SAFETY INSTRUCTIONS

WARNING: *Never try to charge a battery which has frozen electrolyte.*

WARNING: *Never cause sparks or smoke close to batteries being charged or those recently charged.*

WARNING: *When disconnecting the battery cables, always disconnect the earth cable first. When reconnecting the battery cables, always reconnect the earth cable last.*

WARNING: *Some batteries are equipped with an aerator pipe. If the aerator pipe contains acid from the battery, it could spill out when the battery is turned over. When you turn the battery over, always keep the end of the aerator pipe away from yourself and people around you. The acid from the battery can cause serious burns.*

WARNING: *The acid from the battery can cause very serious burns. Batteries contain sulphuric acid. Avoid all contact with skin, eyes or clothes.*
Antidote:
EXTERNAL - Rinse copiously with plenty of water.
INTERNAL - Drink large quantities of water or milk. Follow up with hydrated magnesia, beaten egg or vegetable oil.
Consult a doctor immediately.
EYES - Rinse copiously with water for 15 minutes and seek medical attention immediately.
Batteries produce explosive gases. Keep them away from sparks, flames and cigarettes. If you use or charge a battery in a confined space, make sure that the space is well ventilated. Always protect your eyes when working close to batteries.
Keep batteries and the acid they contain out of the reach of children.

SPECIFICATIONS

See Section 1002.

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- Visual inspection 5
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- Charge test 6

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BATTERY CHARGING GUIDE 8

PREPARING A DRY CHARGED BATTERY FOR USE 8

CONNECTING A BOOSTER BATTERY 9

WARNING: *This symbol is used in this manual to indicate important safety messages. Whenever you see this symbol, carefully read the message which follows. Your safety depends on it.*

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Torque Table

Tighten cap screws and nuts according to the table below if there are no other special instructions.

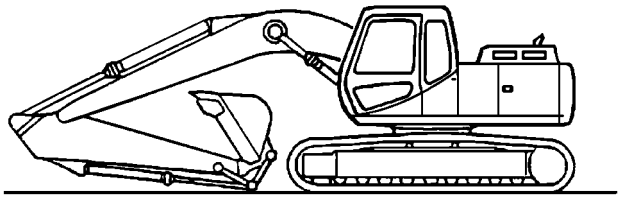
Cap Screw Name Size (Size)			M6	M8	M10	M12	M14	M16	M18	M20
Cap Screw	Spanner	[in.]	0.39	0.51	0.67	0.75	0.87	0.95	1.06	1.18
		[mm]	10	13	17	19	22	24	27	30
	Tightening torque	[lb-ft]	5.1	14.5	29.0	43.4	72.5	116.0	144.6	202.4
		[Nm]	6.9	19.6	39.2	58.8	98.1	157.2	196.0	274.0
Socket Head Cap Screw	Spanner	[in.]	0.20	0.24	0.32	0.39	0.47	0.55	0.55	0.67
		[mm]	5	6	8	10	12	14	14	17
	Tightening torque	[lb-ft]	6.5	15.9	31.1	57.8	86.8	130.1	180.8	253.1
		[Nm]	8.8	21.6	42.1	78.4	117.6	176.4	245.0	343.0

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ENGINE

Removal and installation

STEP 1



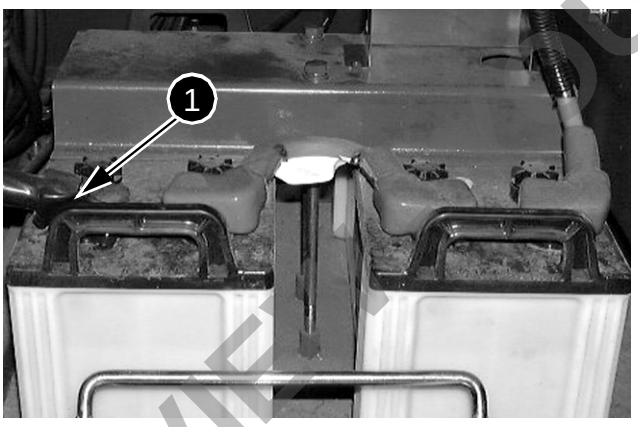
JS00163A

Park the machine on hard, flat ground. Lower the attachment to the ground.

STEP 2

Release pressure in the hydraulic system and in the hydraulic reservoir (see Section 8000).

STEP 3



CD00F091

Disconnect the (-) earth cable (1) from the battery.

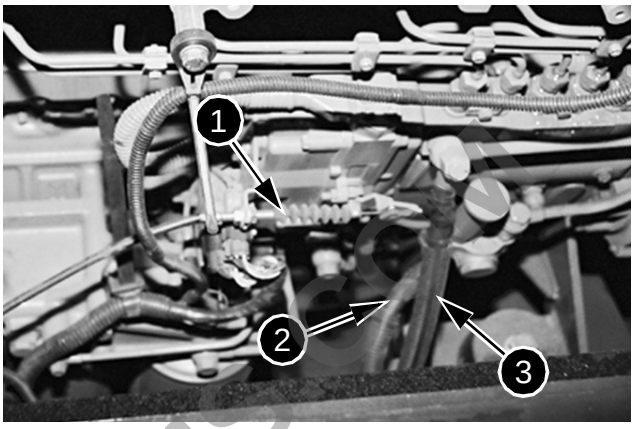
STEP 4

Refer to Section 8003 and remove the hydraulic pump.

STEP 5

Refer to Section 2001 and remove the radiator and oil-cooler assembly.

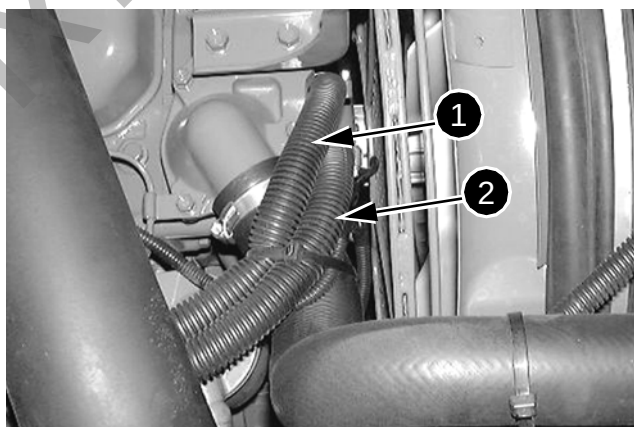
STEP 6



CD02C168

Remove the engine shutdown control (1).
Disconnect the fuel supply pipe (2) and the fuel return pipe (3) and plug them.

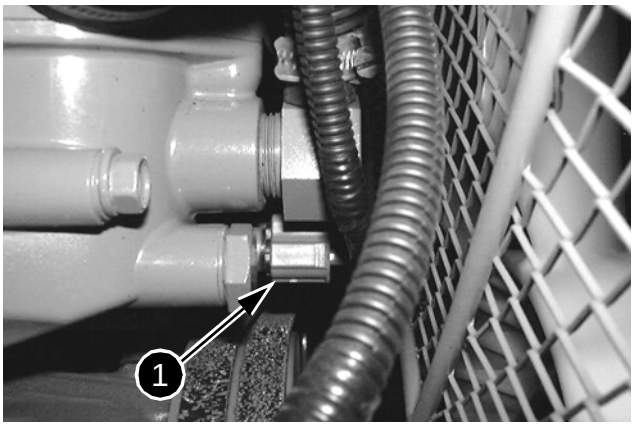
STEP 7



CD00J039

Remove the hoses (1) and (2) from the heater circuit and plug them.

STEP 8



CD00J044

Label and disconnect the electrical connections from the water temperature sensor (1).

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TROUBLESHOOTING

Prior inspections

Item	Target	Action
POINTS TO BE CHECKED WHEN STARTING		
Lubricants - Coolants		
1. Check the quantity of fuel	---	Add fuel
2. Check that fuel is not contaminated	---	Clean, drain
3. Check the quantity of hydraulic fluid	---	Fill with fluid
4. Inspect the hydraulic fluid filter	---	Drain, clean
5. Check the quantity of oil in each reduction gear	---	Fill with oil
6. Check the quantity of engine oil	---	Fill with oil
7. Check the quantity of coolant	---	Fill with coolant
8. Check the filter restriction indicator (dust)	---	Clean or replace
Electrical equipment		
9. Check the battery terminals and wiring for tightness and corrosion	---	Tighten or replace
10. Check the alternator terminals and wiring for tightness and corrosion	---	Tighten or replace
11. Check the starter motor terminals and wiring for tightness and corrosion	---	Tighten or replace
OTHER POINTS TO CHECK		
Hydraulic system - Mechanical equipment		
12. Abnormal noise or smell	---	Repair
13. Check for oil leaks	---	Repair
14. Air in the system	---	Bleed the air
Electrical system - Electrical equipment		
15. Check the battery voltage (with the engine shut down)	23-26 V	Replace
16. Check the quantity of fluid in the battery	---	Add or replace
17. Make sure that the cables are not discoloured, burnt or stripped	---	Replace
18. Check for missing or loose cable retaining clips	---	Repair
19. Check for damp on cables (especially on connectors and terminals)	---	Disconnect and dry if damp
20. Check fuses for condition and corrosion	---	Replace
21. Check the alternator voltage (with the engine speed above the throttle mid-point) (when battery charge is insufficient, there can be 25 V only at start up)	27.5-29.5 V	Replace
22. Noise from relay battery (with starter motor ON or OFF)	---	Replace

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MAINTENANCE

Electrolyte level

If the battery is a maintenance-free battery, check the electrolyte level every 1000 hours of use or every six months, whichever comes first. For all other batteries, check the electrolyte level every 250 hours of use.

Inspecting and cleaning the battery

If the battery is damaged and leaks, it must be replaced. Check the battery regularly for contamination, corrosion and damage. If the top covering of the battery is contaminated by impurities or the electrolyte, the battery can get discharged since the current can pass.

> **WARNING:** *When disconnecting the battery cables, always disconnect the earth cable first. When reconnecting the battery cables, always reconnect the earth cable last.*

If the battery needs to be cleaned, remove the battery from its bracket and clean the battery, the cable terminals as well as the battery bracket. If possible, use Link-Belt Battery Saver and Cleaner, following the instructions on the cartridge. Link-Belt Battery Saver and Cleaner also fights corrosion. If Link-Belt Battery Saver and Cleaner is not available, use bicarbonate of soda and water. MAKE SURE that the cleaning agent does not enter the battery components.

> **WARNING:** *When disconnecting the battery cables, always disconnect the earth cable first. When reconnecting the battery cables, always reconnect the earth cable last.*

Assemble the battery on the machine and check that the straps are tightened properly. Apply Link-Belt Battery Saver and Cleaner or a urethane based sealant on the battery terminals to prevent corrosion. Refer to the Parts Catalogue. Do not use grease.

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INSPECTING THE BATTERY

NOTE: *For a proper inspection of the battery, carry out each part of the inspection until the actual state of the battery is known.*

Visual inspection

- Check that the cable connections are clean and tightened properly. Remove all foreign bodies from the top of the battery.
- Check the box, the terminals and the battery cables for damage.
- Check the electrolyte level, see page 4.
- If you have added water to the battery, charge the battery for 15 minutes at 15 to 25 amperes to allow the water to mix correctly with the electrolyte.

Check the specific gravity

Use a battery hydrometer to check the specific gravity of the electrolyte. The specific gravity indicates the charge level in each cell.

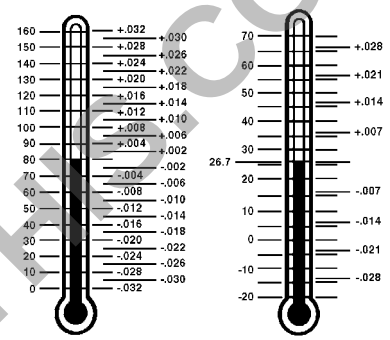
Battery hydrometers are designed to indicate the correct specific gravity when the electrolyte is at a temperature of 80°F.

Before checking the specific gravity, check the electrolyte temperature. If the hydrometer is not equipped with a thermometer, use a thermometer to measure the electrolyte temperature. The thermometer has to be calibrated at least up to 126°F.

1. Remove sufficient electrolyte from a cell so that the float moves freely in the tube.

NOTE: *If it is not possible to check the specific gravity without first adding water to the cell, charge the battery for 15 minutes at 15 to 25 amperes to allow the water to mix correctly with the electrolyte. Then, check the specific gravity.*

2. Read the float.
3. Read the thermometer, if the reading is greater than 80°F, add specific gravity points to the reading to get the specific gravity. If the reading is less than 80°F, deduct specific gravity points from the reading to get the specific gravity. See the illustration below and add or deduct specific gravity points depending on the situation.



1. Temperature in °F. 2. Temperature in °C.

JS00532A

4. Record the corrected specific gravity for each cell.
5. If the difference between the high and low readings is 0.050 minimum, charge the battery and check the specific gravity again. If after charging the difference is still 0.050 minimum, install a new battery.

NOTE: *When the battery is replaced, do not use a used battery with a new one. The life of the new battery will be reduced.*

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SPECIAL TORQUE SETTINGS

No.	Component	Screw (Ø)	Wrench (mm)	Torque setting (lb-ft)
1 *	Travel motor and reduction gear assembly	M24	36	664-774
2 *	Sprocket	M20	30	384-448
3 *	Idler wheel	M16	24	197-230
4 *	Upper roller	M20	30	384-448
5 *	Lower roller	M24	36	664-774
6	Chain guide	M24	36	664-774
7	Track pad	M24	32	912-1114
8	Counterweight	M30	46	782-911
9	Turntable (frame)	M24	36	577-673
10	Turntable (upperstructure)	M24	36	577-673
11 *	Swing motor and reduction gear assembly	M24	36	577-673
12 *	Engine	M16	24	195-231
13 *	Engine bracket	M10	17	47-54
14	Radiator	M16	24	108-130
15 *	Hydraulic pump	M10	17	47-54
		M20	Hexagonal	271-366
16 *	Hydraulic reservoir	M16	24	171-203
17 *	Fuel reservoir	M16	24	171-203
18 *	Control valve	M16	24	197-230
19 *	Hydraulic swivel	M12	19	80-94
20	Cab	M16	24	57-59
21	Battery	M10	17	15-21

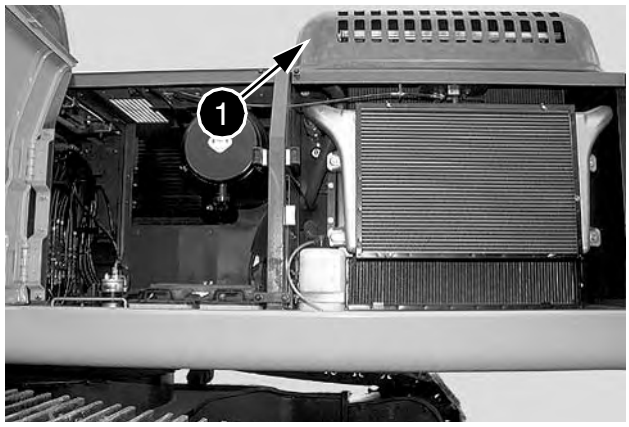
NOTE: *Use Loctite 262 or an equivalent on retaining screws of those components marked with an asterisk (*).*

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RADIATOR AND OIL-COOLER

Removal of the radiator and oil-cooler assembly

STEP 1



CD01K055

Open the hood (1) of the engine.
Remove the crosspiece (2).

STEP 2

Remove the inner cover plate from the engine.

STEP 3

Remove the cap from the expansion reservoir.

IMPORTANT: *Do not remove the cap when the engine is hot, since the system would still be under pressure and you could be scalded.*

STEP 4

Drain the cooling system (see Operator's Manual).

STEP 5

Release pressure in the hydraulic reservoir to allow the vacuum pump to be mounted (see Section 8000).

NOTE: *The numbers within brackets refer to the figure on page 3.*

STEP 6

Remove the screws (1), then the pipe (2) from the oil cooler (3), finally drain the latter into a clean container.

STEP 7

Disconnect hoses (5) and (6) from the air cooler.

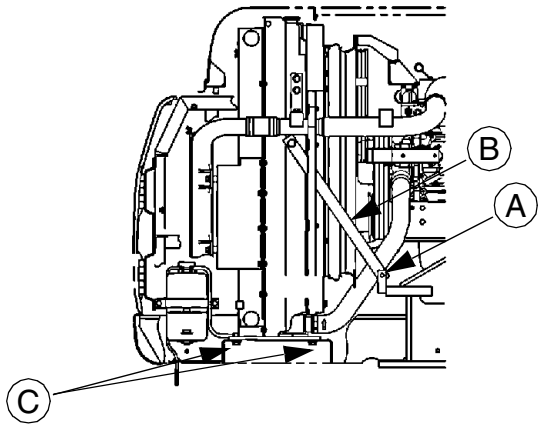
STEP 8

Remove the expansion reservoir hose (8) from the radiator (7). Disconnect the return hose (9) and the water pump inlet hose (10) from the engine, drain the coolant solution into a clean container.

STEP 9

Disconnect the radiator hose (11) from the oil drain plug.

STEP 10



CS02C554

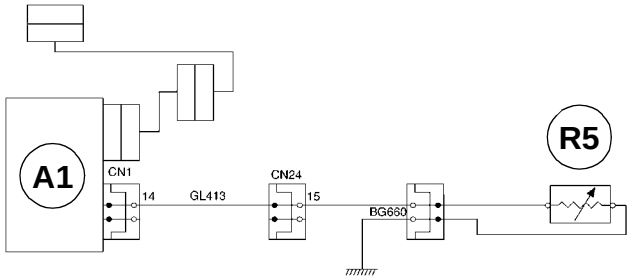
Remove the screws (A) and remove the threaded rods (B). Remove the screws (C).

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Fuel

Description of problem No. 1

- The message is still displayed even after refilling the fuel tank.



CM00F001

A1 Computer

R5 Fuel sensor

Troubleshooting	Cause	Action
Key switch ON Measure the fuel sensor resistance (R5) using maintenance support CHK4. (Refer to the table below for the resistance). YES →	Defective computer (A1)	Replace the computer (A1)
NO → Key switch OFF Disconnect the fuel sensor connector (R5) to measure the resistance on the connector at the fuel sensor end. (Refer to the table below for the resistance). NO →	Fuel sensor (R5) defective	Replace or check the fuel sensor (R5)
YES → Disconnect the CN24 connector to measure the resistance between GL female and the GND earth. (Refer to the table below for the resistance). NO →	Bad connection on fuel sensor (R5)	Clean the connection terminal
YES → Disconnect connector CN1 to measure the resistance between GL female and GND earth. (Refer to the table below for the resistance). NO →	Bad connection on CN24	Clean CN24 connection terminal
YES →	Defective computer (A1) or incorrect CN1 connection	Replace the computer (A1) or clean the CN1 connection terminal

Note: All the bar-graph indicators are off when the circuit is open

Resistance between GL and BG

Monitor	1. Refill the tank	2	3	4	5	6	7	8
Resistance (OHM)	80-75	75-61	61-47	47-37	37-30	30-24	24-19	19-10

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SPECIFICATION

Weight of engine ..... See Section 1002

TORQUE SETTING

Retaining screw of the engine ..... 214 ± 18 lb-ft

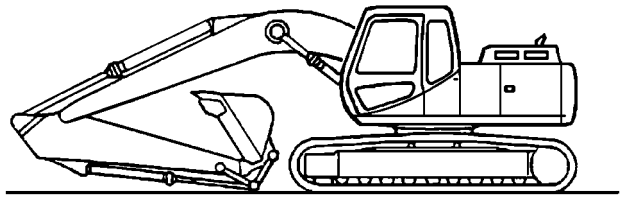
Motor bracket retaining screws ..... 51 ± 4 lb-ft

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FUEL TANK

Removal

STEP 1



JS00163A1

Park the machine on hard, flat ground. Lower the attachment to the ground.

STEP 2

Reduce the engine speed to idle for 30 seconds, then shut down the engine.

STEP 3

Turn the ignition key to "ON" without starting the engine.

STEP 4

Attach a "DO NOT OPERATE" tag to the ignition key in the cab.

STEP 5

NOTE: *The numbers in brackets refer to the figures on pages 5 and 6.*

Remove the access panel under the fuel tank (1).

STEP 6

Open the filling plug of the tank (2). Empty the tank using the valve (3) then remove the latter.

STEP 7

Lift the hood of the front boot. Remove the retaining screw (4) of the access ramp (5). Remove the access ramp (5).

STEP 8

Remove the screws (6) on top and then inside the front boot, then remove the protective housing (7).

STEP 9

Remove the screws (8) and the protective plate (9) from on top of the fuel tank (1).

STEP 10

Loosen the two screws (10) located underneath the machine. Open the side portion of the machine and remove the two screws (11) located on the RH side of the fuel tank (1). Remove the protective plate of the tank (12).

STEP 11

Remove the two screws (13) that hold the fuel oil filter (14). Attach tags to the two hoses (15) and (16). Remove the fuel oil filter (14) by removing the two hoses (15) and (16) and the circlips (17) and (18).

STEP 12

Shift the plastic protection (19) from the fuel probe (20). Remove the retaining screws (21) then the fuel probe (20) as well as the seal (22).

STEP 13

Remove the four screws (23) from the fuel tank (1), as well as the shims (24).

STEP 14

Remove the fuel tank (1) using a hoist.

STEP 15

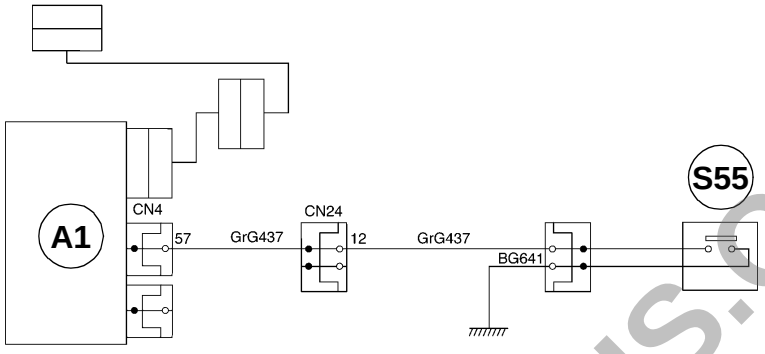
See the operator’s manual for removing the fuel filter.

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Add coolant solution

Description of problem No. 2

- The message is still displayed even after adding coolant solution.



CM00F002

A1 Computer

S55 Minimum coolant solution level switch

Troubleshooting	Cause	Action
Key switch ON		
Disconnect the minimum coolant solution level switch connector (S55) to see if the message disappears — YES	Defective minimum coolant solution level switch (S55)	Replace the minimum coolant solution level switch (S55)
NO → Disconnect connector CN24 to see if the message disappears — YES	Short-circuit on wire GrG between the minimum coolant solution level switch (S55) and CN24	Repair wire GrG
NO → Disconnect connector CN4 to see if the message disappears — YES	Short-circuit on wire GrG between CN24 and CN4	Repair wire GrG
NO	Defective computer (A1)	Replace the computer (A1)

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	Radiator and oil-cooler	2001	9-44490LX
	Engine specifications	*	
	Disassembly and assembly of the engine	*	
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	Main hydraulic control valve, removal and installation	8004	9-44410LX
	Attachment cylinders, removal and installation	8005	7-27791LX
	Hydraulic swivel, removal and installation	8006	7-27811LX
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June 2002

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Cab and cab equipment	9005	9-43750LX
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Air conditioning unit disassembly and assembly	9007	[redacted]
Air conditioning servicing	9008	[redacted]
Air conditioning components	9009	[redacted]
Large format hydraulic and electrical schematics	Pocket	9-42680

* *Consult the Engine Service Manual*

[redacted] *Sections to be distributed at a later date*

NOTE: Link-Belt Company reserves the right to make changes in the specification and design of the machine 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.

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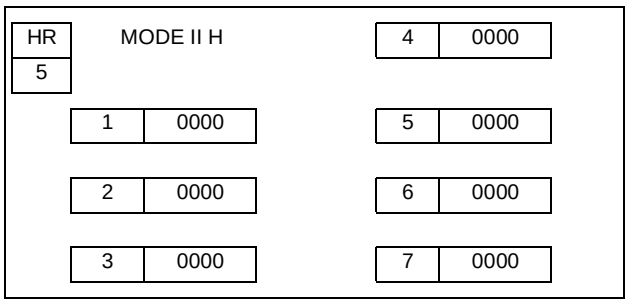
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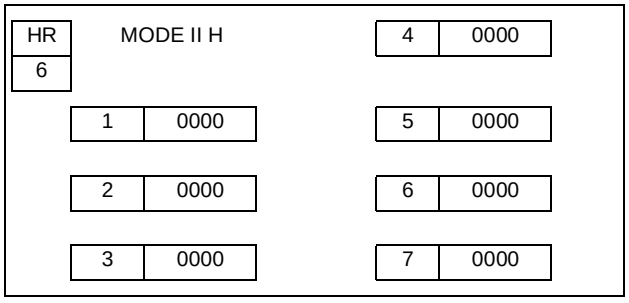
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5. Screen HR5, operating time of the various P2 pressures



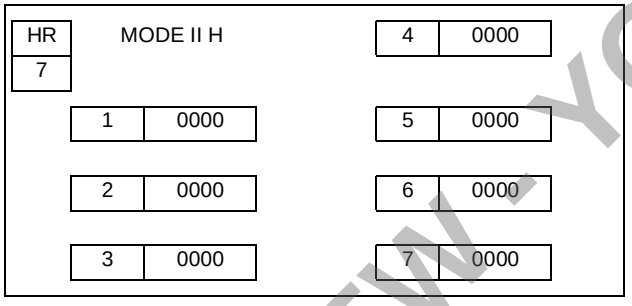
1: 1450 psi or lower
2: Between 1450 psi and 2176 psi
3: Between 2176 psi and 2901 psi
4: Between 2901 psi and 3626 psi
5: Between 3626 psi and 4351 psi
6: Between 4351 psi and 5076 psi
7: 5076 psi or above

6. Screen HR6, operating time of the various engine speeds



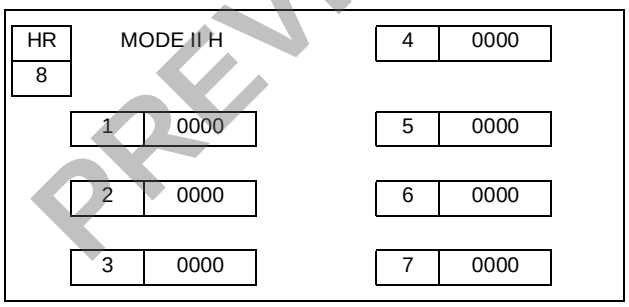
1: 1200 rpm or lower
2: Between 1200 rpm and 1400 rpm
3: Between 1400 rpm and 1600 rpm
4: Between 1600 rpm and 1800 rpm
5: Between 1800 rpm and 2000 rpm
6: Between 2000 rpm and 2200 rpm
7: 2200 rpm or above

7. Screen HR7, operating time of the various coolant temperatures



1: 171°F or lower (1st and 2nd bar)
2: 171°F to 180°F (3rd bar)
3: 180°F to 207°F (4th bar)
4: 207°F to 212°F (5th bar)
5: 212°F to 217°F (6th bar)
6: 217°F to 221°F (7th bar)
7: 221°F or higher (8th bar)

8. Screen HR8, operating times of the various hydraulic oil temperatures

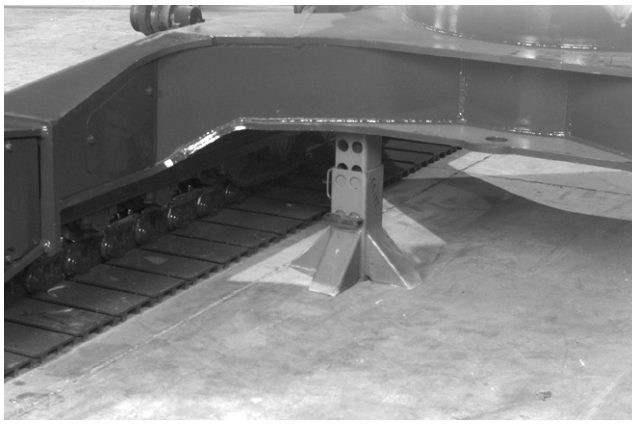


1: 113°F or lower (1st and 2nd bar)
2: 113°F to 140°F (3rd bar)
3: 140°F to176°F (4th bar)
4: 176°F to 190°F (5th bar)
5: 190°F to 203°F (6th bar)
6: 203°F to 208°F (7th bar)
7: 208°F or higher (8th bar)

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Installation

STEP 1



JD00279A

Lift the undercarriage. Install supports under the machine to hold the machine in place.

STEP 2



JD00281A

Place and align the new track under the lower roller.

STEP 3

Lower the machine onto the track chain.

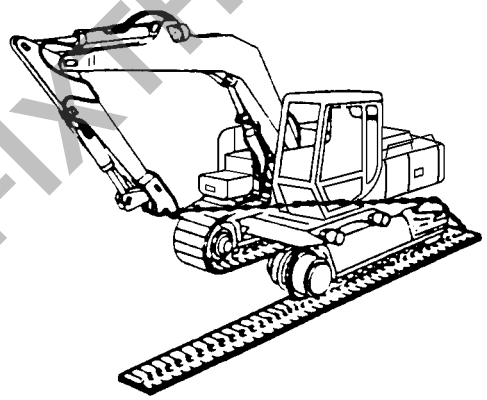
STEP 4



CD00F057A

Connect lifting equipment to the track. Lift the track on the idler wheel.

STEP 5

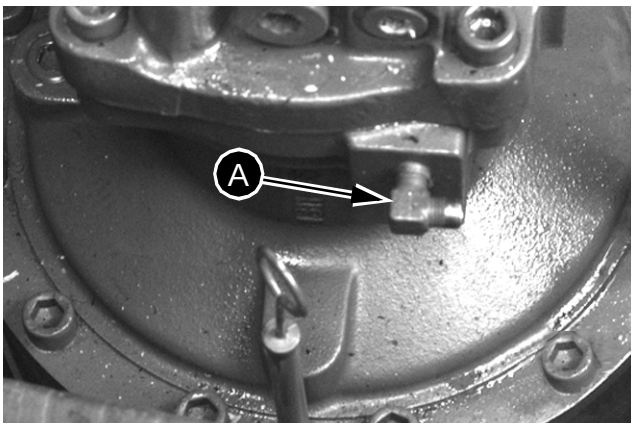


JS00283A

Sling the track to the attachment. Start the engine, operate the machine forward and move the arm out at the same time to pull the track on the sprocket. Keep the track engaged on the sprocket teeth.

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STEP 6



6003-109

Connect the hand pump K1P0017 to the swing motor brake release orifice (A).

STEP 7

Check that the hand pump is filled with fluid.

STEP 8

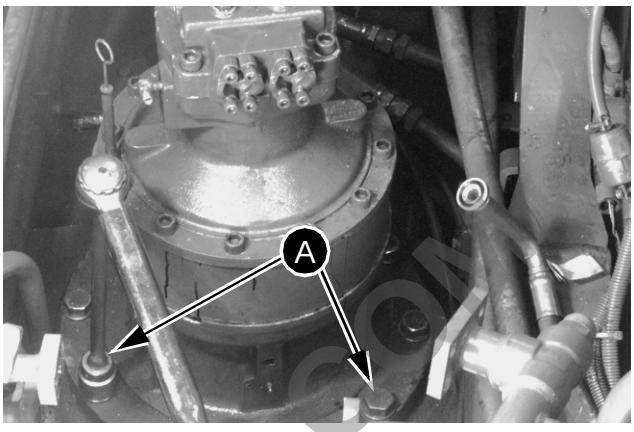
Operate the hand pump until the pressure gauge shows 290 psi. The swing motor brake should be released, thus allowing the reduction gear output shaft to turn.

STEP 9

Lower the swing motor/reduction gear assembly onto the upperstructure mating surface, using a centring stud.

NOTE: *Make sure that the swing reduction gear output gear is correctly engaged in the upperstructure crown wheel.*

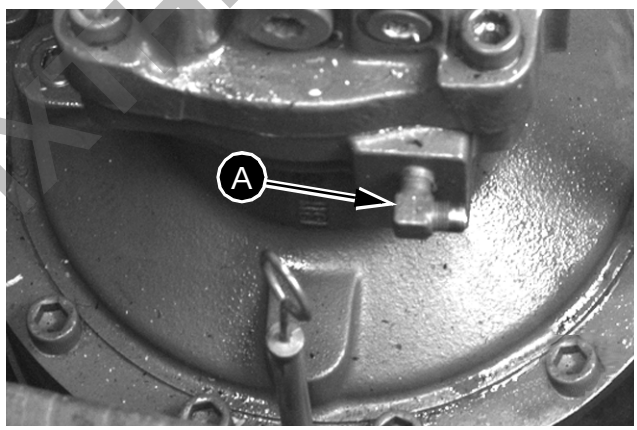
STEP 10



6003-110

Apply Loctite 262 to the screw threads and tighten them to a torque of 627 ± 48 lb-ft.

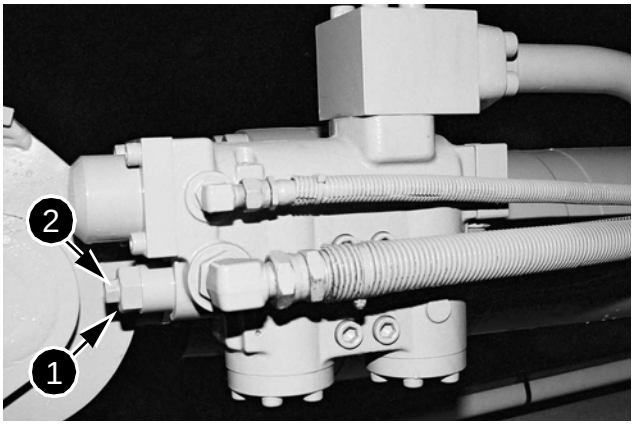
STEP 11



6003-109

Release the hydraulic pressure in the hand pump K1P0017 and disconnect it from the swing motor brake release orifice (A). Remove the lifting equipment from the swing motor.

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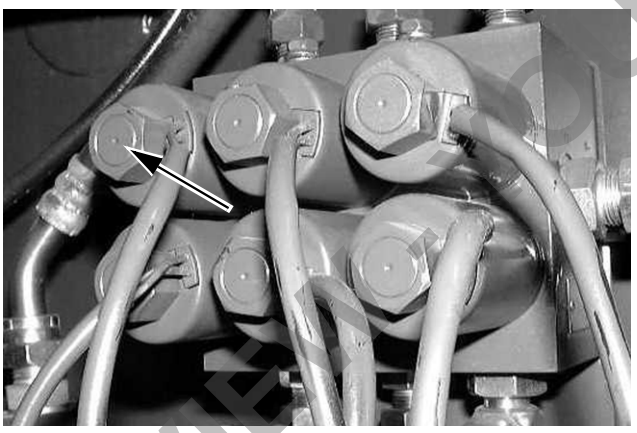


CD01M021

9. If the value is not correct, loosen the lock nut (1) and turn the pressure setting screw (2) to adjust the pressure. Tighten to increase the pressure, untighten to decrease. When the pressure is correct, hold the screw (2) and tighten the lock nut (1). Reset the control valve main relief (A).

Swing port secondary relief (I, J)

Test



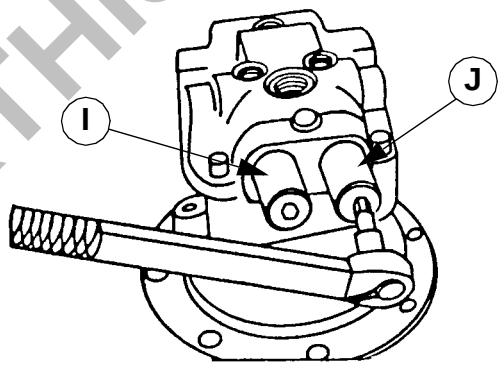
CD00E143

1. Disconnect the connector (green) from the swing cancellation solenoid valve.
2. Display the "CHK1" monitor display.
3. Start the engine and select mode "S".
4. Switch on the swing brake control on the instrument panel (indicator lamp ON).
5. Slowly operate the swing control lever to the right and gradually increase the engine speed to full speed to make sure that the swing is locked.
6. Repeat Step 5, for the LH swing, the pressures must be:

Function		
RH swing	**P1**	**4264±58 psi**
LH swing	**P1**	**4264±58 psi**

Note the pressures if they are not correct to determine the number of shims needed for adjustment. **One 0.0039 in shim corresponds to 72 psi pressure**.

Adjustment



CS99B596

(I) RH swing port secondary relief
(J) LH swing port secondary relief

1. Remove the swing motor secondary relief concerned. If the two secondary reliefs have to be removed, mark them to ensure they are replaced in their original positions.

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SPECIFICATIONS

Weight ..... See Section 1002

SPECIAL TORQUE SETTINGS

Capscrews for retaining locking bar ..... See Section 1002
Capscrews for retaining rotating joint outer sleeve on upperstructure ..... See Section 1002

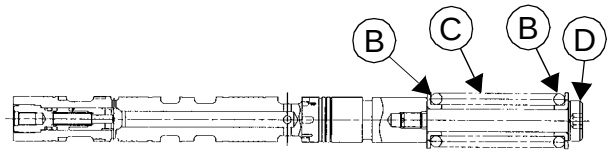
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STEP 5

Remove the O-rings (7) from sections (1) and (13) of the control valve.

NOTE: *To avoid abrasion of the spool surface during removal of the spool assembly, use a vice with protective jaws and tighten the spool as close as possible to the head in order to avoid any deformity. When the threaded portion of the screw is coated with Loctite, heat the head of the screw using an industrial drier until removal becomes easy (normally the temperature should be in between 392 and 482°F). If this operation causes the spring to be deformed and malfunction, replace the spring.*

STEP 6



CS01K596

Remove the spool screws (D) on the spring side of the spools (2) to (6) and (14) to (17). Remove the spring seats (B) as well as the springs (C).

NOTE: *In the spools (3) and (14), only remove the check valves, the springs, the O-rings, the back up rings and the plugs if it is necessary. If it is necessary to remove them, heat the periphery of the spool in order to make it easier to remove the plug.*

Dipper load holding valve decompression spool 1

STEP 1

Loosen and remove the screws (78) that fasten the cap (18) and remove the cap (18).

STEP 2

Remove the O-ring (23) from the cap (18).

STEP 3

Remove the spool (19) from the control valve body taking care not to damage it.

NOTE: *For removal of the spool, refer to the instructions previously cited for removal of spool assemblies.*

STEP 4

Loosen, then remove the end (22) of the spool (19), then remove the spring seats (20) and the spring (21).

Spool assembly (27)

NOTE: *When removing the plug (24), make sure that you do not drop parts which under pressure from the springs.*

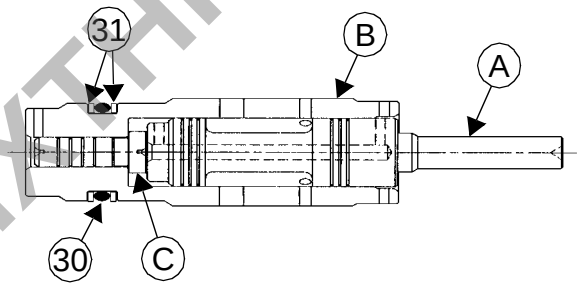
STEP 1

Loosen and remove the plug (24) and remove the O-ring (25).

STEP 2

Remove the spring (26).

STEP 3



CS01K597

Remove the spool (A) from the sleeve (B). Extract the sleeve (B) from the control valve body. Remove the piston (C), the O-ring (30) and the back up rings (31).

Load holding block

NOTE: *Be careful when removing components, some parts are subject to spring pressure.*

STEP 1

Loosen and remove the screws (75) and remove the caps (37).

STEP 2

Remove the springs (35), the check valves (34) and (51), the O-rings (36) from the control valve body.

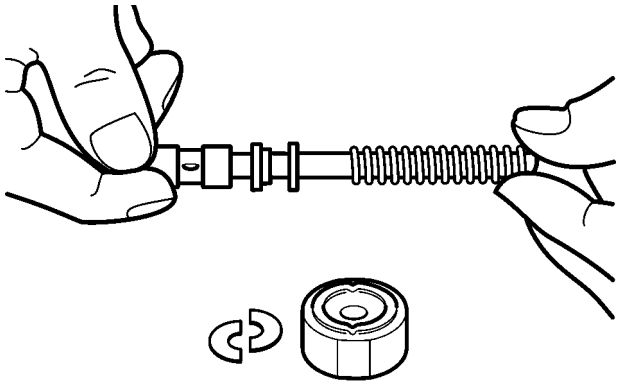
NOTE: *The straight-line travel valve does not have springs or check valves (see section H-H).*

STEP 3

Loosen and remove the screws (75) and remove the caps (52).

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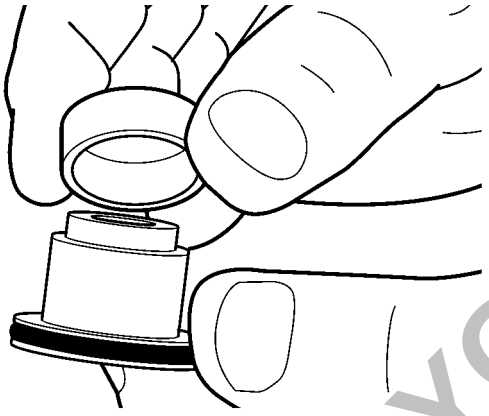
STEP 18



CI01B536

Mark and remove the spool, the spring seat, the calibrated spring, the spring seat and the shim.

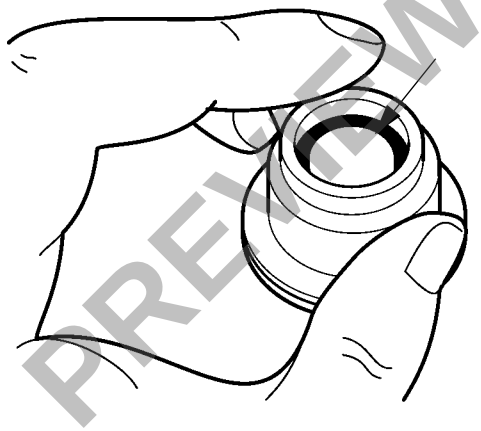
STEP 19



CI01B537

Mark and remove the bushing from the tappet guide.

STEP 20



CI01B538

Remove the wiper seal from the tappet guide.

NOTE: *Make sure you do not damage the inner portion of the tappet guide.*

STEP 21

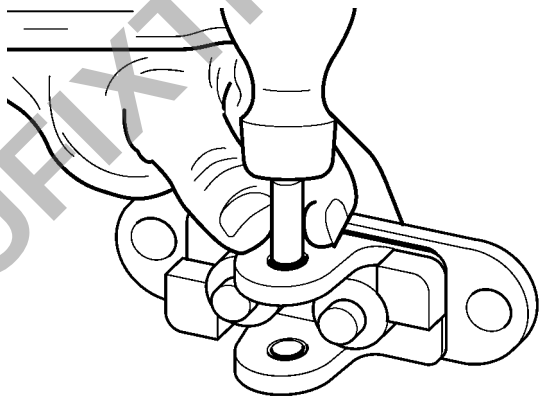


CI01B539

Remove the O-ring from the tappet guide.

NOTE: *Repeat the steps 7 to 21 for the three other travel pedal control ports.*

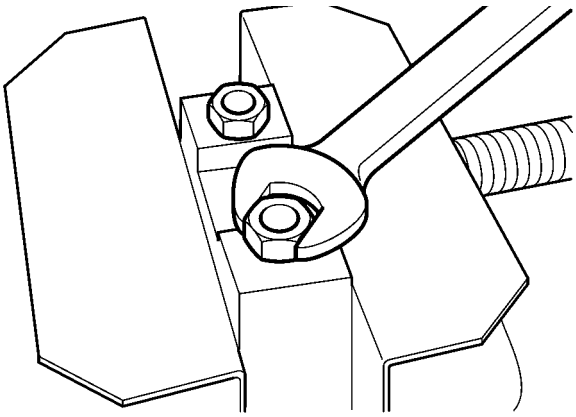
STEP 22



CI01B533

Position each cover on a flat surface and remove the bushings using a special tool and a hammer.

STEP 23



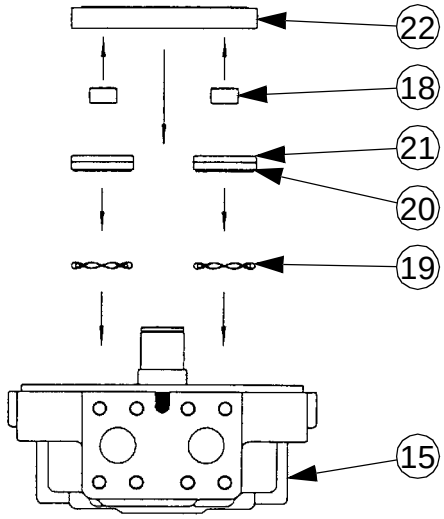
CI01B534

Fasten each cam assembly in a vice with protective jaws, loosen and remove the nuts and the setting screws.

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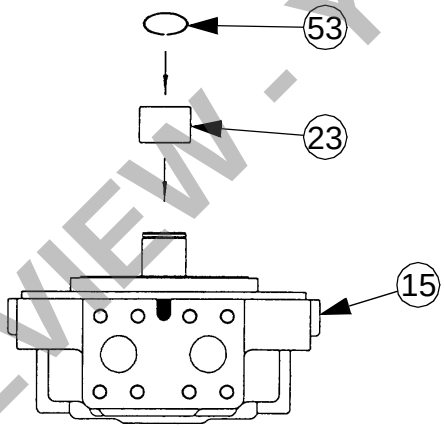
STEP 14



CS02C545

Install the washers (19) in the cover (15). Apply No. 2 EP lithium grease on the bushings (21), the new Teflon rings (20) and in the cover (15). Install a teflon ring on each of the bushings. Install the bushings with rings in the bushing ports on the cover.
Apply No. 2 EP lithium grease on the pistons and install the pistons (18) in the distribution plate (22). Be sure that the pistons are installed in same bore as removed from. Install the pistons and the distribution plate on the cover.

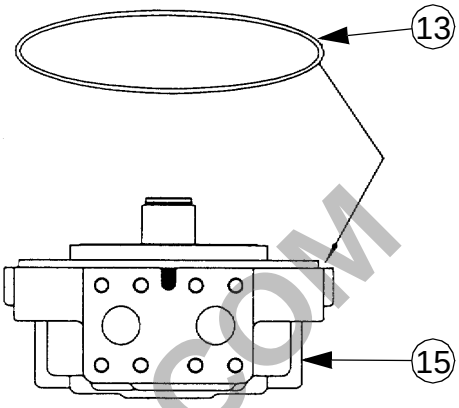
STEP 15



CS02C546

Install the new needle bearing inner race (23) on the shaft and install the retaining ring (53).

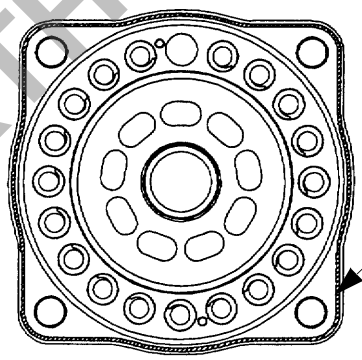
STEP 16



CS02C547

Install a new, greased O-ring (13) on the cover (15).

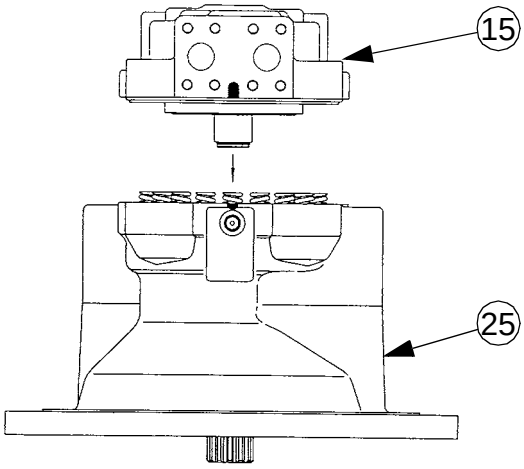
STEP 17



CS02C548

Apply Loctite 504 to the mating surfaces of the motor housing and cover.

STEP 18



CS02C549

Install carefully the cover (15) and the distribution plate (22) on the housing, by making sure that the distribution plate and bushings do not fall off the cover. Align the motor housing and cover alignment marks.

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STEP 17

Do not remove the inclined piston (20).
In the event that this must come out, secure it by hand, push out by blowing air into the hole.

STEP 18

The shaft (9) will come out on its own.

STEP 19

Remove the retaining ring (19) and take out the oil seal (26).

STEP 20

When changing the bearings, inner and outer races are also to be removed with a bearing puller. Each must be replaced as an assembly.

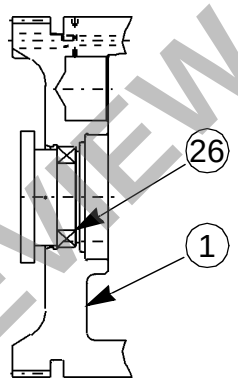
Assembly

General precautions

1. Clean parts well with cleaning oil and blow dry with air.
2. Apply clean hydraulic oil to sliding parts prior to assembling.

> ⚠ **WARNING:** *Keep hands and fingers away from small gaps or crevices among parts. Lifted loads also require extra attention since they may fall on your feet.*

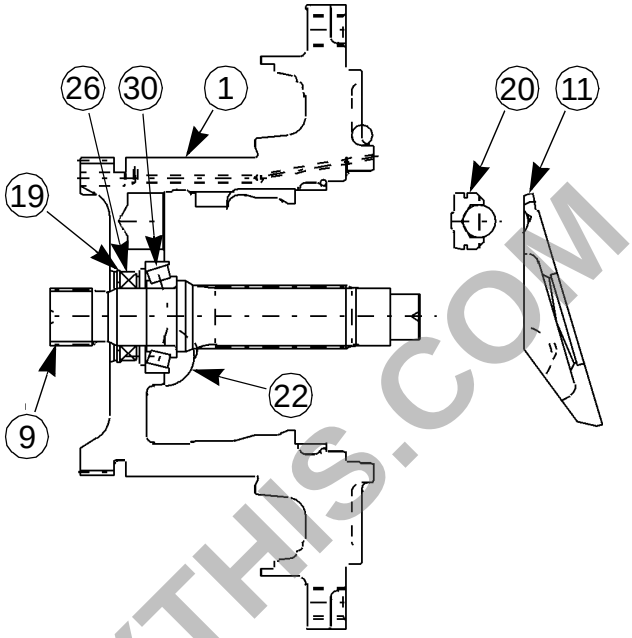
STEP 1



CS02B533

Apply grease to the outer perimeter of the oil seal (26) as well as to the inner perimeter of the casing (1). Use jigs to gently and evenly tap the oil seal (26) into casing (1) without slanting.

STEP 2



CS02B532

Secure the oil seal (26) with the snap ring (19).

STEP 3

Insert the outer race of the bearing (30) into casing (1) and press fit the inner race into the shaft (9).
Heating the inner race to approximately 212°F facilitates the insertion process here.

STEP 4

Place the shaft (9) into the casing (1). Prior to this procedure, grease must be applied to the working surface that contacts the seal (26).

STEP 5

Insert the inclined piston (20).

STEP 6

Insert the pivot (22) into the side where the markings match. Also, if the machine has been in use for a long time prior to servicing, insert in the direction so the sliding traces on the spherical part of the shoe plate (11) match the contact traces.

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