
Product Safety

Important Safety Information

Proper maintenance and proper repair are important to the safe operation and the reliable operation of this product. This document outlines basic recommended procedures. Some of the procedures require special tools, devices, or work methods.

Ensure that all safety messages and information messages are read and understood before any repairs are performed or before any maintenance is performed.

The person who services the product may be unfamiliar with many of the systems on the product. It is important to use caution when service work is performed. A knowledge of the system and/or components is important before the removal or disassembly of any component.

Because of the size of some of the product components, the service person should check the weights that are noted in the Service Manual and the Service Information System (SIS). Use the proper lifting procedures when any components are removed.

Warnings and Notices

Safety messages and information messages are provided in this document, the Service Manual, the Service Information System (SIS), and on the product. If these hazard warnings are not heeded, bodily injury or death could occur to you or other persons.

The hazards are identified by the "Safety Alert Symbol" and followed by a "Signal Word" such as "DANGER", "WARNING" or "CAUTION". The Safety Alert "WARNING" label is shown below.



Illustration 1

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The meaning of this safety alert is as follows:

Attention! Become Alert! Your Safety is Involved.

The message that appears under the safety alert symbol explains the hazard and can be either written or pictorially presented.

Note: Warning Labels are used to provide instructions and identify specific hazards which if not heeded could cause bodily injury or death to you or other persons. These labels identify hazards which may not be apparent to a trained mechanic. There are many potential hazards during the repair for an untrained mechanic and it is impossible to label the product against all such hazards. Improper repair procedures can be dangerous and could result in injury or death.

Operations or conditions that may cause product damage are identified by "NOTICE" labels on the product and in the service information. An example of a "NOTICE" label is shown below.

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

Caterpillar cannot anticipate every possible circumstance that might involve a potential hazard. The safety messages in this document, the Service Manual, the Service Information System (SIS), and on the product are, therefore, not all inclusive. If a tool, procedure, work method or operating technique that is not specifically recommended by Caterpillar is used, you must satisfy yourself that it is safe for you and for others. You should also ensure that the product will not be damaged or be made unsafe by the operation, lubrication, maintenance or repair procedures that you choose.

Current Information

The information, specifications, and illustrations in the service information are on the basis of information available at the time it was written. The specifications, torques, pressures of operation, measurements, adjustments, illustrations, and other items can change at any time. These changes can affect the service given to the product. Get the complete and most current information before you start any job. The most current information is available on the Service Information System (SIS). Caterpillar dealers also have the most current information available.

Basic Precautions



Improper operation, lubrication, maintenance or repair of this product can be dangerous and could result in injury or death.

Do not operate or perform any lubrication, maintenance or repair on this product, until you have read and understood the operation, lubrication, maintenance and repair information.

The following list contains basic precautions that should always be observed.

1. Ensure that all of the “Safety” signs on the product are read and understood before operating, lubricating or repairing this product. Replace any of the safety plates, signs or decals that are damaged, unreadable or missing.
2. If you start the engine to check the pressure or engine speed (rpm), ensure that all of the guards are installed. To help prevent an accident that is caused by parts in rotation, work carefully around an engine that has been put into operation.
3. Ensure that the work area around the product is made safe and be aware of hazardous conditions that may exist. If an engine is started inside an enclosure, ensure that the engine exhaust is properly vented.
4. Mount the engine and dismount the engine only at locations that have steps and/or handholds. Clean any mud or debris from shoes, steps, walkways, or work platforms before mounting the engine or dismounting the engine. Face the engine in order to mount the engine or dismount the engine. When it is not possible to use the designed access system, provide ladders, scaffolds, or work platforms in order to perform safe repair operations.
5. For initial start-up of a new engine or for an engine that has been serviced, make provisions to stop the engine if an overspeed occurs. This can be accomplished by shutting off the fuel supply and/or the air supply to the engine. If the engine has not been assembled correctly or if the fuel settings are not correct, the engine can possibly overspeed. The result can be bodily injury, death or property damage.

Corrosion Inhibitor

Corrosion inhibitor contains alkali. Do not allow alkali to contact the skin or the eyes. Do not take alkali internally. In case of contact, immediately wash skin with soap and water. If alkali contacts the eyes, flush the eyes with large amounts of water for at least 15 minutes. **Call a Physician. Keep toxic chemicals out of reach of children.**

Batteries

Do not smoke or expose an open flame when an inspection of the battery electrolyte level is made. Never disconnect any charging unit circuit or battery circuit cable from the battery when the charging unit is operating. A spark can cause combustible gases to ignite. Do not allow electrolyte to contact the skin or the eyes. Electrolyte is an acid. In case of contact, immediately wash skin with soap and water. Flush the eyes with large amounts of water for at least 15 minutes. **Call a Physician. Keep toxic chemicals out of reach of children.**

Protective Equipment

Wear a hard hat, protective glasses with side shields, and other protective equipment, as required. In particular, wear protective glasses when you pound on any part of the product or the attachments with a hammer or a sledge hammer. Use welders gloves, hood/goggles, an apron and other protective clothing that is appropriate to the welding job that is being performed. Do not wear loose clothing or jewelry that can snag on controls or on other parts of the product. Do not expose loose clothing, jewelry, or long hair near rotating parts.

Pressurized Items

1. Always use a board or a piece of cardboard when you check for a leak. Leaking fluid under pressure can penetrate body tissue. Fluid penetration can cause serious injury and possible death. A pin hole leak can cause severe injury. If fluid is injected into your skin, you must get treatment immediately. Seek treatment from a doctor that is familiar with this type of injury.
2. Relieve all pressure in air, oil or water systems before any lines, fittings or related items are disconnected or removed. Always ensure that all raised components are blocked correctly. Be alert for possible pressure when any device from a system that utilizes pressure is disconnected.

3. Do not bend or strike high pressure lines. Do not install lines, tubes or hoses that are damaged. Repair any fuel lines, oil lines, tubes, or hoses that are loose or damaged. Leaks can cause fires. Inspect all lines, tubes and hoses carefully. Do not use bare hands to check for leaks. Always use a board or cardboard for checking engine components for leaks. Tighten all connections to the recommended torque.
4. Pressurized air or water can cause personal injury. When pressurized air or water is used for cleaning, wear a protective face shield, protective clothing, and protective shoes. The maximum air pressure for cleaning purposes must be below 205 kPa (30 psi). When you use a pressure washer, keep in mind that nozzle pressures are very high. Generally, pressures are well above 13790 kPa (2000 psi). Follow all recommended practices that are provided by the manufacturer of the pressure washer.
4. Be careful when cover plates are removed. Gradually back off the last two bolts or nuts that are located at opposite ends of the cover or the device. Then pry the cover loose in order to relieve any spring pressure or other pressure before the last two bolts or nuts are completely removed.
5. Always use tools that are in good condition. Ensure that you understand the usage of the tools before performing any service work.
6. Replace all fasteners with the same part number. Do not use a lesser quality fastener if replacements are necessary.
7. Repairs which require welding should be performed only with the benefit of the appropriate reference information. Repairs should only be performed by personnel that are adequately trained and knowledgeable in welding procedures. Refer to Instruction Manual, SEGV2549, "Techniques of Structural Repair Course". Determine the type of metal that is being welded. Select the correct welding procedure, electrodes, rods or wire in order to provide a weld metal strength that is at least equivalent to the parent metal.

Hot Fluids and Parts

1. To avoid burns, be alert for hot parts on engines which have just been stopped. Also, be alert for hot fluids in lines, tubes and compartments.
2. Be careful when you remove filler caps, breathers and plugs on the engine. Hold a rag over the cap or the plug in order to prevent being sprayed by fluids under pressure. The danger is even greater if the engine has just been stopped. The fluids can be hot.
8. Do not damage wiring during removal operations. Reinstall the wiring so that the wiring is not damaged. The wiring should not be damaged during operation through contact with sharp corners. The wiring should not be damaged by being rubbed against an object or a hot surface. Do not connect wiring to a line that contains fluid.

Lifting

Use a hoist when you lift components which weigh 23 kg (50 lb) or more in order to avoid back injury. Also use a hoist when you lift components from an awkward position. Ensure that all chains, hooks, slings, etc are in good condition with the correct capacity. Ensure that the hooks are positioned correctly. Also, ensure that the hooks are equipped with a spring latch. Lifting eyes should not be used for side loading during a lifting operation.

Repair

1. Disconnect the battery and discharge any capacitors before you start to work on the product. Attach a "Do Not Operate" tag in the Operator's Compartment.
2. When possible, make all repairs on a level, hard surface.
3. Do not work on any engine that is supported only by lift jacks or a hoist. Always use blocks or jack stands to support the engine before performing any service or disassembly.
9. Ensure that all protective devices are properly installed and that all protective devices are functioning correctly before a repair is started. If a guard or a shield must be removed to perform the repair work, use extra caution, and ensure to reinstall the guard or shield after the repair work is completed.
10. Tighten connections to the correct torque. Ensure that all clamps, guards, and shields are installed correctly. This will help to prevent damage from: vibration, rubbing against other parts, and excessive heat during operation. Particular attention for correct installation should be given to shields that protect against oil or fuel spray onto hot exhaust components.
11. Stay clear of all rotating parts and of all moving parts. Leave the guards in place until maintenance is performed. After the maintenance is performed, reinstall the guards. Any high speed rotating component that has been damaged or altered should be checked for balance before reusing.

 **WARNING**

When replacement parts are required for this product Caterpillar recommends using Caterpillar replacement parts or parts with equivalent specifications including, but not limited to, physical dimensions, type, strength and material.

Failure to heed this warning can lead to premature failures, product damage, personal injury or death.

Asbestos Information

Caterpillar equipment and replacement parts that are shipped from Caterpillar are asbestos free. Caterpillar recommends the use of only genuine Caterpillar replacement parts.

If replacement parts are obtained from another supplier, use the following guidelines when any replacement parts that contain asbestos or asbestos debris are handled.

Use caution. Avoid inhaling dust that might be generated when you handle components that contain asbestos fibers. Inhaling this dust can be hazardous to your health. The components that may contain asbestos fibers are brake pads, brake bands, lining material, clutch plates, and some gaskets. The asbestos that is used in these components is usually sealed or bonded in a resin. Handling these materials normally is not hazardous unless airborne dust that contains asbestos is generated.

If dust which may contain asbestos is present, there are several guidelines that should be followed.

Never use compressed air for cleaning. Avoid brushing materials that contain asbestos or grinding materials that contain asbestos. Use a wet method to clean up asbestos debris. A vacuum that is equipped with the high efficiency particulate air filter (HEPA filter) can also be used.

Use exhaust ventilation on permanent machining jobs.

Wear an approved respirator if there is no other way to control the dust.

Comply with applicable rules and regulations for the work place. In the USA, use Occupational Safety and Health Administration requirements. These OSHA requirements can be found in "29 CFR 1910.1001".

Obey environmental regulations for disposal of asbestos.

Stay away from areas that might have asbestos particles in the air.

