WSM

WORKSHOP MANUAL

ZD321,ZD323,ZD326,ZD331

Kubota

KiSC issued 08, 2016 A

TO THE READER

This Workshop Manual tells the servicing personnel about the mechanism, servicing and maintenance of the ZD321, ZD323, ZD326 and ZD331. It contains 4 parts: **"Information"**, **"General"**, **"Mechanism"** and **"Servicing"**.

■ **Information**

This section primarily contains information below.

- Safety First
- Safety Decal
- Specifications
- Dimensions

■ **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 / 9Y021-18200) 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.

November, 2008

KiSC issued 08, 2016 A

Record of Revisions

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

Last digit of the Code No.	Issue month	Main Revised Point and Corrective Measures {Search word}	Reference Page
2	2013.10	• Engine model D902-E4-ZD-1 and D1005-E4-ZD-1 are added. • NOTEs are modified. • Error characters are corrected. • Pictures and tables are added in "Bushing Replacing Tool", "Crankshaft Bearing 1 Replacing Tool" and "Governor Gear Holder Bushing Replacing Tool" • "6.86 to 11.3" correction to "9.81 to 11.2". • {D902-E3/E4} {D1005-E3/E4}	I-8 I-8, I-10 G-9 G-51 G-51 1-S18
3	2014.06	• Addition of {ZD326HL}, engine{D1105}-E4-ZD-1. • Layout of "Disassembling" for engines. • Correction of PTO clutch operating pressure, • Check and High Pressure Relief Valve setting pressure and engine speed for ZD323.	I-8 etc. 1-S34 2-M5, 2-S11 2-M5, 2-S3, 2-S10
4	2016.08	• Correction of errors	1-S20, 1-S31, 1-S31, 1-S32, 1-S32, 2-S14, 2-S22 to 2-S24, 2-S26 to 2-S28, 2-S31 to 2-S33, 3-S5, 4-S11, 4-S11, 5-S5, 5-S9

I INFORMATION

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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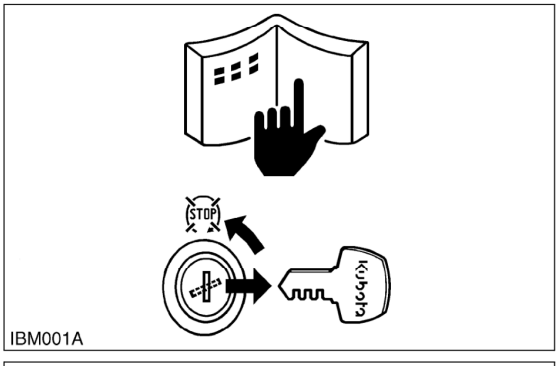

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BEFORE YOU START SERVICE

- 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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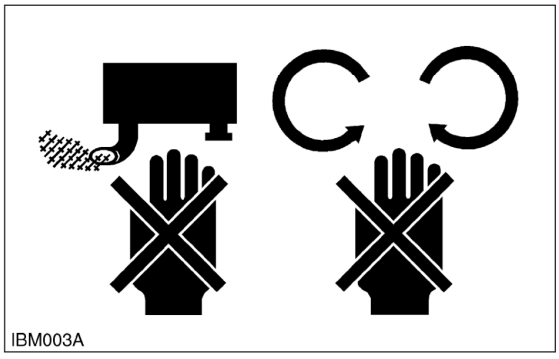
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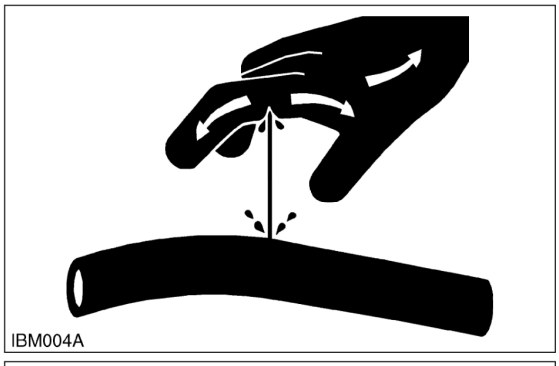
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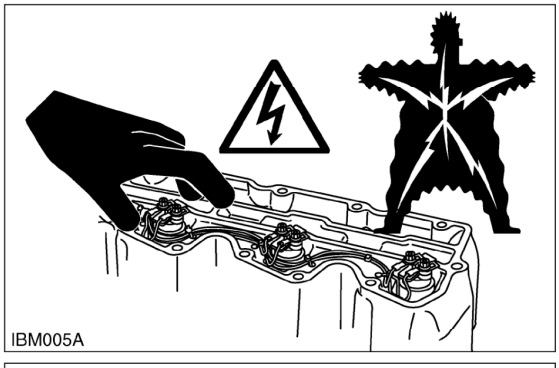
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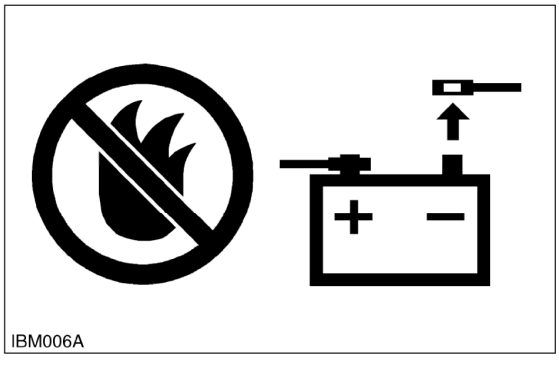
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OPERATE SAFELY

- 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.

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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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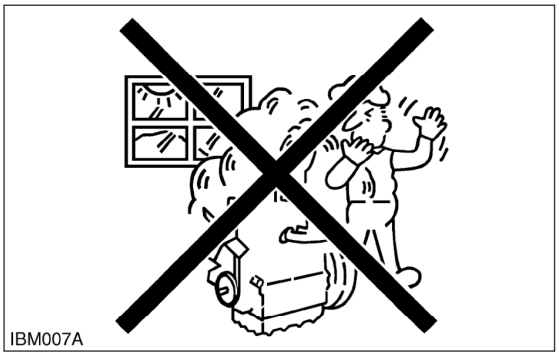
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KEEP A GOOD AIRFLOW IN THE WORK AREA

- 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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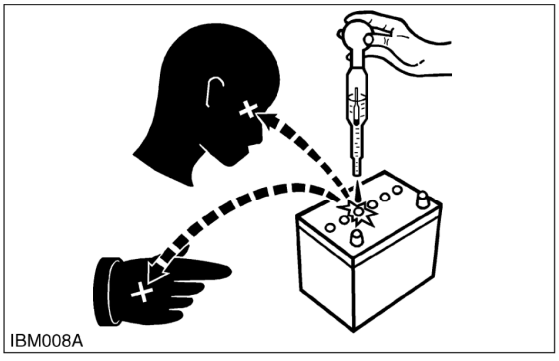
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PREVENT ACID BURNS

- 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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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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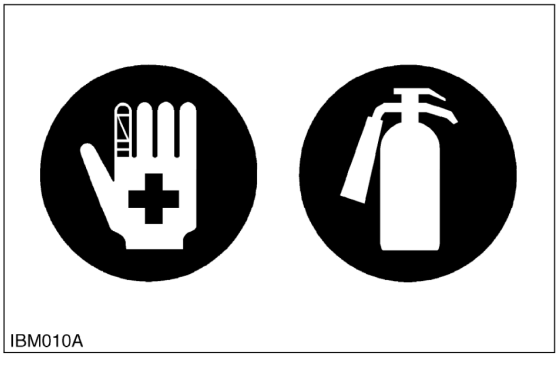
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PREPARE FOR EMERGENCIES

- 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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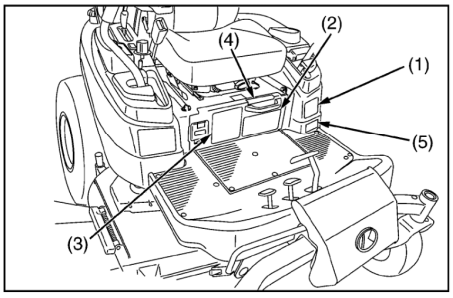


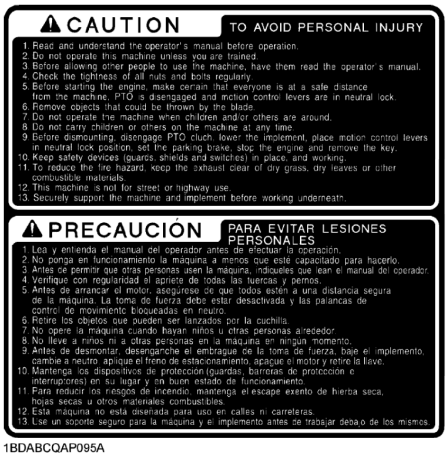
(1) Part No. K3181-6585-1

1BDABCQAP093A

(2) Part No. K3181-6584-1

1BDABCQAP094A

(3) Part No. K3181-6582-1



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(4) Part No. K3181-6596-1

1BDABCQAP1460

(5) Part No. K3181-6571-1

1BDABCQAP1560

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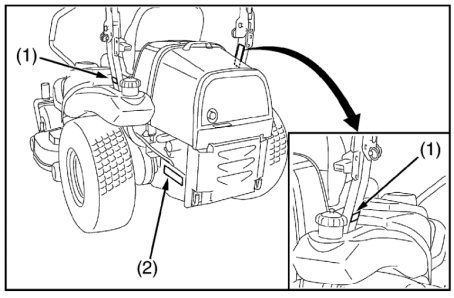
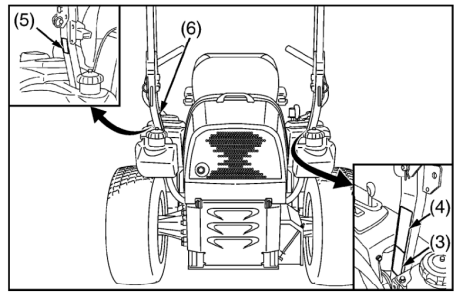
9Y1210265INI0001US0



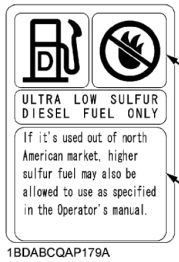


(1) [For North American market]
Part No. K3181-6572-1

Diesel fuel only No fire

1BDABCQAP178A

[For Other North American market]
Part No. K3181-6572-1 and K7724-6566-1



K3181-6572-1

K7724-6566-1

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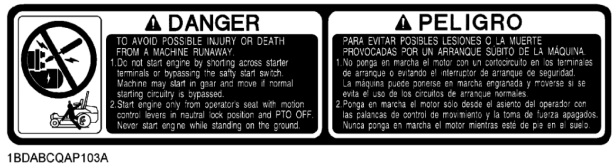
(2) Part No. K3181-6583-1



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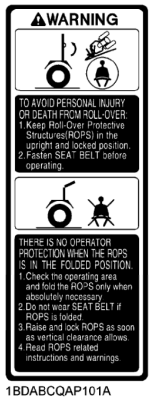
(3) Part No. K3181-6564-1

1BDABCQAP100A

(4) Part No. K3181-6563-1



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(5) Part No. K3181-6566-1

1BDABCQAP135A

(6) Part No. K3181-6565-1

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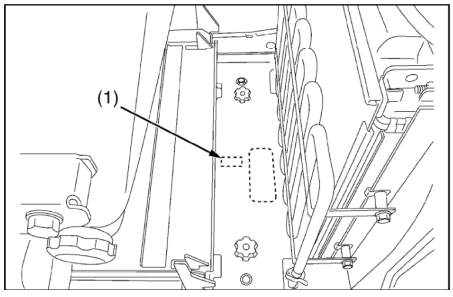
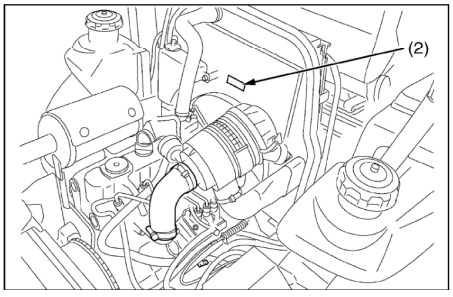


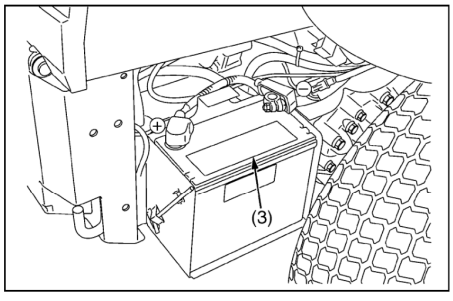
(1) Part No. K3111-6591-1
Do not get your hands close to fan belt.



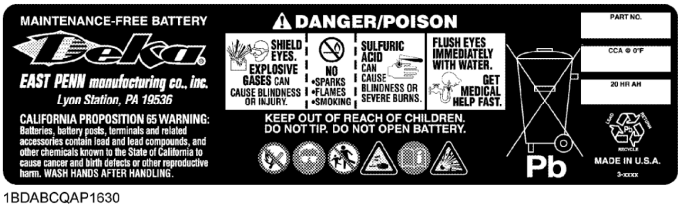
(2) Part No. K3181-6586-1
Do not get your hands close to engine fan and fan belt.

1BDABCQAP107A

1BDABCQAP108A



(3) Part No. K3181-6115-2



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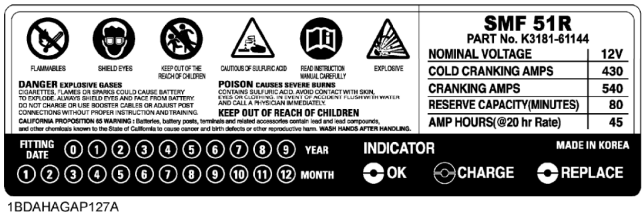
(3) Part No. K3181-6116-1

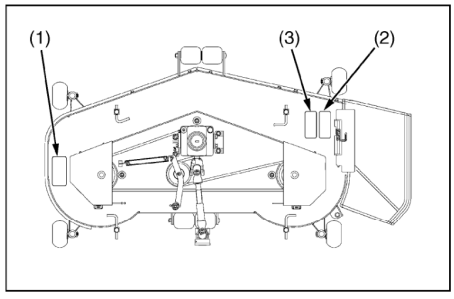


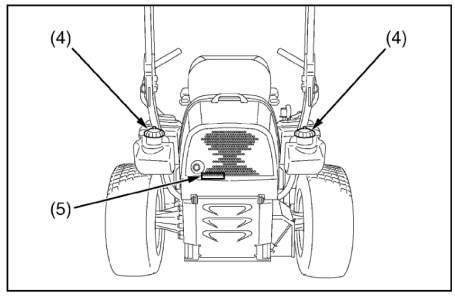
1BDAHAGAP127A

DANGER I POISON
- SHIELD EYES
  EXPLOSIVE GASES can cause blindness or injury.
- NO SPARKS / FLAMES / SMOKING
- SULFURIC ACID can cause blindness or severe burns.
- Flush eyes immediately with water.
- Get medical help fast.

9Y1210265ICI005US

9Y1210265INI0003US0





(1) Part No. K5681-7312-1

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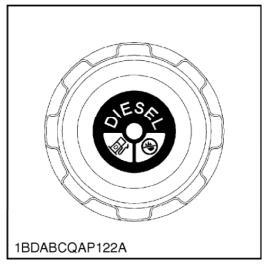
(2) Part No. K5681-7311-1

1BDACAEAP016B

(3) Part No. K5681-7310-1

1BDACAEAP017B

(4) Part No. K3181-2491-3



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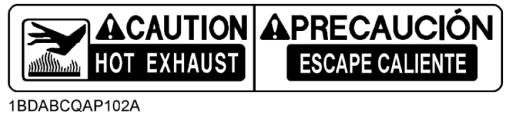
(5) Part No. K3181-6532-1



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9Y1210265INI0004US0

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 replace component.
5. Mount new danger, warning and caution labels by applying on a clean dry surface and pressing any bubbles to outside edge.

9Y1210265INI0005US0

3. SPECIFICATIONS

ZD326

Model			ZD326S	ZD326P	ZD326HL
Engine	Model		D1005-E3-ZD-2 D1005-E4-ZD-1		D1105-E4-ZD
	Maximum engine power (Gross)		19.4 kW (26 HP)*1		
	Type		Liquid-cooled		
	Number of cylinders		3		
	Bore and stroke		76 x 73.6 mm (2.99 x 2.90 in.)		78 x 78.4 mm (3.07 x 3.09 in.)
	Total displacement		1001 cm^3 (61.1 cu.in.)		1123 cm^3 (68.5 cu.in.)
	Rated revolution		3200 min^{-1} (rpm)		3000 min^{-1} (rpm)
	Low idling revolution		1250 to 1350 min^{-1} (rpm)		1300 to 1400 min^{-1} (rpm)
	Fuel		Diesel fuel No. 1 [below −10 °C (14 °F)] Diesel fuel No. 2 [above −10 °C (14 °F)]		
	Starter		Electric starter with battery, glow plug, 12 V, 1.1 kW		
	Lubrication		Forced lubrication by gear pump		
	Cooling		Liquid with pressurized radiator		
	Battery		51 R (12 V, RC: 70 min, CCA: 475 A)		
Capacities	Fuel tank		49 L (13 U.S.gals, 11 Imp.gals)		
	Engine crankcase (with filter)		3.9 L (4.1 U.S.qts, 3.4 Imp.qts)		
	Engine coolant		3.5 L (3.70 U.S.qts, 3.08 Imp.qts)		
	Recovery tank		0.25 L (0.26 U.S.qts, 0.22 Imp.qts)		
	Transmission including rear axle gear case		12.1 L (12.8 U.S.qts, 10.6 Imp.qts)*3		
Dimensions	Overall length		2220 mm (87.4 in.)		2335 mm (91.9 in.)
	Overall width Without mower deck		1460 mm (57.5 in.)		
	Overall height	With ROPS upright	1915 mm (75.4 in.)		
		With ROPS folded	1555 mm (61.2 in.)		
	Wheel base		1410 mm (55.5 in.)		1525 mm (60.0 in.)
	Minimum ground clearance		130 mm (5.12 in.) with 60 in.		130 mm (5.12 in.) with 60 in., 72 in.
	Tread	Front	975 mm (38.4 in.)		1070 mm (42.1 in.)
		Rear	1150 mm (45.3 in.)		
Weight (with Mower Deck)			756 kg (1667 lbs) with 60 in.	771 kg (1700 lbs) with 60 in.	776 kg (1710 lbs) with 72 in.
Travelling system	Tires	Front	15 x 6.0-6 (4PR) Rib	15 x 6.0-6 (Semi-pneumatic Non Flat Tire) Rib	
		Rear	26 x 12.0-12 (4PR) Turf		
	Travelling speeds	Forward	0 to 15.0 km/h (0 to 9.3 mph)*2	0 to 17.0 km/h (0 to 10.6 mph)*2	
		Reverse	0 to 8.3 km/h (0 to 5.2 mph)*2	0 to 8.5 km/h (0 to 5.3 mph)*2	
	Steering		2-Hand levers		
	Transmission		2-Hydrostatic transmission with gear		
	Parking brake		Wet multi disc / foot applied, released		
	Min. turning radius		0 mm (0 in.)		
PTO	Revolution		1 speed (2530 rpm at 3200 engine rpm)		1 speed (2538 rpm at 3000 engine rpm)
	Drive system		Shaft drive, KUBOTA 10 tooth in involute spline		
	Clutch type		Wet multi discs		
	PTO brake		Wet single disc		

■ **NOTE**

- **Specifications and design subject to change without notice.**

N: Narrow tread
S: Special
P: Semi-pneumatic Non Flat Tire
LP: Long wheel base and equipped with 72 in. mower.
***1 : Manufacture's estimate**
***2 : At 3200 min^{-1} (rpm) [ZD326S, ZD326P, ZD326RP] / At 3000 min^{-1} (rpm) [ZD326HL]**
***3: Oil amount when the oil level is at the upper level**

Model			RCK60P-331Z	RCK72P-331Z
PRO commercial deck (fabricated deck)	Suitable machine		ZD326S, ZD326P	ZD331HP
	Mounting method		Quick joint, parallel linkage	
	Adjustment of cutting height		Dial gauge	
	Cutting width		1524 mm (60.0 in.)	1829 mm (72.0 in.)
	Cutting height		25 to 127 mm (1.0 to 5.0 in.)	
	Weight (approx.)		148 kg (327 lbs)	160 kg (353 lbs)
	Blade spindle speed		56.0 r/s (3360 min^{-1} (rpm))*1	47.0 r/s (2820 min^{-1} (rpm))*1
	Blade tip velocity		92.0 m/s (18100 fpm)*1	92.3 m/s (18150 fpm)*1
	Blade length		523 mm (20.6 in.)	625 mm (24.6 in.)
	Number of blades		3	
	Dimensions	Total length	1002 mm (39.4 in.)	1170 mm (46.1 in.)
		Total width	1911 mm (75.2 in.)	2224 mm (87.6 in.)
		Total height	358 mm (14.1 in.)	

■ **NOTE**

- **Specifications and design subject to change without notice.**
  ***1: Engine max. revolution.**

9Y1210265INI0006US0

ZD321, ZD323, ZD331

Model			ZD321N	ZD321	ZD323	ZD331P	ZD331LP
Engine	Model		D782-E3-ZD		D902-E3-ZD / D902-E4-ZD-1	D1305-E3-ZD	
	Maximum engine power (Gross)		15.7 kW (21 HP)[*1]		16.9 kW (23 HP)[*1]	23.1 kW (31 HP)[*1]	
	Type		Liquid-cooled				
	Number of cylinders		3				
	Bore and stroke		67 x 73.6 mm (2.64 x 2.90 in.)		72 x 73.6 mm (2.83 x 2.90 in.)	78 x 88.0 mm (3.07 x 3.46 in.)	
	Total displacement		778 cm^3 (47.5 cu.in.)		898 cm^3 (54.8 cu.in.)	1261 cm^3 (77.0 cu.in.)	
	Rated revolution		3200 min^{-1} (rpm)			3000 min^{-1} (rpm)	
	Low idling revolution		1250 to 1350 min^{-1} (rpm)		1300 to 1400 min^{-1} (rpm)	1250 to 1350 min^{-1} (rpm)	
	Fuel		Diesel fuel No. 1 [below −10 °C (14 °F)] Diesel fuel No. 2 [above −10 °C (14 °F)]				
	Starter		Electric starter with battery, glow plug, 12 V, 1.1 kW				
	Lubrication		Forced lubrication by gear pump				
	Cooling		Liquid with pressurized radiator				
	Battery		51 R (12 V, RC: 70 min, CCA: 475 A)				
Capacities	Fuel tank		49 L (13 U.S.gals, 11 Imp.gals)				
	Engine crankcase (with filter)		3.5 L (3.70 U.S.qts, 3.08 Imp.qts)			5.7 L (6.0 U.S.qts, 5.0 Imp.qts)	
	Engine coolant		2.7 L (2.85 U.S.qts, 2.38 Imp.qts)			3.5 L (3.70 U.S.qts, 3.08 Imp.qts)	
	Recovery tank		0.25 L (0.26 U.S.qts, 0.22 Imp.qts)				
	Transmission including rear axle gear case		12.1 L (12.8 U.S.qts, 10.6 Imp.qts)[*3]				
Dimensions	Overall length		2185 mm (86.0 in.)		2220 mm (87.4 in.)		2335 mm (91.9 in.)
	Overall width Without mower deck		1365 mm (53.7 in.)	1460 mm (57.5 in.)			
	Overall height	With ROPS upright	1915 mm (75.4 in.)				
		With ROPS folded	1555 mm (61.2 in.)				
	Wheel base		1410 mm (55.5 in.)				1525 mm (60.0 in.)
	Minimum ground clearance		130 mm (5.12 in.) with 54 in., 60 in.		130 mm (5.12 in.) with 60 in.	130 mm (5.12 in.) with 60 in., 72 in.	
	Tread	Front	975 mm (38.4 in.)				1070 mm (42.1 in.)
		Rear	1100 mm (43.3 in.)	1150 mm (45.3 in.)			
Weight (with Mower Deck)			686 kg (1517 lbs) with 54 in.	713 kg (1664 lbs) with 60 in.	746 kg (1645 lbs) with 60 in.	778 kg (1715 lbs) with 60 in.	803 kg (1770 lbs) with 72 in.
Travelling system	Tires	Front	15 x 6.0-6 (4PR) Rib			15 x 6.0-6 (Semi-pneumatic Non Flat Tire) Rib	
		Rear	26 x 10.5-12 (4PR) Turf	26 x 12.0-12 (4PR) Turf			
	Travelling speeds	Forward	0 to 15.0 km/h (0 to 9.3 mph)[*2]				
		Reverse	0 to 8.3 km/h (0 to 5.2 mph)[*2]				
	Steering		2-Hand levers				
	Transmission		2-Hydrostatic transmission with gear				
	Parking brake		Wet multi disc / foot applied, released				
	Min. turning radius		0 mm (0 in.)				

Model		ZD321N	ZD321	ZD323	ZD331P	ZD331LP
PTO	Revolution	1 speed (2530 rpm at 3200 engine rpm)			1 speed (2540 rpm at 3000 engine rpm)	
	Drive system	Shaft drive, KUBOTA 10 tooth in involute spline				
	Clutch type	Wet multi discs				
	PTO brake	Wet single disc				

■ **NOTE**

- **Specifications and design subject to change without notice.**
  N: Narrow tread
  S: Special
  P: Semi-pneumatic Non Flat Tire
  LP: Long wheel base and equipped with 72 in. mower.
  ***1 : Manufacture's estimate**
  ***2 : At 3200 min^{-1} (rpm) [ZD321, ZD323] / At 3000 min^{-1} (rpm) [ZD331]**
  ***3: Oil amount when the oil level is at the upper level**

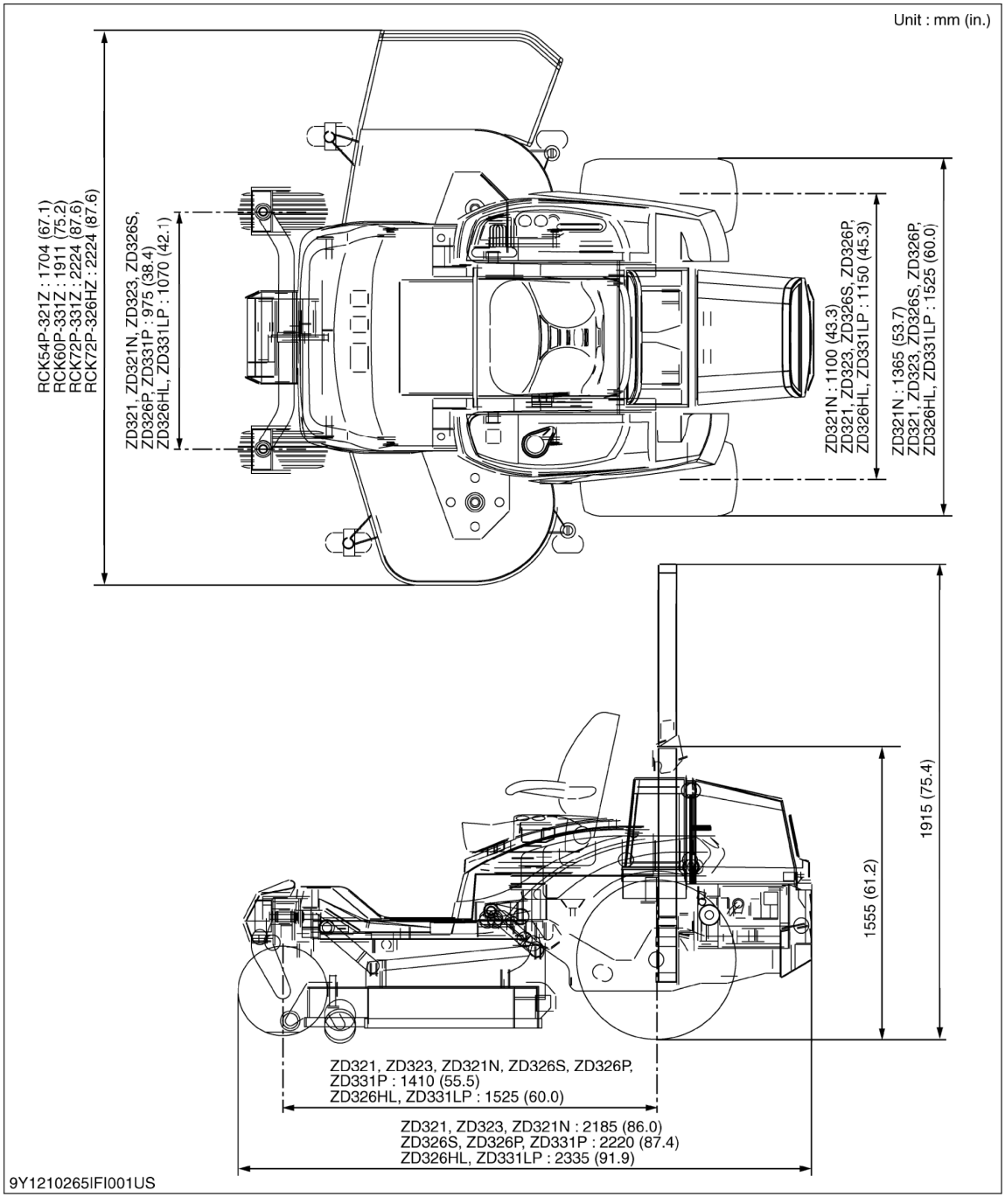
Model			RCK54P-321Z	RCK60P-331Z	RCK72P-331Z
PRO commercial deck (fabricated deck)	Suitable machine		ZD321N	ZD321, ZD323, ZD331P	ZD331LP
	Mounting method		Quick joint, parallel linkage		
	Adjustment of cutting height		Dial gauge		
	Cutting width		1375 mm (54 in.)	1524 mm (60.0 in.)	1829 mm (72.0 in.)
	Cutting height		25 to 127 mm (1.0 to 5.0 in.)		
	Weight (approx.)		128 kg (281 lbs)	148 kg (327 lbs)	169 kg (373 lbs)
	Blade spindle speed		58.8 r/s (3530 min^{-1} (rpm))*1	56.0 r/s (3360 min^{-1} (rpm))*1	47.2 r/s (2830 min^{-1} (rpm))*1
	Blade tip velocity		87.8 m/s (17300 fpm)*1	92.0 m/s (18100 fpm)*1	92.6 m/s (18200 fpm)*1
	Blade length		475 mm (18.7 in.)	523 mm (20.6 in.)	625 mm (24.6 in.)
	Number of blades		3		
	Dimensions	Total length	940 mm (37.0 in.)	1002 mm (39.4 in.)	1170 mm (46.1 in.)
		Total width	1704 mm (67.1 in.)	1911 mm (75.2 in.)	2224 mm (87.6 in.)
		Total height	353 mm (13.9 in.)	358 mm (14.1 in.)	

■ **NOTE**

- **Specifications and design subject to change without notice.**
  ***1: Engine max. revolution.**

9Y1210265INI0007US0

4. DIMENSIONS



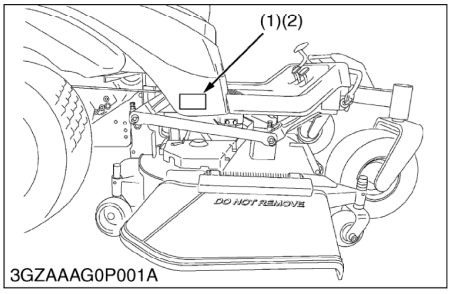
9Y1210265INI0008US0

G GENERAL

GENERAL

CONTENTS

1. IDENTIFICATION



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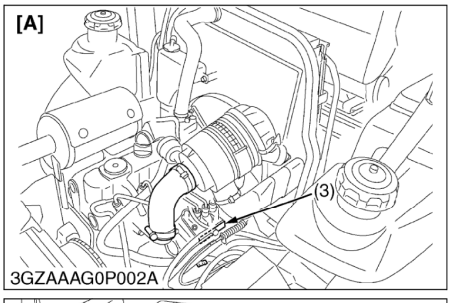

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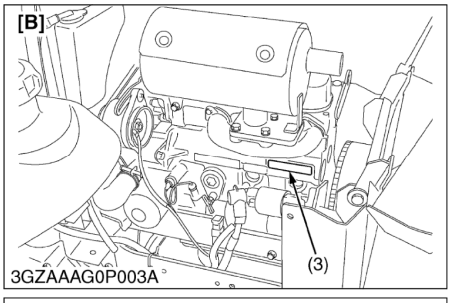

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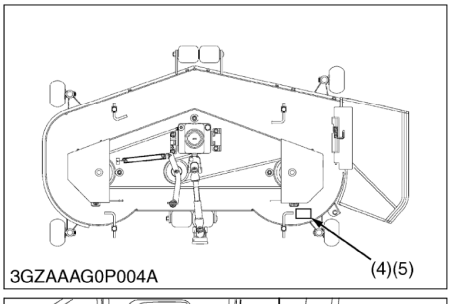

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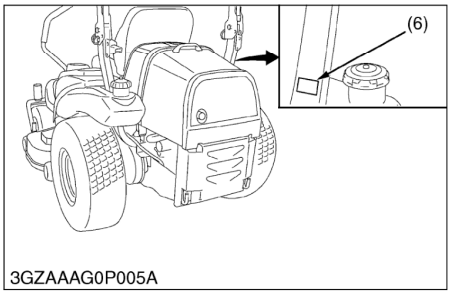


3GZAAAG0P005A

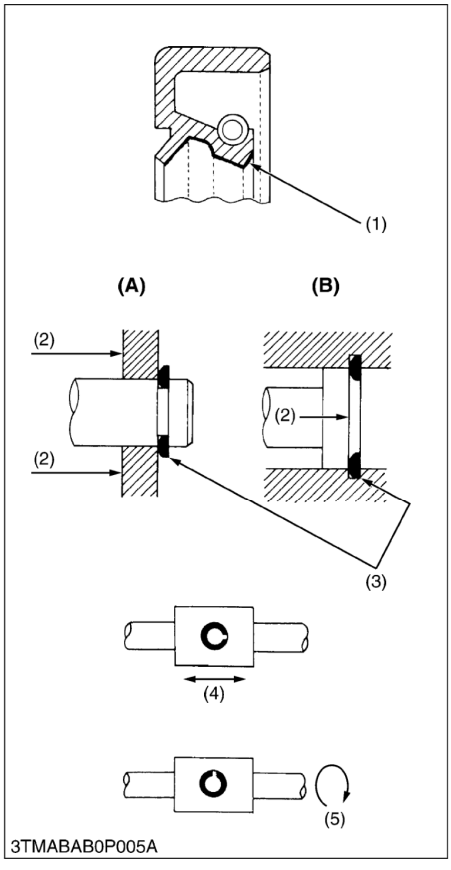
When contacting your local KUBOTA distributor, always specify engine serial number (3), machine serial number (2), mower serial number (4) and hour meter reading.

(1) Machine Identification Plate
(2) Machine Serial Number
(3) Engine Serial Number
(4) Mower Serial Number
(5) Mower Identification Plate
(6) ROPS Serial Number

[A] ZD321, ZD323
[B] ZD326, ZD331

9Y1210265GEG0001US0

2. GENERAL PRECAUTIONS



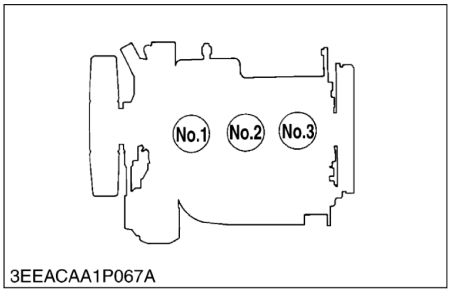
- When you disassemble, carefully put the parts in a clean area to make it easy to find the parts. You must install the screws, bolts and nuts in their initial position to prevent the reassembly errors.
- When it is necessary to use special tools, use KUBOTA special tools. Refer to the drawings when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

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

(A) External Circlip
(B) Internal Circlip

WSM000001GEG0092US0

3. CYLINDER NUMBER



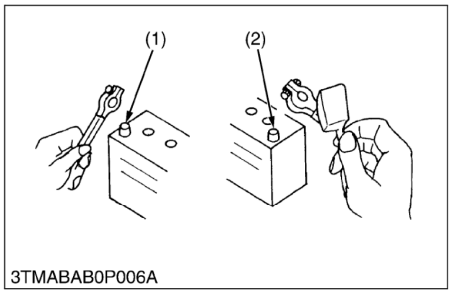
3EEACAA1P067A

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

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

9Y1210265GEG0002US0

4. 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.

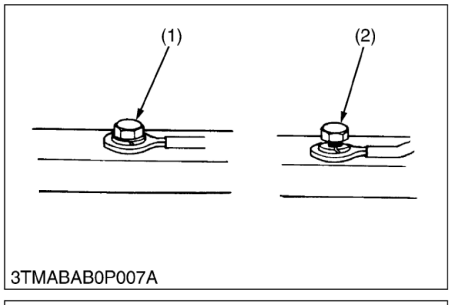
■ **IMPORTANT**

- **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

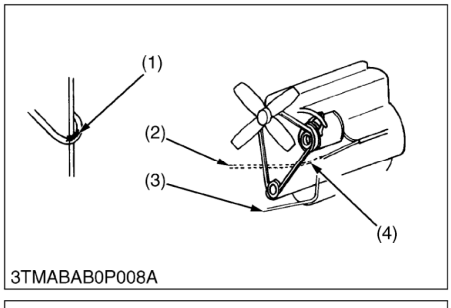


3TMABAB0P007A

- Securely tighten wiring terminals.

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

WSM000001GEG0063US0

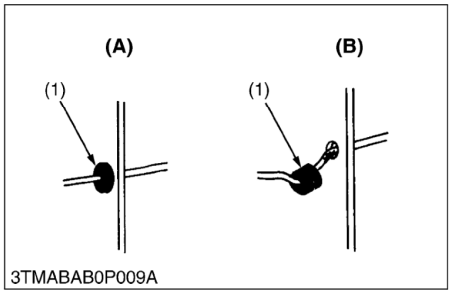


3TMABAB0P008A

- Do not let wiring contact dangerous part.

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

WSM000001GEG0064US0



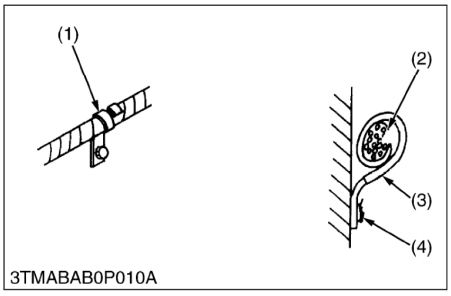
3TMABAB0P009A

- Securely insert grommet.

(1) Grommet

(A) Correct
(B) Incorrect

WSM000001GEG0066US0

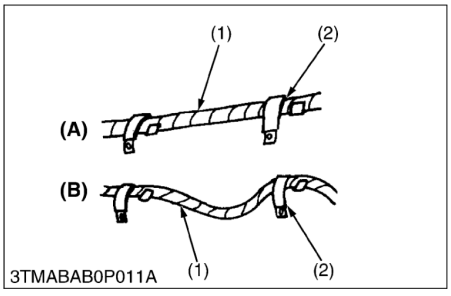


3TMABAB0P010A

- Securely clamp, being careful not to damage wiring.

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

WSM000001GEG0067US0

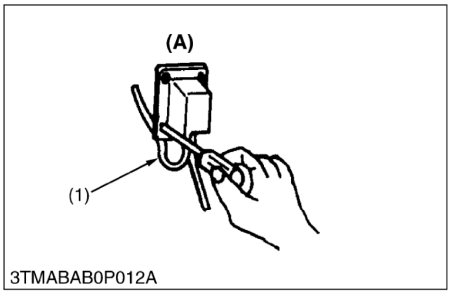


3TMABAB0P011A

- 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

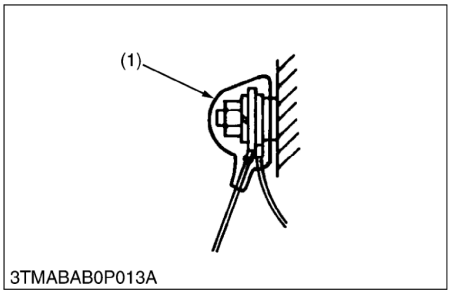


3TMABAB0P012A

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

(1) Wiring
(A) Incorrect

WSM000001GEG0069US0



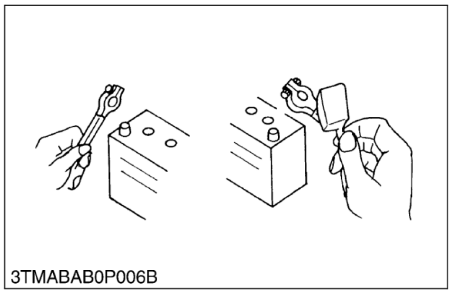
3TMABAB0P013A

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

(1) Cover (Securely Install Cover)

WSM000001GEG0070US0

[2] BATTERY


3TMABAB0P006B

- 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.

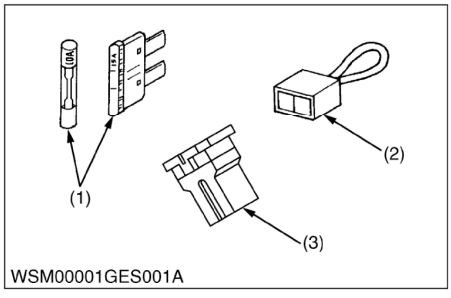
DANGER

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.**

WSM000001GEG0071US0

[3] FUSE



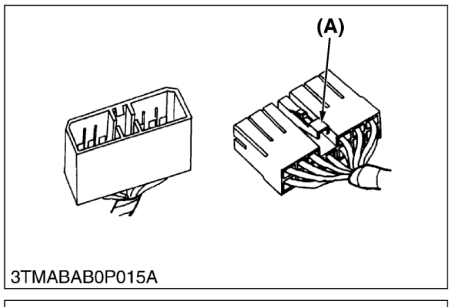
WSM00001GES001A

- 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

WSM000001GEG0072US0

[4] CONNECTOR

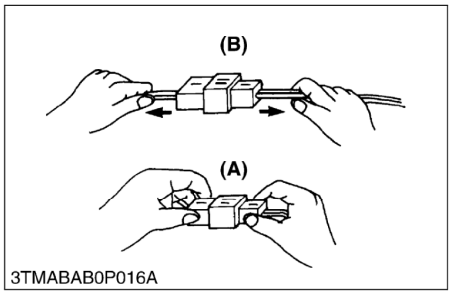


3TMABAB0P015A

- For connector with lock, push lock to separate.

(A) Push

WSM000001GEG0073US0

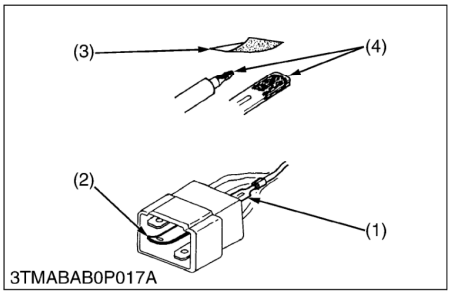


3TMABAB0P016A

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

(A) Correct
(B) Incorrect

WSM000001GEG0074US0

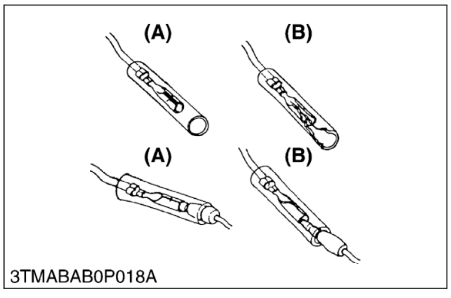


3TMABAB0P017A

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

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

WSM000001GEG0075US0



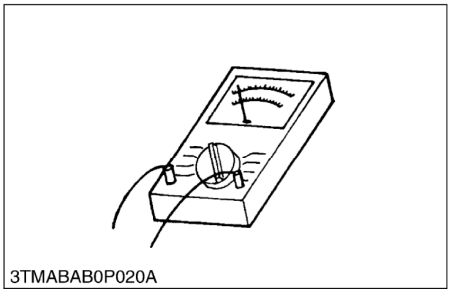
3TMABAB0P018A

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

(A) Correct
(B) Incorrect

WSM000001GEG0076US0

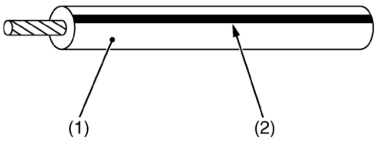
[5] HANDLING OF CIRCUIT TESTER


3TMABAB0P020A

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

WSM000001GEG0078US0

[6] COLOR OF WIRING



WSM00001GES002A

- 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

5. LUBRICANTS, FUEL AND COOLANT

<table>
<tr><th rowspan="2">No.</th><th rowspan="2" colspan="2">Place</th><th colspan="4">Capacity</th><th rowspan="2">Lubricants, fuel and coolant</th></tr>
<tr><th>ZD321</th><th>ZD323</th><th>ZD326</th><th>ZD331</th></tr>
<tr><td>1</td><td colspan="2">Fuel</td><td colspan="4">49 L
13 U.S.gals
11 Imp.gals</td><td>• No. 2-D diesel fuel
• No. 1-D diesel fuel if temperature is below –10 °C (14 °F)</td></tr>
<tr><td rowspan="2">2</td><td rowspan="2">Coolant</td><td>Cooling system</td><td colspan="2">2.7 L
2.85 U.S.qts
2.38 Imp.qts</td><td colspan="2">3.5 L
3.70 U.S.qts
3.08 Imp.qts</td><td rowspan="2">Fresh clean water (soft water) with anti-freeze</td></tr>
<tr><td>Recovery tank</td><td colspan="4">0.25 L
0.26 U.S.qts
0.22 Imp.qts</td></tr>
<tr><td>3</td><td colspan="2">Engine crankcase</td><td colspan="2">3.5 L*
3.70 U.S.qts
3.08 Imp.qts</td><td>3.9 L*
4.1
U.S.qts
3.4
Imp.qts</td><td>5.7 L*
6.0
U.S.qts
5.0
Imp.qts</td><td>Engine oil
Refer to G-11.
• Above 25 °C (77 °F)
SAE30, SAE10W-30 or 15W-40
• 0 to 25 °C (32 to 77 °F)
SAE20, SAE10W-30 or 15W-40
• Below 0 °C (32 °F)
SAE30, SAE10W-30 or 15W-40</td></tr>
<tr><td>4</td><td colspan="2">Transmission case with filter, hose and rear axle gear case (RH and LH)</td><td colspan="4">12.1 L
12.8 U.S.qts
10.6 Imp.qts</td><td>KUBOTA UDT or SUPER UDT fluid*</td></tr>
<tr><td>5</td><td colspan="2">Mower gear case</td><td colspan="4">0.4 L
0.4 U.S.qts
0.4 Imp.qts</td><td>SAE 90 gear oil (API service classification: more than GL-3)</td></tr>
</table>

■ **NOTE**
- *** Oil amount when the oil level is the upper of the oil level gauge.**
- **** KUBOTA original transmission hydraulic fluid.**

■ **IMPORTANT**
- **To prevent serious damage to hydraulic system, use only KUBOTA genuine fluid or its equivalent.**

Greasing				
No.	**Place**	**No. of greasing point**	**Capacity**	**Type of grease**
6	Motion control lever pivot bushing and contact position	6	Until grease overflows	Multipurpose EP2 Grease (NLGI Grade No.2)
7	Center pin	1		
8	King pin	2		
9	Front wheel	2		
10	Front lift arm	2		
11	Universal joint	3		
12	Seat adjuster	2		
13	Throttle cable	2	Moderate amount	Engine oil
Greasing (Mower)				
14	Universal joint	3	Until grease overflows	Multipurpose EP2 Grease (NLGI Grade No.2)
15	Three spindle shafts	3		
16	Belt tension pulley	1		
17	Belt tension pivot	1		
18	Front anti-scalp roller	2		
19	Front anti-scalp roller pivot boss	2		

9Y1210265GEG0003US0

For North American market

■ **NOTE**

Engine Oil

- **Oil used in the engine should have an American Petroleum Institute (API) service classification and Proper SAE Engine Oil according to the ambient temperatures as shown above:**
- **Refer to the following table for the suitable API classification engine oil according to the engine type (with internal EGR, external EGR or non-EGR) and the fuel.**

Fuel used	Engine oil classification (API classification)	
	Oil class of engines except external EGR	Oil class of engines with external EGR
Ultra Low Sulfur Fuel [< 0.0015 % (15 ppm)]	**CF**, **CF-4**, **CG-4**, **CH-4** or **CI-4**	**CF** or **CI-4** (Class CF-4, CG-4 and CH-4 engine oils cannot be used on EGR type engines)

EGR: Exhaust Gas Re-circulation

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

	except external EGR	with external EGR
Model	ZD321N, ZD321, ZD323, ZD326S, ZD326P, ZD326RP, ZD326HL, ZD331P, ZD331RP, ZD331LP	—

Fuel

- **Cetane number of 45 minimum. Cetane number greater than 50 is preferred, especially for temperatures below −20 °C (−4 °F) or elevations above 1500 m (5000 ft).**
- **Diesel fuels specified to EN 590 or ASTM D975 are recommended.**
- **No.2-D is a distillate fuel of lower volatility for engines in industrial and heavy mobile service. (SAE J313 JUN87)**

Transmission Oil

- **KUBOTA Super UDT-2: For an enhanced ownership experience, we highly recommend Super UDT-2 to be used instead of standard hydraulic/transmission fluid.**
  Super UDT-2 is a proprietary KUBOTA formulation that deliveries superior performance and protection in all operating conditions.
  Regular UDT is also permitted for use in this machine.

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

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For other than North American market

■ **NOTE**

Engine Oil

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

Fuel used	Engine oil classification (API classification)	
	Oil class of engines except external EGR	Oil class of engines with external EGR
High Sulfur Fuel [≥ 0.05 % (500 ppm)]	**CF** (If the "CF-4, CG-4, CH-4, or CI-4" lubricating oil is used with a high-sulfur fuel, change the lubricating oil at shorter intervals. (approximately half))	—
Low Sulfur Fuel [< 0.05 % (500 ppm)] or Ultra Low Sulfur Fuel [< 0.0015 % (15 ppm)]	**CF**, **CF-4**, **CG-4**, **CH-4** or **CI-4**	**CF** or **CI-4** (Class CF-4, CG-4 and CH-4 engine oils cannot be used on EGR type engines)

EGR: Exhaust Gas Re-circulation

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

	except external EGR	with external EGR
Model	ZD326P-AU, ZD331P-AU, ZD331LP-AU	—

Fuel

- **Cetane number of 45 minimum. Cetane number greater than 50 is preferred, especially for temperatures below −20 °C (−4 °F) or elevations above 1500 m (5000 ft).**
- **If diesel fuel with sulfur content greater than 0.5 % (5000 ppm) sulfur content in used, reduce the service interval for engine oil and filter by 50 %.**
- **NEVER use diesel fuel with sulfur content greater than 0.05 % (500 ppm) for EXTERNAL EGR type engine.**
- **DO NOT use diesel fuel with sulfur content greater than 1.0 % (10000 ppm).**
- **Diesel fuels specified to EN 590 or ASTM D975 are recommended.**
- **No.2-D is a distillate fuel of lower volatility for engines in industrial and heavy mobile service. (SAE J313 JUN87)**

Transmission oil

- **The oil used to lubricate the transmission is also used as hydraulic fluid. To insure proper operation of the hydraulic system and to complete lubrication of the transmission, it is important that a multi-grade transmission fluid is used in this system. We recommend the use of KUBOTA UDT or SUPER UDT fluid for optimum protection and performance.**
  (Consult your local KUBOTA Dealer for further detail.)
  Do not mix different brands together.
- **Indicated capacities of water and oil are manufacturer's estimate.**

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