WSM

WORKSHOP MANUAL
ZERO TURN MOWER

ZD321,ZD326,ZD331



KiSC issued 04, 2007 A

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GENERAL

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(Reference)

- Undersize dimensions of crankpin

[D782-E2-ZD]

Undersize	0.20 mm 0.0079 in.	0.40 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**	33.759 to 33.775 mm dia. 1.3291 to 1.32973 in. dia.	33.559 to 33.575 mm dia. 1.3213 to 1.3218 in. dia.
{0.8S} The crankpin must be fine-finished to higher than ▽▽▽▽. *Holes to be de-burred and edges rounded with 1.0 to 1.5 mm (0.0394 to 0.0591 in.) relief.		

[D1005-E2-ZD, D1305-E3-ZD]

Undersize	0.20 mm 0.0079 in.	0.40 mm 0.016 in.
Dimension **A**	2.8 to 3.2 mm radius 0.11 to 0.12 in. radius	2.8 to 3.2 mm radius 0.11 to 0.12 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**	39.759 to 39.775 mm dia. 1.5654 to 1.5659 in. dia.	39.559 to 39.575 mm dia. 1.5575 to 1.5580 in. dia.
{0.8-S} The crankpin must be fine-finished to higher than ▽▽▽▽ *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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1. TROUBLESHOOTING

Symptom	Probable Cause	Solution	Reference Page
All Electrical Equipments Do Not Operate	Battery discharged or defective	Recharge or replace	G-26
	Battery positive cable disconnected or improperly connected	Repair or replace	5-S5
	Battery negative cable disconnected or improperly connected	Repair or replace	5-S5
	Slow blow fuse blown	Replace	–
Fuse Blown Frequently	Short-circuited	Repair or replace	G-35

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BATTERY

Battery Discharges Too Quickly	Battery defective	Replace	G-25
	Dynamo defective	Replace	1-S32
	IC regulator defective	Replace	–
	Wiring harness disconnected or improperly connected (between battery positive terminal and regulator **B** terminal)	Repair or replace	–
	Cooling fan belt slipping	Adjust tension	G-27

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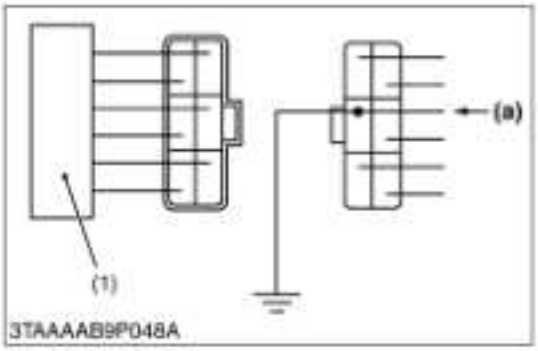
STARTING SYSTEM

Starter Motor Does Not Operate	Battery discharged or defective	Recharge or replace	G-27
	Slow blow fuse blown	Replace	G-35
	Safety switch defective	Replace	5-S10
	Wiring harness disconnected or improperly connected (between main switch **50** terminal and safety switches, between safety switches and starter motor, between battery positive terminal and starter motor)	Repair or replace	–
	Starter motor defective	Repair or replace	5-S19
	Main switch defective	Replace	–
Engine Does Not Stop When Main Switch Is Turned OFF	Fuse blown (20 A)	Replace	G-35
	Wiring harness disconnected or improperly connected (between main switch **AC** terminal and engine stop solenoid)	Repair or replace	–
	Engine stop solenoid defective	Replace	1-S32
	Controller defective	Replace	–
Engine Does Not Start	Engine stop solenoid defective	Replace	1-S32
	Controller defective	Replace	–

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(10) Lighting System



Charge Lamp (Charging Circuit)

1. Remove the under panel.
2. Disconnect the **6P** connector from the regulator after turning the main switch **OFF**.
3. Turn the main switch **ON** and connect a jumper lead from the wiring harness connector terminal (Black) to the chassis.
4. If the charge lamp does not light, the wiring harness or fuse is faulty.

(1) Regulator **(a) From Charge Lamp**

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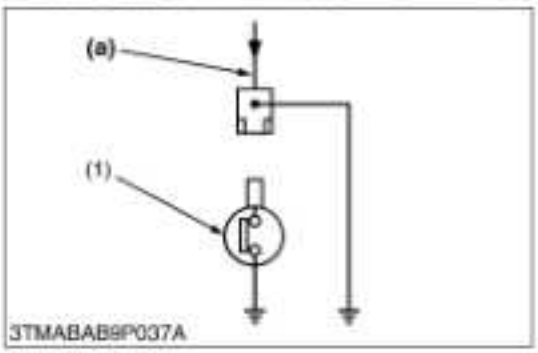


Engine Oil Pressure Lamp

1. Disconnect the lead from the engine oil pressure switch after turning the main switch **OFF**.
2. Turn the main switch **ON** and connect a jumper lead from the lead to the chassis.
3. If the engine oil pressure indicator lamp does not light, the wiring harness is faulty.

(1) Engine Oil Pressure Switch **(a) From Oil Pressure Lamp**

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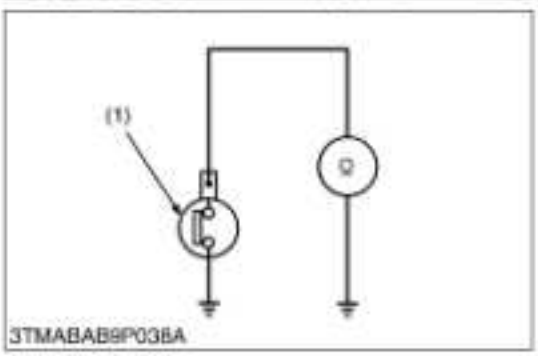
Engine Oil Pressure Switch Continuity

1. Measure the resistance with an ohmmeter across the switch terminal and the chassis.
2. If 0 ohm is not indicated in the normal state, the switch is faulty.
3. If infinity is not indicated at pressure over 4.9 kPa (0.5 kgf/cm^2, 7 psi), the switch is faulty.

Resistance (Switch terminal - Chassis)	In normal state	0 Ω
	At pressure over approx. 4.9 kPa (0.5 kgf/cm^2, 7 psi)	Infinity

(1) Engine Oil Pressure Switch

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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**

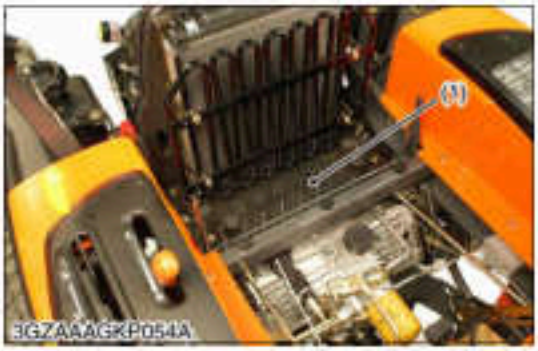
- **Assemble the plate (2) as shown in the photo. If the plate (2) is mounted onto the valve first, the front cover (4) cannot be mounted onto the transmission center case.**
- **Apply liquid gasket (Three Bond 1208D or equivalent) to joint face of center case and center case front cover.**

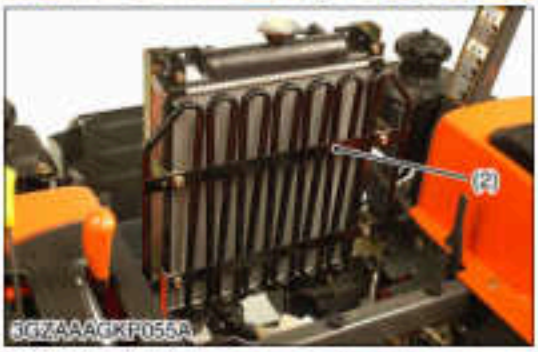
Tightening torque	Center case front cover mounting screw	40 to 44 N·m 4.0 to 4.5 kgf·m 29 to 32 lbf·ft

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

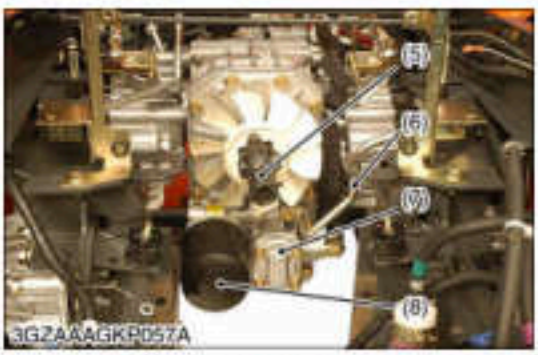
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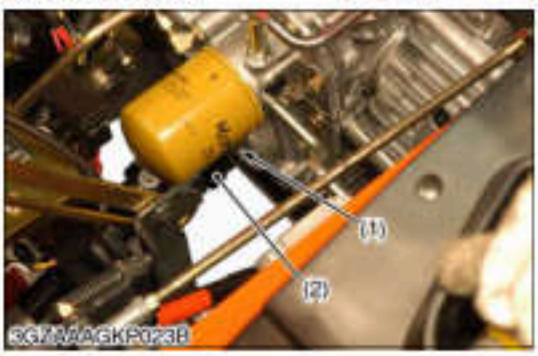
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Oil Cooler, Radiator, Universal Joint and Others

1. Remove the bonnet cover (1) and ROPS connecting plate.
2. Remove the oil cooler (2).
3. Remove the radiator (3).
4. Remove the ROPS connecting plate under (4).
5. Remove the universal joint (5).
6. Remove the oil cooler pipe (6).
7. Remove the hydraulic pump assembly (7).
8. Remove the oil filter cartridge (8).

(When reassembling)

■ **NOTE**

- **Remember to mount the cushion rubber on the oil cooler pipe.**

Tightening torque	ROPS connecting plate mounting screw (M8)	24 to 27 N·m 2.4 to 2.8 kgf·m 18 to 20 lbf·ft
	ROPS connecting plate under mounting screw (M10)	48 to 55 N·m 4.9 to 5.7 kgf·m 36 to 41 lbf·ft
	Hydraulic pump mounting screw	40 to 44 N·m 4.0 to 4.5 kgf·m 29 to 32 lbf·ft

(1) Bonnet Cover
(2) Oil Cooler
(3) Radiator
(4) ROPS Connecting Plate, Under
(5) Universal Joint
(6) Oil Cooler Pipe
(7) Hydraulic Pump Assembly
(8) Oil Filter Cartridge

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Universal Joint and PTO Shaft Oil Seal

1. Disconnect the universal joint (2).
2. Remove the PTO shaft oil seal (1).

(When reassembling)

- Replace the PTO shaft oil seal with new one.

(1) PTO Shaft Oil Seal
(2) Universal Joint

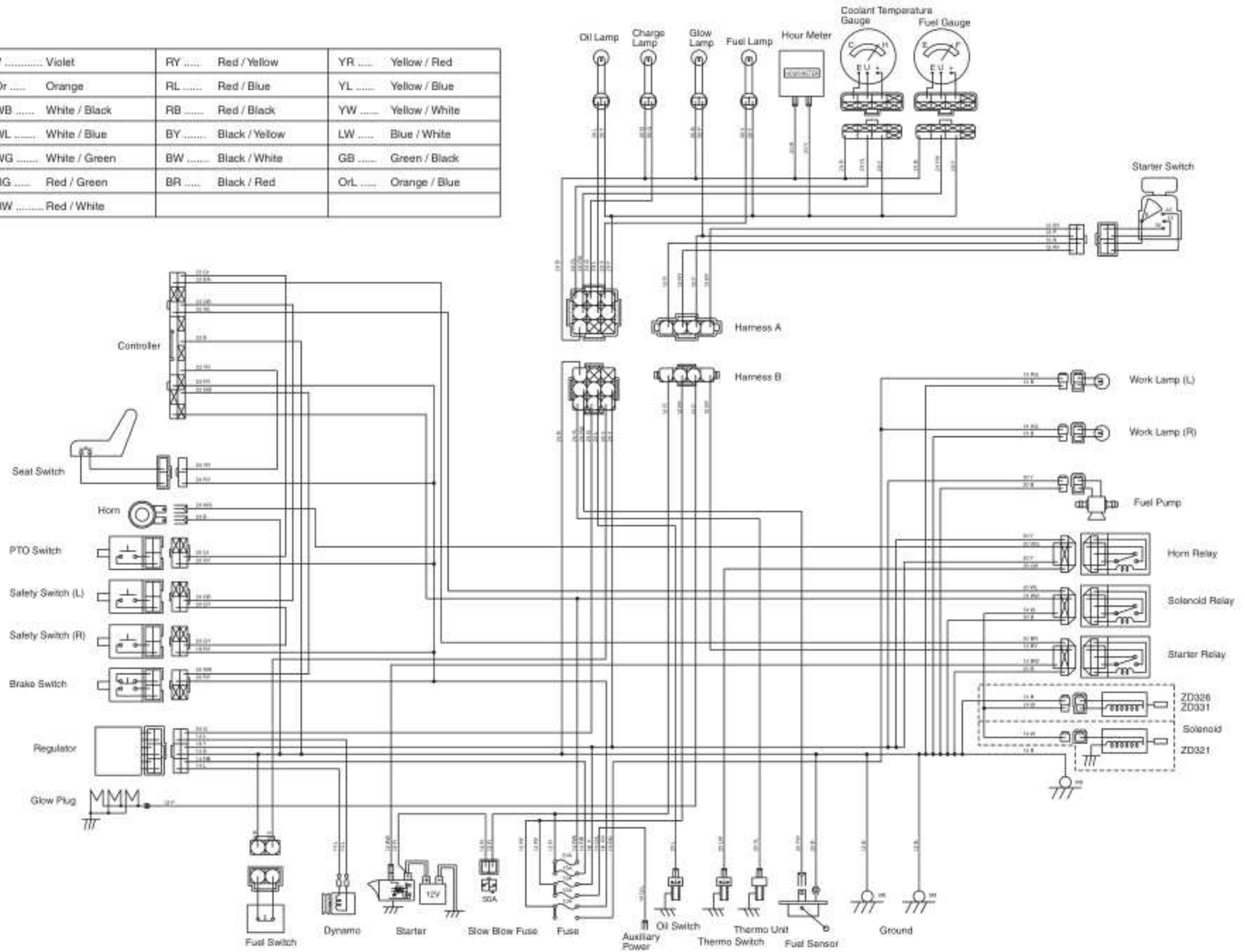
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1. WIRING DIAGRAM

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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