

Product: Kubota LM2605 Service Manual

Full Download: <https://www.arepairmanual.com/downloads/kubota-lm2605-service-manual/>

WSM

WORKSHOP MANUAL

FRONT LOADER

LM2605

Kubota

Sample of manual. Download All 184 pages at:

<https://www.arepairmanual.com/downloads/kubota-lm2605-service-manual/>

KiSC issued 01, 2022 A

Product: Kubota LM2605 Service Manual

Full Download: <https://www.arepairmanual.com/downloads/kubota-lm2605-service-manual/>

TO THE READER

This workshop manual provides safety information for service activity, general information such as specifications and dimensions of the machine, mechanisms and structure descriptions of the machine, and service procedures.

Safety

This section contains safety service descriptions and safety label information.

General

This section contains general instructions, tightening torques, general machine information and special tools.

Maintenance

This section contains information for the recommended oil and general maintenance procedures.

Each section basically consists of mechanism and servicing.

Mechanism

Mechanism part contains information and explanations for the structure, functions, and specifications of the machine or component parts. This part should be comprehended before proceeding with troubleshooting, disassembling, assembling, and servicing works.

Servicing

Servicing part contains information and procedures for maintenance, troubleshooting and repair works. The reader should follow these instructions in order to satisfy any servicing work safely, correctly and quickly.

In this WSM, service specifications and service limits are defined as followings.

Service specifications:

Specification which corresponds to new machine's ex-factory. It is based on quality standard, drawings, or actual measurements conducted by Kubota. This value is used to determine whether there is a problem with the machine in the event of a troubleshooting. However, it is necessary to consider degradation due to wear, based on the operating time of the machine, application or maintenance condition.

Service limits:

Service limit is a value corresponding to the recommended performance limit by taking long term-use wear into account. When the service limit is reached, the machine is required to have proper repair, overhaul or replacement in order to keep safe and adequate performance.

All of the illustrations, photographs, specifications, and other information in this manual were created based on the latest model at the time of publication.

The parts names used in this manual are unified into names representing the functions of the parts. Therefore, it does not necessarily correspond to the names used in other materials (parts list, operators manual etc.) and the name on the label / identification plates on the product.

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

March 2016

© KUBOTA Corporation

Sample of manual. Download All 184 pages at:

<https://www.arepairmanual.com/downloads/kubota-lm2605-service-manual/>

SUPPLEMENTARY INFORMATION

Model name and related manuals

This manual applies to the following model.

Model name
LM2605

RECORD OF REVISIONS

Main revised contents and corrective measures are described in a table.
Find the main revised point and corrective measure through the reference page.

Last digit of the code No.	Month of Revision	Main revised point and corrective measure	Reference page
1	2016 Mar.	Operational specifications and performance curve are corrected.	2-20 2-21
		Main frame mounting bolt tightening torque is corrected.	3-7
		Checking resistance of solenoid valve is added.	4-85 4-87 4-119
2	2018 Mar.	• Correct error of electrical circuit.	4-62
		• Add location of joint connector.	4-66
		• Correct resistance of 3rd function solenoid valve.	4-86
		• Adding information on disassembling control valve, 3rd function valve and 4th function valve.	4-98 4-102 4-107 4-111
3	2018 Sep.	• Updating DTC list.	4-121
		• Adding harness list and electrical inspection table.	4-78
		• Updating information on electrical circuit.	4-62
4	2021 Jun.	• Revised suitable tractor table	2-19
		• Revised specifications for loader table	2-19
		• Added specifications for bucket table	2-19
		• Revised operational specifications	2-21
		• Added Release Tool (1/2 SCH)	2-25
		• Added Release Tool (3/8 SCH)	2-25
		• Updated lubricants table	3-3
		• Added loader service intervals	3-1
		• Added re-tightening of hardware	3-7
		• Revised circuit of outline of open center electrical diagram	4-62
		• Revised outline of a closed center electrical diagram	4-65
		• Revised tightening torques for loader	4-84
		• Revised removing boom cylinder	4-114
		• Added bolt marking procedure to when reassembling side frame	4-117
		• Revised the torque value of main frame mounting bolt (M27)	4-119
		• Added torque value of front guard mounting nut	4-119

CONTENTS

1. SAFETY

SAFETY FIRST	1-1
1. Preparing for emergencies	1-1
2. Working cautions	1-1
3. Starting machine safely	1-2
4. Preventing fires	1-2
5. Preventing acid burns	1-3
6. Avoiding high pressure fluid	1-3
7. Avoiding hot exhaust	1-3
8. Cleaning exhaust filter	1-4
SAFETY LABELS	1-5
1. Care of danger, warning and caution labels	1-9

2. GENERAL

GENERAL WORKING INSTRUCTIONS	2-1
1. General working precautions	2-1
2. Tightening bolts and nuts	2-1
3. Applying thread-locking fluid	2-1
4. Installing circlips	2-2
5. Installing spring pins	2-2
6. Handling split pin	2-2
7. Handling chain joint and split pin	2-2
8. Handling liquid gasket	2-3
9. Replacing O-rings	2-3
10. Replacing oil seals	2-3
11. Replacing floating seals	2-4
12. Connecting hydraulic hoses	2-4
13. Wrapping thread seal tape	2-4
14. Installing elbows with male seat	2-4
15. Connecting and disconnecting quick hose couplings	2-5
16. Handling the battery	2-5
17. Handling wire harness	2-5
18. Handling fuses	2-7
19. Handling connectors	2-7
20. Wiring color	2-8
21. Washing the machine with a high pressure washer	2-8
22. Dispose fluids correctly	2-9
TIGHTENING TORQUES	2-11
1. General use screws, bolts and nuts	2-11
2. Stud bolts	2-12
3. Hydraulic fitting	2-13
3.1 Hydraulic hose fittings	2-13
3.2 Hydraulic pipe cap nuts	2-13
3.3 Adapters, elbows, and others	2-14
4. Metric screws, bolts and nuts	2-15
5. American standard screws, bolts and nuts with UNC or UNF threads	2-15
6. Plugs	2-15
IDENTIFICATION	2-17
1. Outline of loader identification	2-17
SPECIFICATIONS	2-19
1. Suitable tractor	2-19
2. Specifications for loader	2-19
3. Specifications for bucket	2-19
4. Dimensional specifications	2-20

5. Operational specifications	2-21
TERMINOLOGY.....	2-23
1. Loader terminology	2-23
SPECIAL TOOLS.....	2-25
1. Special tools for loader	2-25
1.1 Release Tool (1/2 SCH)	2-25
1.2 Release Tool (3/8 SCH)	2-25
3. MAINTENANCE	
MAINTENANCE CHECKLIST.....	3-1
LUBRICANTS	3-3
CHECK AND MAINTENANCE.....	3-5
1. Daily check	3-5
1.1 Checking the transmission fluid	3-5
1.2 Checking hydraulic hoses	3-5
1.3 Checking and tightening the loose bolts and the nuts.....	3-6
1.4 Checking quick attach coupler	3-6
2. Service every 10 hours	3-6
2.1 Lubricating the loader.....	3-6
3. Service every 20 hours to 30 hours.....	3-7
3.1 Re-tightening of hardware.....	3-7
4. Check point of every 50 hours	3-7
4.1 Checking all mounting bolts torque	3-7
4.2 Others	3-7
4. FRONT LOADER	
MECHANISM	4-1
1. Hydraulic system	4-1
1.1 Open center model.....	4-1
1.1.1 Structure of hydraulic system	4-1
1.1.2 Feature of hydraulic system.....	4-3
1.1.3 Oil flow of hydraulic system	4-3
1.1.4 Control valve	4-4
1.2 Closed center with load sensing model.....	4-20
1.2.1 Structure of hydraulic system	4-20
1.2.2 Feature of hydraulic system.....	4-21
1.2.3 Oil flow of hydraulic system	4-21
1.2.4 Control valve	4-22
1.3 Selectable valve	4-38
1.3.1 Structure of selectable valve	4-38
1.3.2 Function of selectable valve	4-40
1.4 3rd function valve assembly	4-44
1.4.1 3rd function valve assembly (Open center model)	4-44
1.4.2 3rd function valve assembly (Closed center with load sensing model)	4-50
1.5 Hydraulic accumulator.....	4-56
1.5.1 Outline of hydraulic accumulator	4-56
1.5.2 Structure of hydraulic accumulator	4-57
1.5.3 Function of hydraulic accumulator	4-58
2. Self-leveling system.....	4-59
2.1 Mechanical self-leveling	4-59
2.1.1 Structure of mechanical self-leveling	4-59
2.1.2 Function of mechanical self-leveling	4-60
3. Electrical system.....	4-62
3.1 Open center model.....	4-62
3.1.1 Outline of open center electrical diagram	4-62
3.1.2 Structure of open center electrical circuit.....	4-64
3.1.3 Flow of open center electrical current.....	4-64
3.2 Closed center load sensing model	4-65

3.2.1 Outline of closed center electrical diagram	4-65
3.2.2 Structure of closed center electrical circuit	4-66
3.2.3 Flow of closed center electrical current	4-66
3.3 Location of joint connector	4-66
3.3.1 X59 joint connector	4-66
3.3.2 X17 joint connector	4-66
3.3.3 X56 joint connector	4-67
3.3.4 Main valve lower connector	4-67
3.3.5 Main valve upper connector	4-67
SERVICING	4-69
1. Troubleshooting for front loader.....	4-69
2. Service specifications for front loader.....	4-78
3. Tightening torques for front loader.....	4-84
4. Checking and adjusting	4-85
4.1 Checking control valve	4-85
4.1.1 Checking relief valve setting pressure	4-85
4.1.2 Checking control valve solenoid (closed center model control valve)	4-85
4.2 Checking 3rd function valve	4-86
4.2.1 Checking 3rd function valve for open center model.....	4-87
4.2.2 Checking 3rd function valve for closed center model	4-87
4.3 Checking selectable valve.....	4-88
4.3.1 Checking accumulator solenoid valve	4-88
4.3.2 Checking 4th function solenoid valve	4-88
4.4 Checking relay and switch	4-89
4.4.1 Checking voltage of relay (open center model)	4-89
4.4.2 Checking continuity of relay (open center model).....	4-90
4.4.3 Checking voltage of accumulator switch (open center model)	4-90
4.4.4 Checking resistance of accumulator switch (open center model).....	4-91
4.4.5 Checking voltage of activation switch (open center model).....	4-91
4.4.6 Checking resistance of activation switch (open center model)	4-92
4.4.7 Checking voltage of ON-OFF switch (open center model)	4-92
4.4.8 Checking resistance of ON-OFF switch (open center model)	4-93
5. Disassembling and assembling	4-93
5.1 Removing the loader	4-93
5.1.1 How to remove the loader.....	4-93
5.2 Reinstalling the loader.....	4-95
5.2.1 How to reinstall the loader	4-95
5.3 Removing open center model control valve	4-96
5.3.1 Removing control cable from control valve.....	4-96
5.3.2 Removing control valve	4-97
5.4 Disassembling control valve.....	4-98
5.5 Removing closed center model control valve.....	4-101
5.5.1 Removing hydraulic and electric lines from control valve	4-101
5.6 Disassembling control valve.....	4-102
5.7 Removing and disassembling control lever (Open center model).....	4-105
5.7.1 Removing wire harness	4-105
5.7.2 Disassembling control lever	4-105
5.8 Removing and disassembling 3rd function valve	4-106
5.8.1 Removing 3rd function valve	4-106
5.8.2 Disassembling 3rd function valve	4-107
5.9 Removing and disassembling selectable valve.....	4-108
5.9.1 Removing hydraulic hose	4-108
5.9.2 Removing hydraulic accumulator.....	4-109
5.9.3 Removing selectable valve	4-110
5.9.4 Disassembling 4th function valve	4-111
5.10 Removing front end quick coupler.....	4-111
5.11 Removing bucket.....	4-112
5.11.1 Removing bucket (euro quick coupler type).....	4-112

5.12 Removing hydraulic line	4-113
5.12.1 Removing hydraulic line from boom	4-113
5.13 Removing boom cylinder.....	4-114
5.14 Removing quick hitch	4-115
5.14.1 Removing quick hitch.....	4-115
5.14.2 Disassembling quick hitch	4-116
5.15 Removing bucket cylinder	4-116
5.16 Removing side frame	4-117
5.17 Removing parallel link	4-118
5.18 Removing main frame	4-119
5.19 Removing front guard.....	4-119
6. Servicing	4-121
6.1 DTC (diagnostic trouble code) list	4-121

1. SAFETY

SAFETY FIRST

This symbol, the industry's "Safety Alert Symbol", is used throughout this manual and on labels on the machine itself to warn of the possibility of personal injury. Read these instructions carefully. It is essential that you read the instructions and safety regulations before you attempt to assemble 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.

1. Preparing for emergencies



IBM010A

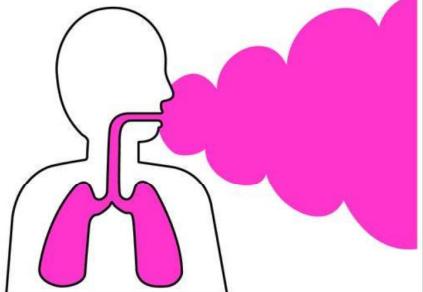
- Keep a first aid kit and fire extinguisher ready at all times.
- Keep emergency numbers near your telephone at all times.

2. Working cautions



2KBTA00034A01

- Wear proper service attire when performing work. Do not wear loose clothing as they could get caught on machine components.
- Wear the proper protective equipment when working around the machine. For example helmet, eye protector and protective shoes.
- Do not work around the machine if you are tired or have consumed alcohol or drugs.



2KBTA00038A01

- Keep the machine away from obstacles and hazardous materials.
- Ensure the working environment is properly ventilated.
- Do not allow third parties to come near the machine.



2KBTA00035A01

- Make sure you have the support of the 3 points with both hands holding the handle and one foot at the step when getting on and off the machine.
- When working under the machine, make sure the machine does not move back and forth or side-to-side.
- When working under the machine, provide secure support for the machine.
- When using a hydraulic jack, always use with a rigid rack to prevent the machine from falling.

3. Starting machine safely



2KBTA00036A01

- Do not do the following work when starting the engine.
 - Short across starter terminals.
 - Bypass the safety start switch.
- Make sure there are no bystanders or obstacles present around the machine before starting the engine.
- Do not start the engine unless the operator is seated in the operator's seat.
- Make sure that the pilot levers are in neutral before starting the engine.



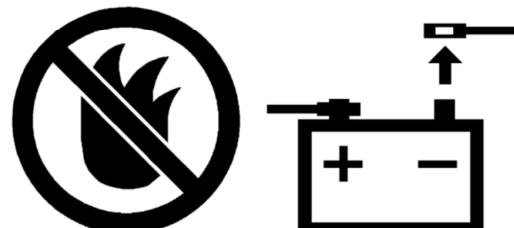
2KBTA00040A01

- Lock the covers before starting the machine.
- Keep away from rotating and moving objects.
- Keep tools and waste cloth away from rotating and moving objects.

4. Preventing fires



2KBTA00037A01

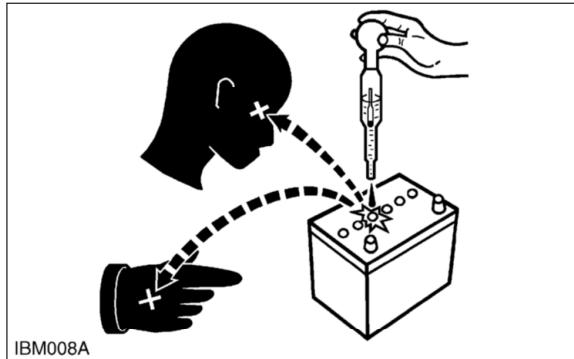


IBM006A

- Keep fire (welding sparks, grinding sparks, cigarettes) away from the fuel.
- Wipe the fuel off when spilled.
- Keep fire (welding sparks, grinding sparks, cigarettes) away from the battery. The battery produces oxygen and hydrogen gas that are flammable.
- Disconnect the negative (-) terminal first when disconnecting the battery cable.

- Connect the positive (+) terminal first when connecting the battery cable.
- Do not short circuit the machine.
- Do not splash the hydraulic oil on the exhaust components.

5. Preventing acid burns

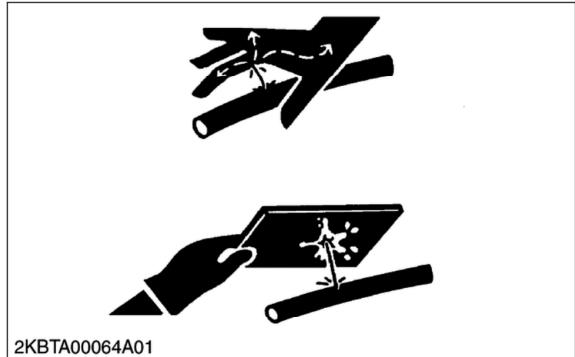


- Keep the electrolyte away from your eyes, hands, and clothes. Sulfuric acid in the battery electrolyte is poisonous: it can cause blindness and is strong enough to burn your skin and clothing. If you spill electrolyte on yourself, clean yourself with water and get a medical aid immediately.

6. Avoiding high pressure fluid

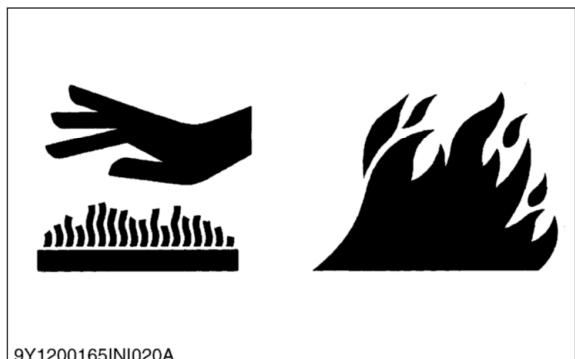


- Keep away from high pressure fluids bursting from a hose or pipe. The fluid can penetrate your skin and cause serious injuries.
- Get a medical aid immediately if an accident occurs.

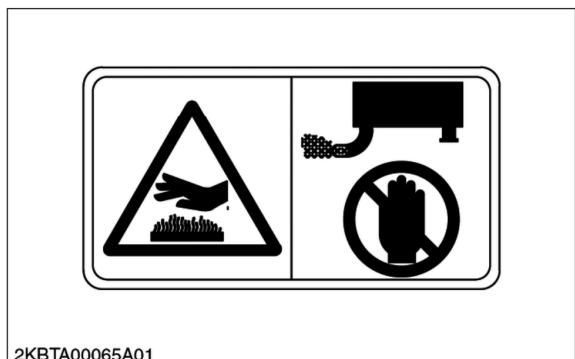


- Release residual pressure in the hydraulic circuit before removing the hydraulic components.
- Pay attention when releasing pressure in hydraulic circuit, because the machine or attachment might move unexpectedly.
- Check the coolant temperature and release the pressure before opening the radiator cap.

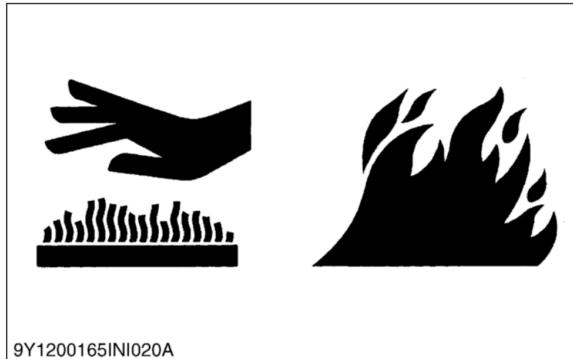
7. Avoiding hot exhaust



- Avoid skin exposure and contact with hot exhaust gas or components.
- Exhaust gas and components are extremely hot during operation.



- Do not work immediately after stopping the engine. The engine, muffler, radiator, and hydraulic components are extremely hot.
- Do not remove caps and plugs soon after stopping the engine. The temperature and pressure of the coolant, hydraulic oil, and fuel are still high.

8. Cleaning exhaust filter

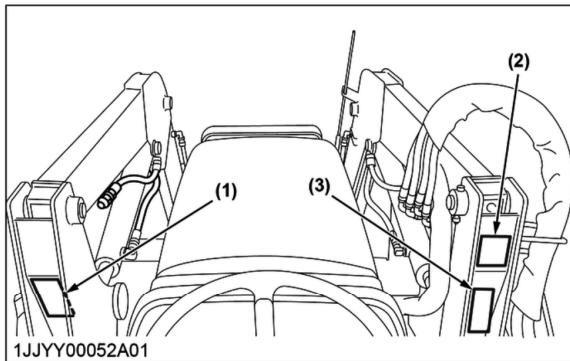
9Y1200165INI020A

- Avoid skin exposure and contact with hot exhaust gas or components. Exhaust gas and components are extremely hot during regeneration of the diesel particulate filter (DPF).

SAFETY LABELS

The safety labels are installed on the machine. If a label becomes damaged, illegible or is not on the machine, replace it. The label part number is listed in the parts list.

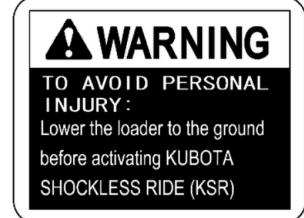
1. SAFETY



(1) Part No. 7J246-5641-2



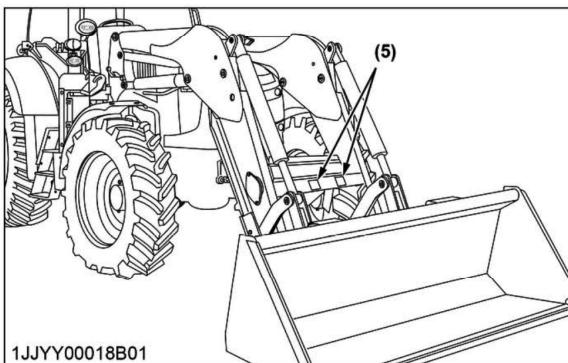
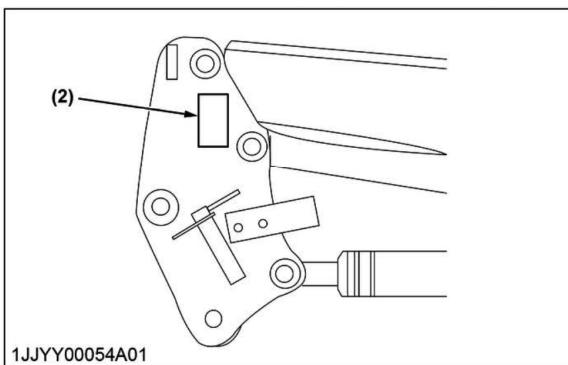
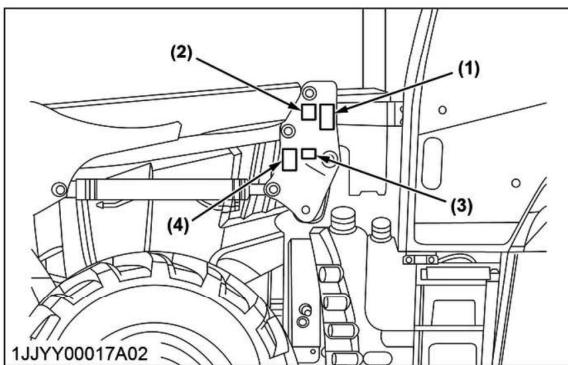
(2) Part No. 7J417-9321-2



(3) Part No. 7J061-5649-1



2XHQK00001A01enUS



2XHQK00002A01enUS

(1) Part No. 7J061-5645-1

WARNING

TO AVOID PERSONAL INJURY :

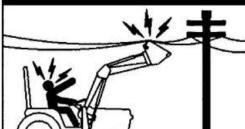
1. Observe safety precautions in loader and tractor Operator's Manual.
2. Operate the loader from tractor seat only.
3. Keep children, others and livestock away when operating loader and tractor.
4. Avoid holes, loose ground, and rocks which may cause tractor / loader to tip.
5. Make sure approved bucket is attached before removing loader from tractor.
6. When parking or storing, choose flat and hard ground. Lower the bucket to the ground, set brakes and remove key before leaving tractor.
7. Before disconnecting hydraulic lines, relieve all hydraulic pressure.

(2) Part No. 7J246-5644-2
(Both sides)
WARNING


TO AVOID INJURY FROM FALLS OR BEING CRUSHED :

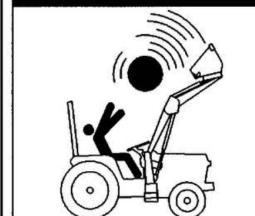
1. DO NOT stand or work under raised loader or bucket.
2. DO NOT use loader as jack for servicing.
3. DO NOT use loader as a work platform.
4. NEVER connect chain, cable or rope to loader bucket while operating loader.

(3) Part No. 7J246-5642-2

DANGER


TO AVOID SERIOUS INJURY OR DEATH CAUSED BY CONTACT WITH ELECTRIC LINES:

- Check overhead clearance.

(4) Part No. 7J246-5643-2
(M1552)
DANGER


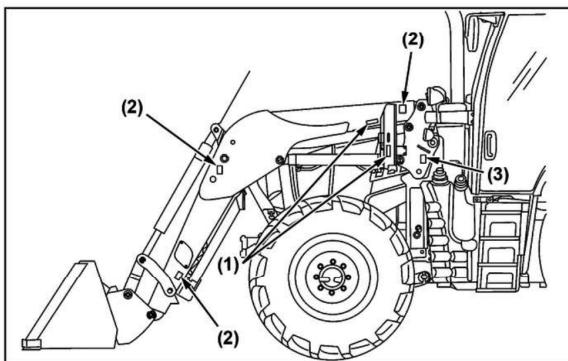
TO AVOID SERIOUS INJURY OR DEATH CAUSED BY FALLING LOADS :

1. Load on raised bucket or fork can fall or roll back onto operator causing serious injury or death.
2. Use approved clamping and / or guard attachments for handling large, loose or shiftable loads such as bales, posts, sheets of plywood etc.
3. Carry loads as low as possible.

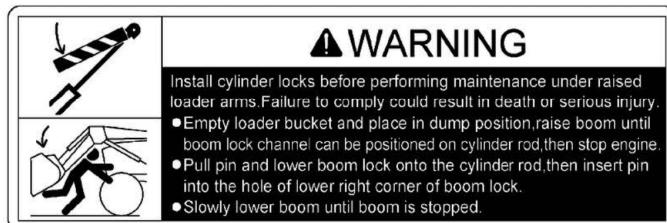
(5) Part No. 7J447-7236-1



1. SAFETY



(1) Part No. 7J802-5848-3



1HNADAAAP0120

(2) Part No. 7J615-5633-1



1AIAABEJAP018E

2ZBPZ00001A01enUS

(3) Part No. 7J452-5637-2

- Tractor Model: M7131, M7151, M7171
M7132, M7152, M7172
- Wheel Size: Front 540/65 R28
Rear 650/65 R38
- Mitas wheel
- Rated Operating Load(ROL)
w/o Front PTO & Front 3PL: 1440kg
w/ Front PTO & Front 3PL: 1295kg
- Counterweight Required: 1500kg
- Michelin wheel
- Rated Operating Load(ROL)
w/o Front PTO & Front 3PL: 1240kg
w/ Front PTO & Front 3PL: 1100kg
- Counterweight Required: 1500kg

Date Of Supply: / / 20

⚠ WARNING

- DO NOT EXCEED ROL.
- DO NOT OPERATE LOADER WITHOUT COUNTERWEIGHT.
- DO NOT EXCEED 10KMH
WHEN TRAVELLING WITH LOAD.
- ROL IS CALCULATED WITH STANDARD
BUCKET OPTIONAL ATTACHMENTS
(4IN BUCKET ETC) WILL REDUCE THE ROL.
- ROL IS CALCULATED WITH THE WHEEL
EQUIPMENT SHOWN, CHANGING WHEEL WILL
CHANGE THE ROL.

1AIAABEJAP0270

1. Care of danger, warning and caution labels

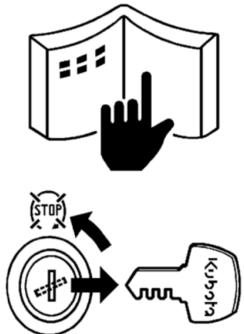
- Keep danger, warning and caution labels clean and free from obstructing material.
- Clean danger, warning and caution labels with soap and water, dry with a soft cloth.
- Replace damaged or missing danger, warning and caution labels with new labels.
- If a component with danger, warning and caution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

1. SAFETY

2. GENERAL

GENERAL WORKING INSTRUCTIONS

1. General working precautions



IBM001A

- When servicing, observe the safety instructions in the operator's manual and workshop manual.
- Clean the machine before maintenance.
- Service the machine at a clean location.
- Park the machine on a stable and level ground then lower the attachment to check the machine safely.
- Stop the engine and remove the key when leaving the operator's seat for cleaning, maintenance, and servicing.
- Before working, remove the negative (-) terminal from the battery or turn off the battery isolator switch.
- Whenever a special tool is required, use the special tool that Kubota recommends.
- Use genuine Kubota parts to ensure safety and machine performance.



2KBTAA00039A01

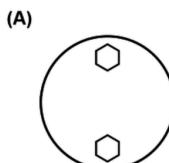
- Hang a DO NOT OPERATE tag near the operator's seat.
- Observe workplace safety rules when performing service and work.

2. Tightening bolts and nuts

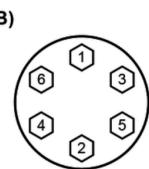
- Tighten the bolts and nuts to their specified torque.

■ NOTE

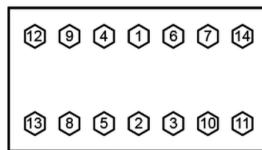
- Tighten the bolts and nuts alternately from top to bottom and left to right so the torque is distributed evenly.
- Gradually tighten the bolts and nuts two or three times.



(A)



(B)



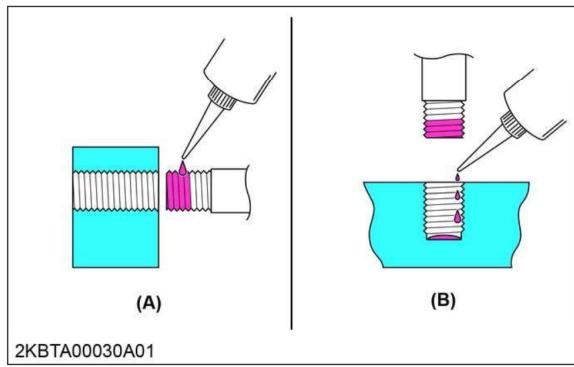
2KBTAA00029A01

(A) Alternately
(B) Diagonally

(C) Diagonally from center to outside

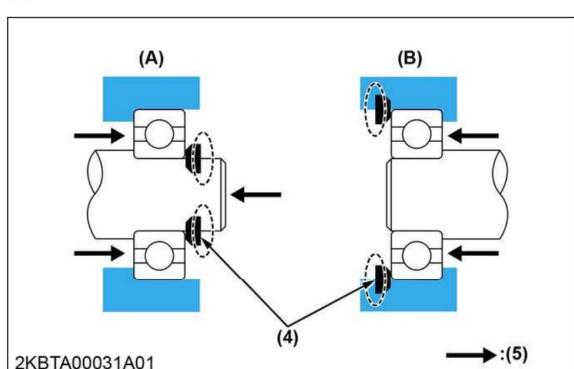
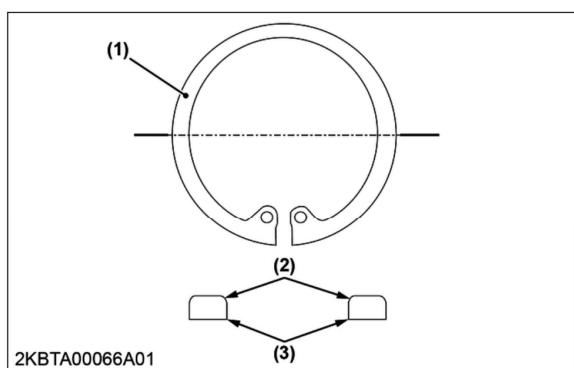
3. Applying thread-locking fluid

- Clean and dry the location where a thread-locking fluid will be applied with a solvent to remove moisture, oil, and dirt.
- Apply the thread-locking fluid to the tip of the bolt.
- If the threads are large, apply the thread-locking fluid all around the bolt hole.



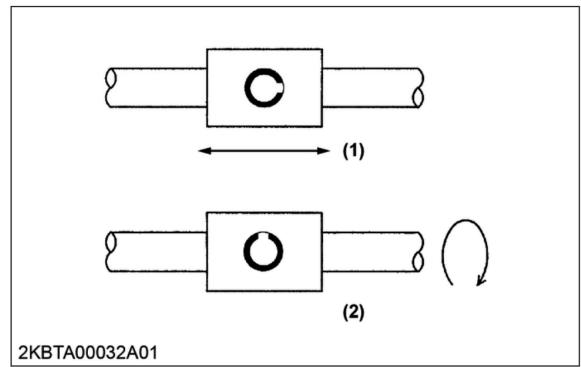
4. Installing circlips

- When installing the circlip, assemble the circlip's angular side (3) toward the side that receives force (4) as shown in the figure.



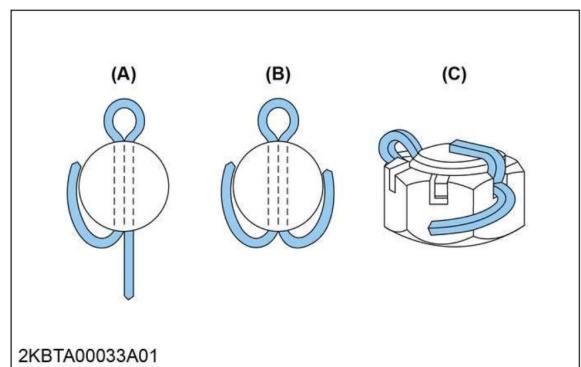
5. Installing spring pins

- When installing the spring pin, assemble the slit of the spring pin in the direction that receives force as shown in the figure.



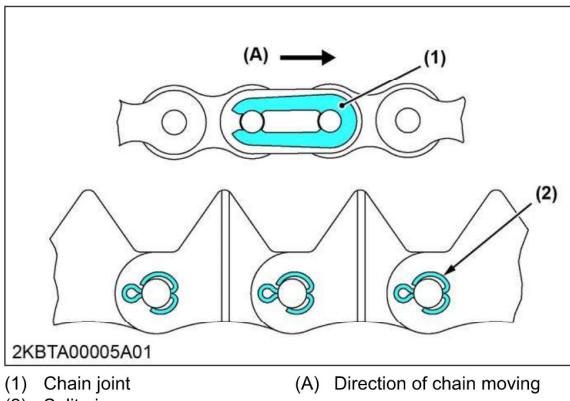
6. Handling split pin

- Bend the split pin as shown in the figure to prevent it from coming off.
- Tighten a grooved nut to the specified torque, align the hole of the split pin to the tighten direction and use an S-shaped split.



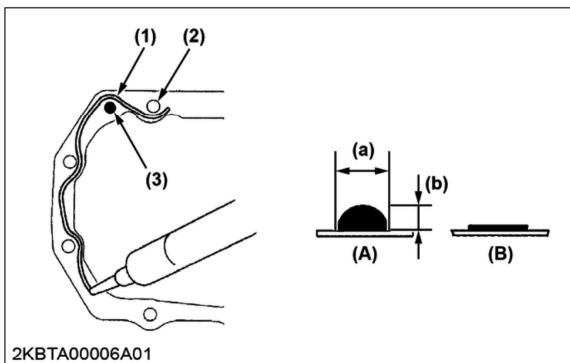
7. Handling chain joint and split pin

- Assemble the chain joint with its opening facing the opposite direction of travel.
- Assemble the split pin with its opening facing the direction of travel.



8. Handling liquid gasket

- Use the specified liquid gasket.
- When using liquid gasket, fully remove the old gasket and grease or oil.
- When applying liquid gasket, apply it on the joint surface with a thickness of 3.0 to 5.0 mm (0.12 to 0.19 in.) without making any gaps.
- When applying liquid gasket near the bolt hole (2), apply it in the inner side.
- If there is a risk of oil leakage or if the hole goes all the way through when applying liquid gasket near the dowel pin (3) hole, apply it in the inner side. If there is no concern of oil leakage, apply it on the outer side.
- Reassemble within 15 minutes after applying; wait for 30 minutes or more then fill with oil.



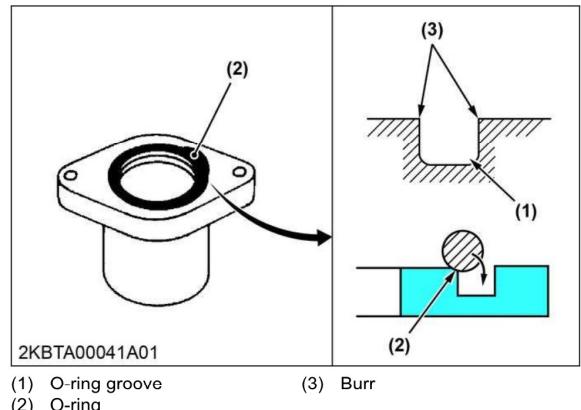
9. Replacing O-rings

- Remove the burr and clean the O-ring groove.
- Lubricate the O-ring. Do not apply any grease to the floating seal.

- Put the O-ring in the groove.

■ NOTE

- Do not twist the O-ring.
- Remove the burr to avoid damage on the O-ring caused by the burr.



10. Replacing oil seals

- If there are burrs, scratches, or rust on the inner surface of the housing hole, the chamfered part, or the surface of the shaft through which the oil seal passes, remove it with sandpaper.

■ NOTE

- If there is a risk of splines or key grooves of the shaft damaging the lip part of the seal, wrap masking tape around those parts to protect the seal.

- Clean the inner surface of the housing hole and the surface of the shaft.
- Lubricate the seal lip and dust lip.

■ NOTE

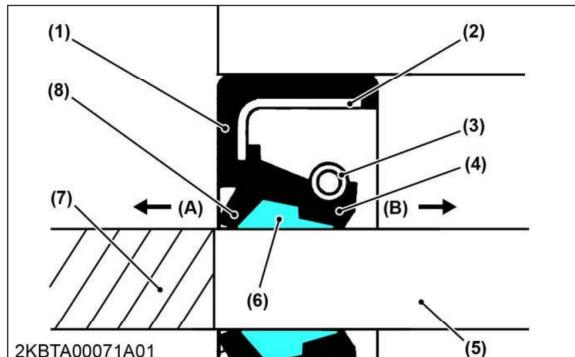
- If the seal has a dust lip, grease the gap between the lips to prevent dry wear that occurs when the machine starts.
- Use the specified grease or oil to lubricate the lip.

- With the seal lip facing the airtight side (B) of the object, use a press to press-fit the oil seal until it is fixed to the boss.

■ NOTE

- In cases when installing an oil seal without a press, place a wooden board on the seal and gently tap the board with a hammer; install the oil seal straightly and evenly.

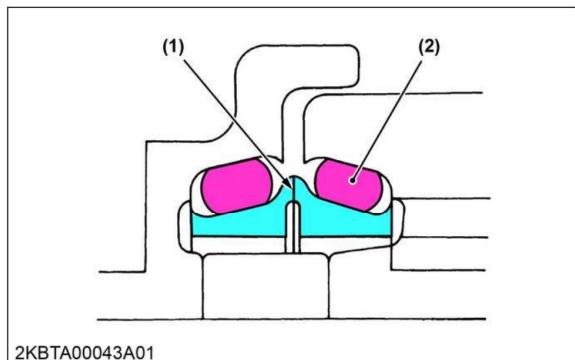
2. GENERAL



(1) Packing
 (2) Metal ring
 (3) Spring
 (4) Seal lip
 (5) Shaft
 (6) Grease
 (7) Masking tape
 (8) Dust lip
 (A) Air side
 (B) Airtight side

11. Replacing floating seals

1. Apply oil appropriately to both sides of the O-ring and the contact surface.
2. Do not twist the O-ring when installing the floating seal.
3. Apply oil thinly to the sliding surfaces.
4. Install the floating seal in parallel to the sliding surfaces, O-rings, and housings.
5. After installation, rotate the floating seal for 3 times to make an oil film on the sliding surface.



12. Connecting hydraulic hoses

1. Clean the inside of the hose fittings.
2. Tighten with the specified torque.
3. Apply pressure on the hydraulic hose to check for oil leakage.

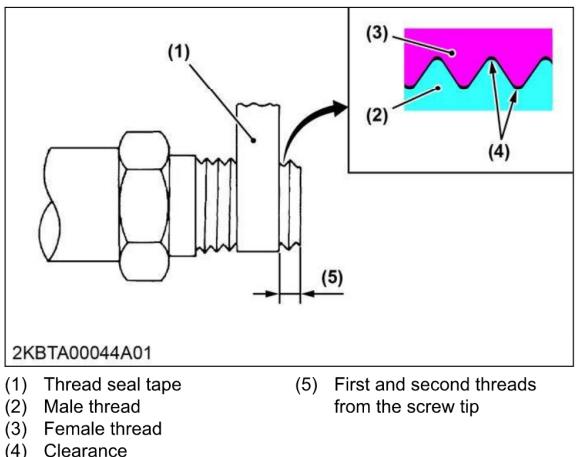
13. Wrapping thread seal tape

1. Wrap the thread seal tape around the taper threads two or three turns.

2. Tighten the taper thread with the specified torque.

■ NOTE

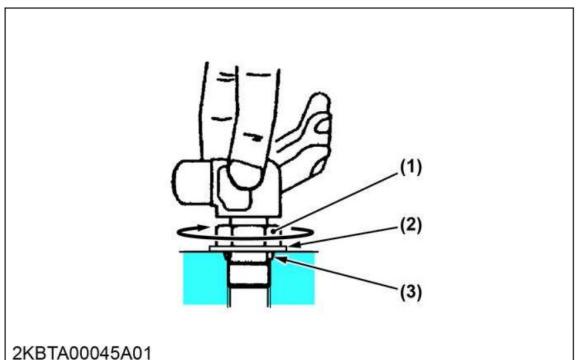
- Do not loosen the taper thread after tightening to avoid oil leakage.
- Do not wrap the thread seal tape on the first and second threads to avoid contamination in the hydraulic circuit.



(1) Thread seal tape
 (2) Male thread
 (3) Female thread
 (4) Clearance
 (5) First and second threads from the screw tip

14. Installing elbows with male seat

1. Clean the male seat surface and seal.
2. Loosen the lock-nut until the top end.
3. Install and tighten the elbow by hand until the male seat touches the material surface.



(1) Lock-nut
 (2) Seat
 (3) Seal

4. Adjust the direction of the elbow.

■ NOTE

- Do not loosen to more than one turn.

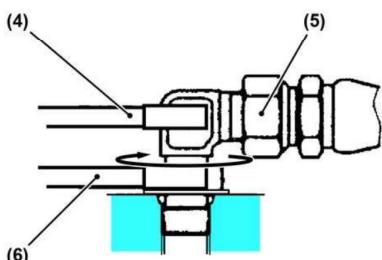


2KBTA00046A01

5. Tighten the lock-nut with the specified torque.

■ NOTE

- Check for oil leakage.

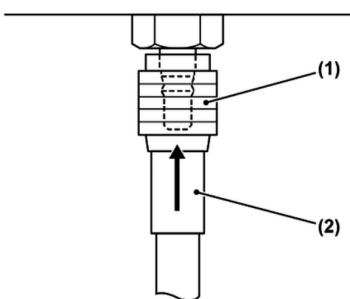


2KBTA00047A01

(4) Wrench
(5) Hose
(6) Torque wrench

15. Connecting and disconnecting quick hose couplings

1. Push the metal fittings in the direction of the arrow mark.



2KBTA00048A01

(1) Plastic part
(2) Metal fitting

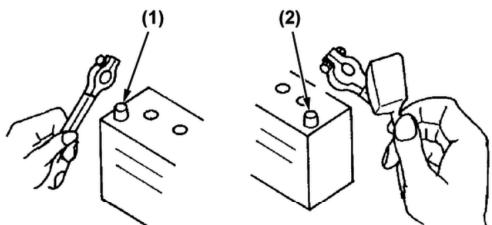
2. Pull the plastic part in the opposite direction of the arrow mark.
3. Disconnect the quick hose coupling.
4. Push the quick hose coupling in the direction of the arrow mark to connect.
5. Make sure that the hose is installed correctly.

16. Handling the battery

!**CAUTION**

- When removing battery cables, disconnect negative (-) terminal first.
- When installing battery cables, connect positive (+) terminal first.

- Do not install any battery with a capacity (Ah) other than is specified.
- Securely attach the terminal covers on the cables when connecting the cables to the battery terminal posts. There is a danger of short-circuiting if the tip of the cables attached to the battery terminal post is exposed.
- Do not allow dirt and dust to collect on the battery.
- Connect the battery terminals after removing dust, old grease, blue rust and others.
- Apply conductive grease thinly to the battery terminal posts to prevent corrosion.



2KBTA00049A01

(1) Battery negative (-) terminal
(2) Battery positive (+) terminal

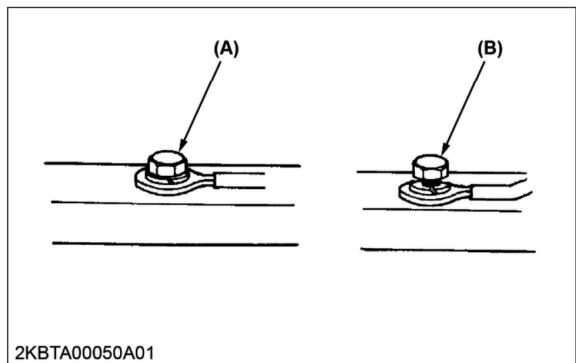
17. Handling wire harness

!**CAUTION**

- Do not let an unprotected wire harness to come in contact with other components.
- Do not clamp the wire harness to fuel hoses.
- If the wire harness is damaged, replace it immediately with a new one.
- Do not alter the electrical device and wire harness.

- Tighten the electrical terminals securely.

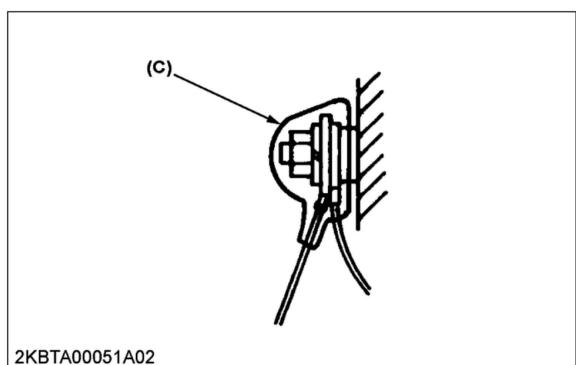
2. GENERAL



2KBTA00050A01

(A) Good (B) Bad: Loose bolt

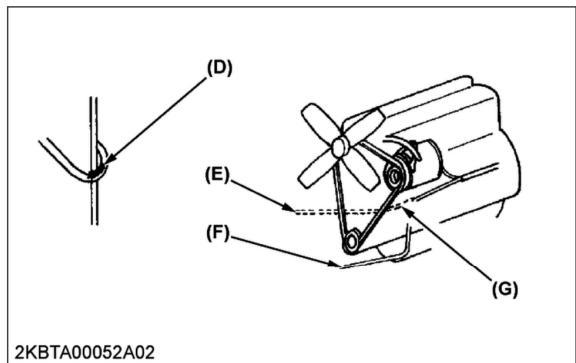
- Check the electrical terminal protection and clamping conditions before connecting the battery cable.



2KBTA00051A02

(C) Covered completely with a protection cover

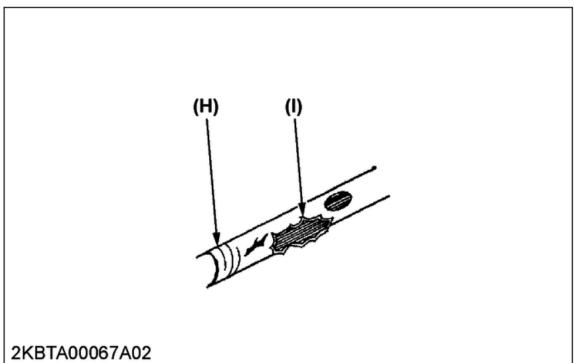
- Keep the wire harness away from hazardous positions such as rotating parts or high-temperature sections.



2KBTA00052A02

(D) Hazardous position (G) Hazardous position
 (E) Wiring position: bad
 (F) Wiring position: good

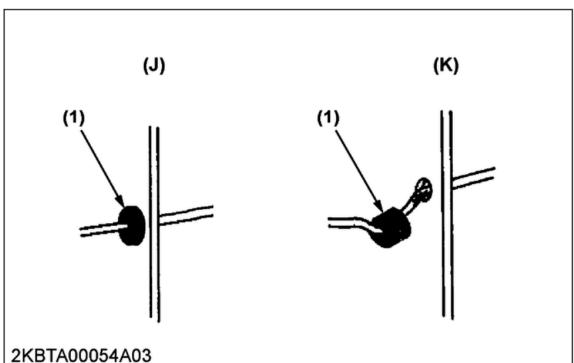
- If wire harness is damaged or degraded, replace immediately.



2KBTA00067A02

(H) Damaged (I) Torn

- Install the grommet securely.

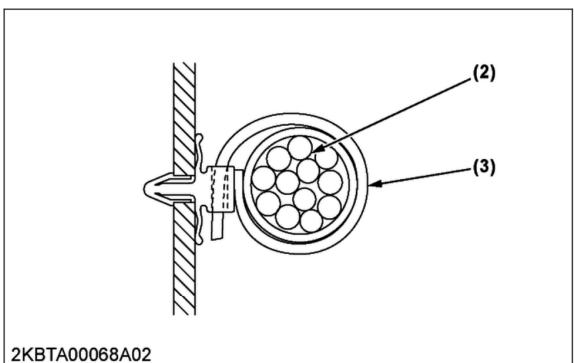


2KBTA00054A03

(1) Grommet (J) Good

(K) Bad: poor installation

- Clamp the wire harness securely. Do not damage the wire harness by the clamp.
- Clamp the wire harness correctly. Do not slack, twist, and pull.

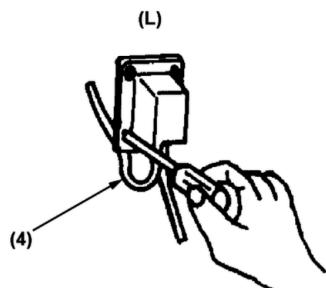


2KBTA00068A02

(2) Wire harness

(3) Clamp

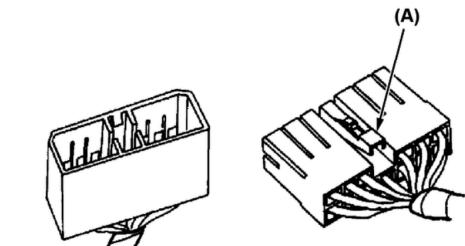
- Do not pinch the wire harness when installing parts.



2KBTA00057A03

(4) Wire harness

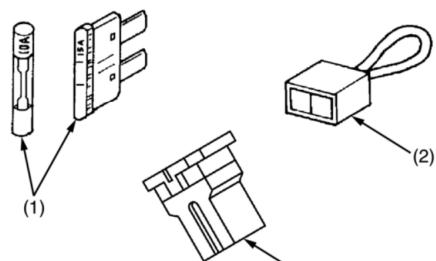
(L) Bad



2KBTA00058A01

(A) Press

- Hold on tightly to the connectors when disconnecting them.
- Do not pull wire harness itself.

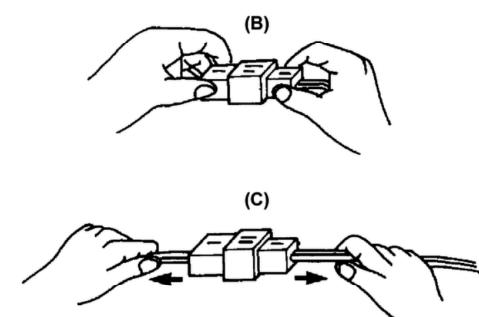


WSM00001GES001A

(1) Fuse

(2) Fusible link

(3) Slow blow fuse



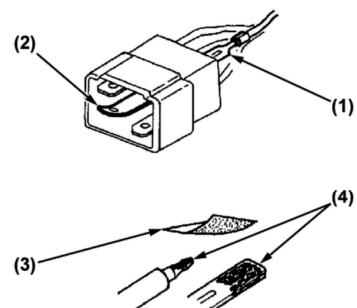
2KBTA00059A01

(B) Correct method

(C) Incorrect method

- Make sure the terminal condition of the connectors is not bent, rusty, and so on.
- If the terminal is rusted, remove rust with sandpaper.

However, do not polish the terminal of the waterproof connector or the plated terminal.



2KBTA00060A01

(1) Missing terminal

(2) Bent terminal

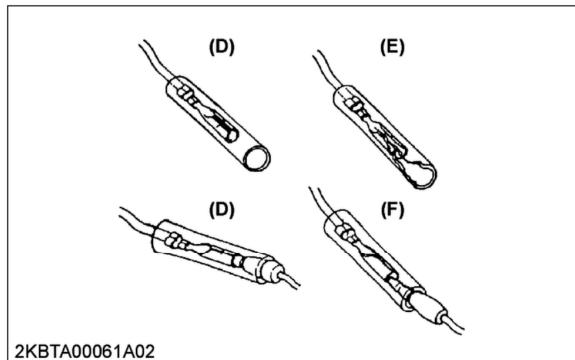
(3) Sandpaper

(4) Rust

- Cover the female bullet terminals and male bullet terminals securely with the plastic covers.

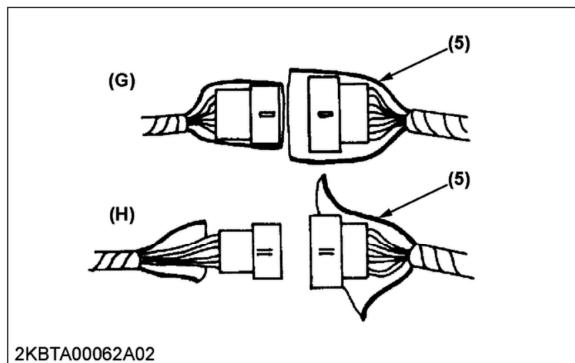
2. GENERAL

- Make sure that the bullet terminals are secure and connected securely to the tip.



(D) Good (F) Bad: poor connection
(E) Bad: damaged cover

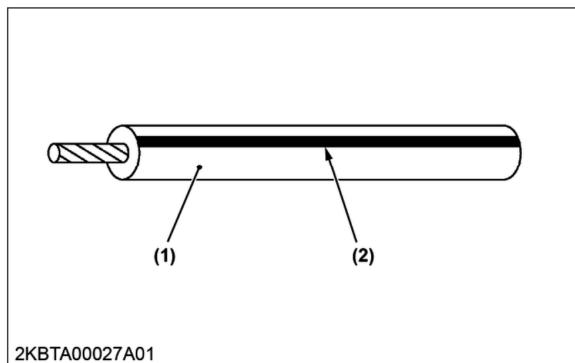
- Cover the female connectors and male connectors securely with the plastic covers.



(5) Cover (H) Bad: damaged cover
(G) Good

20. Wiring color

- Wire colors are specified in the color codes.



(1) Wire color (2) Stripe

Wiring Colors	Color code
Black	B
Brown	BR, Br
Green	G
Gray	GY, GR, Gr
Blue	L
Light green	LG, Lg
Orange	OR, Or
Pink	P
Purple	PU, Pu, V
Red	R
Sky blue	SB, Sb
White	W
Yellow	Y

- This symbol of "/" shows color with stripe(s).
(An example)

W/R:
White with red stripe

21. Washing the machine with a high pressure washer

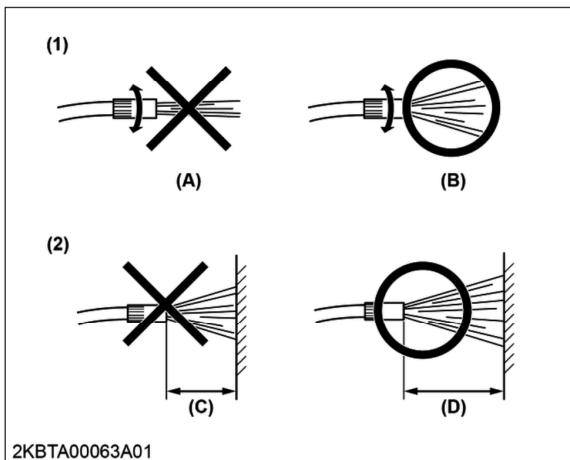
Use a high pressure washer properly to avoid personal injuries and damages to the machine.

CAUTION

- Damaged or cut the wire harness may cause fire.
- Damaged hydraulic hoses or oil seals may cause injury due to hydraulic oil gushing out.

IMPORTANT

- Water infiltration may cause machine problems.
- Adjust the high pressure washer nozzle for a wide spray. Do not adjust to pencil point spray.
- Spray the water at least 2 m away from the machine.

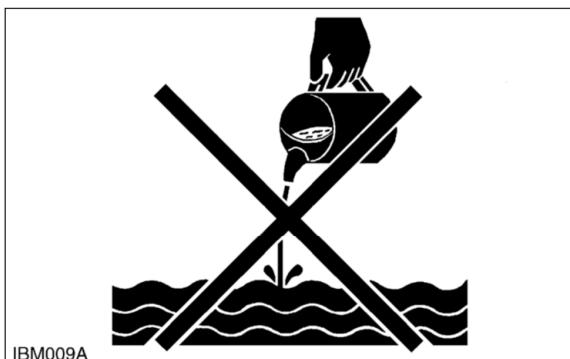


2KBTA00063A01

(1) Adjusting the washer power (C) Less than 2 m (80 in.)
(2) Washing distance (D) Over 2 m (80 in.)
(A) Pencil point spray
(B) Wide spray

22. Dispose fluids correctly

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



IBM009A

