

Product: 2006 Kubota WSM F2880,F2880E,F3680,RCK72P-F36,RCK72R-F36,RCK60P-F36,RCK60R-F36 Front Mover Service
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WSM

WORKSHOP MANUAL

**F2880,F2880E,F3680,RCK72P-F36,
RCK72R-F36,RCK60P-F36,
RCK60R-F36**

Kubota

Sample of manual. Download All 322 pages at:

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TO THE READER

This Workshop Manual has been prepared to provide servicing personnel with information on the mechanism, service and maintenance of KUBOTA F2880, F2880E, F3680, KUBOTA Mower RCK72P-F36, RCK72R-F36, RCK60P-F36, RCK60R-F36. It is divided into three parts, "General", "Mechanism" and "Servicing" for each section.

■ General

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

■ Mechanism

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

Refer to Diesel Engine / Tractor Mechanism Workshop Manual (Code No. 97897-01873 / 97897-18200) for the one which has not been described to this workshop manual.

■ Servicing

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

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

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

January 2006

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SAFETY FIRST

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

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



DANGER

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



WARNING

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



CAUTION

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



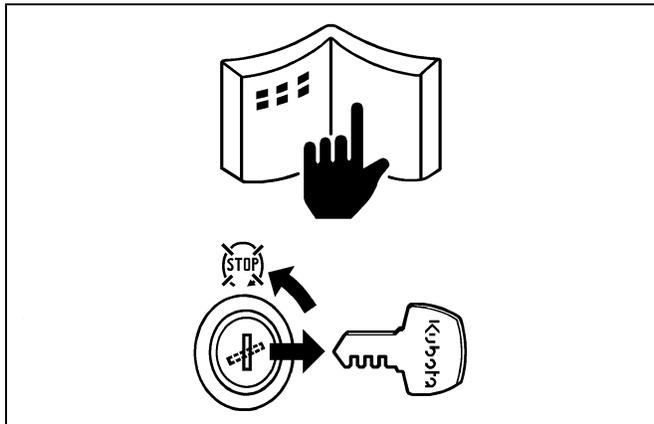
IMPORTANT

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



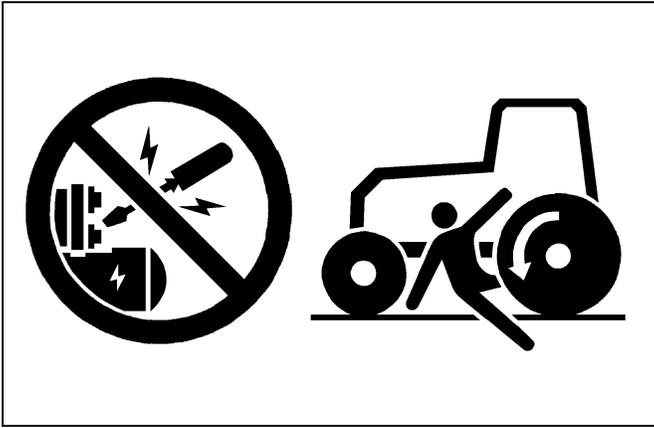
NOTE

: Gives helpful information.



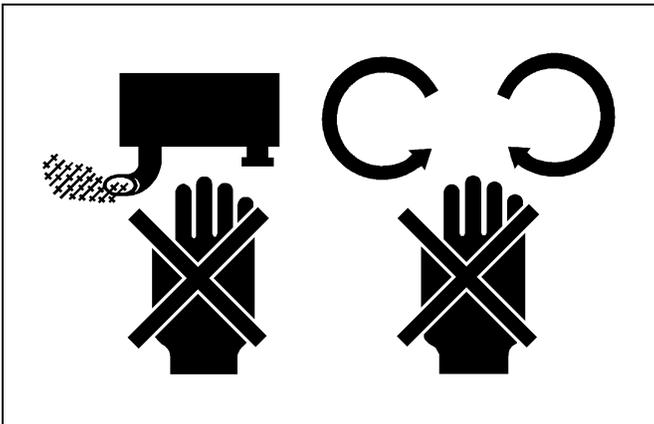
BEFORE SERVICING AND REPAIRING

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



SAFETY STARTING

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



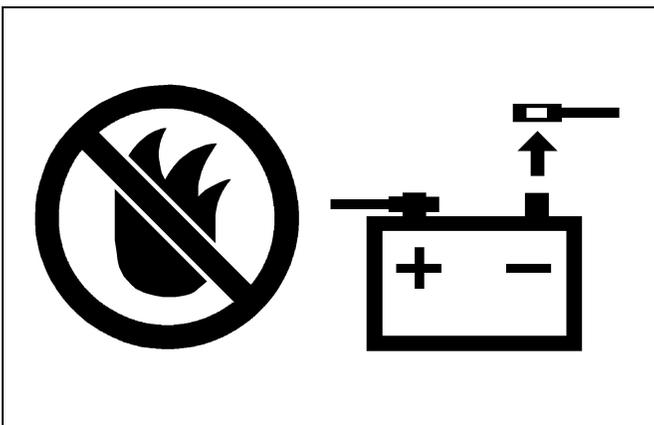
SAFETY WORKING

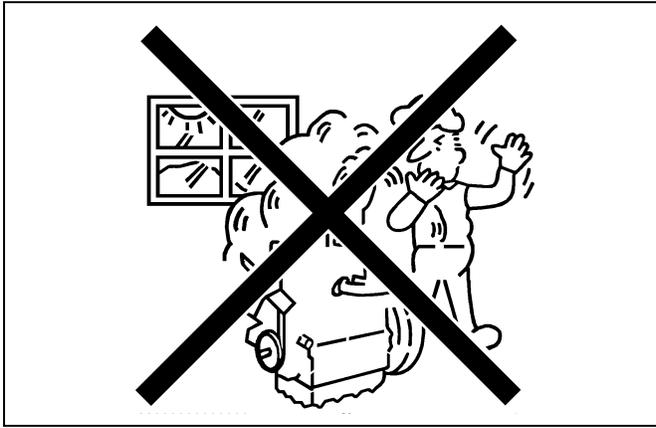
- Do not work on the machine while under the influence of alcohol, medication, or other substances or while fatigued.
- Wear close fitting clothing and safety equipment appropriate to the job.
- Use tools appropriate to the work. Makeshift tools, parts, and procedures are not recommended.
- When servicing is performed together by two or more persons, take care to perform all work safely.
- Do not work under the machine that is supported solely by a jack. Always support the machine by safety stands.
- Do not touch the rotating or hot parts while the engine is running.
- Never remove the radiator cap while the engine is running, or immediately after stopping. Otherwise, hot water will spout out from radiator. Only remove radiator cap when cool enough to touch with bare hands. Slowly loosen the cap to first stop to relieve pressure before removing completely.
- Escaping fluid (fuel or hydraulic oil) under pressure can penetrate the skin causing serious injury. Relieve pressure before disconnecting hydraulic or fuel lines. Tighten all connections before applying pressure.



AVOID FIRES

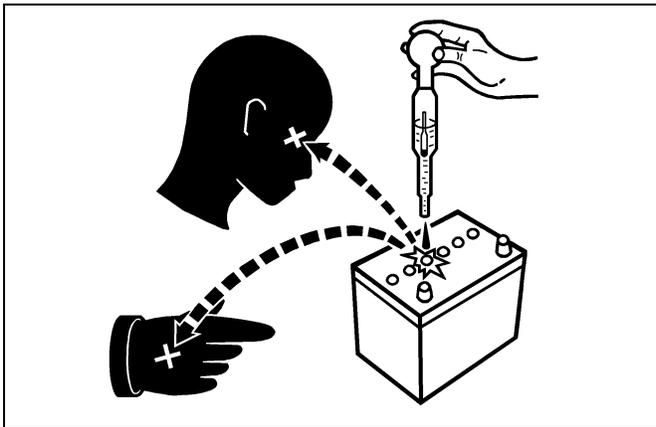
- Fuel is extremely flammable and explosive under certain conditions. Do not smoke or allow flames or sparks in your working area.
- To avoid sparks from an accidental short circuit, always disconnect the battery negative cable first and connect it last.
- Battery gas can explode. Keep sparks and open 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.



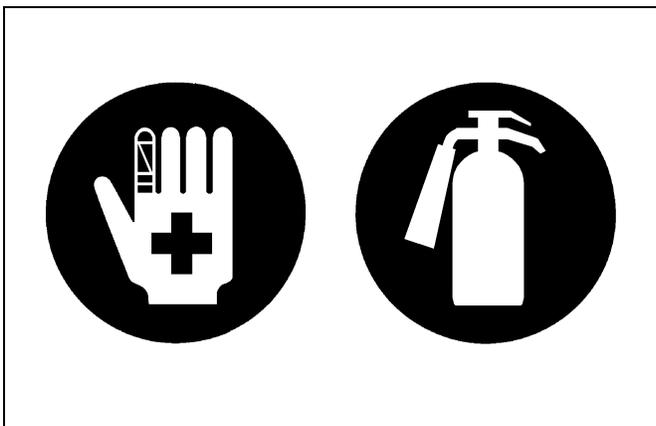
PREVENT ACID BURNS

- 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.



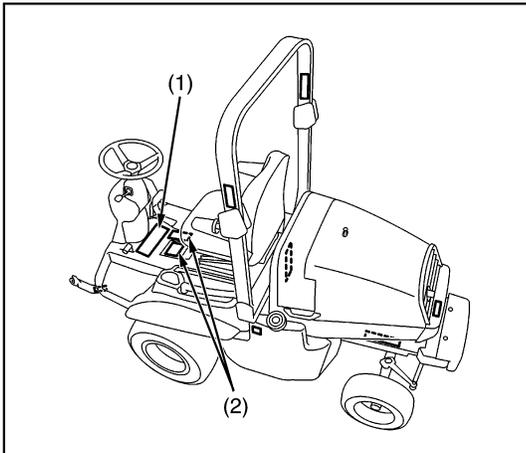
PREPARE FOR EMERGENCIES

- 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. K3611-4717-1

<p>⚠ WARNING</p> <p>TO AVOID SERIOUS INJURY OR DEATH</p> <p>READ OPERATOR'S MANUAL.</p> <ul style="list-style-type: none"> -GO UP AND DOWN SLOPES, NOT ACROSS. -AVOID SUDDEN TURNS. -IF MACHINE STOPS GOING UP-HILL, STOP BLADE AND BACK DOWN SLOWLY. -NEVER CARRY CHILDREN OR OTHERS. -DO NOT MOW WHEN CHILDREN OR OTHERS ARE AROUND. -LOOK DOWN AND BEHIND BEFORE AND WHILE BACKING. -KEEP SAFETY DEVICES (GUARDS, SHIELDS AND SWITCHES) IN PLACE AND WORKING. -REMOVE OBJECTS THAT COULD BE THROWN BY THE BLADE. 	<p>DIFF. LOCK </p> <p>BRAKE FWD. </p> <p>Ⓟ BRAKE LOCK LEVER </p> <p>REV. </p> <p>⚠ CAUTION</p> <p>TO HELP PREVENT TPOVER AND INJURY DO NOT DRIVE AT HIGH SPEED OR TURN THE FRONT MOWER WHEN THE DIFFERENTIAL IS LOCKED.</p> <p>Ⓟ PARKING BRAKE</p> <p>TO LOCK: DEPRESS BRAKE PEDAL, FULLY PULL AND HOLD BRAKE LOCK LEVER AND REMOVE FOOT FROM PEDAL. TO UNLOCK, DEPRESS BRAKE PEDAL.</p>	<p>⚠ CAUTION</p> <p>TO AVOID PERSONAL INJURY</p> <ul style="list-style-type: none"> -KNOW LOCATION AND FUNCTION OF ALL CONTROLS. -BEFORE STARTING ENGINE, MAKE CERTAIN PTO IS OFF, SHIFT INTO NEUTRAL AND EVERYONE IS AT A SAFE DISTANCE FROM MACHINE. -DO NOT OPERATE WHERE MACHINE COULD TIP OR SLIP. -TO REDUCE FIRE HAZARDS, KEEP THE PLATFORM CLEAR OF DRY GRASS, DRY LEAVES OR OTHER COMBUSTIBLE MATERIAL. -BEFORE DISMOUNTING, DISENGAGE PTO CLUTCH, LOWER IMPLEMENT, SHIFT INTO NEUTRAL, SET PARKING BRAKE, STOP ENGINE AND REMOVE THE KEY. -THIS MACHINE IS NOT FOR STREET OR HIGHWAY USE.
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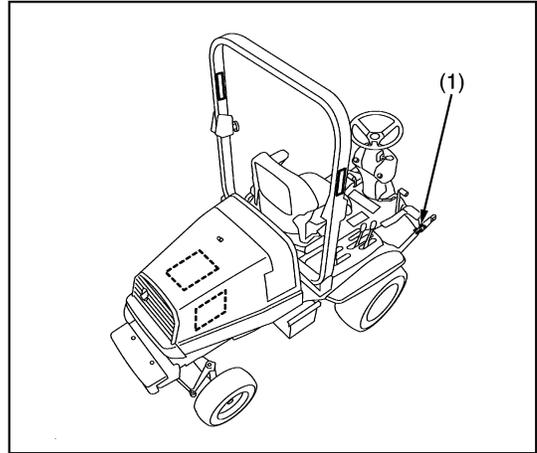
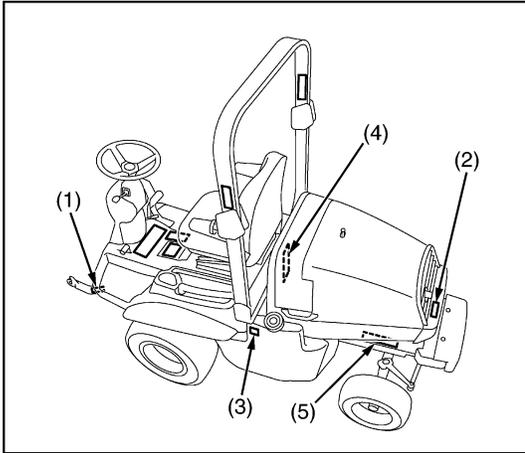
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(2) Part No. K3611-4716-1

<p>⚠ ADVERTENCIA</p> <p>PARA EVITAR LAS LESIONES GRAVES O LA MUERTE</p> <ul style="list-style-type: none"> -EN LOS DECLIVES VAYA HACIA ARRIBA Y HACIA ABAJO, NO LOS ATRAVESE. -EVITE LOS BRUOS SUCIOS. -EN CASO DE QUE LA MAQUINA SE DETENGA MIENTRAS VA OUESTA ARRIBA. -DETENGA LA CUCHILLA Y DESCENDIA LENTAMENTE POR EL DECLIVE. -NUNCA TRANSPORTE NI MDS U OTRAS PERSONAS. -MANTENGA LOS DISPOSITIVOS DE SEGURIDAD (DISPOSITIVOS PROTECTORES, PROTROCIONES Y COMUTADORES) EN SU LUGAR Y EN BUENAS CONDICIONES DE FUNCIONAMIENTO. -RETIRE LOS OBJETOS QUE PUEDAN SER ARROJADOS POR LA CUCHILLA. -LEA EL MANUAL DEL OPERADOR. 	<p>BLOQUEO DEL DIFERENCIAL </p> <p>FRENO AVANCE </p> <p>Ⓟ PALANCA DE BLOQUEO DEL FRENO </p> <p>RETROCESO </p> <p>⚠ PRECAUCIÓN</p> <p>PARA AYUDAR A PREVENIR LOS TUELOS Y LAS LESIONES PERSONALES A LA VELOCIDAD ALTA O BAJA O EN UN TERRENO INESTABLE, NO OPERE LA MAQUINA A UNA VELOCIDAD ALTA CUANDO EL DIFERENCIAL ESTE BLOQUEADO.</p> <p>Ⓟ FRENO DE ESTACIONAMIENTO</p> <p>PARA BLOQUEARLO: PRESIONE A FONDO EL PEDAL DEL FRENO, TIRE DE LA PALANCA DE BLOQUEO DEL FRENO Y SOSTENGALA Y RETIRE EL PIE DEL PEDAL. PARA DESBLOQUEARLO: PRESIONE EL PEDAL DEL FRENO.</p>	<p>⚠ PRECAUCIÓN</p> <p>PARA EVITAR LAS LESIONES PERSONALES</p> <ul style="list-style-type: none"> -AVERIGUE CUAL ES LA LUBICACION Y LA FUNCION DE TODOS LOS CONTROLES. -ANTES DE PONER EN MARCHA EL MOTOR, ASEGURESE DE QUE LA TOMA DE FUERZA ESTE DESCONECTADA, LA PALANCA DE CAMBIOS ESTE COLOCADA EN PUNTO MUERTO Y TODAS LAS PERSONAS ESTEN A UNA DISTANCIA SEGURA DE LA MAQUINA. -PARA REDUCIR EL PELIGRO DE INCENDIO, MANTENGA EL ESCAPE LIBRE DE PASTO SECO, HOJAS SECAS U OTROS MATERIALES COMBUSTIBLES. -ANTES DE DESCENDER DEL VEHICULO, RETIRE EL EMBRAGUE DE TOMA DE FUERZA, BAJE EL IMPLEMENTO, COLOQUE EL CAMBIO EN PUNTO MUERTO, COLOQUE EL FRENO DE ESTACIONAMIENTO, APAGUE EL MOTOR Y SAQUE LA LLAVE. -ESTA MAQUINA NO SE DEBE USAR EN CALLES O AUTOPISTAS.
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(1) Part No. K3611-4723-1

	CAUTION	PRECAUCIÓN
	THIS ARM CAN SPRING UP UPWARD! • SEE OPERATOR'S MANUAL WHEN DISASSEMBLING.	ESTE BRAZO PUEDE REBOTAR HACIA ARRIBA! • CONSULTE EL MANUAL DEL OPERADOR AL DESMONTARLO.

1BDAIAAAP048A

(3) Part No. K3611-4741-1

DIESEL	

1BDAHADAP0300

(4) Part No. TA040-4957-1
Stay clear of engine fan and fan belt.

1BDABARAP113A

(2) Part No. K3611-4728-1

	CAUTION	PRECAUCIÓN
HOT EXHAUST		HUMO CALIENTE

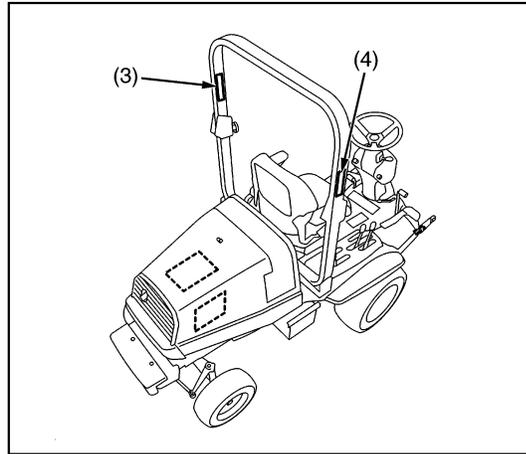
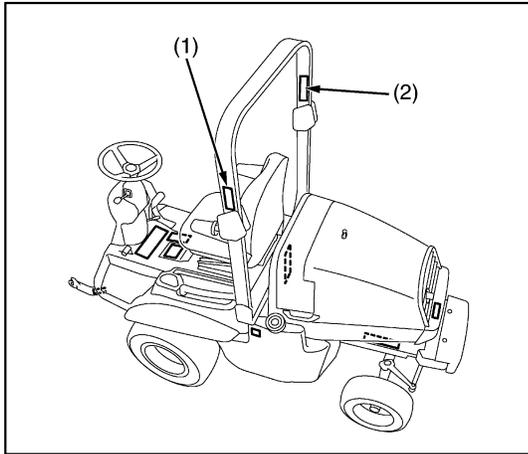
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(5) Part No. K3611-4765-1

	DANGER	PELIGRO
	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.	PARA EVITAR POSIBLES LESIONES O LA MUERTE PROVOCADAS POR UN ARRANQUE SÚBITO DE LA MÁQUINA. 1. No ponga en marcha el motor con un cortocircuito en los terminales de arranque o evitando el interruptor de arranque de seguridad. La máquina puede ponerse en marcha engranada y moverse si se evita el uso de los circuitos de arranque normales. 2. Ponga en marcha el motor sólo desde el asiento del operador con la caja de cambios y la toma de fuerza apagados. Nunca ponga en marcha el motor mientras éste de pie en el suelo.

1BDAIAAAP050A

3GFACACMP002A



(1) Part No. K3611-8149-1

(2) Part No. K3611-8143-1

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

(4) Part No. K3611-8148-1

ADVERTENCIA

PARA EVITAR LESIONES PERSONALES O LA MUERTE A CAUSA DE VUELCOS:

- Mantenga las estructuras de protección contra vuelcos (marcos-techos) en posición erguida y bloqueada.
- Abróchese el CINTURÓN DE SEGURIDAD antes de operar la máquina.

NO HAY NINGUNA PROTECCIÓN PARA EL OPERADOR CUANDO EL MARCO-TECHO ESTÁ EN POSICIÓN DOBLADA

- Controle el área de operación y pliegue el marco-techo sólo cuando sea absolutamente necesario.
- No use el cinturón de seguridad si el marco-techo está doblado
- Levante y trabe el marco-techo en cuanto la holgura vertical lo permita.
- Lea las advertencias e instrucciones relacionadas con el marco-techo.

1BDAIAAAP052A

WARNING

TO AVOID PERSONAL INJURY OR DEATH FROM ROLL-OVER:

- Keep Roll-Over Protective Structures(ROPS) in the upright and locked position.
- Fasten SEAT BELT before operating.

THERE IS NO OPERATOR PROTECTION WHEN THE ROPS IS IN THE FOLDED POSITION.

- Check the operating area and fold the ROPS only when absolutely necessary.
- Do not wear SEAT BELT if ROPS is folded.
- Raise and lock ROPS as soon as vertical clearance allows.
- Read ROPS related instructions and warnings.

1BDAIAAAP053A

WARNING

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

CAUTION

TO AVOID INJURY WHEN RAISING OR FOLDING ROPS:

- Set parking brake and stop engine.
- Remove any obstruction that may prevent raising or folding of the ROPS.
- Do not allow any bystanders.
- Always perform function from a stable position at the rear of the tractor.
- Hold the top of the ROPS securely when raising or folding.
- Make sure all pins are installed and locked.

1AGAIAZAP076B

ADVERTENCIA

Nunca modifique ni repare un marco-techo dado que la soldadura, amoladura, perforación o corte de cualquier pieza puede debilitar la estructura.

PRECAUCIÓN

PARA EVITAR LESIONES AL LEVANTAR O PLEGAR UN MARCO-TECHO:

- Coloque el freno de estacionamiento y apague el motor.
- Retire cualquier obstáculo que pueda evitar que el marco-techo se eleve o se pliegue.
- No permita que haya personas alrededor observando.
- Ejecute siempre la función desde una posición estable en la parte trasera del tractor.
- Sostenga firmemente la parte superior del marco-techo al levantarlo o plegarlo.
- Asegúrese de que todos los pasadores estén instalados y trabados.

1BDAIAAAP055A

CARE OF DANGER, WARNING AND CAUTION LABELS

- Keep danger, warning and caution labels clean and free from obstructing material.
- Clean danger, warning and caution labels with soap and water, dry with a soft cloth.
- Replace damaged or missing danger, warning and caution labels with new labels.
- 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.
- Mount new danger, warning and caution labels by applying on a clean dry surface and pressing any bubbles to outside edge.

3GFACAMP003A

SPECIFICATIONS

Model		F2880	F2880E	F3680
Engine	Model	D1105-E2-FM2		V1505-E2-FM3
	Engine gross power (SAE) *1	20.4 kW (27.3 HP)		26.3 kW (35.3 HP)
	Type	Indirect Injection, vertical, water-cooled, 4-cycle diesel		
	Number of cylinders	3		4
	Bore and stroke	78.0 × 78.4 mm (3.07 × 3.09 in.)		
	Total displacement	1123 cm ³ (68.58 cu.in.)		1498 cm ³ (91.42 cu.in.)
	Rated revolution	3000min ⁻¹ (rpm)		
	Starting system	Electric starter 12 V, 1.1 kW		
	Lubricating system	Forced lubrication by gear pump		
	Cooling system	Pressurized radiator, forced circulation with water pump		
	Battery	12 V, CCA : 490 A, RC : 112 min.		
Fuel	Diesel fuel No. 1 [below -10 °C (14 °F)] Diesel fuel No. 2-D [above -10 °C (14 °F)]			
Capacities	Fuel tank	61 L (16.1 U.S.gals, 13.4 Imp.gals)		
	Engine crankcase	3.8 L (4.0 U.S.qts., 3.3 Imp.qts)		
	Engine coolant	4.6 L (4.9 U.S.qts., 4.0 Imp.qts)		
	Recovery tank	0.6 L (0.6 U.S.qts, 0.5 Imp.qts)		
	Transmission case	14.0 L (14.8 U.S.qts, 12.3 Imp.qts)		
	Rear axle differential case	1.5 L (1.59 U.S.qts, 1.32 Imp.qts)	-	1.5 L (1.59 U.S.qts, 1.32 Imp.qts)
	Rear axle gear case	0.5 L (0.53 U.S.qts, 0.44 Imp.qts)	-	0.5 L (0.53 U.S.qts, 0.44 Imp.qts)
Tire	Front	24 × 12 – 12 (4PR) Turf	23 × 10.5 – 12 (4PR) Turf	24 × 12 – 12 (4PR) Turf
	Rear	18 × 9.5 – 8 (4PR) Turf	16 × 6.5 – 8 (4PR) Turf	18 × 9.5 – 8 (4PR) Turf
Travelling speeds	Forward	Low	0 to 5.6 mph (0 to 9.0 km/h) *2	
		High	0 to 12.6 mph (0 to 20.0 km/h) *2	
	Reverse	Low	0 to 3.0 mph (0 to 4.8 km/h) *2	
		High	0 to 6.9 mph (0 to 11.0 km/h) *2	
Dimensions	Overall length	2450 mm (96.5 in.)		
	Overall width	1370 mm (53.9 in.)	1240 mm (48.8 in.)	1370 mm (53.9 in.)
	Overall height	without ROPS	1350 mm (53.1 in.)	
		with ROPS	1985 mm (78.2 in.)	
	Wheel base	1300 mm (51.2 in.)		
	Min. ground clearance	185 mm (7.3 in.)		
	Tread	Front	1063 mm (41.9 in.)	975 mm (38.4 in.)
Rear		1020 mm (40.2 in.)	875 mm (34.4 in.)	1020 mm (40.2 in.)
Weight (without mower deck)		748 kg (1649 lbs)	723 kg (1594 lbs)	765 kg (1687 lbs)

W1028103

Model		F2880	F2880E	F3680
PTO	Revolution	1 speed (2545 rpm at 3000 engine rpm)		
	Drive system	Shaft drive. KUBOTA 10-tooth involute spline (2545 rpm)		
	Clutch type	Wet multi plates		
	PTO brake	Wet single plates		
Steering		Power, Hydraulic		
Transmission		Hydrostatic transmission, High-Low gear shift (2 forward, 2 reverse)		
Brake		Wet disk type		
Minimum turning radius		Less than 750 mm (29.5 in.) (inside of front tire)		
Differential	Front	Bevel gear		
	Rear	Bevel gear	–	Bevel gear
4WD system		Dual-acting overrunning 4WD	–	Dual-acting overrunning 4WD

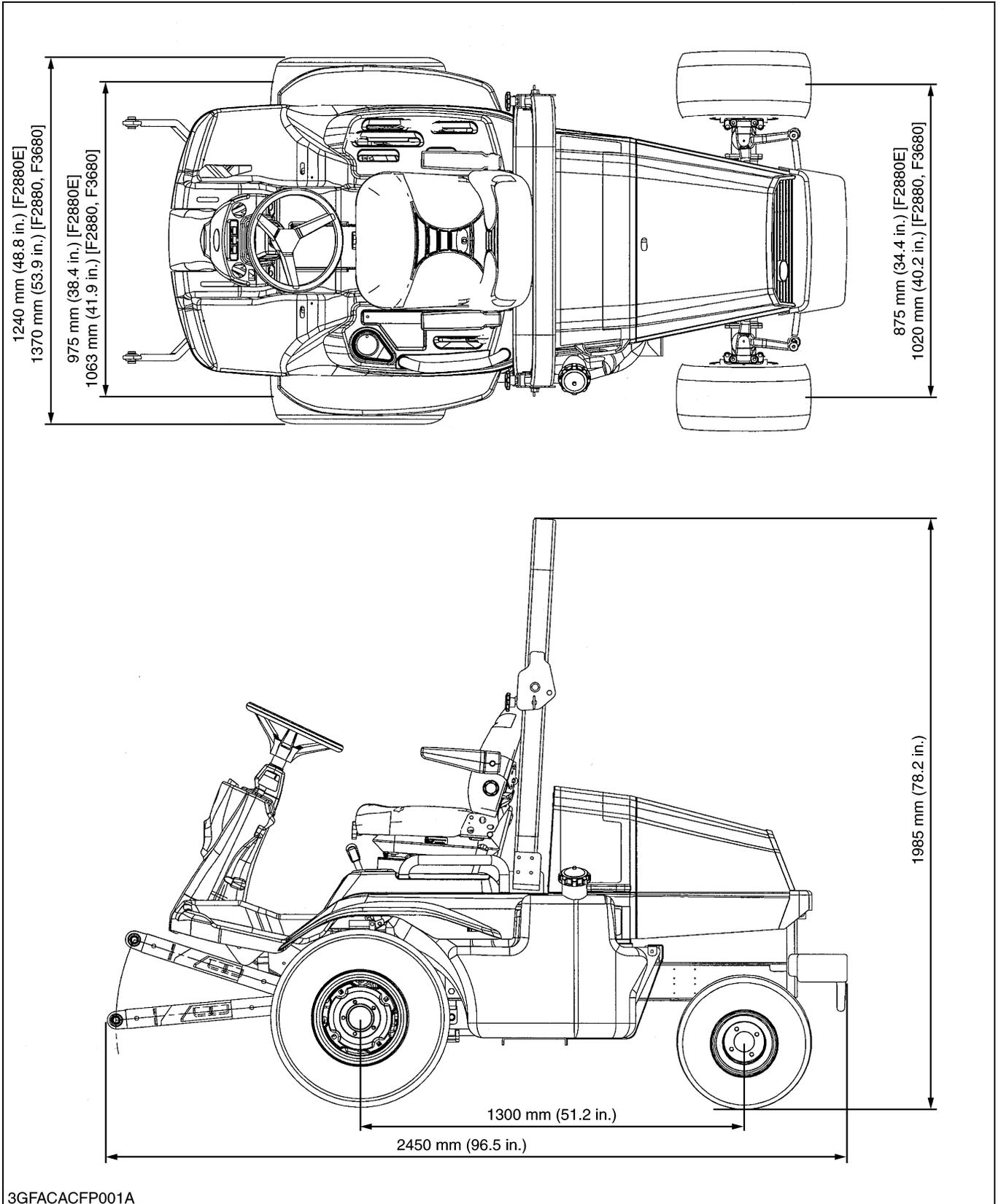
(Specifications and design subject to change without notice)

NOTE: *1 : Manufacture's estimate.

*2 : At 2700 engine min⁻¹ (rpm).

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DIMENSIONS



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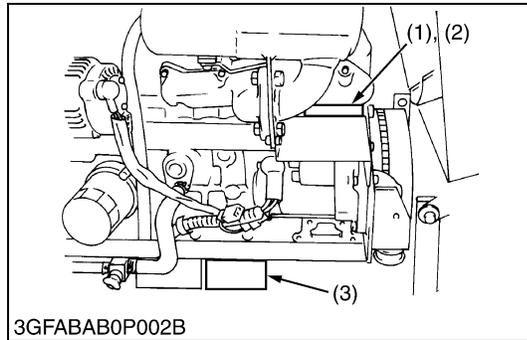
G GENERAL

GENERAL

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1. IDENTIFICATION



When contacting your local KUBOTA distributor, always specify engine model name, engine serial number and machine serial 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. D1105-5A0001

“5” indicates 2005 and “A” indicates January.

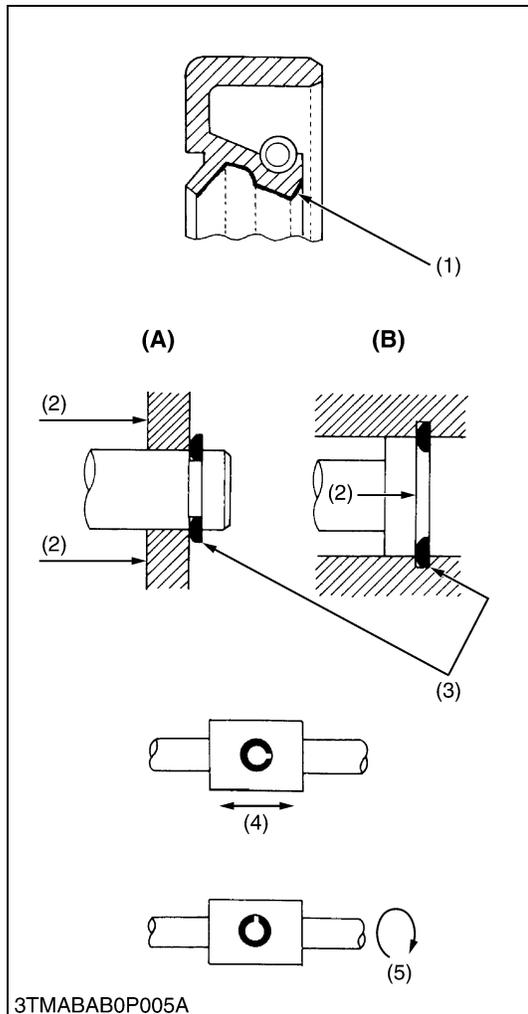
So, 5A indicates that the engine was manufactured in January, 2005.

- (1) Engine Model Name
(2) Engine Serial Number

- (3) Machine Serial Number

W1010714

2. GENERAL PRECAUTIONS



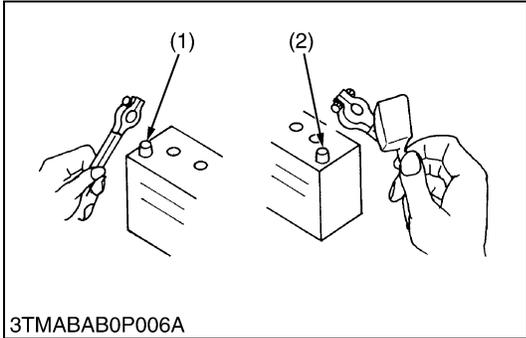
- During disassembly, carefully arrange removed parts in a clean area to prevent confusion later. Screws, bolts and nuts should be installed in their original position to prevent reassembly errors.
- When special tools are required, use KUBOTA genuine special tools. Special tools which are not frequently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

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.

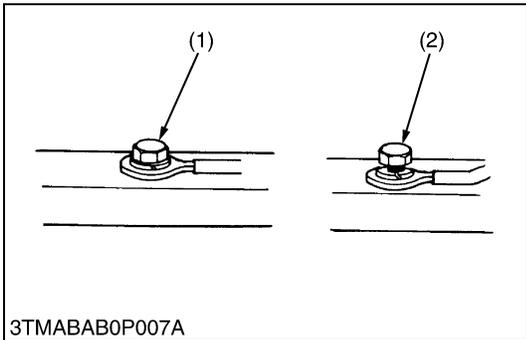
■ IMPORTANT

- 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

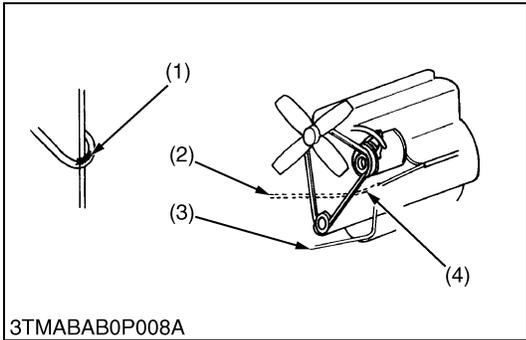


3TMABAB0P007A

- Securely tighten wiring terminals.

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

W10112160

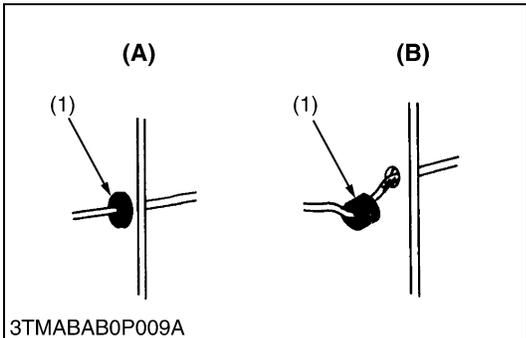


3TMABAB0P008A

- Do not let wiring contact dangerous part.

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

W10113130

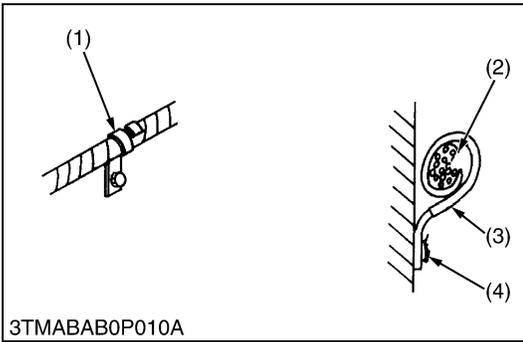


3TMABAB0P009A

- Securely insert grommet.

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

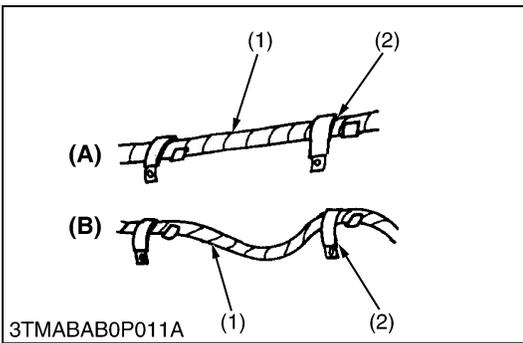
W10113880



- Securely clamp, being careful not to damage wiring.

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

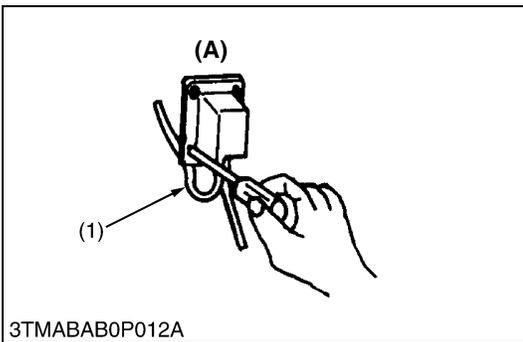
W10114580



- 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

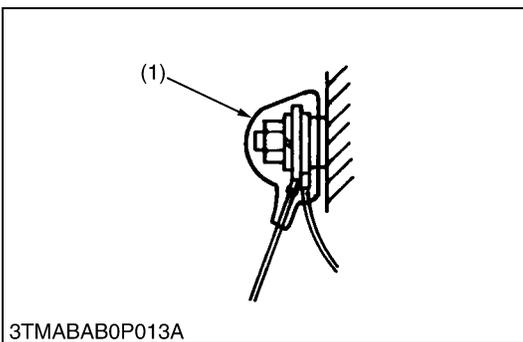
W10115870



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

- (1) Wiring
- (A) Incorrect

W10116700

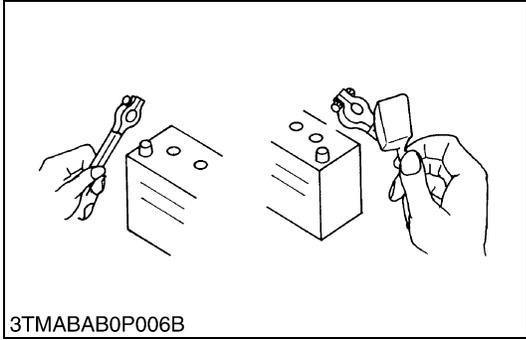


- After installing wiring, check protection of terminals and clamped condition of wiring, only connect battery.

- (1) Cover
 - Securely Install Cover

W10117350

[2] BATTERY



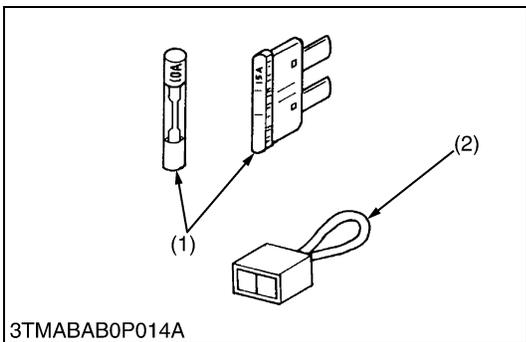
- Take care not to confuse positive and negative terminal posts.
- When removing battery cables, disconnect negative cable first. When installing battery cables, check for polarity and connect positive cable first.
- Do not install any battery with capacity other than is specified (Ah).
- After connecting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

W10118160

[3] FUSE



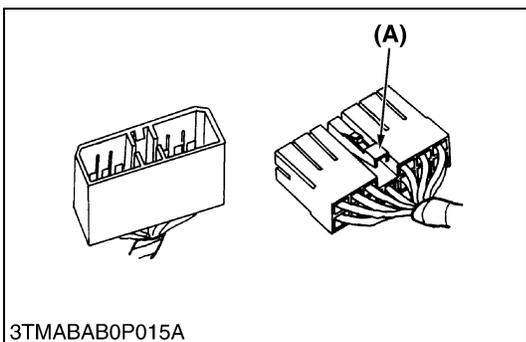
- Use fuses with specified capacity. Neither too large or small capacity fuse is acceptable.
- Never use steel or copper wire in place of fuse.
- Do not install working light, radio set, etc. on machine which is not provided with reserve power supply.
- Do not install accessories if fuse capacity of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

(1) Fuse

(2) Slow Blow Fuse

W10120920

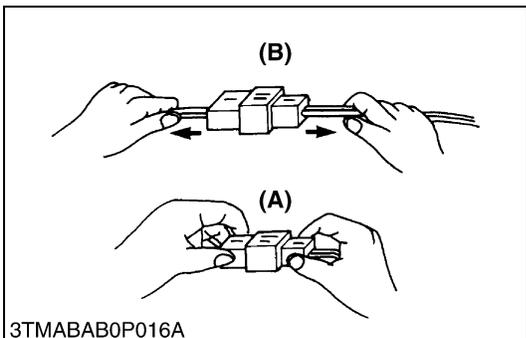
[4] CONNECTOR



- For connector with lock, push lock to separate.

(A) Push

W10122110

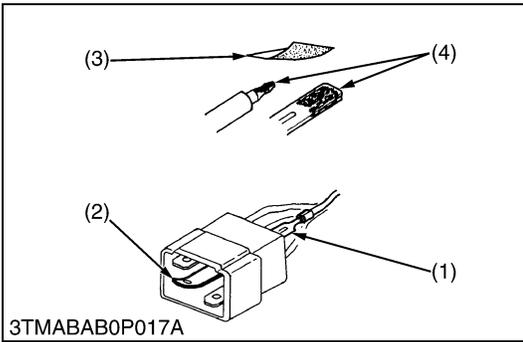


- In separating connectors, do not pull wire harnesses.
- Hold connector bodies to separate.

(A) Correct

(B) Incorrect

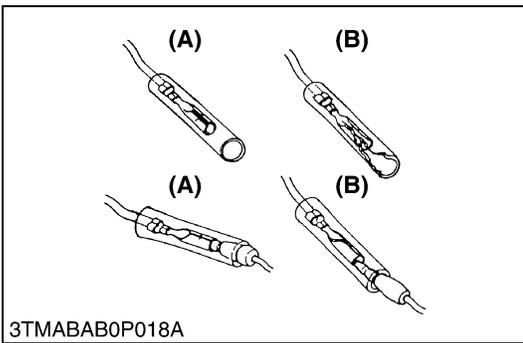
W10122720



- 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

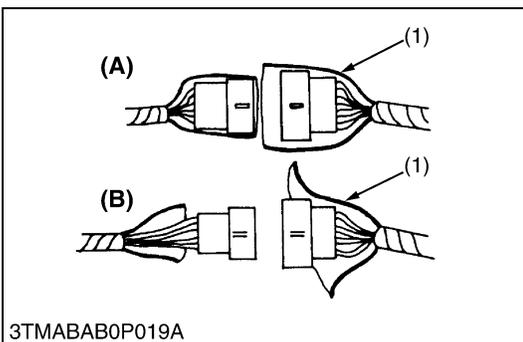
W10123460



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

(A) Correct (B) Incorrect

W10124300

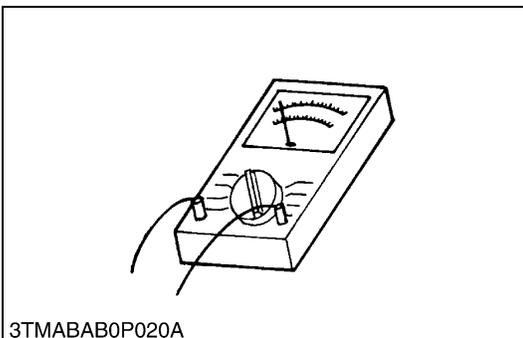


- Make certain plastic cover is large enough to cover whole connector.

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

W10125190

[5] HANDLING OF CIRCUIT TESTER



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

W10126840

4. LUBRICANTS, FUEL AND COOLANT

No.	Place		Capacity			Lubricants, fuel and coolant
			F2880	F2880E	F3680	
1	Fuel		61 L 16.1 U.S.gals 13.4 Imp.gals			No. 2-D diesel fuel No.1-D diesel fuel if temperature is below – 10 °C (14 °F)
2	Coolant	Cooling system	4.6 L 4.9 U.S.qts 4.0 Imp.qts			Fresh clean water with anti-freeze
		Recovery tank	0.6 L 0.6 U.S.qts 0.5 Imp.qts			
3	Engine crankcase		3.8 L 4.0 U.S.qts 3.3 Imp.qts		5.3 L 5.6 U.S.qts 4.7 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		14.0 L 14.8 U.S.qts 12.3 Imp.qts			KUBOTA UDT or SUPER UDT fluid*
5	Rear axle differential case		1.5 L 1.59 U.S.qts 1.32 Imp.qts	–	1.5 L 1.59 U.S.qts 1.32 Imp.qts	KUBOTA UDT, SUPER UDT fluid* or SAE85W, SAE90 gear oil (API Service Classification : more than GL-3)
6	Rear axle gear case		0.5 L 0.53 U.S.qts 0.44 Imp.qts	–	0.5 L 0.53 U.S.qts 0.44 Imp.qts	

* KUBOTA original transmission hydraulic fluid.

Greasing	No. of greasing points			Capacity	Type of grease
	F2880	F2880E	F3680		
Speed control pedal shaft	1	1	1	Until grease overflows	Multipurpose Grease NLGI-2 or NLGI-1 (GC-LB)
Link pivots (RH and LH)	2	2	2		
Differential lock pedal boss	1	1	1		
Universal joint	1	1	1		
Rear wheel drive shaft (Front and rear for 4WD)	2	–	2		
Knuckle arm (RH and LH for 4WD)	2	–	2		
Kingpin (RH and LH for 2WD)	–	2	–		
Seat adjuster	2	2	2	Moderate amount	Oil
HST neutral shaft	1	1	1		
Cable (Throttle)	1	1	1		

5. TIGHTENING TORQUES

[1] GENERAL USE SCREWS, BOLTS AND NUTS

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

Indication on top of bolt	 No-grade or 4T						 7T						 9T		
Material of bolt	SS400, S20C						S43C, S48C						SCr435, SCM435		
Material of opponent part	Ordinariness			Aluminum			Ordinariness			Aluminum			Ordinariness		
Unit	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
Diameter															
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

[2] METRIC SCREWS, BOLTS AND NUTS

Grade	Property class 8.8 			Property class 10.9 		
Unit	N-m	kgf-m	ft-lbs	N-m	kgf-m	ft-lbs
Nominal Diameter						
M8	23.6 to 27.4	2.40 to 2.80	17.4 to 20.2	29.4 to 34.3	3.00 to 3.50	21.7 to 25.3
M10	48.1 to 55.8	4.90 to 5.70	35.5 to 41.2	60.8 to 70.5	6.20 to 7.20	44.9 to 52.1
M12	77.5 to 90.1	7.90 to 9.20	57.2 to 66.5	103.0 to 117.0	10.50 to 12.00	76.0 to 86.8
M14	124.0 to 147.0	12.60 to 15.00	91.2 to 108.0	167.0 to 196.0	17.00 to 20.00	123.0 to 144.0
M16	196.0 to 255.0	20.0 to 23.0	145.0 to 166.0	260.0 to 303.0	26.50 to 31.00	192.0 to 224.0

W1013689

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

Grade	SAE GR.5 			SAE GR.8 			
	Unit	N-m	kgf-m	ft-lbs	N-m	kgf-m	ft-lbs
Nominal Diameter							
5/16		23.1 to 27.8	2.35 to 2.84	17.0 to 20.5	32.5 to 39.3	3.31 to 4.01	24.0 to 29.0
3/8		47.5 to 57.0	4.84 to 5.82	35.0 to 42.0	61.0 to 73.2	6.22 to 7.47	45.0 to 54.0
1/2		108.5 to 130.2	11.07 to 13.29	80.0 to 96.0	149.2 to 179.0	15.22 to 18.27	110.0 to 132.0
9/16		149.2 to 179.0	15.22 to 18.27	110.0 to 132.0	217.0 to 260.4	22.14 to 26.57	160.0 to 192.0
5/8		203.4 to 244.1	20.75 to 24.91	150.0 to 180.0	298.3 to 358.0	30.44 to 36.53	220.0 to 264.0

W1022485

[4] PLUGS

Shape	Size	Material of opponent part					
		Ordinariness			Aluminum		
		N-m	kgf-m	ft-lbs	N-m	kgf-m	ft-lbs
Tapered screw 	R1/8	13 to 22	1.3 to 2.2	9.6 to 16.2	10 to 12	1.0 to 1.2	7.4 to 8.9
	R1/4	29 to 44	3.0 to 4.5	21.4 to 32.5	20 to 29	2.0 to 3.0	14.8 to 21.4
Straight screw 	G1/4	29 to 39	3.0 to 4.0	21.4 to 28.8	–	–	–
	G3/8	49 to 59	5.0 to 6.0	36.1 to 43.5	–	–	–
	G1/2	59 to 78	6.0 to 8.0	43.5 to 57.5	–	–	–

000001666E

(Continued)

No.	Item	Period	Service Interval												After since	Important	Reference page
			50	100	150	200	250	300	350	400	450	500	550	600			
18	Fuel line	Check				☆				☆				☆	every 200Hr		G-30
		Replace													every 2 years	@	G-35
19	Intake air line	Check				☆				☆				☆	every 200Hr		G-31
		Replace													every 2 years	@	-
20	Rear axle pivot	Adjust								☆					every 400Hr		G-31
21	Fuel injection nozzle (injection pressure)	Check													every 1500Hr	@	G-32
22	Injection pump	Check													every 3000Hr	@	G-32
23	Radiator	Clean													every 1 year		G-33
24	Coolant	Change													every 1 year	@	G-33
25	Fuel system	Bleed													Service as Required		G-36
26	Fuse	Replace															G-36
27	Light bulb	Replace															G-36
28	Lift spring	Adjust															G-36

W1023987

7. CHECK AND MAINTENANCE



CAUTION

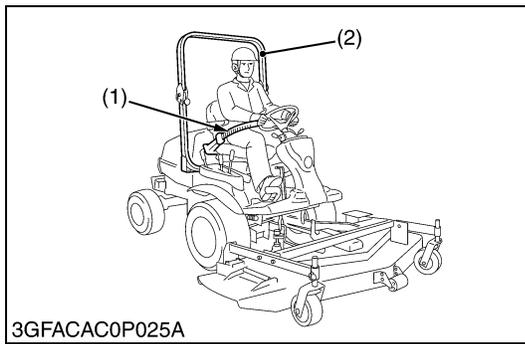
- Be sure to check and service the machine on a flat place with engine shut off, the parking and chock the wheel.

[1] DAILY CHECK

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

Checking

- Check areas where previous trouble was experienced.
- Walk around the machine.
 1. The tire pressure, wear and damage
 2. Oil and water leak
 3. Engine oil level
 4. Transmission fluid level
 5. Battery electrolyte
 6. Coolant level in the recovery tank
 7. Damage of machine body, tightness of all screws, bolts and nuts
 8. Radiator screen
 9. Bonnet screen
 10. Brake pedal free travel
 11. Fuel level
 12. Air cleaner
 - While sitting in the operator's seat
 1. Speed control pedal
 2. Brake pedal
 3. Parking brake
 - Turning the key switch "ON".
 1. Performance of the easy checker light
 2. Head light
 - Starting the engine.
 1. Color of the exhaust fumes
 2. Safety start switch, seat safety control and another safety devices
 3. Check for abnormal noise and vibration
 - Others.
 1. Check the areas where previous trouble was experienced



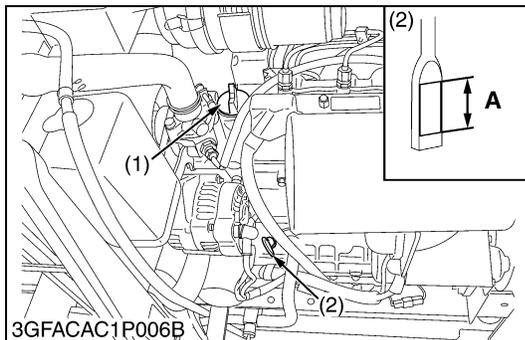
Checking Seat Belt and ROPS

1. Always check condition of the seat belt (1) and ROPS (2) attaching hardware before operating the machine.
2. Replace anything that are frayed or damaged.

(1) Seat Belt

(2) ROPS

W1046694



Checking Engine Oil Level

CAUTION

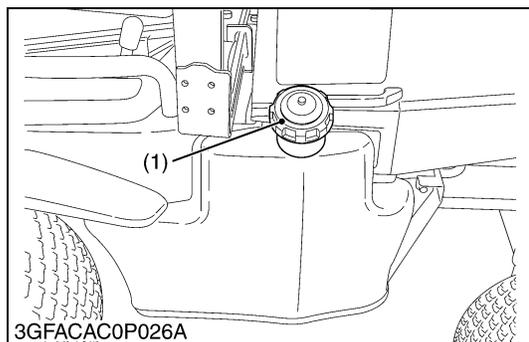
- Always stop the engine and remove the key before checking oil.
1. Check engine oil before starting and 5 minutes or more after the engine has stopped.
 2. Wipe dipstick (2) area clean.
 3. To check the oil level, remove the dipstick (2), wipe it clean, reinsert it, and draw it out again. Check to see that the oil level is between the two notches.
 4. Add new oil to the prescribed level at the oil inlet (1) if necessary.
 5. When using a different brand or viscosity oil from the previous one, remove all of the old oil and oil filter. Never mix two different types of oil.
 6. Use the proper Engine Oil SAE according to the ambient temperatures. (See page G-7.)

(1) Engine Oil Inlet

(2) Oil Level Dipstick

A : Oil level is acceptable within this range

W1047516



Checking Amount of Fuel and Refueling

CAUTION

- Handle fuel carefully. If the engine is running, do not fill the fuel tank. If engine is hot, let engine cool several minutes before adding fuel.

Do not smoke while filling the fuel tank or servicing the fuel system. Fill fuel tank only to bottom of filler neck.

Check the fuel level. Take care that the fuel tank does not become empty.

Fuel tank capacity	61 L 16.1 U.S.gals 13.4 Imp.gals
--------------------	--

IMPORTANT

- **Use Diesel Fuel Only.**
 1. Use No.2-D diesel fuel.
 2. Use No.1-D diesel fuel if the temperature is below -10 °C (14 °F).
 3. Always use a strainer when refueling to prevent fuel injection pump contamination.

NOTE

- **No.2-D is a distillate fuel of lower volatility for engines in industrial and heavy mobile service.**

(SAE J313 JUN87)

Grade of Diesel Fuel Oil according to ASTM D975

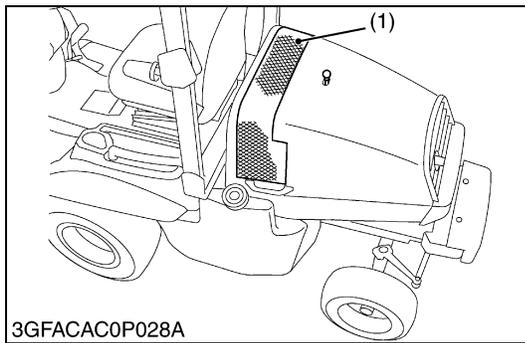
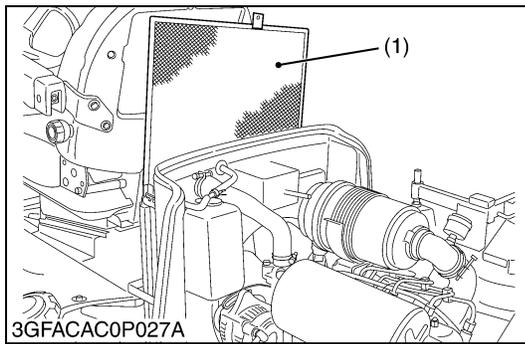
Flash point °C	Water and sediment, volume %	Carbon residue on, 10 percent residuum %	Ash, weight %
Min	Max	Max	Max
52	0.05	0.35	0.01

Distillation temperatures °C 90 % point		Kinematics viscosity cSt or mm ² /S at 40 °C		Saybolt viscosity, SUS at 100 °F	
Min	Max	Max	Max	Max	Max
282	338	1.9	4.1	32.6	40.1

Sulfur, weight	Copper strip corrosion	Cetane number
Max	Max	Min
0.50	No. 3	40

(1) Fuel Cap

W1048002



Checking and Cleaning Radiator to Prevent Overheating

⚠ CAUTION

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

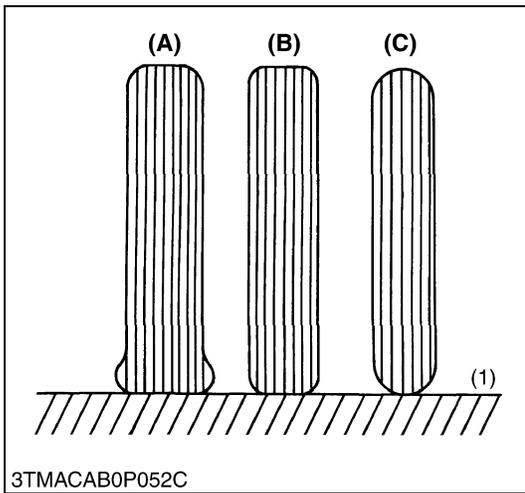
Daily or after every 5 hours of operation, check to be sure the radiator screen (1) and bonnet screen (2) are clean. Dirt or chaff on the radiator screen (1) or bonnet screen (2) decrease cooling performance.

1. Open the bonnet and remove the radiator screen (2).
2. Remove the dust from between the fins and the tube.
3. Tighten the fan drive belt as necessary. For this, refer to "**CHECK POINT EVERY 100 HOURS**".
4. If scale forms in the tube, clean with the scale inhibitor or its equivalent.
5. Each time the bonnet screen (2) is covered with grass during operation, remove the grass from bonnet screen by hand. Check the radiator screen (1) from time to time if grass accumulates.
6. If the dust or chaff has accumulated inside of the panel, remove the radiator screen (1) and clean inside completely.
After cleaning, reinstall the radiator screen (1) properly.

(1) Radiator Screen

(2) Bonnet Screen

W1050141



Checking Tire Pressure

! WARNING

- Do not attempt to mount a tire on a rim. This should be done by a qualified person with the proper equipment
- Always maintain the correct tire pressure.
Do not inflate tires above the recommended pressure.

! CAUTION

- Never operate machine with a loose rim, wheel or axle.
- Whenever bolts are loosened, retighten to specified torque.
- Check all bolts frequently and keep them tightened.

■ Inflation Pressure

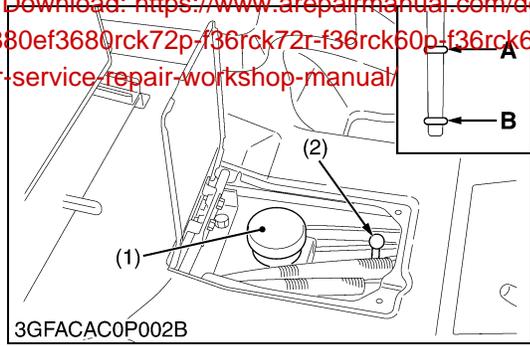
Though the inflation pressure is factory-set to the prescribed level, it naturally drops slowly in the course of time. Thus, check it every day and inflate as necessary.

	Model	Tire Sizes	Recommended inflation pressure
Front	F2880 F3680	24 × 12-12, 4PR	140 kPa (1.4 kgf/cm ² , 20 psi)
	F2880E	23 × 10.5-12, 4PR	
Rear	F2880 F3680	18 × 9.5-8, 4PR	200 kPa (2.0 kgf/cm ² , 28 psi)
	F2880E	16 × 6.5-8, 4PR	

(1) Ground

- (A) Insufficient
- (B) Normal
- (C) Excessive

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Checking Transmission Fluid Level

1. Park the machine on a flat surface, lower the implement to the ground and shut off engine and remove the key.
2. To check the oil level, draw out the dipstick (2), wipe it clean, reinsert it, and draw it out again. Check to see that the oil level lies between the two notches. If the level is too low, add new oil to the prescribed level at the oil inlet (1). (See page G-7.)

IMPORTANT

- **If oil level is low, do not run engine.**

- | | |
|------------------------|------------------------|
| (1) Oil Inlet | A : Upper Level |
| (2) Oil Level Dipstick | B : Lower Level |

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