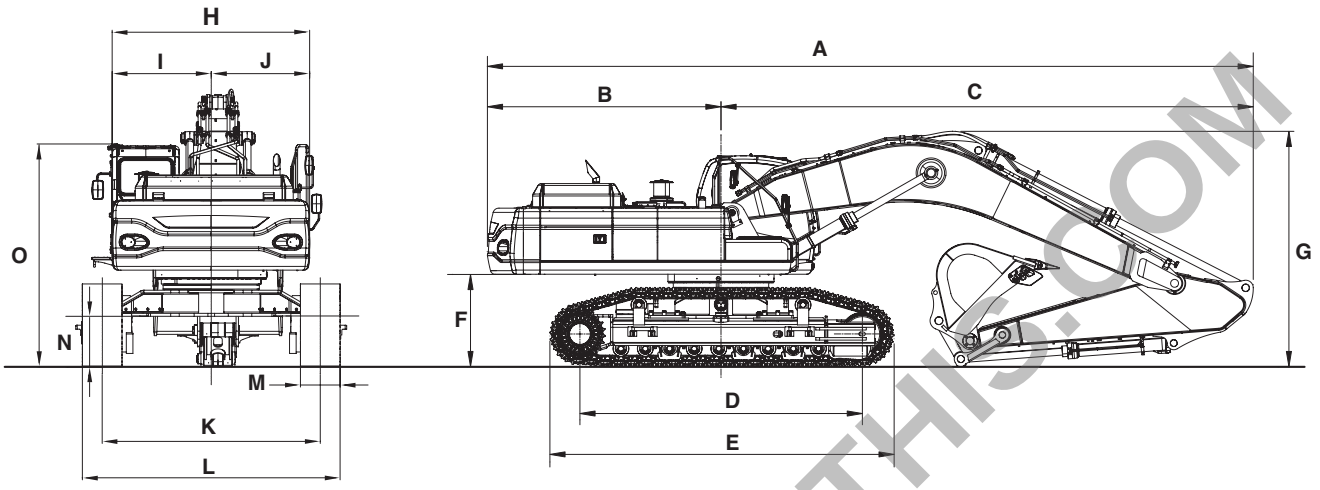
GENERAL DIMENSIONS (DX480LC)



FG004614

Figure 2

Dimension	7.10 m (23.3 ft) Boom		
	2.9 m (9.51ft) Arm	**3.35 m (11.0 ft) Arm**	**3.98 m (13.1 ft) Arm**
A	12,230 mm (40' 2")	12,130 mm (39' 10")	12,210 mm (40' 2")
B	3,700 mm (12' 2")		
C	8,530 mm (28' 0")	8,430 mm (27' 8")	8,510 mm (27' 11")
D	4,470 mm (14' 8")		
E	5,465 mm (17' 11")		
F	1,460 mm (4' 9")		
G	3,980 mm (13' 1")	3,730 mm (12' 3")	3,990 mm (13' 1")
H	2,990 mm (9' 10") / 3,926 mm (12' 10") Cat Walk		
I	1,500 mm (4' 11") / 1,806 mm (5' 11") Cat Walk		
J	1,490 mm (4' 11")		
K (Std)	3,300 mm (10' 10") / 2,740 mm (9' 0") (Transport Position)		
K (Narrow)	2,920 mm (9' 7") / 2,360 mm (7' 9") (Transport Position)		
L (Std)	3,900 mm (12' 10") / 3,340 mm (11' 0") (Transport Position)		
L (Narrow)	3,520 mm (11' 7") / 2,990 mm (9' 10") (Transport Position)		
M	600 mm (23.62 in)		
N	770 mm (30.31 in)		
O	3,370 mm (11' 1")		

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REMOVAL

CAUTION!

Avoid disassembling cabin if there are strong wind gusts, which could catch large surface area of cabin shell and push it sideways during lift.

1. Park on firm and level ground.
2. Lower front attachment (bucket) to ground.
3. Shut down engine.
4. Set safety lever on “RELEASED” position.
5. Turn starter switch to “I” (ON) position.

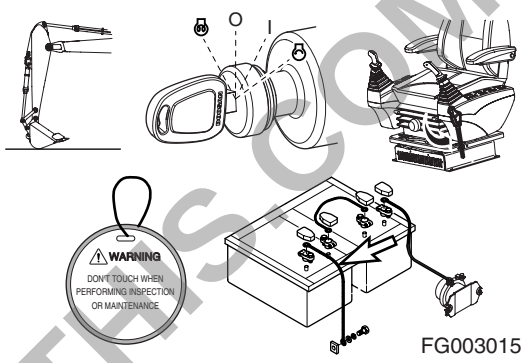
WARNING!

If engine must be run while performing maintenance, use extreme care. Always have one person in the cabin at all times. Never leave the cabin with the engine running.

6. Fully stroke work levers (joysticks) in all directions to relieve pressure from accumulators.
7. Set safety lever on “LOCK” position.
8. Turn key to “O” (OFF) position and remove from starter switch.
9. Hang maintenance warning tag on controls.
10. Disconnect the battery cable from the negative (-) battery terminal.
11. Prepare cabin shell for removal by disconnecting wiring connectors for:
    A. Cabin interior lighting.
    B. External light wiring.
    C. Radio antenna and connections.
    D. Wiper/washer connections.

NOTE: *Control console wiring harnesses and hydraulic piping lines that pass through the floor of the cabin do not need to be disassembled.*

NOTE: *If unit is equipped with a cabin protective structure (for forestry, or hazardous working conditions), it must be removed.*



FG003015

Figure 1

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Hydraulic Schematic DX480LC/ 520LC

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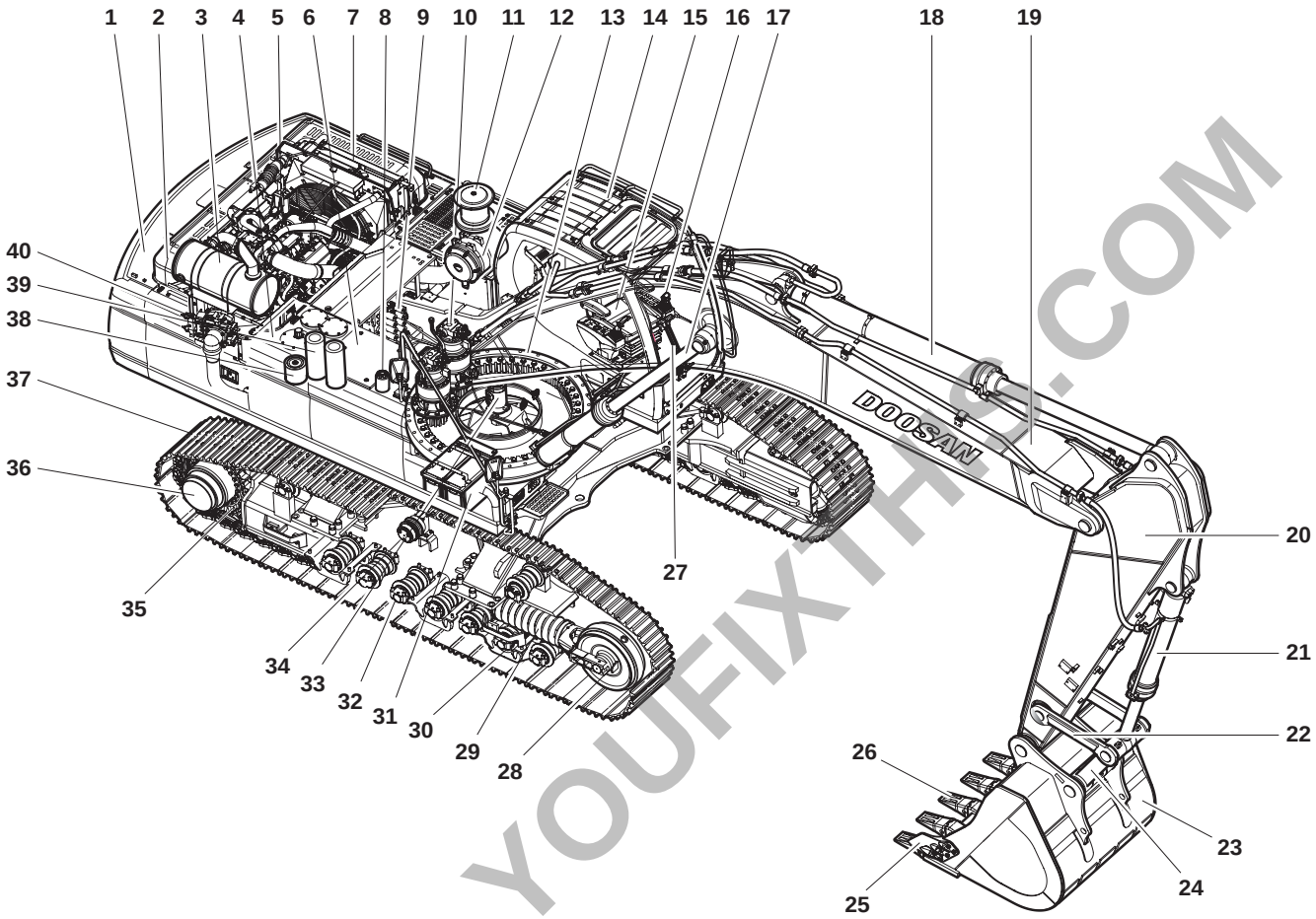
Electrical Schematic DX480LC/ 520LC

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COMPONENT LOCATIONS



FG002085

Figure 1

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SAFETY PRECAUTIONS

CAUTION!

Follow all safety recommendations and safe shop practices outlined in the front of this manual or those contained within this section.

Always use tools and equipment that are in good working order.

Use lifting and hoisting equipment capable of safely handling load.

Remember, that ultimately safety is your own personal responsibility.

APPLICABLE MODELS

The contents of this section apply to the following models and serial number ranges.

MODEL	SERIAL NUMBER RANGE
DX420LC	5001 and Up
DX480LC	5001 and Up
DX520LC	5001 and Up

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Swing Motor SP000194
Travel Motor (With Gearbox) (A6V160HD) SP000185
Main Pump (Rexroth) SP000186
Control Valve (Kayaba Model KVMG-400-DA) SP000187
Remote Control Valve (Work Lever / Joystick) SP000189
Travel Control Valve (With Damper) SP000070
Solenoid Valve Assembly SP000191
Breaker EPPR Valve (Opt) SP000192
Fan Motor (Vane Type) SP000209
Gear Pump (Fan Cooling Drive) SP000208
Fan Cooling Flow In-Out Change Valve SP000207
Hydraulic Schematic DX480LC/ 520LC SP000212

Electrical System

Electrical System SP000197
Electrical Schematic DX480LC/ 520LC SP000213

Attachments

Boom and Arm SP000205
Bucket SP000206

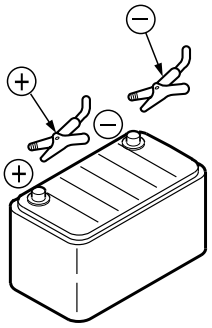
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Boost Starting or Charging Engine Batteries

If any mistake is made in the method of connecting the booster cables, it may cause an explosion or fire. Always do the following:

- Turn off all electrical equipment before connecting leads to the battery. This includes electrical switches on the battery charger or boost starting equipment.
- When boost starting from another machine or vehicle do not allow the two machines to touch. Wear safety glasses or goggles while required battery connections are made.
- 24 volt battery units consisting of two series connected twelve volt batteries have a cable connecting one positive terminal on one of the 12 volt batteries to a negative terminal on the other battery. Booster or charger cable connections must be made between the nonseries connected positive terminals and between the negative terminal of the booster battery and the metal frame of the machine being boosted or charged. Refer to the procedure and illustration in "Starting Engine With a Booster Cable" in the Operation and Maintenance Manual.
- Connect positive cable first when installing cables and disconnect the negative cable first when removing them. The final cable connection, at the metal frame of the machine being charged or boost started, should be as far away from the batteries as possible.



HAOA310L

Figure 46

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MAINTENANCE SERVICE AND REPAIR PROCEDURE

General Precautions

Fluid level and condition should always be checked whenever any other type of maintenance service or repair is being performed.

NOTE: *If the unit is being used in an extreme temperature environment (in sub-freezing climates or in high temperature, high humidity tropical conditions), frequent purging of moisture condensation from the hydraulic reservoir drain tap should be a regular and frequent part of the operating routine. In more moderate, temperate climates, draining reservoir sediment and moisture may not be required more than once or twice every few months.*

Inspect drained oil and used filters for signs of abnormal coloring or visible fluid contamination at every oil change. Abrasive grit or dust particles will cause discoloration and darkening of the fluid. Visible accumulations of dirt or grit could be an indication that filter elements are overloaded (and will require more frequent replacement) or that disintegrating bearings or other component failures in the hydraulic circuit may be imminent or have already occurred. Open the drain plugs on the main pump casings and check and compare drain oil in the pumps. Look for evidence of grit or metallic particles.

Vibration or unusual noise during operation could be an indication of air leaking into the circuit (Refer to the appropriate Troubleshooting section for component or unit for procedures.), or it may be evidence of a defective pump. The gear type pilot pump could be defective, causing low pilot pressure, or a main pump broken shoe or piston could be responsible.

NOTE: *If equipped, indicated operating pressure, as shown on the multidisplay digital gauge on the Instrument Panel ("F-Pump" and "R-Pump") will be reduced as a result of a mechanical problem inside the pump. However, pressure loss could also be due to cavitation or air leakage, or other faults in the hydraulic system.*

Check the exterior case drain oil in the main pumps. If no metallic particles are found, make sure there is no air in the system. Unbolt and remove the tank return drain line from the top part of the swing motor, both travel motors and each main pump. If there is air in any one of the drain lines, carefully prefill the assembly before bolting together the drain line piping connections. Run the system at low rpm.

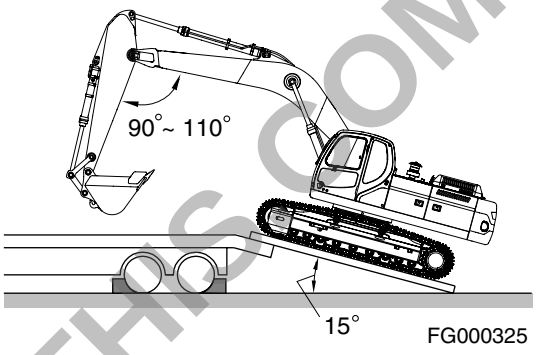
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⚠ WARNING!

If the turntable deck has been unbalanced by removal of weight from one end only, traveling the excavator, swinging the turntable, movement over bumps or sloping and uneven surfaces could cause loss of control and possible accidents or injuries.

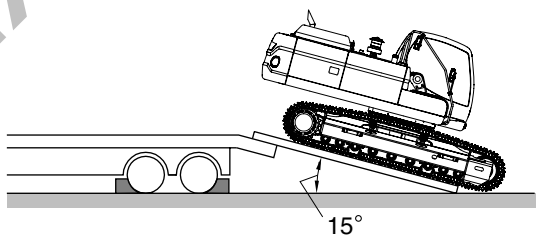
To maintain stability the counterweight should be removed whenever the front attachment is taken off the machine.



FG000325

Figure 1

When loading an excavator (either track or wheeled type) on a trailer for transport after the front attachment has been removed, always go backwards up the loading ramp. The counterweight end of the deck has to get on the trailer first, while the cabin is still going up the ramp (Figure 1).

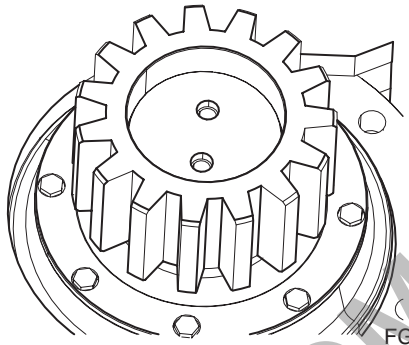


FG000326

Figure 2

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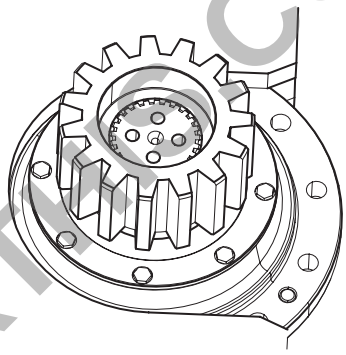
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FG004966

Figure 20

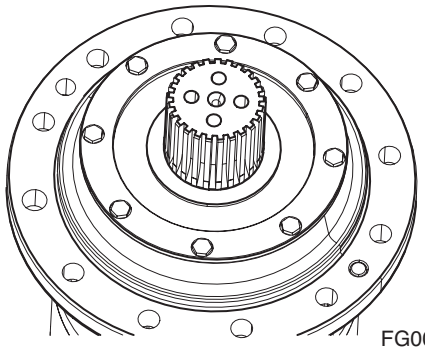
9. Remove pinion gear.



FG004967

Figure 21

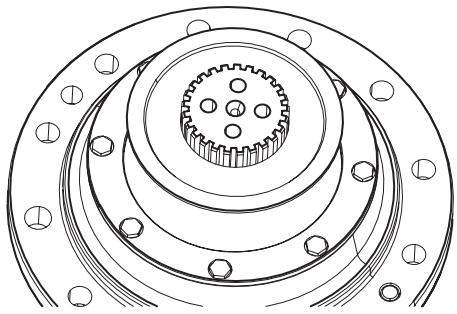
10. Using a gear puller to remove collar.



FG004968

Figure 22

11. Remove plate.



FG004970

Figure 23

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TRACK SHOES AND LINKS

Track Removal

1. Position machine on a smooth level surface with adequate room for forward and reverse travel.
2. Release track tension. Refer to "Track Tension" in this section for procedure.

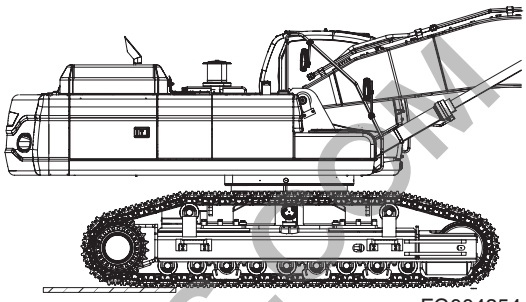
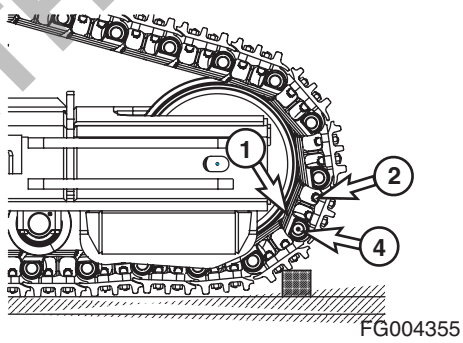

FG004354

Figure 8

3. Move machine until master link (1, Figure 9) is positioned at approximately 4 o'clock from top position on front idle roller.
4. Put a wooden block under track shoes, as shown.



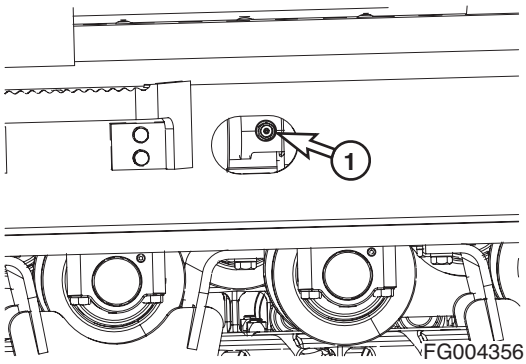
FG004355

Figure 9

5. Loosen valve (1, Figure 10) for track adjuster to drain grease out. Use socket wrench 27 mm

   NOTE: *Loosen carefully, keeping face, hands, body away from the valve and nipple. Do not loosen valve Quickly*

6. Remove four nuts and bolts (2, Figure 9) holding shoe to link. Remove enough shoes to make access to master pin.
7. Remove master pin from master link by hammer or press. Remove pin after detaching shoe.



FG004356

Figure 10

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Categories	Inputs	System Operation
Starting control of heater (1)	Water temp sensor Internal air temp sensor Auto mode Set Temp	1. Start condition (AND condition) (1) When wind direction mode is one of the following modes in the Auto or manual control mode - BI-LEVEL, FOOT or FOOT/DEF (2) The Water temp sensor is stable and the water temp < 73°C (3) Air flow: Auto mode (4) Set temp > Internal air temp + 3°C * Air flow falls gradually up to 12 seconds when operation released.
		2. One time control in the cycle of engine OFF → engine start 3. Initial heating control should be before max heating. 4. Air flow is controlled only when the wind direction is in the manual mode and BI-LEVEL, FOOT, or FOOT/DEF is set. 5. Control through the water temp sensor for start 6. Heater starting control (2) starts in case of fault of the water temp sensor during controlling. 7. Operation release (OR condition) (1) Only air flow is released if it is selected manually. (2) When handling the wind direction mode switch, only wind direction is released but the air flow control is performed only for the remaining period of the starting control of heater. (3) When Max Cooling (17°C) is selected. (4) Water temp sensor > 73°C

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PROCEDURAL TROUBLESHOOTING BASELINE RECOMMENDATIONS

Initial Checks and Tests to Establish Operating Condition of the Excavator

Triage Summary

An excavator that fails to deliver designed performance should be checked for the following:

- Hydraulic flow, first, and.
- Hydraulic pressure, afterwards, in a specified order of priority through different points of the system.

To verify adequate available hydraulic flow, before any other tests are performed through the circuit:

Check engine operation -

- at 1,880 rpm with no load.
- at 1,800 rpm stall load.

If engine rpm drops excessively with a load or fails to surpass rated speed (1,900 rpm), performance problems may be due to inadequate hydraulic flow caused by lagging rotational speed.

NOTE: *Verify actual flow on the excavator against rated performance, with a flow meter.*

If engine tests meet specifications and adequate torque and horsepower are available at the pump drive flex coupling, pull out the electrical tray under the operator's seat to inspect the self-diagnostic display.

If the EPOS trouble code display is clear, check hydraulic functions in the following sequence:

- Pilot pressure.
- Negacon, negative control pressure.
- Main relief pressure (front and rear pump)
- Swing pressure.
- Port relief pressure (individual control functions; boom, arm, bucket, swing, and travel)
- Power boost circuit.
- Standard performance tests; cylinder speed, hydraulic motor (travel and swing) speed, cylinder oil tightness "permissible drift" test.

  NOTE: *System specification performance tests of individual activator function are determined by flow rate through the*

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15. [This procedure is necessary when the ball bearing (108) was disassembled.] Use a hammer tied to a steel bar to tap the surface of the ball bearing into the valve casing (101).



Figure 41

16. Assemble the valve plate (213) in the valve casing (101) and insert the O-ring (112). Apply grease to the engaging part of the valve plate light (to prevent its falling off).

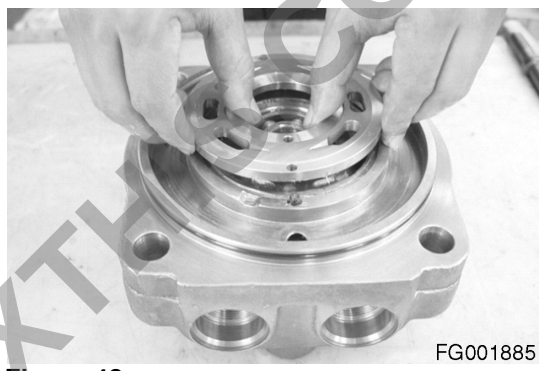


Figure 42

17. Mount the valve casing (101) on the casing (301) and connect them with hex socket head cap bolts (109, 110). Give heed to the mounting direction of the valve casing (and its external measures).

    Care should be taken not to have the valve plate fall off and the brake spring fall down. Tighten hex socket head cap bolts uniformly.

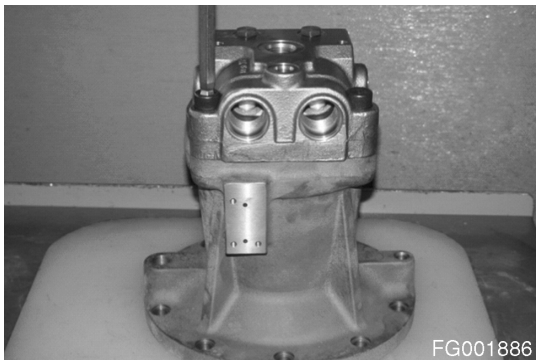


Figure 43

18. Insert the plunger (104) and the spring (103) in the valve casing (101) and engage the plug (102) with the O ring (106) to the valve casing (101). Make sure that the plunger moves smooth.

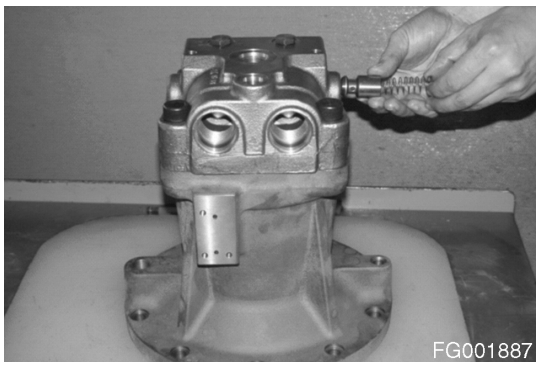


Figure 44

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12. Remove disc. Figure 74.

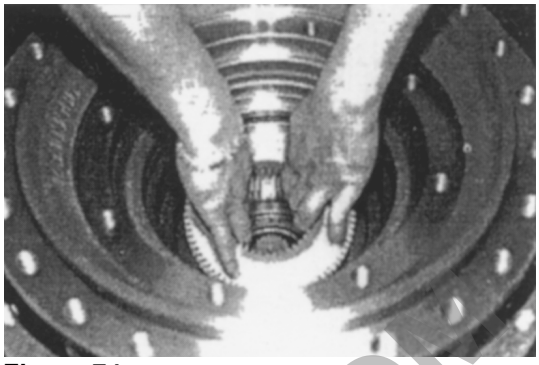


Figure 74

13. Remove O-ring and backup ring. Figure 75.

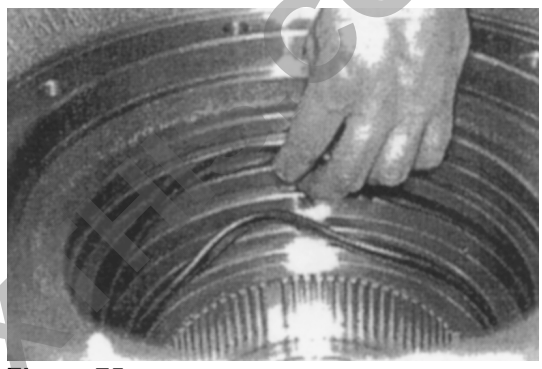


Figure 75

14. Turn reduction gear assembly over and remove 2 plugs (M22 x 1.5). Figure 76.

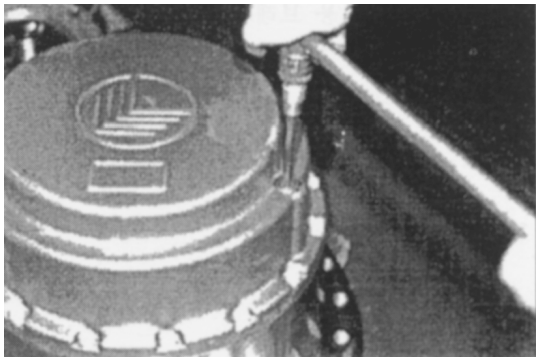


Figure 76

15. Remove 16 socket bolts (M14 x 40). Figure 77.

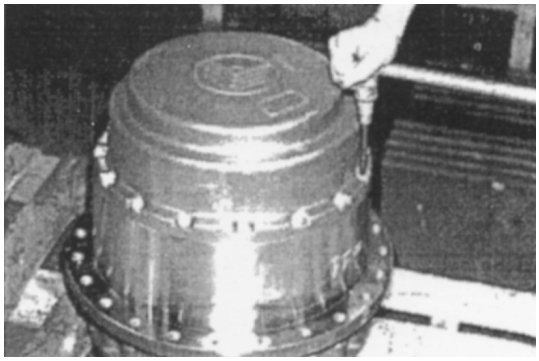
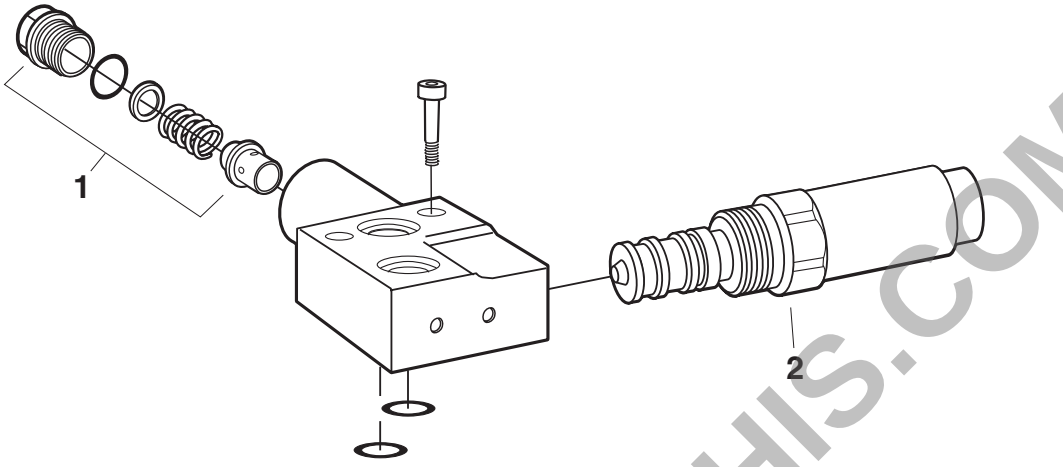


Figure 77

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VALVE PLATE WITH VALVES



ASS0440L

Figure 45

1. Pressure relief valve.
2. Electro- proportional pressure reducing valve (EPPR).

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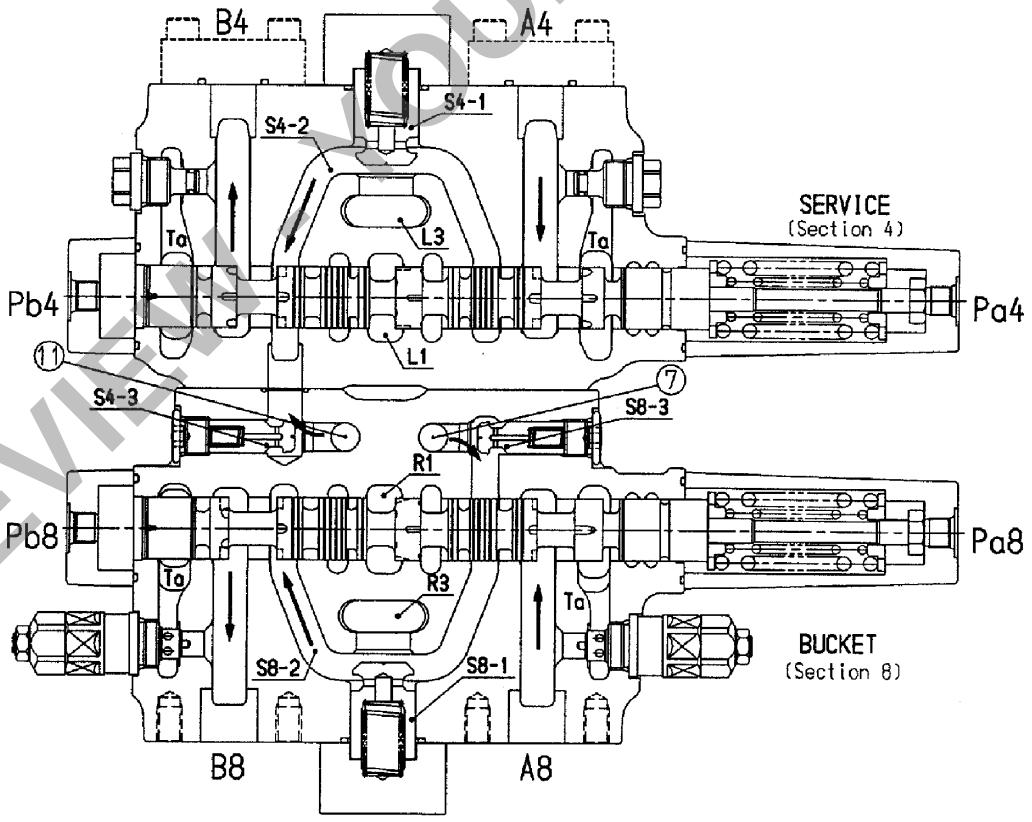
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Spare Spool Shifting (Figure 8)

1. When spare spool is shifted by increasing pressure of spare (section 4) pilot port (Pb4 (Pa4)), neutral passage (L1) is closed. Oil supplied to port (P1) flows through, parallel passage (L3), load check valve (S4-1), passage (S4-2), and spool, into port (B4 (A4)). When neutral-cut spool (R) is shifted by increasing pressure of port (pa10) (Figure 1) also, oil supplied from port (P2) flows through passage (11), and poppet (S4-3), it then joins with passage (S4-2). Return oil returns through port (A4 (B4)) and spool to tank passage (Ta).

Bucket Spool Shifting (Figure 8)

1. When bucket spool is shifted by increasing pressure of bucket (section 8) pilot port (Pb8 (Pa8)), neutral passage (R1) is closed. Oil supplied to port (P2), flows through, parallel passage (R3), load check valve (S8-1), passage (S8-2), and spool, into port (B8 (A8)). When neutral-cut spool (L) is shifted by increasing pressure of port (Pa11) (Figure 1) also, oil supplied from port (P1) flows through passage (7) and poppet (S8-3), it then joins with passage (S8-2). Return oil returns through port (A8 (B8)) and spool to tank passage (Ta).



ASS1330S

Figure 8

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Remote Control Valve

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Reassembly 15
Start-up Procedures 21

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Solenoid Valve Assembly

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Seal Driver

NOTE: *Remove all burrs and break sharp edges : 0.13 / 0.25 R (0.010 / 0.005 R).*
Concave connecting radius between length 2 and shoulder.
Grease length 2 installing shaft seal onto tool to prevent to the seal from being damaged.
Material : XC42 or equivalent.

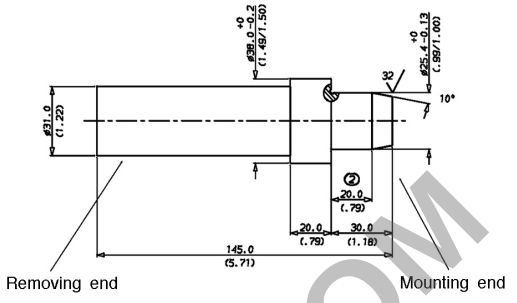


Figure 20

COUPING DIMENSIONS

Taper Keyed Shafts

Shaft	Code
DIA	25.27/25.40 (0.995/1.000)
W	6.36/6.41 (0.250/0.252)
B	28.70/28.95 (1.130/1.140)
C	53.5/54.5 (2.106/2.146)
L	34.8/35.2 (1.370/1.386)

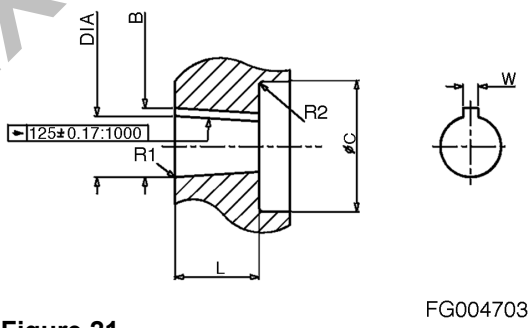


Figure 21

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INTRODUCTION

The electrical system for this equipment is DC 24 volts. The rated voltage for all electric components is 24 volts with the exception of the stereo and the air-conditioning control actuator. The system contains two 12 volt batteries connected in series and a three phase AC generator with a rectifier. The electric wiring used in the system is easily identifiable by the insulator color. The color symbols used in the electrical system are listed in the following chart.

Electric Wire Color

Symbol	Color
W	White
G	Green
Or	Orange
B	Black
L	Blue
Lg	Light green
R	Red
Gr	Gray
P	Pink
Y	Yellow
Br	Brown
V	Violet

NOTE: *RW: Red wire with White stripe*

R - Base Color, W - Stripe Color

NOTE: *0.85G: Nominal sectional area of wire core less insulator = 0.85 mm^2*

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Categories	Inputs	System Operation
Starting control of heating (1)	Water temperature sensor Internal air temperature sensor Auto mode Set Temperature	1. Start condition (AND condition) (1) When wind direction mode is one of the following modes in the Auto or manual control mode - BI-LEVEL, FOOT or FOOT/DEF (2) The Water temperature sensor is stable and the water temperature < 73°C (3) Air flow: Auto mode (4) Set temperature > Internal air temperature + 3°C * Air flow falls gradually up to 12 seconds when operation released.
		2. One time control in the cycle of engine OFF → engine run 3. Initial heating control should be before max heating. 4. Air flow is controlled only when the wind direction is in the manual mode and BI-LEVEL, FOOT, or FOOT/DEF is set. 5. Control through the water temperature sensor for start. 6. Starting control of heating (2) starts in case of fault of the water temperature sensor during controlling. 7. Operation release (OR condition) (1) Only air flow is released if it is selected manually. (2) When handling the wind direction mode switch, only wind direction is released but the air flow control is performed only for the remaining period of the starting control of heater. (3) When Max Cooling (17°C) is selected. (4) Water temperature sensor > 73°C.

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