Product: Kubota BX1860 BX2360 BX2660 RCK48 RCK54 RCK60 LA203 LA243 Service Manual
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-bx2660-rck48-rck54-rck60-la203-la243-service-manual/

WSM

# WORKSHOP MANUAL
# TRACTOR,MOWER, FRONT LOADER

## BX1860,BX2360,BX2660, RCK48-18BX,RCK54-23BX, RCK60B-23BX,RCK48P-18BX, RCK54P-23BX,LA203,LA243

Kubota

KiSC issued 08, 2019 A

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Product: Kubota BX1860 BX2360 BX2660 RCK48 RCK54 RCK60 LA203 LA243 Service Manual
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-bx2660-rck48-rck54-rck60-la203-la243-service-manual/

# TO THE READER

This Workshop Manual has been prepared to provide servicing personnel with information on the mechanism, service and maintenance of KUBOTA Tractor BX1860, BX2360, BX2660, KUBOTA Rotary Mower RCK48-18BX, RCK54-23BX, RCK60B-23BX, RCK48P-18BX, RCK54P-23BX and KUBOTA Front Loader LA203, LA243. It is divided into three parts, “General”, “Mechanism” and “Servicing” for each section.

■ **General**

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

■ **Mechanism**

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

Refer to Diesel Engine / Tractor Mechanism Workshop Manual (Code No. 9Y021-01875 / 9Y021-18201) for the one which has not been described to this workshop manual.

■ **Servicing**

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

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

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

**August 2008**

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KiSC issued 08, 2019 A

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**Record of Revisions**

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

| Last digit of the Code No. | Month of Revision | Main Revised Point and Corrective Measures {Search word} | Reference Page |
|---|---|---|---|
| **2** | 2013.05 | Add a special tool information and correction. {Valve Guide Replacing Tool, Check and High Pressure Relief Valve Assembly Tool} | G-35, G-43 and others |
| **3** | 2019.08 | Changed checking hydraulic pump oil flow | 5-S5, 5-S6 |

# SAFETY FIRST

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

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

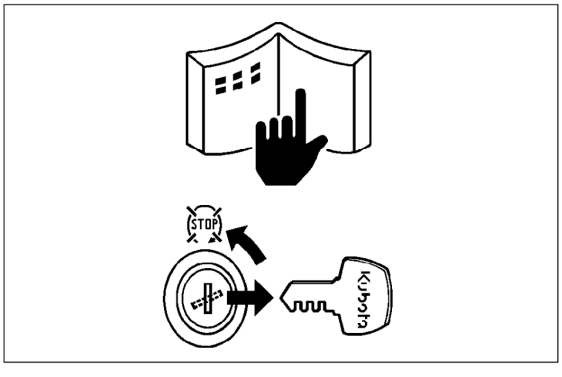
**DANGER : Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.**

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

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

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

**■ NOTE : Gives helpful information.**

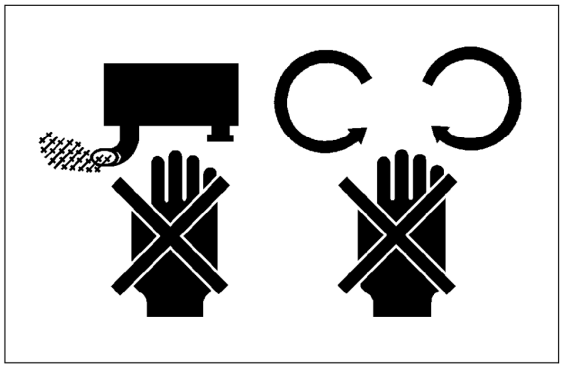


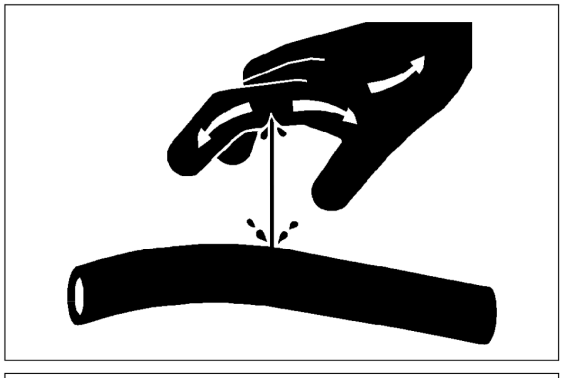

## BEFORE SERVICING AND REPAIRING

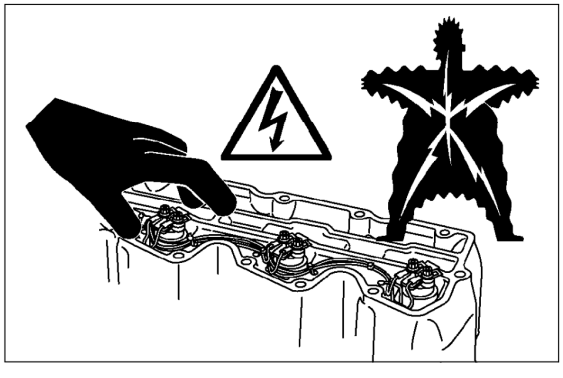
- Read all instructions and safety instructions in this manual and on your machine safety decals.
- Clean the work area and machine.
- Park the machine on a firm and level ground, and set the parking brake.
- Lower the implement to the ground.
- Stop the engine, and remove the key.
- Disconnect the battery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

## SAFETY STARTING

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

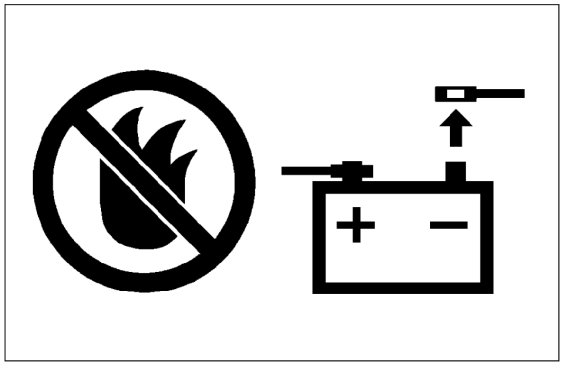






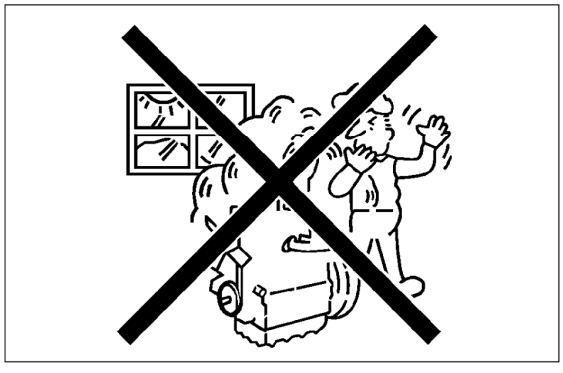
## SAFETY WORKING

- Do not work on the machine while under the influence of alcohol, medication, or other substances or while fatigued.
- Wear close fitting clothing and safety equipment appropriate to the job.
- Use tools appropriate to the work. Makeshift tools, parts, and procedures are not recommended.
- When servicing is performed together by two or more persons, take care to perform all work safely.
- Do not work under the machine that is supported solely by a jack. Always support the machine by safety stands.
- Do not touch the rotating or hot parts while the engine is running.
- Never remove the radiator cap while the engine is running, or immediately after stopping. Otherwise, hot water will spout out from radiator. Only remove radiator cap when cool enough to touch with bare hands. Slowly loosen the cap to first stop to relieve pressure before removing completely.
- Escaping fluid (fuel or hydraulic oil) under pressure can penetrate the skin causing serious injury. Relieve pressure before disconnecting hydraulic or fuel lines. Tighten all connections before applying pressure.
- Do not open high-pressure fuel system. High-pressure fluid remaining in fuel lines can cause serious injury. Do not disconnect or attempt repair fuel lines, sensors, or any other components between the high-pressure fuel pump and injectors on engines with high pressure common rail fuel system.
- High voltage exceeding 100 V is generated in the ECU, and is applied to the injector. Pay sufficient caution to electric shock when performing work activities.



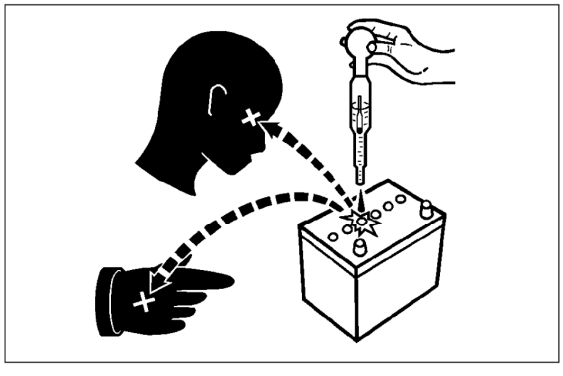
## AVOID FIRES

- Fuel is extremely flammable and explosive under certain conditions. Do not smoke or allow flames or sparks in your working area.
- To avoid sparks from an accidental short circuit, always disconnect the battery negative cable first and connect it last.
- Battery gas can explode. Keep sparks and open flame away from the top of battery, especially when charging the battery.
- Make sure that no fuel has been spilled on the engine.



## VENTILATE WORK AREA

- If the engine must be running to do some work, make sure the area is well ventilated. Never run the engine in a closed area. The exhaust gas contains poisonous carbon monoxide.

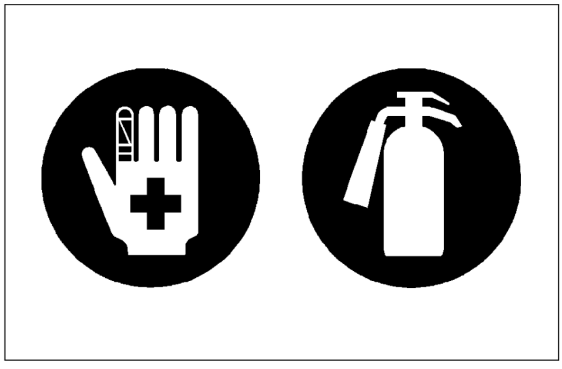


## PREVENT ACID BURNS

- Sulfuric acid in battery electrolyte is poisonous. It is strong enough to burn skin, clothing and cause blindness if splashed into eyes. Keep electrolyte away from eyes, hands and clothing. If you spill electrolyte on yourself, flush with water, and get medical attention immediately.

## DISPOSE OF FLUIDS PROPERLY

- Do not pour fluids into the ground, down a drain, or into a stream, pond, or lake. Observe relevant environmental protection regulations when disposing of oil, fuel, coolant, electrolyte and other harmful waste.



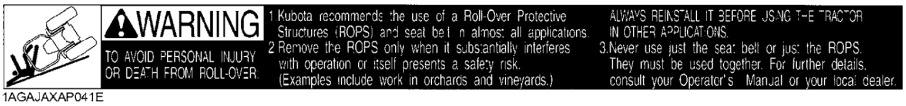
## PREPARE FOR EMERGENCIES

- Keep a first aid kit and fire extinguisher handy at all times.
- Keep emergency numbers for doctors, ambulance service, hospital and fire department near your telephone.

# SAFETY DECALS

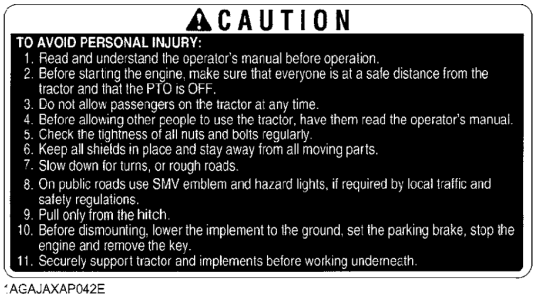
**The following safety decals are installed on the machine.**
**If a decal becomes damaged, illegible or is not on the machine, replace it. The decal part number is listed in the parts list.**

(1) Part No. K2581-6557-1




1AGAJAXAP041E

(2) Part No. K2581-6548-1




1AGAJAXAP042E

(5) Part No. K2581-6549-1

Diesel fuel only | No fire

1AGAMAAP2480

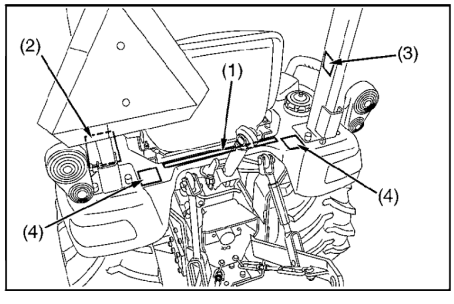
(3) Part No. 6C140-4746-1

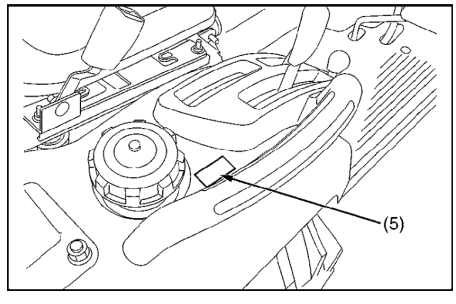

1AGAJAXAP045E

(4) Part No. K2581-6552-1

Do not put hands under the rear fender.

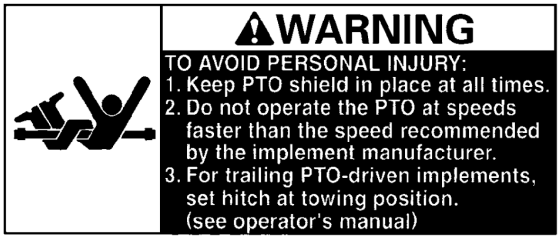

1AGAJAXAP047E




3TAAAAFCP003A

(1) Part No. K2581-6554-1

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(2) Part No. K2581-6555-1


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(3) Part No. K2581-6556-1


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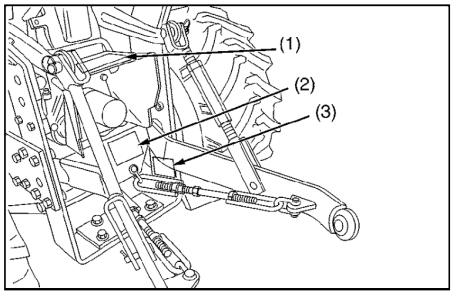


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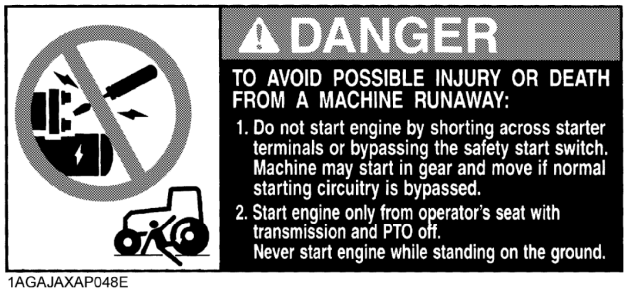
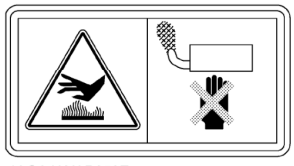
(1) Part No. K2581-6541-1



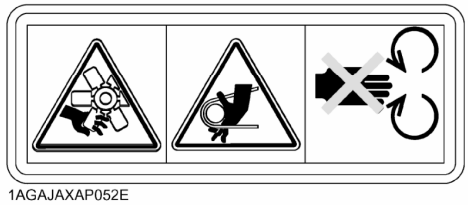

1AGAJAXAP048E

(2) Part No. K2581-6542-1
Do not touch hot surface like muffler, etc.



1AGAJAXAP050E

(3) Part No. K2581-6543-1
Stay clear of engine fan and fanbelt.



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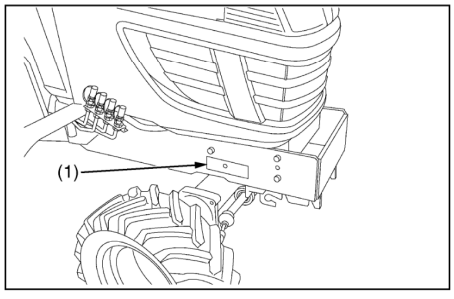


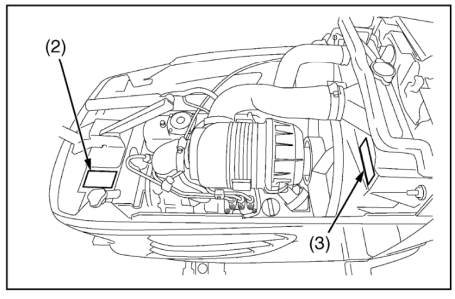


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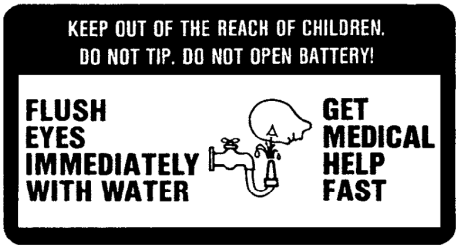
(1) Part No. K2561-6115-1

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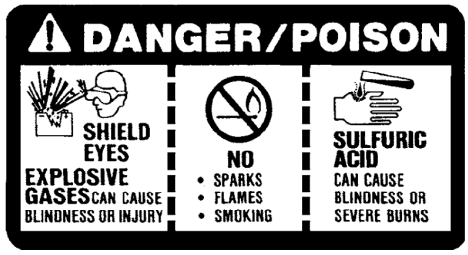
(2) Part No. K2561-6116-1

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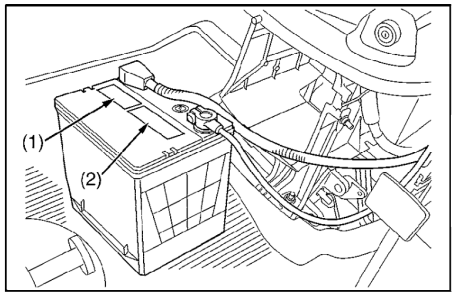



**CARES FOR SAFETY ALERT LABELS**

1. Always keep the labels clean and avoid damaging them.
   If a label is dirty, clean it with soap and water. Then wipe it with a soft cloth.
   Never use a solvent like thinner or acetone, which may erase letters or symbols.
2. When you wash the machine using a high pressure washer, do not pour high pressure water directly on any label to prevent it from peeling off.
3. If any label is damaged or missing, place an order with your dealer for replacement.
4. Before you affix a new label, completely clean the surface on which the label is placed. Wait until the surface is dry, and then affix
5. the label in its place.
   When you replace any part carrying a label, replace the label with a new one at the same time.

3TAAAAFCP006A

# SPECIFICATIONS

| Model | | | BX1860 | BX2360 | BX2660 |
|---|---|---|---|---|---|
| PTO power | | | 10.2 kW (13.7 HP)* | 13.2 kW (17.7 HP)* | 14.5 kW (19.5 HP)* |
| Engine | Maker | | KUBOTA | | |
| | Model | | D722-E3-BX-2 | D902-E3-BX-2 | D1005-E3-BX |
| | Type | | Indirect Injection, vertical, water-cooled, 4-cycle diesel | | |
| | Number of cylinders | | 3 | | |
| | Bore and stroke | | 67 × 68 mm (2.64 × 2.68 in.) | 72 × 73.6 mm (2.83 × 2.90 in.) | 76 × 73.6 mm (2.99 × 2.90 in.) |
| | Total displacement | | 719 $cm^3$ (43.9 cu.in.) | 898 $cm^3$ (54.8 cu.in.) | 1001 $cm^3$ (61.1 cu.in.) |
| | Engine gross power | | 13.4 kW (18.0 HP) | 17.1 kW (23.0 HP) | 19.0 kW (25.5 HP) |
| | Rated revolution | | 3200 $min^{-1}$ (rpm) | | |
| | Maximum torque | | 44.9N·m (4.6kgf·m, 33.1 lbf·ft) | 56.1 N·m (5.7kgf·m, 41.4lbf·ft) | 60.2 N·m (6.1 kgf·m, 44.4 lbf·ft) |
| | Battery | | 12 V, RC : 62 min., CCA : 435 A | 12 V, RC : 80 min., CCA : 535 A | |
| | Fuel | | Diesel fuel No. 1 [below −10 °C (14 °F)], Diesel fuel No. 2 [above −10 °C (14 °F)] | | |
| Capacities | Fuel tank | | 25 L (6.6 U.S.gals, 5.5 Imp.gals.) | | |
| | Engine crankcase (with filter) | | 2.9 L (3.1 U.S.qts., 2.6 Imp.qts.) | 3.1 L (3.3 U.S.qts., 2.7 Imp.qts.) | 3.5 L (3.7 U.S.qts., 3.1 Imp.qts.) |
| | Engine coolant | | 2.5 L (2.6 U.S.qts., 2.2 Imp.qts.) | 2.7 L (2.8 U.S.qts., 2.4 Imp.qts.) | 2.9 L (3.1 U.S.qts., 2.6 Imp.qts.) |
| | Recovery tank | | 0.4 L (0.4 U.S.qts., 0.4 Imp.qts.) | | |
| | Transmission case | | 11.6 L (3.06 U.S.gals, 2.55 Imp.gals.) | | |
| Dimensions | Overall length (without 3P) | | 2035 mm (80.1 in.) | 2120 mm (83.5 in.) | |
| | Overall length (with 3P) | | 2340 mm (92.1 in.) | 2425 mm (95.5 in.) | |
| | Overall width (min. tread) | | 1145 mm (45.1 in.) | | |
| | Overall height (with ROPS) | | 1760 mm (69.3in.) | 1785 mm (70.3 in.) | |
| | Overall height (Top of seat) | | 1230 mm (48.4 in.) | 1255 mm (49.4 in.) | 1330 mm (52.4 in.) |
| | Wheel base | | 1340 mm (52.8 in.) | 1400 mm (55.1 in.) | |
| | Minimum ground clearance | | 150 mm (5.9 in.) | 175 mm (6.9 in.) | |
| | Tread | Front | 880 mm (34.6 in.) | 910 mm (35.8 in.) | |
| | | Rear | 820 mm (32.2 in.) | | |
| Weight (with ROPS) | | | 570 kg (1256.6 lbs) | 585 kg (1289.7 lbs) | 636 kg (1402.1 lbs) |
| Clutch | | | N / A | | |
| Travelling system | Tires | Front | 16 × 7.50 – 8 | 18 × 8.50 – 10 | |
| | | Rear | 24 × 12.00 – 12 | 26 × 12.00 – 12 | |
| | Steering | | Hydrostatic type power steering | | |
| | Transmission | | Main: hydrostatic transmission, High-Low gear shift (2 forward and 2 reverse) | | |
| | Brake | | Wet disk type | | |
| | Min. turning radius (without brake) | | 2.18 m (7.15 feet) | 2.3 m (7.5 feet) | |
| Hydraulic system | Hydraulic control system | | Directional control, auto-return lever system | | |
| | Pump capacity | | 23.5 L/min. (6.2 U.S.gals./min., 5.2 Imp.gals./min.) | | |
| | Three point hitch | | SAE Category I | | |
| | Max. lift force | At lift points | 5390 N (1210 lbs)** | | |
| | | 24 in. behind lift points | 3040 N (680 lbs)** | | |
| PTO | Rear PTO | PTO shaft | SAE 1-3/8, 6 splines | | |
| | | Revolution | 1 speed (540 $min^{-1}$ (rpm) at engine 3142 $min^{-1}$ (rpm)) | | |
| | Mid | PTO shaft | USA No. 5 (KUBOTA 10-tooth) involute spline | | |
| | | Revolution | 1 speed (2500 $min^{-1}$ (rpm) at engine 3043 $min^{-1}$ (rpm)) | | |

NOTE: * Manufacture's estimate The company reserves the right to change the specifications without notice.
** See and check "IMPLEMENT LIMITATIONS".

W1028103

# TRAVELING SPEEDS

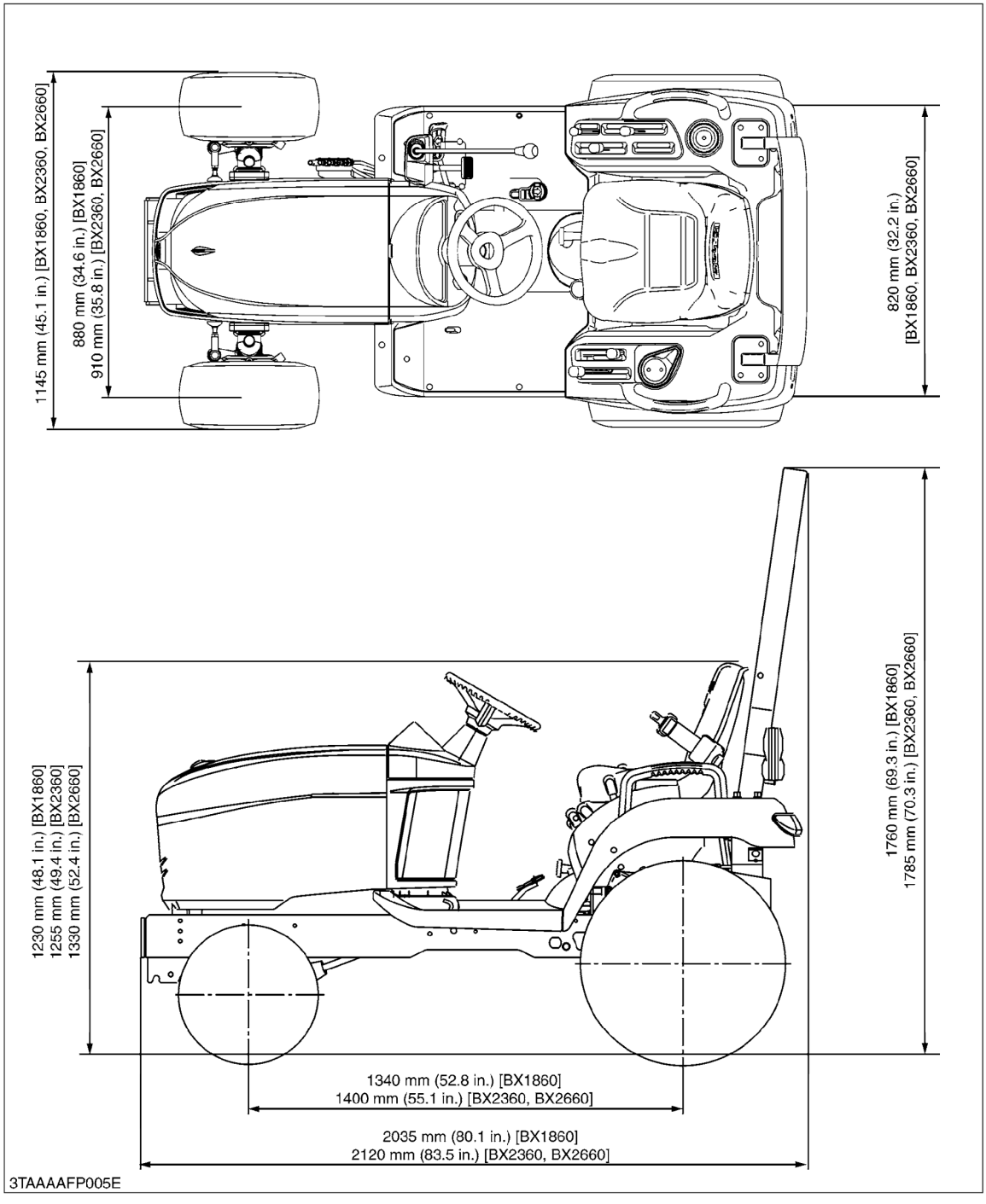
**(At rated engine rpm)**

| **Model** | | **BX1860** | | **BX2360 BX2660** | |
|---|---|---|---|---|---|
| Tire size (Rear) | | 24 × 12.00 – 12 | | 26 × 12.00 – 12 | |
| | Range gear shift lever | km/h | mph | km/h | mph |
| Forward | Low | 0 to 5.5 | 0 to 3.4 | 0 to 6.0 | 0 to 3.7 |
| | High | 0 to 12.0 | 0 to 7.5 | 0 to 13.0 | 0 to 8.1 |
| Reverse | Low | 0 to 4.5 | 0 to 2.5 | 0 to 4.5 | 0 to 2.8 |
| | High | 0 to 9.0 | 0 to 5.6 | 0 to 10.0 | 0 to 6.2 |

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

W1035065

# DIMENSIONS


1145 mm (45.1 in.) [BX1860, BX2360, BX2660]
880 mm (34.6 in.) [BX1860]
910 mm (35.8 in.) [BX2360, BX2660]
820 mm (32.2 in.)
[BX1860, BX2360, BX2660]
1230 mm (48.1 in.) [BX1860]
1255 mm (49.4 in.) [BX2360]
1330 mm (52.4 in.) [BX2660]
1760 mm (69.3 in.) [BX1860]
1785 mm (70.3 in.) [BX2360, BX2660]
1340 mm (52.8 in.) [BX1860]
1400 mm (55.1 in.) [BX2360, BX2660]
2035 mm (80.1 in.) [BX1860]
2120 mm (83.5 in.) [BX2360, BX2660]
3TAAAAFP005E

# G GENERAL

# GENERAL

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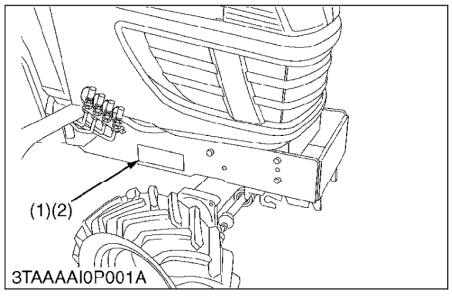
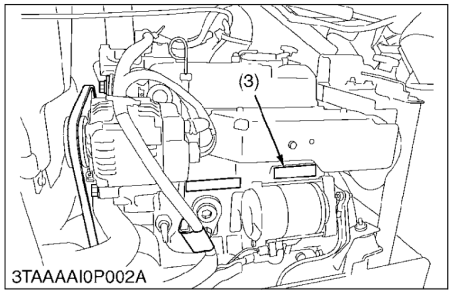
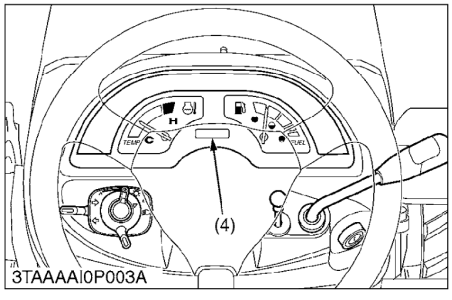
# 1. TRACTOR IDENTIFICATION

## [1] SERIAL NUMBER



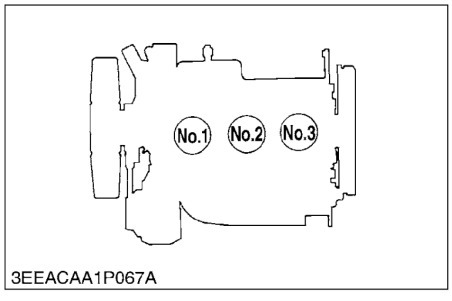




When contacting your local KUBOTA distributor, always specify engine serial number, tractor serial number and hour meter reading.

(1) Tractor Identification Plate
(2) Tractor Serial Number
(3) Engine Serial Number
(4) Hour Meter

W1010590

## [2] CYLINDER NUMBER

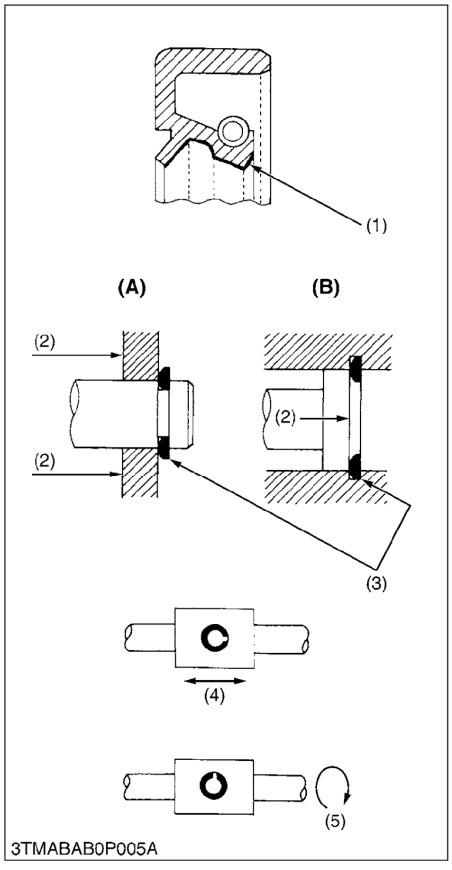



The cylinder numbers of KUBOTA diesel engine are designated as shown in the figure.

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

W1011077

# 2. GENERAL PRECAUTIONS



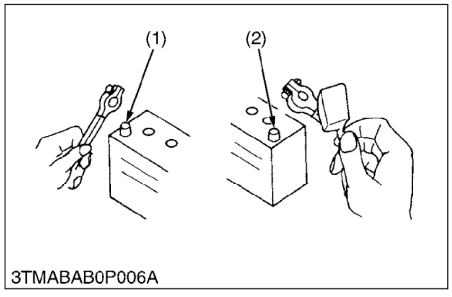

- During disassembly, carefully arrange removed parts in a clean area to prevent confusion later. Screws, bolts and nuts should be installed in their original position to prevent reassembly errors.
- When special tools are required, use KUBOTA genuine special tools. Special tools which are not frequently used should be made according to the drawings provided.
- Before disassembling or servicing electrical wires, always disconnect the ground cable from the battery first.
- Remove oil and dirt from parts before measuring.
- Use only KUBOTA genuine parts for parts replacement to maintain machine performance and to assure safety.
- Gaskets and O-rings must be replaced during reassembly. Apply grease to new O-rings or oil seals before assembling. See the figure left side.
- When reassembling external snap rings or internal snap rings, they must be positioned so that sharp edge faces against the direction from which a force is applied. See the figure left side.
- When inserting spring pins, their splits must face the direction from which a force is applied. See the figure left side.
- To prevent damage to the hydraulic system, use only specified fluid or equivalent.

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

**(A) External Snap Ring**
**(B) Internal Snap Ring**

W10109040

# 3. HANDLING PRECAUTIONS FOR ELECTRICAL PARTS AND WIRING



3TMABAB0P006A

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

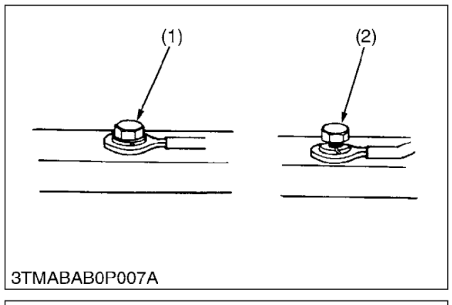
■ **IMPORTANT**

- **Check electrical wiring for damage and loosened connection every year. To this end, educate the customer to do his or her own check and at the same time recommend the dealer to perform periodic check for a fee.**
- **Do not attempt to modify or remodel any electrical parts and wiring.**
- **When removing the battery cables, disconnect the negative cable first. When installing the battery cables, connect the positive cable first.**

(1) Negative Terminal (2) Positive Terminal

W10111140

## [1] WIRING

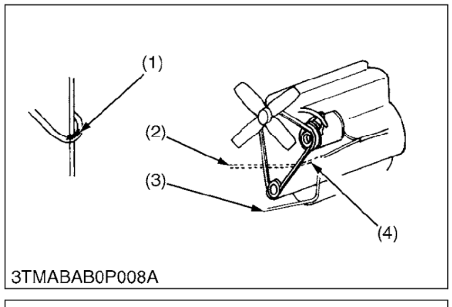


3TMABAB0P007A

- Securely tighten wiring terminals.

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

W10112160

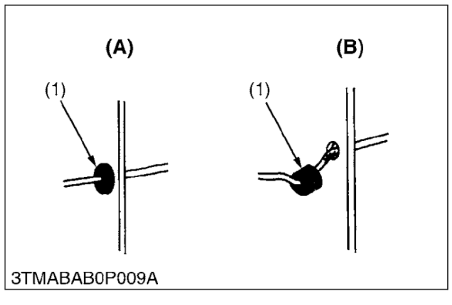


3TMABAB0P008A

- Do not let wiring contact dangerous part.

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

W10113130

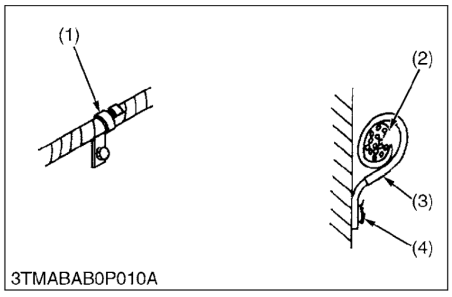


3TMABAB0P009A

- Securely insert grommet.

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

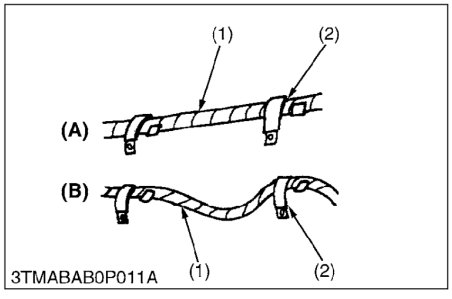
W10113880




- Securely clamp, being careful not to damage wiring.

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

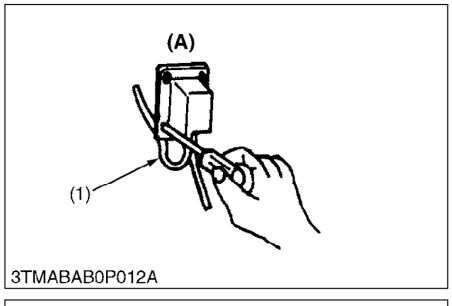
W10114580




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

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

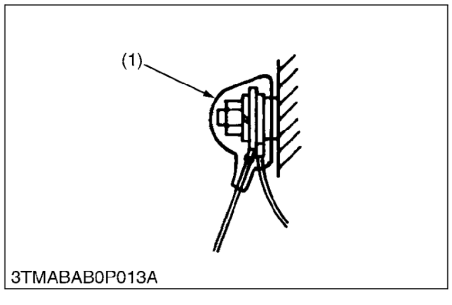
W10115870




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

(1) Wiring
**(A) Incorrect**

W10116700

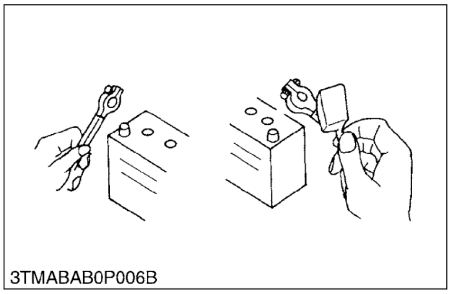



- After installing wiring, check protection of terminals and clamped condition of wiring, only connect battery.

(1) Cover
  • Securely Install Cover

W10117350

## [2] BATTERY


3TMABAB0P006B

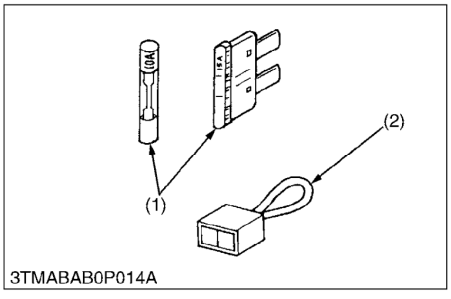
- Take care not to confuse positive and negative terminal posts.
- When removing battery cables, disconnect negative cable first. When installing battery cables, check for polarity and connect positive cable first.
- Do not install any battery with capacity other than is specified (Ah).
- After connecting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

**CAUTION**

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

W10118160

## [3] FUSE



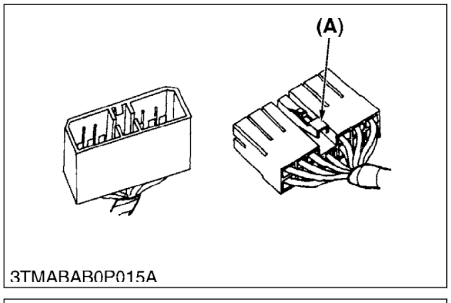
3TMABAB0P014A

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

(1) Fuse (2) Slow Blow Fuse

W10120920

## [4] CONNECTOR

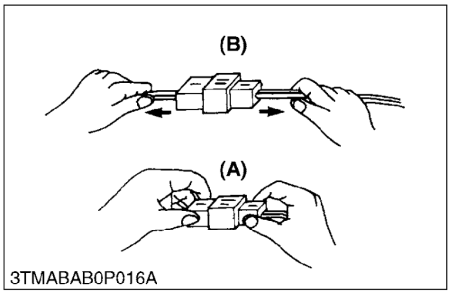


3TMABAB0P015A

- For connector with lock, push lock to separate.

**(A) Push**

W10122110

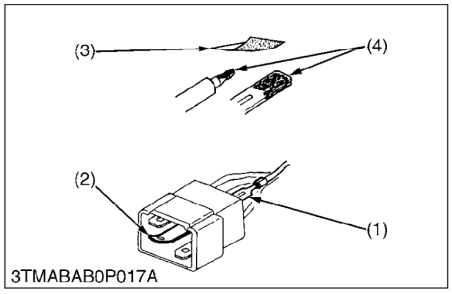


3TMABAB0P016A

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

**(A) Correct** **(B) Incorrect**

W10122720

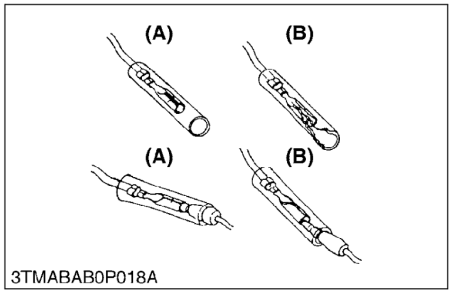


3TMABAB0P017A

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

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

W10123460

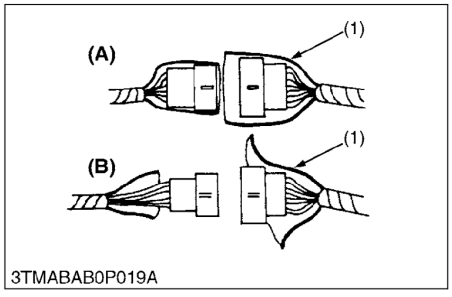


3TMABAB0P018A

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

**(A) Correct**
**(B) Incorrect**

W10124300



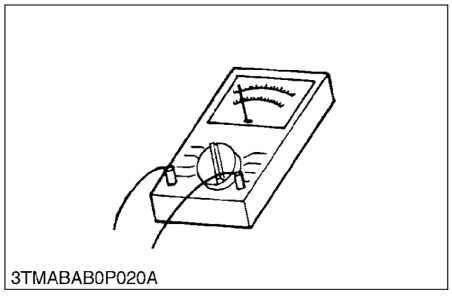
3TMABAB0P019A

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

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

W10125190

## [5] HANDLING OF CIRCUIT TESTER


3TMABAB0P020A

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

W10126840

# 4. LUBRICANTS, FUEL AND COOLANT

| No. | Place | Capacity | | | Lubricants, fuel and coolant |
|---|---|---|---|---|---|
| | | BX1860 | BX2360 | BX2660 | |
| 1 | Fuel tank | 25.0 L<br>6.6 U.S.gals<br>5.5 Imp.gals | | | No. 2-D diesel fuel<br>No. 1-D diesel fuel if temperature is below –10 °C (14 °F) |
| 2 | Cooling system with recovery tank | 2.9 L<br>3.1 U.S.qts<br>2.6 Imp.qts | 3.1 L<br>3.3 U.S.qts<br>2.7 Imp.qts | 3.3 L<br>3.5 U.S.qts<br>2.9 Imp.qts | Fresh clean water with anti-freeze |
| 3 | Engine crankcase | 2.9 L<br>3.1 U.S.qts<br>2.6 Imp.qts | 3.1 L<br>3.3 U.S.qts<br>2.7 Imp.qts | 3.5 L<br>3.7 U.S.qts<br>3.1 Imp.qts | Engine oil : API Service Classification CF or better<br>Below 0 °C (32 °F) : SAE10W, 10W-30 or 15W-40<br>0 to 25 °C (32 to 77 °F): SAE20, 10W-30 or 15W-40<br>Above 25 °C (77 °F): SAE30, 10W-30 or 15W-40 |
| 4 | Transmission case | 11.6 L<br>3.1 U.S.gals<br>2.6 Imp.gals | | | KUBOTA SUPER UDT fluid* |
| 5 | Front axle case | 2.3 L<br>2.4 U.S.qts<br>2.0 Imp.qts | 4.7 L<br>5.0 U.S.qts<br>4.1 Imp.qts | | KUBOTA SUPER UDT fluid or SAE80, SAE90 gear oil |

| Greasing | | | | |
|---|---|---|---|---|
| | **Place** | **No. of greasing point** | **Capacity** | **Type of grease** |
| 6 | Battery terminal | 2 | Moderate amount | Multipurpose type Grease NLGI-2 or NLGI-1 (GC-LG) |
| 7 | Speed control pedal | 1 | Until grease overflows | |

* KUBOTA original transmission hydraulic fluid.

■ **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 temperature 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). **If the "CF-4 or 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)**
- Lubricating oil recommended when a low-sulfur or high-sulfur fuel is employed.

O : Recommendable X : Not Recommendable

| Lubricating oil class | Fuel | | Remark |
|---|---|---|---|
| | Low-sulfur | High-sulfur | |
| CF | ❍ | ❍ | TBN ≥ 10 |
| CF-4 | ❍☆ | X | |
| CG-4 | ❍☆ | X | |
| CH-4 | ❍☆ | X | |
| CI-4 | ❍ | X | |

- ☆ Class CF-4, CG-4 and CH-4 engine oils cannot be used on EGR (Exhaust Gas Re-circulation) type engines.
- The CJ-4 engine oil is intended for DPF (Diesel Particulate Filter) type engines, and cannot be used on this tractor.

● **Fuel :**

- Cetane number of 45 minimum. Cetane number greater then 50 is preferred, especially for temperatures below –20 °C (–4 °F) or elevations above 1500 m (5000 ft).
- If diesel fuel with sulfur content greater than 0.5 % sulfur content is used, reduce the service interval for engine oil and filter by 50 %.
- Do not use diesel fuel with sulfur content greater then 1.0 %.
- Diesel fuels specified to EN 590 or ASTM D975 are recommended.
- No. 2-D is distillate fuel of lower volatility for engines in industrial and heavy mobile service. (SAE J313 JUN87)
- Since this engine adopts EPA Tier 4 and Interim Tier 4 standards, the use of low sulfur fuel or ultra low sulfur fuel is mandatory in EPA regulated area (North America). Therefore, please use No. 2-D S500 or S15 diesel fuel as an alternative to No. 2-D, or use No. 1-D S500 or S15 diesel fuel as an alternative to No. 1-D if outside air temperature is below –10 °C (14 °F)

● **Transmission Oil :**

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

# 5. TIGHTENING TORQUES

## [1] GENERAL USE SCREWS, BOLTS AND NUTS

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

| Indication on top of bolt | ⬡ 4 No-grade or 4T | | | | | | ⬡ 7 7T | | | | | | ⬡ 9 9T | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Material of bolt | SS400, S20C | | | | | | S43C, S48C | | | | | | SCr435, SCM435 | | |
| Material of opponent part | Ordinariness | | | Aluminum | | | Ordinariness | | | Aluminum | | | Ordinariness | | |
| Unit / Diameter | N·m | kgf·m | lbf·ft | N·m | kgf·m | lbf·ft | N·m | kgf·m | lbf·ft | N·m | kgf·m | lbf·ft | N·m | kgf·m | lbf·ft |
| **M6** (6 mm, 0.24 in.) | 7.9 to 9.3 | 0.80 to 0.95 | 5.8 to 6.8 | 7.9 to 8.8 | 0.80 to 0.90 | 5.8 to 6.5 | 9.81 to 11.2 | 1.00 to 1.15 | 7.24 to 8.31 | 7.9 to 8.8 | 0.80 to 0.90 | 5.8 to 6.5 | 12.3 to 14.2 | 1.25 to 1.45 | 9.05 to 10.4 |
| **M8** (8 mm, 0.31 in.) | 18 to 20 | 1.8 to 2.1 | 13 to 15 | 17 to 19 | 1.7 to 2.0 | 13 to 14 | 24 to 27 | 2.4 to 2.8 | 18 to 20 | 18 to 20 | 1.8 to 2.1 | 13 to 15 | 30 to 34 | 3.0 to 3.5 | 22 to 25 |
| **M10** (10 mm, 0.39 in.) | 40 to 45 | 4.0 to 4.6 | 29 to 33 | 32 to 34 | 3.2 to 3.5 | 24 to 25 | 48 to 55 | 4.9 to 5.7 | 36 to 41 | 40 to 44 | 4.0 to 4.5 | 29 to 32 | 61 to 70 | 6.2 to 7.2 | 45 to 52 |
| **M12** (12 mm, 0.47 in.) | 63 to 72 | 6.4 to 7.4 | 47 to 53 | – | – | – | 78 to 90 | 7.9 to 9.2 | 58 to 66 | 63 to 72 | 6.4 to 7.4 | 47 to 53 | 103 to 117 | 10.5 to 12.0 | 76.0 to 86.7 |
| **M14** (14 mm, 0.55 in.) | 108 to 125 | 11.0 to 12.8 | 79.6 to 92.5 | – | – | – | 124 to 147 | 12.6 to 15.0 | 91.2 to 108 | – | – | – | 167 to 196 | 17.0 to 20.0 | 123 to 144 |
| **M16** (16 mm, 0.63 in.) | 167 to 191 | 17.0 to 19.5 | 123 to 141 | – | – | – | 197 to 225 | 20.0 to 23.0 | 145 to 166 | – | – | – | 260 to 304 | 26.5 to 31.0 | 192 to 224 |
| **M18** (18 mm, 0.71 in.) | 246 to 284 | 25.0 to 29.0 | 181 to 209 | – | – | – | 275 to 318 | 28.0 to 32.5 | 203 to 235 | – | – | – | 344 to 402 | 35.0 to 41.0 | 254 to 296 |
| **M20** (20 mm, 0.79 in.) | 334 to 392 | 34.0 to 40.0 | 246 to 289 | – | – | – | 368 to 431 | 37.5 to 44.0 | 272 to 318 | – | – | – | 491 to 568 | 50.0 to 58.0 | 362 to 419 |

W1034542

## [2] STUD BOLTS

| Material of opponent part | Ordinariness | | | Aluminum | | |
|---|---|---|---|---|---|---|
| Unit / Diameter | N·m | kgf·m | lbf·ft | N·m | kgf·m | lbf·ft |
| M8 (8 mm, 0.31 in.) | 12 to 15 | 1.2 to 1.6 | 8.7 to 11 | 8.9 to 11 | 0.90 to 1.2 | 6.5 to 8.6 |
| M10 (10 mm, 0.39 in.) | 25 to 31 | 2.5 to 3.2 | 18 to 23 | 20 to 25 | 2.0 to 2.6 | 15 to 18 |
| M12 (12 mm, 0.47 in.) | 29.5 to 49.0 | 3.0 to 5.0 | 21.7 to 36.1 | 31.4 | 3.2 | 23.1 |

W1048139

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

| Grade | SAE GR.5 | | | SAE GR.8 | | |
|---|---|---|---|---|---|---|
| Unit / Nominal Diameter | N·m | kgf·m | lbf·ft | N·m | kgf·m | lbf·ft |
| 5/16 | 23.1 to 27.7 | 2.35 to 2.83 | 17.0 to 20.5 | 32.6 to 39.3 | 3.32 to 4.00 | 24.0 to 29.0 |
| 3/ 8 | 48 to 56 | 4.9 to 5.8 | 35.0 to 42.0 | 61.1 to 73.2 | 6.23 to 7.46 | 45.0 to 54.0 |
| 1/ 2 | 109 to 130 | 11.1 to 13.2 | 80.0 to 96.0 | 149.2 to 178.9 | 15.21 to 18.24 | 110.0 to 132.0 |
| 9/16 | 149.2 to 178.9 | 15.21 to 18.24 | 110.0 to 132.0 | 217.0 to 260.3 | 22.12 to 26.54 | 160.0 to 192.0 |
| 5/ 8 | 203.4 to 244 | 20.74 to 24.88 | 150.0 to 180.0 | 298.3 to 357.9 | 30.42 to 36.49 | 220.0 to 264.0 |

W1022485

## [4] PLUGS

| Shape | Size | Material of opponent part | | | | | |
|---|---|---|---|---|---|---|---|
| | | Ordinariness | | | Aluminum | | |
| | | N·m | kgf·m | lbf·ft | N·m | kgf·m | lbf·ft |
| Tapered screw  | R1/8 | 13 to 21 | 1.3 to 2.2 | 9.4 to 15 | 13 to 21 | 1.3 to 2.0 | 9.4 to 15 |
| | R1/4 | 25 to 44 | 2.5 to 4.5 | 18 to 32 | 25 to 34 | 2.5 to 3.5 | 18 to 25 |
| Straight screw  | G1/4 | 25 to 34 | 2.5 to 3.5 | 18 to 25 | – | – | – |
| | G3/8 | 62 to 82 | 6.3 to 8.4 | 46 to 60 | – | – | – |
| | G1/2 | 49 to 88 | 5.0 to 9.0 | 37 to 65 | – | – | – |

0000001666E

# 6. MAINTENANCE CHECK LIST

| No. | Item | Period | Service Interval | | | | | | | | | | | | | Since then | Important | | Reference page |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 50 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 650 | 700 | | | | |
| 1 | Engine oil | Change | ★ | | | ☆ | | | | ☆ | | | | ☆ | | | every 200 Hr | | | G-13 |
| 2 | Engine oil filter | Replace | ★ | | | ☆ | | | | ☆ | | | | ☆ | | | every 200 Hr | | | G-13 |
| 3 | Transmission oil filter | Replace | ★ | | | ☆ | | | | ☆ | | | | ☆ | | | every 200 Hr | | | G-14 |
| 4 | Transmission fluid | Change | | | | | | | | ☆ | | | | | | | every 400 Hr | | | G-24 |
| 5 | Transmission strainer | Clean | ★ | | | | | | | ☆ | | | | | | | every 400 Hr | | | G-14 |
| 6 | Front axle case oil | Change | | | | | | | | ☆ | | | | | | | every 400 Hr | | | G-24 |
| 7 | Front axle pivot | Adjust | | | | | | | | ☆ | | | | | | | every 400 Hr | | | G-24 |
| 8 | Engine start system | Check | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | every 50 Hr | | | G-15 |
| 9 | Greasing | – | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | every 50 Hr | | | G-16 |
| 10 | Wheel bolt torque | Check | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | every 50 Hr | | | G-16 |
| 11 | Battery condition | Check | | ☆ | | ☆ | | ☆ | | ☆ | | ☆ | | ☆ | | ☆ | every 100 Hr | *4 | | G-17 |
| 12 | Air cleaner element | Clean | | ☆ | | ☆ | | ☆ | | ☆ | | ☆ | | ☆ | | ☆ | every 100 Hr | *1 | @ | G-19 |
| | | Replace | | | | | | | | | | | | | | | every 1 year | *2 | | G-25 |
| 13 | Fuel filter element | Check | | ☆ | | ☆ | | ☆ | | ☆ | | ☆ | | ☆ | | ☆ | every 100 Hr | | @ | G-20 |
| | | Replace | | | | | | | | | | ☆ | | | | | every 500 Hr | | | G-25 |
| 14 | Fan belt | Adjust | | ☆ | | ☆ | | ☆ | | ☆ | | ☆ | | ☆ | | ☆ | every 100 Hr | | | G-20 |
| 15 | HST neutral spring | Adjust | | ☆ | | ☆ | | ☆ | | ☆ | | ☆ | | ☆ | | ☆ | every 100 Hr | | | G-21 |
| 16 | Brake | Adjust | | ☆ | | ☆ | | ☆ | | ☆ | | ☆ | | ☆ | | ☆ | every 100 Hr | | | G-22 |
| 17 | Radiator hose and clamp | Check | | | | ☆ | | | | ☆ | | | | ☆ | | | every 200 Hr | | | G-22 |
| | | Replace | | | | | | | | | | | | | | | every 2 years | | | G-26 |
| 18 | Power steering oil line | Check | | | | ☆ | | | | ☆ | | | | ☆ | | | every 200 Hr | | | G-23 |
| | | Replace | | | | | | | | | | | | | | | every 2 years | | | G-26 |
| 19 | Fuel line | Check | | ☆ | | ☆ | | ☆ | | ☆ | | ☆ | | ☆ | | ☆ | every 100 Hr | | @ | G-20 |
| | | Replace | | | | | | | | | | | | | | | every 2 years | | | G-26 |
| 20 | Intake air line | Check | | | | ☆ | | | | ☆ | | | | ☆ | | | every 200 Hr | | @ | G-23 |
| | | Replace | | | | | | | | | | | | | | | every 2 years | *3 | | G-26 |
| 21 | Toe-in | Adjust | | | | ☆ | | | | ☆ | | | | ☆ | | | every 200 Hr | | | G-23 |
| 22 | Engine valve clearance | Adjust | | | | | | | | | | | | | | | every 800 Hr | | | 1-S12 |
| 23 | Fuel injection nozzle injection pressure | Check | | | | | | | | | | | | | | | every 1500 Hr | | @ | 1-S24 |
| 24 | Injection pump | Check | | | | | | | | | | | | | | | every 3000 Hr | | @ | 1-S23 |
| 25 | Cooling system | Flush | | | | | | | | | | | | | | | every 2 years | | | G-27 |
| 26 | Coolant | Change | | | | | | | | | | | | | | | every 2 years | | | G-27 |
| 27 | Fuel system | Bleed | | | | | | | | | | | | | | | Service as required | | | G-30 |
| 28 | Fuse | Replace | | | | | | | | | | | | | | | | | | G-30 |
| 29 | Light bulb | Replace | | | | | | | | | | | | | | | | | | G-31 |

## ■ IMPORTANT

- **The jobs indicated by ★ must be done after the first 50 hours of operation.**
- ***1 : Air cleaner should be cleaned more often in dusty conditions than in normal conditions.**
- ***2 : Every year or every 6 times of cleaning.**
- ***3 : Replace only if necessary.**
- ***4 : When the battery is used for less than 100 hours per year, check the fluid level annually.**
- **The items listed above (@ marked) are registered as emission related critical parts by KUBOTA in the U.S.EPA nonroad emission regulation. As the engine owner, you are responsible for the performance of the required maintenance on the engine according to the above instruction.**
  **Please see the Warranty Statement in detail.**

W1035769

# 7. CHECK AND MAINTENANCE

**CAUTION**

- **Be sure to check and service the tractor on a level surface with the engine shut off and the parking brake "ON" and implement lowered to the ground.**

## [1] DAILY CHECK

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

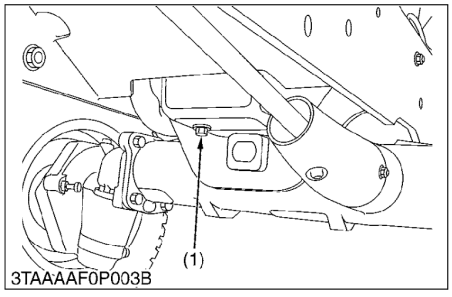
■ **Walk Around Inspection**

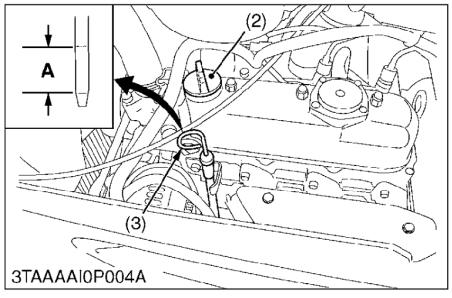
Look around the under the tractor for such items as loose bolts, trash build-up, oil or coolant leaks, broken or worn parts.

**Checking**

1. Checking and refueling.
2. Check the engine oil level.
3. Check the transmission fluid level.
4. Check the coolant level.
5. Clean panel and radiator screen.
6. Check the brake pedal.
7. Check the gauge, the meters and easy checkers.
8. Check the head light, the hazard light etc..
9. Check and clean the electrical wiring and the battery cables.
10. Check the seat belt and ROPS.

# [2] CHECK POINTS OF INITIAL 50 HOURS




## Changing Engine Oil

**CAUTION**

**To avoid personal injury :**

- **Be sure to stop the engine and remove the key before changing the oil.**
- **Allow engine to cool down sufficiently, oil can be hot and can burn.**

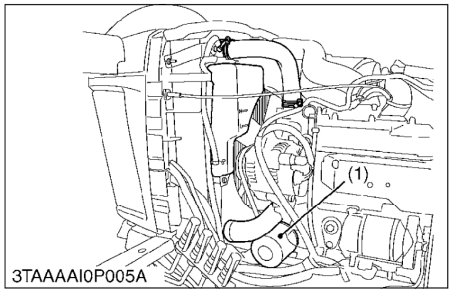
1. To drain the used oil, remove the drain plug at the bottom of the engine and drain the oil completely into the oil pan.
   All the used oil can be drained out easily when the engine is still warm.
2. After draining reinstall the drain plug.
3. Fill with the new oil up to the upper notch on the dipstick.
4. Properly dispose of used oil.

| | | | |
|---|---|---|---|
| Engine oil | Capacity | BX1860 | 2.9 L<br>3.1 U.S.qts<br>2.6 Imp.qts |
| | | BX2360 | 3.1 L<br>3.3 U.S.qts<br>2.7 Imp.qts |
| | | BX2660 | 3.5 L<br>3.7 U.S.qts<br>2.9 Imp.qts |

(1) Drain Plug
(2) Oil Inlet
(3) Dipstick

**(A) Oil level is acceptable within this range.**

W1014065




## Replacing Engine Oil Filter

**CAUTION**

- **Be sure to stop the engine before changing oil filter cartridge.**

1. Remove the oil filter.
2. Put a film of clean engine oil on the rubber seal of the new filter.
3. Tighten the filter quickly until it contacts the mounting surface. Tighten filter by hand an additional 1/2 turn only.
4. After the new filter has been replaced, the engine oil normally decrease a little. Make sure that the engine oil does not leak through the seal and be sure to check the oil level on the dipstick. Then, replenish the engine oil up to the specified level.
5. Properly dispose of used oil.

**■ IMPORTANT**

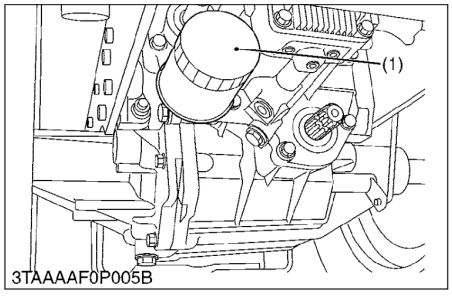
- **To prevent serious damage to the engine, use only a KUBOTA genuine filter.**

(1) Engine Oil Filter Cartridge

W1014316

Product: Kubota BX1860 BX2360 BX2660 RCK48 RCK54 RCK60 LA203 LA243 Service Manual
Full Download: https://www.arepairmanual.com/downloads/kubota-bx1860-bx2360-bx2660-rck48-rck54-rck60-la203-la243-service-manual/






## Replacing Transmission Oil Filter

**CAUTION**

- **Allow engine to cool down sufficiently, oil can be hot and can burn.**

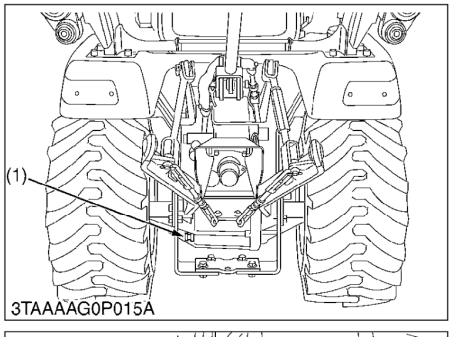
1. Remove the oil filter.
2. Put a film of clean transmission oil on the rubber seal of the new filter.
3. Tighten the filter quickly until it contacts the mounting surface. Tighten filter by hand an additional 1/2 turn only.
4. After the new filter has been replaced, the transmission fluid level will decrease a little. Make sure that the transmission fluid does not leak through the seal, and check the fluid level. Top off if necessary.
5. Properly dispose of used oil.

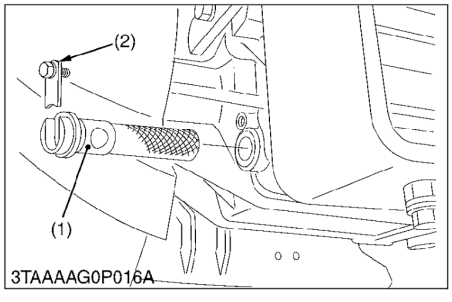
**IMPORTANT**

- **To prevent serious damage to the hydraulic system, use only a KUBOTA genuine filter.**

(1) Transmission Oil Filter

W1014458




## Cleaning Transmission Oil Strainer

1. When changing the transmission fluid, disassemble and rinse the strainer with nonflammable solvent to completely clean off fillings.
2. When reassembling, be careful not to damage the parts.

**NOTE**

- **Since the fine fillings in the oil can damage the precision component parts of the hydraulic system, the end of the suction line is provided with an oil strainer.**

(1) Strainer (2) Filter Plate

W1019390



Sample of manual. Download All 396 pages at:
https://www.arepairmanual.com/downloads/kubota-bx1860-bx2360-bx2660-rck48-rck54-rck60-la203-la243-