WSM

WORKSHOP MANUAL
TRACTOR,FRONT LOADER, BACKHOE,ROTARY MOWER

BX25,LA240,BT601,RCK54, RCK54P,RCK60B

Kubota

KiSC issued 09, 2009 A

TO THE READER

This Workshop Manual has been prepared to provide servicing personnel with information on the mechanism, service and maintenance of KUBOTA Tractor BX25, KUBOTA Rotary Mower RCK60B, RCK54P, RCK54, KUBOTA Front Loader LA240 and KUBOTA Backhoe BT601. It is divided into three parts, “General”, “Mechanism” and “Servicing” for each section.

■ **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. 97897-01873 / 97897-18200) 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.

August 2008

KiSC issued 09, 2009 A

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.

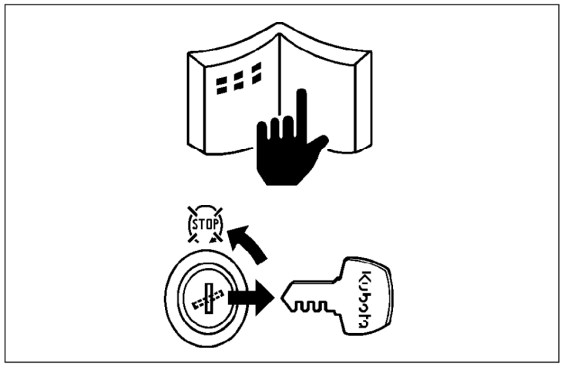
DANGER : **Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.**

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.**

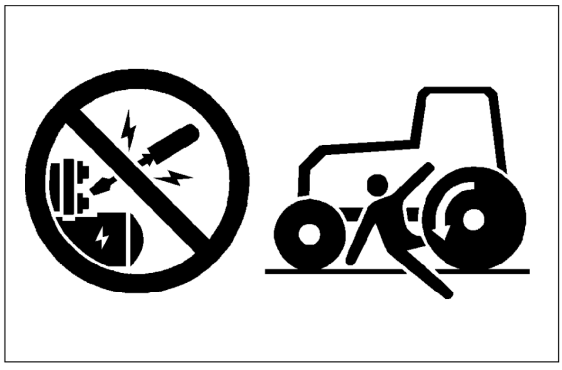
■ **IMPORTANT** : **Indicates that equipment or property damage could result if instructions are not followed.**

■ **NOTE** : **Gives helpful information.**



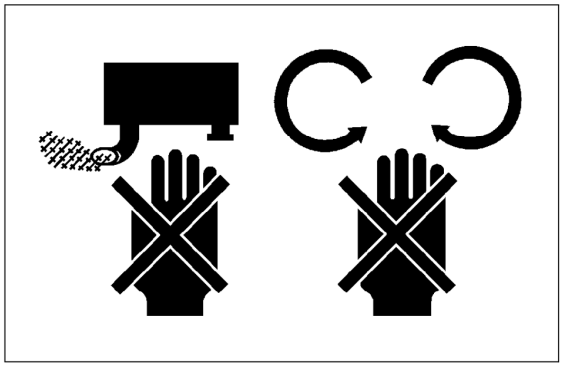
BEFORE SERVICING AND REPAIRING

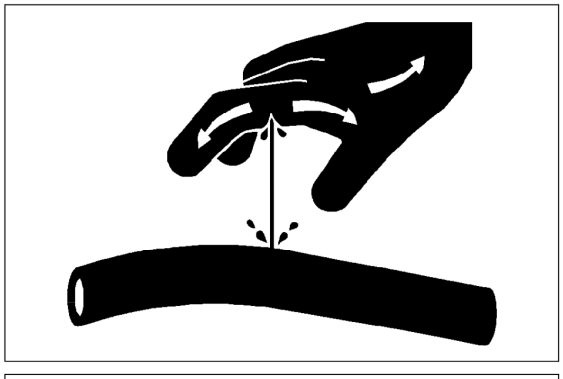
- Read all instructions and safety instructions in this manual and on your machine safety decals.
- Clean the work area and machine.
- Park the machine on a firm and level ground, and set the parking brake.
- Lower the implement to the ground.
- Stop the engine, and remove the key.
- Disconnect the battery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

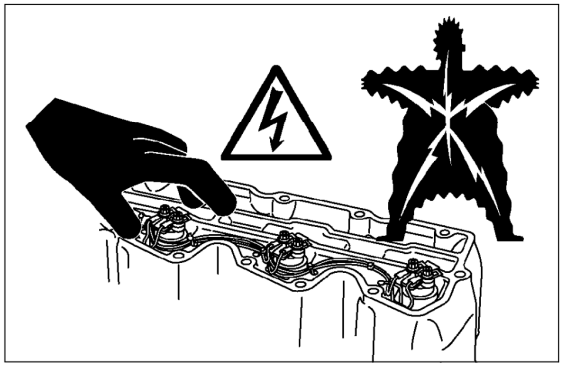


SAFETY STARTING

- 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.

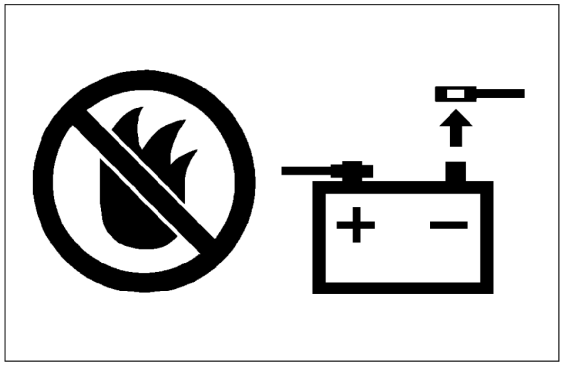






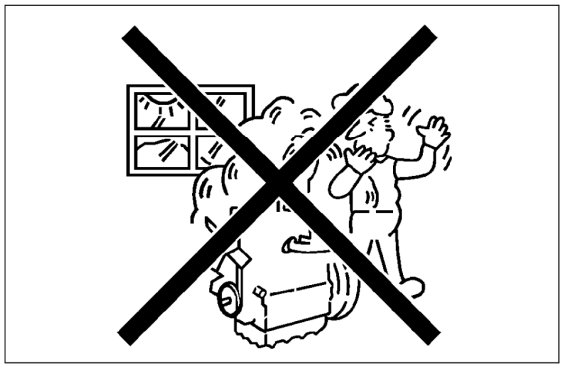
SAFETY WORKING

- 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.



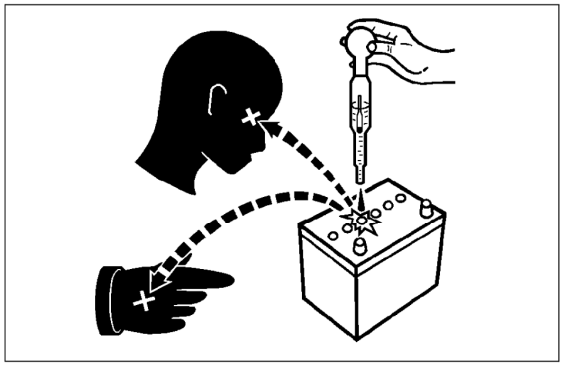
AVOID FIRES

- 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.

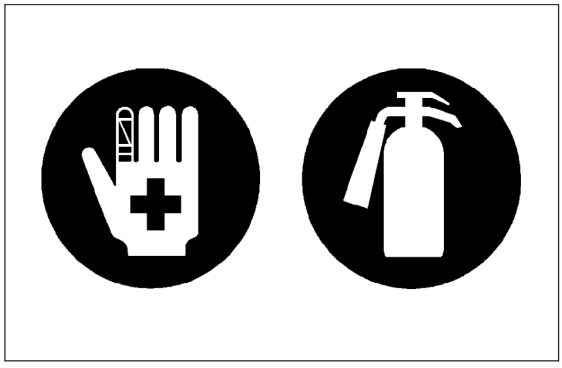


PREVENT ACID BURNS

- 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. K2581-6548-1

⚠CAUTION

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

1AGAJAXAP042E

(2) Part No. K2581-6548-1

⚠WARNING

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

⚠CAUTION

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

1HNAAACAP013E

(3) Part No. K2581-6552-1

Do not put hands under the rear fender.

⚠WARNING

TO AVOID PERSONAL INJURY:
KEEP HANDS AWAY FROM
PINCH POINTS OF LIFT ARMS.

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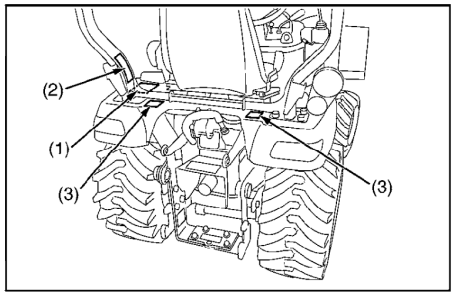
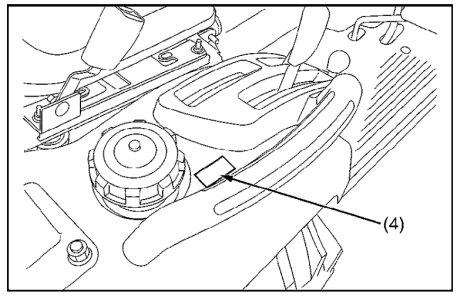
(4) Part No. K2581-6549-1

Diesel fuel only | No fire

1AGAMAAAP2480





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(1) Part No. K2581-6554-1

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(2) Part No. K2591-6557-2

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(3) Part No. K2581-6556-1

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(4) Part No. K2581-6555-1

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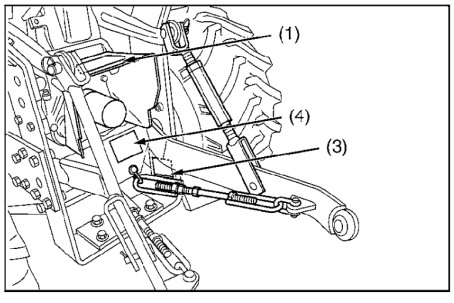

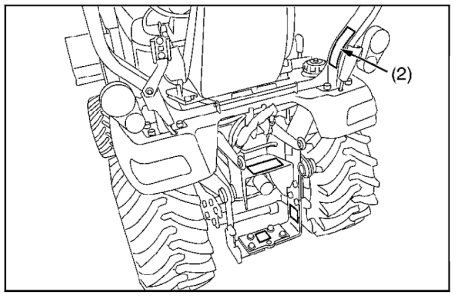

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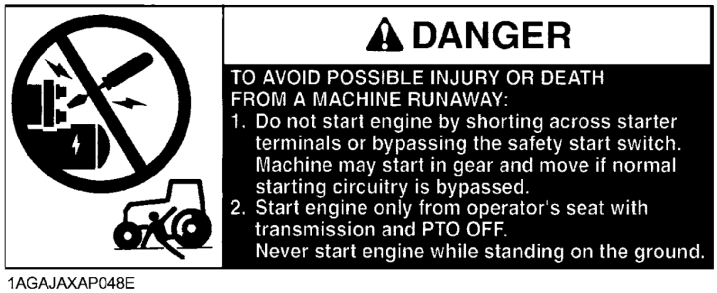
(1) Part No. K2581-6557-1



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(2) Part No. K2581-6547-1
Stay clear of engine fan and fanbelt

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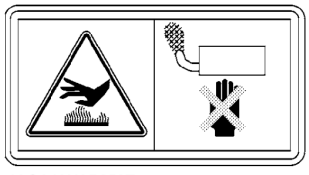
(3) Part No. K2581-6542-1
Do not touch hot surface like muffler, etc.



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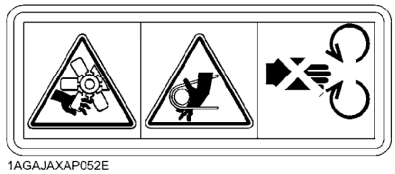
(4) Part No. K2581-6543-1



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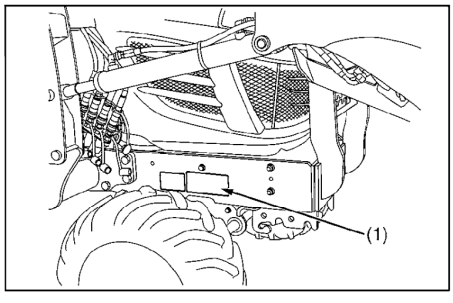

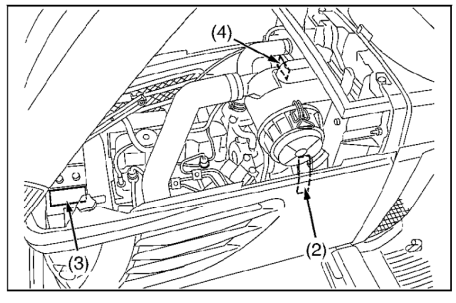

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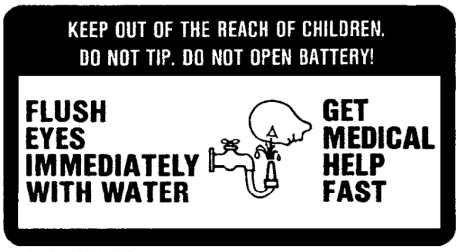
(1) Part No. K2561-6115-1



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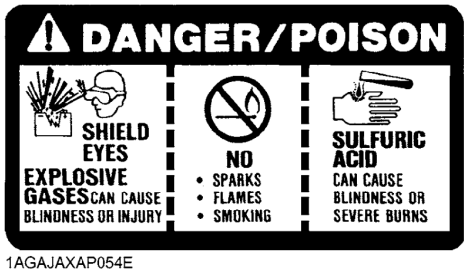
(2) Part No. K2561-6116-1



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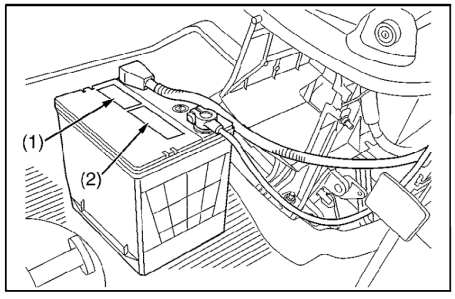

CARES FOR SAFETY ALERT LABELS

1. Always keep the labels clean and avoid damaging them.
   If a label is dirty, clean it with soap and water. Then wipe it with a soft cloth.
   Never use a solvent like thinner or acetone, which may erase letters or symbols.
2. When you wash the machine using a high pressure washer, do not pour high pressure water directly on any label to prevent it from peeling off.
3. If any label is damaged or missing, place an order with your dealer for replacement.
4. Before you affix a new label, completely clean the surface on which the label is placed. Wait until the surface is dry, and then affix
5. the label in its place.
   When you replace any part carrying a label, replace the label with a new one at the same time.

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SPECIFICATIONS

Model			BX25
PTO power			13.2 kW (17.7 HP)*
Engine	Maker		KUBOTA
	Model		D902-E3-BX-2
	Type		Indirect Injection, vertical, water-cooled, 4-cycle diesel
	Number of cylinders		3
	Bore and stroke		72 × 73.6 mm (2.83 × 2.90 in.)
	Total displacement		898 cm^3 (54.8 cu.in.)
	Engine gross power		17.1 kW (23.0 HP)
	Rated revolution		3200min^{-1} (rpm)
	Maximum torque		56.1 N·m (5.7 kgf·m, 41.4 ft-lbs)
	Battery		12 V, CCA : 535 A, RC : 80 min.
	Fuel		Diesel fuel No. 2-D [above −10 °C (14 °F)], Diesel fuel No. 1 [below −10 °C (14 °F)]
Capacities	Fuel tank		25 L (6.6 U.S.gals, 5.5 Imp.gals)
	Engine crankcase (with filter)		3.1 L (3.3 U.S.qts., 2.73 Imp.qts)
	Engine coolant		2.7 L (2.8 U.S.qts., 2.4 Imp.qts)
	Recovery tank		0.4 L (0.4 U.S.qts, 0.4 Imp.qts)
	Transmission case		11.6 L (3.1 U.S.gals, 2.6 Imp.gals)
Dimensions	Overall length (without 3P)		2170 mm (85.4 in.)
	Overall length (with 3P)		2490 mm (98.0 in.)
	Overall width		1145 mm (45.1 in.)
	Overall height	(with ROPS)	2140 mm (84.3 in.)
		(with Folded ROPS)	1610 mm (63.4 in.)
		(Top of steering wheel)	1255 mm (49.4 in.)
	Wheel base		1400 mm (55.1 in.)
	Min. ground clearance		175 mm (6.9 in.)
	Tread	Front	910 mm (35.8 in.)
		Rear	820 mm (32.2 in.)
Weight (with ROPS)			690 kg (1520 lbs)
Clutch			N / A
Travelling system	Tires	Front	18 × 8.50 – 10 (Turf, Bar, Ind.)
		Rear	26 × 12.00 – 12 (Turf, Bar, Ind.)
	Steering		Hydrostatic power steering
	Transmission		Main : Hydrostatic transmission, High-Low gear shift (2 forward and 2 reverse)
	Brake		Wet disk type
	Min. turning radius (without brake)		2.3 m (7.5 feet)
Hydraulic unit	Hydraulic control system		Directional control, auto-return lever system
	Pump capacity		23.5 L/min. (6.2 U.S.gals./min., 5.2 Imp.gals./min.)
	Three point hitch		SAE Category I
	Max. lift force	At lift points	5390 N (550 kg, 1210 lbs)
		24 in. behind points	3040 N (310 kg, 680 lbs)
PTO	Rear	PTO Shaft	SAE 1-3/8, 6 splines
		Revolution	1 speed (540 min^{-1} (rpm) at 3142 engine min^{-1} (rpm))
	Mid	PTO Shaft	USA No.5 (KUBOTA 10-tooth) involute spline
		Revolution	1 speed (2500 min^{-1} (rpm) at 3043 engine min^{-1} (rpm))

NOTE: * Manufacture's estimate. The company reserves the right to change the specifications without notice.
**See and check IMPLEMENT LIMITATIONS.

W1028103

TRAVELLING SPEEDS

Model		BX25	
Tire size (Rear)		26 × 12.00 – 12	
	Range gear shift lever	km/h	mile/h
Forward (At rated engine rpm)	Low	0 to 6.0	0 to 3.7
	High	0 to 13.0	0 to 8.1
Reverse (At rated engine rpm)	Low	0 to 4.5	0 to 2.8
	High	0 to 10.0	0 to 6.2

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

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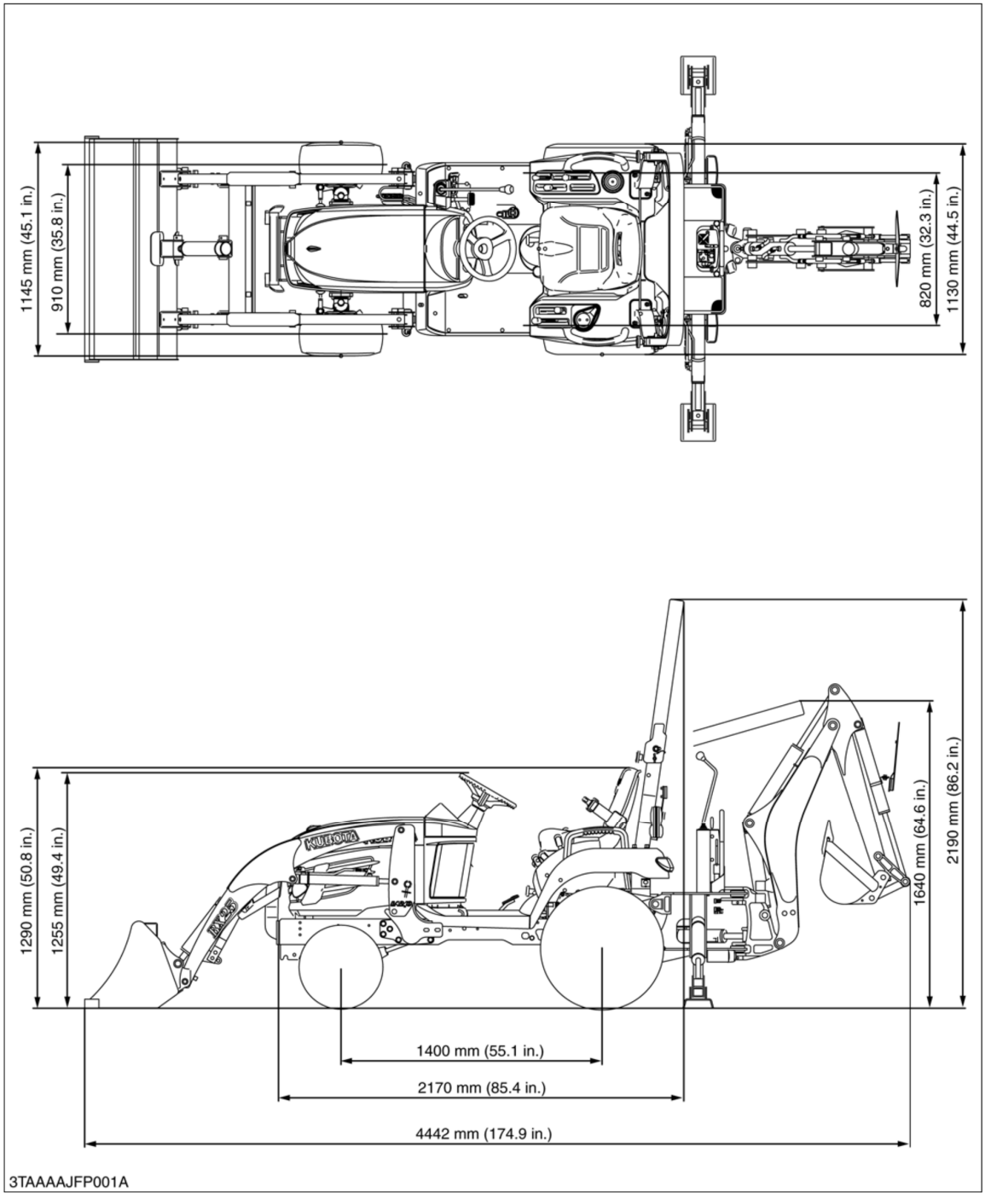
DIMENSIONS


1145 mm (45.1 in.)
910 mm (35.8 in.)
820 mm (32.3 in.)
1130 mm (44.5 in.)
1290 mm (50.8 in.)
1255 mm (49.4 in.)
1640 mm (64.6 in.)
2190 mm (86.2 in.)
1400 mm (55.1 in.)
2170 mm (85.4 in.)
4442 mm (174.9 in.)
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G GENERAL

GENERAL

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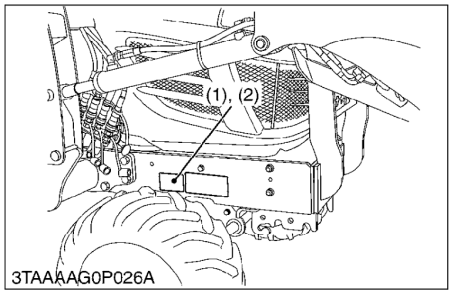
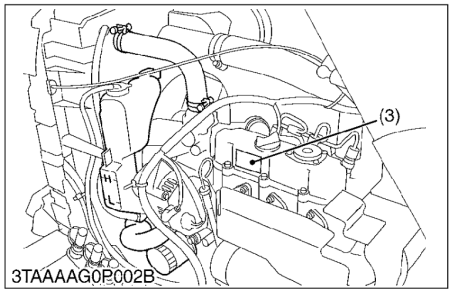
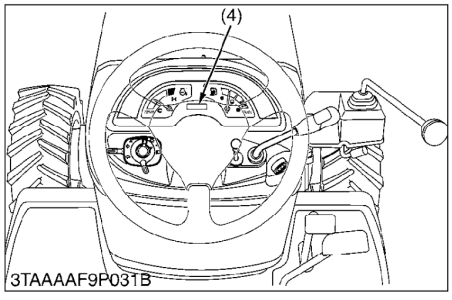
1. TRACTOR IDENTIFICATION







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

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

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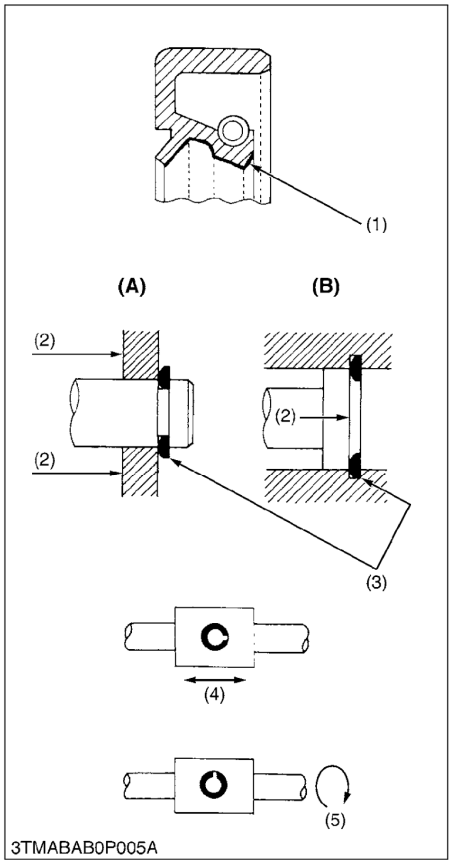
2. GENERAL PRECAUTIONS



- 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

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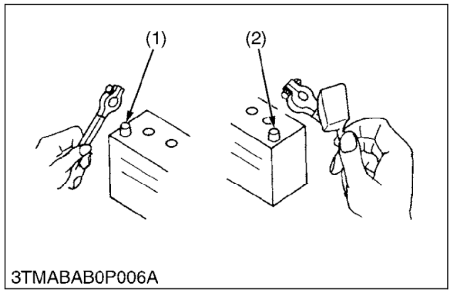
3. HANDLING PRECAUTIONS FOR ELECTRICAL PARTS AND WIRING



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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

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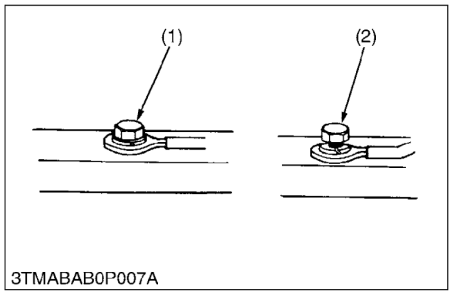
[1] WIRING



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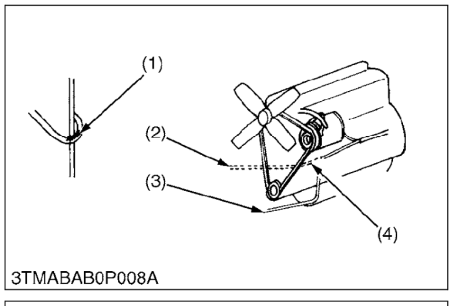
- Securely tighten wiring terminals.

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

W10112160

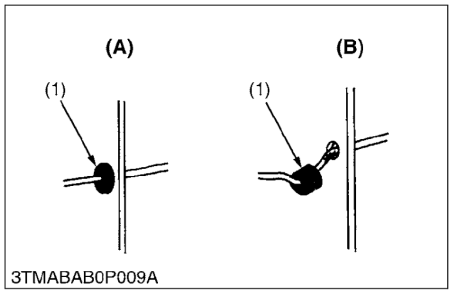


3TMABAB0P008A

- Do not let wiring contact dangerous part.

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

W10113130

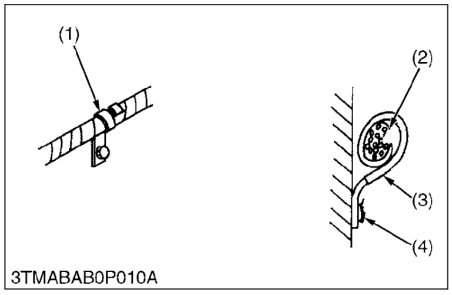


3TMABAB0P009A

- Securely insert grommet.

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

W10113880

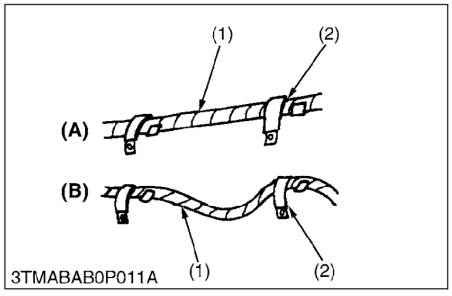


3TMABAB0P010A

- Securely clamp, being careful not to damage wiring.

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

W10114580

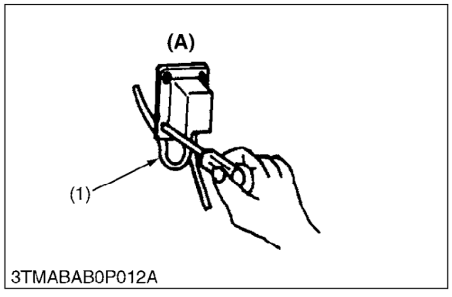


3TMABAB0P011A

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

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

W10115870

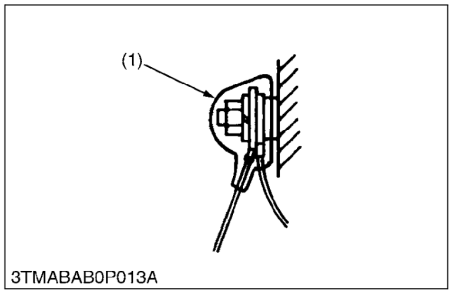


3TMABAB0P012A

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

(1) Wiring
(A) Incorrect

W10116700



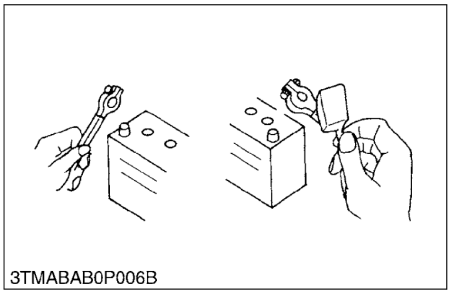
3TMABAB0P013A

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

(1) Cover
  • Securely Install Cover

W10117350

[2] BATTERY


3TMABAB0P006B

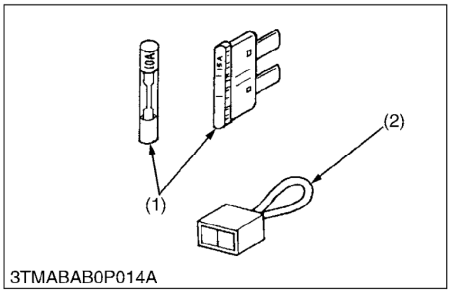
- Take care not to confuse positive and negative terminal posts.
- When removing battery cables, disconnect negative cable first. When installing battery cables, check for polarity and connect positive cable first.
- Do not install any battery with capacity other than is specified (Ah).
- After connecting 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.**

W10118160

[3] FUSE



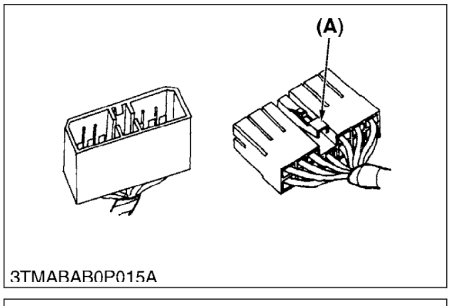
3TMABAB0P014A

- 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

W10120920

[4] CONNECTOR

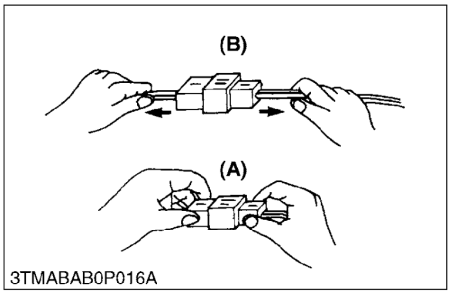


3TMABAB0P015A

- For connector with lock, push lock to separate.

(A) Push

W10122110

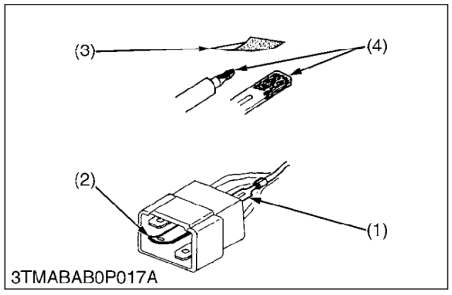


3TMABAB0P016A

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

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

W10122720

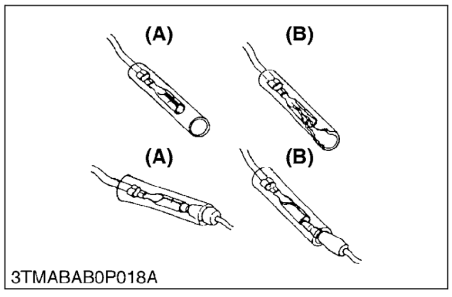


3TMABAB0P017A

- 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

W10123460

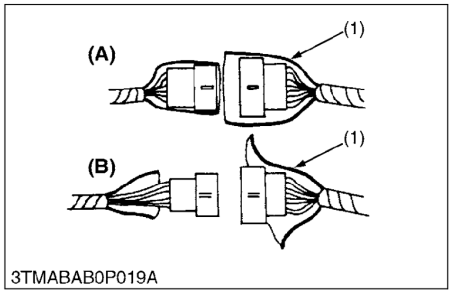


3TMABAB0P018A

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

(A) Correct
(B) Incorrect

W10124300



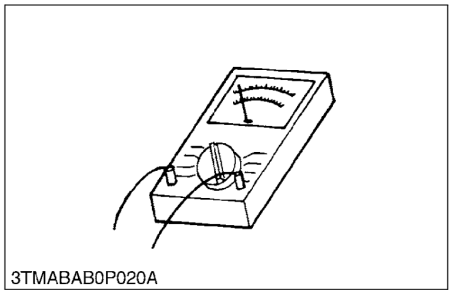
3TMABAB0P019A

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

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

W10125190

[5] HANDLING OF CIRCUIT TESTER


3TMABAB0P020A

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

W10126840

4. LUBRICANTS FUEL AND COOLANT

No.	Place	Capacity	Lubricants, fuel and coolant
		BX25	
1	Fuel tank	25.0 L 6.6 U.S.gals 5.5 Imp.gals	No. 2-D diesel fuel No. 1-D diesel fuel if temperature is below –10 °C (14 °F)
2	Cooling system with recovery tank	3.1 L 3.3 U.S.qts 2.7 Imp.qts	Fresh clean water with anti-freeze
3	Engine crankcase	3.1 L 3.3 U.S.qts 2.7 Imp.qts	Engine oil : API Service CD, CE or CF Below 0 °C (32 °F) : SAE10W, 10W-30 or 10W-40 0 to 25 °C (32 to 77 °F): SAE20, 10W-30 or 10W-40 Above 25 °C (77 °F): SAE30, 10W-30 or 10W-40
4	Transmission case	11.6 L 3.1 U.S.gals 2.6 Imp.gals	KUBOTA SUPER UDT fluid*
5	Front axle case	4.7 L 5.0 U.S.qts 4.1 Imp.qts	KUBOTA SUPER UDT fluid or SAE80, SAE90 gear oil

Greasing				
	Place	No. of greasing point	Capacity	Type of grease
6	Battery terminal	2	Moderate amount	Multipurpose type Grease NLGI-2 or NLGI-1 (GC-LG)
7	Speed control pedal	1	Until grease overflows	

* KUBOTA original transmission hydraulic fluid.

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

W1034542

[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
M14 (14 mm, 0.55 in.)	62 to 73	6.3 to 7.5	46 to 54	–	–	–
M16 (16 mm, 0.63 in.)	98.1 to 112	10.0 to 11.5	72.4 to 83.1	–	–	–
M18 (18 mm, 0.71 in.)	172 to 201	17.5 to 20.5	127 to 148	–	–	–

W1048139

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

Grade	SAE GR.5			SAE GR.8		
Unit / Nominal Diameter	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

[4] 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	–	–	–

0000001666E

6. MAINTENANCE CHECK LIST

No.	Item	Period	Service Interval																	After purchase		Important		Reference page
			50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	1500	3000	1 year	2 years		
1	Engine oil	Change	★	☆		☆				☆				☆				☆							G-12
2	Engine oil filter	Replace	★			☆				☆				☆				☆							G-12
3	Transmission oil filter	Replace	★			☆				☆				☆				☆							G-13
4	Transmission fluid	Change								☆				☆				☆							G-13
5	Transmission strainer	Clean	★							☆				☆				☆							G-24
6	Front axle case oil	Change								☆				☆				☆							G-24
7	Front axle pivot	Adjust								☆								☆							G-25
8	Engine start system	Check	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆							G-14
9	Greasing	–	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆							G-15
10	Wheel bolt torque	Check	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆							G-15
11	Battery condition	Check		☆		☆		☆		☆		☆		☆		☆		☆					*4		G-16
12	Air cleaner element	Clean		☆		☆		☆		☆		☆		☆		☆		☆					*1	@	G-18
		Replace																			☆		*2		G-18
13	Fuel filter element	Check		☆		☆		☆		☆		☆		☆		☆		☆						@	G-19
		Replace										☆													G-19
14	Fan belt	Adjust		☆		☆		☆		☆		☆		☆		☆		☆							G-20
15	HST neutral spring	Adjust		☆		☆		☆		☆		☆		☆		☆		☆							G-21
16	Brake Pedal	Adjust		☆		☆		☆		☆		☆		☆		☆		☆							G-22
17	Radiator hose and clamp	Check				☆				☆				☆				☆							G-22
		Replace																				☆			G-22
18	Power steering oil line	Check				☆				☆				☆				☆							G-23
		Replace																				☆			G-23
19	Fuel line	Check		☆		☆		☆		☆		☆		☆		☆		☆						@	G-19
		Replace																				☆			G-19
20	Intake air line	Check				☆				☆				☆				☆						@	G-23
		Replace																				☆	*3		G-23
21	Toe-in	Adjust				☆				☆				☆				☆							G-23
22	Engine valve clearance	Adjust																☆							1-S13
23	Fuel injection nozzle injection pressure	Check																	☆	☆				@	1-S20
24	Injection pump	Check																		☆				@	1-S19
25	Cooling system	Flush																				☆			G-27
26	Coolant	Change																				☆			G-27
27	Fuel system	Bleed																			Service as required				G-30
28	Fuse	Replace																							G-31
29	Light bulb	Replace																							G-31

■ 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.

W1035769

7. CHECK AND MAINTENANCE

CAUTION

- **Be sure to check and service the tractor on a level surface with the engine shut off and the parking brake "ON" and implement lowered to the ground.**

[1] DAILY CHECK

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

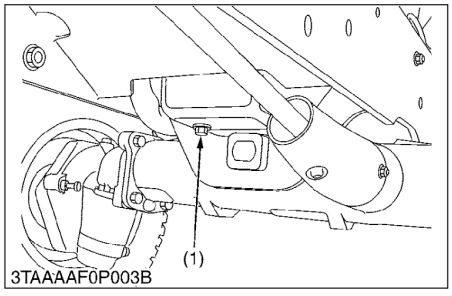
■ **Walk Around Inspection**

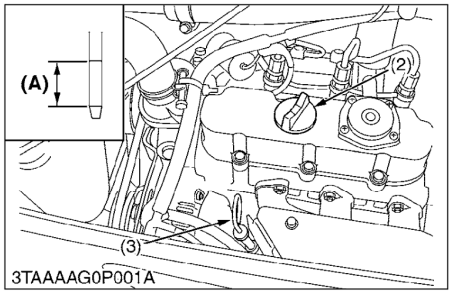
Look around the under the tractor for such items as loose bolts, trash build-up, oil or coolant leaks, broken or worn parts.

Checking

1. Checking and refueling.
2. Check the engine oil level.
3. Check the transmission fluid level.
4. Check the coolant level.
5. Clean panel and radiator screen.
6. Check the brake pedal.
7. Check the gauge, the meters and easy checkers.
8. Check the head light, the hazard light etc..
9. Check and clean the electrical wiring and the battery cables.
10. Check the seat belt and ROPS.

[2] CHECK POINTS OF INITIAL 50 HOURS





Changing Engine Oil

CAUTION

- **Be sure to stop the engine before changing engine oil.**

1. Start and warm up the engine for approx. 5 minutes.
2. Place an oil pan underneath the engine.
3. To drain the used oil, remove the drain plug (1) at the bottom of the engine and drain the oil completely.
4. Screw in the drain plug (1).
5. Fill new oil up to upper line on the dipstick (3).

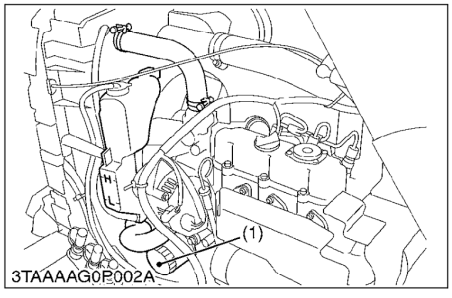
■ IMPORTANT

- **When using an oil of different manufacture or viscosity from the previous one, remove all of the old oil.**
- **Never mix two different types of oil.**
- **Use the proper SAE Engine Oil according to ambient temperatures.**
- **Refer to "LUBRICANTS, FUEL AND COOLANT". (See page G-7.)**

Engine oil capacity	3.1 L 3.3 U.S.qts 2.7 Imp.qts

(1) Drain Plug
(2) Oil Inlet
(3) Dipstick
(A) Oil level is acceptable within this range.

W1014065



Replacing Engine Oil Filter

CAUTION

- **Be sure to stop the engine before changing oil filter cartridge.**

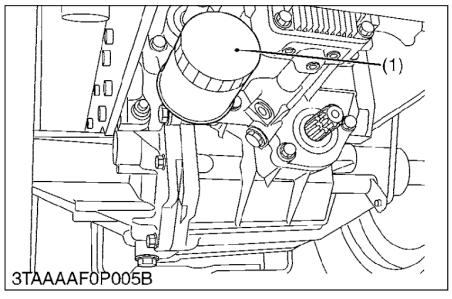
1. Remove the oil filter.
2. Put a film of clean engine oil on the rubber seal of the new filter.
3. Tighten the filter quickly until it contacts the mounting surface. Tighten filter by hand an additional 1/2 turn only.
4. After the new filter has been replaced, the engine oil normally decrease a little. Make sure that the engine oil does not leak through the seal and be sure to check the oil level on the dipstick. Then, replenish the engine oil up to the specified level.
5. Properly dispose of used oil.

■ IMPORTANT

- **To prevent serious damage to the engine, replacement element must be highly efficient. Use only a KUBOTA genuine filter or its equivalent.**

(1) Engine Oil Filter Cartridge

W1014316



Replacing Transmission Oil Filter

CAUTION

- **Allow engine to cool down sufficiently, oil can be hot and can burn.**

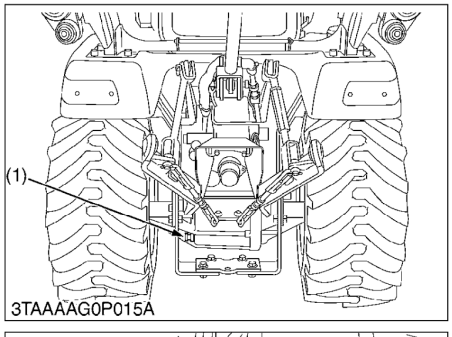
1. Remove the oil filter.
2. Put a film of clean transmission oil on the rubber seal of the new filter.
3. Tighten the filter quickly until it contacts the mounting surface. Tighten filter by hand an additional 1/2 turn only.
4. After the new filter has been replaced, the transmission fluid level will decrease a little. Make sure that the transmission fluid does not leak through the seal, and check the fluid level. Top off if necessary.
5. Properly dispose of used oil.

IMPORTANT

- **To prevent serious damage to the hydraulic system, use only a KUBOTA genuine filter.**

(1) Transmission Oil Filter

W1014458



Cleaning Transmission Oil Strainer

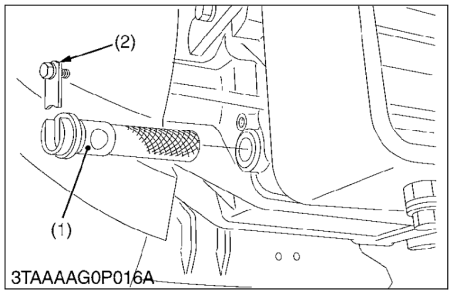
1. When changing the transmission fluid, disassemble and rinse the strainer with nonflammable solvent to completely clean off fillings.
2. When reassembling, be careful not to damage the parts.

NOTE

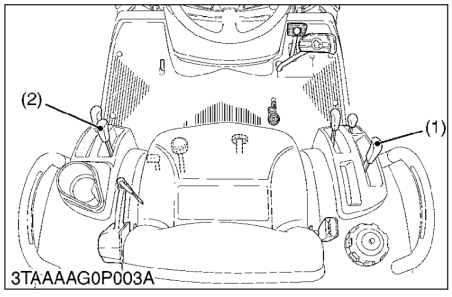
- **Since the fine fillings in the il can damage the precision component parts of the hydraulic system, the end of the suction line is provided with an oil strainer.**

(1) Stainer (2) Filter Plate

W1014665



[3] CHECK POINTS OF EVERY 50 HOURS



Checking Engine Start System

CAUTION

- **Do not allow anyone near the tractor while testing.**
- **If the tractor does not pass the test do not operate the tractor.**

■ **Preparation before testing.**

1. Sit on the operator's seat.
2. Set the parking brake and stop the engine.
3. Shift the range gear shift lever (1) to **"NEUTRAL"** position.
4. Check the speed control pedal **"NEUTRAL"** position
5. Shift the PTO clutch control lever (2) to **"OFF"** position.

■ **Test 1 : Switch for the speed control pedal**

1. Shift the range gear shift lever (1) to **"NEUTRAL"** position.
2. Depress the speed control pedal.
3. Turn the key to **"START"** position.
4. The engine must not crank.

■ **Test 2 : Switch for the PTO clutch lever**

1. Shift the range gear shift lever (1) to **"NEUTRAL"** position.
2. Check the speed control pedal **"NEUTRAL"** position.
3. Shift the PTO clutch control lever (2) to **"ON"** position.
4. Turn the key to **"START"** position.
5. The engine must not crank.

■ **Test 3 : Switches for the operator's seat and the speed control pedal**

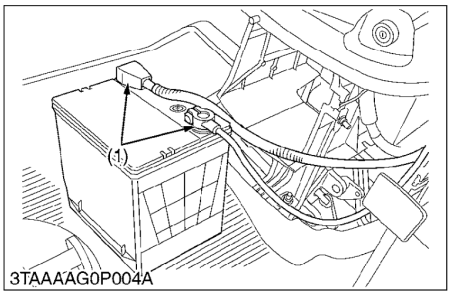
1. Sit on the operator's seat.
2. Shift the range gear shift lever (1) to **"NEUTRAL"** position.
3. Start the engine.
4. Depress the speed control pedal.
5. Stand up. (Do not get off the machine.)
6. The engine must shut off after approximately 1 second.

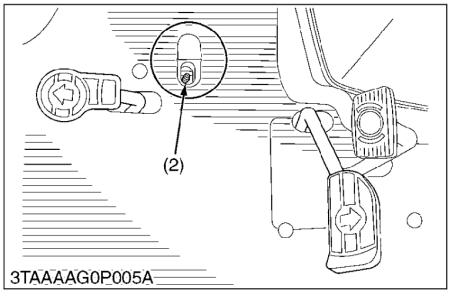
■ **Test : Switches for the operator's seat and the PTO clutch lever**

1. Sit on the operator's seat.
2. Start the engine.
3. Engage the PTO clutch control lever (2).
4. Stand up. (Do not get off the machine.)
5. The engine must shut off after approximately 1 second.

(1) Range Gear Shift Lever (2) PTO Clutch Control Lever

W1014904



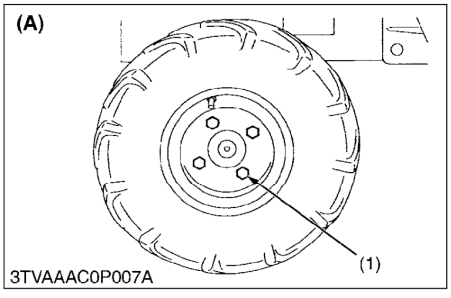


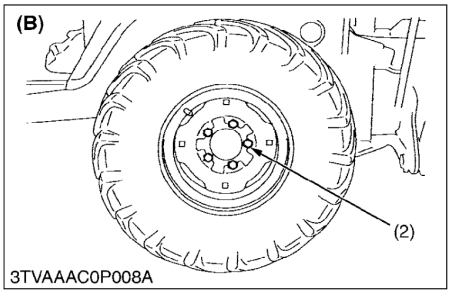
Greasing

1. Apply a small amount of multipurpose grease to the following points.

(1) Battery Terminals
(2) Speed Control Pedal Shaft

W1015242





Checking Wheel Mounting Screws Tightening Torque

CAUTION

- **Never operate tractor with a loose rim, wheel, or axle.**
- **Any time screws are loosened, retighten to specified torque.**
- **Check all screws frequently and keep them tight.**

1. Check wheel screws regularly especially when new. If there are loosened, tighten as follows.

Tightening torque	Front wheel mounting screws	149.2 to 179.0 N·m 15.2 to 18.3 kgf·m 110 to 132 ft-lbs
	Rear wheel mounting screws	108.5 to 130.2 N·m 11.1 to 13.3 kgf·m 80 to 96 ft-lbs

(1) Front Wheel Mounting Screw
(2) Rear Wheel Mounting Screw
(A) Front
(B) Rear

W1015311