WSM

WORKSHOP MANUAL

ZD1511

Kubota

KiSC issued 11, 2016 A

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Item	Factory specification	Allowable limit
Cylinder Liner I.D.	78.000 to 78.019 mm 3.0709 to 3.0716 in.	78.15 mm 3.077 in.
Cylinder (oversize)	78.500 to 78.519 mm 3.0906 to 3.0912 in.	78.65 mm 3.096 in.

Lubricating system

Item		Factory specification	Allowable limit
Engine oil pressure	At idle speed	68 kPa 0.69 kgf/cm^2 9.9 psi	—
	At rated speed	196 to 441 kPa 2.0 to 4.49 kgf/cm^2 28.5 to 63.9 psi	147 kPa 1.50 kgf/cm^2 21.3 psi
Inner rotor to outer rotor	Clearance	0.060 to 0.18 mm 0.0024 to 0.0071 in.	—
Outer rotor to pump body	Clearance	0.100 to 0.180 mm 0.00394 to 0.00708 in.	—
Inner rotor to cover	Clearance	0.025 to 0.075 mm 0.00099 to 0.0029 in.	—

Cooling system

Item		Factory specification	Allowable limit
Thermostat	Valve opening temperature (at beginning)	69.5 to 72.5 °C 157.1 to 162.5 °F	—
	Valve opening temperature (opened completely)	85 °C 185 °F	—
Radiator	Water tightness	No leak at specified pressure	—
Radiator cap	Air leakage	10 seconds or more 88 → 59 kPa 0.89 → 0.61 kgf/cm^2 12 → 8.6 psi	—
Fan belt	Tension	7 to 9 mm / 98 N 0.28 to 0.35 in. / 98 N (10 kgf, 22 lbf)	—

Fuel system

Item		Factory specification	Allowable limit
Injection pump	Injection timing (3000 min^{-1}(rpm))	0.2837 to 0.3097 rad (16.25 to 17.75°) before T.D.C	—
Pump element	Fuel tightness	—	13.73 MPa 140.0 kgf/cm^2 1991 psi
Delivery valve	Fuel tightness	10 seconds 13.73 → 12.75 MPa 140.0 → 130.1 kgf/cm^2 1991 → 1850 psi	5 seconds 13.73 → 12.75 MPa 140.0 → 130.1 kgf/cm^2 1991 → 1850 psi
Injection nozzle	Injection pressure	13.73 to 12.75 MPa 140.0 to 150.0 kgf/cm^2 1991 to 2133 psi	—
Injection nozzle valve seat	Valve seat tightness	When the pressure is 12.75 MPa (130.0 kgf/cm^2, 1849 psi), the valve seat must be fuel tightness	—

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SERVICING

1. Troubleshooting for hydraulic system

Symptom	Probable cause and checking procedure	Solution	Reference page
Mower does not rise	1. Control valve malfunctioning	Check and repair or replace	6-12, 6-15
	2. Lift cylinder damaged	Check and replace	–
	3. Relief valve spring damaged	Check and replace	6-12
	4. Relief valve setting pressure too low	Check and adjust	6-12
	5. Hydraulic pump damaged	Check and replace	6-24
	6. Oil strainer clogged	Clean or replace	–
	7. Suction pipe loosened or broken	Repair or replace	6-13
	8. Insufficient transmission oil	Refill	4-26
Mower does not lower	1. Control valve malfunctioning	Check and repair or replace	6-15
Mower drops by its weight	1. Lift cylinder worn or damaged	Check and replace	–
	2. Control valve malfunctioning	Check and replace	6-15

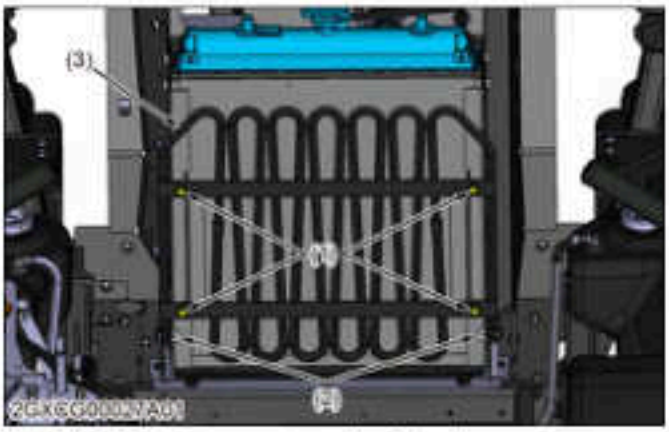
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5.3 Precautions on handling electrical connectors

1. When disconnecting connectors, grasp the body of the connector and pull it out; do not pull on the wiring harness. If the connector is the locking type, release the lock and then pull to disconnect.
2. When removing a connector's plastic cover (for water protection) to inspect it, be careful not to let any water get in the connector. If water does get in, dry it thoroughly before reassembling the connector and putting its plastic cover securely in place.
3. Straighten any bent connector terminals and make sure none are sticking out or missing. Also make sure there is no corrosion on the connector's terminals before connecting it.
4. When connecting a locking connector, be sure to press it in until you hear it click and then pull gently on the harness close to the connector and make sure the harness does not come out.

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3. Remove oil cooler (3).



(1) Oil cooler bolts
(2) Oil cooler clips
(3) Oil cooler

5.3.16 Removing radiator

1. Remove radiator assembly (1).



(1) Radiator assembly

5.3.17 Disconnecting universal joint and removing PTO shaft oil seal



(1) PTO shaft oil seal
(2) Universal joint

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.

5.3.18 Removing center case rear cover and PTO clutch shaft assembly

NOTE

- **At this point, the input shaft (3) must be pulled out to prevent interference between the PTO clutch case and the gear.**
- **Note that pulling out the input shaft (3) excessively may cause falling off of the bevel gear from the input shaft (3).**





(1) Delivery pipe
(2) Center case rear cover
(3) Input shaft
(4) PTO clutch shaft assembly
(5) Pump shaft assembly
(6) O-ring

1. Disconnect the delivery pipe (1).
2. Remove the center case rear cover (2).
3. Remove the pump shaft assembly (5).
4. Remove the PTO clutch shaft assembly (4).

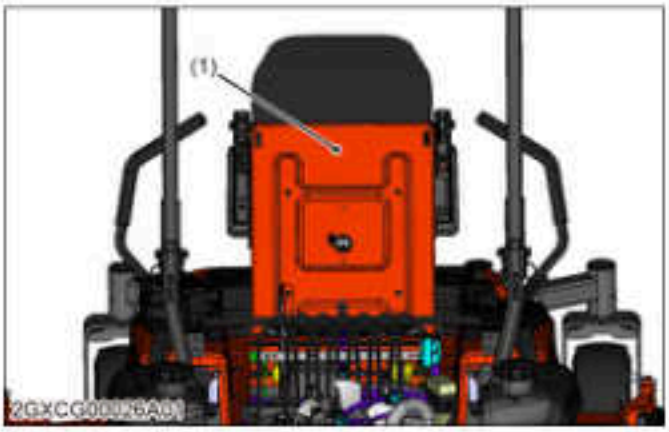
(When reassembling)

- Apply liquid gasket (Three Bond 1208D or equivalent) to joint face of center case and center case rear cover.

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

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2. Remove the seat assembly (1).



(1) Seat assembly

5.1.17 Removing fuel stabilizer

1. Remove fuel stabilizer guard (1) on both sides.



(1) Fuel stabilizer guard

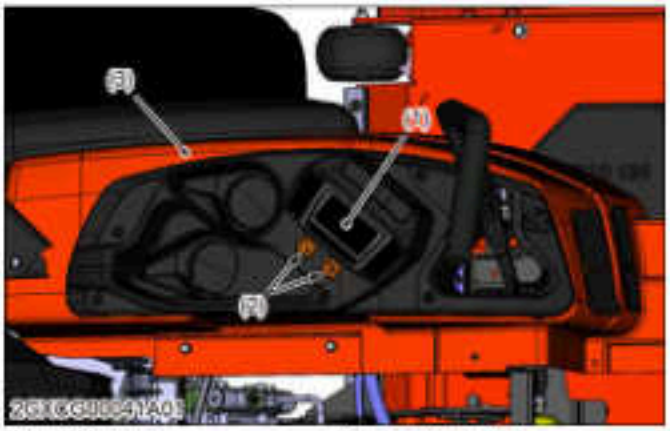
2. Disconnect fuel vapor hose (2) on both sides.
3. Remove fuel stabilizer bar (3) with fuel vapor hose (2).



(2) Fuel vapor hose (3) Fuel stabilizer bar

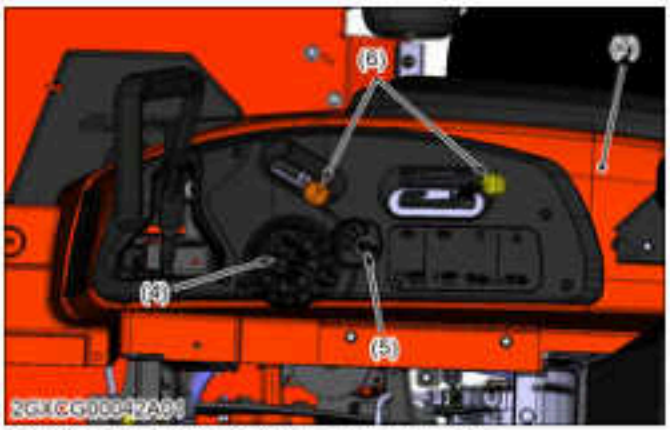
5.1.18 Removing fenders

1. Disconnect LCD panel (1).
2. Disconnect regeneration switches (2).
3. Remove fender L.H. (3).



(1) LCD panel (3) Fender (L.H.)
(2) Regeneration switches

4. Remove mower cutting height adjusting dial (4).
5. Disconnect key switch (5).
6. Remove lever grips (6).
7. Remove fender R.H. (7).



(4) Mower cutting height adjusting dial (6) Lever grips
(7) Fender (R.H.)
(5) Key switch

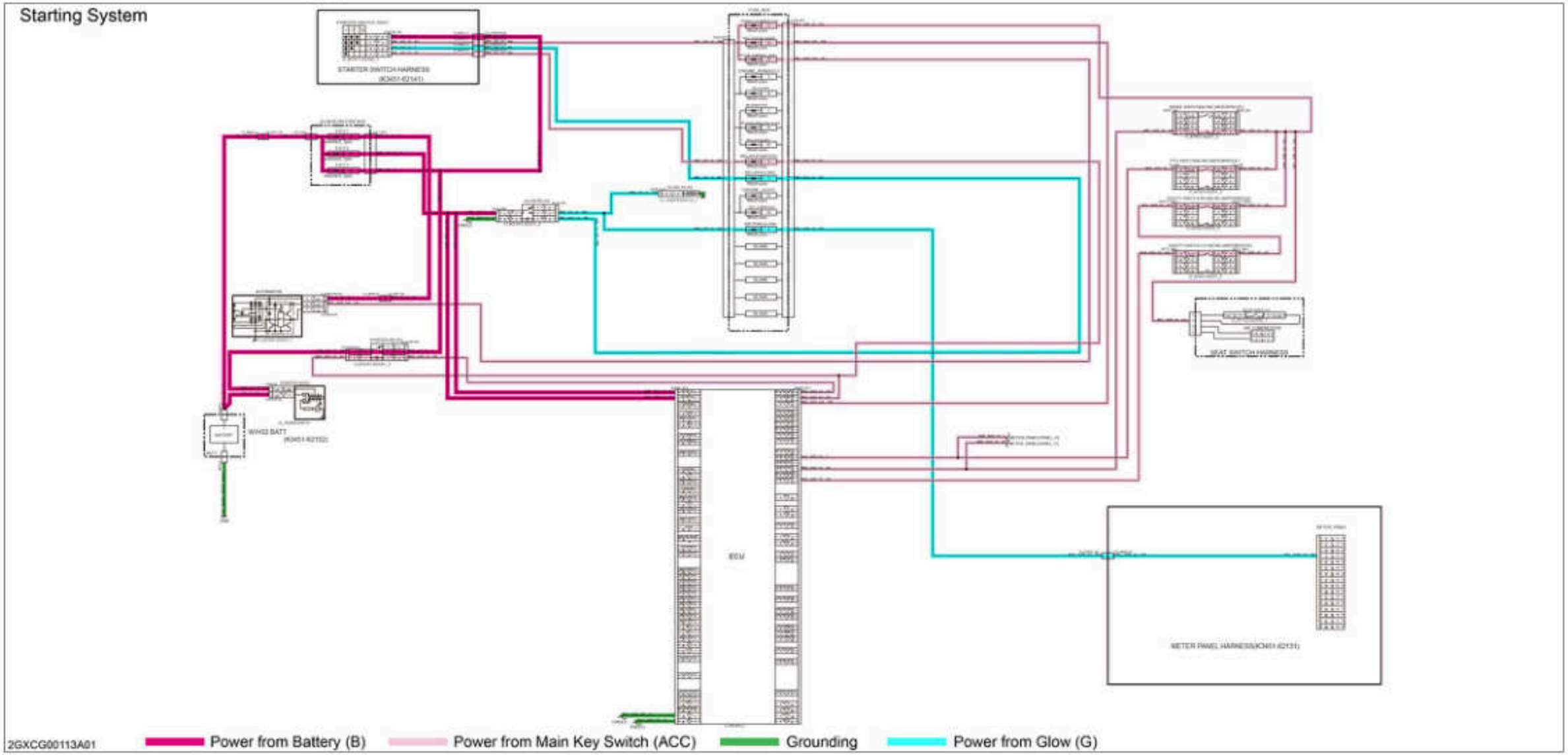
5.1.19 Removing oil cooler

1. Remove oil cooler bolts (1).
2. Remove clips (2).

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MECHANISM

1. Electrical circuit of starting system



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