

WSM

WORKSHOP MANUAL
ZERO TURN MOWER

ZG20 ZG23

Kubota

TO THE READER

This Workshop Manual has been prepared to provide servicing personnel with information on the mechanism, service and maintenance of ZG20 and ZG23. It is divided into three parts, "General", "Mechanism" and "Servicing".

■ General

Information on the engine and the machine identification, the general precautions, maintenance check list, check and maintenance and special tools are described.

■ Mechanism

Information on the construction and function are included. This part should be understood before proceeding with troubleshooting, disassembling and servicing.

■ Servicing

Information on the troubleshooting, servicing specification lists, tightening torque, checking and adjusting, disassembling and assembling, and servicing which cover procedures, precautions, factory specifications and allowable limits.

All information illustrations and specifications contained in this manual are based on the latest product information available at the time of publication.

The right is reserved to make changes in all information at any time without notice.

Due to covering many models of this manual, information or picture being used have not been specified as one model.

January 2004

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⚠ 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 repair 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, may result in minor or moderate injury.

■ IMPORTANT

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

■ NOTE

- Gives helpful information.

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BEFORE SERVICING AND REPAIRING

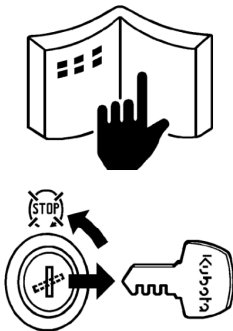
- Read all instructions and safety instructions in this manual and on your machine safety decals.
- Clean the work area and machine.
- Park the machine on a firm and level ground, and set the parking brake.
- Lower the implement to the ground.
- Stop the engine, and remove the key
- Disconnect the battery negative cable
- Hang a **"DO NOT OPERATE"** tag in operator station.

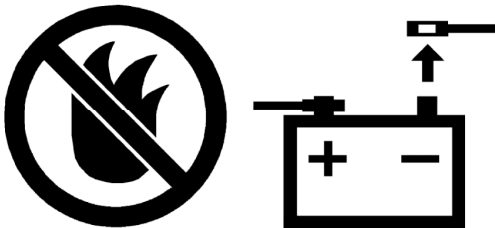
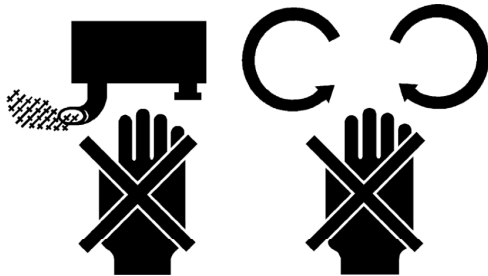
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SAFETY STARTING

- Do not start the engine by shorting across starter terminals or bypassing the safety start switch.
- Do not alter or remove any part of machine safety system.
- Before starting the engine, make sure that all shift levers are in neutral positions or in disengaged positions.
- Never start the engine while standing on ground. Start the engine only from operator's seat.

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SAFETY WORKING

- Do not work on the machine while under the influence of alcohol, medication, or other substances or while fatigued.
- Wear close fitting clothing and safety equipment appropriate to the job.
- Use tools appropriate to the work. Makeshift tools, parts, and procedures are not recommended.
- When servicing is performed together by two or more persons, take care to perform all work safely.
- Do not work under the machine that is supported solely by a jack. Always support the machine by safety stands.
- Do not touch the rotating or hot parts while the engine is running.
- Never remove the radiator cap while the engine is running, or immediately after stopping. Otherwise, hot water will spout out from radiator. Only remove radiator cap when cool enough to touch with bare hands. Slowly loosen the cap to first stop to relieve pressure before removing completely.
- Escaping fluid (fuel or hydraulic oil) under pressure can penetrate the skin causing serious injury. Relieve pressure before disconnecting hydraulic or fuel lines. Tighten all connections before applying pressure.

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AVOID FIRES

- Fuel is extremely flammable and explosive under certain conditions. Do not smoke or allow flames or sparks in your working area.
- To avoid sparks from an accidental short circuit, always disconnect the battery negative cable first and connect it last.
- Battery gas can explode. Keep sparks and open flame away from the top of battery, especially when charging the battery.
- Make sure that no fuel has been spilled on the engine.

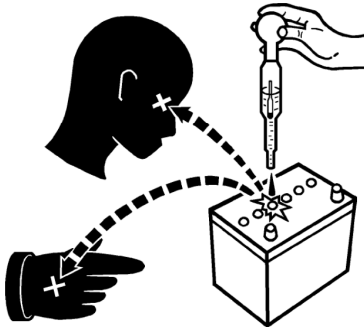
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VENTILATE WORK AREA

- If the engine must be running to do some work, make sure the area is well ventilated. Never run the engine in a closed area. The exhaust gas contains poisonous carbon monoxide.

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PREVENT ACID BURNS

- Sulfuric acid in battery electrolyte is poisonous. It is strong enough to burn skin, clothing and cause blindness if splashed into eyes. Keep electrolyte away from eyes, hands and clothing. If you spill electrolyte on yourself, flush with water, and get medical attention immediately.

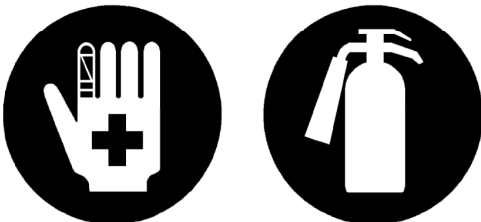
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DISPOSE OF FLUIDS PROPERLY

- Do not pour fluids into the ground, down a drain, or into a stream, pond, or lake. Observe relevant environmental protection regulations when disposing of oil, fuel, coolant, electrolyte and other harmful waste.

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PREPARE FOR EMERGENCIES

- Keep a first aid kit and fire extinguisher handy at all times.
- Keep emergency numbers for doctors, ambulance service, hospital and fire department near your telephone.

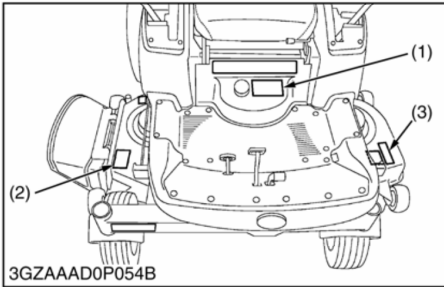
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SAFETY DECALS

The following safety decals are installed on the machine.

If a decal becomes damaged, illegible or is not on the machine, replace it. The decal part number is listed in the parts list.

DANGER, WARNING AND CAUTION LABELS



(1) Part No. K3211-6585-1



(2) Part No. K5617-7312-1

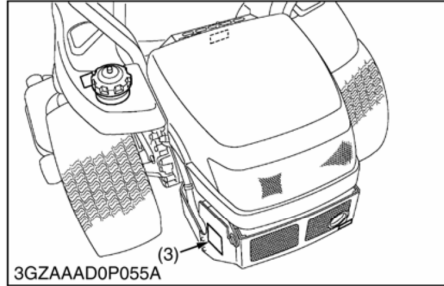
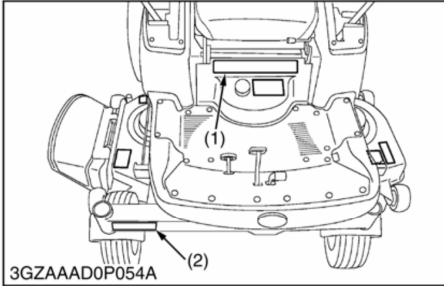


(3) Part No. K5617-7311-1




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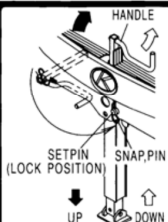
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(1) Part No. K3211-6581-1

<p>⚠ WARNING TO AVOID SERIOUS INJURY OR DEATH</p> 	<ul style="list-style-type: none"> • Use extreme caution when operating on slopes. • Mow across slopes-Not up and down. • Drive slowly on slopes. • Avoid sudden starts. • Do not operate on wet slopes. • Execute turns slowly. • Loss of traction may occur when operating on slopes. • Never carry children or others. • Keep safety devices (guards, shields and switches) in place and working. • Remove objects that could be thrown by the blade. • Read and understand operator's manual. 	<ul style="list-style-type: none"> • Do not park the machine on an incline. If necessary to park on an incline, be sure to stop the machine. <ol style="list-style-type: none"> ① Apply the parking brake. ② Then stop the engine. • If you stop the engine on an incline without applying the parking brake, the machine could move and run away. • If the engine stops suddenly during operation apply the parking brake immediately to prevent machine runaway.
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(2) Part No. K3211-6592-2

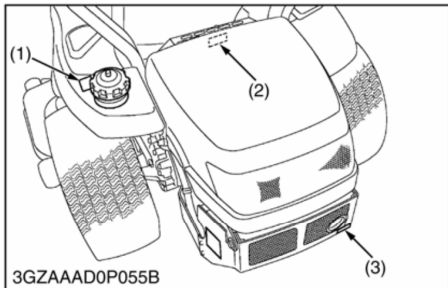
<p>⚠ CAUTION TO AVOID PERSONAL INJURY</p> <ul style="list-style-type: none"> • Park on a firm level ground. • Engage parking brake. • Shut off engine and remove key. • Confirm the lift mechanism is securely locked with the setpin and snap, pin before machine is raised. • Block up mower with additional support. • Do not remove the setpin when the front axle is in the raised position. • Read operator's manual. 	
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(2) Part No. K3211-6583-1

<p>⚠ DANGER</p> 	<p>TO AVOID POSSIBLE INJURY OR DEATH FROM A MACHINE RUNAWAY.</p> <ol style="list-style-type: none"> 1. Do not start engine by shorting across starter terminals or bypassing the safety start switch. Machine may start in gear and move if normal starting circuitry is bypassed. 2. Start engine only from operator's seat with motion control levers in neutral lock position and PTO OFF. Never start engine while standing on the ground.
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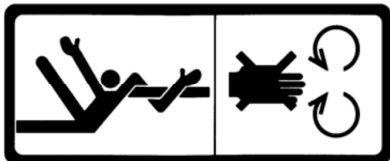
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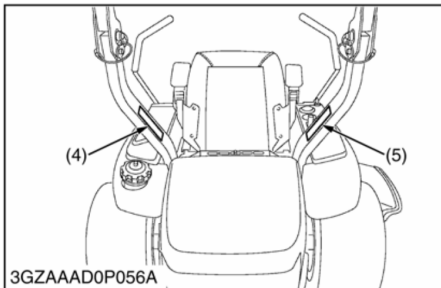
(1) Part No. K3211-6562-1
Gasoline fuel No fire only



(2) Part No. K3211-6586-1



(3) Part No. K3211-6532-1



(4) Part No. K3211-6564-1

WARNING
Never modify or repair a ROPS because welding, grinding, drilling, or cutting any portion may weaken the structure.

CAUTION
TO AVOID PERSONAL INJURY WHEN RAISING OR FOLDING ROPS:

1. Set parking brake and stop engine.
2. Remove any obstruction that may prevent raising or folding of the ROPS.
3. Do not allow any bystanders.
4. Always perform function from a stable position at the rear of the tractor.
5. Hold the top of the ROPS securely when raising or folding.
6. Make sure all pins are installed and locked.

(5) Part No. K3211-6563-1

WARNING

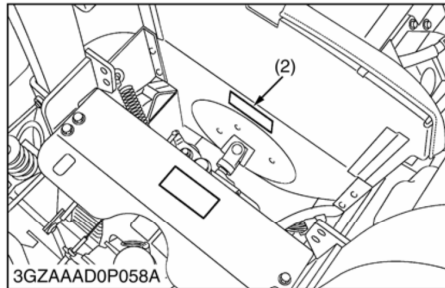
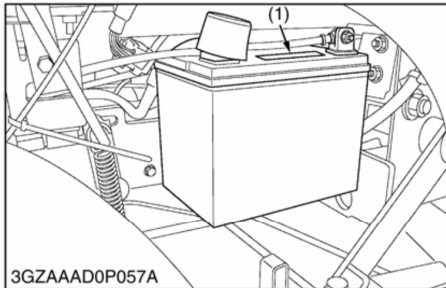
TO AVOID PERSONAL INJURY OR DEATH FROM ROLL-OVER:
1. Keep Roll-Over Protective Structures (ROPS) in the upright and locked position.
2. Fasten SEAT BELT before operating.

THERE IS NO OPERATOR PROTECTION WHEN THE ROPS IS IN THE FOLDED POSITION.

1. Check the operating area and fold the ROPS only when absolutely necessary.
2. Do not wear SEAT BELT if ROPS is folded.
3. Raise and lock ROPS as soon as vertical clearance allows.
4. Read ROPS related instructions and warnings.

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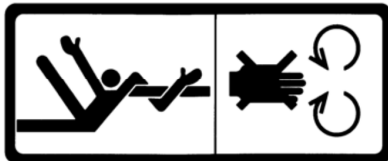
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(1) Part No. K1221-6117-1



(2) Part No. K3211-6586-1



CARE OF DANGER, WARNING AND CAUTION LABELS

1. Keep danger, warning and caution labels clean and free from obstructing material.
2. Clean danger, warning and caution labels with soap and water, dry with a soft cloth.
3. Replace damaged or missing danger, warning and caution labels with new labels.
4. If a component with danger, warning or caution label (s) affixed is replaced with new part, make sure new label (s) is (are) attached in the same location (s) as the replaced component.
5. Mount new danger, warning and caution labels by applying on a clean dry surface and pressing any bubbles to outside edge.

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SPECIFICATIONS

Model		ZG20	ZG23	
Engine	Model	GH630H	GH680H	
	Type	Forced air-cooled, Horizontal shaft OHV, 4-stroke gasoline engine		
	Number of cylinder	2 (V-Twin)		
	Bore and stroke	77 x 67 mm (3.03 x 2.64 in.)	80 x 67 mm (3.18 x 2.64 in.)	
	Total displacement	624 cm ³ (38.1 cu.in.)	674 cm ³ (41.1 cu.in.)	
	Maximum horsepower	14.9 kW / 20 HP	17.2 kW / 23 HP	
	Maximum torque	44.2 N·m / 2600 min ⁻¹ (4.5 kgf·m / 2600 rpm, 32.6 ft-lbs / 2600 rpm)	51.7 N·m / 2200 min ⁻¹ (5.3 kgf·m / 2200 rpm, 38.2 ft-lbs / 2200 rpm)	
	Direction of rotation	Counterclockwise facing the PTO shaft		
	Compression ratio	8.5 : 1		
	Ignition system	Flywheel magnet transistor type		
	Spark plug	Champion 3071		
	Air cleaner	Paper washable form precleaner type		
	Governor	Mechanical type		
	Lubricating system	Forced lubrication by oil pump		
	Cooling system	Forced air cooling		
	Starting system	Electric starter with battery		
	Battery	U1L-9 (12 V, RC : 30 min, CCA : 285, CA : 340)		
Throttle system	Manual			
Engine stop system	Key stop			
Capacities	Fuel tank	23 L (6.0 U.S.gals, 5.1 Imp.gals)		
	Engine crankcase	1.9 L (2.0 U.S.qts, 1.7 Imp.qts)		
	Hydrostatic transmission case	7.5 L (7.9 U.S.qts, 6.6 Imp.qts)		
Dimensions	Overall length	1950 mm (76.8 in.)		
	Overall width	1210 mm (47.7 in.)		
	Overall height	With ROPS upright	1775 mm (69.8 in.)	
		With ROPS folded	1320 mm (51.9 in.)	
	Wheel base	1185 mm (46.7 in.)		
	Tread	Front	860 mm (33.9 in.)	
Rear		930 mm (36.6 in.)		
Weight (with mower deck)	Stamped deck	480 kg (1058 lbs) 48 in.	500 kg (1102 lbs) 54 in.	

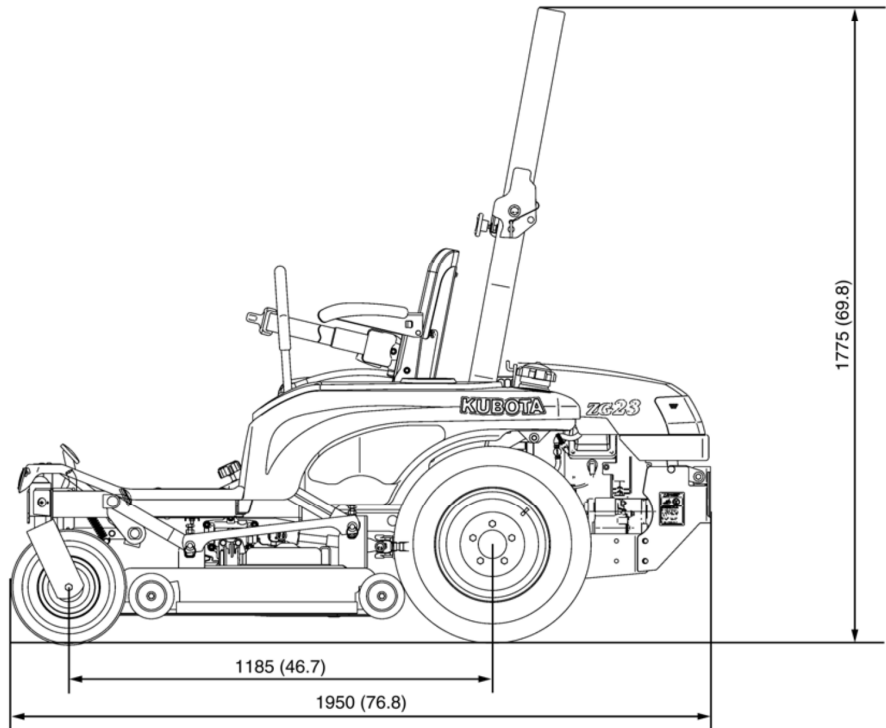
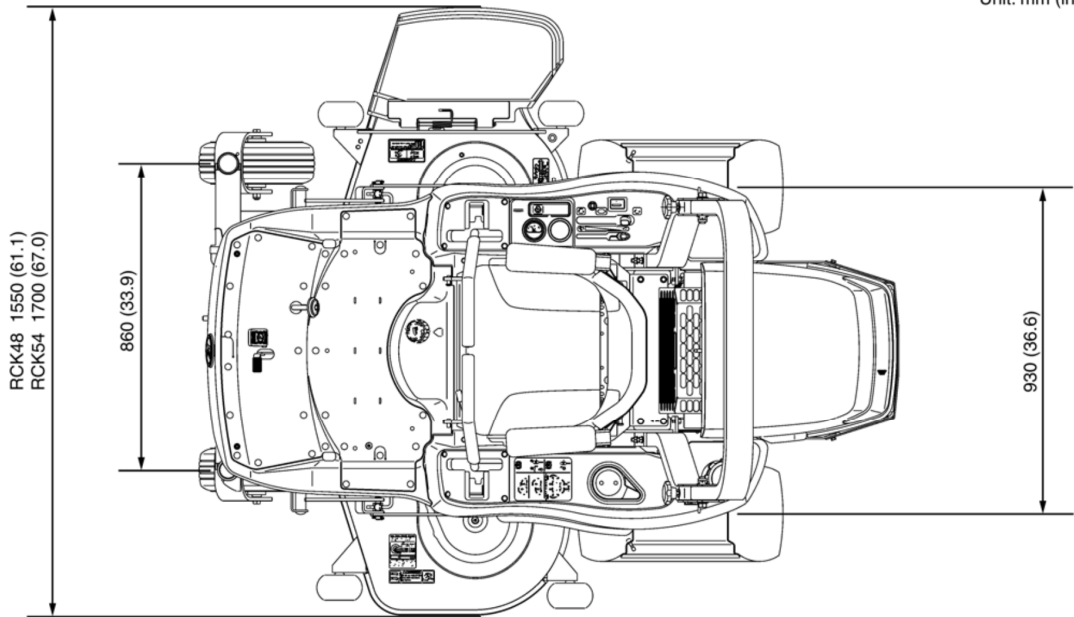
Model		ZG20	ZG23
Tire size	Front	13 x 5.0 -6 (4PR) Rib	
	Rear	23 x 10.5 -12 (4PR) Turf	
Steering system		2 - Hand levers	
Transmission		2 - HST W / Gear	
Parking Brake		Wet multi disk / Foot released	
Traveling speed	Forward	0 to 14.5 km / h (0 to 9.0 mph)	
	Reverse	0 to 8.0 km / h (0 to 5.0 mph)	
PTO	Revolution	1 speed (2530 rpm at 3200 engine rpm)	
	Drive system	Shaft drive. KUBOTA 10 tooth involute spline (2530 rpm)	
	Clutch type	Wet multi disks	
	PTO brake	Wet multi disks	

Model		RCK48-20ZG	RCK54-23ZG
Mower deck	Suitable machine	ZG20	ZG23
	Total length	890 mm (35.0 in.)	
	Total width	1550 mm (61.1 in.)	1700 mm (67.0 in.)
	Total height	310 mm (12.2 in.)	
	Mounting method	Quick joint, Parallel linkage	
	Adjustment of cutting height	Dial gauge	
	Cutting width	1225 mm (48 in.)	1375 mm (54 in.)
	Cutting height	25 to 127 mm (1.0 to 5.0 in.)	
	Number of blades	3	
	Weight (Approx.)	82 kg (180.8 lbs)	86 kg (189.6 lbs)
	Discharge	Right side	

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DIMENSIONS

Unit: mm (in.)



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G GENERAL

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1. IDENTIFICATION

When contacting your local KUBOTA distributor, always specify engine serial number (3), machine serial number (2), mower serial number (4) and hour meter reading.

- | | |
|----------------------------------|--------------------------------|
| (1) Machine Identification Plate | (4) Mower Serial Number |
| (2) Machine Serial Number | (5) Mower Identification Plate |
| (3) Engine Serial Number | |

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