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921C MAINTENANCE SCHEDULE

AS REQUIRED

22 SERVICE THE AIR CLEANER IF THE AIR CLEANER WARNING LAMP ILLUMINATES.....SEE OPERATORS MANUAL
6 REPLACE THE HYDRAULIC FILTERS IF THE HYDRAULIC FILTER WARNING LAMP ILLUMINATES.. USE CASE FILTERS
20 CHECK THE FAN BELT CONDITION..... REPLACE AS REQUIRED
37 SERVICE AIR CLEANER PRECLEANER .....SEE OPERATORS MANUAL
17 CHECK THE ALTERNATOR DRIVE BELT CONDITION ..... REPLACE AS REQUIRED
19 CHECK THE AIR CONDITIONING DRIVE TENSION (IF EQUIPPED).....ADJUST AS REQUIRED
30 REPLACE THE TRANSMISSION FILTERS IF THE TRANSMISSION FILTER RESTRICTION WARNING LAMP ILLUMINATES..... USE CASE FILTERS
1 CHECK THE RADIATOR COOLANT LEVEL IF THE WARNING LAMP ILLUMINATES .....SEE OPERATORS MANUAL

EVERY 10 HOURS OF OPERRATION OR EACH DAY - WHICHEVER OCCURS FIRST

16 CHECK THE ENGINE OIL LEVEL.....SEE OPERATORS MANUAL

EVERY 50 HOURS OF OPERATION

1 CHECK THE RADIATOR COOLANT LEVEL .....ETHYLENE GLYCOL AND WATER
29 CHECK THE TRANSMISSION OIL LEVEL (ENGINE RUNNING AND OIL WARM).....SEE OPERATORS MANUAL
10 LUBRICATE THE BUCKET (3 FITTINGS)..... CASE MOLYDISULFIDE GREASE
5 CHECK THE HYDRAULIC RESERVOIR FLUID LEVEL ..... CASE TCH FLUID
15 LUBRICATE THE REAR AXLE TRUNNION PIVOTS (2 FITTINGS) ..... CASE MOLYDISULFIDE GREASE
35 LUBRICATE THE REAR DRIVE SHAFT SLIP JOINT (1 FITTING)..... CASE MOLYDISULFIDE GREASE
27 LUBRICATE THE CENTER DRIVE SHAFT SLIP JOINT (1 FITTING)..... CASE MOLYDISULFIDE GREASE
26 LUBRICATE THE FRONT DRIVE SHAFT SUPPORT BEARING (1 FITTING) ..... CASE MOLYDISULFIDE GREASE

EVERY 100 HOURS OF OPERATION

7 LUBRICATE THE STEERING CYLINDER PIVOTS-ROD AND CLOSED END (4 FITTINGS) ..... CASE MOLYDISULFIDE GREASE
9 LUBRICATE THE LOADER PIVOT POINTS (10 FITTINGS)..... CASE MOLYDISULFIDE GREASE

EVERY 250 HOURS OF OPERATION

19 CHECK AIR CONDITIONING COMPRESSOR DRIVE BELT TENSION.....ETHYLENE GLYCOL AND WATER
2 CHANGE THE ENGINE OIL AND REPLACE THE ENGINE OIL FILTER.....SEE OPERATORS MANUAL
34 CHECK THE BATTERY FLUID LEVEL.....SEE OPERATORS MANUAL
36 CHECK THE TIRE CONDITION AND AIR PRESSURE.....SEE OPERATORS MANUAL
3 REPLACE THE FUEL FILTER ..... USE CASE FILTER
12 CLEAN THE CAB AIR FILTERS (IF EQUIPPED).....SEE OPERATORS MANUAL
25 REPLACE ENGINE COOLING SYSTEM FILTER ..... USE CASE FILTER
20 CHECK FAN BELT TENSION .....SEE OPERATORS MANUAL
17 CHECK THE ALTERNATOR DRIVE BELT TENSION.....SEE OPERATORS MANUAL

EVERY 500 HOURS OF OPERATION

33 DRAIN WATER AND SEDIMENT FROM THE FUEL TANK .....SEE OPERATORS MANUAL
CHECK ROPS AND SEAT BELT MOUNTING BOLTS (NOT SHOWN) .....SEE OPERATORS MANUAL

EVERY 1000 HOURS OF OPERATION

6 REPLACE THE HYDRAULIC FILTERS..... USE CASE FILTERS
30 REPLACE THE TRANSMISSION OIL FILTER ..... USE CASE FILTERS
31 CHANGE THE FRONT/REAR AXLE DIFFERENTIAL AND PLANETARY OIL .....SEE OPERATORS MANUAL
28 CHANGE THE TRANSMISSION OIL .....SEE OPERATORS MANUAL
23 CLEAN THE TRANSMISSION BREATHER ..... CLEAN WITH SOLVENT
24 LUBRICATE THE UPPER AND LOWER CHASSIS PIVOTS (2 FITTINGS)..... CASE MOLYDISULFIDE GREASE

EVERY 1500 HOURS OF OPERATION

21 ADJUST THE ENGINE VALVE CLEARANCE ..... SEE SERVICE MANUAL
13 ADJUST INJECTORS..... CONTACT YOUR CASE DEALER

EVERY 2000 HOURS OF OPERATION OR EACH YEAR - WHICHEVER OCCURS FIRST

4 CHANGE THE HYDRAULIC OIL AND CLEAN THE SCREEN.....SEE OPERATORS MANUL
18 DRAIN, FLUSH AND REFILL THE ENGINE COOLING SYSTEM .....ETHYLENE GLYCOL AND WATER
22 REPLACE THE AIR CLEANER ELEMENTS..... USE CASE FILTERS
CHECK TORQUE ON TURBOCHARGER MOUNTING BOLTS (NOT SHOWN)

EVERY 6000 HOURS OF OPERATION

13 CLEAN AND CALIBRATE ENGINE INJECTORS, FUEL PUMP.....CONTACT YOUR CASE DEALER

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ENGINE

Removal

1. Park the machine on a level surface and lower the loader bucket to the floor.
2. Turn the master disconnect switch to OFF.
3. Disconnect the negative (-) battery cable first and disconnect the positive (+) battery cable last.
4. Remove the air intake cap and remove the hood.
5. Disconnect the air cleaner hose from the turbocharger and remove the air cleaner assembly from the machine.
6. Remove the fan guards, fan, and spacer. Have a container that has the capacity of 42.6 litres (11.25 U.S. gallons) and drain the cooling system.
7. Remove the radiator hoses and radiator shroud.
8. If the machine is equipped with air conditioning, do not disconnect any of the lines in that system.
9. Disconnect the component parts of the air conditioning system and move to the side.
10. Put tags on all wires and lines that are attached to the engine (5), refer to Figure 1.
11. Clean the engine (5) and flywheel housing (7).
12. Disconnect all wires and lines from the engine (5).
13. Remove the mounting bolts from the relay mounting plate on the right side of the machine. Move the relay mounting plate to the side.
14. Fasten a suitable hoist to the engine. The engine assembly has a weight of 907 kg (2000 pounds).
15. Remove the inspection cover from the right side of the flywheel housing (7).
16. Install the CAS-1690 tool and rotate the flywheel to align the Allen head screw with the hole below.
17. Remove the flex plate to flywheel mounting bolts. You can rotate the engine using a breaker bar and socket on the air conditioning pulley. The air conditioning pulley is on the right rear of the engine.
18. Remove the engine mounting bolts (3), lock washers (8), washers (10) and nuts (9) and the rear engine mounting plate (4).

NOTE: *Make sure the torque converter stays with the transmission.*

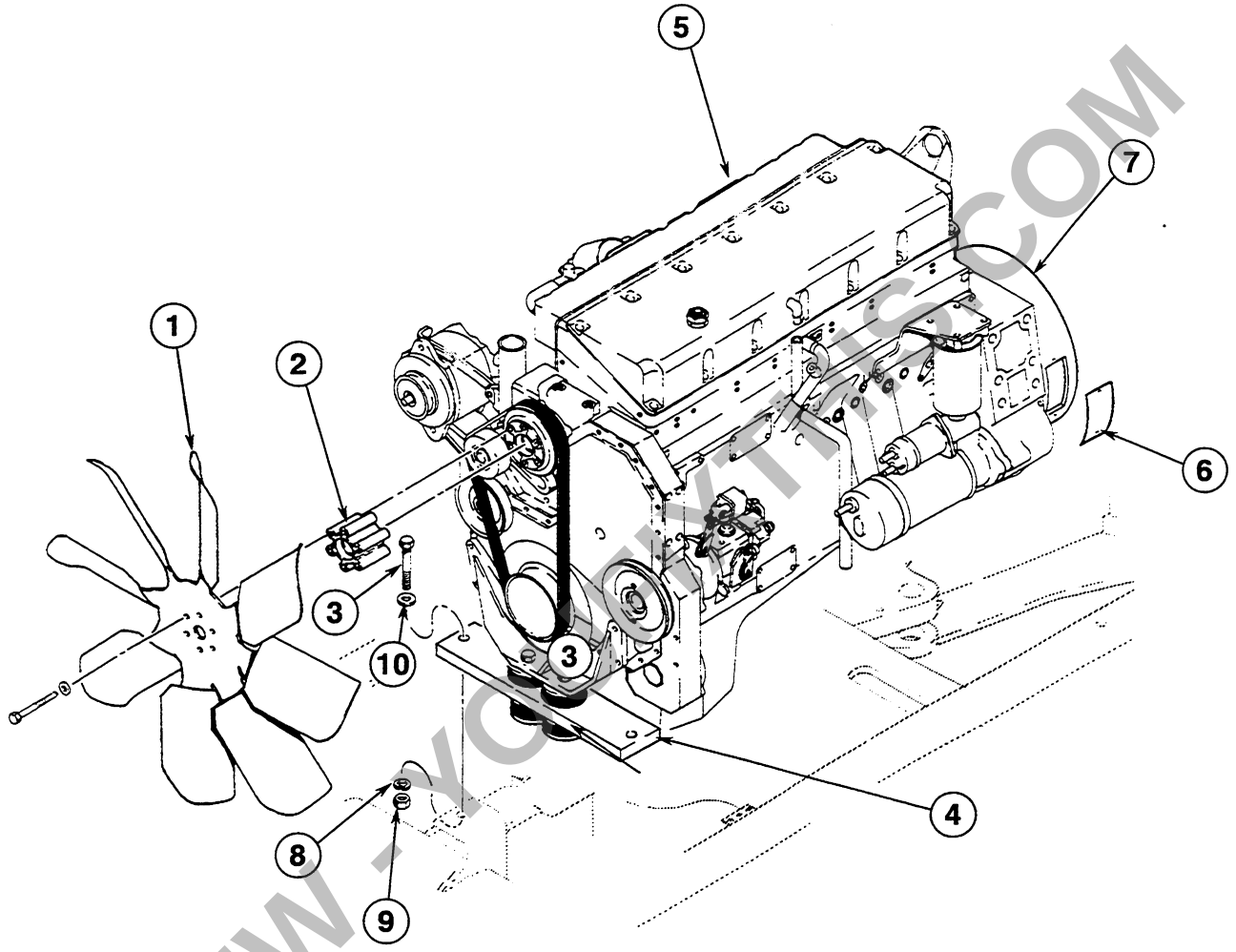
19. Use the hoist and move the engine forward to clear the transmission. Remove the engine from the machine.

Installation

1. Installation of the engine is the reverse of removal.
2. See Section 1002 for the correct engine oil and coolant.
3. Make sure that the engine to be installed has new filters.

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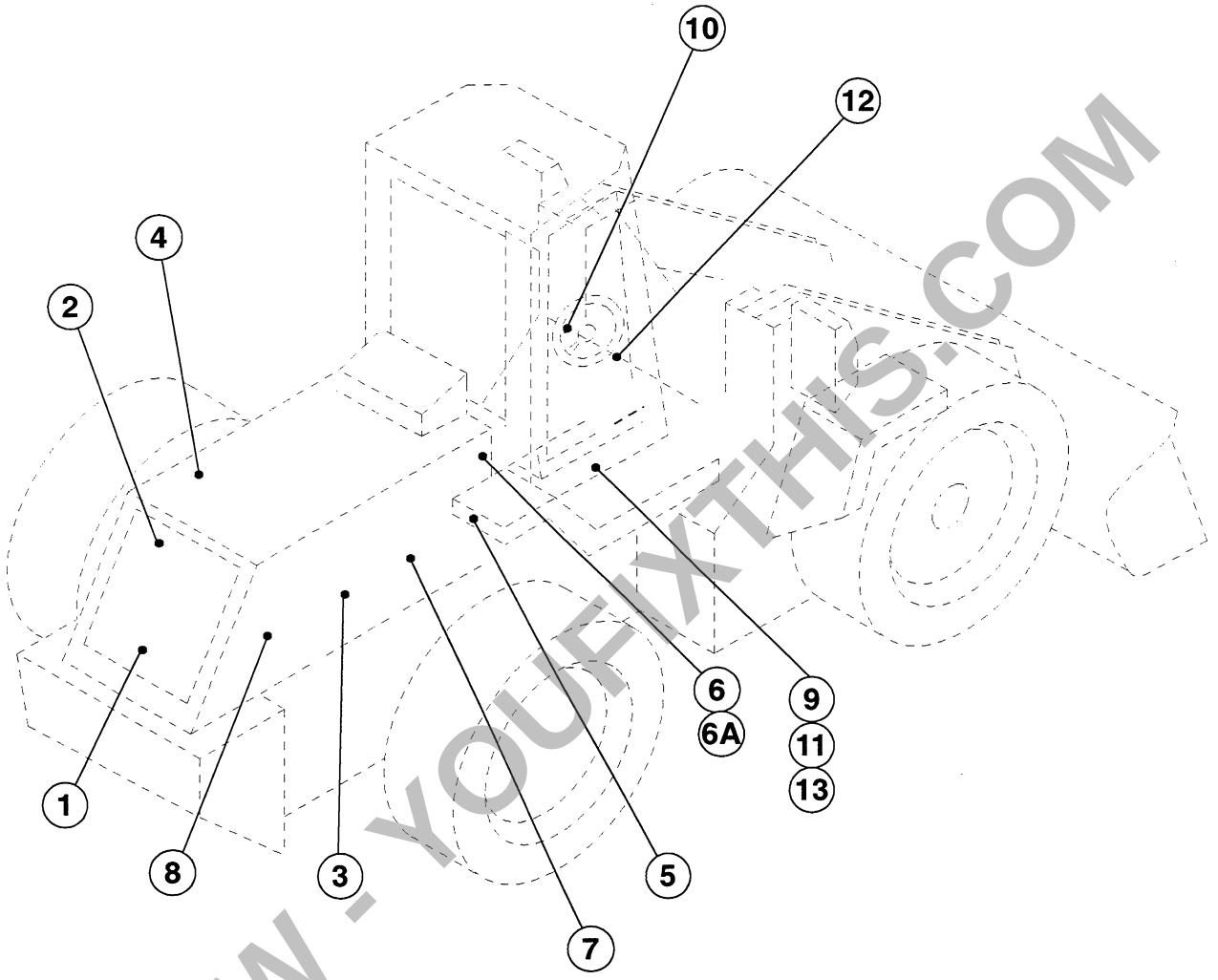
1. FAN
2. SPACER
3. ENGINE MOUNTING BOLT - REAR
4. ENGINE MOUNTING PLATE - REAR
5. ENGINE
6. INSPECTION COVER
7. FLYWHEEL HOUSING
8. LOCK WASHER
9. NUT
10. WASHER

Figure 1. ENGINE

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TROUBLESHOOTING BATTERIES, FUEL SHUTOFF, CHARGING, STARTING, ALTERNATOR, COLD START, IGNITION SWITCH AND RELAYS



GM98M005

1. BATTERIES
2. MASTER DISCONNECT SWITCH
3. FUEL SHUTOFF SOLENOID
4. ALTERNATOR
5. STARTER MOTOR
6. START RELAY
6A. FUEL RELAY
7. COLD START TEMPERATURE SWITCH
8. ETHER SOLENOID
9. ETHER START RELAY #6
10. ETHER START SWITCH
11. NEUTRAL START RELAY #8
12. IGNITION SWITCH
13. IGNITION RELAY #1

1 – Batteries

NOTE: *The battery must be at full charge and all connections clean and tight before doing any testing of the electrical system. Use a Multimeter for the following tests.*

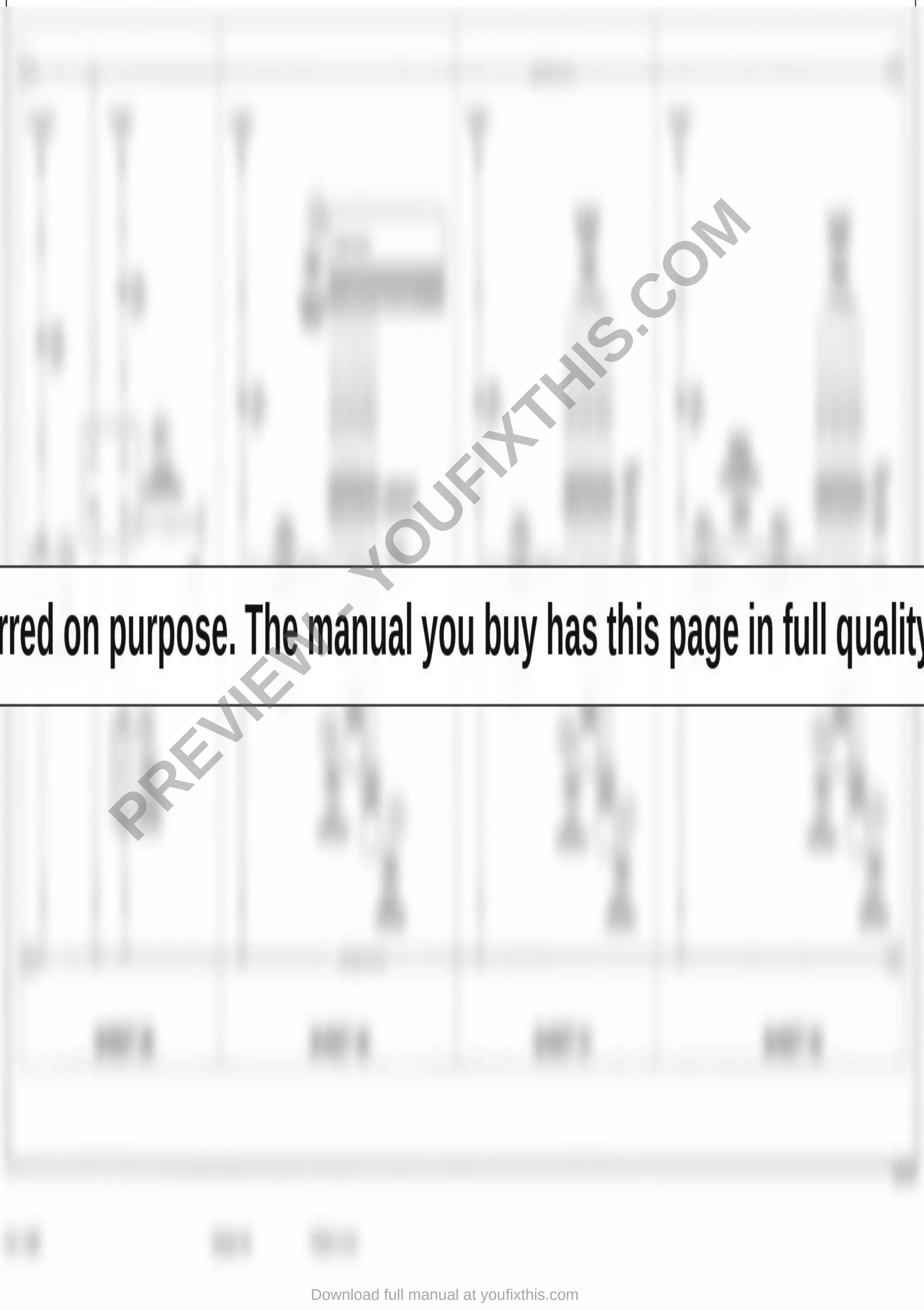
NOTE: *See Section 4003 and check the batteries.*

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ELECTRICAL SCHEMATIC - SHEETS 29, 30, 31, AND 32



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Section
4002

4002

ELECTRICAL SPECIFICATIONS, TROUBLESHOOTING, AND SCHEMATICS

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700 State Street
Racine, WI 53404 U.S.A.

CASE CANADA CORPORATION
3350 South Service Road
Hamilton, ON L7N 3M6 CANADA

Bur 7-13601

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76 – Seat Compressor and Switch

Check Points	Reading	Possible Cause of Bad Reading
NOTE: *This applies to models with air seat option only.*		
Terminal for wire 0 to ground	Continuity	Bad ground circuit.
NOTE: *Put the master disconnect switch and the ignition switch in the ON position.*		
Terminal for wire 19N at seat switch	24 volts	Check fuse N, also check circuit 19N.
NOTE: *Put the seat compressor switch (76) in the ON position.*		
Terminal for wire from seat switch at compressor	24 volts	Bad seat switch, also check circuit from seat switch to compressor.
NOTE: *If the readings are good replace the seat compressor.*		

77 – Horn

Check Points	Reading	Possible Cause of Bad Reading
Terminal for wire 0 to ground	Continuity	Bad ground circuit.
NOTE: *Disconnect the wire 64 from the horn relay (75). Push and hold the horn switch (100).*		
Terminals for wire 64 to ground.	24 volts	Check the horn relay (75), also check circuit 64.
NOTE: *If the readings are good replace the horn (77).*		

78 – Blower Switch

Check Points	Reading	Possible Cause of Bad Reading
NOTE: *Put the master disconnect switch and the ignition switch in the ON position.*		
Terminals for wire 19G to ground	24 volts	Check fuse G, also check circuit 19G.
NOTE: *Turn the blower switch to LOW.*		
Terminals for wire 62L to ground	24 volts	Bad blower switch (78).
Terminals for wire 61T to ground	24 volts	Bad blower switch (78).
NOTE: *Turn the blower switch to MEDIUM.*		
Terminals for wire 62M to ground	24 volts	Bad blower switch (78).
Terminals for wire 61T to ground	24 volts	Bad blower switch (78).
NOTE: *Turn the blower switch to HIGH.*		
Terminals for wire 62H to ground	24 volts	Bad blower switch (78).
Terminals for wire 61T to ground	24 volts	Bad blower switch (78).

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ELECTRICAL SCHEMATIC - SHEETS 1 AND 2



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Secondary Steering Indicator (If equipped)

The secondary steering indicator illuminates when the primary steering system pressure is too low.

1. The warning alarm sounds continuously.
2. The stop master indicator will be red.
3. Stop the engine and correct the problem.

Parking Brake Indicator

The parking brake indicator illuminates when the parking brake is applied. If the transmission is shifted into FORWARD or REVERSE when the parking brake is applied:

1. The warning alarm sounds for 3 seconds.
2. The caution master indicator turns yellow.
3. Disengage the parking brake before shifting the machine.

Air Conditioning Indicator

The air conditioning indicator illuminates when the air conditioner has stopped due to refrigerant pressures that are too high or too low.

1. The warning alarm sounds for 3 seconds.
2. The caution master indicator turns yellow.
3. Service the air-conditioning system, or the outside air temperature is too cool for the system to work.

Air Filter Indicator

The air filter indicator illuminates when the air filter is restricted.

1. The warning alarm sounds for 3 seconds.
2. The caution master indicator turns yellow.
3. Replace or clean the air filter as required.

Hydraulic Oil Filter Indicator

The hydraulic oil filter indicator illuminates when the hydraulic filters are restricted.

1. The warning alarm sounds for 3 seconds.
2. The caution master indicator turns yellow.
3. Replace the hydraulic oil filters as required.

Transmission Oil Filter Indicator (Not applicable to 621C)

The transmission oil filter indicator illuminates when the transmission filter(s) are restricted.

1. The warning alarm sounds for 3 seconds.
2. The caution master indicator turns yellow.
3. Replace the transmission oil filters as required.

Transmission Oil Temperature Gauge

The transmission oil temperature gauge is shown as an indicator bar with a green, yellow or red zone.

Green Zone:

Indicates normal operating temperature, 20° to 120° C (68° to 248° F).

Yellow Zone:

1. Transmission oil temperature is too low, 20° C or below (68° F or below), or it has increased, 120° to 125° C (248° to 257° F).
2. The indicator bars flash.
3. The warning alarm sounds for 3 seconds.
4. The yellow caution master indicator turns on.

Red Zone:

NOTE: *The machine must not be operated when the temperature is in the red zone.*

1. Transmission oil temperature continues to increase,125° C and above (257° F and above).
2. The indicator bar flashes.
3. The warning alarm sounds continuously.
4. The red stop master indicator turns on.
5. Stop the machine.
6. Shift the transmission into NEUTRAL.
7. Run the engine at half throttle until the transmission cools.
8. If the transmission oil temperature does not return to normal operating temperature, run the engine at idle speed and check the transmission oil level.
9. Correct the problem before continuing to operate the machine.

Hydraulic Oil Temperature Gauge

The hydraulic oil temperature gauge is shown as an indicator bar with a green, yellow, or red zone.

Green Zone:

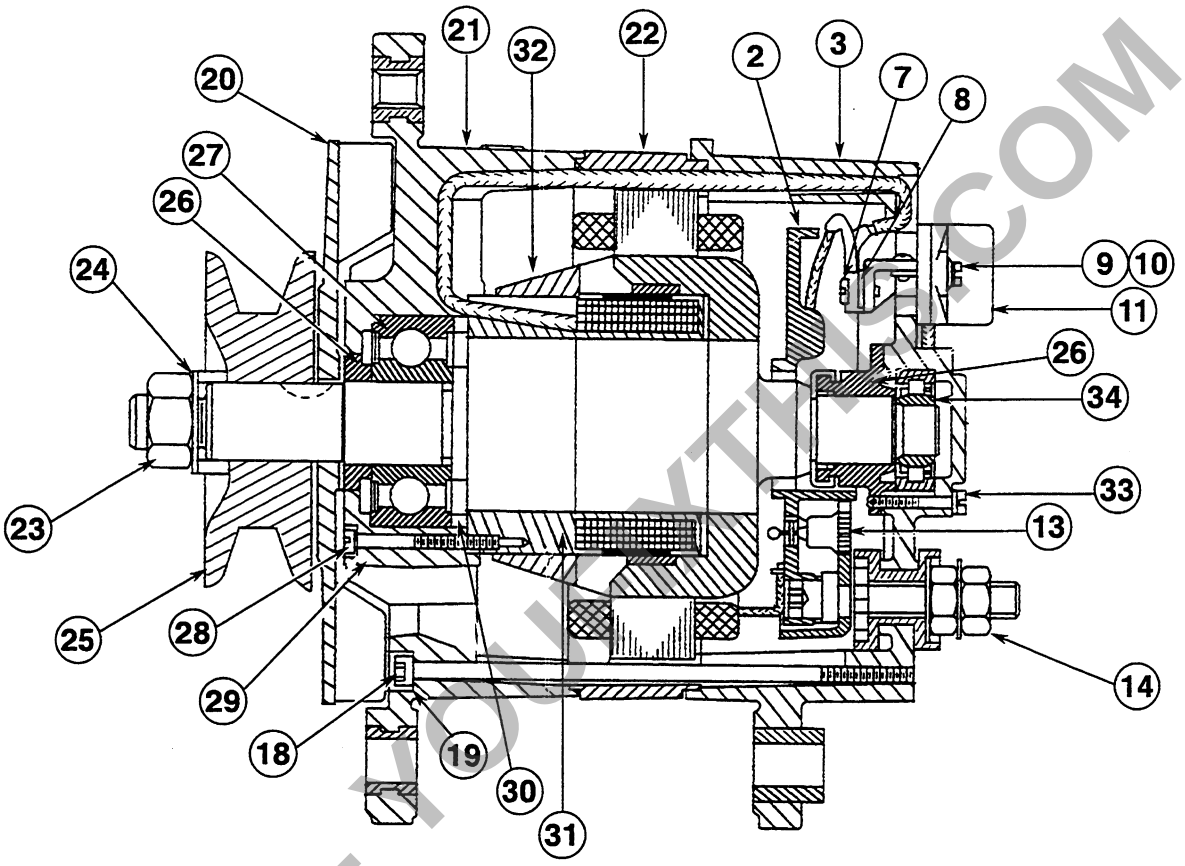
Indicates normal operating temperature, 20° to 105° C (68° to 221° F).

Yellow Zone:

1. Hydraulic oil temperature has decreased, 20° C or below (68° F or below), or it has increased 105° to 110° C (221° to 230° F).

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1. SCREW (NOT SHOWN)
2. RECTIFIER
3. REAR HOUSING
4. CAPACITOR ASSEMBLY (NOT SHOWN
5. WASHER (NOT SHOWN)
6. SCREW (NOT SHOWN)
7. SCREW
8. WASHER
9. WASHER
10. SCREW
11. VOLTAGE REGULATOR
12. B-TERMINAL HARDWARE (NOTSHOWN)
13. W TERMINAL HARDWARE
14. B+ TERMINAL HARDWARE
15. NUT (NOT SHOWN)
16. WASHER (NOT SHOWN)
17. D+ TERMINAL HARDWARE (NOT SHOWN)
18. ALLEN HEAD SCREW
19. FLAT WASHER
20. ALTERNATOR FAN
21. FRONT DRIVE HOUSING
22. STATOR
23. RETAINING NUT
24. WASHER
25. PULLEY
26. BEARING RETAINER
27. FRONT BEARING
28. SCREW
29. LOCK WASHER
30. SPACER
31. COIL
32. ROTOR
33. SCREW
34. REAR BEARING

Figure 2. ALTERNATOR ASSEMBLY CUTAWAY VIEW

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STEERING CYLINDER

Disassembly

1. Loosen and remove the lock screw (1) from the gland (2) and tube (18), refer to Figure 1.
2. Fasten the cylinder in a vise with soft jaws. Be careful not to damage the tube (18).
3. Loosen and remove the gland (2) from the tube (18).
4. Pull the piston (12) straight out of the tube (18).
5. Fasten the rod eye on the piston rod (9) in the vise and put a support below the piston rod (9) near the piston (12). Use a shop cloth between the support and the piston rod (9) to prevent damage to the piston rod (9).
6. Loosen and remove the cap screw (10) and hardened washer (11) that hold the piston (12).
7. Remove the piston (12) from the piston rod (9).
8. Remove the seal (15), backup ring (14), and wear ring (13) from the piston (12).
9. Remove the gland (2) from the piston rod (9).
10. Remove the O-ring (3), backup ring (4), wide seal (8), narrow seal (6), wiper (7), and bushing (5) from the gland (2).

Inspection

1. Discard the O-ring (3), backup ring (4), wide seal (8), narrow seal (6), wiper (7), and bushing (5) that were removed from the gland (2).
2. Discard the seal (15), backup ring (14), and wear ring (13) that were removed from the piston (12).
3. Clean all parts in cleaning solvent.
4. Check to be sure that the piston rod (9) is straight. If the piston rod (9) is bent, a new piston rod (9) must be used.
5. Inspect the inside of the tube (18) for deep grooves and other damage. If there is any damage to the tube (18), a new tube (18) must be used.
6. Remove small scratches on the piston rod (9) or inside the tube (18) with emery cloth of medium grit. Use the emery cloth with a rotary motion.
7. Inspect the self-aligning bushing (17). Replace as required.

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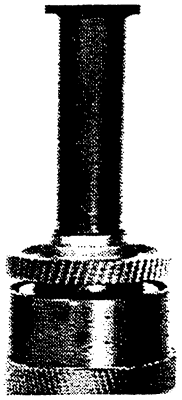
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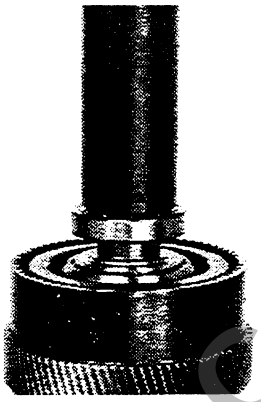
STEP 76



A15165

Using press tube CAS-2266-1 and adapter ring CAS-2263-3, press bearing on until tight against spacer.

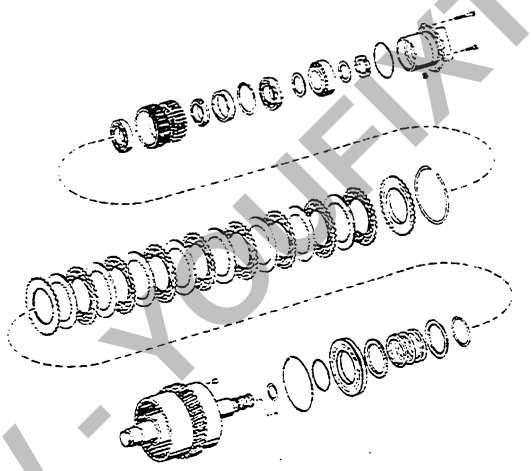
STEP 78



A15167

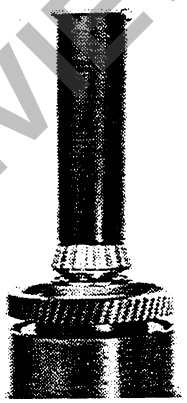
Turn clutch pack over to first (short) clutch side and install the ball bearing until against the shaft shoulder.

First Clutch



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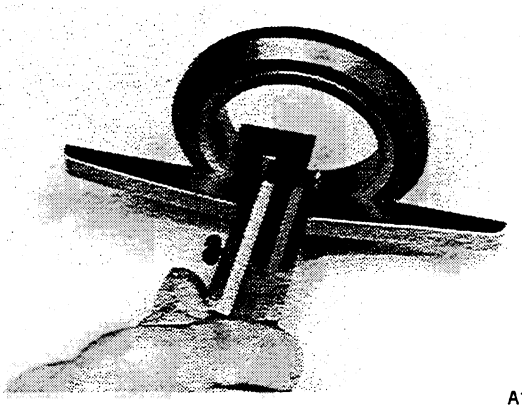
STEP 77



A15166

Install tapered bearing using tube CAS-2266-1 and adapter ring CAS-2266-3. Install slotted nut on shaft.

STEP 79



A15173

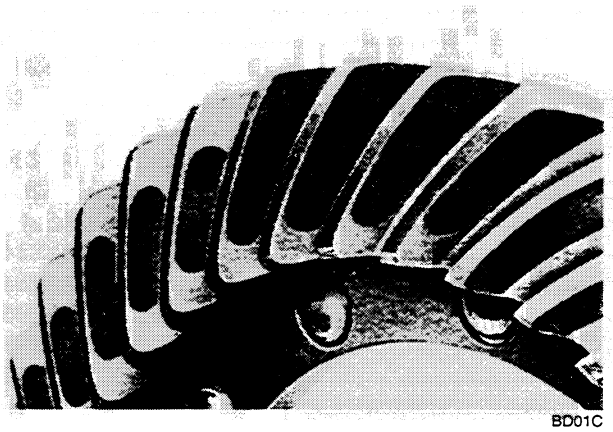
Measure the thickness of the oil control ring.

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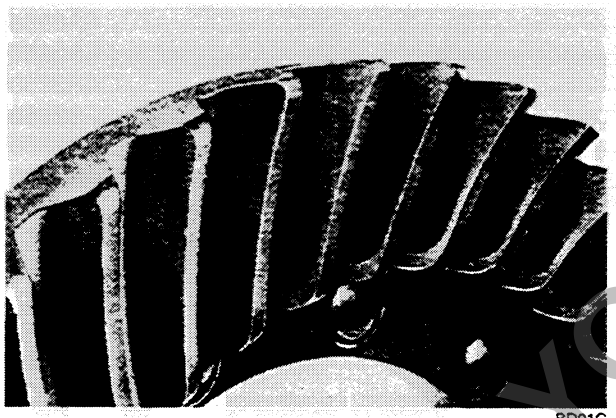
GEAR TOOTH CONTACT PATTERNS

Ideal Tooth Contact Pattern



BD01C

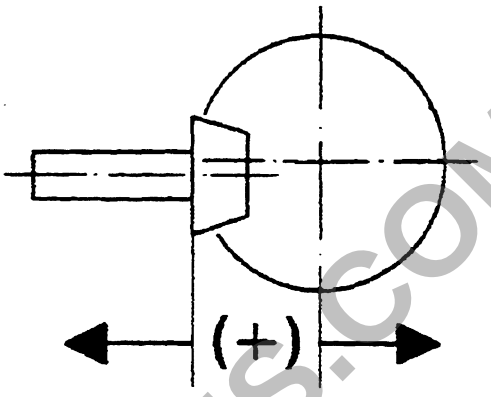
COAST SIDE (CONCAVE)



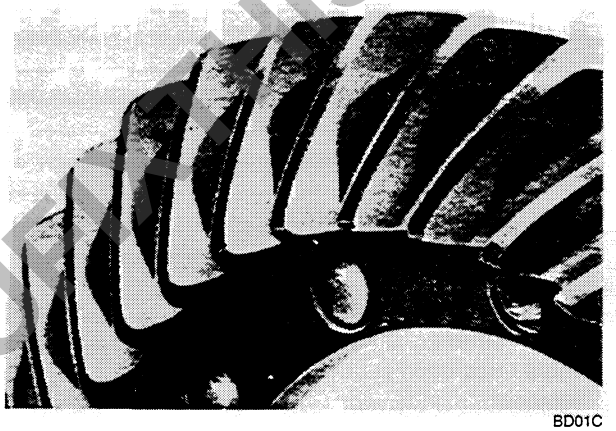
BD01C

DRIVE SIDE (CONVEX)

Pinion Distance Must Be Increased

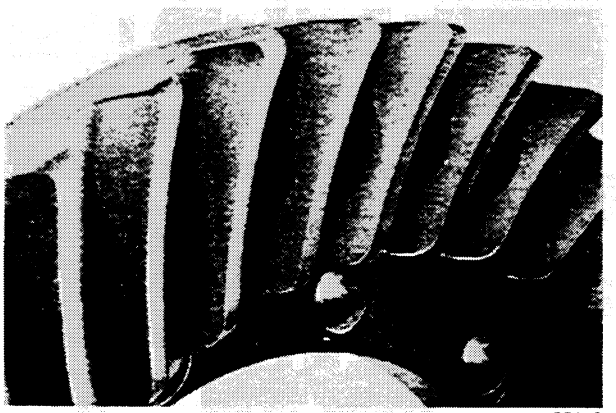


BD01C



BD01C

COAST SIDE (CONCAVE)



BD01C

DRIVE SIDE (CONVEX)

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STEP 202

Tighten the adjusting nut slowly until firm contact is made with the bearing.

NOTE: *As the adjusting nut makes firm contact with the bearing, the adjusting nut will immediately begin to turn with greater effort.*

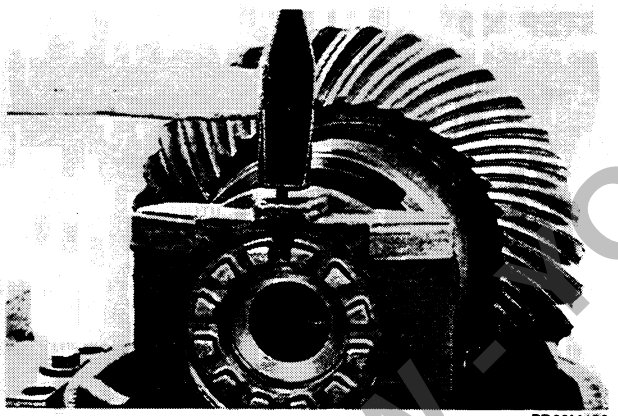
STEP 203

To adjust the bearing preload, note the position of the adjusting nut. Now tighten the nut against the bearing two additional notches on the nut.

STEP 204

As the bearing preload is adjusted as described in steps 201, 202, and 203 pinion to ring gear backlash may increase slightly. Check pinion backlash to confirm that it is within specifications. If backlash is outside of specified range, repeat step 199 through 204 again.

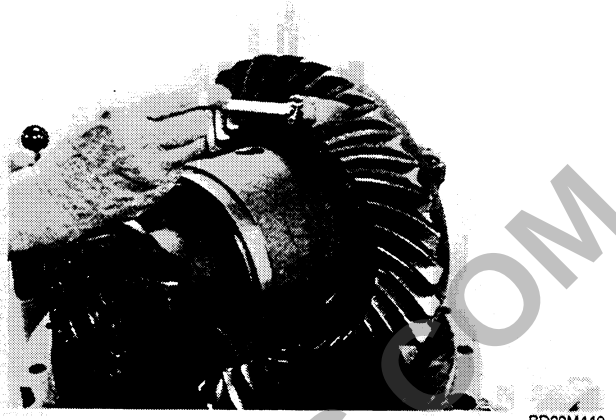
STEP 205



BD00M450

Secure both adjusting nuts by driving the slotted pins into the differential carrier.

STEP 206



BD00M449

Cover some teeth of the ring gear with marking ink and roll ring gear in both directions over the drive pinion.

Compare the obtained tooth contact pattern with the examples on page 4 and 5.

ATTENTION: *If the tooth contact pattern differs, there has been a measuring error at determination of the shim. This must be corrected.*

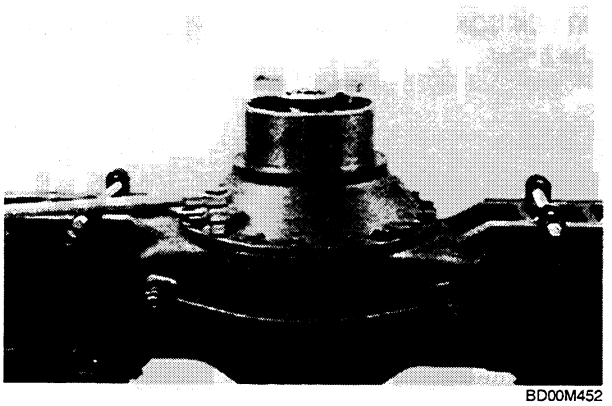
STEP 207

Using CAS2846 insert differential carrier onto the axle casing until contact.

NOTE: *Observe radial location.*

ATTENTION: *Apply sealing compound on the mounting face.*

STEP 208



BD00M452

Install new bolts on the differential carrier.

Tighten torque . . . . . 390 Nm (288 pound-feet)

ATTENTION: *Only use new bolts.*

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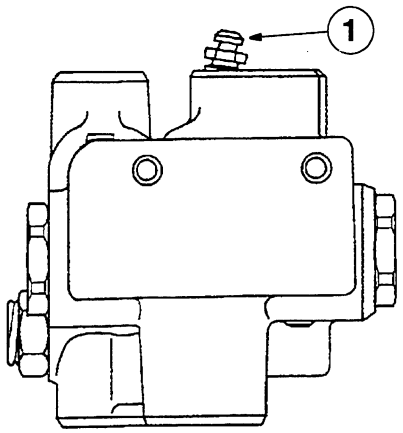
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BLEEDING THE BRAKE SYSTEM

IMPORTANT: *Liftarms need to be supported for safe access to the front axle bleed screws. The parking brake needs to be applied.*

1. Loosen the bleed screw slightly and attach a hose to the bleed screw to prevent oil spillage.

NOTE: *If any lines have been opened between the reservoir and the accumulator charge valve, immediately open the bleed screw after starting the engine.*



980L92

1. BLEED SCREW

FIGURE 3. ACCUMULATOR CHARGE VALVE

2. Start engine and allow engine to idle.
3. Close charge valve bleed screw after oil flow becomes clear.
4. Allow engine to idle until the accumulators are fully charged. About 15 seconds after the low brake pressure light goes out. Stop the engine.
5. Fully discharge the two accumulators using procedure a or b.

   A. Pump the brake pedal until there is no hydraulic pressure in the brake system (about 20 pumps).

   B. Remove the plastic and rubber cap from one of the bleed screws on a front or rear axle and open the bleed screw. Attach a hose to the bleed screw to prevent spillage. Then slowly pushing down on the brake pedal until there is no forced flow from the opened bleed screw.

   IMPORTANT: *Do not push the brake pedal farther than necessary to cause oil to flow from the bleed screw. The farther you push the pedal, the higher the pressure in the brake circuit. High pressure in the brake circuit can cause injury or damage.*

6. Remove the plastic and rubber caps from each wheel end and slowly open all four bleed screws. Attach a hose to the bleed screws to prevent oil spillage.
7. Start machine and allow to idle.
8. Fully depress the brake pedal and slowly release for one cycle.
9. Close all four wheel end bleed screws.
10. Fully depress the brake pedal three times in 5 second cycles.
11. With the pedal not depressed, bleed the front axle first, either LH or RH first. Allow it to flow until it is clear. Repeat this procedure for the rear axle.
12. Replace all bleed screws, caps and plugs.

BRAKE PUMP OUTPUT TEST

1. Connect the flowmeter to the brake pump as shown, refer to Figure 5.
2. Make sure the load control of the flowmeter is open. Start the engine. Run the engine at full throttle. Make sure the oil is at operating temperature.
3. Measure the flow at 0 bar (0 psi). Record the flow reading. Slowly close the load valve on the flowmeter and read the flow at 170 bar (2500 psi). Record the flow reading.

Divide the flow reading at 170 bar (2500 psi) by the reading at 0 bar (0 psi). Multiply the result by 100. This is the percent efficiency of the pump. If the efficiency of the pump is less than 75%, repair or replace the pump.

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11. Disconnect the hose (4) from the priority valve and remove the hose (4). Install a cap on the fitting in the priority valve. Thread size is 1-5/16-12.

12. Loosen and remove the cap screws (1), lock washers (2), and clamps (3) that hold the front pressure port hose (7) on the pump (6).

13. Remove the O-ring (5) from the hose (7).

14. Install a plug in the hose (7) and in the front pressure port on the pump (6).

15. Disconnect the hose (7) from the tube that runs from the priority valve to the loader control valve hose.

16. Remove the hose (8) and install a cap on the tube which hose (8) was removed from. Thread size is 1-5/16-12.

17. Disconnect the hose (8) from the tube (9).

18. Loosen and remove the cap screws (10), lock washers (11), and clamps (12) that hold the suction port tube (9) on the pump (6).

19. Remove and discard the O-ring (13).

20. Install a plug in the suction port on the pump (6).

21. Loosen and remove the cap screws (14) and hardened washers (15) that hold the pump (6).

22. Loosen and remove the self-locking nut, bolt, and clamp that holds the hoses to the brake actuators.

23. If the machine is equipped with a heater, loosen and remove the nut, lock washer, and bolt that holds the clamp for the hoses and put the hoses out of the way.

24. Fasten the CAS-2020 Lever to the suction port of the pump (6) with the existing cap screws (10).

25. Have another person hold down on the CAS-2020 Lever to support the pump (6). Use a prybar to disengage the pump (6) from the transmission.

26. Raise the pump (6) onto the edge of the frame and remove the pump (6) from the machine.

27. Remove and discard the O-ring (16) from the transmission.

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SPECIFICATIONS

Manufacturer.....Denison

Tandem vane hydraulic pump
- Denison part number.....014-70282
- Case part number 195854A1

SPECIAL TORQUES

Bolts for the shaft end cover on the hydraulic pump.....187 Nm (138 pound-feet)
Bolts for the port end cover on the hydraulic pump .....68 Nm (50 pound-feet)

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Assembly

NOTE: *If a new gland is being used, put the part number of the cylinder on the new gland.*

1. Install the bushing (7) in the gland (3), refer to Figure 4.

2. Install the wide seal (5) in the gland (3). The wide seal (5) is to be installed so that the lips of the wide seal (5) are toward the bushing (7). The wide seal (5) can be difficult to install.

3. Install a new wiper (4) in the gland (3). The lips of the wiper (4) must be toward the outside end of the gland (3).

4. Install the narrow seal (6) in the gland (3). The side of the narrow seal (6) with the groove must be toward the bushing (7).

5. Install a new backup ring (9) in the groove on the outside of the gland (3). If both sides of the backup ring (9) are not flat, the side that is not flat must be toward the small end of the gland (3).

6. Install the O-ring (8) next to the backup ring (9) in the groove on the outside of the gland (3). The O-ring (8) must be toward the small end of the gland (3).

7. Remove any marks and sharp edges on the chamfer at the end of the piston rod (18). Make sure that the piston rod (18) is clean.

8. Lubricate the bore of the gland (3) and the piston rod (18) with clean oil.

9. Push the gland (3) onto the piston rod (18). If necessary, use a soft hammer to drive the gland (3) onto the piston rod (18).

10. Put a support below and near the end of the piston rod (18). Use a shop cloth between the support and the piston rod (18) to prevent damage to the piston rod (18).

11. Install a new backup ring (17) in the groove in the ID of the piston (12). If both sides of the backup ring (17) are not flat, the side that is not flat must be toward the O-ring (16).

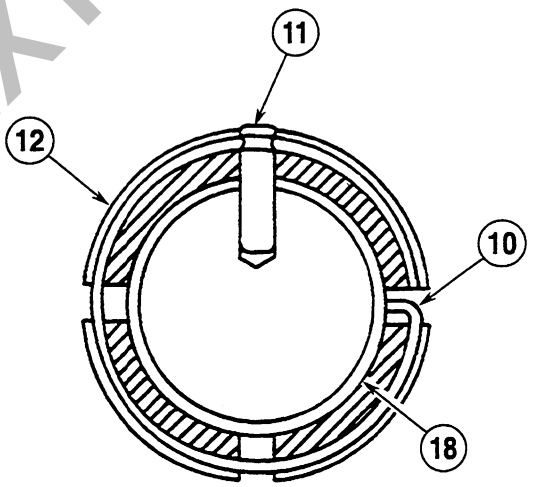
12. Install a new O-ring (16) in the groove in the ID of the piston (12) next to the backup ring (17).

13. Install the other new backup ring (15) in the groove in the ID of the piston (12) next to the O-ring (16). If both sides of the backup ring (15) are not flat, the side that is not flat must be toward the O-ring (16).

14. Lubricate the ID of the piston (12) with clean oil.

15. Start the piston (12) onto the piston rod (18). Turn the piston (12) onto the piston rod (18) until the piston (12) is seated against the shoulder of the piston rod (18).

16. If none of the holes in the piston (12) align with the holes in the piston rod (18), turn the piston (12) counterclockwise until one of the holes in the piston (12) aligns with one of holes in the piston rod (18). Do not turn the piston (12) more than 90 degrees. Refer to Figure 5 for pin placement and hole alignment.



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Figure 5. PISTON AND PISTON ROD HOLE ALIGNMENT

17. Install the pin (11) in the piston (12) and the piston rod (18).

18. Install the retaining ring (10) in the pin (11).

19. Install a new wear ring (14) in the wide groove on the OD of the piston (12), refer to Figure 4.

20. Install a new seal (13) in the groove on the OD of the piston (12).

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COMBINATION VALVE

Disassembly

1. Clean the outside of the valve assembly.
2. Mark the solenoid valves (1 and 2) and each solenoid (10 and 11) location for assembly purposes, refer to Figure 1.
3. Mark the valve body (19) and each solenoid valve (1 and 2) location for assembly purposes. Remove the solenoid valves (1 and 2).
4. Remove the relief cartridge (3) and orifice disk (4).
5. Remove and discard the O-rings (5) and backup rings (6) from the relief cartridge (3).
6. Remove and discard the O-rings (7) and backup rings (8) from the solenoid valve (1).
7. Remove the retainer nut (9) from the solenoid valve (1).
8. Remove the solenoid (10) from the solenoid valve (1).
9. Remove and discard the O-rings (12 and 13) from the solenoid valve (1).
10. Remove and discard the O-rings (14) and backup rings (15) from the solenoid valve (2).
11. Remove the retainer nut (16) from the solenoid valve (2).
12. Remove the solenoid (11) from the solenoid valve (2).
13. Remove and discard the O-rings (17 and 18) from the solenoid valve (2).
14. Remove the plug (20) from the valve body (19).
15. Remove the check valve (21).
16. Remove and discard the O-rings (22 and 23) and the backup ring (24).

Inspection

1. Inspect the relief cartridge (3), solenoid valves (1 and 2) and solenoids (10 and 11). If the relief cartridge (3) is damaged, replace the relief cartridge (3). If the solenoid valves (1 or 2) or the solenoids (10 or 11) are damaged, replace the appropriate solenoid valve (1 or 2) or solenoid (10 or 11).
2. Inspect the check valve (21). If the check valve (21) is damaged, replace the check valve (21).
3. Clean the relief cartridge (3), solenoid valves (1 and 2) and the valve body (19) with a suitable solvent. Air dry or use a lint free cloth to dry parts.

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Pressure Testing

Manifold Gauge Set

NOTE: *The gauge set is not accurate enough to optimize an existing charge of HFC-134a. The best use of the gauge set is to determine whether undercharge or overcharge exists, and then evacuate, reclaim and recharge system with the recommended quantity (charge) of HFC-134a.*

The manifold gauge set is the most important tool used to service the air conditioning system. The manifold gauge set is used to measure the high and low pressures of the system, as a tool to troubleshoot for correct refrigerant charge quantity, system diagnosis, and operating efficiency. The manifold gauge set can read both the high (discharge) and low (suction) sides at the same time, since pressure must be compared in order to make a diagnosis of system operation.

LOW PRESSURE GAUGE - The low pressure gauge is a compound gauge. It is best used to judge evacuation effectiveness. A vacuum reading indicates a system malfunction. For this reason, it is necessary to use a compound gauge that will indicate both pressure and vacuum.

During normal operation the low pressure gauge must always indicate from 10 to 35 psi (0.7 to 2.4 bar) after the system has run 10 to 15 minutes.

HIGH PRESSURE GAUGE - The high pressure gauge is used to indicate pressures in the high side of the system. The gauge must indicate from 0 to 400 psi (0 to 27.6 bar) minimum.

During normal operation, the high pressure gauge will normally indicate from 120 to 310 psi (8.3 to 21.4 bar). See pressure-temperature chart.

Pressure Test Connection

Connect the manifold gauge set into the air conditioning system as shown. Make sure that both valves in the manifold gauge set are closed.

PRESSURE-TEMPERATURE CHART

AMBIENT TEMPERATURE °F (°C)	NORMAL LOW PRESSURE INDICATION psi (bar)	NORMAL HIGH PRESSURE INDICATION psi (bar)	AIR LOUVER (BEHIND SEAT) MAXIMUM TEMP. °F (°C)
80 (27)	9 to 12 (0.62 to 0.83)	145 to 165 (10 to 11.53)	55 (14)
90 (32)	11 to 15 (0.76 to 1.04)	190 to 210 (13.10 to 14.48)	61 (18)
95 (35)	16 to 18 (1.10 to 1.24)	210 to 230 (14.48 to 15.86)	63 (20)
100 (38)	17 to 19 (1.17 to 1.31)	235 to 255 (16.2 to 17.58)	66 (22)
105 (41)	20 to 21 (1.38 to 1.45)	260 to 280 (17.93 to 19.31)	68 (23)
110 (43)	22 to 24 (1.93 to 2.14)	290 to 310 (20 to 21.37)	72 (25)

The pressure-temperature chart is based on the following conditions:

NOTE: *High humidity will cause higher air louver temperatures and dramatic increase in suction pressure. The table shown represents readings taken in low relative humidity. Adjust the chart according to local conditions.*

1. Engine at 1500 RPM, no load, fan speed & temperature control at max setting, A/C switch ON, all louvers and doors open
2. All panels and access doors installed and closed.
3. Cab filters clean and installed.
4. Heater valve at engine closed. Measurements taken 15 minutes after startup.
5. Measurements taken 15 minutes after startup.

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Section

9005

AIR CONDITIONING COMPRESSOR AND CLUTCH FOR SYSTEMS WITH HFC-134a REFRIGERANT

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Printed in U.S.A.
January, 1999

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