

# SERVICING

## CONTENTS

1. TROUBLESHOOTING.....	7-S1
2. SERVICING SPECIFICATIONS .....	7-S2
3. TIGHTENING TORQUES .....	7-S3
4. CHECKING AND ADJUSTING.....	7-S4
[1] STEERING CONTROLLER.....	7-S4
5. DISASSEMBLING AND ASSEMBLING .....	7-S5
[1] STEERING CONTROLLER.....	7-S5
[2] STEERING LINKAGE.....	7-S6
[3] STEERING CYLINDER.....	7-S7
6. SERVICING .....	7-S8
[1] STEERING CYLINDER.....	7-S8

# 1. TROUBLESHOOTING

Symptom	Probable Cause	Solution	Reference Page
<b>Tractor Can Not Be Steered</b>	Steering controller broken	Replace	7-S5
	Steering linkage broken	Replace	7-S5
	Pipe broken	Replace	–
<b>Front Wheels Vibrate</b>	Improper toe-in adjustment	Adjust	6-S5
	Air in the hydraulic system	Bleed	7-S5
	Improperly mounted wheels	Replace	7-S7
	Tie-rod end loose or worn	Retighten or replace	7-S7
	Clearance between front axle center pivots and bracket bushing excessive	Replace	6-S19
	Steering controller malfunctioning	Replace	7-S5
<b>Hard Steering</b>	Steering linkage bushings sticking	Replace	–
	Hydraulic pump malfunctioning	Replace	8-S14
	Overload	–	–
	Transmission fluid improper or insufficient	Change or fill	G-9
	Oil leak from pipe joint	Retighten	–
	Insufficient tire pressure	Inflate	G-69
	Steering controller malfunctioning	Replace	7-S5
	Relief valve malfunctioning	Replace	7-S4
<b>Steering Force Fluctuates</b>	Air sucked in pump due to leaking or missing of oil	Fill	–
	Air sucked in pump from suction circuit	Repair	–
<b>Excessive Steering Wheel Play</b>	Steering linkage worn	Replace	7-S5
<b>Front Wheels Wander to Right or Left</b>	Air sucked in pump due to leak of oil	Fill	–
	Air sucked in pump from suction circuit	Repair	–
	Tire pressure uneven	Inflate	G-69
	Insufficient bleeding	Bleed	7-S5
	Improper toe-in adjustment	Adjust	6-S5
	Clearance between front axle center pivots and brackets bushings excessive	Replace	6-S19
	Tie-rod end loose or worn	Retighten or replace	7-S7
	Steering linkage worn	Replace	7-S5
	Steering controller malfunctioning	Replace	7-S5
<b>Wheels Are Turned to a Direction Opposite to Steering Direction</b>	Power steering hoses connected in reverse	Repair	7-S5
<b>Noise</b>	Air sucked in pump due to lack of oil	Fill	–
	Air sucked in pump from suction circuit	Repair	–
	Pipe deformed	Replace	–

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## 2. SERVICING SPECIFICATIONS

### STEERING CONTROLLER

Item		Factory Specification	Allowable Limit
Relief Valve <b>Condition</b> • Engine Speed Maximum • Oil Temperature 40 to 60 °C (104 to 140 °F)	Setting Pressure L3560, L4060	10.7 to 11.7 MPa 110 to 119 kgf/cm <sup>2</sup> 1560 to 1690 psi	–
	L4760, L5060, L5460, L6060	12.7 to 13.7 MPa 130 to 139 kgf/cm <sup>2</sup> 1850 to 1980 psi	–

### STEERING CYLINDER

Item		Factory Specification	Allowable Limit
Steering Cylinder	I.D.	55.000 to 55.074 mm 2.1654 to 2.1682 in.	55.100 mm 2.1693 in.
Rod to Bushing	Clearance	0.00900 to 0.127 mm 0.000355 to 0.00500 in.	0.135 mm 0.00531 in.

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### 3. TIGHTENING TORQUES

Tightening torques of screws, bolts and nuts on the table below are especially specified.  
(For general use screws, bolts and nuts: Refer to "5. TIGHTENING TORQUES" on page G-11.)

Item	N·m	kgf·m	lbf·ft
Power steering hose retaining nut	25 to 29	2.5 to 3.0	18 to 21
Power steering delivery pipe retaining nut	49 to 58	5.0 to 6.0	37 to 43
Front wheel mounting nut	137	14.0	101
Tie-rod end slotted nut (L3560, L4060)	40 to 45	4.0 to 4.6	29 to 33
Tie-rod end slotted nut (L4760, L5060, L5460, L6060)	157 to 176	16.0 to 18.0	116 to 130
Tie-rod joint	167 to 196	17.0 to 20.0	123 to 144
Tie-rod joint lock nut	167 to 196	17.0 to 20.0	123 to 144
Steering wheel mounting nut	48.1 to 55.9	4.9 to 5.7	35.4 to 41.2

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## 4. CHECKING AND ADJUSTING

### [1] STEERING CONTROLLER



#### Relief Valve Setting Pressure Test

1. Disconnect the power steering hose L.H..
2. Install the power steering tee fitting adaptor to the steering cylinder and connect the power steering hose L.H..
3. Install the adaptor **D** to the power steering tee fitting adaptor and set the cable and pressure gauge.
4. Start the engine and set the engine speed at maximum speed.
5. Fully turn the steering wheel to the left and read the pressure when the relief valve functions.
6. Stop the engine.
7. If the pressure is not within the factory specifications, check the pump delivery line or replace the steering controller assembly.

Power steering relief valve setting pressure	Factory specification	L3560 L4060	10.7 to 11.7 MPa 110 to 119 kgf/cm <sup>2</sup> 1560 to 1690 psi
		L4760 L5060 L5460 L6060	12.7 to 13.7 MPa 130 to 139 kgf/cm <sup>2</sup> 1850 to 1980 psi
Tightening torque	Power steering hose retaining nut	25 to 29 N·m 2.5 to 3.0 kgf·m 18 to 21 lbf·ft	

#### **Condition**

- Engine speed  
Maximum
- Oil temperature  
40 to 60 °C (104 to 140 °F)

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## 5. DISASSEMBLING AND ASSEMBLING

### [1] STEERING CONTROLLER

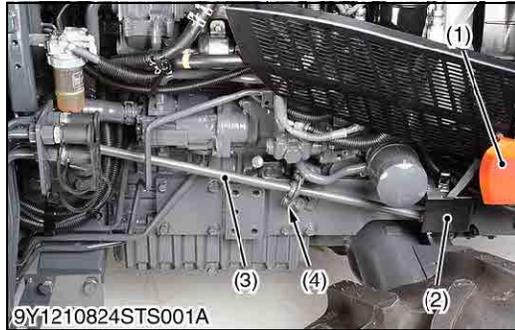
#### ■ IMPORTANT

- Use only the transmission fluid (see page G-9.), in no case use mixture of oils of different brands.
- Before disassembling the power steering system hydraulic components, check the performance of hydraulic pump and power steering using a flowmeter.
- After removing or disassembling the power steering hydraulic components, be sure to bleed air.

#### [Bleeding]

1. Start the engine.
2. Turn the steering wheels slowly in both directions all the way alternately several times, and stop the engine.

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#### Steering Joint Cover and Steering Joint Shaft

1. Pull down the knob and open the bonnet.
2. Remove the front grill (1).
3. Remove the steering joint cover (2).
4. Remove the steering joint screw (5) and the steering joint support (4).
5. Remove the steering joint shaft (3).

#### (When reassembling)

- Tighten the steering joint shaft support mounting screw after adjusting the position of steering joint shaft support (4) for smooth rotation of the steering wheel.

- |                          |                                  |
|--------------------------|----------------------------------|
| (1) Front Grill          | (4) Steering Joint Shaft Support |
| (2) Steering Joint Cover | (5) Steering Joint Screw         |
| (3) Steering Joint Shaft |                                  |

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#### Steering Controller Assembly

1. Disconnect the power steering delivery pipe (4), steering hoses (2), (3) and return hose (5).
2. Remove the steering controller mounting screw (6) and steering controller assembly (1).

#### (When reassembling)

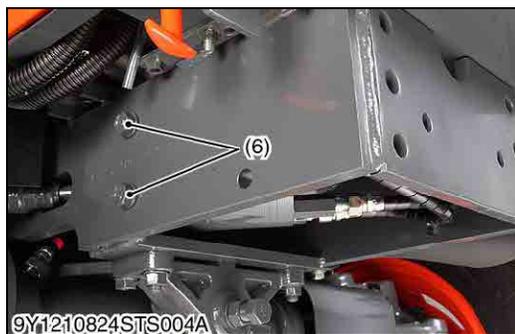
- Reinstall the steering hoses (2), (3) to their original position.



Tightening torque	Power steering delivery pipe retaining nut	49 to 58 N·m 5.0 to 6.0 kgf·m 37 to 43 lbf·ft
	Power steering hose retaining nut	25 to 29 N·m 2.5 to 3.0 kgf·m 18 to 21 lbf·ft

- |                         |                                  |
|-------------------------|----------------------------------|
| (1) Steering Controller | (4) Power Steering Delivery Pipe |
| (2) Steering Hose RH    | (5) Return Hose                  |
| (3) Steering Hose LH    | (6) Screw                        |

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## [2] STEERING LINKAGE



### Steering Wheel and Steering Post Covers

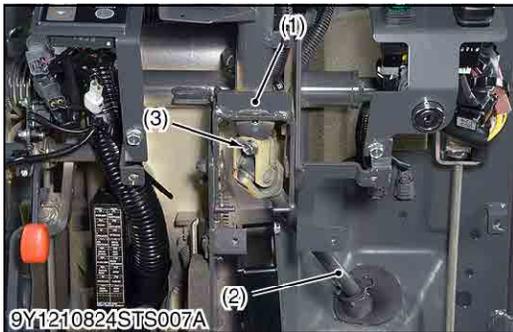
1. Remove the steering wheel (1).
2. Remove the steering panel cover (2).
3. Remove the steering post cover 1 (3) and the steering post cover 2 (4).

#### **(When reassembling)**

Tightening torque	Steering wheel mounting nut	48.1 to 55.9 N·m 4.9 to 5.7 kgf·m 35.4 to 41.2 lbf·ft
-------------------	-----------------------------	---

- |                    |                           |
|--------------------|---------------------------|
| (1) Steering Wheel | (3) Steering Post Cover 1 |
| (2) Panel Cover    | (4) Steering Post Cover 2 |

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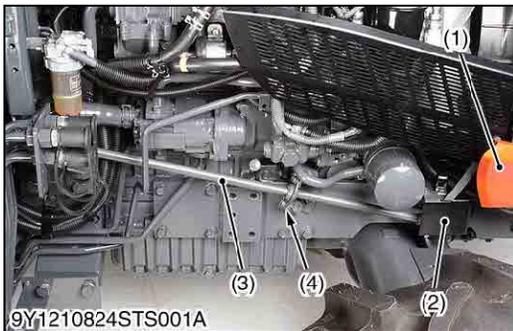


### Steering Joint Shaft and Steering Post

1. Remove the steering joint screw (3) and the steering joint shaft (2).
2. Remove the steering post (1).

- |                          |                          |
|--------------------------|--------------------------|
| (1) Steering Post        | (3) Steering Joint Screw |
| (2) Steering Joint Shaft |                          |

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### Steering Joint Cover and Steering Joint Shaft

1. Pull down the knob and open the bonnet.
2. Remove the front grill (1).
3. Remove the steering joint cover (2).
4. Remove the steering joint screw (5) and the steering joint support (4).
5. Remove the steering joint shaft (3).

#### **(When reassembling)**

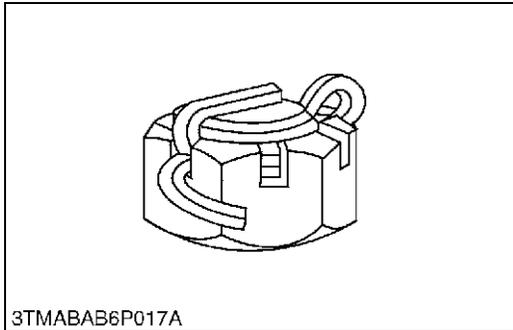
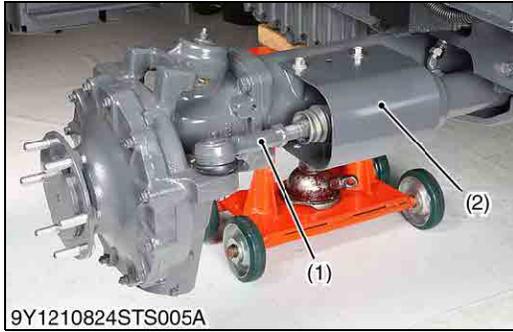
- Tighten the steering joint shaft support mounting screw after adjusting the position of steering joint shaft support (4) for smooth rotation of the steering wheel.

- |                          |                                  |
|--------------------------|----------------------------------|
| (1) Front Grill          | (4) Steering Joint Shaft Support |
| (2) Steering Joint Cover | (5) Steering Joint Screw         |
| (3) Steering Joint Shaft |                                  |

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### [3] STEERING CYLINDER



#### Front Wheel, Cylinder Cover and Tie-rod

1. Place a disassembly stand under the engine and support it with a jack.
2. Remove the front wheel and cylinder cover (2).
3. Pull out the cotter pin and remove the tie-rod end slotted nut.
4. Disconnect the tie-rod (1).

#### (When reassembling)

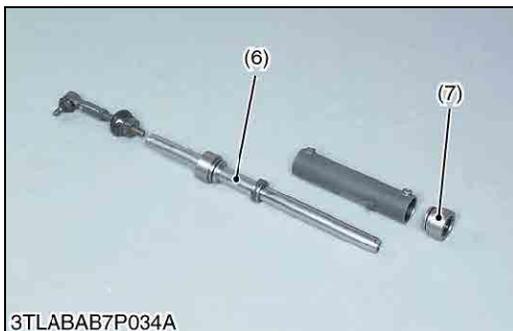
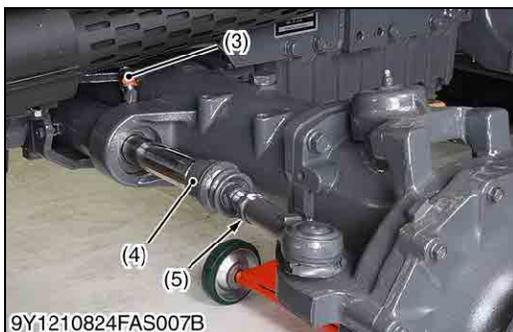
- After tightening the tie-rod end slotted nut to the specified torque, install a cotter pin as shown in the figure.

Tightening torque	Front wheel mounting nut		137 N·m 14.0 kgf·m 101 lbf·ft
	Tie-rod end slotted nut	L3560 L4060	40 to 45 N·m 4.0 to 4.6 kgf·m 29 to 33 lbf·ft
		L4760 L5060 L5460 L6060	157 to 176 N·m 16.0 to 18.0 kgf·m 116 to 130 lbf·ft

(1) Tie-rod

(2) Cylinder Cover

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#### Steering Cylinder

1. Disconnect the power steering hoses (1), (3) and remove the elbows.
2. Disconnect the tie-rod joint L.H. (4).
3. Remove the internal snap ring (2).
4. Remove the steering cylinder to the left.
5. Remove the head cover (7) and draw out the cylinder rod (6).

#### (When reassembling)

- Apply transmission fluid to the oil seal and O-ring.
- Apply liquid lock (Three Bond 1324B or equivalent) to the thread of tie-rod joint (4).

Tightening torque	Power steering hose retaining nut	25 to 29 N·m 2.5 to 3.0 kgf·m 18 to 21 lbf·ft
	Tie-rod joint	167 to 196 N·m 17.0 to 20.0 kgf·m 123 to 144 lbf·ft
	Tie-rod joint lock nut	167 to 196 N·m 17.0 to 20.0 kgf·m 123 to 144 lbf·ft

(1) Power Steering Hose R.H.

(5) Lock Nut

(2) Internal Snap Ring

(6) Cylinder Rod

(3) Power Steering Hose L.H.

(7) Head Cover

(4) Tie-rod Joint

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## 6. SERVICING

### [1] STEERING CYLINDER



#### Steering Cylinder I.D.

1. Measure the steering cylinder I.D. with a cylinder gauge.
2. If the cylinder I.D. exceed the allowable limit, replace the cylinder tube.

Steering cylinder I.D.	Factory specification	55.000 to 55.074 mm 2.1654 to 2.1682 in.
	Allowable limit	55.100 mm 2.1693 in.

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#### Clearance between Rod and Bushing

1. Measure the bushing I.D. with a cylinder gauge.
2. Measure the rod O.D. with a outside micrometer, and calculate the clearance.
3. If the clearance exceeds the allowable limit, replace as a unit.

Clearance between rod and bushing	Factory specification	0.00900 to 0.127 mm 0.000355 to 0.00500 in.
	Allowable limit	0.135 mm 0.00531 in.

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