

Product: 2008 Kubota WSM B3200 Tractor Service Repair Workshop Manual
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WSM

**WORKSHOP MANUAL
TRACTOR**

B3200

Kubota

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TO THE READER

This Workshop Manual has been prepared to provide servicing personnel with information on the mechanism, service and maintenance of B3200. It is divided into three parts, "General", "Mechanism" and "Servicing".

■ General

Information on the tractor identification, the general precautions, maintenance check list, check and maintenance and special tools are described.

■ Mechanism

Information on the construction and function are included. This part should be understood before proceeding with troubleshooting, disassembling and servicing.

Refer to Diesel Engine / Tractor Mechanism Workshop Manual (Code No. 9Y021-01876 / 9Y021-18201) for the one which has not been described to this workshop manual.

■ Servicing

Information on the troubleshooting, servicing specification lists, tightening torque, checking and adjusting, disassembling and assembling, and servicing which cover procedures, precautions, factory specifications and allowable limits.

All information illustrations and specifications contained in this manual are based on the latest product information available at the time of publication.

The right is reserved to make changes in all information at any time without notice.

Due to covering many models of this manual, information or picture being used, have not been specified as one model.

October 2008

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SAFETY FIRST

This symbol, the industry's "Safety Alert Symbol", is used throughout this manual and on labels on the machine itself to warn of the possibility of personal injury. Read these instructions carefully.

It is essential that you read the instructions and safety regulations before you attempt to repair or use this unit.



DANGER

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



WARNING

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



CAUTION

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



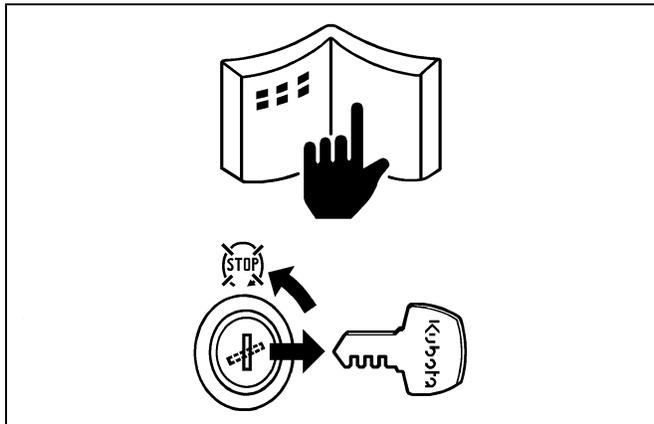
IMPORTANT

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



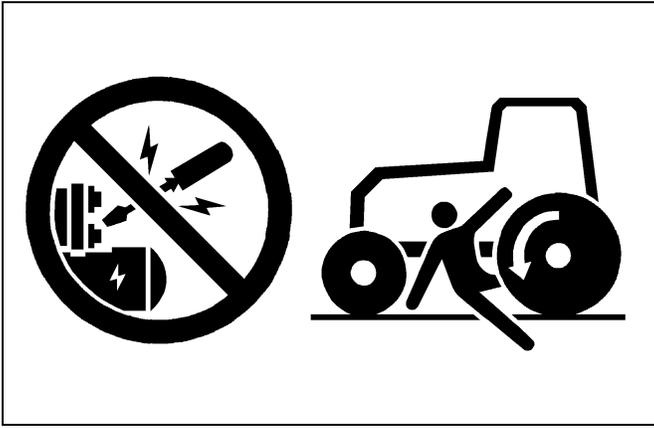
NOTE

: Gives helpful information.



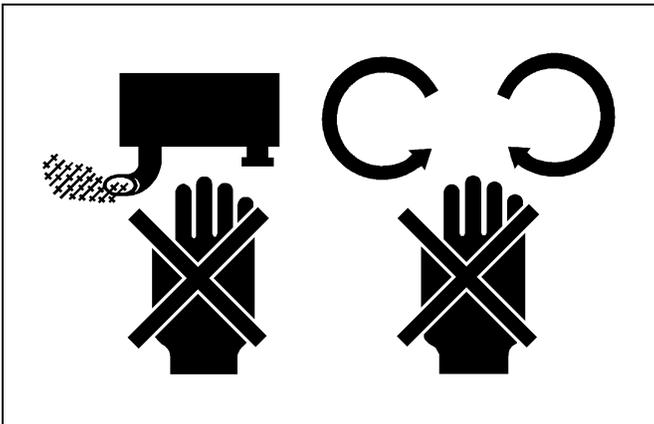
BEFORE SERVICING AND REPAIRING

- 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 firm and level ground, and set the parking brake.
- Lower the implement to the ground.
- Stop the engine, and remove the key.
- Disconnect the battery negative cable.
- Hang a "**DO NOT OPERATE**" tag in operator station.



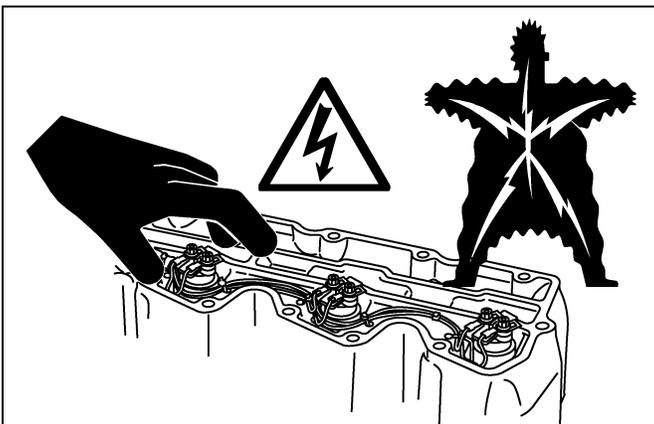
SAFETY STARTING

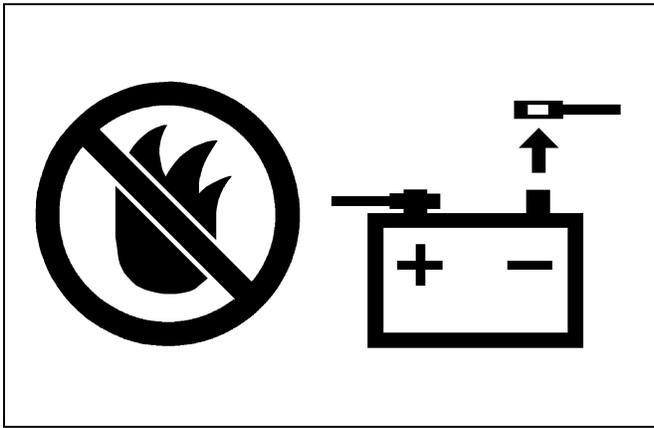
- Do not start the engine by shorting across starter terminals or bypassing the safety start switch.
- Do not alter or remove any part of machine safety system.
- Before starting the engine, make sure that all shift levers are in neutral positions or in disengaged positions.
- Never start the engine while standing on ground. Start the engine only from operator's seat.



SAFETY WORKING

- Do not work on the machine while under the influence of alcohol, medication, or other substances or while fatigued.
- Wear close fitting clothing and safety equipment appropriate to the job.
- Use tools appropriate to the work. Makeshift tools, parts, and procedures are not recommended.
- When servicing is performed together by two or more persons, take care to perform all work safely.
- Do not work under the machine that is supported solely by a jack. Always support the machine by safety stands.
- Do not touch the rotating or hot parts while the engine is running.
- Never remove the radiator cap while the engine is running, or immediately after stopping. Otherwise, hot water will spout out from radiator. Only remove radiator cap when cool enough to touch with bare hands. Slowly loosen the cap to first stop to relieve pressure before removing completely.
- Escaping fluid (fuel or hydraulic oil) under pressure can penetrate the skin causing serious injury. Relieve pressure before disconnecting hydraulic or fuel lines. Tighten all connections before applying pressure.
- Do not open high-pressure fuel system. High-pressure fluid remaining in fuel lines can cause serious injury. Do not disconnect or attempt repair fuel lines, sensors, or any other components between the high-pressure fuel pump and injectors on engines with high pressure common rail fuel system.
- High voltage exceeding 100 V is generated in the ECU, and is applied to the injector. Pay sufficient caution to electric shock when performing work activities.





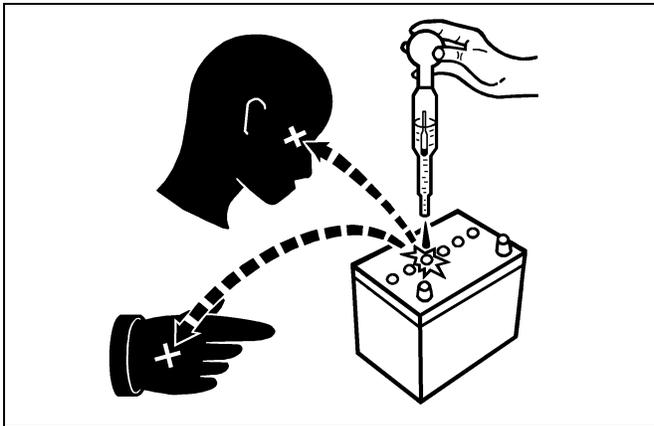
AVOID FIRES

- Fuel is extremely flammable and explosive under certain conditions. Do not smoke or allow flames or sparks in your working area.
- To avoid sparks from an accidental short circuit, always disconnect the battery negative cable first and connect it last.
- Battery gas can explode. Keep sparks and open flame away from the top of battery, especially when charging the battery.
- Make sure that no fuel has been spilled on the engine.



VENTILATE WORK AREA

- If the engine must be running to do some work, make sure the area is well ventilated. Never run the engine in a closed area. The exhaust gas contains poisonous carbon monoxide.



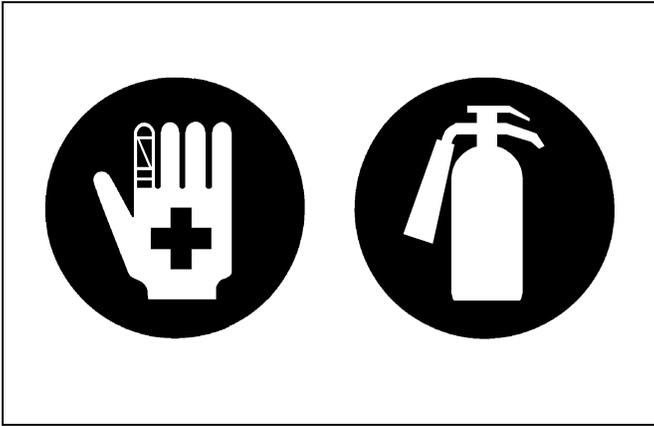
PREVENT ACID BURNS

- Sulfuric acid in battery electrolyte is poisonous. It is strong enough to burn skin, clothing and cause blindness if splashed into eyes. Keep electrolyte away from eyes, hands and clothing. If you spill electrolyte on yourself, flush with water, and get medical attention immediately.



DISPOSE OF FLUIDS PROPERLY

- Do not pour fluids into the ground, down a drain, or into a stream, pond, or lake. Observe relevant environmental protection regulations when disposing of oil, fuel, coolant, electrolyte and other harmful waste.

**PREPARE FOR EMERGENCIES**

- Keep a first aid kit and fire extinguisher handy at all times.
- Keep emergency numbers for doctors, ambulance service, hospital and fire department near your telephone.

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.

(1) Part No. TA240-9848-1

	<h3>⚠ WARNING</h3> <p>TO AVOID INJURY OR DEATH FROM ROLL-OVER:</p> <ul style="list-style-type: none"> • Keep Roll-Over Protective Structures (ROPS) in the upright and locked position. • Fasten SEAT BELT before operating.
	<p>THERE IS NO OPERATOR PROTECTION WHEN THE ROPS IS IN THE FOLDED POSITION:</p> <ul style="list-style-type: none"> • Check the operating area and fold the ROPS only when absolutely necessary. • Do not wear SEAT BELT if ROPS is folded. • Raise and lock ROPS as soon as vertical clearance allows. • Read ROPS related instructions and warnings.

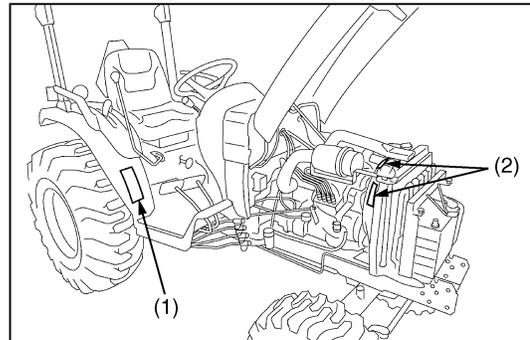
1AGAEBMAP071E

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

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



1AGAECDAPO310



3TBAAALCP001A

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

WARNING

BEFORE DISMOUNTING TRACTOR:

1. ALWAYS SET PARKING BRAKE. Leaving transmission in gear with the engine stopped will not prevent tractor from rolling.
2. PARK ON LEVEL GROUND WHENEVER POSSIBLE. If parking on a slope, position tractor across the slope.
3. LOWER ALL IMPLEMENTS TO THE GROUND.
4. STOP THE ENGINE.



1AGAEBMAP069E

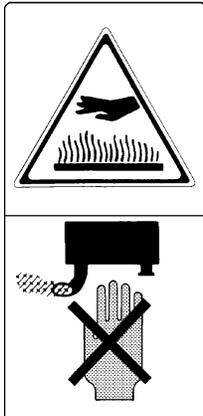
(2) Part No. 6C300-4741-3
No fire



LOW SULFUR FUEL OR ULTRA LOW SULFUR FUEL ONLY

1AGAECDAPO58E

(4) Part No. 6C090-4959-1
Do not touch hot surface like muffler, etc.



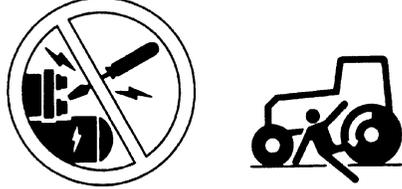
1AGAECDAPO320

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



1AGAECDAPO310

(3) Part No. 6C090-4965-1

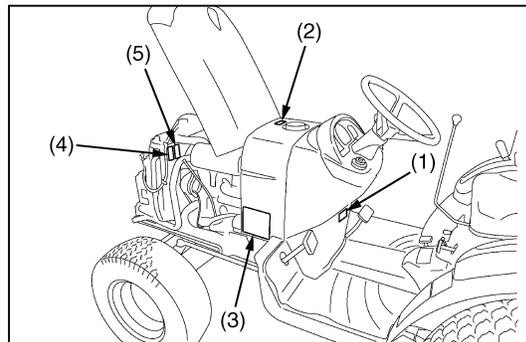


DANGER

TO AVOID POSSIBLE INJURY OR DEATH FROM A MACHINE RUNAWAY.

1. Do not start engine by shorting across starter terminals or bypassing the safety start switch. Machine may start in gear and move if normal starting circuitry is bypassed.
2. Start engine only from operator's seat with transmission and PTO OFF. Never start engine while standing on the ground.

1AGAEBMAP074E



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

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.

1AGAEBMAP068E

(2) Part No. 6C120-4745-1

WARNING

TO AVOID PERSONAL INJURY:

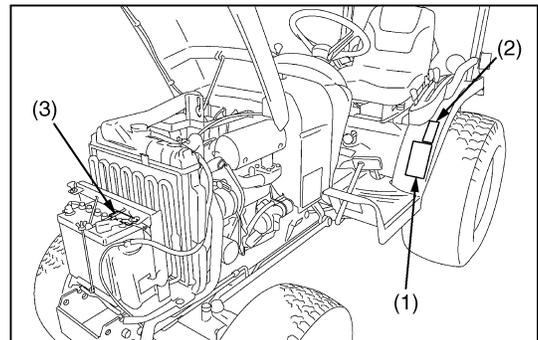
1. Do not use the 2nd PTO speed with implements designed for 540rpm.
2. Use the 2nd PTO speed only when mid PTO or higher rpms are specifically recommended by the implement manufacturer.

1AGAECDAPO330

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

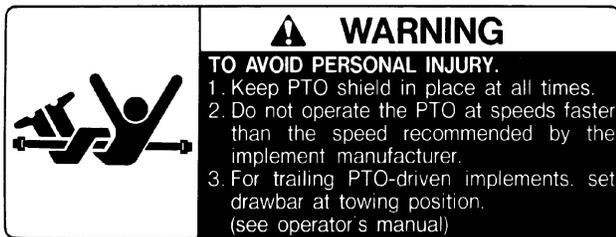
55B24LS (51R-430)	 FLAMMABLES  SHIELD EYES  KEEP OUT OF THE REACH OF CHILDREN  CAUTIOUS OF SULFURIC ACID  READ INSTRUCTION MANUAL CAREFULLY  EXPLOSIVE
<p>HYDROMETER</p> <p>OK CHARGE REPLACE BATTERY BATTERY BATTERY</p>  <p>DK 83324</p>	 <p>LEAD RECYCLE RETURN</p> <p>DANGER</p> <ul style="list-style-type: none"> • DUE TO HYDROGEN GAS GENERATED FROM BATTERY, HANDLING WITHOUT CARE CAN CAUSE FIRE AND EXPLOSION. • THIS 12V BATTERY IS ONLY FOR STARTING ENGINE. DO NOT APPLY THIS PRODUCT FOR OTHER USES. • CHARGE THIS BATTERY ONLY AT WELL VENTILATED PLACES, AND AVOID SHORTS OR SPARKS. • REFER TO THE INSTRUCTION MANUAL OF VEHICLE OR BATTERY BEFORE USING BOOSTER CABLE. • SULFURIC ACID MAY CAUSE BLINDNESS OR SEVERE BURN. IN CASE EYES, SKIN, CLOTHES OR ANY ARTICLES ARE STAINED WITH ACID, FLUSH OBJECTS IMMEDIATELY WITH WATER. IF ACID BEING SWALLOWED, DRINK PLENTY OF WATER PROMPTLY. IN CASE OF ACCIDENTAL CONTACT, CONSULT A DOCTOR IMMEDIATELY. • BATTERY FILLED WITH ACID (DO NOT TILT OR SPILL) -FLAMMABLE. DO NOT CHARGE NEAR FIRE OR SPARKS • DO NOT CHARGE RAPIDLY •DO NOT DISASSEMBLE THE BATTERY (SEALED TYPE)

1AGAECDAPO59E



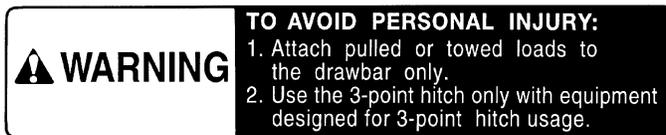
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(1) Part No. TA040-4959-3



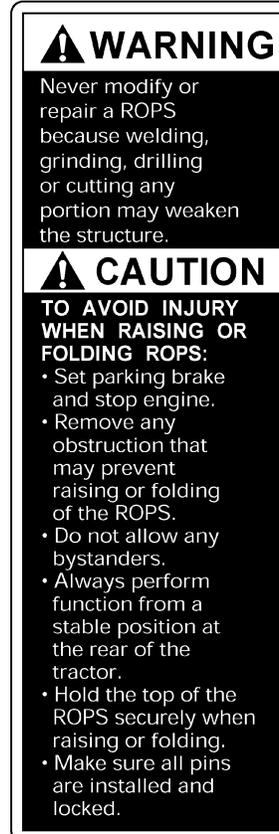
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(2) Part No. 6C140-4744-1

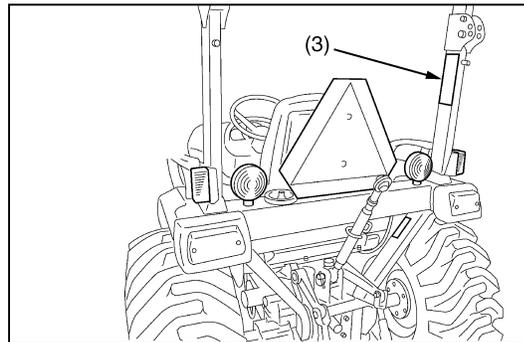
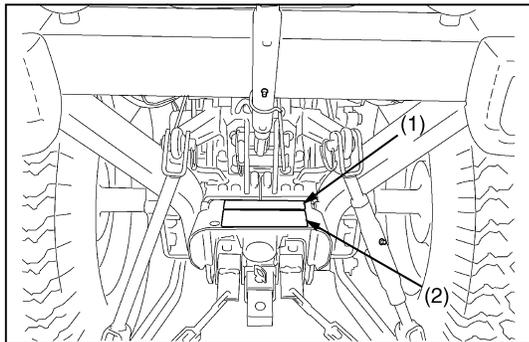


1AGAEBMAP076E

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



1AGAEBMAP080E



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 replaced component.
5. Mount new danger, warning and caution labels by applying on a clean dry surface and pressing any bubbles to outside edge.

3TBAAALCP004A

SPECIFICATIONS

Model		B3200HSD		B3200HSDWO	
PTO power		17.2 kW (23.0 HP)*			
Engine	Maker	KUBOTA			
	Model	V1505-E3-D24			
	Type	Indirect injection, vertical, water-cooled, 4 cycle diesel			
	Number of cylinders	4			
	Bore and stroke	78 x 78.4 mm (3.1 x 3.1 in.)			
	Total displacement	1498 cm ³ (91.5 cu.in.)			
	Engine gross power	23.9 kW (32.0 HP)*			
	Rated revolution	2700 min ⁻¹ (rpm)			
	Maximum torque	90 N·m (67 lbf·ft)			
	Battery	12 V, RC : 79 min, CCA : 433 A			
Capacities	Fuel tank	31 L (8.1 U.S.gals, 6.8 Imp.gals)			
	Engine crankcase (with filter)	5.4 L (5.7 U.S.qts, 4.8 Imp.qts)			
	Engine coolant	4.5 L (4.7 U.S.qts, 4.0 Imp.qts)			
	Transmission case	14.5 L (3.83 U.S.gals, 3.19 Imp.gals)			
Dimensions	Overall length (without 3-point hitch)	2520 mm (99.2 in.)			
	Overall width	1366 mm (53.8 in.)			
	Overall height (with ROPS)	2270 mm (89.4 in.)			
	Wheel base	1666 mm (65.6 in.)			
	Minimum ground clearance	370 mm (14.6 in.)			
	Tread	Front	935 mm (36.8 in.)		
	Rear	1050 mm (41.3 in.)			
Weight (with ROPS)		800 kg (1763 lbs)			
Clutch		Dry single plate			
Travelling system	Tires	Front	7 - 12		
		Rear	12.4 - 16		
	Steering	Integral type power steering			
	Transmission	Main-hydrostatic transmission, 3 range gear shift (3 forward, 3 reverse)			
	Brake	Wet disk type			
Min. turning radius (with brake)	2.1 m (6.9 feet)				
Hydraulic system	Hydraulic control system	Quarter inching valve			
	Pump capacity	3-point hitch : 25.3 L/min (6.68 U.S.gals/min, 5.57 Imp.gals/min) Power steering : 12.2 L/min (3.22 U.S.gals/min., 2.68 Imp.gals/min)			
	3-point hitch	SAE Category 1			
	Max. lift force	At lift points	750 kg (1655 lbs)		
	24 in. behind lift points	590 kg (1300 lbs)			
PTO system	Rear PTO	Shaft	SAE 1-3/8, 6 splines		
		PTO / Engine speed rpm	1 speed 540 min ⁻¹ (rpm) at 2600 min ⁻¹ (rpm)		
	Mid PTO	Shaft	U.S.A. No.5 (KUBOTA 10-tooth) involute spline		
		PTO / Engine speed rpm	1 speed 2500 min ⁻¹ (rpm) at 2578 min ⁻¹ (rpm)		

Note : * Manufacturer's estimate

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

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TRAVELLING SPEEDS

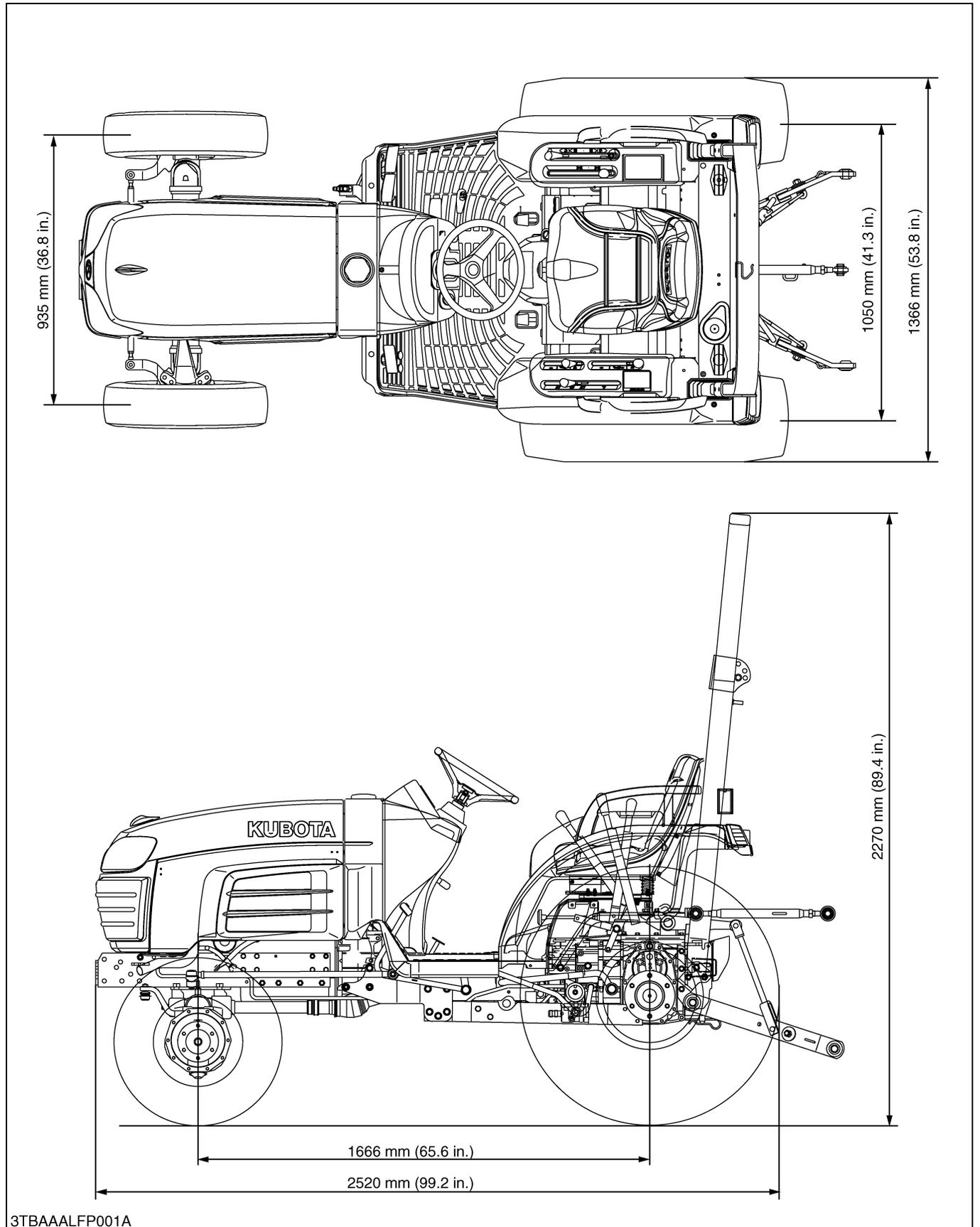
(At rated engine rpm)

Model		B3200			
Tire size (Rear)		12.4 -16 Farm		13.6 - 16 Turf	
	Range gear shift lever	km/h	mph	km/h	mph
Forward	Low	0 to 5.3	0 to 3.3	0 to 5.4	0 to 3.4
	Middle	0 to 9.2	0 to 5.8	0 to 9.4	0 to 6.0
	High	0 to 19.8	0 to 12.4	0 to 20.3	0 to 12.7
Reverse	Low	0 to 4.2	0 to 2.6	0 to 4.3	0 to 2.7
	Middle	0 to 7.2	0 to 4.5	0 to 7.4	0 to 4.6
	High	0 to 15.9	0 to 9.9	0 to 16.3	0 to 10.2

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

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DIMENSIONS



G GENERAL

GENERAL

CONTENTS

1. TRACTOR IDENTIFICATION	G-1
[1] MODEL NAME AND SERIAL NUMBER	G-1
[2] CYLINDER NUMBER	G-2
2. GENERAL PRECAUTIONS	G-3
3. HANDLING PRECAUTIONS FOR ELECTRICAL PARTS AND WIRING ..	G-4
[1] WIRING	G-4
[2] BATTERY	G-6
[3] FUSE	G-6
[4] CONNECTOR	G-7
[5] HANDLING OF CIRCUIT TESTER	G-8
4. LUBRICANTS, FUEL AND COOLANT	G-9
5. TIGHTENING TORQUES	G-11
[1] GENERAL USE SCREWS, BOLTS AND NUTS	G-11
[2] STUD BOLTS	G-11
[3] METRIC SCREWS, BOLTS AND NUTS	G-12
[4] AMERICAN STANDARD SCREWS, BOLTS AND NUTS WITH UNC OR UNF THREADS	G-12
[5] PLUGS	G-12
6. MAINTENANCE CHECK LIST	G-13
7. CHECK AND MAINTENANCE	G-15
[1] DAILY CHECK	G-15
[2] CHECK POINTS OF INITIAL 50 HOURS	G-16
[3] CHECK POINTS OF EVERY 50 HOURS	G-20
[4] CHECK POINTS OF EVERY 100 HOURS	G-23
[5] CHECK POINTS OF EVERY 200 HOURS	G-27
[6] CHECK POINTS OF EVERY 400 HOURS	G-29
[7] CHECK POINTS OF EVERY 800 HOURS	G-31
[8] CHECK POINTS OF EVERY 1500 HOURS	G-31
[9] CHECK POINTS OF EVERY 3000 HOURS	G-31
[10] CHECK POINTS OF EVERY 1 YEAR	G-31
[11] CHECK POINTS OF EVERY 2 YEARS	G-32
[12] OTHERS	G-35
8. SPECIAL TOOLS	G-37
[1] SPECIAL TOOLS FOR ENGINE	G-37
[2] SPECIAL TOOLS FOR TRACTOR	G-43
9. TIRES	G-49
[1] TIRE PRESSURE	G-49
[2] TREAD ADJUSTMENT	G-50
(1) Front Wheels	G-50
(2) Rear Wheels	G-50
[3] TIRE LIQUID INJECTION	G-51
10. IMPLEMENT LIMITATIONS	G-53

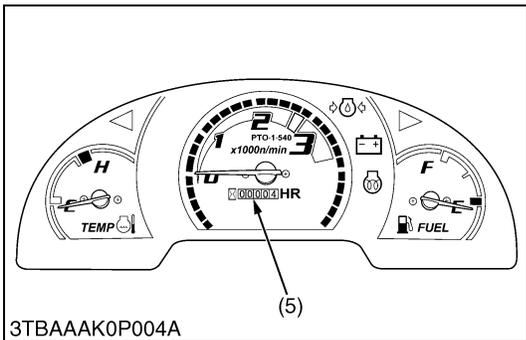
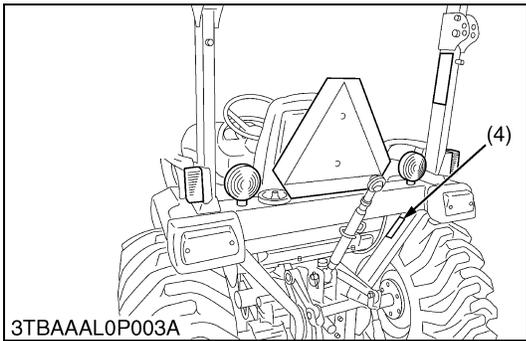
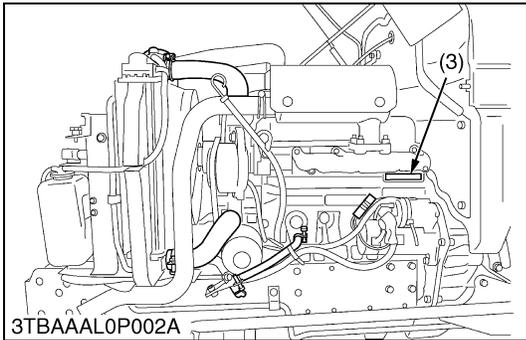
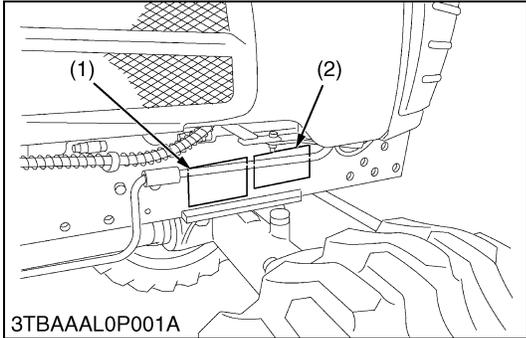
1. TRACTOR IDENTIFICATION

[1] MODEL NAME AND SERIAL NUMBER

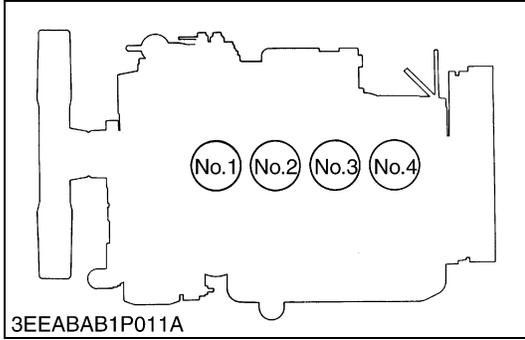
When contacting your local KUBOTA distributor, always specify engine serial number, tractor serial number, ROPS serial number and hour meter reading.

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

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[2] CYLINDER NUMBER

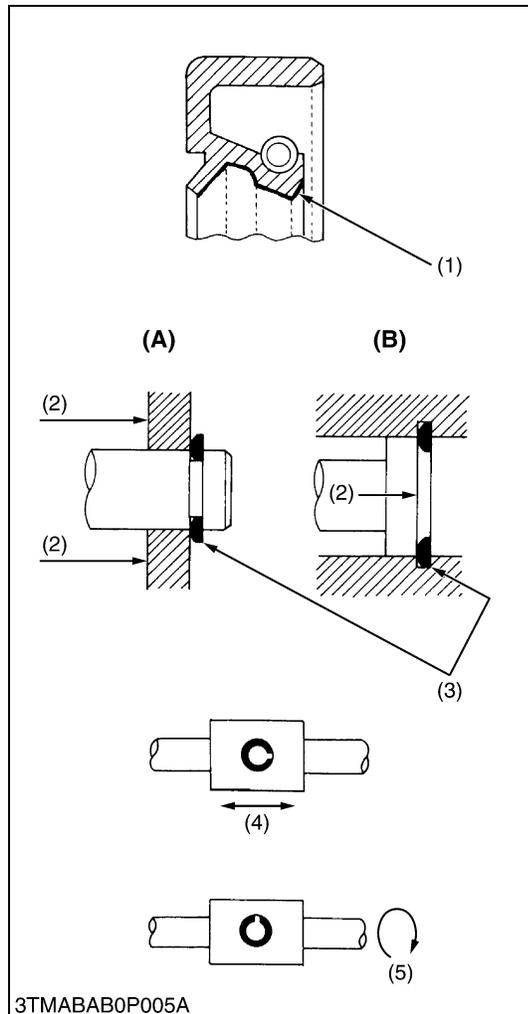


The cylinder numbers of KUBOTA diesel engine are designated as shown in the figure.

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

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2. GENERAL PRECAUTIONS



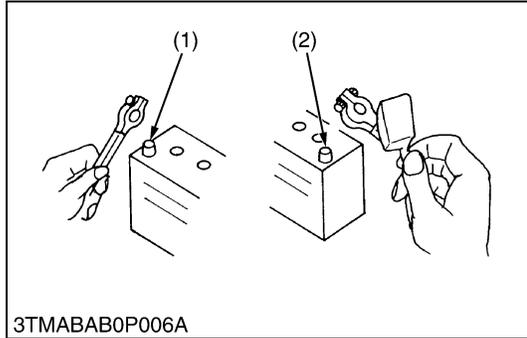
- During disassembly, carefully arrange removed parts in a clean area to prevent confusion later. Screws, bolts and nuts should be installed in their original position to prevent reassembly errors.
- When special tools are required, use KUBOTA genuine special tools. Special tools which are not frequently used should be made according to the drawings provided.
- Before disassembling or servicing electrical wires, always disconnect the ground cable from the battery first.
- Remove oil and dirt from parts before measuring.
- Use only KUBOTA genuine parts for parts replacement to maintain machine performance and to assure safety.
- Gaskets and O-rings must be replaced during reassembly. Apply grease to new O-rings or oil seals before assembling. See the figure left side.
- When reassembling external snap rings or internal snap rings, they must be positioned so that sharp edge faces against the direction from which a force is applied. See the figure left side.
- When inserting spring pins, their splits must face the direction from which a force is applied. See the figure left side.
- To prevent damage to the hydraulic system, use only specified fluid or equivalent.

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

(A) External Snap Ring
(B) Internal Snap Ring

W1010787

3. HANDLING PRECAUTIONS FOR ELECTRICAL PARTS AND WIRING



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

■ IMPORTANT

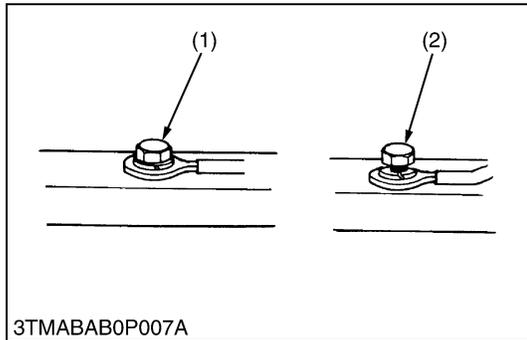
- Check electrical wiring for damage and loosened connection every year. To this end, educate the customer to do his or her own check and at the same time recommend the dealer to perform periodic check for a fee.
- Do not attempt to modify or remodel any electrical parts and wiring.
- When removing the battery cables, disconnect the negative cable first. When installing the battery cables, connect the positive cable first.

(1) Negative Terminal

(2) Positive Terminal

W1011102

[1] WIRING



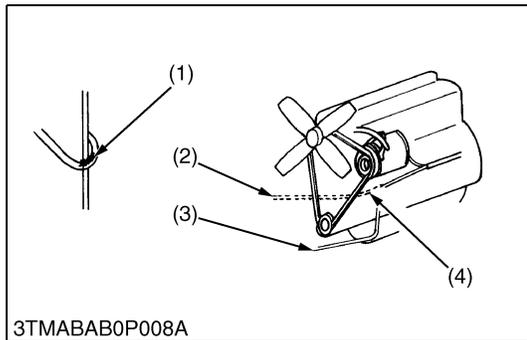
3TMABAB0P007A

- Securely tighten wiring terminals.

(1) Correct (Securely Tighten)

(2) Incorrect (Loosening Leads to Faulty Contact)

W1011256



3TMABAB0P008A

- Do not let wiring contact dangerous part.

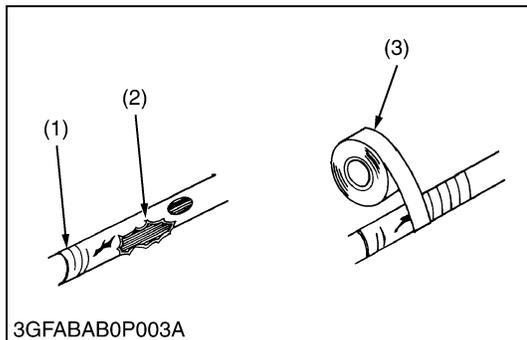
(1) Dangerous Part

(3) Wiring (Correct)

(2) Wiring (Incorrect)

(4) Dangerous Part

W1011360



3GFABAB0P003A

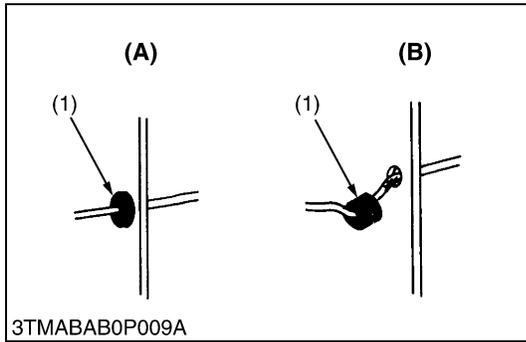
- Repair or change torn or aged wiring immediately.

(1) Aged

(3) Insulating Vinyl Tape

(2) Torn

W1011482

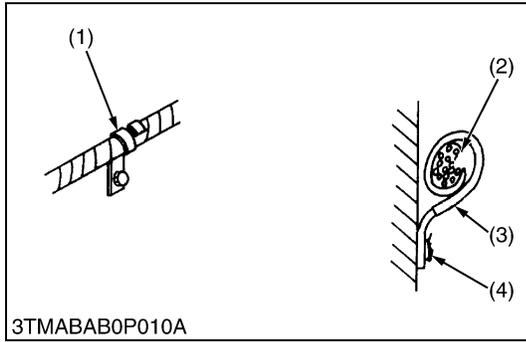


• Securely insert grommet.

(1) Grommet

(A) Correct
(B) Incorrect

W1011601

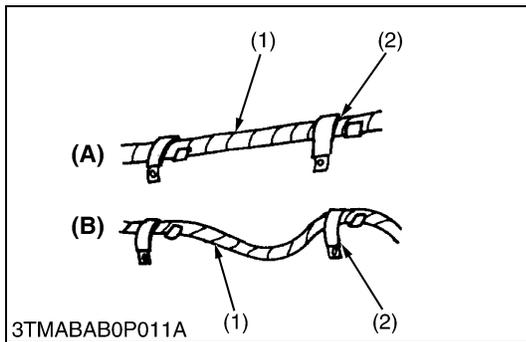


• Securely clamp, being careful not to damage wiring.

(1) Clamp
• Wind Clamp Spirally
(2) Wire Harness

(3) Clamp
(4) Welding Dent

W1011774

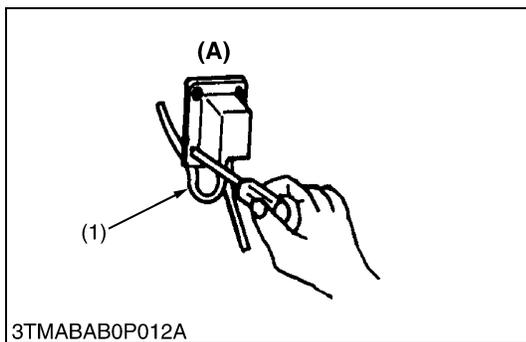


• Clamp wiring so that there is no twist, unnecessary sag, or excessive tension, except for movable part, where sag be required.

(1) Wiring
(2) Clamp

(A) Correct
(B) Incorrect

W1011940

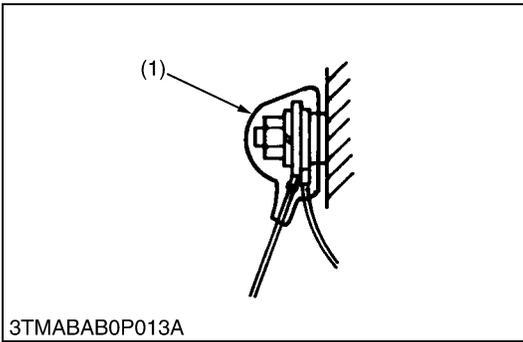


• In installing a part, take care not to get wiring caught by it.

(1) Wiring

(A) Incorrect

W1012065

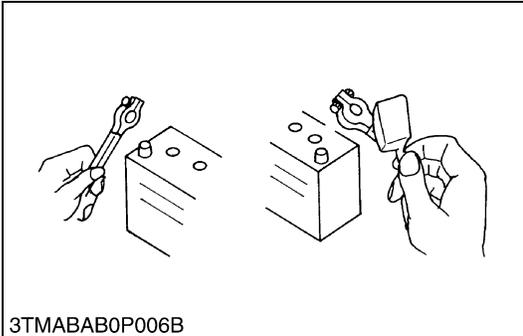


- After installing wiring, check protection of terminals and clamped condition of wiring, only connect battery.

- (1) Cover
- Securely Install Cover

W1012169

[2] BATTERY



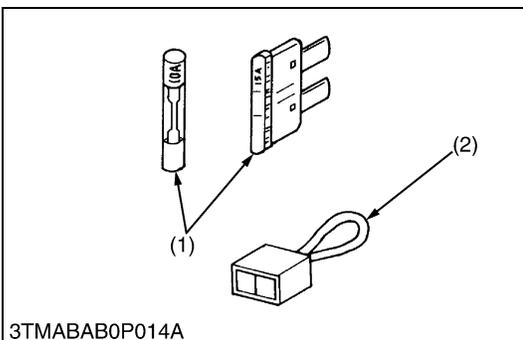
- Take care not to confuse positive and negative terminal posts.
- When removing battery cables, disconnect negative cable first. When installing battery cables, check for polarity and connect positive cable first.
- Do not install any battery with capacity other than is specified (Ah).
- After connecting cables to battery terminal posts, apply high temperature grease to them and securely install terminal covers on them.
- Do not allow dirt and dust to collect on battery.

⚠ CAUTION

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

W1012342

[3] FUSE



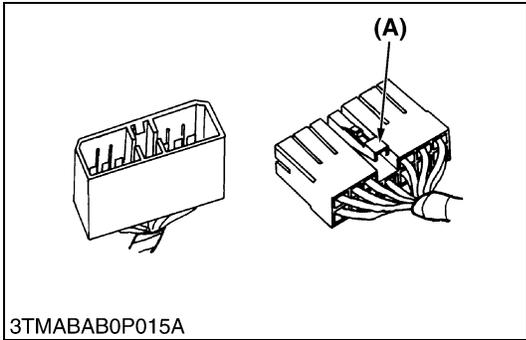
- Use fuses with specified capacity. Neither too large or small capacity fuse is acceptable.
- Never use steel or copper wire in place of fuse.
- Do not install working light, radio set, etc. on machine which is not provided with reserve power supply.
- Do not install accessories if fuse capacity of reserve power supply is exceeded.

(1) Fuse

(2) Slow Blow Fuse

W1012543

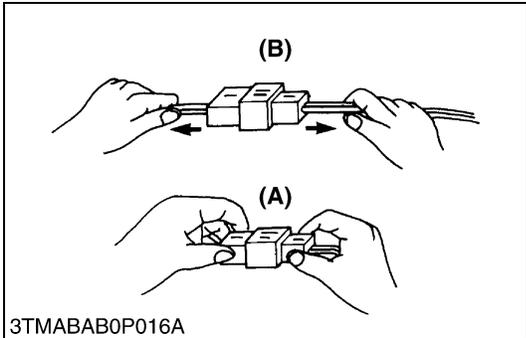
[4] CONNECTOR



- For connector with lock, push lock to separate.

(A) Push

W1012701

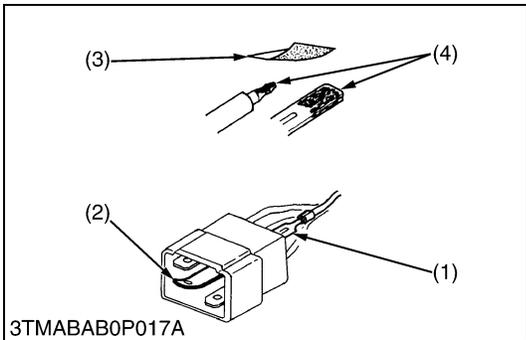


- In separating connectors, do not pull wire harnesses.
- Hold connector bodies to separate.

(A) Correct

(B) Incorrect

W1012798

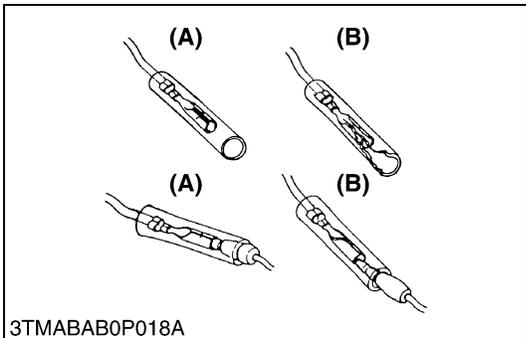


- Use sandpaper to remove rust from terminals.
- Repair deformed terminal. Make certain there is no terminal being exposed or displaced.

- (1) Exposed Terminal
- (2) Deformed Terminal

- (3) Sandpaper
- (4) Rust

W1012915

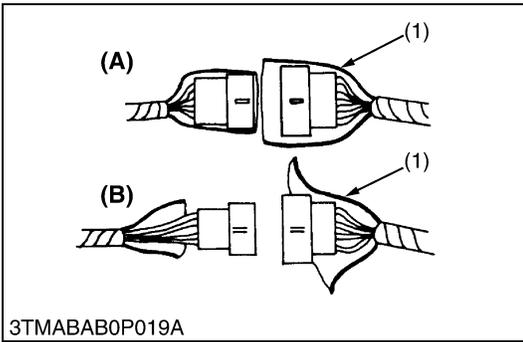


- Make certain that there is no female connector being too open.

(A) Correct

(B) Incorrect

W1013072



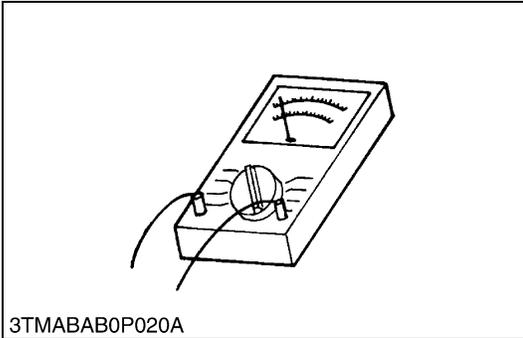
- Make certain plastic cover is large enough to cover whole connector.

(1) Cover

(A) Correct
(B) Incorrect

W1013190

[5] HANDLING OF CIRCUIT TESTER



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

W1013341

4. LUBRICANTS, FUEL AND COOLANT

No.	Locations	Capacities		Lubricants
		B3200		
1	Fuel	31 L 8.2 U.S.gals 6.8 Imp.gals		No. 2-D diesel fuel No. 1-D diesel fuel if temperature is below -10 °C (14 °F)
2	Coolant (with recovery tank)	4.5 L 4.8 U.S.qts 4.0 Imp.qts		Fresh clean water with anti-freeze
3	Engine crankcase (with filter)	5.4 L 5.7 U.S.qts 4.8 Imp.qts		Engine oil : Refer to next page
			Above 25 °C (77 °F)	SAE30, SAE10W-30 or 15W-40
			0 to 25 °C (32 to 77 °F)	SAE20, SAE10W-30 or 15W-40
			Below 0 °C (32 °F)	SAE10W, SAE10W-30 or 15W-40
4	Transmission case	14.5 L 3.83 U.S.gals 3.19 Imp.gals		KUBOTA UDT or SUPER UDT fluid*
5	Front axle case	4.5 L 4.8 U.S.qts 4.0 Imp.qts		KUBOTA UDT or SUPER UDT fluid*, SAE 80- SAE 90 gear oil
Grease				
	Greasing	No. of greasing points	Capacity	Type of grease
6	Speed control pedal	1	Until grease overflow.	Multipurpose grease NLGI-2 or NLGI-1 (GC-LB)
	Top link	1		
	Lifting rod (RH)	1		
	Battery terminal	2	Moderate amount	

*KUBOTA original transmission hydraulic fluid.

■ 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-dulfur 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 of engine oil according to the Fuel : (Low Sulfur or High Sulfur Fuels).

Fuel used	Engine oil classification (API classification)
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

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

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 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 engines 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.

5. TIGHTENING TORQUES

[1] GENERAL USE SCREWS, BOLTS AND NUTS

Screws, bolts and nuts whose tightening torques are not specified in this Workshop Manual should be tightened according to the table below.

Indication on top of bolt	4 No-grade or 4T						7 7T						9 9T		
Material of bolt	SS400, S20C						S43C, S48C						SCr435, SCM435		
Material of opponent part	Ordinariness			Aluminum			Ordinariness			Aluminum			Ordinariness		
Unit															
Diameter	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 (6 mm, 0.24 in.)	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 (8 mm, 0.31 in.)	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 (10 mm, 0.39 in.)	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 (12 mm, 0.47 in.)	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 (14 mm, 0.55 in.)	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 (16 mm, 0.63 in.)	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 (18 mm, 0.71 in.)	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 (20 mm, 0.79 in.)	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

W10345420

[2] STUD BOLTS

Material of opponent part	Ordinariness			Aluminum		
Unit						
Diameter	N·m	kgf·m	lbf·ft	N·m	kgf·m	lbf·ft
M8 (8 mm, 0.31 in.)	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 (10 mm, 0.39 in.)	25 to 31	2.5 to 3.2	18 to 23	20 to 25	2.0 to 2.6	15 to 18
M12 (12 mm, 0.47 in.)	29.5 to 49.0	3.0 to 5.0	21.7 to 36.1	31.4	3.2	23.1

W10481390

[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	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 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

W1016172

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

Grade	SAE GR.5 			SAE GR.8 			
	Unit	N·m	kgf·m	lbf·ft	N·m	kgf·m	lbf·ft
5/16		23.1 to 27.7	2.35 to 2.83	17.0 to 20.5	32.6 to 39.3	3.32 to 4.00	24.0 to 29.0
3/8		48 to 56	4.9 to 5.8	35.0 to 42.0	61.1 to 73.2	6.23 to 7.46	45.0 to 54.0
1/2		109 to 130	11.1 to 13.2	80.0 to 96.0	149.2 to 178.9	15.21 to 18.24	110.0 to 132.0
9/16		149.2 to 178.9	15.21 to 18.24	110.0 to 132.0	217.0 to 260.3	22.12 to 26.54	160.0 to 192.0
5/8		203.4 to 244	20.74 to 24.88	150.0 to 180.0	298.3 to 357.9	30.42 to 36.49	220.0 to 264.0

W1022485

[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 21	1.3 to 2.0	9.4 to 15
	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	49.0 to 58	5.0 to 6.0	37 to 43
	R1/2	59 to 107	6.0 to 11.0	44 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	–	–	–

000001666E

6. MAINTENANCE CHECK LIST

No.	Item		Period	Indication on hour meter								Important	Reference page			
				50	100	150	200	250	300	350	400			450	500	
1	Engine oil	Change	★			☆				☆				G-16		
2	Engine oil filter	Replace	★			☆				☆				G-16		
3	Transmission oil filter (for HST)	Replace	★			☆				☆				G-17		
4	Hydraulic oil filter	Replace	★							☆				G-18		
5	Transmission fluid	Change								☆				G-29		
6	Transmission strainer	Clean	★							☆				G-19		
7	Front axle case oil	Change								☆				G-30		
8	Front axle pivot	Adjust								☆				G-30		
9	Engine start system	Check	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆		G-20		
10	Greasing	—	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆		G-20		
11	Wheel bolt torque	Check	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆		G-22		
12	Battery condition	Check		☆		☆		☆		☆		☆	*4	G-23		
13	Air cleaner element	Primary element	Clean		☆		☆		☆		☆		☆	*1	G-25	
			Replace											*2	@	G-31
		Secondary element	Replace													G-31
14	Fuel filter element	Clean		☆		☆		☆		☆		☆		@	G-25	
		Replace								☆					G-30	
15	Fan belt	Adjust		☆		☆		☆		☆		☆		G-26		
16	Clutch	Adjust	★	☆		☆		☆		☆		☆		G-19		
17	Brake	Adjust		☆		☆		☆		☆		☆		G-26		
18	Radiator hose and clamp	Check				☆				☆				G-28		
		Replace												G-32		
19	Fuel line	Check		☆		☆		☆		☆		☆		@	G-27	
		Replace													G-32	
20	Intake air line	Check				☆				☆				@	G-27	
		Replace													G-32	
21	Toe-in	Adjust				☆				☆				G-28		
22	Engine valve clearance	Adjust												G-31		
23	Fuel injection nozzle injection pressure	Check											@	G-31		
24	Injection pump	Check											@	G-31		
25	Cooling system	Flush												G-32		
26	Coolant	Change												G-32		
27	Fuel system	Bleed												G-35		
28	Clutch housing water	Drain												G-35		
29	Fuse	Replace												G-35		
30	Light bulb	Replace												G-36		

W1035769

■ IMPORTANT

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

No.	Item		Period	Indication on hour meter						After purchase		Important	Reference page		
				550	600	650	700	750	800	1500	3000			1 year	2 years
1	Engine oil		Change		☆					☆				G-16	
2	Engine oil filter		Replace		☆					☆				G-16	
3	Transmission oil filter (for HST)		Replace		☆					☆				G-17	
4	Hydraulic oil filter		Replace							☆				G-18	
5	Transmission fluid		Change							☆				G-29	
6	Transmission strainer		Clean							☆				G-19	
7	Front axle case oil		Change							☆				G-30	
8	Front axle pivot		Adjust							☆				G-30	
9	Engine start system		Check	☆	☆	☆	☆	☆	☆	☆				G-20	
10	Greasing		—	☆	☆	☆	☆	☆	☆	☆				G-20	
11	Wheel bolt torque		Check	☆	☆	☆	☆	☆	☆	☆				G-22	
12	Battery condition		Check		☆		☆			☆			*4	G-23	
13	Air cleaner element	Primary element	Clean		☆		☆			☆			*1	G-25	
		Secondary element	Replace								☆		*2	@	G-31
			Replace									☆			G-31
14	Fuel filter element		Clean		☆		☆			☆				@	G-25
			Replace								☆				G-30
15	Fan belt		Adjust		☆		☆			☆				G-26	
16	Clutch		Adjust		☆		☆			☆				G-19	
17	Brake		Adjust		☆		☆			☆				G-26	
18	Radiator hose and clamp		Check		☆					☆				G-28	
			Replace									☆			G-32
19	Fuel line		Check		☆		☆			☆				@	G-27
			Replace									☆			G-32
20	Intake air line		Check		☆					☆				@	G-27
			Replace									☆			G-32
21	Toe-in		Adjust		☆					☆				G-28	
22	Engine valve clearance		Adjust							☆				G-31	
23	Fuel injection nozzle injection pressure		Check							☆	☆			@	G-31
24	Injection pump		Check								☆			@	G-31
25	Cooling system		Flush									☆		G-32	
26	Coolant		Change									☆		G-32	
27	Fuel system		Bleed											G-35	
28	Clutch housing water		Drain											G-35	
29	Fuse		Replace											G-35	
30	Light bulb		Replace											G-36	

W1026171

■ IMPORTANT

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

**CAUTION**

- **Be sure to check and service the tractor on a flat place with engine shut off, the parking brake on and chock the wheels.**

[1] DAILY CHECK

To prevent trouble from occurring, it is important to know the condition of the tractor. Check the following items before starting.

Checking

- Check areas where previous trouble was experienced.
 - Walk around the tractor.
1. Check the tire pressure, and check for wear and damage.
 2. Check for oil and water leaks.
 3. Check the engine oil level.
 4. Check the transmission fluid level.
 5. Check the coolant level.
 6. Check the condition of seat belt and ROPS attaching hardware.
 7. Check and clean the radiator screen and grille.
 8. Check the nuts of the tires are tight.
 9. Check the number plate or SMV emblem for damage and cleaner replace as necessary if equipped.
 10. Care of danger, warning and caution labels.
 11. Clean around the exhaust manifold and the muffler of the engine.
 - While sitting in the operator's seat.
1. Check the HST pedal, brake pedals and clutch pedal.
 2. Check the parking brake.
 3. Check the steering wheel.
 - Turning the key switch.
1. Check the performance of the easy checker lights.
 2. Check the head lights, tail lights and hazard lights. Clean if necessary.
 3. Check the performance of the meters and gauges.
 - Starting the engine.
1. Check to see that the lights on the Easy Checker go off.
 2. Check the color of the exhaust gas.
 3. Check the brakes for proper operation.