WSM

WORKSHOP MANUAL
UTILITY VEHICLE

RTV-X1140



KiSC issued 11, 2015 A

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MECHANISM

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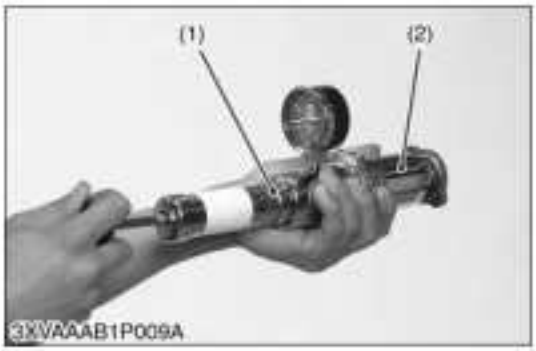
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CAUTION

- **When removing the radiator cap, wait at least ten minutes after the engine has stopped and cooled down. Otherwise, hot water way gush out, scalding nearby people.**

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Radiator Cap Air Leakage

1. Set a radiator tester (1) and an adaptor (2) on the radiator cap.
2. Apply the specified pressure (88 kPa, 0.9 kgf/cm^2, 13 psi), and measure the time for the pressure to fall to 59 kPa (0.6 kgf/cm^2, 9 psi).
3. If the measurement is less than the factory specification, replace the radiator cap.

Pressure falling time	Factory specification	More than 10 seconds for pressure fall from 88 to 59 kPa (from 0.90 to 0.60 kgf/cm^2, from 13 to 8.6 psi)

(1) Radiator Tester (2) Adaptor

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Radiator Water Leakage

1. Pour a specified amount of water into the radiator.
2. Set a radiator tester (1) and an adapter (2) and raise the water pressure to the specified pressure.
3. Check the radiator for water leaks.
4. For water leak from the pinhole, repair with the radiator cement. When water leak is excessive, replace the radiator.

Radiator water leakage test pressure	Factory specification	157 kPa 1.6 kgf/cm^2 23 psi

(1) Radiator Tester (3) Radiator
(2) Adaptor

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Thermostat Valve Opening Temperature

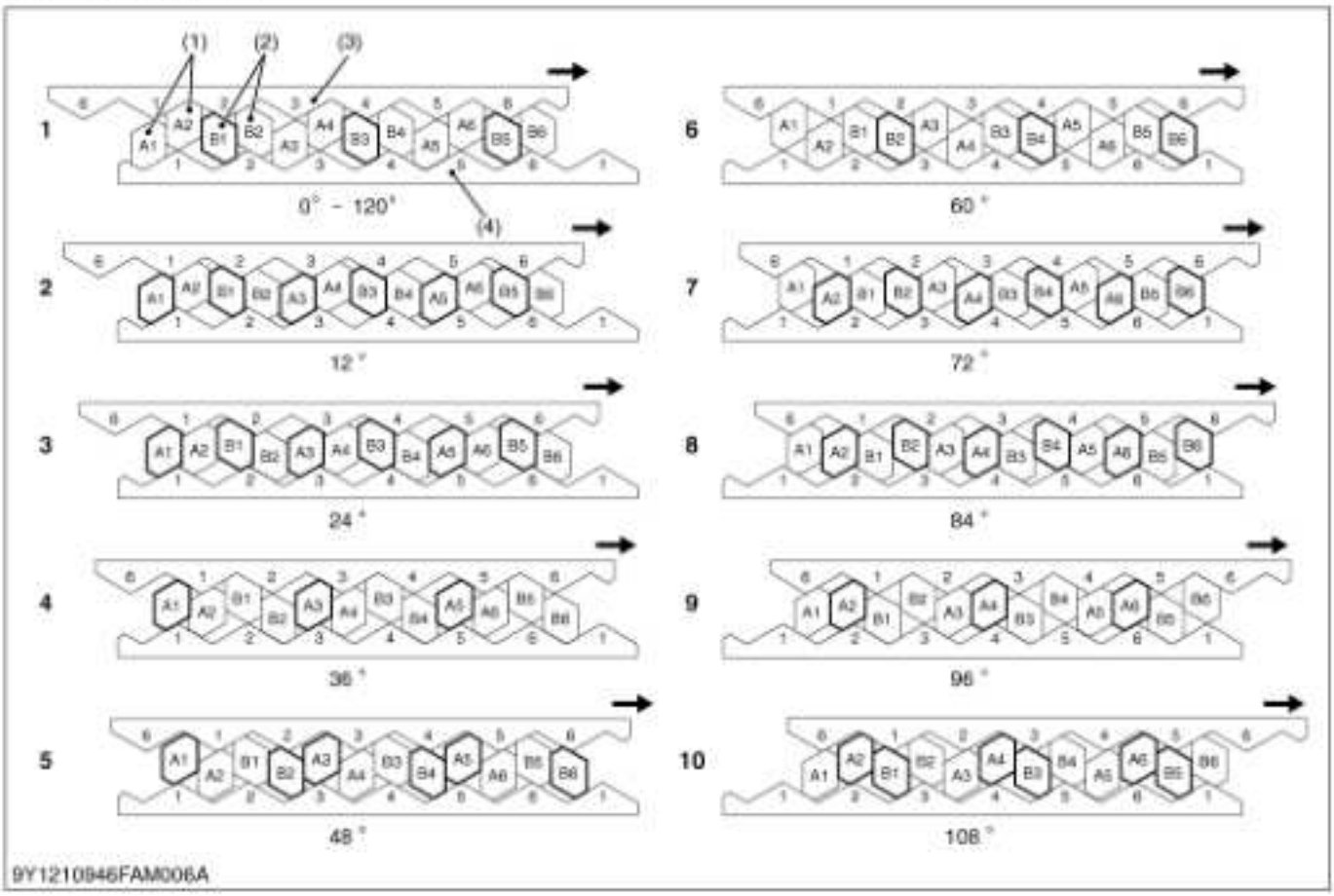
1. Suspend the thermostat in the water by a string with its end inserted between the valve and seat.
2. Heating the water gradually, read the temperature when the valve opens and leaves the string.
3. Continue heating and read the temperature when the valve opens approx. 8.0 mm (0.31 in.).
4. If the measurement is not within the factory specifications, replace the thermostat.

Thermostat's valve opening temperature	Factory specification	80.0 to 84.0 °C 176 to 183 °F
Temperature at which thermostat completely opens	Factory specification	95 °C 203 °F

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(2) Operation



(1) Cam Follower A (2) Cam Follower B (3) Face Cam (Move) (4) Face Cam (Fix)

The two face cams are described linearly and schematically.

This shows the difference in cross sectional shape of the cam followers A (1), B (2).

The cam followers transferring drive power are shown using thicker lines.

This is a figure showing drawings of the outer wheel moved by the face cam (3) 12 degrees each when turning.

Each of the cam followers (1), (2) are hooked into a groove on the differential case and so move in up and down directions.

The cam followers (1), (2) receive power from the differential case and transfer the drive force to the face cam (4) through the contact surface.

During turning, when the upper face cam (3) start to move earlier than the lower face cam (4), each of the cam followers start to move up and down.

When the face cam (3) is offset in order the cam followers slide obliquely providing space to ride over the cam lobes.

Illustrations **"1"** and **"6"** show the instant cam follower A (1) is riding over the cam lobe and the **"6"** cam followers A (1) are going over the upper and lower cam lobes at the same time.

Illustrations **"4"** and **"9"** are the instant that cam follower B (2) is riding over the cam lobe.

The continuous differential motion of from illustration **"1"** to **"10"** make 1 round.

This enables absorbing of the difference in rotation of the left and right wheels.

After straightening out, the cam followers are captured 2 to a space sandwiched between upper and lower cam (4) based on where they are.

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1. TROUBLESHOOTING

Symptom	Probable Cause and Checking Procedure	Solution	Reference Page
All Electrical Equipments Does Not Operate	1. Battery discharged or damaged	Recharge or replace	G-33, 8-S8
	2. Battery positive cable disconnected or improperly connected	Repair or replace	8-S7
	3. Battery negative cable disconnected or improperly connected	Repair or replace	8-S7
	4. Slow blow fuse blown	Replace	G-54
Fuse Blown Frequently	1. Short-circuited	Repair or replace	G-53

BATTERY

Symptom	Probable Cause and Checking Procedure	Solution	Reference Page
Battery Discharges Too Quickly	1. Battery damaged	Replace	8-S8
	2. IC Regulator damaged	Replace	8-S27
	3. Wiring harness disconnected or improperly connected	Repair or replace	–
	4. Alternator fan belt slipping	Adjust tension	G-35

STARTING SYSTEM

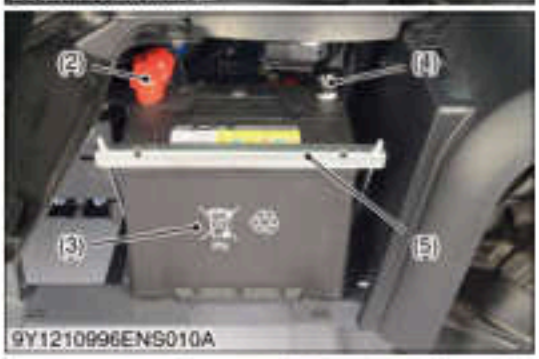
Symptom	Probable Cause and Checking Procedure	Solution	Reference Page
Starter Motor Does Not Work	1. Battery discharged or damaged	Recharge or replace	8-S8
	2. Slow blow fuse blown	Replace	G-54
	3. Safety switch improperly adjusted or damaged	Repair or replace	8-S12
	4. Wiring harness disconnected or improperly connected	Repair or replace	–
	5. Starter motor damaged	Repair or replace	8-S25
	6. Key switch damaged	Repair or replace	8-S9
Engine Does Not Stop When Key Switch is Turned OFF Position	1. Fuse blown (5A)	Replace	G-53
	2. Wiring harness disconnected or improperly connected	Repair or replace	–
	3. Engine stop solenoid damaged	Replace	8-S13
	4. Key switch damaged	Replace	8-S9
Starter Works and Engine Does Not Start	1. Engine stop solenoid damaged	Replace	8-S13

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[2] PREPARATION

(1) Separating Power Steering Controller





Battery

CAUTION

- **When disconnecting the battery cables, disconnect the negative cable from the battery first. When connecting, connect the positive cable to the battery first.**

1. Remove the L.H. side cover (1).
2. Disconnect the negative cable (4) from the battery.
3. Disconnect the positive cable (2) from the battery.
4. Remove the battery stay (5).
5. Remove the battery (3).

(1) L.H. Side Cover
(2) Positive Cable
(3) Battery
(4) Negative Cable
(5) Battery Stay

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Bonnet

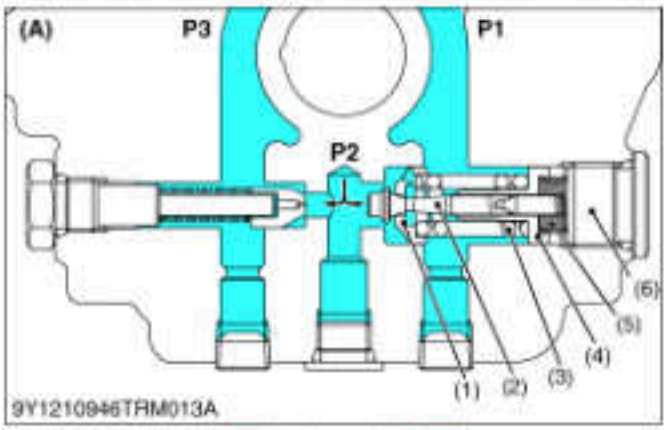
1. Open the bonnet (1).
2. Disconnect the wiring harness clamp and connectors.
3. Remove the damper (3).

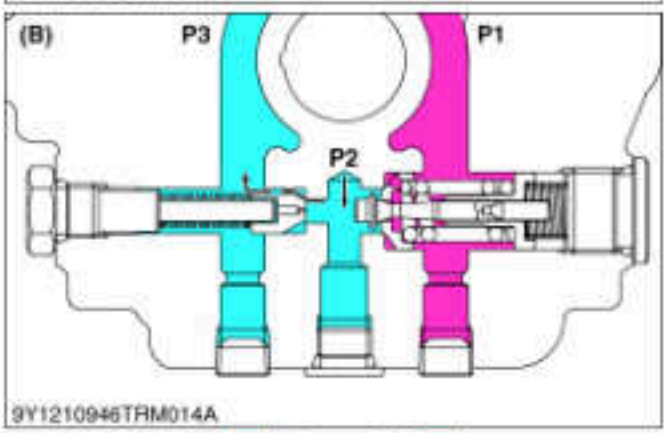
(1) Bonnet
(2) Wiring Harness R.H.
(3) Damper
(4) Wiring Harness L.H.

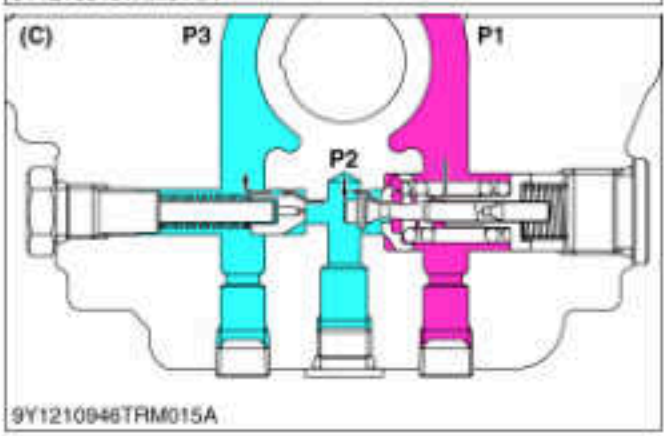
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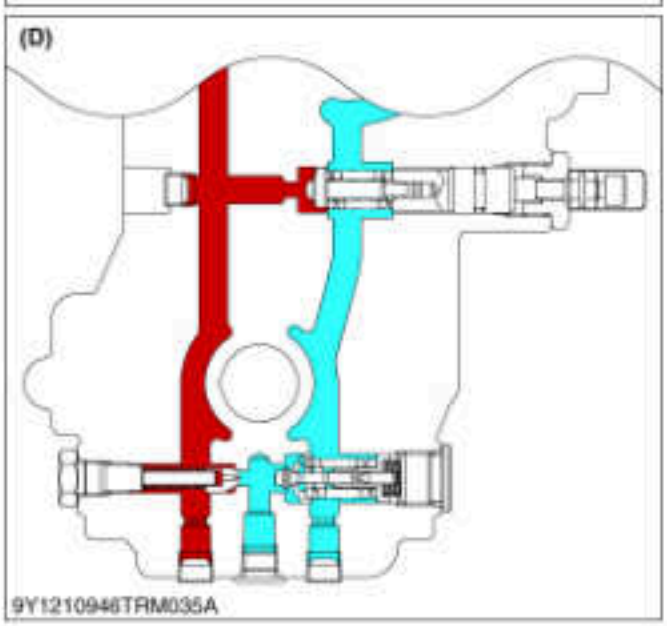
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[D] Check and High Pressure Relief Valve









The cartridge-type check and high-pressure relief valve consists of pressure poppet (2), check valve seat (1), relief valve spring (3), spring guide (4) and check valve spring (5). The spring guide (4) is provided with an anti-rotation, which keeps the threads tight after a pressure has been set.

The valve is used to prevent an overload that would happen at a quick start, sudden stop or even during usual running. This valve doubles as a check valve.

The check and high-pressure relief valves are laid out facing each other as shown in the figure.

When the pressure of both main oil circuit are below the pressure of **P2**, both valves are open and charging oil enters into the main oil circuit through the valves.

At normal operation, the check valve in the high-pressure side is closed and it pushes and opens the another one. An excessive charge flow goes through the charge relief valve into HST housing.

The check and high-pressure relief valve along the high-pressure line serves as a high-pressure relief valve. If the pressure exceeds a high-pressure limit level, the spring (3) force and opens the valve seat that is located between the check valve seat (1) and the pressure poppet (2). Now the flow goes from **P1** to **P2** and **P3**.

If the **P1** pressure drops, the relief valve spring forces the valve seat closed against the pressure. The high-pressure oil at **P1** does not flow to **P2** any longer.

As discussed above, the check and high-pressure relief valve protects engines, pumps, motors, gears and even the machine itself from overload.

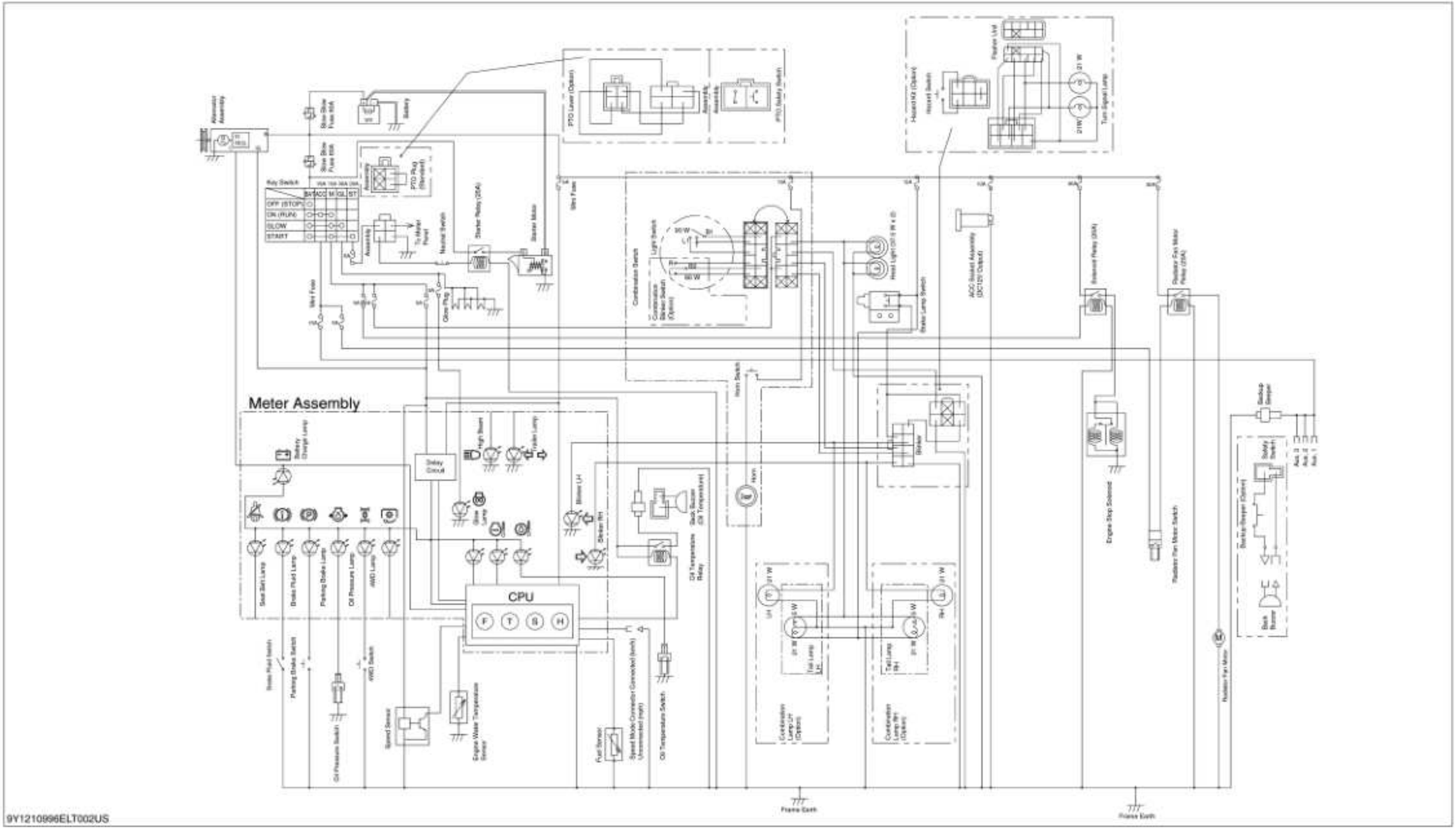
(1) Check Valve Seat
(2) Pressure Poppet
(3) Relief Valve Spring
(4) Spring Guide
(5) Check Valve Spring
(6) Valve Plug

(A) When both Check Valve Activating.
(B) When Check Valve Activating.
(C) When High Pressure Relief Valve Activating. (Travelling Side)
(D) When High Pressure Relief Valve Activating. (Dynamic Brake side)

(To be continued)

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2. ELECTRICAL CIRCUIT



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