GENERAL SPECIFICATIONS

Shipping Weight	14.0 metric tons (30,860 lb), includes 10% fuel, 4,600 mm (15' 1") boom, 2,500 mm (8' 2") arm, standard backhoe bucket and standard shoes
Operating Weight	Add weight of full fuel tank and operator
Shipping Weights With Optional Track Shoes	Add 310 kg (683 lb) for 500 mm (19.7") shoes
	Add 440 kg (970 lb) for 700 mm (34") shoes
Major Component Weights	Standard Boom 756 kg (1,667 lb)
	2,100 mm (6' 11") Arm 367 kg (809 lb)
	2,500 mm (8' 2") Arm 412 kg (908 lb)
	3,000 mm (9' 10") Arm 450 kg (992 lb)
	Boom Cylinders 122 kg (269 lb) each
	Arm Cylinder 145 kg (320 lb)
	Bucket Cylinder 92 kg (207 lb)
	Counterweight 2,200 kg (4,850 lb)
	Upper Turntable 4,100 kg (9,039 lb)
	Lower - below Swing Bearing 5,300 kg (11,685 lb)
Digging Forces (At Power Boost):	
Bucket Cylinder	94 KN or 9,600 kg (21,200 lb) - (with either 3,000 mm [9' 10"] or 2,500 mm [8' 2"] or 2,100 mm [6' 11"] arm)
Arm Cylinder	62 KN or 6,300 kg (13,900 lb) with 2,500 mm (8' 5") standard arm
Fuel Tank Capacity	267 liters (70.5 U.S. gal)
Hydraulic System Capacity	148 liters (39 U.S. gal)
Hydraulic Reservoir Capacity	99 liters (26 U.S. gal)
Bucket Heaped Capacity Range	PCSA 0.24 - 0.76 m^3 (0.31 - 0.99 yd^3)
	IMPORTANT: Refer to the Load Weight, Bucket and Arm Length Compatibility Table for information on which bucket sizes may be used safely with which arm length, for load material weights.
Shoe Type	Triple Grouser
Shoe Width and Optional Sizes	600 mm (23.5") - standard
	700 mm (28") - optional
	500 mm (19.7") - optional
Ground Pressure Ratings:	
Standard 600 mm (23.6") shoe -	0.36 kg/cm^2 (5.1 psi)
Optional 700 mm (28.0") shoe -	0.30 kg/cm^2 (4.3 psi)
Optional 500 mm (19.7") shoe -	0.43 kg/cm^2 (6.1 psi)
Optional Dozer Blade Sizes	2,490 mm (8' 2") with 500 mm (19.7")
	2,590 mm (8' 6") with 600 mm (23.5")
	2,690 mm (8' 10") with 700 mm (28")
Transport Dimensions	
Overall Shipping Length (standard boom and arm)	7,680 mm (25' 2")
Overall Shipping Width (standard shoes)	2,590 mm (8' 6")
Overall Shipping Height (to top of cylinder hose)	2,710 mm (8' 10")

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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.

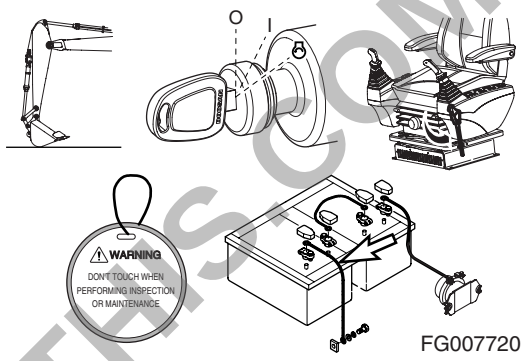


Figure 1

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.*

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TORQUE VALUES FOR STANDARD METRIC FASTENERS

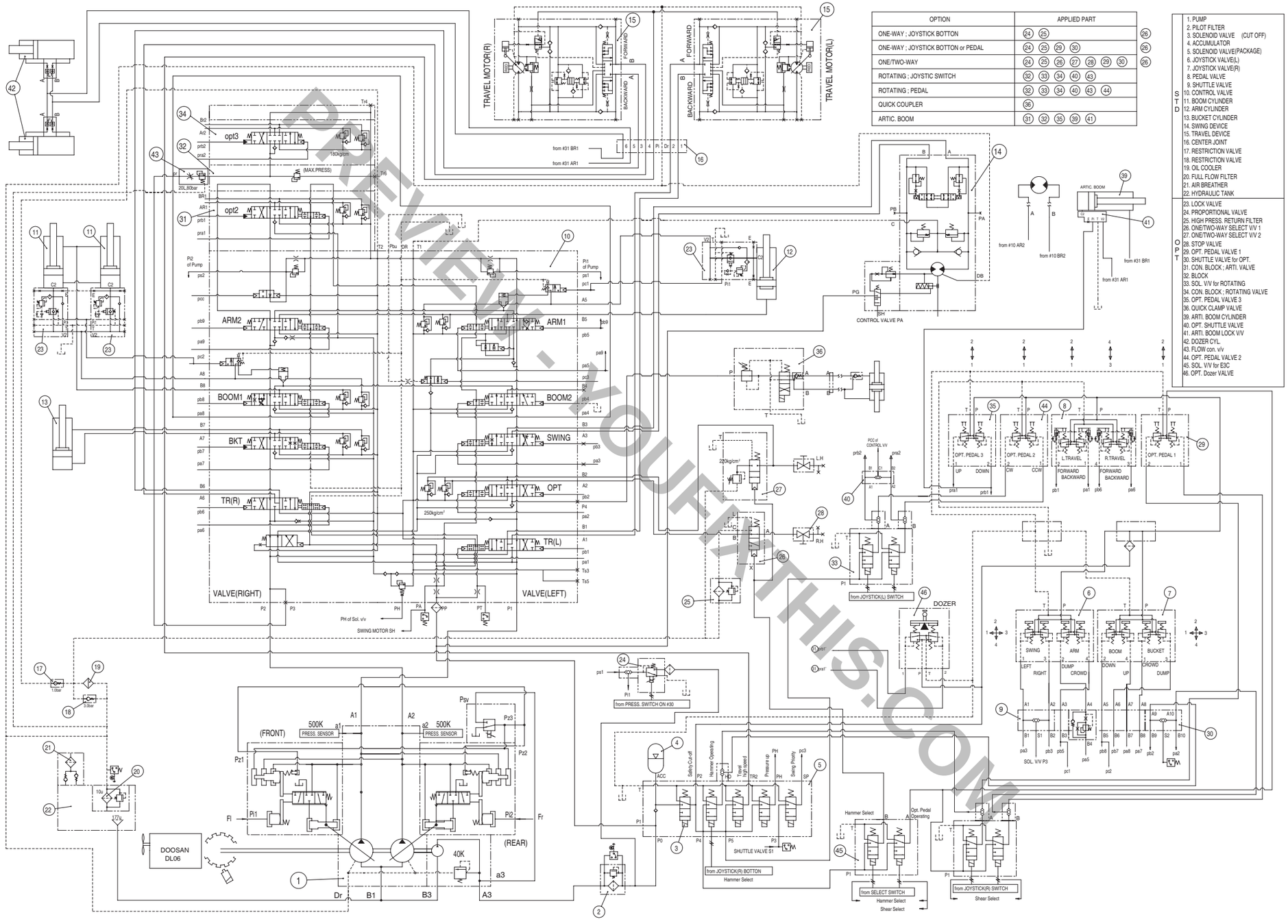
NOTE: *The units for the torque values are kg•m (ft lb).*

Dia. x Pitch (mm)	Grade										
	3.6 (4A)	4.6 (4D)	4.8 (4S)	5.6 (5D)	5.8 (5S)	6.6 (6D)	6.8 (6S)	6.9 (6G)	8.8 (8G)	10.9 (10K)	12.9 (12K)
M5 x Std.	0.15 (1.08)	0.16 (1.15)	0.25 (1.80)	0.22 (1.59)	0.31 (2.24)	0.28 (2.02)	0.43 (3.11)	0.48 (3.47)	0.50 (3.61)	0.75 (5.42)	0.90 (6.50)
M6 x Std.	0.28 (2.02)	0.30 (2.16)	0.45 (3.25)	0.40 (2.89)	0.55 (3.97)	0.47 (3.39)	0.77 (5.56)	0.85 (6.14)	0.90 (6.50)	1.25 (9.04)	1.50 (10.84)
M7 x Std.	0.43 (3.11)	0.46 (3.32)	0.70 (5.06)	0.63 (4.55)	0.83 (6.00)	0.78 (5.64)	1.20 (8.67)	1.30 (9.40)	1.40 (10.12)	1.95 (14.10)	2.35 (16.99)
M8 x Std.	0.70 (5.06)	0.75 (5.42)	1.10 (7.95)	1.00 (7.23)	1.40 (10.12)	1.25 (9.04)	1.90 (13.74)	2.10 (15.18)	2.20 (15.91)	3.10 (22.42)	3.80 (27.48)
M8 x 1	0.73 (5.28)	0.80 (5.78)	1.20 (8.67)	1.00 (7.23)	1.50 (10.84)	1.35 (9.76)	2.10 (15.18)	2.30 (16.63)	2.40 (17.35)	3.35 (24.23)	4.10 (29.65)
M10 x Std.	1.35 (9.76)	1.40 (10.12)	2.20 (15.91)	1.90 (13.74)	2.70 (19.52)	2.35 (19.99)	3.70 (26.76)	4.20 (30.37)	4.40 (31.18)	6.20 (44.84)	7.20 (52.07)
M10 x 1.25	1.50 (10.84)	1.60 (11.57)	2.50 (18.08)	2.10 (15.18)	3.10 (22.42)	2.80 (20.25)	4.30 (31.10)	4.90 (35.44)	5.00 (36.16)	7.00 (50.63)	8.40 (60.75)
M12 x Std.	2.40 (17.35)	2.50 (18.08)	3.70 (26.76)	3.30 (23.86)	4.70 (33.99)	4.20 (30.37)	6.30 (45.56)	7.20 (52.07)	7.50 (54.24)	10.50 (75.94)	12.50 (90.41)
M12 x 1.25	2.55 (18.44)	2.70 (19.52)	4.00 (28.93)	3.50 (25.31)	5.00 (36.16)	4.50 (32.54)	6.80 (49.18)	7.70 (55.69)	8.00 (57.86)	11.20 (81.00)	13.40 (96.92)
M14 x Std.	3.70 (26.76)	3.90 (28.20)	6.00 (13.23)	5.20 (37.61)	7.50 (54.24)	7.00 (50.63)	10.00 (72.33)	11.50 (83.17)	12.00 (86.79)	17.00 (122.96)	20.00 (144.66)
M14 x 1.5	4.10 (29.65)	4.30 (31.10)	6.60 (47.73)	5.70 (41.22)	8.30 (60.03)	7.50 (54.24)	11.10 (80.28)	12.50 (90.41)	13.00 (94.02)	18.50 (133.81)	22.00 (159.12)
M16 x Std.	5.60 (40.50)	6.00 (43.39)	9.00 (65.09)	8.00 (57.86)	11.50 (83.17)	10.50 (75.94)	15.50 (112.11)	17.90 (129.47)	18.50 (133.81)	26.00 (188.05)	31.00 (224.22)
M16 x 1.5	6.20 (44.84)	6.50 (47.01)	9.70 (70.16)	8.60 (62.20)	12.50 (90.41)	11.30 (81.73)	17.00 (122.96)	19.50 (141.04)	20.00 (144.66)	28.00 (202.52)	35.50 (256.77)
M18 x Std.	7.80 (56.41)	8.30 (60.03)	12.50 (90.41)	11.00 (79.56)	16.00 (115.72)	14.50 (104.87)	21.00 (151.89)	27.50 (198.90)	28.50 (206.14)	41.00 (296.55)	43.00 (311.01)
M18 x 1.5	9.10 (65.82)	9.50 (68.71)	14.40 (104.15)	12.50 (90.41)	18.50 (133.81)	16.70 (120.79)	24.50 (177.20)	27.50 (198.90)	28.50 (206.14)	41.00 (296.55)	49.00 (354.41)
M20 x Std.	11.50 (83.17)	12.00 (86.79)	18.00 (130.19)	16.00 (115.72)	22.00 (159.12)	19.00 (137.42)	31.50 (227.83)	35.00 (253.15)	36.00 (260.38)	51.00 (368.88)	60.00 (433.98)
M20 x 1.5	12.80 (92.58)	13.50 (97.64)	20.50 (148.27)	18.00 (130.19)	25.00 (180.82)	22.50 (162.74)	35.00 (253.15)	39.50 (285.70)	41.00 (296.55)	58.00 (419.51)	68.00 (491.84)
M22 x Std.	15.50 (112.11)	16.00 (115.72)	24.50 (177.20)	21.00 (151.89)	30.00 (216.99)	26.00 (188.05)	42.00 (303.78)	46.00 (332.71)	49.00 (354.41)	67.00 (484.61)	75.00 (542.47)
M22 x 1.5	17.00 (122.96)	18.50 (133.81)	28.00 (202.52)	24.00 (173.59)	34.00 (245.92)	29.00 (209.75)	47.00 (339.95)	52.00 (44.76)	56.00 (405.04)	75.00 (542.47)	85.00 (614.80)
M24 x Std.	20.50 (148.27)	21.50 (155.50)	33.00 (238.68)	27.00 (195.29)	40.00 (289.32)	34.00 (245.92)	55.00 (397.81)	58.00 (419.51)	63.00 (455.67)	82.00 (593.10)	92.00 (655.43)
M24 x 2.0	23.00 (166.35)	35.00 (253.15)	37.00 (267.62)	31.00 (224.22)	45.00 (325.48)	38.00 (202.52)	61.00 (441.21)	67.00 (484.61)	74.00 (535.24)	93.00 (672.66)	103.00 (744.99)

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DX140LC



OPTION	APPLIED PART
ONE-WAY ; JOYSTICK BOTTON	24 25 26
ONE-WAY ; JOYSTICK BOTTON or PEDAL	24 25 29 30 26
ONE/TWO-WAY	24 25 26 27 28 29 30 26
ROTATING ; JOYSTIC SWITCH	32 33 34 40 43
ROTATING ; PEDAL	32 33 34 40 43 44
QUICK COUPLER	36
ARTIC. BOOM	31 32 35 38 41

STD
1. PUMP
2. PILOT FILTER
3. SOLENOID VALVE (CUT OFF)
4. ACCUMULATOR
5. SOLENOID VALVE(PACKAGE)
6. JOYSTICK VALVE(L)
7. JOYSTICK VALVE(R)
8. PEDAL VALVE
9. SHUTTLE VALVE
10. CONTROL VALVE
11. BOOM CYLINDER
12. ARM CYLINDER
13. BUCKET CYLINDER
14. SWING DEVICE
15. TRAVEL DEVICE
16. CENTER JOINT
17. RESTRICTION VALVE
18. RESTRICTION VALVE
19. OIL COOLER
20. FULL FLOW FILTER
21. AIR BREATHER
22. HYDRAULIC TANK

OPT
23. LOCK VALVE
24. PROPORTIONAL VALVE
25. HIGH PRESS. RETURN FILTER
26. ONE/TWO-WAY SELECT V/V 1
27. ONE/TWO-WAY SELECT V/V 2
28. STOP VALVE
29. OPT. PEDAL VALVE 1
30. SHUTTLE VALVE for OPT.
31. CON. BLOCK ; ARTI. VALVE
32. BLOCK
33. SOL. V/V for ROTATING
34. CON. BLOCK ; ROTATING VALVE
35. OPT. PEDAL VALVE 3
36. QUICK CLAMP VALVE
39. ARTI. BOOM CYLINDER
40. OPT. SHUTTLE VALVE
41. ARTI. BOOM LOCK V/V
42. DOZER CYL.
43. FLOW con. v/v
44. OPT. PEDAL VALVE 2
45. SOL. V/V for E3C
46. OPT. Dozer VALVE

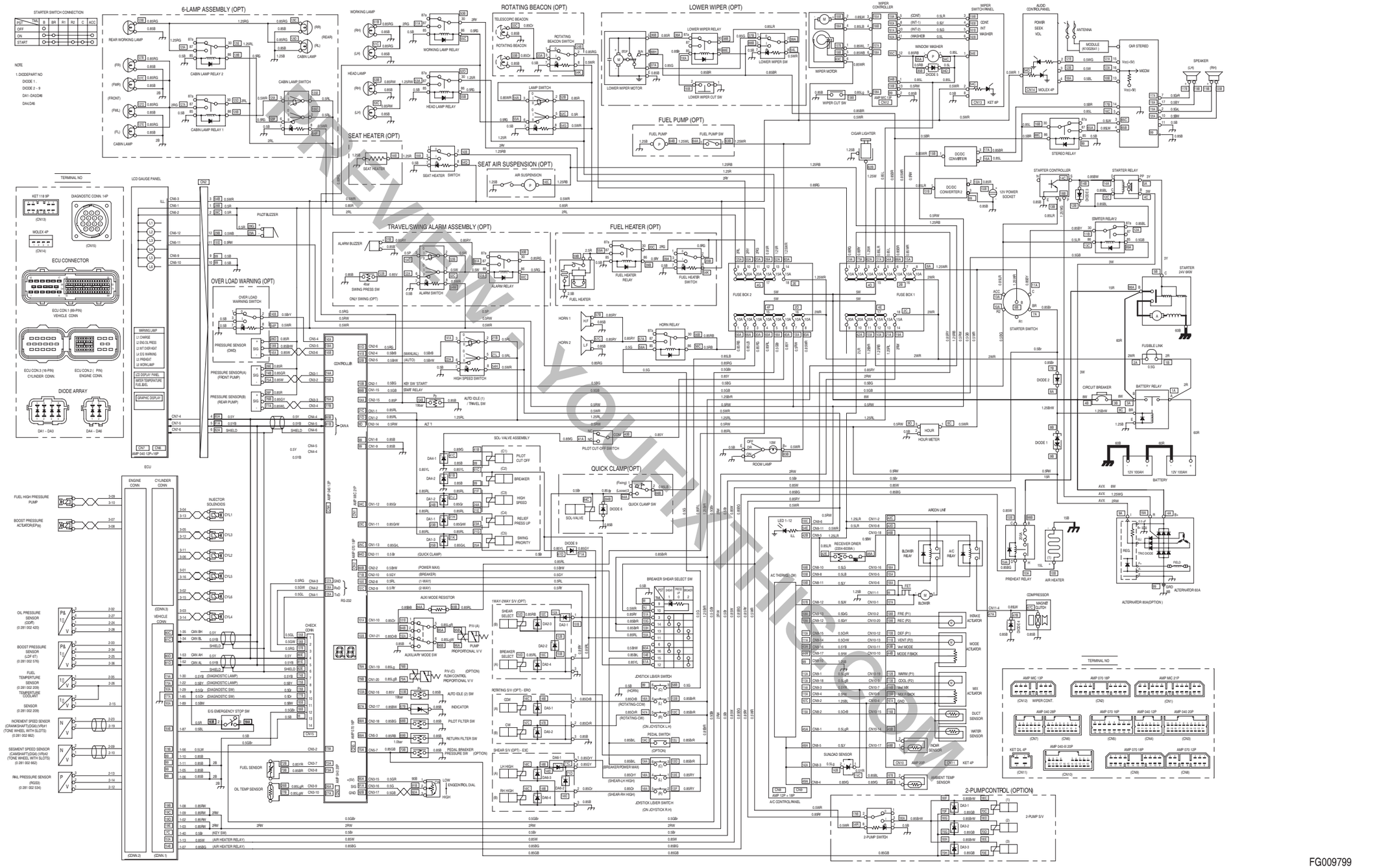
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FG009702

Figure 1

DX140LC



FG009799

Figure 1

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GENERAL DESCRIPTION

⚠ WARNING!

Engine fuel is highly flammable and potentially explosive. To prevent possible injury and/or damage to equipment, extinguish or move to a safe distance all potential fire hazards.

Parts List

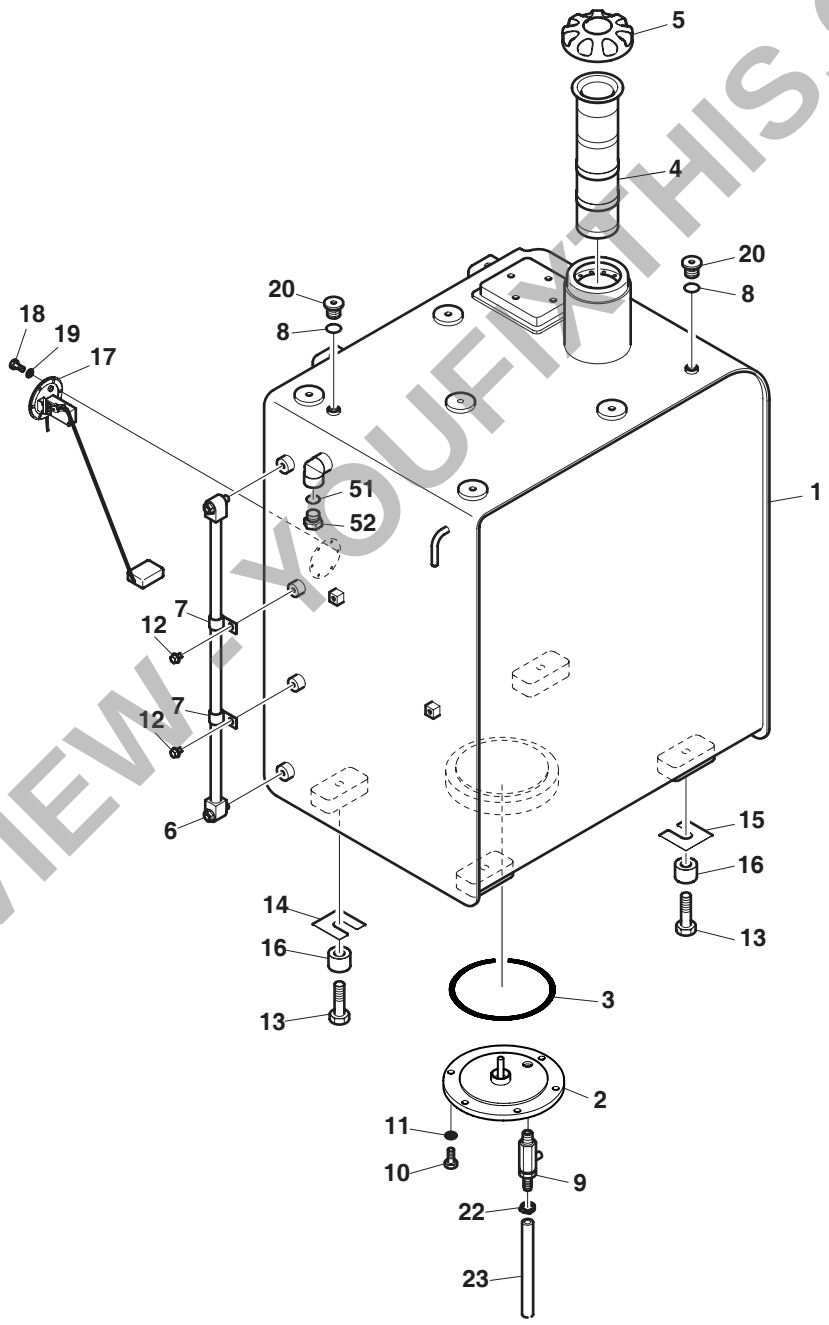


Figure 1

FG009752

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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.

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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
DX140LC	5001 and Up
DX180LC	5001 and Up
DX225LC	5001 and Up
DX225NLC	5001 and Up
DX255LC	5001 and Up
DX300LC	5001 and Up
DX340LC	5001 and Up

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Swing Motor SP000985
Travel Moter SP001346
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Main Control Valve SP001029
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Electrical System SP001038
Electrical Schematic (DX140LC) SP001357

Attachments

Boom and Arm SP001331
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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.

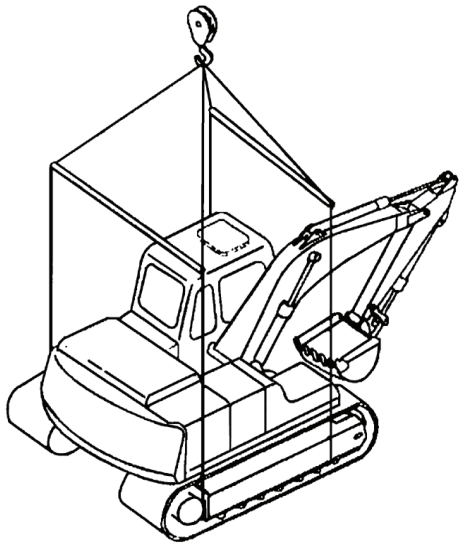
LIFTING WITH SLING

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.



HAOJ410L

Figure 47

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REMOVAL

1. Look at fuel level display (Figure 2) on instrument panel in operator's cabin to see what it displays. The display is divided into ten separated segments, each representing 10 percent of total fuel supply. Also, look at level gauge on side of tank to estimate volume of fuel left in tank.

   NOTE: *If possible, work excavator until available fuel supply in tank has been run down as far as possible.*

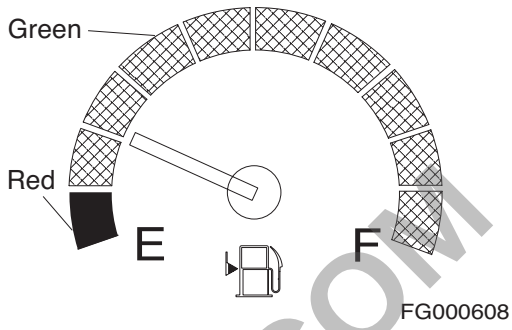


Figure 2

2. Park on firm and level ground and swing turntable to approximately a 90° with respect to tracks. See Figure 3.

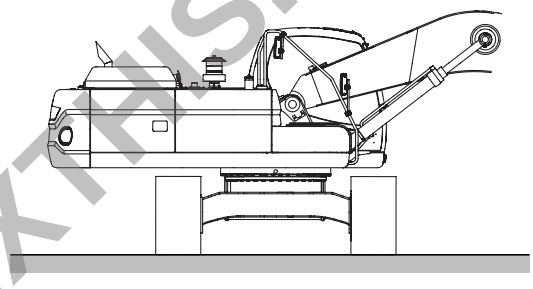


Figure 3

3. Lower front attachment (bucket) to ground.
4. Shut down engine.
5. Set safety lever on "RELEASED" position.
6. 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.

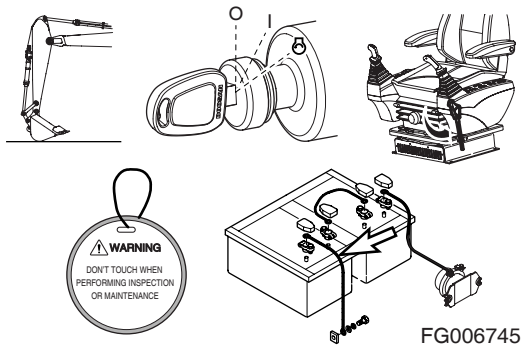


Figure 4

7. Fully stroke work levers (joysticks) in all directions to relieve any pressure from accumulators.
8. Set safety lever on "LOCK" position.
9. Turn key to "O" (OFF) position and remove from starter switch.
10. Hang maintenance warning tag on controls.
11. Disconnect negative (-) battery cable leading to frame from battery.

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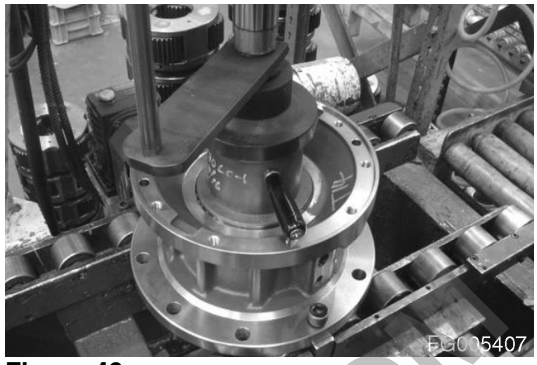


Figure 49

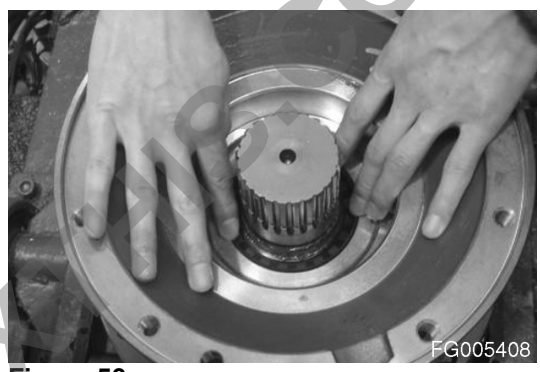


Figure 50

F. Place bearing (2109-1042, NJ313) evenly, put jig on it, and use press to fit it.

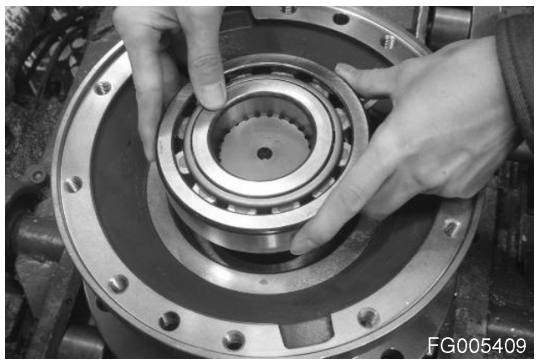


Figure 51

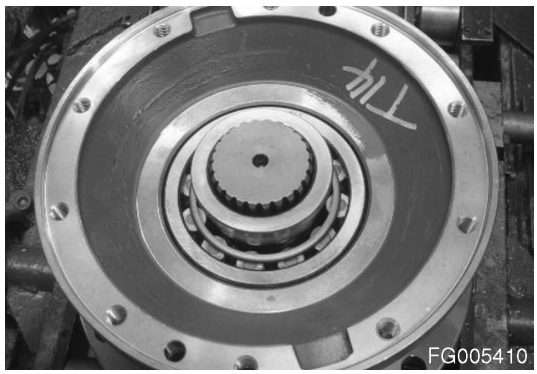


Figure 52

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Upper Roller Reassembly

1. Degrease, clean and dry all parts before reassembly. Insert bushing (4 and 5, Figure 42) into the roller (1).

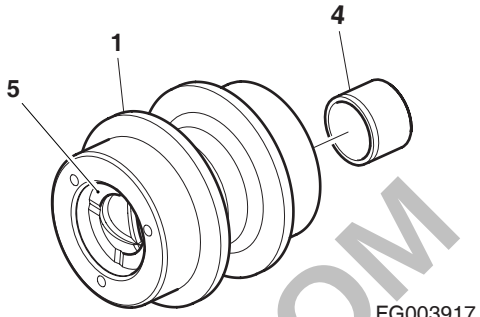


Figure 42

2. Insert floating seal (6, Figure 43) into the roller (1) and bushing.

   NOTE: *Apply clean engine oil to the joint side of the floating seal. Apply grease to the floating seal O-ring.*

3. Install the axle (2), O-ring (8) and thrust ring (3).

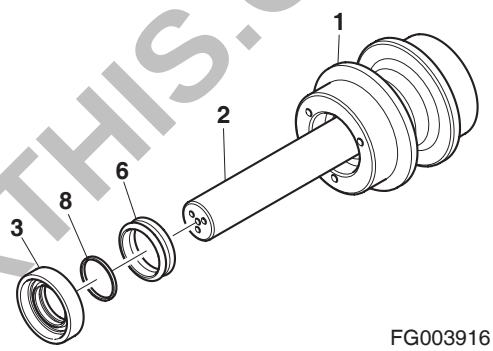


Figure 43

4. Install washer (11, Figure 44) and bolt (12).
5. Insert the O-ring (7, Figure 44) to the cover (10). Attach cover (10) and bolt (13) to the roller.
6. Fill with engine oil with 60cc.
7. Tighten plug (9, Figure 44).

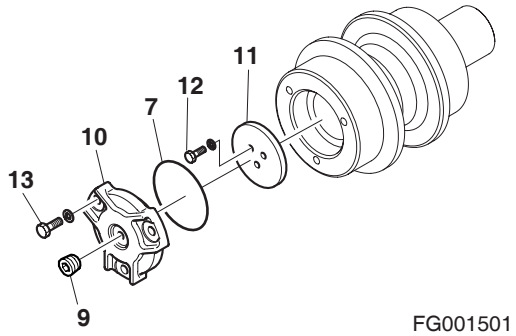
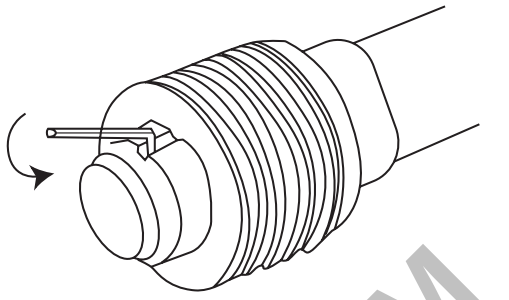


Figure 44

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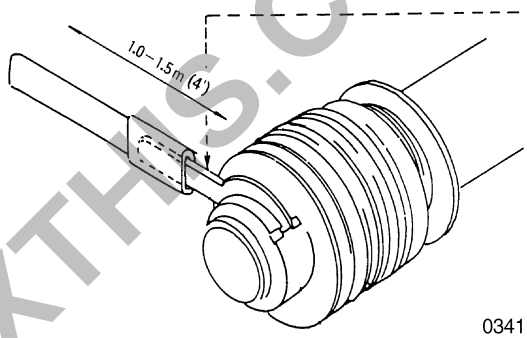
8. Remove set screw using socket wrench.



HAOF340L

Figure 19

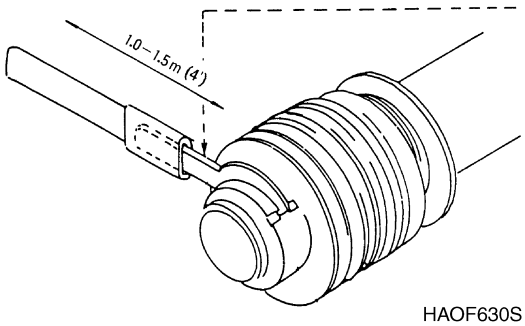
9. Fabricate or purchase a piston nut removal wrench. (Dimensions are called off at beginning of this procedure. This tool may also be ordered through your local *DOOSAN* Parts distributor). Remove nut from end of piston.



0341

Figure 20

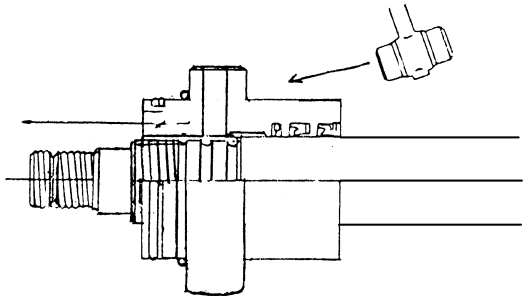
10. Use second piston tool described at beginning of this procedure to separate piston. Detach cushion ring (16), taking care not to damage cushion ring.



HAOF630S

Figure 21

11. Use a plastic hammer to evenly pull off rod cover (5) from end of piston rod. Be careful not to damage rod bushing (6) and dust wiper, U-packing and other seals.



HAOF350S

Figure 22

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PRODUCT OVERVIEW

This product is a hydraulic driven rotary actuator.

The product contains a reduction gear, hydraulic motor, brake valve and parking brake in one compact unit. It has been developed for use as an actuator for application requiring low-rpm, high torque operation such as construction and marine machinery.

General Specifications

ITEM		UNITS	Spec
Rated Output Torque		kgf•m	2100
Max. Speed		min^{-1}	60
Reduction Ratio			1/54.0
Hydraulic Motor	Max. Displacement	cc/rev	82.8
	Max. Speed	min^{-1}	3000
	Max. Pressure	kgf/cm^2	355
	2-speed Control Press	kgf/cm^2	20 ~ 70
Parking Brake	Brake Torque (min)	kgf•m	21
	Brake Free Pressure	kgf/cm^2	7.7

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Part No.	Name	Defect Description	Standard Size	Allowable Range
107	Retainer Plate	· Biased wear on the reciprocating surface with the Shoe (106) · Scratch or biased wear on the reciprocating surface with the Thrust Ball (108).	-	-
108	Thrust Ball	· Biased wear on the spherical reciprocating surface with the Retainer Plate (107).	-	-
109	Timing Plate	· Sooting or biased wear on the reciprocating surface.	-	-
115 116	Friction Plate Opposite Plate	· Biased wear on both ends. · The torque is different from the specified value. · Sooting.	Braking Torque 206 N•m (21.0 kgf•m), min.	Braking Torque 206 N•m (21.0 kgf•m), min.
105	Piston	· Scratch or dent on outer surface.	-	-
149 150	Deep Grooved Ball Bearing	· Dent. · Breaking. · Wear.	-	-
161 162	2-Speed Piston Kit Piston Shoe	· Abnormal wear on outer surface. · Abnormal, biased wear on Shoe.	-	-
323 363	Spool	· Biased wear on outer surface. · Dent on outer surface.	-	-
381	Piston	· Scratch on outer surface.	-	-

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CLEANING AND INSPECTION (WEAR LIMITS AND TOLERANCES)

NOTE: *Inspect all components and precision surfaces to confirm that they haven't been worn beyond service limits. Check the table below for dimensional specifications.*

All parts should be cleaned, air-dried and relubricated with clean, approved type hydraulic fluid, before final reassembly or as the final step after the unit has been put back together again.

Replacement of all O-rings and oil seals with new parts is generally recommended, unless pump has had very few operating hours of use.

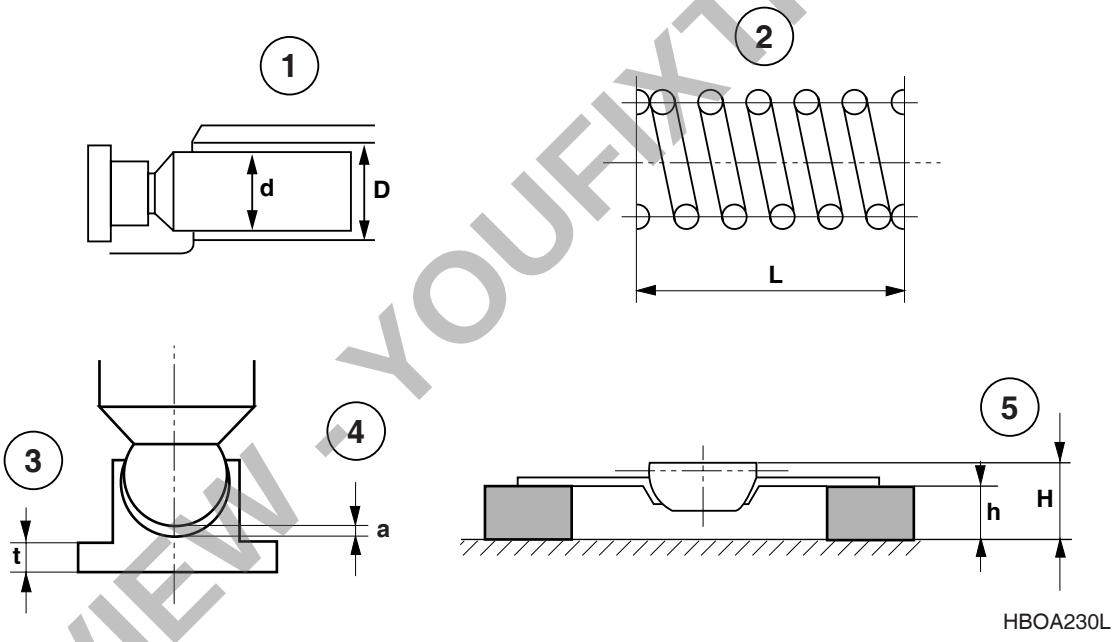


Figure 34

NOTE: *Rounded bushings and push plates must always be replaced in sets. If either one requires replacement, also replace the other.*

1. Clearance Between Piston and Cylinder Bore (D-d)
2. Spring Free Length (L)
3. Thickness of Shoe (t)
4. Piston Ball - Shoe Socket Clearance (a)
5. Height Between Round Bushing and Push Plate (H-h)

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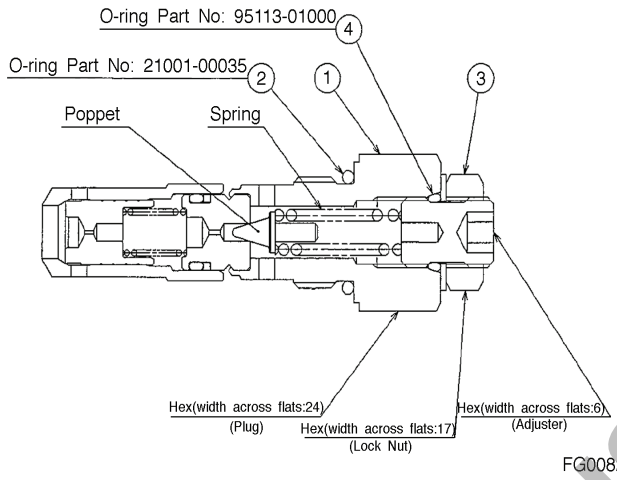


Figure 28

Disassembling

1. This part is replaced by assembly.
2. When replacing, unscrew the plug (width across flats: 32) with a spanner, then remove the O-ring.
3. If oil leaks at the adjuster kit, disassemble the adjuster kit and replace the O-ring.

CAUTION!

When disassembling the adjuster kit, parts may be ejected by the spring. Be careful not to lose the poppet.

Assembling

1. Check for dust, paint, etc., on the thread of the plug. Insert the new O-ring.
2. Clean the relief mounting part of the valve housing. Install the relief valve, insert plug.

   Torque: 59~69N•m.
3. When the adjuster kit is disassembled, clean the threads. Adjust pressure in compliance with the clause.

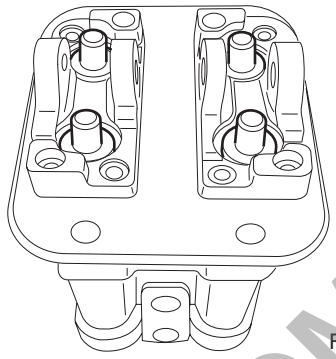
CAUTION!

In the above instructions, the specified torques values are for wet conditions (applied with oil).

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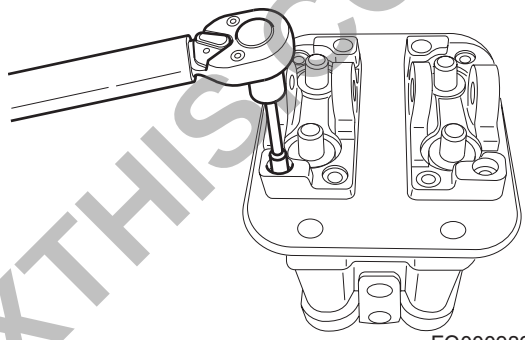
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5. Remove hex socket head bolt (26) and cover (25) from each body (1 and 2).



FG000988

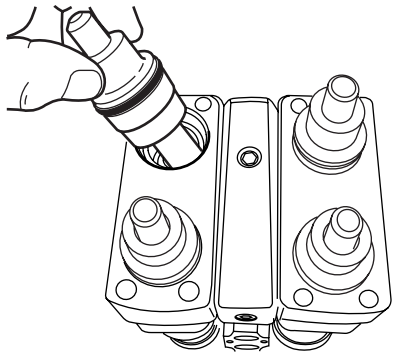
Figure 12



FG000989

Figure 13

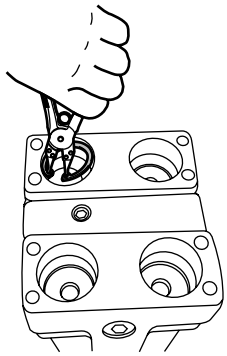
6. Remove push rod assembly from each body (1 and 2).



FG000990

Figure 14

7. Remove retaining ring (13).



FG000991

Figure 15

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FMIs (Failure Mode Identifier)

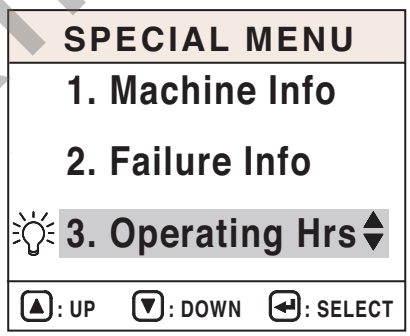
FMI 0	Above normal range (DATA VALID but ABOVE NORMAL OPERATIONAL RANGE)
FMI 1	Below normal range (DATA VALID but BELOW NORMAL OPERATIONAL RANGE)
FMI 2	Incorrect signal (DATA ERRATIC, INTERMITTENT OR INCORRECT)
FMI 3	Voltage above normal (VOLTAGE ABOVE NORMAL OR SHORTED TO HIGH SOURCE)
FMI 4	Voltage below normal (VOLTAGE BELOW NORMAL OR SHORTED TO LOW SOURCE)
FMI 5	Current below normal (CURRENT BELOW NORMAL OR OPEN CIRCUIT)
FMI 6	Current above normal (CURRENT ABOVE NORMAL OR GROUNDED CIRCUIT)
FMI 8	Abnormal signal (ABNORMAL FREQUENCY OR PULSE WIDTH OR PERIOD)
FMI 11	Failure mode not identifiable (ROOT CAUSE NOT KNOWN - Malfunction)
FMI 31	NOT AVAILABLE OR CONDITION EXISTS

Information of Machine Operation

Accumulated operation hour of each mode and status is displayed.

1. Operating Hour Information

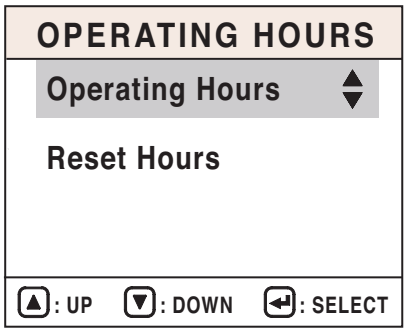
   A. Entering Sub-menus: When a cursor is located in "Operating Hrs" of special menu screen (Figure 40) press enter button (↵, 3 on Figure 24) and "Operating Hrs" screen will be displayed (Figure 41).



FG000571

Figure 40

   B. Information screen of machine operation (Figure 41).

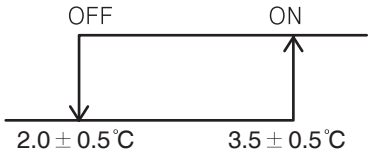
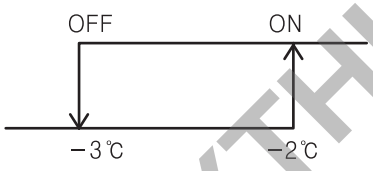


FG000572

Figure 41

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Categories	Inputs	System Operation
Compressor control	Duct sensor	1. Function: Magnetic clutch of compressor is turned "ON/ OFF" depending on temperature of the duct sensor to prevent the freezing of the evaporator with A/C being "ON." 2. Control pattern. 
	External temperature sensor	1. Function: Prevention of compressor in winter. 2. Control pattern.  *Only for Auto mode.

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