

ENVIRONMENT CONTROL Air-conditioning system E.40.C

SAFETY SECURITY ACCESSORIES Safety E.50.B

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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.

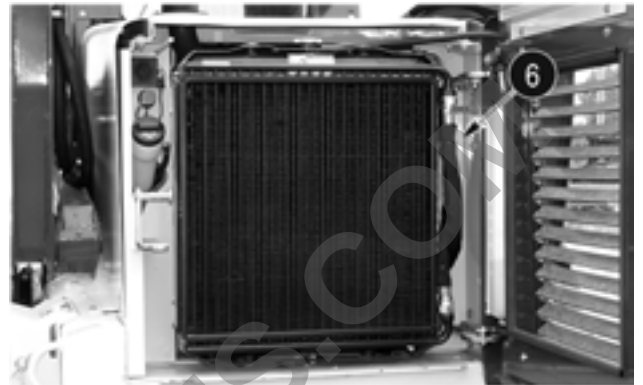
4. Microscopic contamination occurs when very fine particles of foreign material are in suspension in the hydraulic oil.
5. These particles are too small to see or feel. Microscopic contamination can be found by identification of the following problems or by testing in a laboratory. Examples of the problems: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

Filter - Install

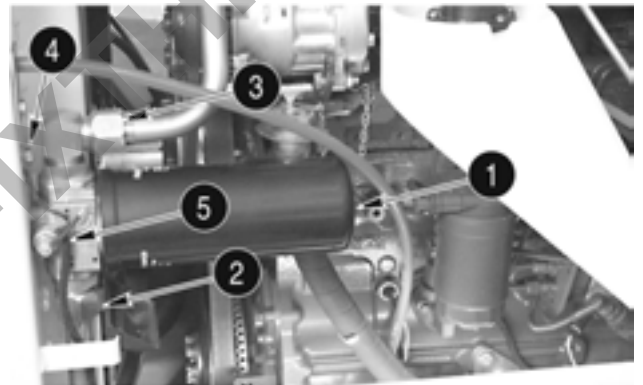
Prior operation:

Reservoir - Apply vacuum (A.10.A).

1. Reinstall the filter base with the hardware previously removed **(6)**. Torque the mounting hardware to **20 Nm (15 lb ft)**.
2. Reinstall the hydraulic lines **(2 and 3)** and tighten the lines to seat line on fittings; loosen and retorque.
3. Stop vacuum pump.
4. Reinstall the filter sensor and connect the sensor wires, **(5)** and the ground wire **(4)**.
5. Coat the seal ring on a new filter element **(1)** with clean 10W-30 oil, and tighten the new filter element **(1)** until it contacts the base and then tighten another half to three-quarter turn.



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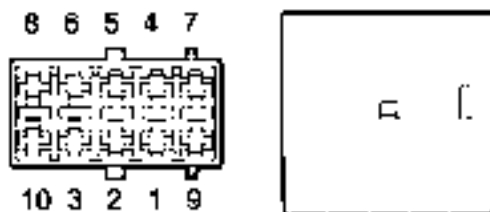


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Connector - Component diagram 15

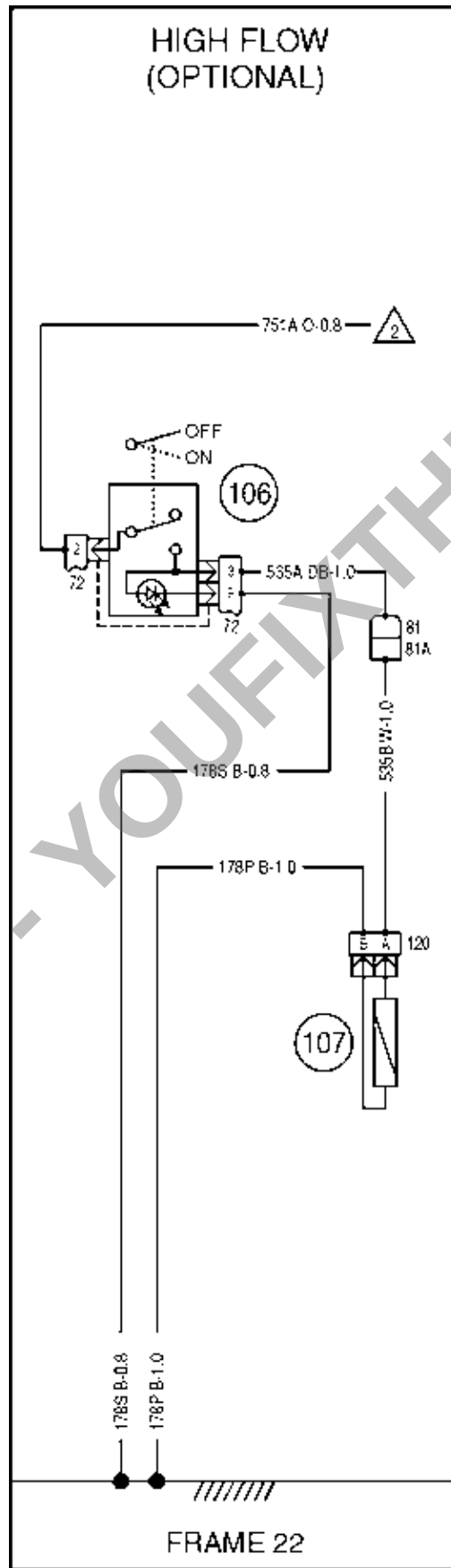
Connector 132



EATON_25-13936 1

Cavity	Circuit ID	Description
3	761C	To connector 134
8	178BL	To ground
2	721C	From fuse
7	721D	From fuse

Wiring harness - Electrical schematic frame 22



BC06K512-22A

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(106) High Flow Switch (Optional)

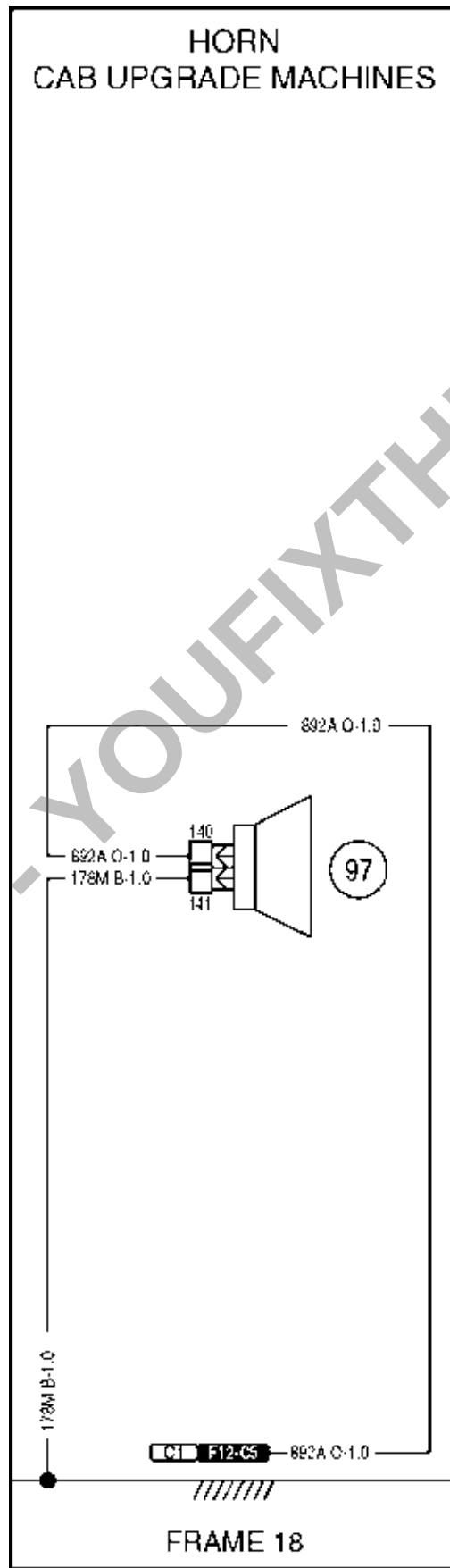
(107) High Flow Solenoid (Optional)

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Wiring harness - Electrical schematic frame 18 (Cab Upgrade Machines)



BC07E412-18A

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Turn/hazard light Diode - Testing

NOTE: For wiring diagram refer to *Wiring harness - Electrical schematic frame 20 (A.30.A) Wiring harness - Electrical schematic frame 08 (A.30.A)*

N°	Test Point	Expected Result	Other Result (Possible Cause)
1	Check Disconnect the diode from the connector. With the voltmeter set to the DIODE TEST setting, check between the terminals of the diode.	Result Continuity in one direction only.	Action Bad diode.

Turn/hazard light Turn switch - Testing

NOTE: For wiring diagram refer to *Wiring harness - Electrical schematic frame 08 (A.30.A) Wiring harness - Electrical schematic frame 09 (A.30.A) Wiring harness - Electrical schematic frame 12 (A.30.A)*

N°	Test Point	Expected Result	Other Result (Possible Cause)
1	Check Turn the key switch to the ON position. Terminal for wire 755B (Y) to ground.	Result Approximately 12 volts	Action Check the circuit between the hazard switch and the 10 amp fuse in the rear fuse block No. 2. Also check the 10 amp fuse in the rear fuse block No. 2.
2	Check Place the hazard switch on the HAZARD position. Terminal for wire 701A (G) and 702A (Y) to ground.	Result Approximately 12 volts	Action Bad hazard switch.
3	Check Terminal for wire 178DJ (B) to ground.	Result Continuity	Action Bad ground circuit for hazard switch indicator lamp. If the readings are correct and the indicator lamp on the hazard switch does not illuminate, replace the hazard switch.
4	Check TESTS 4 THROUGH 6 APPLY TO MACHINES WITH LEFT HANDLE OPTION G ONLY. Turn the key switch to the ON position. Terminal for wire 754AG (Y) to ground.	Result 12 volts	Action Check circuit to flasher module terminal for wire 754C (Y).
5	Check Place the turn signal switch into the left turn signal position. Terminal for wire 771AG (Y) to ground.	Result 12 volts	Action Check the circuit from the terminal for wire 771AG (Y) to the left turn indicator lamp. Also check the left turn indicator lamp. Also check the turn signal switch.
6	Check Place the turn signal switch into the right turn signal position. Terminal for wire 791AG (DG) to ground.	Result 12 volts	Action Check the circuit from the terminal for wire 791AG (DG) to the right turn indicator lamp. Also check the right turn indicator lamp. Also check the turn signal switch.

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PREVIEW - YOUFIXTHIS.COM

31. Use the bolts to mount the cover to the field frame. Tighten the bolts. Do not overtighten.



b330818 31

32. Install the cable, lock washer, and nut onto the motor terminal. Tighten the nut. Do not overtighten.



b330731 32

33. Pull the boot over the motor terminal.

TRANSMISSION Hydrostatic - Dynamic description (Machines Equipped with ISO Pattern Pilot Controls)

Pilot Control Travel System

Overview

A pilot travel control system is an option on Skid Steer Loaders. The hydrostatic pump used for this option is sourced from Rexroth. This pump is similar to the Sundstrand M46 pump that is used on the standard control units. This pilot controlled hydrostatic pump output is controlled by hydraulic pressure from a hydraulic joystick that is controlled by the operator's left hand. This hydraulic pressure is applied directly to the ends of the pump servo stroking piston. This control system is not a positive displacement control as the travel speed will vary depending on engine speed, the hand control movement, the pressure available to the hand control from the anti-stall cartridge and also the travel pressure.

While the pump displacement is infinitely variable between zero and 100%, a given swashplate position can be affected by drive system pressure, control pressure to the pilot hand control valve from the anti-stall cartridge, pilot hand control lever position, pump drive speed, as well as the servo stroking piston centering springs. Flow direction is determined by which pump servo cylinder control port is pressurized. Steering is caused by porting an opposing pressure to the servo piston causing the servo piston to return towards neutral. The slower travel side causes the machine to steer in that direction.

With the travel system anti-stall system, pilot hand control supply pressure is typically lower than the hydrostatic system charge pressure. Hydrostatic pump charge pressure is supplied to the anti-stall control cartridge. As the engine speed increases, the anti stall cartridge delivers a higher control pressure to the joystick control valve. When the engine is at low idle, the pressure from the anti stall cartridge will be lower. The lower the control pressure is, the slower the maximum machine travel speed will be. Control oil pressure from the anti-stall regulating cartridge is directed to the travel control pilot hand control valve through the control interlock solenoid valve. Hydrostatic pump displacement is infinitely variable in each direction of travel, proportional to pump drive speed, travel pressure and the location of the pilot hand control handle. Travel direction is controlled by moving the pilot hand control handle either in the forward or backward direction. Steering is controlled by moving the hand control side to side while having the lever either in the forward or backward direction. Counter rotation is controlled by moving the control handle side to side from the neutral position.

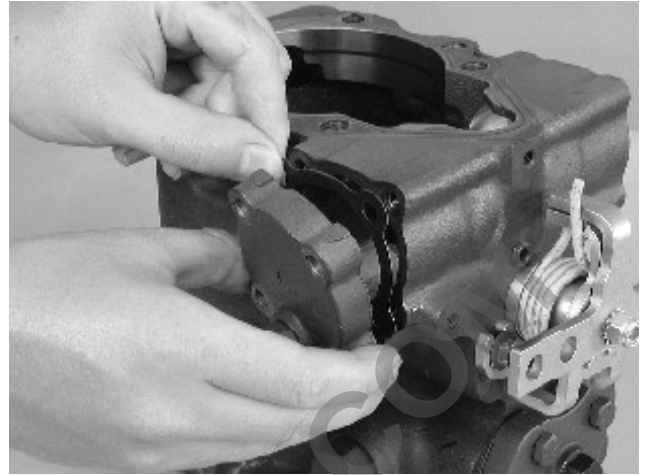
Pilot Travel Control System Forward Travel

Pilot Hand Control - Neutral

The pilot hand control joystick valve assembly operates very similar to the joysticks used in the hydraulic control system of the Excavators and Wheel Loaders. In the neutral position, all of the hydrostatic pump travel control ports are connected to the tank. This tank connection is made through the joystick valve.

The pilot hand control joystick valve assembly has four control spools. Any time that one or more of these spools are not actuated, the travel port for the spool is connected to the tank through a drilling in the spool. The supply pressure from the hydrostatic pump anti-stall valve is completely blocked off at all four control spools at this time. The travel control spool in the joystick is not directly connected to the actuating lever/plunger. There is a spring(s) between the plunger and the control spool.

33. Remove the cover and discard the gasket.



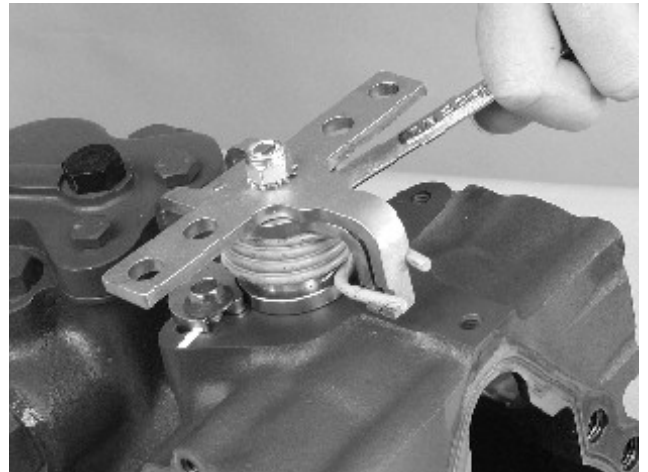
BD01H205 32

34. Go to the spool assembly. Mark the position of where the stop bracket is bolted. Repeat for the other side.



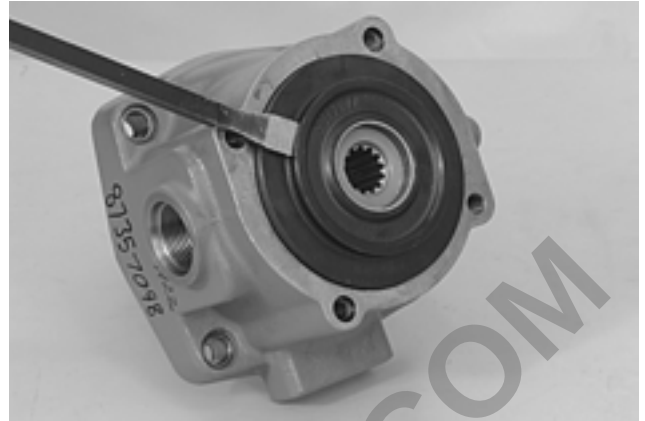
BD01H206 33

35. Remove the bolts and the spool assembly from the housing.



BD01H207 34

31. Use acceptable tools and remove the IZP housing.



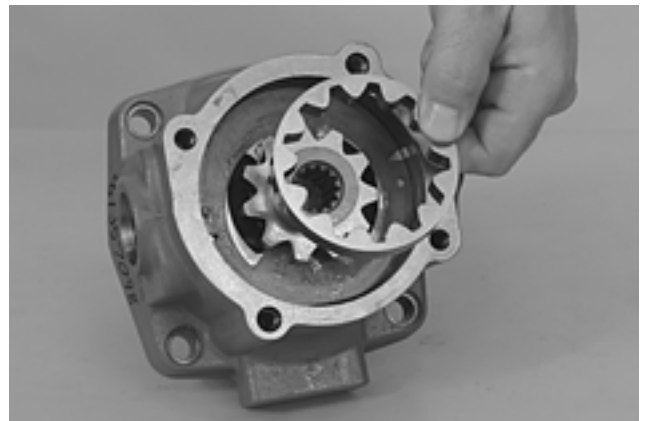
BD06J084 30

32. Remove the O-ring from the IZP housing.



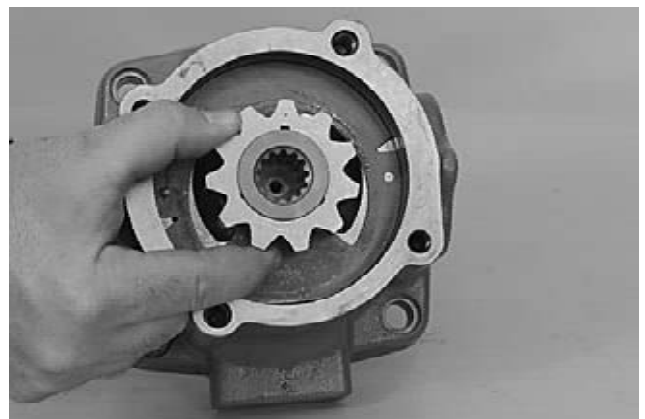
BD06J085_1 31

33. Remove the outer gear.



BD06J086 32

34. Remove the inner gear.

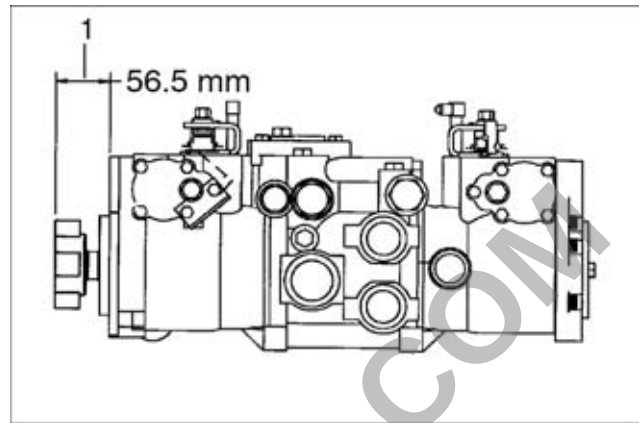


BD06J087 33

Pump - Install

1. If the pump drive coupler hub was removed from the tandem pump input shaft, install the pump drive coupler hub onto the tandem pump input shaft.

(1) Dimension from pump flange to outer hub face.



BS04E024 1

2. The outer face of the pump drive coupler hub should extend **56.5 mm (2.23 in)** from pump mounting flange as shown in Figure 1. Tighten the pump drive coupler hub set screws **50 - 54 Nm (37 - 40 lb ft)**.
3. Connect acceptable lifting equipment to the tandem pump.
4. Use the lifting equipment to move the tandem pump into the mounting location.
5. Move the tandem pump towards the engine. Engage the splines of the pump drive coupler hub with the splines in the pump drive flange.
6. Apply Loctite 243 to all of the pump and support mounting bolts except for the 2 bottom support mounting bolts.
7. Install the 4 tandem pump mounting bolts and washers into the tandem pump mounting flange and the 4 mounting bolts and washers in the pump support bracket.

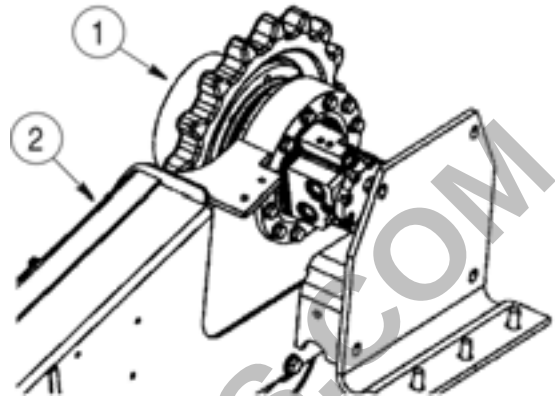


bd04c029 2

Motor - Install

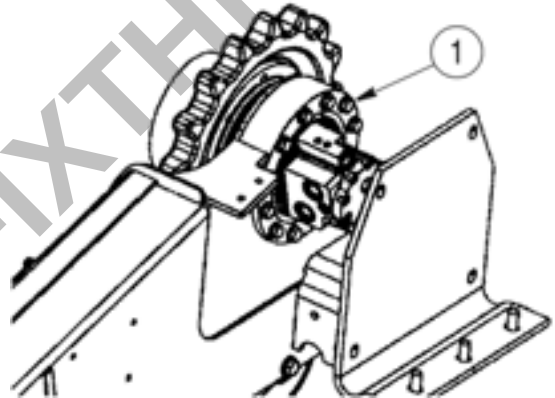
C185, C190

1. Slide the drive motor (1) into the main frame (2) mounting location. If the same motor is being installed, use the marks made during removal and align the drive motor in the main frame. If a new motor is being installed, transfer the reference mark from the old motor to the same location on the new motor and align the drive motor in the main frame.



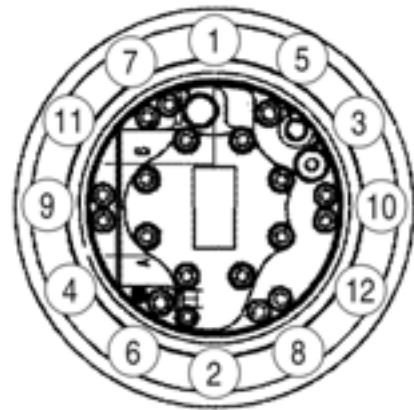
bs05c164_3 1

2. Install the mounting bolts (1) into the main frame.



bs05c164_4 2

3. Tighten the mounting bolts to a initial torque of **67 - 163 Nm (50 - 120 lb ft)** using the star tightening sequence shown. After the initial torque is complete, tighten the mounting bolts to a final torque of **183 - 205 Nm (136 - 153 lb ft)** using the star tightening sequence shown.



bs05c156_1 3

4. Remove the plastic plugs from the motor ports (1). Install the connectors into the motor ports (1) and tighten the connectors.
Next Operation: **Reservoir - Apply vacuum (A.10.A)**

TRAVELLING - D

STEERING Steering clutch - 20.F

C185

C190

L180

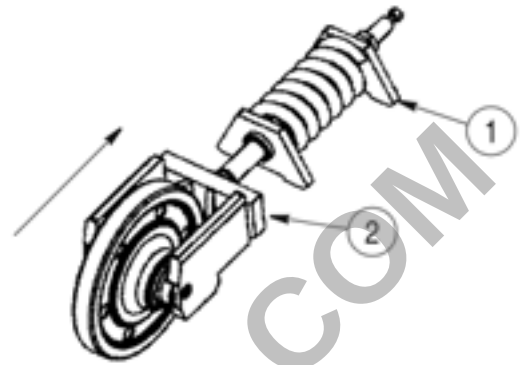
L185

L190

Track tensioning mechanism - Install

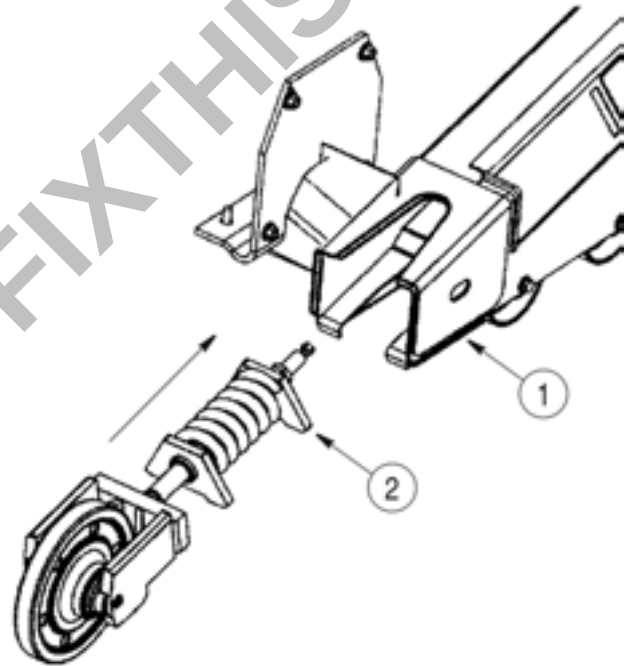
C185, C190

1. Slide the yoke assembly (2) onto the track tension assembly (1).



bs05c134_2 1

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



bs05c135_2 2

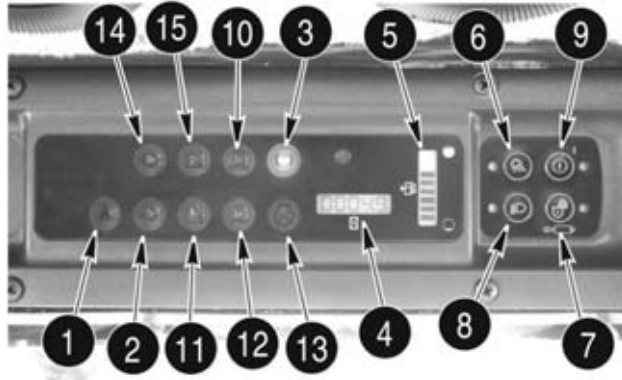
Next operation:

Refer to **Rubber track - Install (D.50.B)** and install the track.

After the track has been installed, follow the procedure **Rubber track - Tension adjust (D.50.B)** and adjust the tension of the track.

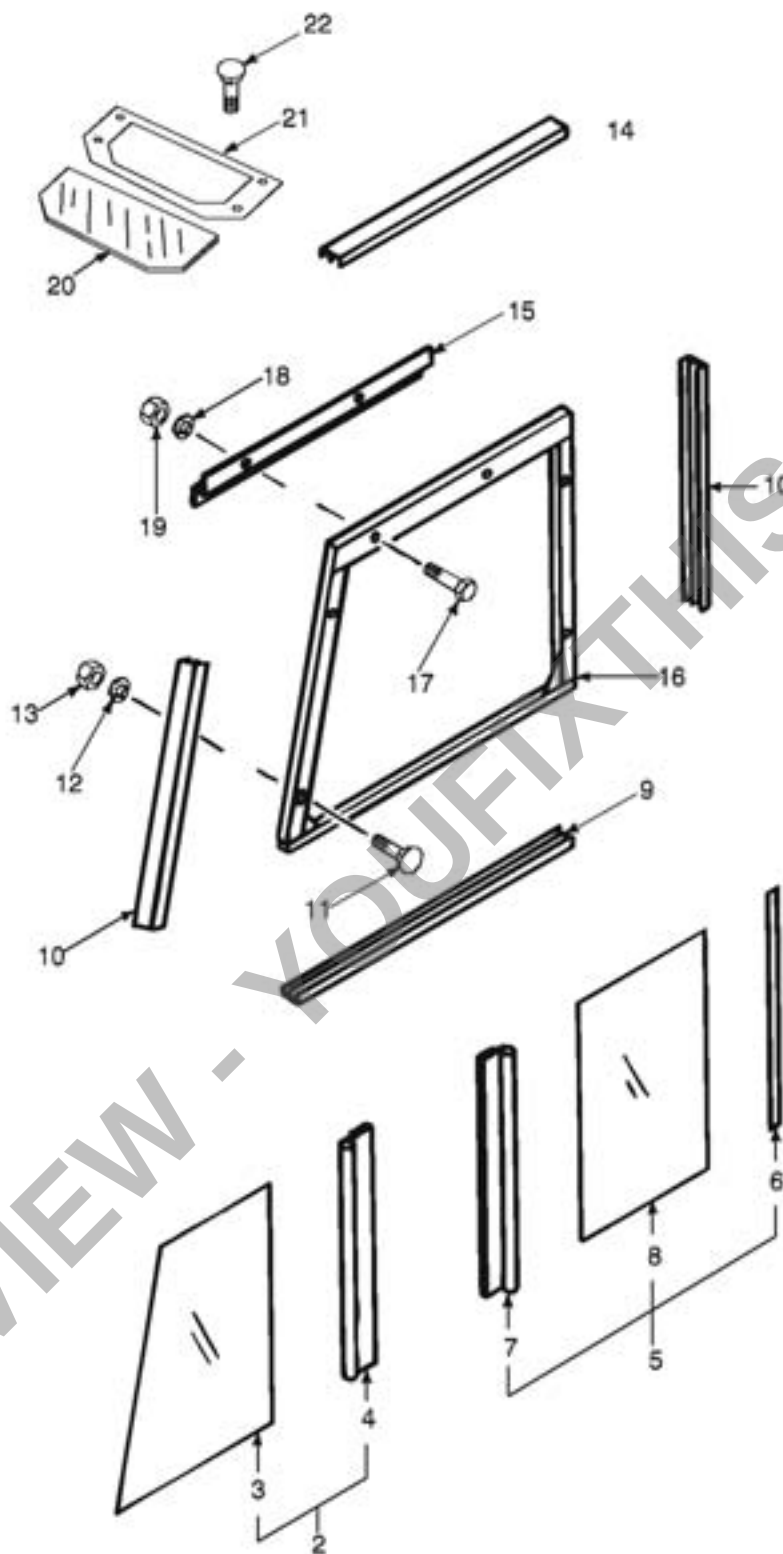
Instrument panel - Static description

Electronic Instrument Cluster (EIC)



bd04e088 1

ELECTRONIC INSTRUMENT CLUSTER (EIC)		
1. Seat Belt Indicator Lamp	6. Work lamp switch	11. Coolant temperature warning lamp and alarm
2. Engine oil pressure indicator lamp and alarm	7. Auxiliary hydraulic interlock override switch	12. Engine air filter warning lamp
3. Park brake indicator lamp	8. Road lamp switch	13. Engine grid heater lamp (if equipped)
4. Hourmeter	9. Park brake ON/OFF switch	14. Charge pressure warning lamp
5. Fuel Gauge	10. Hydraulic oil filter warning lamp	15. Hydraulic fluid temperature warning lamp



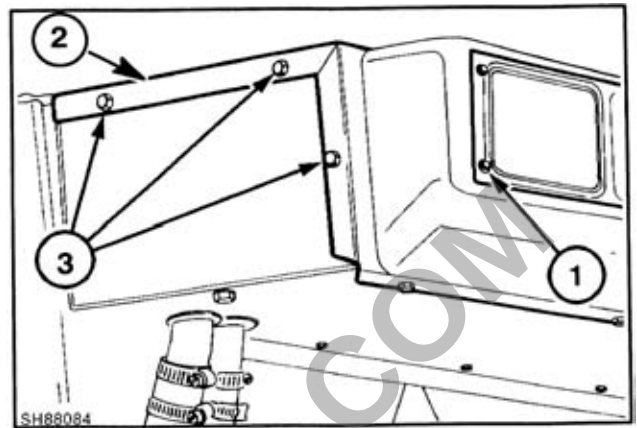
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Cab Windows		
(2) Cab Glass Assembly (Right and Left Hand)	(9) Channel	(16) Window Frame (Right and Left Hand)
(3) Cab Glass	(10) Channel	(17) Bolt
(4) Handle	(11) Bolt	(18) Washer
(5) Cab Glass (Right and Left Hand)	(12) Lock Washer	(19) Nut

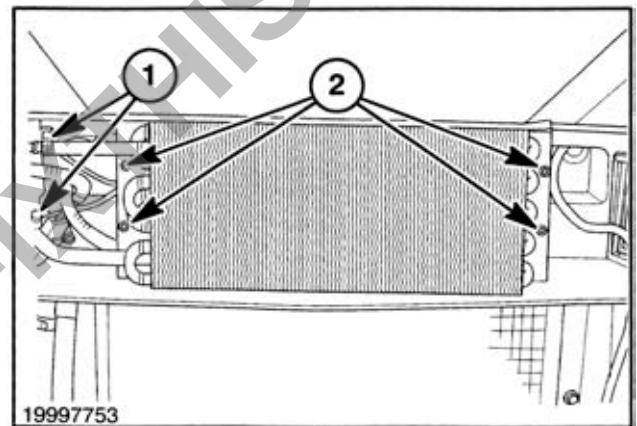
Heater - Remove

1. To access the heater core and/or the fan assembly, the rear light bar, (1), (if equipped with lights) and top heater cover, (2) must be removed. Remove the heater cover mounting screws (3) to remove the cover and the light bar together.



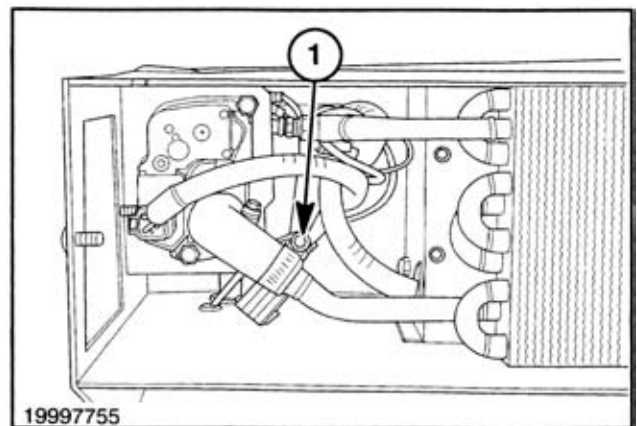
SH88084 1

2. **HEATER CORE REPLACEMENT:**
 Drain the cooling system enough to drain the coolant from the heater core, about 2 liters (2 quarts).
 Remove the heater hose clamps (1) from the heater core. Remove the hoses from the heater core and cap the hoses.
 Remove the heater core retaining hardware (2) and remove the core from the heater support.



19997753 2

3. **HEATER SHUTOFF VALVE REPLACEMENT:**
 Drain the cooling system enough to drain the coolant from the heater core, about 2 liters (2 quarts).
 Remove the control cable from the valve.
 Remove the heater hose clamp (1) from the heater shutoff valve. Remove the hoses from the valve and cap the hoses.
 Remove the heater shutoff valve.



19997755 3

9. Remove the key from the rotor shaft.



A21258 9

10. Remove the external snap ring for the bearing and pulley assembly.



A21260 10

11. Install the special puller internal collars into the groove in the pulley. Install the special tool onto the shaft. Tighten the mounting screws finger tight.



A21261 11

12. Turn the center screw on the puller.



A21262 12

Contents

WORKING ARM - H

SINGLE ARM Lift - 40.B

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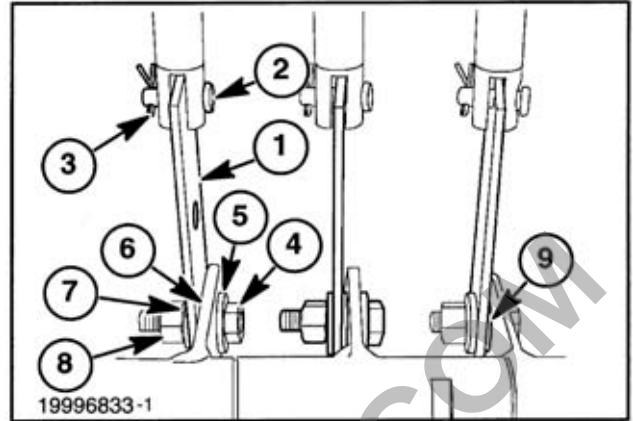
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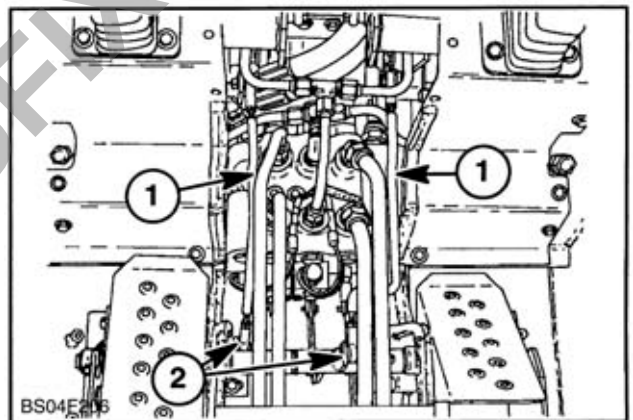
Cylinder

27. Install the control spool links, **(1)**, with clevis pins, **(2)**, and cotter pins, **(3)**.



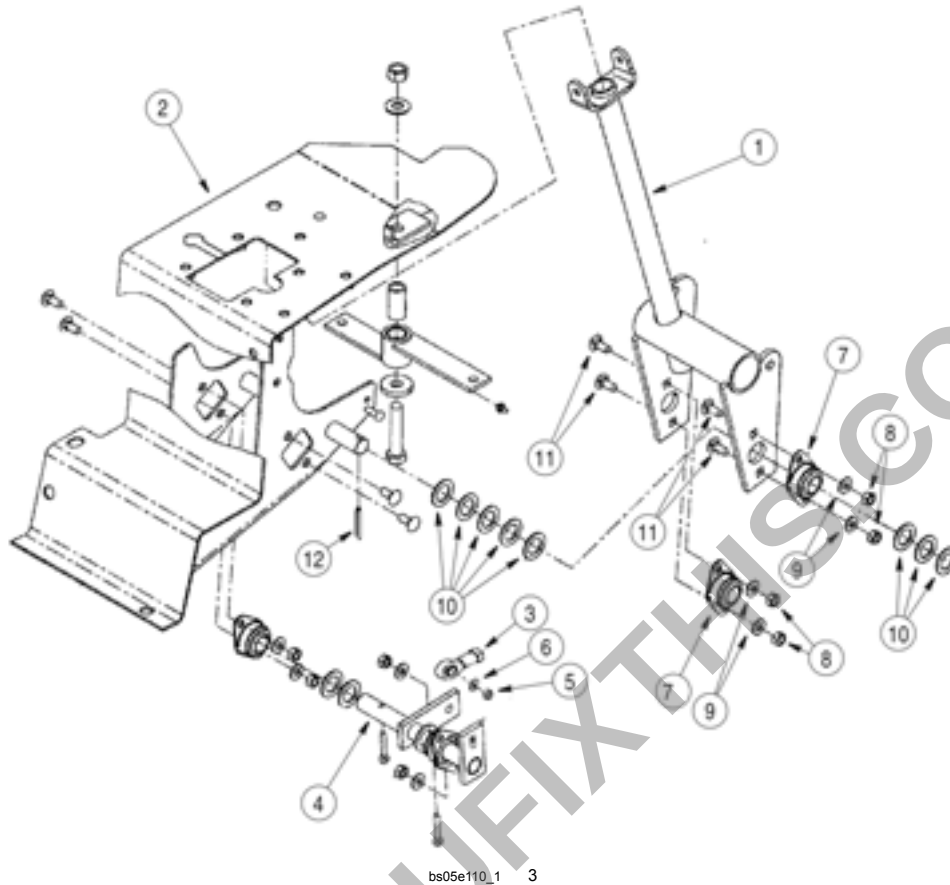
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28. Link the boom valve link and the bucket valve link to the hub arms with 3/8" hex head bolts, **(4)**, flat washer, **(5)**, thick link washers, **(6)**, lock washer, **(7)**, and nut, **(8)**.
29. Install the auxiliary hydraulic link with 3/8" hex head bolts, flat washer, two flat washers, **(9)**, lock washer, and nut.
30. Install control rods, **(1)**, to the pedal hub arms, **(2)**, with the bolts, washers, lock washers and nuts removed during pedal removal.



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31. Install the step shield and step shield hardware.



(1) Right Hand Control Handle	(5) Nut	(9) Washer
(2) Right Hand Kick Panel	(6) Washer	(10) Shims
(3) Control Rod End	(7) Bearing	(11) Bolt
(4) Right Hand Shaft	(8) Nut	(12) Pin

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