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WORKSHOP MANUAL

ZD326-EU



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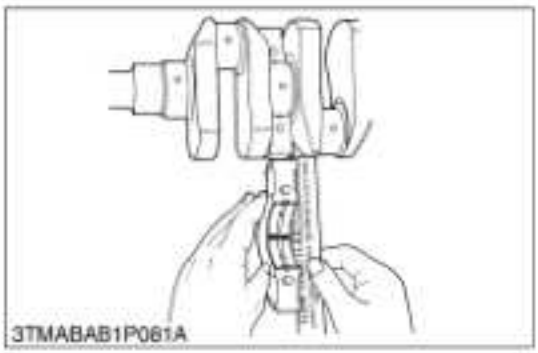
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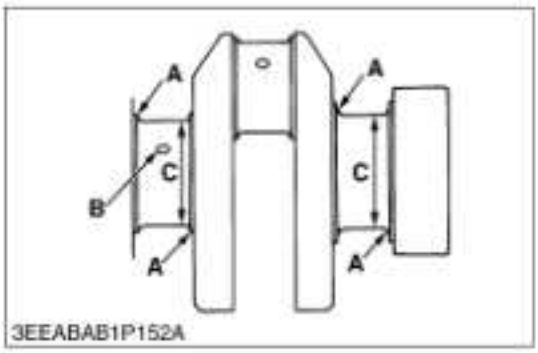
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1. TROUBLESHOOTING

Symptom	Probable Cause	Solution	Reference Page
Engine Does Not Start	No fuel	Fill fuel	G-9
	Air in the fuel system	Bleed	G-41
	Water in the fuel system	Change fuel and repair or replace fuel system	G-18
	Fuel pipe clogged	Clean or replace	G-29
	Fuel filter clogged	Replace	G-29
	Excessively high viscosity of fuel or engine oil at low temperature	Use specified fuel or engine oil	G-9
	Fuel with low cetane number	Use specified fuel	G-10
	Fuel leak due to loose injection pipe retaining nut	Tighten retaining nut	1-S23
	Incorrect injection timing	Adjust	1-S15, 1-S27, 1-S28
	Fuel camshaft worn	Replace	1-S29
	Injection nozzle clogged	Clean or replace	1-S24
	Injection pump malfunctioning	Replace	1-S28
	Seizure of crankshaft, camshaft, piston, cylinder or bearing	Repair or replace	1-S30 to 1-S35
	Compression leak from cylinder	Replace head gasket, tighten cylinder head screw, glow plug and nozzle holder	1-S24 to 1-S25
	Improper valve timing	Correct or replace timing gear	1-S29
	Piston ring and cylinder worn	Replace	1-S32, 1-S46, 1-S50
	Excessive valve clearance	Adjust	1-S11
	Stop solenoid malfunctioning	Replace	1-S23
Starter Does Not Run	Battery discharged	Charge	G-27
	Starter malfunctioning	Repair or replace	1-S23, 5-S9, 5-S18
	Key switch malfunctioning	Replace	5-S19
	Wiring disconnected	Connect	–
Engine Revolution Is Not Smooth	Fuel filter clogged or dirty	Replace	G-29
	Air cleaner clogged	Clean or replace	G-27, G-35
	Fuel leak due to loose injection pipe retaining nut	Tighten retaining nut	1-S23, 1-S27
	Injection pump malfunctioning	Replace	1-S28
	Incorrect nozzle opening pressure	Adjust	1-S17
	Injection nozzle stuck or clogged	Replace	1-S24
	Governor malfunctioning	Repair	1-S27

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Oil Clearance between Crankshaft Journal and Crankshaft Bearing 2 (Crankshaft Bearing 3)

1. Put a strip of plastigage on the center of the journal.
2. Install the bearing case and tighten the baring case screws 1 to the specified torque, and remove the bearing case again.
3. Measure the amount of the flattening with the scale and get the oil clearance.
4. If the clearance exceeds the allowable limit, replace the crankshaft bearing 2 (1) and crankshaft bearing (3).
5. If the same size bearing is useless because of the crankshaft journal wear, replace it with an undersize one referring to the table and figure.

■ **NOTE**

- **Be sure not to move the crankshaft while the bearing case screws are tightened.**

Oil clearance between crankshaft journal and crankshaft bearing 2	Factory specification	0.034 to 0.095 mm 0.0014 to 0.0037 in.
	Allowable limit	0.20 mm 0.0079 in.

Crankshaft journal O.D. (Intermediate)	Factory specification	47.934 to 47.950 mm 1.8872 to 1.8877 in.
Crankshaft bearing 2 I.D.	Factory specification	47.984 to 48.029 mm 1.8892 to 1.8909 in.

Oil clearance between crankshaft journal and crankshaft bearing 3	Factory specification	0.0340 to 0.1030 mm 0.00134 to 0.00406 in.
	Allowable limit	0.20 mm 0.0079 in.

Crankshaft journal O.D. (Flywheel side)	Factory specification	51.921 to 51.940 mm 2.0442 to 2.0448 in.
Crankshaft bearing 3 I.D.	Factory specification	51.974 to 52.024 mm 2.0463 to 2.0481 in.

(Reference)

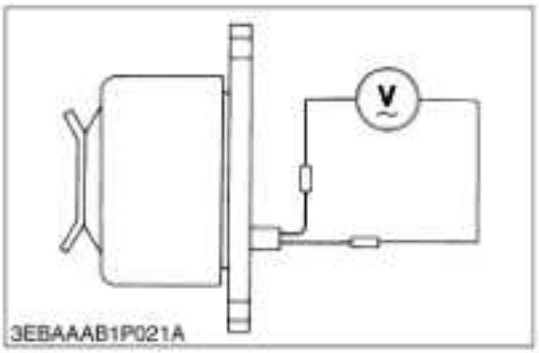
- Undersize dimensions of crankshaft journal

Undersize	0.2 mm 0.0079 in.	0.4 mm 0.016 in.
Dimension **A**	2.3 to 2.7 mm radius 0.091 to 0.10 in. radius	2.3 to 2.7 mm radius 0.091 to 0.10 in. radius
*Dimension **B**	1.0 to 1.5 mm relief 0.040 to 0.059 in. relief	1.0 to 1.5 mm relief 0.040 to 0.059 in. relief
Dimension **C**	47.734 to 47.750 mm dia. 1.8793 to 1.8799 in. dia.	47.534 to 47.550 mm dia. 1.8715 to 1.8720 in. dia.
Dimension **D**	51.721 to 51.740 mm dia. 2.0363 to 2.0370 in. dia.	51.521 to 51.540 mm dia. 2.0284 to 2.0291 in. dia.
The crankshaft journal must be fine-finished to higher than Rmax=0.8-S. *Holes to be de-burred and edges rounded with 1.0 to 1.5 mm (0.040 to 0.059 in.) relief.		

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(9) Charging System

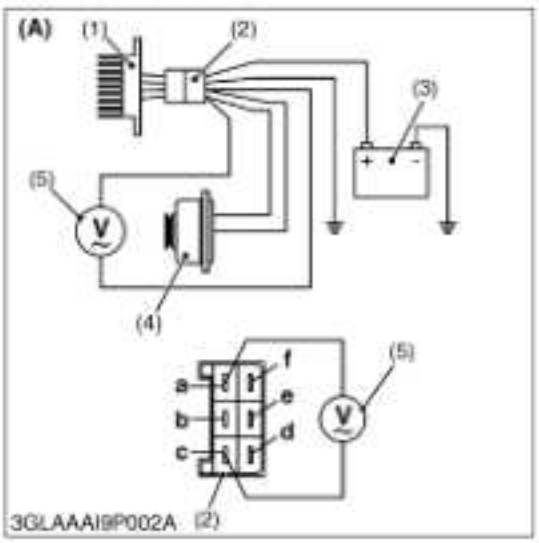


No-load Dynamo Output

1. Disconnect the lead wires from the dynamo.
2. Start the engine and operate the dynamo at the rated speed.
3. Measure the output voltage with a volt meter.
4. If the measurement is not within the specified values, replace the dynamo.

No-load output	Factory specification	AC 20 V or more

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Regulation Voltage

CAUTION

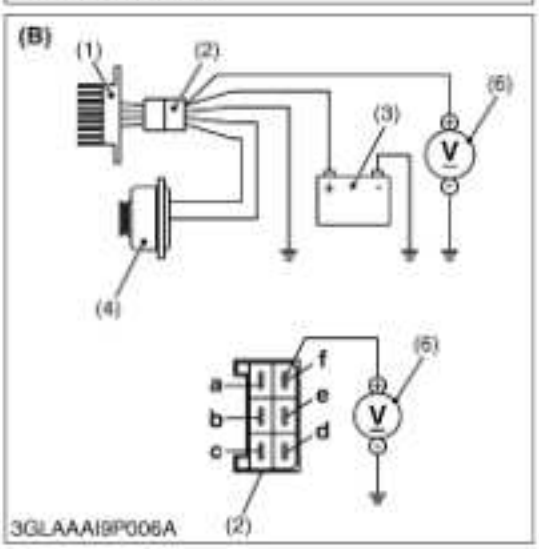
- **To avoid personal injury, do not touch the rotating or hot parts while the engine is running.**

■ **NOTE**

- **Before performing this checking, make sure that the no-load dynamo output is proper.**
- **Complete the charging circuit with fully charged battery.**

1. Rum the engine at the rated speed.
2. Keeping the coupler (2) of regulator being connected, measure the voltage with a volt meter (5) across the terminal blue **"a"** and terminal blue **"c"**. (Refer to figure **(A)**.)
3. If the measurement is not within the specified value, replace the wire harness between the dynamo (4) and regulator (1).
4. If the measurement is within the specified value, measure the voltage with a volt meter (6) across the terminal red **"f"** and chassis. (Refer to figure **(B)**.)
5. If the measurement is not within specified value, replace the regulator (1).

Voltage	Terminal blue **"a"** – Terminal blue **"c"**	AC 20 V or more
	Terminal red **"f"** – Chassis	DC 14 to 15 V



(1) Regulator
(2) Coupler
(3) Battery
(4) Dynamo
(5) Volt Meter (AC)
(6) Volt Meter (DC)

a: Terminal Blue
b: Terminal Black
c: Terminal Blue
d: Terminal Green
e: Terminal Yellow
f: Terminal Red

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PTO Clutch Link, Cylinder Hose, Oil Cooler Pipe and HST Charge Pipes

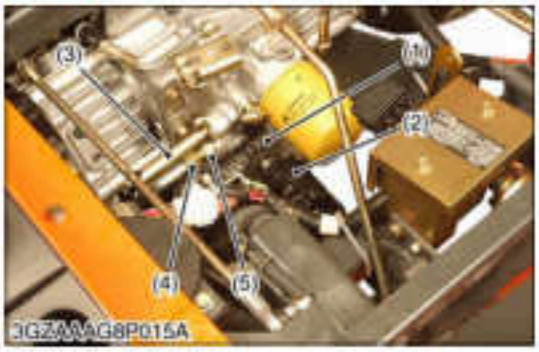
1. Remove the seat and seat base assembly.
2. Remove the PTO clutch link (1).
3. Remove the lift rod (2).
4. Disconnect the oil cooler pipe (3).
5. Remove the HST pipes (4), (6).
6. Disconnect the delivery pipe (5).

(When reassembling)

- Take care not to damage O-ring on the pipes.

(1) PTO Clutch Link
(2) Lift Rod
(3) Oil Cooler Pipe
(4) HST Pipe
(5) Delivery Pipe
(6) HST Pipe

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PTO Clutch Lever, Delivery Pipe, Pipe Fitting, Universal Joint and PTO Shaft Oil Seal

1. Disconnect the universal joint (2).
2. Remove the PTO shaft oil seal (1).
3. Remove the PTO clutch lever stopper, and remove the PTO clutch lever (3).
4. Remove the delivery pipe (4) and pipe fitting (5).

(When reassembling)

- Replace the PTO shaft oil seal (1) with new one.

(1) PTO Shaft Oil Seal
(2) Universal Joint
(3) PTO Clutch Lever
(4) Delivery Pipe
(5) Pipe Fitting

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Center Case Front Cover Assembly

1. Wrap the tape (1) around the PTO shaft to prevent it from damaging internally of the center case front cover.
2. Remove the center case front cover mounting screw, and separate the center case and center case front cover.
3. Remove the plate (2) from hydraulic control valve (3).
4. Remove the center case front cover assembly (4).

(When reassembling)

■ **NOTE**

- **Assemble the plate (2) as shown in the photo. If the plate (2) is mounted onto the valve first, the front cover (4) cannot be mounted onto the transmission center case.**
- **Apply liquid gasket (Three Bond 1208D or equivalent) to joint face of center case and center case front cover.**

Tightening torque	Center case front cover mounting screw	40 to 44 N·m 4.0 to 4.5 kgf·m 29 to 32 lbf·ft

(1) Tape
(2) Plate
(3) Hydraulic Control Valve
(4) Front Cover Assembly

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Adjusting Neutral

CAUTION

To avoid personal injury:

- **Park the machine on a hard and level surface.**
- **If it is necessary to run engine in an enclosed area, use a gas tight exhaust pipe extension to remove the fumes.**
- **Always try to work in a well-ventilated area.**
- **Lift up and secure with jack stands or blocking the rear of the machine, do not run the machine while adjusting.**
- **Do not adjust only one of the following adjustment; exclude "MOTION CONTROL LEVER POSITION". They are relative each other.**

1. Turn key switch to **"OFF"** position.
2. Apply the parking brake.
3. Set the motion control levers (3) to **"Neutral lock"** position.
4. Raise and latch the seat assembly.
5. Remove the connector from the seat safety switch, then **temporarily** install a jumper wire across the terminals in the connector of the wiring harness.
6. Raise the rear of machine and block up so that rear wheel can rotate freely.
7. Remove the motion control lever cover (1).
8. Loosen the lock nuts (5) from the ball joints on the two speed control rods (4).
9. Start the engine.
10. Move the throttle lever to **Max. speed** position.
11. Release the parking brake.
12. Turn the speed control rod (4) to extend the rod length and rotate the rear wheel backward. Then, turn the speed control rod (4) in reverse direction and find a position where the rear wheel stops rotating.
13. Then, turn the speed control rod (4) to shorten the rod length and rotate the rear wheel forward. Then, turn the speed control rod (4) in reverse direction and find a position where the rear wheel stops rotating.
14. After taking steps 12 and 13 above, fix the speed control rod (4) length at the midpoint between the two position. Adjust a speed control rod (4) length to be the center of the HST neutral range.
15. Shut off the machine. Remove jumper wire from wire harness connector and plug connector or into seat safety switch.

■ IMPORTANT

- **The right and left motion control lever (3) can be adjusted independently.**

(1) Motion Control Lever Cover
(2) Guide Plate
(3) Motion Control Lever
(4) Speed Control Rod
(5) Lock Nut

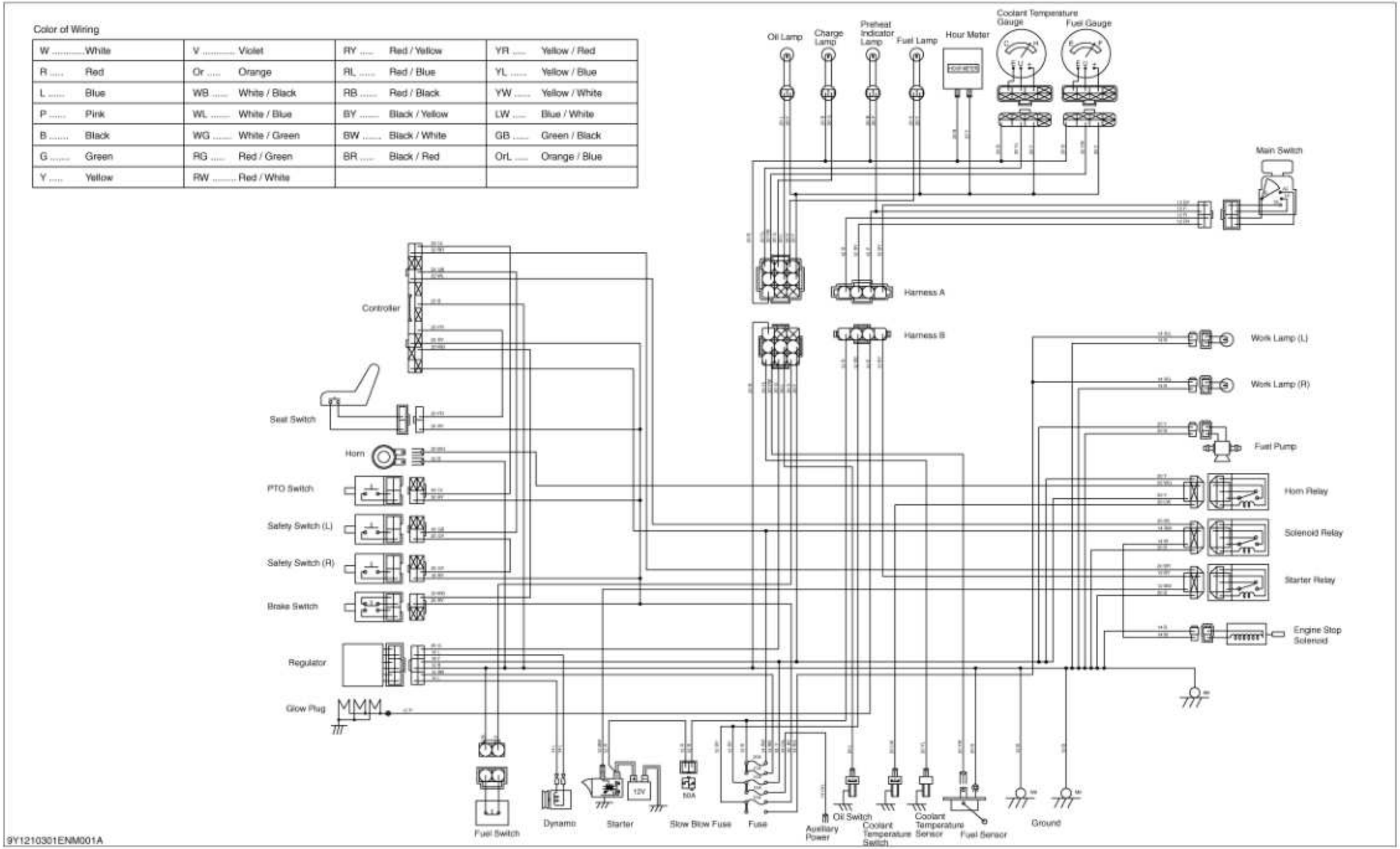
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1. WIRING DIAGRAM

Color of Wiring

W ..... White	V ..... Violet	RY ..... Red / Yellow	YR ..... Yellow / Red
R ..... Red	Or ..... Orange	RL ..... Red / Blue	YL ..... Yellow / Blue
L ..... Blue	WB ..... White / Black	RB ..... Red / Black	YW ..... Yellow / White
P ..... Pink	WL ..... White / Blue	BY ..... Black / Yellow	LW ..... Blue / White
B ..... Black	WG ..... White / Green	BW ..... Black / White	GB ..... Green / Black
G ..... Green	RG ..... Red / Green	BR ..... Black / Red	OrL ..... Orange / Blue
Y ..... Yellow	RW ..... Red / White		



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