

Product: Kubota RTV-X1140 Service Manual

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WSM

WORKSHOP MANUAL
UTILITY VEHICLE

RTV-X1140

Kubota

KiSC issued 04, 2021 A

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TO THE READER

This Workshop Manual tells the servicing personnel about the mechanism, servicing and maintenance of the RTV-X1140. 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) for the diesel engine 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.

November 2015

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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.	Month of Revision	Main Revised Point and Corrective Measures {Search word}	Reference Page
1	2016.02	Revised specifications.	I-9
		Revised length and height dimensions.	I-11
		Revised coolant capacity.	G-8, G-52, 1-S21, 2-S22
		Revised labels.	I-4 to I-8
2	2017.08	Added starter sealant information.	1-S35, 2-S36, 8-S25
3	2019.03	Added Proposition 65 label and revised battery label.	I-5, I-8
		Revised callouts (7) and (8) on HST illustration: (7): (HST) changed to (Suction) (8): (Suction) (Orange Color) changed to (VHT) (Yellow Color)	2-M2
4	2019.10	Revised callouts (4) and (5) on HST illustration: (4): Forward changed to Dynamic Brake (5): Dynamic Brake changed to Forward	2-M2
		Added note for bearing installation	2-S50
5	2020.09	Revised electrical circuit for starting system.	8-M3
6	2021.02	Change of tightening torque by changing the material of the hydraulic hose.	1-S9 1-S30 1-S35 2-S5 2-S31 2-S36 6-S3 6-S4 6-S9 6-S10 6-S15 6-S16 7-S3 7-S5 7-S9
7	2021.04	Added 200 hrs or 3000 km maintenance item ; Suspension arm bushings	G-17, G-45

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

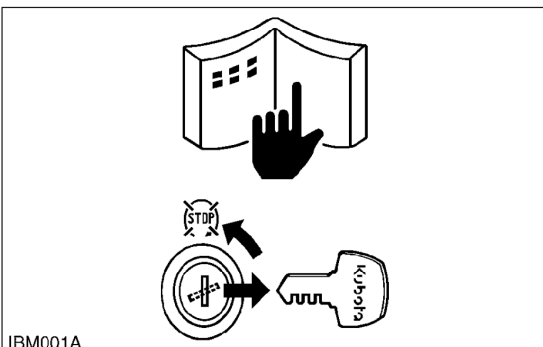
- Gives helpful information.

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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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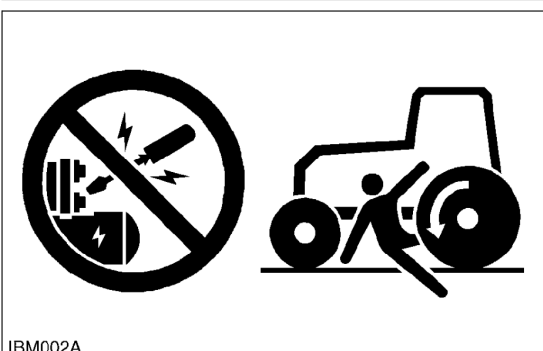


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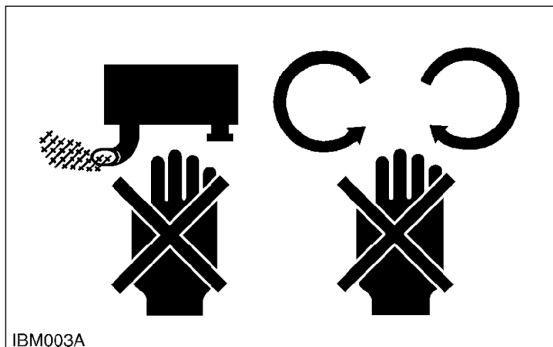
START SAFELY

- 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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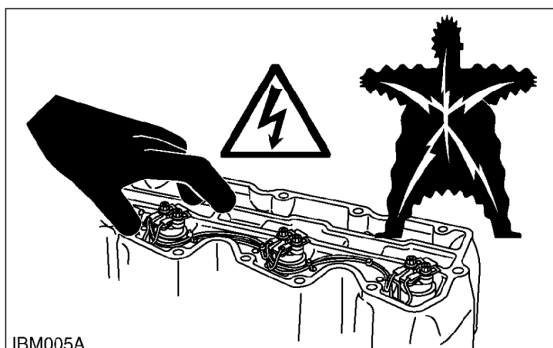
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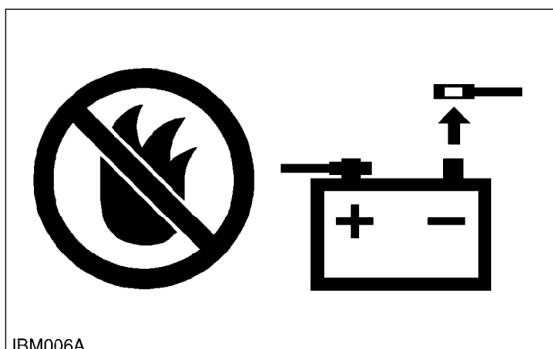
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IBM005A



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OPERATE SAFELY

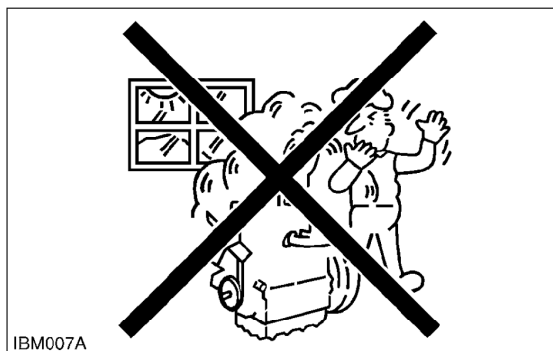
- Do not use the machine after you consume alcohol or medication or when you are tired.
- Put on applicable clothing and safety equipment.
- Use applicable tools only. Do not use alternative tools or parts.
- When 2 or more persons do servicing, make sure that you do it safely.
- Do not operate below 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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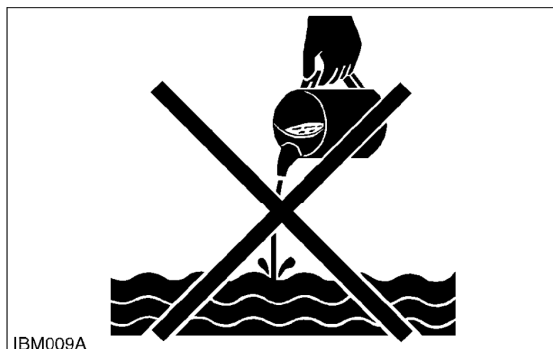


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KEEP A GOOD AIRFLOW IN THE WORK AREA

- 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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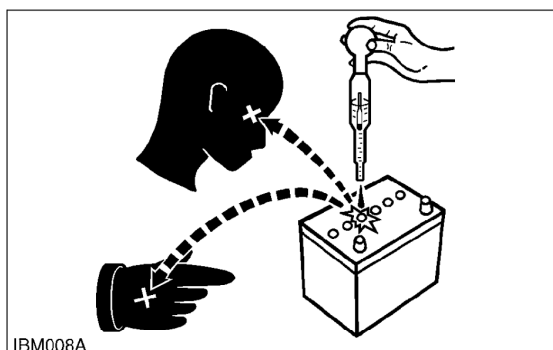


IBM009A

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



IBM010A

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.

WSM000001IN10009US0

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.

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(1) Part No. K7591-6541-1



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(2) Part No. K7591-6526-1



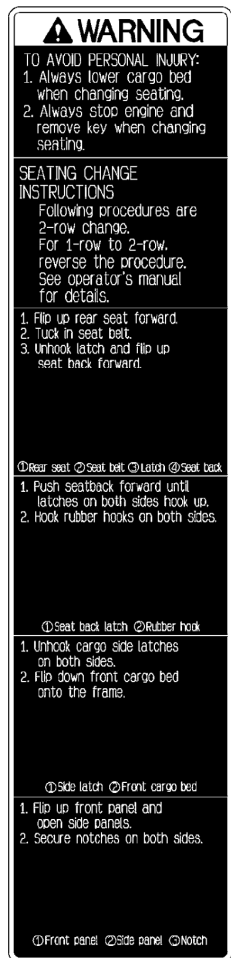
1AYAACQAP014A

(3) Part No. K7591-6528-2



1AYAACQAP019A

(6) Part No. K7621-6589-1



(4) Part No. K7621-6538-1



1AYAACZAP065A

(5) Part No. K7621-6527-1

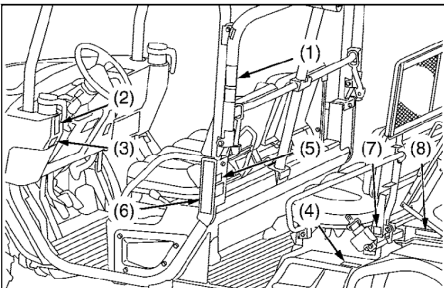


1AYAACQAP013A

(8) Part No. K7591-6542-1



1AYAACQAP005A



9Y1210996ICI001US

(7) Part No. K7621-6588-1



1AYAACZAP098A

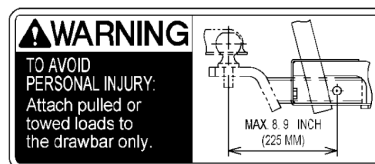
- Be careful not to get your fingers and hands caught in switching the seats.

1AYAACZAP097A

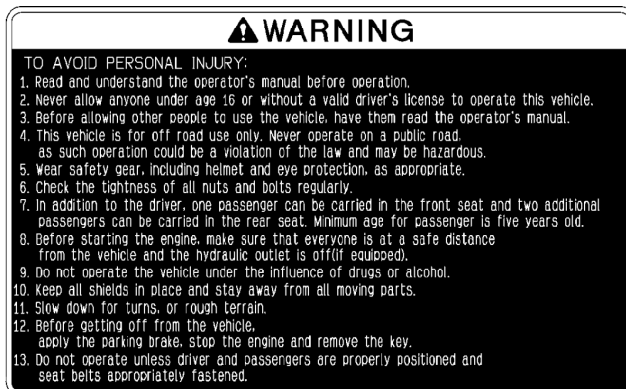
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(1) Part No. K7591-6524-1

1AYAACQAP002A

(2) Part No. K7591-6544-2

1AYAACQAP007A

(3) Part No. K7621-6521-1

1AYAACZAP067A

(4) Part No. K7621-6527-1

1AYAACQAP013A

(5) Part No. K7591-6548-1

1AYAACQAP011A

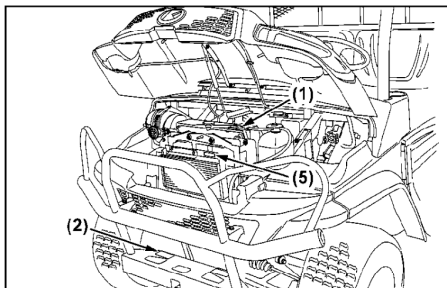
- Hot surface - Burn to finger or hand
- Do not touch oil cooler while surface is hot.

(6) Part No. K7731-6596-1

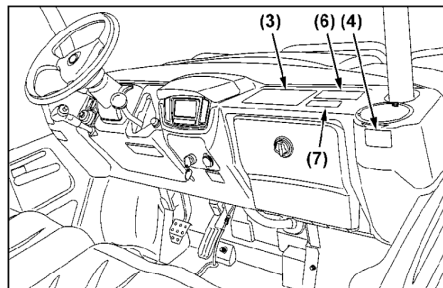
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(7) Part No. K7591-6599-1

1AYAACZAP115A



9Y1210996IC1008US



9Y1210996IN10002US0

(1) Part No. K7591-6542-1



1A1AACQAP005A

(2) Part No. K7621-6551-1



1A1AACZAP065A

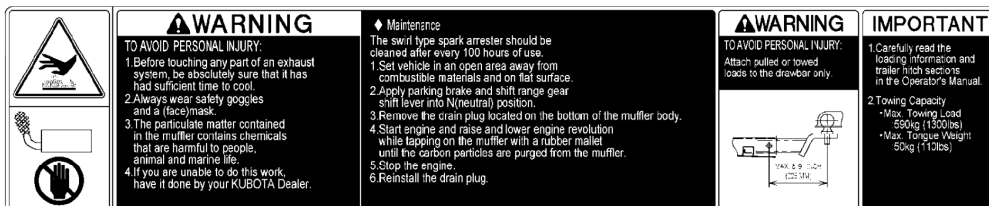
(3) Part No. K7621-6532-1



1A1AACZAP070A

- Be careful not to get your fingers and hands injured by the engine cooling fan.
- Be careful not to get your hands and arms caught.
- Do not detach the safety cover while the engine is running.

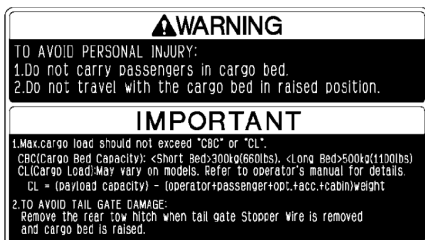
(4) Part No. K7591-6546-3



1A1AACQAP009A

- Hot surface-Burn to finger or hand
- Do not touch muffler while surface is hot.

(5) Part No. K7621-6523-1



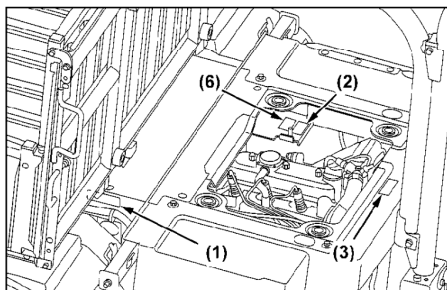
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(6) Part No. K7621-6552-1

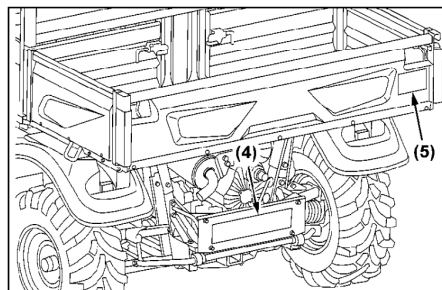


1A1AACZAP099A

- Hot surface-Burn to finger or hand
- Do not touch oil tank while surface is hot.



9Y1210996IC1003US



9Y1210996IN10003USO

(1) Part No. K7621-6534-2



1A5AACZAP069A

(4) Part No. K7621-6588-1



1A5AACZAP098A

- Be careful not to get your fingers and hands caught in switching the seats.

(5) Part No. K7591-6533-1



1A5AACQAP010A

(2) Part No. K7621-6527-1



1A5AACQAP013A

(3) Part No. K7591-6547-1

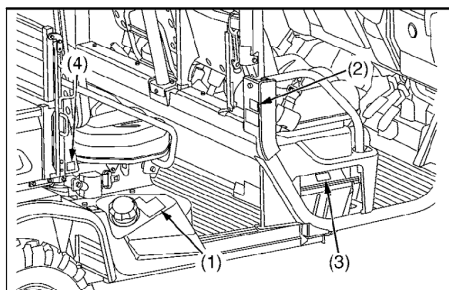


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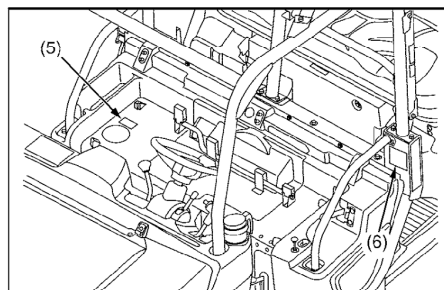
(6) Part No. K7621-6522-1



1A5AACZAP063A




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(1) Part No. K7731-6114-3




FLAMMABLES




SHIELD EYES




KEEP OUT OF THE REACH OF CHILDREN



CAUTIOUS OF SULFURIC ACID



READ INSTRUCTION MANUAL CAREFULLY



EXPLOSIVE

DANGER EXPLOSIVE GASES
CIGARETTES, FLAMES OR SPARKS COULD CAUSE BATTERY TO EXPLODE. ALWAYS SHIELD EYES AND FACE FROM BATTERY. DO NOT CHARGE OR USE BOOSTER CABLES OR ADJUST POST CONNECTIONS WITHOUT PROPER INSTRUCTION AND TRAINING.

POISON CAUSES SEVERE BURNS
CONTAINS SULFURIC ACID. AVOID CONTACT WITH SKIN, EYES OR CLOTHING. IN EVENT OF ACCIDENT FLUSH WITH WATER AND CALL A PHYSICIAN IMMEDIATELY.

KEEP OUT OF REACH OF CHILDREN

California Proposition 65 WARNING : This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

SMF 24R-670 PART No. K7731-61114	
NOMINAL VOLTAGE	12V
COLD CRANKING AMPS	670
CRANKING AMPS	800
RESERVE CAPACITY(MINUTES)	115
AMP HOURS(@20 hr Rate)	66

FITTING DATE

0 1 2 3 4 5 6 7 8 9 YEAR

1 2 3 4 5 6 7 8 9 10 11 12 MONTH


INDICATOR

● OK ○ CHARGE ● REPLACE

MADE IN KOREA

1AYAACQAP277A

(2) Part No. K7591-6531-1




WARNING

Operation of this equipment may create sparks that can start fires around dry vegetation. A spark arrester may be required. The operator should contact local fire agencies for laws or regulations relating to fire prevention requirements.

1AYAACQAP018A

(3) Part No. K7591-6583-3

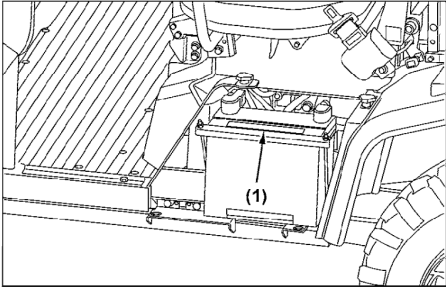


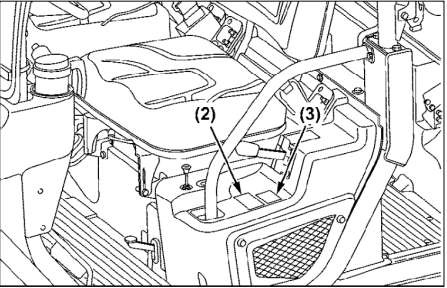
WARNING

TO AVOID PERSONAL INJURY FROM CRUSHING:

1. Do not utilize the lever lock for machine maintenance or repair.
2. The lever lock is in order to prevent accidental actuation.

1AYAACQAP183A





9Y1210996IC1007US

9Y1210996IN10005US0

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.

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I-8

KiSC issued 04, 2021 A

3. SPECIFICATIONS

Model			RTV-X1140	
			Worksite / Orange	Worksite / Camo
Engine	Make	D1105		
	Type	3 cylinders, 4-cycle, diesel, OHV		
	Displacement	1.123 L (68.530 cu. in.)		
	Horsepower	18.5 kw (24.8 HP)		
	Rated revolution	3000 min ⁻¹ (rpm)		
	Low idling revolution	1400 to 1500 min ⁻¹ (rpm)		
Fuel Capacity			30 L (7.9 U.S.gals, 6.6 Imp.gals)	
Transmission			Continuously variable hydro transmission (VHT)	
Wheels, Drive system			4, Rear 2WD or 4WD	
Differential lock			Standard; foot operated with mechanical holder	
Gear selection			Hi-Low range forward, neutral, reverse	
Brakes	Front / Rear		Wet disk brake	
	Parking brake		Rear wheel, hand lever	
Steering			Hydrostatic power	
Suspension	Front		Independent, Dual A-Arm type	
	Rear			
Dimensions	Length		3610 mm (142.1 in.)	
	Width		1605 mm (63.2 in.)	
	Height, overall		2025 mm (79.7 in.)	
	Front tread centers		1280 mm (50.4 in.) HDWS, ATV	
	Rear tread centers			
	Wheelbase		2495 mm (98.2 in.)	
	Ground clearance	front axle	285 mm (11.2 in.)	
		rear axle	240 mm (9.4 in.)	
Turning diameter		10.4 m (34.1 ft)		
Max. Rolling weight (Towing capacity)			Rear: 590 kg (1300 lbs), Front: 295 kg (650 lbs)	
Payload capacity			739 kg (1629 lbs)	
Weight			1075 kg (2370 lbs)	
Gross Vehicle Weight Rating (GVWR)			1814 kg (4000 lbs)	
Cargo bed	Width		1465 mm (57.7 in.)	
	Length (1 row / 2 row)		1300 mm (51.18 in.) / 660 mm (26.0 in.)	
	Depth		285 mm (11.2 in.)	
	Volume (1 row / 2 row)		0.54 m ³ (19.1 cu.ft.) / 0.28 m ³ (9.9 cu.ft.)	
	Bed height (unloaded)		900 mm (35.4 in.)	
	Cargo bed capacity (1 row / 2 row)		500 kg (1102 lbs) / 300 kg (661 lbs)	
Sound level, operator ear			84 db (A)	
Tire	Front		25 × 10-12 ATV, 6PLY, 25 × 10-12 HDWS, 6PLY	
	Rear		25 × 10-12 ATV, 6PLY 25 × 10-12 HDWS, 6PLY	
Tilt steering wheel			Standard	
Seat belt			2 point type	
Front deluxe guard			Standard	—
Front deluxe guard with light guard			—	Standard
Body color			Orange	Camo
Bed lift			Standard	Standard
Speedometer			Standard	Standard
Seat slide			Standard	Standard

■ 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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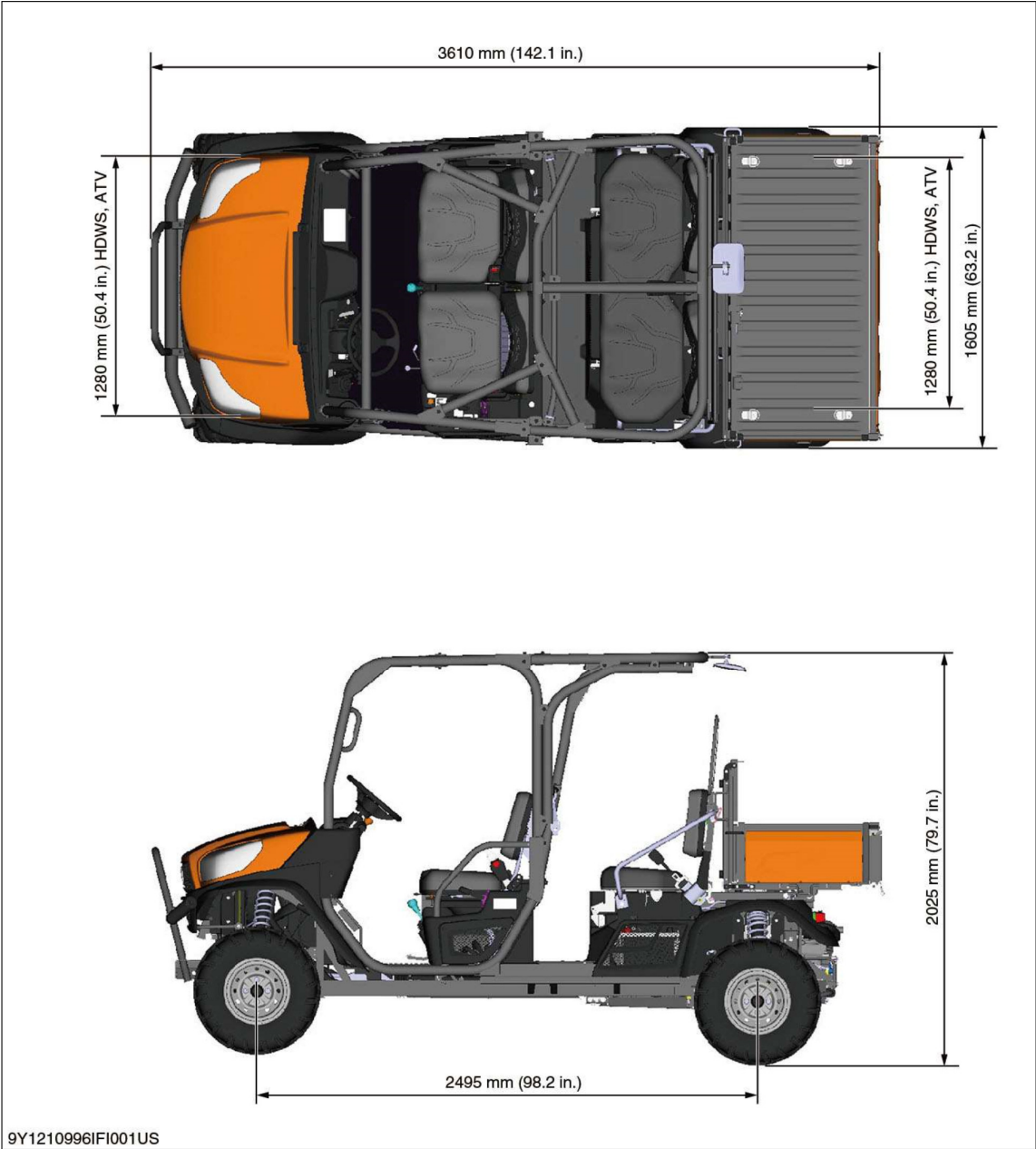
4. TRAVELLING SPEEDS

(At rated engine rpm)

Model	RTV-X1140
Range gear shift lever	km/h (mph)
Low	24 (15)
High	40 (25)
Reverse	27 (17)

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5. DIMENSIONS



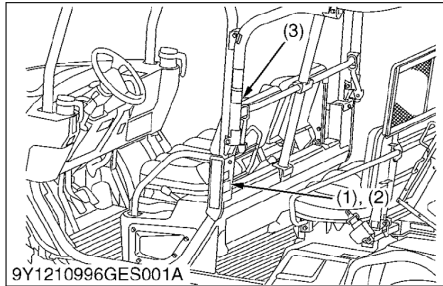
G GENERAL

GENERAL

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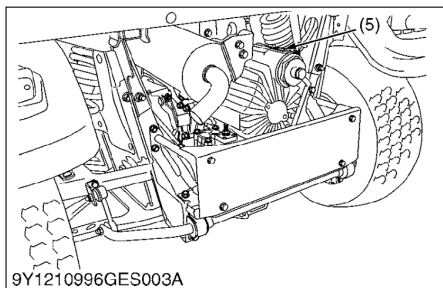
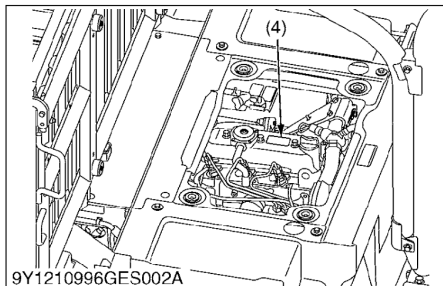
1. PRODUCT IDENTIFICATION



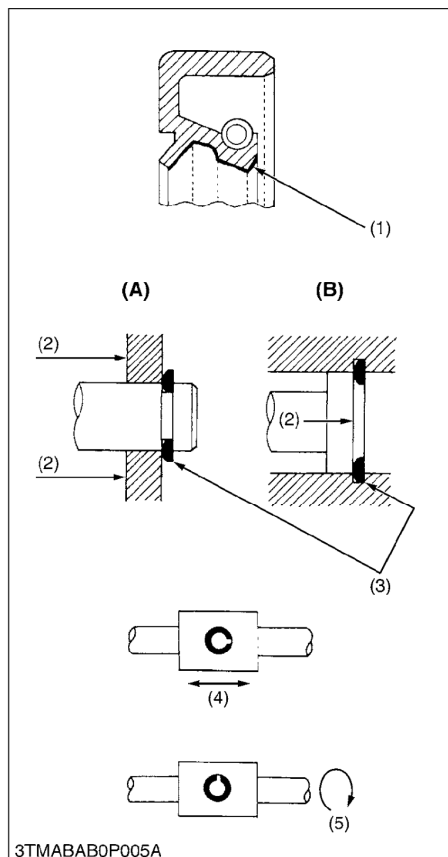
When contacting your local KUBOTA distributor, always specify engine serial number, product serial number and hour meter reading.

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

9Y1210996GEG0001US0



2. GENERAL PRECAUTIONS



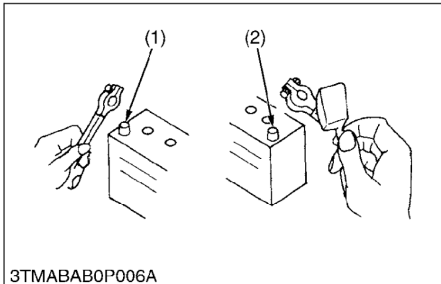
- When you disassemble, carefully put the parts in a clean area to make it easy to find the parts. You must install the screws, bolts and nuts in their initial position to prevent the reassembly errors.
- When it is necessary to use special tools, use KUBOTA special tools. Refer to the drawings when 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

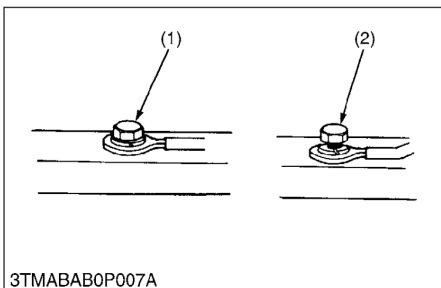
- Check electrical wiring for damage and loosened connection every year.
- When removing the battery cables, disconnect the negative cable first. When installing the battery cables, connect the positive cable first.

(1) Negative Terminal

(2) Positive Terminal

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[1] WIRING

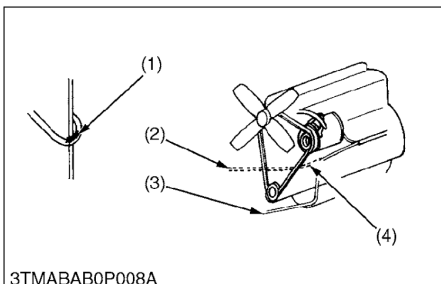


- Securely tighten wiring terminals.

(1) Correct
(Securely Tighten)

(2) Incorrect
(Loosening Leads to damaged
Contact)

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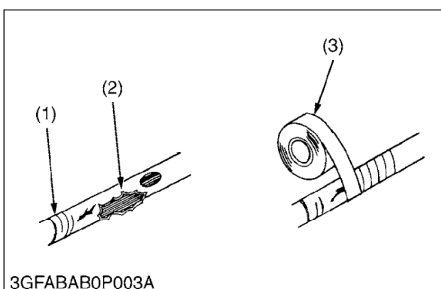


- Do not let wiring contact dangerous part.

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

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

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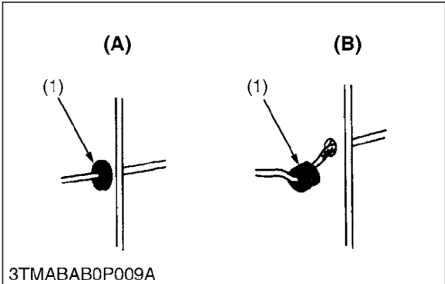


- Repair or change torn or aged wiring immediately.

(1) Aged
(2) Torn

(3) Electrical Tape

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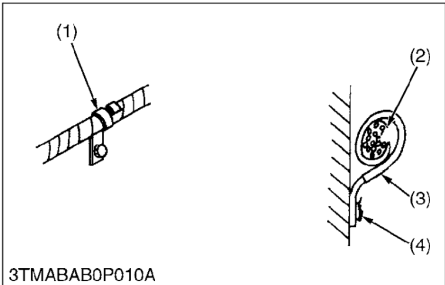


- Securely insert grommet.

(1) Grommet

(A) Correct
(B) Incorrect

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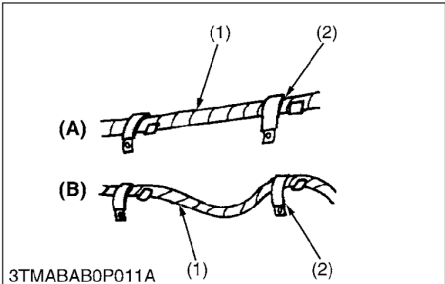


- Securely clamp, being careful not to damage wiring.

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

(3) Clamp
(4) Welding Dent

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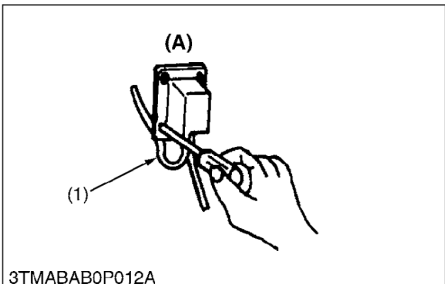


- Clamp wiring so that there is no twist, unnecessary sag, or excessive tension, except for movable part, where sag be required.

(1) Wiring
(2) Clamp

(A) Correct
(B) Incorrect

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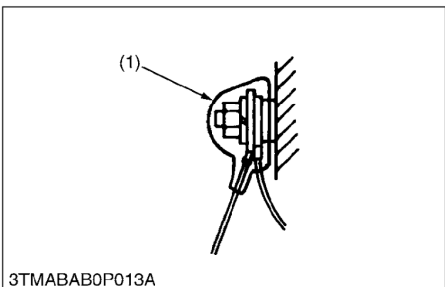


- In installing a part, be careful not to get wiring caught by it.

(1) Wiring

(A) Incorrect

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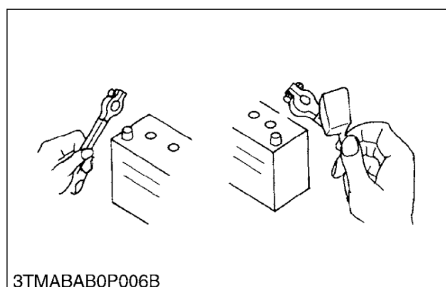


- After installing wiring, check protection of terminals and clamped condition of wiring.

(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.

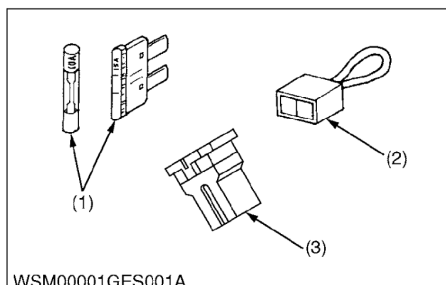
⚠ DANGER

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



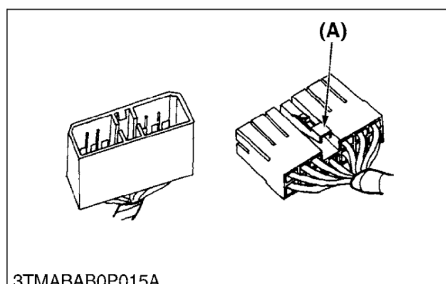
- Use fuses with specified capacity. Neither too large nor small capacity fuse is acceptable.
- Never use steel nor copper wire in place of fuse.
- Do not install working light, radio set, etc. on machine which is not provided with reserve power supply.
- Do not install accessories if fuse capacity of reserve power supply is exceeded.

- (1) Fuse
(2) Fusible Link

- (3) Slow Blow Fuse

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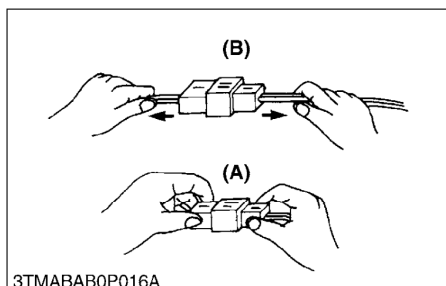
[4] CONNECTOR



- For connector with lock, push lock to separate.

- (A) Push

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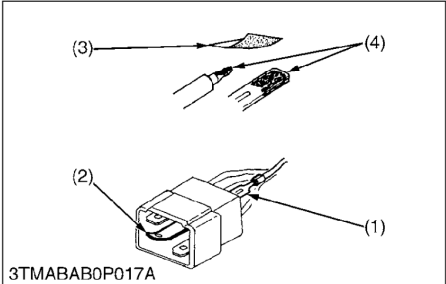


- In separating connectors, do not pull wire harnesses.
- Hold connector bodies to separate.

- (A) Correct

- (B) Incorrect

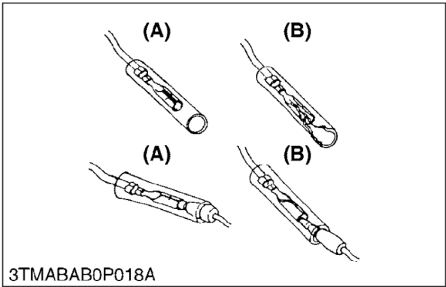
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- Use sandpaper to remove rust from terminals.
- Repair deformed terminal. Make sure that there is no terminal being exposed or displaced.

(1) Exposed Terminal (3) Sandpaper
(2) Deformed Terminal (4) Rust

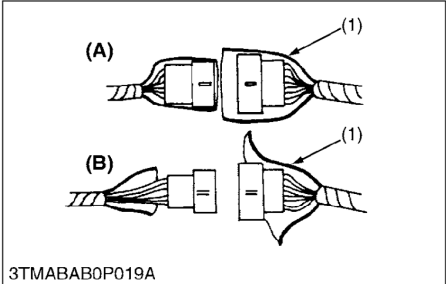
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- Make sure that there is no female connector being too open.

(A) Correct (B) Incorrect

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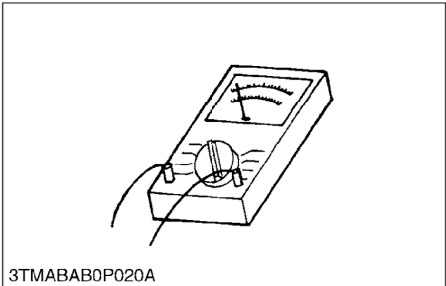


- Make sure that plastic cover is large enough to cover whole connector.

(1) Cover (A) Correct (B) Incorrect

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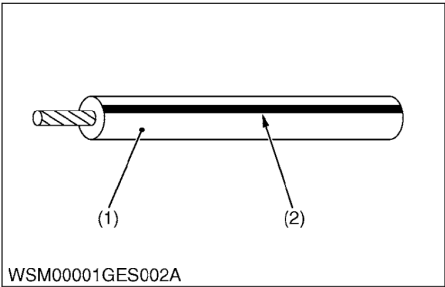
[5] HANDLING OF CIRCUIT TESTER



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

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[6] COLOR OF WIRING



- Colors of wire are specified to the color codes.
- This symbol of "/" shows color with stripe (s).

(An example)

Red stripe on white color: W/R

Color of wiring	Color code
Black	B
Brown	Br
Green	G
Gray	Gy or Gr
Blue	L
Light Green	Lg
Orange	Or
Pink	P
Purple	Pu or V
Red	R
Sky Blue	Sb
White	W
Yellow	Y

(1) Wire Color

(2) Stripe

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4. LUBRICANTS, FUEL AND COOLANT

No.	Place		Capacity	Lubricants, fuel and coolant
			RTV-X1140	
1	Fuel		30 L 7.9 U.S.gals 6.6 Imp.gals	<ul style="list-style-type: none"> No. 2-D diesel fuel No. 1-D diesel fuel if temperature is below -10°C (14°F)
2	Coolant (with reserve tank)		7.6 L 8.0 U.S.qts 6.7 Imp.qts	Fresh clean water with anti-freeze
3	Engine crankcase	Filter exchanged	4.1 L 4.3 U.S.qts 3.6 Imp.qts	Engine oil API Service Classification (See page G-10 "Engine Oil".) <ul style="list-style-type: none"> Above 25°C (77°F) SAE30, SAE10W-30 or 15W-40 0 to 25°C (32 to 77°F) SAE20, SAE10W-30 or 15W-40 Below 0°C (32°F) SAE10W, SAE10W-30
		Filter non-ex- changed	3.8 L 4.0 U.S.qts 3.3 Imp.qts	
4	Transmission case		7.0 L 1.8 U.S.gals 1.5 Imp.gals	For U.S.A. market: KUBOTA SUPER UDT2 fluid* For Canada market: Premium UDT fluid* For other than the above: KUBOTA UDT or SUPER UDT fluid*
5	Front axle case		0.6 L 0.6 U.S.qts 0.52 Imp.qts	For U.S.A. market: KUBOTA SUPER UDT2 fluid* For Canada market: Premium UDT fluid* For other than the above: KUBOTA UDT or SUPER UDT fluid*
6	Front knuckle case		(Reference) 0.25 L 0.26 U.S.qts 0.22 Imp.qts	For U.S.A. market: KUBOTA SUPER UDT2 fluid* For Canada market: Premium UDT fluid* For other than the above: KUBOTA UDT or SUPER UDT fluid*
7	Brake fluid (reservoir and lines)		0.4 L 0.4 U.S.qts 0.35 Imp.qts	KUBOTA DOT3 GENUINE BRAKE FLUID
8	Hydraulic tank oil		18.0 L 19.0 U.S.qts 15.8 Imp.qts	For U.S.A. market: KUBOTA SUPER UDT2 fluid* For Canada market: Premium UDT fluid* For other than the above: KUBOTA UDT or SUPER UDT fluid*

Greasing				
No.	Place	No. of greasing point	Capacity	Type of grease
9	Parking brake lever	2	moderate amount	Multipurpose EP2 Grease (NLGI Grade No. 2)
	Battery terminal	2		
	Cargo lift cylinder pivot	1	Until grease overflows	
	Cargo bed pivot	2	moderate amount	
	VHT link	2	Until grease overflows	
		1	moderate amount	
	Valve lever link	1		
	4WD lever link	1		
	Range gear shift link	1		
	Unload link	1		
	Differential lock pedal	2		
	DT shaft bearing	1	Until grease overflows	
	Front A-ARM	6		
	Rear A-ARM	8		
	Parking brake link	1	moderate amount	Antirust silicone grease
Hand throttle cable [if equipped]	—			

■ **NOTE**

- ***KUBOTA UDT or SUPER UDT fluid - KUBOTA original transmission hydraulic fluid**

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For North American market

■ NOTE**Engine Oil**

- Oil used in the engine should have an American Petroleum Institute (API) service classification and Proper SAE Engine Oil according to the ambient temperatures as shown above:
- Refer to the following table for the suitable API classification engine oil according to the engine type (with internal EGR, external EGR or non-EGR) and the fuel.

Fuel used	Engine oil classification (API classification)	
	Oil class of engines except external EGR	Oil class of engines with external EGR
Ultra Low Sulfur Fuel [< 0.0015 % (15 ppm)]	CF, CF-4, CG-4, CH-4 or CI-4	CF or CI-4 (Class CF-4, CG-4 and CH-4 engine oils cannot be used on EGR type engines)

EGR: Exhaust Gas Re-circulation

- **The CJ-4 engine oil is intended for DPF (Diesel Particulate Filter) type engines, and cannot be used on this vehicle.**

	except external EGR	With external EGR
Model	RTV-X1140	—

Fuel

- Cetane number of 45 is minimum. Cetane number greater than 50 is preferred, especially for temperatures below -20 °C (-4 °F) or elevations above 1500 m (5000 ft).
- Diesel fuels specified to EN 590 or ASTM D975 are recommended.
- No.2-D is a distillate fuel of lower volatility for engines in industrial and heavy mobile service. (SAE J313 JUN87)

Transmission oil

- To complete lubrication of the transmission, it is important that a multi-grade transmission fluid is used in this system.
We recommend the use of KUBOTA UDT or SUPER UDT fluid for optimum protection and performance.
Do not mix different brands together.

Hydraulic tank oil:

- To insure proper operation of the hydraulic and VHT system, it is important that a multi-grade transmission fluid is used in this system. We recommend the use of KUBOTA UDT or SUPER UDT fluid for optimum protection and performance.
Do not mix different brands together.

Brake fluid:

- Always use KUBOTA DOT3 GENUINE BRAKE FLUID from a sealed container. If it is not available, you should use only DOT3 fluid as a temporary replacement from a sealed container.
However, the use of any non-KUBOTA brake fluid can cause corrosion and decrease the life of the system. Have the brake system flushed and refilled with KUBOTA DOT3 GENUINE BRAKE FLUID as soon as possible.

●Indicated capacities of water and oil are manufacturer's estimate.

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For other than North American market

■ NOTE

Engine Oil

- Oil used in the engine should have an American Petroleum Institute (API) service classification and Proper SAE Engine Oil according to the ambient temperatures as shown above:
- With the emission control now in effect, the CF-4 and CG-4 lubricating oils have been developed for use of a low sulfur fuel on on-road vehicle engines. When an off-road vehicle engine runs on a high-sulfur fuel, it is advisable to employ the "CF or better" lubricating oil with a high Total Base Number (TBN of 10 minimum).
- Refer to the following table for the suitable API classification engine oil according to the engine type (with internal EGR, external EGR or non-EGR) and the fuel (low-sulfur or high-sulfur fuel).

Fuel used	Engine oil classification (API classification)	
	Oil class of engines except external EGR	Oil class of engines with external EGR
High Sulfur Fuel [≥ 0.05 % (500 ppm)]	CF (If the "CF-4, CG-4, CH-4, or CI-4" lubricating oil is used with a high-sulfur fuel, change the lubricating oil at shorter intervals. (approximately half))	—
Low Sulfur Fuel [< 0.05 % (500 ppm)] or Ultra Low Sulfur Fuel [< 0.0015 % (15 ppm)]	CF, CF-4, CG-4, CH-4 or CI-4	CF, CI-4 (Class CF-4, CG-4 and CH-4 engine oils cannot be used on EGR type engines)

EGR: Exhaust Gas re-circulation

- The **CJ-4** engine oil is intended for **DPF (Diesel Particulate Filter)** type engines, and cannot be used on this vehicle.

	except external EGR	with external EGR
Model	RTV-X1140	—

Fuel

- Cetane number of 45 minimum. Cetane number greater than 50 is preferred, especially for temperatures below -20°C (-4°F) or elevations above 1500 m.
- If diesel fuel with sulfur content greater than 0.5 % (5000 ppm) sulfur content is used, reduce the service interval for engine oil and filter by 50 %.
- NEVER use diesel fuel with sulfur content greater than 0.05 % (500 ppm) for EXTERNAL EGR type engine.
- DO NOT use diesel fuel with sulfur content greater than 1.0 % (10000 ppm).
- Diesel fuels specified to EN 590 or ASTM D975 are recommended.
- No.2-D is a distillate fuel of lower volatility for engines in industrial and heavy mobile service. (SAE J313 JUN87)

Transmission oil

- To complete lubrication of the transmission, it is important that a multi-grade transmission fluid is used in this system.
We recommend the use of KUBOTA UDT or SUPER UDT fluid for optimum protection and performance.
Do not mix different brands together.

Hydraulic tank oil:

- To insure proper operation of the hydraulic and VHT system, it is important that a multi-grade transmission fluid is used in this system. We recommend the use of KUBOTA UDT or SUPER UDT fluid for optimum protection and performance.
Do not mix different brands together.

Brake fluid:

- Always use KUBOTA DOT3 GENUINE BRAKE FLUID from a sealed container. If it is not available, you should use only DOT3 fluid as a temporary replacement from a sealed container.
However, the use of any non-KUBOTA brake fluid can cause corrosion and decrease the life of the system.
Have the brake system flushed and refilled with KUBOTA DOT3 GENUINE BRAKE FLUID as soon as possible.

●Indicated capacities of water and oil are manufacturer's estimate.

BIODIESEL FUEL (BDF)

B0-B20 Biodiesel fuels (BDF): mixed diesel fuels containing 20% or less biodiesel can be utilized under the following conditions.

■ IMPORTANT

- **Refueling and handling fuel should be done with caution in order to avoid contact with the fuel and spillage that could create a potential environmental or fire hazard. Wear appropriate protective equipment when refueling.**

■ Applicable BDF:

1. Blended diesel fuels containing 6% through 20% BDF (B6 - B20) which comply with American Society for Testing and Materials (ASTM) D7467 Standard, as revised, can be used without adversely affecting the performance and durability of the engine and fuel system components.
2. Any mineral oil diesel fuel, if used, must conform to ASTM D975 (or the European EN590) Standard, as revised. B100 fuel used to make Biodiesel blended fuels must meet ASTM D6751 (or EN14214) Standard, as revised. The final blended fuel B20 must conform to ASTM D7467 Standard, as revised. Straight vegetable oil is NOT allowed in any blended fuel.
3. Allowable blended fuel is mineral oil diesel fuel blended with B100 (i.e. 100% BDF). The blended fuel ratio shall be less than 20% B100 and 80% or more diesel fuel. The B100 source used for Biodiesel blends must be purchased from an accredited BQ-9000 marketer or producer. More information about qualified marketer(s) and producer(s) can be found at <http://www.bq-9000.org>.

■ Preparation:

1. Before using BDF concentrations greater than B5, you are advised to replace the engine oil, engine oil filter and fuel filter with new oil and filters. For replacement procedures, refer to the "PERIODIC SERVICE" section.

■ Product Warranty, Emission and Other Precautions:

1. The engine emission control system was certified according to current regulations based on the use of non-BDF. When using BDF, the owner is advised to check applicable local and federal emission regulations and comply with all of them.
2. BDF may cause restricted or clogged fuel filters during cold weather conditions, resulting in the engine not operating properly.
3. BDF encourages the growth of microorganisms which may cause degradation of the fuel. This in turn may cause fuel line corrosion or reduce fuel filter flow earlier than expected.
4. BDF inherently absorbs moisture which may cause degradation of the fuel earlier than expected. To avoid this, drain the water separator and fuel filter port often.
5. Do not use Biodiesel concentrations higher than 20% (i.e. greater than B20). Engine performance and fuel consumption will be affected, and degradation of the fuel system components may occur.
6. Do not readjust the engine fuel control system as this will violate emission control levels for which the equipment was approved.
7. Compared with soybean-based and rapeseed-based feedstock, palm oil-based feedstock has a thicker consistency (i.e. higher viscosity) at lower temperatures. Consequently, fuel filter performance may be reduced, particularly during cold weather conditions.
8. The KUBOTA Warranty, as specified in the Owner's Warranty Information Guide, only covers defects in product materials and workmanship. Accordingly, any problems that may arise due to the use of poor quality fuels that fail to meet the above requirements, whether biodiesel or mineral oil based, are not covered by the KUBOTA Warranty.

■ Routine handling:

1. Avoid spilling BDF onto painted surfaces as this may damage the finish. If fuel is spilled immediately wipe clean and flush with soapy water to avoid permanent damage.
2. When using BDF, you are advised to maintain a full tank of fuel, especially overnight and during short term storage, to reduce condensation within the tank. Be sure to tighten the fuel cap after refueling to prevent moisture build up within the tank. Water in the Biodiesel mixture will damage fuel filters and may damage engine components.

(To be continued)