

Product: Kubota LA434AU Service Manual

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# WSM

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## WORKSHOP MANUAL FRONT LOADER

# LA434AU

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# Kubota

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KISC issued 11, 2015 A

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## TO THE READER

This Workshop Manual tells the servicing personnel about the mechanism, servicing and maintenance of KUBOTA Front Loader LA434AU. It contains 4 parts: "**Information**", "**General**", "**Mechanism**" and "**Servicing**".

### ■ **Information**

This section primarily contains information below.

- Safety First
- Safety Decal
- Loader Terminology
- Specifications
- Dimensions

### ■ **General**

This section primarily contains information below.

- Loader Identification
- General Precautions
- Maintenance Check List
- Check and Maintenance

### ■ **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.

### ■ **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.

November, 2015

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# I INFORMATION

# INFORMATION

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# 1. SAFETY FIRST

## ⚠ SAFETY FIRST

- This symbol, the industry's "Safety Alert Symbol", is used throughout this manual and on labels on the machine itself to warn of the possibility of personal injury. Read these instructions carefully.
- It is essential that you read the instructions and safety regulations before you try to repair or use this unit.

### ⚠ DANGER

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

### ⚠ WARNING

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

### ⚠ CAUTION

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

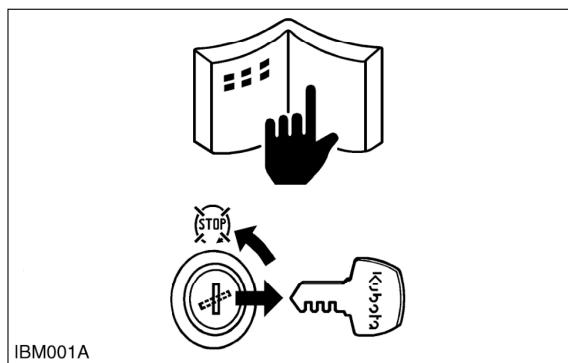
### ■ IMPORTANT

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

### ■ NOTE

- Gives helpful information.

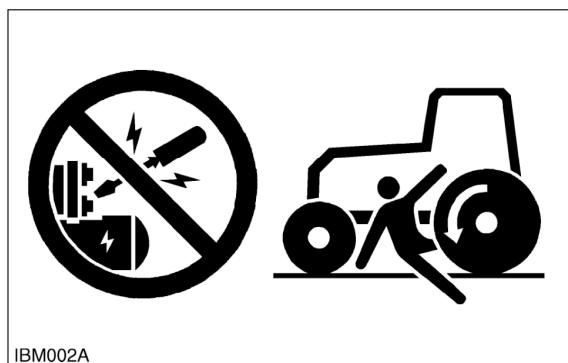
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### BEFORE YOU START SERVICE

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

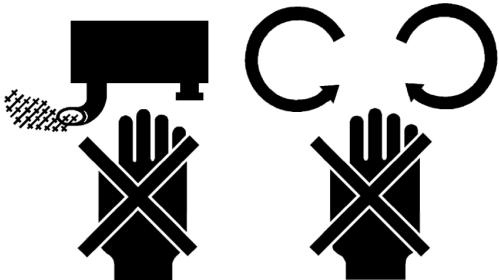
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### START SAFELY

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

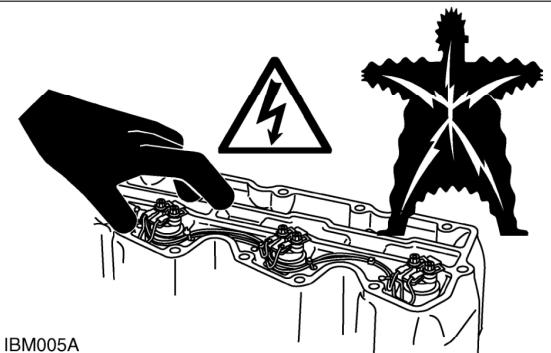
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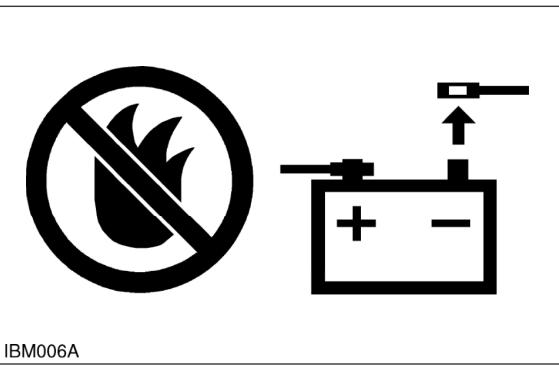
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IBM05A



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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

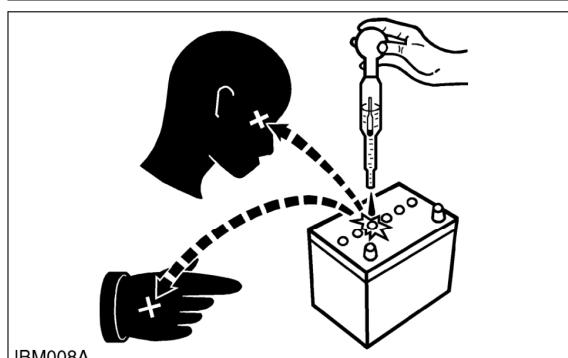
- Fuel is very flammable and explosive under some conditions. Do not smoke or let flames or sparks in your work area.
- To prevent sparks from an accidental short circuit, always disconnect the battery negative cable first and connect it last.
- The battery gas can cause an explosion. Keep the sparks 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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**KEEP A GOOD AIRFLOW IN THE WORK AREA**

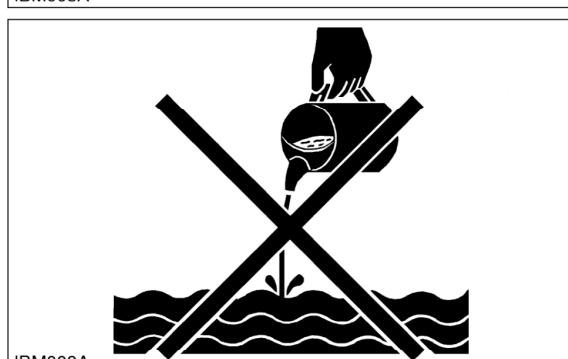
- If the engine is in operation, make sure that the area has good airflow. Do not operate the engine in a closed area. The exhaust gas contains poisonous carbon monoxide.

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**PREVENT ACID BURNS**

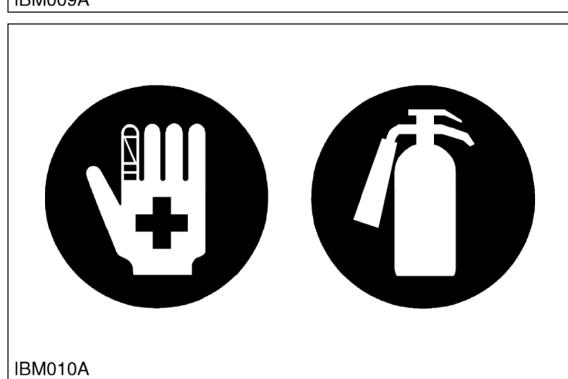
- Keep electrolyte away from your eyes, hands and clothing. Sulfuric acid in battery electrolyte is poisonous and it can burn your skin and clothing and cause blindness. If you spill electrolyte on yourself, clean yourself with water, and get medical aid immediately.

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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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**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. 7J246-5643-1



1AIAAHAP016A

(2) Part No. 7J246-5641-1



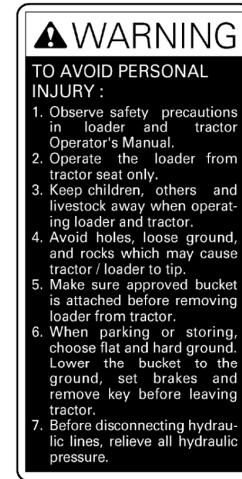
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(3) Part No. 7J246-5642-1



1AIAAHAP018A

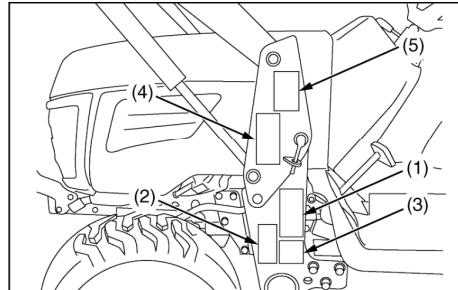
(4) Part No. 7J061-5645-1



1AIAAHAP043A

(5) Part No. 7J246-5644-2  
(Both sides)

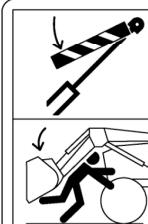
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(1) Part No. 7J802-5848-3



## ! WARNING

Install cylinder locks before performing maintenance under raised loader arms. Failure to comply could result in death or serious injury.

- Empty loader bucket and place in dump position, raise boom until boom lock channel can be positioned on cylinder rod, then stop engine.
- Pull pin and lower boom lock onto the cylinder rod, then insert pin into the hole of lower right corner of boom lock.
- Slowly lower boom until boom is stopped.

1HNADAAAP0120

(2) Part No. 7J615-5633-1



1AIABEJAP018E

(3) Part No. 7J063-5637-1

Tractor Model: B2301, B2601  
Rated Operating Load(ROL)  
With Counterweight: 290kg  
With Backhoe : 300kg  
Counterweight Required : 250kg

Date Of Supply:

/ / 20

## ! WARNING

-DO NOT EXCEED ROL.  
-DO NOT OPERATE LOADER  
WITHOUT COUNTERWEIGHT.  
-DO NOT EXCEED 10KM/H  
WHEN TRAVELLING WITH LOAD.  
-ROL IS CALCULATED WITH  
STANDARD BUCKET OPTIONAL  
ATTACHMENTS (4IN1 BUCKET ETC)  
WILL REDUCE THE ROL.

1AIABDDAP099A

(4) Part No. 7J061-5649-1

## ! WARNING

### TO AVOID INJURY FROM CRUSHING :

1. Do not utilize the valve lock for machine maintenance or repair.
2. The valve lock is to prevent accidental actuation when implement is not in use or during transport.

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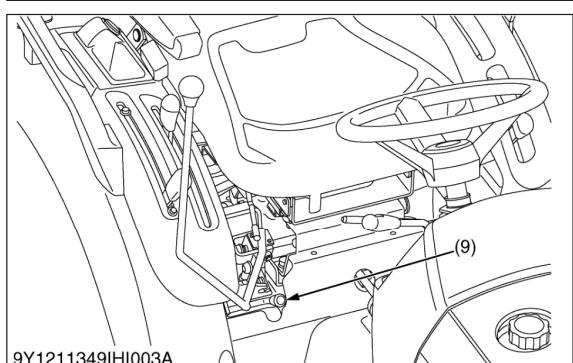
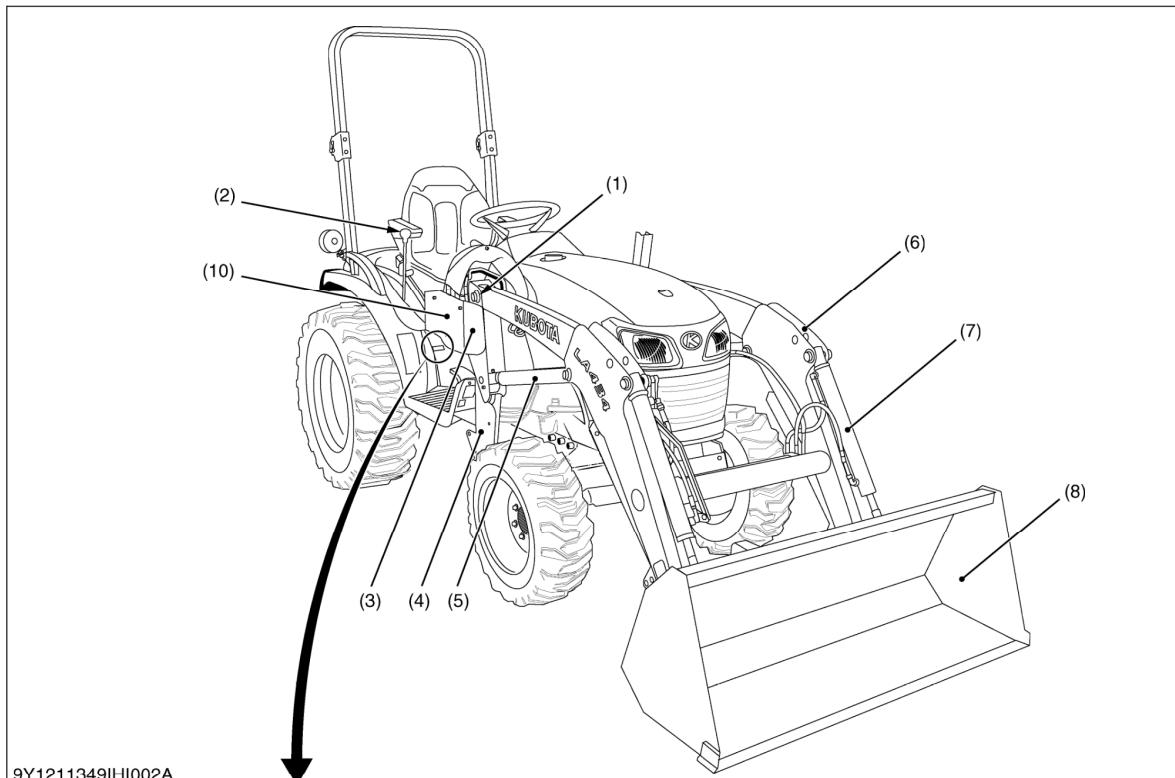
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### **CARE OF DANGER, WARNING AND CAUTION LABELS**

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 from your local KUBOTA dealer.
4. If a component with danger, warning and caution label(s) affixed is replaced with new part, make sure new label(s) is (are) attached in the same location(s) as the replaced component.
5. Mount new danger, warning and caution labels by applying on a clean dry surface and pressing any bubbles to outside edge.

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### 3. LOADER TERMINOLOGY



(1) Side Frame	(6) Boom
(2) Loader Control Lever	(7) Bucket Cylinder
(3) Mounting Pin	(8) Bucket
(4) Main Frame	(9) Lock Lever
(5) Boom Cylinder	(10) Spill Guard Valve

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## 4. SPECIFICATIONS

### ■ Suitable Tractor

Loader Model	LA434AU
Tractor Model	B2301, B2601

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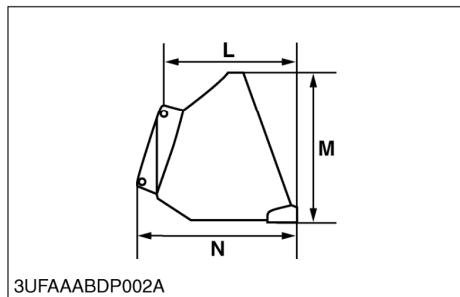
## [1] LOADER SPECIFICATIONS

Loader Model	LA434AU
Tractor Model	B2301, B2601
Wheel Base (WB)	1563 mm (61.5 in.)
Front Tires	6-12 (B2301) / 7-12 (B2601)
Rear Tires	9.5-16 (B2301) / 9.5-18 (B2601)
Boom Cylinder	Bore 45 mm (1.77 in.) Stroke 349 mm (13.7 in.)
Bucket Cylinder	Bore 45 mm (1.77 in.) Stroke 336 mm (13.2 in.)
Control Valve	One Detent Float Position, Two Stage Bucket Dump, Power Beyond Circuit
Rated Flow	17.9 L/min (4.7 U.S.gals/min., 3.9 Imp.gals/min.)
Maximum Pressure	13.8 MPa (141 kg/cm <sup>2</sup> , 2000 psi)
Net Weight (Approximate)	213 kg (470 lbs)

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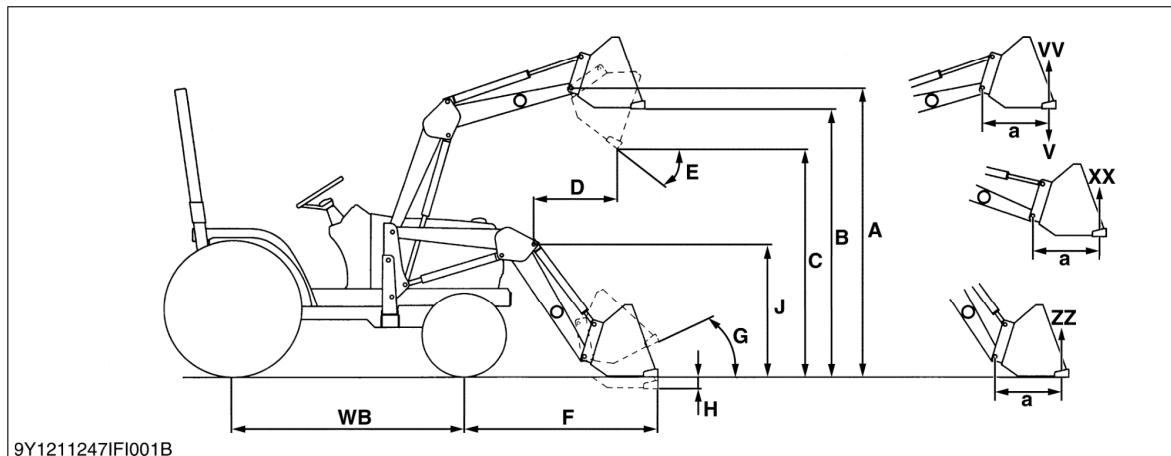
## [2] BUCKET SPECIFICATIONS

Loader Model	LA434AU		
Model	Square 50"	Square 54"	Square 60" LM
Type		Rigid	
Width	1270 mm (50 in.)	1372 mm (54 in.)	1525 mm (60.0 in.)
Depth (L)	478 mm (18.8 in.)	478 mm (18.8 in.)	529 mm (20.8 in.)
Height (M)	483 mm (19.0 in.)	483 mm (19.0 in.)	562 mm (22.1 in.)
Length (N)	523 mm (20.6 in.)	523 mm (20.6 in.)	566 mm (22.3 in.)
Capacity	Struck 0.154 m <sup>3</sup> (5.4 cu.ft) Heaped 0.184 m <sup>3</sup> (6.5 cu.ft)	0.166 m <sup>3</sup> (5.9 cu.ft) 0.198 m <sup>3</sup> (7.0 cu.ft)	0.23 m <sup>3</sup> (8.1 cu.ft) 0.29 m <sup>3</sup> (10.2 cu.ft)
Weight	68 kg (150 lbs)	70 kg (154 lbs)	98 kg (216 lbs)



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### [3] DIMENSIONAL AND OPERATIONAL SPECIFICATIONS



9Y1211247IFI001B

#### ■ Dimensional Specifications

Loader Model	LA434AU	
Tractor Model	B2301, B2601	
A	Maximum lift height (To bucket pivot pin)	1995 mm (78.5 in.)
B	Maximum lift height under level bucket	1853 mm (72.9 in.)
C	Clearance with bucket dumped	1568 mm (61.7 in.)
D	Reach at maximum lift height (Dumping reach)	393 mm (15.4 in.)
E	Maximum dump angle	40 deg.
F	Reach with bucket on ground	1293 mm (50.9 in.)
G	Bucket roll-back angle	25 deg.
H	Digging depth	96 mm (3.8 in.)
J	Overall height in carrying position	1108 mm (43.6 in.)
a	Length	500 mm (19.7 in.)

#### ■ Operational Specifications

Loader Model	LA434AU	
Tractor Model	B2301, B2601	
V	Lift capacity (500 mm forward, maximum height)	299 kg (659 lbs)
VV	Bucket roll-back force at maximum height	8111 N (1823 lbf)
XX	Bucket roll-back force at 1500 mm height	9645 N (2168 lbf)
ZZ	Bucket roll-back force at ground level	7726 N (1737 lbf)
Raising time		3.7 sec.
Lowering time		2.7 sec.
Bucket dumping time		1.9 sec.
Bucket roll-back time		2.6 sec.

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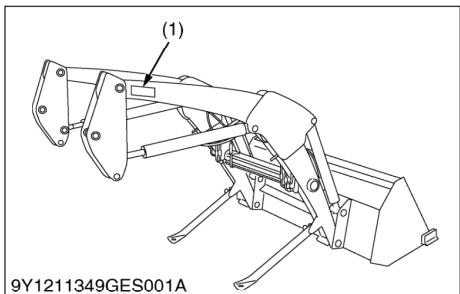
# **G GENERAL**

# GENERAL

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# 1. LOADER IDENTIFICATION

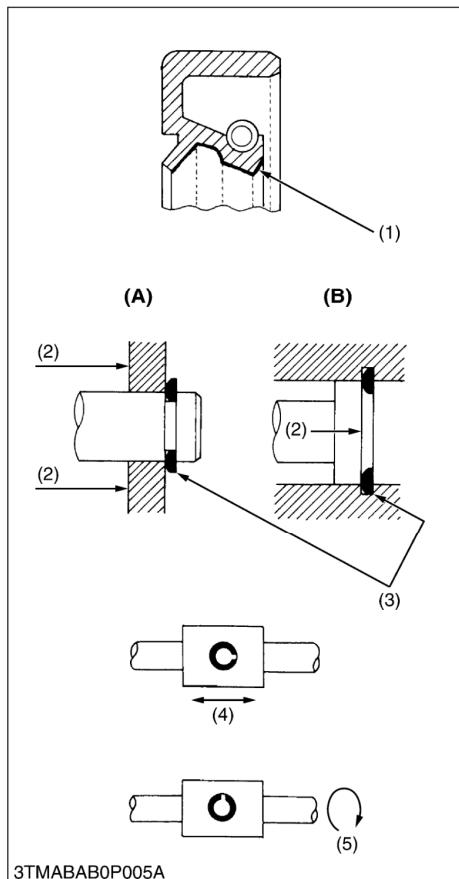


When contacting your local KUBOTA distributor, always specify front loader serial number (1).

(1) Serial Number

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## 2. GENERAL PRECAUTIONS



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

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

(A) External Cir-clip  
 (B) Internal Cir-clip

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### 3. LUBRICANTS

To prevent serious damage to hydraulic systems, use only specified fluid or its equivalent.

Place	Capacity	Lubricants, fuel and coolant
	B2301, B2601	
Transmission case	15 L 4.0 U.S.gals 3.3 Imp.gals	KUBOTA SUPER UDT fluid*
Grease fittings	Until grease overflows.	Moly Ep type grease**

■ NOTE

- \* KUBOTA original transmission hydraulic fluid.
- \*\* "Extreme pressure" and containing Molybdenum disulfide is recommended. This grease may specify "Moly Ep" on it's label.

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## 4. TIGHTENING TORQUES

Tighten screws, bolts and nuts whose tightening torques are not specified in this Workshop Manual according to the table below.

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

Indication on top of bolt	No-grade or 4T						7T or Property class 8.8						9T or Property class 10.9		
Material of opponent part	Ordinariness			Aluminum			Ordinariness			Aluminum			Ordinariness		
Unit	N·m	kgf·m	Ibf·ft	N·m	kgf·m	Ibf·ft	N·m	kgf·m	Ibf·ft	N·m	kgf·m	Ibf·ft	N·m	kgf·m	Ibf·ft
<b>M6</b> (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
<b>M8</b> (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
<b>M10</b> (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
<b>M12</b> (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
<b>M14</b> (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
<b>M16</b> (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
<b>M18</b> (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
<b>M20</b> (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

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### [2] STUD BOLTS

Material of opponent part	Ordinariness			Aluminum		
Unit	N·m	kgf·m	Ibf·ft	N·m	kgf·m	Ibf·ft
<b>M8</b> (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
<b>M10</b> (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
<b>M12</b> (12 mm, 0.47 in.)	30 to 49	3.0 to 5.0	22 to 36	31	3.2	23
<b>M14</b> (14 mm, 0.55 in.)	62 to 73	6.3 to 7.5	46 to 54	—	—	—
<b>M16</b> (16 mm, 0.63 in.)	98.1 to 112	10.0 to 11.5	72.4 to 83.1	—	—	—
<b>M18</b> (18 mm, 0.71 in.)	172 to 201	17.5 to 20.5	127 to 148	—	—	—

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

Grade	SAE GR.5			SAE GR.8		
Unit	N·m	kgf·m	lbf·ft	N·m	kgf·m	lbf·ft
1/4	11.7 to 15.7	1.20 to 1.60	8.63 to 11.5	16.3 to 19.7	1.67 to 2.00	12.0 to 14.6
5/16	23.1 to 27.7	2.36 to 2.82	17.0 to 20.5	33 to 39	3.4 to 3.9	25 to 28
3/8	48 to 56	4.9 to 5.7	36 to 41	61 to 73	6.3 to 7.4	45 to 53
1/2	110 to 130	11.3 to 13.2	81.2 to 95.8	150 to 178	15.3 to 18.1	111 to 131
9/16	150 to 178	15.3 to 18.1	111 to 131	217 to 260	22.2 to 26.5	160 to 191
5/8	204 to 244	20.8 to 24.8	151 to 179	299 to 357	30.5 to 36.4	221 to 263

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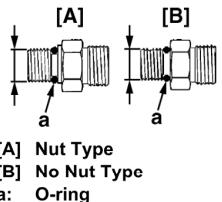
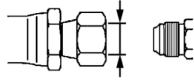
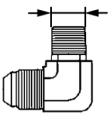
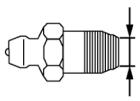
### [4] PLUGS

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 19	1.3 to 2.0	9.4 to 14
	R1/4	25 to 44	2.5 to 4.5	18 to 32	25 to 34	2.5 to 3.5	18 to 25
	R3/8	49 to 88	5.0 to 9.0	37 to 65	49 to 58	5.0 to 6.0	37 to 43
	R1/2	58.9 to 107	6.00 to 11.0	43.4 to 79.5	59 to 78	6.0 to 8.0	44 to 57
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	—	—	—

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## [5] HYDRAULIC FITTINGS

### (1) Adapters, Elbows and Others

Item	Shape	Thread size	Tightening torque		
			N·m	kgf·m	lbf·ft
Adjustable elbow, Adapter (O-ring port) (UNF)	 <p>[A] Nut Type [B] No Nut Type a: O-ring</p>	9/16	37 to 44	3.8 to 4.4	28 to 32
		3/4	48 to 54	4.9 to 5.5	36 to 39
		7/8	77 to 85	7.9 to 8.6	57 to 62
Hose fitting, Flare nut (UNF)		9/16	25 to 28	2.6 to 2.8	19 to 20
		3/4	36 to 40	3.7 to 4.0	27 to 29
		7/8	43 to 50	4.4 to 5.0	32 to 36
Adapter (NPT)		1/4	30 to 50	3.1 to 5.0	23 to 36
		3/8	39 to 60	4.0 to 6.1	29 to 44
		1/2	49 to 58	5.0 to 5.9	37 to 42
Grease Fitting		1/8-27	4.1 to 6.7	0.42 to 0.69	3.0 to 5.0
		1/4-18	4.1 to 6.7	0.42 to 0.69	3.0 to 5.0

#### ■ NOTE

- When connecting a hose with flare nut, after tightening the nut with specified torque, return it approximately 45 degrees (0.79 rad) and re-tighten it to specified torque.

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## 5. MAINTENANCE CHECK LIST

To keep the machine working in good condition as well as to avoid any accident and trouble, do periodic inspection and maintenance. Check the following points before use.

Service Interval	Check Points	Reference page
Daily (Each use)	Check the transmission fluid level	G-8
	Check the lubrication of all grease fittings	G-8
	Check the hydraulic hoses and hardware	G-9, G-9
Every 10 hours	Grease all grease fittings	G-9
	Lubricate joints of control lever linkage	G-9
Every 50 hours	Check the main frame bolts and nuts mounting torque	G-10
After 20 to 30 hours of initial loader operation	Re-tighten all mounting bolts and nuts	G-10

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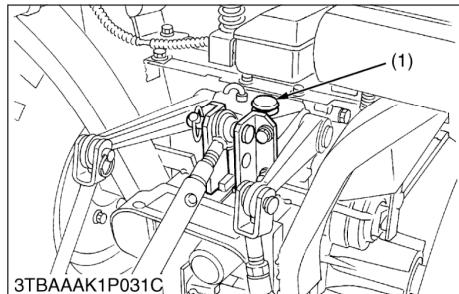
## 6. CHECK AND MAINTENANCE

### CAUTION

- When checking and repairing, park the tractor on flat ground and apply the parking brake.
- When checking and repairing, lower the bucket and stop the engine.

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### [1] CHECK POINTS OF EACH USE OR DAILY



#### Checking Transmission Fluid Level

- Check the oil level at the dipstick (2).
- If the level is too low, add new oil to the prescribed level at the dipstick (2).

#### ■ IMPORTANT

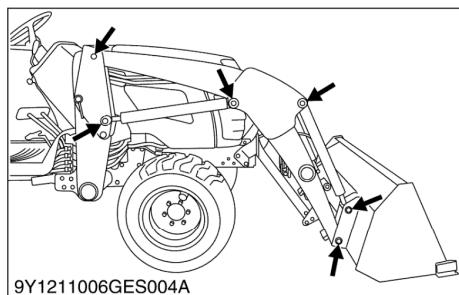
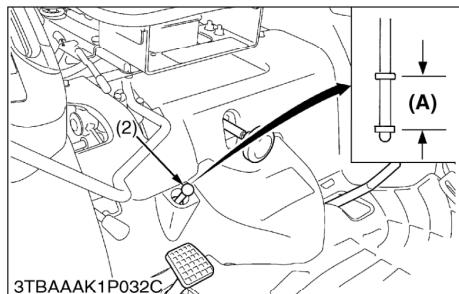
- Use only KUBOTA SUPER UDT fluid.
- Use of other oils may damage the transmission or hydraulic system. Refer to "3. LUBRICANTS" on page G-3.
- Do not mix different brands oil together.

Transmission fluid capacity	B2301, B2601	15 L 4.0 U.S.gals 3.3 Imp.gals
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(1) Filling Plug  
(2) Dipstick

(A) Oil level is acceptable within this range.

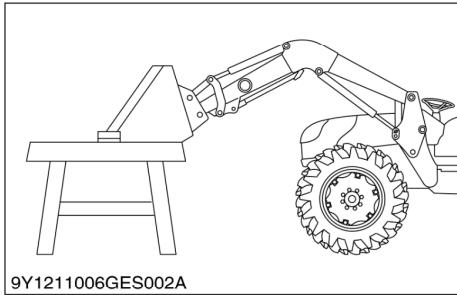
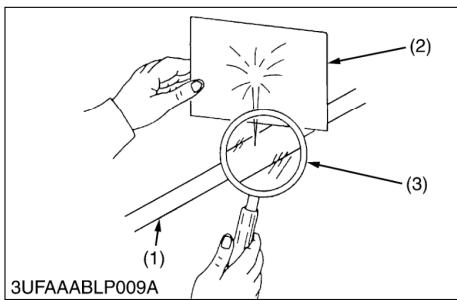
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#### Checking to lubricate all grease fittings

- Check to Lubricate all grease fittings.
- If all grease fittings are not lubricated, lubricate them with SAE multipurpose grease.

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### Checking Hydraulic Hoses

#### WARNING

To avoid serious personal injury:

- Escaping hydraulic fluid under pressure can have sufficient force to penetrate skin, causing serious personal injury. Before disconnecting lines, be sure to relieve all pressure.

Before applying pressure to the system, be sure all connections are tight and that lines, tubes, and hoses are not damaged. Fluid escaping from a very small hole can be almost invisible. Use a piece of cardboard or wood, rather than your hands, to search for suspected leaks.

If injured by escaping fluid, see a doctor at once. Serious infection or allergic reaction will develop if proper medical treatment is not administered immediately.

- When removing the engine side covers, be careful not to touch hot loader cylinders.

Allow all surfaces to cool before performing maintenance.

- Before servicing the loader or the tractor, be sure to place the loader boom in contact with the ground. If the loader boom must be raised during service or maintenance, support the boom as shown in the figure.

1. When the engine off and bucket on the ground, check all hydraulic hoses (1) for cuts or wear.
2. Check for signs of leaks and make sure all fittings are tight.
3. If defects are found, replace them.

(1) Hydraulic Hose  
(2) Cardboard

(3) Magnifying Glass

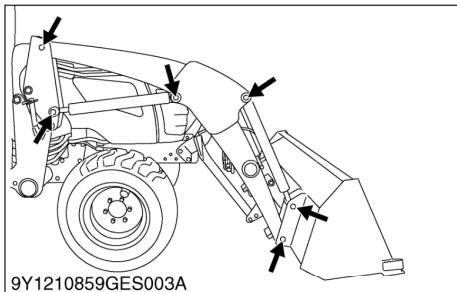
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### Checking Hardware

1. Check all hardware daily before operation. Tighten hardware to torque values as specified in the "Installation Instructions" and "Tightening Torque Chart".

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## [2] CHECK POINTS OF EVERY 10 HOURS



### Greasing

1. Inject grease in all grease fittings with a hand grease gun.

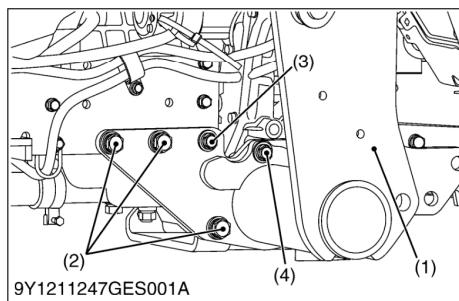
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### Lubricating

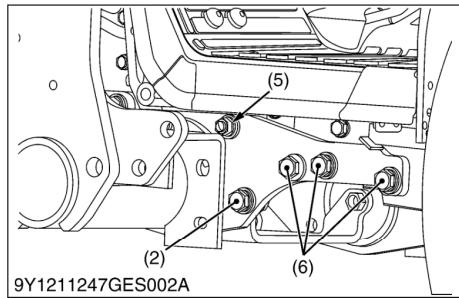
1. Lubricate joints of control lever linkage.

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### [3] CHECK POINTS OF EVERY 50 HOURS



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#### Checking Main Frame Mounting Bolts and Nuts Torque

##### CAUTION

- Never operate front loader with a loose main frame.
- Any time bolts and nuts are loosened, retighten to specified torque.
- Check all bolts and nuts frequently and keep them tight.

- Check the main frame bolts and nuts regularly especially when new. If they are loose, tighten them as follows.

Tightening torque	Main frame mounting bolt (2), (6)	150 N·m 15.1 kgf·m 110 lbf·ft
	Main frame mounting bolt and nut (3), (5)	90 N·m 9.2 kgf·m 66.5 lbf·ft
	Main frame mounting bolt (4)	80 N·m 8.1 kgf·m 59 lbf·ft

(1) Main Frame  
(2) Bolt (M14)  
(3) Bolt (M12, Pitch 1.75)

(4) Bolt (M12)  
(5) Nut (M12)  
(6) Bolt (M14)

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### [4] CHECK POINTS OF AFTER 20 to 30 HOURS of INITIAL LOADER OPERATION

After 20 to 30 hours of initial loader operation, re-tighten all mounting bolts and nuts to the required torque value.

Tightening torque	Main frame (Front axle frame)	M14 bolts	150 N·m 15.3 kgf·m 111 lbf·ft
	M12 bolts (Pitch 1.75)	80.0 N·m 8.2 kgf·m 59.0 lbf·ft	
	Main frame (Clutch housing)	M12 bolts (Pitch 1.75)	80.0 N·m 8.2 kgf·m 59.0 lbf·ft
	Main frame (Center frame)	M14 bolts	150 N·m 15.3 kgf·m 111 lbf·ft

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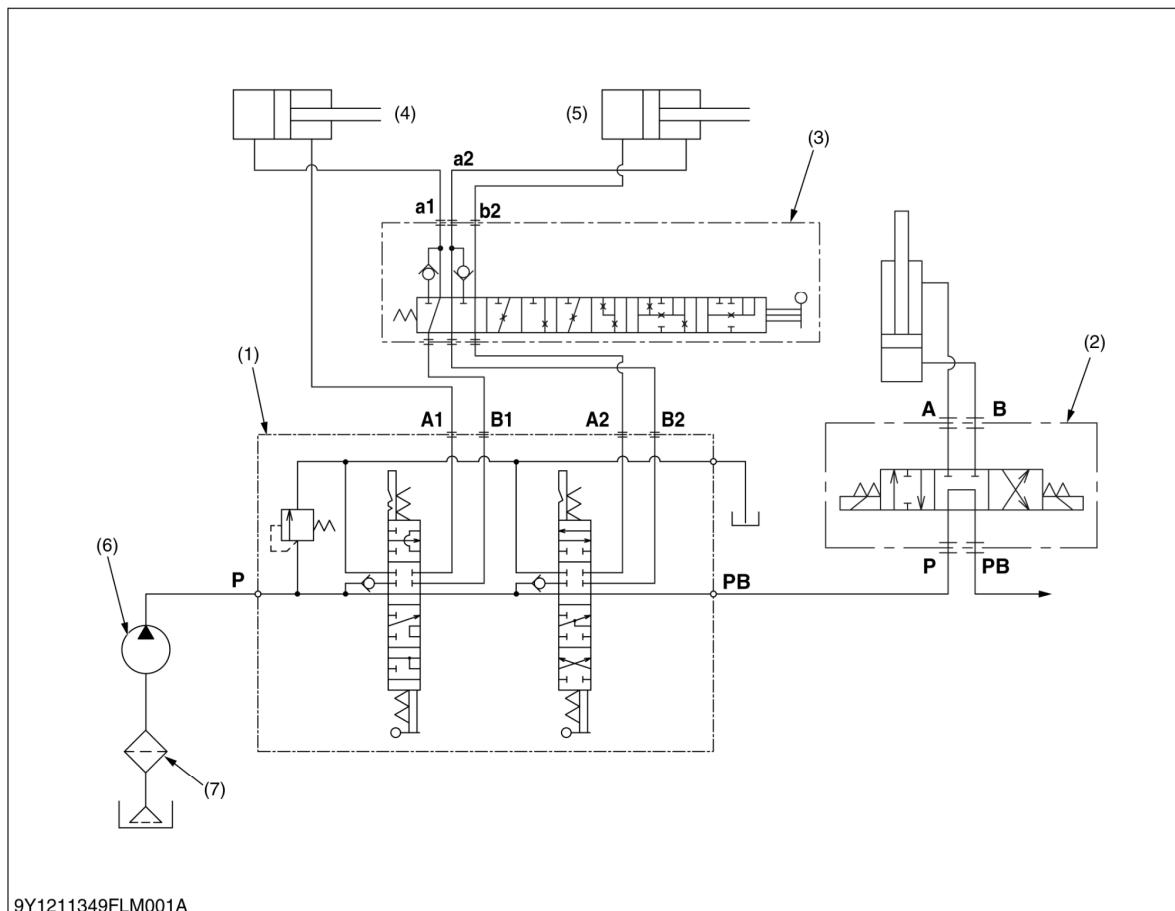
# **1 FRONT LOADER**

# MECHANISM

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# 1. HYDRAULIC CIRCUIT FOR FRONT LOADER



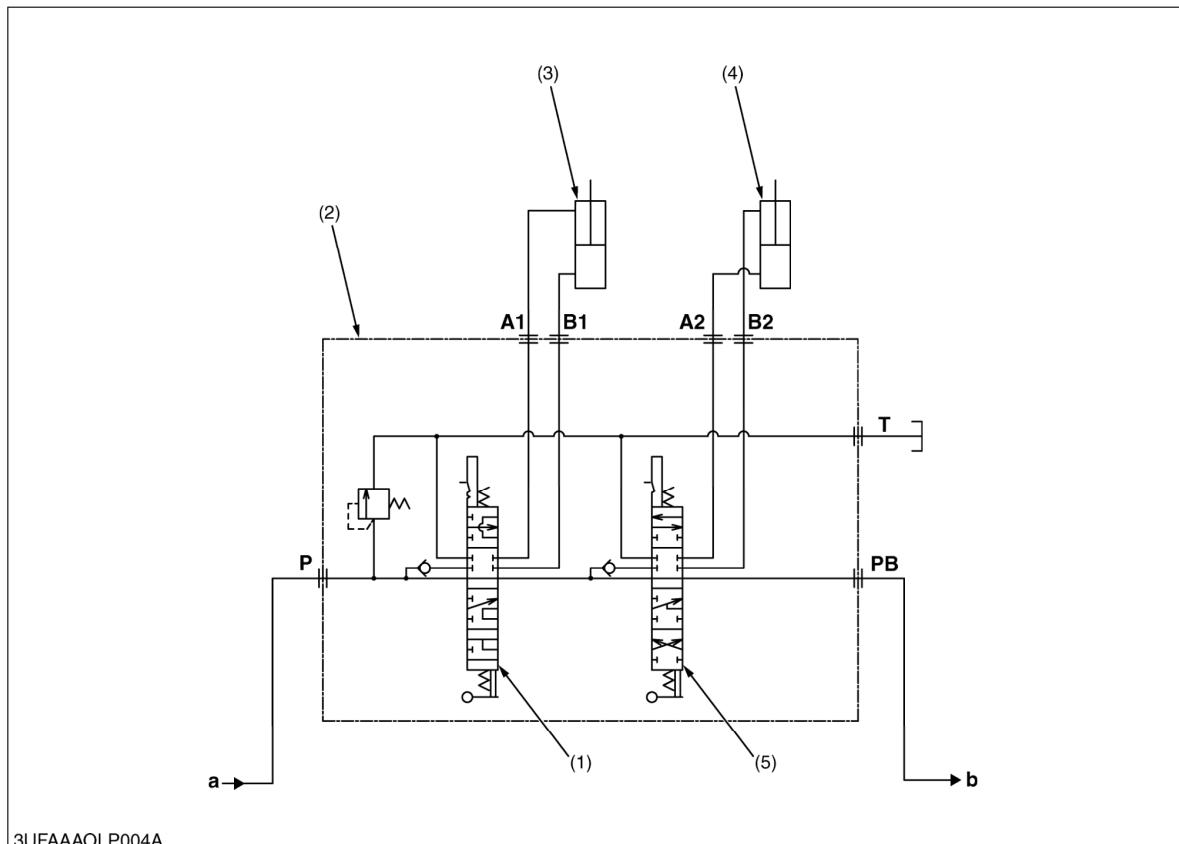
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(1) Control Valve (For Front Loader)	(5) Boom Cylinder	A: A Port	a1: a1 Port
(2) Third Function Valve (Option)	(6) Hydraulic Pump (For 3-point Hitch and Front Loader)	A1: A1 Port	a2: a2 Port
(3) Spill Guard Valve	(7) Oil Filter Cartridge	A2: A2 Port	b2: b2 Port
(4) Bucket Cylinder		B: B Port	P: Pump Port
		B1: B1 Port	PB: Power Beyond Port
		B2: B2 Port	

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## 2. CONTROL VALVE

### [1] HYDRAULIC CIRCUIT



3UFAAAOLP004A

(1) Bucket Control Valve  
 (2) Control Valve Assembly  
 (3) Bucket Cylinder

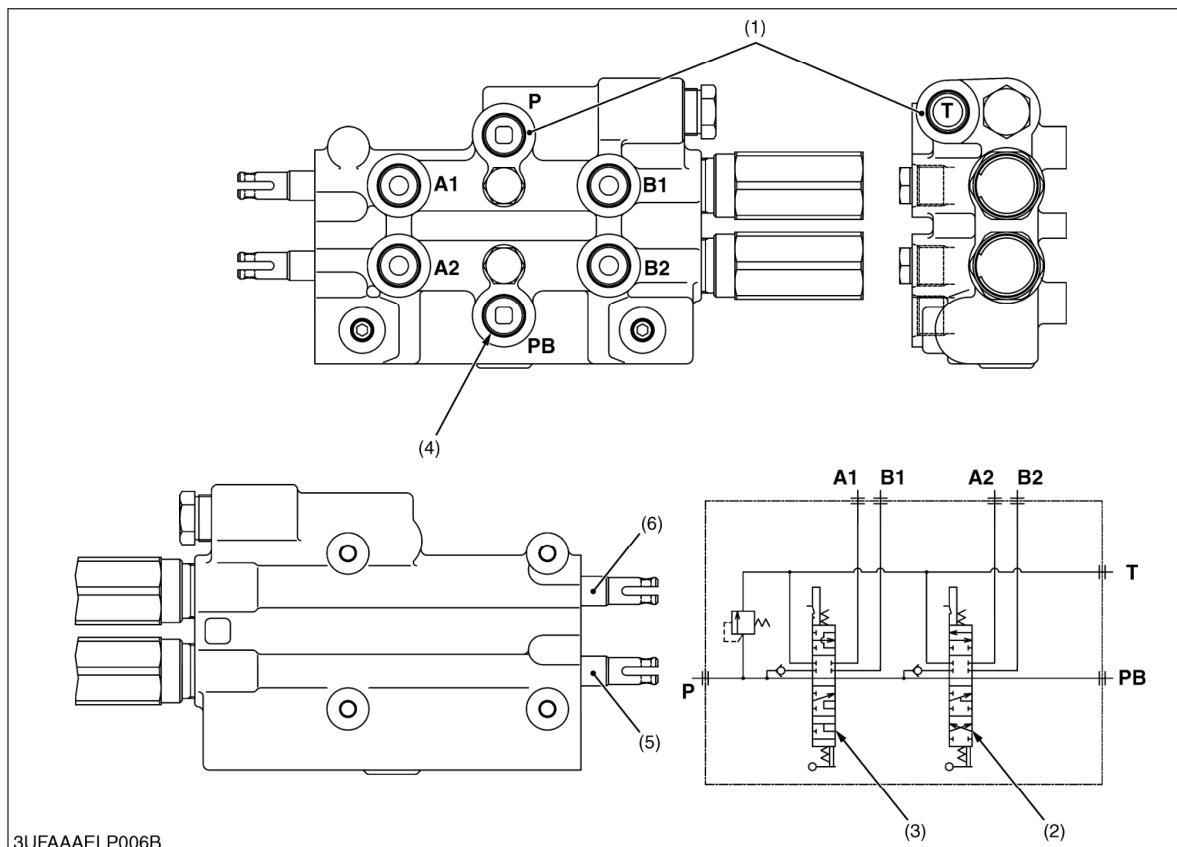
(4) Boom Cylinder  
 (5) Boom Control Valve

P: P Port  
 T: T Port  
 PB: PB Port

a: From Pump  
 b: To Three Points Hydraulic System

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## [2] STRUCTURE



3UFAAAELP006B

(1) Inlet and Outlet Section  
 (2) Boom Control Valve  
 (3) Bucket Control Valve

(4) Power Beyond  
 (5) Spool  
 (6) Spool

P: P Port  
 T: T Port  
 A1: A1 Port  
 A2: A2 Port

B1: B1 Port  
 B2: B2 Port  
 PB: PB Port

The control valve assembly consists of one casting block and four major section as shown above.

### (1) Inlet and Outlet Section

This section has **P** and **T** ports.

The **P** port is connected to the **OUTLET** port of hydraulic block by the hydraulic hose.

The **T** port is connected to the **TANK** port of hydraulic block by the hydraulic hose.

### (2) Boom Control Section

The boom control valve consists of 4-position, 6-connection, detent, spring center type, consisting of a mono block valve housing, spool, load check valve, etc.. This valve has **A1** and **B1** ports and controls oil flow to the boom cylinder.

### (3) Bucket Control Section

The bucket control valve consists of 4-position, 6-connection, no detent, spring center type, consisting of a mono block valve housing, spool, load check valve, etc.. This valve has **A2** and **B2** ports and controls oil flow to the bucket cylinder.

### (4) Power Beyond

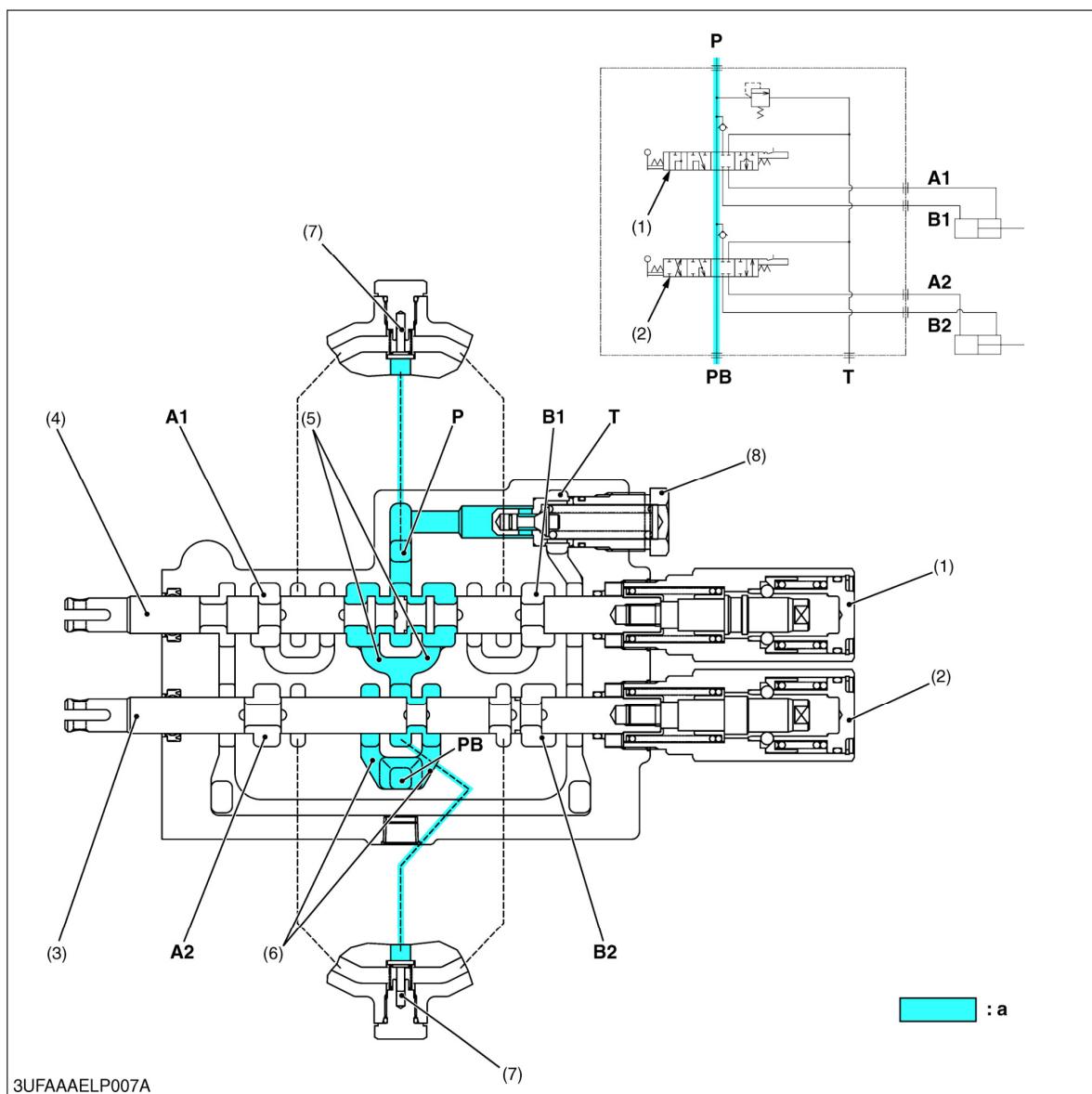
This section has **PB** port which is connected to the **INLET** port of hydraulic block by the hydraulic hose, and feeds oil to the three point hydraulic control valve.

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**[3] OPERATION**

ce-manual/

Control Lever at "NEUTRAL" Position



(1) Boom Control Section  
 (2) Bucket Control Section  
 (3) Spool  
 (4) Spool

(5) PB Passage 1  
 (6) PB Passage 2  
 (7) Load Check Valve  
 (8) Relief Valve

T: T Port  
 P: P Port  
 A1: A1 Port  
 A2: A2 Port

B1: B1 Port  
 B2: B2 Port  
 PB: PB Port  
 a: Low Pressure

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