WSM

WORKSHOP MANUAL
TRACTOR

B1710,B2110,B2410,B2710

Kubota

KiSC issued 11, 2006 A

MidWestTech | Kubota B1710, B2110, B2410, B2710 Tractor Service Manual | Publication 9Y011-12751

Order the manual at mid-west-tech.com >

GENERAL

CONTENTS

1. FEATURES G-1
2. TRACTOR IDENTIFICATION G-2
3. GENERAL PRECAUTIONS G-3
4. HANDLING PRECAUTIONS FOR ELECTRICAL PARTS AND WIRING .. G-4
   [1] WIRING G-4
   [2] BATTERY G-6
   [3] FUSE G-6
   [4] CONNECTOR G-6
   [5] HANDLING OF CIRCUIT TESTER G-7
5. LUBRICANTS FUEL AND COOLANT G-8
6. TIGHTENING TORQUES G-9
   [1] GENERAL USE SCREWS, BOLTS AND NUTS G-9
   [2] STUD BOLTS G-9
7. MAINTENANCE G-10
8. CHECK AND MAINTENANCE G-11
   [1] DAILY CHECK G-11
   [2] CHECK POINTS OF INITIAL 50 HOURS G-12
   [3] CHECK POINTS OF EVERY 50 HOURS G-15
   [4] CHECK POINTS OF EVERY 100 HOURS G-17
   [5] CHECK POINTS OF EVERY 200 HOURS G-23
   [6] CHECK POINTS OF EVERY 300 HOURS G-24
   [7] CHECK POINTS OF EVERY 400 HOURS G-25
   [8] CHECK POINTS OF EVERY 800 HOURS G-26
   [9] CHECK POINTS OF EVERY 1 YEAR G-26
   [10] CHECK POINTS OF EVERY 2 YEARS G-26
   [11] OTHERS G-29
9. SPECIAL TOOLS G-31
   [1] SPECIAL TOOLS FOR ENGINE G-31
   [2] SPECIAL TOOLS FOR TRACTOR G-36
10. TIRES G-40
   [1] TIRE PRESSURE G-40
   [2] TREAD G-41
      (1) Front Wheels G-41
      (2) Rear Tread G-42
   [3] TIRE LIQUID INJECTION G-44

KiSC issued 11, 2008 A

MidWestTech | Kubota B1710, B2110, B2410, B2710 Tractor Service Manual | Publication... Order the manual at mid-west-tech.com >

2. SERVICING SPECIFICATIONS

Item			Factory Specification	Allowable Limit
Front Wheel Alignment	Toe-in	B1710 B2110 B2410	0 to 10 mm 0 to 0.39 in.	–
		B2710	0 to 7 mm 0 to 0.28 in.	–
Front Axle	Rocking Force		49.0 to 98.1 N 5.0 to 11.0 kgf 11.0 to 22.1 lbs	–
Differential Case, Differential Case Cover to Differential Side Gear	Clearance		0.040 to 0.082 mm 0.00157 to 0.00323 in.	0.17 mm 0.0067 in.
Differential Case	I.D.		26.000 to 26.021 mm 1.02362 to 1.02445 in.	–
Differential Case Cover	I.D.		26.000 to 26.021 mm 1.02362 to 1.02445 in.	–
Differential Side Gear	O.D.		25.939 to 25.960 mm 1.02122 to 1.02205 in.	–
Pinion Shaft to Differential Pinion	Clearance		0.038 to 0.068 mm 0.00150 to 0.00268 in.	0.17 mm 0.0067 in.
Pinion Shaft	O.D.		9.972 to 9.987 mm 0.39260 to 0.39312 in.	–
Differential Pinion	I.D.		10.025 to 10.040 mm 0.39469 to 0.39528 in.	–
Differential Pinion to Differential Side Gear	Backlash		0.1 to 0.3 mm 0.004 to 0.012 in.	–
Spiral Bevel Pinion Shaft	Turning Torque		0.8 to 1.0 N·m 0.08 to 0.10 kgf·m 0.59 to 0.73 ft-lbs	–
Spiral Bevel Pinion Shaft to Spiral Bevel Gear	Backlash		0.10 to 0.30 mm 0.0039 to 0.0118 in.	–
11T Bevel Gear to 16T Bevel Gear	Backlash		0.10 to 0.30 mm 0.0039 to 0.0118 in.	–
Front Axle Case Boss to Bracket Bushing (Front)	Clearance		0.125 to 0.280 mm 0.00492 to 0.01102 in.	0.45 mm 0.0177 in.
Front Axle Case Boss	O.D.		49.950 to 49.975 mm 1.96653 to 1.96751 in.	–
Bracket Bushing	I.D.		50.100 to 50.230 mm 1.97243 to 1.97755 in.	–

W10138740

MidWestTech | Kubota B1710, B2110, B2410, B2710 Tractor Service Manual | Publication... Order the manual at mid-west-tech.com >

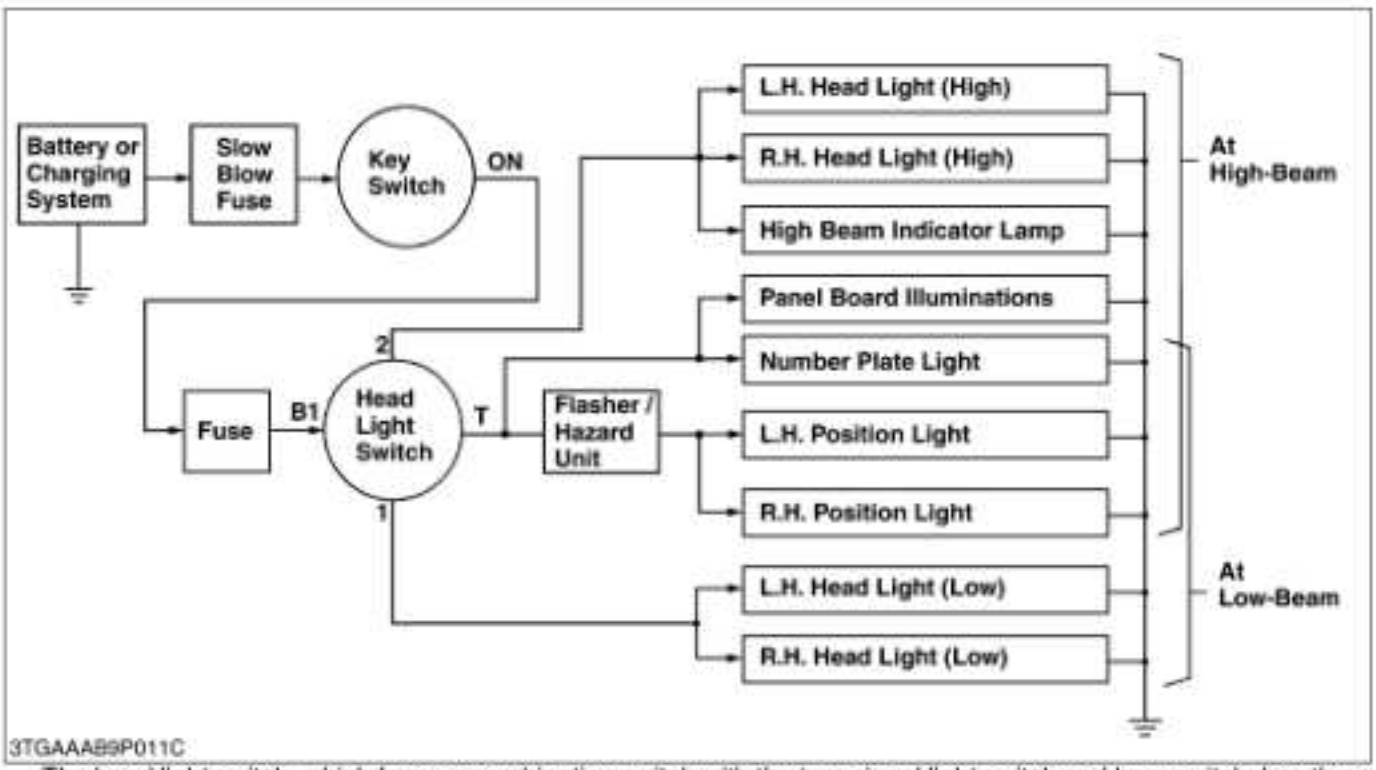
1. TROUBLESHOOTING

Symptom	Probable Cause	Solution	Reference Page
Excessive Steering Wheel Play	• Backlash between sector gear shaft and rack (piston) too large	Adjust	7-S13
	• Steering linkage worn	Replace	–
	• Sector gear shaft worn	Replace	7-S11
Tractor Pulls to Right or Left	• Tire pressure uneven	Adjust	G-40
	• Steering wheel play too small	Adjust	7-S13
	• Improper toe-in adjustment	Adjust	G-23
Front Wheels Vibration	• Steering linkage worn	Replace	–
	• Improper toe-in adjustment	Adjust	G-23
Hard Steering	• Transmission fluid improper or insufficient	Change	G-8
	• Oil leak from pipe joint	Retighten	–
	• Hydraulic pump malfunctioning	Replace	7-S6
	• Improper relief valve adjustment	Adjust	7-S8, S12
	• Relief valve malfunctioning	Replace	7-S12
	• Valve housing and sleeve malfunctioning	Replace	7-S12
	• Seals in the steering gear box damaged	Replace	–
	• Backlash between sector gear shaft and rack (piston) too small	Adjust	7-S13
	• Air in the hydraulic pipes	Air vent	–
Low Operating Pressure	• Hydraulic pump malfunctioning	Replace	7-S6
	• Improper relief valve adjustment	Adjust	7-S8, S12
	• Relief valve malfunctioning	Replace	7-S12
	• Seals in the steering gear box damaged	Replace	–
	• Rack (Piston) malfunctioning	Replace rack (piston) assembly	7-S12
	• Oil leak from pipe or pipe broken	Replace	–
Steering Wheel Does Not Return to Neutral Position	• Valve housing and sleeve jammed	Repair or replace	7-S12
	• Valve housing oil seal damaged	Replace	–
Steering Force Fluctuates	• Insufficient oil	Replenish	G-8
	• Insufficient bleeding	Bleed	–
	• Control valve malfunctioning	Replace	7-S11
Noise	• Insufficient oil	Replenish	G-8
	• Air sucked in pump from suction circuit	Repair	–
	• Pipe deformed	Replace	–

W10143220

MidWestTech | Kubota B1710, B2110, B2410, B2710 Tractor Service Manual | Publication... Order the manual at mid-west-tech.com >

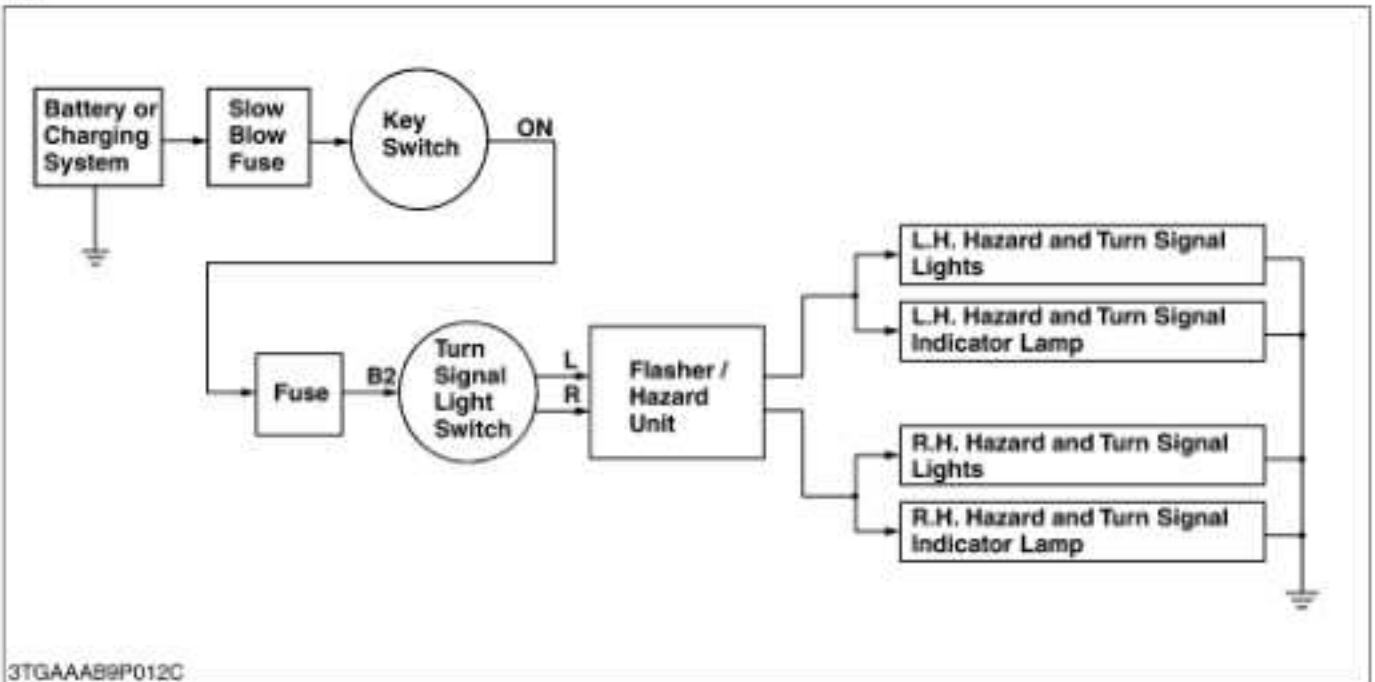
[1] HEAD LIGHT



The head light switch, which forms a combination switch with the turn signal light switch and horn switch, has three positions; **OFF**, **LOW-BEAM** and **HIGH-BEAM**.

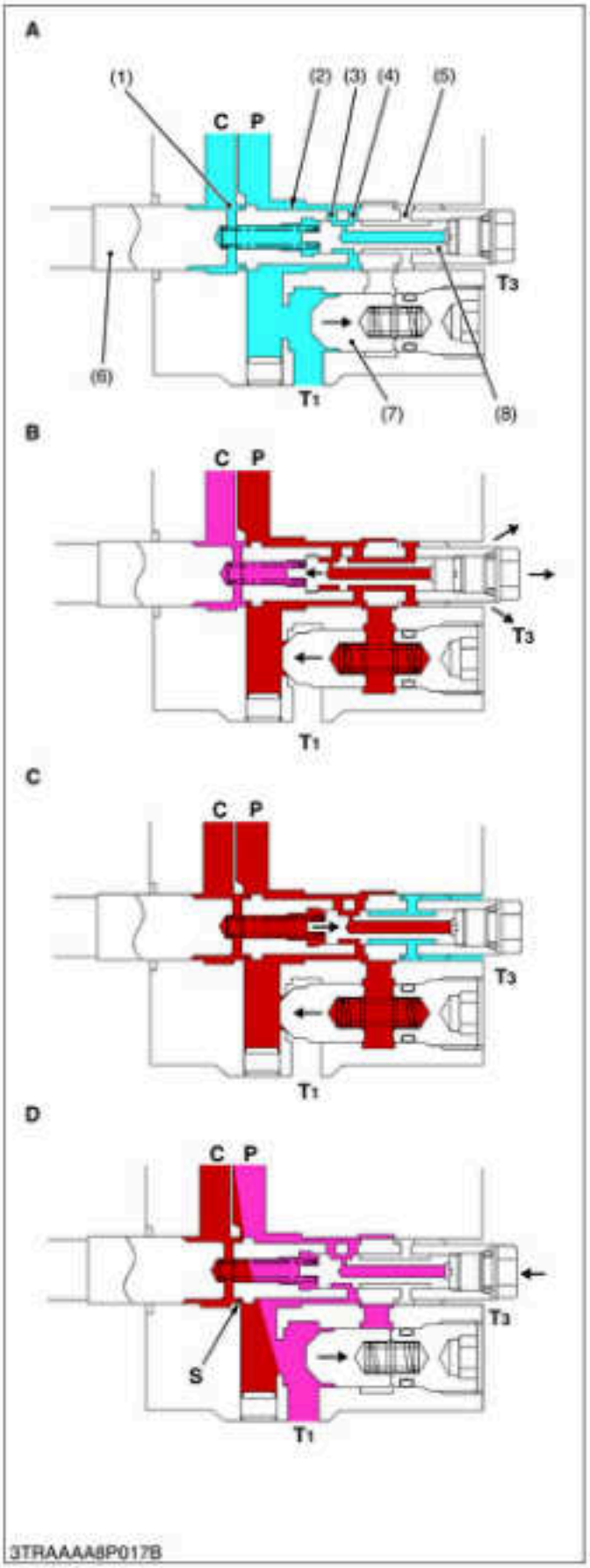
Current passes through the light circuit as shown in the figure above.

[2] TURN SIGNAL LIGHT



The turn signal light switch, which forms a combination switch with the head light switch and horn switch, has three position; **OFF**, **L** and **R**. When using turn signal light switch, blinks only one side light and other one stays off.

MidWestTech | Kubota B1710, B2110, B2410, B2710 Tractor Service Manual | Publication... Order the manual at mid-west-tech.com >



■ Shockless Mechanism

The control valve is provided with a shockless mechanism. This is intended to reduce a sudden change of the oil pressure and flow when the three point linkage system begins to going up or stop going up. As a result, operator does not feel the unpleasant shock.

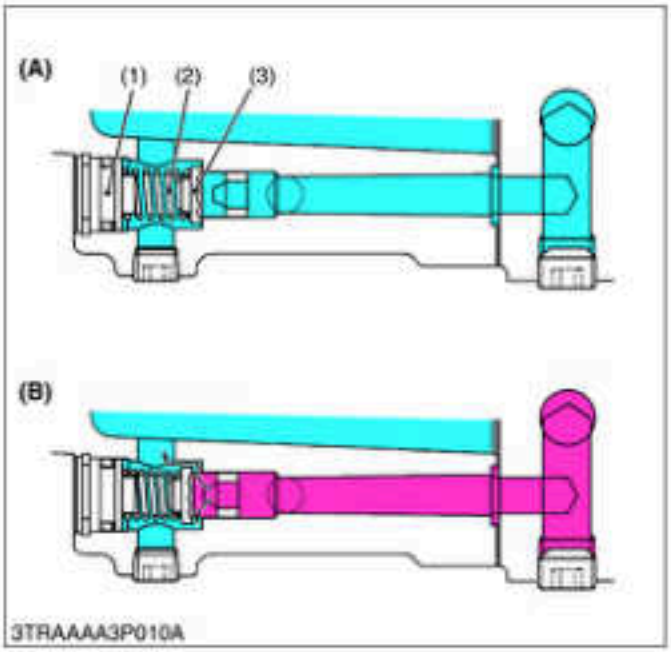
1. When the three point linkage system starts going up, the spool (6) is located slightly at the right from the neutral position. (Fig. **B**)
   A small amount of oil is kept constantly flowing from the pump through the slit into the cylinder port. (A fixed flow rate is guaranteed.)
2. The oil fed from hydraulic pump flows in passages 3 (3) and 4 (4) by the difference of the hole diameter, and pushes the plunger (8) to the left. Then the passages 4 (4) and 5 (5) connect to each other, and the oil between them return to the transmission case through the clearance between the valve body and the spool (6) and through the **T3** port. In this way, the plunger (8) returns to the rightmost position. (Fig. **B** and **C**)
   Some of the oil coming from the pump is drained into the **T3** port, which controls the flow rate of the oil going into the cylinder.
3. As a result, the oil pressure is controlled not to rise suddenly. The shock at the start of lifting is thus reduced.
4. When the spool (6) comes close to the neutral position by the motions of feedback linkage, the oil pressure gradually drops by the slit provided in the spool (6). Therefore the shock at the stop of lifting is reduced. (Fig. **D**)

(1) Passage 1
(2) Passage 2
(3) Passage 3
(4) Passage 4
(5) Passage 5
(6) Spool
(7) Unload Poppet
(8) Plunger

P : Pump Port
C : Cylinder Port
S : Slit
T1, T3 : Tank Port

W10140620

MidWestTech | Kubota B1710, B2110, B2410, B2710 Tractor Service Manual | Publication... Order the manual at mid-west-tech.com >



■ Charge Relief Valve

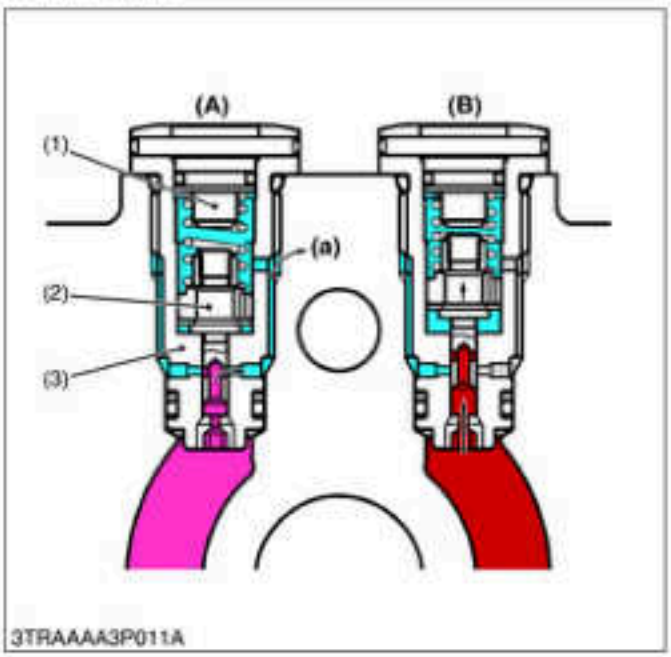
While pumped and filtered oil flows into the main oil circuit through the check and high pressure relief valves, and excessive oil passes to the housing through the charge relief valve.

Oil temperature	Valve operating pressure
50 °C (122 °F)	500 to 800 kPa 5.1 to 8.2 kgf/cm^2 73 to 116 psi

(1) Plug
(2) Spring
(3) Charge Relief Valve

(A) Charge Relief Valve Closed
(B) Charge Relief Valve Opened (When engine is started)

W10142580



■ Neutral Valve

The neutral valves in the main oil circuit lines are open and pass the oil to the case when in neutral, and the oil pressure in their lines becomes low. And when the oil pressure in the high pressure line increases to a specified pressure, the neutral valve closes.

Oil temperature		Valve operating pressure
50 °C (122 °F)	Close	7.36 to 9.81 MPa 75 to 100 kgf/cm^2 1067 to 1422 psi
	Open	1.47 to 2.45 MPa 15 to 25 kgf/cm^2 213 to 356 psi

(1) Plug
(2) Neutral Valve Poppet
(3) Neutral Valve Body

(A) Low Pressure Side (Open)
(B) High Pressure Side (Close)
(a) To HST Case

W10144000

MidWestTech | Kubota B1710, B2110, B2410, B2710 Tractor Service Manual | Publication... Order the manual at mid-west-tech.com >