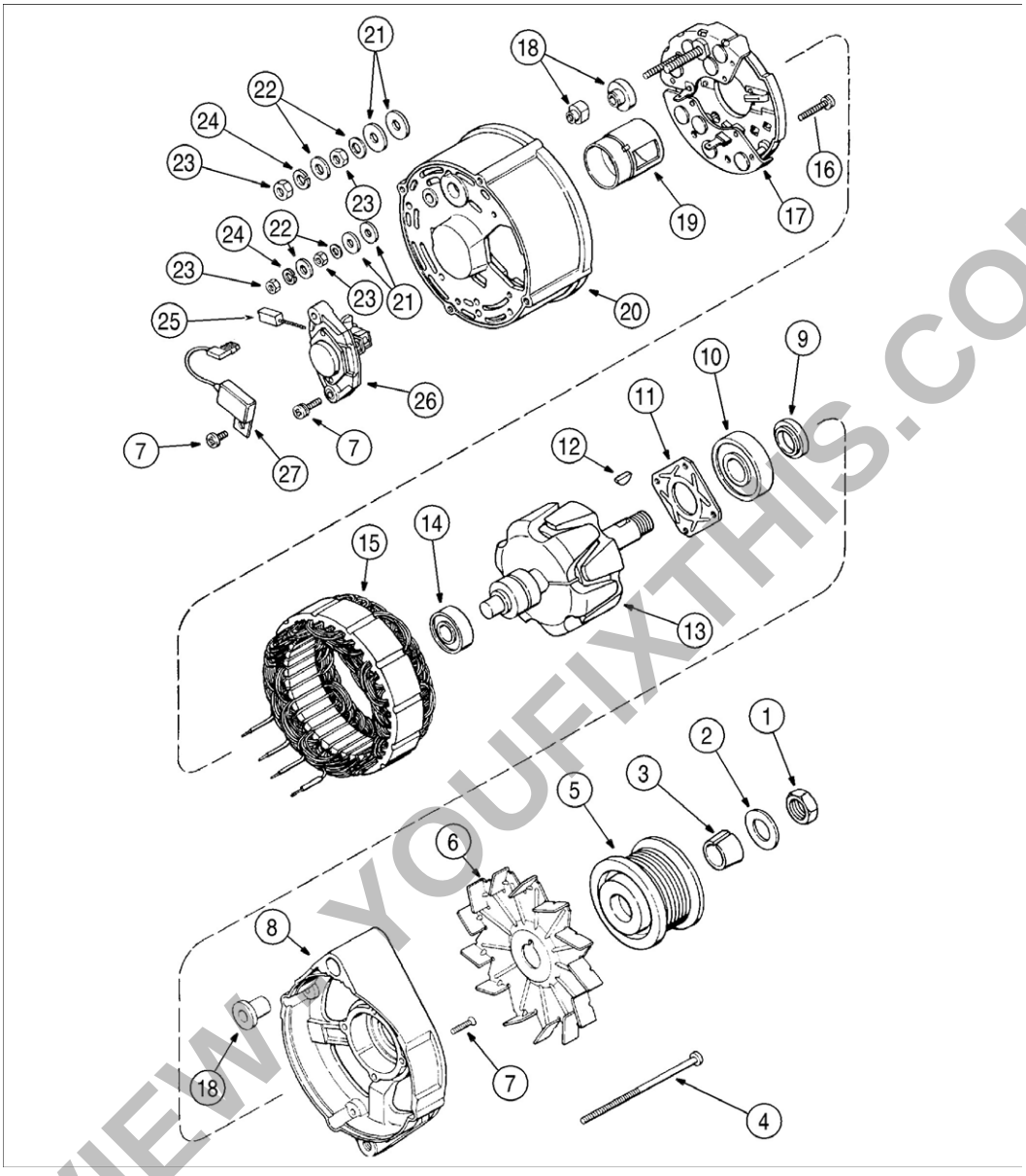
Alternator - Sectional view (A.30.A.82 - C.10.A.30)



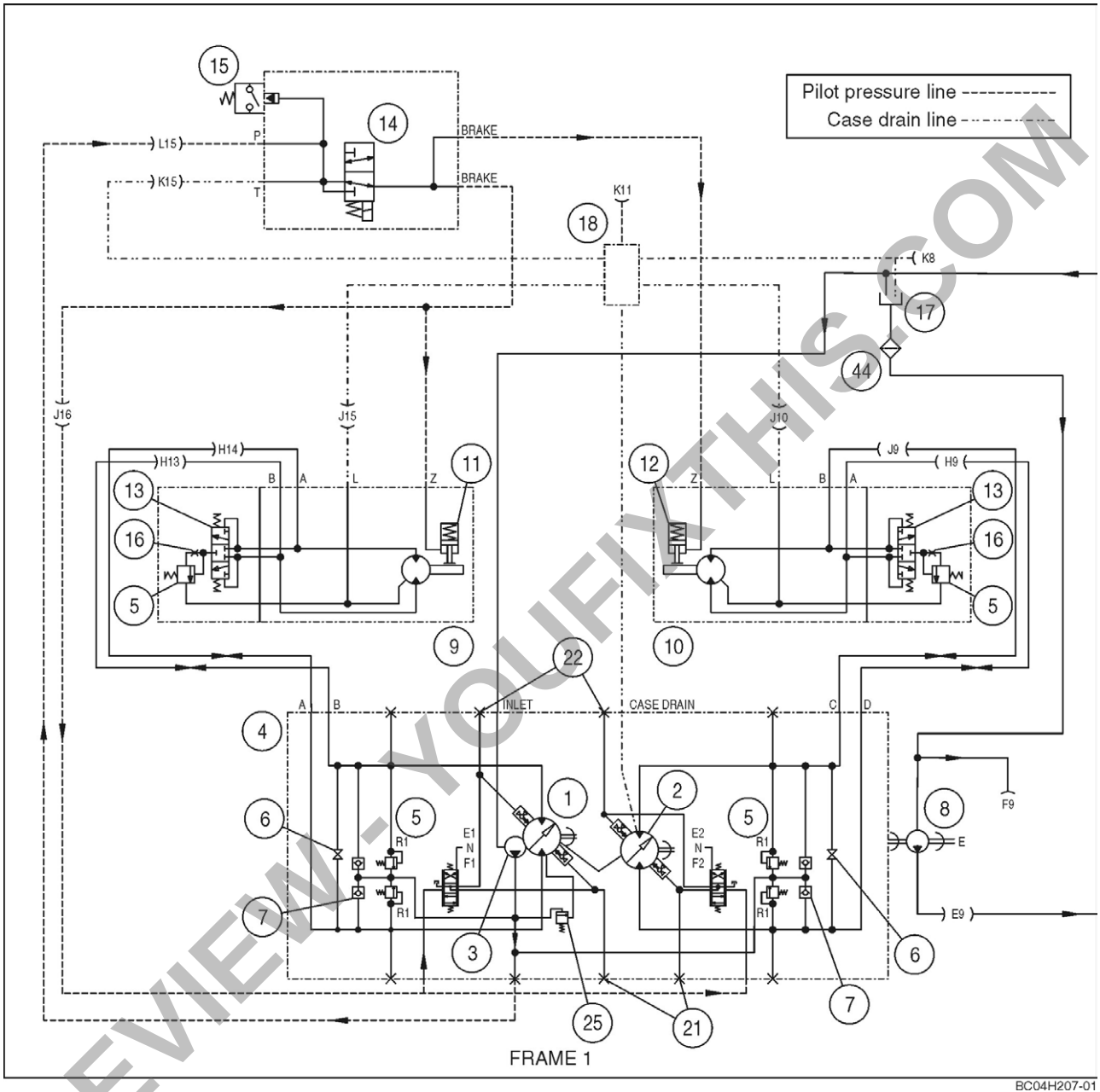
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95 Ampere Alternator			
1. Nut	8. Cover	15. Stator	22. Flat washer
2. Washer	9. Spacer	16. Screw	23. Nut
3. Retainer	10. Front bearing	17. Rectifier Bridge	24. Lock washer
4. Screw	11. Bearing retainer	18. Insulator	25. Brush
5. Pulley	12. Key	19. Shield	26. Voltage regulator and brush holder
6. Fan	13. Rotor	20. Housing	27. Capacitor
7. Screw	14. Rear bearing	21. Fiber washer	

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PRIMARY HYDRAULIC POWER SYSTEM - Hydraulic schematic frame 01 (A.10.A - C.20.H.01)



bc04h207-01 1

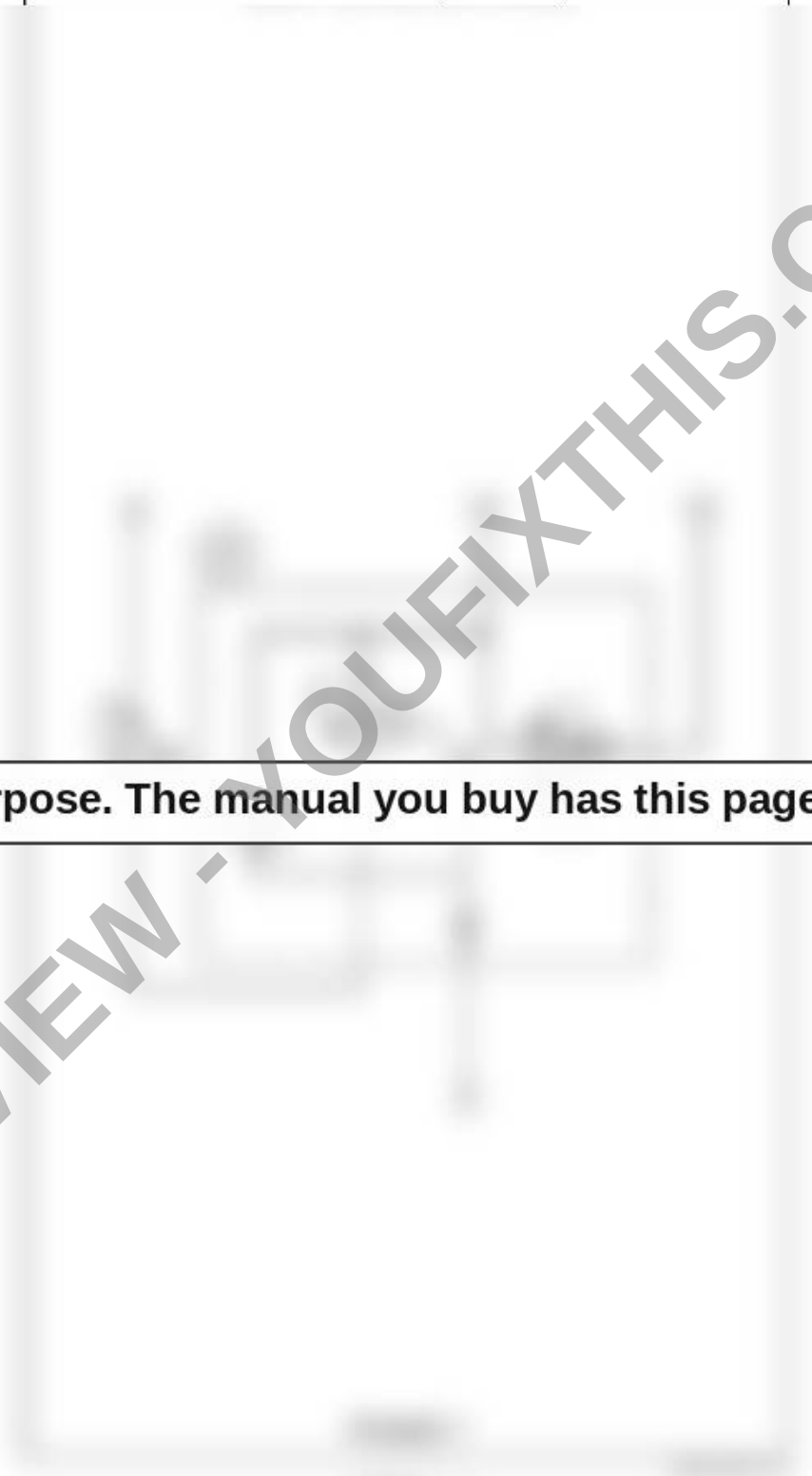
1. Left piston pump	9. Left drive motor	17. Hydraulic reservoir
2. Right piston pump	10. Right drive motor	18. Drain manifold
3. Charge pump	11. Left brake	21. Backup alarm switch ports
4. Hydrostatic pump	12. Right brake	22. Brake light switch ports
5. Circuit relief valve	13. Flushing valve	25. Main relief valve
6. Tow valve	14. Brake solenoid valve	44. 100 Mesh screen
7. Check valve	15. Charge pressure switch	
8. Hydraulic pump	16. Orifice	

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SELF-LEVEL (OPTION)



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Torque (- A.90.A.10)

BOLT TORQUE INFORMATION

DECIMAL HARDWARE

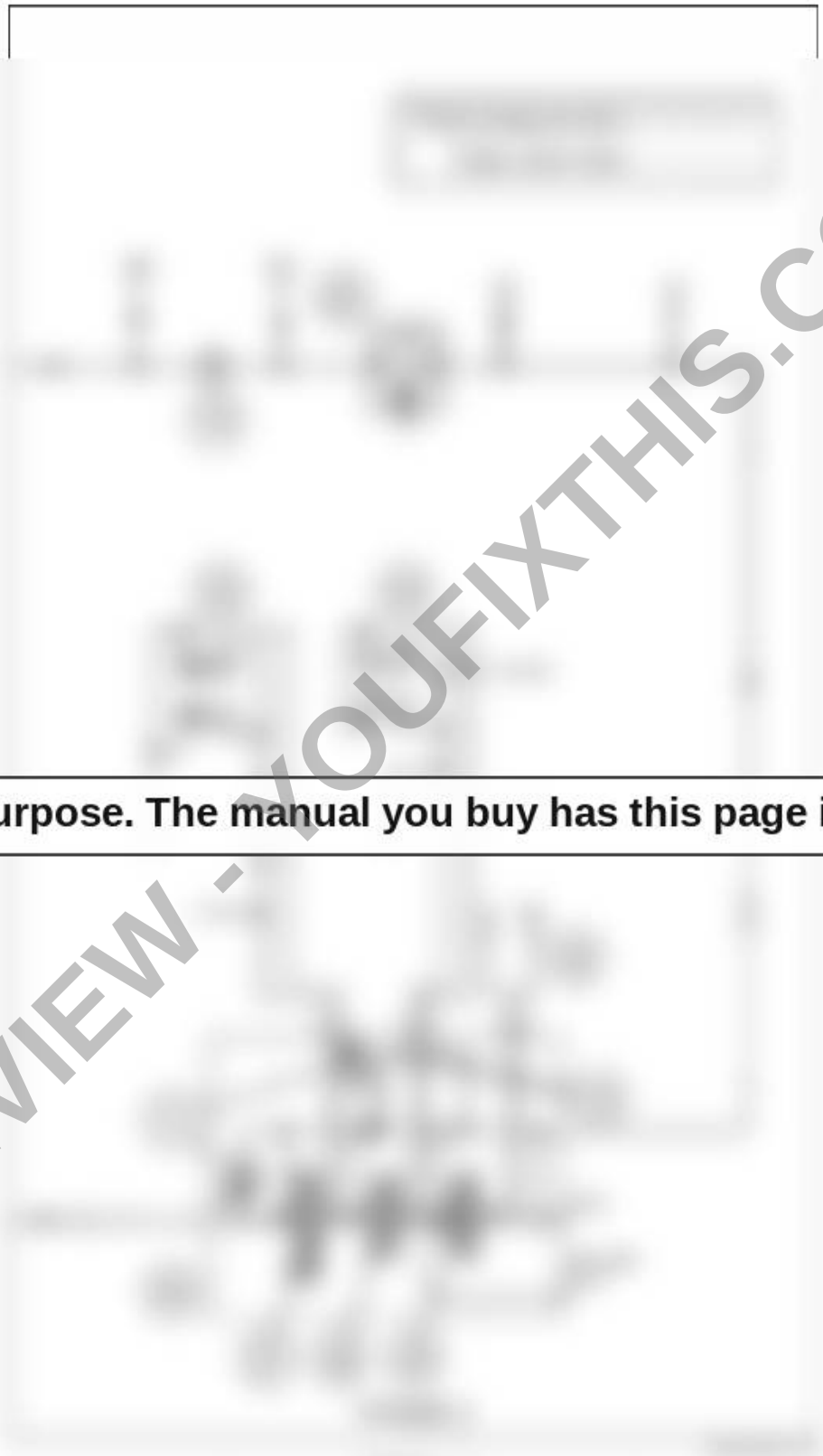
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PRIMARY HYDRAULIC POWER SYSTEM - Hydraulic schematic frame 02 (A.10.A - C.20.H.02)



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PRIMARY HYDRAULIC POWER SYSTEM - Cleaning (A.10.A - F.30.A.10)

1. Contamination in the hydraulic system is a major cause of the malfunction of hydraulic components. Contamination is any foreign material in the hydraulic oil. Contamination can enter the hydraulic system in several ways.
   (A) When you drain the oil or disconnect any line.
   (B) When you disassemble a component.
   (C) From normal wear of the hydraulic components.
   (D) From damaged or worn seals.
   (E) From a damaged component in the hydraulic system.

2. All hydraulic systems operate with some contamination. The design of the components in this hydraulic system permits efficient operation with a small amount of contamination. An increase in this amount of contamination can cause problems in the hydraulic system. The following list includes some of these problems.
   (A) Cylinder rod seals leak.
   (B) Control valve spools do not return to neutral.
   (C) Movement of control valve spools is difficult.
   (D) Hydraulic oil becomes too hot.
   (E) Pump gears, housing, and other parts wear rapidly.
   (F) Relief valves or check valves held open by dirt.
   (G) Quick failure of components that have been repaired.
   (H) Cycle times are slow; machine does not have enough power.

3. If your machine has any of these problems, check the hydraulic oil for contamination. See types of contamination below. If you find contamination, use the Portable Filter to clean the hydraulic system.

NOTE: *There are two types of contamination, microscopic and visible.*

4. Microscopic contamination occurs when very fine particles of foreign material are in suspension in the hydraulic oil.

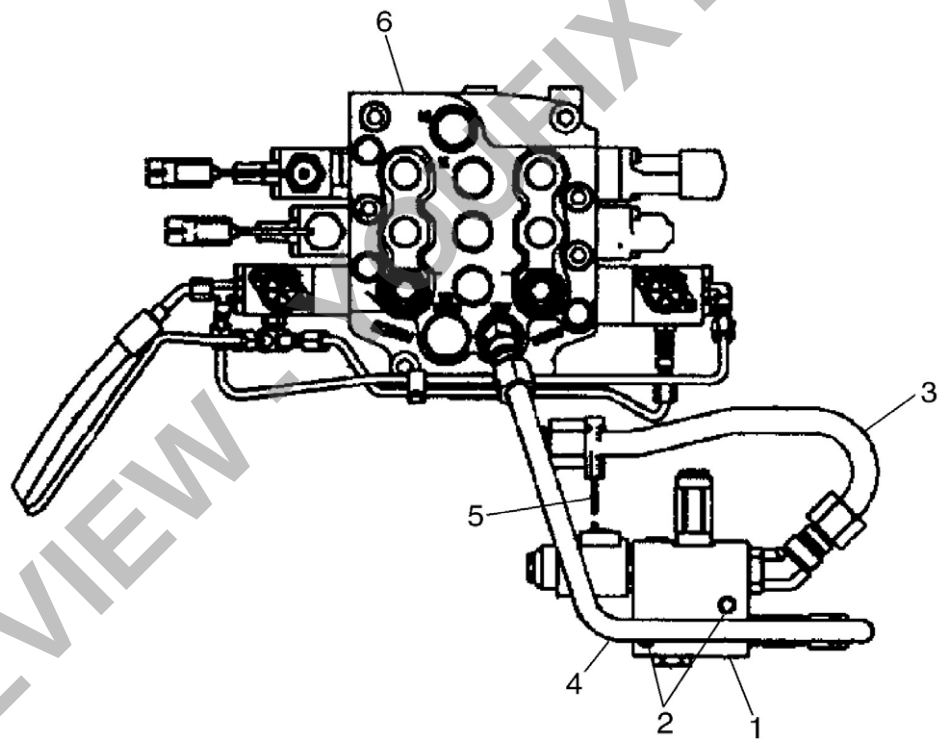
5. These particles are too small to see or feel. Microscopic contamination can be found by identification of the following problems or by testing in a laboratory. Examples of the problems:
   (A) Cylinder rod seal leak.
   (B) Control valve spools do not return to NEUTRAL.
   (C) The hydraulic system has a high operating temperature.

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Control valve - Remove (A.16.A.14 - F.10.A.10)

1. Remove the cap from the hydraulic reservoir and install the **CAS1871** adapter on the reservoir.
2. Connect the **CAS10192** vacuum pump to the adapter. **Reservoir - Apply vacuum (A.10.A.22 - F.35.A.50)**
3. Start the vacuum pump.
4. Loosen and remove the hydraulic lines **(3)** and **(4)** from the control valve **(1)**.
5. Place caps on the fittings and plugs in the lines.
6. Stop the vacuum pump.
7. Disconnect the electrical harness **(5)** from the control valve electrical connector.
8. Loosen and remove the mounting bolts**(2)** from the control valve **(1)**.
9. Remove the control valve **(1)** from the machine.



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High-Flow Control Valve		
1. High-Flow Control Valve	3. Hydraulic Line	Electrical Harness
2. Mounting Bolts	4. Hydraulic Line	6. Loader Control Valve

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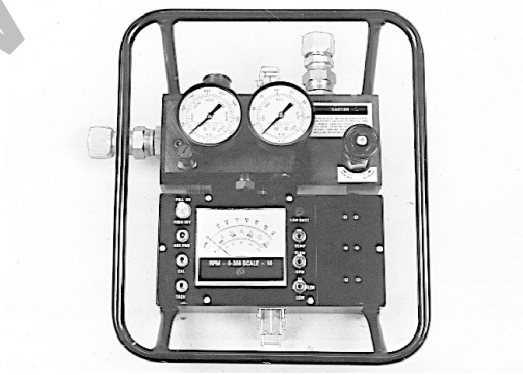
PRIMARY HYDRAULIC POWER SYSTEM - Capacity (A.10.A - D.40.A.20)

Hydraulic System	
Capacity - System 435 Machines	**41.3 L** (**10.9 US gal**)
Capacity - System 445/445CT Machines	**41.5 L** (**11.0 US gal**)
Capacity - System 450/450CT Machines	**64.4 L** (**17 US gal**)
Capacity - System 465 Machines	**66.2 L** (**17.5 US gal**)

PRIMARY HYDRAULIC POWER SYSTEM - General specification (A.10.A - D.40.A.10)

Hydraulic System Oil	Type of Oil	Capacity
Total System (435 Machines)	**CASE AKCELA NO. 1 ENGINE OIL SAE 10W-30**	**41.3 L (10.9 US gal)**
Total System (445/445CT Machines)	**CASE AKCELA NO. 1 ENGINE OIL SAE 10W-30**	**41.5 L (11 US gal)**
Total System (450/450CT Machines)	**CASE AKCELA NO. 1 ENGINE OIL SAE 10W-30**	**64.4 L (17 US gal)**
Total System (465 Machines)	**CASE AKCELA NO. 1 ENGINE OIL SAE 10W-30**	**66.2 L (17.5 US gal)**
Chain Tank (435-445-450-465 Machines)	**CASE AKCELA NO. 1 ENGINE OIL SAE 10W-30**	Each Side **7.6 L (8.0 US qt)**

PRIMARY HYDRAULIC POWER SYSTEM - Special tools (A.10.A - D.20.A.40)



CAS10280 1

CAS - 10280 Flowmeter

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Hydraulic pump - Install (A.10.A.20 - F.10.A.15)

Prior operation:
Before pump installation, apply Molykote G-4700 (P/N 86983138) to the pump and the coupling splines. Pre-fill the pump with clean hydraulic oil. Inspect O-ring on the pump pilot and replace if necessary. Lubricate the O-ring with clean hydraulic oil.

1. Hold the pump in the mounting location. Rotate the gear pump shaft until it aligns with the coupling splines at the rear of the hydrostatic pump. After the splines are aligned, move the pump inward until the mounting flange is flush with the mounting surface of the hydrostatic pump.
2. Apply Loctite 243 to the pump mounting bolts. Install washers on the bolts and install the bolts into the pump mounting flange. Tighten the mounting bolts.
3. **Reservoir - Apply vacuum (A.10.A.22 - F.35.A.50)** Start the vacuum pump.
4. Remove the cap from the fitting and the plug from the pressure hose.
5. Connect the hose to the pressure port fitting of the pump and tighten the fitting.
6. Remove the cap from the fitting and the plug from the suction hose.
7. Connect the hose to the suction port fitting of the pump and tighten the hose clamp.



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8. Stop the vacuum pump. Disconnect the vacuum pump from the hydraulic reservoir and install the reservoir cap on the reservoir filler neck.

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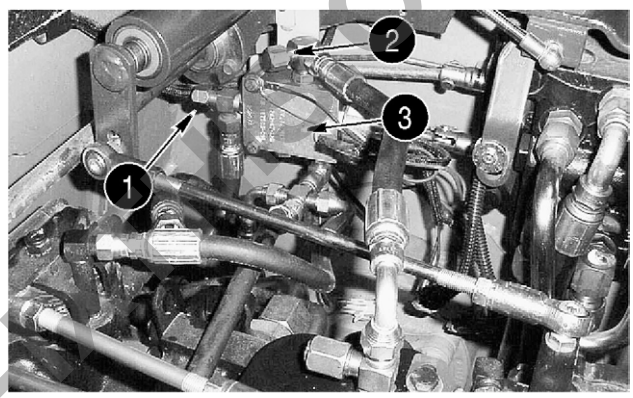
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Charge pump - Pressure test (A.10.A.21 - F.40.A.30)

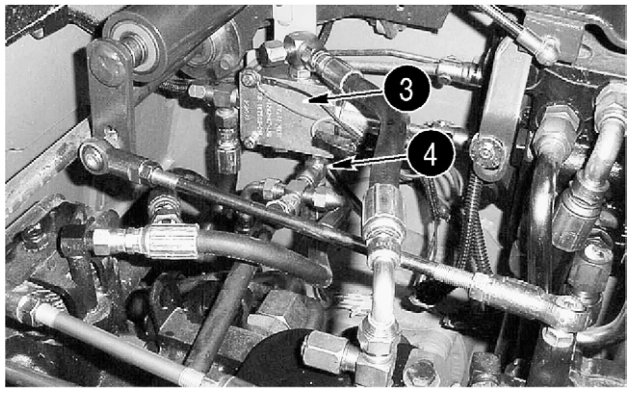
Testing the low-pressure charge system is safer and usually more informative than going into the high-pressure test ports. To obtain as much system information as possible, charge pressure readings must be taken in neutral as well as working the system in both the forward and reverse directions.
With the system in neutral, only charge pressure is present in the closed loop. At this time, the leakage from the system is the least and the charge pressure is the highest. As the system is pressurized, the leakage from the system will increase and the charge pump flow will make up for this leakage. With more of the charge pump oil flowing to the closed loop, less oil will flow across the charge pressure relief valve, and therefore the pressure will be slightly less. If the leakage from the system is excessive, the charge pressure will drop off more. This slight drop in charge pressure between the system in neutral and with the system under load indicates the condition of the closed loop system components.

1. Raise and securely block the unit off the ground.
2. Remove the brake assist line from the tee fitting at the T port (1) of the brake valve (3).



BD03F001_1 1

3. Remove the cap from the tee fitting on the P port (2) of the brake valve (3).
4. Connect the removed brake assist line to the tee fitting on the P port (2) of the brake valve (3).
5. Cap the tee fitting on the T port (1) of the brake valve (3).
6. Remove the brake release line from the tee fitting that connects to the C2 port (4) of the brake valve (3).



BD03F001_2 2

7. Cap the tee fitting that connects to the C2 port (4) of the brake valve (3).
8. Connect a 4,137 kPa (41 bar) (600 psi) pressure gauge to the charge pressure test port.
   A. For units without high flow, remove the cap from the tee fitting and install a 4,137 kPa(600 psi) pressure gauge.
   B. For units with high flow, remove the hose from the tee fitting and install a 4,137 kPa(600 psi) pressure gauge.

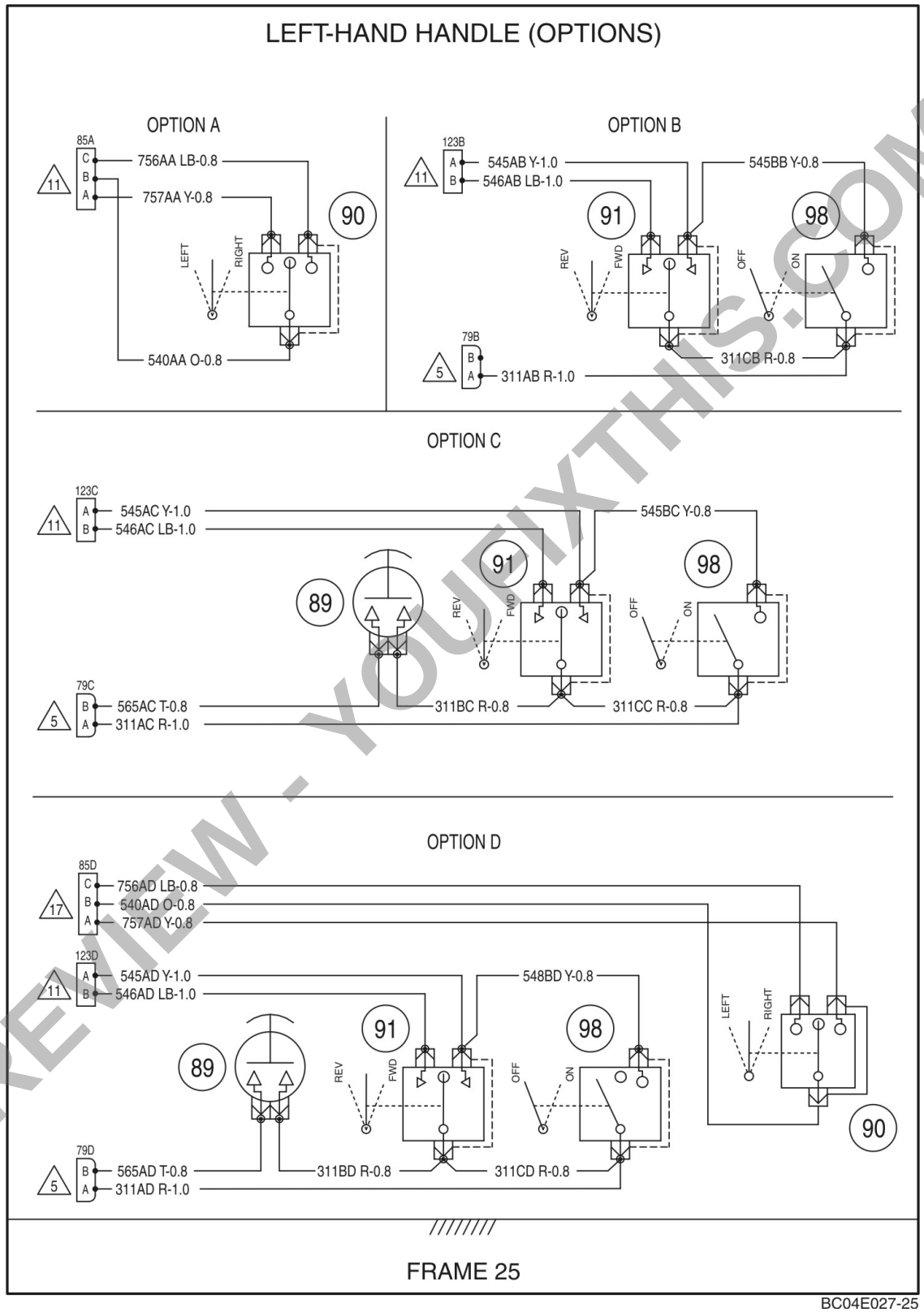
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Cavity	Circuit ID	Description
86	137H (R)	From ignition key "ACC"
87	138A (R)	To options fuse block terminal 3

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Wiring harness - Electrical schematic frame 25 (A.30.A.88 - C.20.E.25)



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(89) Two (2) Speed Switch	**(90)** Turn Signal Switch	**(91)** Attachment Hydraulic Switch

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30. Disconnect the electrical connector from the air filter restriction indicator switch. Loosen the hose clamps on the hoses and remove the hoses from the air filter. Loosen and remove the mounting bolts from the air cleaner mounting bracket.



BD04C129 21

31. Remove the air cleaner assembly from the engine.

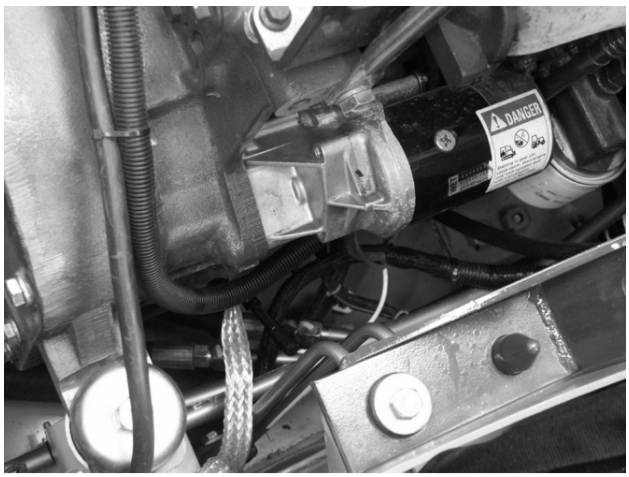
NOTE: *Fasten identification tags to the wires as they are removed from the engine for use during installation.*

32. Disconnect the cable and the wires from the starter solenoid.



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33. Locate the ground strap on the engine and loosen and remove the mounting bolt. Remove the ground strap from the engine.

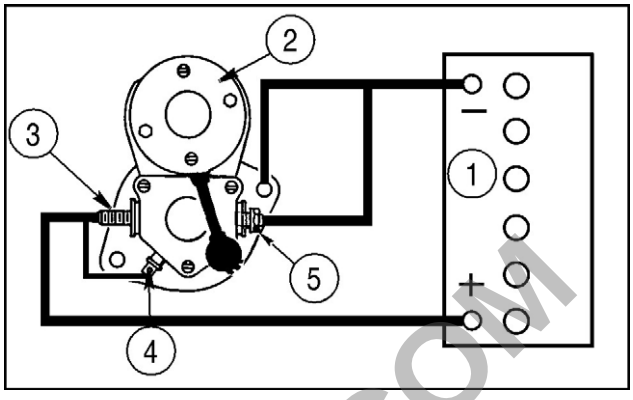


bd04c016 23

34. Locate the ground wires on the side of the engine. Loosen and remove the cap screw(s) which fasten the ground wires to the engine. Keep all of the ground wires together.

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7. Connect a jumper cable to the positive battery post of a fully charged **12 volts** battery. Connect the other end of the jumper cable to the battery terminal on the starter solenoid housing.
   (1) 12 Volt battery
   (2) Starter
   (3) Battery terminal
   (4) Switch terminal
   (5) Motor terminal



BC02J086 4

8. Connect a jumper wire to the battery terminal and the switch terminal in the starter solenoid housing. The jumper wire must be made from No.10 or larger wire.
9. Connect the jumper cable with the common connection to the starter mounting flange and the motor terminal in the starter solenoid housing.
10. Connect the jumper cable with the common connection to the negative battery post. The pinion gear on the starter drive must come all the out rapidly and with force. This must be done within 5 seconds to prevent damage to the pull-in winding and the hold-in winding.
11. If the pinion gear did not come out rapidly and with force, the pull-in winding is damaged. The complete starter solenoid housing assembly must be replaced.
12. Disconnect the jumper cable from the motor terminal in the starter solenoid housing. The pinion gear on the starter drive must not move toward the starter drive housing. This must be done within 5 seconds to prevent damage to the pull-in winding and the hold-in winding.
13. If the pinion gear started to move toward the starter drive housing, the hold-in winding is damaged. The complete starter solenoid housing assembly must be replaced.

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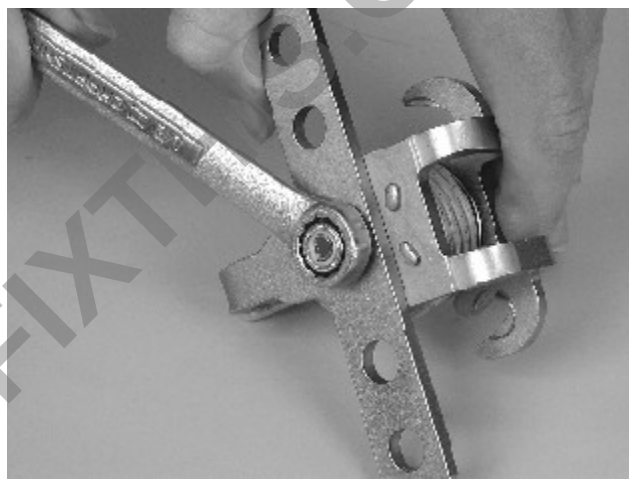
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13. Insert the spool into and through the stop bracket. Refer to the alignment mark made during disassembly **Pump Right hand pump - Disassemble (C.20.F.20.21 - F.10.A.25)**.



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14. Slide the washer and nut onto the protruding threads of the spool. Hold the spool assembly in place. Tighten the nut, but do not overtighten.



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15. Lubricate the sleeve. Insert the sleeve into the housing. Ensure that the notch on the end of the sleeve is properly aligned with the notch inside housing.



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SERVICE



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The description of the models shown in this manual has been made using the technical specifications known at the date on which this document was designed.

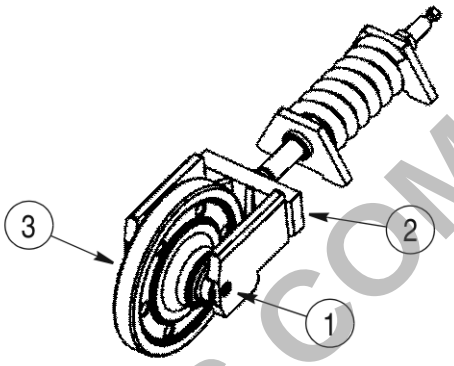
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Idler wheel - Install (D.50.B.57 - F.10.A.15)

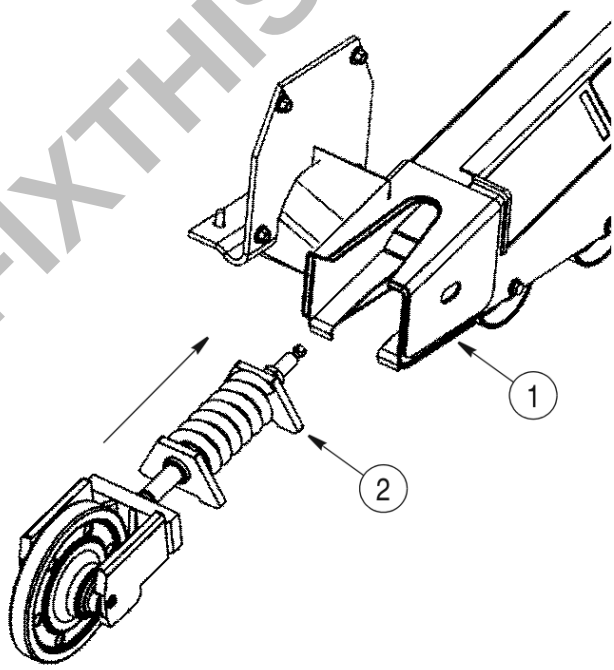
445CT

1. Front Idler Wheel:
   Install the front idler wheel **(3)** into the yoke **(2)**. Install the screw into the yoke and into the front idler wheel. Tighten the screw **(1)** to a torque of **183 - 205 Nm (136 - 153 lb ft)**



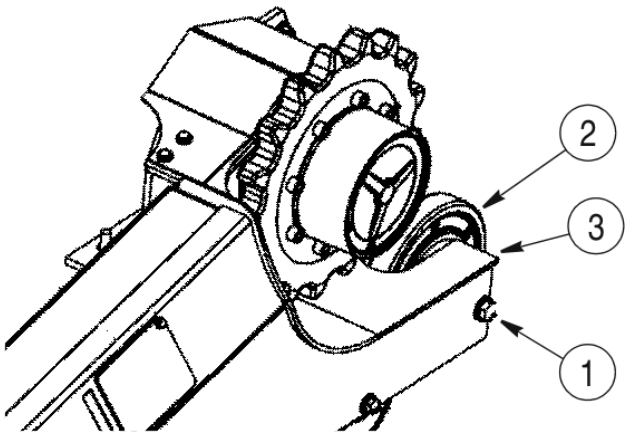
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2. Slide the track tension assembly **(2)** into the main frame **(1)**.



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3. Rear Idler Wheel:
   Install the rear idler wheel **(2)** into the main frame **(3)**. Install the screw **(1)** into the main frame and into the rear idler wheel **(2)**. Tighten the screw **(1)**to a torque of **555 - 620 Nm (406 - 460 lb ft)**.



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Next operation:
Refer to **Rubber track - Install (D.50.B.47 - F.10.A.15)** and install the track.

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ROPS - Visual inspection (E.34.A.74 - F.40.A.10)

ATTENTION: *ROLLOVER PROTECTIVE STRUCTURE (ROPS) CAB STRUCTURAL FRAME (CSF)*

1. The Rollover Protective Structure (ROPS) or Cab Structural Frame (CSF) is a special safety component of your machine.
2. DO NOT attach any device to the ROPS or CSF for pulling purposes.
3. The ROPS or CSF is a certified structural support and any damage, fire, corrosion or modification will weaken the structure and reduce your protection. If this occurs, the ROPS or CSF MUST be replaced so that it will provide the same protection as a new ROPS or CSF.
4. After an accident, fire or rollover, the following MUST be performed before returning the machine to field or job site operation:
   The ROPS or CSF structure MUST be replaced.

   The ROPS or CSF mounting or suspension, operator seat and suspension, seat belts and mounting components and wiring within the operator's protective system MUST be carefully inspected for damage.

   All damaged parts MUST be replaced.

   DO NOT WELD, ATTEMPT TO STRAIGHTEN OR REPAIR THE ROPS OR CAB STRUCTURAL FRAME.

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Compressor - Install (E.40.C.31 - F.10.A.15)

1. Install the compressor on the mounting bracket. Install washers on the pivot bolt **(5)**. Install the washer, and nut onto the pivot bolt.



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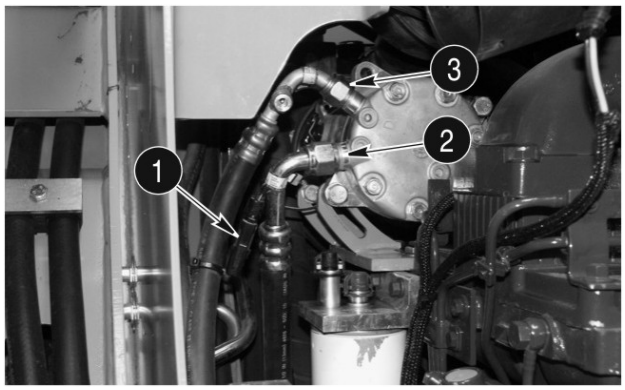
2. Install the drive belt on the machine. Install the adjusting bolts **(4)** , nuts and washers into the compressor adjusting straps.



bd04n002_2 2

3. Adjust belt tension. See **Compressor Belt - Measure (E.40.C.31.44 - F.40.A.16)** in this service manual. Tighten pivot bolt **(5)** nut and compressor adjusting bolts **(4)** when complete.
4. Connect the compressor clutch wire **(1)** to the wiring harness connectors.

IMPORTANT: *Use caution when removing cap as new compressors have internal pressure when shipped.*



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Ride control valve - Remove (H.40.B.14 - F.10.A.10)

1. Remove the cap from the hydraulic reservoir. **CAS1871**
2. Connect a vacuum pump to the hydraulic reservoir. **CAS10192**
3. **Reservoir - Apply vacuum (A.10.A.22 - F.35.A.50)** Start the vacuum pump.
4. Tag and loosen and remove the hydraulic hose and tube connections (1) from the Ride Control Valve (2). Place caps on the fittings and plugs in the hoses and tubes.
5. Stop the vacuum pump.
6. Disconnect the electrical harness (3) from the Ride Control valve electrical connector.
7. Loosen and remove the mounting bolts (4) from the Ride Control valve (2).
8. Remove the Ride Control Valve (2) from the chassis mounting location.

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12. Check the oil level in the reservoir and add hydraulic oil as required. **Reservoir - Filling (A.10.A.22 - F.60.A.10)**

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Connecting rods

They are steel-stamped, of the oblique cut type, with separation of the cap obtained by an advanced technology (fracture split) instead of mechanic machining.

The connecting rod half bearings are made of steel, with anti-friction alloy coating.

Each connecting rod is marked:

- ❑ By a number (on the connecting rod body and cap) indicating its respective match and the cylinder in which it is mounted.
- ❑ By a letter (on the connecting rod body) indicating the weight class of the factory-assembled connecting rod.

Figure 4



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