

Product: Kubota RTV500 Service Manual

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WSM

WORKSHOP MANUAL
UTILITY VEHICLE

RTV500

Kubota

KiSC issued 08, 2021 A

Sample of manual. Download All 336 pages at:

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TO THE READER

This Workshop Manual tells the servicing personnel about the mechanism, servicing and maintenance of the RTV500. It contains 4 parts: "**Information**", "**General**", "**Mechanism**" and "**Servicing**".

■ **Information**

This section primarily contains information below.

- Safety First
- Safety Decal
- Specifications
- Dimensions

■ **General**

This section primarily contains information below.

- Engine Identification
- Model Identification
- General Precautions
- Maintenance Check List
- Check and Maintenance
- Special Tools

■ **Mechanism**

This section contains information on the structure and the function of the unit. Before you continue with the subsequent sections, make sure that you read this section.

Refer to the latest version of Workshop Manual (Code No. 9Y021-01870 / 9Y021-18200) for the diesel engine / tractor mechanism that this workshop manual does not include.

■ **Servicing**

This section primarily contains information below.

- Troubleshooting
- Servicing Specifications
- Tightening Torques
- Checking, Disassembling and Servicing

All illustrations, photographs and specifications contained in this manual are of the newest information available at the time of publication.

KUBOTA reserves the right to change all information at any time without notice.

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September 2008

Record of Revisions

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

Last digit of the Code No.	Month of Revision	Main Revised Point and Corrective Measures {Search word}	Reference Page
4	2013.05	Add the safety decals for Europe. {Europe}	I-8
5	2016.03	Revised safety decals. Revised maintenance intervals.	I-6 G-15
6	2017.12	Corrected the expression of lubricants.	G-10, G-11, G-22, G-41, 3-S5, 3-S6, 3-S7, 3-S16
		Corrected the errors the maintenance interval.	G-16, G-18
7	2019.03	Added Proposition 65 label and revised battery labels.	I-4, I-6, I-11
8	2019.10	Added "CO ₂ emission *1, (NRSC *2) 910.7 g/kWh, Capacity 20 L" Added "**1 and *2"	I-13
		Added Fuel information for European Union.	G-11
9	2021.08	Added torque values for suspension rods	2-S5
		Revised dismounting transaxle and engine one piece assembly	2-S22
		Added secondary coil resistance (With spark plug caps)	6-S6, 6-S27

I INFORMATION

INFORMATION

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1. SAFETY FIRST

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 try 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, could result in minor or moderate injury.

■ IMPORTANT

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

■ NOTE

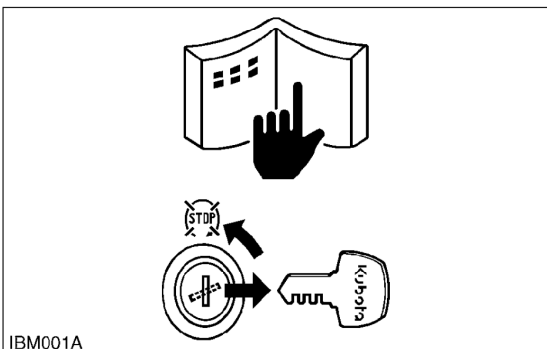
- Gives helpful information.

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BEFORE YOU START SERVICE

- 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 stable and level ground, and set the parking brake.
- Lower the implement to the ground.
- Stop the engine, then remove the key.
- Disconnect the battery negative cable.
- Hang a "DO NOT OPERATE" tag in the operator station.

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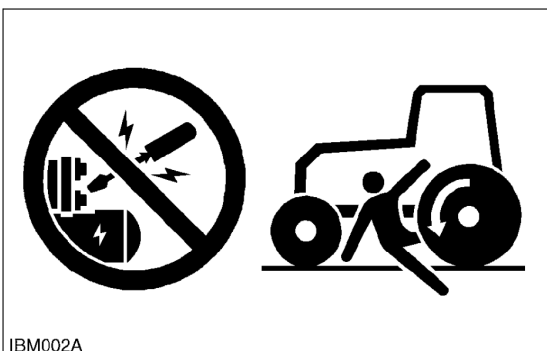


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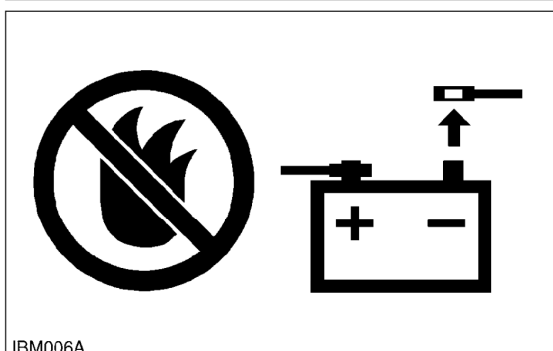
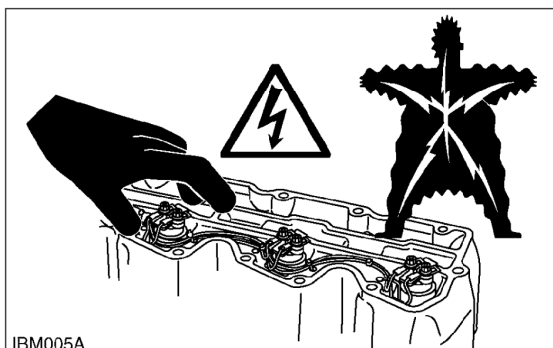
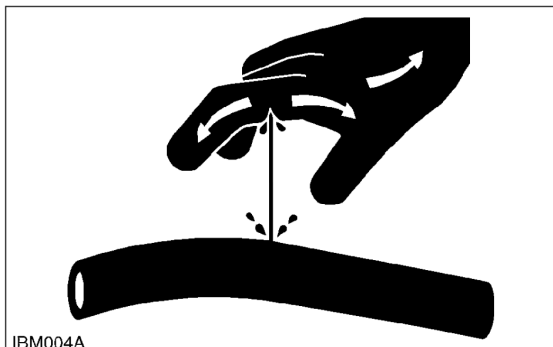
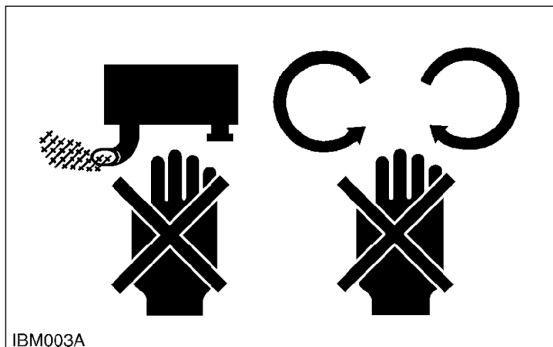
START SAFELY

- Do not do the procedures below when you start the engine.
 - short across starter terminals
 - bypass the safety start switch
- Do not alter or remove any part of machine safety system.
- Before you start the engine, make sure that all shift levers are in neutral positions or in disengaged positions.
- Do not start the engine when you stay on the ground. Start the engine only from operator's seat.

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OPERATE SAFELY

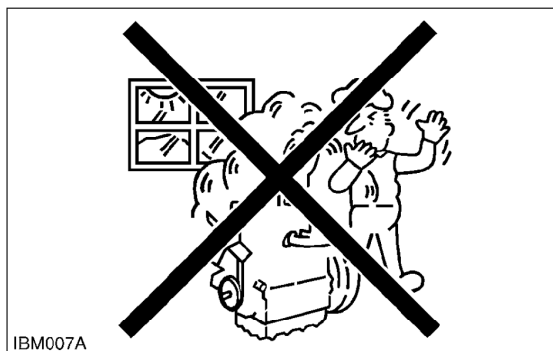
- Do not use the machine after you consume alcohol or medication or when you are tired.
- Put on applicable clothing and safety equipment.
- Use applicable tools only. Do not use alternative tools or parts.
- When 2 or more persons do servicing, make sure that you do it safely.
- Do not operate below the machine that only a jack holds. Always use a safety stand to hold the machine.
- Do not touch the hot parts or parts that turn when the engine operates.
- Do not remove the radiator cap when the engine operates, or immediately after it stops. If not, hot water can spout out from the radiator. Only remove the radiator cap when it is at a sufficiently low temperature to touch with bare hands. Slowly loosen the cap to release the pressure before you remove it fully.
- Released fluid (fuel or hydraulic oil) under pressure can cause damage to the skin and cause serious injury. Release the pressure before you disconnect hydraulic or fuel lines. Tighten all connections before you apply the pressure.
- Do not open a fuel system under high pressure. The fluid under high pressure that stays in fuel lines can cause serious injury. Do not disconnect or repair the fuel lines, sensors, or any other components between the fuel pump and injectors on engines with a common rail fuel system under high pressure.
- Put on an applicable ear protective device (earmuffs or earplugs) to prevent injury against loud noises.
- Be careful about electric shock. The engine generates a high voltage of more than DC100 V in the ECU and is applied to the injector.

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PREVENT A FIRE

- Fuel is very flammable and explosive under some conditions. Do not smoke or let flames or sparks in your work area.
- To prevent sparks from an accidental short circuit, always disconnect the battery negative cable first and connect it last.
- The battery gas can cause an explosion. Keep the sparks and open flame away from the top of battery, especially when you charge the battery.
- Make sure that you do not spill fuel on the engine.

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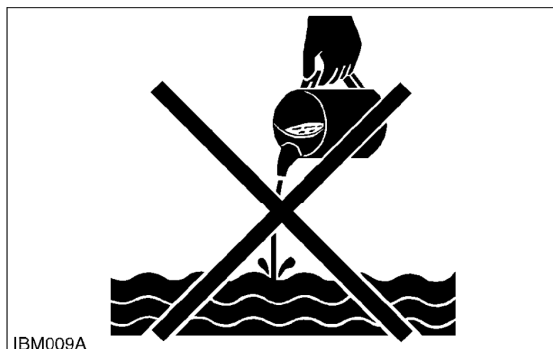


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KEEP A GOOD AIRFLOW IN THE WORK AREA

- If the engine is in operation, make sure that the area has good airflow. Do not operate the engine in a closed area. The exhaust gas contains poisonous carbon monoxide.

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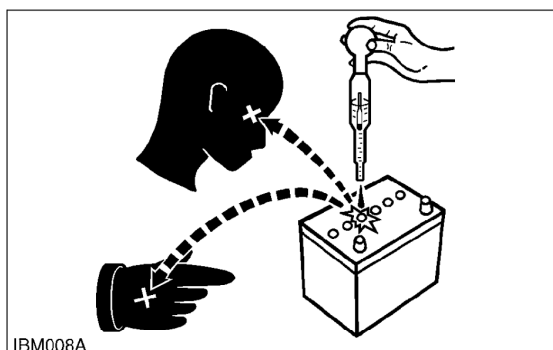


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DISCARD FLUIDS CORRECTLY

- Do not discard fluids on the ground, down the drain, into a stream, pond, or lake. Obey related environmental protection regulations when you discard oil, fuel, coolant, electrolyte and other dangerous waste.

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PREVENT ACID BURNS

- Keep electrolyte away from your eyes, hands and clothing. Sulfuric acid in battery electrolyte is poisonous and it can burn your skin and clothing and cause blindness. If you spill electrolyte on yourself, clean yourself with water, and get medical aid immediately.

WSM000001IN10008US0



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PREPARE FOR EMERGENCIES

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

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2. 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.

WSM000001INT0013US0

[1] North America and Oceania

(1) Part No. K7311-6565-1



1AYAAAYAP0920

(2) Part No. K7311-6522-1



1AYAAAYAP0930

(3) Part No. K7311-6530-1



1AYAAAYAP0940

(4) Part No. K7311-6524-1



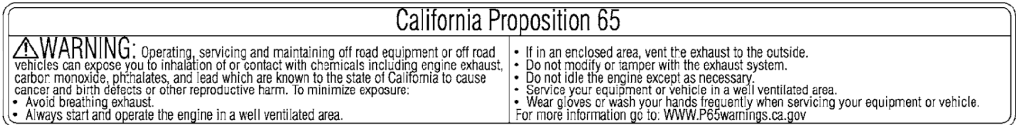
1AYAAAYAP0950

(5) Part No. K7311-6533-3

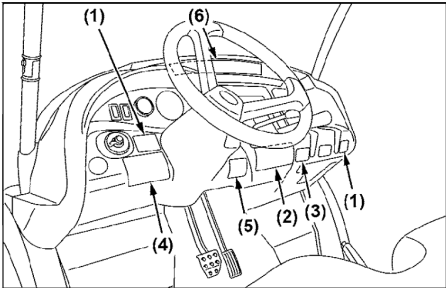


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(6) Part No. K7311-6596-1



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9Y1210140INT0001US0

(1) Part No. K7311-6525-2



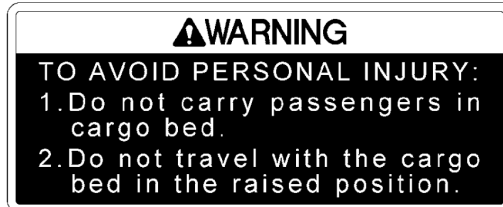
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(2) Part No. K7561-6541-2



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(3) Part No. K7311-6526-2

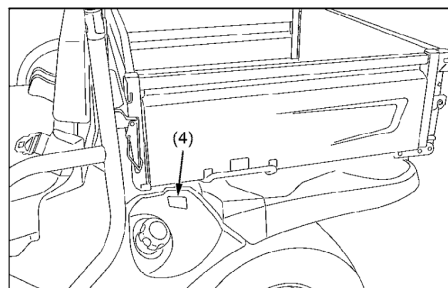
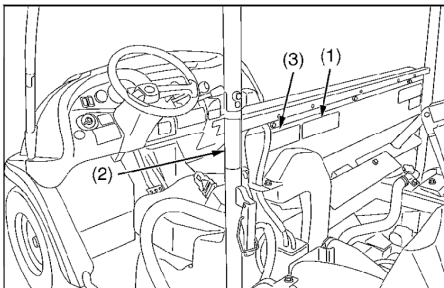


1AYAAAYAP0990

(4) Part No. K7311-6537-1

Gasoline
Fuel only No fire

1AYAAAYAP1000



9Y1210140IC1002US

9Y1210140IN10002US0

(3) Part No. K7311-6114-2



(8) Part No. K7311-6559-1



(7) Part No.
K2651-6568-1



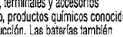
PROPOSITION 65 WARNING: Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. Batteries also contain other chemicals known to the State of California to cause cancer. **WASH HANDS AFTER HANDLING.**

ADVERTENCIA DE LA PROPUESTA 65: Los postes de batería, terminales y accesorios relacionados pueden contener plomo y/o compuestos de plomo, productos químicos conocidos en el Estado de California por causar el cáncer y la enfermedad reproductiva. Las baterías también contienen otros productos químicos conocidos en el Estado de California por causar cáncer.

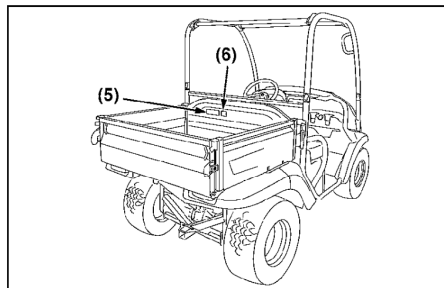
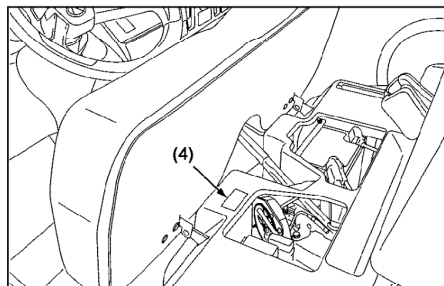
LÁVESE LAS MANOS DESPUÉS DE LA MANIPULACIÓN.

AVERTISSEMENT PROPOSITION 65 : Les bornes de batterie, les prises et les accessoires associés contiennent du plomb et/ou des composés de plomb, produits chimiques connus dans l'Etat de la Californie pour causer le cancer et des effets nocifs sur la reproduction. Les batteries contiennent aussi d'autres produits chimiques connus dans l'Etat de la Californie pour causer le cancer.

LAVES LES MAINS APRÈS MANIPULATION.

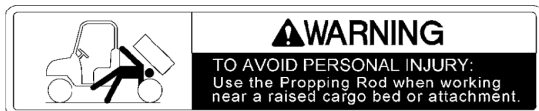


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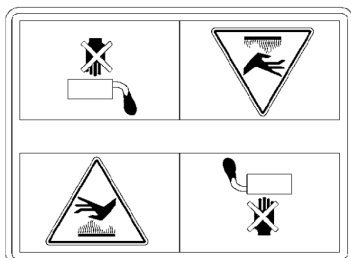
(1) Part No. K7311-6546-1



1AYAAAYAP1020

(2) Part No. K7311-6547-2

Do not touch hot surface like muffler, etc



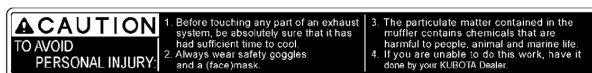
1AYAAAYAP1030

(3) Part No. K7311-6544-2

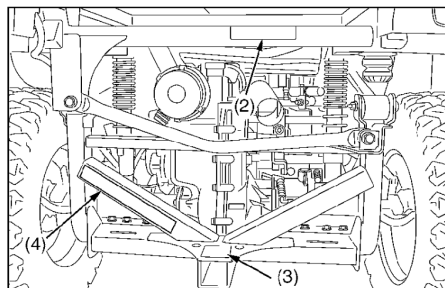
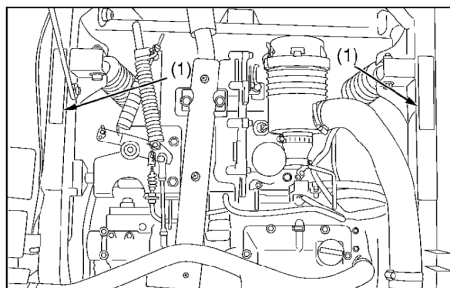


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(4) Part No. K7311-6554-2



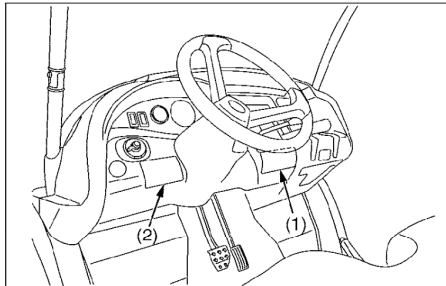
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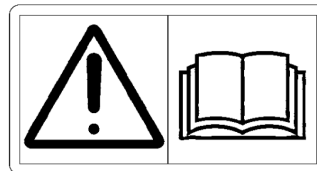
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9Y1210140IN10004US0

[2] Europe

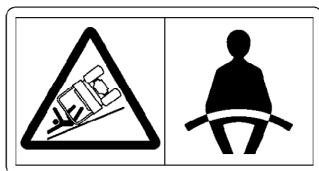


(2) Part No. K7583-6522-1



1AYAACHAP001A

(1) Part No K7583-6565-1



1AYAACHAP003A

- Always fasten your seat belt on drivers seat and passenger seat.

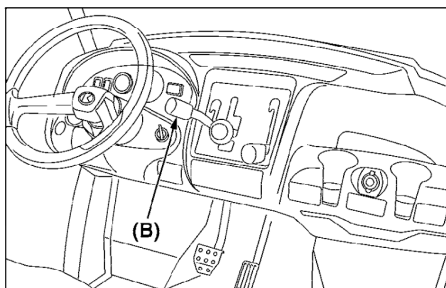
THIS LABEL INCLUDE 5 POINTS CAUTIONS BELOW.

(A) GENERAL CAUTIONS

1. Read and understand the operator's manual before operation.
2. Never allow anyone without a valid driver's license to operate this vehicle.
3. Before allowing other people to use the vehicle, have them read the operator's manual.
4. This vehicle is for off road use only. Never operate on a public road.
5. Wear safety gear, including helmet and eye protection, as appropriate.
6. Check the tightness of all nuts and bolts regularly.
7. In addition to the driver, only 1 passenger can be carried. Minimum age for passenger is 5 years old.
8. Before starting the engine, make sure that everyone is at a safe distance from the vehicle and the hydraulic outlet is off (if equipped)
9. Do not operate the vehicle under the influence of drugs or alcohol.
10. Keep all shields in place and stay away from all moving parts.
11. Slow down for turns, or rough terrain.
12. Before getting off from the vehicle, apply the parking brake, stop the engine and remove the key.

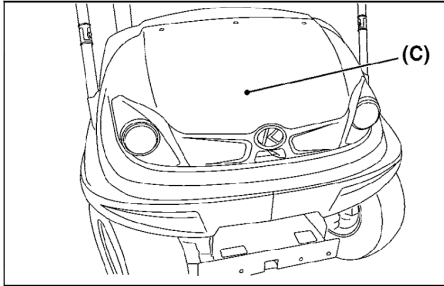
(B) DEFERENTIAL LOCK LEVER

- Do not engage the differential lock while at high speed.

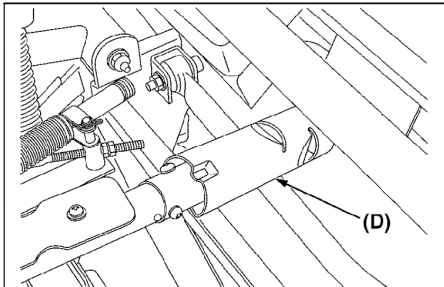


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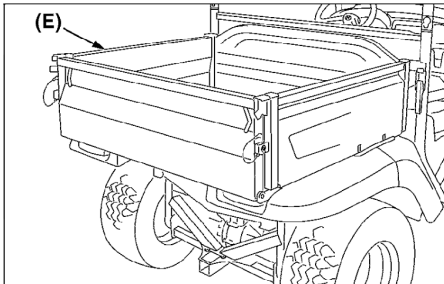
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**(C) FRONT HOOD**

- Do not operate the vehicle with the front hood open. Impaired visibility of the operator may cause loss of vehicle control. Latch the hood securely before operating the vehicle.

**(D) SPARK ARRESTER**

1. Before touching any part of an exhaust system, be absolutely sure that it has had sufficient time to cool.
2. Always wear safety goggles and a (face) mask.
3. The particulate matter contained in the muffler contains chemicals that are harmful to people, animal and marine life.

**(E) CARGO BED**

1. Do not travel with the cargo bed in the raised position.
2. Do not raise the cargo bed while the engine is running above new idle.

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(1) Part No. K7313-6525-1



1AYAACHAP002A

1. Do not start engine by shorting across starter terminals or bypassing the safety start switch.
The vehicle may start in gear and move if normal starting circuitry is bypassed.
2. Start engine only from operators seat with range shift lever in neutral position and hydraulic outlet off (if equipped).

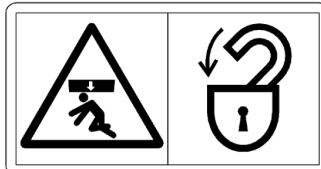
(2) Part No. K7583-6541-1



1AYAACHAP009A

1. Do not remove Roll-Over Protective Structures (ROPS) for any application.
2. Do not modify or repair a ROPS because welding, grinding, drilling or cutting any portion may weaken the structure.

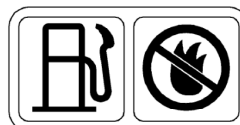
(3) Part No. K7313-6546-1



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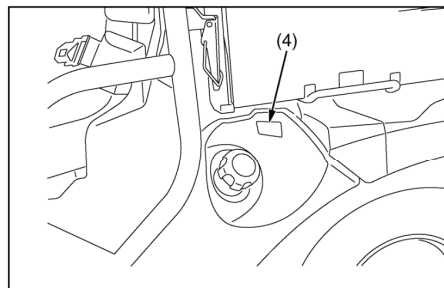
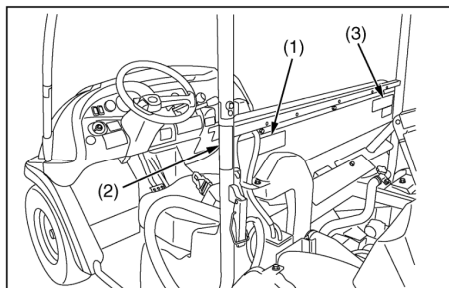
- Use the Propping Rod when working near a raised cargo bed or attachment.

(4) Part No. K7313-6537-1



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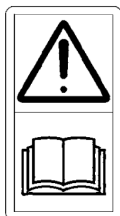
- GASOLINE FUEL ONLY
- NO FIRE



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9Y1210140INI0011US0

(1) Part No. K7583-6546-1



1AYAAACHAP010A

1. Use brake fluid (DOT-3) only.
Other oil types will ruin synthetic resin or rubber installed in brake system components, and cause brake failure.
2. If brake fluid is spilled on power steering hose, wash off with water immediately.
Brake fluid quickly ruins synthetic resin or rubber hoses.

(3) Part No. K7313-6560-1



1AYAACAP068A

- Do not get your hands close to fan.

(2) Part No. K7311-6114-2

▲ DANGER/POISON ▲ PELIGRO/VENENO ▲

SHIELD EYES.
EXPLOSIVE GASES CAN CAUSE BLINDNESS OR INJURY.
PROTÉGEZ LES YEUX.
LES GAZ EXPLOSIFS PEUVENT BLESSER OU RENDRE AVEUGLE.

PROTEJA LOS OJOS.
LOS GASES EXPLOSIVOS PUEDEN CAUSAR DAÑOS O CIEGUEZA.

KEEP OUT OF THE REACH OF CHILDREN. TENIR FORA DE ALÇANCE DE CRIANÇAS.
ALÉJERE DEL ALCANCE DE LOS NIÑOS.

READ ALL INSTRUCTIONS. LIRE TOUTES LES INSTRUCTIONS.
LEA TODAS LAS INSTRUCCIONES.

DO NOT OPEN BATTERY DO NOT TRY TO OPEN BATTERY. NE PAS OUVRIRE LA BATTERIE. NE PAS RÉOUVER, NI OUVRIRE LA BATTERIE. NO VOLTEAR.

WARNING: RISK OF FIRE, EXPLOSION OR BURNS. DO NOT DISPOSE OF OR INCINERATE. NOT RECOMMENDED FOR INVERTED USE. FOLLOW PROPER CHARGING INSTRUCTIONS.
AVERTISSEMENT : RISQUE D'INCENDIE, D'EXPLOSION OU DE BRÛLURES. NE PAS ÉCRASER, NI INCINÉRER. NON RECOMMANDÉ POUR UNE UTILISATION INVERTIE. SUIVEZ ATTENTIVEMENT LES INSTRUCTIONS DE CHARGEMENT.

ADVERTENCIA: RIESGO DE INCENDIO, EXPLOSION O QUEMADURAS. NO DESMONTAR NI INCINERAR. NO RECOMENDADO PARA USO INVERTIDO. SIGA LAS INSTRUCCIONES CORRECTAS DE CARGA.

12V
EPM Products
9108 Yellowbrick Rd.
Baltimore, MD 21227
610-682-6361

Pb

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- SHIELD EYES
EXPLOSIVE GASES can cause blindness or injury.
- NO SPARKS / FLAMES / SMOKING
- SULFURIC ACID can cause blindness or severe burns.
- Flush eyes immediately with water.
- Get medical help fast.

(4) Part No. K2601-9616-2

PROPOSITION 65 WARNING: Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. Batteries also contain other chemicals known to the State of California to cause cancer.

WASH HANDS AFTER HANDLING.

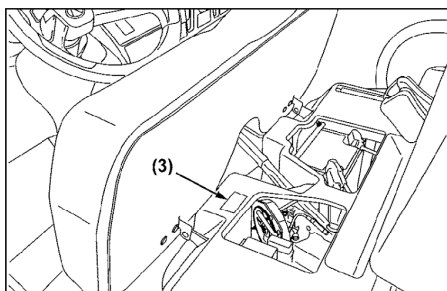
ADVERTENCIA DE LA PROPOSTA 65: Los postes de batería, terminales y accesorios relacionados pueden contener plomo y compuestos de plomo, productos químicos conocidos en el estado de California por causar cáncer y daños a la reproducción. Las baterías también contienen otros productos químicos conocidos en el estado de California por causar cáncer.

LAVESE LAS MANOS DESPUÉS DE LA MANIPULACIÓN.

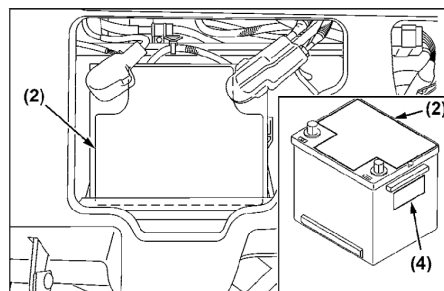
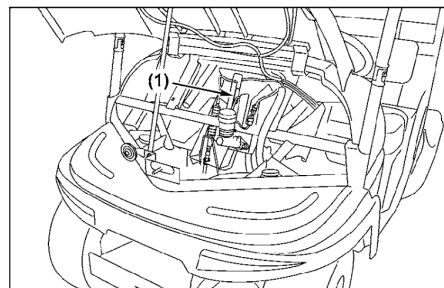
AVERTISSEMENT PROPOSITION 65 : Les bornes de batterie, les prises et les accessoires associés contiennent du plomb et des composés de plomb, des produits chimiques connus dans l'Etat de la Californie pour causer le cancer et des effets nocifs sur la reproduction. Les batteries contiennent aussi d'autres produits chimiques connus dans l'Etat de la Californie pour causer le cancer. **SE LAVER LES MAINS APRES MANIPULATION.**

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1AYAACAP080A

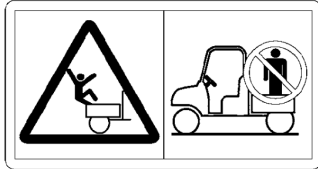


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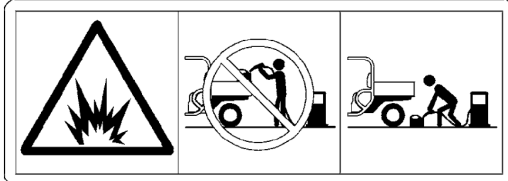
(1) Part No. K7313-6526-1



1AYAACAP005A

- Do not carry passengers in cargo bed.

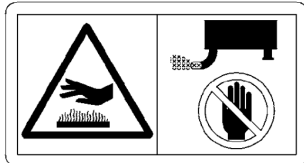
(2) Part No. K7313-6557-1



1AYAACAP067A

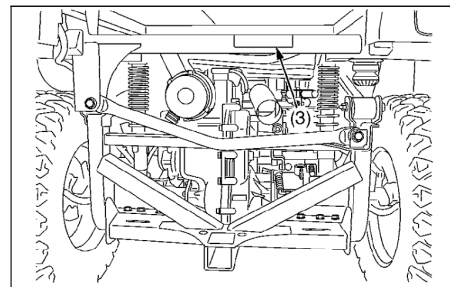
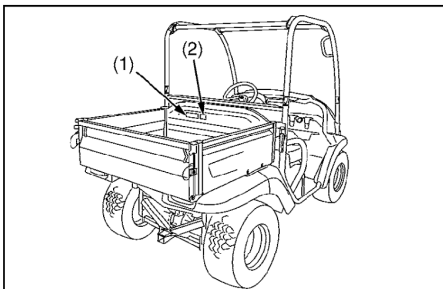
1. Do not place gas container inside cargo box bed when filling.
2. Place gas container on ground when filling.

(3) Part No. K7313-6547-1



1AYAACAP066A

- Do not touch hot surface like muffler, etc..



9Y1210140ICI010US

9Y1210140INT0013US0

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 and caution label(s) affixed is replaced with new part, make sure new label(s) is (are) attached in the same location(s) as the replace component.
5. Mount new danger, warning and caution labels by applying on a clean dry surface and pressing any bubbles to outside edge.

9Y1210140INT0005US0

3. SPECIFICATIONS

Model			RTV500	
Engine	Maker		GZ460	
	Type		2 cylinders, 4-cycle, Gasoline, OHC	
	Displacement		0.456 L (27.8 cu.in.)	
	Horsepower		11.8 kW (15.8 HP) / 3600 min ⁻¹ (rpm)	
	CO ₂ emission *1 (NRSC *2)		910.7 g/kWh	
Fuel capacity			20 L (5.3 U.S.gals, 4.4 Imp.gals)	
Transmission			Continuously variable hydro transmission (VHT)	
Wheels, drive system			4 wheels, rear 2WD or 4WD	
Differential lock			Standard; hand operated with mechanical holder	
Gear selection			Hi-Lo range, forward, neutral, reverse	
Brake	Front / Rear		Dry disc brake	
	Parking brake		Rear wheel, hand lever	
Steering			Rack and pinion	
Suspension	Front		Independent, Mac Pherson strut-type	
	Rear		Semi-independent, multi-link	
Dimensions	Length		2690 mm (105.9 in.)	
	Width		1390 mm (54.7 in.)	
	Overall height		1829 mm (72 in.)	
	Front tread center		1016 mm (40 in.)	
	Rear tread center		1041 mm (41 in.)	
	Wheel base		1800 mm (70.9 in.)	
	Ground clearance	Front axle	205 mm (8.1 in.)	
		Rear axle	175 mm (6.9 in.)	
Turning Diameter		7 m (22.9 ft)		
Max. rolling weight (Towing capacity)	Front		250 kg (551 lbs)	
	Rear		500 kg (1102 lbs)	
Payload capacity			430 kg (949 lbs)	
Weight	ATV tire		615 kg (1358 lbs)	
	HDWS tire		620 kg (1369 lbs)	
Cargo bed	Width		1032 mm (40.6 in.)	
	Length		856 mm (33.7 in.)	
	Depth		290 mm (11.4 in.)	
	Volume		0.25 m ³ (9 cu.ft.)	
	Bed height (unloaded)		810 mm (31.9 in.)	
	Cargo bed load		200 kg (441 lbs)	
Sound level (operator ear)			83 dB (A)	
Tires	Front	24 × 9 – 12 HDWS, 6PLY		24 × 9 – 12 ATV, 6PLY
	Rear	24 × 11 – 12 HDWS, 6PLY		24 × 11 – 12 ATV, 6PLY
Front deluxe guard			Opt.	
Body color			Orange / Camo	
Speedometer			Opt.	
Rear net			Opt.	

*1 Measured according to Regulation (EU)2017/654. The CO₂ measurement is obtained from testing a(n) (parent) engine representative of the engine type (engine family) over a fixed test cycle under laboratory conditions. The CO₂ measurement shall not imply or express any guarantee of the performance of a particular engine.

*2 Non-road steady-state test cycle

■ NOTE

- The company reserves the right to change the specifications without notice.
The values in "Ground clearance" and "Weight" are those of the machine equipped with the tires in the table above.

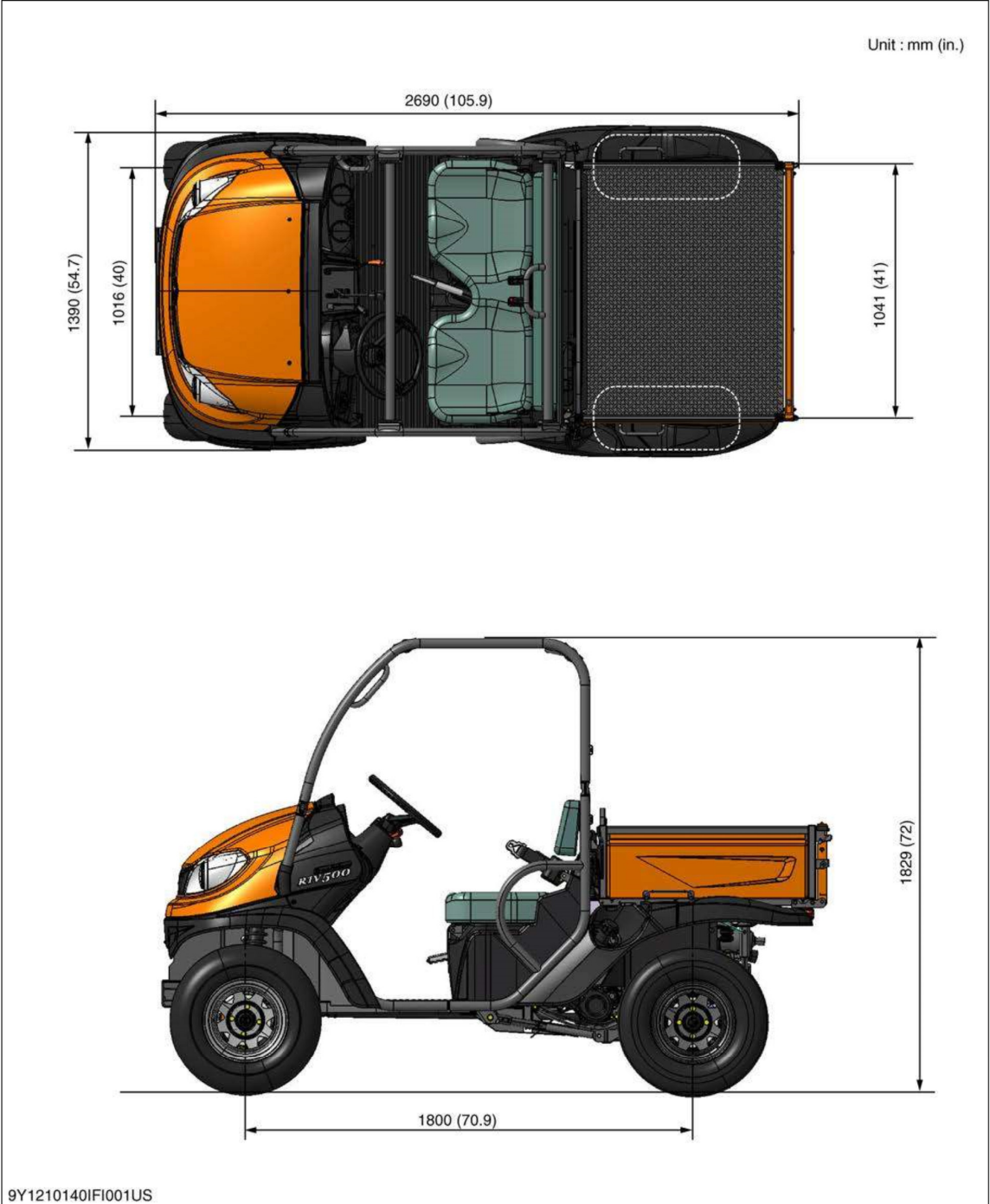
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4. TRAVELLING SPEEDS

Model	RTV500
Range gear shift lever	km/h (mph)
Low	16 (10)
High	40 (25)
Reverse	23 (14.3)

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5. DIMENSIONS



G GENERAL

GENERAL

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1. PRODUCT IDENTIFICATION

[1] ENGINE IDENTIFICATION

(1) Engine Model Name and Engine Serial Number



When contacting the manufacture, always specify your engine model name and serial number.

The engine model and its serial number need to be identified before the engine can be serviced or parts replaced.

■ Engine Serial Number

The engine serial number is an identified number for the engine. It is marked after the engine model number.

It indicates month and year of manufacture as follows.

Year of manufacture

Alphabet or Number	Year	Alphabet or Number	Year
1	2001	F	2015
2	2002	G	2016
3	2003	H	2017
4	2004	J	2018
5	2005	K	2019
6	2006	L	2020
7	2007	M	2021
8	2008	N	2022
9	2009	P	2023
A	2010	R	2024
B	2011	S	2025
C	2012	T	2026
D	2013	V	2027
E	2014		

(1) Engine Model Name and Serial Number

(To be continued)

(Continued)

Month of manufacture

Month	Engine Lot Number	
January	A0001 ~ A9999	B0001 ~ BZ999
February	C0001 ~ C9999	D0001 ~ DZ999
March	E0001 ~ E9999	F0001 ~ FZ999
April	G0001 ~ G9999	H0001 ~ HZ999
May	J0001 ~ J9999	K0001 ~ KZ999
June	L0001 ~ L9999	M0001 ~ MZ999
July	N0001 ~ N9999	P0001 ~ PZ999
August	Q0001 ~ Q9999	R0001 ~ RZ999
September	S0001 ~ S9999	T0001 ~ TZ999
October	U0001 ~ U9999	V0001 ~ VZ999
November	W0001 ~ W9999	X0001 ~ XZ999
December	Y0001 ~ Y9999	Z0001 ~ ZZ999

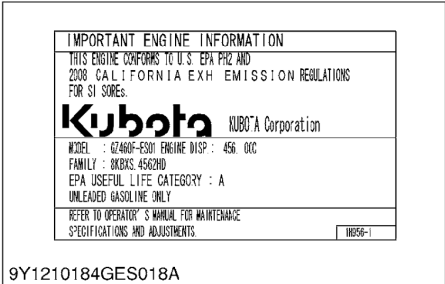
* Alphabetical letters "I" and "O" are not used.

(a) (b) (c) (d)
e.g. XXXX - XXBA001

- (a) Engine Model Name: **XXXX**
- (b) Year: **XX** indicates **20XX**
- (c) Month: **A** or **B** indicates **January**
- (d) Lot Number: (**0001 ~ 9999** or **A001 ~ Z999**)

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(2) Emission Label

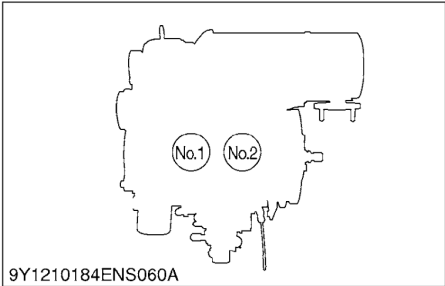


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This label is attached on the cylinder head cover of the engine certified to the requirements of EPA / CARB Emission regulations. The content of the label is approved officially by EPA / CARB.

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(3) Cylinder Number



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The cylinder numbers of KUBOTA diesel engine are designated as shown in the figure.

The sequence of cylinder number is given as No. 1 and No. 2 starting from the gear case side.

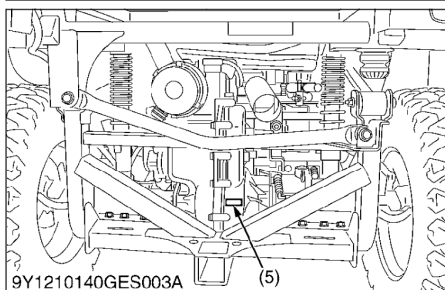
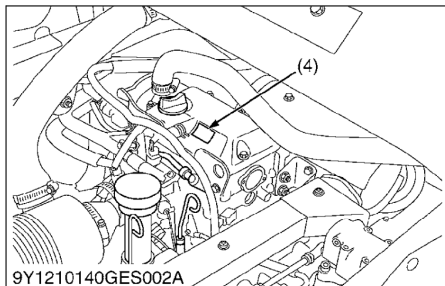
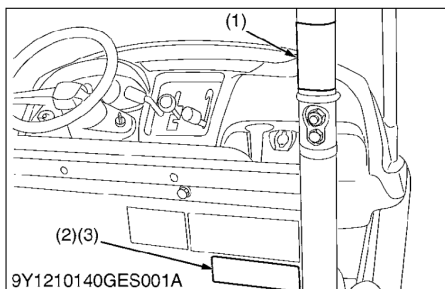
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[2] Model Name and Serial Numbers

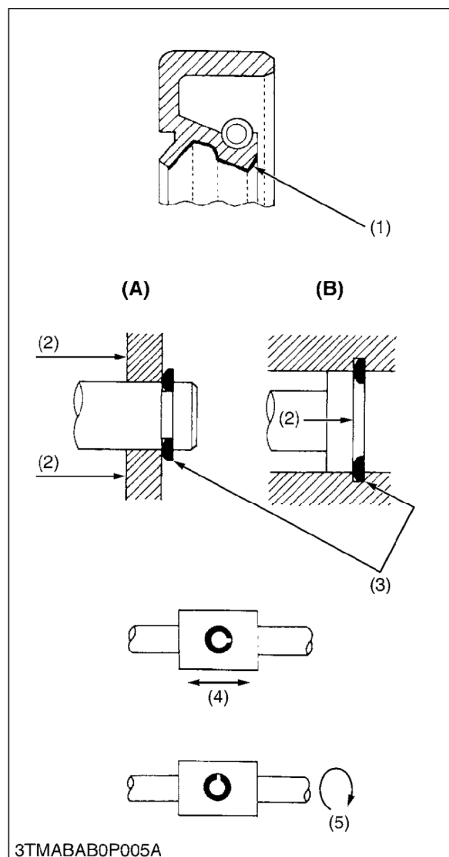
When contacting your local KUBOTA distributor, always specify engine serial number, product serial number and hour meter reading.

- | | |
|-----------------------------------|---|
| (1) ROPS Serial Number | (4) Engine Serial Number |
| (2) Vehicle Serial Number | (5) Transmission Assembly Serial Number |
| (3) Vehicle Identification Number | |

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2. GENERAL PRECAUTIONS



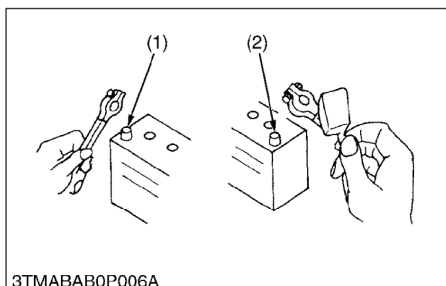
- When you disassemble, carefully put the parts in a clean area to make it easy to find the parts. You must install the screws, bolts and nuts in their initial position to prevent the reassembly errors.
- When it is necessary to use special tools, use KUBOTA special tools. Refer to the drawings when you make special tools that you do not use frequently.
- Before you disassemble or repair machine, make sure that you always disconnect the ground cable from the battery first.
- Remove oil and dirt from parts before you measure.
- Use KUBOTA genuine parts for replacement to keep the machine performance and to make sure of safety.
- You must replace the gaskets and O-rings when you assemble again. Apply grease (1) to new O-rings or oil seals before you assemble.
- When you assemble the external or internal circlips, make sure that the sharp edge (3) faces against the direction from which force (2) is applied.
- When inserting spring pins, their splits must face the direction from which a force is applied. See the figure on the left side.
- To prevent damage to the hydraulic system, use only specified fluid or equivalent.
- Clean the parts before you measure them.
- Tighten the fittings to the specified torque. Too much torque can cause damage to the hydraulic units or the fittings. Not sufficient torque can cause oil leakage.
- When you use a new hose or pipe, tighten the nuts to the specified torque. Then loosen (approx. by 45°) and let them be stable before you tighten to the specified torque (This is not applied to the parts with seal tape).
- When you remove the two ends of a pipe, remove the lower end first.
- Use two pliers in removal and installation. One to hold the stable side, and the other to turn the side you remove to prevent twists.
- Make sure that the sleeves of flared connectors and tapers of hoses are free of dust and scratches.
- After you tighten the fittings, clean the joint and apply the maximum operation pressure 2 to 3 times to check oil leakage.

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

- (A) External Circlip
- (B) Internal Circlip

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3. HANDLING PRECAUTIONS FOR ELECTRICAL PARTS AND WIRING



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

■ IMPORTANT

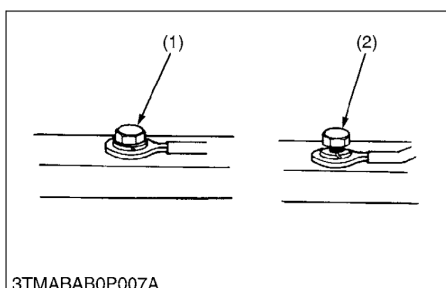
- Check electrical wiring for damage and loosened connection every year.
- When removing the battery cables, disconnect the negative cable first. When installing the battery cables, connect the positive cable first.

(1) Negative Terminal

(2) Positive Terminal

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[1] WIRING

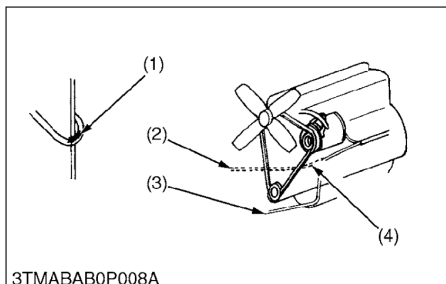


- Securely tighten wiring terminals.

(1) Correct
(Securely Tighten)

(2) Incorrect
(Loosening Leads to damaged
Contact)

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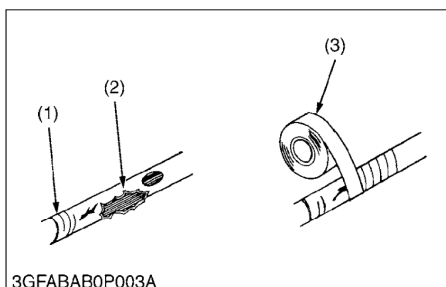


- Do not let wiring contact dangerous part.

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

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

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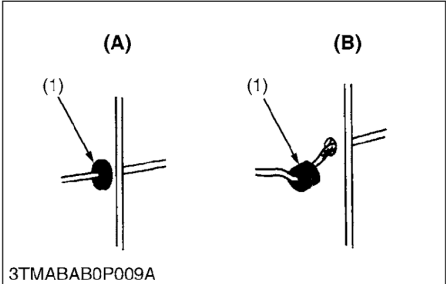


- Repair or change torn or aged wiring immediately.

(1) Aged
(2) Torn

(3) Electrical Tape

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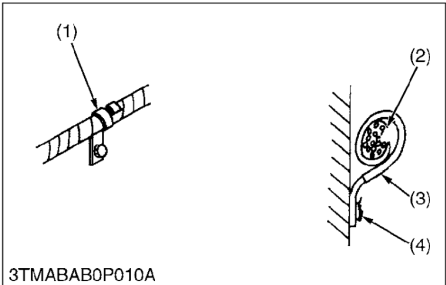


- Securely insert grommet.

(1) Grommet

(A) Correct
(B) Incorrect

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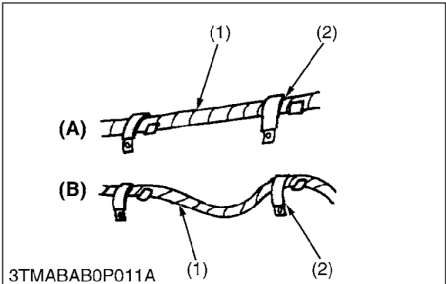


- Securely clamp, being careful not to damage wiring.

(1) Clamp
(Wind Clamp Spirally)
(2) Wire Harness

(3) Clamp
(4) Welding Dent

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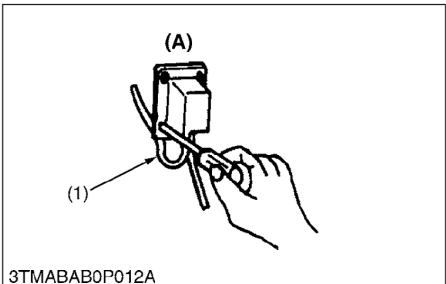


- Clamp wiring so that there is no twist, unnecessary sag, or excessive tension, except for movable part, where sag be required.

(1) Wiring
(2) Clamp

(A) Correct
(B) Incorrect

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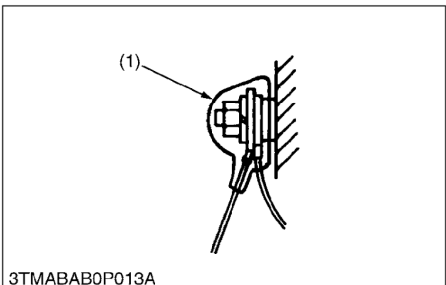


- In installing a part, be careful not to get wiring caught by it.

(1) Wiring

(A) Incorrect

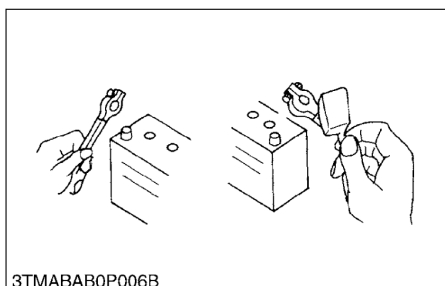
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- After installing wiring, check protection of terminals and clamped condition of wiring.

(1) Cover
(Securely Install Cover)

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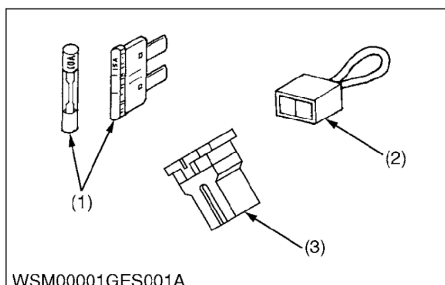
[2] BATTERY

- Be careful not to confuse positive and negative terminal posts.
- When you remove battery cables, disconnect negative cable first. When you install battery cables, check for polarity and connect positive cable first.
- Do not install any battery with capacity other than is specified (Ah).
- After you connect 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.

! DANGER**To avoid serious injury or death:**

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

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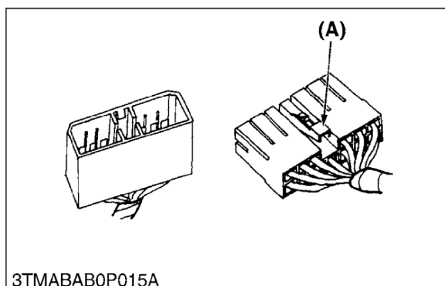
[3] FUSE

- Use fuses with specified capacity. Neither too large nor small capacity fuse is acceptable.
- Never use steel nor 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

(3) Slow Blow Fuse

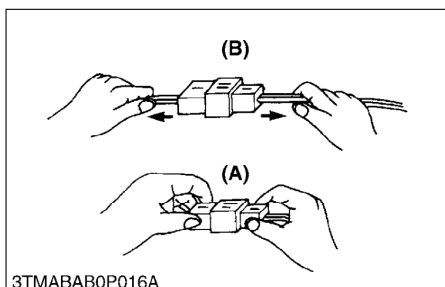
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[4] CONNECTOR

- For connector with lock, push lock to separate.

(A) Push

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

(A) Correct**(B) Incorrect**

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