,350*	3,350*
(1.5 m)	kg	5 180*	5 180*	8 830	5 920	4 390	3 120	2 810	2 030			1 520*	1 520*
-10' 0"	lbs	18,300*	18,300*	17,250*	12,950	9,550	6,850	6,150	4,500			4,650*	4,300
(3.0 m)	kg	8 120*	8 120*	8 010*	6 020	4 430	3 170	2 860	2 090			2 070*	1 940
-15' 0"	lbs			9,400*	9,400*	5,000*	5,000*					4,700*	4,700*
(4.5 m)	kg			4 540*	4 540*	2 680*	2 680*					2 230*	2 230*

Radius of Load - Regular Undercarriage with Blade Down													
9' 11" (3.01 m) Arm with 15' 2" (4.63 m) Boom and 750 lb. (340 kg) Bucket with Power-Boost Applied - Standard Arm													
		5' 0" (1.5 m)		10' 0" (3.0 m)		15' 0" (4.5 m)		20' 0" (6.0 m)		25' 0" (7.5 m)		Max Reach	
		End	Side	End	Side	End	Side	End	Side	End	Side	End	Side
+25' 0"	lbs					5,200*	5,200*					2,900*	2,900*
(7.5 m)	kg					2 350*	2 350*					1 290*	1 290*
+20' 0"	lbs					6,050*	6,050*	5,000*	5,000*			2,500*	2,500*
(6.0 m)	kg					2 770*	2 770*	2 300*	2 300*			1 130*	1 130*
+15' 0"	lbs					6,750*	6,750*	5,850*	5,650	4,000*	3,750	2,400*	2,400*
(4.5 m)	kg					3 100*	3 100*	2 740*	2 610	2 000*	1 750	1 080*	1 080*
+10' 0"	lbs			9,900*	9,900*	9,200*	8,550*	7,550*	5,400	5,400*	3,650	2,400*	2,400*
(3.0 m)	kg			4 650*	4 650*	4 270*	3 970	3 520*	2 510	2 570*	1 710	1 090*	1 090*
+5' 0"	lbs			19,450*	15,450	13,050*	8,050	9,950*	5,100	6,450*	3,500	2,550*	2,550*
(1.5 m)	kg			8 960*	7 170	6 030*	3 740	4 600*	2 370	3 080*	1 640	1 150*	1 150*
Ground	lbs	6,350*	6,350*	22,350*	14,100	14,450*	7,500	10,550*	4,850	6,700*	3,400	2,800*	2,800*
Line	kg	2 850*	2 850*	9 670*	6 550	6 680*	3 490	4 860*	2 250	3 300*	1 580	1 280*	1 280*
-5' 0"	lbs	10,550*	10,550*	21,600*	13,700	14,400*	7,200	10,300*	4,700	4,250*	3,350	3,350*	3,300
(1.5 m)	kg	4 730*	4 730*	9 440*	6 380	6 650*	3 350	4 780*	2 180	2 430*	1 550	1 510*	1 490
-10' 0"	lbs	15,650*	15,650*	18,950*	13,800	12,750*	7,250	8,700*	4,750			4,400*	4,000
(3.0 m)	kg	6 950*	6 950*	8 790*	6 440	5 920*	3 370	4 100*	2 200			1 970*	1 810
-15' 0"	lbs	19,400*	19,400*	12,550*	12,550*	8,200*	7,400					5,300*	5,300*
(4.5 m)	kg	9 250*	9 250*	5 960*	5 960*	3 960*	3 430					2 450*	2 450*

Radius of Load - Regular Undercarriage with Blade Up													
9' 11" (3.01 m) Arm with 15' 2" (4.63 m) Boom and 750 lb. (340 kg) Bucket with Power-Boost Applied - Standard Arm													
		5' 0" (1.5 m)		10' 0" (3.0 m)		15' 0" (4.5 m)		20' 0" (6.0 m)		25' 0" (7.5 m)		Max Reach	
		End	Side	End	Side	End	Side	End	Side	End	Side	End	Side
+25' 0"	lbs					5,200*	5,200*					2,900*	2,900*
(7.5 m)	kg					2 350*	2 350*					1 290*	1 290*
+20' 0"	lbs					6,050*	6,050*	5,000*	5,000*			2,500*	2,500*
(6.0 m)	kg					2 770*	2 770*	2 300*	2 300*			1 130*	1 130*
+15' 0"	lbs					6,750*	6,750*	5,850*	5,300	4,000*	3,500	2,400*	2,400*
(4.5 m)	kg					3 100*	3 100*	2 740*	2 460	2 000*	1 630	1 080*	1 080*
+10' 0"	lbs			9,900*	9,900*	9,200*	8,050	6,750	5,050	4,600	3,400	2,400*	2,400*
(3.0 m)	kg			4 650*	4 650*	4 270*	3 730	3 150*	2 350	2 150	1 580	1 090*	1 090*
+5' 0"	lbs			19,450*	14,200	10,300	7,500	6,450	4,750	4,450	3,250	2,550*	2,550*
(1.5 m)	kg			8 960*	6 600	4 790	3 480	3 000	2 210	2 080	1 520	1 150*	1 150*
Ground	lbs	6,350*	6,350*	19,350	12,900	9,700	6,950	6,150	4,500	4,350	3,150	2,800*	2,750
Line	kg	2 850*	2 850*	9 020	6 000	4 510	3 230	2 870	2 080	2 020	1 460	1 280*	1 240
-5' 0"	lbs	10,550*	10,550*	18,800	12,500	9,400	6,650	6,000	4,350	4,250*	3,100	3,350*	3,050
(1.5 m)	kg	4 730*	4 730*	8 750	5 830	4 360	3 090	2 790	2 010	1 990	1 430	1 510*	1 370
-10' 0"	lbs	15,650*	15,650*	18,800*	12,650	9,400	6,700	6,050	4,400			4,400*	3,700
(3.0 m)	kg	6 950*	6 950*	8 760	5 900	4 380	3 110	2 820	2 040			1 970*	1 670
-15' 0"	lbs	19,400*	19,400*	12,550*	12,550*	8,200*	6,850					5,300*	5,300*
(4.5 m)	kg	9 250*	9 250*	5 960*	5 910	3 960*	3 190					2 450*	2 420

783DC859

Figure 6

CHAPTER 11 - SPECIFICATIONS

Radius of Load - Regular Undercarriage with Blade Down													
6' 11" (2.11 m) Arm with 15' 2" (4.63 m) Boom and 900 lb. (410 kg) Bucket with Power-Boost Applied - Standard Arm													
 End	 Side	5' 0" (1.5 m)		10' 0" (3.0 m)		15' 0" (4.5 m)		20' 0" (6.0 m)		25' 0" (7.5 m)		Max Reach	
End	Side	End	Side	End	Side	End	Side	End	Side	End	Side	End	Side
+25' 0" (7.5 m)	lbs kg											3,650* 1 620*	3,650* 1 620*
+20' 0" (6.0 m)	lbs kg					6,900* 3 220*	6,900* 3 220*	3,800* 2 190*	3,800* 2 190*			3,000* 1 350*	3,000* 1 350*
+15' 0" (4.5 m)	lbs kg			10,000* 4 610*	10,000* 4 610*	9,450* 4 400*	8,650* 4 030	7,150* 3 350*	5,350* 2 500			2,800* 1 270*	2,800* 1 270*
+10' 0" (3.0 m)	lbs kg			17,450* 8 050*	16,200* 7 530	12,050* 5 570*	8,250* 3 840	9,500* 4 410*	5,150* 2 410			2,800* 1 270*	2,800* 1 270*
+5' 0" (1.5 m)	lbs kg			21,600* 10 000*	14,550* 6 760	14,100* 6 510*	7,750* 3 590	10,400* 4 810*	4,950* 2 290	3,400* 2 180*	3,400* 1 580	2,950* 1 330*	2,950* 1 330*
Ground Line	lbs kg			17,600* 7 640*	13,700* 6 380	14,550* 6 720*	7,350* 3 400	10,500* 4 850*	4,750* 2 200			3,300* 1 490*	3,300* 1 490*
-5' 0" (1.5 m)	lbs kg	12,450* 5 600*	12,450* 5 600*	20,300* 9 360*	13,850* 6 450	13,700* 6 340*	7,200* 3 360	9,550* 4 460*	4,700* 2 180			4,000* 1 810*	4,000* 1 800
-10' 0" (3.0 m)	lbs kg	18,750* 8 340*	18,750* 8 340*	15,450* 7 180*	13,950* 6 510	10,650* 4 990*	7,400* 3 440					5,700* 2 520*	5,250* 2 340

Radius of Load - Regular Undercarriage with Blade Up													
6' 11" (2.11 m) Arm with 15' 2" (4.63 m) Boom and 900 lb. (410 kg) Bucket with Power-Boost Applied - Standard Arm													
 End	 Side	5' 0" (1.5 m)		10' 0" (3.0 m)		15' 0" (4.5 m)		20' 0" (6.0 m)		25' 0" (7.5 m)		Max Reach	
End	Side	End	Side	End	Side	End	Side	End	Side	End	Side	End	Side
+25' 0" (7.5 m)	lbs kg											3,650* 1 620*	3,650* 1 620*
+20' 0" (6.0 m)	lbs kg					6,900* 3 220*	6,900* 3 220*	3,800* 2 190*	3,800* 2 190*			3,000* 1 350*	3,000* 1 350*
+15' 0" (4.5 m)	lbs kg			10,000* 4 610*	10,000* 4 610*	9,450* 4 400*	8,150* 3 780*	6,750* 3 140	5,000* 2 330			2,800* 1 270*	2,800* 1 270*
+10' 0" (3.0 m)	lbs kg			17,450* 8 050*	14,950* 6 950	10,550* 4 900	7,700* 3 580	6,500* 3 030	4,800* 2 240			2,800* 1 270*	2,800* 1 270*
+5' 0" (1.5 m)	lbs kg			19,900* 9 280	13,350* 6 200	9,950* 4 620	7,150* 3 330	6,250* 2 910	4,550* 2 120	3,400* 2 020	3,150* 1 460	2,950* 1 330*	2,950* 1 330*
Ground Line	lbs kg			17,600* 7 640*	12,550* 5 840	9,500* 4 420	6,750* 3 150	6,050* 2 820	4,400* 2 040			3,300* 1 490*	3,200* 1 460
-5' 0" (1.5 m)	lbs kg	12,450* 5 600*	12,450* 5 600*	19,000* 8 800	12,650* 5 900	9,400* 4 370	6,650* 3 100	6,000* 2 790	4,350* 2 010			4,000* 1 810*	3,700* 1 660
-10' 0" (3.0 m)	lbs kg	18,750* 8 340*	18,750* 8 340*	15,450* 7 180*	12,900* 6 000	9,500* 4 410	6,850* 3 180					5,700* 2 520*	4,850* 2 170

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Figure 7

Radius of Load - Long Undercarriage													
8' 2" (2.50 m) Arm with 15' 2" (4.63 m) Boom and 900 lb. (400 kg) Bucket with Power-Boost Applied													
 End	 Side	5' 0" (1.5 m)		10' 0" (3.0 m)		15' 0" (4.5 m)		20' 0" (6.0 m)		25' 0" (7.5 m)		Max Reach	
		End	Side	End	Side	End	Side	End	Side	End	Side	End	Side
+25' 0" (7.5 m)	lbs kg					4,850* 2 380*	4,850* 2 380*					2,950* 1 310*	2,950* 1 310*
+20' 0" (6.0 m)	lbs kg					6,350* 2 980*	6,350* 2 980*	4,800* 2 340*	4,800* 2 320			2,500* 1 120*	2,500* 1 120*
+15' 0" (4.5 m)	lbs kg					8,050* 3 720*	7,850 3 650	6,400* 2 960*	4,900 2 290			2,350* 1 060*	2,350* 1 060*
+10' 0" (3.0 m)	lbs kg			15,700* 7 280*	14,550 6 770	11,450* 5 290*	7,550 3 510	7,500 3 480	4,700 2 190	4,500* 2 330*	3,150 1 470	2,350* 1 060*	2,350* 1 060*
+5' 0" (1.5 m)	lbs kg			21,350* 9 830*	13,200 6 140	11,550 5 370	7,000 3 260	7,200 3 350	4,450 2 070	5,000 2 330	3,050 1 410	2,450* 1 120*	2,450* 1 120*
Ground Line	lbs kg	6,200* 2 770*	6,200* 2 770*	19,300* 8 350*	12,250 5 690	11,050 5 140	6,600 3 050	6,950 3 240	4,250 1 970	4,450* 2 280	2,950 1 370	2,800* 1 260*	2,800* 1 260*
-5' 0" (1.5 m)	lbs kg	11,500* 5 180*	11,500* 5 180*	21,350* 9 630*	12,150 5 650	10,800 5 040	6,400 2 970	6,850 3 190	4,150 1 920			3,350* 1 520*	3,200 1 450
-10' 0" (3.0 m)	lbs kg	18,300* 8 120*	18,300* 8 120*	17,250* 8 010*	12,350 5 750	10,850 5 060	6,500 3 020	6,750* 3 220	4,250 1 980			4,650* 2 070*	4,100 1 830
-15' 0" (4.5 m)	lbs kg			9,400* 4 540*	9,400* 4 540*	5,000* 2 680*	5,000* 2 680*					4,700* 2 230*	4,700* 2 230*

Radius of Load - Long Undercarriage													
9' 11" (3.01 m) Arm with 15' 2" (4.63 m) Boom and 750 lb. (340 kg) Bucket with Power-Boost Applied													
 End	 Side	5' 0" (1.5 m)		10' 0" (3.0 m)		15' 0" (4.5 m)		20' 0" (6.0 m)		25' 0" (7.5 m)		Max Reach	
End	Side	End	Side	End	Side	End	Side	End	Side	End	Side	End	Side
+25' 0" (7.5 m)	lbs kg					5,200* 2 350*	5,200* 2 350*					2,900* 1 290*	2,900* 1 290*
+20' 0" (6.0 m)	lbs kg					6,050* 2 770*	6,050* 2 770*	5,000* 2 300*	5,000* 2 300*			2,500* 1 130*	2,500* 1 130*
+15' 0" (4.5 m)	lbs kg					6,750* 3 100*	6,750* 3 100*	5,850* 2 740*	5,050 2 350	4,000* 2 000*	3,300 1 550	2,400* 1 080*	2,400* 1 080*
+10' 0" (3.0 m)	lbs kg			9,900* 4 650*	9,900* 4 650*	9,200* 4 270*	7,750 3 590	7,450 3 480	4,800 2 240	5,200 2 420	3,200 1 500	2,400* 1 090*	2,400* 1 090*
+5' 0" (1.5 m)	lbs kg			19,450* 8 960*	13,600 6 330	11,700 5 450	7,150 3 320	7,300 3 390	4,500 2 100	5,050 2 350	3,100 1 430	2,550* 1 150*	2,500 1 140
Ground Line	lbs kg	6,350* 2 850*	6,350* 2 850*	22,350* 9 670*	12,300 5 730	11,100 5 170	6,600 3 070	7,000 3 260	4,250 1 980	4,900 2 290	2,950 1 380	2,800* 1 280*	2,600 1 170
-5' 0" (1.5 m)	lbs kg	10,550* 4 730*	10,550* 4 730*	21,600* 9 440*	11,950 5 560	10,750 5 010	6,300 2 940	6,850 3 180	4,100 1 900	4,250* 2 260	2,900 1 350	3,350* 1 510*	2,850 1 290
-10' 0" (3.0 m)	lbs kg	15,650* 6 950*	15,650* 6 950*	18,950* 8 790*	12,100 5 620	10,800 5 020	6,350 2 960	6,900 3 200	4,150 1 930			4,400* 1 970*	3,500 1 580
-15' 0" (4.5 m)	lbs kg	19,400* 9 250*	19,400* 9 250*	12,550* 5 960*	12,200 5 680	8,200* 3 960*	6,550 3 050					5,300* 2 450*	5,200 2 300

CHAPTER 11 - SPECIFICATIONS

Radius of Load - Long Undercarriage													
6' 11" (2.11 m) Arm with 15' 2" (4.63 m) Boom and 900 lb. (410 kg) Bucket with Power-Boost Applied													
 End	 Side	5' 0" (1.5 m)		10' 0" (3.0 m)		15' 0" (4.5 m)		20' 0" (6.0 m)		25' 0" (7.5 m)		Max Reach	
		End	Side	End	Side	End	Side	End	Side	End	Side	End	Side
+25' 0" (7.5 m)	lbs kg											3,650* 1 620*	3,650* 1 620*
+20' 0" (6.0 m)	lbs kg					6,900* 3 220*	6,900* 3 220*	3,800* 2 190*	3,800* 2 190*			3,000* 1 350*	3,000* 1 350*
+15' 0" (4.5 m)	lbs kg			10,000* 4 610*	10,000* 4 610*	9,450* 4 400*	7,850* 3 640	7,150* 3 350*	4,800 2 230			2,800* 1 270*	2,800* 1 270*
+10' 0" (3.0 m)	lbs kg			17,450* 8 050*	14,350 6 670	11,850* 5 520	7,350 3 420	7,350 3 430	4,600 2 130			2,800* 1 270*	2,800* 1 270*
+5' 0" (1.5 m)	lbs kg			21,600* 10 000*	12,750 5 920	11,350 5 280	6,850 3 180	7,100 3 300	4,350 2 020	3,400* 2 180*	2,950 1 380	2,950* 1 330*	2,950 1 330
Ground Line	lbs kg			17,600* 7 640*	12,000 5 580	10,900 5 070	6,450 2 990	6,900 3 200	4,150 1 930			3,300* 1 490*	3,050 1 380
-5' 0" (1.5 m)	lbs kg	12,450* 5 600*	12,450* 5 600*	20,300* 9 360*	12,100 5 630	10,750 5 010	6,350 2 950	6,850 3 180	4,100 1 910			4,000* 1 810*	3,500 1 570
-10' 0" (3.0 m)	lbs kg	18,750* 8 340*	18,750* 8 340*	15,450* 7 180*	12,350 5 740	10,650* 4 990*	6,550 3 030					5,700* 2 520*	4,600 2 060

B283BBEB

Figure 9

BUCKET SIZES

Bucket Type	SAE Heaped Capacity (yd³) (m³)		Width Outside Lip (in) (mm)		Bucket Weight (lbs) (kg)		Number of Teeth	Long Undercarriage			with Blade		
								Arm Length			Arm Length		
								8' 2" 2.50 m	9' 11" 3.01 m	6' 11" 2.11 m	8' 2" 2.50 m	9' 11" 3.01 m	6' 11" 2.11 m
STDP	0.50	0.38	24	610	791	359	4	H	H	H	H	H	H
	0.66	0.50	30	762	889	403	4	H	M	H	H	M	H
	0.82	0.63	36	914	1007	457	5	M	L	M	M	L	M
	0.98	0.75	42	1067	1110	503	6	L	N/A	L	L	L	L
HDP	0.50	0.38	24	610	1064	483	4	H	H	H	H	H	H
	0.65	0.50	30	762	1183	537	4	H	M	H	H	M	H
	0.81	0.62	36	914	1331	604	5	L	L	M	M	L	M
	0.97	0.74	42	1067	1450	658	5	L	N/A	L	L	N/A	L
POWER	0.42	0.32	24	610	1225	556	4	H	H	H	H	H	H
	0.55	0.42	30	762	1314	596	4	H	M	H	H	H	H
	0.68	0.52	36	914	1431	649	5	M	L	M	M	L	H
DITCH	0.86	0.66	60	1524	970	440	0	L	L	M	M	L	M
	0.96	0.73	66	1676	1040	472	0	L	N/A	L	L	L	M

STDP - Standard duty plate
HDP - Heavy duty plate
XDP - Extreme duty plate
POWER - HDP for use with ESCO multi-pin grabber only

Approval Code For Arm/Bucket Combinations
H.....Heavy material (up to 3,370 lbs./yd³)
M.....Medium material (up to 2,700 lbs./yd³)
L.....Light material (up to 2,020 lbs./yd³)
N/A.....Not applicable

682F9722

Figure 10

RemoteCARE

This machine can be equipped with RemoteCARE. This is a Machine management system based on GPS technologies. Please refer to "RemoteCARE global navigation system operation manual" for the operational guide of your RemoteCARE system.



WARNING

621ADD6B

Figure 11

Regarding RemoteCARE equipment, NEVER disassemble, repair, modify or move the controllers, antenna, or wire harnesses. This may cause failure or fire on the RemoteCARE equipment or the machine itself. Your Link-Belt Dealer will install, remove, and repair the RemoteCARE equipment.

Do not damage or pull wire harnesses by force. Do not allow wire harnesses to become caught. Short circuit or disconnected wire harnesses may cause failure or fire on the RemoteCARE equipment or the machine itself.

For anyone wearing a pacemaker, make sure that the communication antenna is at least 22 cm (8.7 in) away from the pacemaker. The radio waves may have an adverse effect on the operation of the pacemaker.

In a vicinity of a blast site, the two-way radio communication equipment of RemoteCARE may be in danger of causing accidental blast, resulting in a serious personal injury. Be sure to operate the machine away from a blast site.

If you have to operate the machine in an area less than 12 m (39.4 ft) from a blast site or a remote controlled explosive device, ask your Link-Belt Dealer for disconnecting power cable of RemoteCARE in advance.

If there are requirements or regulations concerning the operation of this machine in your area or country, be sure to observe them in priority to this warning.

The specification of RemoteCARE areas follows;

Rated output: 5 – 10 W

Service frequency: 137.00 – 150.05 MHz

DECLARATION FCC & CE

Description of built-in wireless equipment

Apply Standard radio



Hereby, Tokai Rika Create Corporation, declares that this BTU2 is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

* Product Supplier and Storage location of the full Declaration of R & TTE Conformity
Tokai Rika Create Corporation
2-3-10, Aoi, Higashi-ku, Nagoya 461-0004, JAPAN

Contains FCC ID: T9J-RN52

FCC CAUTION
Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: • Reorient or relocate the receiving antenna. • Increase the separation between the equipment and receiver. • Connect the equipment into an outlet on a circuit different from that to which the receiver is connected. • Consult the dealer or an experienced radio/TV technician for help.
To satisfy FCC RF Exposure requirements for mobile and base station transmission devices, a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during operation. To ensure compliance, operation at closer than this distance is not recommended. The antenna(s) used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Contains IC:6514A-RN52

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device. Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.
Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication. Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

DOCUMENT

NOTE:

The follow document is included in this manual only for providing emission control warranty information. For all parts, service, and warranty requirements please contact your local Link Belt Excavator dealer.

EPA

Target serial No.:145Q7-1002 -

ISUZU

Non-Road Diesel Engine Federal Emission Control Warranty Statement EMISSION RELATED SYSTEM DEFECT WARRANTY

Isuzu Motors America LLC. warrants to the initial owner and subsequent owner of a certified non-road diesel engine (powering non-road machines and equipment), that such engine is:

1. Designed, built, and equipped so as to conform, at the time of sale, to all applicable regulations adapted by the United States Environmental Protection Agency (EPA) and the California Air Resource Board (CARB).
2. Free from defects in materials and workmanship in specific emission-related parts:
 - For a period of two (2) years or 1,500 hours of operation whichever occurs first, after date of delivery to the initial owner of non-road diesel engine less than 19kW (25hp).
 - For a period of two (2) years or 1,500 hours of operation whichever occurs first, after date of delivery to the initial owner of non-road diesel engine for constant speed engine less than 37kW (50hp) with rated speeds greater than or equal to 3000 rpm.
 - For a period of five (5) years or 3,000 hours of operation whichever occurs first, after date of delivery to the initial owner of non-road diesel engine 19kW (25hp) and greater engines except above constant speed engine.

If an emission-related parts fails during the warranty period, it will be repaired or replaced under warranty and is warranted for the remainder of the warranty periods.

During the terms of this warranty, Isuzu Motors America LLC. will provide, through an Isuzu engine dealer or other establishment authorized by Isuzu Motors America LLC., repair or replacement of any warranted parts at no charge to the non-road diesel engine owner.

In an emergency, repairs may be performed at any service establishment, or by the owner, using any replacement part.

Isuzu Motors America LLC. will reimburse the owner for their expenses, including diagnostic charges for such emergency repair. These expenses shall not exceed Isuzu Motors America LLC. suggested retail price for all warranted parts replaced, and labor charges based on Isuzu Motors America LLC. recommended time allowance for the warranty repair and the geographically appropriate hourly labor rate.

A part not available within 30 days or a repair not being complete within 30 days constitute an emergency.

As a condition of reimbursement, replaced parts and receipt invoices must be presented at a place of business of an authorized Isuzu engine dealer or other establishment authorized by Isuzu Motors America LLC.

EMISSION WARRANTY RELATED PARTS

This warranty covers the following emission related parts:

- Fuel Metering System
 - Fuel Supply Pump
 - Fuel Common Rail
 - Fuel Injector
 - Fuel Injection Pipe
- Air Induction System
 - Intake Manifold
 - Turbocharger
 - Charge Air Cooler*
 - Air Inlet Duct (MAF Sensor Mount)*
- Exhaust Gas Recirculation (EGR) System
 - EGR Valve
 - EGR Cooler
- Thermal Reactor System
 - Exhaust Manifold

- Muffler and Exhaust Piping*
- Particulate Controls
 - Diesel Particulate Filter (DPF)
 - Diesel Oxidation Catalyst (DOC)
- Electronic Control Units
 - Engine Control Module (ECM)
 - Reductant Dosing Control Module (RDCM)
 - Turbocharger Controller
- Selective Catalytic Reduction (SCR) System
 - SCR Catalyst
 - Reductant Dosing Module
 - Reductant Supply Module
 - Reductant container and piping*
 - SCR Engine Coolant Control Valve
 - SCR Engine Coolant Lines*
- Positive Crankcase Ventilation (PCV) System
 - PCV
- Emission Control Label
- Sensors
 - Engine Coolant Temperature (ETC) Sensor
 - Intake Manifold Temperature (IMT) Sensor
 - Boost Pressure Sensor
 - Barometric Pressure Sensor
 - Intake Air Temperature (IAT) Sensor
 - Mass Air Flow (MAF) Sensor
 - Reductant Level and Quality Sensor*
 - Exhaust Gas Temperature Sensors (all)
 - Engine Speed Sensor (Ne)
 - DPF Differential Pressure Sensor
 - Common Rail Pressure Sensor
 - Cylinder Detection Sensor
 - Fuel Temperature Sensor
 - NOx Sensor
- Miscellaneous Items Used in Above Systems*
 - Wiring harnesses, hoses, belts, connectors, assemblies, clamps, fittings, tubing, sealing gaskets or devices, and mounting hardware.
 - Any other part with the primary purpose of reducing emissions or that can increase emission during failure without significantly degrading engine performance.

* Marked items: The equipment/machine manufacturer may be responsible for the Emission Warranty of these parts. If any of these parts fail during the warranty period, please contact your equipment/machine manufacturer or Isuzu Motors America LLC, PowerTrain Division, 46401 Commerce Center Drive Plymouth, MI 48170 (Tel. 734-582-9470) to determine parts responsibility.

If failure of one of these components results in failure of another part, both will be covered by this warranty. Any replacement part may be used for maintenance or repairs. The owner should ensure that such parts are equivalent in design and durability to Isuzu genuine parts.

Use of non-genuine Isuzu parts does not invalidate the warranty.

However Isuzu Motors America LLC. is not liable for parts, which are not genuine Isuzu parts.

LIMITATIONS AND RESPONSIBILITIES

These warranties are subject to the following:

ISUZU MOTORS AMERICA LLC. RESPONSIBILITIES

During the emission warranty period, if a defect in material or workmanship of a warranted part or component is found, Isuzu Motors America LLC. will provide;

- New, remanufactured, or repaired parts and/or components required to correct the defect.

Note: Items replaced under this warranty become the property of Isuzu Motors America LLC.

- Labor, during normal working hours, required to make the warranty repair. This includes diagnosis and labor to remove and install the engine, if necessary.

OWNER RESPONSIBILITIES

During the emission warranty period, the owner is responsible for:

- The performance of all required maintenance. A warranty claim will not be denied because the scheduled maintenance was not performed. However, if the lack of required maintenance was the reason for the repair, then the claim will be denied.
- Premium of overtime costs.
- Costs to investigate complaints, which are not caused by a defect in Isuzu Motors America LLC. material or workmanship.
- Providing timely notice of a warrantable failure and promptly making the product available for repair.

LIMITATIONS

Isuzu Motors America LLC. is not responsible for resultant damages to an emission-related part or component resulting from:

- Any application or installation Isuzu Motors America LLC. deems improper as explained in the Instruction Manual.
- Attachments, accessory items, or parts not authorized for use by Isuzu Motors America LLC.
- Improper non-road diesel engine maintenance, repair, or abuse.
- Owner's unreasonable delay in making the product available after being notified of a potential product problem. This warranty is in addition to Isuzu Motors America LLC. standard warranty, applicable to the non-road diesel engine product involved.

Remedies under this warranty are limited to the provision of material and services as specified herein. Isuzu Motors America LLC. is not responsible for incidental or consequential damages such as downtime or loss use of engine powered equipment.

Target serial No.:145Q7-1256 -



Non-Road Diesel Engine and Stationary Compression Ignition Internal Combustion Engines Federal Emission Control Warranty Statement

EMISSION RELATED SYSTEM DEFECT WARRANTY

Isuzu Motors America LLC. warrants to the initial owner and subsequent owner of a certified Non-Road Diesel Engine and Stationary Compression Ignition Internal Combustion Engines (powering non-road machines and equipment), that such engine is:

1. Designed, built, and equipped so as to conform, at the time of sale, to all applicable regulations adapted by the United States Environmental Protection Agency (EPA) and the California Air Resource Board (CARB).
2. Free from defects in materials and workmanship in specific emission-related parts:
 - For a period of two (2) years or 1,500 hours of operation whichever occurs first, after date of delivery to the initial owner of non-road diesel engine less than 19kW (25hp).
 - For a period of two (2) years or 1,500 hours of operation whichever occurs first, after date of delivery to the initial owner of non-road diesel engine for constant speed engine less than 37kW (50hp) with rated speeds greater than or equal to 3000 rpm.
 - For a period of five (5) years or 3,000 hours of operation whichever occurs first, after date of delivery to the initial owner of non-road diesel engine 19kW (25hp) and greater engines except above constant speed engine.

If an emission-related parts fails during the warranty period, it will be repaired or replaced under warranty and is warranted for the remainder of the warranty periods.

During the terms of this warranty, Isuzu Motors America LLC. will provide, through an Isuzu engine dealer or other establishment authorized by Isuzu Motors America LLC., repair or replacement of any warranted parts at no charge to the non-road diesel engine owner.

In an emergency, repairs may be performed at any service establishment, or by the owner, using any replacement part.

Isuzu Motors America LLC. will reimburse the owner for their expenses, including diagnostic charges for such emergency repair. These expenses shall not exceed Isuzu Motors America LLC. suggested retail price for all warranted parts replaced, and labor charges based on Isuzu Motors America LLC. recommended time allowance for the warranty repair and the geographically appropriate hourly labor rate.

A part not available within 30 days or a repair not being complete within 30 days constitute an emergency.

As a condition of reimbursement, replaced parts and receipt invoices must be presented at a place of business of an authorized Isuzu engine dealer or other establishment authorized by Isuzu Motors America LLC.

EMISSION WARRANTY RELATED PARTS

This warranty covers the following emission related parts:

- Fuel Metering System
 - Fuel Supply Pump
 - Fuel Common Rail
 - Fuel Injector
 - Fuel Injection Pipe
- Air Induction System
 - Intake Manifold
 - Turbocharger
 - Charge Air Cooler*
 - Air Inlet Duct (MAF Sensor Mount)*
- Exhaust Gas Recirculation (EGR) System
 - EGR Valve
 - EGR Cooler

- Thermal Reactor System
 - Exhaust Manifold
 - Muffler and Exhaust Piping*
- Particulate Controls
 - Diesel Particulate Filter (DPF)
 - Diesel Oxidation Catalyst (DOC)
- Electronic Control Units
 - Engine Control Module (ECM)
 - Reductant Dosing Control Module (RDCM)
 - Turbocharger Controller
- Selective Catalytic Reduction (SCR) System
 - SCR Catalyst
 - Reductant Dosing Module
 - Reductant Supply Module
 - Reductant container and piping*
 - SCR Engine Coolant Control Valve
 - SCR Engine Coolant Lines*
- Positive Crankcase Ventilation (PCV) System
 - PCV
- Emission Control Label
- Sensors
 - Engine Coolant Temperature (ECT) Sensor
 - Intake Manifold Temperature (IMT) Sensor
 - Boost Pressure Sensor
 - Barometric Pressure Sensor
 - Intake Air Temperature (IAT) Sensor
 - Mass Air Flow (MAF) Sensor
 - Reductant Level and Quality Sensor*
 - Exhaust Gas Temperature Sensors (all)
 - Engine Speed Sensor (Ne)
 - DPF Differential Pressure Sensor
 - Common Rail Pressure Sensor
 - Cylinder Detection Sensor
 - Fuel Temperature Sensor
 - NOx Sensor
- Miscellaneous Items Used in Above Systems*
 - Wiring harnesses, hoses, belts, connectors, assemblies, clamps, fittings, tubing, sealing gaskets or devices, and mounting hardware.
 - Any other part with the primary purpose of reducing emissions or that can increase emission during failure without significantly degrading engine performance.

* Marked items: The equipment/machine manufacturer may be responsible for the Emission Warranty of these parts. If any of these parts fail during the warranty period, please contact your equipment/machine manufacturer or Isuzu Motors America LLC, PowerTrain Division, 46401 Commerce Center Drive Plymouth, MI 48170 (Tel. 734-582-9470) to determine parts responsibility.

If failure of one of these components results in failure of another part, both will be covered by this warranty. Any replacement part may be used for maintenance or repairs. The owner should ensure that such parts are equivalent in design and durability to Isuzu genuine parts.
Use of non-genuine Isuzu parts does not invalidate the warranty.
However Isuzu Motors America LLC. is not liable for parts, which are not genuine Isuzu parts.

LIMITATIONS AND RESPONSIBILITIES

These warranties are subject to the following:

ISUZU MOTORS AMERICA LLC. RESPONSIBILITIES

During the emission warranty period, if a defect in material or workmanship of a warranted part or component is found, Isuzu Motors America LLC. will provide;

- New, remanufactured, or repaired parts and/or components required to correct the defect.

Note: Items replaced under this warranty become the property of Isuzu Motors America LLC.

- Labor, during normal working hours, required to make the warranty repair.
This includes diagnosis and labor to remove and install the engine, if necessary.

OWNER RESPONSIBILITIES

During the emission warranty period, the owner is responsible for:

- The performance of all required maintenance. A warranty claim will not be denied because the scheduled maintenance was not performed. However, if the lack of required maintenance was the reason for the repair, then the claim will be denied.
- Premium of overtime costs.
- Costs to investigate complaints, which are not caused by a defect in Isuzu Motors America LLC. material or workmanship.
- Providing timely notice of a warrantable failure and promptly making the product available for repair.

LIMITATIONS

Isuzu Motors America LLC. is not responsible for resultant damages to an emission-related part or component resulting from:

- Any application or installation Isuzu Motors America LLC. deems improper as explained in the Instruction Manual.
- Attachments, accessory items, or parts not authorized for use by Isuzu Motors America LLC.
- Improper non-road diesel engine maintenance, repair, or abuse.
- Owner's unreasonable delay in making the product available after being notified of a potential product problem. This warranty is in addition to Isuzu Motors America LLC. standard warranty, applicable to the non-road diesel engine product involved.

Remedies under this warranty are limited to the provision of material and services as specified herein. Isuzu Motors America LLC. is not responsible for incidental or consequential damages such as downtime or loss use of engine powered equipment.

Target serial No.:145Q7-1985 -

ISUZU

Non-Road Diesel Engine and Stationary Compression Ignition Internal Combustion Engines Federal Emission Control Warranty Statement

EMISSION RELATED SYSTEM DEFECT WARRANTY

Isuzu Motors America LLC. warrants to the initial owner and subsequent owner of a certified Non-Road Diesel Engine and Stationary Compression Ignition Internal Combustion Engines (powering non-road machines and equipment), that such engine is:

1. Designed, built, and equipped so as to conform, at the time of sale, to all applicable regulations adapted by the United States Environmental Protection Agency (EPA) and the California Air Resource Board (CARB).
2. Free from defects in materials and workmanship in specific emission-related parts:
 - For a period of two (2) years or 1,500 hours of operation whichever occurs first, after date of delivery to the initial owner of non-road diesel engine less than 19kW (25hp).
 - For a period of two (2) years or 1,500 hours of operation whichever occurs first, after date of delivery to the initial owner of non-road diesel engine for constant speed engine less than 37kW (50hp) with rated speeds greater than or equal to 3000 rpm.
 - For a period of five (5) years or 3,000 hours of operation whichever occurs first, after date of delivery to the initial owner of non-road diesel engine 19kW (25hp) and greater engines except above constant speed engine.

If an emission-related parts fails during the warranty period, it will be repaired or replaced under warranty and is warranted for the remainder of the warranty periods.

During the terms of this warranty, Isuzu Motors America LLC. will provide, through an Isuzu engine dealer or other establishment authorized by Isuzu Motors America LLC., repair or replacement of any warranted parts at no charge to the non-road diesel engine owner.

In an emergency, repairs may be performed at any service establishment, or by the owner, using any replacement part.

Isuzu Motors America LLC. will reimburse the owner for their expenses, including diagnostic charges for such emergency repair. These expenses shall not exceed Isuzu Motors America LLC. suggested retail price for all warranted parts replaced, and labor charges based on Isuzu Motors America LLC. recommended time allowance for the warranty repair and the geographically appropriate hourly labor rate.

A part not available within 30 days or a repair not being complete within 30 days constitute an emergency.

As a condition of reimbursement, replaced parts and receipt invoices must be presented at a place of business of an authorized Isuzu engine dealer or other establishment authorized by Isuzu Motors America LLC.

EMISSION WARRANTY RELATED PARTS

This warranty covers the following emission related parts:

- Fuel Metering System
 - Fuel Supply Pump
 - Fuel Common Rail
 - Fuel Injector
 - Fuel Injection Pipe
- Air Induction System
 - Intake Manifold
 - Turbocharger
 - Charge Air Cooler*
 - Air Inlet Duct (MAF Sensor Mount)*
- Exhaust Gas Recirculation (EGR) System
 - EGR Valve
 - EGR Cooler

- Thermal Reactor System
 - Exhaust Manifold
 - Muffler and Exhaust Piping*
- Particulate Controls
 - Diesel Particulate Filter (DPF)
 - Diesel Oxidation Catalyst (DOC)
- Electronic Control Units
 - Engine Control Module (ECM)
 - Reductant Dosing Control Module (RDCM)
 - Turbocharger Controller
- Selective Catalytic Reduction (SCR) System
 - SCR Catalyst
 - Reductant Dosing Module
 - Reductant Supply Module
 - Reductant container and piping*
 - SCR Engine Coolant Control Valve
 - SCR Engine Coolant Lines*
- Positive Crankcase Ventilation (PCV) System
 - PCV
- Emission Control Label
- Sensors
 - Engine Coolant Temperature (ECT) Sensor
 - Intake Manifold Temperature (IMT) Sensor
 - Boost Pressure Sensor
 - Barometric Pressure Sensor
 - Intake Air Temperature (IAT) Sensor
 - Mass Air Flow (MAF) Sensor
 - Reductant Level and Quality Sensor*
 - Exhaust Gas Temperature Sensors (all)
 - Engine Speed Sensor (Ne)
 - DPF Differential Pressure Sensor
 - Common Rail Pressure Sensor
 - Cylinder Detection Sensor
 - Fuel Temperature Sensor
 - NOx Sensor
- Miscellaneous Items Used in Above Systems*
 - Wiring harnesses, hoses, belts, connectors, assemblies, clamps, fittings, tubing, sealing gaskets or devices, and mounting hardware.
 - Any other part with the primary purpose of reducing emissions or that can increase emission during failure without significantly degrading engine performance.

* Marked items: The equipment/machine manufacturer may be responsible for the Emission Warranty of these parts. If any of these parts fail during the warranty period, please contact your equipment/machine manufacturer or Isuzu Motors America LLC, PowerTrain Division, 46401 Commerce Center Drive Plymouth, MI 48170 (Tel. 734-582-9470) to determine parts responsibility.

If failure of one of these components results in failure of another part, both will be covered by this warranty. Any replacement part may be used for maintenance or repairs. The owner should ensure that such parts are equivalent in design and durability to Isuzu genuine parts.
Use of non-genuine Isuzu parts does not invalidate the warranty.
However Isuzu Motors America LLC. is not liable for parts, which are not genuine Isuzu parts.

LIMITATIONS AND RESPONSIBILITIES

These warranties are subject to the following:

ISUZU MOTORS AMERICA LLC. RESPONSIBILITIES

During the emission warranty period, if a defect in material or workmanship of a warranted part or component is found, Isuzu Motors America LLC. will provide;

- New, remanufactured, or repaired parts and/or components required to correct the defect.

Note: Items replaced under this warranty become the property of Isuzu Motors America LLC.

- Labor, during normal working hours, required to make the warranty repair.
This includes diagnosis and labor to remove and install the engine, if necessary.

OWNER RESPONSIBILITIES

During the emission warranty period, the owner is responsible for:

- The performance of all required maintenance. A warranty claim will not be denied because the scheduled maintenance was not performed. However, if the lack of required maintenance was the reason for the repair, then the claim will be denied.
- Premium of overtime costs.
- Costs to investigate complaints, which are not caused by a defect in Isuzu Motors America LLC. material or workmanship.
- Providing timely notice of a warrantable failure and promptly making the product available for repair.

LIMITATIONS

Isuzu Motors America LLC. is not responsible for resultant damages to an emission-related part or component resulting from:

- Any application or installation Isuzu Motors America LLC. deems improper as explained in the Instruction Manual.
- Attachments, accessory items, or parts not authorized for use by Isuzu Motors America LLC.
- Improper non-road diesel engine maintenance, repair, or abuse.
- Owner's unreasonable delay in making the product available after being notified of a potential product problem. This warranty is in addition to Isuzu Motors America LLC. standard warranty, applicable to the non-road diesel engine product involved.

Remedies under this warranty are limited to the provision of material and services as specified herein. Isuzu Motors America LLC. is not responsible for incidental or consequential damages such as downtime or loss use of engine powered equipment.

EPA (FR)

Target serial No.:145Q7-1002 -

Moteur diesel "Non-road" (hors route publique) Notice Fédérale sur la Garantie du Contrôle Antipollution GARANTIE DES DEFAUTS DE SYSTEME RELATIFS A L'EMISSION.

Isuzu Motors l'America LLC. garantie au propriétaire initial et au propriétaire subséquent du moteur diesel "Non-road" (hors route publique) qu'un tel moteur est:

1. Conçu, construit, et équipé afin de se conformer, au moment de la vente, à tous les règlements applicables adaptés par l'Agence de Protection de l'Environnement des Etats-Unis (EPA) et par le Comité des Ressources de l'Air de la Californie (CARB).
2. Exempt de défauts de matériaux et d'exécution des pièces associées à l'émission spécifique:
 - Pour une période de deux (2) ans ou 1.500 heures de fonctionnement, des deux dates celle qui se présente en premier lieu, après la date de livraison au propriétaire initial du moteur diesel type "non road" (hors route publique)(moins de 19kW (25cv)).
 - Pour une période de deux (2) ans ou 1.500 heures, de deux dates celle qui se présente en premier lieu, après la date de livraison au propriétaire initial du moteur diesel type "non road" (hors route publique) utilisé pour les moteurs à vitesse constante de moins de 37kW (50cv) avec vitesses nominales supérieures ou égales à 3.000 tr/mn.
 - Pour une période de cinq (5) ans ou 3.000 heures de fonctionnement, des deux dates celle qui se présente en premier lieu, après la date de livraison au propriétaire initial du moteur diesel type "non-road" (hors route publique) 19 kW (25cv) et moteurs plus grands sauf le moteur à vitesse constante mentionnée ci-dessus.

Si une pièce associée à l'émission est défectueuse pendant la période de garantie, elle sera réparée ou remplacée sous la garantie, en cas de garantie pour le reste des périodes de garantie.

Dans les limites de cette garantie, Isuzu Motors l'America LLC. fournira, à travers le fournisseur de moteurs Isuzu ou tout autre établissement autorisé par Isuzu Motors l'America LLC., la réparation ou le remplacement de toutes les pièces garanties sans aucune charge au propriétaire du moteur diesel "Non-road" (hors route publique).

En cas d'urgence, des réparations peuvent être exécutées à n'importe quel établissement de service, ou par le propriétaire, en utilisant n'importe quelle pièce de rechange.

Isuzu Motors l'America LLC. remboursera les dépenses faites par le propriétaire, y compris les frais de diagnostic pour une telle réparation d'urgence. Ces dépenses n'excéderont pas le prix de détail suggéré par Isuzu Motors l'America LLC., pour toutes les pièces garanties qui ont été remplacées, et les frais de main-d'oeuvre sur la base de l'allocation d'heures de travail recommandée par Isuzu Motors l'America LLC. pour la réparation de garantie et le taux d'heure de travail approprié géographiquement.

Une pièce non disponible dans les 30 jours ou une réparation n'étant pas complète dans les 30 jours constitue un cas d'urgence.

Comme condition de remboursement, les pièces remplacées et les factures doivent être présentées à un emplacement commercial d'un fournisseur autorisé de moteurs Isuzu ou à tout autre établissement autorisé par Isuzu Motors l'America LLC.

PIECES CONCERNANT LA GARANTIE ANTIPOLLUTION

Cette garantie couvre les pièces associées à l'émission suivantes.

- Système de dosage du carburant
 - Pompe d'alimentation en carburant
 - Rail commun de carburant
 - Injecteur de carburant
 - Tuyau d'injection de carburant
- Système d'admission d'air
 - Collecteur d'admission
 - Turbocompresseur
 - Refroidisseur d'air de suralimentation*
 - Conduit d'entrée d'air (support du capteur MAF)*
- Système de recyclage des gaz d'échappement (EGR)
 - Valve EGR

- Refroidisseur EGR
- Système de réacteur thermique
 - Collecteur d'échappement
 - Silencieux et tuyaux d'échappement*
- Contrôles des particules
 - Filtre à particules diesel (DPF)
 - Catalyseur d'oxydation diesel (DOC)
- Unités de commande électronique
 - Module de commande du moteur (ECM)
 - Module de contrôle du dosage de l'agent réducteur (RDCM)
 - Contrôleur du turbocompresseur
- Système de réduction catalytique sélective (SCR)
 - Catalyseur de réduction catalytique sélective (SCR)
 - Module de dosage d'agent réducteur
 - Module d'alimentation en agent réducteur
 - Récipient et tuyauterie de l'agent réducteur*
 - Soupape régulatrice de liquide de refroidissement du moteur SCR
 - Conduites de liquide de refroidissement du moteur SCR*
- Système d'aspiration des gaz du carter (PCV)
 - PCV
- Label de contrôle des gaz d'échappement
- Capteurs
 - Capteur de température du réfrigérant du moteur (ETC)
 - Capteur de température du collecteur d'admission (IMT)
 - Capteur de pression de suralimentation
 - Capteur de pression barométrique
 - Capteur de température de l'admission d'air (IAT)
 - Sonde de débit d'air de masse (MAF)
 - Capteur du niveau et de la qualité de l'agent réducteur*
 - Capteurs de température des gaz d'échappement (tous)
 - Palpeur du régime du moteur (Ne)
 - Capteur de pression différentielle du filtre à particules diesel (DPF)
 - Capteur de pression de rail commun de carburant
 - Capteur de détection de cylindre
 - Capteur de température du carburant
 - Capteur de NOx
- Pièces diverses utilisées dans les systèmes ci-dessus*
 - Faisceaux de câbles, tuyaux, courroies, connecteurs, assemblages, brides, raccords, tubes, joints ou dispositifs d'étanchéité et matériel de montage.
 - Toute autre pièce ayant pour but principal de réduire les émissions ou pouvant augmenter les émissions au cours d'un dysfonctionnement sans dégrader significativement la performance du moteur

* Pièces marquées: Le fabricant de l'équipement/de la machine peut être responsable de la garantie antipollution de ces pièces. Si l'une de ces pièces tombe en panne au cours de la période de garantie, veuillez contacter votre fabricant de l'équipement/de la machine ou Isuzu Motors America LLC. PowerTrain Division, 46401 Commerce Center Drive Plymouth, MI 48170 (Tél. 734-582-9470) afin de déterminer la responsabilité des pièces.

Si un défaut d'un de ces composants a comme conséquence le défaut d'une autre pièce, tous les deux seront couverts par cette garantie.

N'importe quelle pièce de rechange peut être utilisée pour l'entretien ou les réparations. Le propriétaire devrait s'assurer que de telles pièces sont équivalentes, quant à la conception et durée de service, aux pièces d'origine Isuzu. L'utilisation des pièces non authentiques Isuzu n'invalidera pas la garantie. Cependant, Isuzu Motors America LLC. n'est pas responsable des pièces qui ne sont pas d'origine Isuzu.

LIMITATIONS ET RESPONSABILITES

Ces garanties sont sujettes aux articles suivants:

RESPONSABILITES DE ISUZU MOTORS L'AMERICA LLC.

Pendant la période de garantie d'émission, si un défaut de matériel ou d'exécution d'une pièce ou d'un composant garanti est observé, Isuzu Motors l'America LLC. fournira:

- Les nouvelles pièces re-manufacturées ou réparées et/ou les composants nécessaires pour corriger le défaut.

Note: Les articles remplacés sous cette garantie deviennent propriété de Isuzu Motors l'America LLC.

- Travaux pendant les heures de travail normales, nécessaires pour effectuer la réparation de garantie.

Ceci inclut le diagnostic et les travaux pour enlever et installer le moteur, au besoin.

RESPONSABILITES DU PROPRIETAIRE

Pendant la période de garantie d'émission, le propriétaire est responsable des items suivants:

- Exécution de tout entretien requis. Une réclamation de garantie ne sera pas refusée du fait que l'entretien programmé n'a pas été exécuté. Cependant, si le manque d'entretien requis constitue le motif de la réparation, la réclamation sera refusée.
- Prime des coûts d'heures supplémentaires.
- Coûts pour étudier les plaintes qui ne résultent pas d'un défaut de matériel ou d'exécution de Isuzu Motors l'America LLC.
- Fourniture de la notification opportune d'un défaut garantissable et procéder en sorte que le produit soit rapidement disponible pour la réparation.

LIMITATIONS

Isuzu Motors l'America LLC. n'est pas responsable de dommages d'une pièce ou d'un composant associée à l'émission, résultant de:

- N'importe quelle application ou installation jugée incorrecte par Isuzu Motors l'America LLC., selon les explications données dans le mode d'emploi.
- Accessoires, articles, ou pièces non autorisées à l'usage par Isuzu Motors l'America LLC.
- Entretien, réparation, ou négligence non appropriée du moteur diesel "Non-road" (hors route publique).
- Retard peu raisonnable du Propriétaire pour mettre le produit à disposition, après avoir été avisé d'un problème potentiel du produit. Cette garantie est donnée en plus de la garantie des normes de Isuzu Motors l'America LLC., applicables au moteur diesel "Non-road" (hors route publique) concerné.

Les remèdes sous cette garantie sont limités à la fourniture de matériel et de services comme indiqué ci-dessus. Isuzu Motors l'America LLC. n'est pas responsable des dommages fortuits ou consécutifs, tels que temps d'arrêt ou perte d'usage de l'équipement à traction par moteur.

IDE-8509b

Target serial No.:145Q7-1256 -

**Moteur diesel "Non-road" (hors route publique) et
moteurs à combustion interne de type allumage par compression stationnaire
Notice Fédérale sur la Garantie du Contrôle Antipollution**

GARANTIE DES DEFAUTS DE SYSTEME RELATIFS A L'EMISSION.

Isuzu Motors l'America LLC. garantie au propriétaire initial et au propriétaire subséquent du moteur diesel "Non-road" (hors route publique) et des moteurs à combustion interne de type allumage par compression stationnaire qu'un tel moteur est:

1. Conçu, construit, et équipé afin de se conformer, au moment de la vente, à tous les règlements applicables adaptés par l'Agence de Protection de l'Environnement des Etats-Unis (EPA) et par le Comité des Ressources de l'Air de la Californie (CARB).
2. Exempt de défauts de matériaux et d'exécution des pièces associées à l'émission spécifique:
 - Pour une période de deux (2) ans ou 1.500 heures de fonctionnement, des deux dates celle qui se présente en premier lieu, après la date de livraison au propriétaire initial du moteur diesel type "non road" (hors route publique)(moins de 19kW (25cv)).
 - Pour une période de deux (2) ans ou 1.500 heures, de deux dates celle qui se présente en premier lieu, après la date de livraison au propriétaire initial du moteur diesel type "non road" (hors route publique) utilisé pour les moteurs à vitesse constante de moins de 37kW (50cv) avec vitesses nominales supérieures ou égales à 3.000 tr/mn.
 - Pour une période de cinq (5) ans ou 3.000 heures de fonctionnement, des deux dates celle qui se présente en premier lieu, après la date de livraison au propriétaire initial du moteur diesel type "non-road" (hors route publique) 19 kW (25cv) et moteurs plus grands sauf le moteur à vitesse constante mentionnée ci-dessus.

Si une pièce associée à l'émission est défectueuse pendant la période de garantie, elle sera réparée ou remplacée sous la garantie, en cas de garantie pour le reste des périodes de garantie.

Dans les limites de cette garantie, Isuzu Motors l'America LLC. fournira, à travers le fournisseur de moteurs Isuzu ou tout autre établissement autorisé par Isuzu Motors l'America LLC., la réparation ou le remplacement de toutes les pièces garanties sans aucune charge au propriétaire du moteur diesel "Non-road" (hors route publique).

En cas d'urgence, des réparations peuvent être exécutées à n'importe quel établissement de service, ou par le propriétaire, en utilisant n'importe quelle pièce de rechange.

Isuzu Motors l'America LLC. remboursera les dépenses faites par le propriétaire, y compris les frais de diagnostic pour une telle réparation d'urgence. Ces dépenses n'excéderont pas le prix de détail suggéré par Isuzu Motors l'America LLC., pour toutes les pièces garanties qui ont été remplacées, et les frais de main-d'oeuvre sur la base de l'allocation d'heures de travail recommandée par Isuzu Motors l'America LLC. pour la réparation de garantie et le taux d'heure de travail approprié géographiquement.

Une pièce non disponible dans les 30 jours ou une réparation n'étant pas complète dans les 30 jours constitue un cas d'urgence.

Comme condition de remboursement, les pièces remplacées et les factures doivent être présentées à un emplacement commercial d'un fournisseur autorisé de moteurs Isuzu ou à tout autre établissement autorisé par Isuzu Motors l'America LLC.

PIECES CONCERNANT LA GARANTIE ANTIPOLLUTION

Cette garantie couvre les pièces associées à l'émission suivantes.

- Système de dosage du carburant
 - Pompe d'alimentation en carburant
 - Rail commun de carburant
 - Injecteur de carburant
 - Tuyau d'injection de carburant
- Système d'admission d'air
 - Collecteur d'admission
 - Turbocompresseur
 - Refroidisseur d'air de suralimentation*

- Conduit d'entrée d'air (support du capteur MAF)*
- Système de recyclage des gaz d'échappement (EGR)
 - Valve EGR
 - Refroidisseur EGR
- Système de réacteur thermique
 - Collecteur d'échappement
 - Silencieux et tuyaux d'échappement*
- Contrôles des particules
 - Filtre à particules diesel (DPF)
 - Catalyseur d'oxydation diesel (DOC)
- Unités de commande électronique
 - Module de commande du moteur (ECM)
 - Module de contrôle du dosage de l'agent réducteur (RDCM)
 - Contrôleur du turbocompresseur
- Système de réduction catalytique sélective (SCR)
 - Catalyseur de réduction catalytique sélective (SCR)
 - Module de dosage d'agent réducteur
 - Module d'alimentation en agent réducteur
 - Récipient et tuyauterie de l'agent réducteur*
 - Soupape régulatrice de liquide de refroidissement du moteur SCR
 - Conduites de liquide de refroidissement du moteur SCR*
- Système d'aspiration des gaz du carter (PCV)
 - PCV
- Label de contrôle des gaz d'échappement
- Capteurs
 - Capteur de température du réfrigérant du moteur (ECT)
 - Capteur de température du collecteur d'admission (IMT)
 - Capteur de pression de suralimentation
 - Capteur de pression barométrique
 - Capteur de température de l'admission d'air (IAT)
 - Sonde de débit d'air de masse (MAF)
 - Capteur du niveau et de la qualité de l'agent réducteur*
 - Capteurs de température des gaz d'échappement (tous)
 - Palpeur du régime du moteur (Ne)
 - Capteur de pression différentielle du filtre à particules diesel (DPF)
 - Capteur de pression de rail commun de carburant
 - Capteur de détection de cylindre
 - Capteur de température du carburant
 - Capteur de NOx
- Pièces diverses utilisées dans les systèmes ci-dessus*
 - Faisceaux de câbles, tuyaux, courroies, connecteurs, assemblages, brides, raccords, tubes, joints ou dispositifs d'étanchéité et matériel de montage.
 - Toute autre pièce ayant pour but principal de réduire les émissions ou pouvant augmenter les émissions au cours d'un dysfonctionnement sans dégrader significativement la performance du moteur

* Pièces marquées: Le fabricant de l'équipement/de la machine peut être responsable de la garantie antipollution de ces pièces. Si l'une de ces pièces tombe en panne au cours de la période de garantie, veuillez contacter votre fabricant de l'équipement/de la machine ou Isuzu Motors America LLC, PowerTrain Division, 46401 Commerce Center Drive Plymouth, MI 48170 (Tél. 734-582-9470) afin de déterminer la responsabilité des pièces.

Si un défaut d'un de ces composants a comme conséquence le défaut d'une autre pièce, tous les deux seront couverts par cette garantie.

N'importe quelle pièce de rechange peut être utilisée pour l'entretien ou les réparations. Le propriétaire devrait s'assurer que de telles pièces sont équivalentes, quant à la conception et durée de service, aux pièces d'origine Isuzu. L'utilisation des pièces non authentiques Isuzu n'invalidera pas la garantie. Cependant, Isuzu Motors America LLC, n'est pas responsable des pièces qui ne sont pas d'origine Isuzu.

LIMITATIONS ET RESPONSABILITES

Ces garanties sont sujettes aux articles suivants:

RESPONSABILITES DE ISUZU MOTORS L'AMERICA LLC.

Pendant la période de garantie d'émission, si un défaut de matériel ou d'exécution d'une pièce ou d'un composant garanti est observé, Isuzu Motors l'America LLC. fournira:

- Les nouvelles pièces re-manufacturées ou réparées et/ou les composants nécessaires pour corriger le défaut.

Note: Les articles remplacés sous cette garantie deviennent propriété de Isuzu Motors l'America LLC.

- Travaux pendant les heures de travail normales, nécessaires pour effectuer la réparation de garantie.

Ceci inclut le diagnostic et les travaux pour enlever et installer le moteur, au besoin.

RESPONSABILITES DU PROPRIETAIRE

Pendant la période de garantie d'émission, le propriétaire est responsable des items suivants:

- Exécution de tout entretien requis. Une réclamation de garantie ne sera pas refusée du fait que l'entretien programmé n'a pas été exécuté. Cependant, si le manque d'entretien requis constitue le motif de la réparation, la réclamation sera refusée.
- Prime des coûts d'heures supplémentaires.
- Coûts pour étudier les plaintes qui ne résultent pas d'un défaut de matériel ou d'exécution de Isuzu Motors l'America LLC.
- Fourniture de la notification opportune d'un défaut garantissable et procéder en sorte que le produit soit rapidement disponible pour la réparation.

LIMITATIONS

Isuzu Motors l'America LLC. n'est pas responsable de dommages d'une pièce ou d'un composant associée à l'émission, résultant de:

- N'importe quelle application ou installation jugée incorrecte par Isuzu Motors l'America LLC., selon les explications données dans le mode d'emploi.
- Accessoires, articles, ou pièces non autorisées à l'usage par Isuzu Motors l'America LLC.
- Entretien, réparation, ou négligence non appropriée du moteur diesel "Non-road" (hors route publique).
- Retard peu raisonnable du Propriétaire pour mettre le produit à disposition, après avoir été avisé d'un problème potentiel du produit. Cette garantie est donnée en plus de la garantie des normes de Isuzu Motors l'America LLC., applicables au moteur diesel "Non-road" (hors route publique) concerné.

Les remèdes sous cette garantie sont limités à la fourniture de matériel et de services comme indiqué ci-dessus. Isuzu Motors l'America LLC. n'est pas responsable des dommages fortuits ou consécutifs, tels que temps d'arrêt ou perte d'usage de l'équipement à traction par moteur.

IDE-8512

Target serial No.:145Q7-1985 -

**Moteur diesel "Non-road" (hors route publique) et
moteurs à combustion interne de type allumage par compression stationnaire
Notice Fédérale sur la Garantie du Contrôle Antipollution**

GARANTIE DES DEFAUTS DE SYSTEME RELATIFS A L'EMISSION.

Isuzu Motors l'America LLC. garantie au propriétaire initial et au propriétaire subséquent du moteur diesel "Non-road" (hors route publique) et des moteurs à combustion interne de type allumage par compression stationnaire qu'un tel moteur est:

1. Conçu, construit, et équipé afin de se conformer, au moment de la vente, à tous les règlements applicables adaptés par l'Agence de Protection de l'Environnement des Etats-Unis (EPA) et par le Comité des Ressources de l'Air de la Californie (CARB).
2. Exempt de défauts de matériaux et d'exécution des pièces associées à l'émission spécifique:
 - Pour une période de deux (2) ans ou 1.500 heures de fonctionnement, des deux dates celle qui se présente en premier lieu, après la date de livraison au propriétaire initial du moteur diesel type "non road" (hors route publique)(moins de 19kW (25cv)).
 - Pour une période de deux (2) ans ou 1.500 heures, de deux dates celle qui se présente en premier lieu, après la date de livraison au propriétaire initial du moteur diesel type "non road" (hors route publique) utilisé pour les moteurs à vitesse constante de moins de 37kW (50cv) avec vitesses nominales supérieures ou égales à 3.000 tr/mn.
 - Pour une période de cinq (5) ans ou 3.000 heures de fonctionnement, des deux dates celle qui se présente en premier lieu, après la date de livraison au propriétaire initial du moteur diesel type "non-road" (hors route publique) 19 kW (25cv) et moteurs plus grands sauf le moteur à vitesse constante mentionnée ci-dessus.

Si une pièce associée à l'émission est défectueuse pendant la période de garantie, elle sera réparée ou remplacée sous la garantie, en cas de garantie pour le reste des périodes de garantie.

Dans les limites de cette garantie, Isuzu Motors l'America LLC. fournira, à travers le fournisseur de moteurs Isuzu ou tout autre établissement autorisé par Isuzu Motors l'America LLC., la réparation ou le remplacement de toutes les pièces garanties sans aucune charge au propriétaire du moteur diesel "Non-road" (hors route publique).

En cas d'urgence, des réparations peuvent être exécutées à n'importe quel établissement de service, ou par le propriétaire, en utilisant n'importe quelle pièce de rechange.

Isuzu Motors l'America LLC. remboursera les dépenses faites par le propriétaire, y compris les frais de diagnostic pour une telle réparation d'urgence. Ces dépenses n'excéderont pas le prix de détail suggéré par Isuzu Motors l'America LLC., pour toutes les pièces garanties qui ont été remplacées, et les frais de main-d'oeuvre sur la base de l'allocation d'heures de travail recommandée par Isuzu Motors l'America LLC. pour la réparation de garantie et le taux d'heure de travail approprié géographiquement.

Une pièce non disponible dans les 30 jours ou une réparation n'étant pas complète dans les 30 jours constitue un cas d'urgence.

Comme condition de remboursement, les pièces remplacées et les factures doivent être présentées à un emplacement commercial d'un fournisseur autorisé de moteurs Isuzu ou à tout autre établissement autorisé par Isuzu Motors l'America LLC.

PIECES CONCERNANT LA GARANTIE ANTIPOLLUTION

Cette garantie couvre les pièces associées à l'émission suivantes.

- Système de dosage du carburant
 - Pompe d'alimentation en carburant
 - Rail commun de carburant
 - Injecteur de carburant
 - Tuyau d'injection de carburant
- Système d'admission d'air
 - Collecteur d'admission
 - Turbocompresseur
 - Refroidisseur d'air de suralimentation*

- Conduit d'entrée d'air (support du capteur MAF)*
- Système de recyclage des gaz d'échappement (EGR)
 - Valve EGR
 - Refroidisseur EGR
- Système de réacteur thermique
 - Collecteur d'échappement
 - Silencieux et tuyaux d'échappement*
- Contrôles des particules
 - Filtre à particules diesel (DPF)
 - Catalyseur d'oxydation diesel (DOC)
- Unités de commande électronique
 - Module de commande du moteur (ECM)
 - Module de contrôle du dosage de l'agent réducteur (RDCM)
 - Contrôleur du turbocompresseur
- Système de réduction catalytique sélective (SCR)
 - Catalyseur de réduction catalytique sélective (SCR)
 - Module de dosage d'agent réducteur
 - Module d'alimentation en agent réducteur
 - Récipient et tuyauterie de l'agent réducteur*
 - Soupape régulatrice de liquide de refroidissement du moteur SCR
 - Conduites de liquide de refroidissement du moteur SCR*
- Système d'aspiration des gaz du carter (PCV)
 - PCV
- Label de contrôle des gaz d'échappement
- Capteurs
 - Capteur de température du réfrigérant du moteur (ECT)
 - Capteur de température du collecteur d'admission (IMT)
 - Capteur de pression de suralimentation
 - Capteur de pression barométrique
 - Capteur de température de l'admission d'air (IAT)
 - Sonde de débit d'air de masse (MAF)
 - Capteur du niveau et de la qualité de l'agent réducteur*
 - Capteurs de température des gaz d'échappement (tous)
 - Palpeur du régime du moteur (Ne)
 - Capteur de pression différentielle du filtre à particules diesel (DPF)
 - Capteur de pression de rail commun de carburant
 - Capteur de détection de cylindre
 - Capteur de température du carburant
 - Capteur de NOx
- Pièces diverses utilisées dans les systèmes ci-dessus*
 - Faisceaux de câbles, tuyaux, courroies, connecteurs, assemblages, brides, raccords, tubes, joints ou dispositifs d'étanchéité et matériel de montage.
 - Toute autre pièce ayant pour but principal de réduire les émissions ou pouvant augmenter les émissions au cours d'un dysfonctionnement sans dégrader significativement la performance du moteur

* Pièces marquées: Le fabricant de l'équipement/de la machine peut être responsable de la garantie antipollution de ces pièces. Si l'une de ces pièces tombe en panne au cours de la période de garantie, veuillez contacter votre fabricant de l'équipement/de la machine ou Isuzu Motors America LLC, PowerTrain Division, 46401 Commerce Center Drive Plymouth, MI 48170 (Tél. 734-582-9470) afin de déterminer la responsabilité des pièces.

Si un défaut d'un de ces composants a comme conséquence le défaut d'une autre pièce, tous les deux seront couverts par cette garantie.

N'importe quelle pièce de rechange peut être utilisée pour l'entretien ou les réparations. Le propriétaire devrait s'assurer que de telles pièces sont équivalentes, quant à la conception et durée de service, aux pièces d'origine Isuzu. L'utilisation des pièces non authentiques Isuzu n'invalidera pas la garantie. Cependant, Isuzu Motors America LLC, n'est pas responsable des pièces qui ne sont pas d'origine Isuzu.

LIMITATIONS ET RESPONSABILITES

Ces garanties sont sujettes aux articles suivants:

RESPONSABILITES DE ISUZU MOTORS L'AMERICA LLC.

Pendant la période de garantie d'émission, si un défaut de matériel ou d'exécution d'une pièce ou d'un composant garanti est observé, Isuzu Motors l'America LLC. fournira:

- Les nouvelles pièces re-manufacturées ou réparées et/ou les composants nécessaires pour corriger le défaut.

Note: Les articles remplacés sous cette garantie deviennent propriété de Isuzu Motors l'America LLC.

- Travaux pendant les heures de travail normales, nécessaires pour effectuer la réparation de garantie.

Ceci inclut le diagnostic et les travaux pour enlever et installer le moteur, au besoin.

RESPONSABILITES DU PROPRIETAIRE

Pendant la période de garantie d'émission, le propriétaire est responsable des items suivants:

- Exécution de tout entretien requis. Une réclamation de garantie ne sera pas refusée du fait que l'entretien programmé n'a pas été exécuté. Cependant, si le manque d'entretien requis constitue le motif de la réparation, la réclamation sera refusée.
- Prime des coûts d'heures supplémentaires.
- Coûts pour étudier les plaintes qui ne résultent pas d'un défaut de matériel ou d'exécution de Isuzu Motors l'America LLC.
- Fourniture de la notification opportune d'un défaut garantissable et procéder en sorte que le produit soit rapidement disponible pour la réparation.

LIMITATIONS

Isuzu Motors l'America LLC. n'est pas responsable de dommages d'une pièce ou d'un composant associée à l'émission, résultant de:

- N'importe quelle application ou installation jugée incorrecte par Isuzu Motors l'America LLC., selon les explications données dans le mode d'emploi.
- Accessoires, articles, ou pièces non autorisées à l'usage par Isuzu Motors l'America LLC.
- Entretien, réparation, ou négligence non appropriée du moteur diesel "Non-road" (hors route publique).
- Retard peu raisonnable du Propriétaire pour mettre le produit à disposition, après avoir été avisé d'un problème potentiel du produit. Cette garantie est donnée en plus de la garantie des normes de Isuzu Motors l'America LLC., applicables au moteur diesel "Non-road" (hors route publique) concerné.

Les remèdes sous cette garantie sont limités à la fourniture de matériel et de services comme indiqué ci-dessus. Isuzu Motors l'America LLC. n'est pas responsable des dommages fortuits ou consécutifs, tels que temps d'arrêt ou perte d'usage de l'équipement à traction par moteur.

IDE-8513

CARB**Target serial No.:145Q7-1002 -**

Off-Road Compression-Ignition Engines CALIFORNIA EMISSION CONTROL WARRANTY STATEMENT YOUR WARRANTY RIGHTS AND OBLIGATIONS

The California Air Resources Board (CARB) and Isuzu Motors America LLC. are pleased to explain the emission control system warranty on your 2014 engine. In California, new off-road compression-ignition engines must be designed, built, and equipped to meet the State's stringent anti-smog standards. Isuzu Motors America LLC. must warrant the emission control system on your engine for the periods of time listed below provided there has been no abuse, neglect, or improper maintenance of your engine.

Your emission control system may include parts such as the fuel injection system, and air induction system. Also included may be hoses, belts, connectors, and other emission-related assemblies.

Where a warrantable condition exists, Isuzu Motors America LLC. will repair your off-road compression-ignition engine at no cost to you including diagnosis, parts, and labor.

MANUFACTURER'S WARRANTY COVERAGE:

The 2014 off-road compression-ignition engines:

- (1) Power rating at 19kW (25hp) and greater engines.
For a period of five (5) years or 3,000 hours of operation, whichever occurs first, after date of delivery to the initial owner.
- (2) Power rating at less than 19kW (25hp), and for constant speed engines rated under 37kW (50hp) with rated speeds greater than and equal to 3,000 rpm engines.
For a period of two (2) years of 1,500 hours of operation, whichever occurs first, after date of delivery to the initial owner.

If any emission related part on your engine is defective, the part will be repaired or replaced by Isuzu Motors America LLC.

EMISSION WARRANTY RELATED PARTS

Please refer to the EMISSION WARRANTY RELATED PARTS found under the FEDERAL EMISSION CONTROL WARRANTY STATEMENT section.

OWNER'S WARRANTY RESPONSIBILITIES:

- As the off-road compression-ignition engine owner, you are responsible for the performance of the required maintenance listed in your owner's manual. Isuzu Motors America LLC. recommends that you retain all receipts covering maintenance on your off-road compression-ignition engine, but Isuzu Motors America LLC. cannot deny warranty solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance.
- As the off-road compression-ignition engine owner, you should however be aware that Isuzu Motors America LLC. may deny your warranty coverage if your off-road compression-ignition engine or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.
- Your engine is designed to operate on ultra low sulfur diesel fuel only. Use of any other fuel may result in your engine no longer operating in compliance with California's emissions requirements.
- You are responsible for initiating the warranty process. The CARB suggests that you present your off-road compression-ignition engine to an Isuzu Motors America LLC. dealer as soon as a problem exists. The warranty repairs should be completed by the dealer as expeditiously as possible.

If you have any questions regarding your warranty rights and responsibilities, you should contact Isuzu Motors America LLC. PowerTrain Division, 46401 Commerce Center Drive Plymouth, MI 48170 (Tel. 734-582-9470).

MAINTENANCE RECOMMENDATION:

Some Isuzu Motors America LLC. off-road engines are certified by the United States Environmental Protection Agency (EPA) and California Air Resource Board (CARB) to comply with smoke and gaseous emission standards prescribed by Federal laws at the time of maintenance.

The engine is certified if it has a special certification label. An Isuzu engine dealer can also inform you if the engine is certified.

Efficiency of emission control and engine performance depends on adherence to proper operation and maintenance recommendations and use of recommended fuels and lubricating oils. It is recommended that major adjustments and repair be made by your authorized Isuzu engine dealer.

Various chemical fuel additives, which claim to reduce visible smoke, are available commercially. Although additives have been used by individuals to solve some isolated smoke problems in the field, they are not recommended for general use.

Federal smoke regulations require that engines be certified without smoke depressants.

The corrective step taken immediately on discovery of worn parts, which may affect emission levels, will help assure proper operation of emission control systems. The use of genuine Isuzu parts recommended. Suppliers of non-Isuzu parts must assure the owner that the use of such parts will not adversely affect emission levels.

Regular maintenance intervals, along with special emphasis on the following items, are necessary to keep exhaust emissions within acceptable limit for the useful life of the engine.

Refer to the maintenance intervals. If the engine is operating under severe conditions, adjust the maintenance schedule accordingly. See your authorized Isuzu engine dealer to help analyze your specific application, operating environment and maintenance schedule adjustments.

The following is an explanation of maintenance for emission-related components. See the Maintenance Schedule for the specific interval for the following items.

FUEL INJECTION PUMP OR NOZZLES - Fuel injection pumps or nozzles are subject to tip wear as a result to fuel contamination. This damage can cause an increase in fuel consumption, the engine to emit black smoke misfire or run rough.

Inspect, test, and replace if necessary. Fuel injection pumps can be tested by an authorized Isuzu engine dealer.

TURBOCHARGER - Check for any unusual sound or vibration in the turbocharger. Inspect inlet and exhaust piping and connections. Check bearing condition and perform maintenance as described in the Maintenance Schedule.

Slow engine response and low power may indicate a need for adjustment or repair. Your Isuzu engine dealer is equipped with the necessary tools, personnel, and performs this service.

Owner is encouraged to keep adequate maintenance records, but the absence of such, in and of itself, will not invalidate the warranty.

The machine or equipment owner may perform routine maintenance, repairs and other non-warranty work or have it done at any repair facility. Such non-warranty work need not be performed at a designated warranty station in order for the warranty to remain in force.

CUSTOMER ASSISTANCE - EMISSION CONTROL SYSTEM WARRANTY:

Isuzu Motors America LLC. aims to ensure that the Emission Control Systems Warranty is properly administrated. In the event that you do not receive the warranty service to which you believe you are entitled under the Emission Control System Warranty, call or write:

Isuzu Motors America LLC.
PowerTrain Division
46401 Commerce Center Drive Plymouth, MI 48170
Tel: 734-582-9470

Authorized dealers are recommended for major maintenance and repair work as they are staffed with trained personnel, proper tools and are aware of the latest maintenance methods and procedures. Owners and others who desire to perform their own work should purchase a Service Manual and obtain current information from their Isuzu engine dealer.

Target serial No.:145Q7-1256 -

Off-Road and Stationary Compression-Ignition Engines CALIFORNIA EMISSION CONTROL WARRANTY STATEMENT YOUR WARRANTY RIGHTS AND OBLIGATIONS

The California Air Resources Board (CARB) and Isuzu Motors America LLC. are pleased to explain the emission control system warranty on your 2018, 2019 and 2020 engine. In California, new Off-Road and Stationary Compression-Ignition Engines must be designed, built, and equipped to meet the State's stringent anti-smog standards.

Isuzu Motors America LLC. must warrant the emission control system on your engine for the periods of time listed below provided there has been no abuse, neglect, or improper maintenance of your engine.

Your emission control system may include parts such as the fuel injection system, and air induction system. Also included may be hoses, belts, connectors, and other emission-related assemblies.

Where a warrantable condition exists, Isuzu Motors America LLC. will repair your off-road compression-ignition engine at no cost to you including diagnosis, parts, and labor.

MANUFACTURER'S WARRANTY COVERAGE:

The 2018, 2019 and 2020 off-road compression-ignition engines:

- (1) Power rating at 19kW (25hp) and greater engines.
For a period of five (5) years or 3,000 hours of operation, whichever occurs first, after date of delivery to the initial owner.
- (2) Power rating at less than 19kW (25hp), and for constant speed engines rated under 37kW (50hp) with rated speeds greater than and equal to 3,000 rpm engines.
For a period of two (2) years or 1,500 hours of operation, whichever occurs first, after date of delivery to the initial owner.

If any emission related part on your engine is defective, the part will be repaired or replaced by Isuzu Motors America LLC.

EMISSION WARRANTY RELATED PARTS

Please refer to the EMISSION WARRANTY RELATED PARTS found under the FEDERAL EMISSION CONTROL WARRANTY STATEMENT section.

OWNER'S WARRANTY RESPONSIBILITIES:

- As the off-road compression-ignition engine owner, you are responsible for the performance of the required maintenance listed in your owner's manual. Isuzu Motors America LLC. recommends that you retain all receipts covering maintenance on your off-road compression-ignition engine, but Isuzu Motors America LLC. cannot deny warranty solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance.
- As the off-road compression-ignition engine owner, you should however be aware that Isuzu Motors America LLC. may deny your warranty coverage if your off-road compression-ignition engine or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.
- Your engine is designed to operate on ultra low sulfur diesel fuel only. Use of any other fuel may result in your engine no longer operating in compliance with California's emissions requirements.
- You are responsible for initiating the warranty process. The CARB suggests that you present your off-road compression-ignition engine to an Isuzu Motors America LLC. dealer as soon as a problem exists. The warranty repairs should be completed by the dealer as expeditiously as possible.

If you have any questions regarding your warranty rights and responsibilities, you should contact Isuzu Motors America LLC. PowerTrain Division, 46401 Commerce Center Drive Plymouth, MI 48170 (Tel. 734-582-9470).

MAINTENANCE RECOMMENDATION:

Some Isuzu Motors America LLC. off-road engines are certified by the United States Environmental Protection Agency (EPA) and California Air Resource Board (CARB) to comply with smoke and gaseous emission standards prescribed by Federal laws at the time of maintenance.

The engine is certified if it has a special certification label. An Isuzu engine dealer can also inform you if the engine is certified.

Efficiency of emission control and engine performance depends on adherence to proper operation and maintenance recommendations and use of recommended fuels and lubricating oils. It is recommended that major adjustments and repair be made by your authorized Isuzu engine dealer.

Various chemical fuel additives, which claim to reduce visible smoke, are available commercially. Although additives have been used by individuals to solve some isolated smoke problems in the field, they are not recommended for general use.

Federal smoke regulations require that engines be certified without smoke depressants.

The corrective step taken immediately on discovery of worn parts, which may affect emission levels, will help assure proper operation of emission control systems. The use of genuine Isuzu parts recommended. Suppliers of non-Isuzu parts must assure the owner that the use of such parts will not adversely affect emission levels.

Regular maintenance intervals, along with special emphasis on the following items, are necessary to keep exhaust emissions within acceptable limit for the useful life of the engine.

Refer to the maintenance intervals. If the engine is operating under severe conditions, adjust the maintenance schedule accordingly. See your authorized Isuzu engine dealer to help analyze your specific application, operating environment and maintenance schedule adjustments.

The following is an explanation of maintenance for emission-related components. See the Maintenance Schedule for the specific interval for the following items.

FUEL INJECTION PUMP OR NOZZLES - Fuel injection pumps or nozzles are subject to tip wear as a result to fuel contamination. This damage can cause an increase in fuel consumption, the engine to emit black smoke misfire or run rough.

Inspect, test, and replace if necessary. Fuel injection pumps can be tested by an authorized Isuzu engine dealer.

TURBOCHARGER - Check for any unusual sound or vibration in the turbocharger. Inspect inlet and exhaust piping and connections. Check bearing condition and perform maintenance as described in the Maintenance Schedule.

Slow engine response and low power may indicate a need for adjustment or repair.

Your Isuzu engine dealer is equipped with the necessary tools, personnel, and performs this service.

Owner is encouraged to keep adequate maintenance records, but the absence of such, in and of itself, will not invalidate the warranty.

The machine or equipment owner may perform routine maintenance, repairs and other non-warranty work or have it done at any repair facility. Such non-warranty work need not be performed at a designated warranty station in order for the warranty to remain in force.

CUSTOMER ASSISTANCE - EMISSION CONTROL SYSTEM WARRANTY:

Isuzu Motors America LLC. aims to ensure that the Emission Control Systems Warranty is properly administrated. In the event that you do not receive the warranty service to which you believe you are entitled under the Emission Control System Warranty, call or write:

Isuzu Motors America LLC.
PowerTrain Division
46401 Commerce Center Drive Plymouth, MI 48170
Tel: 734-582-9470

Authorized dealers are recommended for major maintenance and repair work as they are staffed with trained personnel, proper tools and are aware of the latest maintenance methods and procedures. Owners and others who desire to perform their own work should purchase a Service Manual and obtain current information from their Isuzu engine dealer.

Target serial No.:145Q7-1985 -

Off-Road Compression-Ignition Engines CALIFORNIA EMISSION CONTROL WARRANTY STATEMENT YOUR WARRANTY RIGHTS AND OBLIGATIONS

The California Air Resources Board (CARB) and Isuzu Motors America LLC. are pleased to explain the emission control system warranty on your 2021, 2022 and 2023 engine. In California, new Off-Road Compression-Ignition Engines must be designed, built, and equipped to meet the State's stringent anti-smog standards.

Isuzu Motors America LLC. must warrant the emission control system on your engine for the periods of time listed below provided there has been no abuse, neglect, or improper maintenance of your engine.

Your emission control system may include parts such as the fuel injection system, and air induction system. Also included may be hoses, belts, connectors, and other emission-related assemblies.

Where a warrantable condition exists, Isuzu Motors America LLC. will repair your off-road compression-ignition engine at no cost to you including diagnosis, parts, and labor.

MANUFACTURER'S WARRANTY COVERAGE:

The 2021, 2022 and 2023 off-road compression-ignition engines:

- (1) Power rating at 19kW (25hp) and greater engines.
For a period of five (5) years or 3,000 hours of operation, whichever occurs first, after date of delivery to the initial owner.
- (2) Power rating at less than 19kW (25hp), and for constant speed engines rated under 37kW (50hp) with rated speeds greater than and equal to 3,000 rpm engines.
For a period of two (2) years or 1,500 hours of operation, whichever occurs first, after date of delivery to the initial owner.

If any emission related part on your engine is defective, the part will be repaired or replaced by Isuzu Motors America LLC.

EMISSION WARRANTY RELATED PARTS

Please refer to the EMISSION WARRANTY RELATED PARTS found under the FEDERAL EMISSION CONTROL WARRANTY STATEMENT section.

OWNER'S WARRANTY RESPONSIBILITIES:

- As the off-road compression-ignition engine owner, you are responsible for the performance of the required maintenance listed in your owner's manual. Isuzu Motors America LLC. recommends that you retain all receipts covering maintenance on your off-road compression-ignition engine, but Isuzu Motors America LLC. cannot deny warranty solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance.
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MAINTENANCE RECOMMENDATION:

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Owner is encouraged to keep adequate maintenance records, but the absence of such, in and of itself, will not invalidate the warranty.

The machine or equipment owner may perform routine maintenance, repairs and other non-warranty work or have it done at any repair facility. Such non-warranty work need not be performed at a designated warranty station in order for the warranty to remain in force.

CUSTOMER ASSISTANCE - EMISSION CONTROL SYSTEM WARRANTY:

Isuzu Motors America LLC. aims to ensure that the Emission Control Systems Warranty is properly administrated. In the event that you do not receive the warranty service to which you believe you are entitled under the Emission Control System Warranty, call or write:

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Authorized dealers are recommended for major maintenance and repair work as they are staffed with trained personnel, proper tools and are aware of the latest maintenance methods and procedures. Owners and others who desire to perform their own work should purchase a Service Manual and obtain current information from their Isuzu engine dealer.

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