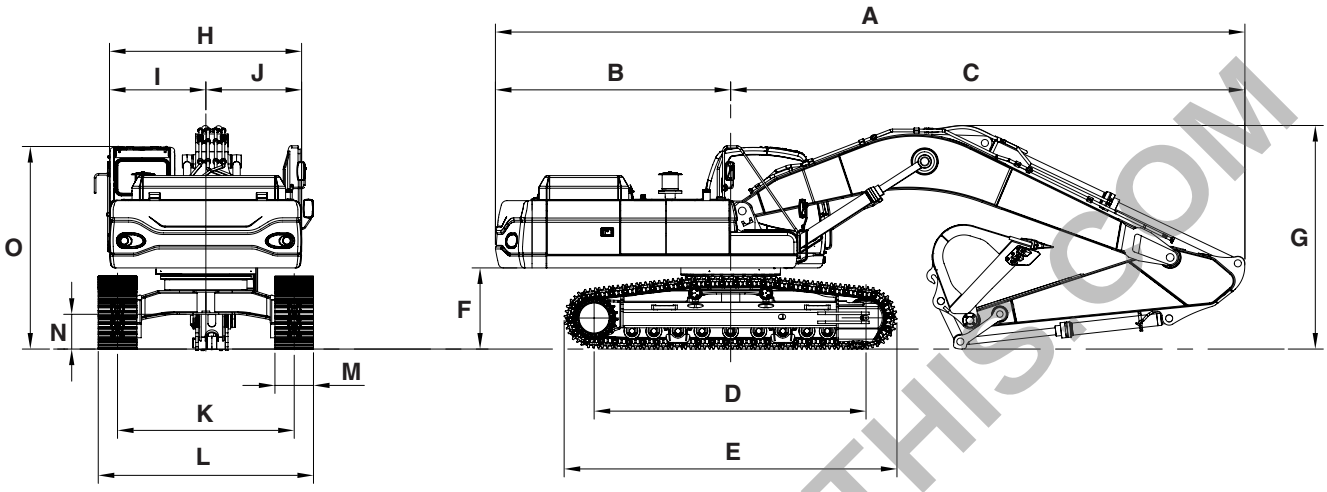
GENERAL DIMENSIONS (DX420LC)



FG001798

Figure 2

DIMENSION	6.7 M (22 FT) BOOM			
	2.6 M (8.5 FT) ARM	**3.25 M (10.7 FT) ARM**	**3.95 M (13 FT) ARM**	**3.25 M (10.7 FT) HD ARM**
	2.16 m^3 (2.83 yd^3) BUCKET	**1.9 m^3 (2.49 yd^3) BUCKET**	**1.44 m^3 (1.88 yd^3) BUCKET**	**1.51 m^3 (1.98 yd^3) BUCKET**
A	11,770 mm (38' 7")	11,660 mm (38' 3")		
B	3,660 mm (12' 0")			
C	8,110 mm (26' 7")	8,000 mm (26' 3")		
D	4,250 mm (13' 11")			
E	5,200 mm (17' 1")			* 5,205 mm (17' 1")
F	1,265 mm (4' 2")			* 1,275 mm (4' 2")
G	3,680 mm (12' 1")	3,480 mm (11' 5")	3,500 mm (11' 6")	* 3,480 mm (11' 5")
H	2,990 mm (9' 10")			
I	1,500 mm (4' 11")			
J	1,490 mm (4' 11")			
K	2,750 mm (9' 0")			
L	3,350 mm (11' 0")			
M	600 mm (2' 0")			
N	540 mm (1' 9")			* 555 mm (1' 10")
O	3,154 mm (10' 4")			* 3,270 mm (10' 9")

* Indicates double grouser shoes installed dimension.

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REMOVAL

CAUTION

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

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

WARNING

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

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

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

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

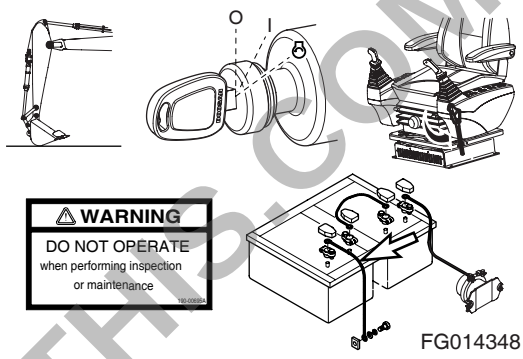
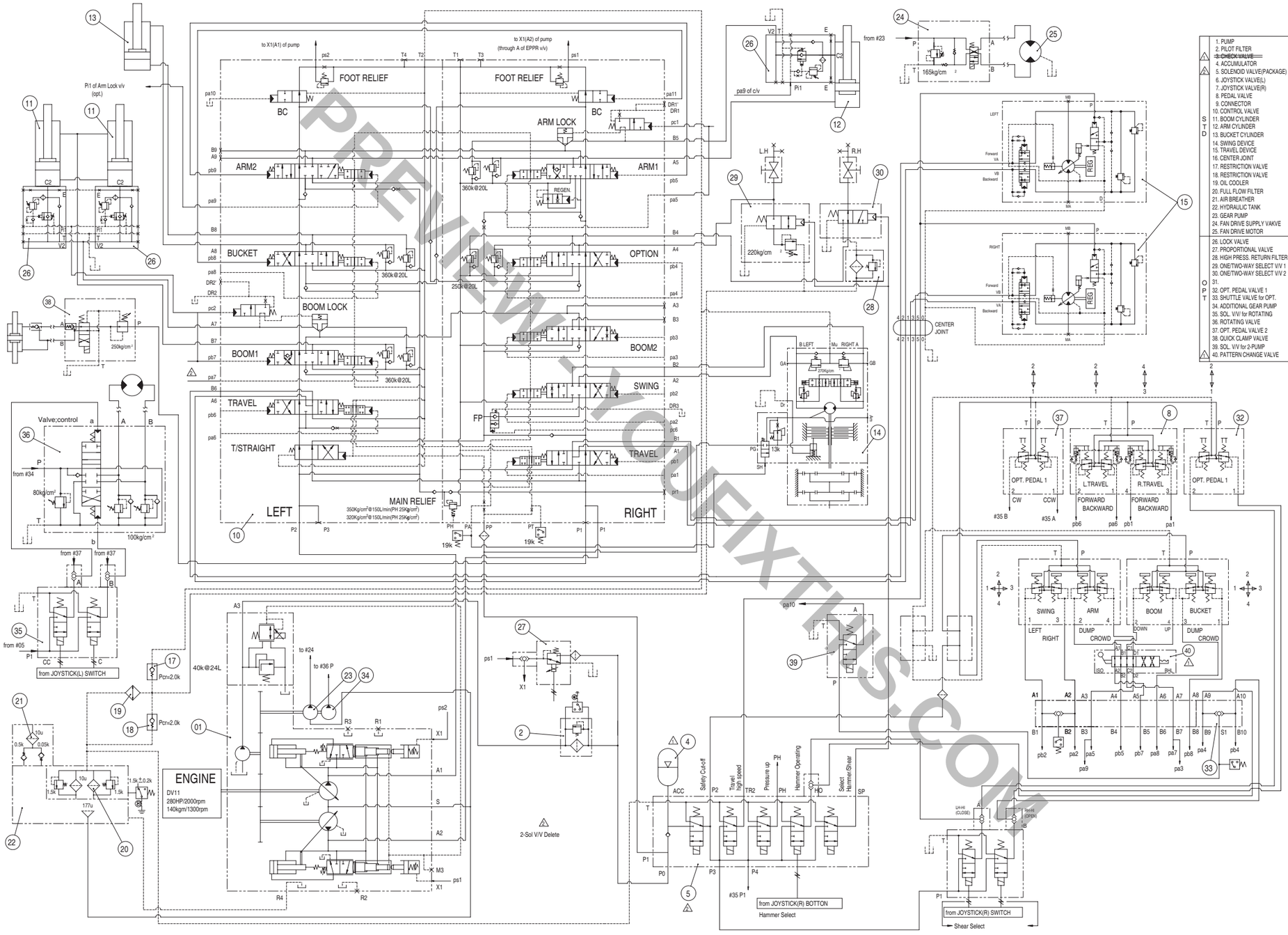


Figure 1

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DX420LC

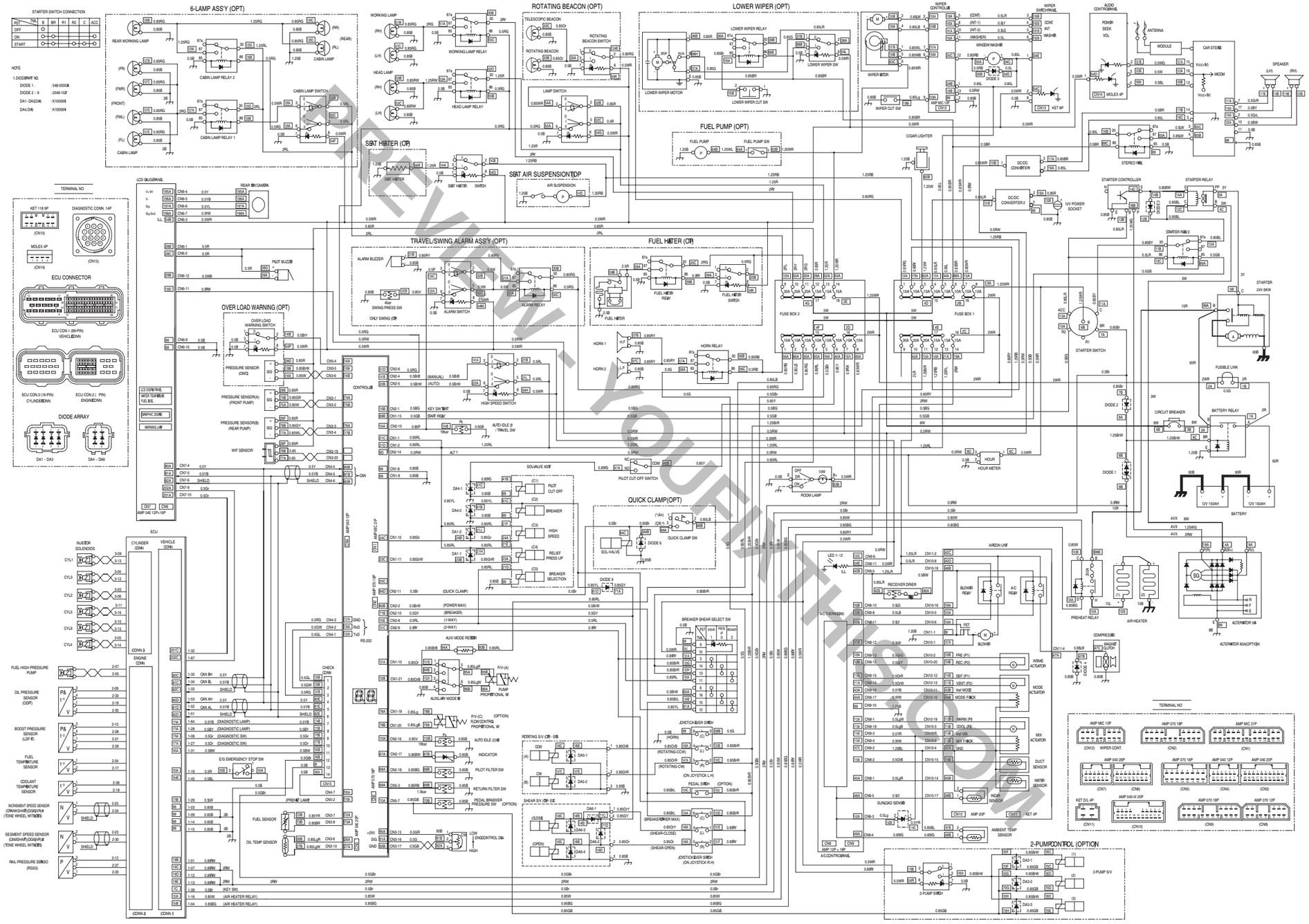


FG014498

Figure 1

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DX420LC



FG014469

Figure 1

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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 (11.26)	22.00 (158.12)
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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Hydraulic System Troubleshooting, Testing and Adjustment

Edition 1

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SAFETY PRECAUTIONS

⚠ CAUTION!

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

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

Use lifting and hoisting equipment capable of safely handling load.

Remember, that ultimately safety is your own personal responsibility.

APPLICABLE MODELS

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

MODEL	SERIAL NUMBER RANGE
DX300LC	7440 and Up
DX340LC	5980 and Up
DX350LC	5980 and Up
DX420LC	5327 and Up
DX480LC	5221 and Up
DX520LC	5117 and Up

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START-UP PROCEDURES

If engine does not start, the fuel system may need priming. Prime the fuel system using the following procedure:

1. Stop engine.
2. Open left side door and then there is fuel filter.

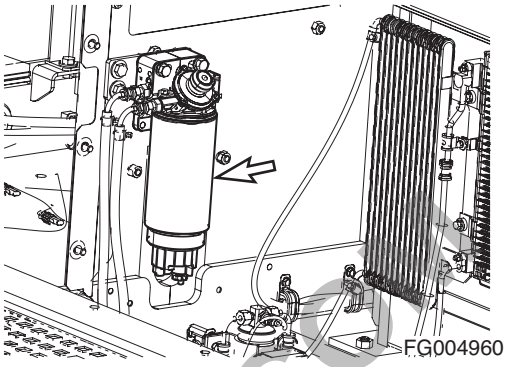


Figure 20

3. Loosen plug (1, Figure 21) on top of fuel filter head.
4. Pump hand operated primer pump (2, Figure 21) by the fuel injection pump. Pump primer until fuel is present at plug hole in fuel filter head.
5. Tighten plug in fuel filter head.
6. Continue to pump primer pump until a strong resistance is felt.
7. Start engine and look for signs of leaks.

Repeat procedure if necessary.

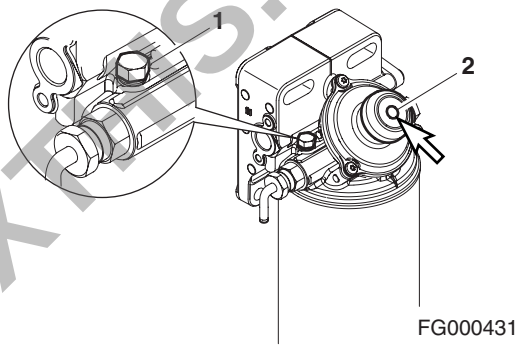


Figure 21

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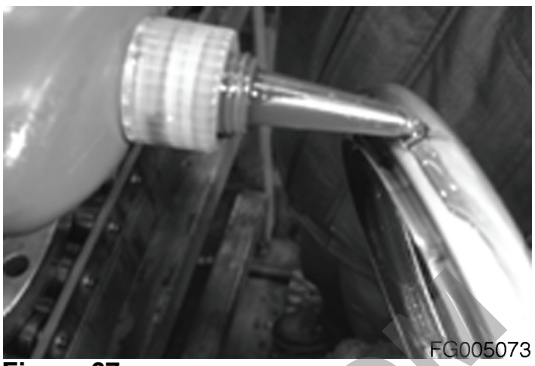


Figure 67



Figure 68



Figure 69

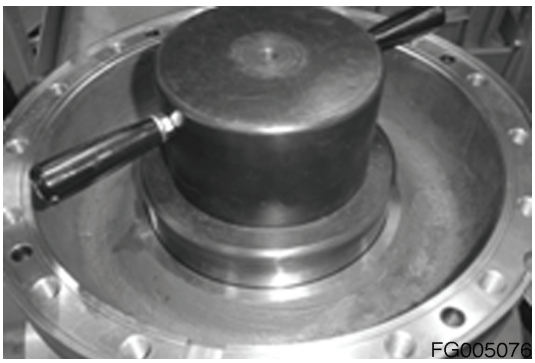


Figure 70

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6. Separate the bushing (4 and 5, Figure 41) from the roller with a press.

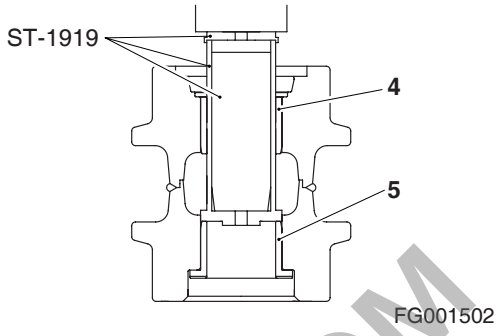


Figure 41

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Pressure should be between 250 and 260 bar (3,625 psi and 4,061 psi), with both swing locks engaged. With swing locks released, during full acceleration and deceleration, pressure should approach 260 bar (3,625 psi) in each direction.

B. Connect a 60 bar (870 psi) pressure gauge at the "SH" port of the hydraulic brake.

Pressure should always stay at or above 4 bar (58 psi) when operating swing, boom or arm.

C. Connect a 10 bar (145 psi) gauge at the motor makeup valve.

Pressure should stay consistently above 2.5 bar (36 psi). If pressure falls below the recommended minimum level, forceful acceleration of the swing motor could lead to cavitation of the circuit and stalling, slowed rotation, noise and possible damage.

2. If main inlet and outlet pressures were off in the preceding tests in Step 1, adjust swing relief valve pressure.

   Following adjustment, repeat the operating pressure tests (with gauges connected to the inlet and outlet test ports on top of the swing motor) and check pressures with the swing locks engaged and released.

   If pressure adjustment fails to restore adequate performance, proceed to the Troubleshooting – Swing table.

3. If pressure tests were at recommended levels through the main inlet and outlet ports, and through the "SH" port of the swing brake, the causes of poor swing performance could include a faulty swing motor, drive train overloading or gearbox defect, or a problem in the brake assembly or swing control valve. Proceed to the troubleshooting information in the next procedure.

   If pressure through the "SH" port was tested below the minimum 13 bar (190 psi) level, check the shuttle valve in the rear compartment behind cabin. When pressure through the port is at the recommended level, the brake release valve should disengage the swing brake, allowing the swing motor to rotate the excavator. If pressure adjustment to the valve has been restored but the brake still fails to release, the brake piston or friction plate may be frozen, requiring disassembly of the motor and parts repair/replacement.

4. If pressure tested at the motor makeup valve falls below recommended minimum level, and consequent problems with cavitation, stalling and surging are observed, check the restriction valve. If pressure adjustment to the valve has been restored but if problems with cavitation continues, disassemble the upper swing motor housing and clean or replace assembly components as required.

   NOTE: *If all tested pressures are at or above recommended levels, and there are no mechanical problems in the drive train or in the motor/brake assembly, the problem will require further hydraulic troubleshooting. It's also possible that a defective joystick, an intermittent short in an electrical control circuit or a problem in the e-EPOS circuit is causing diminished swing performance. Pull out the e-EPOS indicator panel from underneath the operator's seat and perform the self-diagnostic test. If the display panel reads code "0.2," it is reporting that the swing priority proportional valve.*

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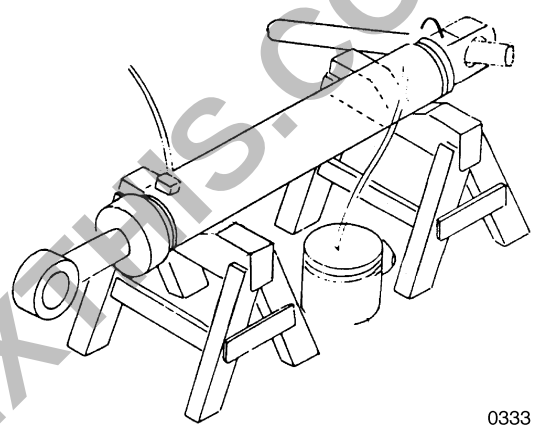
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DISASSEMBLY

⚠ CAUTION

Vent air from the hydraulic system before disconnecting cylinder piping connections. Use the lever on the reservoir, while the engine is running. Discharge the hydraulic accumulator and vent residual tank pressure after the engine is shut off. Pour clean replacement fluid back into the system if excessive fluid is lost.

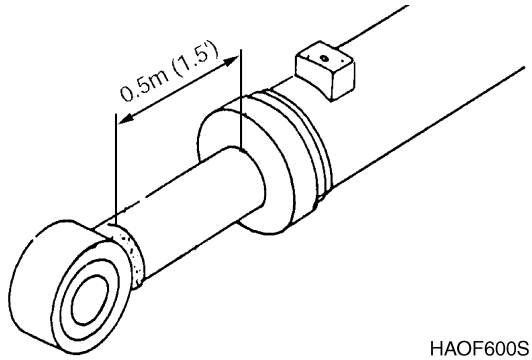
1. Following removal of cylinder from excavator attachment, support cylinder on some type of sturdy work platform and drain all oil. Rotate cylinder so that piping ports are on top, to allow trapped air to vent.



0333

Figure 12

2. Position piston rod so that it is extended approximately one half meter (20").

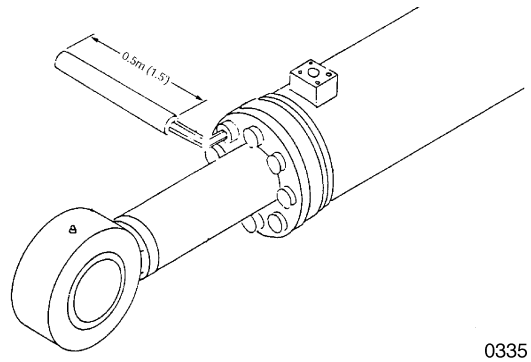


HAOF600S

Figure 13

3. Remove bolts (7) on the end of cylinder.

   NOTE: *Wrap a cloth or other protective material around piston rod, to avoid possibility of accidentally scratching or scoring rod surface while fasteners are being loosened and removed. Component parts (numbered in parentheses) are keyed to Figure 4.*



0335

Figure 14

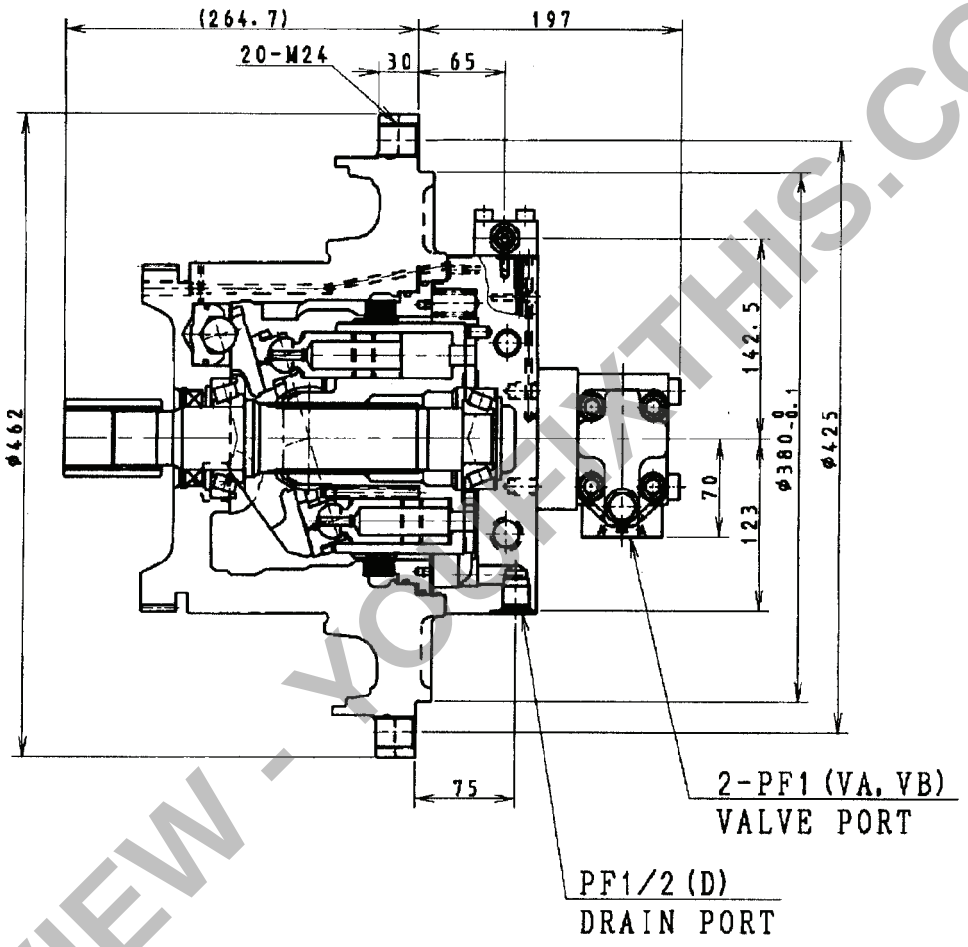
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TRAVEL MOTOR (M3V270/160A)

Specifications

Outline Dimensions



ATS0010S

Figure 1

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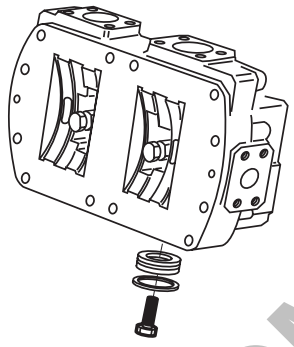
Troubleshooting

Problem	Possible Cause	Remedy
Hydraulic motor never rotates.		
Pressure never increases.	Malfunction of relief valve built in hydraulic motor.	Repair or replace relief valve.
Pressure increases.	Malfunction of spool. Stuck between spool and body. Clogging of restrictor.	Repair or replace.
	Negative brake is not released. Spool is installed in wrong direction.	Install the spool in correct direction.
Hydraulic motor rotates weakly		
The set pressure is correct, but brake is applied with time lag.	Malfunction of spool. Stick between spool and body.	Repair or replace.
Brake applies normal but motor starts to rotate with time lag.	Sticky oil.	Warm up hydraulic oil or replace hydraulic oil.
Brake applies normal but motor rotates weakly.	Negative brake is not fully released. Clogged pilot line for negative brake.	Inspect the passage for negative brake built in hydraulic motor.
Have no brake effect when the control lever returned to neutral		
Brake works on counter lever operation.	Malfunction of spool. Stick between spool and body. Stick of check valve or that by small particle. Clogged restrictor.	Repair or replace or clean.
Abnormal noise		
Abnormal noise appear together with big vibration when brake is slowly applied or oil is supplied to other circuit while motor is running.	Malfunction of spool. Air is caught inside brake valve.	Bleed air.
	Stick between spool and body.	Repair or replace.
Hunting occurs while descending the slope.		
Severe hunting while inching.	Malfunction of spool. Stick between spool and body. Restrictor is not seated completely.	Repair or replace.
	Interference with negative brake. Permanent set or broken spring.	Repair or replace.

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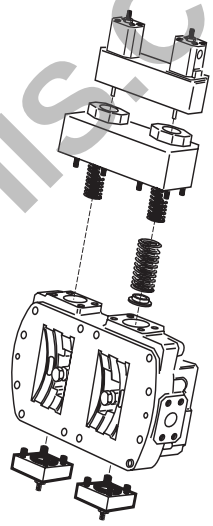
2. Push on piston ring by hand. Fix adjustment piston. Take the tightening torques into account.



ASS1010L

Figure 102

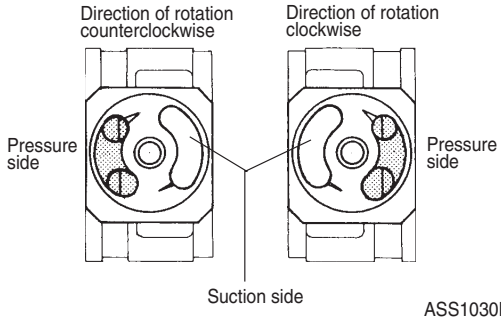
3. Install control housing.



ASS1020L

Figure 103

4. Install control lens in their correct position using grease to hold them in place.



ASS1030L

Figure 104

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Anti Drift Valve

1. The anti drift valve is installed in the cylinder port of arm rod (boom bottom) side to prevent the arm (boom) cylinder from natural lowering.

   In neutral condition (Figure 15), cylinder port pressure is sent through passage (AD2), spool (AD3), and passage (AD4) to spring chamber (AD5).

   Poppet (AD1) is completely closed by spring strength or pressure differential due to difference of poppet sizes.

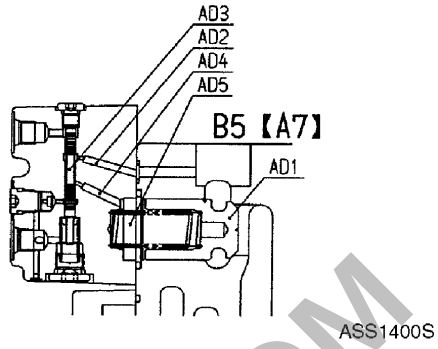


Figure 15

   When arm dumping (boom up) (Figure 16) oil supplied from pump opens poppet (AD1) it allows oil to flow to cylinder port.

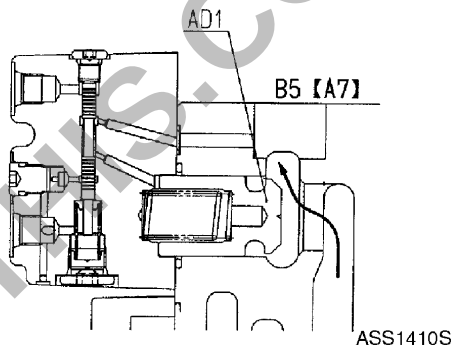


Figure 16

   When crowding arm (boom down) (Figure 17), spool (AD3) is shifted by increasing pressure of port (pc1 (pc2)), and oil in spring chamber (AD5) is allowed to flow through, passage (AD6) to drain port (DR1' (DR2')) This allows poppet (AD1) to open and let return oil flow into tank passage (Ta).

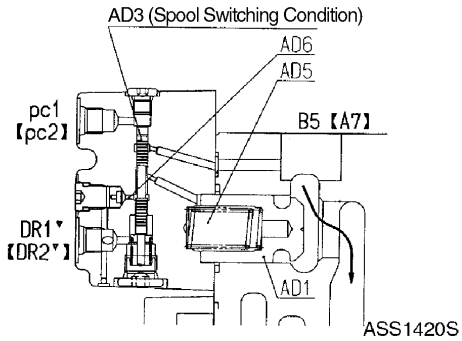


Figure 17

Main Relief Valve

1. The main relief valve is located between neutral oil passage (HP, Figure 18) and low pressure oil passage (LP). Pressurized oil flows into neutral oil passage (HP) through orifice in the main poppet (C) to fill internal cavity (D). Due to the difference in areas between (A) and (B), on which hydraulic pressure acts, main poppet (C) seats on sleeve (E).

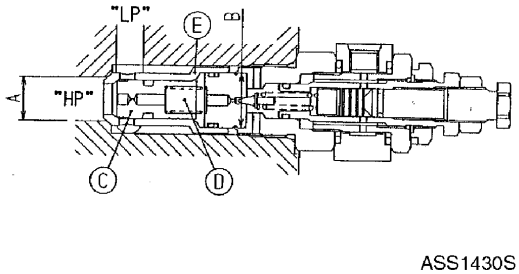
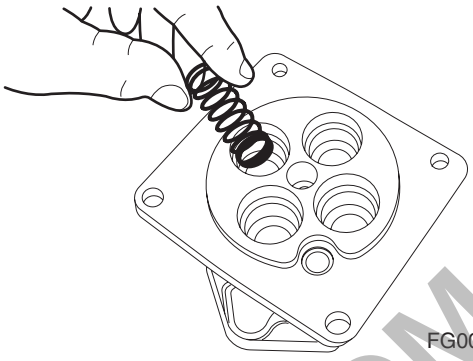


Figure 18

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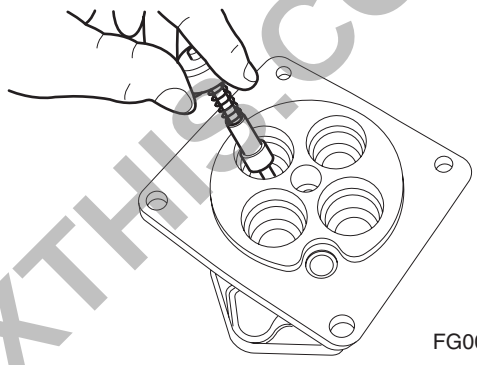
4. Install spring (9) into case (1).



FG000820

Figure 23

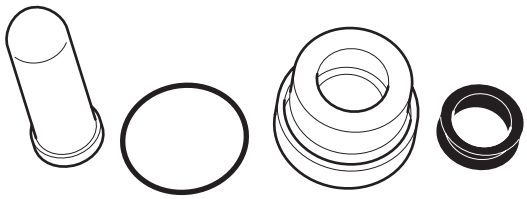
5. Install spool kit assembly into case (1). (The same way is used for four parts.)



FG000821

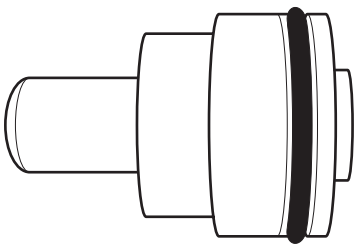
Figure 24

6. Assemble plug kit insert rod seal (18), O-ring (17), and push rod (12) into plug (16) in proper order.



FG000822

Figure 25



FG000810

Figure 26

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8. Insert the four screws (20) and tighten them at 100 Nm (136 ft lb).

   Check that it is possible to rotate the shaft, and fill the motor with oil before connecting the pipes.



Figure 19

Priming

It is important to purge the air off the circuit and the motor.

Manually, fill the motor housing with fluid, and connect the motor to the circuit.

Start rotation in a jogging manner until a prime is picked up, and increase the speed to 500 to 1000 rpm.

Check that there is no leakage or air suction at the flanges (inlet, outlet, drain), neither at the shaft seal.

If the motor does not prime properly in the first minute, or pressure can not be obtained, it should be shut down and condition corrected.

Cold Starting

The motor should be started at low pressure and low speed until the fluid warms up, before running at high pressure or speed.

Changing Porting Position

There are four possible positions of flanges with reference to drain hole and mounting flange.

Put a container under the motor because oil may leak during this operation. Remove the four housing screws (20), and simply rotate the end cap (1) to the specified position ; do not remove the housing completely from the housing, but only 1 mm (0.04 inch) to avoid that the cartridge pin moves out from the plate dowel pin hole.

Reinstall the four screws and tighten them to 100 Nm (136 ft lb).

Purge the motor before using it.

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WEIGHT OF R134a GAS USED IN MACHINES

Model	Weight of Gas
DX225LC	800 ± 20 grams (28 ± 0.7 oz)
DX225NLC	800 ± 20 grams (28 ± 0.7 oz)
DX300LC	800 ± 20 grams (28 ± 0.7 oz)
DX340LC	800 ± 20 grams (28 ± 0.7 oz)
DX350LC	800 ± 20 grams (28 ± 0.7 oz)
DX420LC	800 ± 20 grams (28 ± 0.7 oz)
DX480LC	800 ± 20 grams (28 ± 0.7 oz)
DX520LC	800 ± 20 grams (28 ± 0.7 oz)

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