

Product: Kubota L3200 L3800 Service Manual

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WSM

WORKSHOP MANUAL
TRACTOR

L3200, L3800

Kubota

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KISC issued 09, 2020 A

TO THE READER

This Workshop Manual tells the servicing personnel about the mechanism, servicing and maintenance of the L3200 and L3800. It contains 4 parts: "**Information**", "**General**", "**Mechanism**" and "**Servicing**".

■ Information

This section primarily contains information below.

- Safety First
- Safety Decal
- Specification
- 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.

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

August, 2011

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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	2020.09	Added description about shim adjustment of injection timing	1-S16

I INFORMATION

INFORMATION

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1. SAFETY FIRST

SAFETY FIRST

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

DANGER

- Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

- Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

- Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.

■ IMPORTANT

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

■ NOTE

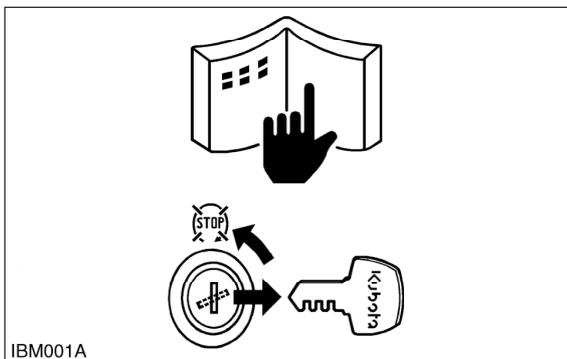
- Gives helpful information.

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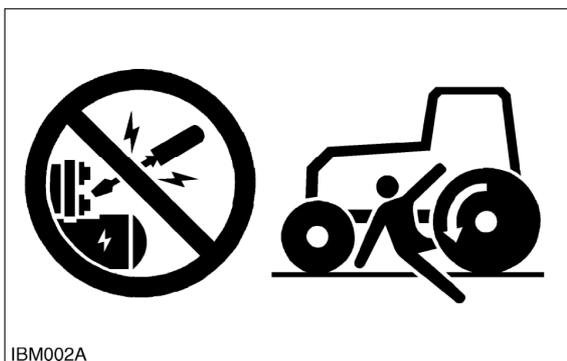
BEFORE YOU START SERVICE

- 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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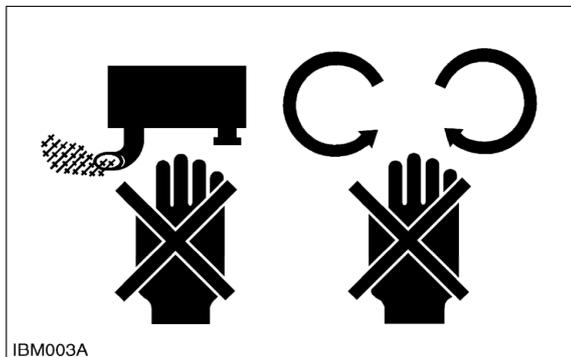


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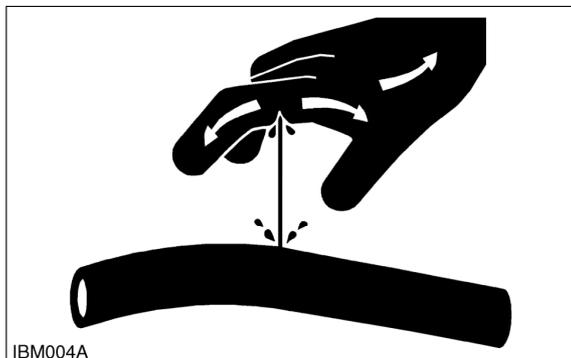
START SAFELY

- 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.

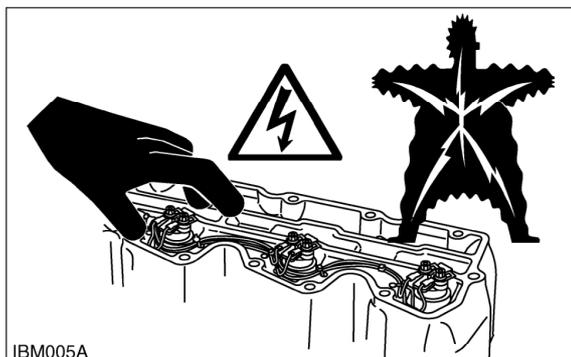
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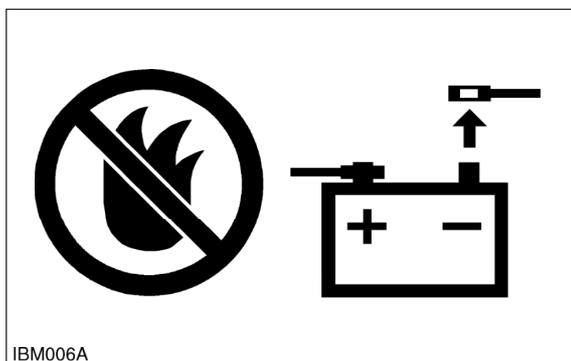
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OPERATE SAFELY

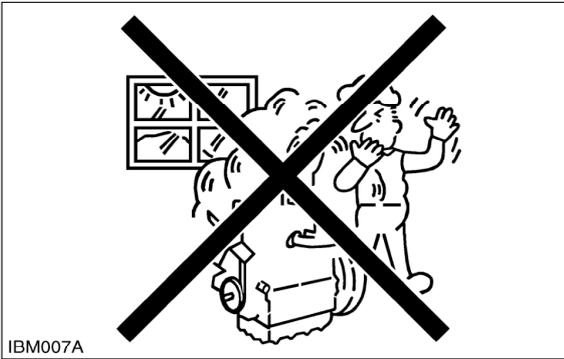
- Do not use the machine after you consume alcohol or medication or when you are tired.
- Put on applicable clothing and safety equipment.
- Use applicable tools only. Do not use alternative tools or parts.
- When 2 or more persons do servicing, make sure that you do it safely.
- Do not operate below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

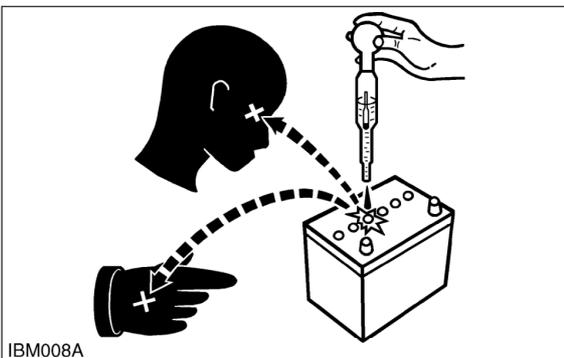
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KEEP A GOOD AIRFLOW IN THE WORK AREA

- 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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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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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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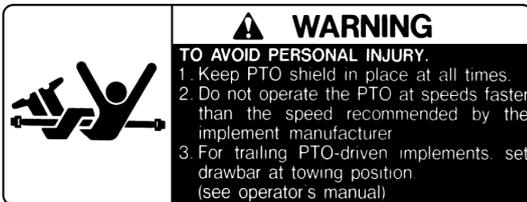
(1) Part No. TA040-4965-2



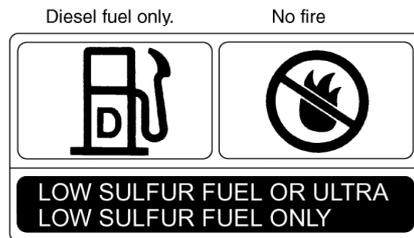
(4) Part No. 6C300-4744-1



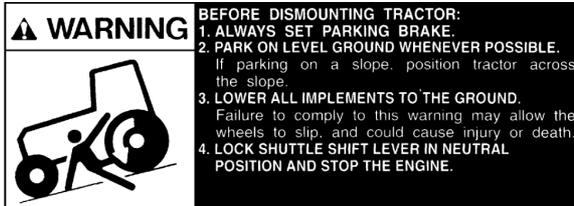
(2) Part No. TA040-4959-3



(5) Part No. TC230-4956-1



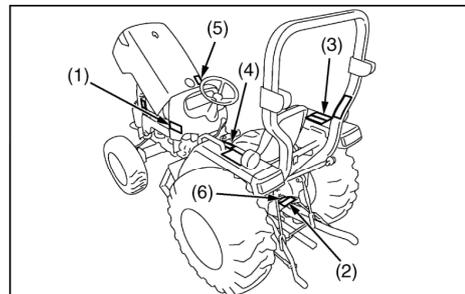
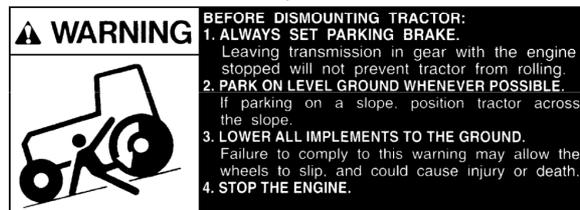
(3) Part No. TA140-4933-1 [Manual Transmission Type]



(6) Part No. TA040-4935-1



(3) Part No. TD170-4933-1 [HST Type]



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(1) Part No. 35260-3491-4

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 dismantling, 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.

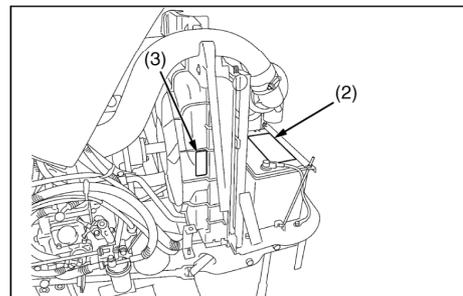
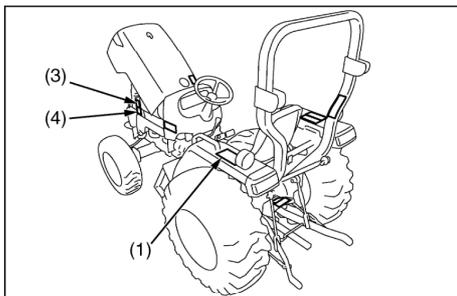
(3) Part No. 6C090-4958-2
Do not get your hands close to engine fan and fan belt.



(2) Part No. TD020-3012-2

							ATTENTION
NS70MF 12V	D	A	N	G	R	E	ATTENTION
AMP H (5 Heures) 52	<ul style="list-style-type: none"> • En raison de l'hydrogène produite par la batterie, une mauvaise manipulation peut provoquer incendie et explosion. • Cette batterie à 12V est à utiliser pour les moteurs de démarrage. Ne pas y avoir recours pour d'autres usages. • Charger la batterie seulement dans des endroits bien aérés, et éviter les courts-circuits ou les étincelles. • Lire le manuel d'utilisation du véhicule ou de la batterie, avant d'utiliser les câbles survolteurs. • L'acide sulfurique peut causer de sévères brûlures ou la cécité. Dans le cas où les yeux, la peau, les vêtements ou autres articles sont en contact avec l'acide, les rincer immédiatement à l'eau. Si vous en avez avalé, buvez tout de suite beaucoup d'eau. Dans le cas d'un contact accidentel, consulter aussitôt un médecin. • Batterie pleine d'acide. (Ne pas la pencher ou la renverser). • Inflammable. Ne pas la charger près du feu ou des étincelles. • Ne pas charger rapidement • Ne pas démonter la batterie (Type soudé) 						
Capacité de Réserve (MIN) 123	75D26R						
AMPS de démarrage à basse température (-10°C) 490	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100						
DANGER GAZ EXPLOSIFS Cigarettes, flammes ou étincelles peuvent provoquer l'explosion de la batterie. Dans tous les cas couvrez-vous les yeux et la face. Ne pas recharger la batterie et ne pas utiliser des câbles de démarrage sans suivre ces instructions.	POISON CAUSE DES BRULURES GRAVES Contient de l'acide sulfurique. Éviter tout contact avec la peau, les yeux ou les vêtements. En cas d'accident, laver à grande eau et contacter immédiatement un médecin. METTRE HORS DE LA PORTEE DES ENFANTS						

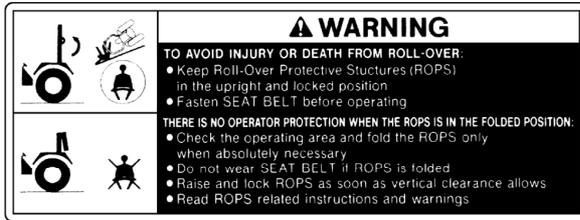
(4) Part No. TC030-4958-1
Do not touch hot surface like muffler etc.



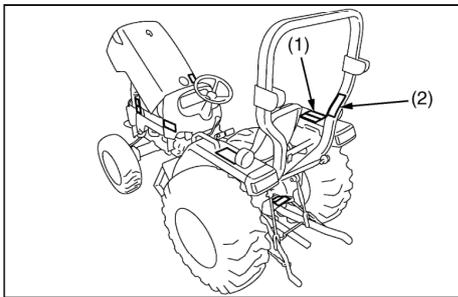
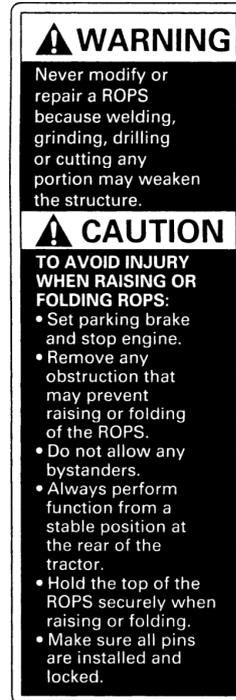
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9Y1210625INI0002US0

(1) Part No. TA240-9848-2



(2) Part No. 3A111-9554-1



9Y1210625IC1003US

9Y1210625INI0003US0

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.

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3. SPECIFICATIONS

Model		L3200		L3800		
		Manual Transmission	HST	Manual Transmission	HST	
PTO power*		19.9 kW (26.7 HP)	18.8 kW (25.2 HP)	23.5 kW (31.5 HP)	22.4 kW (30.0 HP)	
Engine		KUBOTA				
		Maker	KUBOTA			
		Model	D1503-M-E3		D1803-M-E3	
		Type	Indirect injection, Vertical, Water-cooled 4 cycle diesel			
		Number of cylinders	3			
		Bore and stroke	83 × 92.4 mm (3.3 × 3.6 in.)		87 × 102.4 mm (3.4 × 4.0 in.)	
		Total displacement	1.499 L (91.5 cu.in.)		1.826 L (111.4 cu.in.)	
		Engine gross power*	23.8 kW (31.9 HP)		27.9 kW (37.4 HP)	
		Engine net power*	22.7 kW (30.4 HP)		26.8 kW (35.9 HP)	
		Rated revolution	46.7 rps (2800 min ⁻¹ (rpm))		45.0 rps (2700 min ⁻¹ (rpm))	
		Low idling revolution	15.0 to 16.7 rps (900 to 1000 min ⁻¹ (rpm))			
		Maximum torque	94.9 N·m (9.68 kgf·m, 70.0 lbf·ft)		115.6 N·m (11.79 kgf·m, 85.3 lbf·ft)	
Battery	12 V RC: 123 min., CCA: 490 A					
Capacities		Fuel tank 38.0 L (10.0 U.S.gals, 8.4 Imp.gals)				
		Engine crankcase (with filter) 5.7 L (6.0 U.S.qts, 5.0 Imp.qts)		7.1 L (7.5 U.S.qts, 6.2 Imp.qts)		
		Engine coolant 6.0 L (6.3 U.S.qts, 5.3 Imp.qts)				
		Transmission case	27.5 L (7.3 U.S.gals, 6.1 Imp.gals)	23.5 L (6.2 U.S.gals, 5.2 Imp.gals)	27.5 L (7.3 U.S.gals, 6.1 Imp.gals)	23.5 L (6.2 U.S.gals, 5.2 Imp.gals)
Dimensions		Overall length (without 3P) 2800 mm (110.2 in.)				
		Overall width (min. tread) 1400 mm (55.1 in.)				
		Overall height (with ROPS) 2330 mm (91.7 in.)				
		Overall height (Top of steering wheel) 1475 mm (58.1 in.)				
		Wheel base 1610 mm (63.3 in.)				
		Min. ground clearance 340 mm (13.4 in.)				
		Tread	1095 mm (43.1 in.)			
		1115 mm (43.8 in.), 1195 mm (47.1 in.), 1290 mm (50.8 in.)				
Weight (with ROPS)		1180 kg (2601 lbs)	1190 kg (2623 lbs)	1205 kg (2657 lbs)	1210 kg (2668 lbs)	
Traveling system		Tires	AG front 7-16 / 7.2-16 R1			
			AG rear 11.2-24 R1			
		Turf (option)	Front 25 × 8.50-14			
			Rear 13.6-16			
		Indust. (option)	Front 27 × 8.50-15			
			Rear 15-19.5 R4			
		Clutch	Dry type single stage		Dry type dual stage	Dry type single stage
		Steering	Integral type power steering			
		Transmission	Gear shaft, 8 forward and 4 reverse	Hydrostatic transmission, 3 range speed	Gear shaft, 8 forward and 4 reverse	Hydrostatic transmission, 3 range speed
		Brake	Wet disk type			
Min. turning radius (with brake)	2.5 m (8.2 feet)					
Hydraulic unit		Hydraulic control system Position control				
		Pump capacity (main)	24.7 L/min. (6.53 U.S.gals/min., 5.43 Imp.gals/min.)		23.9 L/min. (6.31 U.S.gals/min., 5.26 Imp.gals/min.)	
		Pump capacity (PS)	15.0 L/min. (3.96 U.S.gals/min., 3.30 Imp.gals/min.)		14.5 L/min. (3.83 U.S.gals/min., 3.19 Imp.gals/min.)	
		Three point hitch	Category 1			
		Max. lift force	At lift points	906 kg (1998 lbs)		
			24 in. behind lift points	651 kg (1435 lbs)		
System pressure		15.7 MPa (160 kgf/cm ² , 2277 psi)				

Model			L3200		L3800	
			Manual Transmission	HST	Manual Transmission	HST
			4WD			
PTO	Rear PTO	PTO shaft size	SAE 1-3/8, 6-splines			
		Type	Transmission driven with overrunning	Live-continuous running		
	PTO / Engine speed		540 / 2430 min ⁻¹ (rpm)	540 / 2580 min ⁻¹ (rpm)	540 / 2425 min ⁻¹ (rpm)	540 / 2580 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

■ Manual Transmission Type

(At rated engine rpm)

Model			L3200	L3800
Tire size (Rear)			11.2-24	
Shuttle shift lever	Range gear shift lever	Main gear shift lever	km/h (mph)	km/h (mph)
Forward	Low	1	1.8 (1.1)	1.7 (1.1)
		2	2.3 (1.4)	2.2 (1.4)
		3	3.3 (2.1)	3.2 (2.0)
		4	5.8 (3.6)	5.6 (3.5)
	High	1	6.8 (4.2)	6.6 (4.1)
		2	8.8 (5.5)	8.5 (5.3)
		3	12.7 (7.9)	12.2 (7.6)
		4	22.0 (13.7)	21.2 (13.2)
Reverse	Reverse	1	2.4 (1.5)	2.4 (1.5)
		2	3.2 (2.0)	3.1 (1.9)
		3	4.6 (2.9)	4.4 (2.7)
		4	7.9 (4.9)	7.6 (4.7)

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

■ HST Type

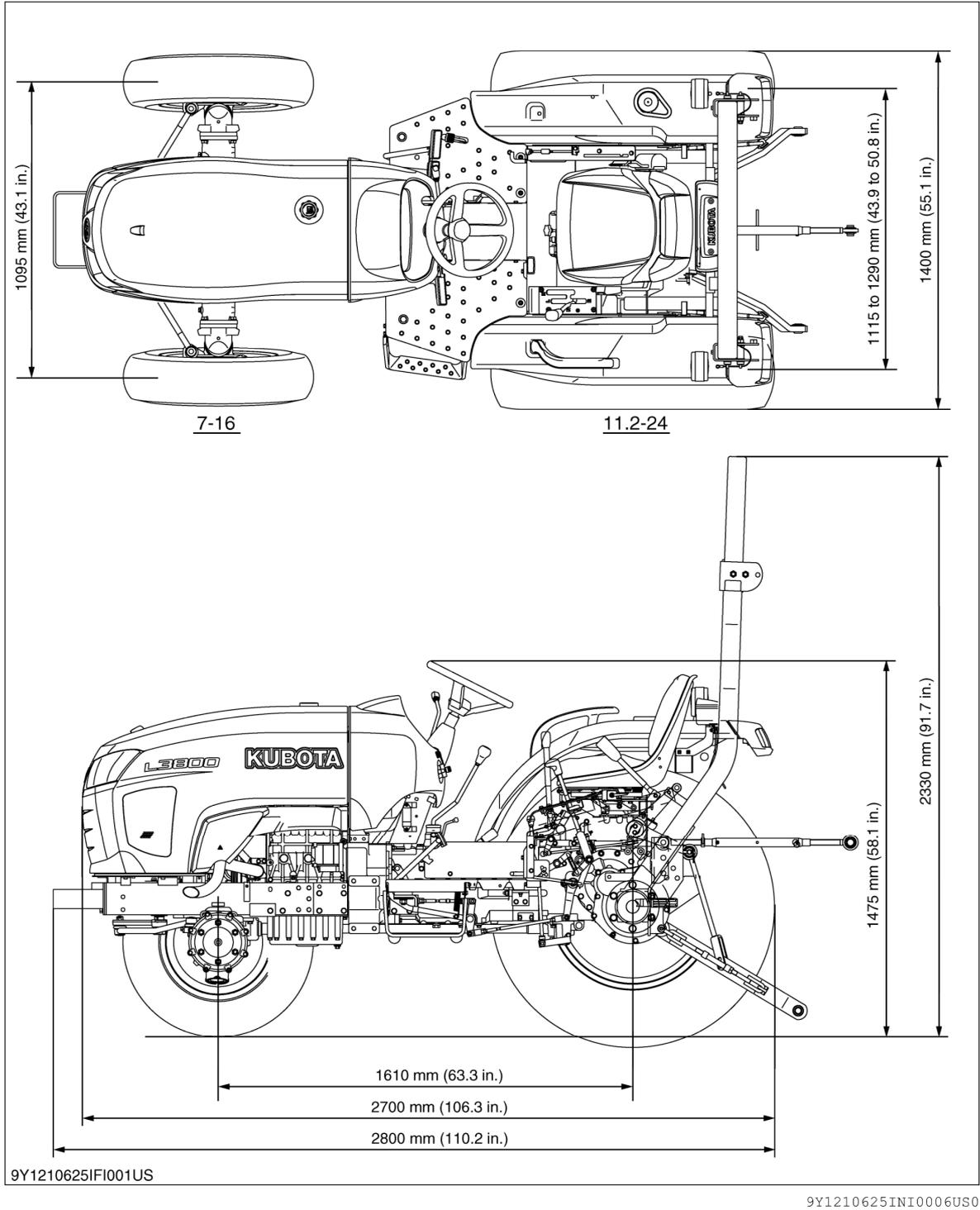
(At rated engine rpm)

Model		L3200	L3800
Tire size (Rear)		11.2-24	
	Range gear shift lever	km/h (mph)	km/h (mph)
Forward	L	6.5 (4.0)	6.3 (3.9)
	M	11.4 (7.1)	10.9 (6.8)
	H	23.6 (14.7)	22.7 (14.1)
Reverse	L	5.9 (3.6)	5.6 (3.5)
	M	10.2 (6.4)	9.9 (6.1)
	H	21.2 (13.2)	20.5 (12.7)

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

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5. DIMENSIONS



G GENERAL

GENERAL

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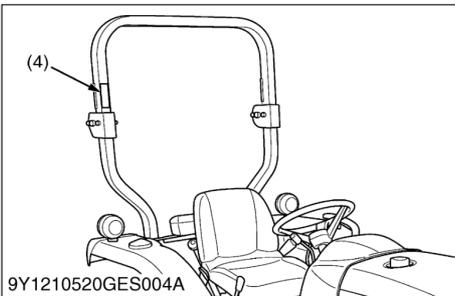
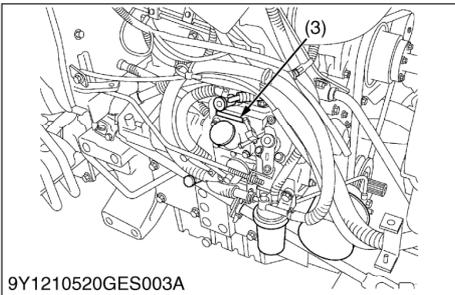
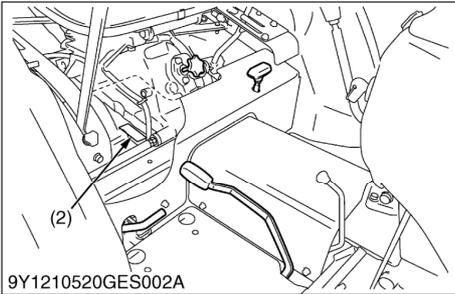
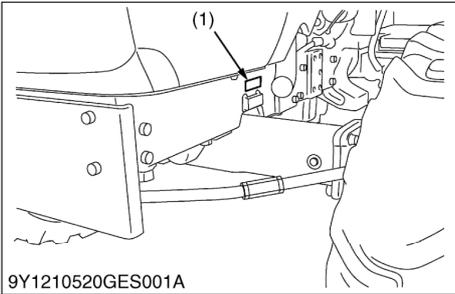
1. TRACTOR IDENTIFICATION

[1] MODEL NAME AND SERIAL NUMBERS

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] E3 ENGINE

[Example: Engine Model Name V2403-M-TE3-XXX]

The emission controls previously implemented in various countries to prevent air pollution will be stepped up as Non-Road Emission Standards continue to change. The timing or applicable date of the specific Non-Road 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 Non-Road Emission regulations. For Kubota Engines, E3 will be the designation that identifies engine models affected by the next emission phase (See the table below).

When servicing or repairing ###-E3 series engines, use only replacement parts for that specific E3 engine, designated by the appropriate E3 Kubota Parts List and perform all maintenance services listed in the appropriate Kubota Operator's Manual or in the appropriate E3 Kubota Workshop Manual. Use of incorrect replacement parts or replacement parts from other emission level engines (for example: E2 engines), may result in emission levels out of compliance with the original E3 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. E3 engines are identified with "ET" at the end of the Model designation, on the US EPA label. Please note: E3 is not marked on the engine.

TYPE :	#####
FAMILY :	#####
APPROVAL NUMBER:	####/#-###-####/#####
 KUBOTA Corporation	
####	

(1) (2)

EMISSION CONTROL INFORMATION	
THIS ENGINE MEETS 2008 ##### EMISSION REGULATIONS FOR U.S. EPA AND CALIFORNIA NONROAD ENGINES.	
 KUBOTA Corporation	
MODEL :	###-ET-#### ENGINE DISP. : ####
FAMILY :	8 ###, ECS: EM
OUTPUT :	## kW / ### rpm CATEGORY: ## - ## kW
VALVE CLEARANCE (COLD) :	IN ## mm EX ## mm
INJ. TIMING :	### DEG BTDC INJ. LOW IDLE: ## - ## rpm
LOW SULFUR FUEL OR ULTRA LOW SULFUR FUEL ONLY	
CONTACT KUBOTA FOR FUEL SETTING. ####	

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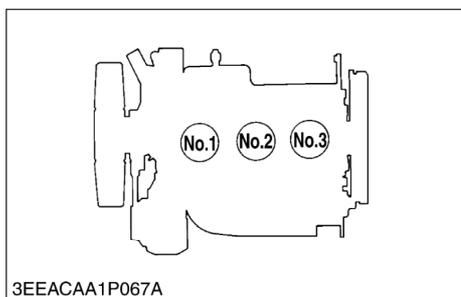
Category (1)	Engine output classification	EU regulation
K	From 19 to less than 37 kW	STAGE IIIA
J	From 37 to less than 75 kW	STAGE IIIA
I	From 75 to less than 130 kW	STAGE IIIA

Category (2)	Engine output classification	EPA 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 3
	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.

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[3] CYLINDER NUMBER

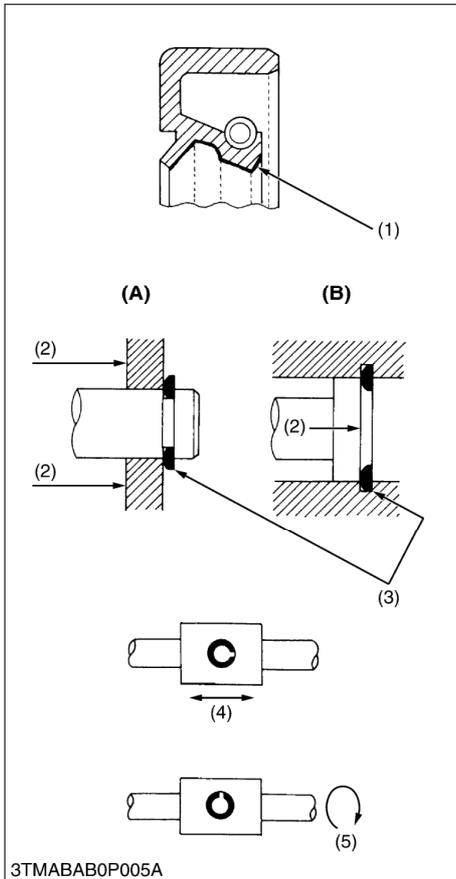


The cylinder numbers of KUBOTA diesel engine are designated as shown in the figure.

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

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2. GENERAL PRECAUTIONS



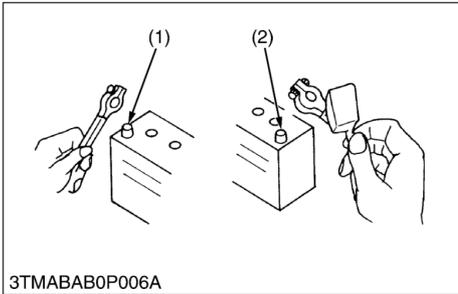
- When you disassemble, carefully put the parts in a clean area to make it easy to find the parts. You must install the screws, bolts and nuts in their initial position to prevent the reassembly errors.
- When it is necessary to use special tools, use KUBOTA special tools. Refer to the drawings when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

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3. HANDLING PRECAUTIONS FOR ELECTRICAL PARTS AND WIRING



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

■ IMPORTANT

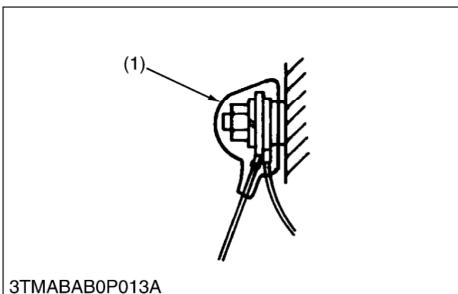
- Check electrical wiring for damage and loosened connection every year.
- When removing the battery cables, disconnect the negative cable first. When installing the battery cables, connect the positive cable first.

(1) Negative Terminal

(2) Positive Terminal

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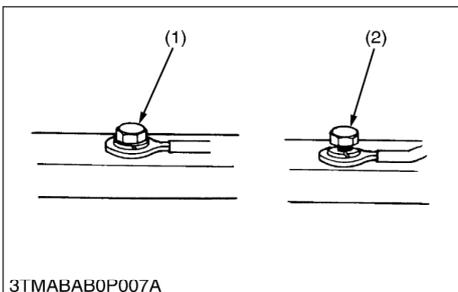
[1] WIRING



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

(1) Cover
(Securely Install Cover)

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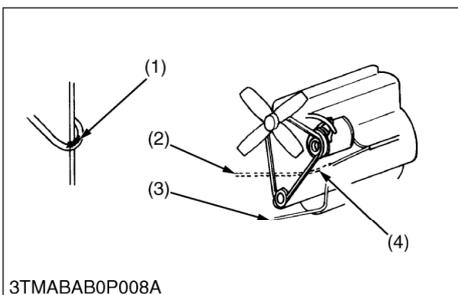


- Securely tighten wiring terminals.

(1) Correct
(Securely Tighten)

(2) Incorrect
(Loosening Leads to damaged Contact)

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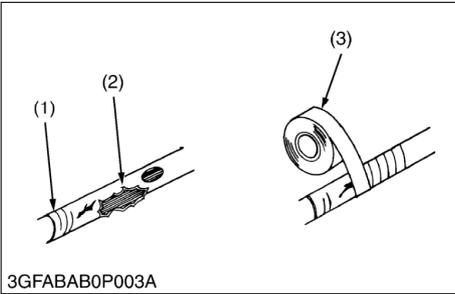


- Do not let wiring contact dangerous part.

(1) Dangerous Part (Sharp Edge)
(2) Wiring (Incorrect)

(3) Wiring (Correct)
(4) Dangerous Part

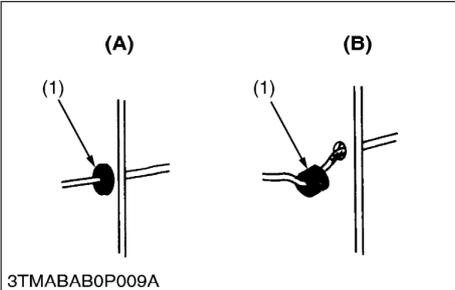
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• Repair or change torn or aged wiring immediately.

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

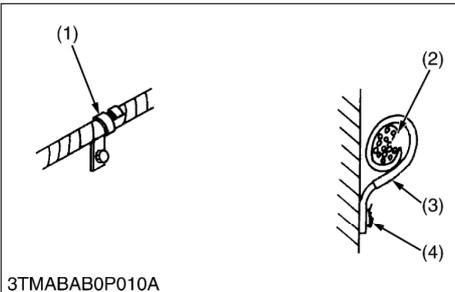
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• Securely insert grommet.

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

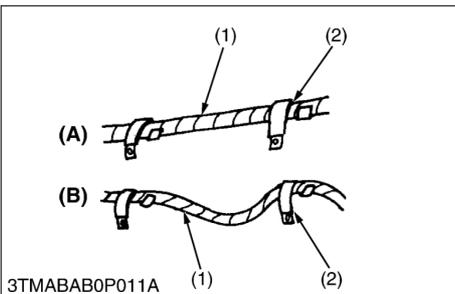
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• Securely clamp, being careful not to damage wiring.

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

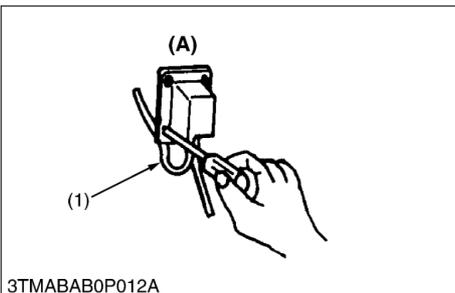
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• Clamp wiring so that there is no twist, unnecessary sag, or excessive tension, except for movable part, where sag be required.

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

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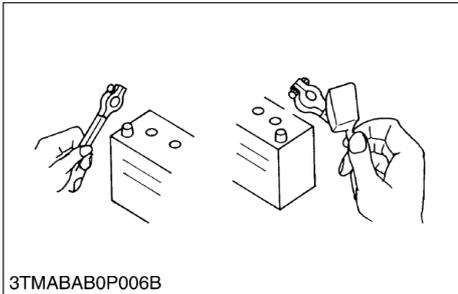


• In installing a part, be careful not to get wiring caught by it.

- (1) Wiring
- (A) Incorrect

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[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.

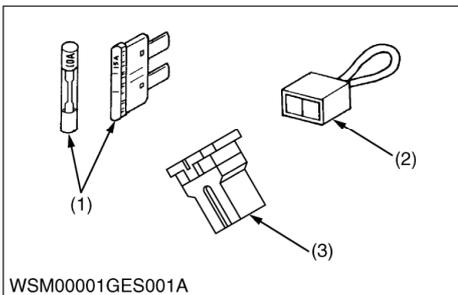
! DANGER

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



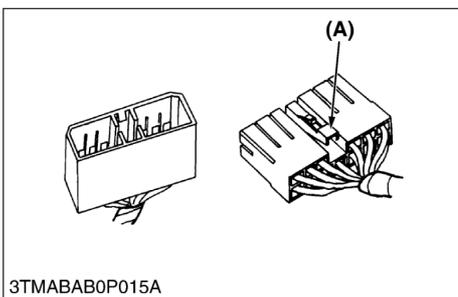
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- Use fuses with specified capacity. Neither too large nor small capacity fuse is acceptable.
- Never use steel nor copper wire in place of fuse.
- Do not install working light, radio set, etc. on machine which is not provided with reserve power supply.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

- (1) Fuse (3) Slow Blow Fuse
 (2) Fusible Link

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[4] CONNECTOR

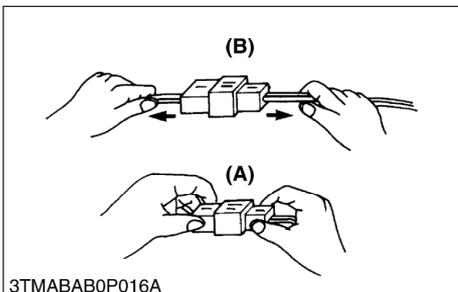


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- For connector with lock, push lock to separate.

(A) Push

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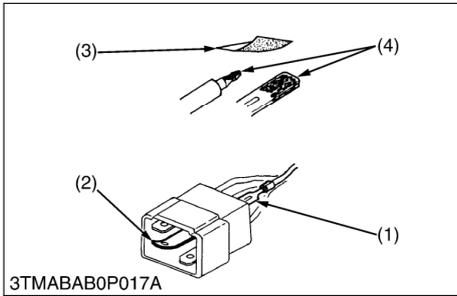


3TMABAB0P016A

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

(A) Correct (B) Incorrect

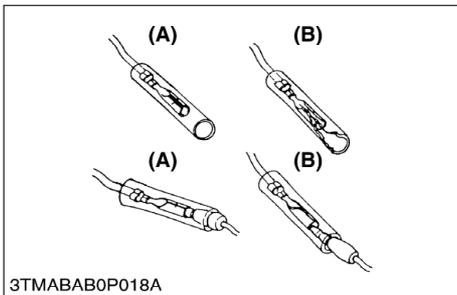
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- Use sandpaper to remove rust from terminals.
- Repair deformed terminal. Make sure that there is no terminal being exposed or displaced.

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

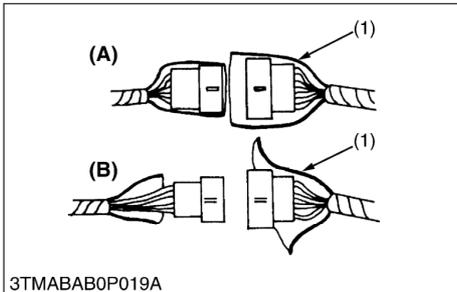
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- Make sure that there is no female connector being too open.

- (A) Correct
- (B) Incorrect

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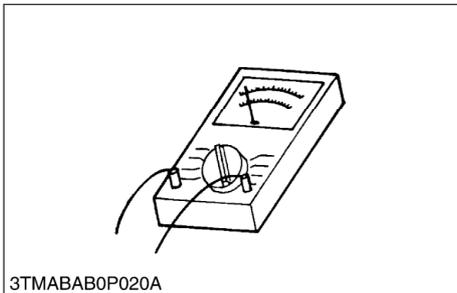


- Make sure that plastic cover is large enough to cover whole connector.

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

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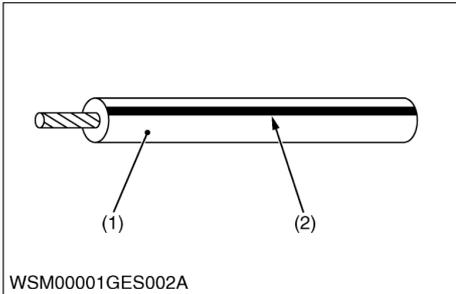
[5] CIRCUIT TESTER



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

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[6] COLOR OF WIRING



- Colors of wire are specified to the color codes.
- This symbol of "/" shows color with stripe (s).

(An example)

Red stripe on white color: W/R

Color of wiring	Color code
Black	B
Brown	Br
Green	G
Gray	Gy or Gr
Blue	L
Light Green	Lg
Orange	Or
Pink	P
Purple	Pu or V
Red	R
Sky Blue	Sb
White	W
Yellow	Y

(1) Wire Color

(2) Stripe

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4. LUBRICANTS, FUEL AND COOLANT

No.	Place		Capacity		Lubricants, fuel and coolant
			L3200	L3800	
1	Fuel		38.0 L 10.0 U.S.gals 8.4 Imp.gals		<ul style="list-style-type: none"> No. 2-D diesel fuel No. 1-D diesel fuel if temperature is below -10 °C (14 °F)
2	Coolant		6.0 L 6.3 U.S.qts 5.3 Imp.qts		Fresh clean water with anti-freeze
	Recovery tank		0.6 L 0.63 U.S.qts 0.53 Imp.qts		
3	Engine crankcase (with filter)		5.7 L 6.0 U.S.qts 5.0 Imp.qts	7.1 L 7.5 U.S.qts 6.2 Imp.qts	Engine oil: Refer to next page. <ul style="list-style-type: none"> Above 25 °C (77 °F) SAE30, 10W-30 or 15W-40 0 to 25 °C (32 to 77 °F) SAE20, 10W-30 or 15W-40 Below 0 °C (32 °F) SAE10W, 10W-30 or 15W-40
4	Transmission case	Manual Transmission	27.5 L 7.3 U.S.gals 6.1 Imp.gals		KUBOTA UDT or SUPER UDT fluid*
	Transmission case	HST	23.5 L 6.2 U.S.gals 5.2 Imp.gals		
5	Front axle case		4.5 L 4.8 U.S.qts 4.0 Imp.qts		KUBOTA UDT or SUPER UDT fluid* or SAE 80-90 gear oil

Greasing

No.	Place	No. of greasing point	Capacity	Type of grease
6	Front axle support	2	Until grease overflows	Multipurpose type grease NLGI-2 or NLGI-1 (GC-LB)
	Clutch pedal	1		
	Brake pedal	1		
	Pedal shaft	1		
	Battery terminal	2		
	Lift rod	1		
	Tie-rod end	2		

*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:
- 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)	
	Engines except external EGR	Engines with external EGR
High Sulfur Fuel (≥ 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 (< 500 ppm) or Ultra Low Sulfur Fuel (< 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 machine.**

	Without EGR	With external EGR
Model	L3200, L3800	–

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).
- If diesel fuel with sulfur content greater than 0.5 % sulfur content is used, reduce the service interval for engine oil and filter by 50 %.
- DO NOT use diesel fuel with sulfur content greater than 1.0 %.
- 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)
- Since this engine adopts EPA Tier 4 and Interim Tier 4 standards, the use of low sulfur fuel or ultra low sulfur fuel is mandatory in EPA regulated area (North America). Therefore, please use No. 2-D S500 or S15 diesel fuel as an alternative to No. 2-D, or use No. 1-D S500 or S15 diesel fuel as an alternative to No. 1-D if outside air temperature is below –10 °C (14 °F).

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.

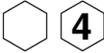
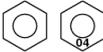
- Indicated capacities of water and oil are manufacturer's estimate.

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

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[2] STUD BOLTS

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

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[3] METRIC SCREWS, BOLTS AND NUTS

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

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

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[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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Full Download: <https://www.aresairmanual.com/downloads/kubota-l3200-l3800-service-manual/>

6. MAINTENANCE CHECK LIST

No.	Item		Service Interval														After since	Reference page			
			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-22		
4	Battery condition	Check		☆		☆		☆		☆		☆		☆		☆	every 100 Hr	G-23, G-24	*3		
5	Fan belt	Adjust		☆		☆		☆		☆		☆		☆		☆	every 100 Hr	G-25			
6	Clutch	Adjust	★	☆		☆		☆		☆		☆		☆		☆	every 100 Hr	G-16, G-25			
7	Brake	Adjust		☆		☆		☆		☆		☆		☆		☆	every 100 Hr	G-25			
8	Air cleaner element	Clean		☆		☆		☆		☆		☆		☆		☆	every 100 Hr	G-26	*1	@	
		Replace																every 1 year	G-31	*2	
9	Fuel filter element	Clean		☆		☆		☆		☆		☆		☆		☆	every 100 Hr	G-26		@	
		Replace								☆								every 400 Hr	G-26		@
10	Fuel line	Check		☆		☆		☆		☆		☆		☆		☆	every 100 Hr	G-27		@	
		Replace																every 2 years	G-27		@
11	Engine oil	Change	★			☆				☆				☆			every 200 Hr	G-17, G-27			
12	Engine oil filter	Replace	★			☆				☆				☆			every 200 Hr	G-17, G-27			
13	Transmission oil filter (HST)	Replace	★			☆				☆				☆			every 200 Hr	G-18, G-27			
14	Toe-in	Adjust				☆				☆				☆			every 200 Hr	G-27			
15	Radiator hose and clamp	Check				☆				☆				☆			every 200 Hr	G-28			
		Replace																every 2 years	G-28		
16	Power steering oil line	Check				☆				☆				☆			every 200 Hr	G-28			
		Replace																every 2 years	G-28		
17	Intake air line	Check				☆				☆				☆			every 200 Hr	G-28		@	
		Replace																every 2 years	G-28		@
18	Oil cooler line (HST)	Check				☆				☆				☆			every 200 Hr	G-28			
		Replace																every 2 years	G-28		
19	Hydraulic oil filter	Replace	★							☆							every 400 Hr	G-19, G-29			
20	Transmission fluid	Change								☆							every 400 Hr	G-29, G-30			
21	Front axle case oil	Change								☆							every 400 Hr	G-31			
22	Front axle pivot	Adjust												☆			every 600 Hr	G-31			
23	Engine valve clearance	Adjust															every 800 Hr	1-S12			