CATERPILLAR®

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October 2008

Caterpillar OEM Solutions Group Support Literature

Operation & Maintenance Manual

OEMSG 320 UNDERCARRIAGE

320 Undercarriage Arrangement Numbers:

6Z-7885-02
6Z-7885-03
9Q-5118-03
9Q-5758-03
9Q-5758-04
9Q-5826-06
199-3140-03
199-3140-04
215-3525-03
215-3525-04
215-3525-05
215-3525-06
219-1905-02
219-1905-03
228-8354-01
228-8354-02
250-9453-04
250-9453-05
291-9933-03
291-9933-04
298-5913-00
298-5913-01
302-3927-00
302-3927-01
309-2875-00
309-2875-01
314-5719-00
314-5719-01
315-2345-00

Product and Dealer Information

Note: For product identification plate locations, see the section “Product Identification Information” in the Operation and Maintenance Manual.

Delivery Date: _____

Product Information

Model: _____

Product Identification Number: _____

Engine Serial Number: _____

Transmission Serial Number: _____

Generator Serial Number: _____

Attachment Serial Numbers: _____

Attachment Information: _____

Customer Equipment Number: _____

Dealer Equipment Number: _____

Dealer Information

Name: _____ Branch: _____

Address: _____

_____

_____

	Dealer Contact	Phone Number	Hours
Sales:	_____	_____	_____
Parts:	_____	_____	_____
Service:	_____	_____	_____

Important Safety Information

Most accidents that involve product operation, maintenance and repair are caused by failure to observe basic safety rules or precautions. An accident can often be avoided by recognizing potentially hazardous situations before an accident occurs. A person must be alert to potential hazards. This person should also have the necessary training, skills and tools to perform these functions properly.

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.

Safety precautions and warnings are provided in this manual and on the product. If these hazard warnings are not heeded, bodily injury or death could occur to you or to 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.

⚠ WARNING

The meaning of this safety alert symbol is as follows:

Attention! Become Alert! Your Safety is Involved.

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

Operations that may cause product damage are identified by “NOTICE” labels on the product and in this publication.

Caterpillar cannot anticipate every possible circumstance that might involve a potential hazard. The warnings in this publication 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.

The information, specifications, and illustrations in this publication are on the basis of information that was available at the time that the publication was written. The specifications, torques, pressures, measurements, adjustments, illustrations, and other items can change at any time. These changes can affect the service that is given to the product. Obtain the complete and most current information before you start any job. Caterpillar dealers have the most current information available.

⚠ 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.

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Foreword

Literature Information

This manual should be stored in the operator's compartment in the literature holder or seat back literature storage area.

This manual contains safety information, operation instructions, transportation information, lubrication information and maintenance information.

Some photographs or illustrations in this publication show details or attachments that can be different from your machine. Guards and covers might have been removed for illustrative purposes.

Continuing improvement and advancement of product design might have caused changes to your machine which are not included in this publication. Read, study and keep this manual with the machine.

Whenever a question arises regarding your machine, or this publication, please consult your Caterpillar dealer for the latest available information.

Safety

The safety section lists basic safety precautions. In addition, this section identifies the text and locations of warning signs and labels used on the machine.

Read and understand the basic precautions listed in the safety section before operating or performing lubrication, maintenance and repair on this machine.

Operation

The operation section is a reference for the new operator and a refresher for the experienced operator. This section includes a discussion of gauges, switches, machine controls, attachment controls, transportation and towing information.

Photographs and illustrations guide the operator through correct procedures of checking, starting, operating and stopping the machine.

Operating techniques outlined in this publication are basic. Skill and techniques develop as the operator gains knowledge of the machine and its capabilities.

Maintenance

The maintenance section is a guide to equipment care. The Maintenance Interval Schedule (MIS) lists the items to be maintained at a specific service interval. Items without specific intervals are listed under the "When Required" service interval. The Maintenance Interval Schedule lists the page number for the step-by-step instructions required to accomplish the scheduled maintenance. Use the Maintenance Interval Schedule as an index or "one safe source" for all maintenance procedures.

Maintenance Intervals

Use the service hour meter to determine servicing intervals. Calendar intervals shown (daily, weekly, monthly, etc.) can be used instead of service hour meter intervals if they provide more convenient servicing schedules and approximate the indicated service hour meter reading. Recommended service should always be performed at the interval that occurs first.

Under extremely severe, dusty or wet operating conditions, more frequent lubrication than is specified in the maintenance intervals chart might be necessary.

Perform service on items at multiples of the original requirement. For example, at every 500 service hours or 3 months, also service those items listed under every 250 service hours or monthly and every 10 service hours or daily.

California Proposition 65 Warning

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

Battery posts, terminals and related accessories contain lead and lead compounds. **Wash hands after handling.**

Certified Engine Maintenance

Proper maintenance and repair is essential to keep the engine and machine systems operating correctly. As the heavy duty off-road diesel engine owner, you are responsible for the performance of the required maintenance listed in the Owner Manual, Operation and Maintenance Manual, and Service Manual.

It is prohibited for any person engaged in the business of repairing, servicing, selling, leasing, or trading engines or machines to remove, alter, or render inoperative any emission related device or element of design installed on or in an engine or machine that is in compliance with the regulations (40 CFR Part 89). Certain elements of the machine and engine such as the exhaust system, fuel system, electrical system, intake air system and cooling system may be emission related and should not be altered unless approved by Caterpillar.

Machine Capacity

Additional attachments or modifications may exceed machine design capacity which can adversely affect performance characteristics. Included would be stability and system certifications such as brakes, steering, and rollover protective structures (ROPS). Contact your Caterpillar dealer for further information.

Caterpillar Product Identification Number

Effective First Quarter 2001 the Caterpillar Product Identification Number (PIN) will change from 8 to 17 characters. In an effort to provide uniform equipment identification, Caterpillar and other construction equipment manufacturers are moving to comply with the latest version of the product identification numbering standard. Non-road machine PINs are defined by ISO 10261. The new PIN format will apply to all Caterpillar machines and generator sets. The PIN plates and frame marking will display the 17 character PIN. The new format will look like the following:

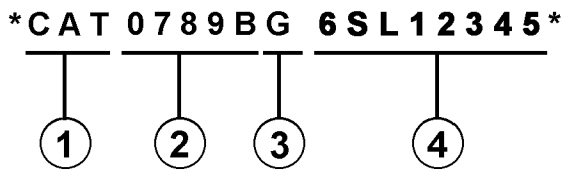


Illustration 1 g00751314

Where:

1. Caterpillar's World Manufacturing Code (characters 1-3)

2. Machine Descriptor (characters 4-8)

3. Check Character (character 9)

4. Machine Indicator Section (MIS) or Product Sequence Number (characters 10-17). These were previously referred to as the Serial Number.

Machines and generator sets produced before First Quarter 2001 will maintain their 8 character PIN format.

Components such as engines, transmissions, axles, etc. and work tools will continue to use an 8 character Serial Number (S/N).

Safety Section

i01637753

General Hazard Information

SMCS Code: 7000

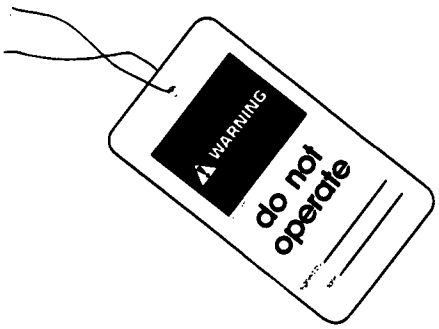


Illustration 2 g00102517

Attach a “Do Not Operate” warning tag or a similar warning tag to the start switch or to the controls before you service the machine or before you repair the machine. These warning tags (Special Instruction, SEHS7332) are available from your dealer.

Know the width of your equipment in order to maintain proper clearance when you operate the equipment near fences or near boundary obstacles.

Be aware of high voltage power lines and power cables that are buried. If the machine comes in contact with these hazards, serious injury or death may occur from electrocution.

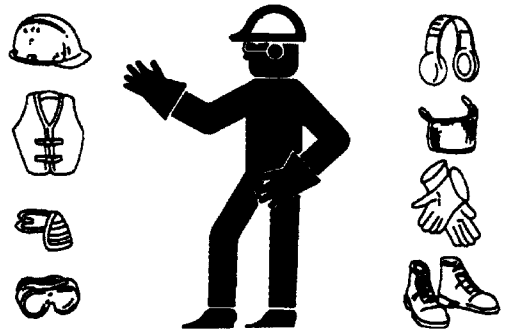


Illustration 3 g00702020

Wear a hard hat, protective glasses, and other protective equipment, as required.

Do not wear loose clothing or jewelry that can snag on controls or on other parts of the machine.

Never put maintenance fluids into glass containers. Drain all liquids into a suitable container.

Use all cleaning solutions with care. Report all necessary repairs.

Pressure Air and Water

Pressurized air and/or water can cause debris and/or hot water to be blown out. This could result in personal injury.

When pressure air and/or pressure water is used for cleaning, wear protective clothing, protective shoes, and eye protection. Eye protection includes goggles or a protective face shield.

The maximum air pressure for cleaning purposes must be below 205 kPa (30 psi). The maximum water pressure for cleaning purposes must be below 275 kPa (40 psi).

Trapped Pressure

Pressure can be trapped in a hydraulic system. Releasing trapped pressure can cause sudden machine movement or attachment movement. Use caution if you disconnect hydraulic lines or fittings. High pressure oil that is released can cause a hose to whip. High pressure oil that is released can cause oil to spray. Fluid penetration can cause serious injury and possible death.

Fluid Penetration

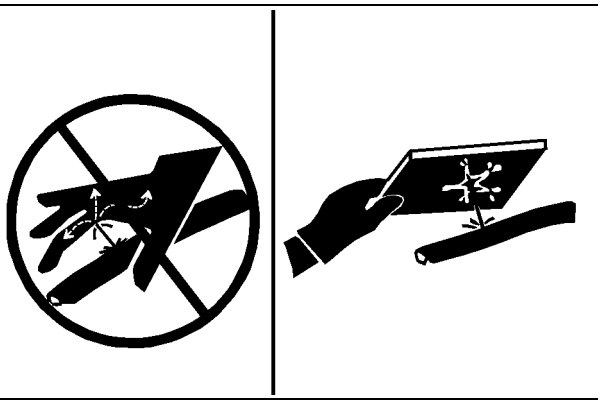


Illustration 4 g00687600

Always use a board or cardboard when you check for a leak. Leaking fluid that is 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.

Containing Fluid Spillage

Care must be taken in order to ensure that fluids are contained during performance of inspection, maintenance, testing, adjusting and repair of the equipment. Prepare to collect the fluid with suitable containers before opening any compartment or disassembling any component containing fluids.

Refer to Special Publication, NENG2500, “Tools and Shop Products Guide” for the following items:

- Tools that are suitable for collecting fluids and equipment that is suitable for collecting fluids
- Tools that are suitable for containing fluids and equipment that is suitable for containing fluids

Obey all local regulations for the disposal of liquids.

Asbestos Information

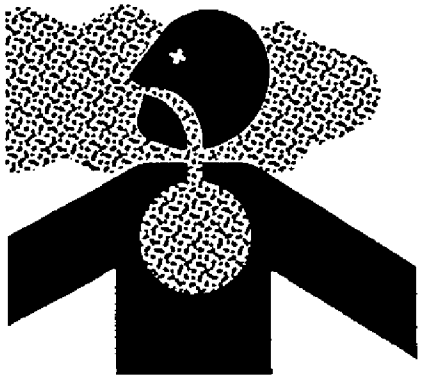


Illustration 5 g00702022

This OEM Solutions Group (OEMSG) component and all replacement parts that are shipped from Caterpillar are asbestos free. OEMSG recommends the use of only genuine Caterpillar replacement parts. Use the following guidelines when you handle any replacement parts that contain asbestos or when you handle asbestos debris.

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 bound in a resin or sealed in some way. Under normal conditions, it is not hazardous to handle these components, unless you generate airborne dust which contains asbestos.

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 cleaner that is equipped with a high efficiency particulate air filter (HEPA) 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.

Dispose of Waste Properly

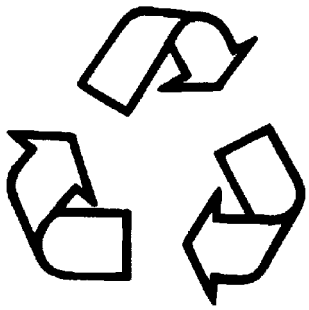


Illustration 6 g00706404

Improperly disposing of waste can threaten the environment. Potentially harmful fluids should be disposed of according to local regulations.

Always use leakproof containers when you drain fluids. Do not pour waste onto the ground, down a drain, or into any source of water.

i01137250

Crushing Prevention and Cutting Prevention

SMCS Code: 7000

Support the equipment properly when you perform work beneath the equipment. Do not depend on the hydraulic cylinders to hold up the equipment. Equipment may fall if a control lever is moved or if a hydraulic line breaks.

Unless you are instructed otherwise, never attempt adjustments while the machine is moving or while the engine is running.

When there are equipment linkages, the movement of the equipment will cause the clearance in the linkage area to be increased or decreased.

Stay clear of all rotating parts and moving parts.

i01137256

Burn Prevention

SMCS Code: 7000

Oils

Hot oil and hot components can cause personal injury. Do not allow hot oil or hot components to contact the skin.

When the hydraulic system is at operating temperature, the hydraulic oil is hot and the hydraulic oil is under pressure.

Remove the filler plug on the hydraulic tank only after the engine has been stopped. Make sure that the filler plug on the hydraulic tank is cool before you remove the filler plug on the hydraulic tank with your bare hand.

Remove the filler plug on the hydraulic tank slowly in order to relieve pressure.

Relieve all pressure in the air system, in the oil system, in the fuel system, or in the cooling system before you disconnect any lines, fittings, or related items.

i01137277

Fire Prevention and Explosion Prevention

SMCS Code: 7000

All fuels, most lubricants, and some coolant mixtures are flammable.

Fuel that is leaking, fuel that is spilled onto hot surfaces, and fuel that is spilled onto electrical components can cause a fire.

Store all fuels and lubricants in properly marked containers and away from all unauthorized persons.

Store all oily rags or other flammable material in a protective container.

Do not weld pipes that contain flammable fluids or tubes that contain flammable fluids. Do not flame cut pipes that contain flammable fluids or tubes that contain flammable fluids. Clean the pipes or tubes thoroughly with nonflammable solvent before you weld the pipes or tubes or you flame cut the pipes or tubes.

Remove all flammable materials (fuel, oil, debris, etc) before the flammable materials accumulate on the machine.

Shields protect hot exhaust components from oil spray or fuel spray. Make sure that the shields are installed correctly in case a line, a tube, or a seal fails.

Fire Extinguisher

A fire extinguisher should be available in case of a fire. Know the correct operating procedure for the fire extinguisher. Follow the recommended procedure on the fire extinguisher's instruction plate for the inspection and/or servicing of the fire extinguisher.

Lines, Tubes and Hoses

Do not bend high pressure lines or do not strike high pressure lines. Do not install lines, tubes, or hoses that are bent or damaged.

Repair any lines, tubes, and hoses that are loose or damaged. Leaks can cause fires. See your Caterpillar dealer for repair or for replacement parts.

Check lines, tubes and hoses carefully. Do not use your bare hand to check for leaks. Use a board or cardboard to check for leaks. See Operation and Maintenance Manual, “Fluid Penetration” in this section for more details. Tighten all connections to the recommended torque.

Replace the parts if any of the following conditions are present:

- The end fittings are damaged or leaking.
- The outer covering is chafed or cut.
- The outer covering is ballooning locally.
- The flexible part of the hose is kinked or crushed.
- The armoring is embedded in the outer cover.
- The end fittings are displaced.

Make sure that all clamps, guards, and heat shields are installed correctly. During the operation of the machine, this will help to prevent vibration, the rubbing of other parts, and excessive heat.

Product Information Section

Product Identification Information

i01858856

Part Number Location

SMCS Code: 1000; 7000

Caterpillar OEM Solutions Group

The following information pertains to OEMSG Custom Designed 320 excavator track systems and to OEMSG undercarriage arrangements which are based on 320 track type excavators.

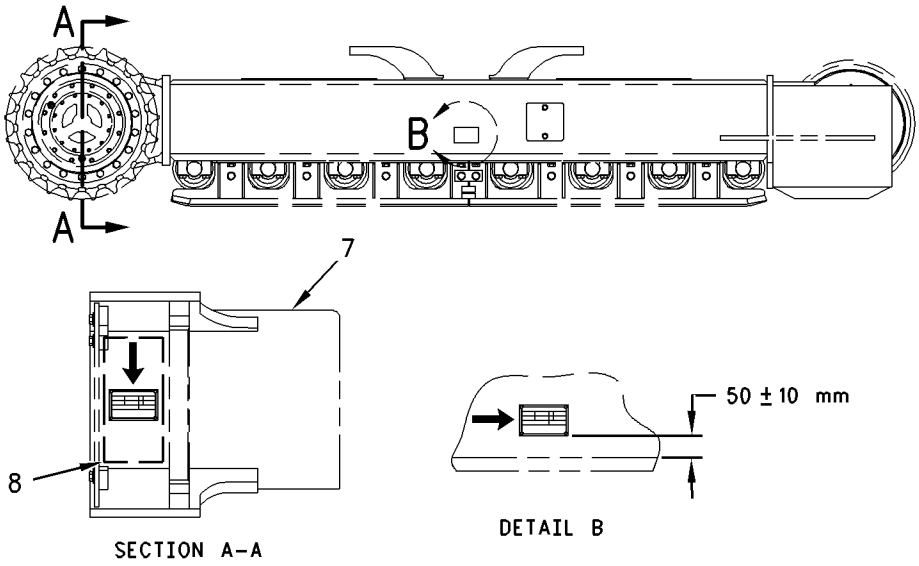
Caterpillar OEM Solutions Group (OEMSG) provides track roller frames of various styles to the Original Equipment Manufacturer (OEM) which include these arrangements: oscillating undercarriages for blast hole drill machines, bolt-on carbody designs for forestry products and special-length frames for underground mining products.

Because of the availability of a wide variety of frame arrangements, creating an Owner's Manual that is all inclusive of the available options is difficult. With the exception of the track roller frames, most of OEMSG undercarriage arrangements use moving undercarriage components from Caterpillar. These components include rollers, idlers, track groups, and final drives with motors and sprockets.

If your OEMSG undercarriage arrangement utilizes non-Caterpillar components, refer to the supplemental information which is provided for those components.

Please read the information and understand the procedures before you begin working on the OEMSG undercarriage arrangement. If the procedure is not fully understood, contact your dealer.

Locations of the Identification Plates on OEMSG Undercarriage Arrangements



g00846574

Illustration 8

Typical right side view of the undercarriage arrangement

(7) Bulkhead plate
(8) Area that is designated for the identification plate

Operation Section

Towing Information

i01137285

Towing the Machine

SMCS Code: 7000

⚠ WARNING

Personal injury or death could result when towing a disabled machine incorrectly.

Block the machine to prevent movement before final drives are disengaged. The machine can roll free if it is not blocked. With final drives disengaged, the machine cannot be stopped or steered.

Follow the recommendations below, to properly perform the towing procedure.

Relieve the hydraulic tank and line pressure before any disassembly. Operate the travel levers/ pedals back and forth with the engine stopped to relieve pressure.

Removing the plugs from the brake cover of the travel motor without first relieving the internal pressure will cause hydraulic oil to squirt out.

Even after the machine has been turned off, the hydraulic oil can still be hot enough to burn. Allow the hydraulic oil to cool before draining.

NOTICE

To tow the machine, both final drives must be disengaged.

Do not operate the travel motors with the final drives disengaged. Damage could result.

These towing instructions are for moving a disabled machine for a short distance at low speed. Move the machine at a speed of 2 km/h (1.2 mph) or less to a convenient location for repair. These instructions are only for emergencies. Always haul the machine if long distance moving is required.

Shields must be provided on both machines. This will protect the operator if the tow line or the tow bar breaks.

Do not allow an operator to be on the machine that is being towed.

Before you tow the machine, make sure that the tow line or the tow bar is in good condition. Make sure that the tow line or the tow bar has enough strength for the towing procedure that is involved. The strength of the tow line or of the tow bar should be at least 150 percent of the gross weight of the towing machine. This requirement is for a disabled machine that is stuck in the mud and for towing on a grade.

Attach the cable to the towing eye on the front of the machine if you are towing the machine forward. Attach the cable to the drawbar pin on the rear of the machine if you are towing the machine backward.

Do not use a chain for pulling a disabled machine. A chain link can break. This may cause personal injury. Use a wire cable with ends that have loops or rings. Put an observer in a safe position in order to watch the pulling procedure. The observer can stop the procedure if the wire cable starts to break. Stop pulling whenever the towing machine moves without moving the towed machine.

Keep the tow line angle to a minimum. Do not exceed a 30 degree angle from the straight ahead position.

Quick machine movement could overload the tow line or the tow bar. This could cause the tow line or the tow bar to break. Gradual, steady machine movement will be more effective.

Normally, the towing machine should be as large as the disabled machine. Make sure that the towing machine has enough brake capacity, enough weight, and enough power. The towing machine must be able to control both machines for the grade that is involved and for the distance that is involved.

You must provide sufficient control and sufficient braking when you are moving a disabled machine downhill. This may require a larger towing machine or additional machines that are connected to the rear of the disabled machine. This will prevent the machine from rolling away out of control.

All situation requirements cannot be listed. Minimal towing machine capacity is required on smooth, level surfaces. Maximum towing machine capacity is required on inclines or on surfaces in poor condition.

Do not tow a loaded machine.

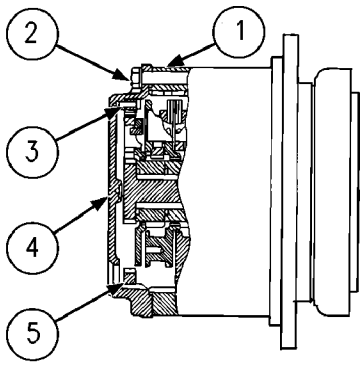
Consult your dealer for information concerning towing a disabled machine.

i01859370

Final Drive Ring Gear Removal

SMCS Code: 4050

Procedure For Disconnecting Final Drives



g00754624

Illustration 9

(1) Ring Gear. (2) Cover Bolts. (3) Bolts. (4) Final Drive Cover. (5) Ring Gear.

⚠ WARNING

Without the ring gear in place, the brakes are ineffective. Personal injury or death could result. Provide other means to hold or stop the machine.

1. Thoroughly clean the area around the final drive. Make sure that you also clean the track shoes that are positioned above the final drive.

Note: Refer to Operation and Maintenance Manual, “General Hazard Information” for information that pertains to Containing Fluid Spillage.

2. Drain the final drive oil into a suitable container. See Operation and Maintenance Manual, “Final Drive Oil - Change” in this section for the procedure.

3. Remove all cover bolts (2) but two from final drive cover (4). Do not leave a bolt in the top hole of the cover.

4. Insert an alignment dowel through the top hole of the cover and into the threads in the final drive housing. This is necessary in order to support ring gear (1) while you are removing the final drive cover.

5. Remove one track shoe in order to allow access to the face between final drive cover (4) and ring gear (1).

6. Loosen remaining two cover bolts (2).

7. Use a hammer and a wedge to separate final drive cover (4) and ring gear (1). Make sure that ring gear (1) stays in place.

8. Remove remaining two cover bolts (2) and final drive cover (4).

9. Remove 12 bolts (3) and ring gear (5) from final drive cover (4).

10. Install final drive cover (4) and all cover bolts (2).

11. Fill the final drive with new oil. See Operation and Maintenance Manual, “Final Drive Oil - Change” in this section for the procedure.

12. Repeat Steps 1 through 11 for the other final drive.

13. Refer to the Service Manual for information on the installation of the final drive ring gear.

14. The machine is now ready for towing.

Final Drive Sun Gear Removal

SMCS Code: 4050

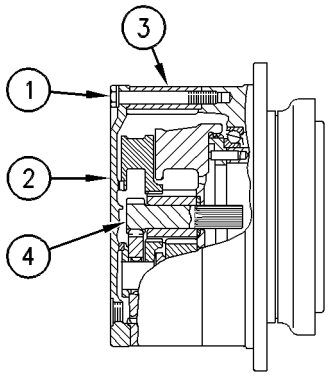


Illustration 10 g00110080

(1) Cover bolt. (2) Final drive cover. (3) Ring gear. (4) Sun gear.

⚠ WARNING

Without the sun gear in place, the brakes are ineffective. Personal injury or death could result. Provide other means to hold or stop the machine.

1. Thoroughly clean the area around the final drive. Make sure that you also clean the track shoes that are positioned above the final drive.

Note: Refer to Operation and Maintenance Manual, “General Hazard Information” for information that pertains to Containing Fluid Spillage.

2. Drain the final drive oil into a suitable container. See Operation and Maintenance Manual, “Final Drive Oil - Change” for the procedure.

3. Remove fourteen of sixteen cover bolts (1) from final drive cover (2). Do not leave a bolt in the top hole of the cover.

4. Insert an alignment dowel through the top hole of the cover and into the threads in the final drive housing. This is necessary in order to support ring gear (3) while you are removing the final drive cover.

5. Remove one track shoe in order to allow access to the face between final drive cover (2) and ring gear (3).

6. Loosen remaining two cover bolts (1).

7. Use a hammer and a wedge to separate final drive cover (2) and ring gear (3). Make sure that ring gear (3) stays in place.

8. Remove remaining two cover bolts (1) and final drive cover (2).

9. Remove sun gear (4) from final drive.

10. Install final drive cover (2) and sixteen cover bolts (1).

11. Fill the final drive with new oil. See Operation and Maintenance Manual, “Final Drive Oil - Change” for the procedure.

12. Repeat Steps 1 through 11 for the other final drive.

13. Refer to the Service Manual for information on the installation of the final drive sun gear.

Maintenance Section

Torque Specifications

i01137319

General Torque Information

SMCS Code: 1000; 7000; 7553

⚠ WARNING

Mismatched or incorrect fasteners can result in damage or malfunction, or possible injury.

Take care to avoid mixing metric dimensioned fasteners and inch dimensioned fasteners.

Prior to installation of any hardware, ensure that components are in near new condition. Bolts and threads must not be worn or damaged. Threads must not have burrs or nicks. Hardware must be free of rust and corrosion. Clean the hardware with a noncorrosive cleaner. Do not lubricate the fastener threads except for the rust preventive. The rust preventive should be applied by the supplier of that component for purposes of shipping and storage. Other applications for lubricating components may also be specified in the Service Manual.

When possible, save the original fasteners that are removed from the machine for assembly. If new fasteners are needed, the new fasteners must be the same size as the fasteners that are being replaced and the same grade as the fasteners that are being replaced.

For additional torque specifications that are not included in this section, refer to Service Manual, SENR3130, “Torque Specifications”, which is available from your dealer.

i01137339

Standard Torque for Inch Fasteners

SMCS Code: 1000; 7000

The following tables give general torques for bolts, nuts, and taperlock studs. The components have a rating of at least SAE Grade 5.

Table 1

TORQUES FOR BOLTS AND FOR NUTS		
THREAD SIZE INCH	STANDARD BOLT AND NUT TORQUE	
	N·m	lb ft
1/4	12 ± 3	9 ± 2
5/16	25 ± 6	18 ± 4.5
3/8	47 ± 9	35 ± 7
7/16	70 ± 15	50 ± 11
1/2	105 ± 20	75 ± 15
9/16	160 ± 30	120 ± 20
5/8	215 ± 40	160 ± 30
3/4	370 ± 50	275 ± 37
7/8	620 ± 80	460 ± 60
1	900 ± 100	660 ± 75
1 1/8	1300 ± 150	950 ± 100
1 1/4	1800 ± 200	1325 ± 150
1 3/8	2400 ± 300	1800 ± 225
1 1/2	3100 ± 350	2300 ± 250

Table 2

TORQUES FOR TAPERLOCK STUDS		
THREAD SIZE INCH	STANDARD TAPERLOCK STUD TORQUE	
	N·m	lb ft
1/4	8 ± 3	6 ± 2
5/16	17 ± 5	13 ± 4
3/8	35 ± 5	26 ± 4
7/16	45 ± 10	33 ± 7
1/2	65 ± 10	48 ± 7
5/8	110 ± 20	80 ± 15
3/4	170 ± 30	125 ± 22
7/8	260 ± 40	190 ± 30
1	400 ± 60	300 ± 45
1 1/8	525 ± 60	390 ± 45
1 1/4	750 ± 80	550 ± 60
1 3/8	950 ± 125	700 ± 92
1 1/2	1200 ± 150	885 ± 110

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Standard Torque for Metric Fasteners

SMCS Code: 1000; 7000

The following tables give general torques for metric bolts, nuts, and taperlock studs of Grade 8.8.

Table 3

TORQUES FOR BOLTS AND FOR NUTS		
THREAD SIZE METRIC	STANDARD BOLT AND NUT TORQUE	
	N·m	lb ft
M6	12 ± 3	9 ± 2
M8	28 ± 7	20 ± 5
M10	55 ± 10	40 ± 7
M12	100 ± 20	75 ± 15
M14	160 ± 30	120 ± 22
M16	240 ± 40	175 ± 30
M20	460 ± 60	340 ± 45
M24	800 ± 100	600 ± 75
M30	1600 ± 200	1200 ± 150
M36	2700 ± 300	2000 ± 225

Table 4

TORQUES FOR TAPERLOCK STUDS		
THREAD SIZE METRIC	STANDARD TAPERLOCK STUD TORQUE	
	N·m	lb ft
M6	8 ± 3	6 ± 2
M8	17 ± 5	13 ± 4
M10	35 ± 5	26 ± 4
M12	65 ± 10	48 ± 7
M16	110 ± 20	80 ± 15
M20	170 ± 30	125 ± 22
M24	400 ± 60	300 ± 45
M30	750 ± 80	550 ± 60
M36	1200 ± 150	890 ± 110

i01137347

Torques for Bolts on Major Components

SMCS Code: 1000; 7000

Torques for Undercarriage Bolts

Table 5

Bolt Size Metric	Recommended Torque	
	N·m	lb ft
M16 Travel motor mounting bolts	240 ± 40	175 ± 30
M20 Final drive mounting bolts	530 ± 70	390 ± 50
M20 Track roller mounting bolts	460 ± 60	340 ± 44
M24 Carrier roller mounting bolts	800 ± 100	600 ± 70

Torques for Track Bolts

Table 6

Method for Tightening Track Bolts				
Model	Bolt Size Metric	Torque Turn Method		
		Pre-Torque (Dynamic)		Additional Turn
		N·m	lb ft	
320 322 325	M20 × 1.5 Track shoe mounting bolts	400 ± 70	300 ± 50	120 degrees ± 5 degrees
330 350	M22 × 1.5 Track shoe mounting bolts	500 ± 70	370 ± 50	120 degrees ± 5 degrees
345	M24 × 1.5 Track shoe mounting bolts	500 ± 70	370 ± 50	120 degrees ± 5 degrees
365 375	M27 × 2.0 Track shoe mounting bolts	550 ± 70	410 ± 50	120 degrees ± 5 degrees

Lubricant Specifications

i01641556

Hydraulic Oil

SMCS Code: 5050

Applications

- Hydraulic Systems
- Hydrostatic Transmissions

Caterpillar Hydraulic Oil (HYDO)

Caterpillar Hydraulic Oil is formulated with a balanced additive system. The system includes the following agents: detergents, rust inhibitors, antiwear agents, and defoamers. Caterpillar Hydraulic Oil offers the following benefits: protection against mechanical wear, protection against rusting, protection against corrosive wear in hydraulic systems, and protection against wear in hydrostatic transmission systems.

Caterpillar Hydraulic Oil should be used to achieve maximum life and maximum performance from hydraulic system components and from hydrostatic transmissions. Caterpillar Hydraulic Oil is recommended in most hydraulic systems and in most hydrostatic transmission systems.

- Caterpillar Hydraulic Oil

If a different viscosity is required due to ambient temperatures, the following Caterpillar oils can be used:

- Caterpillar Multigrade Diesel Engine Oil (DEO)
- Caterpillar Single Grade Diesel Engine Oil (DEO)
- Caterpillar Transmission/Drive Train Oil (TDTO)
- Caterpillar Multi-Season Transmission Oil (TMS)
- Caterpillar Multipurpose Tractor Oil (MTO)

Commercial Oils

If Caterpillar oils cannot be used, the following commercial classifications can be used in hydraulic systems and in hydrostatic transmission systems:

- CH-4 engine oils that have a minimum zinc additive of 0.09 percent (900 ppm)
- CG-4 engine oils that have a minimum zinc additive of 0.09 percent (900 ppm)
- CF-4 engine oils that have a minimum zinc additive of 0.09 percent (900 ppm)
- CF engine oils that have a minimum zinc additive of 0.09 percent (900 ppm)

Caterpillar Biodegradable Hydraulic Oil (HEES)

Caterpillar has a biodegradable hydraulic oil that is available for use in machine hydraulic systems. This fluid is recommended for the hydraulic systems when environmental compliance is required or desired.

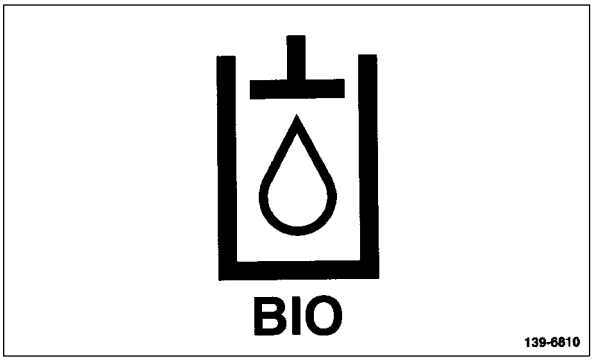

Illustration 11 g00103844

Machines with this symbol are filled with biodegradable hydraulic oil. This symbol is located on the hydraulic tank.

This fluid is formulated with the following components: a saturated HEES (Hydraulic Environmental Ester Synthetic), synthetic base stock, and selected additives. Use this oil only in hydraulic systems.

Caterpillar Biodegradable Hydraulic Oil (HEES) may become darker in color throughout the service life of the oil. Analysis is required to determine the quality of the oil.

The maximum recommended water content for hydraulic systems that are filled with Caterpillar Biodegradable Hydraulic Oil (HEES) is 0.10 percent. If the water levels exceed 0.10 percent, the water should be removed or the oil should be replaced.

Consult your dealer for additional information on this product and on the potential use.

Commercial Biodegradable Hydraulic Oil (HEES)

If Caterpillar Biodegradable Hydraulic Oil (HEES) is not used, commercial oils which meet the Caterpillar BF-1 specifications should be used.

i01641943

Final Drive Oil

SMCS Code: 4070

Applications

- Final Drives

Caterpillar Transmission/Drive Train Oil (TDTO)

Caterpillar Transmission/Drive Train Oil is balanced in order to give maximum frictional material life in power shift transmissions. Caterpillar Transmission/Drive Train Oil also eliminates brake chatter in wet brake applications in Caterpillar machines. This oil has passed the requirements for the TO-4 oil specification which includes the frictional requirements and gear wear requirements. This oil is offered in several lubricant viscosity grades. The SAE 60 viscosity grade is included for maximum component life at high ambient temperatures and for heavy-duty cycles.

NOTICE
This oil is formulated for transmissions and drive trains only, and should not be used in engines. Shortened engine life will result.

Note: Do not use the Caterpillar Gear Oil or commercial gear oil in the final drives. The gear oil can cause seals to fail. The seals can also leak. The gear oil may not be compatible with friction materials. The oil can reduce the efficiency of the transmission and the brake performance.

Note: Multigrade oils must meet the requirements of the Caterpillar TO-4M specification in order to be used in transmissions. Multigrade oils which use high molecular weight polymers as viscosity index improvers may lose the viscosity effectiveness. This effectiveness may be lost by the temporary shear of the polymer viscosity index improver. Permanent shear of the polymer viscosity index improver may also occur. This type of multigrade oils are not recommended for Caterpillar drive train compartments. The Caterpillar TO-4M requirement includes a test for the shear stability of multigrade oil.

i01126245

Commercial Oils

SMCS Code: 4070; 5095

If the Caterpillar Transmission/Drive Train Oil is not used, then commercial oils meeting the Caterpillar TO-4 specification should be used.

NOTICE
Failure to follow this recommendation can cause shortened transmission/drive train life due to material incapability and inadequate frictional requirements for disk material.

The following lists of commercial oils have been previously announced as having Caterpillar TO-4 performance.

Table 1

COMMERCIAL OILS	
COMPANY	**OIL BRAND NAME**[1]
Mobil Oil Co., Fairfax, VA	Mobil Trans HD
D-A Lubricant Co., Indianapolis, IN	D-A Torque Fluid 4
Universal Motor Oils Co. Inc., Wichita, KS	Dyna-Plex 21CTO-4 Transmission Oil
Mitsubishi Oil Co., Japan	Mitsubishi TO-4 Oil
Texaco Lubricants Co., Houston, TX	Texaco Transmission Drive Train Oil (SAE 10W and 30 only)
Behnke Lubricants Inc., Milwaukee, WI	Jax Powertran Fluids
Minuteman Lubricants Inc., Cabol, PA	Minuteman TO-4 Special Lubricant
Shell Oil Company, Worldwide	Shell Donax TC Oil
Dryden Oil Company, Baltimore, MD	Dryden Trans C TDTO
Chevron USA, Richmond, CA	Chevron Drive Train Fluid HD (SAE 10W and 30 only)
Black Bear Company, Inc., Long Island, City, NY	Black Bear Transmission Oil TO-4
CITGO Petroleum Corporation, Tulsa, OK	CITGO Transpower Fluid
Pennzoil Products Company, Houston, TX	Pennzoil Power-Tranz TO-4
Valvoline Inc., Lexington, KY	Valvoline DT Transmission Fluid
CONOCO Inc., Houston, TX	Conoco Power Drive 44
Exxon Company, Houston, TX	Exxon Torque Fluid
Amoco Oil Company, Oak Brook, IL	Amoco HD TransOil
GC Quality Lubricants, Inc., Macon, GA	GC Cat Trans30 (SAE 30 only) GC Cat Gear 50 (SAE 50 only)

(1) Unless the oil viscosities are stated otherwise, all of the oils that are listed are SAE 10W, 30 and 50.

The following table contains a list of other oils which can be used.

Table 2

COMMERCIAL OILS	
COMPANY	**OIL BRAND NAME**
Agip	BLASIA 220
Aral Dego TU 220	Degol BG 220
AVIA	AVILUB RSX 220
Castrol Alpha ZN 220	Alphasyn T 220
DEA	Trion EP 220
ELF ELF EPONA Z 220	REDUCTELF SP 220
FINA	GIRAN L 220
Fuchs	RENEP AWD 220
Klüber	LAMORA 220
Mobil Mobilgear SHC 220	Mobilgear 630
TOTAL	CARTER EP 220
Tribol Tribol 1510/220	Tribol 1100/220

Note: The commercial oils that are listed in Tables 1 and 2 does not constitute an approval by CIPI for usage of these oils. The list is intended to provide you with sources that may meet TO-4 performance levels.

i01803830

S·O·S Oil Analysis

SMCS Code: 7000; 7542

Caterpillar recommends the use of the S·O·S oil analysis program in order to monitor the condition of your equipment. The S·O·S oil analysis program will complement your preventive maintenance program.

The Caterpillar Scheduled Oil Sampling Program was developed in order to help the users of Caterpillar equipment to realize the equipment's full value. The S·O·S program will help the user in minimizing repair costs and maximizing availability. The S·O·S program is a series of diagnostic tests which analyze used lubricating oils from the oil wetted compartments of the equipment. By analyzing the used oils, problems may be identified early before extensive repair cost and downtime are incurred.

The S·O·S program is coupled with a wide range of repair options. When a problem is identified, an appropriate matched repair plan is available. The matched repair plan offers the user a more complete service in order to help minimize repair costs and scheduled downtime. The S·O·S program can also measure the effectiveness of the user's maintenance program.

Obtaining S·O·S Oil Samples

Before you obtain an S·O·S oil sample, operate the machine until the oil is warm and the oil is well circulated. Then obtain the S·O·S oil sample.

In order to obtain a good oil sample, do not take the oil sample from the drain stream. The drain stream method can allow a stream of dirty oil from the bottom of the compartment to contaminate the sample. Likewise, never dip an oil sample from an oil container or pour a sample from a used filter.

There are two ways to obtain S·O·S oil samples. The following methods are listed in the order that is preferred:

- Use an in-line sampling valve for pressurized oil systems.
- Use a sampling gun that is inserted into the sump.

Use of the in-line sampling valve is the preferred method. This method provides samples that are less likely to be contaminated. Whenever you obtain the samples, obtain the samples from the same point. This makes the samples more representative of the oil that is in the system.

In-line sampling valves cannot be used on nonpressurized oil systems such as differentials and final drives. Use of the sampling gun is the preferred method for nonpressurized oil systems.

Refer to the Operation and Maintenance Manual, "Maintenance Interval Schedule" for the proper interval.

The S·O·S oil analysis is composed of four basic tests:

- Wear metal analysis
- Infrared analysis for oil condition
- Tests for contamination of the oil by fuel, by water, and/or by antifreeze
- Particle Count for hydraulics, transmissions and other gear compartments

Consult your Caterpillar Dealer for complete information and assistance about the S·O·S oil analysis program.

S·O·S Interval and Location of Sampling Valve for the Final Drive

The S·O·S interval for the final drive is 500 hours.

Take the oil samples as close as possible to the standard intervals. In order to receive the full value from S·O·S oil analysis, you must establish a consistent trend of data. In order to establish a pertinent history of data, perform consistent oil samplings.

Refer to Special Publication, SEBU6250, "Caterpillar Machine Fluid Recommendations" for detailed information concerning S·O·S oil analysis.

Consult your Caterpillar dealer for complete information and assistance in establishing an S·O·S program for your equipment.

Lubricant Viscosities and Refill Capacities

i01804808

Lubricant Viscosities

SMCS Code: 7581

Selecting the Viscosity

The proper oil viscosity grade is determined by the minimum outside ambient temperature. This is the temperature when the machine is started and while the machine is operated. In order to determine the proper oil viscosity grade, refer to the “Min” column in the table. This information reflects the coldest ambient temperature condition for starting a cold machine and for operating a cold machine. Refer to the “Max” column in the table in order to select the oil viscosity grade for operating the machine at the highest temperature that is anticipated. Use the highest oil viscosity that is allowed for the ambient temperature when you start the machine.

Machines that are operated continuously should use oils that have the higher oil viscosity in the final drives and in the differentials. The oils that have the higher oil viscosity will maintain the highest possible oil film thickness. Consult your dealer if additional information is needed.

NOTICE
Proper oil viscosity **AND** oil type/classification are required to maximize machine compartment performance and life. Do **NOT** use only oil viscosity, or only oil type to determine the machine compartment oil selection. Refer to the “Lubricant Viscosities for Ambient Temperatures” tables and to ALL of the associated footnotes.

NOTICE
The footnotes are an integral part of the “Lubricant Viscosities for Ambient Temperatures” tables - read ALL footnotes!

Lubricant Viscosities for Ambient Temperatures

NOTICE
Do NOT use only the “Oil Viscosities” column when determining the recommended oil for a machine compartment. The “Oil Type and Classification” column MUST also be used.

NOTICE
The footnotes are a key part of the “Lubricant Viscosities for Ambient Temperatures” tables. Read ALL footnotes that pertain to the machine compartment in question.

Note: Only use the oil type and the classification that is recommended for the various machine compartments.

Note: Some machine compartments allow the use of more than one oil type. For the best results, do not mix oil types.

Note: Different oil brands may use different additive packages to meet the various machine compartment performance classification/specification recommendations. For the best results, do not mix oil brands.

Note: Caterpillar oils are the preferred choice. All other oil types and oil classifications which are listed in Table 3 are acceptable oils.

Table 3

Lubricant Viscosities for Ambient Temperatures						
Compartment or System	**Oil Type and Classification**	**Oil Viscosities**	**°C**		**°F**	
			Min	**Max**	**Min**	**Max**
Final Drive	**Caterpillar TDTO Caterpillar TDTO-TMS commercial TO-4**	SAE 0W-20 (1)	–40	0	–40	32
		SAE 0W-30 (1)	–40	10	–40	50
		SAE 5W-30 (1)	–30	10	–22	50
		SAE 10W	–30	0	–22	32
		SAE 30	–25	25	–13	77
		SAE 50	–15	50	5	122
		TDTO-TMS (2)	–30	25	–22	77
Hydraulic Excavator Swing Motor and Travel Motor Systems	**Caterpillar HYDO Caterpillar DEO Caterpillar MTO Caterpillar TDTO Caterpillar TDTO-TMS Caterpillar Biodegradable Hydraulic Oil (HEES) API CH-4 API CG-4 API CF-4 API CF Global DHD-1 commercial TO-4 commercial BF-1(3)(4)**	SAE 0W-20	–40	40	–40	104
		SAE 0W-30	–40	40	–40	104
		SAE 5W-30	–30	40	–22	104
		SAE 5W-40	–30	40	–22	104
		SAE 10W	–20	40	–4	104
		SAE 30	10	50	50	122
		SAE 10W30	–20	40	–4	104
		SAE 15W40	–15	50	5	122
		Caterpillar MTO	–25	40	–13	104
		Cat Biodegradable Hydraulic Oil (HEES) (3)(4)	–40	43	–40	110
		TDTO-TMS (2)	–20	50	–4	122
Track Pins	**Caterpillar GO (Gear Oil) API GL-5 gear oil**	SAE 75W-90	–30	40	–22	104
		SAE 80W-90	–20	40	–4	104
		SAE 85W-140	–10	50	14	122
		SAE 90	0	40	32	104
Track Roller Frame Recoil Spring	**Caterpillar TDTO Caterpillar TDTO-TMS commercial TO-4**	SAE 0W-20 (1)	–40	0	–40	32
		SAE 0W-30 (1)	–40	10	–40	50
		SAE 5W-20 (1)	–35	0	–31	32
		SAE 10W	–30	0	–22	32
		SAE 30	–20	25	–4	77
		SAE 40	–10	40	14	104
		SAE 50	0	50	32	122
		TDTO-TMS (2)	–25	25	–13	77

(continued)

(Table 3, contd)

Lubricant Viscosities for Ambient Temperatures						
Compartment or System	Oil Type and Classification	Oil Viscosities	°C		°F	
			Min	Max	Min	Max
Track Idlers and Track Rollers	Caterpillar DEO API CH-4 API CG-4 API CF Global DHD-1	SAE 30	–20	25	–4	77
		SAE 40	–10	40	14	104
		SAE 5W-40	–35	40	–31	104

(1) The first choice is oils of full synthetic base stock without viscosity index improvers that meet the performance requirements of the TO-4 specification for the SAE 30 viscosity grade. The typical oil viscosity grades are SAE 0W-20, SAE 0W-30, and SAE 5W-30. The second choice is oils that contain a TO-4 additive package and a lubricant viscosity grade of SAE 0W-20, SAE 0W-30, or SAE 5W-30.

(2) TDTO-TMS Transmission Multi-Season (exceeds the TO-4/TO-4M multigrade specification requirements).

(3) Commercial Biodegradable Hydraulic Oil (HEES) must meet the Caterpillar BF-1 specification. The listed ambient temperature range is for the current Caterpillar Biodegradable Hydraulic Oil (HEES), not for commercial BF-1 oil.

(4) Refer to the machine Operation and Maintenance Manual or contact your local Caterpillar dealer before using Biodegradable Hydraulic Oil (HEES) or commercial BF-1 oil in Caterpillar Hydraulic Excavators.

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Refill Capacities

SMCS Code: 7560

The approximate refill capacity in Table 4 pertains to final drives on OEMSG Undercarriage Arrangements which are based on 320 track type excavators.

Table 4

Approximate Refill Capacity				
Component or System	Liters	US gal	Imp gal	Recommended Type
Each Final Drive (320 / 320B)	10	2.6	2.2	Caterpillar Transmission/Drive Train Oil (TDTO)
Each Final Drive (320C / 320D)	8	2.1	1.8	Caterpillar Transmission/Drive Train Oil (TDTO)

i01805728

Maintenance Interval Schedule

SMCS Code: 7000

All safety information, warnings, and instructions must be read and understood before you perform any operation or any maintenance procedure.

Before each consecutive interval is performed, all of the maintenance requirements from the previous interval must also be performed.

When Required

Track Adjustment - Adjust 27

Every 10 Service Hours or Daily

Track Adjustment - Inspect 29
Undercarriage - Check 30

Initial 250 Service Hours

Final Drive Oil - Change 26

Every 250 Service Hours or Monthly

Final Drive Oil Level - Check 26

Every 500 Service Hours

Final Drive Oil Sample - Obtain 27

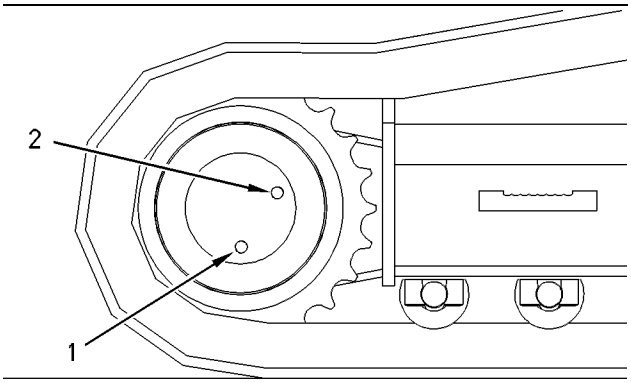
Every 2000 Service Hours or 1 Year

Final Drive Oil - Change 26

i01657954

Final Drive Oil - Change

SMCS Code: 4050-044-FLV



g00538194

Illustration 12

(1) Oil drain plug
(2) Oil level plug

1. Position one final drive so that oil drain plug (1) is at the bottom.

Note: Refer to Operation and Maintenance Manual, “General Hazard Information” for information on Containing Fluid Spillage.

2. Remove drain plug (1) and level plug (2). Allow the oil to drain into a suitable container.

3. Clean the plugs and inspect the O-ring seals. If wear or damage is evident, replace the drain plug, the level plug, and/or the O-ring seals.

4. Install drain plug (1).

5. Fill the final drive to the bottom of the opening on level plug (2). See Operation and Maintenance Manual, “Lubricant Viscosities” and Operation and Maintenance Manual, “Refill Capacities”.

6. Install level plug (2).

7. Perform Step 1 to Step 6 on the other final drive. Use a different container for the oil so that the oil samples from the final drives will be separate.

8. Completely remove the oil that has spilled onto surfaces.

9. Start the engine and allow the final drives to run through several cycles.

10. Stop the engine. Check the oil level.

11. Check the drained oil for metal chips or for particles. If there are any chips or particles, consult your dealer.

12. Properly dispose of the drained material. Obey local regulations for the disposal of the material.

i01657989

Final Drive Oil Level - Check

SMCS Code: 4050-535-FLV

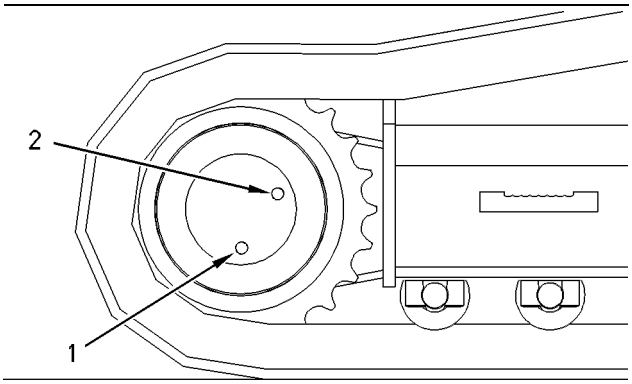


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Illustration 13

(1) Oil drain plug
(2) Oil level plug

1. Position one final drive so that oil drain plug (1) is at the bottom.

Note: Refer to Operation and Maintenance Manual, “General Hazard Information” for information on Containing Fluid Spillage.

2. Remove oil level plug (2).

3. Check the oil level. The oil should be near the bottom of the level plug opening.

4. Add oil through the level plug opening, if necessary.

Note: Overfilling the final drive will cause the seals on the travel motor to allow hydraulic oil or water to enter the final drive. This may contaminate the final drive.

5. Clean oil level plug (2). Inspect the O-ring seal. Replace the O-ring seal if the O-ring seal is worn or damaged.

6. Install oil level plug (2).

7. Repeat the procedure for the other final drive.

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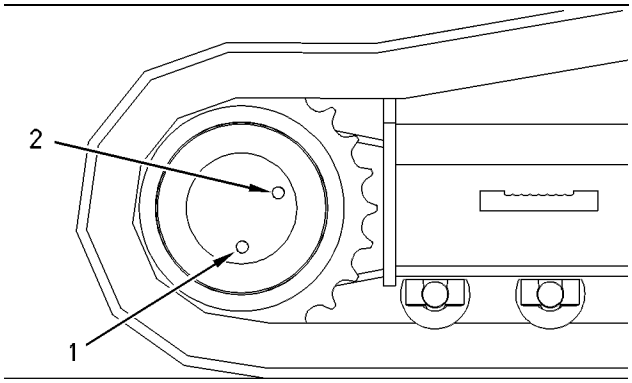
Final Drive Oil Sample - Obtain

SMCS Code: 4050-008



g00538194

Illustration 14

(1) Oil drain plug
(2) Oil level plug

1. Position the final drive so that oil drain plug (1) is at the bottom.

2. Remove oil level plug (2).

3. Obtain a sample of the final drive oil through the hole for the oil level plug.

4. Install oil level plug (2).

Refer to Operation and Maintenance Manual, "S·O·S Oil Analysis" in this section for more information on obtaining a sample of the final drive oil.

i01636579

Track Adjustment - Adjust

SMCS Code: 4170-025

⚠ WARNING

Personal injury or death can result from grease under pressure.

Grease coming out of the relief valve under pressure can penetrate the body causing injury or death.

Do not watch the relief valve to see if grease is escaping. Watch the track or track adjustment cylinder to see if the track is being loosened.

Loosen the relief valve one turn only.

If track does not loosen, close the relief valve and contact your Caterpillar dealer.

NOTICE
Keeping the track properly adjusted will increase the service life of the track and drive components.

Note: The track tension must be adjusted according to the current operating conditions. Keep the track as slack as possible if the soil is heavy.

Measuring Track Tension

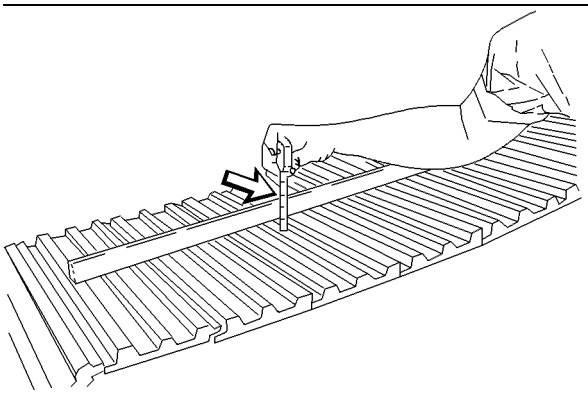


Illustration 15 g00101752

1. Place a straight edge on the tracks. The straight edge should be long enough to reach from the idler to the carrier roller.

2. Measure the maximum amount of sag in the track. The sag is measured from the highest point of the track grouser to the bottom of the edge. A track that is properly adjusted will have a slack of 40 to 55 mm (1 5/8 to 2 1/8 inch).

Tightening the Track

Wipe the fitting before you add lubricant.

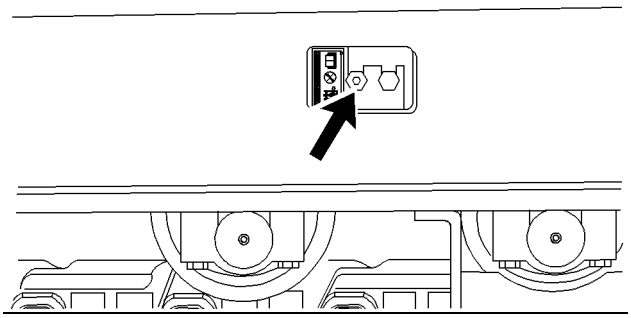


Illustration 16 g00417235

The track adjuster is located on the track frame.

1. Add lubricant through the fitting until the correct track tension is reached.

2. Operate the machine back and forth in order to equalize the pressure.

3. Check the amount of sag. Adjust the track, as needed.

Loosening the Track

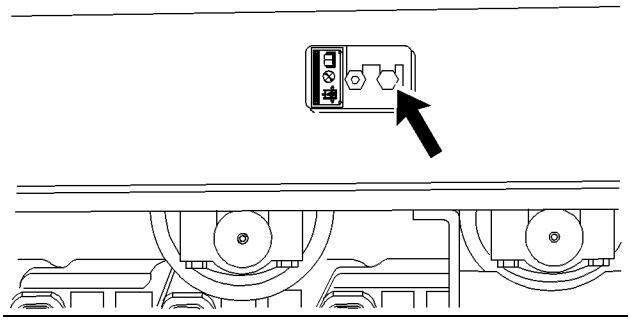


Illustration 17 g00417236

The track adjuster is located on the track frame.

1. Loosen the relief valve carefully until the track begins to loosen. One turn should be the maximum.

2. Tighten the relief valve to 34 N·m (25 lb ft) when the desired track tension is reached.

3. Operate the machine back and forth in order to equalize the pressure.

4. Check the amount of sag. Adjust the track, as needed.

If the correct adjustment cannot be achieved, consult your dealer.

Optional Track Adjustment

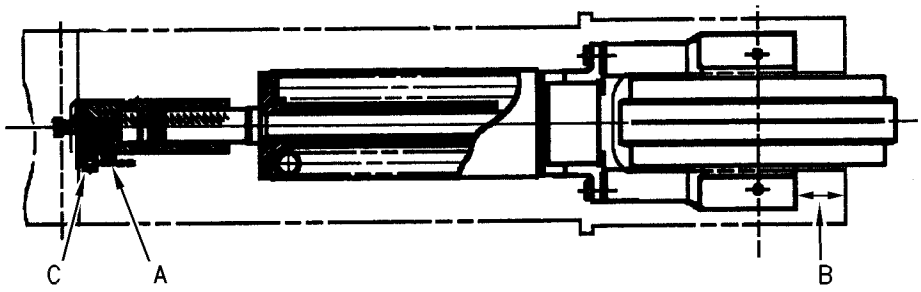


Illustration 18 g00583611

Many OEM lowers have track roller frames that have been custom designed. These frames use slide bars instead of carrier rollers. The frames may also have raised and/or relocated carrier roller brackets or the frames may be extra long. This will cause the previous track adjustment procedure to be inaccurate. The following procedure can be used for those machines. In fact, the procedure which follows can also be used for all standard and custom track lowers.

1. Tracks need to be adjusted in the working environment.

Note: Do not either wash or remove the mud or other material that is packed into the moving components of the undercarriage.

2. At track adjuster “A”, connect a grease gun to the fitting. Pump grease into the adjuster until the idler is at the max forward position. The relief valve that is adjacent to the fill valve should remain closed.

Note: The track may not appear straight after forward motion of idler has ended. This is acceptable.

3. Determine distance “B”. This distance is determined by measuring from the end of the bearing block to the end of the track roller frame.

4. For a properly adjusted track, the idler needs to be retracted 13 mm (0.5 inch).

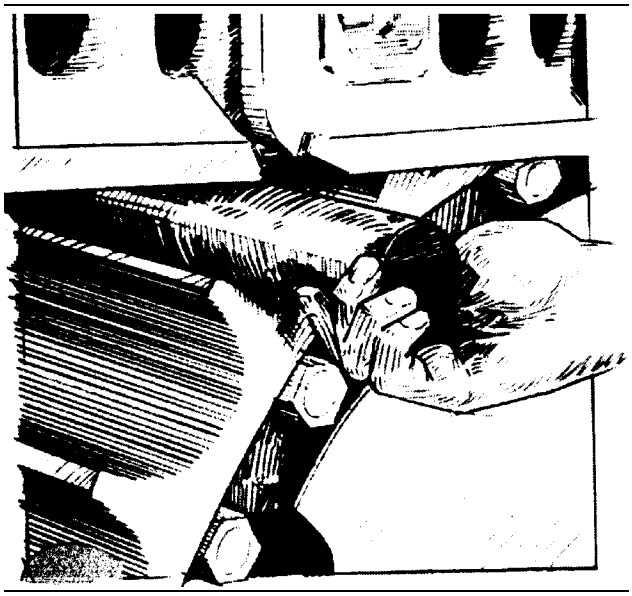


Illustration 19 g00583618

5. To retract the idler, open relief valve “C”. Install a pin that is two to three inches in diameter into the root of the sprocket near the track links.

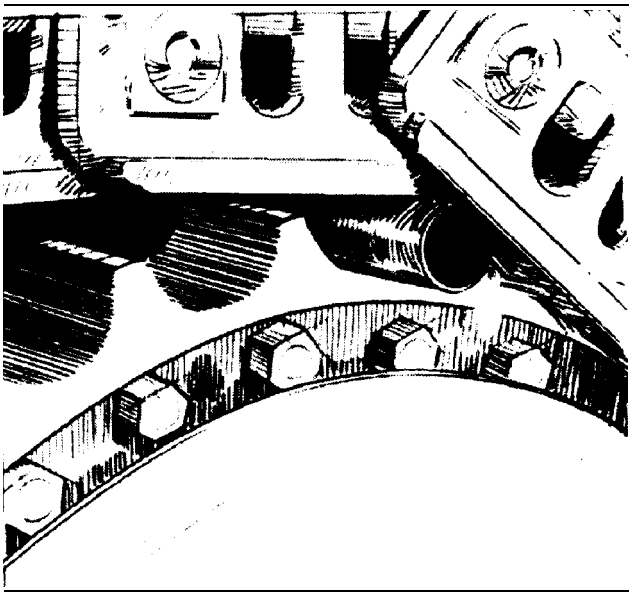


Illustration 20 g00583625

6. Move the machine in reverse until the idler backs up 13 mm (0.5 inch) or more. The pin will approximately be in the twelve o’clock position on the sprocket. Then move the machine forward until the pin is free of the sprocket. Remove the pin.

7. Close relief valve “C”. Check dimension “B”. This measurement should be 13 mm (0.5 inch) greater than the measurement that was taken in Step 3. Extend the track adjuster if the dimension is greater.

8. Now, the tracks are properly adjusted.

i01638286

Track Adjustment - Inspect

SMCS Code: 4170-040

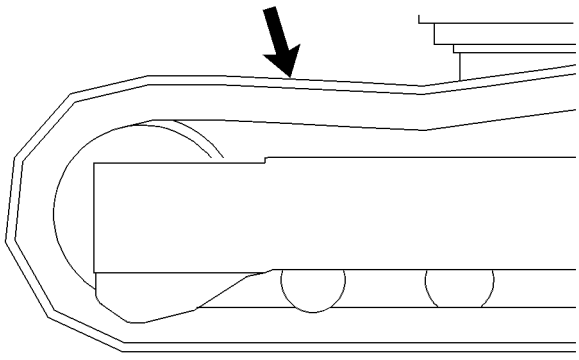


Illustration 21 g00417444

Check the track adjustment. Check the track for wear and for excessive dirt buildup.

If the track appears to be too tight or too loose, refer to Operation and Maintenance Manual, “Track Adjustment - Adjust” in this manual.

i01638358

Undercarriage - Check

SMCS Code: 4150-535

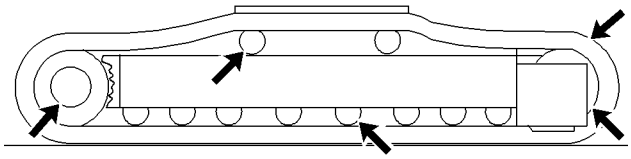


Illustration 22 g00847878

1. Check the carrier rollers, the track rollers, and the idler wheels for possible leakage.

2. Check the surface of the track, the carrier rollers, the track rollers, the idler wheels, the track shoes, and the drive sprockets. Look for signs of wear and loose mounting bolts.

3. Listen for any abnormal noises while you are moving slowly in an open area.

4. If abnormal wear exists or abnormal noises or leaks are found, consult your dealer.

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