GENERAL DIMENSIONS

One - Piece Boom

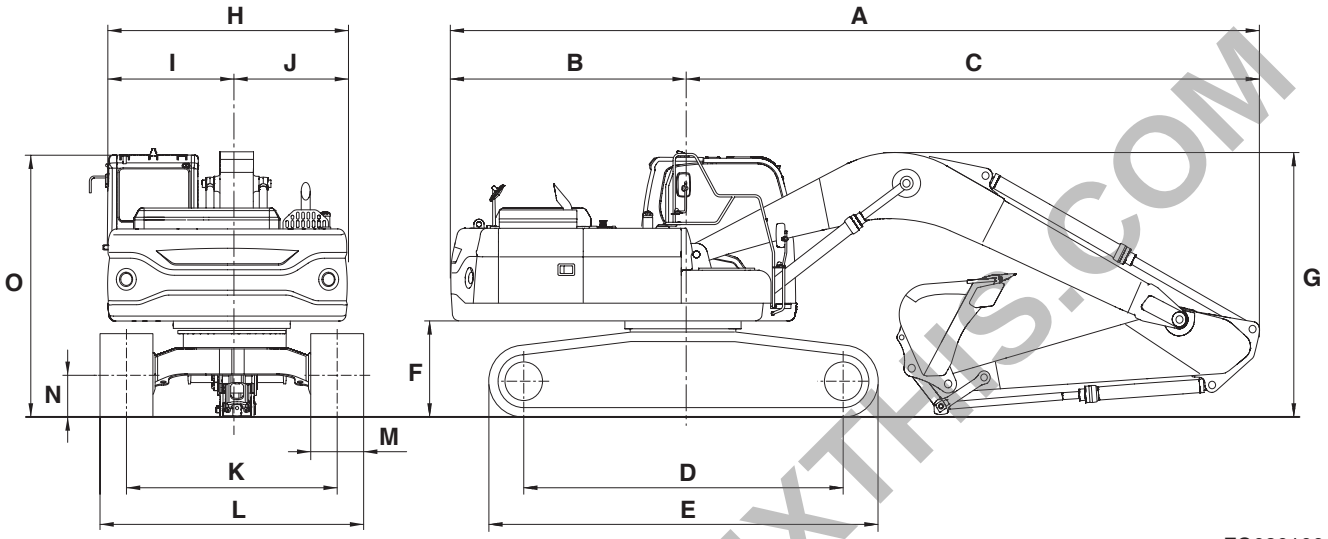


Figure 2

Dimension	5.7 m (18' 8") Boom			8.5 m (27' 11") Boom
	2.9 m (9' 6") Arm	**2.4 m (7' 10") Arm**	**3.5 m (11' 6") Arm**	**6.2 m (20' 4") Arm**
A	9,490 mm (31' 2")	9,540 mm (31' 3")	9,540 mm (31' 4")	12,355 mm (40' 6")
B	2,790 mm (9' 2")			
C	6,710 mm (22')	6,750 mm (22' 2")	6,750 mm (22' 2")	9,565 mm (31' 5")
D	3,650 mm (12' 12")			
E	4,445 mm (14' 7")			
F	1,055 mm (3' 6")			
G (Boom)	2,870 mm (9' 5")	2,970 mm (9' 9")	3,130 mm (10' 3")	3,190 mm (10' 6")
G (Hose)	3,005 mm (9' 10")	3,130 mm (10' 3")	3,330 mm (10' 11")	3,275 mm (10' 11")
H	2,710 mm (8' 10")			
I	1,400 mm (4' 7")			
J	1,310 mm (4' 4")			
K	2,390 mm (7' 10")			
L	2,990 mm (9' 10")			
M	600 mm (1' 12")			
N	480 mm (1' 7")			
O	2,975 mm (9' 9")			

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SAFETY INSTRUCTIONS

WARNING

AVOID DEATH OR SERIOUS INJURY

Instructions are necessary before operating or servicing machine. Read and understand the Operation and Maintenance Manual and signs (decals) on machine. Follow warnings and instructions in the manuals when making repairs, adjustments or servicing. Check for correct function after adjustments repairs or service. Untrained operators and failure to follow instructions can cause death or serious injury.

APPLICABLE MODELS

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

MODEL	SERIAL NUMBER RANGE
DX140LC-3	1001 and Up, 50001 and Up
DX180LC-3	1001 and Up, 50001 and Up
DX225LC-3	1001 and Up, 50001 and Up
DX255LC-3	1001 and Up, 50001 and Up
DX300LC-3	1001 and Up, 50001 and Up
DX340LC-3	1001 and Up, 10001 and Up
DX350LC-3	1001 and Up, 10001 and Up
DX380LC-3	10001 and Up
DX420LC-3	10001 and Up
DX490LC-3	10001 and Up
DX530LC-3	10001 and Up

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HYDRAULIC SYSTEM - GENERAL NOTES

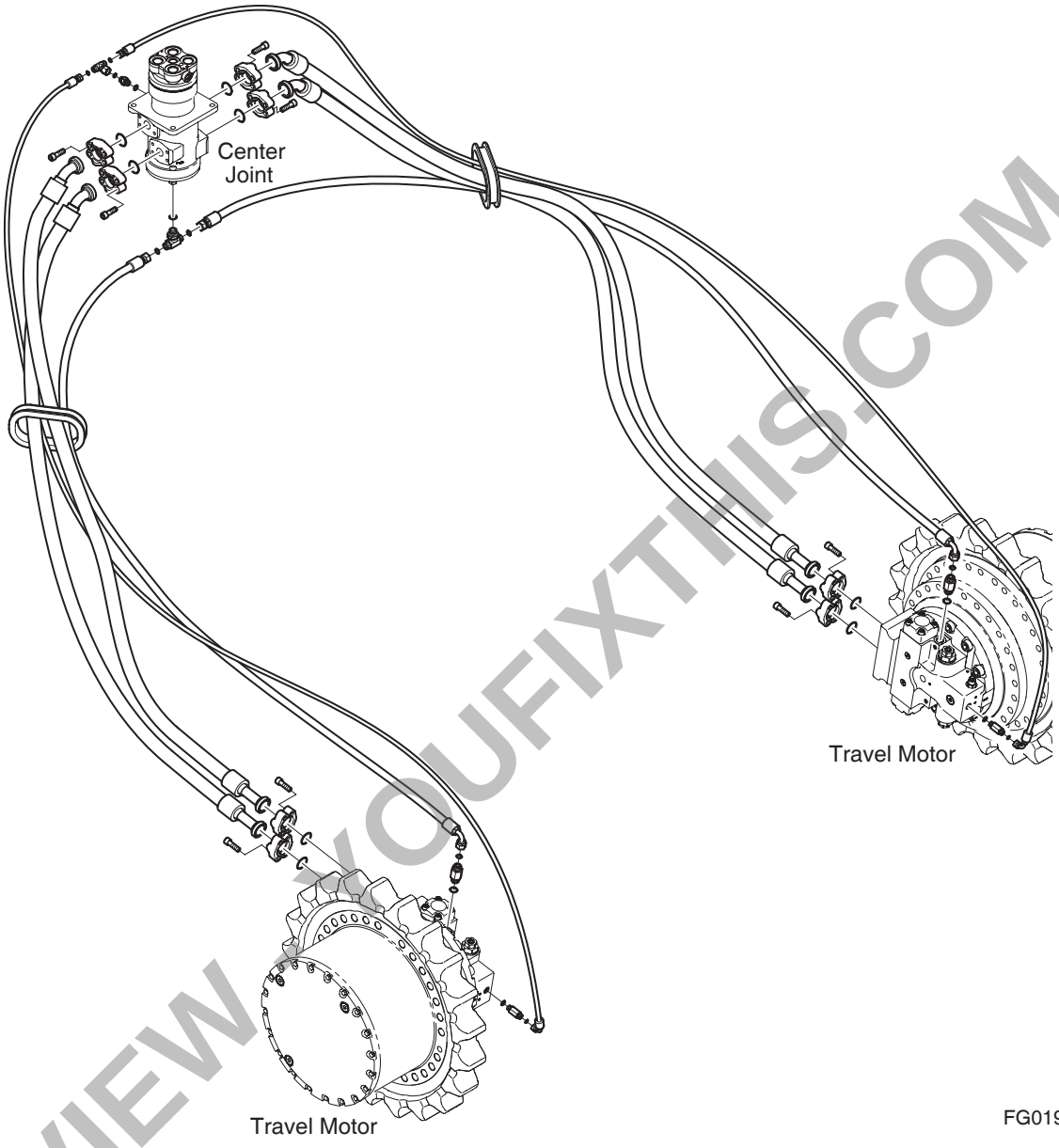


Figure 1

The hydraulic system has several improvements over conventional hydraulic systems - including cross sensing total horsepower control - to maximize output efficiency.

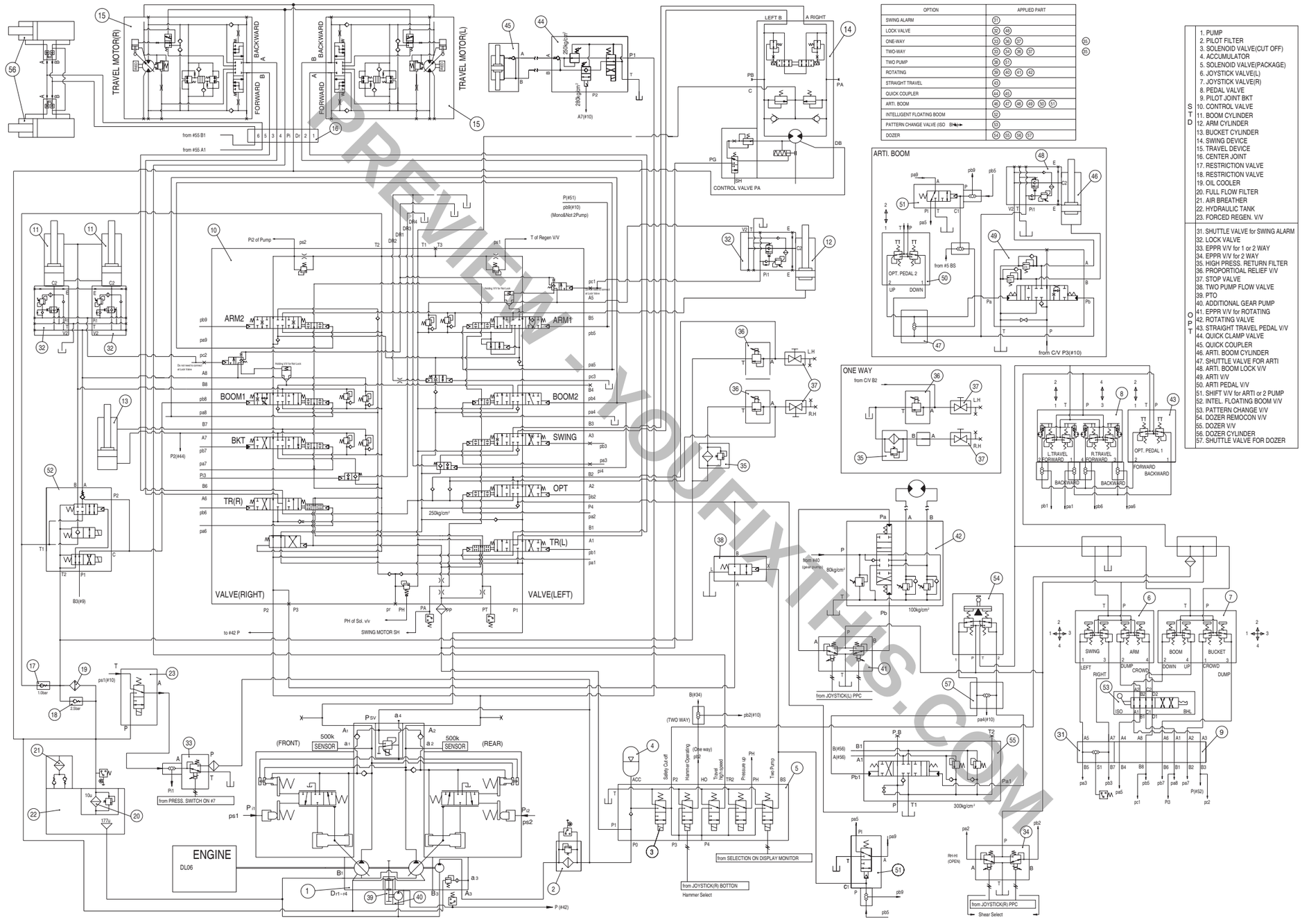
The system features an electronically controlled output optimization system, which allows the operator to choose between two, distinctly different power modes: high output/rapid cycling maximum speed power mode, and a standard power mode for most types of general operation.

Electronic management of hydraulic control valves assists in optimizing the application speed and overall operator control of hydraulic actuators and functions.

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DX225LC-3



OPTION	APPLIED PART
SWING ALARM	31
LOCK VALVE	32 48
ONE-WAY	33 36 37
TWO-WAY	33 34 36 37
TWO PUMP	38 51
ROTATING	39 40 41 42
STRAIGHT TRAVEL	43
QUICK COUPLER	44 45
ARTI. BOOM	46 47 48 49 50 51
INTELLIGENT FLOATING BOOM	52
PATTERN CHANGE VALVE (ISO ⇔ BH)	53
DOZER	54 55 56 57

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. PILOT JOINT BKT
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
23. FORCED REGEN. V/V

OPT

31. SHUTTLE VALVE for SWING ALARM
32. LOCK VALVE
33. EPPR V/V for 1 or 2 WAY
34. EPPR V/V for 2 WAY
35. HIGH PRESS. RETURN FILTER
36. PROPORTIOAL RELIEF V/V
37. STOP VALVE
38. TWO PUMP FLOW VALVE
39. PTO
40. ADDITIONAL GEAR PUMP
41. EPPR V/V for ROTATING
42. ROTATING VALVE
43. STRAIGHT TRAVEL PEDAL V/V
44. QUICK CLAMP VALVE
45. QUICK COUPLER
46. ARTI. BOOM CYLINDER
47. SHUTTLE VALVE FOR ARTI
48. ARTI. BOOM LOCK V/V
49. ARTI V/V
50. ARTI PEDAL V/V
51. SHIFT V/V for ARTI or 2 PUMP
52. INTEL. FLOATING BOOM V/V
53. PATTERN CHANGE V/V
54. DOZER REMOCON V/V
55. DOZER V/V
56. DOZER CYLINDER
57. SHUTTLE VALVE FOR DOZER

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FG024463

Figure 1

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DX380LC-3	10001 and Up
DX420LC-3	10001 and Up
DX490LC-3	10001 and Up
DX530LC-3	10001 and Up

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Swing Device SP002498
Travel Device SP002499
Main Pump SP002502
PTO Server SP002503
Gear Pump SP002500
Main Control Valve SP002403
Remote Control Valve (Work Lever / Joystick) SP002395
Travel Control Valve (with Damper) SP002381
Solenoid Valve Assembly SP002406
Breaker EPPR Valve (Option) SP002458
Dozer Valve SP002529
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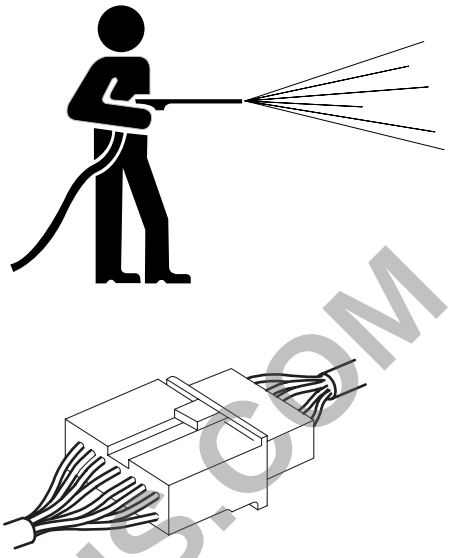
Cleaning

Clean machine before performing inspection and maintenance.

If inspection and maintenance are done when machine is dirty, it will become more difficult to locate problems, and you could slip on steps and work platform areas and injure yourself.

When washing machine, do the following:

- Wear shoes with nonslip soles to prevent slipping and falling.
- Wear safety goggles and protective clothing when washing machine with high-pressure steam or water.
- Do not spray water directly on electrical components (sensors, connectors). If water gets into electrical system, it can cause operation problems.
- Pick up any tools or hammers that are laying in workplace. Wipe up any grease or oil to prevent slippery substances, that can cause tripping or slipping.
- When cleaning cabin top window which is made of polycarbonate material, use tap water. Avoid use of organic solvents for cleaning, such as benzene, toluene or methanol. These solvents can cause a chemical reaction that will dissolve and damage the window.



ARO1330L

Figure 36

Proper Tools and Clothing

Only use tools that are intended for the type of service to be done. Metal pieces from low quality or damaged tools, such as chisels or hammers, can break off and hit a service person in the eyes or face causing serious injury.



HDO1037L

Figure 37

Disassembling Precautions

When using a hammer to remove pins, pins can fly out or metal particles may break off. Always do the following:

- Hitting hard metal pins, bucket teeth, cutting edges or bearings with a hammer, can cause metal pieces to break or fly off resulting in serious injury. Always wear safety goggles and leather gloves. Keep other personnel away.

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Material	Density 1,200 kg/m³ (2,000 lb/yd³), or less	Density 1,500 kg/m³ (2,500 lb/yd³), or less	Density 1,800 kg/m³ (3,000 lb/yd³), or less	Density 2,100 kg/m³ (3,500 lb/yd³), or less
Gypsum, crushed to 3 inch size	-	-	1,522 kg/m³ (2,565 lb/yd³)	-
Gravel, DRY, packed fragments	-	-	-	1,810 kg/m³ (3,051 lb/yd³)
Gravel, WET, packed fragments	-	-	-	1,922 kg/m³ (3,240 lb/yd³)
Limestone, graded above 2	-	1,282 kg/m³ (2,160 lb/yd³)	-	-
Limestone, graded 1-1/2 or 2	-	1,362 kg/m³ (2,295 lb/yd³)	-	-
Limestone, crushed	-	-	1,522 kg/m³ (2,565 lb/yd³)	-
limestone, fine	-	-	1,602 kg/m³ (2,705 lb/yd³)	-
Phosphate, rock	-	1,282 kg/m³ (2,160 lb/yd³)	-	-
Salt	929 kg/m³ (1,566 lb/yd³)	-	-	-
Snow, light density	529 kg/m³ (891 lb/yd³)	-	-	-
Sand, DRY, loose	-	-	1,522 kg/m³ (2,565 lb/yd³)	-
Sand, WET, packed	-	-	-	1,922 kg/m³ (3,240 lb/yd³)
Shale, broken	-	1,362 kg/m³ (2,295 lb/yd³)	-	-
Sulfur, broken	529 kg/m³ (891 lb/yd³)	-	-	-

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IV. "Loctite" retaining compounds

Product	Application	Color	Notes
609	For bushings, sleeves, press fit bearings, splines and collars. For gaps to 0.0002 mm (0.005"), temperatures to 121°C (250°F).	Green	Use Locquic "N" primer for increased bond strength and all cold temperature applications.
620	For high temperatures to 232°C (450°F).	Green	Same as 609, above.
680	For high strength bonds and tight clearance gaps, to 0.00008 mm (0.002").	Green	Same as 609, above.

V. "Loctite" Adhesives

Product	Application	Color	Notes
380	Black Max instant adhesive for shock and vibration-resistant bonds.	Black	May take 120 hours to reach full cure strength.
454	Adhesive for porous surfaces.	Clear	Full strength in 24 hours.
480	Increased strength (+50%), shock and vibration-resistant.	Black	Full strength in 24 hours.

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2. Remove bolts (12, Figure 38) and cover (9). Detach bolts (11) and washer (10).

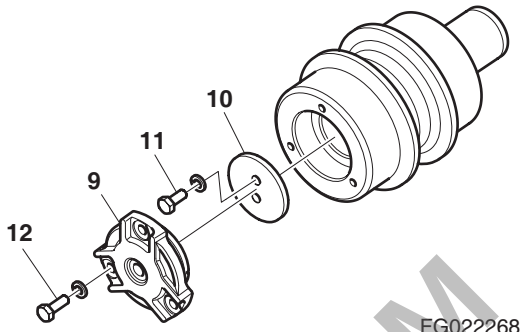


Figure 38

3. Separate the roller (1, Figure 39) from the axle (2).

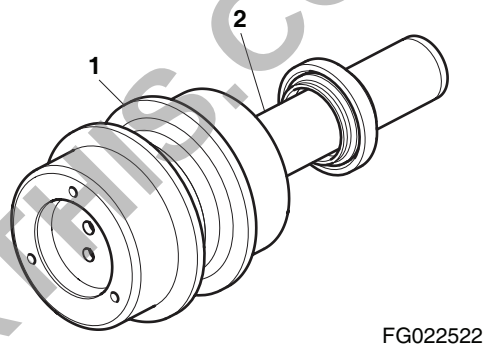


Figure 39

4. Separate the floating seal (6, Figure 40) from the roller.
5. Separate the thrust ring (3) from the axle.

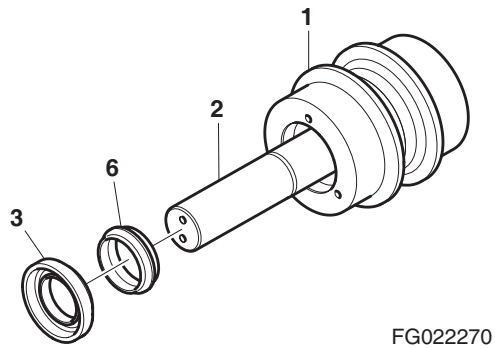


Figure 40

6. Separate the bushing (4 and 5, Figure 41) from the roller with a press and special tool (ST-1919).

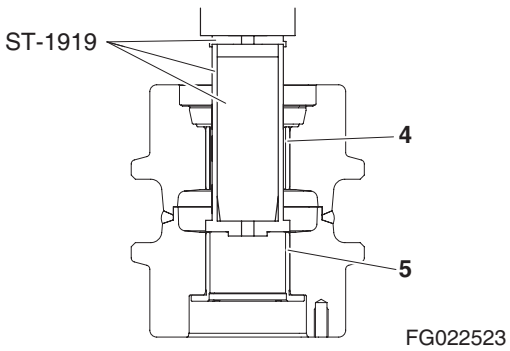


Figure 41

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OPERATION OF WORKING COMPONENTS

Boom Operating Circuit

The boom operating circuit includes the right and left main hydraulic pumps (both halves of the main pump assembly), both sides of the control valve and the boom cylinder. The circuit operates in boom down mode through the first shift position and through the second shift position in boom up mode. Overload relief valves set at 370 kg/cm^2 (5,265 psi) protect the hydraulic system from being damaged as a result of overloads or shocks to the boom.

Boom Up Circuit

When you pull the boom control lever backward, the right side pilot valve generates secondary boom up pilot pressure that is transmitted to the BOOM1 and BOOM2 spools of the control valve simultaneously. When secondary pilot pressure reaches 7 - 9 kg/cm^2 (100 - 130 psi), boom control valve spools open and oil from both pumps goes to the boom cylinder.

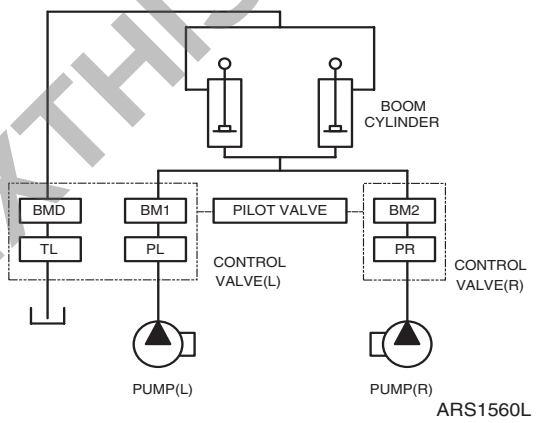


Figure 2

Boom Down Circuit

When the boom control lever is pushed forward, the right side pilot valve generates secondary boom down pilot pressure that is transmitted only to the BOOM1 spool of the control valve. When secondary pilot pressure reaches 7 - 9 kg/cm^2 (100 - 130 psi), the BOOM1 spool on the left side of the control valve opens so oil from only one pump (PUMP (L)) assembly goes to the boom cylinder for boom lowering.

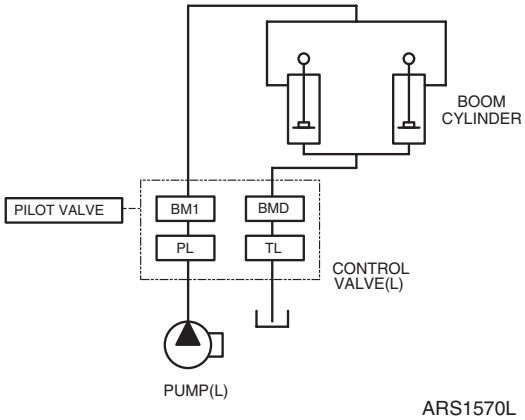


Figure 3

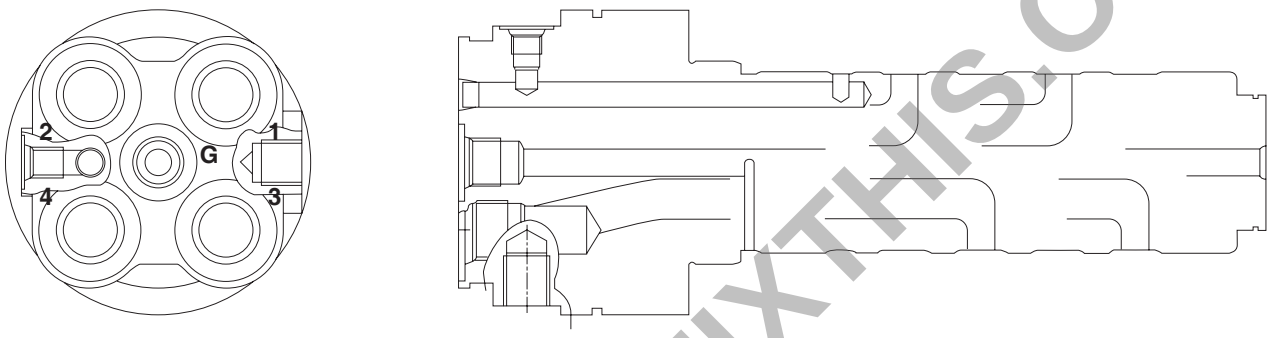
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REASSEMBLY

IMPORTANT

Apply a very light film of white grease or petroleum jelly to the lower rim of the stem and inner surface of the center swivel body. Apply slow, evenhanded pressure, using both hands, to slowly push the stem into the body. Seals may be damaged if the stem is pushed in too quickly.



FG013240

Figure 8

1. Wrap the teflon tape around the PT plug about 6-10 times.
2. Assemble the PT plug into the washed shaft.

PT 1/4: 6 mm wrench
Engagement torque: 3 - 4 kg•m

3. Assemble the slipper seal and the O-ring into the hub.
4. Assemble the Wear ring (ø80 x ø85 x 10) into the hub.

CAUTION

AVOID INJURY

After assembling the slipper seal, a manual test should be performed to ensure that every part is assembled properly.

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SAFETY INSTRUCTIONS

WARNING

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APPLICABLE MODELS

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

MODEL	SERIAL NUMBER RANGE
DX180LC-3	1001 and Up, 50001 and Up
DX190W-3	1001 and Up
DX225LC-3	1001 and Up, 50001 and Up

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E. Tighten the plug (24) to the required torque.

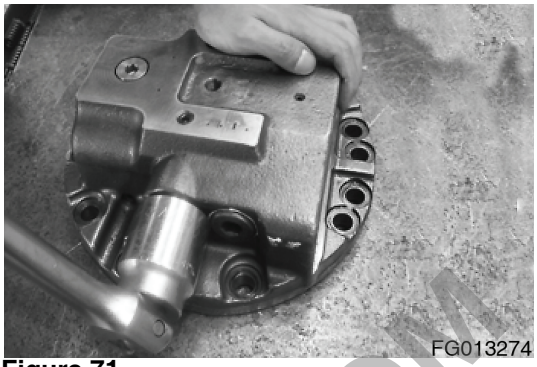


Figure 71

3. Reassemble the two speed valve

A. Install O-rings (46) on plugs (63).

NOTE: *Apply grease to the O-ring (46).*

Apply hydraulic oil to the spool (65), while the spool (65) is installed into the rear flange (1).

B. Insert a spool (65) and spring (66) into the rear flange (1).

NOTE: *Be careful not to damage the hole's liner of the rear flange (1) and the spool (65) outer. It brings on low efficiency of the TM-motor because of the leakage increase after reassembling.*

The shaft center should align with the hole center because of little gap.

It is in order to protect the damage and smooth assembling of the rear flange (1) and the spool (65).

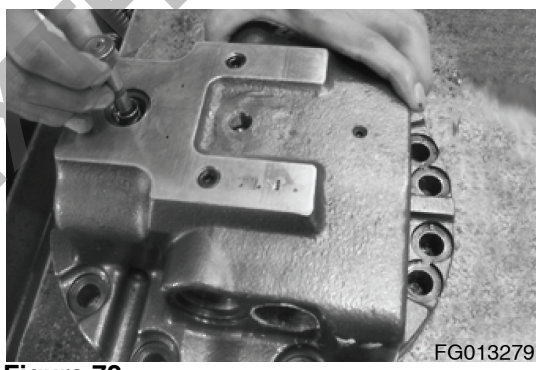


Figure 72

C. Insert a plug (63) into the rear flange (1).

– Tightening torque : 10 ± 2 kg•m

– #10 adapter/torquer wrench for hexagon wrench

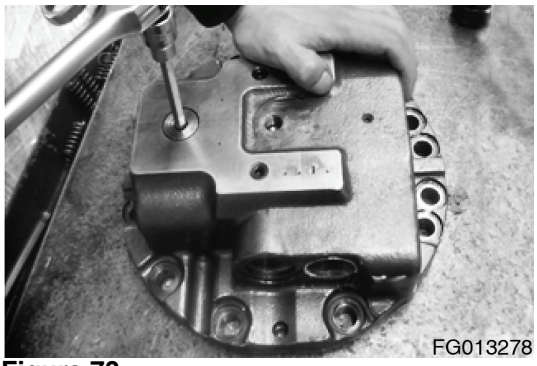


Figure 73

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Gear Pump

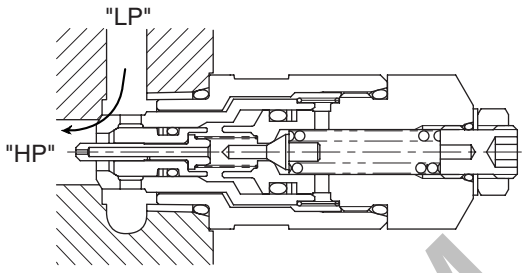
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Absorption Operation

An anticavitation 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 oil is supplied from the low-pressure oil passage (LP) to cylinder port (HP) to eliminate cavitation.



FG000648

Figure 31

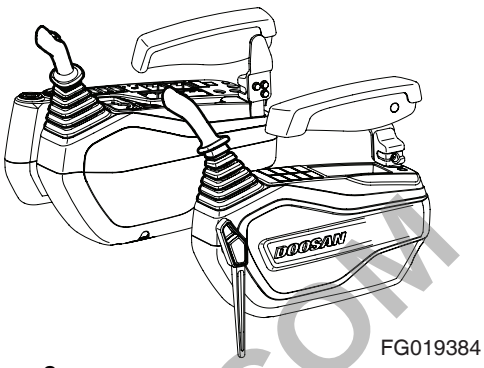
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DISASSEMBLY

1. Prepare the necessary tools.

   (+Type screwdriver, long-nose pliers (M), 13 mm hex socket and ratchet, hex wrench set)

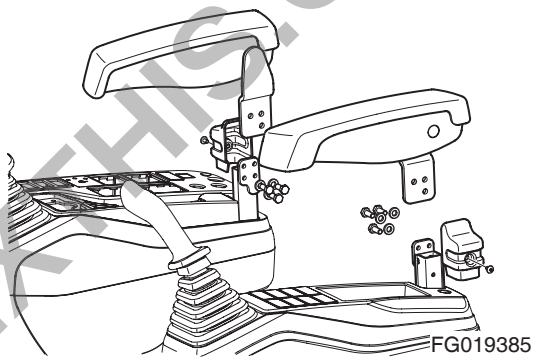


FG019384

Figure 3

2. Remove armrest. (M8 bolt 3 each)

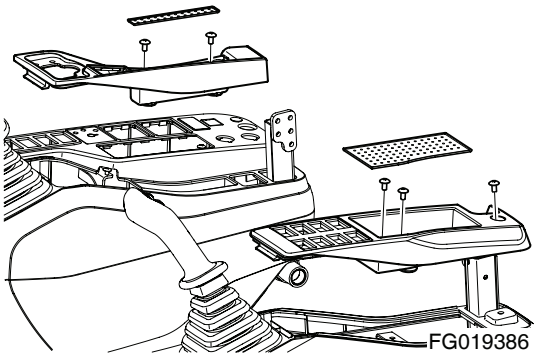
   Remove armrest cover. (M5 screw 1 each)



FG019385

Figure 4

3. Remove rubber pad then unscrew M6 screws and disassemble S/W cover.

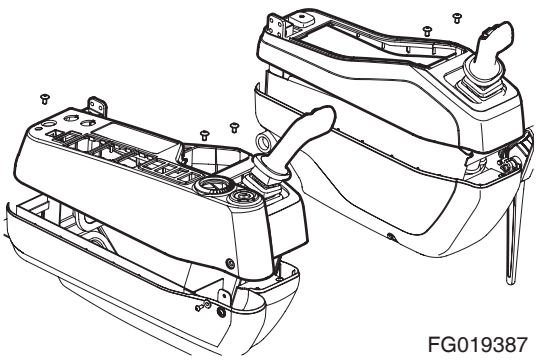


FG019386

Figure5

4. Unscrew socket bolt (1 each) and M6 screws.

   Then disassemble upper cover.



FG019387

Figure 6

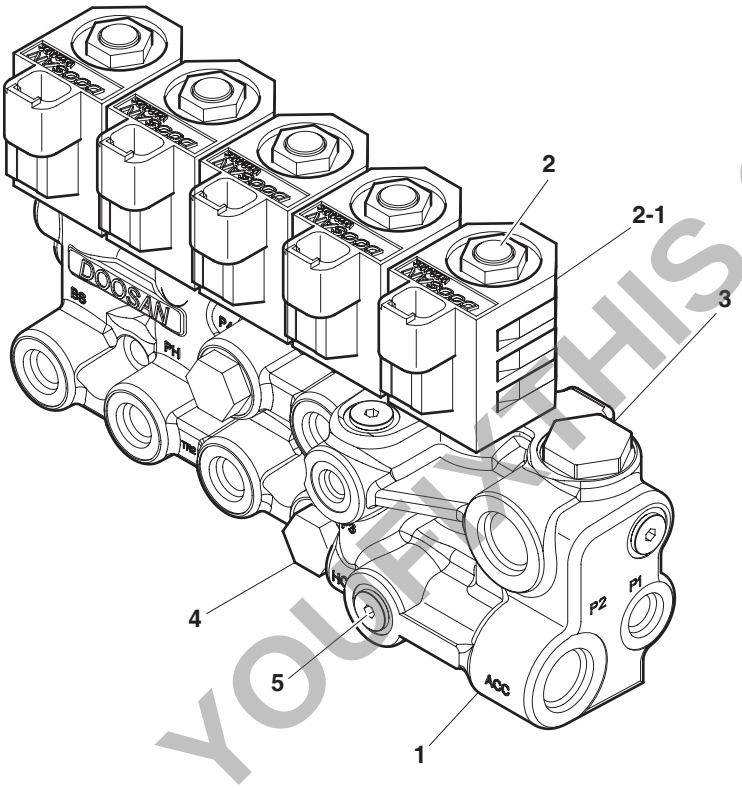
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5-SOLENOID VALVE

Parts List

Figure 1, shows components used in the 5-solenoid valve.



FG020607

Figure 1

Reference Number	Description	Sizes	Quantity	Remarks
1	Block Body	78 x 82 x 263	1	FB-EXDS01657
2	Solenoid Valve	SQ-S3A-00	5	C1 - C5
2-1	Coil (Deutsch Type)	VDD24VDC	5	C1 - C5
3	Check Valve	FD-DCP-0-A	1	C6
4	Plug	PF 1/4"	3	P3, P4, H0
5	Plug	PF 1/8"	6	

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The screen composition of MP3 player is given below.

The top section displays the name of the file being played and the current playing time of the total playing time.

The screen center shows the album image of the file being played, the album name, the song name and the name of the next file to be played.

The bottom displays the MP3 player function operation symbol and cursor.

The MP3 player function operation symbol and jog switch are operated in the following order.

Play/Pause ↔ Replay the Previous File ↔ MP3 Progress Bar ↔ Replay the Next File ↔ MP3 Files List ↔ Background MP3 Play

Play/Pause

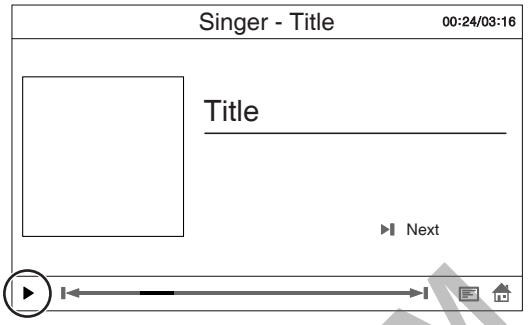
Locate the cursor at the play/pause symbol and click on the jog switch to execute the MP3 play/pause functions.

With play being on, click the jog switch to display the pause symbol at the center of the screen, causing the MP3 to pause.

With pause being on, click on the jog switch to cause the pause symbol at the center of the screen to disappear, resuming the MP3 playing.

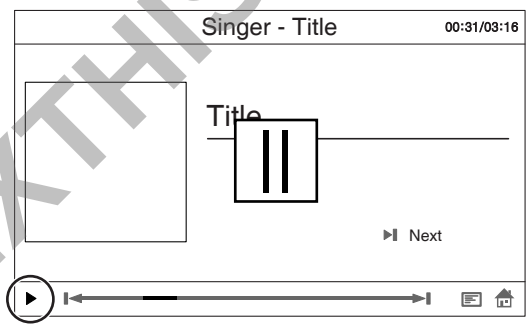
Replay the Previous File

Locate the cursor at the replay the previous file symbol, and click on the jog switch to replay the previous file.



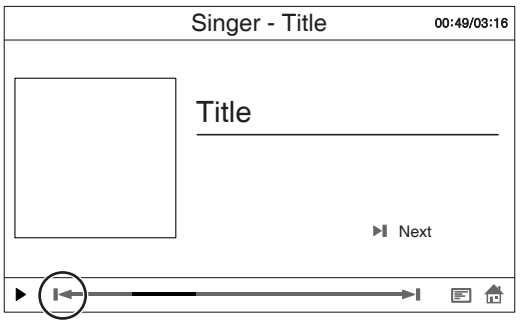
FG020124

Figure 70



FG020125

Figure 71



FG020126

Figure 72

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The Jog Switch Control Panel permits the selection of the appropriate engine power depending on the working condition. One of the four. Power Plus Mode, Power Mode, Standard Mode or Economy Mode setting can be selected. When the engine starter switch is turned "ON," the power mode is automatically defaulted to standard mode. The desired mode can be selected by pressing the jog switch on the jog switch control panel. When the power mode is selected, the indicator light will turn "ON" to display the selected mode.

The quantity of oil discharged by the pump and the engine speed are determined by the mode selected by the operator. The pump output in each mode is determined by the mode selection and is listed in the following table

Mode	Power Plus Mode	Power Mode	Standard Mode	Economy Mode
Output (%)	100%	Approximately 90%	Approximately 80%	Approximately 75%

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2. The new refrigerant has improved cooling characteristics than the old type and care should be used not to overcharge the system.
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 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.*

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