| Document Title: **Standard tightening torques** | Function Group: **030** | Information Type: **Service Information** | Date: **2014/3/19** |
|---|---|---|---|
| Profile: **SSL, MC80B [GB]** | | | |

# Standard tightening torques

The tightening torques in the following tables apply to bolts and nuts with tensile strenght as noted below. The tables should be regarded as general instructions for tightening bolts and nuts which have no specified torque values indicated.

**NOTE!**

Torque values sholud be increased by 10% for flange bolts type U6FS.Bolts and nuts should be cleaned and lubricated with oil.

**Table 1. TENSILE STRENGHT 8.8 Metric coarse and fine threads (Medium Friction level)**

| Thread | Nm | kpm | lbf ft |
|---|---|---|---|
| M6 | 10±1.5 | 1.0±0.15 | 7.4±1.0 |
| M8 | 24±4 | 2.4±0.4 | 18±3.0 |
| M10 | 48±8 | 4.8±0.8 | 35±6.0 |
| M12 | 85±15 | 8.5±1.5 | 63±11 |
| M14 | 140±25 | 14.0±2.5 | 103±18 |
| M16 | 220±35 | 22.0±3.5 | 160±26 |
| M20 | 430±70 | 43.0±7.0 | 320±52 |
| M24 | 740±120 | 74.0±12.0 | 550±89 |

**Table 2. TENSILE STRENGTH 10.9 Metric coarse and fine threads (Medium Friction level)**

| Thread | Nm | kpm | lbf ft |
|---|---|---|---|
| M6 | 12±2 | 1.2±0.2 | 9±1.5 |
| M8 | 30±5 | 3.0±0.5 | 22±3.5 |
| M10 | 60±10 | 6.0±1.0 | 44±7.5 |
| M12 | 105±20 | 10.5±2.0 | 78±14.5 |
| M14 | 175±30 | 17.5±3.0 | 130±22 |
| M16 | 275±45 | 27.5±4.5 | 204±33 |
| M20 | 540±90 | 54.0±9.0 | 400±66 |
| M24 | 900±140 | 90±14.0 | 664±103 |

**Table 3. UN threads, class 8.8 (Low Friction level)**

| Thread | Nm | kpm | lbf ft |
|---|---|---|---|
| 1/4 | 9±2 | 0.9±0.2 | 6.6±1.5 |
| 5/16 | 18±4 | 1.8±0.4 | 13±3.0 |
| 3/8 | 35±8 | 3.5±0.8 | 26±5.9 |
| 7/16 | 50±12 | 5.0±1.2 | 37±9.0 |
| 1/2 | 80±20 | 8.0±2.0 | 59±15 |
| 9/16 | 120±30 | 12.0±3.0 | 89±22 |
| 5/8 | 160±40 | 16.0±4.0 | 118±30 |

VOLVO
Construction Equipment

**Service Information**

| Document Title: **Safety when handling the machine** | Function Group: **191** | Information Type: **Service Information** | Date: **2014/3/19** |
|---|---|---|---|
| Profile: **SSL, MC80B [GB]** | | | |

# Safety when handling the machine

**Volvo CE is only responsible if:**

- the machine has been used correctly and has been maintained according to recommendations in the service manuals and the machine's Operator's manual.
- prescribed service and inspections have been performed at the specified intervals.
- lubricant recommendations in the manual have been followed.
- no safety seals have been opened by an unauthorized person.
- all modifications and repairs have been performed in the manner prescribed by Volvo.
- only genuine Volvo parts/accessories, or attachments that fulfil Volvo's requirements have been used.

**WARNING**

**Machine operators must have sufficient skills and knowledge of the content in the Operator's Manual before operating the machine.**

**It is important that the operator reads and follows the instructions in the machine's Operator's Manual.**

**An untrained operator may cause serious injuries and fatalities.**

**Never operate a machine for which there is no Operator's Manual available.**

**Learn to understand the warning plates, symbols and operating instructions for the machine before you start operating.**

**A few safety rules**

**General**

- Repair malfunctions or defects that affect safety as soon as possible.
- Always wear a hard hat, safety glasses, gloves, protective work shoes and other safety items that your work requires.
- Avoid standing in front of or behind the machine when the engine is running.
- Make sure that stepping surfaces, service areas, handles and slip-protection are clean and free from oil, diesel fuel, dirt and ice and that they're replaced if they are defective or missing.

**Before operating**

- Read the Operator's manual before you operate the machine! Follow the instructions for operating and perform the indicated recommended actions before operating.
  Some important rules below:
- Perform a control light test before starting the engine by turning the ignition key to position **ON** (see Operator's manual).
- Perform all safety checks prescribed in the Operator's manual.

**WARNING**

device comes loose.

- Raise the seat bar. Loader arm controls are now deactivated.
- Person standing beside the machine, remove the support device pin and stow the loader arm support device onto the loader arm. Walk away from the machine.
- Lower the loader arm.

VOLVO
Construction Equipment

**Service Information**

| Document Title: **Starting with booster battery** | Function Group: **191** | Information Type: **Service Information** | Date: **2014/3/19** |
|---|---|---|---|
| Profile: **SSL, MC80B [GB]** | | | |

# Starting with booster battery

When starting with booster battery the following must be observed:

Check that the booster battery or other power source have **the same voltage** as the standard batteries. See 311 Battery, specification

**WARNING**

**Batteries may explode due to the current surge if a fully-charged battery is connected to a completely discharged or frozen battery. Personal injuries may be sustained.**

**WARNING**

**Never boost-start the machine by connecting directly to the starter motor. This may result in uncontrolled machine movements. When using another machine to boost-start, it must not touch the machine that is being started.**

Follow these steps to jump start:

1. Check that the battery is not frozen. If the fluid is frozen, remove battery from machine and allow it to thaw before charging.

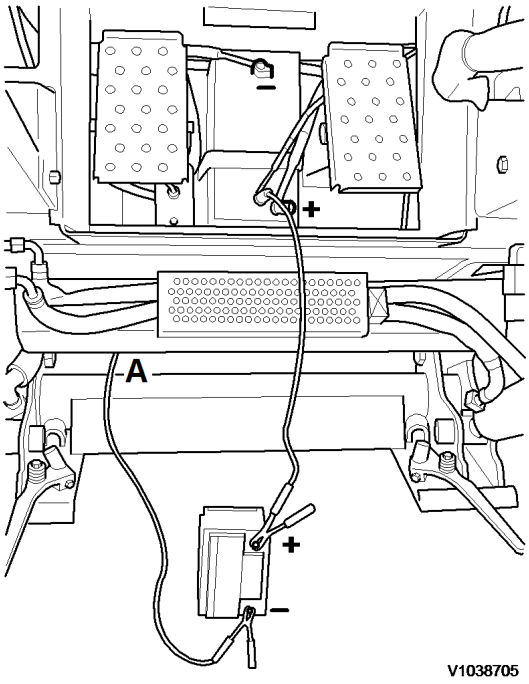


**Figure 1**
**Starting with booster battery**

2. The machine used for jump starting should have a 12 volt battery with at least 500 cold cranking amperes.
3. Connect the positive (+) jumper cable to the positive terminal of the discharged battery.
4. Connect the other end of the same jumper cable to the positive (+) terminal of the booster battery.
5. Connect one end of the second jumper cable to the negative (–) terminal of the booster battery.

| Document Title: | Function Group: | Information Type: | Date: |
|---|---|---|---|
| **Fire prevention measures** | **191** | **Service Information** | **2014/3/19** |
| Profile: **SSL, MC80B [GB]** | | | |

# Fire prevention measures

**General**

- There is always a risk of fire. The recommended location for the fire extinguisher is just inside the cab door next to the cab lock. Find out what type of fire extinguisher to use and how to use it.
- Fire-fighting equipment installed in or on the machine must be maintained in working order. Such equipment should be regarded as a complement to the operator's own efforts in case of a fire.
  The equipment should not be considered as a replacement of the operator's own fire fighting efforts.
- Fire extinguishers mounted on the machine or used when working on the machine must fulfil certain requirements. See the Operator's Manual.
- At the slightest sign of fire, if the situation allows it and keeping in mind your own safety, take the following action:
  - drive the machine away from the danger area
  - lower the lift arms to their bottom position so that the attachment rests on the ground
  - stop the engine
  - leave the cab
  - turn off the battery disconnect switch
  - start fighting the fire and call the fire department if necessary


**Figure 2**
**Smoking and open flames are absolutely forbidden when filling fuel or any time diesel fuel is in contact with the open air.**

- Smoking or open flames are absolutely forbidden close to the machine when filling fuel or at any time the fuel system is in contact with the open air.
- Diesel fuel is flammable and must not be used for cleaning. Use an approved solvent instead.
- Remember that certain solvents can cause skin rashes and are usually flammable. Avoid inhaling solvent vapour.
- Engine starting aids are flammable. Store such items in cool and adequately ventilated areas. Remember that such aids must not be used in combination with electric preheating of induction air.

**Cleanliness**

- Cleanliness is a decisive factor for operational reliability of the machine's systems. Therefore, keep the servicing area clean. Oil or water make floors and steps slippery and are also dangerous in combination with electrical systems or tools. Oily clothes or clothes drenched in grease constitute a serious fire hazard.
- Check daily that the machine and equipment, such as underbody skid plates, are free from dirt and oil. This reduces the risk of fire and makes it easier to detect defective components or loose parts.

| Document Title: **Working in environmentally contaminated areas** | Function Group: **191** | Information Type: **Service Information** | Date: **2014/3/19** |
|---|---|---|---|
| Profile: **SSL, MC80B [GB]** | | | |

# Working in environmentally contaminated areas

Machines that are used in environmentally contaminated and/or health-hazardous areas shall be specially equipped for operation in such an environment.

Used cab and engine air filters from machines working in environments with asbestos or other hazardous dust shall be put into tight-sealing plastic bags that the new filters come in, then leave the used filters for destruction.

| Document Title: **Warranty inspection 100 hours** | Function Group: **172** | Information Type: **Service Information** | Date: **2014/3/19** |
|---|---|---|---|
| Profile: **SSL, MC80B [GB]** | | | |

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# Warranty inspection 100 hours

**Op nbr 172-002**

1. 173 Test-run and check:
   - Steering and braking
   - Instruments and operating controls
   - Lift/tilt lockout functions (seat bar, lockout switch)
   - Attachment bracket locking pins
   - Climate control system (optional)
   - Visually inspect tires and structure
2. 173 Neutral centring, check
   Only applies to machines equipped with mechanical controls
3. Put the machine in Service position, see 191 Service position 1. Turn off the electric power with the battery disconnect switch.
4. 173 Engine, oil level, check
5. 173 Coolant, level, check
6. 173 Hydraulic fluid, level, check
7. 173 Leakage, checking
8. 173 Pipes, couplings and hoses, check
9. 173 Bolted joints, engine mounting, hydrostatic pumps and charge/implement pumps, tightening torques, check
10. 173 Tyres, wear and air pressure, checking
11. 173 Over the tire tracks, check (option)
12. 173 Wheel nuts, torque, check
13. 173 Belt tension, checking
14. 173 Fuel system, water trap, check/drain
15. 173 Engine radiator and hydraulic oil cooler, check (clean when necessary)
16. 173 Turbocharger inclusive inlet and exhaust systems, leakage, check
    Only applies to MC70B, MC90B and MC110B.
17. 173 Hydraulic oil Charge filter, change
    Only applies to machines equipped with Pilot controls.

| Document Title: **Maintenance service, every 50 hours** | Function Group: **173** | Information Type: **Service Information** | Date: **2014/3/19** |
|---|---|---|---|
| Profile: **SSL, MC80B [GB]** | | | |

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# Maintenance service, every 50 hours

**Op nbr 173-004**

1. 173 Test-run and check:
   - Steering and braking
   - Instruments and operating controls
   - Lift/tilt lockout functions (seat bar, lockout switch)
   - Attachment bracket locking pins
   - Climate control system (optional)
   - Visually inspect tires and structure
2. Put the machine in Service position, see 191 Service position 1. Turn off the electric power with the battery disconnect switch.
3. 173 Engine, oil level, check
4. 173 Coolant, level, check
5. 173 Hydraulic fluid, level, check
6. 173 Leakage, checking
7. 173 Pipes, couplings and hoses, check
8. 173 Wheel nuts, torque, check
9. 173 Fuel system, water trap, check/drain
10. 173 Engine radiator and hydraulic oil cooler, check (clean when necessary)
11. 173 Turbocharger inclusive inlet and exhaust systems, leakage, check
    Only applies to MC70B, MC90B and MC110B
12. 173 Pivot pins, lubricate
13. 173 Service journal (included in Operator's manual), fill in

| Document Title: **Maintenance service, every 500 hours** | Function Group: **173** | Information Type: **Service Information** | Date: **2014/3/19** |
|---|---|---|---|
| Profile: **SSL, MC80B [GB]** | | | |

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# Maintenance service, every 500 hours

**Op nbr 173-010**

1. 173 Test-run and check:
   - Steering and braking
   - Instruments and operating controls
   - Lift/tilt lockout functions (seat bar, lockout switch)
   - Attachment bracket locking pins
   - Climate control system (optional)
   - Visually inspect tires and structure
2. 173 Neutral centring, check
   Only applies to machines equipped with mechanical controls
3. Put the machine in Service position, see 191 Service position 1. Turn off the electric power with the battery disconnect switch.
4. 173 Coolant, level, check
5. 173 Hydraulic fluid, level, check
6. 173 Leakage, checking
7. 173 Pipes, couplings and hoses, check
8. 173 Tyres, wear and air pressure, checking
9. 173 Over the tire tracks, check (option)
10. 173 Wheel nuts, torque, check
11. 173 Belt tension, checking
12. 173 Fuel system, water trap, check/drain
13. 173 Engine radiator and hydraulic oil cooler, check (clean when necessary)
14. 173 Turbocharger inclusive inlet and exhaust systems, leakage, check
    Only applies to MC70B, MC90B and MC110B
15. 173 Fuel filter, change
16. 173 Engine, oil and filter, change.
17. 173 Steering levers, locking of pivot pins, check

| Document Title: **Maintenance service, every 2000 hours** | Function Group: **173** | Information Type: **Service Information** | Date: **2014/3/19** |
|---|---|---|---|
| Profile: **SSL, MC80B [GB]** | | | |

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# Maintenance service, every 2000 hours

**Op nbr 173-014**

1. 173 Test-run and check:
   - Steering and braking
   - Instruments and operating controls
   - Lift/tilt lockout functions (seat bar, lockout switch)
   - Attachment bracket locking pins
   - Climate control system (optional)
   - Visually inspect tires and structure
2. 173 Neutral centring, check
   Only applies to machines equipped with mechanical controls
3. 173 VCADS Pro, logged errors, read off
4. Put the machine in Service position, see 191 Service position 1. Turn off the electric power with the battery disconnect switch.
5. 173 Leakage, checking
6. 173 Pipes, couplings and hoses, check
7. 173 Tyres, wear and air pressure, checking
8. 173 Over the tire tracks, check (option)
9. 173 Wheel nuts, torque, check
10. 173 Belt tension, checking
11. 173 Fuel system, water trap, check/drain
12. 173 Engine radiator and hydraulic oil cooler, check (clean when necessary)
13. 173 Turbocharger inclusive inlet and exhaust systems, leakage, check
    Only applies to MC70B, MC90B and MC110B
14. 173 Air cleaner primary filter, clean
15. 173 Air cleaner secondary filter, change
16. 173 Cab, air filter, clean (replace when necessary) (option)
17. 173 Fuel filter, change

VOLVO

Construction Equipment

**Service Information**

| Document Title: | Function Group: | Information Type: | Date: |
|---|---|---|---|
| **Bolted joints, engine mounting, hydrostatic pumps and charge/ implement pumps, tightening torques, check** | **173** | **Service Information** | **2014/3/19** |
| Profile: **SSL, MC80B [GB]** | | | |

# Bolted joints, engine mounting, hydrostatic pumps and charge/ implement pumps, tightening torques, check

This is part of other procedure

**Op nbr**

1. Check engine mounting rubber and bolts.

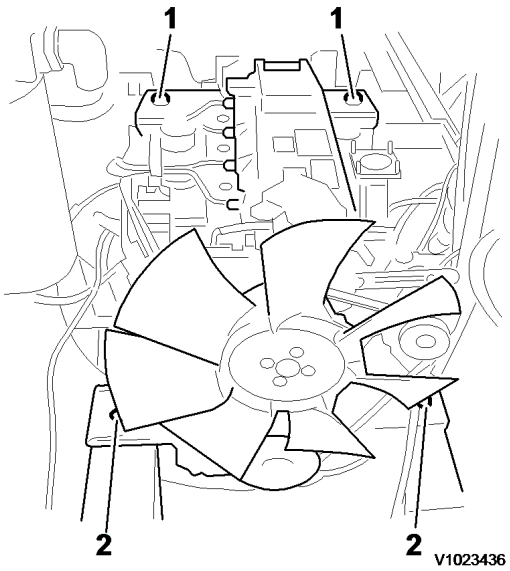



**Figure 1**
**MC80B/MC90B/MC110B shown**

1. Front engine mount
2. Rear engine mount

2. Check hydrostatic and charge/implement pumps, bolts.

VOLVO

Construction Equipment

**Service Information**

| Document Title: **Air cleaner primary filter, clean** | Function Group: **173** | Information Type: **Service Information** | Date: **2014/3/19** |
|---|---|---|---|
| Profile: **SSL, MC80B [GB]** | | | |

# Air cleaner primary filter, clean

This is part of other procedure.

**Op nbr**

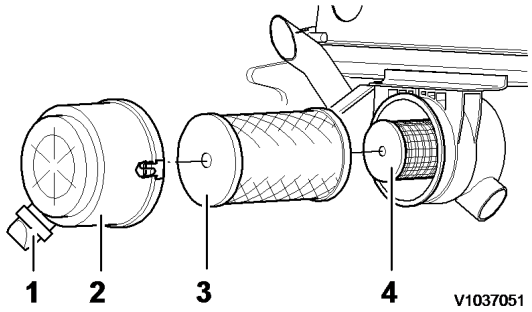
1. 


**Figure 1**

1. Dust valve
2. Air filter cover
3. Primary filter
4. Secondary filter

Remove primary filter.

2. Clean the filter by blowing compressed air at a low pressure.

3. Inspect the filter. If there is the smallest hole, scrath, crack or other damage, the filter must be discarded and replaced by a new one.

If the warning lamp is still illuminated after cleaning, the filter needs to be replaced.

If the warning lamp is still illuminated after replacing, secondary filter must be replaced. See 173 Air cleaner secondary filter, change

4. Close the radiator valve, fit the hose for the engine oil cooler.

5. Fill radiator with coolant. Replace radiator cap. Add coolant to overflow bottle until it is half full.

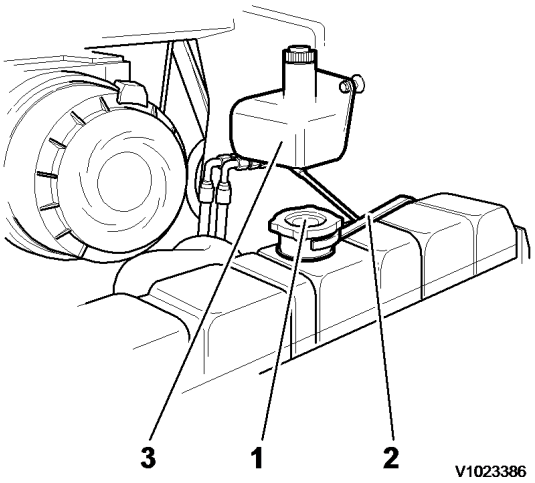



**Figure 3**

1. Radiator fill cap
2. Overflow hose
3. Overflow bottle

VOLVO

Construction Equipment

**Service Information**

| Document Title: **Valve, clearance, check/ adjust** | Function Group: **173** | Information Type: **Service Information** | Date: **2014/3/19** |
|---|---|---|---|
| Profile: **SSL, MC80B [GB]** | | | |

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# Valve, clearance, check/adjust

This is part of other procedure.

**Op nbr**

1. See suitable parts of 214 Valves, adjusting

| Document Title: | Function Group: | Information Type: | Date: |
|---|---|---|---|
| **Pivot pins, lubricate** | **173** | **Service Information** | **2014/3/19** |
| Profile: **SSL, MC80B [GB]** | | | |

# Pivot pins, lubricate

This is part of other procedure.

**Op nbr**

**NOTE!**
The life of bearings and pins can be extended if the machine is lubricated regularly in a correct manner. Before lubrication, clean all lubricating nipples and grease gun to avoid sand and dirt from penetrating bearings. Add grease until grease comes out.

1. Lubricate rear loader arm pivot pins.

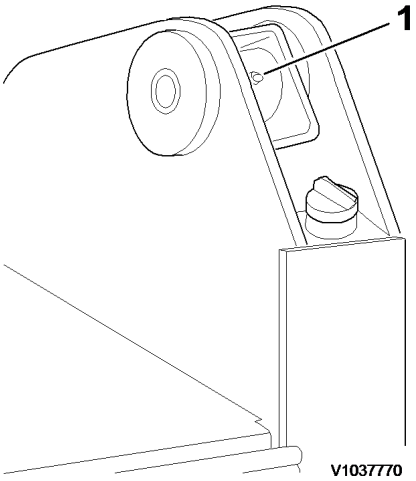


**Figure 1**

1. Loader arm lubrication

2. Lubricates attachment tilt cylinder rod ends, tilt pivot pins and bracket locking pins.

VOLVO

Construction Equipment

**Service Information**

| Document Title: **Manual lifting of loader arm** | Function Group: **191** | Information Type: **Service Information** | Date: **2014/3/19** |
|---|---|---|---|
| Profile: **SSL, MC80B [GB]** | | | |

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# Manual lifting of loader arm

**Op nbr 191-024**

## Pilot controls

## With working electric power and hydraulic servo pressure

In the event of total loss of engine power with a lowered loader arm, the loader arm can be raised safely.

**NOTE!**

During the following steps, place a stand jack or support block under the rear of the machine to prevent it from tipping backwards.

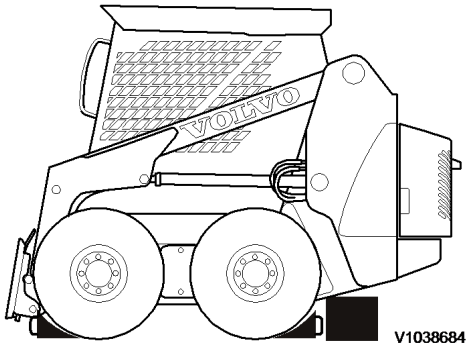


**Figure 1**
**Support block**

1. Remove any attachment from the attachment bracket.
2. Lower the seat bar and set the starter key switch in the **ON** position. Depress the Lift/Tilt lockout switch.
3. Push the right handle fully forward, to put the loader arm into float position.
4. Release the loader arm support pin. Lift the loader arm with an overhead hoist or another piece of equipment all the way up to allow engagement of the loader arm support device.

VOLVO

Construction Equipment

**Service Information**

| Document Title: | Function Group: | Information Type: | Date: |
|---|---|---|---|
| **Engine, description** | **200** | **Service Information** | **2014/3/19** |
| Profile: **SSL, MC80B [GB]** | | | |

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# Engine, description

**MC80B (D3.4DCAE2)**

The engine is a vertical in-line, four cylinder, four stroke, water-cooled diesel engine with a direct injection system. The valve mechanism receives its movement from the camshaft via rods and rocker arms. Turning direction is counter-clockwise seen from the flywheel. Firing order is 1-3-4-2 and the first cylinder is on the flywheel side.
The fuel system is fed by an electric fuel pump that supplies the fuel to the electronic fuel injection pump.
The lubrication system consists of forced lubrication with a trochoid pump.
The air system consists of a dual element, self cleaning air cleaner.
The cooling of the engine is performed by a high capacity radiator and a hydraulic oil cooler.

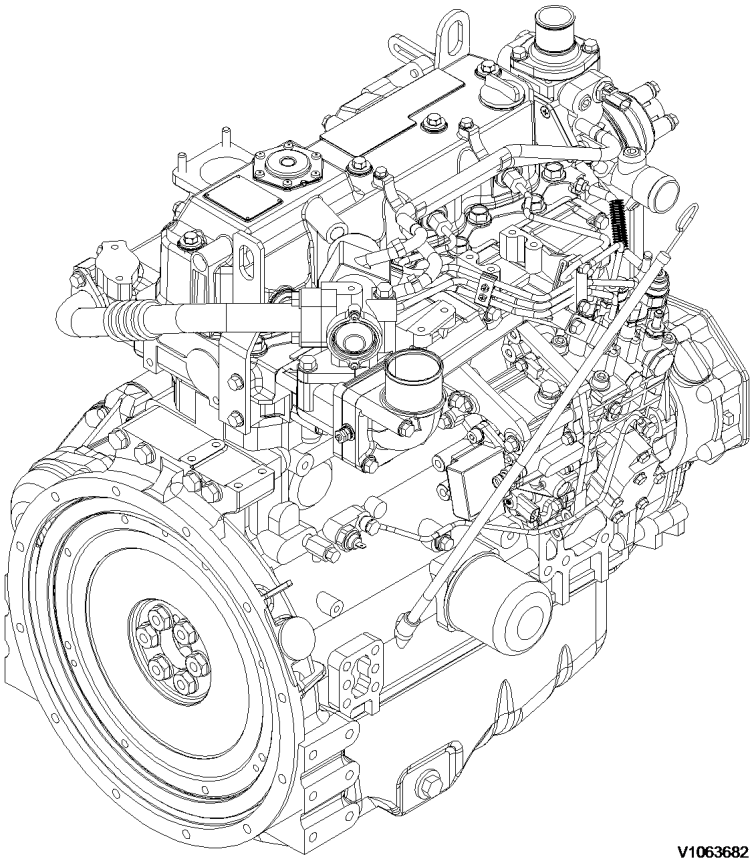



**Figure 1**

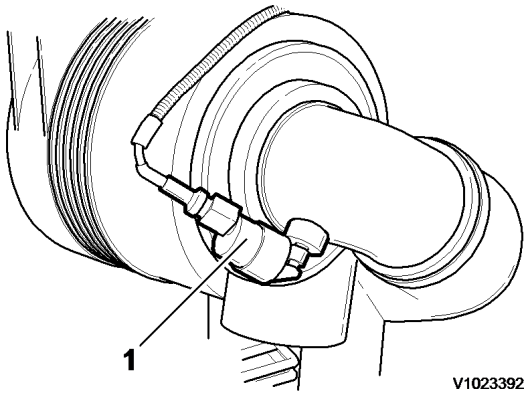



**Figure 13**

1. Air cleaner restriction sensor

18. Disconnect the air intake hose from the engine intake manifold

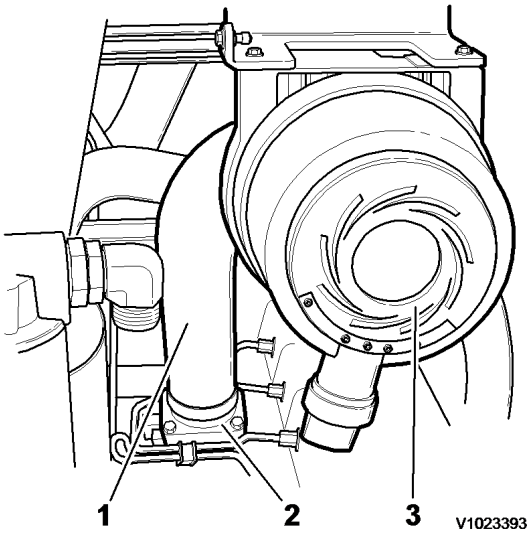



**Figure 14**
**Engine without Turbo**

1. Air intake hose
2. Engine intake manifold

**NOTICE**

**Always cover open air connections with a plastic bag and rubber bands. Gravel, dust and other particles in these connections may result in engine failure!**

If the machine is equipped with turbo, disconnect the air intake hose from the turbo.

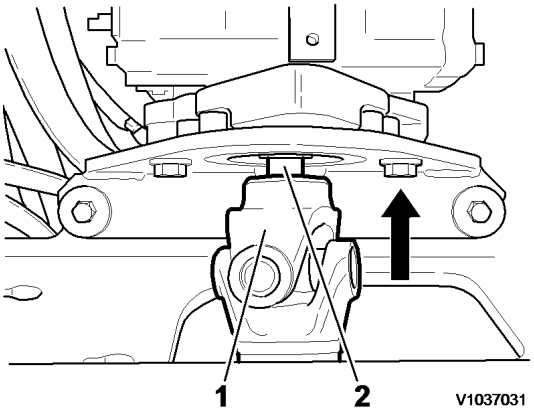



**Figure 4**

1. Transmission universal drive joint
2. Splined transmission drive shaft

7. Align the front engine mount with the frame mounting brackets and position the engine on the mount. Loosely fit the mounting bushings and bolts.

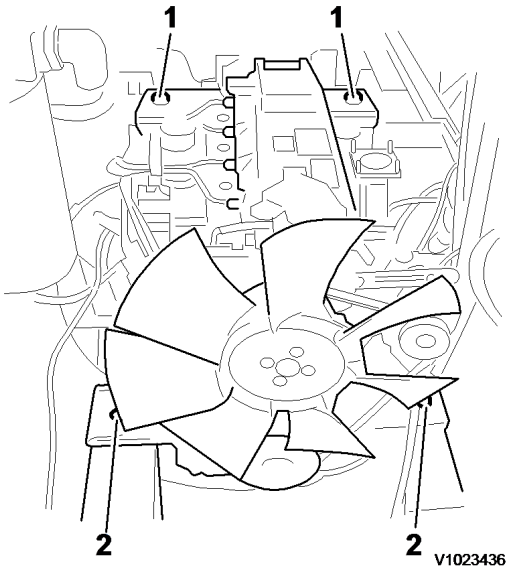



**Figure 5**

1. Front engine mount
2. Rear engine mount

8. Align the rear engine mount with the frame mounting brackets and install the engine to the mount. Loosely fit the mounting bushings and bolts.

9. Fully lower the engine, disconnect and remove the lifting tool.

10. Tighten all four mounting bolts securely.
    Tightening torque: **220 Nm (160 lb ft)**
    **If the machine is equipped with High flow,**

VOLVO

Construction Equipment

**Service Information**

| Document Title: **Cylinder head for MC70B, MC80B, MC90B and MC110B, description** | Function Group: | Information Type: **Service Information** | Date: **2014/3/19** |
|---|---|---|---|
| Profile: **SSL, MC80B [GB]** | | | |

# Cylinder head for MC70B, MC80B, MC90B and MC110B, description

The cylinder head, which covers all cylinders, is a sixteen valve cylinder head.
The cylinder head has two inlet valves and two exhaust valves for each cylinder.

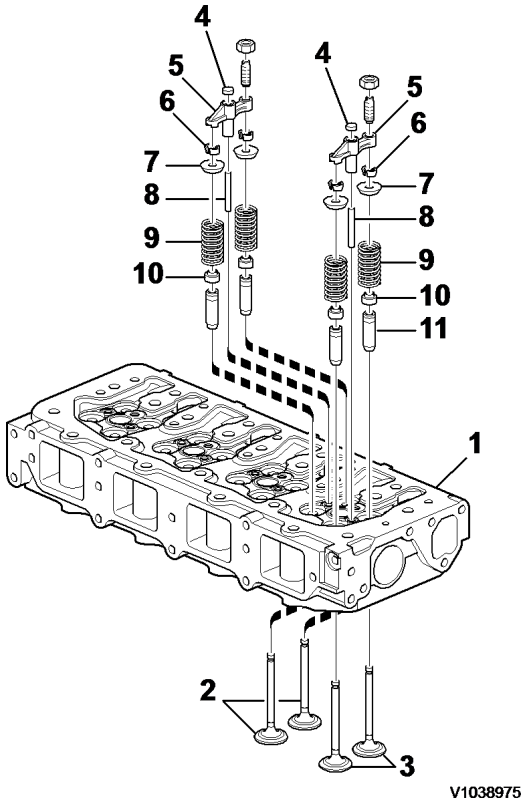



**Figure 1**
**Cylinder head with valve mechanism**

| | | | | | |
|---|---|---|---|---|---|
| 1. | | Cylinder head | 7. | | Spring guide |
| 2. | | Exhaust valve | 8. | | Guide |
| 3. | | Inlet valve | 9. | | Spring |
| 4. | | Plug | 10. | | Seal |
| 5. | | Yoke | 11. | | Guide |
| 6. | | Valve collet | | | |

1. TDC mark
2. Timing reference mark

13. Set cylinder no. 1 to compression TDC and adjust the clearance of the following valves:
Cylinder 1: suction and exhaust
Cylinder 2: suction
Cylinder 3: exhaust
Standard valve clearance for inlet and outlet valve: see, 214 Valve mechanism, specifications

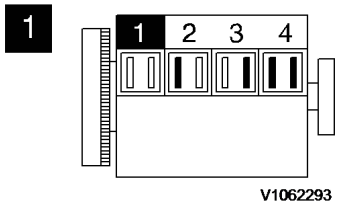



**Figure 5**

**NOTE!**
Since the intake and exhaust valve rocker arms are operated the same and there is a clearance between the arm and valve generally at the top dead center (TDC), the position can be checked by means of the play when the arm head is held with a hand. Use a mirror to access the flywheel inspection port. If there is no valve clearance, inspection in the disassembled state is necessary since the valve seat may be worn abnormally.

14. Turn the crankshaft to cylinder no. 1 overlap TDC and adjust the rest of the valves.
Cylinder 2: exhaust
Cylinder 3: suction
Cylinder 4: suction and exhaust
**NOTE!**
The crankshaft shall be turned anti clockwise as viewed from the flywheel side.

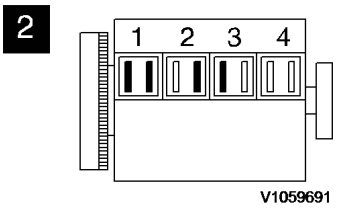
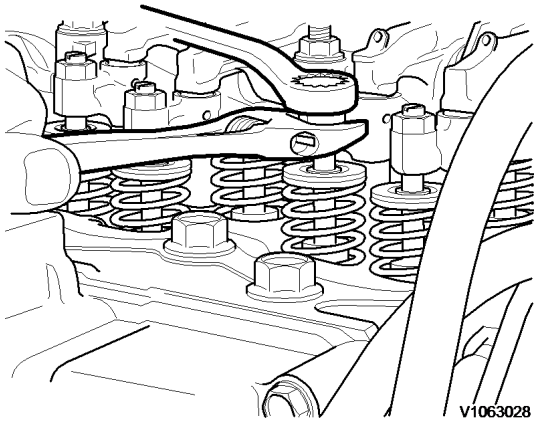



**Figure 6**

15. Make sure there is a clearance between the valve bridge and the rocker arm. BILD
**NOTE!**
Do not loosen or tighten the valve adjusting screw lock nut without holding the valve bridge. Always hold the valve bridge using a wrench to prevent bending of the valve stems.



VOLVO

Construction Equipment

**Service Information**

| Document Title: **Oil cooler, description** | Function Group: **223** | Information Type: **Service Information** | Date: **2014/3/19** |
|---|---|---|---|
| Profile: **SSL, MC80B [GB]** | | | |

# Oil cooler, description

The lubrication oil pump is a trochoid pump whose inner rotor is driven by the shaft of the crankshaft pulley. Outer rotor and pressure relief valve are fit in the pump housing.

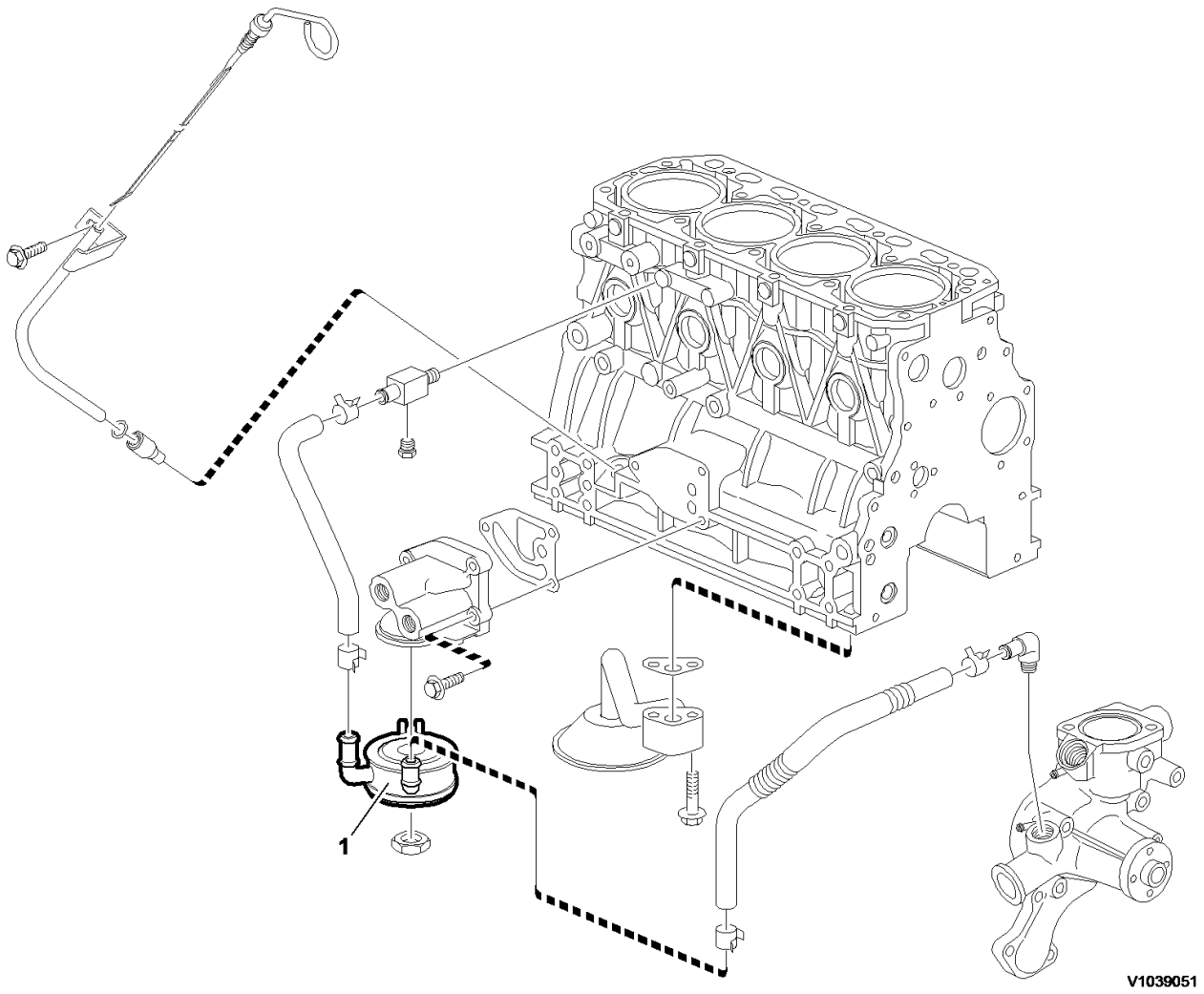



**Figure 1**

1. Oil cooler

VOLVO

Construction Equipment

**Service Information**

| Document Title: | Function Group: | Information Type: | Date: |
|---|---|---|---|
| **Injection pump, description** | **236** | **Service Information** | **2014/3/19** |
| Profile: **SSL, MC80B [GB]** | | | |

# Injection pump, description

The fuel injection pump is a distributor type pump which is unified of Mono-plunger, a distributing shaft, a hydraulic head which equipped the delivery valve for each cylinder, pump housing which has a cam shaft internally and a governor.
The fuel, which is pressurized by the up and down movement of the plunger driven by the cam-rotation, is supplied through the distributor shaft, which is rotating accordingly.

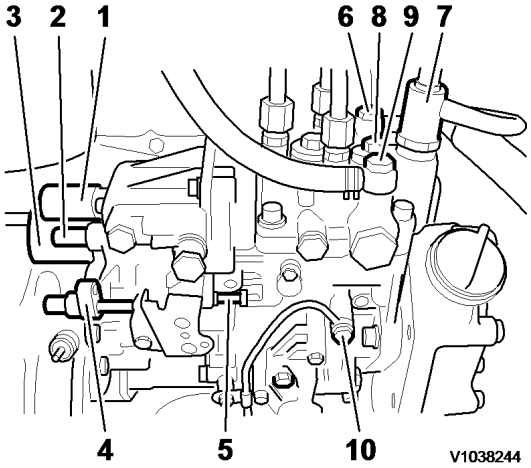



**Figure 1**
**Fuel injection pump**

1. Fuel limiter
2. Torque spring
3. Stop solenoid
4. High idle bolt
5. Low idle bolt
6. Fuel outlet port
7. Cold start device
8. Plug
9. Fuel inlet port for the plunger
10. Lub oil line

| Document Title: **Exhaust manifold, replacing gasket** | Function Group: **251** | Information Type: **Service Information** | Date: **2014/3/19** |
|---|---|---|---|
| Profile: **SSL, MC80B [GB]** | | | |

# Exhaust manifold, replacing gasket

**Op nbr 251-004**

## Removing

1. Put the machine in service position 1, see 191 Service position 1.
2. Disconnect the connector from the air cleaner restriction sensor.

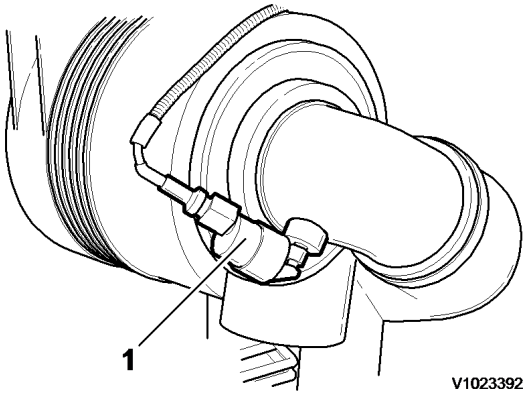



**Figure 1**

1. Air cleaner restriction sensor

**NOTICE**

**Always cover open air connections with a plastic bag and rubber bands. Gravel, dust and other particles in these connections may result in engine failure!**

**Applies to machine without turbo:**

3. Disconnect the air intake hose from the engine induction manifold.

| Document Title: | Function Group: | Information Type: | Date: |
|---|---|---|---|
| **Turbocharger, description** | **255** | **Service Information** | **2014/3/19** |
| Profile: **SSL, MC80B [GB]** | | | |

# Turbocharger, description

The turbo charger is driven by the exhaust gas from the engine that is accelerated at the nozzle portion in the turbine housing and blown onto the turbine impeller to rotate the turbine shaft. This is called the turbine. A seal ring and heat insulating plate are installed to prevent the bearing from adverse influence of the gas.

The compressor impeller installed on the turbine shaft rotates with the shaft to compress air for feeding into the intake manifold. This is called the compressor.

As the turbine is constantly applied with thrust force, the thrust bearing prevents the shaft from being moved by thrust force.

A floating bearing is adopted. Since the radial bearing moves with turbine shaft as the oil films are formed both inside and outside the bearing, the bearing sliding speed is slower than the turbine shaft speed, resulting in higher dynamic stability and a minimum of wear in the bearing.

To prevent the intake air and oil form leaking, a seal ring and a seal plate are provided to form a double wall structure on the rear side of the compressor impeller.

When the blower side pressure (intake air pressure) exceeds the specified level, the exhaust gas at the turbine inlet is partially bypassed to the exhaust discharge side to control the turbine speed so as to maintain the intake pressure at the specified level for improving the response to load variation in the low to medium speed range and to minimize black smoke generation. It consists of a control assembly separated from the turbo charger and a valve assembly installed in the turbine impeller chamber.

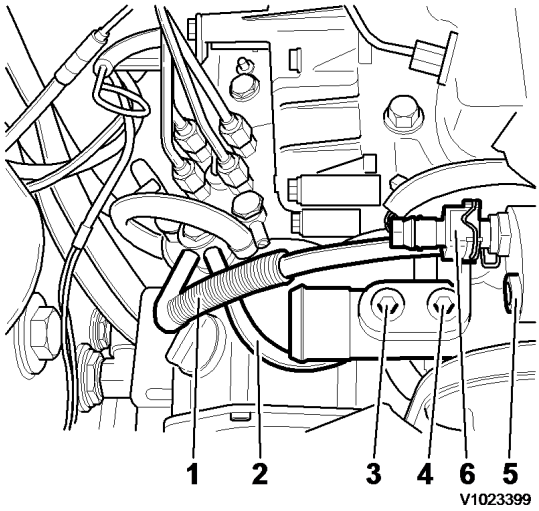



**Figure 4**

1. Hose (cold start)
2. Hose (cold start)
3. Oil cooling (only engines equipped with Turbo)
4. Cab heating (optional)
5. Cab heating (optional)
6. Temperature sensor

8. Fit the fan pulley, spacer and cooling fan to the engine.
   **NOTE!**
   Not the position of the blade curve before installing the fan. It is important to reinstall the fan into the same position.

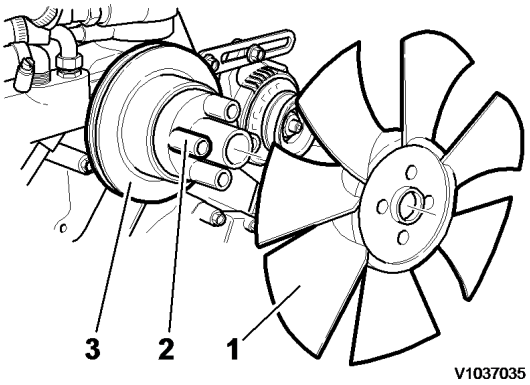



**Figure 5**

1. Fan
2. Spacer
3. Fan pulley

9. Place the fan belt around the three pulleys on the machine.

VOLVO
Construction Equipment

**Service Information**

| Document Title: | Function Group: | Information Type: | Date: |
|---|---|---|---|
| **Fan belt and/or alternator belt, checking and adjusting tension** | **263** | **Service Information** | **2014/3/19** |
| Profile: **SSL, MC80B [GB]** | | | |

# Fan belt and/or alternator belt, checking and adjusting tension

**Op nbr 263-013**

Check fan belt condition and tension as follows:

1. Put the machine in **service position 2**, see 191 Service position 2.
2. Open the rear door and lift the engine cover.
3. Inspect fan belt. Replace cracked or frayed belt.
4. Check belt tension midway between the crankshaft pulley and alternator pulley. Deflection should be **6 to 10 mm (1/4" to 3/8")** with an applied force of **4 kg (10 lb)**.

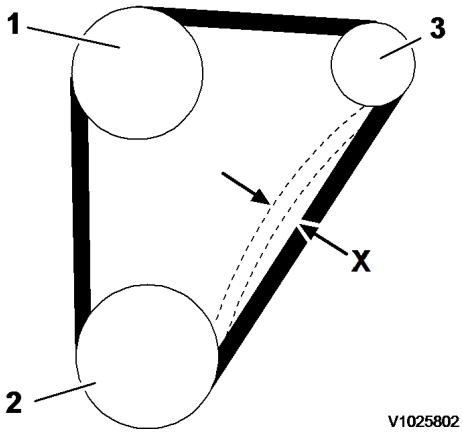



**Figure 1**

1. Fan pulley
2. Crankshaft pulley
3. Alternator pulley

X. Belt deflection **6 – 10 mm (1/4" – 3/8")**

5. To remove excessive belt slack, loosen both adjustment arm bolts and pivot bolt. Carefully pry the alternator to bring deflection within this range and tighten the bolts to maintain this setting. Then recheck belt deflection.
   **NOTE!**
   Excessive belt tension will cause premature belt failure and may damage alternator and water pump bearings.

More than one document matches chosen profile

- Cold start device, description

  Product Line: SSL
  Model Variant: MC110B (Volvo), MC60B (Volvo), MC70B (Volvo), MC80B (Volvo), MC90B (Volvo)

- Cold start device, description

  Product Line: SSL
  Model Variant: MC80B (Volvo)
  Site: Pederneiras
  Serial number start: 71000
  Serial number stop: 79999

VOLVO
Construction Equipment

**Service Information**

| Document Title: **Electrical system, special instructions for servicing, electronic components** | Function Group: | Information Type: **Service Information** | Date: **2014/3/19** |
|---|---|---|---|
| Profile: **SSL, MC80B [GB]** | | | |

# Electrical system, special instructions for servicing, electronic components

**WARNING**

**Electronic equipment is sensitive and can easily be damaged by electro-magnetic interference and/or static electricity from tools or the human body.**

**The data buses J1939 (CAN–bus) and J1708 are especially sensitive.**

**Therefore, always follow the instructions below when work includes electronic units.**

**The following instructions must be followed in order to meet the requirements for electro-magnetic compatibility (EMC and ESD).**

**Figure 1**
**Warning symbol ESD**

- Connections to an electronic unit must never be disconnected when the unit is supplied with electric power, this may damage the electronics.
- Discharge any static electricity in tools before servicing by touching the tool to a metallic machine part that is connected to the frame.

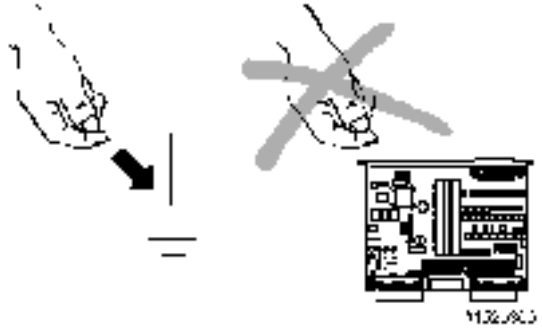


**Figure 2**

| Document Title:<br>**Wiring harnesses** | Function Group: | Information Type:<br>**Service Information** | Date:<br>**2014/3/19** |
|---|---|---|---|
| Profile:<br>**SSL, MC80B [GB]** | | | |

# Wiring harnesses

**WARNING**

**Always follow the instructions "Electrical system, special instructions for servicing".**

Wire harnesses on this vehicle contain internal spliced connections between individual circuits. If a wire is found to be damaged or defective in a harness, it is recommended to replace the entire harness instead of making a repair.

**Removal/disassembly**

To prevent the possibility of improper connections when replacing a harness, install the replacement harness step by step as the original harness is being removed. If this is not possible, tag the terminal locations of all wires and cable clips/ties as the old harness is removed to permit identical installation of the new harness (see Electrical diagrams).

**Inspection**

Clean the wiring harness using a natural bristle brush and the same detergents used to clean the vehicle.

Inspect the harness cover, individual wire leads, and wire terminal ends for cuts, corrosion, or other damage.

**Repair**

If a single wire lead or wire terminal is damaged, it can be repaired as follows:

1. Always use the same gauge of wire being replaced. NEVER replace a section of wire with one of a higher gauge size.
2. If a wire is spliced into a circuit, use rosin core solder to bond the splice. Use insulating tape to cover all splices or otherwise bare wires.
3. Replacement crimp type wire terminals must be of the correct size for the wire gauge used, and must be installed with the proper crimping tool.
4. After the wiring is routed and connected, secure the wire(s) to the harness as required to prevent contact with sharp edges, rotating or moving components, and any part that generates heat during vehicle operation.

**Replacement**

Wire harnesses are held securely in place by clips or other devices that prevent chafing or wearing of the insulation due to vibration, contact with sharp edges, rotating or moving components, and any part that generates heat during vehicle operation. Be careful to install all harness clips and tie wraps in the locations tagged on the vehicle as the old harness was removed.

VOLVO
Construction Equipment

Service Information

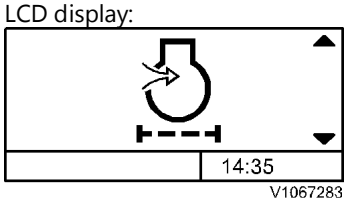
| Document Title: **2F2502, engine air filter** | Function Group: | Information Type: **Service Information** | Date: **2014/3/19** |
|---|---|---|---|
| Profile: **SSL, MC80B [GB]** | | | |

# 2F2502, engine air filter

The purpose of this function is to inform the driver when the air filter is clogged.

| **Input signal** | | |
|---|---|---|
| **From** | **Description** | **Reaction to incorrect input signal** |
| 3021 SE2501, description and measuring | M2504, air filter pressure | Normal is assumed |
| 3012 2F2701, engine running | M2701, engine running | Off is assumed |

| **Output signal** | |
|---|---|
| **Description** | **To** |
| M2505, air filter pressure, warning | HMI Functional Display |

| **HMI Functional Display** | | |
|---|---|---|
| **Input signal** | **Description** | **Output signal** |
| M2505, air filter pressure, warning | Driver information shall be activated if the pressure between the air filter and the air intake has been low for >5 seconds. | LCD display:   V1067283 |

VOLVO
Construction Equipment

**Service Information**

| Document Title: **5F5501, parking brake** | Function Group: | Information Type: **Service Information** | Date: **2014/3/19** |
|---|---|---|---|
| Profile: **SSL, MC80B [GB]** | | | |

# 5F5501, parking brake

This function monitors the parking brake/seat bar and informs the driver when they are applied.
On some machines the tension spring may have looser tension, which might cause the brake position switch to indicate that the parking brake is on. For this reason the signal is filtered for 1 second before driver information is activated.

| **Input signal** | | |
|---|---|---|
| **From** | **Description** | **Reaction to incorrect input signal** |
| 3021 MA9106, description and measuring | M4206, parking brake (ON/OFF) | Off is assumed |
| SW9102, Seat bar switch | M8504, seat bar position (Working/Not Working) | Working position assumed |

| **Output signal** | |
|---|---|
| **Description** | **To** |
| M4207, parking brake indicator, display | HMI Functional Display |

| **HMI Functional Display** | | |
|---|---|---|
| **Input signal** | **Description** | **Output signal** |
| M4207, parking brake indicator, display | Warning light shall be activated if the parking brake is applied. | Warning light:<br>  <br>V1067830 |

VOLVO
Construction Equipment

**Service Information**

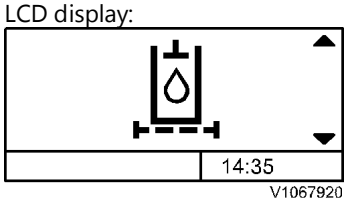
| Document Title: **9F9103, hydraulic oil filter** | Function Group: | Information Type: **Service Information** | Date: **2014/3/19** |
|---|---|---|---|
| Profile: **SSL, MC80B [GB]** | | | |

# 9F9103, hydraulic oil filter

This function monitors the pressure across the hydraulic oil filter. If the filter is clogged a warning shall be displayed to the driver.
Due to the low viscosity of the oil at low temperatures, the supervision of the hydraulic oil filter is not performed while the oil temperature is below 30 °C (86 °F).

| **Input signal** | | |
|---|---|---|
| **From** | **Description** | **Reaction to incorrect input signal** |
| 3012 2F2701, engine running | M2701, engine running | Engine not running assumed |
| 3021 SE9101, description and measuring | M9107, hydraulic oil temperature | Normal temperature assumed |
| SE9106 | M9109, hydraulic oil filter clogged | Off is assumed |

| **Output signal** | |
|---|---|
| **Description** | **To** |
| M9110, hydraulic oil filter clogged, warning | HMI Functional Display |

| **HMI Functional Display** | | |
|---|---|---|
| **Input signal** | **Description** | **Output signal** |
| M9110, hydraulic oil filter clogged, warning | The function driver message when all of the following conditions are fulfilled for more than 5 seconds:<br>○ Engine is running<br>○ The hydraulic oil filter sensor indicates that the filter is clogged<br>○ The hydraulic oil temperature exceeds 30 °C | LCD display:<br>  <br>V1067920 |

frame ground as follows.

1. Ignition in position 1.
2. Actuate all switches and sensors in the circuit and check if any of the fuses blow.
3. Unplug the connectors for the components in question in the circuit so that these do not affect the measurements.
4. Measure resistance between electrical cable and frame ground. The resistance should be ∞ Ω for a cable without short-circuit to ground.

**Short circuit to voltage, check**

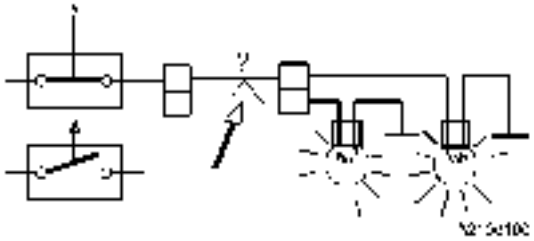


**Figure 6**
**Checking short-circuiting to voltage with resistance measurement**

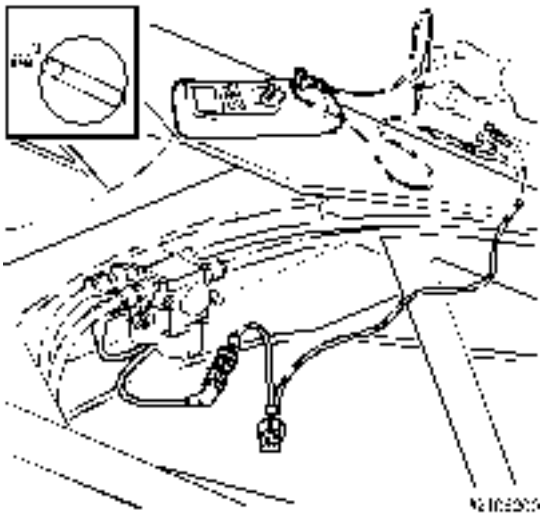


**Figure 7**
**Basis for test of short circuit to voltage**

Short-circuiting between a cable and voltage often results in a blown fuse when the cable is supplied with voltage.

1. Measure voltage with a multimeter at suitable points in the circuit at the same time as switches and sensors are actuated.
   The voltage value is dependent on several parameters. See wiring diagram, signal description and component information.
2. Unplug connectors in question at both ends of the cable harness.
   Resistance test between the leads that can be short-circuited with each other. The resistance should be ∞ Ω for leads which are not cross short-circuited.

**Connector resistance and oxidation, checking**

Poor contact or temporarily recurring malfunctions may be difficult to troubleshoot and are often caused by oxidation, vibrations or because of poor connection of electrical cables.

Moisture in connectors may also be a cause of contact problems, as well as damaged pins or sleeves.

The resistance in connectors and electrical cables should be ≈ 0 Ω. However, certain resistance may exist due to oxidation on cable terminals.

If too much connector resistance is encountered, there will be disruptions of the function. The amplitude of the resistance


Specification: Used together with multimeter when measuring directly in connector.
The gauges are used to prevent connector pins from being damaged or expanded.

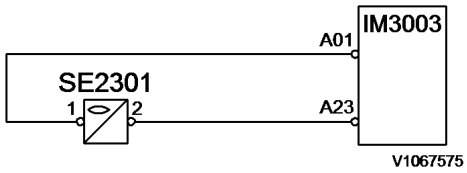
VOLVO
Construction Equipment

**Service Information**

| Document Title: **SE2301, description and measuring** | Function Group: | Information Type: **Service Information** | Date: **2014/3/19** |
|---|---|---|---|
| Profile: **SSL, MC80B [GB]** | | | |

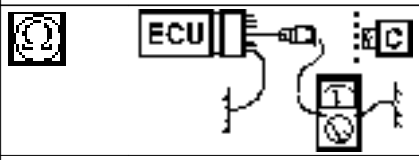
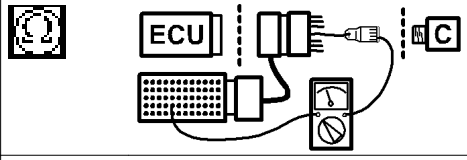
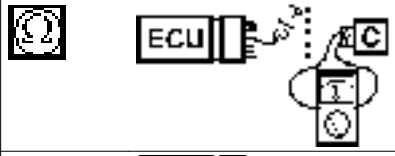
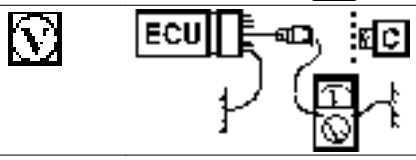
# SE2301, description and measuring

| | |
|---|---|
| Function | Senses fuel level. |
| References | 370 Wiring diagram M03 |
| VCADS Pro, Test | |
| Tools | 88890074 Multimeter<br>9998699 Adapter<br>9990062 Cable<br>9993895 Break out harness |
| Miscellaneous | |

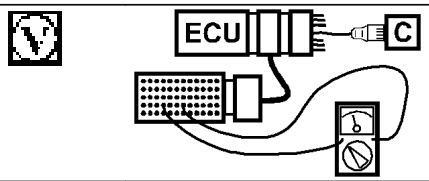



A01, ground
A23, signal fuel level

**Check-measuring**

| Measuring point | Correct value | Condition | Test method |
|---|---|---|---|
| 1 –  | ≈ 0 Ω |  |  |
| A01 – 1<br>A23 – 2 | ≈ 0 Ω |  |  |
| 1 – 2 | ≈ 33 Ω<br>(high level)<br>≈ 240 Ω<br>(low level) |  |  |
| 2 —  | ≈ 5 V |  |  |

**Verification measurement.**

| Measuring point | Correct value | Condition | Test method |
|---|---|---|---|
| A23 – A01 | ≈ 1.2 V<br>(high level)<br>≈ 3.5 V<br>(low level) |  |  |

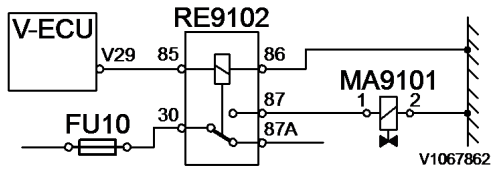
VOLVO
Construction Equipment

**Service Information**

| Document Title: **MA9101, description and measuring** | Function Group: | Information Type: **Service Information** | Date: **2014/3/19** |
|---|---|---|---|
| Profile: **SSL, MC80B [GB]** | | | |

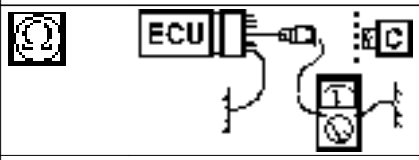
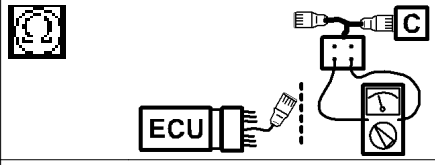
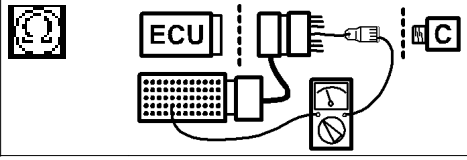
# MA9101, description and measuring

| | |
|---|---|
| Function | Controls the lift lockout of the loader arm |
| References | 366 Lift and tilt lockout functions, description<br>370 Wiring diagram M05 |
| VCADS Pro, Test | |
| Tools | 88890074 Multimeter<br>88890016 Break out harness<br>88890019 Template |
| Miscellaneous | |

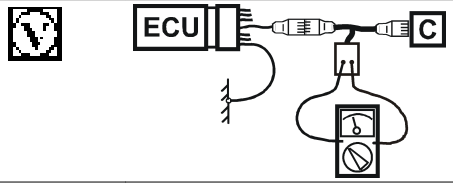


1, signal lift/tilt lockout

**Check-measuring**

| Measuring point | Correct value | Condition | Test method |
|---|---|---|---|
| 2 –  | ≈ 0 Ω |  |  |
| 1 – 2 | ≈ 7 Ω |  |  |
| 1 – RE9102/87 | ≈ 0 Ω |  |  |

**Verification measurement.**

| Measuring point | Correct value | Condition | Test method |
|---|---|---|---|
| 1 – 2 | ≈ 12 V<br>(active)<br>≈ 0 V<br>(not active) |  |  |

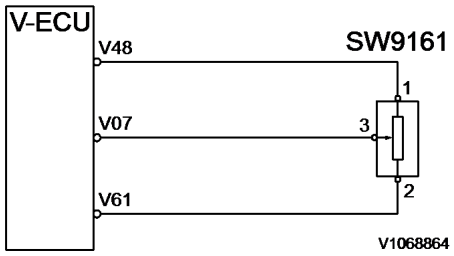
VOLVO
Construction Equipment

**Service Information**

| Document Title: **SW9161, description and measuring** | Function Group: | Information Type: **Service Information** | Date: **2014/3/19** |
|---|---|---|---|
| Profile: **SSL, MC80B [GB]** | | | |

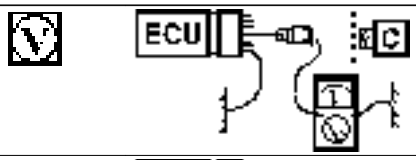
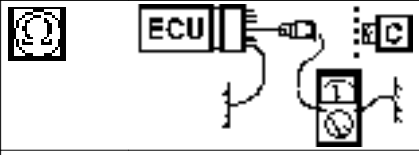
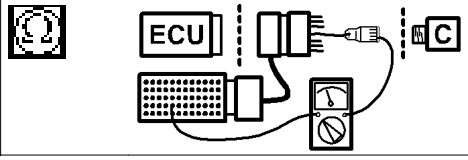
# SW9161, description and measuring

| | |
|---|---|
| Function | Control for auxiliary function (auxiliary roller). |
| References | 370 Wiring diagram M13 |
| VCADS Pro, Test | |
| Tools | 88890074 Multimeter<br>9998699 Adapter<br>9990062 Cable<br>9990014 Break out harness |
| Miscellaneous | |

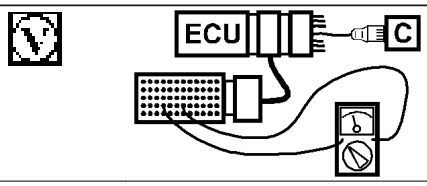



V48, feed 5V
V12, signal
V61, ground

**Check-measuring**

| Measuring point | Correct value | Condition | Test method |
|---|---|---|---|
| 1 –  | ≈ 5 v |  |  |
| 2 –  | ≈ 0 Ω |  |  |
| V07 – 3 | ≈ 0 Ω |  |  |

**Verification measurement**

| Measuring point | Correct value | Condition | Test method |
|---|---|---|---|
| V07 – V61 | ≈ 0.7 V (left)<br>≈ 2.5 V (middle)<br>≈ 4.3 V (right) |  |  |

| Document Title: | Function Group: | Information Type: | Date: |
|---|---|---|---|
| **Alternator, description** | **321** | **Service Information** | **2014/3/19** |
| Profile: **SSL, MC80B [GB]** | | | |

# Alternator, description

The alternator is a alternating current generator with a built-in charging regulator.

When the engine is running, the batteries are normally charged by the alternator since the alternator's normal charging voltage is higher than the battery voltage.

See also:

- 321 Alternator, specifications
- 370 Wiring diagram M01

More than one document matches chosen profile

- Preheating system, description

  Product Line: SSL
  Model Variant: MC80B (Volvo)
  Site: Asheville, Pederneiras
  Serial number start: 61000, 70000
  Serial number stop: 61161, 70999

- Preheating system, description

  Product Line: SSL
  Model Variant: MC80B (Volvo)
  Site: Pederneiras
  Serial number start: 71000
  Serial number stop: 79999

VOLVO
Construction Equipment

**Service Information**

| Document Title: | Function Group: | Information Type: | Date: |
|---|---|---|---|
| **High flow electrical system, description and operation** | **360** | **Service Information** | **2014/3/19** |
| Profile: **SSL, MC80B [GB]** | | | |

# High flow electrical system, description and operation

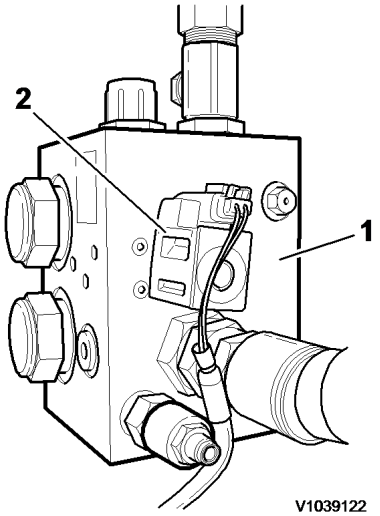



**Figure 1**
**High flow solenoid**

1. High flow valve
2. Solenoid valve

**NOTE!**
Optional equipment

The high flow system provides an increased hydraulic flow rate that is needed for certain types of auxiliary attachments.

The high flow electrical system consists of:

- High flow switch (SW9104)
- High flow relay (RE9101)
- High flow solenoid (MA9105)

The high flow switch has 3 positions:

(**0**) OFF
(**I**) HOLD (static position)
(**II**) ACTIVATE (momentary position)

To activate the high flow function the hydraulic system must first be activated. This is done by momentary depressing the lift/tilt lockout switch while the seat bar is lowered and the cab door (optional) is closed. This gives voltage feed to the high flow switch until the ignition switch is turned off.

**NOTE!**
Once the hydraulic system is activated the position of the seat bar and cab door has no relevance to the ability to activate or deactivate the high flow function.

When the high flow switch is placed in the activated (**II**) position the relay is activated as well as the high flow solenoid.

| Document Title: | Function Group: | Information Type: | Date: |
|---|---|---|---|
| **Back-up alarm, description** | **362** | **Service Information** | **2014/3/19** |
| Profile: **SSL, MC80B [GB]** | | | |

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# Back-up alarm, description

**Mechanical controls**

The back-up alarm is an audible alarm that is activated when at least one travel/steering control lever is moved towards the rear i.e. the vehicle is moving in the rearward direction.

The back-up alarm electrical system consists of:

- Back-up alarm unit (SA3603)
- Back-up alarm monitors (SW3601, SW3602)

The following two conditions must be fulfilled for the back-up alarm to be activated:

- voltage feed i.e. ignition switch in position:
  - **I**, **II** or **III** (old version)
  - **II** or **III** (new version)
- one travel/steering control lever is moved towards the rear

Each monitor is connected to a separate travel/steering lever. The two monitors are electrical connected in parallel which means that the alarm unit sounds an audible warning when either one of the monitors are activated.

For more information see:

- 370 Wiring diagram M06
- 334 Ignition switch, description and operation

VOLVO
Construction Equipment

**Service Information**

| Document Title: **Lift and tilt lockout functions, description** | Function Group: **366** | Information Type: **Service Information** | Date: **2014/3/19** |
|---|---|---|---|
| Profile: **SSL, MC80B [GB]** | | | |

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# Lift and tilt lockout functions, description

**Pilot controls**

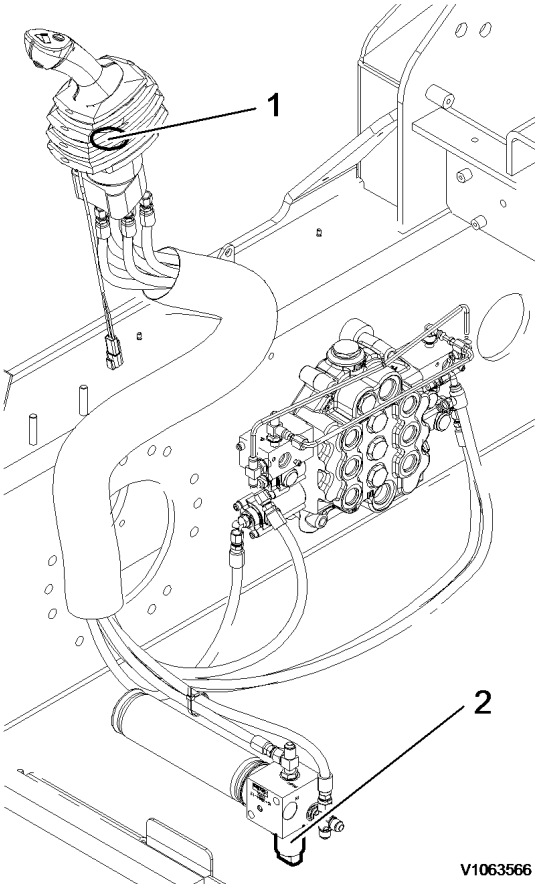



**Figure 1**
**Pilot hydraulic lockout components (MC80B, MC90B. MC110B)**

1. Float lock solenoid (MA9108)
2. Pilot accumulator valve (MA9113)

The lift and tilt lockout function is a feature that when activated prevents movement of vehicle, loader arm and attachment bracket.

The lift and tilt lockout electrical system consists of:

- Lift and tilt lockout switch (SW9101)
- Lift and tilt lockout relay (RE9102)
- Lift lockout solenoid valve (MA9101)
- Float lock solenoid (MA9108)
- Pilot accumulator valve (MA9113)
- Seat bar switch (SW9102)

More than one document matches chosen profile

- Grounding points (chassis ground)

  Product Line: SSL
  Model Variant: MC80B (Volvo)
  Site: Asheville, Pederneiras
  Serial number start: 61000, 70000
  Serial number stop: 61161, 70999

- Grounding points (chassis ground)

  Product Line: SSL
  Model Variant: MC80B (Volvo)
  Site: Pederneiras
  Serial number start: 71000
  Serial number stop: 79999

VOLVO
Construction Equipment

**Service Information**

| Document Title: **Explanation of wiring diagrams** | Function Group: **370** | Information Type: **Service Information** | Date: **2014/3/19** |
|---|---|---|---|
| Profile: **SSL, MC80B [GB]** | | | |

# Explanation of wiring diagrams

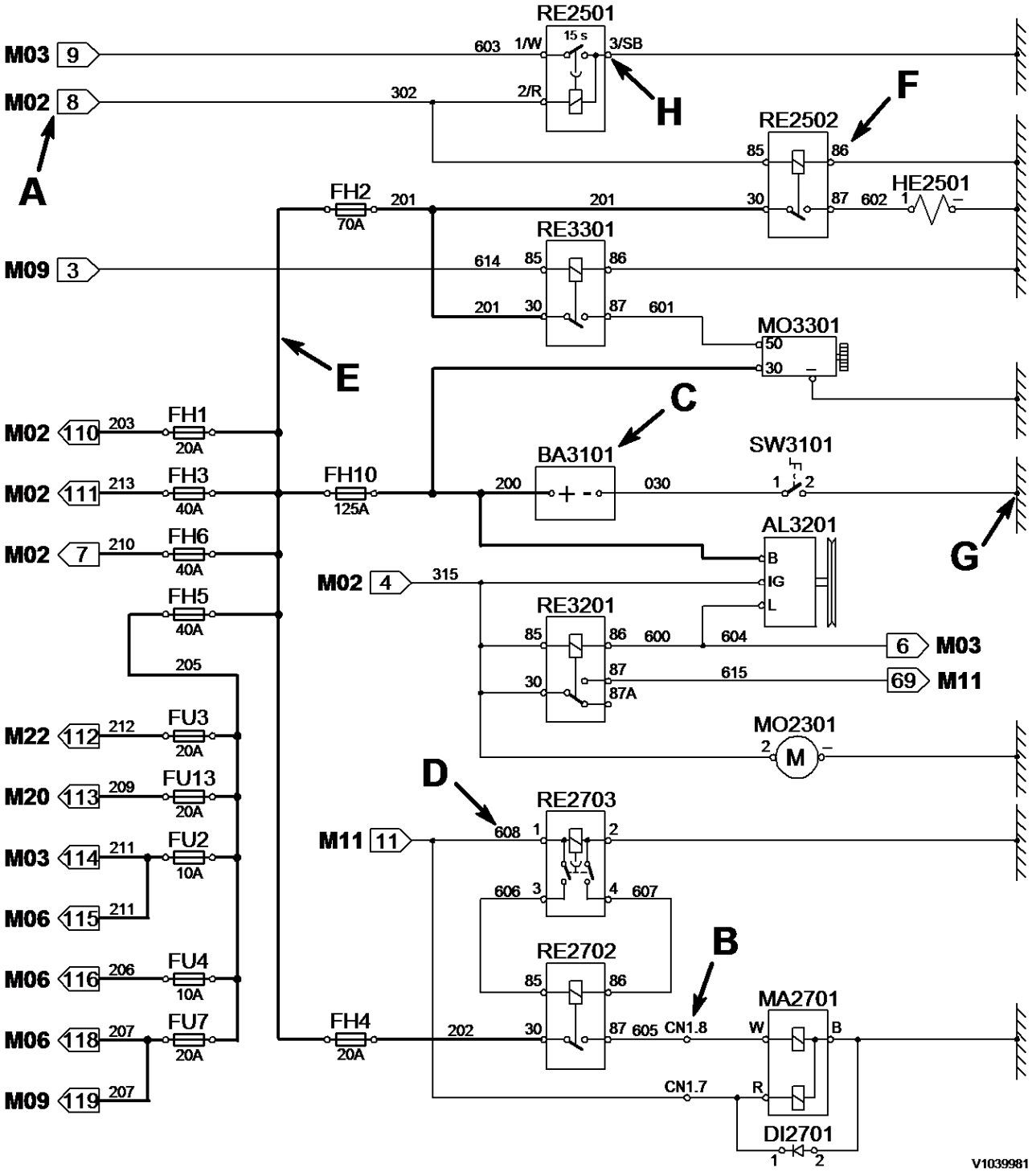



**Figure 1**

More than one document matches chosen profile

- Wiring diagram M02

  Product Line: SSL
  Model Variant: MC80B (Volvo)
  Site: Asheville, Pederneiras
  Serial number start: 61000, 70000
  Serial number stop: 61161, 70999

- Wiring diagram M02

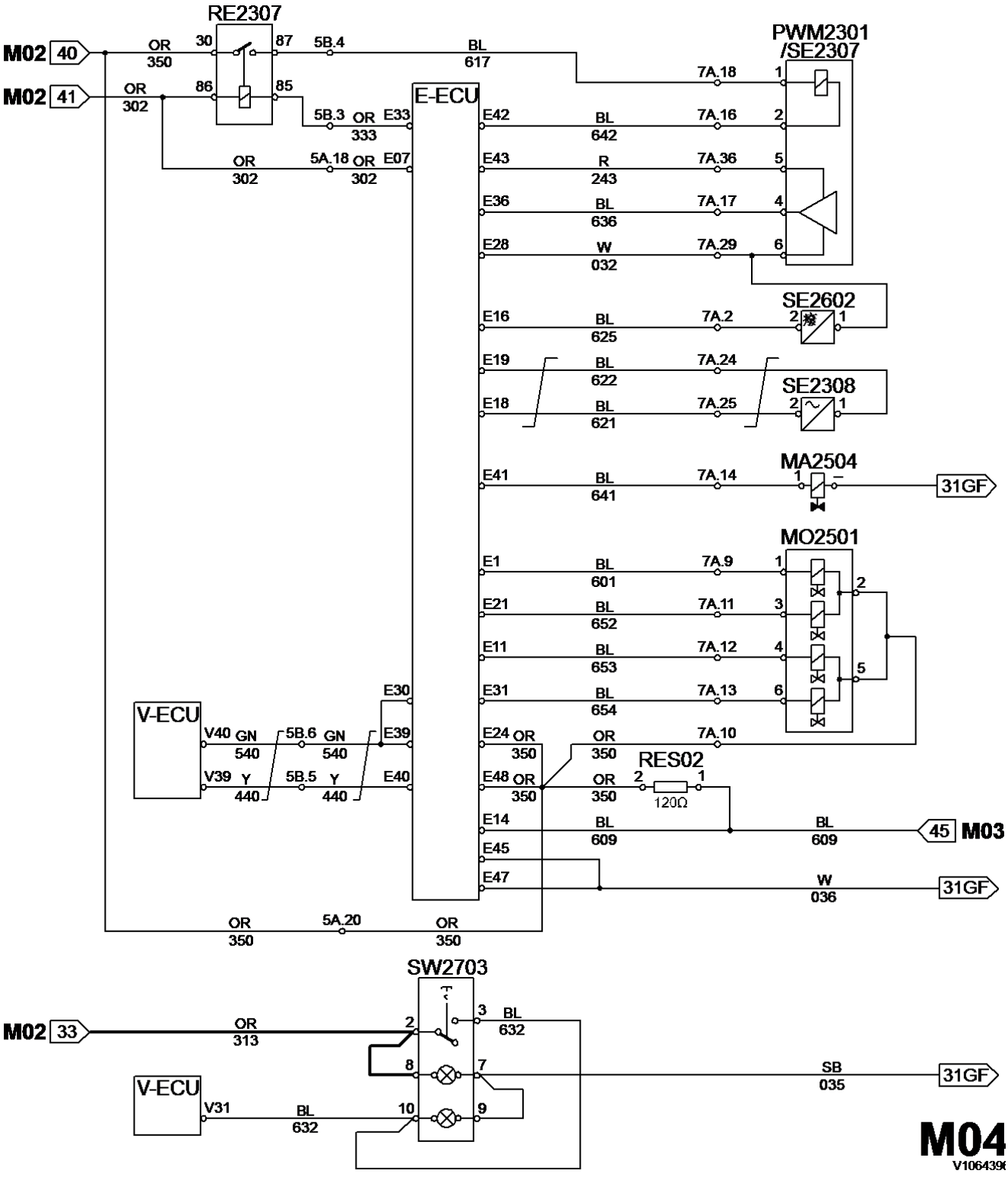
  Product Line: SSL
  Model Variant: MC80B (Volvo)
  Site: Pederneiras
  Serial number start: 71000
  Serial number stop: 79999

VOLVO
Construction Equipment

**Service Information**

| Document Title: | Function Group: | Information Type: | Date: |
|---|---|---|---|
| **Wiring diagram M04** | **370** | **Service Information** | **2014/3/19** |
| Profile: **SSL, MC80B [GB]** | | | |

# Wiring diagram M04



VOLVO
Construction Equipment

**Service Information**

| Document Title: | Function Group: | Information Type: | Date: |
|---|---|---|---|
| **Wiring diagram M06** | **370** | **Service Information** | **2014/3/19** |
| Profile: **SSL, MC80B [GB]** | | | |

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# Wiring diagram M06

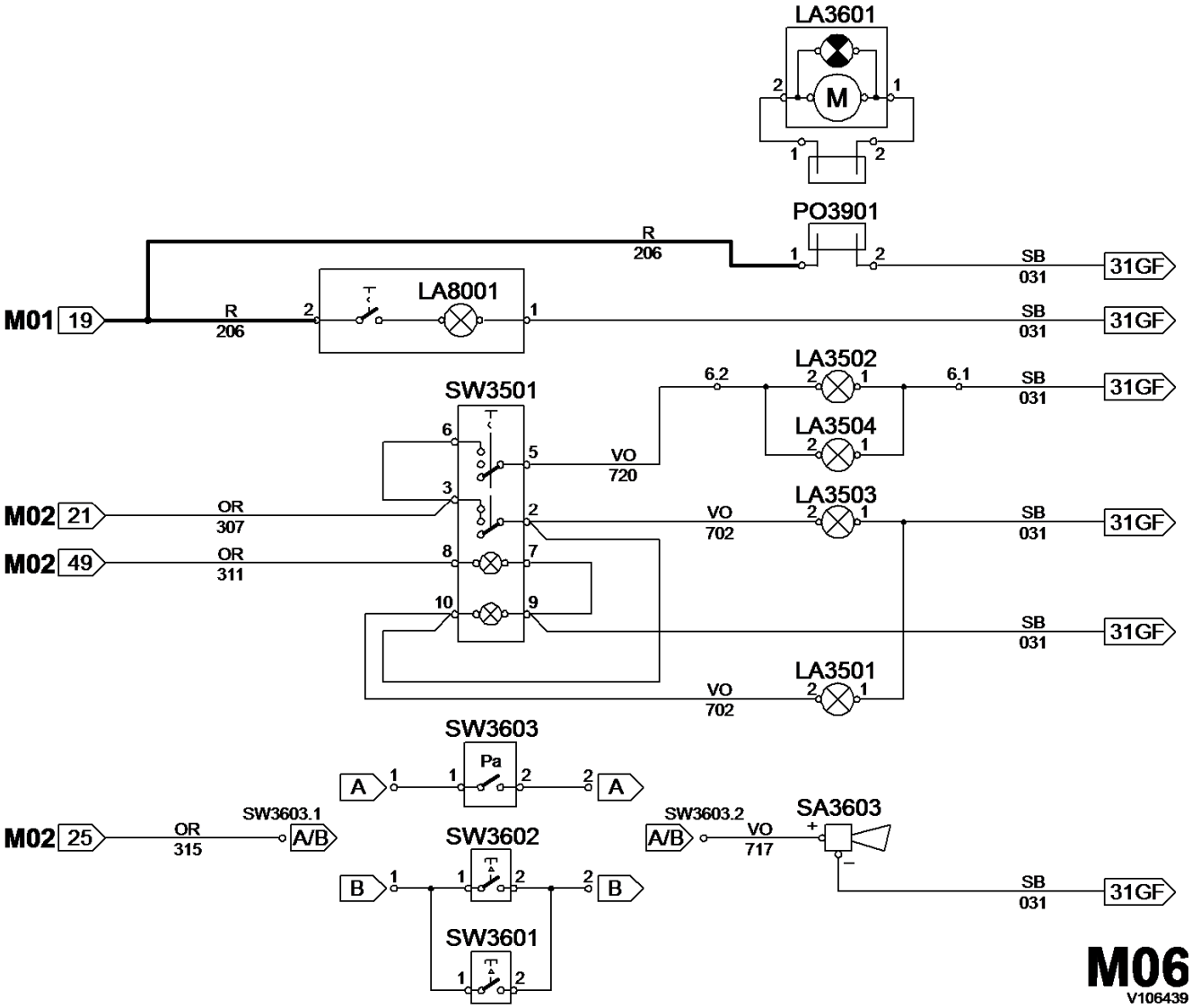


**Figure 1**
**M06**

**LA – Lights**

| | |
|---|---|
| LA3501 | Work lights front left |
| LA3502 | Work lights rear left (optional equipment) |
| LA3503 | Work light front right |
| LA3504 | Work lights rear right (optional equipment) |

VOLVO
Construction Equipment

**Service Information**

| Document Title: | Function Group: | Information Type: | Date: |
|---|---|---|---|
| **Wiring diagram M08** | **370** | **Service Information** | **2014/3/19** |
| Profile: **SSL, MC80B [GB]** | | | |

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# Wiring diagram M08

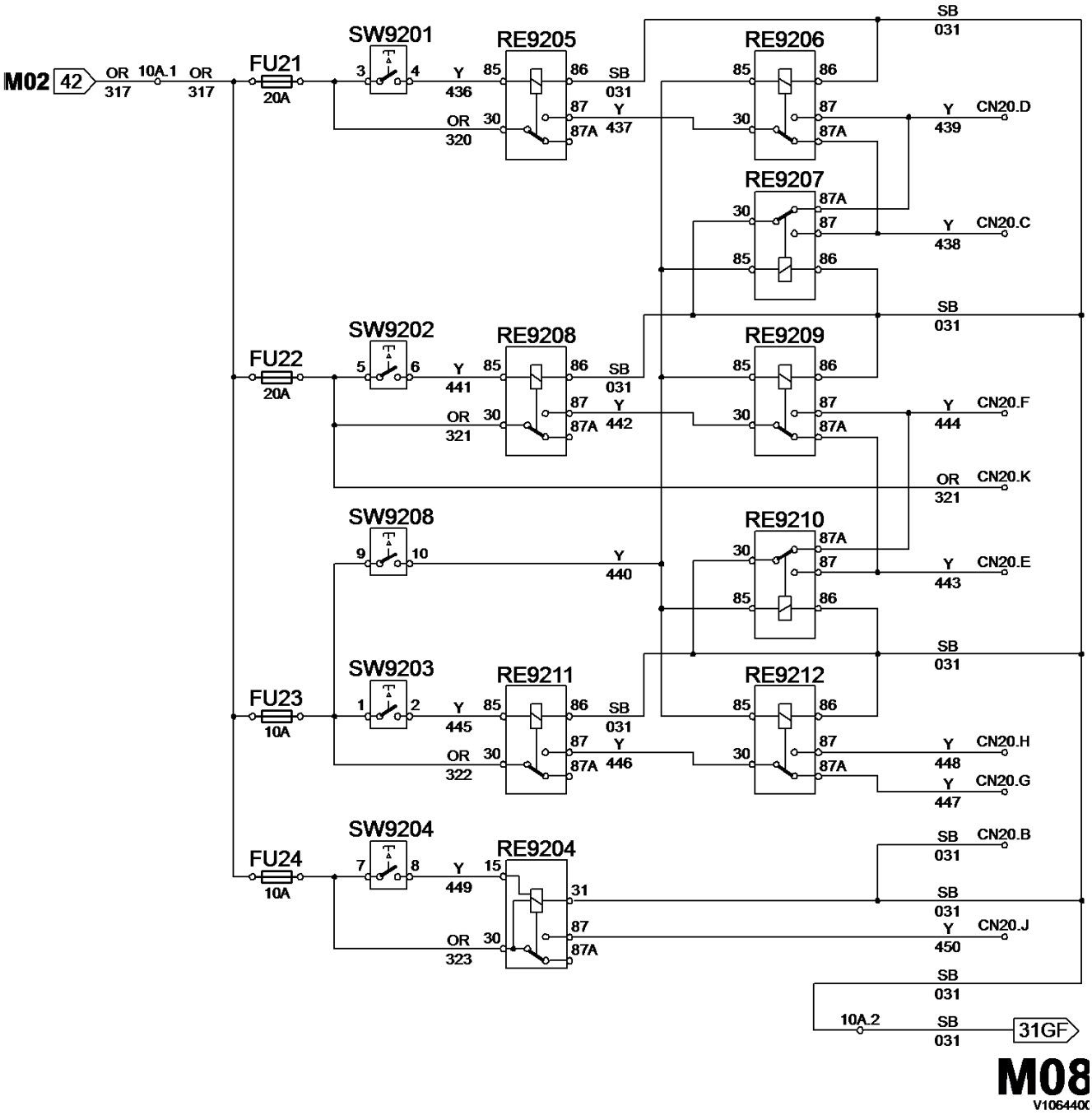


**Figure 1**
**M08**

VOLVO
Construction Equipment

**Service Information**

| Document Title: | Function Group: | Information Type: | Date: |
|---|---|---|---|
| **Wiring diagram M13** | **370** | **Service Information** | **2014/3/19** |
| Profile: **SSL, MC80B [GB]** | | | |

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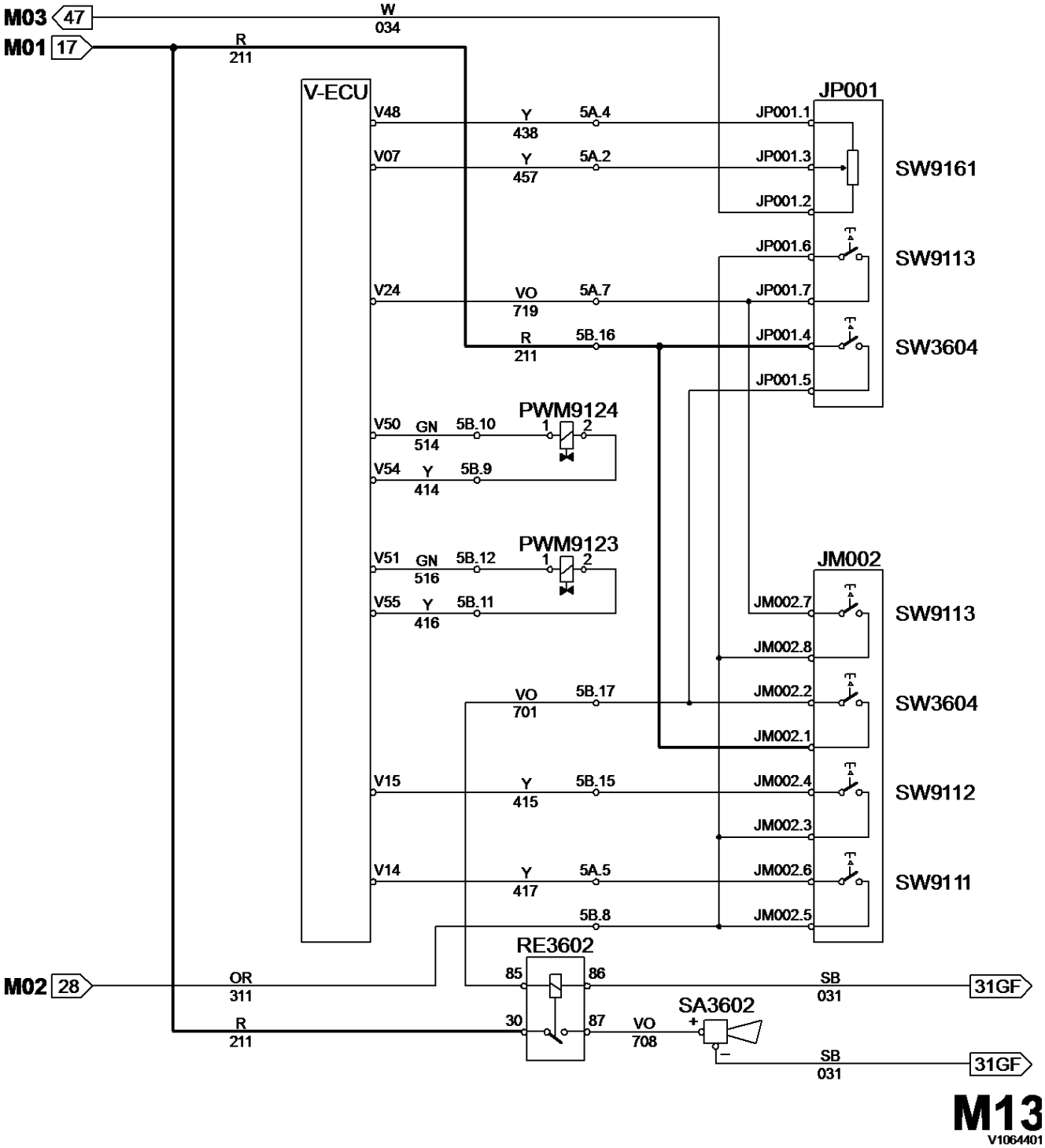
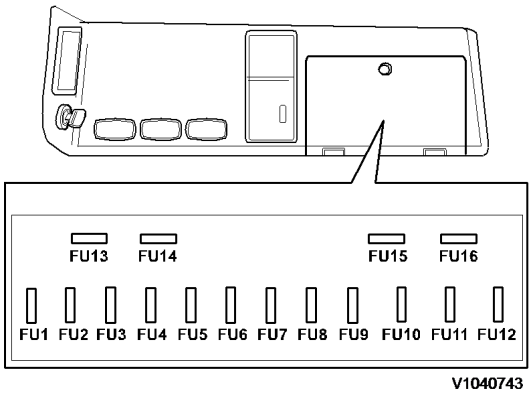
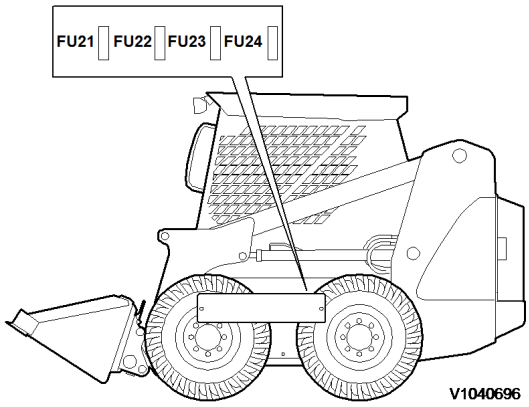
# Wiring diagram M13






Fuse box right instrument panel




Fuse box underneath cab floor (optional equipment)

| Designation | Rating | Description | Wiring diagram |
|---|---|---|---|
| FU1 | 10 | *Auxiliary function, high flow function* | 370 Wiring diagram M02 |
| FU2 | 10 | *Instrument cluster, horn* | 370 Wiring diagram M01 |
| FU3 | 20 | (optional equipment) *Wiper motor, washer pump* | 370 Wiring diagram M01 |
| FU4 | 10 | *Power outlet, interior lamp* | 370 Wiring diagram M01 |
| FU5 | 20 | (optional equipment) *Condenser fan* | 370 Wiring diagram M02 |
| FU6 | 10 | *Alternator, fuel pump, auto-stop function, back up alarm* | 370 Wiring diagram M02 |
| FU7 | 20 | *Work lights, anti-theft system* | 370 Wiring diagram M01 |
| FU8 | 10 | *Instrument cluster, anti-theft system, auto-stop function* | 370 Wiring diagram M02 |
| FU9 | 20 | *Cab fan, air conditioning* | 370 Wiring diagram M02 |
| FU10 | 10 | *Lift/tilt lockout function, parking brake* | 370 Wiring diagram M02 |
| FU11 | | Not used | – |
| FU12 | | Not used | – |
| FU13 | | Not used | – |
| FU14 | | Not used | – |
| FU15 | | Not used | – |
| FU16 | | Not used | – |
| FU21 | 20 | (optional equipment) *Five button function 1* | 370 Wiring diagram M08 |
| FU22 | 20 | (optional equipment) *Five button function 2* | 370 Wiring diagram M08 |
| FU23 | 10 | (optional equipment) *Five button function 3* | 370 Wiring diagram M08 |
| FU24 | 10 | (optional equipment) *Five button function 4* | 370 Wiring diagram M08 |

3. Connect a voltmeter between yellow cable (606) and red cable (608).

   - With ignition switch in position (**I**) the voltmeter should indicate battery voltage (≈12V) for approximately 1 second and after that ≈0V
   - If not, the relay is defective

**Preheater timer relay**

(RE2501)

**NOTE!**

The relay is electronic and is sensitive for short circuit and wrong connections.

There is no audible "click" heard when the relay is switching.

Test the relay as follows: (for details see 370 Wiring diagram M01

1. Connect a voltmeter between red cable (302) and black cable.

   - With ignition switch in position (**II**) the voltmeter should indicate battery voltage (≈12V)
   - If not check and repair the voltage feed and/or ground connection

2. Connect a voltmeter between white cable (603) and red cable (302).

   - With ignition switch in position (**II**) the voltmeter should indicate battery voltage (≈12V) for approximately 15 seconds and after that ≈0V
   - If not, the relay is defective

**Trigger relay**

(RE9113)

**NOTE!**

The relay is electronic and is sensitive for short circuit and wrong connections.

The relay is a switch relay with 2 manoeuvre coils. Once the first coil is activated, the second coil can then momentarily trigger the relay to switch on/off repeatedly.

Test the relay as follows: (for details see 370 Wiring diagram M13)

1. Activate the auxiliary function. See 360 Auxiliary electrical function, description
2. Connect a voltmeter between relay terminal 53S and to 53M.

   - The voltmeter should indicate battery voltage (≈12V)
   - If not, check and repair the voltage feed and/or ground connection

3. Connect a voltmeter between terminal 53S and to terminal T and activate the trigger (detent) switch.

   - The voltmeter should indicate battery voltage (≈12V)
   - If not, check and repair the ground connection through trigger switch (SW9113)

4. Connect a voltmeter between relay terminal 31 and to ground.

   - The voltmeter should indicate battery voltage (≈12V) when the right auxiliary switch is depressed
   - If not, check and repair the voltage feed from auxiliary relay (RE9111)

5. Connect a voltmeter between relay terminal 15 and to ground.

   a. Activate the detent function:

      - An audible "click" should be heard and the voltmeter should indicate battery voltage (≈12V) when the switches are released
      - If not, the relay is defective

   b. Depress the detent switch:

VOLVO
Construction Equipment

Service Information

| Document Title: | Function Group: | Information Type: | Date: |
|---|---|---|---|
| **Air cleaner restriction monitor, description** | **386** | **Service Information** | **2014/3/19** |
| Profile: **SSL, MC80B [GB]** | | | |

# Air cleaner restriction monitor, description

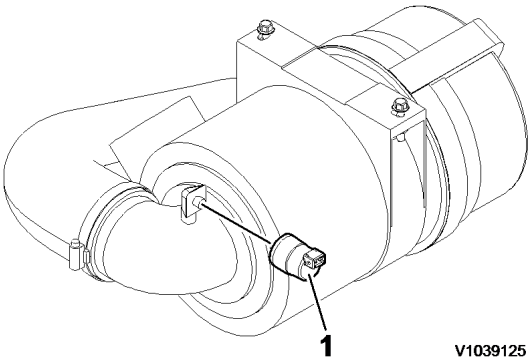



**Figure 1**
**Air cleaner restriction monitor**

1. Air cleaner restriction monitor (SE2501)

The monitor activates/closes if there is too much vacuum (low pressure) in the air intake system. This causes the engine air filter restriction light to illuminate. For specification see 386 Air cleaner restriction monitor, specification.

**NOTE!**
The normal cause of activation is a clogged air cleaner.

- compensates for the internal leakage from the drive motor to tank,
- cools and flushes the motor clean,
- supplies the servo in the pilot system and
- supplies the brake system (MC110B)

The oil travels from the pump to the hydraulic filter then to the charge relief valve (R5) that limits the pressure. The charge pump delivers oil to the low pressure side of the drive motor loop.

The charge pump takes oil directly from tank. From the pump the oil goes through the hydraulic filter and to the charge relief valve (R5) that limits the pressure. . The charge flow compensates the controlled oil leakage from the drive motors to tank, it also cools and flushes the motors. The charge pump delivers oil to the low pressure side on the drive motor loop.
The servo system to the pilot controls (all machines) and the brake system (MC110B) are also supplied by the charge pump.

**Pilot control**

For information about the pilot control, see 914 Servo system, description.

The oil flows from the charge pump, trough a check valve and to an accumulator. When MA9113 on the acumulator is activated, the valve opens and servo pressure comes to the joy stick. From the pilot control lever, the servo pressure goes into the transmission pump and affects the servo piston that changes angle on the swashplate in the transmission pump.
On the pilot control servoline, between the check valve and the servo pressure accumulator a line is mounted. This line delivers servo pressure to the auxiliary function on the main control valve. The return line from the auxiliary function is mounted to the pilot control lever return line.

**Control lever**

The pilot control lever has four spools that are connected to a cross–over valve. When moving one spool in the pilot control lever it affects servo pistons on both sides insides the transmission pump.

For more information regarding the pilot control lever, see 915 Control levers, description.

**Accumulator**

The accumulator maintains a stable servo system pressure to get higher response on the pilot control lever. In event of power loss, the accumulator also supplies enough pressure to the lift and tilt spools in the main control valve to enable the operator to lower the loader arm.
A connection located on the servo line between the check valve and the accumulator connects the servo line to the electrical operated auxiliary valve. This line is needed to relieve pressure in the auxiliary lines when disconnecting auxiliary attachments.

**Charge pressure relief valve**

The charge relief valve (R5) limits the pressure from the charge pump. When the pressure setting is exceeded, the valve opens and oil flushes through the transmission pumps to cool and clean them before the oil goes back to tank.

**Control pump drive relief valve**

The relief valves R1–R4 protect the machine and the hydraulic system. When the pressure setting is exceeded the oil goes from the high pressure side to the low pressure side of the loop.

| | | |
|---|---|---|
| Travel motor shaft failure. | Remove the access plate and check the drive shaft.<br>Check and replace defective parts. | 441 Drive motor, removing |
| Excessive internal leakage or damage in transmission pump. | Test, check, and repair defective transmission pump.<br>Check type of oil used.<br>Replace hydraulic oil and oil filter. | 441 Hydrostatic drive motor test, and Section Service and Maintenace |
| Excessive internal leakage or damage in travel motor. | Test, check, and repair defective travel motor.<br>Check type of oil used.<br>Replace hydraulic oil and oil filter. | 442 Transmission pump, drive relief test , and Section Service and Maintenance |
| **MC110B only**<br>Brakes engaged. | Check brake release pressure. | 520 Brake system, checking function, hydraulic |
| | Check harness and make sure the brake solenoid is connected. | |

| **Trouble** | | |
|---|---|---|
| **Loss of drive power on one side (one direction only)** | | |
| **Probable cause** | **Remedy** | **Ref. section** |
| Defective drive relief valves. | Test and replace if necessary. | 442 Transmission pump, drive relief test |
| Binding on travel motor flush spool. | Check flush oil valve in travel motor. | 441 Flush valve, replacement |

| **Trouble** | | |
|---|---|---|
| **Loss of drive power on both sides.** | | |
| **Probable cause** | **Remedy** | **Ref. section** |
| Oil tank low on oil. | Check for leaks.<br>Fill oil tank. | See Service and Maintenance |
| No flow or pressure from charge or charge/implement pump. | Check pressure in charge system.<br>If the pressure is within specification, go to next section, **"Loss of drive power on both sides (full flow from charge pump or charge/implement pump)"**, and continue the troubleshooting<br>**MC80B only**<br>Check loader cycle times. | **MC60B MC70B**<br>440 Charge pump charge relief test |
| | | **MC80B**<br>030 Loader cycle times (Full throttle)<br>440 Charge system pressure priority valve relief test |
| | | **MC90B MC110B**<br>440 Charge system pressure relief valve test |
| Drive shaft universal joint between engine and pump failure. | Check and replace damaged parts.<br>Check for misalignment. | 442 Transmission drive assembly, replacement |
| Transmission pump shaft failure. | Check and replace damaged parts. | 442 Transmission pump, removing |
| Charge pump cavitation. | Check supply hose to charge and implement pump for leaks or bad connections. | **MC60B MC70B**<br>440 Charge/Implement pump charge relief test |
| | | **MC80B**<br>440 Charge system pressure priority valve relief test |
| | | **MC90B MC110B**<br>440 Charge pump charge relief test |
| **MC110B only**<br>Brakes engaged | Check brake release pressure | 520 Brake system, checking function, hydraulic |

| **Trouble** | | |
|---|---|---|
| **Loss of drive power on both sides (full flow from charge pump or charge/implement pump).** | | |
| **Probable cause** | **Remedy** | **Ref. section** |

3. 936446 Testing nipple

1. Install the pressure gauge at one test location.

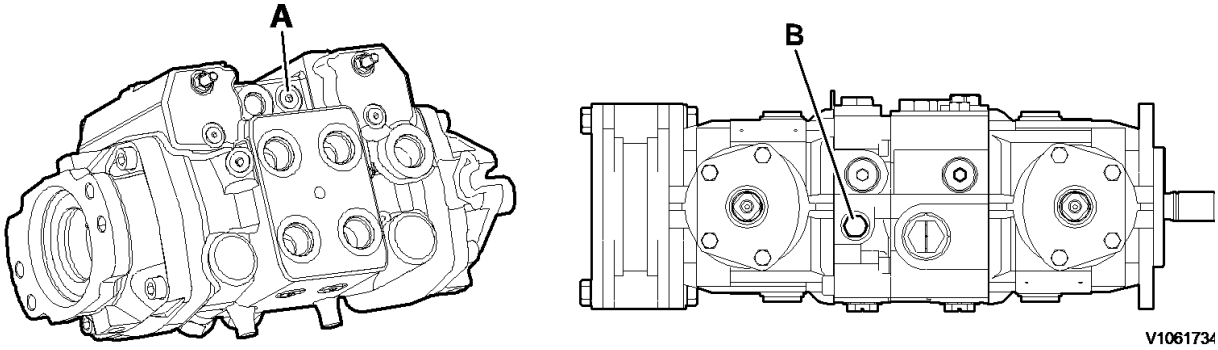



**Figure 2**
**Test location**

| | | | |
|---|---|---|---|
| A | Test location, pilot controls | B | Test location, mechanical controls |

2. Start the engine and increase the engine speed to full throttle but **do not** activate the transmission. Read the pressure.
   For correct pressure values, see 900 Hydraulic pressure, specifications.
   If the pressure reading is not correct, start with removing the pressure relief valve, clean, control, install, and/or replace the valve, see 440 Charge system pressure relief valve, replacement.
   Perform the test again.
   If the pressure still remains below minimum it could be caused by some of the following reasons

   - charge pump failure
   - leakage
   - drive motor failure

3. Remove the pressure gauge from the test location.

More than one document matches chosen profile

- Drive motor, removing

  Product Line: SSL
  Model Variant: MC80B (Volvo)
  Site: Asheville, Pederneiras
  Serial number start: 61000, 70000
  Serial number stop: 61161, 70999

- Drive motor, removing

  Product Line: SSL
  Model Variant: MC80B (Volvo)
  Site: Pederneiras
  Serial number start: 71000
  Serial number stop: 79999
  Optional Equipments: Control levers, Mechanical control

- Drive motor, removing

  Product Line: SSL
  Model Variant: MC80B (Volvo)
  Site: Pederneiras
  Serial number start: 71000
  Serial number stop: 79999
  Optional Equipments: Control levers, Pilot control

| Document Title: **Drive motor, removing** | Function Group: **441** | Information Type: **Service Information** | Date: **2014/3/19** |
|---|---|---|---|
| Profile: **SSL, MC80B [GB]** | | | |

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# Drive motor, removing

**Op nbr 441-035**

## Pilot controls

## MC60B/MC70B/MC80B/MC90B

**Right side**

This operation also includes required tools and times for applicable parts of the following operations:

- 191 Raising and blocking
- 191 Service position 1
- 771 Wheel, removing and fitting one
- 900 Connecting/disconnecting vacuum pump - instructions

1. Raise and block the machine, see 191 Raising and blocking.
2. Put the machine in service position 1, see 191 Service position 1 , including relieving hydraulic pressure.
3. Remove the wheels, see 771 Wheel, removing and fitting one.

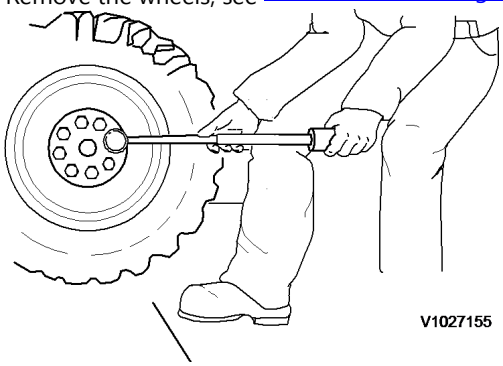


**Figure 1**

4. Loosen, but do not remove the axle housing nuts.

| Document Title: **Drive motor, installing** | Function Group: **441** | Information Type: **Service Information** | Date: **2014/3/19** |
|---|---|---|---|
| Profile: **SSL, MC80B [GB]** | | | |

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# Drive motor, installing

**Op nbr 441-036**

Loctite 518, sealing compound

Loctite 5970, oil resistant sealant

1161053, thread locking fluid

## MC60B/MC70B/MC80B/MC90B

## Mechanical controls

**Left side**

This operation also includes required tools and times for applicable parts of the following operations:

- 771 Wheel, removing and fitting one
- 460 Drive chain tension, adjustment
- 191 Service position 1
- 191 Raising and blocking

**NOTE!**

When installing the drive motor, be sure that the ports are positioned in the same direction as they were prior to removal.

**NOTE!**

Replace all O–rings before assembly.

**NOTE!**

Replace all locknuts

1. Clean and install hydraulic fittings on the new drive motor. Replace any damaged fittings.

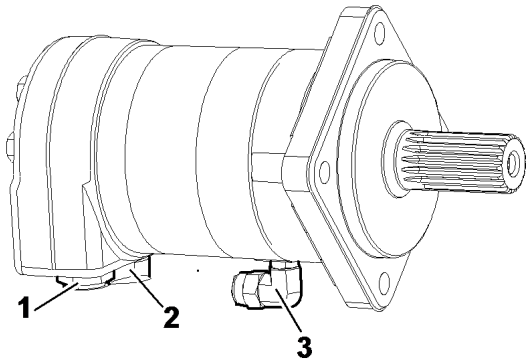



**Figure 1**

1. Drive motor ports

20. Reassemble the wheels to the axles, see 771 Wheel, removing and fitting one.
21. Lower the cab from the service position, see 191 Service position 1.
22. To bleed air from the system, operate the machine in low idle with no load for couple of minutes.
23. Lower the machine from the blocks, see 191 Raising and blocking.

More than one document matches chosen profile

- Transmission pump, drive relief test

  Product Line: SSL
  Model Variant: MC80B (Volvo)
  Site: Asheville, Pederneiras
  Serial number start: 61000, 70000
  Serial number stop: 61161, 70999
  Optional Equipments: Control levers, Mechanical control

- Transmission pump, drive relief test

  Product Line: SSL
  Model Variant: MC80B (Volvo)
  Site: Pederneiras
  Serial number start: 71000
  Serial number stop: 79999
  Optional Equipments: Control levers, Mechanical control

- Transmission pump, drive relief test

  Product Line: SSL
  Model Variant: MC80B (Volvo)
  Site: Asheville, Pederneiras
  Serial number start: 61000, 70000
  Serial number stop: 61161, 70999
  Optional Equipments: Control levers, Pilot control

- Transmission pump, drive relief test

  Product Line: SSL
  Model Variant: MC80B (Volvo)
  Site: Pederneiras
  Serial number start: 71000
  Serial number stop: 79999
  Optional Equipments: Control levers, Pilot control

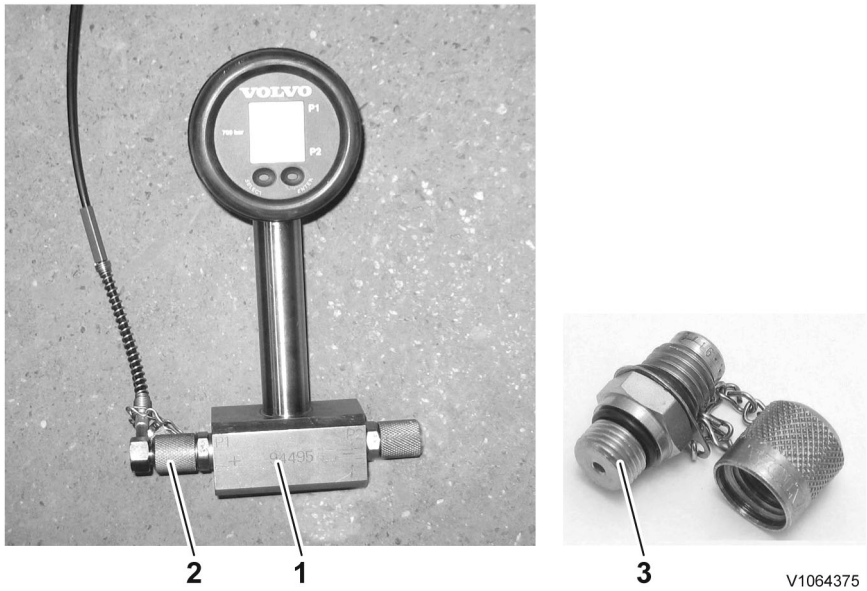



**Figure 1**

1. 11666051 Pressure gauge
2. 14290266 Hose
3. 936446 Testing nipple

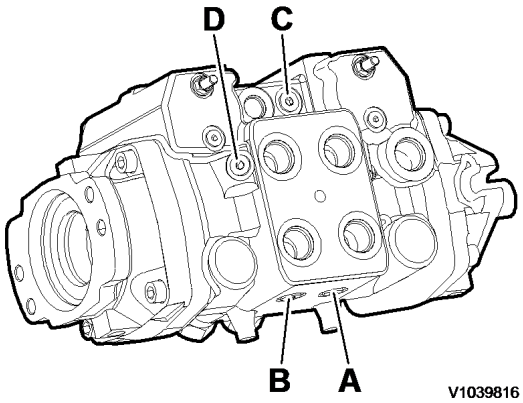



**Figure 2**

A. MA Right, Reward
B. MA Left, Reward
C. MB Right, Forward
D. MB Left, Forward

4. Start the engine and increase the engine speed to full throttle.

5. **MC60B/MC70B/MC80B/MC90B**

   - Raise the seat bar
   - Depress the seat bar switch and keep it depressed during the test
   - Press the hydraulic lock out switch

   **MC110B**

   - Disconnect the park brake valve solenoid MA9106, located on the left side in the transmission compartment.
   - Lower the seat bar
   - Press the hydraulic lock out switch

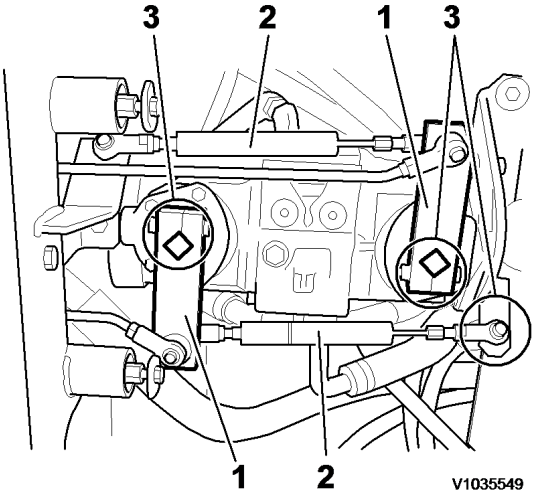



**Figure 2**

1. Linkage rod
2. Shock absorber
3. Disconnection point

5. Tag, disconnect and plug the hydraulic connections from the pump assembly.
   **NOTE!**
   On the MC80 machine there is an external connection between the transmission pump and the priority valve. Do not remove that hose at his time.

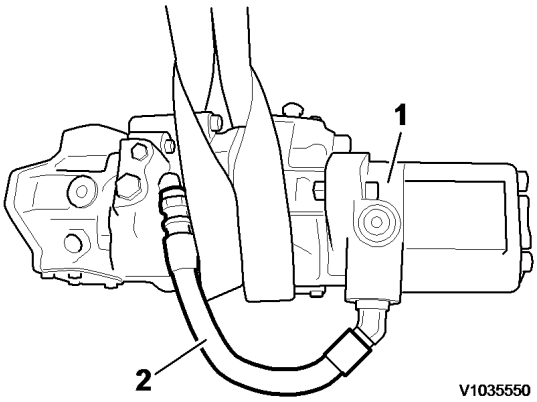



**Figure 3**
**MC80 only**

1. Priority valve
2. External connection

6. Remove the transmission cover.

7. Secure the transmission pump assembly with an engine hoist and a strap.
   **NOTE!**
   Weight approx.: **52 kg (115 lb)**

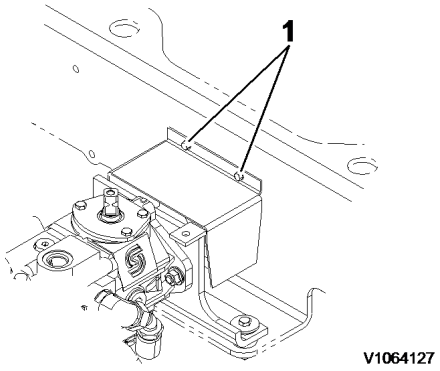



**Figure 4**

1. Engine transmission cover, mounting points

7. Fit the steering linkage to the transmission pump

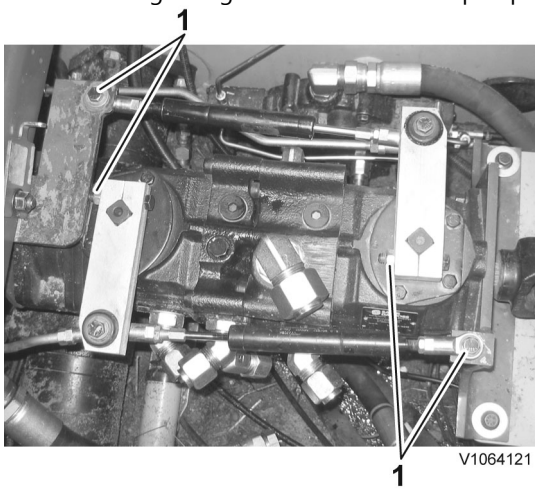



**Figure 5**

1. Mounting points

**NOTE!**
Replace any damaged hydraulic fittings.

8. Reconnect the suction hose to the implement pump.

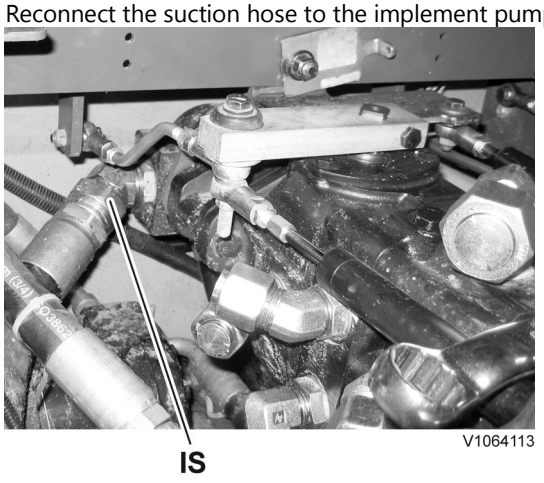



**Figure 6**

17. Check the hydraulic oil level.

assembly is chain driven by the drive sprocket. The drive sprocket, drive chains and axle sprockets are lubricated with oil that is contained in the chain case.

| Document Title: **Axle assembly, removing** | Function Group: **460** | Information Type: **Service Information** | Date: **2014/3/19** |
|---|---|---|---|
| Profile: **SSL, MC80B [GB]** | | | |

# Axle assembly, removing

**Op nbr 460-031**

This procedure is shown on one side only.

**NOTE!**
Do not reuse any lock nuts. Discard and use new ones when installing.

1. Put the machine in service position 1, except tilting the cab, see 191 Service position 1191 Service position 1.
2. Drain the chain case, see 460 Drive chain case, oil change.
3. Raise the front of the machine with a floor jack and place support blocks under the front of each chain case.

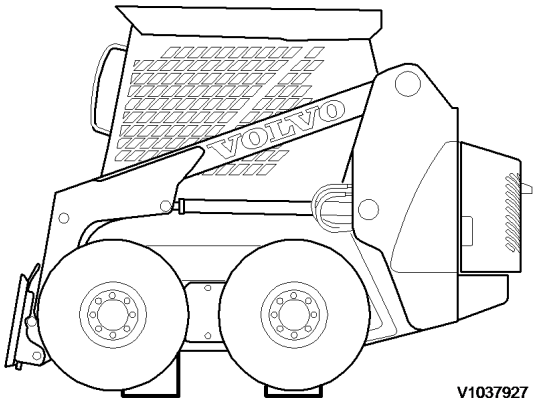
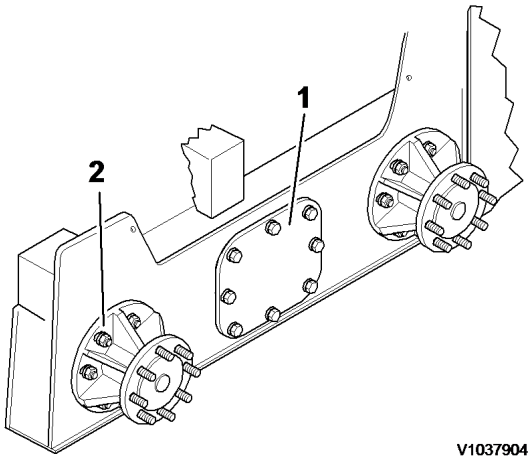



**Figure 1**

4. Lower the front of the machine onto the support blocks.
5. Remove the lug nuts on the wheels and remove the wheels.
6. Clean the area around the access plate and axle housings, and remove the access plate.



| Document Title: **Park lock pin, adjustment** | Function Group: **550** | Information Type: **Service Information** | Date: **2014/3/19** |
|---|---|---|---|
| Profile: **SSL, MC80B [GB]** | | | |

# Park lock pin, adjustment

**Op nbr 550-033**

Loctite 5970, oil resistant sealant

This operation also includes required tools and times for applicable parts of the following operations:

- 191 Service position 1

1. Put the machine in service position 1, see 191 Service position 1
2. Remove both side chain case access covers.

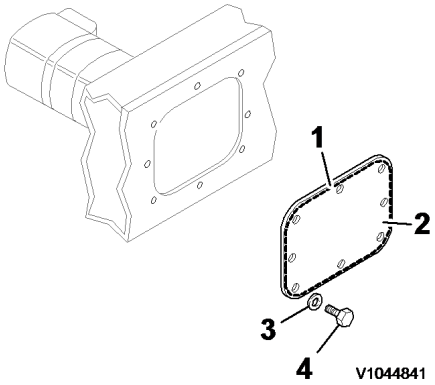



**Figure 1**

1. Sealant
2. Cover
3. Washer
4. Screw

3. Inspect to see that both lock pins have fully extended through the hole in drive sprocket and protrude as required, see 550 Park lock system, specification.
   **NOTE!**
   If the bore is not fully visible from the chain case access opening, move the steering lever forward or backward as you move the drive sprocket clockwise or counter–clockwise.

| Document Title: | Function Group: | Information Type: | Date: |
|---|---|---|---|
| **Park lock, installation** | **550** | **Service Information** | **2014/3/19** |
| Profile: **SSL, MC80B [GB]** | | | |

# Park lock, installation

Applies to model MC60B, MC70B, MC80B and MC90B.

**Op nbr 550-032**

1. Slide boot onto cable.

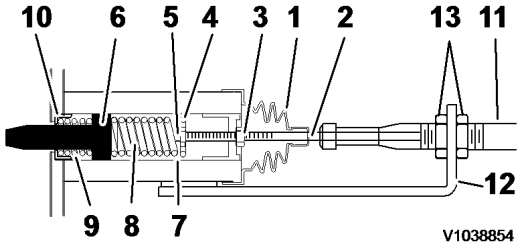



**Figure 1**
**Park lock assembly (park lock engaged)**

1. Boot
2. Cable
3. Hex jam nut
4. Piston
5. Elastic locknut
6. Pin
7. Housing bore
8. Longer compression spring
9. Shorter compression spring
10. Spring guide
11. Cable housing
12. Mount
13. Bulkhead nuts

2. Thread hex jam nuts onto cable.

3. Slip piston onto cable end and secure with a **new** elastic locknut.

4. Coat the piston, pin and inside of housing bore with an anti-seize compound having a molybdenum disulfide base.

5. Insert the pin lock spring guide, compression spring, park lock pin, compression spring, and piston sub-assembly into the housing bore.
   **NOTE!**
   The compression springs must be mounted in the same way as they were mounted before disassembling.

6. Insert the cable housing into its mount, and adjust the bulkhead nuts so an equal amount of threads are exposed on each side of the nuts. Tighten the bulkhead nuts securely.

7. Slide boot in place over the end of the park lock pin housing.

8. Route the park lock cable the same way as they were.
   **NOTE!**

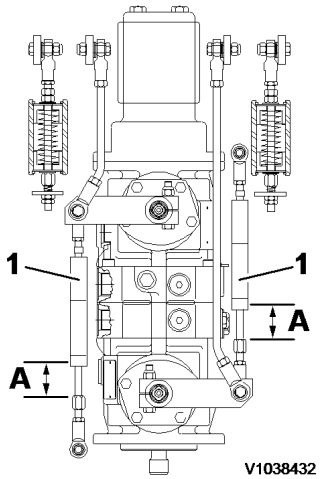



**Figure 7**

14. Remove the damping cylinder from its rear mounting.

15. Adjust the exposed length of the damping cylinder rod. Measure from the damping cylinder body to the inside face of the nut on the rod, with the front ball joint aligned with its mounting.
Correct measure: **36 mm (1-7/16")**

16. Reconnect the damping cylinder.

17. Perform a neutral centring test, see 660 Neutral centring test.

18. Lower the cab from the service position, see 191 Service position 1.

19. Lower the machine from the blocking, see 191 Raising and blocking.

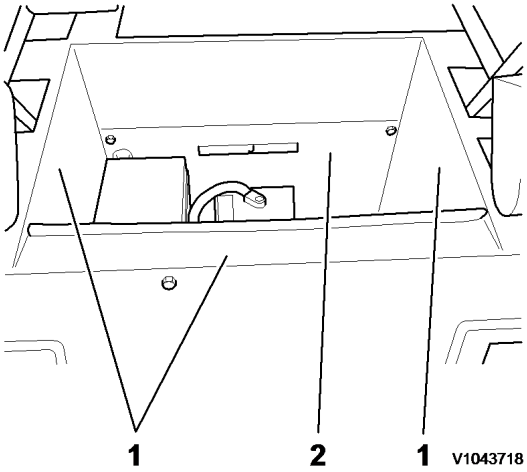



**Figure 2**
**V1043718**

1. Plates
2. Protecting plate

6. Remove the plate on each side of the machine.

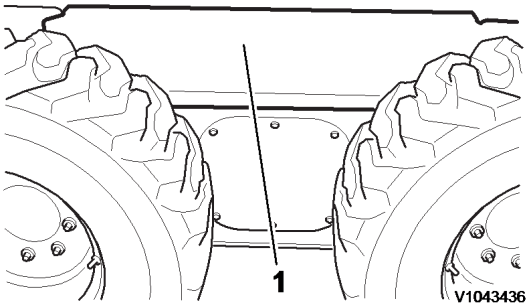



**Figure 3**

1. Plate

7. Remove the protecting plate.

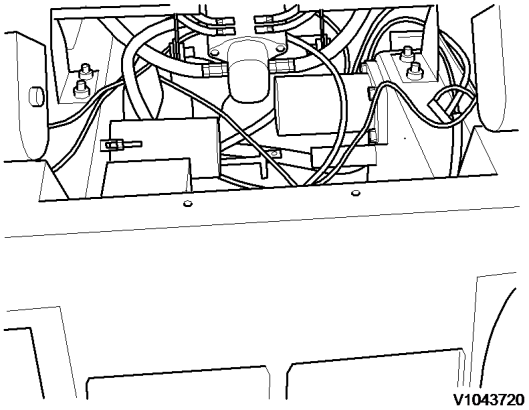



**Figure 4**
**V1043720**

VOLVO

Construction Equipment

**Service Information**

| Document Title: | Function Group: | Information Type: | Date: |
|---|---|---|---|
| **Operator's seat, installation** | **852** | **Service Information** | **2014/3/19** |
| Profile: **SSL, MC80B [GB]** | | | |

# Operator's seat, installation

**Op nbr**

1. See section: 852 Operator's seat, removal for installation.

VOLVO

Construction Equipment

**Service Information**

| Document Title: **Air conditioning, description** | Function Group: **874** | Information Type: **Service Information** | Date: **2014/3/19** |
|---|---|---|---|
| Profile: **SSL, MC80B [GB]** | | | |

# Air conditioning, description

The evaporator becomes cold when the air conditioning is switched on and air passing over the evaporator fins is cooled. If the air becomes too cold, it can be controlled by choosing different speeds for the cab fan or with the heat control.

The air conditioning system is filled with refrigerant (R134a) which is pumped through the system by the compressor .

The compressor, which is driven by the diesel engine via a V-belt, has an electromagnetic clutch for engaging and disengaging the compressor.

The compressor pumps refrigerant to the condenser and increases pressure so that the refrigerant is condensed (becomes liquid). Refrigerant compression generates heat, which is led from the condenser with diesel engine's cooling fan.

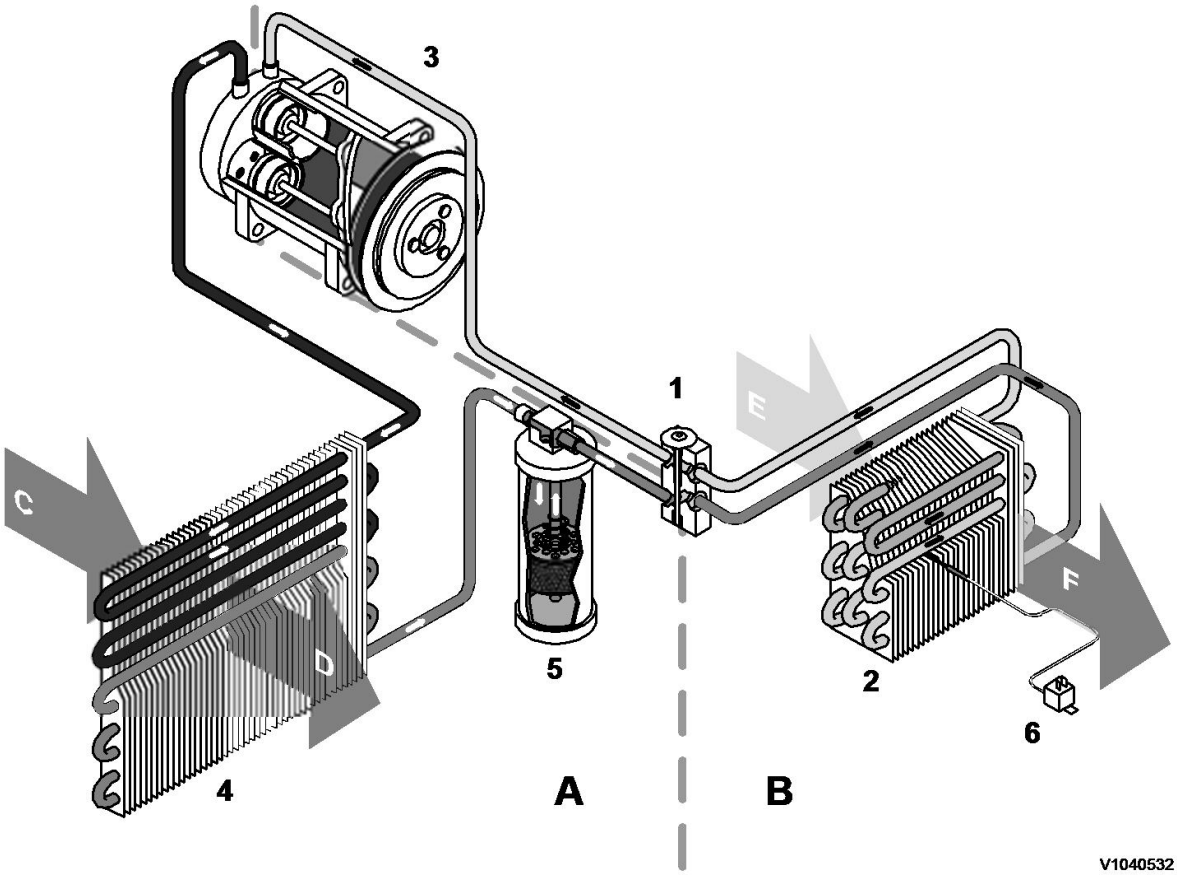
The receiver drier absorbs any moisture in the refrigerant and is also the storage for the refrigerant.

The amount of refrigerant that flows through the evaporator is controlled by the expansion valve, which senses the temperature at the evaporator outlet with the capillary tube. The restriction in the expansion valve lowers the pressure so that the refrigerant converts from liquid to gas. The evaporator causes a significant drop in the refrigerant's temperature.

When the cold refrigerant passes through the evaporator, heat is taken from the air that passes into the cab through the evaporator's fins. This results in cold air being blown into the cab.

Evaporator temperature is adjusted by a thermostat which senses evaporator temperature via the capillary tube and prevents ice from forming on the evaporator. When there's a risk of freezing or ice formation, the thermostat disengages the compressor until the temperature has increased.

Condensation that forms on the evaporator is drained through four plastic tubes below the evaporator.



VOLVO

Construction Equipment

**Service Information**

| Document Title: | Function Group: | Information Type: | Date: |
|---|---|---|---|
| **Hydraulic components, cleanliness when handling** | **900** | **Service Information** | **2014/3/19** |
| Profile: **SSL, MC80B [GB]** | | | |

# Hydraulic components, cleanliness when handling

**WARNING**

**Hot hydraulic oil and hydraulic oil under pressure may result in severe personal injuries**

**NOTICE**

**It is very important to keep the hydraulic system free from any impurities, as these can cause abnormal wear and may lead to expensive downtime. Greatest possible cleanliness should be maintained during all handling of hydraulic components and hydraulic oil.**

**NOTE!**

A vacuum pump should be used for work on the hydraulic system in order to avoid oil spills.

More than one document matches chosen profile

- Startup after hydraulic repair

  Product Line: SSL
  Model Variant: MC80B (Volvo)
  Site: Asheville, Pederneiras
  Serial number start: 61000, 70000
  Serial number stop: 61161, 70999

- Startup after hydraulic repair

  Product Line: SSL
  Model Variant: MC80B (Volvo)
  Site: Pederneiras
  Serial number start: 71000
  Serial number stop: 79999

VOLVO

Construction Equipment

**Service Information**

| Document Title: **Main relief valve, description** | Function Group: **912** | Information Type: **Service Information** | Date: **2014/3/19** |
|---|---|---|---|
| Profile: **SSL, MC80B [GB]** | | | |

# Main relief valve, description

The main pressure relief valve limits the maximum pressure to protect the components and the system. When the pressure reaches the setting of the relief valve, the valve opens, returning the fluid to the hydraulic tank. This prevents pressure from building above the setting of the valve.

The back pressure in the return line also has an affect of the relief valve. Therefore the pressure setting on the relief valve and the max pressure are different in the machine. The back pressure depends on which model it is and if the machine is equipped with High Flow or not.

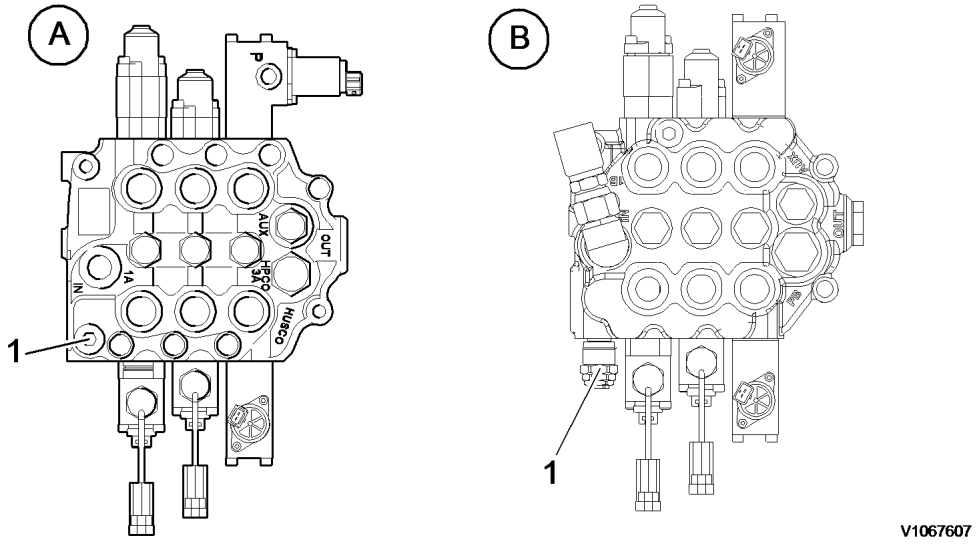



**Figure 1**
**Mechanical controlled main block shown**

A. Early version
B. Late version

1. Main pressure relief valve

| Document Title: **Auxiliary function, description** | Function Group: **912** | Information Type: **Service Information** | Date: **2014/3/19** |
|---|---|---|---|
| Profile: **SSL, MC80B [GB]** | | | |

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# Auxiliary function, description

**Pilot controls**

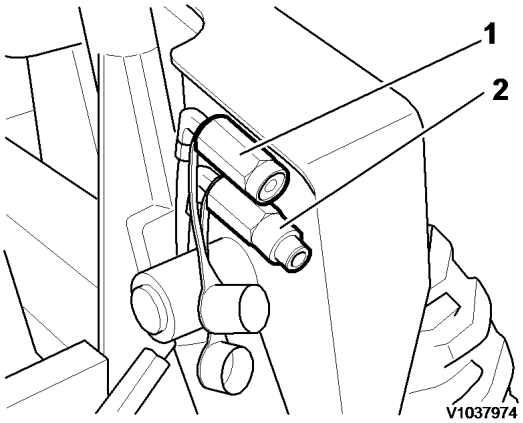


**Figure 1**

1. Female auxiliary coupling
2. Male auxiliary coupling

The auxiliary hydraulic system provides a variable hydraulic flow to a pair of quick couplings mounted on the inside of the left loader arm. The system is operated by a PWM valve, mounted on the main control valve. The solenoids are activated by a roller on the right steering handle.

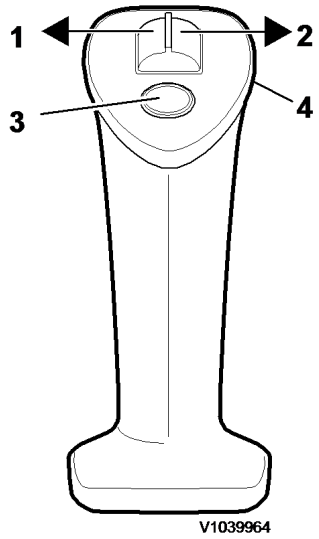


**Figure 2**

**NOTE!**
Rotating the adjustment screw 1/4 revolution implies approx. 2.5 MPa (25 bar) (363 psi) change of the pressure!

4. Tighten the lock nut.

5. Verify the adjusting by performing the main control valve system relief test, see 912 Main control valve system relief test.

More than one document matches chosen profile

- Main control valve, installation

  Product Line: SSL
  Model Variant: MC80B (Volvo)
  Site: Asheville, Pederneiras
  Serial number start: 61000, 70000
  Serial number stop: 61161, 70999
  Optional Equipments: Control levers, Mechanical control

- Main control valve, installation

  Product Line: SSL
  Model Variant: MC80B (Volvo)
  Site: Asheville, Pederneiras
  Serial number start: 61000, 70000
  Serial number stop: 61161, 70999
  Optional Equipments: Control levers, Pilot control

- Main control valve, installation

  Product Line: SSL
  Model Variant: MC80B (Volvo)
  Site: Pederneiras
  Serial number start: 71000
  Serial number stop: 79999
  Optional Equipments: Control levers, Pilot control

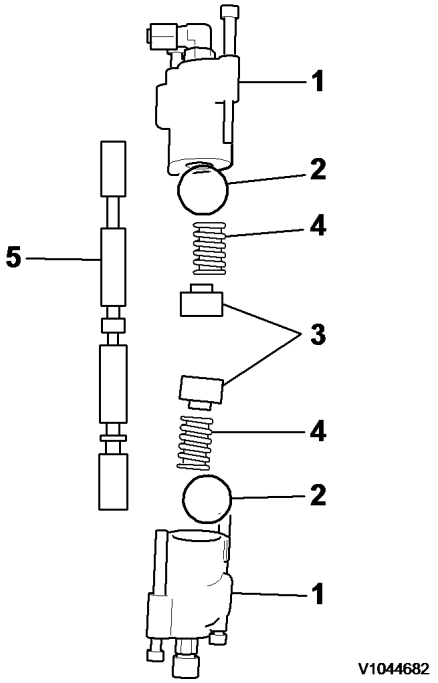


**Figure 3**
**V1044682**

1. Tilt spool housing
2. O-ring
3. Piston
4. Spring
5. Tilt spool

**NOTE!**
Carefully take care of all small parts

11. Remove and discard the O-rings from the housings.

12. Remove pistons and springs from the housing.

13. Remove the tilt spool from the valve body.

14. **Reassembly**
    Apply a bead of vaseline on the new O-rings. Install the O-rings into the tilt spool housing.

15. Insert springs and pistons into the tilt spool housing.

16. Put clean hydraulic oil on the tilt spool and install the spool into valve body.

17. Fit the tilt spool housing on the main control valve.

## Lift spool

18. **Disassembly**
    Carefully remove the upper lift spool housing
    **NOTE!**
    The spring tension inside the housing is high.

    **NOTE!**
    Carefully take care of all small parts

| Auxiliary not functioning properly | | |
|---|---|---|
| **Probable cause** | **Remedy** | **Referring section** |
| Quick coupling disconnected or connectors are reversed. | Check quick coupling.<br>Reverse connectors from implement. | |
| Auxiliary electrical components inoperative. | Inspect and repair or replace fuse, switch, relay or solenoid. | 360 Auxiliary electrical function, description |
| Spool not shifting in main control valve. | Check for damaged spring return mechanisms on spools. | 912 Main control valve, maintenance |

| Trouble | | |
|---|---|---|
| **High flow will not function** | | |
| **Probable cause** | **Remedy** | **Referring section** |
| Electrical component of system inoperative. | Inspect and repair or replace fuse, switch, relay or solenoid. | 360 High flow electrical system, description and operation |

| Trouble | | |
|---|---|---|
| **High flow not functioning properly** | | |
| **Probable cause** | **Remedy** | **Referring section** |
| Quick coupling disconnected or connectors are reversed. | Check quick coupling.<br>Reverse connectors from implement. | |
| Unapproved high flow attachment being used. | Check specification for attachment and machine. | |
| High flow relief valve failure. | Test and adjust or replace relief valve. | 916 High flow valve relief test |
| High flow pump worn. | Test and replace pump. | |

More than one document matches chosen profile

- Implement pump, descripton

  Product Line: SSL
  Model Variant: MC80B (Volvo)
  Site: Asheville, Pederneiras
  Serial number start: 61000, 70000
  Serial number stop: 61161, 70999

- Implement pump, descripton

  Product Line: SSL
  Model Variant: MC80B (Volvo)
  Site: Pederneiras
  Serial number start: 71000
  Serial number stop: 79999

| Document Title: **Servo pressure, check** | Function Group: **914** | Information Type: **Service Information** | Date: **2014/3/19** |
|---|---|---|---|
| Profile: **SSL, MC80B [GB]** | | | |

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# Servo pressure, check

**Op nbr 914-057**

11666051 Pressure gauge
14290266 Hose

## Output pressure
## Control lever valve

1. Put the machine in Service position 1, see 191 Service position 1.
2. Release any trapped hydraulic pressure, see 900 Hydraulic system, relieve pressure.
3. Clean the area around the hydraulic connection.

   **WARNING**

   **Loosen carefully. There may be hot/high-pressure oil in the line.**
4. Disconnect the servo hose concerned, and plug the transmission pump connection.

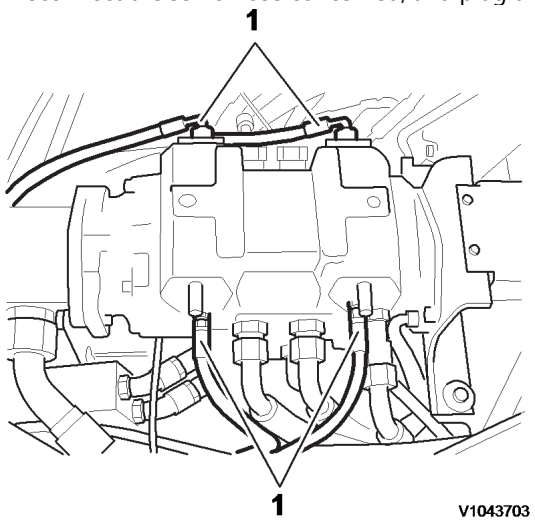


**Figure 1**

1. Test location

5. Connect a T-coupling to the servo hose and plug the opposite connection.
6. Install 14290266 Hose and 11666051 Pressure gauge, to the T–coupling.
7. Start the engine and increase to full throttle.

| Affected port | | Lever movement | Port | Transmission pump section |
|---|---|---|---|---|
| Port 2 | | Right | G[T1] | |
| Port 4 | | Left | F | Left side, rear (X3) |
| Port 1 | | Backward | C | Right side, front (X4) |
| Port 3 | | Forward | D | Left side, front (X4) |
| 5 | | Orifice | E | Right side, rear (X3) |

**[T1]**To back–up alarm switch

**Control lever, operation**
E.g.

**Drive straight forward**

- Pilot control lever forward, spool 3 actuates.
- Oil goes through the orifice → shuttle valves → out to port C and D → in to port X4 and X4 on the transmission pump → oil moves the servo pistons.

**Drive to the left**

- When operating the pilot control lever obliquely forward/left, spool 3 and 2 actuates.
- Oil goes from spool 3 through the orifice → shuttle valves → out to port C and D → in to port X4 and X4 on the transmission pump, → oil moves the servo piston.
- At the same time oil from spool 2 goes through the orifice → shuttle valve → out to port F → in to port X 3 on the transmission pump.
- Now both sides X3 and X4 on the front transmission pump are pressurized and the servo piston goes to neutral.

**Drive straight backwards**

- When operating the pilot control lever backwards, spool 1 actuates.
- Oil goes through the orifice → shuttle valves → out to port F and E → in to port X3 and X3 on the transmission pump, → oil moves the servo pistons.
- At the same time port G is pressurized. Port G is connected to the back–up alarm switch (SE3603)

| Document Title: **Control lever, adjusting** | Function Group: **915** | Information Type: **Service Information** | Date: **2014/3/19** |
|---|---|---|---|
| Profile: **SSL, MC80B [GB]** | | | |

# Control lever, adjusting

**Op nbr 915-003**

1161053 Thread lock

This operation also includes required tools and times for applicable parts of the following operations:

- 191 Service position 2

## Pilot controls

## Left side

1. Put the machine in service position 2, see 191 Service position 2.
2. Remove the cable tie and pull up the cover .
3. With a feeler gauge, measure the distance between the cardan and the plunger.
   For correct value, see 915 Control levers, specifications
   If the distance is too large or to small, adjust as follow:

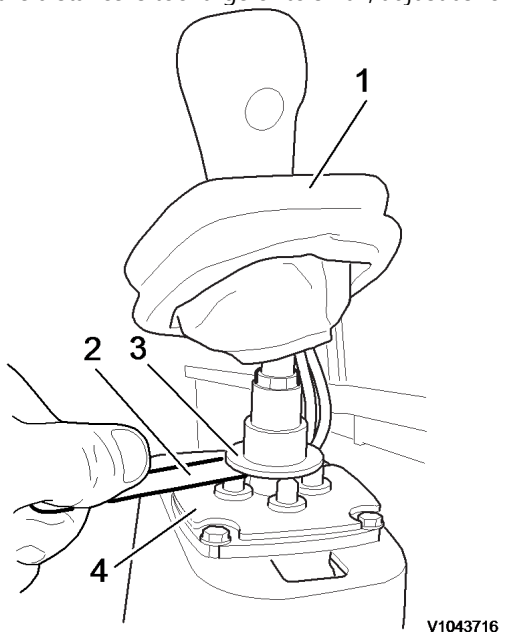


**Figure 1**

1. Cover
2. Feeler gauge
3. Cardan
4. Plunger

4. Remove the screws holding the control handle to the console

**Figure 2**

**Accumulators, charging**

The accumulator is charged even if the Boom suspension is disengaged to avoid the drop of the boom when Boom Suspension engaged.

VOLVO
Construction Equipment

**Service Information**

| Document Title: **Attachment bracket, removal** | Function Group: **924** | Information Type: **Service Information** | Date: **2014/3/19** |
|---|---|---|---|
| Profile: **SSL, MC80B [GB]** | | | |

# Attachment bracket, removal

**Op nbr 924-028**

1. Remove any attachment from the attachment bracket.
2. Put the machine in service position 2, see 191 Service position 2.
3. Raise the loader arm slightly and place blocking under the bottom of the attachment bracket.

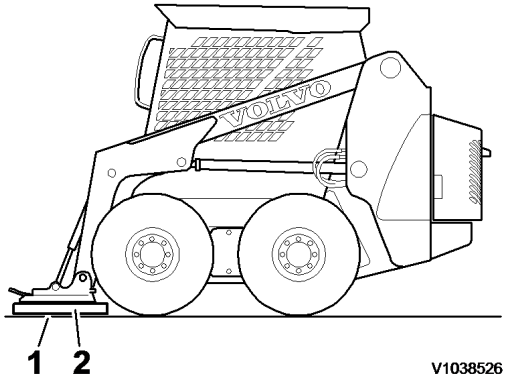


**Figure 1**
**Attachment bracket support**

1. Blocking
2. Attachment bracket

4. Tilt the attachment bracket forward until the front face rests level with the ground.
5. Lower the loader arm until the attachment bracket is supported by the blocking.
6. Shut the engine OFF.
7. Turn the ignition key to the RUN position. With the seat restraint bar lowered fully, push the lift/tilt lockout switch on the instrument panel.
8. Depress the front and rear of both foot pedals to relieve any pressure in the loader arm hydraulic system.
9. Remove the capscrew, locknut, pin and any shims attaching the rod end of the attachment tilt cylinders to the attachment bracket.
   **NOTE!**
   Tag and note the location and quantity of shims that may be used for proper installation.

| Document Title: **Lift cylinder, removing** | Function Group: **945** | Information Type: **Service Information** | Date: **2014/3/19** |
|---|---|---|---|
| Profile: **SSL, MC80B [GB]** | | | |

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# Lift cylinder, removing

**MC80B, MC90B, MC110B**

**Op nbr 945-018**

If your machine has an enclosed cab and/or front door assembly, remove the door.

1. Put the machine in service position 2, see 191 Service position 2.
2. Park the machine on a level surface with the loader arm approximately 20 mm (0.79 in) from the rubber bumper. Place a suitable block under the attachment bracket.

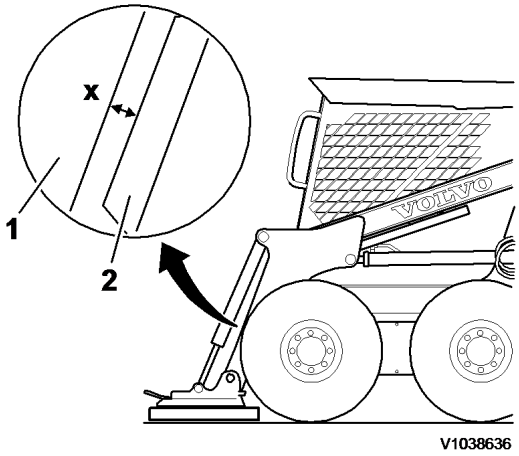


**Figure 1**
**X = Approximately 20 mm (0.79 in)**

1. Loader arm
2. Rubber bumper

3. Turn the ignition key to the RUN position and press the lift/tilt lockout switch. Relieve the pressure in the lift cylinders. Turn the ignition key to the OFF position.
4. Remove the two nuts and washers at the rear corners inside the cab.
5. Grasp both handholds at the front of the cab and tilt the cab forward until it locks securely.

**WARNING**

**Hot hydraulic oil and hydraulic oil under pressure may result in severe personal injuries**

6. Clean the area on the lift cylinder where the hydraulic hoses connect to the base end and rod end.
7. Tag, remove and plug the hydraulic connections to the cylinder.
8. Secure the cylinder being removed to prevent the cylinder from falling while the pivot pins are removed.
   Weight: **27 kg (4.4 lb)**

| Document Title: **Lift cylinder, installing** | Function Group: **945** | Information Type: **Service Information** | Date: **2014/3/19** |
|---|---|---|---|
| Profile: **SSL, MC80B [GB]** | | | |

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# Lift cylinder, installing

**MC80B, MC90B, MC110B**

**Op nbr 945-019**

**NOTE!**
DO NOT apply any type of lubricant to the cylinder pins during installation procedures that follow. Cylinder bushings are impregnated with a special lubricant, and DO NOT require additional lubrication.

1. Position the cylinder on the machine.

2. Carefully install the base end pivot pin from the outside using the shims removed earlier.
   **NOTE!**
   Place the shims as required to center the lift cylinder to the frame, and maintain a maximum clearance of **1.5 mm (0.06")** between the components.

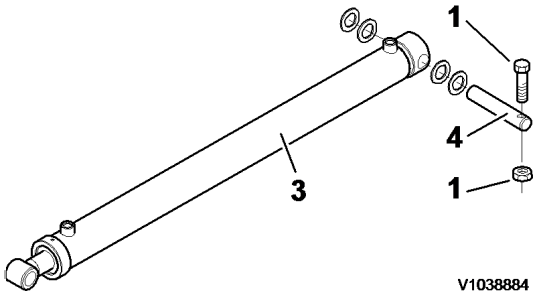



**Figure 1**

1. Capscrew
2. Locknut
3. Lift cylinder
4. Base end pivot pin

3. Insert the capscrew from the top down and secure in place with a locknut. Tighten securely.

4. Align the cylinder rod end with pivot pin holes on loader arm.

| Document Title: **Tilt cylinder removed, repacking** | Function Group: **945** | Information Type: **Service Information** | Date: **2014/3/19** |
|---|---|---|---|
| Profile: **SSL, MC80B [GB]** | | | |

# Tilt cylinder removed, repacking

**Op nbr 945-010**

## Cylinder, dismantling

**NOTE!**
Place a vessel under the cylinder for the remaining oil.

1. Place the cylinder in a vice and make sure it is steady.

2. Loosen and remove the cap setscrew on the gland cap. Use a hook spanner to remove the gland head.

V1074789

**Figure 1**

3. Pull out the rod from the barrel.
   **NOTE!**
   Make sure that the surface of the rod end and barrel does not get damaged.

## Cylinder piston, reconditioning

4. Place the rod in a vice.

5. Loosen and remove the lock nut for the piston. The thread locker often leaves a white, powdery residue, which must be removed by brushing with a wire brush prior to reassemble.

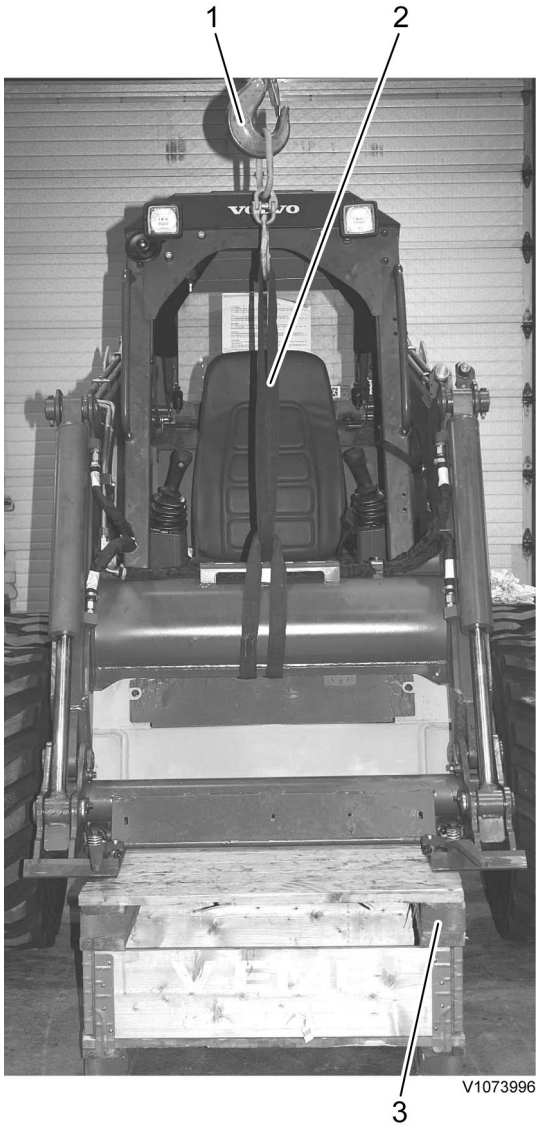



**Figure 1**

1. Traverse hoist
2. Lifting sling
3. Pallet

3. Place the attachment bracket on a pallet and use the pallet trolley to adjust height.

4. Remove the lock nut from the tilt cylinders rod end and loader arms end.
   **NOTE!**
   Record the location and catch any shims that might be used for proper installation

5. Remove the pivot pins and shims from the tilt cylinders and loader arms.

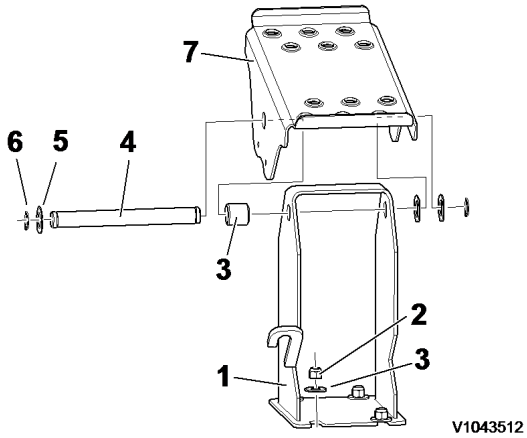



**Figure 4**

1. Pedal anchorage
2. Hex jam nut
3. Washer
4. Pin
5. Washer
6. Retaining ring
7. Pedal

9. Tilt the cab, see 191 Service position 1

10. Remove the hose from the elbow fitting on the left side of the main control valve. Collect the oil in a suitable container. Cap the fitting and plug the hose end to prevent contamination from entering the valve and/or hydraulic system.

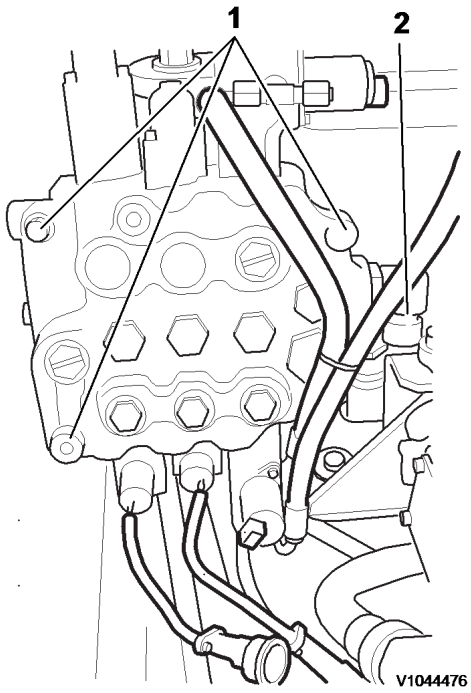



**Figure 5**

1. Cap screw
2. Hose

11. Remove the three cap screws holding the valve to the crossmember, saving the hardware for reassemble. Carefully pull the valve, with the control cables attached, up and away from the crossmember and lay forward.

1. Lock nut
2. Sleeve
3. Cable

3. Fit the auxiliary solenoid valve PWM9123 to the main control valve

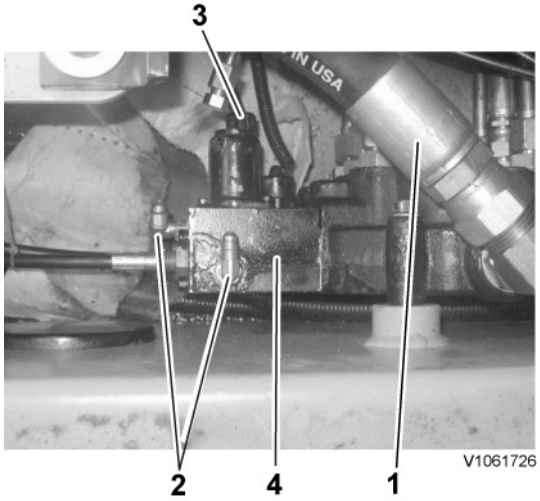



**Figure 3**

1. Hydraulic hose
2. Connection, internal tube
3. Connector PWM9123
4. Solenoid valve PWM9123

4. Connect the connector PWM9123 to the solenoid.

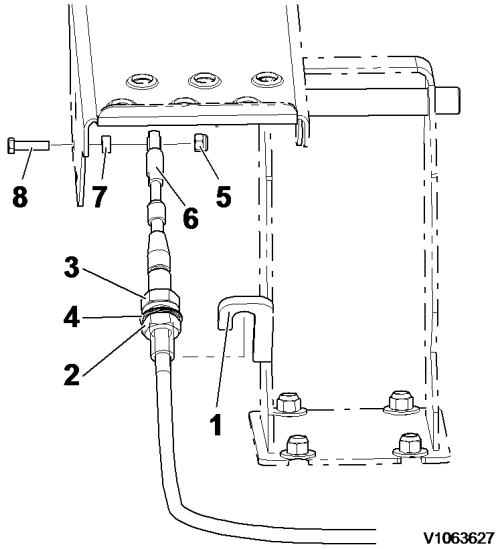
5. Connect the internal tubes to the main control valve.

6. Restore the hydraulic hose to its original position.

7. Tilt down the cab, see 191 Service position 1.

8. Fit the nuts, washers and ball joint to the cable.

9. Fit the cable to the foot pedal.



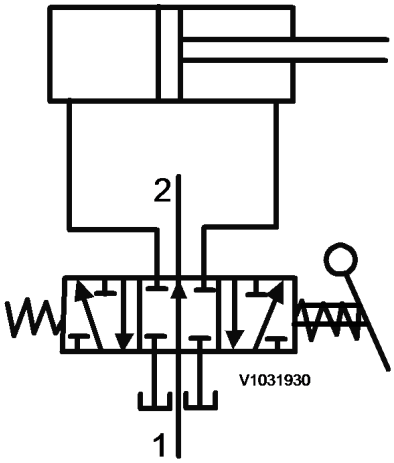



**Figure 5**
**Neutral position**

1. Inlet
2. Outlet

The spool is centred in neutral position by the springs. The inlet is connected to the outlet through the spool.

**Imagined position for piston movement outwards**

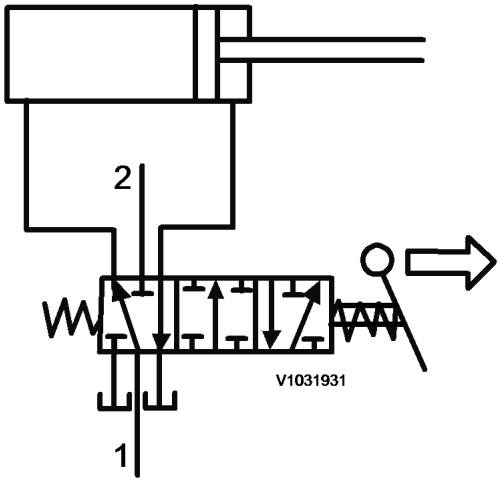



**Figure 6**
**The piston rod is pressed out**

1. Inlet
2. Outlet

The spool is actuated with the lever so that the plus side of the cylinder is connected to the inlet at the same time as the minus side is connected to the tank.

**Imagined position for piston movement inwards**