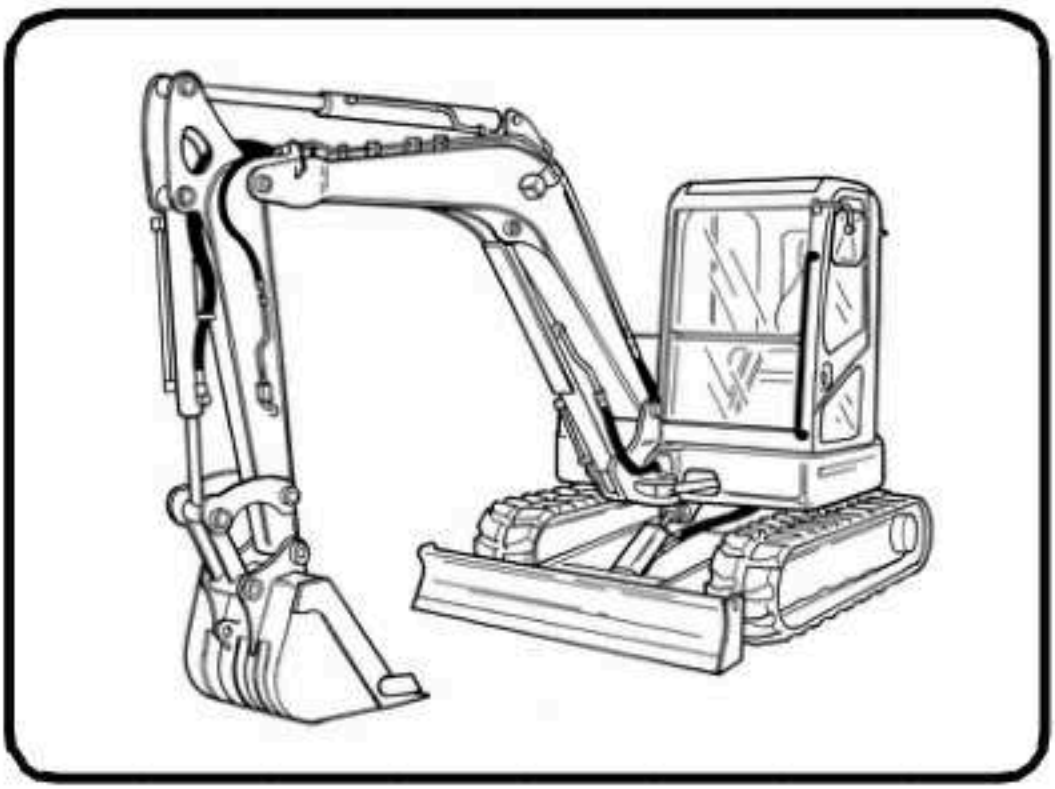
Bobcat®

Service Manual
E60 Compact Excavator

S/N AGSZ11001 & Above
S/N AET811001 & Above



6987190 (10-09)

Printed in U.S.A.

© Bobcat Company 2009

MidWestTech | Bobcat E60 Compact Excavator Service Manual | Publication 6987190_10_... Order the manual at mid-west-tech.com >

ALPHABETICAL INDEX

ACCUMULATOR 20-01
AIR CLEANER 60-01
AIR CLEANER SERVICE 10-01
AIR CONDITIONING BELT 10-01
AIR CONDITIONING SERVICE 70-01
AIR CONDITIONING SYSTEM FLOW 70-01
ALTERNATOR 50-01
ALTERNATOR BELT 10-01
ARM 40-01
ARM CYLINDER 20-01
ATTACHMENTS 40-01
AUXILIARY BREAKER VALVE 20-01
AUXILIARY HYDRAULIC VALVE 20-01

BASIC TROUBLESHOOTING 70-01
BATTERY 50-01
BLADE 30-01
BLADE CONTROL VALVE 20-01
BLADE CYLINDER 20-01
BOOM 40-01
BOOM CYLINDER 20-01
BOOM SWING CYLINDER 20-01
BOOM SWING VALVE 20-01
BUCKET 40-01
BUCKET CYLINDER 20-01

CAB 40-01
CAB FILTER 10-01
CAB TILT PROCEDURE 10-01
COMPONENTS 70-01
COMPRESSOR 70-01
CONDENSOR 70-01
CONSOLE LOCKOUT SWITCH 50-01
CONVERSIONS SPEC-01
CONTROL PATTERN SELECTOR VALVE 20-01
COUNTER WEIGHT 40-01

DIAGNOSTICS SERVICE CODE 50-01
DIRECT TO TANK VALVE 20-01
DIAGNOSTIC TOOL 50-01

ELECTRICAL SYSTEM INFORMATION 50-01
ENGINE 60-01
ENGINE COMPONENTS AND TESTING 60-01
ENGINE COOLING SYSTEM 10-01
ENGINE FLYWHEEL 60-01
ENGINE LUBRICATION SYSTEM 10-01
ENGINE SPECIFICATIONS SPEC-01
EVAPORATOR/HEATER COIL 70-01
EVAPORATOR/HEATER UNIT 70-01
EXPANSION VALVE 70-01

FLOORMAT 40-01
FUEL COOLER 60-01
FUEL LEVEL SENDER 50-01
FUEL SYSTEM 10-01
FUEL TANK 40-01
FUEL TRANSFER PUMP 50-01

GENERAL AIR CONDITIONING SERVICE GUIDELINES 70-01

HEATER / AC FAN 70-01
HEATER VALVE 70-01
HORN 40-01
HYDRAULIC CONTROL VALVE 20-01
HYDRAULIC CONNECTION SPECIFICATIONS SPEC-01
HYDRAULIC FLUID SPECIFICATIONS SPEC-01
HYDRAULIC PUMP 20-01
HYDRAULIC RESERVOIR 20-01
HYDRAULIC SYSTEM 10-01
HYDRAULIC SYSTEM INFORMATION 20-01
HVAC CONTROLLER 70-01

INSTRUMENT PANEL 50-01

KEY SWITCH 50-01

LEFT CONTROL LEVER (JOYSTICK) 20-01
LEFT CONSOLE 40-01
LEFT UPPERSTRUCTURE SIDE COVER 40-01
LIFTING AND BLOCKING THE EXCAVATOR 10-01
LIFTING THE EXCAVATOR 10-01
LIGHTS 50-01
LUBRICATING THE EXCAVATOR 10-01

MAIN RELIEF VALVES 20-01
MUFFLER 60-01

OIL COOLER 20-01
OPERATOR CAB (ROPS/TOPS) 10-01

PIVOT PINS 10-01
PORT RELIEF VALVES 20-01
PRESSURE REDUCING VALVE 20-01
PRESSURE SWITCH 70-01

Continued On Next Page

MidWestTech | Bobcat E60 Compact Excavator Service Manual | Publication 6987190_10_... Order the manual at mid-west-tech.com >

ALPHABETICAL INDEX (CONT'D)

RADIATOR / OIL COOLER....60-01
REAR COVER....10-01, 40-01
RECEIVER/DRIER....70-01
RECONDITIONING THE ENGINE....60-01
REGULAR MAINTENANCE....70-01
RIGHT CONTROL LEVER (JOYSTICK)....20-01
RIGHT CONSOLE....40-01
RIGHT CONSOLE SWITCH COVER....50-01
RIGHT SIDE COVER....10-01, 40-01
RIGHT UPPERSTRUCTURE SIDE COVER....40-01

SAFETY....70-01
SEAT BELT....10-01
SEAT AND SEAT MOUNT....40-01
SERVICE SCHEDULE....10-01
SPARK ARRESTOR MUFFLER....10-01
SPECIFICATIONS....SPEC-01
STARTER....50-01
SWING FRAME....40-01
SWING MOTOR....20-01
SWING MOTOR DRIVE CARRIER....20-01
SWIVEL JOINT....20-01
SYSTEM CHARGING AND RECLAMATION....70-01
SYSTEM TROUBLESHOOTING CHART....70-01

TEMPERATURE/PRESSURE....70-01
THERMOSTAT....70-01
TORQUE SPECIFICATIONS FOR BOLTS
....SPEC-01
TRACK DAMAGE IDENTIFICATION....30-01
TRACK FRAME....30-01
TRACK IDLER....30-01
TRACK ROLLER....30-01
TRACKS....30-01
TRANSPORTING THE EXCAVATOR....10-01
TRAVEL CONTROL VALVE....20-01
TRAVEL MOTOR....10-01, 20-01
TROUBLESHOOTING....60-01

UPPERSTRUCTURE....40-01

WIPER MOTOR....50-01

MidWestTech | Bobcat E60 Compact Excavator Service Manual | Publication 6987190_10_... Order the manual at mid-west-tech.com >

CONTENTS

SAFETY INSTRUCTIONS VI

FOREWORD. III

SERIAL NUMBER LOCATIONS XI

DELIVERY REPORT. XI

BOBCAT EXCAVATOR IDENTIFICATION XII

SAFETY AND MAINTENANCE. 10-01

HYDRAULIC SYSTEM 20-01

UNDERCARRIAGE. 30-01

UPPERSTRUCTURE & SWING SECTION 40-01

ELECTRICAL SYSTEM AND ANALYSIS 50-01

ENGINE SERVICE 60-01

HEATING, VENTILATION, AIR CONDITIONING 70-01

SPECIFICATIONS. SPEC-01

MidWestTech | Bobcat E60 Compact Excavator Service Manual | Publication 6987190_10_... Order the manual at mid-west-tech.com >

TROUBLESHOOTING

Chart

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, 4
Engine will not start	2, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 16, 17, 19, 27, 28, 29
Difficult to start	5, 7, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 19, 20, 25, 27, 28, 29
No power from engine	8, 9, 10, 11, 12, 13, 15, 16, 17, 21, 22, 24, 25, 26, 28, 29
Engine is mis-firing	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	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

KEY TO CORRECT THE CAUSE	
1. Battery capacity low	28. Worn valves and seat
2. Bad electrical connections	29. Broken or worn piston rings
3. Faulty starter motor	30. Worn valve stems or guides
4. Incorrect grade of oil	31. Worn or damaged bearings
5. Low cranking speed	32. Not enough oil in the oil pan
6. Fuel tank empty	33. Switch is defective
7. Faulty stop control operation	34. Oil pump worn
8. Plugged fuel line	35. Relief valve is stuck open
9. Plugged fuel filter	36. Relief valve is stuck closed
10. Restriction in the air cleaner	37. Broken relief valve spring
11. Air in the fuel system	38. Faulty suction pipe
12. Faulty fuel injection pump	39. Plugged oil filter
13. Faulty fuel injectors	40. Piston seizure
14. Broken injection pump drive	41. Incorrect piston height
15. Incorrect injection pump timing	42. Faulty engine mounting
16. Incorrect valve timing	43. Incorrect alignment of flywheel
17. Poor compression	44. Faulty thermostat
18. Plugged fuel tank vent	45. Restriction in water jacket
19. Incorrect grade of fuel	46. Loose alternator belt
20. Exhaust pipe restriction	47. Plugged radiator
21. Cylinder head gasket leaking	48. Plugged breather pipe
22. Over heating	49. Plugged breather pipe
23. Cold running	50. Damaged valve stem oil deflectors
24. Incorrect tappet adjustment	51. Coolant level too low
25. Sticking valves	52. Plugged oil pump pipe strainer
26. Incorrect high pressure fuel lines	53. Broken valve spring
27. Worn cylinder bores	

MidWestTech | Bobcat E60 Compact Excavator Service Manual | Publication 6987190_10_... Order the manual at mid-west-tech.com >

AIR CONDITIONING SYSTEM FLOW

Principals

In an air conditioning system the refrigerant is circulated under pressure through five major components in a closed circuit. At these five points in the system the refrigerant goes through pressure and temperature changes.

The compressor (Item 1) Page 70-40-3 takes in heated, low pressure refrigerant gas through the suction valve (low pressure side) and as the name indicates, pressurizes the heated refrigerant and forces it through the discharge valve (high pressure side) on the condenser (Item 2) Page 70-40-3.

Ambient air passing through the condenser removes the heat from refrigerant resulting in physical state change in the refrigerant from a gas to a liquid.

The liquid refrigerant moves on to the receiver/drier (Item 3) Page 70-40-3 where impurities such as moisture and dirt are filtered out. The receiver/drier also serves as the storage tank for the liquid refrigerant. The liquid refrigerant (still under high pressure) flows to the expansion valve (Item 4) Page Page 70-40-3.

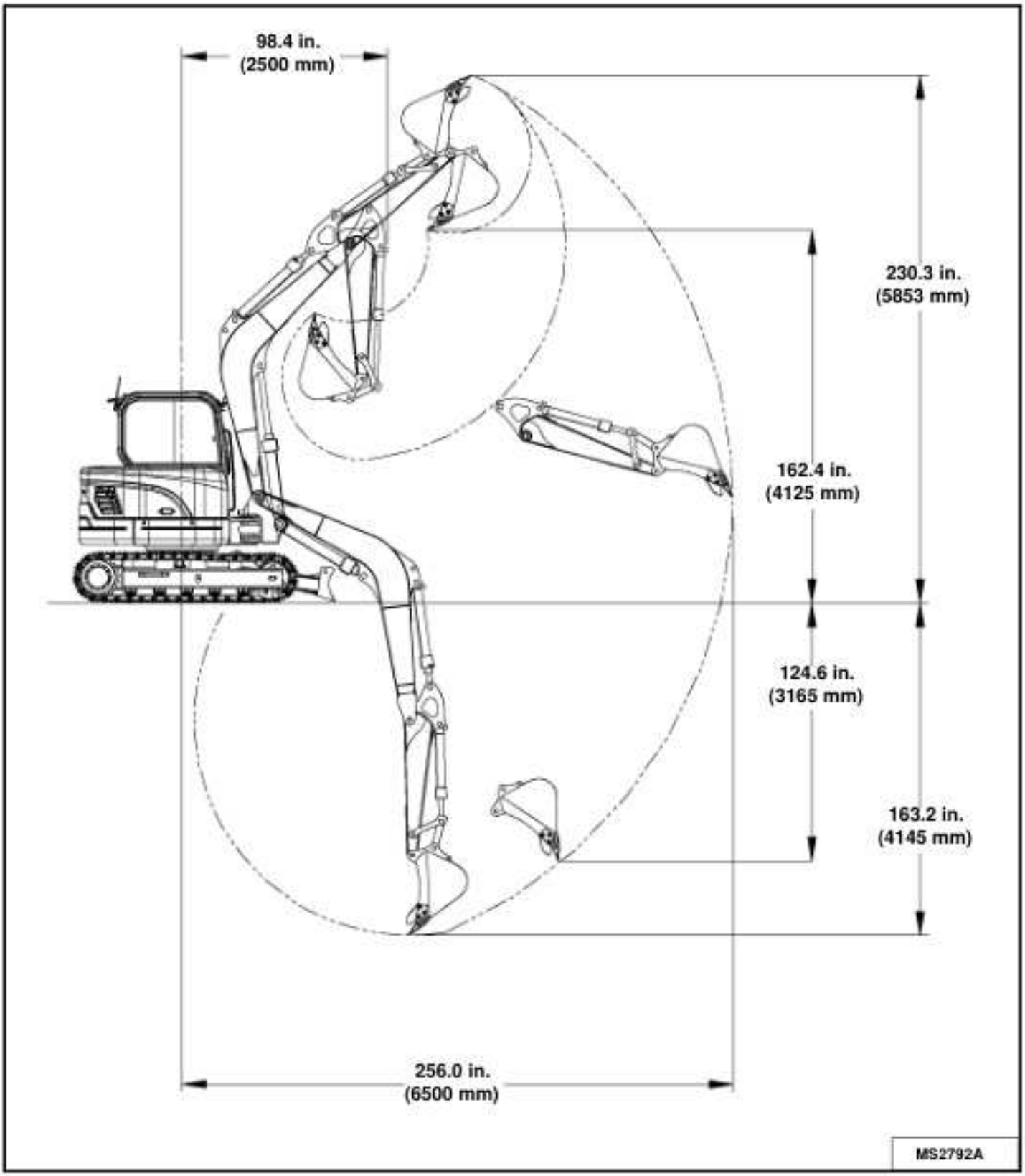
The expansion valve meters the amount of refrigerant into the evaporator coil (Item 5) Page 70-40-3. As the refrigerant passes through the expansion valve, it again changes its physical state. It becomes a low temperature, low-pressure liquid and saturated vapor. The low pressure liquid immediately starts to boil and vaporize as it enters the evaporator. The hot humid air of the machine's cab is drawn through or blown into the evaporator by the evaporator fan (Item 6) Page 70-40-3. Since the refrigerant is colder than the air, it absorbs the heat from the air and produces cooled air, which is pushed into the cab by the fan. The moisture in the air condenses on the evaporator coil and drips into the drain pan, which directs the water out of the cab.

The refrigerant cycle is completed when the heated low pressure gas is again drawn into the compressor.

MidWestTech | Bobcat E60 Compact Excavator Service Manual | Publication 6987190_10_... Order the manual at mid-west-tech.com >

E60 Excavator Dimensions With Long Arm

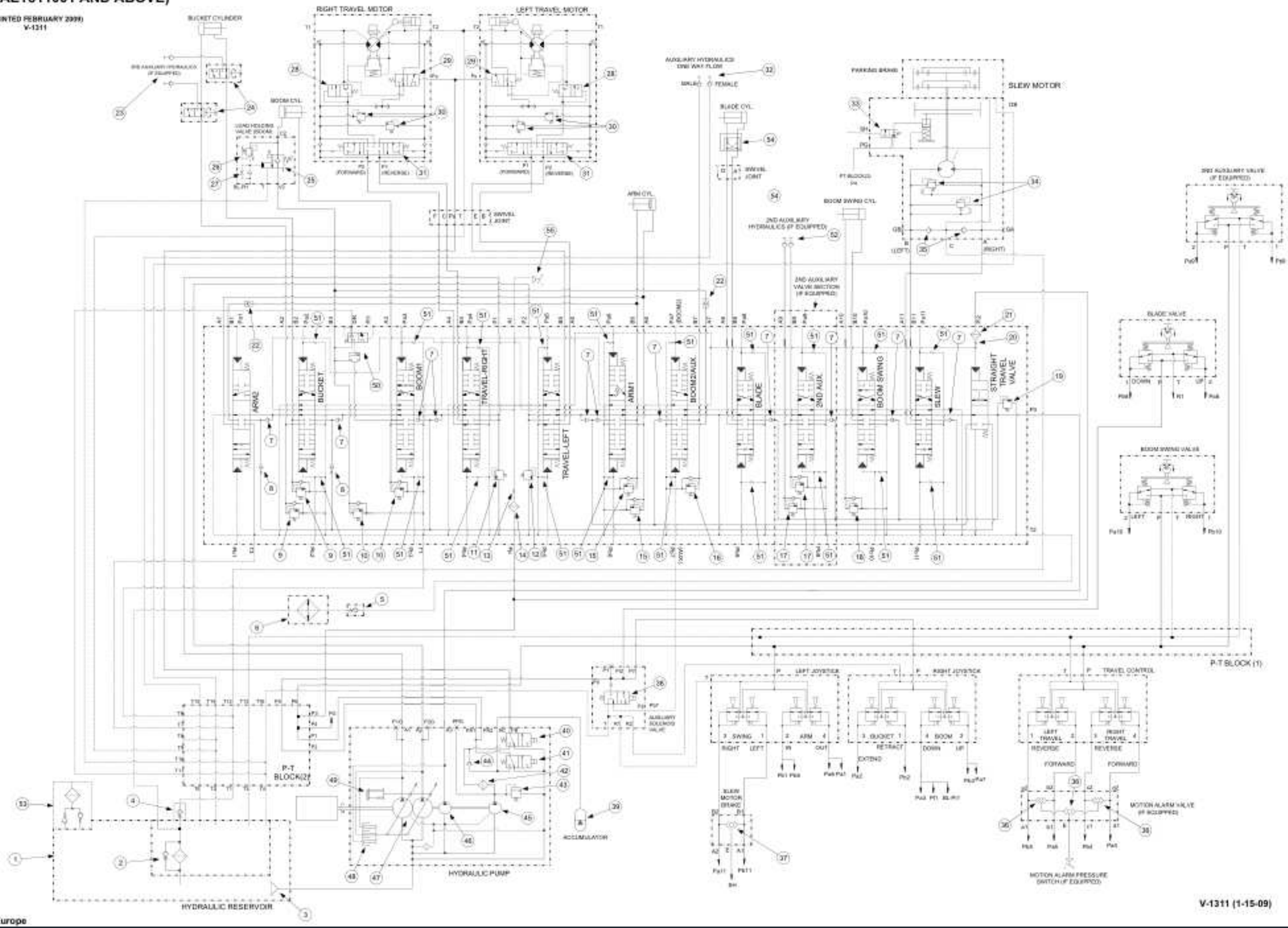
- All dimensions are shown in inches. Respective metric dimensions are given in millimeters enclosed by parentheses.
- Where applicable, specification conform to SAE or ISO standards and are subject to change without notice.



MidWestTech | Bobcat E60 Compact Excavator Service Manual | Publication 6987190_10_... Order the manual at mid-west-tech.com >

HYDRAULIC/HYDROSTATIC SCHEMATIC
E60 (S/N AET811001 AND ABOVE)

(PRINTED FEBRUARY 2009)
V-1311



V-1311 (1-15-09)

Printed in Europe

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