

Product: Kubota WSM L48 Tractor, TL1150 Front Loader, BT1100 Backhoe Service Repair Workshop Manual
Full Download: <https://www.arespairmanual.com/downloads/kubota-wsm-l48-tractor-tl1150-front-loader-bt1100-backhoe-service-repair-workshop-manual/>



WORKSHOP MANUAL TRACTOR

L48

[TL1150 FRONT LOADER] [BT1100 BACKHOE]

Kubota

Sample of manual. Download All 579 pages at:

[https://www.arespairmanual.com/downloads/kubota-wsm-l48-tractor-tl1150-front-loader-bt1100-backhoe-service-repair-workshop-](https://www.arespairmanual.com/downloads/kubota-wsm-l48-tractor-tl1150-front-loader-bt1100-backhoe-service-repair-workshop-manual/)

Product: Kubota WSM L48 Tractor,TL1150 Front Loader,BT1100 Backhoe Service Repair Workshop Manual
Full Download: <https://www.arepairmanual.com/downloads/kubota-wsm-l48-tractortl1150-front-loaderbt1100-backhoe-service-repair-workshop-manual/>

Sample of manual. Download All 579 pages at:

[https://www.arepairmanual.com/downloads/kubota-wsm-l48-tractortl1150-front-loaderbt1100-backhoe-service-repair-workshop-](https://www.arepairmanual.com/downloads/kubota-wsm-l48-tractortl1150-front-loaderbt1100-backhoe-service-repair-workshop-manual/)

TO THE READER

This Workshop Manual has been prepared to provide servicing personnel with information on the mechanism, service and maintenance of KUBOTA Tractor L48, KUBOTA Front Loader TL1150 and KUBOTA Backhoe BT1100. It is divided into two parts, "Mechanism" and "Servicing" for each section.

■ Mechanism

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

■ Servicing

The heading "General" section comes general precautions, check and maintenance and special tools. Other section, there are troubleshooting, servicing specification lists, 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.

October 2000

© KUBOTA Corporation 2000



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.



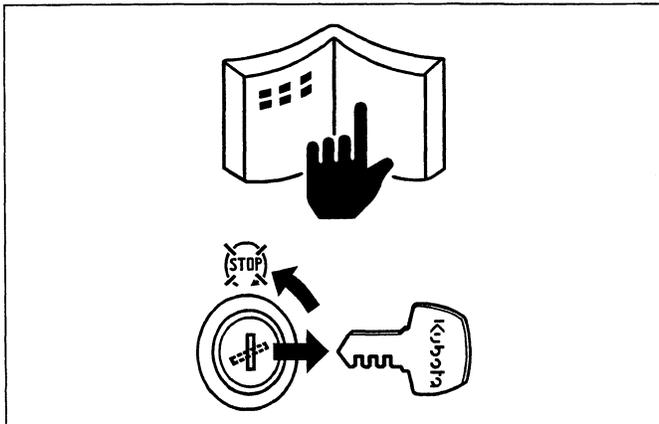
IMPORTANT

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



NOTE

: Gives helpful information.



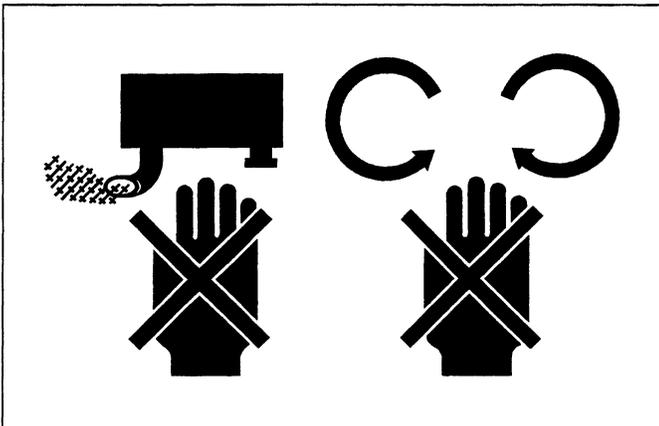
BEFORE SERVICING AND REPAIRING

- 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.



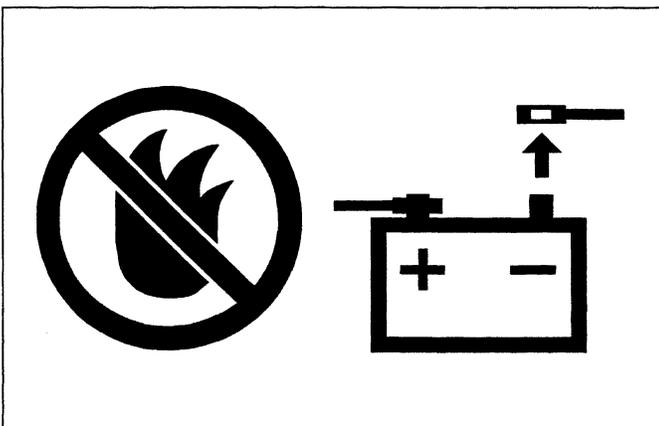
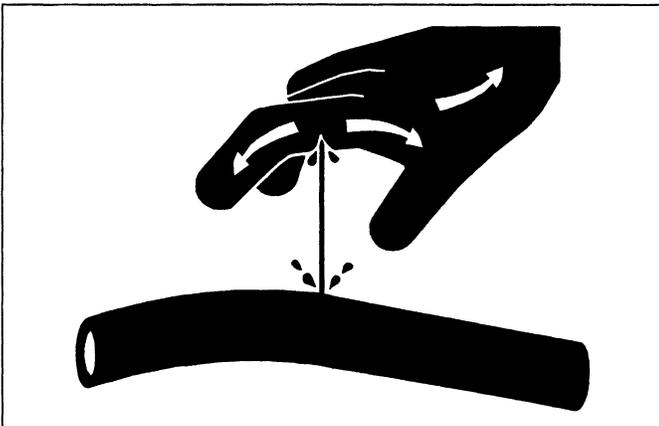
SAFETY STARTING

- 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.



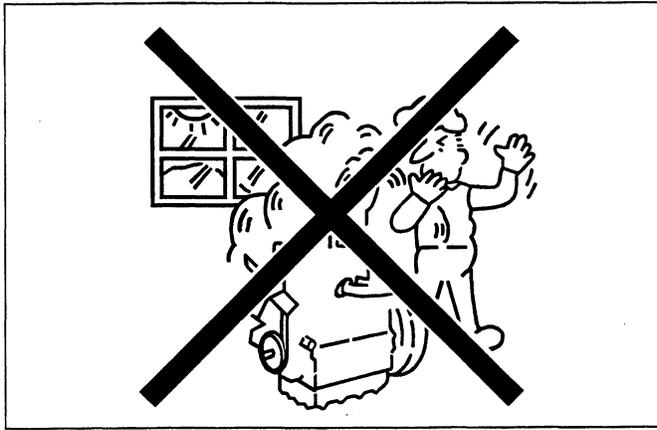
SAFETY WORKING

- 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. Mark shift 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.



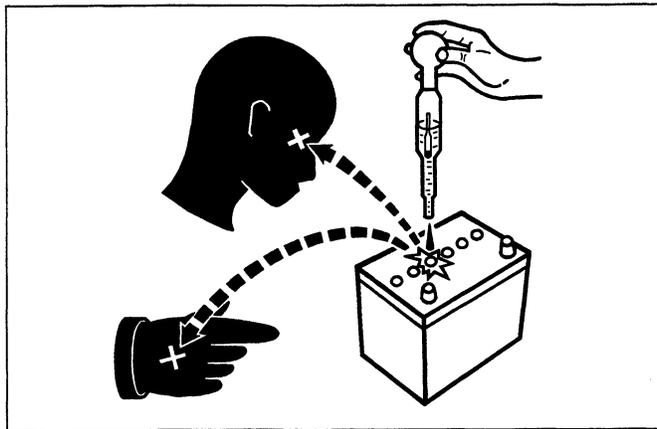
AVOID FIRES

- 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.
- Mark sure that no fuel has been spilled on the engine.



VENTILATE WORK AREA

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



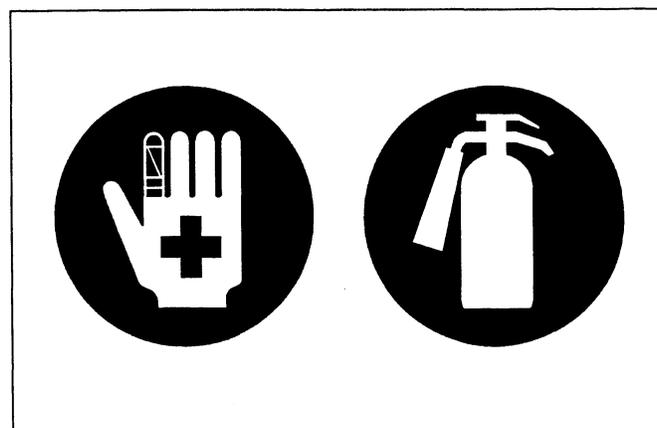
PREVENT ACID BURNS

- 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. 35260-3491-3

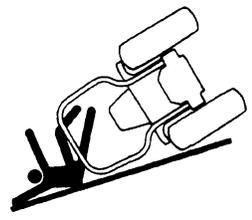
⚠ CAUTION

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, set the parking brake, stop the engine and remove the key.

(2) Part No. 32771-4925-1

⚠ WARNING



TO AVOID PERSONAL INJURY OR DEATH FROM ROLL-OVER :

1. Kubota recommends the use of a Roll-Over Protective structures (ROPS) and seat belt in almost all applications.
2. To ensure ROPS protection, do not operate tractor without loader mainframe.
3. Never use just the seat belt or just the ROPS. They must be used together. For further details, consult your Operator's Manual or your local dealer.

(5) Part No. 32751-4921-2

⚠ WARNING

TO AVOID SERIOUS PERSONAL INJURY OR DEATH:

1. Keep tractor seat in forward position except when operating backhoe.
2. Using seat in reversed position while operating attachments other than backhoe may result in entanglement with PTO shaft or 3-point hitch.

(3) Part No. TA240-4933-2

⚠ 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.**
Failure to comply to this warning may allow the wheels to slip, and could cause injury or death.
4. **STOP THE ENGINE.**

(6) Part No. TA040-4935-1

⚠ WARNING

TO AVOID PERSONAL INJURY:

1. Attach pulled or towed loads to the drawbar only.
2. Use the 3-point hitch only with equipment designed for 3-point hitch usage.

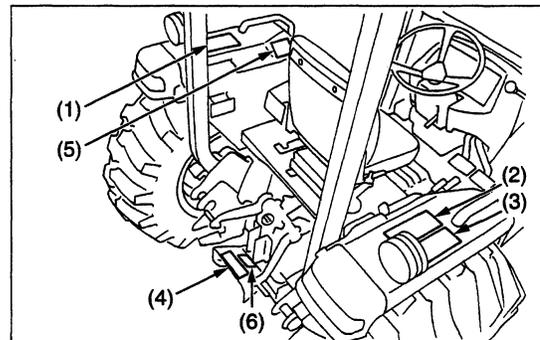
(4) Part No. TA040-4959-3



⚠ WARNING

TO AVOID PERSONAL INJURY.

1. Keep PTO shield in place at all times.
2. Do not operate the PTO at speeds faster than the speed recommended by the implement manufacturer.
3. For trailing PTO-driven implements, set drawbar at towing position. (see operator's manual)



(1) Part No. TA040-4965-2



! 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.

(2) Part No. TA040-4956-2
 Diesel fuel only No fire



(3) Part No. TA040-3015-1

<p>DANGER EXPLOSIVE GASES Cigarettes, flames or sparks could cause battery to explode. Always shield eyes and face from battery. Do not charge or use booster cables or adjust post connections without proper instruction and training. KEEP VENT CAPS TIGHT AND LEVEL</p>	<p>POISON CAUSES SEVERE BURNS Contains sulfuric acid. Avoid contact with skin, eyes or clothing. In event of accident flush with water and call a physician immediately. KEEP OUT OF REACH OF CHILDREN</p>
---	--

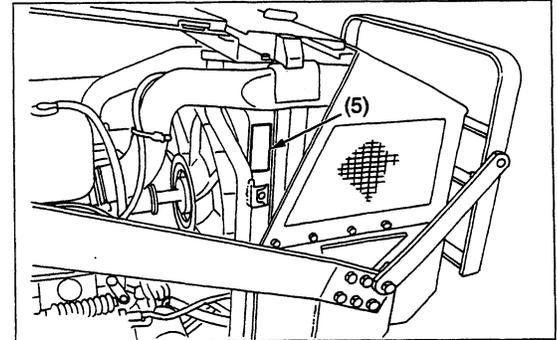
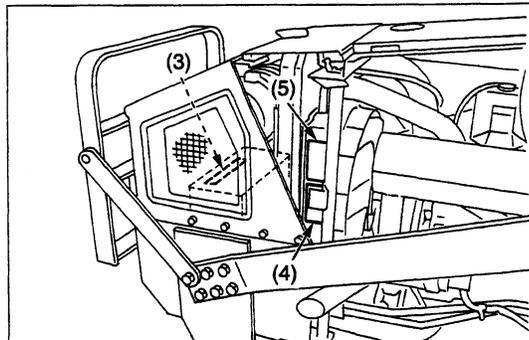
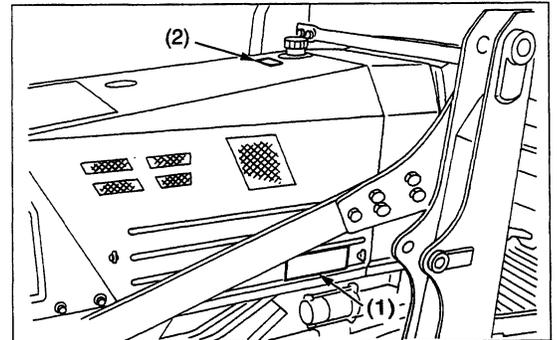
(4) Part No. TA040-4958-1

Do not touch hot surface like muffler, etc.



(5) Part No. 32751-4958-1

Stay clear of engine fan and fanbelt.



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.

SPECIFICATIONS

Model		L48	
Engine gross power		35.8 kW (48 HP)*	
PTO power		28.0 kW (37.5 HP)*	
Engine	Model	V2403-M-ETLB	
	Type	Vertical, water-cooled, 4-cycle diesel	
	No. of cylinders	4	
	Bore and stroke	87 × 102.4 mm (3.4 × 4.0 in.)	
	Total displacement	2434 cm ³ (148.5 cu.in.)	
	Rated revolution	2600 rpm	
	Fuel	Diesel fuel No. 1 [below -10 °C (14 °F)], Diesel fuel No. 2 [above -10 °C (14 °F)]	
	Starter	Electric starter with battery, glow plug, 12 V, 2.0 kW	
	Lubrication	Forced lubrication by trochoid pump	
	Cooling	Water with pressurized radiator	
	Battery	12 V	
Capacities	Fuel tank	50 L (13.2 U.S.gals, 11.0 Imp.gals.)	
	Engine crankcase (with filter)	7.4 L (7.8 U.S.qts., 6.5 Imp.qts.)	
	Engine coolant	7.0 L (7.4 U.S.qts., 6.2 Imp.qts.)	
	Transmission case	51 L (13.5 U.S.gals, 11.2 Imp.gals.)	
	Front axle case	8 L (8.5 U.S.qts., 7.0 Imp.qts.)	
Tires	Front	10-16.5 R4 HD	
	Rear	17.5L-24 R4	
Dimensions	Overall length (without 3P)		3105 mm (122.2 in.)
	Overall width		1906 mm (75.0 in.)
	Overall height with ROPS and FOPS		2385 mm (93.5 in.)
	Wheel base		1880 mm (74.0 in.)
	Min. ground clearance		370 mm (14.6 in.) at transmission case
	Tread	Front	1363 mm (53.7 in.)
Rear		1462 mm (57.6 in.)	
Weight (with ROPS and FOPS, main frame)		2192 kg (4833 lbs)	
PTO shaft		Transmission case rear	
Rear PTO		SAE 1-3/8, 6 splines (with overrunning clutch) (540 rpm at 2436 engine rpm)	
Clutch		Dry single plate	
Steering		Hydrostatic power steering	
Transmission		Hydrostatic transmission (3 speeds)	
Min. turning radius (without brake)		3.2 m (10.5 feet)	
Brake		Right and left independent with interlocking device	
Differential		Bevel gear	

NOTE: * Manufacture's estimate

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

W1028103

TRAVELING SPEEDS

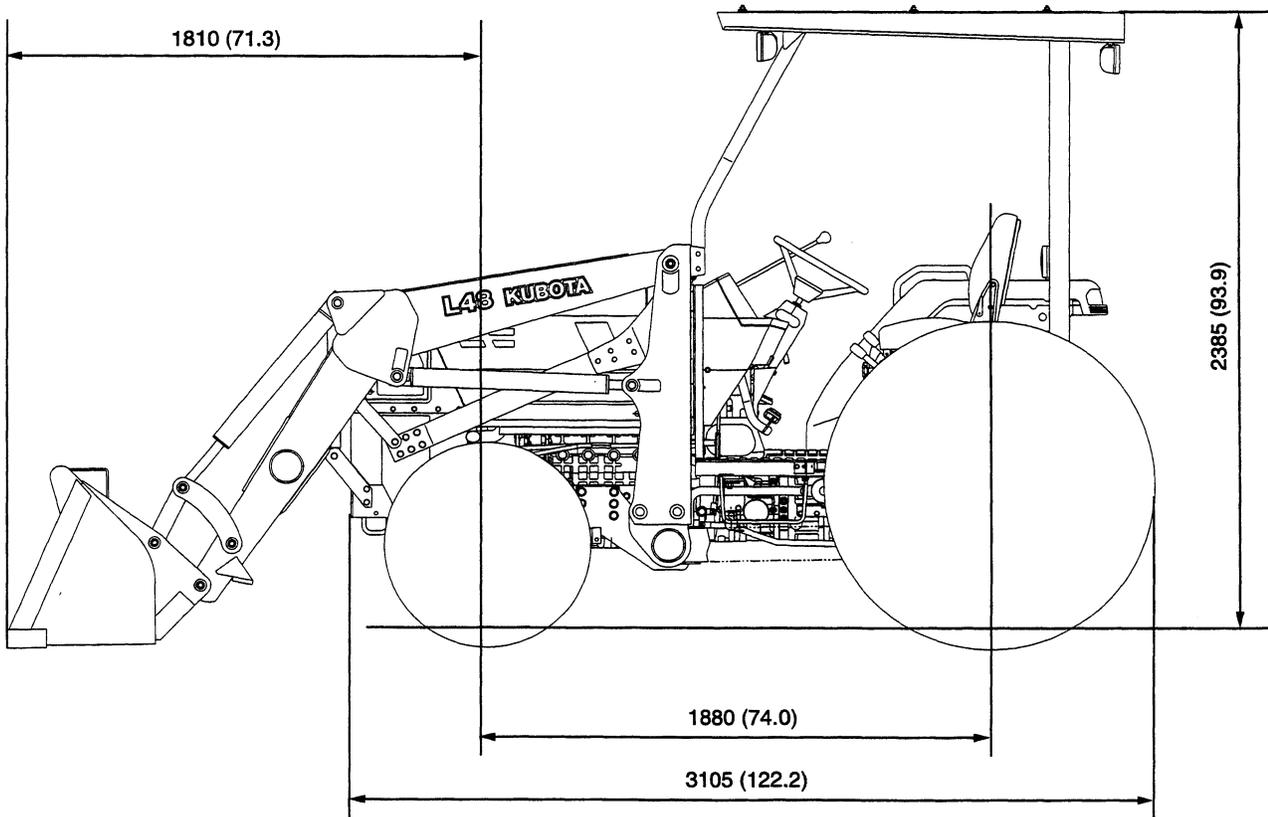
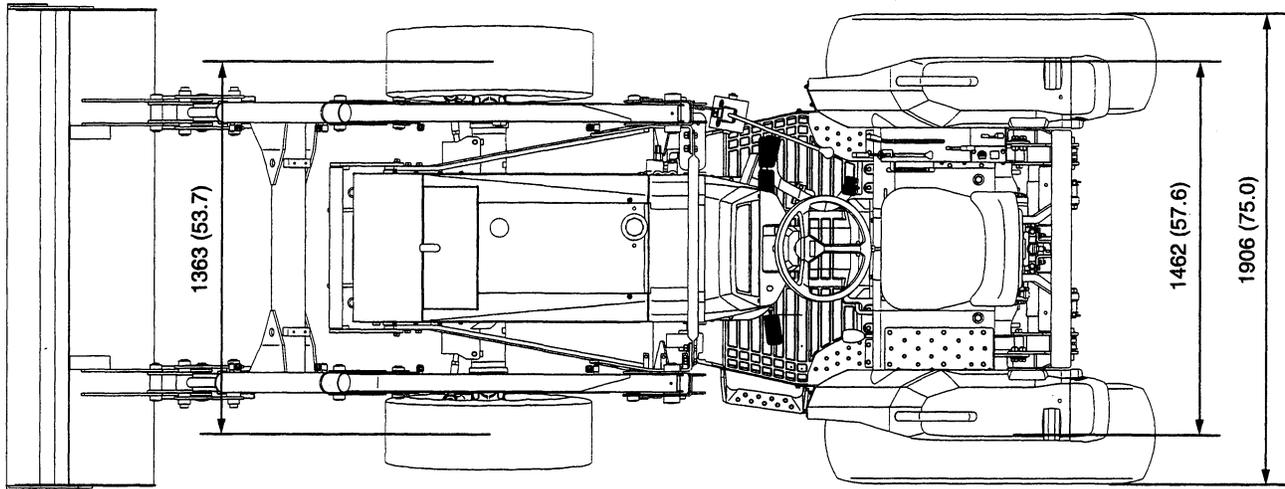
Model		L48	
Tire size (Rear)		17.5L-24 R4	
	Range gear shift lever	km/h	mail/h
Forward (At rated engine rpm)	Low	0 to 4.2	0 to 2.6
	Middle	0 to 7.1	0 to 4.4
	High	0 to 24.6	0 to 15.3
Reverse (At rated engine rpm)	Low	0 to 4.2	0 to 2.6
	Middle	0 to 7.1	0 to 4.4
	High	0 to 24.6	0 to 15.3

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

W1035065

DIMENSIONS

Unit : mm (in.)



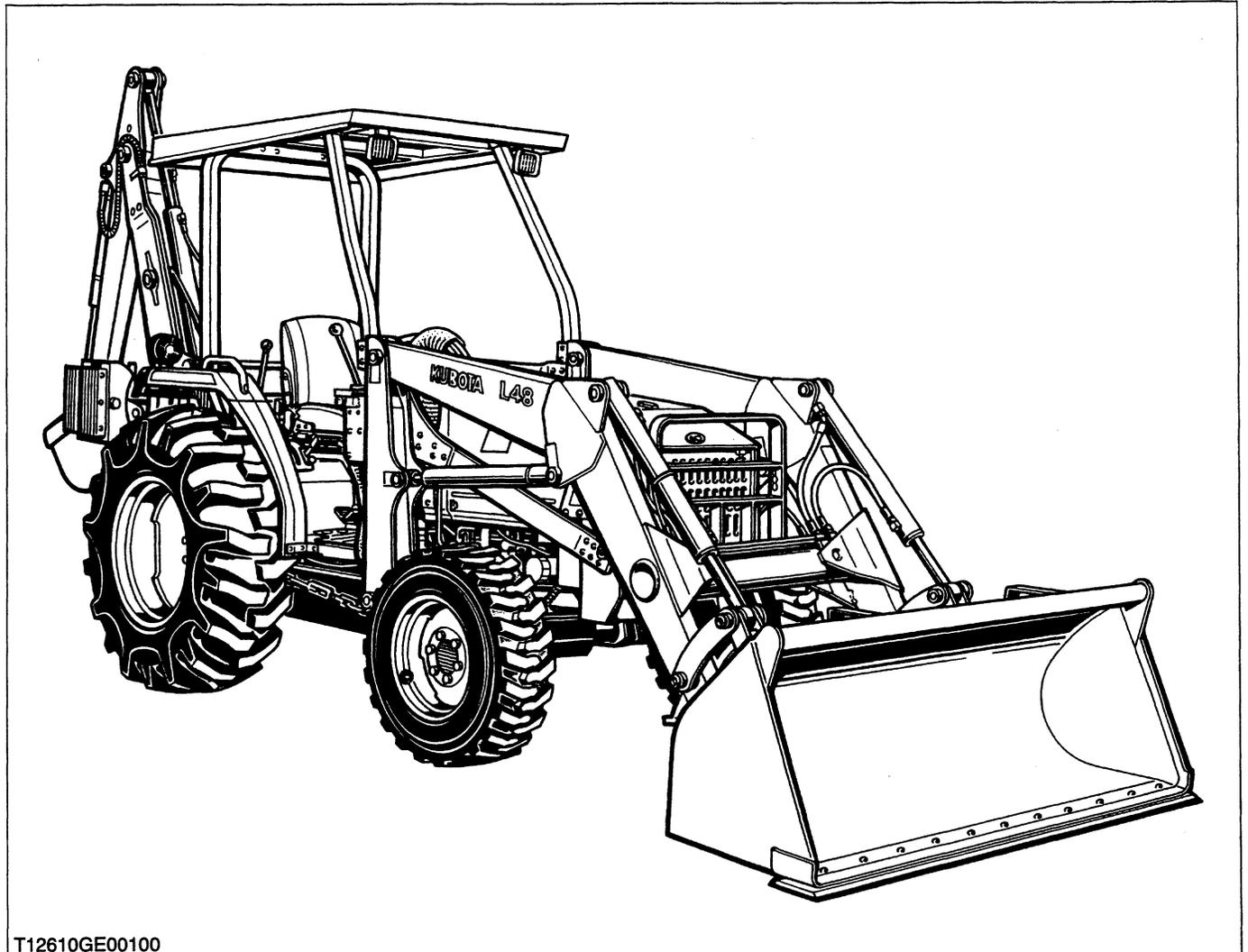
T12610ZZ00301

GENERAL

CONTENTS

1. FEATURE	G-1
2. TRACTOR IDENTIFICATION	G-2
3. GENERAL PRECAUTIONS	G-3
4. HANDLING PRECAUTIONS FOR ELECTRICAL PARTS AND WIRING ..	G-4
[1] WIRING.....	G-4
[2] BATTERY.....	G-6
[3] FUSE.....	G-6
[4] CONNECTOR.....	G-6
[5] HANDLING OF CIRCUIT TESTER.....	G-7
5. LUBRICANTS, FUEL AND COOLANT	G-8
6. TIGHTENING TORQUES	G-9
[1] GENERAL USE SCREWS, BOLTS AND NUTS.....	G-9
[2] STUD BOLTS.....	G-10
[3] HYDRAULIC FITTINGS.....	G-10
7. MAINTENANCE	G-12
8. CHECK AND MAINTENANCE.....	G-13
[1] DAILY CHECK.....	G-13
[2] CHECK POINTS OF INITIAL 50 HOURS.....	G-14
[3] CHECK POINT OF EVERY 50 HOURS	G-18
[4] CHECK POINTS OF EVERY 100 HOURS.....	G-21
[5] CHECK POINTS OF EVERY 200 HOURS.....	G-26
[6] CHECK POINT OF EVERY 250 HOURS	G-28
[7] CHECK POINTS OF EVERY 400 HOURS.....	G-29
[8] CHECK POINTS OF EVERY 600 HOURS.....	G-29
[9] CHECK POINTS OF EVERY 800 HOURS.....	G-29
[10]CHECK POINTS OF EVERY 1500 HOURS.....	G-29
[11]CHECK POINTS OF EVERY 3000 HOURS.....	G-29
[12]CHECK POINTS OF EVERY 1 YEAR	G-29
[13]CHECK POINTS OF EVERY 2 YEARS.....	G-29
[14]OTHERS	G-32
9. SPECIAL TOOLS.....	G-34
[1] SPECIAL TOOLS FOR ENGINE	G-34
[2] SPECIAL TOOLS FOR TRACTOR.....	G-42
10. TIRES.....	G-46
[1] TIRE PRESSURE	G-46
[2] TREADS.....	G-46
[3] TIRE LIQUID INJECTION	G-47
[4] IMPLEMENT LIMITATIONS.....	G-49

1. FEATURE



T12610GE00100

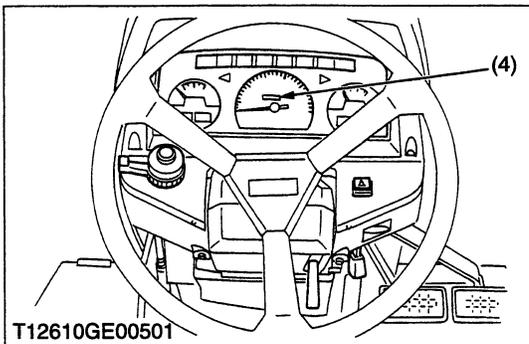
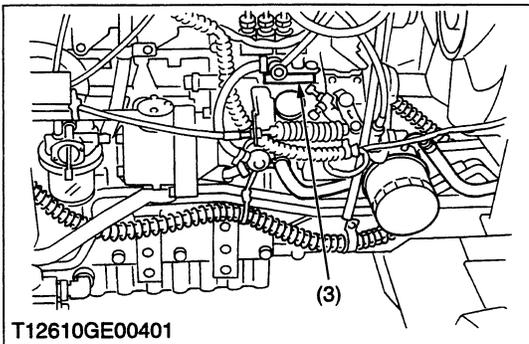
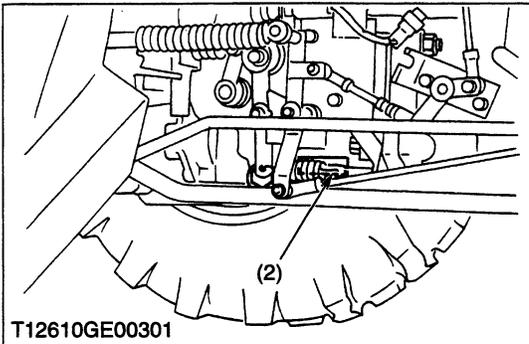
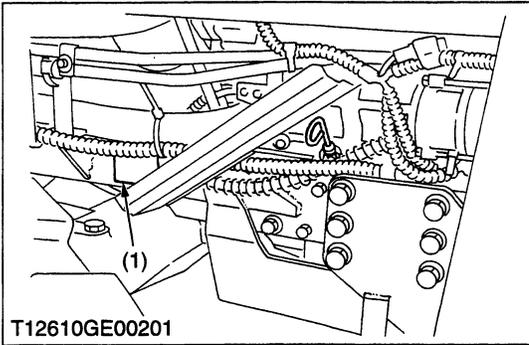
1. New E-TVCS Diesel Engine
2. Hydrostatic Transmission with 3 Range Speeds
3. Hard-Nose Slanted Hood And Enclosed Muffler
4. Full Floating ISO-mounted Flat Deck
5. "One-Touch" Reversible Deluxe Seat
6. Large Capacity Hydraulic System
7. Reinforced Integral Tractor Main Frame with Pillow Block Axle Support
8. ROPS and FOPS
9. Single Lever Loader Operation with Hydraulic Controlled Self-Leveling
10. Backhoe Quick-Attach, Easy-On and Easy-Off

2. TRACTOR IDENTIFICATION

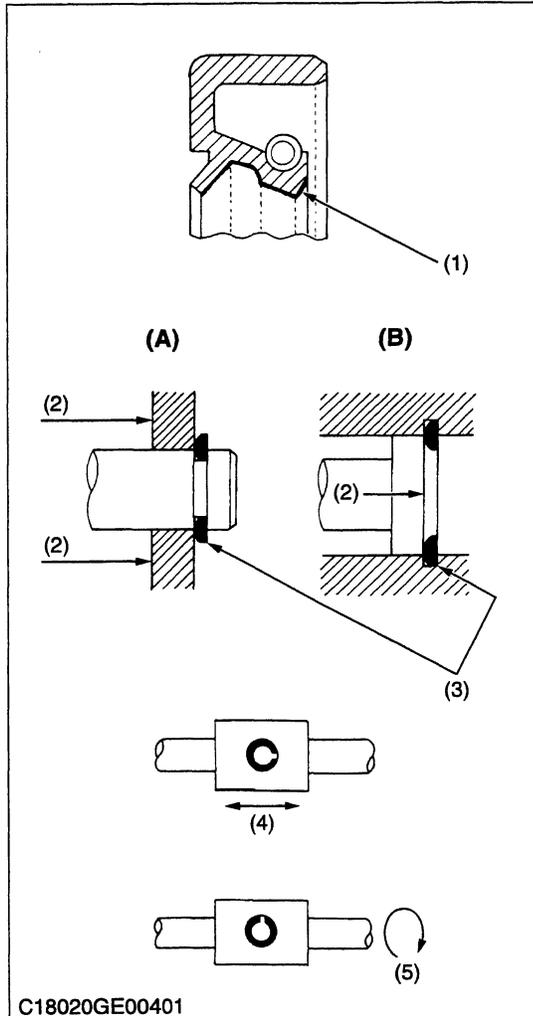
When contacting your local KUBOTA distributor, always specify engine serial number, tractor serial number and hour meter reading.

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

W1010661



3. GENERAL PRECAUTIONS



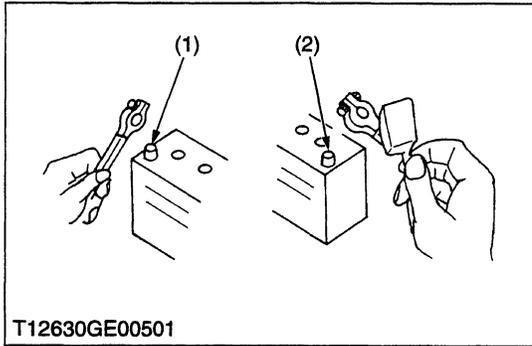
- During disassembly, carefully arrange removed parts in a clean area to prevent confusion later. Screws, bolts and nuts should be installed in their original position to prevent reassembly errors.
- When special tools are required, use KUBOTA genuine special tools. Special tools which are not frequently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

W1010904

4. HANDLING PRECAUTIONS FOR ELECTRICAL PARTS AND WIRING



T12630GE00501

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

■ IMPORTANT

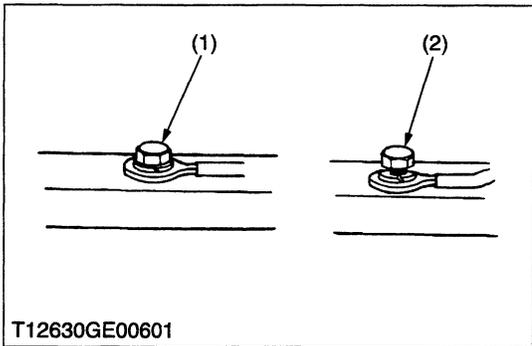
- Check electrical wiring for damage and loosened connection every year. To this end, educate the customer to do his or her own check and at the same time recommend the dealer to perform periodic check for a fee.
- Do not attempt to modify or remodel any electrical parts and wiring.
- When removing the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

(1) Negative Terminal

(2) Positive Terminal

W1011114

[1] WIRING



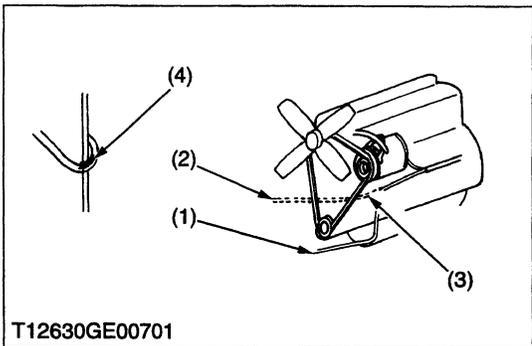
T12630GE00601

- Securely tighten wiring terminals.

(1) Correct
(Securely Tighten)

(2) Incorrect
(Loosening Leads to Faulty Contact)

W1011216



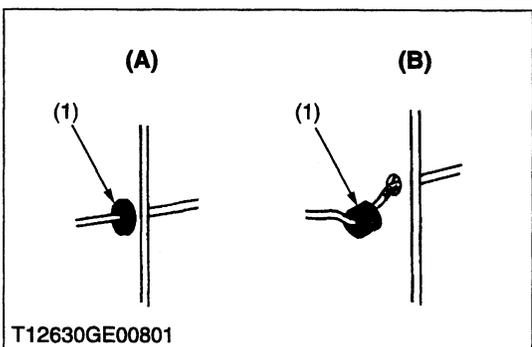
T12630GE00701

- Do not let wiring contact dangerous part.

(1) Wiring (Correct)
(2) Wiring (Incorrect)

(3) Dangerous Part
(4) Dangerous Part

W1011313



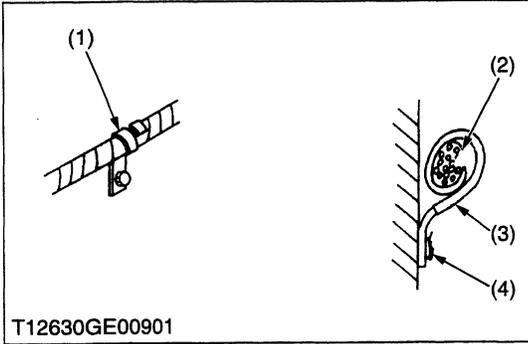
T12630GE00801

- Securely insert grommet.

(1) Grommet

(A) Correct
(B) Incorrect

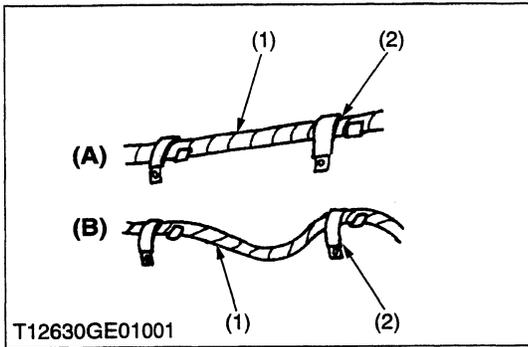
W1011388



- Securely clamp, being careful not to damage wiring.

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

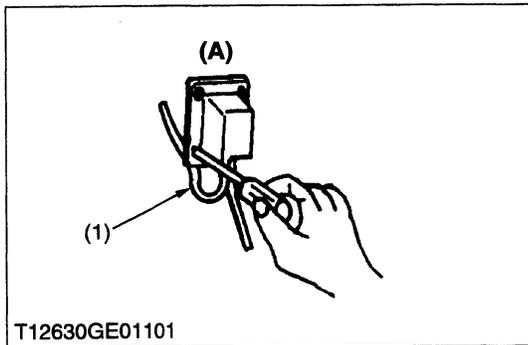
W1011458



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

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

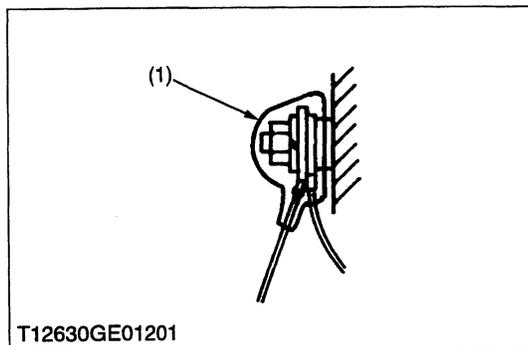
W1011587



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

- (1) Wiring
 - (A) Incorrect

W1011670

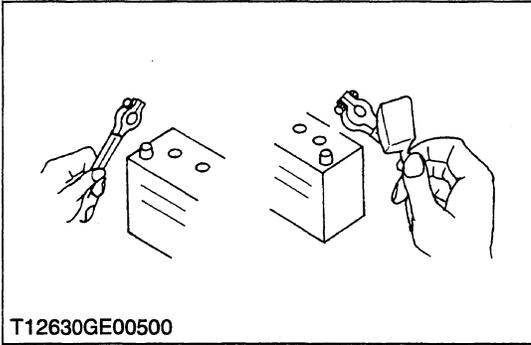


- After installing wiring, check protection of terminals and clamped condition of wiring, only connect battery.

- (1) Cover
 - Securely Install Cover

W1011735

[2] BATTERY



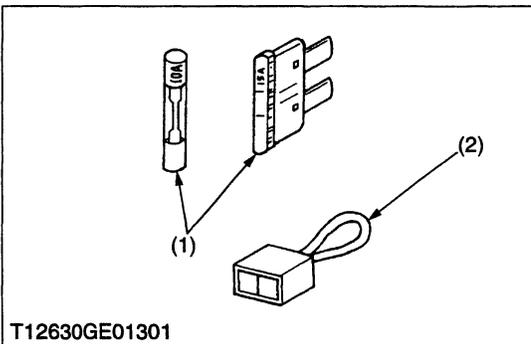
- Take care not to confuse positive and negative terminal posts.
- When removing battery cables, disconnect negative cable first. When installing battery cables, check for polarity and connect positive cable first.
- Do not install any battery with capacity other than is specified (Ah).
- After connecting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

W1011816

[3] FUSE



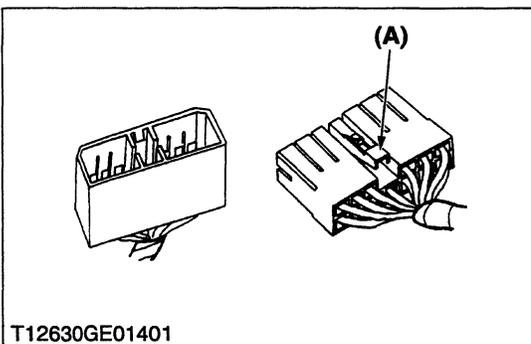
- Use fuses with specified capacity. Neither too large or small capacity fuse is acceptable.
- Never use steel or copper wire in place of fuse.
- Do not install working light, radio set, etc. on machine which is not provided with reserve power supply.
- Do not install accessories if fuse capacity of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

(1) Fuse

(2) Slow Blow Fuse

W1012092

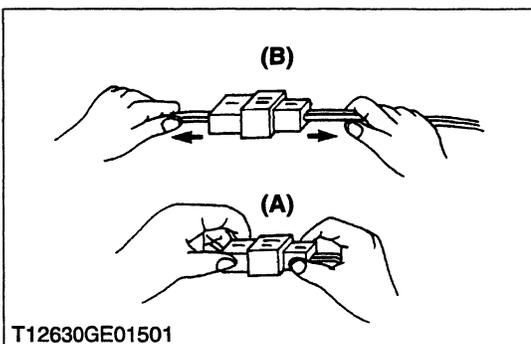
[4] CONNECTOR



- For connector with lock, push lock to separate.

(A) Push

W1012211

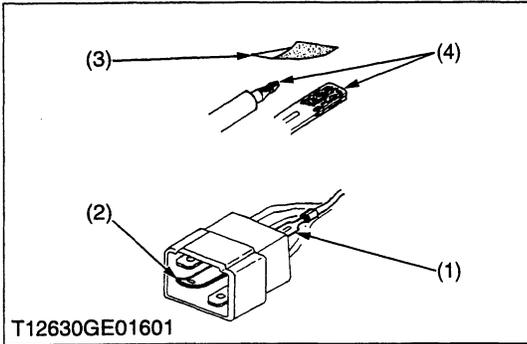


- In separating connectors, do not pull wire harnesses.
- Hold connector bodies to separate.

(A) Correct

(B) Incorrect

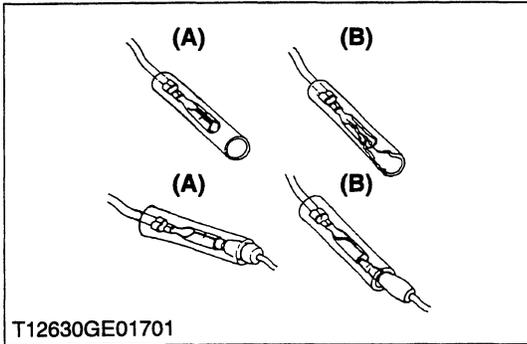
W1012272



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

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

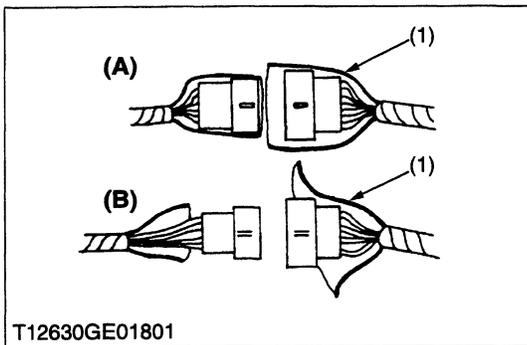
W1012346



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

(A) Correct (B) Incorrect

W1012430

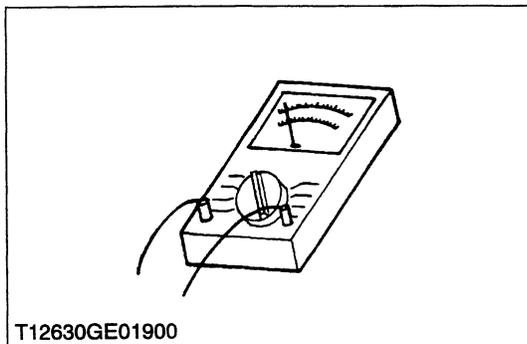


- Make certain plastic cover is large enough to cover whole connector.

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

W1012519

[5] HANDLING OF CIRCUIT TESTER



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

W1012684

5. LUBRICANTS, FUEL AND COOLANT

	Place	Capacity	Lubricants, fuel and coolant	
		L48		
1	Fuel tank	50 L 13.2 U.S.gals. 11.0 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	7.0 L 7.4 U.S.qts. 6.2 Imp.qts.	Fresh clean water with anti-freeze	
3	Engine crankcase	7.4 L 7.8 U.S.qts. 6.5 Imp.qts.	Engine oil : API service CC or CD class 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	51 L 13.5 U.S.gals. 11.2 Imp.gals.	KUBOTA SUPER UDT fluid*	
5	Front axle case	8.0 L 8.5 U.S.qts. 7.0 Imp.qts.	KUBOTA SUPER UDT fluid* or SAE80, 90 gear oil	
Greasing				
	Place	No. of greasing point	Capacity	Type of grease
6	Front axle support	2	Until grease overflows	Multipurpose type grease
	Front wheel case support	2		
	Lifting rod	1		
	Battery terminal	2	Moderate amount	
	Suspension adjuster	-		
	Lock plate	-		
	Spring hook	-		
Reversible seat	-			

* KUBOTA original transmission hydraulic fluid.

6. 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		
Diameter	Unit														
	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)				
Size	Unit	N-m	kgf-m	ft-lbs	Size	Unit	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 Diameter	Unit	Ordinariness			Aluminum		
		N·m	kgf·m	ft-lbs	N·m	kgf·m	ft-lbs
M8 (8 mm, 0.31 in.)		11.8	1.2	8.68	8.82	0.90	6.51
	to	15.6	1.6	11.5	11.8	1.2	8.67
M10 (10 mm, 0.39 in.)		24.6	2.5	18.1	19.7	2.0	14.5
	to	31.3	3.2	23.1	25.4	2.6	18.8
M12 (12 mm, 0.47 in.)		29.5	3.0	21.7	31.4	3.2	23.1
	to	49.0	5.0	36.1			

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	19.8 to 24.5	2.0 to 2.5	14.5 to 18.1
Φ8	29.4 to 34.3	3.0 to 3.5	21.7 to 25.3
Φ10	24.5 to 34.3	2.5 to 3.5	14.5 to 25.3
Φ12	39.2 to 49.0	4.0 to 5.0	28.9 to 36.1
Φ15	78.4 to 88.2	8.0 to 9.0	57.9 to 65.1
Φ16			
Φ18	98.0 to 107.8	10.0 to 11.0	72.3 to 79.6

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

7. MAINTENANCE

No.	Item	Period	Service Time Interval											Important	Reference page		
			50	100	200	250	400	600	800	1500	3000	1 year	2 years				
1	Engine oil	Change	★	☆													G-14
2	Engine oil filter	Replace	★		☆												G-14
3	Transmission fluid	Change	★					☆									G-15
4	Hydraulic oil filter	Replace	★		☆												G-16
5	Transmission oil filter	Replace	★		☆												G-16
6	Transmission strainer	Clean	★		☆												G-17
7	Front axle case oil	Change	★					☆									G-17
8	Brake	Adjust	★	☆													G-18
9	Wheel nut torque	Check	☆														G-18
10	Greasing	-	☆														G-19
11	Engine start system	Check	☆														G-20
12	Air cleaner element [Double type]	Primary element	Clean		☆										*		G-21
		Primary element	Replace									☆		**	@		G-29
		Secondary element	Replace									☆					
13	Fuel filter element	Clean		☆												@	G-22
		Replace						☆									G-29
14	Fan belt	Adjust		☆													G-22
15	Clutch	Adjust		☆													G-23
16	Battery condition	Check		☆											****		G-23
17	Fuel line	Check		☆													G-25
		Replace											☆	***	@		G-29
18	Intake air line	Check			☆												G-26
		Replace											☆	***	@		G-30
19	HST oil line	Check			☆												G-26
		Replace											☆				G-30
20	Power steering oil line	Check			☆												G-26
		Replace											☆				G-30
21	Radiator hose and clamp	Check			☆												G-27
		Replace											☆				G-30
22	Toe-in	Adjust			☆												G-27
23	Spark arrester muffler	Clean				☆											G-28
24	Front Axle pivot	Adjust							☆								G-29
25	Engine valve clearance	Adjust								☆							1-S20
26	Fuel injection nozzle injection pressure	Check									☆					@	1-S53
27	Injection pump	Check										☆				@	1-S51
28	Cooling system	Flush											☆				G-30
29	Coolant	Change											☆				G-30
30	Fuel system	Bleed															G-32
31	Clutch housing water	Drain															G-32
32	Fuse	Replace															G-33
33	Light bulb	Replace															G-33

■ IMPORTANT

- The jobs indicated by ★ must be done after the first 50 hours of operation.
- * : Air cleaner should be cleaned more often in dusty conditions than in normal conditions.
- ** : Every year or every 6 times of cleaning.
- *** : Replace only if necessary.
- **** : 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 nonroad 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

8. CHECK AND MAINTENANCE



CAUTION

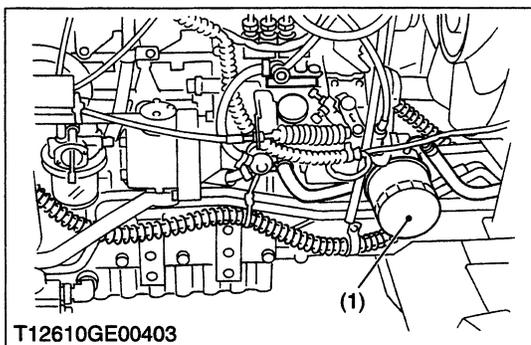
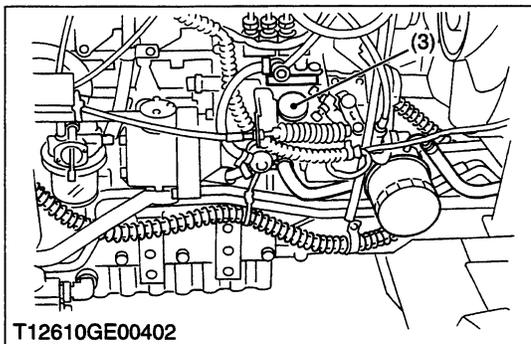
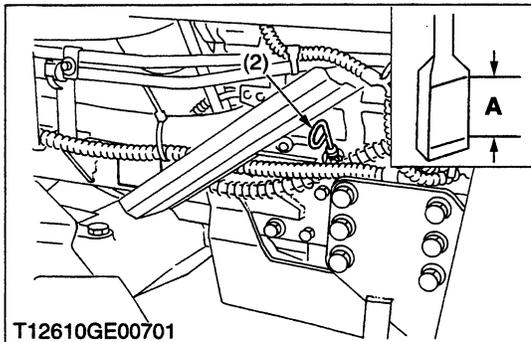
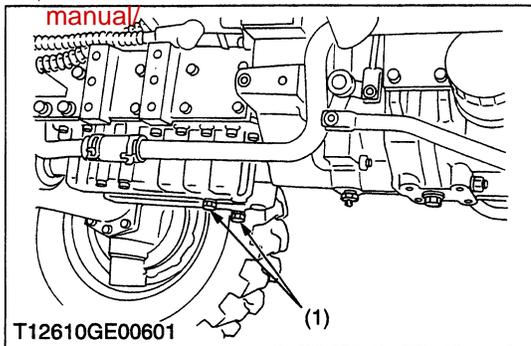
- **Be sure to check and service the tractor on a flat place with engine shut off, the parking brake on and chock the wheels.**

[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.
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. Check the condition of seat belt and ROPS / FOPS attaching hardware.
 7. Check and clean the radiator screen and grill.
 8. Check the nuts of tires are tight.
 9. Check the number plate.
 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 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**Changing Engine Oil****⚠ CAUTION**

- Before changing oil, be sure to stop the engine.
- Allow engine to cool down sufficiently, oil can be hot and can burn.

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 both drain plugs (1) at the bottom of the engine and drain the oil completely.
4. Screw in the both drain plugs (1).
5. Fill new oil up to upper line on the dipstick (2).

■ 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-8.)

Engine oil capacity	7.4 L 7.8 U.S.qts. 6.5 Imp.qts.
---------------------	---------------------------------------

- (1) Drain Plug
- (2) Dipstick
- (3) Oil Inlet

A : Oil level is acceptable within this range.

W1014533

Replacing Engine Oil Filter Cartridge**⚠ CAUTION**

- Be sure to stop the engine before changing oil filter cartridge.
- Allow engine to cool down sufficiently, oil can be hot and can burn.

1. Remove the oil filter cartridge with the filter wrench.
2. Apply a slight coat of oil onto the new cartridge gasket.
3. To install the new cartridge, screw it in by hand. Over tightening may cause deformation of rubber gasket.
4. After the new cartridge has been replaced, the engine oil normally decrease a little. Thus see that the engine oil does not leak through the seal and be sure to read the oil level on the dipstick. Then, replenish the engine oil up to the specified level.

■ 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

Sample of manual. Download All 579 pages at:

<https://www.aresairmanual.com/downloads/kubota-wsm-l48-tractortl1150-front-loaderbt1100-backhoe-service-repair-workshop->

W1014892