

Product: Kubota M9540 DUAL SPEED Service Manual

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WSM

WORKSHOP MANUAL
TRACTOR

M9540
DUAL SPEED

Kubota

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KiSC issued 02, 2020 A

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TO THE READER

This Workshop Manual has been prepared to provide for servicing personnel with information on the mechanism, service and maintenance of M9540 Dual Speed tractor. It is divided into three parts, "General", "Mechanism" and "Servicing".

■ General

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

■ Mechanism

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

Refer to Diesel Engine / Tractor Mechanism Workshop Manual (Code No. 9Y021-01877 / 9Y021-18201) for the one which has not been described in 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 are included.

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

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

Due to covering many models, information or pictures being used have not been specified as one model.

September 2009

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Record of Revisions

For pdf, use search function {Search word} to find all the revised locations.

Last digit of the Code No.	Month of Revision	Main Revised Point and Corrective Measures {Search word}	Reference Page
2	2017.03	Add Information about special tools. {special tools, propeller shaft, oil seal, sleeve}	G-72, G-73
		Revise the assembly drawing of the transmission. {transmission, mechanism, structure}	3-M1
		Add new information about oil seal structure. {oil seal, structure, propeller shaft}	3-S45
		Add new information about oil seal replacing method. {oil seal, propeller shaft}	3-S46
3	2019.01	Changed the order of replacing the meter panel.	9-S18 to 9-S21



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.



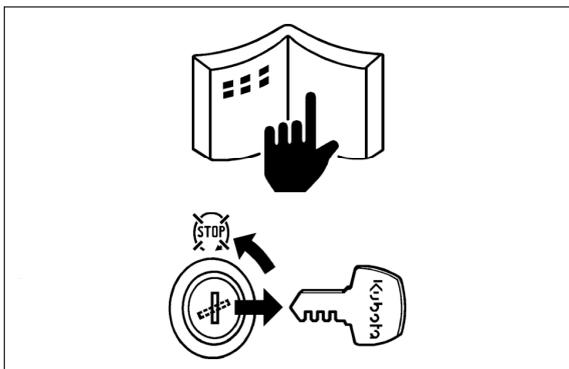
IMPORTANT

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



NOTE

: Gives helpful information.



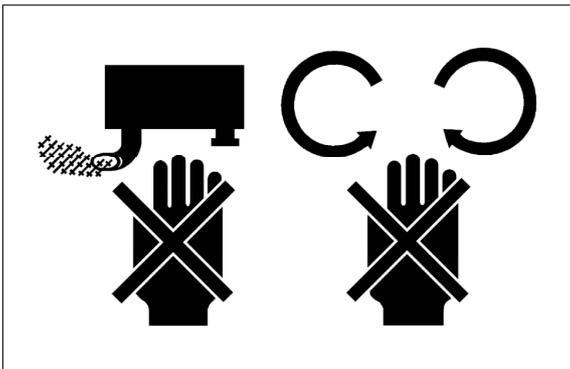
BEFORE SERVICING AND REPAIRING

- 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.



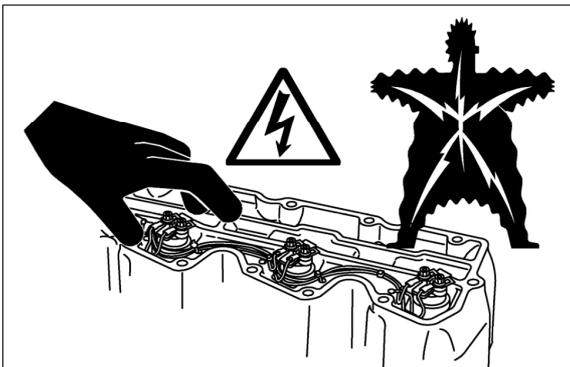
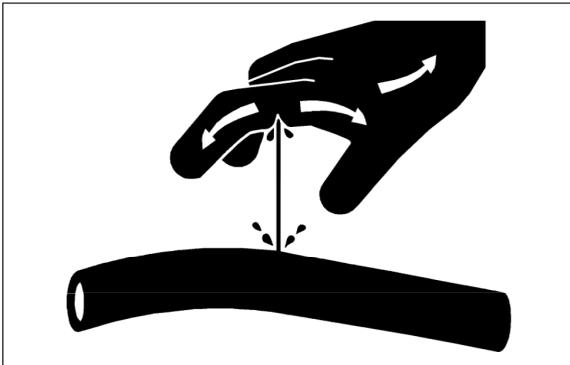
SAFETY STARTING

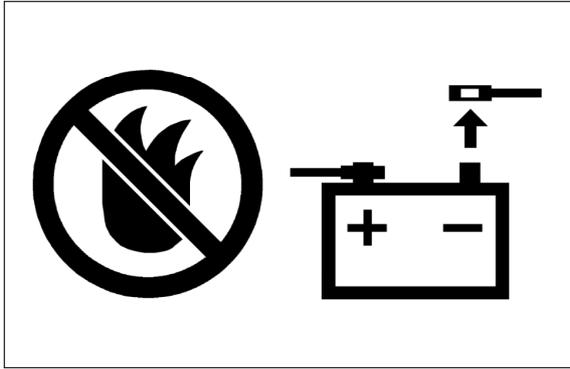
- Do not start the engine by shorting across starter terminals or bypassing the safety start switch.
- Do not alter or remove any part of machine safety system.
- Before starting the engine, make sure that all shift levers are in neutral positions or in disengaged positions.
- Never start the engine 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.





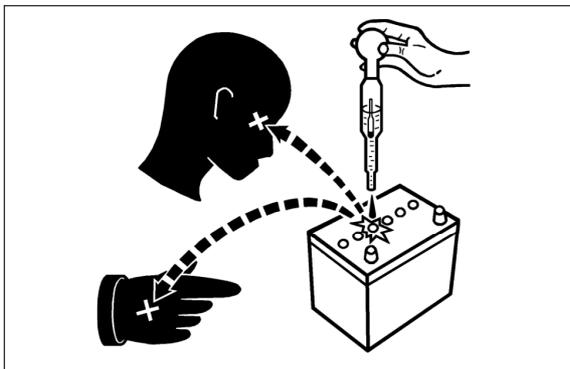
AVOID FIRES

- 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.



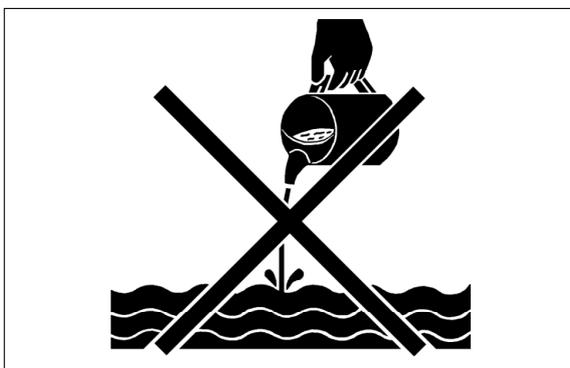
VENTILATE WORK AREA

- 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.



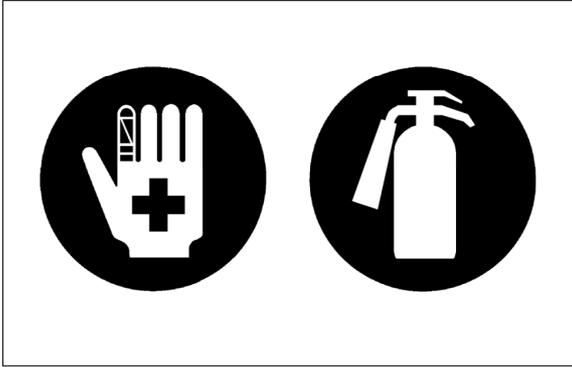
PREVENT ACID BURNS

- 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

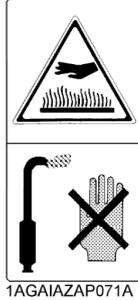
The following safety decals (pictorial safety labels) are installed on the machine.
 If a decal becomes damaged, illegible or is not on the machine, replace it. The decal part number is listed in the parts list.

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



1AGAI AZAP110A

(2) Part No. 3N300-4958-1
 Do not touch hot surface like muffler, etc.



1AGAI AZAP071A

(3) Part No. 6C040-4741-1

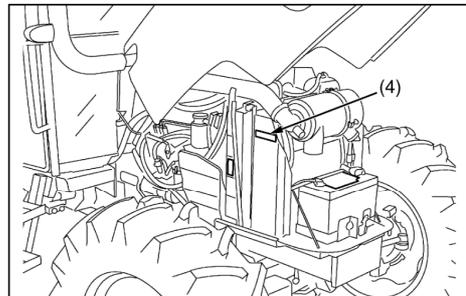
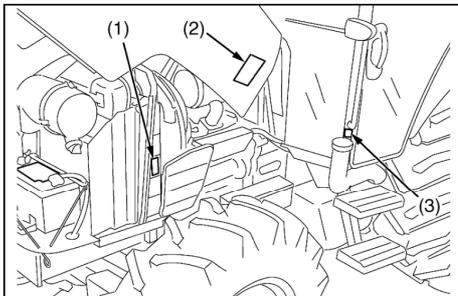


1AGAI AZAP104A

(4) Part No. 3A851-7295-1

<p>CAUTION REFRIGERANT UNDER HIGH PRESSURE</p> <p>Improper service methods may cause injury. Air conditioning system should be serviced by qualified personnel. See Repair Manual.</p> <p>Refrigerant: HFC134a Max. 0.95kg (2.09lbs.) USE ONLY Min. 0.85kg (1.87lbs.)</p> <p>Oil: ND-OIL 8 SAE J-639 OR EQUIVALENT</p> <p>MFD. BY DENSO CORPORATION JAPAN.</p>	<p>ATTENTION REFRIGERANT SOUS HAUTE PRESSION</p> <p>Un entretien incorrect peut provoquer des blessures. Le système de climatisation doit être entretenu par une personne qualifiée. Voir le manuel de réparation.</p> <p>Refrigerant: HFC134a Max. 0.95kg (2.09lbs.) UNIQUEMENT Min. 0.85kg (1.87lbs.)</p> <p>Huile: ND-OIL 8 SAE J-639 OU EQUIVALENTE</p> <p>FABRIQUE PAR DENSO CORPORATION JAPON.</p>
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1AGAI DGAP074A

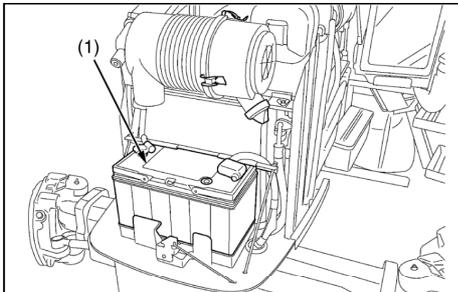


9Y1210380IC1001A

(1) Part No. 3N300-9892-1

⚠ DANGER/POISON			KEEP OUT OF REACH OF CHILDREN. DO NOT TIP. DO NOT OPEN BATTERY.
 SHIELD EYES. EXPLOSIVE GASES CAN CAUSE BLINDNESS OR INJURY.	 NO • SPARKS • FLAMES • SMOKING	 SULFURIC ACID CAN CAUSE BLINDNESS OR SEVERE BURNS.	
PROPOSITION 65 WARNING BATTERY POSTS, TERMINALS, AND RELATED ACCESSORIES CONTAIN LEAD AND LEAD COMPOUNDS, CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER AND REPRODUCTIVE HARM. WASH HANDS AFTER HANDLING.			FLUSH EYES IMMEDIATELY WITH WATER.  GET MEDICAL HELP FAST.
		 105E41R 12V	HYDROMETER 
		RESERVE CAPACITY (MIN) 160 COLD CRANKING AMPS(-18°C) 900	

1AGAICHAP100A



9Y1210380IC1002A

(1) Part No. 3F240-9857-1 [Hydraulic shuttle model]

⚠ WARNING

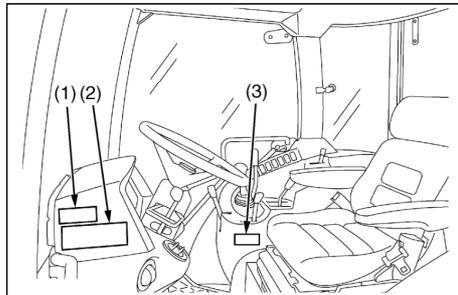
To avoid free wheeling when shifting the shuttle lever while on a slope: Stop completely by using the brake and by depressing the clutch pedal. Start off after selecting shuttle direction by releasing the clutch pedal.

(2) Part No. TA040-4965-2

	<p>⚠ DANGER</p> <p>TO AVOID POSSIBLE INJURY OR DEATH FROM A MACHINE RUNAWAY.</p> <ol style="list-style-type: none"> 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.
---	--

(3) Part No. 6C150-4743-1 [Hydraulic shuttle model]

<p>⚠ WARNING</p> 	<p>BEFORE DISMOUNTING TRACTOR:</p> <ol style="list-style-type: none"> 1. ALWAYS SET PARKING BRAKE. Leaving transmission in gear with the engine stopped will not prevent tractor from rolling. 2. PARK ON LEVEL GROUND WHENEVER POSSIBLE. If parking on a slope, position tractor across the slope. 3. LOWER ALL IMPLEMENTS TO THE GROUND. 4. STOP THE ENGINE.
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3TMACANCP007A

(1) Part No. 3F240-9836-2

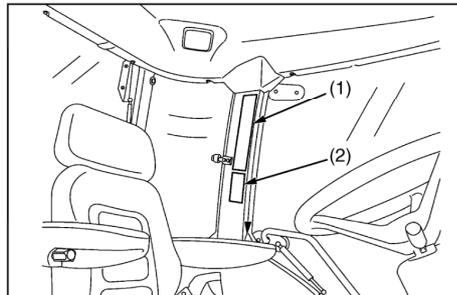
CAUTION**TO AVOID PERSONAL INJURY:**

1. Read and understand the operator's manual before operation.
2. Before starting the engine, make sure that everyone is at a safe distance from tractor and 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 nuts and bolts regularly.
6. Keep all shields in place and stay away from all moving parts.
7. Lock the two brake pedals together before driving on the road.
8. Slow down for turns, or rough roads, or when applying individual brakes.
9. On public roads use SMV emblem and hazard lights, if required by local traffic and safety regulations.
10. Pull only from the drawbar.
11. Before dismounting, lower the implement to the ground, set the parking brake, stop the engine and remove the key.
12. Securely support tractor and implements before working underneath.

(2) Part No. TA040-4902-1

WARNING

TO AVOID INJURY OR DEATH FROM ROLL-OVER:
Always use seat belt when driving.



3TMACANCP008A

(1) Part No. 3P305-9856-1

⚠ CAUTION

TO AVOID INJURY FROM SEPARATION:

GROOVE



LH

**DO NOT EXTEND LIFT ROD
BEYOND THE GROOVE
ON THE THREADED ROD.**

GROOVE



RH

1AGAICVAP046E

(2) 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.

1AGAIAP056A

(3) Part No. TA040-4959-3



⚠ WARNING

TO AVOID PERSONAL INJURY.

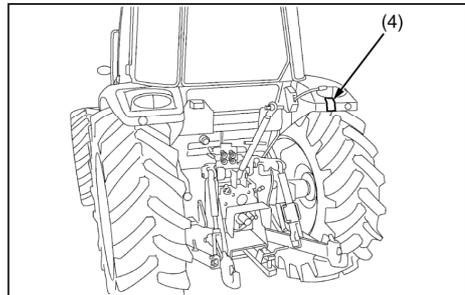
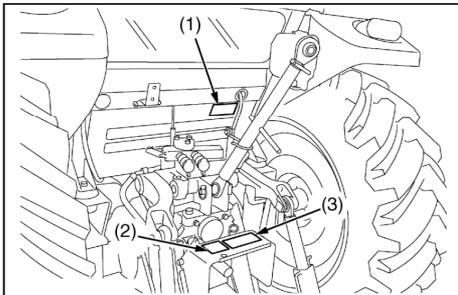
1. Keep PTO shield in place at all times.
2. Do not operate the PTO at speeds faster than the speed recommended by the implement manufacturer.
3. For trailing PTO-driven implements, set drawbar at towing position. (see operator's manual)

1AGAIAP116A

(4) Part No. 3A294-9819-1
Do not stand by IMPLEMENT or between implement and tractor while operating remote hitch switch.



1AGAOCPAP0130



CARE OF DANGER, WARNING AND CAUTION LABELS

1. Keep danger, warning and caution labels clean and free from obstructing material.
2. Clean danger, warning and caution labels with soap and water, dry with a soft cloth.
3. Replace damaged or missing danger, warning and caution labels with new labels.
4. If a component with danger, warning or 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.

9Y1210380IC1003A

SPECIFICATIONS

Model		M9540		
		4WD		
Engine	Model	V3800DI-TE3		
	Type	Vertical, water-cooled, 4-cycle direct injection diesel engine		
	Number of cylinders	4		
	Total displacement	3769 cm ³ (230.0 cu.in.)		
	Bore and stroke	100 × 120 mm (3.9 × 4.7 in.)		
	Rated speed	2600 min ⁻¹ (rpm)		
	Net power ^{*1}	70.8 kW (95 HP)		
	Gross power ^{*1}	73.6 kW (98.7 HP)		
	Maximum torque	314 N·m (32.0 kgf·m, 232 lbf·ft) / 1500 to 1700 min ⁻¹ (rpm)		
	Battery capacity	12 V, RC : 160 min, CCA : 900 A		
	Fuel tank capacity	110 L (29.1 U.S.gals., 24.2 Imp.gals.)		
	Engine oil capacity	10.7 L (11.3 U.S.qts., 9.4 Imp.qts.)		
Coolant capacity	9.0 L (9.5 U.S.qts., 7.9 Imp.qts.)			
Dimensions	Overall length	3955 mm (155.7 in.)		
	Overall width (min. tread)	2010 mm (79.13 in.)		
	Overall height	2650 mm (104.3 in.)		
	Wheel base	2250 mm (88.6 in.)		
	Tread	Front	1540, 1560, 1660 mm (60.63, 61.42, 65.35 in.)	
		Rear	1500, 1580, 1698 mm (59.06, 62.20, 66.85 in.)	
Minimum ground clearance	450 mm (17.7 in.)			
Weight		3305 kg (7286 lbs)		
Traveling system	Standard tire size	Front	360/70R24	
		Rear	480/70R34	
	Clutch	Multiple wet discs		
	Steering	Hydraulic power steering		
	Braking system	Hydraulic wet discs		
Differential	Bevel gears with differential lock (Rear)			
Hydraulic system	Hydraulic control system	Position, draft (top link sensing) and mix control		
	Pump capacity	64.3 L (17 U.S.gals., 14 Imp.gals.) / min.		
	3-point hitch	SAE Category II		
	Max. lifting force	At lift points ^{*2}	3900 kg (8600 lbs)	
		24 in. behind lift points ^{*2}	3300 kg (7275 lbs)	
	Remote hydraulic control	Two remote valves (3rd valve option)		
System pressure	19.6 MPa (200 kgf/cm ² , 2844.7 psi)			
Traction system		Swinging drawbar, adjustable in direction		
PTO	Live PTO (Independent)	Direction of turning	Clockwise, viewed from tractor rear	
		PTO speed	6 spline : 540 min ⁻¹ (rpm) / 2035 min ⁻¹ (rpm) engine speed 6 spline : 540E min ⁻¹ (rpm) / 1519 min ⁻¹ (rpm) engine speed	

Note : *1 : Manufacture's estimate

*2 : At lower link end with links horizontal.

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

W10281170

TRAVELING SPEEDS

(At rated engine rpm)

Model			M9540	
Tire size (Rear)			480/70R34	
Transmission type			with Dual Speed	
Shuttle shift lever	Range gear shift lever	Main gear shift lever	Hi	Lo
			km/h (mph)	km/h (mph)
Forward	CREEP	1	0.46 (0.29)	0.39 (0.24)
		2	0.59 (0.37)	0.50 (0.31)
		3	0.78 (0.48)	0.65 (0.40)
		4	0.99 (0.62)	0.84 (0.52)
		5	1.23 (0.764)	1.04 (0.646)
		6	1.48 (0.920)	1.25 (0.777)
	L	1	3.0 (1.9)	2.5 (1.6)
		2	3.8 (2.4)	3.2 (2.0)
		3	5.0 (3.1)	4.2 (2.6)
		4	6.4 (4.0)	5.4 (3.4)
		5	8.0 (5.0)	6.7 (4.2)
		6	9.6 (6.0)	8.1 (5.0)
	H	1	11.5 (7.15)	9.6 (6.0)
		2	14.7 (9.13)	12.4 (7.70)
		3	19.4 (12.1)	16.3 (10.1)
		4	24.8 (15.4)	20.9 (13.0)
		5	30.8 (19.1)	25.9 (16.1)
		6	37.0 (23.0)	31.1 (20.6)

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

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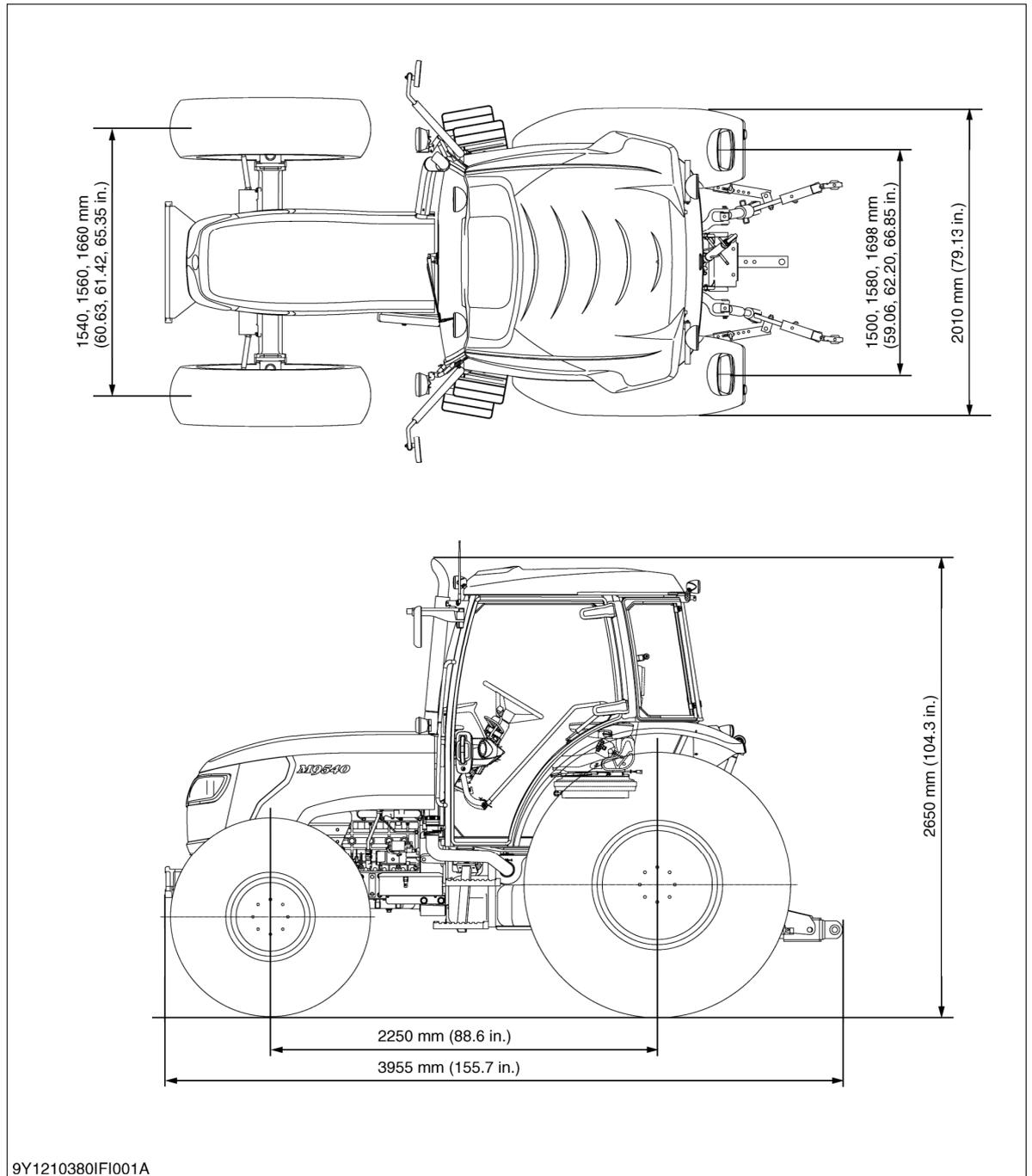
(At rated engine rpm)

Model			M9540	
Tire size (Rear)			480/70R34	
Transmission type			with Dual Speed	
Shuttle shift lever	Range gear shift lever	Main gear shift lever	Hi	Lo
			km/h (mph)	km/h (mph)
Reverse	CREEP	1	0.46 (0.29)	0.39 (0.24)
		2	0.60 (0.37)	0.50 (0.31)
		3	0.79 (0.49)	0.66 (0.41)
		4	1.01 (0.628)	0.85 (0.53)
		5	1.25 (0.777)	1.05 (0.652)
		6	1.50 (0.932)	1.26 (0.783)
	L	1	3.0 (1.9)	2.5 (1.6)
		2	3.9 (2.4)	3.3 (2.0)
		3	5.1 (3.2)	4.3 (2.7)
		4	6.5 (4.0)	5.5 (3.4)
		5	8.1 (5.0)	6.8 (4.2)
		6	9.7 (6.0)	8.2 (5.1)
	H	1	11.6 (7.21)	9.8 (6.1)
		2	14.9 (9.26)	12.5 (7.77)
		3	19.6 (12.2)	16.5 (10.3)
		4	25.1 (15.6)	21.1 (13.1)
		5	31.1 (20.6)	26.2 (16.3)
		6	37.5 (23.3)	31.5 (19.6)

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

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DIMENSIONS



G GENERAL

GENERAL

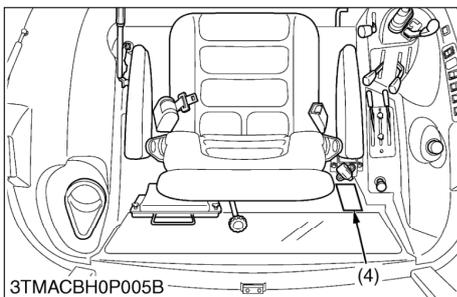
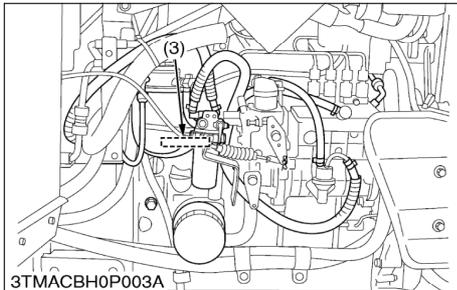
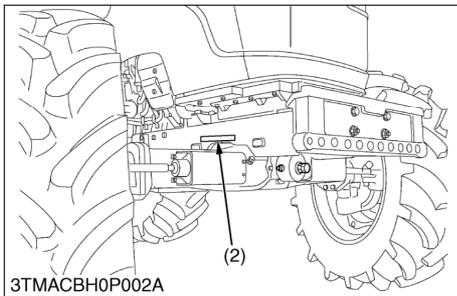
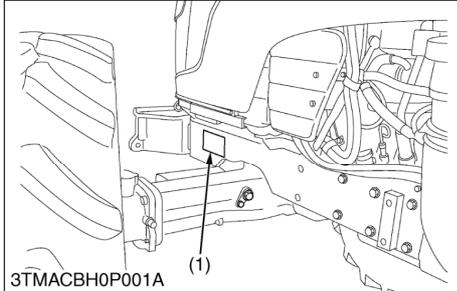
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[3] SPECIAL TOOLS FOR AIR CONDITIONER UNIT.....	G-74
9. TIRES.....	G-76
[1] TIRE SIZE AND INFLATION PRESSURE.....	G-76
[2] TREAD ADJUSTMENT.....	G-77
(1) Front Wheels.....	G-77
(2) Rear Wheels	G-79
[3] WHEEL HUB.....	G-79
[4] TIRE LIQUID INJECTION.....	G-80
10. IMPLEMENT LIMITATIONS.....	G-83
[1] IMPLEMENT CAPACITY	G-84

1. TRACTOR IDENTIFICATION

[1] MODEL NAME AND SERIAL NUMBERS

(1) Tractor Number

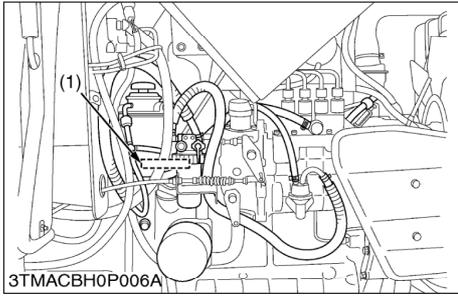


When contacting your local KUBOTA distributor, always specify engine serial number, tractor serial number and hourmeter reading.

- (1) Tractor Identification Plate
- (2) Tractor Serial Number
- (3) Engine Serial Number
- (4) CABIN Identification Plate (CABIN Serial Number)

W1010800

(2) Engine Number



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. V3800-6A0001

“6” indicates 2006 and “A” indicates January.

So, 6A indicates that the engine was manufactured on January, 2006.

(1) Engine Model and Serial Number

W1010477

[2] E3 ENGINE

[Example : Engine Model Name V3800-E3]

The emission controls previously implemented in various countries to prevent air pollution will be stepped up as Non-Road Emission Standards continue to change. The timing or applicable date of the specific Non-Road Emission regulations depends on the engine output classification.

Over the past several years, Kubota has been supplying diesel engines that comply with regulations in the respective countries affected by Non-Road Emission regulations. For Kubota Engines, E3 will be the designation that identifies engine models affected by the next emission phase (See the table below).

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

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

(1) (2)

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

3EEAEAE0P002A

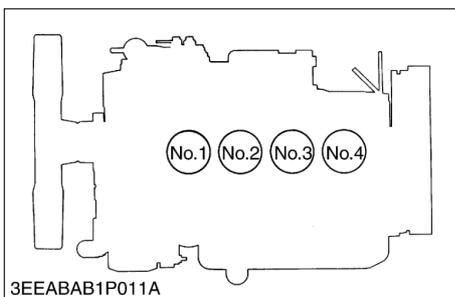
Category (1)	Engine output classification	EU regulation
K	From 19 to less than 37 kW	STAGE IIIA
J	From 37 to less than 75 kW	STAGE IIIA
I	From 75 to less than 130 kW	STAGE IIIA

Category (2)	Engine output classification	EPA regulation
ET	Less than 19kW	Tier 4
	From 19 to less than 56 kW	Interim Tier 4
	From 56 to less than 75 kW	Tier 3
	From 75 to less than 130 kW	Tier 3

- (1) EU regulation engine output classification category
- (2) "E3" engines are identified with "ET" at the end of the Model designation, on the US EPA label.
"E3" designates Tier 3 and some Interim Tier 4 / Tier 4 models, depending on engine output classification.

W1031971

[3] CYLINDER NUMBER

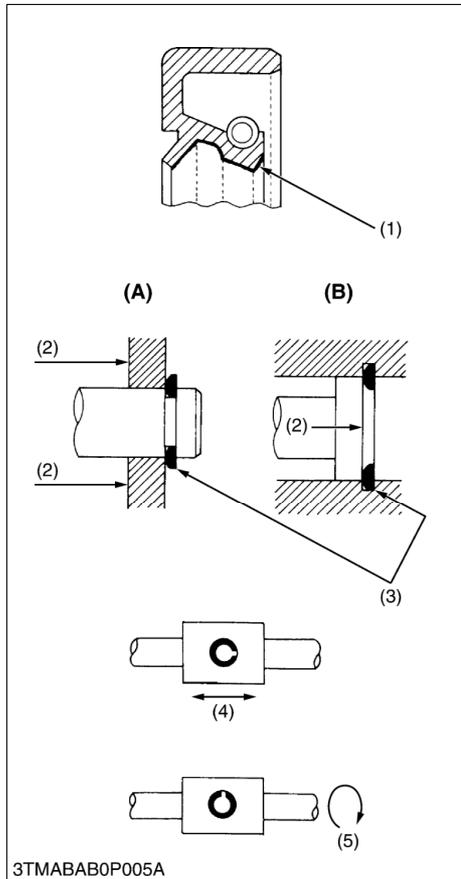


The cylinder numbers of Kubota diesel engine are designated as shown in the figure.

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

W1011077

2. GENERAL PRECAUTIONS



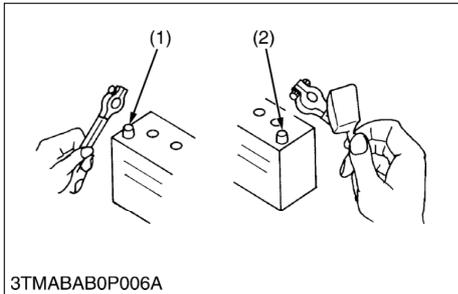
- During disassembly, carefully arrange removed parts in a clean area to prevent confusion later. Screws, bolts and nuts should be installed in their original position to prevent reassembly errors.
- When special tools are required, use KUBOTA genuine special tools. Special tools which are not frequently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

W1010904

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.

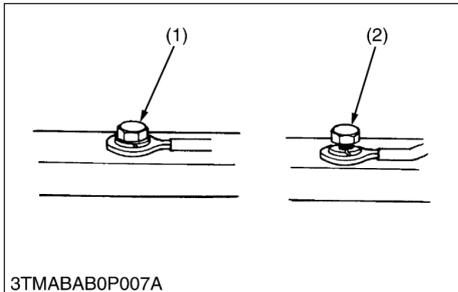
■ IMPORTANT

- 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

W1011114

[1] WIRING

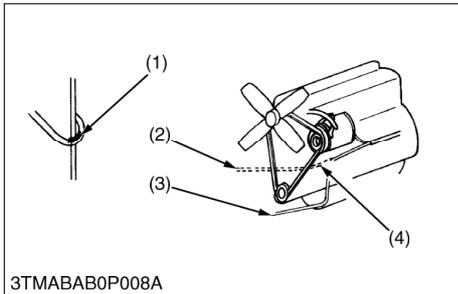


3TMABAB0P007A

- Securely tighten wiring terminals.

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

W1011216

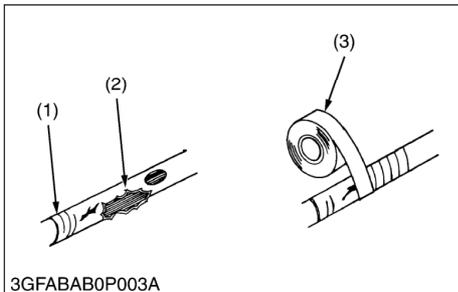


3TMABAB0P008A

- Do not let wiring contact dangerous part.

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

W1011313

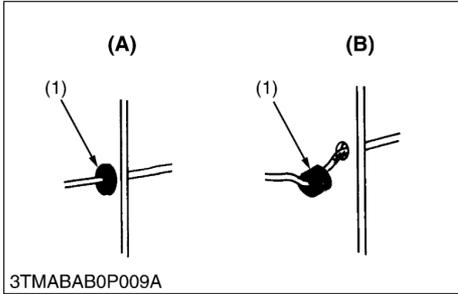


3GFABAB0P003A

- Repair or change torn or aged wiring immediately.

- (1) Aged (2) Torn (3) Insulating Vinyl Tape

W1012292

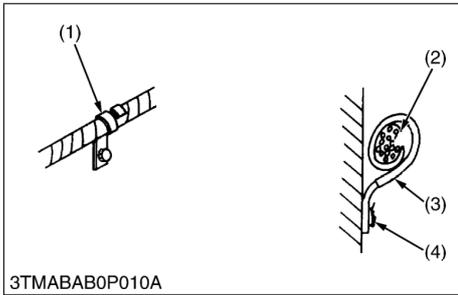


- Securely insert grommet.

(1) Grommet

(A) Correct
(B) Incorrect

W1011388



- Securely clamp, being careful not to damage wiring.

(1) Clamp

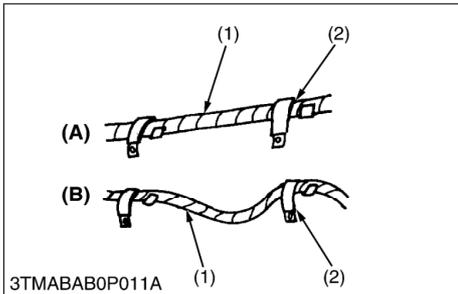
(3) Clamp

• Wind Clamp Spirally

(4) Welding Dent

(2) Wire Harness

W1011458



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

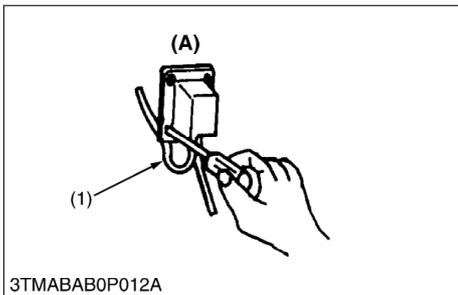
(1) Wiring

(A) Correct

(2) Clamp

(B) Incorrect

W1011587

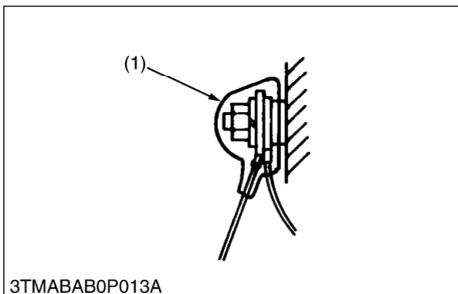


- In installing a part, take care not to get wiring caught by it.

(1) Wiring

(A) Incorrect

W1011670



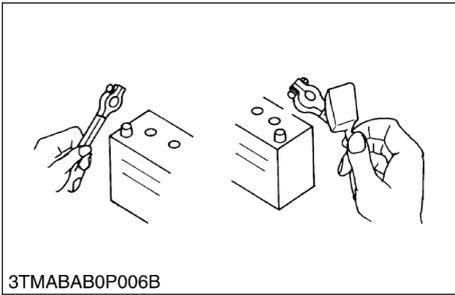
- After installing wiring, check protection of terminals and clamped condition of wiring, only connect battery.

(1) Cover

• Securely Install Cover

W1011735

[2] BATTERY



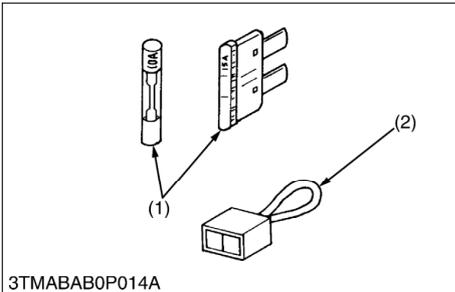
- Take care not to confuse positive and negative terminals.
- When removing battery cable, disconnect negative wire first. When installing battery cable, check for polarity and connect positive wire first.
- Do not install any battery with capacity other than is specified (Ah).
- After connecting cable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



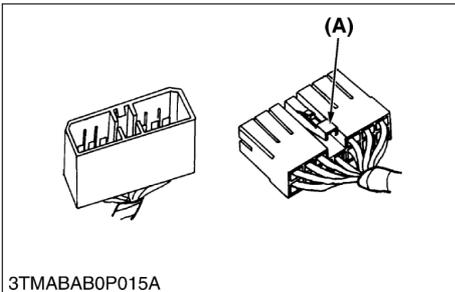
- Use fuses with specified capacity. Neither too large or small capacity fuse is acceptable.
- Never use steel or copper wire in place of fuse.
- Do not install working light, radio set, etc. on machine which is not provided with reserve power supply.
- Do not install accessories if fuse capacity of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

(1) Fuse

(2) Slow Blow Fuse

W1012092

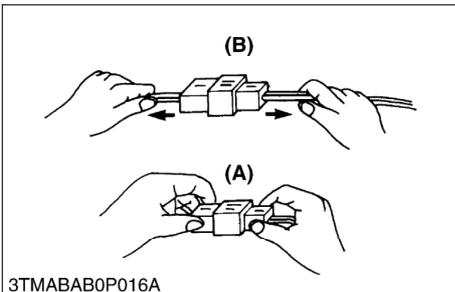
[4] CONNECTOR



- For connector with lock, push lock to separate.

(A) Push

W1012211

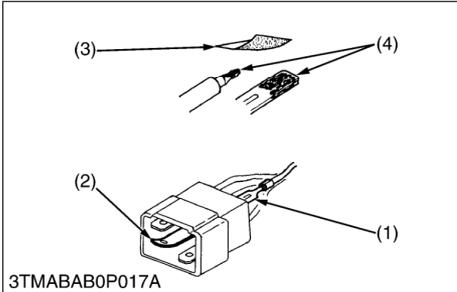


- In separating connectors, do not pull wire harnesses.
- Hold connector bodies to separate.

(A) Correct

(B) Incorrect

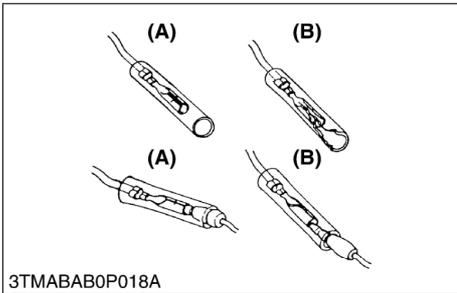
W1012272



- 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

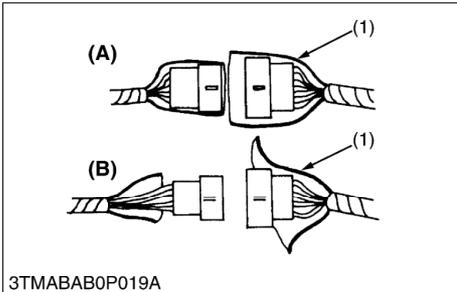
W1012346



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

(A) Correct (B) Incorrect

W1012430

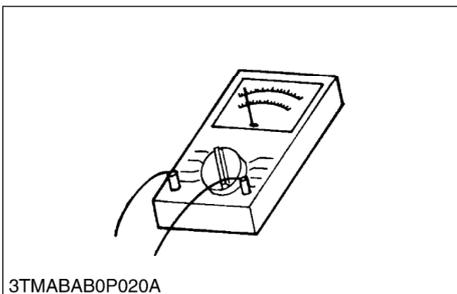


- Make certain plastic cover is large enough to cover whole connector.

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

W1012519

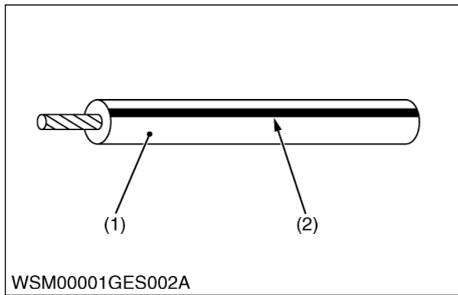
[5] HANDLING OF CIRCUIT TESTER



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

W1012684

[6] COLOR OF WIRING



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

(An example)

Red stripes on white color : W/R

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

(1) Wire Color

(2) Stripe

W1028525

4. LUBRICANTS, FUEL AND COOLANT

	Place	Capacity	Lubricants, fuel and coolant
		M9540	
1	Fuel tank	110 L 29.1 U.S.gals. 24.2 Imp.gals.	No. 2-D diesel fuel No. 1-D diesel fuel if temperature is below -10 °C (14 °F)
2	Coolant	9.0 L 9.5 U.S.qts. 7.9 Imp.qts.	Fresh clean water with anti-freeze
	Recovery tank	1.0 L 1.1 U.S.qts. 0.9 Imp.qts.	
3	Washer liquid	1.3 L 1.4 U.S.qts. 1.1 Imp.qts.	Automobile washer liquid
4	Engine crankcase (with filter)	10.7 L 11.3 U.S.qts. 9.4 Imp.qts.	API Service Classification CF or CI-4 (External EGR type engine) Below 0 °C (32 °F): SAE10W, 10W-30 or 15W-40 0 to 25 °C (32 to 77 °F): SAE20, 10W-30 or 15W-40 Above 25 °C (77 °F): SAE30, 10W-30 or 15W-40
5	Transmission case	60 L 63.4 U.S.qts. 52.8 Imp.qts.	KUBOTA UDT or SUPER UDT fluid*
6	Front differential case oil	6.0 L 6.3 U.S.qts. 5.3 Imp.qts.	KUBOTA UDT or SUPER UDT fluid* or SAE80, SAE90 gear oil
7	Front axle gear case oil (one side)	3.5 L 3.7 U.S.qts. 3.1 Imp.qts.	

* KUBOTA original transmission hydraulic fluid.

Greasing				
	Place	No. of greasing points	Capacity	Type of grease
8	Front axle gear case support	2	Until grease overflows	Multipurpose NLGI-2 or NLGI-1 (GC-LB) grease
	Front axle support	2		
	Top link	1		
	Top link bracket	2		
	Lift rod	2		
	Hydraulic lift cylinder pin	4		
	Steering joint shaft	1		
	Battery terminal	2	Moderate amount	Multipurpose type grease or petroleum jelly

■ **NOTE** [ed-service-manual/](#)

Engine Oil :

- Oil used in the engine should have an American Petroleum Institute (API) service classification and Proper SAE Engine Oil according to the ambient temperatures as shown above.
- With the emission control now in effect, the CF-4 and CG-4 lubricating oils have been developed for use of a low-sulfur fuel on on-road vehicle engines. When an off-road vehicle engine runs on a high-sulfur fuel, it is advisable to employ the “CF or better” lubricating oil with a high Total Base Number (TBN of 10 minimum).
- Refer to the following table for the suitable API classification engine oil according to the engine type (with internal EGR, external EGR or non-EGR) and the fuel (low-sulfur or high-sulfur fuel).

Fuel used	Engine oil classification (API classification)	
	Oil class of engines except external EGR	Oil class of engines with external EGR
High Sulfur Fuel (≥ 500 ppm)	CF (If the “CF-4, CG-4, CH-4, or CI-4” lubricating oil is used with a high-sulfur fuel, change the lubricating oil at shorter intervals. (approximately half))	—
Low Sulfur Fuel (< 500 ppm) or Ultra Low Sulfur Fuel (< 15 ppm)	CF, CF-4, CG-4, CH-4 or CI-4	CF or CI-4 (Class CF-4, CG-4 and CH-4 engine oils cannot be used on EGR type engines.)

EGR : Exhaust Gas Re-circulation

- The CJ-4 engine oil is intended for DPF (Diesel Particulate Filter) type engines, and cannot be used on this tractor.
W1024941

Fuel :

- Cetane number of 45 minimum. Cetane number greater than 50 is preferred, especially for temperatures below –20 °C (–4 °F) or elevations above 1500 m (5000 ft).
- If diesel fuel with sulfur content greater than 0.5 % sulfur content is used, reduce the service interval for engine oil and filter by 50 %.
- DO NOT use diesel fuel with sulfur content greater than 1.0 %.
- Diesel fuels specified to EN 590 or ASTM D975 are recommended
- No.2-D is a distillate fuel of lower volatility for engines in industrial and heavy mobile service. (SAE J313 JUN87).

Transmission Oil :

The oil used to lubricate the transmission is also used as hydraulic fluid. To insure proper operation of the hydraulic system and to complete lubrication of the transmission, it is important that a multi-grade transmission fluid is used in this system. We recommend the use of **KUBOTA UDT or SUPER UDT fluid** for optimum protection and performance.

Do not mix different brands together.

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