

Product: 2013 Kubota WSM F2690E,F2690,F3990,RCK60P-F39,RCK60R-F36,RCK72P-F39,RCK72R-F36 Front Mover Service
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WSM

WORKSHOP MANUAL

**F2690E,F2690,F3990,RCK60P-F39,
RCK60R-F36,RCK72P-F39,
RCK72R-F36**

Kubota

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TO THE READER

This Workshop Manual tells the servicing personnel about the mechanism, servicing and maintenance of the F2690E, F2690 and F3990, KUBOTA Mower RCK60P-F39, RCK60R-F36, RCK72P-F39 and RCK72R-F36. It contains 4 parts: "**Information**", "**General**", "**Mechanism**" and "**Servicing**".

■ **Information**

This section primarily contains information below.

- Safety First
- Safety Decal
- Specification
- Dimension

■ **General**

This section primarily contains information below.

- Engine Identification
- Model Identification
- General Precautions
- Maintenance Check List
- Check and Maintenance
- Special Tools

■ **Mechanism**

This section contains information on the structure and the function of the unit. Before you continue with the subsequent sections, make sure that you read this section.

Refer to the latest version of Workshop Manual (Code No. 9Y021-01870) for the diesel engine / tractor mechanism that this workshop manual does not include.

■ **Servicing**

This section primarily contains information below.

- Troubleshooting
- Servicing Specifications
- Tightening Torques
- Checking, Disassembling and Servicing

Regarding the servicing of electric control system of V1505-T-E4 (F3990), refer to "Diagnosis Manual V1505-T-E4 (9Y120-02490)".

Regarding the servicing of Diesel Particulate Filter (DPF), refer to "DIESEL PARTICULATE FILTER HANDLING MANUAL" (9Y111-08130).

All illustrations, photographs and specifications contained in this manual are of the newest information available at the time of publication.

KUBOTA reserves the right to change all information at any time without notice.

Since this manual includes many models, information or illustrations and photographs can show more than one model.

August, 2013

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I INFORMATION

INFORMATION

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1. MACHINE

[1] SAFETY FIRST

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 try 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.

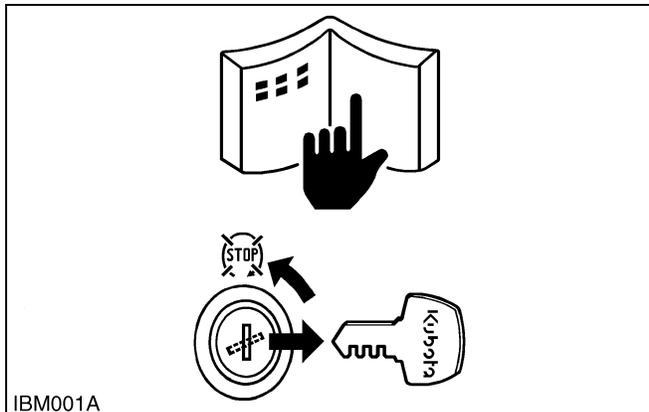
■ IMPORTANT

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

■ NOTE

- Gives helpful information.

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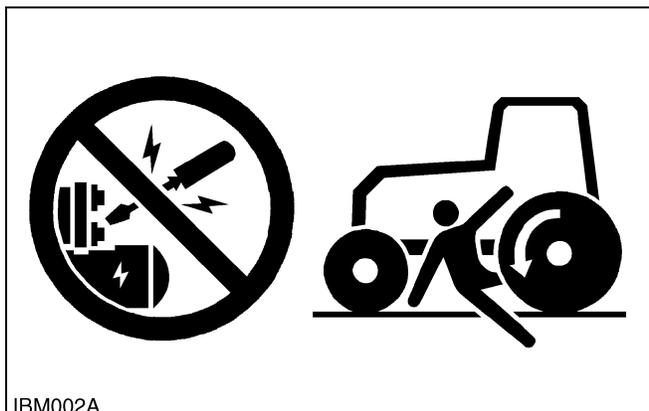


IBM001A

BEFORE YOU START SERVICE

- 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 stable and level ground, and set the parking brake.
- Lower the implement to the ground.
- Stop the engine, then remove the key.
- Disconnect the battery negative cable.
- Hang a "DO NOT OPERATE" tag in the operator station.

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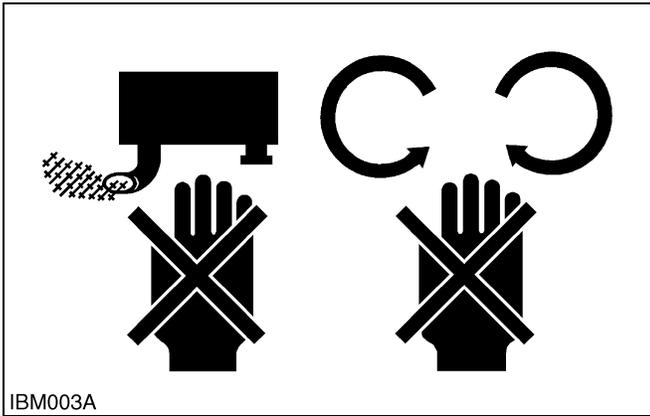


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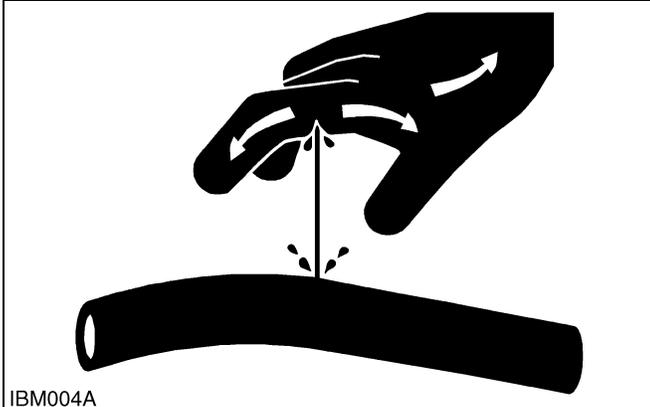
START SAFELY

- Do not do the procedures below when you start the engine.
 - short across starter terminals
 - bypass the safety start switch
- Do not alter or remove any part of machine safety system.
- Before you start the engine, make sure that all shift levers are in neutral positions or in disengaged positions.
- Do not start the engine when you stay on the ground. Start the engine only from operator's seat.

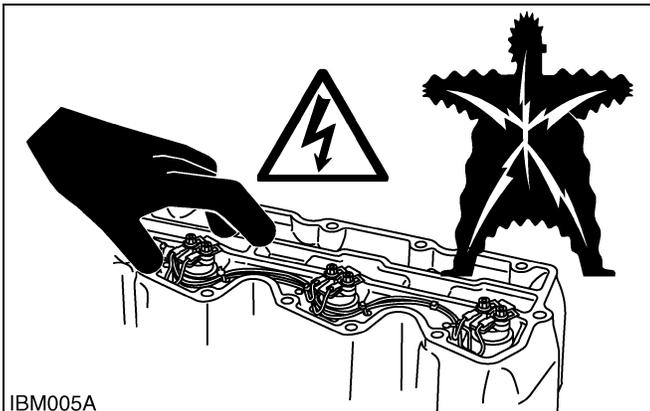
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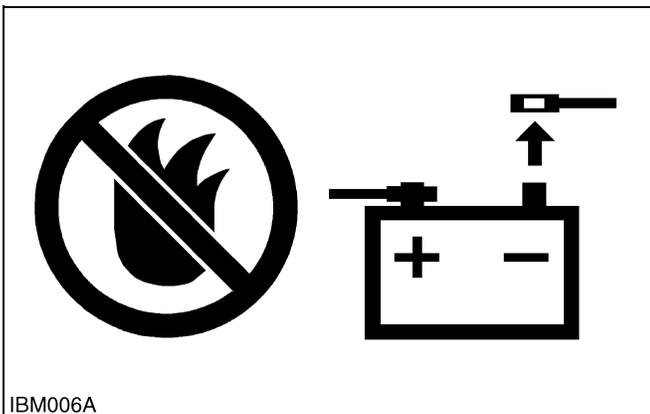
IBM003A



IBM004A



IBM005A



IBM006A

OPERATE SAFELY

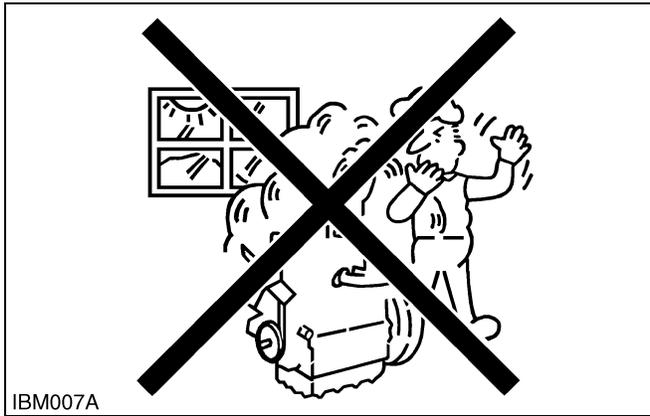
- Do not use the machine after you consume alcohol or medication or when you are tired.
- Put on applicable clothing and safety equipment.
- Use applicable tools only. Do not use alternative tools or parts.
- When 2 or more persons do servicing, make sure that you do it safely.
- Do not operate below the machine that only a jack holds. Always use a safety stand to hold the machine.
- Do not touch the hot parts or parts that turn when the engine operates.
- Do not remove the radiator cap when the engine operates, or immediately after it stops. If not, hot water can spout out from the radiator. Only remove the radiator cap when it is at a sufficiently low temperature to touch with bare hands. Slowly loosen the cap to release the pressure before you remove it fully.
- Released fluid (fuel or hydraulic oil) under pressure can cause damage to the skin and cause serious injury. Release the pressure before you disconnect hydraulic or fuel lines. Tighten all connections before you apply the pressure.
- Do not open a fuel system under high pressure. The fluid under high pressure that stays in fuel lines can cause serious injury. Do not disconnect or repair the fuel lines, sensors, or any other components between the fuel pump and injectors on engines with a common rail fuel system under high pressure.
- Put on an applicable ear protective device (earmuffs or earplugs) to prevent injury against loud noises.
- Be careful about electric shock. The engine generates a high voltage of more than DC100 V in the ECU and is applied to the injector.

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PREVENT A FIRE

- Fuel is very flammable and explosive under some conditions. Do not smoke or let flames or sparks in your work area.
- To prevent sparks from an accidental short circuit, always disconnect the battery negative cable first and connect it last.
- The battery gas can cause an explosion. Keep the sparks and open flame away from the top of battery, especially when you charge the battery.
- Make sure that you do not spill fuel on the engine.

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IBM007A

KEEP A GOOD AIRFLOW IN THE WORK AREA

- If the engine is in operation, make sure that the area has good airflow. Do not operate the engine in a closed area. The exhaust gas contains poisonous carbon monoxide.

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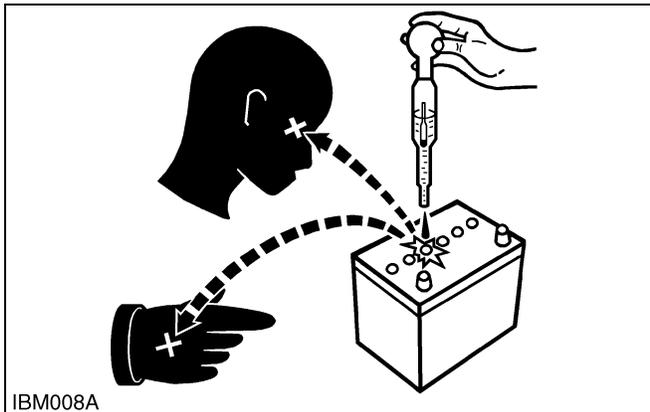


IBM009A

DISCARD FLUIDS CORRECTLY

- Do not discard fluids on the ground, down the drain, into a stream, pond, or lake. Obey related environmental protection regulations when you discard oil, fuel, coolant, electrolyte and other dangerous waste.

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IBM008A

PREVENT ACID BURNS

- Keep electrolyte away from your eyes, hands and clothing. Sulfuric acid in battery electrolyte is poisonous and it can burn your skin and clothing and cause blindness. If you spill electrolyte on yourself, clean yourself with water, and get medical aid immediately.

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IBM010A

PREPARE FOR EMERGENCIES

- Keep a first aid kit and fire extinguisher ready at all times.
- Keep the emergency contact telephone numbers near your telephone at all times.

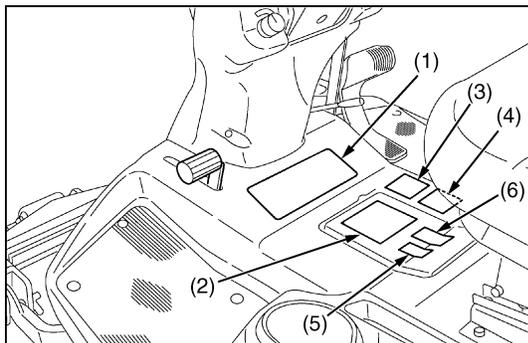
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[2] SAFETY DECALS

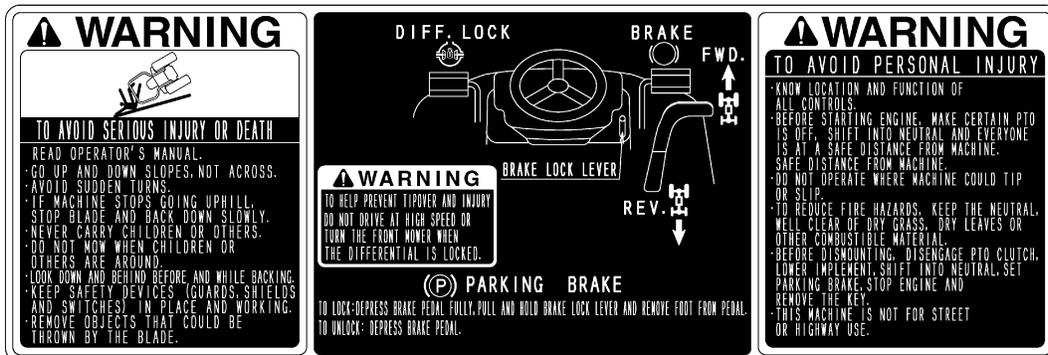
The following safety decals are installed on the machine. If a decal becomes damaged, illegible or is not on the machine, replace it. The decal part number is listed in the parts list.

WSM000001INI0013US0

[F2690E, F2690]



(1) Part No. K3601-4717-1



1BDIAIYAP071A

(2) Part No. K3601-4741-1

(3) Part No. K3601-4743-1

(4) Part No. K3601-4742-1



1BDIAIYAP072A

(5) Part No. 6C300-4744-1



1BDIAIYAP073A

(6) Part No. K3612-4744-1



1BDIAIYAP074A

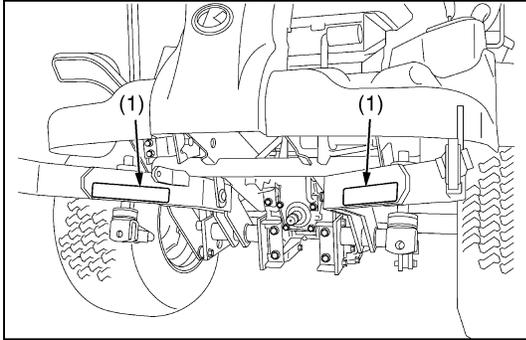


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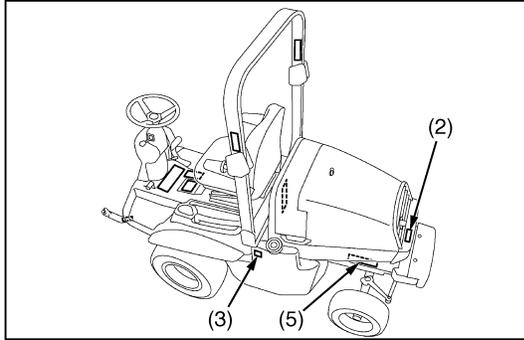


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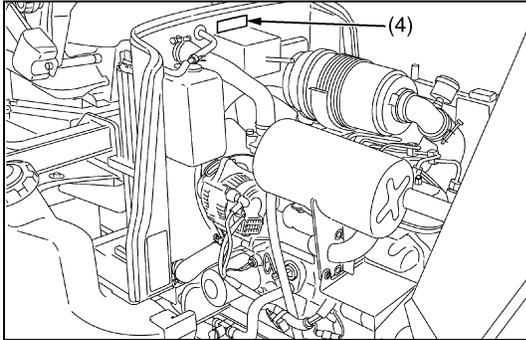
[F2690E, F2690]



[F2690E, F2690]



[F2690E, F2690]



(1) Part No. K3615-4723-1

	WARNING THIS ARM CAN SPRING UP UPWARD! • SEE OPERATOR'S MANUAL WHEN DISASSEMBLING.	ADVERTENCIA ESTE BRAZO PUEDE REBOTAR HACIA ARRIBA! • CONSULTE EL MANUAL DEL OPERADOR AL DESMONTARLO.
	1BDAIAYAP077A	

(2) Part No. K3615-4728-1

WARNING HOT EXHAUST	ADVERTENCIA HUMO CALIENTE
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1BDAIAYAP078A

(5) Part No. K3611-4765-1

	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.	PELIGRO PARA EVITAR POSIBLES LESIONES O LA MUERTE PROVOCADAS POR UN ARRANQUE SUJETO 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 apagadas. Nunca ponga a en marcha el motor mientras éste de pie en el suelo.
	1BDAIAAAP050A	

(3) Part No. K3611-4744-2

Diesel fuel No fire only

ULTRA LOW SULFUR DIESEL FUEL ONLY	
SOLAMENTE COMBUSTIBLE DIESEL CON NIVELES DE AZUFRE ULTRA BAJOS	

1BDAIATAP020A

(4) Part No. K2581-6543-1

Stay clear of engine fan and fan belt.

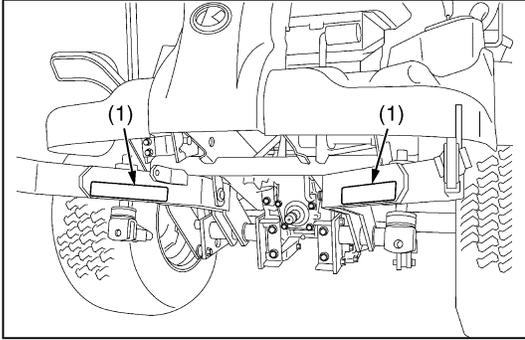
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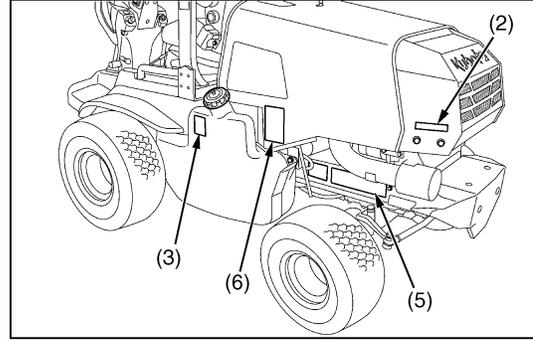
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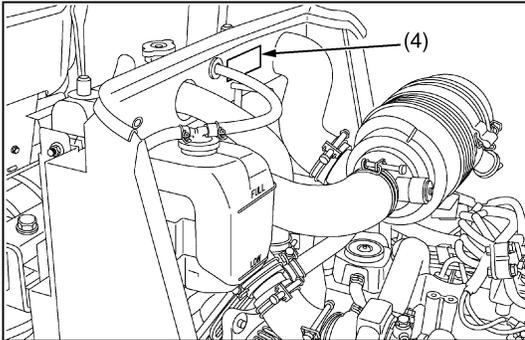
[F3990]



[F3990]



[F3990]



(3) Part No. K3611-4744-2
 Diesel fuel No fire only

ULTRA LOW SULFUR DIESEL FUEL ONLY	
SOLAMENTE COMBUSTIBLE DIESEL CON NIVELES DE AZUFRE ULTRA BAJOS	

1BDAIATAP020A

(1) Part No. K3615-4723-1

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

1BDAIAYAP077A

(2) Part No. K3615-4728-1

	⚠ WARNING HOT EXHAUST	⚠ ADVERTENCIA HUMO CALIENTE
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1BDAIAYAP078A

(4) Part No. K2581-6543-1
 Stay clear of engine fan and fan belt.



1AGAAXAP052E

(6) Part No. K3611-4721-1
 [F3990 only]

⚠ WARNING TO AVOID PERSONAL INJURY: When the Diesel Particulate Filter (DPF) is in the regenerating mode, the exhaust gas and the DPF muffler become hot. During regeneration, keep the machine away from other people, animals, plants, and flammable materials. Also keep the area by the DPF muffler and exhaust system free of debris and flammable materials.
--

(5) Part No. K3611-4765-1

	⚠ 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.	⚠ PELIGRO 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 solo desde el asiento del operador con la caja de cambios y la toma de fuerza apagados. Nunca ponga a en marcha el motor mientras éste de pie en el suelo.
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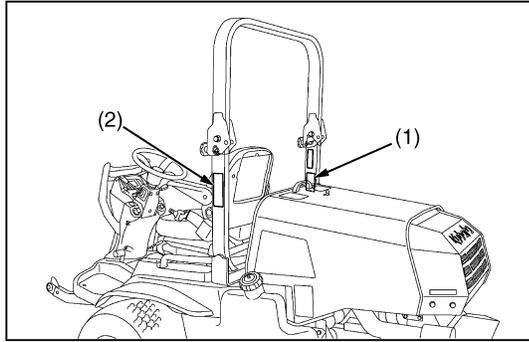
⚠ ADVERTENCIA Para evitar heridas personales: Cuando el DPF (Diesel Particulate Filter) se encuentra en modo de regeneración, el gas del escape y el silenciador del DPF se calentarán. Durante la regeneración, aleje la máquina de personas, animales, plantas y materiales inflamables. Mantenga también el área cerca al silenciador DPF limpia y alejada de materiales inflamables.
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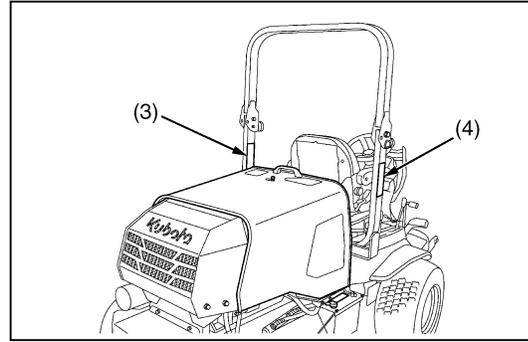
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[F2690E, F2690, F3990]



[F2690E, F2690, F3990]



(1) Part No. K3611-8143-1

(2) Part No. K3611-8149-1

(3) Part No. K3615-8149-1

(4) Part No. K3615-8148-1

WARNING

TO AVOID PERSONAL INJURY OR DEATH FROM ROLL-OVER:

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

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

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

1BDAIAAAP053A

ADVERTENCIA

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

- 1.Mantenga las estructuras de protección contra vuelcos (marcos-techos) en posición erguida y bloqueada.
- 2.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

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

1BDAIAAAP052A

WARNING

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

WARNING

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.

1BDAIAYAP079A

ADVERTENCIA

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

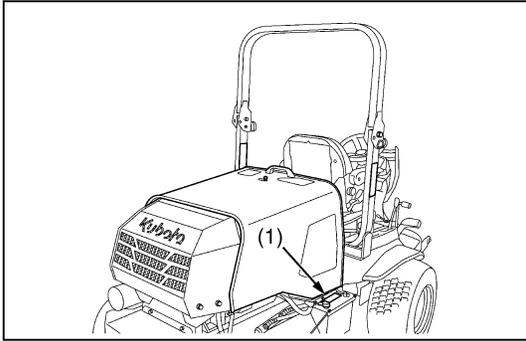
ADVERTENCIA

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.

1BDAIAYAP080A

[F2690E, F2690, F3990]



(1) Part No. TD060-3012-3

 FLAMMABLES	 SHIELD EYES	 KEEP OUT OF THE REACH OF CHILDREN	 CAUTIONOUS OF SULFURIC ACID	 READ INSTRUCTION MANUAL CAREFULLY	 EXPLOSIVE
<p>DANGER</p> <ul style="list-style-type: none"> • DUE TO HYDROGEN GAS GENERATED FROM BATTERY, HANDLING WITHOUT CARE CAN CAUSE FIRE AND EXPLOSION • THIS 12V BATTERY IS ONLY FOR STARTING ENGINE. DO NOT APPLY THIS PRODUCT FOR OTHER USES. • CHARGE THIS BATTERY ONLY AT WELL VENTILATED PLACES, AND AVOID SHORTS OR SPARKS. • REFER TO THE INSTRUCTION MANUAL OF VEHICLE OR BATTERY BEFORE USING BOOSTER CABLE. • SULFURIC ACID MAY CAUSE BLINDNESS OR SEVERE BURN. IN CASE EYES, SKIN, CLOTHES OR ANY ARTICLES ARE STAINED WITH ACID, FLUSH OBJECTS IMMEDIATELY WITH WATER. IF ACID BEING SWALLOWED, DRINK PLENTY OF WATER PROMPTLY. IN CASE OF ACCIDENTAL CONTACT, CONSULT A DOCTOR IMMEDIATELY. • BATTERY FILLED WITH ACID (DO NOT TILT OR SPILL) • FLAMMABLE. DO NOT CHARGE NEAR FIRE OR SPARKS • DO NOT CHARGE RAPIDLY • DO NOT DISASSEMBLE THE BATTERY (SEALED TYPE) 					
<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.</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.</p> <p>KEEP OUT OF REACH OF CHILDREN</p>					
<p>S.O.C INDICATOR</p> <p> <input type="radio"/> OK <input checked="" type="radio"/> CHARGE BATTERY <input type="radio"/> REPLACE BATTERY </p>					
<p>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.</p>					
<p>FITTING DATE</p> <p> <input type="radio"/> 0 <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 <input type="radio"/> 9 YEAR <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7 <input type="radio"/> 8 <input type="radio"/> 9 <input type="radio"/> 10 <input type="radio"/> 11 <input type="radio"/> 12 MONTH </p>					
<p>80D26R 12V</p>		<p>582CCA (SAE) 70Ah(20HR)</p>		<p>550CCA (EN) RC 133(MIN)</p>	

1AGASABAP108B

TO AVOID INJURY FROM BATTERY GASES AND ACIDS

- Keep away cigarettes, flames or sparks.
- Always shield eyes and face from battery.
- Keep out of reach of children.
- Poison causes severe burns.
 - Contains sulfuric acid.
- Read and understand operator's manual.
- Danger explosive gases.

1BDAlAEAP0200

9Y1210918ICI006US

9Y1210918INI0006US0

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 and caution label(s) affixed is replaced with a 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 the outside edge.

9Y1210918INI0007US0

[3] SPECIFICATIONS

Model		F2690E	F2690	F3990	
Engine	Model	D1105-E4-FM-2		V1505-T-E4-FM	
	Engine gross power (SAE) *1	19.0 kW (25.5 HP)		28.9 kW (39 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	3000 min ⁻¹ (rpm)		[PTO ON] 2500 min ⁻¹ (rpm) [PTO OFF] 2700 min ⁻¹ (rpm)	
	Low idling revolution	1300 to 1400 min ⁻¹ (rpm)			
	Starting system	Electric starter with battery, glow plug, 12 V, 1.4 kW			
	Lubricating system	Forced lubrication by gear pump			
	Cooling system	Pressurized radiator, forced circulation with water pump			
	Battery	12 V, RC: 133 min, CCA: 582 A			
	Fuel	Diesel fuel No. 1-D S15 [below -10 °C (14 °F)] Diesel fuel No. 2-D S15 [above -10 °C (14 °F)]			
Capacities	Fuel tank	61.0 L (16.1 U.S.gals, 13.4 Imp.gals)			
	Engine crankcase (with filter) *2	3.5 L (3.7 U.S.qts, 3.1 Imp.qts)		4.7 L (5.0 U.S.qts, 4.1 Imp.qts)	
	Engine coolant	4.6 L (4.9 U.S.qts, 4.0 Imp.qts)		3.7 L (3.9 U.S.qts, 3.3 Imp.qts)	
	Recovery tank	0.6 L (0.6 U.S.qts, 0.5 Imp.qts)		1.1 L (1.2 U.S.qts, 1.0 Imp.qts)	
	Transmission case	14.0 L (14.8 U.S.qts, 12.3 Imp.qts)			
	Rear axle differential case	1.5 L (1.6 U.S.qts, 1.3 Imp.qts)			
	Rear axle gear case	0.5 L (0.5 U.S.qts, 0.4 Imp.qts)			
Tire	Front	23 × 10.5-12 (4PR) Turf	24 × 12-12 (4PR) Turf		
	Rear	16 × 6.5-8 (4PR) Turf	18 × 9.5-8 (4PR) Turf		
Travelling speeds *3	Forward	Low	0 to 5.6 mph (0 to 9.0 km/h)		
		High	0 to 12.5 mph (0 to 20.1 km/h)		
	Reverse	Low	0 to 3.0 mph (0 to 4.8 km/h)		
		High	0 to 6.9 mph (0 to 11.0 km/h)		
Dimensions	Overall length	2450 mm (96.5 in.)		2510 mm (98.9 in.)	
	Overall width	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	975 mm (38.4 in.)	1063 mm (41.9 in.)	
Rear		875 mm (34.4 in.)	1020 mm (40.2 in.)		
Weight (without mower deck)		756 kg (1667 lbs)	770 kg (1698 lbs)	855 kg (1885 lbs)	
PTO	Revolution	1 speed (2545 rpm at 3000 engine rpm)		1 speed (2583 rpm at 2500 engine rpm)	
	Drive system	Shaft drive. KUBOTA 10-tooth involute spline (2545 rpm)		Shaft drive. KUBOTA 10-tooth involute spline (2583 rpm)	
	Clutch type	Wet multi plates			
	PTO brake	Wet single plate			
Traveling system	Steering	Hydrostatic power steering			
	Transmission	Main-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	
4WD system	–	Dual-acting overrunning 4WD			

NOTE

- Specifications and design subject to change without notice

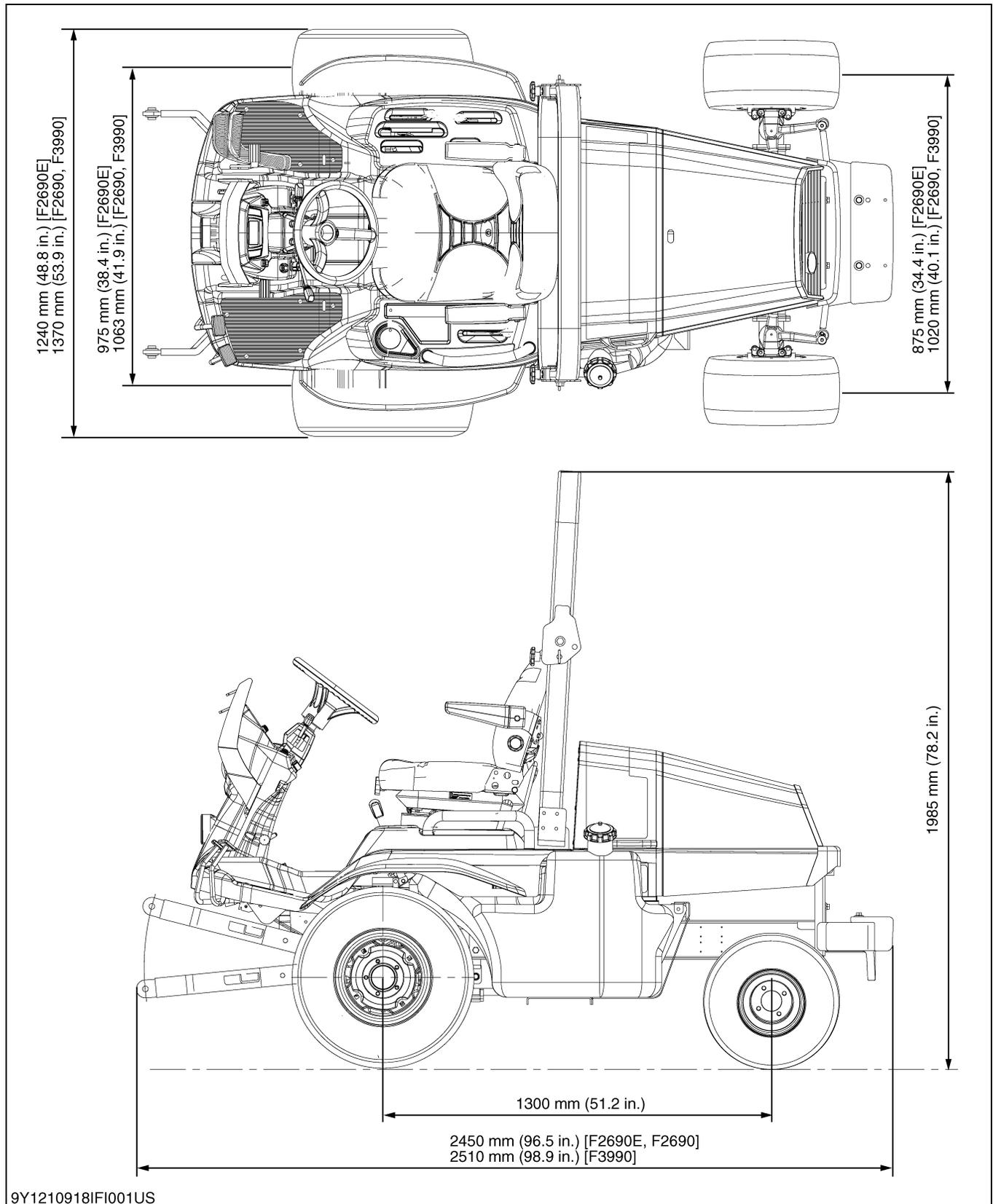
*1: Manufacturer's estimate.

*2: At the center of the oil level gauge.

*3: F2690E, F2690 : At 3000 engine min⁻¹ (rpm) / F3990 : At 2700 engine min⁻¹ (rpm) [PTO OFF]

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[4] DIMENSIONS



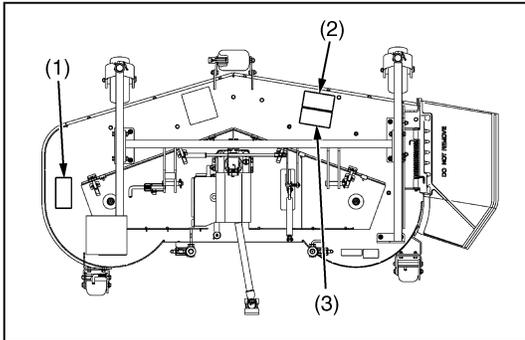
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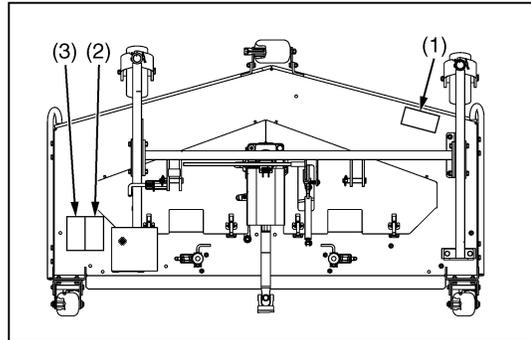
2. MOWER

[1] SAFETY DECALS

[RCK72P-F39]



[RCK72R-F36]



(1) Part No. K5681-7312-1



1BDACAEAP015A

(2) Part No. K5681-7311-1



1BDACAEAP016A

(3) Part No. K5681-7310-1

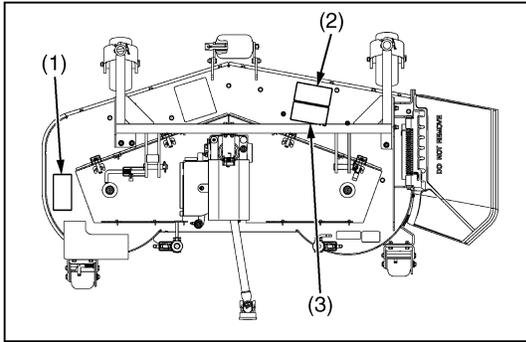


1BDACAEAP017A

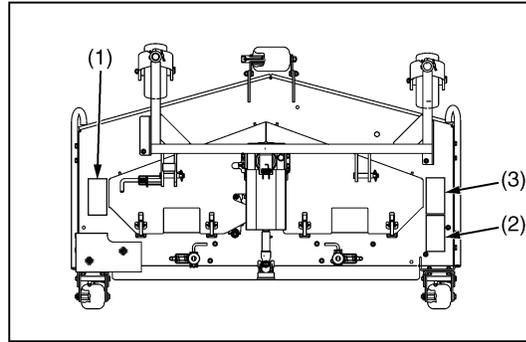
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9Y1210918INI0010US0

[RCK60P-F39]



[RCK60R-F36]



(1) Part No. K5681-7312-1



1BDACAEAP015A

(2) Part No. K5681-7311-1



1BDACAEAP016A

(3) Part No. K5681-7310-1



1BDACAEAP017A

9Y1210918ICI008US

9Y1210918INI0011US0

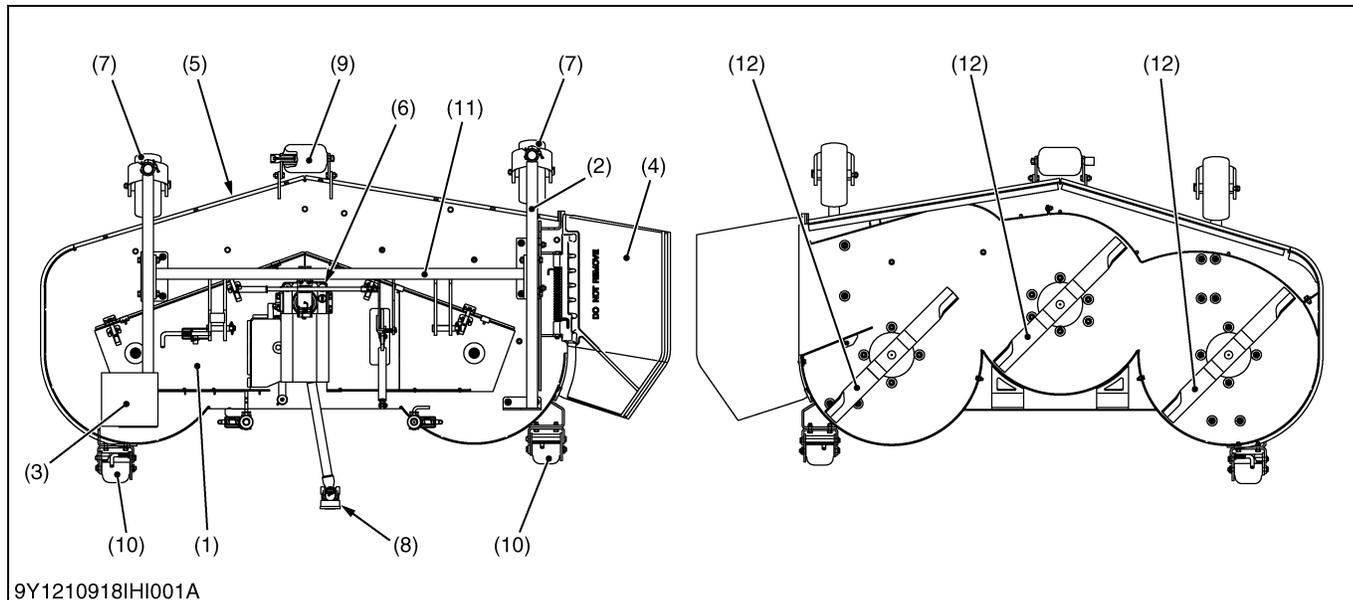
CARE OF DANGER, WARNING AND CAUTION LABELS

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 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.

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[2] TERMINOLOGY

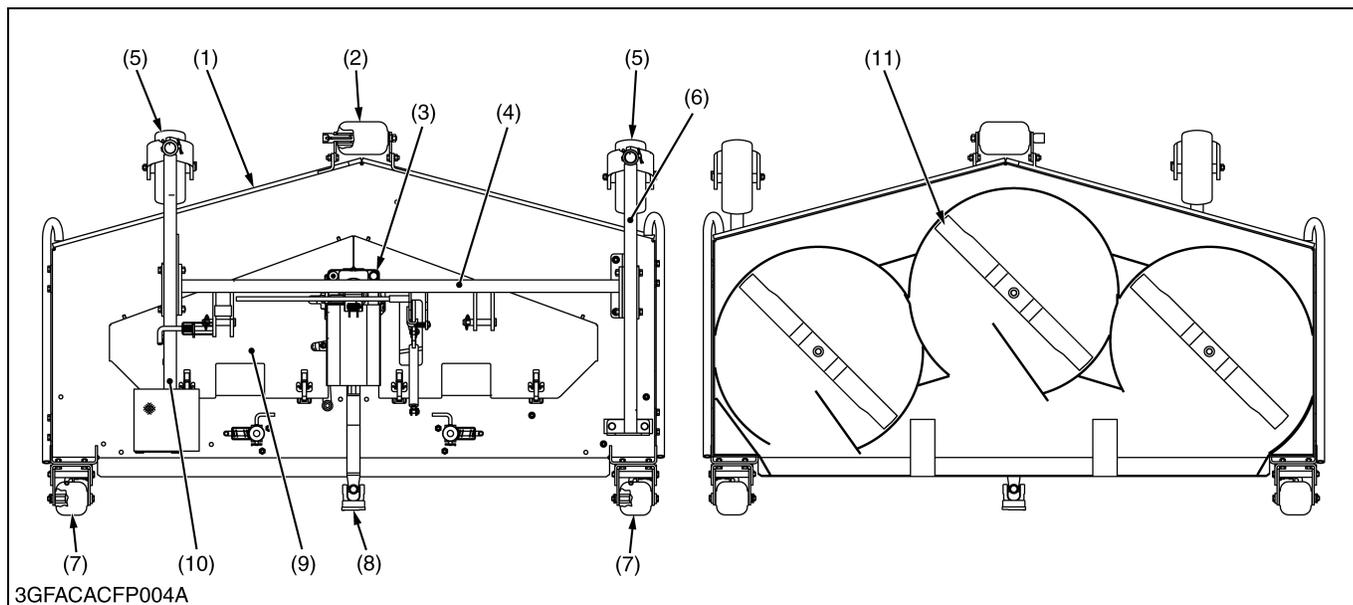
RCK72P-F39



- | | | | |
|---------------------------|-------------------------|-----------------------|------------------------|
| (1) Shield | (4) Discharge Deflector | (7) Front Gauge Wheel | (10) Anti-scalp Roller |
| (2) Gauge Wheel Arm Right | (5) Deck | (8) Universal Joint | (11) Center Frame |
| (3) Gauge Wheel Arm Left | (6) Gear Box | (9) Front Roller | (12) Blade |

9Y1210918INI0012US0

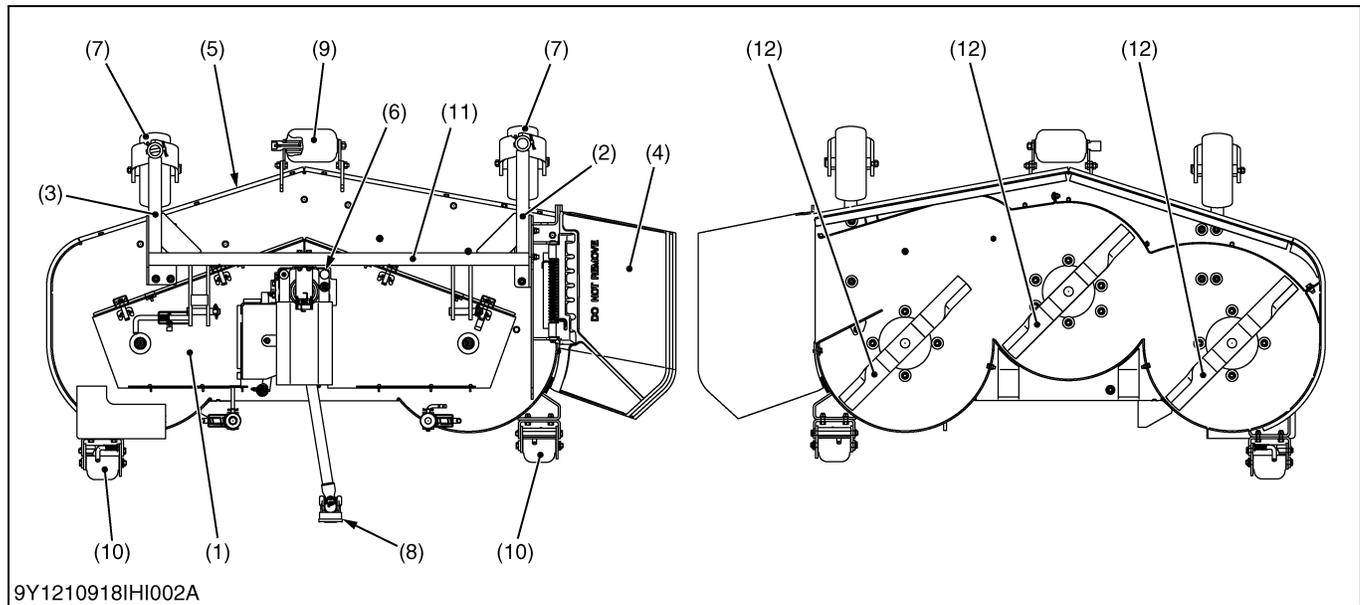
RCK72R-F36



- | | | | |
|------------------|------------------------|-----------------------|-------------------------|
| (1) Mower Deck | (4) Center Frame | (7) Anti-Scalp Roller | (10) Gauge Wheel Arm LH |
| (2) Front Roller | (5) Front Gauge Wheel | (8) Universal Joint | (11) Blade |
| (3) Gear Box | (6) Gauge Wheel Arm RH | (9) Shield | |

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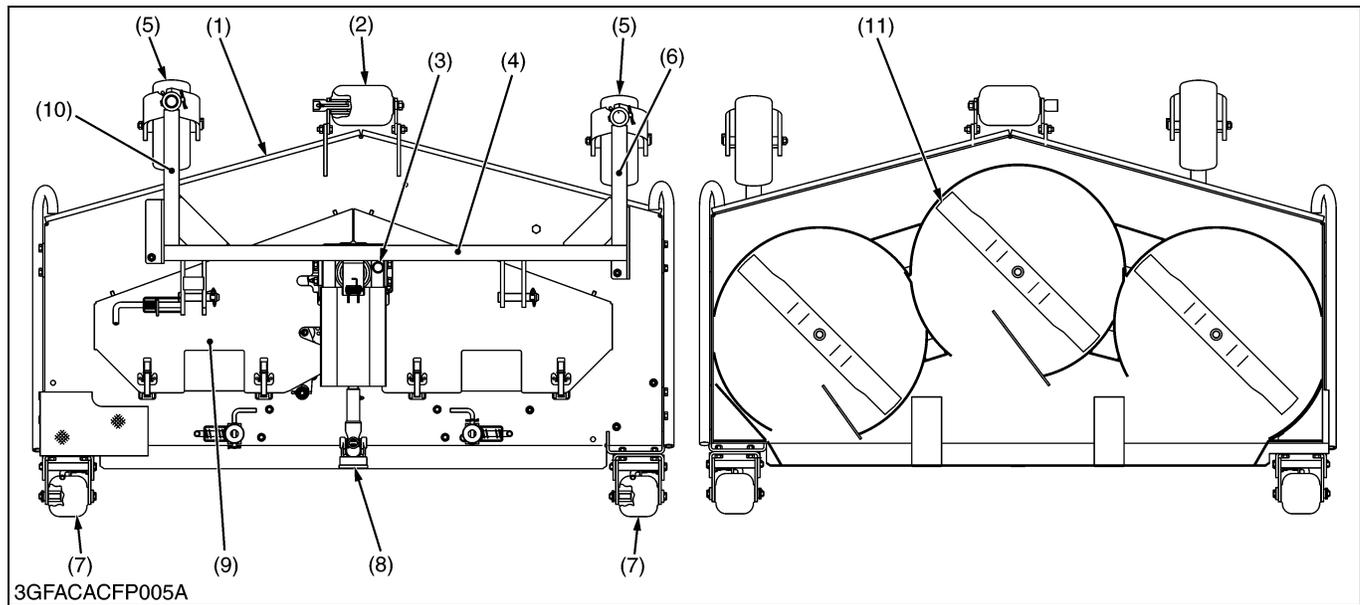
RCK60P-F39



- | | | | |
|---------------------------|-------------------------|-----------------------|------------------------|
| (1) Shield | (4) Discharge Deflector | (7) Front Gauge Wheel | (10) Anti-scalp Roller |
| (2) Gauge Wheel Arm Right | (5) Deck | (8) Universal Joint | (11) Center Frame |
| (3) Gauge Wheel Arm Left | (6) Gear Box | (9) Front Roller | (12) Blade |

9Y1210918INI0014US0

RCK60R-F36



- | | | | |
|------------------|------------------------|-----------------------|-------------------------|
| (1) Mower Deck | (4) Center Frame | (7) Anti-Scalp Roller | (10) Gauge Wheel Arm LH |
| (2) Front Roller | (5) Front Gauge Wheel | (8) Universal Joint | (11) Blade |
| (3) Gear Box | (6) Gauge Wheel Arm RH | (9) Shield | |

9Y1210918INI0015US0

[3] SPECIFICATIONS

Model		RCK72P-F39	RCK72R-F36	RCK60P-F39	RCK60R-F36
Suitable front mower		F2690E, F2690, F3990			
Mounting method		2 point linkage			
Adjustment of cutting height		Gauge wheel			
Cutting width		1829 mm (72.0 in.)	1826 mm (71.9 in.)	1524 mm (60 in.)	
Cutting height		25 to 129 mm (1.0 to 5.0 in.)			
Discharge direction		Side	Rear	Side	Rear
Weight (Approx.)		225 kg (496 lbs)	210 kg (463 lbs)	186 kg (410 lbs)	170 kg (375 lbs)
Blade spindle speed		2735 min ⁻¹ (rpm)	2695 min ⁻¹ (rpm)	3272 min ⁻¹ (rpm)	3020 min ⁻¹ (rpm)
Blade tip velocity		89.5 m/s (17620 fpm)	88 m/s (17350 fpm)	89.6 m/s (17640 fpm)	82.7 m/s (16300 fpm)
Blade length		625 mm (24.6 in.)		523 mm (20.6 in.)	
Number of blades		3			
Dimensions	Total length	1216 mm (47.9 in.)	1160 mm (45.7 in.)	1078 mm (42.4 in.)	1090 mm (42.9 in.)
	Total width	2222 mm (87.5 in.)	1910 mm (75.2 in.)	1907 mm (75.1 in.)	1610 mm (63.4 in.)
	Total height	461 mm (18.1 in.)	450 mm (17.7 in.)	461 mm (18.1 in.)	450 mm (17.7 in.)

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G GENERAL

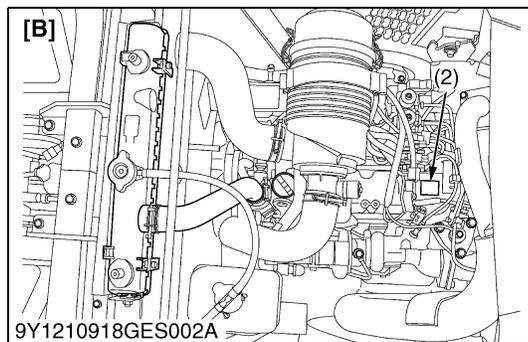
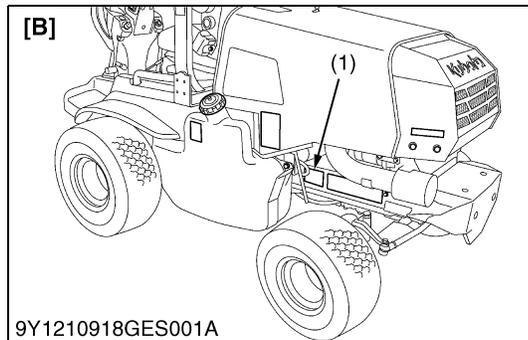
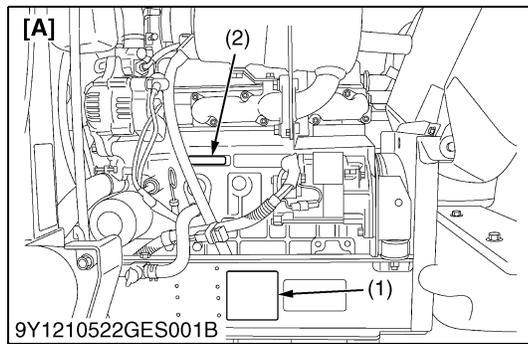
GENERAL

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1. IDENTIFICATION

[1] ENGINE AND MODEL SERIAL NUMBERS



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.

Engine Series

Number or Alphabet	Series	Number or Alphabet	Series
1	05 (include: WG)	6	GZ, OC, AC, EA, E
2	V3	7	03
3	08	8	07
4	SM (include: WG)	A	EA, RK
5	Air Cooled Gasoline	B	03 (KET Production)

• 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		

- (1) Machine Serial Number
- (2) Engine Serial Number

- [A] F2690E, F2690
- [B] F3990

(To be continued)

(Continued)

Production Month and Lot Number

Month	Engine Lot Number	
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 ~

* Alphabetical letters "I" and "O" are not used.

(a) (b)(c)(d) (e)
e.g. V1505-T - 1 C L A001

- (a) Engine Model Name: **V1505-T**
- (b) Engine Series: 1 indicates 05 Series
- (c) Year: C indicates 2012
- (d) Month: L or M indicates June
- (e) Lot Number: (**0001 ~ 9999** or **A001 ~ Z999**)

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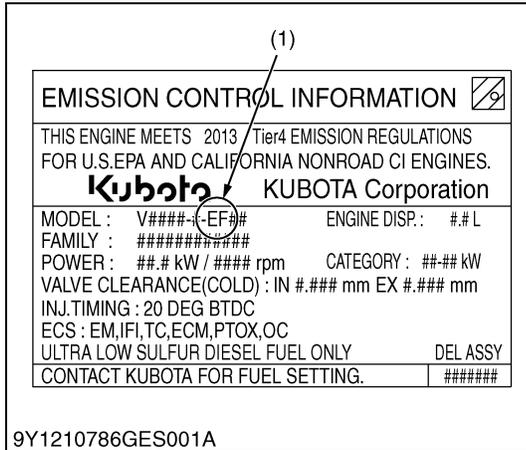
[2] E4 ENGINE

[Example: Engine Model Name V1505-T-E4-XXXX]

The emission controls previously implemented in various countries to prevent air pollution will be stepped up as Nonroad Emission Standards continue to change. The timing or applicable date of the specific Nonroad 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 Nonroad Emission regulations. For KUBOTA Engines, E4 will be the designation that identifies engine models affected by the next emission phase (See the table below).

When servicing or repairing ###-E4 series engines, use only replacement parts for that specific E4 engine, designated by the appropriate E4 KUBOTA Parts List and perform all maintenance services listed in the appropriate KUBOTA Operator's Manual or in the appropriate E4 KUBOTA Workshop Manual. Use of incorrect replacement parts or replacement parts from other emission level engines (for example: E3 engines), may result in emission levels out of compliance with the original E4 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. E4 engines are identified with "EF" at the end of the Model designation, on the US EPA label. Please note: E4 is not marked on the engine.

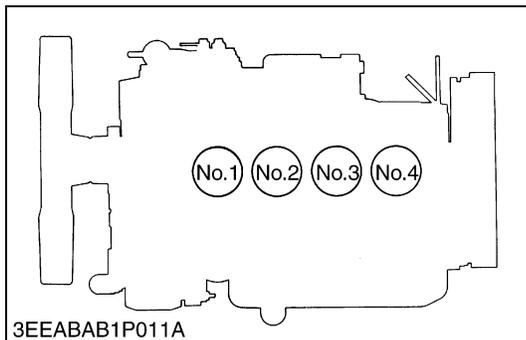


Category (1)	Engine output classification	EPA regulation
EF	Less than 19 kW	Tier 4
	From 19 to less than 56 kW	Interim Tier 4
	From 56 to less than 75 kW	Interim Tier 4
	From 75 to less than 130 kW	Interim Tier 4

- (1) "E4" engines are identified with "EF" at the end of the Model designation, on the US EPA label.
 "E4" designates some Interim Tier 4 / Tier 4 models, depending on engine output classification.

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[3] CYLINDER NUMBER

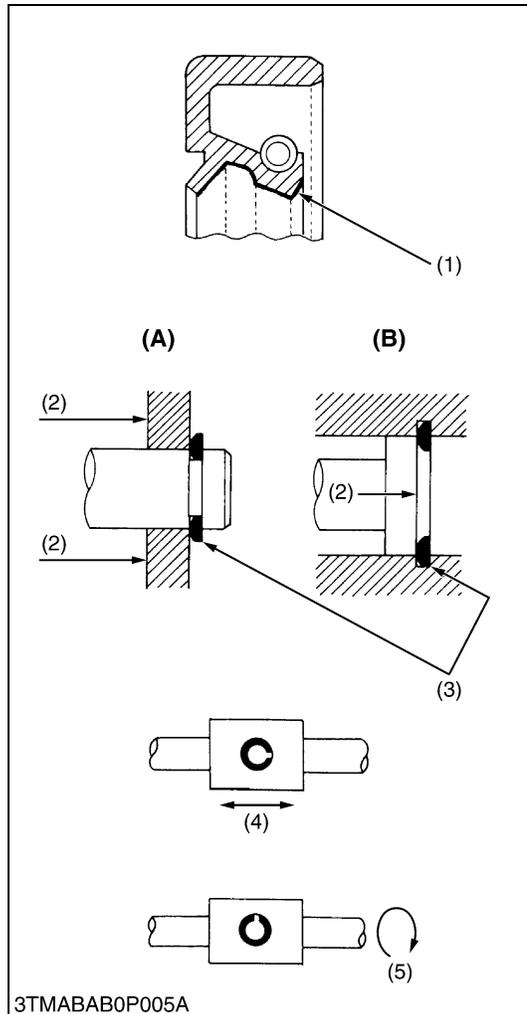


You can see the cylinder numbers of KUBOTA diesel engine in the figure.

The sequence of cylinder numbers is No.1, No.2, No.3 and No.4 and it starts from the gear case side.

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2. GENERAL PRECAUTIONS



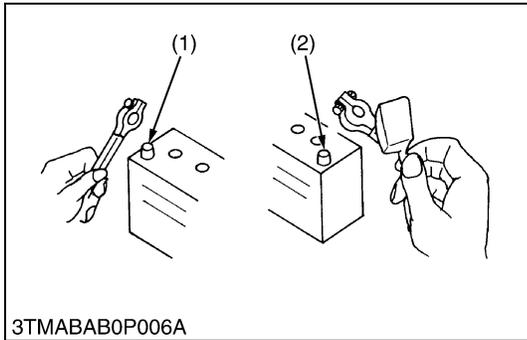
- When you disassemble, carefully put the parts in a clean area to make it easy to find the parts. You must install the screws, bolts and nuts in their initial position to prevent the reassembly errors.
- When it is necessary to use special tools, use KUBOTA special tools. Refer to the drawings when you make special tools that you do not use frequently.
- Before you disassemble or repair machine, make sure that you always disconnect the ground cable from the battery first.
- Remove oil and dirt from parts before you measure.
- Use only KUBOTA genuine parts for replacement to keep the machine performance and to make sure of safety.
- You must replace the gaskets and O-rings when you assemble again. Apply grease (1) to new O-rings or oil seals before you assemble.
- When you assemble the external or internal snap rings, make sure that the sharp edge (3) faces against the direction from which force (2) is applied.
- 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.
- Clean the parts before you measure them.
- Tighten the fittings to the specified torque. Too much torque can cause damage to the hydraulic units or the fittings. Not sufficient torque can cause oil leakage.
- When you use a new hose or pipe, tighten the nuts to the specified torque. Then loosen (approx. by 45 °) and let them be stable before you tighten to the specified torque (This is not applied to the parts with seal tape).
- When you remove the two ends of a pipe, remove the lower end first.
- Use two pliers in removal and installation. One to hold the stable side, and the other to turn the side you remove to prevent twists.
- Make sure that the sleeves of flared connectors and tapers of hoses are free of dust and scratches.
- After you tighten the fittings, clean the joint and apply the maximum operation pressure 2 to 3 times to examine oil leakage.

- (1) Grease
- (2) Force
- (3) Sharp Edge
- (4) Axial Force
- (5) Rotating Movement

- (A) External Circlip
- (B) Internal Circlip

WSM000001GEG0106US0

3. HANDLING PRECAUTIONS FOR ELECTRICAL PARTS AND WIRING



3TMABAB0P006A

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

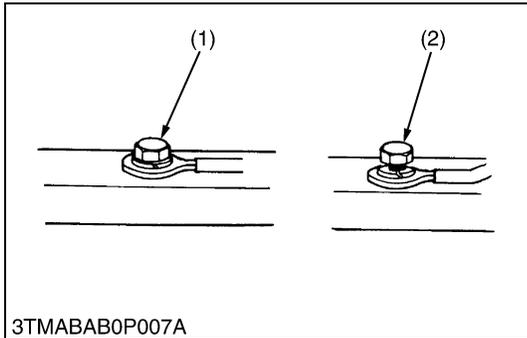
■ IMPORTANT

- 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 try 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

WSM000001GEG0062US0

[1] WIRING

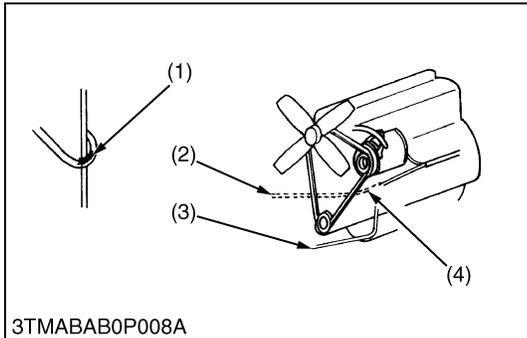


3TMABAB0P007A

- Securely tighten wiring terminals.

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

WSM000001GEG0063US0

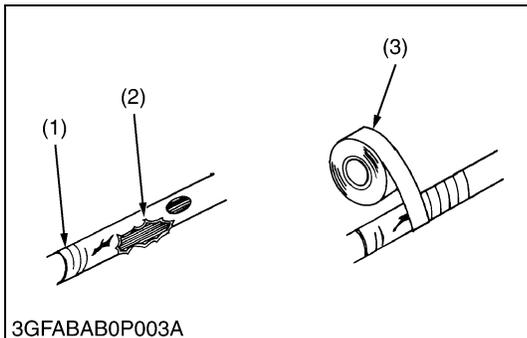


3TMABAB0P008A

- Do not let wiring contact dangerous part.

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

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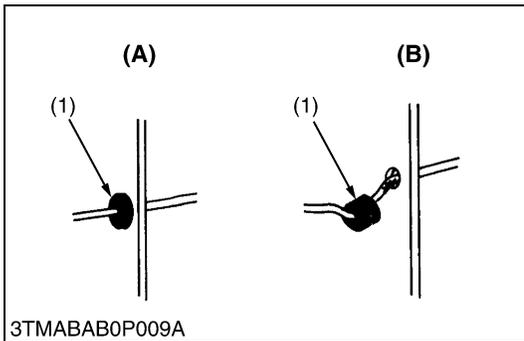


3GFABAB0P003A

- Repair or change torn or aged wiring immediately.

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

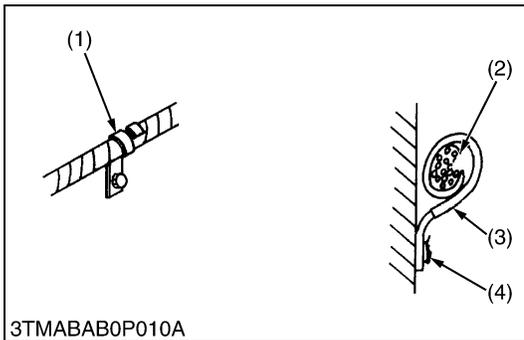
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• Securely insert grommet.

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

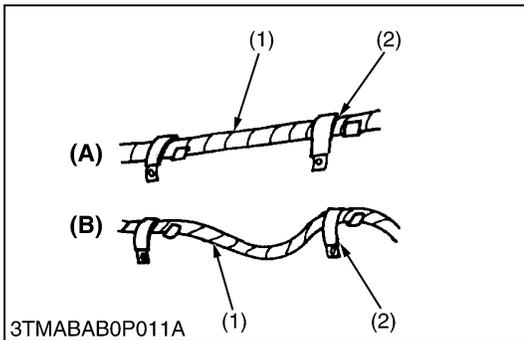
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• Securely clamp, being careful not to damage wiring.

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

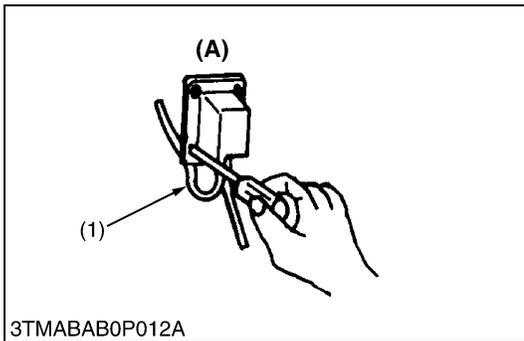
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• Clamp wiring so that there is no twist, unnecessary sag, or excessive tension, except for movable part, where sag be required.

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

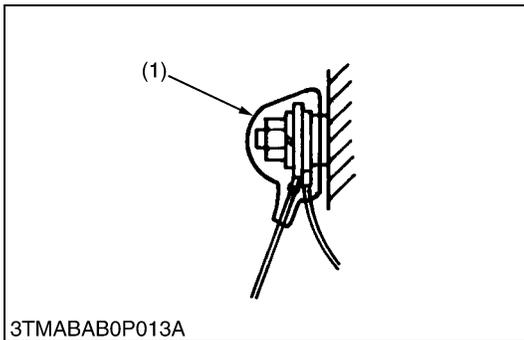
WSM000001GEG0068US0



• In installing a part, be careful not to get wiring caught by it.

- (1) Wiring
- (A) Incorrect

WSM000001GEG0069US0



• After installing wiring, check protection of terminals and clamped condition of wiring.

- (1) Cover (Securely Install Cover)

WSM000001GEG0070US0

Product: 2013 Kubota WSM F2690E, F2690, F3990, RCK60P-F39, RCK60R-F36, RCK72P-F39, RCK72R-F36 Front Mover Service
 Full Download: <https://www.aresairmanual.com/downloads/2013-kubota-wsm-f2690ef2690f3990rck60p-f39rck60r-f36rck72p-f39rck72r-f36-front-mover-service-repair-workshop-manual/>

[2] BATTERY



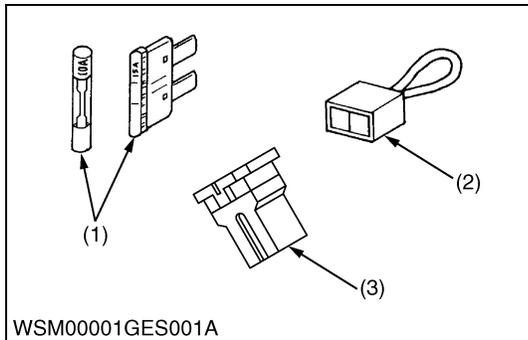
- When you remove battery cables, disconnect negative cable first. When you install battery cables, check for polarity and connect positive cable first.
- Do not install any battery with capacity other than is specified (Ah).
- After you connect cables to battery terminal posts, apply high temperature grease to them and securely install terminal covers on them.
- Do not allow dirt and dust to collect on battery.

! CAUTION

- Be careful not to let battery liquid spill on your skin and clothes. If contaminated, wash it off with water immediately.
- Before you recharge the battery, remove it from the machine.
- Before you recharge, remove cell caps.
- Recharge in a well-ventilated place where there is no open flame nearby, as hydrogen gas and oxygen are formed.

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[3] FUSE

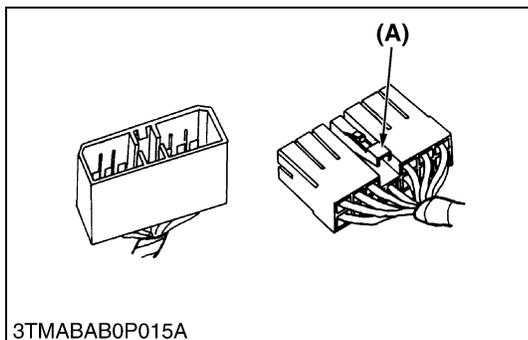


- Use fuses with specified capacity. Neither too large nor small capacity fuse is acceptable.
- Never use steel nor copper wire in place of fuse.
- Do not install working light, radio set, etc. on machine which is not provided with reserve power supply.
- Do not install accessories if fuse capacity of reserve power supply is exceeded.

- (1) Fuse (3) Slow Blow Fuse
 (2) Fusible Link

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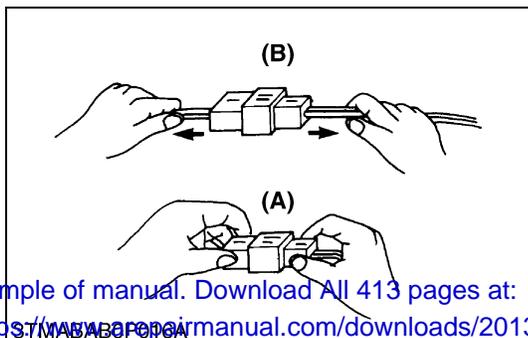
[4] CONNECTOR



- For connector with lock, push lock to separate.

(A) Push

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

(A) Correct (B) Incorrect

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