WSM

WORKSHOP MANUAL
TRACTOR

L4600

Kubota

KiSC issued 08, 2020 A

TO THE READER

This Workshop Manual tells the servicing personnel about the mechanism, servicing and maintenance of the L4600. It contains 4 parts: **"Information"**, **"General"**, **"Mechanism"** and **"Servicing"**.

■ **Information**

This section primarily contains information below.

- Safety First
- Safety Decal
- Specification
- Traveling Speeds
- Dimension

■ **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.

August, 2012

KiSC issued 08, 2020 A

Record of Revisions

For pdf, use search function {Search word} to find all revised locations.

Last digit of the Code No.	Month of Revision	Main Revised Point and Corrective Measures {Search word}	Reference Page
1	2020.08	Added description about shim adjustment of injection timing	1-S18

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, could result in minor or moderate injury.**

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

■ NOTE
- **Gives helpful information.**

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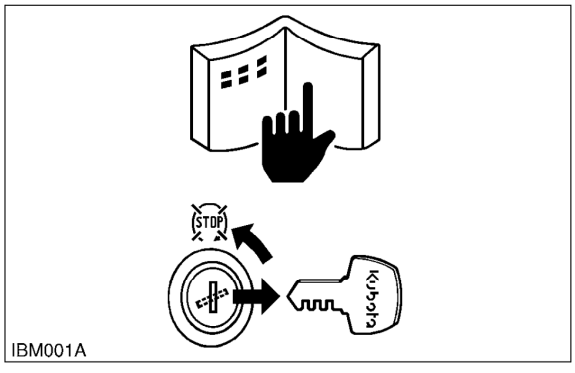

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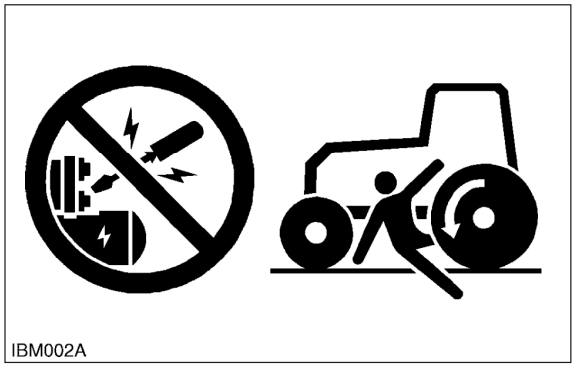
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BEFORE YOU START SERVICE

- 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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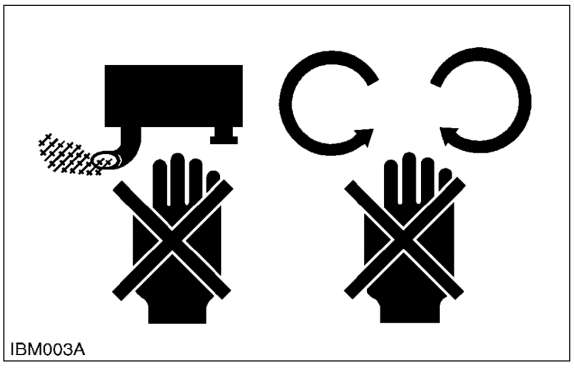
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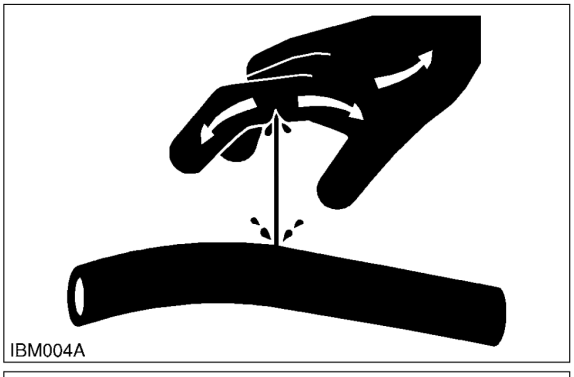
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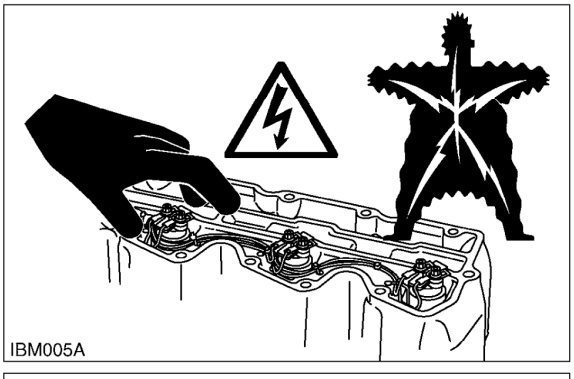
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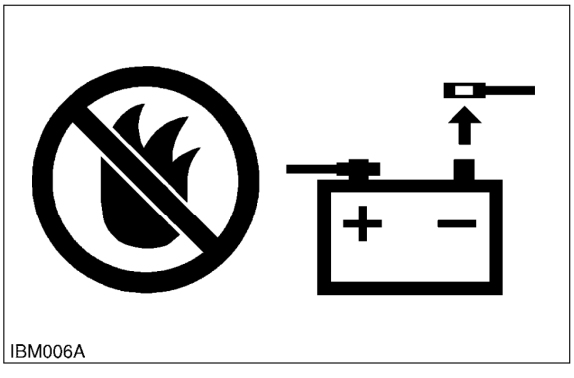
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OPERATE SAFELY

- 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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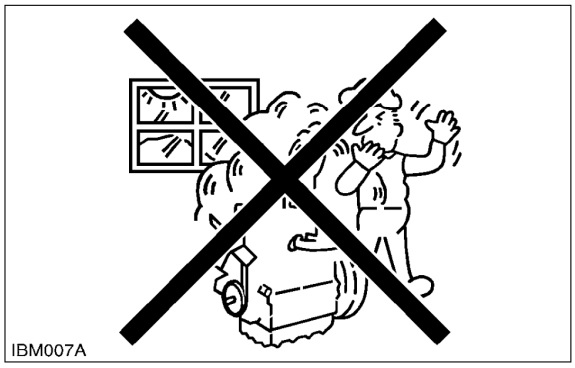
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KEEP A GOOD AIRFLOW IN THE WORK AREA

- 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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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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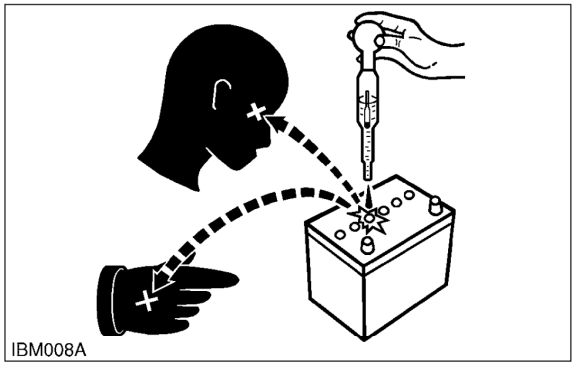
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PREVENT ACID BURNS

- 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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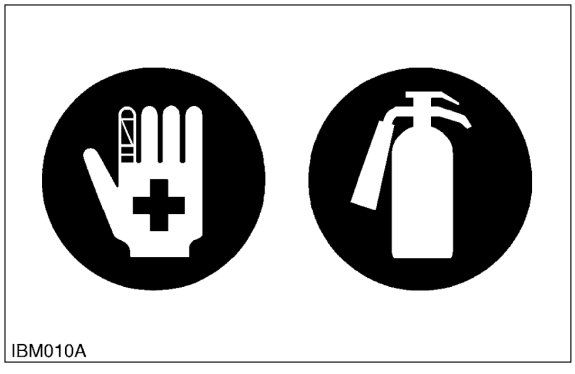
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PREPARE FOR EMERGENCIES

- 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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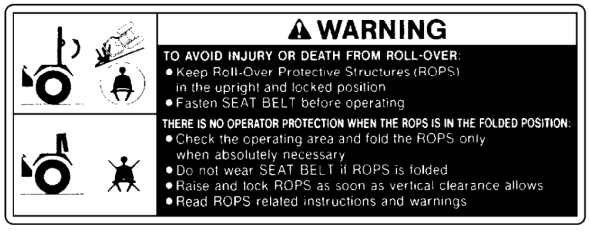
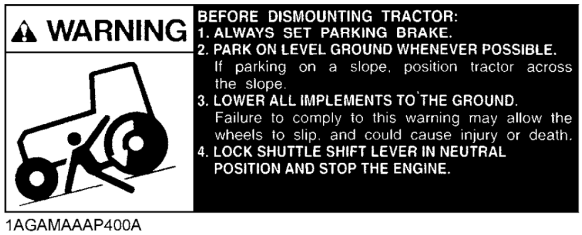
(1) Part No. TC430-9848-1



(2) Part No. TC430-4933-1 [Manual Transmission Type]



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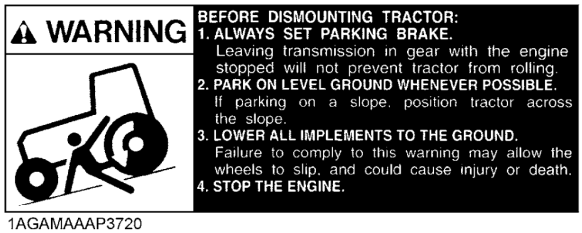
(2) Part No. TC430-4933-1 [HST Type]



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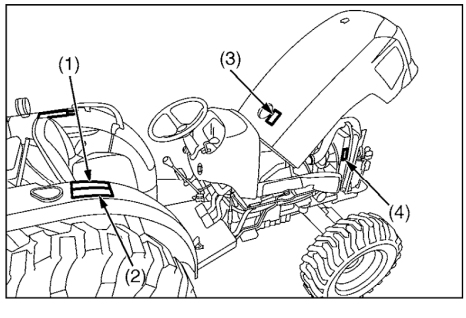
(3) Part No. TC230-4956-1

1AGAPAJAP068A

(4) Part No. TC402-4958-1

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



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(1) Part No. TC430-4997-1

⚠CAUTION

TO AVOID PERSONAL INJURY:

1. Read and understand the operator's manual before operation.
2. Before starting the engine, make sure that everyone is at a safe distance from the tractor and that the PTO is OFF.
3. Do not allow passengers on the tractor at any time.
4. Before allowing other people to use the tractor, have them read the operator's manual.
5. Check the tightness of all nuts and bolts regularly.
6. Keep all shields in place and stay away from all moving parts.
7. Lock the two brake pedals together before driving on the road.
8. Slow down for turns, or rough roads, or when applying individual brakes.
9. On public roads use SMV emblem and hazard lights, if required by local traffic and safety regulations.
10. Pull only from the drawbar.
11. Before dismounting, lower the implement to the ground, set the parking brake, stop the engine and remove the key.
12. Securely support tractor and implements before working underneath.

(4) Part No. TC402-4958-1

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

(2) Part No. TC430-4744-1

⚠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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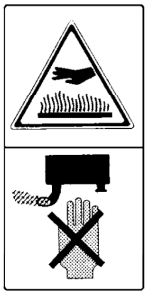
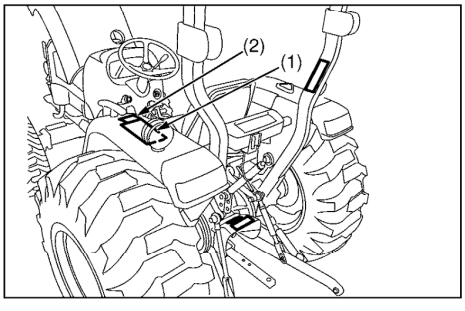
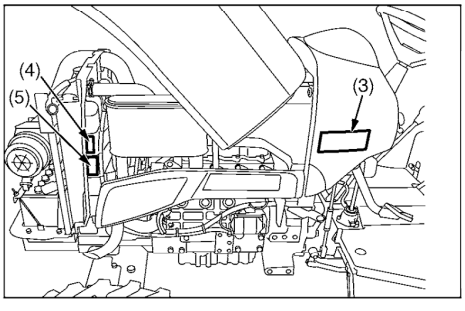
(3) Part No. TC430-4965-1

(5) Part No. TC4044-4956-1

Do not touch hot surface like muffler etc..







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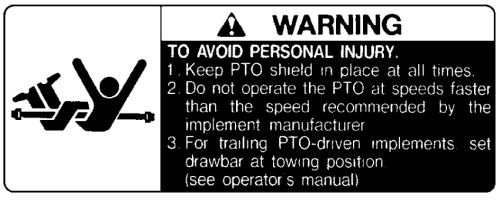
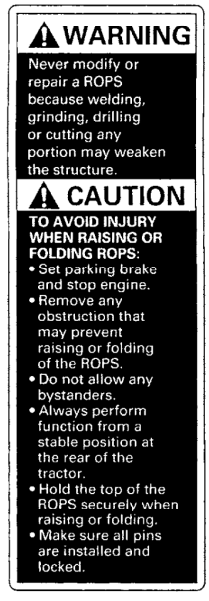
(1) Part No. TC430-4959-1

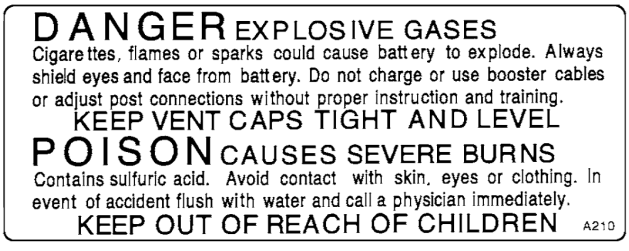


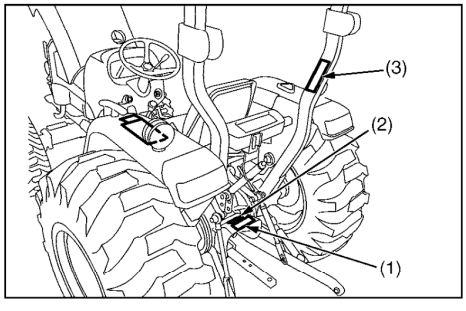
(2) Part No. TC430-4935-1

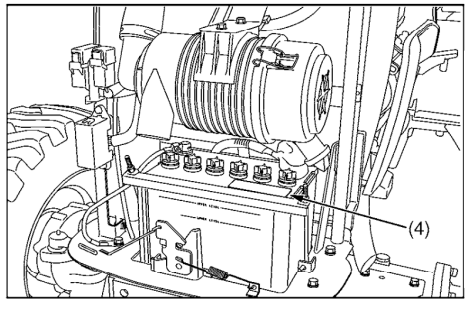
(3) Part No. TC430-4954-1



(4) Part No. TC430-3013-1







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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 or caution label(s) affixed is replaced with new part, make sure new label(s) is (are) attached in the same location(s) as the replaced component.
5. Mount new danger, warning and caution labels by applying on a clean dry surface and pressing any bubbles to outside edge.

9Y1210761INI0004US0

3. SPECIFICATIONS

Model			L4600	
			Manual Transmission	HST
			4WD	
PTO power*			28.5 kW (36.3 HP) / 2600 rpm	27.4 kW (36.8 HP) / 2600 rpm
Engine	Maker		KUBOTA	
	Model		V2203-M-E3-LB3	
	Type		Injection, vertical, water-cooled 4 cycle	
	Number of cylinders		4	
	Bore and stroke		87 mm × 92.4 mm (3.4 in. × 3.6 in.)	
	Total displacement		2.197 L (134.1 cu. in.)	
	Engine net power*		32.7 kW (43.0 HP) / 2600 rpm	
	Rated revolution		2600 (rpm)	
	Maximum torque gross*		143.2 N·m (105.6 lbf·ft)	
	Battery		12 V. RC: 133 min., CCA: 582 A	
	Fuel		Diesel fuel No.2-D, Diesel fuel No.1-D [below −10 °C (14 °F)]	
Capacities	Fuel tank		48 L (12.7 U.S.gals, 10.7 Imp.gals)	
	Engine crankcase (with filter)		7.6 L (8.0 U.S.qts, 6.7 Imp.gals)	
	Engine coolant		6.5 L (6.9 U.S.qts, 5.7 Imp.gals)	
	Transmission case		40 L (10.6 U.S.gals, 8.8 Imp.gals)	
Dimensions	Overall length (without 3P)		2995 mm (117.9 in.)	
	Overall width (min. tread)		1585 mm (62.4 in.)	
	Overall height (with ROPS)		2330 mm (91.7 in.)	
	Overall height (Top of steering wheel)		1495 mm (58.9 in.)	
	Wheel base		1845 mm (72.6 in.)	
	Min. ground clearance		385 mm (15.2 in.)	
	Tread	Front	1155 mm (45.5 in.)	
		Rear	1180 mm (46.5 in.), 1200 mm (47.2 in.), 1300 mm (51.2 in.), 1450 mm (57.1 in.), 1545 mm (60.8 in.)	
Weight (with ROPS)			1445 kg (3186 lbs)	1450 kg (3197 lbs)
Traveling system	Standard tire size	Front	8.3 - 16	
		Rear	14.9 - 24	
	Clutch		Dry type single stage	
	Steering		Hydrostatic power steering	
	Transmission		Gear shift, 8 forward and 8 reverse	Hydrostatic transmission 3 range speed
	Braking system		Mechanical, Wet disk type	
	Min. turning radius (with brake) system		2.6 m (8.5 feet)	
Hydraulic unit	Hydraulic control system		Position control	
	Pump capacity		29.4 L (7.8 U.S.gals, 6.5 Imp.gals) / min.	
	Three point hitch		Category 1	
	Max. lift force	At lift points	1300 kg (2870 lbs)	
		24 in. behind lift points	1053 kg (2320 lbs)	
	System pressure		17.7 MPa (180 kgf/cm^2, 2560 psi)	
PTO	Rear PTO		SAE 1-3/8, 6-splines	
	PTO / Engine speed		540 min^{-1} (rpm) / 2640 min^{-1} (rpm)	

■ **NOTE**

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

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4. TRAVELING SPEEDS

[Manual Transmission Type]

(At rated engine rpm)

Model			L4600
Tire size (Rear)			14.9-24
	Range gear shift lever	Main gear shift lever	km/h (mph)
Forward	Low	1	2.2 (1.4)
		2	2.8 (1.7)
		3	4.6 (2.8)
		4	6.7 (4.2)
	High	1	8.0 (5.0)
		2	10.0 (6.2)
		3	16.3 (10.1)
		4	24.0 (14.9)
Reverse	Low	1	2.1 (1.3)
		2	2.7 (1.7)
		3	4.4 (2.7)
		4	6.4 (4.0)
	High	1	7.7 (4.8)
		2	9.6 (6.0)
		3	15.6 (9.7)
		4	23.0 (14.3)

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

[HST Type]

(At rated engine rpm)

Model		L4600
Tire size (Rear)		14.9-24
	Range shift lever	km/h (mph)
Forward	L	5.9 (3.7)
	M	12.2 (7.6)
	H	25.4 (15.8)
Reverse	L	5.3 (3.3)
	M	11.0 (6.8)
	H	22.9 (14.2)

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

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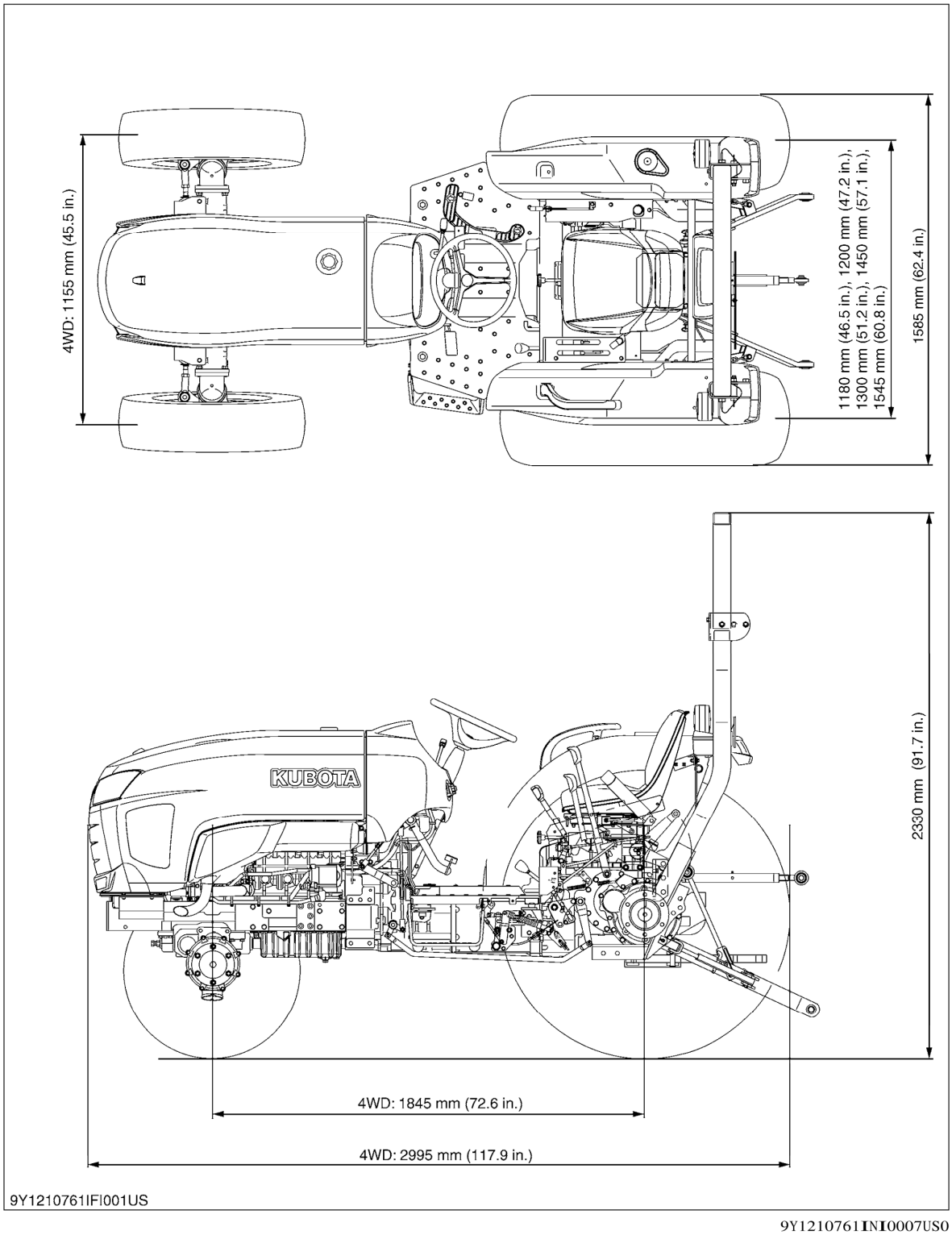
5. DIMENSIONS



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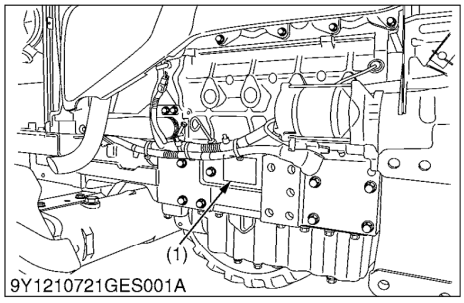
G GENERAL

GENERAL

CONTENTS

1. TRACTOR IDENTIFICATION

[1] MODEL NAME AND SERIAL NUMBERS



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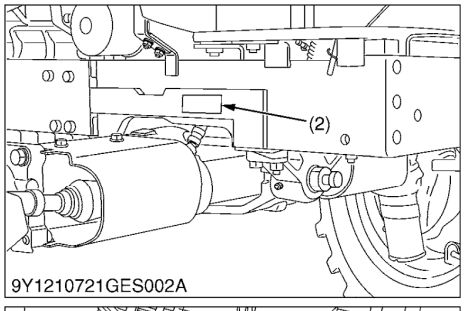

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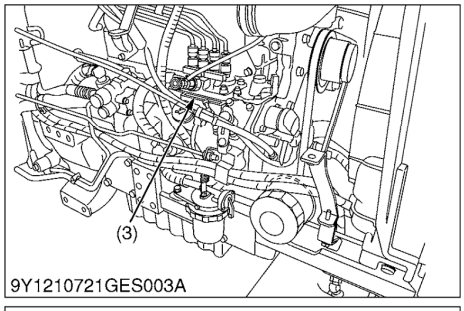

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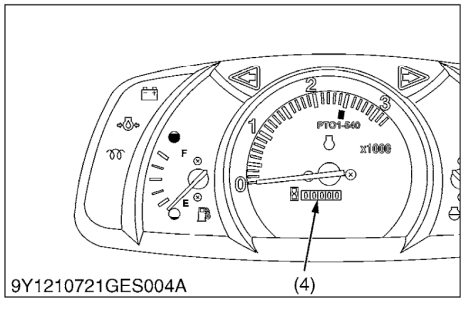

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When contacting your local KUBOTA distributor, always specify engine serial number, tractor serial number and hour meter reading.

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

9Y1210761GEG0001US0

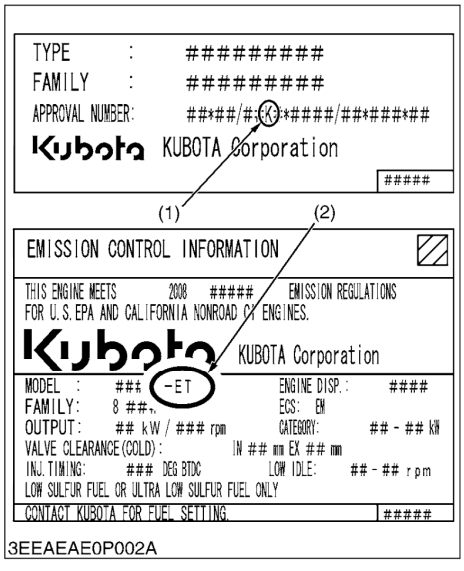
[2] E3 ENGINE

Example: Engine Model Name V2203M-E3B-XXXX]

The emission controls previously implemented in various countries to prevent air pollution will be stepped up as Nonroad Emission Standards continue to change. The timing or applicable date of the specific Nonroad Emission regulations depends on the engine output classification.

Over the past several years, Kubota has been supplying diesel engines that comply with regulations in the respective countries affected by Nonroad Emission regulations. For Kubota Engines, E3B will be the designation that identifies engine models affected by the next emission phase (See the table below).

When servicing or repairing ###-E3B series engines, use only replacement parts for that specific E3B engine, designated by the appropriate E3B Kubota Parts List and perform all maintenance services listed in the appropriate Kubota Operator's Manual or in the appropriate E3B Kubota Workshop Manual. Use of incorrect replacement parts or replacement parts from other emission level engines (for example: E2B engines), may result in emission levels out of compliance with the original E3B design and EPA or other applicable regulations. Please refer to the emission label located on the engine head cover to identify Output classification and Emission Control Information. E3B engines are identified with "ET" at the end of the Model designation, on the US EPA label. Please note: E3B is not marked on the engine.



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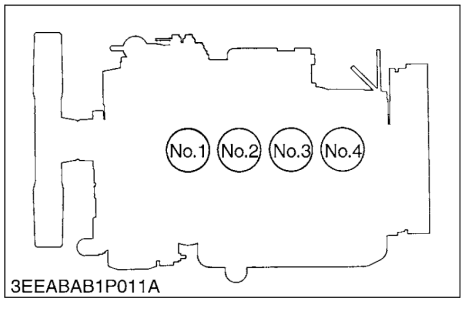
Category (1)	Engine output classification	EU regulation
K	From 19 to less than 37 kW	STAGE IIIA
J	From 37 to less than 75 kW	STAGE IIIA
I	From 75 to less than 130 kW	STAGE IIIA

Category (2)	Engine output classification	EU regulation
ET	Less than 19kW	Tier 4
	From 19 to less than 56 kW	Interim Tier 4
	From 56 to less than 75 kW	Tier 4
	From 75 to less than 130 kW	Tier 3

(1) EU regulation engine output classification category
(2) "E3" engines are identified with "ET" at the end of the Model designation, on the US EPA label.
"E3" designates Tier 3 and some Interim Tier 4 / Tier 4 models, depending on engine output classification.

9Y1210761GEG0002US0

[3] CYLINDER NUMBER



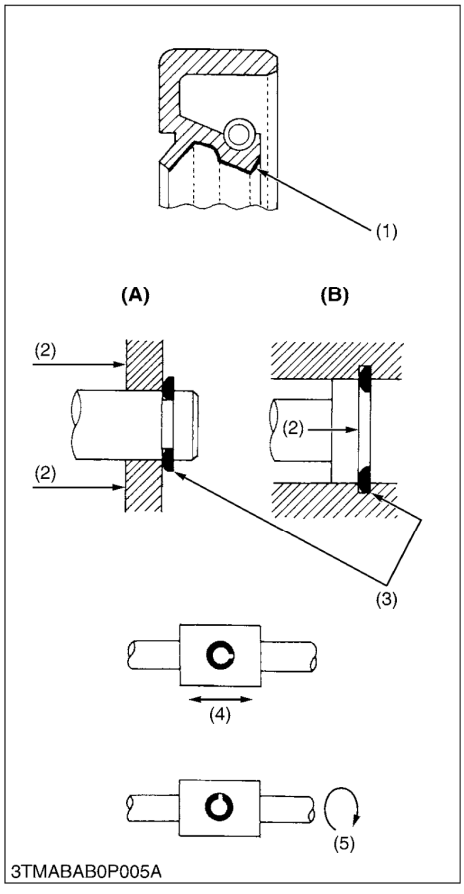
3EEABAB1P011A

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

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

9Y1210761GEG0003US0

2. GENERAL PRECAUTIONS



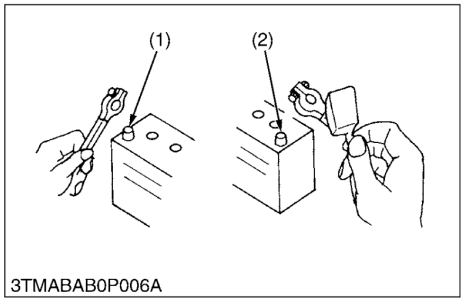
- When you disassemble, carefully put the parts in a clean area to make it easy to find the parts. You must install the screws, bolts and nuts in their initial position to prevent the reassembly errors.
- When it is necessary to use special tools, use KUBOTA special tools. Refer to the drawings when you make special tools that you do not use frequently.
- Before you disassemble or repair machine, make sure that you always disconnect the ground cable from the battery first.
- Remove oil and dirt from parts before you measure.
- Use KUBOTA genuine parts for replacement to keep the machine performance and to make sure of safety.
- You must replace the gaskets and O-rings when you assemble again. Apply grease **(1)** to new O-rings or oil seals before you assemble.
- When you assemble the external or internal circlips, make sure that the sharp edge **(3)** faces against the direction from which force **(2)** is applied.
- When inserting spring pins, their splits must face the direction from which a force is applied. See the figure on the left side.
- To prevent damage to the hydraulic system, use only specified fluid or equivalent.
- Clean the parts before you measure them.
- Tighten the fittings to the specified torque. Too much torque can cause damage to the hydraulic units or the fittings. Not sufficient torque can cause oil leakage.
- When you use a new hose or pipe, tighten the nuts to the specified torque. Then loosen (approx. by 45°) and let them be stable before you tighten to the specified torque (This is not applied to the parts with seal tape).
- When you remove the two ends of a pipe, remove the lower end first.
- Use two pliers in removal and installation. One to hold the stable side, and the other to turn the side you remove to prevent twists.
- Make sure that the sleeves of flared connectors and tapers of hoses are free of dust and scratches.
- After you tighten the fittings, clean the joint and apply the maximum operation pressure 2 to 3 times to check oil leakage.

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

(A) External Circlip
(B) Internal Circlip

WSM000001GEG0106US0

3. HANDLING PRECAUTIONS FOR ELECTRICAL PARTS



3TMABAB0P006A

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

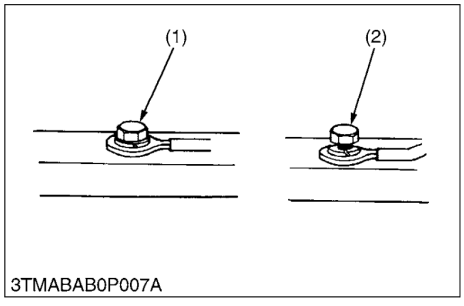
■ **IMPORTANT**

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

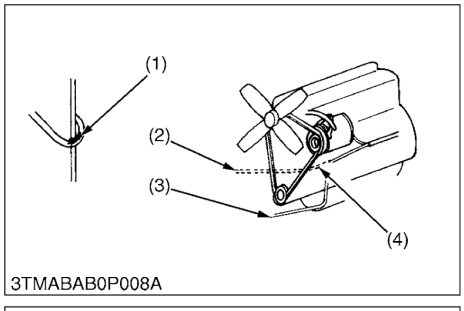


3TMABAB0P007A

- Securely tighten wiring terminals.

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

WSM000001GEG0063US0

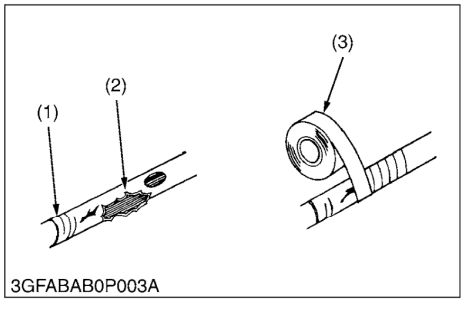


3TMABAB0P008A

- Do not let wiring contact dangerous part.

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

WSM000001GEG0064US0

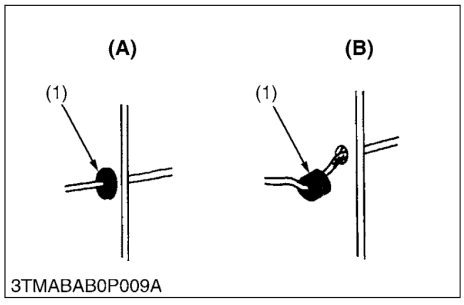


3GFABAB0P003A

- Repair or change torn or aged wiring immediately.

(1) Aged (3) Electrical Tape
(2) Torn

WSM000001GEG0065US0

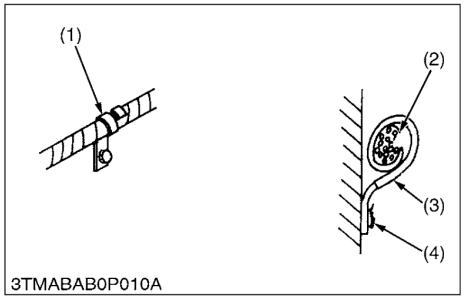


- Securely insert grommet.

(1) Grommet

(A) Correct
(B) Incorrect

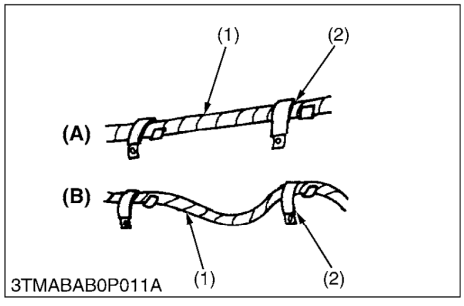
WSM000001GEG0066US0



- Securely clamp, being careful not to damage wiring.

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

WSM000001GEG0067US0

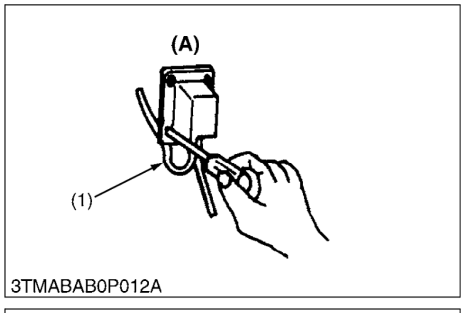


- Clamp wiring so that there is no twist, unnecessary sag, or excessive tension, except for movable part, where sag be required.

(1) Wiring
(2) Clamp

(A) Correct
(B) Incorrect

WSM000001GEG0068US0

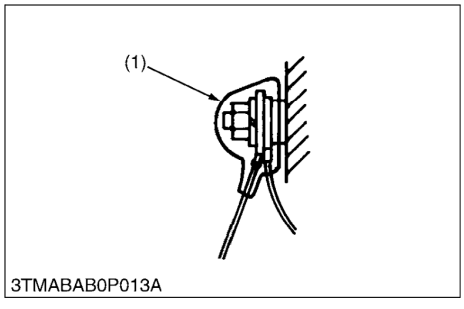


- In installing a part, be careful not to get wiring caught by it.

(1) Wiring

(A) Incorrect

WSM000001GEG0069US0



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

(1) Cover
(Securely Install Cover)

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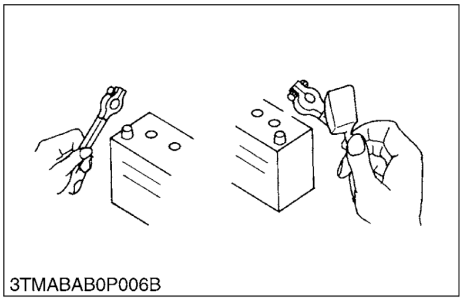
[2] BATTERY


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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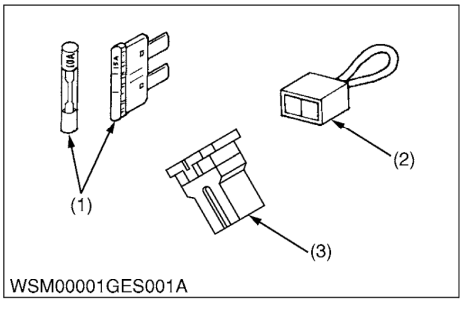
[3] FUSE



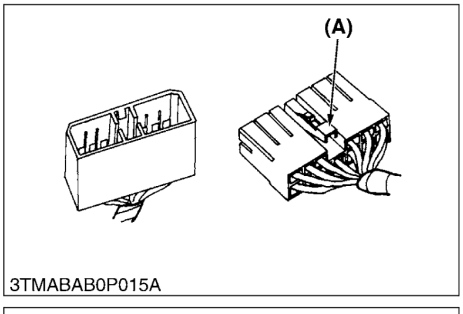
WSM00001GES001A

- 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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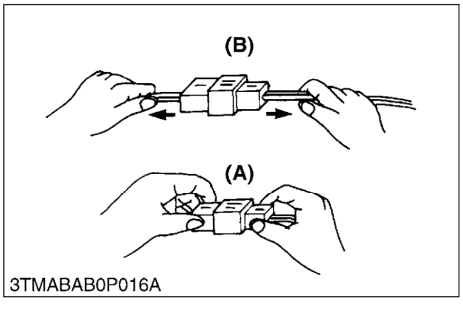

3TMABAB0P016A

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

(A) Correct **(B) Incorrect**

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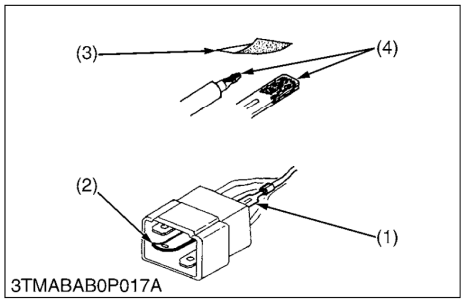

3TMABAB0P017A

- 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

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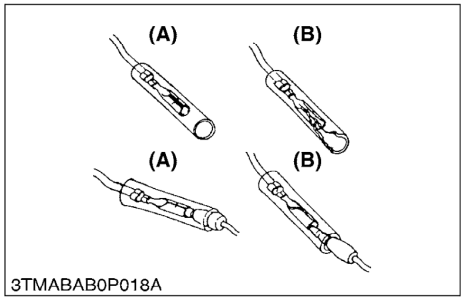

3TMABAB0P018A

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

(A) Correct
(B) Incorrect

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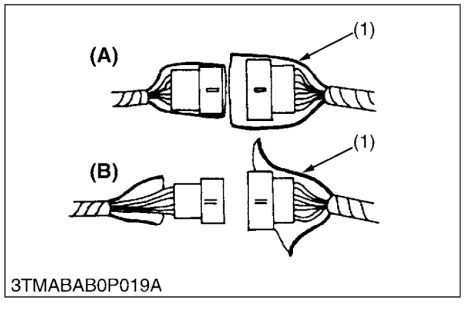


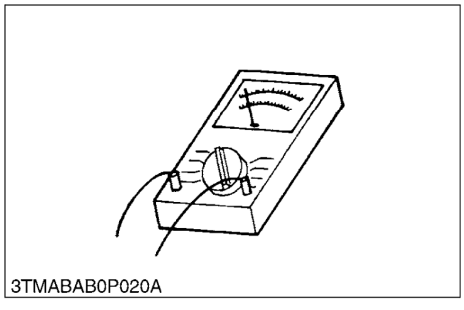
3TMABAB0P019A

- 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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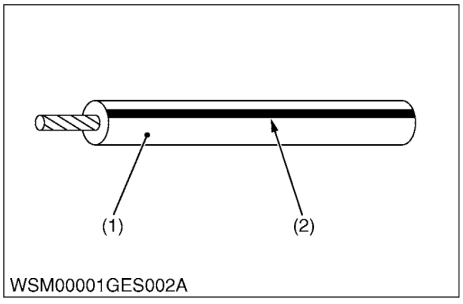
[6] COLOR OF WIRING



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
			L4600	
1	Fuel		48.0 L 12.7U.S. gals 10.5 Imp.gals	• No. 2-D diesel fuel • No. 1-D diesel fuel if temperature is below –10 °C (14 °F)
2	Coolant		6.5 L 6.9 U.S.qts 5.7 Imp.qts	Fresh clean water with anti-freeze
3	Engine crankcase (with filter)		7.6 L 8.0 U.S.qts 6.7 Imp.qts	**Engine oil** API Service Classification [E3 Engine] Refer to next page. • Below 0 °C (32 °F): SAE10W, 10W-30 or 15W-40 • 0 to 25 °C (32 to 77 °F): SAE20, 10W-30 or 15W-40 • Above 25 °C (77 °F): SAE30, 10W-30 or 15W-40
4	Transmission case		40 L 10.6 U.S.gals 8.8 Imp.gals	KUBOTA UDT or SUPER UDT fluid*
5	Front axle case	4WD	6.5 L 6.9 U.S.qts 1.4 Imp.qts	KUBOTA UDT or SUPER UDT fluid* or SAE80-90 gear oil

Greasing				
No.	**Place**	**No. of greasing point**	**Capacity**	**Type of grease**
6	Front axle support	2	Until grease overflows	Multipurpose type grease NLG1-2 or NLG1-1 (GC-LB)
	Top link	1		
	Top link bracket	2 [with draft control (if equipped)]		
	Battery terminal	2		
	Lift rod	1		

■ **NOTE**

- *** KUBOTA original transmission hydraulic fluid.**

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■ **NOTE**

Engine Oil

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

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

EGR: Exhaust Gas Re-circulation

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

	except external EGR	with external EGR
Model	L4600	—

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.**

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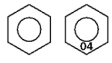
5. TIGHTENING TORQUES

[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						7 7T						9 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] HYDRAULIC FITTINGS

(1) Hydraulic Hose Fittings

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

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(2) Hydraulic Pipe Cap Nuts

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

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(3) Adaptors, Elbows and Others

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

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[4] METRIC SCREWS, BOLTS AND NUTS

Grade	8.8 Property class 8.8			10.9 Property class 10.9		
Unit	N·m	kgf·m	lbf·ft	N·m	kgf·m	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

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

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

[6] PLUGS

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

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6. MAINTENANCE

No.	Item			Indication on hour meter														Interval	Reference page	im-portant	
				50	100	150	200	250	300	350	400	450	500	550	600	650	700				
1	Greasing		–	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	every 50 Hr	G-20		
2	Engine start system		Check	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	every 50 Hr	G-21		
3	Wheel bolt torque		Check	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	every 50 Hr	G-23		
4	Tie-rod dust cover		Check	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	every 50 Hr	–	*3	
5	Battery condition		Check		☆		☆		☆		☆		☆		☆		☆	every 100 Hr	G-26	*4	
6	Fan belt		Adjust		☆		☆		☆		☆		☆		☆		☆	every 100 Hr	G-24		
7	Clutch		Adjust	★	☆		☆		☆		☆		☆		☆		☆	every 100 Hr	G-19		
8	Brake		Adjust		☆		☆		☆		☆		☆		☆		☆	every 100 Hr	G-25		
9	Air cleaner element	Primary element	Clean		☆		☆		☆		☆		☆		☆		☆	every 100 Hr	G-23	*1	@
			Replace															every 1 year	G-30	*2	
		Secondary element	Replace															every 1 year	G-31		
10	Fuel filter element		Clean		☆		☆		☆		☆		☆		☆		☆	every 100 Hr	G-24		@
			Replace								☆							every 400 Hr	G-30		
11	Fuel line		Check		☆		☆		☆		☆		☆		☆		☆	every 100 Hr	G-25		@
			Replace															every 2 years	G-34	*3	
12	Engine oil		Change	★			☆				☆				☆			every 200 Hr	G-28		
13	Engine oil filter		Replace	★			☆				☆				☆			every 200 Hr	G-28		
14	Transmission oil filter [HST model]		Replace	★			☆				☆				☆			every 200 Hr	G-18		
15	Toe-in		Adjust				☆				☆				☆			every 200 Hr	G-29		
16	Radiator hose and clamp		Check				☆				☆				☆			every 200 Hr	G-28		
			Replace															every 2 years	G-34		
17	Power steering oil line		Check				☆				☆				☆			every 200 Hr	G-28		
			Replace															every 2 years	G-34	*3	
18	Intake air line		Check				☆				☆				☆			every 200 Hr	G-29		@
			Replace															every 2 years	G-34	*3	
19	Oil cooler line [HST model]		Check				☆				☆				☆			every 200 Hr	–		
			Replace															every 2 years	–	*3	
20	Hydraulic oil filter		Replace	★							☆							every 400 Hr	G-30		
21	Transmission fluid		Change								☆							every 400 Hr	G-30		