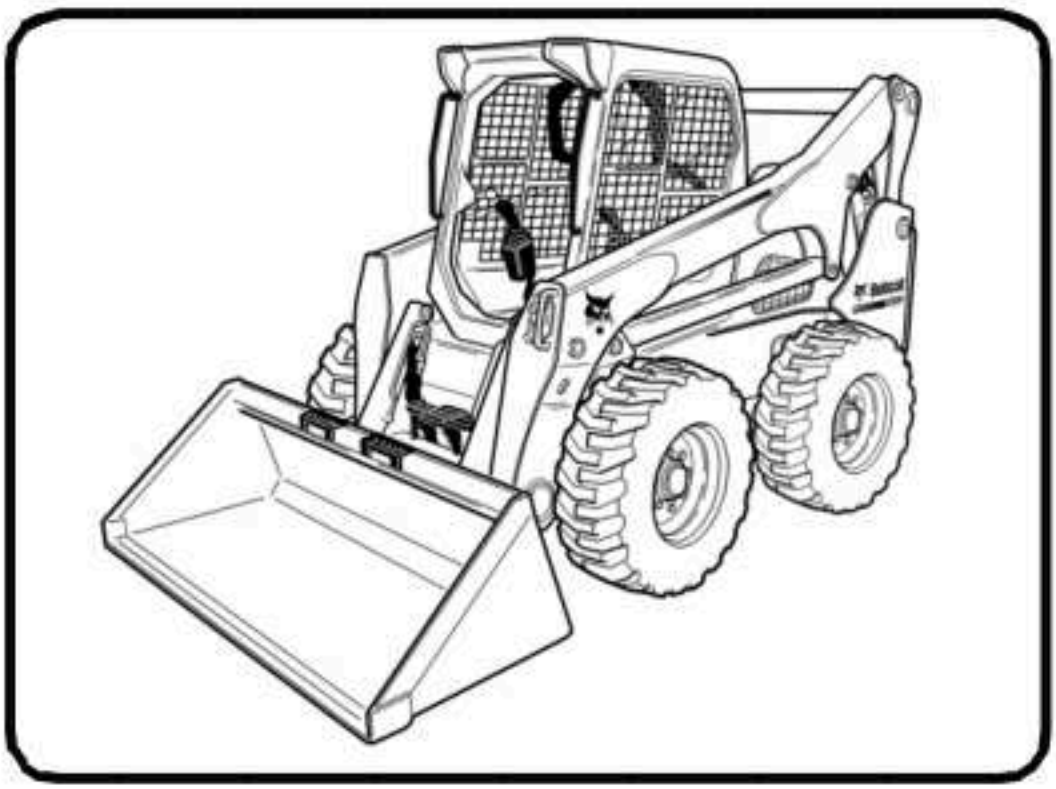
Bobcat®

Service Manual
S850 Skid-Steer Loader

S/N ACS711001 & Above
S/N ACSL11001 & Above



EQUIPPED WITH
BOBCAT INTERLOCK
CONTROL SYSTEM (BICS™)

6987479 (4-11)

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Remote Start Procedure

⚠ WARNING

UNAUTHORIZED AND UNEXPECTED ENGINE STARTUP CAN CAUSE SERIOUS INJURY OR DEATH

With the 7-pin connector plugged into the machine and Remote Start Tool Key Switch in the OFF position, the engine can be started from the operator panel inside the cab.

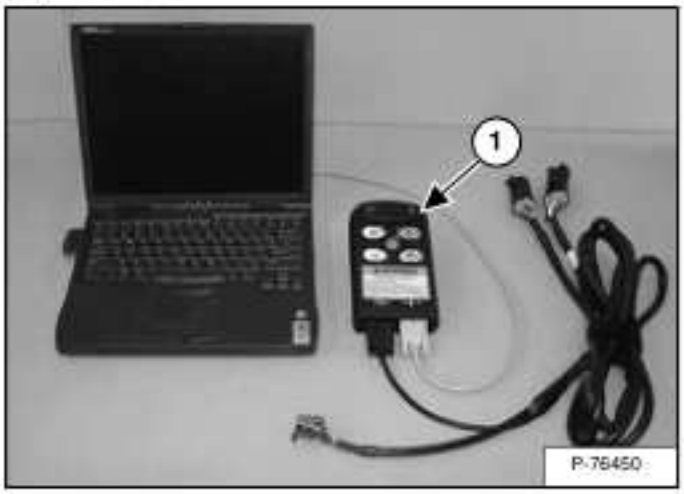
- **Place the key switch of the Remote Start Tool in the RUN position to disconnect the operator panel from the start circuit.**
- **Remove the operator panel key (key switch), lock the keypad with a unique password (keyless) or otherwise disable the starter before working in the engine area.**

W-2457-1110

The tool listed will be needed to do the following procedure:

7003031: Remote Start Tool (Service Tool) Kit

Figure 10-61-8



The Remote Start Tool (Service Tool) (Item 1) **[Figure 10-61-8]** is required when the operator cab is in the raised position for service and the service technician needs to turn on the loader or start the engine. Example: adjusting the steering linkage.

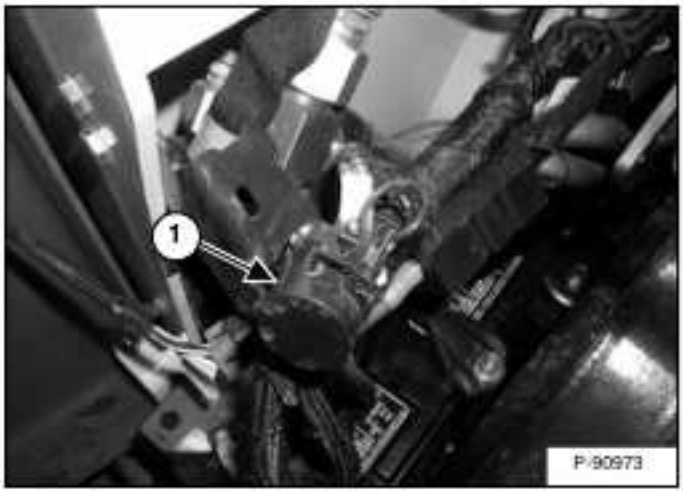
Lift and block the loader.

Raise the lift arms (if required by the procedure) and install an approved lift arm support device.

Raise the operator cab (if required by the procedure).

Open the rear door of the loader.

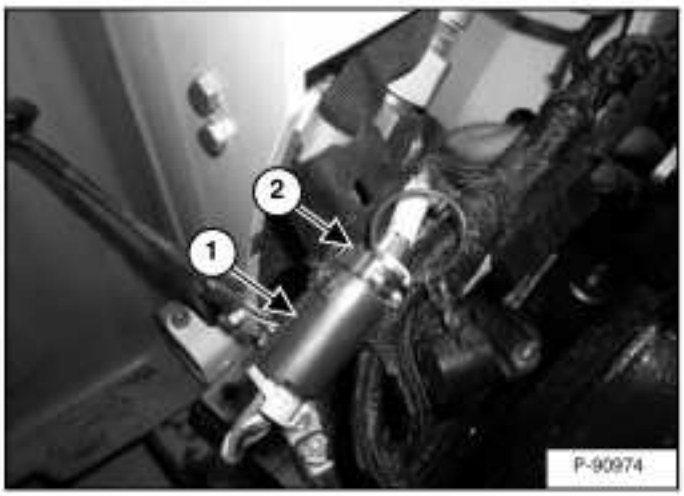
Figure 10-61-9



Loaders without an attachment control harness, remove the loader harness cap (Item 1) **[Figure 10-61-9]** and connect the Loader Service Tool Harness from the Remote Start Tool (Service Tool).

NOTE: When using a Remote Start Tool (Service tool) harness on loaders not equipped with an attachment control device, the Remote Start Tool (Service Tool) harness attachment control device connector must be capped.

Figure 10-61-10



Loaders with an attachment control harness (7 pin or 14 pin), the attachment harness (Item 1) must be disconnected from the loader harness (Item 2) **[Figure 10-61-10]**.

When the remote start procedure is completed, replace the loader connector cap (Item 1) **[Figure 10-61-10]** or reconnect the attachment control harness to the loader harness.

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All dimensions are shown in millimeters. Respective imperial dimensions are given in inches enclosed by parentheses.

Torque Values

Thread Size (Dia. x Pitch)	Material		
	Head Mark 4	Head Mark 7	Head Mark 10
M5 x 0.8		4 - 5 N•m (3 - 4 ft-lb)	
M6 x 1.0		8 - 9 N•m (6 - 7 ft-lb)	8 - 12 N•m (6 - 9 ft-lb)
M8 x 1.25	8 - 12 N•m (6 - 9 ft-lb)	15 - 22 N•m (11 - 16 ft-lb)	24 - 34 N•m (18 - 25 ft-lb)
M10 x 1.25	18 - 24 N•m (13 - 18 ft-lb)	30 - 41 N•m (22 - 30 ft-lb)	49 - 68 N•m (36 - 50 ft-lb)
M12 x 1.25	30 - 41 N•m (22 - 30 ft-lb)	54 - 73 N•m (40 - 54 ft-lb)	94 - 118 N•m (69 - 87 ft-lb)
M14 x 1.5	49 - 68 N•m (36 - 50 ft-lb)	79 - 108 N•m (58 - 80 ft-lb)	157 - 186 N•m (116 - 137 ft-lb)

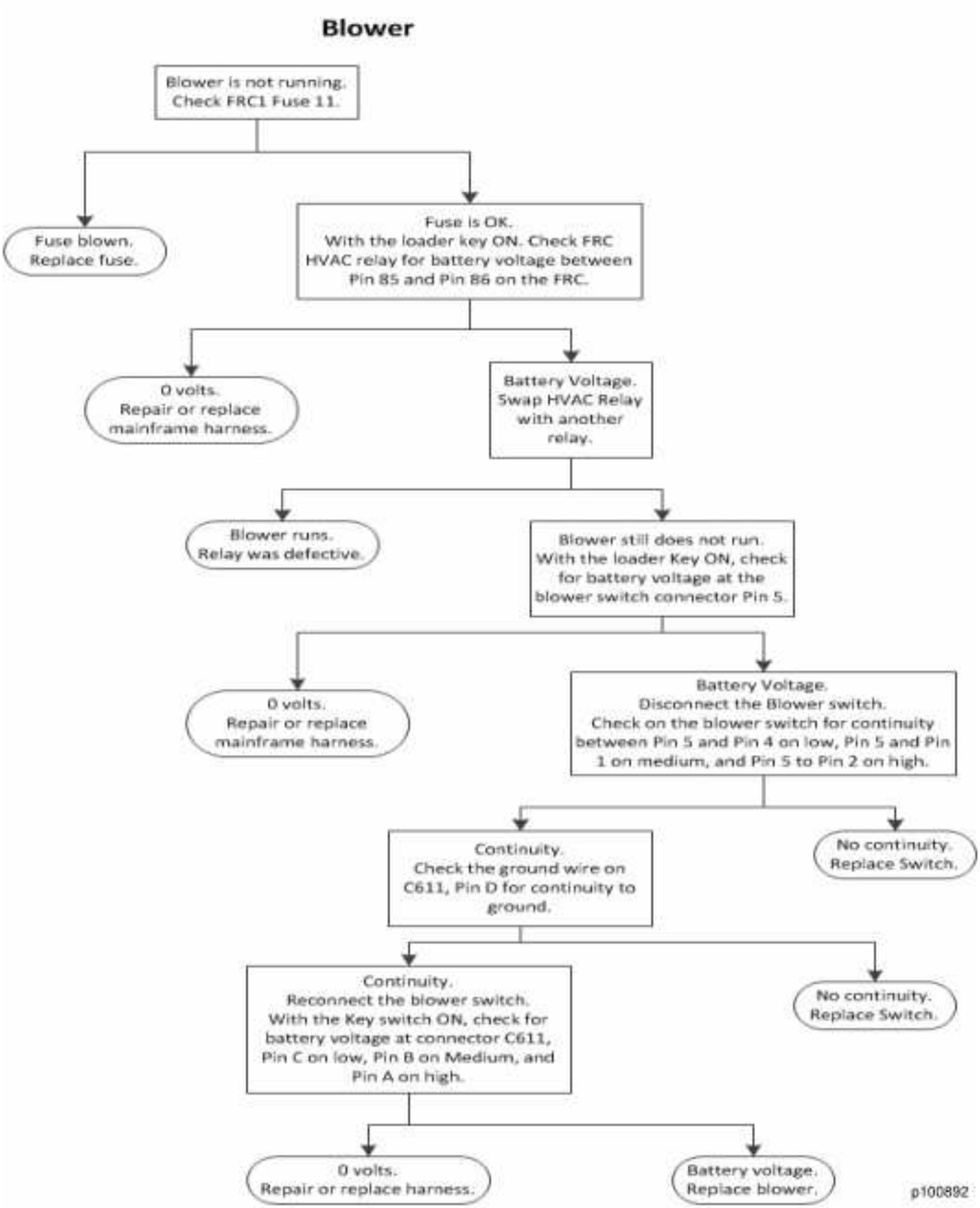
Troubleshooting

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.

PROBLEM	CAUSE
Slow cranking speed.	1, 2, 3, 54
Engine will not start.	2, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 19, 27, 28, 29
Difficult to start.	1, 2, 5, 7, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 19, 20, 25, 27, 28, 29,54
No power for engine.	8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 20, 21, 22, 23, 27, 28, 29
Engine is misfiring.	8, 9, 11, 12, 13, 15, 16, 17, 21, 22, 24, 25, 26, 28
Too much fuel consumption.	10, 12, 13, 15, 16, 17, 19, 20, 21, 23, 24, 25, 27, 28, 29
Black exhaust.	10, 12, 13, 15, 16, 17, 19, 20, 21, 23, 24, 25, 27, 28, 29
Blue / white exhaust.	4, 10, 15, 16, 17, 21, 23, 27, 29, 30, 50
Low oil pressure.	4, 31, 32, 33, 34, 35, 37, 38, 39, 52
Engine knocking.	13, 15, 16, 19, 22, 24, 25, 27, 29, 31, 40, 41, 53
Engine running rough.	7, 8, 9, 10, 11, 12, 13, 17, 18, 22, 24, 25, 26, 29, 40, 53
Vibration.	12, 13, 17, 21, 22, 25, 26, 29, 40, 42, 43
High oil pressure warning.	4, 33, 36
Overheating.	10, 12, 13, 15, 16, 20, 21, 40, 44, 45, 46, 47, 48, 51
Too much crankcase pressure.	22, 27, 29, 30, 40, 49
Poor compression.	10, 16, 21, 24, 25, 27, 28, 29, 30, 41, 53
Start and stop.	9, 10, 11

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Troubleshooting Tree (Cont'd)



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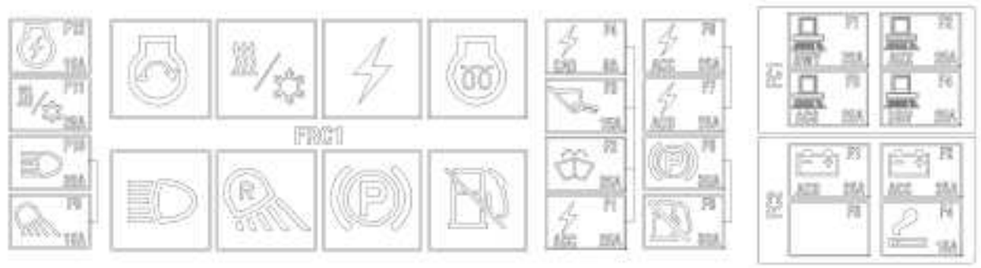
J1 CONNECTOR ASSIGNMENTS(GATEWAY CONTROLLER)			
PIN	FUNCTION	PIN	FUNCTION
A-1	HYDRAULIC LOCK RETURN	B-1	HYD CHARGE PRESS
A-2		B-2	UNSW BATT
A-3	FUEL PULL RELAY	B-3	UNSW BATT
A-4	SWITCHED POWER OUT RELAY	B-4	FUEL HOLD
A-5	LIGHT 1 RELAY	B-5	
A-6	GLOW PLUG RELAY	B-6	TRACTION LOCK HOLD
A-7	STARTER RELAY	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	7176098
DLX FUEL	7184255
STD FUEL	7149219
DOOR	7155024
S/R	6733370
TAILGATE DOM	7175271
TAILGATE EUR	7175267
2 SPD ADP	7159366
A22 PUMP	7169309
SUSP JSTK	7163706
BRAKE ADAPTER	7165061
SPD SNSR ADP	7168115



WIRING SCHEMATIC
(SJC MACHINE)
S850 (S/N ACS711001 AND ABOVE)
(S/N ACSL11001 AND ABOVE)
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