

Product: Kubota WSM RTV-X1100C Utility Vehicle Service Repair Workshop Manual
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WSM

WORKSHOP MANUAL UTILITY VEHICLE

RTV-X1100C

The Kubota logo is rendered in a bold, black, stylized font. The letters are thick and blocky, with a distinctive shape for the 'K' and 'O's.

Sample of manual. Download All 465 pages at:
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TO THE READER

This Workshop Manual tells the servicing personnel about the mechanism, servicing and maintenance of the RTV-X1100C. 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.

December, 2013

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| 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, may result in minor or moderate injury.

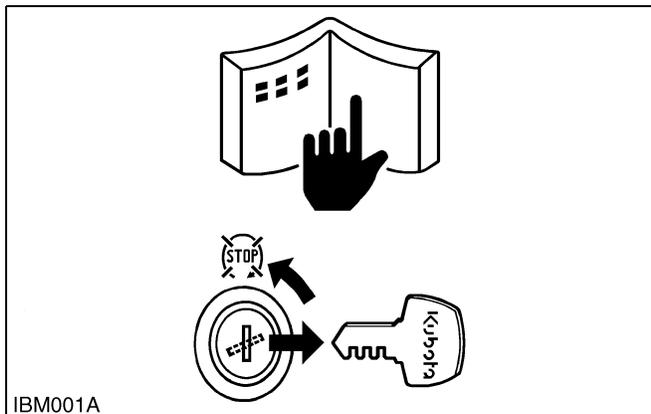
■ IMPORTANT

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

■ NOTE

- Gives helpful information.

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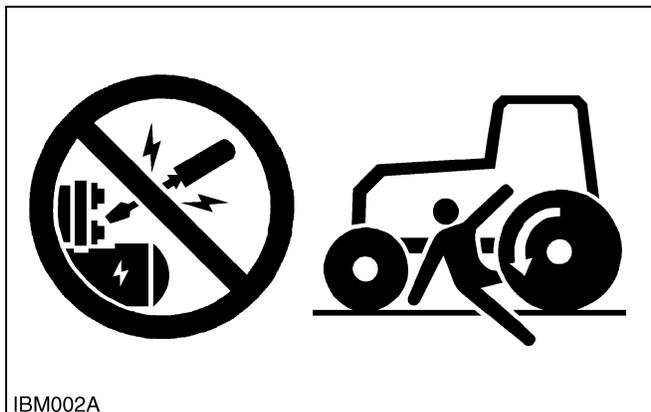


IBM001A

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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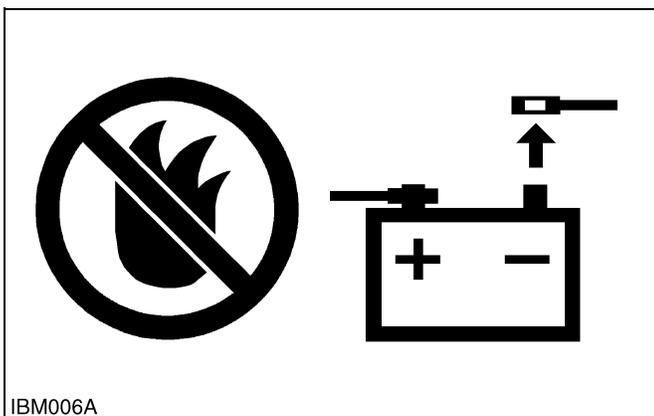
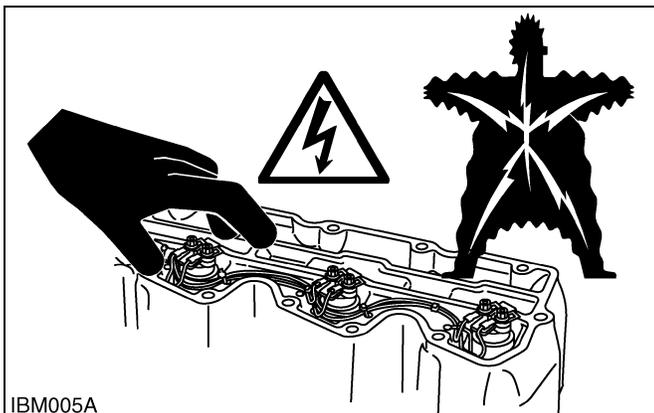
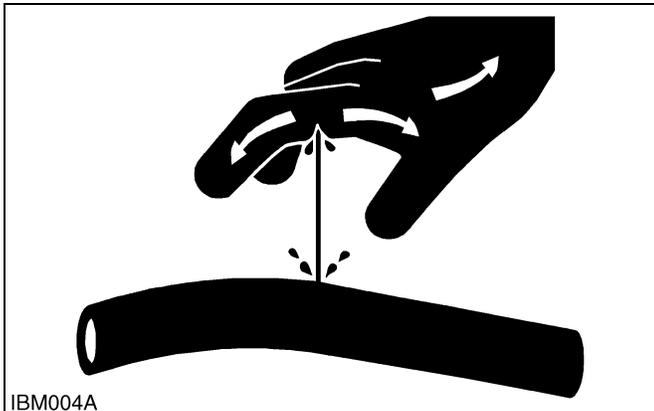
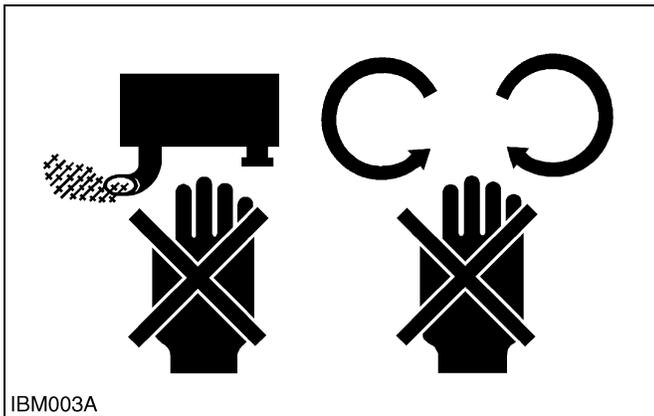


IBM002A

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

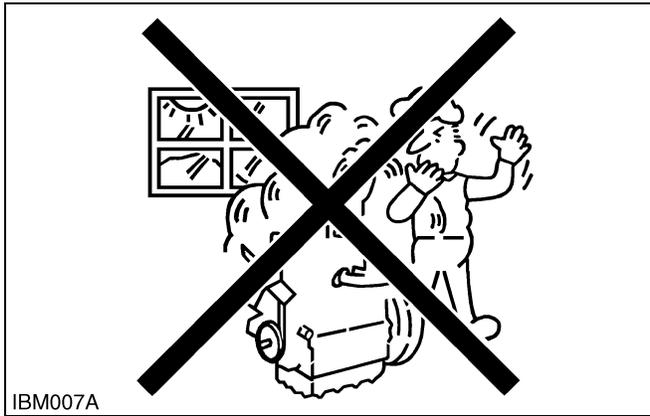
- Do not use the machine after you consume alcohol or medication or when you are tired.
- Put on applicable clothing and safety equipment.
- Use applicable tools only. Do not use alternative tools or parts.
- When 2 or more persons do servicing, make sure that you do it safely.
- Do not operate below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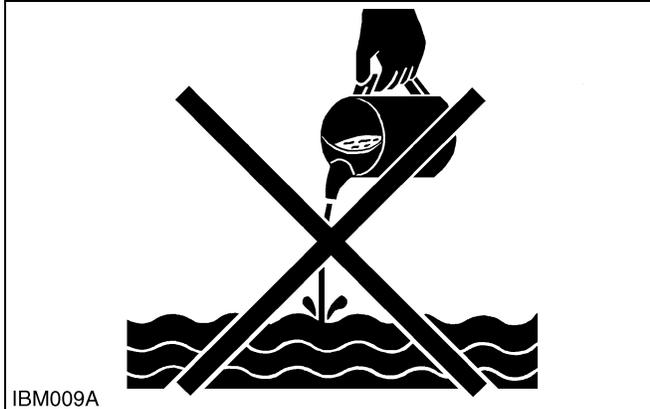
PREVENT A FIRE

- 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.

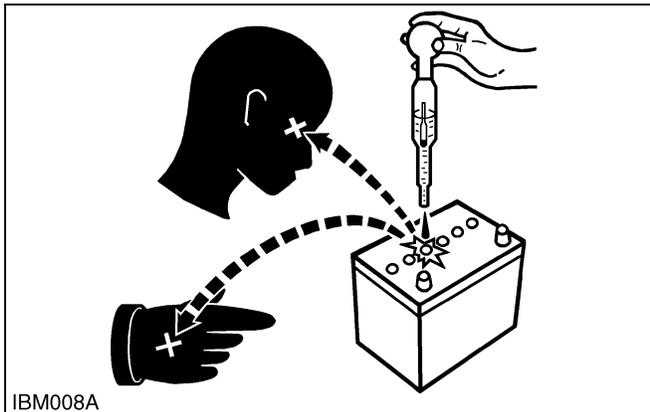
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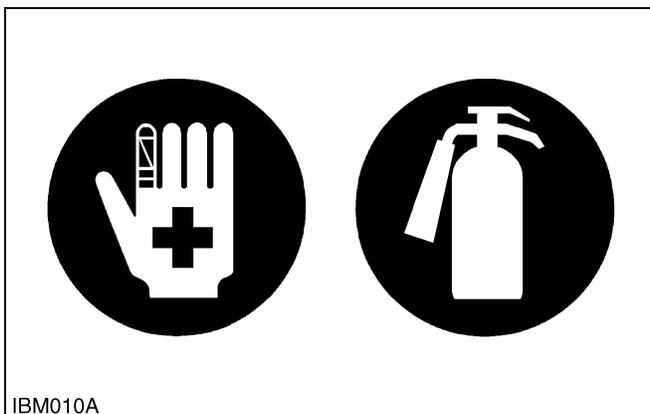
IBM007A



IBM009A



IBM008A



IBM010A

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.

WSM000001INI0006US0

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.

WSM000001INI0007US0

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.

WSM000001INI0008US0

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.

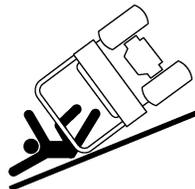
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(1) Part No. K7731-6523-1

⚠ WARNING	IMPORTANT
TO AVOID PERSONAL INJURY: 1. Do not carry passengers in cargo bed. 2. Do not travel with the cargo bed in raised position.	1. Max. cargo load should not exceed "CBC" or "CL". CBC (Cargo Bed Capacity): 500Kg (1100 lb) CL (Cargo Load): May vary on models. Refer to operator's manual for details. CL = (payload capacity) - (operator+passenger+opt.+acc.+cabin)weight 2. TO AVOID TAIL GATE DAMAGE: Remove the rear tow hitch when tail gate Stopper Wire is removed and cargo bed is raised.

1A1AACQAP221A

(4) Part No. K7731-6541-1

⚠ WARNING

TO AVOID PERSONAL INJURY OR DEATH: Do not modify or repair a CABIN because welding, grinding, drilling or cutting any portion may weaken the structure.

1A1AACQAP220A

(2) Part No. K7731-6542-1

	⚠ DANGER
	TO AVOID POSSIBLE INJURY OR DEATH FROM A MACHINE RUNAWAY: 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 operator's seat with range shift lever in neutral position and hydraulic outlet off (if equipped).

1A1AACQAP016A

(3) Part No. K7591-6542-1

	⚠ WARNING
	TO AVOID PERSONAL INJURY: Use the Safety Support or Propping Rod when working near a raised cargo bed or attachment.

1A1AACQAP005A

(5) Part No. K7731-6526-2

⚠ WARNING	⚠ WARNING
 TO AVOID PERSONAL INJURY OR DEATH: Always fasten your seat belt.	TO AVOID PERSONAL INJURY DUE TO LOSS OF STEERING CONTROL: Do not depress the differential lock pedal at high speed.
⚠ WARNING	⚠ WARNING
TO AVOID PERSONAL INJURY: 1. Do not stick your head out of the window while the engine is running. 2. Do not stick your body out of the window while traveling.	TO AVOID PERSONAL INJURY: 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.

1A1AACQAP218A

(6) Part No. K7731-6577-2

⚠ WARNING	
TO AVOID PERSONAL INJURY OR DEATH: Secure the door properly.	

1A1AACQAP021A

(7) Part No. K7591-6549-1

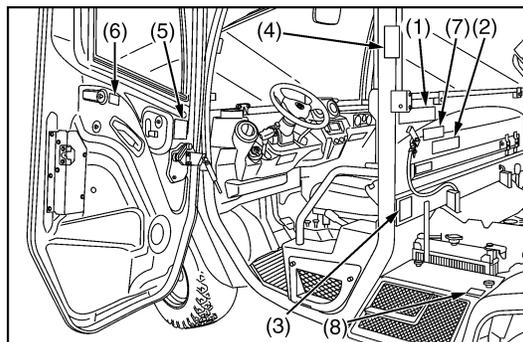
⚠ WARNING
TO AVOID PERSONAL INJURY: Do not open breather for coolant while coolant is hot.

1A1AACQAP008A

(8) Part No. K7591-6538-2

⚠ CAUTION	NO STEP
	

1A1AACQAP004A



9Y1210948ICI001US

9Y1210948INI0001US0

(1) Part No. K7591-6521-2

⚠ WARNING

TO AVOID PERSONAL INJURY:

1. Read and understand the operator's manual before operation.
2. Never allow anyone under age 16 or 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, as such operation could be a violation of the law and may be hazardous.
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 one passenger can be carried.
Minimum age for passenger is five 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.
13. Do not operate unless driver and passenger are properly positioned and seat belts appropriately fastened.

1AYAACQAP020A

(2) Part No. K7731-6537-2

<p>⚠ WARNING REFRIGERANT UNDER HIGH PRESSUER</p> <p>TO AVOID PERSONAL INJURY: This air conditioning system should be serviced by your dealer or any other qualified service shop. See Workshop Manual for details.</p> <table border="0"> <tr> <td style="text-align: center;">Refrigerant</td> <td style="text-align: center;">oil</td> </tr> <tr> <td style="text-align: center;">R134a Max. 0.55kg(1.21lbs.) USE ONLY Min. 0.45kg(0.99lbs.)</td> <td style="text-align: center;">PAG OIL USE ONLY</td> </tr> </table>	Refrigerant	oil	R134a Max. 0.55kg(1.21lbs.) USE ONLY Min. 0.45kg(0.99lbs.)	PAG OIL USE ONLY	<p>IMPORTANT</p> <p>TO AVOID DAMAGE TO AIR CONDITIONAER</p> <ol style="list-style-type: none"> 1. Do not spray water on any air conditioner parts. 2. Use air when cleaning the air conditioner.
Refrigerant	oil				
R134a Max. 0.55kg(1.21lbs.) USE ONLY Min. 0.45kg(0.99lbs.)	PAG OIL USE ONLY				

1AYAACQAP222A

(3) Part No. K7591-6542-1

⚠ WARNING

TO AVOID PERSONAL INJURY:
Use the Safety Support or Propping Rod when working near a raised cargo bed or attachment.

1AYAACQAP005A

(6) Part No. K7591-6534-3

	ULTRA LOW SULFUR DIESEL FUEL ONLY
⚠ CAUTION	
	NO STEP

1AYAACQAP003A

(4) Part No. K7731-6527-1

⚠ WARNING

TO AVOID PERSONAL INJURY OR DEATH:
Always fasten your seat belt.

⚠ WARNING

TO AVOID PERSONAL INJURY:

1. Do not stick your head out of the window while the engine is running.
2. Do not stick your body out of the window while traveling.

1AYAACQAP219A

(5) Part No. K7731-6577-2

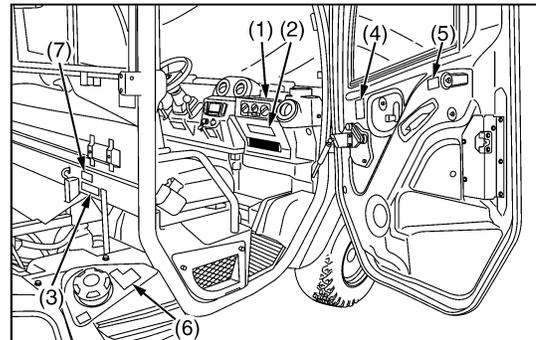
⚠ WARNING

TO AVOID PERSONAL INJURY OR DEATH:
Secure the door properly.

1AYAACQAP021A

(7) Part No. K7731-6543-1

1AYAACQAP234A



9Y1210948ICI002US

9Y1210948INI0002US0

(1) 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

(2) 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

(3) Part No. K7711-6117-1

MAINTENANCE-FREE BATTERY

DeKa

EAST PENN manufacturing co., inc.
Lyon Station, PA 19536

CALIFORNIA PROPOSITION 65 WARNING:
Batteries, battery posts, terminals and related accessories contain lead and lead compounds, and other chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. WASH HANDS AFTER HANDLING.

⚠ DANGER/POISON

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.

KEEP OUT OF REACH OF CHILDREN. DO NOT TIP. DO NOT OPEN BATTERY.

Pb

RECYCLE

MADE IN U.S.A.

PART NO. K7711-61112

CCA @ 0°F

650A

RC

120

Ah @ 20HR

12V

3-9909

1AYAACAAP126A

(4) Part No. K7591-6524-1

⚠ WARNING

TO AVOID PERSONAL INJURY:

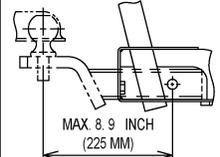
1. Use brake fluid (DOT-3) only. Other oil types will ruin synthetic resin or rubber installed in brake system components, and cause brake failure.
2. If brake fluid is spilled on power steering hose, wash off with water immediately. Brake fluid quickly ruins synthetic resin or rubber hoses.

1AYAACQAP002A

(5) Part No. K7591-6544-2

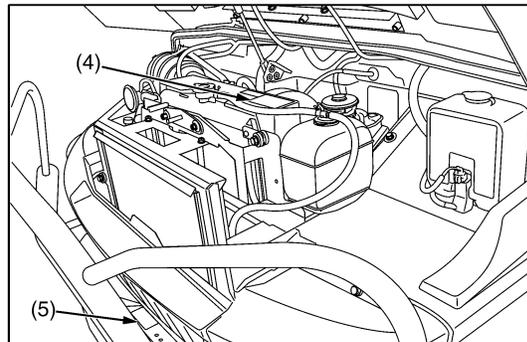
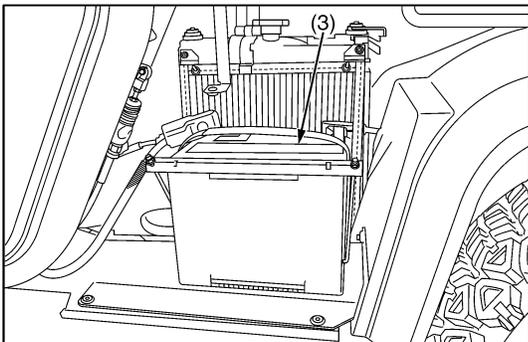
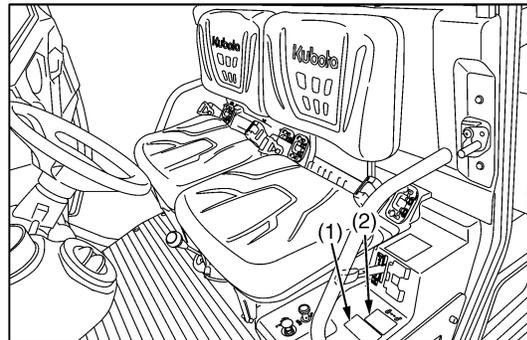
⚠ WARNING

TO AVOID PERSONAL INJURY:
Attach pulled or towed loads to the drawbar only.



MAX. 8.9 INCH
(225 MM)

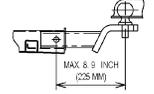
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9Y1210948IC1003US

9Y1210948INI0003US0

(1) Part No. K7591-6545-2

 	<p>WARNING</p> <p>TO AVOID PERSONAL INJURY:</p> <ol style="list-style-type: none"> 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. 4. If you are unable to do this work, have it done by your KUBOTA Dealer. 	<p>Maintenance</p> <p>The swirl type spark arrester should be cleaned after every 100 hours of use.</p> <ol style="list-style-type: none"> 1. Set vehicle in an open area away from combustible materials and on flat surface. 2. Apply parking brake and shift range gear shift lever into N(neutral) position. 3. Remove the drain plug located on the bottom of the muffler body. 4. Start engine and raise and lower engine revolution while tapping on the muffler with a rubber mallet until the carbon particles are purged from the muffler. 5. Stop the engine. 6. Reinstall the drain plug. 	<p>WARNING</p> <p>TO AVOID PERSONAL INJURY:</p> <p>Attach pulled or towed loads to the drawbar only.</p> 	<p>IMPORTANT</p> <ol style="list-style-type: none"> 1. Carefully read the loading information and trailer hitch sections in the Operator's Manual. 2. Towing Capacity <ul style="list-style-type: none"> - Max. Towing Load 590kg (1300lbs) - Max. Tongue Weight 50kg (110lbs)
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(2) Part No. K7591-6547-1



1AYAACQAP010A

(3) Part No. K7591-6533-1



1AYAACQAP010A

(4) Part No. K7591-6548-1

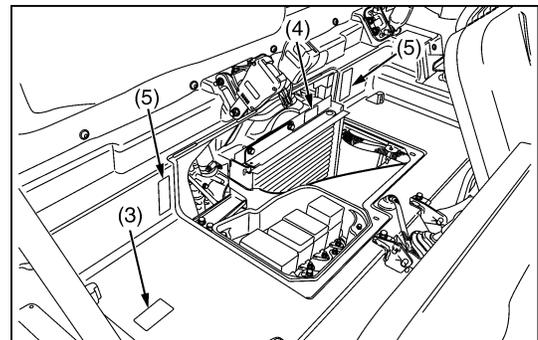
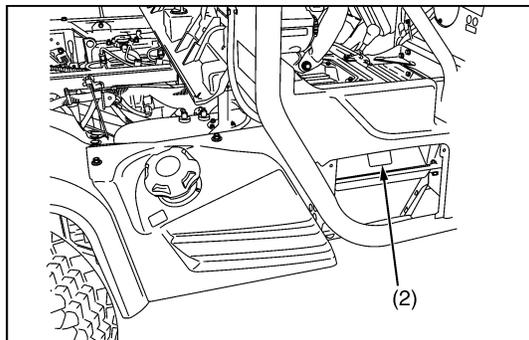
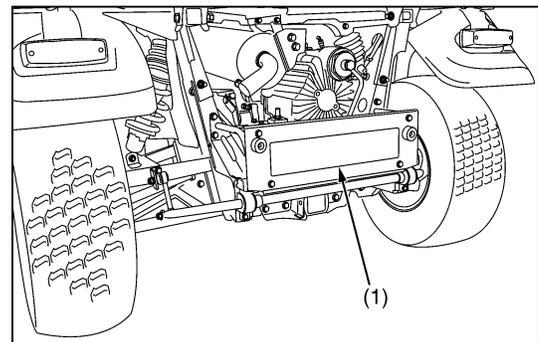


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(5) Part No. K7591-6532-1



1AYAACQAP017A



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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.

9Y1210948INI0005US0

3. SPECIFICATIONS

Model		RTV-X1100C		
		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	1350 to 1450 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	Independent, Dual A-Arm type		
Dimensions	Length	3110 mm (122.5 in.)		
	Width	1660 mm (65.4 in.)		
	Height, overall	2090 mm (82.3 in.)		
	Front tread centers	1240 mm (48.8 in.) HDWS, ATV, 1290 mm (50.8 in.) Turf		
	Rear tread centers	1240 mm (48.8 in.) HDWS, ATV, 1290 mm (50.8 in.) Turf		
	Wheelbase	2045 mm (80.5 in.)		
	Ground clearance	front axle	266 mm (10.5 in.)	
		rear axle	263 mm (10.4 in.)	
Turning diameter	8.0 m (26.2 ft)			
Max. Rolling weight (Towing capacity)		Rear: 590 kg (1300 lbs), Front: 295 kg (650 lbs)		
Payload capacity		734 kg (1618 lbs)		
Weight		1075 kg (2370 lbs)		
Gross Vehicle Weight Rating (GVWR)		1814 kg (3999 lbs)		
Cargo bed	Width	1465 mm (57.7 in.)		
	Length	1030 mm (40.5 in.)		
	Depth	285 mm (11.2 in.)		
	Volume	0.43 m ³ (15.2 cu.ft.)		
	Bed height (unloaded)	887 mm (34.9 in.)		
	Cargo bed capacity	500 kg (1102 lbs)		
Sound level, operator ear		83 db (A)		
Tire	Front	25 × 10-12 HDWS, 6PLY 25 × 10-12 ATV, 6PLY 25 × 12-12 Turf, 4PLY	25 × 10-12 HDWS, 6PLY 25 × 10-12 ATV, 6PLY	
	Rear	25 × 10-12 HDWS, 6PLY 25 × 10-12 ATV, 6PLY 25 × 12-12 Turf, 4PLY	25 × 10-12 HDWS, 6PLY 25 × 10-12 ATV, 6PLY	
Tilt steering wheel		Standard		
Seat belt		2 point type		
Front deluxe guard		–	–	
Front deluxe guard with light guard		Standard	Standard	
Body color		Orange	Camo	
Bed lift		Standard	Standard	
Speedometer		Standard	Standard	
Door		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.

9Y1210948INI0006US0

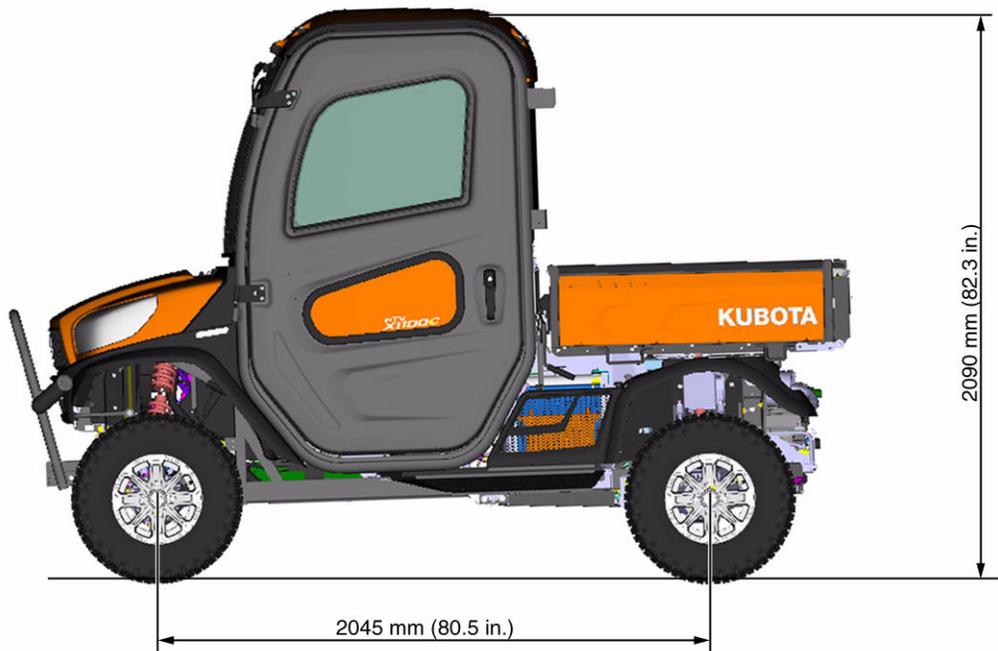
4. TRAVELLING SPEEDS

(At rated engine rpm)

Model	RTV-X1100C
Range gear shift lever	km/h (mph)
Low	24 (15)
High	40 (25)
Reverse	27 (17)

9Y1210948INI0007US0

5. DIMENSIONS



9Y1210948IF001US

9Y1210948INI0008US0

G GENERAL

GENERAL

CONTENTS

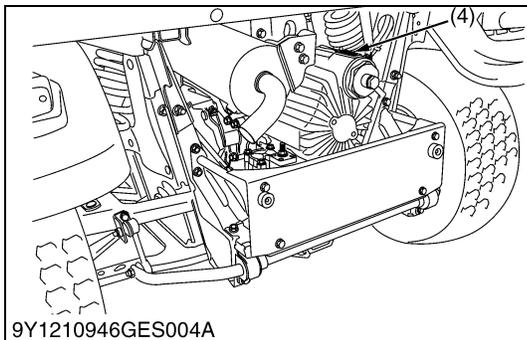
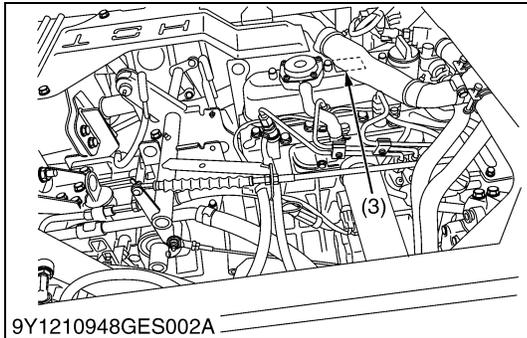
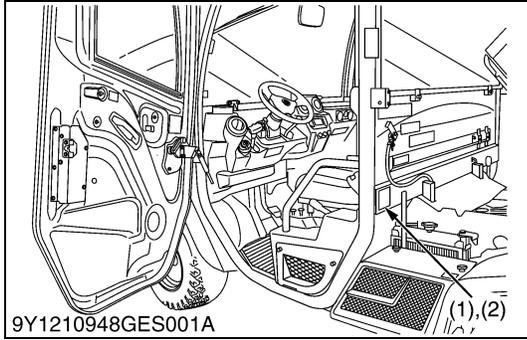
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1. PRODUCT IDENTIFICATION

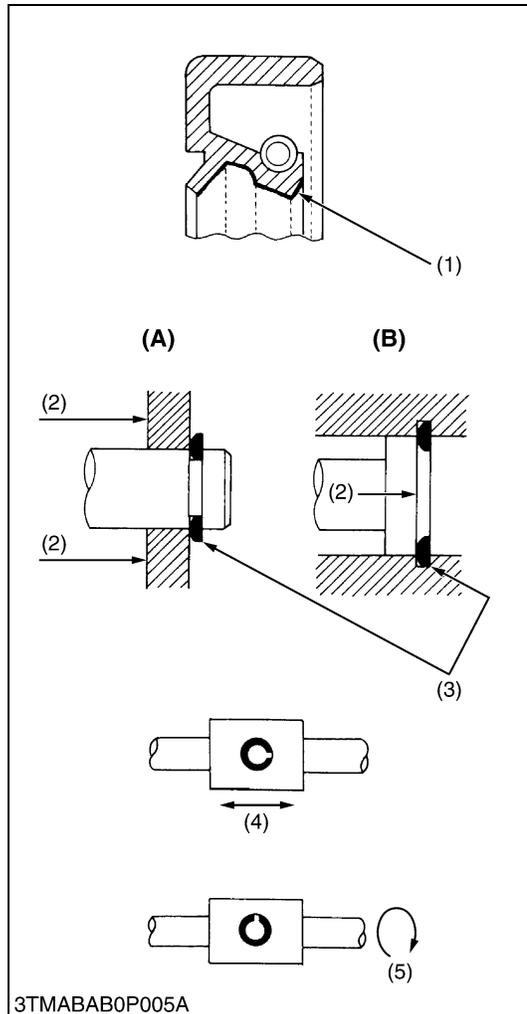
When contacting your local KUBOTA distributor, always specify engine serial number, product serial number and hour meter reading.

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

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2. GENERAL PRECAUTIONS



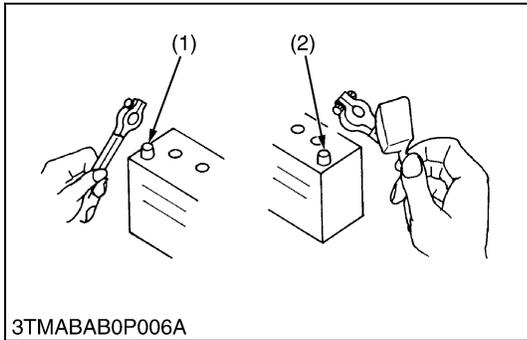
- When you disassemble, carefully put the parts in a clean area to make it easy to find the parts. You must install the screws, bolts and nuts in their initial position to prevent the reassembly errors.
- When it is necessary to use special tools, use KUBOTA special tools. Refer to the drawings when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



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

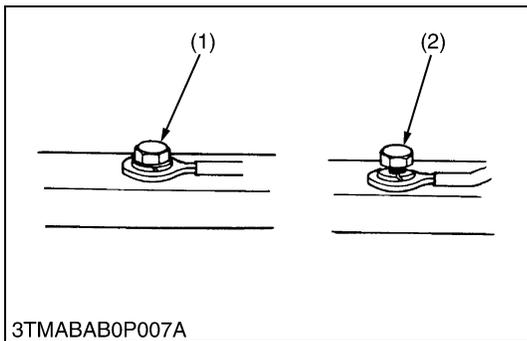
■ IMPORTANT

- Check electrical wiring for damage and loosened connection every year. 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 try 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

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[1] WIRING

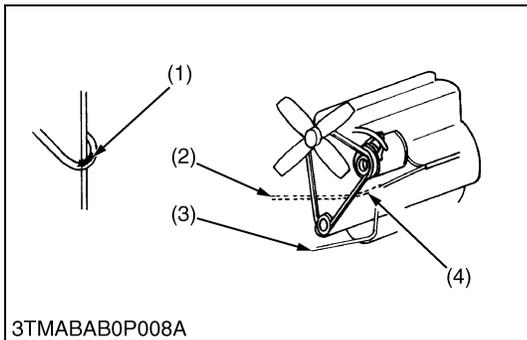


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- Securely tighten wiring terminals.

- (1) Correct (Securely Tighten) (2) Incorrect (Loosening Leads to Faulty Contact)

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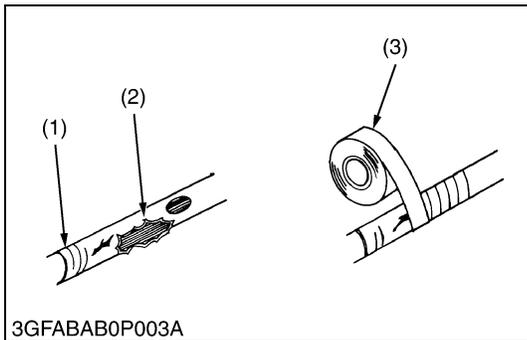


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- Do not let wiring contact dangerous part.

- (1) Dangerous Part (Sharp Edge) (2) Wiring (Incorrect) (3) Wiring (Correct) (4) Dangerous Part

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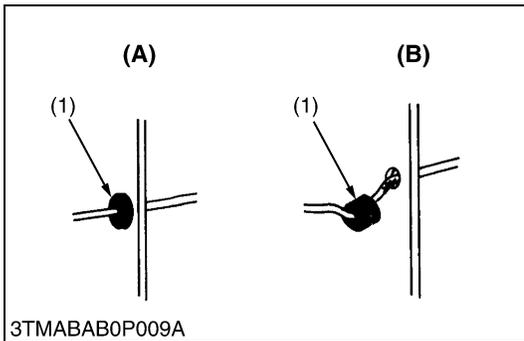


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- Repair or change torn or aged wiring immediately.

- (1) Aged (2) Torn (3) Insulating Vinyl Tape

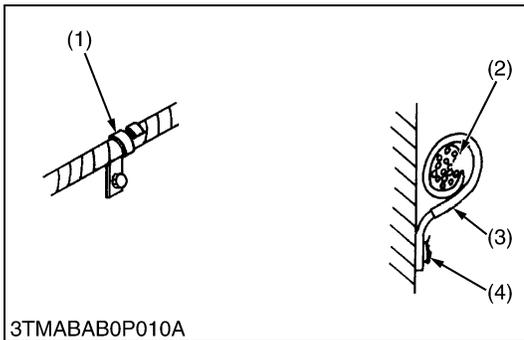
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• Securely insert grommet.

- (1) Grommet
- (A) Correct
- (B) Incorrect

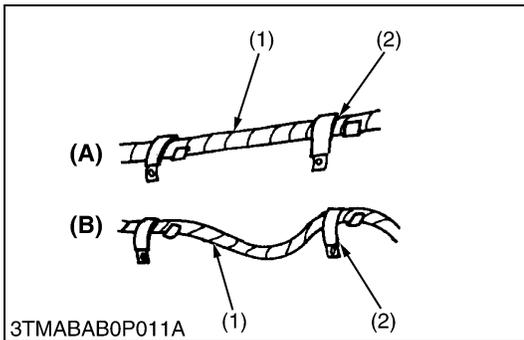
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• Securely clamp, being careful not to damage wiring.

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

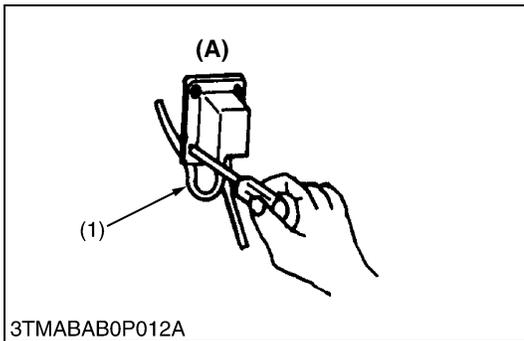
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• Clamp wiring so that there is no twist, unnecessary sag, or excessive tension, except for movable part, where sag be required.

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

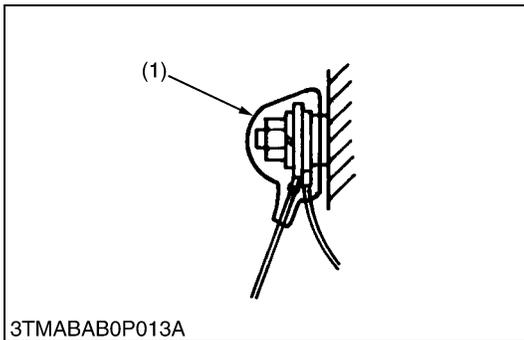
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• In installing a part, be careful not to get wiring caught by it.

- (1) Wiring
- (A) Incorrect

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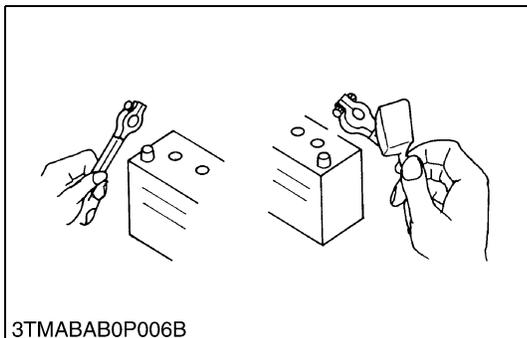


• After installing wiring, check protection of terminals and clamped condition of wiring.

- (1) Cover (Securely Install Cover)

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[2] BATTERY



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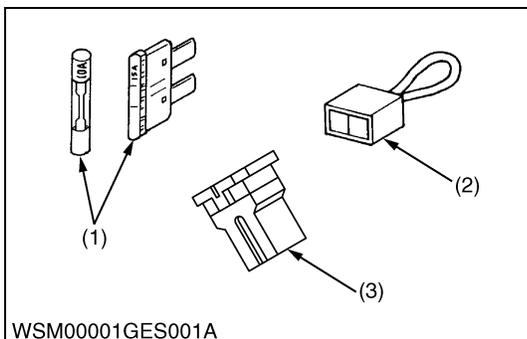
- Be careful not to confuse positive and negative terminal posts.
- When you remove battery cables, disconnect negative cable first. When you install battery cables, check for polarity and connect positive cable first.
- Do not install any battery with capacity other than is specified (Ah).
- After you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

⚠ CAUTION

- 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



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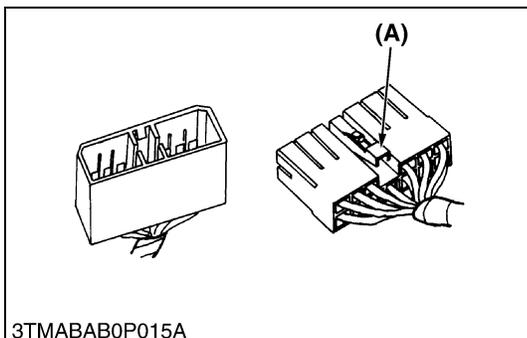
- Use fuses with specified capacity. Neither too large nor small capacity fuse is acceptable.
- Never use steel nor copper wire in place of fuse.
- Do not install working light, radio set, etc. on machine which is not provided with reserve power supply.
- Do not install accessories if fuse capacity of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

- (1) Fuse
(2) Fusible Link

- (3) Slow Blow Fuse

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[4] CONNECTOR

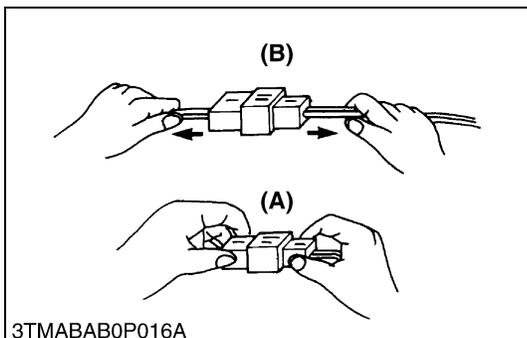


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- For connector with lock, push lock to separate.

(A) Push

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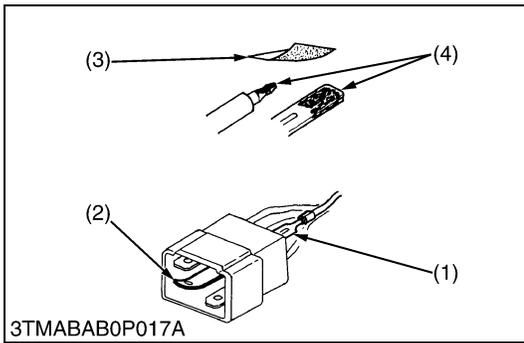
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- In separating connectors, do not pull wire harnesses.
- Hold connector bodies to separate.

(A) Correct

(B) Incorrect

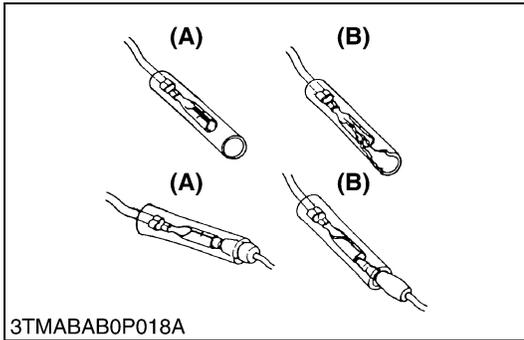
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- Use sandpaper to remove rust from terminals.
- Repair deformed terminal. Make sure that there is no terminal being exposed or displaced.

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

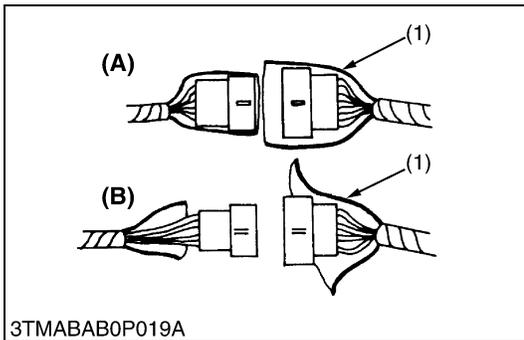
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- Make sure that there is no female connector being too open.

- (A) Correct
- (B) Incorrect

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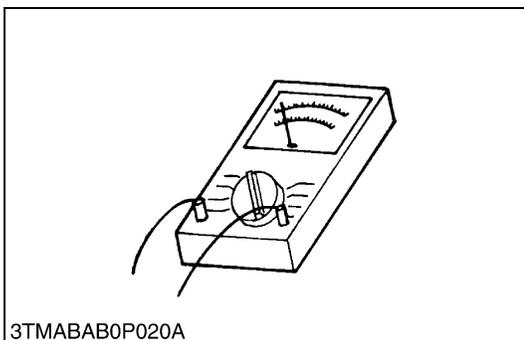


- Make sure that plastic cover is large enough to cover whole connector.

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

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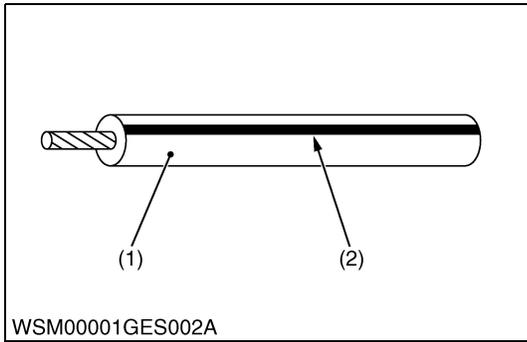
[5] HANDLING OF CIRCUIT TESTER



- 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
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)		7.9 L 8.3 U.S.qts 7.0 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 CF or higher <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	KUBOTA UDT or SUPER UDT fluid*
5	Front axle case		0.6 L 0.6 U.S.qts 0.52 Imp.qts	KUBOTA UDT or SUPER UDT fluid*
6	Front knuckle case		(Reference) 0.25 L 0.26 U.S.qts 0.22 Imp.qts	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	KUBOTA UDT or SUPER UDT fluid*
9	Washer liquid		1.5 L 1.6 U.S.qts 1.3 Imp.qts	Automobile washer liquid

Greasing				
No.	Place	No. of greasing point	Capacity	Type of grease
10	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	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-X1100C	—

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-X1100C	—

Fuel

- Cetane number of 45 minimum. Cetane number greater than 50 is preferred, especially for temperatures below -20 °C 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:

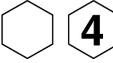
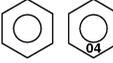
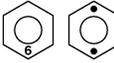
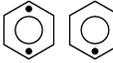
- Always use KUBOTA DOT3 GENUINE BRAKE FLUID from a sealed container. If it is not available, you should use only DOT3 fluid as a temporary replacement from a sealed container.
However, the use of any non-KUBOTA brake fluid can cause corrosion and decrease the life of the system.
Have the brake system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

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

5. TIGHTENING TORQUES

[1] GENERAL USE SCREWS, BOLTS AND NUTS

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

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

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[2] STUD BOLTS

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

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[3] HYDRAULIC FITTINGS

(1) Hydraulic Hose Fittings

Hose size	Thread side	Tightening torque		
		N·m	kgf·m	lbf·ft
02	1/8	13.8 to 15.6	1.40 to 1.60	10.2 to 11.5
03	1/4	22.6 to 27.4	2.30 to 2.80	16.7 to 20.2
04				
05	3/8	45.2 to 52.9	4.60 to 5.40	33.3 to 39.0
06				

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(2) Hydraulic Pipe Cap Nuts

Pipe size	Tightening torque		
	N·m	kgf·m	lbf·ft
φ4 × t1.0	19.7 to 29.4	2.00 to 3.00	14.5 to 21.6
φ6 × t1.0	24.6 to 34.3	2.50 to 3.50	18.1 to 25.3
φ8 × t1.0	29.5 to 39.2	3.00 to 4.00	21.7 to 28.9
φ10 × t1.0	39.3 to 49.0	4.00 to 5.00	29.0 to 36.1
φ12 × t1.5	49.1 to 68.6	5.00 to 7.00	36.2 to 50.6
φ15 × t1.6	108 to 117	11.0 to 12.0	79.6 to 86.7
φ18 × t1.6	108 to 117	11.0 to 12.0	79.6 to 86.7

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(3) Adaptors, Elbows and Others

Item	Thread side	Tightening torque		
		N·m	kgf·m	lbf·ft
Fitting with O-ring	G 1/8	45 to 53	4.5 to 5.5	33 to 39
	G 1/4	74 to 83	7.5 to 8.5	55 to 61
	G 3/8	93.2 to 102	9.50 to 10.5	68.8 to 75.9
	G 1/2	113 to 122	11.5 to 12.5	83.2 to 90.4
Elbow with O-ring	G 1/8	23 to 26	2.3 to 2.7	17 to 19
	G 1/4	36 to 43	3.6 to 4.4	26 to 31
	G 3/8	54 to 63	5.5 to 6.5	40 to 47
	G 1/2	73 to 83	7.4 to 8.5	54 to 61
Adapter	G 1/8	9.8 to 14	1.0 to 1.5	7.3 to 10
	G 1/4	30 to 34	3.0 to 3.5	22 to 25
	G 3/8	49 to 68	5.0 to 7.0	37 to 50
	G 1/2	69 to 88	7.0 to 9.0	51 to 65

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[4] METRIC SCREWS, BOLTS AND NUTS

Grade	8.8 Property class 8.8			10.9 Property class 10.9		
	Unit	N·m	kgf·m	lbf·ft	N·m	kgf·m
M8	24 to 27	2.4 to 2.8	18 to 20	30 to 34	3.0 to 3.5	22 to 25
M10	48 to 55	4.9 to 5.7	36 to 41	61 to 70	6.2 to 7.2	45 to 52
M12	78 to 90	7.9 to 9.2	58 to 66	103 to 117	10.5 to 12.0	76.0 to 86.7
M14	124 to 147	12.6 to 15.0	91.2 to 108	167 to 196	17.0 to 20.0	123 to 144
M16	197 to 225	20.0 to 23.0	145 to 166	260 to 304	26.5 to 31.0	192 to 224

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[5] 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
1/4	11.7 to 15.7	1.20 to 1.60	8.63 to 11.5	16.3 to 19.7	1.67 to 2.00	12.0 to 14.6
5/16	23.1 to 27.7	2.36 to 2.82	17.0 to 20.5	33 to 39	3.4 to 3.9	25 to 28
3/8	48 to 56	4.9 to 5.7	36 to 41	61 to 73	6.3 to 7.4	45 to 53
1/2	110 to 130	11.3 to 13.2	81.2 to 95.8	150 to 178	15.3 to 18.1	111 to 131
9/16	150 to 178	15.3 to 18.1	111 to 131	217 to 260	22.2 to 26.5	160 to 191
5/8	204 to 244	20.8 to 24.8	151 to 179	299 to 357	30.5 to 36.4	221 to 263

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[6] PLUGS

Shape	Size	Material of opponent part					
		Ordinariness			Aluminum		
		N·m	kgf·m	lbf·ft	N·m	kgf·m	lbf·ft
Tapered screw 	R1/8	13 to 21	1.3 to 2.2	9.4 to 15	13 to 19	1.3 to 2.0	9.4 to 14
	R1/4	25 to 44	2.5 to 4.5	18 to 32	25 to 34	2.5 to 3.5	18 to 25
	R3/8	49 to 88	5.0 to 9.0	37 to 65	49 to 58	5.0 to 6.0	37 to 43
	R1/2	58.9 to 107	6.00 to 11.0	43.4 to 79.5	59 to 78	6.0 to 8.0	44 to 57
Straight screw 	G1/4	25 to 34	2.5 to 3.5	18 to 25	–	–	–
	G3/8	62 to 82	6.3 to 8.4	46 to 60	–	–	–
	G1/2	49 to 88	5.0 to 9.0	37 to 65	–	–	–

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