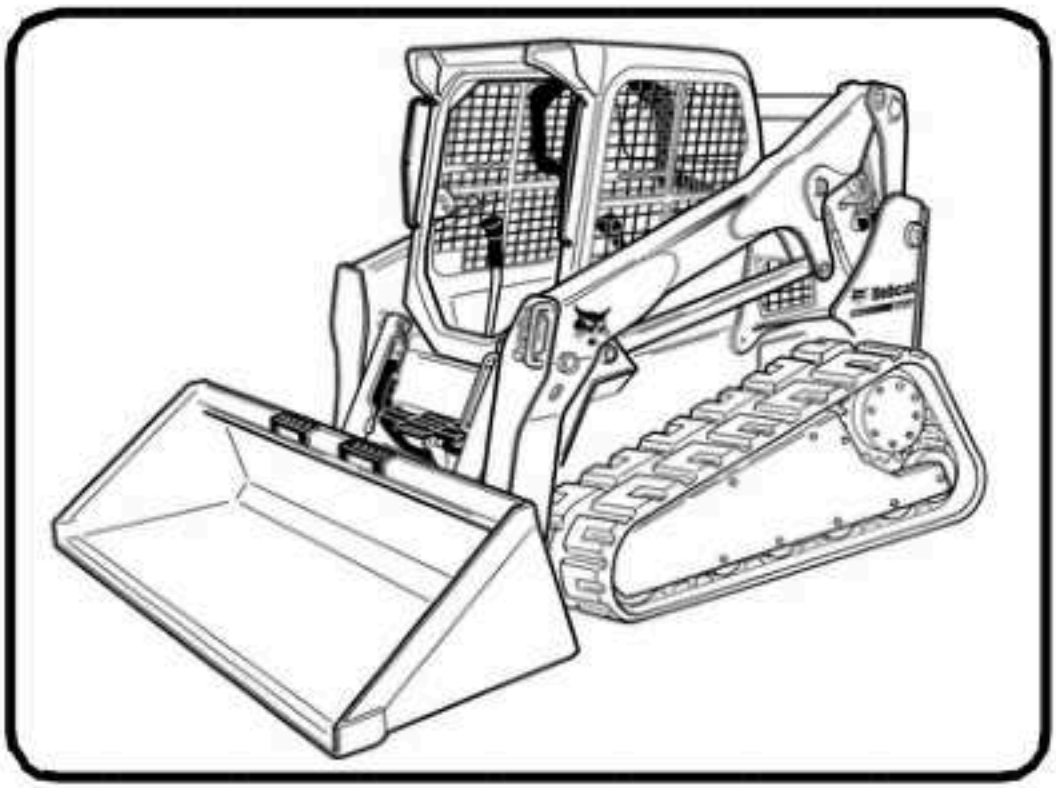
Bobcat®

Service Manual
T650 Compact Track Loader

S/N A3P011001 & Above
S/N A3P111001 & Above



EQUIPPED WITH
BOBCAT INTERLOCK
CONTROL SYSTEM (BICS™)

6987172 (12-10)

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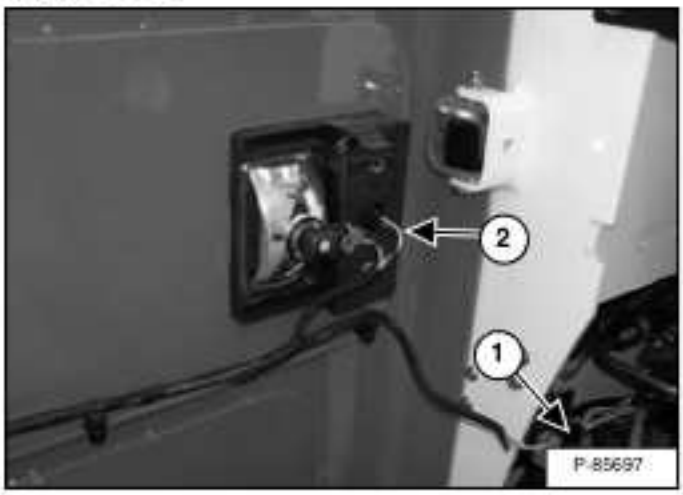
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REAR DOOR (TAILGATE)

Removal And Installation

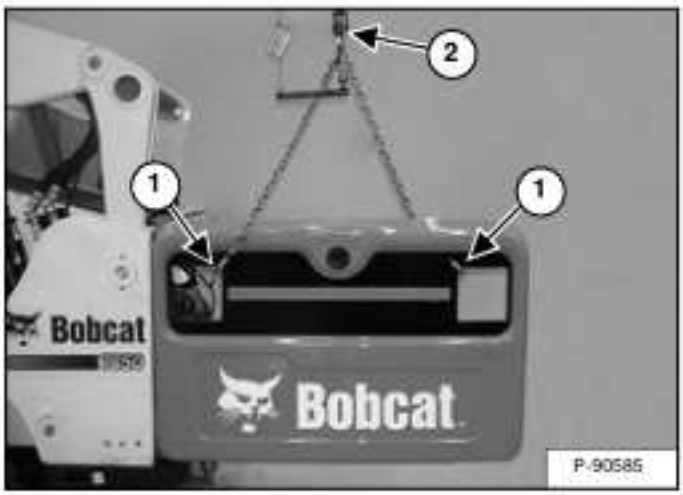
Figure 50-70-1



Disconnect the light harness connector (Item 1) **[Figure 50-70-1]** from the main frame harness.

Remove both rear lights (Item 2) **[Figure 50-70-1]** from the door. (See Rear Removal And Installation on Page 60-60-2.)

Figure 50-70-2



Secure the chain hooks (Item 1) **[Figure 50-70-2]** to the door as shown.

Connect a chain hoist (Item 2) **[Figure 50-70-2]** to the lifting chain.

Figure 50-70-3



Remove the top and bottom door hinge mounting bolts and nuts (Item 1) **[Figure 50-70-3]**.

NOTE: Install the door stop (Item 2) and the door stop retainer (Item 3) in the top hinge as shown [Figure 50-70-3].

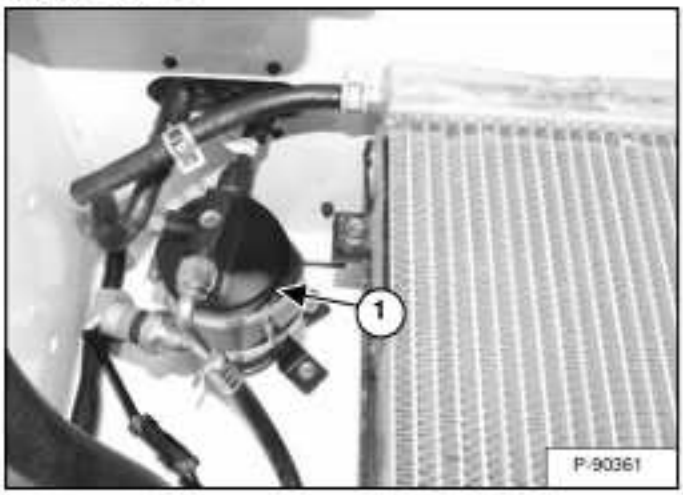
Installation: Tighten the mounting bolts and nuts to 34 - 38 N•m (25 - 28 ft-lb) torque.

Lift the door away from the loader frame and put the door flat on the floor.

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HVAC Repair And Leaks

Figure 80-30-3



Whenever the A/C system is opened to the atmosphere or there has been a leak in the system, the receiver / drier (Item 1) **[Figure 80-30-3]** must be changed.

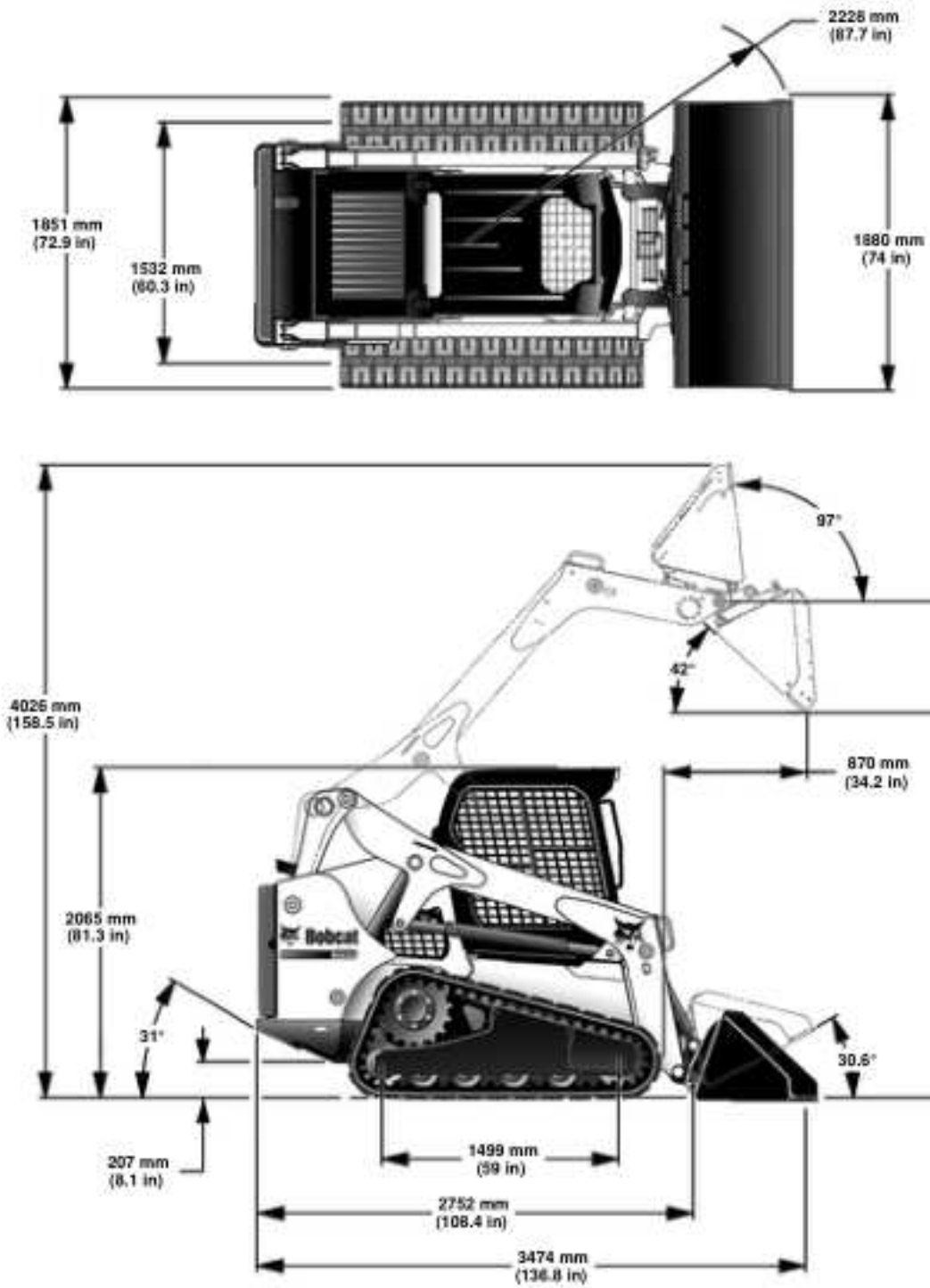
Never leave hose fittings, compressor fittings or components uncapped while working on the A/C system.

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(T650) LOADER SPECIFICATIONS

Machine Dimensions

- Dimensions are given for loader equipped with standard track and 74 inch Heavy Duty Construction And Industrial bucket and may vary with other bucket types. All dimensions are shown in millimeters. Respective imperial dimensions are given in inches enclosed by parentheses.
- Where applicable, specifications conform to SAE or ISO standards and are subject to change without notice.



Changes of structure or weight distribution of the loader can cause changes in control and steering response and can cause failure of the loader parts.

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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	LIFT SPOOL LOCK RETURN	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	LIFT SPOOL LOCK
A-6	GLOW PLUG RELAY	B-6	TRACTION LOCK HOLD
A-7	STARTER RELAY	B-7	TILT SPOOL LOCK
A-8	TRACTION PULL RELAY	B-8	CAN LO 1
A-9	FAN 1 RELAY	B-9	CAN HI 1
A-10	TILT SPOOL LOCK RETURN	B-10	SPOOL LOCK SENSOR 2
A-11	SPARE DIGITAL, ECU SINKS	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	LIGHT 2 RELAY	B-17	GROUND P3, SENSOR
A-18	FAN 2 RELAY	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	HYD OIL FILTER SW2	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	SPARE	B-26	TWO SPEED COIL
A-27	SPARE		
A-28	LIGHT 2 RELAY FDBK		
A-29	FAN 1 RELAY FDBK		
A-30	FUEL PULL RELAY FDBK		
A-31	LIGHT 1 RELAY FDBK		
A-32	HYD OIL TEMP		
A-33	SPARE ANALOG		
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	OUTPUT SPARE	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	LH PADDLE RIGHT	B-11	
A-12	LH PADDLE LEFT	B-12	
A-13	RH RIGHT BUTTON UP	B-13	FRONT AUX (F)
A-14	DIGITAL INPUT SPARE	B-14	CAN HI 2
A-15		B-15	GROUND
A-16		B-16	GROUND
A-17		B-17	HANDLE POT GND
A-18	FRONT AUX (M) RETURN	B-18	RH PVM POT SIGNAL
A-19		B-19	FRONT AUX (M)
A-20	LH FLOAT BUTTON	B-20	CAN LO 2
A-21	HYDRAULIC DETENT	B-21	RH TRIGGER
A-22	LH RIGHT BUTTON DOWN	B-22	SWITCHED POWER
A-23	RH CENTER BUTTON	B-23	HANDLE POT POWER
A-24	DIGITAL INPUT SPARE	B-24	
A-25		B-25	BUCKET POSITION (SPARE)
A-26	HIGH FLOW RETURN	B-26	HIGH FLOW
A-27	BUCKET POSITION(SPARE) RETURN		
A-28	LH RIGHT BUTTON		
A-29	RH RIGHT BUTTON DOWN		
A-30	RH LEFT UP		
A-31	RH LEFT DOWN		
A-32			
A-33			
A-34	DIGITAL INPUT SPARE		

J5 DRIVE CONTROLLER	
PIN	FUNCTION
1	SAFETY IN
2	TWO SPEED SWITCH
3	SPARE DIGITAL INPUT 2
4	H PAT SWITCH
5	ISO PAT SWITCH
6	ISO LITE
7	L SWASH PLATE ANGLE
8	R SWASH PLATE ANGLE
9	SPARE ANALOG 4
10	SPARE ANALOG 5
11	L FWD RETURN
12	CAN HIGH
13	LF ANGLE
14	RF ANGLE
15	LR ANGLE
16	H PAT LITE
17	RR ANGLE
18	L JOYSTICK X
19	L JOYSTICK Y
20	R JOYSTICK X
21	L FWD DRIVE
22	CAN LOW
23	R QUAD A DRIVE
24	R QUAD B DRIVE
25	TWO SPEED 1
26	BRAKE LIGHT OUTPUT
27	GROUND
28	GROUND
29	SENSOR GROUND
30	SENSOR SUPPLY 2 +5V
31	L REV DRIVE
32	CAN SHIELD
33	L QUAD A DRIVE
34	L QUAD B DRIVE
35	SAFETY OUT
36	BACKUP ALARM
37	R JOYSTICK Y
38	SPARE ANALOG 1
39	SPARE PWM COIL 7
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	TWO SPEED 2
47	UNSWITCHED BATTERY
48	UNSWITCHED BATTERY
49	SPARE PWN COIL 8
50	SWITCHED BATTERY

ACS CONTROLLER					
CONNECTOR J1-ACS		CONNECTOR J2-ACS		CONNECTOR J3-ACS	
PIN	FUNCTION	PIN	FUNCTION	PIN	FUNCTION
A	+5V TO SENSORS	A	LIFT CYLINDER SENSOR-SPARE	A	TILT MOTOR 1
B	SWITCHED POWER	B	FLOAT-SPARE	B	UNSWITCHED POWER
C	HAND/FOOT INPUT	C	RESPONSE SELECTOR-SPARE	C	UNSWITCHED POWER
D	CAN HIGH	D	TILT CYLINDER SENSOR-SPARE	D	LIFT MOTOR 2
E	CAN LOW	E	TILT ACTUATOR FEEDBACK	E	HANDLE ENABLE
F		F	LIFT HANDLE	F	LIFT MOTOR 1
G	GROUND	G	TILT HANDLE	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	
MAINFRAME	7175625
STD CAB	7165991
DLX CAB	7176098
DLX FUEL	7175293
STD FUEL	7149219
DOOR	7155024
S/R	6733370
TAILGATE DOM	7175271
TAILGATE EUR	7175287
2 SPD ADP	7159366
ACS	7164144
SJC WHEEL	7159325

HARNESS PART NUMBER	
SJC TRACK	7159458
A22 PUMP	7169309
SUSP JSTK	7163706
BACKUP ALARM	7175017
BRAKE ADAPTER	7165061



WIRING SCHEMATIC
(ACS & SJC MACHINE)
T650 (S/N A3P011001 - A3P012213)
(S/N A3P111001 - A3P111241)
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