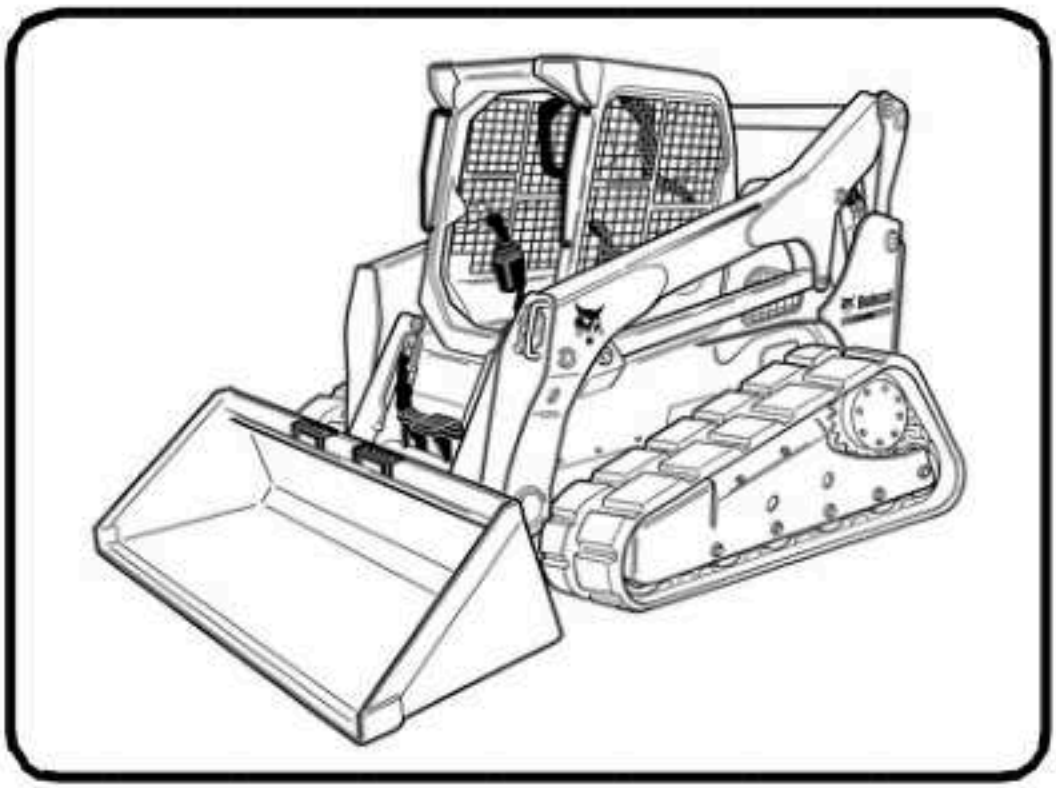
Bobcat®

Service Manual
T870 Compact Track Loader

S/N A3PG11001 & Above
S/N A3PH11001 & Above



EQUIPPED WITH BOBCAT INTERLOCK CONTROL SYSTEM (BICS™)

6987487 (4-11)

Printed in U.S.A.

© Bobcat Company 2011

MidWestTech | Bobcat T870 Compact Track Skid Loader Service Manual | Publication 698... Order the manual at mid-west-tech.com >

CONTENTS

SAFETY & MAINTENANCE 10-01

HYDRAULIC SYSTEM 20-01

HYDROSTATIC SYSTEM 30-01

DRIVE SYSTEM 40-01

MAINFRAME 50-01

ELECTRICAL SYSTEM & ANALYSIS 60-01

ENGINE SERVICE 70-01

HEATING, VENTILATION AND AIR CONDITIONING (HVAC) 80-01

SPECIFICATIONS SPEC-01

ALPHABETICAL INDEX INDEX-01

MidWestTech | Bobcat T870 Compact Track Skid Loader Service Manual | Publication 698... Order the manual at mid-west-tech.com >

FOREWORD 1-7

SAFETY INSTRUCTIONS 1-10

FIRE PREVENTION 1-12
- Maintenance 1-12
- Operation 1-12
- Electrical 1-12
- Hydraulic System 1-12
- Fueling 1-12
- Starting 1-12
- Spark Arrestor Exhaust System 1-12
- Welding And Grinding 1-13
- Fire Extinguishers 1-13

SERIAL NUMBER LOCATIONS 1-14
- Loader Serial Number 1-14
- Engine Serial Number 1-14

DELIVERY REPORT 1-15

LOADER IDENTIFICATION 1-16

MidWestTech | Bobcat T870 Compact Track Skid Loader Service Manual | Publication 698... Order the manual at mid-west-tech.com >

HYDRAULIC/HYDROSTATIC SCHEMATIC WITH ALL OPTIONS

T870 (S/N A3PG11001 AND ABOVE) (S/N A3PH11001 AND ABOVE)

(PRINTED SEPTEMBER 2010)
V-1397legend

LEGEND

1. RESERVOIR:
   Capacity at sight gauge . . 10.3 Qts. (9,75 L)
   System Capacity . . . . . 9.5 Gal. (36 L)
2. SIGHT GAUGE
3. DIFFERENTIAL PRESSURE SWITCH:
   15 PSI (1,07 bar)
   Normally Closed
4. FILTER - HYDRAULIC (CANISTER)
5. SPRING LOADED FILTER BY-PASS VALVE: 25 PSI (1,7 bar)
6. DIAGNOSTIC COUPLER
7. RELIEF VALVE - MAIN:
   3450 - 3550 PSI (238 - 245 bar)
   at Front Quick Couplers
8. RELIEF/ANTICAVITATION VALVE - PORT 4500 PSI (310 bar)
9. RELIEF/ANTICAVITATION VALVE - PORT 4000 PSI (276 bar)
   (AUXILIARY RELIEF IS OPTIONAL)
10. SOLENOID ACTIVATED DIRECTIONAL CONTROL VALVE - AUXILIARY
11. LOAD CHECK VALVE
12. ANTICAVITATION VALVE
13. PILOTED ACTIVATED DIRECTIONAL CONTROL VALVE - TILT CONTROL
14. PILOTED ACTIVATED DIRECTIONAL CONTROL VALVE - LIFT CONTROL
15. SOLENOID ACTIVATED DIRECTIONAL CONTROL VALVE - BICS CONTROL
16. FILTER - BICS CONTROL VALVE (SCREEN)
17. CHECK VALVE - With 14.5 PSI (1,0 bar) Spring
18. RESTRICTION . . . . . 0.079 in. (2,0 mm)
19. PULL BUTTON ACTIVATED DIRECTIONAL CONTROL VALVE - LIFT ARM BY-PASS
20. LIFT CYLINDER SPOOL - MADE TO RESTRICT FLOW DURING BOOM DOWN BUT NOT DURING BOOM UP
21. ANTICAVITATION VALVE
22. PROPORTIONAL RELIEF VALVE – (Fan Speed Regulator):
    1566 - 1784 PSI (108 - 123 bar)
23. SPRING LOADED FILTER BY-PASS VALVE: 75 - 83 PSI (5,2 - 5,7 bar)
24. FIXED CAPACITY DISPLACEMENT HYDRAULIC MOTOR
25. FILTER - HYDRAULIC (CANISTER)
26. SENSOR – CHARGE PRESSURE – Fan Filter
27. FRONT AUXILIARY MANUAL PRESSURE BLEED-OFF VALVE
28. SENSOR – HYD. TEMPERATURE
29. RESTRICTION - 0.067 inch (1,7 mm)
30. CHECK VALVE - With 200 PSI (13,8 bar) Spring
31. DRIVE MOTOR SHUTTLE VALVE
32. Not Used For This Model
33. Not Used For This Model
34. FIXED CAPACITY DISPLACEMENT BIDIRECTIONAL HYDROSTATIC MOTOR
35. HYDRAULIC BRAKE – SPRING APPLIED – PRESSURE RELEASE (SAPR)
36. VARIABLE CAPACITY DISPLACEMENT BIDIRECTIONAL HYDROSTATIC PUMP
37. CHECK VALVE – COLD WEATHER BY-PASS With 50 PSI (3,45 bar) Spring
38. SERVO PISTON – Swash Plate
39. RELIEF/REPLENISHING VALVE - HIGH PRESSURE: 5294 PSI (365 bar)
40. RELIEF VALVE - CHARGE INLET:
    430 - 530 PSI (29,6 – 36,5 bar) at High Engine Idle With 140 degrees F. (60 degrees C.) Fluid
41. SOLENOID ACTIVATED DIRECTIONAL CONTROL VALVE – FORWARD/REVERSE
42. FILTER (Screen)
43. Not Used For This Model
44. Not Used For This Model
45. Not Used For This Model
46. SOLENOID ACTIVATED DIRECECTIONAL CONTROL VALVE – BRAKE
47. FILTER - BRAKE
48. HYDRAULIC PUMP . . . . . Gear Type
    23.8 GPM (90,1 L/min.) at High Engine Idle
49. CHARGE PUMP -
    13.5 GPM (51,1 L/min) at High Engine Idle
50. HIGH FLOW HYDRAULIC PUMP Gear Type
    13.6 GPM (51,5 L/min.) at High Engine Idle
51. RELIEF VALVE - 3500 PSI (241 bar)
52. DUMP VALVE – ON / OFF
53. PILOT ACTIVATED DIRECTIONAL CONTROL VALVE - HYDRAULIC POWERED BOB-TACH
54. FILTER - BOB-TACH VALVE
55. RESTRICTION - 0.089 inch (2,26 mm)
56. SOLENOID ACTIVATED DIRECTIONAL CONTROL VALVE (TWO COIL)
57. RELIEF VALVE - 1200 PSI (83 bar)
58. CHECK VALVE - With 80 PSI (5,5 bar) Spring
59. RELIEF VALVE - 2000 PSI (137 bar)
60. CHECK VALVE - With 300 PSI (20,7 bar) Spring And With 0.016 inch (0,40 mm) Orifice
61. RESTRICTION - 0.025 inch (0,6 mm)
62. FILTER – BOB-TACH VALVE
63. PILOT ACTIVATED DIRECTIONAL CONTROL VALVE - REAR AUXILIARY
64. RELIEF VALVE: 3300 PSI (228 bar)
65. SOLENOID ACTIVATED DIRECTIONAL CONTROL VALVE - TWO COIL
66. RESTRICTOR - 0.031 inch (0,8 mm)
67. LOAD SHUTTLE VALVE - BLEED OFF
68. SOLENOID ACTIVATED DIRECTIONAL CONTROL VALVE - BASE
69. SOLENOID ACTIVATED DIRECTIONAL CONTROL VALVE - ROD
70. SOLENOID ACTIVATED DIRECTIONAL CONTROL VALVE - BUCKET POSITION VALVE (ON/OFF)
71. FLOW DIVIDER ADJUSTMENT VALVE
72. PILOTED ACTIVATED DIRECTIONAL CONTROL VALVE - FLOW CONTROL SPOOL
73. CHECK VALVE - BUCKET POSITION VALVE
74. PILOTED ACTIVATED DIRECTIONAL CONTROL VALVE - UNLOADING SPOOL
75. RIDE CONTROL VALVE
76. HIGH PRESSURE CHAMBER
77. LOW PRESSURE CHAMBER

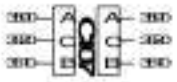
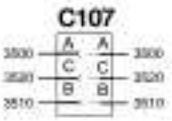
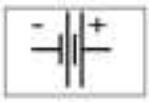
NOTE: Unless otherwise specified springs have NO significant pressure value.

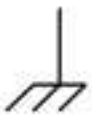
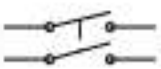
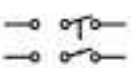
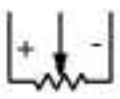
V-1397legend (9-9-10)

Printed in U.S.A.

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

Glossary Of Electrical Symbols

SYMBOL	DESCRIPTION
	CONNECTIONS
	CONNECTOR - Harness - Used for connecting 2 harnesses together or a harness to a component. The connector can vary from a single pin to any number of pins (Example: 3 pin connectors shown). The connector pins can be numbered alphabetical (shown) or numerical (1, 2, 3 etc.). The harness wires numbers are called out next to the connector (Example: 3500).
	The connector number is called out next to the connector (Example: C107). These connector numbers are used for schematic identification only and do not appear on the harness or connector.
	COMPONENTS
	BATTERY - Used for supplying and storing electrical power for the machine.
+	POSITIVE ELECTRICAL CIRCUIT - Indicates positive battery circuit.
-	NEGATIVE ELECTRICAL CIRCUIT - Indicates battery ground circuit.
	ALTERNATOR - Used to create the electrical current to supply voltage to the battery and components.
	STARTER - Uses battery current to start the machine engine.
	GROUND - Used to represent an external ground connection.

SYMBOL	DESCRIPTION
	COMPONENTS
	GROUND - Frame - Used to represent an component that is internally grounded.
	LIGHT -
	SWITCH - Single Pole - Single Throw (ON-OFF) Normally Open
	
	SWITCH - Single Pole - Single Throw (ON-OFF) Normally Closed.
	
	SWITCH - Single Pole - Double Throw (ON-OFF-ON) - This switch can be in any of three positions. (Some switches are spring activated to return them to a certain position when released.)
	SWITCH - Double Pole - Single Throw (ON-OFF) Open and Closed positions will be specified depending on switch application.)
	SWITCH - Double Pole - Double Throw (ON-OFF) Open and Closed positions will be specified depending on switch application.
	POTENTIOMETER - Variable resistance - Provides variable resistance.

MidWestTech | Bobcat T870 Compact Track Skid Loader Service Manual | Publication 698... Order the manual at mid-west-tech.com >

Troubleshooting (Joystick)

The following troubleshooting chart is provided for assistance in locating and correcting problems which are most common. Many of the recommended procedures must be done by authorized Bobcat Service Personnel only.

⚠ WARNING

AVOID INJURY OR DEATH

Instructions are necessary before operating or servicing machine. Read and understand the Operation & Maintenance Manual, Operator's Handbook and signs (decals) on machine. Follow warnings and instructions in the manuals when making repairs, adjustments or servicing. Check for correct function after adjustments, repairs or service. Untrained operators and failure to follow instructions can cause injury or death.

W-2003-0807

PROBLEM	CAUSE
Front horn will not sound when the operator presses the front horn button	1, 2, 3, 4, 5, 6

KEY TO CORRECT THE CAUSE
1. The ground connection is not making a good contact.
2. The front horn is damaged.
3. The front horn wires are disconnected.
4. Check the fuses.
5. The wiring is damaged.
6. The joystick controller is not working correctly.

MidWestTech | Bobcat T870 Compact Track Skid Loader Service Manual | Publication 698... Order the manual at mid-west-tech.com >

J1 CONNECTOR ASSIGNMENTS(GATEWAY CONTROLLER)			
PIN	FUNCTION	PIN	FUNCTION
A-1	HYDRAULIC LOCK RETURN	B-1	HYD CHARGE PRESS
A-2		B-2	UNSW BATT
A-3	FUEL PULL RELAY	B-3	UNSW BATT
A-4	SWITCHED POWER OUT RELAY	B-4	FUEL HOLD
A-5	LIGHT 1 RELAY	B-5	
A-6	GLOW PLUG RELAY	B-6	TRACTION LOCK HOLD
A-7	STARTER RELAY	B-7	
A-8	TRACTION PULL RELAY	B-8	CAN LO 1
A-9		B-9	CAN HI 1
A-10		B-10	
A-11	AC SENSE	B-11	SEAT BAR
A-12	SPARE DIGITAL, ECU SOURCES	B-12	FUEL LEVEL
A-13	TRACTION PULL RELAY FDBK	B-13	BICS HYD LOCK HOLD
A-14	GLOW PLUG RELAY FDBK	B-14	CAN HI 2
A-15	ENGINE SPEED	B-15	GROUND P1
A-16	AIR FILTER SWITCH	B-16	GROUND P2
A-17	REAR LIGHT 2 RELAY	B-17	GROUND P3, SENSOR
A-18	FAN 2 RETURN	B-18	ENGINE COOLANT TEMP
A-19	PTOL LED	B-19	FAN 2 OUTPUT
A-20	PTOL SWITCH	B-20	CAN LO 2
A-21	SWITCHED POWER OUT RELAY FDBK	B-21	REMOTE KEY
A-22	STATER RELAY FDBK	B-22	RUN/ENTER
A-23		B-23	SENSOR SUPPLY 8V
A-24	START ENGINE	B-24	SENSOR SUPPLY 5V
A-25	ENGINE OIL PRESS	B-25	TWO SPEED MAKEUP
A-26	TWO SPEED RETURN	B-26	TWO SPEED COIL
A-27	TWO SPEED MAKE-UP RETURN		
A-28	REAR LIGHT 2 RELAY FDBK		
A-29			
A-30	FUEL PULL RELAY FDBK		
A-31	FRONT WORK LIGHT 1 RELAY FDBK		
A-32	HYD OIL TEMP		
A-33			
A-34	HYD OIL FILTER SW1		

J2 CONNECTOR ASSIGNMENTS(AUXILLIARY CONTROLLER)			
PIN	FUNCTION	PIN	FUNCTION
A-1	FRONT AUX (F) RETURN	B-1	
A-2	REAR AUX (F) RETURN	B-2	UNSW BATT
A-3	LEFT BLINKER RELAY	B-3	UNSW BATT
A-4	RIGHT BLINKER RELAY	B-4	DIVERTED SOLENOID
A-5	HORN RELAY	B-5	REAR AUX (F)
A-6		B-6	RELIEF SOLENOID
A-7		B-7	REAR AUX (M)
A-8		B-8	CAN LO 1
A-9		B-9	CAN HI 1
A-10	REAR AUX (M) RETURN	B-10	
A-11		B-11	
A-12		B-12	
A-13		B-13	FRONT AUX (F)
A-14		B-14	
A-15		B-15	GROUND
A-16		B-16	GROUND
A-17		B-17	
A-18	FRONT AUX (M) RETURN	B-18	
A-19		B-19	FRONT AUX (M)
A-20		B-20	
A-21		B-21	
A-22		B-22	SWITCHED POWER
A-23		B-23	
A-24		B-24	
A-25		B-25	HYDRAULIC BOOST
A-26	HIGH FLOW RETURN	B-26	HIGH FLOW
A-27	HYDRAULIC BOOST RETURN		
A-28			
A-29			
A-30			
A-31			
A-32			
A-33			
A-34			

J5 DRIVE CONTROLLER	
PIN	FUNCTION
1	
2	
3	
4	H PAT SWITCH
5	
6	ISO LITE
7	L SWASH PLATE ANGLE
8	R SWASH PLATE ANGLE
9	
10	
11	L FWD RETURN
12	CAN HIGH
13	
14	
15	
16	H PAT LITE
17	
18	
19	
20	
21	L FWD DRIVE
22	CAN LOW
23	R QUAD A DRIVE
24	R QUAD B DRIVE
25	
26	BRAKE LIGHT OUTPUT
27	GROUND
28	GROUND
29	SENSOR GROUND
30	
31	L REV DRIVE
32	
33	L QUAD A DRIVE
34	L QUAD B DRIVE
35	
36	BACKUP ALARM
37	
38	
39	
40	SENSOR SUPPLY 1 +5V
41	L REV RETURN
42	R FWD RETURN
43	R FWD DRIVE
44	R REV DRIVE
45	R REV RETURN
46	
47	UNSWITCHED BATTERY
48	UNSWITCHED BATTERY
49	
50	SWITCHED BATTERY

ACS CONTROLLER					
CONNECTOR J3A		CONNECTOR J3B		CONNECTOR J3C	
PIN	FUNCTION	PIN	FUNCTION	PIN	FUNCTION
A	+5V TO SENSORS	A		A	TILT MOTOR 1
B	SWITCHED POWER	B		B	UNSWITCHED POWER
C		C		C	UNSWITCHED POWER
D	CAN HIGH	D		D	LIFT MOTOR 2
E	CAN LOW	E	TILT ACTUATOR FEEDBACK	E	
F		F		F	LIFT MOTOR 1
G	GROUND	G		G	PEDAL ENABLE
H	GROUND	H	LIFT ACTUATOR FEEDBACK	H	GROUND
		J	LIFT PEDAL	J	GROUND
		K	TILT PEDAL	K	TILT MOTOR 2

HARNESS PART NUMBER	
MFR SJC	7176759
DLX CAB	7176096
DLX FUEL	7184255
STD FUEL	7149219
DOOR	7155024
S/R	6733370
TAILGATE DOM	7175271
TAILGATE EUR	7175287
2 SPD ADP	7159366
A22 PUMP	7169309
SUSP JSTK	7163706
BRAKE ADAPTER	7165061
SPD SNSR ADP	7168115



WIRING SCHEMATIC
(SJC MACHINE)
T870 (S/N A3PG11001 AND ABOVE)
(S/N A3PH11001 AND ABOVE)
Sheet 2 of 13

(Printed August 2010)

7176903

Printed In U.S.A.

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