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.**

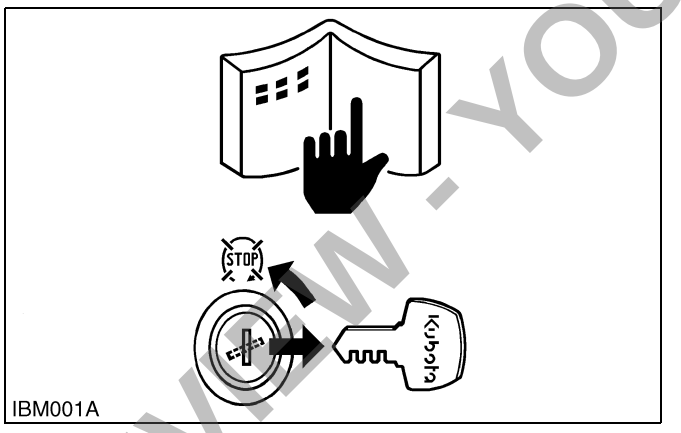
⚠ WARNING
- **Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.**

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

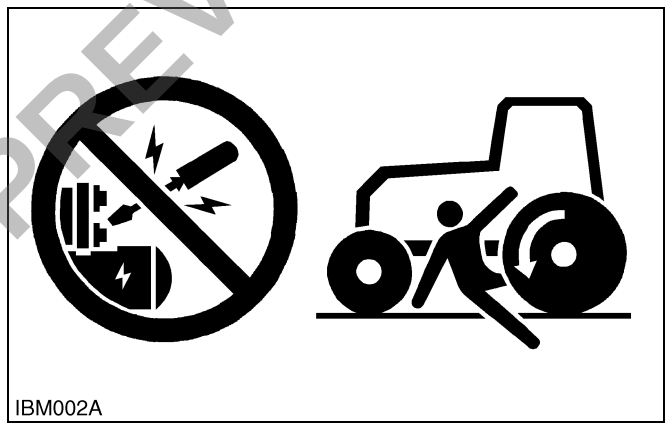
■ IMPORTANT
- **Indicates that equipment or property damage could result if instructions are not followed.**

■ NOTE
- **Gives helpful information.**

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IBM001A


IBM002A

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

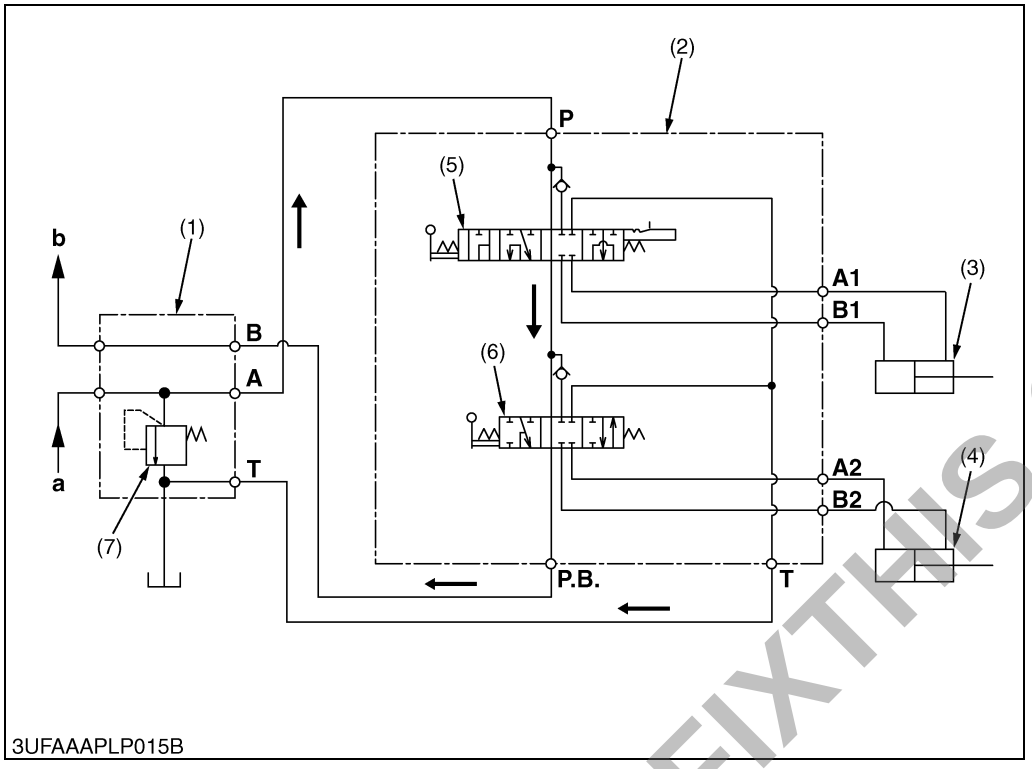
- Do not do the procedures below when you start the engine.
  - short across starter terminals
  - bypass the safety start switch
- Do not alter or remove any part of machine safety system.
- Before you start the engine, make sure that all shift levers are in neutral positions or in disengaged positions.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

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1. HYDRAULIC CIRCUIT



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(1) Hydraulic Block
(2) Control Valve Assembly
(3) Boom Cylinder
(4) Bucket Cylinder
(5) Boom Control Valve
(6) Bucket Control Valve (3 Position Type)
(7) Relief Valve

P: P Port
T: T Port
A1: A1 Port
B1: B1 Port
A2: A2 Port
B2: B2 Port
P.B.:Power Beyond Port

a: From Pump
b: To 3-Point Hydraulic System

To operate the front loader, the hydraulic oil pressurized by the hydraulic pump flows from **P** port through the boom control valve (5) and the bucket control valve (6) to **P.B.** port.

Specification of Hydraulic Parts

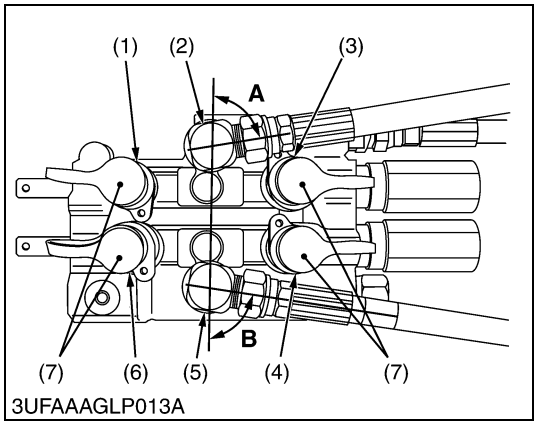
(7)	L2501: 15.2 to 16.2 MPa (155 to 165 kgf/cm^2, 2210 to 2340 psi)
	L3301/L3901: 15.7 to 16.6 MPa (160 to 170 kgf/cm^2, 2280 to 2410 psi)
	L4701: 17.1 to 18.1 MPa (174 to 185 kgf/cm^2, 2480 to 2630 psi)

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(2) Disassembling Control Valve



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Adapter and Elbow

1. Remove the fitting, adapters and elbows from the control valve.

(When reassembling)

- Put seal tape to the fitting threads.
- Be careful not to cause damage to the O-ring.
- Install all the elbows with the angle **"A"** and **"B"**.

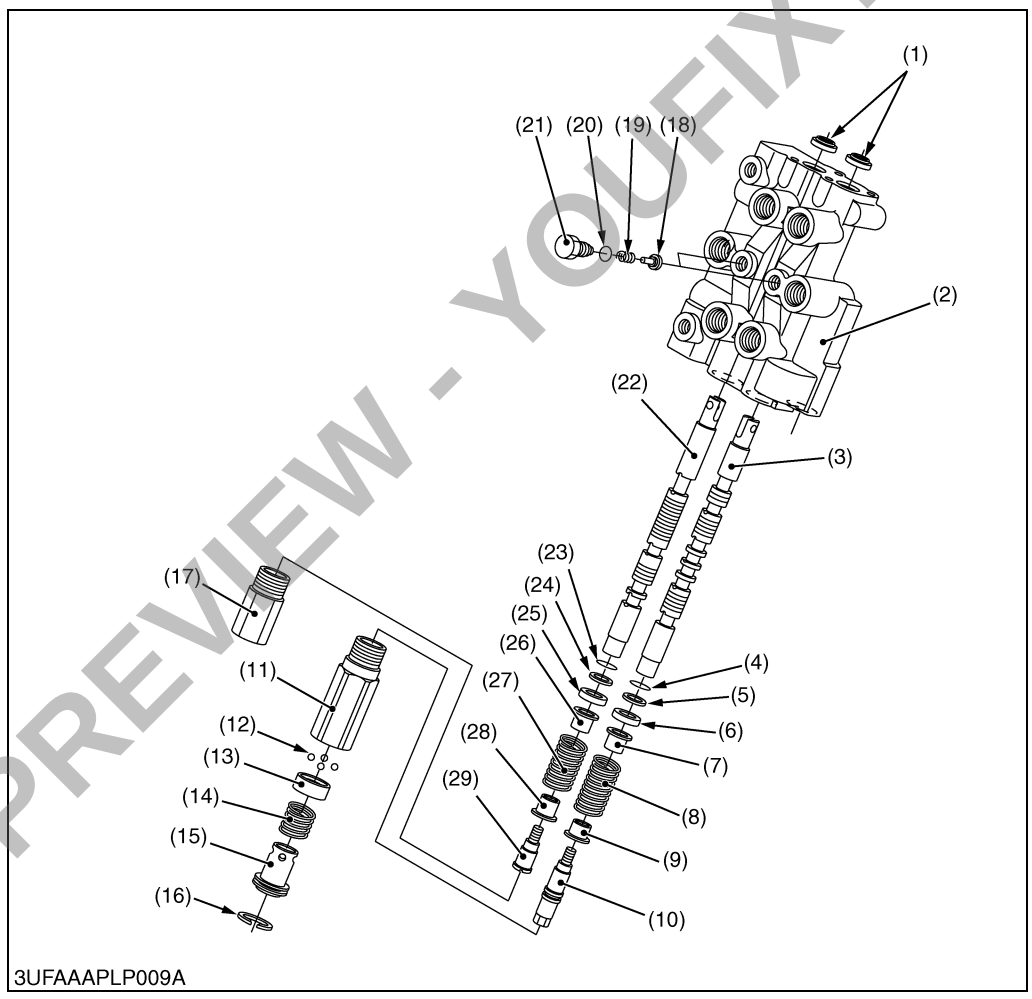
Tightening torque	Adapter and elbow	48 to 54 N·m 4.9 to 5.5 kgf·m 35 to 40 lbf·ft
	Fitting	39 to 60 N·m 4.0 to 6.1 kgf·m 29 to 44 lbf·ft

(1) **A1** Port (Adapter and Fitting)
(2) **P** Port (Elbow)
(3) **B1** Port (Adapter and Fitting)
(4) **B2** Port (Adapter and Fitting)
(5) **PB** Port (Elbow)
(6) **A2** Port (Adapter and Fitting)
(7) Dust Cap

A: 1.4 rad (80 °)
B: 1.4 rad (80 °)

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Disassembling Control Valve



3UFAAAPLP009A

(1) Dust Seal
(2) Valve Body
(3) Spool for Boom
(4) O-ring
(5) Backup Ring
(6) Collar
(7) Spring Holder 1
(8) Spring
(9) Spring Holder 2
(10) Detent Bolt 1
(11) Plug
(12) Ball
(13) Detent Ring
(14) Detent Spring
(15) Stopper
(16) Ring
(17) Plug
(18) Check Valve
(19) Spring
(20) O-ring
(21) Plug
(22) Spool for Bucket
(23) O-ring
(24) Backup Ring
(25) Collar
(26) Spring Holder 1
(27) Spring
(28) Spring Holder 2
(29) Bolt

■ **Boom Control Section and Bucket Control Section**

1. Remove the plug (21) and pull out the spring (19) and load check valve (18).
2. Remove the plug (11), (17) from valve body (2).
3. Remove the ring (16) and pull out the stopper (15), detent spring (14), detent ring (13), and ball (12).
4. Pull out the spool (3), (22) with other component parts from valve body (2).

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4. TIGHTENING TORQUES

[1] GENERAL USE SCREWS, BOLTS AND NUTS (FOR FRONT LOADER)

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

Indication on top of bolt	4 No-grade or 4T						7 8.8 7T or Property class 8.8						9 10.9 9T or Property class 10.9		
Material of opponent part	Ordinariness			Aluminum			Ordinariness			Aluminum			Ordinariness		
Unit	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

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[2] STUD BOLTS

Material of opponent part	Ordinariness			Aluminum		
Unit	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.)	30 to 49	3.0 to 5.0	22 to 36	31	3.2	23
M14 (14 mm, 0.55 in.)	62 to 73	6.3 to 7.5	46 to 54	–	–	–
M16 (16 mm, 0.63 in.)	98.1 to 112	10.0 to 11.5	72.4 to 83.1	–	–	–
M18 (18 mm, 0.71 in.)	172 to 201	17.5 to 20.5	127 to 148	–	–	–

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1. TROUBLESHOOTING

Symptom	Probable Cause and Checking Procedure	Solution	Reference Page
Boom Does Not Rise	1. Transmission fluid is low	Fill the oil to proper level	G-8
	2. Oil is leaking from the hydraulic hose	Solution order 1. Check the connecting parts of the hose	G-9
		2. Check the hose is not worn or damaged	G-9
		3. Replace the hydraulic hose	1-S28, 1-S31
	3. Oil is leaking from the boom cylinder	Solution order 1. Check the piston ring and o-ring are not worn or damaged	1-S25
		2. Check the piston rod is not bent or scratched	1-S32
		3. Replace the piston ring and/or o-ring	1-S25
		4. Replace the piston rod	1-S24
		5. Replace the boom cylinder assembly	1-S23
	4. Control lever linkage is damaged	Solution order 1. Check the length of the control lever linkages	1-S18
		2. Adjust the length of the control lever linkages	1-S18
		3. Replace the control lever linkages	1-S18

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4. SPECIFICATIONS

■ Suitable Tractor

Loader Model	LA525	LA765
Tractor Model	L2501, L3301, L3901	L4701

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[1] LOADER SPECIFICATIONS

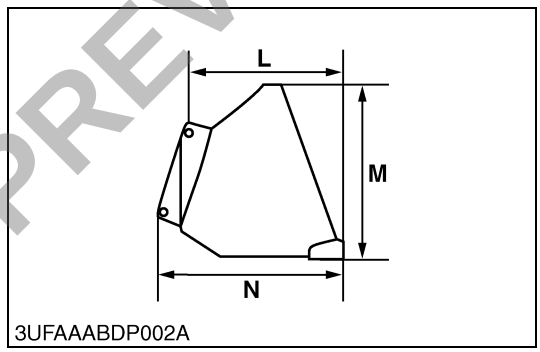
Loader Model		LA525				LA765	
Tractor Model		L2501		L3301, L3901		L4701	
Model		2WD	4WD	2WD	4WD	2WD	4WD
Wheel Base (WB)		1610 mm (63.3 in.)				1850 mm (72.8 in.)	1845 mm (72.6 in.)
Front Tires		7 - 16				7.5L-15	8.3-16
Rear Tires		11.2-24				14.9-24	
Boom Cylinder	Bore	45 mm (1.77 in.)				50 mm (1.97 in.)	
	Stroke	476 mm (18.7 in.)				520 mm (20.5 in.)	
Bucket Cylinder	Bore	45 mm (1.77 in.)				50 mm (1.97 in.)	
	Stroke	476 mm (18.7 in.)				480.5 mm (18.9 in.)	
Control Valve	3 position bucket control type	One Detent Float Position, Regenerative Bucket Dump, Power Beyond Circuit					
Rated Flow		23.9 /min. (6.3 GPM)				29.4 /min. (7.8 GPM)	
Maximum Pressure		15.7 MPa 160 kgf/cm^2 2275 psi		16.2 MPa 165 kgf/cm^2 2347 psi		17.7 MPa 180 kgf/cm^2 2560 psi	
Net Weight (Approximate)		365 kg (805 lbs)				524 kg (1155 lbs)	

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[2] BUCKET SPECIFICATIONS

Loader Model		LA525		LA765		
Model		SQUARE 60"	SQUARE 66"	SQUARE 72"	ROUND 72" HD	SQUARE 72" LIGHT MATERIAL
Type		Rigid	Quick Attach	Quick Attach	Quick Attach	Quick Attach
Width		1525 mm (60 in.)	1675 mm (66 in.)	1830 mm (72 in.)		
Depth **"L"**		463 mm (18.2 in.)	458 mm (18 in.)	547 mm (21.5 in.)	477 mm (18.8 in.)	607 mm (23.9 in.)
Height **"M"**		559 mm (22 in.)	562 mm (22.1 in.)	570 mm (22.4 in.)	608 mm (23.9 in.)	570 mm (22.4 in.)
Length **"N"**		511 mm (20.1 in.)	544 mm (21.4 in.)	630 mm (24.8 in.)	610 mm (24 in.)	691 mm (27.2 in.)
Capacity	Struck	0.22 m^3 (7.8 cu.ft.)	0.23 m^3 (8.1 cu.ft.)	0.31 m^3 (10.9 cu.ft.)		0.36 m^3 (12.7 cu.ft.)
	Heaped	0.26 m^3 (9.2 cu.ft.)	0.28 m^3 (9.9 cu.ft.)	0.37 m^3 (13.1 cu.ft.)		0.45 m^3 (16.0 cu.ft.)
Weight		82 kg (181 lbs)	120 kg (265 lbs)	150 kg (331 lbs)	180 kg (397 lbs)	136 kg (300 lbs)

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4. REMOVING THE LOADER

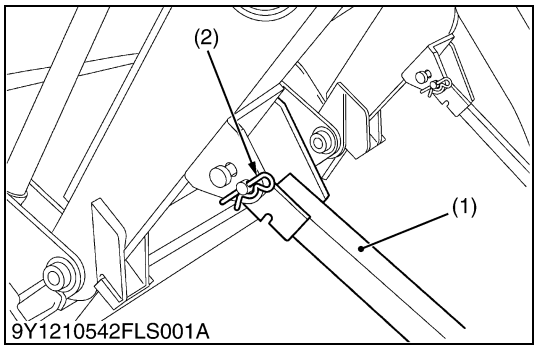
[1] REMOVING THE LOADER

WARNING

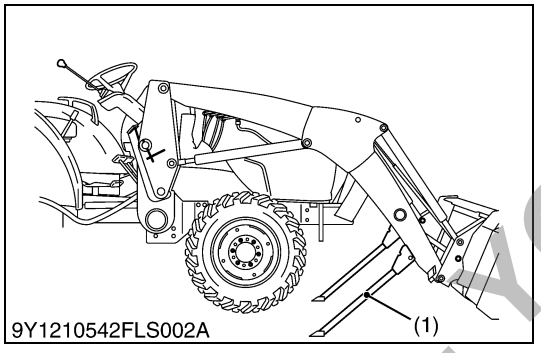
To avoid serious injury:

- **Make sure an approved bucket is attached before removing the loader from the tractor.**
- **To remove the loader, use flat and hard ground, preferably concrete.**
- **If the ground surface is soft, set suitable planks on the ground for the bucket and stands.**
- **Before starting the engine or using the hydraulic control valve, always stay in the operator's seat.**
- **Make sure the bucket and stands are at ground level.**

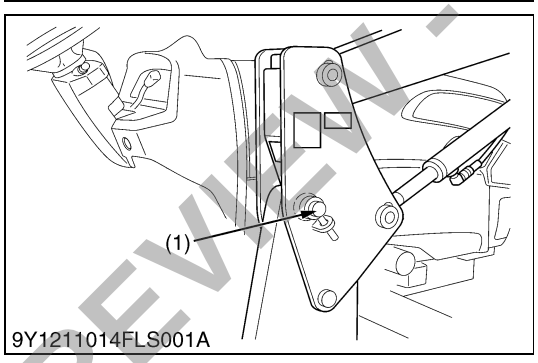
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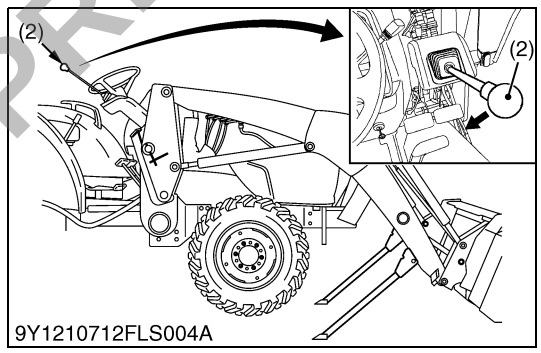
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Stand

1. Lift the boom until the stands (1) can turn.
2. Stop the engine.
3. Remove the spring pins (2) holding the stands to the boom.
4. Move the stands outward and turn them until the hole in the stand and pin on the boom are aligned. Then move the stands inward and put the spring pin as shown.
5. Start the engine.
6. Dump the bucket approximately 20 degrees.
7. Lower the boom and lift the front wheels slightly.

■ **IMPORTANT**

- **Lift the front wheels with the bucket. Do not try to lift them with the stands.**

8. Stop the engine.

(1) Stand (2) Spring Pin

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Side Frame

1. Remove the mounting pins (1) from the loader main frame and hold them on the side frames.
2. Start the engine and keep at idle. Slowly move the loader control lever (2) to **rollback position** to lift the loader side frames up and out of the receivers of the main frames as shown.
3. Stop the engine.

(1) Mounting Pin (2) Loader Control Lever

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