

Document Title: Valves, adjusting	Function Group: 173	Information Type: Service Information	Date: 2014/7/8 0
Profile: ART, A40F FS (37534) [GB]			

Valves, adjusting

Op nbr 214-012

This service information describes adjustment of inlet and exhaust valves as well as setting and adjusting of the brake rocker arms.

Preloading unit injectors, see [237 Unit injector, adjusting pretension](#).

This operation also includes the tools and times needed for required parts of the following actions:

NOTE!

Markings 1–6 are for adjusting inlet valves and unit injectors. Markings V1–V6 are for adjusting exhaust valves and brake rocker arms.

- [191 Service positions](#)
 1. Place the machine in service position, see [191 Service positions](#).
 2. Lower the front grill and open the engine hood.

Rotate the engine

3. Remove the belt guard.



Figure 1

4. Install an extension with a 32 mm socket on the crankshaft's belt pulley. The extension should be at least 25 cm (10 in) long.

NOTE!

Use an extension for the handle to achieve smoother rotation.

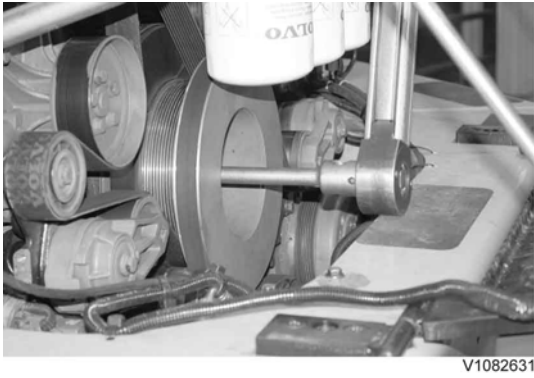


Figure 2

5. Remove the valve cover.
6. Loosen the bolts for the brake rocker arms' leaf springs. Leave the leaf springs in place.

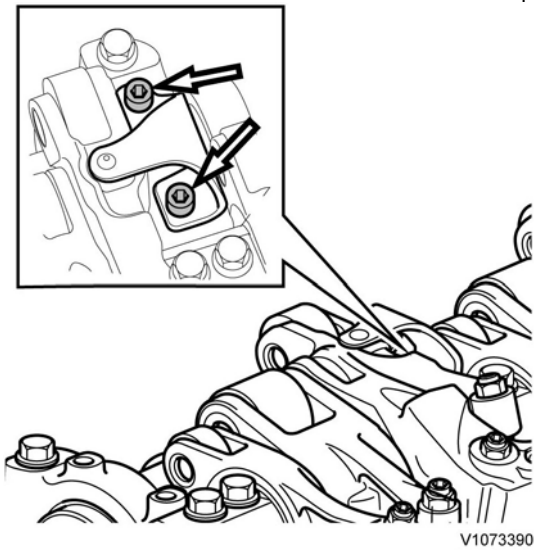


Figure 3

7. Rotate the engine in its rotational direction (clockwise) until the nearest line marking on the camshaft stands between the marks on the bearing cap.

NOTE!

Markings 1–6 are for adjusting inlet valves and unit injectors. Markings V1–V6 are for adjusting exhaust valves and brake rocker arms.

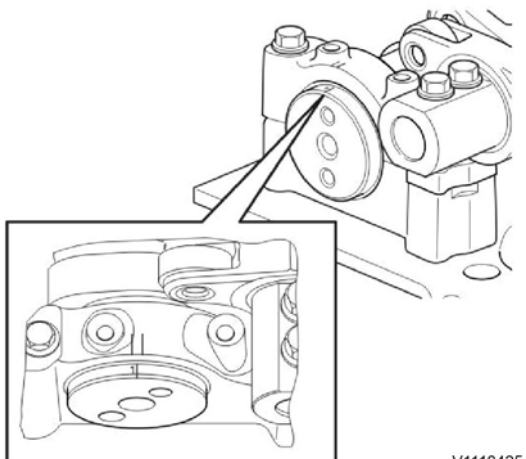


Figure 4

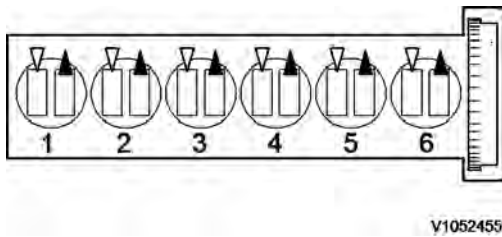


Figure 5

Cylinder number

Inlet valves, checking and adjusting

8. Check that the valve clearance between the yoke and rocker arm's thrust sleeve is according to [214 Valve system, specification](#). If needed, adjust as follows:
Adjust correct valve clearance for the inlet valves. Place a tool in adjusting screw B as counterhold and tighten lock nut A with a box-end wrench. See [214 Valve system, specification](#).
Recheck the valve clearance.

NOTE!

Using a marking pen, mark when adjusting is done to keep track of which valves, unit injectors, and brake rocker arms have been adjusted.

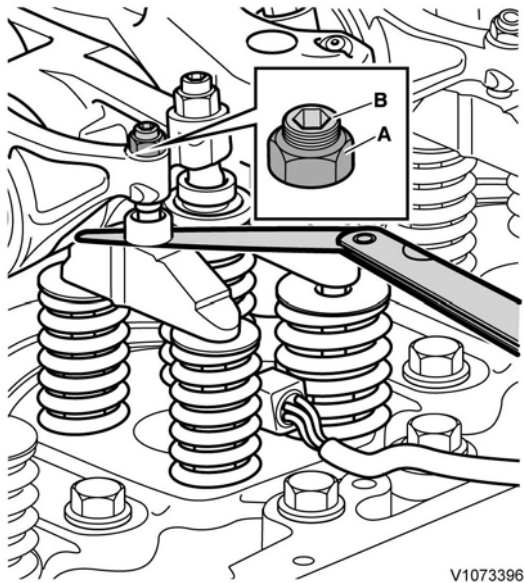


Figure 6

NOTE!

The unit injectors should only be adjusted if work has been done that involved removal of the rocker arm shaft.

The unit injectors are adjusted using the same camshaft marking as the inlet valves. See [237 Unit injector, adjusting pretension](#).

Valve yoke, balancing

NOTE!

When the adjusting screw is being screwed down, at the same time the yoke must be pressed down to contact with the valve stems. It is very important that the pressure is applied as close as possible to the middle of the yoke, see figure. Use a screwdriver or similar.

Unit injectors, adjusting

Exhaust valves, checking and adjusting

9. Adjust to zero clearance on the valve yoke by loosening the lock nut (A) and adjusting screw (B) so that it does not have contact with the valve stem. Press on the valve yoke and then screw down the adjusting screw so that the yoke has contact with the valve stem. Then tighten the adjusting screw another hex edge (60°). Then torque-tighten the lock nut (A) according to [214 Valve system, specification](#).



Figure 7

10. Check that the valve clearance between the yoke and rocker arm's thrust sleeve is according to [214 Valve system, specification](#).

Turn the sleeve so that it does not end up at an angle. Adjust the clearance and torque-tighten the lock bolt. Check the valve clearance **and leave the feeler gauge in place**.



Figure 8

Brake rocker arm, checking

11. The feeler gauge still in place should maximally eliminate the exhaust valve clearance. Check the brake rocker arm's clearance between the rocker arm and the camshaft with a shim or feeler gauge. Check that the clearance is correct, see [214 Valve system, specification](#).

NOTE!

If the check-measurement deviates from the value in Specifications, adjust as follows, otherwise proceed to Error

check.

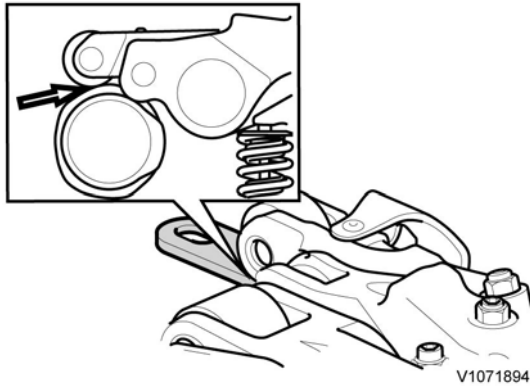


Figure 9

NOTE!

Leave the feeler gauge in place.

Brake rocker arm, adjusting

12. Loosen the brake rocker arm's lock nut A and turn adjusting screw B 0.5–1 turn counter-clockwise. Place a shim or feeler gauge between the camshaft and the brake rocker arm's roller. The shim's thickness should be according to [214 Valve system, specification](#). Tighten adjusting screw B to contact and then half a turn so that the valve yoke is pressed downward and the exhaust valves open slightly. Then the engine brake mechanism is heavily loaded and all parts are in correct position. Loosen adjusting screw B until the shim or feeler gauge can be slid in and out with some effort. Lock adjusting screw B in this position with lock nut A, with torque, see [214 Valve system, specification](#).

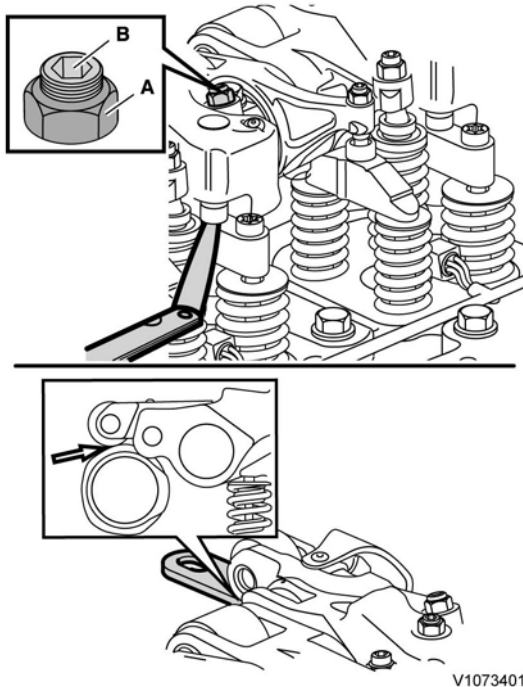


Figure 10

Error check

13. **Remove the feeler gauge and shim.** Check the clearance between the camshaft and the brake rocker arm's roller using a shim or feeler gauge with

thickness according to [214 Valve system, specification](#).

It should be possible to slide the shim or feeler gauge into the clearance without resistance.

NOTE!

In case of insufficient clearance, start over from Exhaust valves, checking.

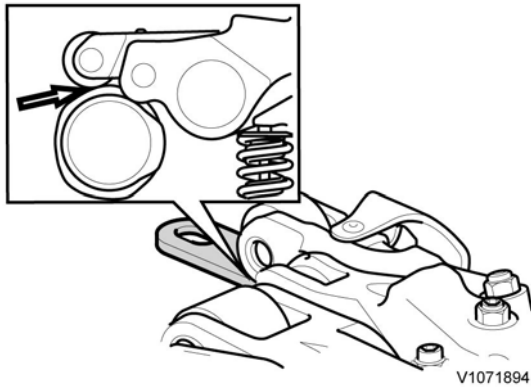


Figure 11

NOTE!

The error check may never be used for adjusting work.

14. Adjust the rest of the valves, brake rocker arms, and unit injectors in the same way.
15. Check that the guide pin is located directly opposite the bowl in the spring plate. Tighten the bolts for the brake rocker arms' leaf springs.

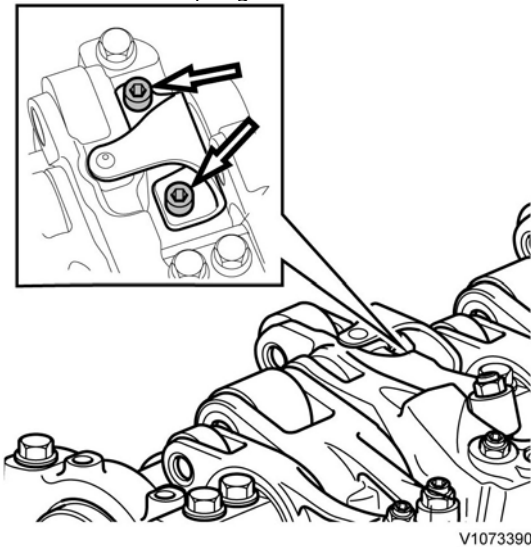


Figure 12

16. Install the valve cover.
17. Remove the rotation equipment and install the belt guard.
18. Close the engine hood and raise the front grill.
19. Restore the machine from service position.
20. Start the engine and check its function.

Document Title: Diesel particulate filter, check and clean	Function Group: 173	Information Type: Service Information	Date: 2014/7/8 0
Profile: ART, A40F FS (37534) [GB]			

Diesel particulate filter, check and clean

Op nbr 254-001

WARNING

Risk of burns - stop the diesel engine and allow it to cool down before starting any work.

This operation also includes the tools and times needed for required parts of the following actions:

- [191 Service positions](#)
 1. Place the machine in service position, see [191 Service positions](#).
 2. Secure the exhaust pipe and the outlet end with two boards over the spill guard. Tighten together with a C-clamp. In the outlet end there is a sensor for temperature and differential pressure that is easy to damage unless the outlet end is secured adequately, see [254 Exhaust Aftertreatment System, description](#).

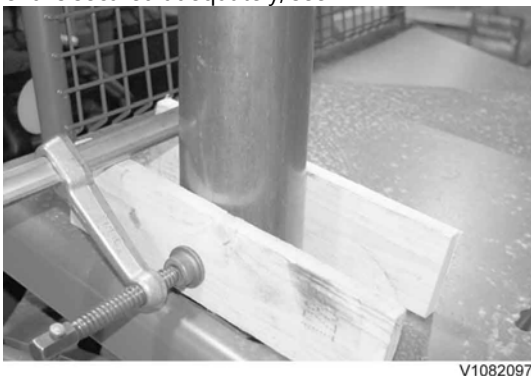


Figure 1

3. Loosen the safety chain for the hydraulic hoses. Move the hose assembly aside.



Figure 2

4. Install an M8 lifting eye in the hole on top of the heat shield. Secure the filter in an overhead crane with a shackle

and a lifting sling. Loosen the steel strap that holds the filter to the bracket. Also loosen the tensioning strap for the burner part and slide in a spacer between the burner part and the bracket to relieve it.

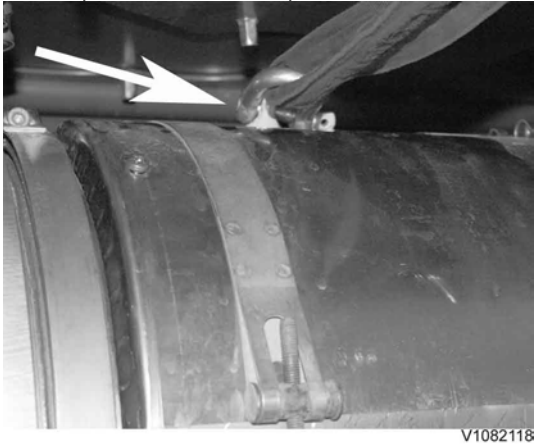


Figure 3

5. Remove the clamps for the filter connections. If the filter is to be reinstalled, mark its position. Carefully loosen the filter.

NOTE!

Make sure that the flanges on the filter are not damaged.

6. Lift away the filter.

Weight: approx. **35 kg (77 lbs)**



Figure 4

NOTE!

Handle the filter carefully to prevent any impact damage.

7. Check if soot particles have accumulated in the burner part. Clean or vacuum out the soot.

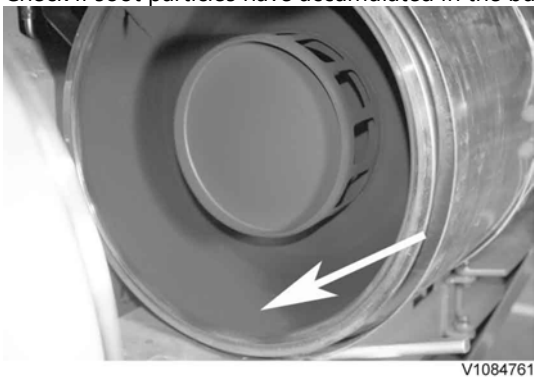


Figure 5

8. Unpack the spare part filter from the box.
9. The removed filter must be placed in the protective bag that is supplied with the new filter. Follow Volvo Core handling instructions.

NOTE!

Handle the filter carefully to prevent any impact damage.

10. Transfer the heat shield plates to the new particle filter.



Figure 6

11. Clean the grooves in the particle filter and outlet end from remaining soot and the old gaskets. One gasket is placed in the groove on the outlet end, the other in the particle filter. Use **new** gaskets.

NOTE!

Graphite gaskets are fragile.



Figure 7

12. Wipe off the contact surface on the clamps with a rag and cleaning fluid. Place new clamps over the burner and outlet end. Install the clamps carefully so that they maintain their round shape.
13. Secure the filter in an overhead crane in the same way as before. Lift the filter into place. Install **new** clamps loosely at both ends. Max. 5 Nm (3.7 lbf ft). Install the steel straps.

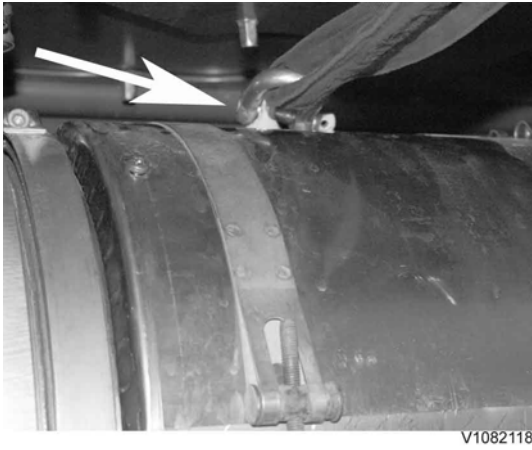


Figure 8

14. Torque-tighten the clamps and steel straps, see [254 Exhaust aftertreatment system, tightening torques](#). First tighten the clamp closest to the burner part. Check that the outlet end has not been displaced so that the exhaust pipe is leaning, then tighten the clamp. Tap on the clamps, start farthest from the bolt and tap both ways all the way around. Remove the lifting devices.
15. Restore the machine from service position.
16. Run VCADS operation: 25456-3 (Reset ash load).
17. Start the engine and check that there are no leaks. Repeat tightening when needed.

Document Title: Ignition cables, change	Function Group: 173	Information Type: Service Information	Date: 2014/7/8 0
Profile: ART, A40F FS (37534) [GB]			

Ignition cables, change

Op nbr

This is part of other procedure.



Risk of electrocution.

Contact with live parts will cause death or serious injury.

Never touch live electrical parts.



Risk of burns!

Hot machine parts could cause burns.

Allow hot machine parts to cool before performing adjustments or service. Wear personal protective equipment.

NOTE!

Do not remove the ignition cables until the machine has cooled down. Risk of damage to the ignition cables.

1. Turn off the electric power with the battery disconnecter.
2. Loosen and swing out the protective cover for the particulate filter.

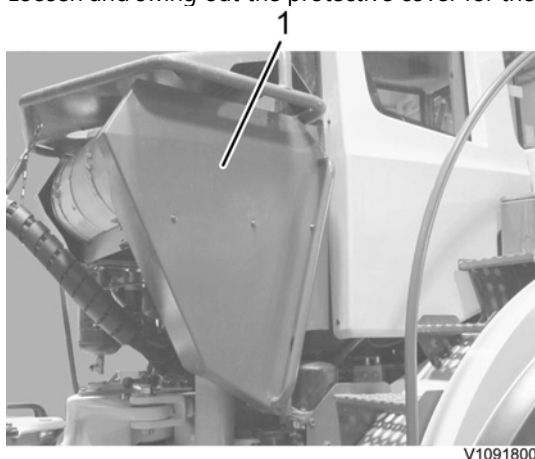


Figure 1

1. Protective cover
3. Disconnect and remove the ignition cables together with the ground cables.

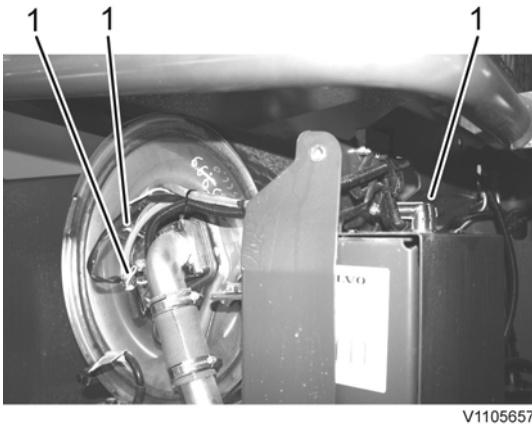


Figure 2

1. Position of brackets for ignition cables

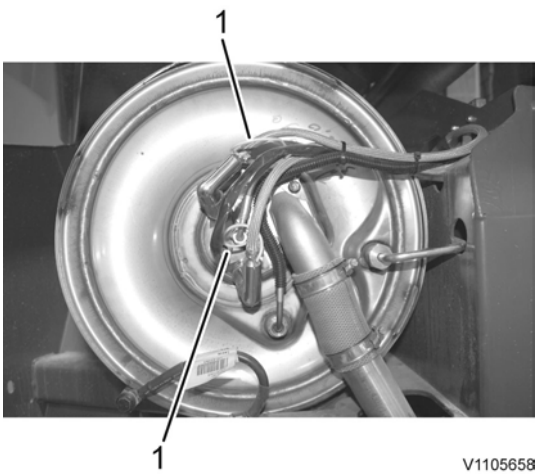


Figure 3

1. Ignition cables' ground cables
4. Install the new ignition cables and the ground cables.
5. Clamp the ignition cables and ground cables so that they cannot come into contact with the particulate filter's burner.
6. Reinstall the protective cover.
7. Turn on the electric power with the battery disconnecter.

Document Title: Accumulator, precharge pressure, checking and adjusting	Function Group: 173	Information Type: Service Information	Date: 2014/7/8 0
Profile: ART, A40F FS (37534) [GB]			

[Go back to Index Page](#)

Accumulator, precharge pressure, checking and adjusting

Trailer

Op nbr 726-009

[11666051 Pressure gauge](#)

[11666135 Gas filling kit](#)

[14290266 Hose](#)

[14290266 Hose](#)

[88830046 Dump body support](#)

[88830034 Adapter](#)

936439 Nipple

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

- [191 Service positions](#)
- [720 Relieve pressure](#)

This operation only describes the procedure for one accumulator.

1. Park the machine in service position and depressurize the suspension system, see [191 Service positions](#) and [720 Relieve pressure](#).

NOTE!

Always relieve the pressure before starting to work in the suspension system!

2. Elevate the load body and secure with 88830046 Dump body support.
3. Connect the measuring equipment to the gas cylinder as shown.

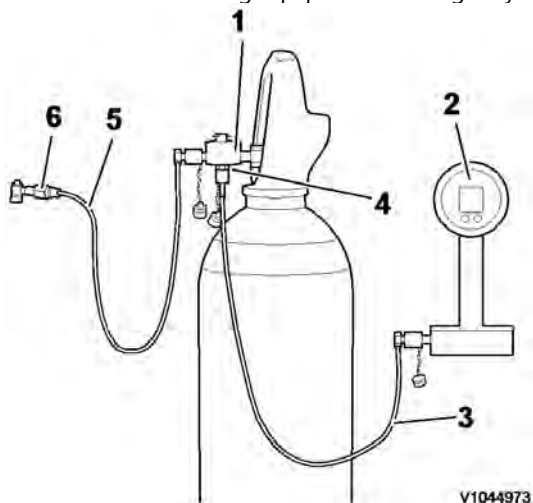


Figure 1

1. 11666135 Gas filling kit
2. 11666051 Pressure gauge
3. 14290266 Hose
4. 936439 Nipple
5. 14290266 Hose
6. 88830034 Adapter

NOTE!

Open the valve on 88830034 Adapter.

4. Remove the protective plate over the valve on the accumulator.

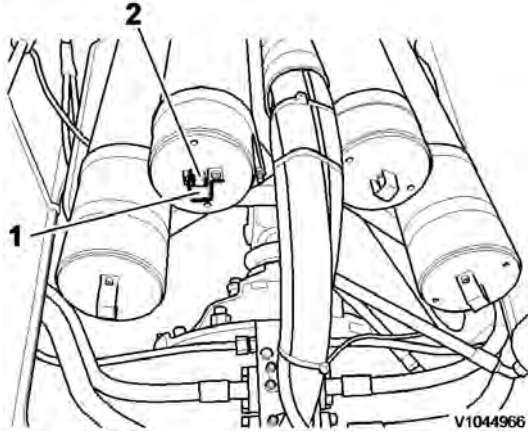


Figure 2

1. Protective plate
2. Valve cap

5. Remove the valve cap from the valve.
6. Connect 88830034 Adapter to the valve.

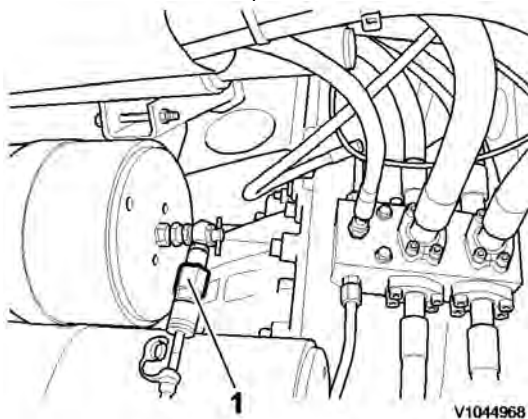


Figure 3

1. 88830034 Adapter

7. Open the valve by loosening the nut on the valve, and screw it all the way up (counter-clockwise) against the nipple.

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