WSM

WORKSHOP MANUAL
TRACTOR
L39

[TL1000 FRONT LOADER]
[BT1000 BACKHOE]

Kubota

KiSC issued 04, 2006 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 L39. 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. 97897-01870 / 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.

February 2005

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.

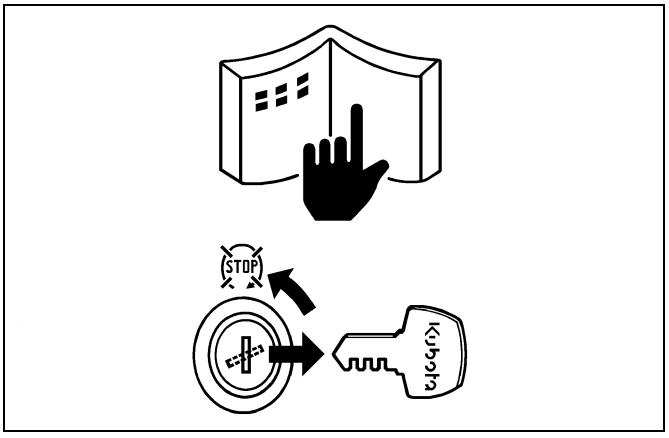
DANGER : Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

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.

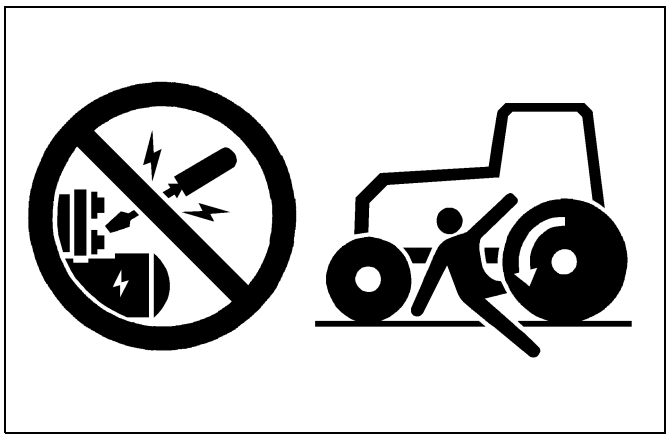
■ IMPORTANT : Indicates that equipment or property damage could result if instructions are not followed.

■ NOTE : Gives helpful information.



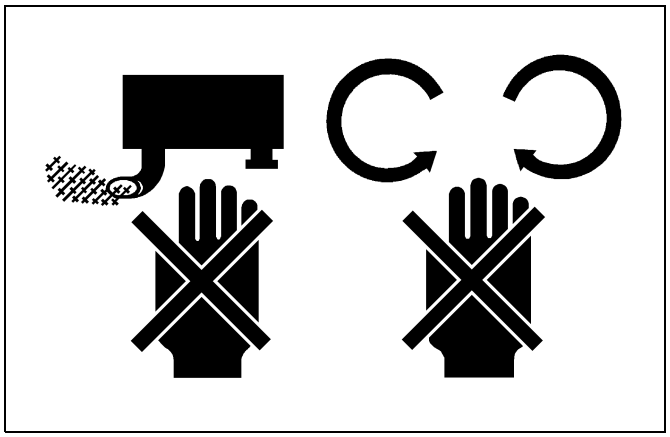
BEFORE SERVICING AND REPAIRING

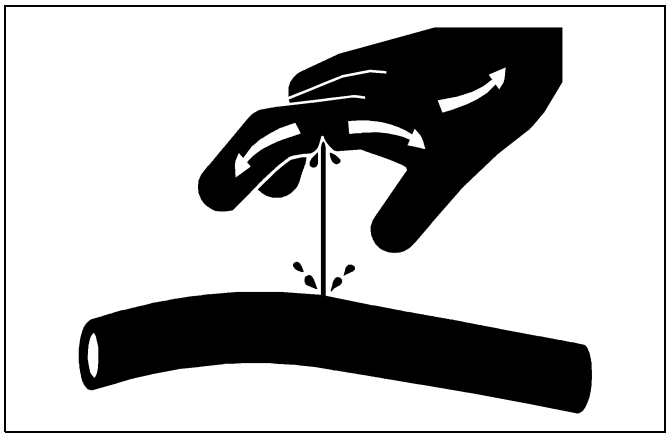
- Read all instructions and safety instructions in this manual and on your machine safety decals.
- Clean the work area and machine.
- Park the machine on a firm and level ground, and set the parking brake.
- Lower the implement to the ground.
- Stop the engine, and remove the key.
- Disconnect the battery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



SAFETY STARTING

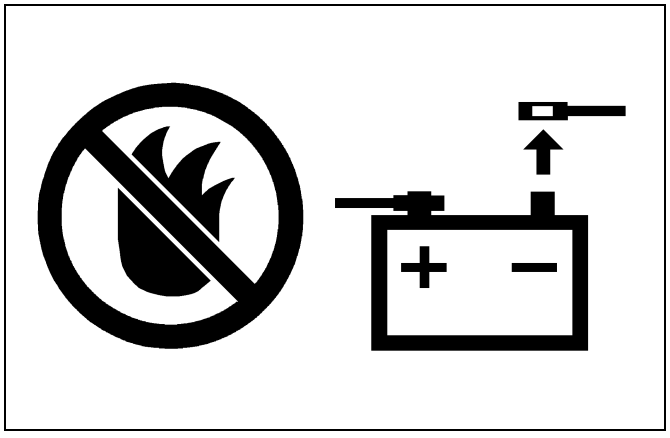
- Do not start the engine by shorting across starter terminals or bypassing the safety start switch.
- Do not alter or remove any part of machine safety system.
- Before starting the engine, make sure that all shift levers are in neutral positions or in disengaged positions.
- Never start the engine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





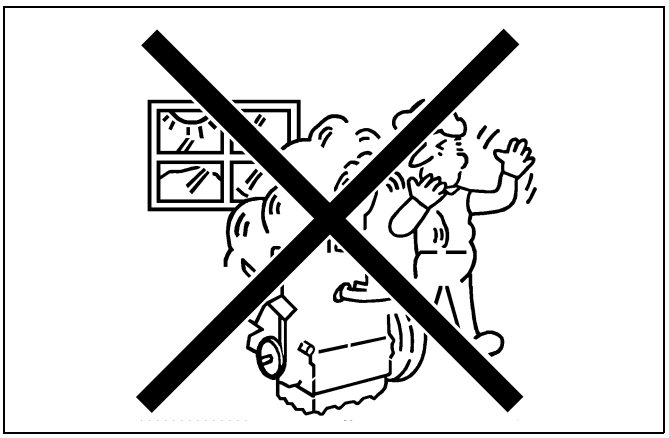
SAFETY WORKING

- 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.



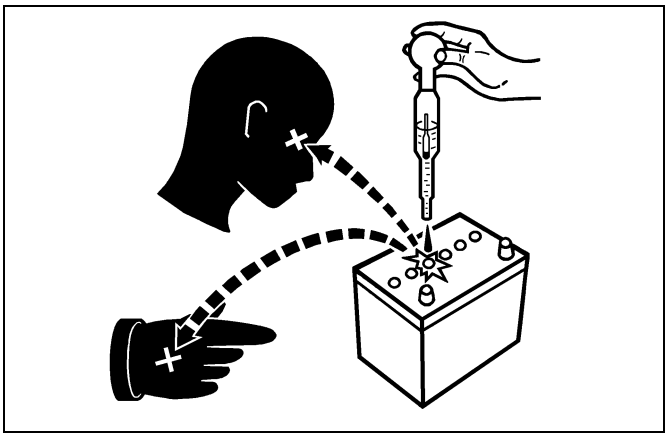
AVOID FIRES

- 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.



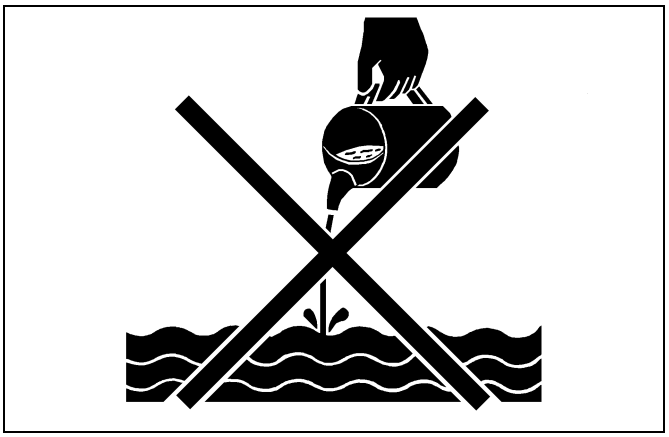
VENTILATE WORK AREA

- 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.



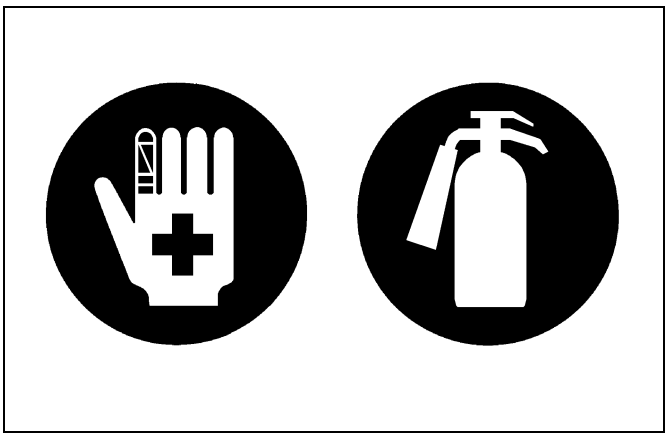
PREVENT ACID BURNS

- 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.

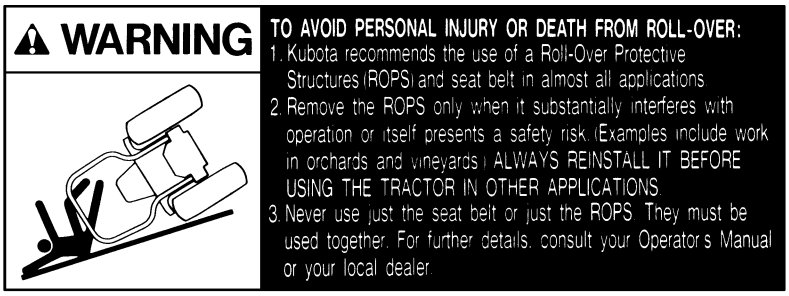
SAFETY DECALS

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. TA040-4965-2

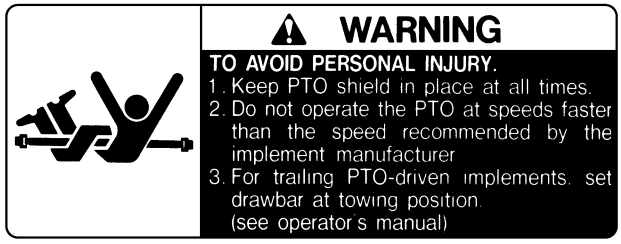
1AGAMAAAP3810

(2) Part No. TA040-4932-2 [Rigid ROPS type]



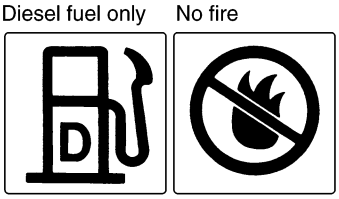
1AGAMAAAP3820

(3) Part No. TA040-4959-3



1AGAMAAAP3830

(4) Part No. TA040-4965-2



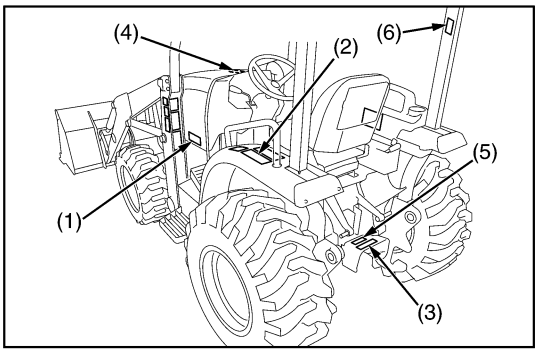
1AGAMAAAP3840

(5) Part No. TA040-4935-1

1AGAMAAAP3860

(6) Part No. 6C140-4746-1

1AGAMAAAP3870

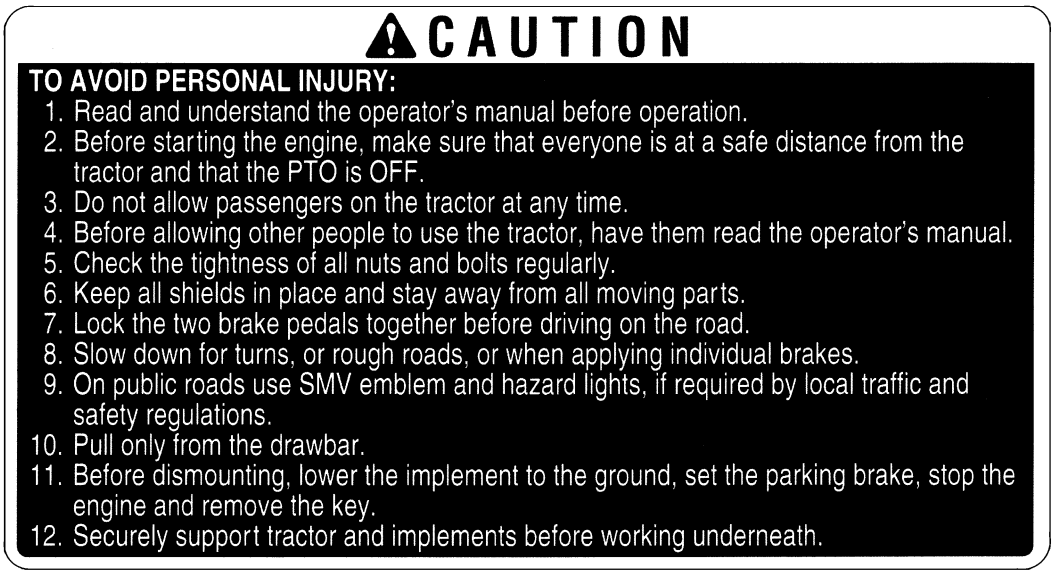


3TVAAAECP001A

(1) Part No. TA140-4992-1 [GST type]

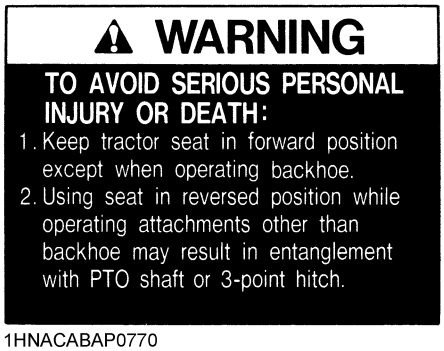
1AGAMAAAP3990

(2) Part No. 35260-3491-4

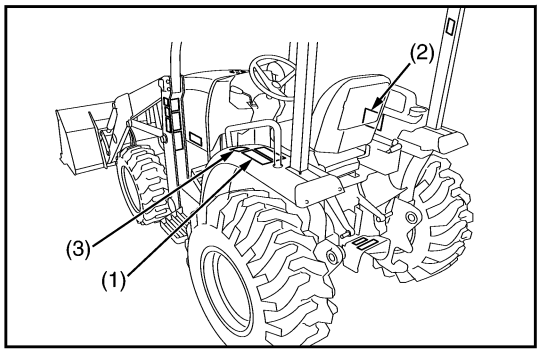


1AGAMAAAP3750

(3) Part No. 32751-4921-2



1HNACABAP0770



3TVAAAECP002A

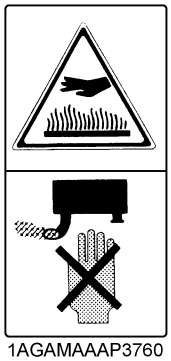
(1) Part No. 32781-3015-1

1HNACABAP0740

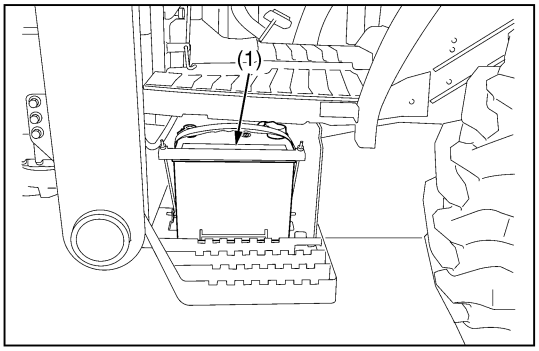
(2) Part No. 32751-4958-1
Stay clear of engine fan and fan belt.

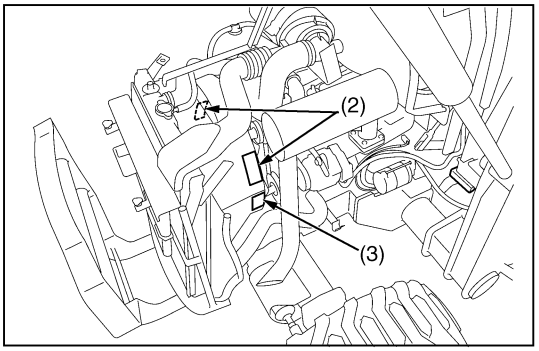
1AGAMAAAP3980

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



1AGAMAAAP3760





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 from your local KUBOTA distributor.
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.

3TVAAAECP003A

SPECIFICATIONS

Model			L39
Engine gross power			29.1 kW (39 HP)*
Engine net power			27.9 kW (37.4 HP)*
PTO power			22.7 kW (30.5 HP)*
Engine	Model		D1803-M-E2-TLB
	Type		Indirect injection vezrtical, water-cooled, 4-cycle diesel
	No. of cylinders		3
	Bore and stroke		87 × 102.4 mm (3.4 × 4.0 in.)
	Total displacement		1.826 L (111.4 cu. in.)
	Rated revolution		2700 min^{-1} (rpm)
	Fuel		Diesel fuel No. 1 [below –10 °C (14 °F)], Diesel fuel No. 2 [above –10 °C (14 °F)]
	Battery		12 V, RC: 90 min., CCA: 550A
Capacities	Fuel tank		40 L (10.6 U.S.gals, 8.80 Imp.gals.)
	Engine crankcase (with filter)		5.7 L (6.0 U.S.qts., 5.0 Imp.qts.)
	Engine coolant		7.5 L (7.9 U.S.qts., 6.6 Imp.qts.)
	Transmission case		43 L (11.4 U.S.gals, 9.5 Imp.gals.)
	Front axle case		6.5 L (6.9 U.S.qts., 5.7 Imp.qts.)
Tires		Front	27 × 10.5-15R4
		Rear	15-19.5R4
Dimensions	Overall length (without 3P)		2747 mm (108.18 in.)
	Overall width		1968 mm (66.9 in.)
	Overall height with ROPS and FOPS		2400 mm (94.5 in.)
	Wheel base		1750 mm (68.9 in.)
	Min. ground clearance		300 mm (11.8 in.) at transmission case
	Tread	Front	1165 mm (45.9 in.)
		Rear	1315 mm (51.8 in.)
Weight (with ROPS and FOPS, main frame)			1850 kg (4080 lbs)
PTO shaft			Transmission case rear
Rear PTO			SAE 1-3/8, 6-5 Spline
Clutch			Dry
Steering			Hydraulic power
Transmission			Glide shift transmission (12 forward and 8 reverse speeds)
Min. turning radius (without brake)			3.2 m (10.5 feet)
Brake			Multiple wet disks operated by two foot pedals which can be locked together
Differential			Bevel gear

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

W1028103

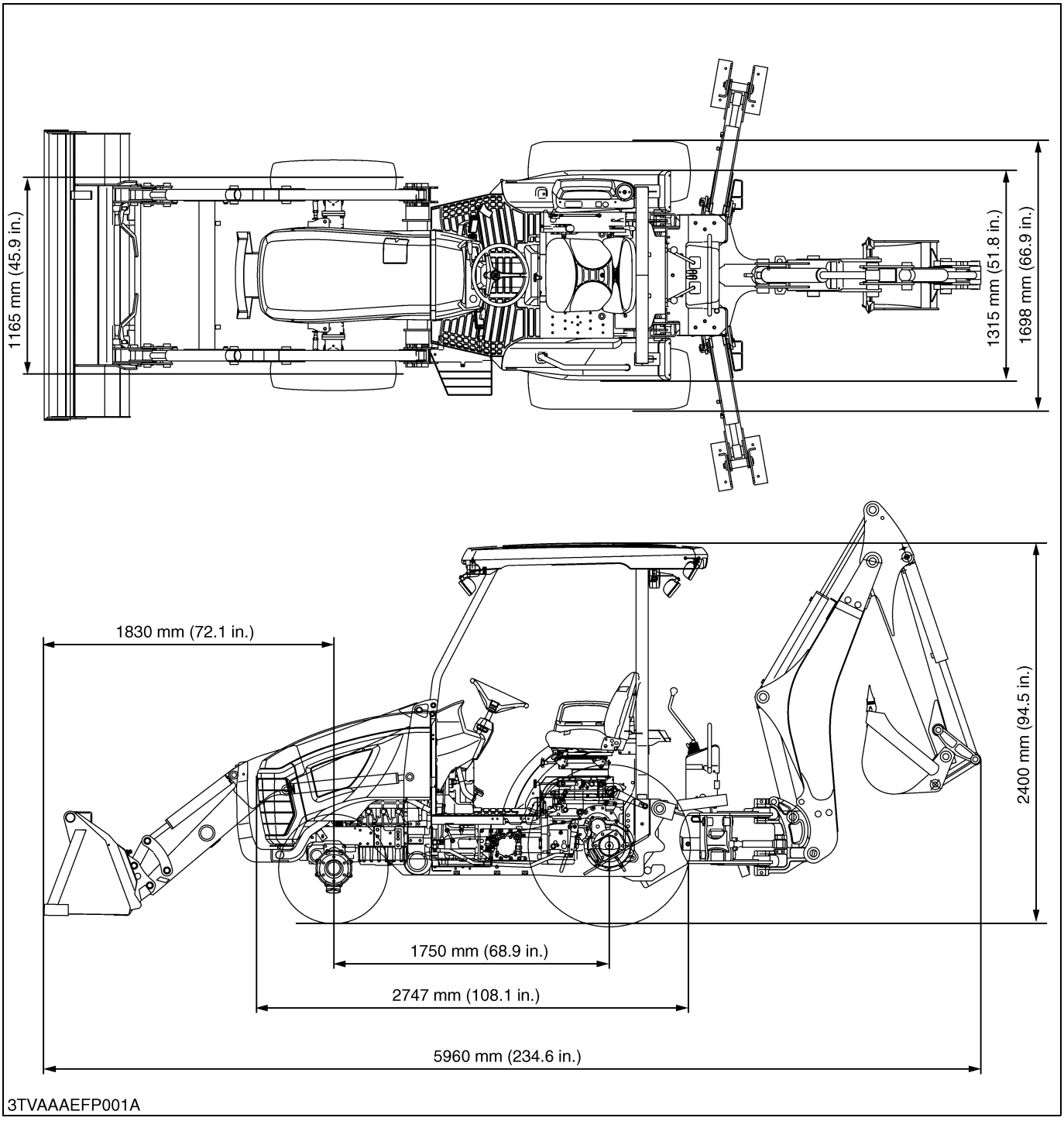
TRAVELLING SPEEDS

Model		L39	
Tire size (Rear)		15 - 19.5R4	
Shuttle shift lever	Main gear shift lever	km/h	mph
Forward	1	1.3	0.8
	2	1.9	1.2
	3	2.6	1.6
	4	3.1	1.9
	5	3.8	2.4
	6	4.6	2.9
	7	5.6	3.5
	8	6.8	4.2
	9	8.0	5.0
	10	9.6	6.0
	11	15.6	9.7
	12	23.0	14.3
Reverse	1	1.3	0.8
	2	1.8	1.1
	3	2.9	1.8
	4	4.4	2.7
	5	6.5	4.0
	6	9.2	5.7
	7	14.9	9.3
	8	21.9	13.6

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

W1035065

DIMENSIONS


1165 mm (45.9 in.)
1315 mm (51.8 in.)
1698 mm (66.9 in.)
1830 mm (72.1 in.)
2400 mm (94.5 in.)
1750 mm (68.9 in.)
2747 mm (108.1 in.)
5960 mm (234.6 in.)
3TVAAAEFP001A

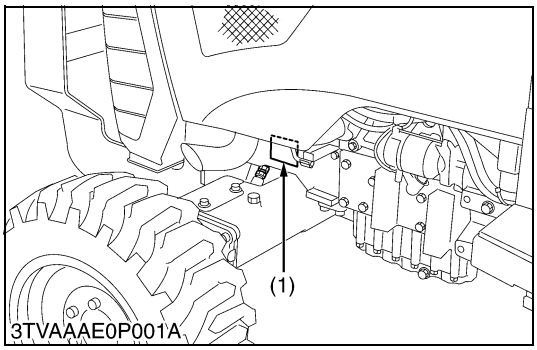
G GENERAL

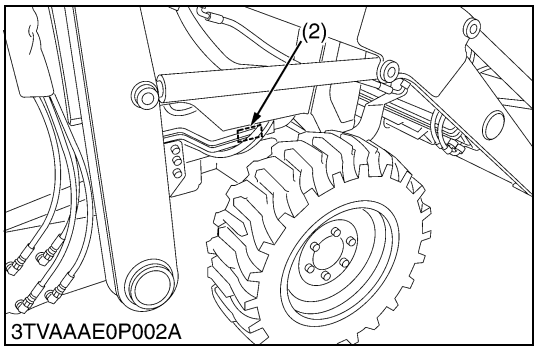
GENERAL

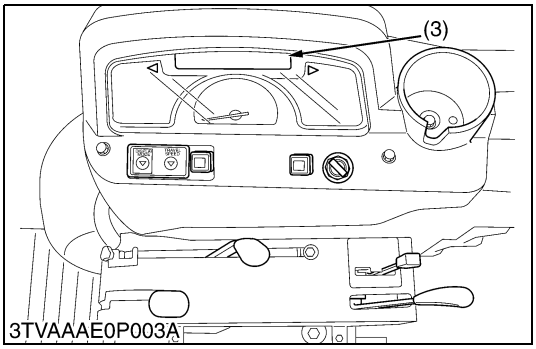
CONTENTS

1. TRACTOR IDENTIFICATION

[1] MODEL NAME AND SERIAL NUMBERS



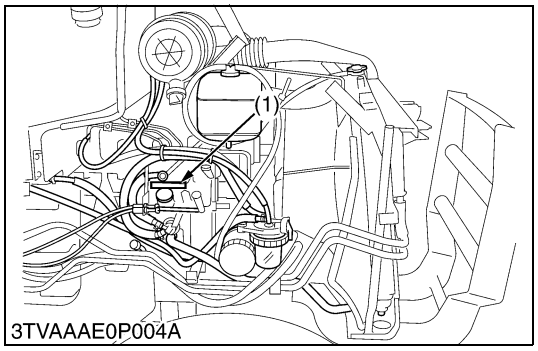




When contacting your local KUBOTA distributor, always specify engine serial number, tractor serial number and hour meter reading.

(1) Tractor Identification Plate
(2) Tractor Serial Number
(3) Hour Meter (IntelliPanel Display)

W10106000



Engine Serial Number

When contacting the manufacture, always specify your engine model name and serial number.

The engine model and its serial number need to be identified before the engine can be serviced or parts replaced.

■ Engine Serial Number

The engine serial number is an identified number for the engine. It is marked after the engine model number.

It indicates month and year of manufacture as follows.

- **Year of manufacture**

Alphabet or Number	Year	Alphabet or Number	Year
1	2001	F	2015
2	2002	G	2016
3	2003	H	2017
4	2004	J	2018
5	2005	K	2019
6	2006	L	2020
7	2007	M	2021
8	2008	N	2022
9	2009	P	2023
A	2010	R	2024
B	2011	S	2025
C	2012	T	2026
D	2013	V	2027
E	2014		

- **Month of manufacture**

Month	Engine Serial Number	
	0001 ~ 9999	10000 ~
January	A0001 ~ A9999	B0001 ~
February	C0001 ~ C9999	D0001 ~
March	E0001 ~ E9999	F0001 ~
April	G0001 ~ G9999	H0001 ~
May	J0001 ~ J9999	K0001 ~
June	L0001 ~ L9999	M0001 ~
July	N0001 ~ N9999	P0001 ~
August	Q0001 ~ Q9999	R0001 ~
September	S0001 ~ S9999	T0001 ~
October	U0001 ~ U9999	V0001 ~
November	W0001 ~ W9999	X0001 ~
December	Y0001 ~ Y9999	Z0001 ~

e.g. D1803-3A0001

“3” indicates 2003 and “A” indicates January.

So, 3A indicates that the engine was manufactured on January, 2003.

(1) Engine Model and Serial Number

W1010477

[2] E2 ENGINE

[ex.: Model Name D1803-M-E2-XXXX]

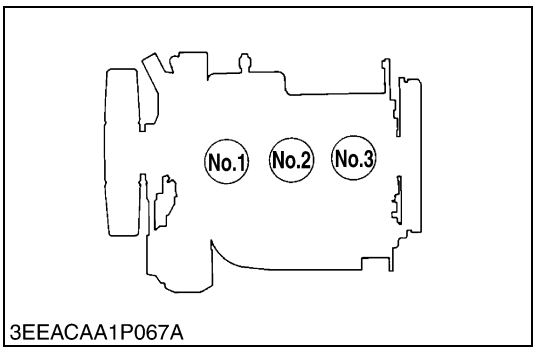
The emission controls that have been put into effect in various countries to prevent air pollution will be stepped up. The time to enforce the regulations differs depending on the engine output classifications.

Kubota has been supplying the diesel engines conforming to the emission regulations in respective countries. Exhaust emissions regulations shift to the second stage. Kubota executed the improvement of the engine according to this regulation.

In order to discriminate the engines conforming to Tier 1 / Phase 1 requirements and those conforming to Tier 2 / Phase 2 requirements, we have adopted E2 as a new model name for the engines conforming Tier 2 / Phase 2 regulations with emission label (1) or (2).

In the after-sale services for 03-M-E2 series engines, only use the dedicated parts for E2 models and carry out the maintenance services accordingly.

[3] CYLINDER NUMBER



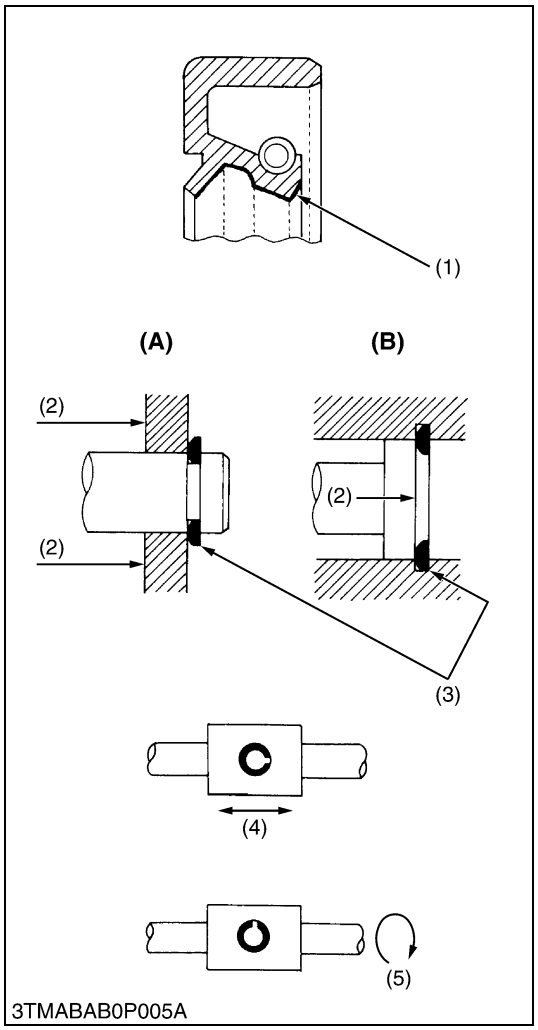
3EEACAA1P067A

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.

0000003180E

2. GENERAL PRECAUTIONS



3TMABAB0P005A

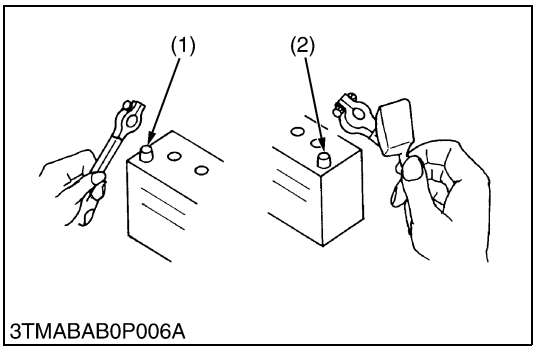
- During disassembly, carefully arrange removed parts in a clean area to prevent confusion later. Screws, bolts and nuts should be installed in their original position to prevent reassembly errors.
- When special tools are required, use KUBOTA genuine special tools. Special tools which are not frequently 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

W10109040

3. HANDLING PRECAUTIONS FOR ELECTRICAL PARTS AND WIRING



3TMABAB0P006A

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

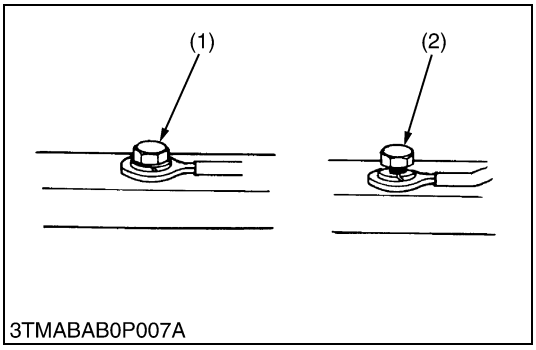
■ **IMPORTANT**

- **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

W10111140

[1] WIRING

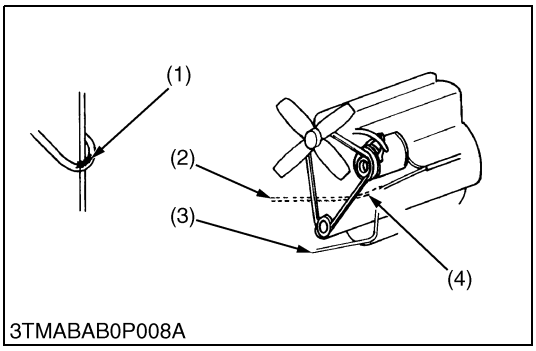


3TMABAB0P007A

- Securely tighten wiring terminals.

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

W10112160

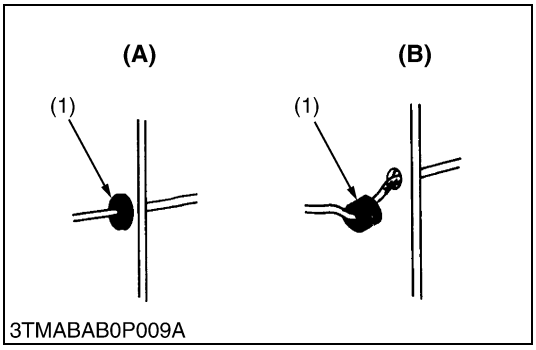


3TMABAB0P008A

- Do not let wiring contact dangerous part.

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

W10113130

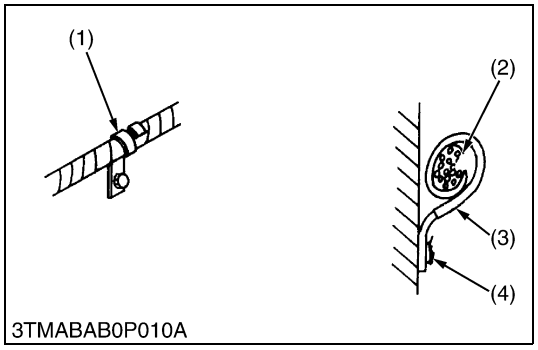


3TMABAB0P009A

- Securely insert grommet.

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

W10113880

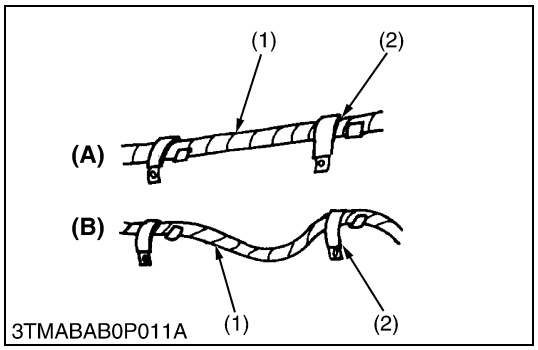


3TMABAB0P010A

- Securely clamp, being careful not to damage wiring.

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

W10114580

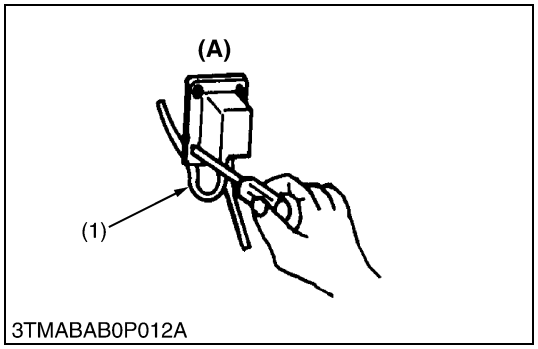


3TMABAB0P011A

- 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

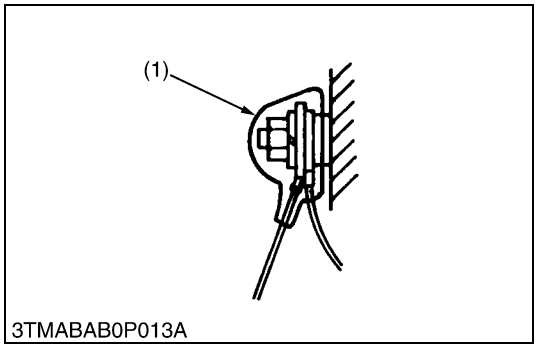


3TMABAB0P012A

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

(1) Wiring
(A) Incorrect

W10116700



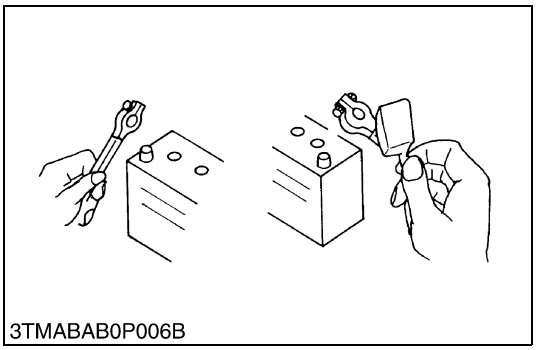
3TMABAB0P013A

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

(1) Cover
• Securely Install Cover

W10117350

[2] BATTERY


3TMABAB0P006B

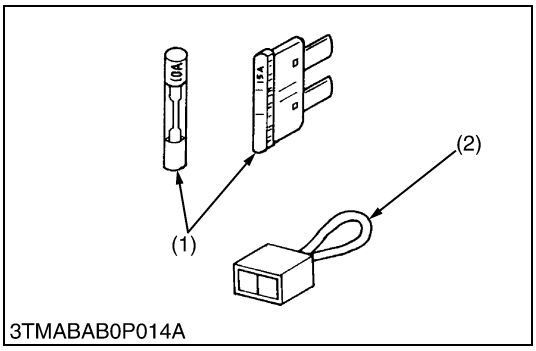
- Take care not to confuse positive and negative terminal posts.
- When removing battery cables, disconnect negative cable first. When installing battery cables, check for polarity and connect positive cable first.
- Do not install any battery with capacity other than is specified (Ah).
- After connecting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



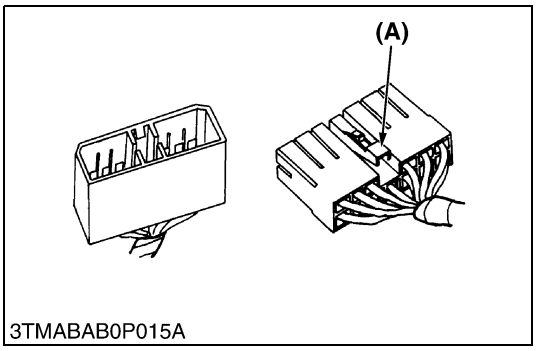
3TMABAB0P014A

- 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

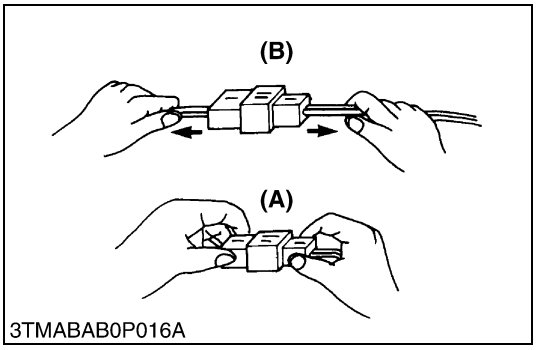


3TMABAB0P015A

- For connector with lock, push lock to separate.

(A) Push

W10122110

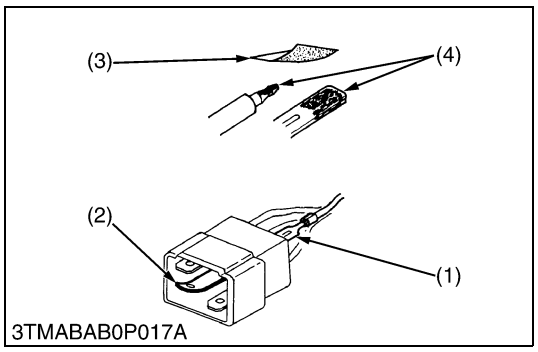


3TMABAB0P016A

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

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

W10122720

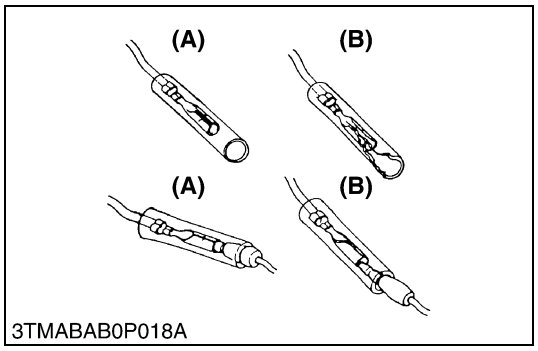


3TMABAB0P017A

- 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

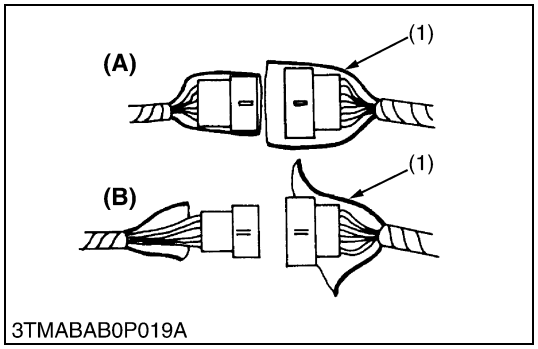


3TMABAB0P018A

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

(A) Correct
(B) Incorrect

W10124300



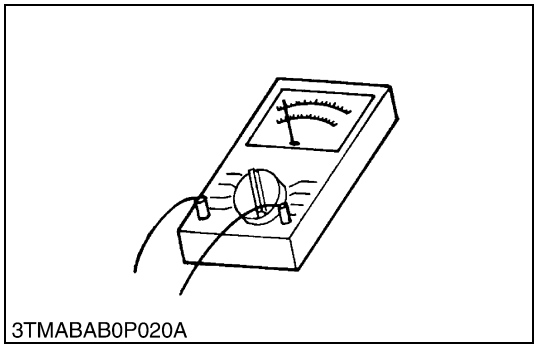
3TMABAB0P019A

- 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

	Place	Capacity	Lubricants, fuel and coolant
		L39	
1	Fuel	40 L 10.6 U.S.gals. 8.8 Imp.gals.	No. 2-D diesel fuel No. 1-D diesel fuel if temperature is below –10 °C (14 °F)
2	Coolant	7.5 L 7.9 U.S.qts. 6.6 Imp.qts.	Fresh clean water with anti-freeze
3	Engine crankcase (with filter)	5.7 L 6.0 U.S.qts. 5.0 Imp.qts.	Engine oil : API service Classification 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	43 L 11.4 U.S.gals. 9.5 Imp.gals.	KUBOTA UDT or SUPER UDT fluid*
5	Front axle case [4WD]	6.5 L 6.9 U.S.qts. 5.7 Imp.qts.	KUBOTA UDT or SUPER UDT fluid* or SAE80, 90 gear oil

Greasing

	Place	No. of greasing point	Capacity	Type of grease
6	Greasing	2	Until grease overflows	Multipurpose type grease
	Front axle support	2		
	Top link	1		
	Left rod	2	Moderate amount	
	Battery terminal	–		
	Suspension adjuster	–		
	Lock plate	–		
	Spring hook	–		
	Reversible seat	–		
	Throttle cable	Oiling		Engine oil

* KUBOTA UDT or SUPER UDT fluid --- 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-sulfur fuel, it is advisable to employ the CF, CD or CE lubricating oil with a high total base number. **If the CF-4 or CG-4 lubricating oil is used with a high-sulfur fuel, change the lubricating oil at shorter intervals.**

-Lubricating oil recommended when a low-sulfur or high-sulfur fuel is employed.

5. TIGHTENING TORQUES

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

[1] GENERAL USE SCREWS, BOLTS AND NUTS

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	ft-lbs	N·m	kgf·m	ft-lbs	N·m	kgf·m	ft-lbs	N·m	kgf·m	ft-lbs	N·m	kgf·m	ft-lbs
M6 (6 mm, 0.24 in.)	7.85 to 9.31	0.80 to 0.95	5.79 to 6.87	7.85 to 8.82	0.80 to 0.90	5.79 to 6.50	9.81 to 11.2	1.00 to 1.15	7.24 to 8.31	7.85 to 8.82	0.80 to 0.90	5.79 to 6.50	12.3 to 14.2	1.25 to 1.45	9.05 to 10.4
M8 (8 mm, 0.31 in.)	17.7 to 20.5	1.8 to 2.1	13.1 to 15.1	16.7 to 19.6	1.7 to 2.0	12.3 to 14.4	23.6 to 27.4	2.4 to 2.8	17.4 to 20.2	17.7 to 20.5	1.8 to 2.1	13.1 to 15.1	29.5 to 34.3	3.0 to 3.5	21.7 to 25.3
M10 (10 mm, 0.39 in.)	39.3 to 45.1	4.0 to 4.6	29.0 to 33.2	31.4 to 34.3	3.2 to 3.5	23.2 to 25.3	48.1 to 55.8	4.9 to 5.7	35.5 to 41.2	39.3 to 44.1	4.0 to 4.5	29.0 to 32.5	60.9 to 70.6	6.2 to 7.2	44.9 to 52.0
M12 (12 mm, 0.47 in.)	62.8 to 72.5	6.4 to 7.4	46.3 to 53.5	–	–	–	77.5 to 90.2	7.9 to 9.2	57.2 to 66.5	62.8 to 72.5	6.4 to 7.4	46.3 to 53.5	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

American standard cap screws with UNC or UNF threads				Metric cap screws			
Grade	SAE 5 or 8			Grade	Property class 8.8 (Approx. SAE grade 5)		
Unit / Size	N·m	kgf·m	ft-lbs	Unit / Size	N·m	kgf·m	ft-lbs
1/4	9.8 to 11.7	1.0 to 1.2	7.2 to 8.6	**M6**	9.8 to 11.2	1.0 to 1.1	7.2 to 8.3
5/16	19.0 to 23.1	1.9 to 2.4	14 to 17	**M8**	23.6 to 27.4	2.4 to 2.8	17.4 to 20.2
3/8	33.9 to 40.7	3.5 to 4.2	25 to 30	**M10**	48.1 to 55.8	4.9 to 5.7	35.5 to 41.2
1/2	88.1 to 105.8	9.0 to 10.8	65 to 78	**M12**	77.5 to 90.1	7.9 to 9.2	57.2 to 66.5
9/16	122.0 to 146.4	12.4 to 14.9	90 to 108	**M14**	124 to 147	12.6 to 15.0	91.2 to 108
5/8	176.3 to 211.5	18.0 to 21.6	130 to 156	**M16**	196 to 225	20.0 to 23.0	145 to 166
–	–	–	–	**M18**	275 to 318	28.0 to 32.5	203 to 235

W1013653

[2] STUD BOLTS

Material of opponent part	Ordinariness			Aluminum		
Unit / Diameter	N·m	kgf·m	ft-lbs	N·m	kgf·m	ft-lbs
M8 (8 mm, 0.31 in.)	11.8 to 15.6	1.2 to 1.6	8.68 to 11.5	8.82 to 11.8	0.90 to 1.2	6.51 to 8.67
M10 (10 mm, 0.39 in.)	24.6 to 31.3	2.5 to 3.2	18.1 to 23.1	19.7 to 25.4	2.0 to 2.6	14.5 to 18.8
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

W1048139

[3] HYDRAULIC FITTINGS

■ Hydraulic Hose Fittings

Hose size	Thread size	Tightening torque		
		N·m	kgf·m	ft-lbs
02	1/8	13.7 to 15.7	1.4 to 1.6	10.1 to 11.6
03	1/4	22.6 to 27.5	2.3 to 2.8	16.6 to 20.3
04				
05	3/8	45.1 to 53.0	4.6 to 5.4	33.3 to 39.0
06				

W1014711

■ Hydraulic Pipe Cap Nuts

Pipe size	Tightening torque		
	N·m	kgf·m	ft-lbs
Φ6	24.5 to 34.3	2.5 to 3.5	18.1 to 25.3
Φ8	29.4 to 39.2	3.0 to 4.0	21.7 to 28.9
Φ10	39.2 to 49.0	4.0 to 5.0	28.9 to 36.1
Φ12	49.0 to 68.6	5.0 to 7.0	36.1 to 50.6
Φ15	107.9 to 117.7	11.0 to 12.0	72.3 to 86.8
Φ16	137.3 to 147.1	14.0 to 15.0	101.3 to 108.5
Φ18	107.9 to 117.7	11.0 to 12.0	72.3 to 86.8

W1014848

■ Hydraulic Pipe Joints

Size		Tightening torque		
		N·m	kgf·m	ft-lbs
1/4	G	17.7 to 21.6	1.8 to 2.2	13.0 to 15.9
	R	10.8 to 13.7	1.1 to 1.4	8.0 to 10.1
3/8	G	35.3 to 43.1	3.6 to 4.4	26.0 to 31.8
	R	22.6 to 27.4	2.3 to 2.8	16.6 to 20.2
1/2	G	88.3 to 107.8	9.0 to 11.0	65.1 to 79.5
	R	44.1 to 53.9	4.5 to 5.5	32.5 to 39.7

W1015229

■ Adaptors, Elbows and Others

Item	Thread size	Tightening torque		
		N·m	kgf·m	ft-lbs
Adjustable elbow, Adaptor	9/16	37 to 44	3.7 to 4.6	27 to 33
	3/4	47 to 54	4.8 to 5.5	35 to 40
Hose fitting, Flare nut	9/16	22 to 25	2.2 to 2.6	16 to 19
	3/4	35 to 41	3.6 to 4.1	26 to 30
Adaptor (NPT)	3/8	39 to 44	3.9 to 4.4	28 to 32
	1/2	49 to 58	5.0 to 5.9	36 to 43

■ NOTE

- **When connecting a hose with flare nut, after tightening the nut with specified torque, return it approximately 45 degrees and re-tighten it to specified torque.**

W1015484

6. MAINTENANCE

No.	Item			Indication on hour meter									Since then	Important		Reference page
				50	100	150	200	250	300	350	400	450				
1	Engine oil		Change	★	☆		☆		☆		☆		every 100 Hr			G-18
2	Engine oil filter		Replace	★			☆				☆		every 200 Hr			G-23
3	Hydraulic oil filter		Replace	★			☆				☆		every 200 Hr			G-23
4	Transmission fluid		Change	★							☆		every 400 Hr			G-27
5	Front axle case oil		Change	★							☆		every 400 Hr			G-27
6	Front axle pivot		Adjust										every 600 Hr			G-19
7	Greasing		–	☆	☆	☆	☆	☆	☆	☆	☆	☆	every 50 Hr			G-16
8	Engine start system		Check	☆	☆	☆	☆	☆	☆	☆	☆	☆	every 50 Hr			G-17
9	Wheel bolt torque		Check	☆	☆	☆	☆	☆	☆	☆	☆	☆	every 50 Hr			G-17
10	Battery condition		Check		☆		☆		☆		☆		every 100 Hr	*5		G-21
11	Air cleaner element [Double type]	Primary element	Clean		☆		☆		☆		☆		every 100 Hr	*1	@	G-18
			Replace										every 1 year	*2		G-28
		Secondary element	Replace										every 1 year			G-28
12	Fuel filter element		Clean		☆		☆		☆		☆		every 100 Hr		@	G-19
			Replace								☆		every 400 Hr			G-27
13	Fan belt		Adjust		☆		☆		☆		☆		every 100 Hr			G-19
14	Clutch		Adjust		☆		☆		☆		☆		every 100 Hr			G-20
15	Brake		Adjust	★	☆		☆		☆		☆		every 100 Hr			G-20
16	Radiator hose and clamp		Check				☆				☆		every 200 Hr			G-24
			Replace										every 2 year			G-31
17	Oil cooler line / Power steering oil line		Check				☆				☆		every 200 Hr			G-24
			Replace										every 2 year			G-31
18	Fuel line		Check		☆		☆		☆		☆		every 100 Hr		@	G-19
			Replace										every 2 year	*3		G-31
19	Toe-in		Adjust				☆				☆		every 200 Hr			G-25
20	Intake air line		Check				☆				☆		every 200 Hr		@	G-25
			Replace										every 2 year	*3		G-31
21	Engine valve clearance		Adjust										every 800 Hr	*4		G-28
22	Fuel injection nozzle injection pressure		Check										every 1500 Hr	*4	@	G-28
23	Injection pump		Check										every 3000 Hr	*4	@	G-28
24	Cooling system		Flush										every 2 year			G-29, 32
25	Coolant		Change										every 2 year			G-29
26	Fuel system		Bleed										Service as required			G-32
27	Clutch housing water		Drain													G-32
28	Fuse		Replace													G-33
29	Light bulb		Replace													G-33
30	Spark arrest muffler		Clean					☆					every 250 Hr			G-26

W1035769

No.	Item			Indication on hour meter									Since then	Important		Reference page
				500	550	600	650	700	750	800	850	900				
1	Engine oil		Change	☆		☆		☆		☆		☆	every 100 Hr			G-18
2	Engine oil filter		Replace			☆				☆			every 200 Hr			G-23
3	Hydraulic oil filter		Replace			☆				☆			every 200 Hr			G-23
4	Transmission fluid		Change							☆			every 400 Hr			G-27
5	Front axle case oil		Change							☆			every 400 Hr			G-27
6	Front axle pivot		Adjust			☆							every 600 Hr			G-19
7	Greasing		–	☆	☆	☆	☆	☆	☆	☆	☆	☆	every 50 Hr			G-16
8	Engine start system		Check	☆	☆	☆	☆	☆	☆	☆	☆	☆	every 50 Hr			G-17
9	Wheel bolt torque		Check	☆	☆	☆	☆	☆	☆	☆	☆	☆	every 50 Hr			G-17
10	Battery condition		Check	☆		☆		☆		☆		☆	every 100 Hr	*5		G-21
11	Air cleaner element [Double type]	Primary element	Clean	☆		☆		☆		☆		☆	every 100 Hr	*1	@	G-18
			Replace										every 1 year	*2		G-28
		Secondary element	Replace										every 1 year			G-28
12	Fuel filter element		Clean	☆		☆		☆		☆		☆	every 100 Hr		@	G-19
			Replace							☆			every 400 Hr			G-27
13	Fan belt		Adjust	☆		☆		☆		☆		☆	every 100 Hr			G-19
14	Clutch		Adjust	☆		☆		☆		☆		☆	every 100 Hr			G-20
15	Brake		Adjust	☆		☆		☆		☆		☆	every 100 Hr			G-20
16	Radiator hose and clamp		Check			☆				☆			every 200 Hr			G-24
			Replace										every 2 year			G-31
17	Oil cooler line / Power steering oil line		Check			☆				☆			every 200 Hr			G-24
			Replace										every 2 year			G-31
18	Fuel line		Check	☆		☆		☆		☆		☆	every 100 Hr		@	G-19
			Replace										every 2 year	*3		G-31
19	Toe-in		Adjust			☆				☆			every 200 Hr			G-25
20	Intake air line		Check			☆				☆			every 200 Hr		@	G-25
			Replace										every 2 year	*3		G-31
21	Engine valve clearance		Adjust							☆			every 800 Hr	*4		G-28
22	Fuel injection nozzle injection pressure		Check										every 1500 Hr	*4	@	G-28
23	Injection pump		Check										every 3000 Hr	*4	@	G-28
24	Cooling system		Flush										every 2 year			G-29, 32
25	Coolant		Change										every 2 year			G-29
26	Fuel system		Bleed										Service as required			G-32
27	Clutch housing water		Drain													G-32
28	Fuse		Replace													G-33
29	Light bulb		Replace													G-33
30	Spark arrest muffler		Clean	☆					☆				every 250 Hr			G-26

■ 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 : Consult your local KUBOTA Dealer for this service.**
- ***5 : When the battery is used for less than 100 hours per year, check the battery condition by reading the indicator 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.

W1019501

7. CHECK AND MAINTENANCE

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.
- Check and refueling

1. Check the tire pressure, and check for wear and damage.
2. Check for oil and water leak.
3. Check the engine oil level.
4. Check the transmission fluid level.
5. Check the coolant level.
6. Clean grill, radiator screen and oil cooler
7. Check the dust indicator
8. Check the condition of seat belt and ROPS / FOPS attaching hardware.
9. Check the nuts of tires are tight.
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 brake pedals and clutch pedal.
2. Check the steering wheel.

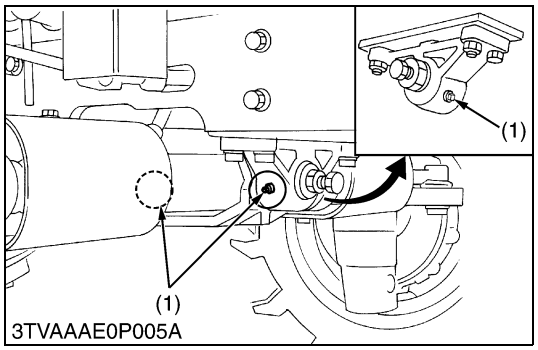
- Turning the key switch.

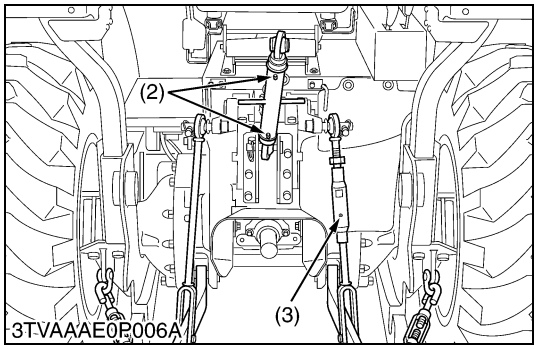
1. Check the performance of the easy checker lights.
2. Check the lights, turn signal lights, hazard lights and other light equipment. Clean if necessary.
3. Check the performance of the meters and gauges.

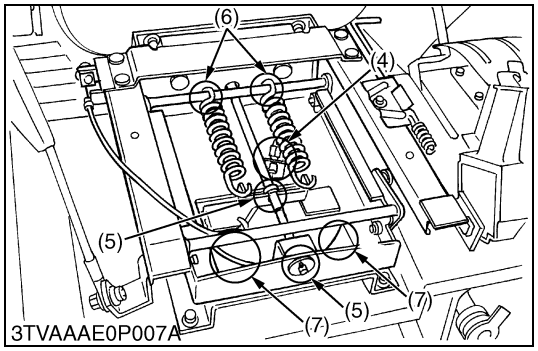
- Starting the engine.

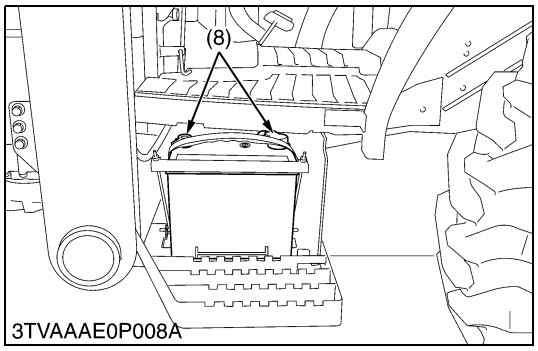
1. Check to see that the lights on the easy checker go off.
2. Check the color of the exhaust gas.
3. Check the brakes for proper operation.

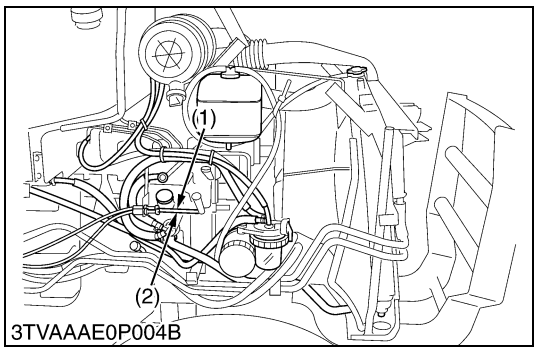
[2] CHECK POINTS OF INITIAL 50 HOURS











Lubricating Grease Fittings

Apply a small amount of multipurpose grease to the following points every 50 hours:

If you operated the machine in extremely wet and muddy conditions, lubricate grease fittings more often.

When apply a grease to forward front axle support, remove the breather plug and apply a grease until grease overflows from breather plug port.

After greasing reinstall the breather plug.

(1) Front Axle Support
(2) Top Link
(3) Lifting Rod
(4) Lock Plate
(5) Suspension Adjuster
(6) Spring Hook
(7) Reversible Seat
(8) Battery Terminal

W1014533

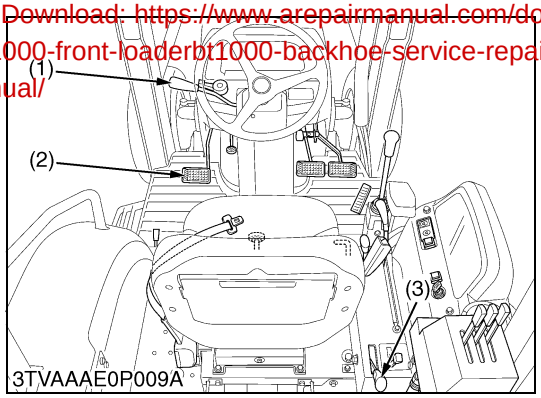
Oiling

CAUTION

- **Be sure to stop the engine and remove the key before oiling.**

(1) Hand Throttle Cable
(2) Foot Throttle Cable

W1014892



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. Place all control levers in the "**NEUTRAL**" position.
2. Set the parking brake and stop the engine.

■ Test 1: Switch for the shuttle shift lever.

1. Sit on the operator's seat.
2. Shift the shuttle shift lever to the forward or reverse position.
3. Depress the clutch pedal fully.
4. Disengage the PTO clutch control lever.
5. Turn the key to "**START**" position.
6. The engine must not crank.

■ Test 2: Switch for the PTO clutch control lever.

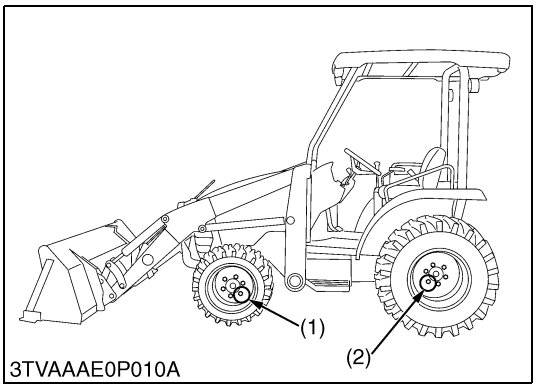
1. Sit on the operator's seat.
2. Engage the PTO clutch control lever.
3. Depress the clutch pedal fully.
4. Shift the shuttle shift lever to the neutral position.
5. Turn the key to "**START**" position.
6. The engine must not crank.

■ Test 3: Switch for the operator's seat.

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

(1) Shuttle Shift Lever
(2) Clutch Pedal
(3) PTO Clutch Control Lever

W1015055



Checking Wheel Bolt Torque

CAUTION

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

1. Check wheel bolts and nuts regularly especially when new. If they are loose, tighten them as follows.

Tightening torque	Front wheel mounting nuts	137 N·m 14 kgf·m 100 ft-lbs
	Rear wheel mounting nuts	260 N·m 27 kgf·m 192 ft-lbs

(1) Front Wheel Mounting Nut
(2) Rear Wheel Mounting Nut

W1015586