

Product: 2013 Kubota GZD21 Service Manual

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WSM

WORKSHOP MANUAL

GZD21

Kubota

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KiSC issued 08, 2013 A

TO THE READER

This Workshop Manual has been prepared to provide servicing personnel with information on the mechanism, service and maintenance of GZD21. It is divided into three parts, "General", "Mechanism" and "Servicing".

■ General

Information on the engine 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.

Refer to Diesel Engine Mechanism Workshop Manual (Code No. 97897-01872) for the one which has not been described to this workshop manual.

■ 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.

December 2003

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Record of Revisions

For pdf, use search function {Search word} to find all the revised locations.

Last digit of the Code No.	Issue month	Main Revised Point and Corrective Measures {Search word}	Reference Page
1	2013.08	Error charactor is rexised.	G-55, 1-S11, 1-S38, 2-S9, 2-S11, 2-S27



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

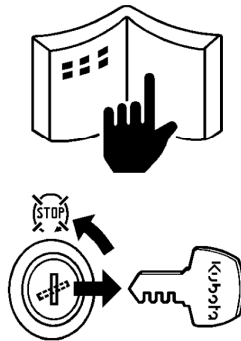
: Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

■ IMPORTANT

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

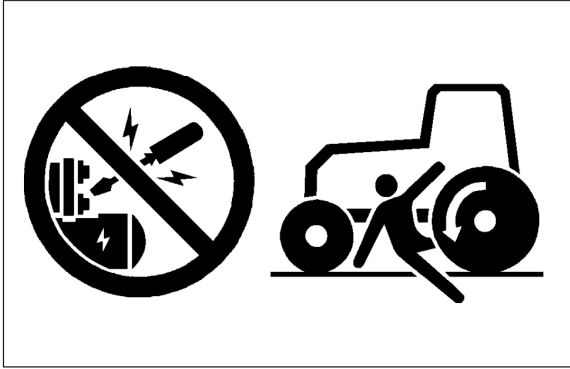
■ NOTE

: Gives helpful information.



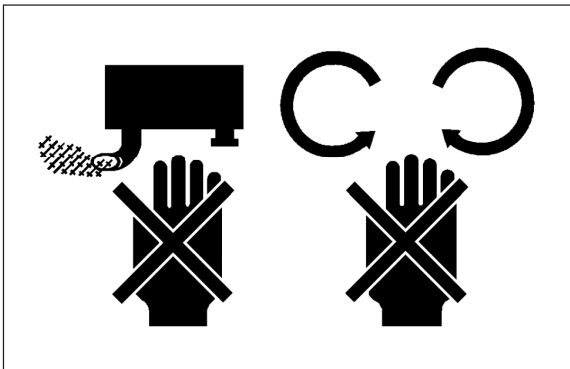
BEFORE SERVICING AND REPAIRING

- 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.



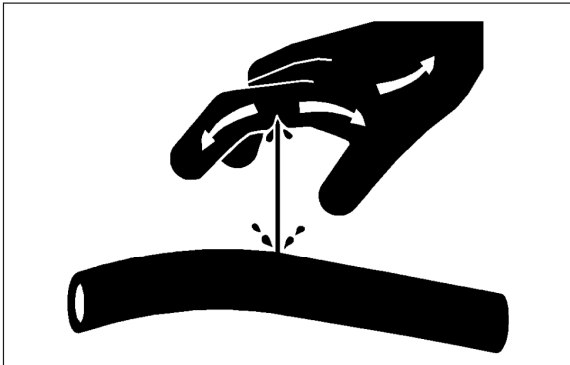
SAFETY STARTING

- 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.



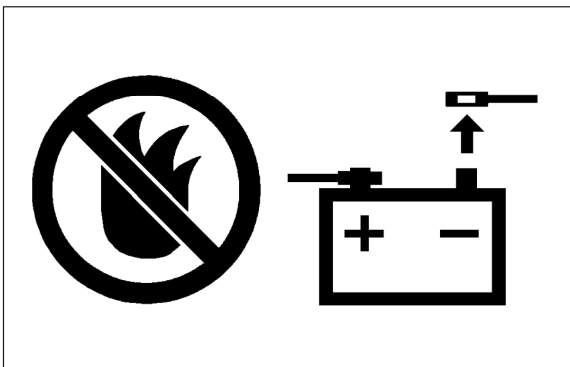
SAFETY WORKING

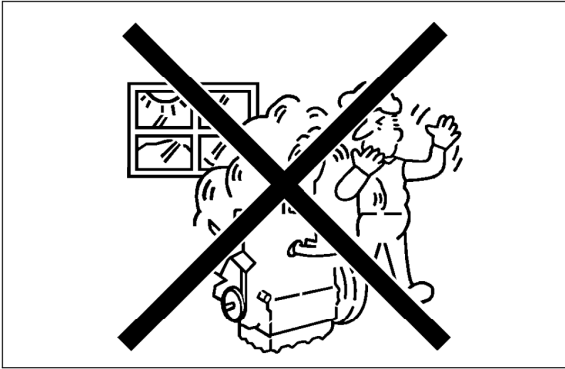
- Do not work on the machine while under the influence of alcohol, medication, or other substances or while fatigued.
- Wear close fitting clothing and safety equipment appropriate to the job.
- Use tools appropriate to the work. Makeshift tools, parts, and procedures are not recommended.
- When servicing 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.



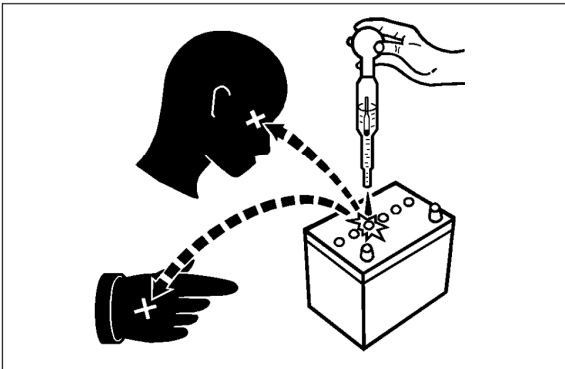
AVOID FIRES

- 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.

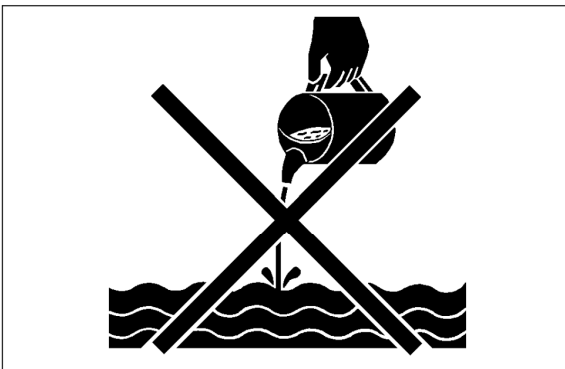


**VENTILATE WORK AREA**

- 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.

**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.

**DISPOSE OF FLUIDS PROPERLY**

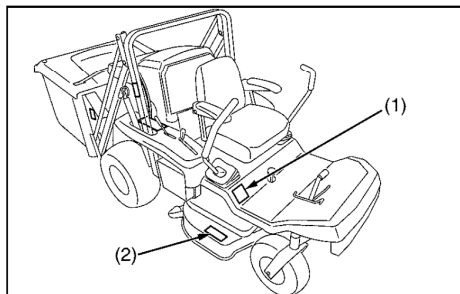
- Do not pour fluids into the ground, down a drain, or into a stream, pond, or lake. Observe relevant environmental protection regulations when disposing of oil, fuel, coolant, electrolyte and other harmful waste.

**PREPARE FOR EMERGENCIES**

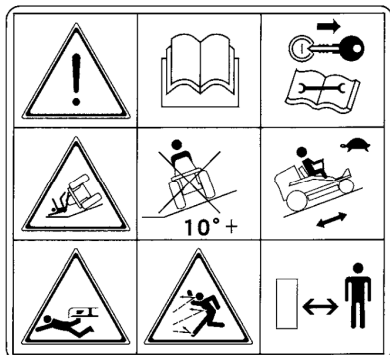
- Keep a first aid kit and fire extinguisher handy at all times.
- Keep emergency numbers for doctors, ambulance service, hospital and fire department near your telephone.

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.



(1) Part No. K2011-6581-1



TO AVOID INJURY OR DEATH:

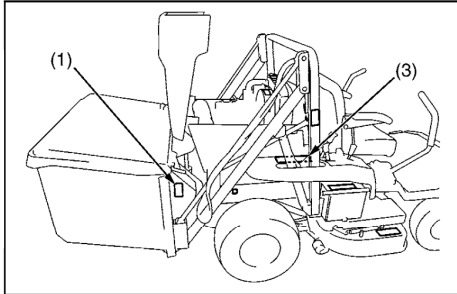
- Read and understand Operator's Manual.
- Shut off engine and remove key before servicing.
- DO NOT operate where machine could slip or tip.
- Mow across SLOPES-NOT UP and Down.
- DO NOT allow any bystanders or children around or near machine at all times when the engine is running.

(2) Part No. K5243-7311-1

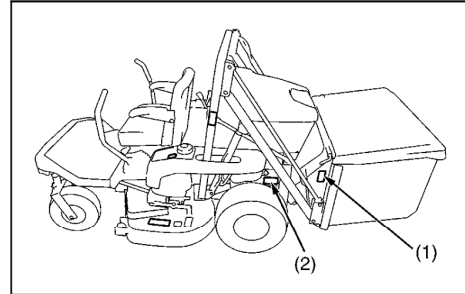
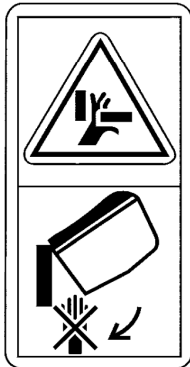


ROTATING BLADES HAZARDOUS:

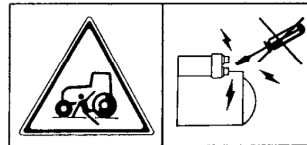
- DO NOT put hands or feet into mower when engine is running.
- Keep all shields and guards in place.



(1) Part No. K6082-6582-1



(1) Part No. K3512-4718-1



TO AVOID MACHINE RUNAWAY:

- DO NOT start engine by shorting across starter terminals or bypassing the safety start switch.

(3) Part No. K6082-6582-1

⚠ ATTENTION · CAUTION · ACHTUNG

LORSQUE VOUS UTILISEZ CET APPAREIL IL EST CONSEILLÉ DE...

- 1- RÉDUIRE LA VITESSE D'AVANCEMENT LORS DE LA COUPE D'HERBE LONGUE OU HUMIDE.
- 2- NE JAMAIS LEVER LE BAC LORSQUE LE TRACTEUR SE TROUVE SUR UNE SURFACE INSTABLE, INÉGALE OU EN PENTE.
- 3- NE JAMAIS CONDUIRE LE TRACTEUR OU PRENDRE DES VIRAGES À VIVE ALLURE LORSQUE LE BAC EST EN POSITION HAUTE.
- 4- TOUJOURS DÉBRAYER LA PRISE DE FORCE AVANT DE LEVER LE BAC.
- 5- ARRÊTER LE MOTEUR DU TRACTEUR AVANT TOUTE INTERVENTION SUR L'APPAREIL.
- 6- POSER DES CONTREPOIDS À L'AVANT DU TRACTEUR.
- 7- RAMENER LE BAC EN POSITION PRÉ-BEUVAGE AVANT DE LE REDESCENDRE.

WHEN USING THE UNIT YOU ARE ADVISED...

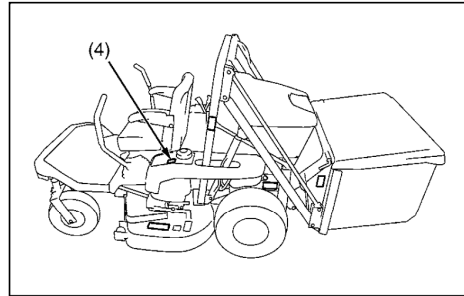
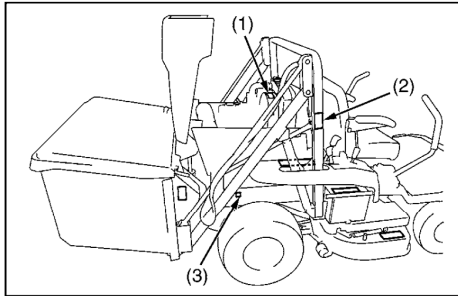
- 1- TO REDUCE FORWARD SPEED WHEN CUTTING LONG OR WET GRASS.
- 2- NEVER TO RAISE THE GRASSBOX WHILE THE TRACTOR IS ON SOFT, SLOPING OR UNEVEN GROUND.
- 3- NEVER DRIVE THE TRACTOR OR TURN SHARPLY WHILE THE GRASSBOX IS RAISED.
- 4- ALWAYS DISENGAGE THE PTO BEFORE RAISING THE GRASSBOX.
- 5- ALWAYS TO STOP THE TRACTOR ENGINE BEFORE CLEARING ANY BLOCKAGES.
- 6- TO FIT COUNTER WEIGHTS TO THE FRONT OF THE TRACTOR.
- 7- ALWAYS RETURN THE GRASSBOX TO THE PRE DUMP POSITION BEFORE LOWERING INTO THE WORKING POSITION.

BEIM EINSATZ FOLGENDE HINWEISE BEACHTEN:

- 1- BEI LANGEM ODER NASSEM GRAS FAHRGESCHWINDIGKEIT REDUZIEREN.
- 2- BEI WEICHEM, ABSCHUSSIGEM ODER UNEBENEM GELÄNDE DEN FANGBEHÄLTER NICHT HOCHFÄHREN.
- 3- KEINE ENGEN KURVEN FAHREN MIT ANGEHOBEDEM FANGBEHÄLTER.
- 4- VOR DEM HOCHFÄHREN DES FANGBEHÄLTERS MAHWERK AUSCHALTEN.
- 5- WÄHREND DER BESEITIGUNG VON VERSTOPFUNGEN MOTOR ABSTELLEN.
- 6- KONTERGEWICHTE AM FRONTRAHMEN DES AFSITZMÄHERS ANBRINGEN.
- 7- VOR DEM HERUNTERFAHREN DEN FANGBEHÄLTER ZURÜCK IN AUSGANGSSTELLUNG KIPPEN.

K2011-658111

3GZAAABCP002A



- (1) Part No. 6C090-4958-2
Stay clear of engine
fan and fan belt



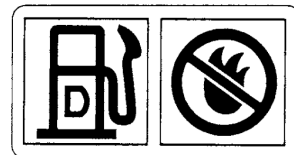
- (2) Part No. K6082-6583-1
[HD type only]
● Do not put yourself below the
grass container. It may fall
accidentally

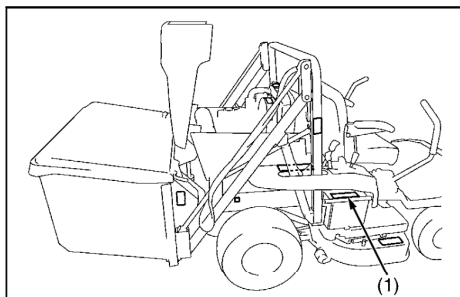


- (3) Part No. K3512-4719-1
HOT SURFACE
DO NOT TOUCH



- (4) Part No. K2011-6516-1
Diesel fuel No fire
only





(1) Part No. 5H522-4112-1

TO AVOID INJURY FROM BATTERY GASES AND ACIDS



- Keep away cigarettes, flames or sparks.
- Always shield eyes and face from battery.
- Keep out of reach of children.
- Poison causes severe burns.
- Contains sulfuric acid.
- Read and understand operator's manual.
- Danger explosive gases.

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.

3GZAAABCP004A

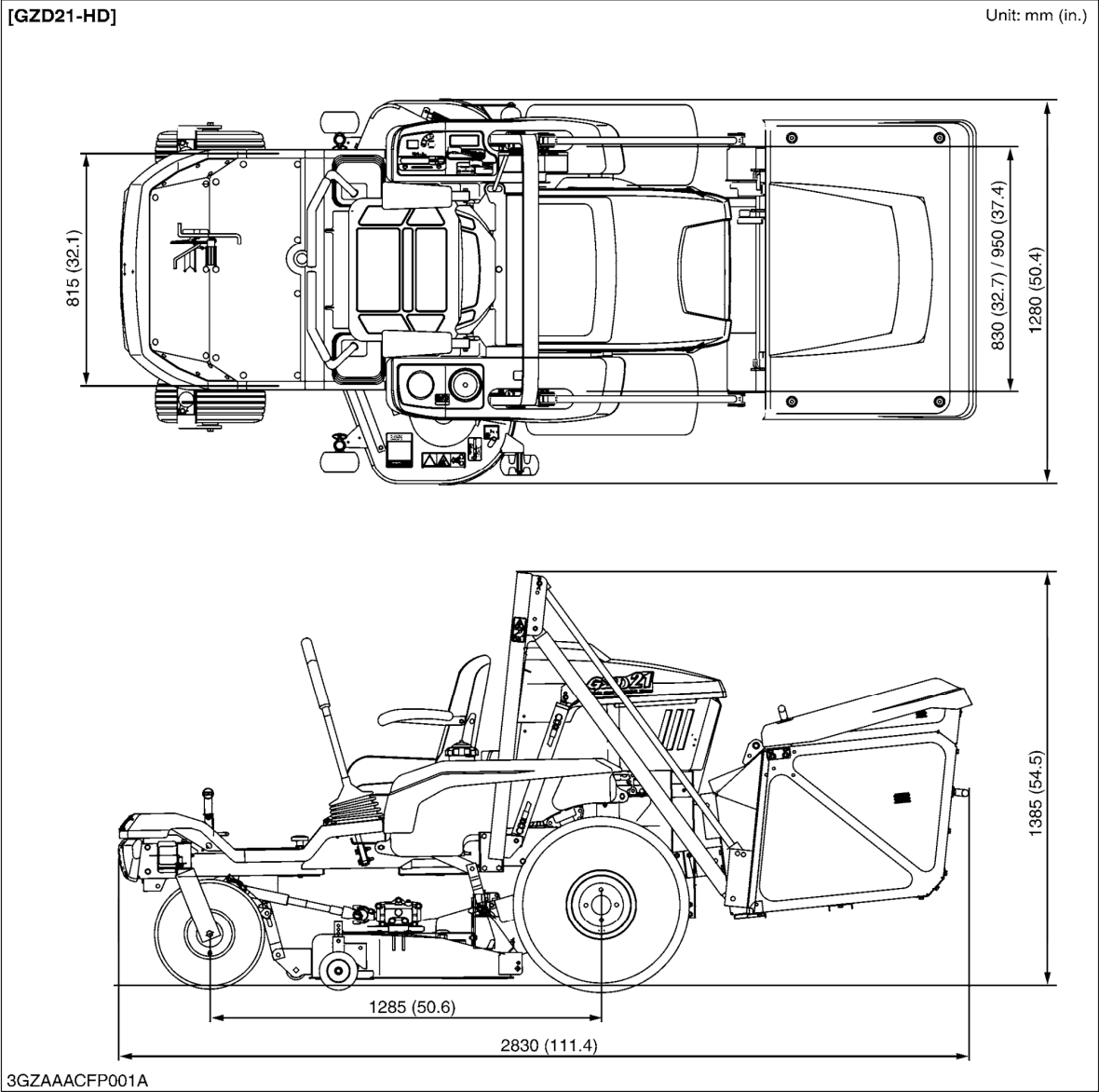
SPECIFICATIONS

Model		GZD21-HD
Maximum gross power		15.6 kW (21 HP) *1
Engine	Model	D782-GZD21
	Type	Indirect injection, Vertical, water-cooled, 4-cycle diesel engine
	Number of cylinder	3
	Bore and stroke	67.0 x 73.6 mm (2.64 x 2.90 in.)
	Total displacement	778 cm ³ (47.5 cu.in.)
	Rated revolution	3000 rpm
	Combustion chamber	Spherical type (E-TVCS)
	Fuel injection pump	Bosh MD type mini pump
	Governor	Centrifugal ball mechanical governor
	Injection nozzle	Bosh throttle type
	Injection timing	0.28 to 0.32 rad (16 ° to 18 °) before T.D.C.
	Injection order	1-2-3
	Injection pressure	13.73 MPa (140 kgf/cm ² , 1990 psi)
	Lubricating system	Forced lubrication by gear pump
	Cooling system	Pressurized radiator, forced circulation with water pump
	Lubricating oil	API Service classification CD, CE or CF, below 0 °C (32 °F) : SAE 10W, 10W-30 or 10W-40, 0 to 25 °C (32 to 77 °F) : SAE 20, 10W-30 or 10W-40, above 25 °C (77 °F) : SAE 30, 10W-30 or 10W-40
	Starting system	Electrical starter (12 V, 1.1 kW)
	Battery	65D23L (12V, 52A.H. at 5H.R.)
	Fuel	No.2-D Diesel fuel (ASTM D975) [No. 1-D diesel fuel, if temperature is below -10 °C (14 °F)]
Capacities	Fuel tank	20 L (5.3 U.S.gals, 4.4 Imp.gals)
	Engine crankcase	2.8 L (3.0 U.S.qts, 2.5 Imp.qts)
	Engine coolant	1.9 L (2.0 U.S.qts, 1.7 Imp.qts)
	Recovery tank	0.25 L (0.26 U.S.qts., 0.22 Imp.qts)
	Transmission case & rear axle gear case (RH & LH)	10.0 L (10.6 U.S.qts., 8.8 Imp.qts)
	Front PTO case	0.13 L (0.14 U.S.gals, 0.11 Imp.gals)
	Mower gear case oil	0.15 L (0.16 U.S.qts, 0.13 Imp.qts)
Tyres	Front	15 x 6.0 - 6 (4 PR) Rib
	Rear	23 x 10.5 - 12 (4 PR) Turf
Traveling speeds	Forward	0 to 15.5 km/h (0 to 9.6 mph)
	Reverse	0 to 11.5 km/h (0 to 7.1 mph)

NOTE: *1 Manufacture's estimate

Model			GZD21-HD
Dimensions	Overall length (with grass collector)		2830 mm (111.4 in.)
	Overall width (with mower)		1280 mm (50.4 in.)
	Overall height (without ROPS)		1385 mm (54.5 in.)
	Wheel base		1285 mm (50.6 in.)
	Tread	Front	815 mm (32.1 in.)
		Rear	830 mm (32.7 in.), 950 mm (37.4 in.)
Weight (with mower deck and grass collector)			590 kg (1301.0 lbs) / with 48 in. mower deck

DIMENSIONS



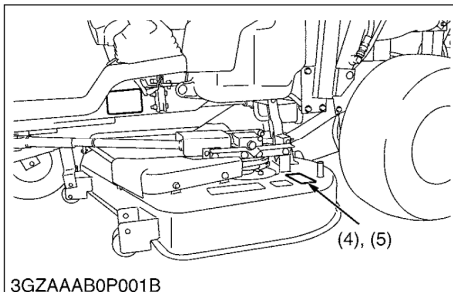
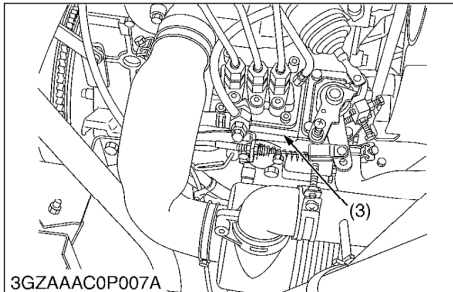
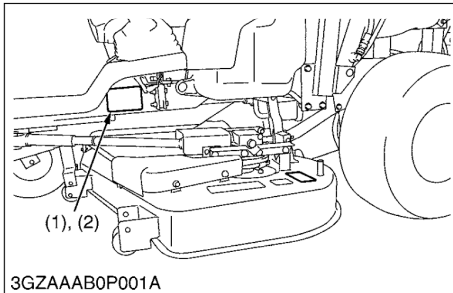
G GENERAL

GENERAL

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1. IDENTIFICATION

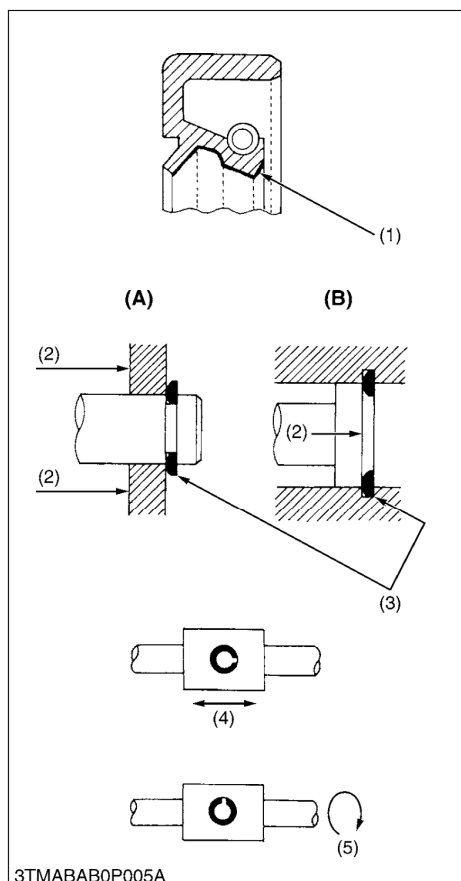


When contacting your local KUBOTA distributor, always specify engine serial number (3), machine serial number (2), mower serial number (4) and hour meter reading.

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

W1010662

2. GENERAL PRECAUTIONS



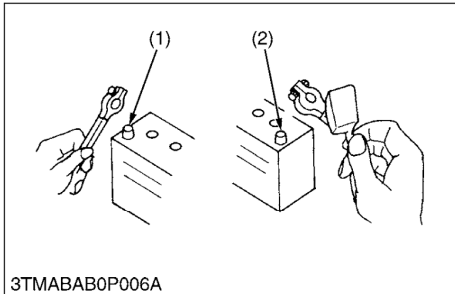
- During disassembly, carefully arrange removed parts in a clean area to prevent confusion later. Screws, bolts and nuts should be installed in their original position to prevent reassembly errors.
- When special tools are required, use KUBOTA genuine special tools. Special tools which are not frequently used should be made according to the drawings provided.
- Before disassembling or servicing electrical wires, always disconnect the ground cable from the battery first.
- Remove oil and dirt from parts before measuring.
- Use only KUBOTA genuine parts for parts replacement to maintain machine performance and to assure safety.
- Gaskets and O-rings must be replaced during reassembly. Apply grease to new O-rings or oil seals before assembling. See the figure left side.
- When reassembling external snap rings or internal snap rings, they must be positioned so that sharp edge faces against the direction from which a force is applied. See the figure left side.
- When inserting spring pins, their splits must face the direction from which a force is applied. See the figure left side.
- To prevent damage to the hydraulic system, use only specified fluid or equivalent.

- (1) Grease
- (2) Force
- (3) Sharp Edge
- (4) Axial Force
- (5) Rotating Movement

- (A) External Snap Ring
- (B) Internal Snap Ring

W1012189

3. HANDLING PRECAUTIONS FOR ELECTRICAL PARTS AND WIRING



To ensure safety and prevent damage to the machine and surrounding equipment, heed the following precautions in handling electrical parts and wiring.

■ IMPORTANT

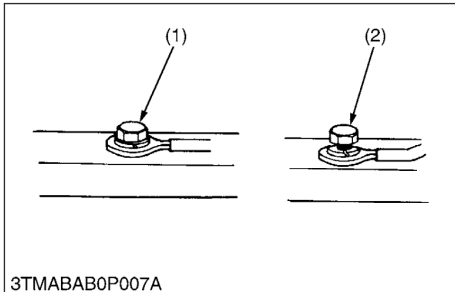
- Check electrical wiring for damage and loosened connection every year. To this end, educate the customer to do his or her own check and at the same time recommend the dealer to perform periodic check for a fee.
- Do not attempt to modify or remodel any electrical parts and wiring.
- When removing the battery cables, disconnect the negative cable first. When installing the battery cables, connect the positive cable first.

(1) Negative Terminal

(2) Positive Terminal

W1012776

[1] WIRING

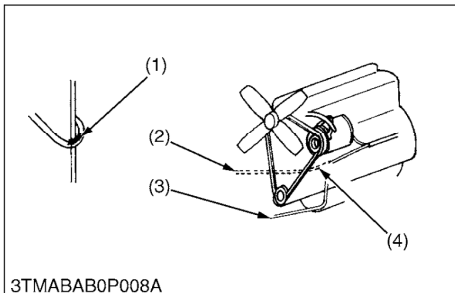


- Securely tighten wiring terminals.

(1) Correct
(Securely Tighten)

(2) Incorrect
(Loosening Leads to Faulty Contact)

W1013299

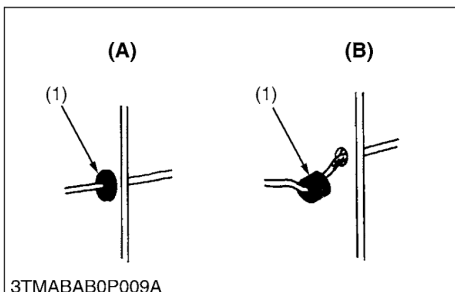


- Do not let wiring contact dangerous part.

(1) Dangerous Part
(2) Wiring (Incorrect)

(3) Wiring (Correct)
(4) Dangerous Part

W1013844

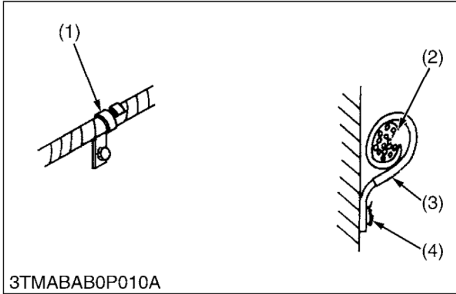


- Securely insert grommet.

(1) Grommet

(A) Correct
(B) Incorrect

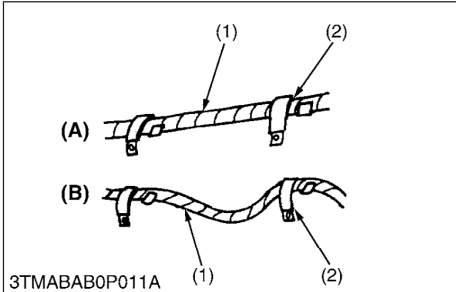
W1014420



- Securely clamp, being careful not to damage wiring.

- (1) Clamp
*Wind Clamp Spirally
(2) Wire Harness
(3) Clamp
(4) Welding Dent

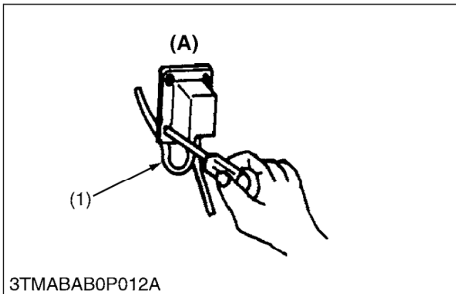
W1015003



- Clamp wiring so that there is no twist, unnecessary sag, or excessive tension, except for movable part, where sag be required.

- (1) Wiring
(2) Clamp
(A) Correct
(B) Incorrect

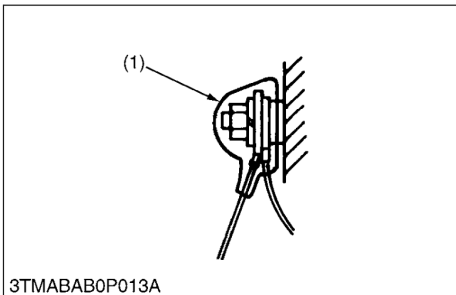
W1015624



- In installing a part, take care not to get wiring caught by it.

- (1) Wiring
(A) Incorrect

W1015738

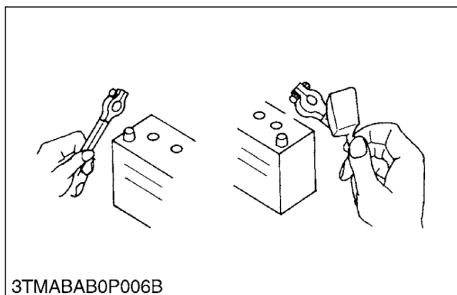


- After installing wiring, check protection of terminals and clamped condition of wiring, only connect battery.

- (1) Cover
*Securely Install Cover

W1015828

[2] BATTERY



- Take care not to confuse positive and negative terminal posts.
- When removing battery cables, disconnect negative cable first. When installing battery cables, check for polarity and connect positive cable first.
- Do not install any battery with capacity other than is specified (Ah).
- After connecting cables to battery terminal posts, apply high temperature grease to them and securely install terminal covers on them.
- Do not allow dirt and dust to collect on battery.

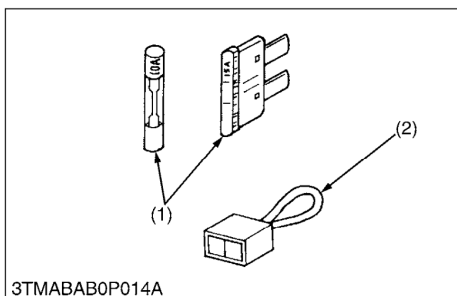


CAUTION

- Take care not to let battery liquid spill on your skin and clothes. If contaminated, wash it off with water immediately.
- Before recharging the battery, remove it from the machine.
- Before recharging, remove cell caps.
- Do not recharging in a well-ventilated place where there is no open flame nearby, as hydrogen gas and oxygen are formed.

W1015930

[3] FUSE



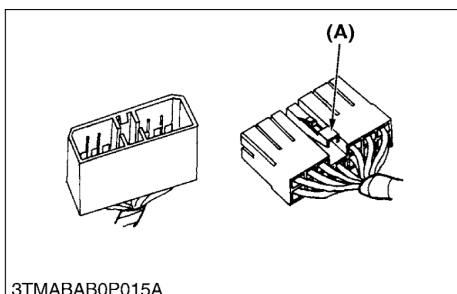
- Use fuses with specified capacity. Neither too large or small capacity fuse is acceptable.
- Never use steel or copper wire in place of fuse.
- Do not install working light, radio set, etc. on machine which is not provided with reserve power supply.
- Do not install accessories if fuse capacity of reserve power supply is exceeded.

(1) Fuse

(2) Fusible Link

W1016148

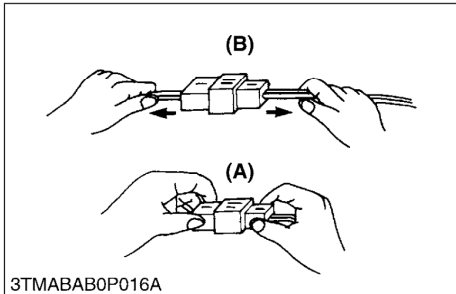
[4] CONNECTOR



- For connector with lock, push lock to separate.

(A) Push

W1016297

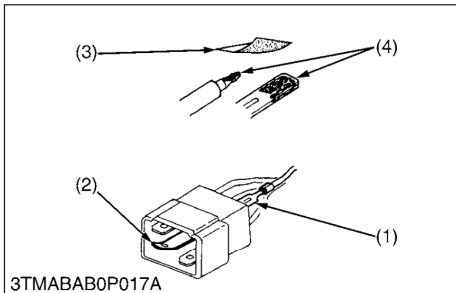


- In separating connectors, do not pull wire harnesses.
- Hold connector bodies to separate.

(A) Correct

(B) Incorrect

W1016434

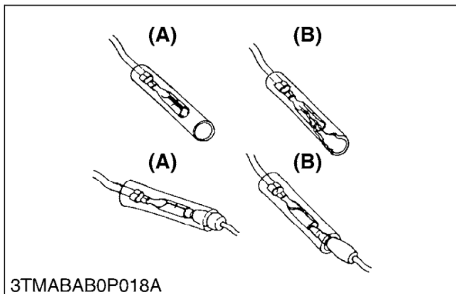


- Use sandpaper to remove rust from terminals.
- Repair deformed terminal. Make certain there is no terminal being exposed or displaced.

(1) Exposed Terminal
(2) Deformed Terminal

(3) Sandpaper
(4) Rust

W1016526



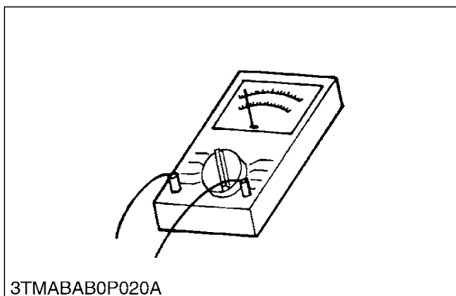
- Make certain that there is no female connector being too open.

(A) Correct

(B) Incorrect

W1016708

[5] HANDLING OF CIRCUIT TESTER



- Use tester correctly following manual provided with tester.
- Check for polarity and range.

W1016823

4. LUBRICANTS, FUEL AND COOLANT

No.	Place		Capacity	Lubricants, fuel and coolant
			GZD21-HD	
1	Fuel tank		20 L 5.3 U.S.gals 4.4 Imp.gals	No. 2-D diesel fuel No. 1-D diesel fuel if temperature is below -10 °C (14 °F)
2	Coolant	Cooling system	1.9 L 2.0 U.S.qts 1.7 Imp.qts	Fresh clean water with anti-freeze
		Recovery tank	0.25 L 0.26 U.S.qts 0.22 Imp.qts	
3	Engine crankcase		2.8 L 3.0 U.S.qts 2.5 Imp.qts	Engine oil : API Service Classification CD, CE or CF Below 0 °C (32 °F) : SAE10W, 10W-30 or 10W-40 0 to 25 °C (32 to 77 °F) : SAE20, 10W-30 or 10W-40 Above 25 °C (77 °F) : SAE30, 10W-30 or 10W-40
4	Transmission case and rear axle gear case (RH and LH)		10.0 L 2.6 U.S.gals 2.2 Imp.gals	KUBOTA UDT or SUPER UDT fluid**
5	Mower gear box		0.15 L 0.16 U.S.qts 0.13 Imp.qts	
6	Front PTO case		0.13 L 0.14 U.S.qts 0.11 Imp.qts	

* Oil amount when the oil level is at the upper of the oil level gauge.




** KUBOTA original transmission hydraulic fluid.

Greasing, oiling (Machine)				
No.	Place	No. of greasing point	Capacity	Type of grease
7	Motion control lever boss	2	Until grease overflows	SAE multi-purpose type grease
8	Centre pin	1		
9	King pin	2		
10	Front wheel	2		
11	Front PTO drive shaft	2		
12	Engine universal joint	1		
13	Motion control lever	–	Moderate amount oil	Oil
14	Seat adjuster	–		
15	Hydraulic lift pedal	–		
16	Cable	–		
17	Grass collector link	–		
Greasing (Mower)				
18	Universal joint	3	Until grease overflows	SAE multi-purpose type grease
19	Two spindle shafts	2		



5. TIGHTENING TORQUES

[1] GENERAL USE SCREWS, BOLTS AND NUTS



Screws, bolt and nuts whose tightening torque are not specified in this Workshop Manual should be tightened according to the table below.

Indication on top of bolt	 No-grade or 4T						 7T						 9T		
Material of bolt	SS400, S20C						S43C, S48C						SCr435, SCM435		
Material of opponent part	Ordinariness			Aluminum			Ordinariness			Aluminum			Ordinariness		
Unit Diameter	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 (6 mm, 0.24 in.)	7.85 to 9.31	0.80 to 0.95	5.79 to 6.87	7.85 to 8.82	0.80 to 0.90	5.79 to 6.50	9.81 to 11.2	1.00 to 1.15	7.24 to 8.31	7.85 to 8.82	0.80 to 0.90	5.79 to 6.50	12.3 to 14.2	1.25 to 1.45	9.05 to 10.4
M8 (8 mm, 0.31 in.)	17.7 to 20.5	1.8 to 2.1	13.1 to 15.1	16.7 to 19.6	1.7 to 2.0	12.3 to 14.4	23.6 to 27.4	2.4 to 2.8	17.4 to 20.2	17.7 to 20.5	1.8 to 2.1	13.1 to 15.1	29.5 to 34.3	3.0 to 3.5	21.7 to 25.3
M10 (10 mm, 0.39 in.)	39.3 to 45.1	4.0 to 4.6	29.0 to 33.2	31.4 to 34.3	3.2 to 3.5	23.2 to 25.3	48.1 to 55.8	4.9 to 5.7	35.5 to 41.2	39.3 to 44.1	4.0 to 4.5	29.0 to 32.5	60.9 to 70.6	6.2 to 7.2	44.9 to 52.0
M12 (12 mm, 0.47 in.)	62.8 to 72.5	6.4 to 7.4	46.3 to 53.5	—	—	—	77.5 to 90.2	7.9 to 9.2	57.2 to 66.5	62.8 to 72.5	6.4 to 7.4	46.3 to 53.5	103 to 117	10.5 to 12.0	76.0 to 86.7
M14 (14 mm, 0.55 in.)	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 (16 mm, 0.63 in.)	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 (18 mm, 0.71 in.)	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 (20 mm, 0.79 in.)	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] METRIC SCREWS, BOLTS AND NUTS

Grade	Property class 8.8 			Property class 10.9 		
Unit Nominal Diameter	N·m	kgf·m	lbf·ft	N·m	kgf·m	lbf·ft
M8	23.6 to 27.4	2.4 to 2.8	17.4 to 20.2	29.4 to 34.3	3.0 to 3.5	21.7 to 25.3
M10	48.1 to 55.8	4.9 to 5.7	35.5 to 41.2	60.8 to 70.5	6.2 to 7.2	44.9 to 52.1
M12	77.5 to 90.1	7.9 to 9.2	57.2 to 66.5	103.0 to 117.0	10.5 to 12.0	76.0 to 86.8
M14	124.0 to 147.0	12.6 to 15.0	91.2 to 108.0	167.0 to 196.0	17.0 to 20.0	123.0 to 144.0
M16	196.0 to 225.0	20.0 to 23.0	145.0 to 166.0	260.0 to 303.0	26.5 to 31.0	192.0 to 224.0

[3] AMERICAN STANDARD SCREWS, BOLTS AND NUTS WITH UNC OR UNF THREADS

Grade	SAE GR.5			SAE GR.8		
						
Unit	N·m	kgf·m	lbf·ft	N·m	kgf·m	lbf·ft
Nominal Diameter						
5/16	23.1 to 27.8	2.35 to 2.84	17.0 to 20.5	32.5 to 39.3	3.31 to 4.01	24.0 to 29.0
3/8	47.5 to 57.0	4.84 to 5.82	35.0 to 42.0	61.0 to 73.2	6.22 to 7.47	45.0 to 54.0
1/2	108.5 to 130.2	11.07 to 13.29	80.0 to 96.0	149.2 to 179.0	15.22 to 18.27	110.0 to 132.0
9/16	149.2 to 179.0	15.22 to 18.27	110.0 to 132.0	217.0 to 260.4	22.14 to 26.57	160.0 to 192.0
5/8	203.4 to 244.1	20.75 to 24.91	150.0 to 180.0	298.3 to 358.0	30.44 to 36.53	220.0 to 264.0

[4] PLUGS

Shape	Size	Material of opponent part					
		Ordinariness			Aluminum		
		N·m	kgf·m	lbf·ft	N·m	kgf·m	lbf·ft
	R1/8	12.7 to 21.6	1.3 to 2.2	9.4 to 15.9	12.7 to 19.6	1.3 to 2.0	9.4 to 15.4
	R1/4	24.5 to 44.1	2.5 to 4.5	18.1 to 32.5	24.5 to 34.3	2.5 to 3.5	18.1 to 25.4
	R3/8	49.0 to 88.3	5.0 to 9.0	36.2 to 65.1	49.0 to 58.8	5.0 to 6.0	36.2 to 43.4
	R1/2	58.8 to 107.9	6.0 to 11.0	43.4 to 79.6	58.8 to 78.5	6.0 to 8.0	43.4 to 57.9
	G1/4	24.5 to 34.3	2.5 to 3.5	18.1 to 25.3	—	—	—
	G3/8	61.8 to 82.4	6.3 to 8.4	45.6 to 60.8	—	—	—
	G1/2	49.0 to 88.3	5.0 to 9.0	36.2 to 65.1	—	—	—

6. MAINTENANCE

No.	Period Item		Indication on hour meter												After since	Reference page	
			50	100	150	200	250	300	350	400	450	500	550	600			
1	Engine oil	Change	★	☆		☆		☆		☆		☆		☆	every 100 Hr	G-19	
2	Engine oil filter	Replace	★			☆				☆				☆	every 200 Hr	G-20	
3	Transmission and Rear axle gear case (RH and LH) fluid	Change	★			☆				☆				☆	every 200 Hr	G-21	
4	Transmission oil filter	Replace	★			☆				☆				☆	every 200 Hr	G-20	
5	Transmission strainer	Clean	★			☆				☆				☆	every 200 Hr	G-23	
6	Front PTO case fluid	Check	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	every 50 Hr	G-29	
		Change			☆			☆			☆			☆	every 150 Hr	G-29	
7	Front axle pivot	Adjust		★		☆				☆				☆	every 200 Hr	G-24	*2
8	Safety device	Check	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	every 50 Hr	G-25	
9	Oiling	—	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	every 50 Hr	G-28	
10	Greasing (without mower)	—	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	every 50 Hr	G-27	
11	Mower gear box oil	Check	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	every 50 Hr	G-26	
		Change			☆			☆			☆			☆	every 150 Hr	G-34	
12	Air cleaner element	Clean	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	every 50 Hr	G-26	*1
		Replace													every 1 year	G-36	
13	Battery condition	Check	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	every 50 Hr	G-32	
14	Fan belt	Adjust		☆		☆		☆		☆		☆		☆	every 100 Hr	G-31	
15	Parking brake	Adjust		☆		☆		☆		☆		☆		☆	every 100 Hr	G-31	*2
16	Fuel filter element	Check		☆		☆		☆		☆		☆		☆	every 100 Hr	G-30	
		Replace								☆					every 400 Hr	G-36	*2
17	Fuel line	Check		☆		☆		☆		☆		☆		☆	every 100 Hr	G-30	
		Replace													every 2 years	G-39	*2

No.	Item	Period	Indication on hour meter												After since	Reference page	
			50	100	150	200	250	300	350	400	450	500	550	600			
18	Radiator hose and clamp	Check				☆				☆				☆	every 200 Hr	G-35	
		Replace													every 2 years	G-39	*2
19	Hydraulic hose	Check				☆				☆				☆	every 200 Hr	G-35	
		Replace													every 2 years	G-39	*2
20	Radiator	Clean													every 1 year	G-37	
21	Coolant	Change													every 1 year	G-37	
22	Mower gear box seal	Replace													every 2 year	G-39	*2
23	Fuel system	Bleed													Service as required	G-42	
24	Fuse	Replace														G-40	
25	Blade	Replace														G-41	
26	Mower belt	Replace														G-42	

■ IMPORTANT

- The jobs indicated by ☆ must be done initially.
- *1 : This maintenance should be done daily more often in dusty condition than in normal conditions. Suggested cleaning interval is every 100 hours in normal conditions.
- *2 : These items should be serviced by an authorized KUBOTA Distributor, unless the owner has the proper tools and is mechanically proficient.

7. CHECK AND MAINTENANCE



CAUTION

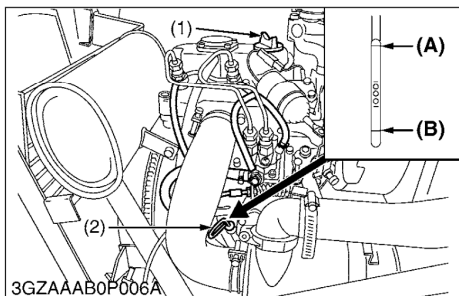
- Be sure to check and service the machine on a flat place with engine shut off, the parking brake on and chock the wheels.

[1] DAILY CHECK

To prevent trouble from occurring, it is important to know the condition of the machine. Check the following items before starting.

Checking

- Check areas where previous trouble was experienced.
- Walk around the machine.
 1. Tire pressure, wear and damage
 2. Oil and water leak
 3. Engine oil level
 4. Transmission fluid level
 5. Coolant level in the recovery tank
 6. Damage of machine body, tightness of all bolts and nuts
 7. Radiator screen
 8. Panel screen
 9. Brake play
 10. Air cleaner
 11. Fuel level
 12. Oiling
- Mower
 1. Oil leak
 2. Make sure blade cap screws are tight.
 3. Check blades for wear or damage.
 4. Check all hardware.
 5. Make sure all pins are in place.
 6. Mower deck cleaning
 7. Greasing
- While sitting in the operator's seat,
 1. Motion control lever
 2. Parking brake
- Starting the engine,
 1. Color of the exhaust fumes
 2. Safety start switch, seat safety control and another safety control and another safety devices.
 3. Check for abnormal noise and vibration.



Checking Engine Oil Level



CAUTION

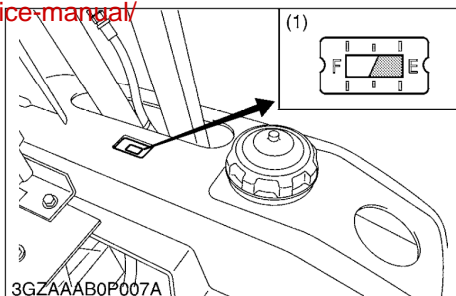
- Always stop the engine and remove the key before checking oil.

1. Check engine oil before starting and 5 minutes or more after the engine has stopped.
2. Wipe dipstick area clean.
3. To check the oil level, remove the dipstick, wipe it clean, replace it, and draw it out again. Check to see that the oil level is between the two notches.
4. Add new oil to the prescribed level at the oil port if necessary.
5. When using a different brand or viscosity oil from the previous one, remove all of the old oil and oil filter. Never mix two different types of oil.
6. Use the proper Engine Oil SAE according to the ambient temperatures. (See page G-7.)

- (1) Engine Oil Port
(2) Oil Level Dipstick

- (A) Upper Level
(B) Lower Level

W1025107



Checking Amount of Fuel and Refueling

⚠ CAUTION

- Handle fuel carefully. If the engine is running, do not fill the fuel tank. If engine is hot, let engine cool several minutes before adding fuel.

Do not smoke while filling the fuel tank or servicing the fuel system. Fill fuel tank only to bottom of filler neck.

Check the fuel level. Take care that the fuel tank does not become empty.

Fuel tank capacity	20 L 5.3 U.S.gals 4.4 Imp.gals
--------------------	--------------------------------------

■ IMPORTANT

- Use Diesel Fuel Only.

1. Use No.2 diesel fuel.
2. Use No.1 diesel fuel if the temperature is below -10 °C.
3. Always use a strainer when refueling to prevent fuel injection pump contamination.

■ NOTE

- No.2-D is a distillate fuel of lower volatility for engines in industrial and heavy mobile service.

(SAE J313 JUN87)

Grade of Diesel Fuel Oil according to ASTM D975

Flash point °C	Water and Sediment, volume %	Carbon Residue on, 10 percent Residuum %	Ash, weight %
Min	Max	Max	Max
52	0.05	0.35	0.01

Distillation Temperatures °C 90% Point		Viscosity Kinematics cSt or mm ² /S at 40 °C		Viscosity Saybolt, SUS at 100 °F	
Min	Max	Min	Max	Min	Max
282	338	1.9	4.1	32.6	40.1

Sulfur, weight	Copper strip Corrosion	Cetane Number
Max	Max	Min
0.50	No.3	40

(1) Fuel Gauge

E : Empty

F : Full

W1025829