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3. FRONT LOADER

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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.**

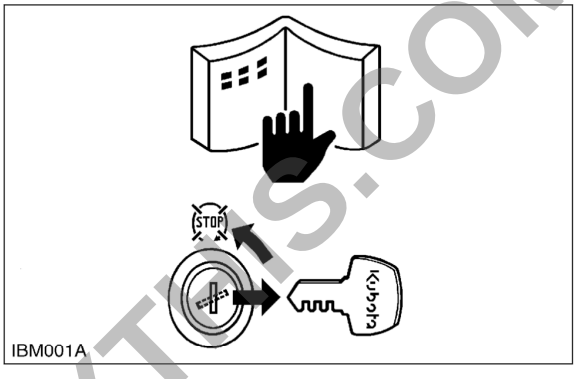
WARNING
- **Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.**

CAUTION
- **Indicates a potentially hazardous situation which, if not avoided, 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.**

1. Before you start service



IBM001A

- 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.

2. Start safely


IBM002A

- Do not do the procedures below when you start the engine.
  1. Short across starter terminals.
  2. 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.

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SPECIFICATIONS

1. Loader specifications

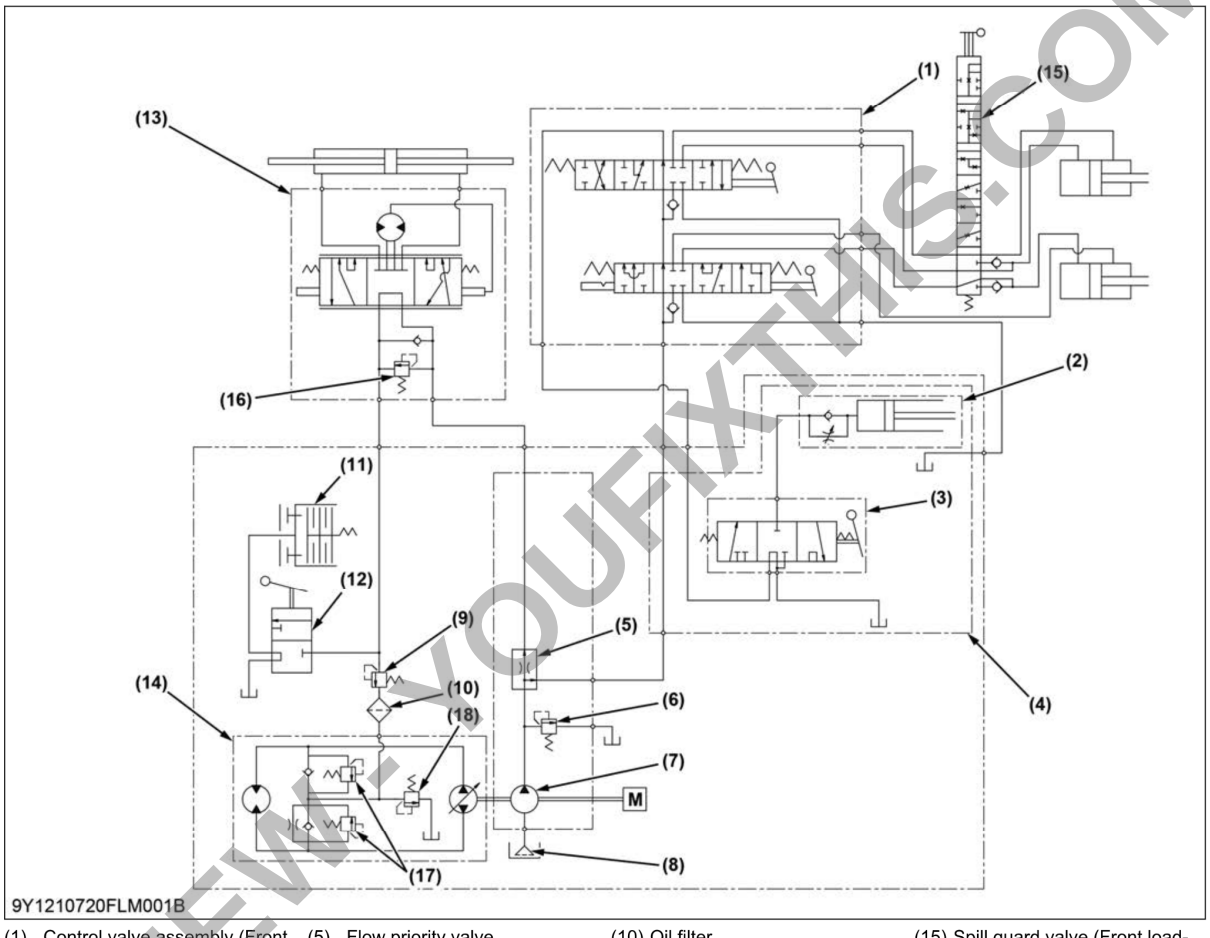
Loader model		LA344AU	
Tractor model		BX1880-AU	BX2380-AU, BX2680-AU
Wheel base (WB)		1400 mm (55.12 in.)	
Front wheels		16 × 7.5-8	18 × 8.5-10
Rear wheels		24 × 12-12	26 × 12-12
Boom cylinder	Bore	40 mm (1.6 in.)	
	Stroke	326 mm (12.8 in.)	
Bucket cylinder	Bore	65 mm (2.6 in.)	
	Stroke	196 mm (7.72 in.)	
Control valve		One detent float position, single bucket dump, power beyond circuit	
Rated flow		14 L/m (3.7 GPM)	
Maximum pressure		12.8 MPa (131 kg/cm^2) [1860 psi]	
Net weight (approximate)		180 kg (397 lbs)	

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MECHANISM

1. Hydraulic circuit for front loader



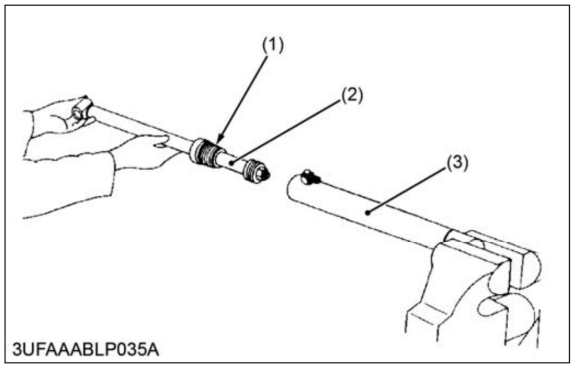
(1) Control valve assembly (Front loader)
(2) Hydraulic cylinder
(3) Control valve (3P)
(4) 3 Point hitch system
(5) Flow priority valve
(6) Relief valve
(7) Hydraulic pump
(8) Oil strainer
(9) PTO clutch relief valve
(10) Oil filter
(11) PTO clutch
(12) PTO clutch valve
(13) Power steering controller
(14) Hydrostatic transmission
(15) Spill guard valve (Front loader)
(16) Power steering relief valve
(17) High pressure relief valve
(18) Charge relief valve

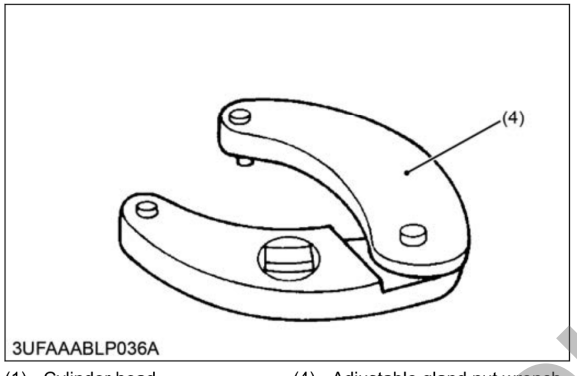
The hydraulic system of this tractor and front loader has a hydraulic pump, control valve for front loader, 3 point hitch system and other components.
This system has the following functions:

1. Oil is supplied by hydraulic pump which is operated by pump drive shaft in the transmission case. As the pump drive shaft is connected to the propeller shaft, hydraulic pump starts operating when engine starts.
2. The hydraulic pump supplies the high pressured oil to control valve for front loader, control valve for 3 point hitch system, power steering controller, PTO clutch valve and hydrostatic transmission after dividing oil flow by flow priority valve.

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3. Pull out the piston rod assembly (2) from the cylinder tube (3).





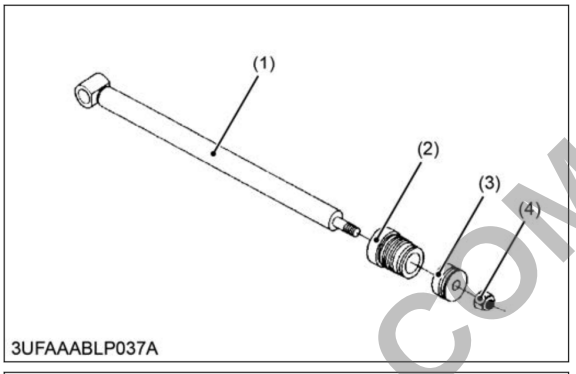
(1) Cylinder head
(2) Piston rod assembly
(3) Cylinder tube
(4) Adjustable gland nut wrench

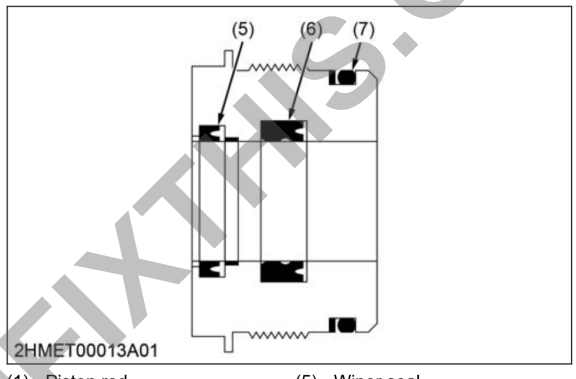
(When reassembling)

- Visually inspect the cylinder tube for signs of scoring or damage.
- Put the piston rod assembly to the cylinder tube. Be careful not to cause damage to the piston seal on the piston.
- Install the cylinder head to the cylinder tube. Be careful not to damage the O-ring on the cylinder head.

4.2.6 Removing cylinder head, piston and nut

1. Hold the rod end in a vise.
2. Remove the nut (4), and remove the piston (3) and cylinder head (2) from the piston rod (1).





(1) Piston rod
(2) Cylinder head
(3) Piston
(4) Nut
(5) Wiper seal
(6) Oil seal
(7) O-ring

(When reassembling)

- Visually inspect all parts for signs of scoring or damage.
- Put the piston rod to the cylinder head. Be careful not to cause damage to the wiper seal (5) and oil seal (6).

Tightening torque	Boom cylinder piston mounting nut	150 to 180 N·m 15.3 to 18.3 kgf·m 111 to 132 lbf·ft
	Bucket cylinder piston mounting nut	350 to 400 N·m 35.7 to 40.7 kgf·m 259 to 295 lbf·ft

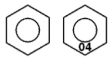
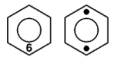
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TIGHTENING TORQUES

1. General use screws, bolts, and nuts

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

Indication on top of bolt	 No-grade or 4T						 7T						 9T		
Indication on top of nut	 No-grade or 4T												 6T		
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	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	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	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	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	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	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	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	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

2. Stud bolts

Material of opponent part	Ordinariness			Aluminum		
Unit	N·m	kgf·m	lbf·ft	N·m	kgf·m	lbf·ft
M8	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	25 to 31	2.5 to 3.2	18 to 23	20 to 25	2.0 to 2.6	15 to 18
M12	30 to 49	3.0 to 5.0	22 to 36	31	3.2	23
M14	62 to 73	6.3 to 7.5	46 to 54	—	—	—
M16	98.1 to 112	10.0 to 11.5	72.4 to 83.1	—	—	—
M18	172 to 201	17.5 to 20.5	127 to 148	—	—	—

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SERVICING

1. Troubleshooting for front loader

Symptom	Probable cause and checking procedure	Solution	Reference page
Boom does not rise.	1. Control valve is damaged.	Repair or replace control valve.	Tractor WSM
	2. Boom cylinder is damaged.	Repair or replace boom cylinder.	3-43
	3. Control lever linkage is damaged.	Repair or replace control lever linkage.	Tractor WSM
	4. Hydraulic pump is damaged.	Repair or replace hydraulic pump.	Tractor WSM
	5. Relief valve spring is damaged.	Replace relief valve spring.	Tractor WSM
	6. Relief valve is dirty.	Clean relief valve.	Tractor WSM
	7. Oil filter is clogged.	Clean or replace oil filter.	Tractor WSM
	8. Hydraulic hose is damaged.	Replace hydraulic hose.	3-43
Boom does not lower.	1. Control valve is damaged.	Repair or replace control valve.	Tractor WSM
	2. Control lever linkage is damaged.	Repair or replace control lever linkage.	Tractor WSM
Boom speed is insufficient.	1. Boom cylinder tube is worn or damaged.	Replace boom cylinder tube.	3-43
	2. Boom cylinder piston ring (piston seal and O-ring) is worn or damaged.	Replace boom cylinder piston ring (piston seal and O-ring).	3-45
	3. Oil leaks from tube joints.	Repair tube joints.	—
	4. Relief valve setting pressure is too low.	Adjust relief valve.	Tractor WSM
	5. Transmission fluid is insufficient.	Fill transmission fluid.	Tractor WSM
	6. Relief valve is dirty.	Clean relief valve.	Tractor WSM
Bucket does not move.	1. Control valve is damaged	Repair or replace control valve.	Tractor WSM
	2. Bucket cylinder is damaged.	Repair or replace bucket cylinder.	3-43

(Continued)

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MAINTENANCE CHECK LIST

1. Loader service intervals

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

Service intervals	Check points	Reference page
Daily (Each use)	Check hydraulic hoses.	2-13
Every 10 hours	Apply all grease fittings.	2-13
Every 50 hours	Check the main frame mounting bolts.	2-14
Every 100 hours	Check spill guard function.	2-14

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