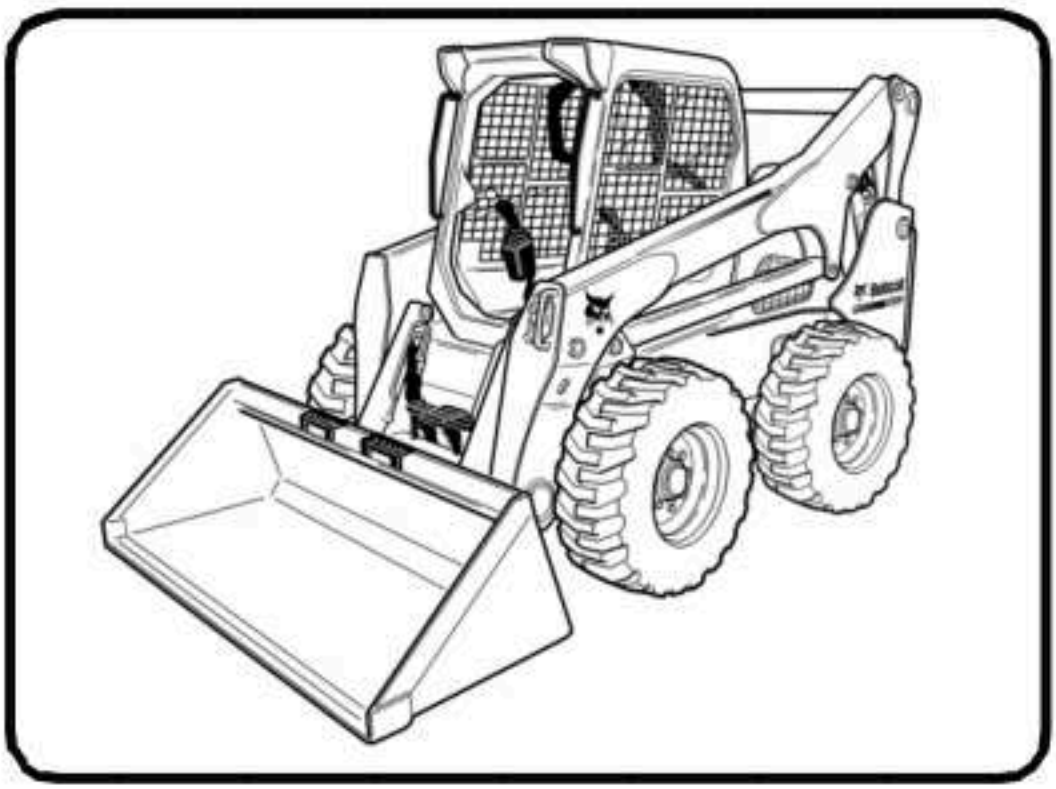
Bobcat®

Service Manual
S850 Skid-Steer Loader

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



EQUIPPED WITH BOBCAT INTERLOCK CONTROL SYSTEM (BICS™)

6987479 (9-10)

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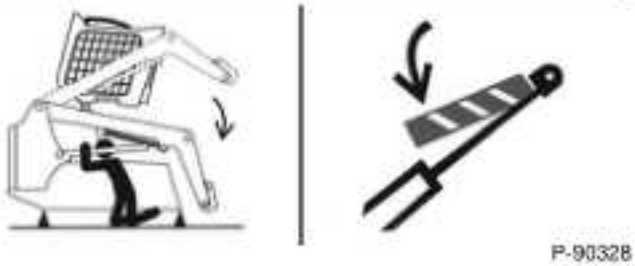
BUCKET POSITION VALVE (CONT'D)

Solenoid Testing

Refer to Bobcat Advanced Troubleshooting System (B.A.T.S.) for electrical testing and troubleshooting information. It is recommended that these procedures be performed by authorized Bobcat Service Personnel only.

Removal And Installation

⚠ DANGER



P-90328

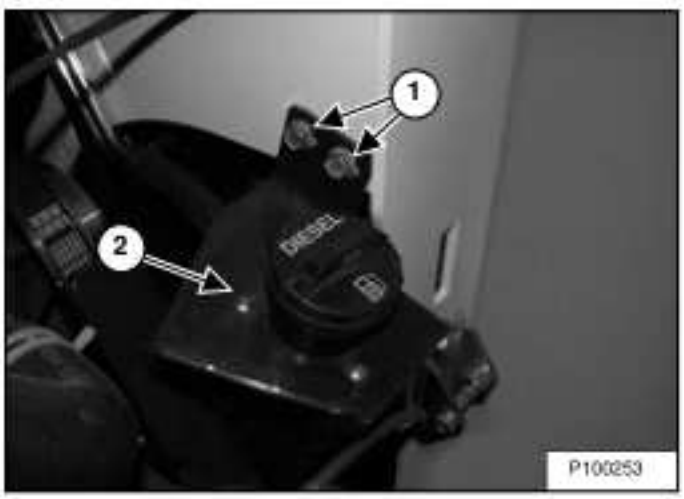
AVOID DEATH

- **Disconnecting or loosening any hydraulic tubeline, hose, fitting, component or a part failure can cause lift arms to drop.**
- **Keep out of this area when lift arms are raised unless supported by an approved lift arm support. Replace if damaged.**

D-1009-0409

Drain the hydraulic reservoir. (See Removing And Replacing Hydraulic Fluid on Page 10-120-2.)

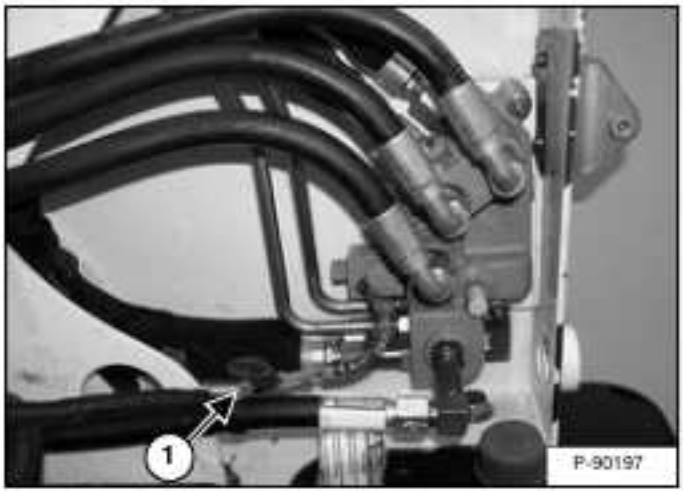
Figure 20-100-4



Remove the two bolts (Item 1), and remove the fuel inlet assembly (Item 2) **[Figure 20-100-4]**.

Cover the fuel tank inlet.

Figure 20-100-5

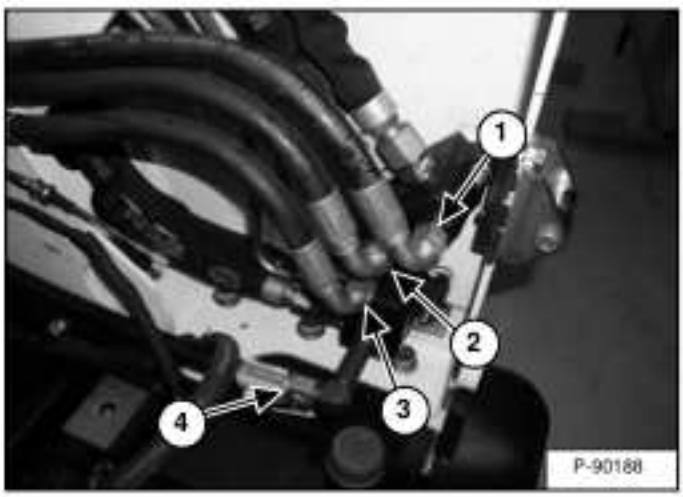


NOTE: The engine is shown removed for photo clarity.

NOTE: Mark all hoses and tubelines for correct installation.

Disconnect the electric solenoid connector (Item 1) **[Figure 20-100-5]**.

Figure 20-100-6

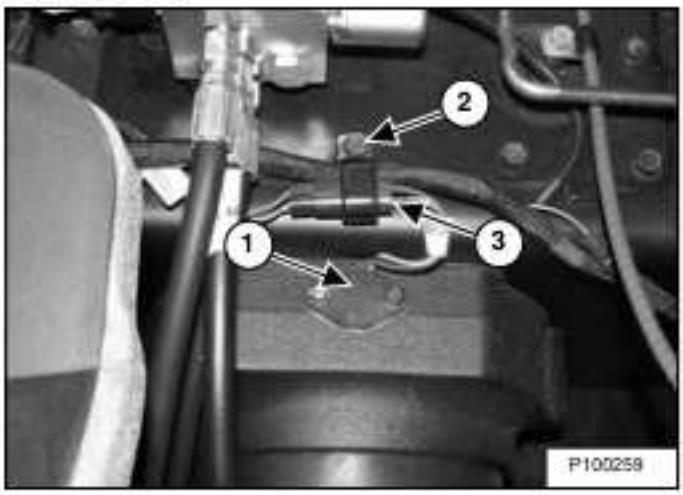


Disconnect and cap the tilt base inlet hose (Item 1), the tilt rod inlet hose (Item 2), the lift rod inlet hose (Item 3), and the lift base inlet hose (Item 4) **[Figure 20-100-6]** that route from the control valve.

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Testing (Cont'd)

Figure 60-80-3



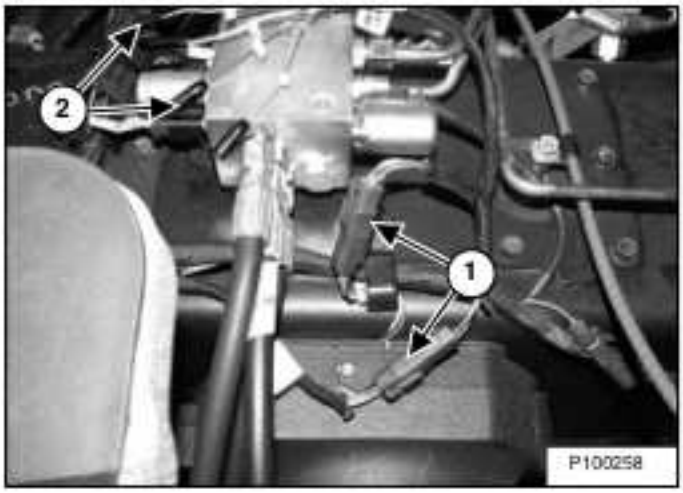
Locate the speed sensor (Item 1) **[Figure 60-80-3]** on the top of the right or left hydrostatic motor carrier.

Remove the transmission cover screw (Item 2) **[Figure 60-80-3]**, to loosen the connector clamp.

Installation: Tighten screw to 15 - 20 ft.-lb. (20 - 27 N•m) torque.

Disconnect the speed sensor wire connector (Item 3) **[Figure 60-80-3]** from the loader harness wire connector.

Figure 60-80-4



Connect the speed sensor test harness (Item 1) **[Figure 60-80-4]** in line, between the loader wiring harness and the speed sensor harness.

Turn the remote start key to ON position without starting the loader.

Take a voltage reading, with the multimeter, at the speed sensor test harness, between pin 1 and pin 3 (Item 2) **[Figure 60-80-4]**.

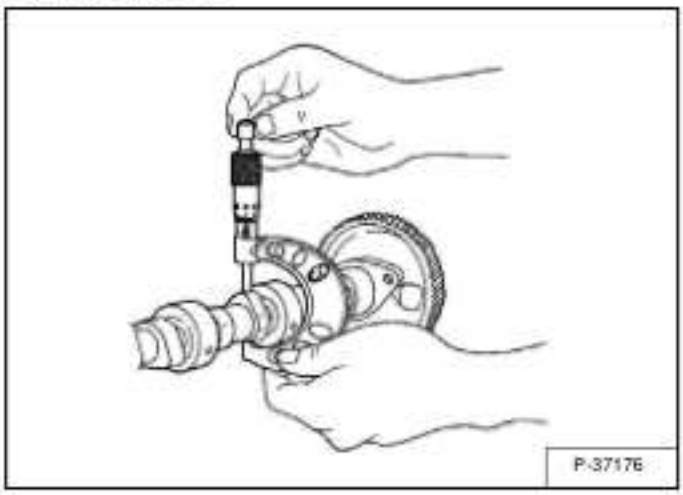
The voltage should be approximately 5 volts.

Repeat the procedure for the opposite side speed sensor. (If needed.)

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Camshaft - Servicing (Cont'd)

Figure 70-100-10

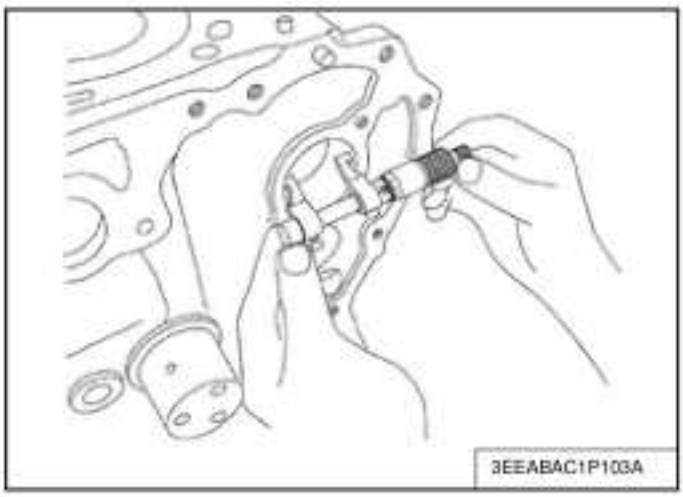


Measure the height of the camshaft lobe at its highest point with an outside micrometer **[Figure 70-100-10]**.

If the measurement is less than the allowable limit, replace the camshaft.

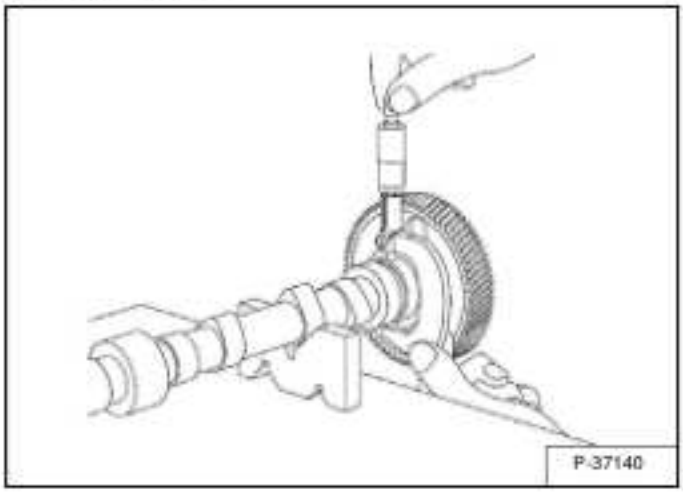
Intake and exhaust camshaft lobe height	Factory spec.	Intake valve	1.481 in. (37,63 mm)
		Exhaust valve	1.534 in. (38,96 mm)
	Allowable limit	Intake valve	1.462 in. (37,13 mm)
		Exhaust valve	1.514 in. (38,46 mm)

Figure 70-100-11



Measure the cylinder block bore I.D. for camshaft with an inside micrometer **[Figure 70-100-11]**.

Figure 70-100-12



Measure the camshaft journal O.D. with an outside micrometer **[Figure 70-100-12]**.

If the clearance exceeds the allowable limit, replace the camshaft.

Oil clearance of camshaft journal	Factory spec.	0.0020 - 0.0035 in. (0,050 - 0,091 mm)
	Allowable limit	0.0059 in. (0,15 mm)

Camshaft journal O.D.	Factory spec.	1.8084 - 1.8091 in. (45.934 - 45.950 mm)
Camshaft journal I.D.	Factory spec.	1.8110 - 1.8120 in. (46.000 - 46.025 mm)

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Safety Alert Symbol

This symbol with a warning statement means: "Warning, be alert! Your safety is involved!" Carefully read the message that follows.

WARNING

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-2003-0903

IMPORTANT

This notice identifies procedures which must be followed to avoid damage to the machine.

I-2019-0284

DANGER

The signal word DANGER on the machine and in the manuals indicates a hazardous situation which, if not avoided, will result in death or serious injury.

D-1002-1107

WARNING

The signal word WARNING on the machine and in the manuals indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

W-2044-1107

The following publications provide information on the safe use and maintenance of the Bobcat machine and attachments:

- The Delivery Report is used to assure that complete instructions have been given to the new owner and that the machine is in safe operating condition.
- The Operation & Maintenance Manual delivered with the machine or attachment contains operating information as well as routine maintenance and service procedures. It is a part of the machine and can be stored in a container provided on the machine. Replacement Operation & Maintenance Manuals can be ordered from your Bobcat dealer.
- Machine signs (decals) instruct on the safe operation and care of your Bobcat machine or attachment. The signs and their locations are shown in the Operation & Maintenance Manual. Replacement signs are available from your Bobcat dealer.
- An Operator's Handbook fastened to the operator cab. It's brief instructions are convenient to the operator. The handbook is available from your dealer in an English edition or one of many other languages. See your Bobcat dealer for more information on translated versions.
- The AEM Safety Manual delivered with the machine gives general safety information.
- The Service Manual and Parts Manual are available from your dealer for use by mechanics to do shop-type service and repair work.
- The Skid-Steer Loader Operator Training Course is available through your local dealer or at **www.training.bobcat.com** or **www.bobcat.com**. This course is intended to provide rules and practices of correct operation of the Skid-Steer Loader. The course is available in English and Spanish versions.
- Service Safety Training Courses are available from your Bobcat dealer or at **www.training.bobcat.com** or **www.bobcat.com**. They provide information for safe and correct service procedures.
- The Skid-Steer Loader Safety Video is available from your Bobcat dealer or at **www.training.bobcat.com** or **www.bobcat.com**.

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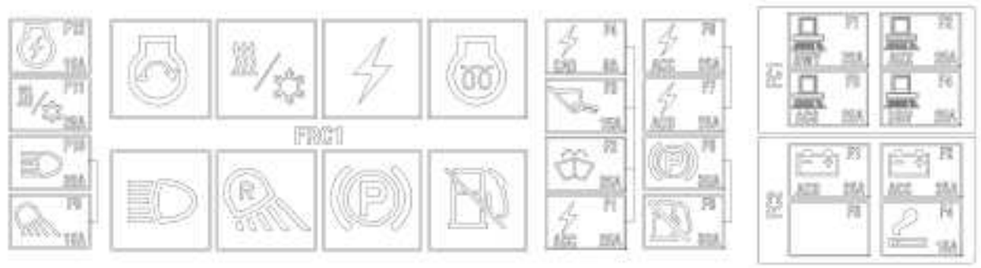
J1 CONNECTOR ASSIGNMENTS(GATEWAY CONTROLLER)			
PIN	FUNCTION	PIN	FUNCTION
A-1	HYDRAULIC LOCK RETURN	B-1	HYD CHARGE PRESS
A-2		B-2	UNSW BATT
A-3	FUEL PULL RELAY	B-3	UNSW BATT
A-4	SWITCHED POWER OUT RELAY	B-4	FUEL HOLD
A-5	LIGHT 1 RELAY	B-5	
A-6	GLOW PLUG RELAY	B-6	TRACTION LOCK HOLD
A-7	STARTER RELAY	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


FIG1

WIRING SCHEMATIC
(SJC MACHINE)
S850 (S/N ACS711001 AND ABOVE)
(S/N ACSL11001 AND ABOVE)
Sheet 2 of 13

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