WSM

WORKSHOP MANUAL
TRACTOR

B2301,B2601

Kubota

KiSC issued 11, 2014 A

TO THE READER

This Workshop Manual tells the servicing personnel about the mechanism, servicing and maintenance of the B2301 and B2601. 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.

November, 2014

KiSC issued 11, 2014 A

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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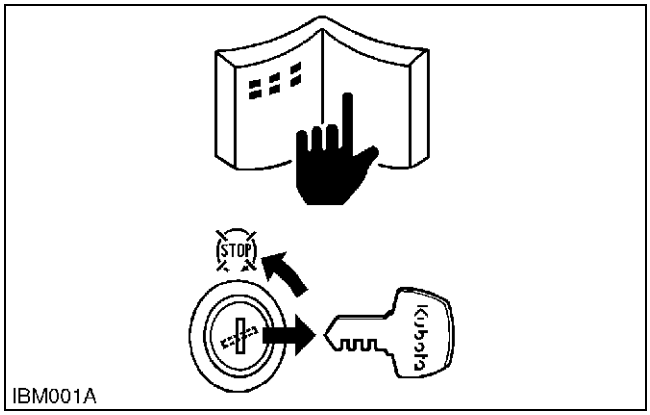

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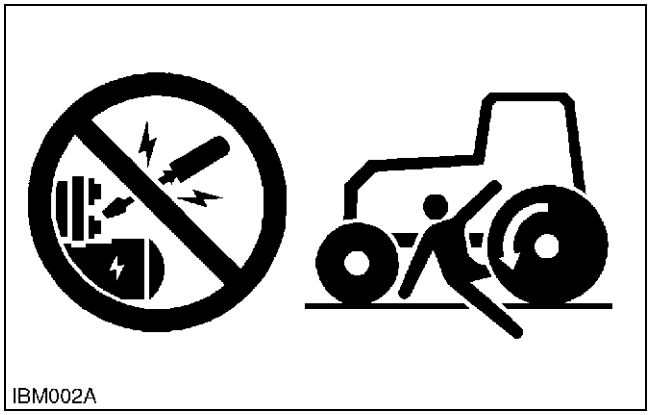
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BEFORE YOU START SERVICE

- 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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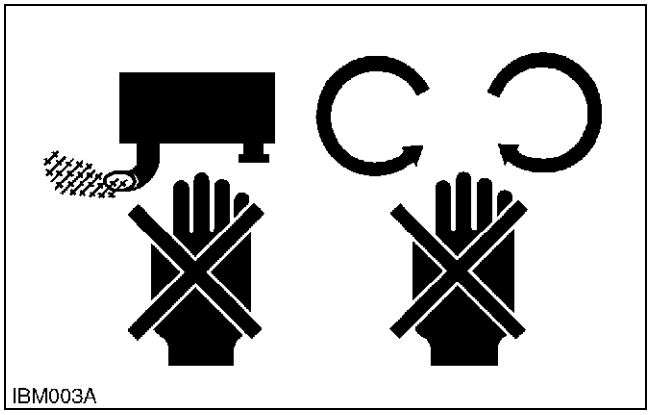
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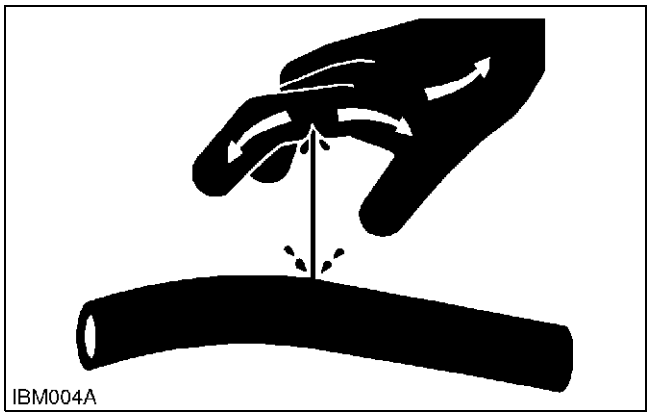
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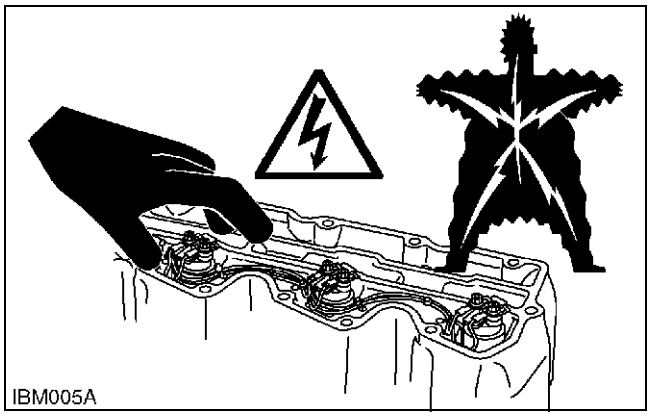
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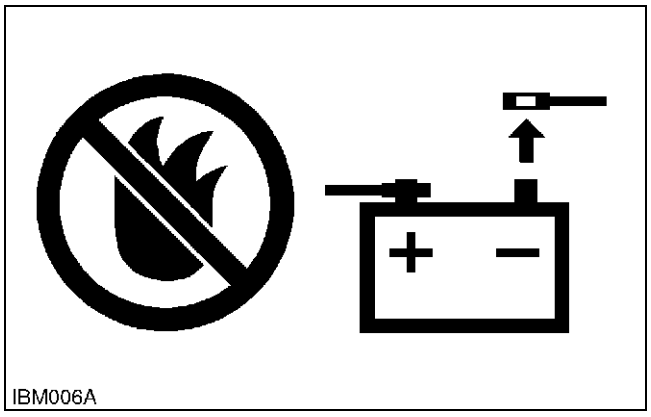
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OPERATE SAFELY

- 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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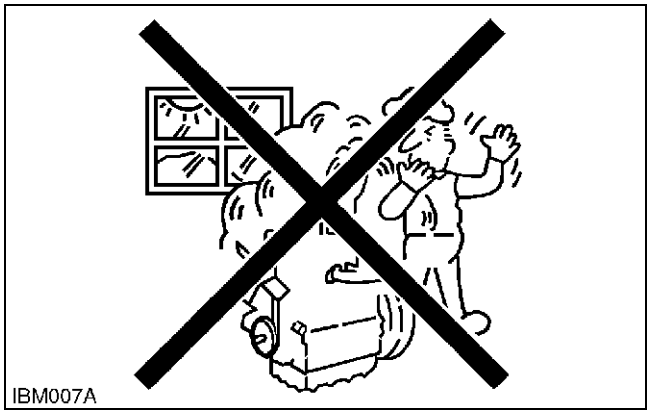
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KEEP A GOOD AIRFLOW IN THE WORK AREA

- 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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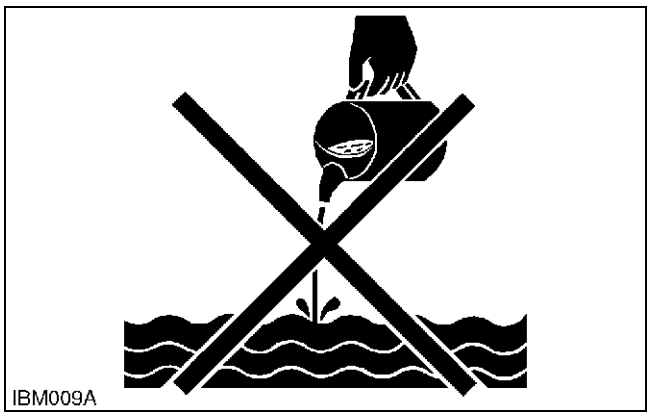
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DISCARD FLUIDS CORRECTLY

- 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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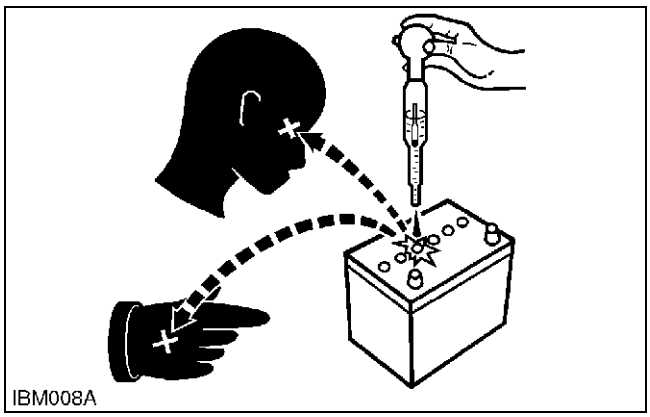
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PREVENT ACID BURNS

- 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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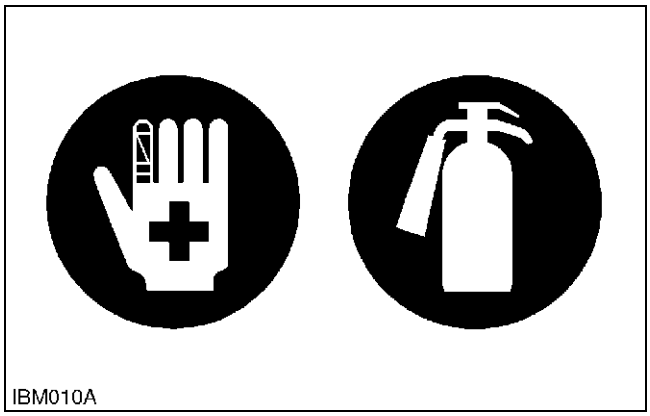
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PREPARE FOR EMERGENCIES

- 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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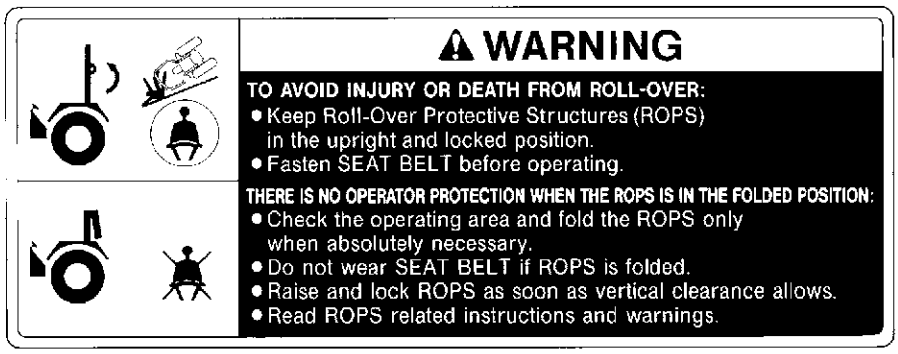
(1) Part No. TA240-9848-2



1AGAEBMAP071E

(2) Part No. TC420-4956-1

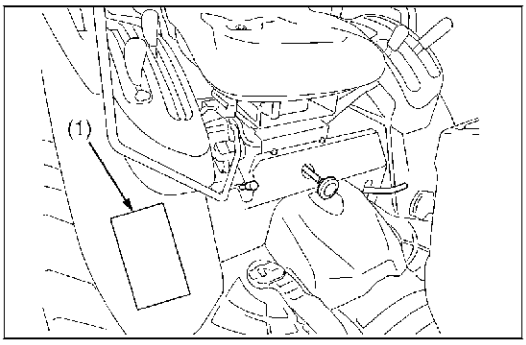
Diesel fuel only No fire

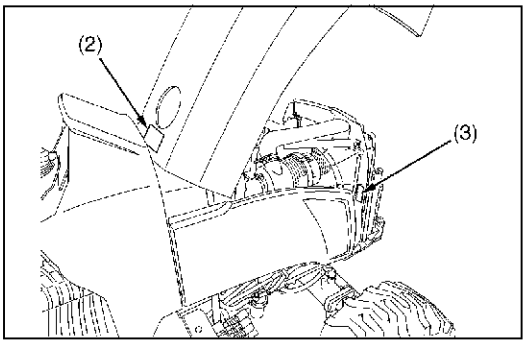
1AGAIDHAP154E

(3) Part No. 6C090-4958-2

Do not get your hands close to engine fan and fan belt.

1AGAIAZAP110A





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9Y1211156INI0004US0

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

⚠WARNING

TO AVOID PERSONAL INJURY:
1. Attach pulled or towed loads to the drawbar only.
2. Use the 3-point hitch only with equipment designed for 3-point hitch usage.

⚠ WARNING

TO AVOID PERSONAL INJURY:
1. Keep PTO shield in place at all times.
2. Do not operate the PTO at speeds faster than the speed recommended by the Implement manufacturer.
3. For trailing PTO-driven implements, set drawbar at towing position. (see operator's manual)

1AGAECEAP013E

(2) Part No. 6C540-9554-1

⚠ WARNING

Never modify or repair a ROPS because welding, grinding, drilling or cutting any portion may weaken the structure.

⚠ WARNING

TO AVOID PERSONAL INJURY OR DEATH WHEN RAISING OR FOLDING ROPS:
- Set parking brake and stop engine.
- Remove any obstruction that may prevent raising or folding of the ROPS.
- Do not allow any bystanders.
- Always perform function from a stable position at the rear of the tractor.
- Hold the top of the ROPS securely when raising or folding.
- Make sure all pins are installed and locked.

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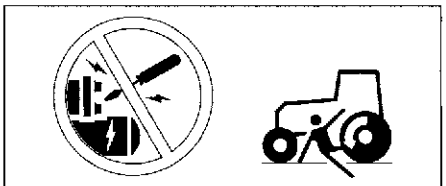
(3) Part No. 6C430-4965-1



⚠ 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. Machine may start in gear and move if normal starting circuitry is bypassed.
2. Start engine only from operator's seat with transmission and PTO OFF. Never start engine while standing on the ground.

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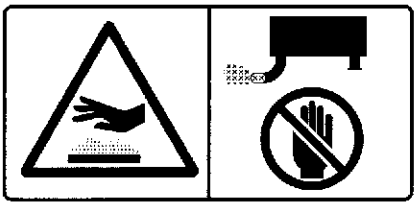
(4) Part No. 6C430-4959-1
Do not touch hot surface like muffler, etc.



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

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(6) Part No. 6C300-4744-1

⚠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.

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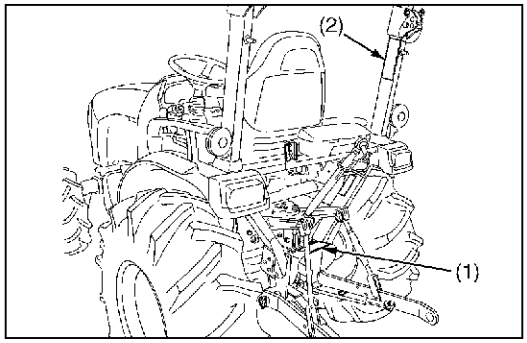

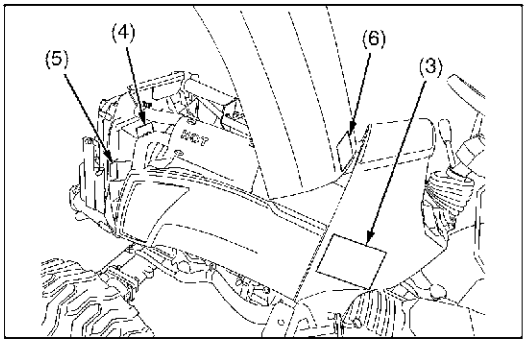

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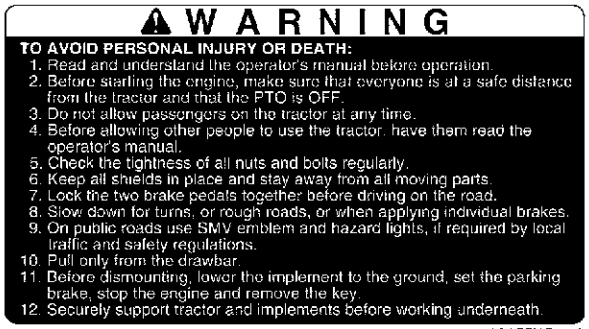
9Y1211156INI0005US0

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

1AGAEBQAP107A

(2) Part No. 6C540-4742-1



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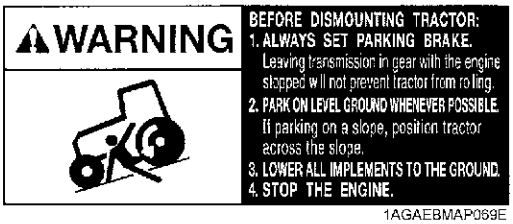
(3) Part No. 6C150-4743-1



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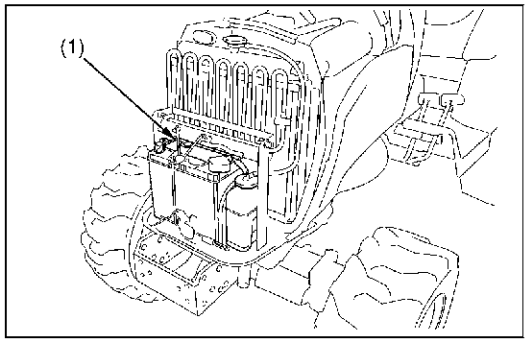

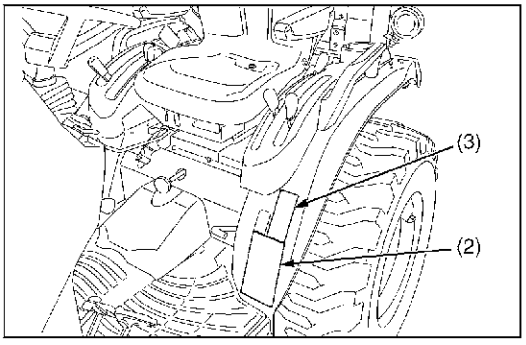

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CARE OF DANGER, WARNING AND CAUTION LABELS

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.

9Y1211156INI0007US0

3. SPECIFICATIONS

Model			B2301	B2601
PTO power *1			17.5 kW (13.0 HP)	19.5 kW (14.5 HP)
Engine	Maker		KUBOTA	
	Model		D1005-E4-D32	D1105-E4-D32
	Type		E-TVCS. Liquid-cooled, 3-cylinder diesel	
	Number of cylinders		3	
	Bore and stroke		76 × 73.6 mm (3.0 × 2.9 in.)	78 × 78.4 mm (3.1 × 3.1 in.)
	Total displacement		1001 cc (61.1 cu.in.)	1123 cc (68.5 cu.in.)
	Engine gross power *1		22 kW (16.4 HP)	25.5 kW (19.0 HP)
	Rated revolution		2800 min^{-1} (rpm)	
	Low idling revolution		1000 to 1100 min^{-1} (rpm)	
	Maximum torque		60 N·m (6.1 kgf·m, 44 lbf·ft)	71 N·m (7.2 kgf·m, 52 lbf·ft)
	Battery		12 V, RC: 80 min, CCD: 430 A	
Capacities	Fuel tank		23 L (6.1 U.S.gals, 5.1 Imp.gals)	
	Engine crankcase (with filter)		3.1 L (3.3 U.S.qts, 2.7 Imp.qts)	
	Engine coolant		3.8 L (4.0 U.S.qts, 3.3 Imp.qts)	
	Transmission case		15 L (4.0 U.S.gals, 3.3 Imp.gals)	
Dimensions	Overall length (without 3P)		2380 mm (93.7 in.)	2410 mm (94.9 in.)
	Overall width (min. tread)		1150 mm (45.3 in.)	1245 mm (49.0 in.)
	Overall height		2130 mm (83.9 in.)	2160 mm (85.0 in.)
	Wheel base		1560 mm (61.4 in.)	
	Minimum ground clearance		305 mm (12.0 in.)	325 mm (12.8 in.)
	Tread	Front	800 mm (31.5 in.)	815 mm (32.1 in.)
		Rear	900 mm (35.5 in.)	950 mm (37.4 in.)
Weight			710 kg (1566 lbs)	740 kg (1632 lbs)
Clutch			Not applicable	
Traveling system	Tires	Front	6-12	7-12
		Rear	9.5-16	11.2-16
	Steering		Hydraulic type power steering	
	Transmission		HST (3 range)	
	Brake		Wet disk type	
	Minimum turning radius (with brake)		2.1 m (6.9 feet)	
Hydraulic unit	Hydraulic control system		Position Control Valve	
	Pump capacity		31.4 L/min (8.3 gals/min)	
	3-point hitch		SAE Category 1	
	Max. lift force	At lift points	820 kg (1808 lbs)	
		24 in. behind lift point	640 kg (1411 lbs)	
PTO	Rear-PTO		SAE 1-3/8, 6 splines	
		PTO / Engine speed	540 min^{-1} (rpm) / 2768 min^{-1} (rpm)	
	Mid-PTO		USA No.5 (KUBOTA 10-tooth) involute spline	
		PTO / Engine speed	2500 min^{-1} (rpm) / 2753 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		B2301HSD
Tire size (Rear)		9.5-16 Farm / 33 × 12.5-15 Turf / 12-16.5 Industry
	Range gear shift lever	km/h (mile/h)
Forward	Low	0 to 5.6 (0 to 3.5)
	Middle	0 to 8.8 (0 to 5.5)
	High	0 to 19.1 (0 to 11.8)
Reverse	Low	0 to 4.2 (0 to 2.6)
	Middle	0 to 6.6 (0 to 4.1)
	High	0 to 14.3 (0 to 8.9)

Model		B2601HSD	
Tire size (Rear)		11.2-16 Farm	33 × 12.5-15 Turf / 12-16.5 Industry
	Range gear shift lever	km/h (mile/h)	
Forward	Low	0 to 6.0 (0 to 3.7)	0 to 5.6 (0 to 3.5)
	Middle	0 to 9.5 (0 to 5.9)	0 to 8.8 (0 to 5.5)
	High	0 to 20.4 (0 to 12.7)	0 to 19.1 (0 to 11.8)
Reverse	Low	0 to 4.5 (0 to 2.8)	0 to 4.2 (0 to 2.6)
	Middle	0 to 7.1 (0 to 4.4)	0 to 6.6 (0 to 4.1)
	High	0 to 15.3 (0 to 9.5)	0 to 14.3 (0 to 8.9)

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

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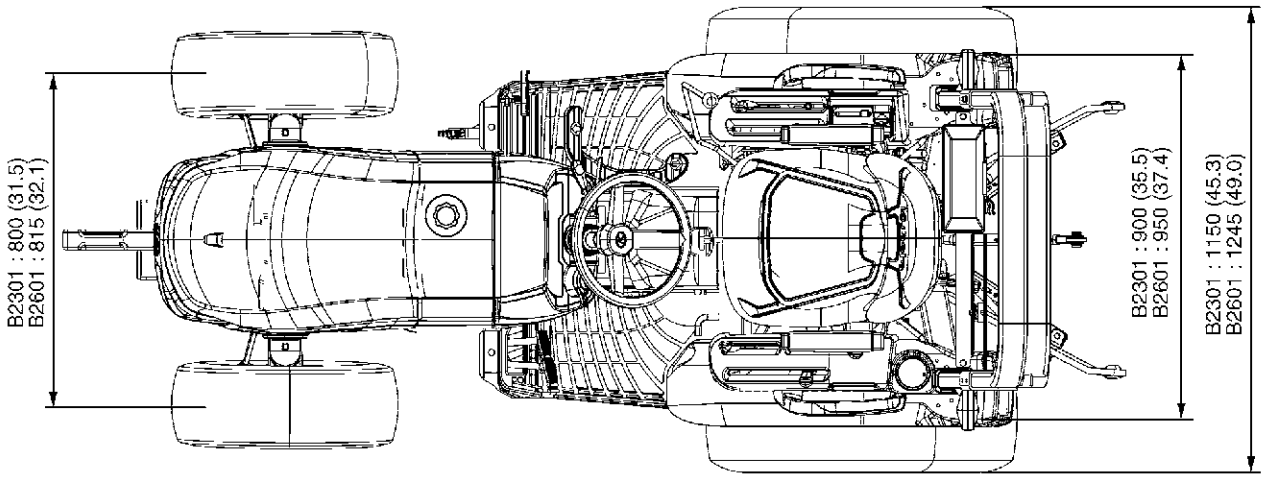
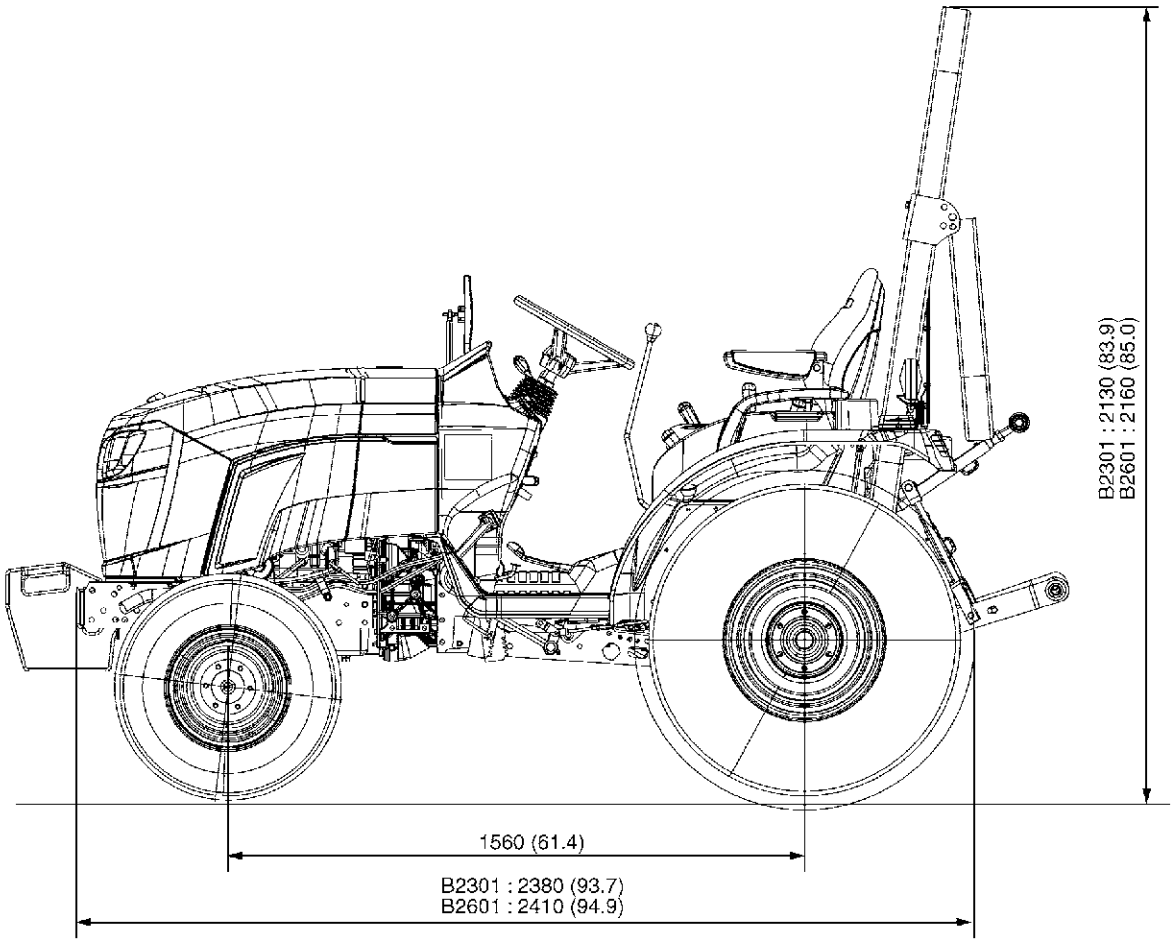
5. DIMENSIONS

Unit : mm (in.)





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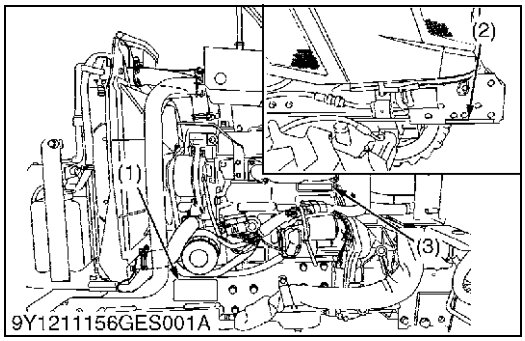
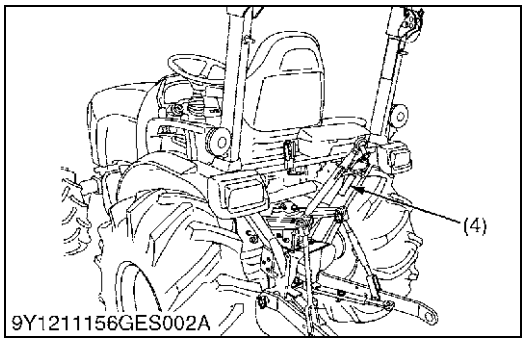
G GENERAL

GENERAL

CONTENTS

1. TRACTOR IDENTIFICATION





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

(1) Tractor Identification Plate
(2) Tractor Serial Number
(3) Engine Serial Number
(4) ROPS Identification Plate (ROPS Serial Number)

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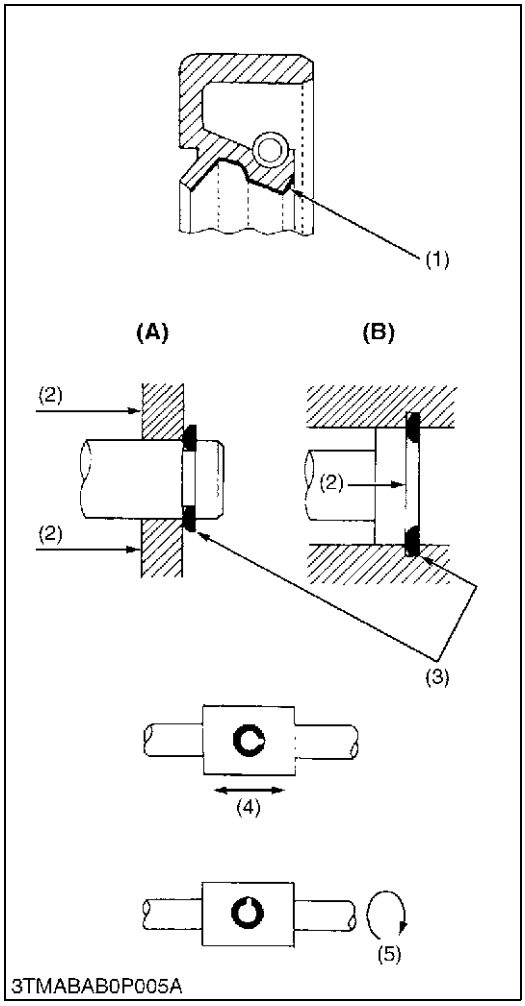
2. GENERAL PRECAUTIONS



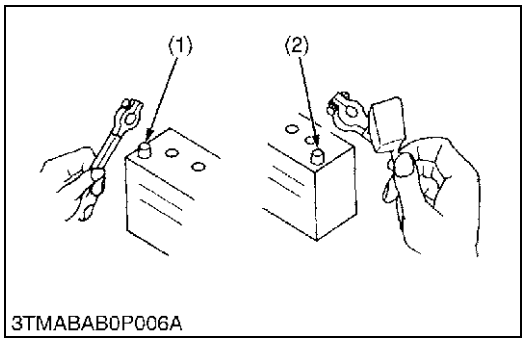
- When you disassemble, carefully put the parts in a clean area to make it easy to find the parts. You must install the screws, bolts and nuts in their initial position to prevent the reassembly errors.
- When it is necessary to use special tools, use KUBOTA special tools. Refer to the drawings when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

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

(A) External Circlip
(B) Internal Circlip

WSM000001GEG0106US0

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.

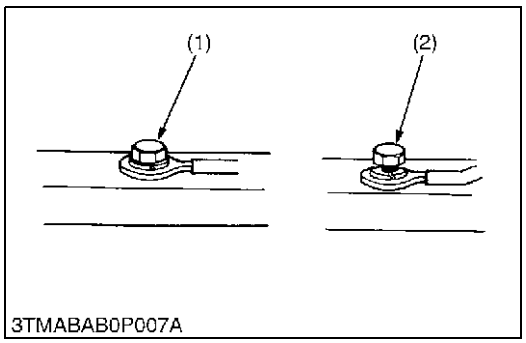
■ **IMPORTANT**

- **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

WSM000001GEG0062US0

[1] WIRING

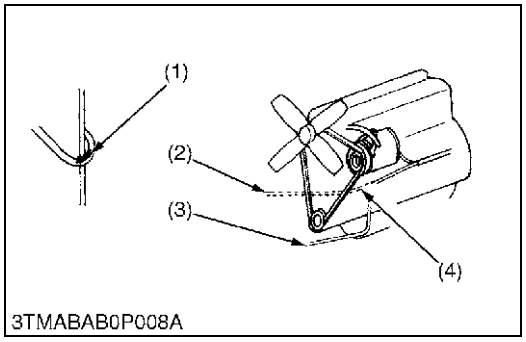


3TMABAB0P007A

- Securely tighten wiring terminals.

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

WSM000001GEG0063US0

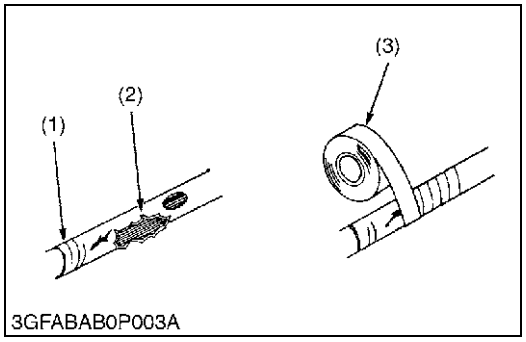


3TMABAB0P008A

- Do not let wiring contact dangerous part.

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

WSM000001GEG0064US0

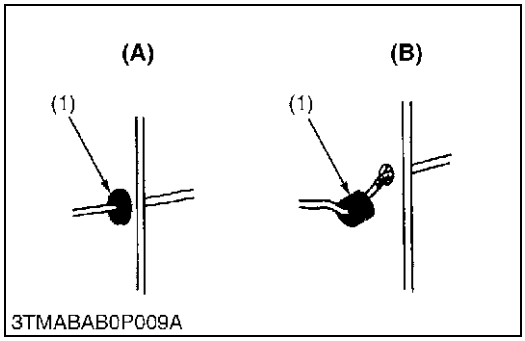


3GFABAB0P003A

- Repair or change torn or aged wiring immediately.

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

WSM000001GEG0065US0

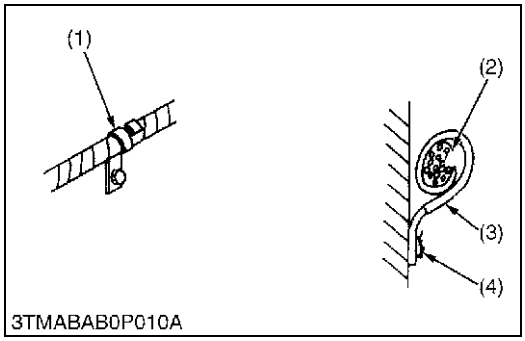


- Securely insert grommet.

(1) Grommet

(A) Correct
(B) Incorrect

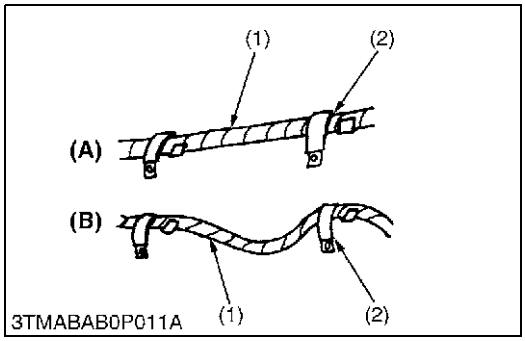
WSM000001GEG0066US0



- Securely clamp, being careful not to damage wiring.

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

WSM000001GEG0067US0

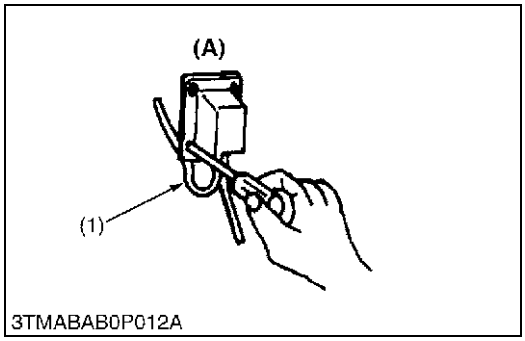


- Clamp wiring so that there is no twist, unnecessary sag, or excessive tension, except for movable part, where sag be required.

(1) Wiring
(2) Clamp

(A) Correct
(B) Incorrect

WSM000001GEG0068US0

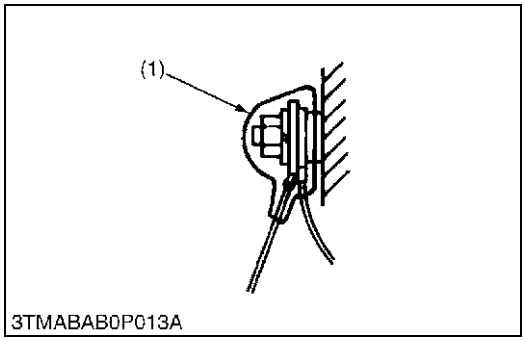


- In installing a part, be careful not to get wiring caught by it.

(1) Wiring

(A) Incorrect

WSM000001GEG0069US0

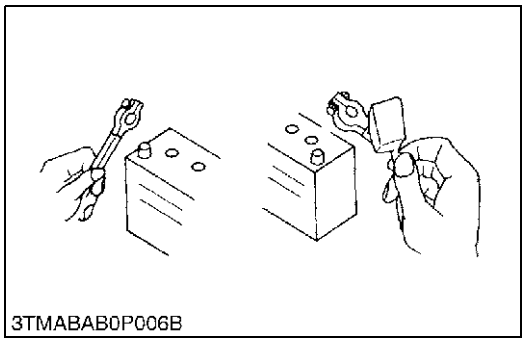


- After installing wiring, check protection of terminals and clamped condition of wiring.

(1) Cover (Securely Install Cover)

WSM000001GEG0070US0

[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.

DANGER

To avoid serious injury or death:

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

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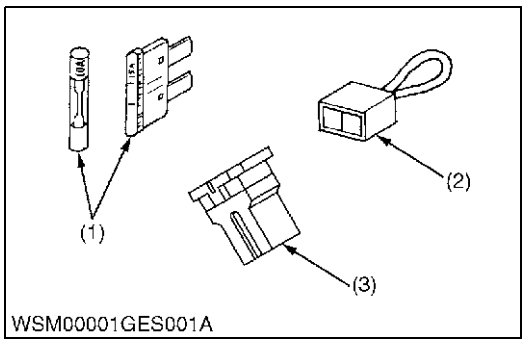
[3] FUSE



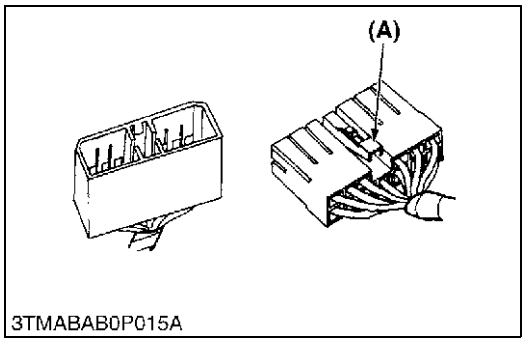
WSM00001GES001A

- 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

WSM000001GEG0072US0

[4] CONNECTOR



3TMABAB0P015A

- For connector with lock, push lock to separate.

(A) Push

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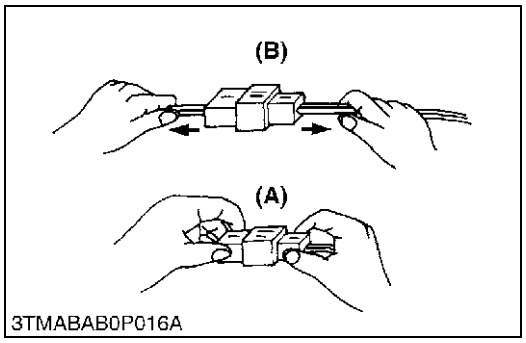
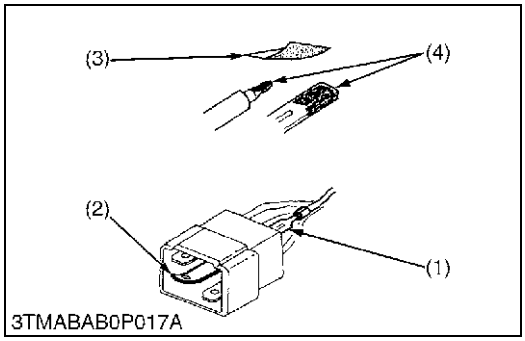


3TMABAB0P016A

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

(A) Correct
(B) Incorrect

WSM000001GEG0074US0

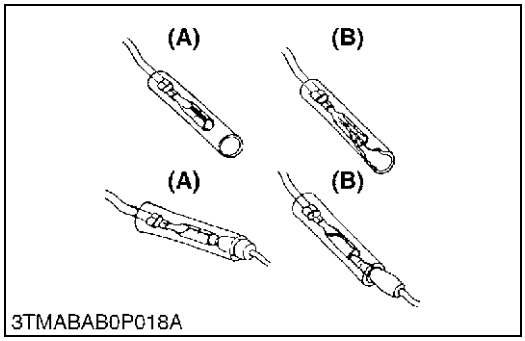


3TMABAB0P017A

- 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

WSM000001GEG0075US0

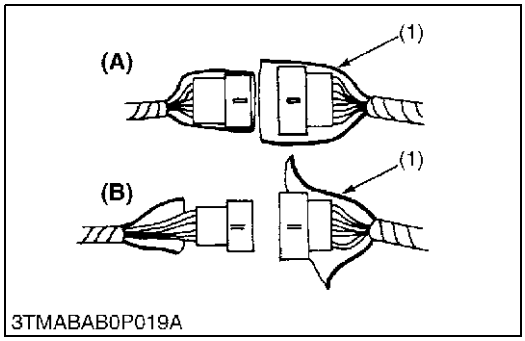


3TMABAB0P018A

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

(A) Correct
(B) Incorrect

WSM000001GEG0076US0



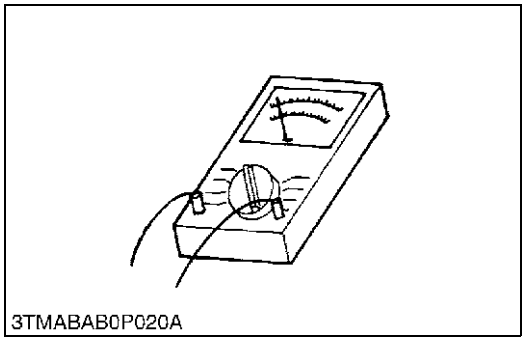
3TMABAB0P019A

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

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

WSM000001GEG0077US0

[5] HANDLING OF CIRCUIT TESTER


3TMABAB0P020A

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

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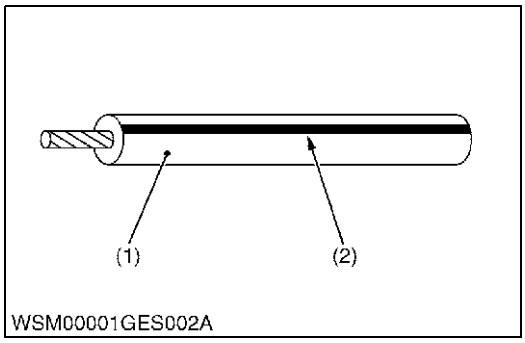
[6] COLOR OF WIRING



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.	Place	Capacity		Lubricants, fuel and coolant
		B2301	B2601	
1	Fuel tank	23 L 6.1 U.S.gals 5.1 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)	3.8 L 4.0 U.S.qts 3.3 Imp.qts		Fresh clean soft water with anti-freeze
3	Engine crankcase (with filter)	3.1 L 3.3 U.S.qts 2.7 Imp.qts		Engine oil: Refer to next page • Above 25 °C (77 °F) SAE30, SAE10W-30 or 15W-40 • −10 to 25 °C (14 to 77 °F) SAE20, SAE10W-30 or 15W-40 • Below −10 °C (14 °F) SAE10W-30
4	Transmission case	15 L 4.0 U.S.gals 3.3 Imp.gals		KUBOTA SUPER UDT-2 fluid*
5	Front axle case	3.5 L 3.7 U.S.qts 3.1 Imp.qts		KUBOTA SUPER UDT-2 fluid* or SAE80 - SAE90 gear oil

	Greasing	No. of greasing point	Capacity	Type of grease
6	Top link	1	Until grease overflows	Multipurpose type grease NLGI-2 or NLGI-1 (GC-LB)
	Lift rod [RH]	1		
	Brake pedal	1		
	Battery terminal	2	Moderate amount	

■ **NOTE**

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

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■ **NOTE**

<For North American market>

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 (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
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 tractor.**

	except external EGR	With external EGR
Models	B2301 / B2601	–

Fuel

- **Cetane number of 45 minimum. Cetane number greater then 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 engine 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 delivers 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.**

<For other than North American market>

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** 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 tractor.**

	except external EGR	With external EGR
Models	B2301 / B2601	–

Fuel

- **Cetane number of 45 minimum. Cetane number greater then 50 is preferred, especially for temperatures below −20 °C (−4 °F) or elevations above 1500 m (5000 ft).**
- **If diesel fuel with sulfur content greater than 0.5 % (5000 ppm) sulfur content in 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 engine in industrial and heavy mobile service. (SAE J313 JUN87)**

Transmission oil

- **The oil used to lubricate the transmission is also used as hydraulic fluid. To insure proper operation of the hydraulic system and 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.

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

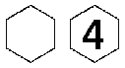
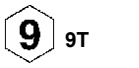
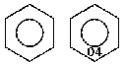
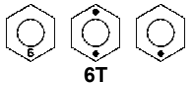
9Y1211156GEG0003US0

5. TIGHTENING TORQUES

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

WSM000001GEG0116US0

[1] GENERAL USE SCREWS, BOLTS AND NUTS

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

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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 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	–	–	–

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[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

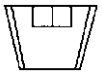
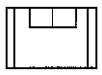
WSM000001GEG0003US0

[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

WSM000001GEG0008US0

[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															Interval	Reference page		
			50	100	150	200	250	300	350	400	450	500	550	600	650	700	800				
1	Engine oil	Change	★			☆				☆				☆			☆	every 200 Hr	G-26		
2	Engine oil filter	Replace	★			☆				☆				☆			☆	every 200 Hr	G-25		
3	Transmission oil filters [HST]	Replace	★			☆				☆				☆			☆	every 200 Hr	G-26		
4	Hydraulic oil filter	Replace	★							☆							☆	every 400 Hr	G-29		
5	Transmission fluid	Change								☆							☆	every 400 Hr	G-28		
6	Front axle case oil	Change								☆							☆	every 400 Hr	G-29		
7	Front axle pivot	Adjust								☆							☆	every 400 Hr	G-30		
8	Engine start system	Check	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	every 50 Hr	G-19		
9	Greasing	–	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	every 50 Hr	G-20		
10	Wheel bolt torque	Check	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	every 50 Hr	G-20		
11	Battery condition	Check		☆		☆		☆		☆		☆		☆		☆	☆	every 100 Hr	G-21	*4	
12	Air cleaner element [Double element type] Primary element	Clean		☆		☆		☆		☆		☆		☆		☆	☆	every 100 Hr	G-23	*1	@
		Replace																every 1 year	G-30	*2	
	Air cleaner element [Double element type] Secondary element	Replace																every 1 year	G-30		
13	Fuel filter element	Clean		☆		☆		☆		☆		☆		☆		☆	☆	every 100 Hr	G-24		@
		Replace								☆							☆	every 400 Hr	G-30		
14	Fan belt	Adjust		☆		☆		☆		☆		☆		☆		☆	☆	every 100 Hr	G-24		
15	Brake	Adjust		☆		☆		☆		☆		☆		☆		☆	☆	every 100 Hr	G-25		
16	Radiator hose and clamp	Check				☆				☆				☆			☆	every 200 Hr	G-27		
		Replace																every 2 years	G-33		
17	Fuel line	Check		☆		☆		☆		☆		☆		☆		☆	☆	every 100 Hr	G-25		@
		Replace																every 2 years	G-33	*3	
18	Intake air line	Check				☆				☆				☆			☆	every 200 Hr	G-27		@
		Replace																every 2 years	G-33	*3	
19	Toe-in	Adjust				☆				☆				☆			☆	every 200 Hr	G-28		
20	Engine valve clearance	Adjust															☆	every 800 Hr	G-30		
21	Fuel injection nozzle injection pressure	Check																every 1500 Hr	G-30		@
22	Injection pump	Check																every 3000 Hr	G-30		@
23	Cooling system	Flush																every 2 years	G-31		

No.	Item		Indication on hour meter															Interval	Reference page		
			50	100	150	200	250	300	350	400	450	500	550	600	650	700	800				
24	Coolant	Change																every 2 years	G-31		
25	Fuel system	Bleed																Service as required	G-33		
26	Clutch housing water	Drain																	G-33		
27	Fuse	Replace																	G-34		
28	Light bulb	Replace																	G-34		

■ **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 or 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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7. CHECK AND MAINTENANCE

[1] DAILY CHECK

WARNING

To avoid personal injury or death:

Take the following precautions when checking the tractor.

- **Park the machine on firm and level ground.**
- **Set the parking brake.**
- **Lower the implement to the ground.**
- **All residual pressure of the hydraulic system released.**
- **Stop the engine and remove the key.**

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Walk Around Inspection

1. Look around and under the tractor for such items as loose bolts, trash build-up, oil or coolant leaks, broken or worn parts.

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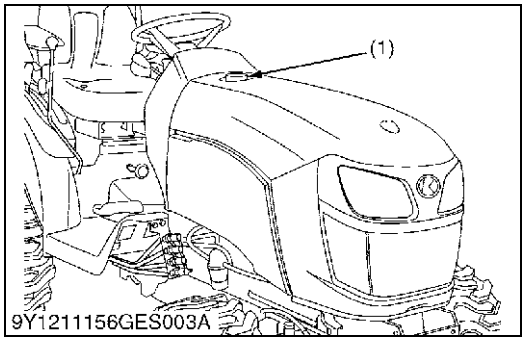

Checking and Refueling

WARNING

To avoid personal injury or death:

- **Do not smoke while refueling.**
- **Be sure to stop the engine before refueling.**

1. Turn the key switch to **"ON"**, check the amount of fuel by fuel gauge.
2. Fill fuel tank when fuel gauge shows 1/4 or less fuel in tank.
3. Use grade No.2-Diesel fuel at temperatures above −10 °C (14 °F).
   Use grade No.1-Diesel fuel at temperatures below −10 °C (14 °F).

■ **IMPORTANT**

- **Do not permit dirt or trash to get into the fuel system.**
- **Be careful not to let the fuel tank become empty, otherwise air will enter the fuel system, necessitating bleeding before next engine start.**
- **Be careful not to spill during refueling. If you should spill, wipe it off at once, or it may cause a fire.**
- **To prevent condensation (water) accumulation in the fuel tank, fill the tank before parking overnight.**

Fuel tank capacity	23 L 6.1 U.S.gals 5.1 Imp.gals

(1) Fuel Tank Cap

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