CONTENTS

1. SAFETY

SAFETY FIRST 1-1
1. Working precautions 1-1
2. Preparing for emergencies 1-1
3. Working cautions 1-2
4. Starting machine safely 1-2
5. Preventing fires 1-3
6. Preventing acid burns 1-3
7. Avoiding high pressure fluid 1-3
8. Avoiding hot exhaust 1-4
SAFETY DECALS 1-5
1. Safety decals 1-5
2. Care of danger, warning and caution labels 1-10

2. GENERAL

GENERAL PRECAUTIONS 2-1
TIGHTENING TORQUES 2-3
1. General use screws, bolts, and nuts 2-3
2. Stud bolts 2-3
3. Hydraulic fittings 2-4
3.1 Hydraulic hose fittings 2-4
3.2 Hydraulic pipe cap nuts 2-4
3.3 Adapters, elbows, and others 2-5
4. Metric screws, bolts and nuts 2-6
5. American standard screws, bolts and nuts with UNC or UNF threads 2-6
6. Plugs 2-6
PRODUCT IDENTIFICATION 2-7
SPECIFICATIONS 2-9
1. Specifications for Z231BR-AU, Z231KH-AU, Z251BR-AU, Z251KH-AU 2-9
2. Specifications for RCK48P-124Z, RCK54P-127ZA 2-11
DIMENSIONS 2-13
HANDLING PRECAUTIONS FOR ELECTRICAL PARTS AND WIRING 2-15
1. Handling of wiring 2-15
2. Battery 2-16
3. Handling of fuse 2-17
4. Connector 2-17
5. Handling of circuit tester 2-18
6. Wiring colors 2-18
IMPLEMENT LIMITATIONS 2-19
SPECIAL TOOLS 2-21
1. Special tools for machine 2-21
1.1 Spanner wrench 2-21

3. MAINTENANCE

LUBRICANTS AND FUEL 3-1
SERVICE INTERVALS 3-3
CHECK AND MAINTENANCE 3-7
1. Daily check 3-7
1.1 Checking the engine oil level 3-8
1.2 Checking the amount of fuel and refueling 3-8
1.3 Checking and cleaning the air intake screen 3-9
1.4 Checking the tire pressure 3-10
1.4.1 Inflation pressure 3-10
1.5 Checking transaxle fluid level 3-10
1.6 Checking movable parts 3-10

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

INDEX

A

air cleaner element
cleaning (Z231BR-AU, Z251BR-AU)..... 3-12
replacing (Z231BR-AU, Z251BR-AU)..... 3-17,3-26
replacing (Z231KH-AU, Z251KH-AU)..... 3-26
air cleaner paper element
replacing (Z231KH-AU, Z251KH-AU)..... 3-17
anti-scalp rollers
adjusting.....9-9
removing..... 9-15
axle shaft
removing..... 5-25

B

battery
charging..... 3-21
checking condition..... 3-20
checking specific gravity..... 8-13
checking terminal connection.....8-13
checking voltage..... 8-13
removing.....4-11,5-26,5-30
storing..... 3-22
blade
removing.....9-14
replacing..... 3-28
blade shaft
removing.....9-15
blades
checking.....3-28
bolts..... 2-3
brake arm
function..... 5-3
brake arm assembly
removing..... 5-18
brake assembly
removing..... 5-25
brake rod
disconnecting.....5-14
bull gear
removing..... 5-19
bypass arm
function..... 5-3
removing..... 5-22
bypass rod
disconnecting.....5-14

C

cam
removing..... 7-7
center section
function..... 5-3
removing..... 5-23
center section kit
replacing.....5-23
charge pump
function..... 5-3
removing.....5-20
charging system
electrical circuit..... 8-6
checking level
engine oil.....3-8
circuit tester
handling..... 2-18
combustion chamber
cleaning.....3-26
control arm
function..... 5-3
control arm assembly
removing.....5-17
control lever panel
removing.....5-27
control rod
disconnecting.....5-14
cylinder block
removing.....5-24

D

daily check..... 3-7
checking fuel level 3-8
checking movable parts..... 3-10
checking the air intake screen..... 3-9
checking the tire pressure.....3-10
checking the tire pressure (warning information).....
.....3-10
cleaning the air intake screen..... 3-9
refueling..... 3-8
dimensions.....2-13

E

electric clutch
adjusting.....3-25
removing..... 4-11
electric PTO clutch
checking (coil resistance).....8-20
checking (electromagnetic action)..... 8-20
checking clearance..... 8-21
electrical part
handling precaution.....2-15
electrical system
servicing specifications..... 8-12
troubleshooting..... 8-9
engine
removing..... 4-16
serial number..... 2-7
servicing specifications..... 4-9

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

SAFETY FIRST

This symbol, the industry's "Safety Alert Symbol", is used throughout this manual and on labels on the machine itself to warn of the possibility of personal injury. Read these instructions carefully. It is essential that you read the instructions and safety regulations before you attempt to assemble or use this unit.

DANGER
- **Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.**

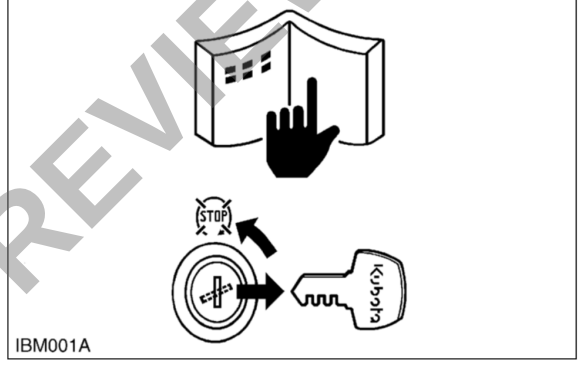
WARNING
- **Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.**

CAUTION
- **Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.**

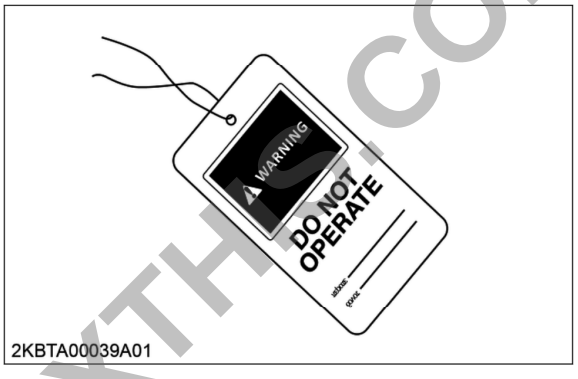
IMPORTANT
- **Indicates that equipment or property damage could result if instructions are not followed.**

NOTE
- **Gives helpful information.**

1. Working precautions



- Understand all safety instructions and safety labels in this manual.
- Park the machine on a stable and level ground then lower the attachment to check the machine safely.
- Stop the engine and remove the key when leaving the operator's seat for cleaning, maintenance, and servicing.



- Hang a DO NOT OPERATE tag near the operator's seat.
- Do not use worn or cracked tools. Use tools in a proper way with enough strength.
- In regards to the facility which is used in the workshop, follow each safety instruction.

2. Preparing for emergencies

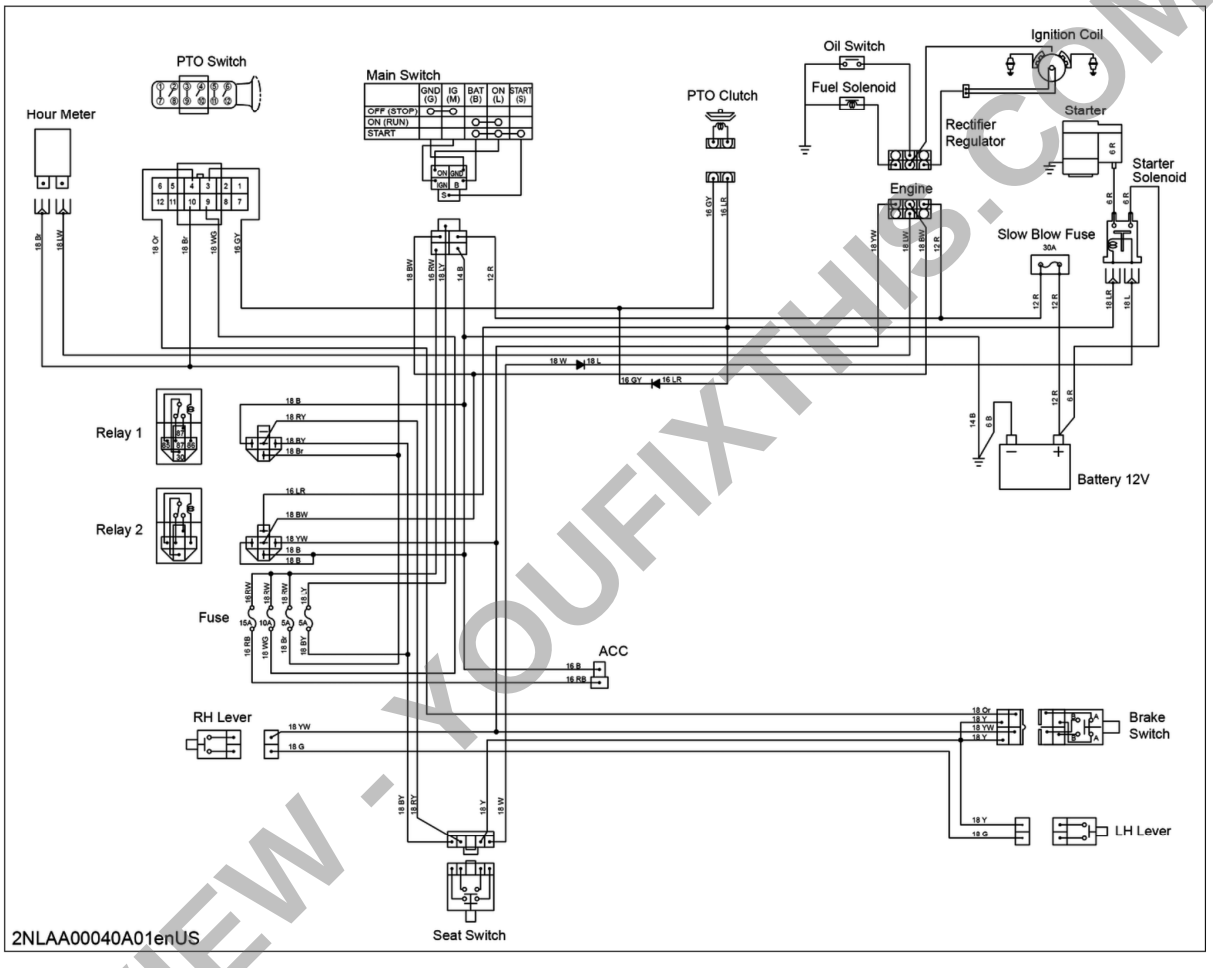


- Keep a first aid kit and fire extinguisher ready at all times.
- Keep emergency numbers near your telephone at all times.

PREVIEW - YOUFIXTHIS.COM
Download full manual at youfixthis.com

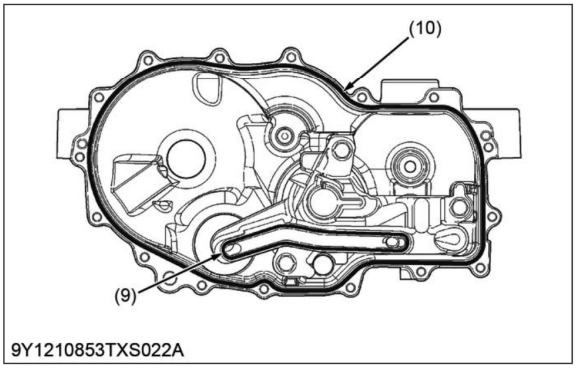
MECHANISM

1. Wiring diagram



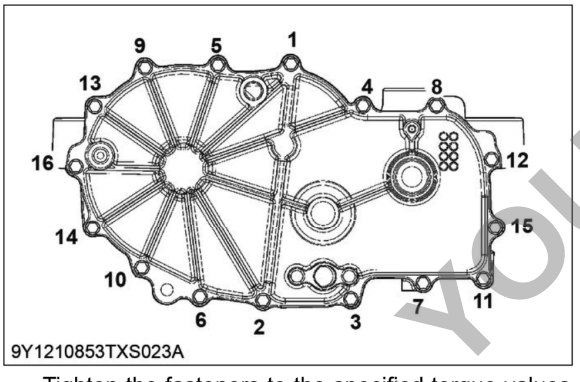
PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com



(9) Sealant path for center section
(10) Sealant path for main housing

- Install the locating pins, if not already installed.
- Install the side cover (2). Use care not to smear the sealant bead.
- Install the side cover screws (1). Refer to the screw tightening pattern.

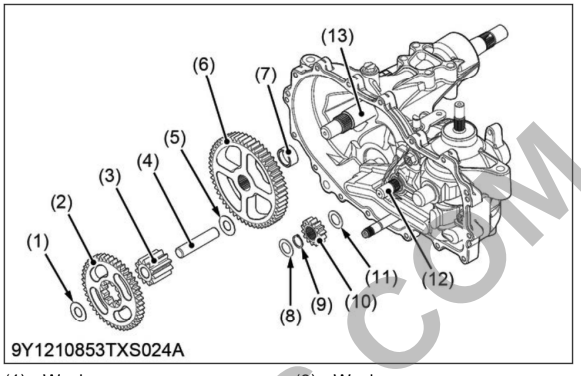


- Tighten the fasteners to the specified torque values in the required order.
- As a general rule, use the low end of the torque spec. on fasteners when reassembling.

Tightening torque	Screw (Side cover)	12 to 17 N·m 1.2 to 1.8 kgf·m 8.8 to 12 lbf·ft

5.2.7 Removing bull, pinion, and reduction gears

1. Remove the washer (1) and reduction gears (2), (3) as an assembly.



(1) Washer
(2) Reduction gear
(3) Reduction gear
(4) Jack shaft pin
(5) Washer
(6) Bull gear
(7) Spacer (Not used on ZT-3400 transaxle)
(8) Washer
(9) Retaining ring
(10) Pinion gear
(11) Washer
(12) Motor shaft
(13) Axle shaft

2. Remove the washer (5) and jack shaft pin (4).
3. Remove the washer (8), retaining ring (9), pinion gear (10), and washer (11) from the motor shaft (12).
4. Remove the bull gear (6).
5. Inspect the bull gear teeth and internal splines for wear or damage.
6. Separate the reduction gears and inspect the gears and jack shaft pin for excessive wear or damage. Replace if necessary.

(When reassembling)

1. Install the washer (11), pinion gear (10), and retaining ring (9) onto the motor shaft (12).
2. Install the washer (8) onto the motor shaft.
3. Install the bull gear (6) onto the axle shaft (13).
4. Install the jack shaft pin (4), washer (5), and reduction gears (3), (2).
5. Install the washer (1) onto the jack shaft pin.

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

TIGHTENING TORQUES

1. General use screws, bolts, and nuts

Tighten screws, bolts, and nuts whose tightening torques are not specified in the Workshop Manual according to the table below.

Indication on top of bolt	 No-grade or 4T						 7T						9T		
Indication on top of nut	 No-grade or 4T												 6T		
Material of opponent part	Ordinariness			Aluminum			Ordinariness			Aluminum			Ordinariness		
Unit	N·m	kgf·m	lbf·ft	N·m	kgf·m	lbf·ft	N·m	kgf·m	lbf·ft	N·m	kgf·m	lbf·ft	N·m	kgf·m	lbf·ft
M6	7.9 to 9.3	0.80 to 0.95	5.8 to 6.8	7.9 to 8.8	0.80 to 0.90	5.8 to 6.5	9.81 to 11.2	1.00 to 1.15	7.24 to 8.31	7.9 to 8.8	0.80 to 0.90	5.8 to 6.5	12.3 to 14.2	1.25 to 1.45	9.05 to 10.4
M8	18 to 20	1.8 to 2.1	13 to 15	17 to 19	1.7 to 2.0	13 to 14	24 to 27	2.4 to 2.8	18 to 20	18 to 20	1.8 to 2.1	13 to 15	30 to 34	3.0 to 3.5	22 to 25
M10	40 to 45	4.0 to 4.6	29 to 33	32 to 34	3.2 to 3.5	24 to 25	48 to 55	4.9 to 5.7	36 to 41	40 to 44	4.0 to 4.5	29 to 32	61 to 70	6.2 to 7.2	45 to 52
M12	63 to 72	6.4 to 7.4	47 to 53	—	—	—	78 to 90	7.9 to 9.2	58 to 66	63 to 72	6.4 to 7.4	47 to 53	103 to 117	10.5 to 12.0	76.0 to 86.7
M14	108 to 125	11.0 to 12.8	79.6 to 92.5	—	—	—	124 to 147	12.6 to 15.0	91.2 to 108	—	—	—	167 to 196	17.0 to 20.0	123 to 144
M16	167 to 191	17.0 to 19.5	123 to 141	—	—	—	197 to 225	20.0 to 23.0	145 to 166	—	—	—	260 to 304	26.5 to 31.0	192 to 224
M18	246 to 284	25.0 to 29.0	181 to 209	—	—	—	275 to 318	28.0 to 32.5	203 to 235	—	—	—	344 to 402	35.0 to 41.0	254 to 296
M20	334 to 392	34.0 to 40.0	246 to 289	—	—	—	368 to 431	37.5 to 44.0	272 to 318	—	—	—	491 to 568	50.0 to 58.0	362 to 419

2. Stud bolts

Material of opponent part	Ordinariness			Aluminum		
Unit	N·m	kgf·m	lbf·ft	N·m	kgf·m	lbf·ft
M8	12 to 15	1.2 to 1.6	8.7 to 11	8.9 to 11	0.90 to 1.2	6.5 to 8.6
M10	25 to 31	2.5 to 3.2	18 to 23	20 to 25	2.0 to 2.6	15 to 18
M12	30 to 49	3.0 to 5.0	22 to 36	31	3.2	23
M14	62 to 73	6.3 to 7.5	46 to 54	—	—	—
M16	98.1 to 112	10.0 to 11.5	72.4 to 83.1	—	—	—
M18	172 to 201	17.5 to 20.5	127 to 148	—	—	—

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

2. Check points of every 25 hours

2.1 Cleaning precleaner element (except Z251BR-AU)

Check the air cleaner daily or before starting the engine. Check for a buildup of dirt and debris around the air cleaner system. Keep this area clean. Also check for loose or damaged components. Replace all bent or damaged air cleaner components.

■ NOTE

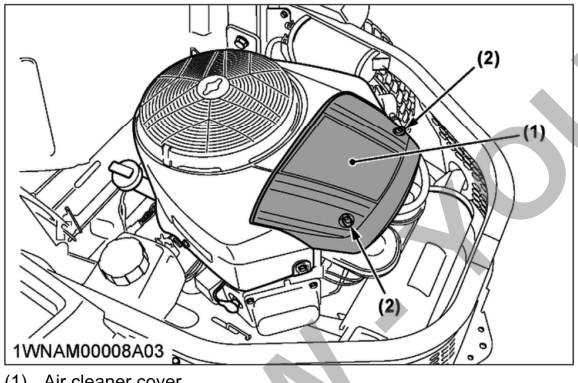
- **Operating the engine with loose or damaged air cleaner components could allow unfiltered air into the engine causing premature wear and failure.**

Clean precleaner

Z231BR-AU

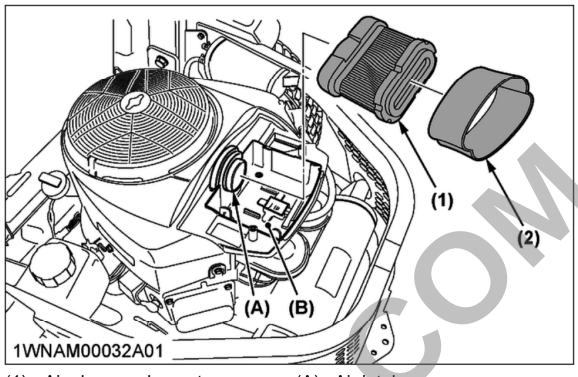
Wash the precleaner every 25 hours of operation. (more often under extremely dusty or dirty conditions.)

1. Loosen the air cleaner cover knobs and remove the air cleaner cover.



(1) Air cleaner cover
(2) Air cleaner cover knob

2. Remove the air cleaner element with the precleaner and remove the precleaner from it. Make sure the base and the sealing area is clean before reassembly is performed.



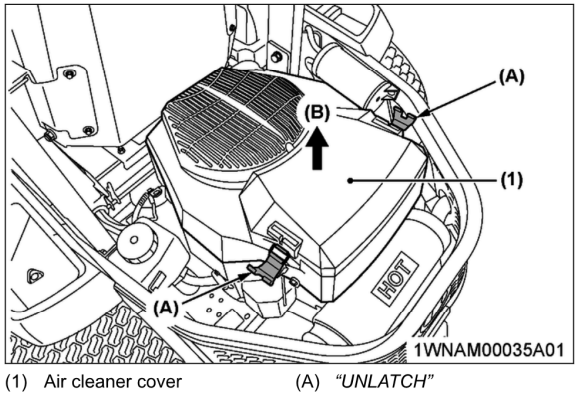
(1) Air cleaner element
(2) Precleaner
(A) Air intake
(B) Base

3. Wash the precleaner in warm water with detergent. Rinse the precleaner thoroughly until all traces of detergent are eliminated. Squeeze out excess water. (do not wring.) Allow the precleaner to air dry.
   Do not oil the precleaner.
4. Reinstall the precleaner over the paper element and reinstall them to air intake.
5. Reinstall the air cleaner cover and secure with the 2 knobs.

Z231KH-AU, Z251KH-AU

Wash and reoil the precleaner every 25 hours of operation. (more often under extremely dusty or dirty conditions.)

1. Unlatch the cover and remove the air cleaner cover.
2. Remove the precleaner from the air cleaner element, or remove as an assembly for servicing. Make sure the base and the sealing area is clean before reassembly is performed.



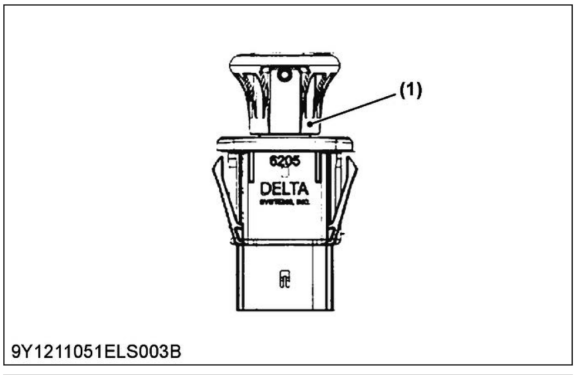
(1) Air cleaner cover
(A) *"UNLATCH"*
(B) *"REMOVE"*

PREVIEW - YOUFIXTHIS.COM

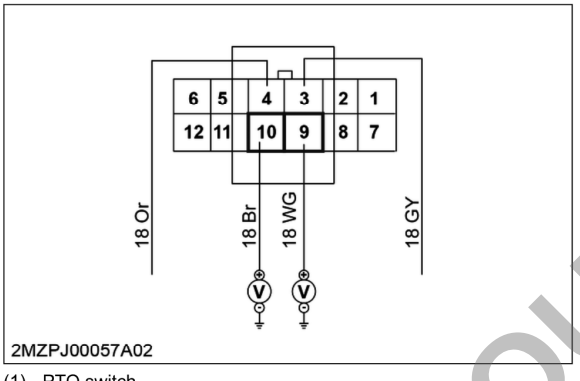
Download full manual at youfixthis.com

3.3.7 Checking PTO switch harness

1. Disconnect the connector from PTO switch (1).



9Y1211051ELS003B



2MZPJ00057A02

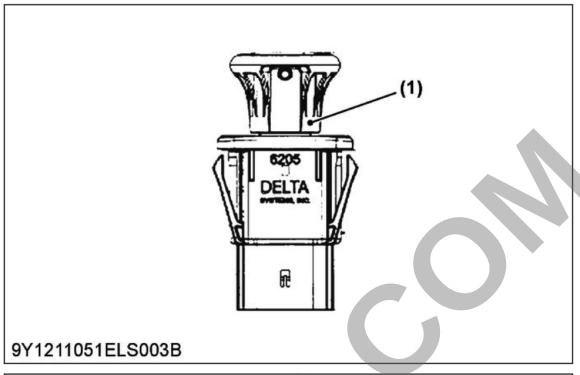
(1) PTO switch

2. Turn the main switch *"ON"*.
3. Measure the voltage across the terminal 9 and chassis.
4. Measure the voltage across the terminal 10 and chassis.
5. If the voltage differs from battery voltage, the wiring harness is damaged.

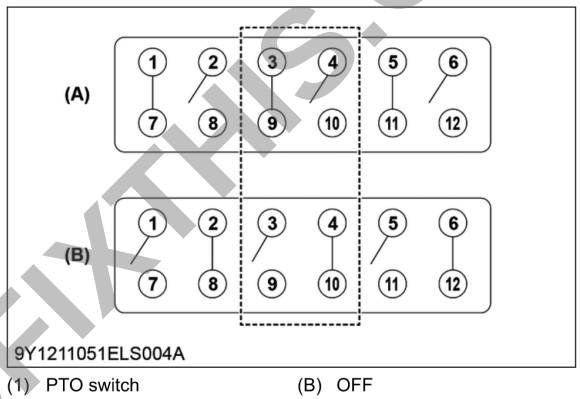
Terminal - Chassis	Service specification	Battery voltage

3.3.8 Checking PTO switch continuity

1. Remove the PTO switch (1) from the instrument panel.



9Y1211051ELS003B



9Y1211051ELS004A

(1) PTO switch (B) OFF
(A) ON

2. Measure the resistance with an ohmmeter across terminals when the PTO switch is set at *"OFF"* and *"ON"* position.
3. If the resistance values specified below are not indicated, the PTO switch is damaged.

1) PTO switch is at *"ON"* position

Terminal	9	10
3	●	—
4	—	Infinity

●: Continuity

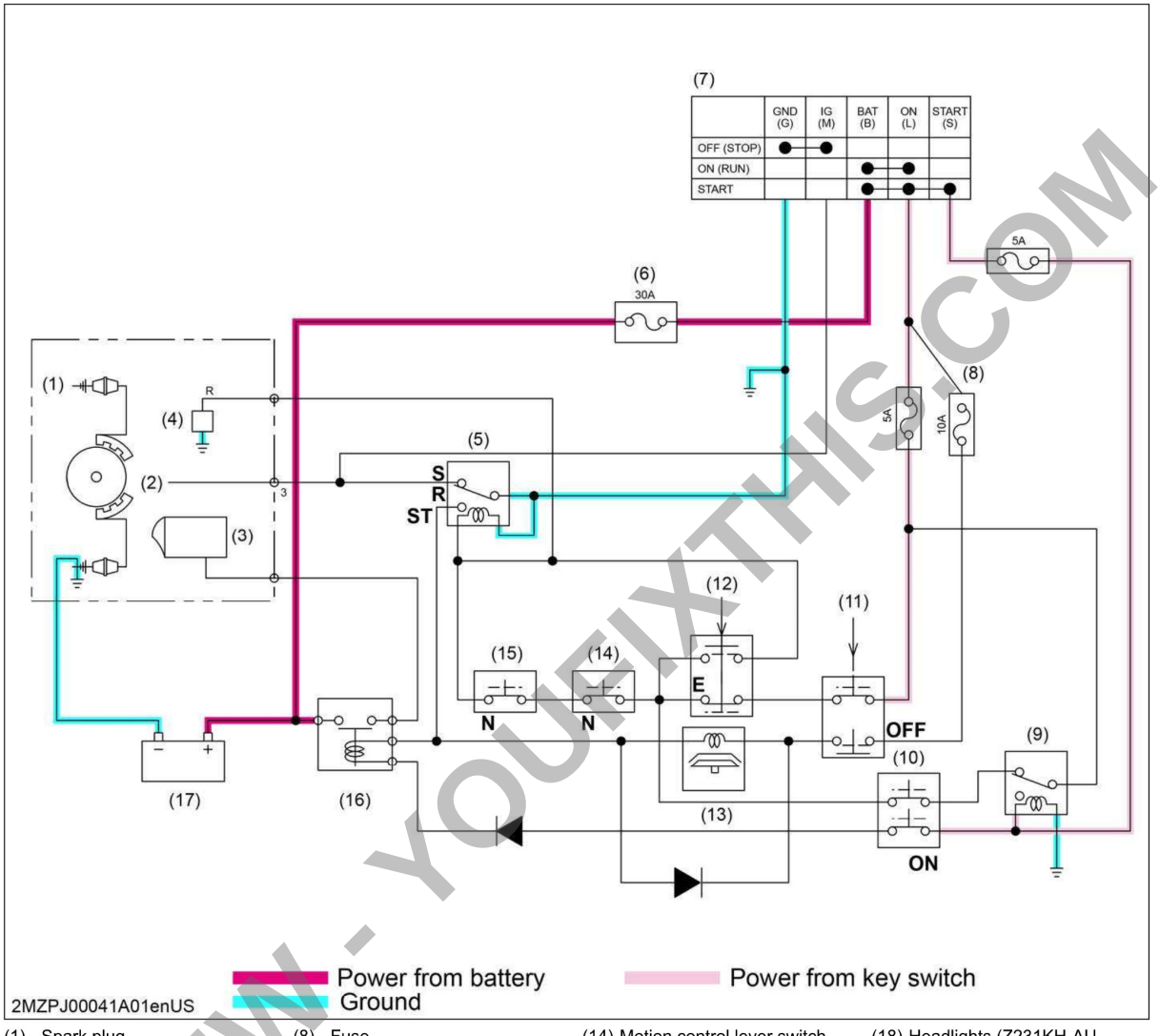
2) PTO switch is at *"OFF"* position

Terminal	9	10
3	Infinity	—
4	—	●

●: Continuity

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com



(1) Spark plug
(2) Ignition coil
(3) Starter
(4) Fuel solenoid
(5) Stop relay
(6) Slow blow fuse
(7) Main switch
(8) Fuse
(9) Seat relay
(10) Seat switch
(11) PTO switch
(12) Brake switch
(13) PTO clutch
(14) Motion control lever switch (L.H.)
(15) Motion control lever switch (R.H.)
(16) Starter solenoid
(17) Battery
(18) Headlights (Z231KH-AU, Z251KH-AU)
S: Stop
R: Run
ST: Start
N: Neutral
E: Engage

2.1.1 Safety switch

2.1.1.1 Function of safety switch

The safety switch prevents current from flowing to the starter when the safety switches are not engaged.
This is to ensure safe starting.
Switches are changed to close or open electrically by changing the motion control levers, sitting on the operator's seat, engaging the parking brake, and engaging/disengaging the PTO switch.
By selecting either normally open or normally closed contact, the switch function is determined.

2.1.1.2 Structure of safety switch

The machine is equipped with safety switches.

PREVIEW - YOUFIXTHIS.COM
Download full manual at youfixthis.com

Symptom	Probable cause	Solution	Reference page
Engine is difficult to start or will not start	1. No operator on seat	Sit on operator's seat	3-13
	2. Parking brake lever not in the proper position	Apply the parking brake	3-13
	3. PTO switch not in the proper position	Make sure PTO switch is in disengaged (*"OFF"*) position	3-13
	4. Motion control levers not in the proper position	Make sure motion control levers are in *"NEUTRAL LOCK"* position	3-13
	5. Main switch is not in the proper position	Make sure main switch is in *"ON"* position	3-13
	6. No fuel	Fill fuel	3-1 3-8
	7. Fuse is blown	Replace fuse	3-27
	8. Air cleaner is clogged	Clean or replace air cleaner	3-12 3-17
	9. Battery becomes weak	1. Clean battery cables and terminals	3-20
		2. Charge the battery	3-20
		3. In cold weather, always remove the battery from the engine, charge and store it indoors Install it on the machine only when you use the machine	3-20
	10. Spark plug damaged	1. Check the spark plug wire connection	3-18
		2. Adjust the spark plug gap or replace the spark plug	3-18
	11. Fuel hose or fuel filter clogged or damaged	Clean or replace fuel hose	3-19
	12. Engine oil viscosity is wrong	Use oils of different viscosities, depending on ambient temperature	3-1
	13. Improper or stale fuel (fuel quality is poor)	Replace fuel and the fuel filter	3-8 3-19
	14. Water or dirt in the fuel system	Replace fuel	3-19
Insufficient engine power	1. Air cleaner is clogged	Clean or replace air cleaner	3-12 3-17
	2. Fuel filter is clogged	Replace fuel filter	3-19

(Continued)

PREVIEW - YOUFIXTHIS.COM
Download full manual at youfixthis.com

SPECIFICATIONS

1. Specifications for Z231BR-AU, Z231KH-AU, Z251BR-AU, Z251KH-AU

Model			Z231BR-AU	Z231KH-AU	Z251BR-AU	Z251KH-AU
Engine	Model		GH731V-1	GH736V	GH733V-1	GH750V
	Max. engine power (Gross)		16.4 kw (22.0 HP)*1*2	15.7 kw (21.0 HP)*1*3	18.6 kw (25.0 HP)*1*2	18.6 kw (25.0 HP)*1*3
	Type		Air-cooled gasoline engine			
	Number of cylinders		2 (V-Twin)			
	Bore and stroke		79 × 73 mm (3.11 × 2.87 in.)	83 × 67 mm (3.27 × 2.64 in.)	79 × 73 mm (3.11 × 2.87 in.)	83 × 69 mm (3.27 × 2.72 in.)
	Total displacement		724 cm^3 (44 cu. in.)	725 cm^3 (44 cu. in.)	724 cm^3 (44 cu. in.)	747 cm^3 (44 cu. in.)
	Rated revolution		3600 rpm			
	Fuel		Unleaded gasoline			
	Starter		Electric			
	Lubrication		Full pressure lubrication			
	Cooling		Air cooled			
	Battery		U1 (12 V, RC: 45 min, CCA: 300, CA: 410)			
Capacities	Fuel tank		16.3 L (4.31 U.S.gals, 3.59 Imp.gals)			
	Engine crankcase (with filter)		1.8 L (1.9 U.S.qts, 1.6 Imp.qts)			
	Transmission case		4.8 L (5.1 U.S.qts, 4.2 Imp.qts)*4			
Dimensions	Overall length		1940 mm (76.4 in.)			
	Overall width w/o mower deck		1207 mm (47.5 in.)			
	Overall height	With ROPS	1652 mm (65.0 in.)			
	Wheelbase		1155 mm (45.5 in.)			
	Min. ground clearance		123 mm (4.84 in.) with 48"		123 mm (4.84 in.) with 54"	
	Tread	Front	796 mm (31.3 in.)			
		Rear	954 mm (37.6 in.)			
Weight (without fuel, with mower deck)			330 kg (728 lbs) with 48"	340 kg (750 lbs) with 48"	340 kg (750 lbs) with 54"	350 kg (772 lbs) with 54"
Traveling system	Tires	Front	11 × 4 - 5 (4PR) smooth			
		Rear	22 × 10- 14 (4PR) turf			
	Traveling speeds	Forward	0 to 8.0 mph (0 to 12.9 km/h)			
		Reverse	0 to 4.0 mph (0 to 6.4 km/h)			
	Steering		2 - Hand levers			
	Transmission		2 - HST with Gear			
	Parking brake		Hand lever applied, released			
	Min. turning radius		0 mm (0 in.)			
PTO	Drive system		Belt			
	Clutch type		Electric			

(Specifications and design subject to change without notice)

*1 Manufacturer's estimate

*2 The gross power rating for individual gas engine models is labeled in accordance with SAE (Society of automotive engineers) code J1940 (Small engine power and torque rating procedure), and rating performance has been obtained and corrected in accordance with SAE J1995 (Revision 2002-05). Torque values are derived at 3060 RPM; horsepower values are derived at 3600 RPM. Actual gross engine power will be lower and is affected by, among other things, ambient operating conditions and engine-to-engine variability. Given both the wide array of products on which engines are placed and the variety of environmental issues applicable to operating the equipment, the gas engine will not

PREVIEW - YOUFIXTHIS.COM
Download full manual at youfixthis.com

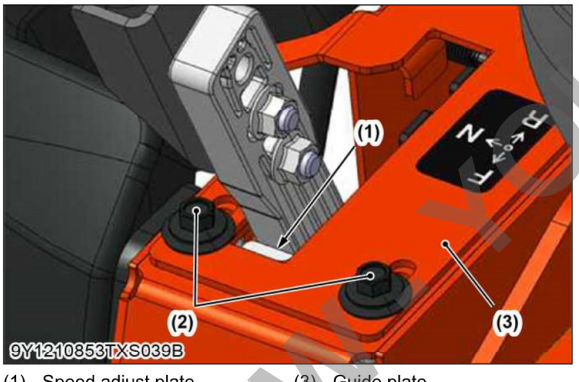
Tightening torque	Bolt (Front, rear)	23.5 to 27.4 N·m 2.40 to 2.79 kgf·m 17.4 to 20.2 lbf·ft

4.1.2 Adjusting maximum speed

1. Lift-up and secure with jack stands or blocking the rear of the machine frame.



2. Start the engine, and operate at maximum speed.
3. Loosen the front bolts (2) of the guide plate (3).



(1) Speed adjust plate
(2) Bolt (Front)
(3) Guide plate

4. Set the L.H. forward speed to the specification. The control arm must hit the speed adjust plate (1).

Maximum speed	Service specification	12 to 13 km/h 7.5 to 8.0 mph
	Service limit	Difference between L.H. and R.H. 0.2 km/h 0.1 mph

5. Tighten the front bolts to the specification.

Tightening torque	Bolt (Front)	23.5 to 27.4 N·m 2.40 to 2.79 kgf·m 17.4 to 20.2 lbf·ft

6. Check the forward speed again.
7. Adjust the other side equally. Difference between L.H. and R.H. must be less than 2 rpm (0.2 km/h, 0.1 mph).

4.1.3 Adjusting motion control lever alignment

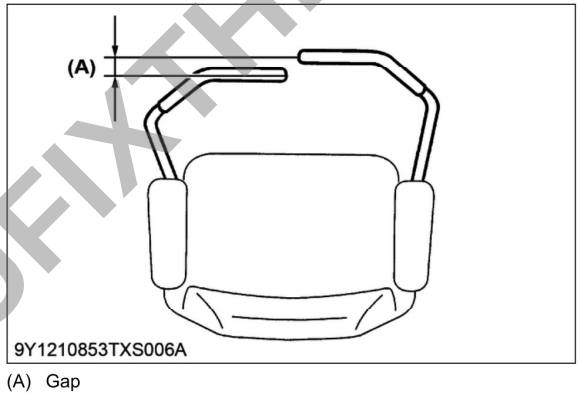
CAUTION

To avoid personal injury:

- **Park the machine on a firm and level surface.**
- **Stop the engine, remove the key and apply the parking brake.**

Check the alignment

1. Check the gap (A) and space between the levers, at the maximum forward position.



(A) Gap

2. If positions of the control levers are unequal, an adjustment is necessary.

Recommendation	Gap	0 to 2 mm 0 to 0.08 in.

Aligning the control levers

1. Stop the engine and apply the parking brake.

Lever position (high or low)

1. Remove the bolts (1) and select the motion control lever position, high (A) or low.

PREVIEW YOUFIXTHIS.COM

Download full manual at youfixthis.com

PREVIEW ONLY

You're viewing 12 of 188 pages

The full manual includes:

- All 188 pages, complete
- Searchable PDF (find any keyword)
- No watermarks
- Instant download
- Print-ready quality

GET FULL MANUAL NOW

Kubota Z231BR-AU, Z231KH-AU, Z251BR-AU, Z251KH-AU Service Manual

Scan or click anywhere
youfixthis.com

Click anywhere on this page to get the full manual