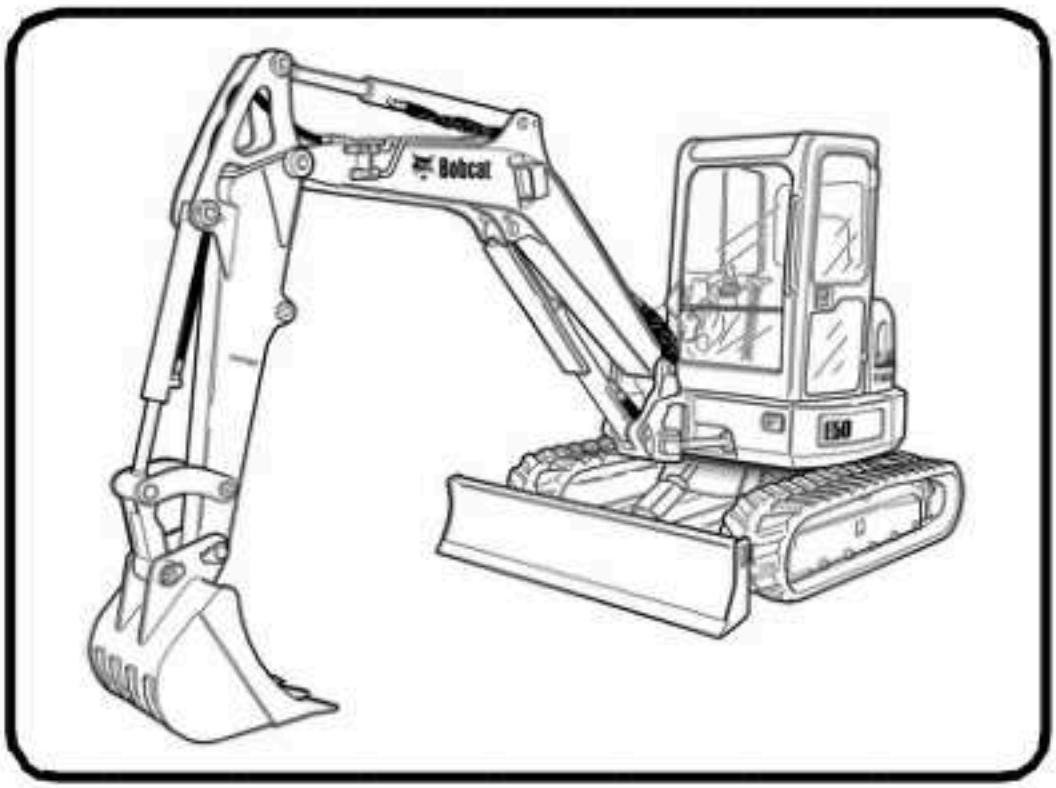
Bobcat®

Service Manual
E50 Compact Excavator

S/N AG3N11001 & Above
S/N AHHE11001 & Above



6989441 (10-10)

Printed in U.S.A.

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Specifications

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

Fuel Injection Nozzles

Opening Pressure	186 - 201 bar (2702 - 2916 psi)
Fuel Tightness Nozzle Seat	Dry Nozzle at 166,8 bar (2418 psi)

Fuel Injection Pump

Fuel Tightness Plunger	10 sec: initial pressure 127,5 bar (1850 psi)
Allowable Limit	5 seconds
Injection Timing	6.5° degrees B.T.D.C.
*High Idle	2450 RPM
*Low Idle	1200 ± 75 RPM

Cylinder Head

Cylinder Head Surface Distortion	0,05 in. (0.002) 500 (19.70) Max.
Top Clearance (Piston to Head)	0,60 - 0,70 (0.0236 - 0.0276)
Compression	30 - 33 bar (427 - 469 psi) @ 290 RPM
Allowable Limit	24 bar (341 PSI) @ 290 RPM
Allowable Difference Between Cylinders	10% or less

Valves

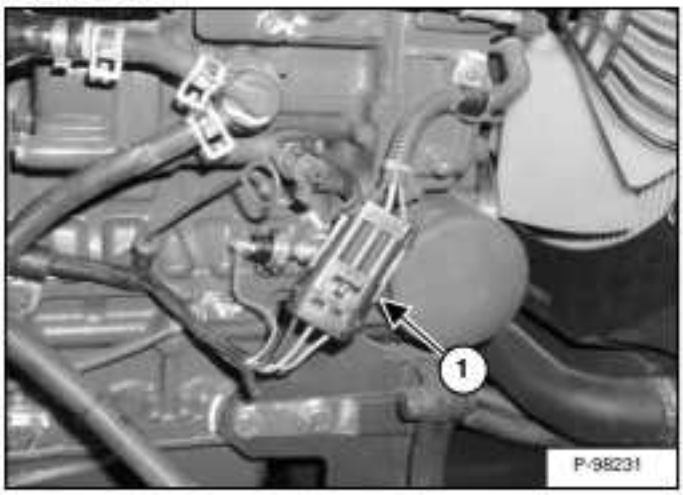
Valve Seat Width (Intake & Exhaust)	2,12 (0.0835)
O.D. of Valve Stems	7,96 - 7,98 (0.3134 - 0.3140)
I.D. of Valve Guides	8,015 - 8,03 (0.3156 - 0.3161)
Clearance Between Valve Stem & Guide	0,04 - 0,07 (0.0016 - 0.0028)
Allowable Limit	0,1 (0.0039)
Valve Clearance (Cold)	0,18 - 0,22 (0.007 - 0.0087)
Valve Recessing (Protrusion)	0,05 (0.002)
Allowable Limit (Recess)	0,4 (0.0157)
Valve Seat Angle (Int.)	45 degrees
Valve Seat Angle (Exh.)	45 degrees

* The engine speed control must be calibrated anytime engine speed stop screws are adjusted.

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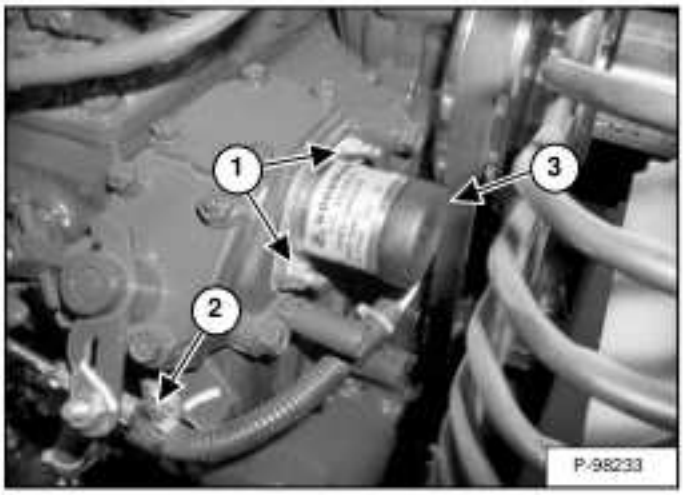
Fuel Shut-off Solenoid Removal And Installation

Figure 60-70-2



Disconnect the wire harness (Item 1) **[Figure 60-70-2]**.

Figure 60-70-3

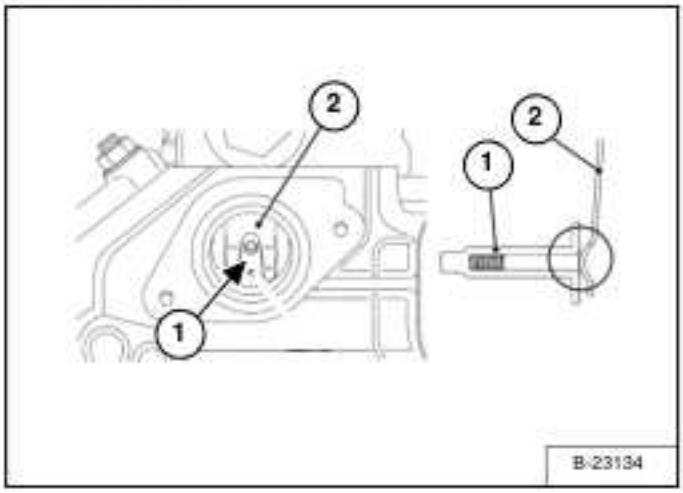


Remove the nuts (Item 1) **[Figure 60-70-3]**.

Remove the bolt (Item 2) **[Figure 60-70-3]**.

Remove the solenoid (Item 3) **[Figure 60-70-3]**.

Figure 60-70-4



Installation: The guide (Item 1) on the fuel shut-off solenoid must contact the boost lever (Item 2) **[Figure 60-70-4]**.

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Gauge Pressure Related Troubleshooting

Normal compressor suction (low side) and discharge (high side) pressure at ambient temperatures of 30 - 38°C (86 - 96°F) and compressor speed of approximately 2000 RPM are:

High pressure side pressure: 210 - 265 PSI

Low pressure side pressure: 15 - 33 PSI

As a rule of thumb the high side pressure will be around eight times greater then the low side pressure.

POSSIBLE CAUSE	INSPECTION	SOLUTION
Low Pressure Side Too High	The Low pressure side pressure normally becomes too high when the high pressure side pressure is too high. As this is explained below, the following inspection is only used when the low pressure side is too high.	
1. Expansion valve opens too far	Frost is present on the suction hose	Replace the expansion valve
2. Defective compressor	The high and low pressure side gauge pressures equalize when the magnetic clutch is disengaged	Replace compressor
Low Pressure Side Too Low		
1. Low refrigerant charge	The high side pressure will be low and bubbles may be present in sight glass on receiver / drier	Repair any leaks and recharge the refrigerant to the correct level
2. Clogged or closed expansion valve	The expansion valve's inlet side is frosted. Moisture or other contaminants can be the cause.	Clean or replace the expansion valve
3. Restriction between drier and expansion valve	Frost on the line between drier and expansion valve. A negative low pressure reading may be shown.	Flush system or replace hose
4. Thermostat malfunction	the evaporator is frozen	Adjust thermostat's temperature setting or probe placement or replace thermostat
5. Restriction in receiver dryer	Excessive frost on receiver dryer	Replace receiver dryer
High Pressure Side Too High		
1. Poor condenser performance	Dirty or clogged condenser fins. Condenser fans not operating.	Clean fins and / or repair the fan
2. Excessive refrigerant	The high pressure side pressure will be high	Use refrigerant recovery equipment to capture excess refrigerant. Charge to the correct refrigerant level.
3. Excessive oil charge	The high pressure side will be high	Evacuate system. Remove oil from condenser and compressor. Measure oil from compressor and add correct oil charge back into compressor. Flush system with nitrogen. Replace drier.
4. Air in system	Pressure is high on both high and low sides	Evacuate and recharge with refrigerant
5. Restriction in drier, condenser, or high pressure line	High pressure side will be high and low pressure side will be low	Evacuate and flush system replacing defective parts
High Pressure Side Too Low		
1. Low refrigerant charge	The high side pressure will be low and bubbles may be present in sight glass jon receiver / drier	Repair any leaks and recharge the refrigerant to the correct level.
System Pressure Equals		
1. Clutch not operating	See magnetic clutch related topics above	
2. Compressor not pumping	Equal high and low pressures	Replace compressor

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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.

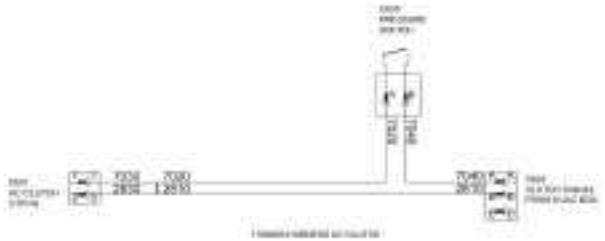
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The following publications provide information on the safe use and maintenance of the Bobcat machine and attachments:

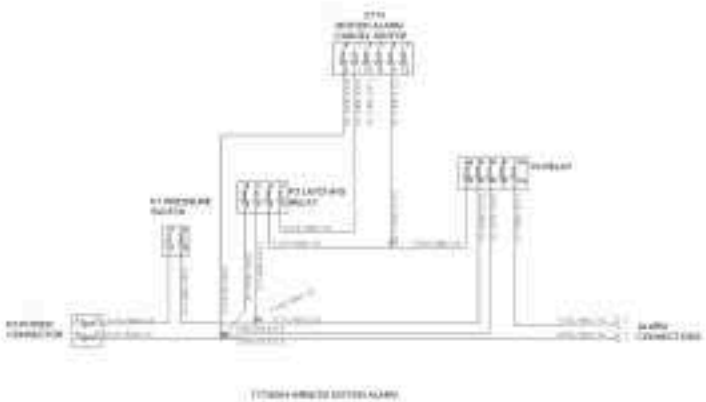
- The Delivery Report is used to assure that complete instructions have been given to the new owner and that the machine is in safe operating condition.
- The Operation & Maintenance Manual delivered with the machine or attachment contains operating information as well as routine maintenance and service 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 Compact Excavator 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 Bobcat excavator. 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 Bobcat compact excavator Safety Video is available from your Bobcat dealer or at **www.training.bobcat.com** or **www.bobcat.com**.

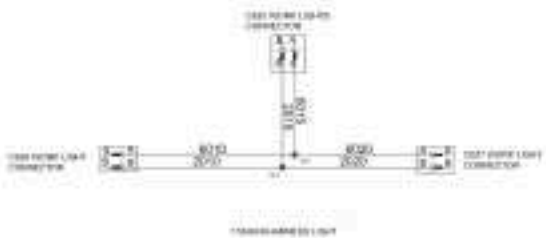
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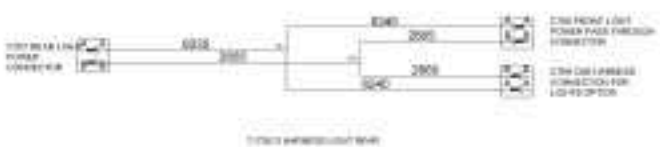
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WIRING SCHEMATIC
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