DX340LC

Shop Manual

K1009684E

Serial Number 5001 and Up

DOOSAN reserves the right to improve our products in a continuing process to provide the best possible product to the market place. These improvements can be implemented at any time with no obligation to change materials on previously sold products. It is recommended that consumers periodically contact their distributors for recent documentation on purchased equipment.

This documentation may include attachments and optional equipment that is not available in your machine's package. Please call your distributor for additional items that you may require.

Illustrations used throughout this manual are used only as a representation of the actual piece of equipment, and may vary from the actual item.

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
DX300LC	5001 and Up
DX340LC	5001 and Up

Breathing Masks, Ear Protection May Be Required

Do not forget that some risks to your health may not be immediately apparent. Exhaust gases and noise pollution may not be visible, but these hazards can cause disabling or permanent injuries.

NOTE: *The equivalent continuous A-weighted sound pressure level at the workstation for this machine is given in the operation manual.*

Measurement is obtained on a dynamic machine following the procedures and cabin conditions as described in ISO 6396.

NOTE: *The guaranteed sound power level emitted by the machinery for this machine is given in the operation manual.*

Measurement is obtained on a dynamic machine with the procedures as described in 2000/14/EC.

Vibration Level Information

Hands/Arms: The weighted root mean square acceleration to which the hands/arms are subjected, is less than 2.5 m/s^2.

Whole body: The weighted root mean square acceleration to which the whole body is subjected, is less than 0.5 m/s^2.

Measurements are obtained on a representative machine, using measuring procedures as described in the following standard: ISO 2631/1. ISO 5349, and SAE J1166.

Recommendations for Limiting Vibrations

1. Select the right machine, equipment and attachments for a particular application.
2. Replace any damaged seat by a genuine *DOOSAN* part. Keep the seat maintained and adjusted.
   - Adjust the seat and suspension for the weight and size of the operator.
   - Inspect and maintain the suspension and adjustment mechanisms of the seat regularly.
3. Check that the machine is properly maintained.
   - Tire pressure, brakes, steering, linkages, etc.
4. Steer, brake, accelerate, shift gears, move the attachments and load the attachments smoothly.
5. Adjust the machine speed and travel path to reduce the vibration level.

- Warm up the engine and hydraulic oil before operating machine.
- Before moving the machine, check the position of undercarriage. The normal travel position is with idler wheels to the front under the cabin and the drive sprockets to the rear. When the undercarriage is in the reversed position, the travel controls must be operated in opposite directions.

fluids. Before you weld on pipes or on tubes or before you flame cut on pipes or on tubes, clean the pipes or tubes thoroughly with a nonflammable solvent.

Burn Prevention

When checking the radiator coolant level, shut down engine, let the engine and radiator cool down, then check the coolant recovery tank. If the coolant level in the coolant recovery tank is near the upper limit, there is enough coolant in the radiator.

Loosen the radiator cap gradually to release the internal pressure before removing the radiator cap.

If the coolant level in the coolant recovery tank is below the lower limit, add coolant.

Cooling system conditioner contains alkali. Alkali can cause personal injury. Do not allow alkali to contact the skin, the eyes, or the mouth.

Allow cooling system components to cool before you drain the cooling system.

Hot oil and hot components can cause personal injury. Do not allow hot oil or hot components to contact the skin.

Remove the hydraulic tank filter plug only after the engine has been stopped. Make sure that the hydraulic tank filter plug is cool before you remove it with your bare hand. Remove the hydraulic tank filter plug slowly to relieve pressure.

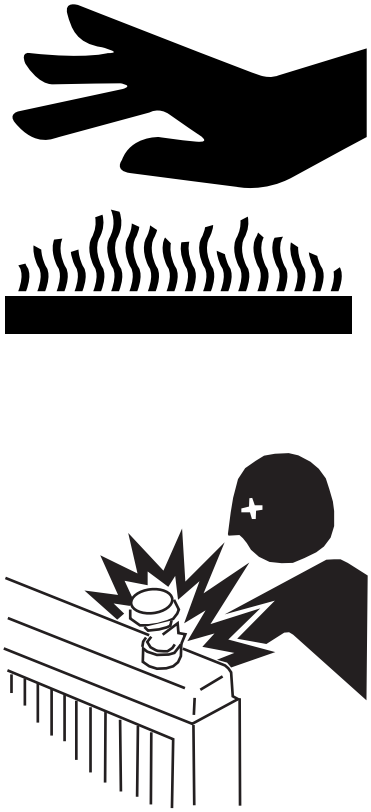
Relieve all pressure in the hydraulic oil system, in the fuel system, or in the cooling system before you disconnect any lines, fittings, or related items.

Batteries give off flammable fumes that can explode.

Do not smoke while you are checking the battery electrolyte levels.

Electrolyte is an acid. Electrolyte can cause personal injury. Do not allow electrolyte to contact the skin or the eyes.

Always wear protective glasses when you work on batteries.



HAAE1980

Figure 34

Welding Repairs

CAUTION!

When you connect or disconnect connectors between ECU and Engine or connector between ECU and the machine, always disconnect the source power to protect damage of the ECU.

If you don't observe this procedure, the ECU would be damaged or the engine would operate abnormally.

SHIPPING AND TRANSPORTATION

Obey State and Local Over-the-Road Regulations

Check state and local restrictions regarding weight, width and length of a load before making any other preparation for transport.

The hauling vehicle, trailer and load must all be in compliance with local regulations governing the intended shipping route.

Partial disassembly or teardown of the excavator may be necessary to meet travel restrictions or particular conditions at the work site. See the Shop Manual for information on partial disassembly.

Refer to the Transportation and Shipping section of this Operation and Maintenance Manual for information on loading, unloading and towing.

LIFTING WITH SLING

WARNING!

Improper lifting can allow load to shift and cause injury or damage.

1. Refer to Specification section of Operation and Maintenance Manual for information on weight and dimensions.
2. Use properly rated cables and slings for lifting.
3. Position machine for a level lift.
4. Lifting cables should have a long enough length to prevent contact with the machine. Spreader bars may be required.

If spreader bars are used, be sure that cables are properly secured to them and that the angle of the cables is factored into the lift strength.

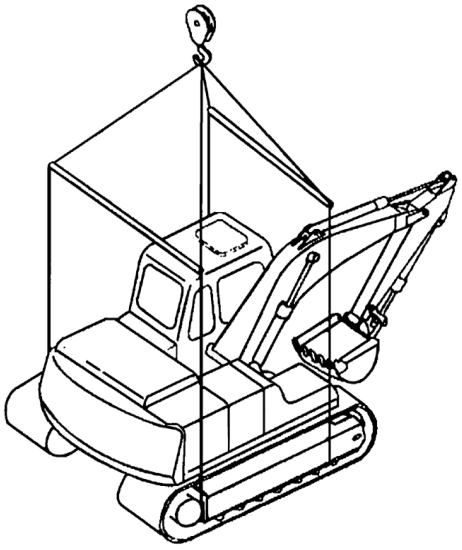


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Figure 47

GENERAL DESCRIPTION

The excavator has three main component sections:

- The Upper Turntable
- The Lower Undercarriage and Track Frames
- The Excavator Front-end Attachment

The following illustration identifies main components and their locations. (See Figure 1 on page -8.)

Condition	Specification
Engine Model	DL08
Barometric Pressure	760 mmHg (20°C (68°F)
Cooling Fan	711 mm, Borg Warner (28 in)
Alternator	24V x 50A
Air Cleaner	Installed
Muffler	Installed

Performance Standard	DIN 6270
Power	250 ps @ 1,750 rpm (247 hp @ 1,750 rpm)
Max. Torque	117 kg•m @ 1,300 rpm (846 ft lb @ 1,300 rpm)
Fuel Consumption (Rated)	164 g/ps•h (5.87 oz/hp•h)

General Maintenance

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.

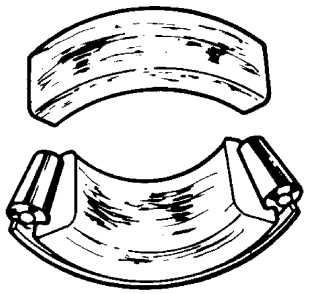
NOTE: *If equipped, indicated operating pressure, as shown on the multidisplay digital gauge on the Instrument Panel ("F-Pump" and "R-Pump") will be reduced as a result of a mechanical problem inside the pump. However, pressure loss could also be due to cavitation or air leakage, or other faults in the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

Frettage

Corrosion set up by small relative movement of parts with no lubrication.

Replace bearing. Clean all related parts. Check seals and check for proper lubrication.



HASA590S

Figure 16

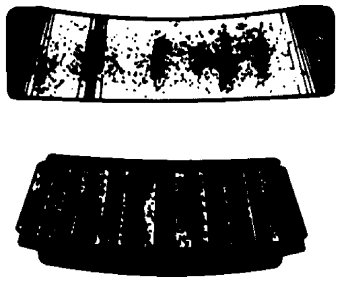
Heat Discoloration

Heat discoloration can range from faint yellow to dark blue resulting from overload or incorrect lubrication.

Excessive heat can cause softening of races or rollers.

To check for loss of temper on races or rollers, a simple file test may be made. A file drawn over a tempered part will grab and cut metal, whereas a file drawn over a hard part will glide readily with no metal cutting.

Replace bearing if over heating damage is indicated. Check seals and other related parts for damage.



HASA600S

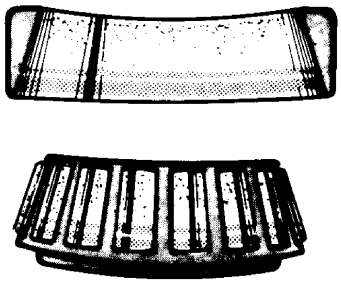
Figure 17

Stain Discoloration

Discoloration can range from light brown to black caused by incorrect lubrication or moisture.

if the stain can be removed by light polishing or if no evidence of overheating is visible, the bearing can be reused.

Check seals and other related parts for damage.



HASA610S

Figure 18

TYPE 8 PHOSPHATE COATED HARDWARE

This chart provides tightening torque for general purpose applications using original equipment standard hardware as listed in the Parts Manual for the machine involved. **DO NOT SUBSTITUTE**. In most cases, original equipment standard hardware is defined as Type 8, coarse thread bolts and nuts and thru hardened flat washers (Rockwell "C" 38 - 45), all phosphate coated and assembled without supplemental lubrication (as received) condition.

The torques shown below also apply to the following:

1. Phosphate coated bolts used in tapped holes in steel or gray iron.
2. Phosphate coated bolts used with phosphate coated prevailing torque nuts (nuts with distorted threads or plastic inserts).
3. Phosphate coated bolts used with copper plated weld nuts.

Markings on bolt heads or nuts indicate material grade ONLY and are NOT to be used to determine required torque.

Nominal Thread Diameter	Standard Torque ±10%	
	Kilogram Meter (kg•m)	Foot Pounds (ft lb)
1/4"	1.1	8
5/16"	2.2	16
3/8"	3.9	28
7/16"	6.2	45
1/2"	9.7	70
9/16"	13.8	100
5/8"	19.4	140
3/4"	33.2	240
7/8"	53.9	390
1"	80.2	580
1 - 1/8"	113.4	820
1 - 1/4"	160.4	1160
1 - 3/8"	210.2	1520
1 - 1/2"	279.4	2020
1 - 3/4"	347.1	2510
2	522.8	3780

Cabin

Edition 1

Counterweight

Edition 1

Fuel Tank

Edition 1

18. Remove six bolts (25 and 26, Figure 10) and stay (27) from fuel tank and frame.

    Remove four bolts (28 and 29) and fuel tank cover (30) from fuel tank.

    Remove two bolts (31) and bracket (32) from tank.

    Remove four bolts (33) and battery cover (34) from frame.

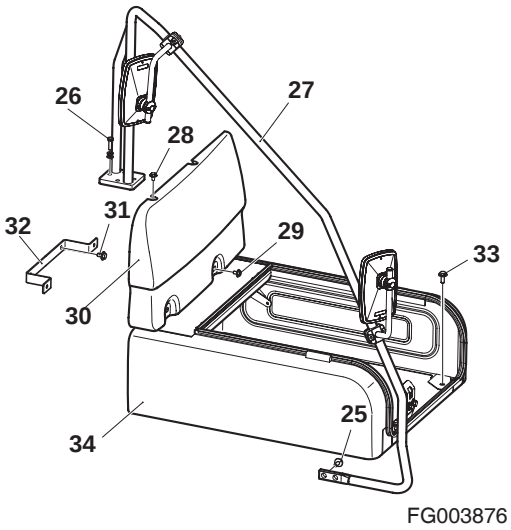


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Figure 10

19. Tag and disconnect wires leading to fuel sender (2, Figure 11) on side of fuel tank (1).

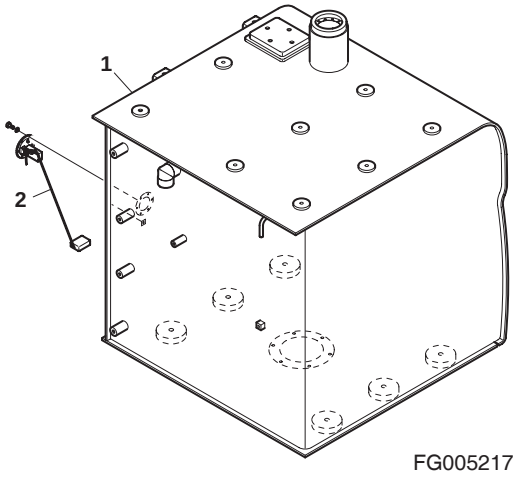

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Figure 11

SAFETY PRECAUTIONS

CAUTION!

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

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APPLICABLE MODELS

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

MODEL	SERIAL NUMBER RANGE
DX300LC	5001 and Up
DX340LC	5001 and Up

GENERAL DESCRIPTION

Theory of Operation

The swing reduction gearbox is a two-step planetary gearbox with three planet gears, one sun gear and 2-step output reduction. The planetary gear engages with the ring gear. The pinion gear is connected with the output shaft and spline.

The gearbox reduces swing motor rpm to increase swing motor output torque. The available maximum swing speed provides a fast turning rate for efficient, rapid work cycling with more than adequate power for good acceleration.

Shaft and S/R Bearing Shrinkage Fitting

1. Washing of the shaft

   Remove liquid like anti-corrosion liquid on the shaft and then use an air gun to remove all of remaining foreign substance.

2. Insert the spacer in the prepared shaft as shown in the figure below and put and heat the bearing on the specified heater.

Figure 15

Figure 16

Assembly of Main Case

Washing of the Casing and Other Components

Use supersonic waves to wash out foreign substance remaining on the casing and other components mentioned in the Parts List after casting and processes.

- Cleaning fluid: PK6540 (alkali)
- Liquid density: 3 - 5%
- Liquid temperature: 60° - 70°C (140° - 158°F)

Assembly of the Shaft and the Pinion

1. Press fitting of the shaft subassembly

   Pun the washed casing as shown in the figure below and use a hoist to put shaft subassembly in the area to be inserted. Bearing kept horizontal, put the specific jig to insert it into the press table, and use a press to fit it into the casing.

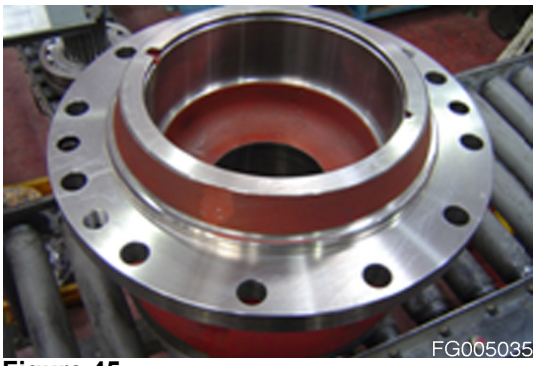

Figure 45

Figure 46

Figure 47

2. Apply liquid gasket (Three Bond 1104) to the area where the ring gear of the casing is assembled.

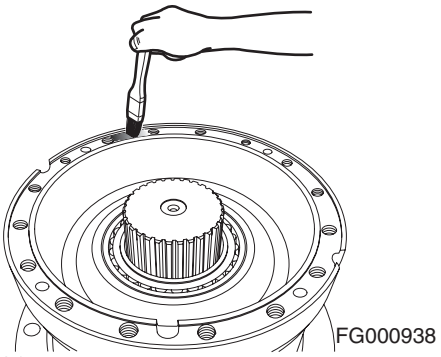

Figure 83

3. Use a hoist to lift the prepared ring gear, wipe the assembled part with a cloth, put it on the hole considering its assembly direction, tighten specific bolts (M16 x 160), to which Loctite is not applied, in the symmetrical order, and be sure that the assembled parts are pressed each other completely.

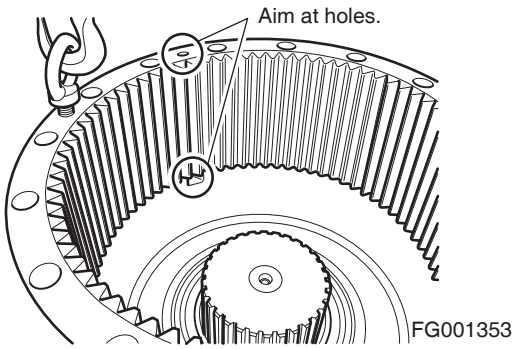

Figure 84

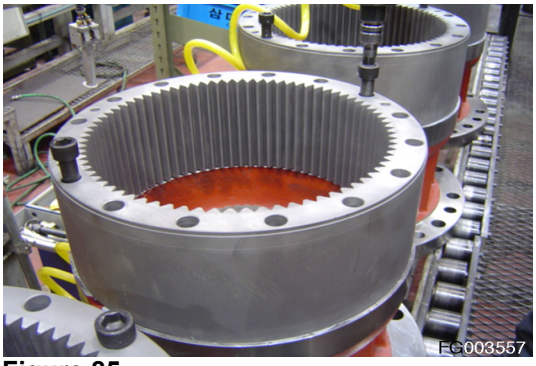

Figure 85

3. Engage bolts (M16x40, torque: 2,700 kgf•cm) applied Loctite using a L wrench, check the standard torque using a torque wrench, and mark using a paint marker.

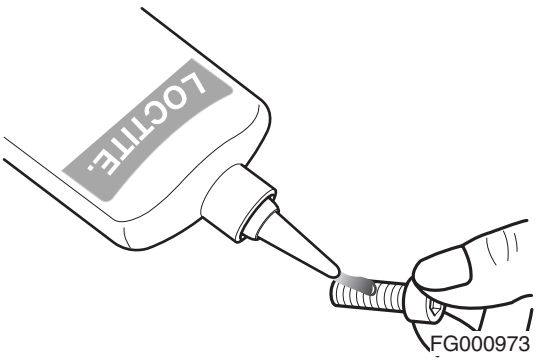

Figure 114

Figure 115

Figure 116

Table of Contents

Track Assembly

Upper Roller

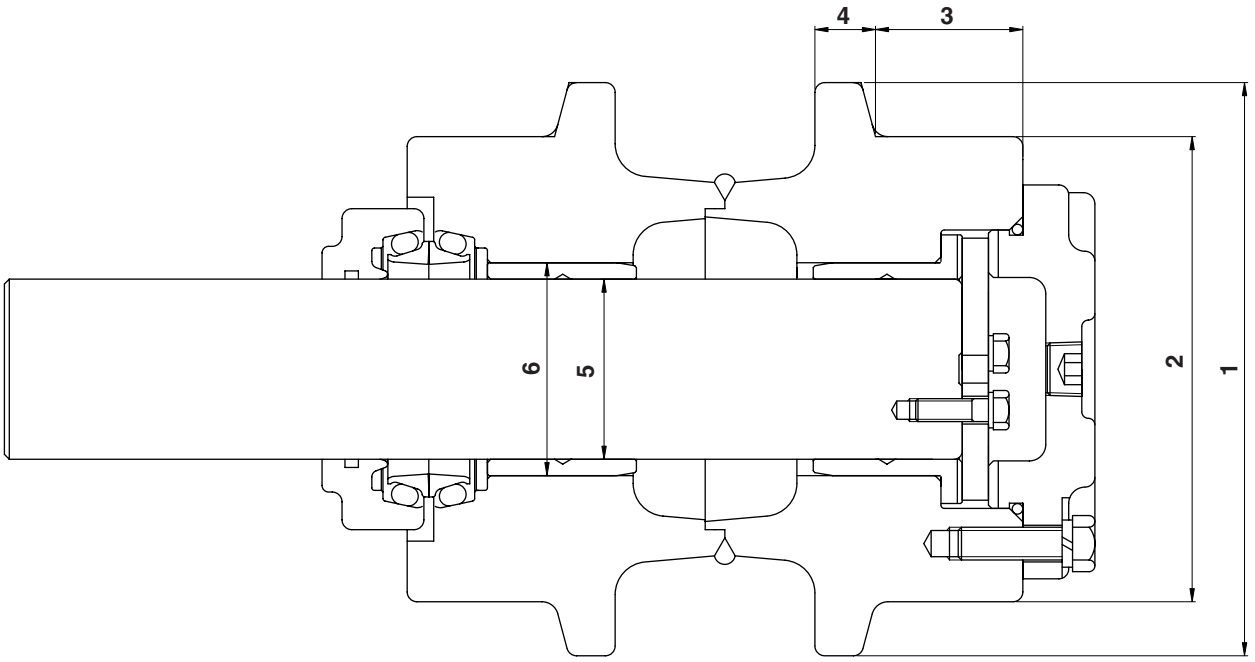

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Figure 6

No.	Check Item	Standard Dimension			Recommended Limit for Maintenance	Limit for Use (Repair - P or Replace - R)
1	Outside Diameter of flange	175 mm (6.890")				
2	Outside Diameter of Tread	142 mm (5.591")			135 mm (5.315")	130 mm [P] (5.118")
3	Width of Tread	45 mm (1.772")			52 mm (2.047")	54 mm [P] (2.126")
4	Width of Flange	18.5 mm (0.728")				
5	Clearance between shaft and bushing	Standard Dimension	Tolerance		Standard Interference	Repair Limit
			Shaft	Hole		
		55 mm (2.165")	-0.01 -0.03	+0.37 +0.33	0.34 - 0.40	
6	Interference between roller and bushing	Standard Dimension	Tolerance		Standard Interference	Repair Limit
			Shaft	Hole		
		65 mm (2.559")	+0.125 +0.090	+0.030 0.0	0.06 - 0.125	

Reference Number	Description
1	Roller
2	Collar
3	Shaft
4	Bushing

Reference Number	Description
5	Pin
6	Floating Seal
7	O-ring
8	Plug

Lower Roller Removal

1. Relieve track tension. Refer to "Track Tension" in this section for procedure.
2. Swing upper structure at 90° to frame.
3. Using bucket raise track off ground and place blocking under frame.
4. Remove four bolts and lower roller assembly from track frame. There is an alignment pin on each end of lower roller assembly.

   NOTE: *To gain access to some rollers the link guard may have to be removed. Remove four spring washers and bolts to remove guard.*

   NOTE: *If additional track clearance is required, remove upper rollers before raising track.*

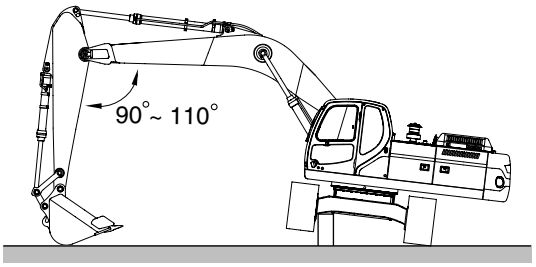

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Figure 25

Lower Roller Disassembly

1. Remove plug (8, Figure 26) from the collar and drain oil.
2. Pull the pin (5, Figure 26) from the collar.

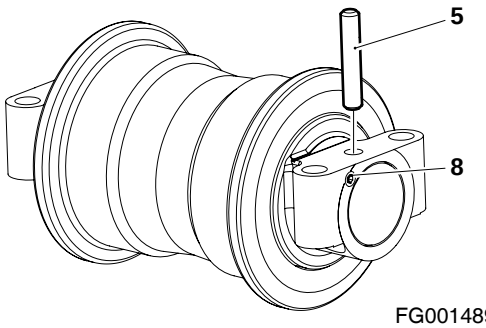

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Figure 26

Air Conditioner

Edition 1

Air Conditioner/Heater Unit

Air Flow Diagram

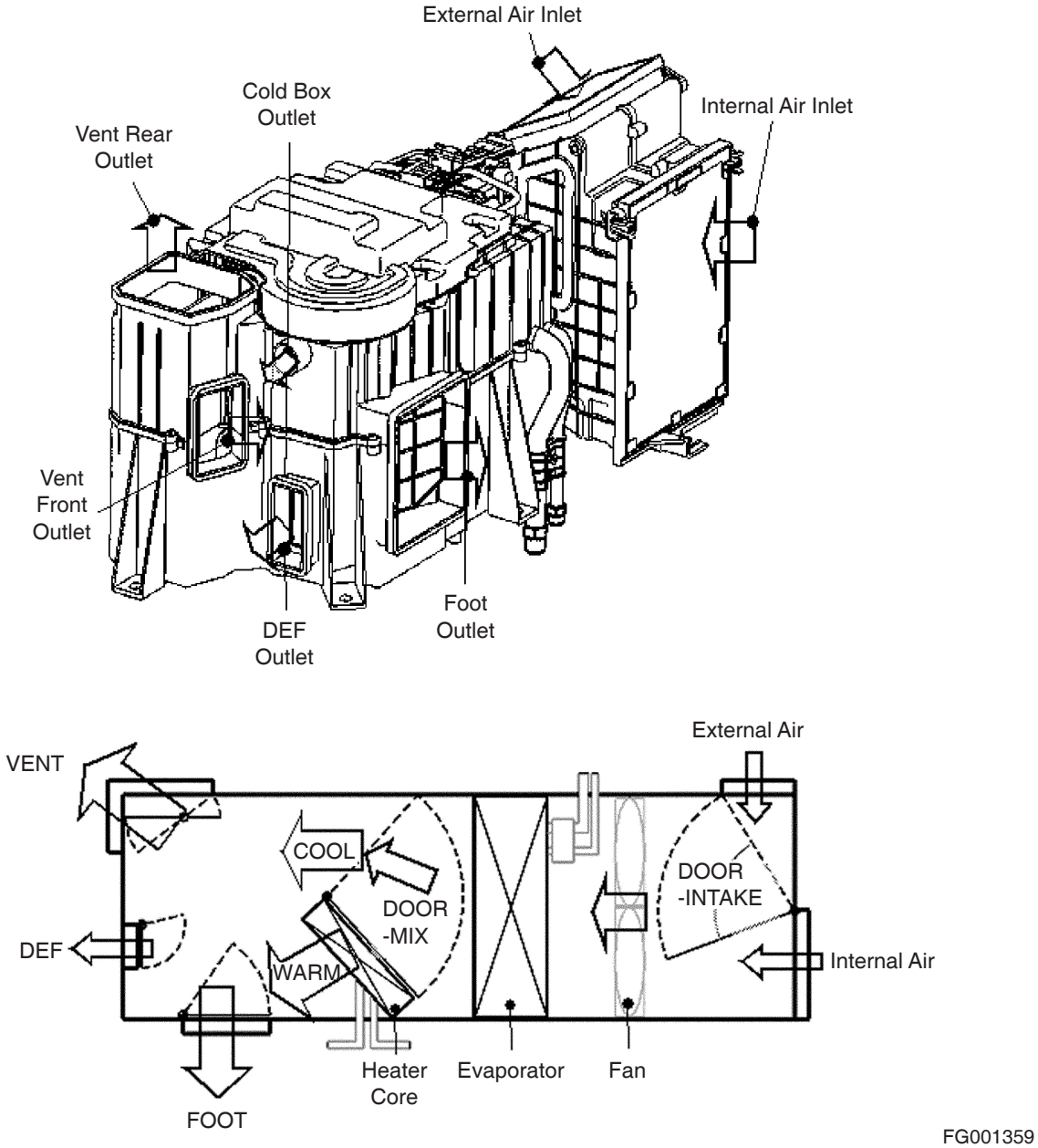


Figure 8

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

3. Do not over tighten connections when working on refrigerant system.
4. The new refrigerant system standards require new tools, equipment and parts. DO NOT attempt to use equipment use in servicing the old refrigerant system.
5. The new refrigerant oil (PAG type) has a high moisture absorption characteristic. When the refrigerant system vacuum seal has been broken, immediately plug up all openings to prevent moisture from entering into the system.
6. When joining unions which use O-ring seals, lightly coat O-rings with refrigerant oil. Be careful not to drip oil on the threads of the nut.
7. Be certain the O-rings are seated properly on the refrigerant line lip. Always use new O-rings when reassembling parts. Do not reuse old O-rings.
8. Use a vacuum pump to evacuate refrigerant system of air.
9. When charging the refrigerant system with the engine running, do not open the high-pressure valve on the manifold gauge as the reverse flow of high-pressure refrigerant will rupture the hose.
10. When releasing the high-pressure hose after completing the charging process, quickly disconnect the hose to minimize refrigerant released to the air.

Repair and Replacement Procedure

1. Work Procedure
   A. Before repairing or replacing any refrigerant components first, return all refrigerant oil to the compressor and perform recovery procedures.
2. Operating Condition
   A. Run engine at maximum engine speed.
   B. Select 'HI' blower fan speed and select A/C switch to 'ON'.
   C. Set the temperature control switch for maximum cooling and leave running for approximately 20 minutes.

      NOTE: *The manifold gauge dial pointer can vary depending on the outdoor temperatures.*

Drive Coupling (Main Pump)

Edition 1

Hydraulic System Troubleshooting, Testing and Adjustment

Edition 1

Arm Operating Circuit

The arm operating circuit includes both the right and left hydraulic main pumps, the right and left halves of the control valve, a slow return orifice, and the arm cylinder. The circuit can be operated in the two-stage speed control mode which works through both halves of the control valve and doubles the volume of oil flowing to the cylinder.

Overload relief valves set at 360 kg/cm^2 (5,112 psi) have been installed at the AM 1 and AMD 1 ports on the right side of the control valve to protect the circuit and system components from possible damage caused by shocks and/or overload pressure. Additional protection - to prevent cavitation of the cylinder - is provided by a makeup valve and reservoir return circuit, which ensures that the volume of oil going to the cylinder will not exceed the volume of oil coming out.

Arm Crowd Circuit

When the arm control lever is put in the crowd mode, the left side pilot valve generates secondary pressure that is transmitted to the AM1 and AM2 spools of the control valve simultaneously.

When secondary pilot pressure reaches 7 - 9 kg/cm^2 (100 - 130 psi), the arm control valve spools AM1 and AM2 open. Output flow from both halves of the pump assembly is directed to the arm cylinder.

When working in the arm crowd mode, under certain conditions, oil in the arm cylinder could suddenly be forced out by the weight of the arm and bucket. Insufficient oil flow to the cylinder could lead to cavitation in the cylinder and/or surging or irregular movement. This is prevented by a regeneration valve attached to the control valve which maintains the balance between oil flowing into the cylinder and oil flowing out.

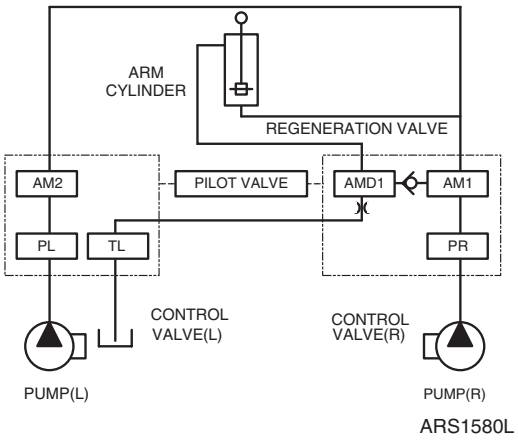


Figure 4

Arm Dump Circuit

When the arm control lever is put in "dump" mode, the left side pilot valve generates secondary pilot pressure that goes to both spools AM1 and AM2 of the control valve simultaneously.

When pilot pressure reaches 7 - 9 kg/cm^2 (100 - 130 psi), the control spools open, allowing oil from PUMP (L) and PUMP (R) to flow to the arm cylinder.

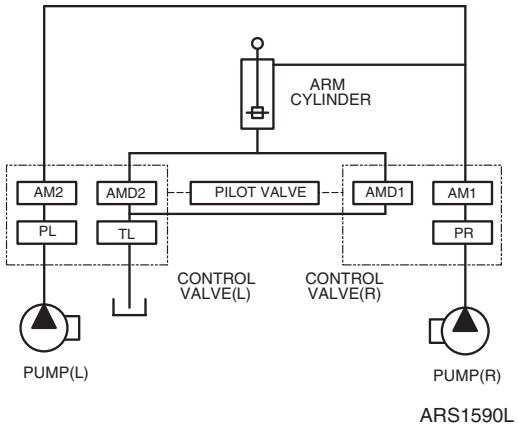


Figure 5

PRESSURE UP VALVE

Checks and Adjustments

⚠ WARNING!

This procedure should be done with two people. To reduce the chance of accident or unintended start-up, one person should remain at the operator's control stand while checks and adjustments are made.

Vent hydraulic pressure from the reservoir to install an in-line "T-style" adapter and test gauge (60 bar/1,000 psi) at the pilot pump signal port relief valve outlet.

Start the engine and turn the engine speed dial to maximum. When normal operating temperature is reached:

- Check pilot pressure and readjust it, if required:
- Select the Instrument Panel rear pump "pressure display".
- Select Power Mode.
- Stall the boom cylinder (towards the extend side).
- Read rear pump pressure on the Instrument Panel display.

Repeat all tests with and without "pressure up" selected through the console rocker switch and joystick button.

If the two-stage main relief valve was not set correctly and main relief high-stage pressure ("pressure up") is outside the tolerance range, begin valve adjustment by loosening the outside (widest diameter) lock nut on the relief valve. Turn the adjusting screw clockwise to increase pressure, or counterclockwise to decrease it. Pressure must be 350 bars (5075 psi), or up to 10 bars (145 psi) higher.

Because one adjustment can affect the other, check low-stage main relief pressure by repeating the cylinder stall test without "pressure up." Readjust standard relief pressure by turning the innermost (smallest diameter) screw clockwise to increase the setting, or counterclockwise to decrease it. Pressure should be at least 330 bars (4,785 psi), but less than 335 bars (4,858 psi).

IMPORTANT

Pressure adjustments and checks cannot be made if pilot pressure is outside the specified range. Refer to the pilot pump adjustment procedure if required, then proceed with any necessary adjustments to main relief pressure settings.

TROUBLESHOOTING – SWING GEARBOX

Problem	Possible Cause	Remedy
Swing motor fails to operate and:		
Three pressure tests at motor, brake or makeup valve show low reading(s).	Swing relief valve defective Brake release valve defective Motor makeup valve defective.	Adjust pressure to recommended range in affected valve. OR Disassemble and clean valve assembly. Replace all valve components that show damage.
All three pressure checks are OK but left travel also fails to run.	Exchange front and rear pump inlet and outlet hoses to test pump function.	If swing and left travel are restored but right travel stops working, replace or repair P1 pump.
All three pressure tests are OK, but machine fails to swing at all.	Brake assembly or motor friction plate failing to release.	Check for binding. Disassemble and repair.
	Pilot (control) pressure low or swing control valve stuck.	Disassemble / Repair pilot pressure swing spool (305) and / or swing control valve.
	Swing motor defective.	Test motor drain rate. Replace / Repair motor.
	Gear train defective.	Refer to "Swing Gear Troubleshooting" procedure.
Swing functions but only at reduced rpm.	Causes listed above could also produce dragging swing, OR hot or wrong oil OR worn-out parts.	Check above list; then replace oil, test motor drain rate and check for "03" reading (e-EPOS self-test).
Left travel speed is also reduced.	Low output at P1 pump or external pilot piping leaks/is clogged.	Clean and repair piping or repair or replace pump P1.
Swing control movement is reversed.	Inlet / outlet piping reversed.	Reset controls or reverse piping.
Machine swings but continues coasting on past stopping point.	Swing control valve spool not centered.	Replace return spring; clean/ repair valve piston and spool.
	Pilot pressure may be outside range.	Disassemble, clean or replace pilot relief valve or pilot valve.
	Swing relief valve may be faulty.	Repair/Replace swing relief valve.
Swing movement is in one direction only.	Check to see that pilot pressure is the same right and left.	If pilot pressure is unequal, clean or repair piping or repair/replace valve.
	Swing control valve spool may be stuck.	Repair/Replace the swing control valve.
	Swing relief valve may be faulty.	Repair/Replace the swing relief valve.
No rotation and:		
Pressure at swing motor inlet increases.	Swing brake not releasing.	Check brake engagement and disengagement; check release pressure.
	Internal damage to gearbox drive train.	Replace broken gears and drive train assemblies.
	Overload.	Reduce load weight.

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.

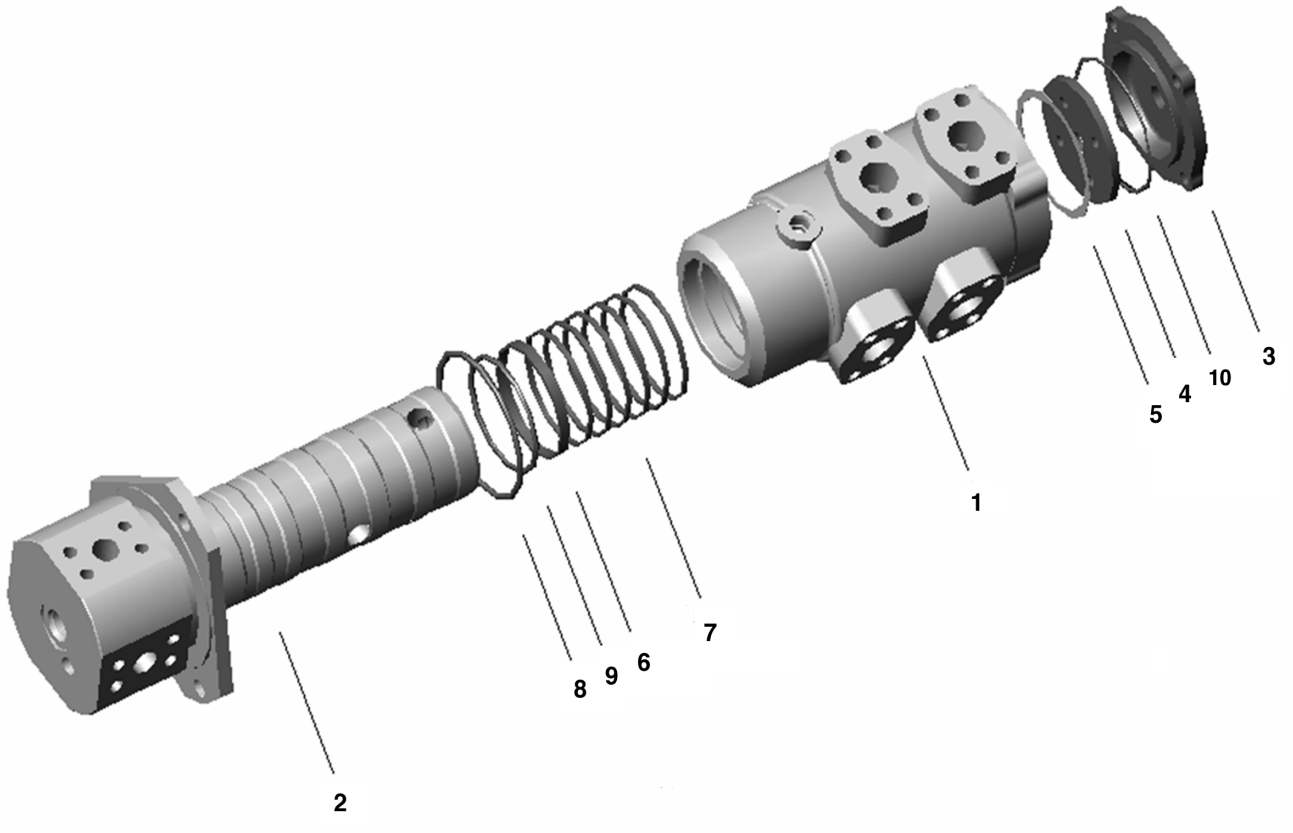
Remember, that ultimately safety is your own personal responsibility.

APPLICABLE MODELS

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

MODEL	SERIAL NUMBER RANGE
DX300LC	5001 and Up
DX340LC	5001 and Up
DX420LC	5001 and Up
DX480LC	5001 and Up

Center Joint Disassembly Diagram



FG004446

Figure 1

Reference Number	Description
1	Body
2	Shaft
3	Cover
4	Spacer
5	Shim

Reference Number	Description
6	Wear Ring
7	Slipper Seal
8	O-ring(1AP 120)
9	O-ring(1BP 100)
10	O-ring(1BG 120)

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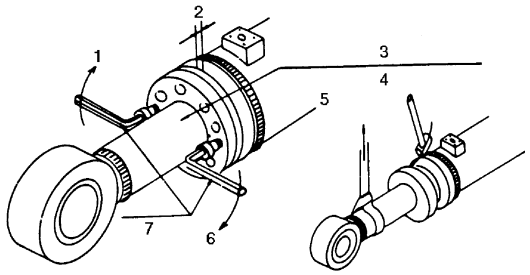
Cylinders

MODEL	CYLINDER	A (±0.1)	øB	øC	øD	MODEL (CYLINDER)
DX300LC	BOOM	110.0 mm (4.33 in)	13.0 mm (0.51 in)	76.0 mm (2.99 in)	140.0 mm (5.51 in)	
	ARM	120.0 mm (4.72 in)	13.0 mm (0.513 in)	85.0 mm (3.35 in)	150.0 mm (5.91 in)	S/ARM
	BUCKET	110.0 mm (4.33 in)	13.0 mm (0.51 in)	76.0 mm (2.99 in)	140.0 mm (5.51 in)	S/BUCKET
DX340LC	BOOM	120.0 mm (4.72 in)	13.0 mm (0.51 in)	85.0 mm (3.35 in)	150.0 mm (5.91 in)	OPT BOOM
	ARM	130.0 mm (5.12 in)	13.0 mm (0.513 in)	93.0 mm (3.66 in)	165.0 mm (6.50 in)	OPT ARM
	BUCKET	120.0 mm (4.72 in)	13.0 mm (0.51 in)	85.0 mm (3.35 in)	150.0 mm (5.91 in)	OPT BUCKET
DX420LC	BOOM	130.0 mm (5.12 in)	13.0 mm (0.51 in)	93.0 mm (3.66 in)	165.0 mm (6.50 in)	
	ARM	130.0 mm (5.12 in)	13.0 mm (0.513 in)	93.0 mm (3.66 in)	165.0 mm (6.50 in)	
	BUCKET	130.0 mm (5.12 in)	13.0 mm (0.51 in)	93.0 mm (3.66 in)	165.0 mm (6.50 in)	

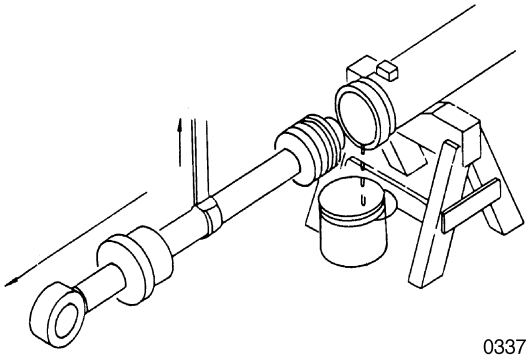
4. Tap two bolts into cover of cylinder head, 180° apart. Tighten them in a staggered, even sequence, to back off piston rod end cover from edge of cylinder wall. Look for adequate clearance between cover and end of cylinder wall before using a plastic or other soft-faced hammer for final disassembly.



HAOF610S

Figure 15

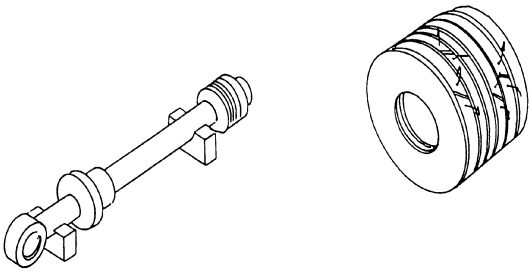
5. Begin withdrawing piston rod assembly, away from cylinder. Attach a lifting support when final 1/3 of rod is still inside barrel of cylinder. Prepare support blocks for piston rod before it has been completely withdrawn.



0337

Figure 16

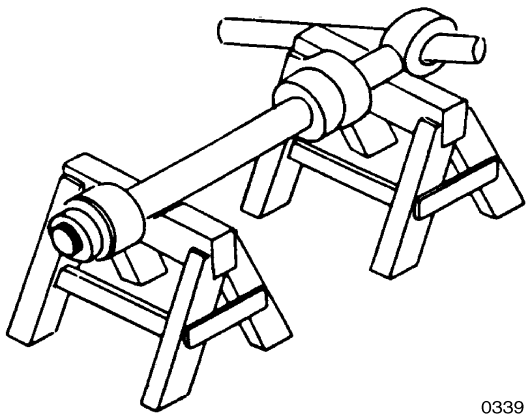
6. Lower piston rod to support blocks and detach wear ring (outer surface) (18) from end of rod.



HAOF620S

Figure 17

7. Immobilize piston rod by inserting a wooden or other nonscoring, nonmetallic support through end of rod.



0339

Figure 18

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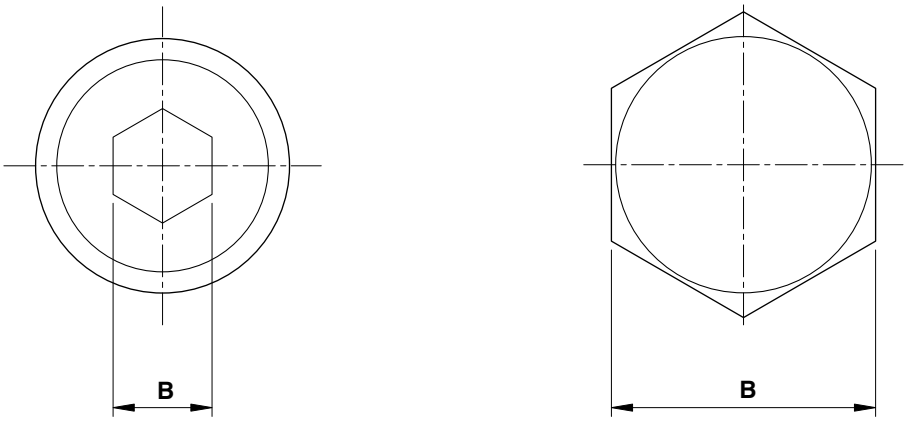
Swing Motor

TOOLS AND MATERIALS

Tools

Tools	B Length	Tools to Be Used
Hex L Wrench	5 mm	Wrench bolt (32)
	6 mm	Plug (33)
	12 mm	Wrench bolt (24, 25)
	17 mm	Plug (28)
Socket Wrench Spanner	36 mm	Relief valve assembly (33)
Snap Ring Pliers (For Orifice And Axis)		Snap Ringp (4)
Bar Hammer		Needle bearing (22), Pin (6, 21)
Torque Wrench		Measure:
Oil Seal Assembly Jig		Oil seal (2)
Bearing Induction Heating Device		Roller bearing (3)



ARS3980L

Figure 9

CLEANING AND INSPECTION (WEAR LIMITS AND TOLERANCES)

For general cleaning and inspection procedures, refer to "General Maintenance Procedures" section.

REASSEMBLY

General Cautions

1. Wash and clean each part. Then dry them with compressed air. The friction plate, however, should not be washed with treated oil.
2. Each connecting parts should be tightened according to its assigned torque.
3. Only use a plastic soft-faced hammer.

Reassembly of drive shaft subassembly

1. Put roll bearing (3) on a heater and apply heat to their inner race (inlet temperature: 290°C for 2 minutes).

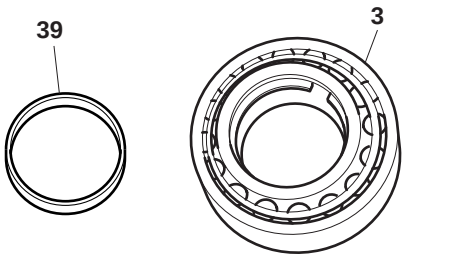


Figure 34

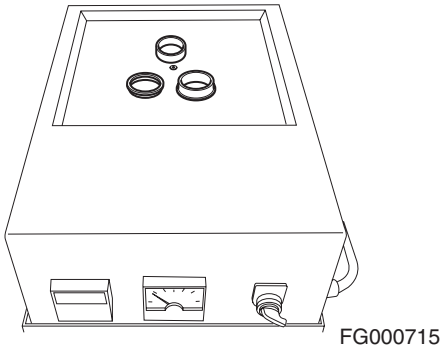


Figure 35

Figure 72

7. Put the rear cover ass'y on the body (1) and tighten its wrench bolts (24, 25) with impact and then torch wrench.

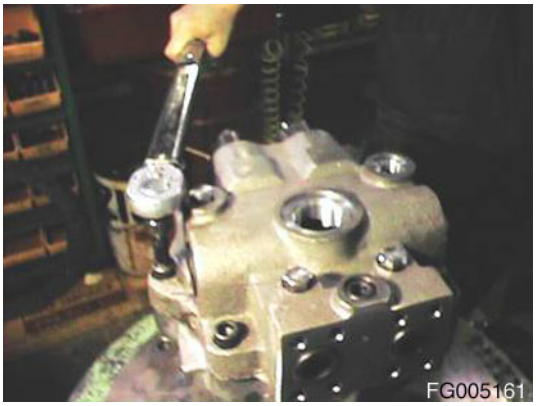


Figure 73

8. Install time delay valve assembly onto rear cover (23) with wrench bolts (32).

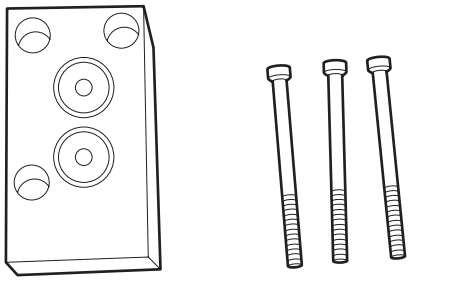


Figure 74

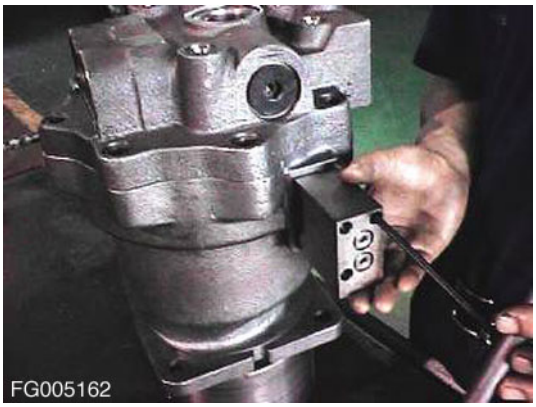
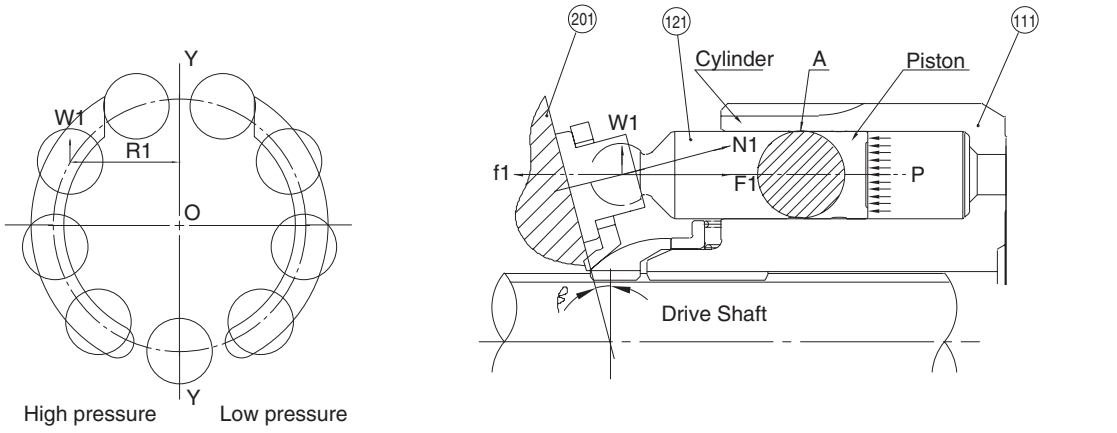


Figure 75

Hydraulic Motor

1. Generation of rotational force.



ARS4530L

Figure 2

High pressure oil supplied from the hydraulic pump flows through valve casing (303) and valve plate (131) into cylinder block (111). (Refer to Figure 9 for indication numbers).

The internal design allows the high pressure oil to flow to one side of the center line "Y-Y" at the top and the bottom dead center piston (121).

The high pressure oil acts upon pistons and generates force "F1" (F1 = P x A (P: Supply pressure, A: Pressure area)). The force "F1" generates perpendicular force "N1" and radial force "W1" against swash plate (201), which has a tilting angle of "β." "W1" generates torque "T" (T = W1 x R1) against the line "Y-Y" of bottom and top dead center of piston.

The resultant ($\sum$ W1 x R1) of torques which are generated from pistons (4 - 5 ea.) of high pressure side by high pressure oil generates rotating force. This torque is transmitted to cylinder block (111) through piston, and then rotating force is transmitted to drive shaft because cylinder block is combined with drive shaft by spline.

DISASSEMBLY

General Caution Matters

1. Use care so that contact surface of seals such as O-ring and oil seals, gears, pins, bearings, and sliding surface may not be damaged.
2. If disassembling this motor with it mounted on machine, use care that dust or foreign materials may not enter it.
3. The numbers in ( ) behind part name indicate part indication No. on assembly cross section diagram.
4. The piping side of motor should be called Rear, while output side Front.

Reduction Gear Part

1. Choose a good place for disassembly work.

   NOTE: *Choose a clean place. Place a rubber pad on work bench so that parts will not be damaged.*

2. Remove dust or foreign materials from surface of reduction gear.
3. Drain gear oil.

   NOTE: *Drain gear oil into clean container and check it for contamination. Never reuse this gear oil.*

4. Place side cover (004) facing up and remove socket bolts (030). Remove side cover (004) and O-ring (081).

Figure 12

3. Remove socket bolt (366). Remove cover (364) and counterbalance valve assembly.

   NOTE: *If counterbalance spool and counterbalance spring have been damaged, replace them with new ones.*

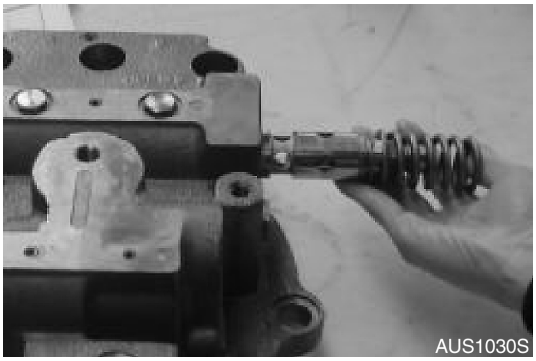


Figure 47

4. Remove plug (569) and high pressure select valve assembly.

   NOTE: *Do not disassemble tilting switching system if it functions properly. Do not disassemble needle bearing (103) if it is OK.*

Figure 48

Disassembly of Cylinder Block Assembly

1. Remove cylinder block assembly with set plate (123), piston (121) and shoe (122) as one assembly.

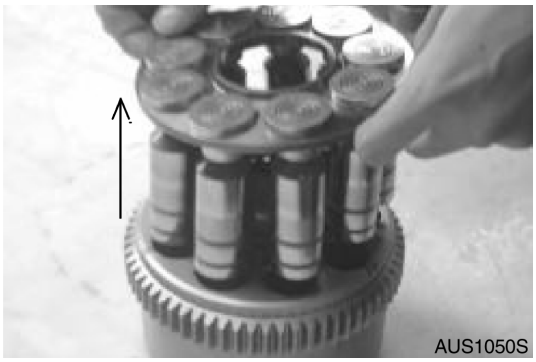


Figure 49

2. Remove spherical bushing (113) and cylinder spring (114).

   NOTE: *The disassembly operation is up to here. Do not disassemble pin (451: for valve plate positioning) pressed into valve casing.*

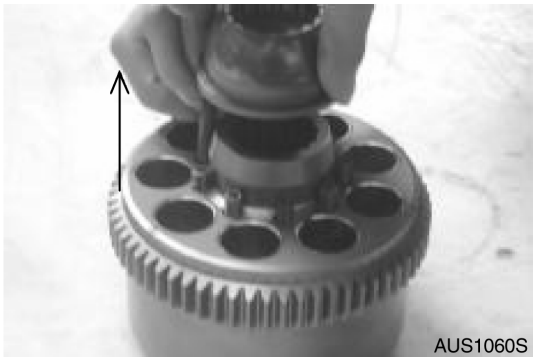


Figure 50

10. Assemble mating plate (741) and friction plate 742) onto shaft casing (272) and cylinder (111), respectively.

Figure 77

11. Assemble O-rings (707, 708) into shaft casing (272).

    NOTE: *When reassembling, replace O-ring with a new one.*

Figure 78

12. Position valve plate (131, Figure 80) on valve casing subassembly and tighten socket bolts (401 and 402) to shaft casing.

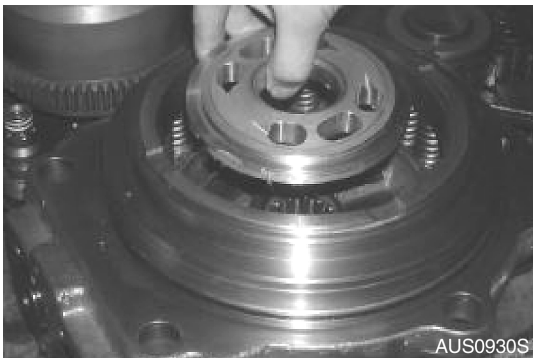


Figure 79

    NOTE: *Coat rear side of valve plate with grease, so that valve plate does not become disconnected.*

    NOTE: *Use guide bolt.*

    NOTE: *Coat needle bearing roller with grease, so that it can be easily assembled onto shaft.*

    NOTE: *Use a crane when assembling valve casing to shaft casing. Tightening torque for socket bolts (401 and 401): 4400 kgf•cm.*

Figure 80

Checkup after Assembly

Air Test for Reduction Gear

Remove one plug (032) from reduction gear section and apply compressed air (0.3 kgf/cm^2) through threaded hole for 2 minutes under water. No air bubbles should be generated.

NOTE: *Gear oil volume: 5.5 liter (equivalent to SAE #90, GL-4 grade or higher by API classification)*

Air Test for Motor

Seal tightly all ports, except one location, of piping port of motor and apply compressed air (3 kgf/cm^2) from opened port for 2 minutes under water. Air bubble should not be generated.

NOTE: *Working oil volume: 1.5 liter*

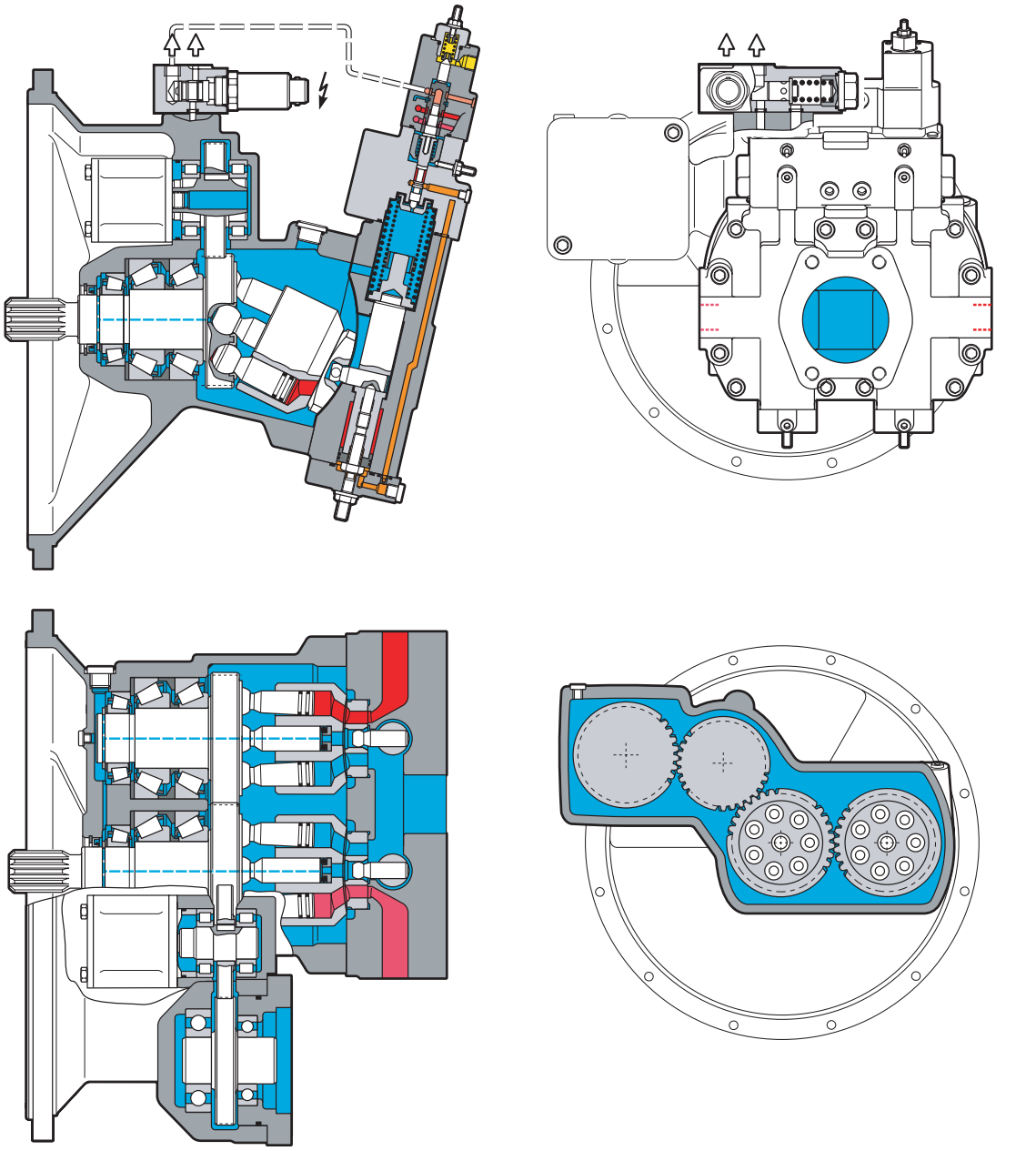
Performance Test

Be sure to add a sufficient amount of working oil into motor case before carrying out performance test. Be sure to carry out performance test below after finishing servicing of TM motor.

If Test Equipment Is Available

If any built-in part has been replaced, be sure to carry out performance test after conducting test operation in accordance with following conditions:

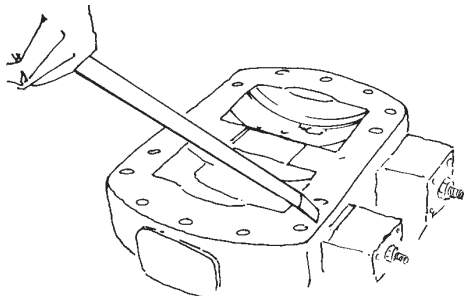
1. Conditions for test operation
   - A. Rotating it right and left for 1 minute at no-load pressure of 20 rpm.
   - B. Rotating it right and left for 1 minute at no-load pressure of 10 rpm, 200kgf/cm^2.
   - C. Rotating it right and left for 1 minute on no-load pressure of 20 rpm.
2. Test conditions
   - A. Working oil: Wear-resistant working oil equivalent to ISO VG #46
   - B. Lube oil: Gear oil
   - C. Temperature
     1) Ambient temperature - Room temperature
     2) Working oil service temperature - 50±5°C
     3) Reduction gear case temperature - 40 ~ 80°C
   - D. Oil drain pressure: 0.8kgf/cm^2 or less



ASS0020L

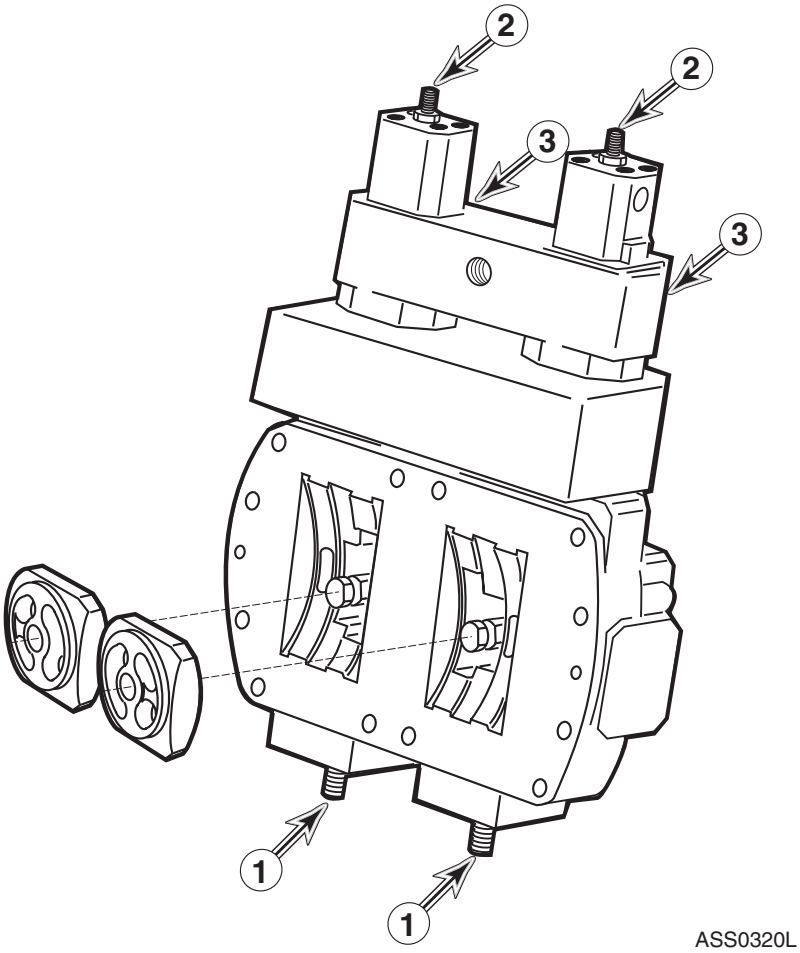
Figure 2

4. Remove paper seal, and clean sealing surface.



ASS0310L

Figure 27



ASS0320L

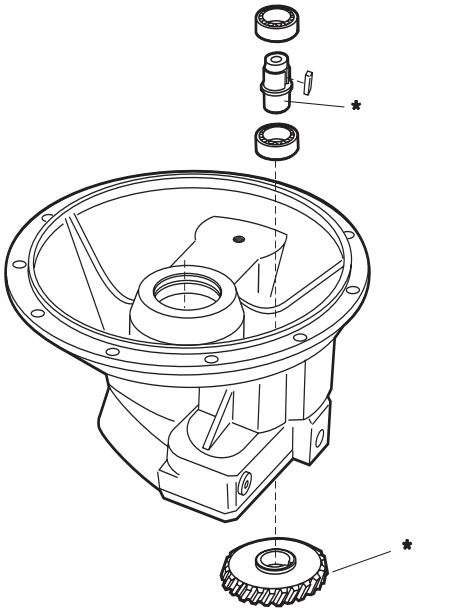
Figure 28

Number	Description
1	Setting Screw: Q_{max}
2	Setting Screw: Hydraulic Stroke Limitation
3	Setting Screw: Power Characteristic (Begin of Regulation)

REMOVE THE INTERMEDIATE WHEEL

1. Press bolt (*, Figure 48) into gear wheel. (Fixed pressing fit). I

   NOTE: *Can only be disassembled with a hydraulic press.*

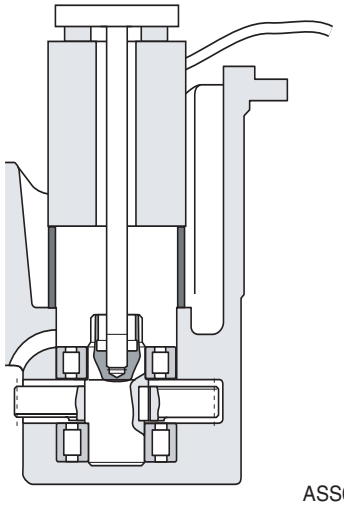


ASS0520L

Figure 48

2. Install sleeve. I

   NOTE: *Press out bolt with a hydraulic press.*

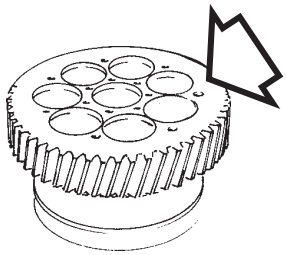


ASS0530L

Figure 49

RE-FITTING THE ROTARY GROUP

1. Threads must be free of oil, grease, dust or any other contaminants which may impair locking of screws.

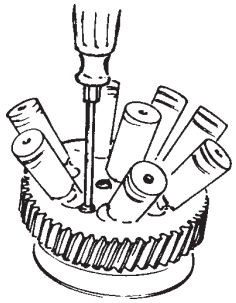


ASS0780L

Figure 74

2. Assemble retaining plate with pistons and center pin in position. Use screws that have a Precoat coating.

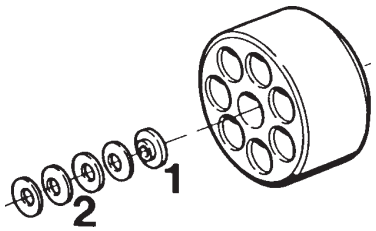
   NOTE: *For tightening torques, see service information.*



ASS0790L

Figure 75

3. Insert spring plate (1, Figure 76) and cup springs (2, Figure 76) into their correct position (and orientation) using grease to hold them into place.



ASS0800L

Figure 76

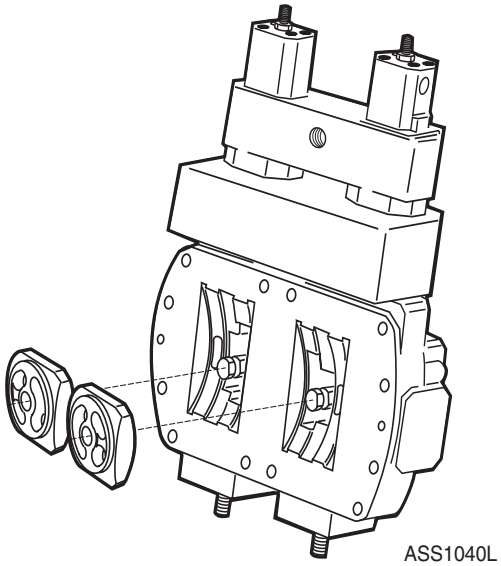


Figure 100

5. Install seal and controller.

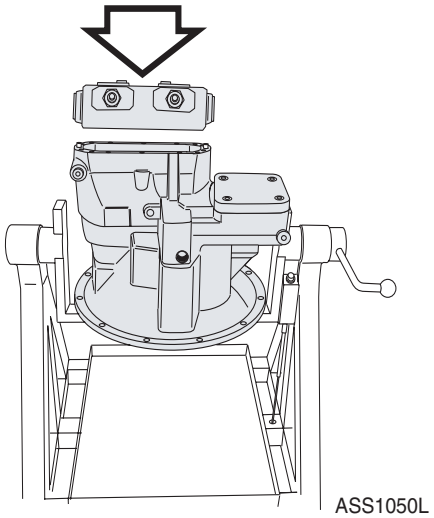


Figure 101

4. Remove the mounting flange taking care to keep the flange as straight as possible during removal.

   If mounting flange is stuck, tap around the edge with rubber mallet in order to break away from the body.

   NOTE: *Ensure that while removing mounting flange, shaft and other components remain position.*

Figure 4

Figure 5

5. Remove snap ring with proper tool, (only when it is needed to replace shaft seal)

Figure 6

6. Remove the shaft seal taking care not to give any damage on the surface of shaft hole.(only when it is needed to replace shaft seal)

Figure 7

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
DX300LC	5001 and Up
DX340LC	5001 and Up

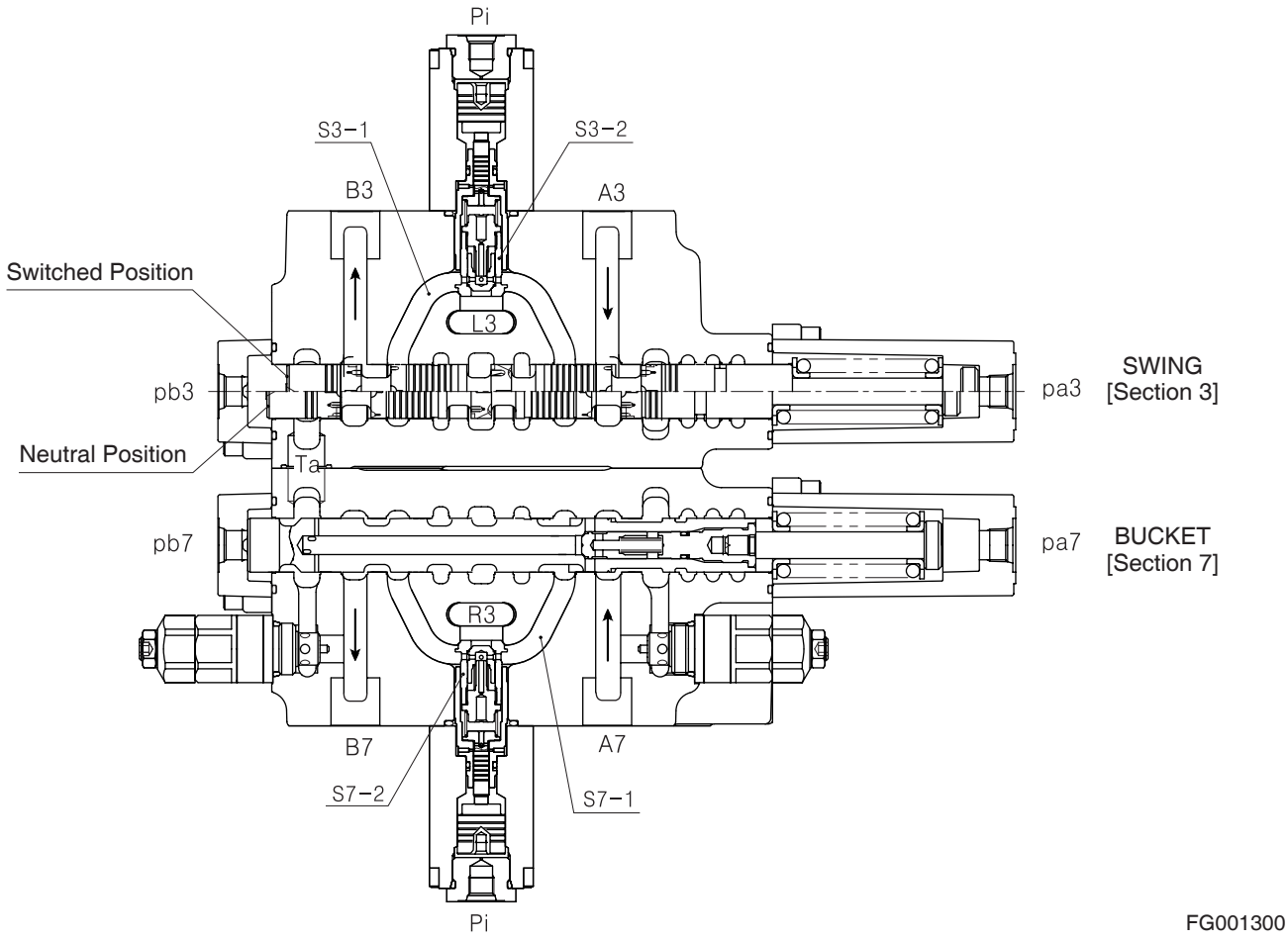

Pi
S3-1
S3-2
B3
A3
Switched Position
L3
pb3
pa3
SWING
[Section 3]
Neutral Position
Ta
pb7
pa7
BUCKET
[Section 7]
R3
B7
A7
S7-2
S7-1
Pi
FG001300

Figure 6

Relief Valve

1. Main relief valve

   Oil supplied to port (P1) flows through poppet (LP). Oil supplied to port (P2) flows through poppet (RP) and passage (3). They join at the main relief valve. The highest pressure of pump (P1 and P2) is controlled by reaction of main relief valve.

2. Overload relief valve

   The overload relief valve, that is installed in each cylinder port of boom 1, arm 1 and bucket, prevents pressure of actuator from increasing extremely high from outside forces. This relief valve, when pressure of cylinder port is negative, has a function to prevent cavitation by drawing oil from tank.

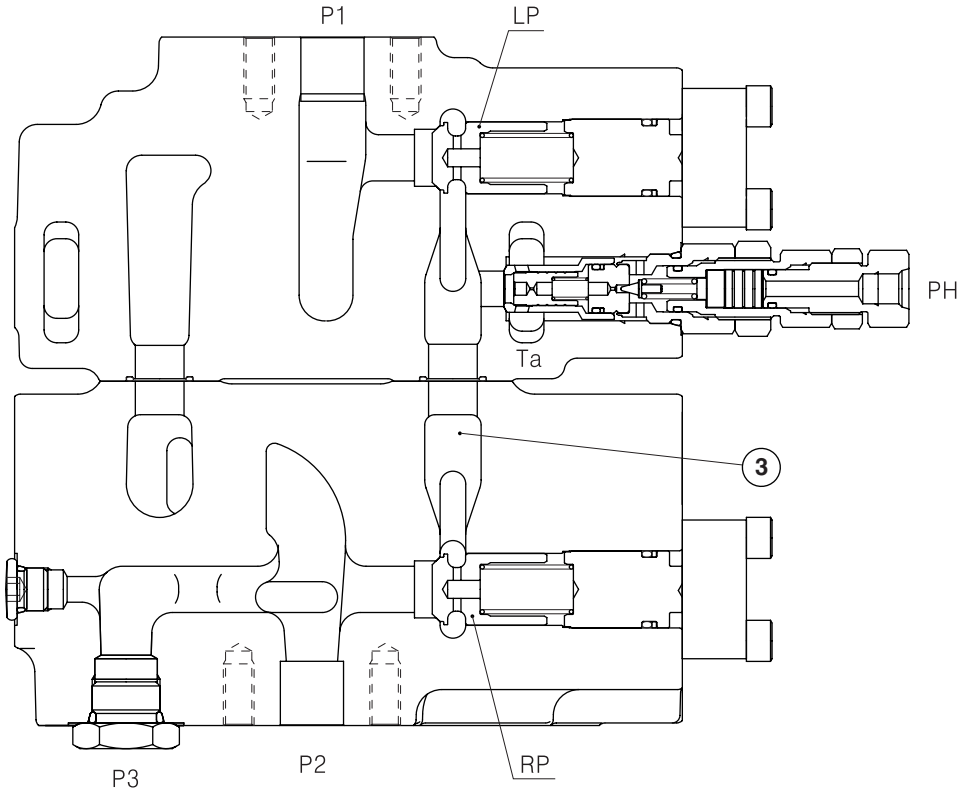
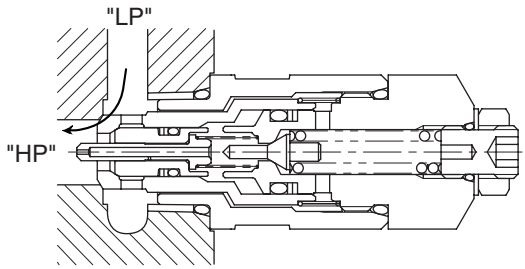


Figure 16

Absorption Operation

An anti void unit is installed in cylinder port (HP) to prevent the development of cavitation. If pressure at cylinder port (HP) becomes lower than that of oil passage (LP), sleeve (K) moves so that oil is supplied from the low-pressure oil passage (LP) to eliminate cavitation.



FG000648

Figure 31

Relief Valve

Problem	Possible Cause	Remedy
Press does not increase.	Main poppet, sleeve or pilot poppet are stuck open and valve seat part has dust.	Replace relief valve.
Unstable relief pressure.	The seat part of pilot poppet has groove.	
	Piston or main poppet gets stuck.	
Abnormal relief pressure.	Abrasion of seat part by dust.	
	Locking screw and adjustment equipment are loosened.	Re-set pressure and tighten locking screw with regular Torque.
Oil leakage.	Damage to relief valve seat part.	Replace relief valve.
	Each part is stuck with dust.	
	The O-ring is worn out.	Replace adjustment equipment or O-ring of loading part.

Overall Oil Pressure

Problem	Possible Cause	Remedy
Oil pressure condition is bad or not operate at all.	Breakdown of pump.	Check pressure or replace pump.
	Breakdown of relief valve.	Replace relief valve.
	Breakdown of cylinders.	Repair or replace.
	Pump load pressure is significant.	Check circuit pressure.
	Valve has crevice.	Replace valve assembly.
	Spool does not make full stroke.	Check operation of spool.
	Tank surface is too low.	Add operation oil.
	Filter in circuit is clogged.	Wash or replace filter.
	Circuit pipeline is tightened.	Check pipeline.

Adjustment of Valves

Main Relief Valve

1. Connect an accurate pressure gauge to inlet port.
2. Start engine and maintain rated pump speed.
3. Shift control valve spool and read pressure gauge from stroke end of cylinder.

   NOTE: *Shift a spool that the actuator pressure setting of the overload relief valve is higher than the pressure of the main relief valve.*

4. High-pressure adjustment (1st stage) (Refer to Figure 38 on page 54.)

   A. Loosen lock nut (7) and tighten plug (8) until piston contacts step (* mark) of plug (6). Plug (8) should be torque below 2.0 kg•m (15 ft lb). While plug (8) is tightened, plug (6) should not be turned. Distance A

Disassembly of Overload Relief Valve

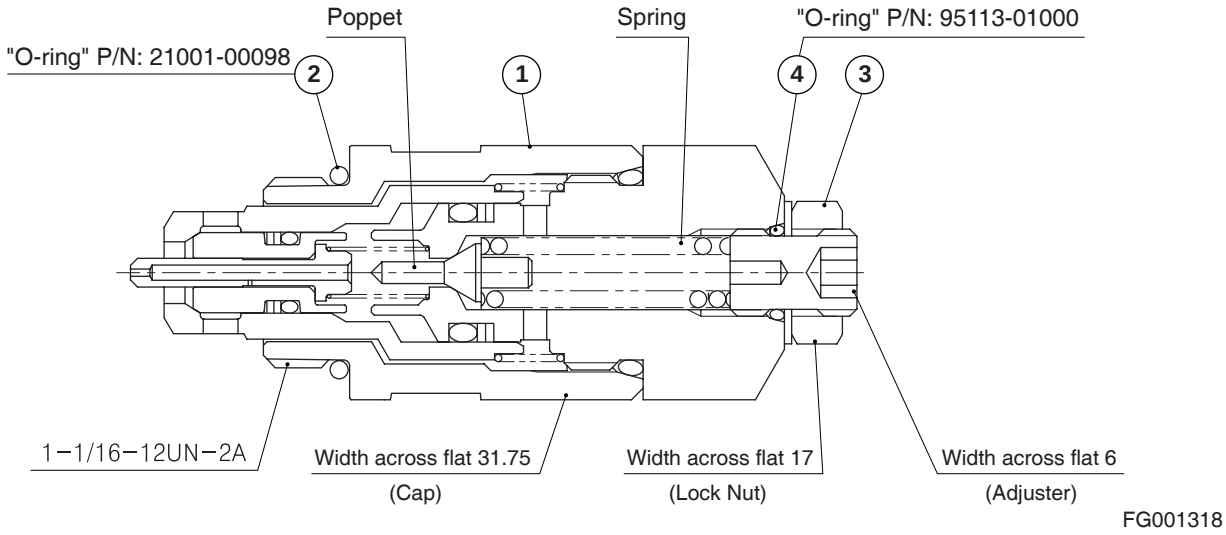


Figure 39

1. This relief valve should be replaced as an assembly. When replacing it, remove cap (1, width across flats: 32 mm) and O-ring (2). If oil is leaking from nut (4), remove nut (4) and plug (1), and replace O-ring (3). If oil is leaking from nut (7), remove nut (7) and plug (8), and replace O-ring (3).

   NOTE: *This relief valve should be replaced as an assembly. When replacing it, Remove cap (1, width across flats: 32 mm) and O-ring (2). If oil is leaking from adjusting kit (3), remove adjusting kit (3), and replace O-ring (4).*

CAUTION!

When disassembling adjuster kit, be careful not to let parts spring out or lose poppet because of spring force.

Maintenance of Relief Valves

Reassembly of Main Relief Valve

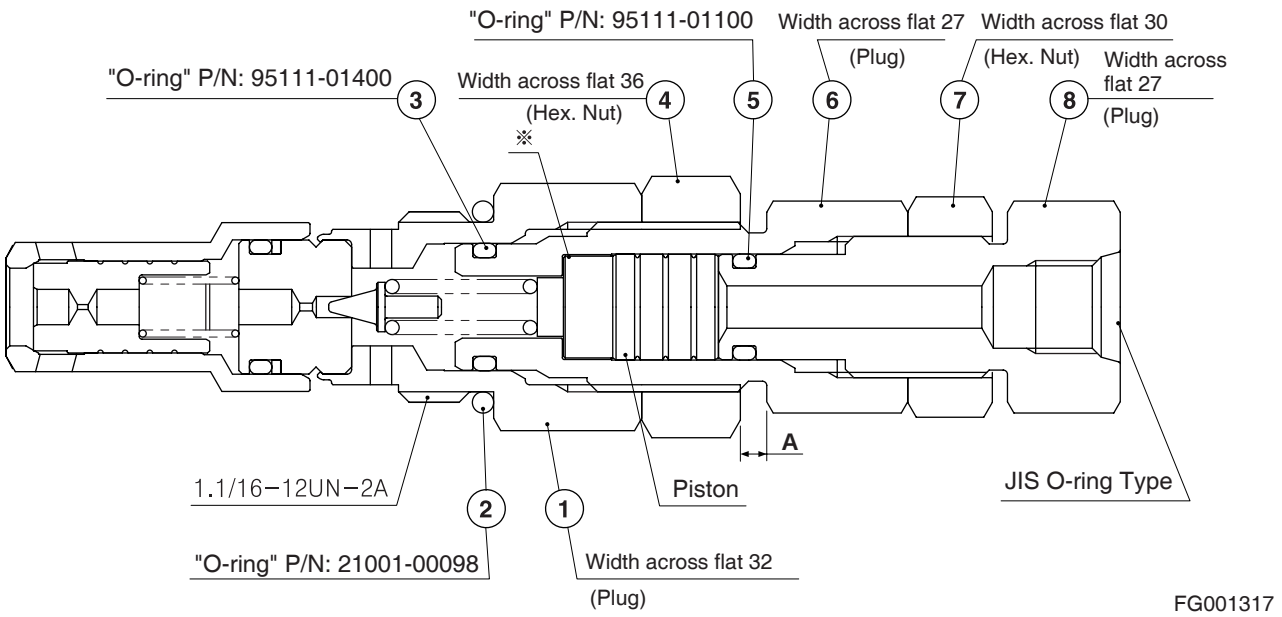


Figure 41

1. Check if there is dirt and paint chips around threads of plug (1, 6 and 8) and nut (4 and 7). Replace O-ring with new one. Clean installation portion of relief valve and valve housing. Install valve, and then tighten plug (1, width across flats: 32 mm). Tightening torque: 7.95 - 8.97 kg•m (58 - 65 ft lb).

   NOTE: *The torque values are based on use of lubricated threads.*

   NOTE: *If relief valve was disassembled, adjust pressure by referring to "Main Relief Valve" on page 45.*

GENERAL DESCRIPTION

Theory of Operation

Structure

The remote control valve contains four push rods, spring holders, spools and return springs, which are in the valve casing. The valve works as a pressure reduction valve.

The housing has six ports, which include input port P, tank port T, and four secondary pressure ports.

The electric horn button is installed in the valve handle.

Gear pump pressure is used for operating control spools.

Function

1. Neutral Position

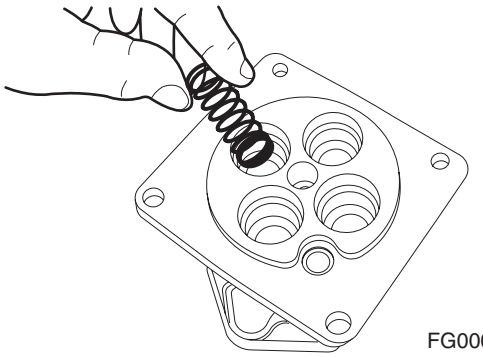
   When the lever is in neutral mode, the spool is pushed upward by return spring. The force of balancing spring, which determines the secondary discharge pressure, is not transmitted to the spool. The input port is closed and the pressure of the output port is the same as the pressure of the tank port T.

2. Control Switch

   Pressing of the push rod starts to press the balance spring, whose force is transferred to the spool to connect the P and T ports, transferring the pilot pressure. Output pressure acts on the bottom of the spool and press the spool upwards until it is balanced with the force of the balance spring.

   In short, the second pressure (output pressure) changes in proportion to the pressing force of the balance spring.

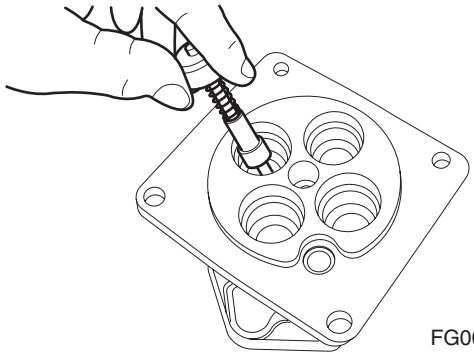
4. Install spring (9) into case (1).



FG000820

Figure 24

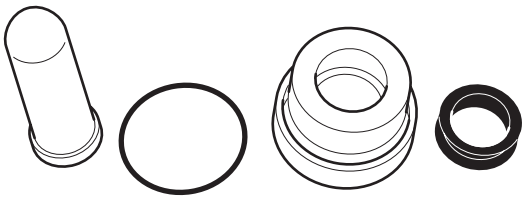
5. Install spool kit assembly into case (1). (The same way is used for four parts.)



FG000821

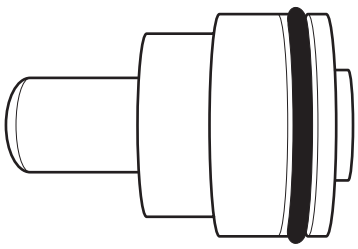
Figure 25

6. Assemble plug kit insert rod seal (18), O-ring (17), and push rod (2) into plug (16) in proper order.



FG000822

Figure 26



FG000810

Figure 27

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.

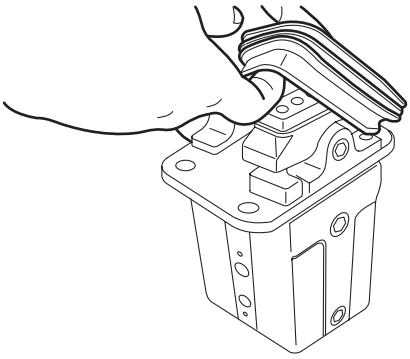
APPLICABLE MODELS

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

MODEL	SERIAL NUMBER RANGE
DX300LC	5001 and Up
DX340LC	5001 and Up
DX420LC	5001 and Up
DX480LC	5001 and Up

DISASSEMBLY

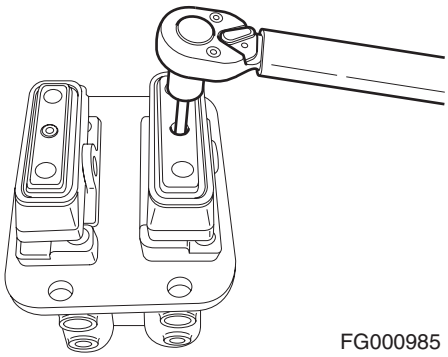
1. Remove bellows (33).



ARS1870P

Figure 8

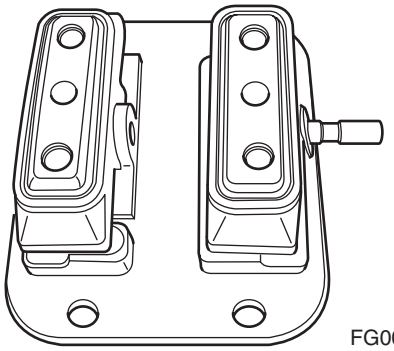
2. Remove set screw (30) from cam (27).



FG000985

Figure 9

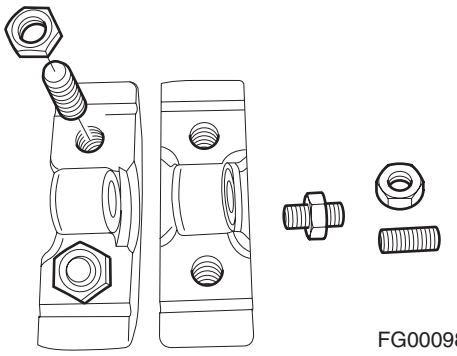
3. Remove cam shaft (29) and cover (25) from cam (27).



FG000986

Figure 10

4. Remove hex nut (32) and swash plate (31) from cam.



FG000987

Figure 11

INSTALLATION

1. Position pedal valve (1, Figure 47) on cabin floor plate and install four bolts and washers (2).

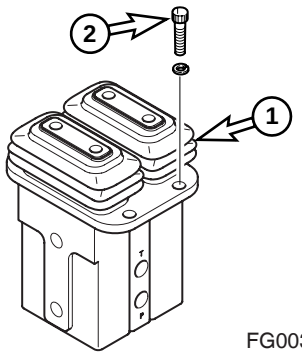


Figure 47

2. Install pedal brackets (3) and levers (4, Figure 48) on pedal valve and install four bolts and washers (2).
3. Install rubber boots (1, Figure 48).

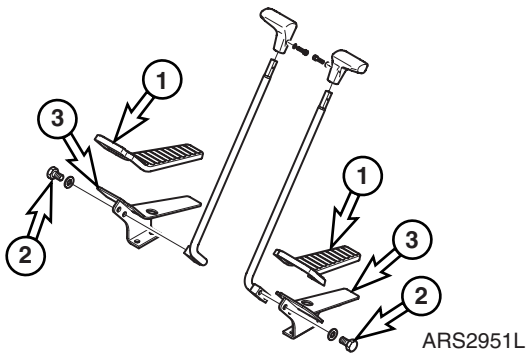


Figure 48

4. Connect hoses as tagged during removal to pedal valve (1, Figure 49).
5. Install cabin under cover by tightening bolts.

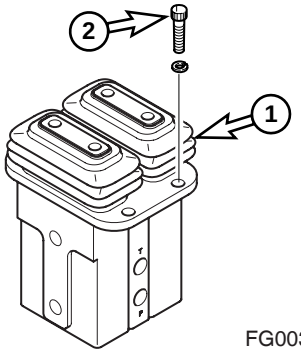


Figure 49

Disassembly

1. Determine a place for disassembly.
   - It should be clean.
   - Lay a rubber board or a cloth on the table and take care not to damage parts.
2. Remove dust and rust of the proportional pressure reducing valve with cleansing oil.
3. Disassemble the solenoid
   - Take care not to damage O-rings of the solenoid.

Figure 53

4. Disassemble the spool, the spring, and the pin.

Figure 54

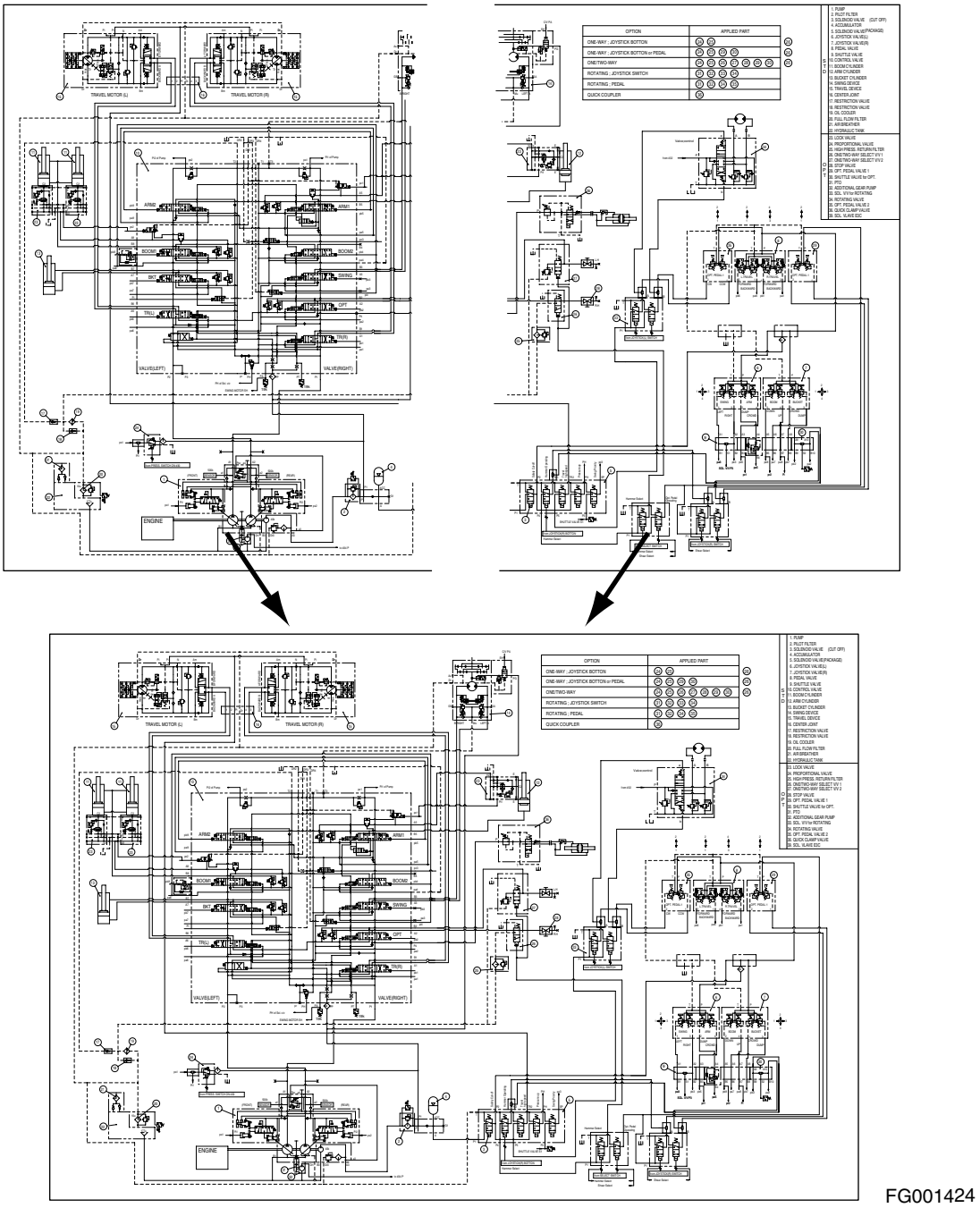
5. Disassemble the sleeve.
   - Take care not to damage O-rings of the sleeve.

Figure 55

GENERAL DESCRIPTION

Schematic(s) presented in this section are laid out on facing pages.

An overlapping edge has been taken into consideration so that a photocopy can be made and pasted together to make a complete schematic.



FG001424

Figure 1

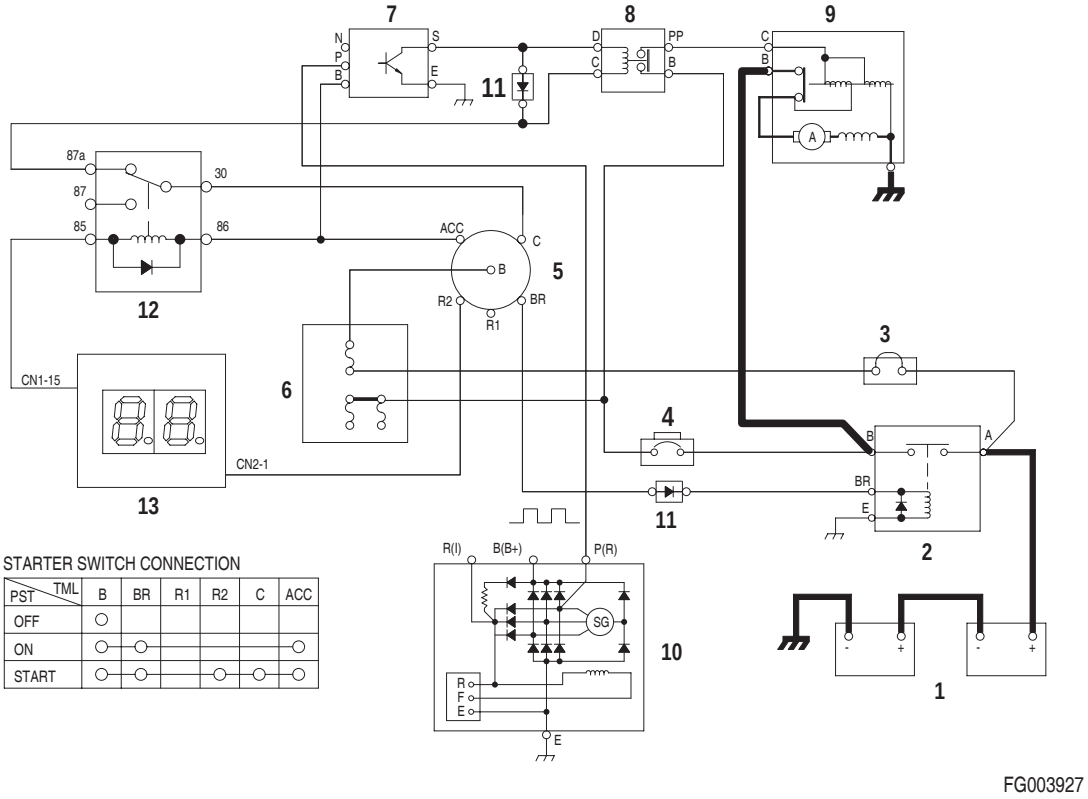


Figure 4 OPERATION OF START CIRCUIT (2) - IMMEDIATELY AFTER START

Reference Number	Description
1	Battery
2	Battery Relay
3	Fusible Link
4	Circuit Breaker
5	Starter Switch
6	Fuse Box
7	Starter Controller

Reference Number	Description
8	Starter Relay
9	Starter
10	Alternator
11	Diode
12	Starter Relay 2
13	e-EPOS Controller

Reference Number	Description
1	Instrument Panel
2	Pilot Buzzer
3	Light Switch
4	Starter Switch
5	Front Pump Pressure Sensor
6	Rear Pump Pressure Sensor
7	Hydraulic Oil Temperature Sensor
8	Fuel Sensor
9	Pedal Pressure Switch (Optional)
10	Air Cleaner Indicator

Reference Number	Description
11	Pilot Filter Switch
12	Return Filter Switch
13	Alternator
14	e-EPOS Controller
15	Battery
16	Battery Relay
17	Circuit Breaker
18	Fusible Link
19	Fuse Box
20	Check Connector
21	Engine Controller

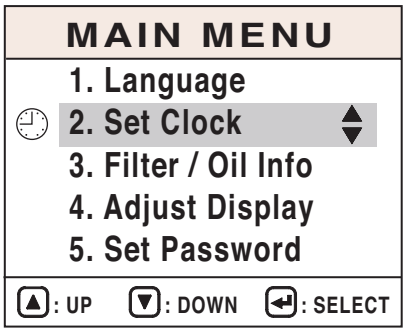
Set Clock

It is used to adjust time of the digital clock.

Pressing the Enter Button (↵, 3 on Figure 12) in the Main Menu after putting cursor on Set Clock brings Set Clock display.

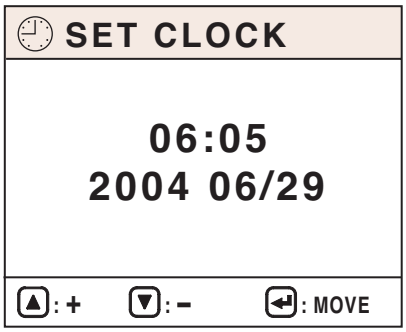
Without pressing a button more than 20 seconds, the default view appears.

Please refer to the Operation Manual for detailed information on Time Setting.



FG000075

Figure 16



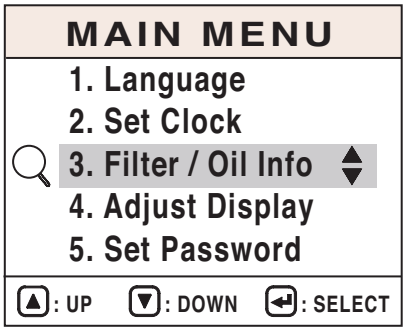
FG000076

Figure 17

Filter/Oil Info

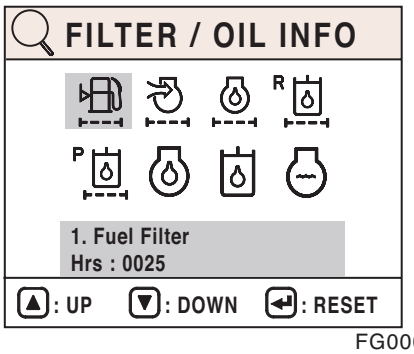
This mode displays total operating hours of filters and oils.

After changing the filter and oil, reset the operating hour and then the operating hours until the next service interval can be easily checked.



FG000077

Figure 18

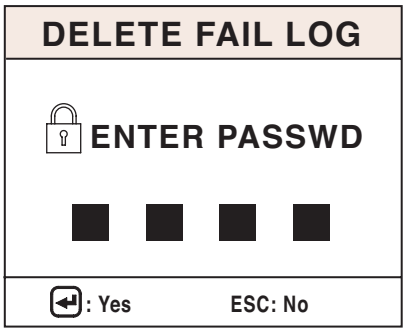


FG000078

Figure 19

Input your password with one of No. 1 - 8 switches.

When "NO" (ESC, 4 on Figure 24) button is pressed, the screen will recover to previous menu without deletion.

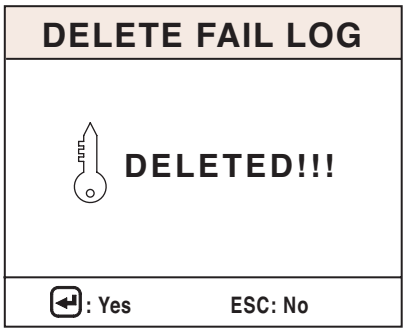


FG000568

Figure 37

Delete Completed screen will appear 3 seconds and the screen will move to Failure Info screen.

It has been shown 3 seconds upon deleting Fail Log.

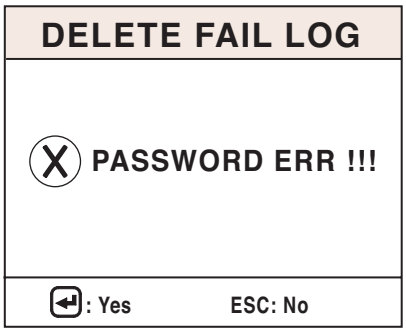


FG000569

Figure 38

The screen shown on the left will appear 3 seconds in case of wrong password input and then Enter Password screen appears again.

It has been shown 3 seconds in case of password failure.



FG000570

Figure 39

Reference Number	Description
1	Instrument Panel
3	Engine Controller
4	e-EPOS Controller
10	E.P.P.R. Valve (Electromagnetic Proportional Pressure Reducing)
17	Engine Control Dial
22	Aux Mode Switch

Reference Number	Description
23	Aux Mode Resistor
24	Battery
25	Battery Relay
26	Fuse
27	Fusible Link
28	Starter Switch

If the machine is idling without the controls being operated or is waiting for a dump truck the engine speed is automatically lowered. Once the controls are operated and work is being started the machine will be restored to the previous settings. As a result, noise and fuel consumption will be reduced. This function can be selected or cancelled through the Auto Idle Selector Switch on the instrument panel.

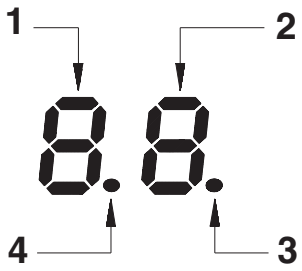
The initial setting at start-up is with this switch in the select position. Approximately 4 seconds after this function is selected, if all work levers are in the neutral position, the e-EPOS controller compares the automatic reduction signal with the signal set by engine control dial. The lower of the two signals is selected, the e-EPOS controller sends a signal to the engine controller to control the engine speed.

The neutral status of the machine is detected by the two pressure switches in the control valve. When the work levers are in the neutral position, the switch is in the "OFF" position.

SELF-DIAGNOSTIC FUNCTION

e-EPOS Controller

The system operation status and malfunction codes can be checked through the display on top of the e-EPOS controller box the rear cover behind the operator's seat.



FG000588

Figure 68

Reference Number	Description
1	Upper Digit
2	Lower Digit
3	Engine Speed Monitor LED (Flash Interval Increases With Engine Speed.)

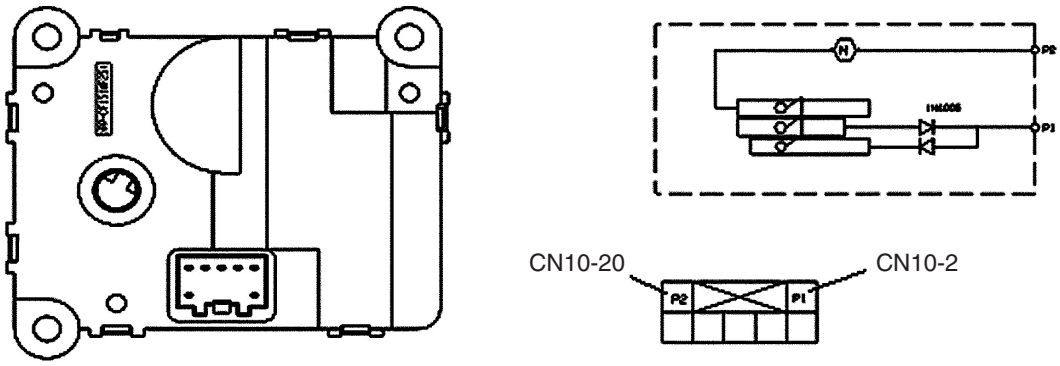
Reference Number	Description
4	Power Monitor (Stays "ON" While Power Is In Normal Range,)

1. Power Monitor

This LED is turned "OFF" when the input voltage to the e-EPOS controller is below 18.5 ±1 V or above 32.5 ±1 V. Stays "ON" while in normal range.

2. Engine Speed Monitor

This LED light flashes according to the engine speed. The flashing interval is proportional to the engine speed.



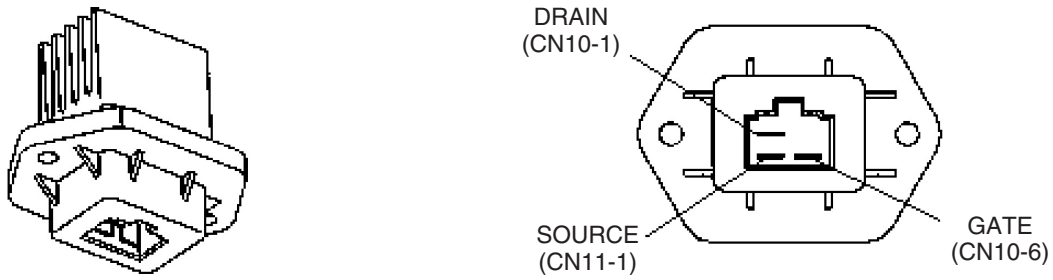
FG001055

Figure 79

Mode	Output Terminal	Output
Intake	P1(+), P2(-)	Moving of exchange door by selecting intake.
Recirculate	P1(-), P2(+)	Moving of exchange door by selecting recirculate.

Air Flow Control Module

Air flow is controlled through the control of voltage between GATE and SOURCE.



FG001056

Figure 80

Air flow	Output Terminal		Output
1st	CN11-2	CN10-1	10 ±0.5V
2nd			12.5 ±0.5V
3rd			15 ±0.5V
4th			17.5 ±0.5V
5th			20.0 ±0.5V
6th			22.0 ±0.5V
7th			More than 25V

Input voltage is 27.5V.

Compressor

Categories	Specifications
Output	155.3 cc/rev
Oil Level	120 cc (ND-OIL8)
Refrigerant	R134a
Rated Voltage	24V
Relief Valve	Open: 35 - 42.2 kg/cm^{2}G Close: 28.1 kg/cm^{2}G

Compressor sucks in refrigerant which evaporates completely in the evaporator and discharges it to the condenser.

Refrigerant undergoes repeated status change in the order of liquid, gas, and liquid in the freezing cycle, and the compressor makes evaporated refrigerant a high temperature and high-pressured gas to freeze it in the condenser.

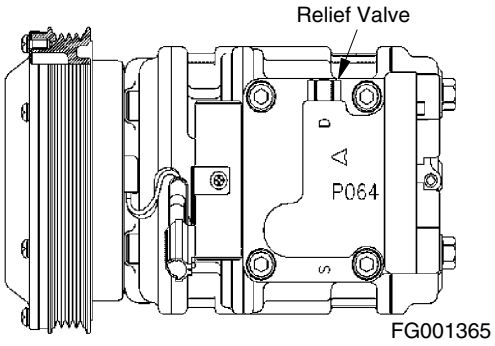


Figure 91

Receiver Dryer

The receiver dryer reserves refrigerant enough to ensure smooth freezing cycle responding immediately to the change of level in the freezing cycle.

As liquid refrigerant from the condenser may contain refrigerant gas with bubbles whose presence in the expansion valve decreases the freezing power excessively, it separates liquid and gas and sends liquid only to the expansion valve.

Water in refrigerant shall be eliminated with dryer and through filter.

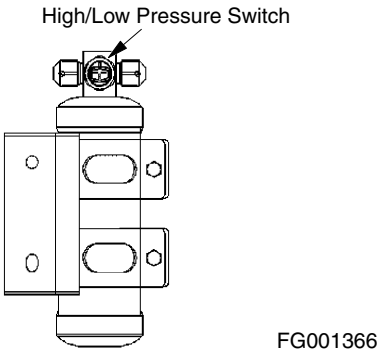


Figure 92

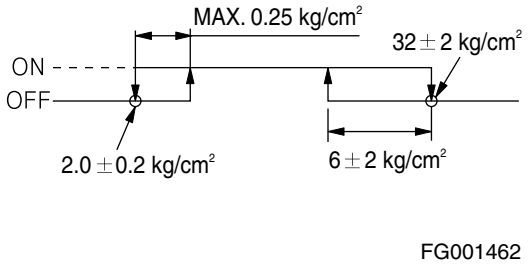


Figure 93

Volume of refrigerant by model

Model	Volume of Refrigerant
DX300LC	800 ±20 grams (28 ±0.7 oz)
DX340LC	800 ±20 grams (28 ±0.7 oz)
DX140W	800 ±20 grams (28 ±0.7 oz)

Electrical Schematic (DX300LC/340LC)

Edition 1

Attachments

Mark	Measuring Part	Criteria					Remedy
		Standard Size	Tolerance		Standard Clearance	Clearance Limit	
			Pin	Hole			
A	Boom Foot	120 mm (4.724")	-0.10 -0.15	+0.18 +0.03	0.13 ~ 0.33	1.5	Replace
B	Boom Cylinder Head	110 mm (4.331")	-0.10 -0.15	+0.18 +0.03	0.13 ~ 0.33	1.5	
C	Boom Center	120 mm (4.724")	-0.10 -0.15	+0.18 +0.03	0.13 ~ 0.33	1.5	
D	Boom End	120 mm (4.724")	-0.10 -0.15	+0.18 +0.03	0.13 ~ 0.33	1.5	
E	Arm Cylinder Head	110 mm (4.331")	-0.10 -0.15	+0.18 +0.03	0.13 ~ 0.33	1.5	
F	Arm Cylinder Rod	110 mm (4.331")	-0.10 -0.15	+0.18 +0.03	0.13 ~ 0.33	1.5	
G	Bucket Cylinder Head	110 mm (4.331")	-0.10 -0.15	+0.18 +0.03	0.13 ~ 0.33	1.5	
H	Arm Link	100 mm (3.937")	-0.06 -0.11	+0.18 +0.03	0.09 ~ 0.27	2.0	
I	Arm End	110 mm (4.331")	-0.10 -0.15	+0.18 +0.03	0.13 ~ 0.33	2.0	
J	Bucket Cylinder Rod	110 mm (4.331")	-0.10 -0.15	+0.18 +0.03	0.13 ~ 0.33	2.0	
K	Push Link to Bucket	110 mm (4.331")	-0.10 -0.15	+0.18 +0.03	0.13 ~ 0.33	2.0	

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