

# WSM

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## WORKSHOP MANUAL

**F2890, F3690, RCK60P-F39,  
RCK60R-F36, RCK72P-F39,  
RCK72R-F36**

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# Kubota

## TO THE READER

This Workshop Manual tells the servicing personnel about the mechanism, servicing and maintenance of the F2890 and F3690, 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

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.

September, 2013

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### **Record of Revisions**

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

<b>Last digit of the Code No.</b>	<b>Month of Revision</b>	<b>Main Revised Point and Corrective Measures {Search word}</b>	<b>Reference Page</b>
<b>1</b>	2014.10	Adding the service code information	8-M7
<b>2</b>	2016.04	Revise Maintenance Intervals (Mower Deck)	9-G6
<b>3</b>	2016.09	Wrong Correction The value of cylinder length " <b>A</b> " and set angle " <b>C</b> " was corrected. The illustration of set angle " <b>E</b> " was corrected.	6-S2, 6-S7
<b>4</b>	2018.05	Added checking mower deck drop rate	9-S9

# 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, could result in minor or moderate injury.

#### ■ IMPORTANT

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

#### ■ NOTE

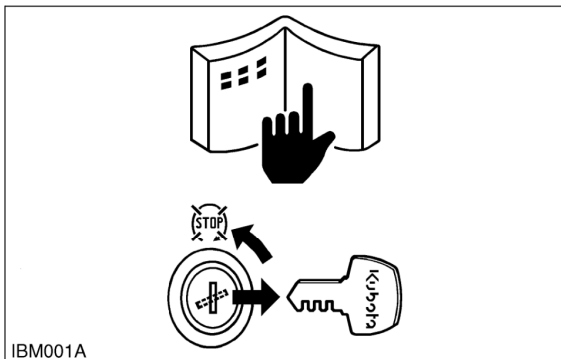
- Gives helpful information.

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### 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.

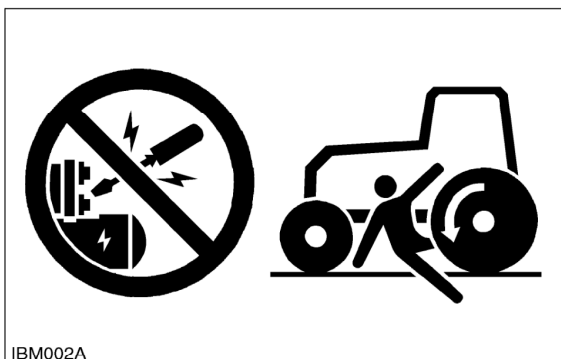
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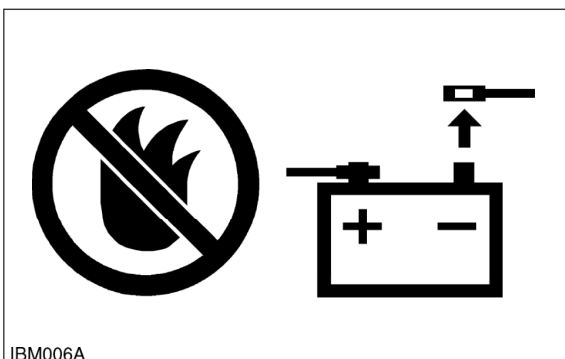
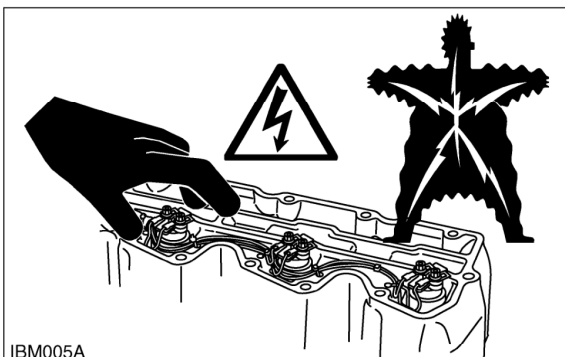
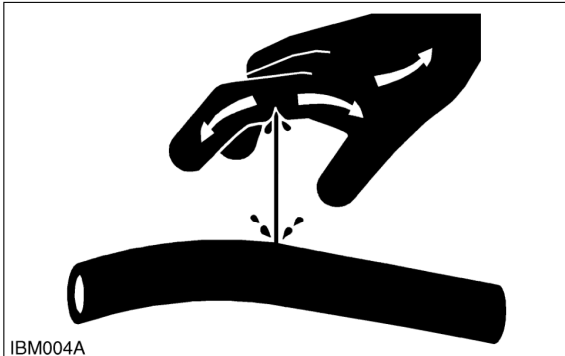
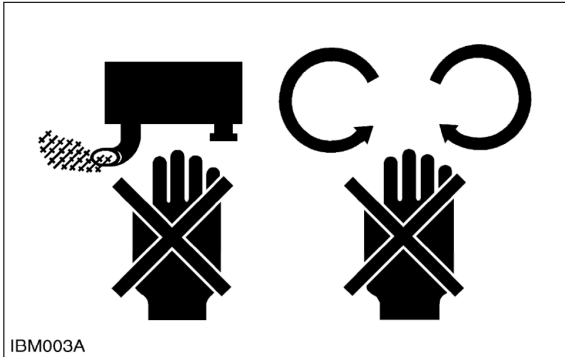


### START SAFELY

- 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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### **OPERATE SAFELY**

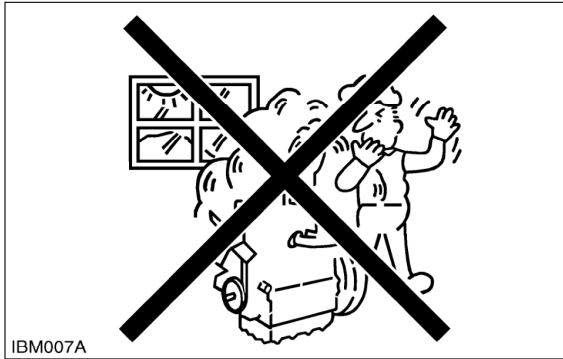
- Do not use the machine after you consume alcohol or medication or when you are tired.
- Put on applicable clothing and safety equipment.
- Use applicable tools only. Do not use alternative tools or parts.
- When 2 or more persons do servicing, make sure that you do it safely.
- Do not operate below 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.

WSM000001INI0012US0

### **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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**KEEP A GOOD AIRFLOW IN THE WORK AREA**

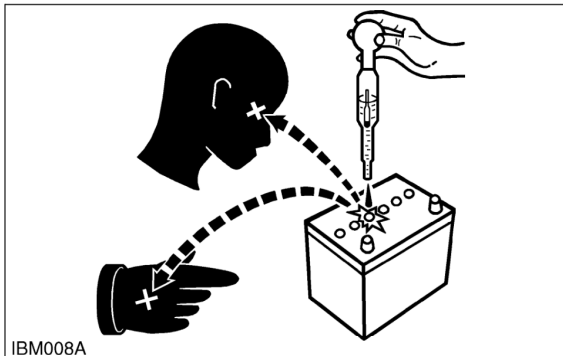
- If the engine is in operation, make sure that the area has good airflow. Do not operate the engine in a closed area. The exhaust gas contains poisonous carbon monoxide.

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**DISCARD FLUIDS CORRECTLY**

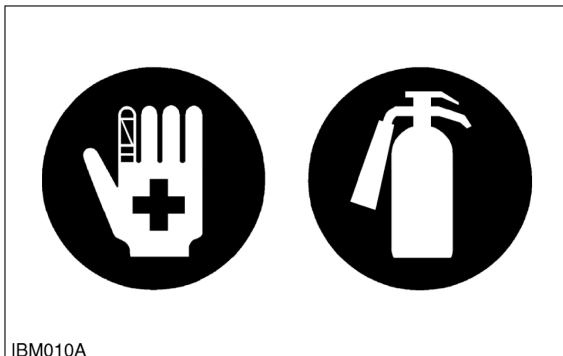
- Do not discard fluids on the ground, down the drain, into a stream, pond, or lake. Obey related environmental protection regulations when you discard oil, fuel, coolant, electrolyte and other dangerous waste.

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**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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**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.

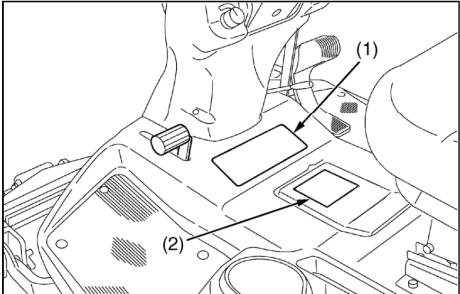
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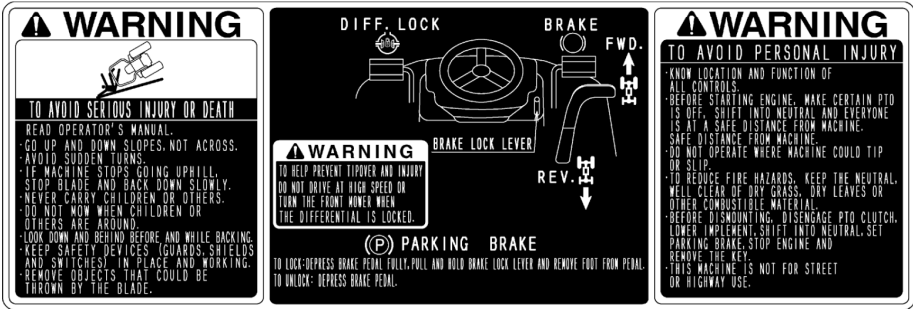
[2] SAFETY DECALS

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.

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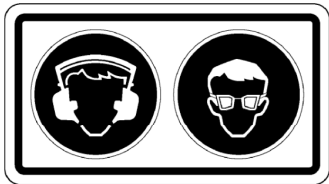


(1) Part No. K3601-4717-1



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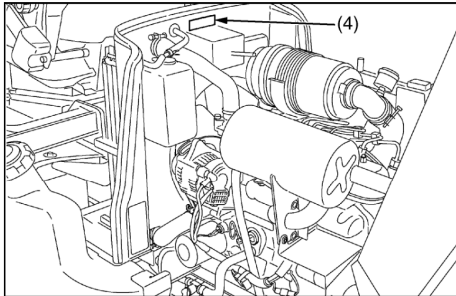
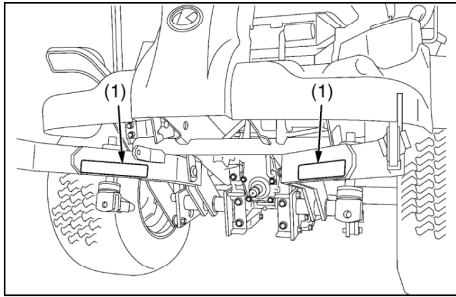
(2) Part No. K3603-4718-1



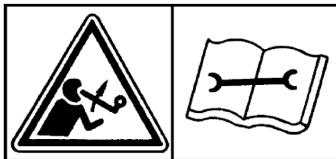
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9Y1210917ICI001US

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- (1) Part No. K3512-4721-1  
This arm can spring up upward.  
See operator's manual when  
disassembling.

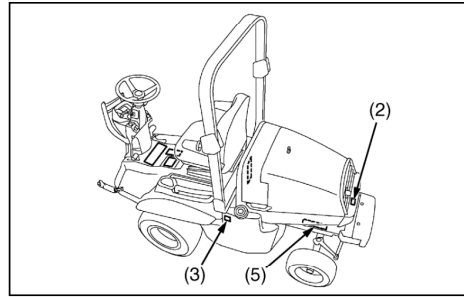


1BDAIAEAP013B

- (2) Part No. K3615-4728-1  
HOT SURFACE  
DO NOT TOUCH



1BDABANAP080B



- (3) Part No. K3611-4744-1

Diesel fuel No fire  
only



1BDAHADAP030A

- (4) Part No. K2581-6543-1

Stay clear of engine  
fan and fan belt.



1AGAJAXAP052E

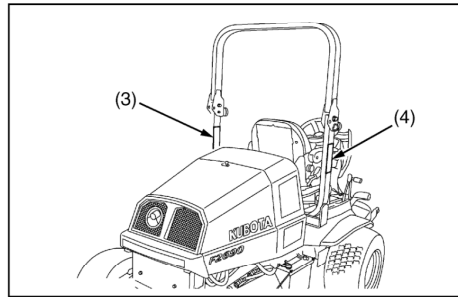
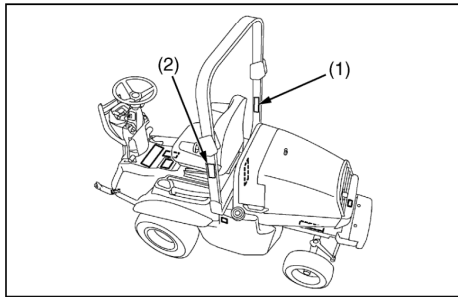
- (5) Part No. TA040-4965-2



1AGAMAAAP3810

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9Y1210917INI0002US0



(1) Part No. K3611-8143-1

**⚠ 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

(2) Part No. K3611-8149-1

**⚠ ADVERTENCIA**

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

1. Mantenga las estructuras de protección contra vuelcos (marcos-techo) en posición erguida y bloqueada.
2. Abrace 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 trabaje el marco-techo en cuanto la holgura vertical lo permita.
4. Lea las advertencias e instrucciones relacionadas con el marco-techo.

1BDAIAAAP052A

(3) Part No. K3615-8149-1

**⚠ 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

(4) Part No. K3615-8148-1

**⚠ ADVERTENCIA**

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

**⚠ ADVERTENCIA**

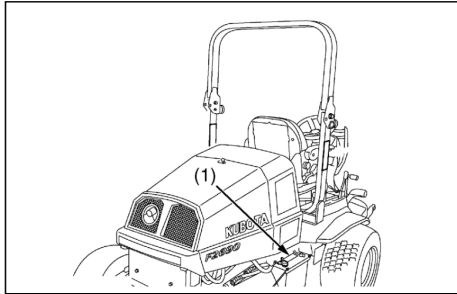
**PARA EVITAR LESIONES AL LEVANTAR O PLEGAR UN MARCO-TECHO:**

- 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

9Y1210917ICI003US

9Y1210917INI0003US0



(1) Part No. TD060-3012-3

FLAMMABLES SHIELD EYES KEEP OUT OF THE REACH OF CHILDREN CAUTION OF SULFURIC ACID READ INSTRUCTION MANUAL CAREFULLY EXPLOSIVE	<b>DANGER EXPLOSIVE GASES</b> 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. <b>POISON CAUSES SEVERE BURNS</b> Contains sulfuric acid. Avoid contact with skin, eyes or clothing. In event of accident flush with water and call a physician immediately. <b>KEEP OUT OF REACH OF CHILDREN</b>
<b>DANGER</b> • 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)	<b>S.O.C INDICATOR</b> OK  CHARGE BATTERY  REPLACE BATTERY
<b>PROPOSITION 65 WARNING</b> 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.	
FITTING DATE: 0 1 2 3 4 5 6 7 8 9 YEAR 1 2 3 4 5 6 7 8 9 10 11 12 MONTH	
<b>80D26R</b> <b>12V</b>	<b>582CCA (SAE)</b> <b>70Ah(20HR)</b>
<b>550CCA (EN)</b> <b>RC 133(MIN)</b>	RECYCLE

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.

1BDAIAEAP0200

9Y1210917IC1004US

9Y1210917INI0004US0

**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.

9Y1210917INI0005US0

### [3] SPECIFICATIONS

Model			F2890	F3690	
Engine	Model		D1105		V1505
	Engine gross power (SAE) *1		20.6 kW (28 HP)		26.5 kW (36 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 cm³ (68.58 cu.in.)	1498 cm³ (91.42 cu.in.)	
	Rated revolution		3000 min <sup>-1</sup> (rpm)		
	Low idling revolution		1300 to 1400 min <sup>-1</sup> (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 [below −10 °C (14 °F)] Diesel fuel No. 2-D [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)	5.0 L (5.3 U.S.qts, 4.4 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, 1.3 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		24 × 12-12 (4PR) Turf		
	Rear		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 km/h)		
	Reverse	Low	0 to 3.0 mph (0 to 4.8 km/h)		
		High	0 to 6.9 mph (0 to 11 km/h)		
Dimensions	Overall length		2450 mm (96.5 in.)		
	Overall width		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)			770 kg (1698 lbs)	788 kg (1740 lbs)	
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 plate		
Travelling 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

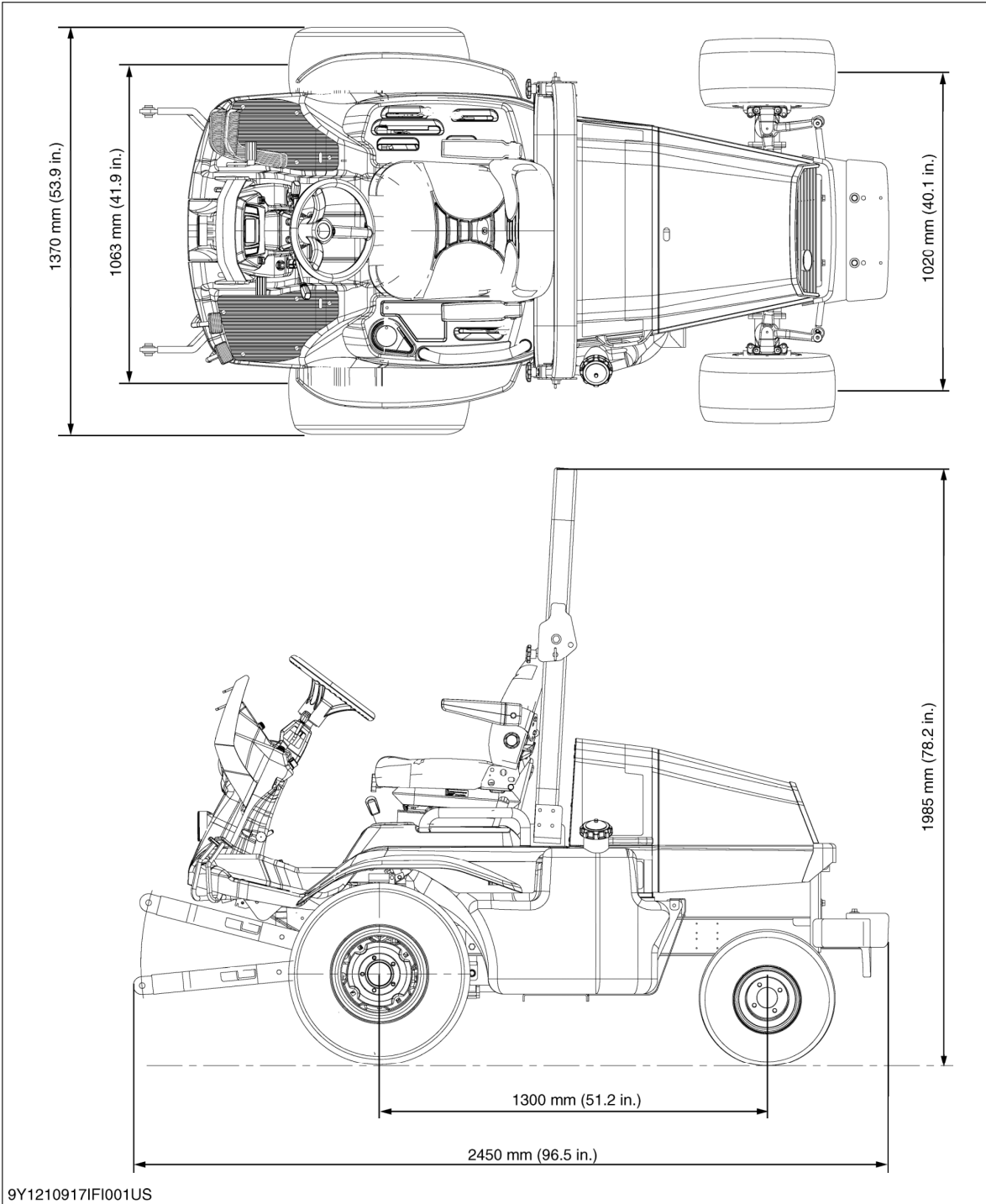
\*1: Manufacturer's estimate.

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

\*3: At 3000 engine min<sup>-1</sup> (rpm)

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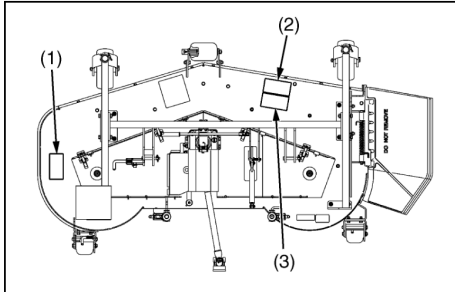
[4] DIMENSIONS



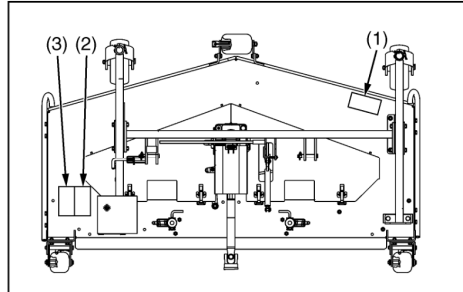
## 2. MOWER

### [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



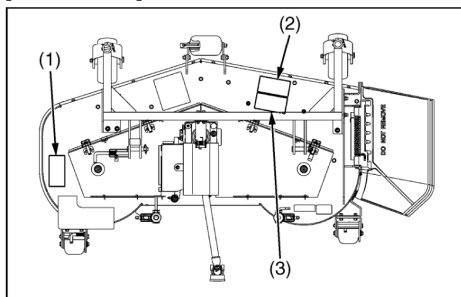
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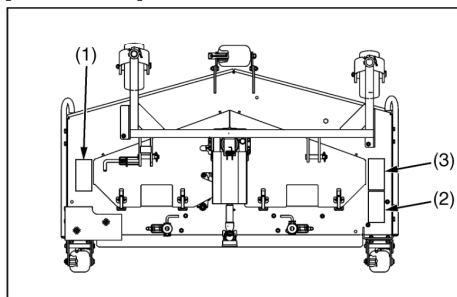
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[RCK60P-F39]



[RCK60R-F36]



(1) Part No. K5681-7312-1



1BDACAEAP015A

(2) Part No. K5681-7311-1



1BDACAEAP016A

(3) Part No. K5681-7310-1



1BDACAEAP017A

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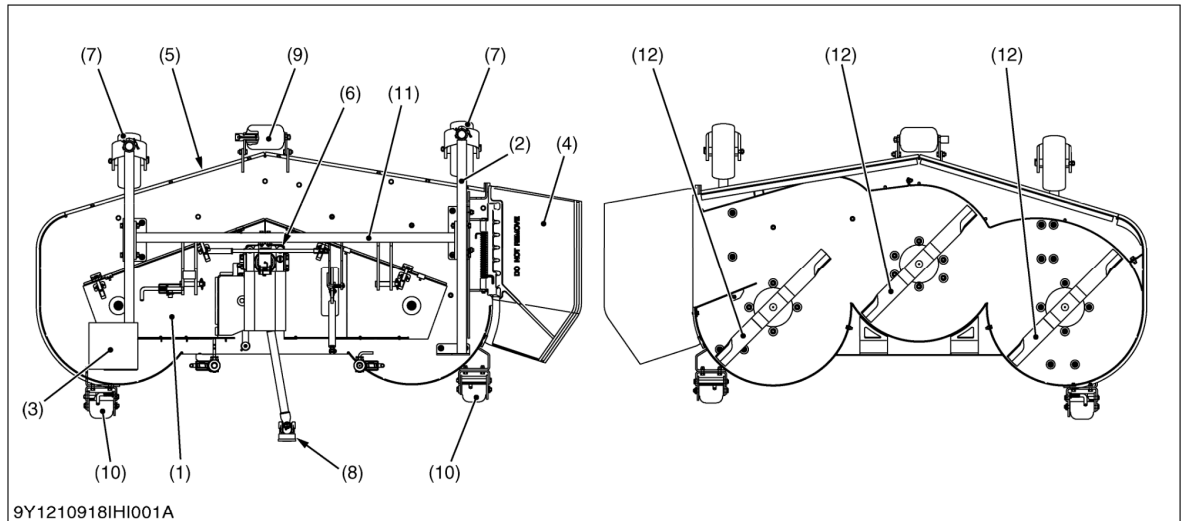
### CARE OF DANGER, WARNING AND CAUTION LABELS

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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

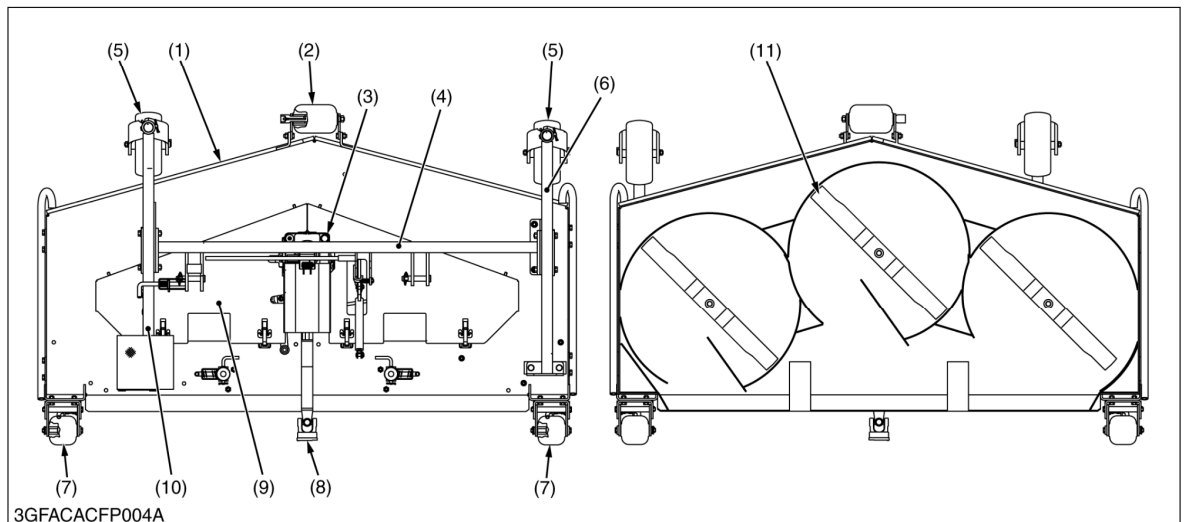
### **RCK72P-F39**



- |                           |                         |                       |                        |
|---------------------------|-------------------------|-----------------------|------------------------|
| (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             |

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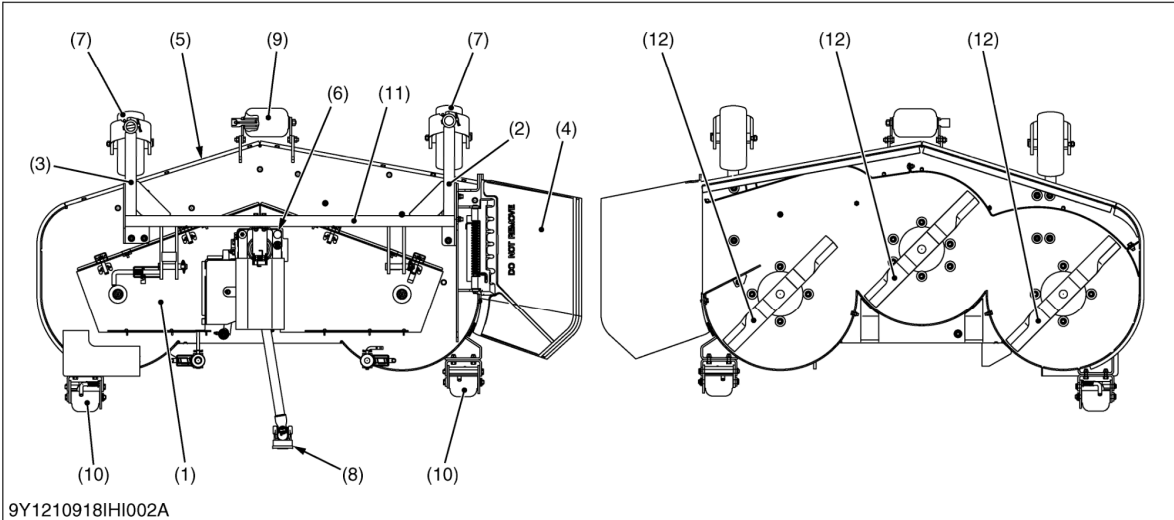
### **RCK72R-F36**



- |                  |                        |                       |                         |
|------------------|------------------------|-----------------------|-------------------------|
| (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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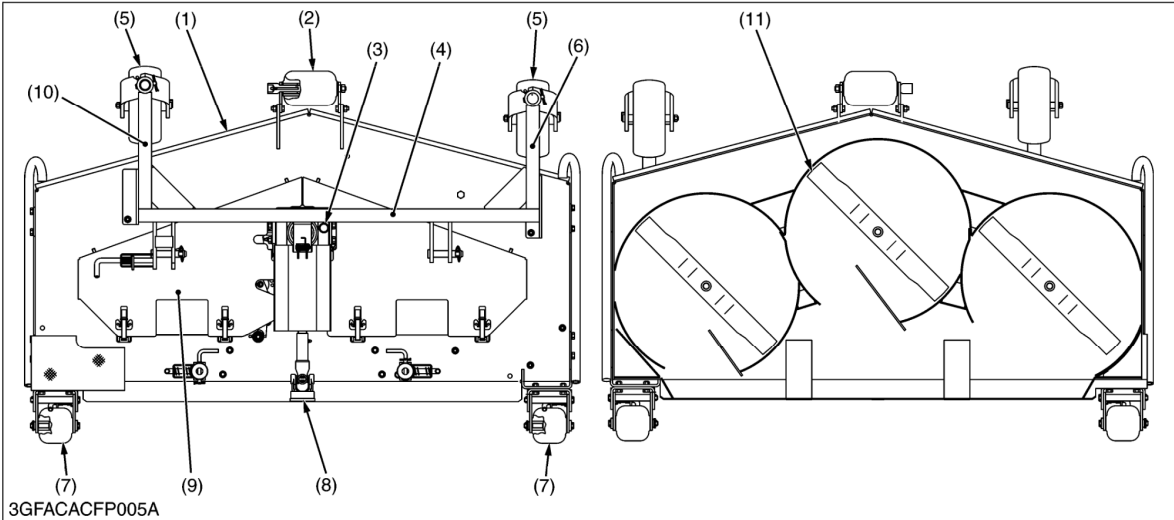
**RCK60P-F39**



- |                           |                         |                       |                        |
|---------------------------|-------------------------|-----------------------|------------------------|
| (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             |

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**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            |                         |

9Y1210917INI0013US0

### [3] SPECIFICATIONS

Model		RCK72P-F39	RCK72R-F36	RCK60P-F39	RCK60R-F36
Suitable front mower		F2890, F3690			
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 <sup>-1</sup> (rpm)	2695 min <sup>-1</sup> (rpm)	3272 min <sup>-1</sup> (rpm)	3020 min <sup>-1</sup> (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**

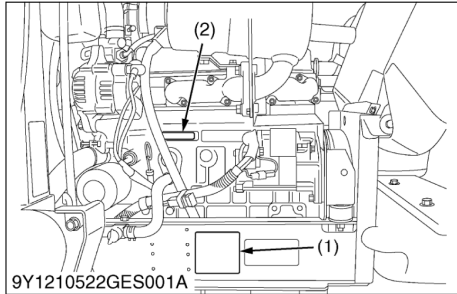
# GENERAL

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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

**(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 ~

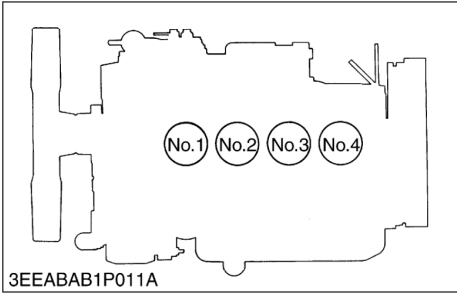
\* Alphabetical letters "I" and "O" are not used.

e.g. <sup>(a)</sup>V<sup>(b)</sup>1505-<sup>(c)</sup>T - <sup>(d)</sup>1 <sup>(e)</sup>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] CYLINDER NUMBER



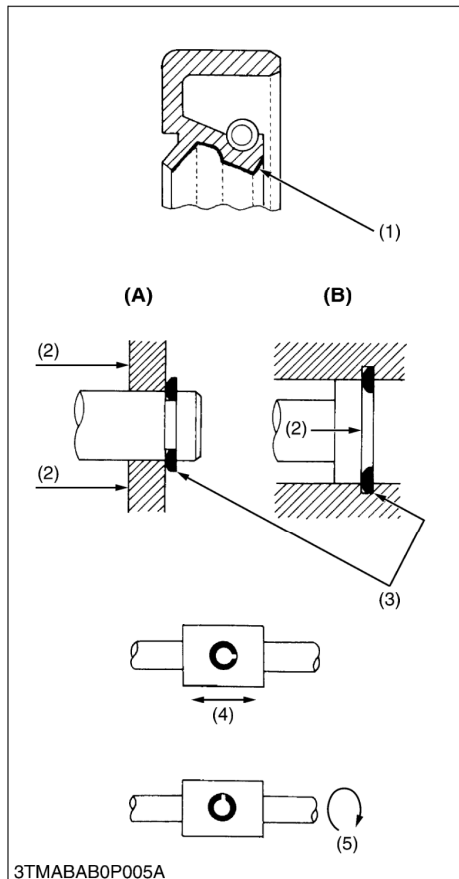
You can see the cylinder numbers of KUBOTA diesel engine in the figure.

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



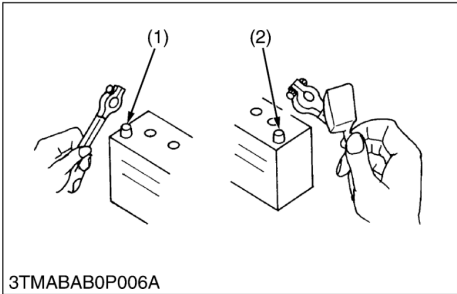
- When you disassemble, carefully put the parts in a clean area to make it easy to find the parts. You must install the screws, bolts and nuts in their initial position to prevent the reassembly errors.
- When it is necessary to use special tools, use KUBOTA special tools. Refer to the drawings when 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 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 circlips, 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 on the 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 check oil leakage.

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

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

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### 3. HANDLING PRECAUTIONS FOR ELECTRICAL PARTS AND WIRING



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

■ **IMPORTANT**

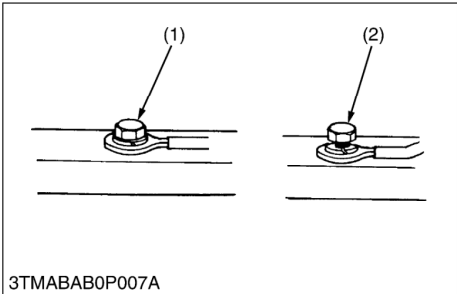
- Check electrical wiring for damage and loosened connection every year.
- When removing the battery cables, disconnect the negative cable first. When installing the battery cables, connect the positive cable first.

(1) Negative Terminal

(2) Positive Terminal

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#### [1] WIRING

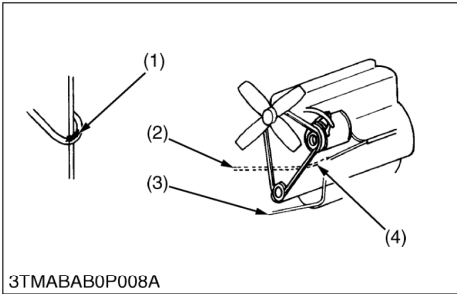


- Securely tighten wiring terminals.

(1) Correct  
(Securely Tighten)

(2) Incorrect  
(Loosening Leads to damaged Contact)

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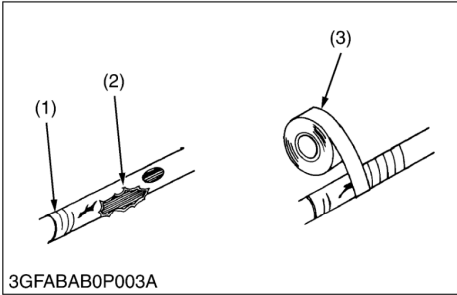


- Do not let wiring contact dangerous part.

(1) Dangerous Part (Sharp Edge)  
(2) Wiring (Incorrect)

(3) Wiring (Correct)  
(4) Dangerous Part

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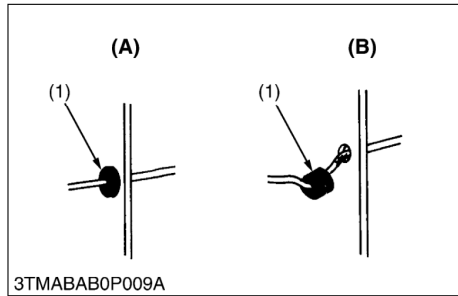


- Repair or change torn or aged wiring immediately.

(1) Aged  
(2) Torn

(3) Electrical Tape

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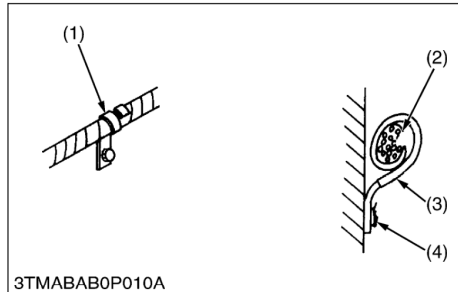


- Securely insert grommet.

(1) Grommet

(A) Correct  
(B) Incorrect

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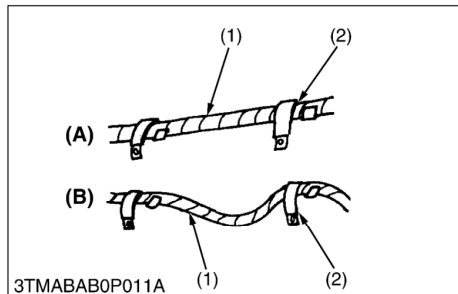


- Securely clamp, being careful not to damage wiring.

(1) Clamp  
(Wind Clamp Spirally)  
(2) Wire Harness

(3) Clamp  
(4) Welding Dent

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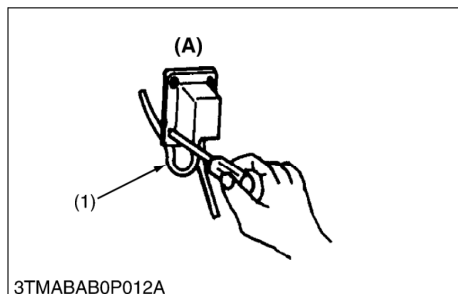


- Clamp wiring so that there is no twist, unnecessary sag, or excessive tension, except for movable part, where sag be required.

(1) Wiring  
(2) Clamp

(A) Correct  
(B) Incorrect

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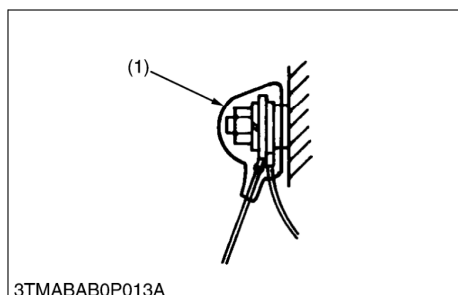


- In installing a part, be careful not to get wiring caught by it.

(1) Wiring

(A) Incorrect

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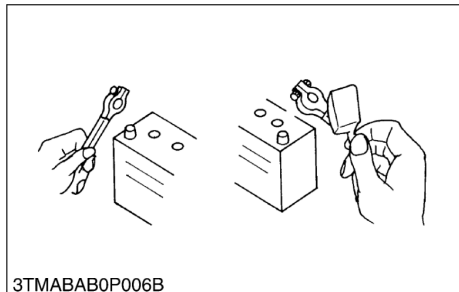


- After installing wiring, check protection of terminals and clamped condition of wiring.

(1) Cover  
(Securely Install Cover)

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## [2] BATTERY



- Be careful not to confuse positive and negative terminal posts.
- 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.



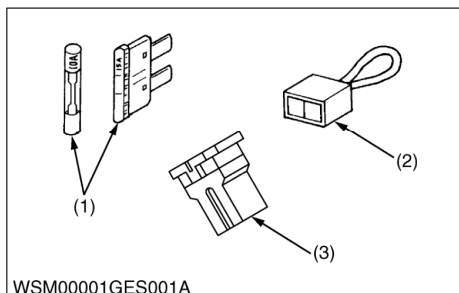
### **DANGER**

To avoid serious injury or death:

- **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



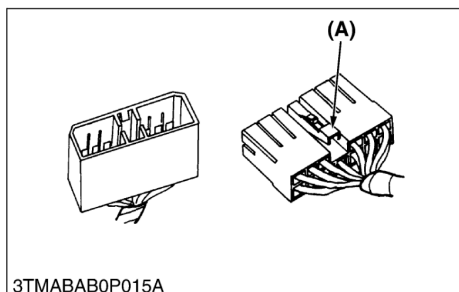
- Use fuses with specified capacity. Neither too large nor small capacity fuse is acceptable.
- Never use steel nor copper wire in place of fuse.
- Do not install working light, radio set, etc. on machine which is not provided with reserve power supply.
- Do not install accessories if fuse capacity of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

- (1) Fuse  
(2) Fusible Link

- (3) Slow Blow Fuse

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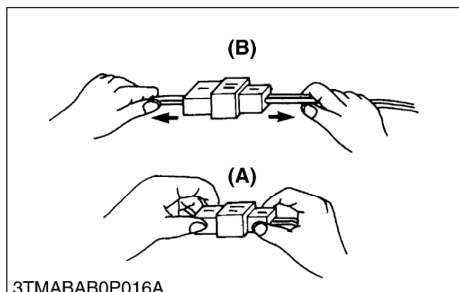
## [4] CONNECTOR



- For connector with lock, push lock to separate.

- (A) Push

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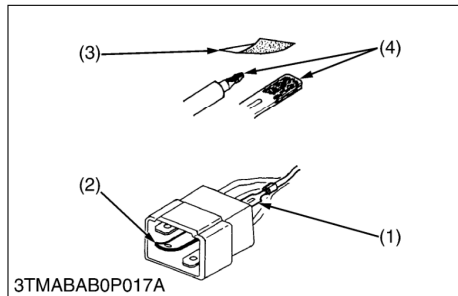


- In separating connectors, do not pull wire harnesses.
- Hold connector bodies to separate.

- (A) Correct

- (B) Incorrect

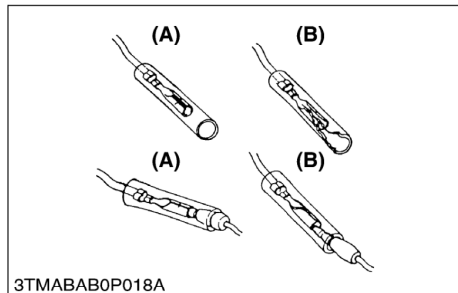
WSM000001GEG0074US0



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

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

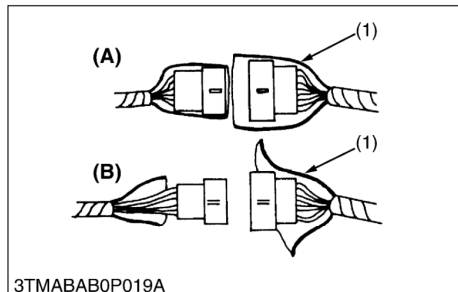
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- Make sure that there is no female connector being too open.

(A) Correct (B) Incorrect

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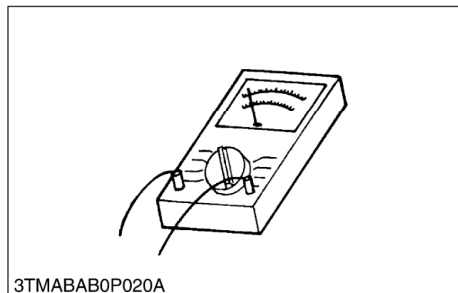


- Make sure that plastic cover is large enough to cover whole connector.

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

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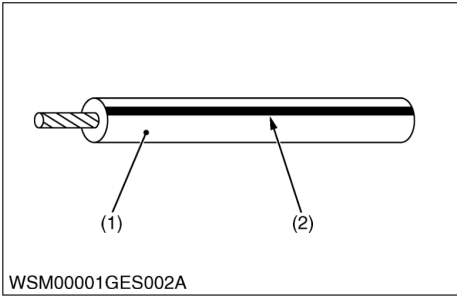
## [5] HANDLING OF CIRCUIT TESTER



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

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[6] COLOR OF WIRING



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

(An example)

Red stripe on white color: W/R

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

(1) Wire Color

(2) Stripe

WSM000001GEG0079US0