



Construction Equipment

PROSIS Service Information

Document Title : Checking the hydraulic oil level	Function Group : 9111	Information Type : Service Information	Print Date : 23/10/2011
Profile : CEX, EC15B XTV (Volvo) [GB]			

Checking the hydraulic oil level

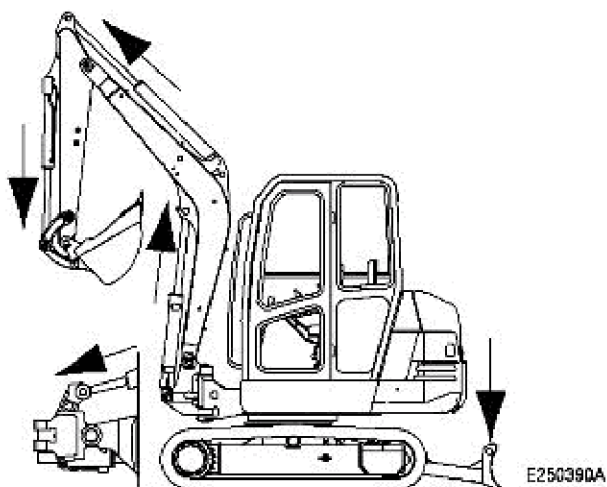


Figure 1

Park the machine on a horizontal base.
Operate all cylinders to both directions while the engine is running.

Actuate all cylinder to their end position.

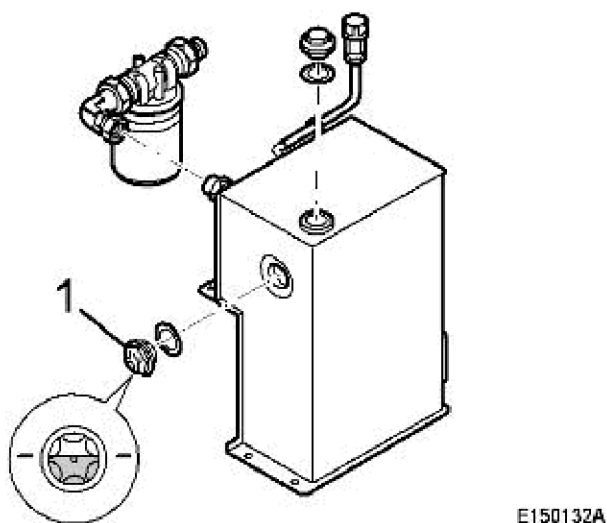
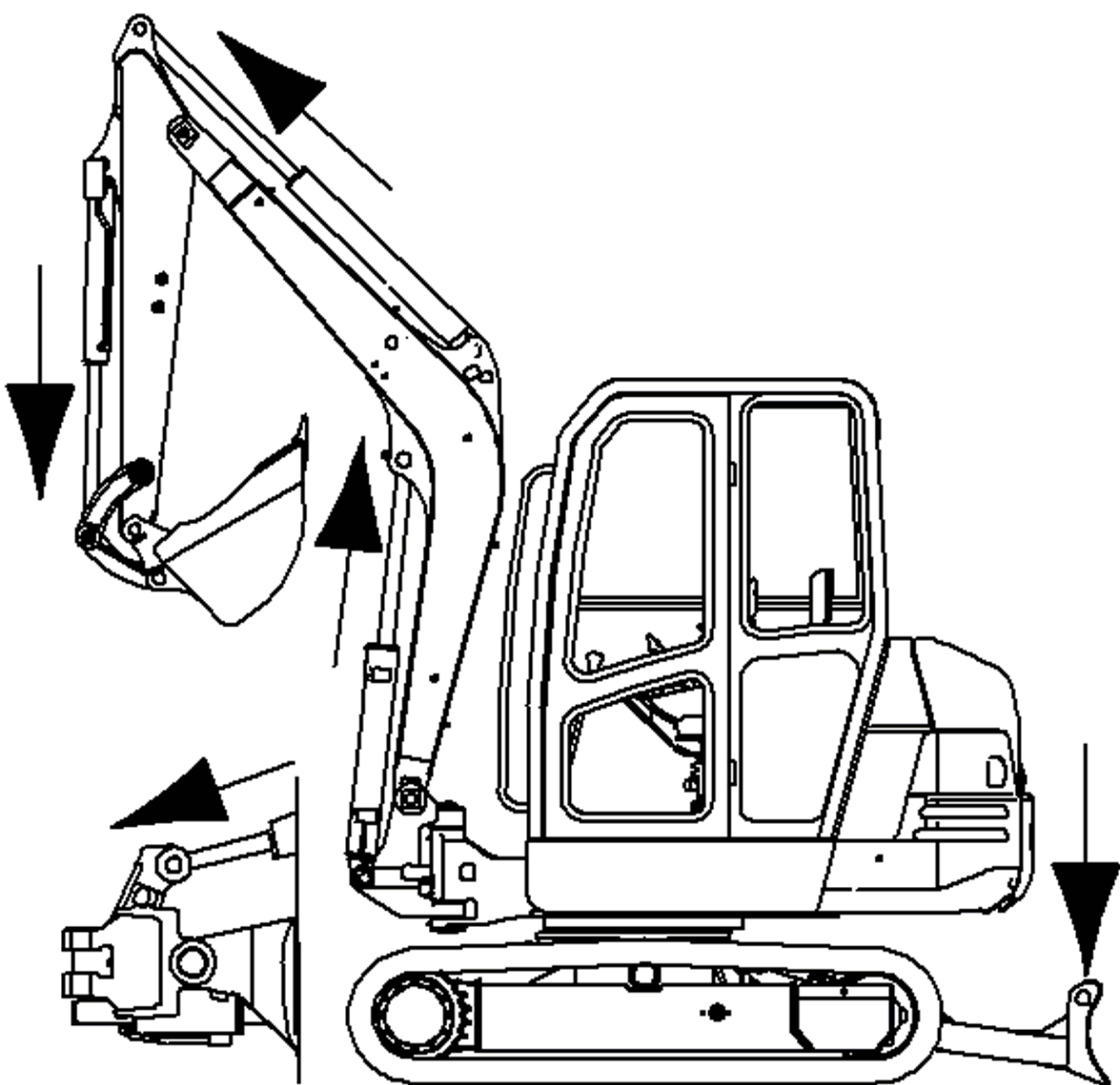


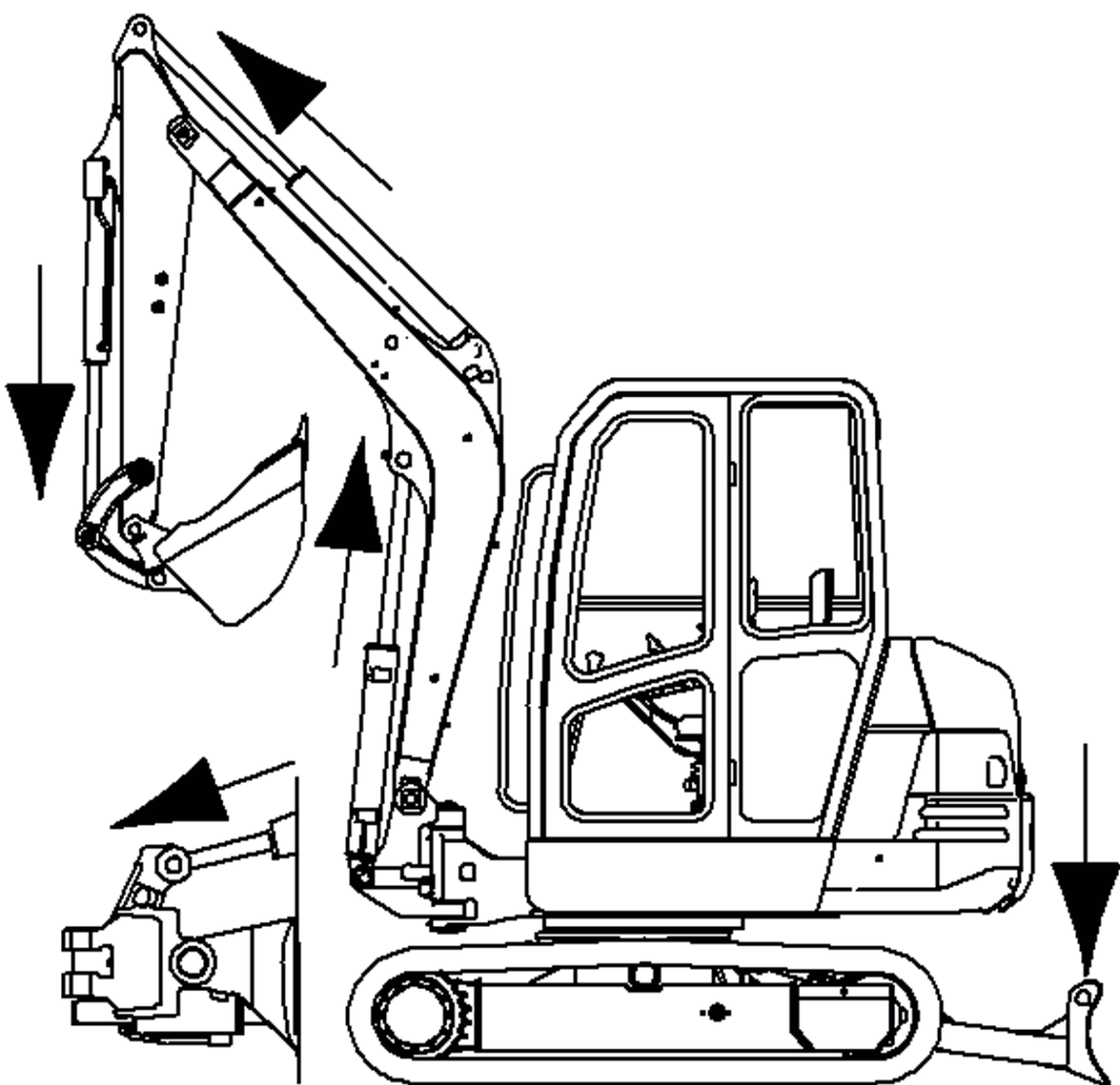
Figure 2
Checking the hydraulic oil level

1. Inspection glass

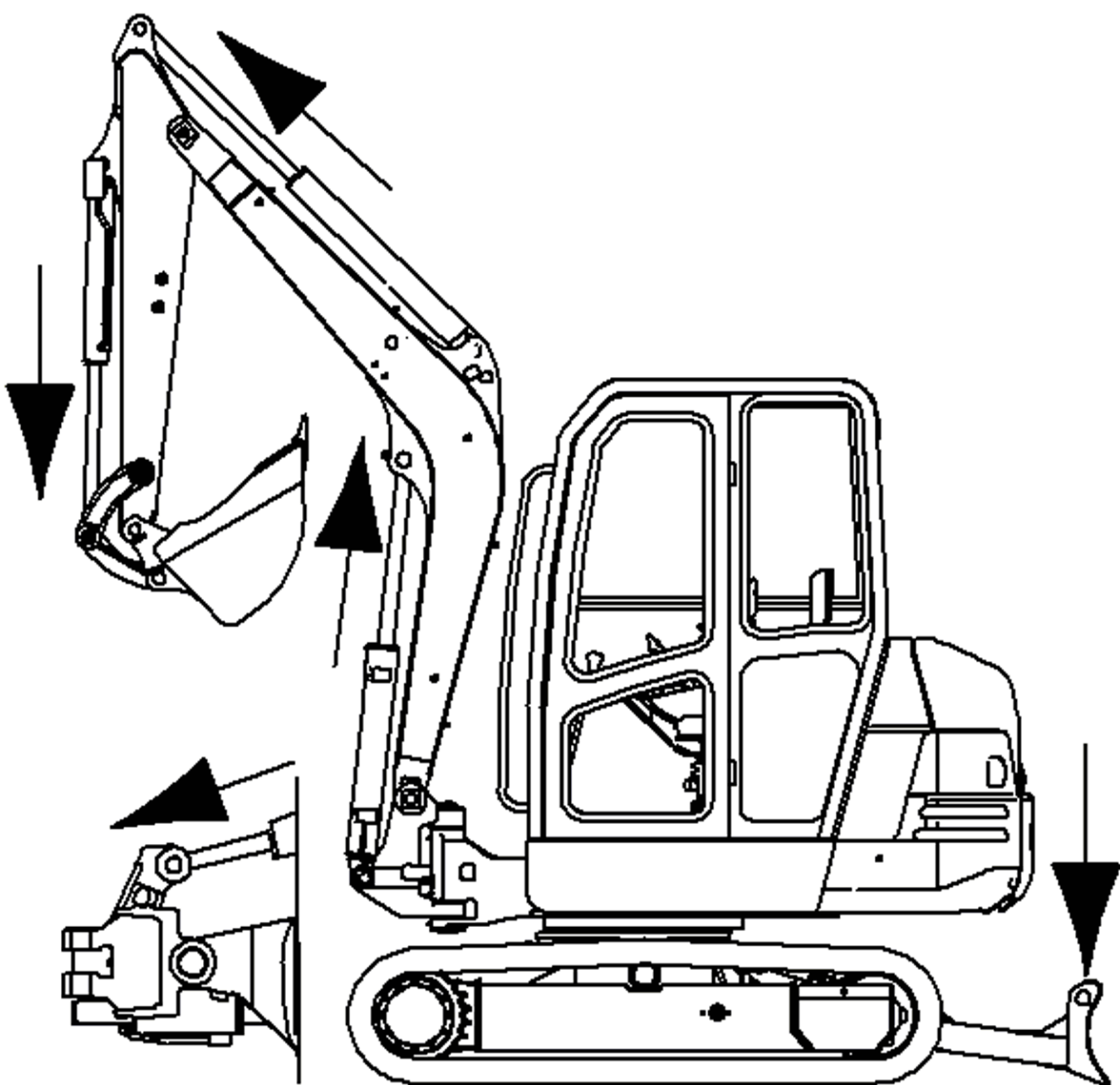
Check the hydraulic oil level in the inspection glass (1), it must reach the level shown in the illustration.
Top up oil if necessary.



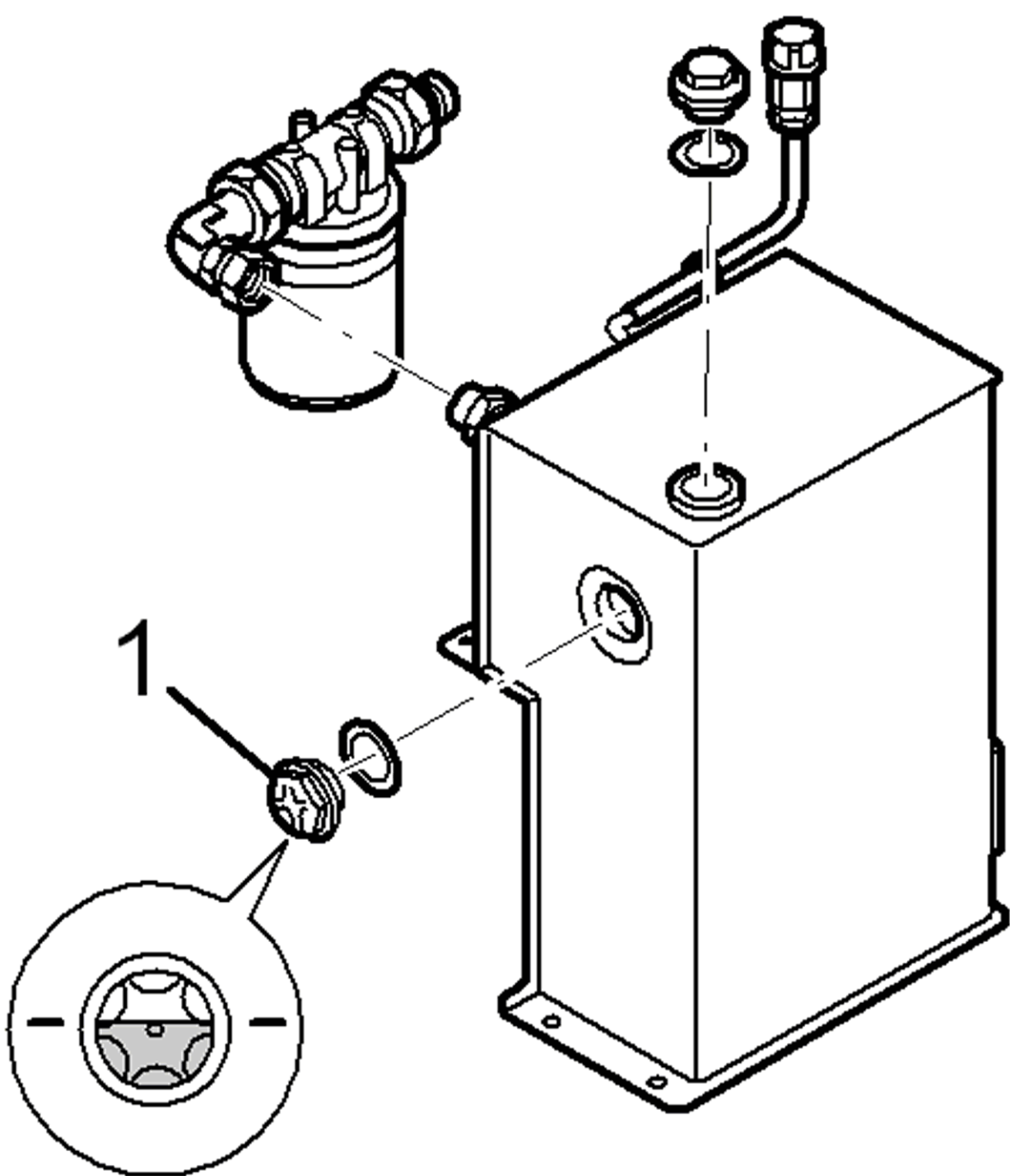
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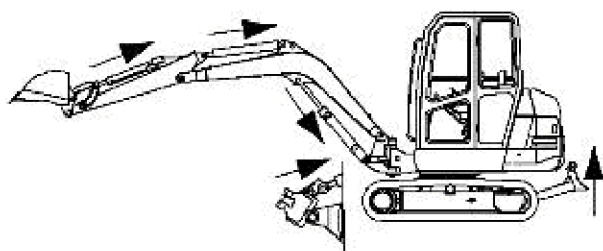


Construction Equipment

PROSIS Service Information

Document Title : Changing the hydraulic oil	Function Group : 9111	Information Type : Service Information	Print Date : 23/10/2011
Profile : CEX, EC15B XTV (Volvo) [GB]			

Changing the hydraulic oil



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Figure 1

Operate all piston rods until they are fully retracted. Lower the working attachment to the ground and shut the engine down.

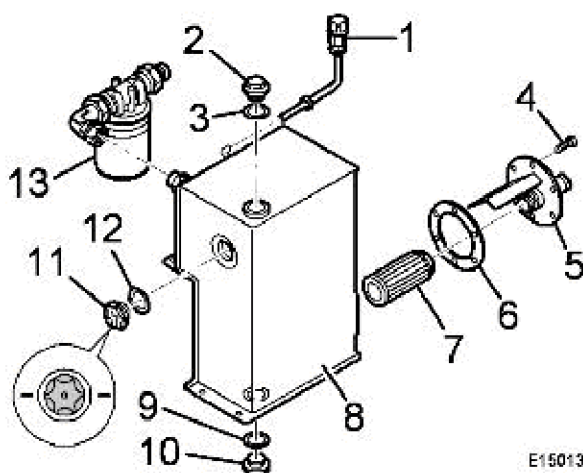


WARNING!

Hydraulic oil may be very hot, do not touch. Danger of scalding!

Caution!

Hydraulic oil must be drained off warm.



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Figure 2

Remove and clean the breather (1).

Unscrew filler plug (2) and take it off with seal ring (3).

Unscrew drain plug (10), take it off with seal ring (9) and let the hydraulic oil run out.

**WARNING!****Catch hydraulic oil and dispose of environmentally.**

Unscrew the screws (4) and take the cover (5) off with the gasket (6).

Unscrew the suction button (7), clean and reinsert it.

Install cover (5) with an new gasket (6).

Assemble drain plug (10) with a new seal ring (9) and tighten with 39 ± 5 Nm.

Fill the hydraulic oil tank with oil, see chapter 0 – fuels, lubricants and filling capacities – until the maximum filling level (11) is indicated.

Check the oil filling level (11).

Assemble the breather (1).

Start the engine, move the working attachment control lever slowly to both directions and perform all working movements.

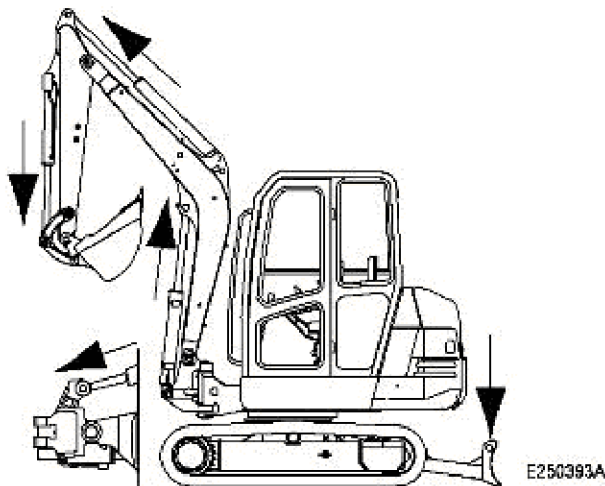
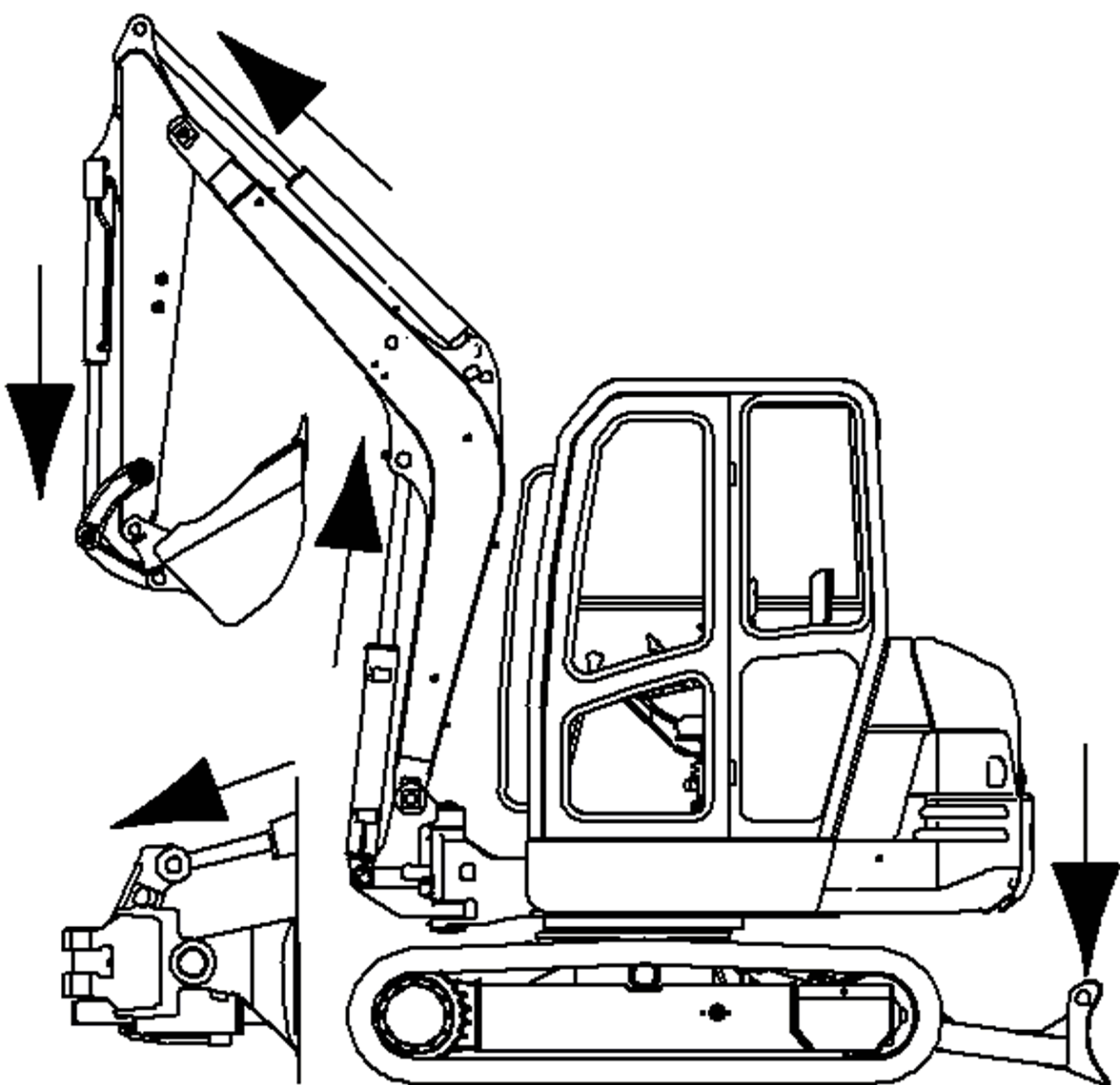


Figure 3

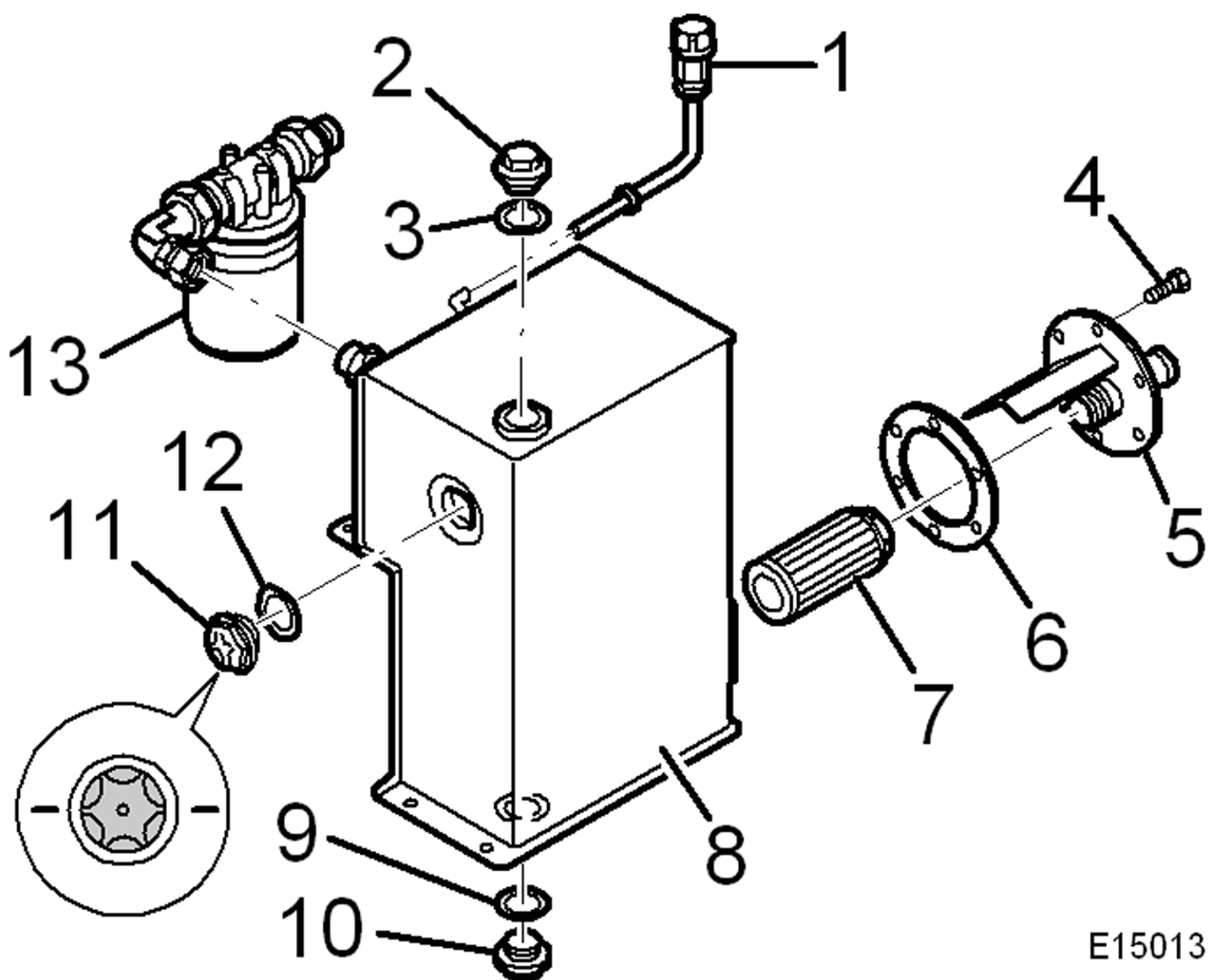
Check the hydraulic oil level.

Extend all cylinders to their end positions ([See figure](#)), while the machine is standing on level ground. The oil level must now comply with the level shown in [See figure/1](#).

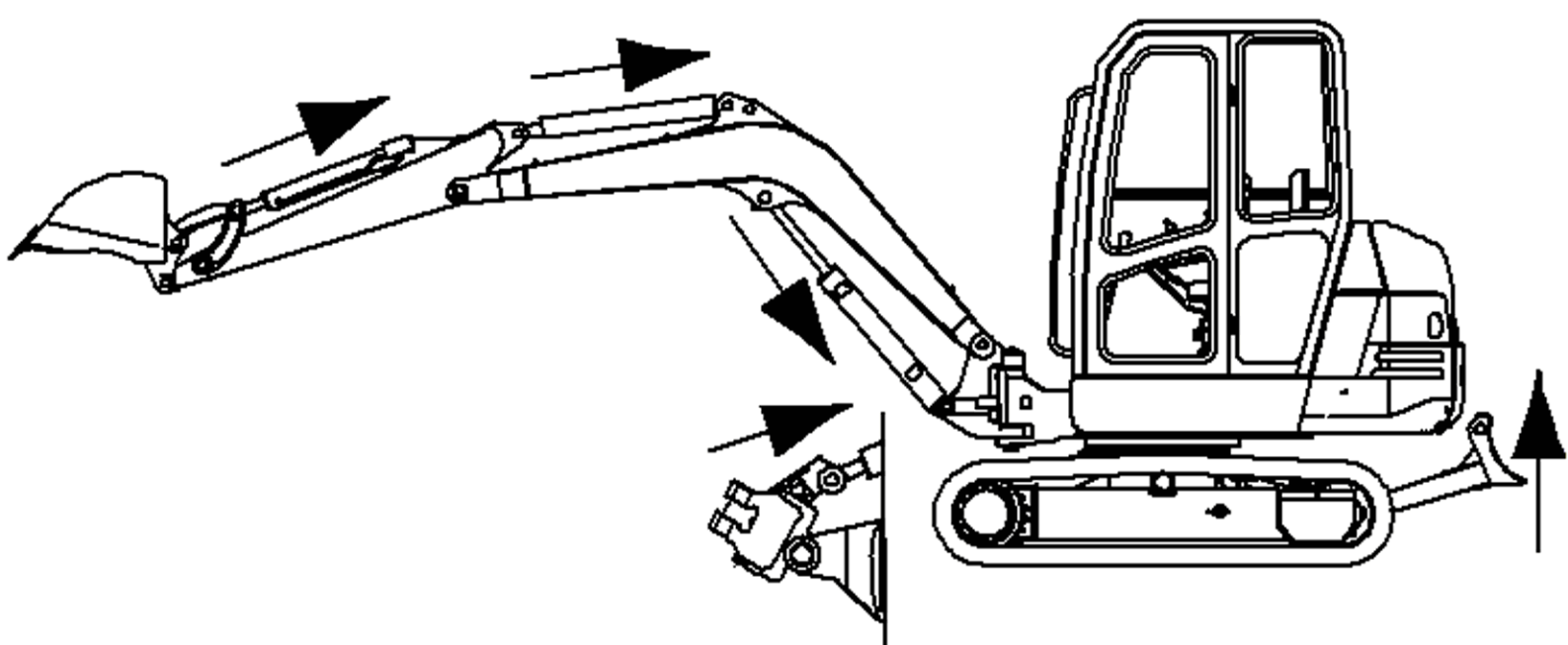
Top up oil if necessary.



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VOLVO

Construction Equipment

PROSIS Service Information

Document Title : Cleaning the oil cooler	Function Group : 9113	Information Type : Service Information	Print Date : 23/10/2011
Profile : CEX, EC15B XTV (Volvo) [GB]			

Cleaning the oil cooler

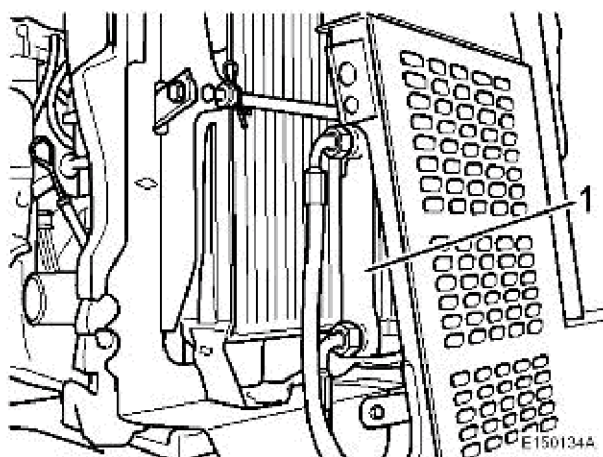


Figure 1
Oil cooling circuit

1. Oil cooler

Clean the fins of the oil cooler (1) with a water jet or compressed air from inside to outside.

NOTE Cleaning with water only when the engine is cold.

VOLVO

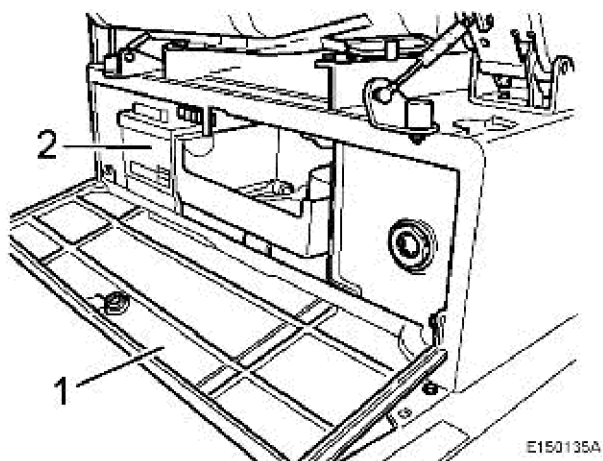
Construction Equipment

PROSIS Service Information

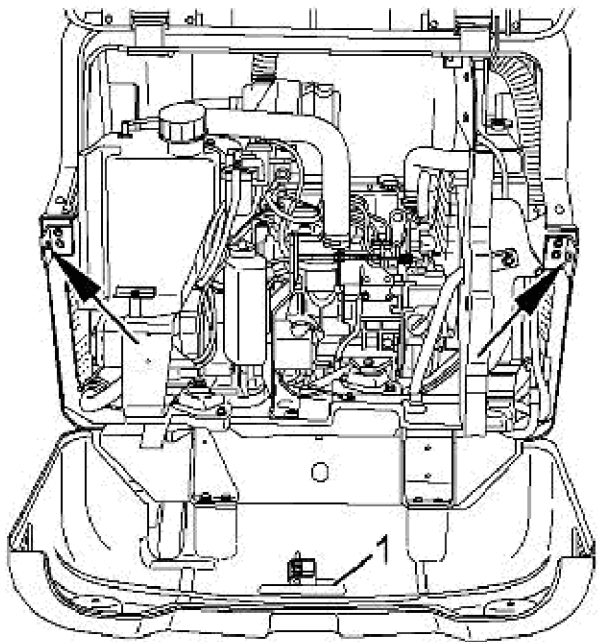
Document Title : Removing the oil cooler	Function Group : 9113	Information Type : Service Information	Print Date : 23/10/2011
Profile : CEX, EC15B XTV (Volvo) [GB]			

Removing the oil cooler

Op nbr 911351

[1436000 Vacuum pump](#)**Figure 1**

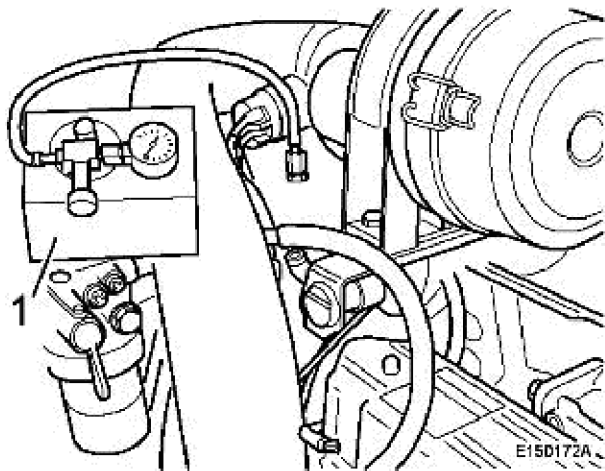
- Open flap (1).
- Disconnect the ground cable from battery (2).



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Figure 2

- Open the engine hood.
- Unscrew both screws (arrow) on both sides of the counterweight.
- Pull safety lever (1) and move the counterweight to bottom position.



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Figure 3

- Remove the breather and install vacuum pump (1).

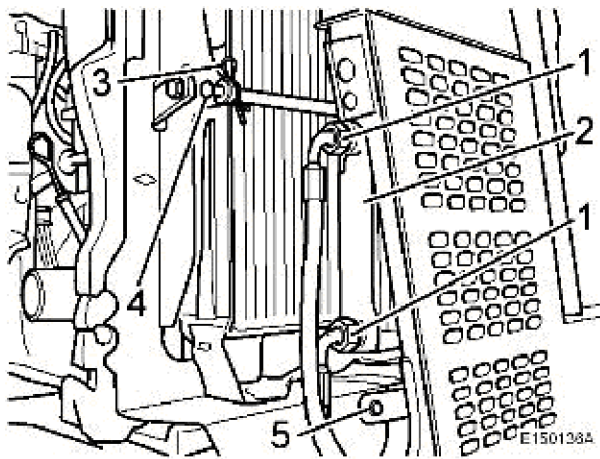


Figure 4

- Mark hydraulic lines (1), unscrew and close with plugs.

WARNING! Catch hydraulic fluid and dispose of environmentally.

- Unhook clamp (3) and push out rod (4).
- Unscrew the screw (5) and remove the oil cooler (2).

Installing the oil cooler

Op nbr 911351

[14360000 Vacuum pump](#)

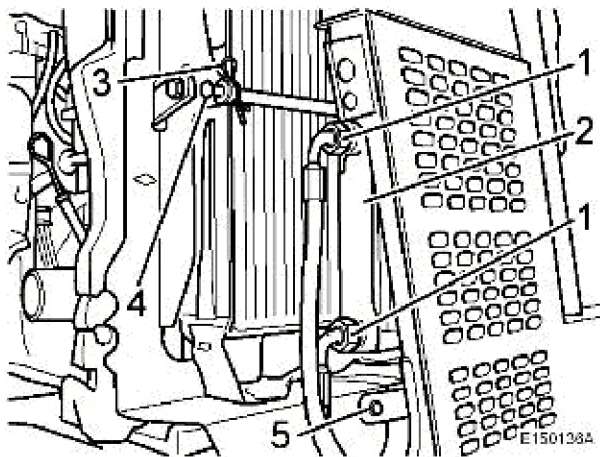


Figure 5

- Position the oil cooler (2) and turn in screw (5) and tighten with 12 ± 5 Nm.
- Assemble rod (4) and secure it with clamp (3).
- Remove the plugs from the hydraulic hoses and tighten fittings (1) of hydraulic lines on the oil cooler with 170 ± 40 Nm.

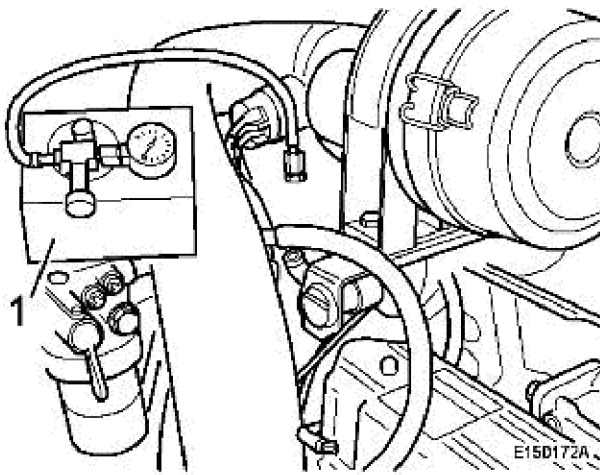
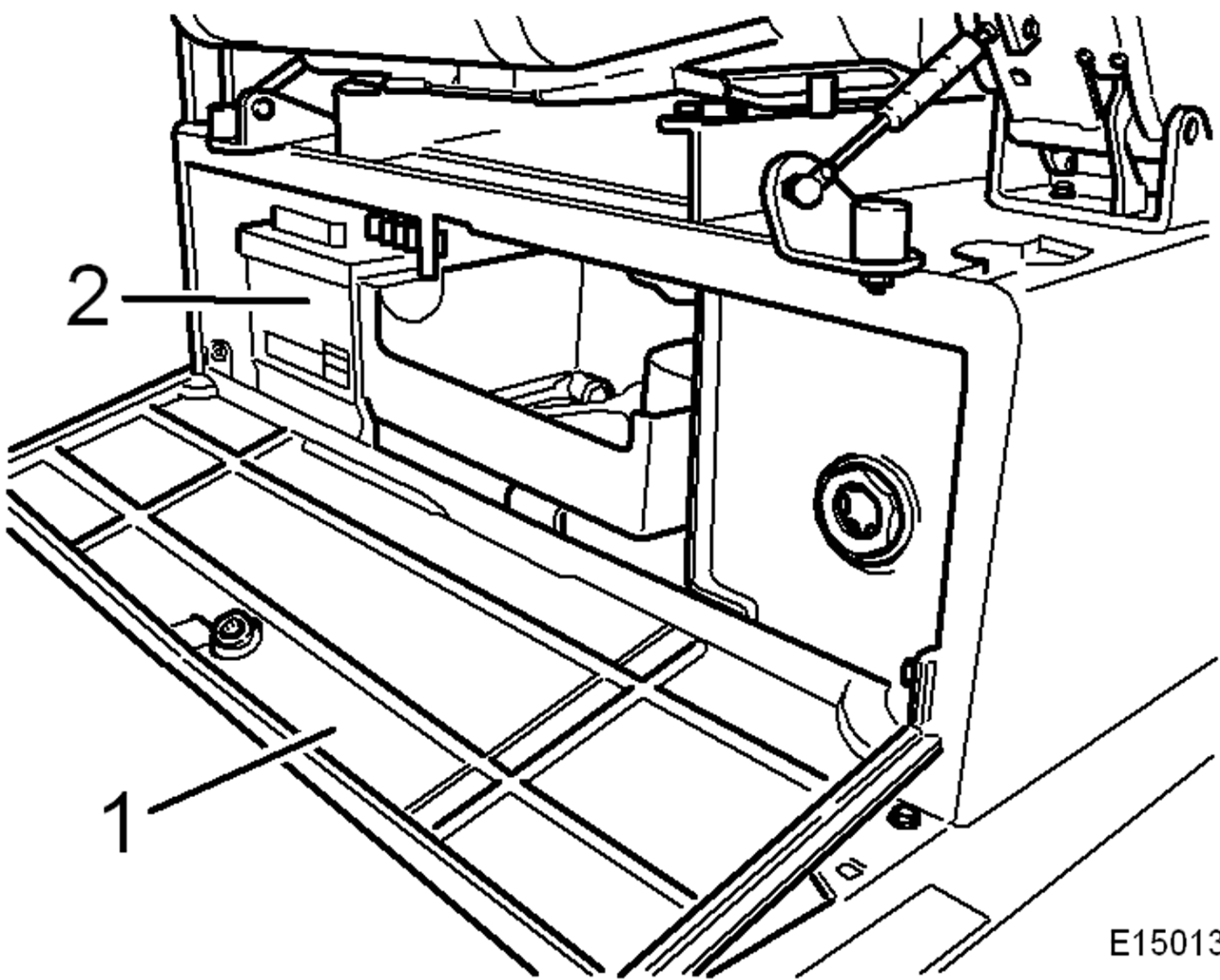
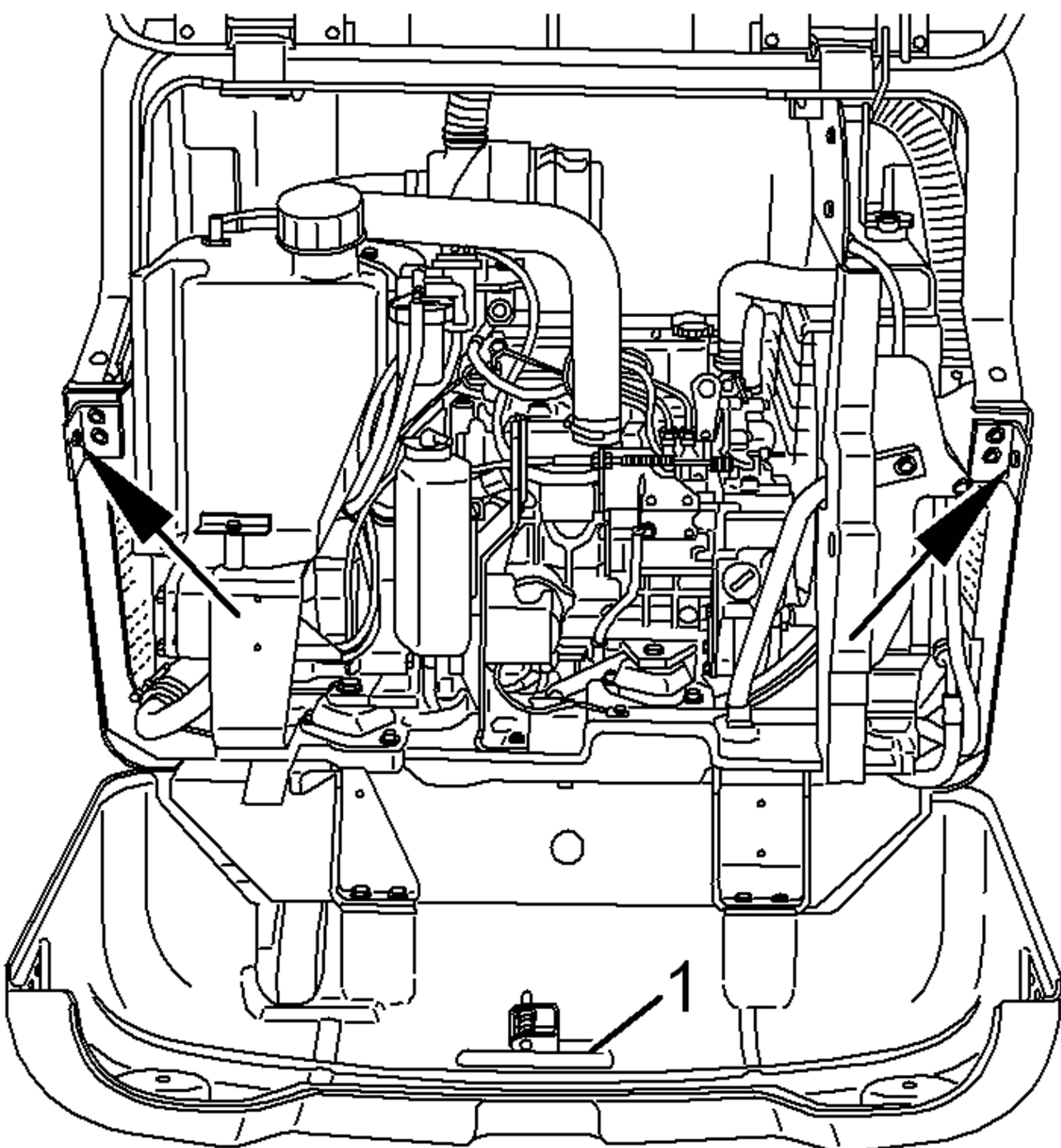


Figure 6

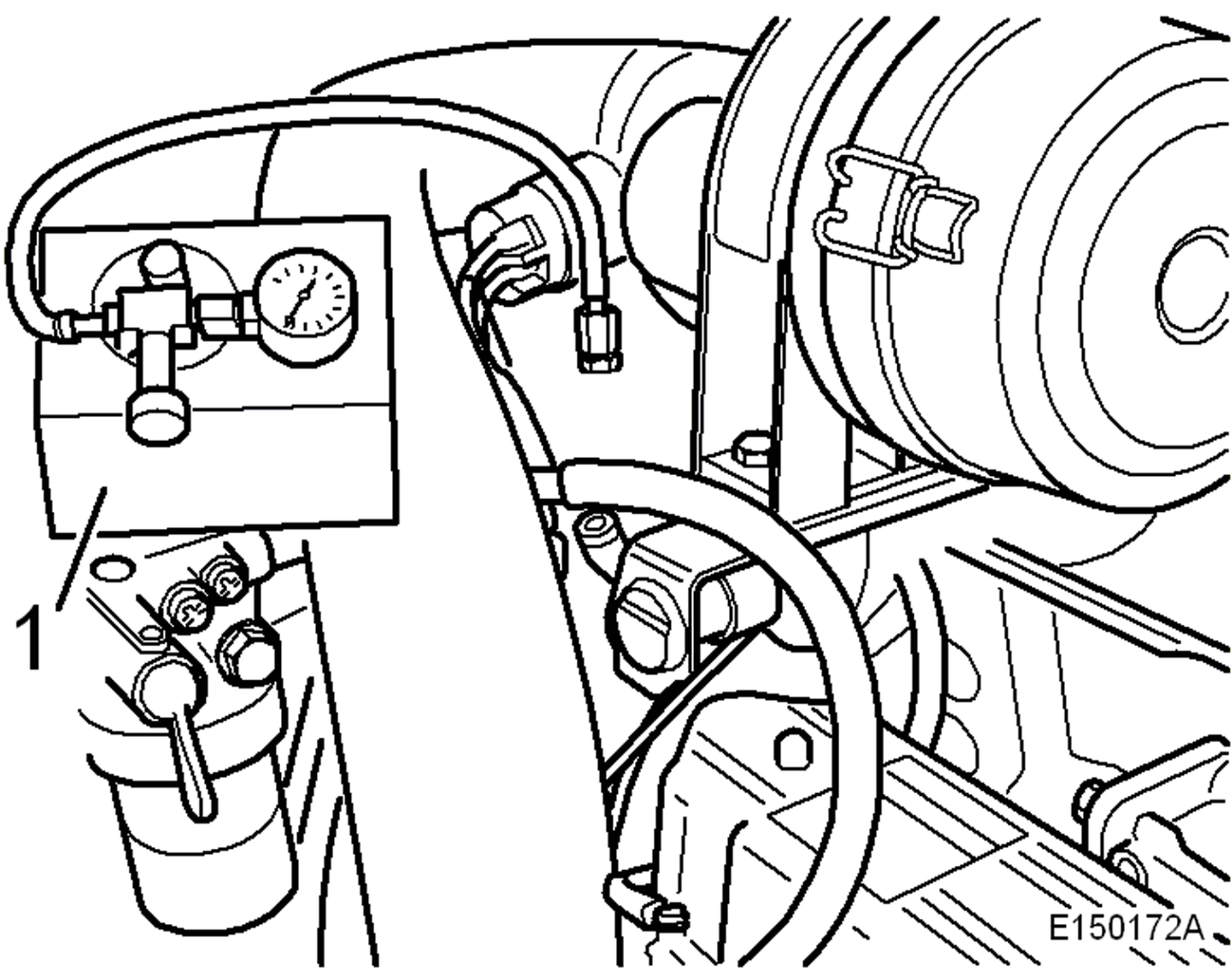
- Remove vacuum pump (1) and install the breather.
- Connect the ground cable to the battery.
- Start the engine, check machine functions and leak tightness, fill up oil if necessary.
- Lift the counterweight up and fasten with the screws.
- Close the engine hood.



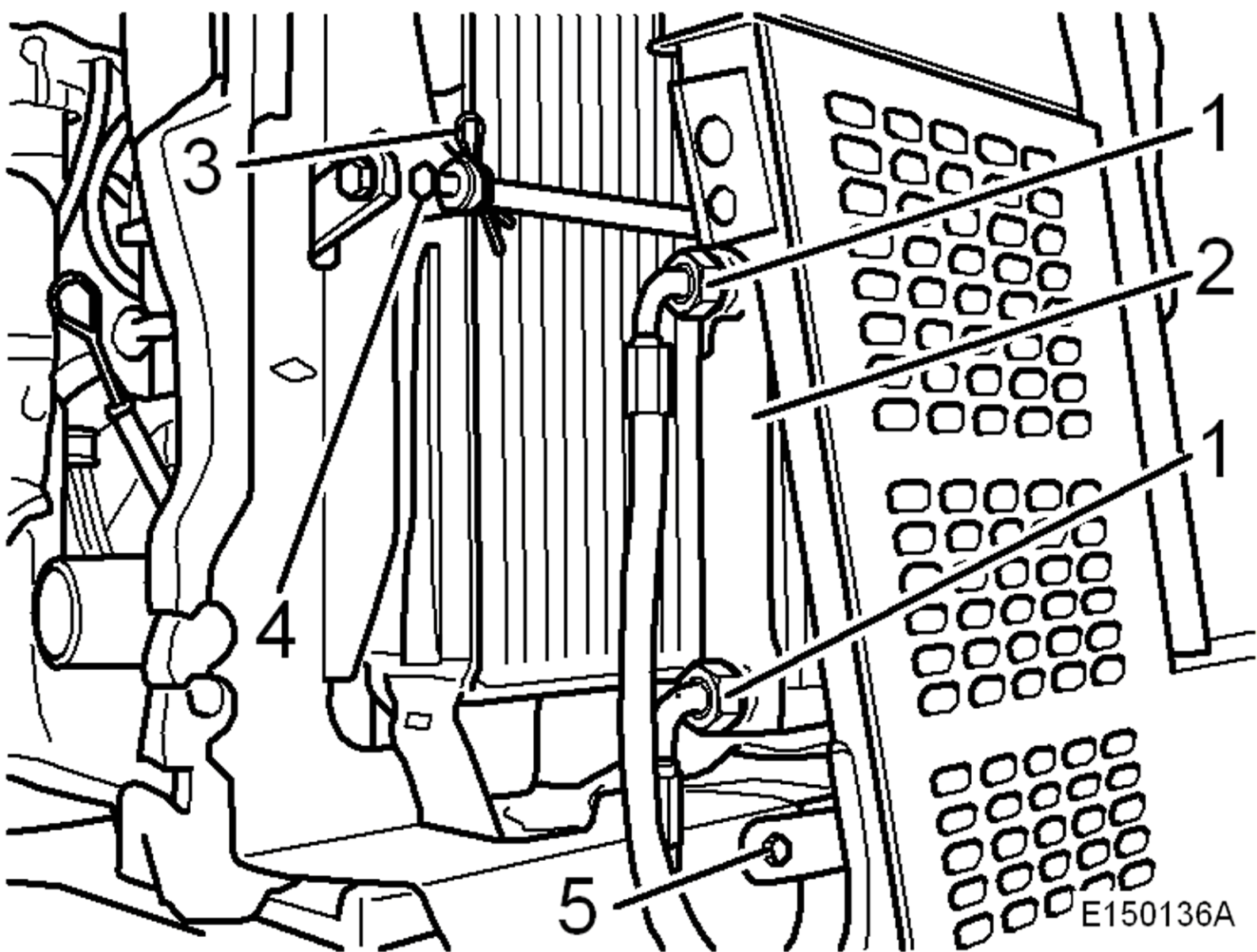
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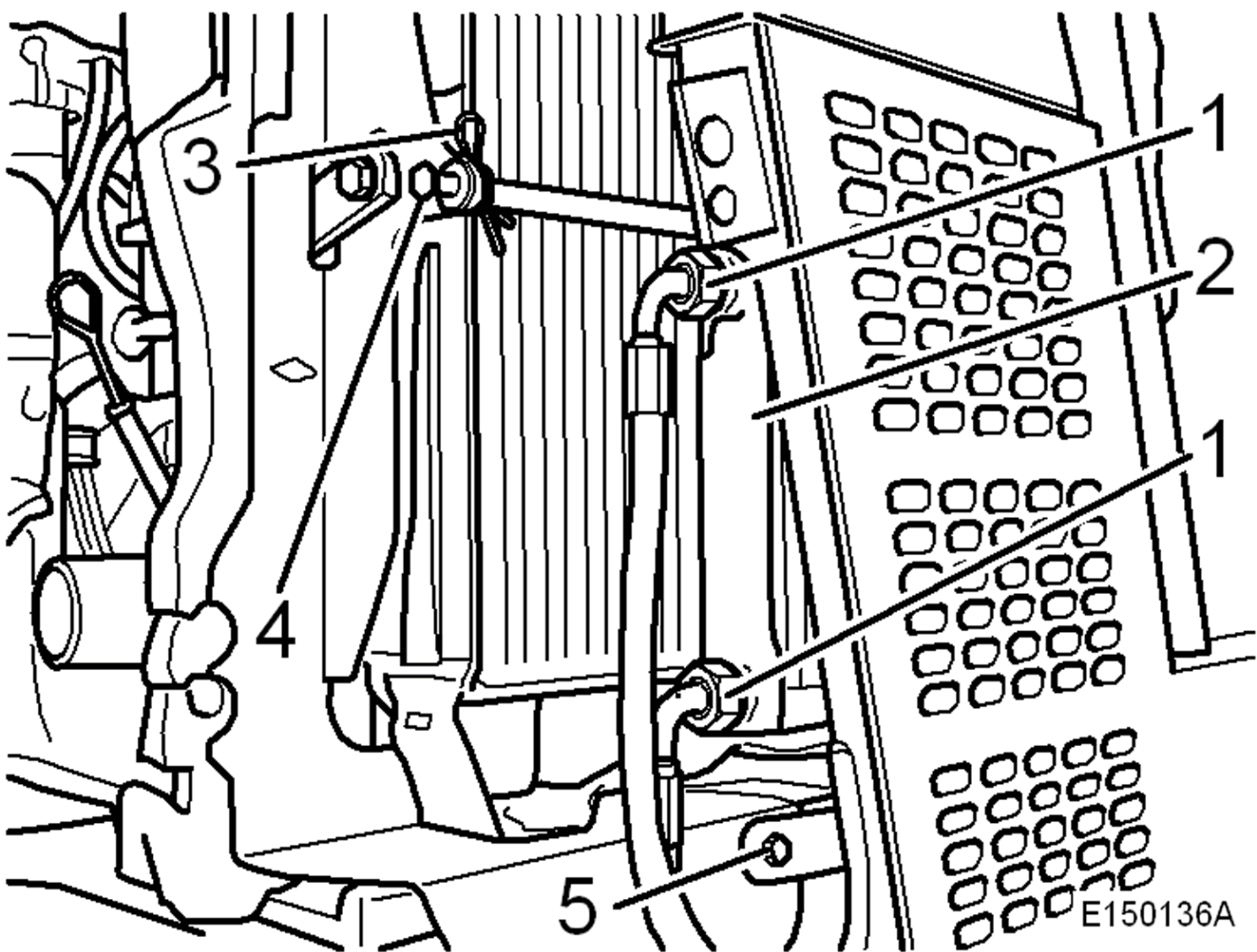
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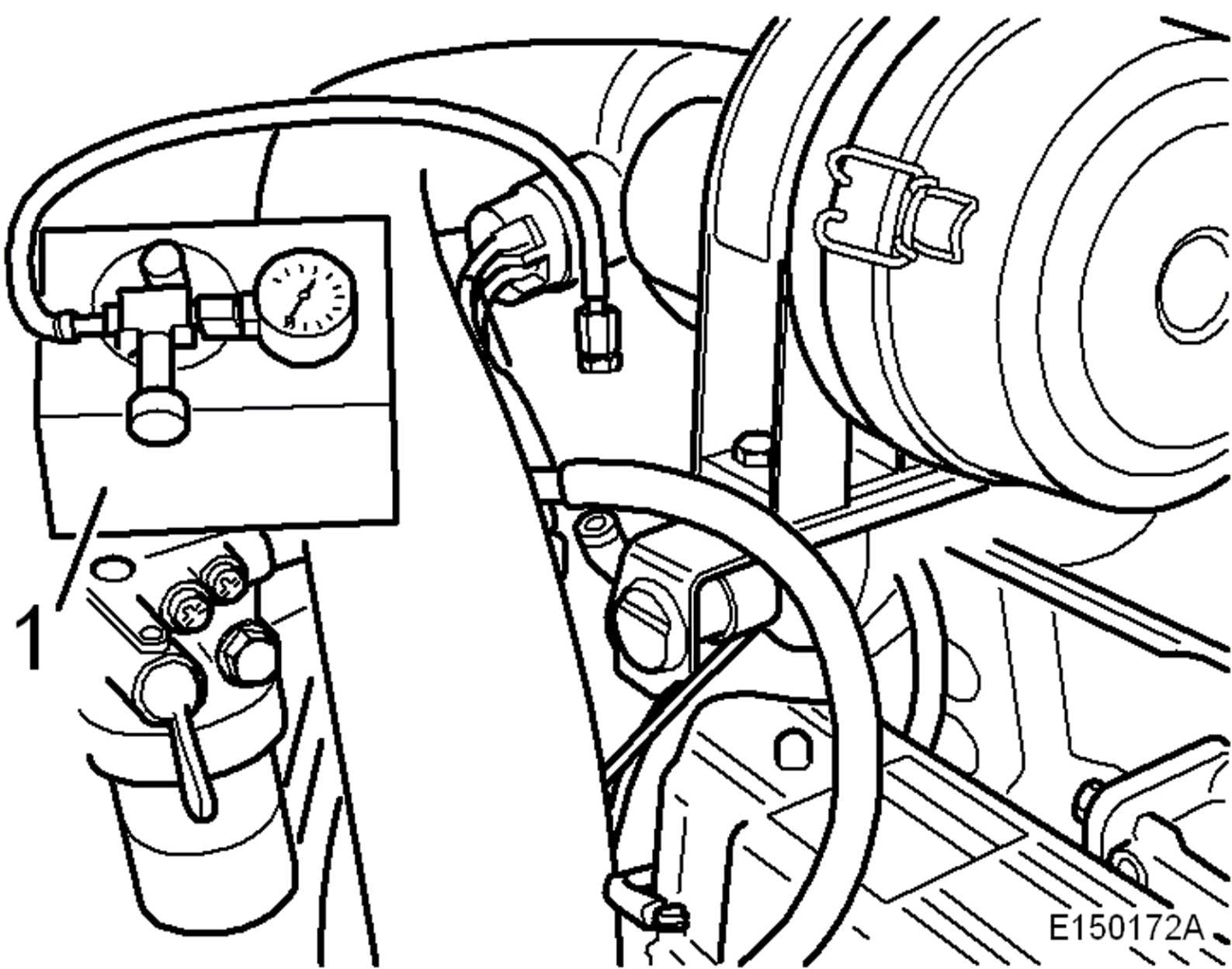


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VOLVO

Construction Equipment

PROSIS Service Information

Document Title : Changing the hydraulic oil filter	Function Group : 9114	Information Type : Service Information	Print Date : 23/10/2011
Profile : CEX, EC15B XTV (Volvo) [GB]			

Changing the hydraulic oil filter

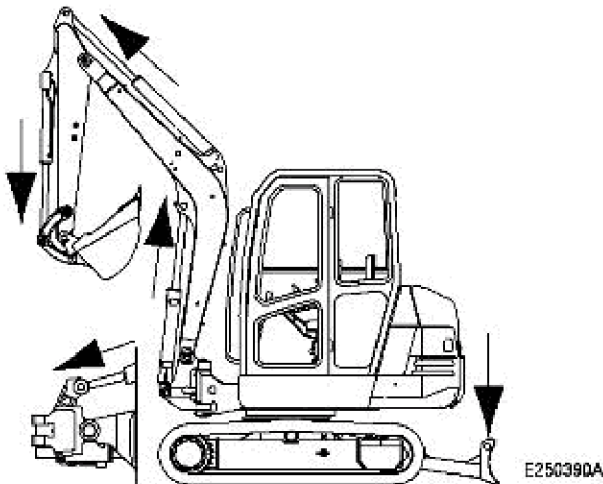


Figure 1

Actuate all cylinder to their end position. Shut down the engine and move the control levers for boom, dipper, bucket and accessories to all directions and relieve remaining pressure.

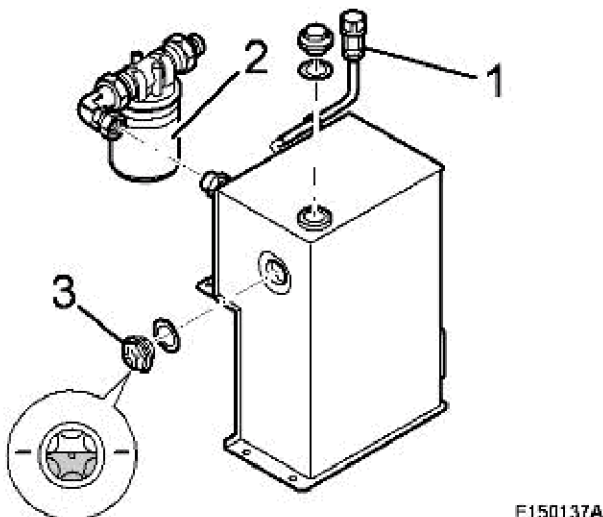


Figure 2

Remove and clean the breather (1).

Unscrew the hydraulic oil filter (2).

**WARNING!**

Dispose of the hydraulic oil filter (2) environmentally.

Apply some oil to the seal ring on the hydraulic oil filter and screw the filter in.

Assemble the breather (1).

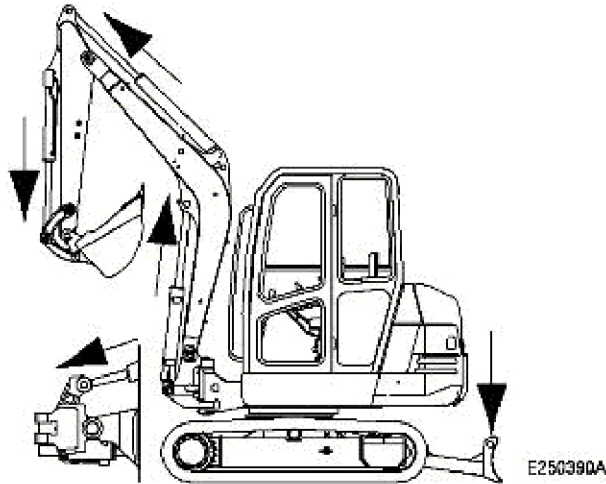


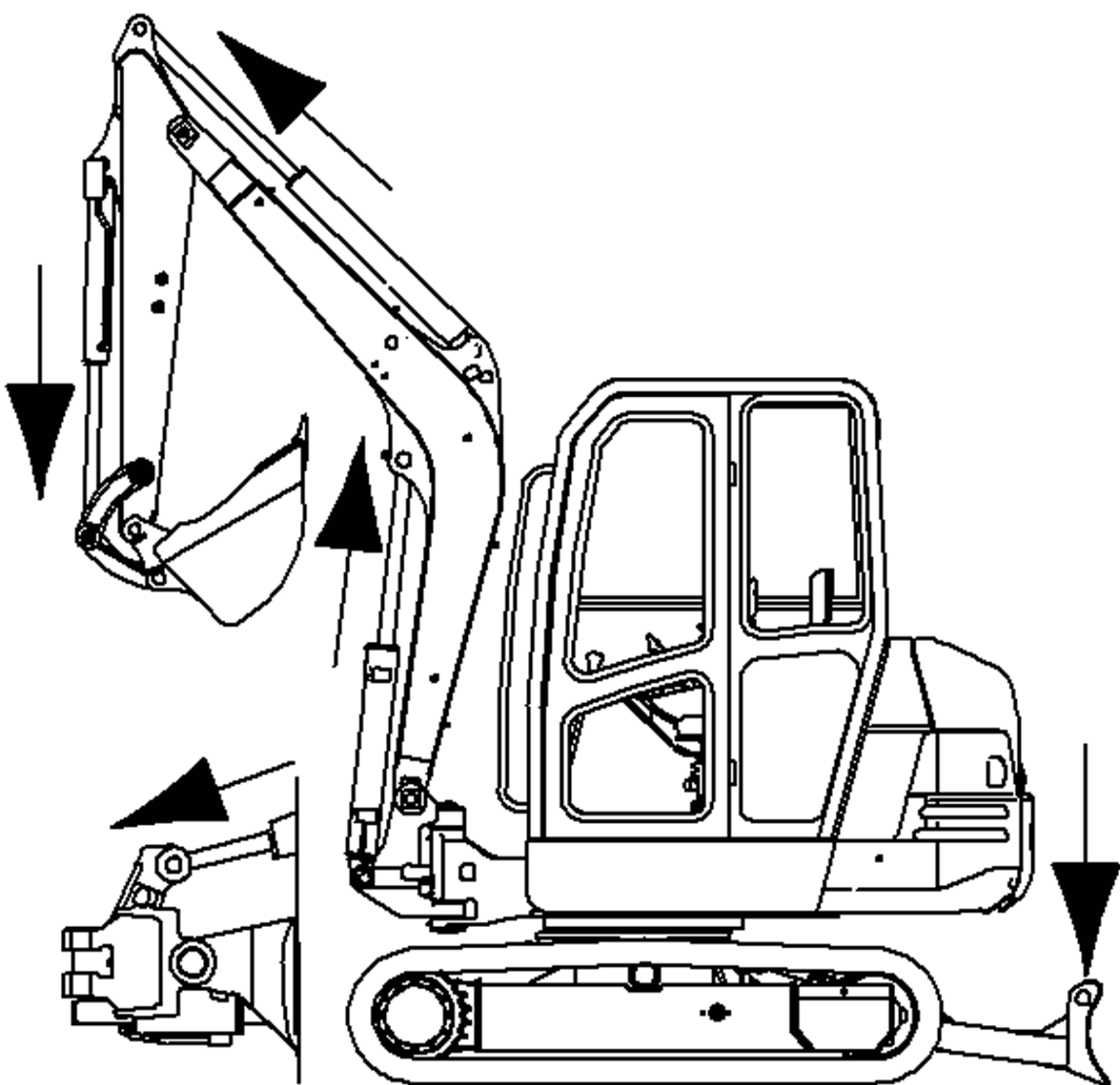
Figure 3

Move the control levers slowly to both directions to perform the working movements.

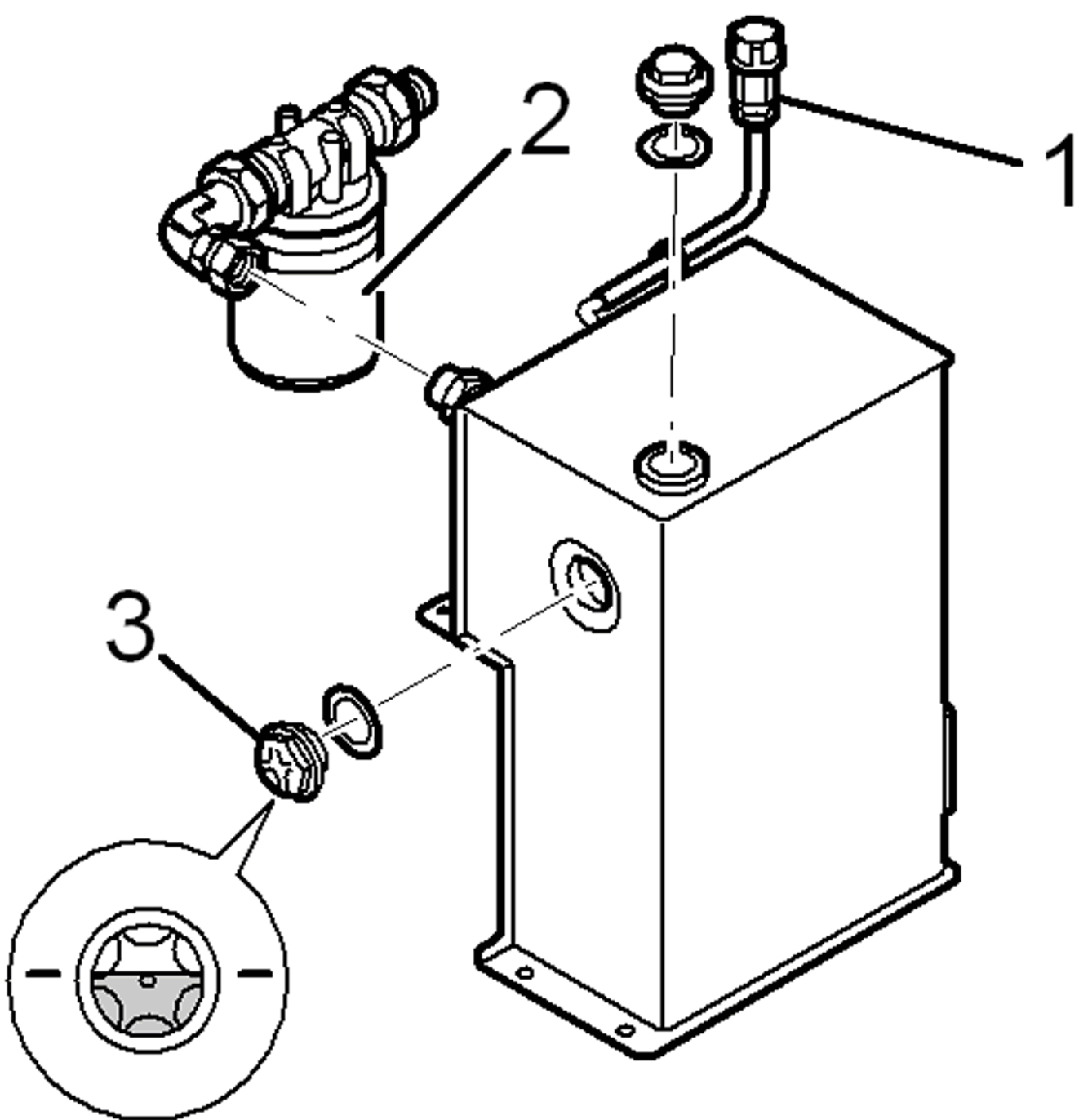
Check the oil filling level ([See figure/3](#)).

Extend all cylinders to their end positions ([See figure](#)), while the machine is standing on level ground. The oil level must now comply with the level shown in ([See figure](#)).

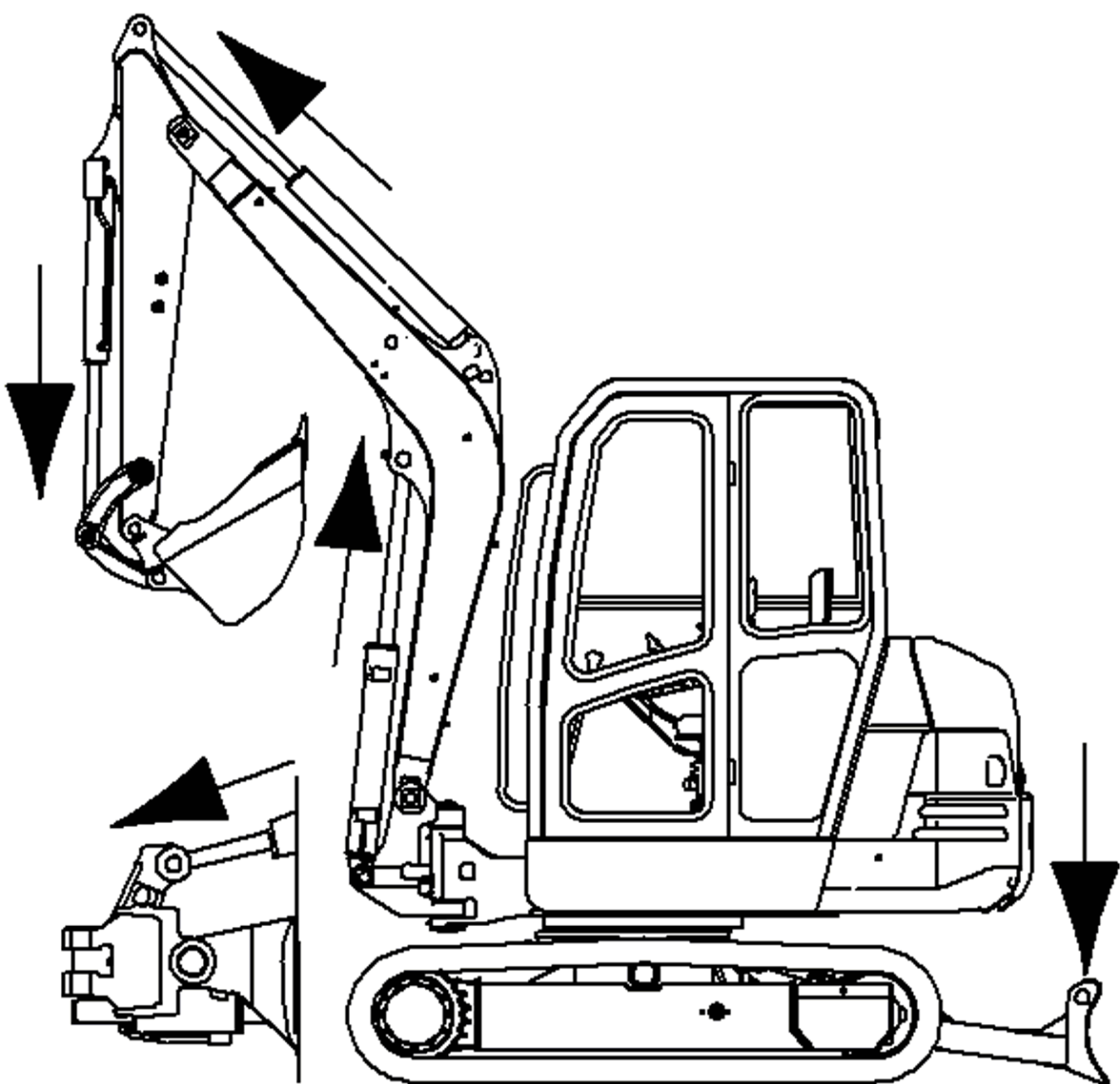
Top up oil if necessary.



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E250390A



Construction Equipment

PROSIS Service Information

Document Title : Assignment of elements	Function Group : 9121	Information Type : Service Information	Print Date : 23/10/2011
Profile : CEX, EC15B XTV (Volvo) [GB]			

Assignment of elements

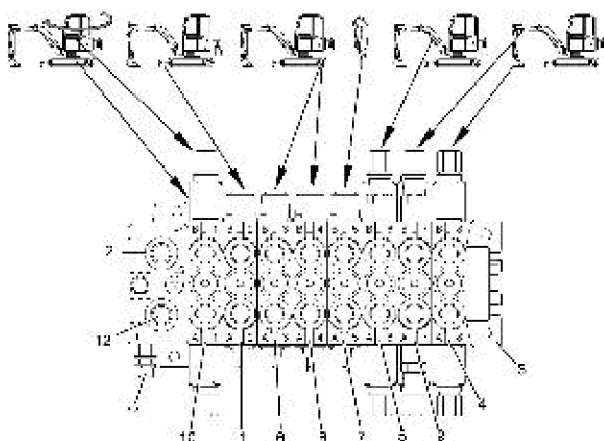
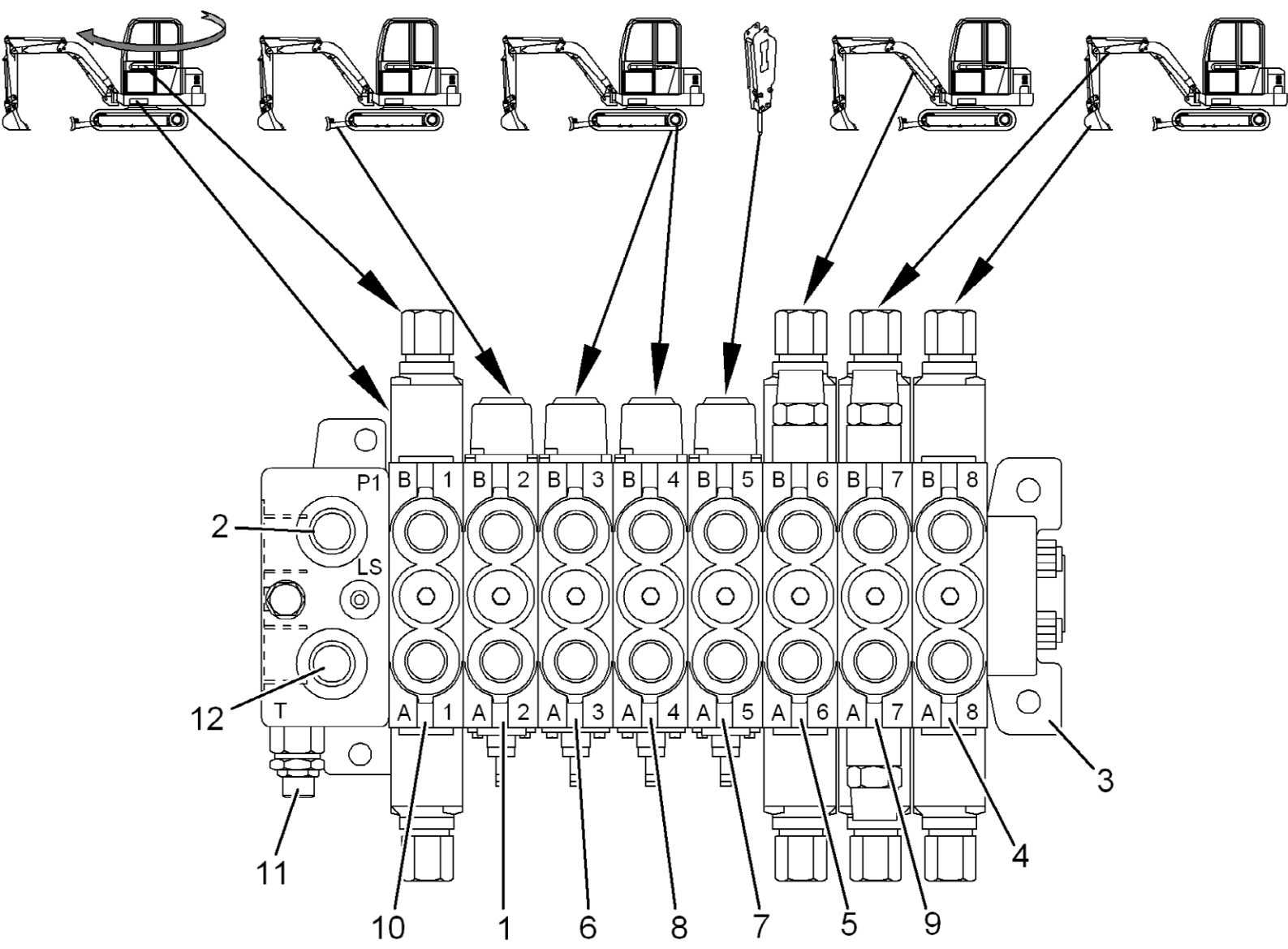


Figure 1
Oil distributor

- | | |
|--|---|
| 1 Control valve elements for dozer blade | 7 Control valve element for accessories |
| 2 Inlet port control valve P1 | 8 Control valve element for right-hand travel motor |
| 3 Oil distributor | 9 Control valve element for dipper arm |
| 4 Control valve element for dipper | 10 Control valve element for slewing gear / offset |
| 5 Control valve element for boom | 11 Pressure relief valve (high pressure) P1 |
| 6 Control valve element for left-hand travel motor | 12 Load Sensing connection |





Construction Equipment

PROSIS Service Information

Document Title : Hydraulic circuit for dozer blade	Function Group : 9121	Information Type : Service Information	Print Date : 23/10/2011
Profile : CEX, EC15B XTV (Volvo) [GB]			

Hydraulic circuit for dozer blade

EC15B XT / EC20B XT

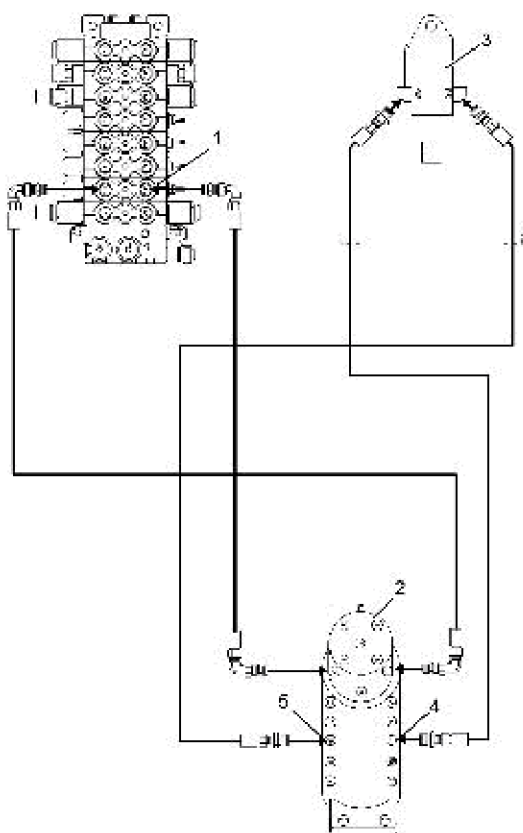
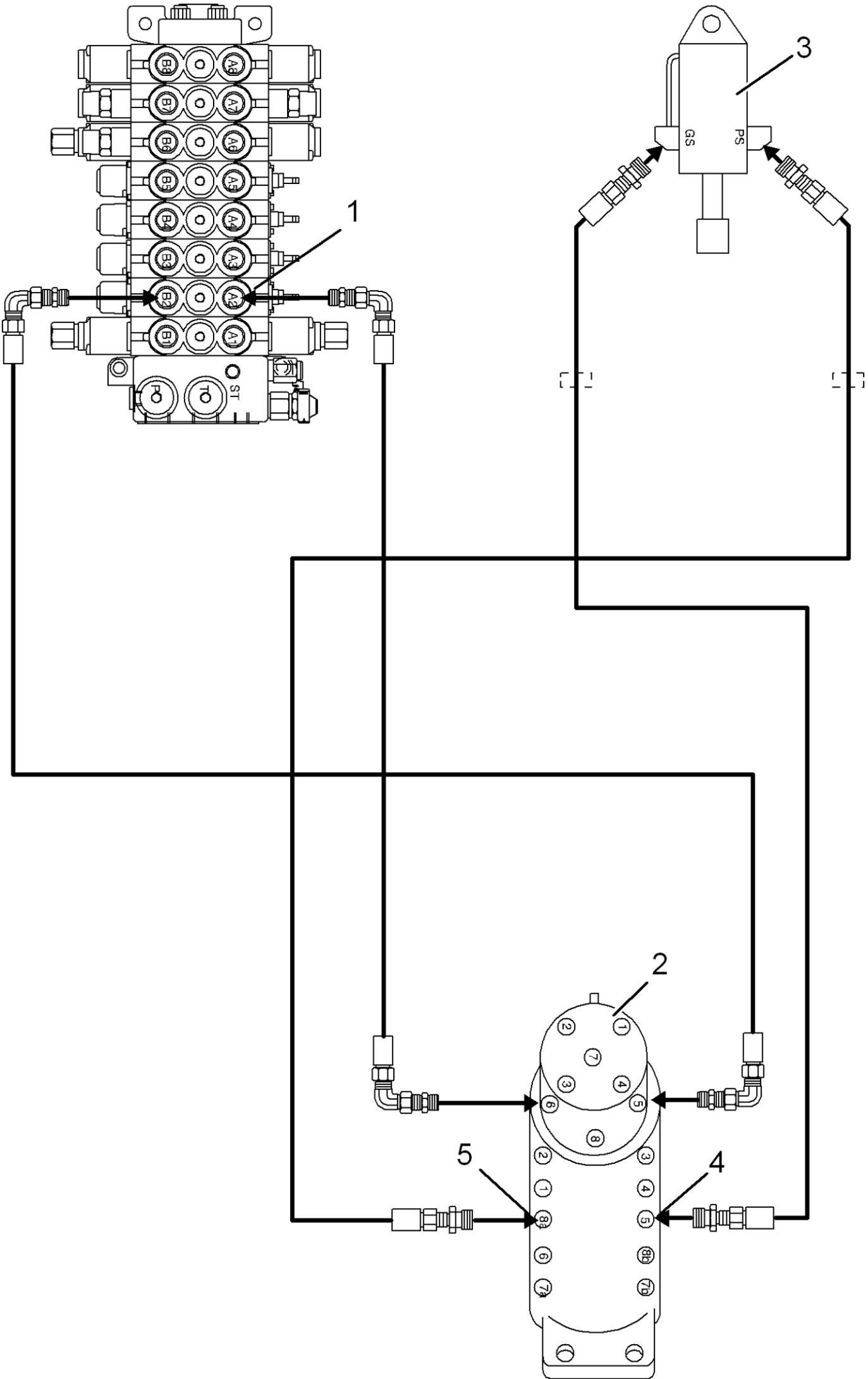


Figure 1

1. Dozer blade control element
2. Rotary oil distributor
3. Dozer blade cylinder
4. Piston side (extend cylinder)
5. Piston rod side (retract cylinder)





Construction Equipment

PROSIS Service Information

Document Title : Hydraulic circuit for dozer blade and adjustable track width	Function Group : 9121	Information Type : Service Information	Print Date : 23/10/2011
Profile : CEX, EC15B XTV (Volvo) [GB]			

Hydraulic circuit for dozer blade and adjustable track width

EC15B XTV / EC20B XTV

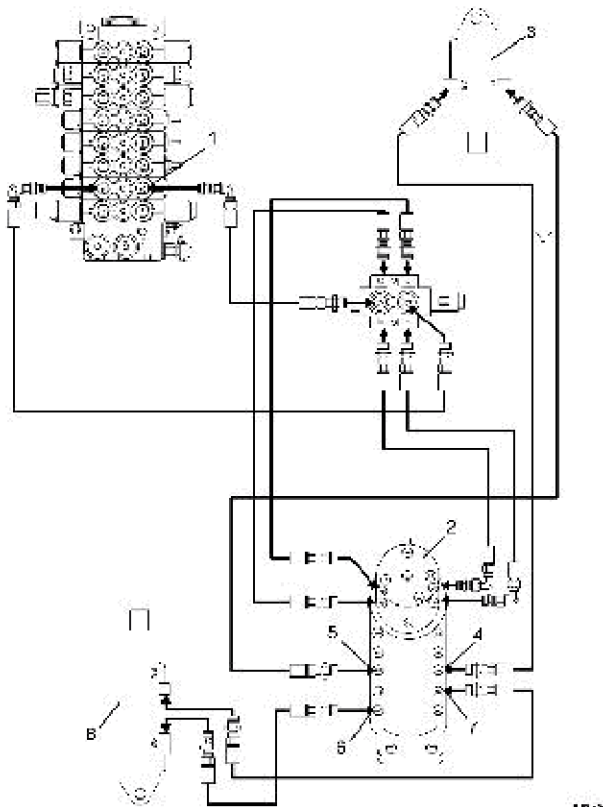
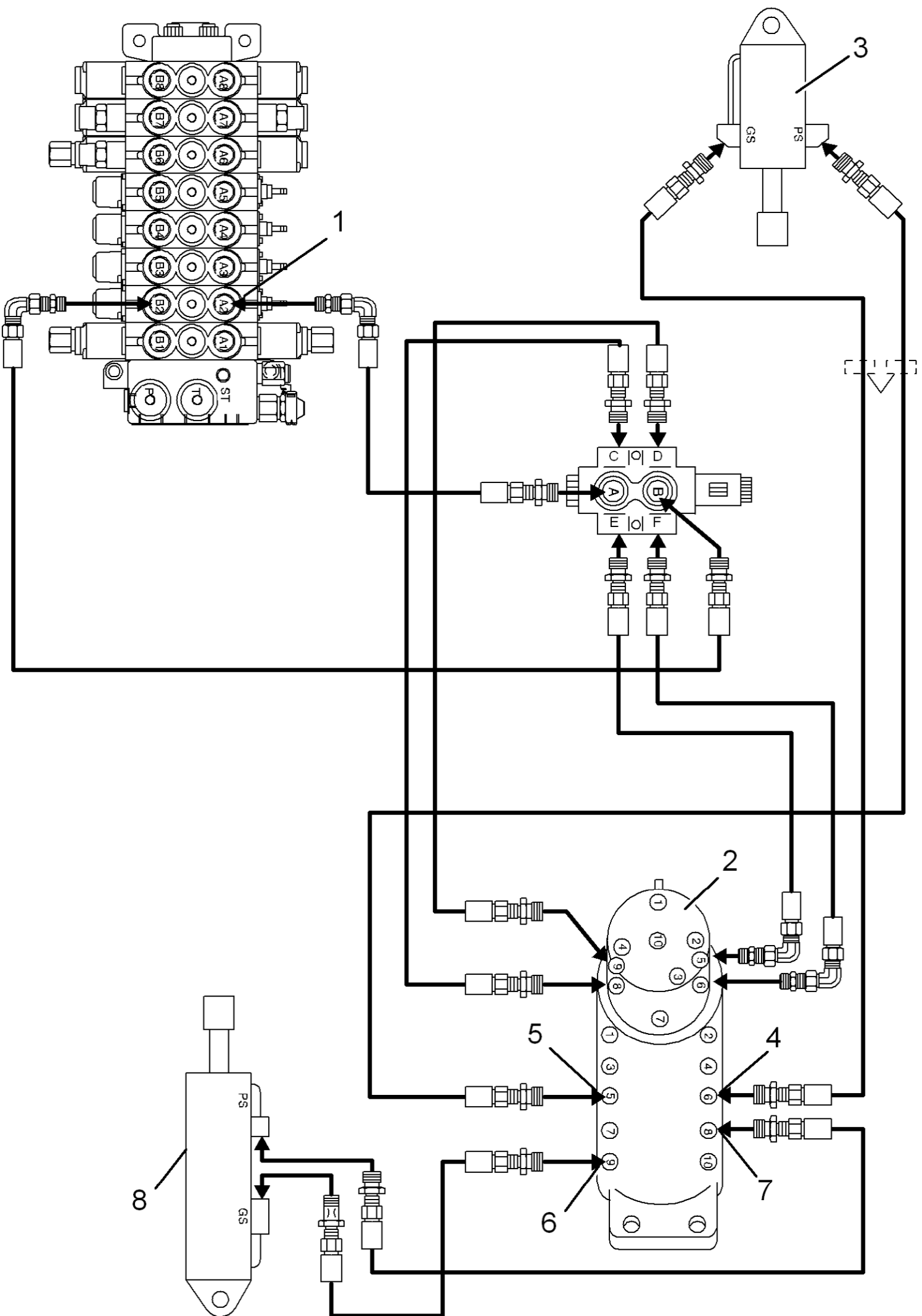


Figure 1

1. Dozer blade control element
2. Rotary oil distributor
3. Dozer blade cylinder
4. Piston side (extend cylinder)
5. Piston rod side (retract cylinder)
6. Piston side (extend cylinder)
7. Piston rod side (retract cylinder)
8. Cylinder for adjustable track width





Construction Equipment

PROSIS Service Information

Document Title : Hydraulic circuit for slewing gear and offset	Function Group : 9121	Information Type : Service Information	Print Date : 23/10/2011
Profile : CEX, EC15B XTV (Volvo) [GB]			

Hydraulic circuit for slewing gear and offset

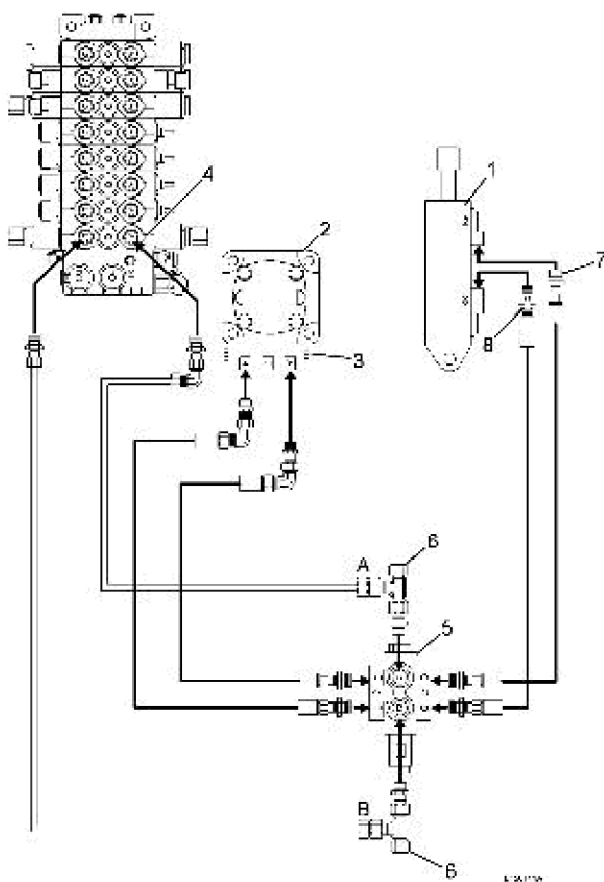
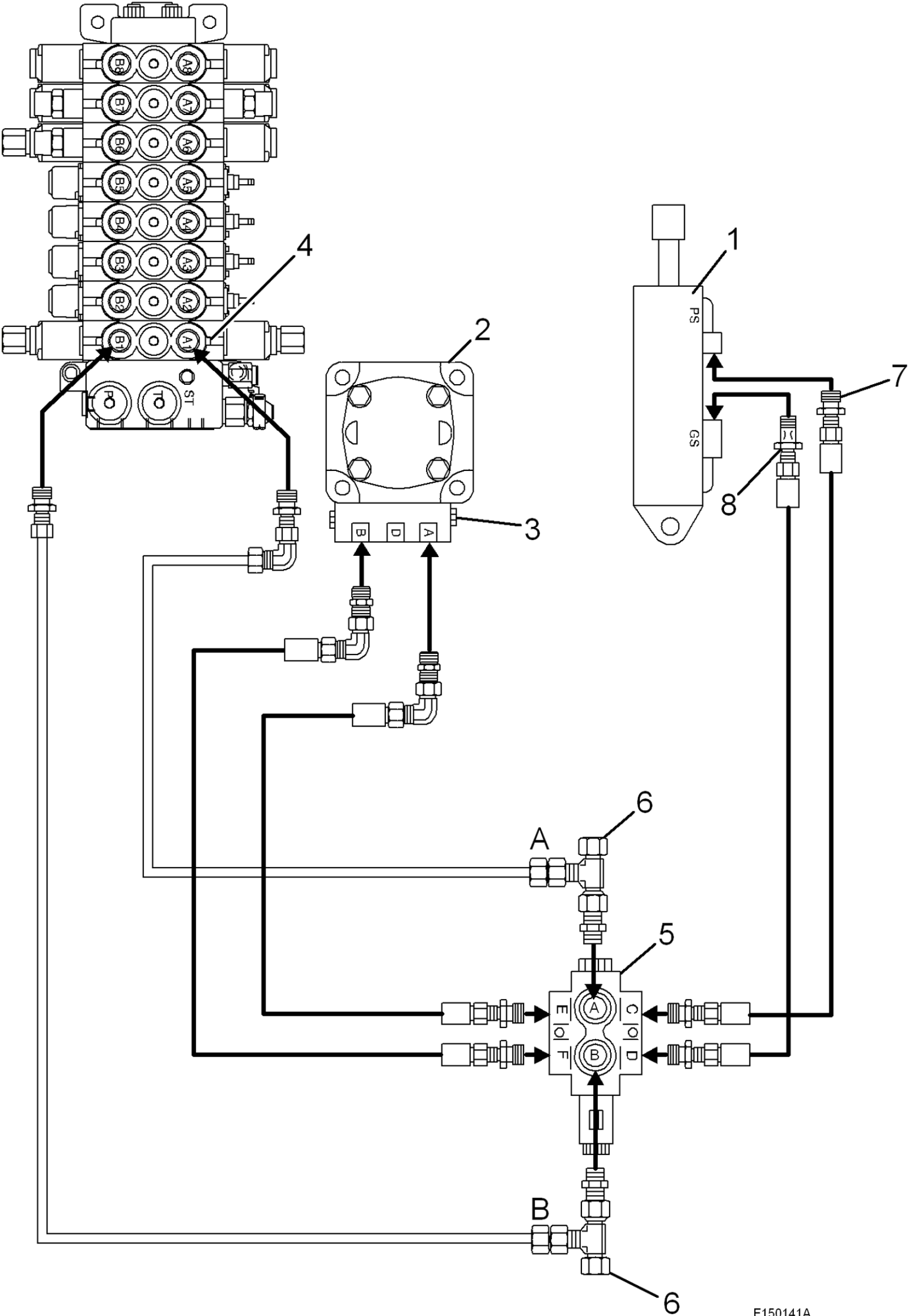


Figure 1

1. Offset cylinder
2. Hydraulic slewing gear motor
3. Control valve for slewing gear / crossover valve
4. Control element for slewing gear – offset cylinder
5. Solenoid valve for slewing gear / offset
6. Pressure test port
7. Piston rod side (retract cylinder)
8. Piston side (extend cylinder)





Construction Equipment

PROSIS Service Information

Document Title : Hydraulic circuit for boom	Function Group : 9121	Information Type : Service Information	Print Date : 23/10/2011
Profile : CEX, EC15B XTV (Volvo) [GB]			

Hydraulic circuit for boom

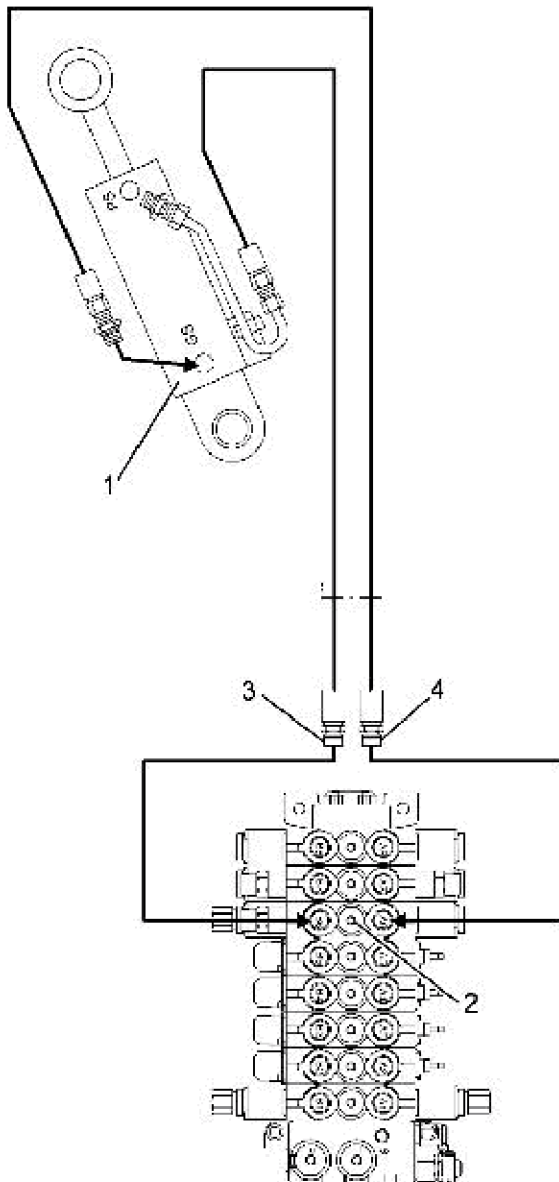
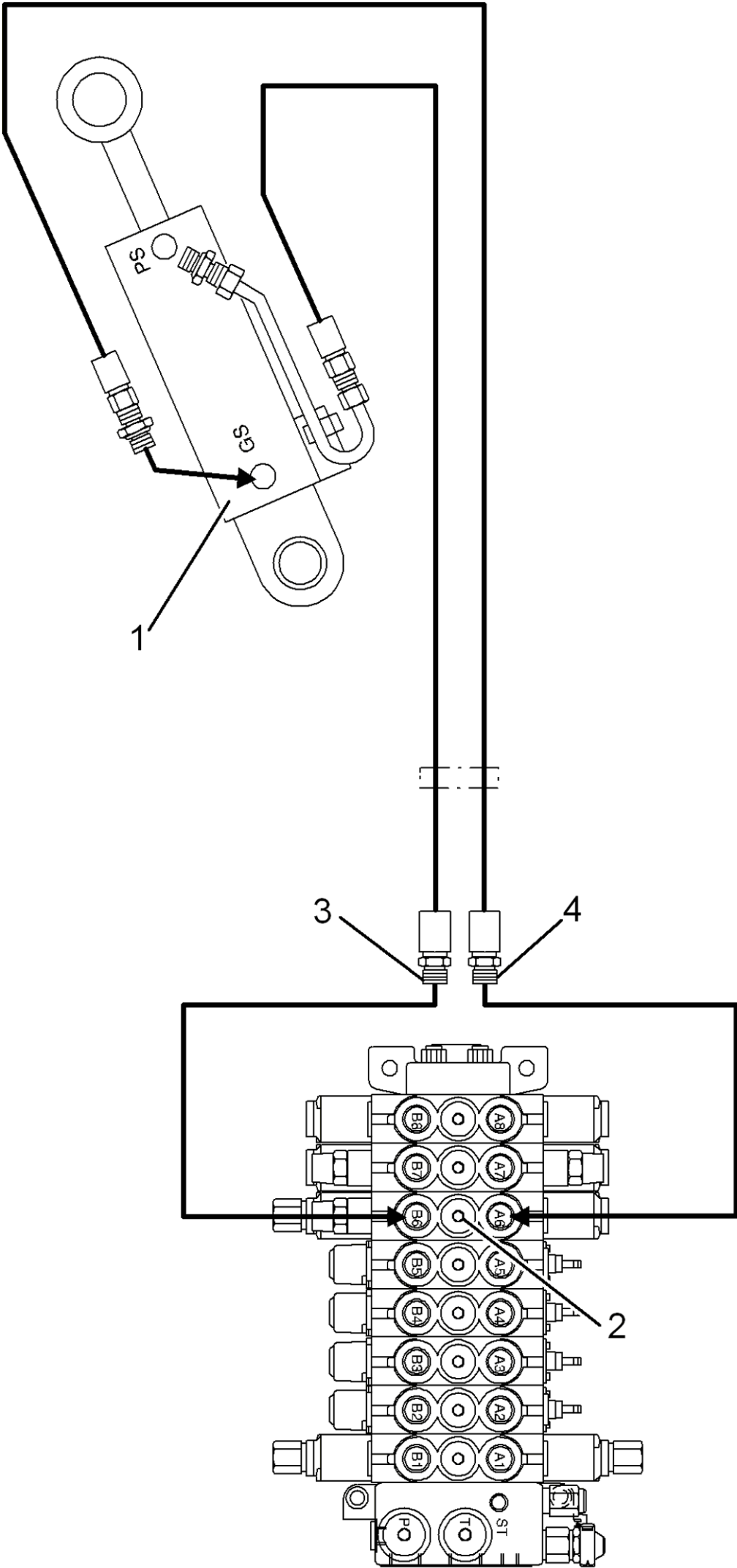


Figure 1

EIX 3

1. Boom cylinder
2. Boom control element
3. Piston rod side (retract cylinder)
4. Piston side (extend cylinder)





Construction Equipment

PROSIS Service Information

Document Title : Hydraulic circuit for dipper arm	Function Group : 9121	Information Type : Service Information	Print Date : 23/10/2011
Profile : CEX, EC15B XTV (Volvo) [GB]			

Hydraulic circuit for dipper arm

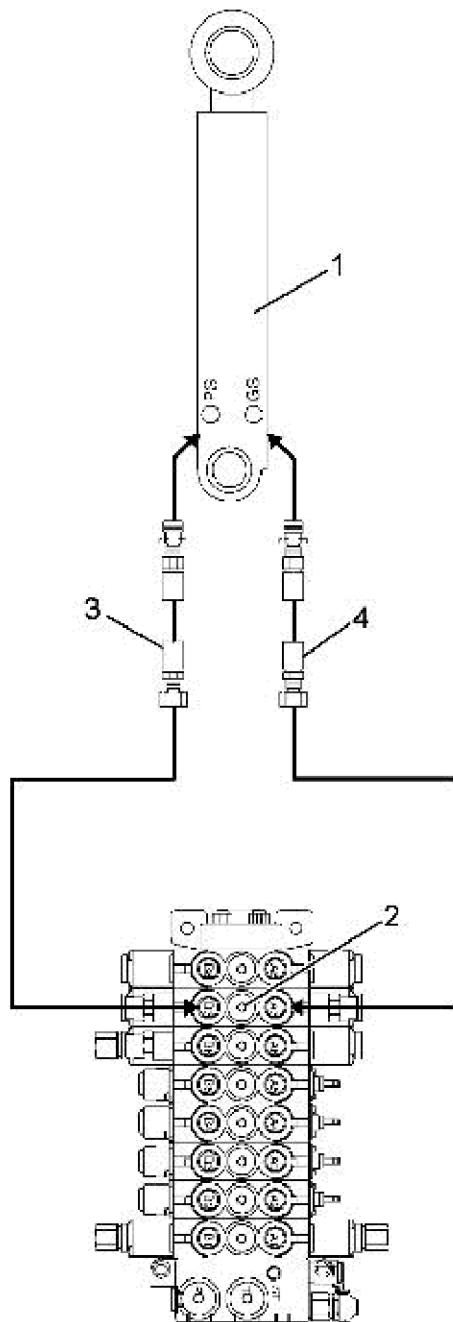
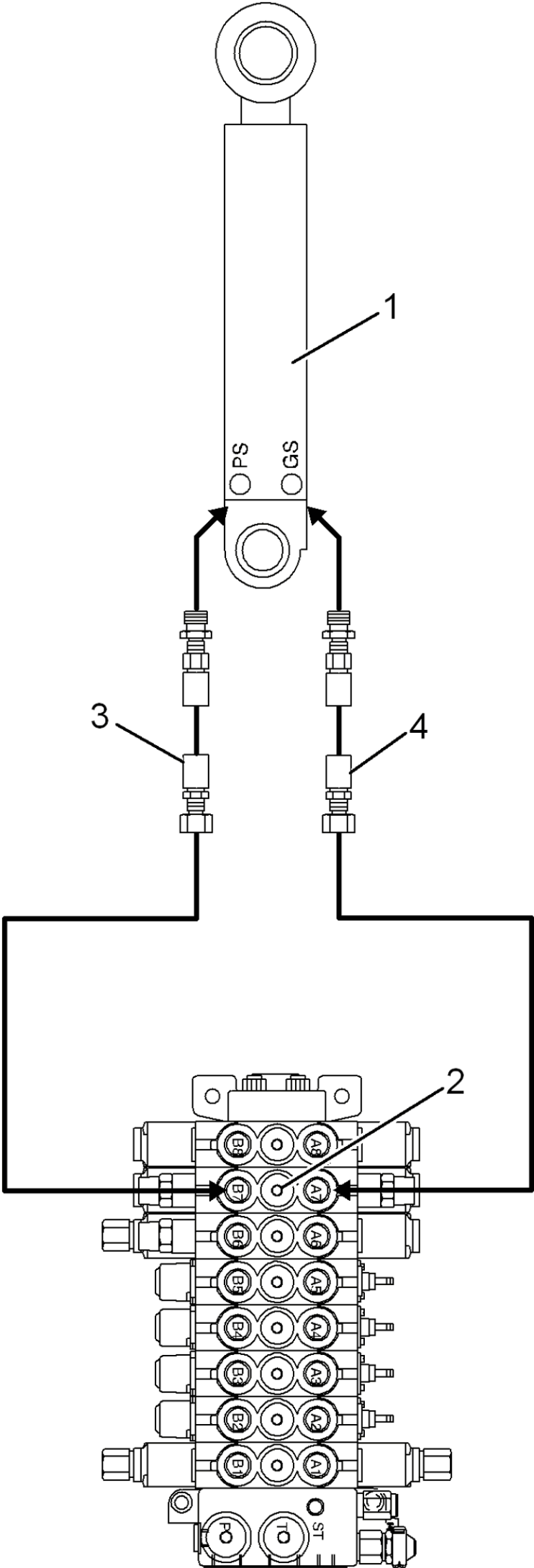


Figure 1

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1. Dipper cylinder
2. Control element for dipper arm cylinder
3. Piston rod side (retract cylinder)
4. Piston side (extend cylinder)





Construction Equipment

PROSIS Service Information

Document Title : Hydraulic circuit for bucket	Function Group : 9121	Information Type : Service Information	Print Date : 23/10/2011
Profile : CEX, EC15B XTV (Volvo) [GB]			

Hydraulic circuit for bucket

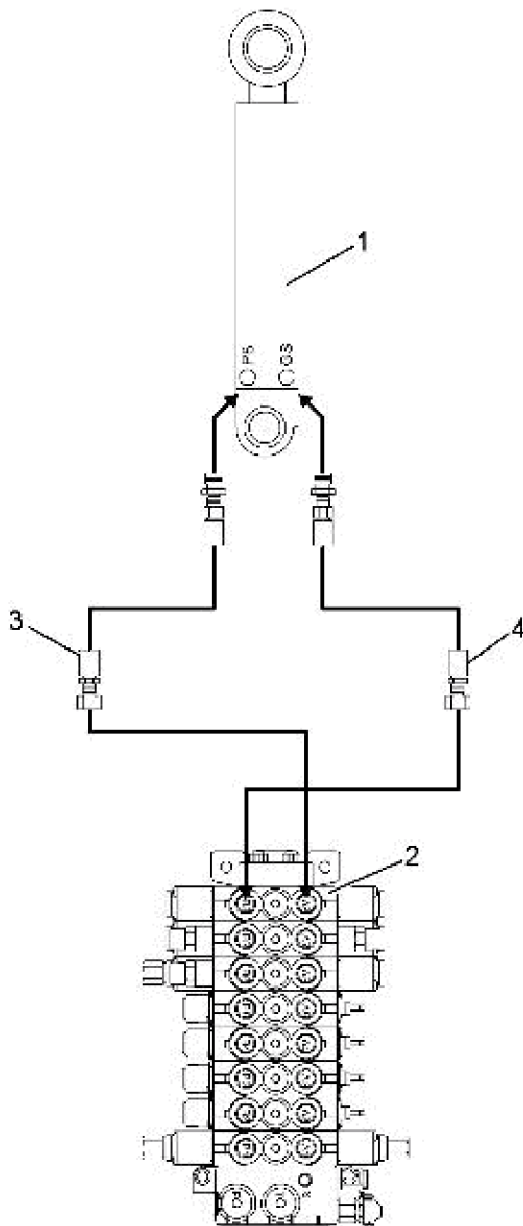
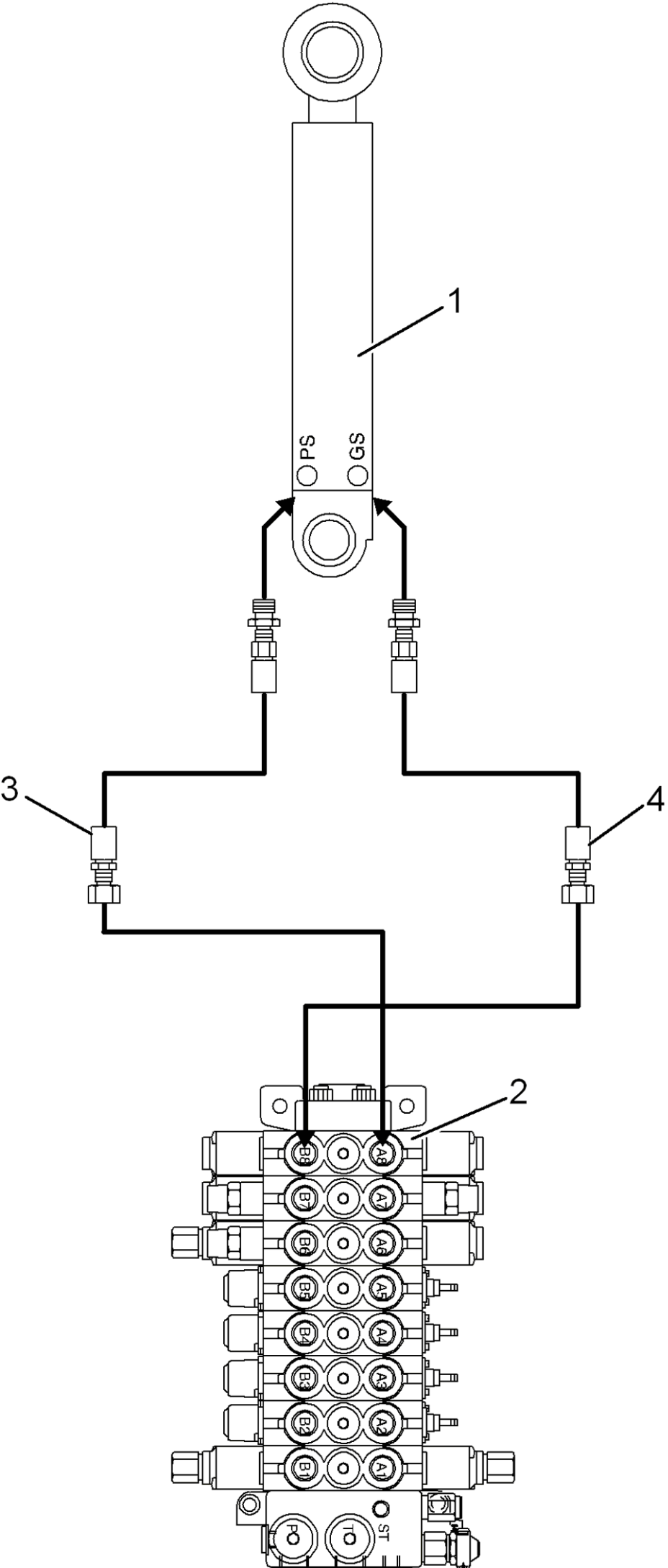


Figure 1

E152144

1. Bucket cylinder
2. Bucket cylinder control element
3. Piston rod side (retract cylinder)

4. Piston side (extend cylinder)





Construction Equipment

PROSIS Service Information

Document Title : Return flow, hydraulic circuit for accessories EC15B	Function Group : 9121	Information Type : Service Information	Print Date : 23/10/2011
Profile : CEX, EC15B XTV (Volvo) [GB]			

Return flow, hydraulic circuit for accessories EC15B

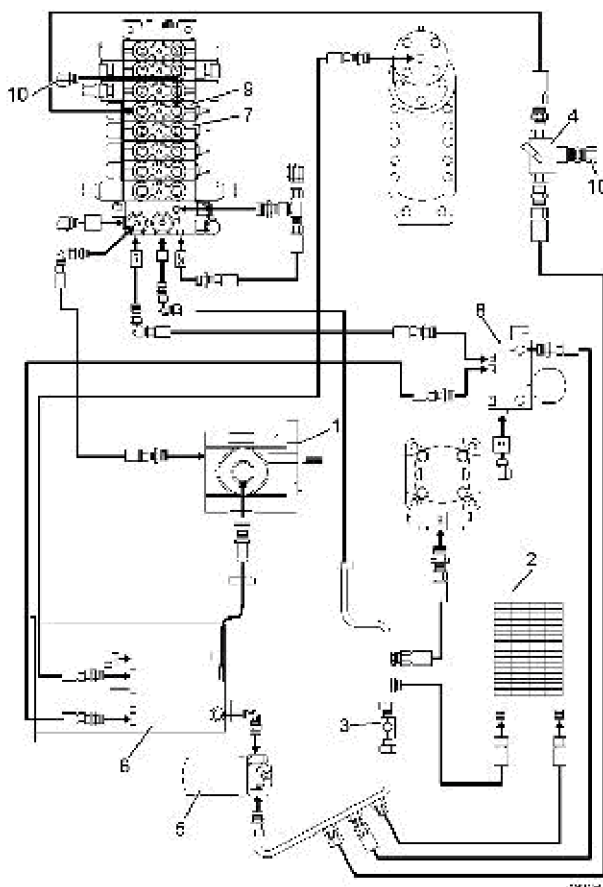
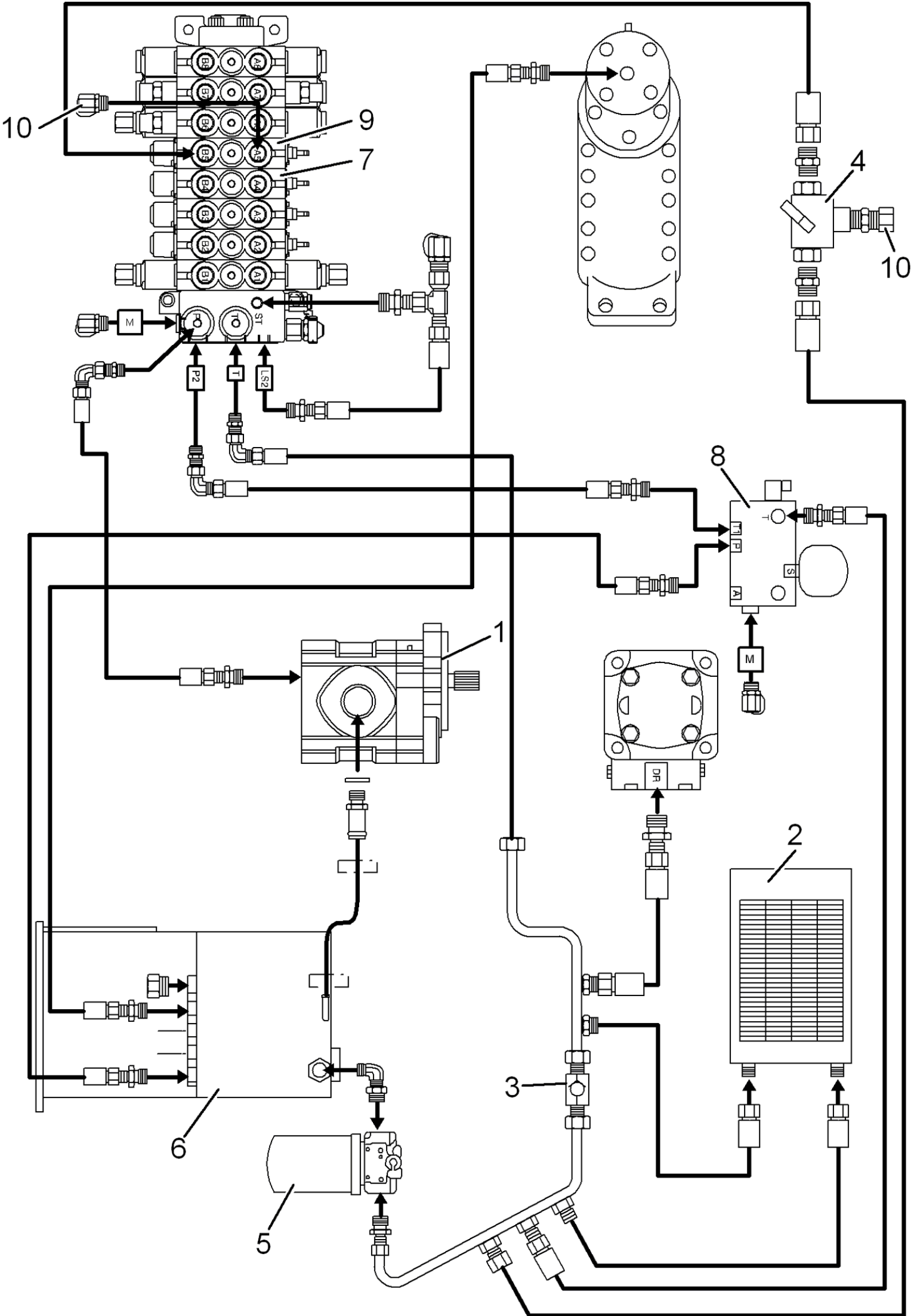


Figure 1

- | | |
|-------------------|---------------------------------------|
| 1 Hydraulic pump | 6 Hydraulic oil tank |
| 2 Oil cooler | 7 Control valve block with 8 elements |
| 3 By-pass valve | 8 Hydraulic servo valve block |
| 4 Three-way valve | 9 Control element for accessories |
| 5 Oil filter | 10 Accessory connections |





Construction Equipment

PROSIS Service Information

Document Title : Return flow, hydraulic circuit for accessories EC20B	Function Group : 9121	Information Type : Service Information	Print Date : 23/10/2011
Profile : CEX, EC15B XTV (Volvo) [GB]			

Return flow, hydraulic circuit for accessories EC20B

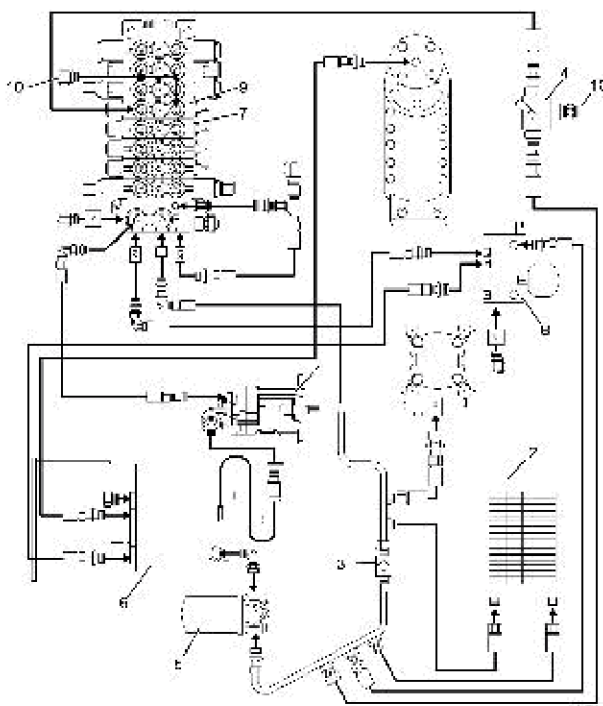
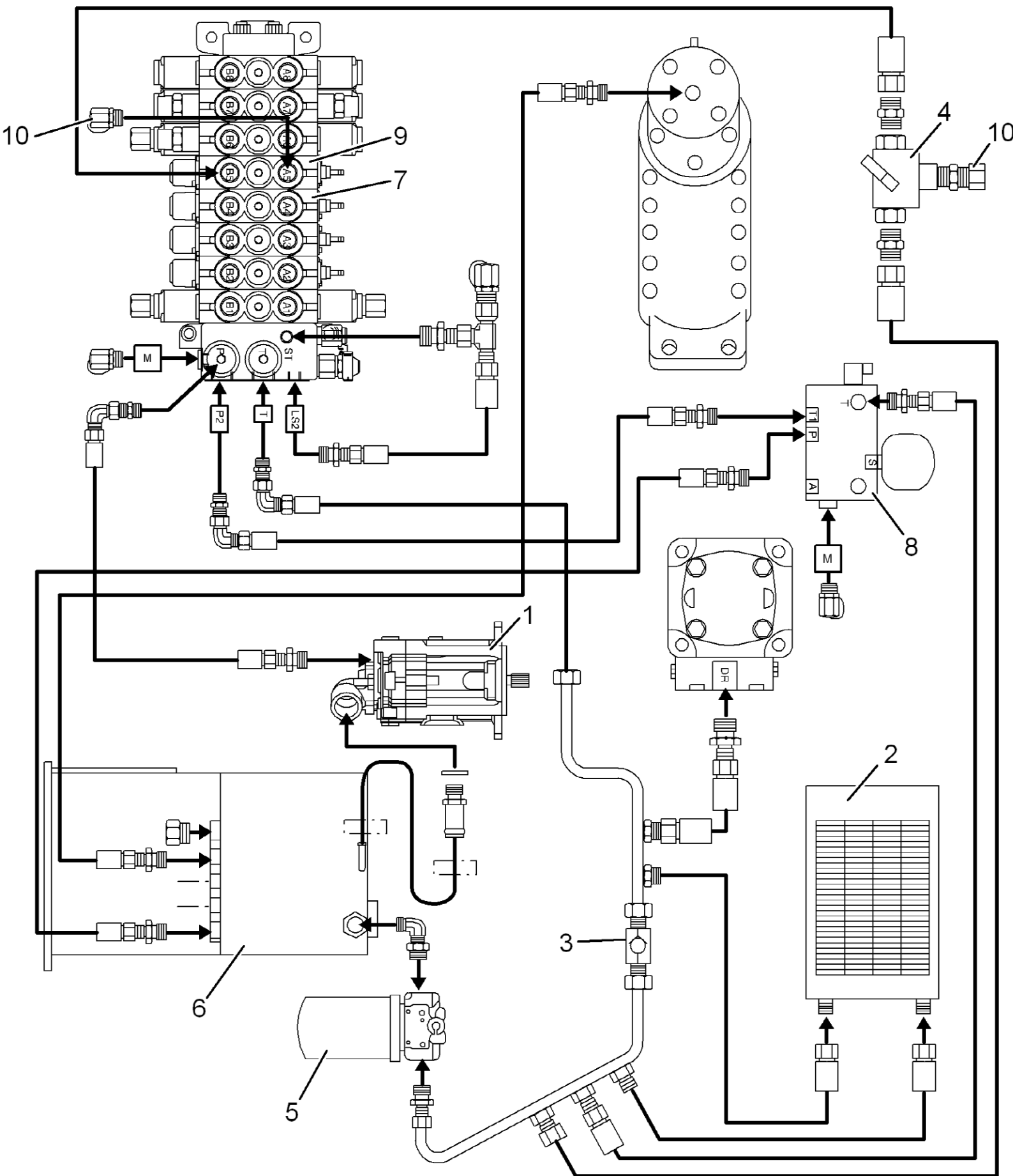


Figure 1

- | | |
|-------------------|---------------------------------------|
| 1 Hydraulic pump | 6 Hydraulic oil tank |
| 2 Oil cooler | 7 Control valve block with 8 elements |
| 3 By-pass valve | 8 Hydraulic servo valve block |
| 4 Three-way valve | 9 Control element for accessories |
| 5 Oil filter | 10 Accessory connections |



VOLVO

Construction Equipment

PROSIS Service Information

Document Title : Tests and adjustments of the pressure relief valves	Function Group : 9122	Information Type : Service Information	Print Date : 23/10/2011
Profile : CEX, EC15B XTV (Volvo) [GB]			

Tests and adjustments of the pressure relief valves

In order to assure proper elimination of fault, inspection or adjustment the following precautions must be implemented when using the table of standard values.

The standard values in the table are based on several test results as well as standard values of the machine when it leaves the machine. Sie sind als Bezugswerte zu betrachten, die verwendet werden, um sich nach der Ausführung einer Störungsbeseitigung ein Urteil zu bilden.

These standard values cannot be used as standards to justify any claims. They should be applied under consideration of all ambient factors, in order to rule out any precipitated conclusions.

**WARNING!**

Pressure relief valves must only be checked and adjusted by appropriately trained VOLVO service engineers, who are fully acquainted with the machine. If any settings are changed by persons who are not authorized for this work, the warranty will become null and void. During work the following safety regulations must generally be observed.

Avoid contact with hot and/or pressurized hydraulic oil. Always close access doors to service points before pressurizing the system in order to protect persons from hydraulic oil jets, which may be dangerous even under considerably low pressures.

Use pressure gauges with long test hoses so that the pressure can be read at a safe distance. Make sure that these lines and hoses are not pinched in doors.

The first lever or pedal movement should be performed slowly to prevent sudden or unexpected machine movements and pressures in excess of the specified pressures. Interrupt the pressure increase when the machine has reached the specified pressure. Do not try to exceed the specified limit value.

When using adjustment devices with unknown sensitivity adjust the pressure in small increments. This is of special importance for the auxiliary hydraulic circuit in which the pressure builds up immediately when starting the engine.



Construction Equipment

PROSIS Service Information

Document Title : Checking and adjusting the pilot pressure	Function Group : 9122	Information Type : Service Information	Print Date : 23/10/2011
Profile : CEX, EC15B XTV (Volvo) [GB]			

Checking and adjusting the pilot pressure

Test

Remove the caps from pressure test ports (P2 and LS) and connect a pressure tester to P2.

Measurement

Start the engine and accelerate to maximum speed. Read the pilot pressure of 32 bar on the display of the pressure tester.

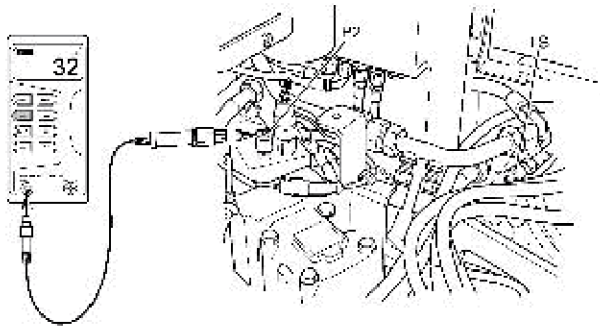


Figure 1

P2 Pressure test port
LS Pressure test port

Connect the pressure tester also to (LS).

NOTE Measure the pressure differential (Delta P) across non-return valve (1) on the control block (return line).

Pilot pressure - LS pressure = Delta P

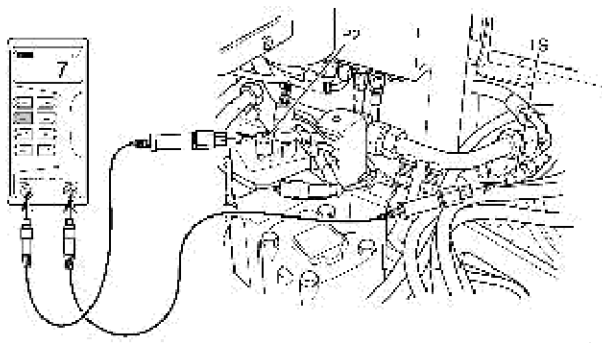


Figure 2

Adjustment

Slacken counter nut (1) (19 mm spanner). Use an Allen key (3/16") to turn screw (2) either in clockwise direction to increase the pressure or in anti-clockwise direction to reduce the pressure.

Tighten counter nut (1).

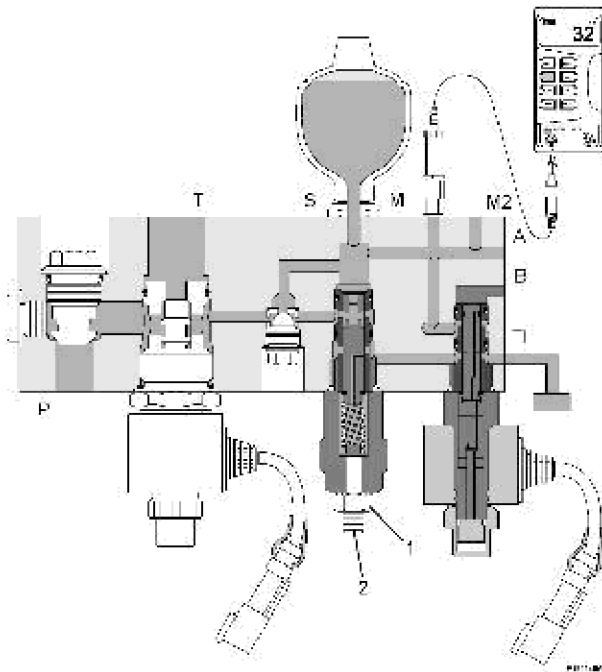
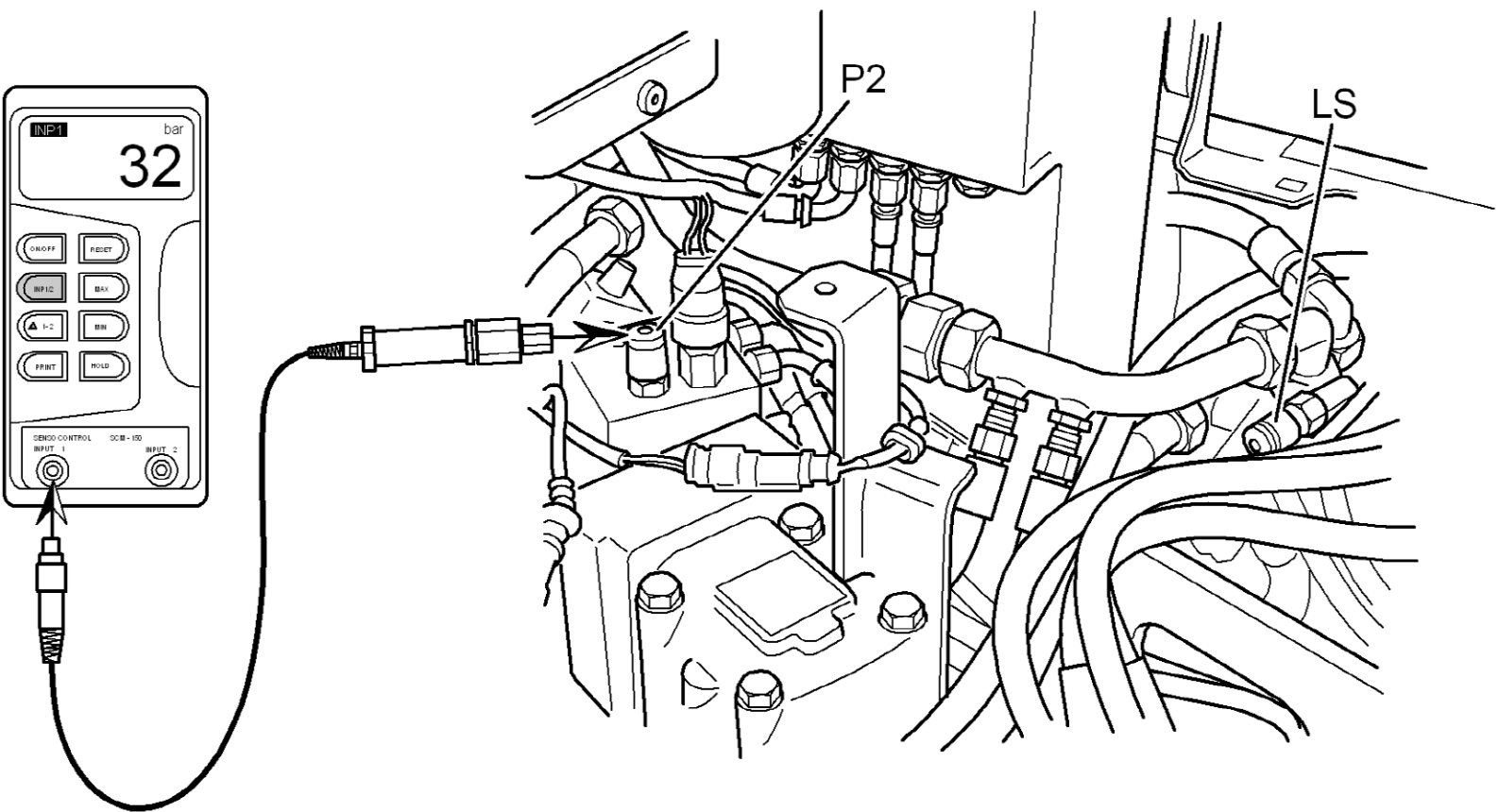
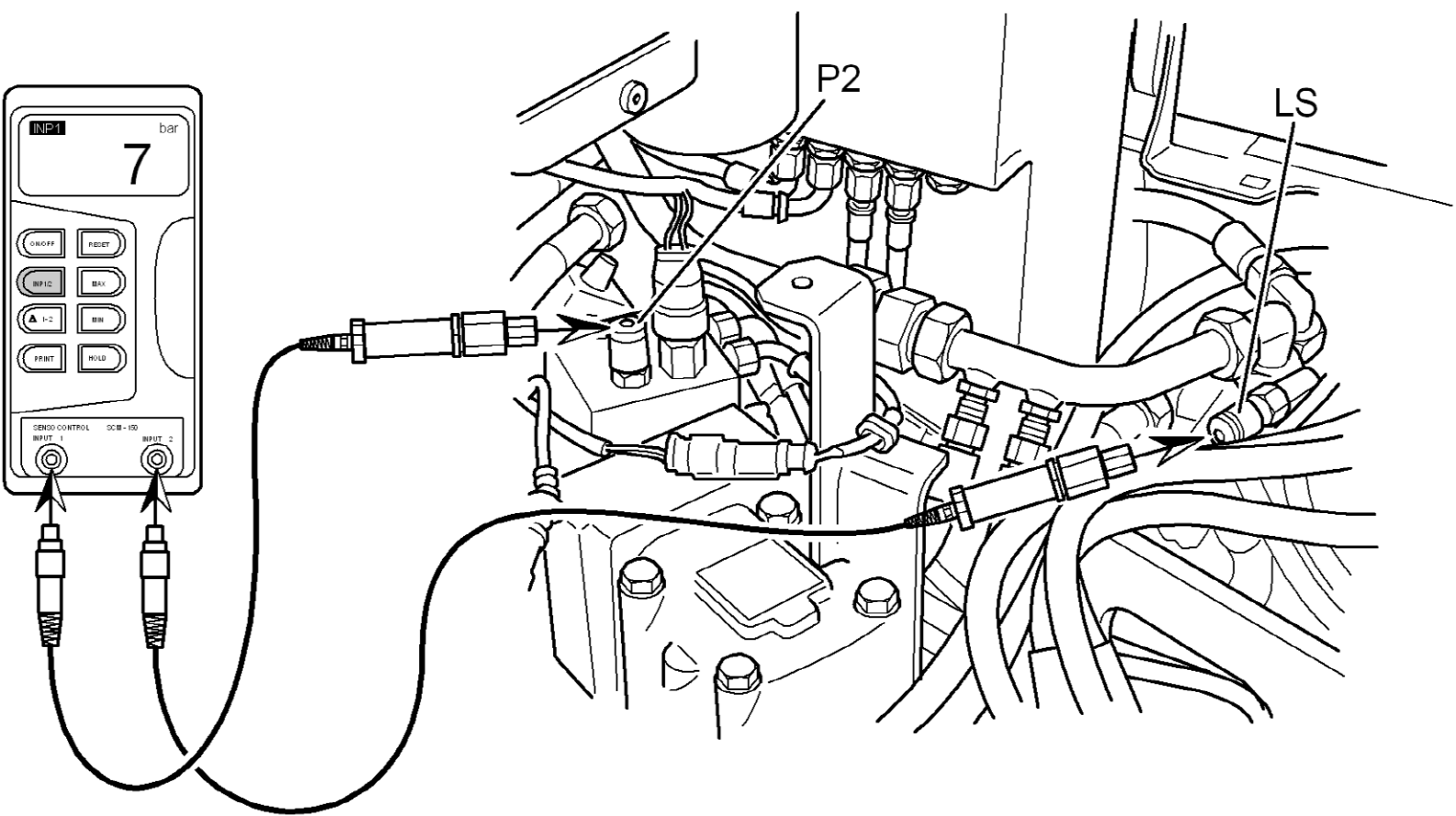
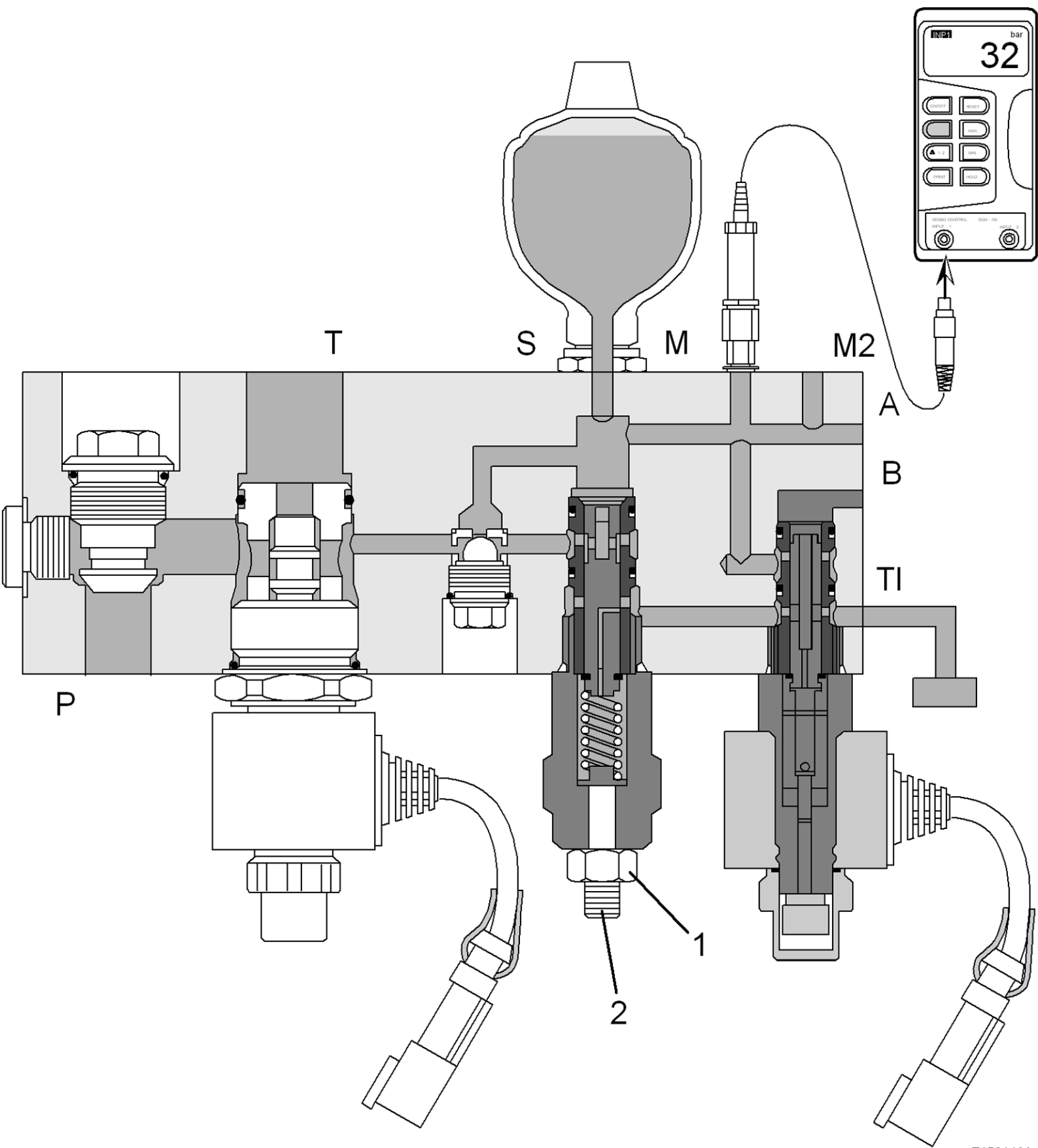


Figure 3







VOLVO

Construction Equipment

PROSIS Service Information

Document Title : Stand-by pressure	Function Group : 9122	Information Type : Service Information	Print Date : 23/10/2011
Profile : CEX, EC15B XTV (Volvo) [GB]			

Stand-by pressure

Test (stand-by pressure)

Remove the caps from pressure test ports (P1 and LS) and connect a pressure tester.

Measurement

Start the engine and accelerate to maximum speed.

Do not operate the joystick or any other function.

Check the stand-by pressure as pressure differential (Delta P) between high pressure side P1 and load sensing LS (pre-setting).

High pressure - LS pressure = Delta P

This pressure depends on the setting of the pressure control valve and is set in the factory.

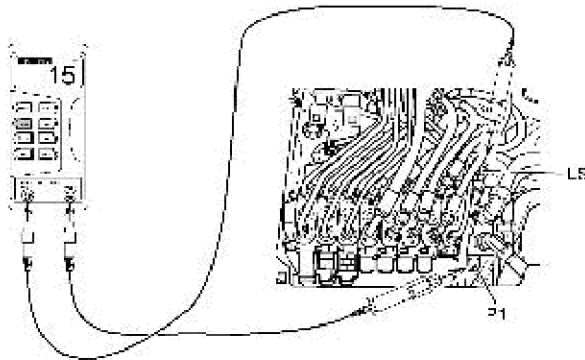
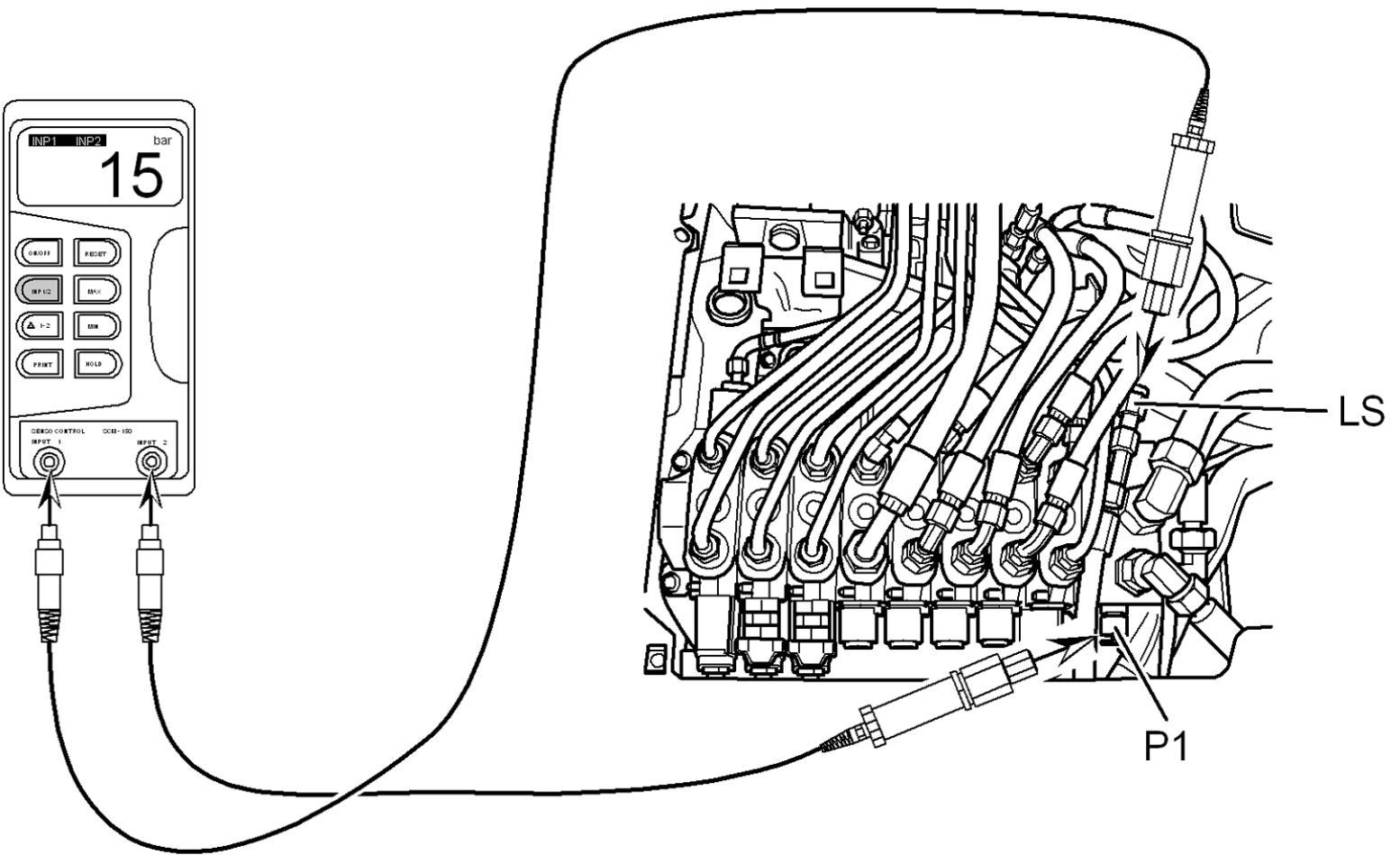


Figure 1



VOLVO

Construction Equipment

PROSIS Service Information

Document Title : Checking and adjusting the pressure relief valve	Function Group : 9122	Information Type : Service Information	Print Date : 23/10/2011
Profile : CEX, EC15B XTV (Volvo) [GB]			

Checking and adjusting the pressure relief valve

Check

Remove the cap from pressure test ports P1 and connect a pressure tester.

Measurement

Start the engine and accelerate to maximum speed.

Raise the dozer blade cylinder against the end stop and hold it in this position.

The pressure tester must now indicate a high pressure ([See further](#)). Perform another movement to confirm.

This pressure test can also be performed on port LS (see [See figure](#)).

**WARNING!**

Change the pressure tester over to port LS and do not set to Δp .

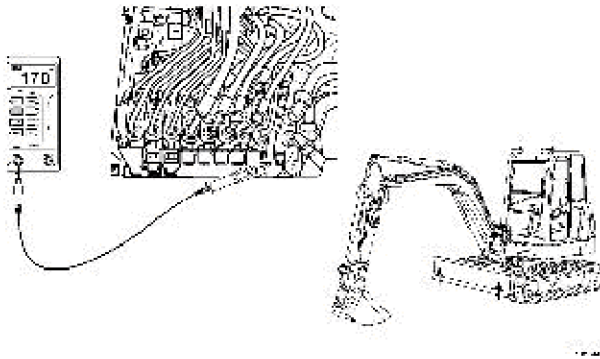
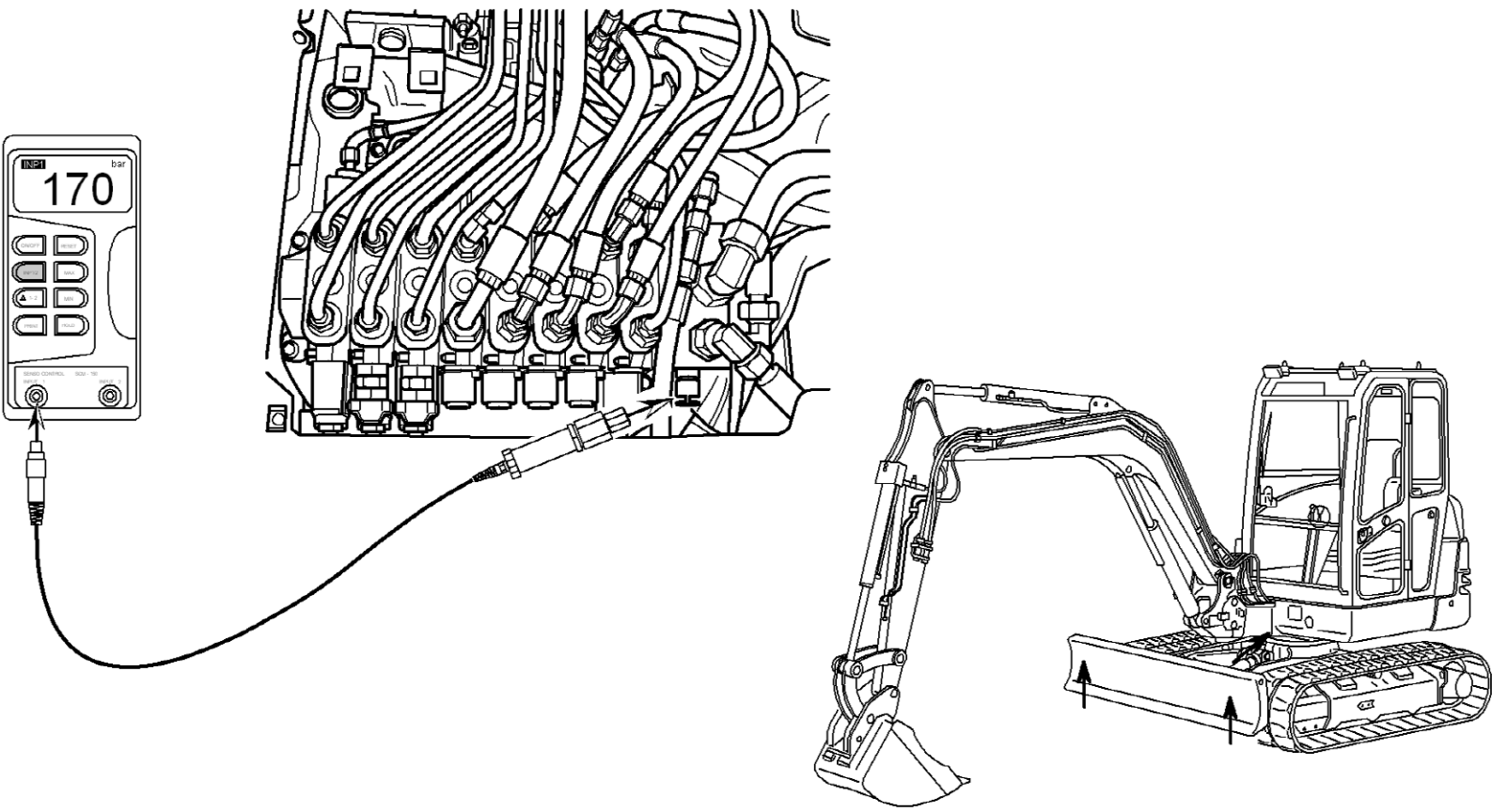


Figure 1





Construction Equipment

PROSIS Service Information

Document Title : Adjustment	Function Group : 9122	Information Type : Service Information	Print Date : 23/10/2011
Profile : CEX, EC15B XTV (Volvo) [GB]			

Adjustment

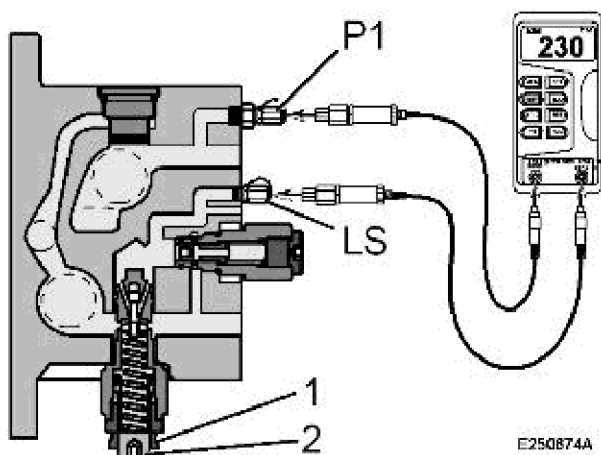


Figure 1

Remove the cap from the pressure relief valve on the supply element on the control block.

Slacken counter nut (1) (19 mm spanner). Use a 5 mm Allen key to turn screw (2) either in clockwise direction to increase the pressure or in anti-clockwise direction to reduce the pressure.

If the pressure of HP [See further](#) is not reached, adjust pressure regulator DR. Unscrew cap (1) from pressure control valve on hydraulic pump.

Slacken counter nut (2) (17 mm spanner). Use a 3 mm Allen key (4) to turn screw (3) either in clockwise direction to increase the pressure or in anti-clockwise direction to reduce the pressure.

Turn cap (1) onto the pressure control valve.

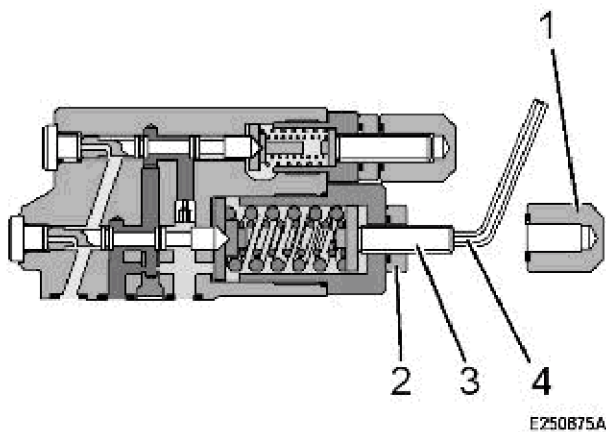
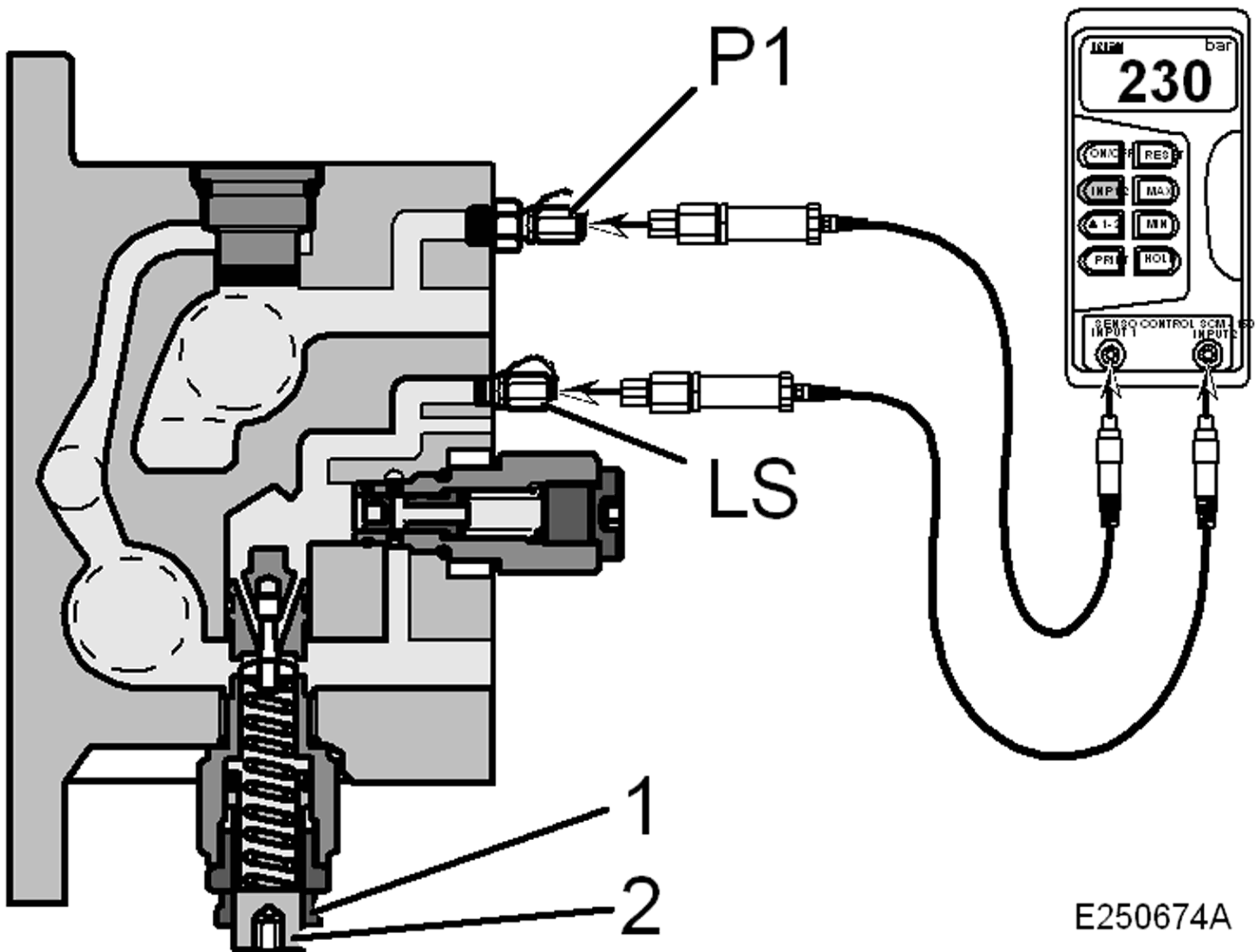
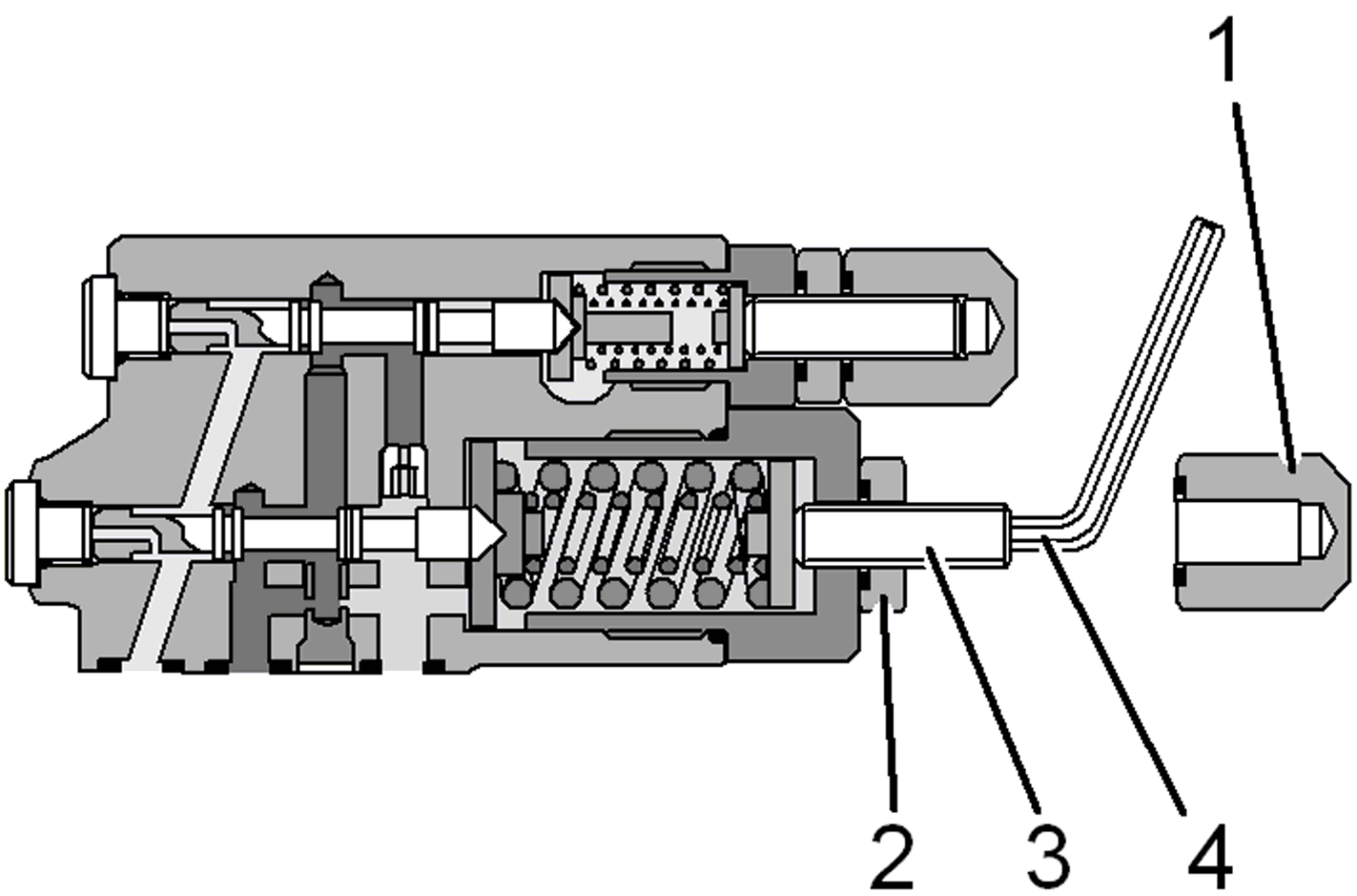


Figure 2



E250674A



E250675A

VOLVO

Construction Equipment

PROSIS Service Information

Document Title : Adjustment of secondary valves Test and adjustment procedure	Function Group : 9123	Information Type : Service Information	Print Date : 23/10/2011
Profile : CEX, EC15B XTV (Volvo) [GB]			

Adjustment of secondary valves Test and adjustment procedure

Measurement

Disconnect the hose from the control valve. Connect hand pump (P) with pressure gauge (A), 0 - 400 bar, to port A8 on the control valve block.

Test

Engine shut down. Operate the hand pump to increase the pressure to the required value. See technical data for adjustment value. When the adjusted safety pressure is reached the valve will open.

NOTE All secondary valves must be checked in the same way.

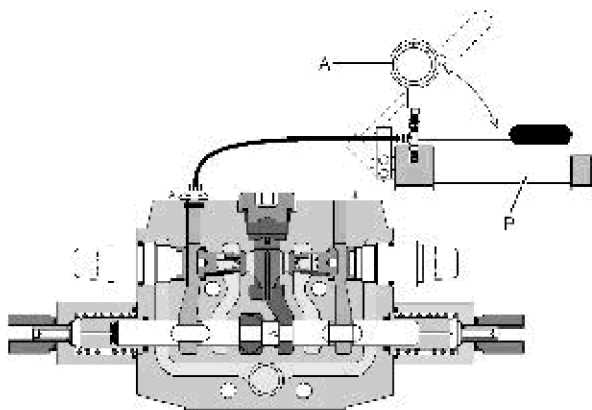
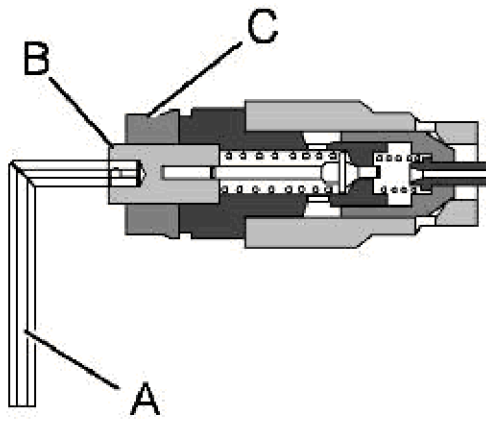


Figure 1

- A Pressure gauge
- P pump



E250592A

Figure 2

- 1 Secondary pressure relief valve
- A Allen key
- B Screw
- C Counter nut

Adjustment

The pressure depends on the secondary pressure relief valve (1).

Remove the plastic cap from the secondary pressure relief valve. Slacken counter nut (C) and turn screw (B) with an Allen key (A) to adjust.

See technical data for adjustment value.

Turn screw (B) clockwise to INCREASE the pressure.

Turn screw (B) anti-clockwise to REDUCE the pressure.

Tighten counter nut (C) with 6 Nm while holding screw (B) with Allen key (A).

NOTE Repeat this procedure on each secondary pressure relief valve.

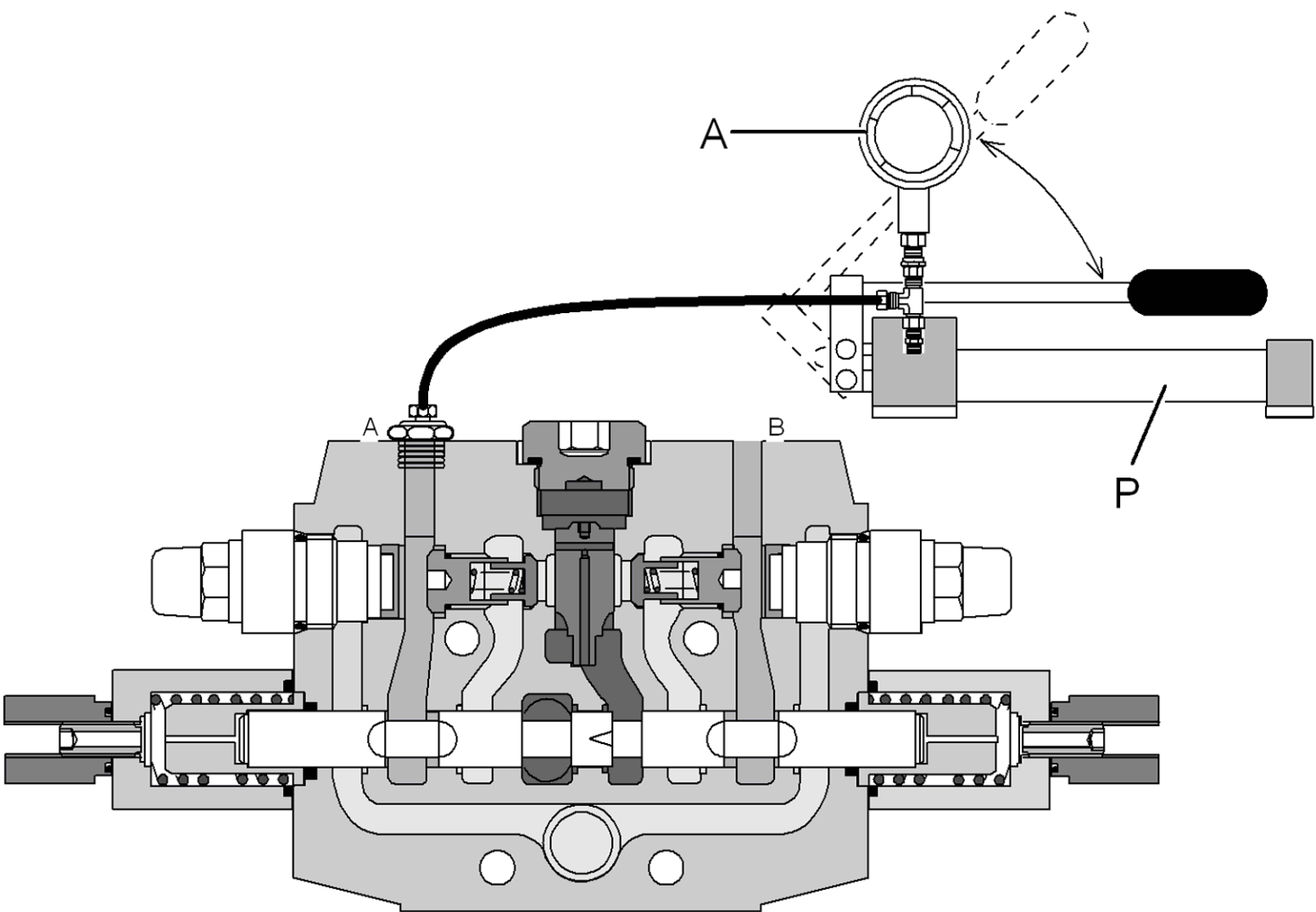


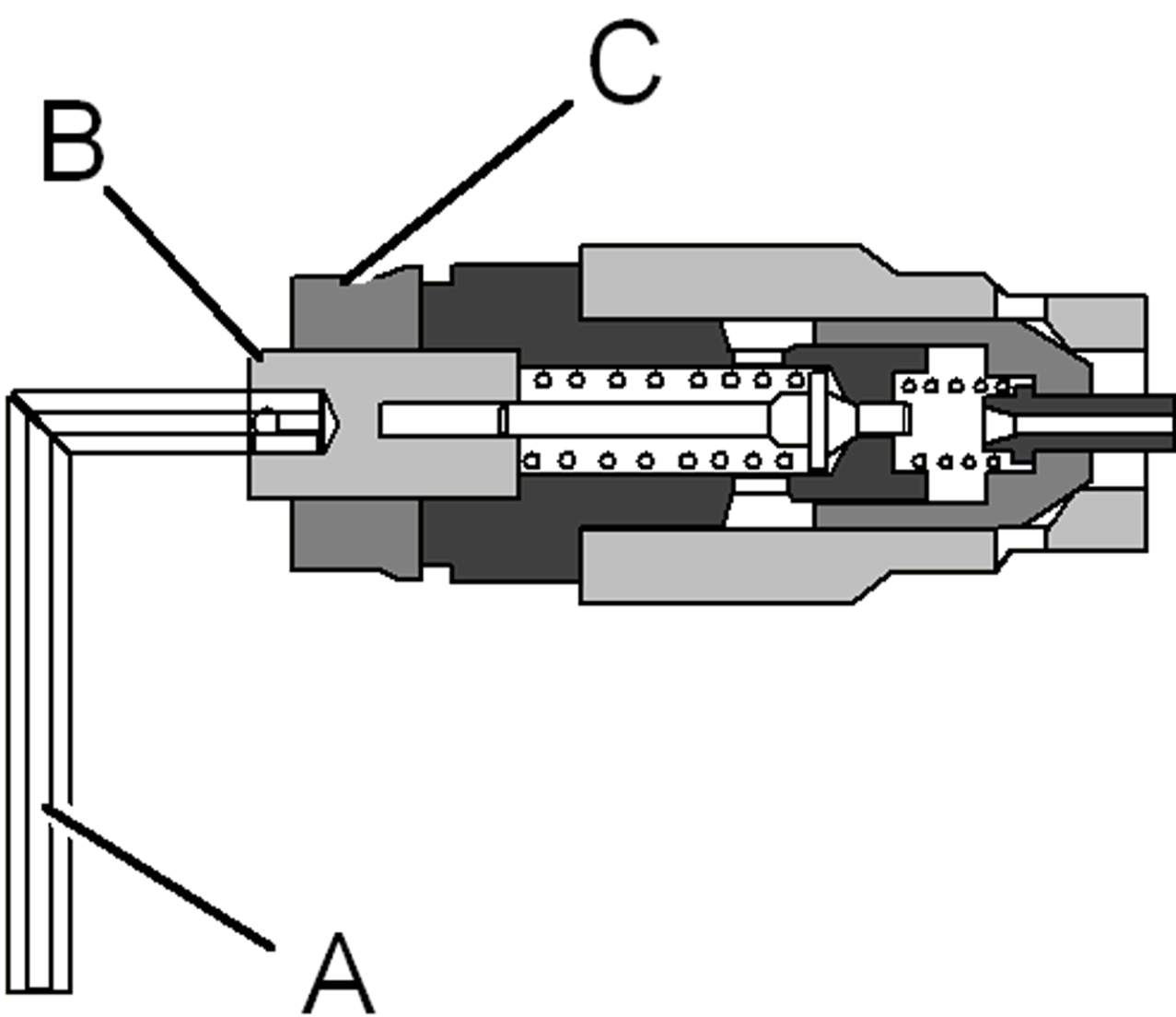
WARNING!

The secondary pressure relief valves must only be checked and adjusted by appropriately trained VOLVO service engineers, who are fully acquainted with the machine. If any settings are changed by persons who are not authorized for this work, the warranty will become null and void. During work all safety regulations must generally be observed.

The pressure setting of the high pressure relief valve must under no circumstances be raised in order to adjust the secondary pressure relief valve. Increasing the pressure setting of the main pressure relief valve just for the purpose of adjusting the secondary pressure relief valve can be very dangerous and cause bursting of the hydraulic circuit.

The adjustment of the secondary pressure relief valve must only be performed with the help of a hand pump.





E250592A

VOLVO

Construction Equipment

PROSIS Service Information

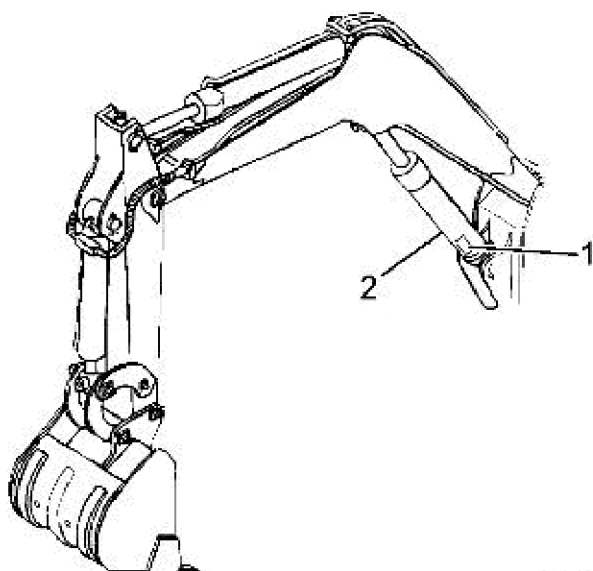
Document Title : Hose rupture valve on boom cylinder	Function Group : 9123	Information Type : Service Information	Print Date : 23/10/2011
Profile : CEX, EC15B XTV (Volvo) [GB]			

Hose rupture valve on boom cylinder

The hose rupture valve has the function to prevent the boom from dropping down and causing an accident in case of a pipe or hose failure. It also prevents creeping of the boom cylinder caused by internal leaks in the control valve block.

**WARNING!**

In case of a hose or pipe rupture do not remove the safety valve. In case of a problem consult your authorized dealer or the sales subsidiary of VOLVO.



E25C440A

Figure 1

1. Hose rupture valve
2. Boom cylinder

Hose rupture valve on boom cylinder

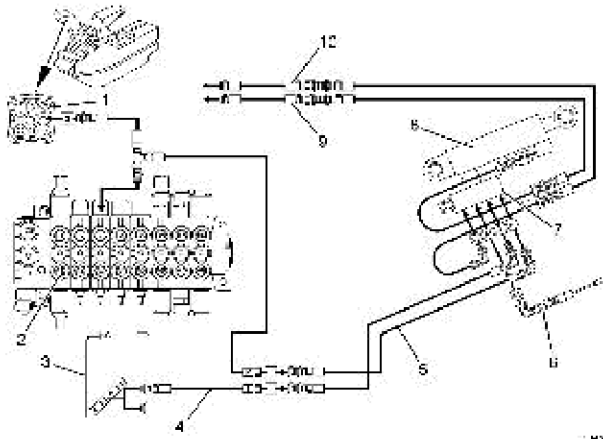
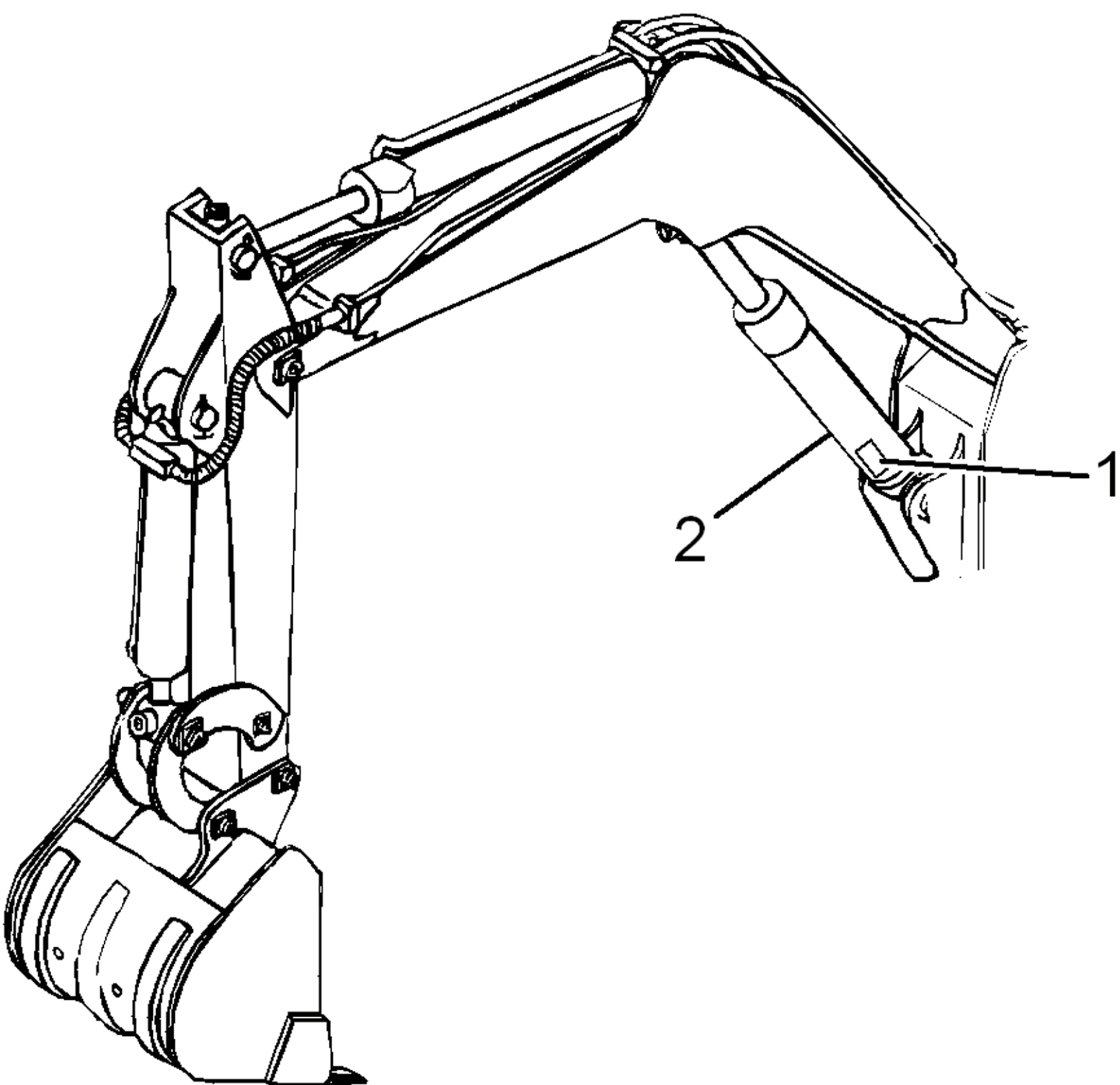
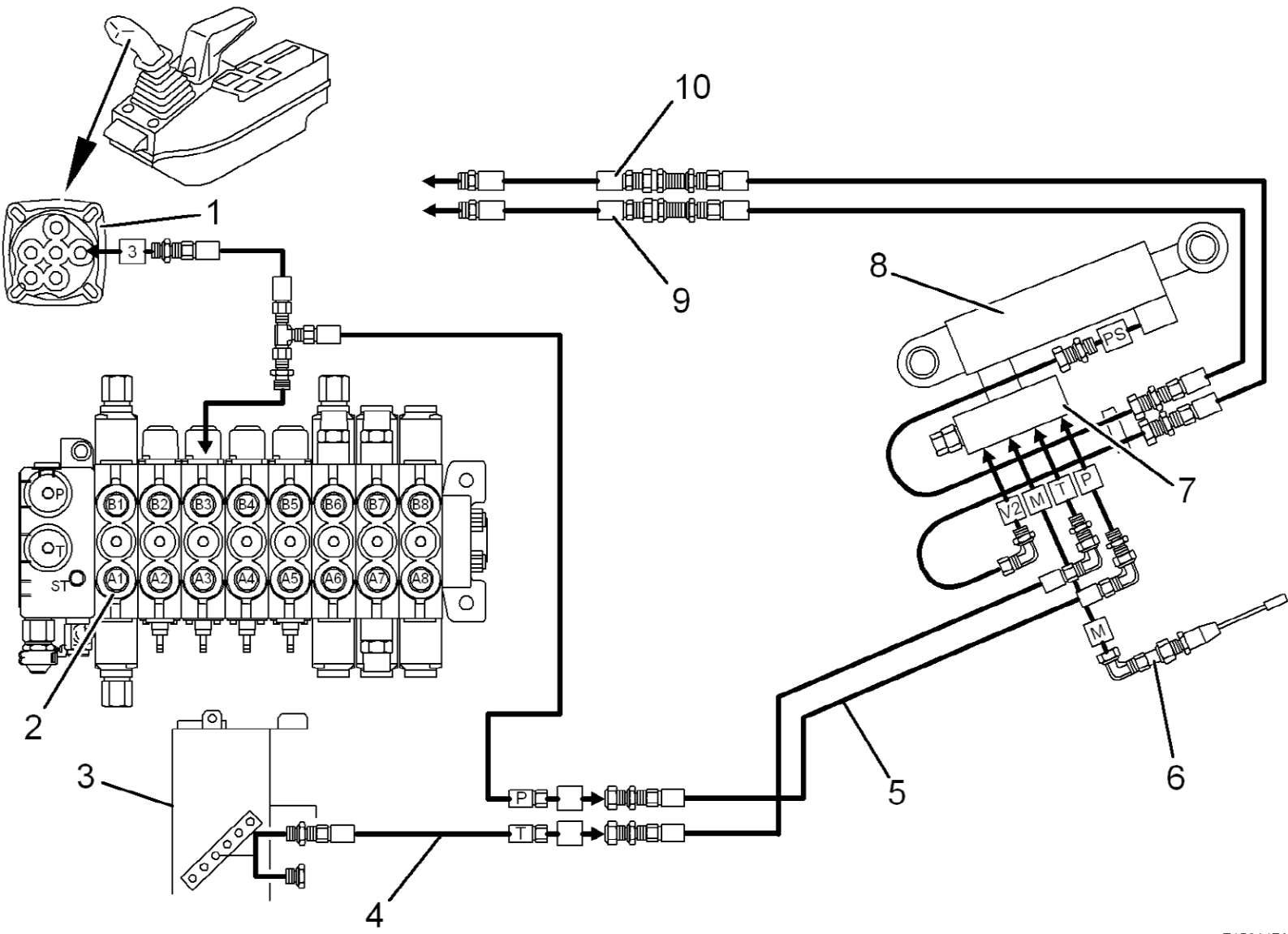


Figure 2

- | | |
|-----------------------|------------------------------------|
| 1 Pilot control valve | 6 Overload warning pressure switch |
| 2 Oil distributor | 7 Hose rupture valve |
| 3 Hydraulic oil tank | 8 Boom cylinder |
| 4 Tank return line | 9 Line - down |
| 5 Pilot pressure line | 10 Line - up |



E250440A



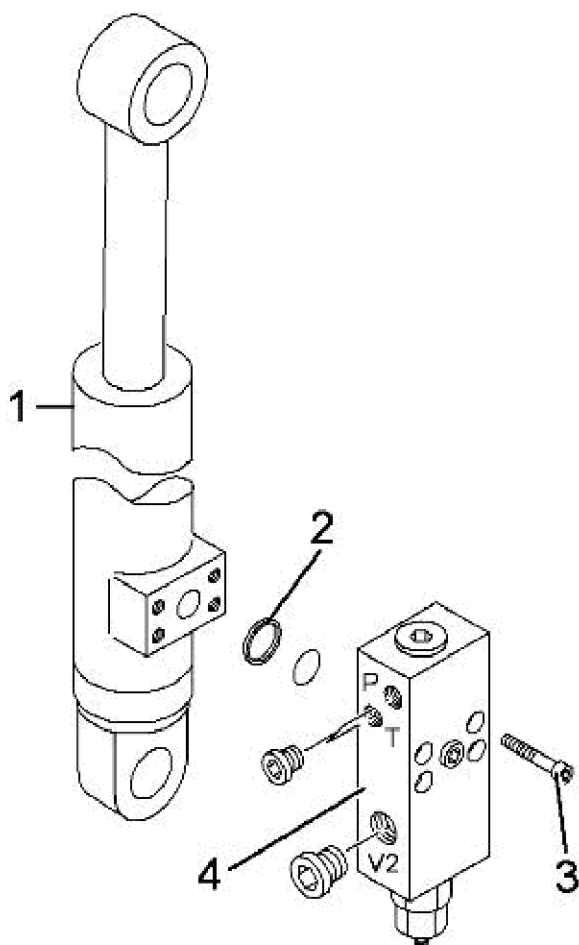


Construction Equipment

PROSIS Service Information

Document Title : Hose rupture valve on boom cylinder Test and adjustment procedure	Function Group : 9123	Information Type : Service Information	Print Date : 23/10/2011
Profile : CEX, EC15B XTV (Volvo) [GB]			

Hose rupture valve on boom cylinder Test and adjustment procedure



E250587A

Figure 1

1. Boom cylinder
2. O-ring
3. Screw
4. Hose rupture valve

Removal

Place the container to collect running out oil under the location of rupture.

Start the engine.

Operate the pilot control valve (boom down), until the working attachment rests on the ground, shut the engine

down.

Perform all movements to relieve the remaining pressure.

Carefully loosen screws (3) on the hose rupture valve (4) crosswise.

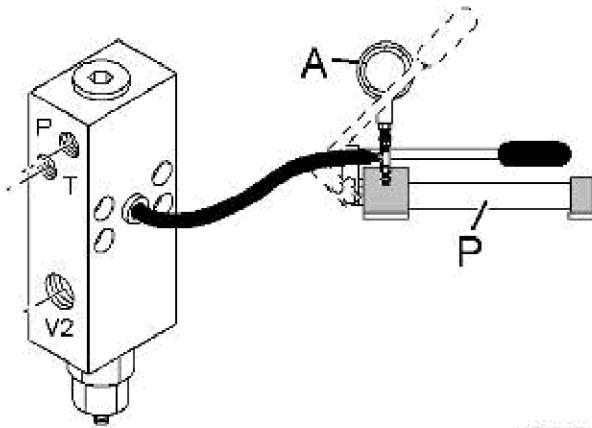
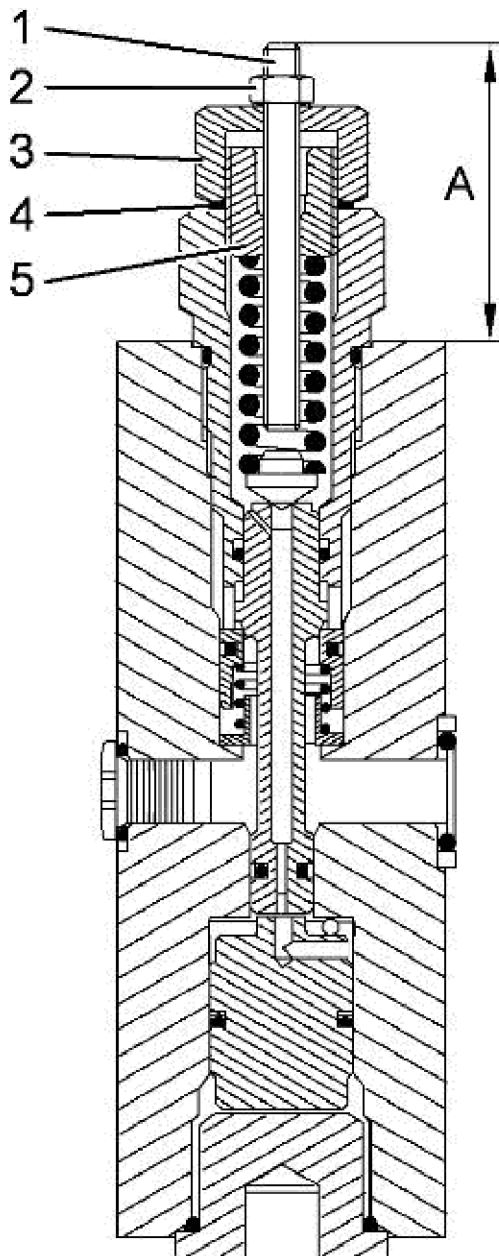


Figure 2

Measurement

Connect a hand pump (P) with pressure gauge (A) to the middle port of the hose rupture valve. Build up pressure, at 300 bar the pressure should not increase any further.



E250599A

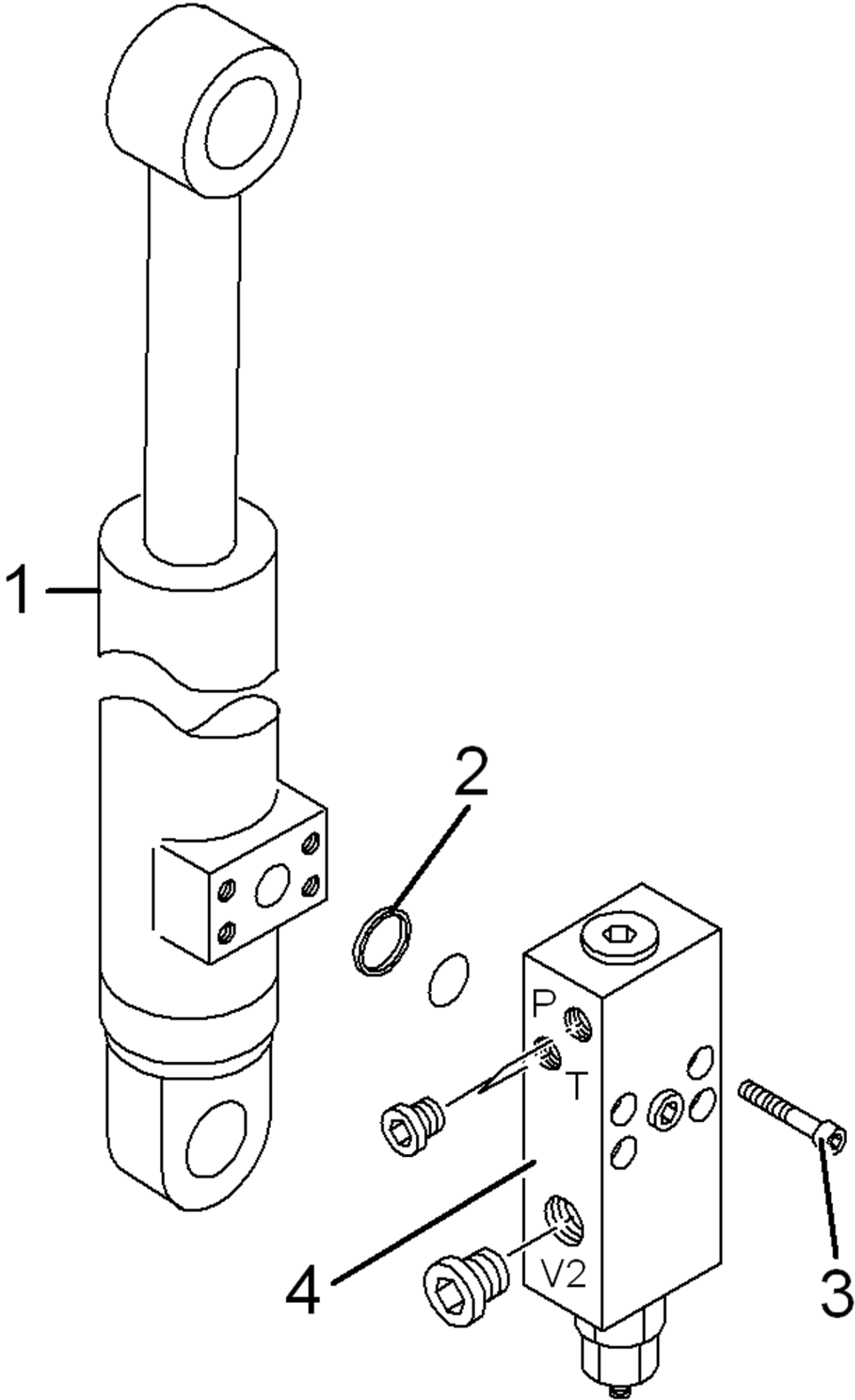
Figure 3

A = 53 mm

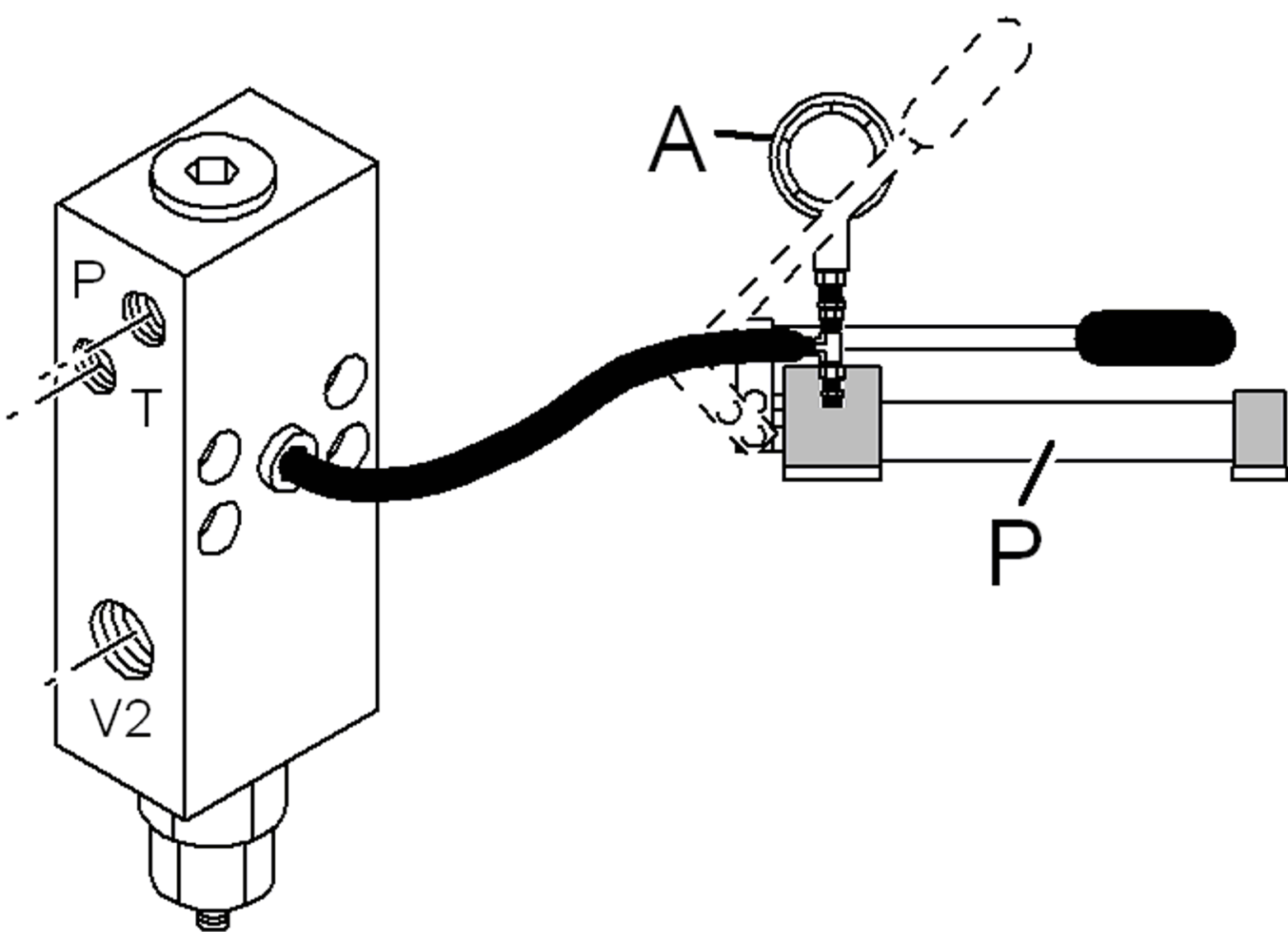
- 1. Screw
- 2. Nut
- 3. Nut
- 4. O-ring
- 5. Screw

Adjustment

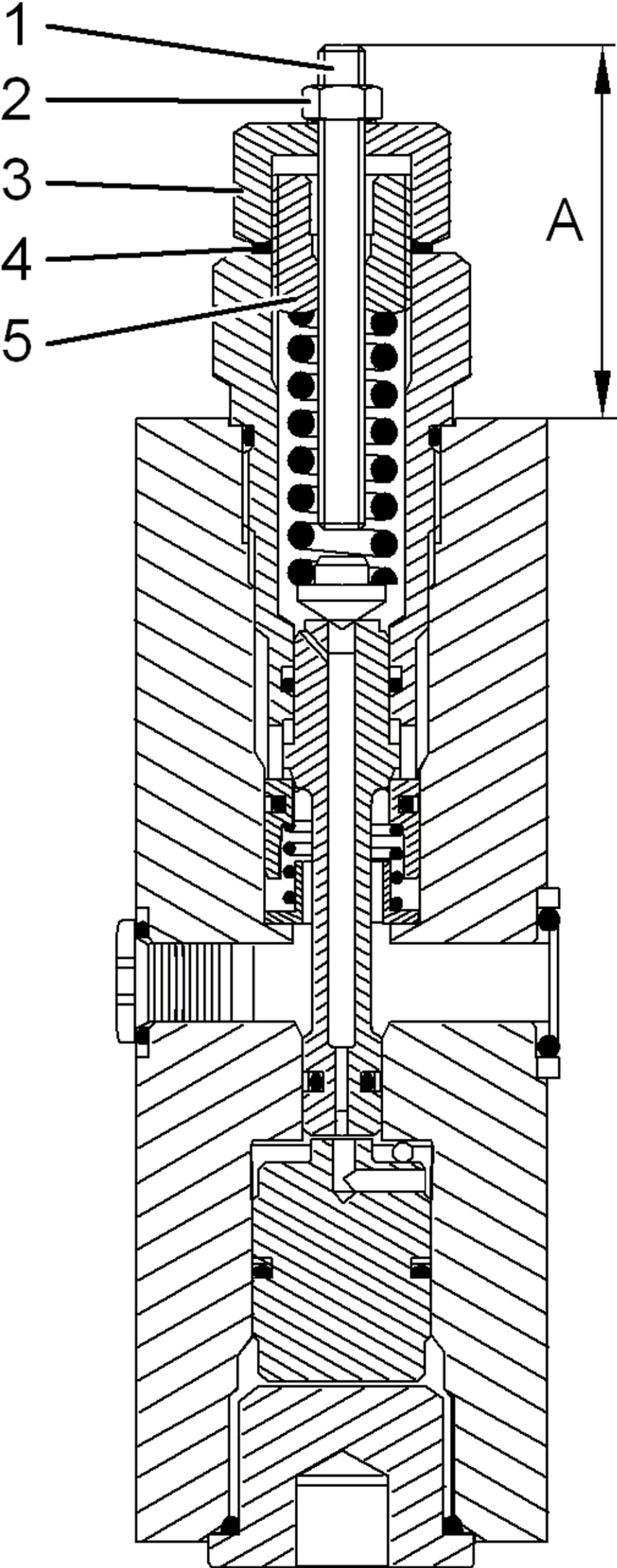
Unscrew nuts (2 and 3). Turn screw (5) clockwise to increase and anti-clockwise to reduce the pressure.
 Assemble nut (3) with a new O-ring (4).
 Adjust screw (1) to measurement A (53 mm) and lock with nut (2).



E250597A



E250598A





Construction Equipment

PROSIS Service Information

Document Title : Hose rupture valve on boom cylinder, leak test	Function Group : 9123	Information Type : Service Information	Print Date : 23/10/2011
Profile : CEX, EC15B XTV (Volvo) [GB]			

Hose rupture valve on boom cylinder, leak test

Preparation

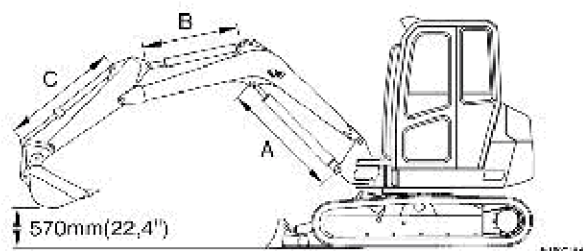


Figure 1
Measuring conditions, creeping

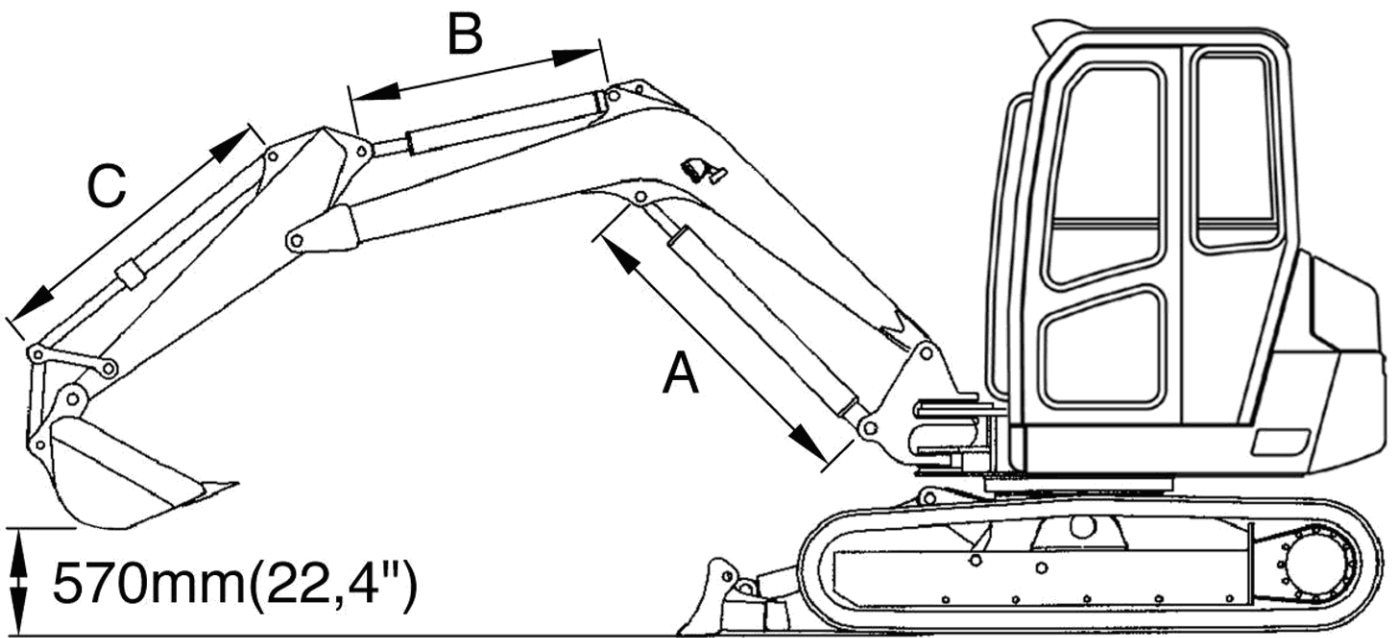
- With the bucket fully loaded adjust the front digger as shown below.

Measurement

- Shut the engine down.
- Measure the distance of the cylinder fastening bolts.
- Repeat the measurement after 5 minutes and check how far the cylinder has retracted. Permissible values, see [See table](#).

Creeping value, unit: mm/5 min.

	Standard	Permissible value	Limit
Boom cylinder	Less than 4.0	6.0	8.0



E150016A



Construction Equipment

PROSIS Service Information

Document Title : Hose rupture valve on dipper cylinder	Function Group : 9123	Information Type : Service Information	Print Date : 23/10/2011
Profile : CEX, EC15B XTV (Volvo) [GB]			

Hose rupture valve on dipper cylinder

The machine can be optionally fitted with a hose rupture valve for the dipper cylinder. If the hose connected to port A breaks while lifting the swing arm, the valve will immediately close, thereby preventing free dropping of the swing arm.



WARNING!

In case of a hose or pipe rupture do not remove the safety valve. In case of a problem consult your authorized dealer or the sales subsidiary of VOLVO.

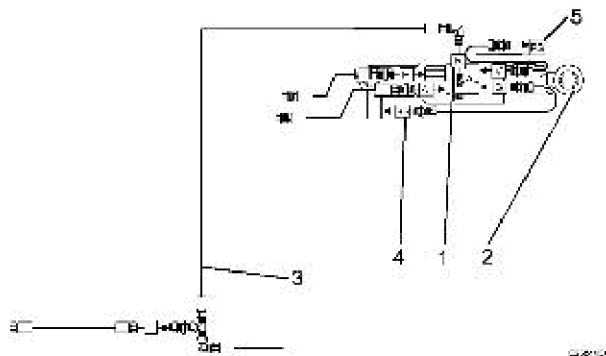


Figure 1

1. Hose rupture valve
2. Dipper cylinder
3. Tank return line
4. Piston end
5. Piston rod