Specifications for DX300LC-3

Edition 1

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ROPS Certification

This DOOSAN excavator has an operator's cabin that meets ROPS requirements. The seat belt must be worn for rollover protection.

The ROPS certification plate is found on the left side of the cabin on most models. It may vary slightly in its location on some models.

Check the ROPS cabin, mounting, and hardware for damage.

Never modify the ROPS cabin. Replace the cabin and hardware if damaged. See your DOOSAN dealer for parts.

ROPS – Rollover Protective Structure complies with ISO 12117-2:2008.

WARNING

AVOID DEATH OR SERIOUS INJURY

Never modify the operator cabin by welding, grinding, drilling holes or adding attachments unless instructed by DOOSAN. Changes to the cabin can cause loss of operator protection from rollover and falling objects, and result in death or serious injury.

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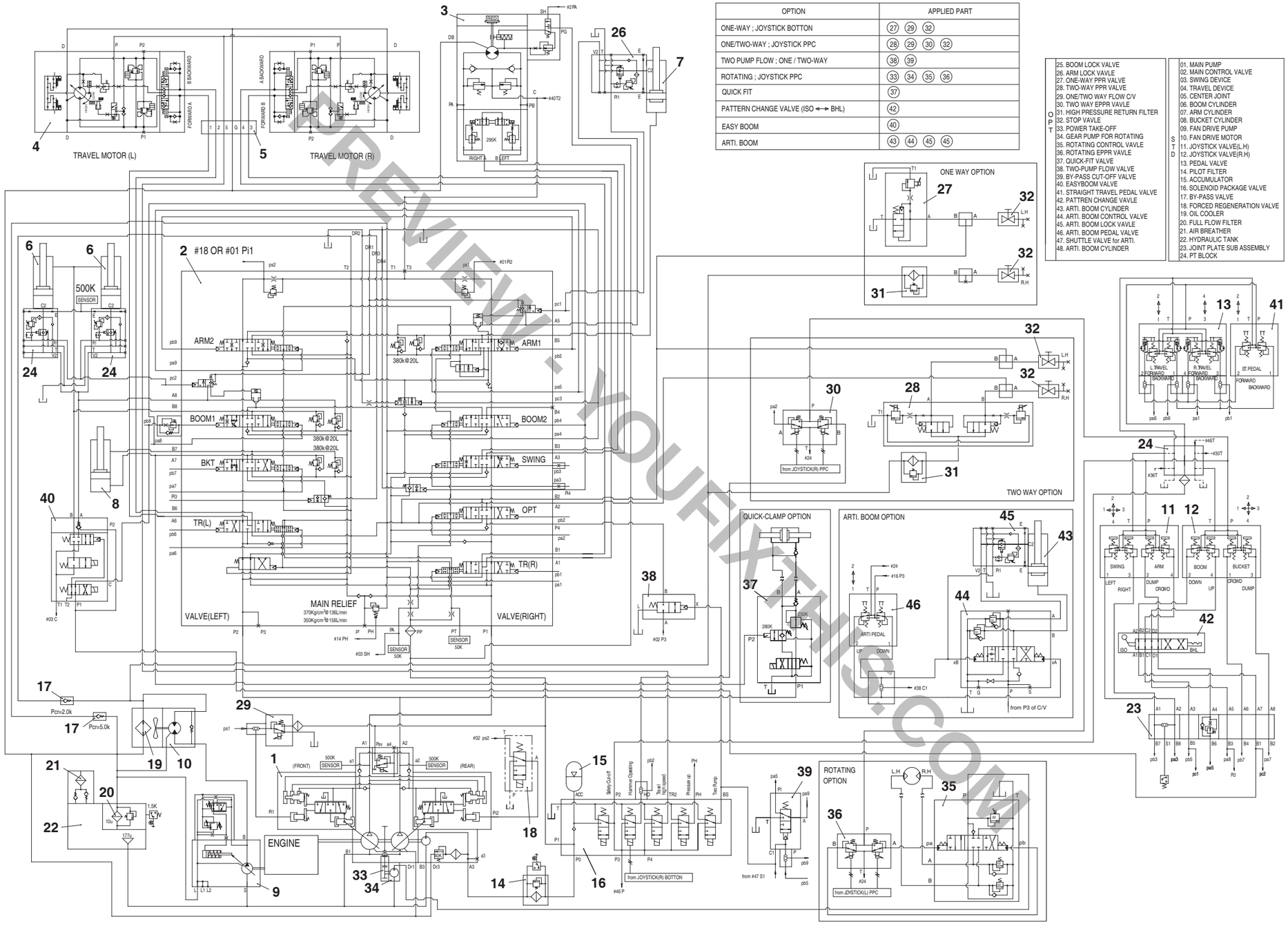
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DX300LC-3



OPTION	APPLIED PART
ONE-WAY ; JOYSTICK BOTTON	(27) (29) (32)
ONE/TWO-WAY ; JOYSTICK PPC	(28) (29) (30) (32)
TWO PUMP FLOW ; ONE / TWO-WAY	(38) (39)
ROTATING ; JOYSTICK PPC	(33) (34) (35) (36)
QUICK FIT	(37)
PATTERN CHANGE VALVE (ISO ◄► BHL)	(42)
EASY BOOM	(40)
ARTI. BOOM	(43) (44) (45) (45)

OPT	STD
25. BOOM LOCK VALVE	01. MAIN PUMP
26. ARM LOCK VAVLE	02. MAIN CONTROL VALVE
27. ONE-WAY PPR VALVE	03. SWING DEVICE
28. TWO-WAY PPR VALVE	04. TRAVEL DEVICE
29. ONE/TWO WAY FLOW C/V	05. CENTER JOINT
30. TWO WAY EPPR VAVLE	06. BOOM CYLINDER
31. HIGH PRESSURE RETURN FILTER	07. ARM CYLINDER
32. STOP VAVLE	08. BUCKET CYLINDER
33. POWER TAKE-OFF	09. FAN DRIVE PUMP
34. GEAR PUMP FOR ROTATING	10. FAN DRIVE MOTOR
35. ROTATING CONTROL VAVLE	11. JOYSTICK VAVLE(L.H)
36. ROTATING EPPR VAVLE	12. JOYSTICK VALVE(R.H)
37. QUICK-FIT VALVE	13. PEDAL VALVE
38. TWO-PUMP FLOW VALVE	14. PILOT FILTER
39. BY-PASS CUT-OFF VALVE	15. ACCUMULATOR
40. EASYBOOM VALVE	16. SOLENOID PACKAGE VALVE
41. STRAIGHT TRAVEL PEDAL VALVE	17. BY-PASS VALVE
42. PATTREN CHANGE VAVLE	18. FORCED REGENERATION VALVE
43. ARTI. BOOM CYLINDER	19. OIL COOLER
44. ARTI. BOOM CONTROL VALVE	20. FULL FLOW FILTER
45. ARTI. BOOM LOCK VAVLE	21. AIR BREATHER
46. ARTI. BOOM PEDAL VALVE	22. HYDRAULIC TANK
47. SHUTTLE VALVE for ARTI.	23. JOINT PLATE SUB ASSEMBLY
48. ARTI. BOOM CYLINDER	24. PT BLOCK

FG018840

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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Rubber and Plastics

Polymer materials when heated, can form compounds that create a health hazard and can harm the environment. Scrapped rubber and plastic must never be burned. Extra precautions should be taken when servicing machines that have been in a fire or exposed to extreme heat.

If gas cutting or welding is to be done near such materials, the following safety instructions must be followed:

- Protect the material from heat.
- Use protective gloves, protective goggles and an approved respirator.

Waste Hazardous to the Environment

Painted parts or parts made of plastic or rubber which are to be scrapped must never be burned, but must be taken care of by an approved refuse handling plant.

Batteries, plastic objects and anything else which is suspected of being dangerous to the environment must be taken care of in an environmentally safe way.

Check List After Fire

When handling a machine which has been damaged by fire or been exposed to intense heat, the following instructions should be followed:

Use thick, gloves made of rubber and wear goggles to protect your eyes.

Never touch burned components with your bare hands, as there is a risk that you may come into contact with melted polymer materials. First wash thoroughly with plenty of limewater (a solution or suspension of calcium hydroxide, i.e. slaked lime in water).

As a precaution, seals (O-rings and other oil seals) should always be handled as if they were made of rubber that contains fluorides.

Treat skin, which is suspected of having touched burned rubber that contains fluorides, with Hydrofluoric Acid Burn Jelly or something similar. Seek medical advice. Symptoms may not appear until several hours afterwards.

Discard gloves, rags etc. which are suspected of having touched burned rubber that contains fluorides.

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Cylinder Performance Tests

NOTE: *All tests are performed with standard boom, arm and bucket configuration. The bucket should be empty.*

Boom Cylinders Test

The starting points for the test are with the boom and arm extended away from the excavator, and the bucket curled inward. The arm cylinder should be fully retracted; boom and bucket cylinders must be extended. Test movement in both directions, several times, and average results for both Standard Mode and Power Mode.

Arm Cylinder Test

Start with the boom up and the arm cylinder fully retracted. Test movement in both directions several times, between the "crowd" and "dump" positions, and average the results of both tests, in both standard and extraduty power modes.

Bucket Cylinder Test

Start with the boom up and the teeth of the bucket hanging vertically, 500 mm (1-1/2' - 2') above the ground. Dump and crowd the bucket several times, and average results, for both standard and extraduty power modes.

Operation	Power Plus Mode
Boom Up	3.1 - 3.9 sec
Boom Down	2.5 - 3.1 sec
Arm Dump	2.5 - 3.1 sec
Arm Crowd	3.6 - 4.4 sec
Bucket Dump	2.3 - 2.9 sec
Bucket Crowd	2.8 - 3.6 sec

Hydraulic Cylinder Natural Drop Test

To check boom and arm cylinder against the specified performance standard for new cylinders, put a full load of dirt in the bucket and move the attachment cylinders so the arm cylinder is extended 20 - 50 mm (1" - 2") and boom cylinders are retracted the same amount, 20 - 50 mm (1" - 2"). The top of the bucket should be approximately 2 m (6' - 7') off the ground.

Stop engine and measure cylinder drop after 5 minutes. Bucket cylinder should not show more than 40 mm (1.57") change, while the arm and boom cylinders should not fall more than 10 mm (0.39").

Travel Motor Test

Test travel motor operation on each side by painting or chalking a mark on one crawler shoe, with a corresponding mark on the travel frame. Use the attachment to jacking up one side of the machine and operate the raised travel motor. Record the number of seconds it takes the crawler shoe to make 3 full rotations, during both high-speed and low speed operation.

Operation	Power Plus Mode
High-speed	19.6 - 22.6 sec
Low Speed	35.5 - 39.5 sec

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REMOVAL

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

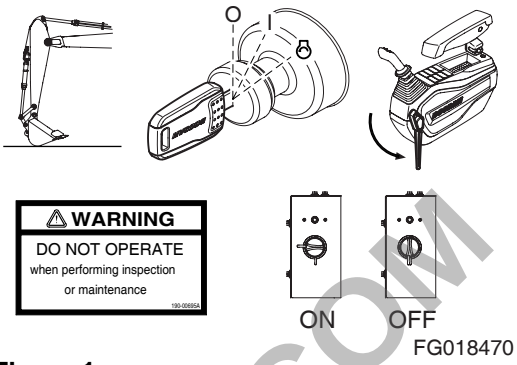


Figure 1

WARNING

AVOID DEATH OR SERIOUS INJURY

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. To relieve pressure from accumulators, fully stroke work levers in all directions. Movement may occur.
7. Move 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 cabin is equipped with additional protective guards over cab openings, they must be removed.*

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Swing Bearing Basic Operation

The swing bearing, which connects the upper structure with the lower structure, consists of a inner ring, outer ring and ball bearings. During swing movement, power from the swing motor is transferred to the pinion by planetary gears connected to gears on the inner ring, which is fixed in the undercarriage. Ball bearings turn the outer ring.

Reference Number	Description
1	Outer Ring
2	Inner Ring
3	Tapered Pin
4	Plug
5	Ball
6	Retainer
7	Seal

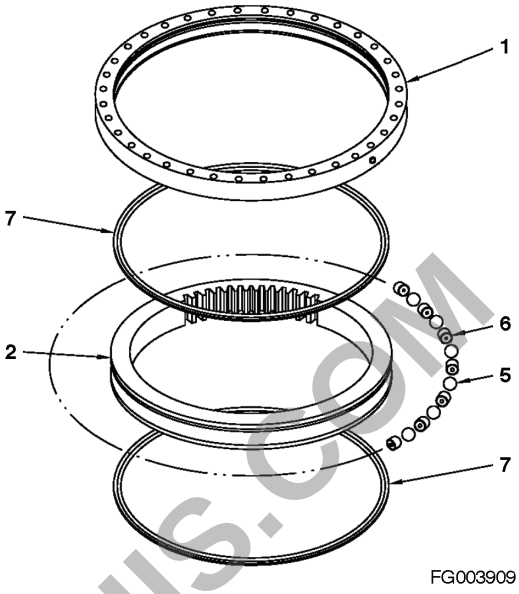


Figure 2

Disassembly

1. Remove tip of tapered pin (3, Figure 3) using grinder and tap lightly to remove debris.

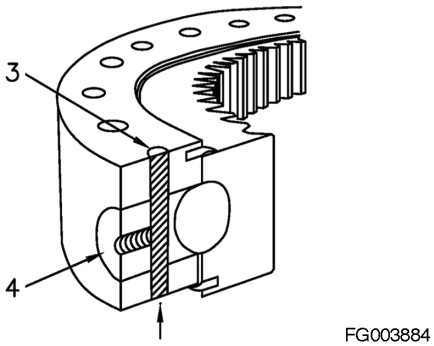


Figure 3

2. Remove plug (4, Figure 4) using a M10 x P 1.5 bolt.

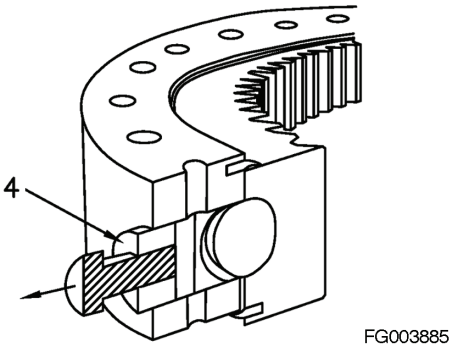
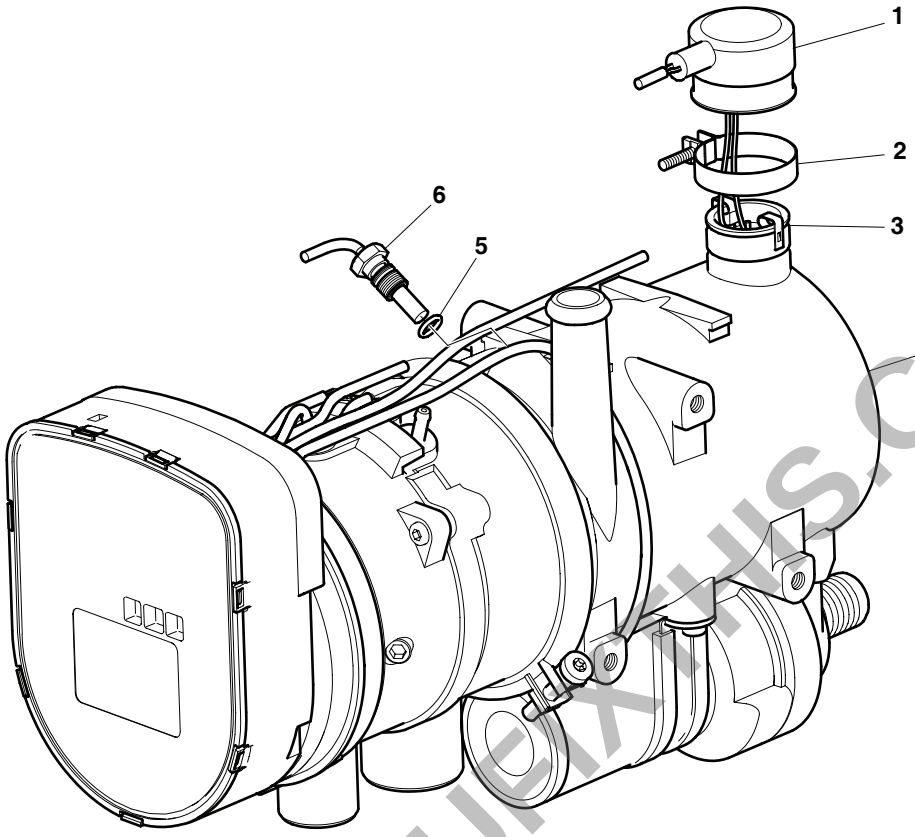


Figure 4

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FG018671

Figure 2 Changing the Temperature Limiter and Temperature Sensor

Reference Number	Description
1	Protective Cap
2	Clip
3	Temperature Limiter

Reference Number	Description
4	Heat Exchanger
5	Round Sealing Ring
6	Temperature Sensor

NOTE: *A Thermo 90 ST heater is shown. In the Thermo 90 S heater, the control unit can also be arranged on the combustion air fan without having any effect on changing the temperature sensor.*

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Problem	Possible Cause	Remedy
Pressure at swing motor inlet shows no increase, and the swing motor is making irregular noises.	Swing motor driveshaft damage.	Replace swing motor.
	Internal damage to gearbox drivetrain.	Repair/Replace broken or faulty assemblies.
Pressure at swing motor inlet shown no increase, but without irregular noises from the swing motor.	Hydraulic pump or valve problem.	Troubleshoot hydraulic system.
Oil Leakage:		
From driveshaft or from bolted connections or other assembled surfaces.	Oil seal damaged Assembly compound (joint sealer) old and not sealing, bolt not tight or flange warped.	Replace oil seal Disassemble and check mating surfaces. Reapply Loctite; torque bolts to specifications.
Excess heat:		
Gearbox casing becomes excessively hot, with or without irregular noise (s), during operation.	Low oil level.	Replace oil; refill to specified level.
	Bearings or gears worn but not completely inoperative.	Repair or replace gearbox.

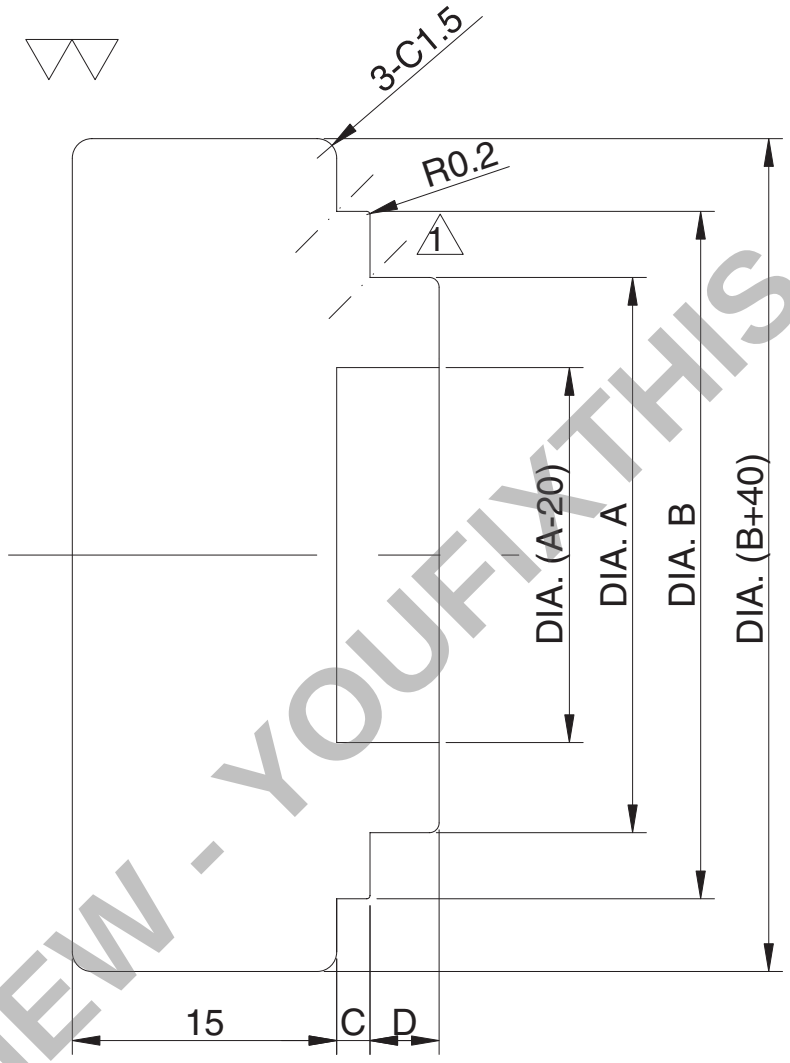
TROUBLESHOOTING – HYDRAULIC PROBLEMS

Problem	Possible Cause	Remedy
Attachment cylinders, swing and travel motors are all inoperable. Loud noises are heard from main pump assembly.	Main pump (s) malfunction.	Repair or replace.
	Low oil level in hydraulic system.	Refill.
	Main pump inlet (oil supply) piping or hose damaged.	Repair or replace.
Attachment cylinders, swing and travel motors are all inoperable. No usual or loud noises can be heard.	Pilot pump malfunction.	Repair or replace.
	Pilot cutoff solenoid stuck.	Repair or replace.
	Pilot cutoff switch faulty.	Repair or replace.
	Engine/pump flex coupling damaged.	Replace flex coupling.
Sluggish performance of all hydraulic functions – attachment, swing and travel.	Main pump (s) damaged or worn.	Repair or replace.
	Main relief valve pressure off.	Readjust pressure.
	Low oil level in hydraulic system.	Refill.
	Hydraulic reservoir intake strainer clogged.	Clean.
	Pump inlet (supply side) piping or hose allowing air into hydraulic system.	Tighten connection.

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Dust Wiper Jig



ARS4760L

Figure 10

Material: SM45C which is done thermal refining <QT> HRC 22 - 28

Undefined Chamfer C/R = 0.5 Max.

1 Place: Finally work to used DNMG Tip <Nose R0.4>

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7. Install the tee (11, Figure 25).
   - : 41 mm
   - Torque: 21 kg•m (206 Nm, 152 ft lb)
8. Tighten the nut (10, Figure 25).
   - : 27 mm
   - Torque: 9.5 kg•m (93 Nm, 69 ft lb)

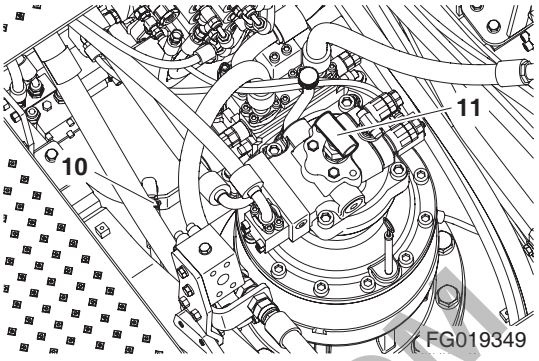


Figure 25

9. Install hoses (8 and 9, Figure 26).
   - : 17 mm
   - Torque: 2.7 kg•m (26 Nm, 20 ft lb)

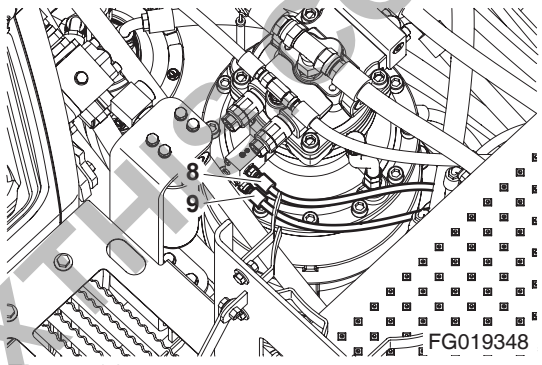


Figure 26

10. Install hoses (1 to 7, Figure 27).
    - : 41 mm, 24 mm, 19 mm
    - : 8 mm
    - Torque: 6.5 kg•m (64 Nm, 47 ft lb)

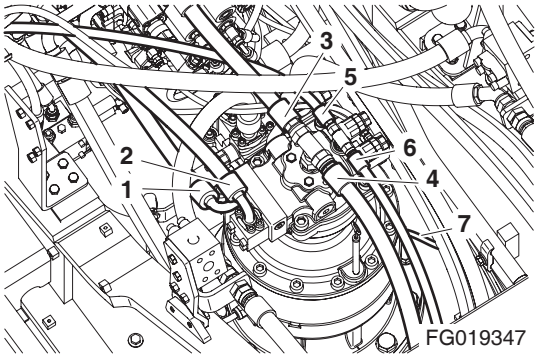


Figure 27

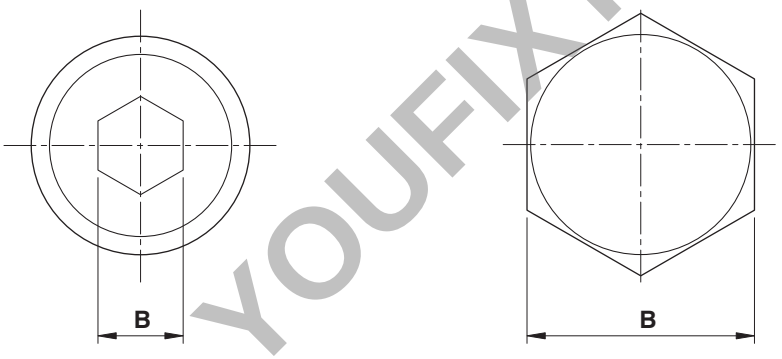
Reference Number	Description
1	Feed Line Hoses (8 mm)
2	Feed Line Hoses (8 mm)
3	Makeup Hoses (41 mm)
4	Makeup Hoses (41 mm)
5	Drain Hoses (24 mm)
6	Drain Hoses (24 mm)
7	Lubrication Hose (19 mm)

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Tightening Torque (Table 3)

Classification	Symbol	Name	Size (mm)	B Size	Tightening Torque (kg•cm)
Hydraulic Motor	14	Socket Bolt	M12 x 45	10	1,000
	43	Socket Bolt	M20 x 45	17	4,400
	54	Plug	NPTF 1/16	4	100
	45	Plug	PT 1/2	6	220
	56	VP Plug	PF 1/4	19	370
	52	Plug	PF 1/4	6	370
	71	Orifice	M4 x 0.7	2	36
	82	Plug	PF 1/2	10	1,100
Reduction Gear	182	Plug	PF 1/2	10	1,000
	185	Socket Bolt	M10 x 35	8	590



B Size (rear side width)

FG018759

Figure 15

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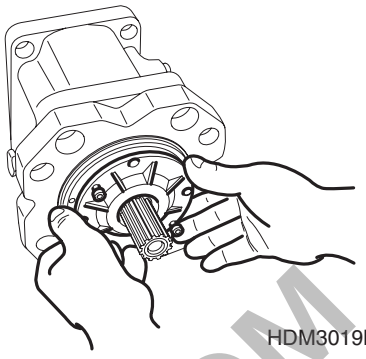
8. Remove hex socket head bolts (406) and seal cover (F) (261).

IMPORTANT

Install bolt into pulling-out tapped hole of seal cover (F), and cover can be removed easily.

Since oil seal is attached on seal cover (F), do not damage it when removing cover.

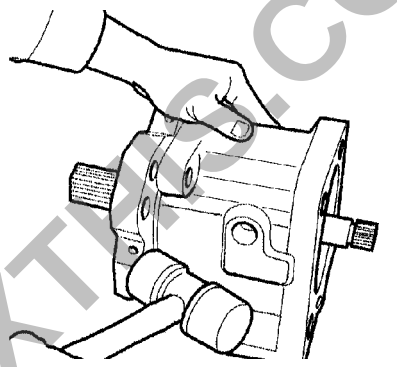
[In case fitting a gear pump, first, remove gear pump]



HDM3019L

Figure 9

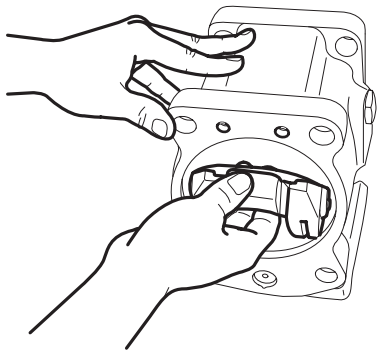
9. Lightly tapping fitting flange section of swash plate support (251), on its pump casing side, separate swash plate support from pump casing.



HDM3020P

Figure 10

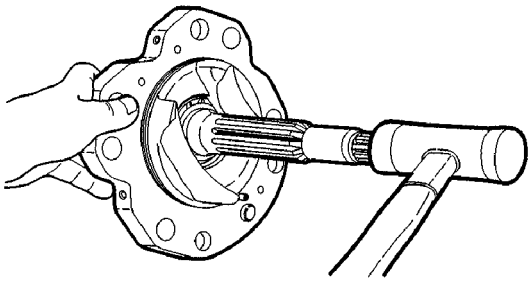
10. Remove shoe plate (211) and swash plate (212) from pump casing (271).



HDM3021L

Figure 11

11. Lightly tapping shaft ends of driveshafts (111 and 113) with plastic hammer, remove driveshafts from swash plate supports.



HDM3022P

Figure 12

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WARNING

AVOID DEATH OR SERIOUS INJURY

Always relieve hydraulic pressure and fully lower bucket (or attachment) to the ground, before disassembly. Failure to follow instructions can cause sudden release of component parts or boom dropping, resulting in death or serious injury.

1. Remove socket head bolt (75, four places on each section, width across flats: 8 mm) and flange (37, seven places).
2. Remove spring (35), poppet (34) (poppet (51)) and O-ring (36) from valve housing.

CAUTION

AVOID INJURY

Be careful, there is not a poppet and spring in travel straight valve section (Section H-H).

3. Remove socket head bolt (75, width across flats: 8 mm) and flange (52, two places).
4. Remove spacer (53) from valve housing. Remove O-ring (54) and backup ring (55) from spacer (53).
5. Remove spring (35) and poppet (34) from valve housing.
6. Remove plug (72, width across flats: 8 mm) (Section C-C).
7. Remove spring (33) and poppet (32) from valve housing.
8. Remove plug (72, width across flats: 8 mm) (Section L-L).
9. Remove spacer (57), spring (33) and poppet (32) from valve housing.
10. Remove plug (92, width across flats: 36 mm) (Section G-G).
11. Remove socket head bolt (73, four places, width across flats: 8 mm) and flange (43).
12. Remove spring (45), poppet (44) and O-ring (36) from valve housing.
13. Remove plug (46, width across flats: 27 mm) and O-ring (47).
14. Remove spring (48) and poppet (49) from valve housing.
15. Remove socket head bolt (101, four places, width across flats: 8 mm) from body (96, one places).
16. Remove body (96) from valve housing. Remove sleeve (99), piston (97), spring (98), poppet assembly (100), backup ring (103), and O-ring (104).
17. Remove O-ring (36).

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Pressure Reducing Valve

1. Neutral Condition

   If pedal is in neutral, spool is pushed up by return spring and spring seat. Port (P) is blocked by bottom part of spool and four operating ports (left forward and backward, right forward and backward) are connected to port (T) through inner hole of spool.

2. Half Operation Condition

   If pedal is moved, push rod moves down, and they transmit this force through spring seat and control spring to spool. If spool is moved, primary pressure is transmitted through an inner hole of spool to operating port. If lever is stopped in middle position, compressed control spring force and secondary pressure transmitted through hole acts at bottom part of spool, balance is maintained by hydraulic force acted upward, and then this pressure is transmitted to traveling spool of control valve. That is, primary pressure is transmitted to operating port as secondary pressure equivalent to control spring force compressed by spool.

3. Full Operating Condition

   If pedal is moved to a maximum, bottom part of push rod presses spool seat to a maximum, and compresses control spring to a maximum. Primary pressure is transmitted through inner hole of spool to operation port, secondary pressure transmitted through spool overcomes control spring force and pushes spool up, but spool is restricted by push rod and does not move any more. That is, when pedal lever is moved to a maximum, control spring does not function, spool is restricted by push rod, and then primary pressure equalizes to secondary pressure.

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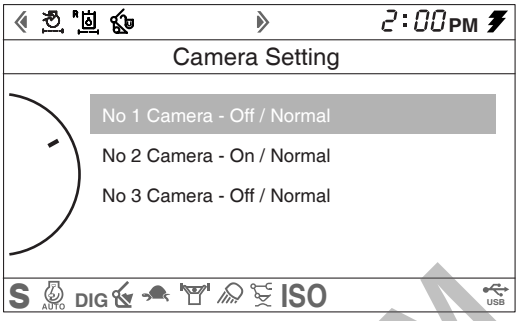
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The camera setting list screen displays various camera states (ON/OFF, NORMAL/MIRROR).

Select a camera and click the jog switch to access the relevant camera setting screen.

Press the ESC button to return to the previous screen.

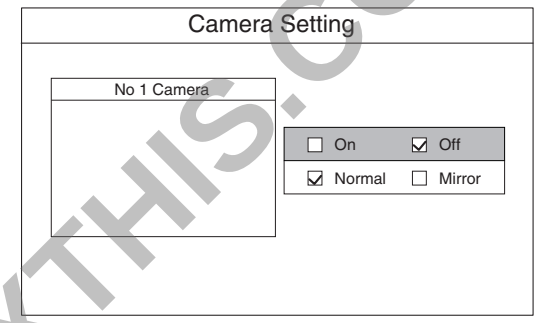


FG018500

Figure 40

On the camera setting screen, set up the camera state (ON/OFF, NORMAL/MIRROR).

Also, see the actual image of the currently installed camera.



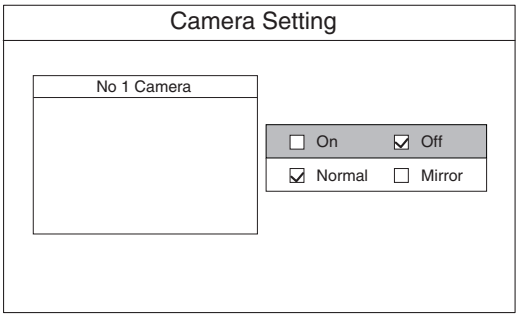
FG018501

Figure 41

If a camera is not installed, the camera image section is shown as a blue screen.

If the cursor is placed on "ON/OFF," click on the jog switch to set up "ON" ↔ "OFF."

Turn the jog switch to locate the cursor at normal/ mirror. Then, click on the jog switch to set up normal ↔ mirror.



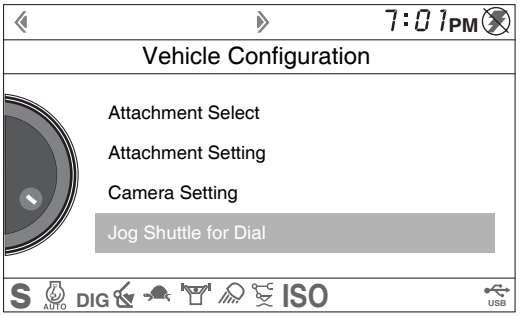
FG018501

Figure 42

D. Jog Shuttle for Dial

The jog shuttle for dial screen provides a method whereby to use the gauge panel's jog switch and control the engine rpm, replacing the engine control dial.

From the vehicle configuration, select the jog shuttle for dial to access it.



FG018502

Figure 43

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REFRIGERANT SYSTEM REPAIRS

WARNING

AVOID DEATH OR SERIOUS INJURY

Always wear safety goggles and gloves when handling refrigerant. If refrigerant comes in contact with the skin or eyes, immediately flush with clean, running water and consult a physician.

Select a clean and well ventilated area to work.

The refrigerant container is under high-pressure and should be stored below 40°C (104°F). Be careful not to drop the container from a high location.

The contents are under high-pressure and should not be used with compressed air or near an open flame.

Refrigerant Safe Handling Procedures

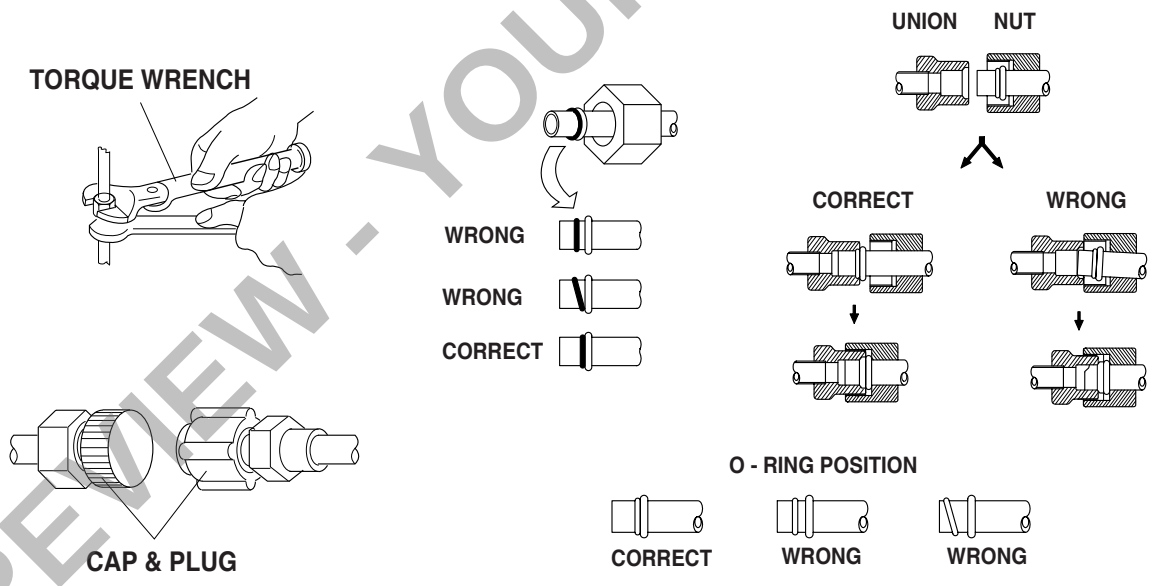


Figure 197

The the following procedures should be observed for safe handling of refrigerant during vacuum and charging process.

1. Use an approved recovery / charging device which can safely perform vacuum and charge work simultaneously.

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