

Document Title: Cab description	Function Group: 800	Information Type: Service Information	Date: 2014/3/8 0
Profile: CWL, L25F [GB]			

Cab description

The cab is mounted resiliently and complies with ROPS regulations ISO 3471 and SAE 1040, and the cab is also FOPS – certified to ISO 3449 and SAE J231. This guarantees optimum driver safety in the event of the machine overturning or if objects fall onto the cab roof.

As well as driver safety, the tinted windshield of safety glass gives the driver excellent all-round visibility. In particular a good forward view of the attachments and fast changer, and rearward over the compact machine rear, contribute substantially to the operating safety.

The cab interior is very spacious and offers good storage facilities. On the clear instrument panel the driver has a constant view of all important machine information.

The operator's seat has several positions and gives drivers of any size a comfortable seating position.

A powerful heater fan supplies filtered outside air to the cab. Optimal heating and defroster performance is provided by the adjustable fresh-air vents. An additional fresh-air supply is provided by the multi-position window, which comes as standard on the left side.

Document Title: Repairs of minor damage on internal and external plastic parts (scratches, dents, breaks)	Function Group: 810	Information Type: Service Information	Date: 2014/3/8 0
Profile: CWL, L25F [GB]			

Repairs of minor damage on internal and external plastic parts (scratches, dents, breaks)

The plastic parts repair kit, order no. 2815630, consists of:

Pos.	Order no.	Description
1	2809720	Universal cleaner, 1 ltr.
2	2809721	1K plastic adhesive primer, 1 ltr.
3	2809722	Quick filler white, 1 ltr.
4	2809723	Hardener standard, 0.5 ltr.
5	2809724	Thinners, 1 ltr.
6	2809725	Fibreglass filler, 1 kg
7	2809726	Tube hardening paste 50 g

Smooth broken edges, sand down cracks and clean with universal cleaner (item 1).

Apply a thin layer of bonding primer (item 2) to the contact surface and leave to flash dry for 15 minutes.

Mix quick filler (item 3) with hardener (item 4) and thinners (item 5) thoroughly in a mixing container in mixing ratio 4 : 1 : 1.

Apply quick filler to the contact surface and leave to dry (dry at 20 °C for around 2 hours).

Mix fibreglass filler (item 6) with hardener, around 2 .. 3% (item 7), in a mixing vessel.

Apply fibreglass filler, if necessary use extra fibreglass matting (dry at 20 °C for around 20 min).

Sand down fibreglass filler, then clean the filled area.

Apply a thin layer of bonding primer (item 2) and top coat (2K-PUR acrylic paint).

NOTE!

Repairs are evident on plastic interior parts due to the grained finish.

Document Title: Cab mounts, tightening torques	Function Group: 818	Information Type: Service Information	Date: 2014/3/8 0
Profile: CWL, L25F [GB]			

Cab mounts, tightening torques

The cab suspension fixing elements are tightened with a torque of **200 Nm (148 lbf ft)**.

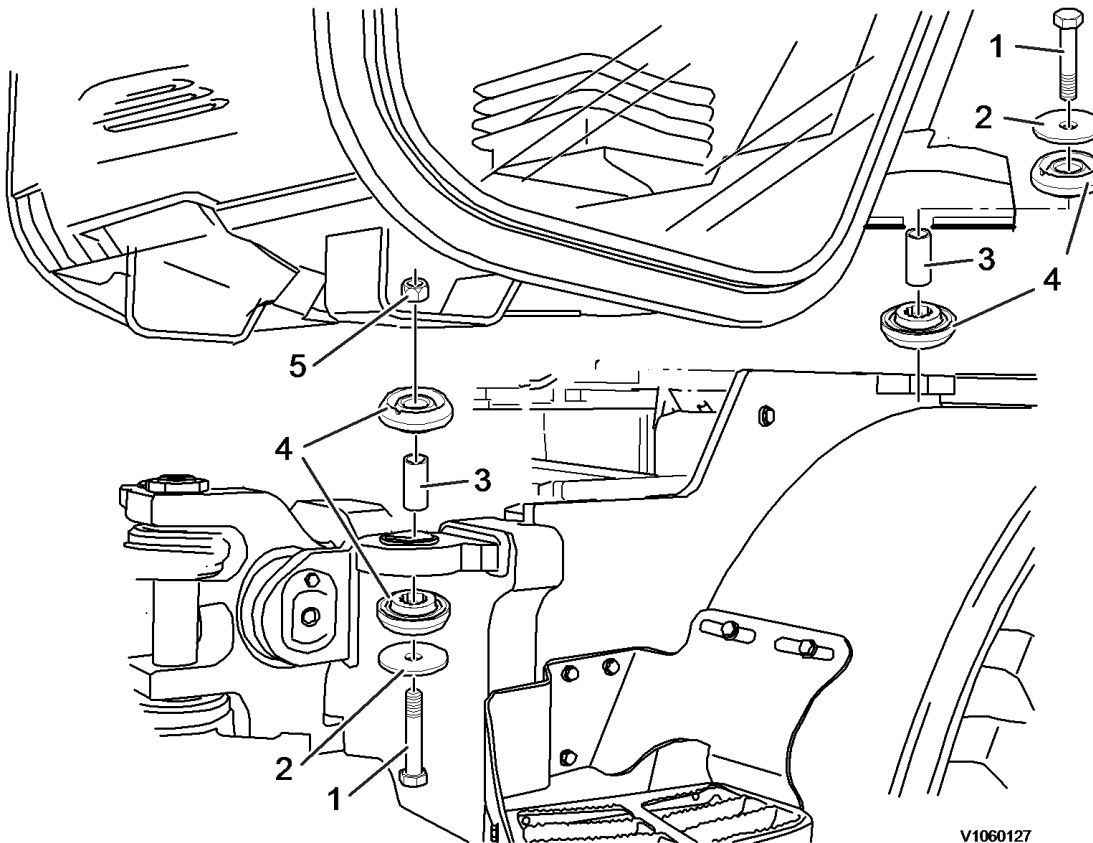


Figure 1
Cab suspension, fixing elements

1. Screw
2. Washer
3. Sleeve
4. Buffer
5. Nut

Document Title: Engine hood, removing	Function Group: 821	Information Type: Service Information	Date: 2014/3/8 0
Profile: CWL, L25F [GB]			

Engine hood, removing

Op nbr 821-001

1. Place the machine in service position.
2. Turn OFF the battery disconnect switch.
3. Open the bonnet and suspend from a crane using suitable hoisting equipment.



WARNING

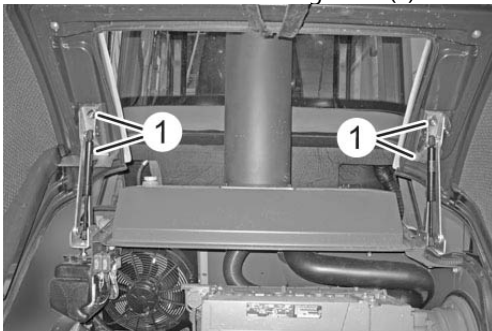
The work involves handling heavy components - failure to stay alert may result in severe crushing injuries.



V1080966

Figure 1

4. Unscrew the bonnet attaching bolts (1) at the bonnet support. Hoist the bonnet and place it on a suitable surface.



V1080967

Figure 2

NOTE!

Bonnet weight, approx. 28 kg (62 lb).

Document Title: Engine hood, installing	Function Group: 821	Information Type: Service Information	Date: 2014/3/8 0
Profile: CWL, L25F [GB]			

Engine hood, installing

Op nbr 821-002

1. Raise the bonnet and position it over the bonnet support.



Figure 1

NOTE!

Bonnet weight, approx. 28 kg (62 lb).

2. Screw the bonnet attaching bolt (1) at the bonnet support.

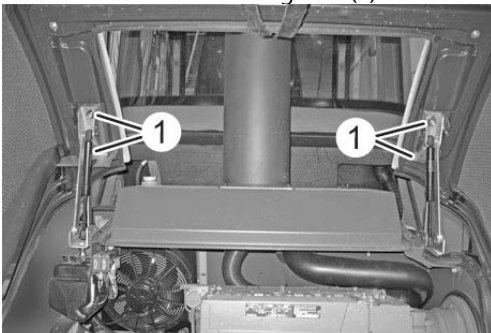


Figure 2

3. Remove the hoisting equipment.

Document Title: Windows, general	Function Group: 843	Information Type: Service Information	Date: 2014/3/8 0
Profile: CWL, L25F [GB]			

Windows, general

The front/rear screen is glued directly to the window cut-out of the cab frame. When replacing the cab windows, wear safety goggles and gloves. Use clean tools because dirt residue and lubricant can reduce adhesion, which is extremely important for the seal and strength of the window adhesion. The adhesive hardening process is dependent on temperature and relative humidity. At temperatures close to freezing point and low humidity, a longer hardening time is required.

Consumables

To replace the cab windows, use commercial adhesives and consumables.

Activator

The activator is a cleaning and activation fluid which is used for pretreatment of the contact area (adhesive area of the new screen) before application of the polyurethane adhesive.

Primer

The primer is a moisture-repellent primer of low viscosity which is used to prime the contact area (adhesive area of the new screen) before application of the polyurethane adhesive.

NOTE!

Never use primer on old adhesive residues.

Polyurethane adhesive

The polyurethane adhesive is a fast drying, cold applied adhesive which hardens by contact with the humidity in the air. Reduced humidity which occurs at low temperatures leads to longer hardening times. Under these conditions, allow the vehicle to idle and switch on the cab heating fan. To increase the air humidity in the cab, place a bucket of water in the cab. To check the drying time under different weather conditions, apply a bead of adhesive to a piece of cardboard.

Document Title: Windscreen, replacing	Function Group: 843	Information Type: Service Information	Date: 2014/3/8 0
Profile: CWL, L25F [GB]			

Windscreen, replacing

Op nbr 843-002

[88830060 Disassembly tool](#)

[88830062 Wire unvinding device](#)

1. Place the machine in service position.



Risk of cuts! Wear safety glasses and use protective gloves.

Remove damaged windscreen.

2. Protect cab interior and other components from splintering glass (cover with a tarpaulin).
3. Remove windscreen wipers.
4. Remove all glass components down to the adhesive.
5. Using a sharp knife, cut out the old adhesive on the frame flange.

NOTE!

Do not cut out old adhesive completely, leave approx. 1 - 2 mm (0.0039 - 0.079 in) residual material on the contact surface. The residual material serves as an adhesive base for the new adhesive.

6. Lay new window on a suitable base.

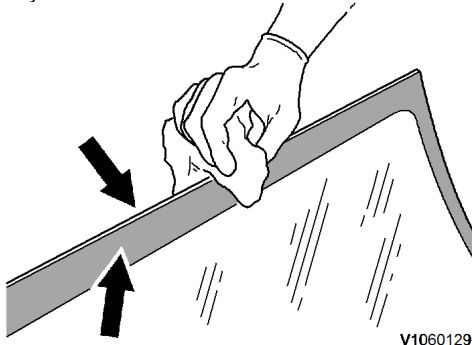


Figure 1

NOTE!

Weight of windscreen approx. 15 kg (33 lb).

7. Clean/activate the screen contact surfaces (arrows) (outer edge and ceramic layer on inside) with activator and then wipe with a dry, lint-free cloth.
8. Apply primer thinly to the contact surface (arrows) of the screen (outer edge and ceramic layer on the inside) and allow to dry to at least 15 minutes.

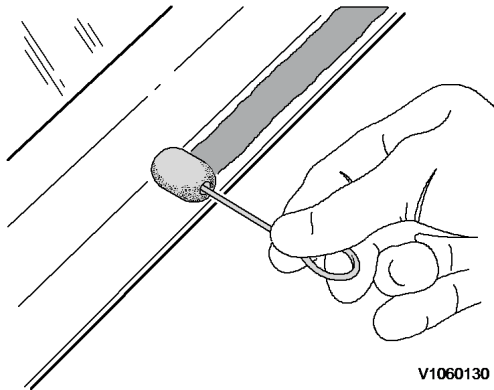


Figure 2

9. Clean/activate contact surface of the frame flange with activator before inserting the new window.
10. Apply the new adhesive (1) with the glue gun at even height (approx. 12 mm / 0.47 in) all round, without gaps, on the old residual material (2).

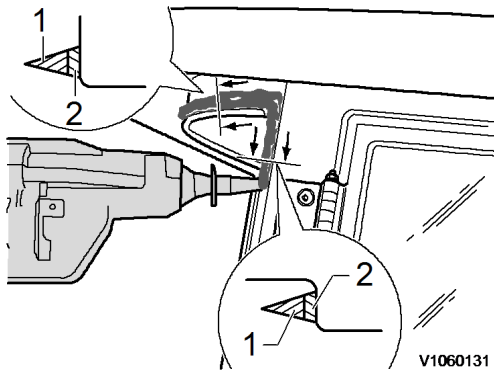


Figure 3

NOTE!

The adhesive must be applied steadily without interruption, and the screen must be inserted within 10 minutes after the start of the adhesive application otherwise the adhesive joint cannot be guaranteed.

11. Insert screen using the suction lift and bring to installation dimensions immediately. To the left and right, leave a gap of approx. 5 - 6 mm (0.19 - 0.24 in). If necessary, attach windscreen with adhesive tape until the adhesive hardens.

NOTE!

If the adhesive bead is applied too thickly and the adhesive extrudes below the screen, remove the surplus adhesive as soon as possible using a wooden spatula.

12. Fill the gap between the screen and frame with sealant and spread evenly with a suitable tool.

NOTE!

Allow adhesive to harden for at least 2 hours.

13. Refit windscreen wipers.

NOTE!

Dispose of remaining adhesive, primer and activator.

Document Title: Rear window, replacing	Function Group: 843	Information Type: Service Information	Date: 2014/3/8 0
Profile: CWL, L25F [GB]			

Rear window, replacing

Op nbr 843-012

[88830060 Disassembly tool](#)

[88830062 Wire unvinding device](#)

1. Place the machine in service position.



WARNING

Risk of cuts! Wear safety glasses and use protective gloves.

Remove damaged rear screen.

2. Protect cab interior and other components from splintering glass (cover with a tarpaulin).
3. Remove screen wiper and wiper motor.
4. Detach work light lamp fixing bolts. Bend work light lamps up.
5. Remove all glass components down to the adhesive.
6. Using a sharp knife, cut out the old adhesive on the frame flange.

NOTE!

Do not cut out old adhesive completely, leave approx. 1 - 2 mm (0.0039 - 0.079 in) residual material on the contact surface. The residual material serves as an adhesive base for the new adhesive.

7. Lay new window on a suitable base.

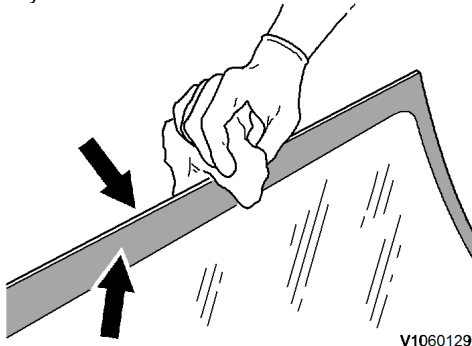


Figure 1

NOTE!

Weight of rear screen approx. 22 kg (48 lb).

8. Clean/activate the screen contact surfaces (arrows) (outer edge and ceramic layer on inside) with activator and then wipe with a dry, lint-free cloth.

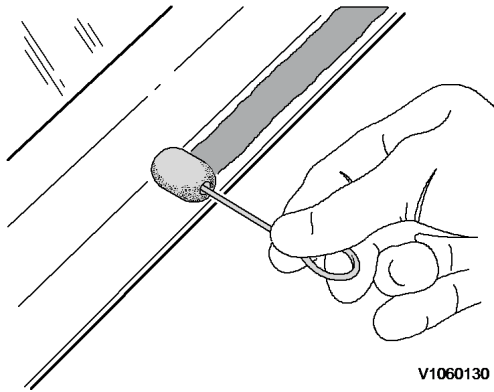


Figure 2

9. Apply primer thinly to the contact surface (arrows) of the screen (outer edge and ceramic layer on the inside) and allow to dry to at least 15 minutes.
10. Clean/activate contact surface of the frame flange with activator before inserting the new window.
11. Apply the new adhesive (1) with the glue gun at even height (approx. 12 mm / 0.47 in) all round, without gaps, on the old residual material (2).

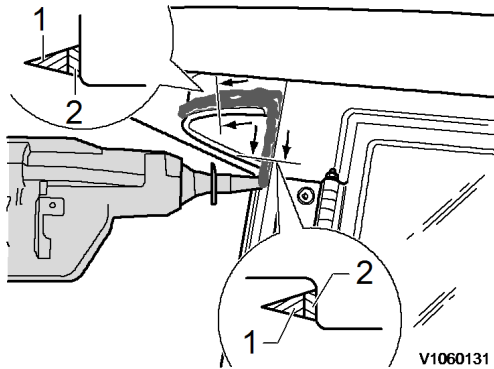


Figure 3

NOTE!

The adhesive must be applied steadily without interruption, and the screen must be inserted within 10 minutes after the start of the adhesive application otherwise the adhesive joint cannot be guaranteed.

12. Insert screen using the suction lift and bring to installation dimensions immediately. To the left and right, leave a gap of approx. 5 - 6 mm (0.19 - 0.24 in). If necessary, attach windscreen with adhesive tape until the adhesive hardens.

NOTE!

If the adhesive bead is applied too thickly and the adhesive extrudes below the screen, remove the surplus adhesive as soon as possible using a wooden spatula.

13. Fill the gap between the screen and frame with sealant and spread evenly with a suitable tool.

NOTE!

Allow adhesive to harden for at least 2 hours.

14. Fit screen wiper and wiper motor.
15. Position work light lamps correctly and tighten fixing bolts.

NOTE!

Dispose of remaining adhesive, primer and activator.

Document Title: Fan motor, replacing	Function Group: 873	Information Type: Service Information	Date: 2014/3/8 0
Profile: CWL, L25F [GB]			

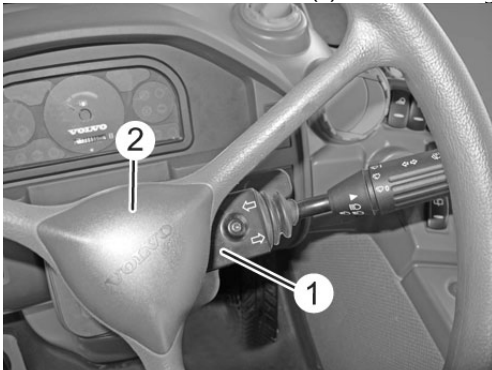
Fan motor, replacing

Op nbr 873-006

1. Place the machine in service position.
2. Turn OFF the battery disconnect switch.

Removing

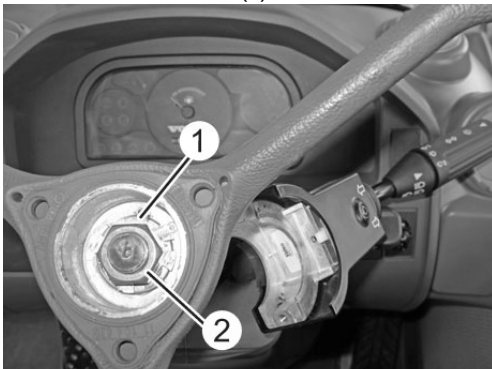
3. Remove the universal switch (1) at the steering column.



V1080988

Figure 1

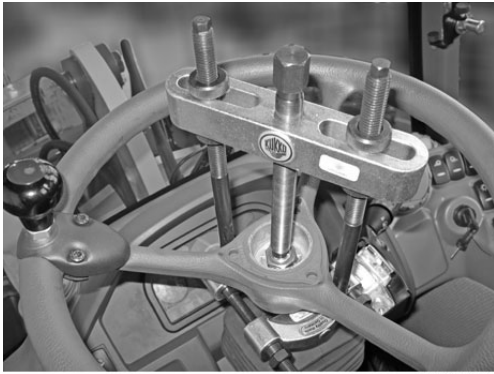
4. Remove the steering wheel panel (2).
5. Undo the lock washer (1) and unscrew the nut (2).



V1080989

Figure 2

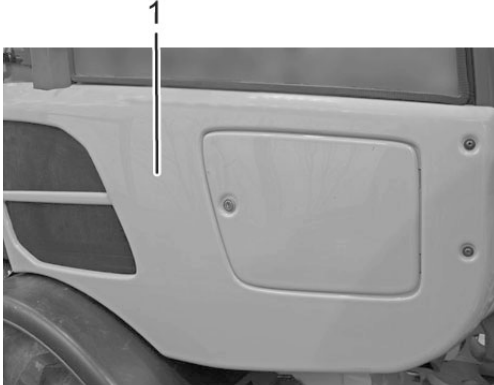
6. Fit the extractor and remove the steering wheel.



V1080990

Figure 3

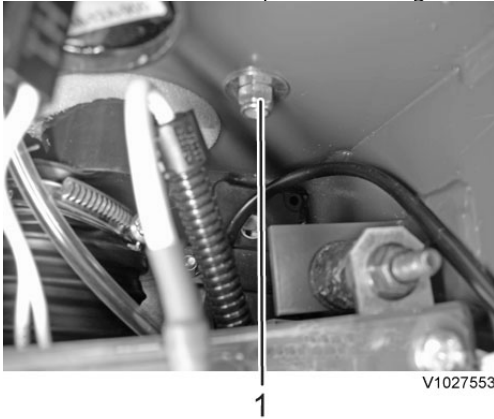
7. Remove the right-hand side panel (1).



V1027552

Figure 4

8. Unscrew the instrument panel attaching nut (1). The attaching nut (1) is located above the central electrics.



V1027553

Figure 5

9. Unscrew the instrument panel attaching nut (2). The attaching nut (2) is located above the inching brake pedal.

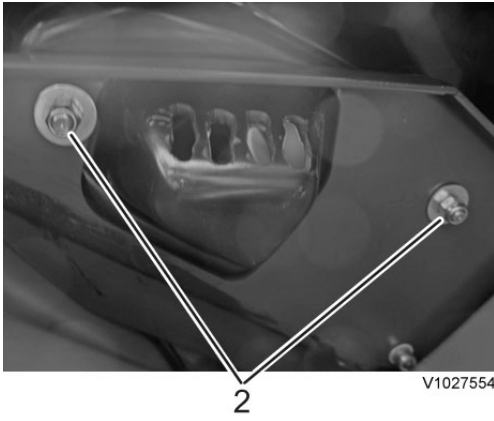


Figure 6

10. Remove the body-bound rivet (3) at the instrument panel.

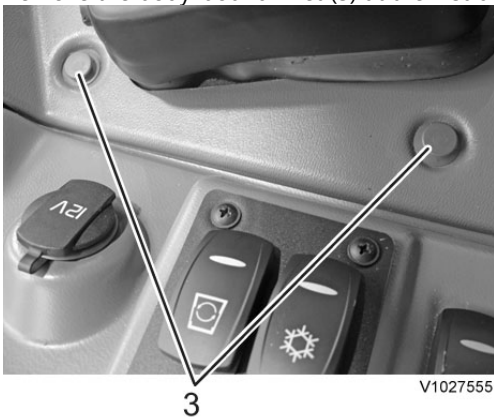


Figure 7

11. Raise the instrument panel and move it rearwards.



Figure 8

12. Disconnect the electrical connector (1) from the fan switch.

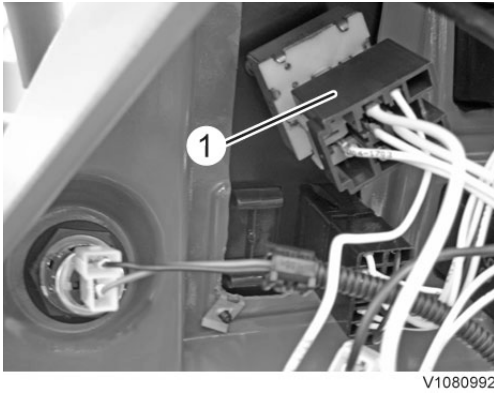


Figure 9

13. Unscrew the attaching bolt (1) of the fan bracket.

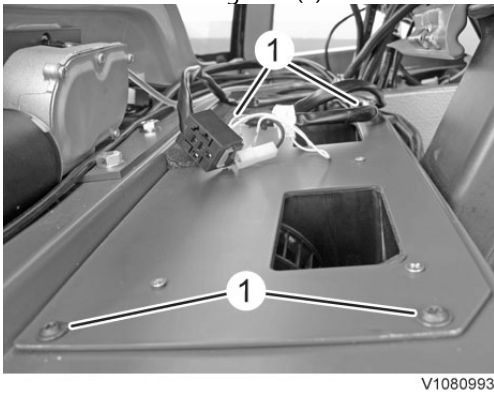


Figure 10

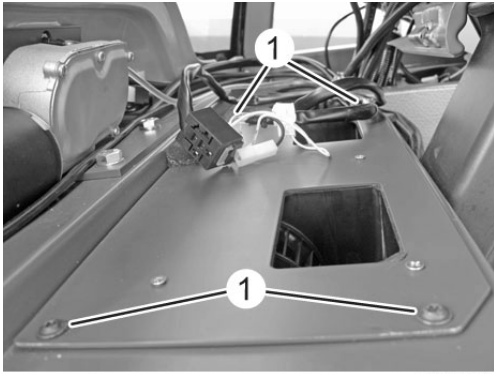
14. Remove the fan unit.



Figure 11

Installation

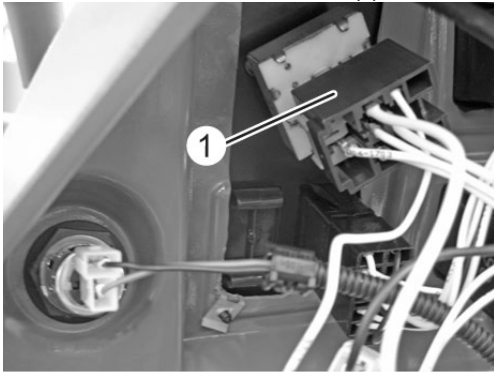
15. Fit a new fan unit in the bracket.
16. Install the fan unit and secure with the attaching bolts (1).



V1080993

Figure 12

17. Connect the electrical connector (1) to the fan switch.



V1080992

Figure 13

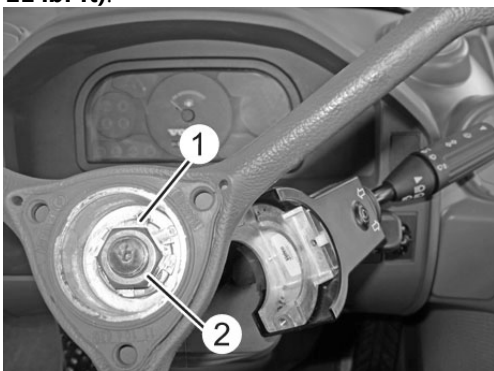
18. Reposition the instrument panel and screw into place. Fit body-bound rivet.

NOTE!

Make sure that the air duct seal under the instrument panel is properly positioned.

19. Install the right-hand side panel (1).

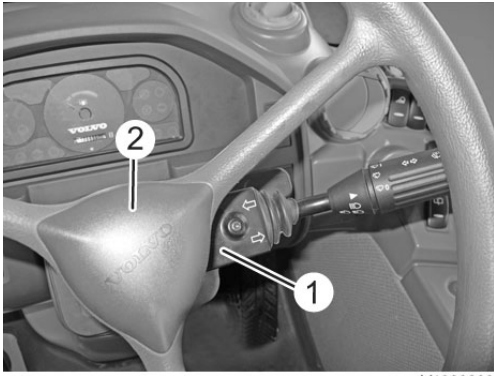
20. Position the steering wheel and fit and secure the nut (2) with new snap ring (1). Tightening torque **28±3 Nm (21 ±2 lbf ft)**.



V1080989

Figure 14

21. Fit the universal switch (1) at the steering column.
22. Fit the steering wheel panel (2).



V1080988

Figure 15

23. Check the functionality of the fan unit.

Document Title: Diesel heater, description	Function Group: 875	Information Type: Service Information	Date: 2014/3/8 0
Profile: CWL, L25F [GB]			

Diesel heater, description

The diesel heating is independent of the engine and serves as auxiliary/parking heater. The heater is controlled by an operating control, the module gauge.

Operating control (module gauge).

The operating control switches the heater on and off and sets the desired room temperature. The green LED acts as a tell-tale. Using the timer, the heater can be switched on and off immediately or the activation time can be preset.

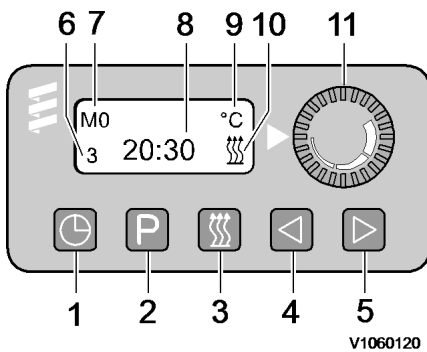
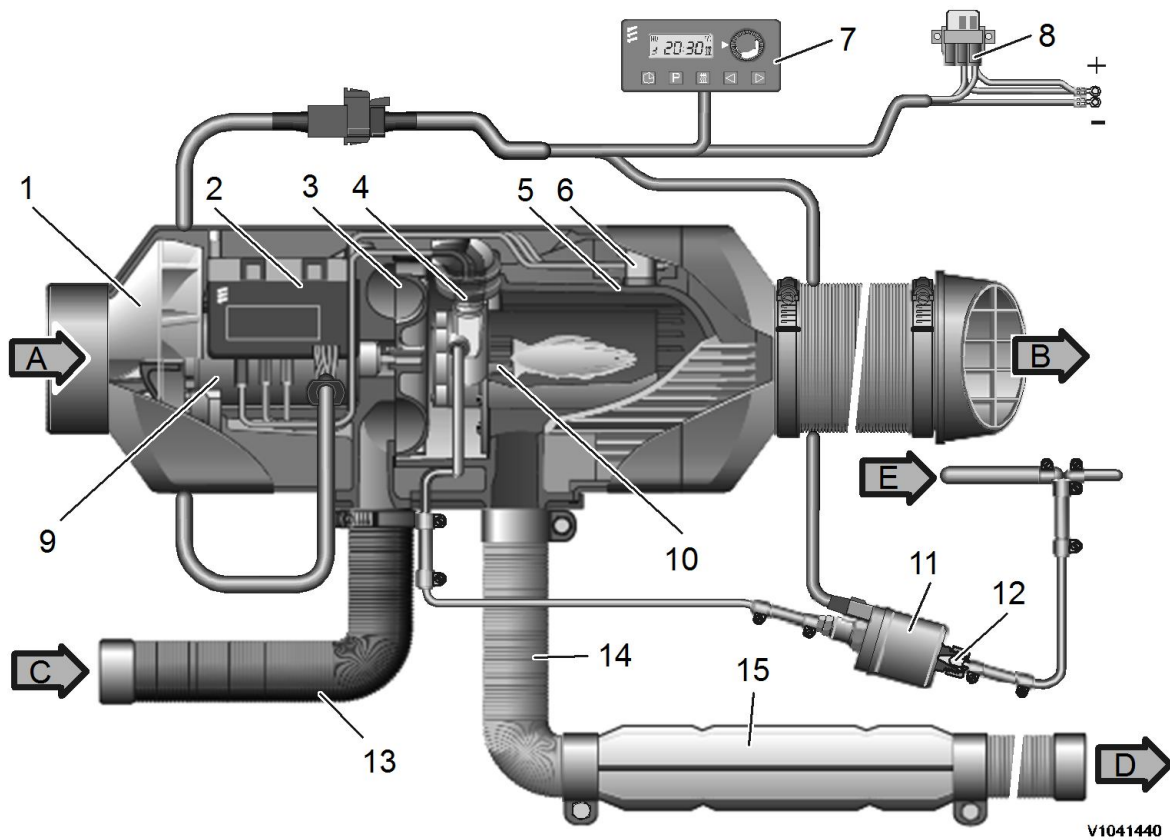


Figure 1
Control (module gauge).

1. Clock time
2. Preselection
3. Heating ON / OFF
4. Return
5. Feed
6. Memory indicator
7. Day of week
8. Current time or preselection time
9. Temperature gauge
10. Operating display
11. Temperature preset - control range 10°C bis 30°C (50°F - 86°F)

NOTE!

In heating mode without preselection and with ignition 'OFF', the heating duration is factory-set to a maximum of 120 minutes.



V1041440

Figure 2
Diesel heating, cross-section

1. Heating fan impeller
 2. Control unit
 3. Combustion fan impeller
 4. Glow plug
 5. Heat exchanger
 6. Combi-sensor (flame monitoring / overheating)
 7. Control (module gauge).
 8. Fuse holder
 9. Fan motor
 10. Combustion chamber
 11. Metering pump
 12. Strainer (integral to metering pump)
 13. Combustion air hose
 14. Flexible exhaust manifold
 15. Exhaust silencer
-
- A. Air from outside the cab
 - B. Heating air
 - C. Combustion air
 - D. Exhaust air
 - E. Fuel (diesel)

Document Title: Diesel heater, principles	Function Group: 875	Information Type: Service Information	Date: 2014/3/8 0
Profile: CWL, L25F [GB]			

Diesel heater, principles

When switched on, the green LED in the operating control lights. The glow plug is switched on and the fan runs at low speed.

NOTE!

If there is too much residual heat in the heat exchanger from a previous heating operation, at first only the fan runs (cold). When the residual heat has dissipated, start-up begins.

After around 60 seconds, the fuel feed begins and the fuel/air mixture in the combustion chamber ignites. After the combi-sensor has detected the flame, the glow plug is switched off after 60 seconds. After a further 120 seconds, the control stage "POWER" is reached (maximum fuel quantity and maximum fan speed).

The desired interior temperature is preset using the rotary knob in the range between 10°C and 30°C (50°F - 86°F), depending on exterior temperature.

During heating operation, the room temperature or intake heating air temperature is measured constantly. If the temperature exceeds the temperature preset on the control element, regulation begins so that the heat flow supplied by the heater can be adapted to the heat requirement. The fan speed and fuel quantity correspond to the control stage set. If the temperature set is exceeded even at the lowest control stage, the heater switches to control stage "OFF".

NOTE!

To cool down, the heater fan runs on for around 4 minutes.

Document Title: Symptom/malfunction:	Function Group: 875	Information Type: Service Information	Date: 2014/3/8 0
Profile: CWL, L25F [GB]			

Symptom/malfunction:

Control and protection devices

If the heater does not ignite within around 90 seconds from the start of fuel feed, the start-up is repeated. If the heater again does not ignite within around 90 seconds, a fault shut-down is made.

NOTE!

Fault shut-down, i.e. fuel feed off and fan run-on for around 4 minutes.

If the flame goes out spontaneously during operation, first a new start-up is performed. If the heater does not ignite within around 90 seconds from re-start of fuel feed, or if it ignites but goes out again within 15 minutes, a fault shut-down is made.

NOTE!

The fault shut-down can be eliminated by switching off and on again briefly. However do not repeat this reset more than twice.

On overheating, the sensor for flame monitoring/overheating trips, the fuel feed is interrupted, and a fault shut-down takes place. After the cause of overheating has been eliminated, the heater can be started by switching off and on again.

If the glow plug or fan motor is faulty, or the electrical line to the metering pump is broken, the heater will not start.

If the sensor for flame monitoring / overheating is faulty, or the electrical line broken, the heater starts and a fault shut-down takes place during the start-up phase.

The fan motor speed is monitored continuously. If the fan motor does not start or the speed deviates, after around 30 seconds a fault shut-down takes place. On shut-down, the glow plug switches on for around 40 seconds during fan run-on (afterglow) to clear it of combustion residue.

On a malfunction, first check the following points.

If the heater does not start after switch on:

- Switch heater off and on again but not more than twice in succession.

If the heater still does not start, check:

- Fuel in tank
- Fuses OK
- Electrical lines, connections, contacts OK
- Heating air, combustion air supply or exhaust discharge

If these points are OK, then perform a diagnostic test with the module gauge, see [875 Fault mode diagnosis](#)

Document Title: Fault mode diagnosis	Function Group: 875	Information Type: Service Information	Date: 2014/3/8 0
Profile: CWL, L25F [GB]			

Fault mode diagnosis

Diagnostic test with module gauge

If a fault is detected on activation or during operation of the heater, this is indicated within around 15 seconds by the module gauge with **F** and a 2-digit display.

Example: F64 (= current fault) and flashing heater symbol

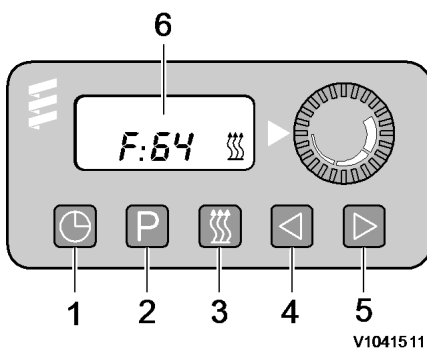


Figure 1

Failure mode, module gauge

1. Clock time
2. Preselection
3. Heating ON / OFF
4. Return
5. Feed
6. Display with fault indication

The electronic control unit can store up to 5 faults which can then be read and displayed with the module gauge. The current fault is written to memory location F1. Previous faults are written to memory locations F2 to F5.

Scan fault memory with module gauge

Switch on the heater using button (3). Press button (1) and hold down, then press button (2) within 2 seconds. The current fault is then shown in the display.

NOTE!

The remaining stored faults (max. 5) can be retrieved using buttons (4) and (5).

Clear fault memory

NOTE!

To clear the fault memory, ensure that there is an electrical connection to the 12-pin plug of the module gauge from PIN 11 to PIN 10.

Press button (3), the current fault is displayed. Press button (1), hold down and within 2 seconds press button (2). The module gauge is now in the "Scan fault memory" program.

Switch off ignition. Press buttons (1) and (2) at the same time, then switch the ignition on.

The indication in the display flashes after the ignition is turned on.

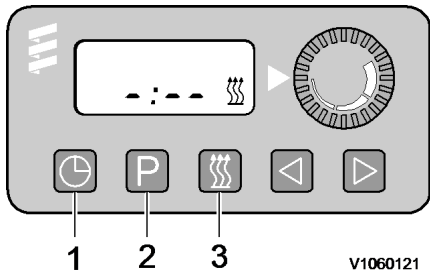


Figure 2

NOTE!

After around 3 seconds, the control unit is released, and then the heater starts.

Display, no current fault in display when heater is started.

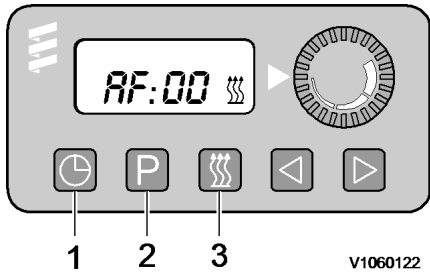


Figure 3

Document Title: Error code, troubleshooting	Function Group: 875	Information Type: Service Information	Date: 2014/3/8 0
Profile: CWL, L25F [GB]			

Error code, troubleshooting

Diesel heater

Error code	Cause	Action
004	Short-circuit in control unit	Separate plug connection S1/B1 on heater and check the line to the relay fresh air fan for short-circuit to ground at plug B1, PIN 16. If OK - -> replace control unit.
010	Overtoltage - switch off Overtoltage present at control unit for at least 20 seconds without interruption. Heater does not work.	Separate plug connection S1/B1 at heater, start vehicle engine, measure voltage at plug B1 between PIN 1 (cable 2.52 rt) and PIN 10 (cable 2.52 br). Voltage > 16 Volt - -> check alternator regulator
011	Under-voltage - switch off Under-voltage present at control unit for at least 20 seconds without interruption. Heater does not work.	Separate plug connection S1/B1 at heater, vehicle engine off, measure voltage at plug B1 between PIN 1 (cable 2.52 rt) and PIN 10 (cable 2.52 br). The measurement voltage and the battery voltage should be the same. If there is a voltage drop, check fuse, supply line, ground connection and battery positive terminal for corrosion and good contact.
012	Overheating at overheat sensor	Check heating air lines for blockage or eliminate blockage, if OK - -> replace combi-sensor.
013	Overheating at flame sensor, excessive temperature at heat exchanger	Check heating air lines for blockage or eliminate blockage, if OK - -> replace combi-sensor.
014	Temperature difference between flame sensor and overheating sensor too large	Check heating air lines for blockage or eliminate blockage, if OK - -> replace combi-sensor.
015	Operating block Fault code 015 is displayed if the heater is switched on again after displaying fault code 017.	- -> Replace control unit.
017	Overheat Because the control unit has not detected fault code 012 or 013, it is locked.	If the heater is switched on again, fault code 015 is displayed - -> replace control unit.
020	Glow plug - failure	Check glow plug for continuity, approx. $0.5 \Omega \pm 0.05 \Omega$, or function test (see fault code 021).
021	Glow plug output - short-circuit, overload or short-circuit to ground	Perform function test on glow plug in installed state; to do this, remove plug from control unit. Apply a voltage of max. 8 Volt to the glow plug and measure the current intensity after around 40 seconds. If the following measurement values appear, the glow plug is OK. Current intensity = 9 A + 1.5 A / - 1.2 A, if value deviates - -> replace glow plug. If the function test values are OK - -> check glow plug harness for damage and continuity, if OK - -> replace control unit.
031	Fan motor - failure	Check fan motor harness for damage, if OK --> remove harness at control unit and check for continuity, if OK --> replace control unit.
032	Fan motor - short-circuit	Perform function test on fan motor; to do this, remove plug from control unit. Apply a voltage of max. 8 Volt to the fan motor and measure the current intensity after around 40

seconds. Current intensity ≤ 6.5 A, fan motor OK - -> replace control unit. Current intensity > 6.5 A --> replace fan.

033	Fan motor does not turn	Speed too low: fan blocked - check free running of fan and remove any foreign bodies, if OK --> check fan (see fault code 032). Speed too high: magnet on fan impeller missing --> replace fan. Speed sensor on control unit faulty --> replace control unit.
047	Metering pump - short-circuit or overload	Remove plug from metering pump, if fault code 048 is displayed, the metering pump is faulty --> replace metering pump. If fault code 047 is still shown, separate plug connection S1/B1 from heater. At plug B1, PIN 5, test line to metering pump for short-circuit to ground (PIN 10), if OK --> replace control unit.
048	Metering pump - failure	Remove plug from metering pump and measure metering pump resistance. Measurement value: $10 \Omega \pm 0.5 \Omega$, resistance value OK, reconnect wiring harness to metering pump. Separate plug connection S1/B1 at heater and measure resistance between PIN 5 and PIN 10, if OK --> replace control unit.
050	Too many failed start attempts (operating block), control unit locked	Unlock control unit by clearing fault memory with module gauge.
051	Flame detected on activation	If the flame sensor resistance value after activation is 1274Ω ($> 70^\circ\text{C} / 158^\circ\text{F}$), the fan runs for around 15 minutes to cool down; if the above resistance value does not fall within 15 minutes, a fault shut-down takes place. Test flame sensor, if OK --> replace control unit.
052	Time out No flame detected during start-up phase.	Test exhaust and combustion air supply. Test fuel supply. Test glow plug (see fault code 020 and 021) Test flame sensor, if OK --> replace control unit.
Flame interrupt in: 053 control stage "POWER" 054 control stage "HIGH" 055 control stage "MEDIUM" 056 control stage "LOW"	The heater has ignited (flame detected) and reports flame failure in a power stage	Test exhaust and combustion air supply. Test fuel supply. Test flame sensor, if OK --> replace control unit.
062	Control (module gauge) - failure	Separate plug connection S1/B1 at heater, in plug housing measure resistance between PIN 6 and PIN 7, if OK --> replace control unit. Resistance value on break between PIN 6 and PIN 7 $> 7175 \Omega$. Normal value: $1740 \Omega - 2180 \Omega (\pm 80 \Omega)$
063	Control (module gauge) - short-circuit	Remove plug on operating control, if fault code 062 appears --> replace operating control If operating control OK, test connection line for short-circuit, if OK --> reconnect plug to operating control. Separate plug connection S1/B1 at heater, if fault code 063 still displayed --> replace control unit. Resistance value on short-circuit between PIN 6 and PIN 7 $< 486 \Omega$. Normal value: $1740 \Omega - 2180 \Omega (\pm 80 \Omega)$
064	Flame sensor - failure	Remove control unit and separate green plug from control unit. Test flame sensor, if OK --> replace control unit. Resistance value on break $> 7175 \Omega$

065	Flame sensor - short-circuit	Remove control unit and separate green plug from control unit. If fault code 064 displayed --> replace combi-sensor. If fault code 065 still displayed --> replace control unit. Resistance value on short-circuit < 486 Ω
071	Overheat sensor - failure	Remove control unit, separate blue and green plugs from control unit, measure resistance value at blue plug PIN 1 and at green plug PIN 2, if OK --> replace control unit. Resistance value on break > 223 Ω
072	Overheat sensor - short-circuit	Remove control unit and separate blue plug from control unit. If fault code 071 displayed --> replace combi-sensor. If fault code 072 still displayed --> replace control unit. Resistance value on short-circuit < 183 Ω
090	Control unit defective	--> Replace control unit.
091	External interference voltage	Fault on control unit due to interference voltages on the vehicle network. Possible causes: Poor battery, charger --> eliminate interference voltage.
092	Control unit defective (ROM fault)	--> Replace control unit.
094	Control unit defective (EPROM fault)	--> Replace control unit.
096	Internal temperature sensor defective	--> Replace control unit.
097	Control unit defective	--> Replace control unit.

Document Title: Combination sensor, check	Function Group: 875	Information Type: Service Information	Date: 2014/3/8 0
Profile: CWL, L25F [GB]			

Combination sensor, check

Combi-sensor (overheat sensor / flame sensor)

To test the combi-sensor, observe a max. temperature of 320°C (608° F).

Test the overheat sensor with a digital multimeter; if the resistance value lies outside the nominal value in the table, replace the combi-sensor.

Overheat sensor, resistance values			
Temperature		Resistance in Ω	
°C	°F	Min.	max.
- 40	- 40	1597.00	1913.00
- 20	- 4	458.80	533.40
0	32	154.70	175.50
20	68	59.30	65.84
40	104	25.02	28.04
60	140	11.56	13.16
80	176	5.782	6.678
100	212	3.095	3.623
120	248	1.757	2.081
140	284	1.050	1.256
160	320	0.6554	0.792
180	356	0.4253	0.5187
200	392	0.2857	0.3513

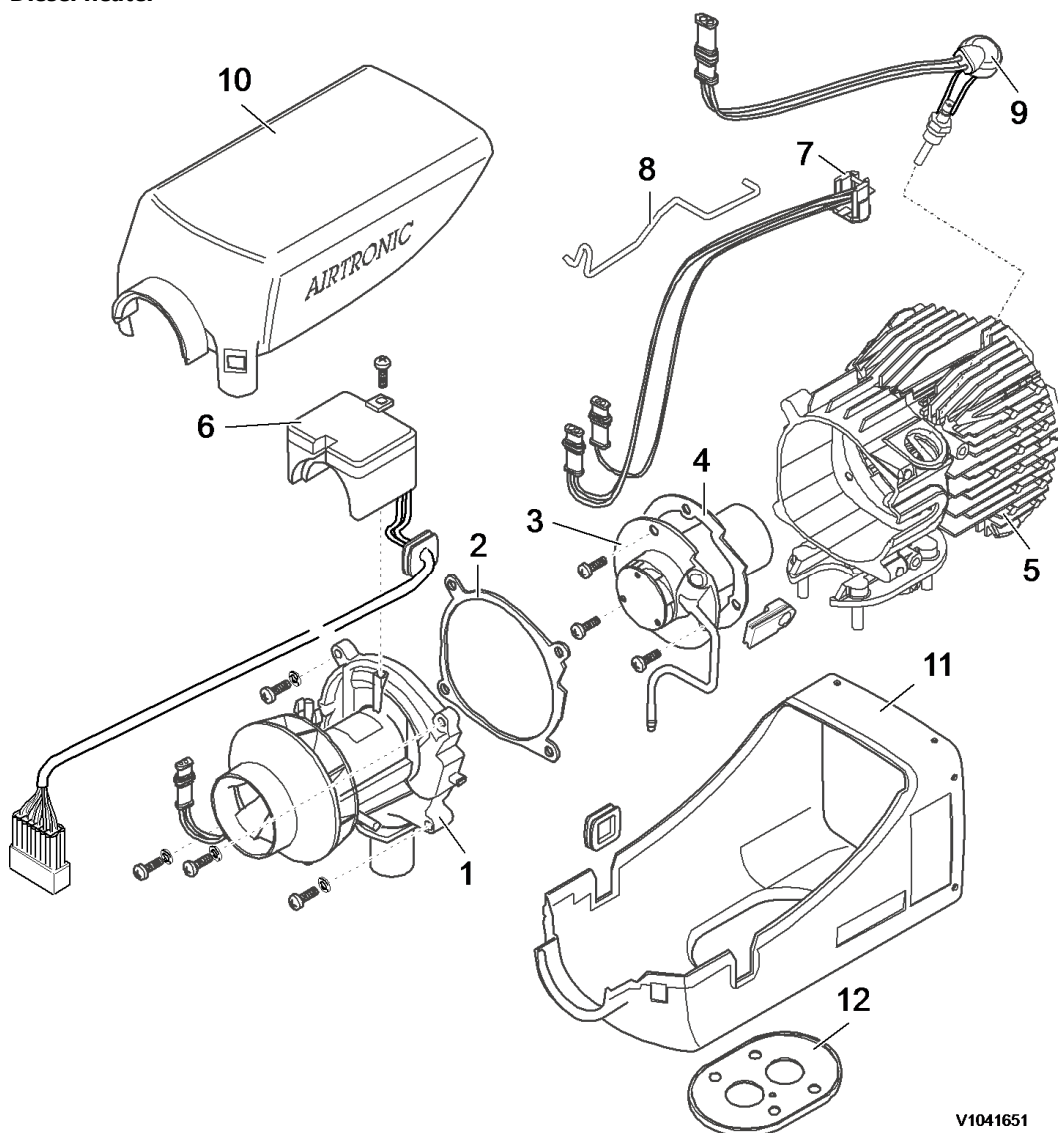
Test the flame sensor with a digital multimeter; if the resistance value lies outside the nominal value in the table, replace the combi-sensor.

Flame sensor, resistance values			
Temperature		Resistance in Ω	
°C	°F	Min.	max.
- 40	- 40	825.90	859.60
0	32	980.00	1020.00
40	104	1132.30	1178.50
80	176	1282.80	1335.10
120	248	1431.50	1489.90
160	320	1578.30	1642.80
200	392	1723.40	1793.70
240	464	1866.60	1942.80
280	536	2008.10	2090.00
320	608	2147.70	2235.80

Document Title: Disassembly and assembly	Function Group: 875	Information Type: Service Information	Date: 2014/3/8 0
Profile: CWL, L25F [GB]			

Disassembly and assembly

Diesel heater



V1041651

Figure 1
Diesel heater, disassembly and assembly

1. Combustion air blower
2. Seal - combustion air fan / heat exchanger
3. Combustion chamber
4. Seal - combustion chamber / heat exchanger
5. Heat exchanger
6. Control unit
7. Combi-sensor (overheat/flame sensor)
8. Clamp bracket
9. Glow plug

10. cover
11. Outer shell (lower part)
12. Flange seal

Remove cover from heater



Turn off the electric power with the battery disconnect switch before starting any work.

Unlock both locking tabs (1), raise cover and remove forwards

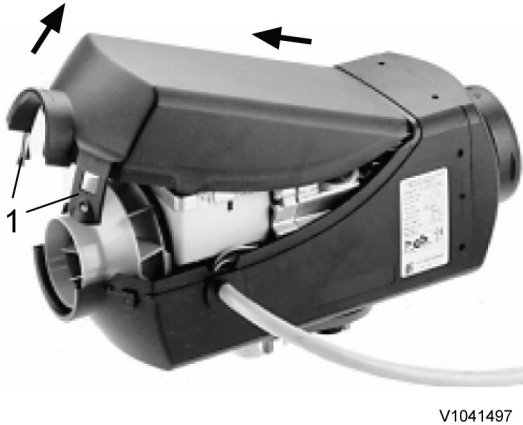


Figure 2

NOTE!

Wait until the heater has cooled before removing the cover.

Remove control unit

Unscrew fixing bolt (1), compress retaining clip (2), remove control unit (3) upwards. Unclip lines from holder on control unit. Withdraw grommet (4) from outer shell (lower part). Remove plug from control unit.

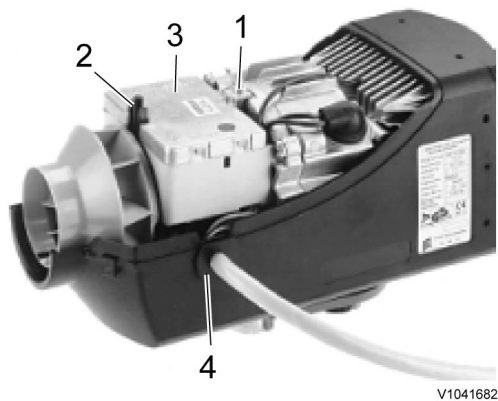


Figure 3

NOTE!

When fitting the control unit, ensure that the lines are clipped into the holder on the control unit and the plug is connected to the control unit.

Remove glow plug

Remove control unit. Separate plug (1) of glow plug wiring harness on control unit. Remove rubber grommet (2) and unscrew glow plug (3) using special tool (SW 12).



Figure 4

NOTE!

The special tool (SW 12) comes with the new glow plug. Tightening torque for glow plug **6 Nm (4.4 lbf ft)**.

With the glow plug removed, visually inspect the connector lining for dirt, and blow clean with compressed air if necessary. If the lining surface is severely soiled, replace it.

Remove combi-sensor

Remove control unit. Separate both plugs of the combi-sensor wiring harness on the control unit. Release bracket (1) from the combi-sensor (2). Remove combi-sensor.

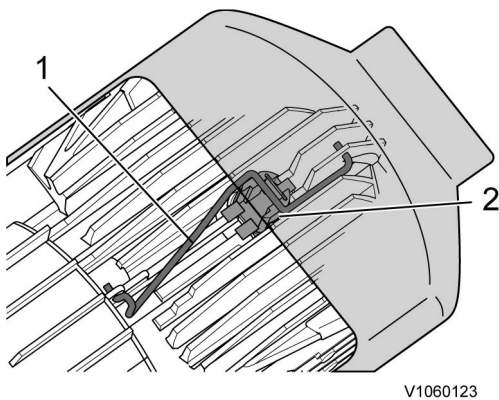


Figure 5

NOTE!

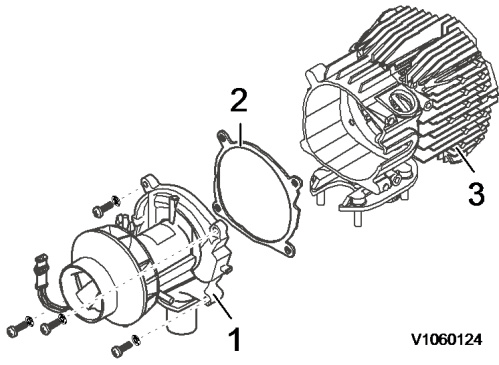
When installing the combi-sensor, it is essential to ensure that the combi-sensor sits flat on the heat exchanger.

Lock bracket (1) and lay wiring harness along bracket, through bracket eye to control unit, and connect.

Remove combustion fan.

Remove control unit. Remove flange seal and remove heater from outer shell (lower part).

Unscrew fixing bolts from combustion fan (1). Remove combustion fan with seal (2) from heat exchanger (3).



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Figure 6

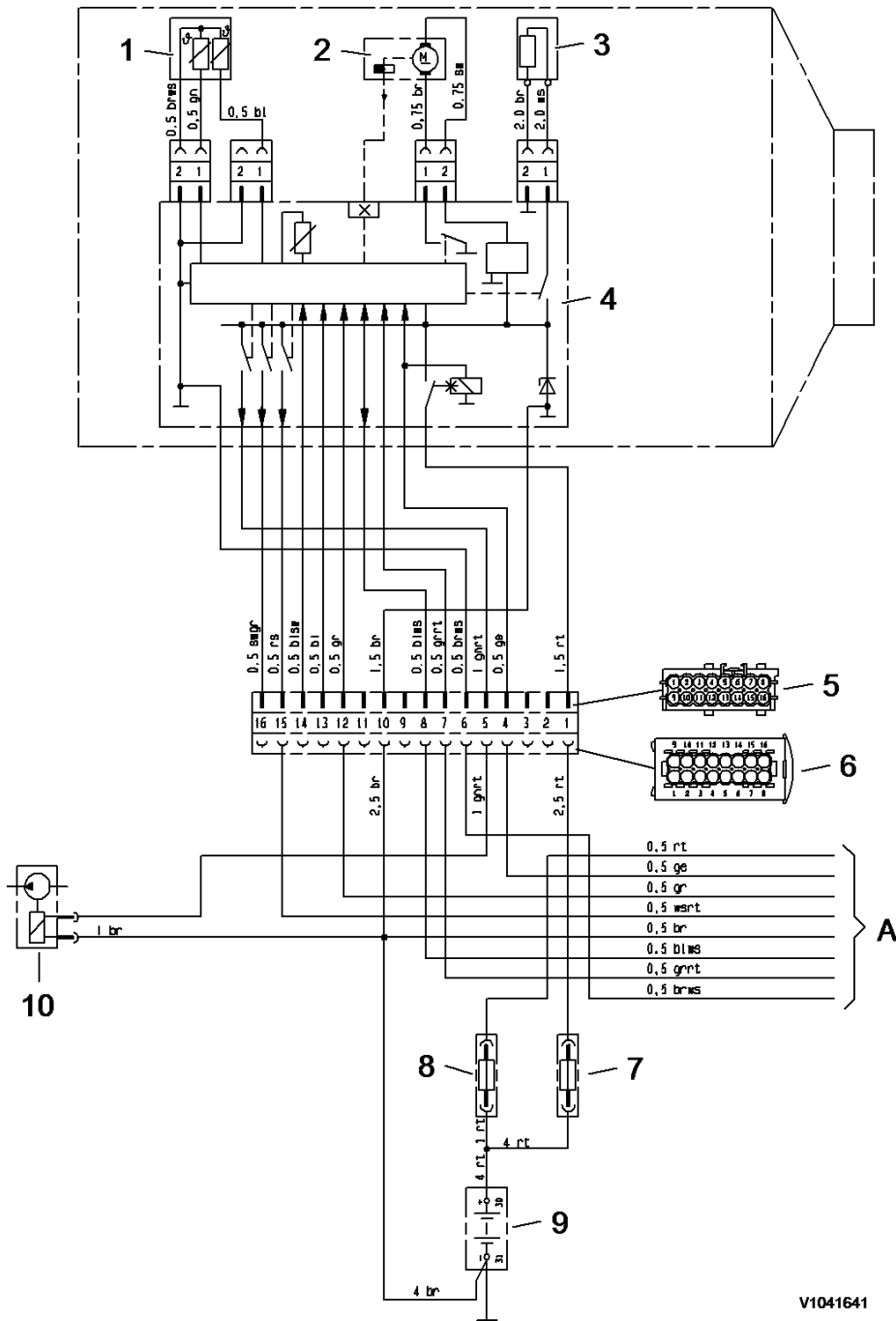
NOTE!

When installing the combustion fan, in principle replace the seal. Fixing bolt tightening torque **4 + 0.5 Nm (3 + 0.36 lbf ft)**.

Document Title: Electrical schematic	Function Group: 875	Information Type: Service Information	Date: 2014/3/8 0
Profile: CWL, L25F [GB]			

Electrical schematic

Diesel heater



V1041641

Figure 1
Circuit diagram, diesel heater

- A. Connection - operating control (module gauge).

1. Combi-sensor
2. Fan motor
3. Glow plug
4. Control unit
5. Plug S1
6. Connector B1
7. Main fuse
8. Fuse
9. Battery
10. Metering pump

Circuit diagram, operating control (module gauge)

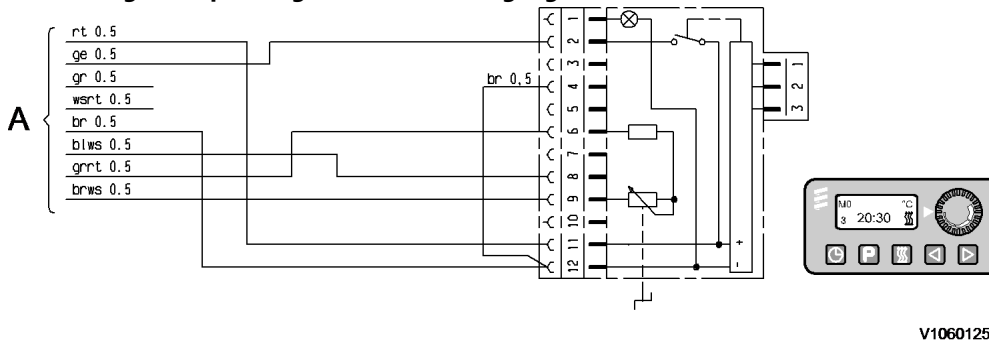


Figure 2
Circuit diagram, operating control (module gauge)

A. Connection - operating control to heater

Circuit diagram, combi-sensor

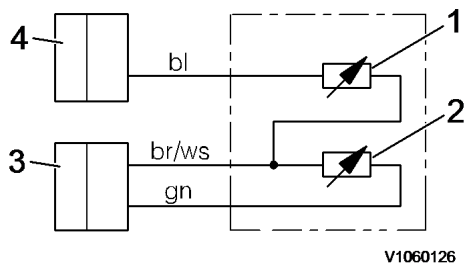


Figure 3
Circuit diagram, combi-sensor

1. Overheat sensor
2. Flame sensor
3. Plug, green
4. Plug, blue

Many thanks for your purchase.
Happy every day.