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Torque

BOLT TORQUE INFORMATION

DECIMAL HARDWARE

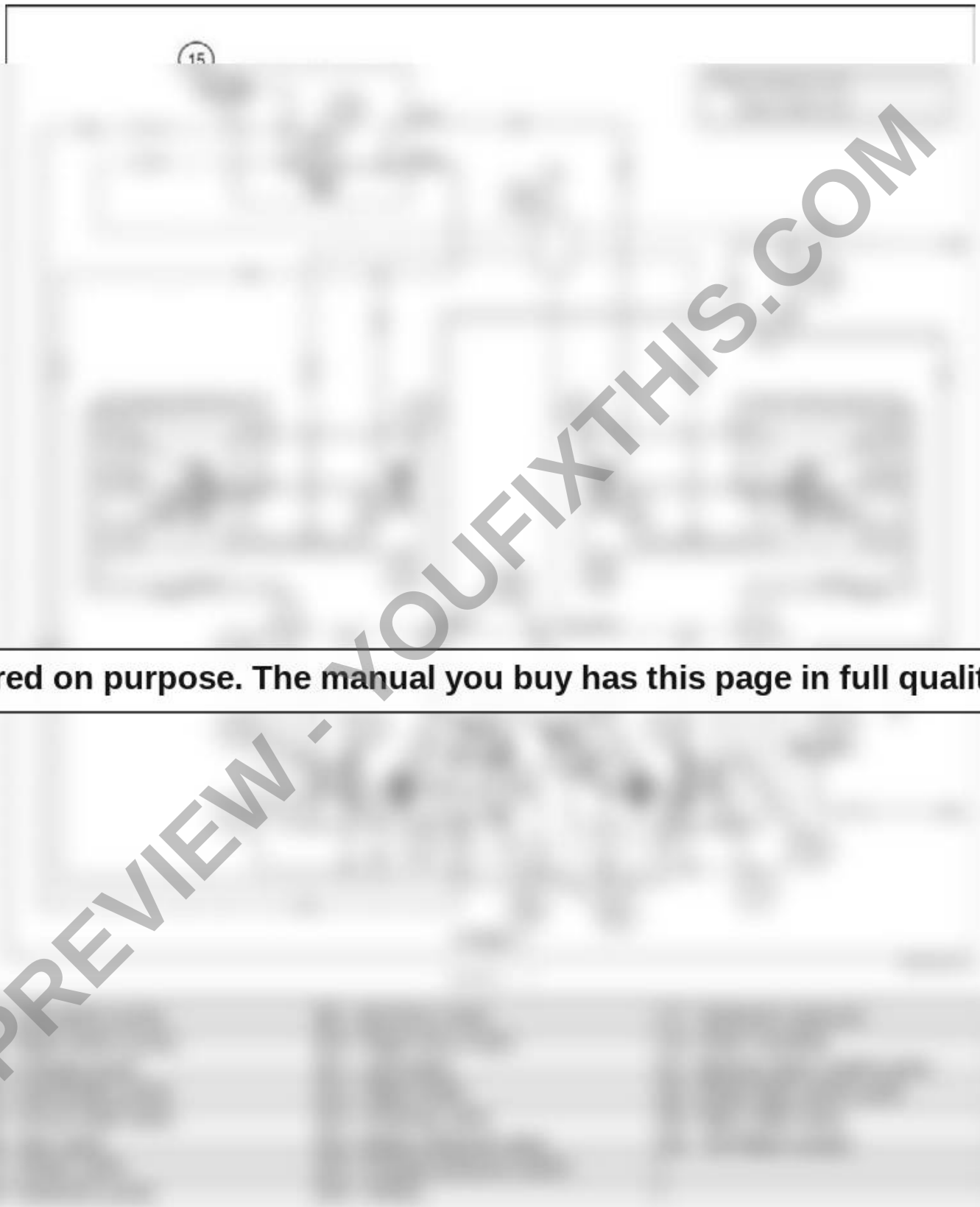
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PRIMARY HYDRAULIC POWER SYSTEM - Hydraulic schematic frame 01



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(5) Circuit Relief Valve	**(45)** Auxiliary Spool
(42) Loader Control Valve	**(46)** Tilt Cylinders
(43) Tilt Spool	**(47)** Lift Cylinders
(44) Lift Spool	**(48)** Auxiliary Outlets

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Reservoir - Filling

1. Lower the loader lift arms to the ground and shut off the engine.
2. Clean the reservoir filler cap and the area around the filler cap with cleaning solvent.
3. Turn the filler cap 1/2 turn to relieve air pressure from the reservoir. Do not remove the filler cap from the reservoir until the pressure is relieved.
4. Remove the filler cap from the reservoir.
5. Add the correct oil **CASE AKCELA AUTO SUPREME SAE 10W-30** to the reservoir until the proper oil level in the reservoir is established. Fill the reservoir until the oil level is at the mid point of the site gauge.
6. Start and run the engine and operate the hydraulics. Lower the loader lift arms to the ground. Stop the engine and check the oil level in the reservoir. Add oil as required.

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PRIMARY HYDRAULIC POWER SYSTEM - Cleaning

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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PRIMARY HYDRAULIC POWER SYSTEM - Capacity

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

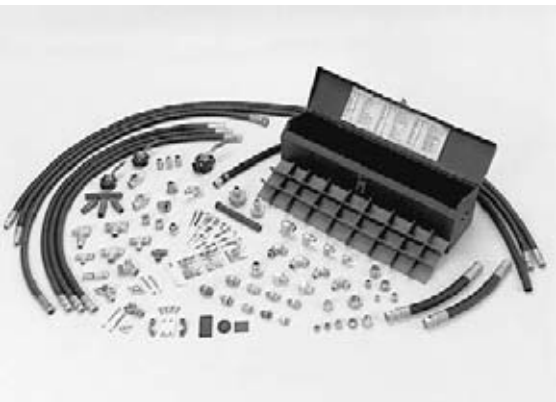
Hydraulic System Oil	Type of Oil	Capacity
Total System (435 Machines)	**CASE AKCELA NO. 1 ENGINE OIL SAE 10W-30**	**41.3 L (10.9 US gal)**
Total System (445/445CT Machines)	**CASE AKCELA NO. 1 ENGINE OIL SAE 10W-30**	**41.5 L (11 US gal)**
Total System (450/450CT Machines)	**CASE AKCELA NO. 1 ENGINE 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



CAS10280 1

CAS - 10280 Flowmeter



CAS1808 2

CAS-1808 Flowmeter Fitting Kit

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Sensing system Temperature sensor - Testing

NOTE: *For wiring diagram refer to* ***Wiring harness - Electrical schematic frame 06 (A.30.A)***

N°	Test Point	Expected Result	Other Result (Possible Cause)
1	**Check** Disconnect the connector from the hydraulic oil temperature sensor and use a voltmeter set to read resistance. Measure resistance from sensor terminal to machine frame.	**Result** For oil temperatures greater than **(60 °F)** and less than **(212 °F)** the sensor resistance should measure between 4300 ohms **(60 °F)** and 180 ohms **(212 °F)**	**Action** Temperature of oil outside of range indicated. Bad sensor.
2	**Check** Reconnect the connector to the hydraulic oil temperature sensor. Remove the instrument cluster and disconnect the 26 pin connector from the instrument cluster. Measure resistance from terminal 2 to terminal 20 of the 26 pin connector in the wiring harness.	**Result** For oil temperatures greater than **(60 °F)** and less than **(212 °F)** the sensor resistance should measure between 4300 ohms **(60 °F)** and 180 ohms **(212 °F)**	**Action** Temperature of oil outside of range indicated. Bad sensor. Bad wiring to the sensor.

Sensing system Temperature sensor - Testing (Tier 3 Cab Up-Grade Machines)

NOTE: *For wiring diagram refer to* ***Wiring harness - Electrical schematic frame 06 (A.30.A) Wiring harness - Electrical schematic frame 07 (A.30.A)***

N°	Test Point	Expected Result	Other Result (Possible Cause)
1	**Check** Disconnect the connector from the hydraulic oil temperature sensor and use a voltmeter set to read resistance. Measure resistance from sensor terminal to machine frame.	**Result** For oil temperatures greater than 60 degrees F and less than 212 degrees F the sensor resistance should measure between 4300 ohms	**Action** Temperature of oil outside of range indicated. Bad sensor.
2	**Check** Reconnect the connector to the hydraulic oil temperature sensor. Remove the instrument cluster and disconnect the 26 pin connector from the instrument cluster. Measure resistance from terminal 2 to terminal 20 of the 26 pin connector in the wiring harness.	**Result** For oil temperatures greater than For oil temperatures greater than 60 degrees F and less than 212 degrees F the sensor resistance should measure between 4300 ohms	**Action** Temperature of oil outside of range indicated. Bad sensor. Bad wiring to the sensor.

Sensing system Filter restriction sensor - Testing

NOTE: *For wiring diagram refer to* ***Wiring harness - Electrical schematic frame 06 (A.30.A)***

N°	Test Point	Expected Result	Other Result (Possible Cause)
1	**Check** Check between the housing of the return filter switch and the filter housing.	**Result** Continuity	**Action** Bad ground connection between the return filter switch and the filter housing.

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Oil cooler - Remove (Tier 3 Certified Engines)

1. Refer to **Radiator - Remove (B.50.A)** for Tier 3 Certified Engines and follow the procedure to remove the oil cooler.

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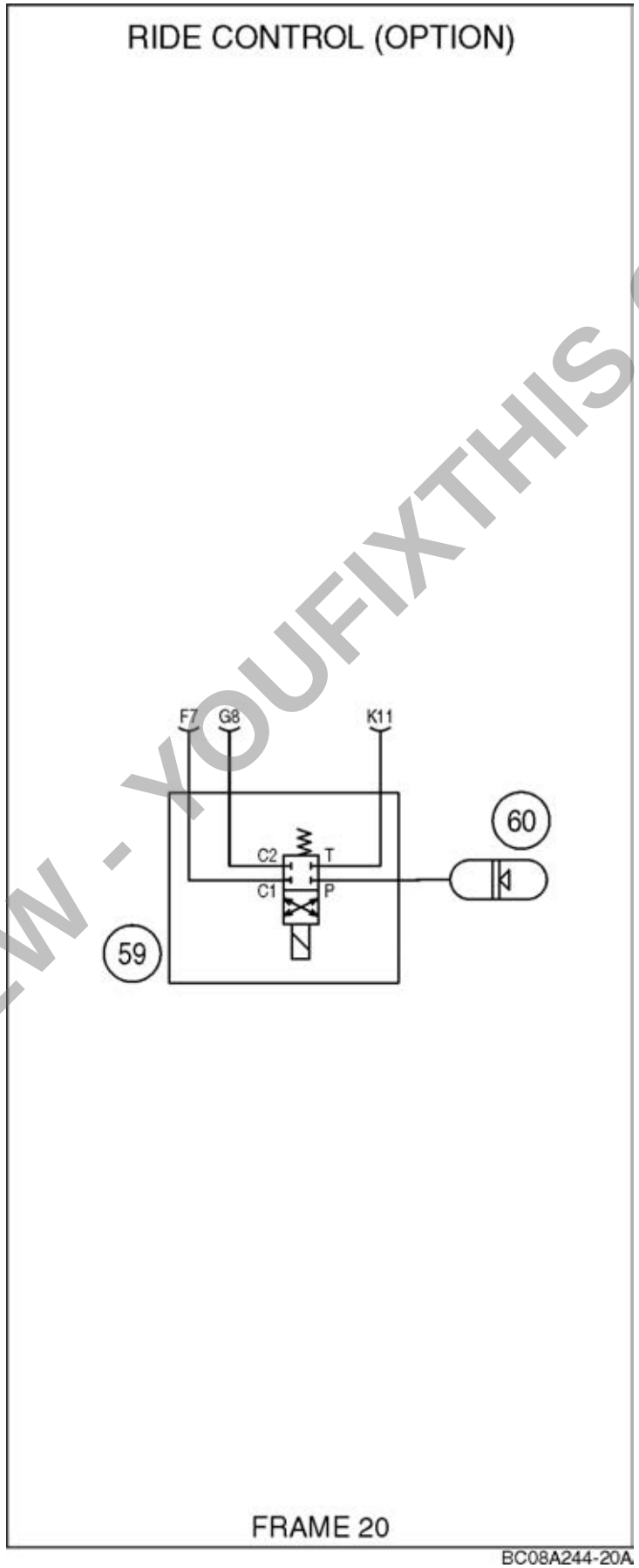
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PRIMARY HYDRAULIC POWER SYSTEM - Hydraulic schematic frame 20 (H-Pattern Pilot Controls)



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HIGH-FLOW HYDRAULIC POWER SYSTEM - Cleaning

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   (B) Control valve spools do not return to NEUTRAL.
   (C) The hydraulic system has a high operating temperature.

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(16) Grid Heater Relay	**(17)** Grid Heater

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(77) Horn Switch	**(79)** Front Electrical Control Switch No. 1
(78) Two-Speed Switch	**(80)** Turn Signal Switch

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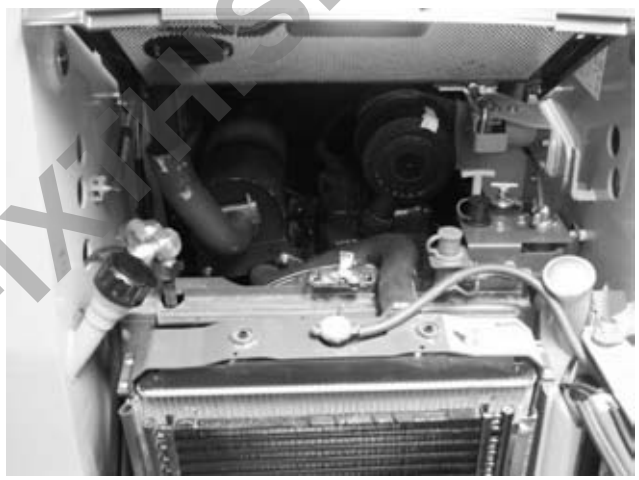
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21. Loosen the hose clamps on the upper and lower radiator hoses. Remove the upper and lower radiator hoses from the radiator.



bd04c102 12

22. Loosen and remove the upper and lower hardware that fasten the radiator to the chassis. Loosen and remove the hardware from the remote jump start and master disconnect switch bracket (if equipped) at the mounting location on the oil cooler.



bd04c102 13

23. Push the handle on the latch to release the radiator from the oil cooler. Tip the radiator down to access the hardware which fastens the radiator to the oil cooler. Remove the hardware from the radiator and remove the radiator from the engine compartment.

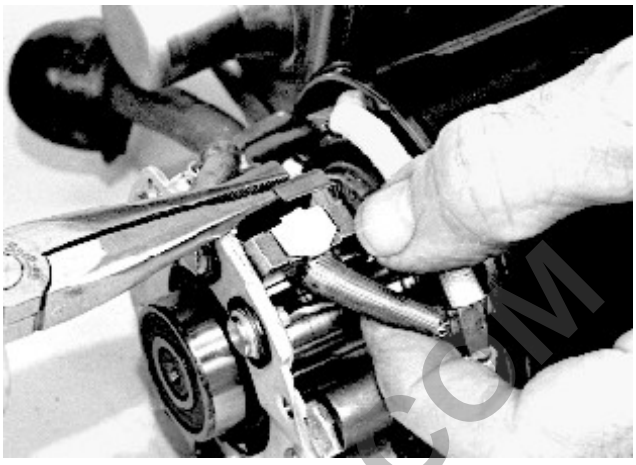


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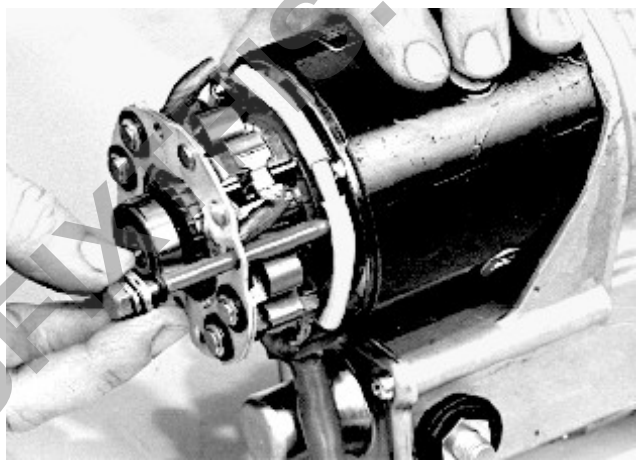
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25. Install the brushes that are connected to the field coil.



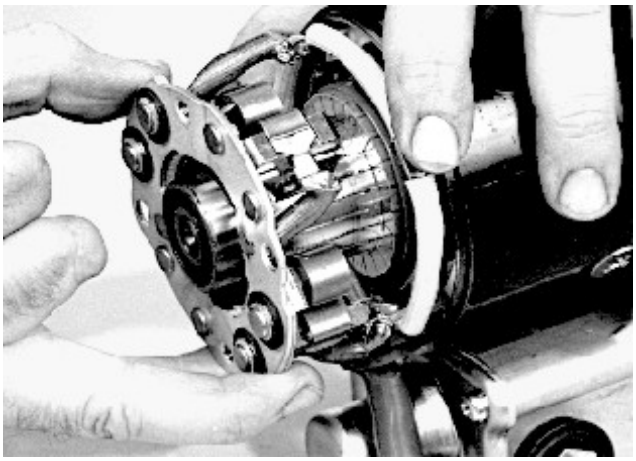
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26. Use a bolt to align the brush holder with the field frame assembly.



b330812 26

27. Move the brush holder so it is even with the end of the armature.



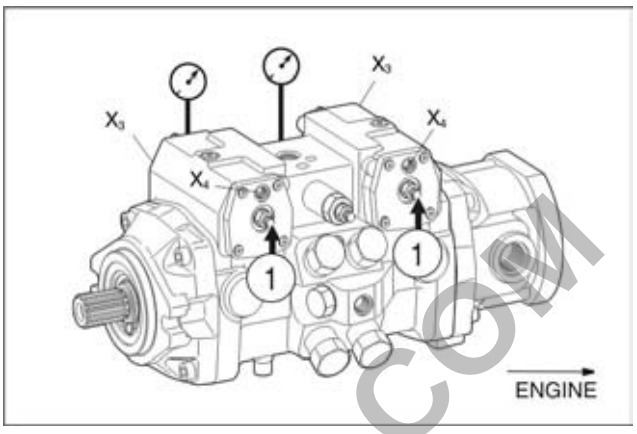
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6. Start and run the engine at high idle.

7. Loosen the jam nut and turn the adjustment screw (1) on the pilot servo control until the pressure gauges indicate the same value on each gauge. Repeat the same procedure for the other pilot servo control until the pressure gauges indicate the same value on each gauge.



BS06M583_1 2

8. Reconnect the positive terminal of the brake valve. Start the engine and release the park brakes. The ground drive should not move when the ground drive control is in the NEUTRAL position. Repeat the above procedure as required until there is no movement of the ground drive with the park brakes released.

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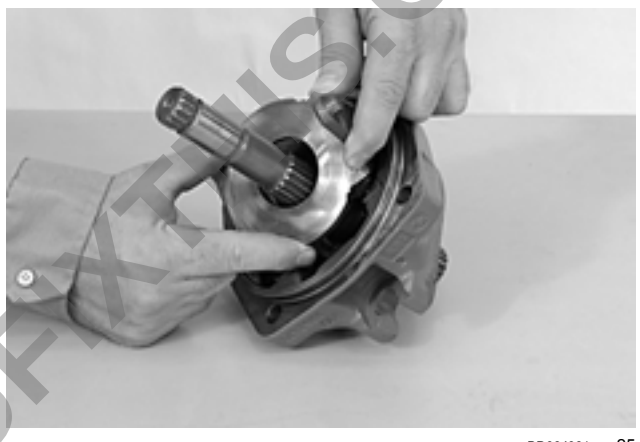
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28. Ensure the cradle arm (1) is opposite of the alignment hole (2).



BD06J058_1 24

29. Install the cradle onto the drive shaft.



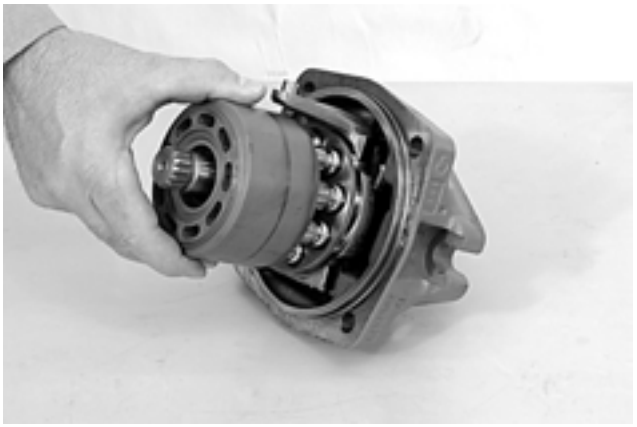
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30. Install the spline collar.



BD06J060 26

31. Install the hydraulic section onto the drive shaft.



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FRONT AXLE - Install

435, 445

1. Install the sprocket on the axle assembly.

NOTE: *During the front axle removal, the location and the direction the sprockets were facing, was recorded. Please refer to* ***FRONT AXLE - Remove (D.10.A)****. Ensure that the sprockets are facing the right direction.*

2. Install the chain on the sprocket. Align the sprocket with the axle opening in the chassis.
3. Install a new O-ring on the axle assembly.
4. Align the splines on the axle assembly with the splines inside the sprocket. Slide the axle assembly onto the sprocket. Install the axle assemblies and flange nuts on the chassis.
5. Install the bolt and washers in the axle assemblies and flange nuts on the chassis.
6. Tighten the bolt to a torque of **247 - 320 Nm** (**185 - 235 lb ft**). Install the rubber plugs in the chassis.
7. Adjust the deflection of the chains. Please refer to **Drive chain - Tension adjust (D.50.C)**.
8. Install the inspection cover and gasket. Tighten the inspection cover retaining bolts to a torque of **101 - 113 Nm** (**73 - 83 lb ft**).
9. Install the wheels and wheel nuts.
10. Tighten the wheel nuts to a torque of **223 - 265 Nm** (**165 - 195 lb ft**).
11. Remove the supports and lower machine to the ground.

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8. PROBLEM:
   Engine will start and run but boom and bucket will not move.
   POSSIBLE CAUSE:
   No power to control valve lockout solenoids.
   CORRECTION:
   Check for power at spool lockout solenoids.
   Check 15 amp fuse in cab fuse block.
   Replace EIC.

9. PROBLEM:
   EIC will not read monitored circuits.
   POSSIBLE CAUSE:
   Incorrect engine configuration.
   CORRECTION:
   Correct engine configuration.
   POSSIBLE CAUSE:
   Open or short in wire from sensor to EIC.
   CORRECTION:
   Repair ope/short.
   POSSIBLE CAUSE:
   Faulty sender or sensor.
   CORRECTION:
   Repair/replace sender or sensor.

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6. Open the high and low valves.



A22114 3

7. Make certain the refrigerant tank gas and liquid valves are open.



A22107 4

8. Connect the main power plug to a 115 volt AC outlet. Move the main power switch to the ON position and depress the recovery start switch. The compressor will shut OFF automatically when recovery is complete. Wait for five minutes and observe the manifold pressure gauges for a pressure rise. If pressure rises above zero PSI, depress the hold/cont switch. Then wait for the compressor to automatically shut OFF.



A22112 5

9. Drain the oil separator of the A/C system oil. Open the air purge valve long enough to let some of the compressor discharge pressure back into the separator.



A22108 6

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WORKING ARM - H

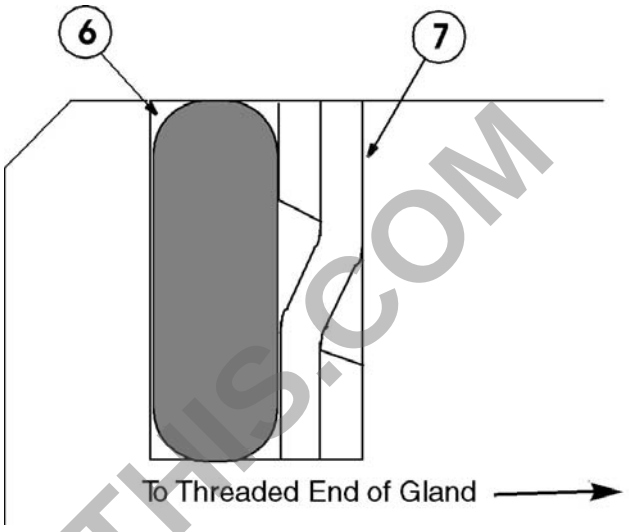
SINGLE ARM Lift - 40.B

435
445CT
445

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6. If used, install a new back ring **(7)** on the gland **(2)**. Make sure the backup ring is installed. Follow the same procedure for the non-gas valve end of the tube.
7. Install the O-ring **(6)** next to the backup ring **(7)**. If a backup ring is not used, install an O-ring in the groove on the gland. Follow the same procedure for the non-gas valve end of the tube.



BS04D006 2

8. Lubricate the O-ring **(6)** and the backup ring **(7)** with clean hydraulic oil. Start the gland **(2)** into the tube **(1)**. Follow the same procedure for the non-gas valve **(14)** end of the tube.
9. Fasten the tube **(1)** in the vise. Tighten the gland **(2)**. Follow the same procedure for the non-gas valve end of the tube
10. Install a new O-ring **(6)**on the body **(13)**of the gas valve assembly **(10)**.
11. Install the valve core **(12)** in the body **(13)**.
12. Lubricate the O-ring **(6)** with clean hydraulic oil. Install and tighten the gas valve assembly **(10)**in the gland **(2)**.
13. Install the cap **(11)**.
14. Charge the accumulator with dry nitrogen. Please refer to **Accumulator - Charging (H.40.B)**.
15. Install the guard **(9)** and cap screws **(8)**.

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