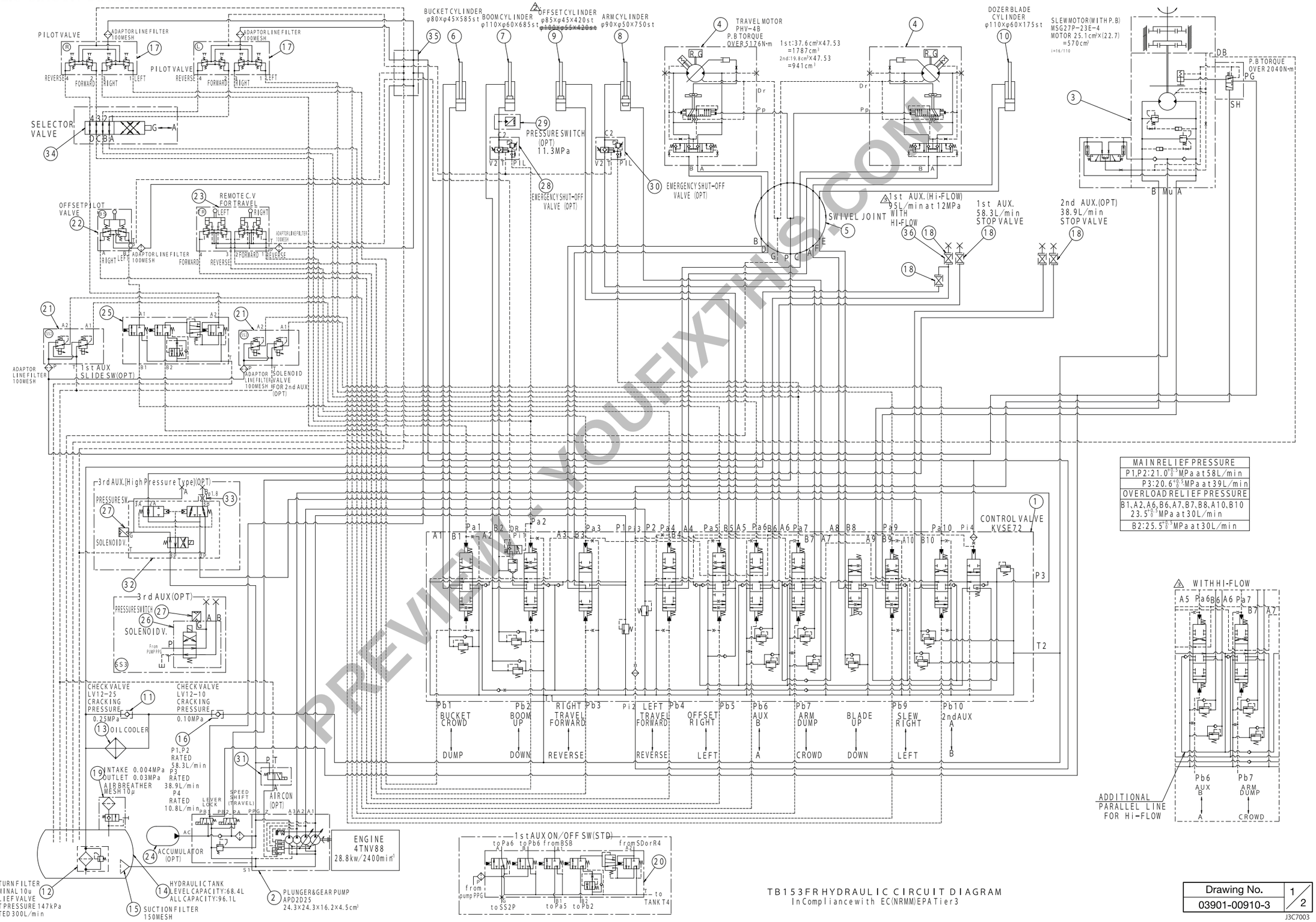
HYDRAULIC SYSTEM

HYDRAULIC CIRCUIT DIAGRAM



TB153FR HYDRAULIC CIRCUIT DIAGRAM
In Compliance with EC(NRMM) EPA Tier3

Drawing No. 03901-00910-3 1/2

J3C7003

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No	PART No.	NAME OF PART	REMARKS
42			
41			
40			
39			
38			
37			
△3 36	19017-23700	STOP VALVE	WITH HI-FLOW
35	03750-20040	MANIFOLD	
34	19017-30500	SELECTOR VALVE	
33	05750-03630	ELBOW(with orifice)	
32	19017-51600	SOLENOID VALVE	
31	19017-46600	SOLENOID VALVE	FOR A/C
30	19017-42800	EMERGENCY SHUT-OFF VALVE	Arm
29	17001-00080	PRESSURE SWITCH	ON/OFF11.3MPa
28	19017-42700	EMERGENCY SHUT-OFF VALVE	Boom
27	17001-00065	PRESSURE SWITCH	ON2.8MPa/OFF1.9MPa
26	19017-50700	SOLENOID VALVE	3rd AUX
25	19017-48800	SOLENOID VALVE	
24	15522-00020	ACCUMULATOR	
23	19017-39100	PILOT VALVE	TRAVEL
22	19017-46300	PILOT VALVE	OFFSET
21	19017-52100	SOLENOID VALVE	2nd AUX

No	PART No.	NAME OF PART	REMARKS
20	19017-49200	SOLENOID VALVE	
19	15520-02700	AIR BREATHER	
18	19017-19800	STOP VALVE	
17	19017-51100	PILOT VALVE	
16	15401-41210	CHECK VALVE	
15	15500-00116	SUCTION FILTER	
14	03980-11000	HYDRAULIC TANK	
13	19113-00320	RAD/HOC	
12	15511-02600	RETURN FILTER	
11	15401-41225	CHECK VALVE	
10	19000-87900	BLADE CYLINDER	
△2 9	19001-06100 ~~19000-77100~~	OFFSET CYLINDER	
8	19000-92300	ARM CYLINDER	
7	19000-92200	BOOM CYLINDER	
6	19000-75800	BUCKET CYLINDER	
5	19040-06300	SWIVEL JOINT	
4	19031-27400	TRAVEL MOTOR	
3	19031-25500	SLEW MOTOR	
2	19020-24900	PLUNGER&GEAR PUMP	FOR A/C
2	19020-24800	PLUNGER&GEAR PUMP	
△3 1	19010-49800	CONTROL VALVE	WITH HI-FLOW AND 2ND AUX.
1	19010-43300	CONTROL VALVE	WITH 2ND AUX.
1	19010-43200	CONTROL VALVE	

Drawing No.	2/2
03901-00910-3	

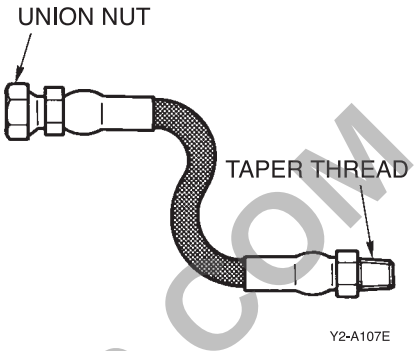
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TIGHTENING TORQUES

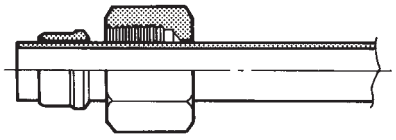
Hydraulic Hoses

Hose Fitting Size	Torque			
	Union Nut (G)		Taper Thread (R)	
	N·m	ft-lb	N·m	ft-lb
1/8	9.8 $^{+4.9}_{0}$	7.3 $^{+3.5}_{0}$	11.8 ±1.2	8.7 ±0.8
1/4	24.5 $^{+4.9}_{0}$	18.1 $^{+3.5}_{0}$	29.4 ±2.9	21.7 ±2.1
3/8	49 $^{+4.9}_{0}$	36.2 $^{+3.5}_{0}$	53.9 ±5.4	39.8 ±3.9
1/2	58.8 $^{+4.9}_{0}$	43.4 $^{+3.5}_{0}$	88.3 ±8.8	65.1 ±6.4
3/4	117.7 $^{+4.9}_{0}$	86.8 $^{+3.5}_{0}$	147.1 ±14.7	108.5 ±10.7
1	137.3 $^{+4.9}_{0}$	101.3 $^{+3.5}_{0}$	196.1 ±19.6	144.7 ±14.3



Bite Type Pipe Fitting for Steel Pipe

Pipe Outer Diameter (mm)	Torque	
	N·m	ft-lb
8	34.3 ±4.9	25.3 ±3.5
10	41.7 ±2.5	30.7 ±1.7
12	58.8 ±4.9	43.4 ±3.5
15	88.3 ±4.9	65.1 ±3.5
16	93.2 ±4.9	68.7 ±3.5
18	132.4 ±4.9	97.6 ±3.5
22	205.9 ±9.8	151.8 ±7.2
27.2	245.2 ±9.8	181.0 ±7.2
28	313.8 ±19.6	231.4 ±14.3
32	313.8 ±19.6	231.4 ±14.3
35	411.9 ±19.6	303.7 ±14.3



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TB153FR/180FR Maintenance software, Error Code Table

Error Code	Discription	Note
01	Key SW starter signal and start operation for a short time.	Key switch starter signal was entered in less than 2 seconds interval. PULL action of Engine Stop solenoid was repeated in short interval.
02	Engine oil pressure decrease after engine starts	
03	After the engine starts, Alternator charge is defective	
04	Overheating	Signal from water temperature switch
05	Coolant level level decrease	
06	Air cleaner stopped up	
07	Lift over load	Lifting overload appeared (more than 1second) after ACC power supply
08	-	
09	Emergency release ON	Short harness for Emergency was connected.
10	Glow key SW turning on for a long Time	Glow key switch had connected more than 10 seconds.
11	Ignition at time of head Glow	Glow had ignited more than 10 seconds.
12	The upper bound of voltage of the battery is abnormal	Voltage as over 18V had been measured over 0.5 second, after ACC power was supplied or engine was started.
13	the lower bound of voltage of the battery is abnormal	Voltage as under 12V had been measured over 0.5 second, after ACC power was supplied or engine was started.
14	Emergency release ON->OFF	Short harness for Emergency was disconnected.
15	Clock initialization	Clock in the controller had been reset. For example, It will happen when Battery have abnormal lower voltage in

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TROUBLESHOOTING

Hydraulic Pump

Symptom	Probable Causes	Remedy
Noise is loud. Abnormal noise is generated.	• The suction hose is pinched or the suction filter is clogged.	• Remove the dirt or eliminate the pinched condition of the hose.
	• The suction side joint is loose and air is being sucked in.	• Retighten each joint.
	• The hydraulic oil's viscosity is too high and cavitation is occurring.	• Replace the hydraulic oil with oil of the proper viscosity.
	• The pump is off center with respect to the engine.	• Center the pump with respect to the engine.
	• There are bubbles in the hydraulic oil.	• Investigate the cause of the bubbles and repair it.
	• The engine's speed is higher than the specified speed.	• Operate the engine at the specified speed.
	• The drain back pressure is higher than the specified pressure.	• Check and replace the drain piping.
	• The bearing, etc. is mechanically damaged.	• Replace the damaged parts or replace the pump.
Discharge is insufficient.	• The engine's speed is too low.	• Operate the engine at the specified speed.
	• The oil temperature is abnormally high.	• Stop the machine and let the oil cool off, then check again.
	• The hydraulic oil's viscosity is too high.	• Replace the hydraulic oil with oil of the proper viscosity.
	• The pump's volumetric efficiency has dropped.	• Replace the pump.
	• The horsepower setting adjustment screw is loose.	• Reset the screw and lock it.
	• The oil level in the tank is low.	• Replenish the tank with hydraulic oil to the specified level.
	• The suction side pipe or the suction filter is clogged.	• Clean the piping.
	• The amount of leakage from hydraulic devices other than the pump is increasing.	• Repair the hydraulic device or replace it.
Pressure doesn't rise.	• The relief valve setting has dropped.	• Reset the relief valve setting.
	• The amount of leakage from hydraulic devices other than the pump is increasing.	• Repair the hydraulic device or replace it.
	• The pump's volumetric efficiency has dropped.	• Replace the pump.
The rotational speed drops when there is a dynamic load.	• The peak pressure is generated due to a drop in the relief valve's response.	• Repair the relief valve or replace it.
	• There is foreign matter trapped in the pilot line or foreign matter is caught in the sliding parts of the control equipment.	• Remove the foreign matter and repair or replace the scratched parts.
Abnormal heat is generated.	• Leakage from the pump is increasing.	• Replace the pump.
	• The bearings, etc. are mechanically damaged.	• Replace the damaged parts or replace the pump.
	• There is seizing of sliding parts.	• Replace the damaged parts or replace the pump.
Hydraulic oil is leaking.	• Seals are damaged.	• Replace the seals.
	• The shaft surface which slides against the oil seal is worn.	• Replace the shaft or replace the pump.
	• The plug or bolts are loose.	• Tighten them or replace the seals.

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DISASSEMBLY AND ASSEMBLY

Removing the Engine

1. Disconnect the battery ground cable (1) from the battery.

2. Remove the engine hood and side cover.
   ☞ "Removing the Covers"

3. Remove the counterweight.
   ☞ "Removing the Upper Frame"

4. Tilt up the floor frame.

5. Remove the radiator and oil cooler.
   ☞ "Removing the Radiator and Oil Cooler"

6. Disconnect the air hose (2) from the engine.

7. Disconnect the coolant drain hose (3).

8. Close the valve (4), then disconnect two heater hoses.

9. <Air Conditioner>
   Remove the compressor (5).
   - Do not loosen the hose to the compressor, or the refrigerant gas may leak.

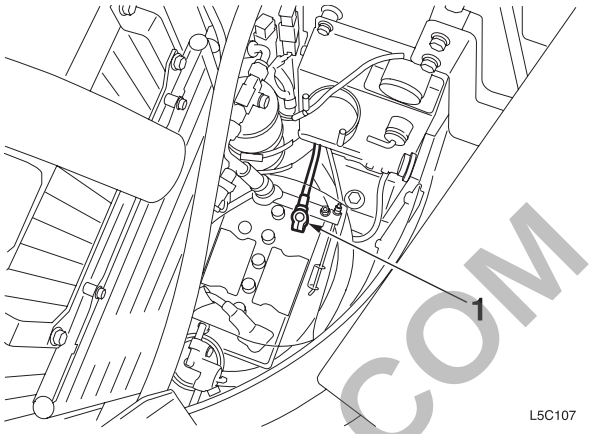
   a. Loosen the bolts (6) to release the V-belt (7) tension.
      - When re-assembling, press the midpoint between the crankshaft pulley (8) and the idle pulley (9) with the force of 98 N, and adjust the bolts (6) to produce a slack of approximately 8 mm.

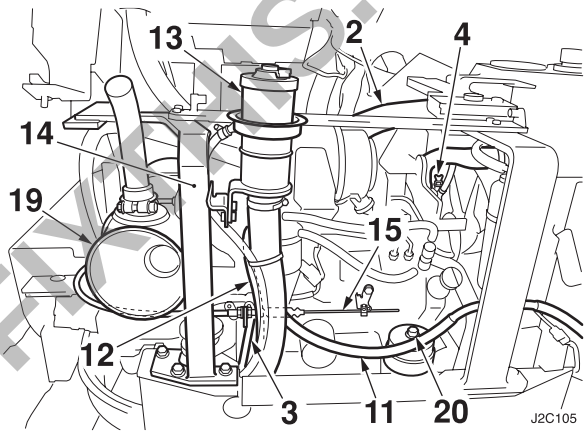
   b. Remove the two installation bolts (10) from the compressor (5), and detach the compressor (5) from the engine.

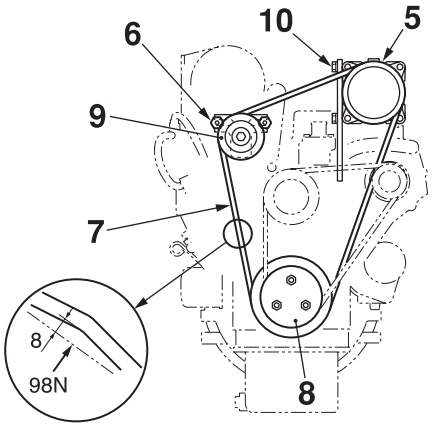
10. Disconnect the fuel hoses (11) and (12) from the engine.

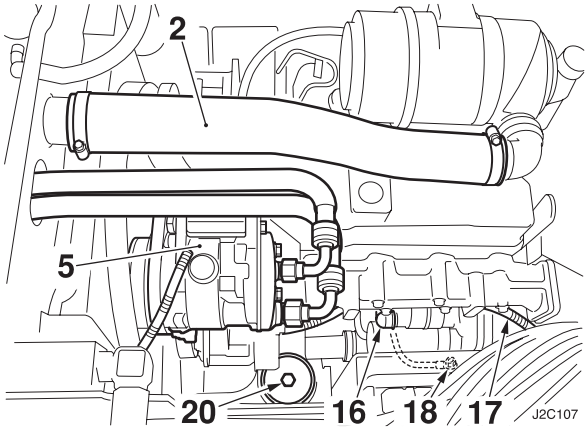
11. Remove the filler neck (13) from the bracket (14).
    - Remove the filler neck with hose attached.

12. Remove the hydraulic pump.
    ☞ "Removing the Hydraulic Pump"









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RECOMMENDED LUBRICANTS

Use different fuels, lubricants and greases according to the temperature, referring to the chart below.

- Change the lubricant earlier than as show in the table if it is extremely dirty or its performance has deteriorated severely.
- Whenever possible, use the same brand of lubricant as before. If changing with a different brand, replace the entire quantity – do not mix different brands.

Location	Type	Type by temperature -22 -4 14 32 50 68 86 104°F -30 -20 -10 0 10 20 30 40°C	Replacement interval	Capacity
Engine oil pan	Diesel engine oil API service CD	SAE 10W-30 SAE 15W-40	After first 50 hrs. Every 500 hrs.	Upper limit 7.4 L Lower limit 4.0 L
Hydlaulic tank	Takeuchi genuine hydraulic oil 46	ISO VG46	Every 4000 hrs.***	Total system 110 L Tank level 68 L
	Antiwear hydraulic oil	ISO VG68 ISO VG46 ISO VG32	Every 2000 hrs.***	
Fuel tank	Diesel fuel	Use a clean, Quality fuel for performance and optimum engine life. • To prevent fuel flow problems in cold weather, use diesel fuel with a pour point of at least -12°C (10°F) below the lowest expected ambient temperature. • Minimum cetane number is 45. Low temperature or high altitude operation may require the use of fuel with a higher cetane number.		Tank level 65 L
Engine cooling system	Coolant (water+Coolant**)	30% coolant mixture 50% coolant mixture	Every 1000 hrs.	8.8 L
Travel reduction gear	Gear oil API-GL-4	SAE 90	After first 250 hrs.* Every 1000 hrs.	1 L
Carrier Roller	Gear oil API-GL-4	SAE 90	—	60 mL
Track Roller	Mobil oil SHC 680	——	—	65 mL
Idler	Gear oil API-GL-4	SAE 90	—	70 mL
Slew Grease Bath	Lithium grease EP-2 NLGI No. 2	——	—	2.8 L
Slew bearing		——	Every 50 hrs.	As required
Working equipment		——	Daily or erery 10 hrs.	
Levers		——	When required	

*: If the percentage of the traveling time within the total operating time is high, replace the gear oil earlier than the specified time.

**: For water, use tap water (soft). Do not use well or river water.
When the ambient temperature drops below 0°C, add coolant (antifreeze). Follow the coolant manufacture's instructions to determine the mixture ratio.

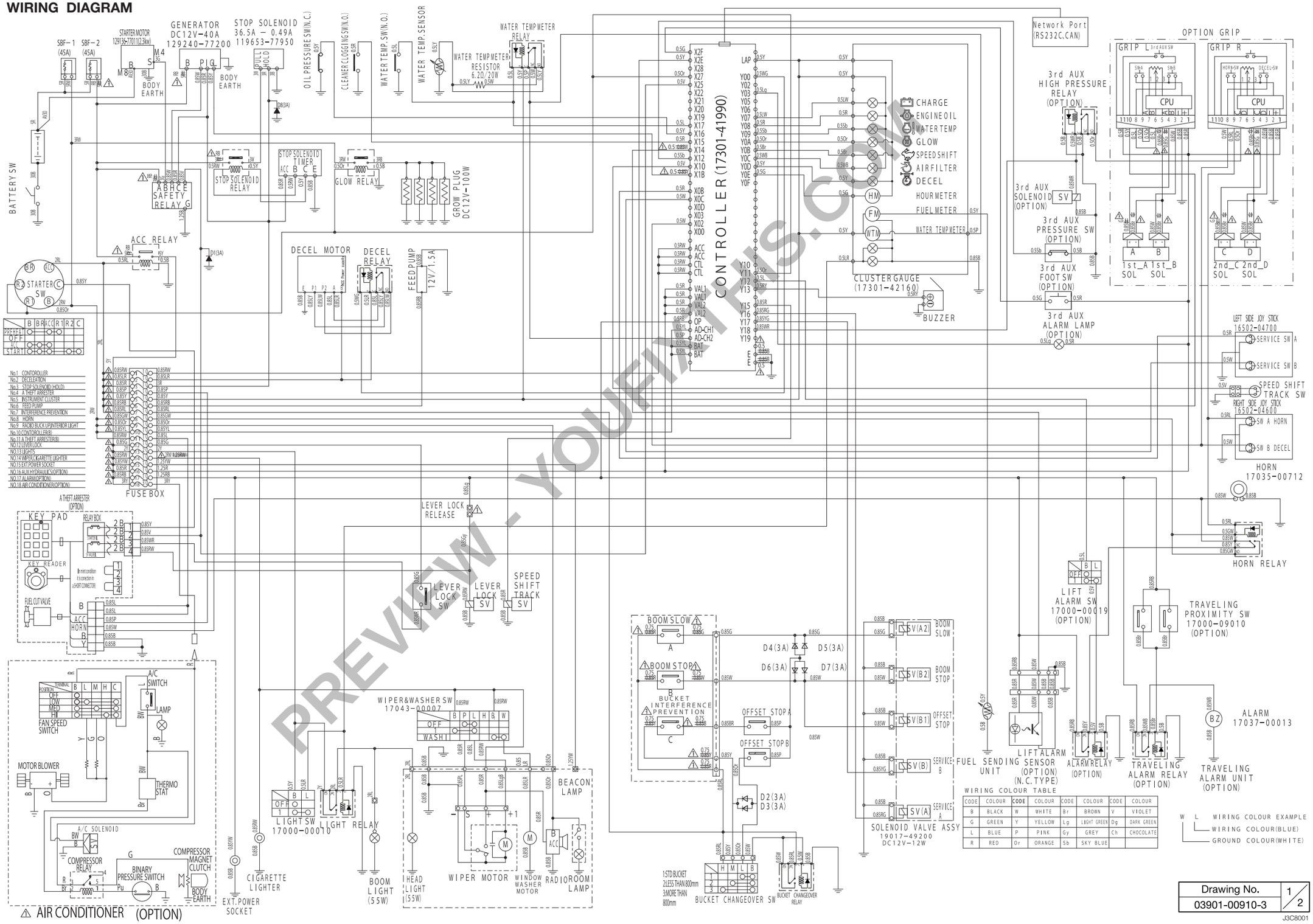
***: The hydraulic oil replacement interval depends on the type of hydraulic oil being used. New machine are delivered with Takeuchi genuine hydraulic oil 46, and the hydraulic oil replacement intervals indicated in this manual assume that Takeuchi genuine hydraulic oil 46 is being used. When using conventional antiwear hydraulic oil, the hydraulic oil should be replaced every 2000 hours.

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ELECTRICAL SYSTEM

ELECTRICAL WIRING DIAGRAM

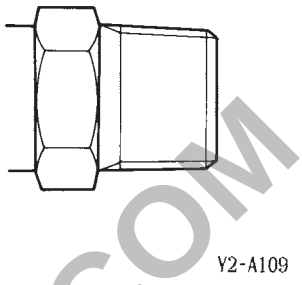


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Joints for Piping

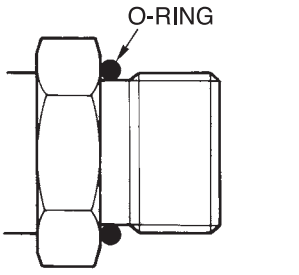
Nominal Thread Diameter (R)	Torque			
	Steel		Cast Steel	
	N·m	ft-lb	N·m	ft-lb
1/8	11.8 ±1.2	8.7 ±0.8	10.8 ±1.1	8.0 ±0.7
1/4	29.4 ±2.9	21.7 ±2.1	24.5 ±2.5	18.1 ±1.7
3/8	53.9 ±5.4	39.8 ±3.9	49 ±4.9	36.2 ±3.5
1/2	88.3 ±8.8	65.1 ±6.4	73.5 ±7.4	54.3 ±5.3
3/4	147.1 ±14.7	108.5 ±10.7	127.5 ±12.7	94.1 ±9.3
1	196.1 ±19.2	144.7 ±14.3	171.6 ±17.2	126.6 ±12.5


Y2-A109

Joints for Piping (O-ring Seal Type)

Nominal Thread Diameter (G)	Torque	
	N·m	ft-lb
1/8	19.6 ±2.0	14.5 ±1.4
1/4	34.3 ±4.9	25.3 ±3.5
3/8	53.9 ±4.9	39.8 ±3.5
1/2	63.7 ±4.9	47.0 ±3.5
3/4	93.2 ±4.9	68.7 ±3.5
1	107.9 ±9.8	79.5 ±7.2
1-1/4	117.7 ±9.8	86.8 ±7.2
1-1/2	137.3 ±9.8	101.2 ±7.2

Nominal Thread Diameter (UNF)	Torque	
	N·m	ft-lb
7/16–20	16.7 ±2.0	12.3 ±1.4
1/2–20	22.6 ±2.0	16.6 ±1.4
9/16–18	31.4 ±2.9	23.1 ±2.1
3/4–16	59.8 ±4.9	44.1 ±3.5
1-1/16–12	102.0 ±5.9	75.2 ±4.4
1-5/16–12	135.3 ±7.8	99.8 ±5.8
1-5/8–12	181.4 ±9.8	133.8 ±7.2



Y2-A110

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16	Engine oil disconnection	Engine oil pressure switch condition was OFF, when key switch was turned on .
17	Alternator charge disconnection	Charge signal was ON, when key switch was turned on .

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Solenoid Valve

Symptom	Probable Causes	Remedy
Solenoid valve does not operate.	• Wiring short-circuit or wire break • Solenoid coil short-circuit or wire break • Catching of foreign matter by the spool • Damage on the outer circumference of the spool	• Replace • Replace • Overhaul and repair or replace. • Overhaul and repair or replace.
Oil leakage from solenoid valve, cover, or relief valve to the outside.	• Damaged O-ring • Damaged O-ring at the emergency manual button of the solenoid valve	• Replace • Replace
Pressure does not rise.	• Catching of foreign matter by the relief valve	• Clean or replace.

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13. Disconnect the accelerator wire (15) from the engine.

14. Disconnect the battery cable (16) and all the connections on the engine side of the electric wirings (17).
    - Attach identification labels to individual wirings for correct reassembling.
    - Disconnect the wirings from the clamps and the bands.

15. Disconnect the engine ground cable (18).

16. <Canopy>
    Disconnect the exhaust pipe from the silencer (19).

17. Remove the cushion rubber tightening bolts (20) and the engine assembly.
    ⇐ Bolt: 102 N·m
    - Apply thread lock to the bolts.

Installing the Engine

Follow the same procedure as for removal in the reverse order.

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Figure 7-9 Preventive Maintenance Schedule.

PREVENTIVE MAINTENANCE SCHEDULE FOR AIR CONDITIONING SYSTEMS

NOTE: Typical Maintenance Schedule: 3 months or 15,000 miles, 6 Months or 30,000 miles, 12 Months or 60,000 miles

Installation Date: _____ Mileage: _____

Last Maintenance Check: _____ Mileage: _____

Checked by _____ Mileage: _____

COMPONENT	MAINTENANCE INTERVAL (months) 3*	6*	12*	DONE
1. COMPRESSOR				
Check noise level	•			❑
Check clutch pulley	•			❑
Check oil level	•			❑
Run system 5 minutes	•			❑
Check belts for tension (120 lb max.)	•			❑
Inspect shaft seal (leakage)		•		❑
Check mounting bracket (tighten bolts)		•		❑
Check alignment to clutch w/crankshaft drive pulley		•		❑
Perform manifold gauge check			•	❑
Verify clutch is engaging			•	❑
CONDENSER				
2. Clean dirt/bugs/leaves from coils (w/compressed air)	•			❑
Check inlet/outlet for obstructions/damage	•			❑
RECEIVER-DRIER				
3. Check inlet line from condenser (hot to touch)	•			❑
Check sight glass (streaks or cloudiness)	•			❑
Replace if system is opened			•	❑

COMPONENT	MAINTENANCE INTERVAL (months) 3*	6*	12*	DONE
4. EXPANSION VALVE				
Inspect capillary tube (leakage/damage/looseness)			•	❑
5. EVAPORATOR				
Clean dirt/bugs/leaves form fins/tubes (w/compressed air)			•	❑
Check solder joints on inlet/outlet tubes (leakage)			•	❑
Inspect condensate drain (R-12 or oil leak)			•	❑
6. OTHER COMPONENTS				
Check discharge lines (hot to touch)	•			❑
Check suction lines (cold to touch)	•			❑
Inspect fittings/clamps/hoses		•		❑
Check thermostatic switch (proper operation)			•	❑
Outlets in cab (temperature check; 40 to 50°F)		•		❑
Check fan clutch (proper operation)		•		❑
Inspect all wiring connections		•		❑
Operate manual controls through full functions	•			❑

The following require monthly maintenance:

*Compressor – run system at least 5 minutes (40 degrees Fahrenheit minimum outside temp.) in order to circulate oil and lubricate components.

Maintenance notes: _____

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Bolts and Nuts (for ISO Strength Category 10.9)

Thread	Size × Pitch	Torque					
		General Tightening Points			Special Tightening Points		
		N·m	kgf·m	ft-lb	N·m	kgf·m	ft-lb
Coarse	M 6 × 1.0	9.8 ±0.5	1.0 ±0.05	7.2 ±0.4	11.8 ±0.6	1.2 ±0.06	8.7 ±0.4
	M 8 × 1.25	22.6 ±1.1	2.3 ±0.11	16.6 ±0.8	26.5 ±1.3	2.7 ±0.13	19.5 ±0.9
	M10 × 1.5	47.1 ±2.4	4.8 ±0.24	34.7 ±1.7	54.9 ±2.7	5.6 ±0.28	40.5 ±2.0
	M12 × 1.75	83.4 ±4.1	8.5 ±0.42	61.5 ±3.0	97.1 ±4.8	9.9 ±0.49	71.6 ±3.5
	M14 × 2.0	134.4 ±6.7	13.7 ±0.68	99.1 ±4.9	155.9 ±7.7	15.9 ±0.79	115.0 ±5.7
	M16 × 2.0	207.9 ±10.4	21.2 ±1.06	153.3 ±7.7	241.2 ±12.1	24.6 ±1.23	177.9 ±8.9
	M20 × 2.5	410.9 ±20.5	41.9 ±2.09	303.1 ±15.1	475.6 ±23.7	48.5 ±2.42	350.8 ±17.5
Fine	M 8 × 1.0	24.5 ±1.2	2.5 ±0.12	18.1 ±0.9	28.4 ±1.4	2.9 ±0.14	21.0 ±1.0
	M10 × 1.25	50.0 ±2.5	5.1 ±0.25	36.9 ±1.8	58.8 ±2.9	6.0 ±0.30	43.4 ±2.2
	M12 × 1.5	87.3 ±4.3	8.9 ±0.44	64.4 ±3.2	102.0 ±5.1	10.4 ±0.52	75.2 ±3.8
	M14 × 1.5	135.3 ±6.8	13.8 ±0.69	99.9 ±5.0	157.9 ±7.8	16.1 ±0.80	116.5 ±5.8
	M16 × 1.5	220.6 ±11.0	22.5 ±1.12	162.7 ±8.1	256.0 ±12.7	26.1 ±1.30	188.8 ±9.4
	M20 × 1.5	452.1 ±22.6	46.1 ±2.30	333.4 ±16.6	524.7 ±26.1	53.5 ±2.66	387.0 ±19.2

1. General Tightening Points (Non-lubricated)
   - All securing points other than the special tightening points.

2. Special Tightening Points (Grease with molybdenum disulfide applied.)
   - Points where particularly necessary due to function.
     Special tightening positions and associated instructions are given in the text.

3. Points where thread-locking compound is used (Three Bond #1324 is applied.)
   Thread-locking compound positions and associated instructions are given in the text.

4. If tightening torque values are provided in this manual, then tightening should be done according to those values.
   (This indicates that the tightening torque differs from the values given in this table.)

5. In order to tighten bolts and nuts evenly, they should be tightened alternately top, bottom, left, right.

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TROUBLESHOOTING

The following items are a list of all the problems that might occur individually, but in actual practice, 2 or 3 of these problems might occur simultaneously to compound the trouble. It is therefore desirable to proceed so that the causes can be eliminated one at a time.

Symptom	Probable Causes	Remedy
Oil leaks from spool seal.	• Seal is scratched or the seal lip is worn due to long use.	• Replace with a new part.
	• Spool's seal sliding portion was damaged by some external cause (bruise, scratch, etc.).	• Repair or replace the spool.
	• Seal bulged out and the cover was installed in a warped state.	• Return to the correct shape and check for eccentric wear of the seal lip.
	• Paint adhered to the sliding portion of the spool's seal portion during painting.	• Remove paint with paint thinner or remove it mechanically. However, at this time, be careful not to damage the spool surface or the seal lip.
	• Tank circuit's pressure became high and exceeded the pressure level that the seal was capable of withstanding.	• Eliminate the factors causing excessive flow resistance.
Spool's sliding is not smooth.	• Foreign matter is biting into the spool's sliding surface.	• Overhaul and repair or replace.
	• Oil film between the spool and body disappears due to abnormally high oil temperature.	• Use some method to lower the oil temperature or if the relief valve is operating frequently, investigate the cause and reduce the frequency.
	• Lubrication is improper due to deteriorating oil.	• This could be alleviated by simply replacing the hydraulic oil, or it could require an overhaul of the circuit.
	• Spool is worn from long use or due to pressure bearing on one side only.	• Check the spool's diameter and consider the necessity of replacement.
	• Spool is bent from externally applied pressure.	• Check the spool's straightness and other factors, then repair or replace.
	• Entire valve is strained due to strain in the installation face.	• Loosen the installation bolts, then cut the installation face and edge and check.
	• Valve was used at a pressure or a flow volume which was out of specification.	• In the case of pressure, check with a pressure gauge. In the case of flow volume, check by the actuator's speed of movement and the capacity.
	• Bolts used to assemble the valve were tightened excessively.	• Check if the assembly bolts are tightened to the specified torque. If the torque deviates markedly from the specified torque, tighten them again.
	• Oil is accumulating in the cover (the side with a spring or a detent) opposite the side where the spool operates.	• The spool is leaking oil, so when the spool moves, oil leaks from the cover. After confirming this, replace the seal.
Cylinder drops while shifting to a lift operation.	• Foreign matter is biting into the load check valve seat or large scratches were made by foreign matter biting into the valve's seat previously.	• Disassemble and check, then overhaul or replace.

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Removing the Radiator and Oil Cooler

1. Remove the engine hood, and side cover.
   ☞ "Removing the Covers"

2. Remove the counterweight.
   ☞ "Removing the Upper Frame"

3. Tilt up the floor frame.

4. Loosen the drain valve (1) to drain the engine coolant.
   • Coolant volume: Approx. 8.4 L

5. Disconnect the coolant drain hose (2).

6. Remove the air hose (3).

7. Disconnect the hose from sub tank (4).

8. Disconnect the electric wiring and fuel hoses from the feed pump (5).

9. Disconnect the hoses (6) and (7) from the water separator (8).

10. Remove the plate (9) and the bracket (10) together with the feed pump and the sub tank.

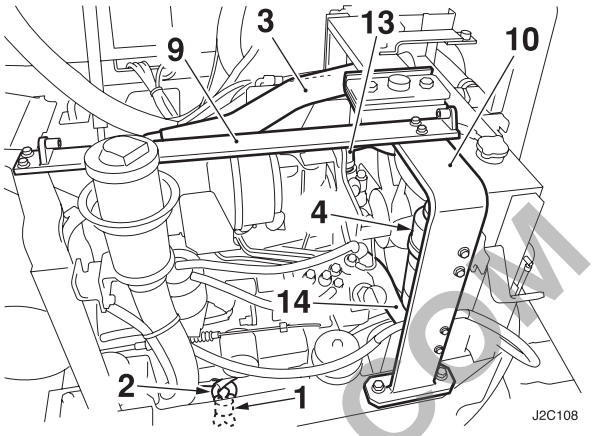
11. <Air Conditioner>
    Remove the condenser (11) and receiver-dryer (12).
    • Do not loosen the hoses.

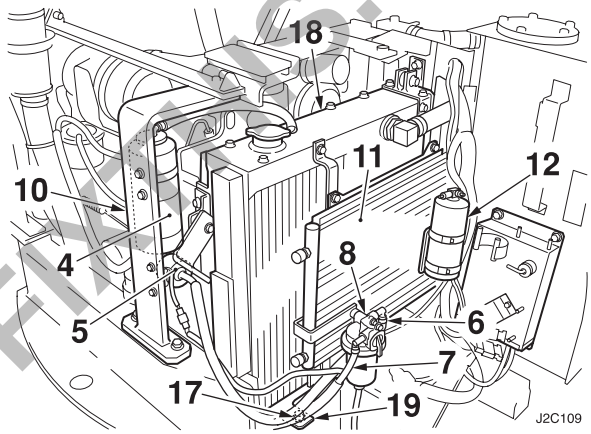
12. Disconnect the radiator hoses (13) and (14).

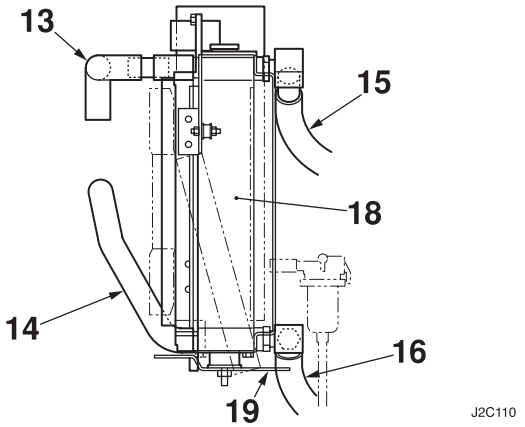
13. Disconnect the 2 oil cooler hoses (15) and (16).
    • Prepare a plate to catch drips of the hydraulic oil.

14. Remove the bracket tightening bolts (17).

15. Suspend the radiator and oil cooler (18) together with the bracket (19), and remove them carefully without touching other parts.
    • Slide them to the front to prevent the shroud from hitting the cooling fan.







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CONTENTS

Safety Precautions....3
Cautions During Disassembly and Assembly....9
Cautions During Removal and Installation of The Hydraulic Units....9
Cautions During Removal and Installation of Piping....10
Handling of Seals....10
Tightening Torques....11

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SAFETY PRECAUTIONS

SAFETY ALERT SYMBOL

This symbol means Attention! Be Alert! Your Safety Is Involved.
The message that follows the symbol contains important information about safety.
Read and understand the message to avoid personal injury or death.

■ SIGNAL WORDS

Safety messages appearing in this manual and on machine decals are identified by the words "DANGER", "WARNING" and "CAUTION". These signal words mean the following:

⚠ DANGER	⚠ WARNING	⚠ CAUTION
The word "DANGER" indicates an imminently hazardous situation which, if not avoided, can result in serious injury or death.	The word "WARNING" indicates a potentially hazardous situation which, if not avoided, could result in serious injury or death.	The word "CAUTION" indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

IMPORTANT: The word "IMPORTANT" is used to alert against operators and maintenance personnel about situations which can result in possible damage to the machine and its components.

This manual is intended for trained and qualified personnel only. Warnings or cautions described in this manual do not necessarily cover all safety measures. For maintenance work, each person must take adequate safety precautions against possible hazards present in the respective working environment.

Observe all safety rules

- Operation, inspection and maintenance of this machine must be performed only by a trained and qualified person.
- All rules, regulations, precautions and safety procedures must be understood and followed when performing operation, inspection and maintenance of this machine.
- Do not perform any operation, inspection and maintenance of this machine when under the adverse influence of alcohol, drugs, medication, fatigue, or insufficient sleep.


E3A040

Wear appropriate clothing and personal protective equipment

- Do not wear loose clothing or any accessory that can catch on controls or in moving parts.
- Do not wear oily or fuel stained clothing that can catch fire.
- Wear a hard hat, safety shoes, safety glasses, filter mask, heavy gloves, ear protection and other protective equipment as required by job conditions. Wear required appropriate equipment such as safety glasses and filter mask when using grinders, hammers or compressed air, as metal fragments or other objects can fly and cause serious personal injury.
- Use hearing protection when operating the machine. Loud prolonged noise can cause hearing impairments, even the total loss of hearing.

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