2-1. Specifications

Main specifications of machine

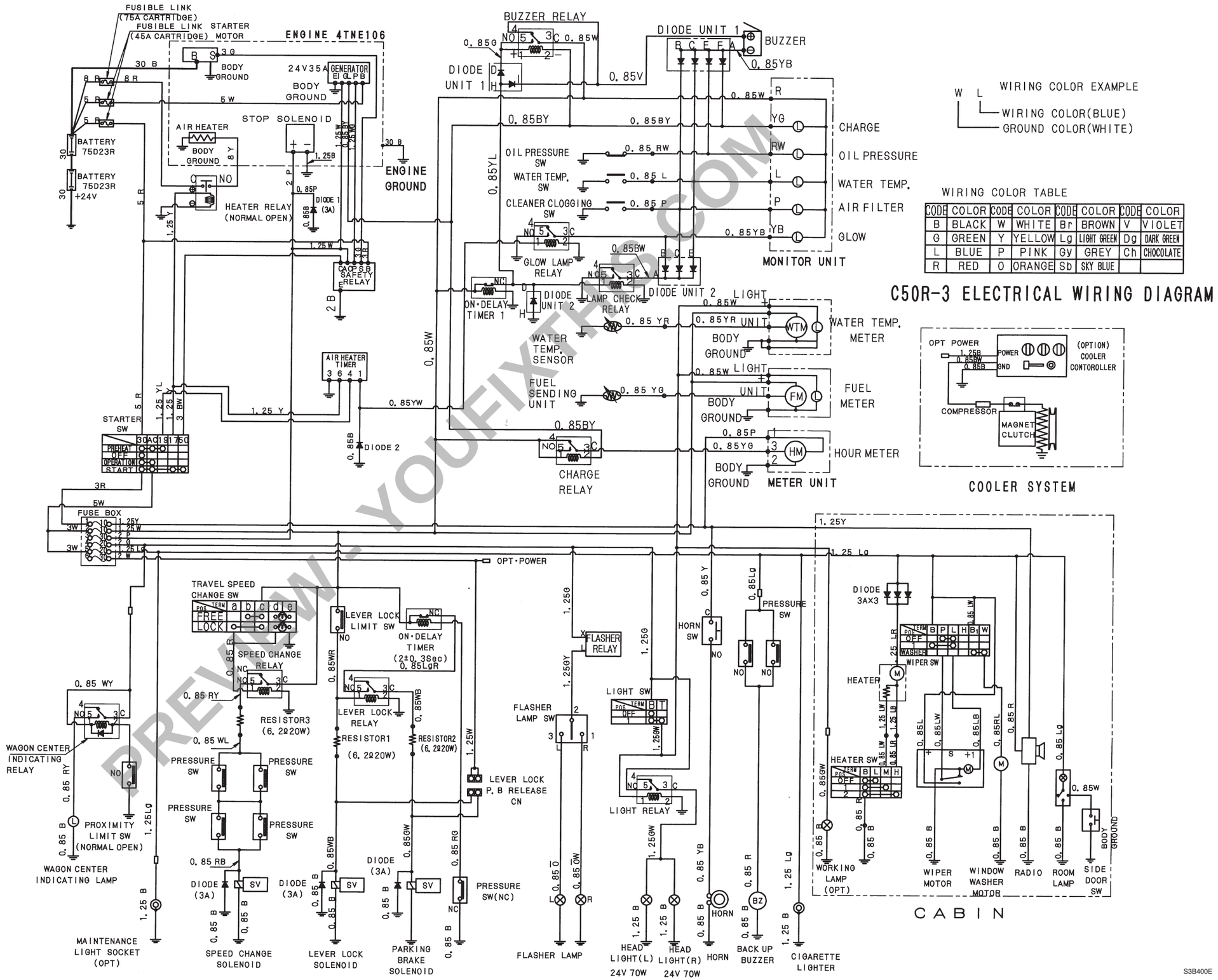
Item		Unit	3-side flaps wagon		Scoop-end wagon		Swing wagon	
			Canopy	Cabin	Canopy	Cabin	Canopy	Cabin
Dimensions/Weight								
	Overall length	in. (mm)	178.74 (4540)				183.07 (4650)	
	Overall width	in. (mm)	78.74 (2000)					
	Overall height	in. (mm)	105.32 (2675)	105.51 (2680)	105.32 (2675)	105.51 (2680)	105.32 (2675)	105.51 (2680)
	Tumbler center distance	in. (mm)	125.59 (3190)					

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2-4. Electrical Circuit Diagram



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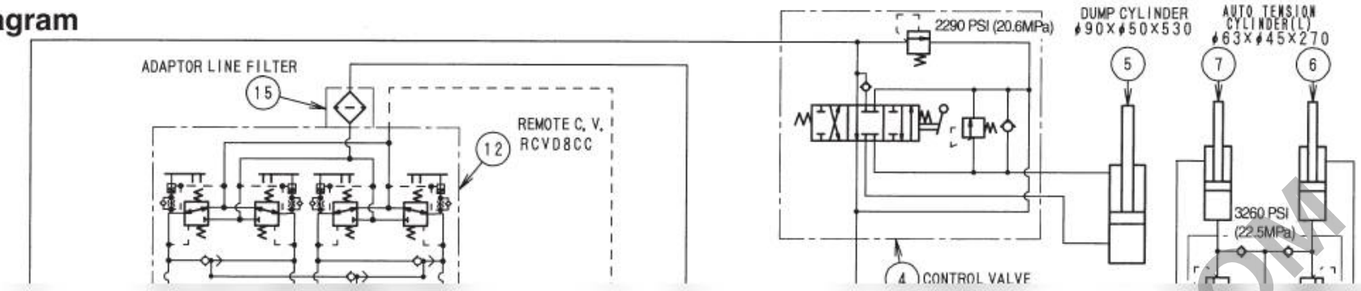
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2-3. Hydraulic Circuit Diagram

3-side flaps wagon model

Scoop-end wagon model



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3-7. Tightening Torque Table

3-7-1. Tightening Torque for Bolts and Nuts for Vehicle

1) General tightening points

Item	Head width (b) (mm)	Size (a) × Pitch (mm) (mm)	Tightening torque	
			ft·lbf	N·m
	10	M6 × 1.0	7.2 ±0.4	9.8 ±0.5
	12, 13	M8 × 1.25	16.6 ±0.8	22.6 ±1.1



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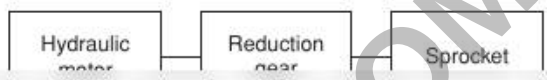
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5-1. Components and Names

5-2. Power Transmission Mechanism

The engine drives the hydraulic pump, and its discharge oil drives the hydraulic motor. The closed circuit is configured so that the return oil from the hydraulic motor directly goes back to the hydraulic pump.



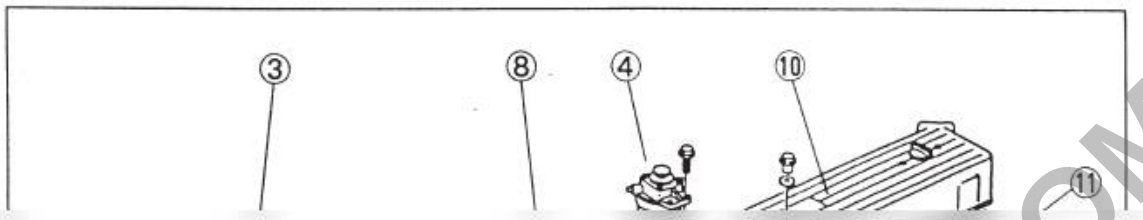
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4-2-2. Cylinder Head

(1) Components



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3. Disassembly and assembly

1) Precautions in disassembly and assembly

1. Carry out disassembly and assembly operations in a clean place and provide clean containers to place the disassembled parts in.
2. Before disassembly, clean around the ports and remove the paint from each joint using a wire brush.
3. Clean each of the disassembled parts with a cleaning oil.
4. Make match marks on each part so that they will be assembled in the same positions when assembled.
5. Replace all seals with new ones each time the unit is disassembled, coating them lightly with grease.
6. Check each part to make sure there is no abnormal wear or seizing and use sandpaper, etc. to remove any burrs, sharp edges, etc.
7. Adjust adjustment screws only when required.

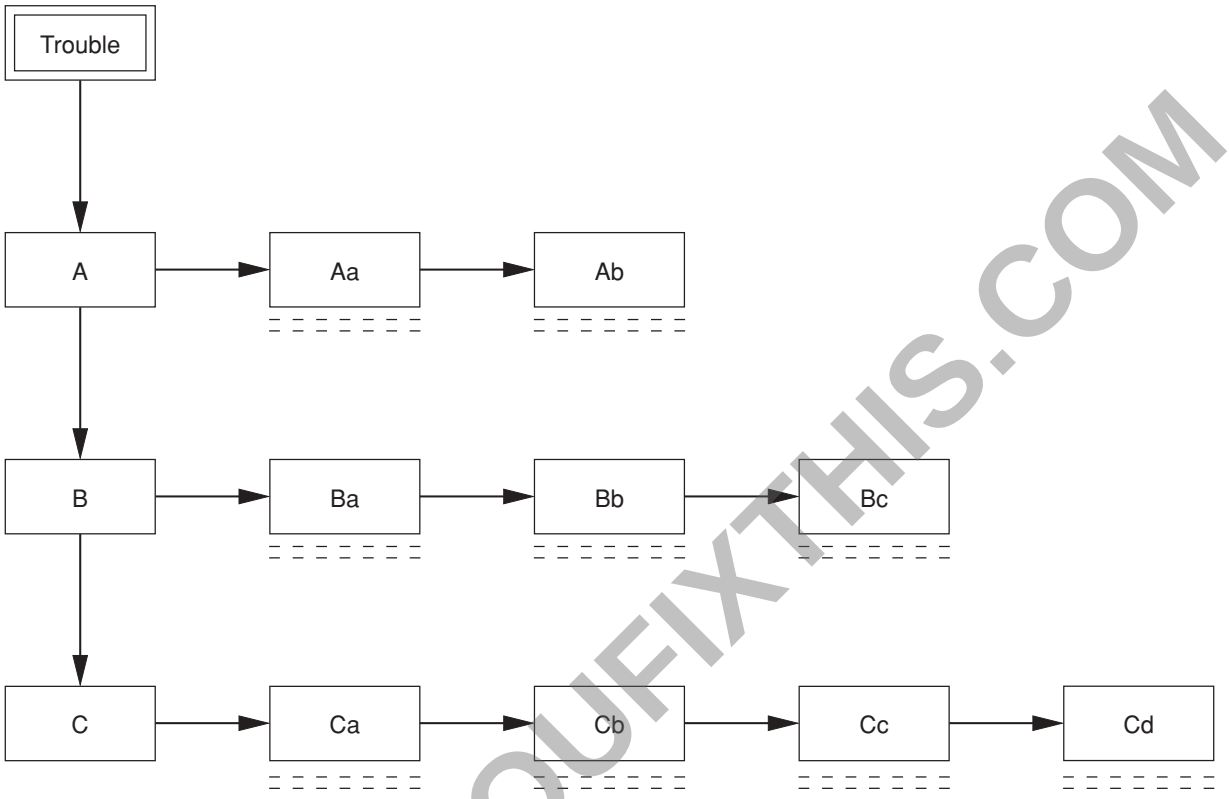
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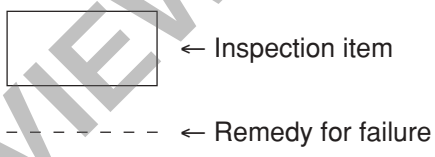
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10-2. Troubleshooting

How to use the charts



Factors related to the trouble are enumerated in the columns and instructions for corrective procedures are given below. It is recommended that the troubles be inspected and corrected one by one according to the chart.



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8-1. List of Periodic Inspection and Servicing

◇ : Check ○ : Supply ● : Replace □ : Adjust (clean) ■ : Oil & grease

Check & service items			Daily	Every 50	Every 100	Every 250	Every 500	Every 1000 hrs
General	Check falling off, breakage of parts		◇					
	Check loosened bolts & nuts, retighten		◇					
	Check engine condition		◇					
	Clean		□					
Lube oil	*Swing gear case oil	Check, resupply				○		
		Replace			●1st time			●
	Travel reduction gear oil	Check, resupply				○		
		Replace			●1st time		●	
	*Transmission oil	Check, resupply	◇					
		Replace			●1st time			●
	*Differential gear oil	Check, resupply			◇			
		Replace			●1st time			●
Hydraulic system	Hydraulic oil	Check, resupply	◇					
		Replace						●
	Clean suction filter					□1st time		□
	Replace return filter			● 1st time				●
	Replace line filter					● 1st time	●	
	Check for abnormality of hydraulic pump		◇					
Grease	Check grease-up positions, grease		■					
	Greasing the swing gears and the swing bearings					■		
Undercarriage	Check, adjust track tension		◇					
	*Check air pressure, wear, flaw in tyres		◇					
Steering equipment	Check performance, play of steering lever		◇					
	Check performance, play of travel lever		◇					
	*Check performance of speed change lever		◇					
	*Check performance of forward/reverse pedal		◇					
	*Check performance, play of steering wheel		◇					
	*Brake pedal	Stroke	◇					
		Performance	◇					
	*Parking brake	Stroke	◇					
		Performance	◇					
	Check performance of accel. lever		◇					
Electric equipment	Check front & work lights, horn		◇					
	Check hourmeter function		◇					
	Check function of change, oil and pilot lamps		◇					
	Check wire breakage, short-circuits, loosened terminals retighten		◇					
	Check, resupply battery fluid		◇					
	Check specific gravity of electrolyte						□As required	
	Check function of OK monitor		◇					

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9-1. Fuel, Lube Oil and Grease Recommended

Item	Recommended type		Capacity	Refill
Fuel	Diesel light oil		20.6 Gals. (78 L)	——
Engine oil	Engine oil SAE10W–30 (Class CD)		14.8 Qts. (14 L)	
Hydraulic oil	Anti-wear hydraulic oil ISO VG46		15.05 Gals. (57 L)	9.24 Gals. (35 L)
Travel reduction gear oil	Gear oil SAE90 (GL–4)		2.75 Qts. (2.6 L) each	
Idler	*Mobile gear oil SHC680		5.75 fl. oz. (170 mL)	
Carrier roller			1.52 to 1.69 fl. oz. (45 to 50 mL)	
Track roller			5.41 fl. oz. (160 mL)	
Cooling water	Soft-water (drinking water)	Radiator	10.36 Qts. (9.8 L)	
		Sub tank	1.06 Qts. (1 L)	
Antifreeze	Long-life coolant LLC antifreeze (Yanmar genuine)		See the table below.	
Grease	Multipurpose EP (Extreme pressure) grease		——	

Note: ∗; In order to prevent bearings from being damaged and secure their durability, do not use other oil than specified in the table.

Table of mixing ratio of anti-freeze to water

Lowest temperature	°F (°C)	23 (–5)	14 (–10)	5 (–15)	–4 (–20)	–13 (–25)	–22 (–30)	–31 (–35)	–40 (–40)
Amount of anti-freeze	Qts. (L)	1.69 (1.6)	2.85 (2.7)	3.49 (3.3)	4.02 (3.8)	4.55 (4.3)	5.18 (4.9)	5.71 (5.4)	6.24 (5.9)
Amount of water	Qts. (L)	9.72 (9.2)	8.56 (8.1)	7.93 (7.5)	7.40 (7.0)	6.87 (6.5)	6.24 (5.9)	5.71 (5.4)	5.18 (4.9)

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1-1. Correct Work

"Correct Work" means to complete the operation accurately in the quickest time while following the procedures and methods described for appropriate operations.
It is important to review and check the type of service (the components to be inspected, adjusted or disassembled, and procedures to be used), tools, instruments, materials and lubricants to be used, and the precautions to be taken before starting any operation.

1-2. Safety Precautions

Follow safety rules at your workplace

- The operation and servicing of this machine is restricted to qualified persons.
- When operating or servicing the machine, follow all the safety rules, precautions and procedures.
- Any work performed by a team or with a signal person should be conducted in accordance with signals agreed on beforehand.

Wear proper clothing and safety items

- Do not wear loose clothing or jewelry that can be caught on the control levers and other machine parts. Also avoid wearing working clothes stained with oil as they can ignite.
- Be sure to wear a helmet, safety goggles, safety shoes, a mask, gloves and other protective items, as appropriate. Take particular precautions when generating metal debris, when striking metal objects with a hammer or when cleaning components with compressed air.
  Also make sure there are no persons near the machine.


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Use and inspect appropriate tools

- Using damaged or worn tools or using tools inappropriate for the required application is very dangerous, and may also cause damage to the machine. Make sure to use the tools that are appropriate for the specific job.
- Inspect the facilities and tools, especially hoisting and rigging tools, in advance.

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Be sure to read carefully and fully understand the instructions and precautions given in this manual and on the labels on the machine before you start working.

The degrees of hazards caused by improper service are represented by the following warning words and symbols:

⚠ DANGER Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury. This warning is used in safety messages and safety labels, and the necessary precautions are described.

[redacted]

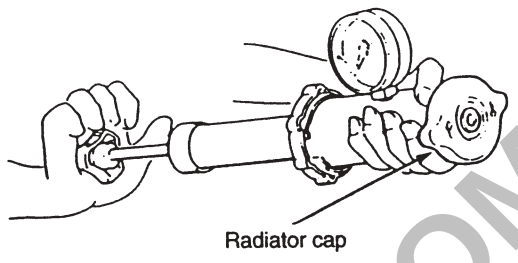
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(2) Radiator cap inspection

Install the radiator cap on the cap tester. Set the tester pressure to 0.9±0.15 kgf/cm² and see that the cap is opened.
If the cap does not open, replace the cap since it is abnormal.

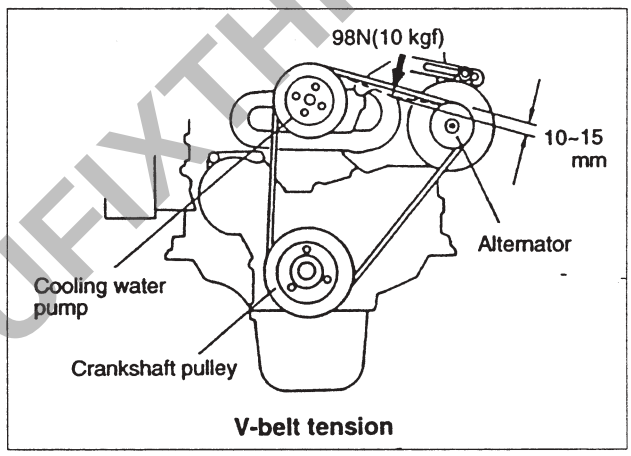


Radiator cap inspection

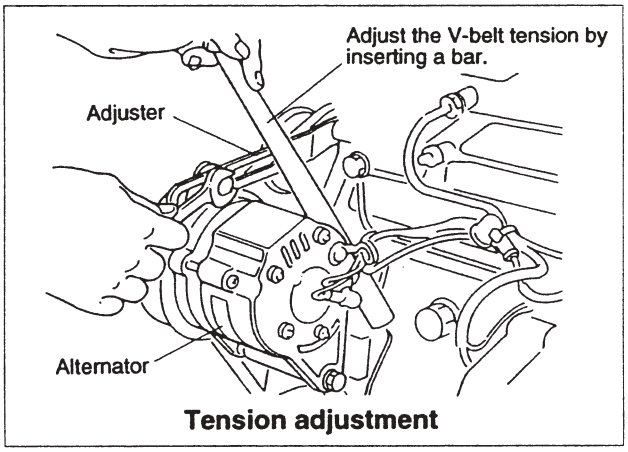
4-1-4. Fan Belt Tension Inspection and Adjustment

Standard: 10~15 mm/98N (10 kgf)
(7~9 mm in initial state)

Push the center of the V belt between the alternator and cooling water with a finger. The V belt tension is normal if the deflection is 10 to 15 mm. If not, adjust the V belt tension by the alternator adjuster.



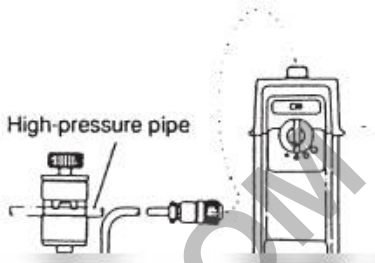
V-belt tension



Tension adjustment

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No.	Instrument name		Application	Illustration
16	Speedometer	Fuel high-pressure pipe clamp type	Measures the revolution regardless of the center or periphery of the revolving object.	

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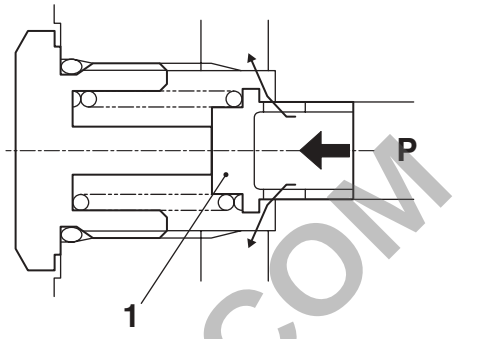
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3) Low-pressure relief valve

This valve releases the oil in the closed circuit from the flushing valve to the tank to keep the charge pressure of the charge pump constant.

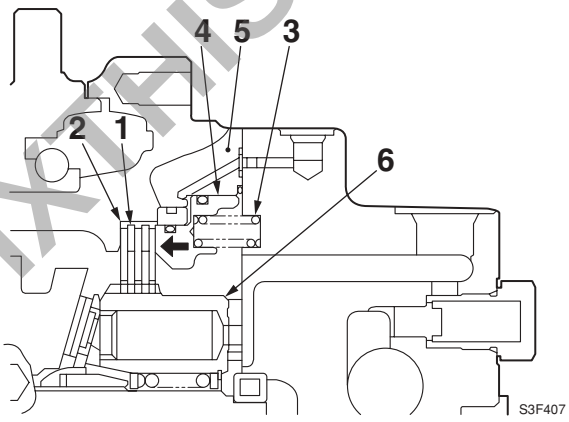
When the pressure at the port P becomes higher than the stipulated value, the poppet (1) moves to the left, allowing the oil from the port P to flow into the tank port.



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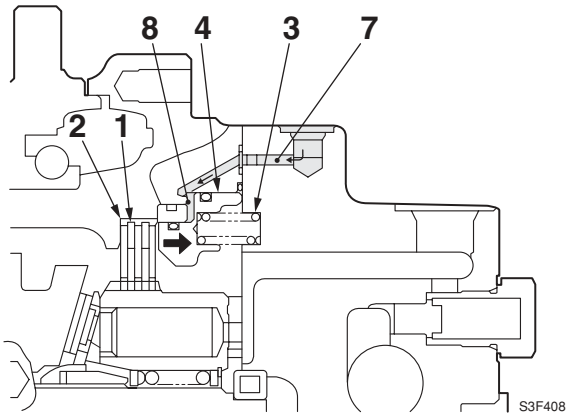
4) Parking brake

Friction disks (1) and disks (2) are connected via a spline. Friction disks (1) and disks (2) are held down against flange holder (5) by spring (3) with the power of the spring passing through brake piston (4). The friction between these disks generates brake torque and prevents cylinder block (6) from rotating.



S3F407

When hydraulic oil reaches the motor it flows out of release port (7) of the parking brake until it reaches brake piston chamber (8) and overcomes the force of the spring and causes brake piston (4) to move to the right. This opens up a space between friction disks (1) and (2), resulting in the parking brake being released. When the motor stops, oil stops running to release port (7) of the parking brake, resulting in the force of spring (3) causing the parking brake to engage.



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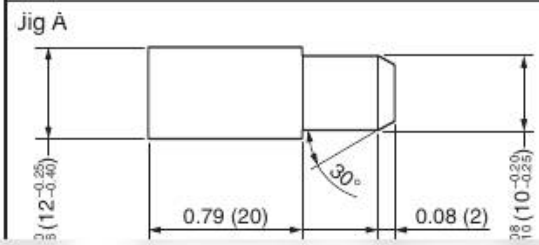
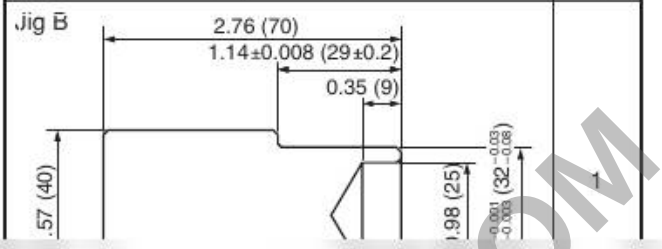
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3. Disassembly and assembly

1) Table of special tools

Unit: in. (mm)

Name, Dimension	Q'ty
Jig A 	1
Jig B 	1

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(15) Install the bearing's inner ring on the shaft (2).

(16) Press-fit the half of the floating seal set (10) into the bracket (6).
- Refer to Section "Disassembling and reassembling the floating seal" for press-fitting of the floating seal.

(17) Apply molybdenum disulfide grease to the spline section of the shaft (2).

(18) Install the track roller (1) on the shaft.

(19) Install the O-ring (11) on the shaft.

(20) Install the plate (4) on the shaft, and temporarily tighten it with the nut (3).
- Spray grease over the nut bearing surface and the screw section.

(21) Upon completion of the reassembling of one side of the track roller assembly, remove the assembly from the installation jig, and start installing the floating seal, the track roller, the O-ring, the plate, and the nut on the opposite side of the track roller.

(22) Insert the steel bar into the hole of the track roller to prevent the roller from rotating, and tighten it to the stipulated torque.

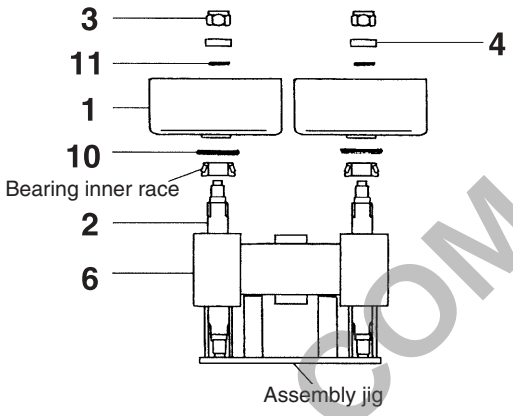
Tightening torque: 217 to 239 ft·lbf (294 to 324 N·m)

(23) Attach the clamp to the track roller, and measure the roller's rotational moment by a spring scale to inspect if the roller rotates smoothly.
- If the rotational moment is outside of the stipulated value or the roller does not rotate smoothly, reassemble again. If this does not work, disassemble the track roller again and replace the spacer.

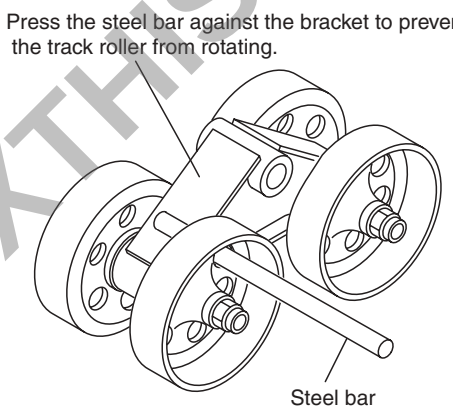
Roller's rotational moment: 28.9 to 43.4 ft·lbf (39 to 59 N·m)

(24) Secure the nut (3) with the setscrew (13).

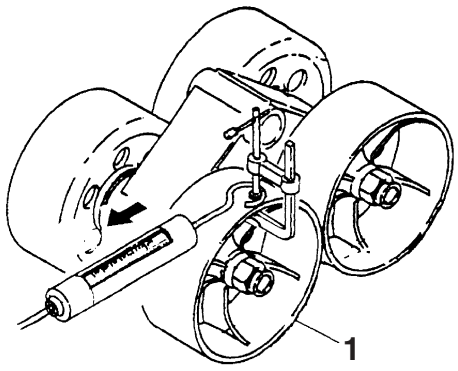
Tightening torque: 8.7 ft·lbf (12 N·m)



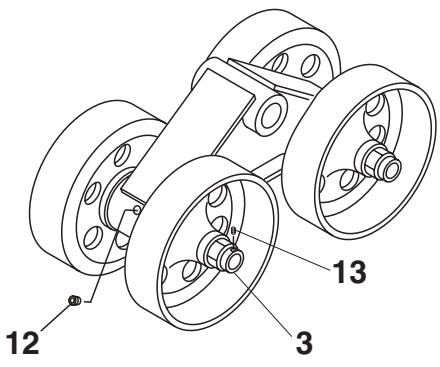
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