WSM

WORKSHOP MANUAL
TRACTOR

B2650HSDC,B3350HSDC

Kubota

KiSC issued 12, 2012 A

TO THE READER

This Workshop Manual tells the servicing personnel about the mechanism, servicing and maintenance of the B2650HSDC and B3350HSDC. It contains 4 parts: **"Information"**, **"General"**, **"Mechanism"** and **"Servicing"**.

■ **Information**

This section primarily contains information below.

- Safety First
- Safety Decal
- Specifications
- Dimensions

■ **General**

This section primarily contains information below.

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

■ **Mechanism**

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

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

■ **Servicing**

This section primarily contains information below.

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

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

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

Since this manual includes many models, information or illustrations and photographs can show more than one model.

December, 2012

I INFORMATION

INFORMATION

CONTENTS

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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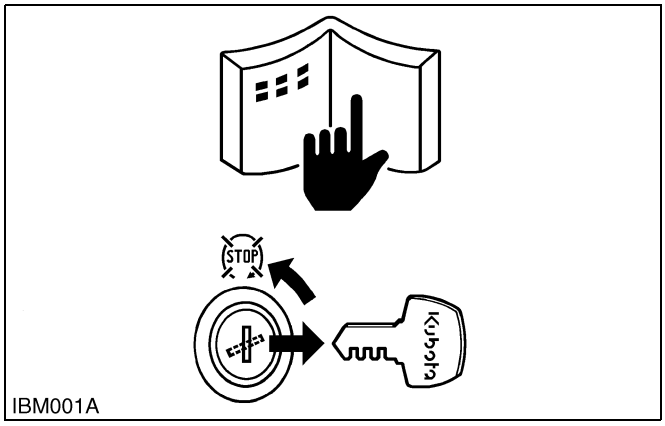

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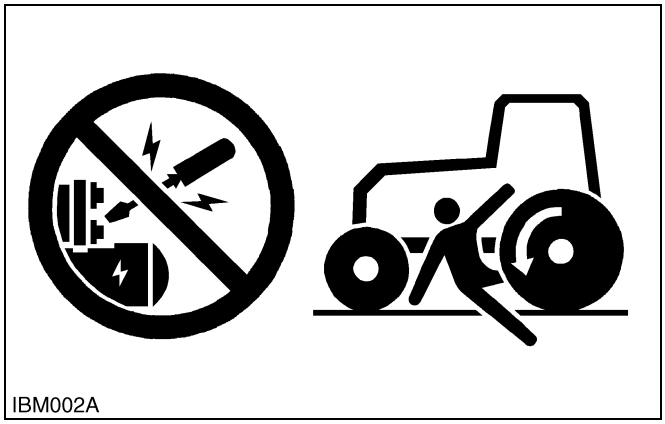
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BEFORE YOU START SERVICE

- Read all instructions and safety instructions in this manual and on your machine safety decals.
- Clean the work area and machine.
- Park the machine on a stable and level ground, and set the parking brake.
- Lower the implement to the ground.
- Stop the engine, then remove the key.
- Disconnect the battery negative cable.
- Hang a **"DO NOT OPERATE"** tag in the operator station.

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START SAFELY

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

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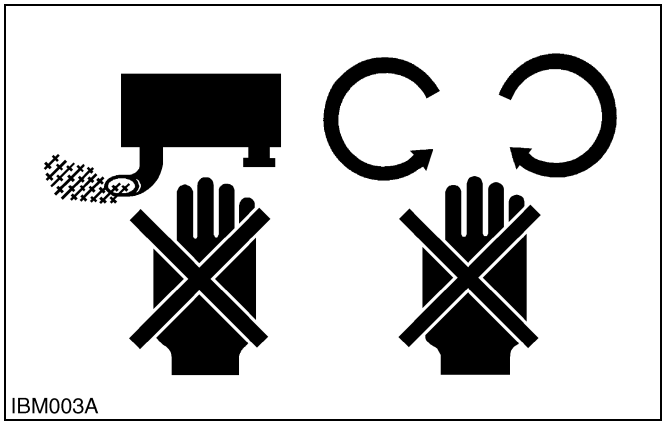
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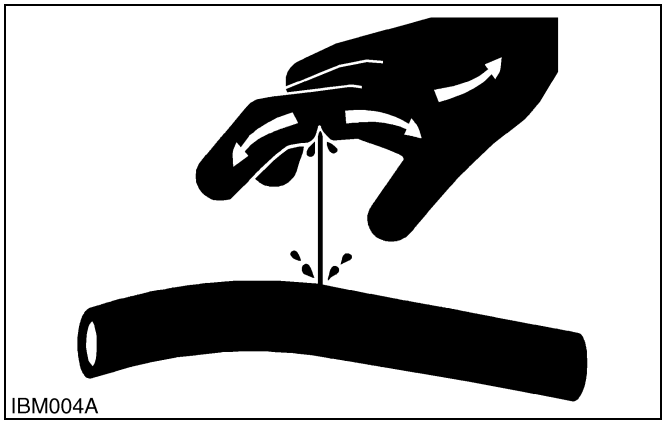
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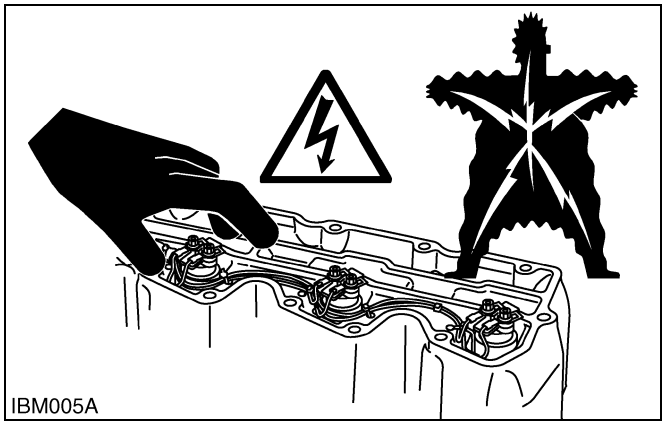
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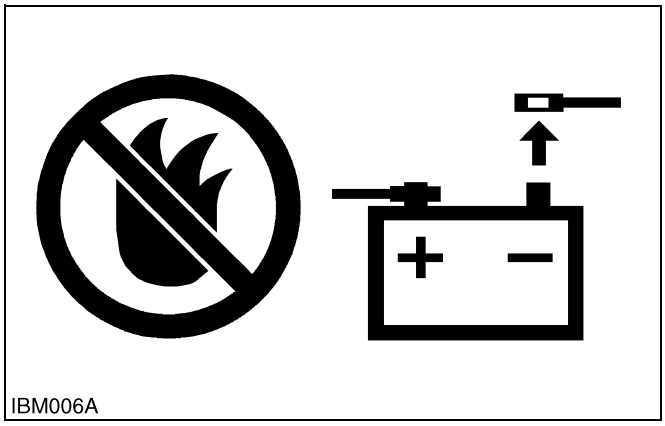
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OPERATE SAFELY

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

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PREVENT A FIRE

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

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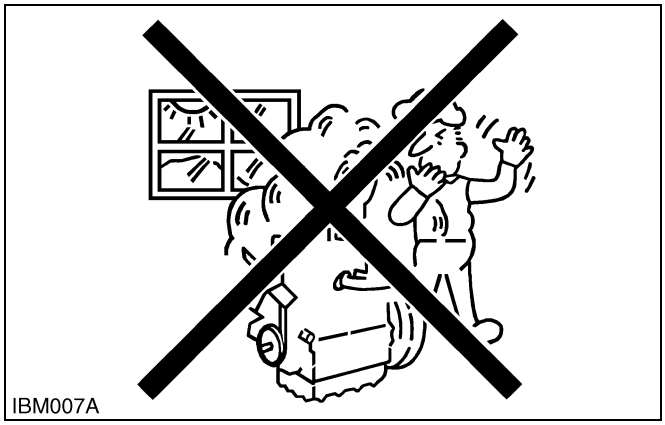
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KEEP A GOOD AIRFLOW IN THE WORK AREA

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

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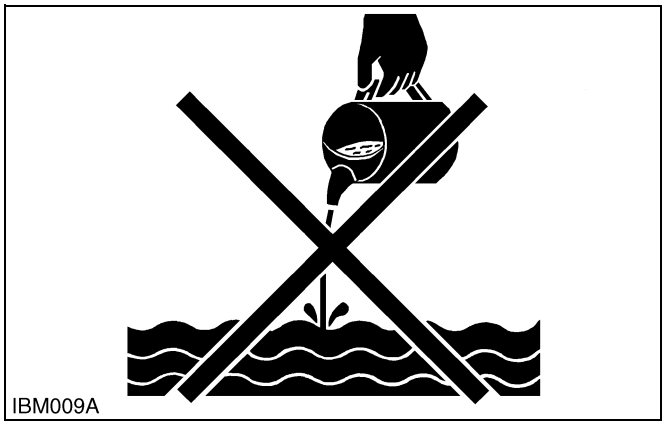
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DISCARD FLUIDS CORRECTLY

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

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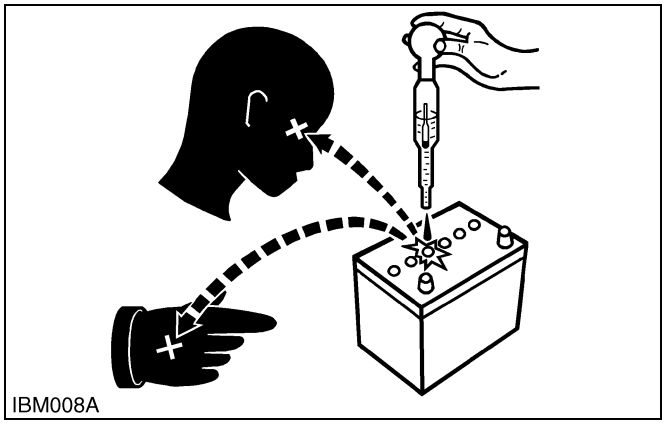
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PREVENT ACID BURNS

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

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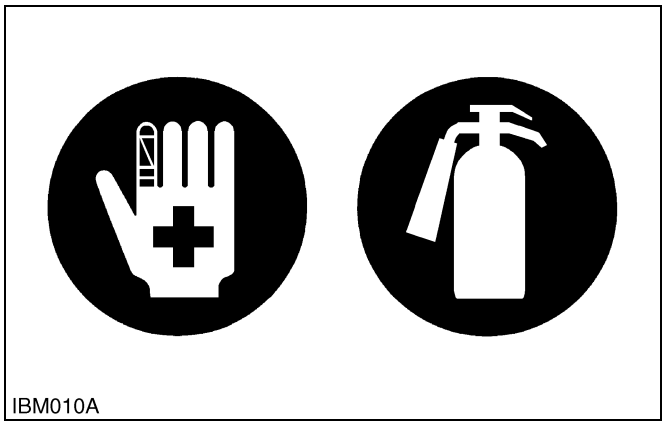
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PREPARE FOR EMERGENCIES

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

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2. SAFETY DECALS

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

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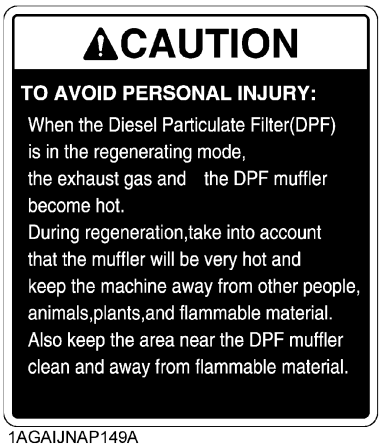
(1) Part No. 3Y205-9868-1
[B3350 Only]

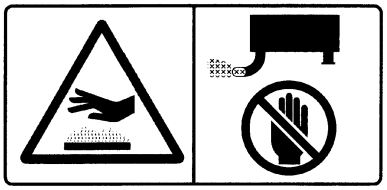


1AGAIJNAP149A

(2) Part No. 6C090-4958-2
Do not get your hands close to engine fan and fan belt.

1AGAIAZAP110A

(3) Part No. 6C430-4959-1
[B3350 Only]
Do not touch hot surface like muffler, etc.



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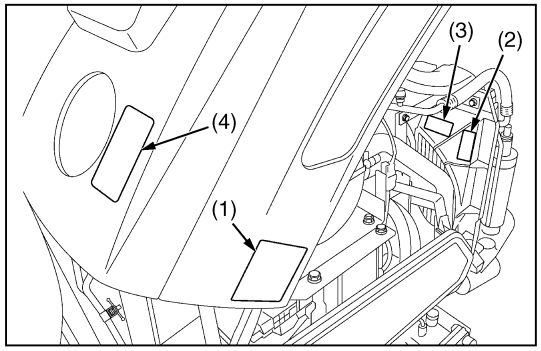
(4) Part No. TC420-4956-1
Diesel fuel only No fire

1AGAIDHAP154E



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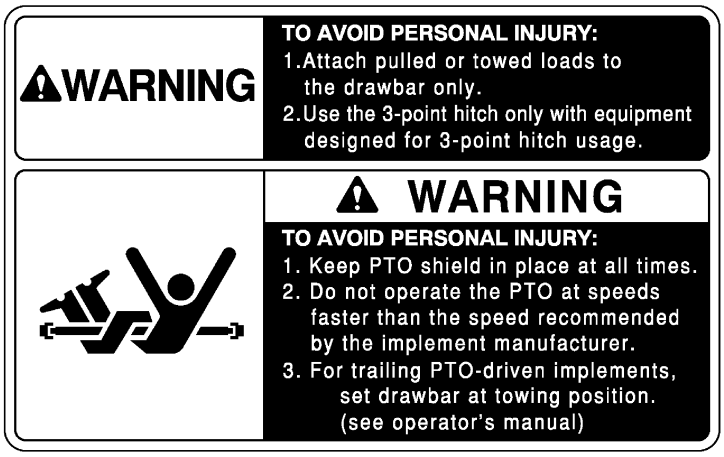
9Y1210822INI0001US0

(1) Part No. 6C200-4959-1



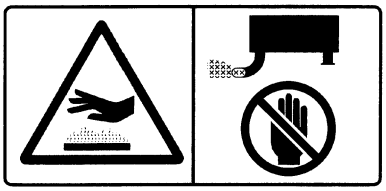
(2) Part No. 6C090-4958-2
Do not get your hands close to engine fan and fan belt.


1AGAIAZAP110A

(3) Part No. 6C430-4965-1

1AGAEEAAP003A

(4) Part No. 6C430-4959-1
[B2650 Only]
Do not touch hot surface like muffler, etc.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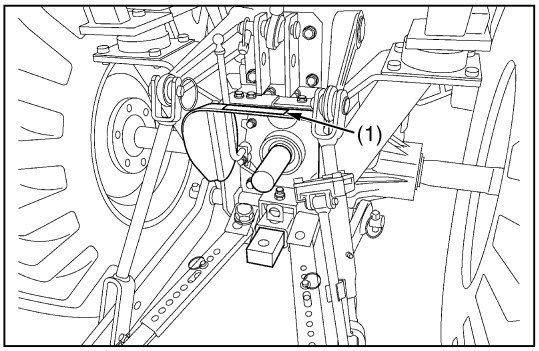

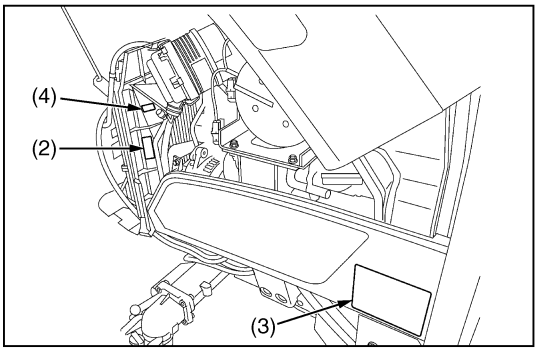

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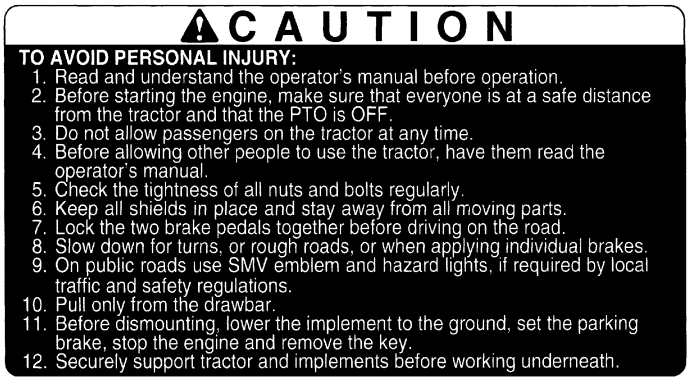
(1) Part No. 6C300-3012-2

(2) Part No. 6C070-4742-2



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(3) Part No. 6C300-4744-1
[B2650 Only]

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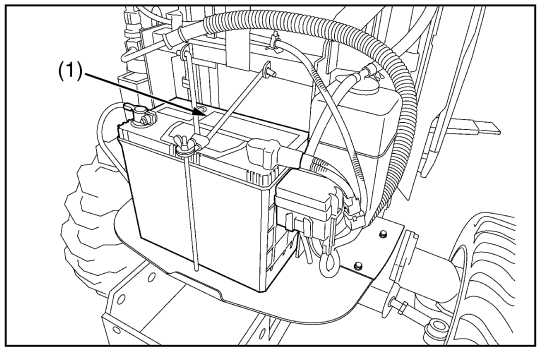
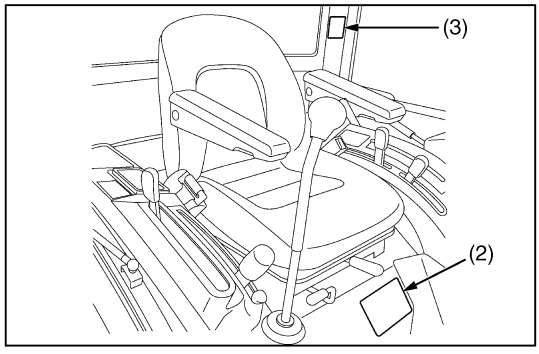
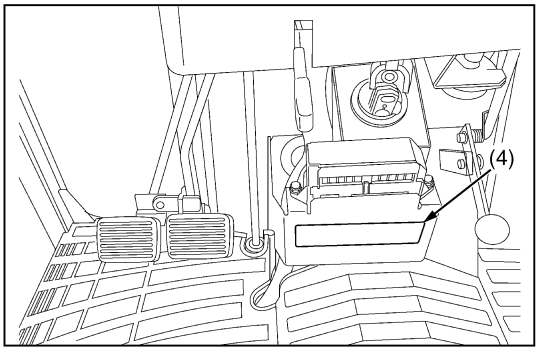


(4) Part No. 6C230-4743-1

1AGAMAOAP0790





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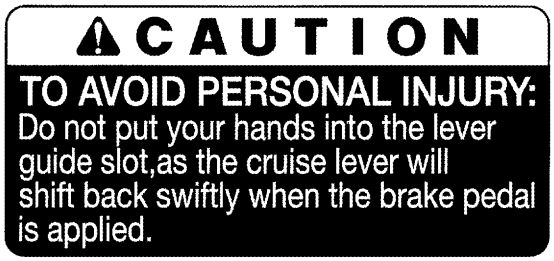

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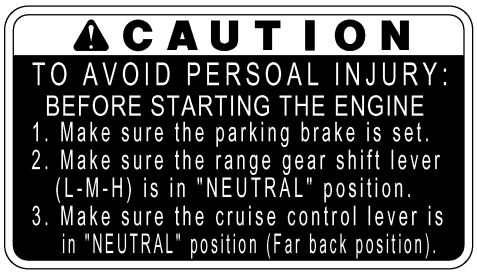
(2) Part No. 6C200-4751-1



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(3) Part No. TA040-4902-1

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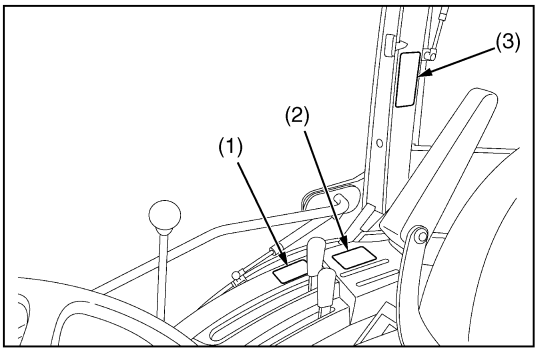

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9Y1210822INI0004US0

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.

9Y1210822INI0005US0

3. SPECIFICATIONS

Model			B2650HSDC	B3050HSDC
PTO power*			14.5 kW (19.5 HP)*	20.1 kW (27.0 HP)*
Engine	Maker		KUBOTA	
	Model		D1305-E4-D26-Q	V1505-T-E4-D26-Q
	Type		Indirect Injection, Vertical, water-cooled, 4 cycle diesel	
	Number of cylinders		3	4
	Bore and stroke		78 × 78.4 mm (3.1 × 3.1 in.)	
	Total displacement		1261 cm^3 (77.0 cu.in.)	1498 cm^3 (91.5 cu.in.)
	Engine gross power*		19.4 kW (26.0 HP)*	24.6 kW (33.0 HP)*
	Rated revolution		2500 min^{-1} (rpm)	
	Low idling revolution		1100 min^{-1} (rpm)	
	Maximum torque		84.0 N·m (8.6 kgf·m, 62.0 lbf·ft)	105.4 N·m (10.75 kgf·m, 77.74 lbf·ft)
	Battery		12 V, RC: 80 min, CCA: 430 A	
Capacities	Fuel tank		27 L (7.1 U.S.gals, 5.9 Imp.gals)	
	Engine crankcase (with filter)		4.0 L (4.2 U.S.qts, 3.6 Imp.qts)	4.8 L (5.1 U.S.qts, 4.2 Imp.qts)
	Engine coolant		4.3 L (4.5 U.S.qts, 3.8 Imp.qts)	
	Transmission case		15 L (4.0 U.S.gals, 3.3 Imp.gals)	
Dimensions	Overall length (without 3P)		2900 mm (114.2 in.)	
	Overall width		1365 mm (53.7 in.)	
	Overall height		2150 mm (84.6 in.)	
	Wheel base		1666 mm (65.6 in.)	
	Min. ground clearance		370 mm (14.6 in.)	
	Tread	Front	935 mm (36.8 in.)	
		Rear	1050 mm (41.3 in.)	
Weight			1040 kg (2293 lbs)	1110 kg (2447 lbs)
Traveling system	Clutch		–	
	Tread	Front	7-12	
		Rear	12.4-16	
	Steering		Hydrostatic type power steering	
	Transmission		Main-hydrostatic transmission, 3 range gear shift (3 forward, 3 reverse)	
	Brake		Wet disc type	
	Min. turning radius (with brake)		2.1 m(6.9 feet)	
Hydraulic unit	Hydraulic control system		Position control	
	Pump capacity		33.1 L/min (8.7 U.S.gals/min, 7.3 Imp.gals/min)	
	3-point hitch		SAE Category 1	
	Max. lift force	At lift points	970 kg (2139 lbs)	
		24 in. behind lift point	760 kg (1676 lbs)	
PTO	Rear-PTO		SAE 1-3/8, 6 splines	
	PTO / Engine speed		1 speed 563 / 2500 min^{-1} (rpm)	
	Rear-PTO		USA No. 5 (KUBOTA 10-tooth) involve spline	
	PTO / Engine speed		1 speed 2500 / 2500 min^{-1} (rpm)	

■ **NOTE**

- *** Manufacturer's estimate**
  The company reserves the right to change the specifications without notice.

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4. TRAVELING SPEEDS

(At rated engine rpm)

Model		B2650			
Tire size (Rear)		12.4-16 Farm		13.6-16 Turf	
	Range gear shift lever	km/h	mph	km/h	mph
Forward	Low	0 to 5.7	0 to 3.6	0 to 6.0	0 to 3.7
	Middle	0 to 8.5	0 to 5.3	0 to 8.9	0 to 5.5
	high	0 to 19.1	0 to 11.8	0 to 20.0	0 to 12.4
Reverse	Low	0 to 4.3	0 to 2.7	0 to 4.5	0 to 2.8
	Middle	0 to 6.4	0 to 3.9	0 to 6.7	0 to 4.1
	high	0 to 14.4	0 to 8.9	0 to 15.0	0 to 9.3

Model		B3350			
Tire size (Rear)		12.4-16 Farm		13.6-16 Turf	
	Range gear shift lever	km/h	mph	km/h	mph
Forward	Low	0 to 5.7	0 to 3.6	0 to 6.0	0 to 3.7
	Middle	0 to 9.3	0 to 5.8	0 to 9.8	0 to 6.1
	high	0 to 21.9	0 to 13.6	0 to 23.0	0 to 14.3
Reverse	Low	0 to 4.3	0 to 2.7	0 to 4.5	0 to 2.8
	Middle	0 to 7.0	0 to 4.3	0 to 7.3	0 to 4.5
	high	0 to 16.5	0 to 10.3	0 to 17.3	0 to 10.7

The company reserves the right to change the specification without notice.

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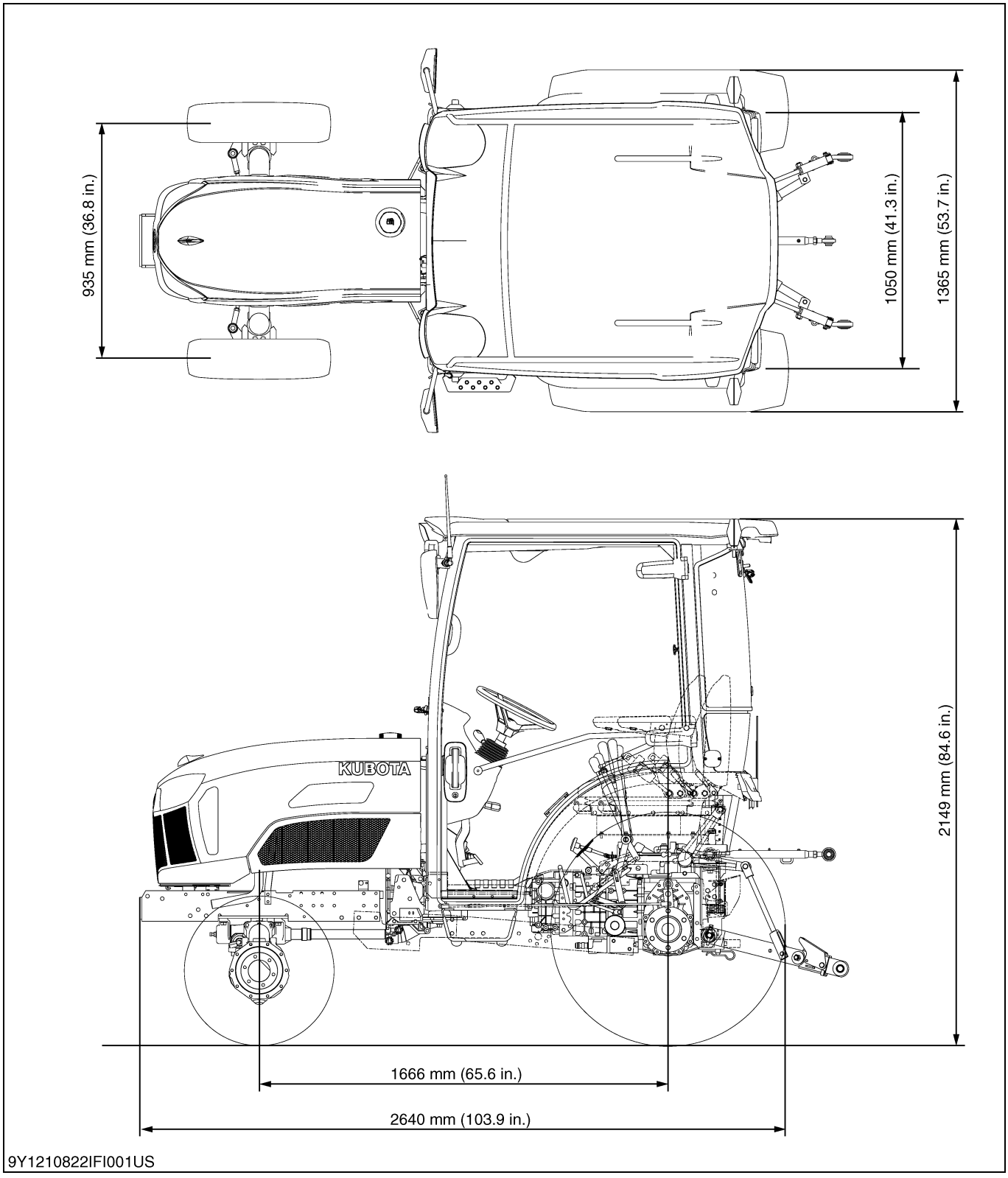
5. DIMENSIONS



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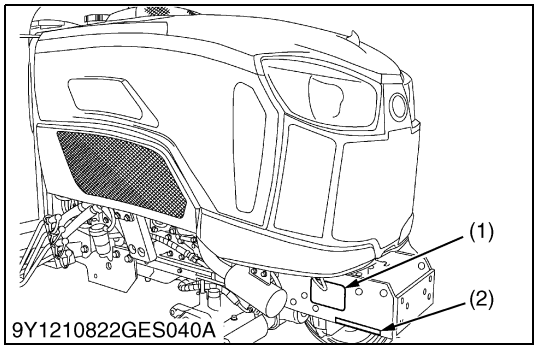
G GENERAL

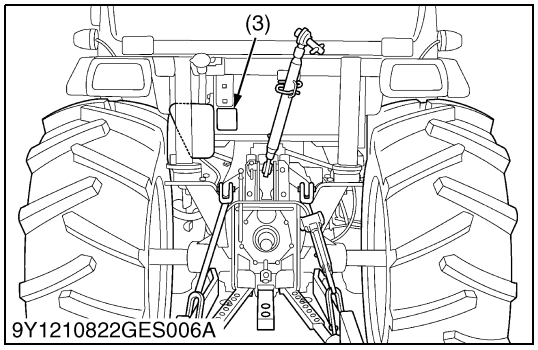
GENERAL

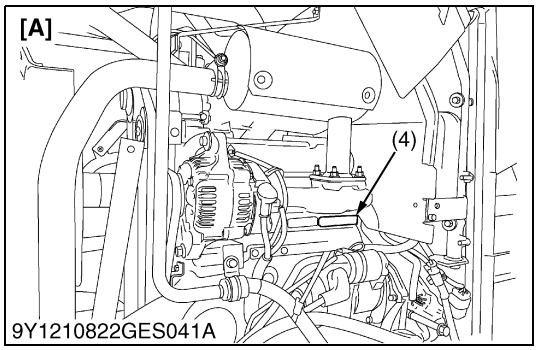
CONTENTS

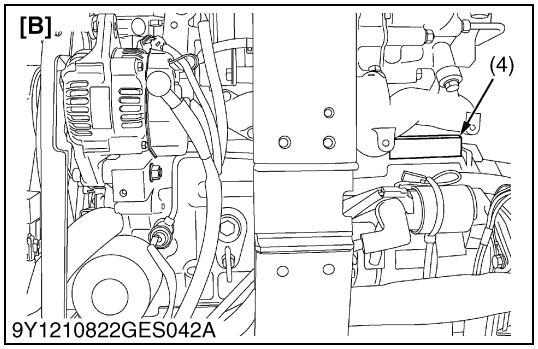
1. TRACTOR IDENTIFICATION

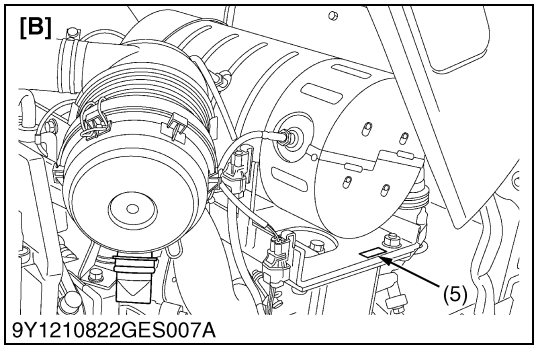
[1] MODEL NAME AND SERIAL NUMBER



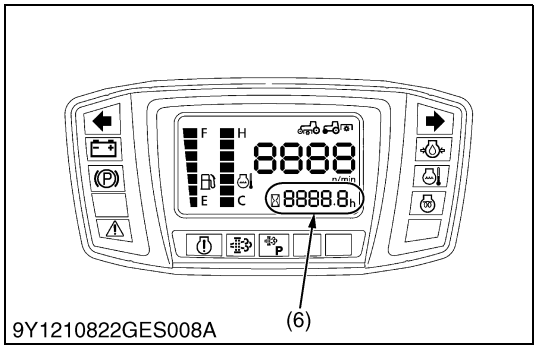








When contacting your local KUBOTA distributor, always specify engine serial number, tractor serial number, ROPS serial number and hour meter reading.

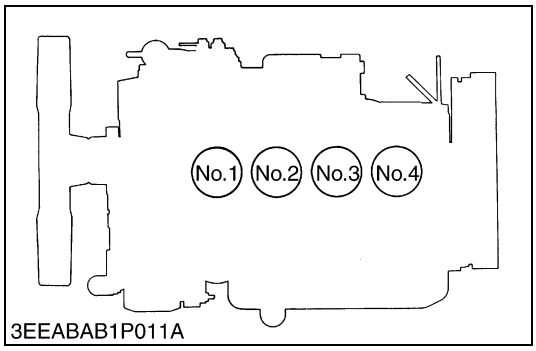


(1) Tractor Identification Plate
(2) Tractor Serial Number
(3) CABIN Identification Plate (CABIN Serial Number)
(4) Engine Serial Number
(5) Diesel Particulate Filter (DPF) Serial Number
(6) Hour Meter

[A] B2650
[B] B3350

9Y1210822GEG0001US0

[2] CYLINDER NUMBER



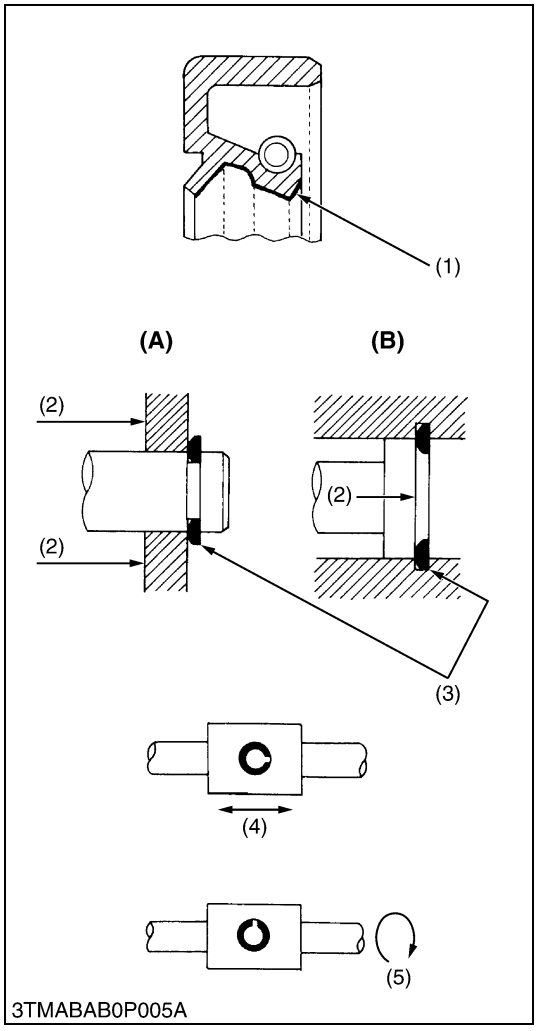
3EEABAB1P011A

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

The sequence of cylinder numbers is given as No.1, No.2. No.3 and No.4 starting from the gear case side.

9Y1210822GEG0002US0

2. GENERAL PRECAUTIONS



3TMABAB0P005A

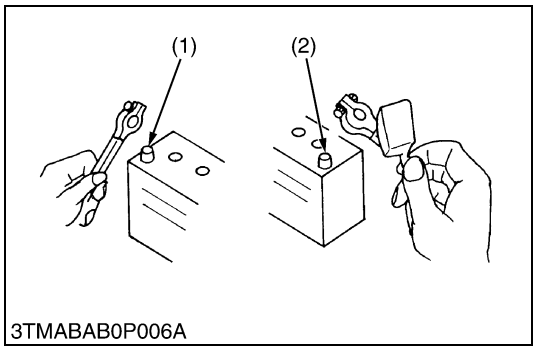
- When you disassemble, carefully put the parts in a clean area to make it easy to find the parts. You must install the screws, bolts and nuts in their initial position to prevent the reassembly errors.
- When it is necessary to use special tools, use KUBOTA special tools. Refer to the drawings when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

WSM000001GEG0106US1

3. HANDLING PRECAUTIONS FOR ELECTRICAL PARTS AND WIRING



3TMABAB0P006A

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

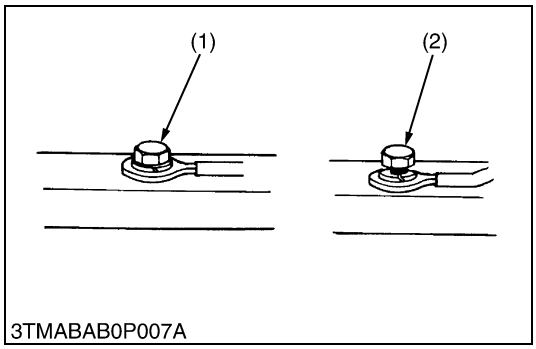
■ **IMPORTANT**

- **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

WSM000001GEG0062US1

[1] WIRING

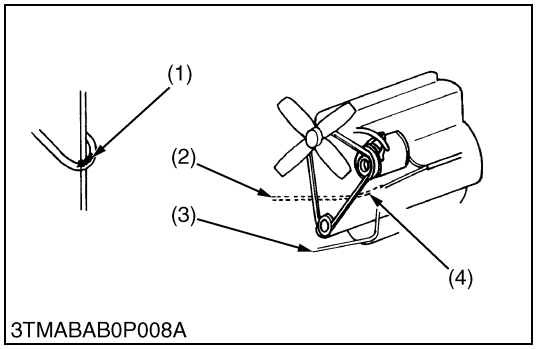


3TMABAB0P007A

- Securely tighten wiring terminals.

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

WSM000001GEG0063US1

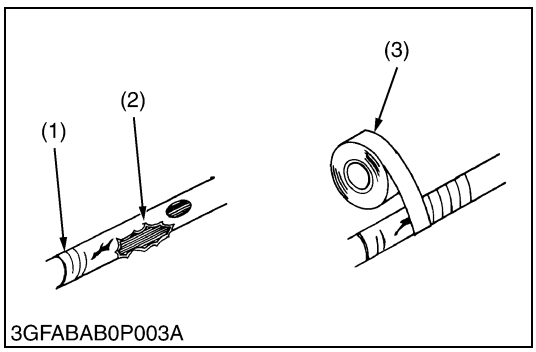


3TMABAB0P008A

- Do not let wiring contact dangerous part.

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

WSM000001GEG0064US1

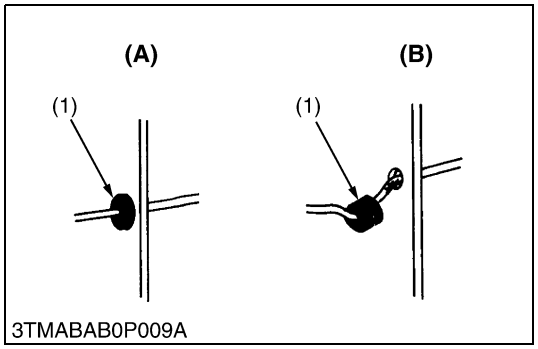


3GFABAB0P003A

- Repair or change torn or aged wiring immediately.

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

WSM000001GEG0065US1



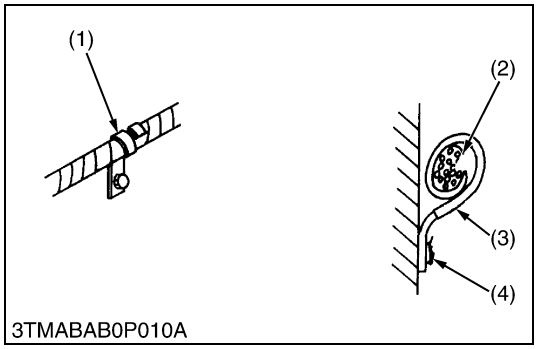
3TMABAB0P009A

- Securely insert grommet.

(1) Grommet

(A) Correct
(B) Incorrect

WSM000001GEG0066US1

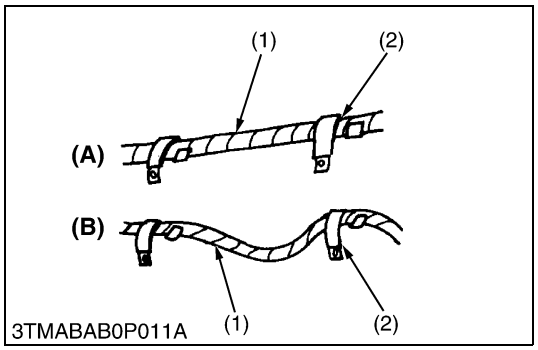


3TMABAB0P010A

- Securely clamp, being careful not to damage wiring.

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

WSM000001GEG0067US1



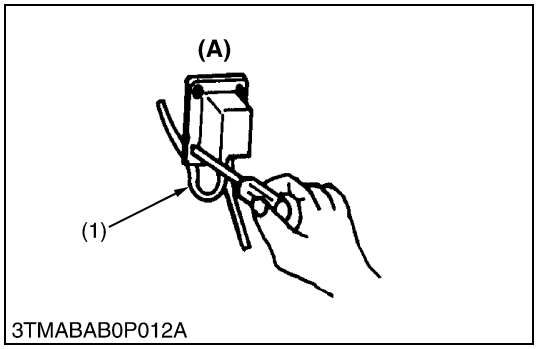
3TMABAB0P011A

- 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

WSM000001GEG0068US1



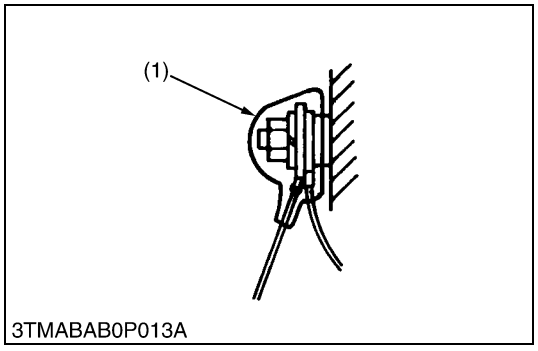
3TMABAB0P012A

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

(1) Wiring

(A) Incorrect

WSM000001GEG0069US1



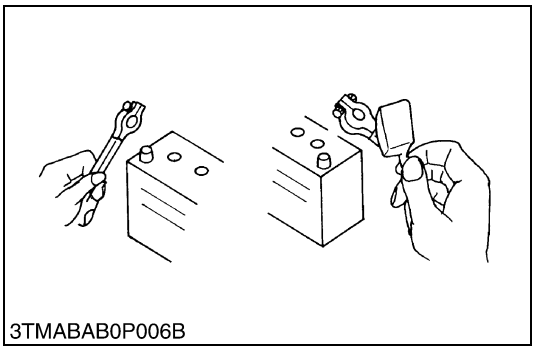
3TMABAB0P013A

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

(1) Cover
(Securely Install Cover)

WSM000001GEG0070US1

[2] BATTERY


3TMABAB0P006B

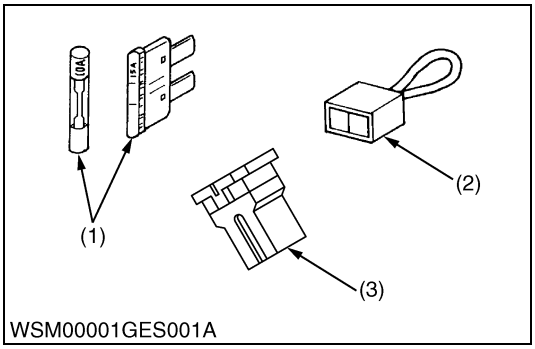
- Be careful not to confuse positive and negative terminal posts.
- When you remove battery cables, disconnect negative cable first. When you install battery cables, check for polarity and connect positive cable first.
- Do not install any battery with capacity other than is specified (Ah).
- After you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

WSM000001GEG0071US1

[3] FUSE



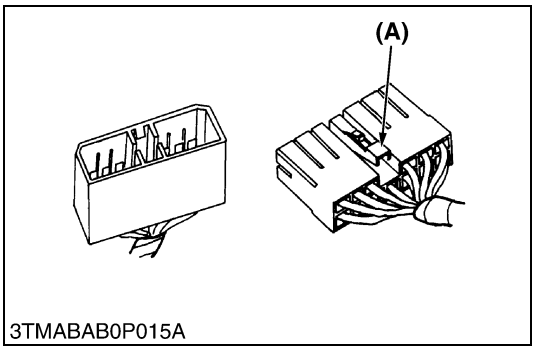
WSM00001GES001A

- 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

WSM000001GEG0072US1

[4] CONNECTOR

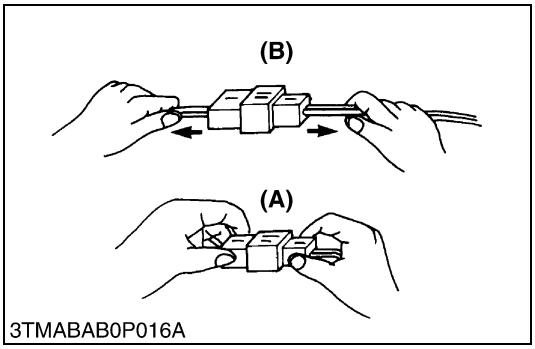


3TMABAB0P015A

- For connector with lock, push lock to separate.

(A) Push

WSM000001GEG0073US1

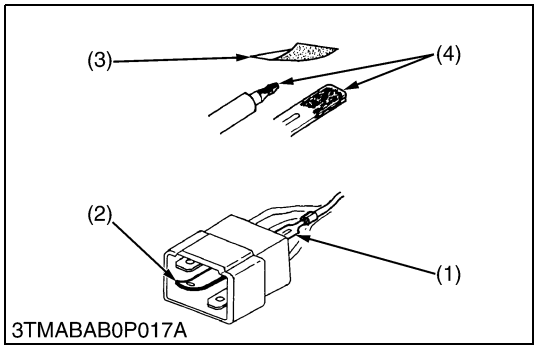


3TMABAB0P016A

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

(A) Correct
(B) Incorrect

WSM000001GEG0074US1

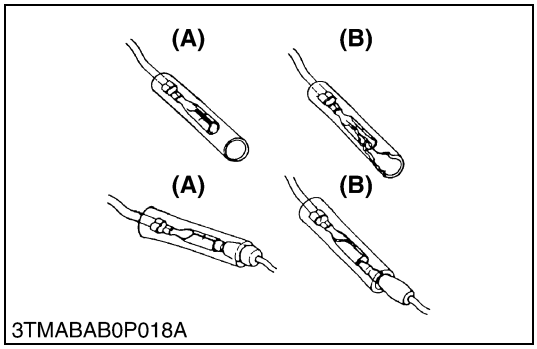


3TMABAB0P017A

- 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

WSM000001GEG0075US1

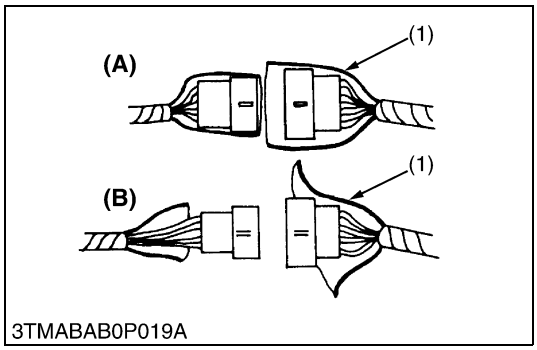


3TMABAB0P018A

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

(A) Correct
(B) Incorrect

WSM000001GEG0076US1



3TMABAB0P019A

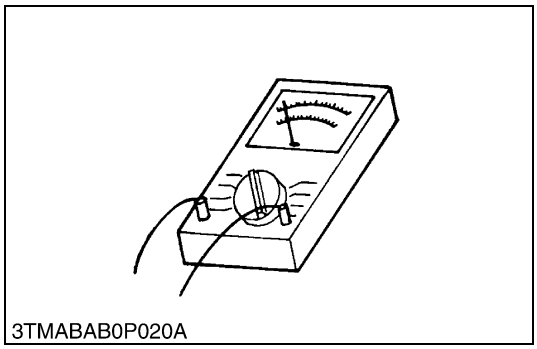
- Make sure that plastic cover is large enough to cover whole connector.

(1) Cover

(A) Correct
(B) Incorrect

WSM000001GEG0077US1

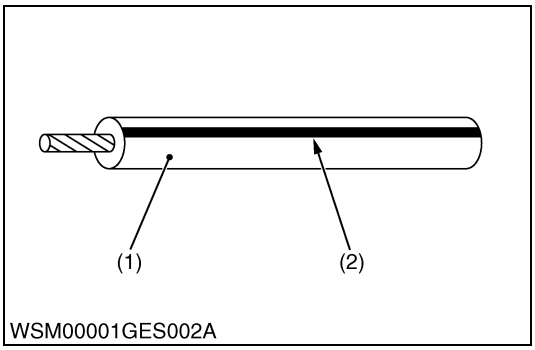
[5] HANDLING OF CIRCUIT TESTER


3TMABAB0P020A

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

WSM000001GEG0078US1

[6] COLOR OF WIRING



WSM00001GES002A

- 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

WSM000001GEG0079US0

4. LUBRICANTS, FUEL AND COOLANT

No.	Locations	Capacities		Lubricants	
		B2650	B3350		
1	Fuel	27 L 7.1 U.S.gals 5.9 Imp.gals		No. 2-D diesel fuel No. 1-D diesel fuel if temperature is below −10 °C (14 °F)	
2	Coolant (with recovery tank)	4.3 L 4.5 U.S.qts 3.8 Imp.qts		Fresh clean water with anti-freeze	
3	Washer liquid tank	1.5 L 0.4 U.S.gals 0.33 Imp.gals		Automobile washer liquid	
4	Engine crankcase (with filter)	4.0 L 4.2 U.S.qts 3.6 Imp.qts	4.8 L 5.1 U.S.qts 4.2 Imp.qts	Engine oil: API Service Classification	CJ-4 [DPF type engine]
				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 or 15W-40
5	Transmission case	15 L 4.0 U.S.gals 3.3 Imp.gals		KUBOTA SUPER UDT-2 fluid	
6	Front axle case	4.7 L 5.0 U.S.qts 4.1 Imp.qts		KUBOTA SUPER UDT-2 fluid, SAE 80- SAE 90 gear oil	

Grease				
	Greasing	No. of greasing points	Capacity	Type of grease
7	Top link	1	Until grease overflow.	Multipurpose grease NLGI-2 or NLGI-1 (GC-LB)
	Lifting rod (RH)	1		
	Speed control pedal	1		
	Battery terminal	2	Moderate amount	

■ **NOTE**

- **The product name of KUBOTA genuine UDT fluid may be different from that in the Operator's Manual depending on countries or territories.**

9Y1210822GEG0003US0

■ **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 DPF (Diesel Particulate FIlter) type engines) and the fuel.**
- **The CJ-4 engine oil is intended for DPF (Diesel Particulate Filter) type engine.**

Fuel used	Engine oil classification (API classification)	
	Oil class of engines except DPF (B2650)	Oil class of engines with DPF (B3350)
Ultra Low Sulfur Fuel [< 0.0015 % (15 ppm)]	CF, CF-4, CG-4, CH-4 or CI-4	CJ-4

Fuel:

- **Cetane number of 45 minimum. Cetane number greater than 50 is preferred, especially for temperatures below −20 °C (−4 °F) or elevations above 1500 m (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:

*KUBOTA Super UDT-2: For an enhanced ownership experience, we highly recommend Super UDT-2 to be used instead of standard hydraulic/transmission fluid.
Super UDT-2 is a proprietary KUBOTA formulation that deliveries superior performance and protection in all operating conditions.
Regular UDT is also permitted for use in this machine.

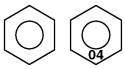
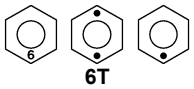
- Indicated capacities of water and oil are manufacturer's estimate.

9Y1210822GEG0004US0

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 to 9.3	0.80 to 0.95	5.8 to 6.8	7.9 to 8.8	0.80 to 0.90	5.8 to 6.5	9.81 to 11.2	1.00 to 1.15	7.24 to 8.31	7.9 to 8.8	0.80 to 0.90	5.8 to 6.5	12.3 to 14.2	1.25 to 1.45	9.05 to 10.4
M8	18 to 20	1.8 to 2.1	13 to 15	17 to 19	1.7 to 2.0	13 to 14	24 to 27	2.4 to 2.8	18 to 20	18 to 20	1.8 to 2.1	13 to 15	30 to 34	3.0 to 3.5	22 to 25
M10	40 to 45	4.0 to 4.6	29 to 33	32 to 34	3.2 to 3.5	24 to 25	48 to 55	4.9 to 5.7	36 to 41	40 to 44	4.0 to 4.5	29 to 32	61 to 70	6.2 to 7.2	45 to 52
M12	63 to 72	6.4 to 7.4	47 to 53	–	–	–	78 to 90	7.9 to 9.2	58 to 66	63 to 72	6.4 to 7.4	47 to 53	103 to 117	10.5 to 12.0	76.0 to 86.7
M14	108 to 125	11.0 to 12.8	79.6 to 92.5	–	–	–	124 to 147	12.6 to 15.0	91.2 to 108	–	–	–	167 to 196	17.0 to 20.0	123 to 144
M16	167 to 191	17.0 to 19.5	123 to 141	–	–	–	197 to 225	20.0 to 23.0	145 to 166	–	–	–	260 to 304	26.5 to 31.0	192 to 224
M18	246 to 284	25.0 to 29.0	181 to 209	–	–	–	275 to 318	28.0 to 32.5	203 to 235	–	–	–	344 to 402	35.0 to 41.0	254 to 296
M20	334 to 392	34.0 to 40.0	246 to 289	–	–	–	368 to 431	37.5 to 44.0	272 to 318	–	–	–	491 to 568	50.0 to 58.0	362 to 419

WSM000001GEG0001US1

[2] STUD BOLTS

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

WSM000001GEG0002US1

[3] 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	lbf·ft
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

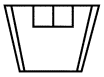
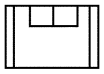
WSM000001GEG0003US1

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

Grade	SAE GR.5			SAE GR.8		
Unit	N·m	kgf·m	lbf·ft	N·m	kgf·m	lbf·ft
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

WSM000001GEG0008US1

[5] 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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6. MAINTENANCE CHECK LIST

No.	Item		Indication on hour meter														After since	Reference page		
			50	100	150	200	250	300	350	400	450	500	550	600	650	700	800				
1	Clogging of air conditioner condenser screen	Clean																Daily	G-16		
2	Engine oil	Change	★	☆		☆		☆		☆		☆		☆		☆	☆	every 100 Hr	G-22		
3	Engine oil filter	Replace	★			☆				☆				☆			☆	every 200 Hr	G-27		
4	Transmission oil filters	Replace	★					☆						☆				every 300 Hr	G-31		
5	Transmission fluid	Change	★					☆						☆				every 300 Hr	G-30		
6	Front axle case oil	Change						☆						☆				every 300 Hr	G-32		
7	Front axle pivot	Adjust								☆							☆	every 400 Hr	G-32		
8	Engine start system	Check	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	every 50 Hr	G-21		
9	Greasing	–	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	every 50 Hr	G-22		
10	Wheel bolt torque	Check	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	every 50 Hr	G-22		
11	Battery condition	Check		☆		☆		☆		☆		☆		☆		☆	☆	every 100Hr	G-23	*4	
12	Air cleaner element (Double element type) Primary element	Check		☆		☆		☆		☆		☆		☆		☆	☆	every 100 Hr	G-25	*1	@
		Replace																every 1 year	G-33	*2	
	Air cleaner element (Double element type) Secondary element	Replace																every 1 year	G-33		
13	Fuel filter element	Clean		☆		☆		☆		☆		☆		☆		☆	☆	every 100 Hr	G-25		@
		Replace								☆							☆	every 400 Hr	G-32		
14	Fan belt	Adjust		☆		☆		☆		☆		☆		☆		☆	☆	every 100 Hr	G-26		
15	Brake	Adjust		☆		☆		☆		☆		☆		☆		☆	☆	every 100 Hr	G-26		
16	Tension of air conditioner drive belt	Adjust				☆				☆				☆			☆	every 200 Hr	G-29		
17	Clogging of inner air filter	Clean				☆				☆				☆			☆	every 200 Hr	G-29		
18	Clogging of fresh air filter	Clean				☆				☆				☆			☆	every 200 Hr	G-30		
19	Clogging of air conditioner condenser	Check				☆				☆				☆			☆	every 200 Hr	G-30		
20	Radiator hose and clamp	Check				☆				☆				☆			☆	every 200 Hr	G-28		
		Replace																every 2 years	G-36		
21	Fuel line	Check		☆		☆		☆		☆		☆		☆		☆	☆	every 100 Hr	G-27		@
		Replace																every 2 years	G-36	*3	
22	Intake air line	Check				☆				☆				☆			☆	every 200 Hr	G-27		
		Replace																every 2 years	G-36	*3	
23	Toe-in	Adjust				☆				☆				☆			☆	every 200 Hr	G-28		

No.	Item		Indication on hour meter															After since	Reference page		
			50	100	150	200	250	300	350	400	450	500	550	600	650	700	800				
24	Engine valve clearance	Adjust															☆	every 800 Hr	G-32		
25	Fuel injection nozzle injection pressure	Check																every 1500 Hr	G-32		@
26	Injection pump	Check																every 3000 Hr	G-32		@
27	Exhaust manifold (B3350 only)	Check																every 1 year	G-33		@
28	Air conditioner pipes and hoses	Check																every 1 year	G-33		
		Replace																every 2 years	G-36		
29	CAB isolation cushion	Check																every 1 year	G-33		
30	Differential pressure sensor hose (B3350 only)	Replace																every 2 years	G-36		
31	Cooling system	Flush																every 2 years	G-34		
32	Coolant	Change																every 2 years	G-34		
33	Fuel system	Bleed																Service as required	G-36		
34	Clutch housing water	Drain																	G-37		
35	Fuse	Replace																	G-37		
36	Light bulb	Replace																	G-39		
37	Washer liquid	Check																	G-40		
38	Amount of refrigerant (gas)	Check																	G-40		

■ **IMPORTANT**

- **The jobs indicated by ★ must be done after the first 50 hours of operation.**
  ***1 Air cleaner should be cleaned more often in severe dusty conditions.**
  ***2 Every year of after 6 cleanings.**
  ***3 Replace only if necessary.**
  ***4 When the battery is used for less than 100 hours per year, check the fluid level annually.**
- **The items listed above (@ marked) are registered as emission related critical parts by KUBOTA in the U.S.EPA nonroad emission regulation. As the engine owner, you are responsible for the performance of the required maintenance on the engine according to the above instruction.**
  Please see the Warranty Statement in detail.

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