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## 1. COMPONENTS

### 1.1 GENERAL

#### Bulbs

Headlights	75/70 W
Parking light	5 W
Tail light	10 W
Rear fog light	21 W
Back-up light	21 W
Stop light	21 W
Direction indicator	21 W
Side light	3 W
Instrument panel lighting	2 W
Tachograph	2 W
Cab lighting	21 W
Bunk reading lamp	10 W
Warning lamps on instrument panel	1.2 W
Stepwell lighting	5 W
Marker light	5 W

#### REVOLUTION SENSOR

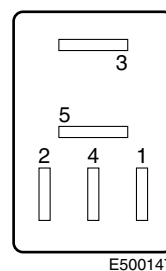
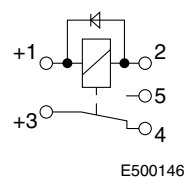
Air gap between tooth and sensor	0.3 - 0.7 mm
----------------------------------	--------------

Max. current and wire cross sectional area (mm <sup>2</sup> )				
Wire diameter	< 2 m	2 - 4 m	4 - 8 m	> 8 m
1	9	5	4	
1.5	22.5	13.5	7.5	6
2.5	37.5	22.5	12.5	10
4	60	36	20	16
6	90	54	30	24
10	150	90	50	40
16	240	144	80	64
25	375	225	125	100
35	525	315	175	140
50	750	450	250	200
70	1050	630	350	280
95	1425	855	475	380
120	1800	1080	600	480

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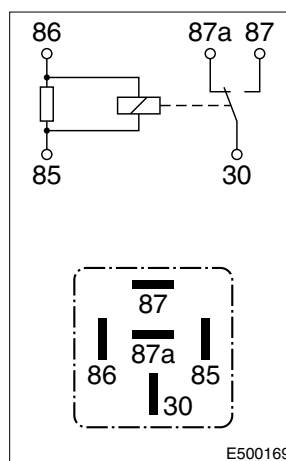
**Microrelay**

Maximum making current between points 3 and 5: 10A  
 Maximum breaking current between points 3 and 4: 5A



**Minirelay**

Maximum making current between points 30 and 87: 20A  
 Maximum breaking current between points 30 and 87a: 10A



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## 1. BATTERIES

### 1.1 FAULT-FINDING TABLE

FAULT: NEW BATTERY GETS QUITE HOT DURING CHARGING	
Possible cause	Remedy
Inadequate formation because of bad conservation or long-term (moist) storage	Allow battery to cool down Charge properly Check density

FAULT: ELECTROLYTE LEVEL TOO LOW	
Possible cause	Remedy
Leaking battery box	Replace battery
Excessive gas production caused by overcharging	Check/repair charger

FAULT: BATTERY ACID SPILLS FROM THE PLUG HOLES	
Possible cause	Remedy
Battery level exceeds capacity	Siphon off liquid
Overcharging	Check charger and repair, if necessary

FAULT: DENSITY IS TOO LOW (< 1,240) BAD STARTING	
Possible cause	Remedy
Power user left on	Charge battery
Insufficient charge	Check/repair charger
Short circuit in the charging circuit	Check charging circuit

FAULT: DENSITY IS TOO HIGH (< 1,290)	
Possible cause	Remedy
Topped up with acid instead of distilled water	Siphon off liquid and top up with distilled water If necessary, repeat after mixing (charging)

**1**

<b>FAULT: BAD STARTING BAD STARTING TEST POWER FAILS UNDER LOAD</b>	
<b>Possible cause</b>	<b>Remedy</b>
- Discharged battery	Charge battery
- Worn battery (corroded plates)	Replace battery
- Defective battery ("dead cell")	Replace battery
- Battery too small	Install battery with a larger capacity
- Sulphated battery (plates are hard)	Replace battery

<b>FAULT: BURNT-IN BATTERY TERMINALS</b>	
<b>Possible cause</b>	<b>Remedy</b>
- Wire clamps not securely fitted or bad contact	Have battery terminals repaired, securely fit wire clamps, and replace clamps, if necessary

<b>FAULT: EXCESSIVE BUBBLING IN 1 OR 2 CELLS DURING HIGH LOADS (STARTING OR STARTING TEST)</b>	
<b>Possible cause</b>	<b>Remedy</b>
- Defective cells	Replace battery
- Leaking partition	Replace battery

<b>FAULT: BATTERY DISCHARGES QUICKLY (CANNOT CONTAIN ITS CHARGE)</b>	
<b>Possible cause</b>	<b>Remedy</b>
- Insufficient charge	Check charge, is charging time (driving time) sufficient?
- Short circuit in the charging circuit	Check charging circuit
- Major self-discharging, e.g. because of contamination	Clean battery
- Battery sulphated (on inspection, plates prove hard and possibly have white appearance)	Replace battery

<b>FAULT: SHORT BATTERY LIFE</b>	
<b>Possible cause</b>	<b>Remedy</b>
- Wrong type of battery (e.g. in case of tailboards)	Install Super Heavy Duty or semi-traction battery
- Too many deep discharges	Intermediate additional charging with battery charger
- No recharging after deep discharge (white deposition)	Always recharge battery after deep discharge

<b>FAULT: BATTERY GETS HOT DURING OPERATION AND USES A LOT OF WATER</b>	
<b>Possible cause</b>	<b>Remedy</b>
- Overcharging or charging voltage too high	Check charger (voltage regulator)

<b>FAULT: BATTERY HAS EXPLODED</b>	
<b>Possible cause</b>	<b>Remedy</b>
- Fire or spark during or immediately after charging	Ensure proper ventilation and be careful with fire and sparks
- Short-circuiting tools	Be careful where you put tools
- Internal fault (loose connection)	Replace battery

<b>FAULT: DEFECTIVE ALTERNATOR AND/OR DIODES (RADIO AND OTHER POLARITY-SENSITIVE EQUIPMENT DO NOT WORK)</b>	
<b>Possible cause</b>	<b>Remedy</b>
- Reversed battery polarity or incorrect charging	Discharge battery and recharge in the proper direction Replace battery, if necessary

<b>FAULT: BATTERY IS INACTIVE (NO VOLTAGE)</b>	
<b>Possible cause</b>	<b>Remedy</b>
- Internal open circuit	Replace battery
- Battery extremely deeply discharged	Charge and test battery, replace if necessary

**1**



## 2. TROUBLESHOOTING

The following test equipment and tools can be used to localise faults.

1. The best instrument for this purpose is a digital multimeter. This instrument enables voltages, currents and resistances to be measured without reading errors, and it can trace virtually all faults.
2. Many but not all faults can be traced in a simple way by using warning lamps. However, faults which are caused by a poor earth connection can in general not be traced via a warning lamp or a buzzer.

The most frequently occurring faults are:

- a. short circuit
- b. open circuit
- c. earthing problems (poor earth connection caused by corrosion).

## 2.1 SHORT CIRCUITS

A short circuit is caused by a positive wire shorting somewhere to earth. In most cases this will cause a fuse to blow.

70W is then used to trace this fault. First check the diagram to see which consumers are protected by the fuse and then switch them all off.

Remove the fuse and replace it with a test lamp. Then, one by one, switch the consumers on and off. If the test lamp starts burning very brightly when a consumer is switched on, it is almost certain that the fault is in the wiring of that particular consumer. Check the diagram to see which connector is used to connect this consumer. Remove the first wiring connection (looking from the fuse).

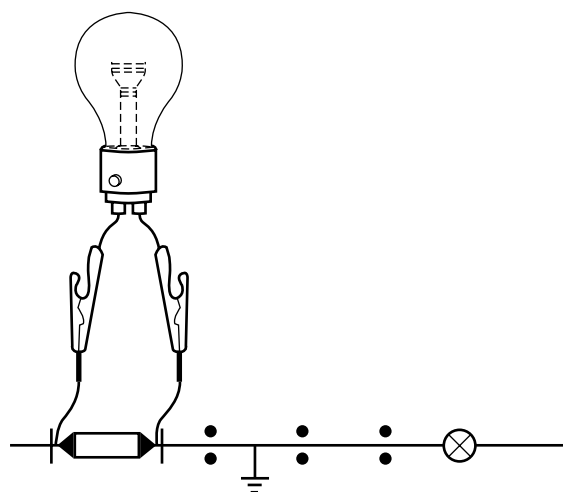
If the test lamp continues to burn brightly, the fault is between the fuse and this wiring connection.

However, if the test lamp stops burning, the fault is somewhere further on in the wiring.

Restore the wiring connection and disconnect the next one. If the test lamp continues to burn brightly, the fault is between these two wiring connections.

However, if the lamp stops burning again, the fault tracing procedure must be continued.

In this way the faulty section of the wiring can be found.



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## 2.2 OPEN CIRCUITS

Suppose a consumer is not functioning. The fault may then be in the consumer itself, or the wiring may be interrupted.

First switch on the consumer and check for voltage with the test lamp. If no voltage is present, first check whether the fuse is still intact.

If there is voltage at the fuse, the wiring must be checked again from the fuse to the consumer.

Every wiring connection must be checked.

If there is no voltage at one of these wiring connections, the interruption is between this connection and the connection checked second-last.

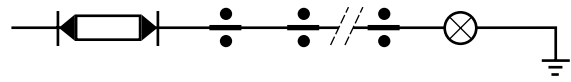
If voltage was found at the consumer, there is still the possibility of an interruption in the wiring from the negative terminal of the consumer to earth. This can be checked with a test lamp.

Make sure the circuit concerned is connected up.

Connect one end of the test lamp to earth and the other end to the negative (-) terminal of the component to be checked.

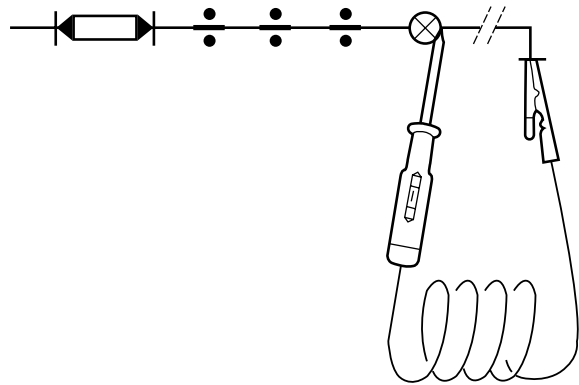
If the test lamp starts burning, the earth connection of the component is interrupted. If the test lamp does **not** come on, the earth connection of the component will in most cases be in good order.

If the positive and negative connections are both in good order, the consumer is defective and must be replaced.



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## 2.3 EARTHING PROBLEMS

Problems with the earth connections are mostly caused by corrosion on the contact surfaces of electrical connections.

Earthing problems can only be traced with a (preferably digital) multimeter. Digital, because this kind of problem usually involves only a few volts and the readings of an analog meter are not precise enough for this purpose.

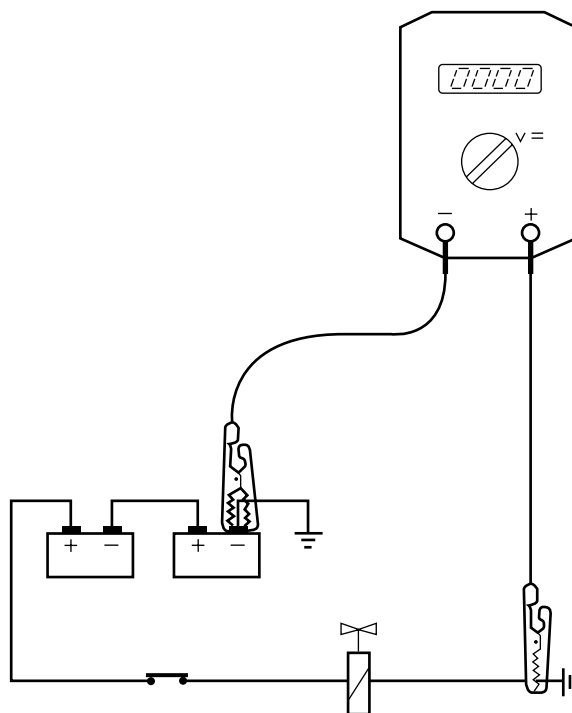
To establish whether a certain earthing point has a good earth connection, measure with a voltmeter between the battery negative pole and the earthing point in question.

Now switch on as many consumers as possible. If there is a correct earth connection, **no** voltage should be found.

In practice, however, a loss of approx. 0,5V will often be measured.

If the reading is higher, the earth connection must be checked carefully.

In this way the earth connections of all the consumers can be checked and measured.



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## 1. GENERAL

### 1.1 MULTIMETER

Multimeters are available in two different versions:

- analog meter
- digital meter

An analog meter has an indicating needle (pointer) which can move over a graduated scale.

A digital meter indicates the measured values by means of digits in a read-out window.

#### **Analog meter**

Disadvantages:

- Difficult to read due to the various graduated scales.
- Not capable of giving precision readings (depending on the scale arrangement/measuring range).
- If the meter is connected up incorrectly, there is a real risk of electrical defects in the meter.
- The indicating needle (pointer) is not resistant to powerful mechanical vibrations.
- The meter must usually be used in a certain position.

Advantages:

- Useful, for example, when measuring a potentiometer with a minor interruption.

#### **Digital meter**

Disadvantages:

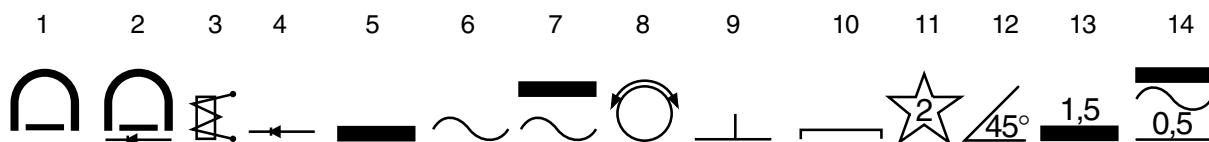
- Meter is slow. With a fluctuating voltage all you can see are flashing digits.

Advantages:

- It indicates the correct value without the risk of misinterpretation.
- Gives more accurate readings.
- It is protected against faulty connection.
- It is resistant to powerful mechanical vibrations.
- It can be used in any position.

### Key to the symbols on analog meters.

The following symbols may occur on an analog meter:



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1. Moving-coil meter with permanent magnet.
2. Moving-coil meter with rectifier cell.
3. Electromagnetic or soft-iron meter.
4. With rectifier cell.
5. Suitable for direct current.
6. Suitable for alternating current.
7. Suitable for direct current and alternating current.
8. Meter with zero adjustment.
9. Meter may only be used in the vertical position.
10. Meter may only be used in the horizontal position.
11. Test voltage is 2 kilovolts (without a digit it is 0.5 kilovolt).
12. Meter may only be used at the angle indicated.
13. Suitable for direct current, class 1.5 (inaccuracy 1.5% of full scale).
14. Suitable for direct current and alternating current, classes 1 and 0.5 (see item 13 for explanation).



**Units of measurement**

The multimeter should be set to the range applicable to the unit of measurement required. For example: the voltage range, current range or resistance range.

- 1 DCV -  $\bar{V}$
- 2 ACV -  $\tilde{V}$
- 3 DCA -  $A\equiv$
- 4 ACA -  $A\sim$
- 5 Ohm -  $\Omega$
- 6 %
- 7 Hz

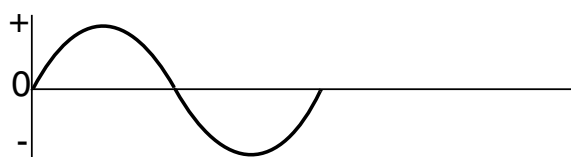
W 5 01 004

1. Direct voltage
2. Alternating voltage
3. Direct current
4. Alternating current
5. Resistor
6. Duty-cycle
7. Frequency

1.2 MEASURING SIGNALS WITH THE MULTIMETER

1. Sine-wave signal (alternating voltage)

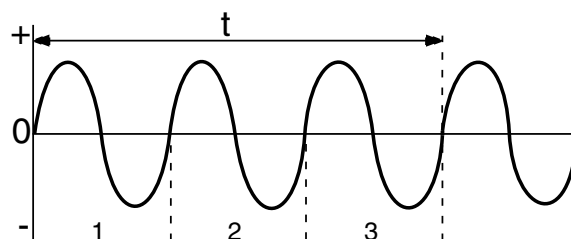
The signal regularly changes polarity with respect to the "0" line.



2

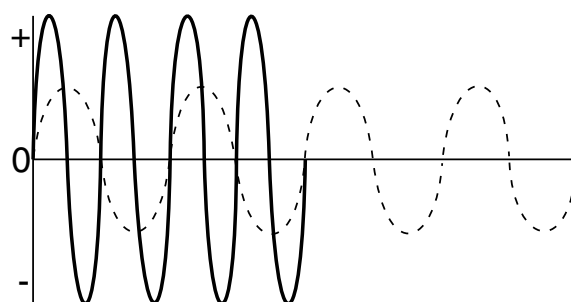
Frequency

The frequency is indicated in Hertz (Hz). The number of complete sines per second is the frequency of the signal (3 Hz in the figure shown opposite).



Voltage

When the number of sines per second increases, not only the frequency increases but also the voltage.



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Measuring a sine-wave signal

There are two ways of measuring a sine-wave signal with a multimeter:

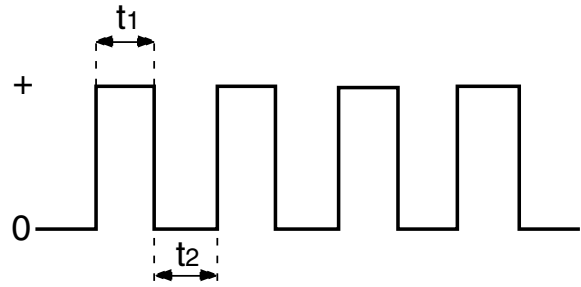
- With the multimeter set to the frequency (Hz) position. This is measuring the number of complete sines per second.
- With the multimeter set to the alternating voltage position. This is measuring the mean voltage.

Sine-wave signals on the vehicle

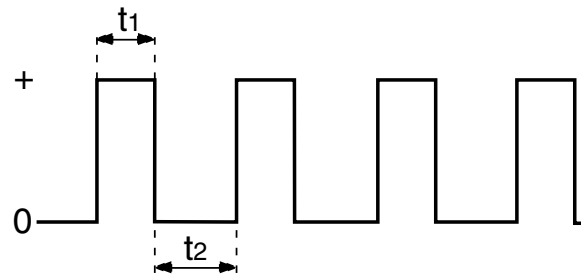
- Output signal of ABS sensor.
- Output signal of engine speed sensor

**2. Square-wave signal**

Square-wave signals only have two voltage levels, both of which - in principle - have the same duration (t1 equals t2).



If the duration is different for the two levels (t1 is not equal to t2), the signal is called a "pulse train".



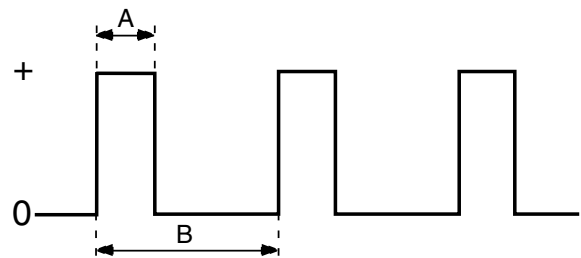
**Duty-cycle**

The duty cycle is the ratio between the two voltage levels expressed as a percentage.

$$\frac{A}{B} \times 100\%$$

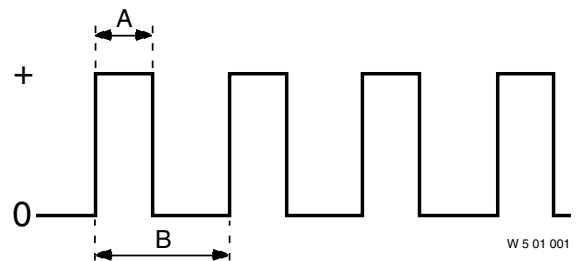
The voltage level ratio of a "pulse train" may change (for example, when the vehicle speed increases).

If the number of pulses per unit of time increases, the duty cycle reading will also increase.



**Voltage**

An increase in the number of pulses per unit of time will not only give higher duty cycle readings but also a higher mean voltage.



**Measuring a square-wave signal**

There are two ways of measuring a square-wave signal with a multimeter:

- With the multimeter set to the duty cycle (%) position.  
In this case, we measure the voltage level ratio.
- With the multimeter set to the direct voltage position.  
This is measuring the mean voltage.

**Square-wave signals on the vehicle**

- Output signal of speed sensor
- Speed signal to electronic units
- Speed signal to electronic units.

## 2. DESCRIPTION OF COMPONENTS

### 2.1 ENGINE SPEED AND VEHICLE SPEED SENSORS

The engine speed and vehicle speed sensors are inductive sensors.

The vehicle is equipped with a number of inductive sensors, such as:

- engine speed sensor
- ABS sensor
- vehicle speed sensor.

#### Operating principle

An inductive sensor is composed of a permanent magnet (1), a core (2) and a coil (3). When the inductive sensor is situated between two teeth, the lines of force of the magnetic field will run directly from the north pole to the south pole via the housing.

The moment a tooth approaches the inductive sensor, the lines of force of the magnetic field will run from the north pole to the south pole via the housing, the teeth of the wheel, and the core.

In this situation more lines of force will pass through the core, which will give an increased magnetic-field intensity.

As a result of this change in the magnetic field, an alternating voltage will be generated in the coil.

The value of the generated alternating voltage depends on the rotation speed of the toothed wheel and the air gap between sensor (core) and tooth.

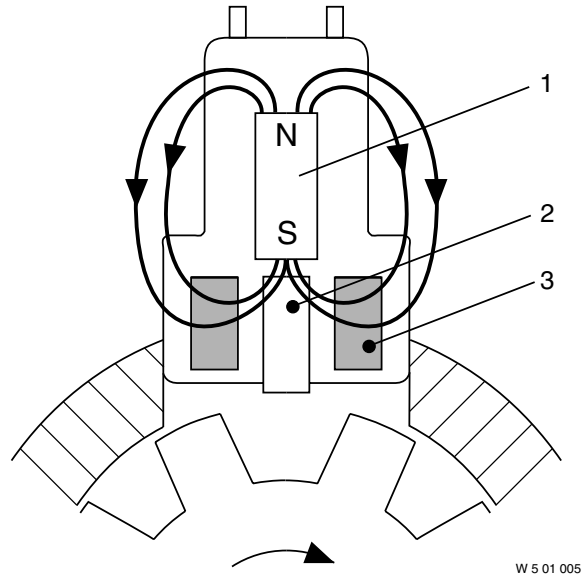
#### From alternating voltage to “pulse train”

The output signal of the inductive sensor is used by the various electronic units and analog meters/gauges (rev counter, tachograph).

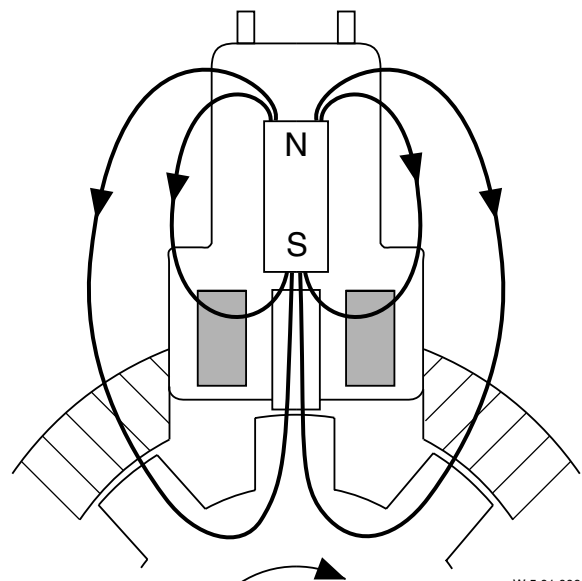
The electronic unit has a microprocessor, which can only process digital signals (pulses).

Therefore, the sine-wave signal should be converted into a “pulse train”.

Similarly, the meters/gauges (rev counter, tachograph) only respond to a “pulse train”.



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The conversion of the engine speed signal may take place in:

- the rev counter (e.g. 95 series)

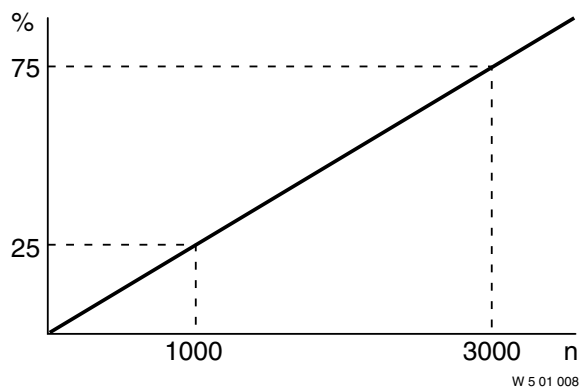
For the vehicle speed signal, conversion takes place within the speed sensor itself.

For the ABS sensor signal, conversion takes place in the ABS unit.

**Duty cycle of “converted” engine speed signal**

The linear characteristic of the duty cycle (%) versus the engine speed (n) is plotted in the graph opposite.

This characteristic applies to all engines.



**Duty cycle of vehicle speed signal**

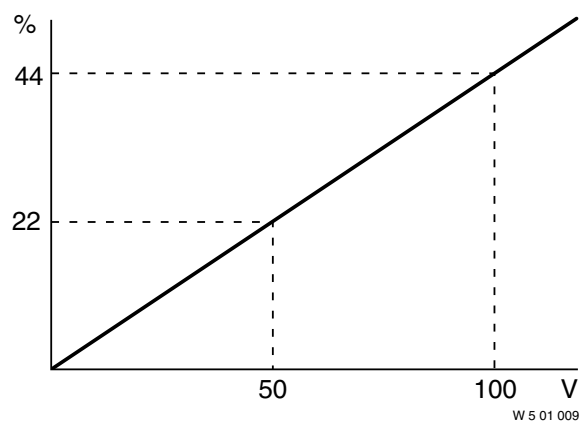
The linear characteristic of the duty cycle (%) versus the vehicle speed (V) is plotted in the graph opposite.

This characteristic applies to all vehicle types.

**Checking**

The alternating voltage signal can be checked with a multimeter set to the alternating voltage range.

The “pulse train” (square-wave voltage) can be checked with a multimeter set to the direct voltage or duty cycle range.



## 2.2 TEMPERATURE SENSORS

The vehicle is equipped with a number of temperature sensors, such as:

- coolant temperature sensor

These sensors (also called thermistors) are resistors which are sensitive to temperature. The resistance of these sensors changes considerably when the temperature increases or decreases.

There are two kinds of temperature sensor:

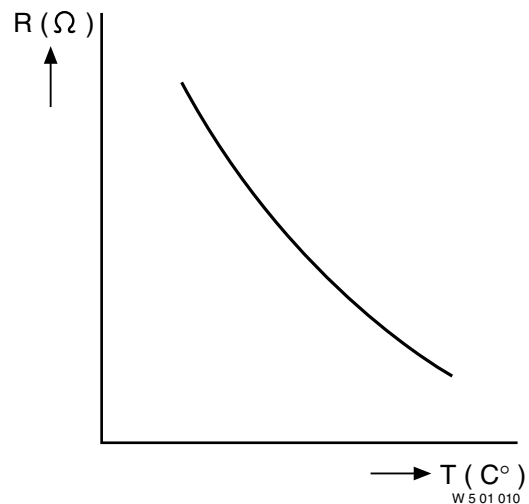
- NTC resistor (Negative Temperature Coefficient).
- PTC resistor (Positive Temperature Coefficient).

### NTC resistor

In an NTC resistor, the resistor value decreases as temperature increases.

Application:

- measuring coolant temperature.



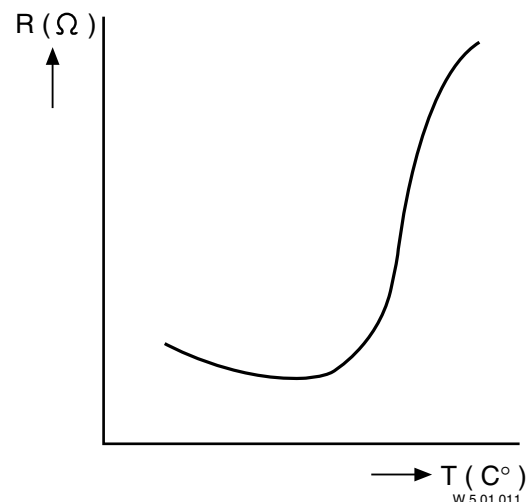
### PTC resistor

In a PTC resistor, the resistor value increases as temperature increases.

Contrary to NTC resistors, PTC resistors show a large resistor difference within a small temperature range.

Application:

- measuring the air temperature in the auxiliary heating.



### Checking

The temperature sensors can be checked with a multimeter set to the resistance range.

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**2.3 FLUID-LEVEL SENSORS**

The vehicle is equipped with a number of fluid-level sensors, such as:

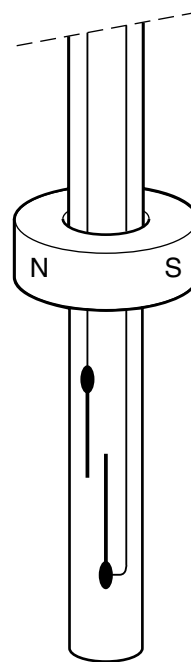
- fluid-level sensor for the cooling system

The fluid-level sensor is a reed contact type. The sensor is provided with a micro switch which is influenced by a magnetic field outside the sensor.

If the fluid level drops, the switch will be operated by a float with a magnet in the tank or reservoir, and the contacts will close. The closing of the contacts will “activate” a warning lamp.

**Checking**

The fluid-level sensors can be checked with a multimeter set to the resistance range.





## 2.4 PRESSURE SENSORS

The vehicle is equipped with a number of pressure sensors, such as:

- pressure sensor to register the bag pressure in ECAS.

A diaphragm of semiconductor material (silicon) is incorporated in the pressure sensor.

If pressure is exerted on the diaphragm, it will bend.

This bending of the diaphragm will produce a change of resistance of the semiconductor material.

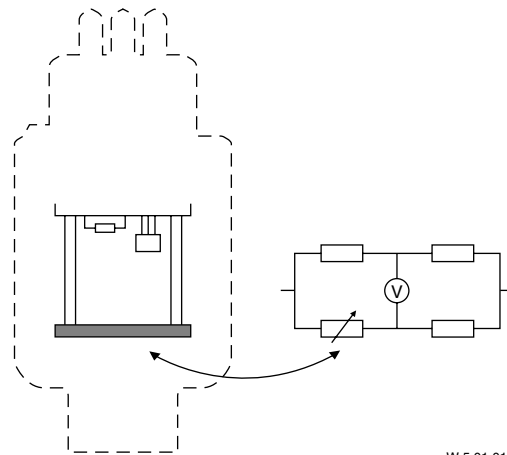
The diaphragm is part of a so-called bridge circuit.

The bending of the diaphragm will unbalance the bridge circuit, which causes the output signal to change.

The output voltage is directly proportional to the pressure applied (bending of the diaphragm).

### Checking

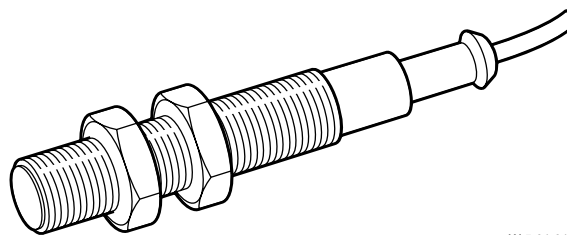
The output voltage can be checked with a multimeter set to the direct voltage range.



**2.5 PROXIMITY SENSORS**

The vehicle is equipped with a number of proximity sensors, such as:

- sensor under the clutch pedal for E-throttle
- cab lock sensor
- mechanic rear axle lift system



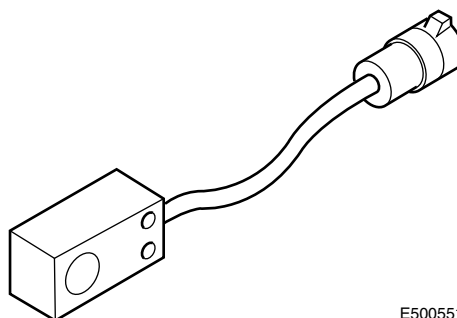
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**Inductive proximity sensors**

A changing electromagnetic field is generated by a pulsating current in a coil (oscillation). If a metal object is introduced into the electromagnetic field, eddy currents will occur in that metal object.

These eddy currents will “damp” the magnetic field in the coil, so that the current taken up in the coil will change.

This change will result in an output voltage.



E500551

**Checking**

Placing a metal object in front of the sensor (inductive sensor) makes it possible to check the output voltage with a multimeter set to the direct voltage range.

### 3. INSPECTION AND ADJUSTMENT

#### 3.1 CHECKING ELECTRICAL SYSTEMS

Special tools that may be used, are:

- DAVIE 2.0
- multimeter, preferably digital
- DELSI 2

##### **DAVIE 2.0**

For information on how to use DAVIE 2.0, see the instructions supplied with the DAVIE equipment.

##### **Multimeter**

For the use of a digital multimeter, see the instructions supplied with the meter and the section "Signal measuring".

##### **DELSI**

DELSI stands for **DAF E**lectronic **S**imulator. A road speed signal is required for testing a number of electronic systems.

DELSI 2 (DAF no. 694941) is an electronic road speed simulator which can only be used in combination with a compact tachograph.

DELSI is connected to the road speed sensor plug on the gearbox.

To connect the DELSI, you must first break the seal on the connector. The road speed signal can be regulated with a rotary knob.

The road speed setting can be read on the tachograph.

For a reliable operational test the road speed should be above 20 km/h.

##### **Note:**

**Remember to seal the road speed sensor plug again after DELSI has been used.**

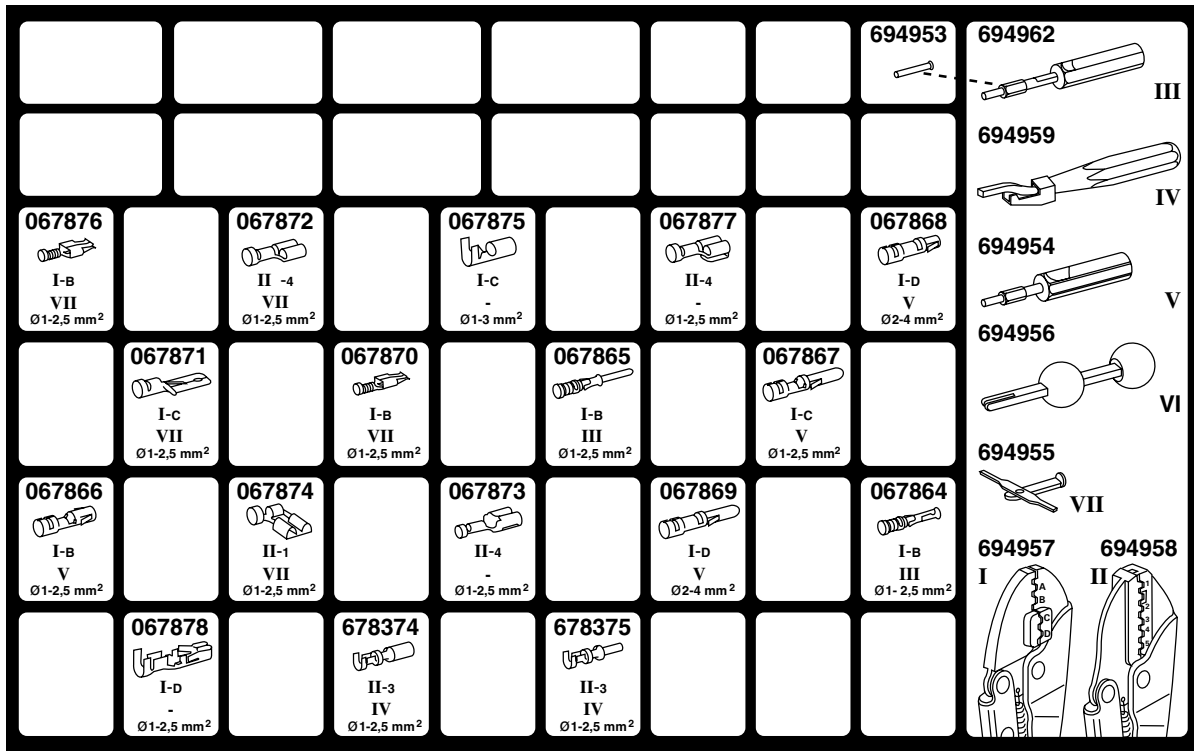


4. REMOVAL AND INSTALLATION

4.1 REMOVING AND INSTALLING CONTACTS FROM CONNECTORS

Contact kit A (DAF no. 0694960)

If additions are made to the wiring, a contact may have to be removed from the connector. For this purpose special ejectors have been developed, which are included in the contact kit. To facilitate the selection of the contact, crimping tool and ejector, a sticker has been affixed to the inside of the box.



W 5 03 019

The information given on this sticker is to be interpreted as follows:

At the top is the DAF no. of the contact shown. Roman numerals I and II, shown under the illustrations, refer to the crimping tool to be used.

The numeral or letter added to Roman numeral I or II indicates the hole in the tool in which the contact is to be placed.

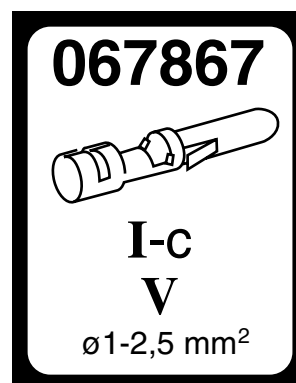
Roman numerals III to VII refer to the type of ejector to be used for removing the contact from the connector.

The information at the bottom refers to the wire core cross sectional area suitable for the contact.

### Contact kit B (DAF no. 1240065)

Additional crimping and ejector tools are required for SCAT contacts and for micro-timer contacts.

To facilitate the selection of the contact, crimping tool and ejector, a sticker has been affixed to the inside of the box.



W 5 03 018

## 4.2 INSTALLING CONTACT UNITS ON ELECTRICAL WIRES

The increasing application of electronics in vehicles has made it necessary to use new types of connectors and contacts. This has resulted in the use of relatively small contacts. More attention must therefore be paid to the connections as a whole.

In addition, the number of connections has considerably increased, so that the wiring harnesses have become thicker. To keep the wiring harnesses manageable, a new type of wiring is now being used:

3. Wires with a core section of 1 to 2.5 mm<sup>2</sup> and reduced insulation thickness, retaining the mechanical properties, resistant to temperatures up to 70 °C (in accordance with DAF standard 9502). These wires are not suitable for engine and gearbox wiring.
4. Wires with a core section of 1 to 120 mm<sup>2</sup> and normal insulation thickness, resistant to temperatures up to 105 °C (in accordance with DAF standard 9504).

**Note:**

**In view of the mechanical strength required, the minimum permissible core section is 1 mm<sup>2</sup>.**

To ensure the reliability of systems and connections, the following points should be observed when repairs or additions are made to the wiring:

1. Always choose the following:
  - the correct type of contact
  - the correct wire diameter for the contact used
  - the correct insulation diameter for the cable used
  - the correct type of contact material (tin-plated or silver-plated)
2. Use the right tool for the job. Wire ends are always clamped to a contact. For this purpose special tools have been developed.

**Only if these special tools are used and if the contact is placed in the right hole, can reliable connections be made.**

3. Strip the correct length of wire. Always use stripping pliers. Rule of thumb: stripped length = length of shrinking sleeve + 1 mm. Make sure that the core is not damaged during stripping or problems may occur after some time.

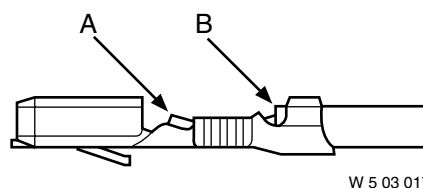
**2**

#### **What is a good connection?**

A good connection will only be obtained if points 1, 2 and 3 are complied with. This implies that both the copper core and the insulation are firmly clamped in place.

Figure 1 shows the correct method of stripping and clamping.

The end of the core should still be visible at A. The end of the insulation should still be visible at B.





### 4.3 REMOVAL AND INSTALLATION OF CONTACT UNITS OF 39-PIN FLOOR CONNECTOR

#### Removal and installation of contacts units of floor part

##### Removal of contacts units from floor part

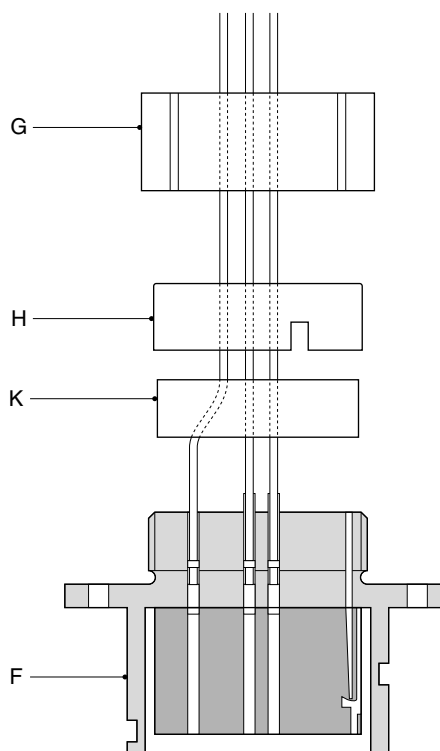
1. Unscrew union nut G.
2. Slide thrust washer H and seal K slightly back on the wiring.
3. Now push the contacts out of the connector housing F, using the special ejector tool from contact kit A or B.

##### Installation of contacts units in floor part

1. Slip union nut (G) and thrust washer up the wiring.
2. Feed the wires without contacts through seal K.
3. Fit new contacts to the wires, using the right tool.
4. Push the contacts home in the connector F.
5. Push seal K against connector housing F.
6. Position thrust washer H so that the two cams on the sides of connector housing F snap into the thrust washer recesses.
7. Finger-tighten union nut G.

##### Note:

- Thrust washer H bears the contact numbers (for correct location of contacts). Make sure that these contact numbers occupy the same position as the contact numbers on the connector housing.
- A wrongly positioned wire provokes a leaky seal after removal. If no new wire is inserted in this position, be sure to fit a sealing plug.



E500477

### Removal and installation of contacts units of counter floor part

#### Removal of contacts units from counter floor part

1. Undo end union nut A and adapter union nut B, and slide them back over the insulation hose as far as they go.
2. Slide thrust washer H and seal K back over the wiring harness as far as they go.
3. Slide union nut E back over the wiring harness.
4. Remove the sealing ring (2) carefully.
5. Release the locking rings (3) in connector housing F carefully.
6. Take out centring sleeve D from connector housing C.
7. Now push the contacts out of the connector housing C, using the special ejector tool from contact kit A or B.

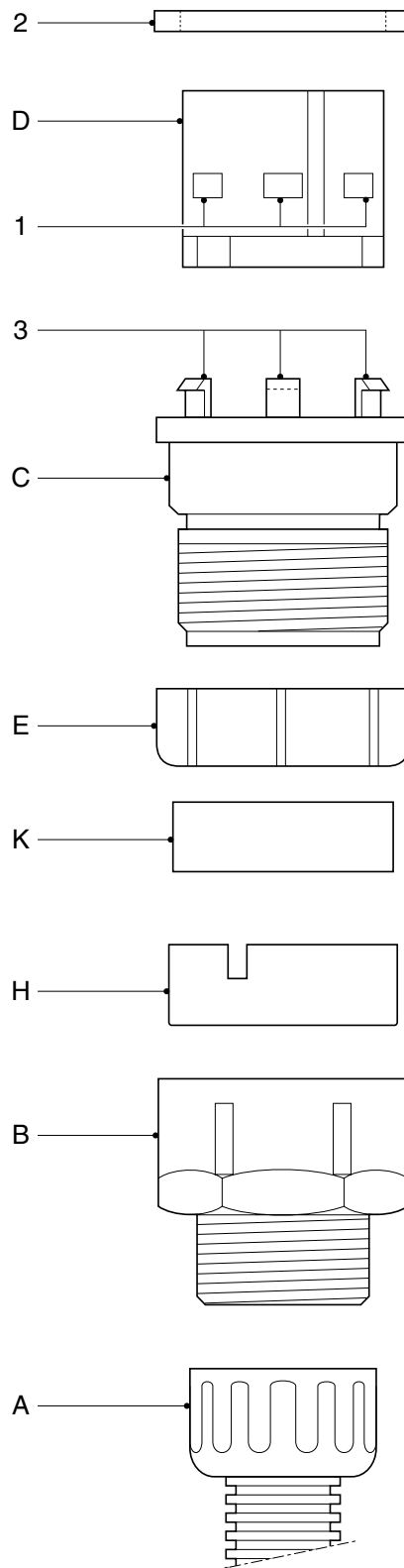
#### Installation of contacts units in counter floor part

1. Slide end union nut A and adapter union nut B, back over the insulation hose as far as they go.
2. Position centring sleeve D in connector housing C so that all openings are arranged opposite one another.
3. Check that all circlips (3) are located in the relevant recesses (1).
4. Feed the wires without contacts through thrust washer and seal K.
5. Fit new contacts to the wires, using the right tool.
6. Feed the wiring harness through adapter union nut B.
7. Push seal K against connector housing C.
8. Position thrust washer H so that the two cams on the sides of connector housing C snap into the thrust washer recesses.
9. Push the connector pins into connector housing C, observing their correct position.
10. Place sealing ring (2) around centring sleeve D and push it against the stop of connector housing C.

#### Note:

- In performing the work described in the last two steps, avoid twisting the wiring harness. Otherwise serious damage could develop (risk of wire breakage).
- Hand-tighten the relevant union nuts. Do not use any tools (pliers) for this job.

11. Screw adapter union nut B on connector housing C.
12. Screw end union nut A (with insulation hose) on adapter union nut B.



E500478

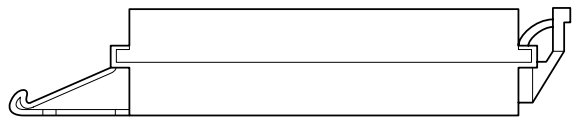
#### 4.4 REMOVAL AND INSTALLATION OF CONTACT UNITS OF CONNECTORS WITH SINGLE CONTACT LOCK

Contact units with a single contact lock are removed using the special ejector tool from contact kit A or B.

Correctly position the wires with their contact units.

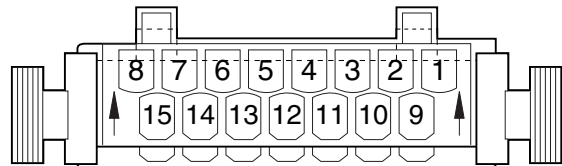
#### 4.5 REMOVAL AND INSTALLATION OF CONTACT UNITS OF CONNECTORS WITH ADDITIONAL CONTACT LOCK

Some connectors have an additional contact lock. Such a connector is in halves. The upper half (wire entry side) together with the lower half constitutes the additional contact lock.



E500476

In order to unlock the additional contact lock, slightly push the upper half of the connector in the direction shown by the arrow (on the connector housing). Now you can correctly position the wires with their contact units.



E500475

Contact units with an additional contact lock are removed using the special ejector tool from contact kit A or B.

Correctly position the wires with their contact units. Once the contacts have been fitted, push back the connector until it locks.



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## 1. SAFETY INSTRUCTIONS

### 1.1 BATTERIES

- When working on batteries, always first remove the earth lead.  
When reconnecting battery leads, always connect the earth lead last.
- Always handle batteries carefully, and keep them vertical.
- The sulphuric acid in batteries is an aggressive and toxic substance. When working on batteries, wear protective clothing, gloves and safety goggles.  
In the event of contact with clothing, skin or eyes, immediately rinse with large volumes of water. In the event of contact with the eyes or skin, always call medical assistance.
- When topping up batteries, never allow the electrolyte level to rise more than 10 mm above the plates, or further than the level indicator.
- Never place any tools or other materials which could accidentally lead to a short circuit on the battery terminals, on the batteries or close to the batteries.  
Short-circuited battery terminals may cause the battery to explode.
- Following work, always tighten batteries soundly, but never too tight.

### 1.2 CHARGING BATTERIES

- When charging batteries, an explosive gas mixture may be released.  
Always ensure efficient ventilation when charging batteries.  
Smoking, open flames and sparks are strictly forbidden.
- Thaw out frozen batteries before charging them.
- Switch off the battery charger, before the leads to the battery are disconnected.





## 2. CHARGING BATTERIES

### 2.1 GENERAL

- A battery may only be charged with direct current. Connect the positive pole of the battery with the (+) positive terminal of the charger, and the negative pole of the battery with the (-) negative terminal of the charger.  
During charging, the cell sealing plugs may be left on the battery (except during fast-charging).  
During charging, the cell voltage will rise. This voltage rise will depend on the charging current applied and the temperature. During normal charging, the cell voltage will rise from approx. 2 volt/cell to approx. 2,65 volt/cell. Exceeding a charge voltage of approx. 2,35 to 2,4 volt/cell (approx. 14,2 volt in a 12V battery) will result in active gas development.  
As a result of the rising voltage during charging, the charge current will generally gradually fall.  
Overcharging will negatively affect the service life of a battery.
- By unnecessarily continuing to charge, once the battery is completely full (even with a low current), corrosion (damage) occurs on the grids of the positive battery plates. This form of wear results in the early failure of the battery.  
Depending on the power of the charger, normal charging time is between 8 and 15 hours.  
If during charging the temperature of the battery acid exceeds 55°C, charging should be stopped. High temperatures reduce the service life of a battery.
- A battery should be considered charged, if the charge voltage rises no further for 2 hours, and the acid density (specific mass) has reached the nominal value (for example 1,28 kg/dm<sup>3</sup>), and rises no further.

- A charged battery must be used immediately. If this is not possible, apply maintenance to the battery as described in the chapter "Storage of batteries".
- A discharged battery should be charged as rapidly as possible. If a discharged battery is not recharged, the battery plates may become sulphated (i.e. the battery plates become hard), leading to permanent capacity loss.

## 2.2 CHARGING METHODS

### Normal charging

- Normal charging is carried out to return a fully or partially discharged battery to 100% capacity. In general, a charging current of 1/20 to 1/10 of the capacity is selected.
- It is important that the charge current be reduced during gas development, and that the current be switched off, once the battery is full.

### Fast-charging

- In this charging method, multiples of the normal charge current (approx. 3 to 5 times) are used, in order to achieve an acceptable charge condition, in the shortest possible time.
- Before fast-charging, remove the battery leads, in order to avoid damage to the electronic components.
- Remove the cell sealing plugs, to permit the gasses produced to better escape.
- To prevent overcharging, switch to reduced charge current upon reaching the gas pressure (2,35 tot 2,4 volt/cell).

#### Note:

Try to avoid fast-charging. Only use it as a last resort. The battery is overloaded during fast-charging, thus reducing the battery's service life.

### Buffer charging

- In this option, the consumer and the charger are both connected to the battery. The charger delivers sufficient current to ensure that the battery remains practically full. The battery provides peak currents to the consumer.
- Buffer charging is best carried out at a constant (stabilised) voltage.

### Trickle charging

- If the battery is full, but is not to be used immediately, self-discharge occurs. This can be between 0,1% and 1% per day. Trickle charging compensates for this self-discharge.
- The charge current for trickle charging should be approx. 0,1 A per 100 Ah.



### 3. STORAGE OF BATTERIES

#### 3.1 GENERAL

Before storing batteries, carry out the following actions:

1. Remove the battery terminals.
2. Clean the battery poles and the top of the batteries.
3. Grease the battery poles with vaseline.
4. Check the battery charge, and recharge if necessary, see chapter "Checking and Adjusting".
5. Check the electrolyte level; this should be approx. 10 mm above the plates, or if present, up to the level indicator.  
If necessary, top up the batteries with distilled water.

#### 3.2 STORAGE UP TO FOUR WEEKS

If the batteries (separately or in a vehicle) are not to be used for a longer period, of up to 4 weeks, the following measures must be taken.

1. Do **not** connect the battery leads to the batteries.
2. Regularly check the battery charge, in particular at low temperatures, see chapter "Checking and Adjusting".  
If the voltage falls below 12,4 V, or the specific mass of the electrolyte in one or more cells is less than 1,23 kg/dm<sup>3</sup>, the battery must be charged.

**Note:**

The lower the specific mass of the electrolyte, the more likely the battery is to freeze.

**3.3 STORAGE FOR MORE THAN FOUR WEEKS**

If the batteries are not used for more than 4 weeks, the following measures must be taken.

1. Remove the batteries from the vehicle, and store the batteries in a frost-free, dry, cool and well-ventilated area.
2. Regularly check the battery charge, at least every 4 weeks, see chapter "Checking and Adjusting".  
If the voltage falls below 12,4 V, or the specific mass of the electrolyte in one or more cells is less than 1,23 kg/dm<sup>3</sup>, the battery must be charged.
3. Limit storage to a maximum of three months. The longer the battery is stored, the greater the permanent capacity loss.

## 4. CHECKING BATTERIES

### 4.1 VISUAL INSPECTION

- A white dividing line at 1/3 or plate height (visible through transparent battery casings) would indicate that a battery has been left standing in a highly discharged condition.
- If the electrolyte is brown in colour, and the battery consumes a large amount of water, the battery may have been overcharged.
- If the electrolyte is murky, milky, and the cells have a white deposit, the battery has been damaged by insufficient charging (highly discharged).

### 4.2 CHECKING THE CHARGING CONDITION

#### Specific mass

- By charging and discharging the battery, a chemical reaction occurs in the battery, involving sulphuric acid. The concentration of the sulphuric acid falls, the further the battery becomes discharged. The concentration, measured as specific mass ( $\text{kg}/\text{dm}^3$ ) is a useful yardstick for determining the charging condition of the battery.
- In order to check the charging condition, use can be made of an acidimeter.
 

Specific mass at 27°C in $\text{kg}/\text{dm}^3$	
Charged battery	: 1,28
Half-charged battery	: 1,20
Discharged battery	: 1,10
- Measurement corrections are necessary, if the temperatures deviate considerably. For each 10°C lower temperature, 0,007 points must be deducted from the measured reading. For each 10°C higher temperature, 0,007 points must be added.

In a battery in good condition, the specific mass must be the same in all cells. The maximum difference between the highest and lowest specific mass may not exceed  $0,03 \text{ kg/dm}^3$ .

**Note:**

If the specific mass in a single cell is considerably lower than the rest, the cause may be cell closure. If the specific mass of two adjacent cells is considerably below the level in the remainder of the battery, there could be a leak in the dividing wall. In both cases, the battery must be replaced.

**Voltage**

- The charging condition of batteries can also be measured using a sensitive, preferably digital voltmeter. This method can only be employed 1 to 2 hours following complete termination of charging or discharging. What is measured is the absolute voltage at rest (the positive and negative terminals must have been removed from the battery).

According to the formula: Voltage per cell = specific mass ( $\text{kg/dm}^3$ ) + 0,84, the charging condition can be calculated.

## Example:

For a fully charged battery, the specific mass per cell equals  $1,28 \text{ kg/dm}^3$ . The voltage per cell is therefore  $1,28 + 0,84 = 2,12 \text{ V}$ .

A 12V battery has 6 cells. Total voltage of a charged battery is therefore  $6 \times 2,12 = 12,72 \text{ V}$ .

The voltage of a half-charged battery is approx.  $12,24 \text{ V}$ .

The voltage of a discharged battery is approx.  $11,75 \text{ V}$ .



### 4.3 CHECKING WITH A BATTERY TESTER

- A rapid measurement to roughly assess the condition of the battery can be carried out using a battery tester. In this test, the battery is subjected to a load, and the discharge voltage across the battery poles is measured. The load on the battery must be at least three times the capacity of the battery.
- As a rule of thumb, the test can be carried out when the battery is sufficiently charged (specific mass 1,25 - 1,28 kg/dm<sup>3</sup>). At a normal temperature (10-20°C), the load voltage of a well-charged battery should be 10 V, after 10 seconds. For a partially-discharged battery (specific mass 1,25 kg/dm<sup>3</sup>), at least 9 volt must be measured.  
It is important that the voltage be measured directly across the battery poles.



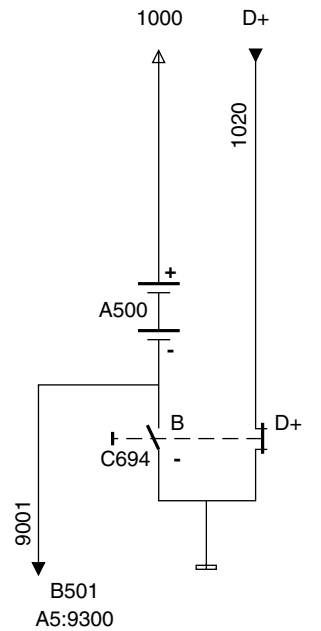
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## 1. MASTER SWITCH DIAGRAM

### 1.1 MANUAL-CONTROL SINGLE-POLE MASTER SWITCH



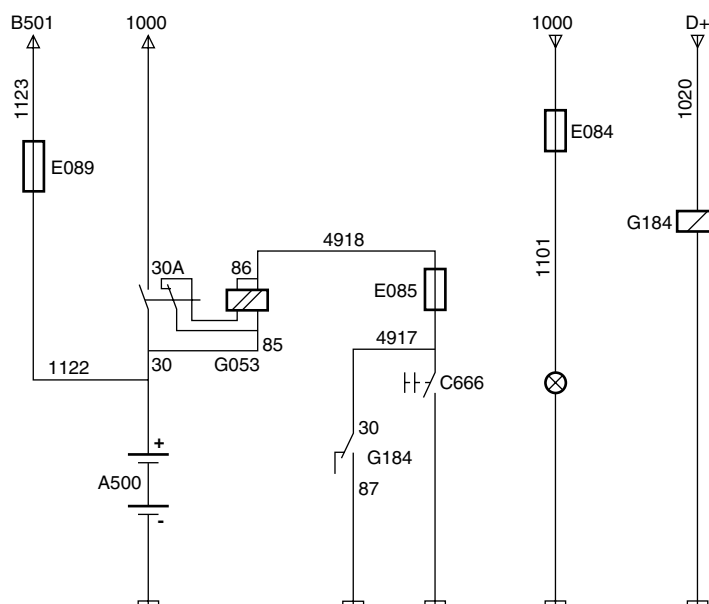
E500129

Basic code number	Designation
A500	Batteries (2)
B501	Compact tachograph
C694	Manual-control master switch

The electric master switch C669 must be switched on manually outside the cab.

When the electric master switch is switched off, the engine continues to operate. D+ will then be connected to earth.

### 1.2 ELECTRIC-CONTROL SINGLE-POLE MASTER SWITCH



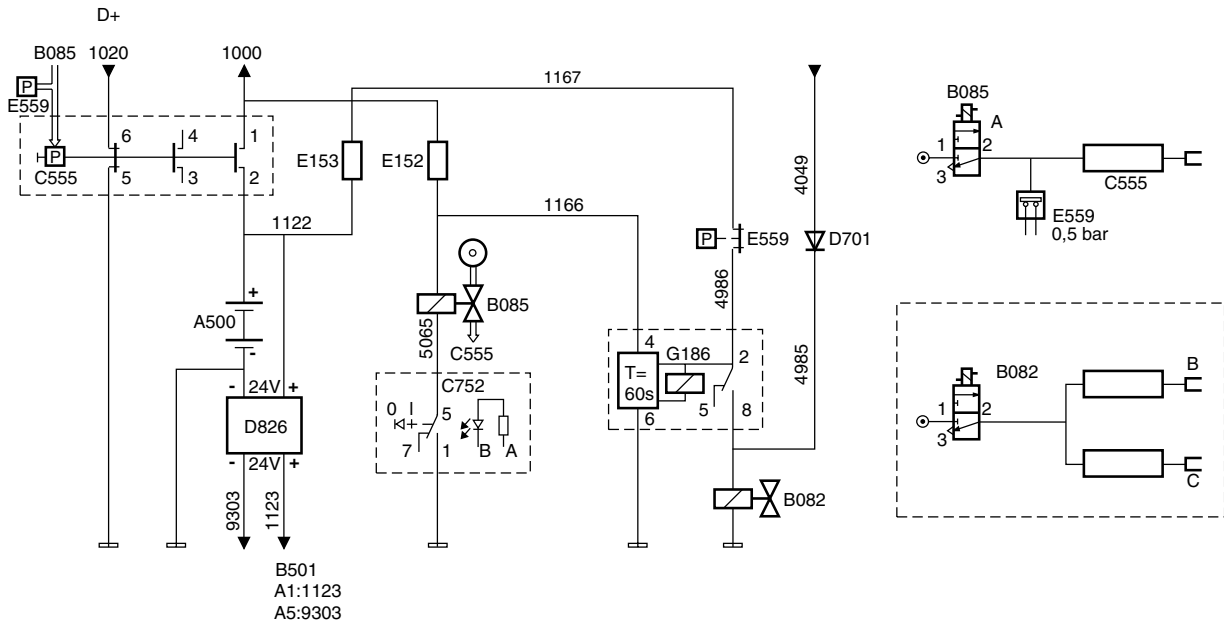
E500131

Basic code number	Designation
A500	Batteries (2)
B501	Compact tachograph
C666	Control master switch
E084	7,5A lighting fuse
E085	7,5A control master switch fuse
E089	7,5A compact tachograph (A1) fuse
G053	Master switch relay
G184	D+ transfer master switch relay

Operation of main switch relay G053 is only possible from the cab, using switch C666.

If switch C666 is operated while the engine is running, main switch relay G053 will not switch off, owing to the D+ signal.

1.3 ELECTRIC-CONTROL MASTER SWITCH FOR VLG/ADR/GGVS



E500133

- A: Electropneumatic switch in cab
- B: Fuel pump
- C: Exhaust valve

Basic code number	Designation
A500	Batteries (2)
B082	Engine stop/engine brake valve
B085	Master switch control valve
B501	Compact tachograph
C555	Pneumatic master switch
C752	Master switch control switch
D701	Master switch diode preventing feedback to CTE
D826	Electronic unit for current limiter VLG
E152	Fuse for master switch/ timer/ engine stop/ power supply after master switch
E153	Fuse for master switch/ timer/ engine stop/ power supply before master switch
E559	Control switch for pneumatic master switch/ engine stop break
G186	Timer relay for the engine stop master switch

Master switch C555 should be switched on manually outside the cab.

The master switch can be switched off:

- Manually (outside the cab)
- Pneumatically (inside the cab)

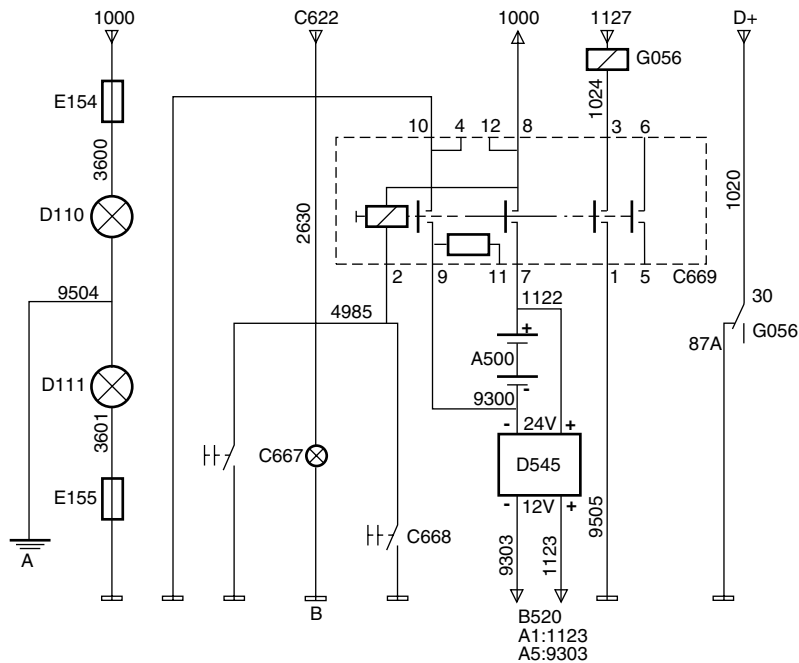
Relay G186 is activated when the voltage on pin 4 drops out. Engine stop valve B082 will then be activated for 60 seconds.

If pressure switch E559 is open, engine stop valve B082 is not activated.

Switch A can be used to switch off the master switch pneumatically inside the cab. This also involves the opening of pressure switch E559.



1.4 ELECTRIC-CONTROL TWO-POLE MASTER SWITCH FOR PETREG



E500134

- A: Special reference earth on chassis
- B: Electric earth insulated (i.e. not on chassis)

Basic code number	Designation
A500	Batteries (2)
B520	Compact tachograph (12V)
C622	Lighting switch
C667	Electric master switch cut-out switch (cab)
C668	Electric master switch cut-out switch (chassis)
C669	Switch for electric master switch
D110	Indicator lamp for master switch leakage current to power supply
D111	Indicator lamp for master switch leakage current to earth
D545	Electronic unit current limiter converter 12/24V
E154	Fuse for master switch leakage current to power supply
E155	Fuse for master switch leakage current to earth
G056	Master switch control relay

The electric master switch C669 must be switched on manually outside the cab.

The electric master switch can be switched off in the following ways:

- Manually (outside the cab)
- Electrically (outside the cab)
- Electrically (inside the cab)

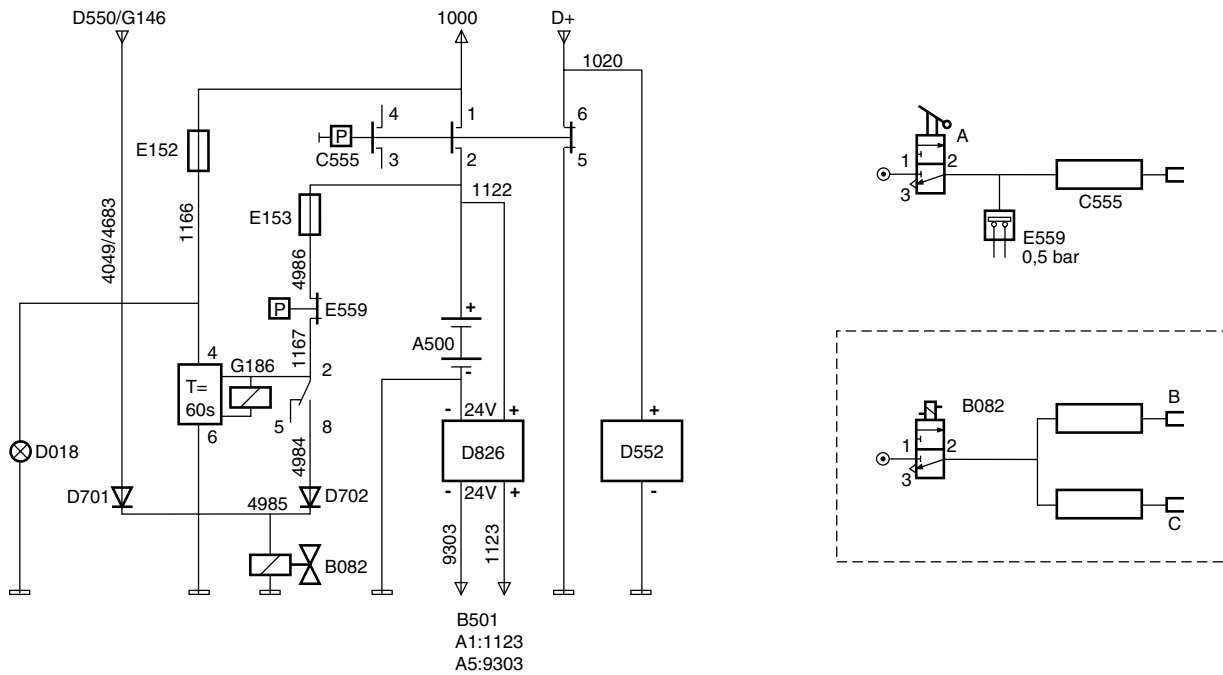
When switch C667 or C668 is closed, the relay of the electric master switch is activated, so that the electric master switch is switched off.

As soon as the electric master switch is switched off there will be no voltage on the relay.

When the electric master switch is switched off, the engine continues to operate.

D+ will then be connected to earth.

1.5 PNEUMATIC-CONTROL SINGLE-POLE MASTER SWITCH FOR VLG/ADR/GGVS



E500130

- A: Pneumatic switch in cab
- B: Fuel pump
- C: Exhaust valve

Basic code number	Designation
A500	Batteries (2)
B082	Engine stop valve
B501	Compact tachograph
C555	Pneumatic master switch
D018	Master switch indicator lamp
D701	Master switch diode preventing feedback to CTE
D702	Master switch diode preventing feedback to engine stop relay
D550	Electronic unit for central timing unit (2nd)
D552	Generator overvoltage protection
D826	Electronic unit for current limiter VLG
E152	Fuse for master switch/ timer/ engine stop/ power supply after master switch

<b>Basic code number</b>	<b>Designation</b>
E153	Fuse for master switch/ timer/ engine stop/ power supply before master switch
E559	Control switch for pneumatic master switch, engine stop break
G146	Timer relay for electric engine stop
G186	Timer relay for the master switch

Master switch C555 should be switched on manually outside the cab.

The master switch can be switched off in the following ways:

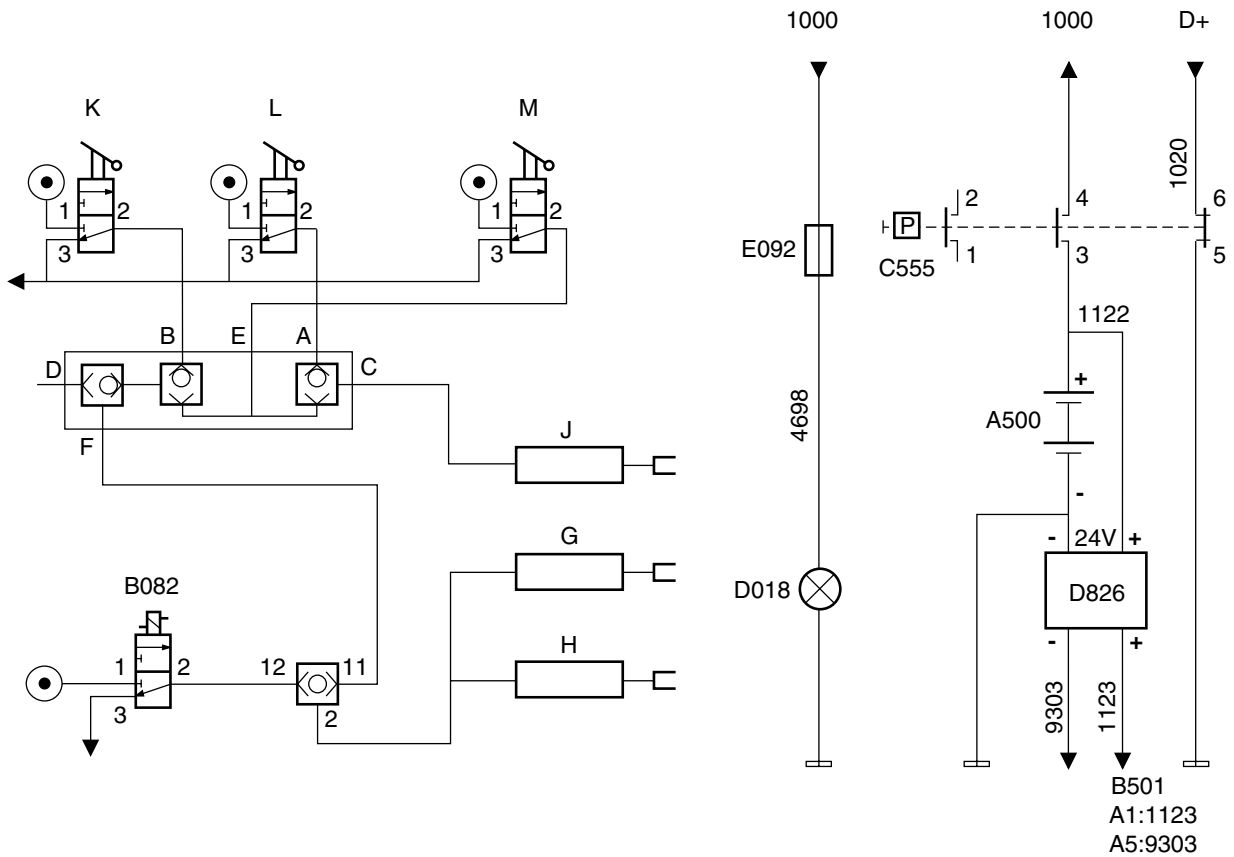
- Manually (outside the cab)
- Pneumatically (inside the cab)

Relay G186 is activated when the voltage on pin 4 drops out. Engine stop valve B082 will then be activated for 60 seconds.

If pressure switch E559 is open, engine stop valve B082 is not activated.

Switch A can be used to switch off the master switch pneumatically inside the cab. This also involves the opening of pressure switch E559.

1.6 PNEUMATIC-CONTROL SINGLE-POLE MASTER SWITCH FOR RTMDR



- A = Connection to collection block
- B = See A
- C = See A
- D = See A
- E = See A
- F = See A

- G = Fuel pump
- H = Exhaust valve
- J = Master switch
- K = Engine stop
- L = Master switch
- M = Engine stop + master switch

Basic code number	Designation
A500	Batteries (2)
B501	Compact tachograph
C555	Pneumatic master switch
D018	Green master switch indicator lamp
D826	Electronic unit for current limiter VLG
E092	Fuse for master switch valve

Master switch C555 should be switched on manually outside the cab.

The master switch can be switched off in the following ways:

- Manually (outside the cab)
- Pneumatically (inside the cab)

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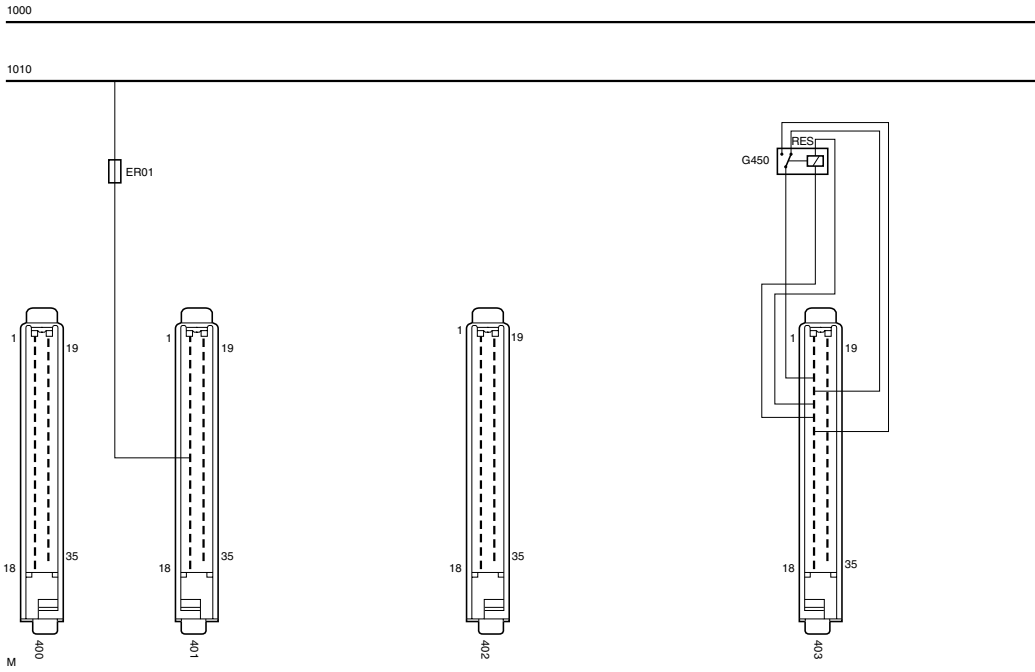
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1. CONNECTING ACCESSORIES

1.1 CONNECTION POINTS ON PRINTED CIRCUIT



E500914

The accompanying diagram shows the spare connectors for accessories.

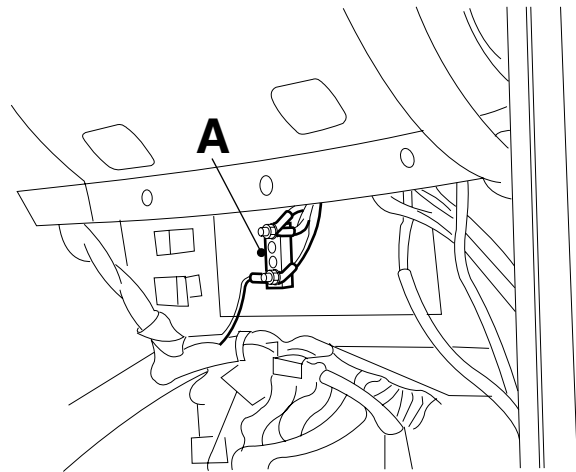
The connectors concerned are fed via the printed circuit board tracks. It is, therefore, absolutely essential that the amperages specified should not be exceeded, since this might cause burning of the tracks and overloading of the contact relay.

Maximum current passing through the diodes:  
3A

**Note:**

If necessary, the supply voltage before or after the contact can also be branched off from the contact block (A).

The connection points are **not** fused.

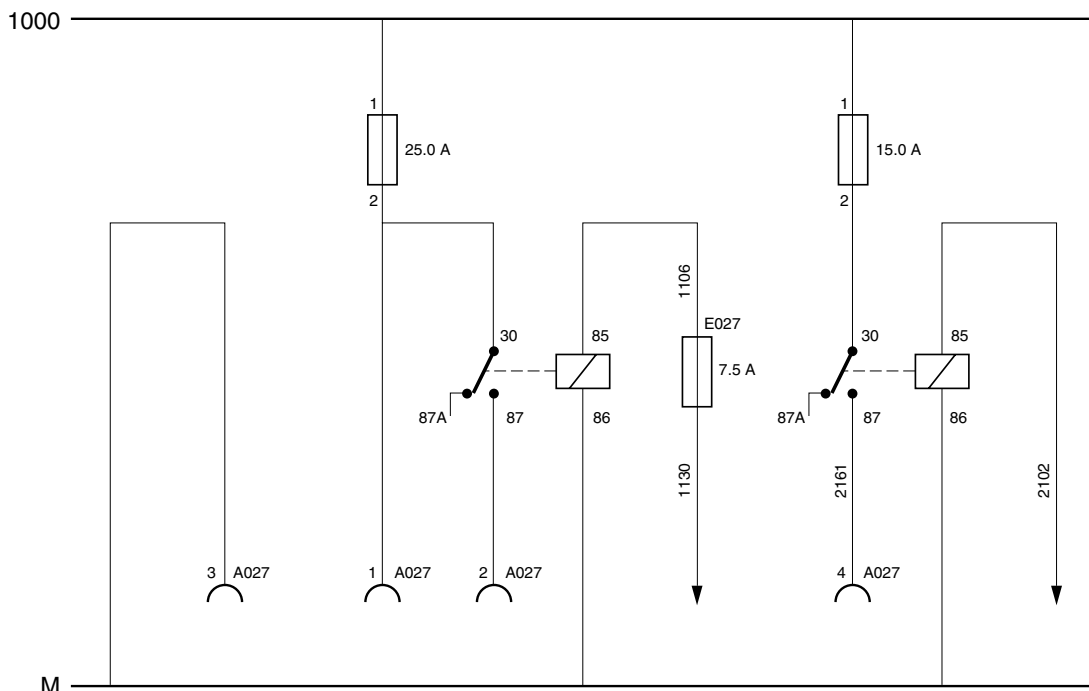


E500224

Fuse	Maximum current
ER01	15 A

## 1.2 CONNECTING ACCESSORIES WITH A CURRENT CONSUMPTION OF 15 TO 25 AMP

If amperages of 15 to 25A are required, assemble a wiring harness for this purpose and connect it in accordance with the diagram below. The required relays and fuses should be added, but they must **not** be fitted on the printed circuit board. The wire core should have a cross-section of at least 2.5 mm<sup>2</sup>.



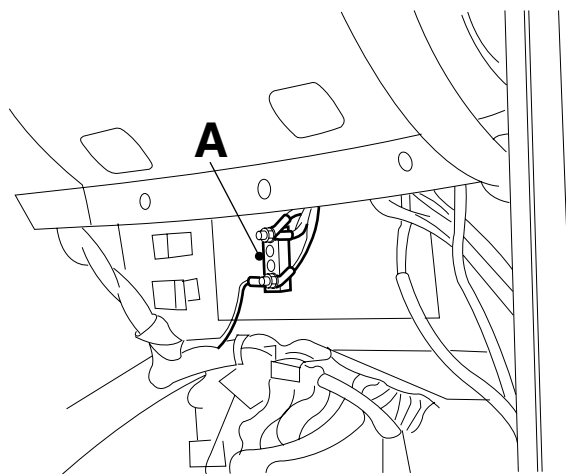
W 5 03 002

Current supply wire 1000 to be branched off from contact block (A).

### Connector A027

- Pin 1 current consumption max. 25 A before contact
- Pin 2 current consumption max. 25 A after contact
- Pin 3 earth (the wire core should have a cross-section of 4 mm<sup>2</sup> because of possible high currents)
- Pin 4 current consumption max. 15 A after contact

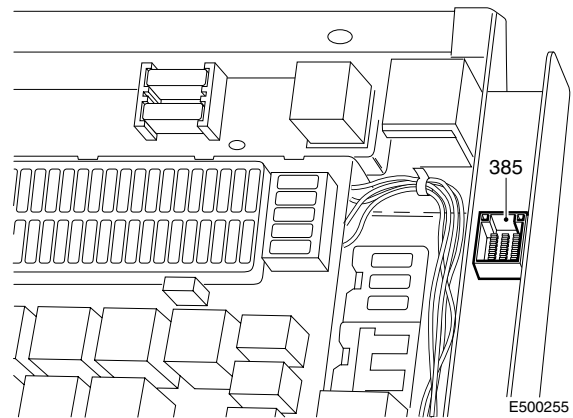
If pins 1 and 2 are both connected, the maximum combined current consumption after the contact has been switched on is 25A. With the contact switched off, the maximum current consumption of pin 1 is 25A.



E500224

### 1.3 CONNECTING ACCESSORIES VIA THE ACCESSORY CONNECTOR

On the right-hand side, along the central printed circuit, a 12-pole accessory connector (1) has been installed (connector no. 385).  
The supply voltage for this connector is branched off from the power supply via the fuses (2)

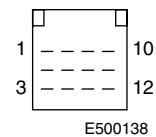
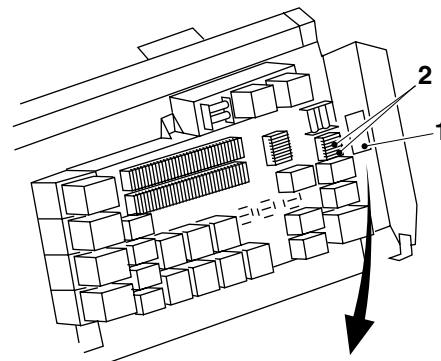


Attached to the connector are:

- Pin 1 : wire no. 1154
- Pin 3 : wire no. 1258
- Pin 10 : earth
- Pin 12 : earth

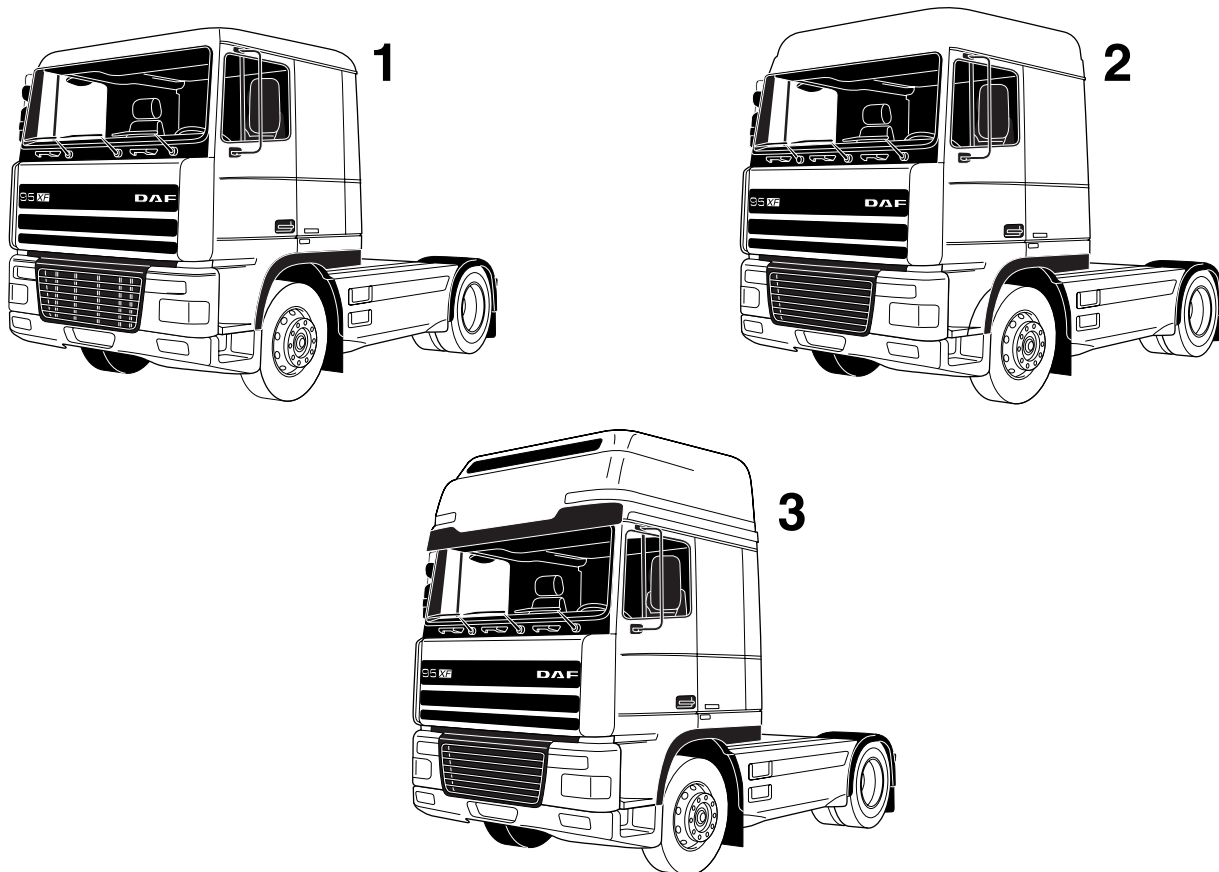
Maximum current consumption:

- Pin 1 : supply before contact, max. 25 A
- Pin 3 : supply after contact, max. 25 A



## 1.4 OVERVIEW OF CONNECTION POINTS IN ROOF CONSOLE

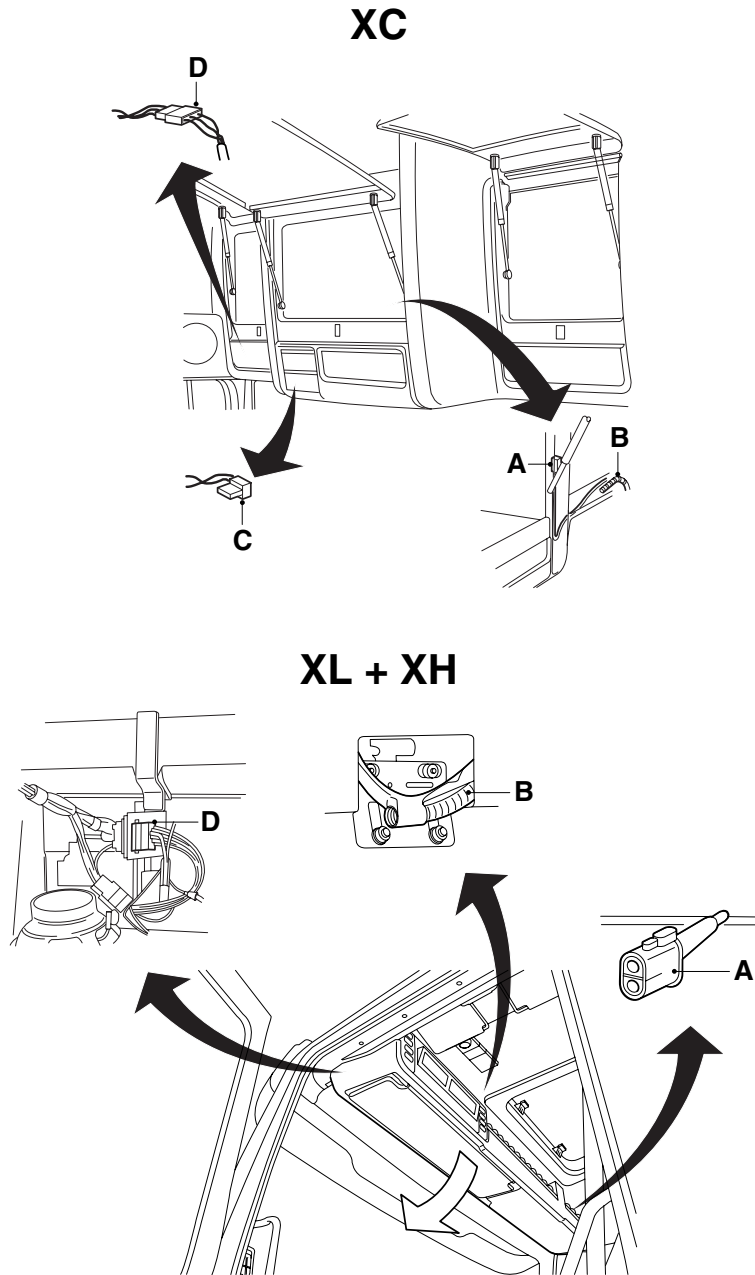
### Cab versions



K100442

1. XL cab (Comfort cab)
2. XH cab (Space cab)
3. XC cab (Superspace cab)

Figure showing XC-cab roof console



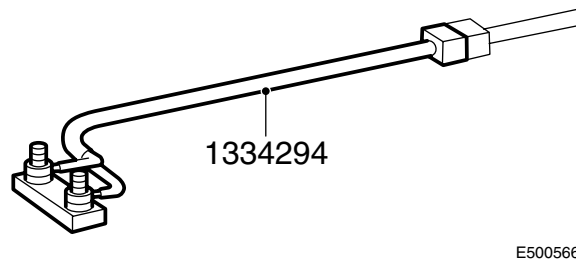
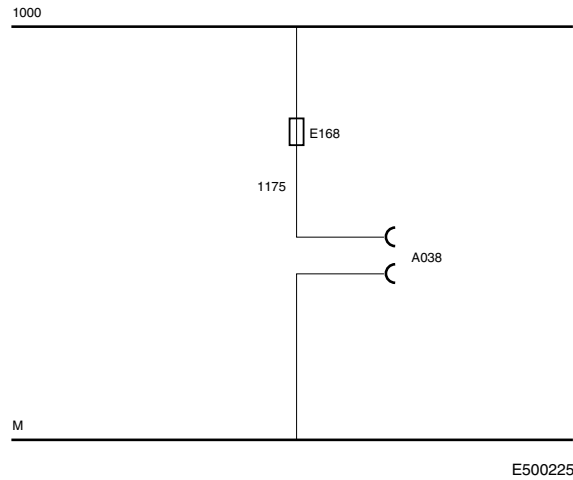
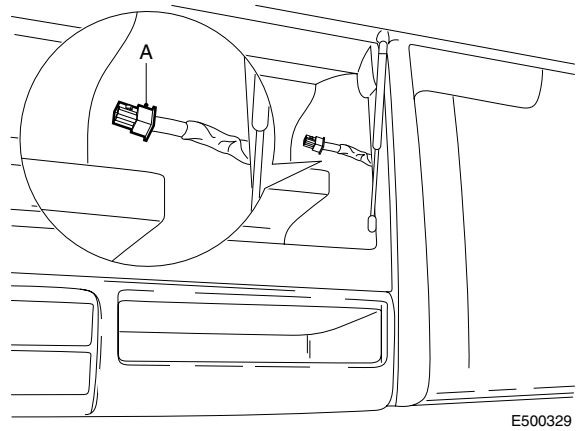
E500579

	Description	Used for cab versions
A	24V (40A) connector (for microwave, fog lights, etc.).	XL + XH + XC
B	Passage tube	XL + XH + XC
C	12V connector for audio equipment (e.g. CB transmitter)	XC
D	Connector, overhead-box wiring (with 12V connection)	XL + XH + XC

### 1.5 40A CONNECTOR

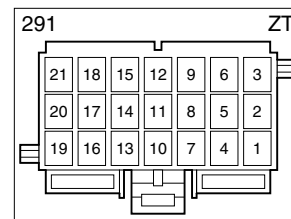
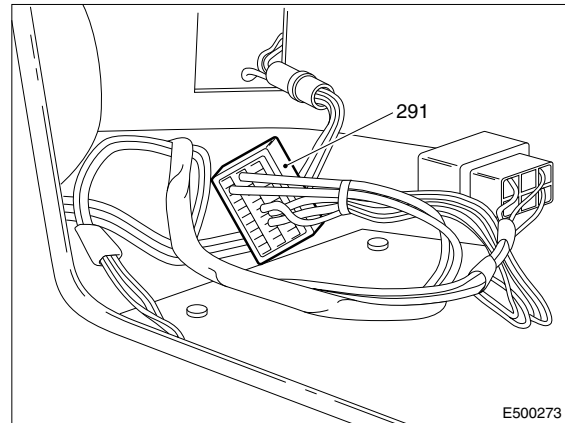
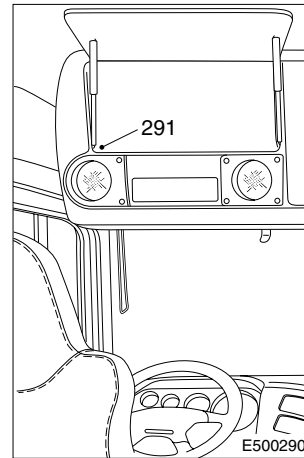
This connector (A) is a two-pole connector. The supply voltage for this connector is branched off from the power supply before contact via fuse E168.

It is possible to connect a connector to a contact block. This way you get a central connection point for supply and earth.



1.6 12V CONNECTION IN THE OVERHEAD BOX CONNECTOR

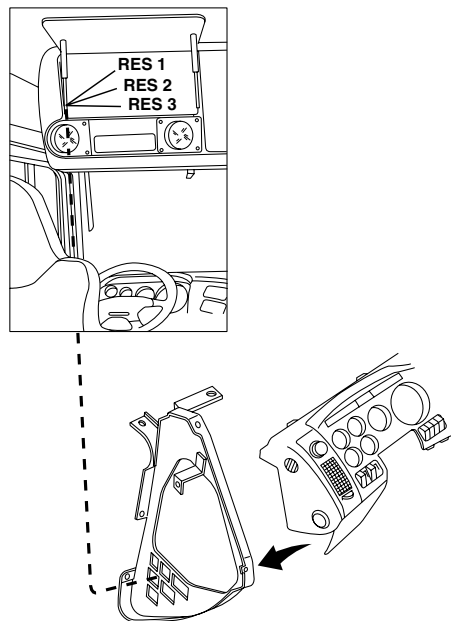
The overhead box contains a connector for the overhead box wiring.  
 This connector also has a 12V connection (connection point 3, wire no. 1108).



### 1.7 SPARE WIRES

Three spare wires are available in the connector located below the instrument panel to the left.

These spare wires end in the overhead box again.

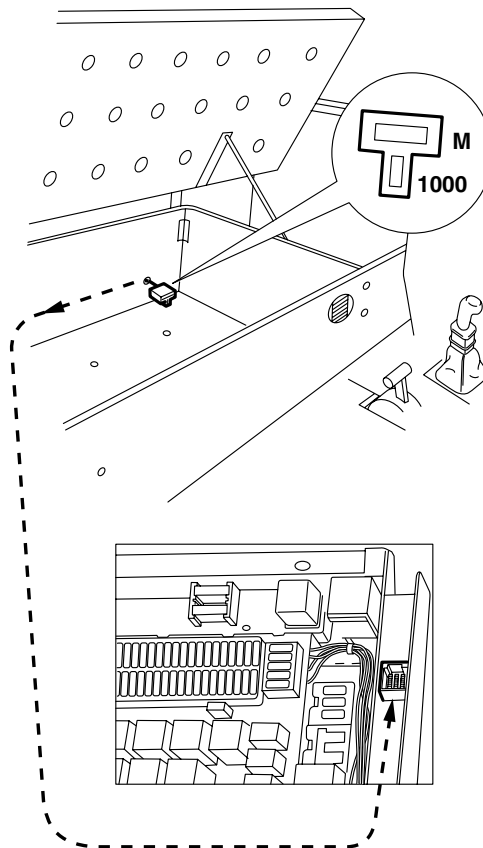


E500568

# 6

### 1.8 COOL BOX CONNECTOR

From the accessory connector, a connection has been with the connector for the cooler box.

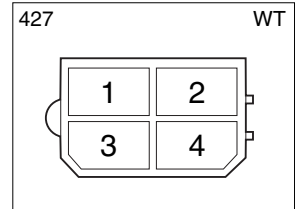
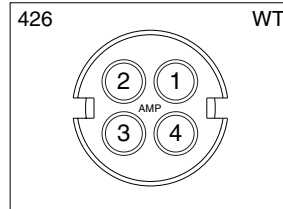
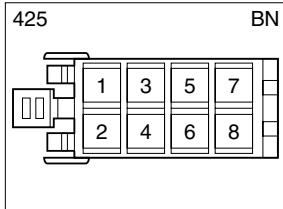
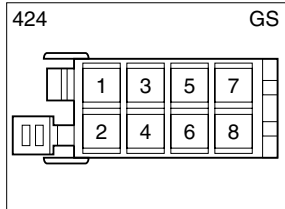
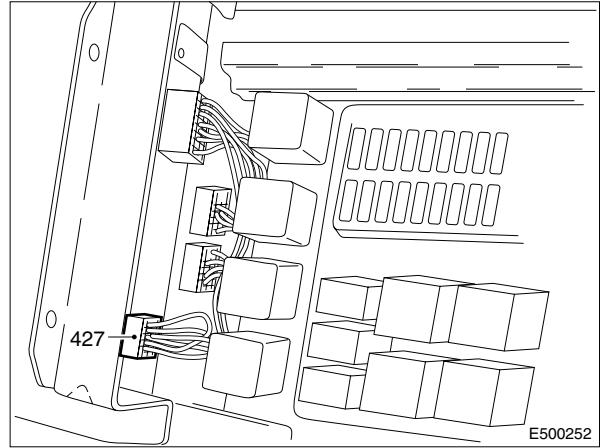
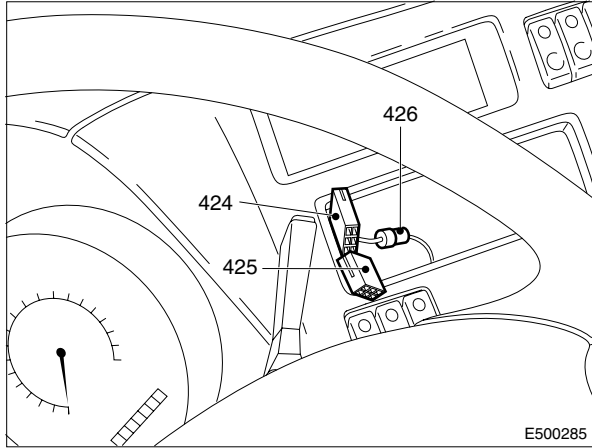


E500567



1.9 CONNECTING THE RADIO

Connectors for connecting the radio.



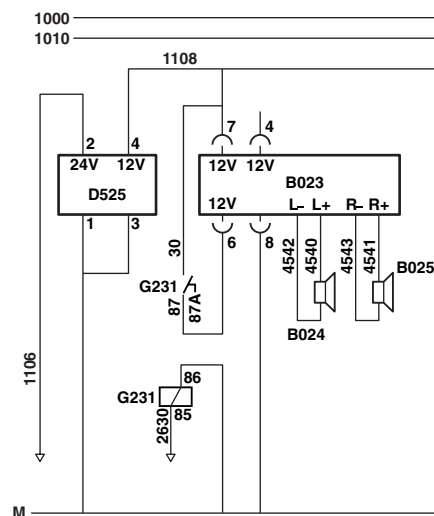
E500975

- 424 Radio power supply
- 425 Loudspeakers of radio
- 426 Memory of radio
- 427 Converter of radio

### DIMMING THE DISPLAY LIGHTING

#### Philips and Grundig radios

If the radio has display lighting (for searching), it can be dimmed on switching on the vehicle lighting. This requires relay G231 to be connected as shown in the figure.

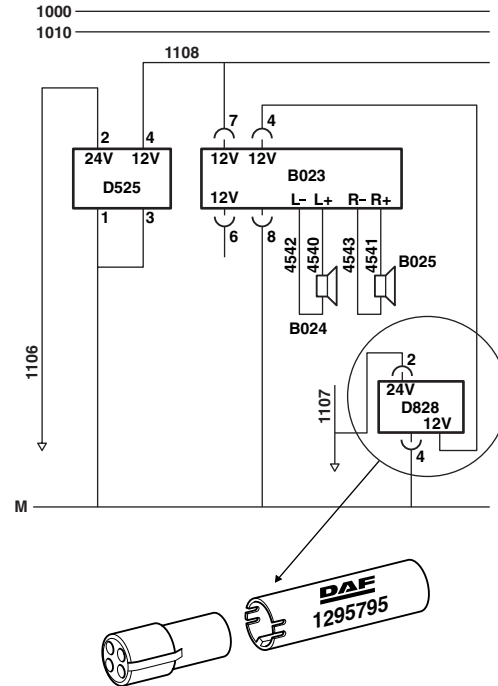


E500727

**CHANNEL MEMORY OF RADIO IN COMBINATION WITH 24/12V 4A CONVERTER**

**Channel memory of Philips radio**

For the channel memory it is necessary to link connection point 4 of the radio connector to the 12V supply voltage before contact, using an electronic unit for the power supply of the radio memory (D828).



E500728

**Note:**

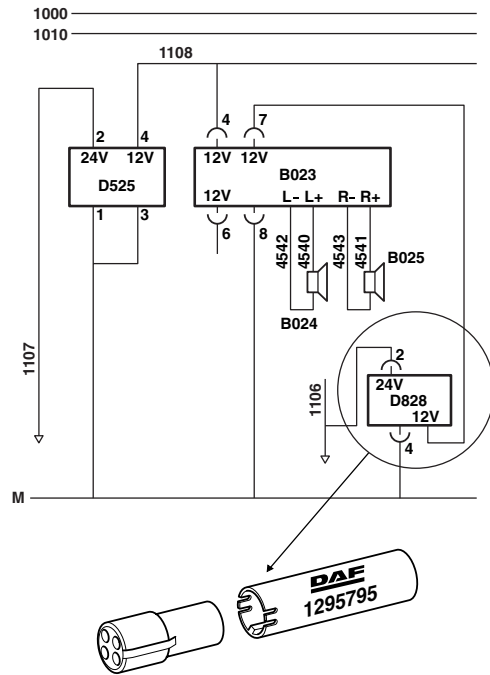
Input		Voltage before/ after the contact	Output	
24 V	Wire no.		12 V	Wire no.
2	1106	after	4	1108
2	1107	before		

### Channel memory of Grundig radio

For the channel memory it is necessary to link connection point 7 of the radio connector to the 12V supply voltage after contact, using an electronic unit for the power supply of the radio memory (D828).

#### Note:

Wire 1106 is for the 24V supply voltage, connected in contact/starter switch position with relay G178: "accessories".



E500729

# 6

Input		Voltage before/ after the contact	Output	
24 V	Wire no.		12 V	Wire no.
2	1106	after		
2	1107	before	4	1108

**CHANNEL MEMORY OF RADIO IN COMBINATION WITH 24/12V 10A OR 20A CONVERTER**

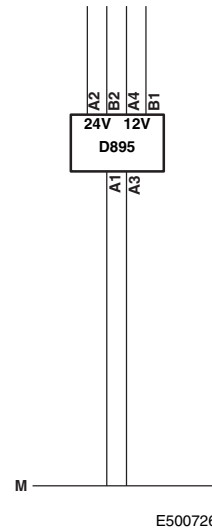
Two variants of this converter are available:

24V/12V (10A + 10mA) or:

24V/12V (20A + 10mA)

Both are connected in the same way.

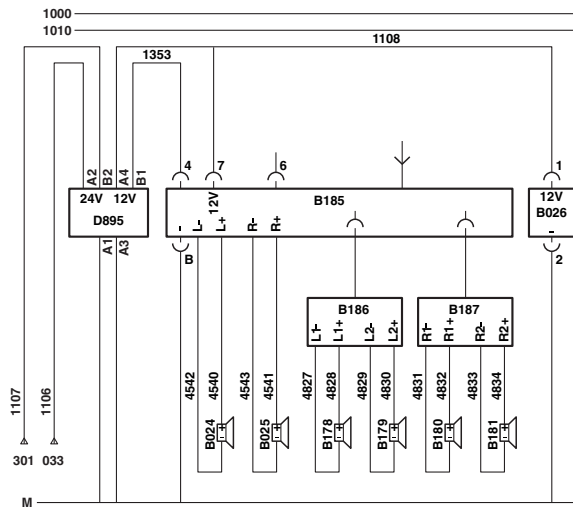
The converter has two individual in- and outputs:



24V input	12V output	Max. amperage
A2	A4	10 or 20A
B2	B1	10 mA

### Channel memory of Philips radio

The 12V/10mA output is the supply voltage for the channel memory (output B1 of the converter).



E500730

### Note:

Input		Voltage before/after the contact	Output	
24 V	Wire no.		12 V	Wire no.
A2	1106	after	A4	1108
B2	1107	before	B1	1353

Wire 1105 is connected in contact/starter switch position with relay G178: "accessories".

# 5

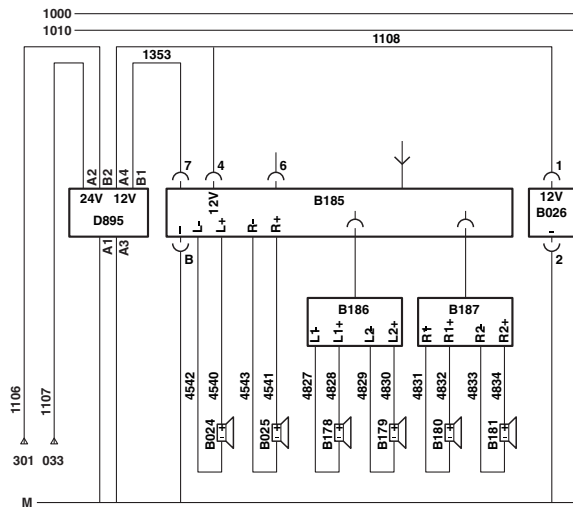
95XF series

# CONNECTING ACCESSORIES

Connecting accessories

### Channel memory of Grundig radio

The 12V/10 (20)A output is the supply voltage for the channel memory (output A4 of the converter).



E500731

### Note:

Input		Voltage before/after the contact	Output	
24 V	Wire no.		12 V	Wire no.
A2	1107	before	A4	1108
B2	1106	after	B1	1353

Wire 1105 is connected in contact/starter switch position with relay G178: "accessories".  
Wires 1107 and 1106 on the converter wiring harness should be reversed. (see figure)

6





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	<b>Page</b>	<b>Date</b>
1. LIST OF ABBREVIATIONS .....	1-1 .....	9711
2. MARKING OF ELECTRIC WIRING .....	2-1 .....	9711
3. READING THE CIRCUIT DIAGRAM .....	3-1 .....	9711
4. READING THE SUBDIAGRAM .....	4-1 .....	9711



## 1. LIST OF ABBREVIATIONS

Abbreviation	Description	Translation
ABS-D	Antiblokkeersysteem - versie D	Anti-lock Brake system - version D
ACH-E	Additional Cab Heater - Eberspächer	Auxiliary heating - Eberspächer
ACH-W	Additional Cab Heater - Webasto	Auxiliary heating - Webasto
VLG/ADR/GGVS/ PETREG/RTMDR	Vervoer te Land Gevaarlijke stoffen	Transport of Hazardous Goods by Road
AGS	Automatic Greasing System	Automatic Greasing System
AIRCO	Air-conditioning	Airconditioning
ASL-G	Automatic Speed Limiter -Groeneveld	Automatic Speed Limiter - Groeneveld
ASL-V	Automatic Speed Limiter - VDO	Automatic Speed Limiter - VDO
ASR	Anti-Slip Regeling	Anti-slip Regulator
CDB-3	Central Distribution Board F95	Central Distribution Board F95
CDS	Central door locking	Central door locking
CTE-2	Centrale Tijds Eenheid - versie 2	Central Timer Unit - version 2
CWS-2	Central Warning System - version 2	Central Warning System - version 2
DAVIE 2.0	DAF Vehicle Investigation Equipment versie 2	DAF Vehicle Investigation Equipment version 2
DCI	DAF Cummins interface	DAF Cummins interface
DEB	DAF Engine Brake	DAF Engine Brake
DIP-3	DAF Instrument Pack F95	DAF Instrument Pack F95
DVB	DoorVerBinding	Interconnection
ECAS-2	Electronically Controlled Air Suspension system - version 2	Electronically Controlled Air Suspension system - version 2
ECS-DC	Engine Control System-DAF/Cummins	DAF/Cummins Engine Control System
E-gas 3	Elektrische Gasbediening - version 3	Electric Gas Control - version 3
HGS	Hydraulic Gear Shifting	Hydraulic Gear Shifting
NMV	Nebenantrieb Motorabhängig	Motor-PTO
PTO	Power Take Off	Power Take Off
RC-ECAS/E-gas	Remote Control unit-ECAS/E-gas	ECAS/E-gas Remote Control unit
Tacho	Tachograph	Tachograph
V/n		Speed/revolutions



## 2. MARKING OF ELECTRIC WIRING

### INTRODUCTION

This standard contains instructions for the uniform use of markings for wiring.

The marking system consists of a numerical system and a colour coding system, which ensures a clear wiring layout and avoids faulty connections and manufacturing errors.

The marking system does not apply to vehicles governed by special regulations, such as military vehicles.

#### Numerical and colour coding

Each numerical code is composed of four digits, the first of which refers to the main group and the colour.

#### Main groups

Power supply (red)

1000 to 1099	Power generation
1100 to 1199	Power supply before contact
1200 to 1499	Power supply after contact

Lighting (yellow)

2000 to 2099	Direction indicator and hazard lights
2100 to 2599	External vehicle lighting
2600 to 2999	Internal vehicle lighting

Warning and indicator functions (blue)

3000 to 3399	Engine functions
3400 to 3999	Vehicle function

Consumers (black)

4000 to 4499	Start, stop, engine, glow functions
4500 to 5499	Vehicle functions
5500 to 5999	Automatic gearboxes
6000 to 6999	Special model. (Not from production line, although from factory.)

Earth connections (white)

Not marked	
9000 to 9499	Test and signal earth

**Notes**

- "M" with serial number coding on earth wiring are used during production.
- In the case of straight-splicing (cascading) of the wiring, the numerical codes are shown on each separate wire, followed by a letter.

**Earth connections**

The application of electronic systems has made it necessary to divide the earth connections into groups: We distinguish 2 different types of earth connections:

- switching earth
- test and signal earth

Switching earth is the conventional type of earth connection.

Test and signal earth is the earth connection exclusively used for electronic systems.

The wiring colour of both types of earth connection is white, but the test and signal earth wiring also has numerical codes (from 9000 to 9500).

**NEVER USE TEST AND SIGNAL EARTH WHEN FITTING AN ELECTRIC COMPONENT**

This rule should be adhered to or electronic components might become deranged. When an electronic component is connected up, the earth terminal of this system must be connected to the central earth connection in the cab.

This connection is located under the central box behind the bulkhead.

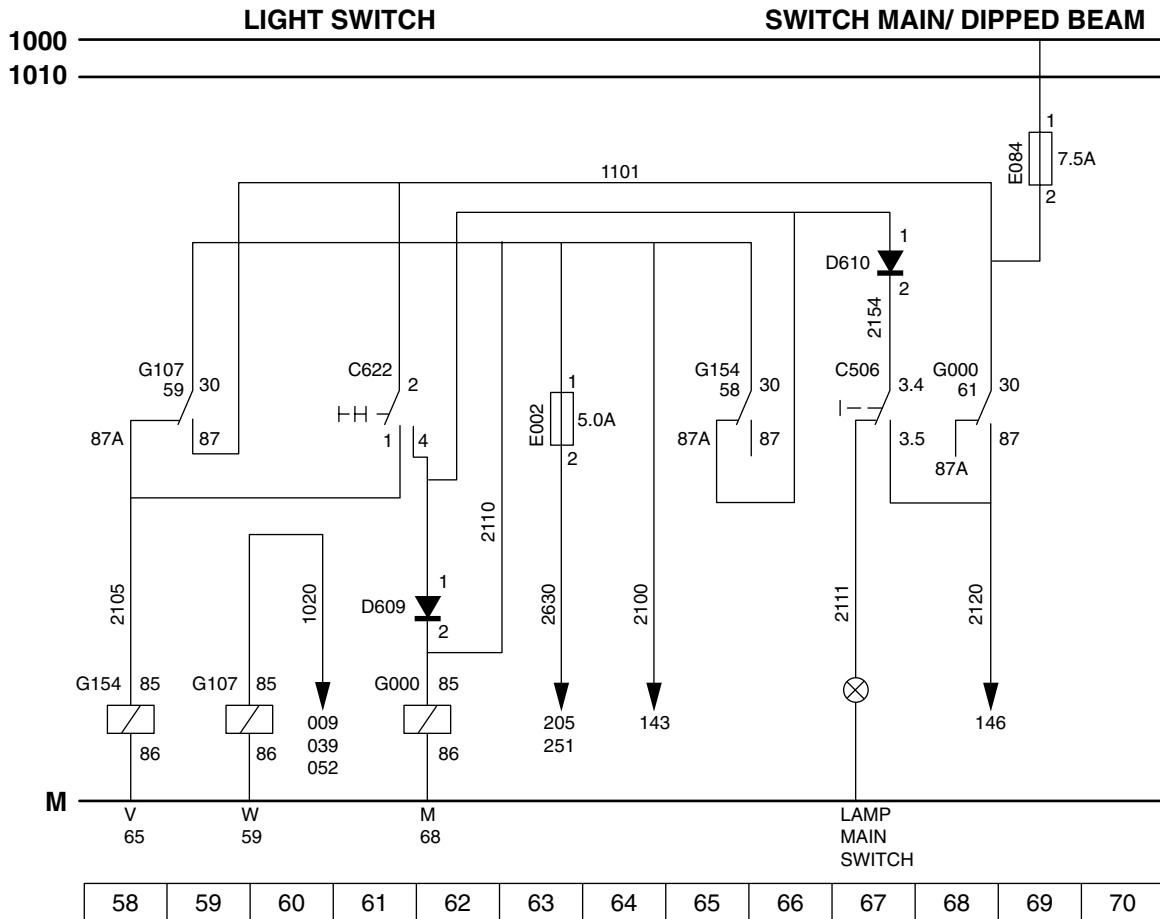
**Abbreviations used in colour coding**

<b>Colour</b>	<b>Abbreviation</b>	<b>Colour</b>	<b>Abbreviation</b>
red	rd	yellow	gl
brown	bn	white	wt
green	gn	grey	gs
blue	bw	black	zt
		orange	oe

3. READING THE CIRCUIT DIAGRAM

A circuit diagram is intended to represent a circuit as simply as possible with the aid of symbols.

Use is made of symbols here.



58	59	60	61	62	63	64	65	66	67	68	69	70
----	----	----	----	----	----	----	----	----	----	----	----	----

E500145

1. The diagram contains the indications "1000" and "1010" at the top left. These indications have the following meaning:  
1000 = power before contact.  
1010 = power after contact.
2. The diagram contains the letter "M" at the bottom left. This has the following meaning:  
M = earth connection.

3. To make it easier to find your way in the circuit diagram, a “search bar” is included at the bottom, which contains numbers. These numbers are called location numbers.

The legend of the circuit diagram contains behind the description of the elementary code number (ECN), the location number. This makes it possible to find the location of a component in the diagram.

4. There is an arrow above the location number 60, 63, 64, and 68 in the diagram example. At the bottom of this arrow is a number. This number refers to the location number on the search bar where you may find the wire number concerned.

5. Under the earth connection line (indicated by the letter M), there are the letter V, referring to relay G154, the letter W, referring to relay G107, and the letter M, referring to relay G000.

The meaning of these letters is given below:

V = breaker contact  
 W = make-and-break contact  
 M = make-contact

These contacts can be found at the location numbers shown under the letters “V”, “W” and “M”.

The numbers shown under the relay codes at the relay contacts in the diagram refer to the location numbers on the reference bar where the relays can be found.

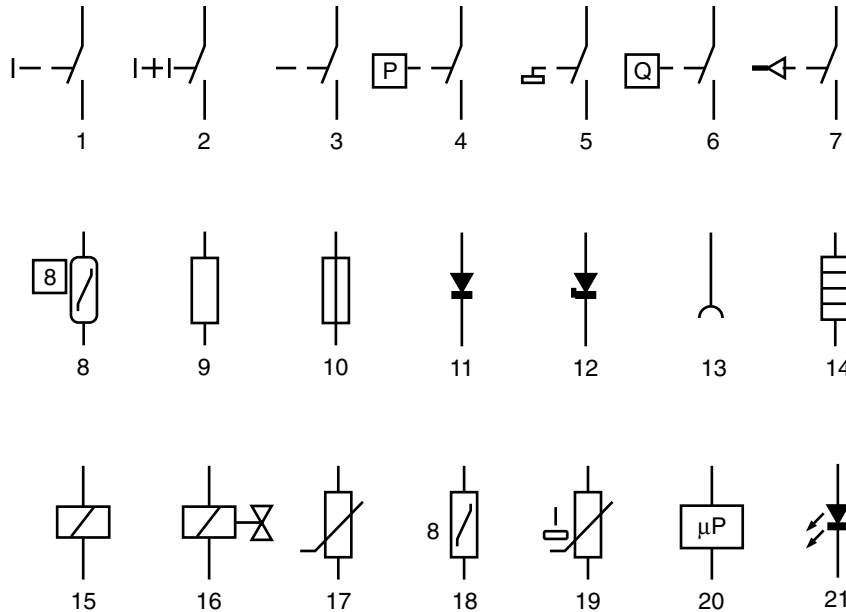
6. The circuit diagram shows the basic codes (for instance, E002). The descriptions referring to the basic codes are given in the legend to the circuit diagram concerned.



7. If there are no changes in the wire numbers, these numbers are not repeated in the diagram.

In the diagram example, wire 1101, for instance is connected to point 87 of relay contact G107, but also to point 2 of component C622.

Wire 2100 (at location number 64) is connected to point 30 of relay G154 but also to point 85 of relay G000, etc.



E500135

### Symbols used

- |   |   |
|---|---|
| 1. Switch, manually controlled                                  | 11. Diode                                       |
| 2. Switch (multi-position), manually controlled                 | 12. Zener diode                                 |
| 3. Switch (return), manually controlled                         | 13. Contact socket (e.g. connection of trailer) |
| 4. Switch, pressure-controlled (pneumatically or hydraulically) | 14. Heating element                             |
| 5. Switch, float position                                       | 15. Relay                                       |
| 6. Switch, fluid through-flow                                   | 16. Electropneumatic valve                      |
| 7. Pressure switch  | 17. Resistor, voltage-dependent                 |
| 8. Switch, temperature-dependent                                | 18. Resistor, temperature-dependent             |
| 9. Resistor   | 19. Resistor, fluid level-dependent             |
| 10. Fuse  | 20. Microprocessor                              |
|   | 21. LED   |



## 4. READING THE SUBDIAGRAM

### IDENTIFICATION OF POSITION NUMBERS IN SUBDIAGRAMS

In the subdiagrams, only the information which is functional in the subdiagram concerned is displayed in detail.

1. The wiring is displayed with the same colours as the wiring in the vehicle.
2. The wire number is shown as it is printed on the wiring in the vehicle. Suffixes such as A, B, C, etc., following the wire numbers, however, have been omitted.
3. The basic code number of a component. For a description, see the legend included in the diagram. For more information, see the subdiagram concerned.
4. Number of the connection point of the wire or the print track on the component.
5. The basic code number of the connector and the connection point on this connector.
6. The symbols indicate which system or component is meant (the symbol is often also included on the lens of the indicator lamp or the switch).
7. Print track.
8. The colour of the printed circuits of the central box and the instrument panel is grey.
9. Removable components are shown in white.

10. Reference to the component and its connection point and to the chapter (subdiagram) in which the element is included. For more information, see chapter 4 "Connectors".

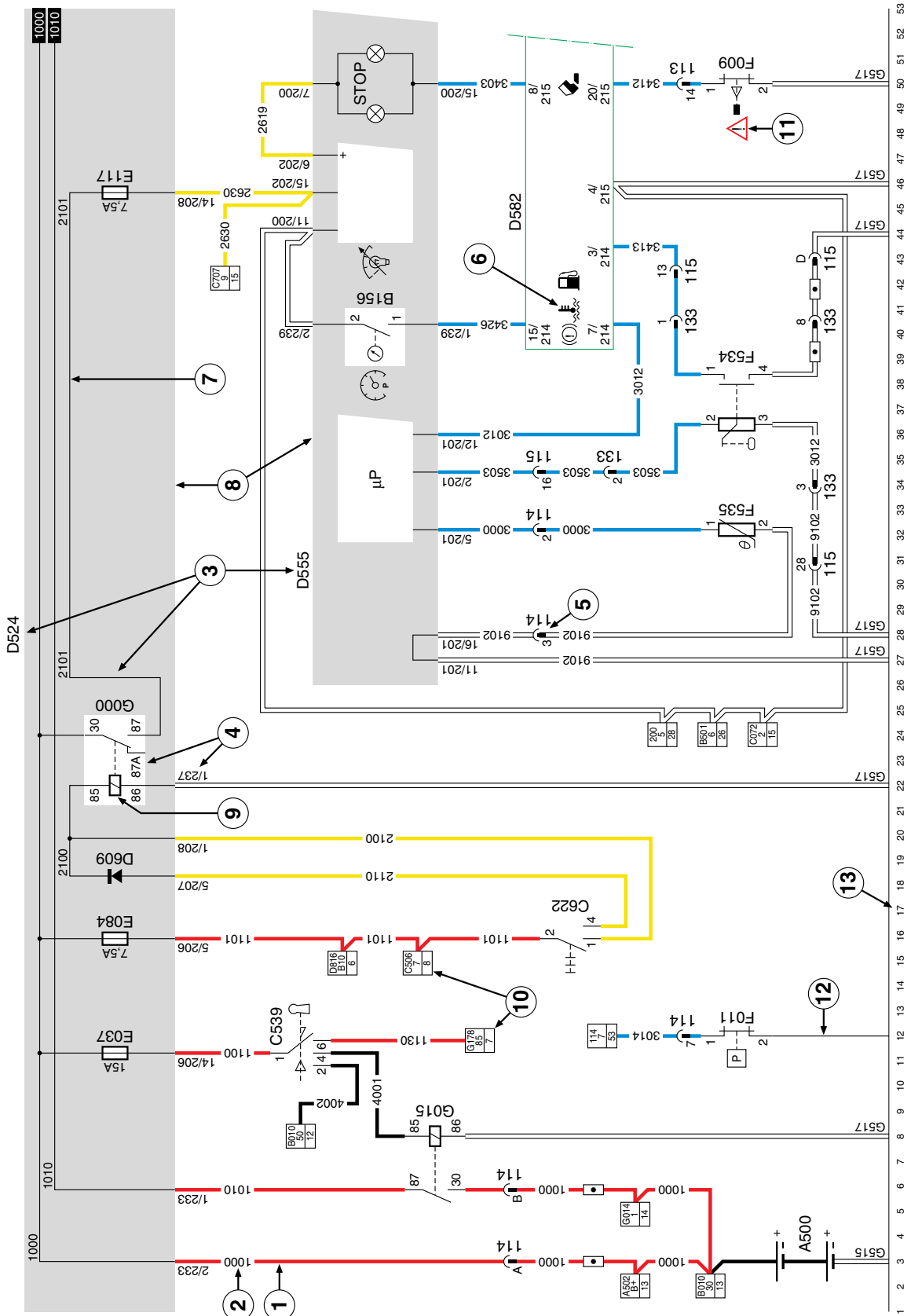
D524 F11
53

D524=      Basic code number of the component

F11    =      Connection point on the component

53      =      Reference to subdiagram 53

11. **NOTE:** There may be differences here because of different model specifications. Always consult the legend included in the diagram.
12. The housing of this component is earthed. The line drawn is not a wire.
13. Search bar numbers.
14. Drawing number and chapter number.
15. Relation to the circuit diagram.



9642

14 → 0

1293789/04-17 → 15

EL000001



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1.2 Location of components in relation to the circuit diagram: 1316630/06-12 .....	1-7 .....	0009
1.3 Location of components in relation to the circuit diagram: 1316630/13-23 .....	1-15 .....	0009
1.4 Location of components in relation to the circuit diagram: 1316630/24-29 .....	1-26 .....	0009





## 1. GENERAL LOCATION OF COMPONENTS

### 1.1 LOCATION OF COMPONENTS IN RELATION TO THE CIRCUIT DIAGRAM: 1316630/05

- Column 1 = Basic code numbers of the component  
 Column 2 = Description  
 Column 3 = Location  
 Column 4 = Position number in illustration

1	2	3	4
B036	Resistor, alternator, D+	On print track of printed circuit, central box.	19
D525	24V/12V Converter	On fixing plate along printed circuit, central box.	35
D550	CTE-2	On fixing plate under printed circuit, central box.	7
D587	Electronic unit for ZF intarder	On fixing plate along printed circuit, central box.	12
D591	Electronic unit for E-gas 3	On fixing plate under printed circuit, central box.	16
D597	Electronic unit for ASL-V	On fixing plate under printed circuit, central box.	16
D609	Diode for light switch	On print track of printed circuit, central box.	19
D610	Diode for main beam/dipped beam	On print track of printed circuit, central box.	19
D611	Diode for lifting gear lowering valve damping	In lifting gear distributor box	34
D612	Diode for lifting gear lifting valve damping	In lifting gear distributor box	34
D613	Diode in lifting gear for pump damping relay	In lifting gear distributor box	34
D622	Diode for lifting gear lifting lock	In lifting gear distributor box	22
D623	Diode for lifting gear lowering lock	In lifting gear distributor box	22
D668	Diode for generator safety D+	On print track of printed circuit, central box.	19
D708 D709 D710	Diode for internal cab lighting	In diode block, upper console	18

1	2	3	4
D721	Diode for parking brake, prevent feedback	On print track of printed circuit, central box.	23
D722	Diode for brake lights, prevent feedback	On print track of printed circuit, central box.	24
D802	Electronic unit for ECAS-2 (6x2)	On fixing plate under printed circuit, central box.	8
D804	Electronic unit for DAF/Cummins interface	On fixing plate under printed circuit, central box.	16
D806	Electronic unit for AGS	On fixing plate along printed circuit, central box.	9
D809	Electronic unit for ASL-G	On fixing plate under printed circuit, central box.	16
D813	Electronic unit for gate safety	On fixing plate under printed circuit, central box.	33
D827	Electronic unit for auxiliary heating, Thermo 90	On fixing plate under printed circuit, central box.	38
D833	Electronic unit for alarm system	On fixing plate under printed circuit, central box.	39
D850	Electronic unit for ABS/ASR-D	On fixing plate along printed circuit, central box.	15
D851	Electronic unit for ECAS-2 (4x2)	On fixing plate under printed circuit, central box.	8
D853	CWS-2	Behind DIP-3	31
D862	Electronic unit for central door locking	On fixing plate under printed circuit, central box.	37
D870	Electronic unit for Voith retarder	On fixing plate along printed circuit, central box.	12
E112	Fuse for glow indicator lamp	At pre-glow relay	25
E168	Accessory fuse box	Along printed circuit, central box	11
E511	Brake light control switch	Left-hand side of heater unit	5
E564	Engine brake control switch	On floor at driver's side	27
E570	Control switch for coupling/PTO N/10	Above clutch pedal	28
E575	Clutch pedal proximity switch	Above clutch pedal	26
F000	Parking brake control switch	Left-hand side of heater unit	3
F050	Control switch for differential lock pressure (1st and 2nd diff.)	FT: front of differential housing FA: in chassis side member	17

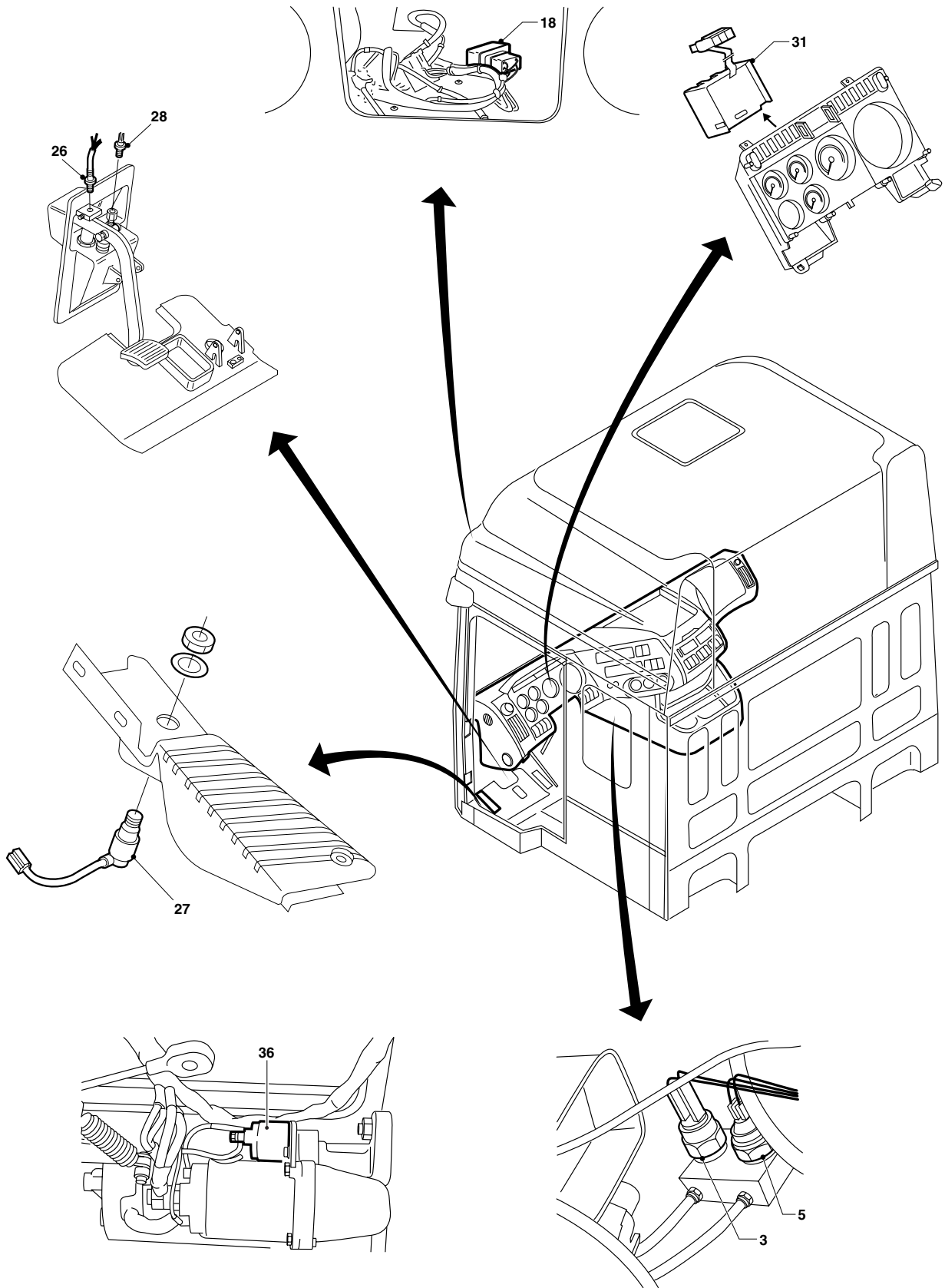
# 5

## LOCATION OF COMPONENTS

95XF series

General location of components

1	2	3	4
F585	Sensor for engine coolant level	Back of header tank	20
G015	Contact relay	Along printed circuit, central box	10
G065	Heater fan relay	Right-hand side of heater unit	6
G066	Lifting-gear takeover relay	In lifting gear distributor box	29
G170	Auxiliary-heating fan relay	Along printed circuit, central box	21
G203	Starting-motor takeover relay	On starting motor	36
G239	Engine brake takeover relay ABS/ASR-D CTE	Along printed circuit, central box	14
G247	Auxiliary-heating fan relay	Along printed circuit, central box	21
G257 G258	Recirculation valve microrelay	Right-hand side of heater unit	1
G259	N-10-PTO control relay	Along printed circuit, on right-hand side, central box	13
G267	Air-conditioning microrelay	Right-hand side of heater unit	2
G279	Heater fan transfer microrelay	Right-hand side of heater unit	4
G723	Connection for central door locking	In the central box	30

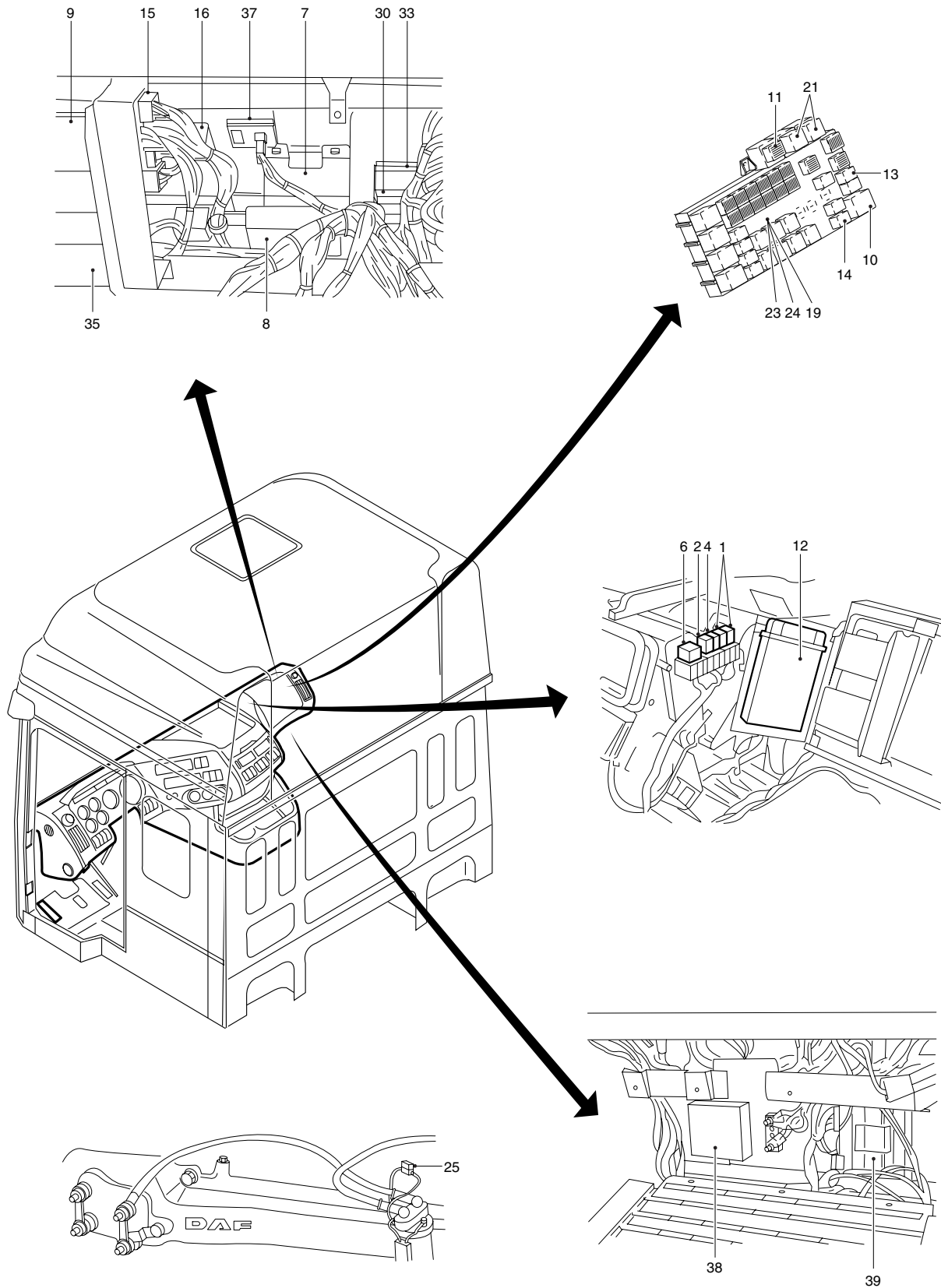


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95XF series

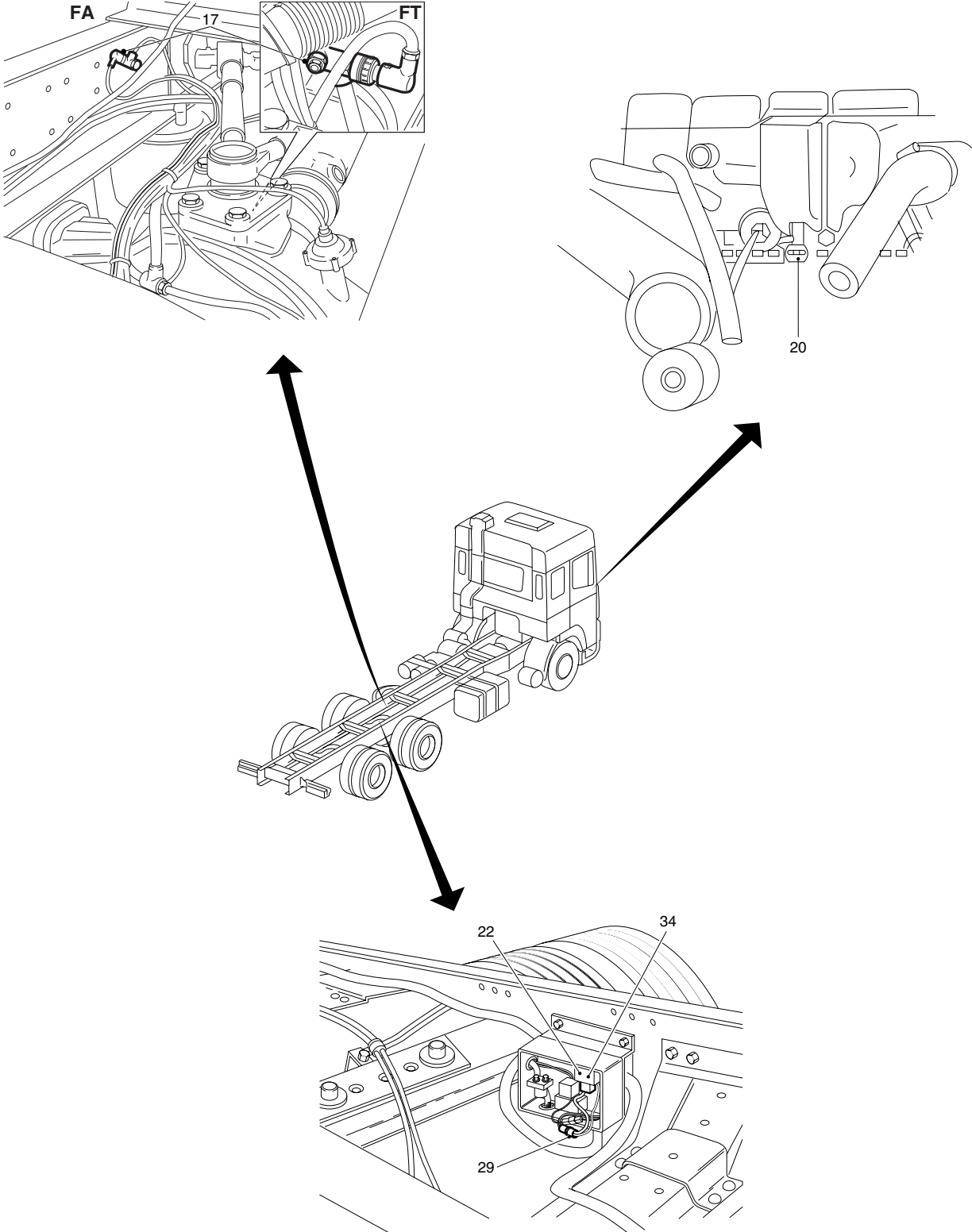
# LOCATION OF COMPONENTS

General location of components



8

E500624



8

E500626

## 1.2 LOCATION OF COMPONENTS IN RELATION TO THE CIRCUIT DIAGRAM: 1316630/06-12

Column 1 = Basic code numbers of the component  
 Column 2 = Description  
 Column 3 = Location  
 Column 4 = Position number in illustration

1	2	3	4
A000	FA (semi-)trailer socket, 7-pin	Rear end of the chassis	32
A001	Rear fog light back-up light socket, FA (semi-)trailer, 7-pin	Rear end of the chassis	40
A002	FT (semi-)trailer socket, 7-pin	Cab rear	41
A003	Rear fog light back-up light socket, central supply for FT (semi-)trailer, 7-pin	Cab rear	42
A004	ABS FA (semi-)trailer socket, 7-pin	Rear end of the chassis	43
A005	ABS FT (semi-)trailer socket, 7-pin	Cab rear	44
A021	Connector, diagnostic	Central box, left-hand side	47
A026	Body builder side-light	In chassis, rear left	50
A038	Accessory socket, 2-pin	Behind the bulkhead on the co-driver's side	48
A040	Connector, alarm system	Central box, right-hand side	49
A042	Dashboard socket, 2-pin	Front of heating unit, right-hand side	45
A043	Socket, 2-pin	Chair console on driver's side	46
B036	Resistor, alternator, D+	On print track of printed circuit, central box.	19
D525	24V/12V Converter	On fixing plate along printed circuit, central box.	35
D550	CTE-2	On fixing plate under printed circuit, central box.	7
D587	Electronic unit for ZF intarder	On fixing plate along printed circuit, central box.	12
D591	Electronic unit for E-gas 3	On fixing plate under printed circuit, central box.	16
D597	Electronic unit for ASL-V	On fixing plate under printed circuit, central box.	16

1	2	3	4
D609	Diode for light switch	On print track of printed circuit, central box.	19
D610	Diode for main beam/dipped beam	On print track of printed circuit, central box.	19
D611	Diode for lifting gear lowering valve damping	In lifting gear distributor box	34
D612	Diode for lifting gear lifting valve damping	In lifting gear distributor box	34
D613	Diode in lifting gear for pump damping relay	In lifting gear distributor box	34
D622	Diode for lifting gear lifting lock	In lifting gear distributor box	22
D623	Diode for lifting gear lowering lock	In lifting gear distributor box	22
D668	Diode for generator safety D+	On print track of printed circuit, central box.	19
D703	Diode for switching off the auxiliary heating/door contact at driver's side	In diode block, upper console	18
D704	Diode for switching off the auxiliary heating/door contact at co-driver's side	In diode block, upper console	18
D705	Diode for switching off the auxiliary heating with running engine	In diode block, upper console	18
D708	Diode for interior lighting, prevent feedback to co-driver's stepwell	In diode block, upper console	18
D709	Diode for interior lighting, prevent feedback to co-driver's switch	In diode block, upper console	18
D710	Diode for interior lighting, prevent feedback to driver's switch	In diode block, upper console	18
D721	Diode for parking brake, prevent feedback	On print track of printed circuit, central box.	23
D722	Diode for brake lights, prevent feedback	On print track of printed circuit, central box.	24
D745	Diode for engine brake (DEB) valves	On print track of printed circuit, central box.	24
D758	Diode prevent feedback to CWS-2	On print track of printed circuit, central box.	24
D759	Diode prevent feedback to brake lights	On print track of printed circuit, central box.	24



1	2	3	4
D802	Electronic unit for ECAS-2 (6x2)	On fixing plate under printed circuit, central box.	8
D804	Electronic unit for DAF/Cummins interface	On fixing plate under printed circuit, central box.	16
D806	Electronic unit for AGS	On fixing plate along printed circuit, central box.	9
D809	Electronic unit for ASL-G	On fixing plate under printed circuit, central box.	16
D813	Electronic unit for gate safety	On fixing plate under printed circuit, central box.	33
D833	Electronic unit for alarm system	On fixing plate under printed circuit, central box.	39
D850	Electronic unit for ABS/ASR-D	On fixing plate along printed circuit, central box.	15
D851	Electronic unit for ECAS-2 (4x2)	On fixing plate under printed circuit, central box.	8
D853	CWS-2	Behind DIP-3	31
D862	Electronic unit for central door locking	On fixing plate under printed circuit, central box.	37
D869	Electronic unit for auxiliary heating, Thermo 90	On fixing plate under printed circuit, central box.	38
D870	Electronic unit for Voith retarder	On fixing plate under printed circuit, central box.	12
E112	Fuse for glow indicator lamp	At pre-glow relay	25
E168	Fuse (40A) accessories	At top of printed circuit, central box.	11
E511	Brake light control switch	Left-hand side of heater unit	5
E564	Engine brake control switch	On floor at driver's side	27
E570	Control switch for coupling/PTO N/10	Above clutch pedal	28
E575	Clutch pedal proximity switch	Above clutch pedal	26
F000	Parking brake control switch	Left-hand side of heater unit	3
F050	Control switch for differential lock pressure (1st and 2nd diff.)	FT: front of differential housing FA: in chassis side member	17
F585	Sensor for engine coolant level	Back of header tank	20
G015	Contact relay	Along printed circuit, central box	10
G065	Heater fan relay	Right-hand side of heater unit	6

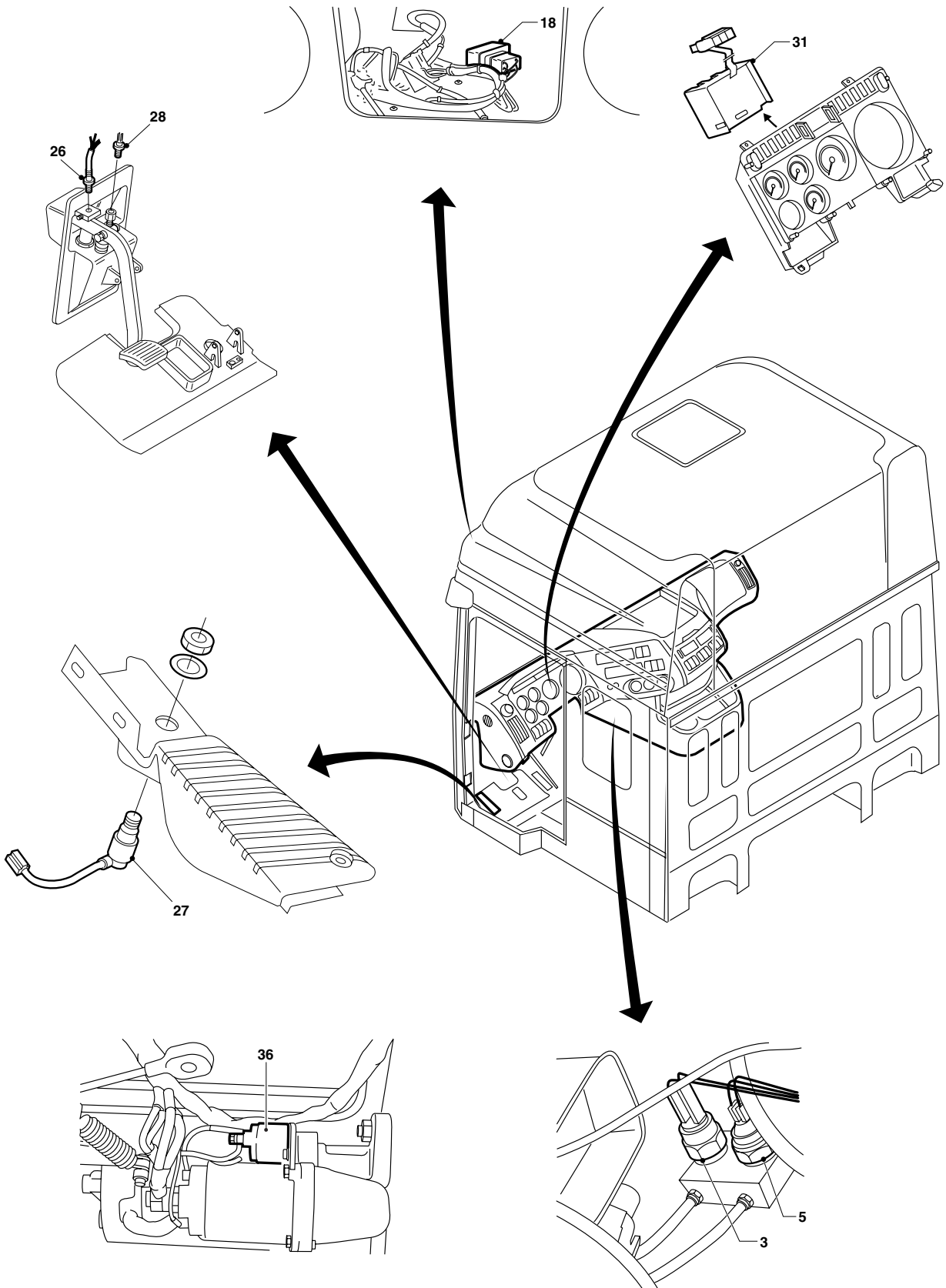
1	2	3	4
G066	Lifting-gear takeover relay	In lifting gear distributor box	29
G170	Thermo 90 auxiliary heating fan relay	At top of printed circuit, central box.	21
G203	Starting-motor takeover relay	On starting motor	36
G239	Engine brake takeover relay ABS/ASR-D CTE	Along printed circuit, central box	14
G247	Thermo 90 auxiliary heating fan relay	At top of printed circuit, central box.	21
G257 G258	Recirculation valve microrelay	Right-hand side of heater unit	1
G259	N-10-PTO control relay	Along printed circuit, on right-hand side, central box	13
G267	Air-conditioning microrelay	Right-hand side of heater unit	2
G279	Heater fan transfer microrelay	Right-hand side of heater unit	4
G284	Microrelay for Voith retarder 133-2	At top of printed circuit, central box.	53
G297	Cab air suspension relay	Along printed circuit, on right-hand side, central box	54
G300	Thermo 90 auxiliary heating transfer microrelay (GGVS)	At top of printed circuit, central box.	52
G301	Microrelay, light D+	At top of printed circuit, central box.	55
G302	Microrelay for Swedish lighting	At top of printed circuit, central box.	56
G303	Starting motor lock relay	At top of printed circuit, central box.	51
G723	Connection for central door locking	In the central box	30

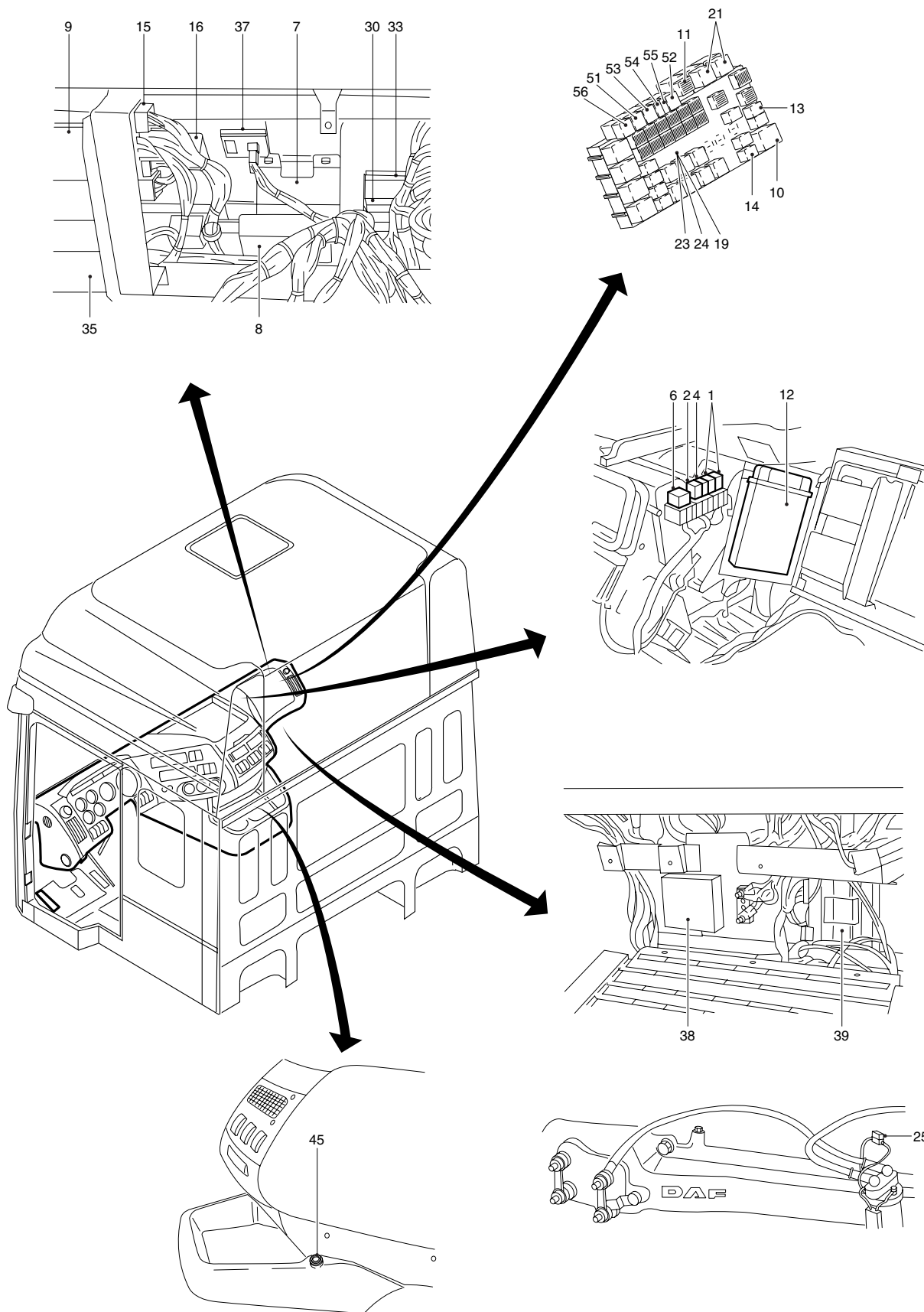
# 5

95XF series

# LOCATION OF COMPONENTS

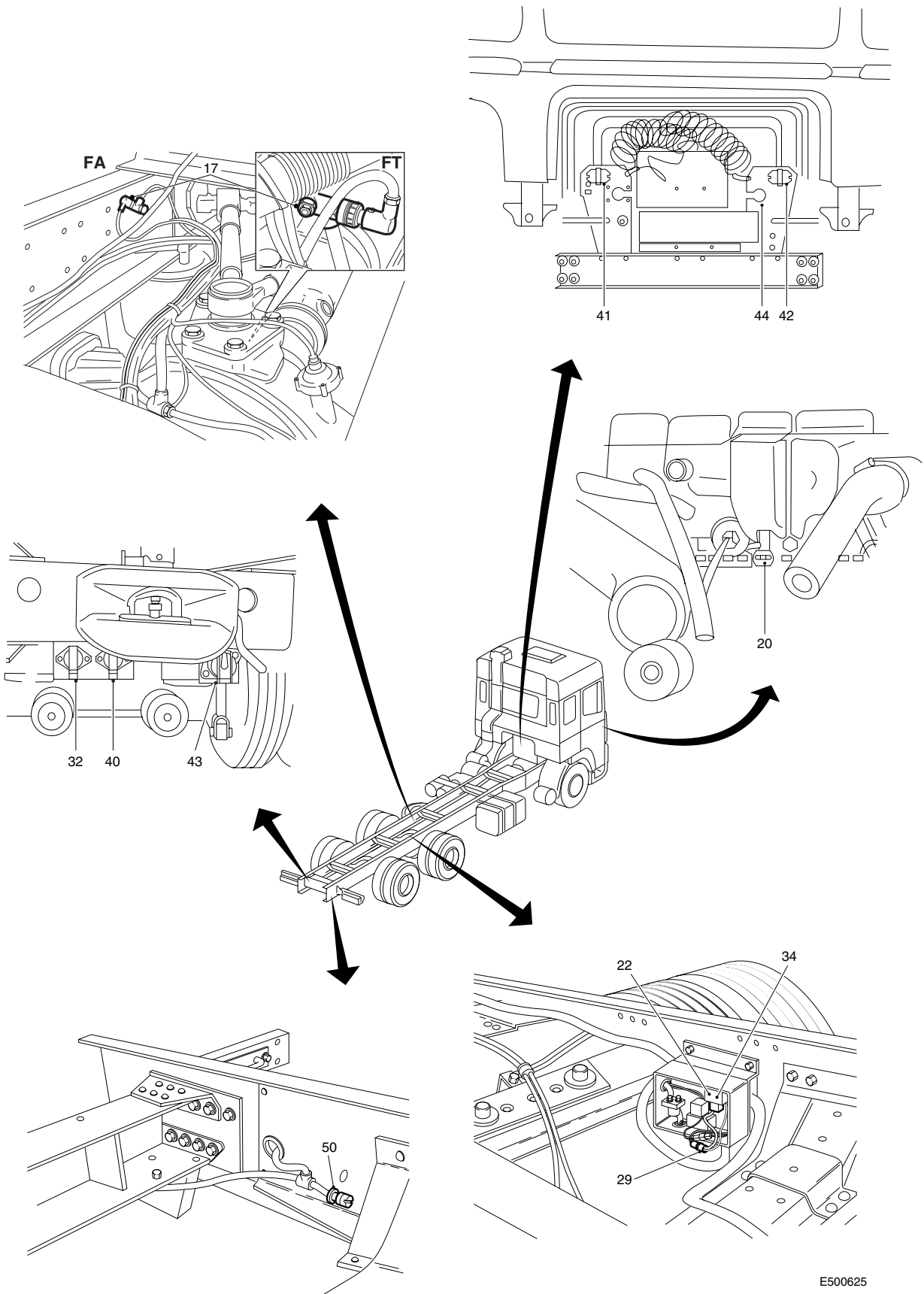
General location of components

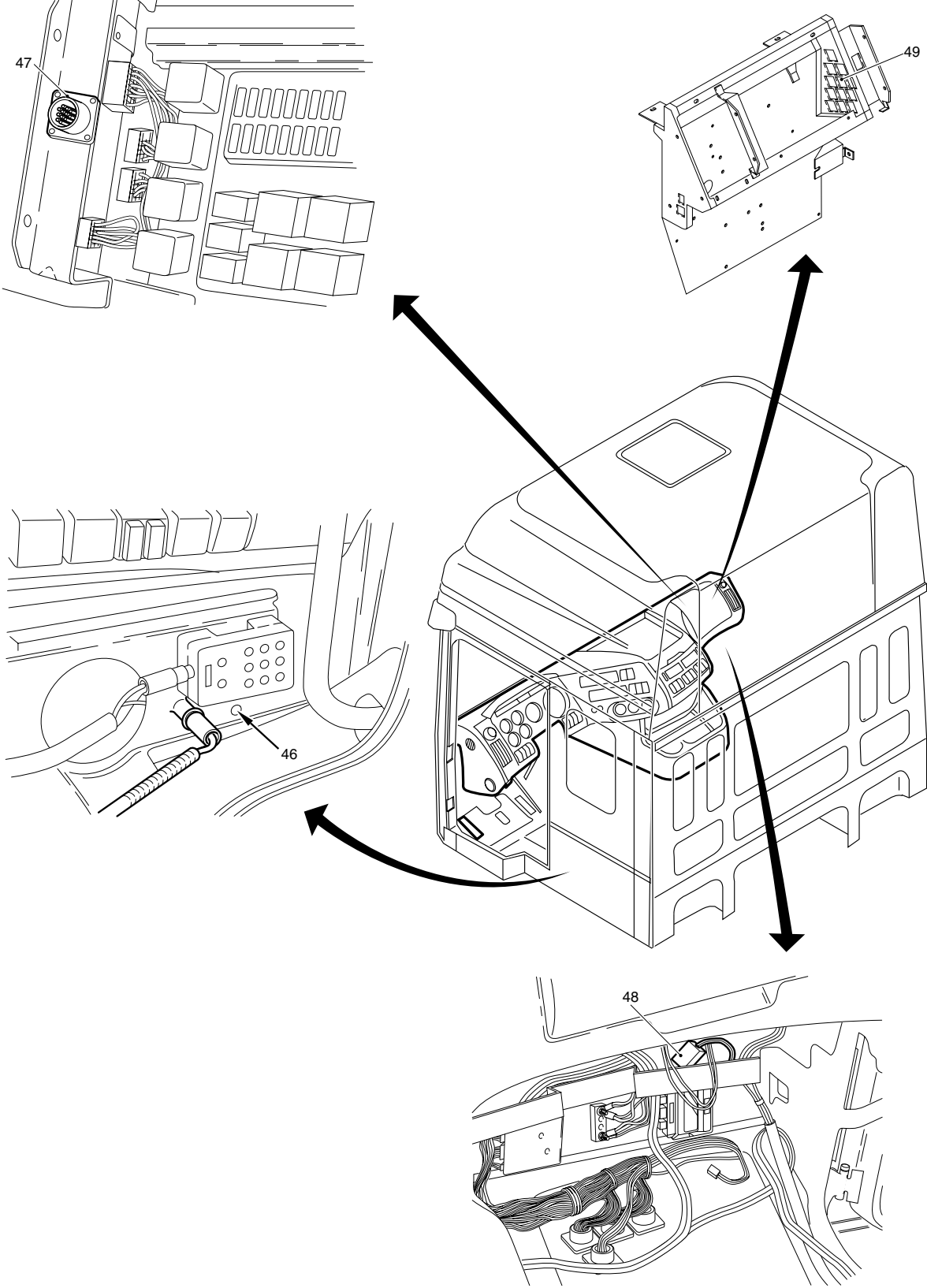




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E500627





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E500637

### 1.3 LOCATION OF COMPONENTS IN RELATION TO THE CIRCUIT DIAGRAM: 1316630/13-23

Column 1 = Basic code numbers of the component  
 Column 2 = Description  
 Column 3 = Location  
 Column 4 = Position number in illustration

1	2	3	4
A000	FA (semi-)trailer socket, 7-pin	Rear end of the chassis	32
A001	Rear fog light back-up light socket, FA (semi-)trailer, 7-pin	Rear end of the chassis	40
A002	FT (semi-)trailer socket, 7-pin	Cab rear	41
A003	Rear fog light back-up light socket, central supply for FT (semi-)trailer, 7-pin	Cab rear	42
A004	ABS FA (semi-)trailer socket, 7-pin	Rear end of the chassis	43
A005	ABS FT (semi-)trailer socket, 7-pin	Cab rear	44
A021	Connector, diagnostic	Central box, left-hand side	47
A026	Body builder side-light	In chassis, rear left	50
A038	Accessory socket, 2-pin	Behind the bulkhead on the co-driver's side	48
A040	Connector, alarm system	Central box, right-hand side	49
A042	Dashboard socket, 2-pin	Front of heating unit, right-hand side	45
A043	Socket, 2-pin	Chair console on driver's side	46
A046	Connector for the body builder for remote control connection	Below cab, co-driver's side	68
B036	Resistor, alternator, D+	On print track of printed circuit, central box.	19
B131 t/m B136	Pump units with magnetic valve	In pump housing	60
B290	Electro-pneumatic boost pressure valve	On inlet-air duct	63
C776	Stalk switch	On steering column	33
C804	Flexible vehicle speed limiter switch	Right-hand side instrument panel	58

1	2	3	4
D525	24V/12V Converter	On fixing plate along printed circuit, central box.	35
D587	Electronic unit for ZF intarder	On fixing plate along printed circuit, central box.	12
D591	Electronic unit for E-gas 3	On fixing plate under printed circuit, central box.	16
D597	Electronic unit for ASL-V	On fixing plate under printed circuit, central box.	16
D609	Diode for light switch	On print track of printed circuit, central box.	19
D610	Diode for main beam/dipped beam	On print track of printed circuit, central box.	19
D611	Diode for lifting gear lowering valve damping	In lifting gear distributor box	34
D612	Diode for lifting gear lifting valve damping	In lifting gear distributor box	34
D613	Diode in lifting gear for pump damping relay	In lifting gear distributor box	34
D622	Diode for lifting gear lifting lock	In lifting gear distributor box	22
D623	Diode for lifting gear lowering lock	In lifting gear distributor box	22
D668	Diode for generator safety D+	On print track of printed circuit, central box.	19
D703	Diode for switching off the auxiliary heating/door contact at driver's side	In diode block, upper console	18
D704	Diode for switching off the auxiliary heating/door contact at co-driver's side	In diode block, upper console	18
D705	Diode for switching off the auxiliary heating with running engine	In diode block, upper console	18
D708	Diode for interior lighting, prevent feedback to co-driver's stepwell	In diode block, upper console	18
D709	Diode for interior lighting, prevent feedback to co-driver's switch	In diode block, upper console	18
D710	Diode for interior lighting, prevent feedback to driver's switch	In diode block, upper console	18
D721	Diode for parking brake, prevent feedback	On print track of printed circuit, central box.	23



1	2	3	4
D722	Diode for brake lights, prevent feedback	On print track of printed circuit, central box.	24
D745	Diode for engine brake (DEB) valves	On print track of printed circuit, central box.	24
D758	Diode prevent feedback to CWS-2	On print track of printed circuit, central box.	24
D759	Diode prevent feedback to brake lights	On print track of printed circuit, central box.	24
D802	Electronic unit for ECAS-2 (6x2)	On fixing plate under printed circuit, central box.	8
D804	Electronic unit for DAF/Cummins interface	On fixing plate under printed circuit, central box.	16
D806	Electronic unit for AGS	On fixing plate along printed circuit, central box.	9
D809	Electronic unit for ASL-G	On fixing plate under printed circuit, central box.	16
D814	Electronic unit, UPEC	Below cab, co-driver's side	57
D833	Electronic unit for alarm system	On fixing plate under printed circuit, central box.	39
D850	Electronic unit for ABS/ASR-D	On fixing plate along printed circuit, central box.	15
D851	Electronic unit for ECAS-2 (4x2)	On fixing plate under printed circuit, central box.	8
D853	CWS-2	Behind DIP-3	31
D862	Electronic unit for central door locking	On fixing plate under printed circuit, central box.	37
D869	Electronic unit for auxiliary heating, Thermo 90	On fixing plate under printed circuit, central box.	38
D870	Electronic unit for Voith retarder	On fixing plate under printed circuit, central box.	12
D884	CTE-3	On fixing plate under printed circuit, central box.	7
E112	Fuse for glow indicator lamp	At pre-glow relay	25
E168	Fuse (40A) accessories	At top of printed circuit, central box.	11
E511	Brake light control switch	Left-hand side of heater unit	5
E564	Engine brake control switch	On floor at driver's side	27
E570	Control switch for coupling/PTO N/10	Above clutch pedal	28

1	2	3	4
E575	Clutch pedal proximity switch	Above clutch pedal	26
F000	Parking brake control switch	Left-hand side of heater unit	3
F050	Control switch for differential lock pressure (1st and 2nd diff.)	FT: front of differential housing FA: in chassis side member	17
F552	Crankshaft position sensor	On flywheel housing	65
F555	Boost pressure sensor	On inlet manifold	61
F558	Camshaft position sensor	On pump housing	67
F561	Inlet-air temperature sensor	On inlet manifold	62
F565	Fuel temperature sensor	On pump housing	66
F566	Engine coolant temperature sensor	On coolant pipe	64
F571	Accelerator pedal sensor	On floor at driver's side	59
F585	Sensor for engine coolant level	Back of header tank	20
G015	Contact relay	Along printed circuit, on right-hand side, central box	10
G065	Heater fan relay	Right-hand side of heater unit	6
G066	Lifting-gear takeover relay	In lifting gear distributor box	29
G126	Relay for UPEC power supply	In the central box	36
G170	Thermo 90 auxiliary heating fan relay	At top of printed circuit, central box.	21
G239	Engine brake takeover relay ABS/ASR-D CTE	Along printed circuit, central box	14
G247	Thermo 90 auxiliary heating fan relay	At top of printed circuit, central box.	21
G257 G258	Recirculation valve microrelay	Right-hand side of heater unit	1
G259	N-10-PTO control relay	Along printed circuit, on right-hand side, central box	13
G267	Air-conditioning microrelay	Right-hand side of heater unit	2
G279	Heater fan transfer microrelay	Right-hand side of heater unit	4
G284	Microrelay for Voith retarder 133-2	At top of printed circuit, central box.	53
G297	Cab air suspension relay	Along printed circuit, on right-hand side, central box	54
G300	Thermo 90 auxiliary heating transfer microrelay (GGVS)	At top of printed circuit, central box.	52

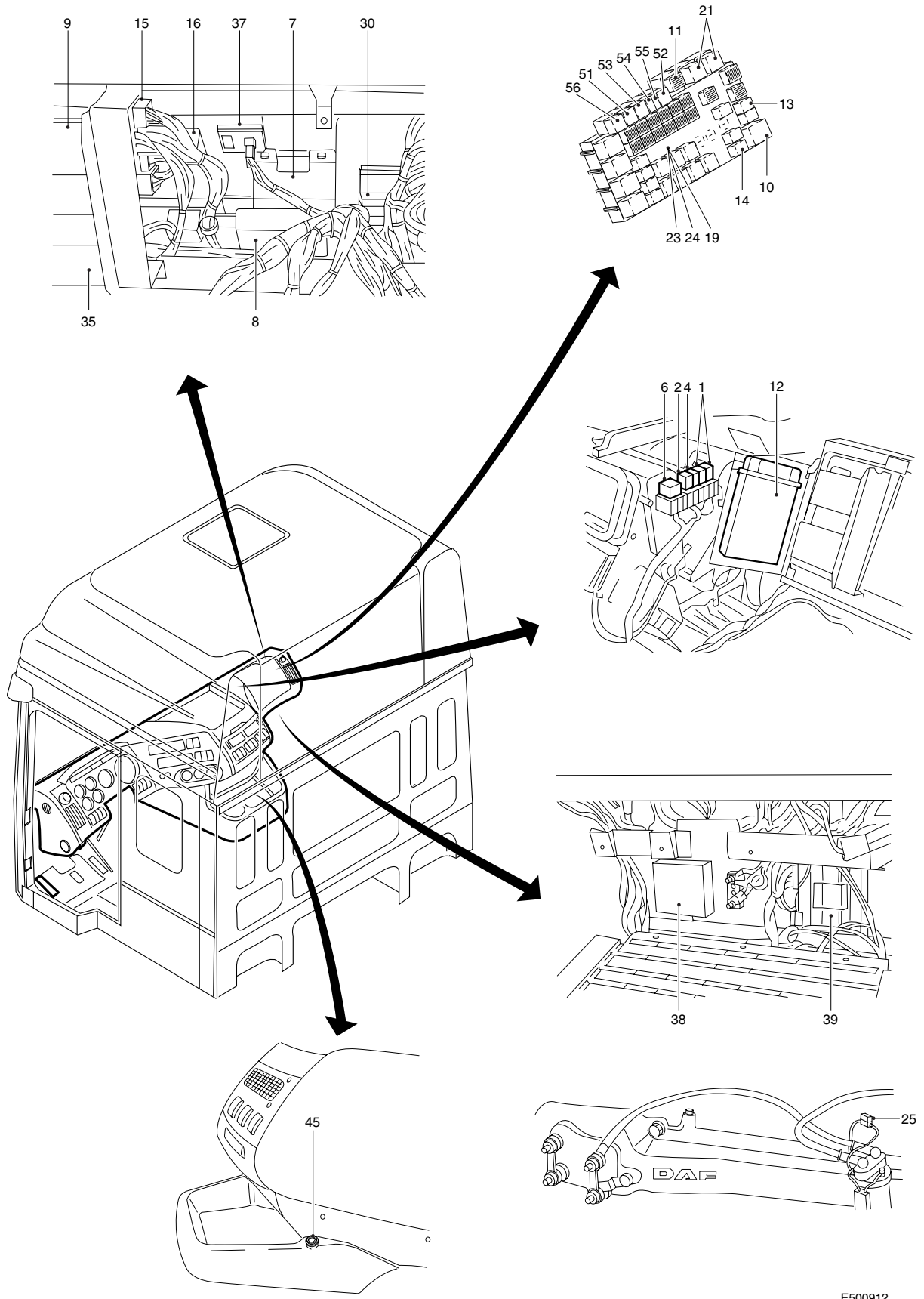
# 5

## LOCATION OF COMPONENTS

95XF series

General location of components

1	2	3	4
G301	Microrelay, light D+	At top of printed circuit, central box.	55
G302	Microrelay for Swedish lighting	At top of printed circuit, central box.	56
G303	Starting motor lock relay	At top of printed circuit, central box.	51
G321	UPEC connector relay for the body builder	At top of printed circuit, central box.	69
G328	UPEC engine stop relay	At top of printed circuit, central box.	70
G723	Connection for central door locking	In the central box	30



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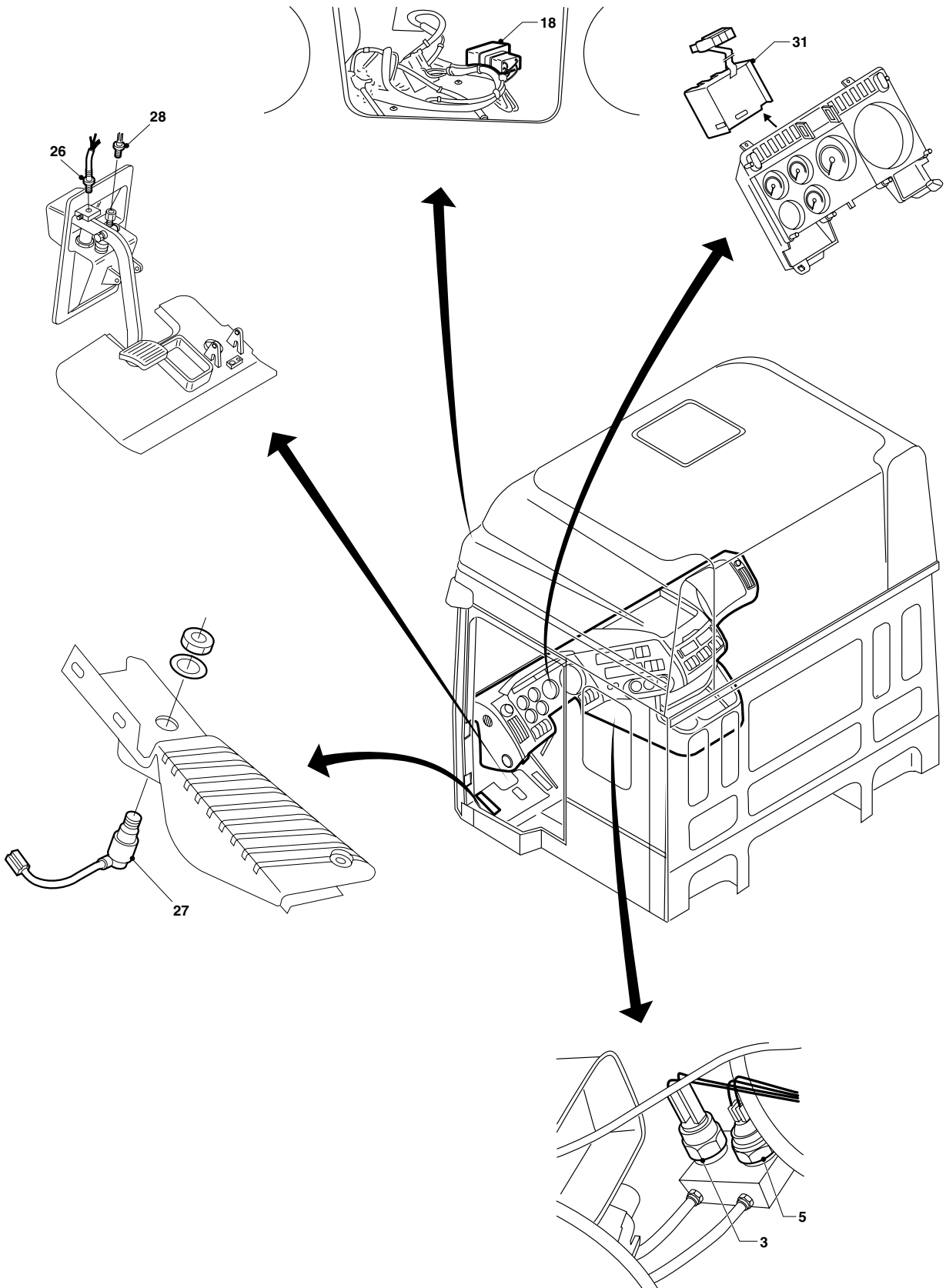
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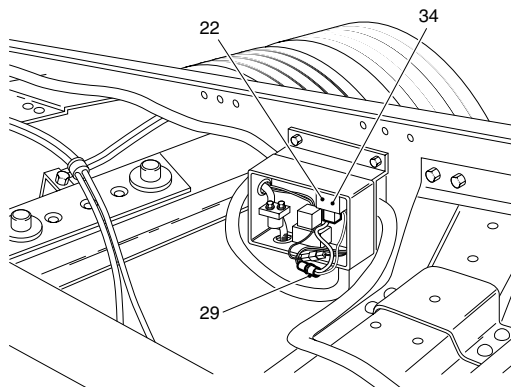
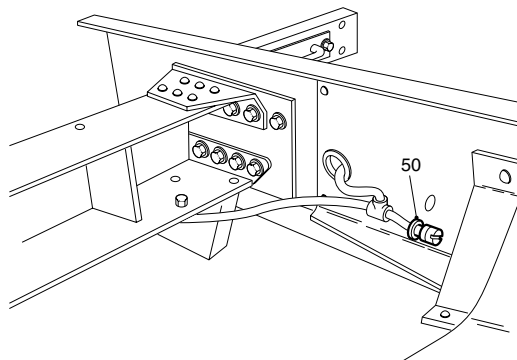
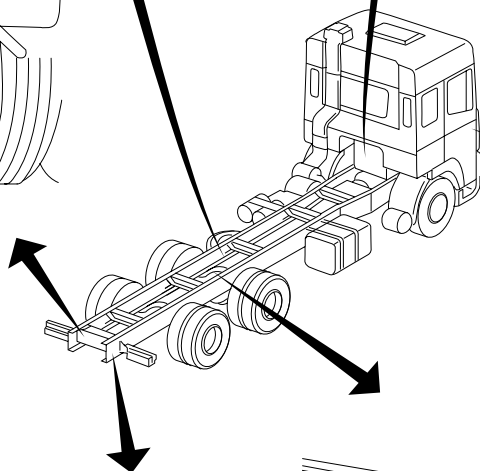
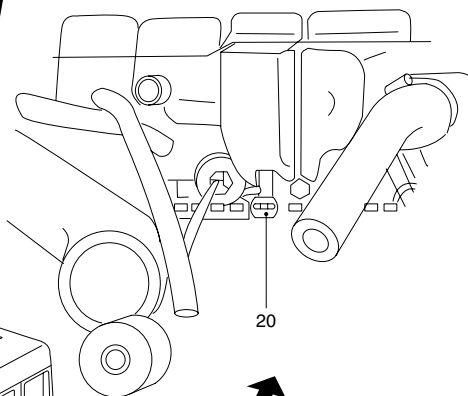
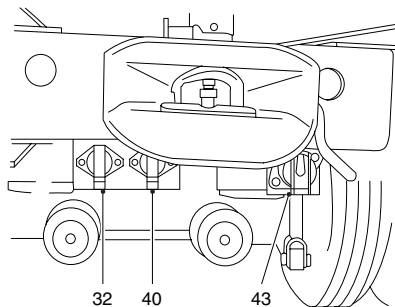
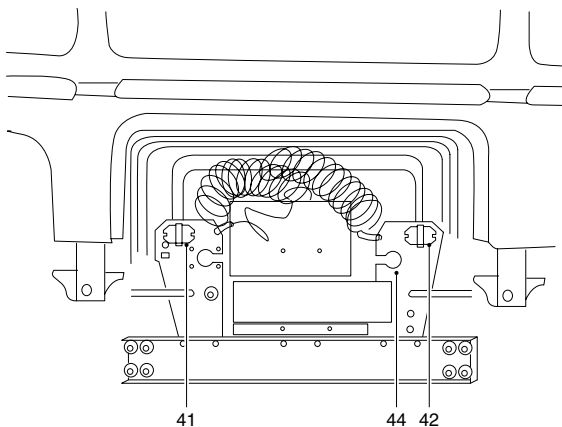
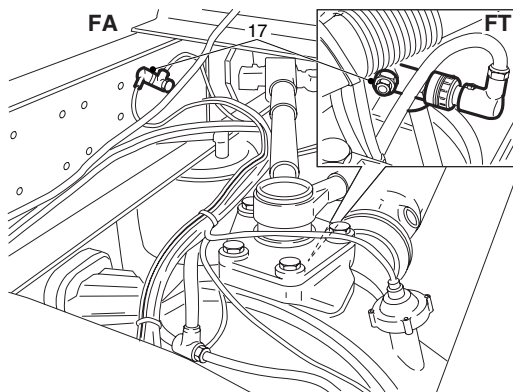
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95XF series

# LOCATION OF COMPONENTS

General location of components





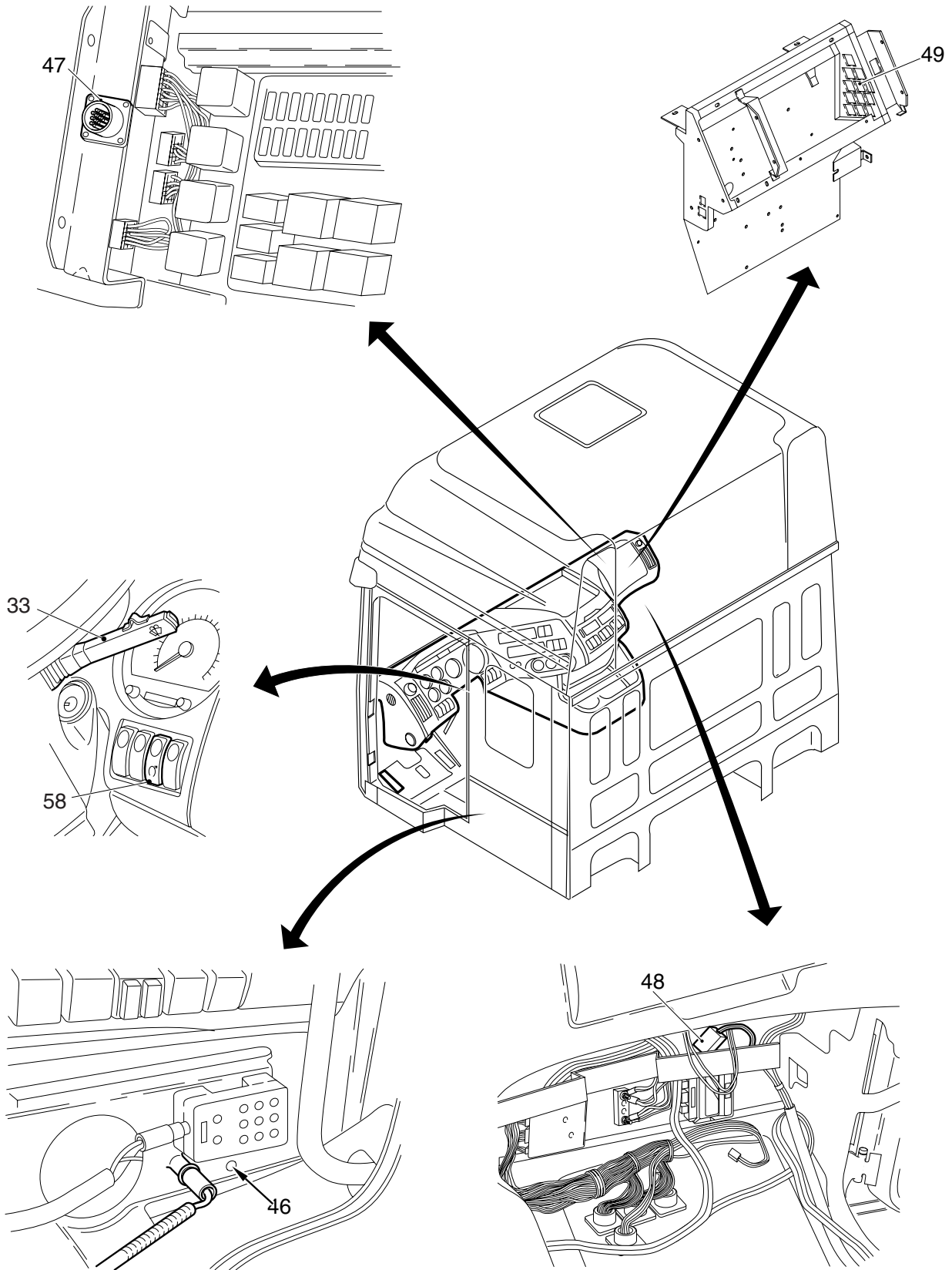
E500625

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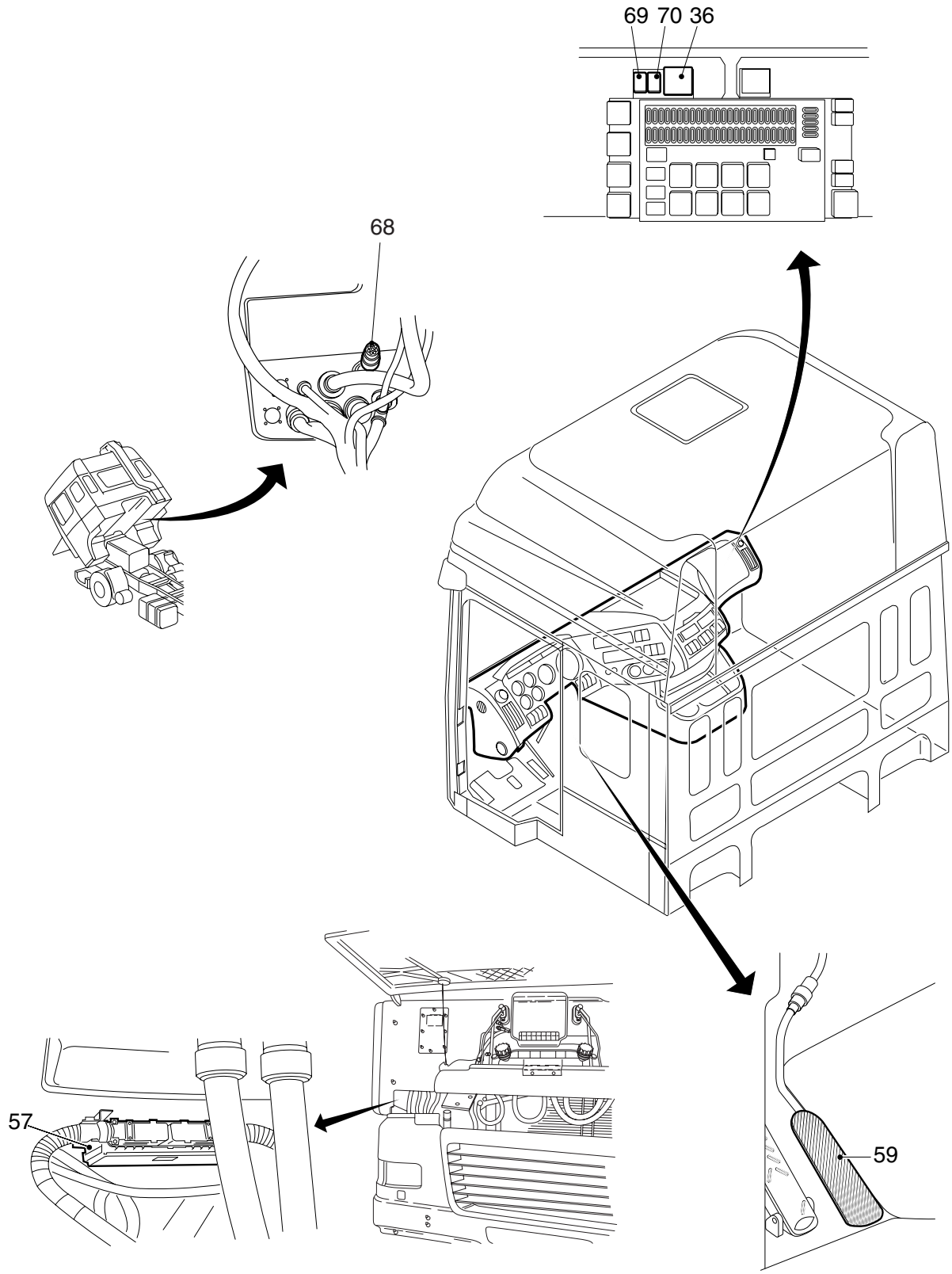
95XF series

# LOCATION OF COMPONENTS

General location of components



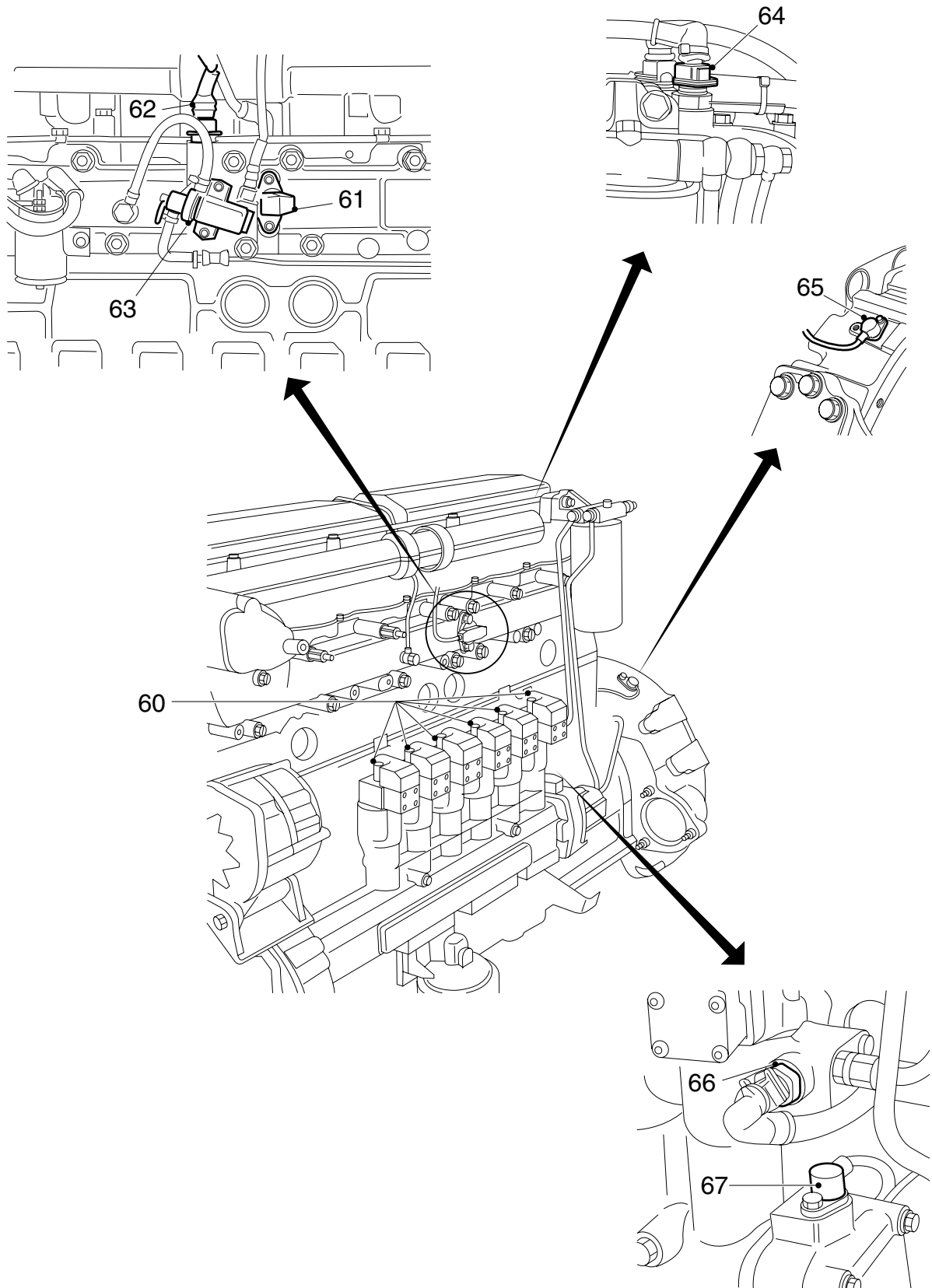
E500909



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E500910





E500673

## 1.4 LOCATION OF COMPONENTS IN RELATION TO THE CIRCUIT DIAGRAM: 1316630/24-29

- Column 1 = Basic code numbers of the component  
 Column 2 = Description  
 Column 3 = Location  
 Column 4 = Position number in illustration

1	2	3	4
A000	FA (semi-)trailer socket, 7-pin	Rear end of the chassis	32
A001	Rear fog light back-up light socket, FA (semi-)trailer, 7-pin	Rear end of the chassis	40
A002	FT (semi-)trailer socket, 7-pin	Cab rear	41
A003	Rear fog light back-up light socket, central supply for FT (semi-)trailer, 7-pin	Cab rear	42
A004	ABS FA (semi-)trailer socket, 7-pin	Rear end of the chassis	43
A005	ABS FT (semi-)trailer socket, 7-pin	Cab rear	44
A021	Connector, diagnostic	Central box, left-hand side	47
A026	Body builder side-light	In chassis, rear left	50
A038	Accessory socket, 2-pin	Behind the bulkhead on the co-driver's side	48
A040	Connector, alarm system	Central box, right-hand side	49
A042	Dashboard socket, 2-pin	Front of heating unit, right-hand side	45
A043	Socket, 2-pin	Chair console on driver's side	46
A046	Connector for the body builder for remote control connection	Below cab, co-driver's side	68
B036	Resistor, alternator, D+	On print track of printed circuit, central box.	19
B131 t/m B136	Pump units with magnetic valve	In pump housing	60
B290	Electro-pneumatic boost pressure valve	On inlet-air duct	63
B344	Electronic unit for AGS	In lubrication pump housing	9
C776	Stalk switch	On steering column	33
C804	Flexible vehicle speed limiter switch	Right-hand side instrument panel	58

1	2	3	4
D525	24V/12V Converter	On fixing plate along printed circuit, central box.	35
D587	Electronic unit for ZF intarder	On fixing plate along printed circuit, central box.	12
D591	Electronic unit for E-gas 3	On fixing plate under printed circuit, central box.	16
D597	Electronic unit for ASL-V	On fixing plate under printed circuit, central box.	16
D600	Diode, rear fog light/dipped beam	On print track of printed circuit, central box.	19
D601	Diode for front and rear fog lights	On print track of printed circuit, central box.	19
D609	Diode for light switch	On print track of printed circuit, central box.	19
D610	Diode for main beam/dipped beam	On print track of printed circuit, central box.	19
D611	Diode for lifting gear lowering valve damping	In lifting gear distributor box	34
D612	Diode for lifting gear lifting valve damping	In lifting gear distributor box	34
D613	Diode in lifting gear for pump damping relay	In lifting gear distributor box	34
D622	Diode for lifting gear lifting lock	In lifting gear distributor box	22
D623	Diode for lifting gear lowering lock	In lifting gear distributor box	22
D668	Diode for generator safety D+	On print track of printed circuit, central box.	19
D703	Diode for switching off the auxiliary heating/door contact at driver's side	In diode block, upper console	18
D704	Diode for switching off the auxiliary heating/door contact at co-driver's side	In diode block, upper console	18
D705	Diode for switching off the auxiliary heating with running engine	In diode block, upper console	18
D708	Diode for interior lighting, prevent feedback to co-driver's stepwell	In diode block, upper console	18
D709	Diode for interior lighting, prevent feedback to co-driver's switch	In diode block, upper console	18

1	2	3	4
D710	Diode for interior lighting, prevent feedback to driver's switch	In diode block, upper console	18
D721	Diode for parking brake, prevent feedback	On print track of printed circuit, central box.	23
D722	Diode for brake lights, prevent feedback	On print track of printed circuit, central box.	24
D745	Diode for engine brake (DEB) valves	On print track of printed circuit, central box.	24
D758	Diode prevent feedback to CWS-2	On print track of printed circuit, central box.	24
D759	Diode prevent feedback to brake lights	On print track of printed circuit, central box.	24
D802	Electronic unit for ECAS-2 (6x2)	On fixing plate under printed circuit, central box.	8
D804	Electronic unit for DAF/Cummins interface	On fixing plate under printed circuit, central box.	16
D809	Electronic unit for ASL-G	On fixing plate under printed circuit, central box.	16
D814	Electronic unit, UPEC	Below cab, co-driver's side	57
D833	Electronic unit for alarm system	On fixing plate under printed circuit, central box.	39
D850	Electronic unit for ABS/ASR-D	On fixing plate along printed circuit, central box.	15
D851	Electronic unit for ECAS-2 (4x2)/ Electronic unit for ECAS-3 (4x2)	On fixing plate under printed circuit, central box.	8
D853	CWS-2	Behind DIP-3	31
D862	Electronic unit for central door locking	On fixing plate under printed circuit, central box.	37
D869	Electronic unit for auxiliary heating, Thermo 90	On fixing plate under printed circuit, central box.	38
D870	Electronic unit for Voith retarder	On fixing plate under printed circuit, central box.	12
D884	CTE-3	On fixing plate under printed circuit, central box.	7
E112	Fuse for glow indicator lamp	At pre-glow relay	25
E168	Fuse (40A) accessories	At top of printed circuit, central box.	11
E511	Brake light control switch	Left-hand side of heater unit	5

1	2	3	4
E564	Engine brake control switch	On floor at driver's side	27
E570	Control switch for coupling/PTO N/10	Above clutch pedal	28
E575	Clutch pedal proximity switch	Above clutch pedal	26
F000	Parking brake control switch	Left-hand side of heater unit	3
F050	Control switch for differential lock pressure (1st and 2nd diff.)	FT: front of differential housing FA: in chassis side member	17
F552	Crankshaft position sensor	On flywheel housing	65
F555	Boost pressure sensor	On inlet manifold	61
F558	Camshaft position sensor	On pump housing	67
F561	Inlet-air temperature sensor	On inlet manifold	62
F565	Fuel temperature sensor	On pump housing	66
F566	Engine coolant temperature sensor	On coolant pipe	64
F571	Accelerator pedal sensor	On floor at driver's side	59
F585	Sensor for engine coolant level	Back of header tank	20
G015	Contact relay	Along printed circuit, on right-hand side, central box	10
G065	Heater fan relay	Right-hand side of heater unit	6
G066	Lifting-gear takeover relay	In lifting gear distributor box	29
G126	Relay for UPEC power supply	In the central box	36
G170	Thermo 90 auxiliary heating fan relay	At top of printed circuit, central box.	21
G239	Engine brake takeover relay ABS/ASR-D CTE	Along printed circuit, central box	14
G247	Thermo 90 auxiliary heating fan relay	At top of printed circuit, central box.	21
G257 G258	Recirculation valve microrelay	Right-hand side of heater unit	1
G259	N-10-PTO control relay	Along printed circuit, on right-hand side, central box	13
G267	Air-conditioning microrelay	Right-hand side of heater unit	2
G279	Heater fan transfer microrelay	Right-hand side of heater unit	4
G284	Microrelay for Voith retarder 133-2	At top of printed circuit, central box.	53
G297	Cab air suspension relay	Along printed circuit, on right-hand side, central box	54
G300	Thermo 90 auxiliary heating transfer microrelay (GGVS)	At top of printed circuit, central box.	52

## LOCATION OF COMPONENTS

5

General location of components

95XF series

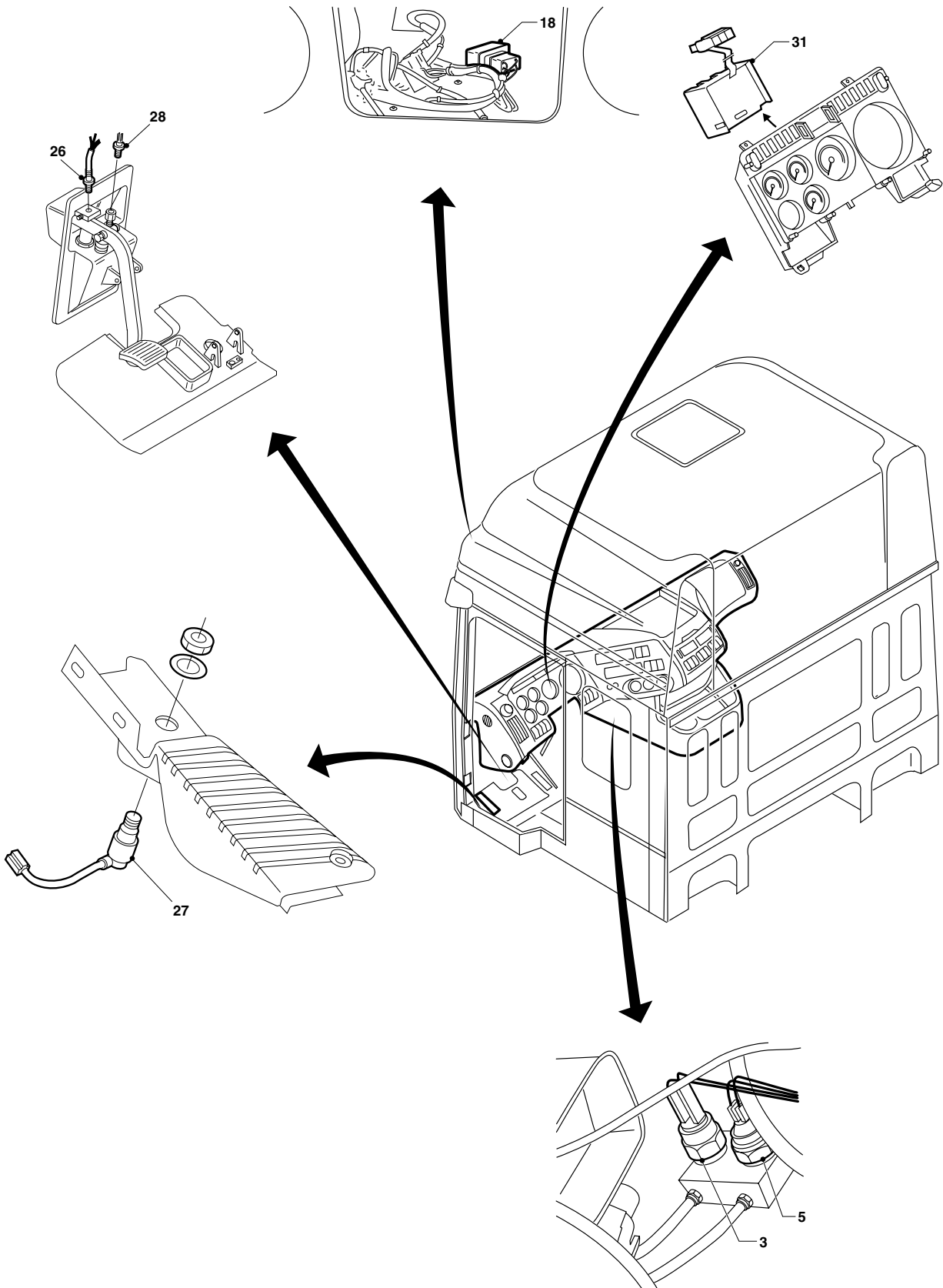
1	2	3	4
G301	Microrelay, light D+	At top of printed circuit, central box.	55
G302	Microrelay for Swedish lighting	At top of printed circuit, central box.	56
G321	UPEC connector relay for the body builder	At top of printed circuit, central box.	69
G328	UPEC engine stop relay	At top of printed circuit, central box.	70
G372	Starting motor lock relay	On printed circuit, central box	51
G723	Connection for central door locking	In the central box	30
G392	Rear fog light transfer microrelay	On printed circuit, central box	71

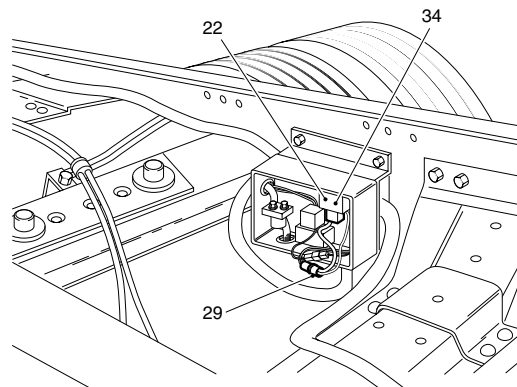
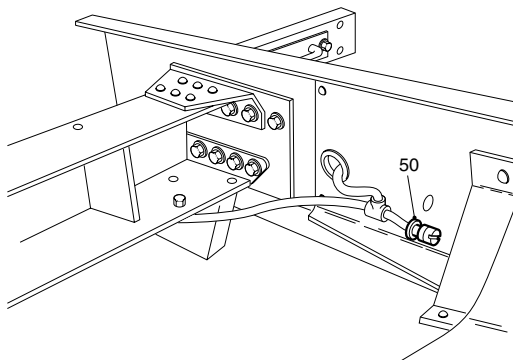
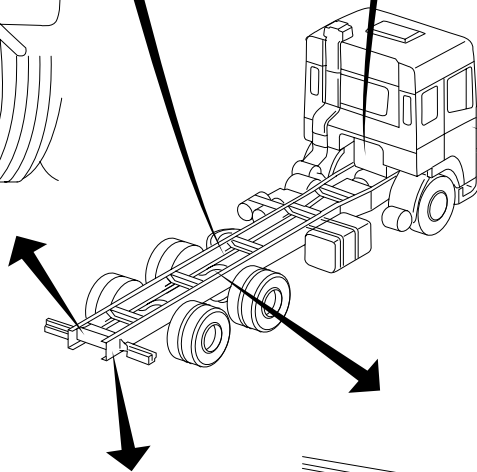
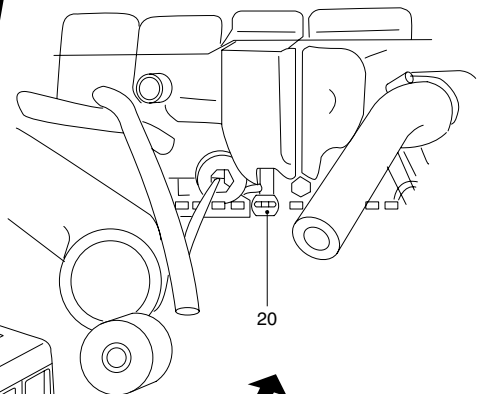
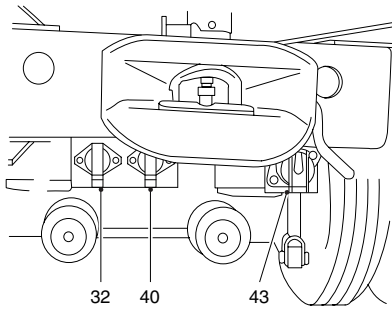
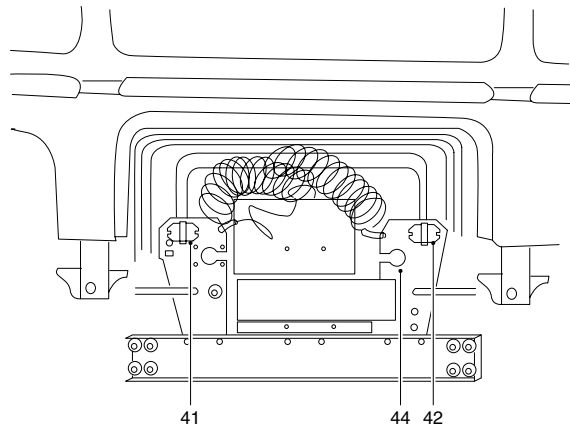
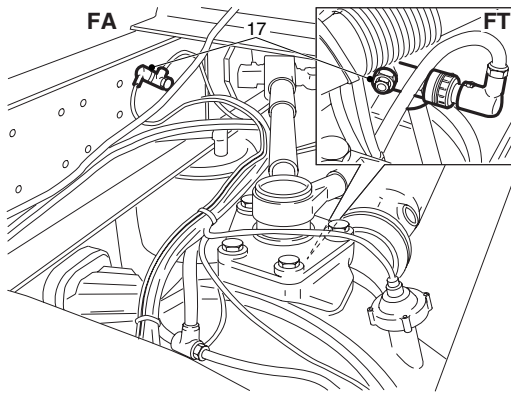
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95XF series

# LOCATION OF COMPONENTS

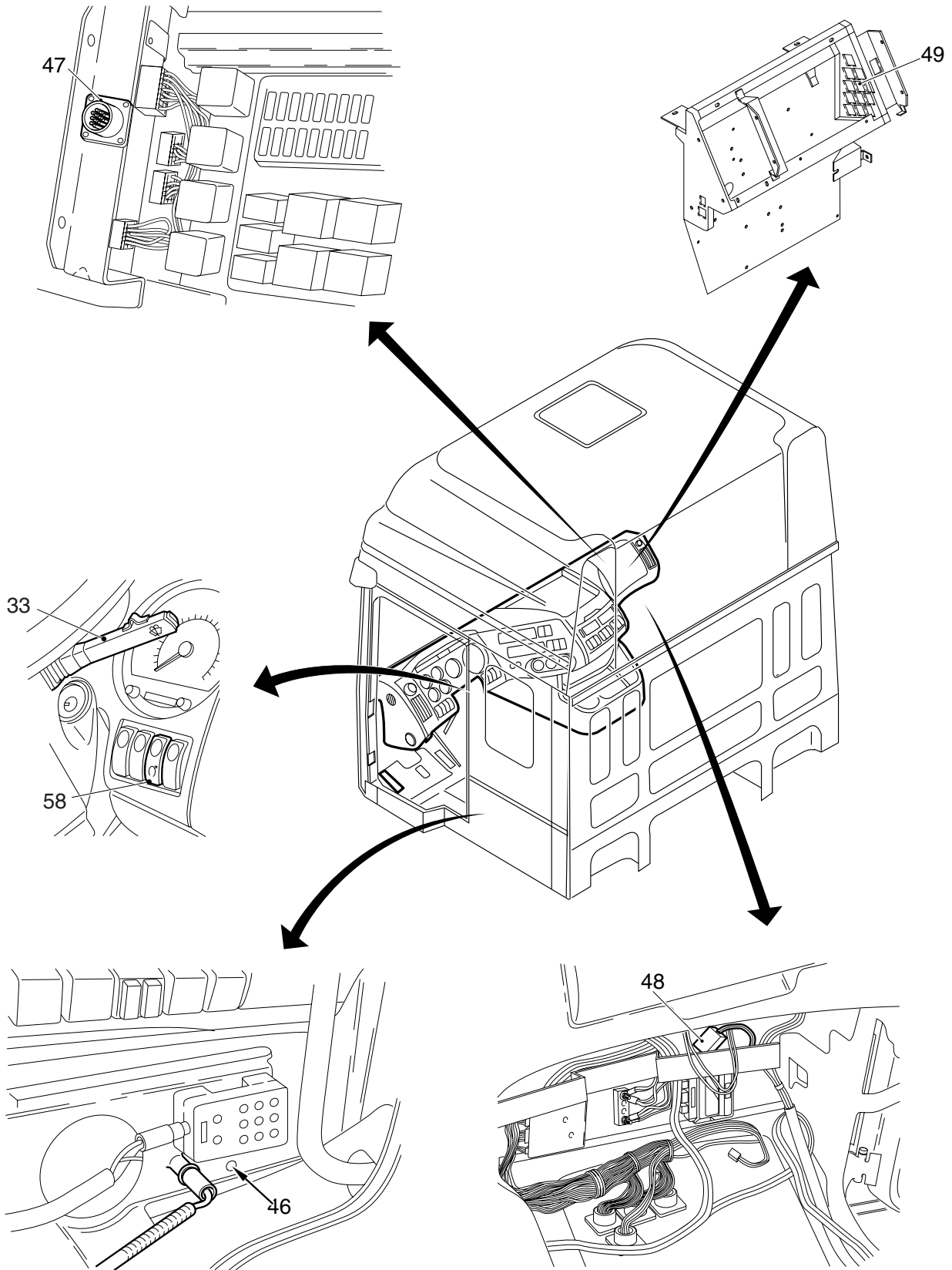
General location of components



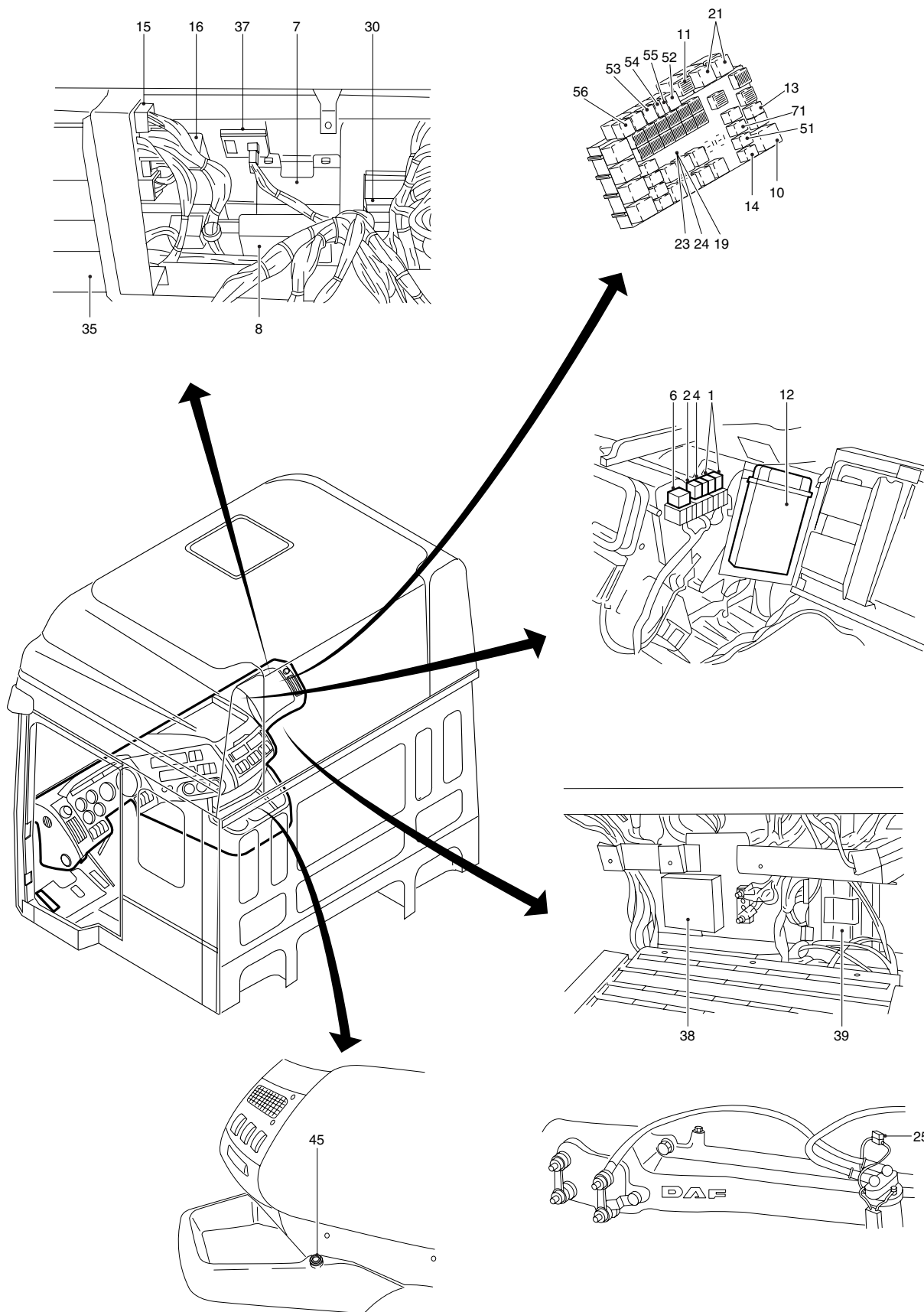


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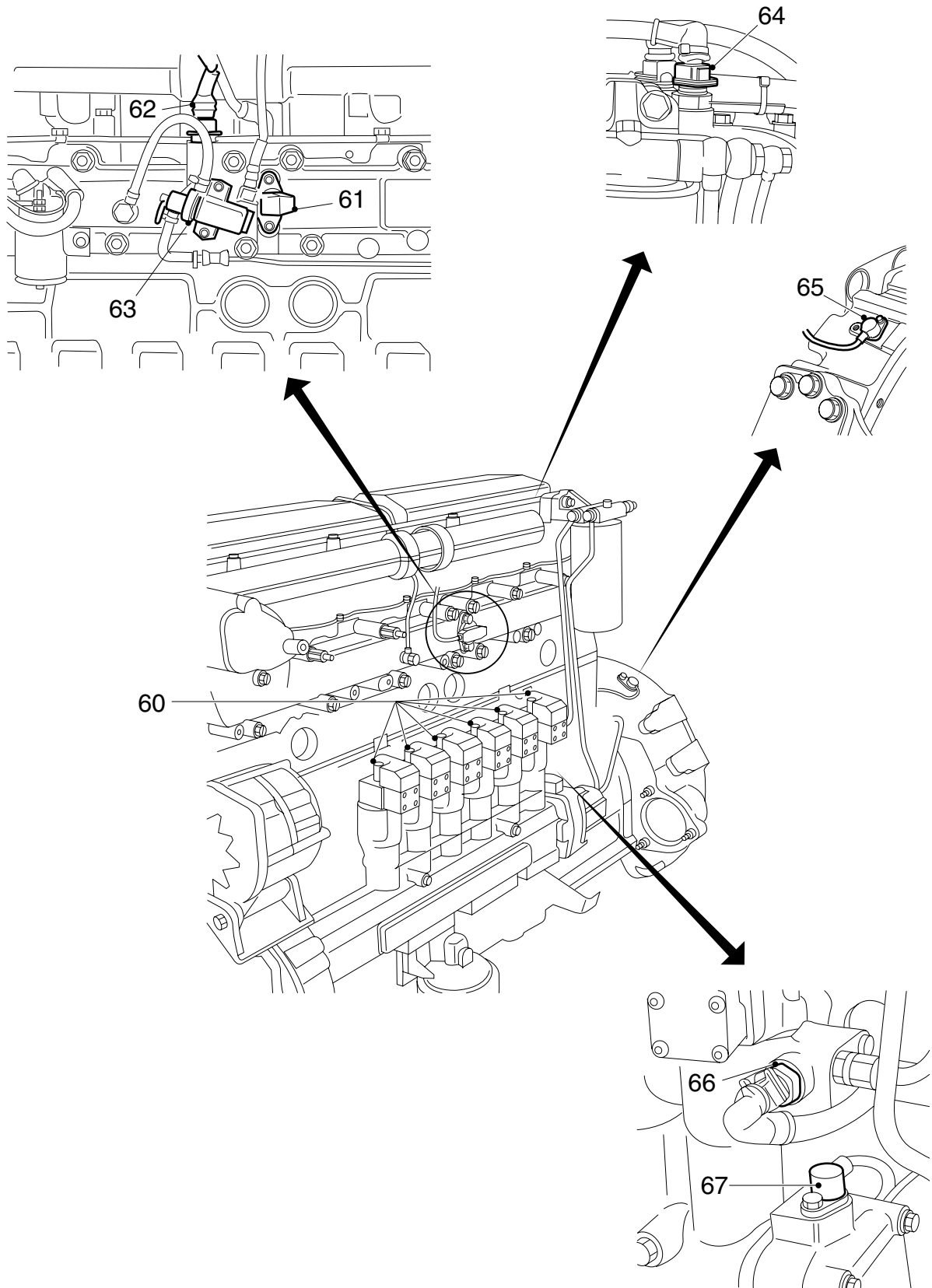


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1.1 Overview of connectors .....	1-1 .....	9711
1.2 Illustrations of connector locations .....	1-8 .....	9711



## 1. LOCATION OF CONNECTORS

### 1.1 OVERVIEW OF CONNECTORS

- Column 1 = Coding of connectors  
 Column 2 = Number of connection points on connector  
 Column 3 = Colour of the connector  
 Column 4 = Description of the connector, if applicable  
 Column 5 = Location of the connector on the vehicle  
 Column 6 = Page-number reference (see "Illustrations of connector locations")

Connectors on printed circuit central box (D878)					
1	2	3	4	5	6
400	35	Grey	A connector	On printed circuit, central box	1-11
401	35	Black	B connector	On printed circuit, central box	1-11
402	35	Grey	C connector	On printed circuit, central box	1-11
403	35	Black	D connector	On printed circuit, central box	1-11
233	2	Black	Before and after contact	On printed circuit, central box	1-11

Connectors on instrument panel (D852)					
1	2	3	4	5	6
200	20	White	C connector	At the back of the instrument panel	1-9
201	20	Black	B connector	At the back of the instrument panel	1-9
202	20	Red	A connector	At the back of the instrument panel	1-9
239	2	Brown	D connector	At the back of the instrument panel	1-9

Connectors on tachograph (B501)					
1	2	3	4	5	6
223	8	White	A connector	At the back of the tachograph	1-9
224	8	Red	C connector	At the back of the tachograph	1-9
225	8	Brown	D connector	At the back of the tachograph	1-9
271	8	Yellow	B connector	At the back of the tachograph	1-9

Connectors on CWS panel (D853)					
1	2	3	4	5	6
395	21	Black	A connector	On CWS panel	1-10
396	15	Black	B connector	On CWS panel	1-10

Other connectors					
1	2	3	4	5	6
114	39	Red	Engine wiring	Behind the bulkhead on the co-driver's side	1-12
115	39	Black	Chassis wiring	Behind the bulkhead on the co-driver's side	1-12
116	7	Black	Lifting gear distribution box wiring harness	Lifting gear distribution box on the right side of the chassis, behind the non-driven axle	1-35
118	8	Black	Gearbox wiring harness	On the gearbox, rear right	1-43
122	6	White	Time relay D503	Lifting gear distribution box on the right side of the chassis, behind the non-driven axle	1-35
134	4	Red	Electronic unit for gate safety	Central box	1-49
135	15	Black	Electronic unit for Groeneveld speed limiter	Central box	1-26
136	4	Black	Groeneveld speed limiter regulator motor	Below cab, co-driver's side	1-26
143	4	Black	Stepwell lighting	Below cab floor, right-hand side	1-47
144	4	Black	Stepwell lighting	Below cab floor, left-hand side	1-47
145	16	Black	Auxiliary heating - Webasto	Behind the bulkhead on the co-driver's side	1-12/39
161	3	White	Wiring for end-outline marker lighting	Overhead cover XC cab	1-46
166	2	Black	Electronic unit - Webasto	Central box	1-39
167	10	Black	Electronic unit - Webasto	Central box	1-39
168	8	Black	Electronic unit - Webasto	Central box	1-39
173	8	Black	Thermostat unit for Webasto auxiliary heating, Thermo 90	Back panel	1-38/40
175	6	Blue	Connection HGS / Airco dashboard wiring	Central box, left-hand side	1-13/43
176	21	Blue	Connection dashboard wiring	Instrument panel	1-14
180	2	Brown	Connection accessories	Behind the bulkhead on the co-driver's side	1-50
181	2	Brown	Connection accessories	In overhead box	1-50
182	2	White	Connection Egas - ASC	Below printed circuit, right-hand side	1-61
183	2	White	Airco sensor	Cab outside, front	1-57
185	21	Black	Door-sill wiring, driver's side	Below instrument panel, left-hand side	1-14



Other connectors					
1	2	3	4	5	6
187	12	Blue	Door-sill wiring, co-driver's side	Central box, right-hand side	1-13
189	18	Yellow	Overhead-cover wiring XC cab	Next to instrument panel, left-hand side	1-14
190	21	Black	Connection overhead-box wiring XC cab	Overhead cover	1-46
191	6	Blue	Assembly heater-control panel (XF)	Central box, left-hand side	1-59
192	6	Blue	Assembly heater-control panel (VF)	Central box, left-hand side	1-60
194	12	Blue	Overhead-cover wiring	Below instrument panel, left-hand side	1-14
196	9	Black	Door wiring, driver's side	In door post, driver's side	1-45
197	6	Blue	Door wiring, driver's side	In door post, driver's side	1-45
198	4	White	Door wiring, driver's side	In door, driver's side	1-45
199	4	White	Door wiring, driver's side	In door, driver's side	1-45
216	16	Black	Diagnosis	Central box, left-hand side	1-18
231	5	Black	Light switch	Instrument panel	1-17
232	55	Black	Electronic unit for CTE	Central box	1-18
251	3	White	Engine brake control switch	On floor at driver's side	1-19
252	6	White	Wind-screen wiper motor	Behind dashboard, left-hand side of the heater	1-17
253	12	Black	Electronic unit for automatic lubrication	Central box	1-42
254	4	Black	Grease pump automatic lubrication	Below cab floor, right-hand side	1-42
269	14	Black	Thermostat - Eberspächer	Back panel, driver's side	1-12/23
276	9	Black	Door wiring, co-driver's side	In door post, co-driver's side	1-45
277	6	Yellow	Door wiring, co-driver's side	In door post, co-driver's side	1-45
278	4	White	Door wiring, co-driver's side	In door, co-driver's side	1-45
279	4	White	Door wiring, co-driver's side	In door, co-driver's side	1-45
281	18	Blue	Substructure, driver's side	Below cab, driver's side	1-15
282	12	Black	Substructure, driver's side	Below cab, driver's side	1-15

Other connectors					
1	2	3	4	5	6
284	12	Black	Chassis substructure	Cable trough below cab, left-hand side	1-51
285	12	Black	ABS sensors, left-hand side	Below cab, driver's side	1-55
286	18	Black	Substructure, co-driver's side	Central box, above floor connectors	1-56
288	12	Black	Chassis substructure	Shore on anti-underrun bumper below the cab, right-hand side	1-58
290	18	Yellow	Connection XL/XH cab dashboard wiring	Next to instrument panel, left-hand side	1-14/48
291	21	Black	Connection overhead-box wiring XL/XH cab	Behind overhead boxes, left-hand side	1-52
305	25	Black	Electronic unit for VDO speed limiter	Central box	1-27
307	9	Black	ECAS / E-gas remote control	Below chair, driver's side	1-33
313	7	Black	E-gas regulator motor	Below cab, co-driver's side	1-12
314	7	Black	VDO speed limiter regulator motor	Below cab, co-driver's side	1-27
321	39	White	ABS / ECAS wiring	Floor pan	1-12/32/37
328	16	Black	Cable trough ZF-intarder chassis	Floor pan, co-driver's side	1-12/31
333	55	White	Electronic unit for E-gas	Central box	1-19
334	35	Black	Electronic unit for DAF Cummins interface	Central box	1-22
335	28	Black	Cummins	Engine left	1-24
336	44	Black	Cable harness cab Cummins	Behind the bulkhead on the co-driver's side	1-12/24
338	25	Black	Electronic unit for ZF intarder	Central box	1-30
340	35	Black	Electronic unit for ECAS-2 (6x2)	Central box	1-32
343	7	Black	Sensor for accelerator pedal, Cummins	Central box	1-22
344	7	Black	Sensor for accelerator pedal E-gas	Below cab, driver's side	1-20
347	12	Black	Cable harness ECAS FTG	In chassis, right-hand side, in front of driven axle	1-33
348	16	Black	Cable harness below cab, air-sprung front axle	Behind the bulkhead on the co-driver's side	1-12/32
352	16	Black	Chassis wiring Voith retarder	Floor pan, co-driver's side	1-12/29

Other connectors					
1	2	3	4	5	6
356	4	White	Wiring air-sprung front axle	Floor pan	1-34
358	9	Grey	Cable harness Cummins	Floor pan, co-driver' s side	1-23
371	18	Yellow	Connection dashboard wiring Cummins	Central box, left-hand side	1-13
373	18	Blue	Connection dashboard wiring ECAS-2 (4x2)	Central box, left-hand side	1-13
376	21	Black	Assembly radio panel	Left of heater	1-15
377	21	Black	ABS	Central box, left-hand side	1-13
378	21	Yellow	Connection dashboard wiring E-gas	Central box, left-hand side	1-13
380	21	Blue	Assembly heater-control panel	Heater	1-15
383	12	Black	Electronic unit for WEBASTO auxiliary heating, Thermo 90	Central box, left-hand side	1-13/41
385	12	Blue	2 x 24V accessories	Central box	1-55
387	12	Yellow	Alarm installation	Central box, left-hand side	1-13
394	10	Black	Central door locking	Under central box	1-40
397	5	Black	Heater wiring	Central box, right-hand side	1-13
398	9	Yellow	Cruise-control switch, E-gas	Central box, left-hand side	1-13/20/23
407	6	Yellow	Clutch pedal sensor, E-gas	Under instrument panel Under clutch pedal	1-14/21
408	9	Yellow	Direction-indicator switch	Steering column	1-15
411	9	Black	Intermittent-wipe switch, E-gas	Steering column	1-15
412	9	Blue	Ignition lock	Behind steering column	1-15
424	8	Grey	Radio power supply	In dashboard	1-53
425	8	Brown	Loudspeakers	In dashboard	1-53
426	4	White	12V memory	In dashboard	1-53
427	4	White	Converter	In dashboard	1-49
433	21	Yellow	Connection dashboard wiring for Groeneveld speed limiter	Left side of central box	1-26
434	21	Yellow	Connection dashboard wiring for VDO speed limiter	Left side of central box	1-27

Other connectors					
1	2	3	4	5	6
441	8	White	ASL-G diagnosis	Central box	1-26
443	9	Yellow	Connection dashboard wiring for cruise control, Cummins	Central box, left-hand side	1-13
445	18	Blue	Connection dashboard wiring ECAS (6x2)	Central box, left-hand side	1-13
446	25	Black	Electronic unit for ECAS-2 (4x2)	Central box	1-32
453	18	Black	A connector ABS-D	Central box	1-36
454	6	Black	B connector ABS-D	Central box	1-36
455	9	Black	C connector ABS-D	Central box	1-36
456	15	Black	D connector ABS-D	Central box	1-36
461	21	Blue	Dashboard wiring, ZF intarder	Central box, left-hand side	1-13
464	8	White	Wiring ZF-intarder switch	At radio-control panel	1-30
465	21	Blue	Dashboard wiring, Voith retarder	Central box, left-hand side	1-13
468	18	Black	Electronic unit for Voith retarder	Central box	1-28
469	9	Black	Electronic unit for Voith retarder	Central box	1-28
470	12	Black	Electronic unit for Voith retarder	Central box	1-28
471	8	White	Wiring dashboard switch, Voith retarder	At radio-control panel	1-28
478	9	Black	Webasto auxiliary heating, Thermo 90	Central box, left-hand side	1-13
480	8	Black	Timer	Back panel	1-40
482	18	Black	EBERSPäCHER D1LC / D3LC auxiliary heating	Behind co-driver's seat	1-38
483	12	Black	EBERSPäCHER D1LC/D3LC auxiliary heating	Central box, right-hand side	1-13
491	4	Black	PTO cable harness	On gearbox, right-hand side, rear	1-54
493	12	Black	Cable-harness connector sockets (FT)	Cable trough below cab, right-hand side	1-48
495	12	Black	Cable-harness connector sockets (FA)	Chassis rear, at the right-hand side in front of the rear cross member	1-48
499	127	Black	Cable harness ABS / ASC	In chassis, right-hand side, 1000 mm in front of the driven axle	1-BB

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## LOCATION OF CONNECTORS

95XF series

Location of connectors

Other connectors					
1	2	3	4	5	6
515	4	Black	Axle-load protection	In chassis cross member, in front of the driven axle	1-53
525	8	Black	Substructure cable harness	Valve assembly, left-hand side, below the cab	1-54
530	12	Grey	Webasto auxiliary heating, Thermo 90	On auxiliary-heating unit	1-40
537	3	Green	Cable-harness supply, Cummins	Floor pan, co-driver' s side	1-25

## 1.2 ILLUSTRATIONS OF CONNECTOR LOCATIONS

### Explanation of connector illustrations

A: Connector coding

B: Colour of the connector

BN = Brown

BW = Blue

GL = Yellow

GS = Grey

OE = Orange

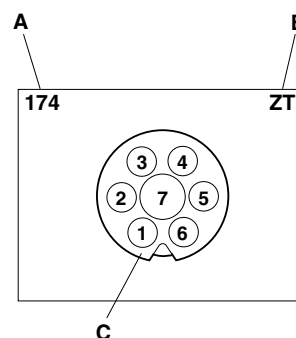
RD = Red

WT = White

ZT = Black

C: Overview of pin numbers on connector

Pin numbers on the connector as viewed from the wire-input side.



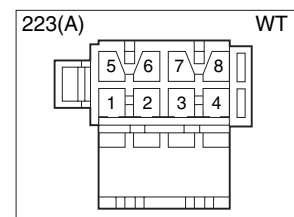
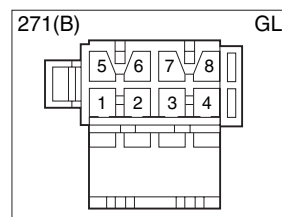
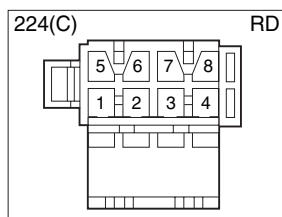
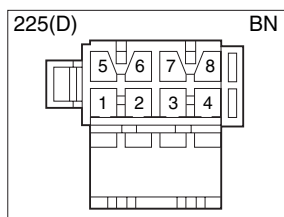
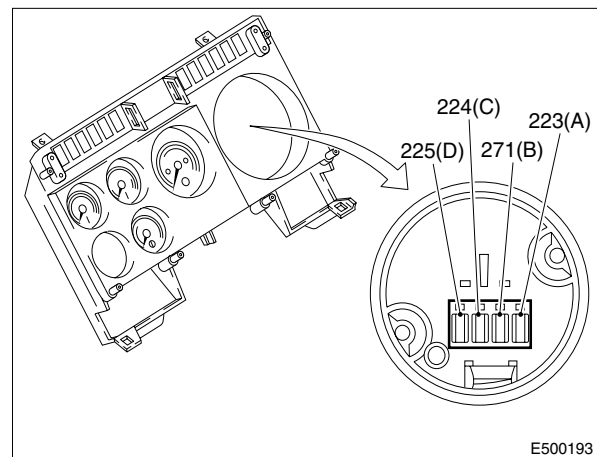
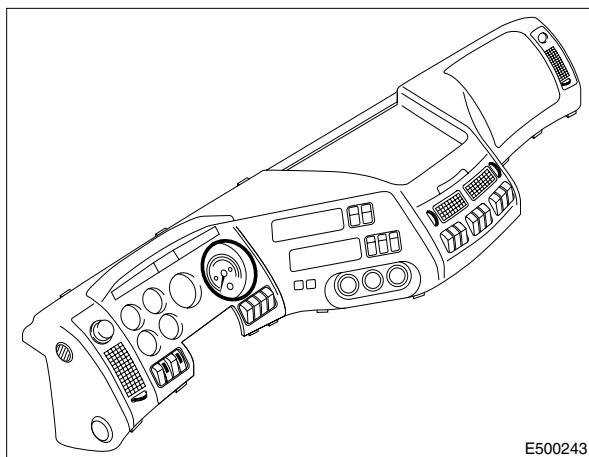
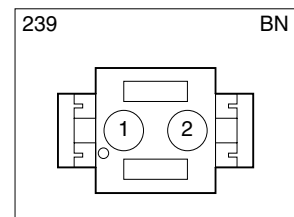
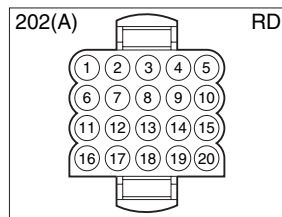
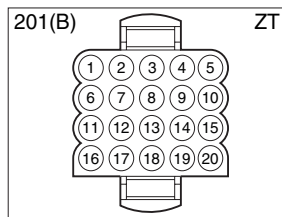
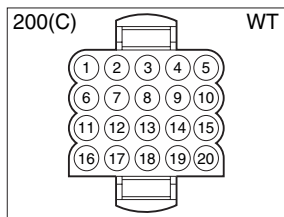
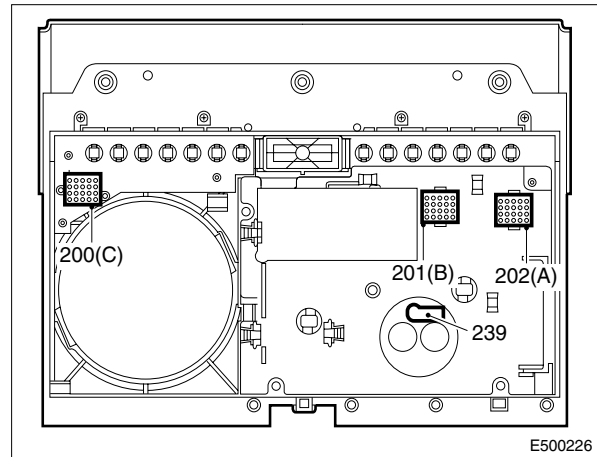
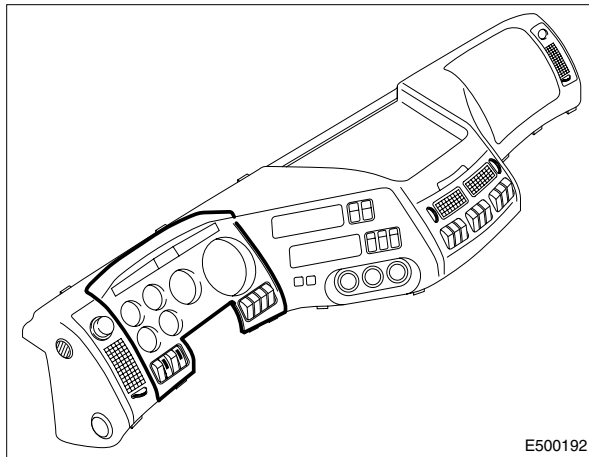
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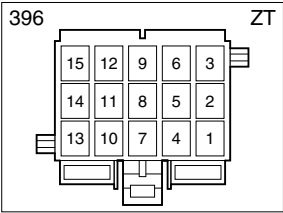
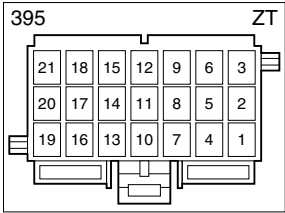
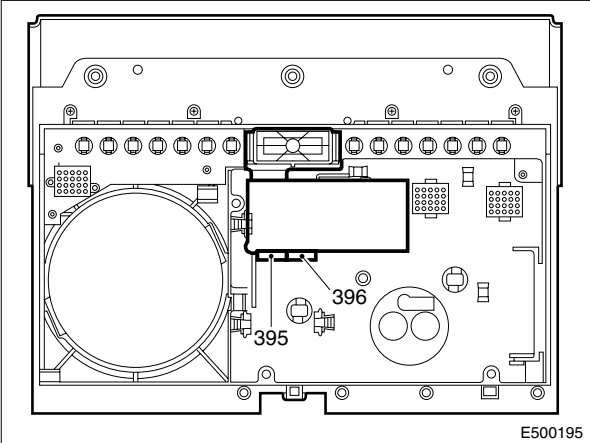
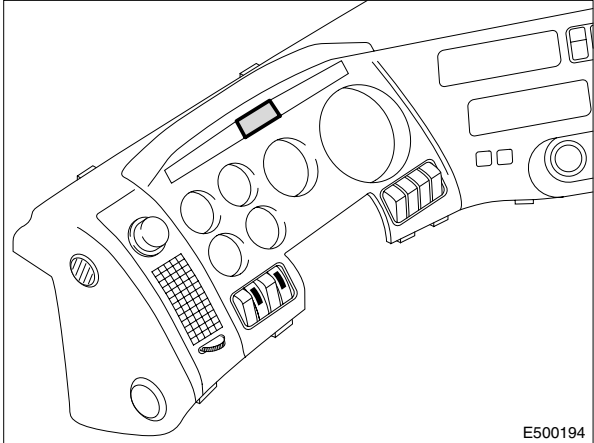
# 5

95XF series

# LOCATION OF CONNECTORS

Location of connectors





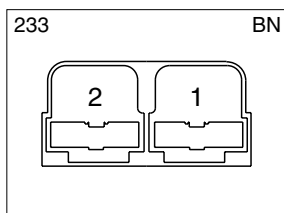
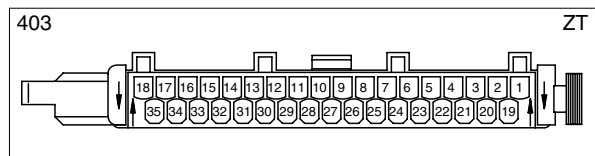
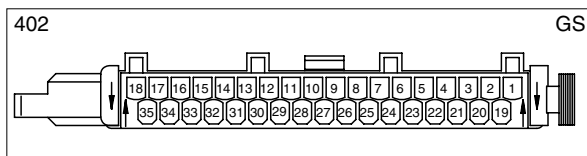
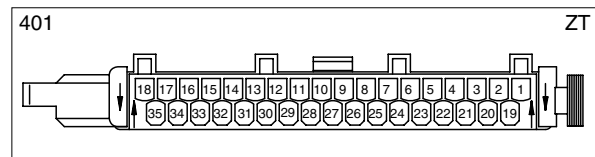
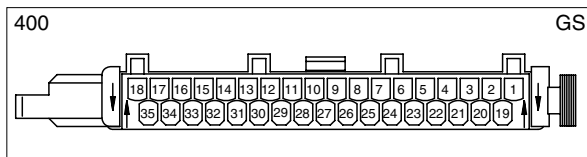
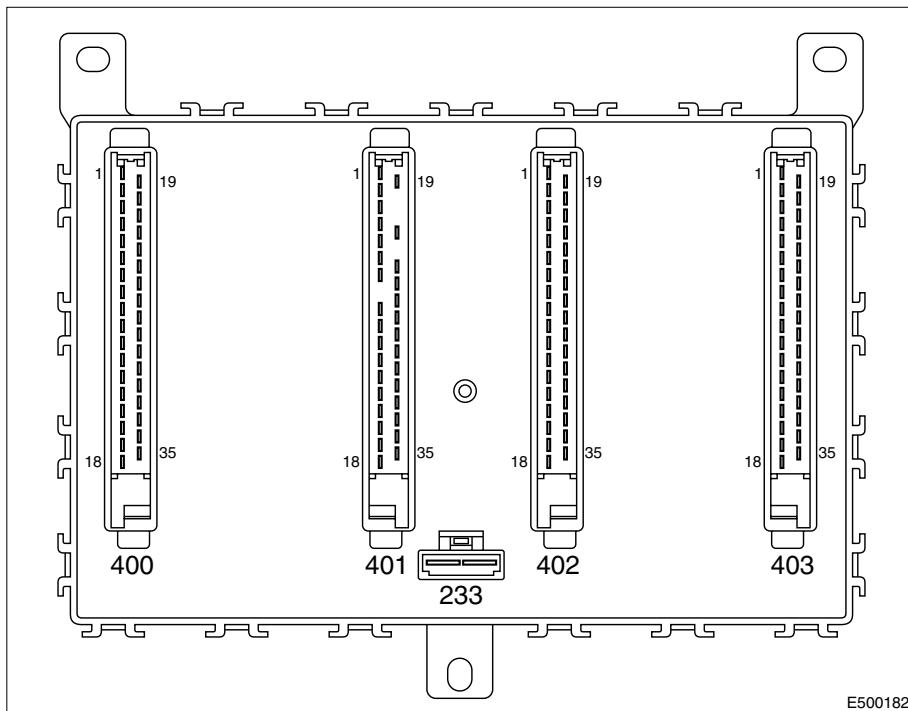
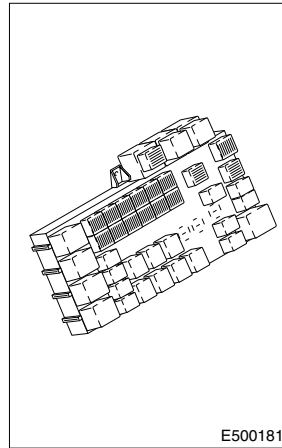
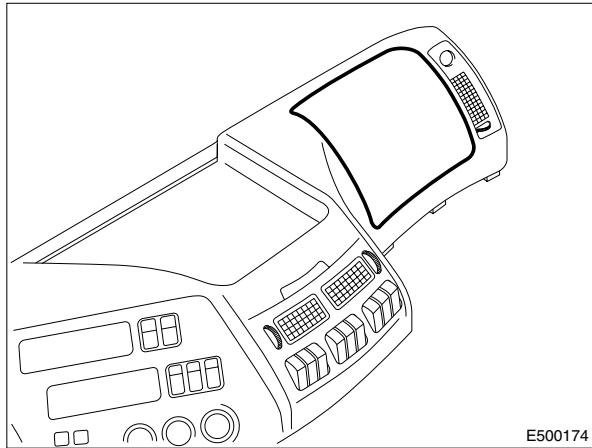


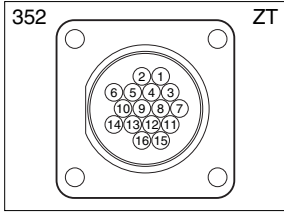
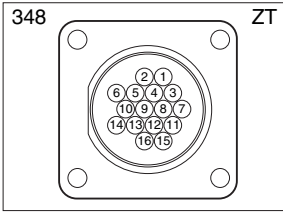
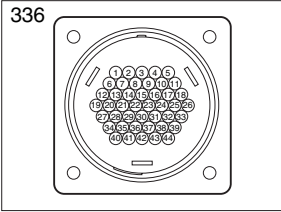
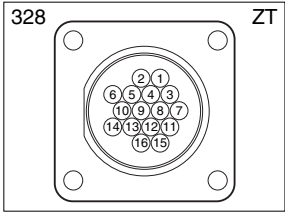
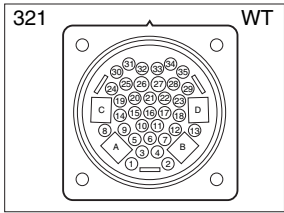
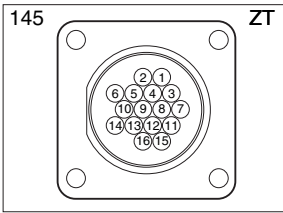
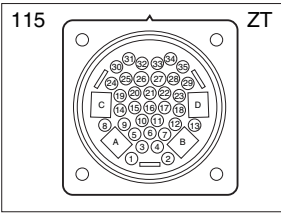
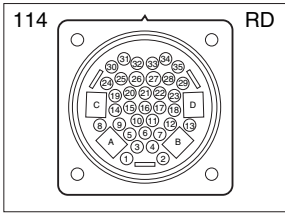
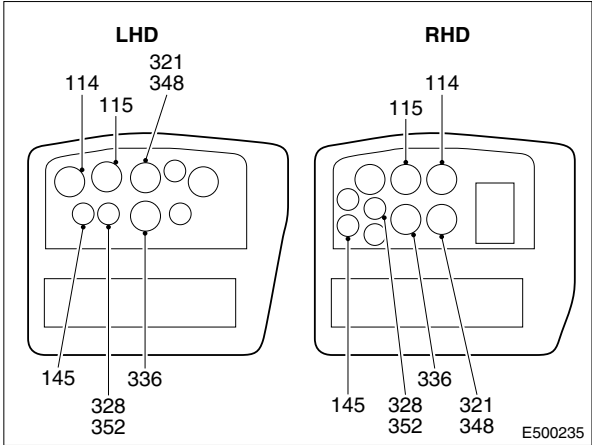
# 5

95XF series

# LOCATION OF CONNECTORS

Location of connectors



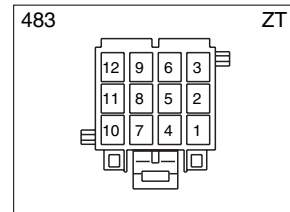
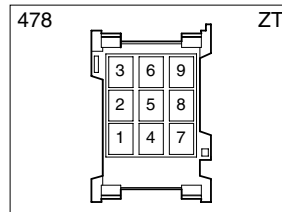
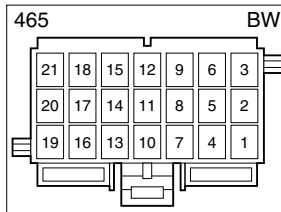
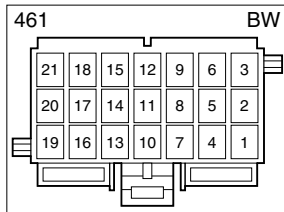
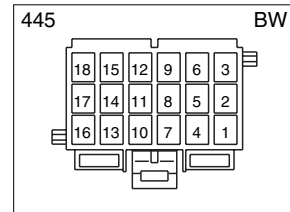
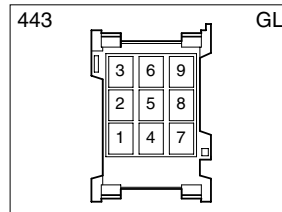
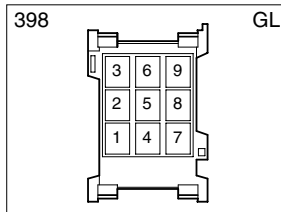
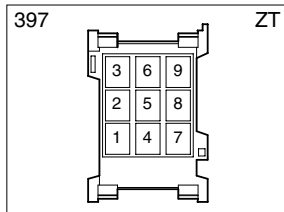
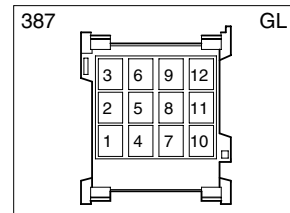
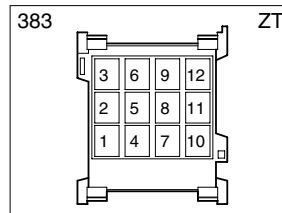
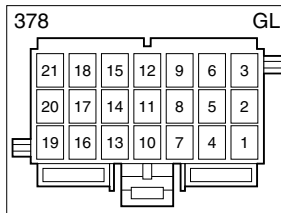
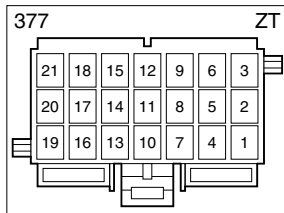
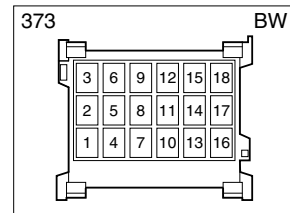
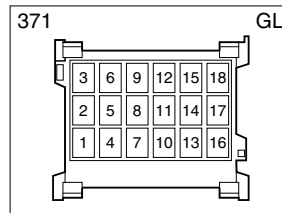
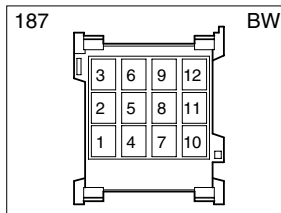
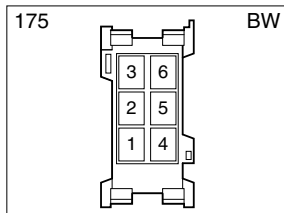
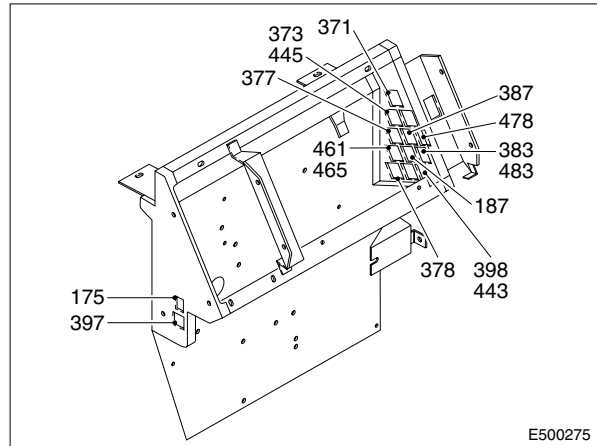
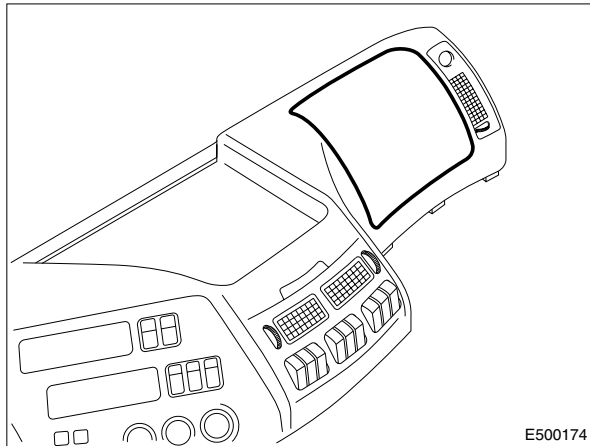


# 5

## 95XF series

# LOCATION OF CONNECTORS

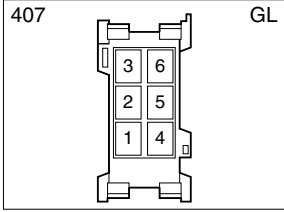
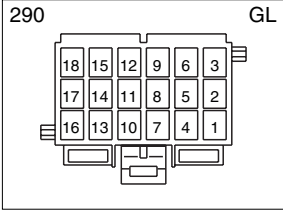
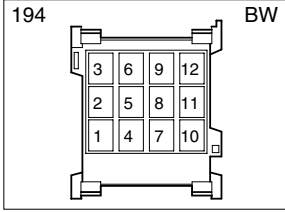
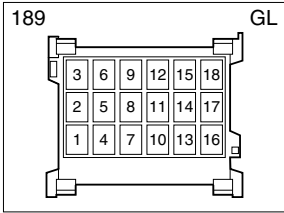
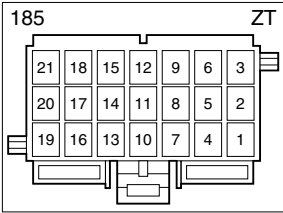
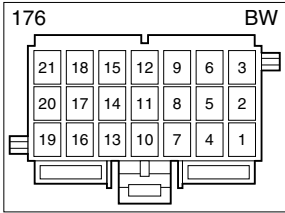
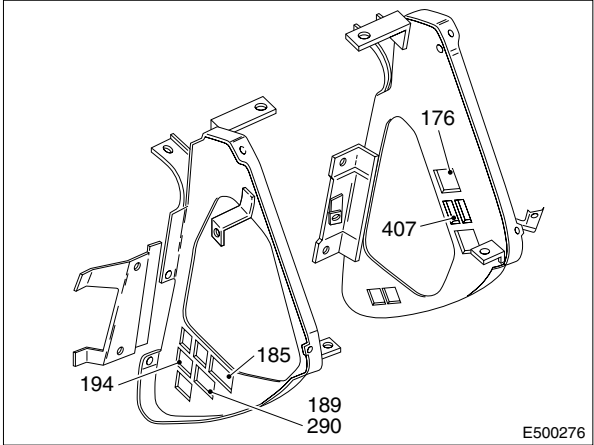
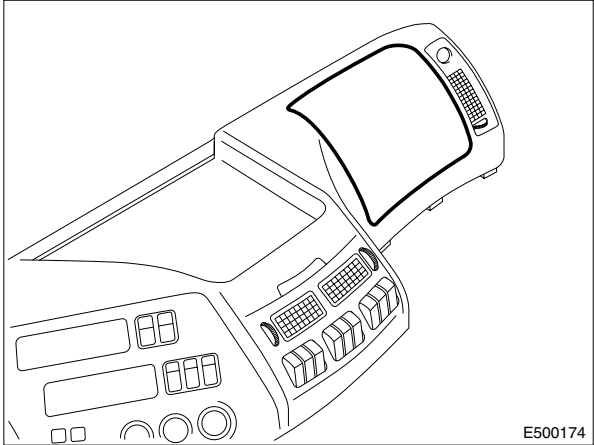
## Location of connectors



# LOCATION OF CONNECTORS

Location of connectors

95XF series

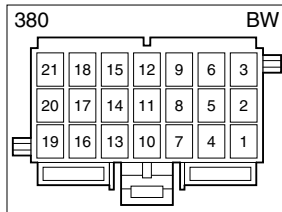
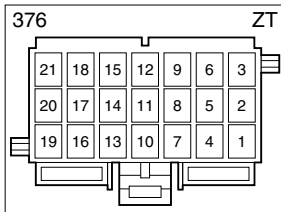
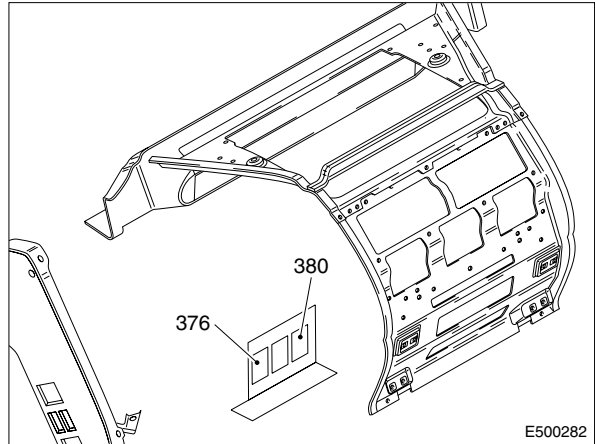
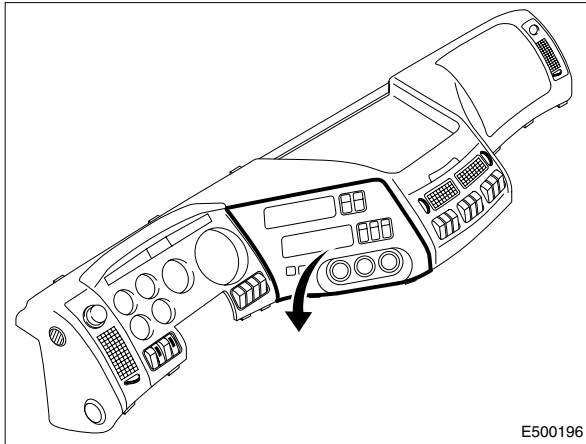


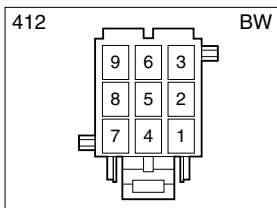
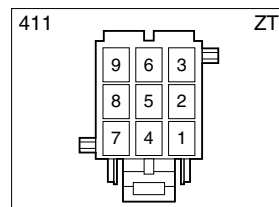
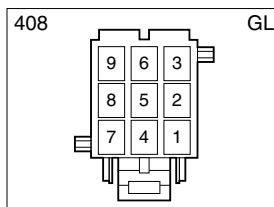
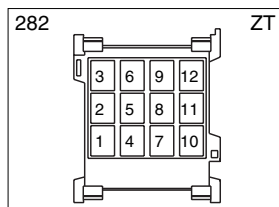
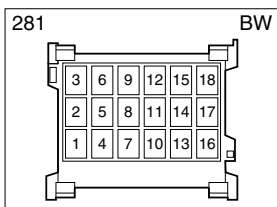
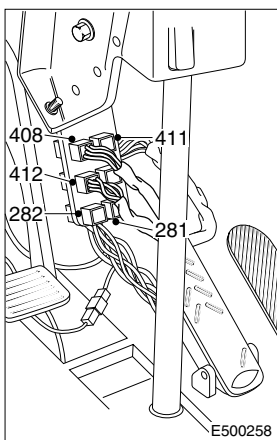
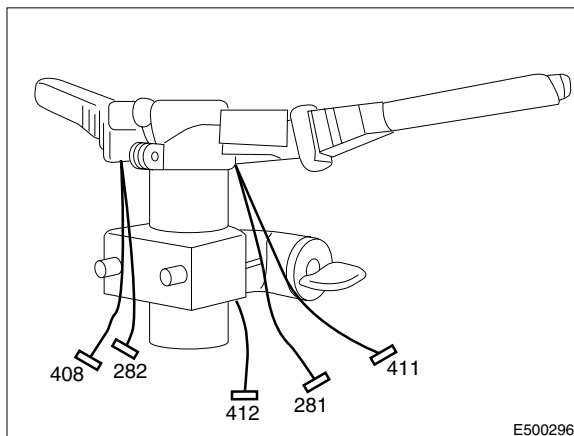
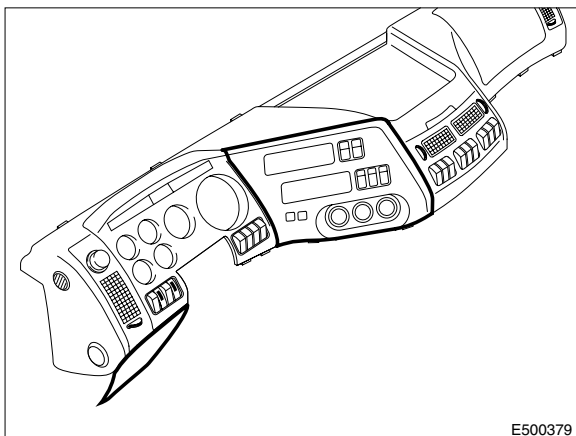
# 5

95XF series

## LOCATION OF CONNECTORS

Location of connectors



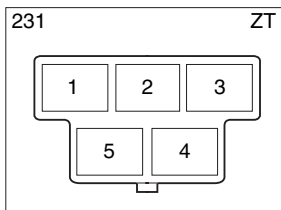
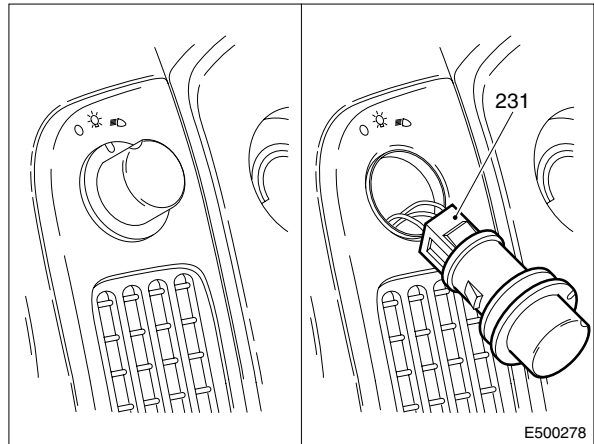
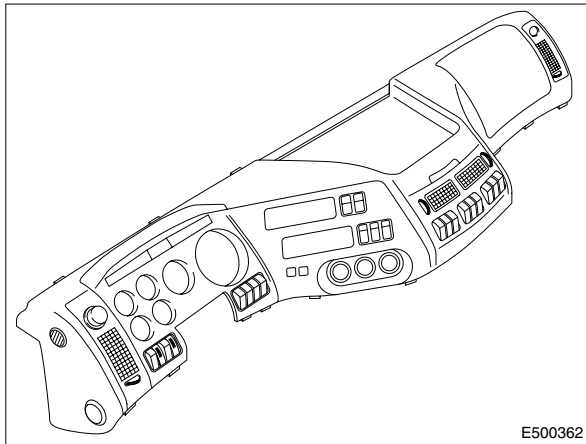
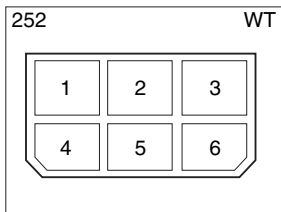
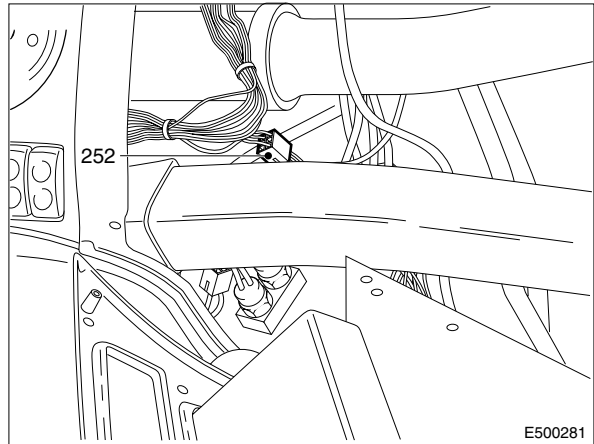
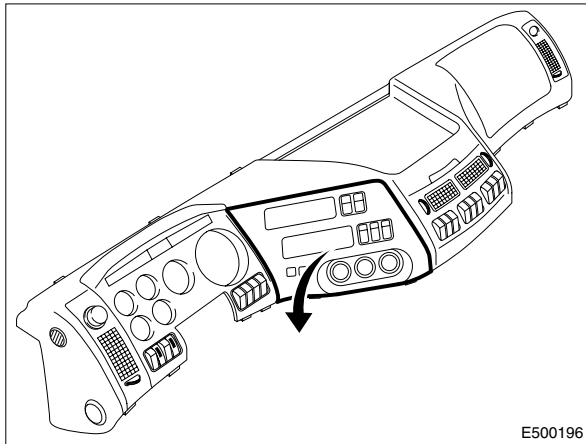


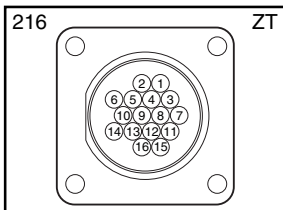
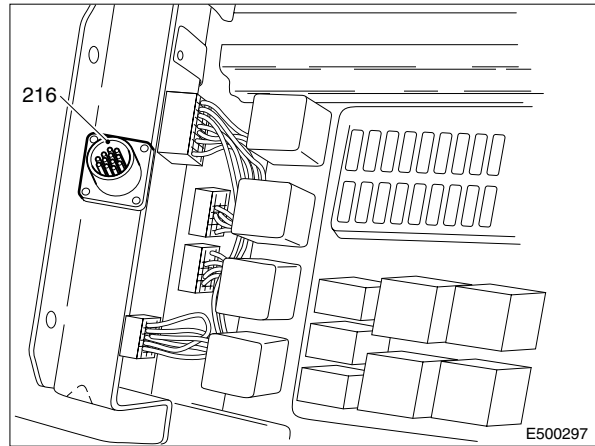
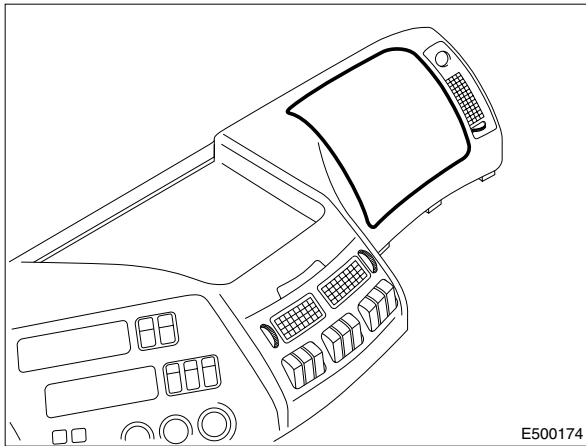
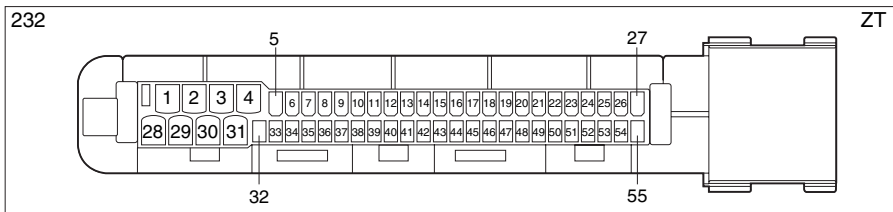
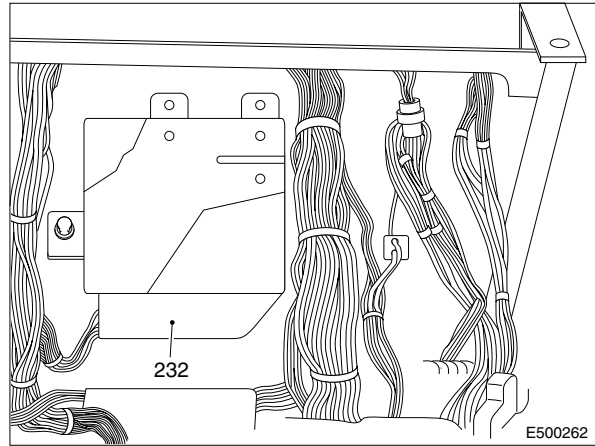
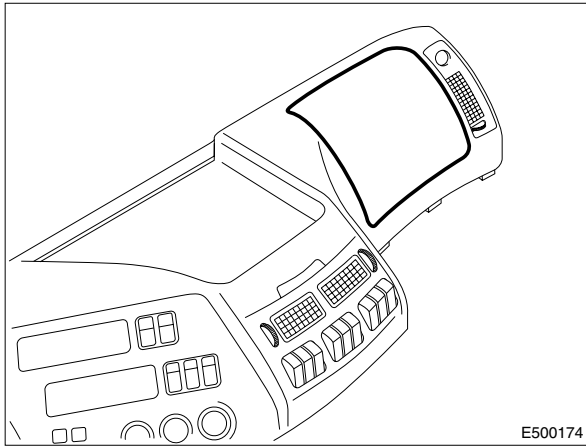
# 5

95XF series

# LOCATION OF CONNECTORS

Location of connectors





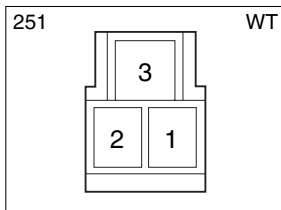
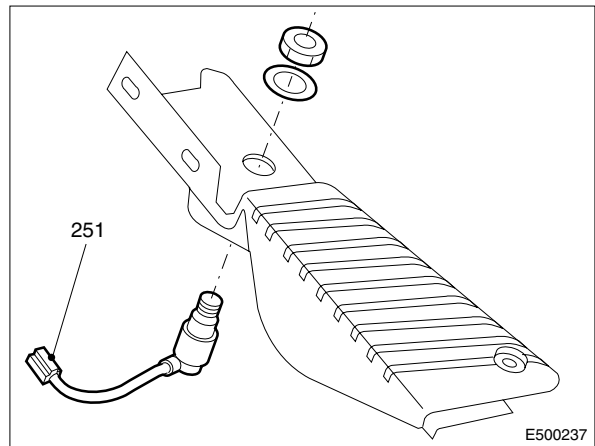
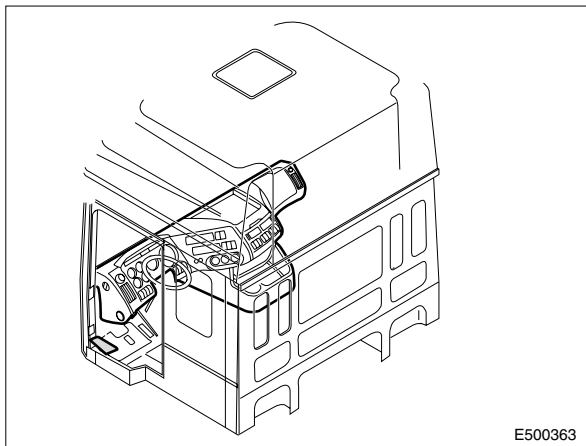
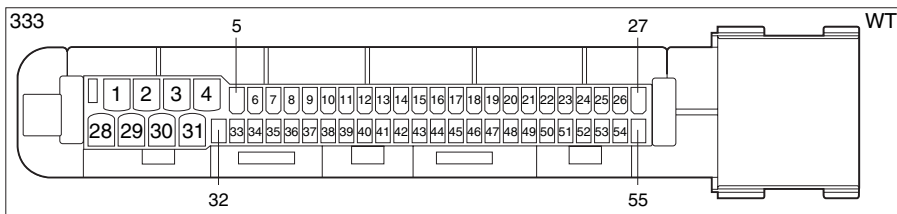
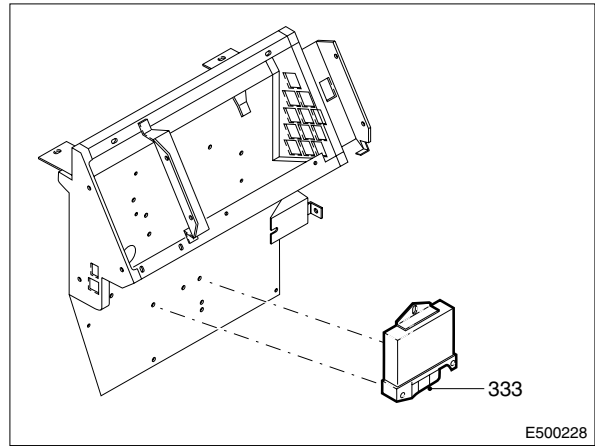
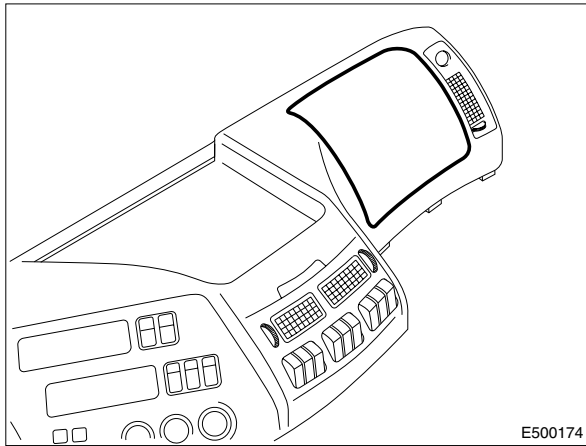


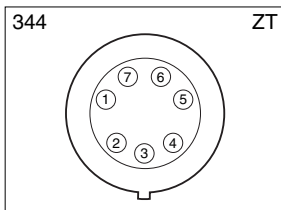
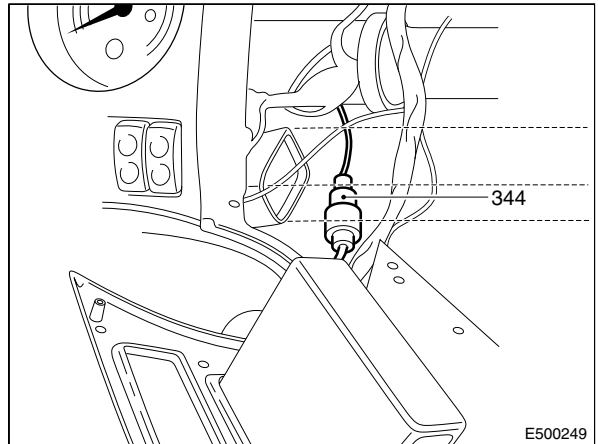
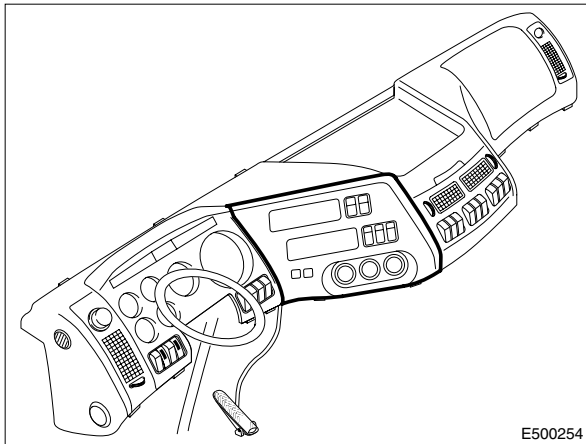
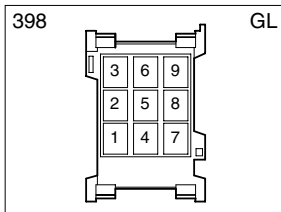
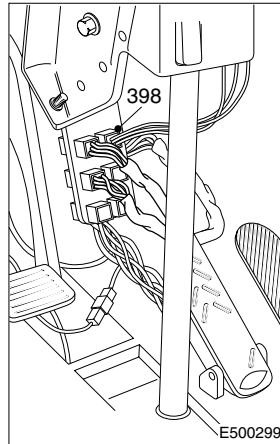
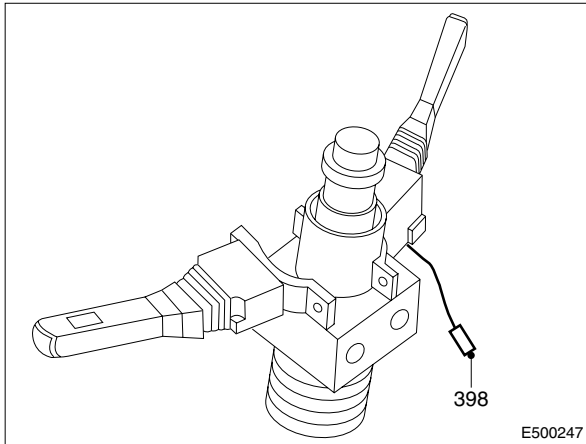
# 5

95XF series

# LOCATION OF CONNECTORS

Location of connectors



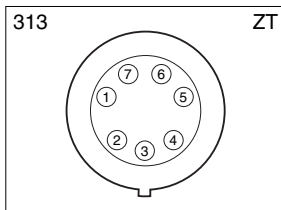
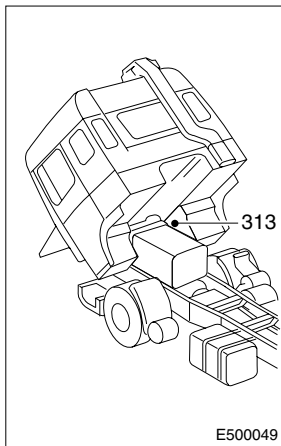
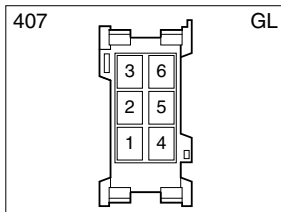
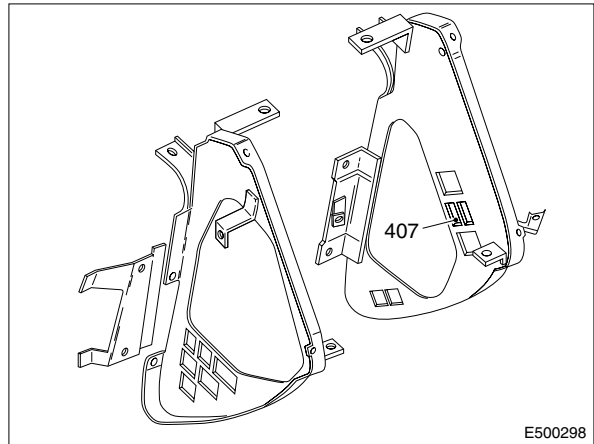
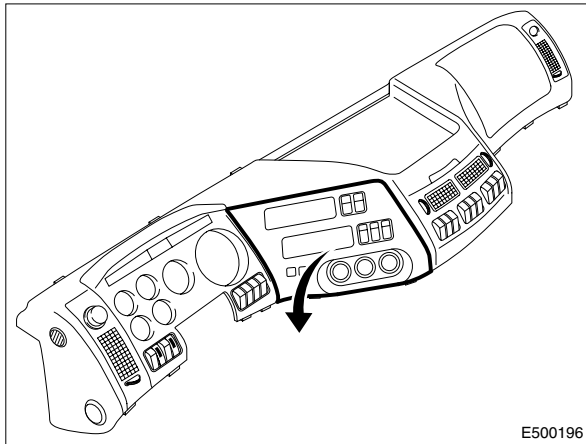


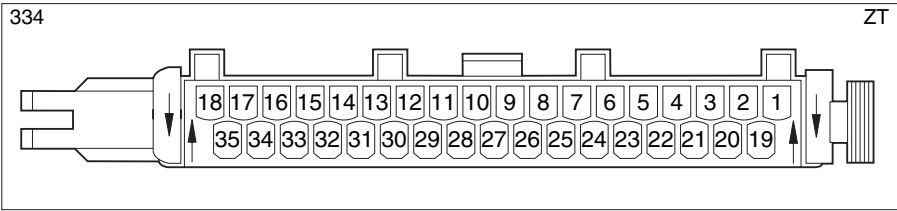
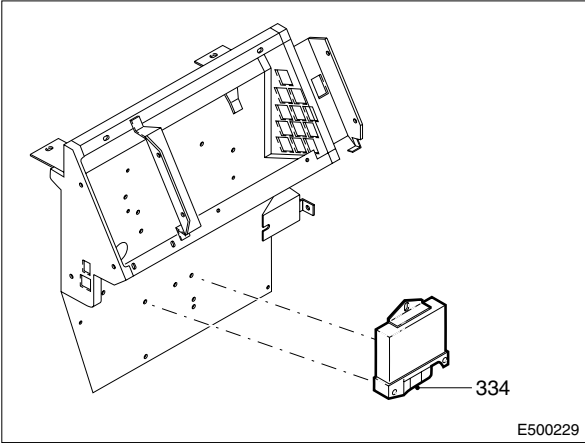
# 5

95XF series

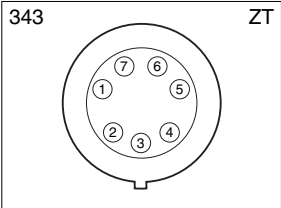
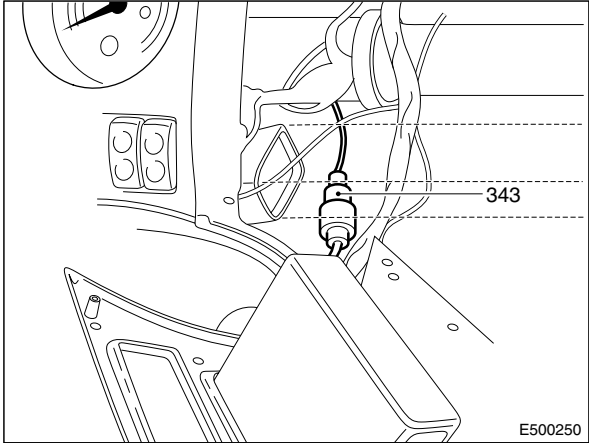
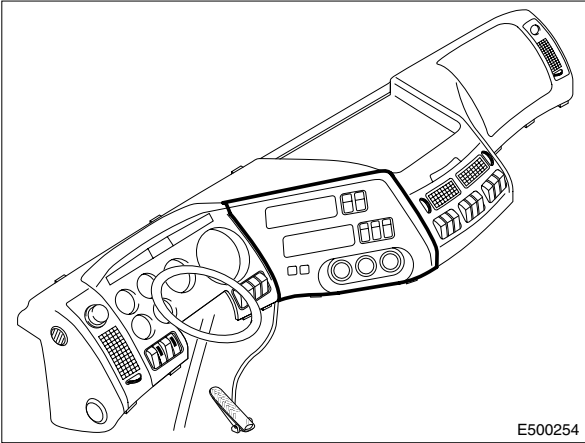
# LOCATION OF CONNECTORS

Location of connectors





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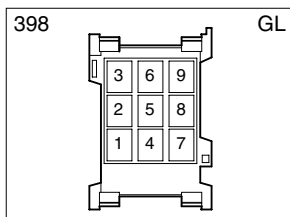
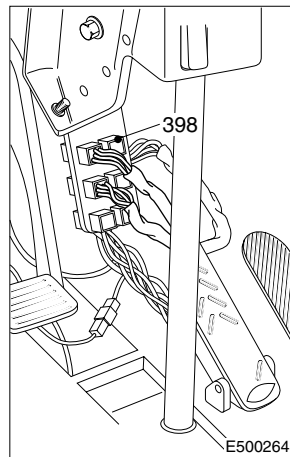
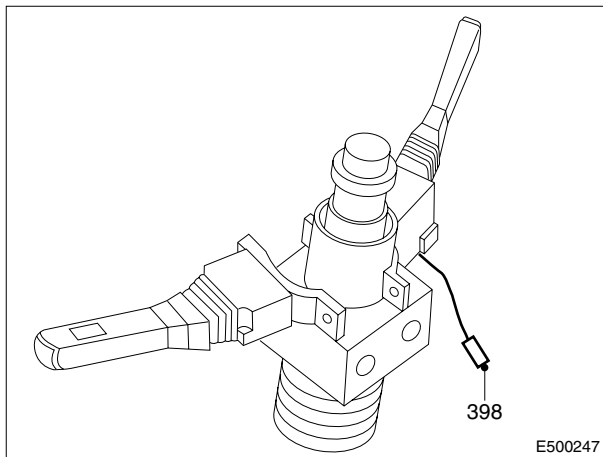
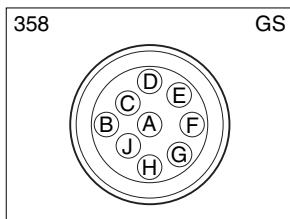
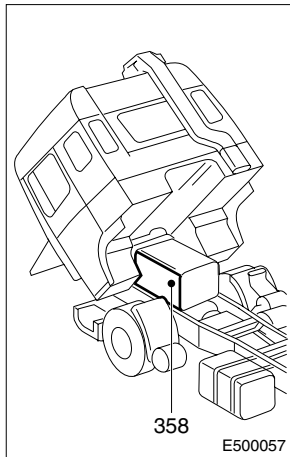


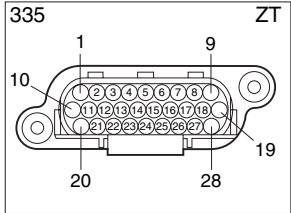
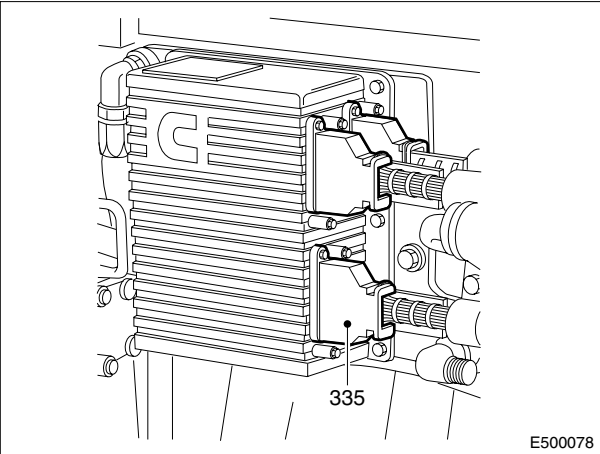
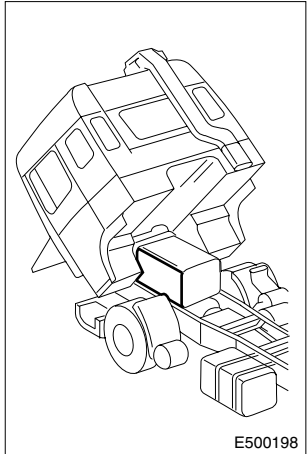
# 5

95XF series

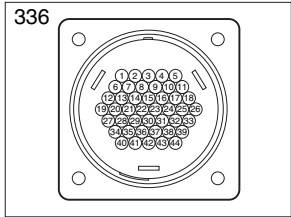
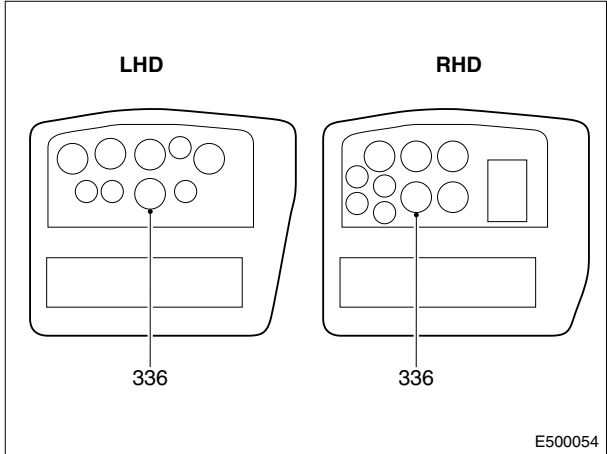
# LOCATION OF CONNECTORS

Location of connectors





**9**

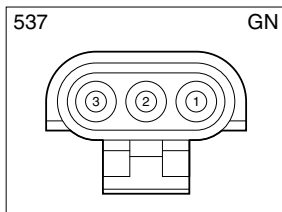
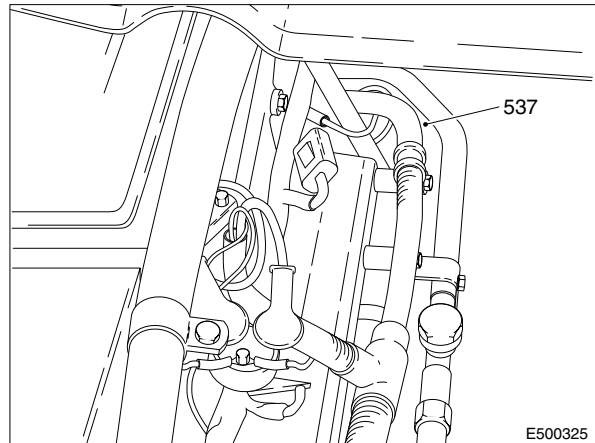
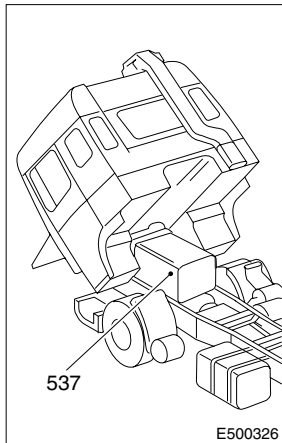


# 5

95XF series

## LOCATION OF CONNECTORS

Location of connectors

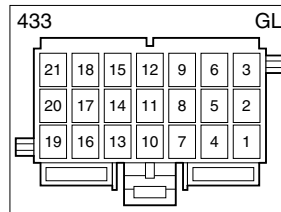
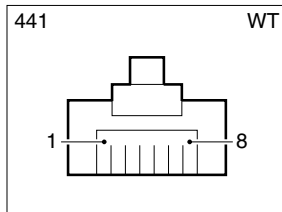
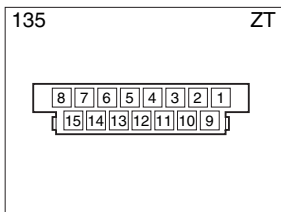
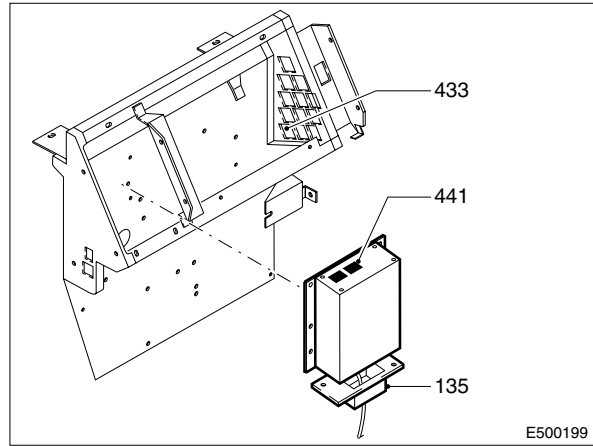
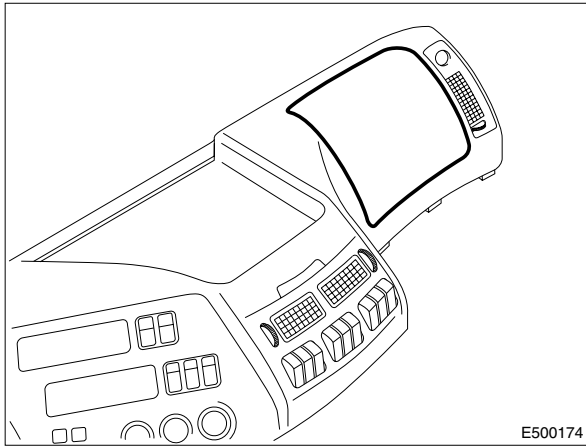


# LOCATION OF CONNECTORS

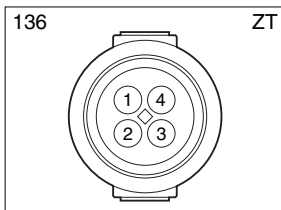
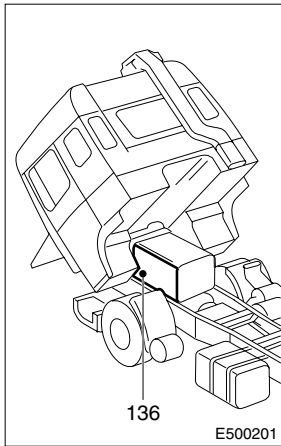
5

Location of connectors

95XF series



9



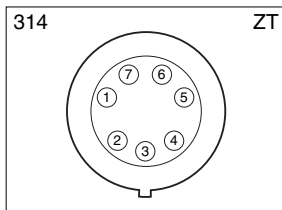
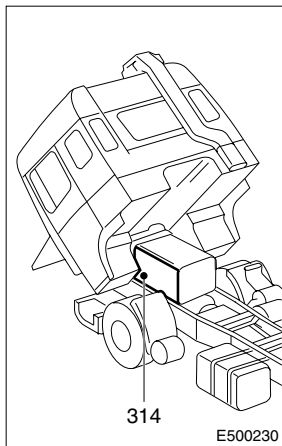
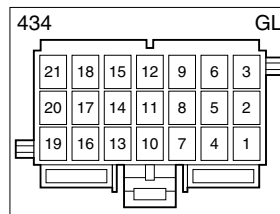
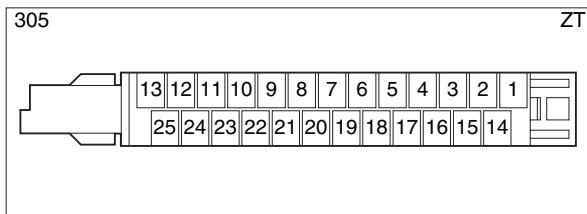
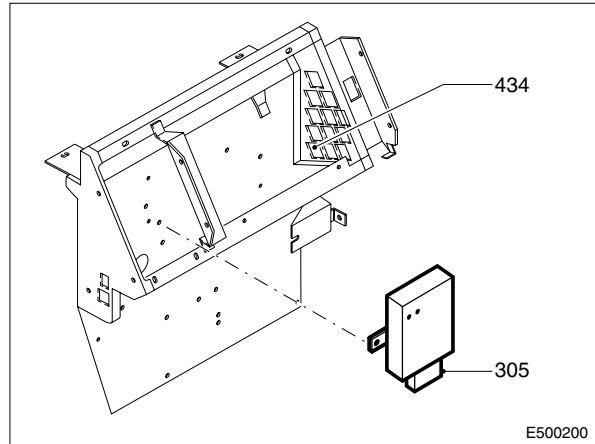
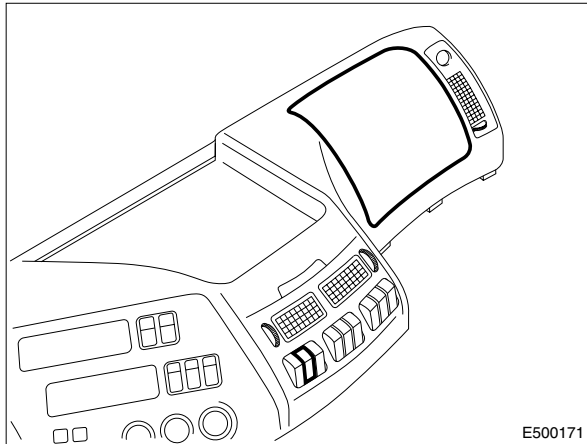


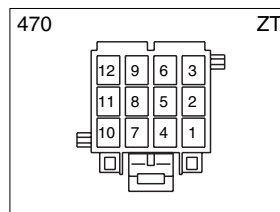
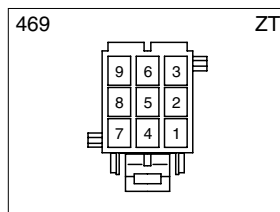
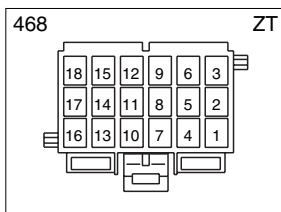
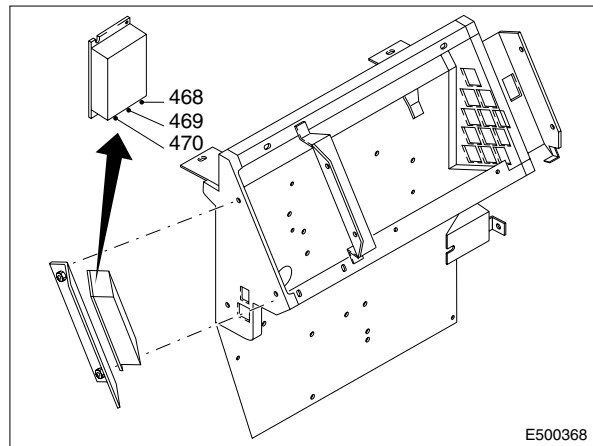
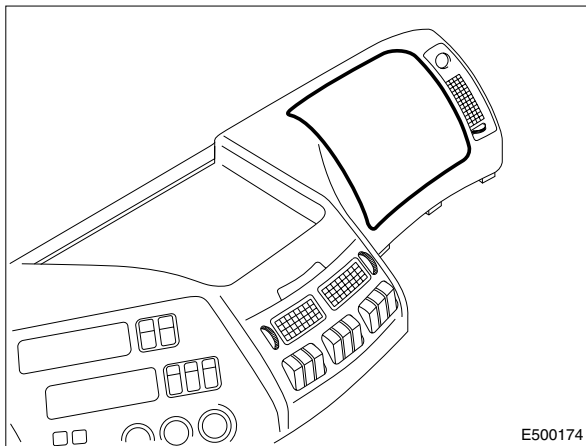
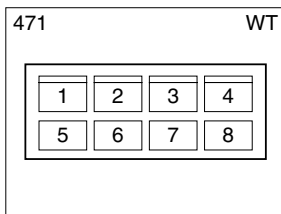
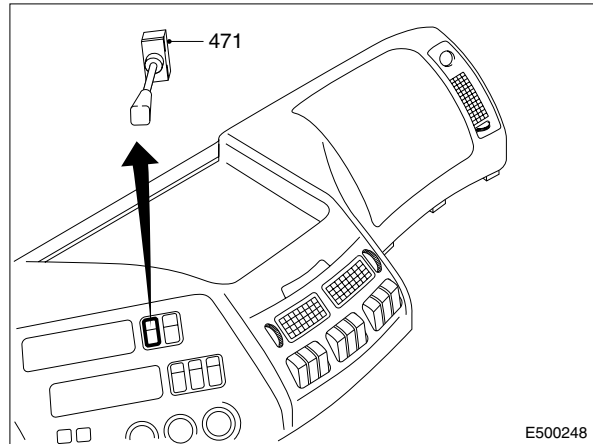
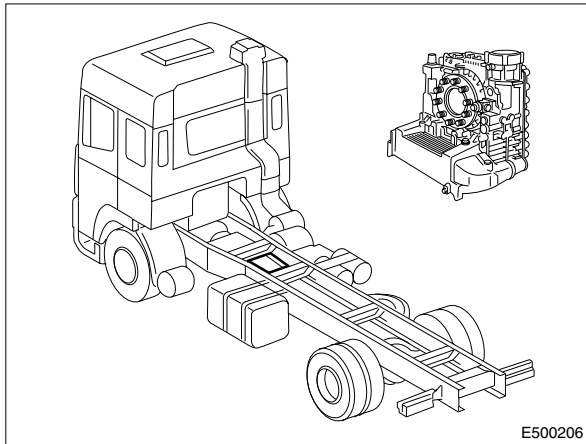
# 5

95XF series

# LOCATION OF CONNECTORS

Location of connectors



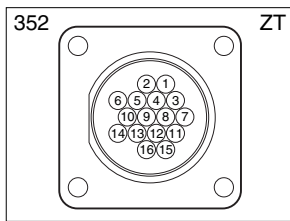
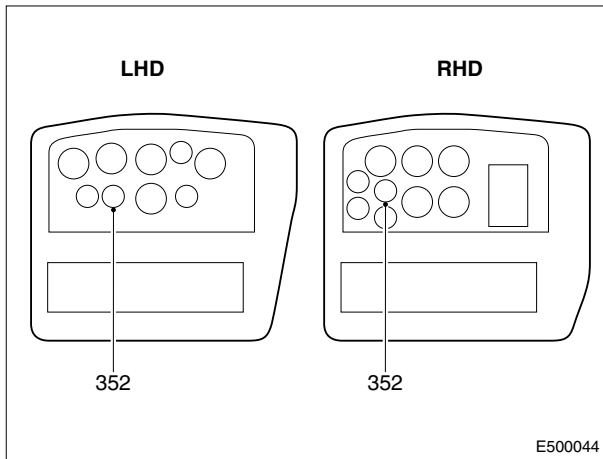


# 5

# LOCATION OF CONNECTORS

95XF series

Location of connectors

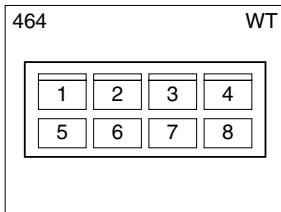
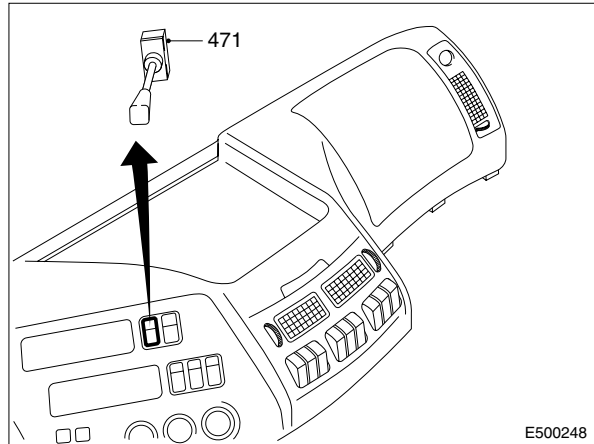
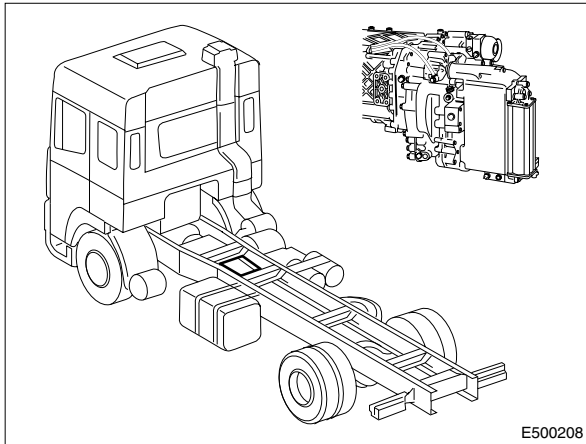


# LOCATION OF CONNECTORS

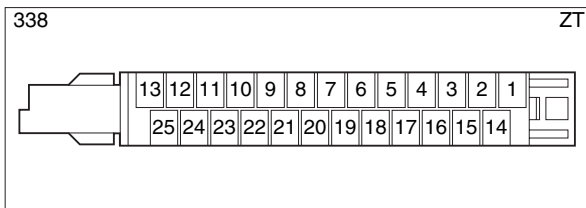
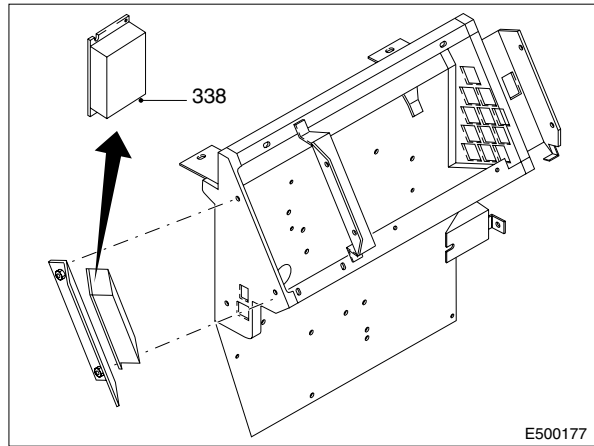
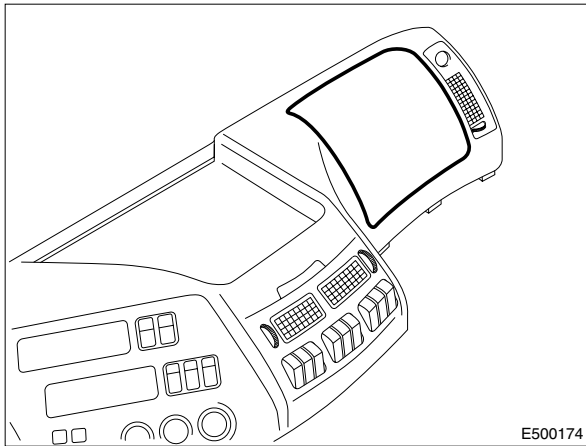
5

Location of connectors

95XF series



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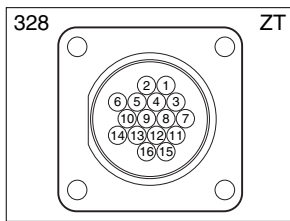
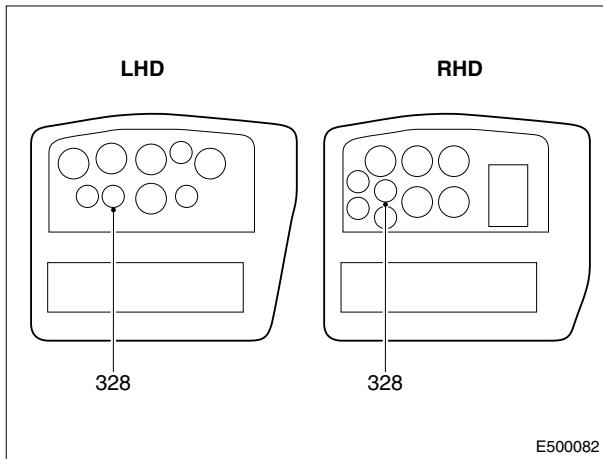


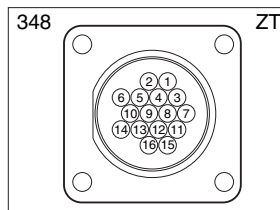
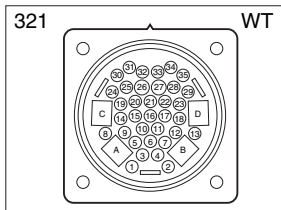
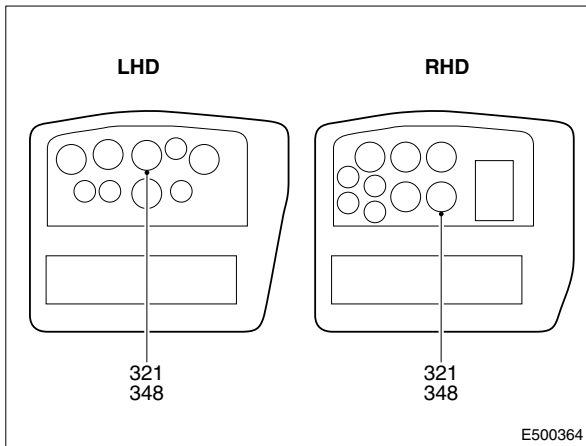
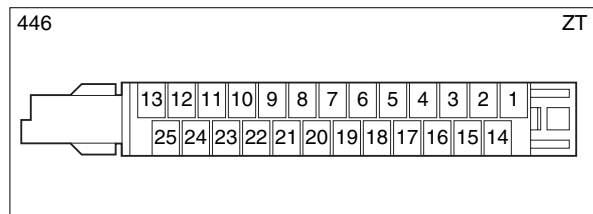
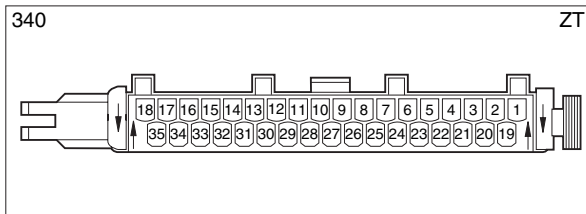
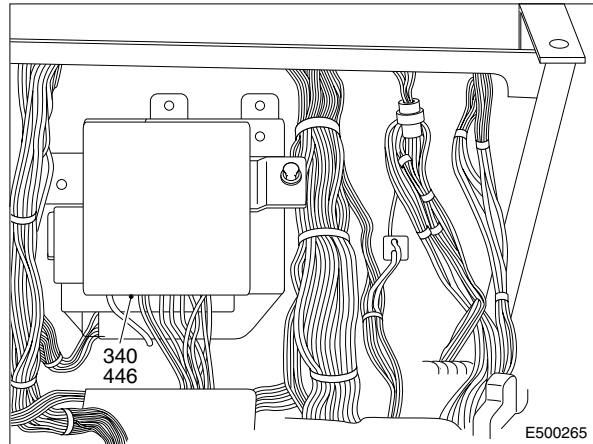
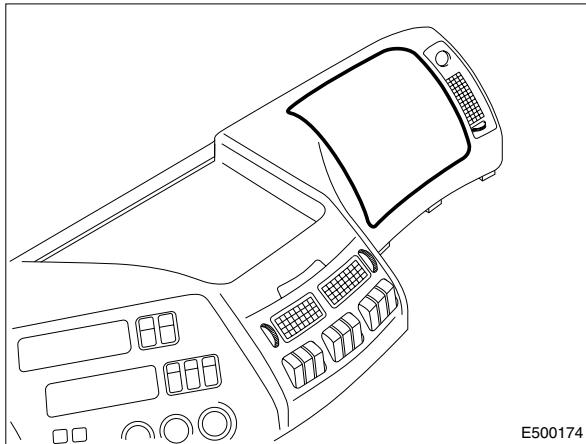
# 5

# LOCATION OF CONNECTORS

95XF series

Location of connectors



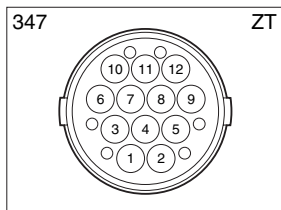
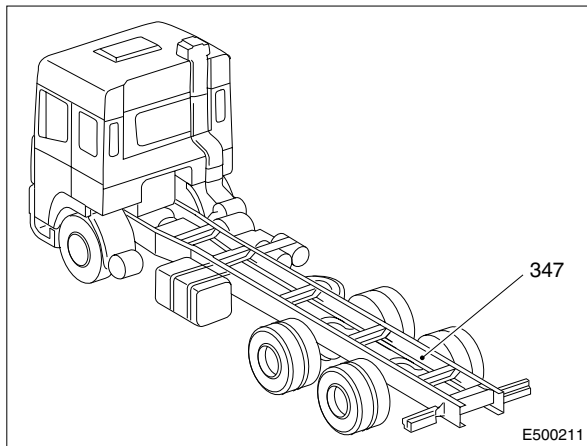
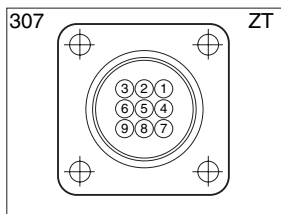
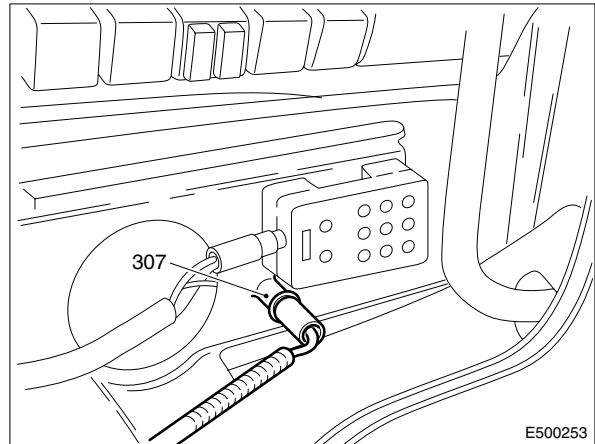
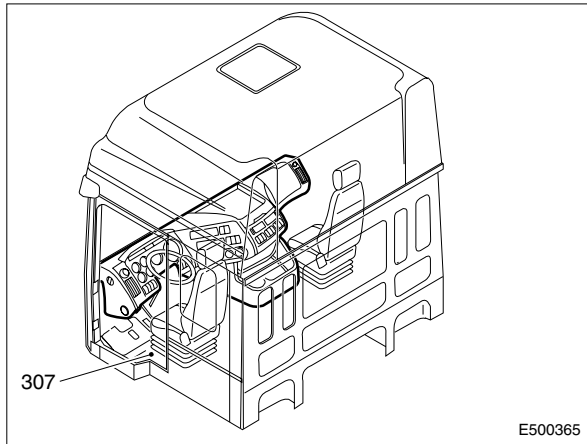


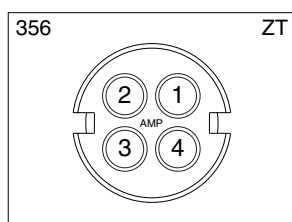
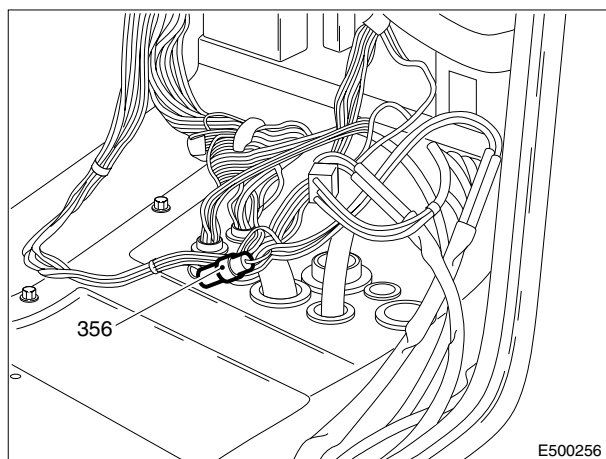
# 5

95XF series

# LOCATION OF CONNECTORS

Location of connectors





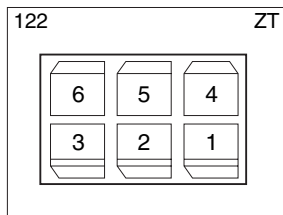
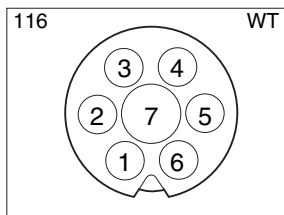
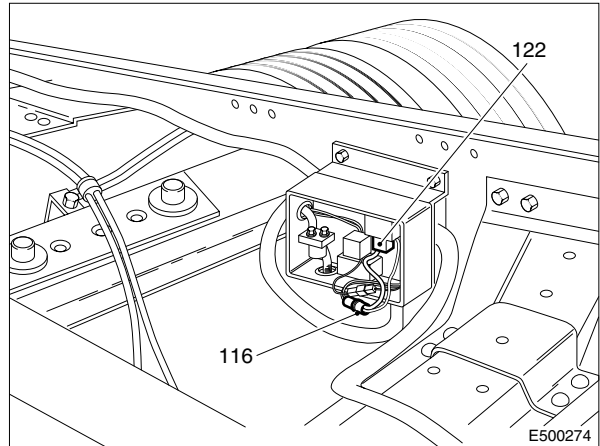
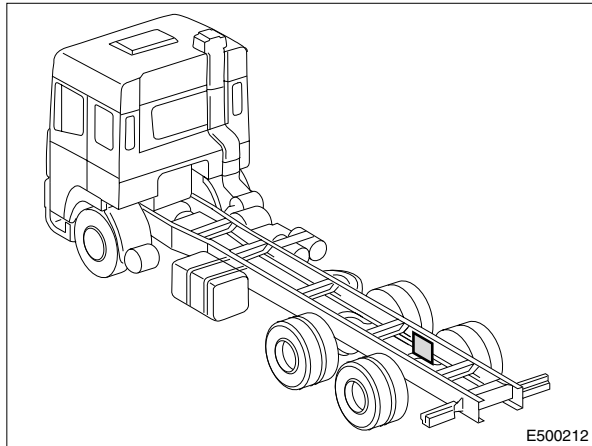


# 5

95XF series

## LOCATION OF CONNECTORS

Location of connectors

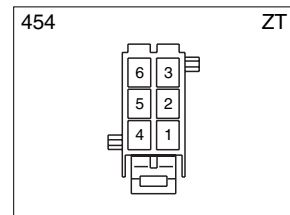
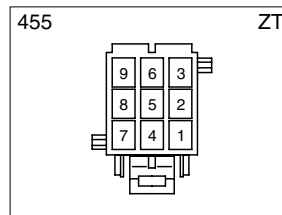
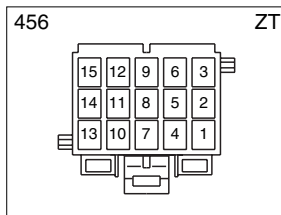
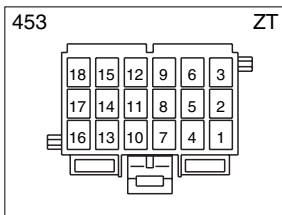
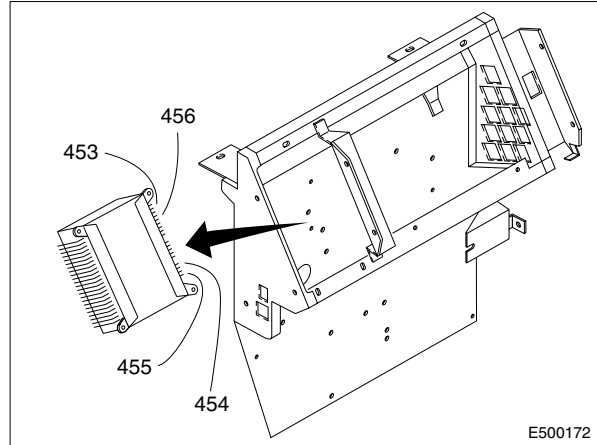
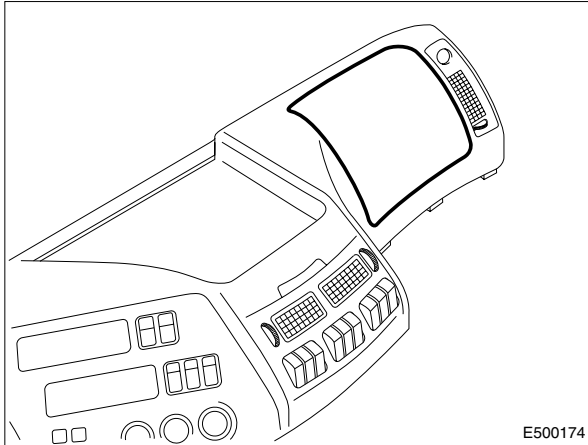


# LOCATION OF CONNECTORS

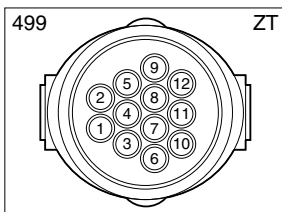
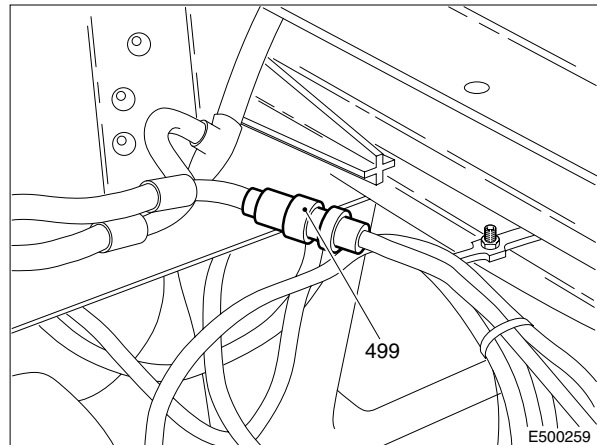
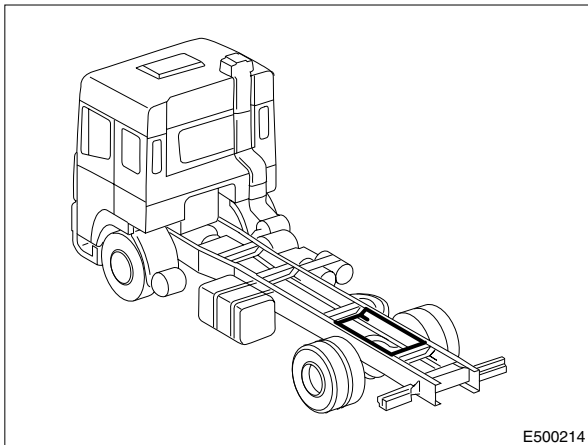
5

Location of connectors

95XF series



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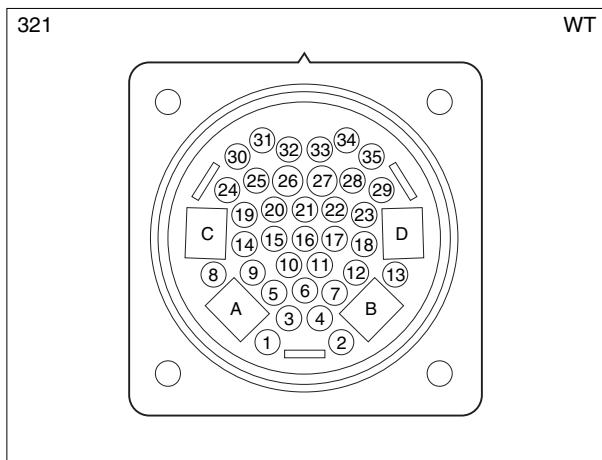
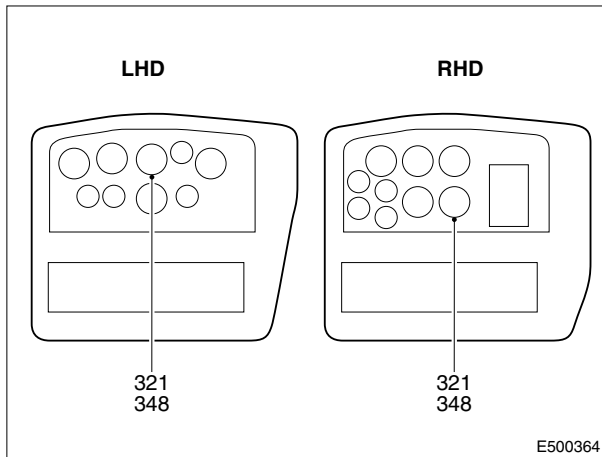


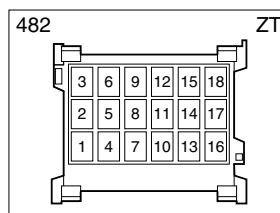
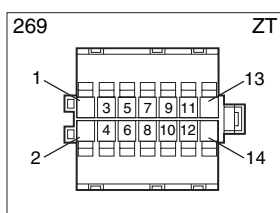
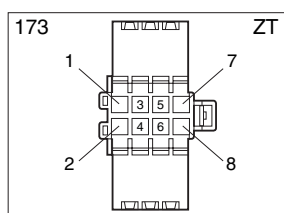
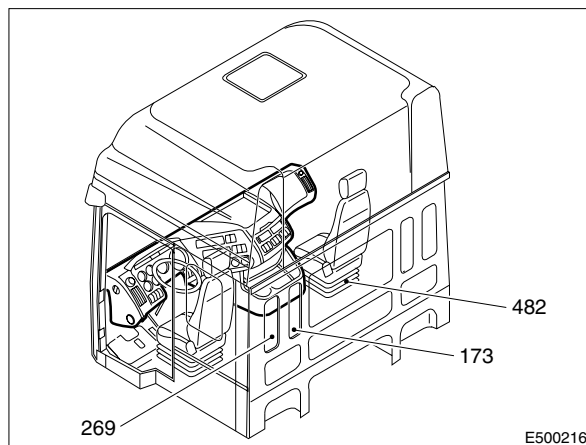
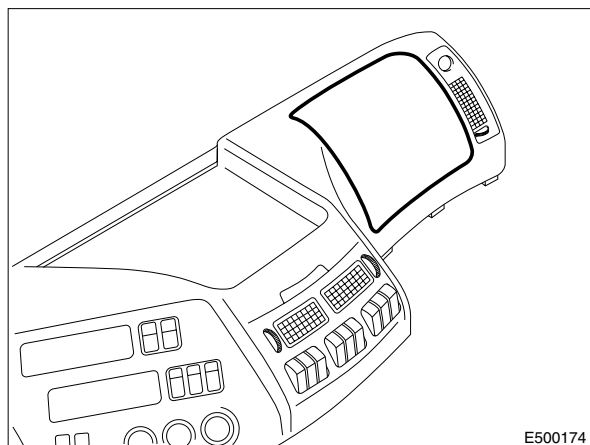
# 5

95XF series

# LOCATION OF CONNECTORS

Location of connectors



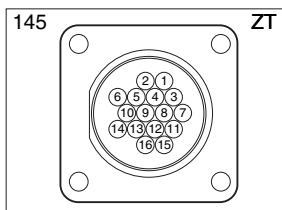
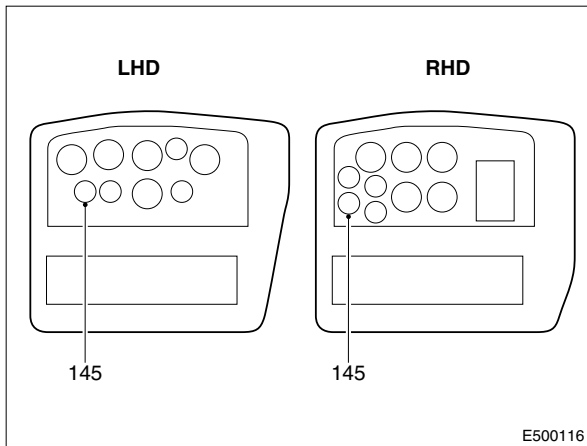
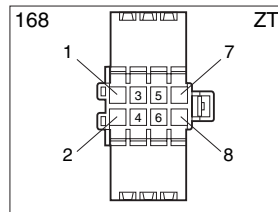
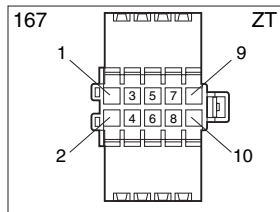
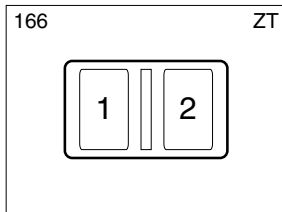
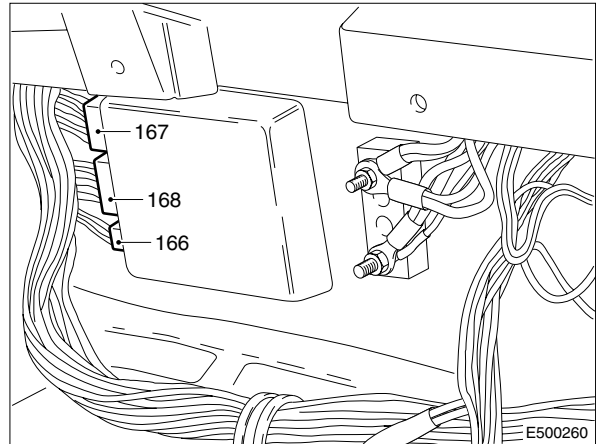
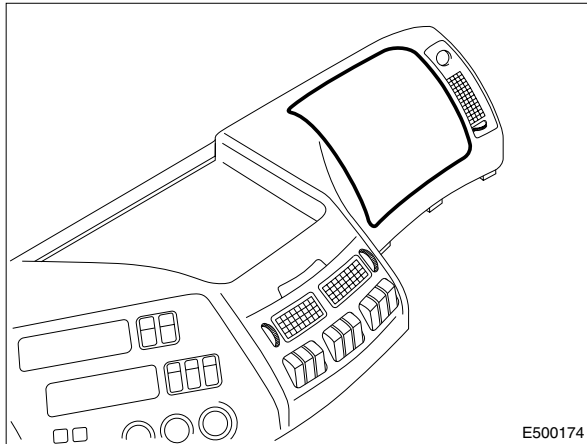


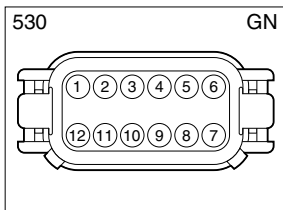
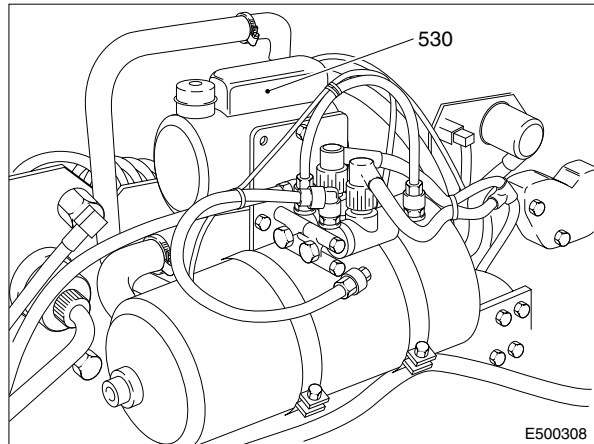
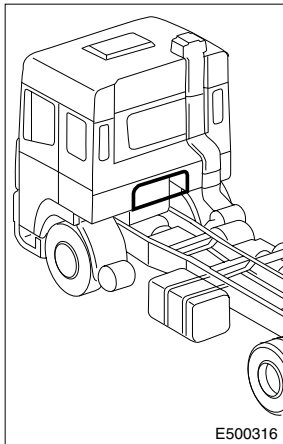
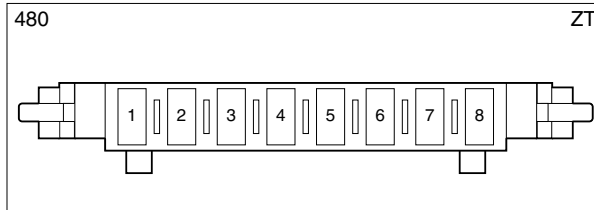
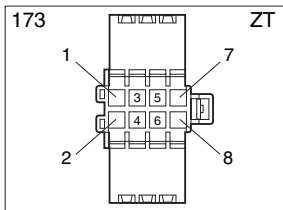
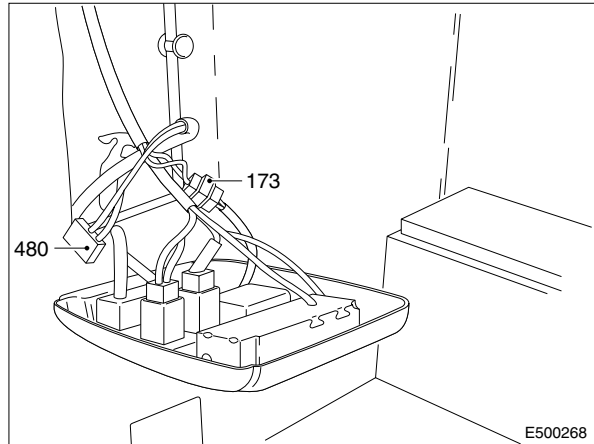
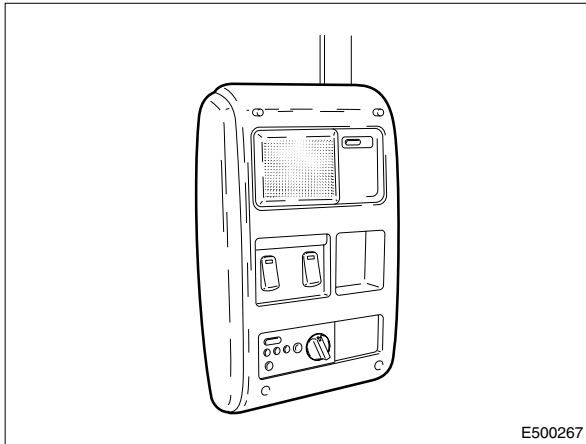
# 5

95XF series

# LOCATION OF CONNECTORS

Location of connectors



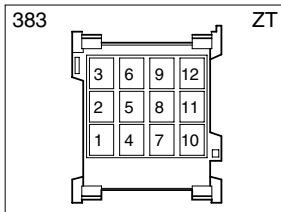
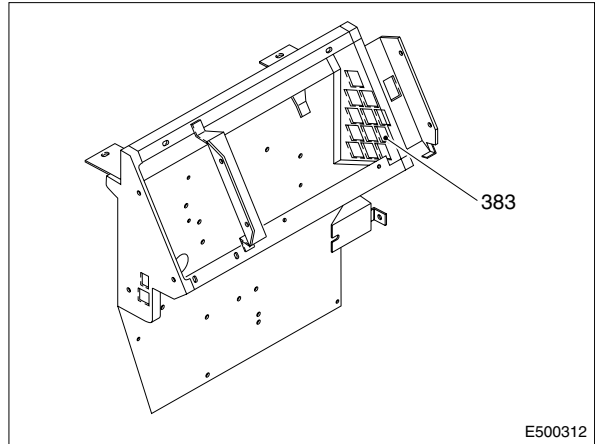
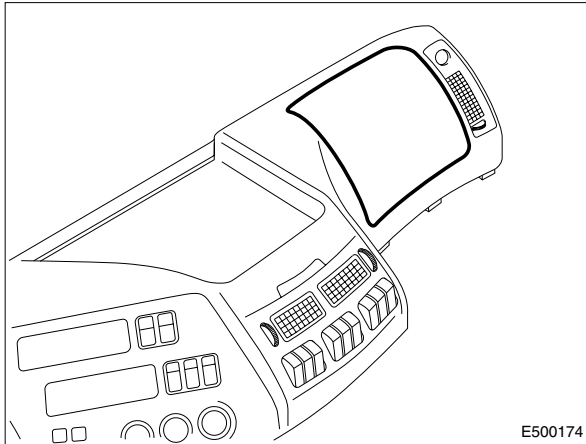


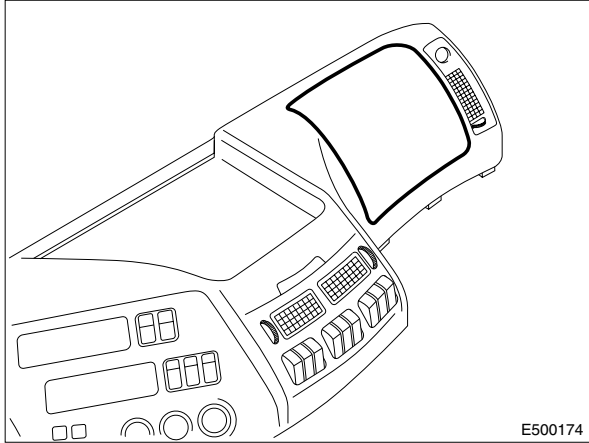
# 5

95XF series

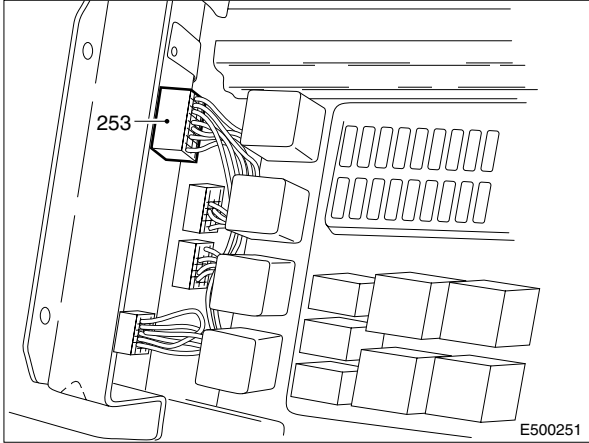
## LOCATION OF CONNECTORS

Location of connectors

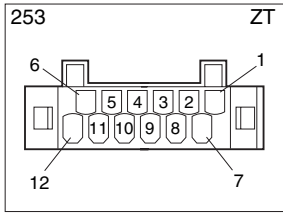




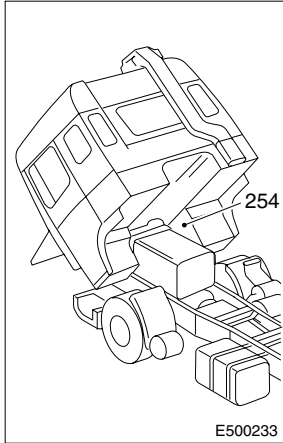
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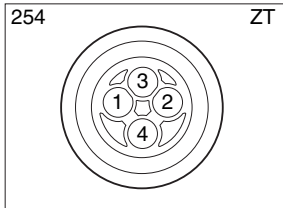
E500251



9



E500233



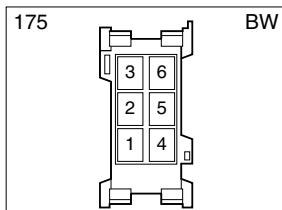
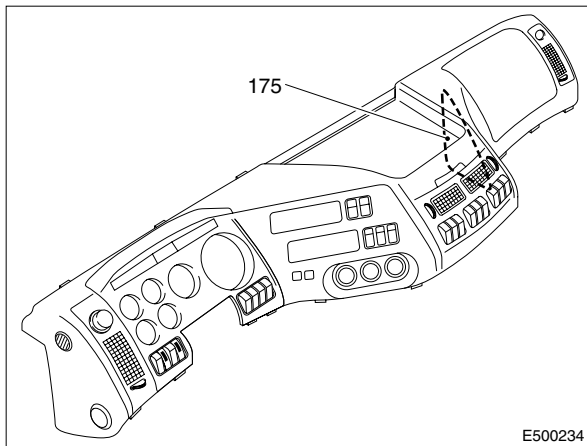
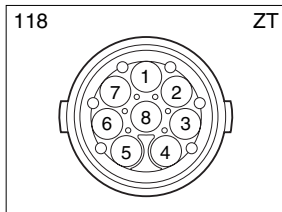
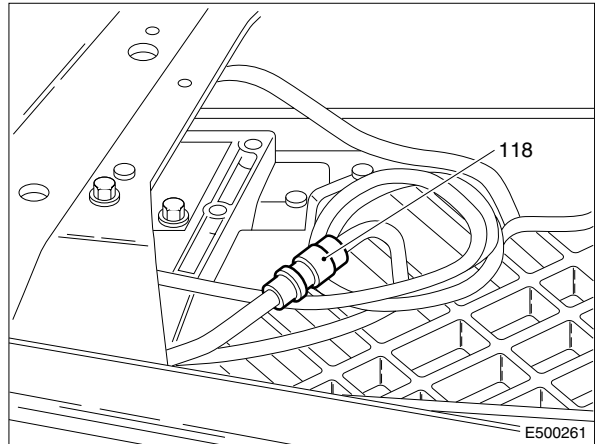
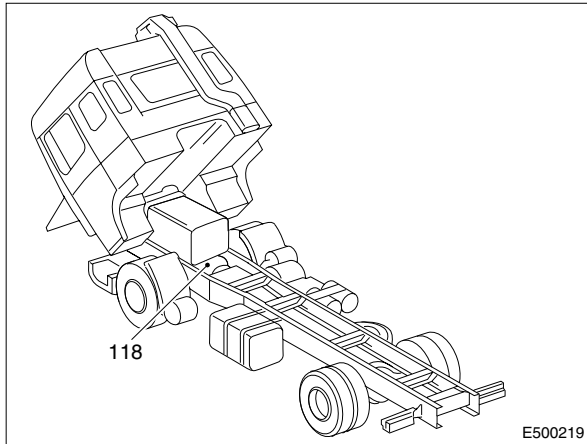


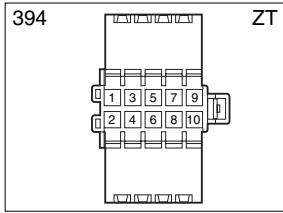
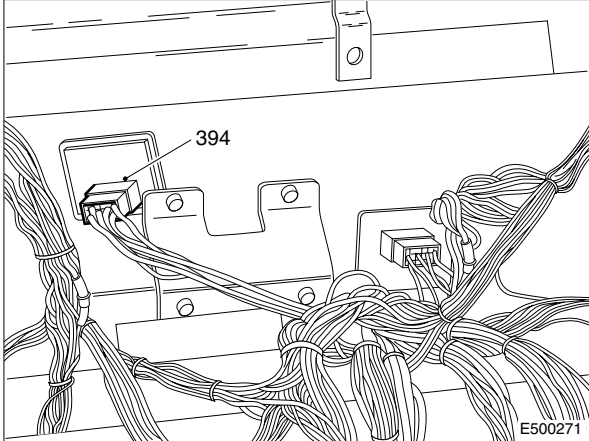
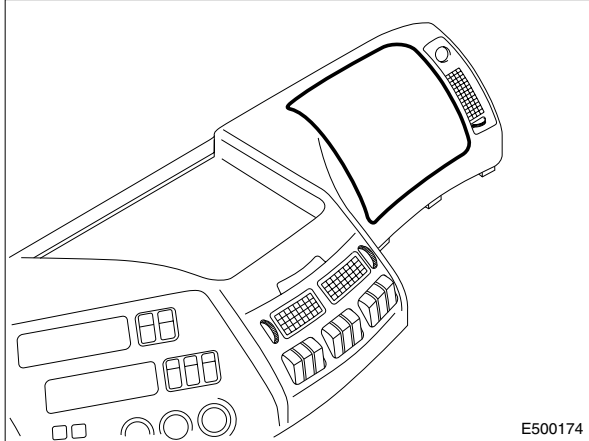
# 5

95XF series

# LOCATION OF CONNECTORS

Location of connectors



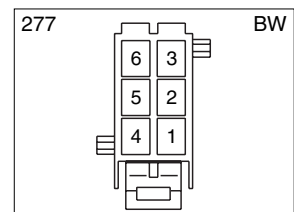
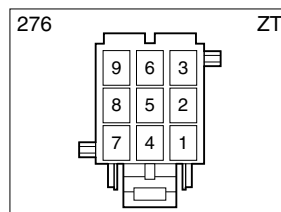
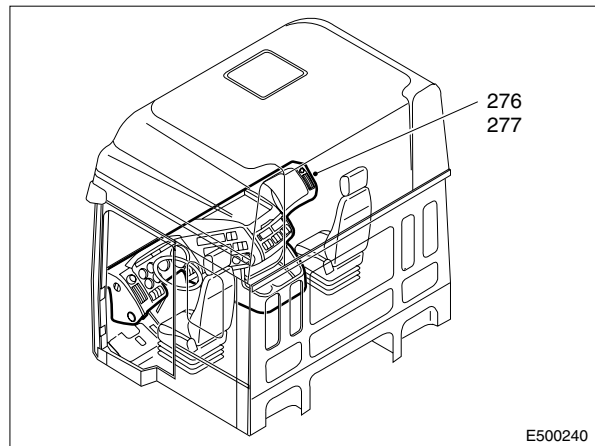
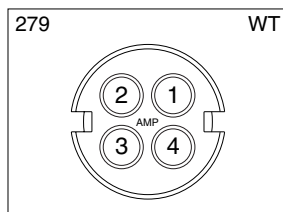
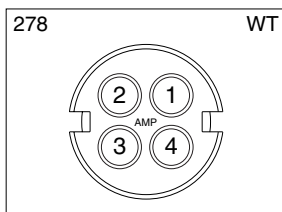
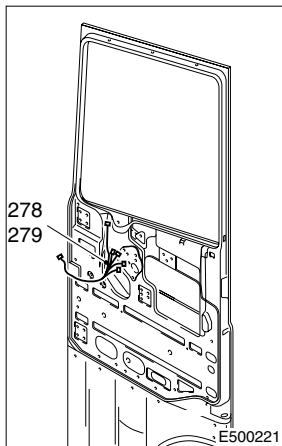
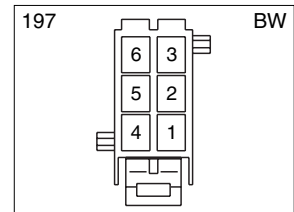
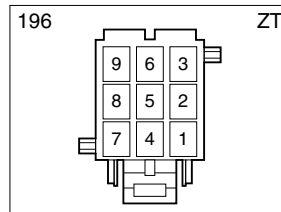
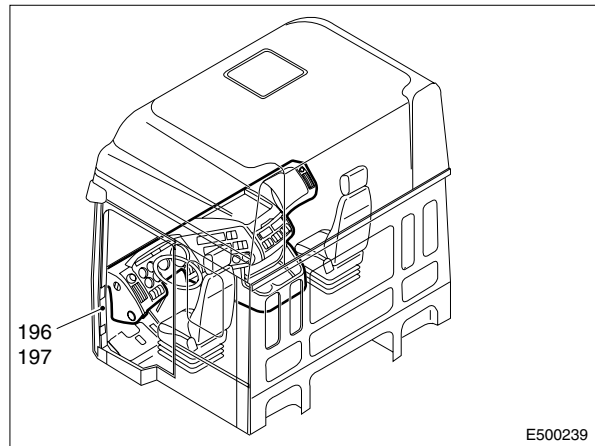
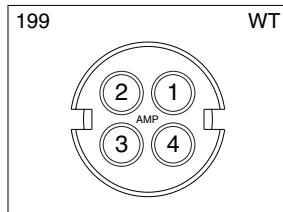
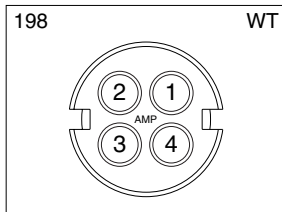
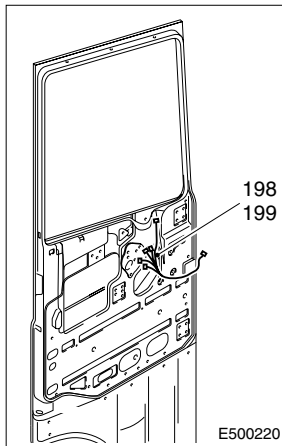


# 5

## 95XF series

# LOCATION OF CONNECTORS

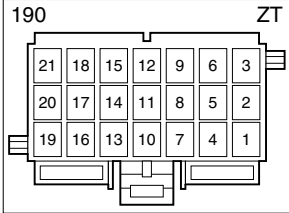
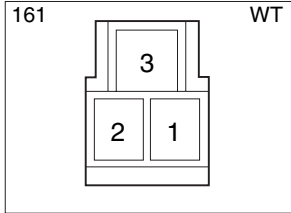
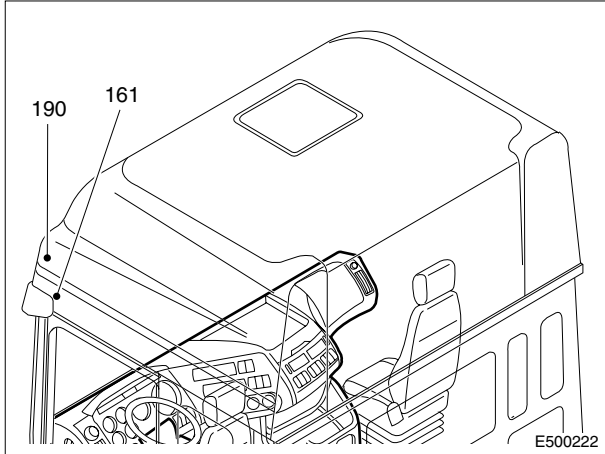
## Location of connectors



# LOCATION OF CONNECTORS

Location of connectors

95XF series

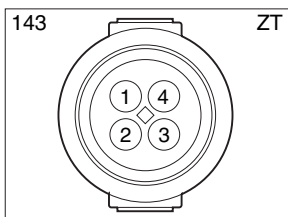
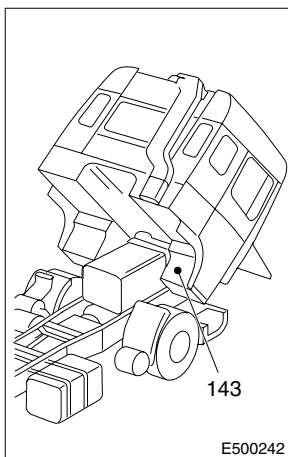
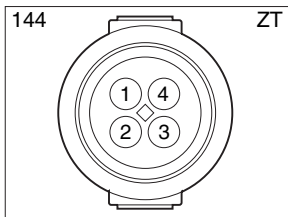
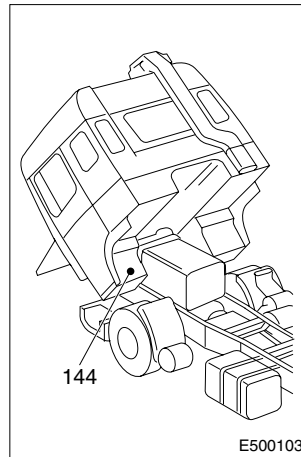
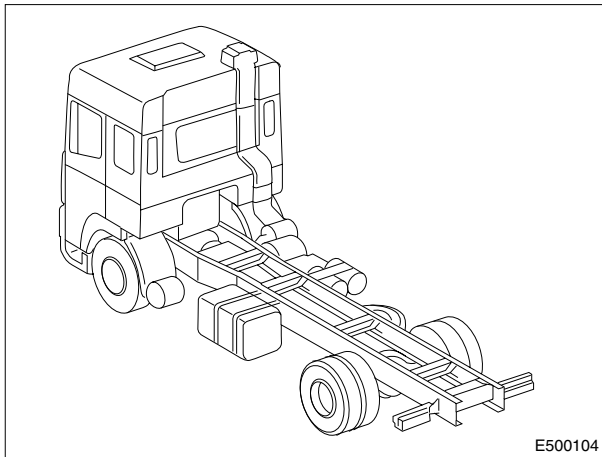


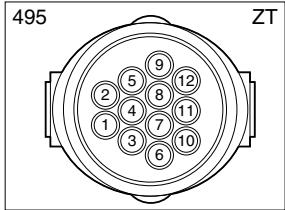
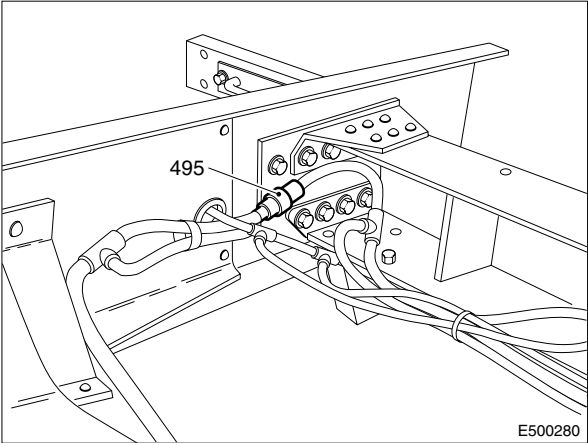
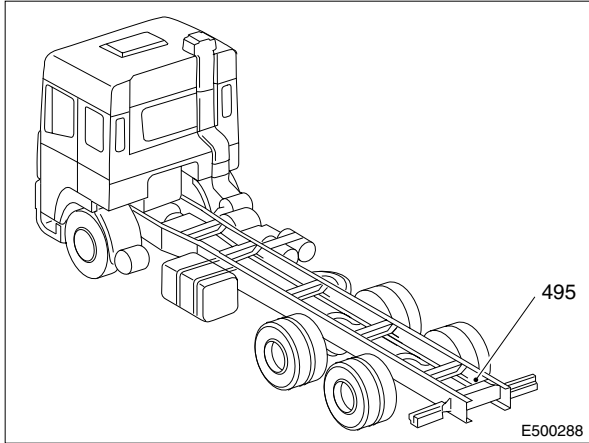
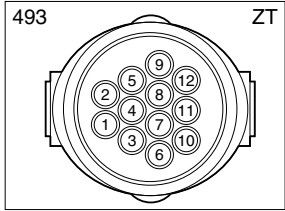
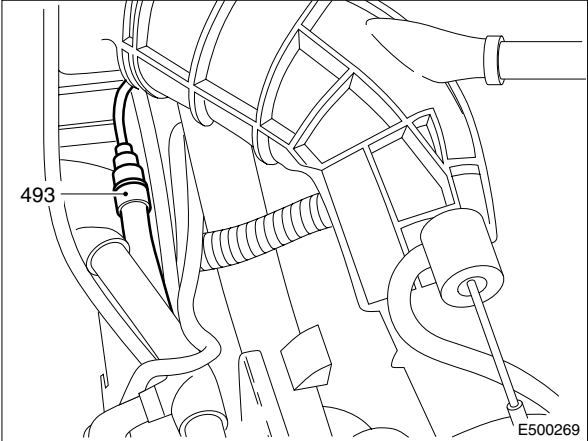
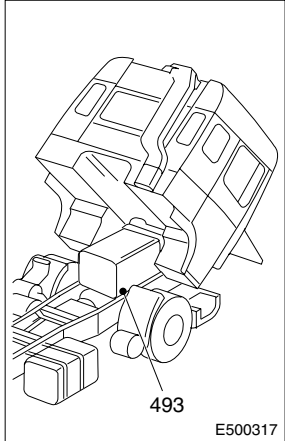
# 5

95XF series

# LOCATION OF CONNECTORS

Location of connectors





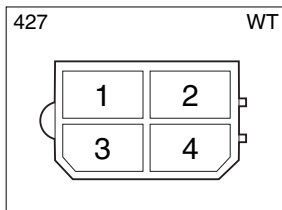
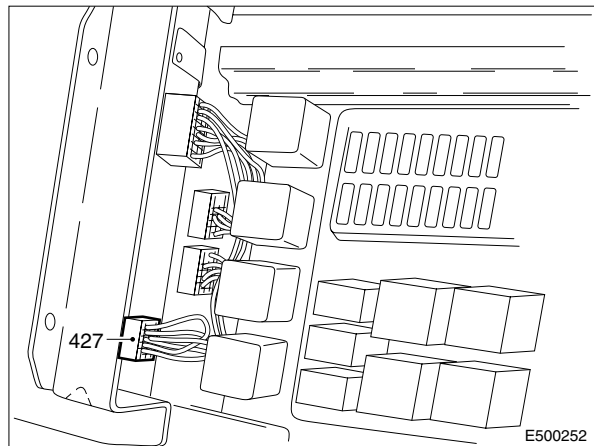
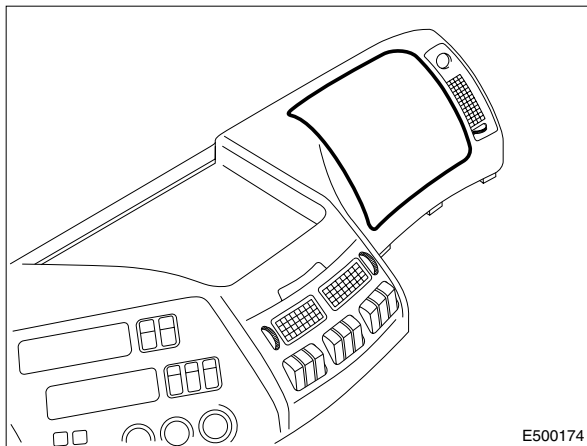
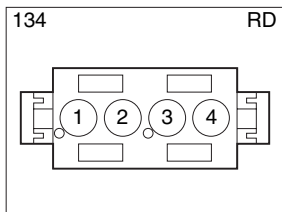
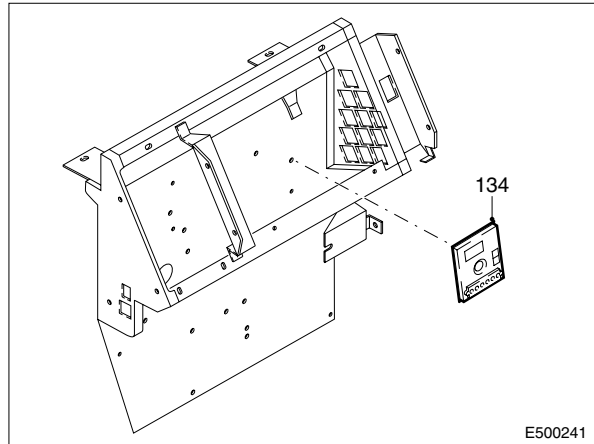
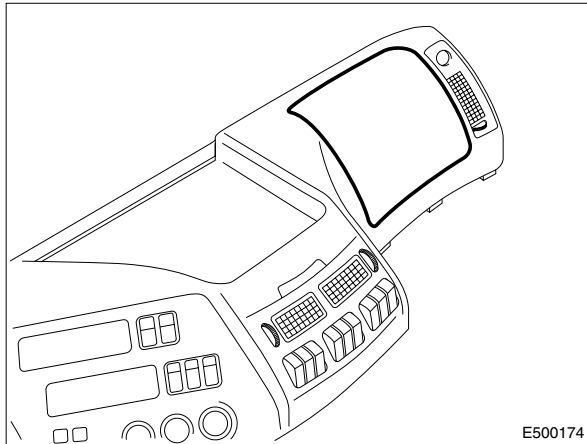
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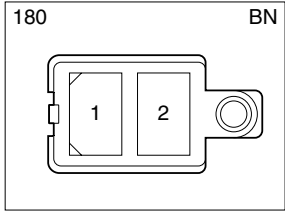
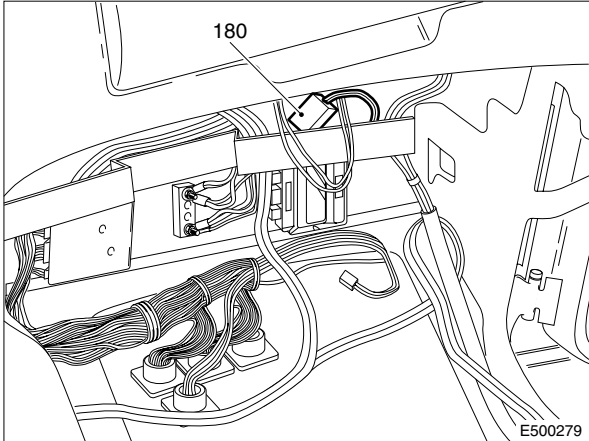
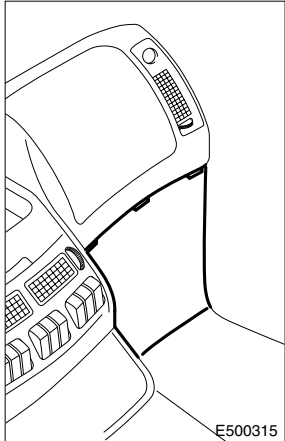
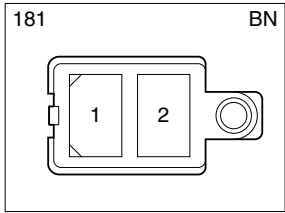
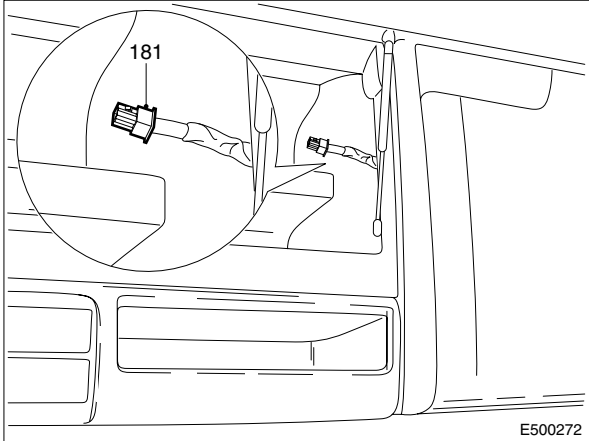
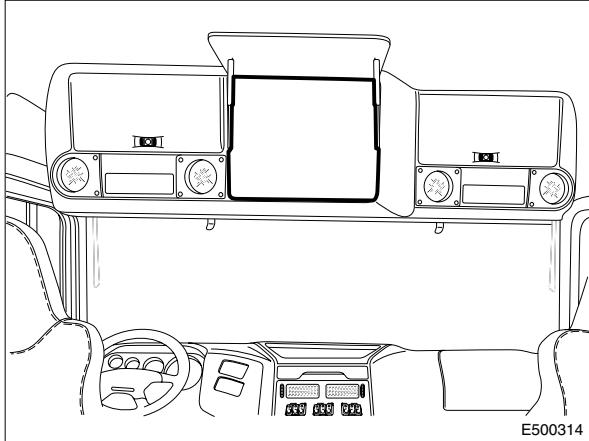
# 5

95XF series

# LOCATION OF CONNECTORS

Location of connectors





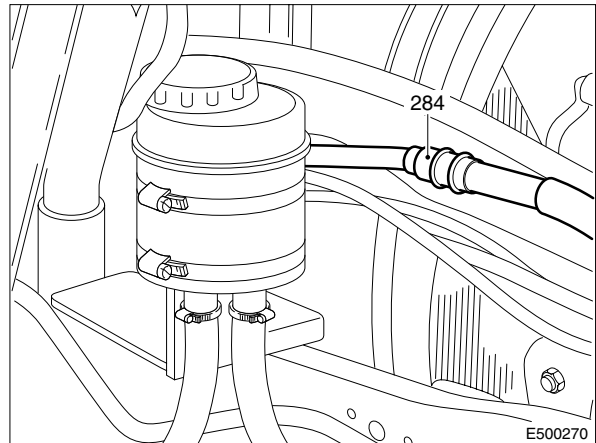
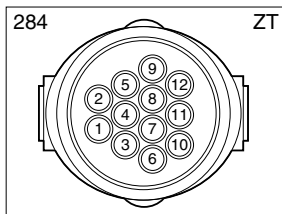
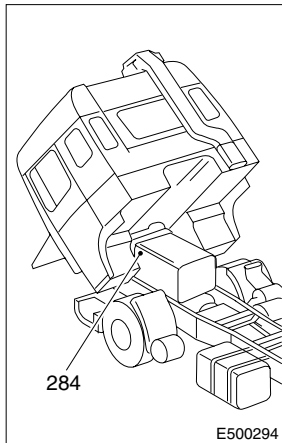


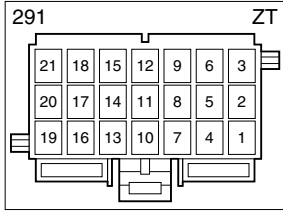
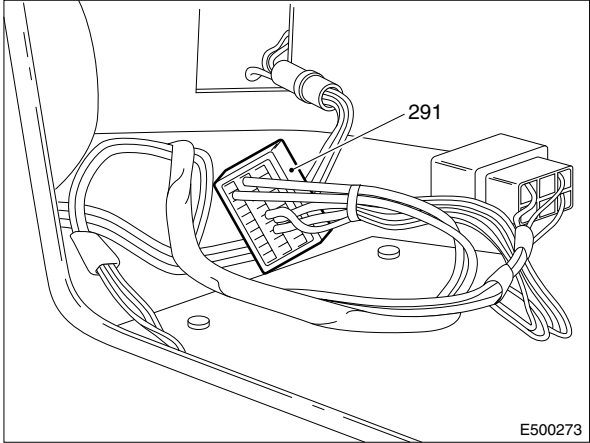
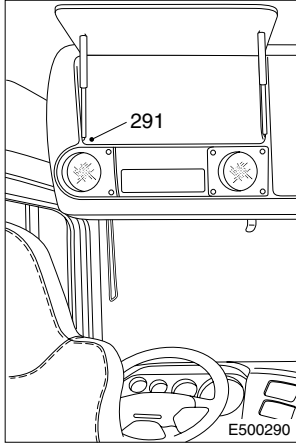
# 5

95XF series

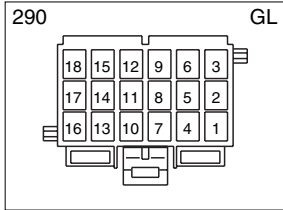
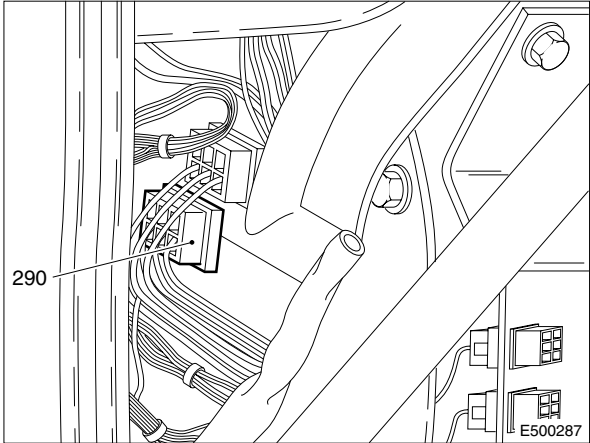
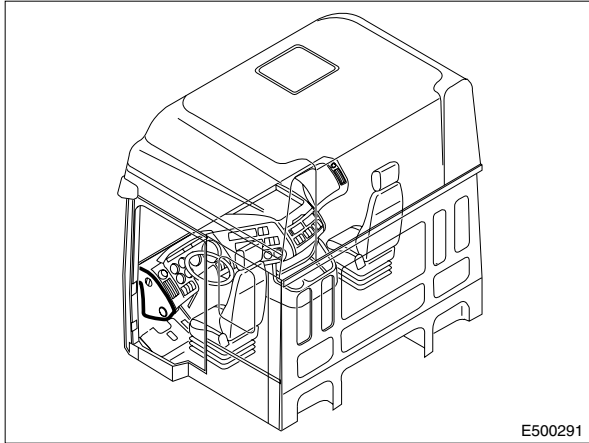
## LOCATION OF CONNECTORS

Location of connectors





9

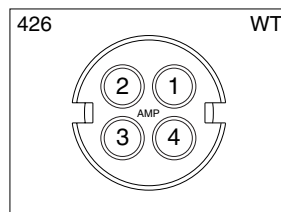
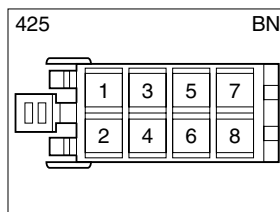
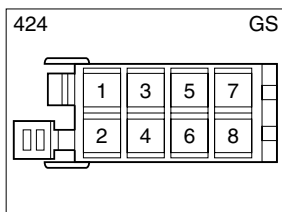
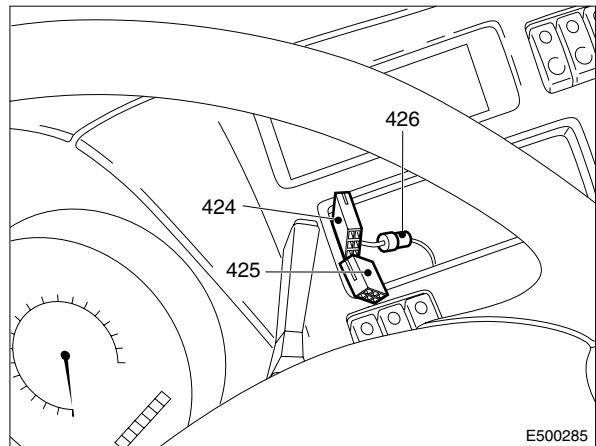
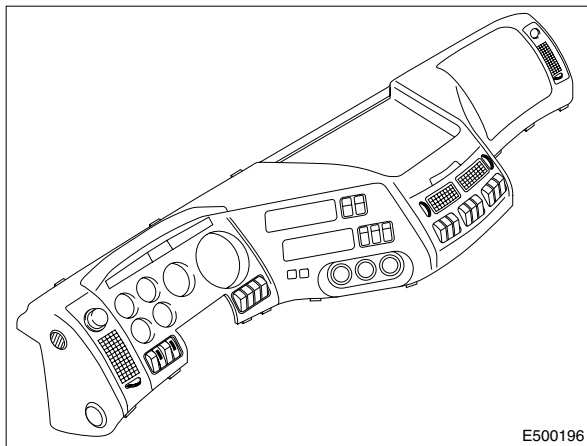
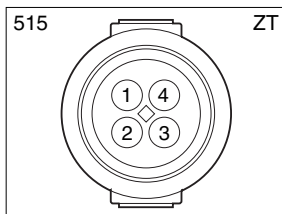
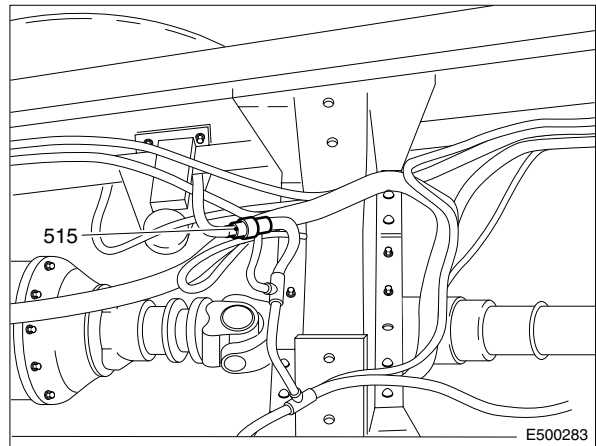
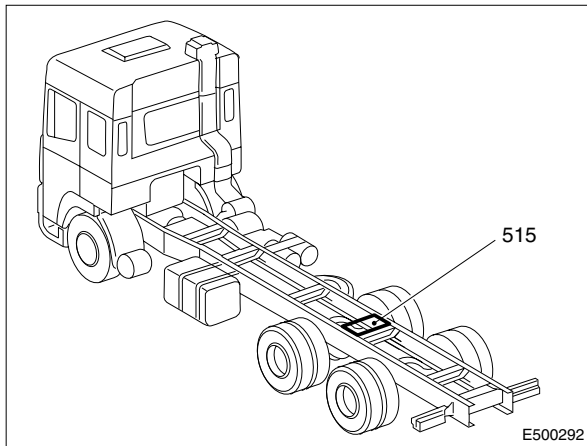


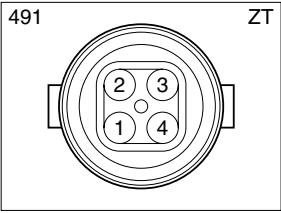
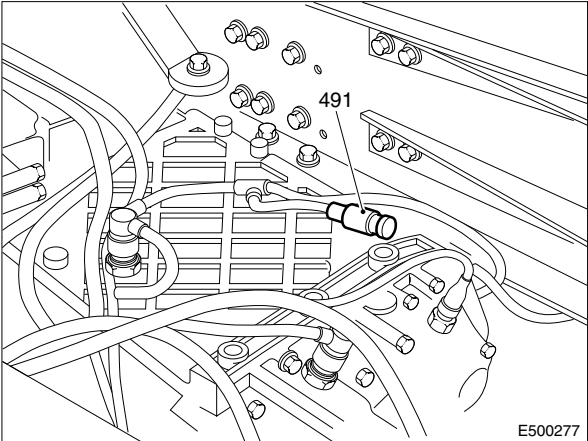
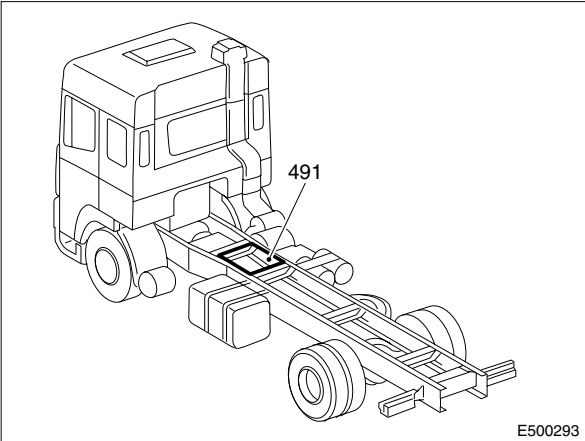
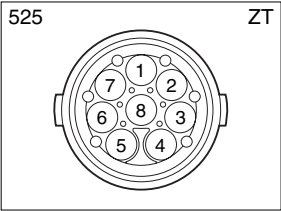
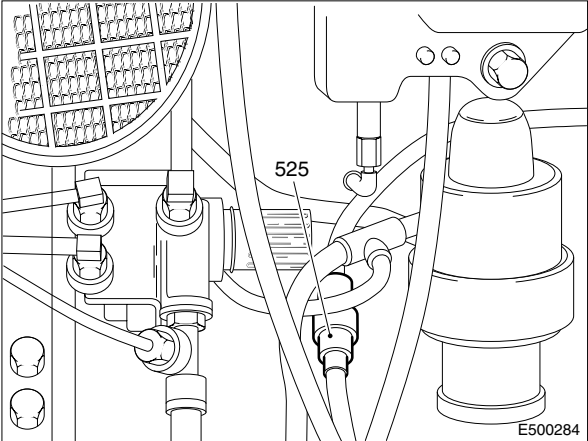
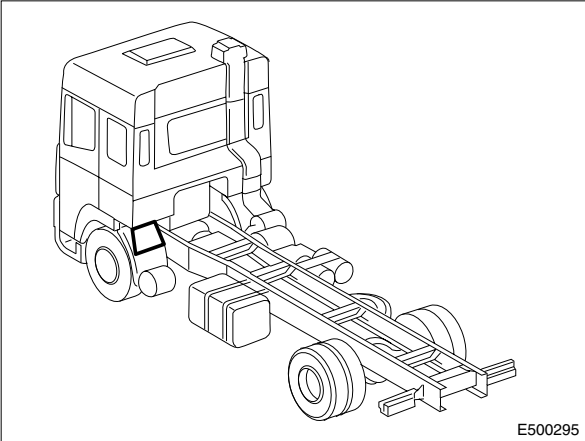
# 5

95XF series

# LOCATION OF CONNECTORS

Location of connectors



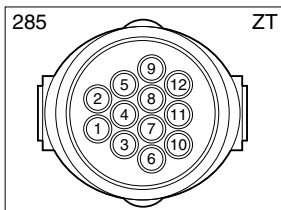
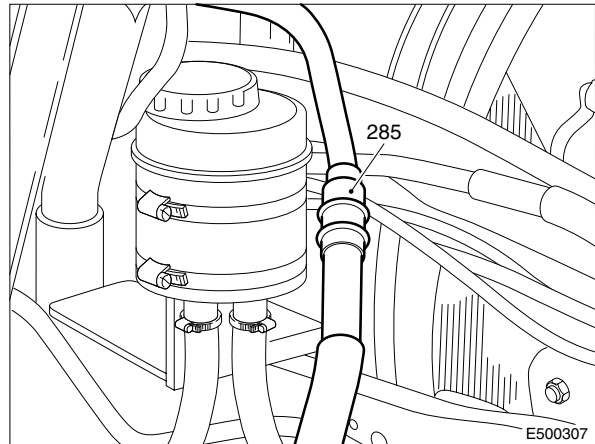
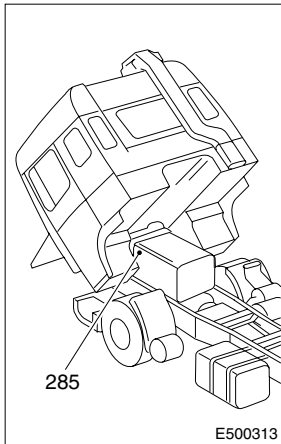
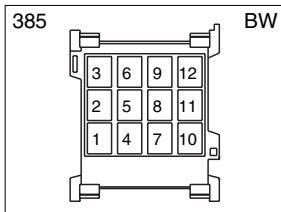
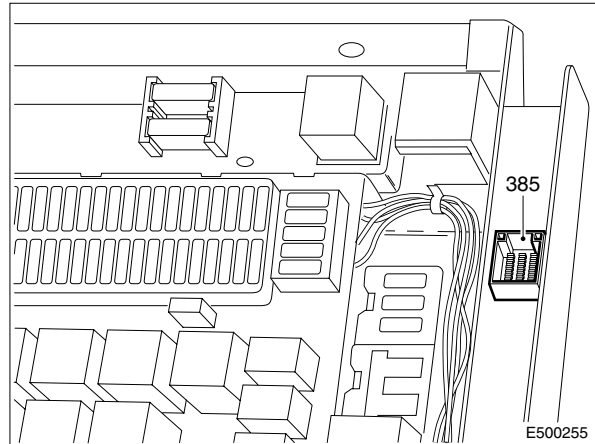
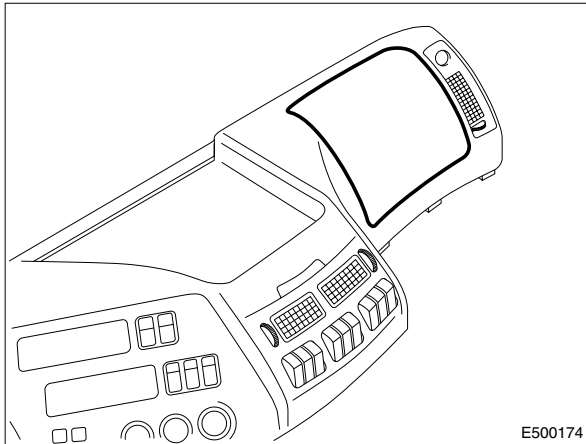


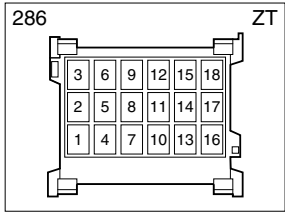
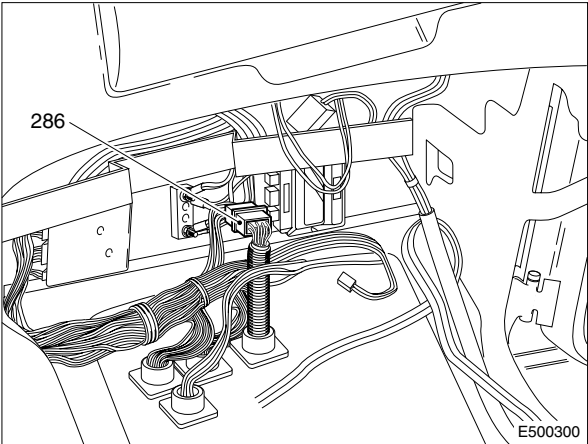
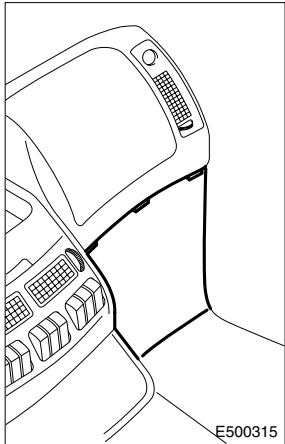
# 5

95XF series

## LOCATION OF CONNECTORS

Location of connectors



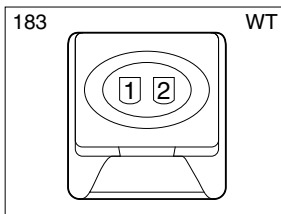
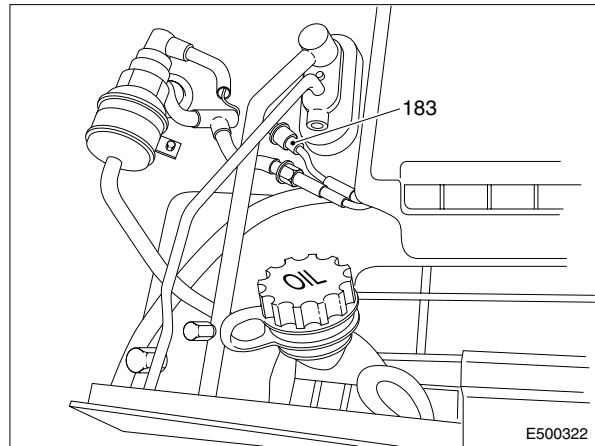
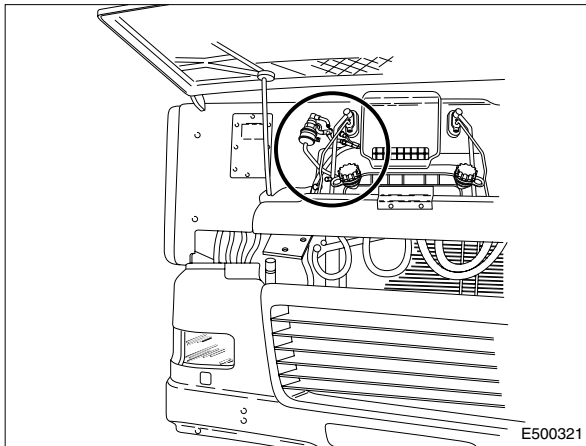


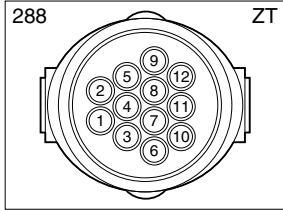
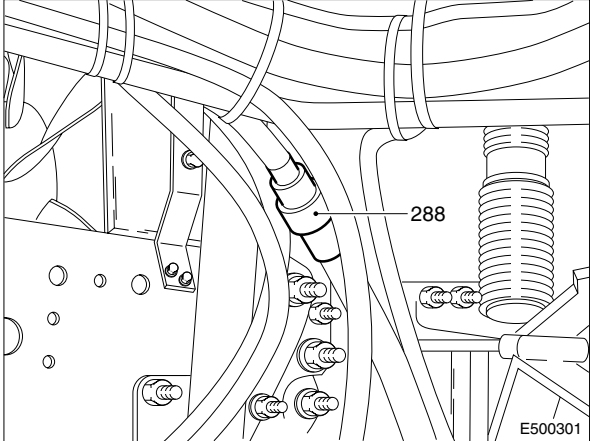
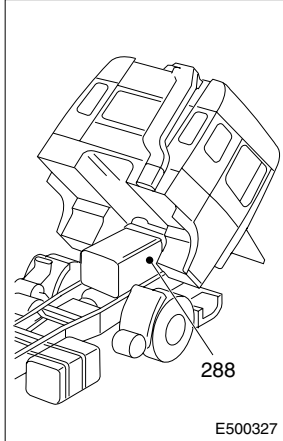
# 5

95XF series

# LOCATION OF CONNECTORS

Location of connectors





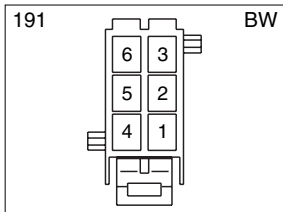
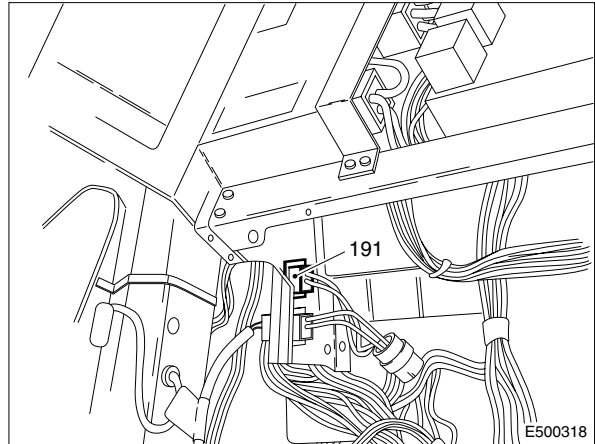
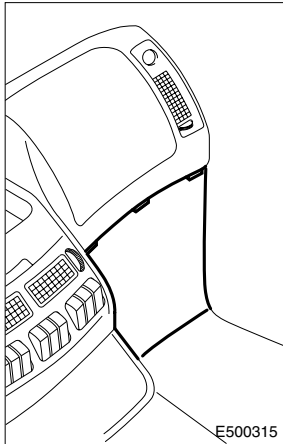


# 5

95XF series

## LOCATION OF CONNECTORS

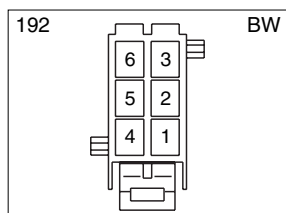
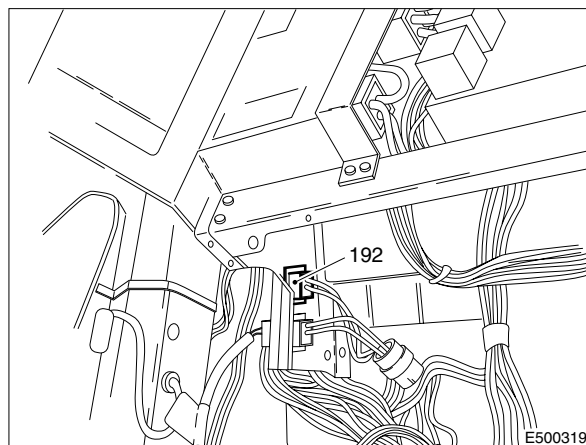
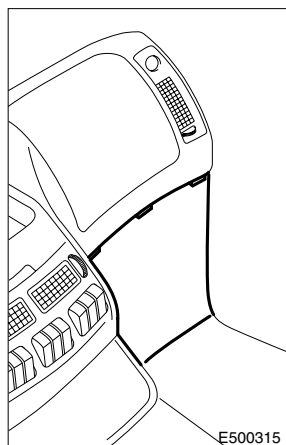
Location of connectors



# LOCATION OF CONNECTORS

Location of connectors

95XF series

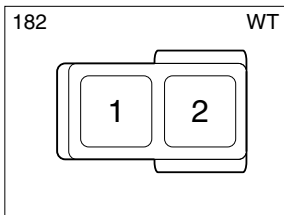
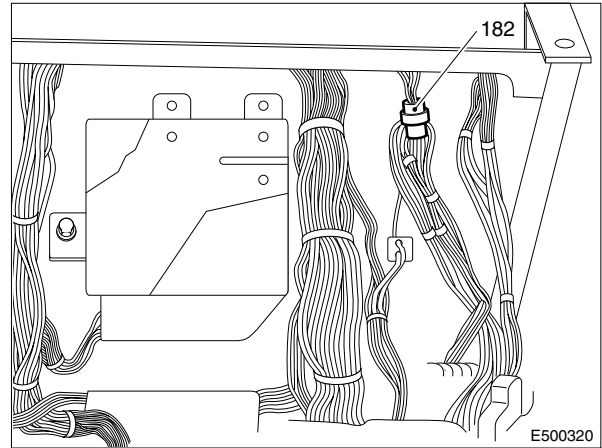
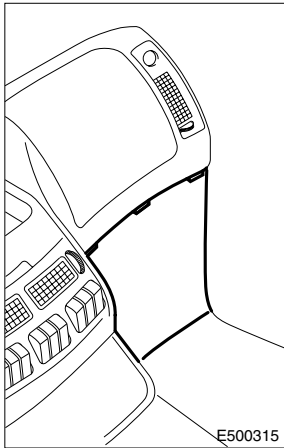


# 5

95XF series

## LOCATION OF CONNECTORS

Location of connectors





**CONTENTS**

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## 1. INTRODUCTION

This main group includes the entire electrical installation shown in the form of **circuit diagrams** and an **overview of connectors/pin allocations**.

### **Circuit diagrams**

The circuit diagram contains all information pertaining to the entire electrical installation of the vehicle, with the exception of the connectors.

### **Overview of connectors/pin allocations**

The overview of connectors/pin allocations indicates the connection of the wire number on the connector.

### **Note:**

For the location of the connectors in the vehicle, see main group "Location of connectors".

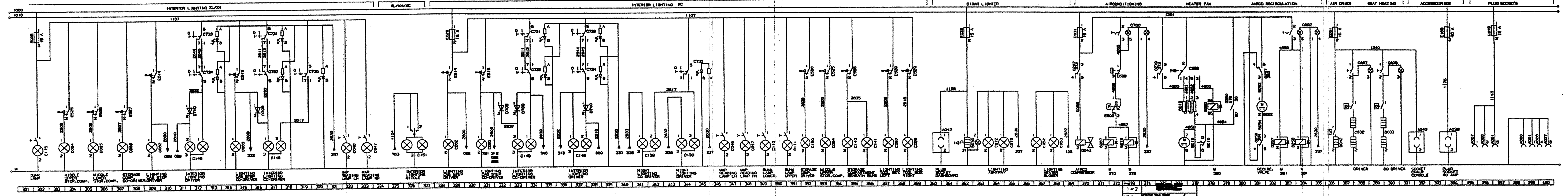
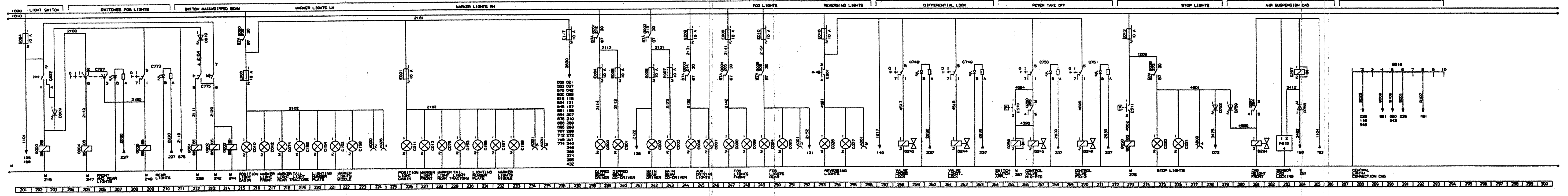
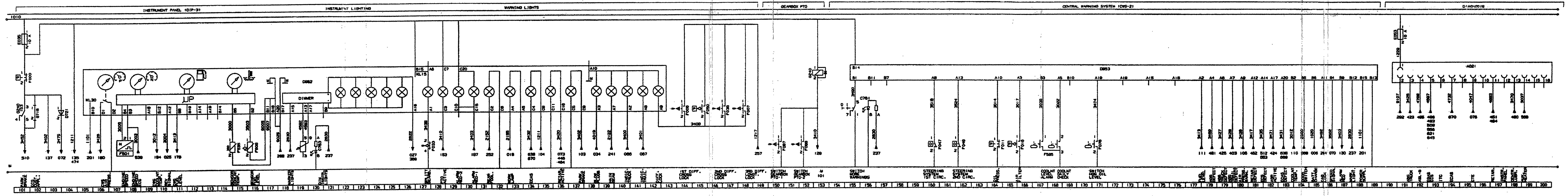
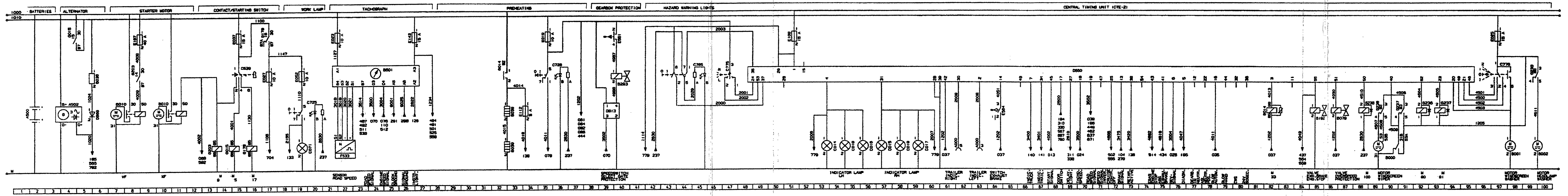




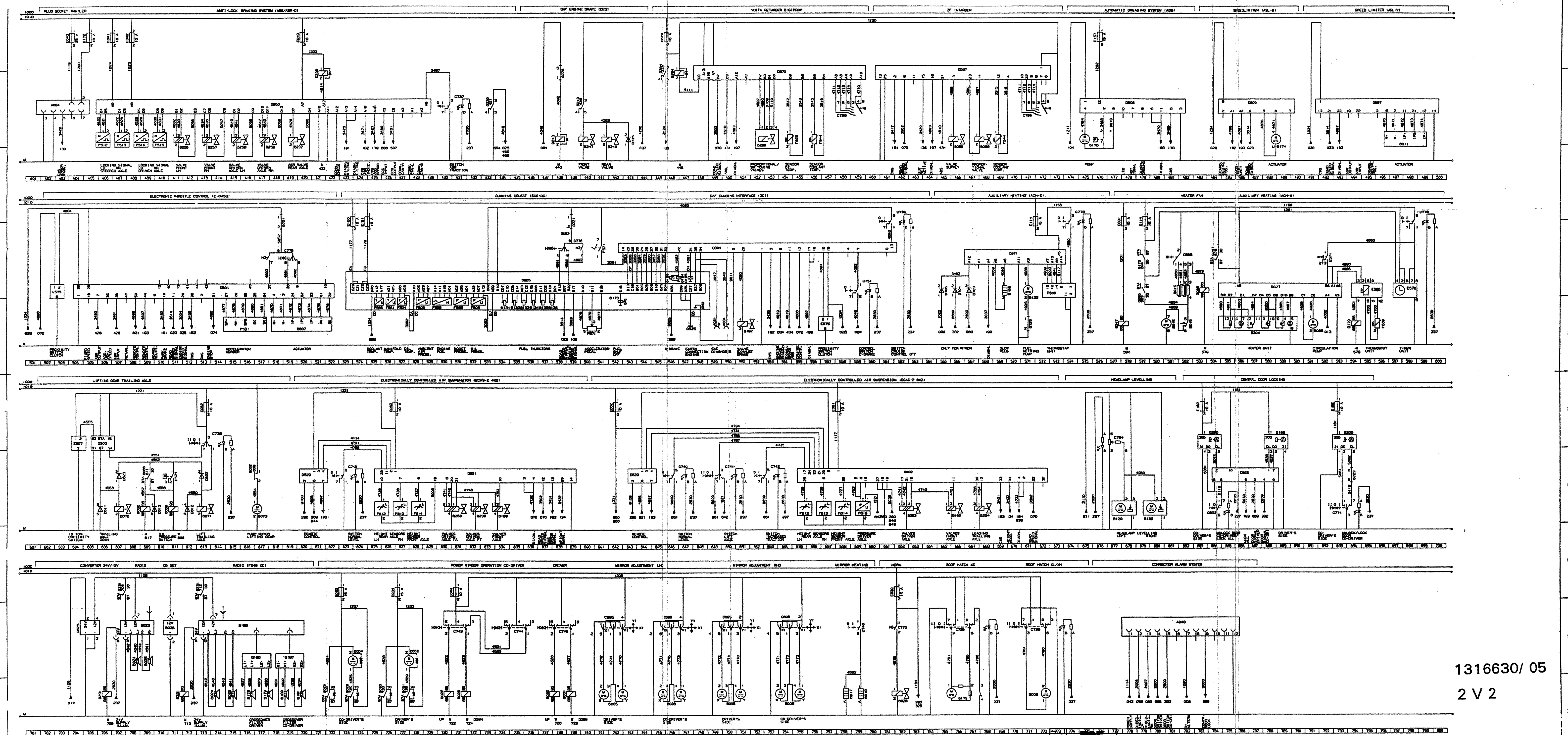
**2. ELECTRICAL INSTALLATION****2.1 CIRCUIT DIAGRAM 1316630/ 05**

This page provides room for your own notes on the circuit diagram.

Lined area for writing or drawing, consisting of multiple horizontal lines.







1316630/ 05  
2 V 2

## 2.2 OVERVIEW OF BASIC CODE NUMBERS IN CIRCUIT DIAGRAM 1316630/ 05

Column 1: Basic code number  
 Column 2: Designation  
 Column 3: Number on search bar of circuit diagram 1316630/ 05

Column 1	Column 2	Column 3
A000	Trailer socket (7-pin)	62/63/224/234/277/399
A001	Rear fog light back-up light socket (7-pin)	252/256/397/399
A004	ABS FA socket (7-pin)	404
A007	24V socket (2-pin)	395
A021	Diagnostic socket (16-pin)	191
A026	Box side-lights (4-pin)	224/235/396/400
A027	24V accessory socket (4-pin)	400
A031	Diagnostic socket 2-pin SAE CUMMINS	549/550
A038	Accessory socket (2-pin) 40A	394
A040	Alarm system socket	778
A042	24V dashboard socket (2-pin)	361
A043	Chair console socket driver's side (2-pin)	392
A500	Batteries (2)	2
A502	Generator of integrated voltage regulator	4
B000	Windscreen-wiper motor	89
B001	Windscreen-wiper pump motor	98
B002	Headlight cleaner pump motor	100
B003	Electric motor for automatic windows, driver's side	728
B004	Electric motor for automatic windows, co-driver's side	724
B005	Left-hand mirror adjustment motor	741/750
B006	Right-hand mirror adjustment motor	745/754
B007	Vehicle/engine speed regulator motor E-gas system	518
B009	Roof panel motor	772
B010	Starter motor	8/11
B011	Electric motor for speed limiter	496
B015	4-speed heater fan	76/378/581/582
B017	Mirror heating, driver's side	758
B018	Mirror heating, co-driver's side	759
B023	Radio	708
B024	Left-hand loudspeaker	708/714
B025	Right-hand loudspeaker	709/715

Column 1	Column 2	Column 3
B026	Citizen Band	711
B028	Air horn	762
B030	Cigarette lighter, driver's side	362
B032	Seat heating, driver's side	388
B033	Seat heating, co-driver's side	390
B036	Resistor generator D+	6
B038	Glow filament	33
B039	Glow filament	33
B042	Air dryer element heating	386
B043	Air-conditioning compressor	370
B068	Auxiliary heating circulation pump	591
B071	Lifting-gear lifting valve	613
B072	Lifting-gear lowering valve	607
B073	Pump on lifting-gear motor	617
B079	Valve single-H-safety	86
B088	Intarder valve, proportional	468
B089	Intarder valve, air supply	466
B122	Fuel dosage pump for auxiliary heating Eberspächer	571
B129	Electric motor for left-hand headlight-height adjustment	678
B130	Electric motor for right-hand headlight-height adjustment	680
B166	Front axle ECAS valve	634/665
B168	Loudspeaker filter, driver's side	569
B170	Automatic lubrication pump with push-button switch	475
B174	Electric motor for speed limiter	488
B175	Roof panel motor Super Space Cab	766
B178	Left-hand loudspeaker	716
B179	Left-hand loudspeaker	718
B180	Right-hand loudspeaker	719
B181	Right-hand loudspeaker	720
B185	Radio	713
B186	Loudspeaker filter, driver's side	717
B187	Loudspeaker filter, co-driver's side	719
B192	Engine brake valve	85/551
B199	Central door locking, driver's side	688
B200	Central door-locking motor, co-driver's side F249 XH/XC	683/693

Column 1	Column 2	Column 3
B204	Auxiliary-heating unit Thermo 90	585
B237	ABS/ASC rear-axle differential-gear blocking valve	419
B238	Valve ECAS-driven axle left/right air supply (FT)	632
B243	Axial controlled slip differential control valve	258
B244	Longitudinal controlled slip differential control valve	262
B245	PTO control valve	267
B246	PTO control valve	270
B247	Engine brake valve	440
B248	Engine brake valve	441
B250	Valve ECAS-driven axle left/right air supply (FA)	630
B252	Recirculation valve	381
B253	Valve ECAS-driven axle left/right air supply	662
B254	Valve of ECAS trailing/leading axle lifting/lowering	667
B256	Left-hand front ABS valve	411
B257	Right-hand front ABS valve	413
B258	ABS valve left-hand driven axle	415
B259	ABS valve right-hand driven axle	417
B293	Gearbox gate safety valve	40
B294	Switch-off valve cab suspension, front	281
B298	Voith retarder valve	452
B501	Compact tachograph	22
C000	Dipped light, left	239
C001	Dipped light, right	240
C002	Main beam, left	242
C003	Main beam, right	243
C006	High-beam headlight, left	244
C007	High-beam headlights, right	246
C008	Fog light, front left	247
C009	Fog light, front right	248
C010	Side-headlight, left	215
C011	Side-headlight, right	226
C012	Side-light, front left	217
C013	Side-light, front right	227
C014	Flasher light, front left	53
C015	Flasher light, front right	57

Column 1	Column 2	Column 3
C016	Side flasher light, left	56
C017	Side flasher light, right	59
C018	Flasher light, rear left	55
C019	Flasher light, rear right	58
C020	Brake light, left	275
C021	Brake light, right	276
C024	Fog light, rear left	249
C025	Fog light, rear right	250
C026	Back-up light, left	253
C027	Back-up light, right	255
C046	Map-reading light, driver's side	322/347
C047	Map-reading light, co-driver's side	323/348
C052	Heater fan light, left	367
C053	Heater fan light, right	368
C062	Stepwell lighting, driver's side	309/329
C063	Stepwell lighting, co-driver's side	315/331
C064	Central upper storage compartment lighting	304/353
C065	Central lower storage compartment lighting	305
C066	Right-hand storage compartment lighting	307
C067	Left-hand storage compartment lighting	357
C068	Left-hand tool compartment lighting	358
C071	Work light	19
C072	Ashtray light, left	364
C073	Ashtray light, right	365
C074	Side-light, rear left	218
C075	Side-light, rear left	228
C110	Lower bed lamp with switch	349
C111	Upper bed lamp with switch	351
C115	Bed lamp with switch	302
C130	Red interior nightlight, driver's side	344
C139	Red interior nightlight, co-driver's side	341
C140	Light in storage compartment under lower bed (lamp 1)	355
C141	Light in storage compartment under lower bed (lamp 2)	356
C148	Interior lighting, driver's side 2 x 21W	317/333
C149	Interior lighting, co-driver's side 2 x 21W	312/337



Column 1	Column 2	Column 3
C150	Left-hand storage compartment lighting	352
C151	Central interior lighting with switch	326
C152	Rear light, left (trucks)	219
C153	Rear light, right (trucks)	229
C154	Rear number plate light, left (trucks)	220
C155	Rear number plate light, right (trucks)	231
C156	First side-light left (trucks)	221
C157	First side-light right (trucks)	232
C158	Second side-light left (trucks)	222
C159	Second side-light right (trucks)	233
C539	Accessory start-contact switch	15
C588	Switch 4-speed heater fan	377/582
C622	Lighting switch	202
C695	Switch for mirror adjustment, driver's side	743/751
C696	Switch for mirror adjustment, co-driver's side	747/755
C697	Switch for seat heating, driver's side	388
C698	Switch for seat heating, co-driver's side	390
C725	Work light switch	19
C726	Glow plug switch	35
C727	Rear fog light switch	205
C731	Interior bed lighting switch, co-driver's side F249 XC	317/334
C732	Interior lighting switch, overhead console, co-driver's side F249	XC317/334
C733	Interior bed lighting switch, driver's side F249 XC	312/338
C734	Interior lighting switch, overhead console, driver's side F249 XC	312/338
C735	Interior night lighting switch F249 XC	319/344
C736	Roof panel switch F249 XL/XH/XC	766/771
C737	ABS/ASC-traction switch	430
C738	Speed regulator cut-out switch	561
C739	Lifting-gear switch	613
C740	ECAS switch, normal level	623/646
C741	Switch ECAS axle lifting	649
C742	Auxiliary drive-off switch	653
C743	Switch for automatic windows on co-driver's side (door on driver's side)	730

Column 1	Column 2	Column 3
C744	Switch for automatic windows on co-driver's side (door on co-driver's side)	735
C745	Switch for automatic windows on driver's side (door on driver's side)	738
C746	Mirror heating switch	759
C748	Axial controlled slip differential control switch	258
C749	Longitudinal controlled slip differential control switch	262
C750	PTO control switch	267
C751	PTO control switch	270
C754	DEB switch	559
C760	Air-conditioning switch	372
C761	CWS switch	155
C763	Potentiometer for instrument light dimming	119
C764	Potentiometer for headlight-height adjustment	676
C765	Hazard light switch (with LED search light)	43
C773	Rear fog light switch	209
C774	Central door locking switch	693
C775	Switch for direction indicators/main beam/dipped headlights/horn	47/212/762
C776	Switch for windscreen wiper/intermittent wipe/E-gas/resume cruise control	97/518/539
C778	Switch for auxiliary heating	574/598
C799	Switch for retarder	458/471
C802	Air-conditioning recirculation switch	383
C803	Central door locking switch	684
D503	Electronic unit for lifting gear	605
D525	Electronic unit for converter 12/24V	705
D529	Electronic unit for ECAS remote control	621/644
D550	Electronic unit for CTE-2	49
D587	Electronic unit for ZF intarder	472
D591	Electronic unit for E-gas 3	504
D597	Electronic unit for speed limiter for ASL-V	492
D609	Diode for light switch	203
D610	Diode for main beam/dipped lights	212
D611	Diode for lifting gear lowering valve damping	606
D612	Diode for lifting gear lifting valve damping	612
D613	Diode for lifting gear relay pump damping	610

Column 1	Column 2	Column 3
D622	Diode for lifting gear lifting lock	613
D623	Diode for lifting gear lowering lock	607
D668	Diode for generator safety (D+)	6
D703	Diode for switching off the auxiliary heating/door contact at driver's side	567
D704	Diode for switching off the auxiliary heating/door contact at co-driver's side	566
D705	Diode for switching off the auxiliary heating with running engine	565
D708	Diode for interior lighting, prevent feedback to co-driver's stepwell	316/332
D709	Diode for interior lighting prevent feedback to switch co-driver's side	333
D710	Diode for interior lighting, prevent feedback to driver's switch	312/338
D721	Diode for parking brake, prevent feedback	104
D722	Diode for brake lights, prevent feedback	278
D745	Diode for brake valve motor	443
D758	Diode prevent feedback to CWS	284
D759	Diode prevent feedback to brake lights	279
D802	Electronic unit for ECAS-2	655
D804	Electronic unit for DAF Cummins interface	561
D805	Electronic unit for CUMMINS CELECT	524
D806	Electronic unit for automatic lubrication	475
D809	Electronic unit for speed limiter for ASL-G	485
D813	Electronic unit for gate safety, gearbox	39
D827	Electronic unit for auxiliary heating, Thermo 90	586
D850	electronic unit for ABS/ASC D-version	407
D851	Electronic unit for ECAS-2 (4x2)	626
D852	Instrument panel DIP-3	105
D853	Electronic unit for CWS-2	155
D862	Electronic unit for central door locking	684
D870	Electronic unit for Voith retarder	448
D871	Electronic unit for auxiliary heating	573
E000	Fuse for side-light, rear left	215
E001	Fuse for side-light, rear right	226
E004	Fuse for dipped lights, driver's side	239
E005	Fuse for dipped lights indicator lamp, co-driver's side	240

Column 1	Column 2	Column 3
E006	Fuse for main beam, driver's side	242
E007	Fuse for main beam indicator lamp, co-driver's side	243
E008	Fuse for high-beam lights	244
E009	Fuse for front fog lights	247
E010	Fuse for rear fog lights	249
E013	Fuse for brake lights	273
E016	Fuse for back-up lights	253
E019	Fuse for the control of glow plug/ CTE/ flasher lights/ engine brake	35
E023	Fuse for switch for cold start/ tachograph/ auxiliary heating programming clock	22
E025	Fuse for headlight cleaner wiper motor	97
E026	Fuse for cigarette lighter	362
E027	Fuse for converter 24/12V	17
E028	Fuse for interior lighting	302/329
E029	Fuse for engine brake retarders	446
E030	Fuse for horn	762
E031	Fuse for heater fan ITC unit	370/578
E033	Fuse for electric window motor, co-driver's side	723
E034	Fuse for electric window motor, driver's side	727
E035	Fuse for instruments and indicator lamps	101
E037	Fuse for contact switch	15
E040	Fuse for ABS	420
E041	Fuse for ABS	407
E042	Fuse for ABS	408
E043	Fuse for ABS trailer	404
E044	Fuse for mirror heating	731
E048	Fuse for power supply trailer	397
E051	Fuse for ECAS-1	658
E052	Fuse for ECAS remote control working light	19
E053	Fuse for ECAS diagnostic connector (16-pin)	191
E062	Fuse for lifting gear and ECAS	613/627/642
E084	Fuse for lighting	201
E091	Fuse for air-dryer element/fuel contamination separator	386
E108	Fuse for CTE-2	51
E112	Fuse for glow indicator lamp	34

Column 1	Column 2	Column 3
E114	Fuse for auxiliary heating (Eberspächer)	572/579
E117	Fuse for search light	237
E143	Fuse for E-gas tachograph	27
E157	Grease pump automatic lubrication	476
E160	Fuse for Cummins motor	524
E161	Fuse for Cummins motor	525
E167	Fuse for transfer relay, starting motor	9
E168	Fuse for accessories/microwave	394
E172	Fuse for ABS trailer 10A	405
E182	Fuse for central door locking	683/693
E501	Control switch for back-up light	253
E507	Approximation switch for axle load protection of lifting-gear (10 ton)	604
E508	Thermal switch for air-conditioning compressor	372
E509	High / low pressure air-conditioning control switch	372
E511	Brake light control switch	273
E514	Control switch for interior step lighting, door switch on driver's side	309/329
E515	Control switch for interior step lighting, door switch on co-driver's side	315/331
E524	Control switch for lifting-gear limit switch oil pressure	611
E525	Control switch for central upper storage compartment lighting	304/354
E526	Control switch for central lower storage compartment lighting	306
E527	Control switch for right-hand storage compartment lighting	308
E528	Control switch for left-hand storage compartment lighting	358
E529	Control switch for right-hand tool compartment lighting	359
E555	Control switch for lighting in storage compartment under lower bed	355
E560	Control switch for left-hand storage compartment lighting	352
E561	Control switch of gearbox gate safety	40
E564	Engine brake control switch	46
E565	Control switch for auxiliary-heating fan, Thermo 90	594
E566	Control switch for thermostat for auxiliary heater Eberspächer (DIIC)	572
E570	Control switch for coupling/PTO N/10	265
E571	Control switch for auxiliary heater, Thermo 90	592

Column 1	Column 2	Column 3
E575	Approximation switch ECS coupling	503/557
E576	Control switch for auxiliary-heating fan	597
F000	Parking brake control switch	101
F006	Control switch for differential-gear blocking 1st diff.	144
F007	Control switch for differential-gear blocking 3rd diff.	148
F011	Control switch for engine oil pressure	164
F016	Control switch for engine air filter	166
F033	Control switch for splitter signalling	127
F038	Control switch for differential-gear blocking 2nd diff.	147
F047	Control switch for steering system (1st circuit)	160
F048	Control switch for steering system (2nd circuit)	162
F050	Control switch for differential-gear blocking pressure (1st and 2nd diff.)	145
F076	Switch for oil level HGS	171
F087	Control switch for gearbox PTO	150
F088	Control switch for gearbox PTO	152
F501	Engine-speed sensor	107
F509	Cab temperature sensor of auxiliary heater	596
F512	Sensor for ABS blocking signal, front left	406
F513	Sensor for ABS blocking signal, front right	407
F514	Sensor for ABS blocking signal, left-hand drive axle	408
F515	Sensor for ABS blocking signal, right-hand drive axle	410
F531	Sensor for accelerator pedal E-gas	515
F533	Vehicle-speed sensor (4-pin 1st)	22
F535	Sensor for engine coolant temperature	115
F544	Sensor for coolant temperature of secondary retarder	456/469
F571	Sensor for accelerator pedal ECS	540/541
F585	Sensor for engine coolant level	167
F608	Sensor for fuel level	116
F612	Height sensor ECAS left-hand rear axle	626
F613	Height sensor ECAS right-hand rear axle	627/657
F614	Height sensor ECAS front axle	628/658
F615	Pressure sensor ECAS driven axle left/right	659
F616	Sensor cab locking	283
F620	Sensor for oil temperature in Voith retarder	454
G000	Relay for taillight/ side-light	202/215

Column 1	Column 2	Column 3
G001	Relay for dipped lights	212/239
G002	Relay for main beam	213/242
G003	Relay for high-beam lights	214/244
G004	Relay for front fog light	205/247
G005	Relay for rear fog light	209/249
G014	Glow-filament relay	33/82
G015	Contact relay	5/15
G028	Relay for automatic windows, co-driver's side	722/730
G029	Relay for automatic windows, co-driver's side	724/732
G030	Relay for automatic windows, driver's side	726/738
G031	Relay for automatic windows, driver's side	728/739
G036	Relay for brake light 1st	273/275
G052	Lifting-gear motor relay	609/617
G065	Relay, heater fan	579/583
G066	Lifting-gear takeover relay	609/611
G170	Auxiliary-heating fan relay	579/594
G178	Accessory relay	16/17
G203	Starting-motor takeover relay	9/14
G231	Radio lighting relay (12V)	706/708/712/713
G236	Windscreen wiper micro relay (speed 1 or 2)	90/921
G237	Windscreen wiper micro relay (automatic zero position)	91/93
G238	Headlight cleaner micro relay	88/100
G239	Engine brake takeover micro relay ABS/ASC-CTE	421/433
G240	E-gas PTO/engine speed micro relay	101/153
G243	Engine brake micro relay	438/440
G247	Auxiliary-heating fan relay	578/584
G257	Recirculation valve relay	381/383
G258	Recirculation valve relay	381/384
G259	PTO control relay	265/267
G267	Air-conditioning micro relay	370/372
G279	Heater fan transfer micro relay	373/375
G280	Relay, heater fan	378/380
G284	Micro relay for Voith retarder function	446/447
G297	Relay for cab air suspension, front height adjustment	281/284
G516	Central earth cab co-driver's side	288

<b>Column 1</b>	<b>Column 2</b>	<b>Column 3</b>
G525	Central earth flywheel housing motor	547
G718	Connection parking brake/PTO	102
G721	Speed regulator switch connection	518/539
G723	Connection for central door locking	694
G725	Connection for auxiliary heating D3LC (PETREG)	571
G726	Connection panel switch DEB, XF engine	438



### 2.3 OVERVIEW OF WIRE AND CONNECTOR NUMBERS OF CIRCUIT DIAGRAM 1316630/ 05

The pages consist of the following three columns:

Column 1 wire number

Column 2 connector number

Column 3 connection number on connector

Column 1	Column 2	Column 3	Column 1	Column 2	Column 3
1000	537	1	1107	293	2
1000	444	A1	1107	187	2
1000	537	3	1107	190	2
1000	114	B	1107	185	2
1000	299	B1	1107	426	2
1000	400	29	1107	291	2
1000	399	A1	1107	189	2
1000	388	3	1107	290	2
1000	114	A	1108	293	3
1000	299	A1	1108	427	4
1010	388	1	1108	189	3
1010	299	C1	1108	291	3
1020	396	6	1108	190	3
1020	114	1	1108	290	3
1020	402	13	1108	424	7
1020	387	7	1110	176	1
1020	383	8	1110	400	34
1100	412	1	1113	496	3
1100	402	15	1113	115	27
1100	402	19	1113	402	16
1101	201	10	1113	493	10
1101	231	2	1114	232	29
1101	403	14	1114	387	1
1101	408	7	1114	402	32
1101	396	15	1114	547	4
1104	293	1	1114	232	1
1104	163	4	1117	400	30
1104	291	1	1117	373	1
1104	190	1	1117	340	1
1104	408	8	1119	299	A2
1104	547	1	1119	115	A
1104	189	1	1127	402	31
1104	290	1	1127	223	1
1104	402	29	1130	402	20
1105	547	2	1130	412	6
1105	402	35	1131	495	10
1105	196	1	1147	400	32
1105	394	10	1147	402	1
1105	276	1	1147	403	10
1106	427	2	1150	378	1
1106	403	12	1150	402	18
1107	547	3	1154	299	B2
1107	403	15	1154	385	1

Column 1	Column 2	Column 3	Column 1	Column 2	Column 3
1156	383	1	1217	401	13
1156	480	2	1217	118	1
1156	168	5	1217	134	1
1156	482	1	1217	115	1
1156	472	3	1221	373	2
1156	483	1	1221	185	6
1156	402	34	1221	446	1
1156	478	1	1221	376	3
1156	473	1	1221	445	2
1156	547	5	1221	116	1
1156	480	6	1221	307	1
1175	399	A2	1221	340	9
1201	480	4	1221	122	6
1201	401	15	1221	115	2
1201	397	1	1221	401	9
1201	478	2	1221	122	3
1201	473	3	1221	347	1
1201	376	1	1223	453	7
1201	473	2	1223	403	19
1201	472	1	1223	377	2
1202	251	2	1223	400	35
1202	232	42	1224	453	9
1202	401	16	1224	377	3
1202	408	3	1224	401	11
1202	185	5	1225	377	4
1202	403	27	1225	453	8
1202	114	30	1225	400	17
1202	176	2	1229	403	18
1205	400	7	1229	216	1
1205	400	8	1230	468	7
1205	400	21	1230	464	4
1205	411	1	1230	461	1
1205	252	3	1230	466	A3
1205	400	11	1230	338	1
1205	400	31	1230	465	1
1207	401	17	1230	464	8
1208	196	2	1230	466	A1
1208	400	26	1230	400	18
1208	276	2	1230	468	13
1209	402	7	1233	401	35
1211	400	16	1234	135	8
1211	281	1	1234	371	1
1211	396	14	1234	305	1
1211	253	1	1234	434	2
1211	401	14	1234	400	23
1211	201	15	1234	334	19
1211	285	8	1234	436	1
1211	200	7	1234	177	1
1211	200	20	1234	378	2
1211	200	8	1234	333	28
1217	176	3	1234	223	3
1217	376	2	1234	336	2

Column 1	Column 2	Column 3	Column 1	Column 2	Column 3
1234	358	4	2102	115	7
1234	443	8	2102	493	5
1240	286	1	2102	400	33
1240	400	25	2102	189	4
1240	288	1	2102	284	2
1240	187	4	2103	189	5
1240	185	7	2103	495	6
1258	299	C2	2103	115	8
1258	385	3	2103	290	5
1288	401	12	2103	288	3
1288	321	1	2103	286	3
1288	377	1	2103	496	2
1295	253	12	2103	493	6
1295	401	18	2103	161	2
2000	547	7	2103	400	28
2000	232	37	2110	231	4
2001	408	1	2110	401	24
2001	232	24	2110	288	4
2002	232	53	2110	176	5
2002	408	2	2110	284	3
2003	547	8	2110	286	4
2003	232	35	2110	281	4
2006	185	8	2111	408	5
2006	281	2	2111	401	7
2006	284	1	2113	288	5
2006	232	4	2113	286	5
2006	495	1	2113	403	17
2006	115	3	2114	403	16
2006	387	2	2114	281	5
2007	495	2	2114	284	4
2007	115	4	2120	402	5
2007	288	2	2120	408	6
2007	187	5	2120	402	22
2007	387	3	2122	202	7
2007	286	2	2122	402	30
2007	232	31	2122	281	6
2008	493	3	2122	284	5
2008	232	2	2123	291	4
2008	495	3	2123	286	6
2008	115	5	2123	288	6
2009	495	4	2123	189	6
2009	493	4	2123	402	28
2009	115	6	2123	290	6
2009	232	30	2123	190	4
2100	401	21	2131	403	9
2100	231	1	2131	402	17
2100	176	4	2132	402	21
2102	290	4	2132	288	7
2102	281	3	2132	281	7
2102	496	1	2132	284	6
2102	495	5	2132	286	7
2102	161	1	2140	401	19

Column 1	Column 2	Column 3	Column 1	Column 2	Column 3
2140	176	6	2622	202	16
2141	401	4	2622	223	2
2141	402	33	2630	290	13
2142	401	2	2630	400	3
2142	281	8	2630	291	5
2142	288	8	2630	176	9
2142	284	7	2630	190	5
2142	286	8	2630	202	15
2150	176	7	2630	376	4
2150	401	6	2630	400	27
2152	493	7	2630	547	12
2152	200	2	2630	189	13
2152	115	9	2630	396	12
2152	495	7	2632	293	10
2152	400	24	2632	291	10
2154	408	4	2633	293	11
2154	401	28	2633	291	11
2155	493	1	2637	293	12
2155	202	4	2644	547	13
2155	115	29	2644	290	14
2155	176	8	2644	189	14
2600	232	17	2645	547	14
2600	281	9	2645	189	15
2600	144	1	2645	290	15
2600	383	9	3000	114	2
2600	396	5	3000	201	5
2600	387	4	3003	336	6
2600	394	3	3003	371	2
2609	293	8	3003	177	5
2609	291	8	3003	114	4
2609	290	8	3003	201	3
2609	383	10	3003	335	17
2609	387	5	3004	232	6
2609	394	4	3004	224	4
2609	143	1	3004	434	3
2609	189	8	3004	333	20
2609	286	9	3004	202	12
2610	232	27	3004	378	3
2610	189	9	3005	201	4
2610	293	9	3005	114	15
2610	290	9	3012	201	12
2610	291	9	3012	396	2
2611	547	9	3014	395	10
2611	290	10	3014	114	7
2611	189	10	3017	395	3
2612	290	11	3017	114	8
2612	189	11	3022	114	9
2612	547	10	3022	395	5
2617	547	11	3036	396	3
2617	290	12	3036	114	10
2617	189	12	3037	482	12
2622	397	2	3037	216	14

Column 1	Column 2	Column 3	Column 1	Column 2	Column 3
3037	383	11	3064	378	5
3037	483	11	3064	216	8
3047	335	8	3065	378	4
3047	336	10	3065	216	10
3047	177	8	3400	232	7
3047	334	34	3400	202	2
3048	334	35	3401	202	8
3048	335	27	3401	232	34
3048	336	11	3402	200	9
3048	177	9	3402	401	32
3052	336	13	3402	400	12
3052	334	23	3403	396	9
3052	335	4	3403	200	15
3052	177	10	3406	396	10
3053	177	11	3406	395	1
3053	336	14	3408	115	10
3053	334	26	3408	202	9
3053	335	13	3410	200	3
3054	177	12	3410	118	3
3054	336	15	3410	491	1
3054	335	5	3410	400	14
3054	334	24	3410	115	12
3055	358	6	3412	285	11
3055	336	16	3412	281	10
3055	334	29	3413	395	2
3056	177	14	3413	201	8
3056	335	1	3417	395	12
3056	334	30	3417	338	2
3056	336	17	3417	461	5
3057	334	32	3420	338	15
3057	335	16	3420	461	6
3057	177	15	3420	466	A5
3057	336	18	3420	465	6
3058	336	19	3420	465	7
3058	334	31	3420	200	16
3058	335	25	3425	453	13
3058	177	16	3425	216	3
3059	336	20	3425	377	5
3059	177	17	3425	453	14
3059	177	13	3426	395	9
3059	334	28	3427	395	6
3059	335	6	3427	453	18
3060	336	21	3427	377	6
3060	335	9	3428	395	7
3060	177	18	3428	377	7
3060	334	27	3428	321	2
3061	334	14	3431	373	3
3061	343	7	3431	446	13
3062	358	1	3431	445	3
3062	358	3	3431	395	20
3063	358	9	3431	340	33
3063	358	2	3432	340	34

Column 1	Column 2	Column 3	Column 1	Column 2	Column 3
3432	373	4	3487	453	6
3432	446	25	3487	377	14
3432	200	4	3487	376	5
3432	445	4	3490	396	1
3435	378	6	3490	376	7
3435	371	5	3492	395	11
3435	395	14	3496	376	8
3435	334	3	3496	396	11
3435	434	6	3500	225	3
3435	333	30	3500	232	18
3438	202	1	3502	445	5
3438	115	32	3502	465	8
3438	118	4	3502	232	19
3445	232	38	3502	373	5
3452	434	7	3502	340	22
3452	333	19	3502	338	5
3452	400	13	3502	461	8
3452	378	7	3502	446	12
3460	333	7	3502	134	3
3460	378	8	3502	470	2
3460	377	8	3503	115	16
3460	434	8	3503	201	2
3460	455	3	3514	434	10
3460	305	10	3514	177	23
3461	378	9	3514	336	25
3461	305	22	3514	135	9
3461	434	9	3514	333	11
3461	455	6	3514	378	10
3461	377	9	3514	371	6
3461	333	35	3514	335	7
3468	254	2	3514	305	21
3468	253	2	3515	352	4
3468	286	11	3515	469	5
3469	253	5	3515	328	4
3469	395	4	3515	338	12
3470	253	6	3516	469	4
3470	253	11	3516	352	6
3470	216	13	3516	328	6
3471	453	16	3516	338	4
3471	395	17	3518	281	11
3471	377	10	3518	395	8
3471	395	19	3542	469	9
3474	175	1	3542	352	1
3475	401	34	3542	328	1
3475	232	13	3543	469	8
3475	401	26	3543	328	2
3484	377	11	3543	352	2
3484	378	12	4001	412	4
3485	377	12	4001	388	2
3485	378	13	4002	412	2
3486	377	13	4002	168	4
3486	378	14	4002	383	2

Column 1	Column 2	Column 3	Column 1	Column 2	Column 3
4002	232	45	4501	232	46
4008	444	A2	4502	411	4
4009	114	33	4502	232	49
4009	114	27	4503	282	10
4011	232	16	4503	232	20
4011	176	10	4503	411	5
4013	114	11	4504	400	5
4013	232	3	4504	232	52
4019	202	3	4505	400	9
4019	114	19	4505	232	23
4030	232	51	4506	400	20
4030	118	5	4506	400	22
4030	115	33	4507	252	5
4047	232	5	4507	400	6
4047	216	9	4508	252	6
4049	334	6	4508	400	4
4049	376	10	4509	232	40
4049	371	7	4509	252	2
4049	232	55	4509	400	10
4051	232	14	4510	400	1
4051	251	3	4510	232	50
4051	185	11	4511	400	19
4080	371	13	4511	281	12
4080	334	20	4517	525	1
4080	114	20	4517	176	11
4081	336	28	4517	285	6
4081	177	30	4517	282	1
4081	334	21	4518	285	7
4081	358	8	4518	282	2
4082	334	22	4518	376	12
4082	336	29	4520	196	3
4082	177	31	4520	276	3
4082	58	7	4521	276	4
4083	371	15	4521	196	4
4083	335	2	4522	276	5
4083	343	1	4523	276	6
4083	443	1	4524	276	7
4083	335	10	4525	276	8
4083	177	32	4526	196	5
4083	376	9	4527	196	6
4083	336	30	4528	196	7
4092	334	7	4529	196	8
4092	403	33	4532	276	9
4092	376	11	4532	196	9
4092	371	8	4535	408	9
4093	114	18	4535	284	8
4093	403	32	4535	281	13
4093	401	33	4537	394	7
4094	114	12	4537	197	4
4500	232	21	4538	197	5
4500	411	2	4538	394	1
4501	411	3	4540	185	12

Column 1	Column 2	Column 3	Column 1	Column 2	Column 3
4541	187	7	4605	378	11
4542	185	13	4605	402	9
4543	187	8	4614	377	15
4550	116	2	4614	403	21
4550	376	13	4614	453	17
4550	115	17	4619	470	3
4551	116	3	4619	403	3
4551	376	14	4619	465	13
4551	115	18	4619	232	41
4551	122	1	4619	334	11
4552	116	4	4619	338	21
4553	122	2	4619	461	13
4553	116	5	4619	371	9
4555	115	19	4620	377	16
4555	122	5	4620	285	1
4555	373	18	4620	282	5
4558	116	6	4620	454	4
4578	321	12	4621	282	6
4578	456	7	4621	285	2
4578	499	11	4621	377	17
4588	163	2	4621	454	5
4588	232	26	4622	455	4
4589	281	15	4622	321	3
4589	284	9	4623	321	4
4589	163	3	4623	455	5
4591	493	8	4628	321	5
4591	495	8	4628	456	5
4591	118	6	4628	499	1
4592	176	12	4629	321	6
4592	202	13	4629	456	6
4593	176	13	4629	499	2
4593	202	17	4630	499	3
4594	176	14	4630	321	7
4594	389	A3	4630	456	8
4595	282	3	4631	321	8
4595	176	15	4631	456	9
4595	525	6	4631	499	4
4595	285	9	4632	454	1
4596	525	5	4632	377	18
4596	282	4	4632	282	7
4596	185	14	4632	285	3
4596	389	A1	4633	282	8
4596	285	10	4633	285	4
4596	389	A5	4633	377	19
4599	281	16	4633	454	2
4599	163	5	4634	321	9
4601	115	22	4634	455	7
4601	495	9	4635	455	8
4601	493	9	4635	321	10
4601	402	8	4640	321	13
4601	163	1	4640	499	5
4602	402	6	4640	456	1



Column 1	Column 2	Column 3	Column 1	Column 2	Column 3
4641	456	2	4672	314	7
4641	499	6	4672	313	7
4641	321	14	4672	333	24
4642	456	10	4673	333	52
4642	321	15	4673	305	24
4642	499	8	4673	314	6
4643	456	11	4673	313	6
4643	321	16	4674	333	23
4643	499	9	4674	313	5
4655	376	16	4674	305	12
4655	397	3	4674	314	5
4656	397	4	4675	333	51
4656	175	2	4675	313	3
4657	397	5	4676	313	4
4657	175	3	4676	333	22
4660	383	4	4677	177	28
4660	397	7	4677	344	2
4660	480	7	4677	333	27
4660	480	8	4677	335	18
4660	547	15	4677	336	32
4660	478	3	4677	343	2
4663	167	1	4678	333	26
4663	145	1	4678	177	29
4663	530	7	4678	335	19
4664	145	2	4678	336	33
4664	530	11	4678	344	5
4664	167	2	4678	343	5
4665	145	3	4679	344	3
4665	167	10	4679	177	35
4665	530	4	4679	343	3
4666	478	4	4679	335	11
4666	168	6	4679	336	39
4666	173	3	4679	333	55
4667	530	5	4680	333	25
4667	167	9	4680	344	1
4667	145	5	4681	333	54
4668	145	11	4681	344	7
4668	530	12	4682	434	16
4668	167	3	4682	333	31
4670	135	5	4682	232	43
4670	136	1	4682	378	16
4670	305	15	4684	407	2
4670	314	2	4684	333	38
4670	333	4	4684	334	10
4670	313	2	4684	436	7
4671	313	1	4684	443	7
4671	333	3	4684	398	7
4671	314	1	4686	334	12
4671	135	6	4686	407	1
4671	305	2	4686	232	25
4671	136	2	4686	443	9
4672	305	11	4686	436	8

Column 1	Column 2	Column 3	Column 1	Column 2	Column 3
4686	436	9	4711	468	6
4686	398	8	4711	461	7
4690	352	12	4712	471	6
4690	469	3	4712	468	5
4690	328	12	4712	338	22
4691	398	2	4712	464	6
4691	443	3	4713	464	5
4691	443	4	4713	338	9
4691	436	2	4713	471	5
4691	411	8	4713	468	4
4691	335	22	4714	338	8
4691	333	36	4714	471	3
4691	177	33	4714	468	9
4691	336	36	4714	464	3
4692	411	9	4727	356	1
4692	333	9	4727	340	26
4692	336	37	4727	348	1
4692	398	3	4727	446	6
4692	443	2	4731	445	8
4692	436	3	4731	185	17
4692	335	12	4731	307	4
4692	177	34	4731	446	11
4693	334	13	4731	373	8
4693	411	7	4731	340	21
4693	371	14	4732	373	9
4693	333	37	4732	340	2
4693	436	4	4732	340	4
4693	398	4	4732	216	7
4693	376	17	4732	446	3
4696	307	6	4732	445	9
4696	434	18	4732	446	4
4696	378	18	4734	340	20
4696	333	50	4734	445	10
4697	334	17	4734	446	2
4697	307	7	4734	307	3
4697	185	15	4734	373	10
4697	334	16	4734	185	18
4697	305	23	4735	376	15
4697	378	19	4735	340	17
4697	434	19	4735	373	11
4697	371	11	4736	446	7
4697	333	44	4736	321	20
4697	216	5	4736	340	8
4697	441	7	4736	347	3
4706	189	16	4739	446	19
4706	547	16	4739	321	21
4710	468	10	4739	347	4
4710	471	8	4739	340	25
4710	471	4	4740	356	2
4711	338	10	4740	446	21
4711	464	7	4740	340	15
4711	471	7	4740	321	22

Column 1	Column 2	Column 3	Column 1	Column 2	Column 3
4740	348	2	4827	291	13
4740	347	5	4828	425	6
4741	340	13	4828	291	14
4741	347	6	4828	194	2
4741	321	23	4829	425	3
4741	446	8	4829	194	3
4742	446	20	4829	291	15
4742	340	31	4830	194	4
4742	321	24	4830	425	4
4742	347	7	4830	291	16
4751	340	11	4831	190	17
4751	446	10	4831	194	5
4751	356	3	4831	291	17
4751	348	3	4831	425	7
4753	347	8	4831	293	17
4753	321	32	4832	293	18
4753	340	5	4832	194	6
4753	340	6	4832	190	18
4754	321	33	4832	425	8
4754	340	12	4832	291	18
4754	347	9	4833	425	1
4755	321	34	4833	293	19
4755	347	10	4833	291	19
4755	340	30	4833	190	19
4756	376	18	4833	194	7
4756	445	12	4834	194	8
4756	340	23	4834	425	2
4756	373	12	4834	190	20
4756	446	23	4834	293	20
4757	376	19	4834	291	20
4757	340	24	4883	461	21
4757	373	13	4883	338	18
4760	189	17	4883	216	11
4760	290	17	4886	398	9
4760	547	17	4887	469	2
4761	290	18	4887	352	14
4761	189	18	4887	328	14
4761	547	18	4887	338	14
4764	253	4	4888	338	3
4764	286	12	4888	328	15
4764	254	1	4922	167	4
4771	197	1	4922	530	3
4771	277	1	4922	145	10
4773	197	2	4935	383	5
4773	277	2	4935	115	30
4775	197	3	4936	383	6
4775	277	3	4936	482	9
4788	441	8	4936	115	31
4788	378	20	4936	483	6
4788	216	4	4939	482	11
4827	425	5	4939	269	12
4827	194	1	4941	269	14

Column 1	Column 2	Column 3	Column 1	Column 2	Column 3
4941	482	13	5109	352	7
4953	288	9	5109	328	7
4953	286	14	5109	469	1
4953	176	16	5110	469	6
4953	281	14	5110	328	8
4953	284	11	5110	352	8
4960	338	23	5111	470	8
4980	478	5	5111	466	A2
4980	168	1	5116	483	4
4980	167	6	5116	269	7
4980	383	7	5117	482	7
4980	397	6	5117	269	2
4980	173	2	9001	223	5
4981	145	6	9003	482	10
4981	530	6	9003	269	10
4981	530	2	9005	115	28
4981	530	1	9005	201	11
4981	167	7	9007	114	3
4982	472	2	9007	201	16
4982	173	7	9009	376	20
4982	478	6	9009	347	11
4988	118	7	9009	356	4
4988	115	35	9009	446	18
4988	134	4	9009	348	4
5052	398	1	9009	340	19
5052	411	6	9009	340	27
5055	397	8	9009	340	16
5055	114	14	9009	321	29
5056	282	12	9010	253	9
5056	454	3	9010	254	4
5056	285	5	9010	286	17
5056	377	21	9011	177	24
5057	321	11	9011	537	2
5057	455	9	9011	336	41
5058	499	7	9011	334	2
5058	456	3	9025	201	17
5058	321	17	9025	202	20
5059	456	12	9025	177	6
5059	321	18	9107	216	2
5059	499	10	9108	185	20
5060	321	19	9108	307	2
5060	499	12	9300	530	10
5060	456	4	9300	145	12
5061	547	20	9300	167	8
5061	277	4	9300	530	9
5061	394	8	9300	167	5
5062	394	2	M	200	11
5062	277	5	M	530	8
5063	547	6	M	493	12
5063	394	5	M	495	11
5063	387	9	M	145	13
5065	547	19	M	495	12

Column 1	Column 2	Column 3	Column 1	Column 2	Column 3
M	394	9	M	480	5
M	348	5	M	525	8
M	453	10	M	118	8
M	328	16	M	401	5
M	333	1	M	116	7
M	453	11	M	163	6
M	284	12	M	232	28
M	453	12	M	252	1
M	290	16	M	122	4
M	321	28	M	401	3
M	288	12	M	277	6
M	334	1	M	547	21
M	389	A2	M	293	7
M	114	C	M	285	12
M	114	D	M	232	39
M	478	9	M	376	21
M	468	15	M	176	21
M	321	27	M	197	6
M	396	13	M	402	4
M	135	7	M	402	3
M	397	9	M	385	12
M	403	35	M	175	6
M	286	18	M	473	4
M	269	11	M	472	4
M	338	25	M	185	21
M	482	4	M	385	10
M	483	12	M	427	3
M	253	3	M	427	1
M	187	12	M	446	14
M	202	5	M	134	2
M	115	C	M	388	4
M	115	D	M	426	4
M	401	31	M	383	12
M	347	12	M	281	18
M	387	12	M	194	12
M	200	5	M	305	14
M	424	8	M	491	3
M	223	6	M	143	3
M	483	5	M	144	3
M	200	6	M	496	4
M	493	11	M	403	1
M	173	5	M	338	13
M	190	7	M	161	3
M	168	3	M	269	3
M	291	7			

**2.4 SUBDIAGRAMS OF CIRCUIT DIAGRAM 1316630/ 05**

- A Voltage in front of and behind the contact
- B Earth-connection overview
- 1 Charging circuit / Starting motor / Contact switch / Starter switch
- 2 Tachograph
- 3 Glow plugs / Glowing / Afterglowing
- 4 Direction indicators and warning lights
- 5 CTE-2
- 6 Dip-3
- 7 CWS-2
- 8 Light switch / Rear/side marker and parking lights FA
- 9 Light switch / Rear/side marker and parking lights FT
- 10 Dipped beam / Main beam and high-beam headlights
- 11 Front and rear fog lights
- 12 Back-up light
- 13 Gearbox and gate safety
- 14 Brake lights / Cab air suspension
- 15 Differential lock
- 16 Interior lighting
- 17 Interior lighting, Super Space Cab
- 18 Mirror heating and mirror adjustment
- 19 Control lighting
- 20 Heater fan / Air-conditioning system
- 21 Seat heating / Microwave
- 22 Signal horn / Cigarette lighter / Work light / Air dryer
- 23 ABS / ASC
- 24 DEB
- 25 Voith retarder
- 26 ZF intarder
- 27 AGS
- 28 E-gas 3
- 29 ECS-DC
- 30 DCI
- 31 ASL-V
- 32 ASL-G
- 33 Headlight-height adjustment
- 34A ECAS-2 (4x2)
- 34B ECAS-2 (6x2)
- 35 Converter / Radio
- 36 Automatic windows / Central door locking / Roof hatch
- 37 Mechanical lifting gear
- 38 Gearbox PTO
- 39 Wipe-wash system
- 40 Eberspächer D1LC / D3LC Compact auxiliary heating
- 41 Webasto auxiliary heating, Thermo 90
- 42 Connector sockets FT, diagnostic connector, alarm connector
- 43 Connector sockets FA, diagnostic connector, alarm connector

## A VOLTAGE IN FRONT OF AND BEHIND CONTACT

### VOLTAGE IN FRONT OF CONTACT

A constant voltage is applied to both the Pertinax block and connector 233 pin 2 through wire 1000 and connector 114 (pins A and B). This wire is NOT fuse-protected. It can only be made dead by disconnecting the battery leads or by disconnecting connector 114.

### VOLTAGE BEHIND CONTACT

A voltage is applied to the Pertinax connection block through the starting motor (point 30) and the alternator (B+). This connection point can be connected to wire 1010 through contact relay G0105.

This wire is NOT fuse-protected.

### OPERATION

If the contact/starter switch (C539) is switched to the "accessories" position (connection between points 1 and 6), voltage is applied through wire 1130 to relay G178.

If the contact/starter switch (C539) is switched to the "contact" position (connection between points 1 and 4), the relay is activated through wire 4001.

This relay then connects wire 1000 (voltage in front of contact) to wire 1010 (voltage behind contact).

If the contact/starter switch (C539) is turned further against the spring pressure (connection between points 1 and 2), relay G015 remains activated and the starting-motor relay (B010) is also activated. The starting motor will now start operating.

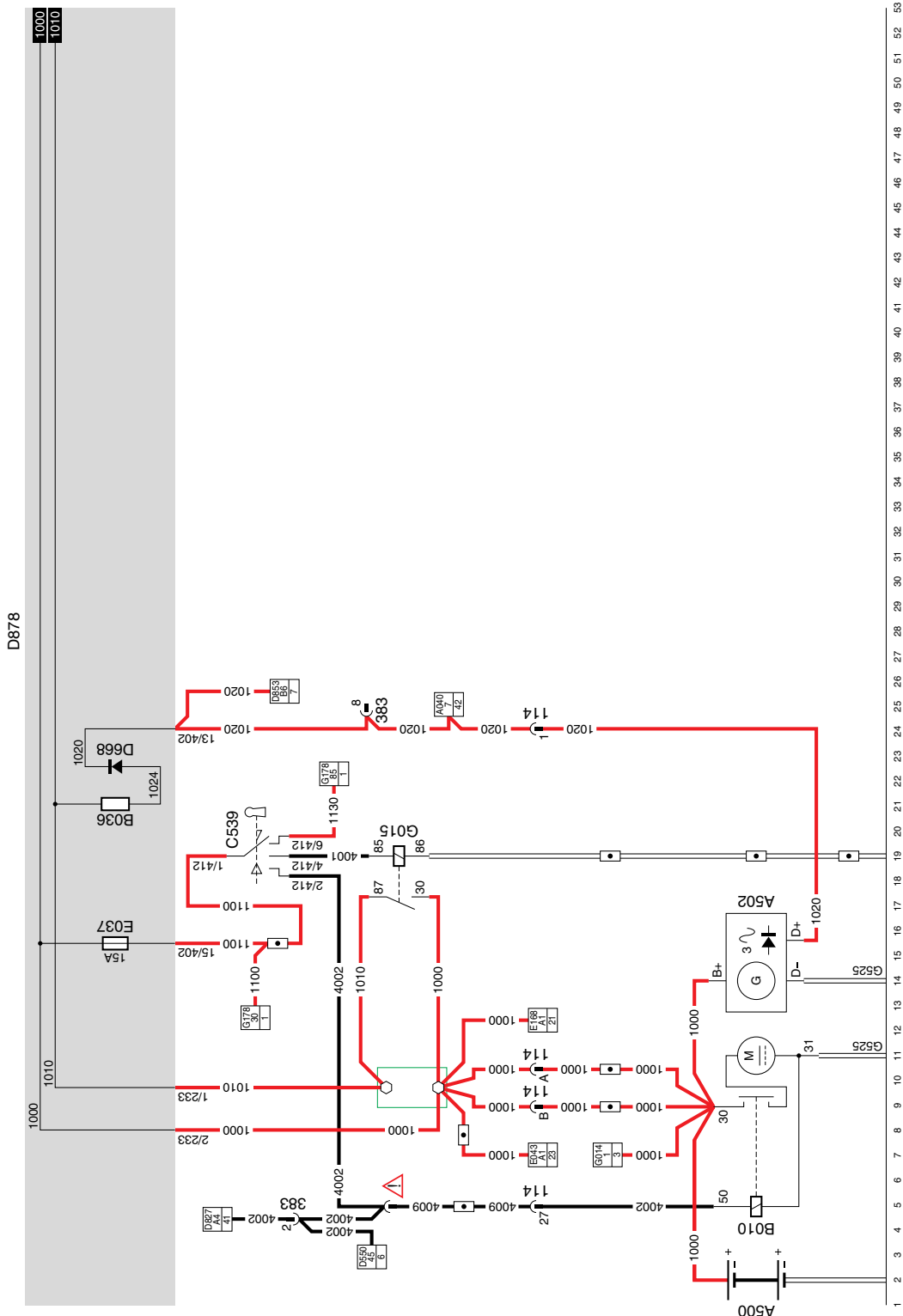
If the starter key is released, the contact switch will automatically return and remain in the "contact" position. The starting motor (B010) is no longer activated.

### VARIANTS

#### Location

- 6 Wire 4009 only applies in the case of a VF engine.

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A








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EL000092

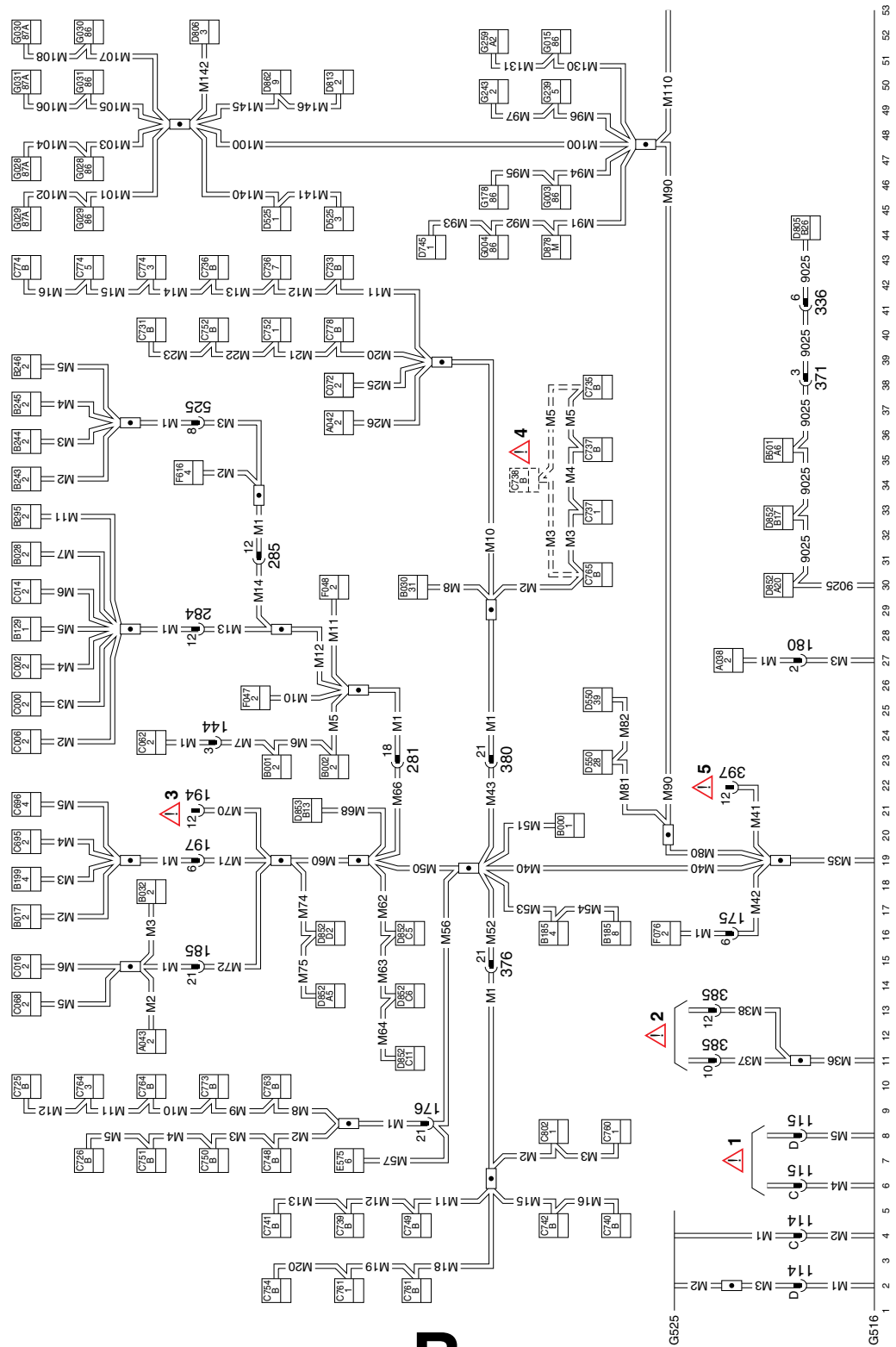


**B EARTH-CONNECTION OVERVIEW**

This subdiagram provides an overview of all earth connections with the wire numbers and connector points.

G 525	1	=	Central earth flywheel housing motor
	1	=	Earth connection to chassis
	2	=	Accessory connection in central cabinet, right.
	3	=	Overhead-cover wiring connection Depending on cab type
	4	=	Cruise control connection, VF engine
	5	=	Heater-wiring connection
	6	=	Auxiliary-heating connection Connector 383: Webasto Thermo 90 Connector 483: Eberspächer D1LC / D3LC "compact"
	7	=	Cooling-drawer connection

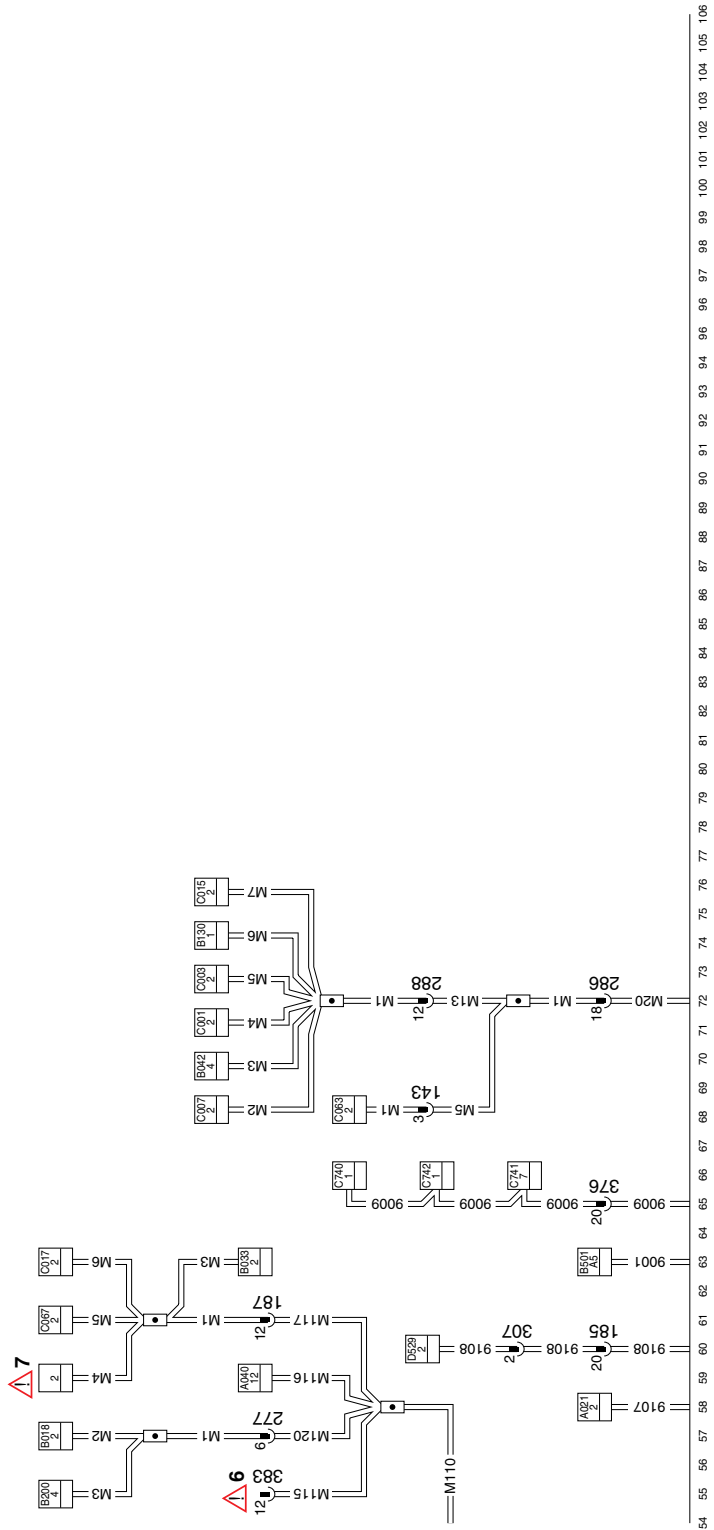
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B

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**B**

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**10**

## 1. CHARGING CIRCUIT / STARTING MOTOR / CONTACT/STARTER SWITCH

### CONTACT CIRCUIT

If contact/starter switch C539 is turned (contact 1 is connected to pin 6), the accessories relay (G178) will be activated.

Voltage is now applied through fuse E037, switch C539 and wire 1130 to contact 85 of relay G178. Because relay G178 is activated, a connection is made between contacts 30 and 87 and a voltage is applied through fuse E027 and wire 1106 to pin 1 of the electronic converter 24 V/12V. At the same time a voltage is applied through fuse E052 and wire 1110 to the electronic unit of the seat adjustment on co-driver's side (B202, pin 2) (if fitted), to the electronic unit of the seat adjustment on driver's side (B197, pin 2) (if fitted), and to pin Pn on the work light switch (C625).

If the vehicle contact is turned off, no voltage is applied to connection point 42. As a result, pin 55 of the CTE-2-unit will be connected to the supply voltage for 3 minutes, causing the engine stop/engine brake valve (B082) to become activated.

If the vehicle is switched to contact again, the engine stop/engine brake valve (B082) is deactivated again.

For more information on activating the engine brake: see system manual

### START CIRCUIT

If contact switch C539 is turned (contact 1 is connected to contacts 4 and 6), contact relay G015 is activated through wire 4001. If the contact switch is turned into the "starting" position, a connection between points 1 and 2 is made in this switch. The supply now runs from the batteries through fuse E037, connection 1-2 of the contact/starter switch and wire 4002 to connection point 50 of starting motor B010. The relay coil is located between points 50 and 31 (earth) and will supply the starting motor with voltage through connection points 30 and 31, as a result of which the motor will start operating. Voltage is also applied to pin 45 of the CTE-2 through fuse E037, wire 1100, switch C539 (connections 1 and 2), wire 4002, fuse E073 and wire 4003. Depending on the condition (engine speed exceeding approx. 400 rpm and supply voltage (battery voltage) on the CTE unit exceeding 17 V), glowing is activated during starting, on the understanding that preglowing has taken place first.

For more information on glowing: see system manual.

**CHARGING CIRCUIT**

If the contact is activated, voltage is applied to resistor generator D+ (B036).

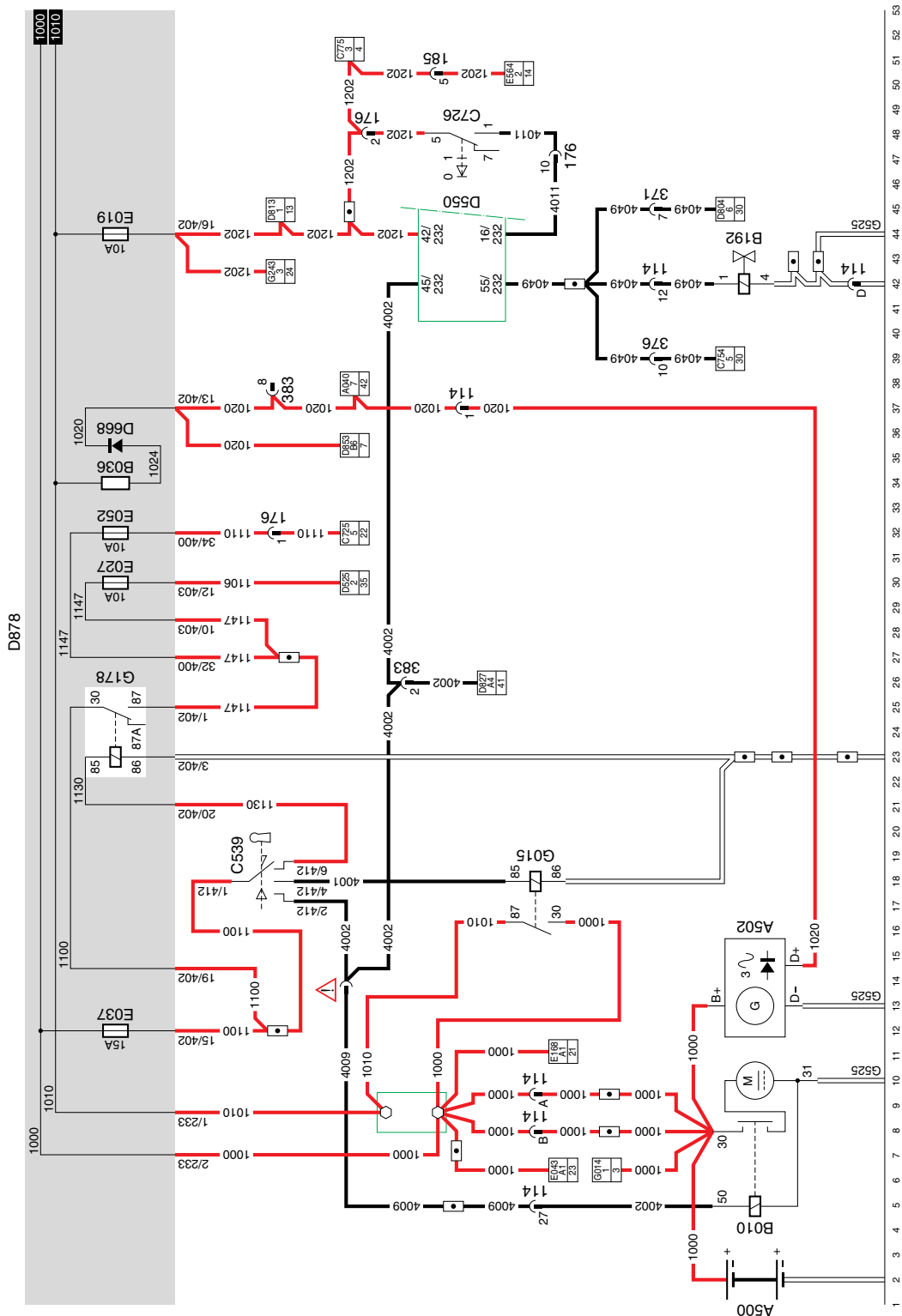
The other side of the resistor is connected to earth through the diode for generator safety (D+) (D668), wire 1020, D+ connection of the alternator and the integrated voltage regulator (A502) in the generator. This will cause a small current to run, causing a magnetic field in the alternator.

After starting, the voltage on clamps B+ and D+ will increase to approx. 28.4 V. This is caused by the fact that the regulator disconnects the earth connection in the regulator and connects it to the battery voltage. This voltage is also applied to wire 1020, so that the difference of potential over the resistor becomes 0 V. The magnetic field now disappears, so that the generator is not activated for a short time. This will reduce the voltage on outputs B+ and D+. The regulator is activated if the voltage drops below 27.6 V. This way, the generator voltage supply remains relatively constant. The batteries are fed by generator output B+.

**VARIANTS****Location**

14 Wire 4009 only applies in the case of a VF engine.

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## 2. TACHOGRAPH

The tachograph (B501) has two supplies; one in front of and one behind the contact relay (G015).

The non-activated supply voltage is applied to tachograph point 1/223 through fuse E023 and wire 1127.

This supply voltage is meant for the clock, among other things.

The activated supply voltage is applied to tachograph point 3/223 through fuse E143 and wire 1234.

The tachograph is connected to the vehicle speed sensor (F533) through points B1 (1/271), B2 (2/271), B3 (3/271) and B4 (4/271).

Pin B1 (1/271) represents the supply voltage for speed sensor (4-pin 1st) (F533).

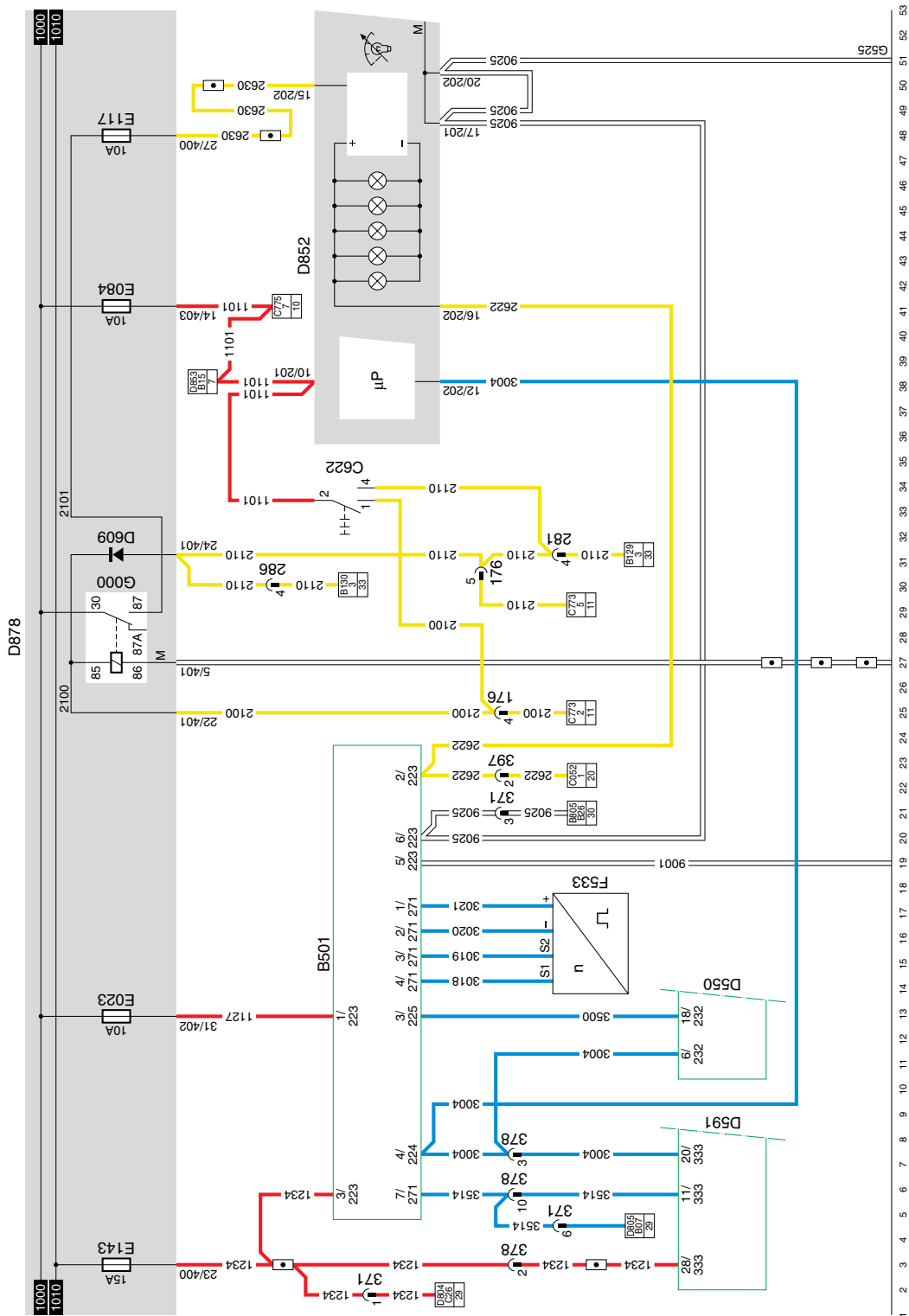
Pin B1 (2/271) is the earth connection for speed sensor (4-pin 1st) (F533).

Pins B3 (3/271) and B4 (4/271) of the tachograph receive two speed signals in opposite phase.

Pin 3/225 of the tachograph supplies a pulsating speed signal to the CTE 2-unit, connection point 18/232. For more information see system manual.

Pin B7 (7/271) of the tachograph supplies the same pulsating speed signal to one of the speed limiting systems: ASL-V (D597), ASL-G (D809), the E-gas 3-system (D591) or the ECS-DS-system (D805). This wire may not be interrupted or branched. All wiring connections this wire runs through must be provided with a seal.

There is also a speed signal (wire 3004) which is connected to tachograph connection point 4/224 through the instrument panel (D852). This is to connect a tachograph with speed registration.



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### 3. GLOW PLUGS / GLOWING / AFTERGLOWING

#### GLOWING

Glowing is only required if the outside temperature is below 5°C.

#### Automatic (16/232)

The automatic preglowing time is factory set to 45 seconds.

To protect the glow filaments against overheating, the circuit of this engine type contains a thermal protection switch (E550). The thermal protection switch opens at 110 -125°C.

#### Afterglowing

The after-glowing function is applied in Euro-2 engines. The glowing time is factory set to 120 seconds. Afterglowing is started approx. 3 seconds after loss of voltage at connection point 45 (starting signal).

Afterglowing only takes place if:

- Preglowing has taken place.
- The engine speed exceeds approx. 400 rpm.
- The supply voltage (battery voltage) to the CTE unit exceeds 17 V.

During afterglowing the CTE unit checks both the engine speed and the supply voltage. If the engine speed falls below approx. 400 rpm or if the supply voltage (battery voltage) falls below approx. 17 V, the afterglowing is interrupted.

#### Glowing while starting

During a "starting" action voltage is applied to pin 45 of the CTE-2 through wire 4002. Depending on the condition (engine speed exceeding (6/232) approx. 400 rpm and supply voltage (battery voltage) (42/232) on the CTE unit exceeding 17 V), glowing is applied during starting on the understanding that preglowing has taken place first.

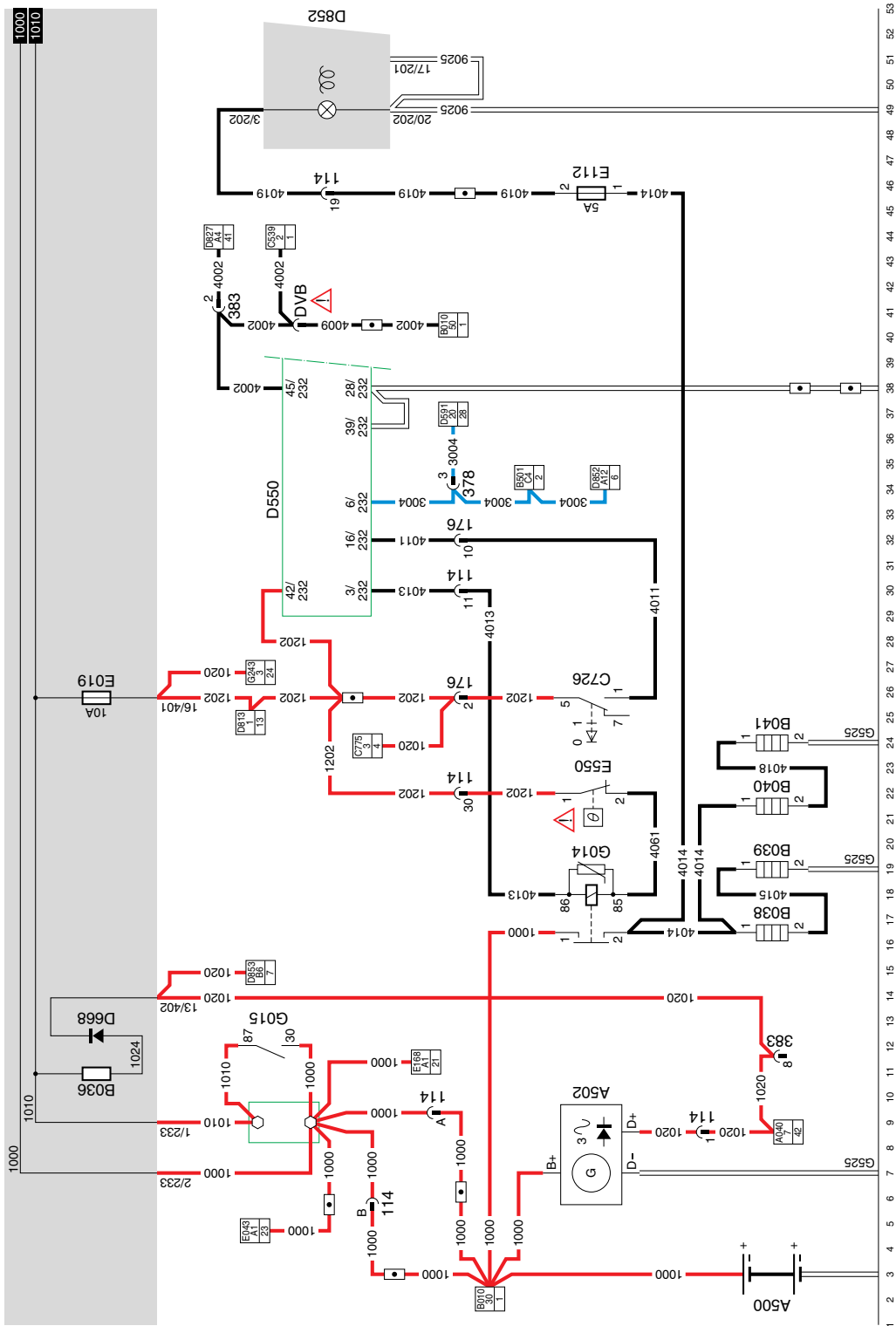
#### VARIANTS

##### Location

- 21 Component E550 is **not** present in VF engines.
- 41 Wire 4009 only applies in the case of a VF engine.

**SEE THE SYSTEM MANUAL FOR MORE INFORMATION**

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## 4. DIRECTION INDICATORS AND WARNING LIGHTS

### WARNING LIGHTS

A supply voltage is applied to connection point 6 of warning-light switch C765 through fuse E108. By activating the warning light/direction indicator switch the supply voltage is applied to point 37 of the CTE-2.

The CTE 2 now supplies a square-block voltage through point 4 to lights C014, C016 and C018 (all on the left side) and through point 31 to C015, C017 and C019 (all on the right side), as a result of which these lights start blinking simultaneously. The warning lights also function if the contact is not activated.

CTE-2 (point 35) also supplies a square-block voltage to warning light/direction indicator switch C765 (to point 1), causing the LED in the switch to blink also.

### DIRECTION INDICATORS

#### Left

If the direction indicator switch (C775) is activated to the left (connection between points 3 and 2), the supply voltage is passed on to point 53 of the CTE-2 through wire 2002. Subsequently the CTE-2 supplies a square-wave signal through point 4 to C014, C016 and C018 (left direction indicators) and through point 2 to connector socket A000 pin 3 (in the case of an FA) or A002 pin 3 (in the case of an FT). Every time a pulse is supplied to point 4 of the CTE-2, the lights will blink briefly.

#### Right

If the direction indicator switch (C775) is activated to the right (connection between points 3 and 1), the supply voltage is passed on to point 24 of the CTE-2 through wire 2001.

Subsequently the CTE-2 supplies a square-wave signal through point 31 to C015, C017 and C019 (right direction indicators) and through point 30 to connector socket A000 pin 5 (in the case of an FA) or A002 pin 5 (in the case of an FT). Every time a pulse is supplied to point 31 of the CTE-2, the lights will blink briefly.

The CTE-2 (points 7 and 34) also supplies a signal to the instrument panel.

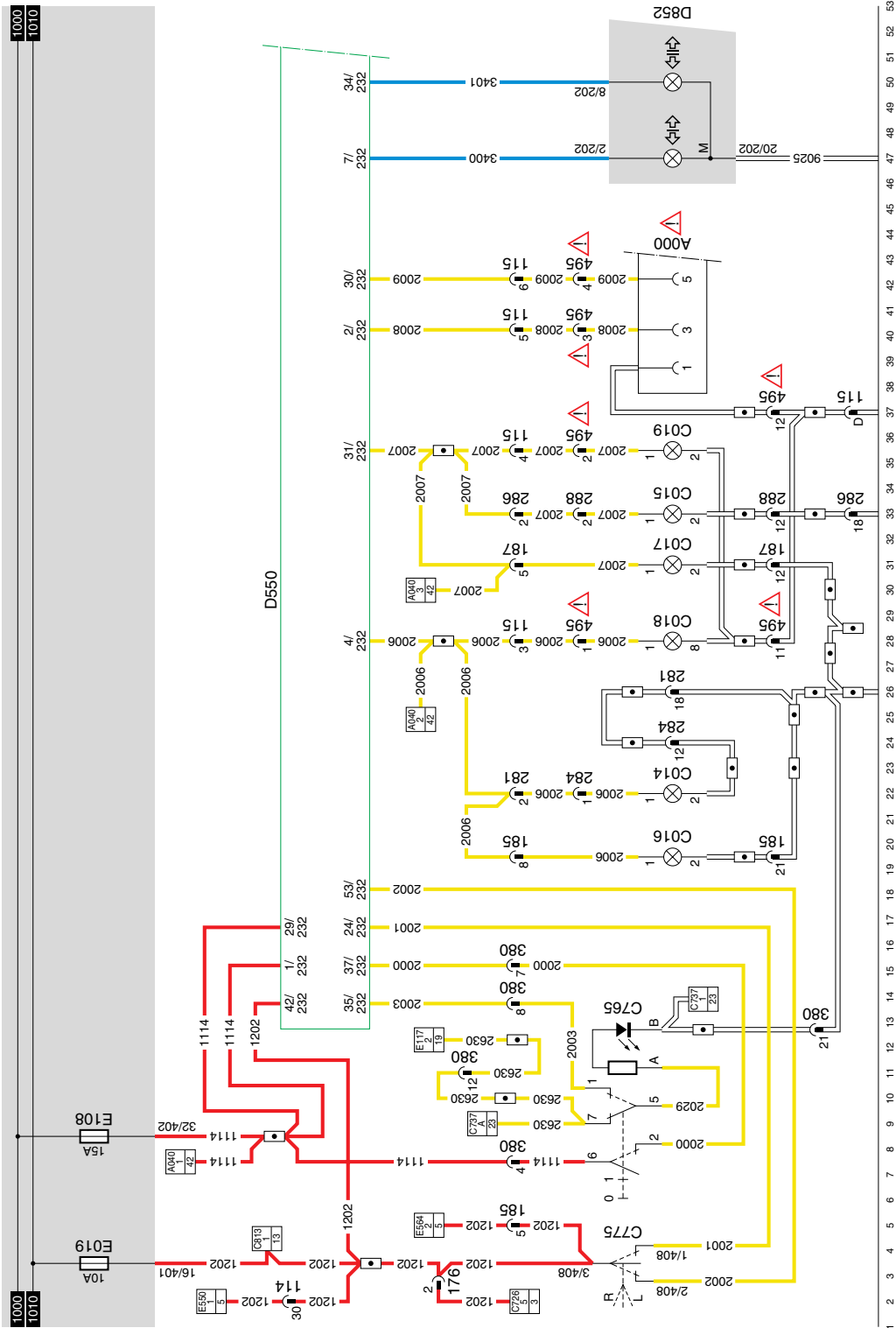
If the direction indicator installation functions properly, the lights for the truck (2/202) and the trailer (8/202) will light up.

## VARIANTS

### Location

29,37,38,43,42	Connector 495 is only used in the case of an FA. Connector 493 is used in the case of an FT.
44	Connector A000 is used for an FA, connector A002 for an FT.

**SEE THE SYSTEM MANUAL FOR MORE INFORMATION**



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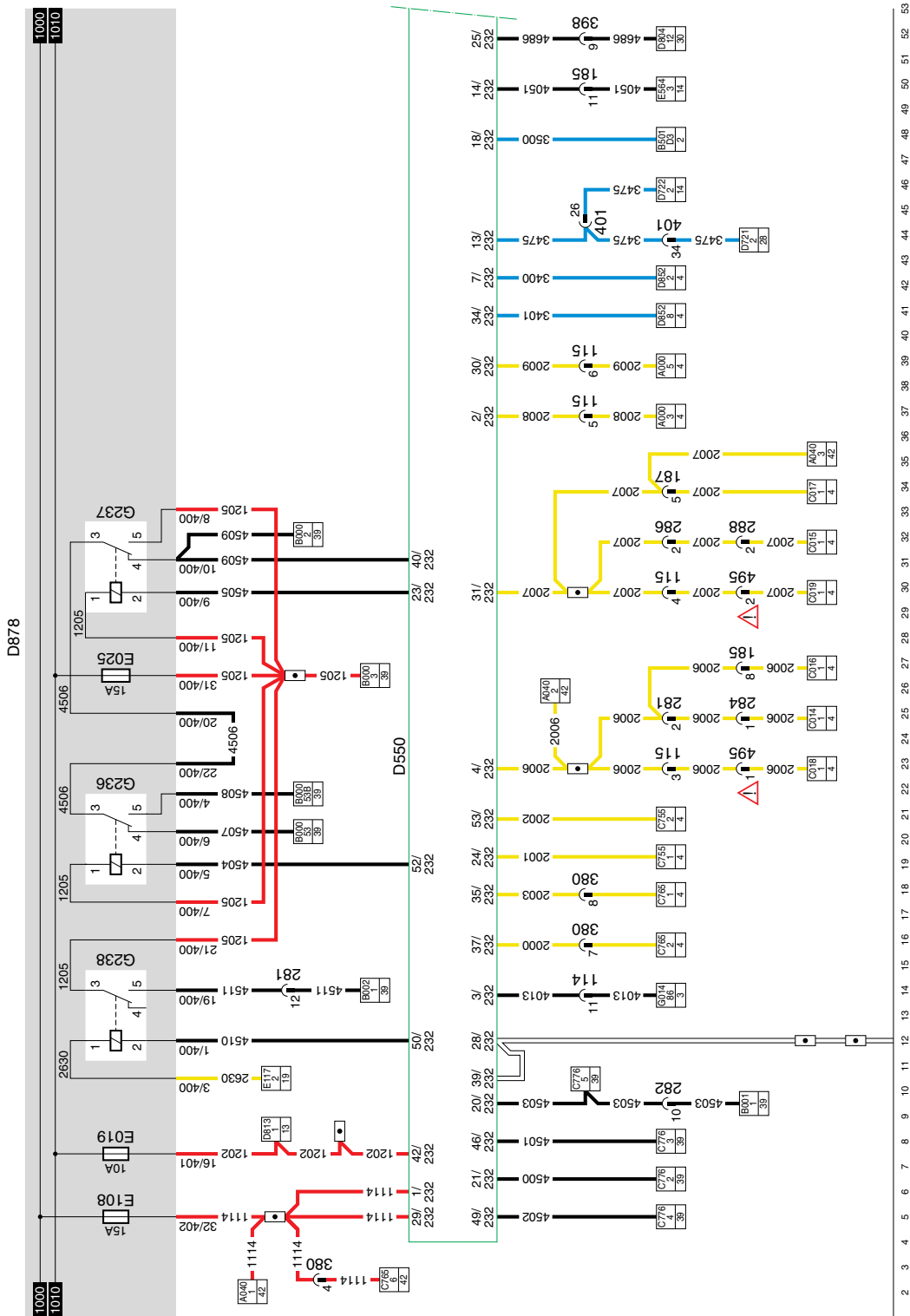
## 5 CTE-2

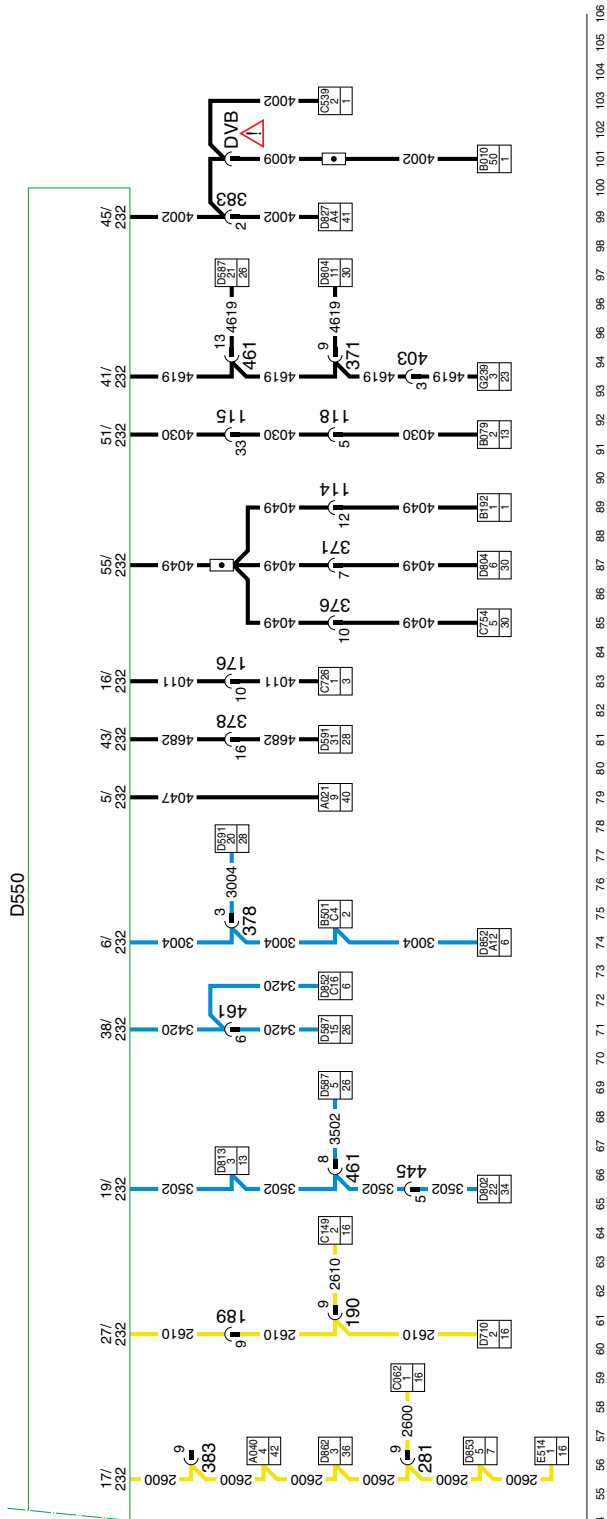
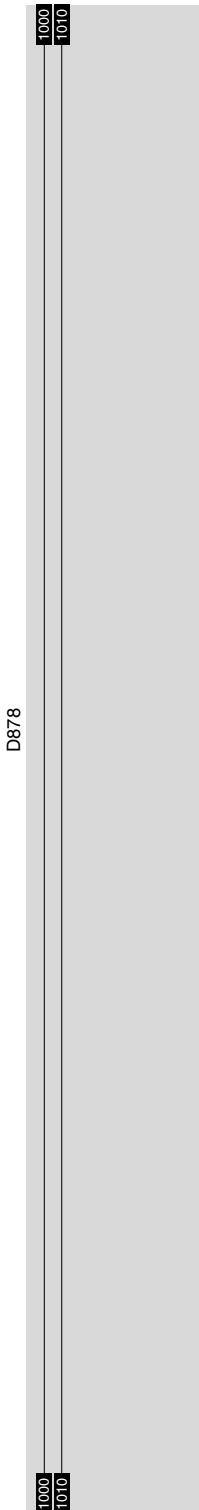
### VARIANTS

#### Location

- 22,29 Connector 495 is only used in the case of an FA.  
Connector 493 is used in the case of an FT.
- 44 Wire 4009 only applies in the case of a VF engine.
- 102 DVB: Only applies in the case of a VF engine.

**SEE THE SYSTEM MANUAL FOR MORE INFORMATION**





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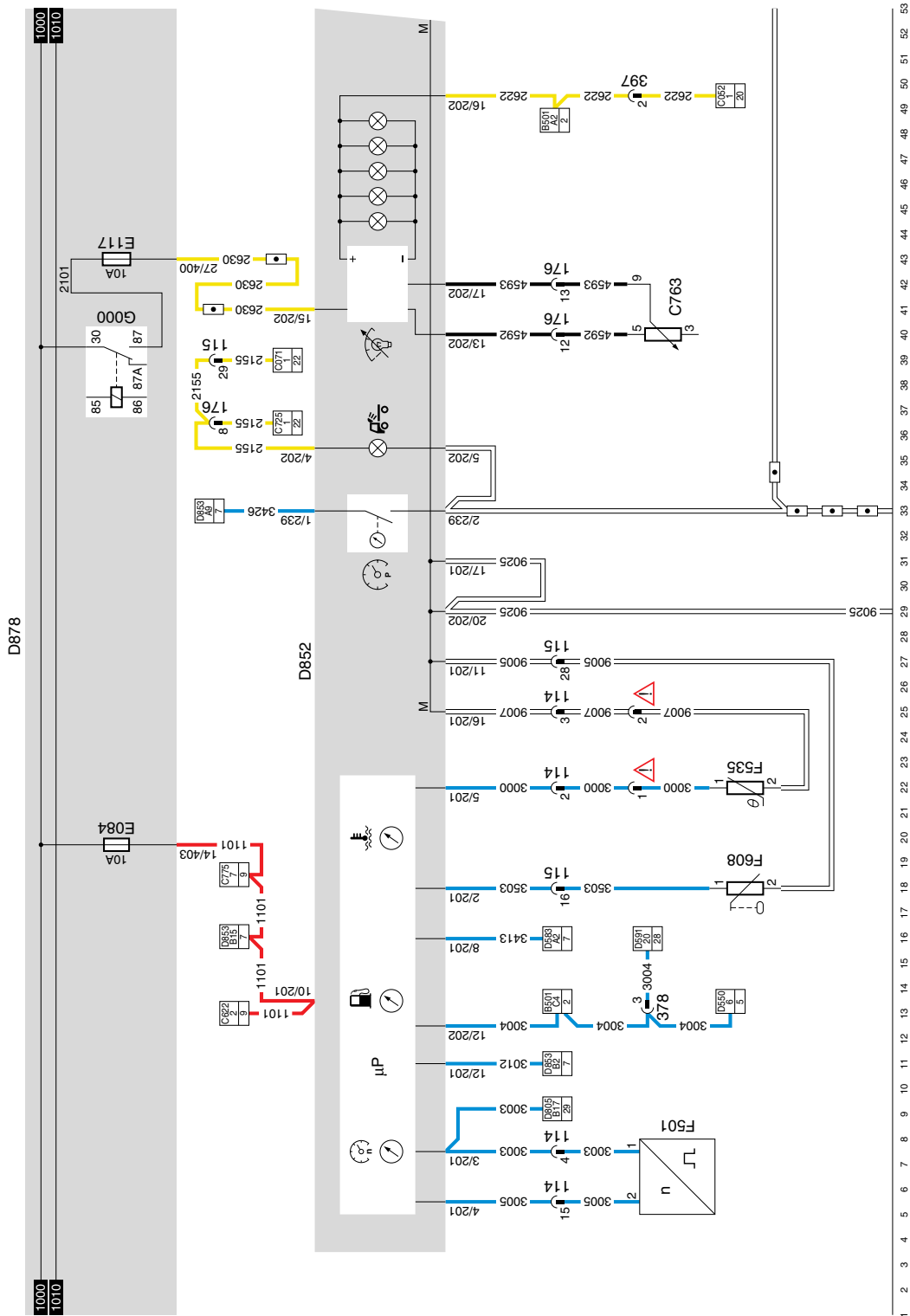
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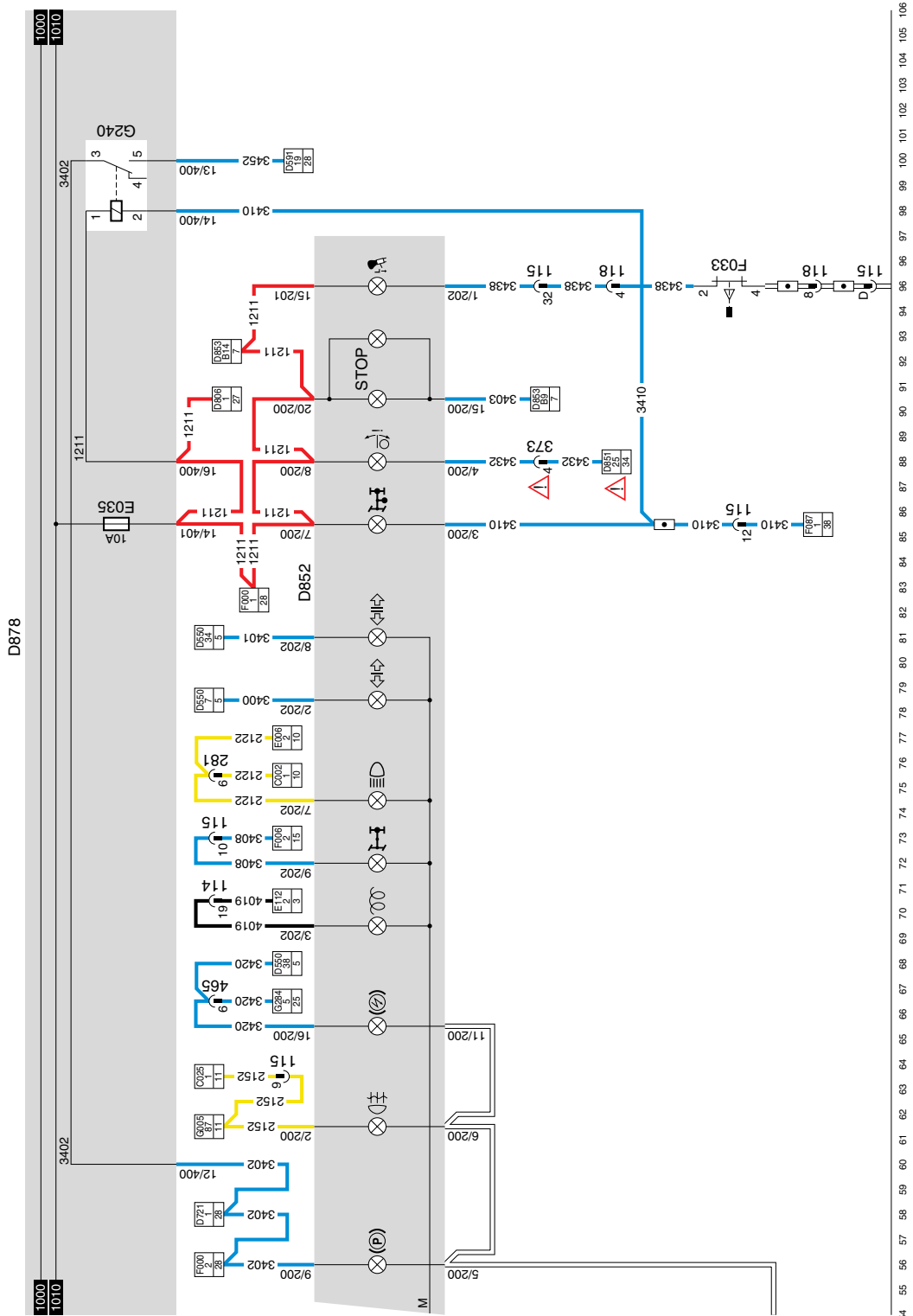


**6 DIP-3****VARIANTS****Location**

- 23,26 The engine coolant temperature sensor (F535) only applies if an intarder or a retarder has been installed.
- 87 For a 4x2: Connector 373 with component D851.  
For a 6x2: Connector 445 with component D802.

**SEE THE SYSTEM MANUAL FOR MORE INFORMATION**





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**7. C.W.S.-2**

**CWS** is the abbreviation for **C**entral **W**arning **S**ystem.

The system consists of an electronic unit (D853) and a digital display. The display is used to display error warnings using symbols.

The CWS is connected using two (2) black connectors.

Connector 395 (21-pin) and connector 396 (15 pin).

**Red warning symbol**

<b>Function</b>	<b>Connector + contact</b>	<b>Wire number</b>
air system storage pressure too low	395/9	3426
steering circuit	395/8	3518
engine oil pressure too low	395/10	3014
coolant temperature too high	396/2	3012
coolant level too low	396/3	3036
alternator charging current too high ( $> 30 \pm 0.5$ V)	396/6	1020
alternator charging current too low ( $> 20 \pm 0.5$ V)	396/6	1020
cab not locked	395/11	3492
engine management	395/14	3435

**Orange warning symbol**

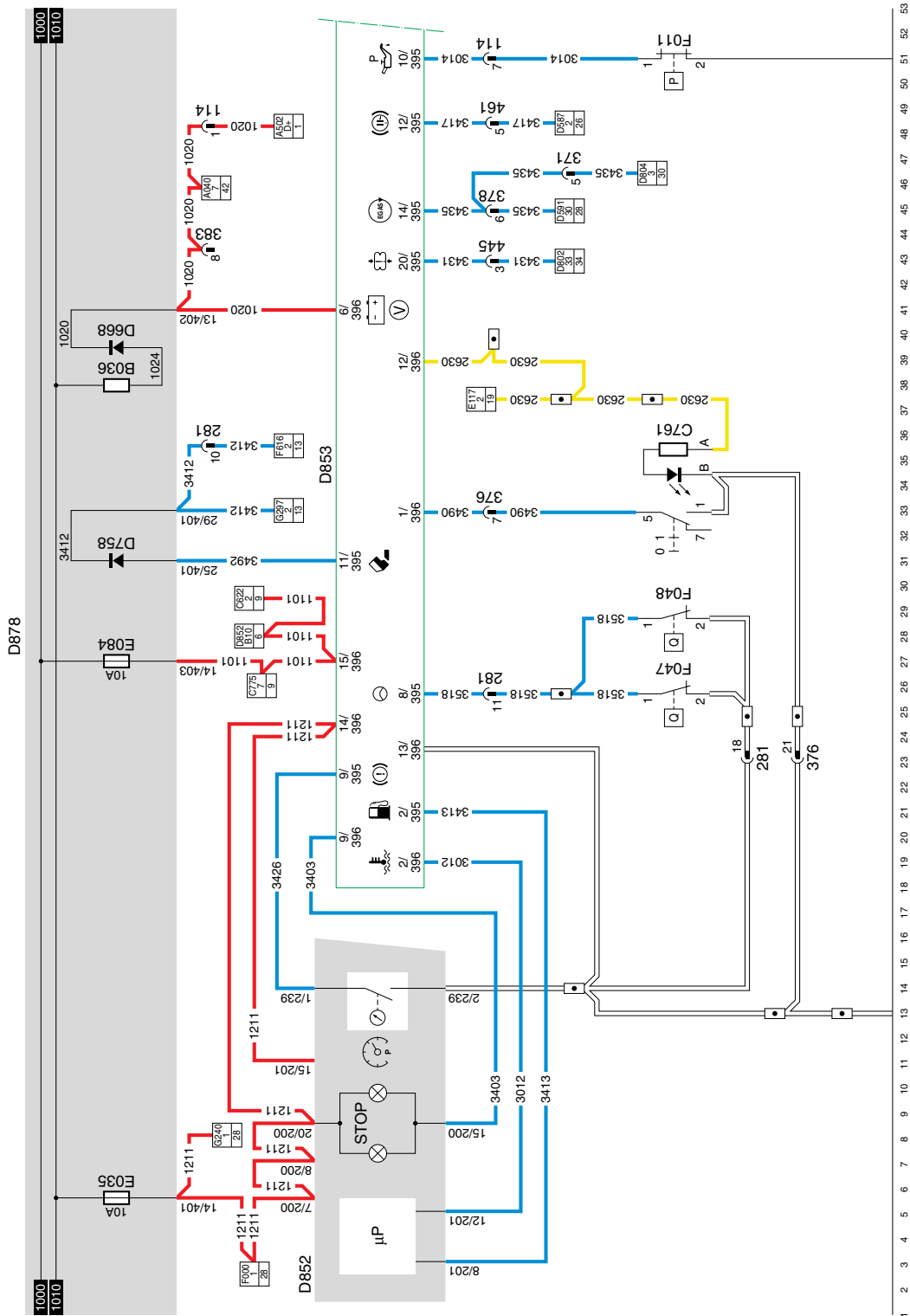
coolant level	395/5	3022
retarder malfunction	395/12	3417
truck ABS malfunction	395/6	3427
engine management malfunction	395/14	3435
trailer ABS malfunction	395/7	3428
ECAS malfunction	395/20	3431
blocked air filter	395/3	3017
fuel level (too) low	395/2	3413
AGS malfunction	395/4	3469
HGS fluid level (delayed switch)	395/19	3474
ASC	395/17	3471

**CONNECTOR POINTS CWS-2 UNIT****CONNECTOR 395**

<b>Pin No.</b>	<b>Designation</b>	<b>Wire number</b>
1	Interconnection to connector 396, pin 10.	3406
2	Input for alarm function "Fuel supply on reserve". Activated if the fuel supply meter reaches the red area. The instrument panel connects point A2 to earth.	3413
3	Input for alarm function "Fuel filter blocked". Activated if pneumatic switch F016 closes and pin 1 is connected to earth. If the input is 0 V (earth), the light concerned will light up.	3017
4	Input for alarm function "Lubricating system". Activated in the case of a malfunction. The AGS unit supplies a voltage to the CWS unit and will activate the light on the CWS panel.	3469
5	Daily check. If the input is connected to earth, the symbol will light up.	3022
6	Input for alarm function "ABS truck malfunction". Activated if the truck ABS system malfunctions. If the input is 0 V (earth), the light concerned will light up.	3427
7	Input for alarm function "ABS trailer malfunction". If the input is 0 V (earth), the light concerned will light up.	3428
8	Input for alarm function "Emergency circuit steering system" first (1st) circuit. Activated if fluid passage switch F047 closes and pin 2 is connected to earth. If the input is 0 V (earth), the light concerned will light up.	3518
9	Input for alarm function "Brake reservoir pressure". Activated if the brake reservoir pressure is too low (switch at reservoir pressure meter closed).	3426
10	Input for alarm function "Oil pressure". Activated if pressure switch F011 closes as a result of an insufficient oil pressure. If the input is 0 V (earth), the light concerned will light up.	3014
11	Input for alarm function "Cab lock". Activated if switch F009 is closed. If the input is 0 V (earth), the light concerned will light up.	3492
12	Input for alarm function "Retarder".	3417
14	Input for alarm function "Engine management". Orange symbol: less serious malfunction. Red symbol: serious malfunction.	3435
17	Input ABS/ASC (D586). This lamp: blinks a few times when switching on the contact if the ABS/ASC traction switch (C737) is activated and lights up continuously if a malfunction occurs in this control.	3471
19	Input for alarm function "Fluid level HGS". Activated if switch F076 closes because the level is too low. If the input is 0 V (earth), the light concerned will light up after eight (8) seconds.	3474
20	Input for alarm function "ECAS defective".	3431

## CONNECTOR 396

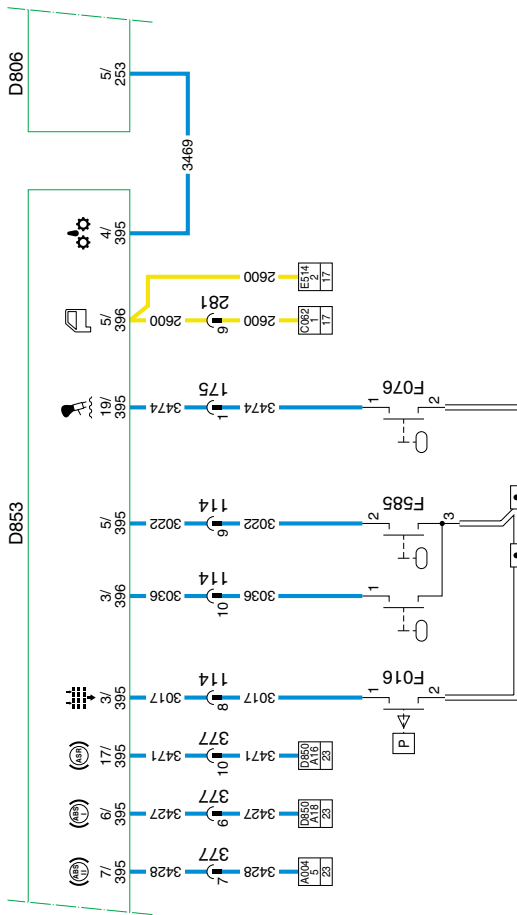
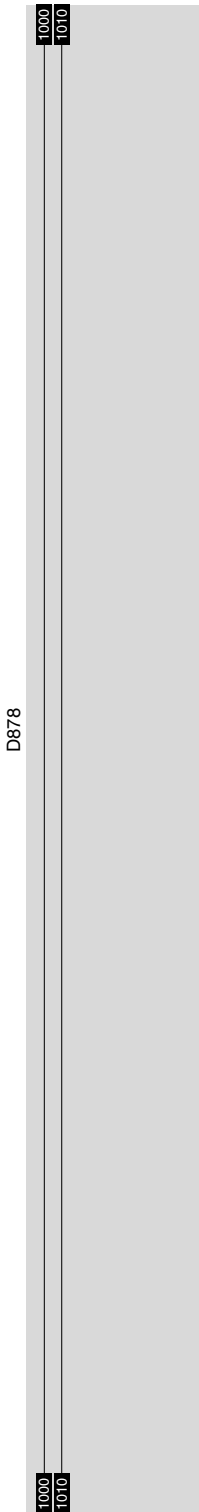
Pin No.	Designation	Wire number
1	Activation switch "I", more warnings.	3490
2	Input for alarm function "Coolant temperature too high". The signal on this input originates from the instrument panel DIP 2 (D816). If the input is 0 V (earth), the light concerned will light up.	3012
3	Coolant level too low. If the level is too low, the switch closes and the symbol lights up.	3036
5	Door on driver's side open/closed.	2600
6	Input D+ for alarm functions "Generator voltage too high/too low". Generator voltage too low: If D+ is $< 21 \pm 1V$ , the alarm function is activated. Generator voltage too high: If D+ is $> 30 \pm 1V$ , the alarm function is activated. The input receives its analog signal from D+ from the generator.	1020
9	Output central warning lamp (D004) red. The CWS unit will activate the lamp if a malfunction has been detected which must be repaired as soon as possible. The only exception to this rule is the malfunction signal: alternator voltage too low. If the input is 0 V (earth), the red light on the CWS panel will light up.	3403
10	Interconnection to connector 395, pin 1.	3406
12	Connection for control lighting.	2630
13	Earth connection.	M
14	Supply connection behind contact.	1211
15	Supply connection in front of contact.	1101



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54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 96 96 97 98 99 100 101 102 103 104 105 106



## 8. LIGHT SWITCH / REAR/SIDE MARKER AND PARKING LIGHTS FA

### REAR/SIDE MARKER AND PARKING LIGHTS

By switching the lighting switch (C622) into the first (1st) position (connection between contacts 2 and 1), the rear-light/side-light relay (G000) is activated through wire 2100.

A voltage is applied to the left and right side-lights and the left and right side-headlights respectively through the contacts of relay G000 and fuses E000 and E001. These lights will light up.



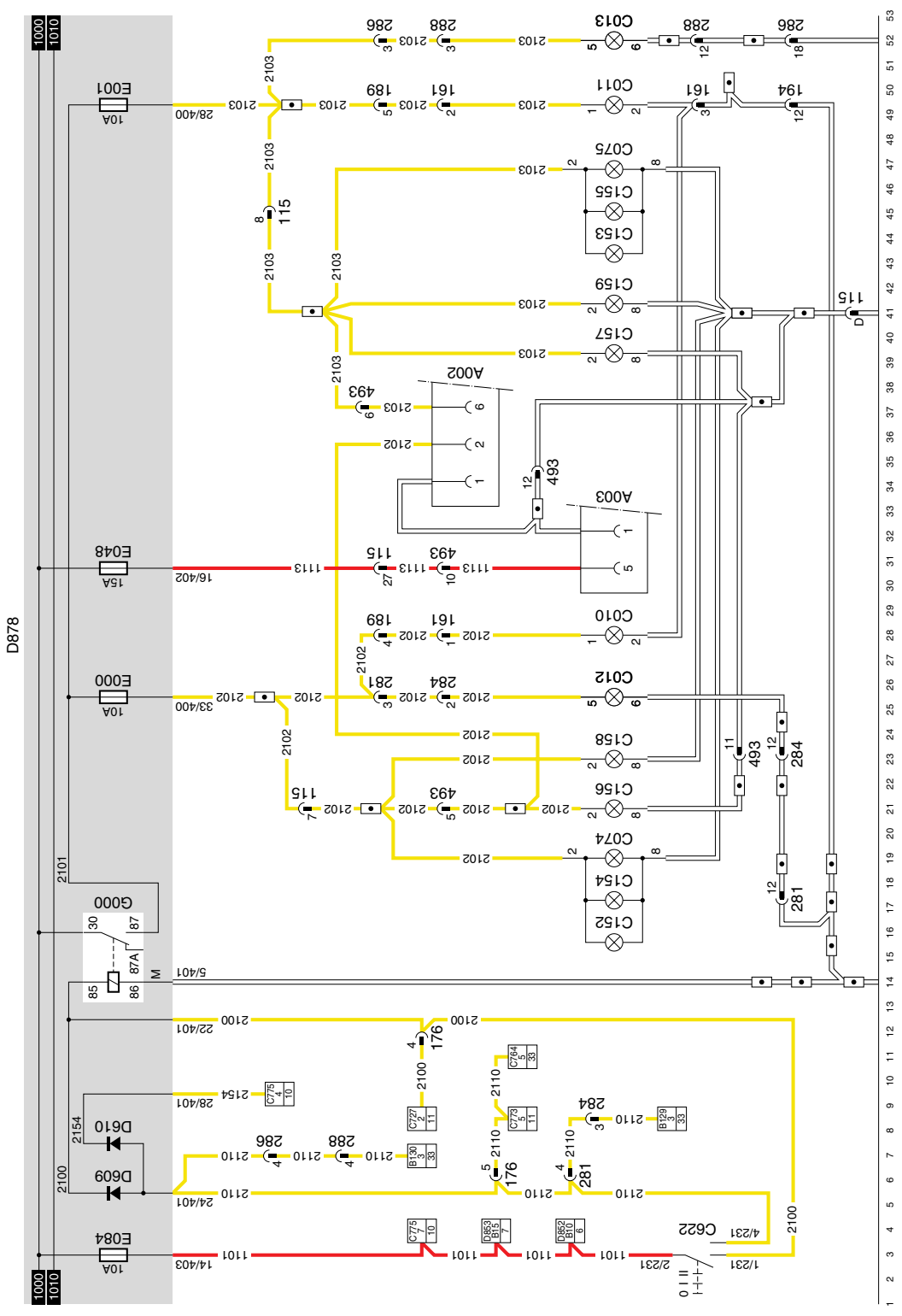
## 9. LIGHT SWITCH / REAR/SIDE MARKER AND PARKING LIGHTS FT

### REAR/SIDE MARKER AND PARKING LIGHTS

By switching the lighting switch (C622) into the first (1st) position (connection between contacts 2 and 1), the rear-light/side-light relay (G000) is activated through wire 2100.

A voltage is applied to the left and right side-lights and the left and right side-headlights respectively through the contacts of relay G000 and fuses E000 and E001. These will light up.

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## 10. DIPPED BEAM / MAIN BEAM AND HIGH-BEAM HEADLIGHTS

### DIPPED BEAM

The dipped beam is activated when the lighting switch (C622) is switched to the “dipped beam” position (connection between pins 2 and 4). Switch C775 on the steering column should be in the “dipped beam” position (connection between pins 4 and 5). As a result, relay G001 is activated causing a voltage to be applied through fuse E005 and wire number 2113 to the right dipped beam (C001) and through fuse E004 and wire number 2114 to the left dipped beam (C000).

The lights can burn without the contact relay (G015) being activated.

### MAIN BEAM

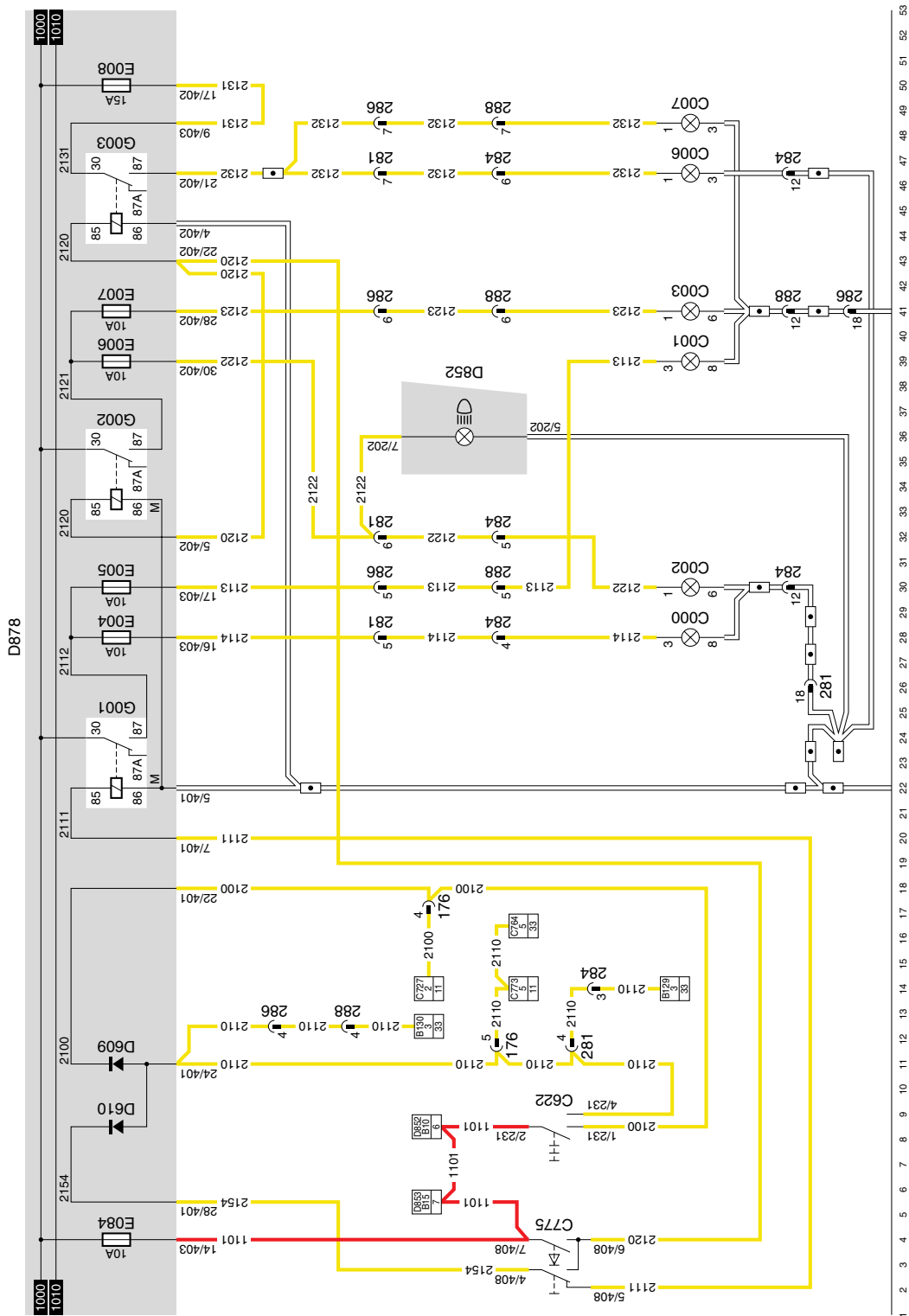
The main beam is activated if the lighting switch (C622) is switched to the “main beam” position (connection between pins 2 and 4). Switch C775 on the steering column should be in the “main beam” position (connection between pins 4 and 6). As a result, relay G002 is activated causing a voltage to be applied through fuses E006 and E007, and wire numbers 2122 and 2123 respectively, to the left main beam (C002) and to the right main beam (C003). A warning lamp will light up on the instrument panel.

### MAIN BEAM SIGNALLING

Signalling using the main beam is done using the return spring contact of switch C775 (connection between contacts 7 and 6), as a result of which G002 is activated. The main beam remains activated for as long as the switch is being operated.

### HIGH-BEAM HEADLIGHTS

The high-beam headlights, if mounted, are activated when the main beam is activated. Relay G003 is activated.



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## 11. FRONT AND REAR FOG LIGHTS

There are two possible situations:

- 1 Rear fog lights only.
- 2 Both front and rear fog lights.

### REAR FOG LIGHTS (standard)

If the lighting switch (C622) is switched into the "dipped beam" position (connection between the contacts 2 and 4), a voltage is applied to switch (C773) through wire 2110. As a result, relay G005 is activated. This ensures that a voltage is applied via E010 through relay contacts 30 and 87 to the left and right rear fog lights.

If the front fog lights are also connected, the situation changes as follows:

### FRONT AND REAR FOG LIGHTS

If the lighting switch (C622) is switched into the "parking light" position (connection between contacts 2 and 1), a voltage is applied to contact 2 of switch C727 through wire 2100. If the first position is now activated (connection between contacts 2 and 6), relay G004 is activated. As a result, a voltage is applied through E009, wire 2141, and contacts 30 and 87 of relay G004 to the left and right front fog lights (C008 and C009 respectively). In this position the rear fog lights cannot be activated.

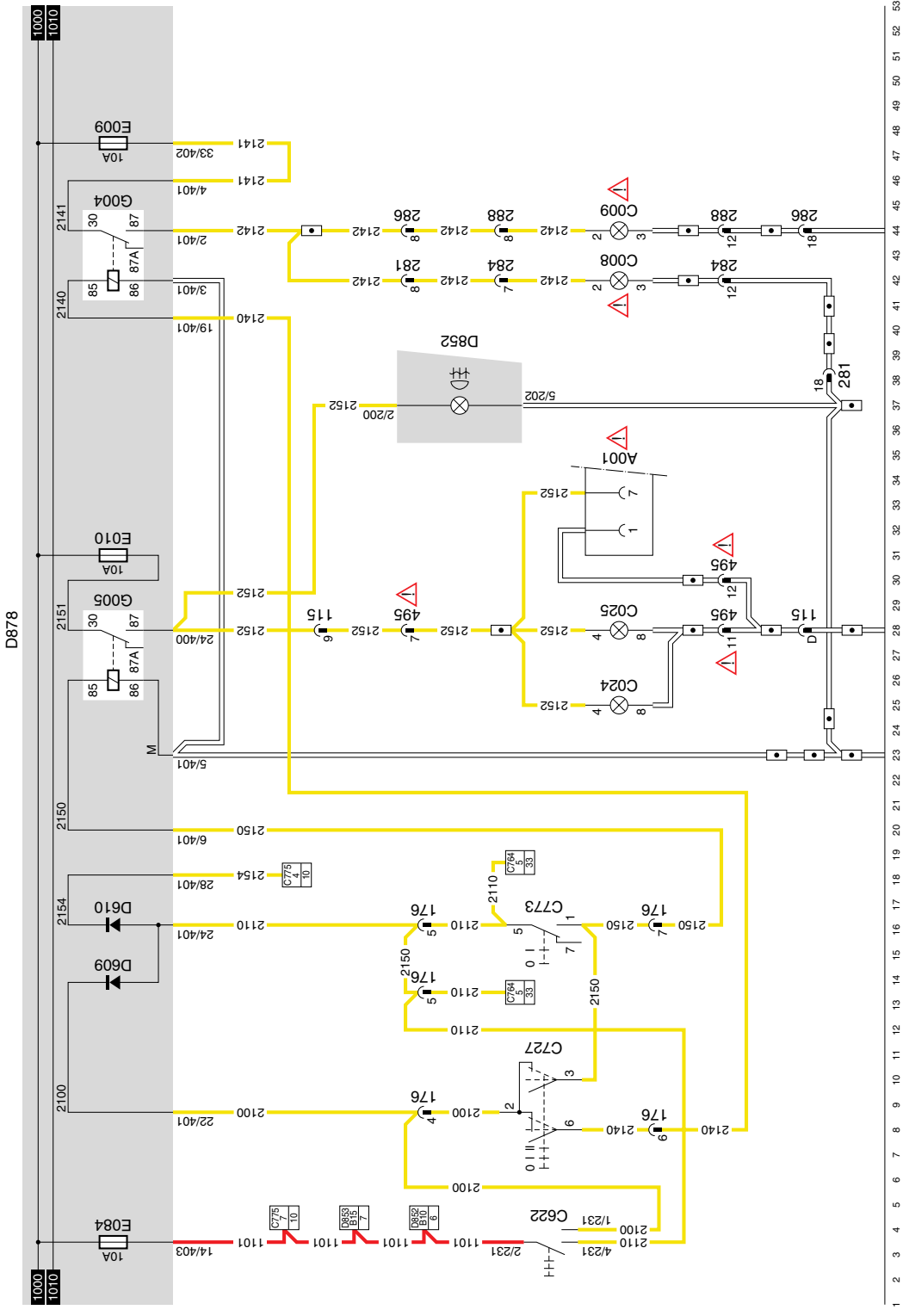
If the second position is now activated (connection between contacts 2 and 3), relay G005 is also activated. As a result, a voltage is applied through E010, contacts 30 and 87 of relay G005 and wire 2152 to the left and right rear fog lights (C024 and C025 respectively). In this position both the front and rear fog lights can be activated.

### VARIANTS

#### Location

- 27,29,31 Connector 495 is only used in the case of an FA. Connector 493 is used in the case of an FT.
- 36 Connector A001 is only used in the case of an FA. Connector A003 is used in the case of an FT.
- 41,46 The left and right front fog lights (C008 and C009 respectively) are **not** standard.

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## 12. BACK-UP LIGHT

If the contact is activated, the supply voltage is applied through E016 to the control switch for the rear back-up light (E501).

This switch is mounted in the gearbox. The contacts are closed if the gearbox is put into "reverse" gear position.

As a result, the voltage is applied through wire 4591 to back-up lights C026 and C027 and to the connector socket (A001).

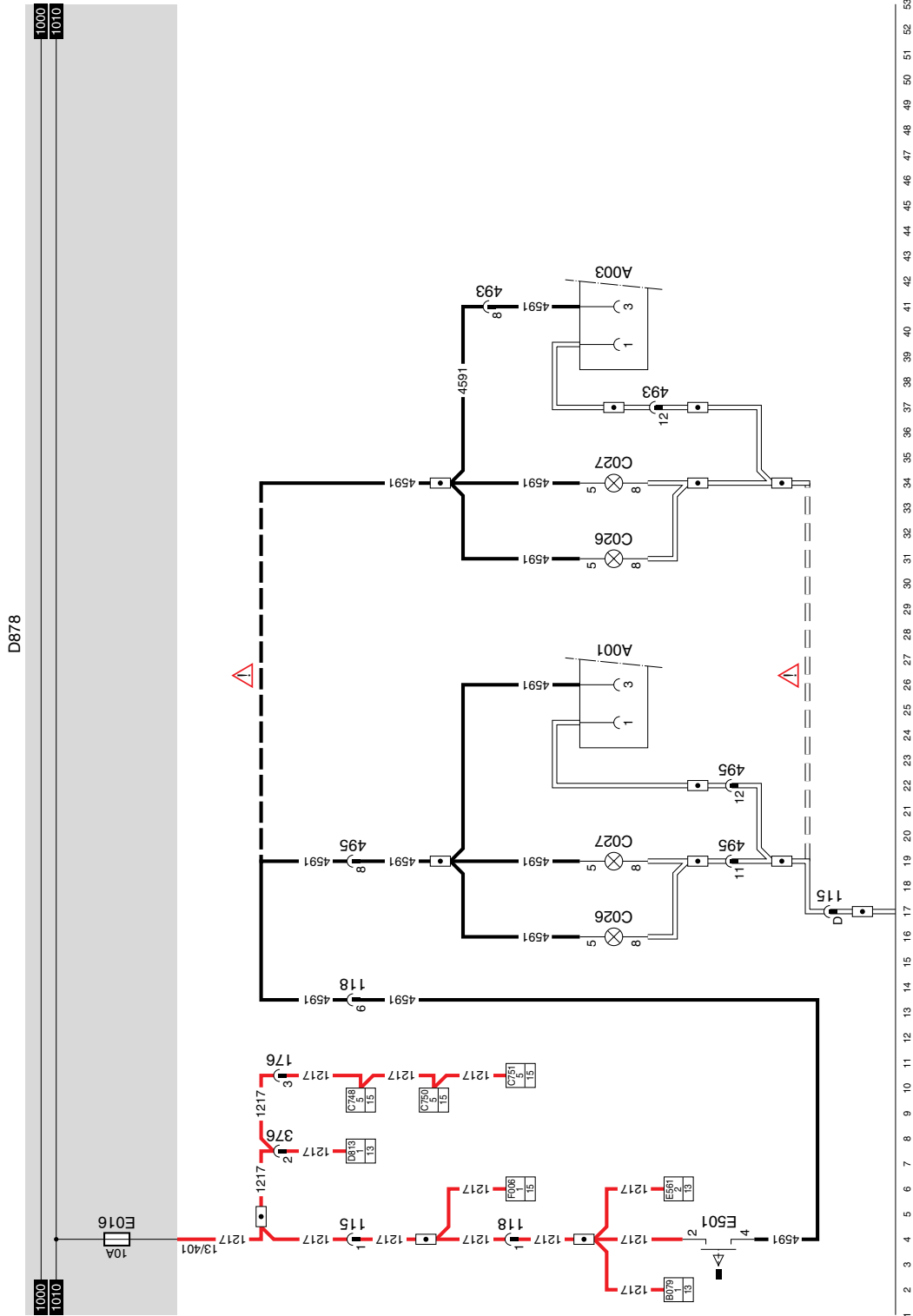
The above description applies to an FA version.

### VARIANTS:

#### Location:

26 The section between ref. bars 16 and 28 applies to an FA version. The section between ref. bars 31 and 42 applies to an FT version.

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### 13. GEARBOX AND GATE SAFETY

#### GROUP SAFETY GEARBOX (gears 1 -> 5)

This shift-down safety prevents shifting down into the lower group (gears 1, 2, 3 and 4) once the vehicle speed has exceeded approx. 30 km/h. The shift-down safety is installed on vehicles with single H-type gearing.

In the case of an electrical malfunction (voltage drop out), the safety is activated and the gears 1, 2, 3 and 4 cannot be re-engaged.

#### OPERATION

If the relay contact (G015) is closed, the supply voltage will be applied to the group safety valve ("single H" valve) (B079) through fuse E016. As soon as the CTE-2 unit of the tachograph receives a signal which corresponds to a vehicle speed of less than 30 km/h, the CTE 2 will switch the voltage to earth. As a result, the group safety valve is activated and shifting down into a lower group becomes possible.

If the vehicle speed exceeds 30 km/h, the CTE-2 unit will break the earth connection and shifting down is no longer possible.

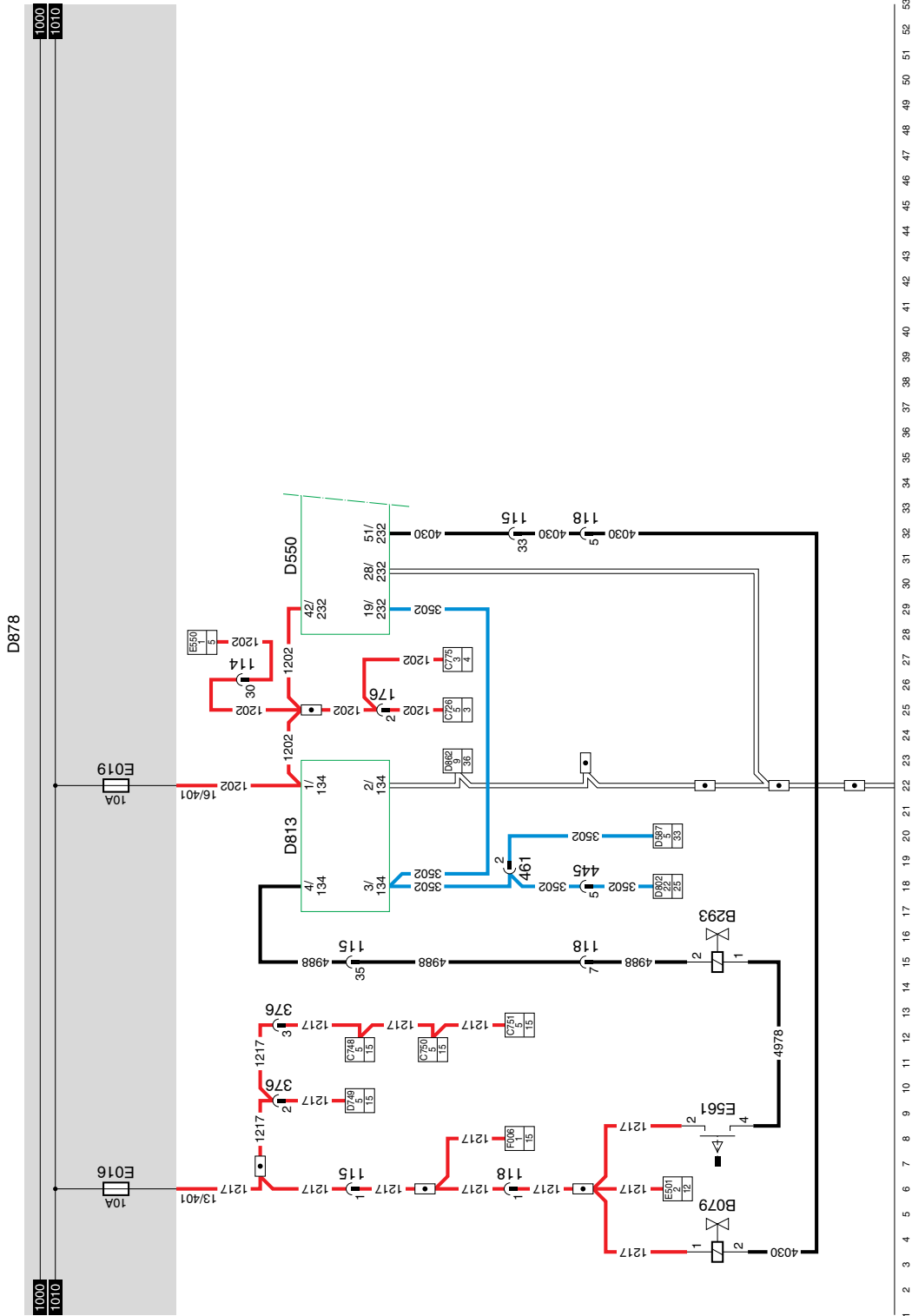
#### GATE SAFETY (gears 4 -> 1)

If the relay contact (G015) is closed, the supply voltage will be applied to the control switch (E561) through fuse E016.

If the low group is activated, switch E561 is closed and a voltage is applied to valve B293. A supply voltage is applied to point 1 of electronic unit D813 through fuse E019 and wire 1202. Connection 3 of electronic unit D813 is connected to the CTE-2. This is the speed-dependent signal. Depending on the speed, the electronic unit of the gearbox and gate safety (D813) connects valve B293 to earth. If both conditions are present, valve B293 is activated and the gate safety is active. Shifting down from 3rd and 4th gear into the 1st and 2nd gear is now impossible.

If the high group is activated, switch E561 is opened and the voltage to valve B293 drops out. At a speed in excess of approx. 12 km/h, pin 4 of the electronic unit D813 is uninterruptedly connected to earth. Shifting down into 5th or 6th gear is possible, however.

**SEE THE CTE SYSTEM MANUAL FOR MORE INFORMATION**



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## 14. BRAKE LIGHTS / CAB AIR SUSPENSION

### BRAKE LIGHTS

If the brake pedal is pressed, brake light control switch E511 is activated and the relay (G036) will be activated. A voltage will be applied to the right- and left-hand vehicle brake lights (C021 and C020 respectively) and they will light up. The lights connected through trailer connector socket A000 will also light up.

A voltage will also be applied to the CTE unit (13/232) through diode D722. A voltage is also applied to connection point 5 of relay G297 (cab air suspension) through diode D759.

### CONTINUOUS BRAKE (engine brake)

If the engine brake control switch (E564) is activated, a voltage is applied to connection point 14. As a result, connection point 55 is activated causing engine brake valve B192 to become activated.

Connection point 55 is only connected to the supply voltage if:

- The engine speed exceeds 700 rpm.
- The rear wheels do not block in an ABS-equipped vehicle.

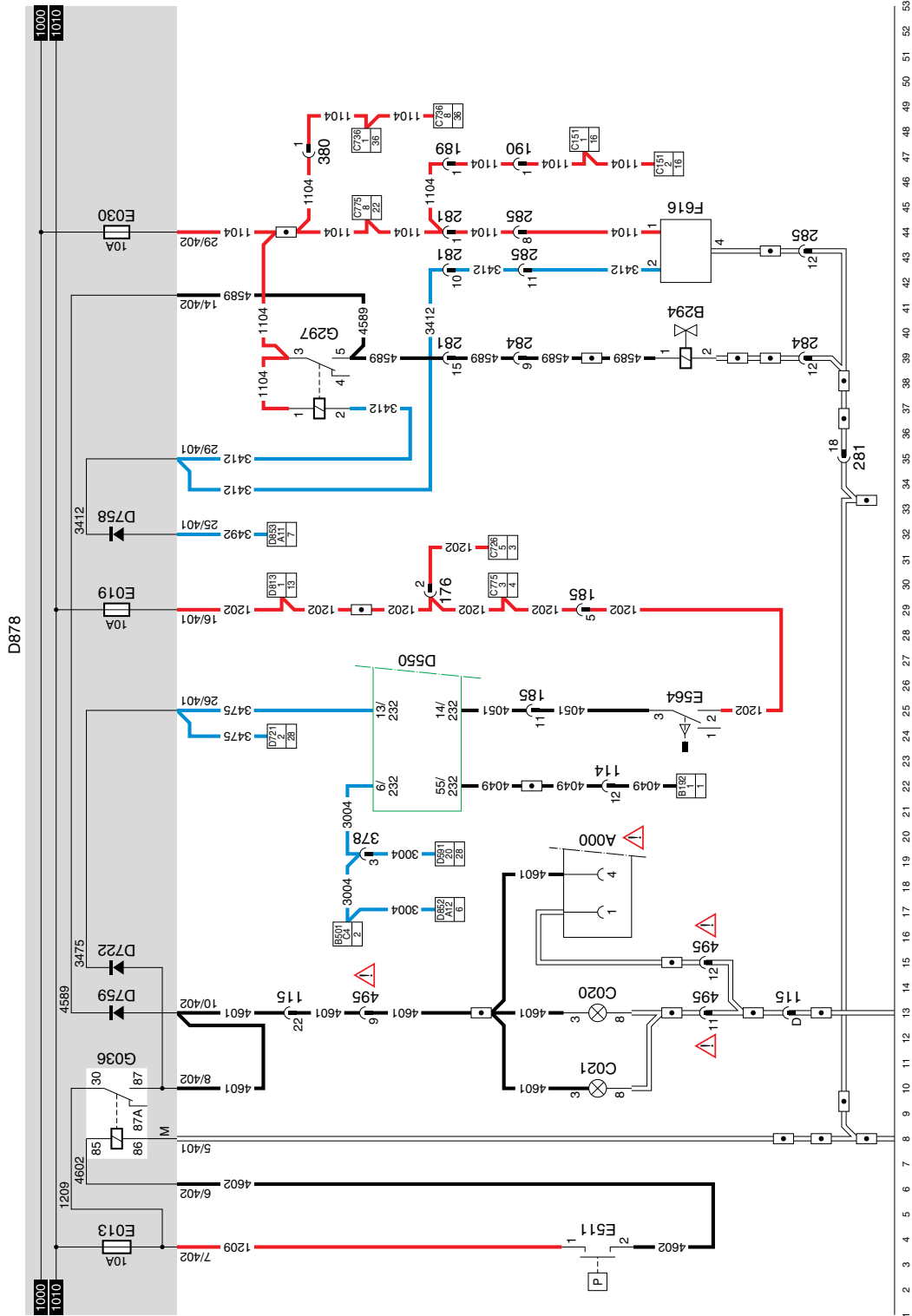
### CAB AIR SUSPENSION

A voltage is applied to both the cab lock sensor (F616) and relay G297 through fuse E030 and wire 1104. If the cab is tilted, points 2 and 4 in the cab lock sensor (F616) are connected. As a result, relay G297 (cab air suspension relay) is activated through wire 3412 and the cab lock sensor (F616). The contacts of relay G297 close (connection between contacts 3 and 5). A voltage is now applied to valve B294 causing this valve to become activated as well.

### VARIANTS

#### Location

- 12,14,16 Connector 495 is only used in the case of an FA version. In FT versions, wire 4601 (to C021 and C022) and earth do **not** run through connector 495.
- 20 Connector A000 is only used in the case of an FA. In FT versions, connector A002 is used.



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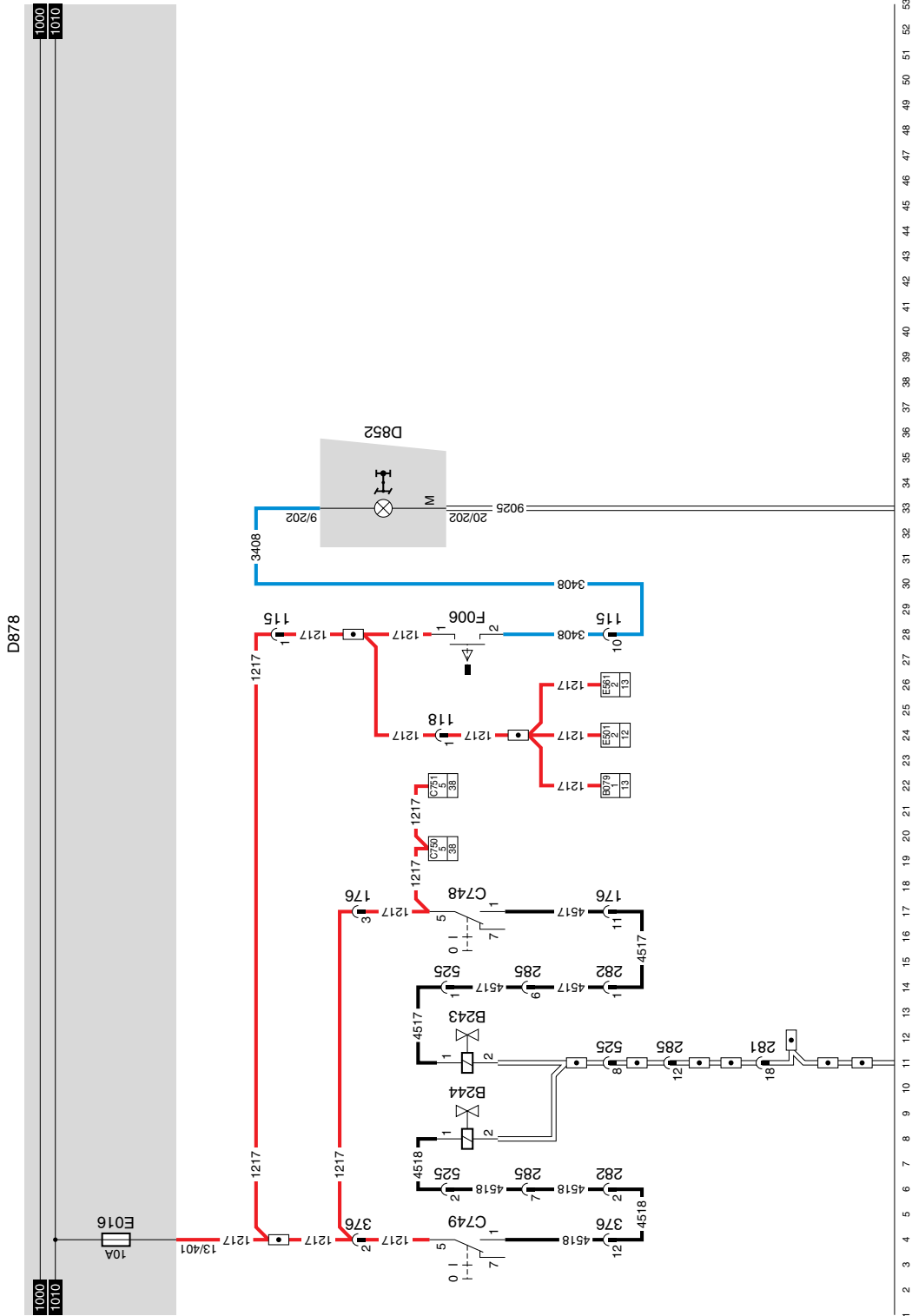
**15. DIFFERENTIAL LOCK****1ST, 2ND AND 3RD DIFFERENTIAL LOCK**

If the contact switch (G015) is activated, a voltage is applied through fuse E016 and wire 1217 to the control switch for the axial controlled slip differential (C748) and control switch for the longitudinal controlled slip differential (C749). If the driver now activates the axial controlled slip differential (C748), a voltage is applied through wire 4517 to the axial controlled slip differential valve. As a result, the valve is activated.

If the driver now activates the longitudinal controlled slip differential (C749), a voltage is applied through wire 4518 to the longitudinal controlled slip differential valve. As a result, the valve is activated.

If the driver engages the first differential, the "differential lock control switch" (F006) is activated. The corresponding symbol on the DIP will now light up.





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**16. COMFORT CAB/SPACE CAB INTERIOR LIGHTING**

The description of the interior lighting can be divided into:

- Stepwell lighting, driver's side
- Stepwell lighting, co-driver's side
- Interior lighting
- Red interior nightlight
- Interior bed lighting, driver's side
- Interior bed lighting, co-driver's side
- Bunk lamp
- Storage compartment lighting
- Map-reading lights

**STEPWELL LIGHTING, DRIVER'S SIDE**

If the driver's side door is opened, switch E514 will close and the driver's side stepwell lamp (C062) will light up. A voltage is also applied through wire 2600 to pin 17 of the CTE-2 unit (D550). A voltage will also be applied internally to connection point 27 of CTE-2 unit (D550), causing the lamp of the driver's side interior lighting (C149) to light up.

If the driver's side door is closed, a voltage will be applied to connection point 27 of the CTE unit for approx. 9 sec. This will result in a delayed switching-off of the interior lighting. If a speed signal is applied to pin 18, the delayed switch off will not function.

The stepwell lighting is independent of the contact switch position.

**STEPWELL LIGHTING, CO-DRIVER'S SIDE**

If the co-driver's side door is opened, switch E515 will close and the co-driver's side stepwell lamp (C063) will light up. A voltage is also applied to C148 (interior lighting, co-driver's side) through wire 2609, diode D708 and wire 2633.

**INTERIOR LIGHTING UNDERSIDE ROOF CONSOLE**

A voltage is applied to switch C151 (interior lighting with middle switch) through fuse E030 and wire 1104. Depending on the switch position, C151 (interior lighting underside roof console) will light up.

**RED INTERIOR NIGHTLIGHT**

A voltage is also applied to switch C735 (interior nightlight switch) through fuse E028 and wire 1107. Depending on the switch position, C148 (interior nightlight, driver's side) will light up.

**INTERIOR BED LIGHTING, DRIVER'S SIDE**

A voltage is applied to connection point 5 of switch C733 (interior bed lighting, driver's side) through fuse E028 and wire 1107. If a connection is made in switch C733 (contacts 5 and 7), a voltage will be applied through wire 2644 and switch C734 (contacts 7 and 5) and wire 2632 to both of C149's bulbs.

**INTERIOR BED LIGHTING, CO-DRIVER'S SIDE**

A voltage is applied to connection point 5 of switch C731 (interior bed lighting, co-driver's side) through fuse E028 and wire 1107. If a connection is made in switch C731 (contacts 5 and 7), a voltage will be applied through wire 2611 and switch C732 (contacts 7 and 5) and wire 2633 to bulb C148 (normal interior lighting).

**BUNK LAMP**

The bunk light C115 can be switched with a switch through fuse E028.  
The bunk lamp is independent of the contact switch position.

**STORAGE COMPARTMENT LIGHTING**

A voltage is applied to switches E525 (central upper storage compartment lighting switch) and E527 (right-hand storage compartment lighting switch) through fuse E028 and wire 1107. Switch E525 is used to switch on/off lamp C064 (upper storage compartment lighting). Switch E527 is used to switch on/off lamp C066 (right-hand storage compartment lighting).

**TOOLBOX LIGHTING**

A voltage is applied to switches E528 (left-hand toolbox lighting switch) and E529 (right-hand toolbox lighting switch) through fuse E028 and wire 1107. Switches E528 and E529 are used to switch on/off lamps C067 and C068 respectively.

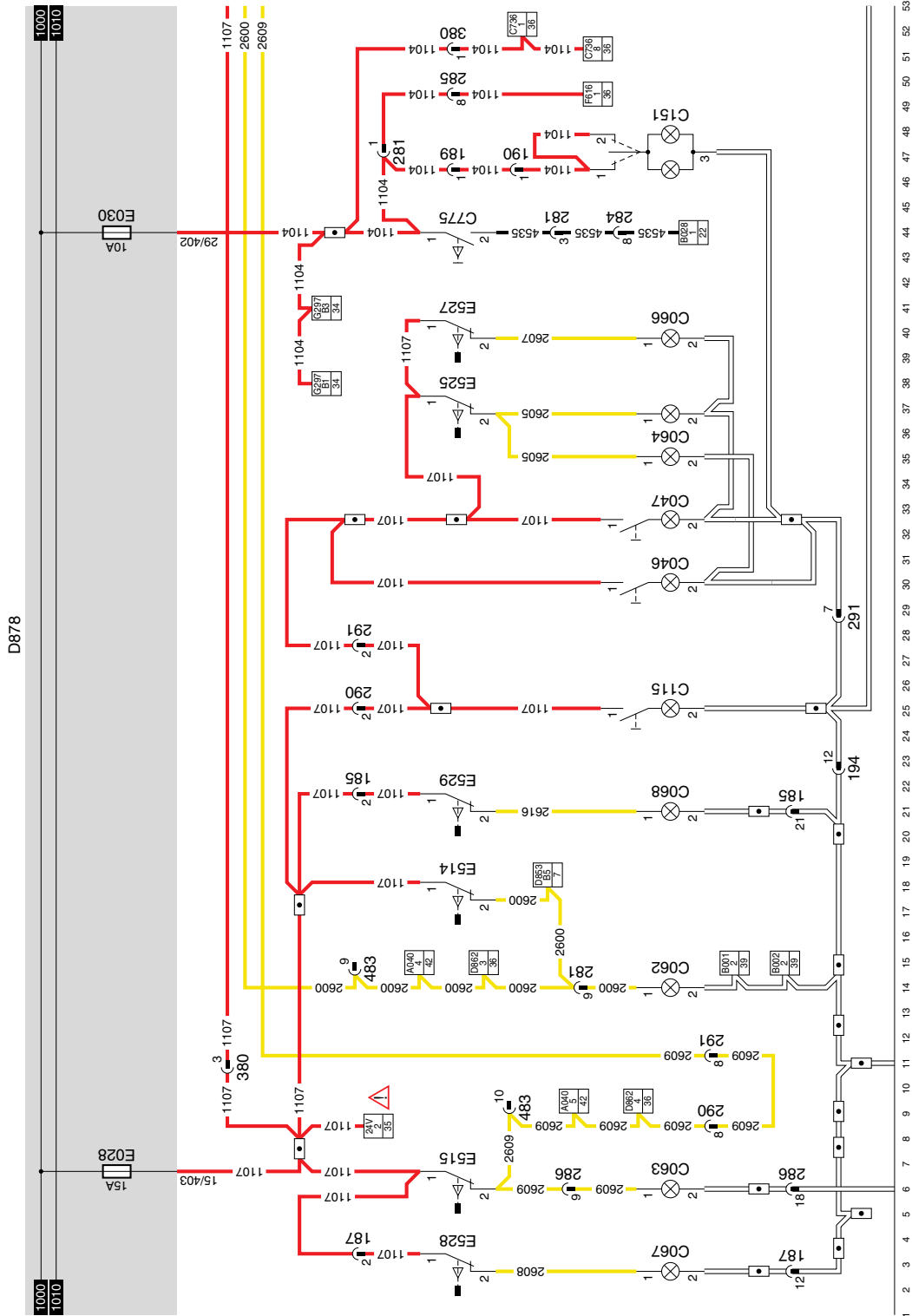
### MAP-READING LIGHTS

A voltage is applied to the switches installed in the map-reading lights on both the driver's and the co-driver's side (C046 and C047 respectively) through fuse E208 and wire 1107. By pulling out the map-reading lights, the switch is activated and the light is switched on.

### VARIANTS

#### Location

- 9 This location is used to connect a voltage converter for the radio memory. **(The voltage converter is optional!)**



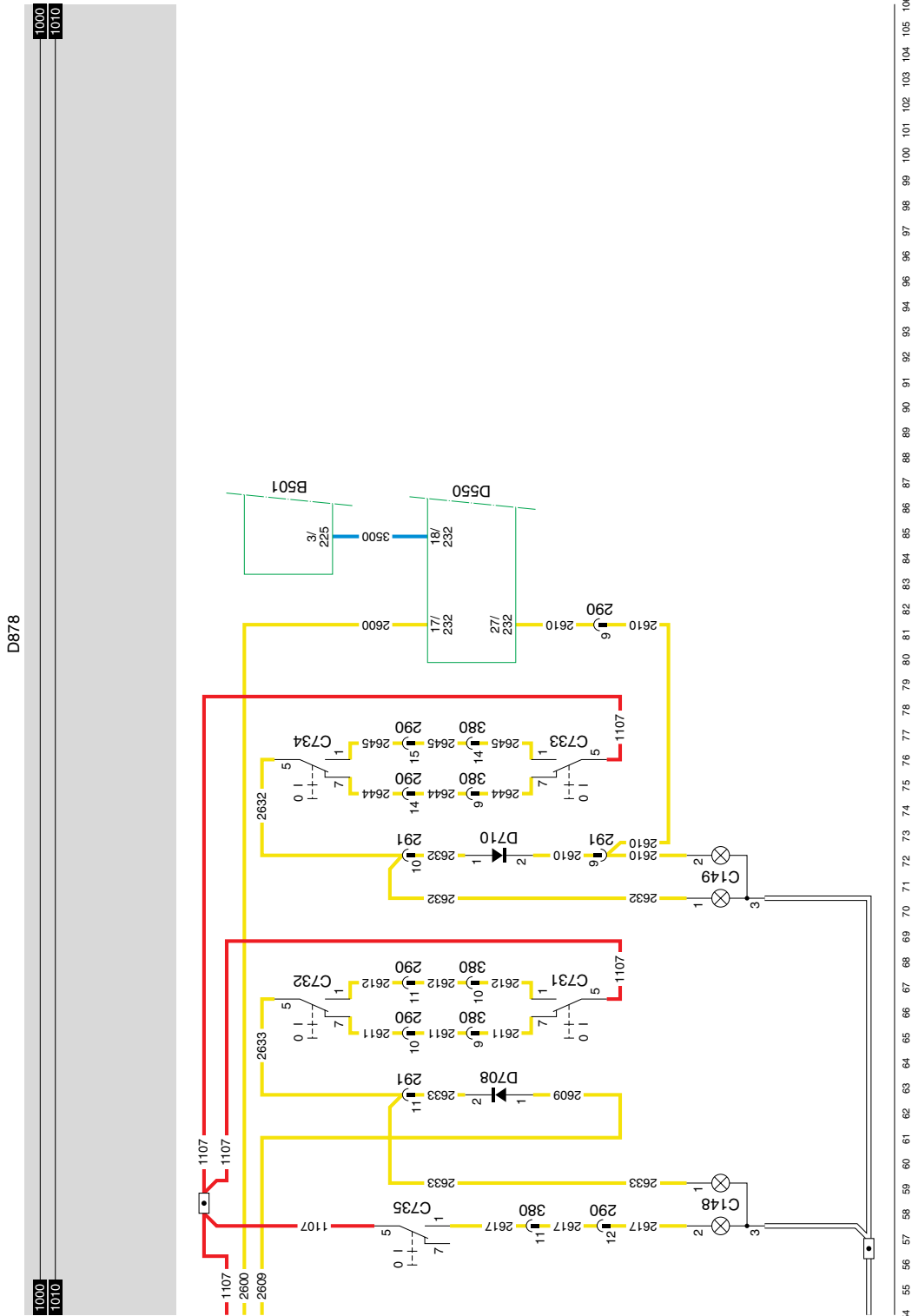
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## 17. INTERIOR LIGHTING, SUPER SPACE CAB

The description of the interior lighting can be divided into:

- Stepwell lighting, driver's side
- Stepwell lighting, co-driver's side
- Interior lighting
- Red interior nightlight
- Interior bed lighting, driver's side
- Interior bed lighting, co-driver's side
- Bunk lamp
- Storage compartment lighting
- Map-reading lights

### STEPWELL LIGHTING, DRIVER'S SIDE

If the driver's side door is opened, switch E514 will close and the driver's side stepwell lamp (C062) will light up. A voltage is also applied through wire 2600 to pin 17 of the CTE-2 unit (D550). A voltage will be also be applied internally to connection point 27 of CTE-2 unit (D550), causing a lamp on the driver's side interior lighting (C149) to light up.

If the driver's side door is closed, a voltage will be applied to connection point 27 of the CTE unit for approx. 9 sec. This will result in a delay in switching off the interior lighting. If a speed signal is applied to pin 18, the delayed switch-off will not function. The stepwell lighting is independent of the contact switch position.

### STEPWELL LIGHTING, CO-DRIVER'S SIDE

If the co-driver's side door is opened, switch E515 will close and the co-driver's side stepwell lamp (C063) will light up. A voltage is also applied to C148 (interior lighting, co-driver's side) through wire 2609, diode D708 and wire 2633.

### INTERIOR LIGHTING UNDERSIDE ROOF CONSOLE

A voltage is applied to switch C151 (interior lighting with middle switch) through fuse E030 and wire 1104. Depending on the switch position, C151 (interior lighting underside roof console) will light up.

**RED INTERIOR NIGHTLIGHT**

A voltage is applied to switch C735 (interior nightlight switch) through fuse E028 and wire 1107. Depending on the switch position, C148 (interior nightlight, driver's side) will light up.

**INTERIOR LIGHTING, DRIVER'S SIDE**

A voltage is applied to connection point 5 of switch C733 (interior lighting roof console driver's side bed control) through fuse E028 and wire 1107. If a connection is made in switch C733 (contacts 5 and 7), a voltage will be applied through wire 2644 and switch C734 (interior lighting roof console driver's side central console) (contacts 7 and 5) and wire 2632 to both bulbs of C149.

A voltage is also applied to lamp C130 through wire 2632.

**INTERIOR BED LIGHTING, CO-DRIVER'S SIDE**

A voltage is applied to connection point 5 of switch C731 (interior lighting roof console co-driver's side bed control) through fuse E028 and wire 1107. If a connection is made in switch C731 (contacts 5 and 7), a voltage will be applied through wire 2611 and switch C732 (interior lighting roof console co-driver's side central console) (contacts 7 and 5) and wire 2633 to bulb C148.

A voltage is also applied to lamp C139 through wire 2633.

**BUNK LAMP**

The bunk light C115 can be switched on using a switch.

The bunk lamp is independent of the contact switch position.

**STORAGE COMPARTMENT LIGHTING**

A voltage is applied to switches E525 (central upper storage compartment lighting switch), E527 (right-hand storage compartment lighting switch) and E560 (left-hand storage compartment lighting switch) through fuse E028 and wire 1107. Door switches E525, E527 and E560 are used to switch on/off lamps C064 (upper storage compartment lighting), C066 (right-hand storage compartment) and C150 (left-hand storage compartment) respectively.



**TOOLBOX LIGHTING**

A voltage is applied to switches E528 (left-hand toolbox lighting switch) and E529 (right-hand toolbox lighting switch) through fuse E028 and wire 1107. Switches E528 and E529 are used to switch on/off lamps C067 and C068 respectively.

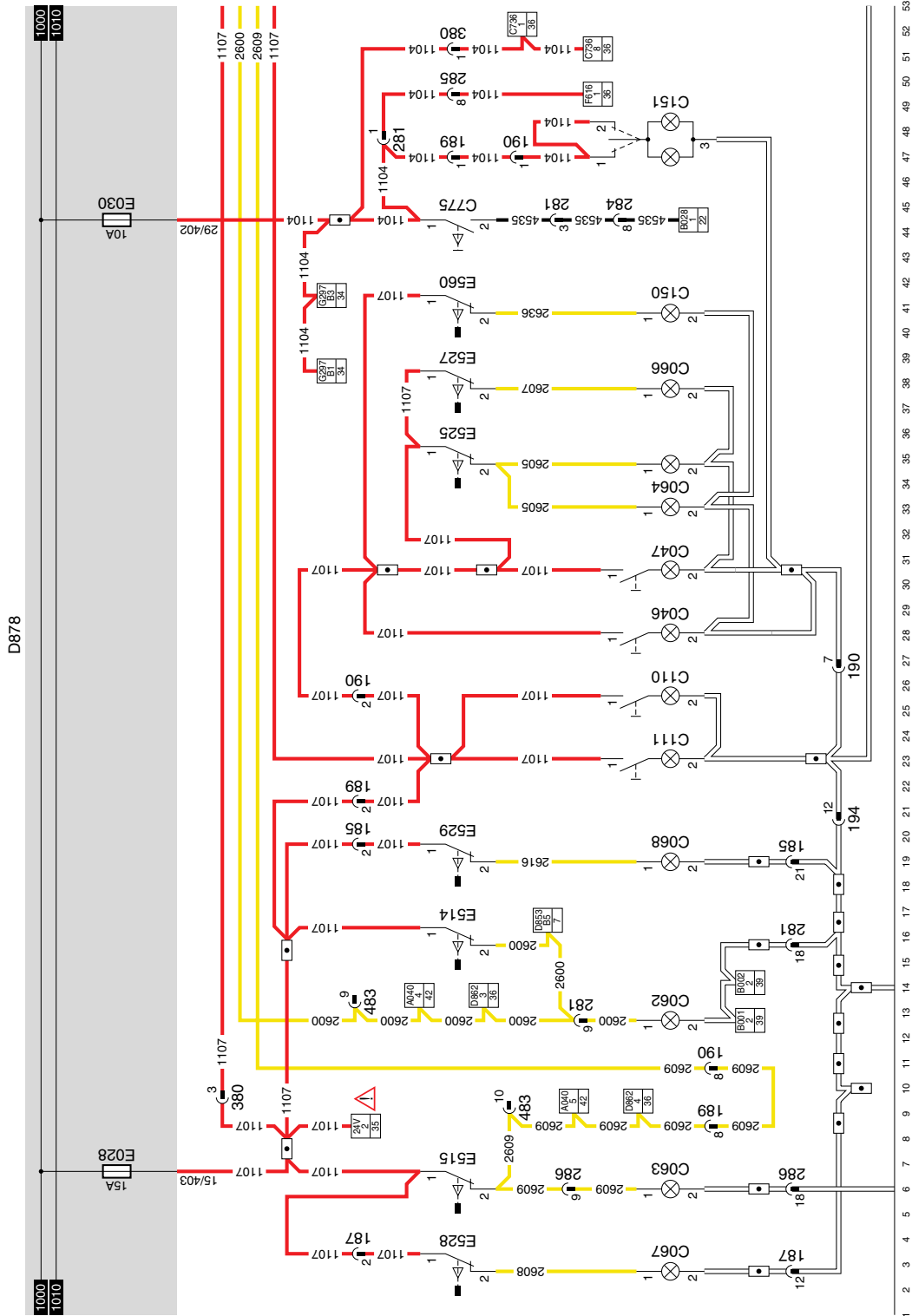
**MAP-READING LIGHTS**

A voltage is applied to the switches installed in the map-reading lights on both the driver's and the co-driver's side through fuse E208 and wire 1107. By pulling out the map-reading lights, the switch is activated and the light is switched on.

**VARIANTS****Location**

- 9 This location is used to connect a voltage converter for the radio memory. **(The voltage converter is an accessory!)**
- 56 This connector is placed between the roof upholstery and the roof. A PL lamp can be connected to it. **(The PL lamp is an accessory!)**

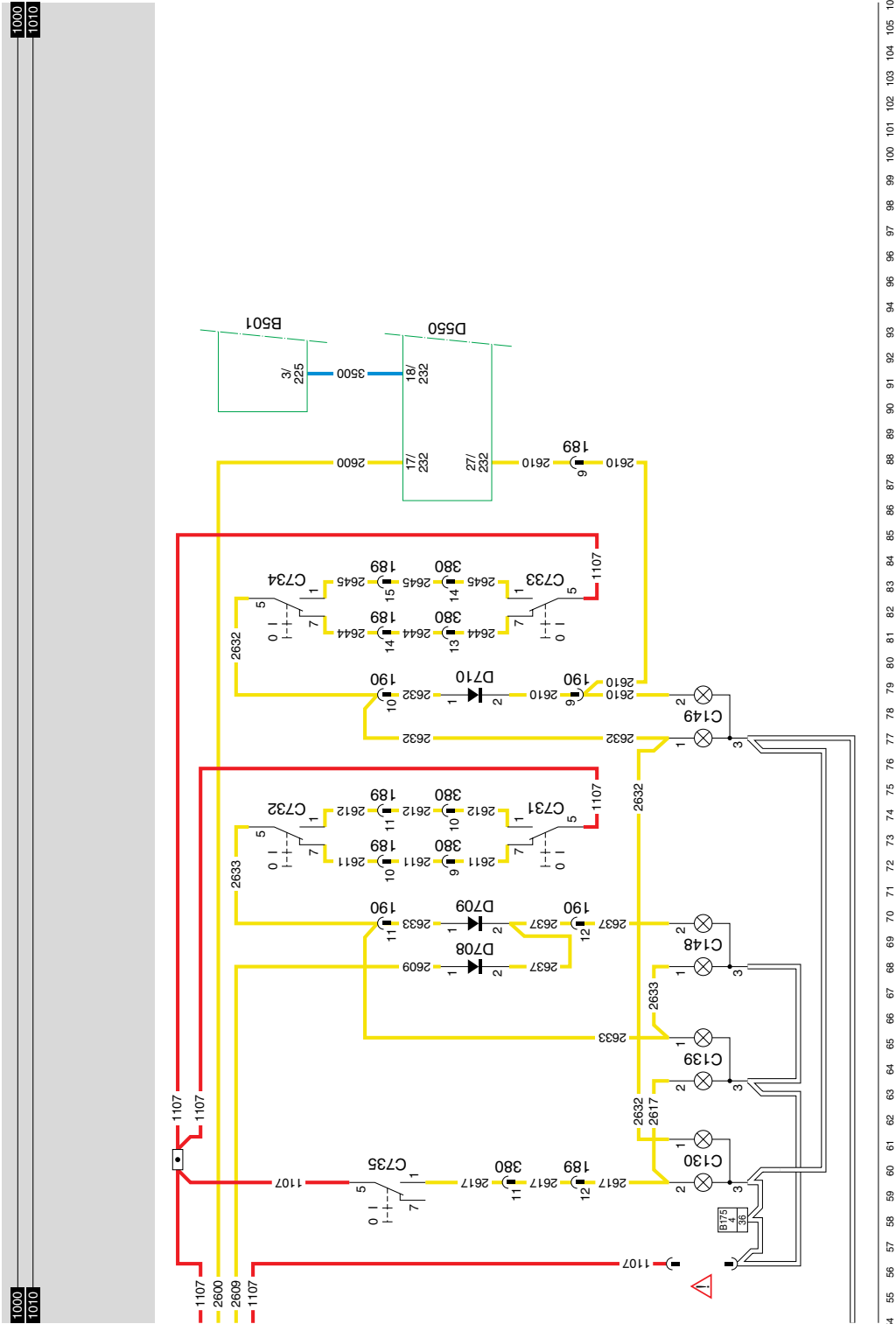
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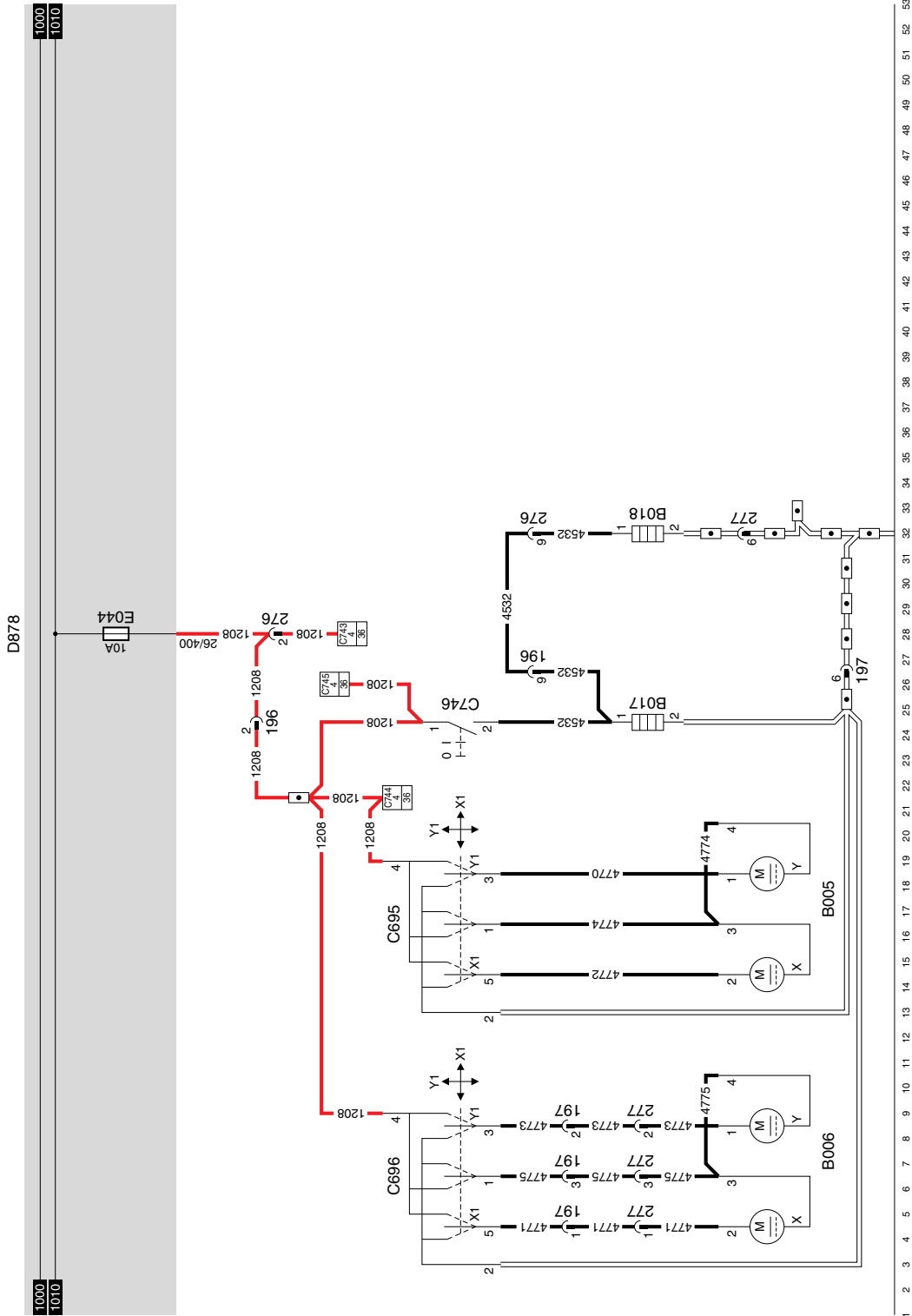
**18. MIRROR HEATING AND MIRROR ADJUSTMENT****MIRROR HEATING**

If the mirror heating switch (C746) is engaged, a voltage is applied to both heating elements B017 (driver's side) and B018 (co-driver's side) through fuse E044, wire 1208 and switch C746. The mirror heating can only be engaged if the contact relay is activated.

**MIRROR ADJUSTMENT**

The outside mirrors are adjusted using two so-called "joystick" switches C695 (driver's side) and C696 (co-driver's side). If the joystick is moved from its rest position (centre) into a certain direction, a voltage is applied to the mirror-adjustment motor B005 (driver's side) or B006 (co-driver's side) and the mirror concerned will follow this movement.

The voltage for the left/right mirror adjustment motor is supplied through wires 4770 and 4774 (driver's side) or wires 4771 and 4775 (co-driver's side). The voltage for the up/down mirror adjustment motor is supplied through wires 4772 and 4774 (driver's side) or wires 4773 and 4775 (co-driver's side).



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**19. CONTROL LIGHTING****CONTROL LIGHTING**

The control lighting consists of the lamps and LEDs in the various function switches.

When the lighting switch (C622) is being operated, a supply voltage will be applied to relay G000 through fuse E084 and lighting switch (C622), wire 2100.

Relay G000 is activated so that a voltage is applied to the control lighting (wire 2630) through fuse E117, causing it to light up.

When switch C622 is being operated, the following lamps will light up:  
B030, C072, C760, C802 (so-called functional lighting).

The following switches will cause a LED to light up:

C725, C726, C727, C731, C733, C734, C735, C736, C737, C739, C740, C741, C742, C748, C749, C750, C751, C752, C754, C761, C763, C764, C765, C778 and C803.

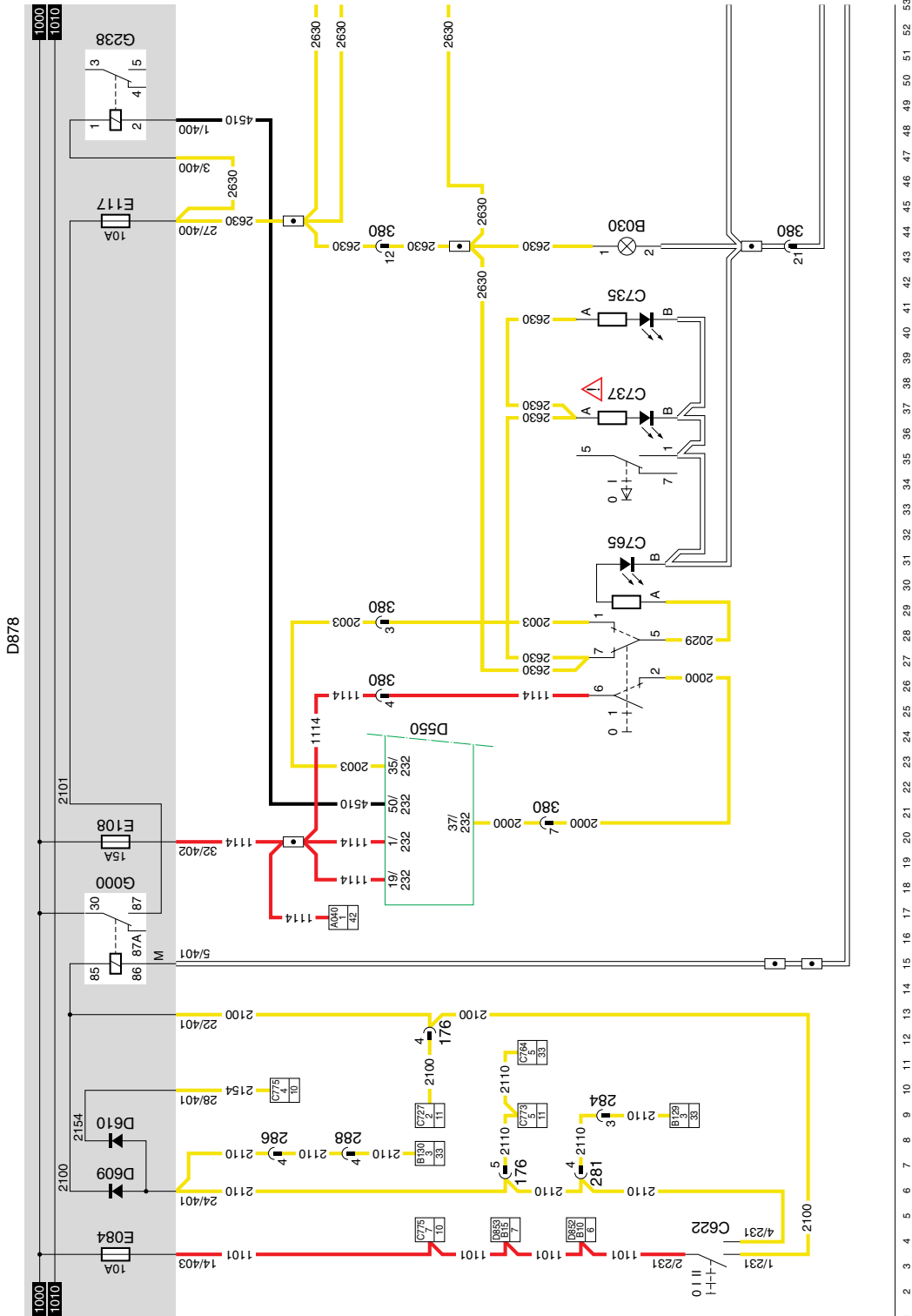
**LIGHTING BUZZER**

When the lighting switch (C622) is being operated, a supply voltage will be applied to relay G000 through fuse E084 and lighting switch (C622), wire 2100.

Relay G000 is activated so that a voltage is applied to the control lighting (wire 2630) through fuse E117. This wire is also connected to the electronic unit CWS-2 (D853), pin B12. A signal from the door switch is also applied to pin 5/396 of the electronic unit CWS-2 (D853). A signal from the alternator (A502) is also applied to the electronic unit CWS-2 (D853) (pin 6/396). If no voltage is measured from the alternator, the door is open (pin 5/396 of the CWS-2 is connected to earth through lamp C062) and a voltage is also applied from input 12/396, the buzzer is activated.

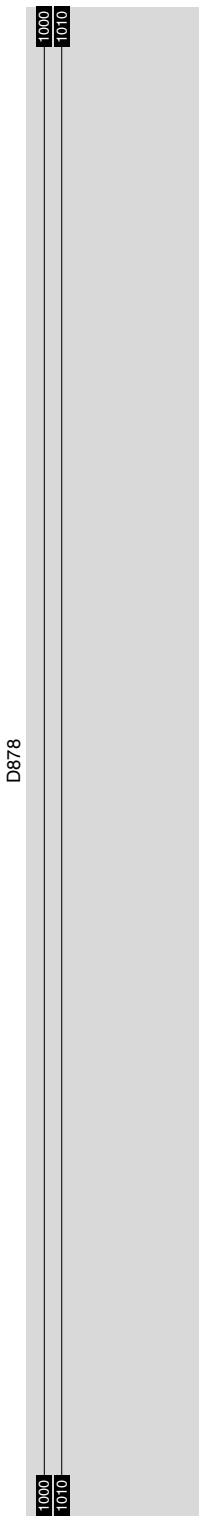
**VARIANTS****Location**

37 Switch C737 is only used in XF-type vehicles. Switch C738 is used in VF-type vehicles.

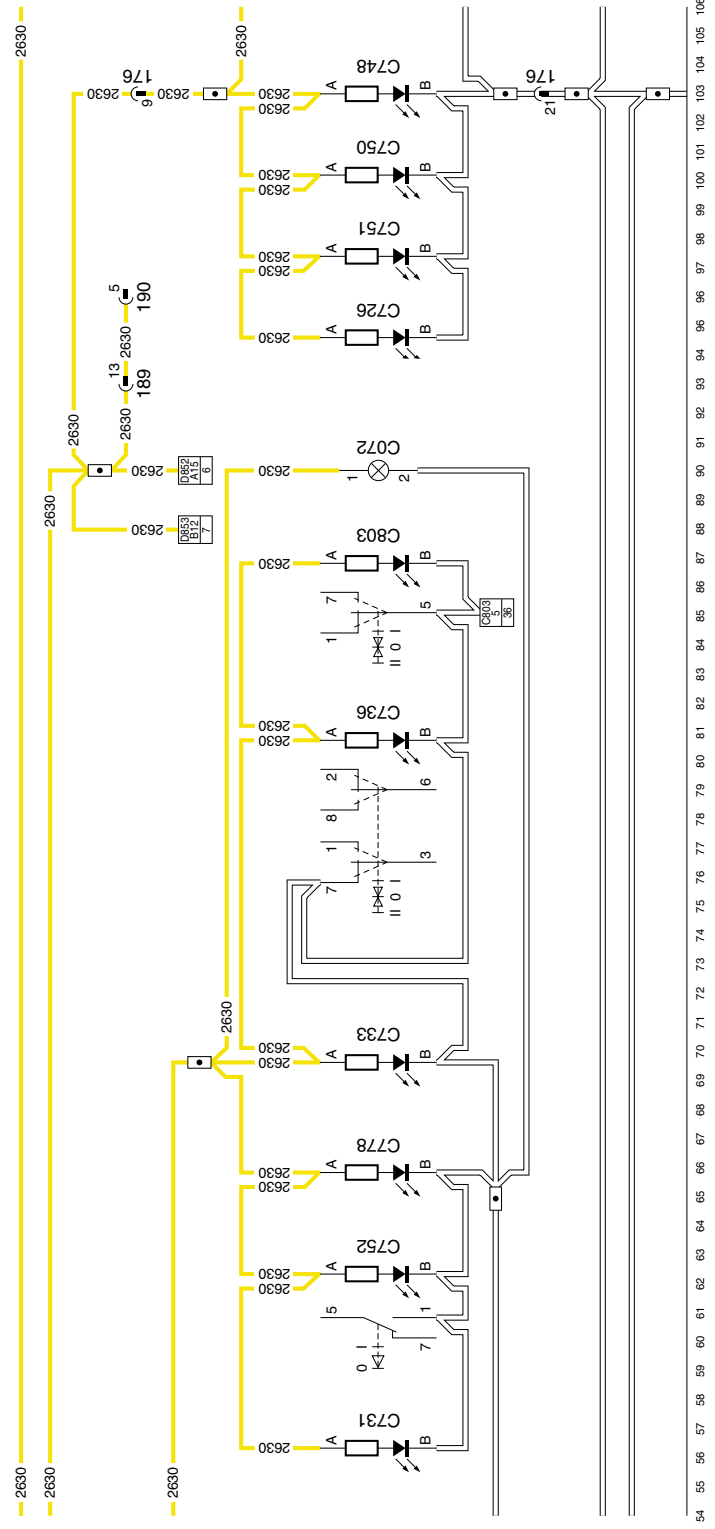


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53

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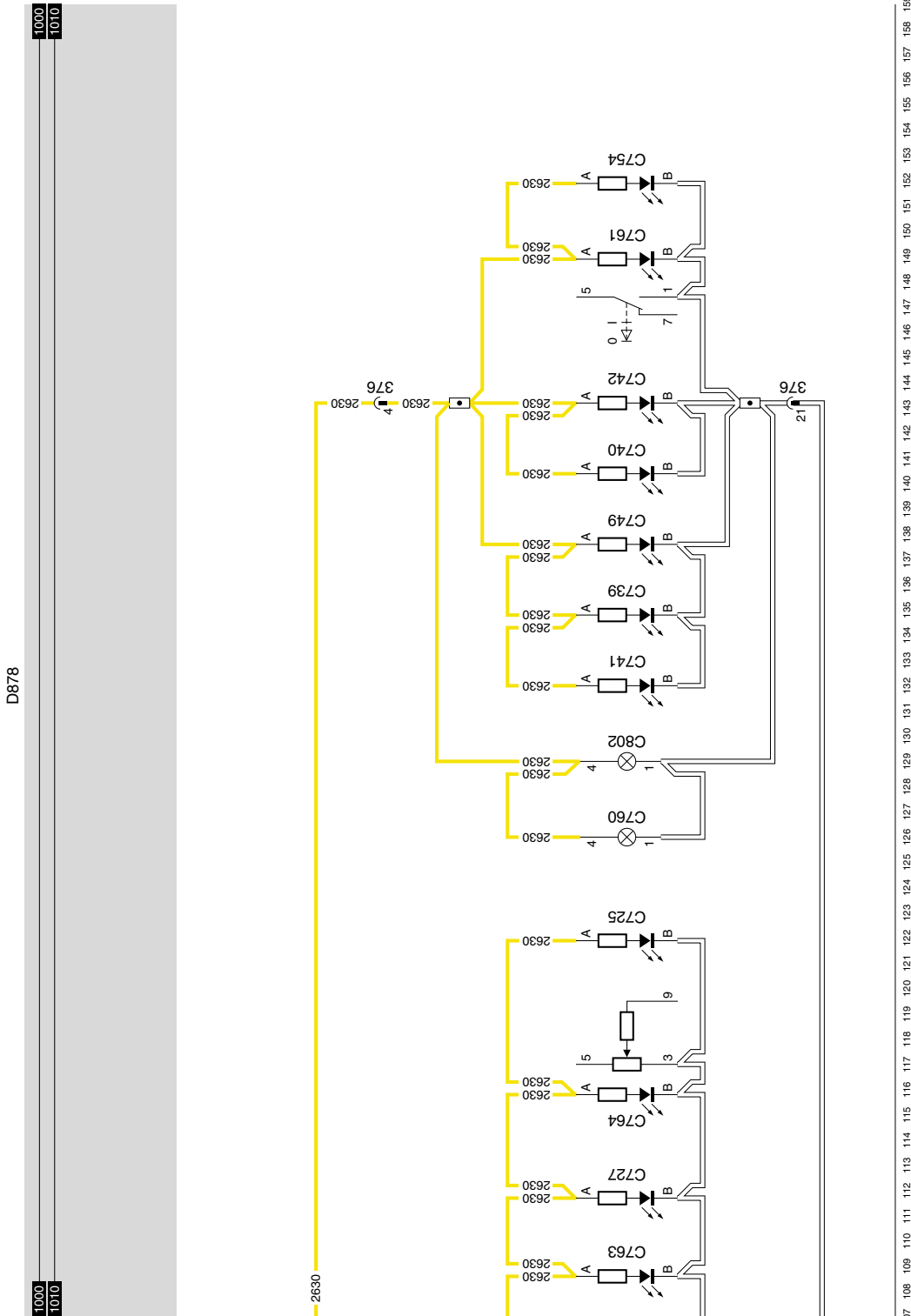


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## 20. HEATER FAN/ AIR-CONDITIONING SYSTEM

A voltage is applied to the heater fan switch (C588) through the heater fan fuse (E031). Depending on the position of this switch, the fan will start operating.

The switch has five (5) positions:

**Off:** Heater fan (B015) off.

**Position 1:** Fan at lowest speed setting (wire 4650), supply of heater fan (B015) through three (3) resistors.

**Position 2:** Fan at somewhat higher speed setting (wire 4651), supply of heater fan (B015) through two (2) resistors.

**Position 3:** Heater fan in next to highest speed setting (wire 4652), supply of heater fan (B015) through one (1) resistor.

**Position 4:** Heater fan in highest speed setting (wire 4653), relay G065 now activated. This relay connects the supply (wire 1201) to wire 4654 and the heater fan. The relay is only activated in position 4 (full supply voltage heater fan B015).

### AIR-CONDITIONING SYSTEM

#### SHORT DESCRIPTION OF THE RECIRCULATION VALVE

If switch C802 (air-conditioning recirculation valve) is activated, a voltage is applied to point 1 of relays G257 and G258. As a result, pin 2 of recirculation-valve motor B252 is connected to earth and simultaneously pin 1 of B252 is connected to the positive voltage. This will activate motor B252 and close the recirculation valve.

If C802 is not activated, no voltage is applied to both relays G257 and G258. As a result, the direction of flow of the current through motor B252 is reversed and the recirculation valve will open.

**SHORT DESCRIPTION OF THE AIR-CONDITIONING SYSTEM**

When the air-conditioning system is engaged with switch C760, a voltage is applied to both relay G279 and G267 through wire 4655, switch E508 (air-conditioning compressor temperature switch), E509 (air-conditioning high/low pressure operating switch) and wire 4657.

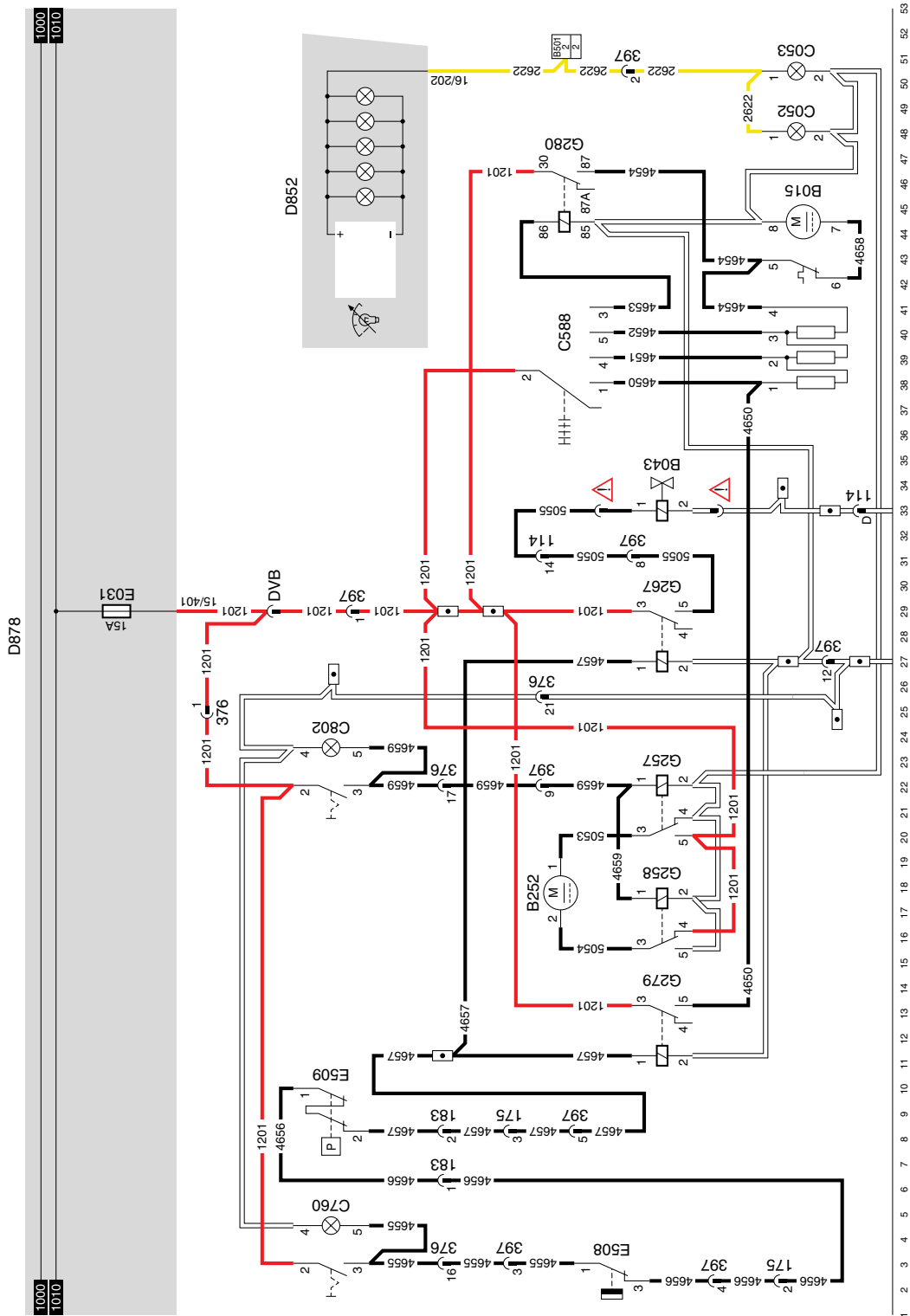
As a result, the heater fan (B015) will start operating in position 1 and the air-conditioning is activated.

**VARIANTS****Location**

33 A round 4-pin black connector is attached to the wiring harness coming from B043 (air-conditioning compressor). This connector is **not** provided with a connector number and is installed at the front (upper centre) of the engine block.

**SEE THE SYSTEM MANUAL FOR MORE INFORMATION**

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## 21. SEAT HEATING / MICROWAVE

### SEAT HEATING

If the vehicle is switched to contact, a voltage is applied through fuse (E091) (wire 1240) to switch C697 and C698. Depending on the temperature, the thermostat switch in the seat closes and the heating elements start glowing.

### MICROWAVE

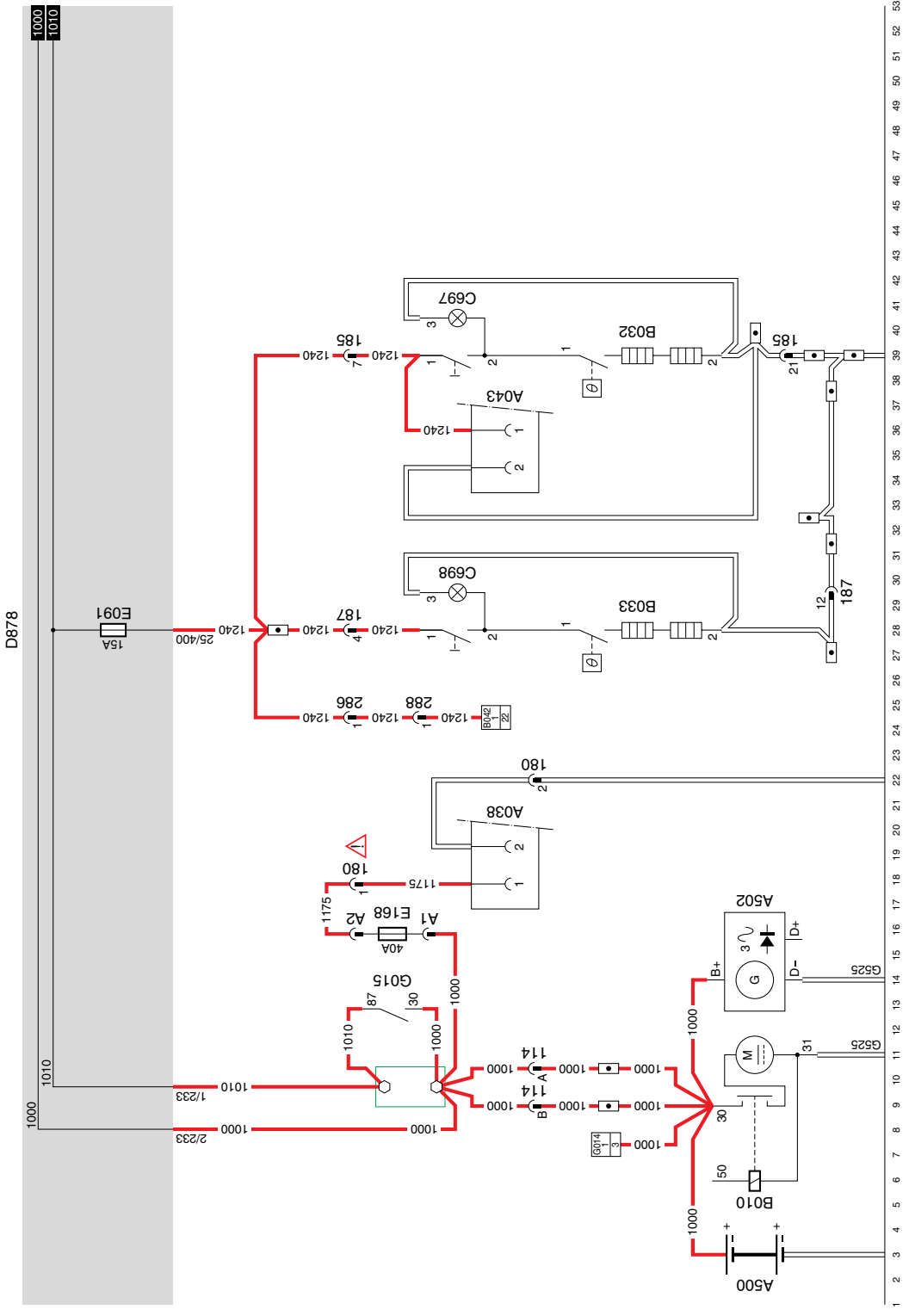
A wire which leads to the 40A fuse is connected to connection 1000 of the Pertinax block in the central fuse box. The other side of this fuse is connected to a connector leading to the overhead-box. The microwave can be connected to it.

### VARIANTS

#### Location

18 In an XL cab, connector 180 is installed under the central fuse cabinet. The cable harness (wire 1175 and earth) to the overhead box is **not** installed. For the XH and XC versions these wires are located in the central overhead box.

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**22. SIGNAL HORN / CIGARETTE LIGHTER / WORK LIGHT / AIR DRYER****SIGNAL HORN**

The signal horn on this vehicle is a so-called electropneumatic signal horn.

It consists of an electrically controlled air valve and a diaphragm.

If the signal horn is engaged by activating switch C775 (connection between contacts 8 and 9), a voltage will be applied to the air-horn valve (B028) through fuse E030, wire 1104, switch C775 and wire 4535. The air horn will subsequently be activated.

**CIGARETTE LIGHTER**

If heating element B030 of the cigarette lighter is activated, the heating element in the cigarette lighter is heated. When the switch heating (C622) is activated, both the ashtray lighting (C072) and the rim around the cigarette lighter will light up.

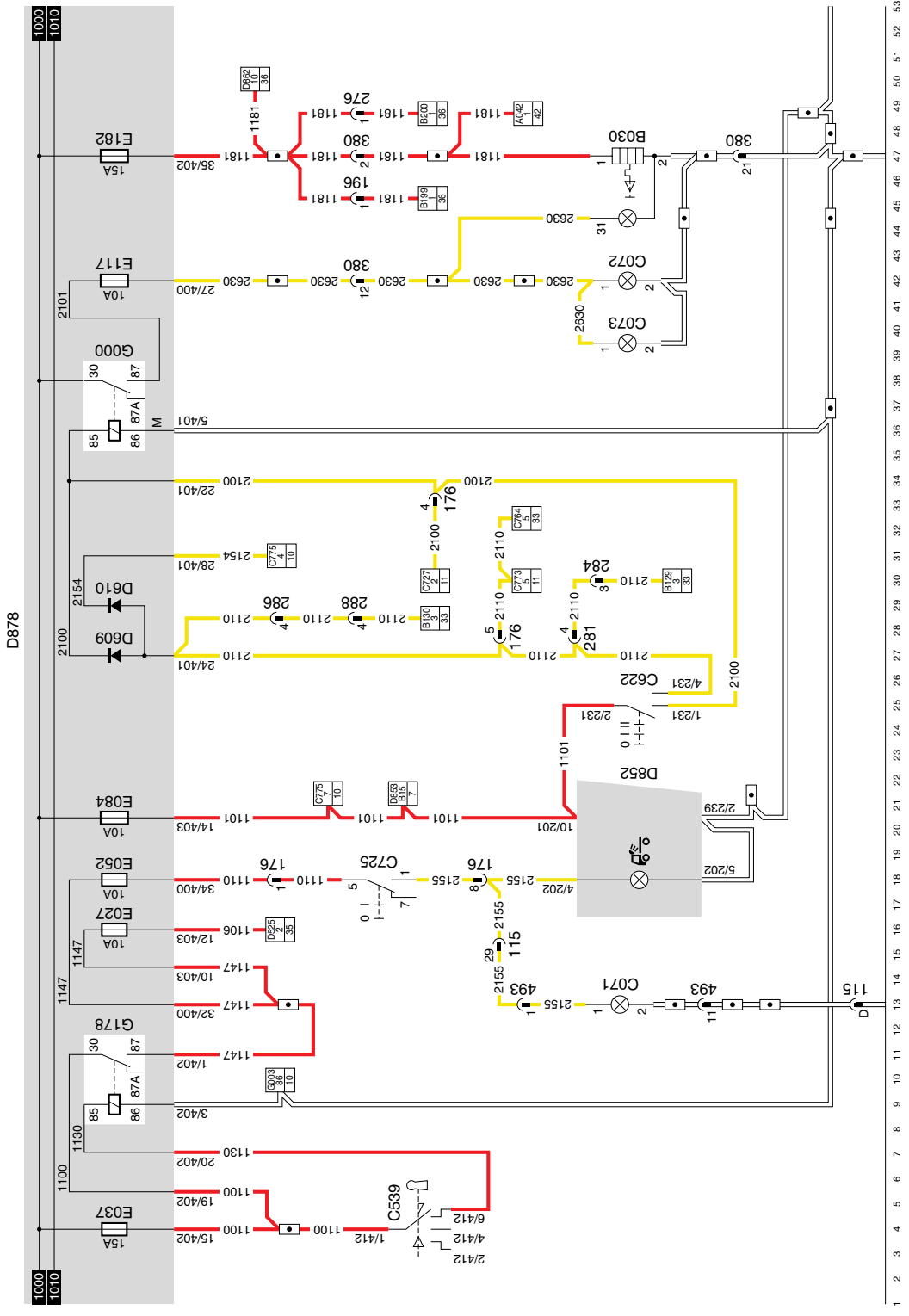
**WORK LIGHT**

If the contact is positioned in or past the accessory position, the work light (C071) can be lit using switch C725. The light is fed through fuse E307 and accessory relay (G178). This relay is activated, after which the voltage is applied to both the work-light switch (C725) and the work light (C071) through fuse E052 (work-light fuse). At the same time a warning lamp on the DIP is also activated.

**AIR DRYER**

If the contact relay (G015) is activated, a voltage will be applied to connection point 1 of air dryer B042 through fuse E091 and wire 1240. Pin 4 is connected to earth. Depending on the temperature, the air dryer heating element is switched on or off.

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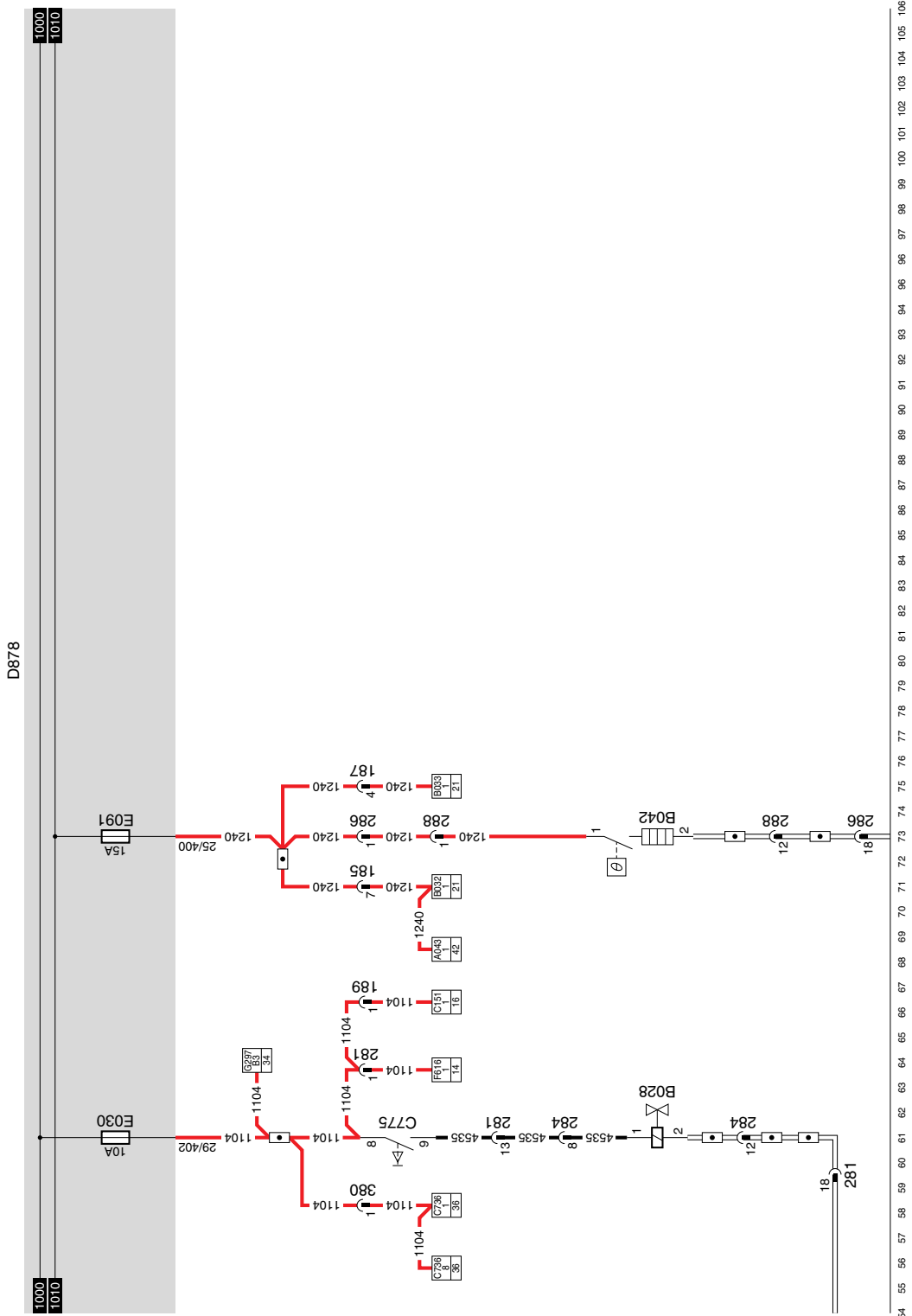


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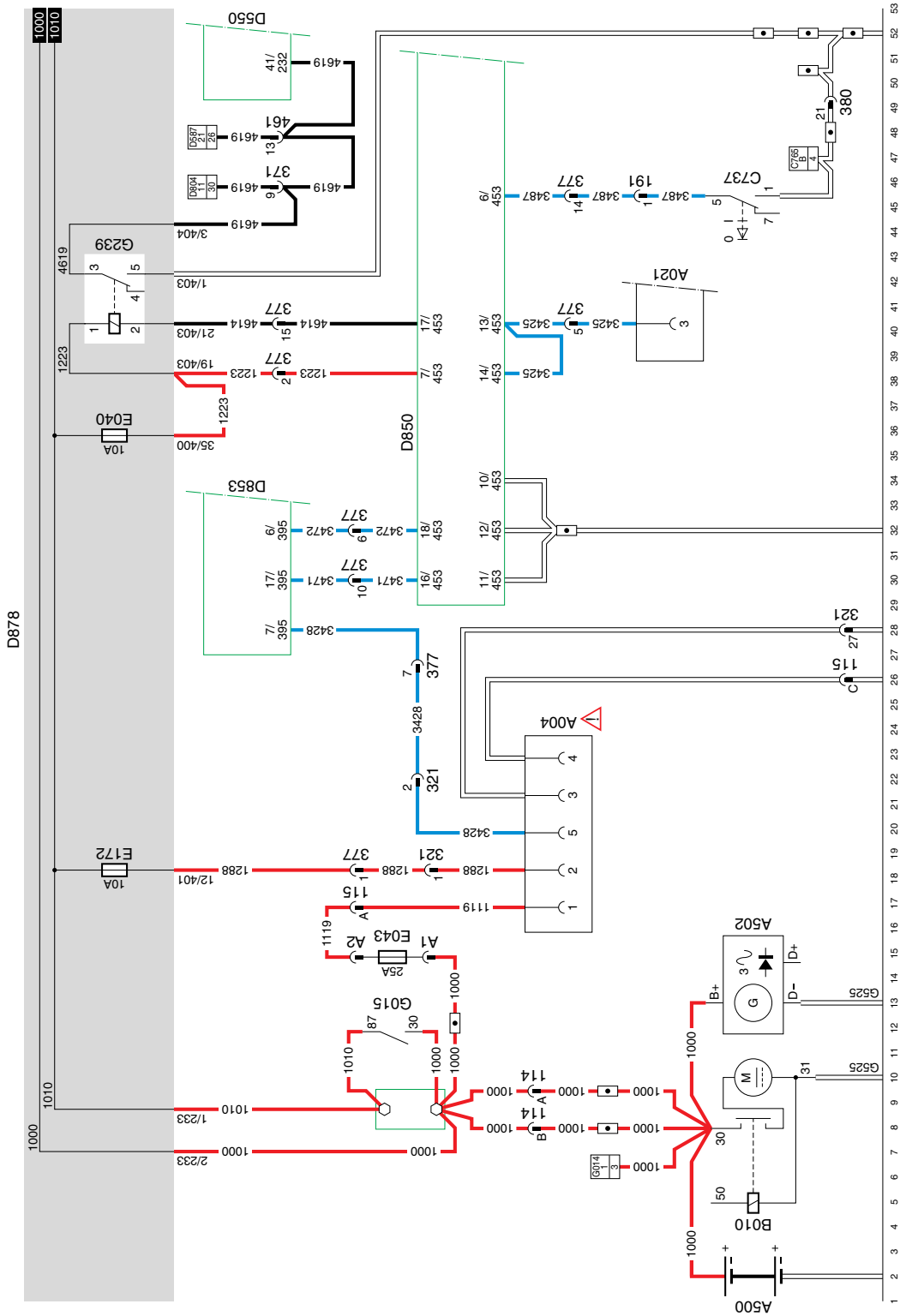
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**23. ABS / ASC****VARIANTS****Location**

- 24 Connector A004 is only used in the case of an FA. Connector A005 is used in the case of an FT.
- 70 Connector 182 may not be connected. This depends on whether or not an E-gas system (D591) is installed.

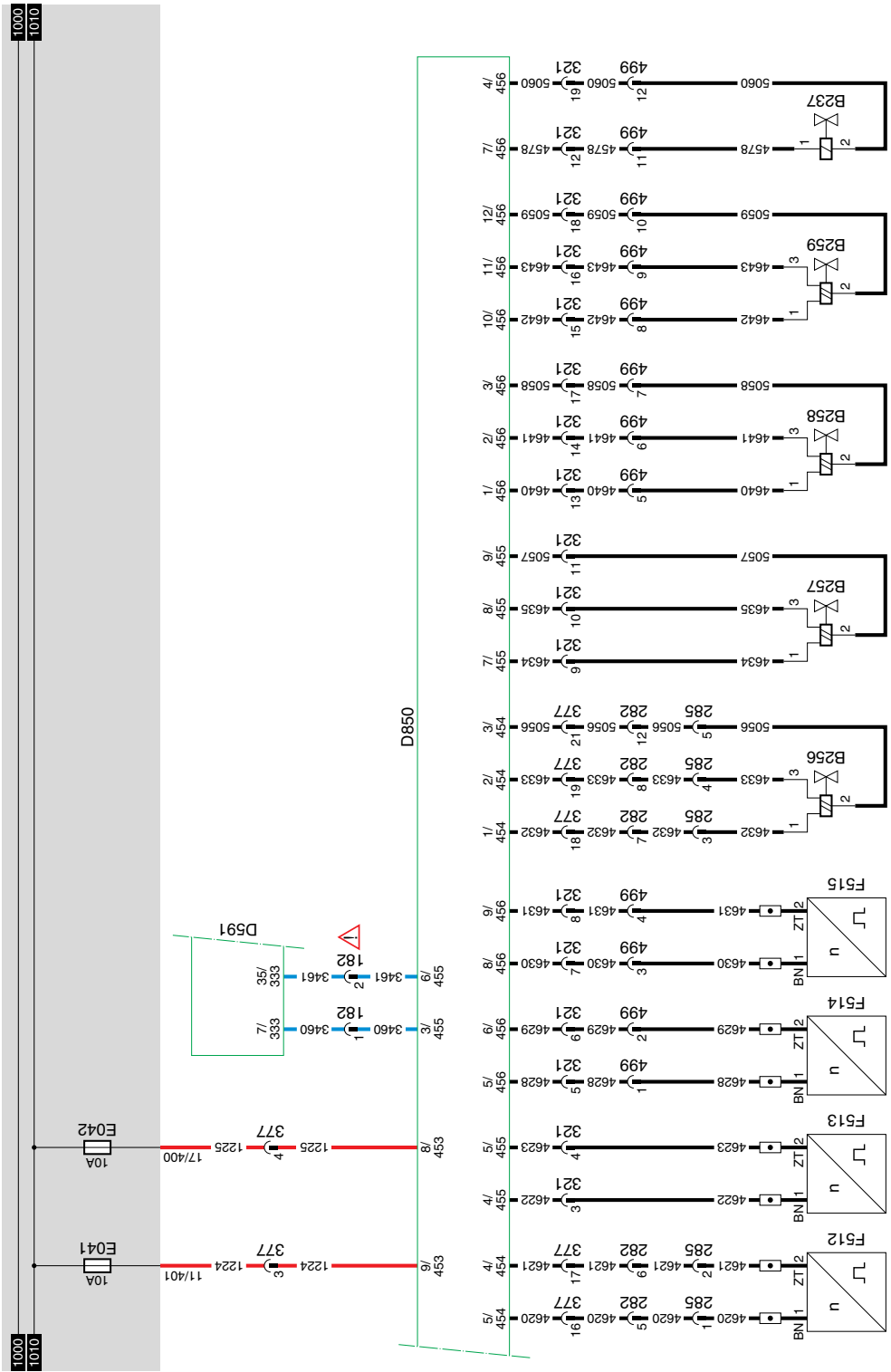
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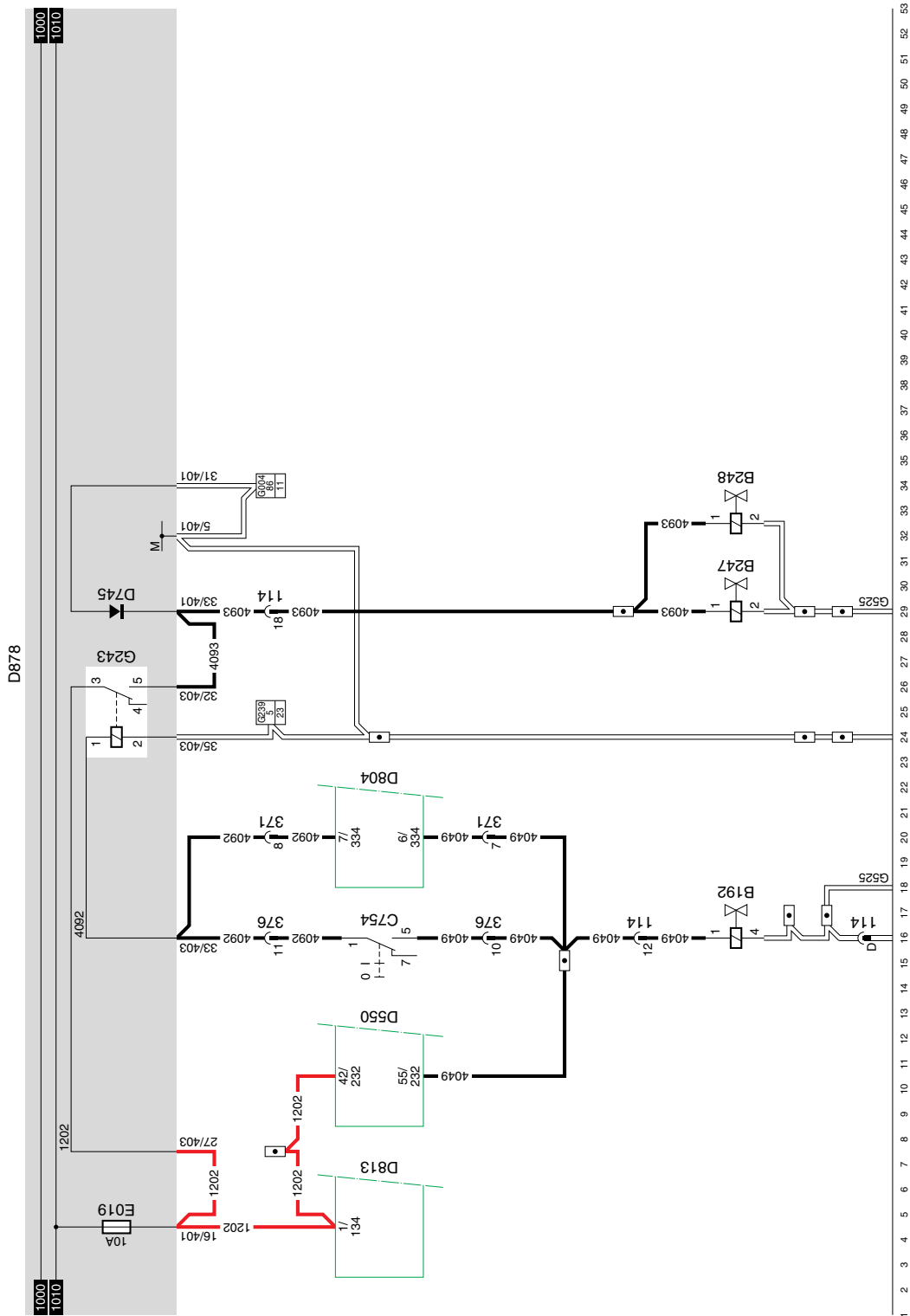
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**24 DEB****OPERATION**

A voltage is applied to D813 (gearbox gate safety electronic unit), D550 (ABS/ASC-D electronic unit) and to contact 3 of relay G243 (engine brake micro relay) through fuse E019. If the ABS/ASC-D electronic unit is not active, the voltage is also applied to both switch C754 (engine-brake switch VF engine) and the Daf Cummins Interface electronic unit. Depending on the Daf Cummins Interface electronic unit or the position of switch C754, relay G243 will be activated and a voltage applied to valves B247 and B248.

If no Cummins Celect is present, relay G243 is activated directly by CTE-2 (D550).

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## 25. VOITH RETARDER

### OPERATION

The electronic unit of the Voith retarder (D870) is fed behind the contact through fuse E029. If the ABS is active, wire 4619 is switched to earth by relay G239. As a result, the Voith retarder is deactivated.

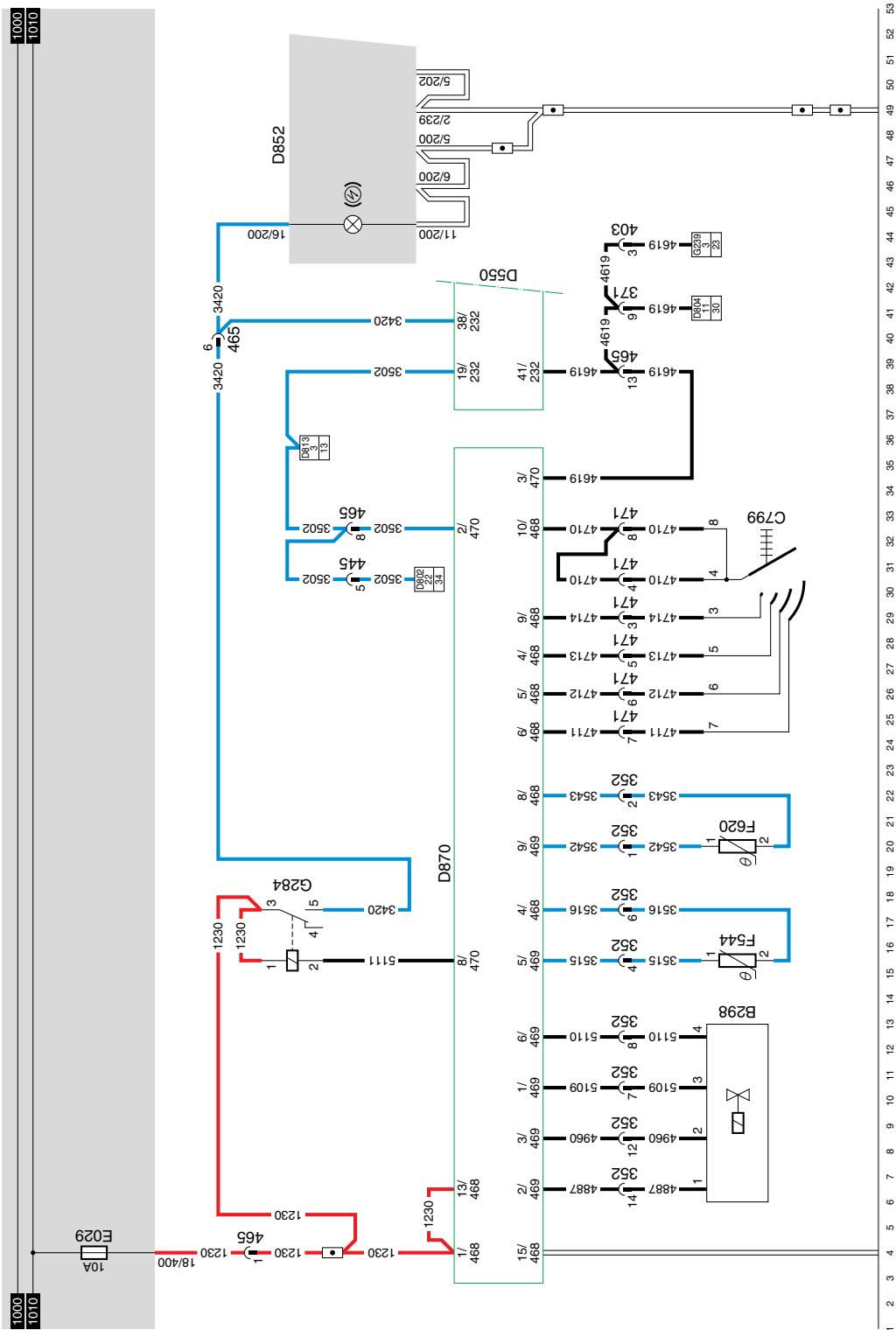
The Voith retarder switch (C799) is fed through wire 4710 and is equipped with 4 outputs (positions 1 - 4) which are connected to the Voith retarder unit. These are the 4 brake positions.

This is how the electronic unit controls the Voith retarder valve (B298).

If the coolant temperature is too high (measured by the coolant temperature sensor (F544)), the retarder control reduces the retarder pressure by reducing the current through the proportional magnetic valve.

A warning lamp on the instrument panel DIP-3 (D852) indicates whether or not the retarder is active. A signal is also supplied to the CTE-2 unit (D550) through wire 3420 to disengage the cruise control when using the retarder.

There is a connection on the CTE-2 unit to supply the speed signal through wire 3502. This wire is also connected to the electronic unit of the Voith retarder (D870).



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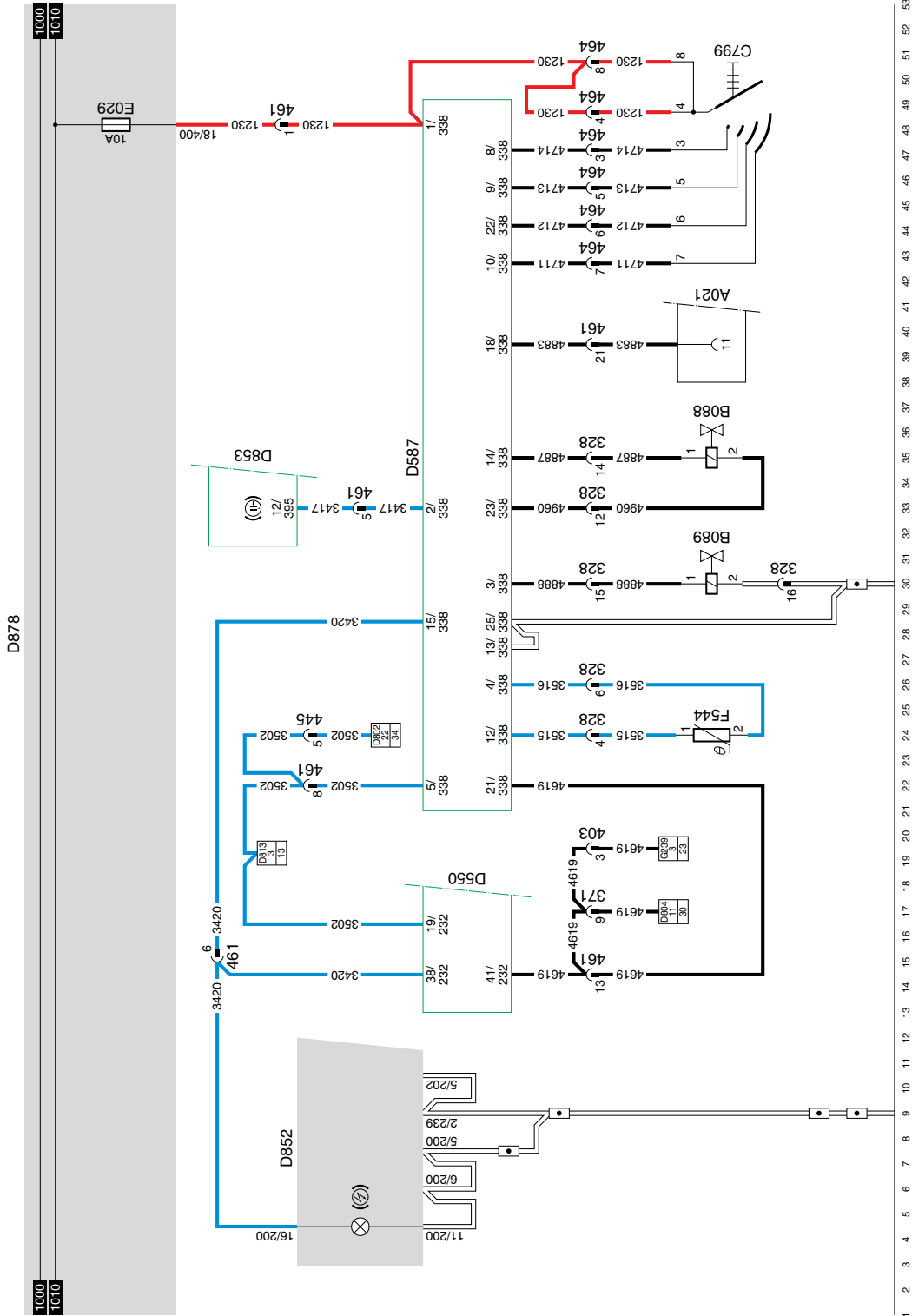
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**26. ZF INTARDER**

**SEE THE SYSTEM MANUAL FOR MORE  
INFORMATION**

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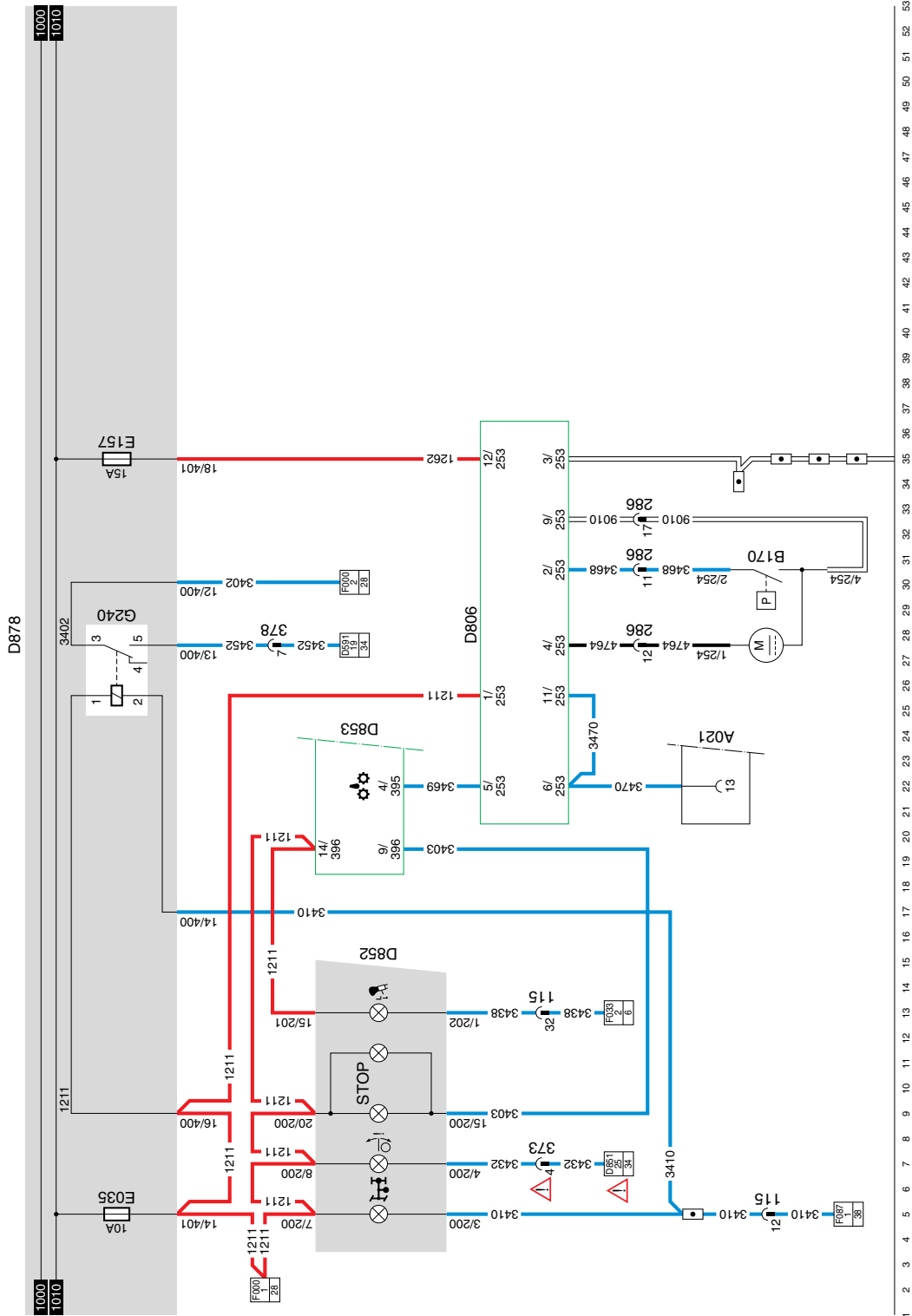
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**27. AGS****VARIANTS****Location**

- 6 Connector 373 may not be connected. This depends on whether or not an ECAS system (D851) is installed.

**SEE THE SYSTEM MANUAL FOR MORE INFORMATION**

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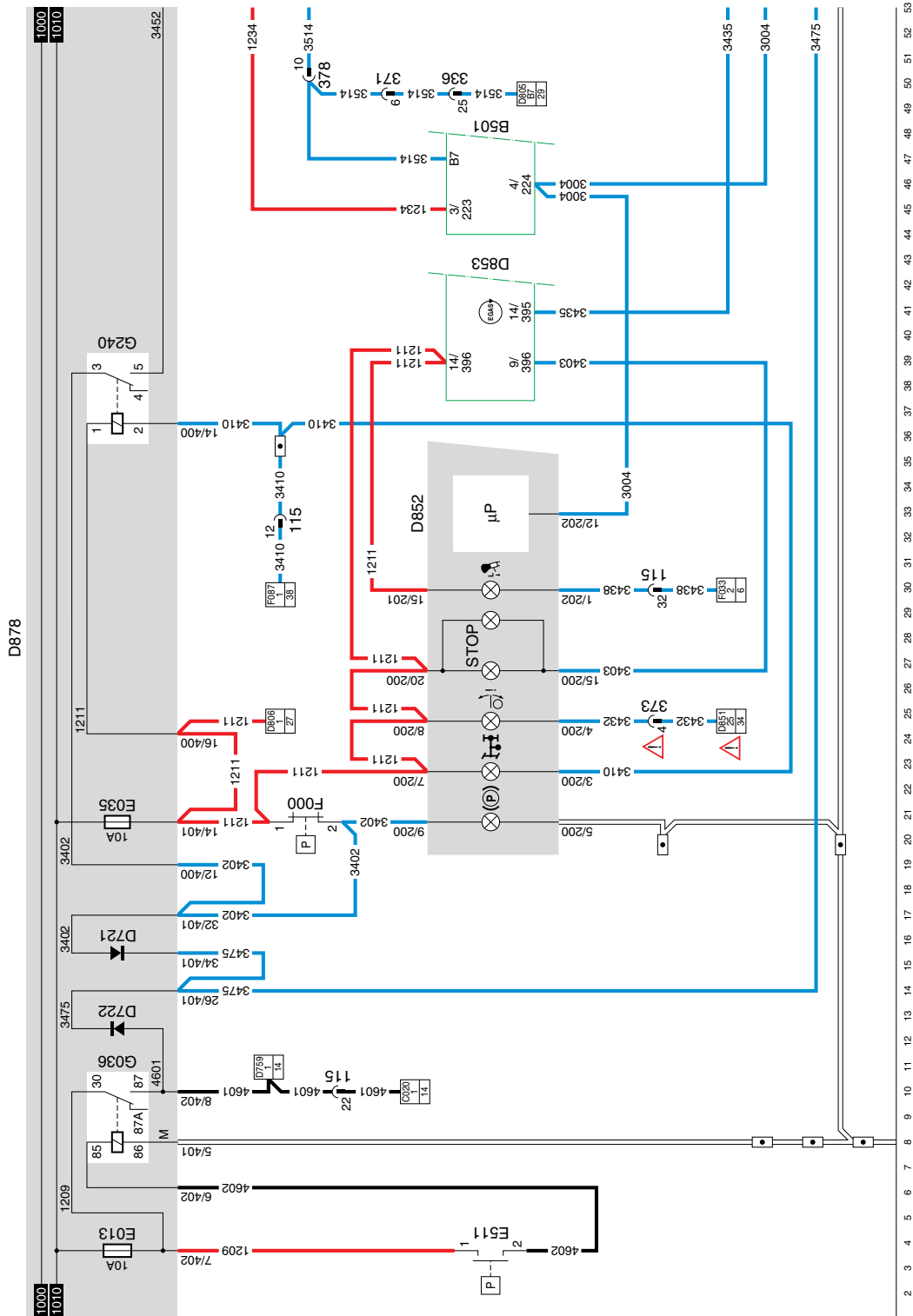
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**28. E-GAS 3****VARIANTS****Location**

24 Connector 373 may not be connected. This depends on whether or not an ECAS system (D851) is installed.

81 This depends on the speed-limiter type.

**SEE THE SYSTEM MANUAL FOR MORE INFORMATION**

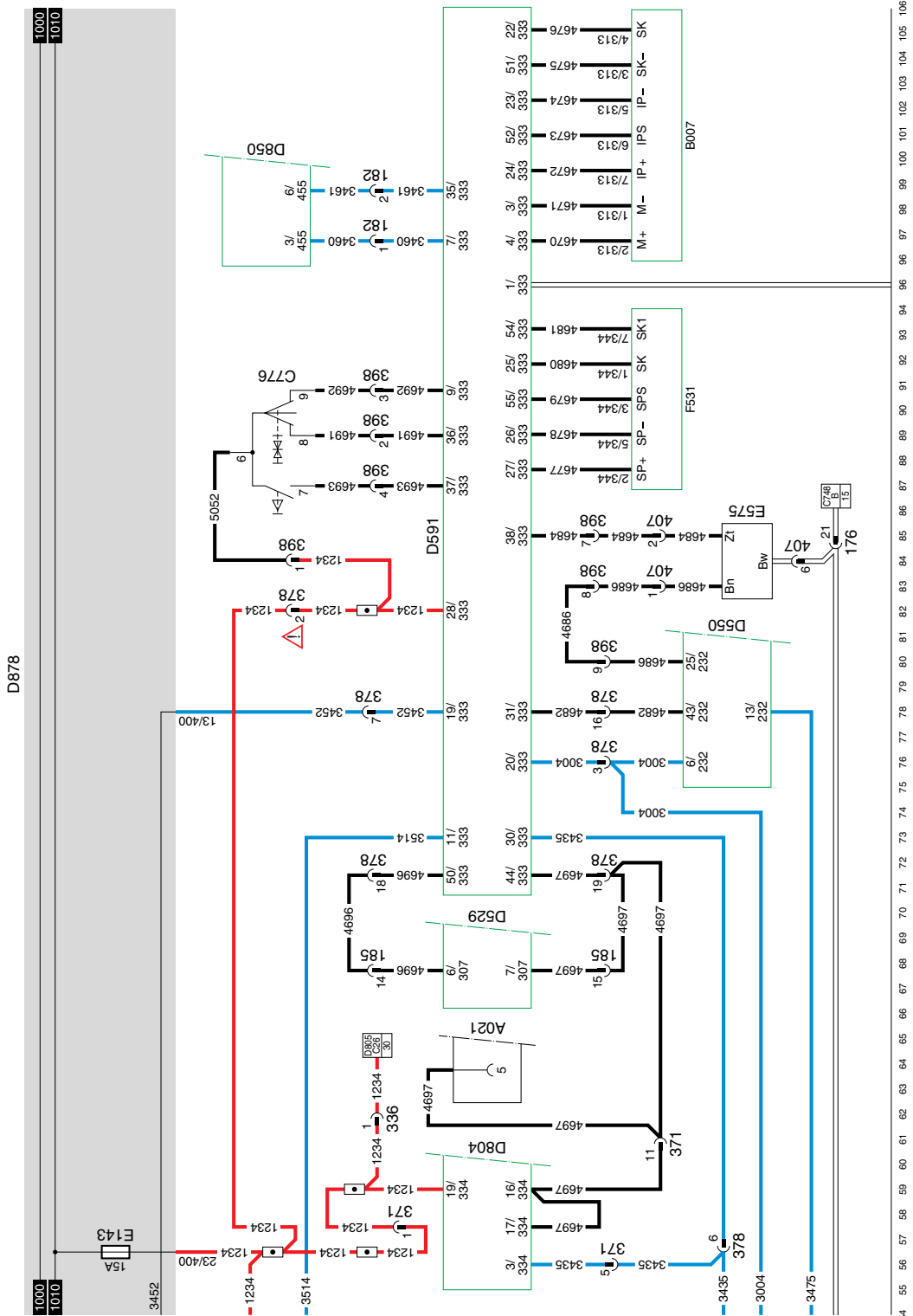


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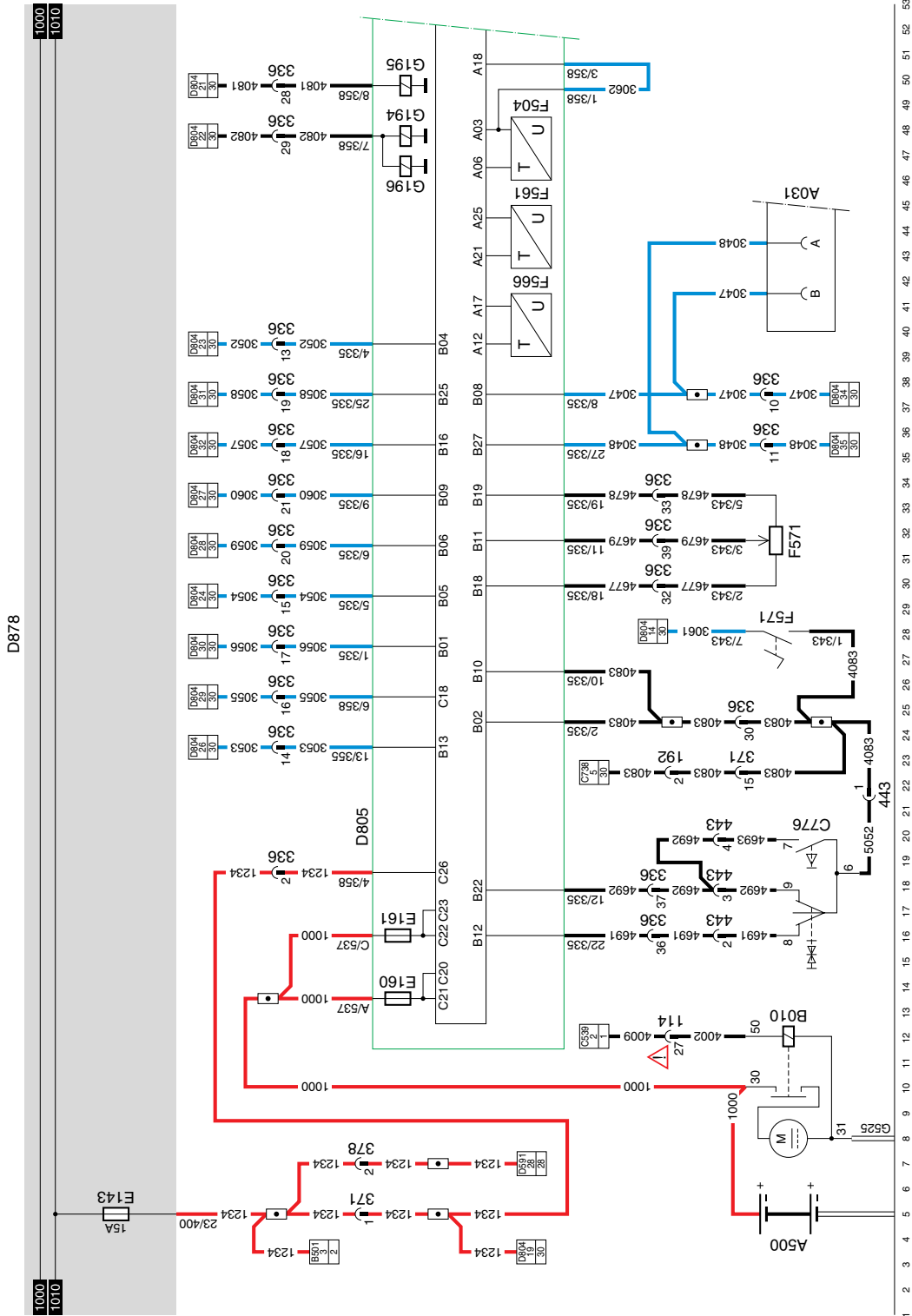


**29. ECS-DC****VARIANTS****Location**

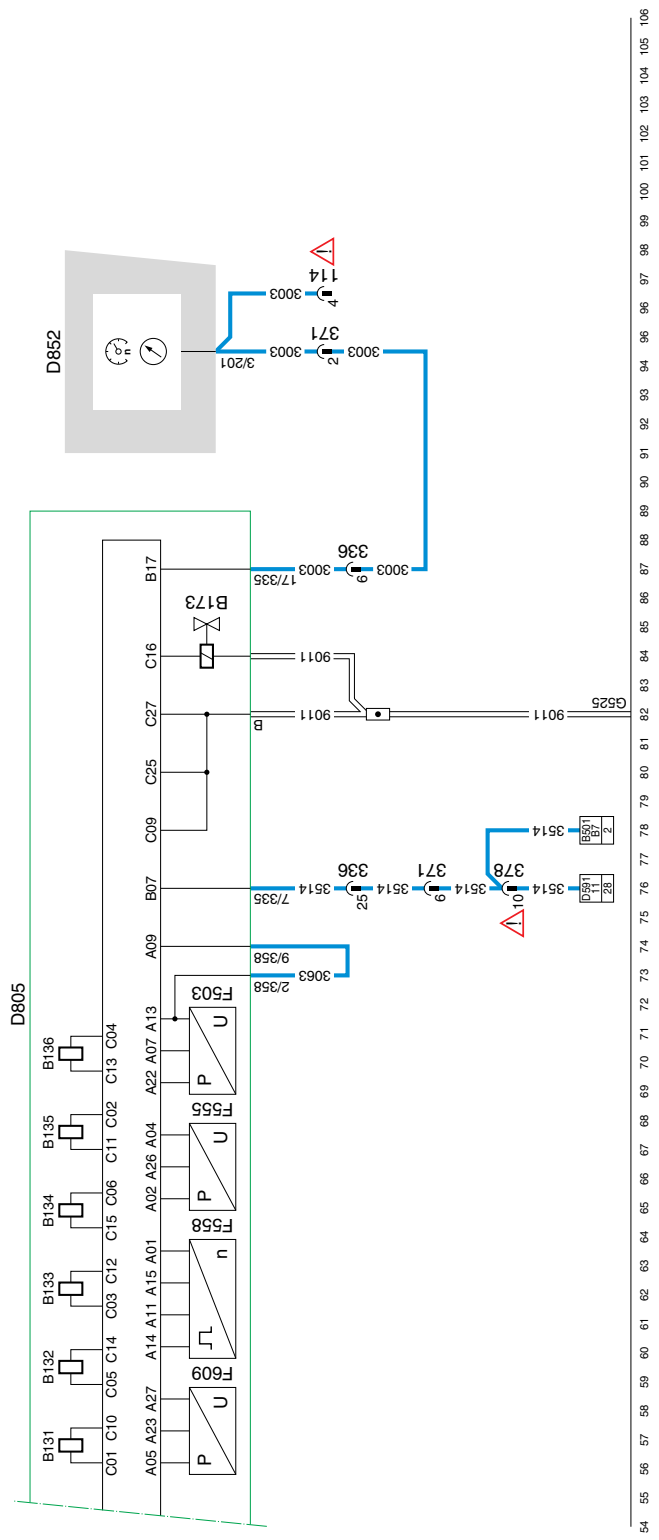
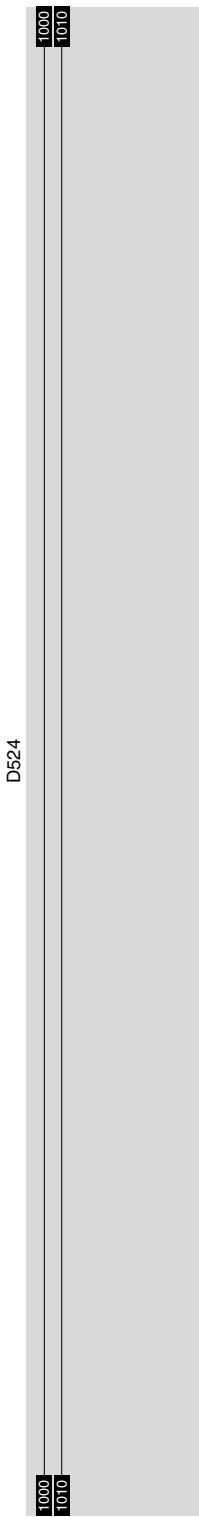
- 11 Wire 4009 only applies in the case of a VF.
- 75 This depends on the speed-limiter type.
- 98 In the case of an XF engine, component F501 (speed sensor) is connected here. In the case of a VF engine, the connection is loose.

**SEE THE SYSTEM MANUAL FOR MORE INFORMATION**





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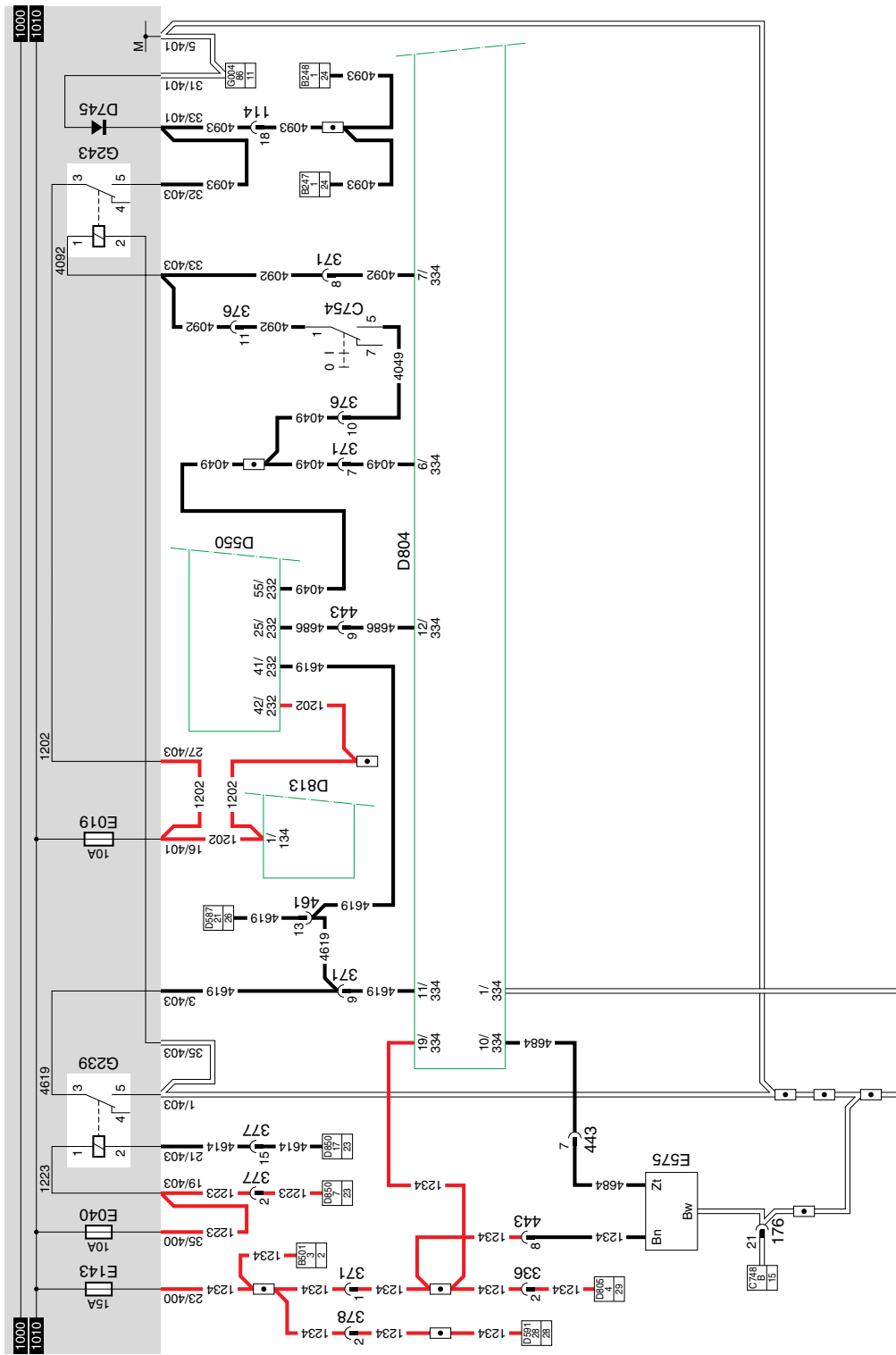
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**30. DCI****VARIANTS****Location**

70 This depends on the speed-limiter type.

**SEE THE SYSTEM MANUAL FOR MORE INFORMATION**



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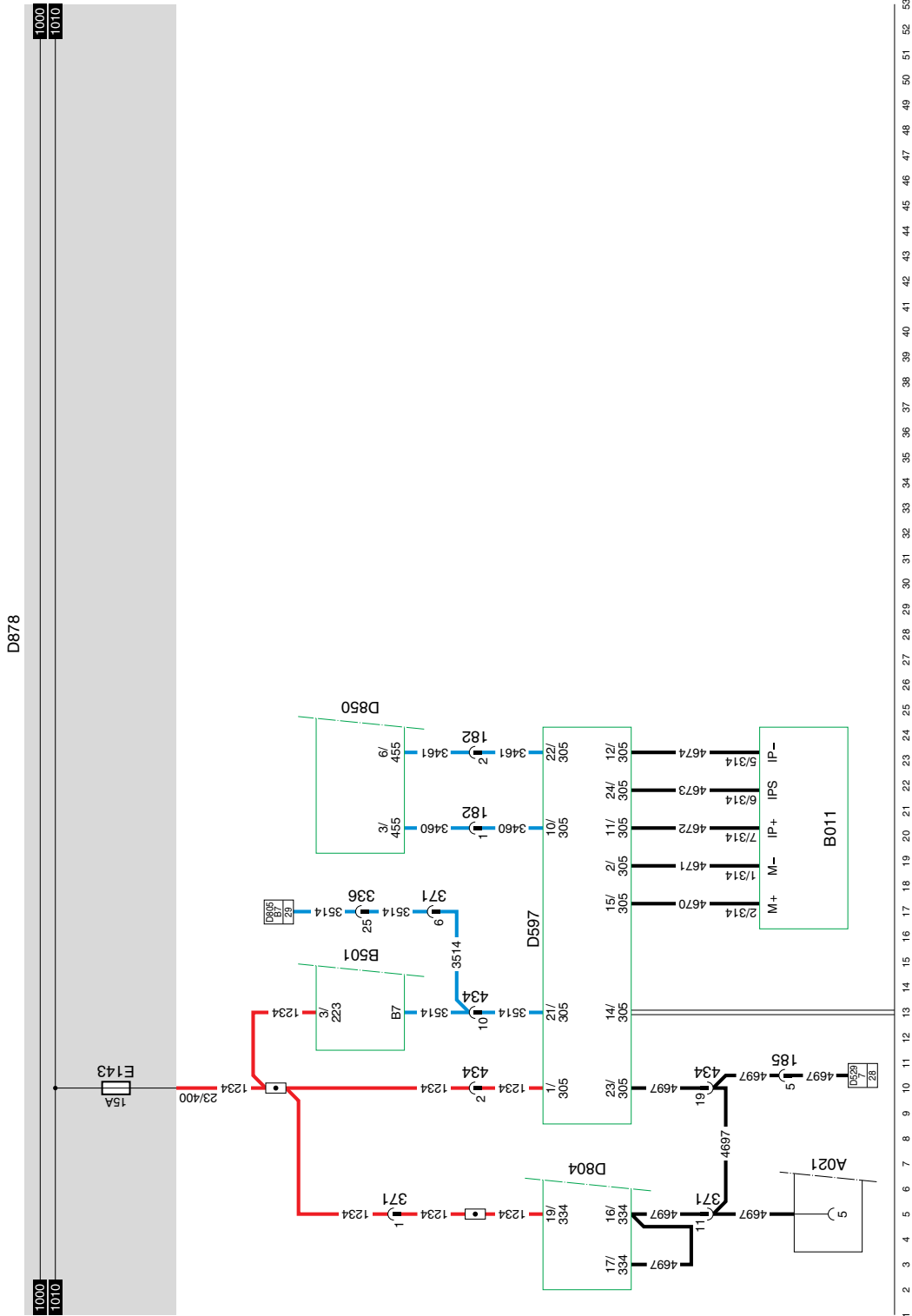
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**31. ASL-V**

**SEE THE SYSTEM MANUAL FOR MORE  
INFORMATION**



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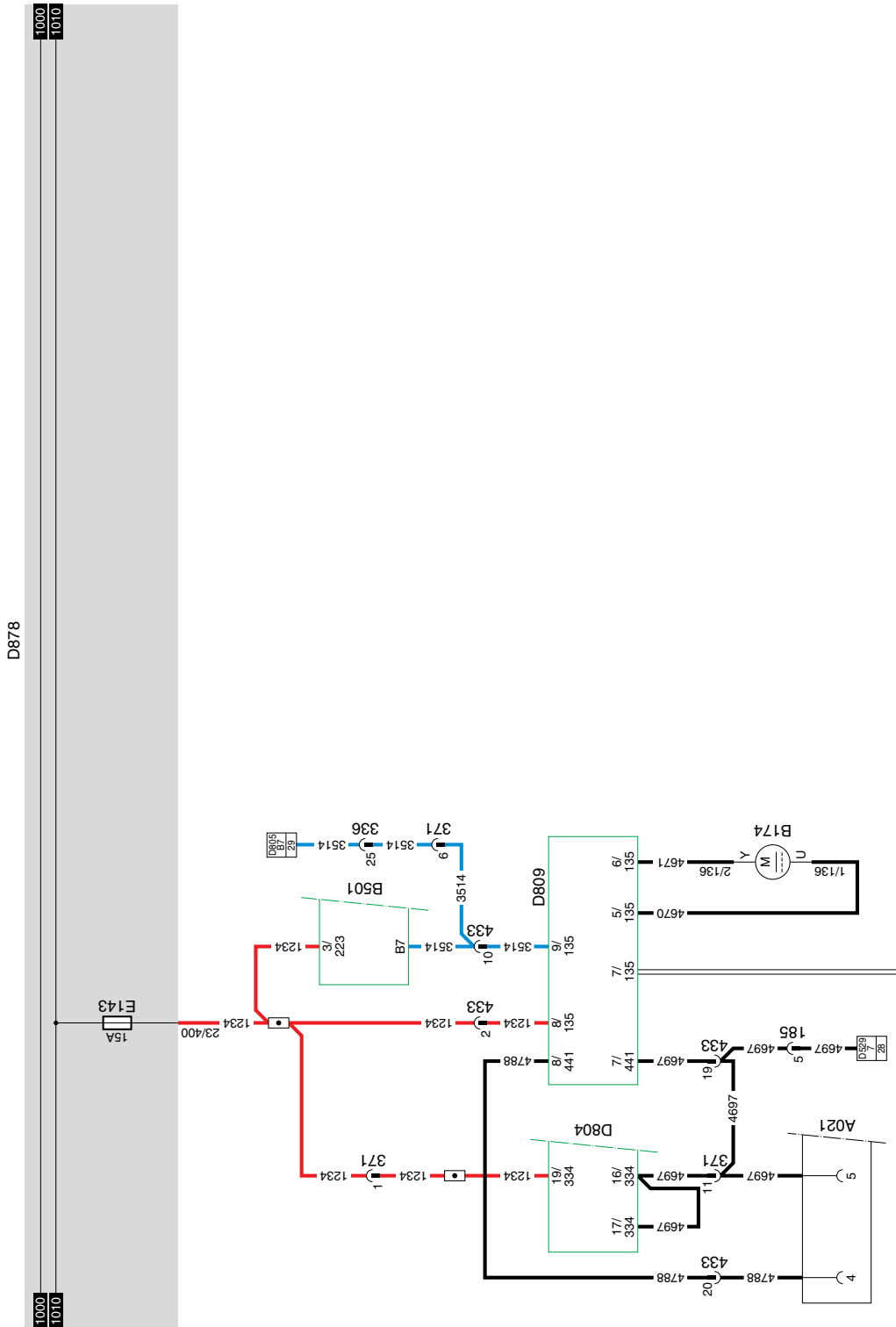
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**32. ASL-G**

**SEE THE SYSTEM MANUAL FOR MORE  
INFORMATION**





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### 33 HEADLIGHT-HEIGHT ADJUSTMENT

#### Operation

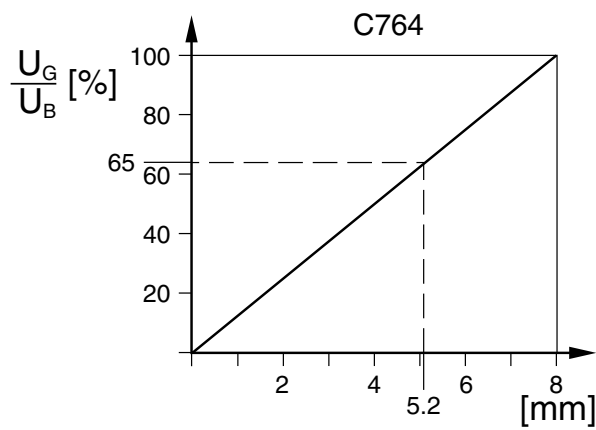
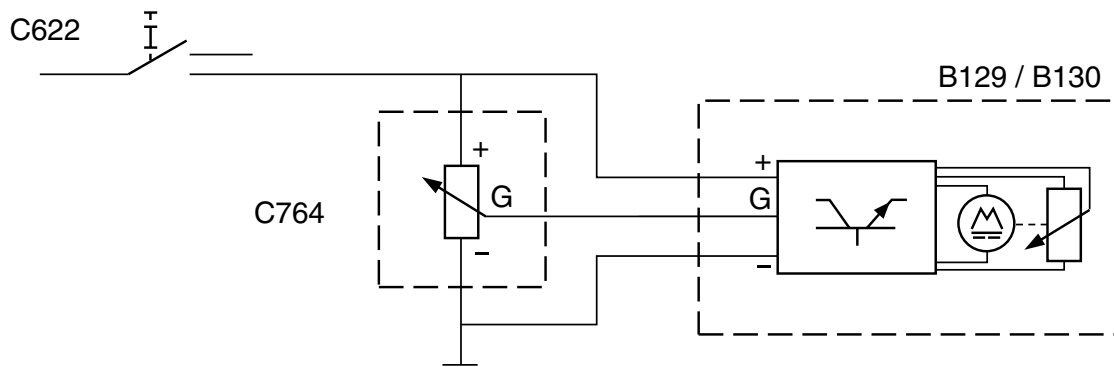
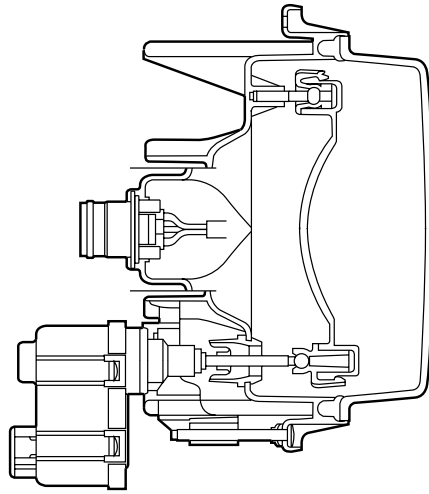
See also the detailed drawing.

#### Rear/side marker and parking lights position

A voltage is applied to connection point 2 of the lighting switch (C622) through fuse E084 and wire 1101. If a connection is made (contacts 2 and 1) with switch C622, a voltage is applied through wire 2100 to contact 85 of relay G000 (rear light/ side-light). Once the relay is activated, a connection is made between points 30 and 87. As a result, a voltage is applied through relay G000, wire 2101, fuse E117 and wire 2630 to connection point A of switch C764 (potentiometer for headlight-height adjustment). Only the LED in the switch will now light up.

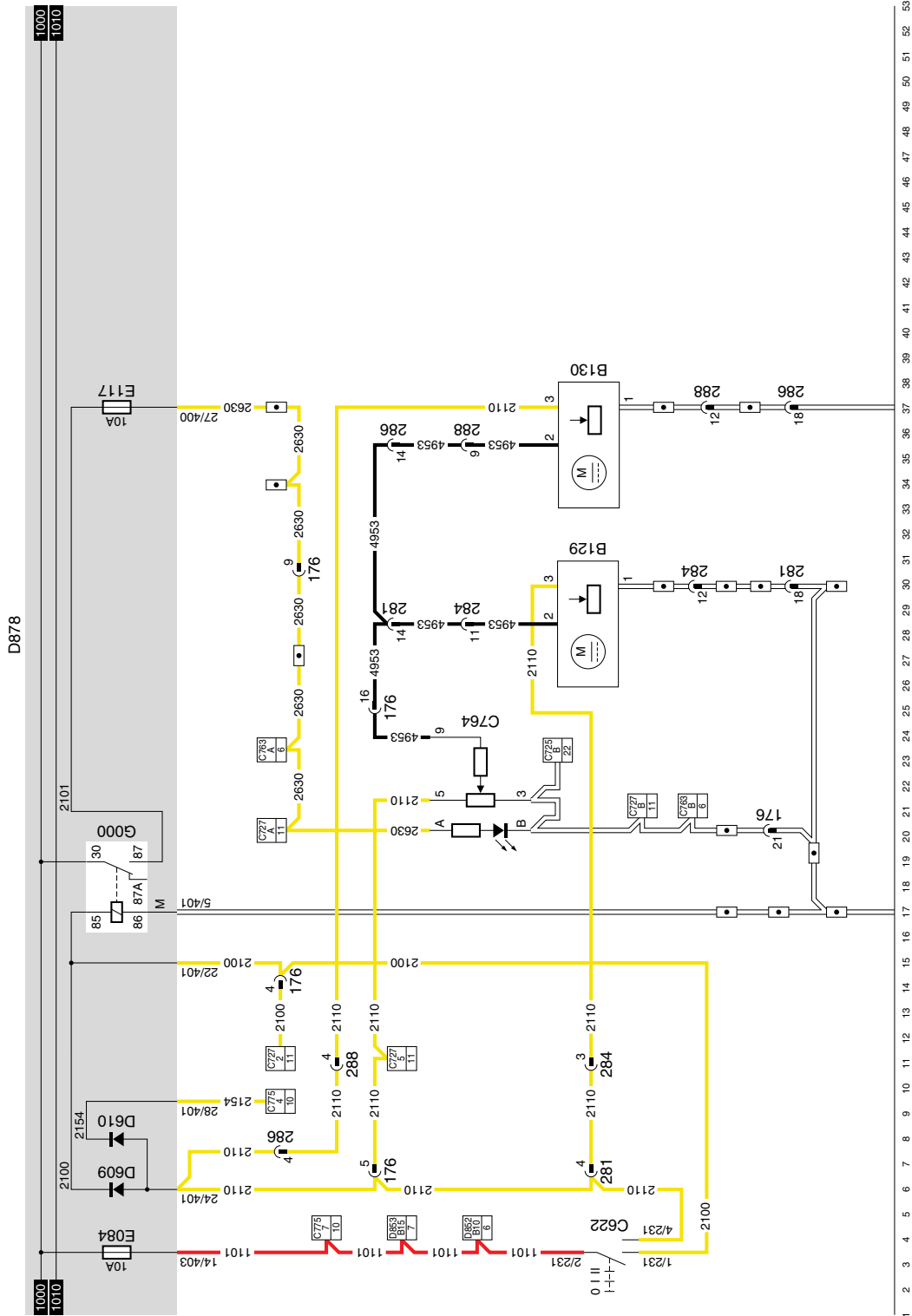
#### Dipped beam position

If a connection is made between contacts 2 and 4 with switch C622, a voltage is applied through fuse E084, wire 1101, switch C622, wire 2110 to B129 (left-hand side headlight-height adjustment motor), connection point 3, B130 (right-hand side headlight-height adjustment motor) and C764 (headlight-height adjustment potentiometer). Depending on the position of C764 (headlight-height adjustment potentiometer), the motor in the headlight is activated. The motor will remain active until an electric state of balance is achieved. This state of balance is the actual difference of voltage between wires 2110 and 4953 of C764, B129 and B130. This difference of voltage should be equal for all three components.



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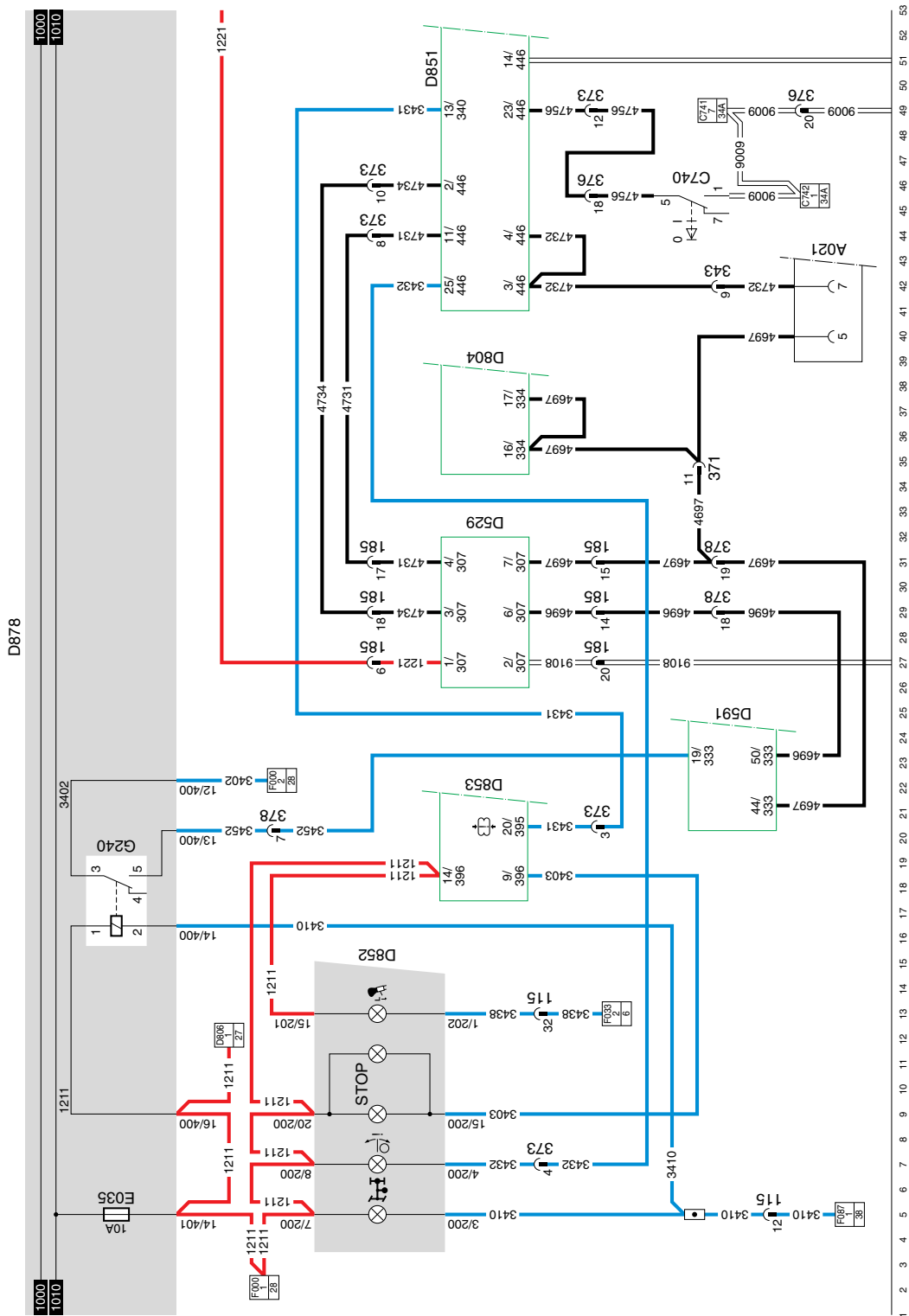
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**34A. ECAS 2 (4X2)****VARIANTS****Location**

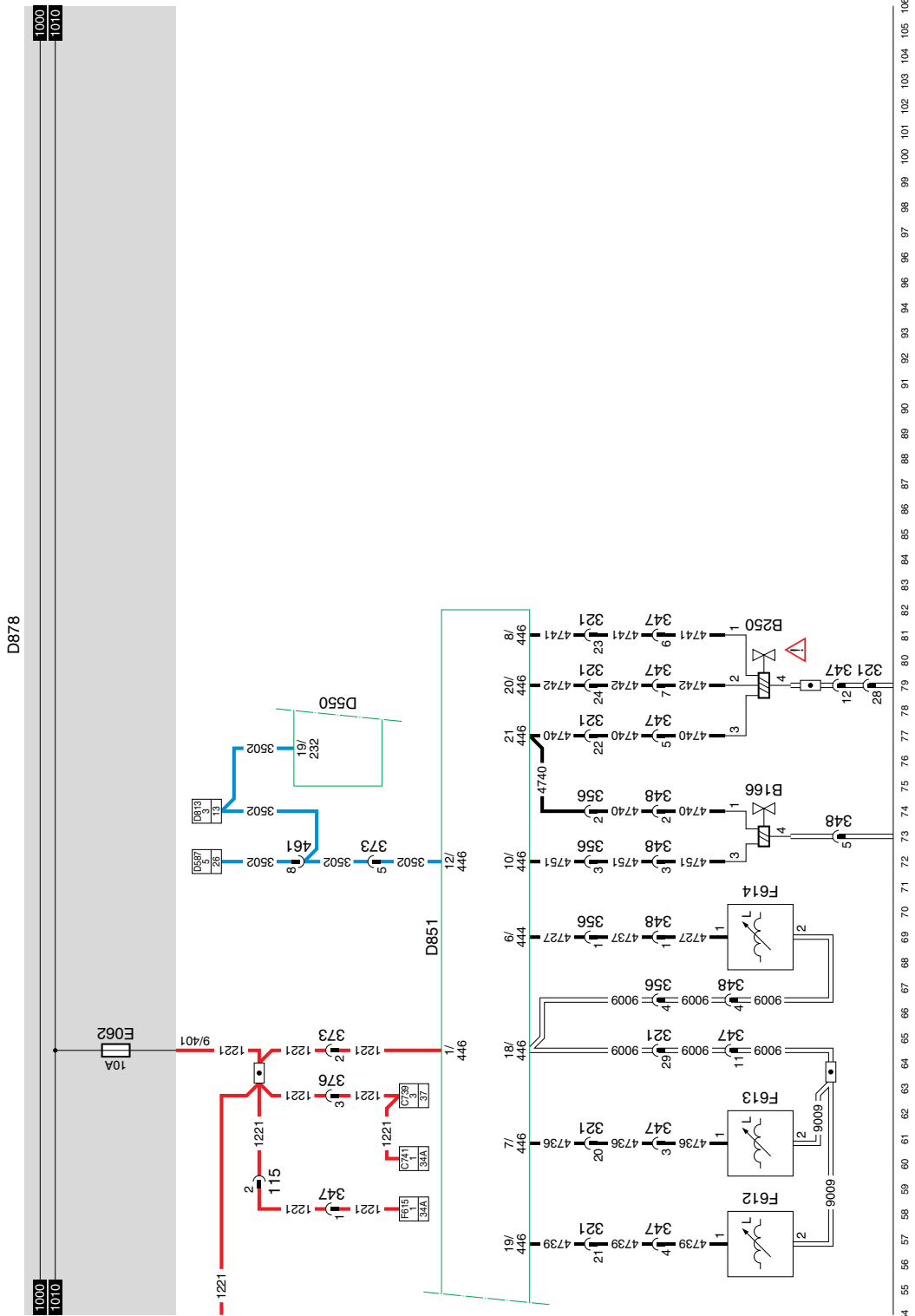
80 For vehicle type FA: component B250  
For vehicle type FT: component B238

**SEE THE SYSTEM MANUAL FOR MORE  
INFORMATION**



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34A

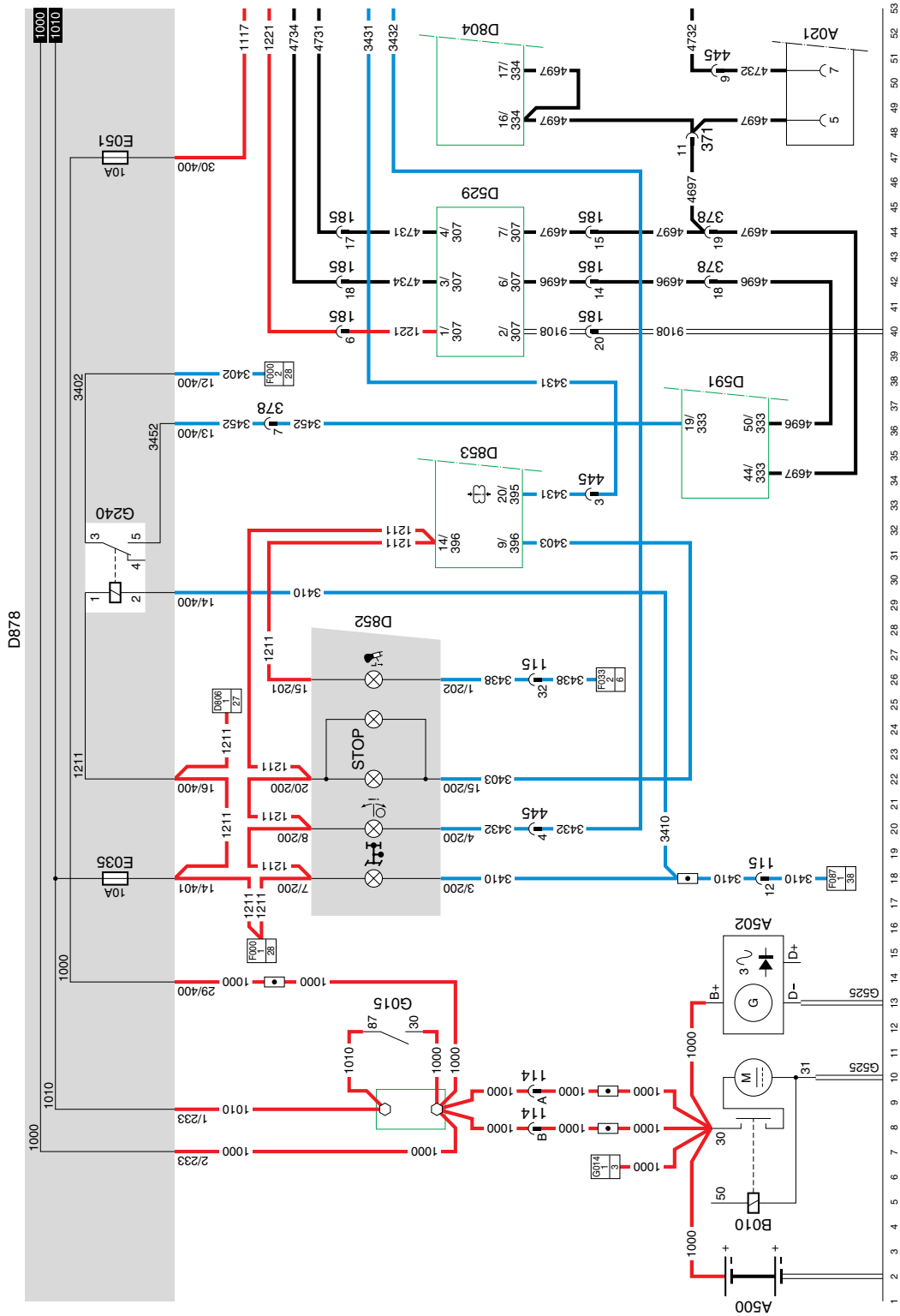
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**34B. ECAS 2 (6X2)**

**SEE THE SYSTEM MANUAL FOR MORE  
INFORMATION**

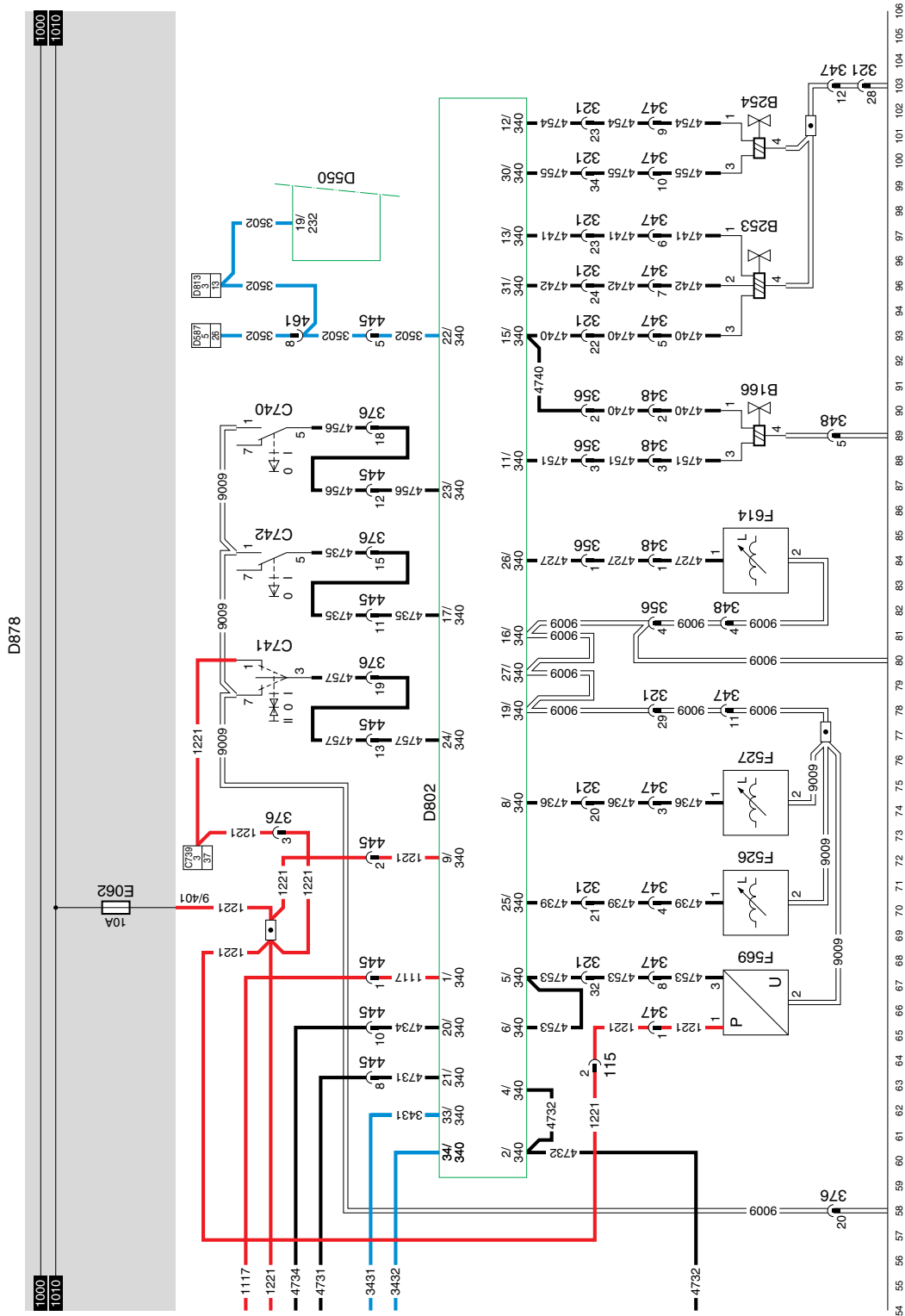




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# 34B

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### 35. CONVERTER/RADIO

**The following description of operation and installation is merely advisory.**

**Read the manufacturer's installation instructions supplied with the radio.**

If the contact switch (C539) is activated in accessory position 1, pin 1 is connected to pin 6 (wire 1100 to wire 1130). As a result, relay G178 is activated. A voltage is now applied to pin 2 of the voltage converter (D525) through the contacts of relay G178 and fuse E027.

The converter reduces this voltage to a 12V voltage and applies it to point 4 (D525).

This 12V voltage is fed to the radio (B185) through wire 1108.

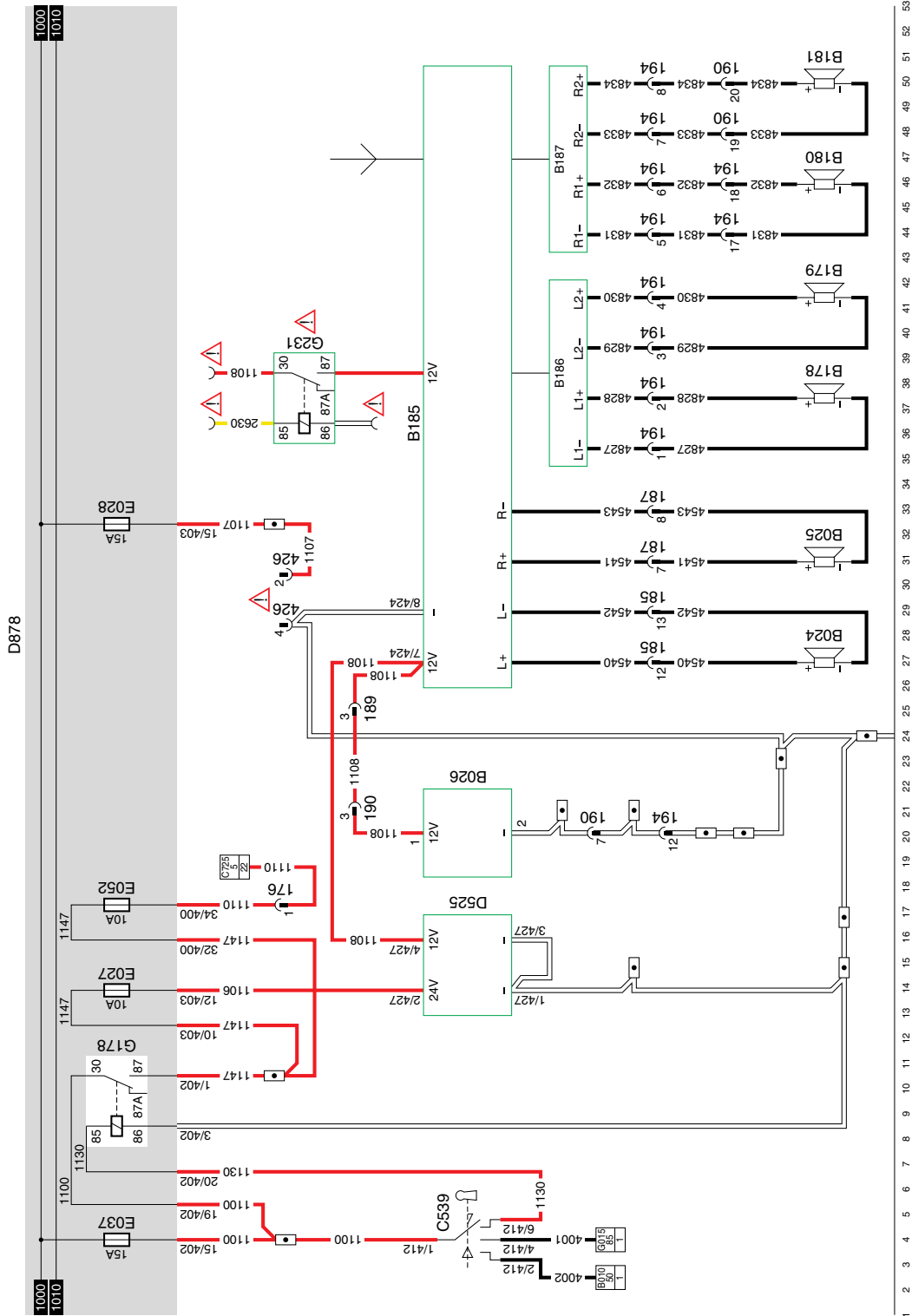
The radio is equipped with one antenna connection and two loudspeaker outputs used to connect loudspeakers B024 and B025. Two filters for the loudspeakers can also be connected to the radio. To each of these filters (B186 en B187) two loudspeakers can be connected (B178, B179 and B180 and B181).

The 12V output (pin 4) of the converter (D525) can also be connected to a CB transmitter (B026) to provide it with a supply voltage.

#### VARIANTS

##### Location

- 29 The converter should be connected to the existing wiring to feed the memory function (wire 1107). This can be done using a voltage converter. This converter can be obtained as an accessory.
- 37 Wire No. 2630. This wire should be connected to one of the control lighting switch wires.
- 31 Wire No. 1108. This wire should be connected to wire 1108 coming from the 24/12V converter.



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**36 AUTOMATIC WINDOWS / ROOF HATCH / CENTRAL DOOR LOCKING****AUTOMATIC WINDOWS, DRIVER'S SIDE (OPENING)****(Switch in door panel, driver's side)**

If the automatic window switch (C745) is activated and a connection is made (contacts 2 and 4), relay G030 will be activated through fuse E044 and switch C745 (wire 4526). As a result, a supply voltage is applied through fuse E034 to connection point 2 of the motor (B003). The other connection point (1) is connected to earth through relay G031. The motor will start operating counter-clockwise and the automatic window on driver's side will open.

**AUTOMATIC WINDOWS, DRIVER'S SIDE (CLOSING)****(Switch in door panel, driver's side)**

If the automatic window switch (C745) is activated and a connection is made (contacts 4 and 1), relay G031 will be activated through fuse E044 and switch C745 (wire 4527). As a result, a supply voltage is applied through fuse E034 to connection point 1 of the motor (B003). The other connection point (2) is connected to earth through relay G030. The motor will start operating clockwise and the automatic window on driver's side will close.

**AUTOMATIC WINDOWS, CO-DRIVER'S SIDE (OPENING)****(Switch in door panel, driver's side)**

If the automatic window switch (C743) is activated and a connection is made (contacts 2 and 4), relay G028 will be activated through fuse E044 and switch C743 (wire 4522). As a result, a supply voltage is applied through fuse E033 to connection point 2 of the motor (B004). The other connection point (1) is connected to earth through relay G029. The motor will start operating counter-clockwise and the automatic window on co-driver's side will open.

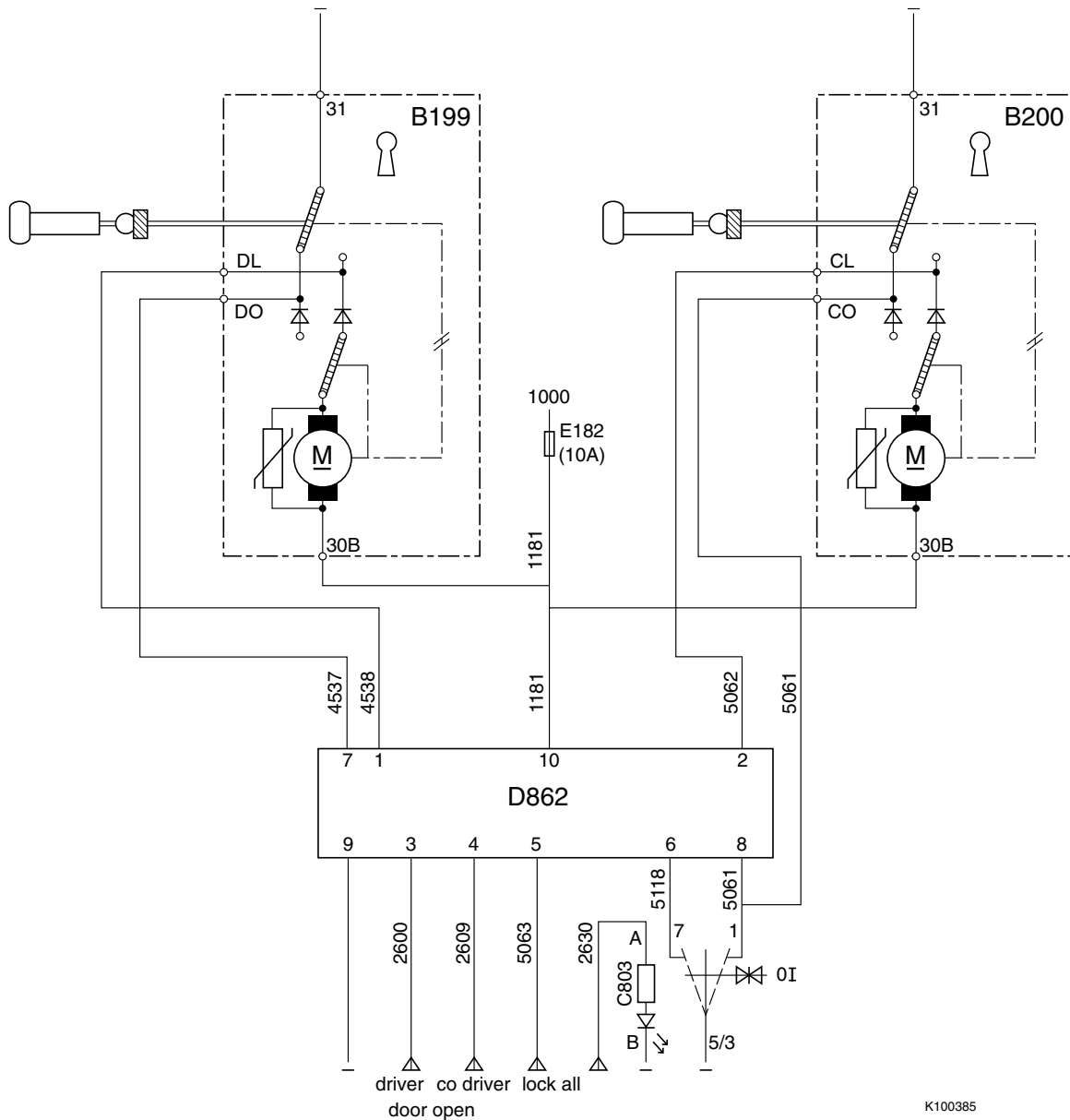
**AUTOMATIC WINDOWS, CO-DRIVER'S SIDE (CLOSING)****(Switch in door panel, driver's side)**

If the automatic window switch (C743) is activated and a connection is made (contacts 4 and 1), relay G029 will be activated through fuse E044 and switch C743 (wire 4523). As a result, a supply voltage is applied through fuse E033 to connection point 1 of the motor (B004). The other connection point (2) is connected to earth through relay G028. The motor will start operating clockwise and the automatic window on co-driver's side will close.

## AUTOMATIC WINDOWS, CO-DRIVER'S SIDE (Switch in door panel, driver's side)

The automatic window control using C744 on the co-driver's side is similar to the automatic window control on the driver's side. When switch C744 (connection between contacts 4 and 2) is engaged, relay G028 is activated through switch C743 (contacts 5 and 2) and the motor (B004) will open the automatic window. When switch C744 (connection between contacts 4 and 1) is engaged, relay G029 is activated through switch C743 (contacts 3 and 1) and the motor will operate clockwise and close the automatic window.

The automatic windows will only function if the contact is switched on.



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**ROOF HATCH, OPENING**

If the roof-hatch switch (C736) is used to make a connection between contacts 2 and 6, and therefore between contacts 1 and 3, a voltage is applied to pin 1 of the roof-hatch motor (B175) through fuse E030, switch C736 and wire 4761. The roof hatch will open.

**ROOF HATCH, CLOSING**

If the roof-hatch switch (C736) is used to make a connection between contacts 8 and 6, and therefore between contacts 7 and 3, a voltage is applied to pin 2 of the roof-hatch motor (B175) through fuse E030, switch C736 and wire 4760. The roof hatch will close.

**CENTRAL DOOR LOCKING, CO-DRIVER'S SIDE (STANDARD)****Purpose:**

To lock the co-driver's side door using button/key or switch (C744). The driver can lock/unlock the co-driver's side door from behind the steering wheel.

**Central door locking motor, co-driver's side (B200):**

The motor has two (internal) switches, i.e.:

- a "stroke-end" switch (always reverses at end of stroke) (lower drawing);
- a switch which is mechanically connected to the locking button (always reverses at the beginning of the upward or downward movement of the locking button) (upper drawing).

**Note:**

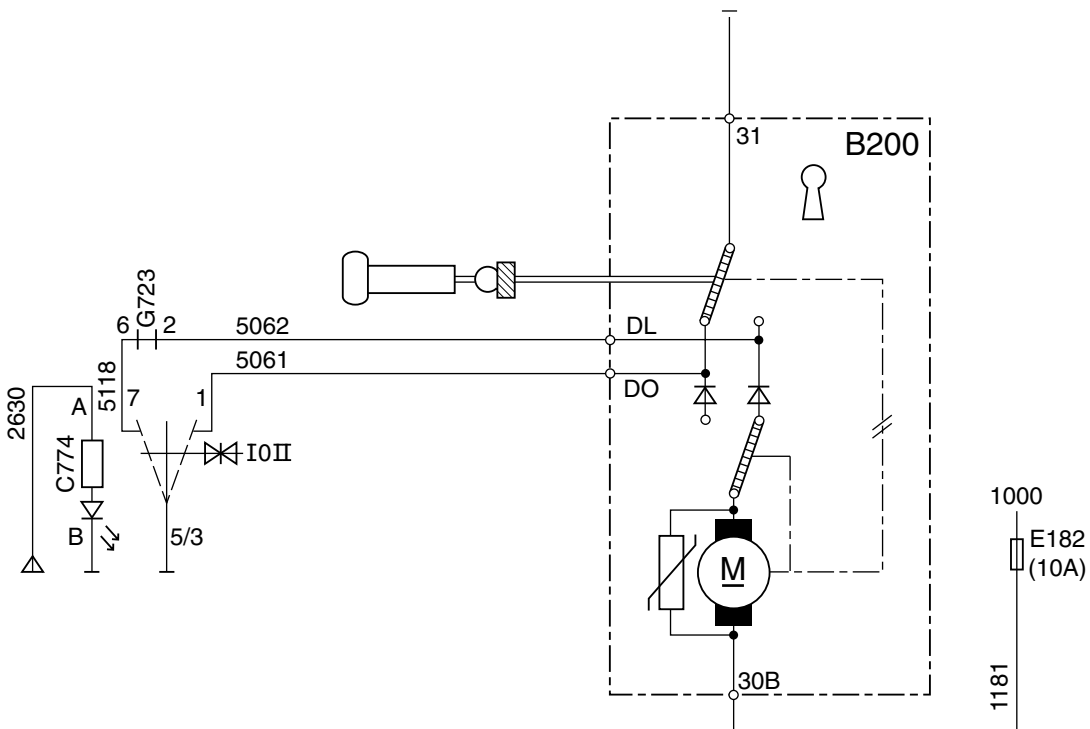
A mechanical connection consisting of a linkage mechanism between the cylinder lock and the locking button will remain.

**Starting position: door unlocked (see drawing).**

- The door is locked using the button/key. The mechanical linkage reverses the upper switch directly. As a result, a current will flow through the fuse (E162), the connection (30b), the motor, the lower switch and the upper switch through connection 31 to earth. The mechanical linkage between the motor and unlock button will move the button down. Having reached the lower position, the "stroke end" switch reverses.

The same occurs during unlocking. The direction of rotation of the motor is the same. The position of the switches is different, however. The power between motor/lock button is transmitted through a lever/connecting rod mechanism.

- The door is locked using the switch (C774). If the spring-loaded switch (C774) makes a connection between connections 5/3 and 7, point DL of (B200) is connected to earth. One brief moment is sufficient to start the motor moving. Because there is a mechanical linkage between the motor and the lock button, the upper switch will reverse immediately afterwards. A current will flow until the "stroke-end" switch breaks the circuit.
- The door is unlocked using the switch (C774). To this end, connection DO is briefly connected to earth. The action is the same, except that the switches resume their other position once the locking button has moved upwards.



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**Variants:**

- 36 If the standard version is installed, the driver's side central door locking (B199) and the central door locking electronic unit (D862) will also not be installed. In that case cascade G723 is placed on connector 394, and switch C744 replaces switch C803.

**CENTRAL DOOR LOCKING (OPTION)****Purpose:**

- To automatically lock both doors if one of the doors is locked using the key/button.
- To automatically lock both doors using the alarm-system remote control (if available).
- If one of the two doors is unlocked, only this door will open while other door remains locked.

**Description of central door locking, driver's side (B199) and central door locking motor, co-driver's side (B200).**

The description of both components is similar to description B200 as above.

**Starting position: both doors locked.**

Unlock the co-driver's side door using the key. This is the same as the standard version. The other door remains locked.

Unlock the co-driver's side door using switch C803.

If switch C803 is engaged (connection between pin 1 and 3/5), connection CO of component B200 is connected to earth. B200 is activated in the same way as in the standard version.

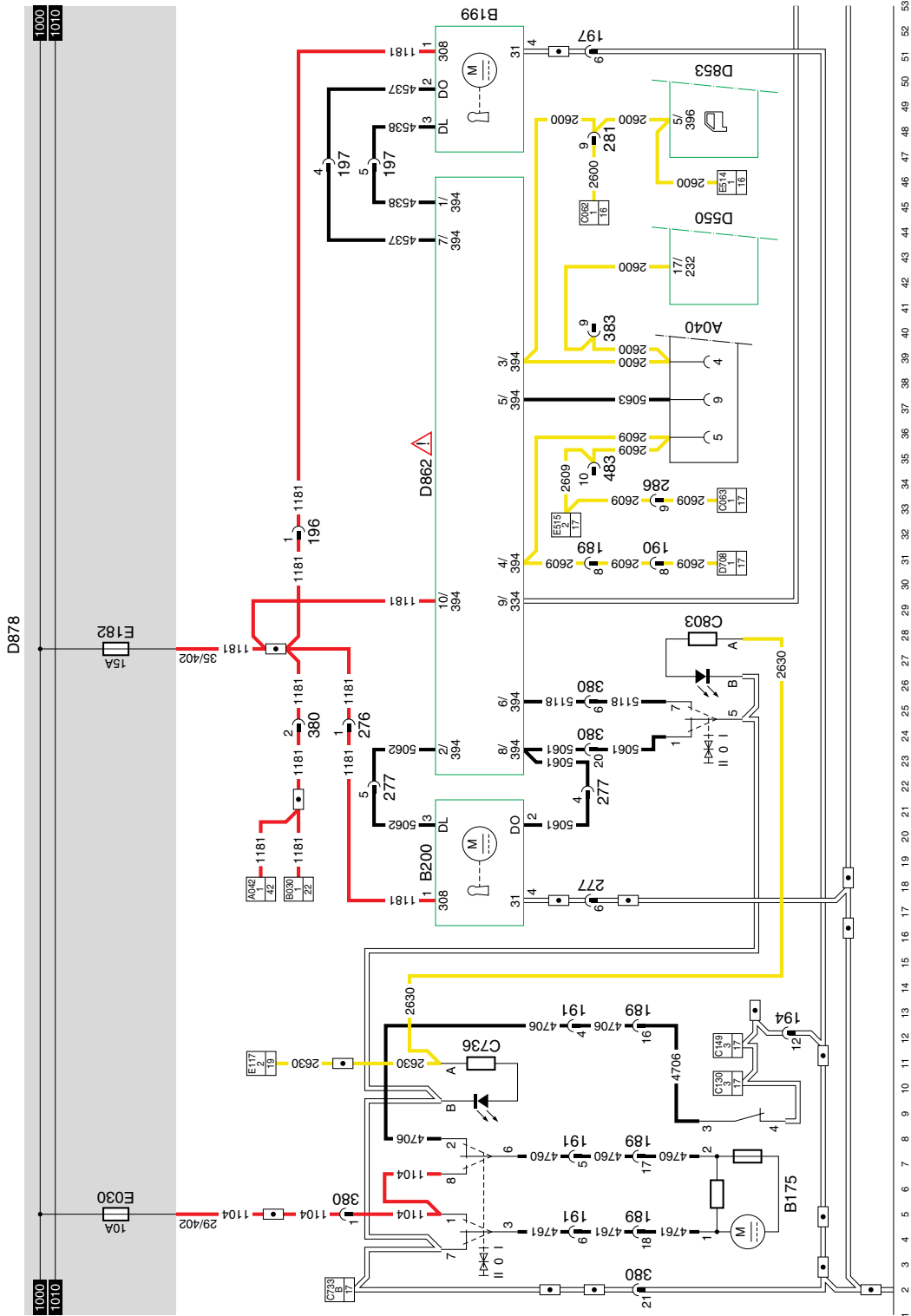
**Starting position: both doors unlocked.**

Driver's side door locked using key/button. The action is similar to that in the standard version; in this case, however, unit D862 will measure an earth signal through connection DL (wire 4538) to pin 1. D862 now connects pin 2 to earth, also activating B200. The co-driver's side door is now also locked.

Locking co-driver's side door using key/button. The operation is the same as the operation described above. However, unit D862 now measures an earth signal at pin 2 and will, therefore, connect pin 1 of component B199 to earth. The driver's side door is now also locked.

**Note:**

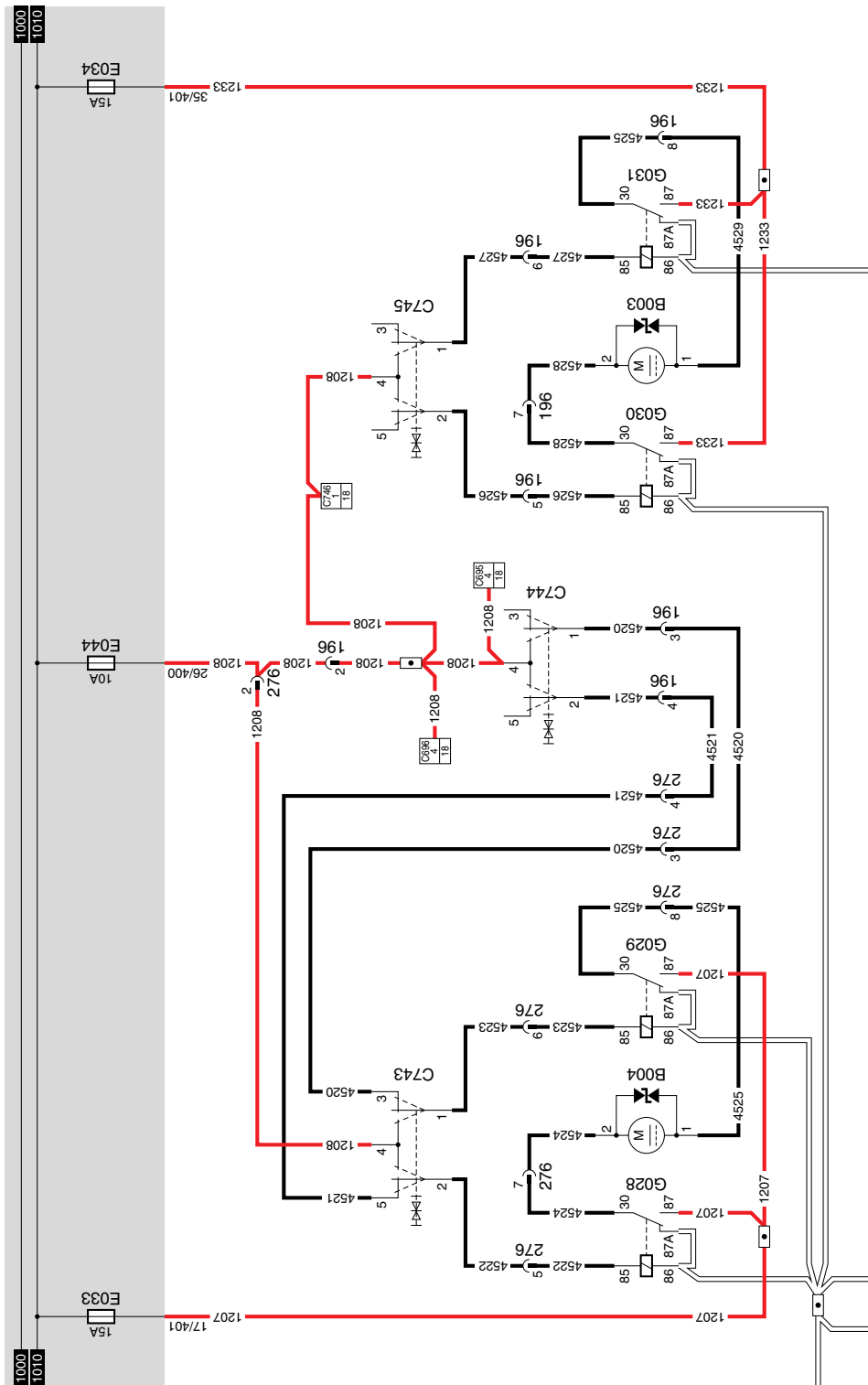
If one or both door switches sends a positive signal to pin 3 or 4 of unit D862, the accompanying components B199 and/or B200 will not be activated.



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## 37. MECHANICAL LIFTING GEAR

### Lifting:

A voltage is applied to the lifting gear switch (C739), the electronic unit of the lifting gear (D503) and the approximation switch for axle load protection of lifting gear (10 tonnes) (E507) through fuse E062 and wire 1221.

If the switch is switched into the 'lifting' position (connection between points 3 and 1), valve B071 (lifting-gear lifting valve) will be activated through wire 4550. A voltage is also applied through contacts 30 and 87a of relay G066 (lifting-gear take-over relay). As a result, the lifting-gear motor relay (G052) will be activated, thus activating the lifting-gear pump motor (B073).

If the pressure has increased to 160 bar, the control switch for lifting-gear oil-pressure limit switch (E524) will be activated, thus activating the lifting-gear take-over relay (G066) as a result of which the contact of this relay will switch from connection 30/87a to connection 30/87.

This will switch off the lifting-gear pump motor (B073) and the pressure will fall to below 160 bar, so that the control switch for the lifting-gear oil-pressure limit switch (E524) will resume its neutral position.

If the switch on the dashboard is released, the supply is disconnected and everything returns to the starting position so that no more lifting takes place.

### Lowering:

#### Manual control:

A voltage is applied to the lifting gear switch (C739), the electronic unit of the lifting gear (D503) and the approximation switch for axle load protection of lifting-gear (10 tonnes) (E507) through fuse E062 and wire 1221. If the switch is switched into the 'lowering' position (connection between points 7 and 1), a voltage will be applied to point S1 of the lifting gear's electronic unit (D503). This unit will apply a voltage to point 87 for 2,5 minutes.

**If within this 2,5 minute period the dashboard switch is engaged again, the electronic unit will reset and another 2,5 minute period will start.**

As a result, the lifting-gear motor relay (G052) will also be activated, thus activating the lifting-gear pump motor (B073). The motor is activated through D623, relay G066 (connection between points 30 and 87a) to connection point 85 of relay G052. At a pressure of 160 bar, the oil-pressure limit switch (E524) switches off the lifting-gear pump motor (B073) through relay (G066) and relay (G052).

During the 2,5 minute period, the trailing axle cannot be lifted as the 4/2 valve (B072) remains activated. This valve should be in the **non-activated** position (see hydraulics diagram).

**Automatically:**

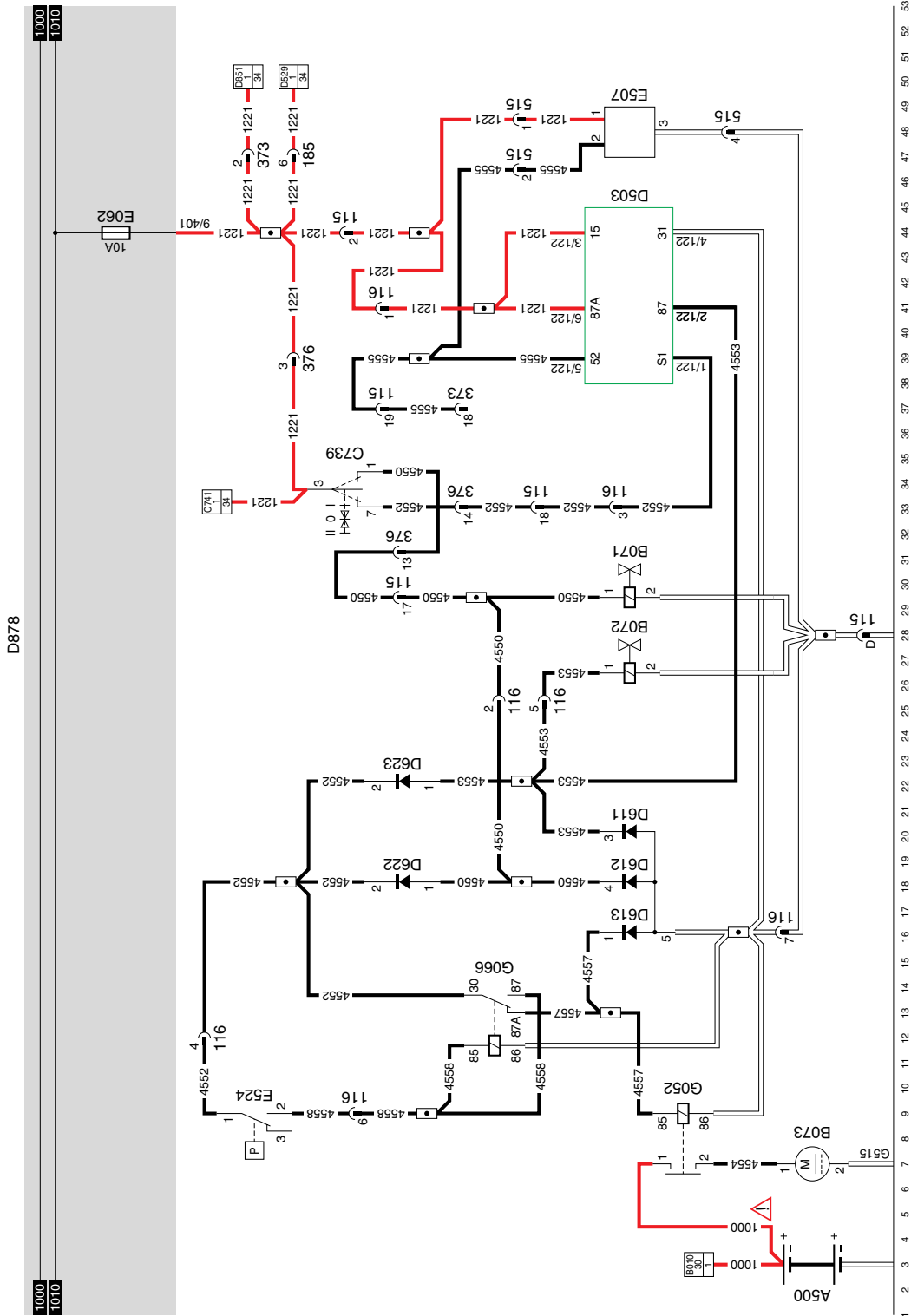
If the axle pressure of the driven axle exceeds 10 tonnes, the trailing axle is lowered automatically.

**10-TONNES AXLE LOAD PROTECTION**

If the driven rear axle is loaded with a weight of 10 tonnes or more, a signal is sent by the approximation switch for axle load protection (E507) to input S2 of the "lifting gear electronic unit". The signal sent by the approximation switch for axle load protection (E507) to S2 should last for at least 10 seconds before the lifting gear electronic unit (D503) will activate the valve (B072) and the lifting-gear pump motor (B073), so that the trailing axle is lowered. This is to prevent the driven axle from exceeding the legal maximum axle load maximum (10 tonnes).

**VARIANTS****Location**

- 5 This wire should be connected directly to the battery.



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**38. GEARBOX PTO****Operation**

If the contact is activated, a voltage is applied to the electronic unit CWS (D853) pin 14.

A voltage is then also applied to C750 and C751 (PTO control switch) through fuse E016 and wire 1217.

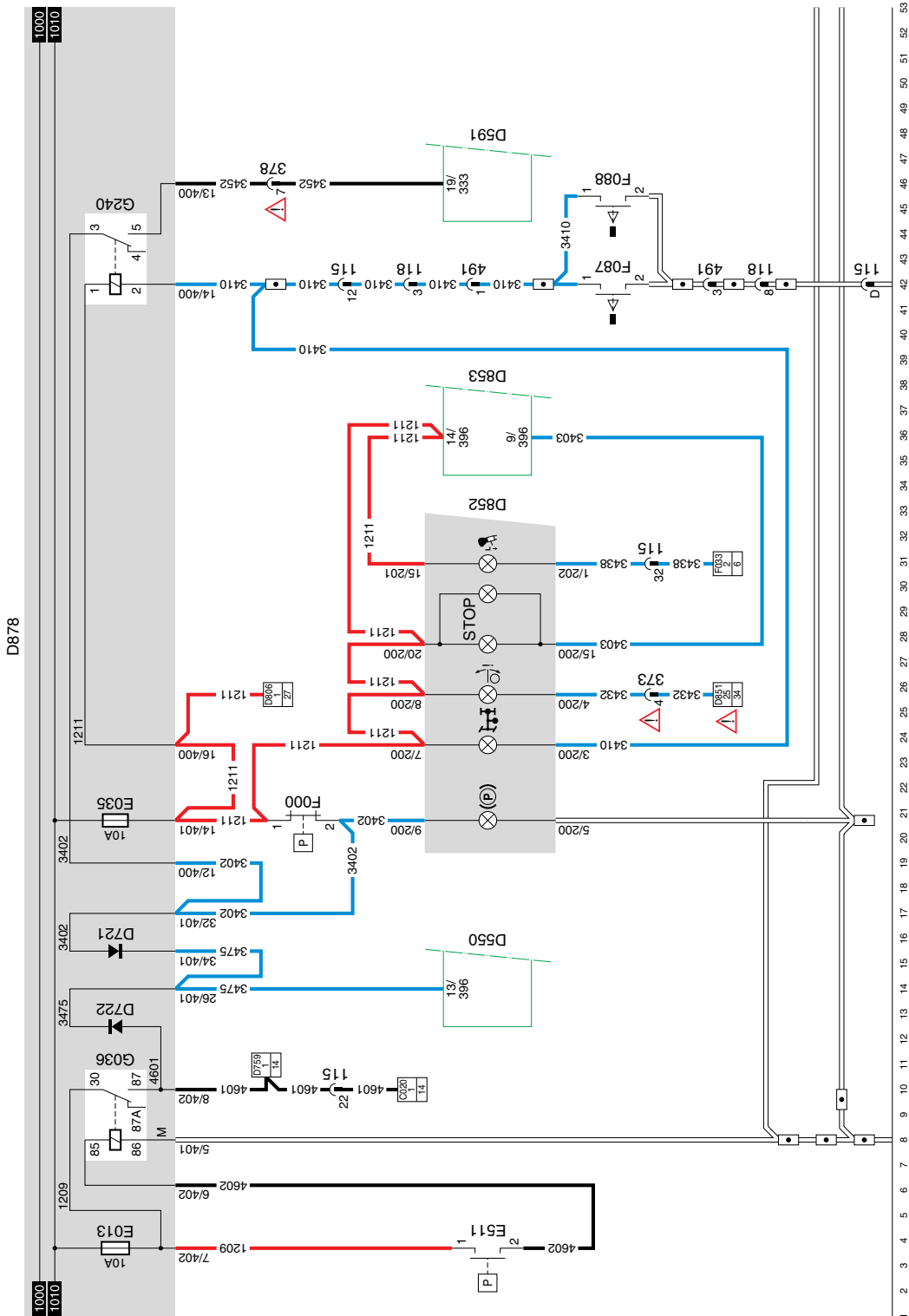
If the PTO control switch (C750) is engaged, a voltage will be applied to E570 (control switch clutch/PTO N/10) and to contact 3 of relay G259. Switch E570 will make a connection between contacts 1 and 2. As a result, both relay G259 will be activated and a voltage will be applied to connection point 1 (through wire 4596) of B245. The relay will establish a connection to connection point 1 of valve B245 through contacts 3 and 5.

If the PTO control switch (C751) is engaged, a voltage will be applied to B246 (PTO control valve). As a result, valve B246 is activated.

**VARIANTS****Location**

- 25 In the case of 4x2, connector 373 and unit D851 are used.  
In the case of 6x2, connector 445 and unit D802 are used.
- 45 This depends on the speed-limiter type.  
Connector 378 is used if the E-gas system is applied.  
Connector 433 is used if the ASL-G is applied.  
Connector 434 is used if the ASL-V is applied.



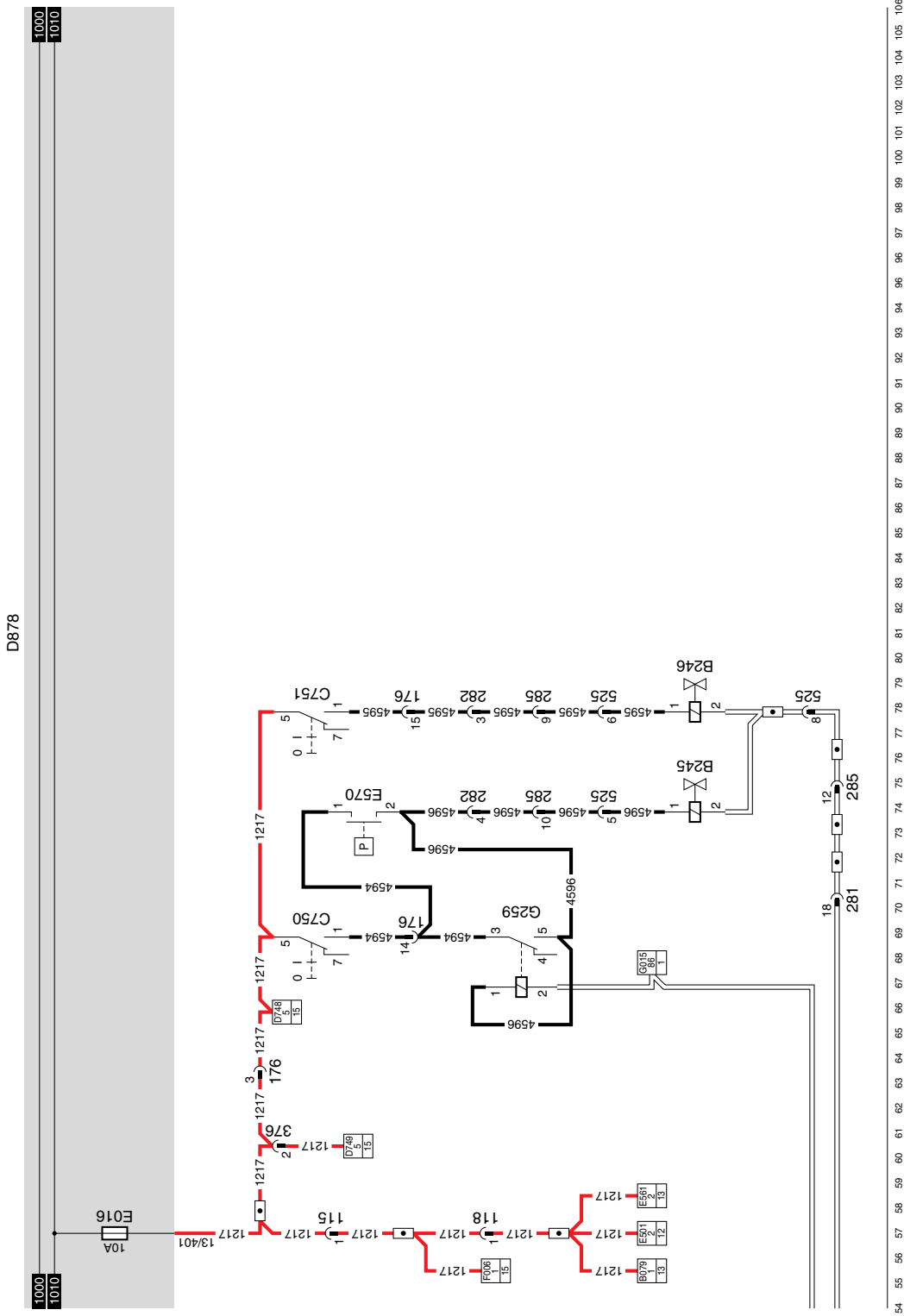


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### 39. WIPE-WASH SYSTEM

#### WINDSCREEN WIPERS

If the vehicle is switched to contact (G015 activated), a supply voltage will be applied to connection pin 4/411 of switch C776 through fuse E025.

The driver now has three choices, i.e. interval, speed I and speed II.

#### Speed I:

If switch C776 is set to position I, a voltage is applied to pin 21 of the CTE-2 unit through fuse E025 and contacts 1 and 2 of switch C776 (through wire 4500). Using a transistor switch, the CTE-2 unit then internally connects pin 23 to earth, activating relay G237. A supply voltage is now applied to pin 5 of the windscreen-wiper motor (B000) through relays G236 and G237. This voltage runs through fuse E025, relay G237 (contacts 5 and 3), wire 4506, relay 236 (contacts 3 and 4) and wire 4507.

#### Speed II:

If switch C776 is put into position II, a voltage is applied to pin 46 of the CTE-2 unit through fuse E025 and contacts 1 and 3 of switch C776 (through wire 4501). Using its transistor switch, the CTE-2 unit now not only connects pin 23 but also pin 52 to earth. Both relays G237 and G236 are now activated. A supply voltage is now applied to pin 6 of the windscreen-wiper motor (B000) through relays G236 and G237, causing the windscreen-wiper motor to operate faster.

If the windscreen wiper is halfway through its stroke and the windscreen-wiper control switch is set to position 0, the windscreen wiper finishes its stroke and then stops. This is possible because the switch in the windscreen-wiper motor (B000) reverses when the motor is at an angle in relation to its neutral position.

If the windscreen-wiper control switch is set to position 0, switch B000 provides the required supply voltage to enable the motor to finish its stroke. If the stroke is finished, switch B000 will return to its neutral position.

**Interval (i):**

If switch C776 is set to position i, a voltage is applied to pin 49 of the CTE-2 unit through fuse E025 and contacts 1 and 4 of switch C776 (through wire 4502). Using a transistor switch, the CTE-2 unit then connects pin 23 to earth (for 1 second), activating relay G237 for a short time. A voltage is now applied to pin 5 through relay G237 (pins 3 and 5) and relay 236 (pins 3 and 4). The windscreen-wiper motor starts operating and the "switch" in the windscreen-wiper motor (B000) is reversed. A voltage is now applied to wire 4507 through fuse E025, contacts 3 and 2 in the windscreen-wiper motor through wire 4509, and contacts 4 and 3 of relays G237 and G236. A voltage is also applied to pin 40 of the CTE-2 unit, enabling this unit to measure whether or not the stroke has been finished. The motor will now stop for some seconds; after this period the motor will start again for as long as a voltage is applied to pin 49.

**Wipe-wash:**

If the spring-back part of switch C776 is used, connection between 1 and 5, a voltage is applied to pin 20 of the CTE-2 unit through fuse E025 and contacts 1 and 5 of switch C776 (through wire 4503). A voltage is applied directly to the windscreen-wiper pump motor (B001) through wire 4503.

After a brief period of spraying, pin 23 of the CTE-2 unit is connected to earth using a transistor switch. As a result, relay G237 is activated.

A supply voltage is now applied to pin 5 of the windscreen-wiper motor (B000) through relays G236 and G237. The windscreen-wiper motor B000 will now start operating. The CTE-2 unit will have the motor make 3 revolutions and will then disconnect pin 23 from earth, causing the windscreen-wiper motor (B000) to stop.

**Cut-off switch:**

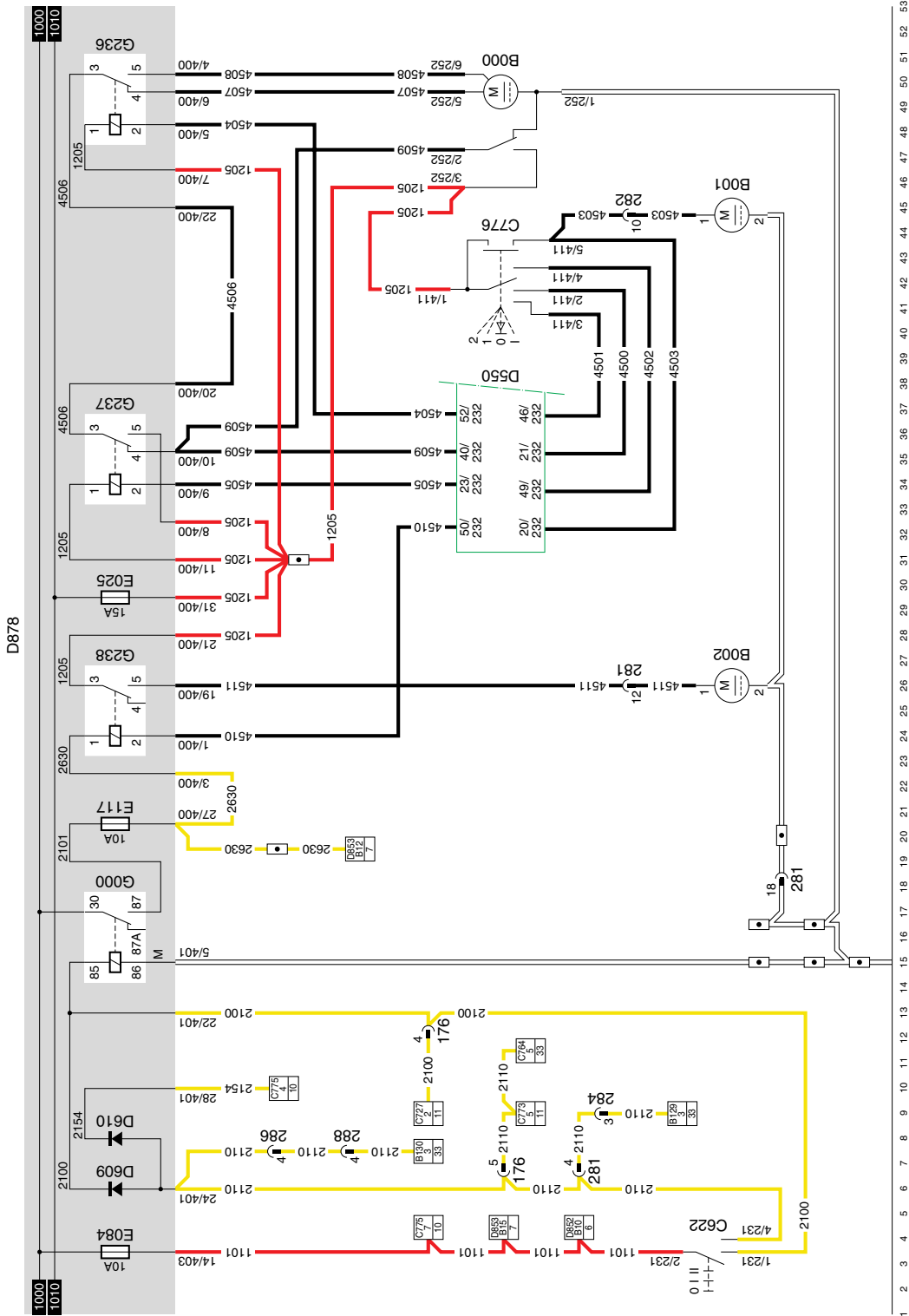
If the windscreen-wiper motor (B000) does not operate, pin 40 of the CTE-2 unit "detects" an earth connection over the windscreen-wiper motor "switch", wire 4509.

If switch C776 is engaged so that the windscreen-wiper motor should operate (voltage to pins 21, 46 or 49), the earth to pin 40 should be changed into +24V through the "switch" in the motor. If the voltage is not changed (the motor is not operating), the CTE-2 unit will disconnect the earth from pins 23 and/or 52, preventing the motor from burning, for example as a result of frozen windscreen-wiper blades. The CTE-2 unit is "reset" by switching C776 into the "off" position.

**Headlight cleaner**

If lighting switch C622 is activated (position I or II), a voltage is applied to the rear-light/side-light relay (G000).

If this relay is activated, a connection is made between contacts 30 and 87. The voltage will now activate relay G238 (headlight cleaner) through fuse E117, wire 2630 and print track. A connection is made with contacts 3 and 5, so that the voltage is applied to B002 through fuse E025, relay G238 and wire 4511. If a voltage is applied to connection pin 20 for at least 1 second (engaging the windscreen-wiper pump B001), relay G238 is connected to earth for approx. 1 second, causing the headlight-cleaner pump motor (B002) to be activated for approx. 1 second.



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## 40. AUXILIARY HEATING - EBERSPÄCHER

The auxiliary air heating is a separate heating which functions entirely independent of the vehicle. The cab temperature is measured by a temperature sensor which is installed in the thermostat panel (E566). This sensor sends a signal to the electronic unit which controls the heating.

As a result, the cab temperature automatically remains at the preset temperature. In that case, the blower is in continuous operation.

### OPERATION OF AUXILIARY HEATING

The auxiliary air heating can be activated using the button on thermostat E566. It is possible to use the thermostat in combination with a programming clock. If this button is switched to the "interior heating" position, the heating will be activated. A green lamp will now light up in the thermostat.

If the heating is activated, the auxiliary heating unit (D871) activates the fan in the heating unit (D871).

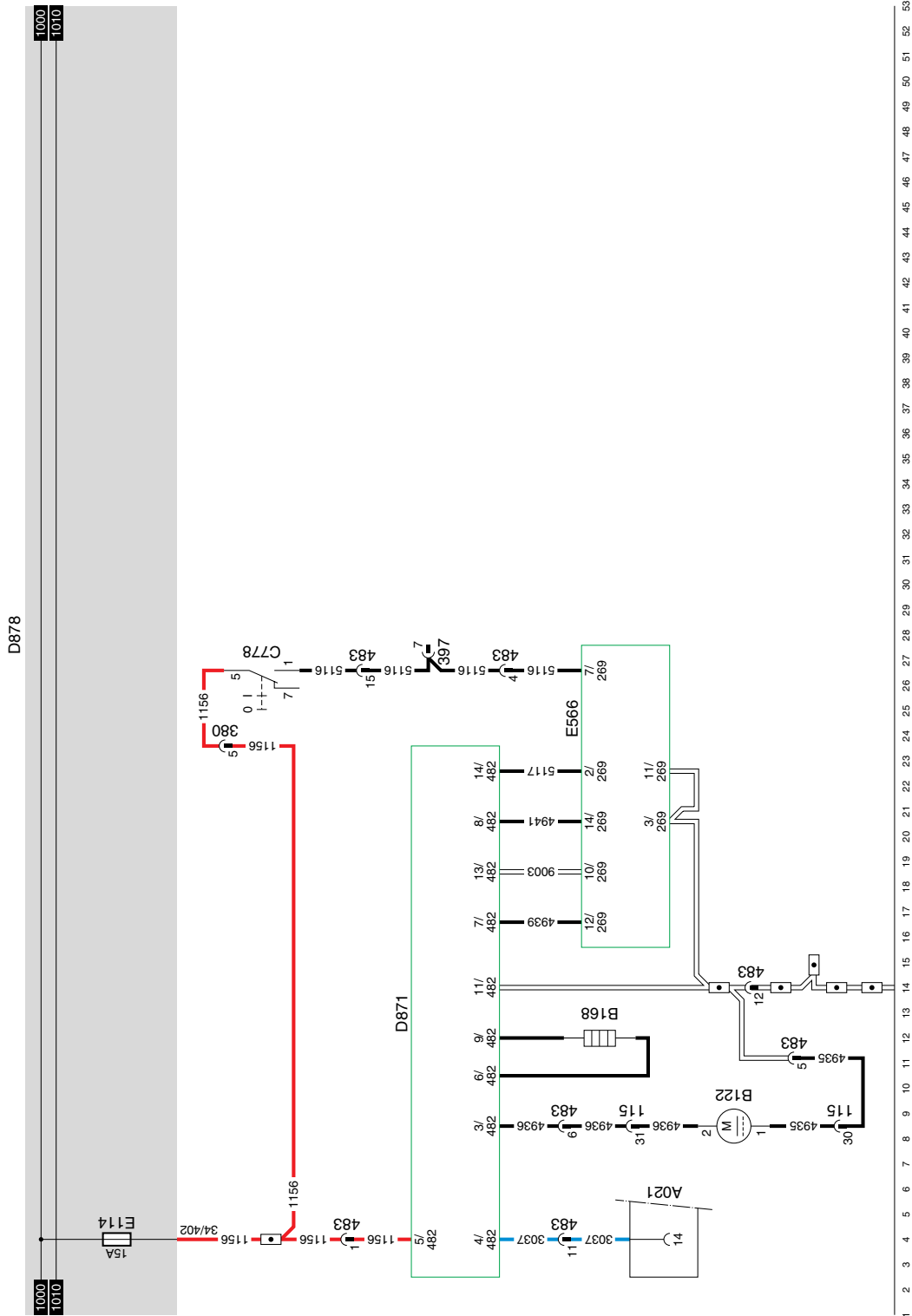
At the same time the fuel feed pump for the auxiliary Eberspächer heating (B122) is activated, so that the correct amount of fuel is fed to the ignition chamber.

If the fuel is ignited, a temperature sensor (installed in the thermostat) will apply a voltage to the heating unit so that at a certain temperature, the heating unit (D871) switches off.

If the sensor measures a lower temperature than the temperature preset by the driver (using the temperature control button on the thermostat), the heating power will be adjusted.

In the case of overheating, the thermal protection will switch off the fuel pump. This will switch off the heating.

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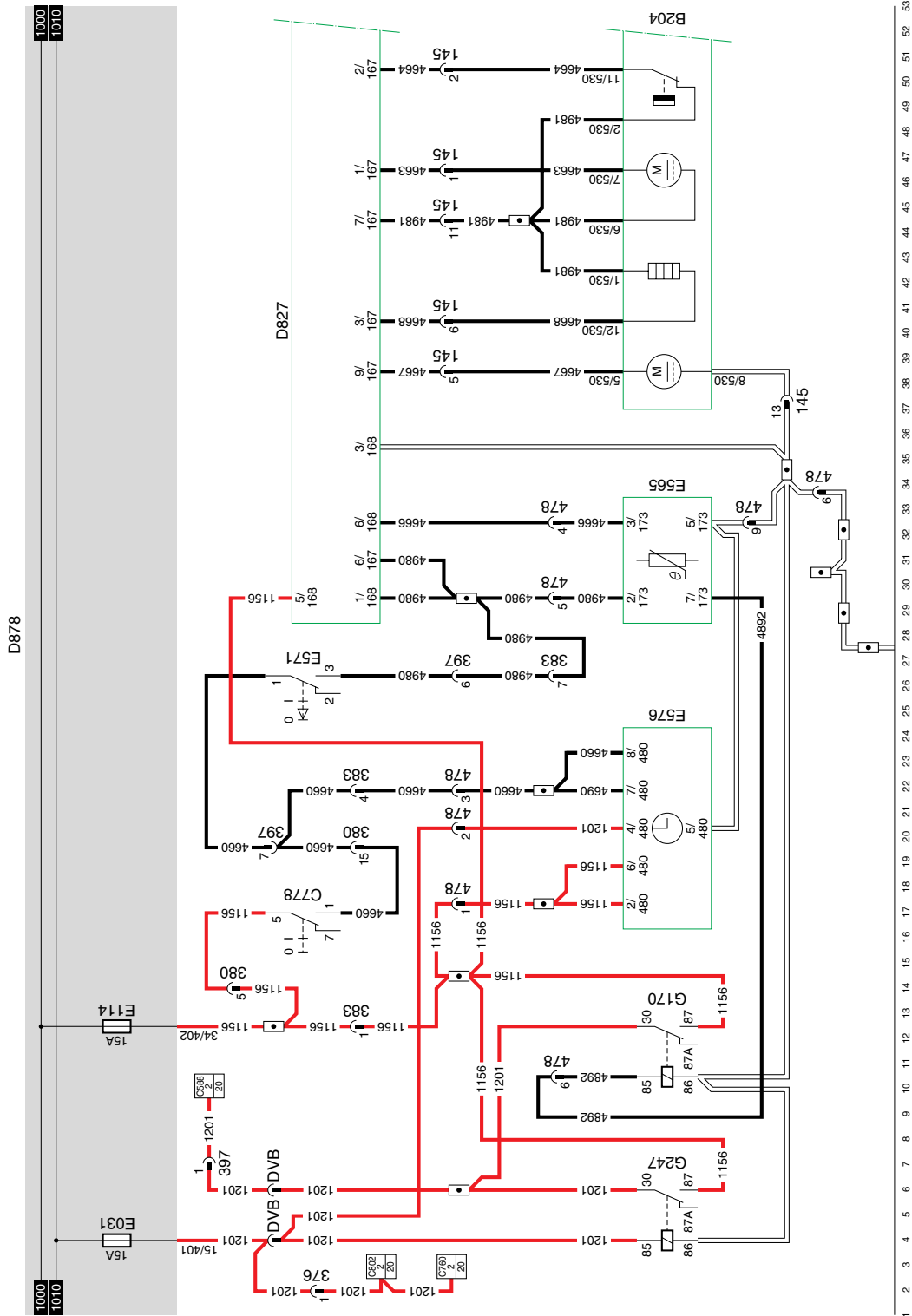


**41. WEBASTO AUXILIARY HEATING, THERMO 90****VARIANTS****Location**

78 Wire 4009 only applies in the case of a VF engine.

**SEE THE SYSTEM MANUAL FOR MORE INFORMATION**

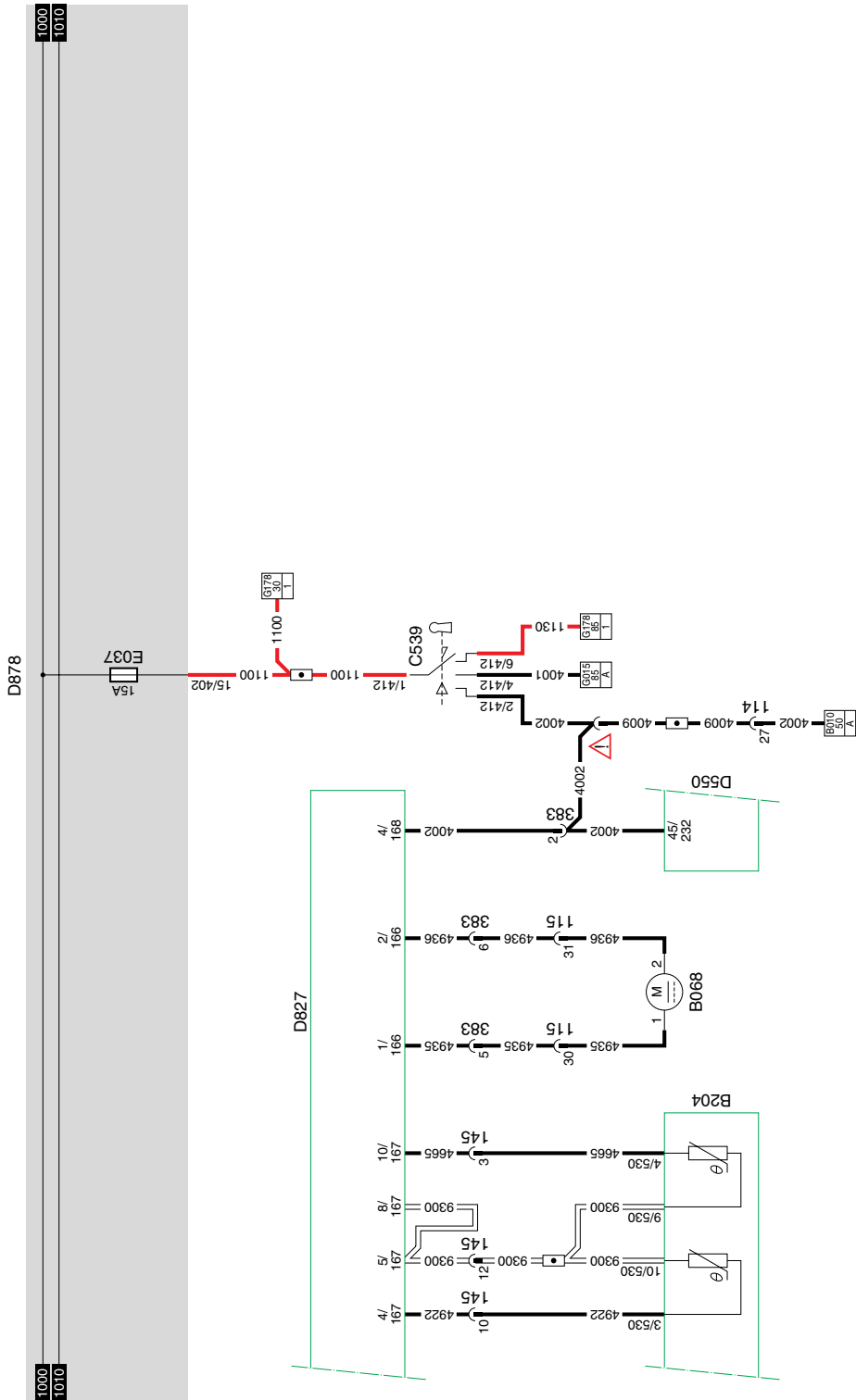
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**42. CONNECTOR SOCKETS FT, DIAGNOSTIC CONNECTOR, ALARM CONNECTOR****DIAGNOSTIC CONNECTOR (A021)**

The diagnostic connector is installed on the left-hand side in the central cabinet. This is the connector to which DAVIE is connected. After the contact has been activated, the supply voltage for DAVIE is applied to pin 1 through fuse E053. Pin 2 is connected to earth. The remaining pins are meant for the communication with various systems and are connected to those systems.

Pin No.	Wire No.	Colour	Designation
1	1229	red	Supply for DAVIE
2	9107	white	Earth
3	3425	blue	ABS/ASC-D
4	4788	black	ASL-G
5	4697	black	ECAS remote control, E-gas 3, ECS-DC,
6			
7	4732	black	ECAS 2
8	3064	blue	Connector 378, pin 5.
9	4047	black	CTE-2
10	3065	blue	Connector 378, pin 4.
11	4883	black	ZF Intarder
12			
13	3470	blue	AGS
14	3037	blue	D1LC / D3LC Compact auxiliary heating

**24V CONNECTOR (A042)**

Pin 1 of the 24V connector (A402) is connected directly to the supply voltage through wire 1000 and fuse E026.

Pin 2 is connected to earth.

**ABS CONNECTOR (A005)**

Pin 1 of the ABS connector (A005) is connected directly to the supply voltage in front of the contact through wire 1119 and fuse E043.

Pin 2 is connected directly to the supply voltage behind the contact through fuse E172. This voltage also serves to feed the ABS unit.

Pins

3 + 4 are both connected to earth.

Pin 5 is connected to pin 7 of the CWS-2 unit (D853) through wire 3428.

**FT TRAILER CONNECTOR (A002)**

- Pin 1 of the FT trailer connector (A002) is connected to earth. If a connection is made between contacts 2 and 1 (rear/side marker and parking lights position) with the lighting switch (C622), a voltage is applied to contact 85 of relay G000 through fuse E084, wire 1101, switch C622 and wire 2100. The relay is activated and a voltage is applied from wire 1000, contacts 30 and 87 (from relay G000) through fuses E000 and E001 to pins 2 (through wire 2102) and 6 (through wire 2103) respectively.
- Pin 2 switches the left-hand rear light.
- Pin 3 is connected to the CTE-2 unit (2/232) (left direction) through wire 2008.
- Pin 4 is connected to relay G036 (brake -light relay) through wire 4601.
- Pin 5 is connected to the CTE-2 unit (30/232) (right direction) through wire 2009.
- Pin 6 switches the right-hand rear light.

**REAR FOG LAMP / BACK-UP LIGHT CONNECTOR (A003)**

- Pin 1 is connected to earth.
- Pin 3 is connected to the supply voltage after the contact has been activated and the gearbox is in reverse gear. The voltage is applied as follows: through fuse E016 (wire 1217), backup switch E501 (wire 4591) to pin 3.
- Pin 5 (connector A003) is connected directly to the supply voltage through fuse E048 and wire 1113.
- Pin 7 (rear fog lights) is connected to the supply voltage through fuse E010, relay G005 and wire 2152.

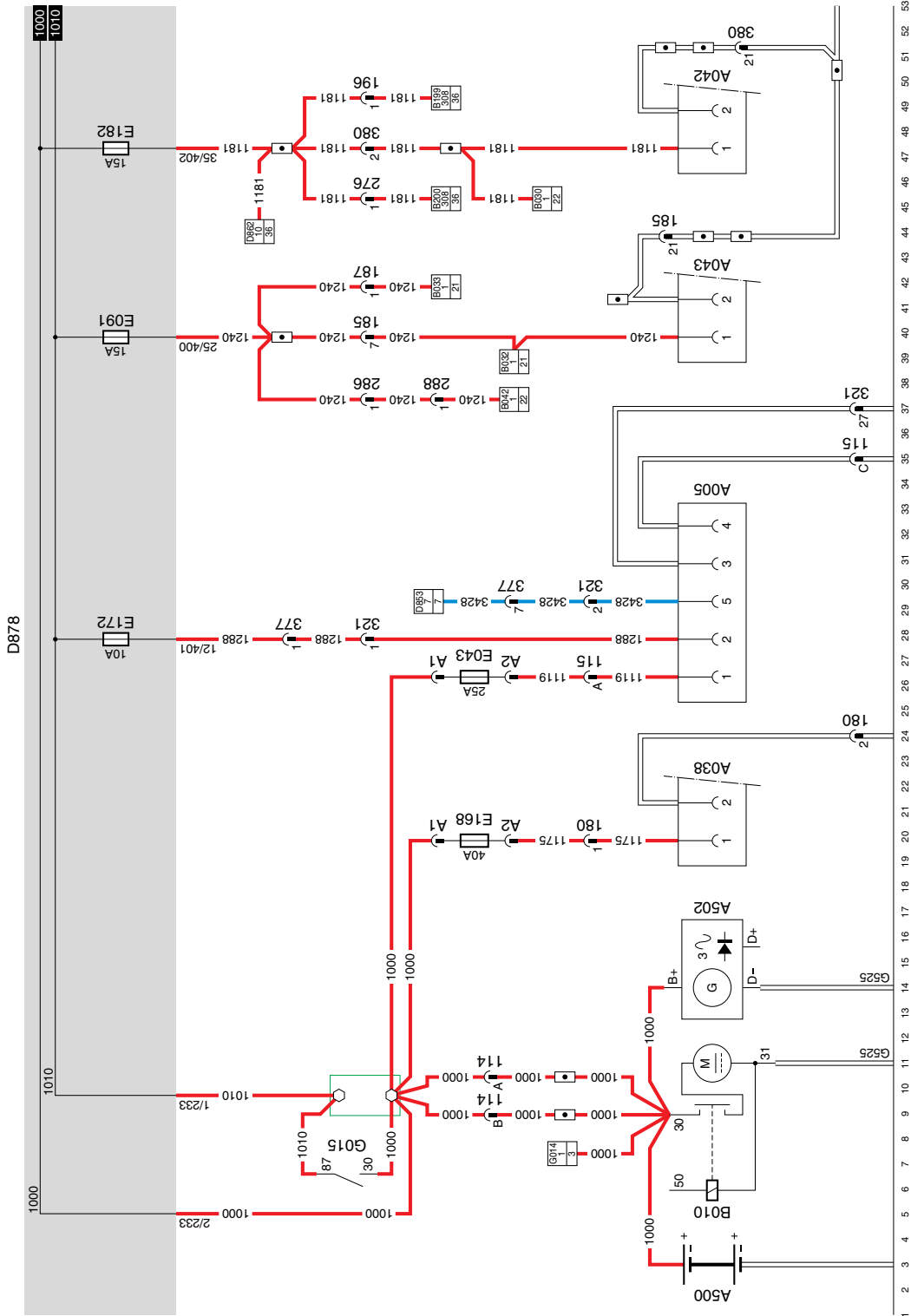
**DIAGNOSTIC CONNECTOR SAE CUMMINS (A031)**

- Pin A is connected directly to the electronic unit DAF Cummins interface (D804) (35/334) and the electronic unit Cummins Celect (D805) (27/335) through wire 3048.
- Pin B is connected directly to the electronic unit DAF Cummins interface (D804) (34/334) and the electronic unit Cummins Celect (D805) (8/335) through wire 3047.

This diagnostic system is completely different from the DAF diagnostic system. DAVIE will not respond when connected.

**ALARM SYSTEM SOCKET (A040)**

- Pin 1 is connected directly to the supply voltage in front of the contact through wire 1114 and fuse E0108 (wire 1000).
- Pin 2 is connected to the direction indicator, front left (C014), side direction indicator, left (C016), direction indicator, rear left (C018) and the electronic unit CTE-2 (D550) (4/232) through wire 2006.
- Pin 3 is connected to the direction indicator, front right (C015), side direction indicator, right (C017), direction indicator, rear right (C019) and the electronic unit CTE-2 (D550) (31/232) through wire 2007.
- Pin 4 is connected directly to the control switch for interior step lighting, door switch on driver's side (E514), the stepwell lighting, driver's side (C062), the electronic unit CTE-2 (D550) and the lighting buzzer relay (G235).
- Pin 5 is connected directly to the stepwell lighting, co-driver's side (C063), the interior lighting switch, co-driver's side (C686), the control switch for interior step lighting, door switch on co-driver's side (E515) through wire 2609, while the interior-lighting diode prevents feedback to the co-driver's stepwell (D708).
- Pin 6 is connected directly to the cab-lock control switch (F009) through wire 3412 and by means of a cab lock connection (cab without air suspension) (G719) to the electronic unit CWS (D582) (20/215) through wire 3492. If the cab is air-suspended, wire 3412 is also connected to pin A2 of the electronic unit of the cab air-suspension.
- Pin 7 is connected directly to the generator integrated voltage regulator (A502) (D+) and to lighting relay D+ (G107). At the same time pin 7 is connected directly to the lighting buzzer (B242) and to the electronic unit CWS (D582) (12/214).
- Pin 9 is not connected.
- Pin 12 is connected to earth.

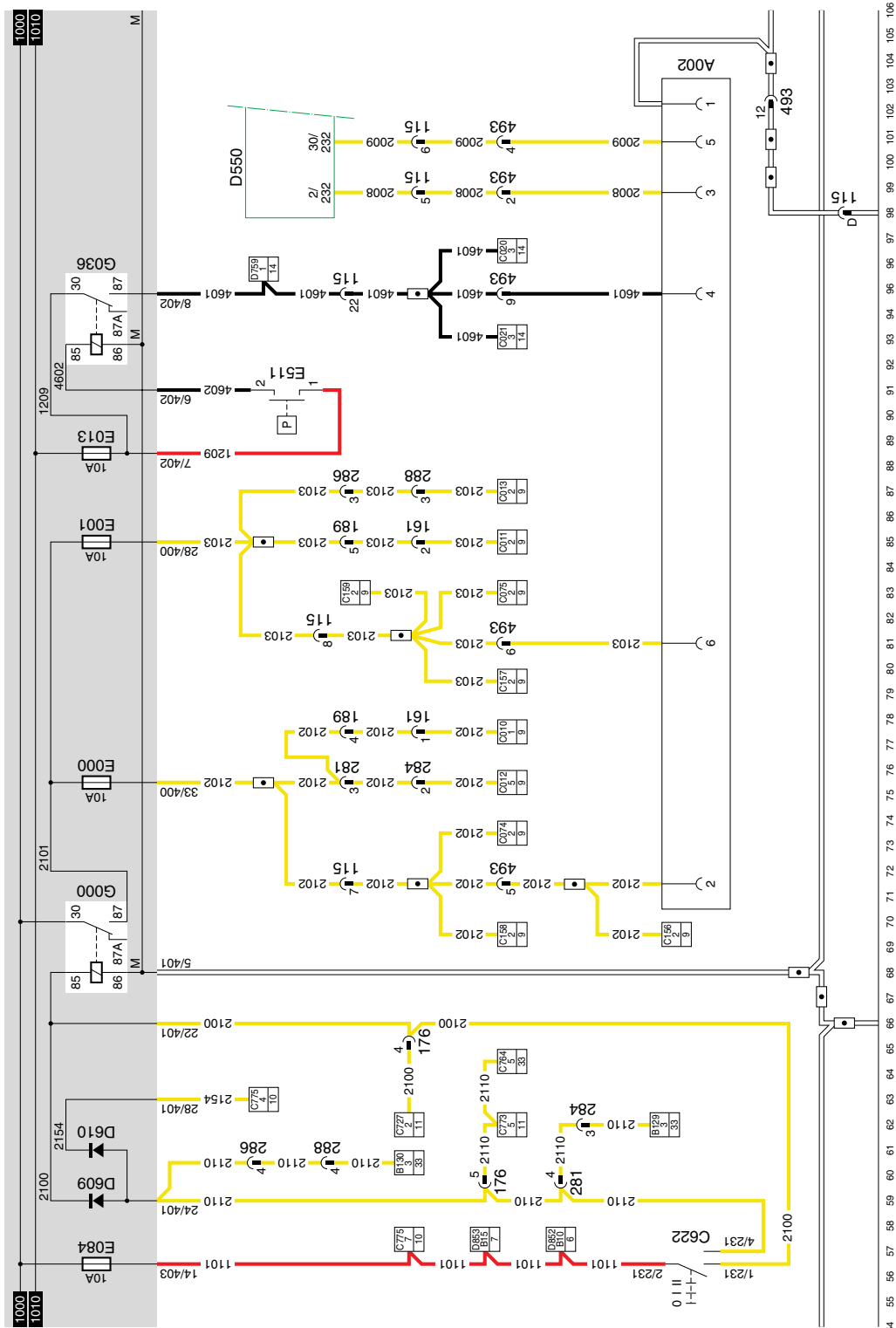


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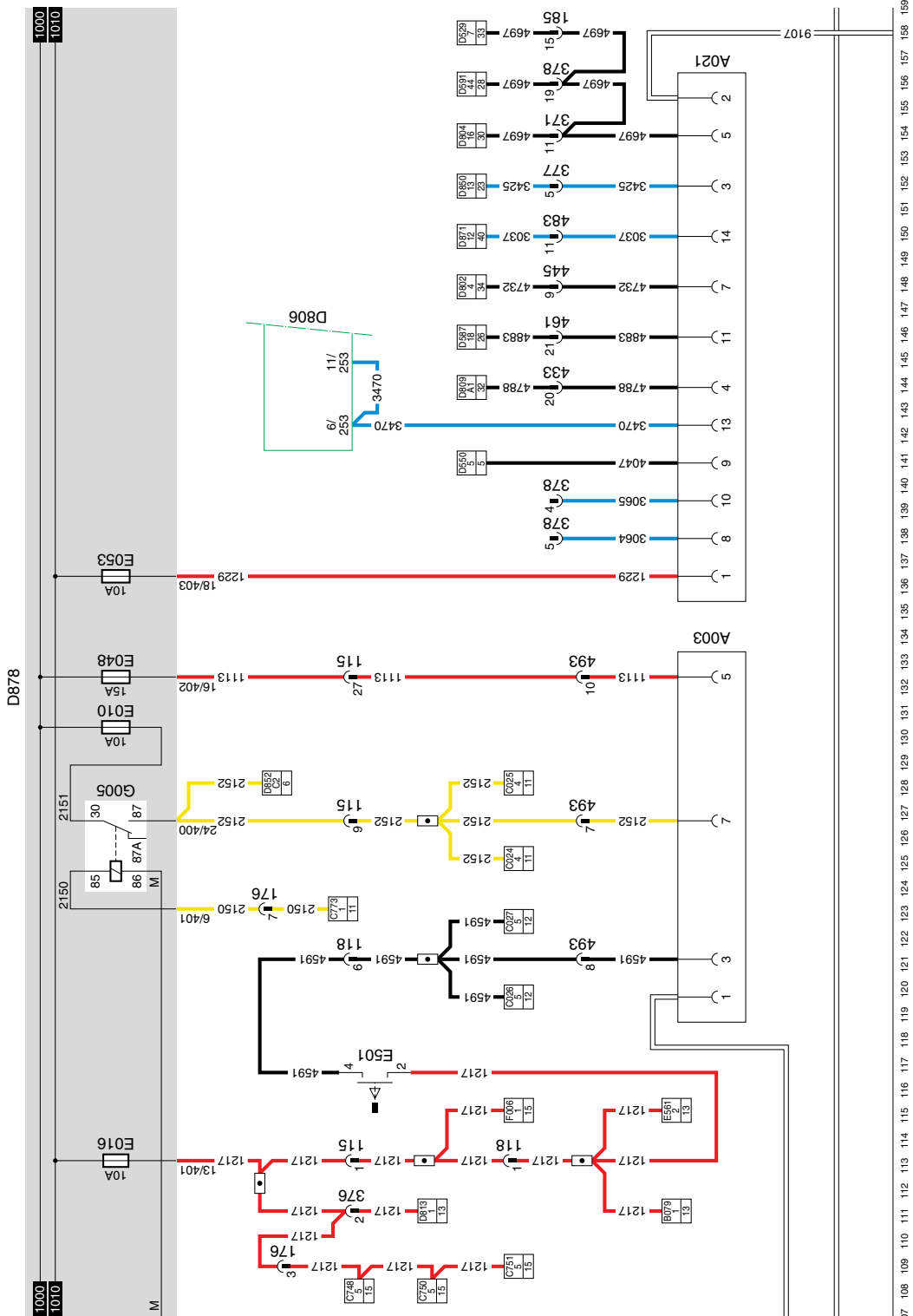
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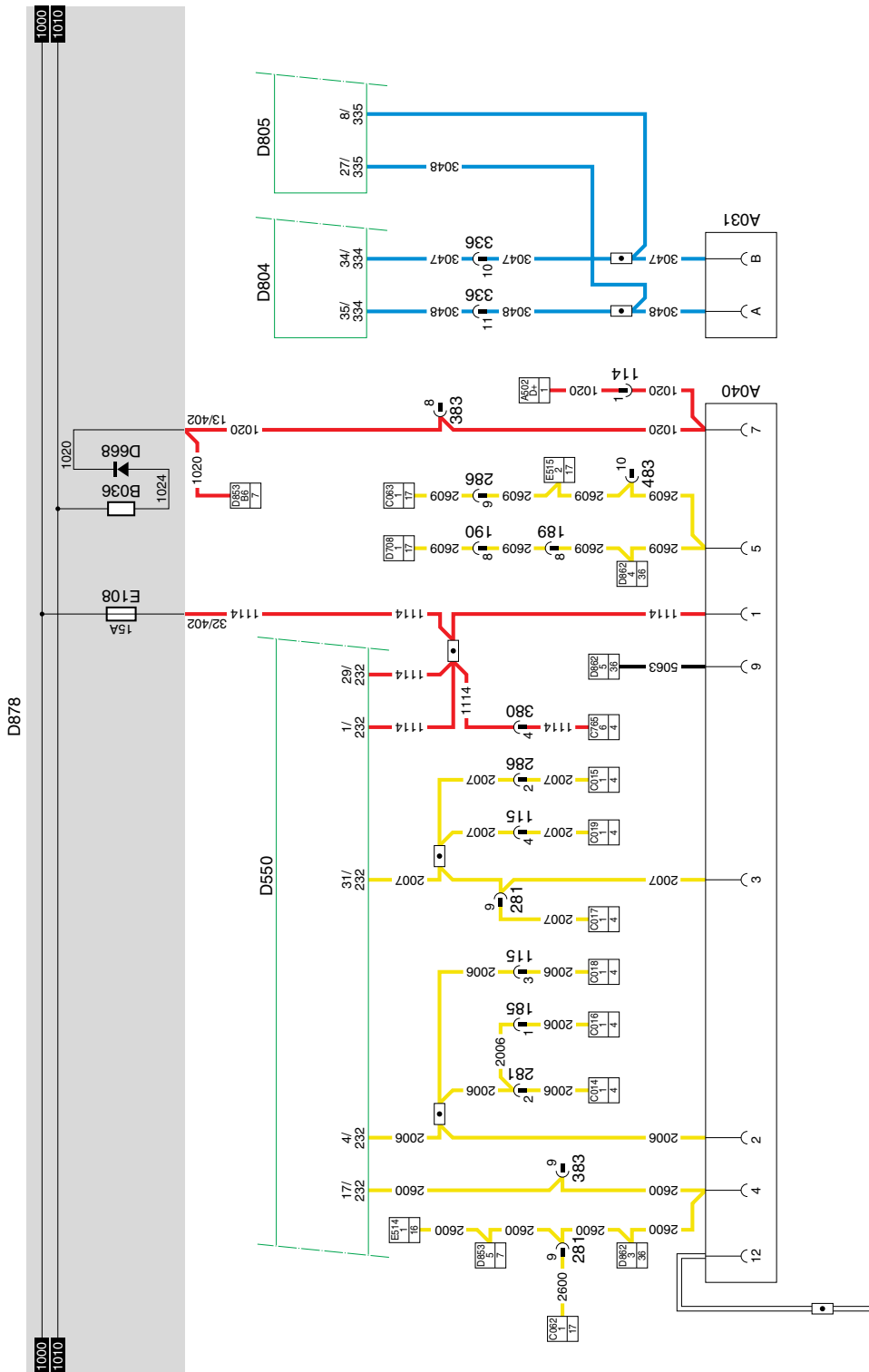




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160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212

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EL000157

### 43. CONNECTOR SOCKETS FA, DIAGNOSTIC CONNECTOR, ALARM CONNECTOR

#### DIAGNOSTIC CONNECTOR (A021)

The diagnostic connector is installed on the upper left-hand side in the central cabinet. This is the connector to which DAVIE is connected. After the contact has been activated, the supply voltage for DAVIE is applied to pin 1 through fuse E053. Pin 2 is connected to earth. The remaining pins are meant for the communication with various systems and are connected to those systems.

Pin No.	Wire No.	Colour	Designation
1	1229	red	Supply for DAVIE
2	9107	white	Earth
3	3425	blue	ABS/ASC-D
4	4788	black	ASL-G
5	4697	black	ECAS remote control, E-gas 3, ECS-DC,
6			
7	4732	black	ECAS 2
8	3064	blue	Connector 378, pin 5.
9	4047	black	CTE-2
10	3065	blue	Connector 378, pin 4.
11	4883	black	ZF Intarder
12			
13	3470	blue	AGS
14	3037	blue	D1LC / D3LC Compact auxiliary heating

#### 24V CONNECTOR (A043)

Pin 1 of the 24V connector (A034) is connected directly to the supply voltage through wire 1240 and fuse E091 (behind the contact).

Pin 2 is connected to earth.

#### ABS CONNECTOR (A004)

Pin 1 of the ABS connector (A004) is connected directly to the supply voltage through wire 1119 and fuse E043.

Pin 2 is connected directly to the supply voltage through fuse E172 behind the contact. This voltage also serves to feed the ABS unit.

Pins 3 + 4 are both connected to earth.

Pin 5 is connected to the CWS-2 unit (D583) through wire 3428.

**FA TRAILER CONNECTOR (A000)**

- Pin 1 of the FA trailer connector (A000) is connected to earth.  
If a connection is made between contacts 2 and 1 (rear/side marker and parking lights position) with the lighting switch (C622), a voltage is applied to contact 85 of relay G000 through fuse E084, wire 1101, switch C622 and wire 2100. The relay is activated and a voltage is applied from wire 1000, contacts 30 and 87 (from relay G000) through fuses E000 and E001 to pins 2 (through wire 2102) and 6 (through wire 2103) respectively.
- Pin 2 switches the left rear light and pin 6 switches the right rear light.
- Pin 3 is connected to the CTE-2 unit (2/232) (left direction) through wire 2008.
- Pin 4 is connected to relay G036 (brake-light relay) through wire 4601.
- Pin 5 is connected to the CTE-2 unit (30/232) (right direction) through wire 2009.

**REAR FOG LAMP / BACK-UP LIGHT CONNECTOR (A001)**

- Pin 1 is connected to earth.
- Pin 3 is connected to the supply voltage after the contact has been activated and the gearbox is in reverse gear. The voltage is applied as follows: through fuse E016 (wire 1217), backup switch E501 (wire 4591) to pin 3.
- Pin 5 is connected directly to the supply voltage through fuse E048 and wire 1113. Pin 3 is also connected to connector A026 (box side-lights, 4-pin).
- Pin 7 (rear fog lights) is connected to the supply voltage through fuse E010, relay G005 (contacts 30 and 87) and wire 2152.

**DIAGNOSTIC CONNECTOR SAE CUMMINS (A031)**

- Pin A is connected directly to the electronic unit DAF Cummins interface (D804) (35/334) and the electronic unit Cummins Celect (D805) (27/335) through wire 3048.
- Pin B is connected directly to the electronic unit DAF Cummins interface (D804) (34/334) and the electronic unit Cummins Celect (D805) (8/335) through wire 3047.

This diagnostic system is completely different from the DAF diagnostic system. DAVIE will not respond when connected.

**ALARM SYSTEM SOCKET (A040)**

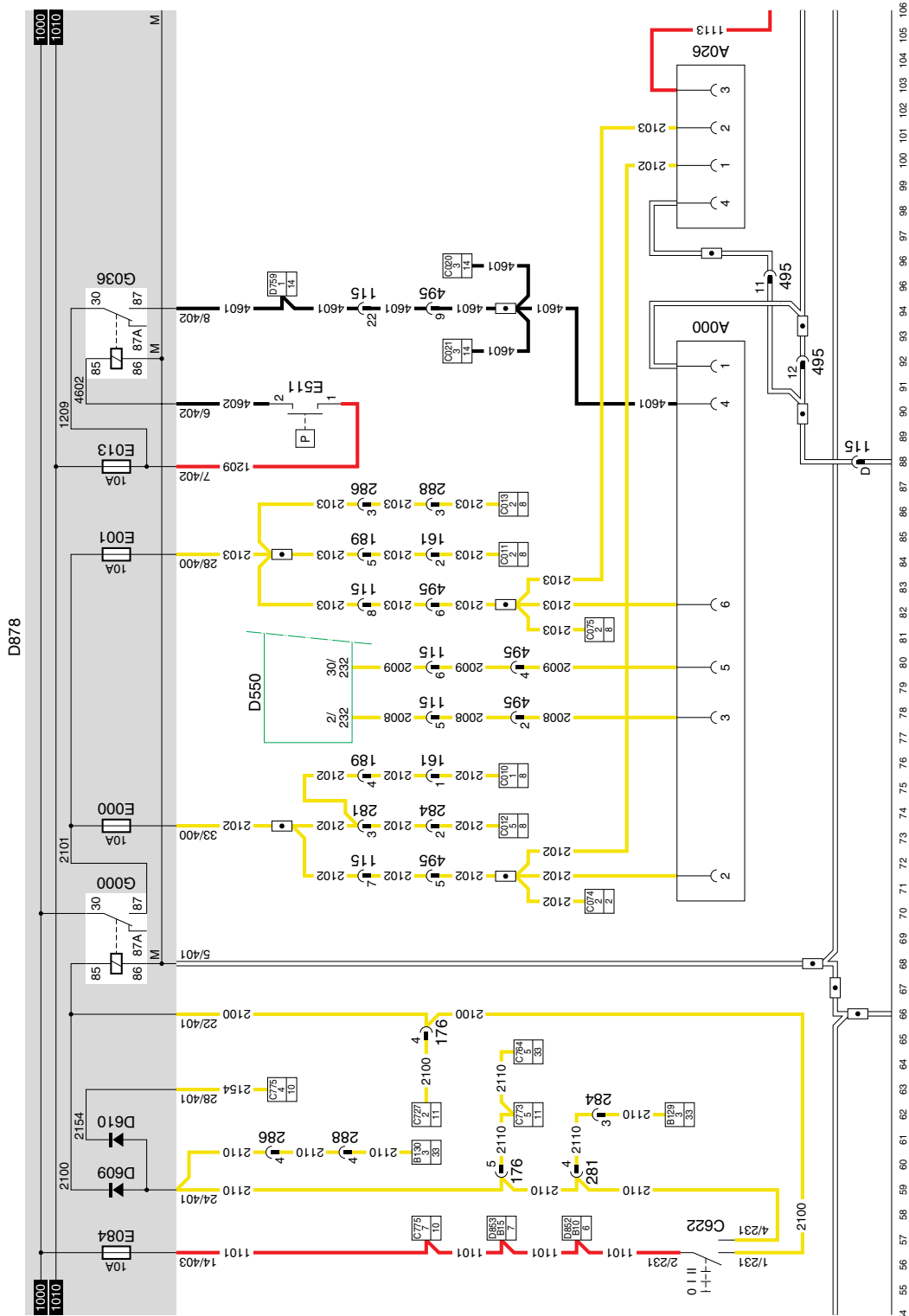
- Pin 1 is connected directly to the supply voltage in front of the contact through wire 1114 and fuse E108 (wire 1000).
- Pin 2 is connected to the direction indicator, front left (C014), side direction indicator, left (C016), direction indicator, rear left (C018) and the electronic unit CTE-2 (D550) (4/232) through wire 2006.
- Pin 3 is connected to the direction indicator, front right (C015), side direction indicator, right (C017), direction indicator, rear right (C019) and the electronic unit CTE-2 (D550) (31/232) through wire 2007.
- Pin 4 is connected directly to the control switch for interior step lighting, door switch on driver's side (E514), the stepwell lighting, driver's side (C062), the electronic unit CTE-2 (D550) and the lighting buzzer relay (G235).
- Pin 5 is connected directly to the stepwell lighting, co-driver's side (C063), the interior lighting switch, co-driver's side (C686), the control switch for interior step lighting, door switch on co-driver's side (E515) through wire 2609, while the interior-lighting diode prevents feedback to the co-driver's stepwell (D708).

- Pin 6 is connected directly to the cab-lock control switch (F009) through wire 3412 and by means of a cab lock connection (cab without air suspension) (G719) to the electronic unit CWS (D582) (20/215) through wire 3492. If the cab is air-suspended, wire 3412 is also connected to pin A2 of the electronic unit of the cab air-suspension (D857).
- Pin 7 is connected directly to the generator of integrated voltage regulator (A502) (D+) and to lighting relay D+ (G107). At the same time pin 7 is connected directly to the lighting buzzer (B242) and to the electronic unit CWS (D582) (12/214).
- Pin 9 is connected to the electronic unit of the central door locking (D862).
- Pin 12 is connected to earth.

**SIDE-LIGHTS CONNECTOR (A026)**

- Pin 1 is connected directly to the trailer socket (A000) pin 2 through wire 2102, and to the rear-light/ side light relay (G000) through fuse E000.
- Pin 2 is connected directly to the trailer socket (A000) pin 6 through wire 2103, and to the rear-light/ side light relay (G000) through fuse E001.
- Pin 3 is connected directly to pin 5 of the rear fog lamp socket (A001) through wire 1113 and to the supply voltage through fuse E048.
- Pin 4 is connected directly to earth.





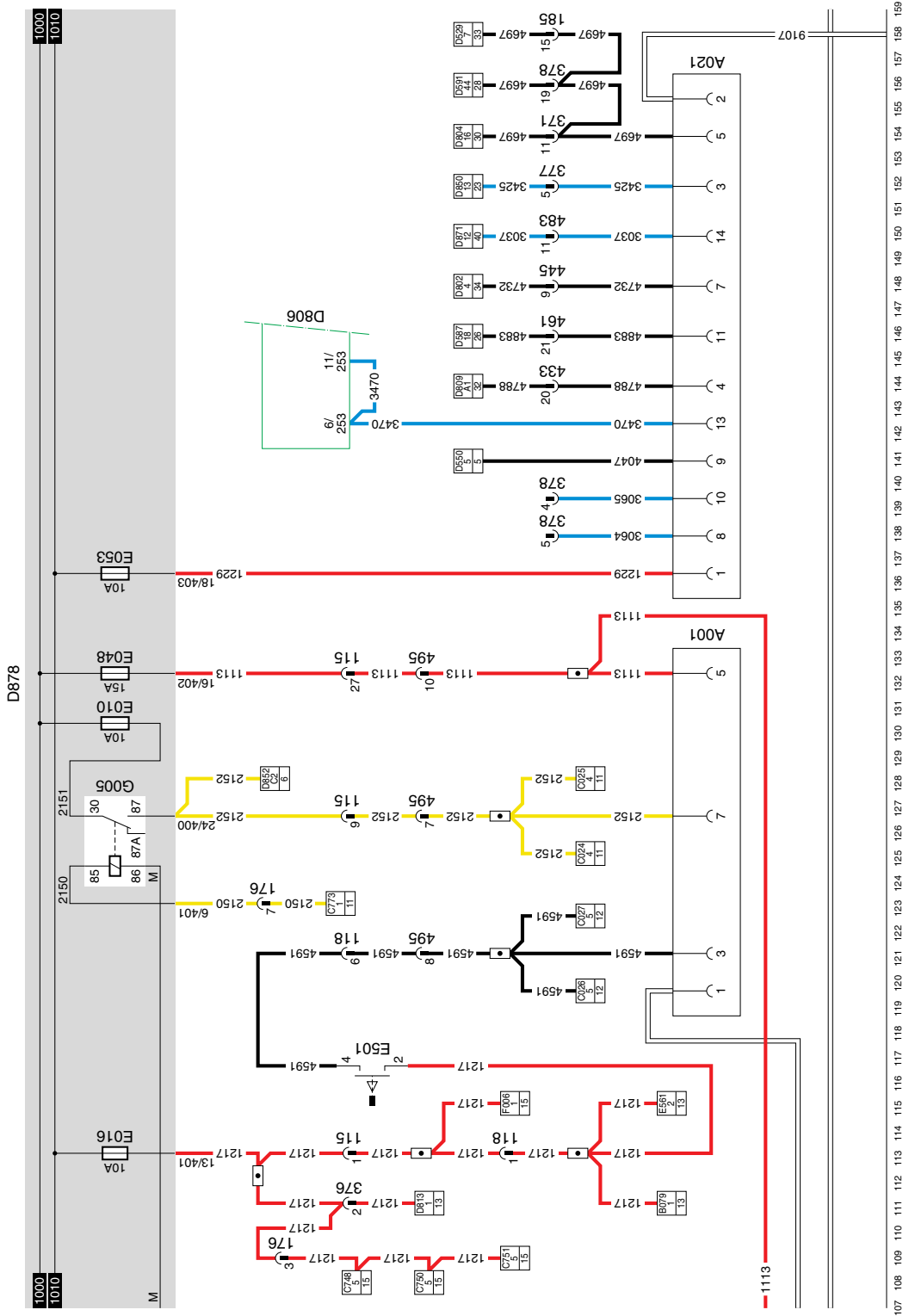
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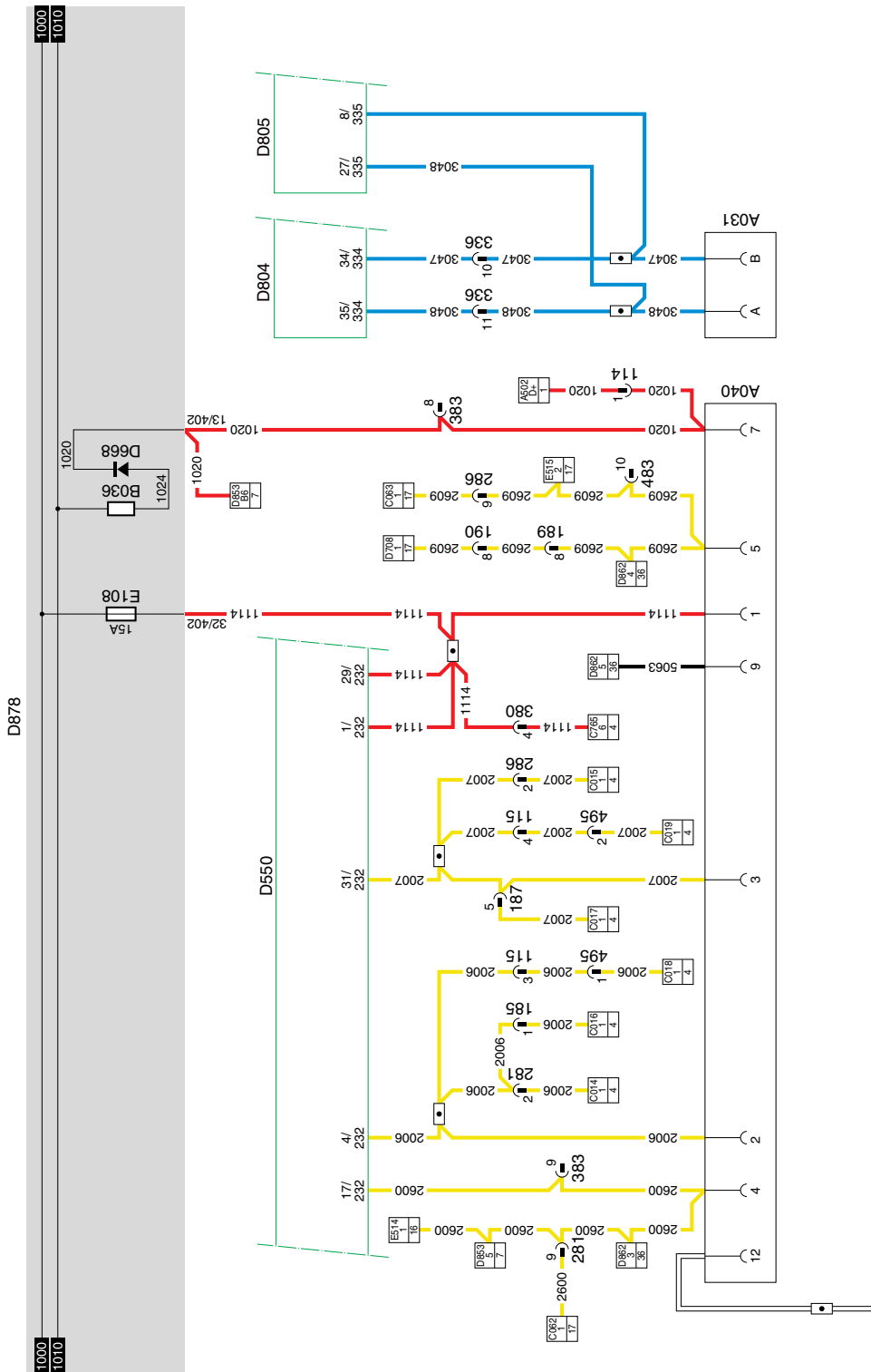




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## 1. INTRODUCTION

This main group includes the entire electrical installation show in the form of **circuit diagrams and the altered subdiagrams**.

### **Circuit diagrams**

The circuit diagram contains all information pertaining to the entire electrical installation of the vehicle, with the exception of the connectors.

### **Subdiagrams**

The subdiagrams only show the parts of the electrical installation that have been modified. These diagrams also contain the connectors.

### **Note:**

For the location of the connectors in the vehicle, see chapter "Location of connectors".



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## MODIFICATIONS TO THE ELECTRICAL INSTALLATION

95XF series

Modifications to the electrical installation from chassis number 0E459335

### 2. MODIFICATIONS TO THE ELECTRICAL INSTALLATION FROM CHASSIS NUMBER 0E459335

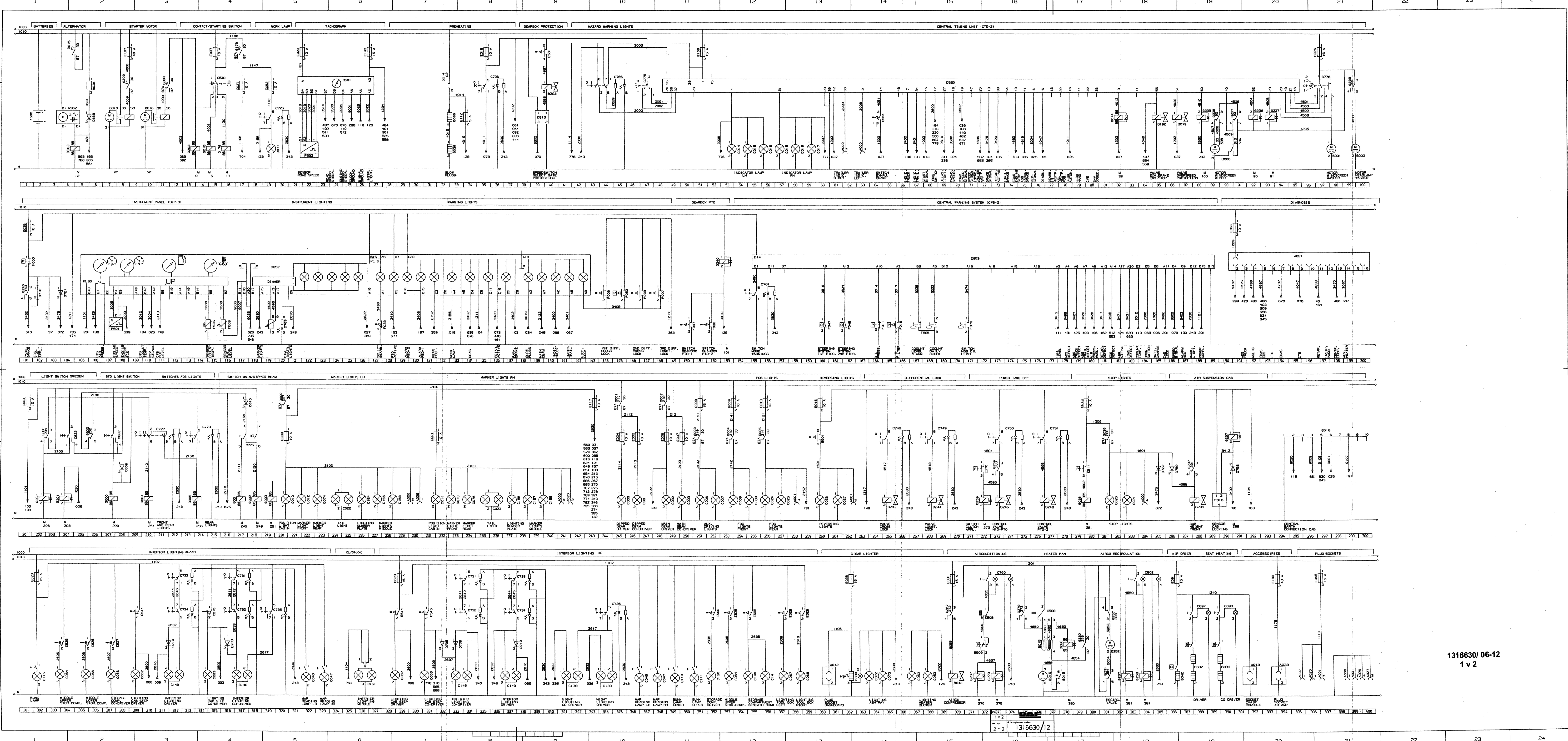
#### 2.1 OVERVIEW OF MODIFICATIONS TO THE ELECTRICAL INSTALLATION

##### Modification/Chassis numbers

Electrical system	From chassis number	Modification	See sub-diagram no.
Lighting	0E463970	Swedish lighting included in circuit diagram  Basic code numbers of tail lights C152 and C153 changed to C022 and C023	8/9
Fuel line heater	0E463970	Fuel line heater included in circuit diagram	44/45
Starting circuit	0E463970	Starter lock relay G303 added	1
Auxiliary heating	0E477514	Electronic unit for auxiliary heating, Thermo 90, changed from D827 to D869  Thermo 90 auxiliary heating microrelay (G300) added	41
Auxiliary heating	0E479353	Control switch for Thermo 90 auxiliary-heating fan (E565) (wire 4980 added to connection point 6)  Control switch for Thermo 90 auxiliary-heating fan (E576) (wire 1201 disconnected from point 4)	41
Voith retarder/ZF intarder	0E460264	Retarder switch connection point (C799) for connector changed	25/26
Cummins Select	0E462108	Electronic unit for DAF Cummins interface (D804), wire 4049 disconnected from point 6 and connected to point 4	30



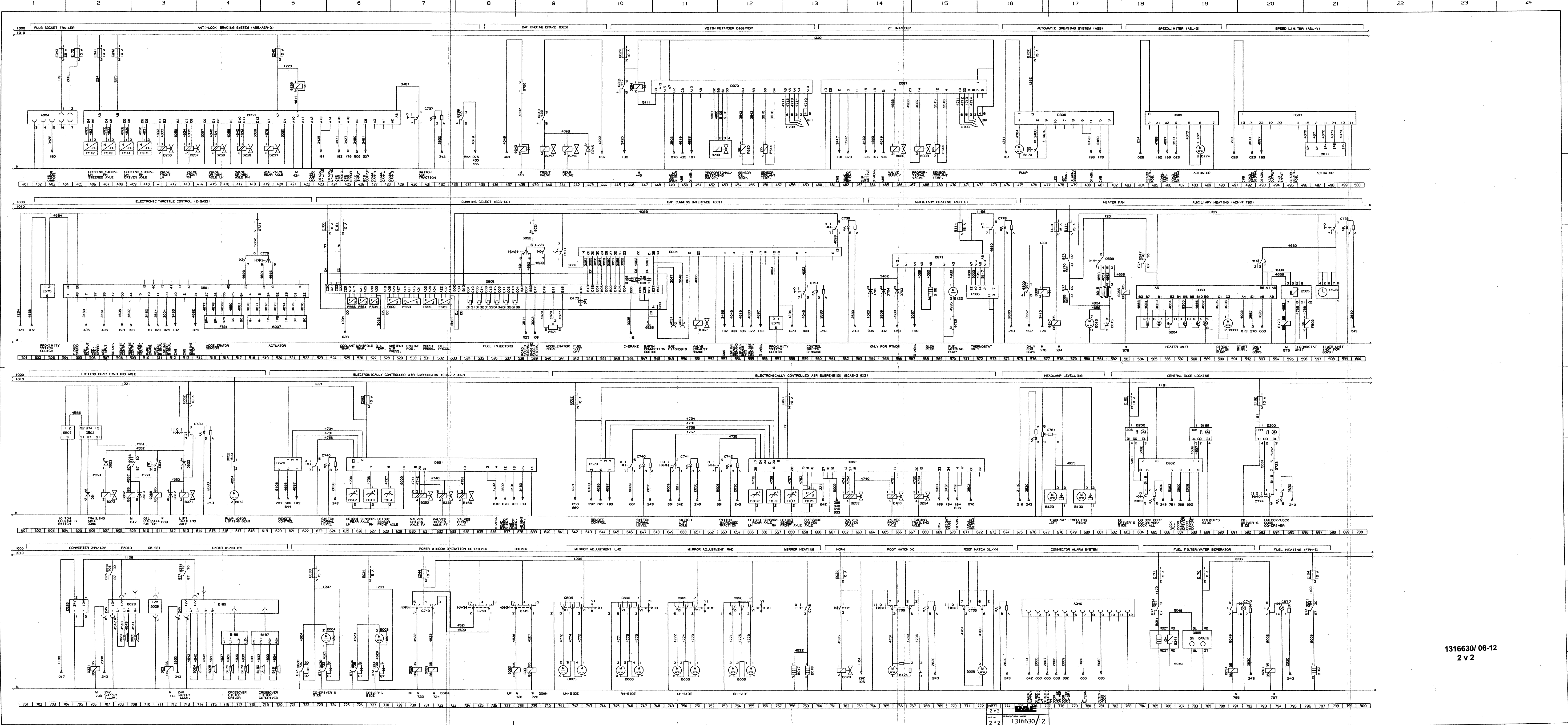




1316630/06-12  
1 v 2

1316630/12





1316630/06-12  
2 v 2

1316630/12  
2 v 2

### 2.3 OVERVIEW OF BASIC CODE NUMBERS IN CIRCUIT DIAGRAM 1316630/06-12

Column 1 : Basic code number  
 Column 2 : Description  
 Column 3 : Number on search bar of  
 circuit diagram  
 1316630/06-12

Column 1	Column 2	Column 3
A000	(Semi-)trailer socket (7-pin)	62/63/230/241/284/399
A001	Rear fog light back-up light socket (7-pin)	258/262/397/399
A004	ABS FA socket (7-pin)	404
A007	24V socket (2-pin)	395
A021	Diagnostic socket (16-pin)	191
A026	Superstructure side-lights (4-pin)	230/241/396/400
A027	Accessory socket (4-pin)	400
A031	Diagnostic socket, 2-pin, SAE CUMMINS	549/550
A033	Alarm system socket (9-pin)	183
A038	Accessory socket (2-pin) 40A	394
A040	Alarm system socket	776
A042	Dashboard socket (2-pin)	361
A043	Chair console socket on driver's side (2-pin)	392
A500	Batteries (2)	2
A502	Generator of integrated voltage regulator	4
B000	Windscreen-wiper motor	89
B001	Windscreen-wiper pump motor	98
B002	Headlight-washer pump motor	100
B003	Electric motor for window control, driver's side	728
B004	Electric motor for window control, co-driver's side	724
B005	Left-hand mirror adjustment motor	741/750
B006	Right-hand mirror adjustment motor	745/754
B007	Vehicle/engine speed regulator motor E-gas	518
B009	Roof hatch motor	772
B010	Starting motor	8/11
B011	Electric motor for speed limiter	496
B015	4-speed heater fan	376/378/580/581/582
B017	Mirror heating, driver's side	758
B018	Mirror heating, co-driver's side	759
B023	Radio	708
B024	Left-hand loudspeaker	708/714
B025	Right-hand loudspeaker	709/715
B026	Citizen Band	711
B028	Air horn	762
B030	Cigarette lighter, driver's side	362
B032	Seat heating, driver's side	388
B033	Seat heating, co-driver's side	390
B036	Resistor, alternator, D+	6
B038	Glow filament	33
B039	Glow filament	33
B042	Air dryer element heating	386
B043	Air-conditioning compressor	370
B068	Fuel pump for auxiliary heating	591

Column 1	Column 2	Column 3
B071	Lifting-gear lifting valve	613
B072	Lifting-gear lowering valve	607
B073	Lifting-gear motor pump	617
B079	Valve single-H-safety	86
B088	Intarder valve, proportional	468
B089	Intarder valve, air supply	466
B122	Fuel metering pump for auxiliary heating, Eberspächer	570
B129	Electric motor for left-hand headlight-height adjustment	678
B130	Electric motor for right-hand headlight-height adjustment	680
B166	Valve, ECAS front axle	634/665
B168	Glow filament for D1LC auxiliary heating	568
B170	Automatic lubrication pump with push-button switch	475
B174	Electric motor for speed limiter	488
B175	Roof panel motor Super Space Cab	766
B178	Left-hand loudspeaker	716
B179	Left-hand loudspeaker	718
B180	Right-hand loudspeaker	719
B181	Right-hand loudspeaker	720
B182	Fuel heater	797
B185	Radio	713
B186	Loudspeaker filter, driver's side	717
B187	Loudspeaker filter, co-driver's side	719
B192	Engine brake valve	85/551
B199	Central door locking, driver's side	688
B200	Central door-locking motor, co-driver's side F249 XH/XC	683/693
B204	Auxiliary-heating unit Thermo 90	584
B237	ASC valve	419
B238	Valve ECAS driven axle, left/right, air supply (FT)	632
B241	Sensor for heating element fuel filter/water separator	785
B243	Axle locking differential control valve	265
B244	Inter-axle locking differential control valve	268
B245	PTO control valve	273
B246	PTO control valve	277
B247	Engine brake (DEB) valve	440
B248	Engine brake (DEB) valve	441
B250	Valve ECAS driven axle, left/right, air supply (FA)	630
B252	Recirculation valve	381
B253	Valve ECAS driven axle, left/right, air supply	662
B254	Valve ECAS trailing/leading axle lifting/lowering	667
B256	Left-hand front ABS valve	411
B257	Right-hand front ABS valve	413
B258	Left-hand rear ABS valve	415
B259	Right-hand rear ABS valve	417
B293	Gearbox gate safety valve	40
B294	Switch-off cab suspension valve, front height control	288
B298	Switch-off cab suspension valve, back height control	452
B501	Compact tachograph	22
C000	Dipped beam, left	245
C001	Dipped beam, right	246
C002	Main beam, left	249

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## MODIFICATIONS TO THE ELECTRICAL INSTALLATION

95XF series Modifications to the electrical installation from chassis number 0E459335

Column 1	Column 2	Column 3
C003	Main beam, right	250
C006	High-beam headlight, left	251
C007	High-beam headlights, right	252
C008	Fog light, front left	254
C009	Fog light, front right	255
C010	Side-headlight, left	220
C011	Side-headlight, right	232
C012	Side-light, front left	222
C013	Side-light, front right	233
C014	Direction indicator lamp, front left	53
C015	Direction indicator lamp, front right	57
C016	Direction indicator lamp, left, side	56
C017	Direction indicator lamp, right, side	59
C018	Rear direction indicator, left	55
C019	Rear direction indicator, right	58
C020	Brake light, left	281
C021	Brake light, right	283
C022	Rear light, left	225
C023	Rear light, right	236
C024	Fog light, rear left	256
C025	Fog light, rear right	257
C026	Back-up light, left	260
C027	Back-up light, right	261
C046	Map-reading lamp, driver's side	322/347
C047	Map-reading lamp, co-driver's side	323/348
C052	Heater fan light, left	367
C053	Heater fan light, right	368
C062	Stepwell lighting, driver's side	309/329
C063	Stepwell lighting, co-driver's side	315/331
C064	Central upper storage compartment lighting	304/353
C065	Central lower storage compartment lighting	305
C066	Right-hand storage compartment lighting	307
C067	Left-hand storage compartment lighting	357
C068	Right-hand tool compartment lighting	358
C071	Work lamp	19
C072	Ashtray light, left	364
C073	Ashtray light, right	365
C074	Side-light, rear left	223
C075	Side-light, rear right	234
C110	Lower bunk reading lamp with switch	349
C111	Upper bunk reading lamp with switch	351
C115	Bunk reading lamp with switch	302
C130	Red interior night light, driver's side	344
C139	Red interior night light, co-driver's side	341
C140	Light in storage compartment under lower bed (lamp 1)	355
C141	Light in storage compartment under lower bed (lamp 2)	356
C148	Interior lighting, driver's side 2 x 21W	317/333
C149	Interior lighting, co-driver's side 2 x 21W	312/337
C150	Left-hand storage compartment lighting	352
C151	Central interior lighting with switch	326
C154	Rear number plate light, left (trucks)	226
C155	Rear number plate light, right (trucks)	237



Column 1	Column 2	Column 3
C156	First side-light left (trucks)	227
C157	First side-light right (trucks)	238
C158	Second side-light left (trucks)	228
C159	Second side-light right (trucks)	240
C539	Accessory start-contact switch	15
C588	Switch, 4-speed heater fan	377/581
C622	Switch, vehicle lighting and marker lights	204/207
C677	Fuel heater switch	794
C695	Switch for mirror adjustment, driver's side	743/751
C696	Switch for mirror adjustment, co-driver's side	747/755
C697	Switch for seat heating, driver's side	388
C698	Switch for seat heating, co-driver's side	390
C725	Work light switch	19
C726	Glow plug switch	35
C727	Rear fog light switch	210
C731	Interior lighting switch, roof console (bunk control), co-driver's side F249 XC	317/334
C732	Interior lighting switch, roof console, co-driver's side F249 XC	317/334
C733	Interior lighting switch, roof console (bunk control), driver's side F249 XC	312/338
C734	Interior lighting switch, roof console, driver's side F249 XC	312/338
C735	Interior night lighting switch FG249 XC	319/344
C736	Roof panel switch F249 XL/XH/XC	766/771
C737	ASC-traction switch	430
C738	Speed regulator cut-out switch	561
C739	Lifting-gear switch	613
C740	Switch ECAS, normal level	623/646
C741	Switch ECAS axle lifting	649
C742	Auxiliary drive-off switch	653
C743	Switch for electric window control on co-driver's side (door on driver's side)	730
C744	Switch for electric window control on co-driver's side (door on co-driver's side)	735
C745	Switch for electric window control on driver's side (door on driver's side)	738
C746	Switch, mirror heating	759
C747	Control switch for fuel filter/water separator	791
C748	Axle locking differential control switch	265
C749	Inter-axle locking differential control switch	268
C750	PTO control switch	273
C751	PTO control switch	277
C754	Engine-brake switch VF engine	559
C760	Air-conditioning switch	372
C761	CWS switch, more warnings	155
C763	Potentiometer for instrument light dimming	119
C764	Potentiometer for headlight-height adjustment	676
C765	Hazard light switch (with LED search light)	43
C773	Rear fog light switch	214
C774	Central door locking switch	693
C775	Switch for direction indicator, main beam/dipped beam/horn	47/217/762
C776	Stalk switch	97/518/539

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## MODIFICATIONS TO THE ELECTRICAL INSTALLATION

95XF series Modifications to the electrical installation from chassis number 0E459335

Column 1	Column 2	Column 3
C778	Switch for auxiliary heating	573/598
C799	Switch for retarder	458/471
C802	Recirculation switch	383
C803	Central door locking switch	684
D503	Electronic unit for lifting gear	605
D525	Electronic unit for converter 24/12V	705
D529	Electronic unit for ECAS remote control	621/644
D550	Electronic unit CTE-2	49
D587	Electronic unit for ZF intarder	472
D591	Electronic unit Egas-3	504
D597	Electronic unit for speed limiter for ASL-V	492
D609	Diode for light switch	208
D610	Diode for main beam/dipped beam	217
D611	Diode for lifting gear lowering valve damping	606
D612	Diode for lifting gear lifting valve damping	612
D613	Diode for lifting gear relay pump damping	610
D622	Diode for lifting gear lifting lock	613
D623	Diode for lifting gear lowering lock	607
D668	Diode for generator safety (D+)	6
D703	Diode for switching off the auxiliary heating/door contact at driver's side	566
D704	Diode for switching off the auxiliary heating/door contact at co-driver's side	565
D705	Diode for switching off the auxiliary heating with running engine	564
D708	Diode for interior lighting, prevent feedback to co-driver's stepwell	1316/332
D709	Diode for interior lighting, prevent feedback to co-driver's switch	333
D710	Diode for interior lighting, prevent feedback to driver's switch	312/338
D721	Diode for parking brake, prevent feedback	104
D722	Diode for brake lights, prevent feedback	285
D745	Diode for engine brake (DEB) valves	443
D758	Diode prevent feedback to CWS	291
D759	Diode prevent feedback to brake lights	286
D802	Electronic unit for ECAS-2	655
D804	Electronic unit for DAF/Cummins interface	561
D805	Electronic unit, CUMMINS CELECT	524
D806	Electronic unit for automatic lubrication	475
D809	Electronic unit for speed limiter for ASL-G	485
D813	Electronic unit for gate safety, gearbox	39
D850	Electronic unit for ABS/ASC D-version	407
D851	Electronic unit for ECAS-2 (4x2)	626
D852	Instrument panel DIP-3	105
D853	Electronic unit for CWS-2	155
D855	Electronic unit for water separator	788
D862	Electronic unit, central door locking	684
D869	Electronic unit for auxiliary heating, Thermo 90	585
D870	Electronic unit for Voith retarder 133-2	448
D871	Electronic unit for auxiliary heating D3LC	572
E000	Fuse for side-light, rear left	220
E001	Fuse for side-light, rear right	232
E004	Fuse, dipped beam, driver's side	425

Column 1	Column 2	Column 3
E005	Fuse for dipped lights indicator lamp, co-driver's side	246
E006	Fuse for main beam, driver's side	249
E007	Fuse for main beam indicator lamp, co-driver's side	250
E008	Fuse, spot lights	251
E009	Fuse, front fog lights	254
E010	Fuse, rear fog lights	256
E013	Fuse, brake lights	280
E016	Fuse, reversing lights	260
E019	Fuse for the control of glow plug/CTE/direction indicators/engine brake	35
E023	Fuse for switch for cold start, tachograph, auxiliary heating programming clock	22
E025	Fuse, windscreen wiper, headlight washer	97
E026	Fuse, cigarette lighter	362
E027	Fuse for 24/12V converter	17
E028	Fuse, cab interior lighting	302/329
E029	Fuse for engine brake retarders	446
E030	Fuse, horn	762
E031	Fuse for heater fan ITC unit	370/578
E033	Fuse, electric window control motor, co-driver's side	723
E034	Fuse, electric window control motor, driver's side	727
E035	Fuse for instruments and indicator lamps	101
E037	Fuse for contact switch	15
E040	Fuse, ABS	420
E041	Fuse, ABS	407
E042	Fuse, ABS	408
E043	Fuse, ABS, (semi-)trailer	404
E044	Fuse, mirror heating/adjustment	731
E048	Fuse, central power supply, (semi-)trailer	397
E051	Fuse for ECAS-1	658
E052	Fuse for ECAS remote control working light	19
E053	Fuse for ECAS diagnostic connector (16-pin)	191
E062	Fuse, lifting gear and ECAS	613/627/642
E084	Fuse, lighting	201
E091	Fuse, for air dryer element/fuel contamination separator	386
E108	Fuse for CTE-2	51
E112	Fuse for glow indicator lamp	34
E114	Fuse, auxiliary heating Eberspächer	571/579
E117	Fuse for search light	243
E143	Fuse for E-gas/UPEC tachograph	27
E157	Fuse, automatic lubrication	476
E160	Fuse for Cummins motor	524
E161	Fuse for Cummins motor	525
E164	Fuse for fuel heater before contact	797
E167	Fuse for take-over relay, starting motor	9
E168	Fuse for accessories/microwave	394
E170	Fuse for fuel filter/water separator control	789
E171	Fuse for fuel filter/water separator	785
E172	Fuse for ABS (semi-)trailer 10A	405
E182	Fuse for centralised lubrication	683/693
E501	Control switch for back-up light	260
E507	Proximity switch for axle load protection of lifting-gear (10 tonnes)	604



# 5

## MODIFICATIONS TO THE ELECTRICAL INSTALLATION

95XF series Modifications to the electrical installation from chassis number 0E459335

Column 1	Column 2	Column 3
E508	Thermal switch for air-conditioning compressor	372
E509	High/low pressure air-conditioning control switch	372
E511	Brake light control switch	280
E514	Control switch for stepwell/interior lighting, door switch on driver's side	309/329
E515	Control switch for stepwell/interior lighting, door switch on co-driver's side	315/331
E524	Control switch for lifting-gear limit switch oil pressure	611
E525	Control switch for central upper storage compartment lighting	304/354
E526	Control switch for central lower storage compartment lighting	306
E527	Control switch for right-hand storage compartment lighting	308
E528	Control switch for left-hand storage compartment lighting	358
E529	Control switch for right-hand tool compartment lighting	359
E555	Control switch for lighting in storage compartment under lower bed	355
E560	Control switch for left-hand storage compartment lighting	352
E561	Control switch of gearbox gate safety	40
E564	Engine brake control switch	64
E565	Control switch for auxiliary-heating fan, Thermo 90	595
E566	Control switch for thermostat for auxiliary heating Eberspächer (D1LC)	571
E570	Control switch for coupling/PTO N/10	272
E571	Control switch for auxiliary heating Thermo 90	593
E575	Clutch proximity switch	503/557
E576	Control panel for auxiliary-heating fan, Thermo 90	597
F000	Parking brake control switch	101
F006	Control switch for differential lock, 1st differential	144
F007	Control switch for differential lock, 3rd differential	148
F011	Control switch for engine oil pressure	164
F016	Control switch for engine air filter	166
F033	Control switch for splitter signalling	127
F038	Control switch for differential lock, 2nd differential	147
F047	Control switch for steering system (1st circuit)	160
F048	Control switch for steering system (2nd circuit)	162
F050	Control switch for differential lock pressure (1st and 2nd diff.)	145
F076	Switch for oil level HGS	171
F087	Control switch for gearbox PTO	150
F088	Control switch for gearbox PTO	152
F501	Engine-speed sensor	107
F509	Cab temperature sensor of auxiliary heating	596
F512	Sensor for ABS blocking signal, front left	406
F513	Sensor for ABS blocking signal, front right	407
F514	Sensor for ABS blocking signal, left-hand drive axle	408
F515	Sensor for ABS blocking signal, right-hand drive axle	410
F531	Sensor for accelerator pedal E-gas	515
F533	Vehicle-speed sensor (4-pin) 1st	22
F535	Engine coolant temperature sensor	115
F544	Sensor for coolant temperature of secondary retarder	456/469
F571	Sensor for accelerator pedal ECS	540/541
F585	Sensor for engine coolant level	167
F608	Sensor for fuel level	116
F612	Height sensor, ECAS left-hand rear axle	626/655
F613	Height sensor, ECAS right-hand rear axle	627/657
F614	Height sensor, ECAS front axle	628/658

Column 1	Column 2	Column 3
F615	Pressure sensor, ECAS driven axle, left/right	659
F616	Cab locking sensor	289
F620	Sensor for oil temperature in Voith retarder 133-2	454
G000	Relay, width/marker/tail lights	200/220
G001	Relay, dipped beam	217/245
G002	Relay, main beam	218/249
G003	Relay, spotlights	219/251
G004	Relay, front fog light	210/254
G005	Relay, rear fog light	214/256
G014	Glow-filament relay	33/82
G015	Contact relay	5/15
G028	Relay for electric window control, co-driver's side	722/730
G029	Relay for electric window control, co-driver's side	724/732
G030	Relay for electric window control, driver's side	726/738
G031	Relay for electric window control, driver's side	728/739
G036	Relay for brake light, 1st	280/281
G052	Lifting-gear motor relay	609/617
G065	Heater fan relay	579/583
G066	Lifting-gear takeover relay	609/611
G170	Auxiliary-heating fan relay	579/595
G178	Relay, accessories	16/17
G201	Relay for fuel heater EFPH	794/797
G203	Starting-motor takeover relay	9/14
G231	Radio lighting relay (12V)	706/708/712/713
G234	Relay for window control, fuel filter/water separator	785/791
G236	Windscreen wiper microrelay (speed 1 or 2)	90/92
G237	Windscreen wiper microrelay (automatic zero position)	91/93
G238	Headlight-washer microrelay	88/100
G239	Relay for disengaging third brake	421/434
G240	PTO/engine speed microrelay	101/153
G243	Engine brake (DEB) microrelay	438/440
G247	Auxiliary-heating fan relay	578/584
G257	Recirculation valve microrelay	381/383
G258	Recirculation valve microrelay	381/384
G259	N-10-PTO control relay	272/273
G267	Air-conditioning microrelay	370/372
G279	Air-conditioning microrelay	373/375
G280	Heater fan relay	378/380
G284	Microrelay for Voith retarder 133-2	446/447
G297	Cab air suspension relay	288/291
G300	Microrelay for auxiliary heating, Thermo 90	576/577
G301	Microrelay, light D+	203/204
G302	Microrelay for Swedish lighting	202/206
G303	Starting motor lock relay	5/12
G516	Central earth cab co-driver's side	294
G525	Central earth flywheel housing motor	547
G718	Connection parking brake/PTO	102
G721	Speed regulator switch connection	518/539
G723	Connection for central door locking	694
G725	Connection for auxiliary heating D3LC	570
G726	Connection panel switch DEB	438

# 5

## MODIFICATIONS TO THE ELECTRICAL INSTALLATION

95XF series

Modifications to the electrical installation from chassis number 0E459335

### 2.4 SUBDIAGRAMS OF CIRCUIT DIAGRAM 1316630/06-12

- 1 Charging circuit/starting motor/contact switch/starter switch
- 8 Light switch/Rear/side marker and parking lights/Swedish lighting FA
- 9 Light switch/Rear/side marker and parking lights/Swedish lighting FT
- 25 Voith retarder
- 26 ZF intarder
- 30 DCI
- 41 Auxiliary heating Webasto Thermo 90
- 44 Fuel filter/water separator
- 45 Fuel line heater

**1. CHARGING CIRCUIT/STARTING MOTOR/CONTACT/STARTER SWITCH****CONTACT CIRCUIT**

If a connection is made between contacts 1 and 6 with contact/starter switch C539, a voltage is applied through fuse E037, switch C539 and wire 1130 to contact 85 of relay G178.

Because relay G178 is activated, a connection is made between contacts 30 and 87 and a voltage is applied through fuse E037, wire 1100, the contacts 30 and 87 of relay G178, wire 1147, and through fuses E027 and E052 to the electronic unit of converter 24 V/12V D525 and the work light switch C725.

If a connection is made between contacts 1 and 4 with contact/starter switch C539, a voltage is applied through fuse E037, wire 1100, switch C539 and wire 4001 to contact 85 of relay G015. As a result, relay G015 is activated, so that wire 1000 is connected to wire 1010. Now voltage is applied to the supply behind contact circuit (connection point 1010) and, through resistor B036 and diode D668, to the connection points D+ of the alternator A502, connection point 85 of relay G303 and to the electronic unit CWS D853.

**START CIRCUIT**

When the engine is started, a connection is made between the contacts 1 and 2 with contact/starter switch C539. The voltage now runs from the batteries through wire 1000, fuse E037, connection 1–2 of the contact/starter switch, wire 4002 and contacts 30 and 87 of relay G303, wire 4009, to connection point 50 of starting motor B010. The coil of the starting motor relay is now activated, so that a voltage is supplied to the starting motor, as a result of which the motor will start operating.

As soon as the engine is running, the voltage on connection D+ of the alternator will increase to the adjustment voltage (= board voltage). This voltage will cause the coil of relay G303 to be energised. It will break the connection between 30 and 87A and connects 30 to 87. As a result, wire 4002 is disconnected from wire 4009. In this situation it is no longer possible to start.

**CHARGING CIRCUIT**

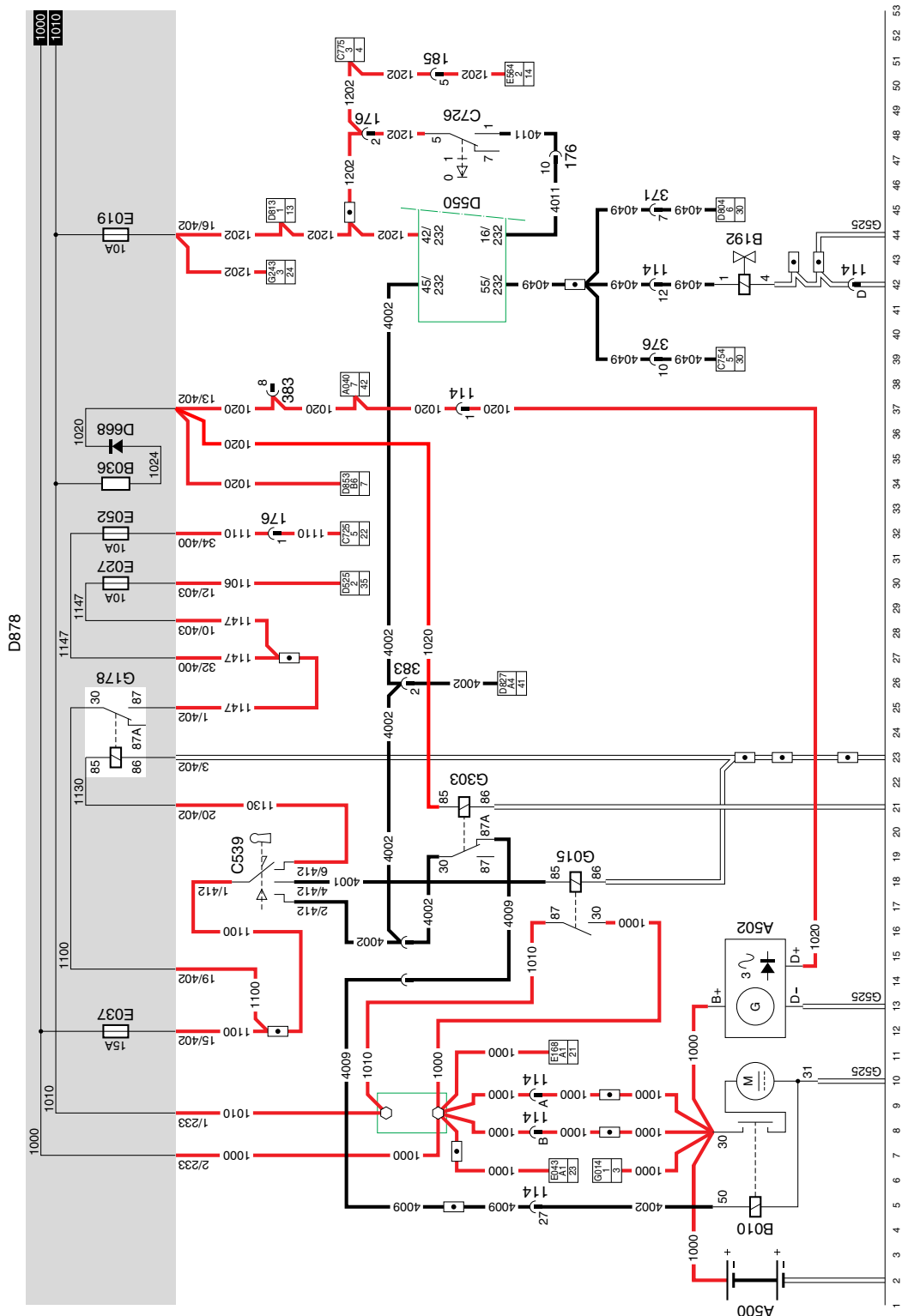
If the contact is activated, a voltage is applied to resistor D+ B036.

The other side of the resistor is connected to the D+ connection of the alternator through diode D668 and wire 1020.

The D+ connection is connected to earth through the integrated voltage regulator in the alternator A502. This will cause a small current to run, causing a magnetic field in the alternator.

After starting, the voltage on clamps B+ and D+ will increase to approx. 29 V. This is caused by the fact that the regulator disconnects the earth connection in the regulator and connects it to the battery voltage. This voltage is also applied to wire 1020, so that the difference of potential over the resistor becomes 0 V. The magnetic field now disappears, so that the generator is not activated for a short time. This will reduce the voltage on outputs B+ and D+.

The regulator is activated if the voltage drops below 27.6 V. This way, the generator voltage supply remains relatively constant. The batteries are fed by generator output B+.



# 1

1316630/06-12

EL000242

## 8. LIGHT SWITCH/REAR/SIDE MARKER AND PARKING LIGHTS/SWEDISH LIGHTING FA

### REAR/SIDE MARKER AND PARKING LIGHTS

FOR SUBDIAGRAM AND IDENTIFICATION:  
SEE MAIN GROUP "ELECTRICAL SYSTEM"  
SUBDIAGRAM OF CIRCUIT DIAGRAM  
1316630/05

### SWEDISH LIGHTING

When the engine is running, a D+ signal is available on connection point 1 of relay G301 through resistor B036 and diode D668. If this relay is activated, a connection is made between connection points 3 and 5.

This voltage is applied to connection point 5 of relay G301 through fuse E084 and wire 1101. From connection point 3 of relay G301 and wire 2100, this voltage is applied to connection point 85 of relay G000. This is energised. Now a voltage is applied to C022, C074, C012 and C010 through connection points 30 and 87 of relay G000, print track 2101 and fuse E000. This voltage is also applied to C023, C075, C011 and C013 through fuse E001 and wire 2103.

Wire 2100 is connected to point 3 of relay G301 but also to point 3 of relay G302. If the light switch C622 is not operated, relay G302 is not activated, so that the voltage is also applied to C775 through contacts 3 and 4 and through wire 2110 and diode D610. As a result, the dipped beam is switched on as well.

If the light switch C622 is in marker position, a voltage is applied to connection point 1 of relay G302 through wire 2105.

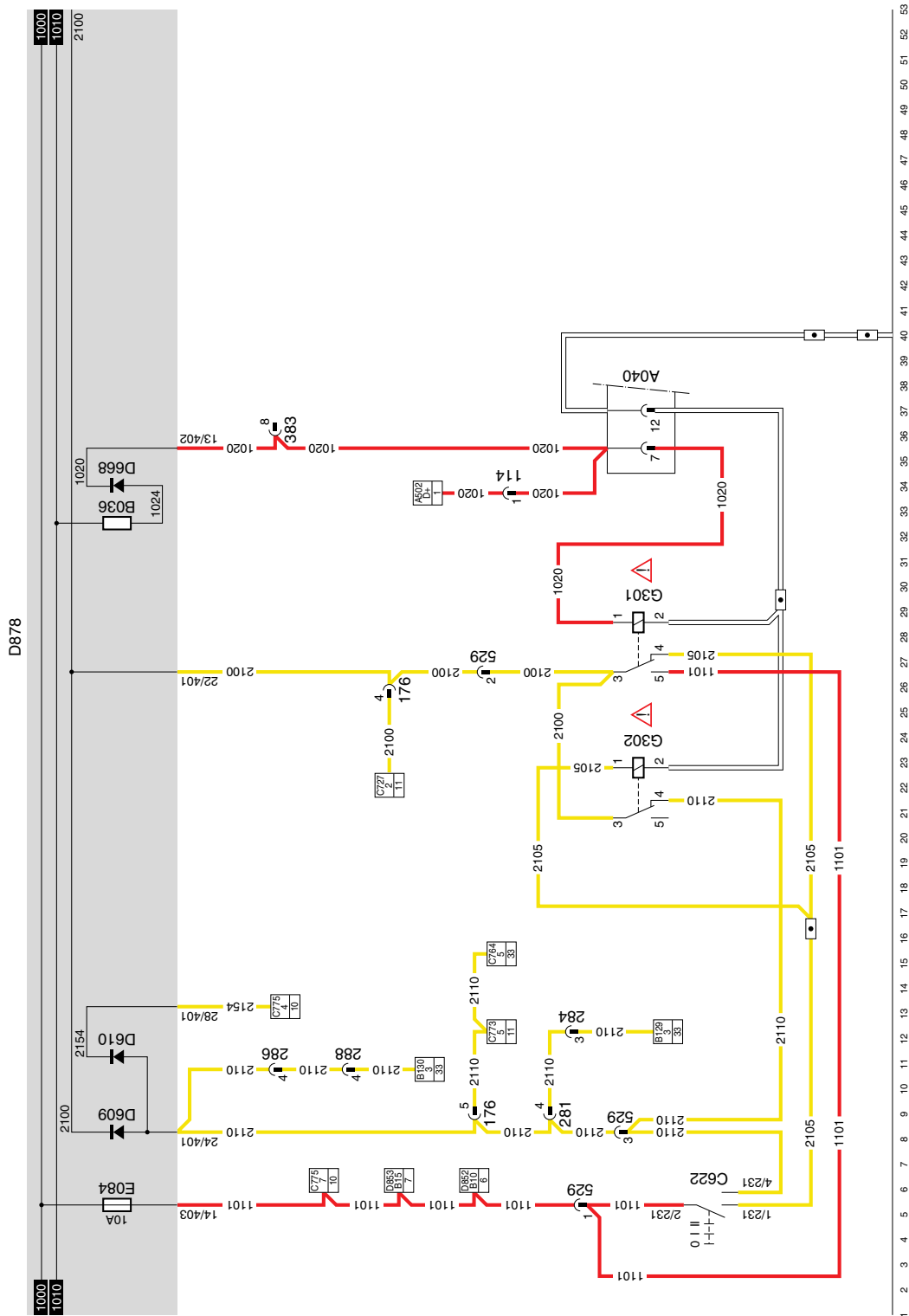
The relay is activated, as a result of which points 3 and 4 of relay G302 are no longer connected. This voltage is also applied to connection point 4 of relay G301 and through wire 2100 to point 85 of relay G000, so that it is again activated.

When the engine is running in this situation, a voltage from the D+ connection of the alternator is applied to connection point 1 of relay G301 through resistor B036 and diode D668. The relay is activated, so that a connection is made between points 3 and 5. Now relay G000 will be activated (power supply wire 1101), so that again only the marker lights will be switched on.

### VARIANTS

#### Location

25, 31 These are present only in a vehicle with 'Swedish' lighting.



# 8

1316630/06-12

EL000238

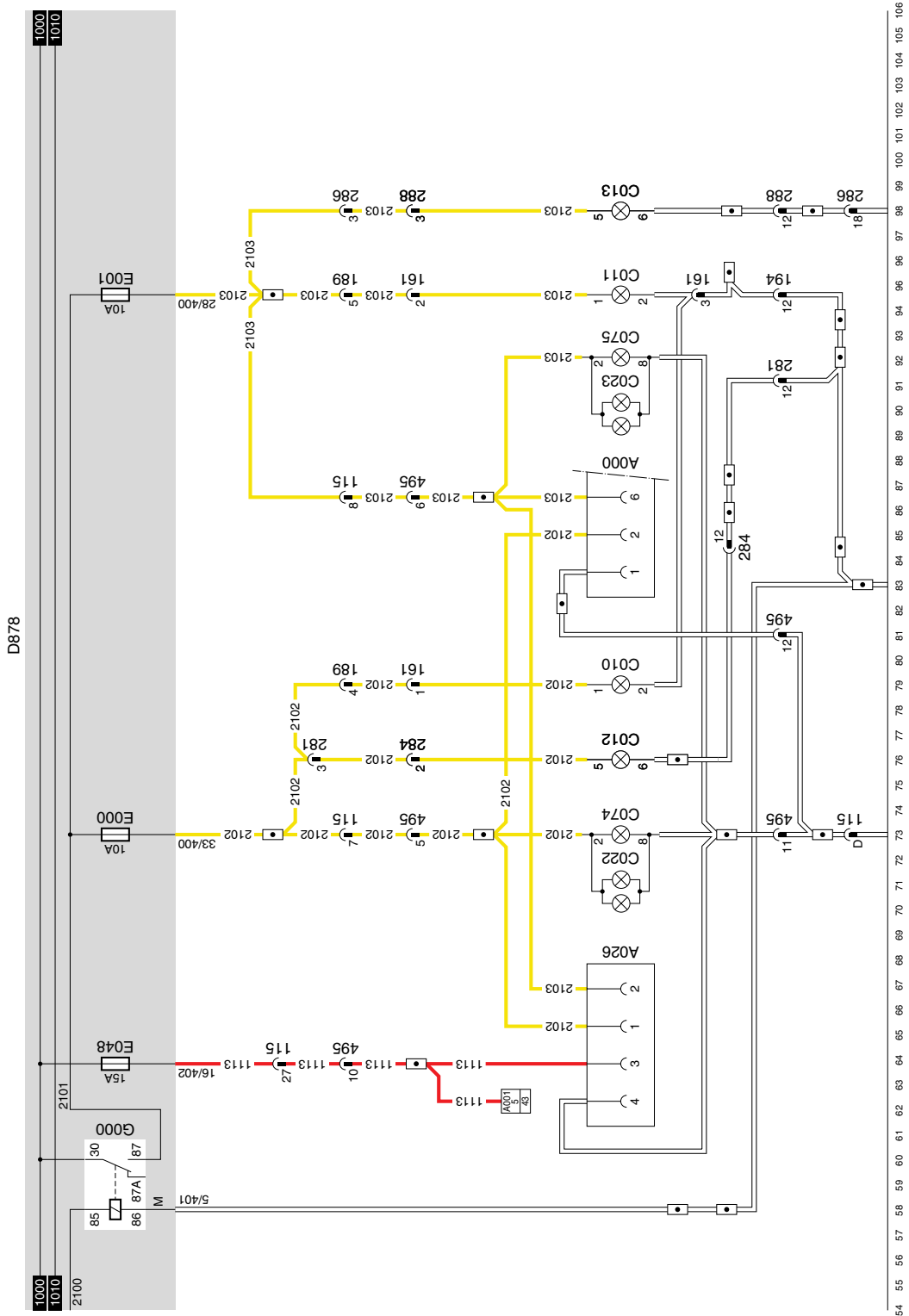


# 5

# MODIFICATIONS TO THE ELECTRICAL INSTALLATION

95XF series

Modifications to the electrical installation from chassis number 0E459335



# 8

1316630/06-12

EL000239

# 11

**9. LIGHT SWITCH/REAR/SIDE MARKER AND PARKING LIGHTS/SWEDISH LIGHTING FT****REAR/SIDE MARKER AND PARKING LIGHTS**

FOR SUBDIAGRAM AND IDENTIFICATION:  
SEE MAIN GROUP "ELECTRICAL SYSTEM"  
SUBDIAGRAM OF CIRCUIT DIAGRAM  
1316630/05

**SWEDISH LIGHTING**

When the engine is running, a D+ signal is available on connection point 1 of relay G301 through resistor B036 and diode D668. If this relay is activated, a connection is made between connection points 3 and 5.

This voltage is applied to connection point 5 of relay G301 through fuse E084 and wire 1101. From connection point 3 of relay G301 and wire 2100, this voltage is applied to connection point 85 of relay G000. This is energised. Now a voltage is applied to C022, C074, C012 and C010 through connection points 30 and 87 of relay G000, print track 2101 and fuse E000. This voltage is also applied to C023, C075, C011 and C013 through fuse E001 and wire 2103.

Wire 2100 is connected to point 3 of relay G301 but also to point 3 of relay G302. If the light switch C622 is not operated, relay G302 is not activated, so that the voltage is also applied to C775 through contacts 3 and 4 and through wire 2110 and diode D610. As a result, the dipped beam is switched on as well.

If the light switch C622 is in marker position, a voltage is applied to connection point 1 of relay G302 through wire 2105.

The relay is activated, as a result of which points 3 and 4 of relay G302 are no longer connected. This voltage is also applied to connection point 4 of relay G301 and through wire 2100 to point 85 of relay G000, so that it is again activated.

When the engine is running in this situation, a voltage from the D+ connection of the alternator is applied to connection point 1 of relay G301 through resistor B036 and diode D668. The relay is activated, so that a connection is made between points 3 and 5. Now relay G000 will be activated (power supply wire 1101), so that again only the marker lights will be switched on.

**VARIANTS****Location**

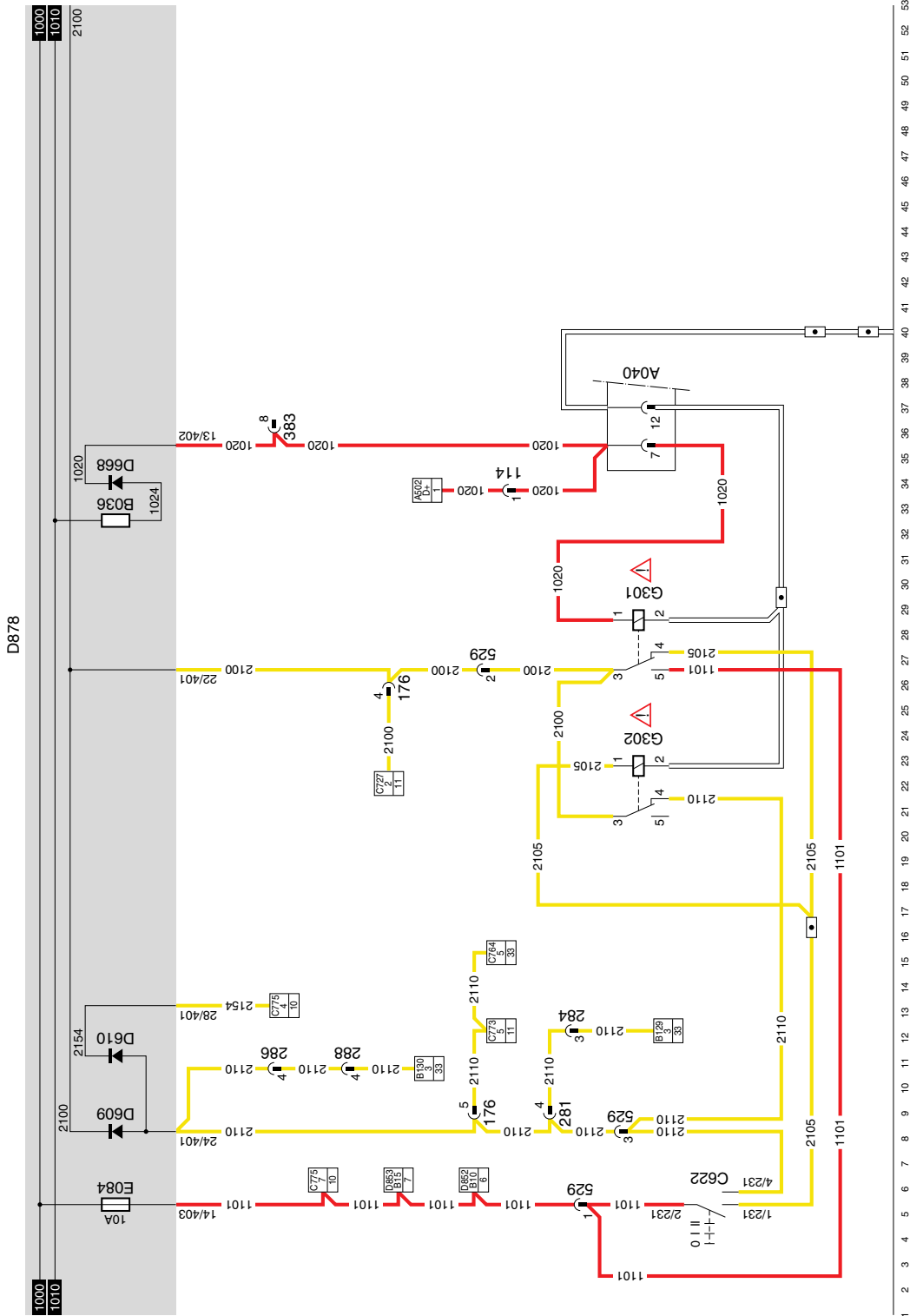
25, 31 These are present only in a vehicle with 'Swedish' lighting.

# 5

# MODIFICATIONS TO THE ELECTRICAL INSTALLATION

95XF series

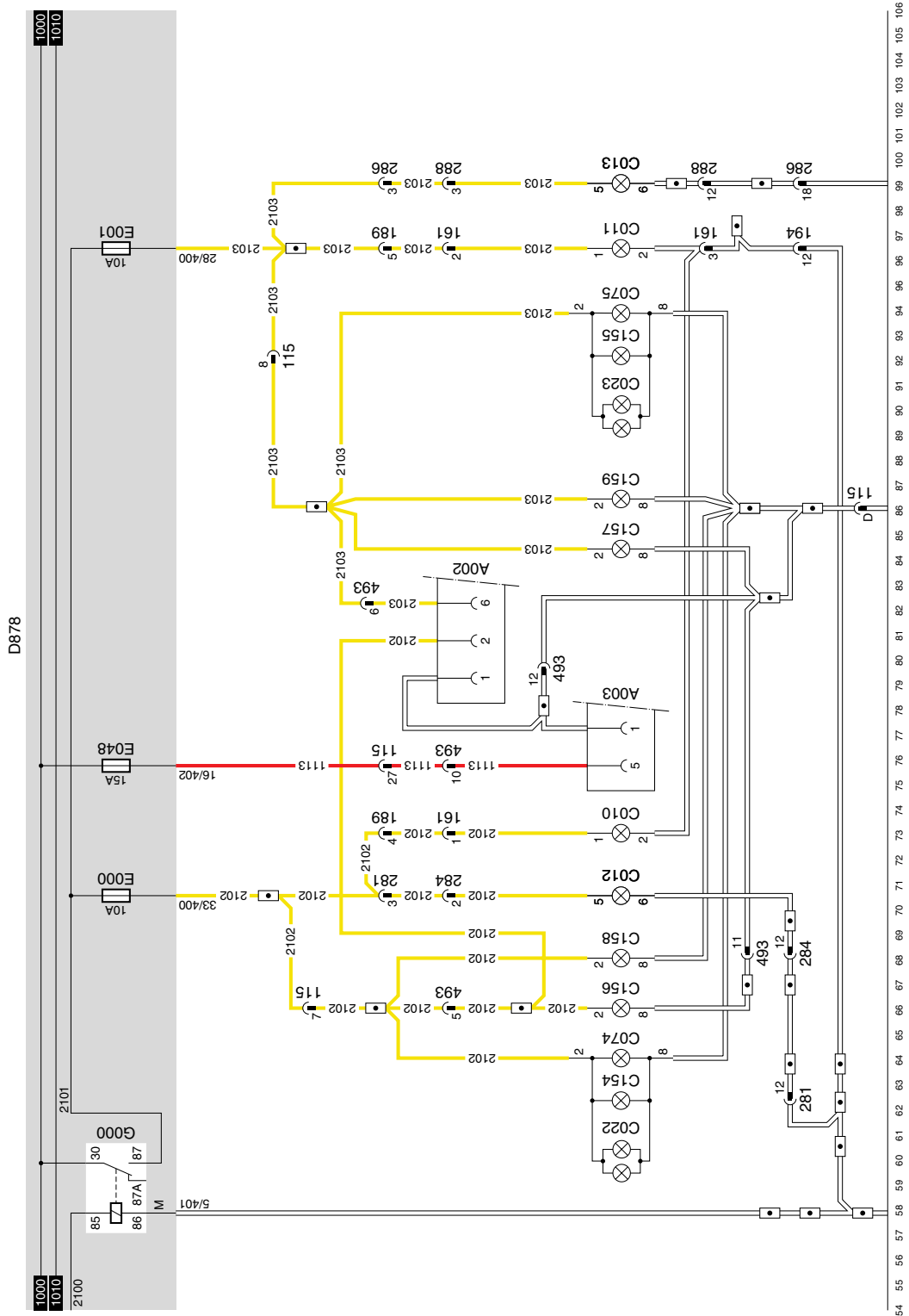
Modifications to the electrical installation from chassis number 0E459335



# 9

1316630/06-12

EL000240



11

9

1316630/06-12

EL000241

## 25. VOITH RETARDER

### OPERATION

The electronic unit of the Voith retarder (D870) is fed behind the contact through fuse E029. If the ABS is active, wire 4619 is switched to earth by relay G239. As a result, the Voith retarder is deactivated.

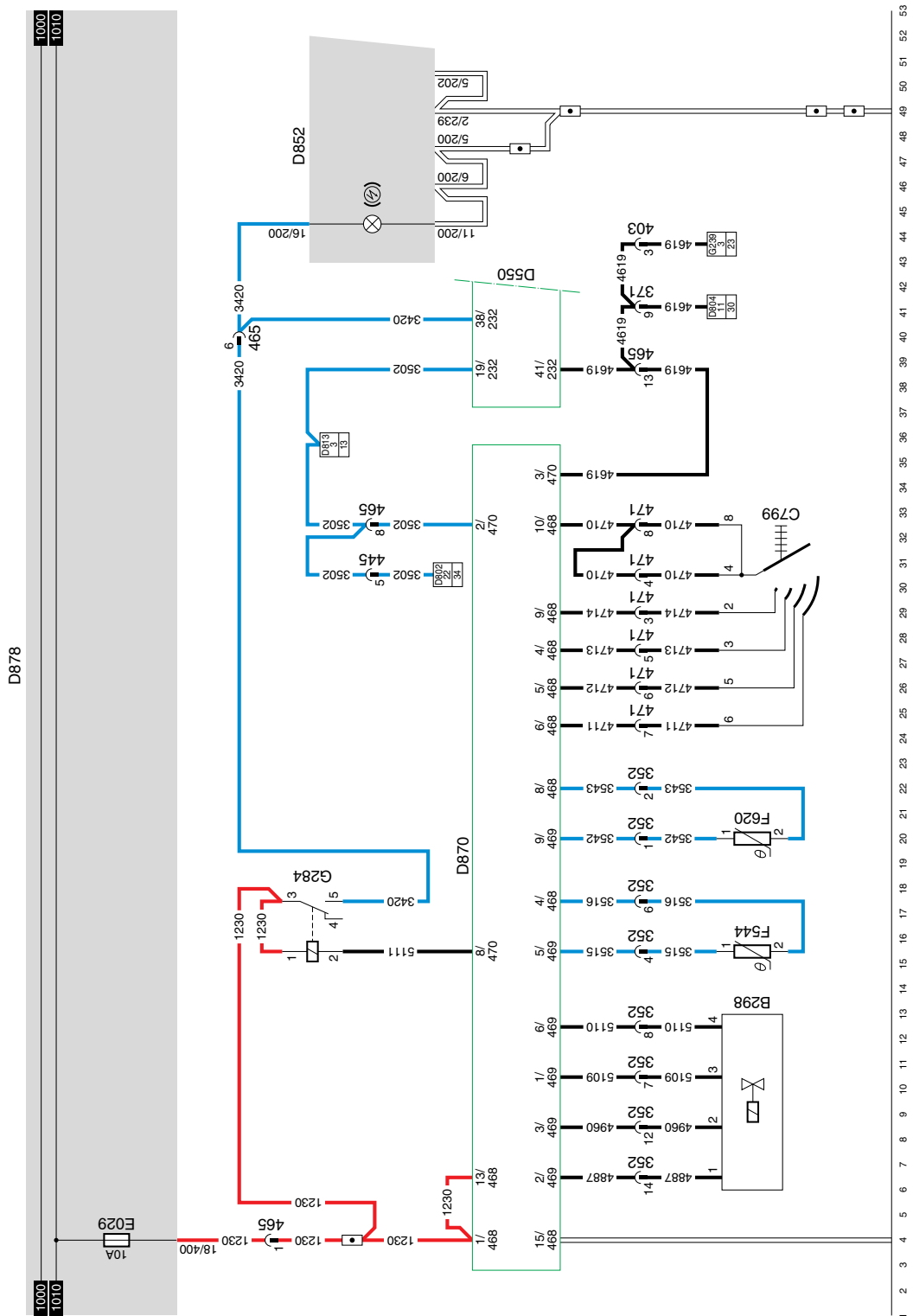
The Voith retarder switch (C799) is fed through wire 4710 and is equipped with 4 outputs (positions 1 - 4) which are connected to the Voith retarder unit. These are the 4 brake positions.

This is how the electronic unit controls the Voith retarder valve (B298).

If the coolant temperature is too high (measured by the coolant temperature sensor (F544)), the retarder control reduces the retarder pressure by reducing the current through the proportional magnetic valve.

A warning lamp on the instrument panel DIP-3 (D852) indicates whether or not the retarder is active. A signal is also supplied to the CTE-2 unit (D550) through wire 3420 to disengage the cruise control when using the retarder.

There is a connection on the CTE-2 unit to supply the speed signal through wire 3502. This wire is also connected to the electronic unit of the Voith retarder (D870).



11

25

1316630/06-12

EL000245

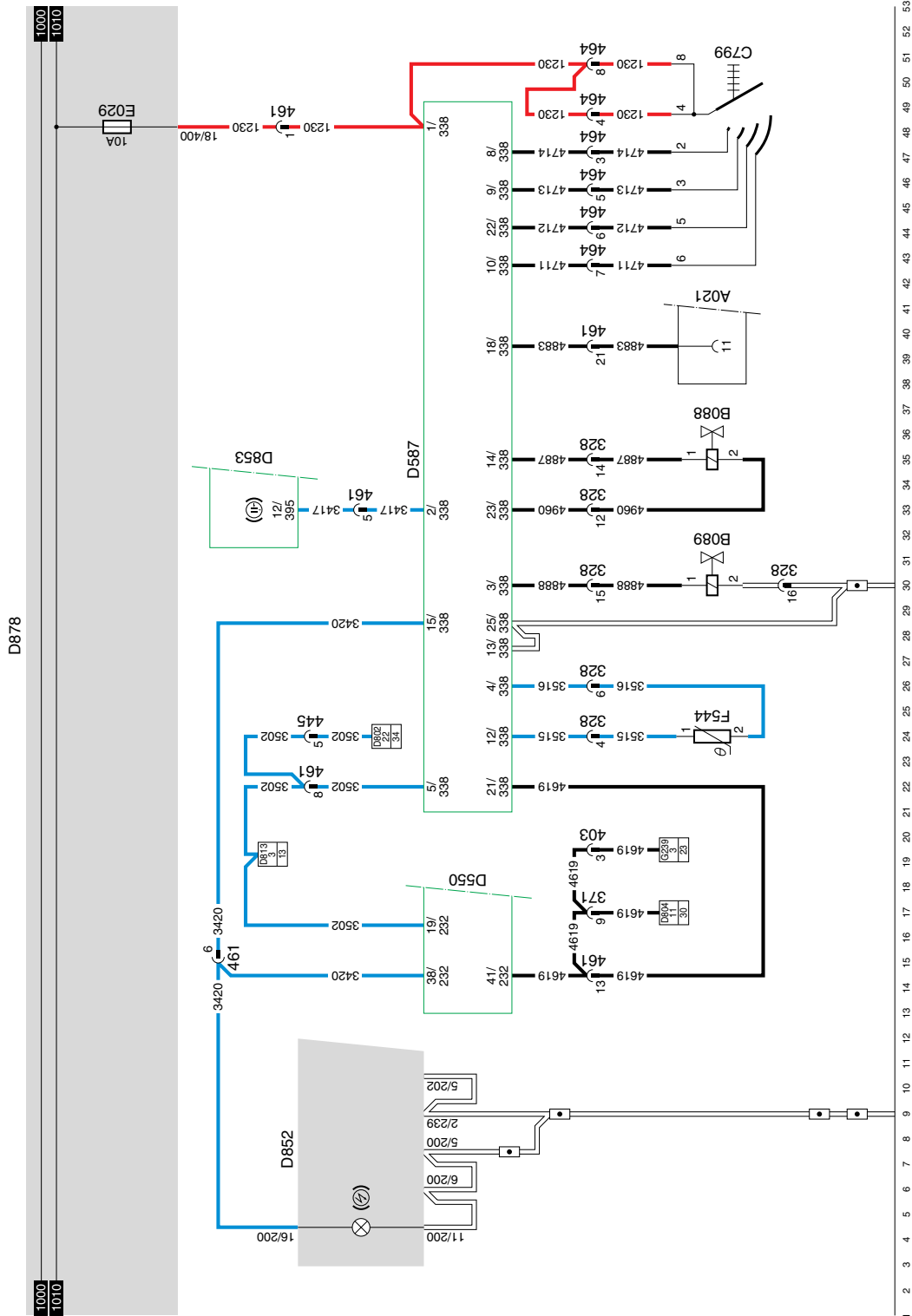
# 5

## MODIFICATIONS TO THE ELECTRICAL INSTALLATION

**95XF** series      Modifications to the electrical installation from chassis number 0E459335

### 26. ZF INTARDER

SEE THE SYSTEM MANUAL FOR MORE INFORMATION.



11

26

1316630/06-12

EL000246



# 5

## MODIFICATIONS TO THE ELECTRICAL INSTALLATION

**95XF** series

Modifications to the electrical installation from chassis number 0E459335

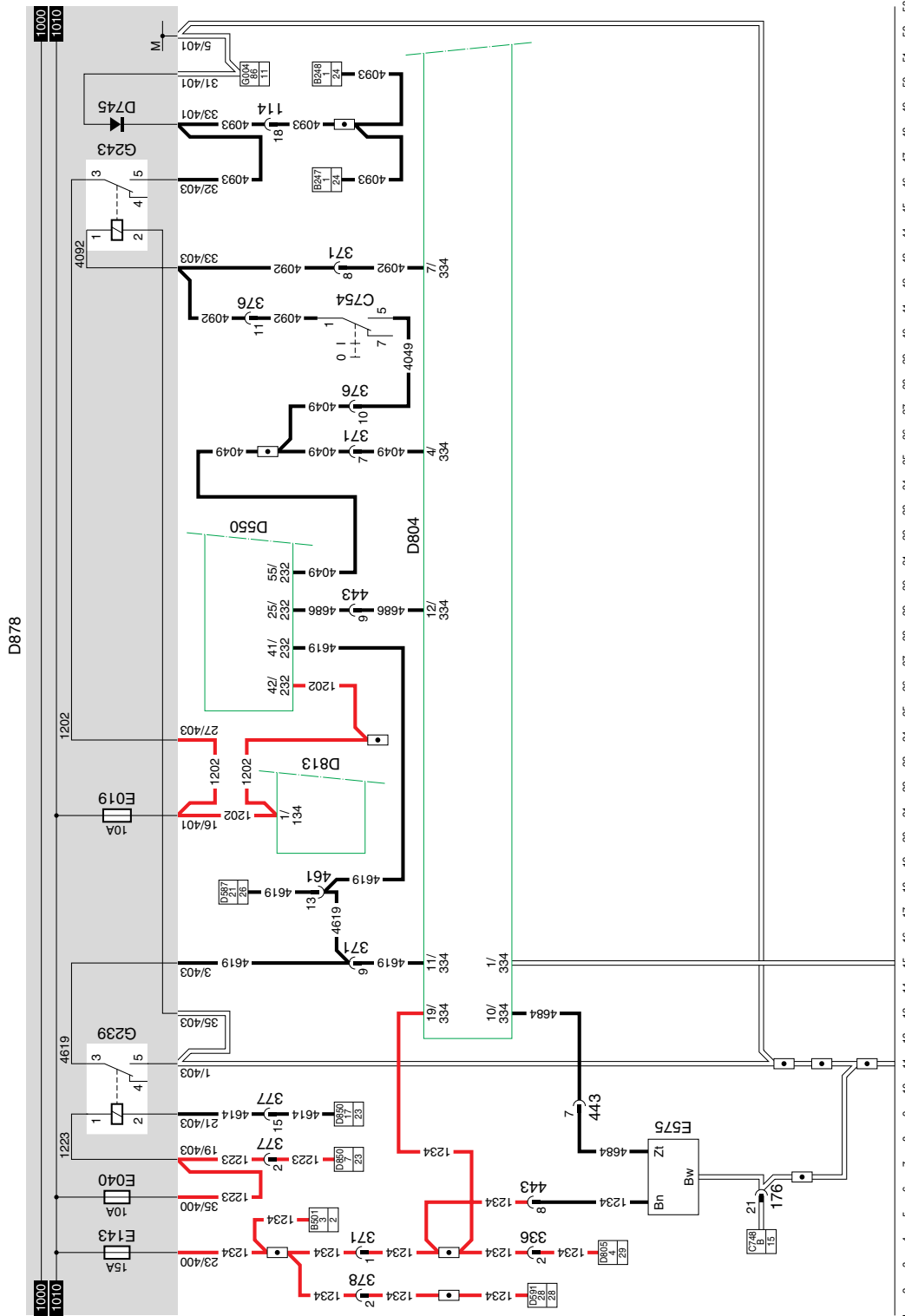
### 30. DCI

#### VARIANTS

##### Location

70 This depends on the speed-limiter type.

**SEE THE SYSTEM MANUAL FOR MORE INFORMATION.**



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53

30

1316630/06-12

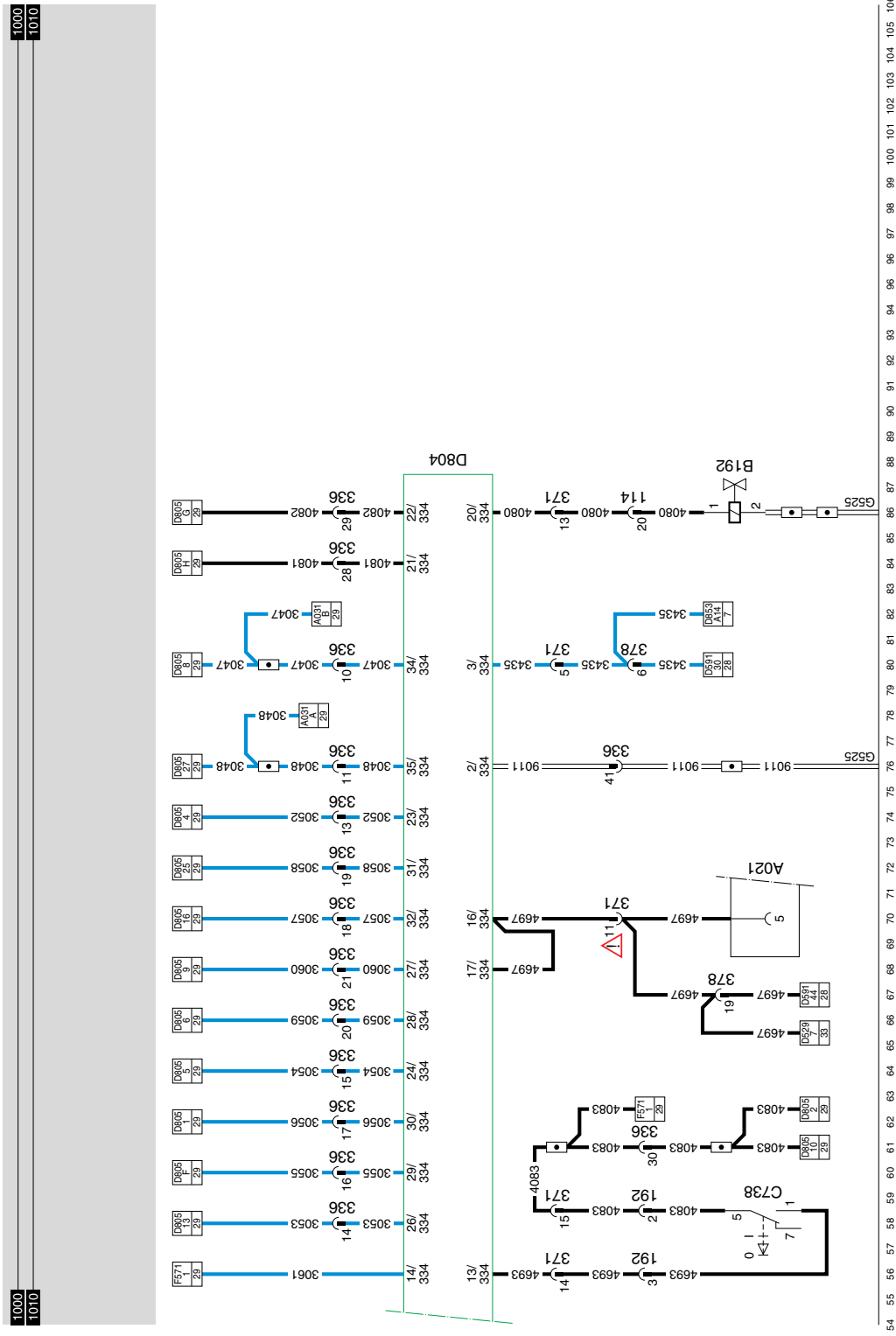
EL000249

# 5

# MODIFICATIONS TO THE ELECTRICAL INSTALLATION

95XF series

Modifications to the electrical installation from chassis number 0E459335



30

1316630/06-12

EL0002050

## 41. WEBASTO AUXILIARY HEATING, THERMO 90

### VARIANTS

#### Location

78 Wire 4009 only applies in the case of a VF.

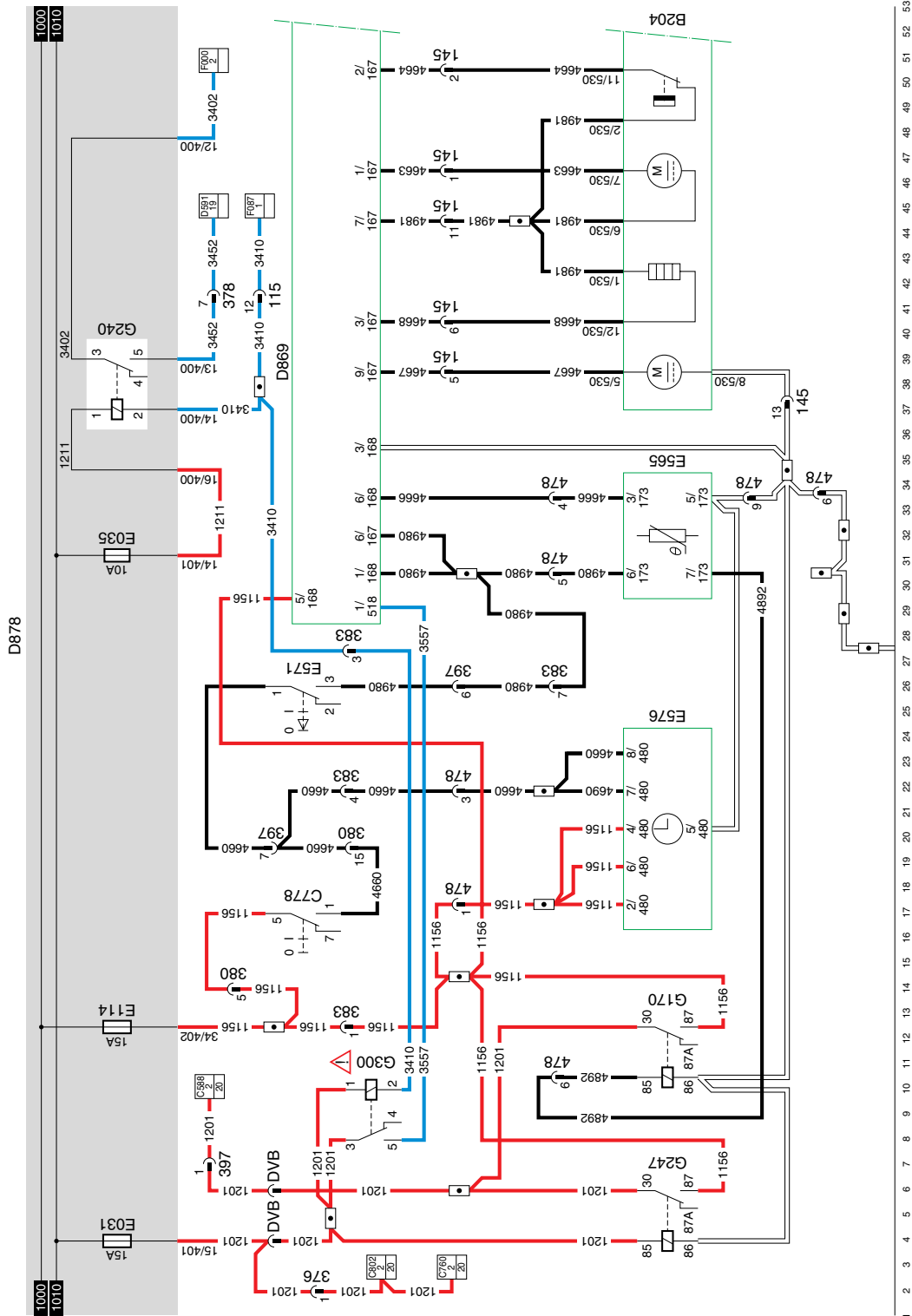
**SEE THE SYSTEM MANUAL FOR MORE INFORMATION.**

# 5

## MODIFICATIONS TO THE ELECTRICAL INSTALLATION

95XF series

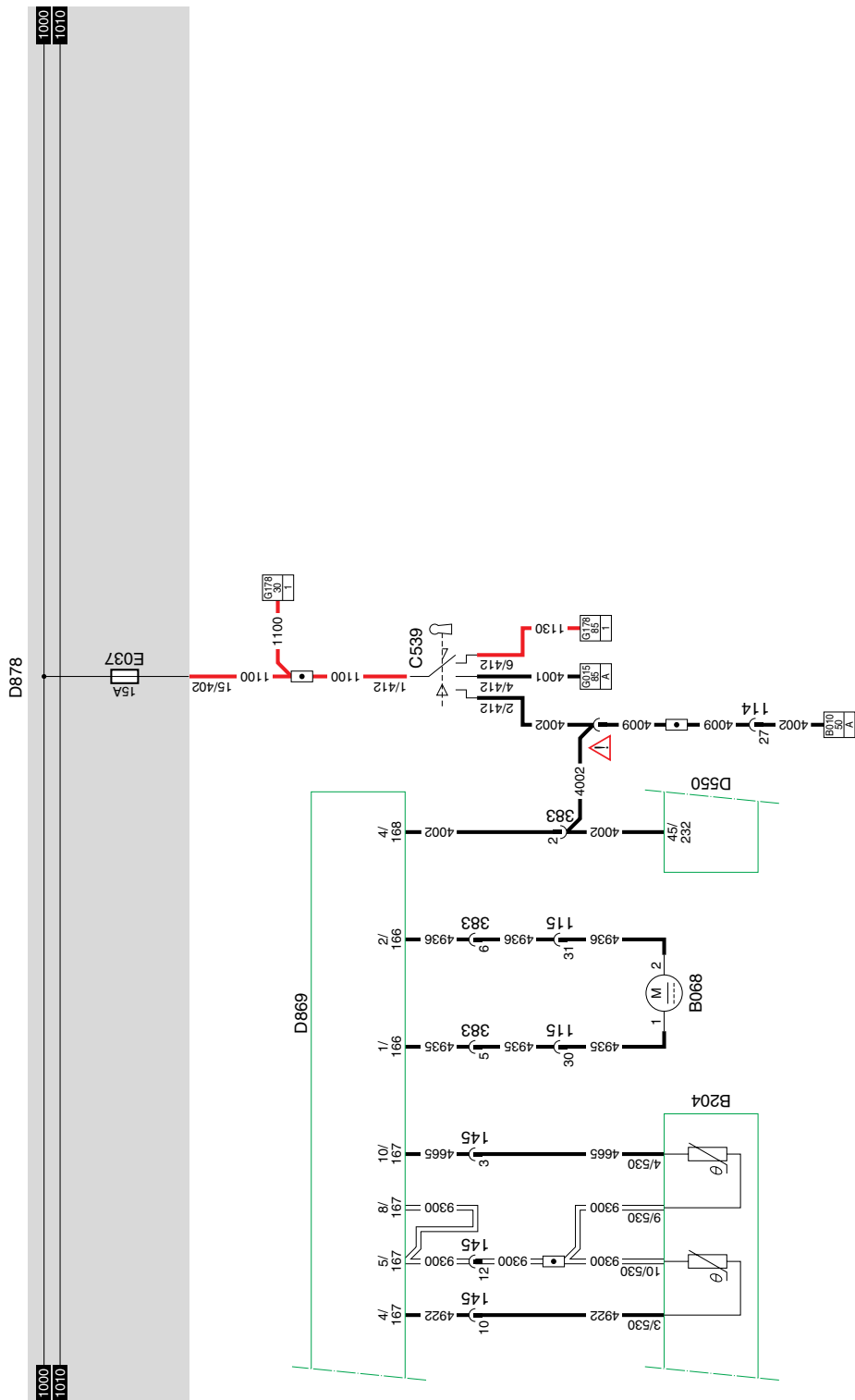
Modifications to the electrical installation from chassis number 0E459335



# 41

1316630/06-12

EL000243



# 41

1316630/06-12

EL000244

# 11

**44. FUEL FILTER / WATER SEPARATOR**

If the vehicle is switched to contact, a voltage is applied through wire 1010 and fuse E170 both to connection point 1 of the electronic unit (D855) and to connection point 6 of the fuel filter/water separator switch (C747). If the switch is operated, relay G234 is activated through wire 5048. Now a voltage is also applied, through wire 1000, fuse E171, wire 1179, contacts 3 and 1 of relay G234 and wire 5051, to connection point rdzt1 of fuel filter/water separator sensor (B241). If the heating element is switched on with switch C747, the LED "ON" in the electronic unit D855 will be lit.

If the sensor in the fuel filter/water separator section detects water, the LED "DRAIN" in the electronic unit (D855) is activated through wires 5049 and 5050.





**45. FUEL PREHEATING**

If the vehicle is switched to contact, a voltage is applied to connection point 6 of the fuel preheating switch (C677) through wire 1010 and fuse E170. If this switch is operated, the voltage is applied to connection point 2 of relay G201 through wire 6008. This is energised. Now a voltage is applied to connection point 1 of the fuel heating element (B182) through wire 1000, fuse E164, wire 1190, contacts 3 and 1 of relay G201 and wire 6009.



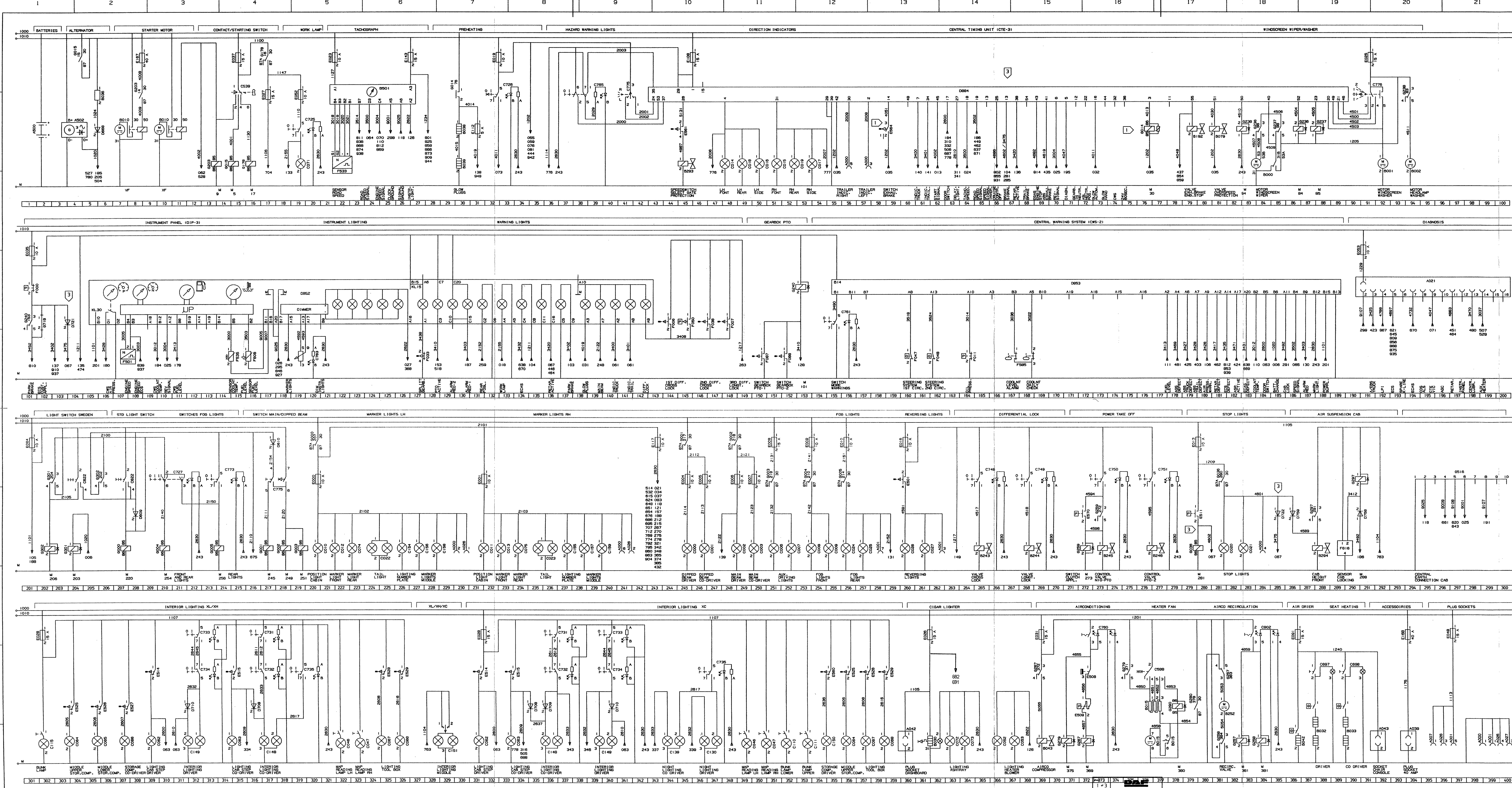
### 3. MODIFICATIONS TO THE ELECTRICAL INSTALLATION FROM CHASSIS NUMBER 0E473500

#### 3.1 OVERVIEW OF MODIFICATIONS TO THE ELECTRICAL INSTALLATION

##### Modification/Chassis numbers

Electrical system	From chassis number	Modification	See sub-diagram no.
Voltage before and after the contact	0E473500	Changed connector on printed circuit for wires 1000 and 1010	A
CTE	0E473500	CTE-2 (D550) changed to CTE-3 (D884)	5
Air conditioning	0E473500	Air-conditioning relay (G279) no longer connected in series with switches E508 and E509	20
Starting circuit	0E477514	Starter lock relay (G303) removed, now mechanical starter lock in ignition lock	1
Gearbox gate safety	0E473500	Gate safety activation changed, now activated through CTE-3	13
E-gas 3	0E473500	Fuse for E-gas (E197) added	28
Oil level HGS	0E475536	Switch for oil level HGS (F076) removed	7
Search light	0E481530	LED-lighting added for air-conditioning switch (C760) and recirculation switch (C802)	19
Door lock	0E481530	Fuse E182 changed to fuse E026 Wire mark 1181 changed to 1105	36
Air conditioning	0E481530	LED-lighting added for air-conditioning switch (C760) and air-conditioning recirculation switch (C802)	20
CWS-2	0E493304	Air filter switch (F016) removed	7
UPEC	Depending on whether vehicle is fitted with UPEC	UPEC system added	47
ABS / ASC	Depending on whether vehicle is fitted with UPEC	Wires 3484 and 3485 added in connection with UPEC system	23
Connector sockets FT	Depending on whether vehicle is fitted with UPEC	Various changes in connections because of modified and new systems Connector A046 added in view of UPEC system	42
Connector sockets FA	Depending on whether vehicle is fitted with UPEC	Various changes in connections because of modified and new systems Connector A046 added in view of UPEC system	43
Auxiliary heating	0E502734	Webasto Thermo 90 replaced by Eberspächer Hydronic 10	46





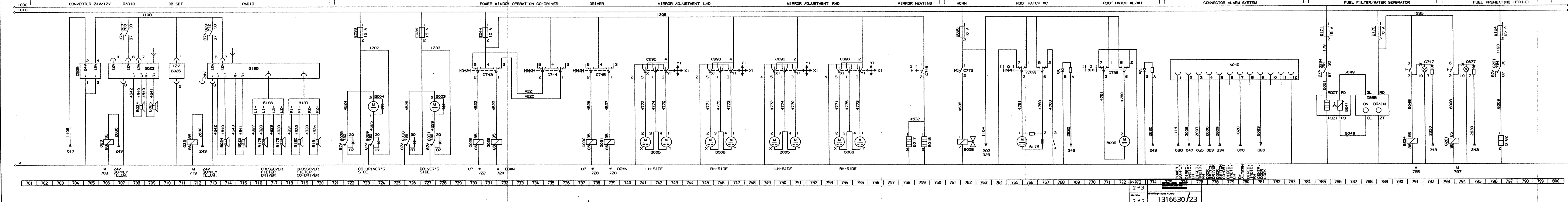
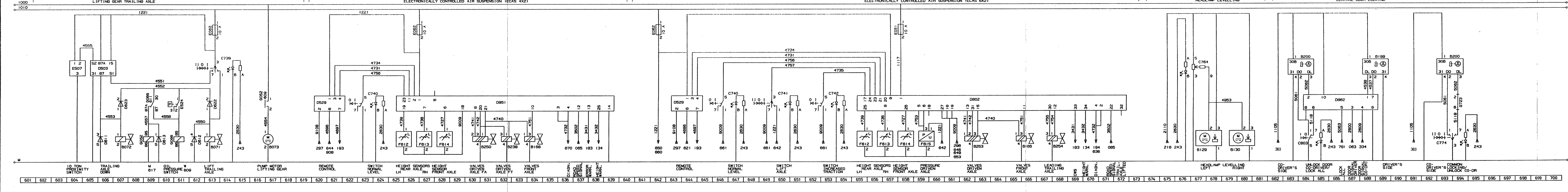
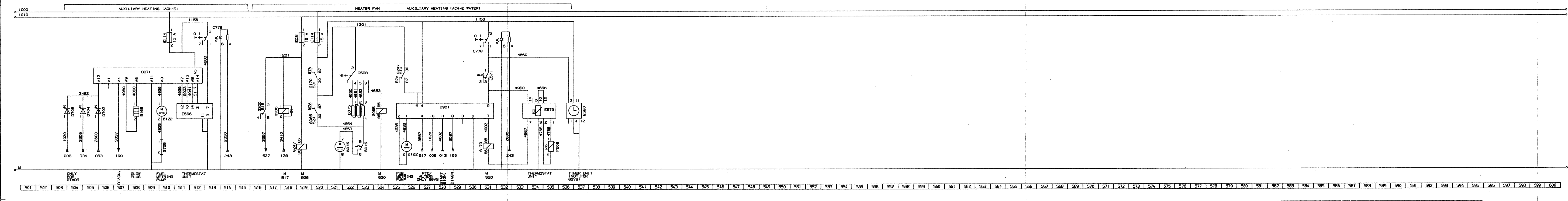
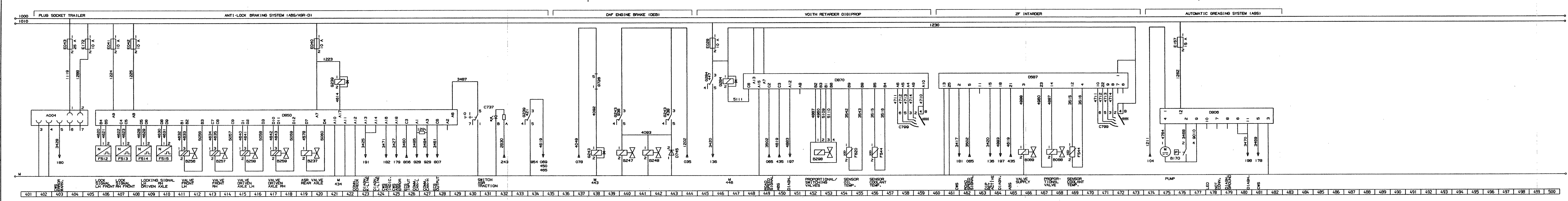
OPMERKING/note  
 DE FUNCTIES GELIJKEN MOTORREH  
 EN MOTORSTOP NIET VAN  
 TOEPASSING IGV UPEC.

OPMERKING/note  
 BI J UPEC ADER 4602 OP PIN 13  
 VAN DE CTE ANGESLOTEN,  
 DIODES D721, D722 EN ADER  
 3475 NIET AANGESLOTEN.

the functions pre heating, engine  
 brake and stop are not applied  
 with the UPEC system

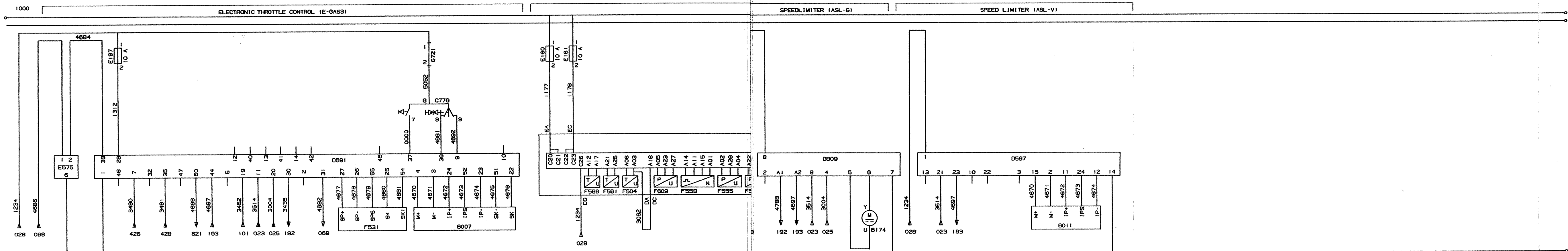
if UPEC wire 4602 connected to pin  
 13 of the CTE diode D721, D722 and  
 wire 3475 are not connected.



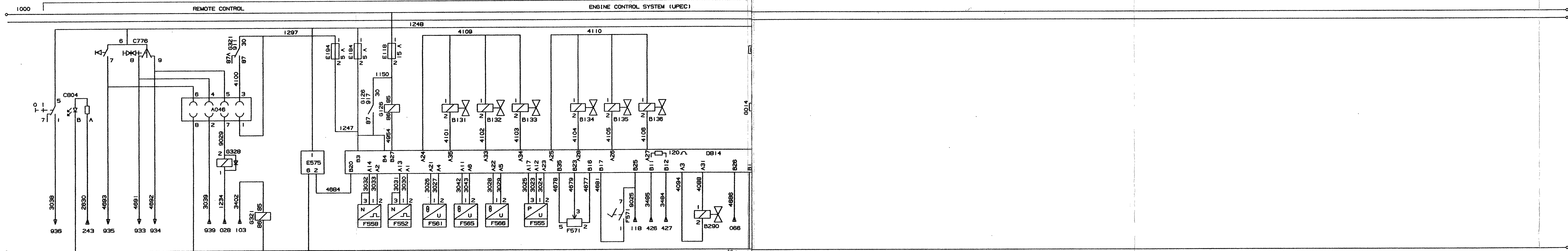


1316630/ 13-23  
2v3

1316630/23



801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900
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901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000
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1001	1002	1003	1004	1005	1006	1007	1008	1009	1010	1011	1012	1013	1014	1015	1016	1017	1018	1019	1020	1021	1022	1023	1024	1025	1026	1027	1028	1029	1030	1031	1032	1033	1034	1035	1036	1037	1038	1039	1040	1041	1042	1043	1044	1045	1046	1047	1048	1049	1050	1051	1052	1053	1054	1055	1056	1057	1058	1059	1060	1061	1062	1063	1064	1065	1066	1067	1068	1069	1070	1071	1072	1073	1074	1075	1076	1077	1078	1079	1080	1081	1082	1083	1084	1085	1086	1087	1088	1089	1090	1091	1092	1093	1094	1095	1096	1097	1098	1099	1100
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1101	1102	1103	1104	1105	1106	1107	1108	1109	1110	1111	1112	1113	1114	1115	1116	1117	1118	1119	1120	1121	1122	1123	1124	1125	1126	1127	1128	1129	1130	1131	1132	1133	1134	1135	1136	1137	1138	1139	1140	1141	1142	1143	1144	1145	1146	1147	1148	1149	1150	1151	1152	1153	1154	1155	1156	1157	1158	1159	1160	1161	1162	1163	1164	1165	1166	1167	1168	1169	1170	1171	1172	1173	1174	1175	1176	1177	1178	1179	1180	1181	1182	1183	1184	1185	1186	1187	1188	1189	1190	1191	1192	1193	1194	1195	1196	1197	1198	1199	1200
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2 OPMERKING/note  
 INDIEN GEEN OPBOUW APPLICATIE  
 ADEER 1234 MET PIN B15 VAN  
 UNIT D814 VERBINDEN. if no body builders application  
 connect wire 1234 directly to  
 pin B15 of unit D814.

1316630/13-23  
 3v3

1316630/23

# 5

## MODIFICATIONS TO THE ELECTRICAL INSTALLATION

95XF series Modifications to the electrical installation from chassis number 0E473500

### 3.3 OVERVIEW OF BASIC CODE NUMBERS IN CIRCUIT DIAGRAM 1316630/13-23

Column 1 : Basic code number  
Column 2 : Description  
Column 3 : Number on search bar of circuit diagram 1316630/13-23

Column 1	Column 2	Column 3
A000	(Semi-)trailer socket (7-pin)	56/57/230/241/284/399
A001	Rear fog light back-up light socket (7-pin)	258/262/397/399
A004	ABS FA socket (7-pin)	404
A007	24V socket (2-pin)	395
A021	Diagnostic socket (16-pin)	191
A026	Superstructure side-lights (4-pin)	230/241/396/400
A027	Accessory socket (4-pin)	400
A031	Diagnostic socket, 2-pin, SAE CUMMINS	849/850
A038	Accessory socket (2-pin) 40A	394
A040	Alarm system socket	776
A042	Dashboard socket (2-pin)	360
A043	Chair console socket on driver's side (2-pin)	392
A046	Connector for the body builder for remote control connection	908
A500	Batteries (2)	2
A502	Generator of integrated voltage regulator	4
B000	Windscreen-wiper motor	84
B001	Windscreen-wiper pump motor	92
B002	Headlight-washer pump motor	94
B003	Electric motor for window control, driver's side	728
B004	Electric motor for window control, co-driver's side	724
B005	Left-hand mirror adjustment motor	741/750
B006	Right-hand mirror adjustment motor	745/754
B007	Vehicle/engine speed regulator motor E-gas	818
B009	Roof hatch motor	772
B010	Starting motor	8/11
B011	Electric motor for speed limiter	878
B015	4-speed heater fan	376/378/521/522/523
B017	Mirror heating, driver's side	758
B018	Mirror heating, co-driver's side	759
B023	Radio	707
B024	Left-hand loudspeaker	708/714
B025	Right-hand loudspeaker	709/715
B026	Citizen Band	711
B028	Air horn	762
B030	Cigarette lighter, driver's side	362
B032	Seat heating, driver's side	388
B033	Seat heating, co-driver's side	390
B036	Resistor, alternator, D+	6
B038	Glow filament	30/947
B039	Glow filament	30/947
B040	Glow filament	948
B041	Glow filament	948



Column 1	Column 2	Column 3
B042	Air dryer element heating	386
B043	Air-conditioning compressor	369
B071	Lifting-gear lifting valve	613
B072	Lifting-gear lowering valve	607
B073	Lifting-gear motor pump	617
B079	Valve single-H-safety	81
B088	Intarder valve, proportional	468
B089	Intarder valve, air supply	466
B122	Fuel metering pump for auxiliary heating, Eberspächer	510/526
B129	Electric motor for left-hand headlight-height adjustment	678
B130	Electric motor for right-hand headlight-height adjustment	680
B131	Magnetic valve pump unit/injector cylinder 1	919
B132	Magnetic valve pump unit/injector cylinder 2	921
B133	Magnetic valve pump unit/injector cylinder 3	922
B134	Magnetic valve pump unit/injector cylinder 4	925
B135	Magnetic valve pump unit/injector cylinder 5	926
B136	Magnetic valve pump unit/injector cylinder 6	928
B166	Valve, ECAS front axle	634/665
B168	Glow filament for D1LC auxiliary heating	508
B170	Automatic lubrication pump with push-button switch	475
B174	Electric motor for speed limiter	871
B175	Roof panel motor Super Space Cab	766
B178	Left-hand loudspeaker	716
B179	Left-hand loudspeaker	718
B180	Right-hand loudspeaker	719
B181	Right-hand loudspeaker	720
B182	Fuel heater	797
B185	Radio	713
B186	Loudspeaker filter, driver's side	717
B187	Loudspeaker filter, co-driver's side	719
B192	Engine brake valve	79/851/934
B199	Central door locking, driver's side	688
B200	Central door-locking motor, co-driver's side F249 XH/XC	683/693
B237	ASC valve	419
B238	Valve ECAS driven axle, left/right, air supply (FT)	632
B241	Sensor for heating element fuel filter/water separator	785
B243	Axle locking differential control valve	265
B244	Inter-axle locking differential control valve	268
B245	PTO control valve	273
B246	PTO control valve	277
B247	Engine brake (DEB) valve	440
B248	Engine brake (DEB) valve	441
B250	Valve ECAS driven axle, left/right, air supply (FA)	630
B252	Recirculation valve	381
B253	Valve ECAS driven axle, left/right, air supply	662
B254	Valve ECAS trailing/leading axle lifting/lowering	667
B256	Left-hand front ABS valve	411
B257	Right-hand front ABS valve	413
B258	Left-hand rear ABS valve	415
B259	Right-hand rear ABS valve	417
B290	Electro-pneumatic boost pressure valve	930
B293	Gearbox gate safety valve	45

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## MODIFICATIONS TO THE ELECTRICAL INSTALLATION

95XF series Modifications to the electrical installation from chassis number 0E473500

Column 1	Column 2	Column 3
B294	Switch-off cab suspension valve, front height control	288
B298	Switch-off cab suspension valve, back height control	452
B501	Compact tachograph	22
C000	Dipped beam, left	245
C001	Dipped beam, right	246
C002	Main beam, left	249
C003	Main beam, right	250
C006	High-beam headlight, left	251
C007	High-beam headlights, right	252
C008	Fog light, front left	254
C009	Fog light, front right	255
C010	Side-headlight, left	220
C011	Side-headlight, right	232
C012	Side-light, front left	222
C013	Side-light, front right	233
C014	Direction indicator lamp, front left	48
C015	Direction indicator lamp, front right	51
C016	Direction indicator lamp, left, side	50
C017	Direction indicator lamp, right, side	54
C018	Rear direction indicator, left	49
C019	Rear direction indicator, right	52
C020	Brake light, left	281
C021	Brake light, right	283
C022	Rear light, left	225
C023	Rear light, right	236
C024	Fog light, rear left	256
C025	Fog light, rear right	257
C026	Back-up light, left	260
C027	Back-up light, right	261
C046	Map-reading lamp, driver's side	322/349
C047	Map-reading lamp, co-driver's side	323/351
C052	Heater fan light, left	366
C053	Heater fan light, right	367
C062	Stepwell lighting, driver's side	309/331
C063	Stepwell lighting, co-driver's side	315/333
C064	Central upper storage compartment lighting	304/356
C065	Central lower storage compartment lighting	305
C066	Right-hand storage compartment lighting	307
C067	Left-hand storage compartment lighting	325/357
C068	Right-hand tool compartment lighting	326/358
C071	Work lamp	19
C072	Ashtray light, left	363
C073	Ashtray light, right	364
C074	Side-light, rear left	223
C075	Side-light, rear left	234
C110	Lower bunk reading lamp with switch	352
C111	Upper bunk reading lamp with switch	353
C115	Bunk reading lamp with switch	302
C130	Red interior night light, driver's side	346
C139	Red interior night light, co-driver's side	344

Column 1	Column 2	Column 3
C148	Interior lighting, driver's side 2 x 21W	317/336
C149	Interior lighting, co-driver's side 2 x 21W	312/339
C150	Left-hand storage compartment lighting	355
C151	Central interior lighting with switch	329
C154	Rear number plate light, left (trucks)	226
C155	Rear number plate light, right (trucks)	237
C156	First side-light left (trucks)	227
C157	First side-light right (trucks)	238
C158	Second side-light left (trucks)	228
C159	Second side-light right (trucks)	240
C539	Accessory start-contact switch	15
C588	Switch, 4-speed heater fan	377/522
C622	Switch, vehicle lighting and marker lights	204/207
C677	Fuel heater switch	794
C695	Switch for mirror adjustment, driver's side	743/751
C696	Switch for mirror adjustment, co-driver's side	747/755
C697	Switch for seat heating, driver's side	388
C698	Switch for seat heating, co-driver's side	390
C725	Work light switch	19
C726	Glow plug switch	32
C727	Rear fog light switch	210
C731	Interior lighting switch, roof console (bunk control), co-driver's side F249 XC	317/337
C732	Interior lighting switch, roof console, co-driver's side F249 XC	317/337
C733	Interior lighting switch, roof console (bunk control), driver's side F249 XC	312/340
C734	Interior lighting switch, roof console, driver's side F249 XC	312/340
C735	Interior night lighting switch FG249 XC	319/347
C736	Roof panel switch F249 XL/XH/XC	766/771
C737	ASC-traction switch	430
C738	Speed regulator cut-out switch	861
C739	Lifting-gear switch	613
C740	Switch ECAS, normal level	623/646
C741	Switch ECAS axle lifting	649
C742	Auxiliary drive-off switch	653
C743	Switch for electric window control on co-driver's side (door on driver's side)	730
C744	Switch for electric window control on co-driver's side (door on co-driver's side)	735
C745	Switch for electric window control on driver's side (door on driver's side)	738
C746	Switch, mirror heating	759
C747	Control switch for fuel filter/water separator	791
C748	Axle locking differential control switch	265
C749	Inter-axle locking differential control switch	268
C750	PTO control switch	273
C751	PTO control switch	277
C754	Engine-brake switch VF engine	859
C760	Air-conditioning switch	372
C761	CWS switch, more warnings	155
C763	Potentiometer for instrument light dimming	119

# 5

## MODIFICATIONS TO THE ELECTRICAL INSTALLATION

95XF series Modifications to the electrical installation from chassis number 0E473500

Column 1	Column 2	Column 3
C764	Potentiometer for headlight-height adjustment	676
C765	Hazard light switch (with LED search light)	38
C773	Rear fog light switch	214
C774	Central door locking switch	693
C775	Switch for direction indicator, main beam/dipped beam/horn	41/217/762
C776	Stalk switch	91/818/839/905
C778	Switch for auxiliary heating	513/531
C799	Switch for retarder	458/471
C802	Recirculation switch	383
C803	Central door locking switch	684
C804	Flexible vehicle speed limitation switch	902
D503	Electronic unit for lifting gear	605
D525	Electronic unit for converter 24/12V	705
D529	Electronic unit for ECAS remote control	621/644
D587	Electronic unit for ZF intarder	472
D591	Electronic unit for E-gas 3	804
D597	Electronic unit for speed limiter for ASL-V	873
D609	Diode for light switch	208
D610	Diode for main beam/dipped beam	217
D611	Diode for lifting gear lowering valve damping	606
D612	Diode for lifting gear lifting valve damping	612
D613	Diode for lifting gear relay pump damping	610
D622	Diode for lifting gear lifting lock	613
D623	Diode for lifting gear lowering lock	607
D668	Diode for generator safety (D+)	6
D703	Diode for switching off the auxiliary heating/door contact at driver's side	506
D704	Diode for switching off the auxiliary heating/door contact at co-driver's side	505
D705	Diode for switching off the auxiliary heating with running engine	504
D708	Diode for interior lighting, prevent feedback to co-driver's stepwell 316/335	
D709	Diode for interior lighting, prevent feedback to co-driver's switch	336
D710	Diode for interior lighting, prevent feedback to driver's switch	312/340
D721	Diode for parking brake, prevent feedback	104
D722	Diode for brake lights, prevent feedback	285
D745	Diode for engine brake (DEB) valves	443
D758	Diode prevent feedback to CWS	291
D759	Diode prevent feedback to brake lights	286
D802	Electronic unit for ECAS-2	655
D804	Electronic unit for DAF/Cummins interface	861
D805	Electronic unit, CUMMINS SELECT	824
D806	Electronic unit for automatic lubrication	475
D809	Electronic unit for speed limiter for ASL-G	866
D814	Electronic unit ECS	915
D850	Electronic unit for ABS/ASC D-version	407
D851	Electronic unit for ECAS-2 (4x2)	626
D852	Instrument panel DIP-3	105
D853	Electronic unit for CWS-2	155
D855	Electronic unit for water separator	788
D862	Electronic unit, central door locking	684
D870	Electronic unit for Voith retarder 133-2	448

Column 1	Column 2	Column 3
D871	Electronic unit for auxiliary heating D3LC	512
D884	Electronic unit CTE-3	43
D901	Electronic unit for auxiliary heating Eberspächer Hydronic 10	526
E000	Fuse for side-light, rear left	220
E001	Fuse for side-light, rear right	232
E004	Fuse, dipped beam, driver's side	245
E005	Fuse for dipped lights indicator lamp, co-driver's side	246
E006	Fuse for main beam, driver's side	249
E007	Fuse for main beam indicator lamp, co-driver's side	250
E008	Fuse, spot lights	251
E009	Fuse, front fog lights	254
E010	Fuse, rear fog lights	256
E013	Fuse, brake lights	280
E016	Fuse, reversing lights	260
E019	Fuse, preglowing, CTE, direction indicators, engine brake	32
E023	Fuse for switch for cold start, tachograph, auxiliary heating programming clock	22
E025	Fuse, windscreen wiper, headlight washer	91
E026	Fuse, cigarette lighter	362
E027	Fuse, 24V/12V converter	17
E028	Fuse, cab interior lighting	302/332
E029	Fuse for engine brake/retarders	446
E030	Fuse, horn	762
E031	Fuse for heater fan ITC unit	369/519
E033	Fuse, electric window control motor, co-driver's side	723
E034	Fuse, electric window control motor, driver's side	727
E035	Fuse for instruments and indicator lamps	101
E037	Fuse for contact switch	15
E040	Fuse, ABS	420
E041	Fuse, ABS	407
E042	Fuse, ABS	408
E043	Fuse, ABS, (semi-)trailer	404
E044	Fuse, mirror heating/adjustment	731
E048	Fuse, central power supply, (semi-)trailer	397
E051	Fuse for ECAS-1	658
E052	Fuse for ECAS remote control working light	19
E053	Fuse for ECAS diagnostic connector (16-pin)	191
E062	Fuse, lifting gear and ECAS	613/627/642
E084	Fuse, lighting	201
E091	Fuse, for air dryer element/fuel contamination separator	386
E108	Fuse for CTE-2/CTE-3	46
E112	Fuse for glow indicator lamp	31/949
E114	Fuse, auxiliary heating Eberspächer	510/520
E117	Fuse for search light	243
E118	Fuse, relay for UPEC power supply	917
E143	Fuse for E-gas tachograph	27
E157	Fuse, automatic lubrication	476
E160	Fuse for Cummins motor	824
E161	Fuse for Cummins motor	825
E164	Fuse for fuel heater before contact	797
E167	Fuse for take-over relay, starting motor	9

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## MODIFICATIONS TO THE ELECTRICAL INSTALLATION

95XF series

Modifications to the electrical installation from chassis number 0E473500

Column 1	Column 2	Column 3
E168	Fuse for accessories/microwave	394
E170	Fuse for fuel filter/water separator control	789
E171	Fuse for fuel filter/water separator	785
E172	Fuse for ABS (semi-)trailer 10A	405
E184	Fuse UPEC	915
E194	Fuse for UPEC for the body builder	914
E197	Fuse for E-gas	805
E501	Control switch for back-up light	260
E507	Proximity switch for axle load protection of lifting-gear (10 tonnes)	604
E508	Thermal switch for air-conditioning compressor	372
E509	High / low pressure air-conditioning control switch	372
E511	Brake light control switch	280
E514	Control switch for interior step lighting, door switch on driver's side	309/332
E515	Control switch for interior step lighting, door switch on co-driver's side	315/334
E524	Control switch for lifting-gear limit switch oil pressure	611
E525	Control switch for central upper storage compartment lighting	304/356
E526	Control switch for central lower storage compartment lighting	306
E527	Control switch for right-hand storage compartment lighting	308
E528	Control switch for left-hand storage compartment lighting	325/358
E529	Control switch for right-hand tool compartment lighting	326/359
E550	Control switch for glow filament temperature	932
E560	Control switch for left-hand storage compartment lighting	355
E561	Control switch of gearbox gate safety	45
E564	Engine brake control switch	59/942
E566	Control switch for thermostat for auxiliary heating Eberspächer (D1LC)	511
E570	Control switch for coupling/PTO N/10	272
E571	Control switch for auxiliary heating Thermo 90	531
E575	Clutch proximity switch	803/857/913
E579	Proximity switch for thermostat for auxiliary heating fan Eberspächer	534
E580	Proximity switch for timer for auxiliary heating fan Eberspächer	536
F000	Parking brake control switch	101
F006	Control switch for differential lock, 1st differential	144
F007	Control switch for differential lock, 3rd differential	148
F011	Control switch for engine oil pressure	164
F033	Control switch for splitter signalling	127
F038	Control switch for differential lock, 2nd differential	147
F047	Control switch for steering system (1st circuit)	160
F048	Control switch for steering system (2nd circuit)	162
F050	Control switch for differential lock pressure (1st and 2nd differentials)	145
F087	Control switch for gearbox PTO	150
F088	Control switch for gearbox PTO	152
F501	Engine-speed sensor	107
F509	Cab temperature sensor of auxiliary heating	535
F512	Sensor for ABS blocking signal, front left	406
F513	Sensor for ABS blocking signal, front right	407
F514	Sensor for ABS blocking signal, left-hand drive axle	408
F515	Sensor for ABS blocking signal, right-hand drive axle	410



Column 1	Column 2	Column 3
F531	Sensor for accelerator pedal E-gas	815
F533	Vehicle-speed sensor (4-pin), 1st	22
F535	Sensor for engine coolant temperature	115
F544	Sensor for coolant temperature of secondary retarder	456/469
F552	Crankshaft position sensor	917
F555	Boost pressure sensor	923
F558	Camshaft position sensor	915
F561	Inlet-air temperature sensor	918
F565	Fuel temperature sensor	920
F566	Sensor for engine coolant temperature	921
F571	Sensor for accelerator pedal ECS	840/841/924/927
F585	Sensor for engine coolant level	167
F608	Sensor for fuel level	116
F612	Height sensor, ECAS left-hand rear axle	626/655
F613	Height sensor, ECAS right-hand rear axle	627/657
F614	Height sensor, ECAS front axle	628/658
F615	Pressure sensor, ECAS driven axle, left/right	659
F616	Cab locking sensor	289
F620	Sensor for oil temperature in Voith retarder 133-2	454
G000	Relay, width/marker/tail lights	207/220
G001	Relay, dipped beam	217/245
G002	Relay, main beam	218/249
G003	Relay, spotlights	219/251
G004	Relay, front fog light	210/254
G005	Relay, rear fog light	214/256
G014	Glow-filament relay	30/76/932/947
G015	Contact relay	5/15
G028	Relay for electric window control, co-driver's side	722/730
G029	Relay for electric window control, co-driver's side	724/732
G030	Relay for electric window control, driver's side	726/738
G031	Relay for electric window control, driver's side	728/739
G036	Relay for brake light, 1st	280/281
G052	Lifting-gear motor relay	609/617
G065	Heater fan relay	520/524
G066	Lifting-gear takeover relay	609/611
G126	Relay for UPEC power supply	916/917
G170	Auxiliary-heating fan relay	520/531
G178	Relay, accessories	16/17
G201	Relay for fuel heater EFPH	794/797
G203	Starting-motor takeover relay	9/14
G231	Radio lighting relay (12V)	706/708/712/713
G234	Relay for window control, fuel filter/water separator	785/791
G236	Windscreen wiper microrelay (speed 1 or 2)	84/86
G237	Windscreen wiper microrelay (automatic zero position)	85/88
G238	Headlight-washer microrelay	83/94
G239	Relay for disengaging third brake	421/434
G240	PTO/engine speed microrelay	101/153
G243	Engine brake (DEB) microrelay	438/440/443/936
G247	Auxiliary-heating fan relay	519/526
G257	Recirculation valve microrelay	381/383
G258	Recirculation valve microrelay	381/384
G259	N-10-PTO control relay	272/273

# 5

## MODIFICATIONS TO THE ELECTRICAL INSTALLATION

**95XF** series      Modifications to the electrical installation from chassis number 0E473500

<b>Column 1</b>	<b>Column 2</b>	<b>Column 3</b>
G267	Air-conditioning microrelay	369/372
G279	Air-conditioning microrelay	371/375
G280	Heater fan relay	378/380
G284	Microrelay for Voith retarder 133-2	446/447
G297	Cab air suspension relay	288/291
G300	Microrelay for auxiliary heating, Thermo 90	517/518
G301	Microrelay, light D+	203/204
G302	Microrelay for Swedish lighting	202/206
G321	UPEC connector relay for the body builder	910/911
G328	UPEC engine stop relay	909/944
G516	Central earth cab co-driver's side	294
G525	Central earth flywheel housing motor	847
G718	Connection parking brake/PTO	102
G721	Speed regulator switch connection	818/839
G723	Connection for central door locking	694
G725	Connection for auxiliary heating D3LC	510
G726	Connection panel switch DEB	438



**3.4 SUBDIAGRAMS OF CIRCUIT DIAGRAM 1316630/13-23**

- A Voltage before and after the contact
- 1 Charging circuit/starting motor /contact switch/starter switch
- 5 CTE-3
- 7 CWS-2
- 13 Gearbox and gate safety
- 19 Search light
- 20 Heater fan/air-conditioning system
- 23 ABS/ASC
- 28 E-gas 3
- 36 Automatic windows/roof hatch/central door locking
- 42 Connector sockets FT
- 43 Connector sockets FA
- 46 Auxiliary heating Eberspächer Hydronic 10
- 47 UPEC

## A. VOLTAGE BEFORE AND AFTER CONTACT

### VOLTAGE BEFORE CONTACT

A constant voltage is applied to both the Pertinax block and connectors 416 and 417 through wire 1000 and connector 114 (pins A and B). These wires are NOT fuse-protected. They can only be made dead by disconnecting the battery leads or by disconnecting connector 114.

### VOLTAGE AFTER CONTACT

A voltage is applied to the Pertinax connection block through the starting motor (point 30) and the alternator (B+). This connection point can be connected to wire 1010 through contact relay G015. This wire is NOT fuse-protected.

### OPERATION

If the contact/starter switch (C539) is switched to the "accessories" position (connection between points 1 and 6), voltage is applied through wire 1130 to relay G178. If the contact/starter switch is switched to the "contact" position (connection between points 1 and 4), the relay is activated through wire 4001.

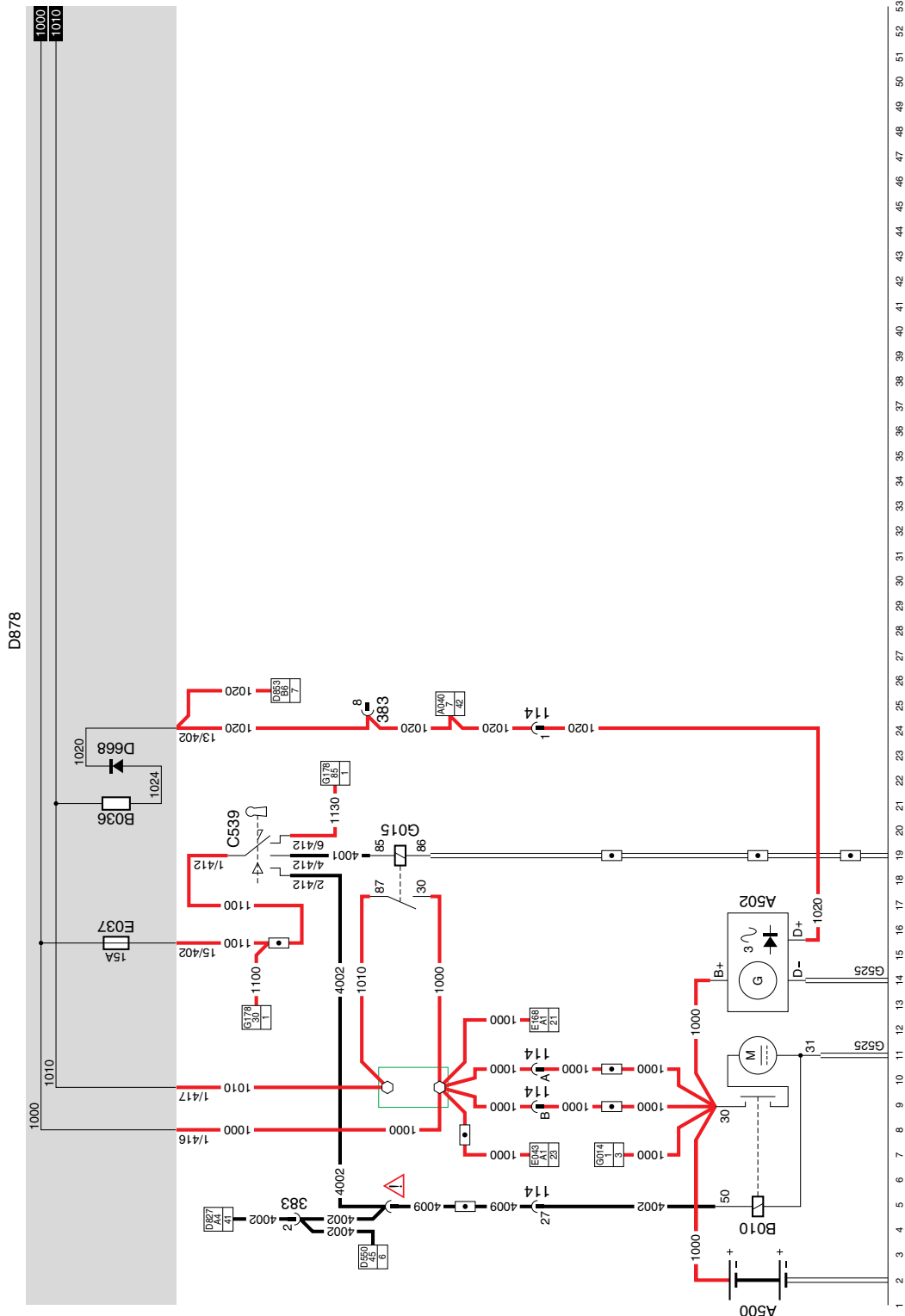
This relay then connects wire 1000 (voltage before contact) to wire 1010 (voltage after contact). If the contact/starter switch (C539) is turned further against the spring pressure (connection between points 1 and 2), relay G015 remains activated and the starting-motor relay (B010) is also activated. The starting motor will now start operating.

If the starter key is released, the contact switch will automatically return and remain in the "contact" position. The starting motor (B010) is no longer activated.

### VARIANTS

#### Location

6 Wire 4009 only applies in the case of a VF.



A

1316630/13-23

EL000253

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## 1. CHARGING CIRCUIT / STARTING MOTOR / CONTACT/STARTER SWITCH

### CONTACT CIRCUIT

If a connection is made between contacts 1 and 6 with contact/starter switch C539, a voltage is applied through fuse E037, switch C539 and wire 1130 to contact 85 of relay G178.

Because relay G178 is activated, a connection is made between contacts 30 and 87 and a voltage is applied through fuse E037, wire 1100, the contacts 30 and 87 of relay G178, wire 1147, and through fuses E027 and E052 to the electronic unit of converter 24 V/12V D525 and the work light switch C725.

If a connection is made between contacts 1 and 4 with contact/starter switch C539, a voltage is applied through fuse E037, wire 1100, switch C539 and wire 4001 to contact 85 of relay G015.

As a result, relay G015 is activated, so that wire 1000 is connected to wire 1010. Now voltage is applied to the supply after contact circuit (connection point 1010) and, through resistor B036 and diode D668, to the connection points D+ of the alternator A502, connection point 85 of relay G303 and to the electronic unit CWS D853.

### START CIRCUIT

When the engine is started, a connection is made between the contacts 1 and 2 with contact/starter switch C539. The voltage now runs from the batteries through wire 1000, fuse E037, connection 1–2 of the contact/starter switch, wire 4002 and contacts 30 and 87 of relay G303, wire 4009, to connection point 50 of starting motor B010. The coil of the starting motor relay is now activated, so that a voltage is supplied to the starting motor, as a result of which the motor will start operating.

**CHARGING CIRCUIT**

If the contact is activated, a voltage is applied to resistor D+ B036.

The other side of the resistor is connected to the D+ connection of the alternator through diode D668 and wire 1020.

The D+ connection is connected to earth through the integrated voltage regulator in the alternator A502. This will cause a small current to run, causing a magnetic field in the alternator.

After starting, the voltage on clamps B+ and D+ will increase to approx. 29 V. This is caused by the fact that the regulator disconnects the earth connection in the regulator and connects it to the battery voltage. This voltage is also applied to wire 1020, so that the difference of potential over the resistor becomes 0 V. The magnetic field now disappears, so that the generator is not activated for a short time. This will reduce the voltage on outputs B+ and D+.

The regulator is activated if the voltage drops below 27.6 V. This way, the generator voltage supply remains relatively constant. The batteries are fed by generator output B+.

**VARIANTS****Location**

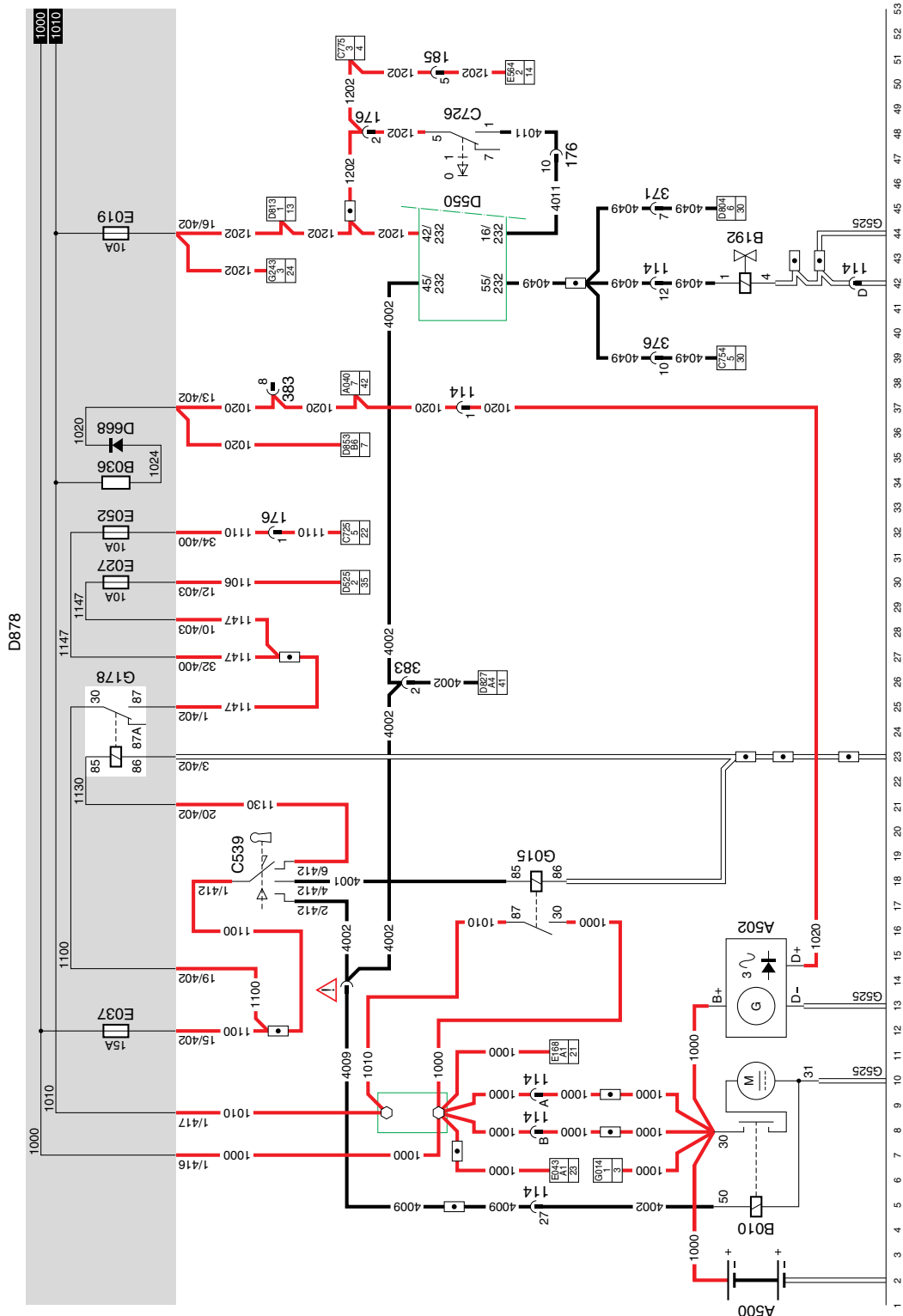
5 Wire 4009 only applies in the case of a VF.

# 5

# MODIFICATIONS TO THE ELECTRICAL INSTALLATION

95XF series

Modifications to the electrical installation from chassis number 0E473500



# 1

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**5. CTE-3****VARIANTS****Location**

14		Not applicable when the vehicle is fitted with UPEC system.
22,29		Connector 495 is only used in the case of an FA. Connector 493 is used in the case of an FT.
50,85,89		Not applicable when the vehicle is fitted with UPEC system.
104	DVB:	Only applies in the case of a VF engine.

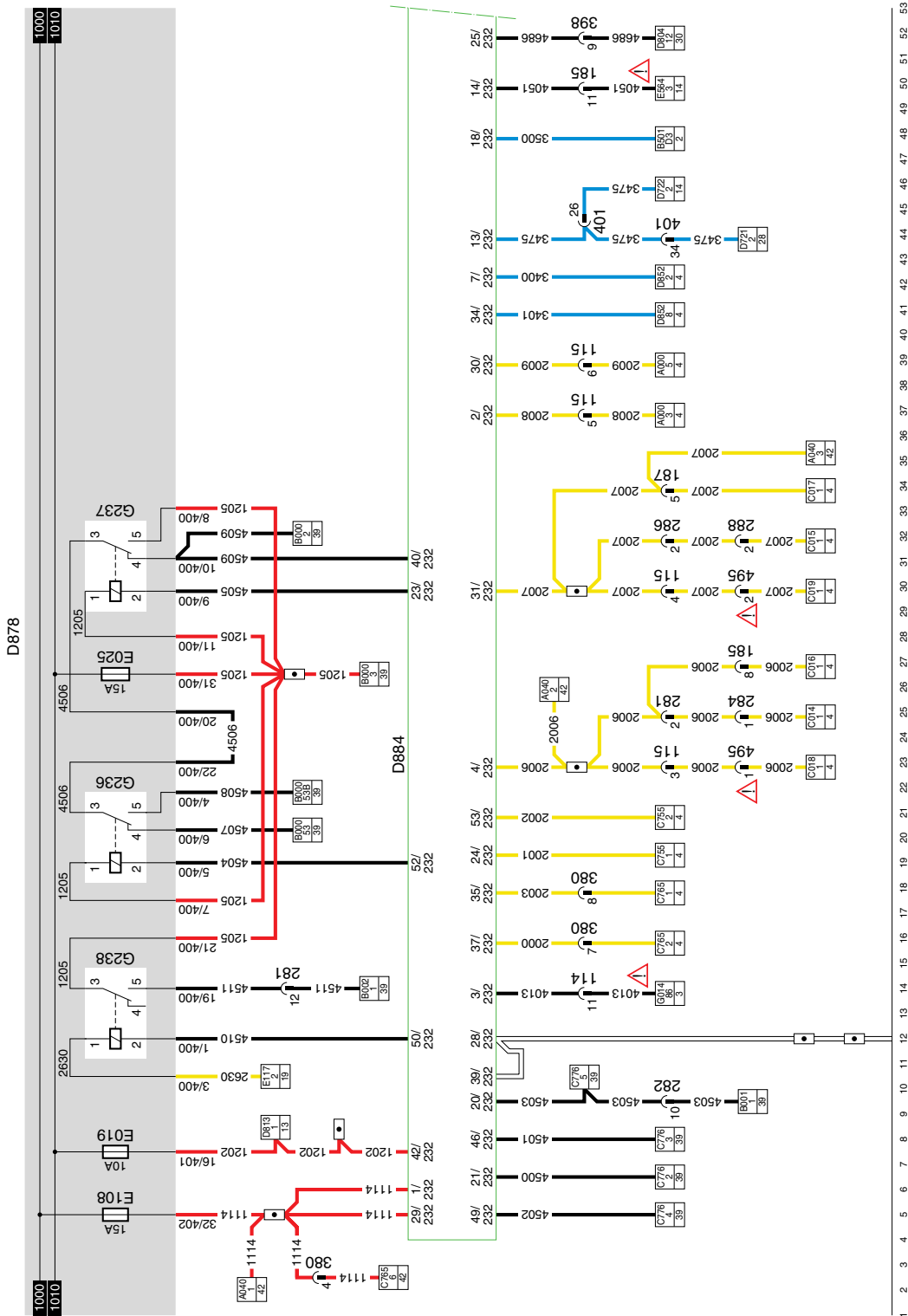
**SEE THE SYSTEM MANUAL FOR MORE INFORMATION.**

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# MODIFICATIONS TO THE ELECTRICAL INSTALLATION

95XF series

Modifications to the electrical installation from chassis number 0E473500



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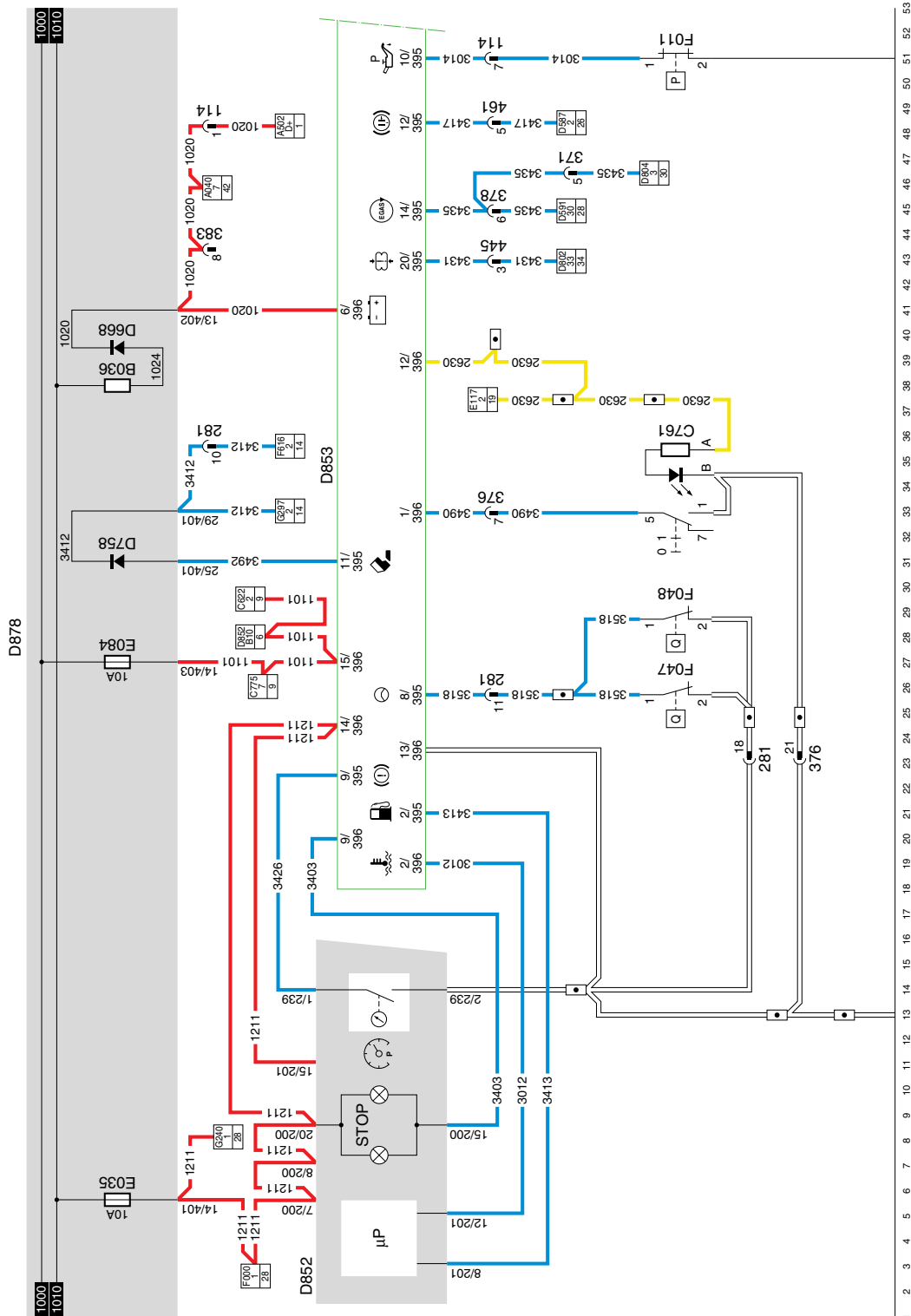
## MODIFICATIONS TO THE ELECTRICAL INSTALLATION

**95XF** series

Modifications to the electrical installation from chassis number 0E473500

### 7. CWS-2

SEE THE SYSTEM MANUAL FOR MORE INFORMATION.



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EL000259



**13. GEARBOX AND GATE SAFETY****SINGLE-H-SAFETY**

If the vehicle speed is below a particular value (this value depending on the engine type and the gearbox version), connection point 51 of the CTE unit (D884) will be connected to earth. As a result, the single-H-safety valve is activated, so that it is possible to switch down to the lower range.

If the vehicle speed gets too high, the earth connection of connection point 51 will be cut off, so that it is no longer possible to switch down to the lower range.

**GATE SAFETY**

If the gearbox low range has been selected, the low-gear switch (E561) will be closed.

If the vehicle speed exceeds a particular value (this value depending on the engine type and the gearbox version), a supply voltage will be applied to connection point 26 of the CTE unit. As a result, the gate safety valve (B293) is activated, so that it is no longer possible to change down to first or second gear (with the force normally used to change gear).

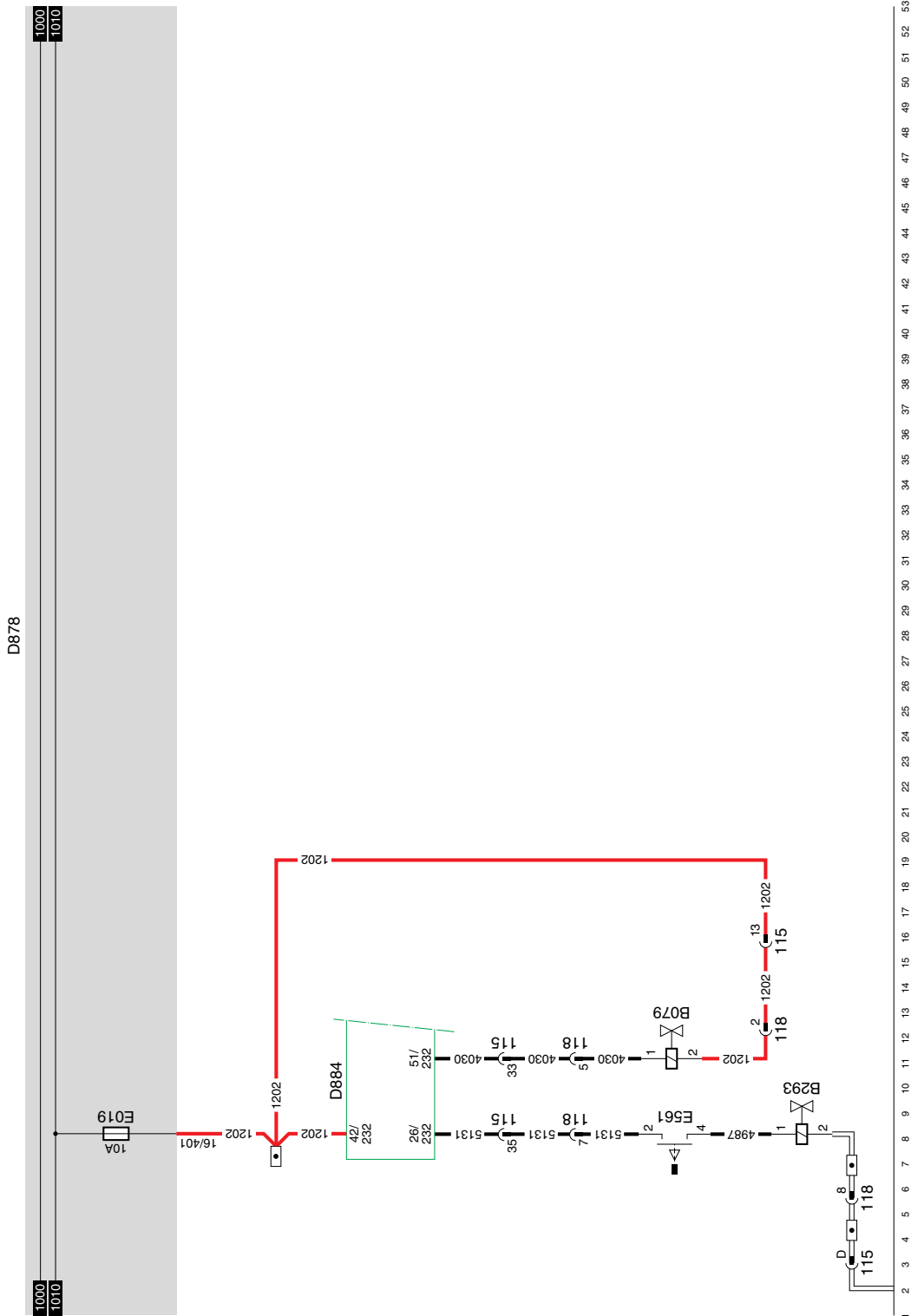
**SEE THE SYSTEM MANUAL FOR MORE INFORMATION.**

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## MODIFICATIONS TO THE ELECTRICAL INSTALLATION

95XF series

Modifications to the electrical installation from chassis number 0E473500



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## 19. SEARCH LIGHT

### SEARCH LIGHT

The search light consists of the lamps and LEDs in the various function switches.

When the lighting switch (C622) is being operated, a supply voltage will be applied to relay G000 through fuse E084 and lighting switch (C622), wire 2100.

Relay G000 is activated so that a voltage is applied to the search light (wire 2630) through fuse E117, causing it to light up.

When switch C622 is being operated, the following lamps will light up:

B030, C072 (so-called functional lighting).

The following switches will cause an LED to light up:

C725, C726, C727, C731, C733, C734, C735, C736, C737, C739, C740, C741, C742, C748, C749, C750, C751, C752, C754, C760, C761, C763, C764, C765, C778, C802, C803.

### LIGHTING BUZZER

When the lighting switch (C622) is being operated, a supply voltage will be applied to relay G000 through fuse E084 and lighting switch (C622), wire 2100.

Relay G000 is activated so that a voltage is applied to the search light (wire 2630) through fuse E117. This wire is also connected to the electronic unit CWS-2 (D853), pin B12.

A signal from the door switch is also applied to pin 5/396 of the electronic unit CWS-2 (D853). A signal from the alternator (A502) is also applied to the electronic unit CWS-2 (D853) (pin 6/396).

If no voltage is measured from the alternator, the door is open (pin 5/396 of the CWS-2 is connected to earth through lamp C062) and a voltage is also applied from input 12/396, the buzzer is activated.

### VARIANTS

#### Location

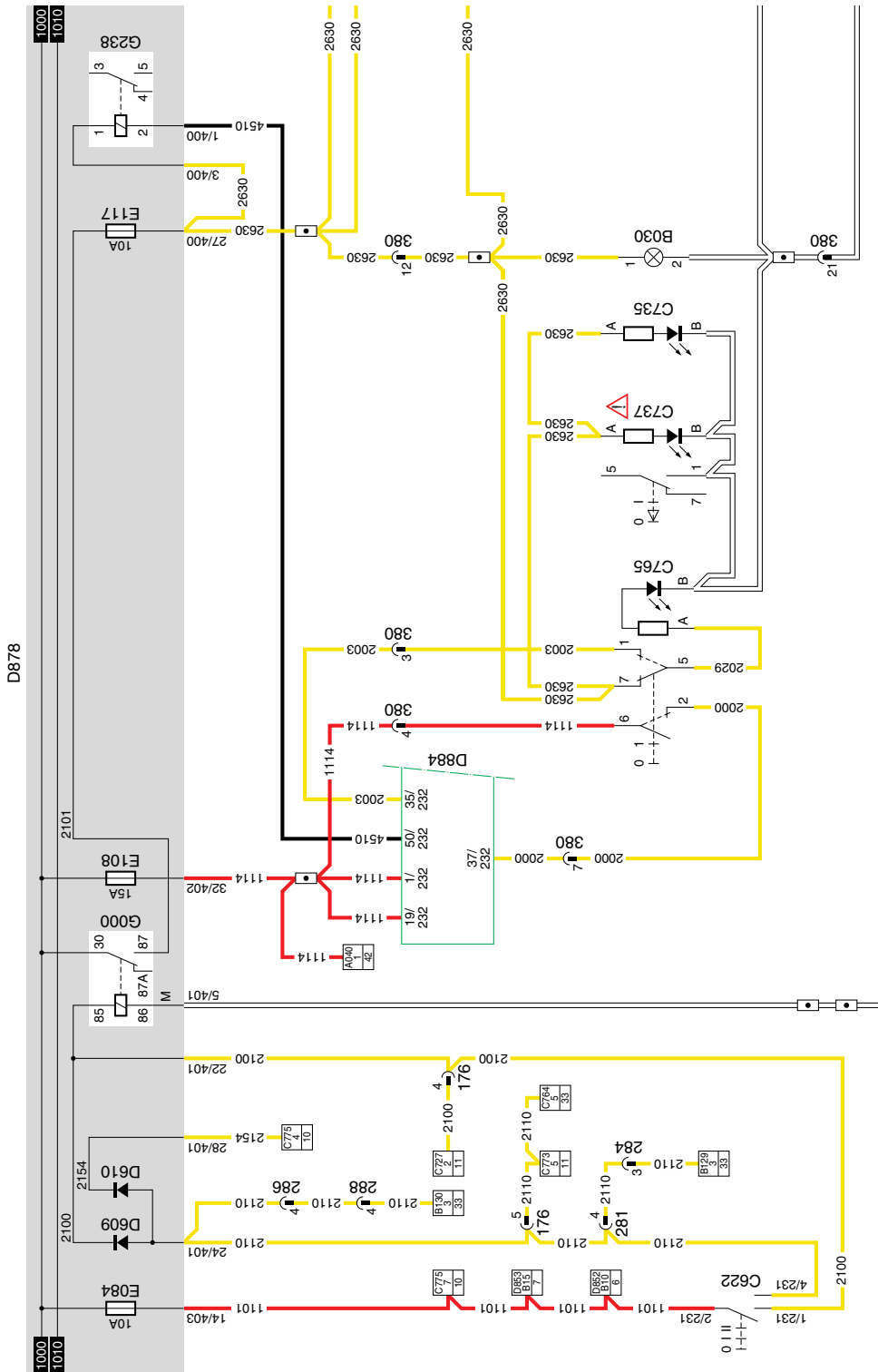
37 Switch C737 is only used in XF-type vehicles. Switch C738 is used in VF-type vehicles.

# 5

# MODIFICATIONS TO THE ELECTRICAL INSTALLATION

95XF series

Modifications to the electrical installation from chassis number 0E473500



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53

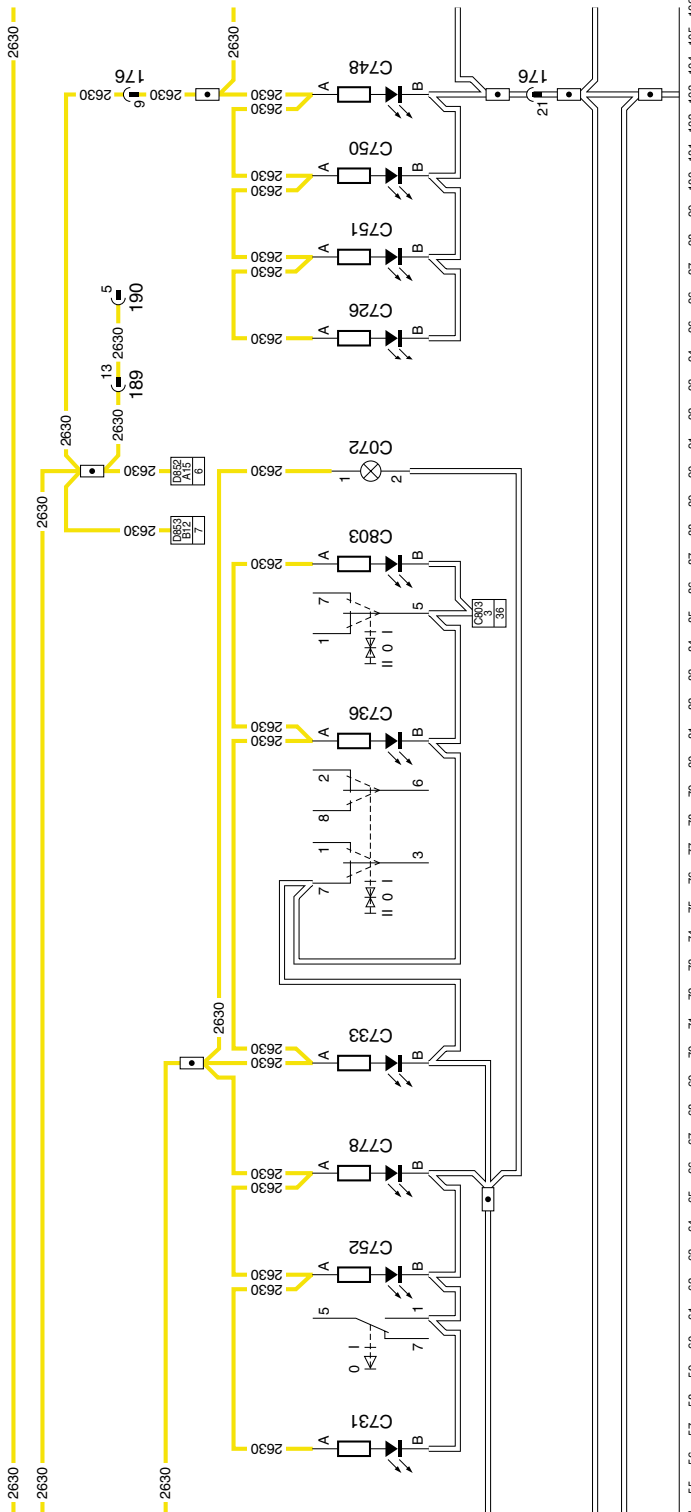
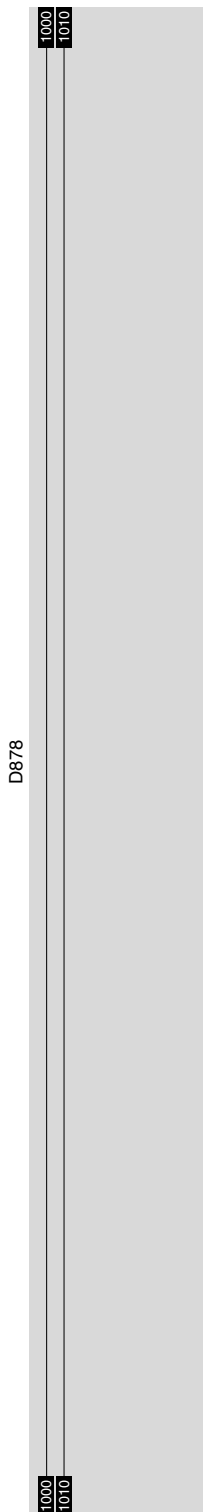
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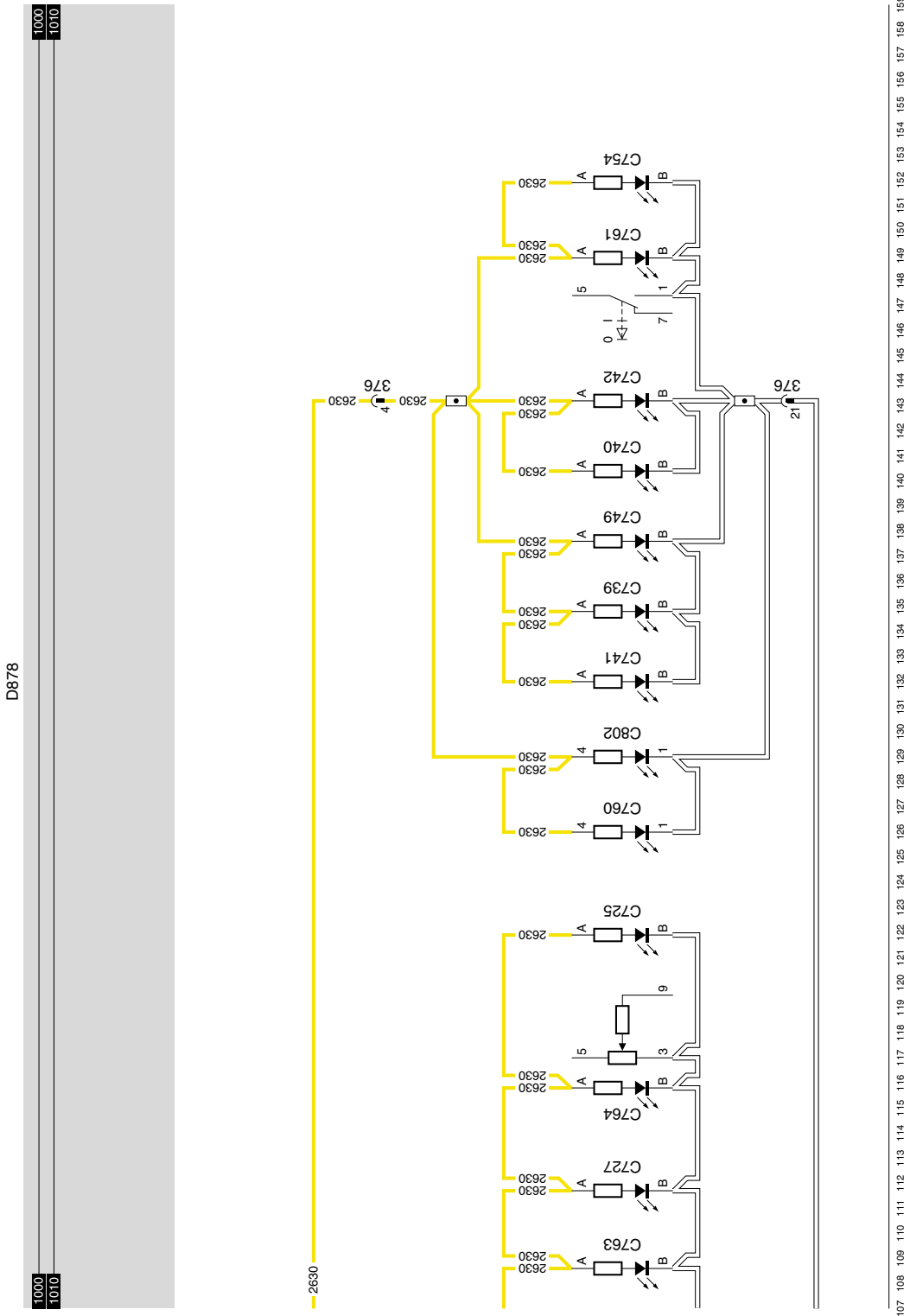
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# MODIFICATIONS TO THE ELECTRICAL INSTALLATION

95XF series

Modifications to the electrical installation from chassis number 0E473500



# 19

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## 20. HEATER FAN/ AIR-CONDITIONING SYSTEM

A voltage is applied to the heater fan switch (C588) through the heater fan fuse (E031). Depending on the position of this switch, the fan will start operating.

The switch has five (5) positions:

- Off:** Heater fan (B015) off.
- Position 1:** Fan at lowest speed setting (wire 4650), supply of heater fan (B015) through three (3) resistors.
- Position 2:** Fan at somewhat higher speed setting (wire 4651), supply of heater fan (B015) through two (2) resistors.
- Position 3:** Heater fan in next to highest speed setting (wire 4652), supply of heater fan (B015) through one (1) resistor.
- Position 4:** Heater fan in highest speed setting (wire 4653), relay G065 now activated. This relay connects the supply (wire 1201) to wire 4654 and the heater fan. The relay is only activated in position 4 (full supply voltage of heater fan B015).

### AIR-CONDITIONING SYSTEM

#### SHORT DESCRIPTION OF THE RECIRCULATION VALVE

If switch C802 (air-conditioning recirculation valve) is activated, a voltage is applied to point 1 of relays G257 and G258. As a result, pin 2 of recirculation-valve motor B252 is connected to earth and simultaneously pin 1 of B252 is connected to the positive voltage. This will activate motor B252 and close the recirculation valve.

If C802 is not activated, no voltage is applied to both relays G257 and G258. As a result, the direction of flow of the current through motor B252 is reversed and the recirculation valve will open.

**SHORT DESCRIPTION OF THE AIR-CONDITIONING SYSTEM**

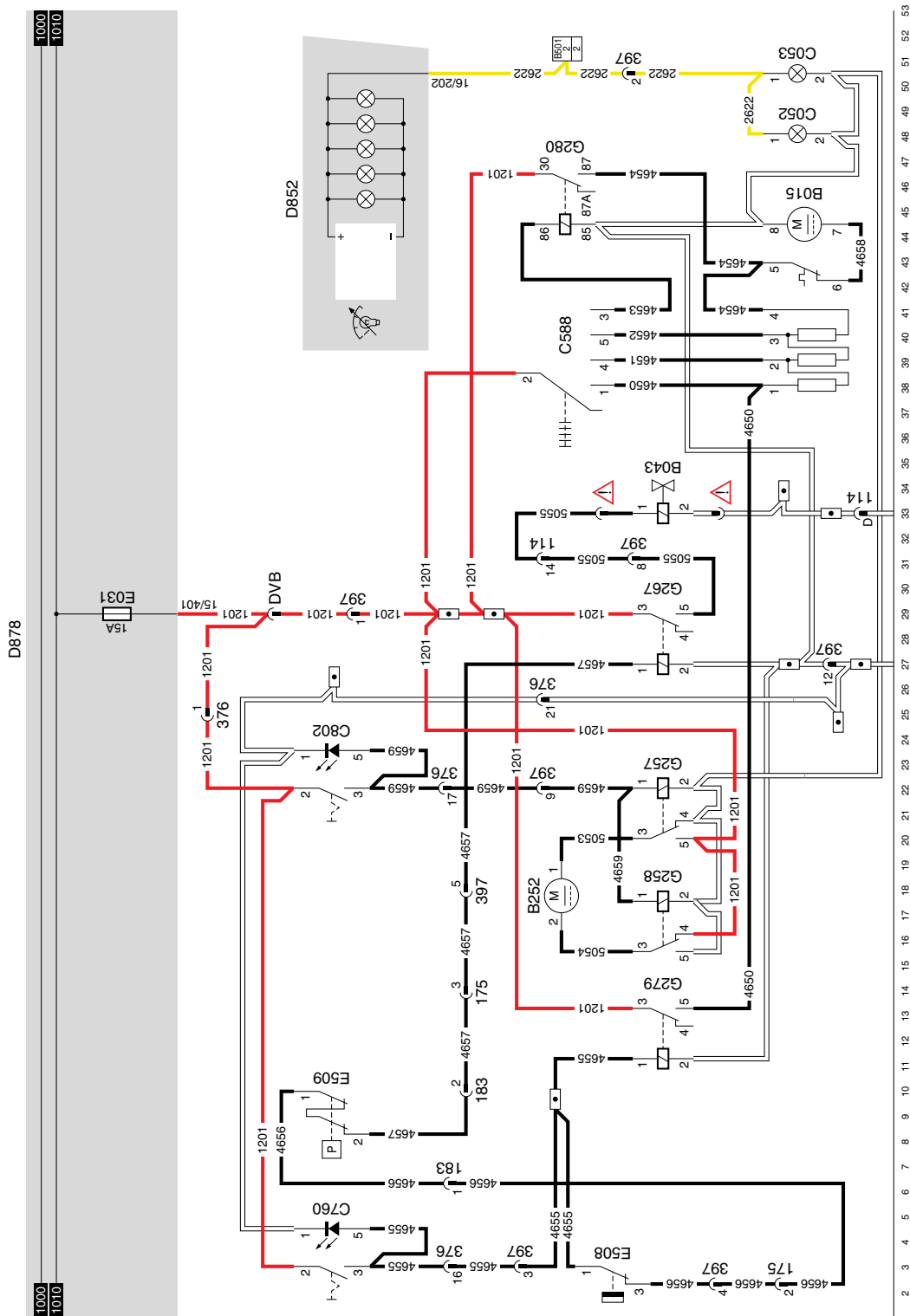
When the air-conditioning system is engaged with switch C760, a voltage is applied to relay G279 through wire 4655 and a voltage to relay G267 through switch E508 (air-conditioning compressor temperature switch), E509 (air-conditioning high/low pressure operating switch) and wire 4657.

As a result, the heater fan (B015) will start operating in position 1 and the air-conditioning is activated.

**VARIANTS****Location**

33 A round 4-pin black connector is attached to the wiring harness coming from B043 (air-conditioning compressor). This connector is **not** provided with a connector number and is installed at the front (upper centre) of the engine block.

**SEE THE SYSTEM MANUAL FOR MORE INFORMATION.**



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# 20

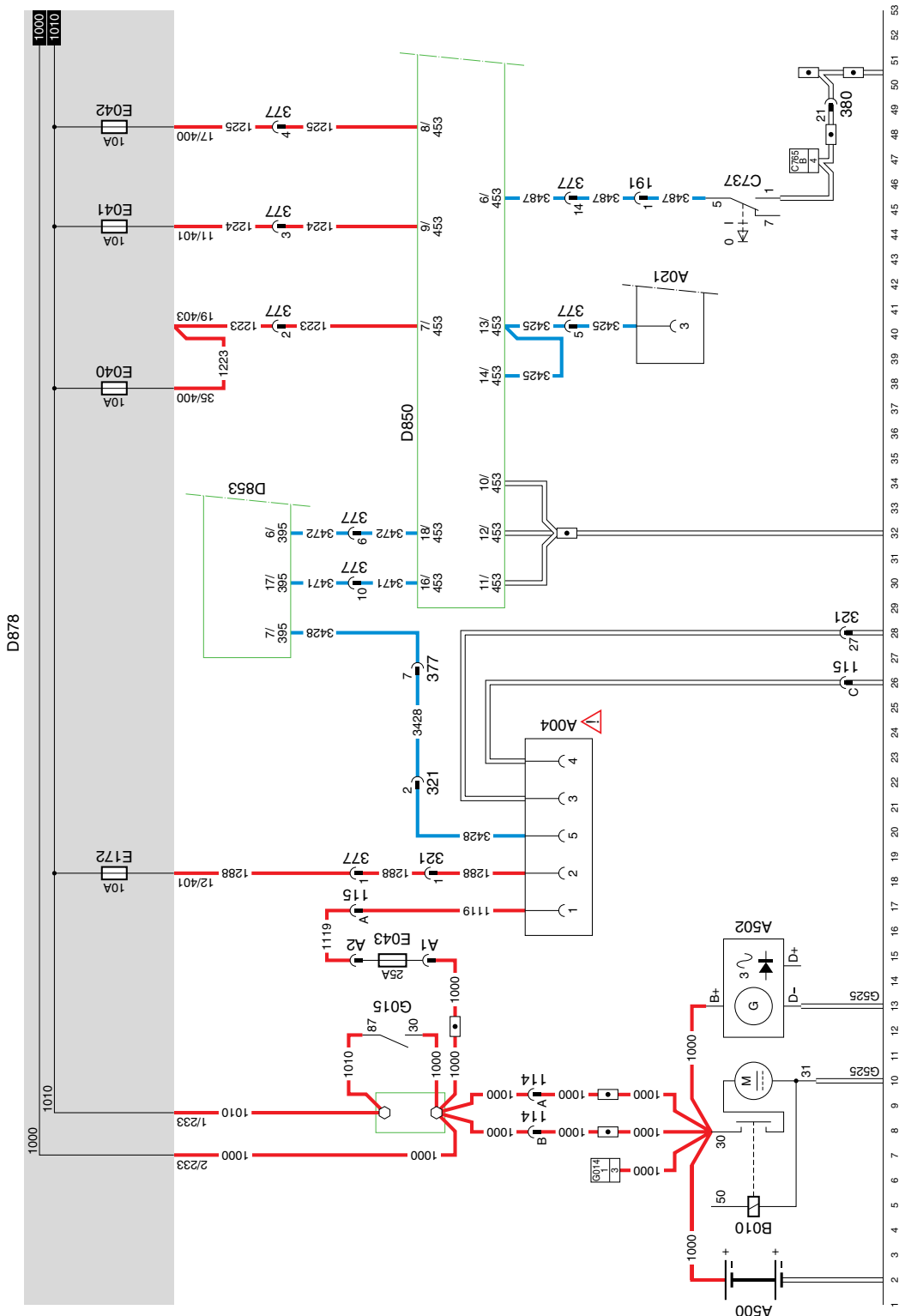
1316630/13-23

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**23. ABS/ASC****VARIANTS****Location**

- 24 Connector A004 is only used in the case of an FA. Connector A005 is used in the case of an FT.

**SEE THE SYSTEM MANUAL FOR MORE INFORMATION.**

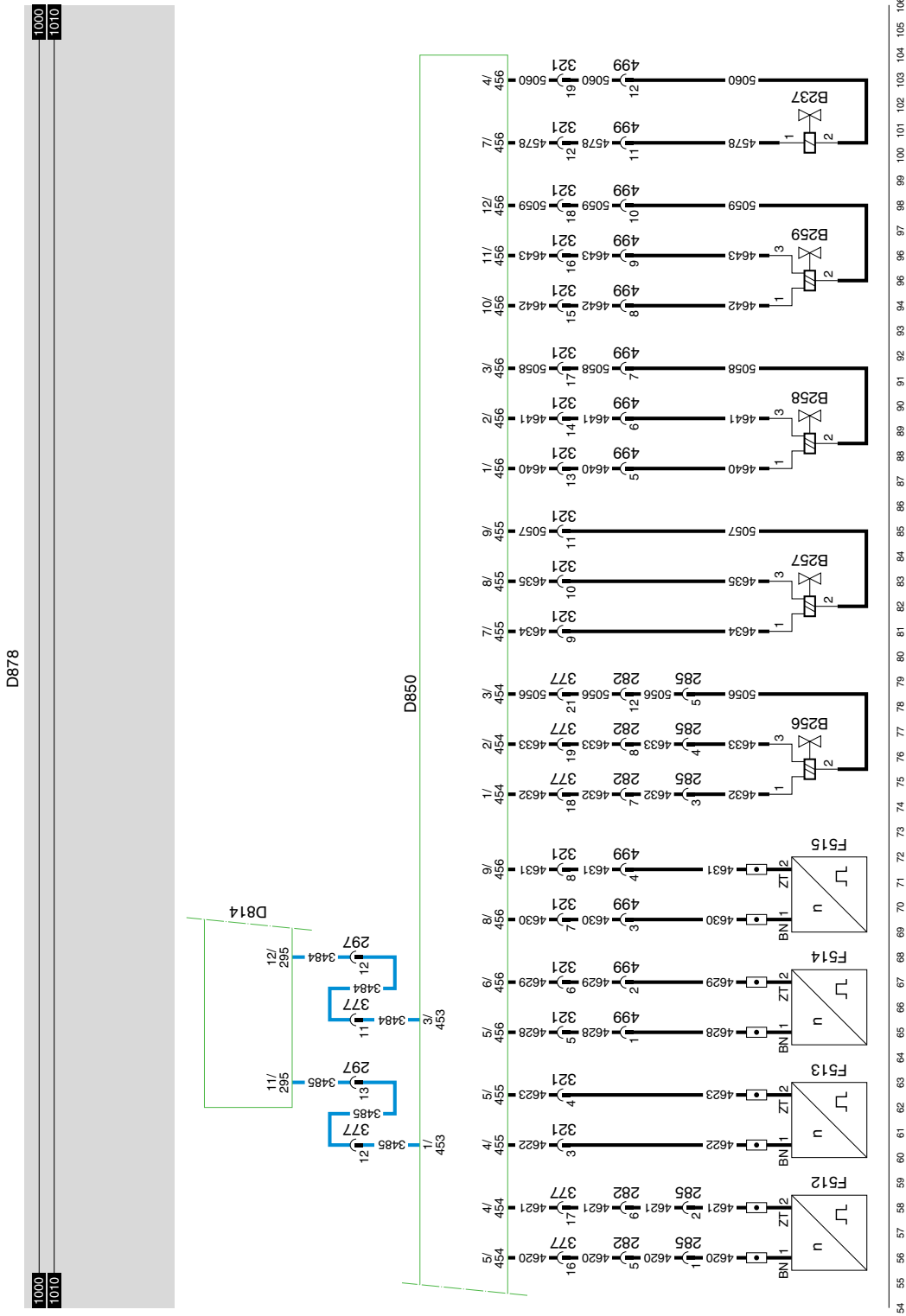


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EL000302

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1316630/13-23

EL000303



**28. E-GAS 3****VARIANTS****Location**

- 24 Connector 373 may not be connected. This depends on whether or not an ECAS system is installed.

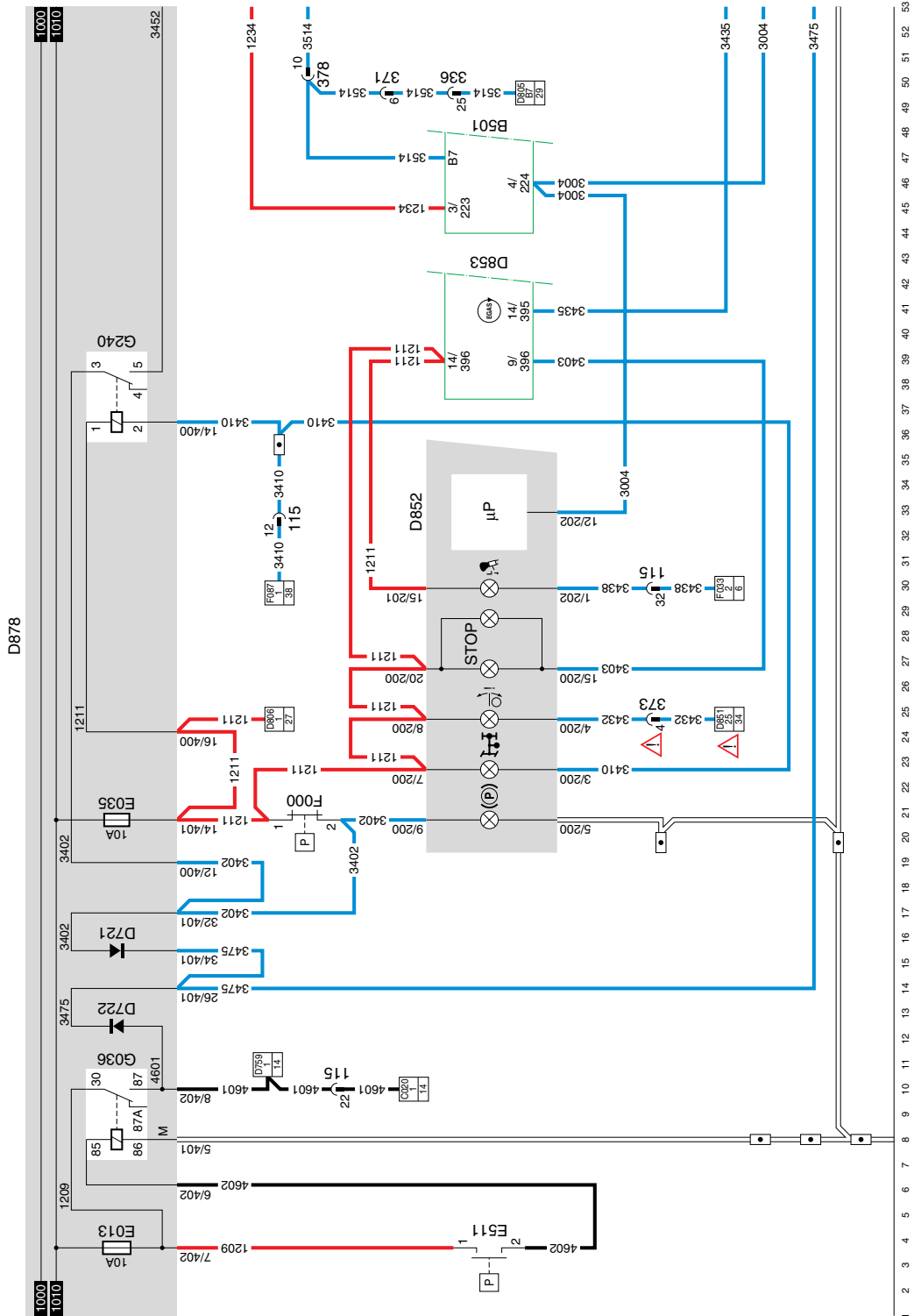
**SEE THE SYSTEM MANUAL FOR MORE INFORMATION.**

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# MODIFICATIONS TO THE ELECTRICAL INSTALLATION

95XF series

Modifications to the electrical installation from chassis number 0E473500

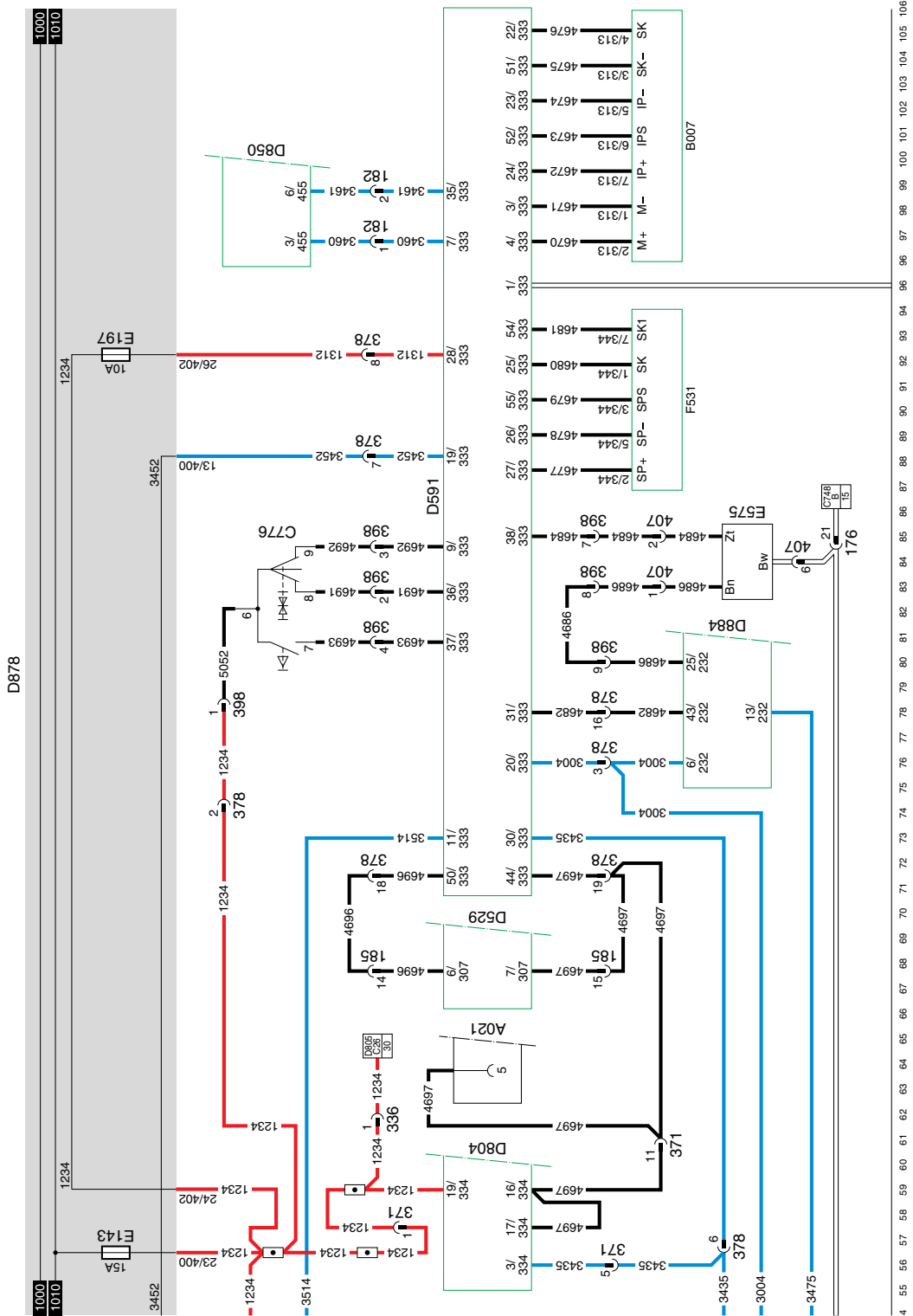


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**36. AUTOMATIC WINDOWS/ROOF HATCH/CENTRAL DOOR LOCKING****ELECTRIC WINDOW CONTROL, DRIVER'S SIDE (OPENING)****(Switch in door panel, driver's side)**

If the electric window control switch (C745) is activated and a connection is made (contacts 2 and 4), relay G030 will be activated through fuse E044 and switch C745 (wire 4526). As a result, a supply voltage is applied through fuse E034 to connection point 2 of the motor (B003). The other connection point (1) is connected to earth through relay G031. The motor will start operating counter-clockwise and the window on driver's side will open.

**ELECTRIC WINDOW CONTROL, DRIVER'S SIDE (CLOSING)****(Switch in door panel, driver's side)**

If the electric window control switch (C745) is activated and a connection is made (contacts 4 and 1), relay G031 will be activated through fuse E044 and switch C745 (wire 4527). As a result, a supply voltage is applied through fuse E034 to connection point 1 of the motor (B003). The other connection point (2) is connected to earth through relay G030. The motor will start operating clockwise and the window on driver's side will close.

**ELECTRIC WINDOW CONTROL, CO-DRIVER'S SIDE (OPENING)****(Switch in door panel, driver's side)**

If the electric window control switch (C743) is activated and a connection is made (contacts 2 and 4), relay G028 will be activated through fuse E044 and switch C743 (wire 4522). As a result, a supply voltage is applied through fuse E033 to connection point 2 of the motor (B004). The other connection point (1) is connected to earth through relay G029. The motor will start operating counter-clockwise and the window on co-driver's side will open.

**ELECTRIC WINDOW CONTROL,  
CO-DRIVER'S SIDE (CLOSING)****(Switch in door panel, driver's side)**

If the electric window control switch (C743) is activated and a connection is made (contacts 4 and 1), relay G029 will be activated through fuse E044 and switch C743 (wire 4523). As a result, a supply voltage is applied through fuse E033 to connection point 1 of the motor (B004). The other connection point (2) is connected to earth through relay G028. The motor will start operating clockwise and the window on co-driver's side will close.

**ELECTRIC WINDOW CONTROL,  
CO-DRIVER'S SIDE****(Switch in door panel, driver's side)**

The automatic window control using C744 on the co-driver's side is similar to the automatic window control on the driver's side. When switch C744 (connection between contacts 4 and 2) is engaged, relay G028 is activated through switch C743 (contacts 5 and 2) and the motor (B004) will open the automatic window. When switch C744 (connection between contacts 4 and 1) is engaged, relay G029 is activated through switch C743 (contacts 3 and 1) and the motor will operate clockwise and close the automatic window.

The electric window control will only function if the contact is switched on.

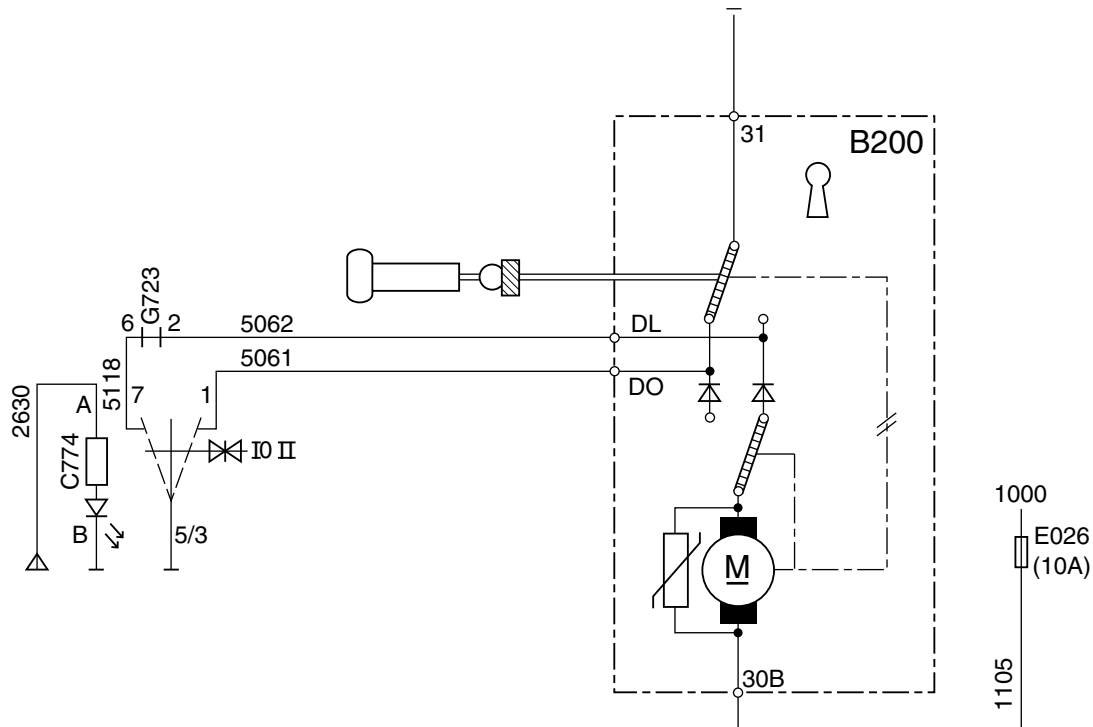
**ROOF HATCH, OPENING**

If the roof-hatch switch (C736) is used to make a connection between contacts 2 and 6, and therefore between contacts 1 and 3, a voltage is applied to pin 1 of the roof-hatch motor (B175) through fuse E030, switch C736 and wire 4761. The roof hatch will open.

**ROOF HATCH, CLOSING**

If the roof-hatch switch (C736) is used to make a connection between contacts 8 and 6, and therefore between contacts 7 and 3, a voltage is applied to pin 2 of the roof-hatch motor (B175) through fuse E030, switch C736 and wire 4760. The roof hatch will close.

## CENTRAL DOOR LOCKING, CO-DRIVER'S SIDE (STANDARD)



K100851

**Purpose:**

To lock the co-driver's side door using button/key or switch (C774). The driver can lock/unlock the co-driver's side door from behind the steering wheel.

**Central door locking motor, co-driver's side (B200):**

The motor has two (internal) switches, i.e.:

- a "stroke-end" switch (always reverses at end of stroke) (lower drawing);
- a switch which is mechanically connected to the locking button (always reverses at the beginning of the upward or downward movement of the locking button) (upper in drawing).

**Note:**

A mechanical connection consisting of a linkage mechanism between the cylinder lock and the locking button will remain.

**Starting position: door unlocked (see drawing).**

- The door is locked using the button/key. The mechanical linkage reverses the upper switch directly. As a result, a current will flow through the fuse (E026), the connection (30b), the motor, the lower switch and the upper switch through connection 31 to earth. The mechanical linkage between the motor and unlock button will move the button down.

Having reached the lower position, the "stroke end" switch reverses.

The same occurs during unlocking. The direction of rotation of the motor is the same. The position of the switches is different, however. The power between motor/lock button is transmitted through a lever/connecting rod mechanism.

- The door is locked using the switch (C774). If the spring-loaded switch (C774) makes a connection between connections 5/3 and 7, point DL of (B200) is connected to earth. One brief moment is sufficient to start the motor moving. Because there is a mechanical linkage between the motor and the lock button, the upper switch will reverse immediately afterwards. A current will flow until the "stroke-end" switch breaks the circuit.
- The door is unlocked using the switch (C774). To this end, connection DO is briefly connected to earth. The action is the same, except that the switches resume their other position once the locking button has moved upwards.

**Variants:**

**Location**

- 36 If the standard version is installed, the driver's side central door locking (B199) and the central door locking electronic unit (D862) will also not be installed. In that case cascade G723 is placed on connector 394, and switch C774 replaces switch C803.

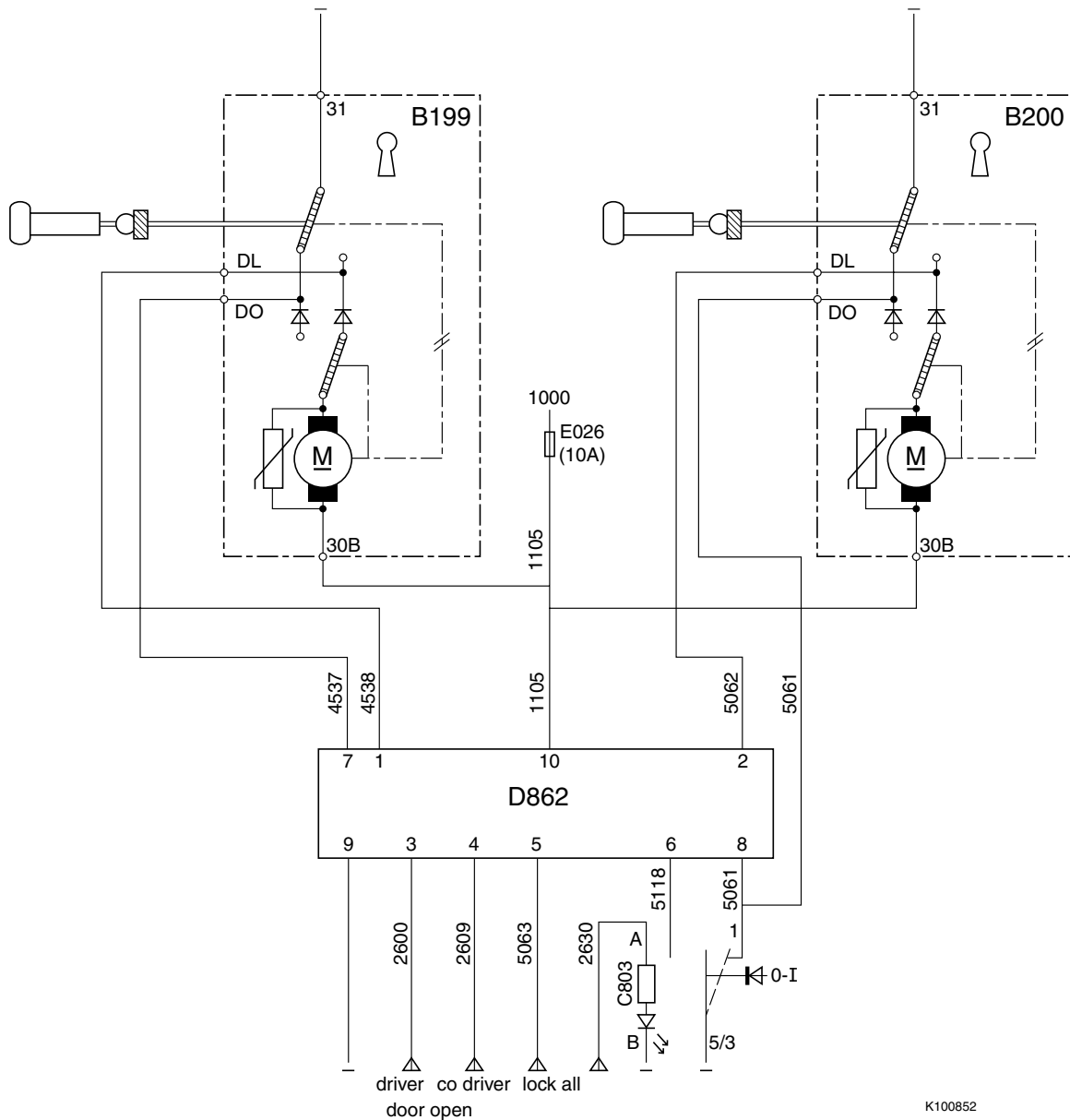
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## MODIFICATIONS TO THE ELECTRICAL INSTALLATION

95XF series

Modifications to the electrical installation from chassis number 0E473500

### CENTRAL DOOR LOCKING (OPTION)



K100852

#### Purpose:

- To automatically lock both doors if one of the doors is locked using the key/button.
- To automatically lock both doors using the alarm-system remote control (if available).
- If one of the two doors is unlocked, only this door will open while other door remains locked.



**Description of central door locking, driver's side (B199) and central door locking motor, co-driver's side (B200).**

The description of both components is similar to description B200 as above.

**Starting position: both doors locked.**

Unlock the co-driver's side door using the key. This is the same as the standard version. The other door remains locked.

Unlock the co-driver's side door using switch C803.

If switch C803 is engaged (connection between pin 1 and 5/3), connection DO of component B200 is connected to earth. B200 is activated in the same way as in the standard version.

**Starting position: both doors unlocked.**

Driver's side door locked using key/button. The action is similar to that in the standard version; in this case, however, unit D862 will measure an earth signal through connection DL (wire 4538) to pin 1. D862 now connects pin 2 to earth, also activating B200. The co-driver's side door is now also locked.

Locking co-driver's side door using key/button. The operation is the same as the operation described above. However, unit D862 now measures an earth signal at pin 2 and will, therefore, connect pin 1 of component B199 to earth. The driver's side door is now also locked.

**Note:**

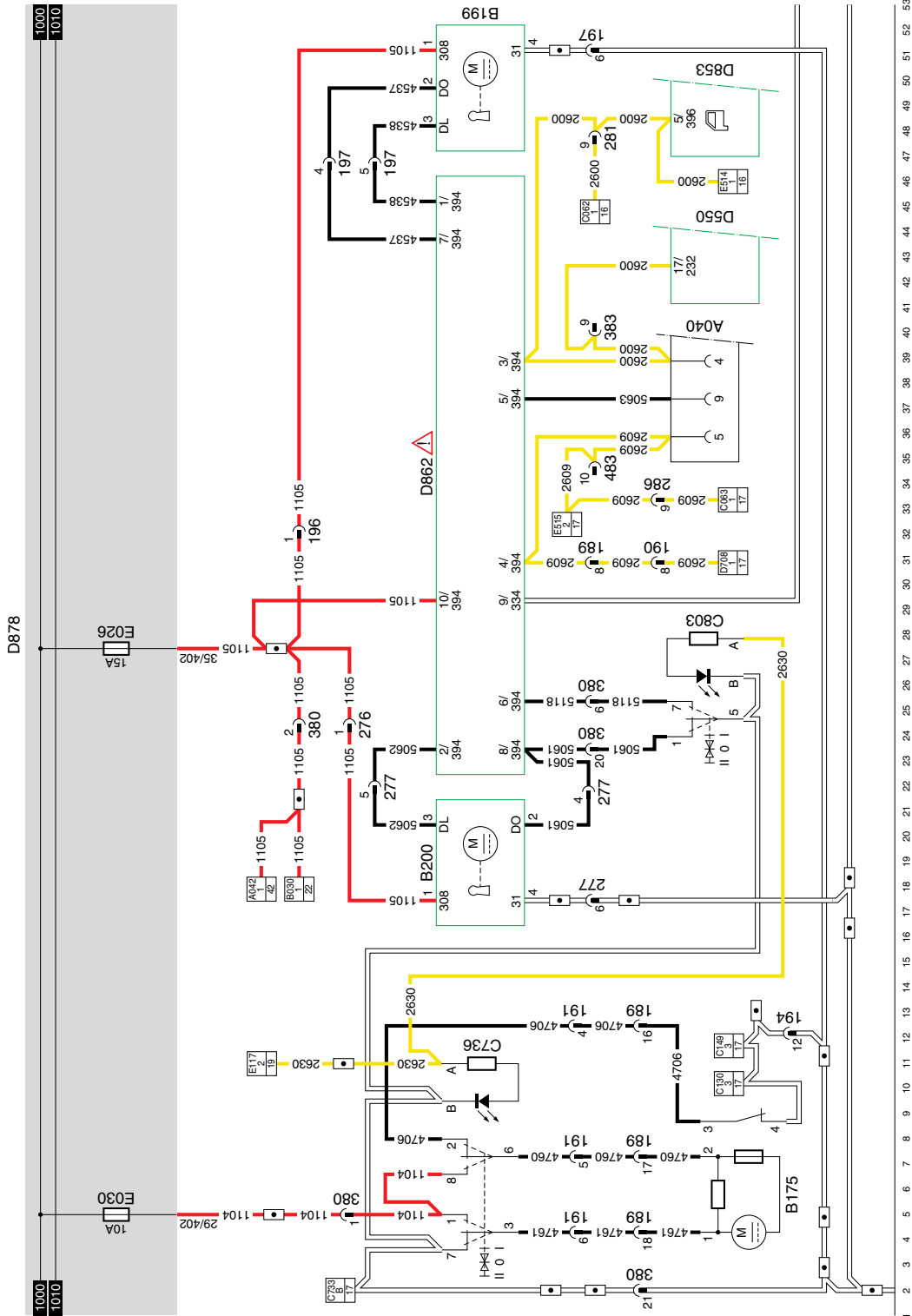
If one or both door switches sends a positive signal to pin 3 or 4 of unit D862, the accompanying components B199 and/or B200 will not be activated.

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# MODIFICATIONS TO THE ELECTRICAL INSTALLATION

95XF series

Modifications to the electrical installation from chassis number 0E473500

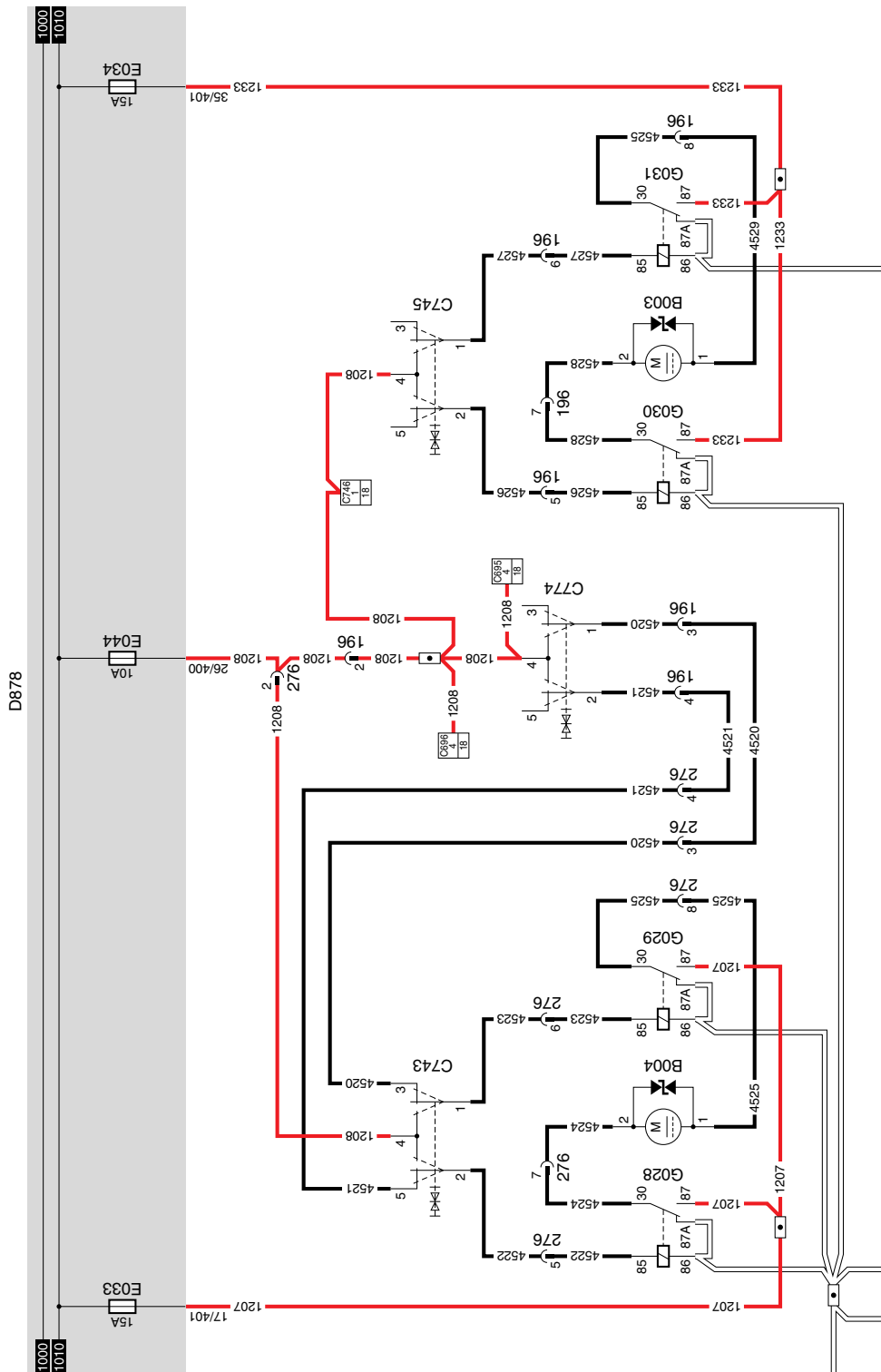


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54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 96 97 98 99 100 101 102 103 104 105 106

36

1316630/13-23

EL000075

**42. CONNECTOR SOCKETS FT****DIAGNOSTIC CONNECTOR (A021)**

The diagnostic connector is installed on the left-hand side in the central cabinet. This is the connector to which DAVIE is connected. After the contact has been activated, the supply voltage for DAVIE is applied to pin 1 through fuse E053. Pin 2 is connected to earth. The remaining pins are meant for the communication with various systems and are connected to those systems.

Pin no.	Wire no.	Colour	Description
1	1229	Red	Supply for DAVIE
2	9107	White	Earth
3	3425	Blue	ABS/ASC-D
4	4788	Black	ASL-G
5	4697	Black	ECAS remote control / E-gas 3 / ASL-V / UPEC
6			
7	4732	Black	ECAS 2
8	3064	Blue	Connector 378, pin 5
9	4047	Black	CTE-3
10	3065	Blue	Connector 378, pin 4
11	4883	Black	ZF intarder
12			
13	3470	Blue	AGS
14	3037	Blue	D1LC / D3LC Compact auxiliary heating/ Hydronic 10

**24V CONNECTOR (A042)**

Pin 1 of the 24V connector (A042) is connected directly to the supply voltage through wire 1000 and fuse E026.

Pin 2 is connected to earth.

**ABS CONNECTOR (A005)**

Pin 1 of the ABS connector (A005) is connected directly to the supply voltage in front of the contact through wire 1119 and fuse E043.

Pin 2 is connected directly to the supply voltage behind the contact through fuse E172. This voltage also serves to feed the ABS unit.

Pins 3 + 4 are both connected to earth.

Pin 5 is connected to pin 7 of the CWS-2 unit (D853) through wire 3428.

**FT TRAILER CONNECTOR (A002)**

- Pin 1 of the FT trailer connector (A002) is connected to earth. If a connection is made between contacts 2 and 1 (rear/side marker and parking lights position) with the lighting switch (C622), a voltage is applied to contact 85 of relay G000 through fuse E084, wire 1101, switch C622 and wire 2100. The relay is activated and a voltage is applied from wire 1000, contacts 30 and 87 (from relay G000) through fuses E000 and E001 to pins 2 (through wire 2102) and 6 (through wire 2103) respectively.
- Pin 2 switches the left-hand rear light.
- Pin 3 is connected to the CTE-3 unit (2/232) (left direction) through wire 2008.
- Pin 4 is connected to relay G036 (brake-light relay) through wire 4601.
- Pin 5 is connected to the CTE-3 unit (30/232) (right direction) through wire 2009.
- Pin 6 switches the right-hand rear light.

**REAR FOG LIGHT / BACK-UP LIGHT CONNECTOR (A003)**

- Pin 1 is connected to earth.
- Pin 3 is connected to the supply voltage once the contact has been activated and the gearbox is in reverse gear. The voltage is applied as follows: through fuse E016 (wire 1217), back-up switch E501 (wire 4591) to pin 3.
- Pin 5 is connected directly to the supply voltage through fuse E048 and wire 1113.
- Pin 7 (rear fog lights) is connected to the supply voltage through fuse E010, relay G005 and wire 2152.

**ALARM SYSTEM SOCKET (A040)**

- Pin 1 is connected directly to the supply voltage in front of the contact through wire 1114 and fuse E108 (wire 1000).
- Pin 2 is connected to the direction indicator, front left (C014), side direction indicator, left (C016), direction indicator, rear left (C018) and the electronic unit CTE-3 through wire 2006.
- Pin 3 is connected to the direction indicator, front right (C015), side direction indicator, right (C017), direction indicator, rear right (C019) and the electronic unit CTE-3 through wire 2007.
- Pin 4 is connected directly to the control switch for interior stepwell lighting, door switch on driver's side (E514), the stepwell lighting on driver's side (C062), the electronic unit CTE-3 (D884) and the lighting buzzer relay (G235) through wire 2600.
- Pin 5 is connected directly to the stepwell lighting on co-driver's side (C063), the interior lighting switch on co-driver's side (C686), the control switch for interior stepwell lighting, door switch on co-driver's side (E515) through wire 2609, and the interior-lighting diode prevent feedback to the co-driver's stepwell (D708).
- Pin 6 is connected directly to the cab-lock control switch (F009) through wire 3412 and by means of a cab lock connection (cab without air suspension) (G719) to the electronic unit CWS (D582) through wire 3492.
- Pin 7 is connected directly to the generator of integrated voltage regulator (A502) (D+) and to lighting relay D+ (G107) through wire 1020. At the same time pin 7 is connected directly to the lighting buzzer (B242) and to the electronic unit CWS (D582).
- Pin 9 is connected to the electronic unit of the central door locking (D862).
- Pin 12 is connected to earth.

**CONNECTOR SOCKET FOR REMOTE CONTROL CONNECTION UPEC (A046)**

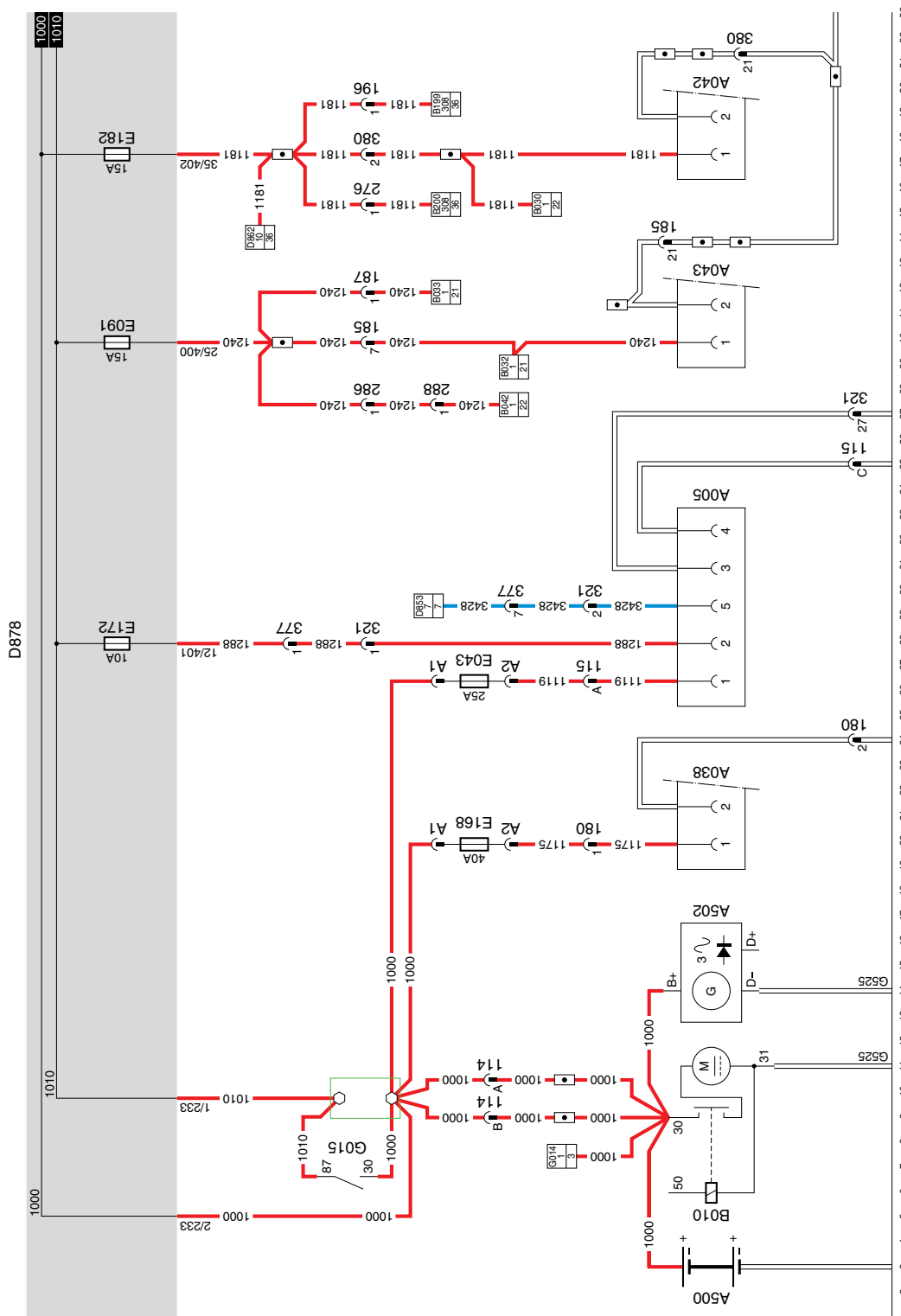
- Pin 1 is connected to point 87 of relay for ECS power supply (G126) through wire 1297 and fuse E194.
- Pin 2 is connected directly to pin 21 of the UPEC electronic unit (D814) through wire 3039.
- Pin 3 is connected directly to point 5 of relay for UPEC remote control (G321) through wire 4100.
- Pin 4 is connected directly to pin 8 of switch for the windscreen wipe/wash intermittent wipe/E-gas/UPEC vehicle speed/engine speed (C776) and to pin 34 of the UPEC electronic unit (D814) through wire 4691.
- Pin 5 is connected directly to pin 9 of the switch for windscreen wipe/wash intermittent wipe/E-gas/UPEC vehicle speed/engine speed (C776) and to pin 32 of the UPEC electronic unit (D814) through wire 4692.
- Pin 6 is connected directly to pin 7 of the switch for windscreen wipe/wash intermittent wipe/E-gas/UPEC vehicle speed/engine speed (C776) and to pin 33 of the UPEC electronic unit (D814) through wire 4693.
- Pin 7 is connected to point 86 of the UPEC engine stop relay (G328).
- Pin 8 is connected directly to earth.

5

MODIFICATIONS TO THE ELECTRICAL INSTALLATION

95XF series

Modifications to the electrical installation from chassis number 0E473500

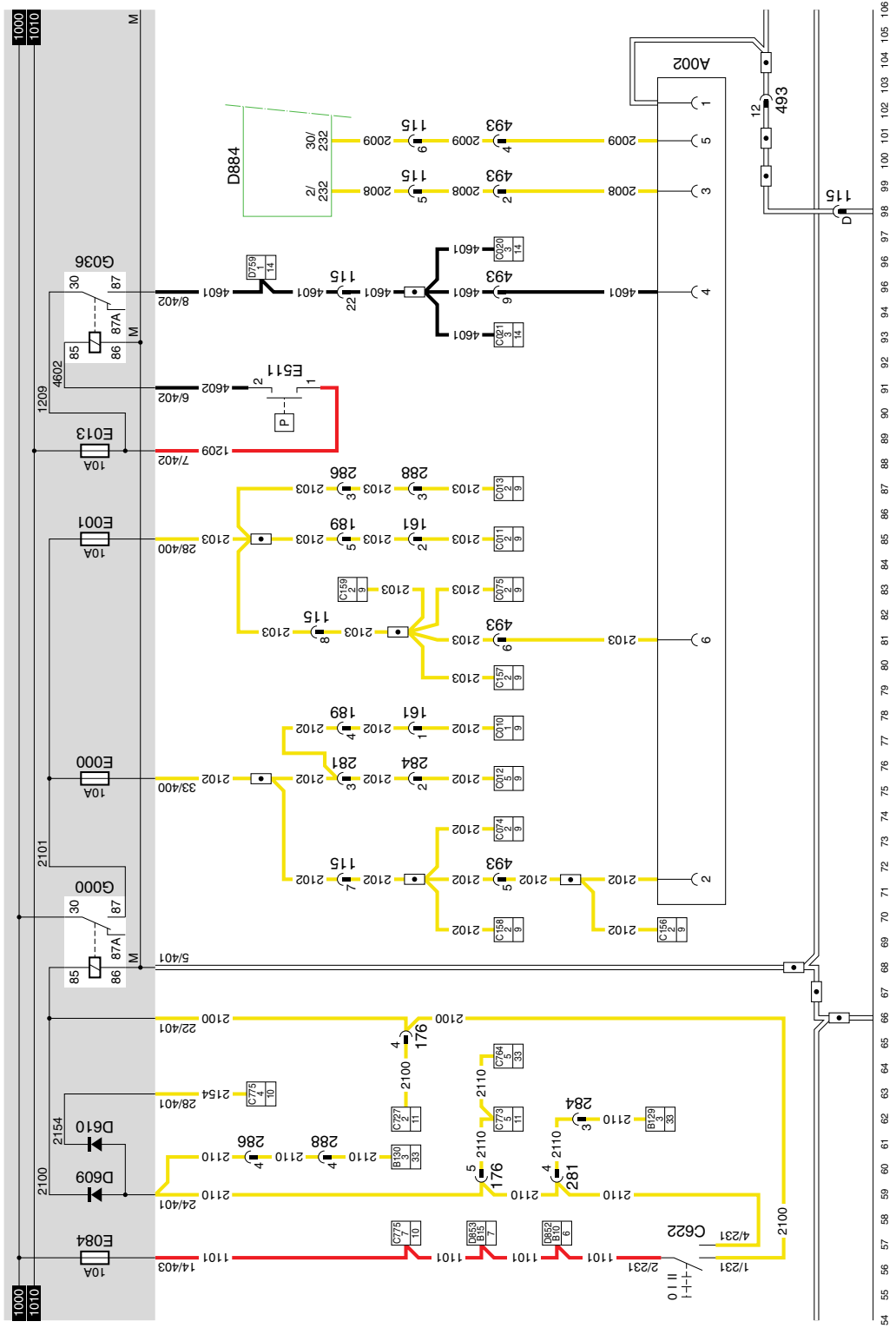


42

1316630/13-23

EL000304





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42

1316630/13-23

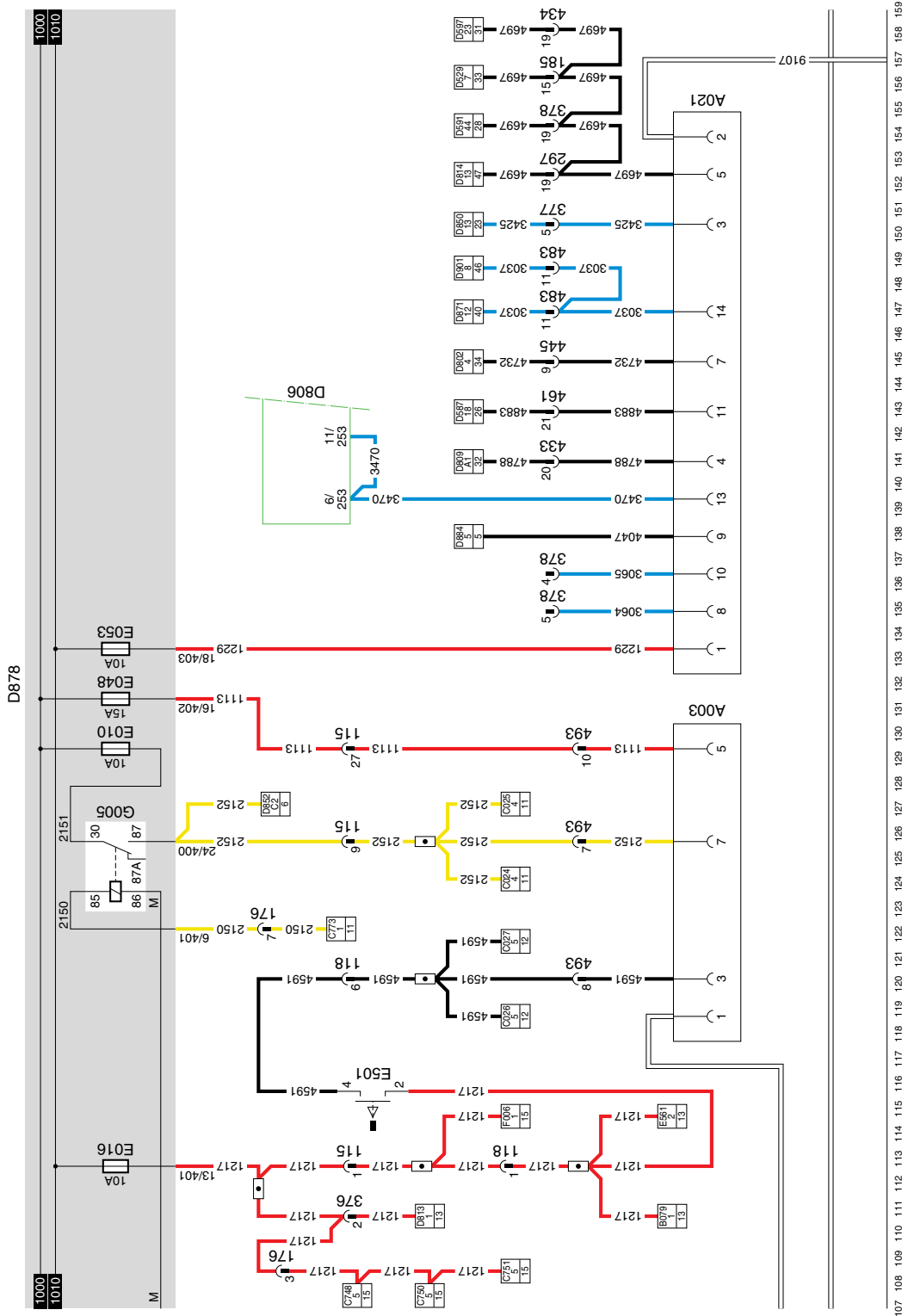
EL000305

# 5

# MODIFICATIONS TO THE ELECTRICAL INSTALLATION

95XF series

Modifications to the electrical installation from chassis number 0E473500

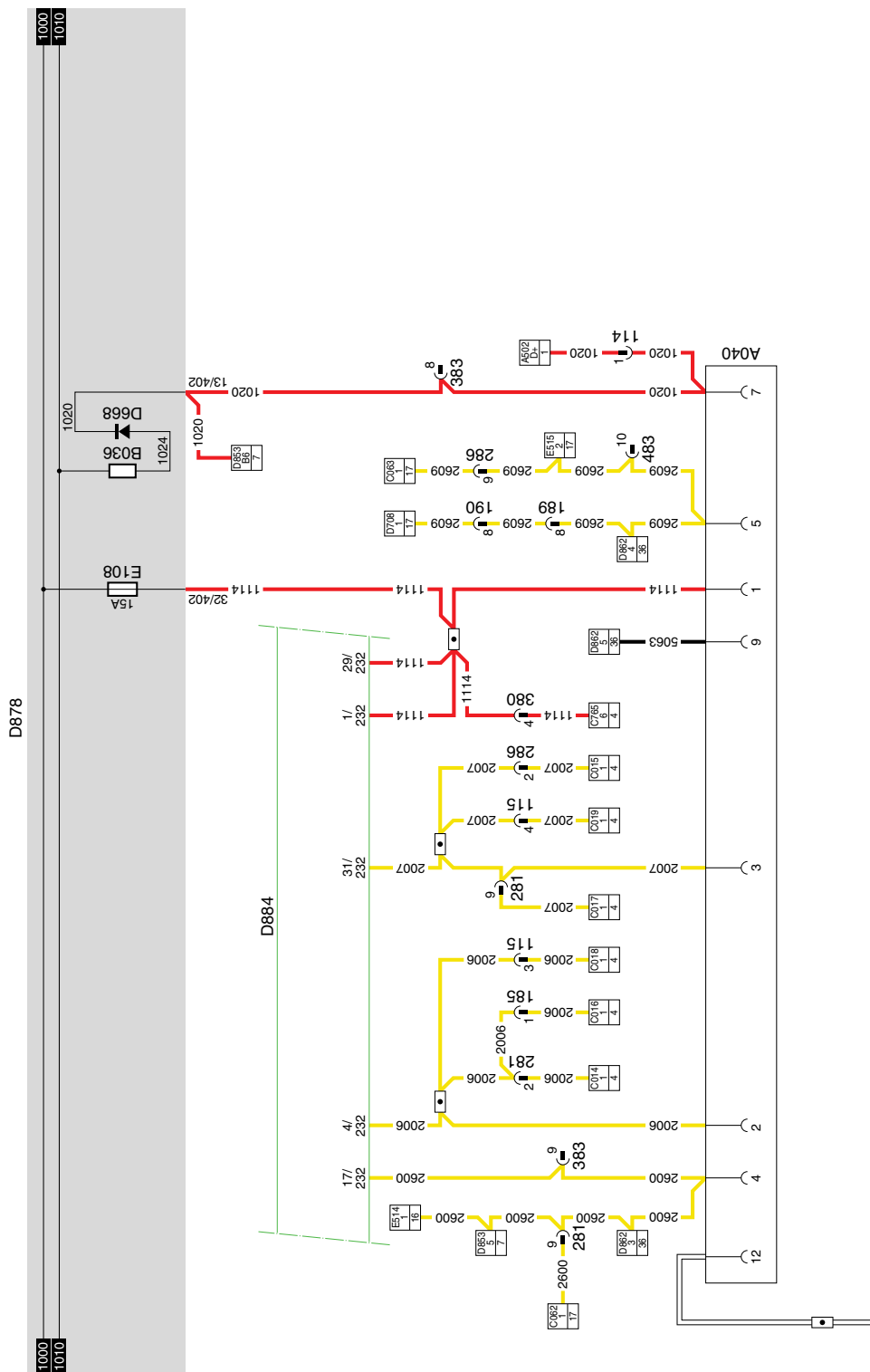


# 42

1316630/13-23

EL000306

# 11



160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212

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42

1316630/13-23

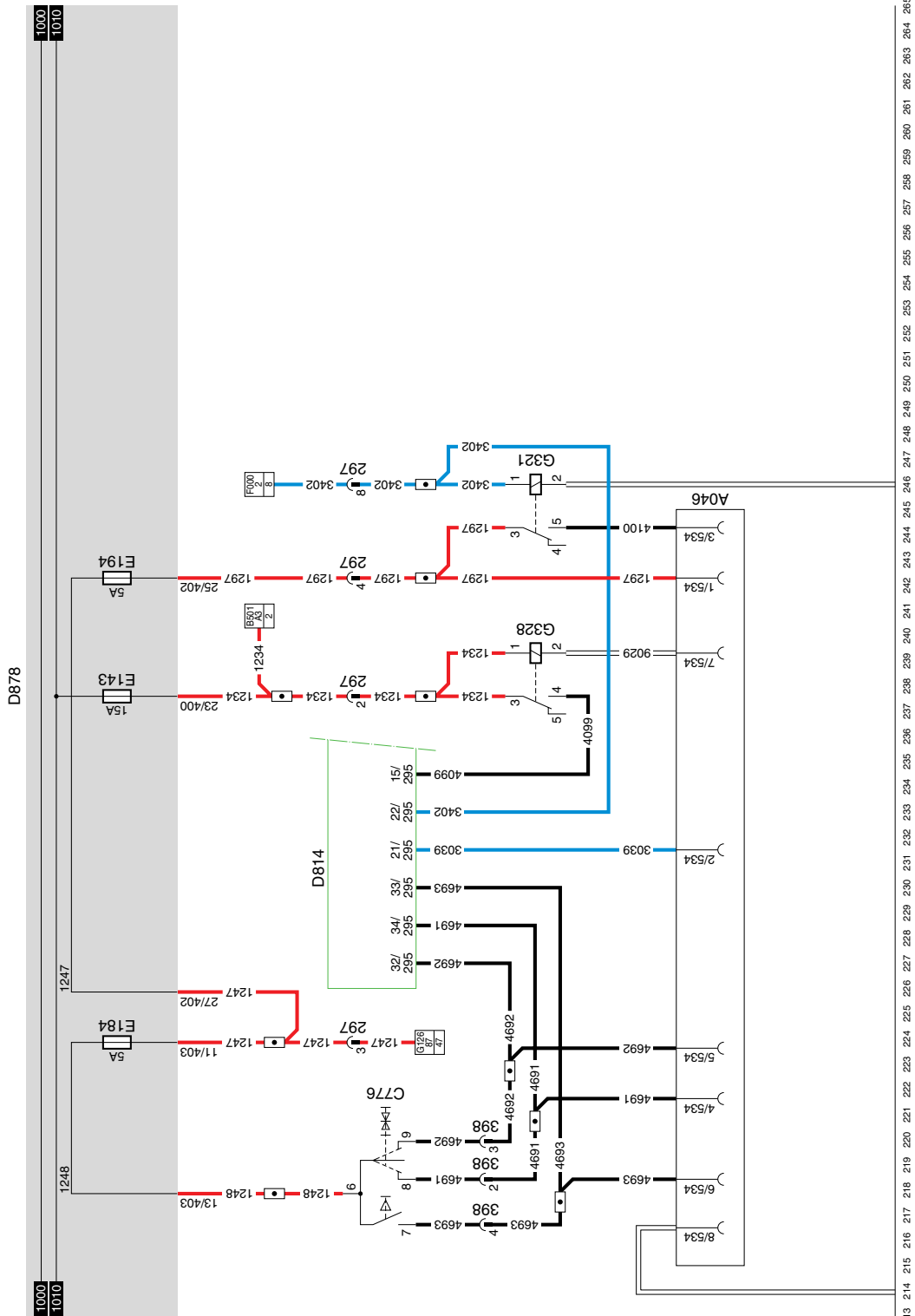
EL000307

# 5

# MODIFICATIONS TO THE ELECTRICAL INSTALLATION

95XF series

Modifications to the electrical installation from chassis number 0E473500



213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265

# 42

1316630/13-23

EL000308

# 11

## 43. CONNECTOR SOCKETS FA

### DIAGNOSTIC CONNECTOR (A021)

The diagnostic connector is installed on the top left-hand side in the central cabinet. This is the connector to which DAVIE is connected. After the contact has been activated, the supply voltage for DAVIE is applied to pin 1 through fuse E053. Pin 2 is connected to earth. The remaining pins are meant for the communication with various systems and are connected to those systems.

Pin no.	Wire no.	Colour	Description
1	1229	Red	Supply for DAVIE
2	9107	White	Earth
3	3425	Blue	ABS/ASC-D
4	4788	Black	ASL-G
5	4697	Black	ECAS remote control / E-gas 3 / ASL-V / UPEC
6			
7	4732	Black	ECAS 2
8	3064	Blue	Connector 378, pin 5
9	4047	Black	CTE-3
10	3065	Blue	Connector 378, pin 4
11	4883	Black	ZF intarder
12			
13	3470	Blue	AGS
14	3037	Blue	D1LC / D3LC Compact auxiliary heating/ Hydronic 10

### 24V CONNECTOR (A043)

Pin 1 of the 24V connector (A034) is connected directly to the supply voltage through wire 1240 and fuse E091 (behind the contact).

Pin 2 is connected to earth.

### ABS CONNECTOR (A004)

Pin 1 of the ABS connector (A004) is connected directly to the supply voltage through wire 1119 and fuse E043.

Pin 2 is connected directly to the supply voltage through fuse E172 behind the contact. This voltage also serves to feed the ABS unit.

Pins 3 + 4 are both connected to earth.

Pin 5 is connected to the CWS-2 unit (D583) through wire 3428.

**FA TRAILER CONNECTOR (A000)**

- Pin 1 of the FA trailer connector (A000) is connected to earth.  
If a connection is made between contacts 2 and 1 (rear/side marker and parking lights position) with the lighting switch (C622), a voltage is applied to contact 85 of relay G000 through fuse E084, wire 1101, switch C622 and wire 2100. The relay is activated and a voltage is applied from wire 1000, contacts 30 and 87 (from relay G000) through fuses E000 and E001 to pins 2 (through wire 2102) and 6 (through wire 2103) respectively.
- Pin 2 switches the left rear light and pin 6 switches the right rear light.
- Pin 3 is connected to the CTE-3 unit (left direction) through wire 2008.
- Pin 4 is connected to relay G036 (brake-light relay) through wire 4601.
- Pin 5 is connected to the CTE-3 unit (right direction) through wire 2009.

**REAR FOG LIGHT / BACK-UP LIGHT CONNECTOR (A001)**

- Pin 1 is connected to earth.
- Pin 3 is connected to the supply voltage once the contact has been activated and the gearbox is in reverse gear. The voltage is applied as follows: through fuse E016 (wire 1217), back-up switch E501 (wire 4591) to pin 3.
- Pin 5 is connected directly to the supply voltage through fuse E048 and wire 1113. Pin 3 is also connected to connector A026 (superstructure side-lights, 4-pin).
- Pin 7 (rear fog lights) is connected to the supply voltage through fuse E010, relay G005 (contacts 30 and 87) and wire 2152.

## ALARM SYSTEM SOCKET (A040)

- Pin 1 is connected directly to the supply voltage in front of the contact through wire 1114 and fuse E108 (wire 1000).
- Pin 2 is connected to the direction indicator, front left (C014), side direction indicator, left (C016), direction indicator, rear left (C018) and the electronic unit CTE-3 (D884) through wire 2006.
- Pin 3 is connected to the direction indicator, front right (C015), side direction indicator, right (C017), direction indicator, rear right (C019) and the electronic unit CTE-3 (D884) through wire 2007.
- Pin 4 is connected directly to the control switch for interior stepwell lighting, door switch on driver's side (E514), the stepwell lighting on driver's side (C062), the electronic unit CTE-3 (D884) and the lighting buzzer relay (G235) through wire 2600.
- Pin 5 is connected directly to the stepwell lighting on co-driver's side (C063), the interior lighting switch on co-driver's side (C686), the control switch for interior stepwell lighting, door switch on co-driver's side (E515) through wire 2609, and the interior-lighting diode prevent feedback to the co-driver's stepwell (D708).
- Pin 6 is connected directly to the cab-lock control switch (F009) through wire 3412 and by means of a cab lock connection (cab without air suspension) (G719) to the electronic unit CWS (D582) through wire 3492.
- Pin 7 is connected directly to the generator of integrated voltage regulator (A502) (D+) and to lighting relay D+ (G107) through wire 1020. At the same time pin 7 is connected directly to the lighting buzzer (B242) and to the electronic unit CWS (D582).
- Pin 9 is connected to the electronic unit of the central door locking (D862).
- Pin 12 is connected to earth.

**SUPERSTRUCTURE SIDE-LIGHTS CONNECTOR (A026)**

- Pin 1 is connected directly to the (semi-)trailer socket (A000) pin 2 through wire 2102, and to the rear-light/side light relay (G000) through fuse E000.
- Pin 2 is connected directly to the (semi-)trailer socket (A000) pin 6 through wire 2103, and to the rear-light/side light relay (G000) through fuse E001.
- Pin 3 is connected directly to pin 5 of the rear fog light socket (A001) through wire 1113 and to the supply voltage through fuse E048.
- Pin 4 is connected directly to earth.

**CONNECTOR SOCKET FOR REMOTE CONTROL CONNECTION UPEC (A046)**

- Pin 1 is connected to point 87 of relay for ECS power supply (G126) through wire 1297 and fuse E194.
- Pin 2 is connected directly to pin 21 of the UPEC electronic unit (D814) through wire 3039.
- Pin 3 is connected directly to point 5 of relay for UPEC remote control (G321) through wire 4100.
- Pin 4 is connected directly to pin 8 of switch for the windscreen wipe/wash intermittent wipe/E-gas/UPEC vehicle speed/engine speed (C776) and to pin 34 of the UPEC electronic unit (D814) through wire 4691.
- Pin 5 is connected directly to pin 9 of the switch for windscreen wipe/wash intermittent wipe/E-gas/UPEC vehicle speed/engine speed (C776) and to pin 32 of the UPEC electronic unit (D814) through wire 4692.
- Pin 6 is connected directly to pin 7 of the switch for windscreen wipe/wash intermittent wipe/E-gas/UPEC vehicle speed/engine speed (C776) and to pin 33 of the UPEC electronic unit (D814) through wire 4693.
- Pin 7 is connected to point 86 of the UPEC engine stop relay (G328).
- Pin 8 is connected directly to earth.



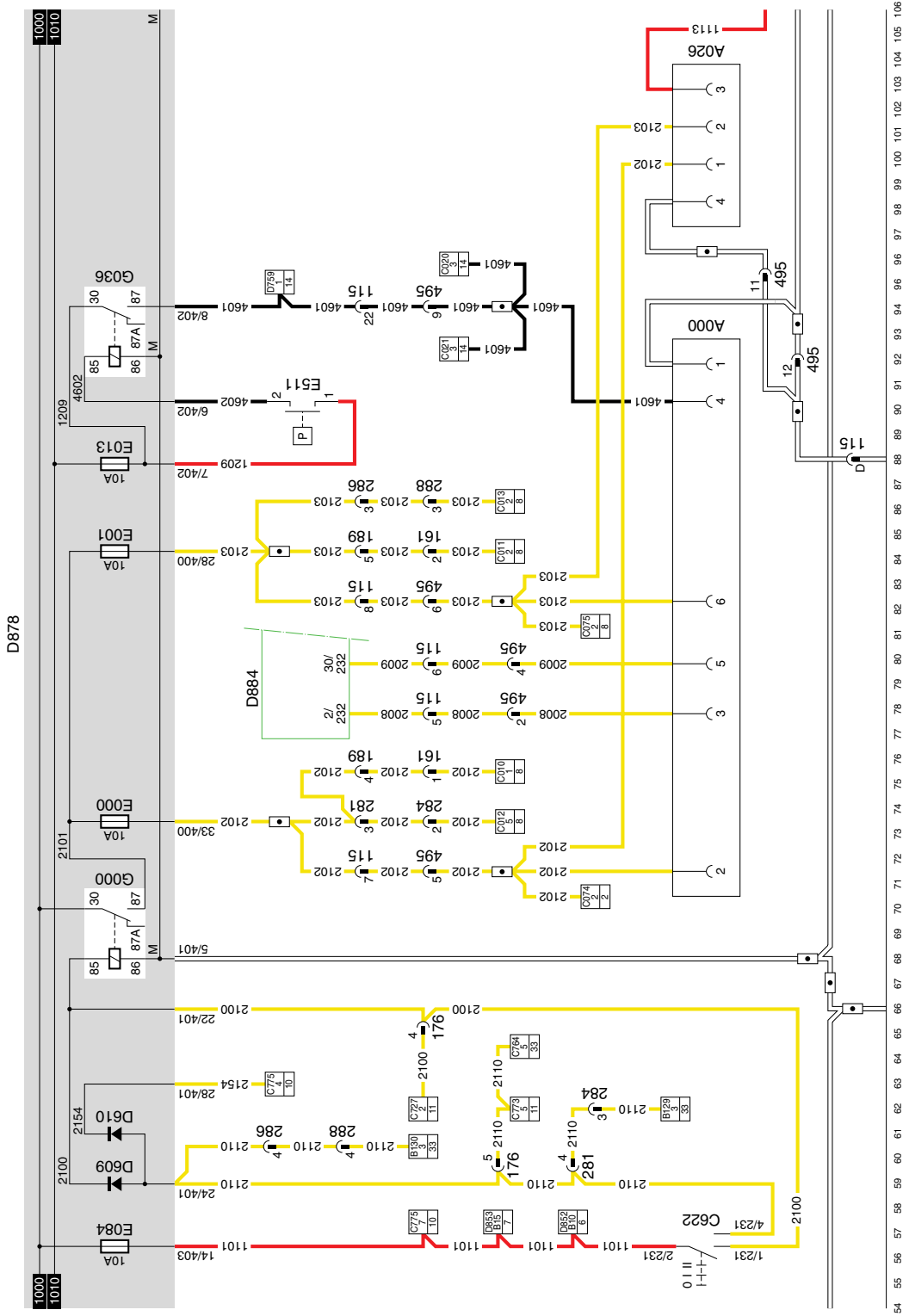


# 5

# MODIFICATIONS TO THE ELECTRICAL INSTALLATION

95XF series

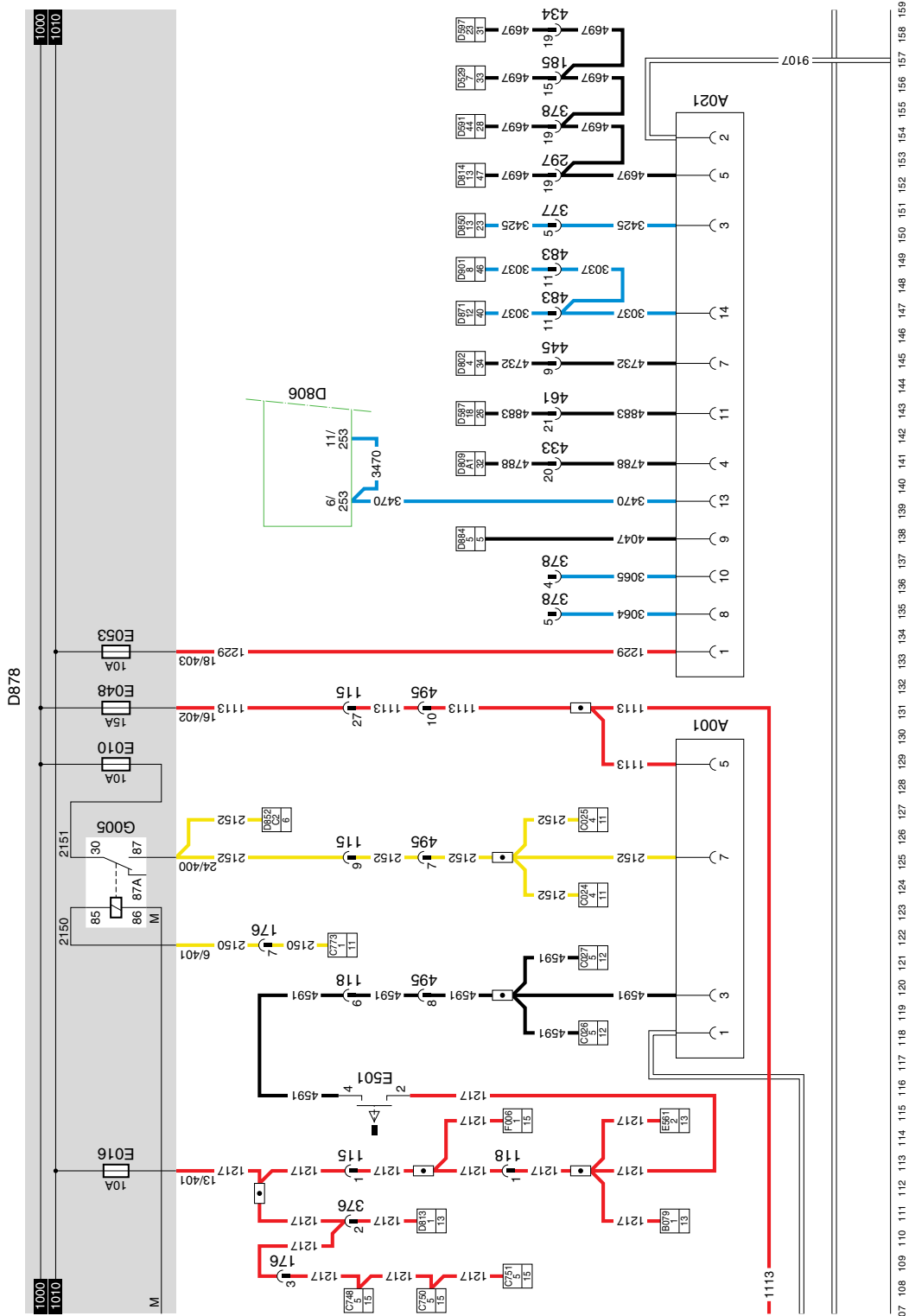
Modifications to the electrical installation from chassis number 0E473500



43

1316630/13-23

EL000310



# 43

1316630/13-23

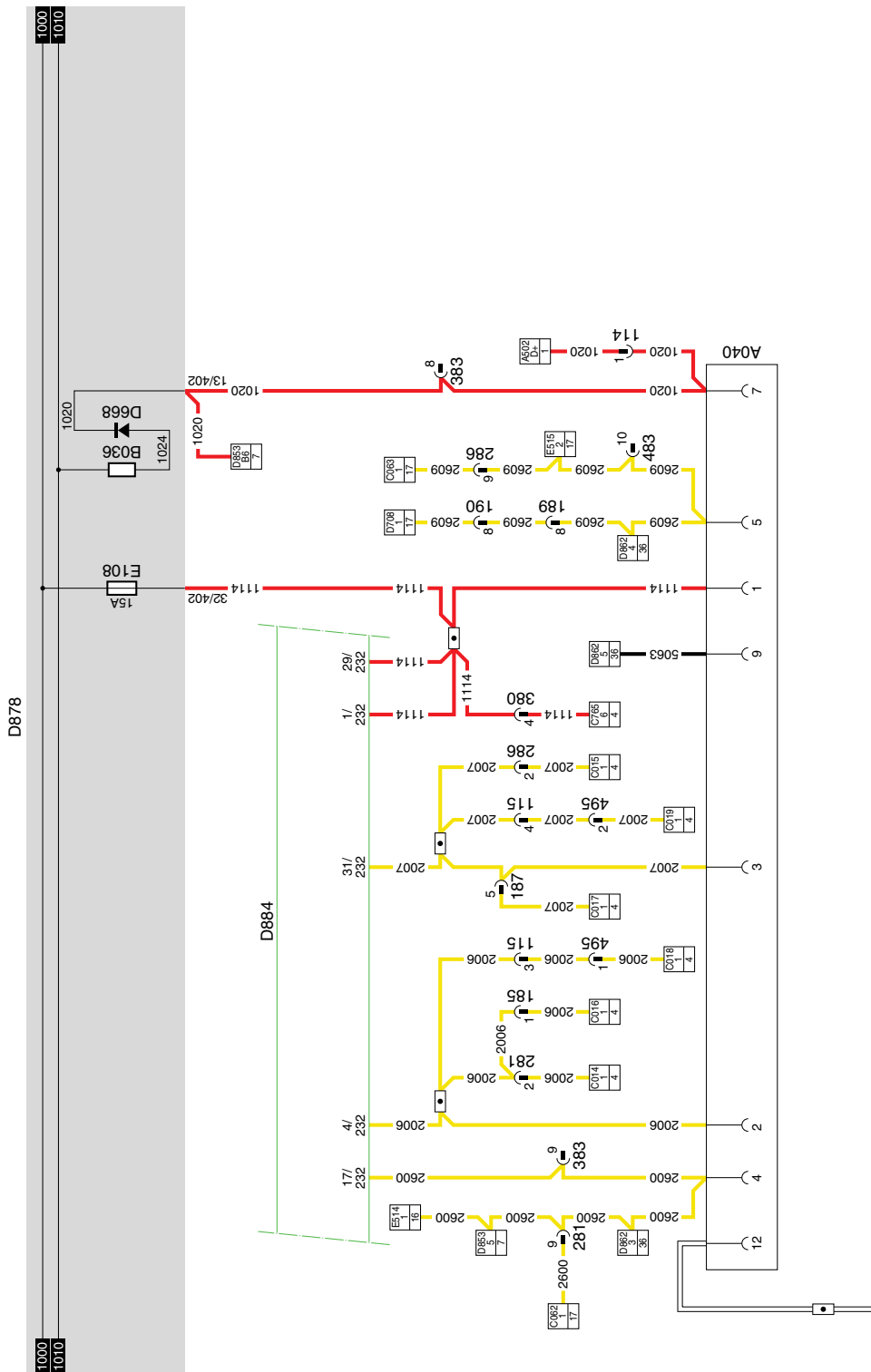
EL000311

# 5

# MODIFICATIONS TO THE ELECTRICAL INSTALLATION

95XF series

Modifications to the electrical installation from chassis number 0E473500

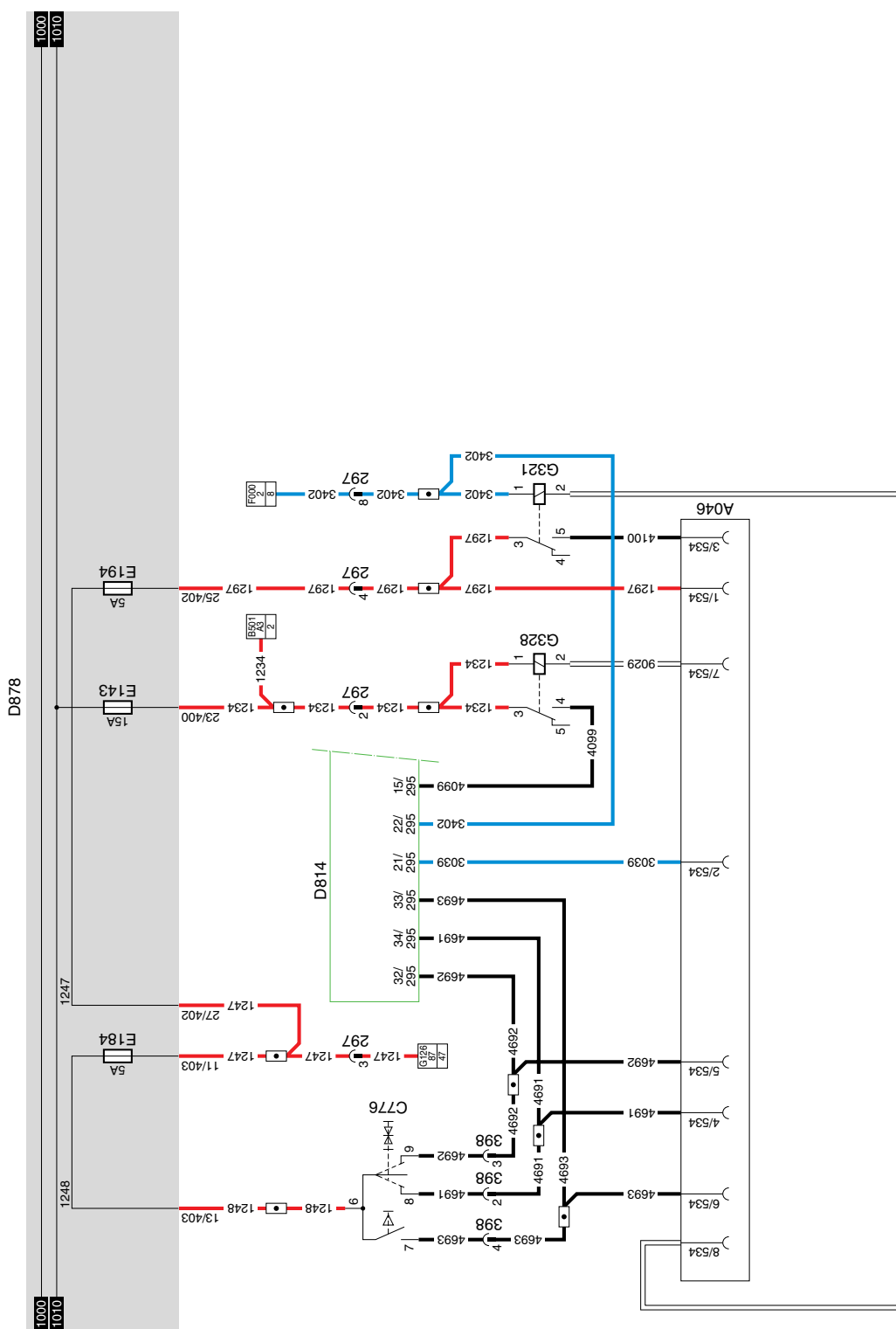


160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212

# 43

1316630/13-23

EL000312



213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265

# 43

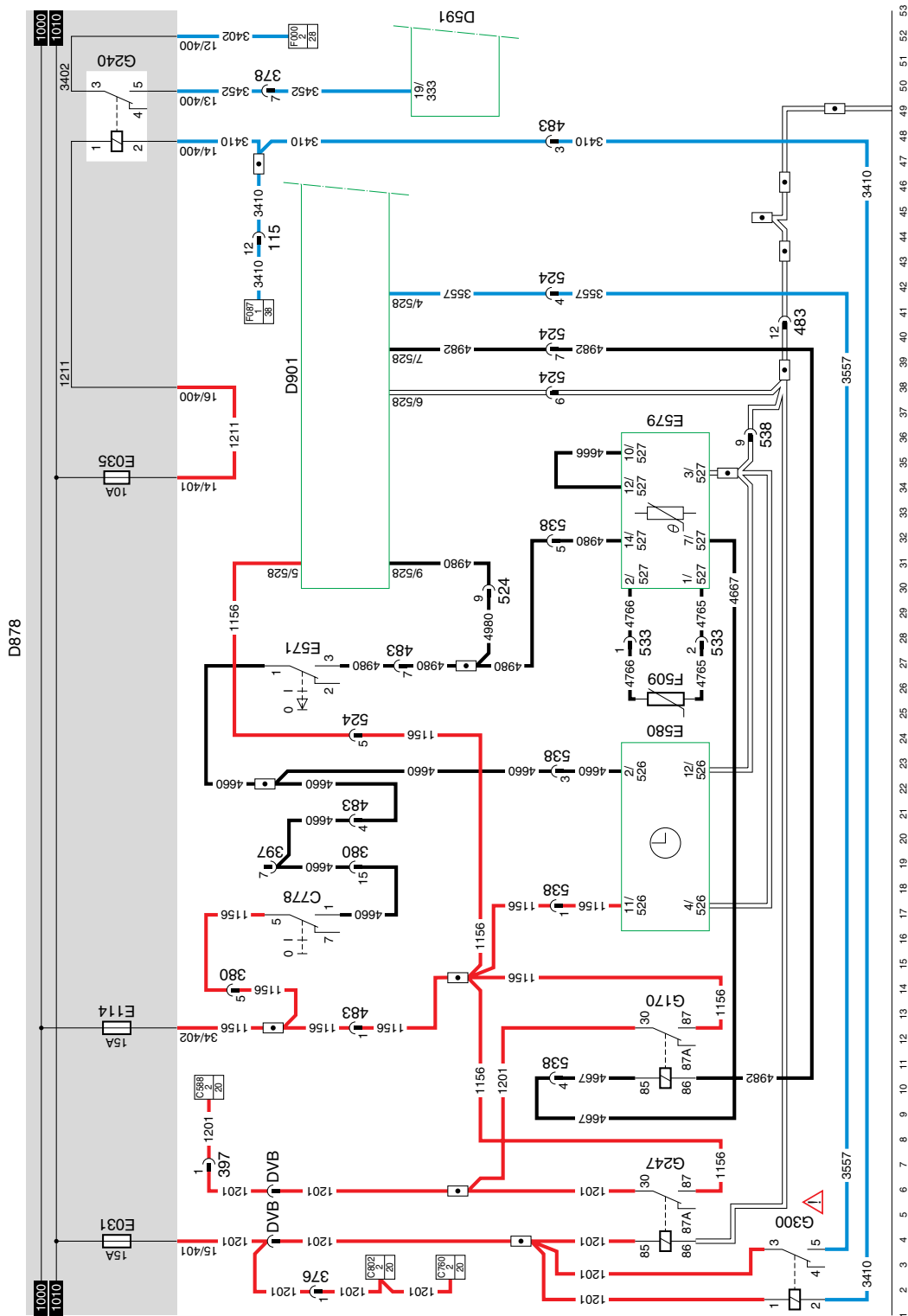
1316630/13-23

EL000313

**46. AUXILIARY HEATING EBERSPÄCHER HYDRONIC 10****VARIANTS****Location**

- 5 Only when transporting hazardous substances. The auxiliary heating will be switched off upon activation of the PTO.
- 78 Wire 4009 only applies in the case of a VF.

**SEE THE SYSTEM MANUAL FOR MORE INFORMATION.**

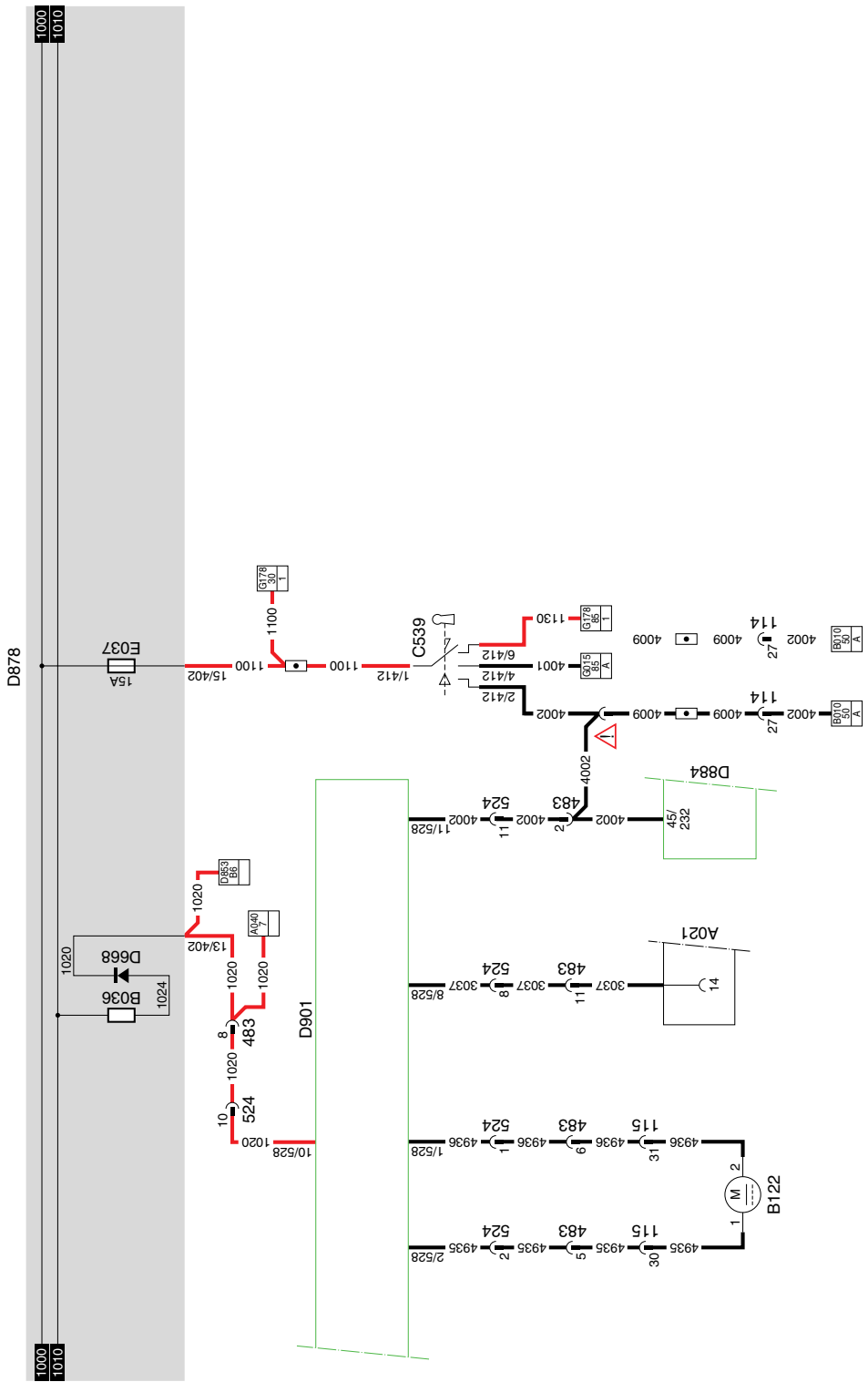


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46

1316630/13-23

EL000266





## 47. UPEC

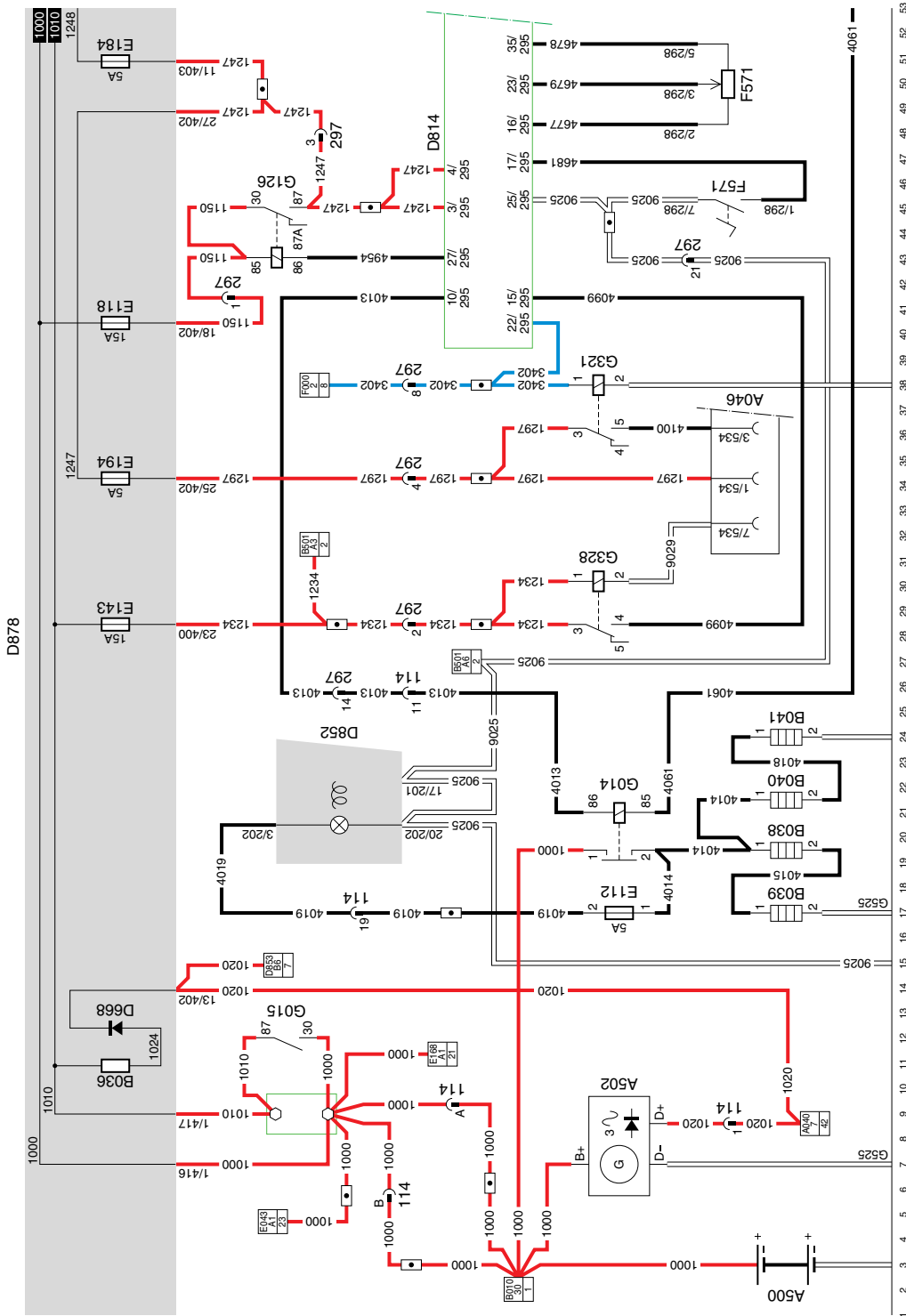
SEE THE SYSTEM MANUAL FOR MORE INFORMATION.

# 5

# MODIFICATIONS TO THE ELECTRICAL INSTALLATION

95XF series

Modifications to the electrical installation from chassis number 0E473500

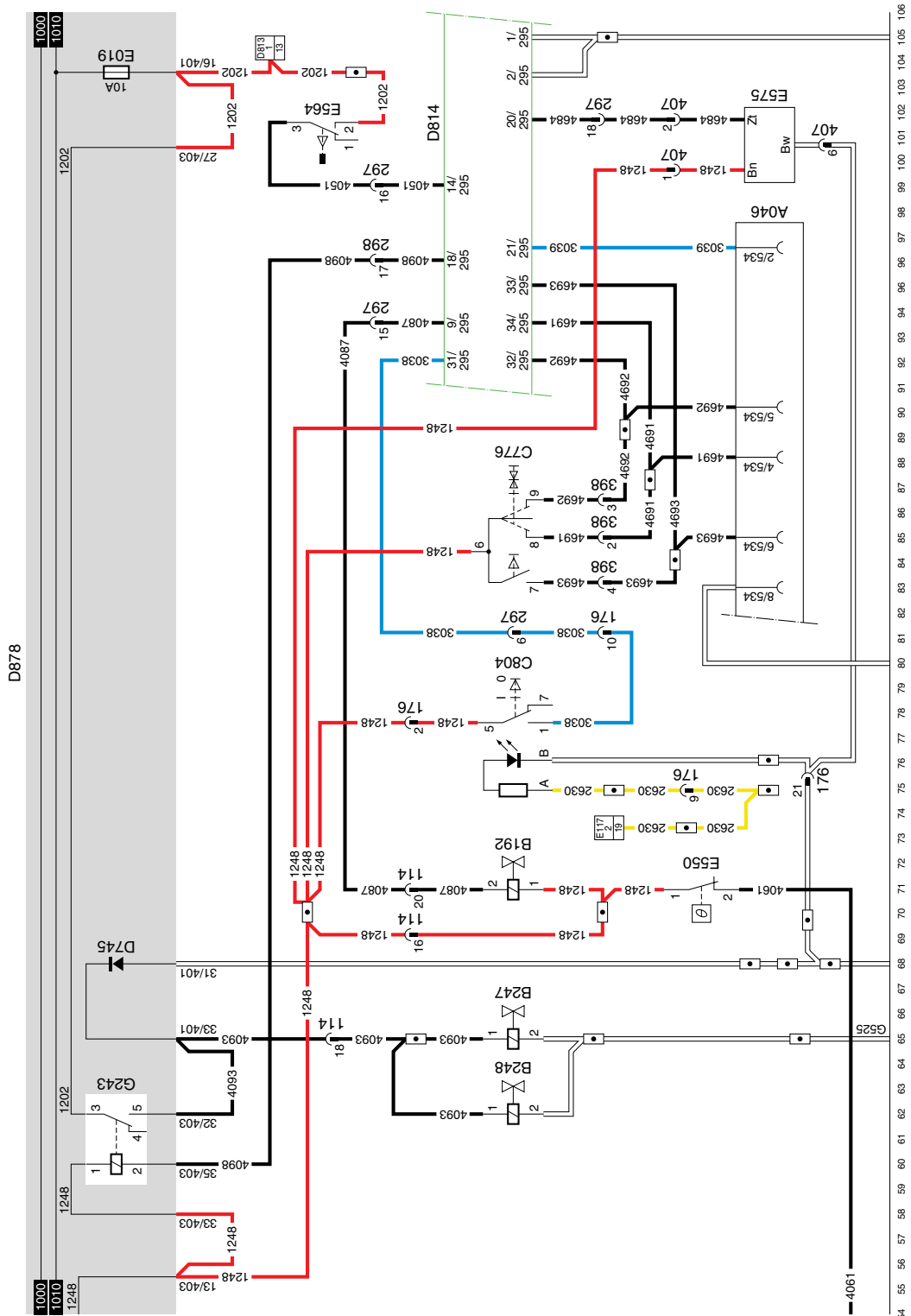


# 47

1316630/13-23

EL000295

11



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47

1316630/13-23

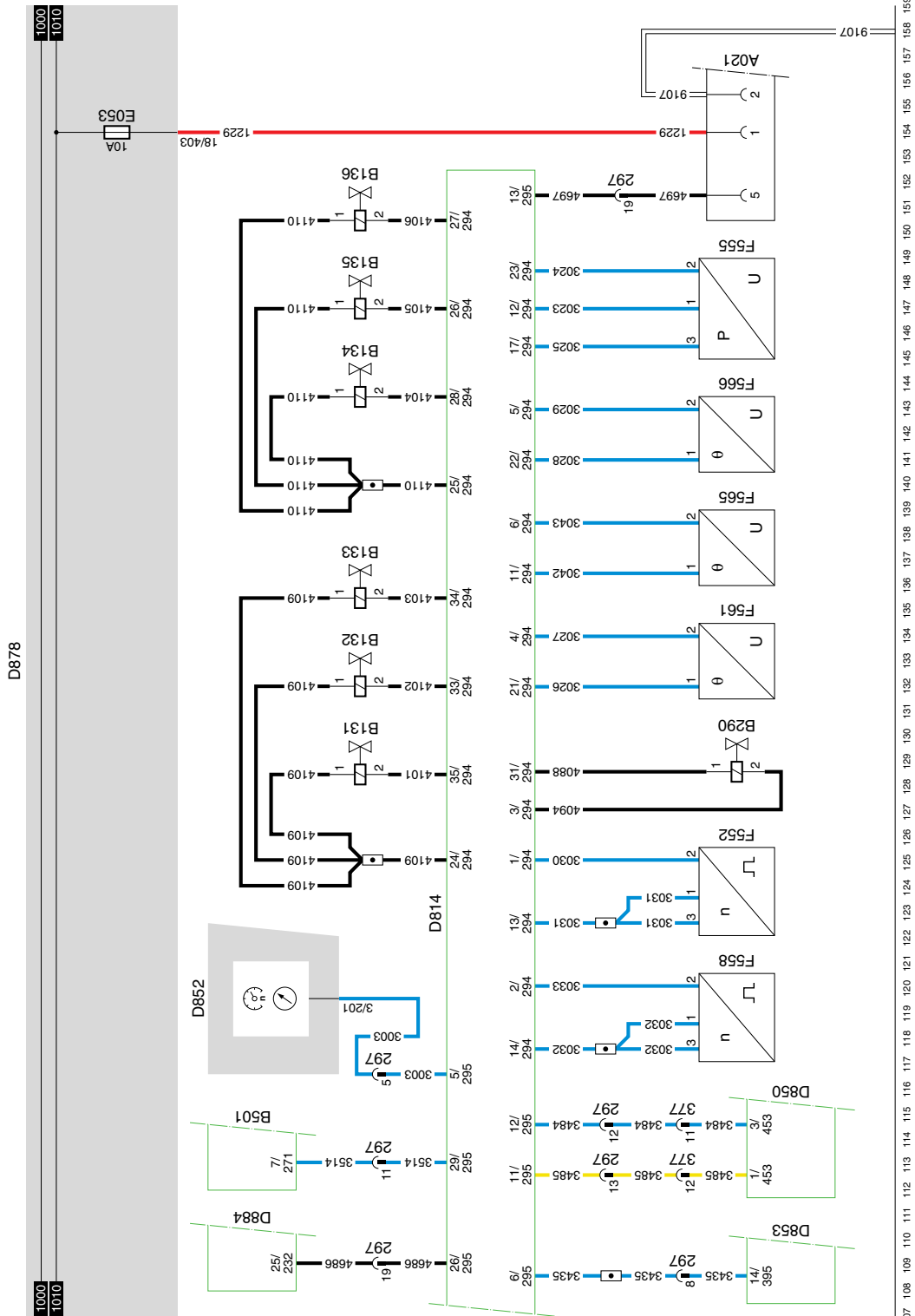
EL000296

# 5

# MODIFICATIONS TO THE ELECTRICAL INSTALLATION

95XF series

Modifications to the electrical installation from chassis number 0E473500



# 47

1316630/13-23

EL000297



# 5

## MODIFICATIONS TO THE ELECTRICAL INSTALLATION

95XF series

Modifications to the electrical installation from chassis number 0E477514

### 4. MODIFICATIONS TO THE ELECTRICAL INSTALLATION FROM CHASSIS NUMBER 0E477514

#### 4.1 OVERVIEW OF MODIFICATIONS TO THE ELECTRICAL INSTALLATION

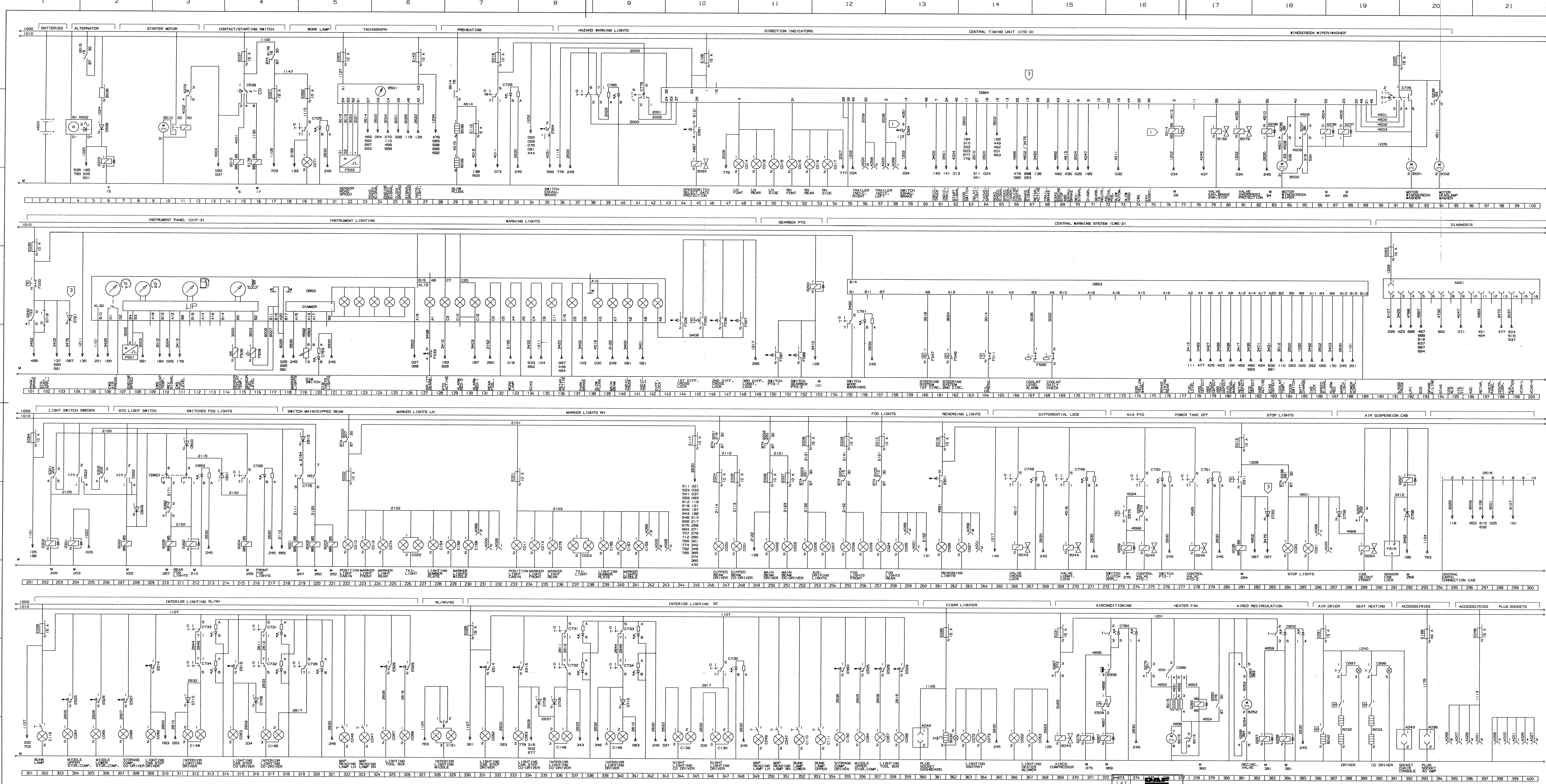
##### Modification/Chassis numbers

Electrical system	From chassis number	Modification	See sub-diagram no.
Starting circuit	0E477514	Starter lock relay (G372) added	1
Converter/radio	0E514800	New converter added	35
Automatic windows/ Central door locking/ Roof hatch	0E525147	Modifications to software of door locking unit (D862)	36
Connector sockets FT, diagnostic connector, alarm connector	0E525239	Overview of 15-pole connector added	42
Connector sockets FA, diagnostic connector, alarm connector	0E525239	Overview of 15-pole connector added	43
AGS	0E527422	Timer unit mounted in lubrication pump housing	27
ECAS 3	0E527422	Fuse E051 added	48
Auxiliary heating	0E527422	Subdiagram number changed to 40A.	40A
Auxiliary heating	0E527422	Subdiagram number changed to 40B and pins 10 and 11 on timer unit (E581) connected	40B
Auxiliary heating	0E527422	Pins 10 and 11 on timer unit (E581) connected	46
Front and rear fog lights	0E536161	Connection of front and rear fog lights modified	11

**4.2 CIRCUIT DIAGRAM 1316630/24-29**

This page provides room for your own notes on the circuit diagram.

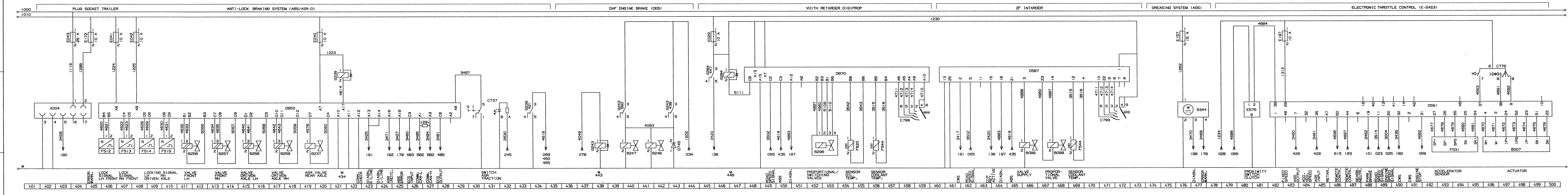
Lined area for notes on the circuit diagram, consisting of 20 horizontal lines.



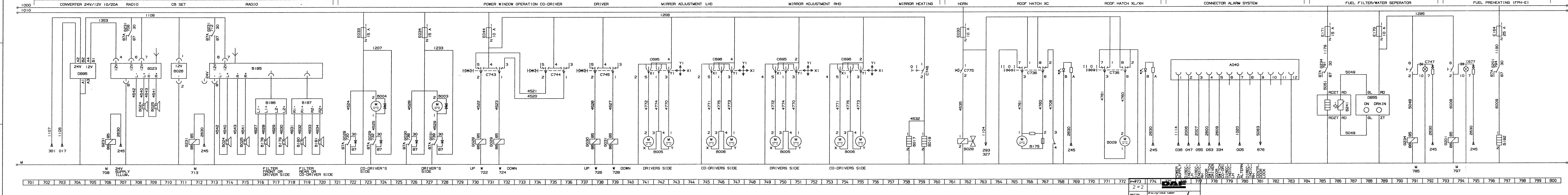
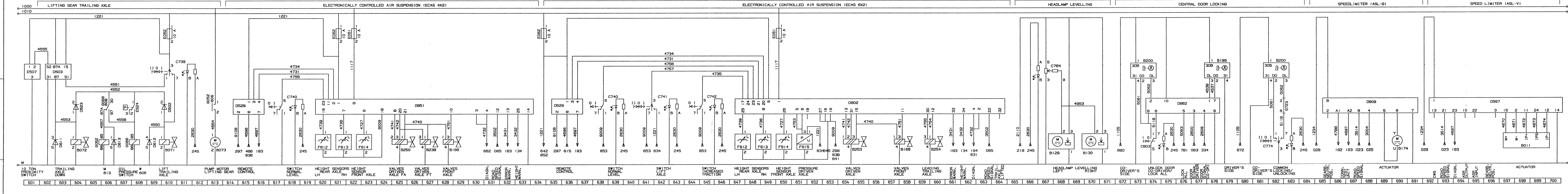
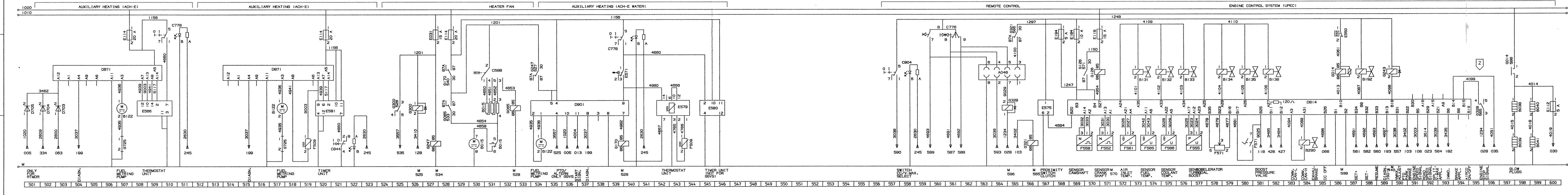
OPMERKING/note  
 DE FUNCTIES GLOEIEN, MOTORREM EN MOTORSTOP NIET VAN TOEPASSING IGV UPEC.  
 the functions pre heating, engine brake and stop are not applied with the UPEC system.

OPMERKING/note  
 BIJ UPEC ADER 4602 OP PIN 13 VAN DE CTE AANGESLOTEN, DIODES D721, D722 EN ADER 3475 NIET AANGESLOTEN.  
 if UPEC wire 4602 connected to pin 13 of the CTU diode D721, D722 and wire 3475 are not connected.





OPMERKING/note  
INDIEN GEEN OPDRAAG APPLICATIE if no body builders application  
ADER 1234 MET PIN B15 VAN connect wire 1234 directly to  
UNIT D814 VERBINDEN. pin B15 of unit D814.



### 4.3 OVERVIEW OF BASIC CODE NUMBERS IN CIRCUIT DIAGRAM 1316630/24-29

Column 1 : Basic code number  
 Column 2 : Description  
 Column 3 : Number on search bar of  
 circuit diagram  
 1316630/13-23

Column 1	Column 2	Column 3
A000	(Semi-)trailer socket (7-pin)	56/57/231/243/287/399
A001	Rear fog light back-up light socket (7-pin)	260/264/397/399
A004	ABS FA socket (7-pin)	404
A007	24V socket (2-pin)	395
A021	Diagnostic socket (16-pin)	191
A026	Superstructure side-lights (4-pin)	232/243/396/400
A027	Accessory socket (4-pin)	400
A038	Accessory socket (2-pin) 40A	394
A040	Alarm system socket	776
A042	Dashboard socket (2-pin)	360
A043	Chair console socket on driver's side (2-pin)	392
A046	Connector for the body builder for remote control connection	563
A058	(Semi-)trailer socket (15-pin)	57/58/231/242/259/263/286/395/398
A500	Batteries (2)	2
A502	Generator of integrated voltage regulator	4
B000	Windscreen-wiper motor	84
B001	Windscreen-wiper pump motor	92
B002	Headlight-washer pump motor	94
B003	Electric motor for window control, driver's side	728
B004	Electric motor for window control, co-driver's side	724
B005	Left-hand mirror adjustment motor	741/750
B006	Right-hand mirror adjustment motor	745/754
B007	Vehicle/engine speed regulator motor E-gas	496
B009	Roof hatch motor	772
B010	Starting motor	8/11
B011	Electric motor for speed limiter	697
B015	4-speed heater fan	376/378/530/531
B017	Mirror heating, driver's side	758
B018	Mirror heating, co-driver's side	759
B023	Radio	707
B024	Left-hand loudspeaker	708/714
B025	Right-hand loudspeaker	709/715
B026	Citizen Band	711
B028	Air horn	762
B030	Cigarette lighter, driver's side	362
B032	Seat heating, driver's side	388
B033	Seat heating, co-driver's side	390
B036	Resistor, alternator, D+	6
B038	Glow filament	29/598
B039	Glow filament	29/598
B040	Glow filament	599
B041	Glow filament	599

Column 1	Column 2	Column 3
B042	Air dryer element heating	386
B043	Air-conditioning compressor	369
B071	Lifting-gear lifting valve	610
B072	Lifting-gear lowering valve	604
B073	Lifting-gear motor pump	613
B079	Valve single-H-safety	81
B088	Intarder valve, proportional	468
B089	Intarder valve, air supply	466
B122	Fuel metering pump for auxiliary heating, Eberspächer	507/517/534
B129	Electric motor for left-hand headlight-height adjustment	668
B130	Electric motor for right-hand headlight-height adjustment	670
B131	Magnetic valve pump unit/injector cylinder 1	573
B132	Magnetic valve pump unit/injector cylinder 2	575
B133	Magnetic valve pump unit/injector cylinder 3	576
B134	Magnetic valve pump unit/injector cylinder 4	579
B135	Magnetic valve pump unit/injector cylinder 5	580
B136	Magnetic valve pump unit/injector cylinder 6	582
B166	Valve, ECAS front axle	628/657
B174	Electric motor for speed limiter	690
B175	Roof panel motor Super Space Cab	766
B178	Left-hand loudspeaker	716
B179	Left-hand loudspeaker	718
B180	Right-hand loudspeaker	719
B181	Right-hand loudspeaker	720
B182	Fuel heater	797
B185	Radio	713
B186	Loudspeaker filter, driver's side	717
B187	Loudspeaker filter, co-driver's side	719
B192	Engine brake valve	79/588
B199	Central door locking, driver's side	678
B200	Central door-locking motor, co-driver's side F249 XH/XC	673/682
B237	ASC valve	419
B238	Valve ECAS driven axle, left/right, air supply (FT)	627
B241	Sensor for heating element fuel filter/water separator	785
B243	Axle locking differential control valve	266
B244	Inter-axle locking differential control valve	270
B245	PTO control valve	275
B246	PTO control valve	278
B247	Engine brake (DEB) valve	440
B248	Engine brake (DEB) valve	441
B250	Valve ECAS driven axle, left/right, air supply (FA)	625
B252	Recirculation valve	381
B253	Valve ECAS driven axle, left/right, air supply	654
B254	Valve ECAS trailing/leading axle lifting/lowering	659
B256	Left-hand front ABS valve	411
B257	Right-hand front ABS valve	413
B258	Left-hand rear ABS valve	415

# 5

## MODIFICATIONS TO THE ELECTRICAL INSTALLATION

95XF series Modifications to the electrical installation from chassis number 0E477514

Column 1	Column 2	Column 3
B259	Right-hand rear ABS valve	417
B290	Electro-pneumatic boost pressure valve	584
B293	Gearbox gate safety valve	45
B294	Switch-off cab suspension valve, front height control	289
B298	Switch-off cab suspension valve, back height control	452
B344	Electronic unit for automatic lubrication	476
B501	Compact tachograph	22
C000	Dipped beam, left	247
C001	Dipped beam, right	248
C002	Main beam, left	250
C003	Main beam, right	251
C006	High-beam headlight, left	252
C007	High-beam headlights, right	254
C008	Fog light, front left	255
C009	Fog light, front right	256
C010	Side-headlight, left	222
C011	Side-headlight, right	233
C012	Side-light, front left	223
C013	Side-light, front right	234
C014	Direction indicator lamp, front left	48
C015	Direction indicator lamp, front right	51
C016	Direction indicator lamp, left, side	50
C017	Direction indicator lamp, right, side	54
C018	Rear direction indicator, left	49
C019	Rear direction indicator, right	52
C020	Brake light, left	284
C021	Brake light, right	285
C022	Rear light, left	226
C023	Rear light, right	237
C024	Fog light, rear left	257
C025	Fog light, rear right	258
C026	Back-up light, left	261
C027	Back-up light, right	263
C046	Map-reading lamp, driver's side	322/349
C047	Map-reading lamp, co-driver's side	323/351
C052	Heater fan light, left	366
C053	Heater fan light, right	367
C062	Stepwell lighting, driver's side	309/331
C063	Stepwell lighting, co-driver's side	315/333
C064	Central upper storage compartment lighting	304/356
C065	Central lower storage compartment lighting	305
C066	Right-hand storage compartment lighting	307
C067	Left-hand storage compartment lighting	325/357
C068	Right-hand tool compartment lighting	326/358
C071	Work lamp	19
C072	Ashtray light, left	363
C073	Ashtray light, right	364
C074	Side-light, rear left	224
C075	Side-light, rear left	236
C110	Lower bunk reading lamp with switch	352



Column 1	Column 2	Column 3
C111	Upper bunk reading lamp with switch	353
C115	Bunk reading lamp with switch	302
C130	Red interior night light, driver's side	346
C139	Red interior night light, co-driver's side	344
C148	Interior lighting, driver's side 2 x 21W	317/336
C149	Interior lighting, co-driver's side 2 x 21W	312/339
C150	Left-hand storage compartment lighting	355
C151	Central interior lighting with switch	328
C154	Rear number plate light, left (trucks)	228
C155	Rear number plate light, right (trucks)	239
C156	First side-light left (trucks)	229
C157	First side-light right (trucks)	240
C158	Second side-light left (trucks)	230
C159	Second side-light right (trucks)	241
C539	Accessory start-contact switch	15
C588	Switch, 4-speed heater fan	377/531
C622	Switch, vehicle lighting and marker lights	204/207
C677	Fuel heater switch	794
C695	Switch for mirror adjustment, driver's side	743/751
C696	Switch for mirror adjustment, co-driver's side	747/755
C697	Switch for seat heating, driver's side	388
C698	Switch for seat heating, co-driver's side	390
C725	Work light switch	19
C726	Glow plug switch	32
C728	Front fog light switch	215
C731	Interior lighting switch, roof console (bunk control), co-driver's side F249 XC	317/337
C732	Interior lighting switch, roof console, co-driver's side F249 XC	317/337
C733	Interior lighting switch, roof console (bunk control), driver's side F249 XC	312/340
C734	Interior lighting switch, roof console, driver's side F249 XC	312/340
C735	Interior night lighting switch FG249 XC	319/347
C736	Roof panel switch F249 XL/XH/XC	766/771
C737	ASC-traction switch	430
C739	Lifting-gear switch	610
C740	Switch ECAS, normal level	617/638
C741	Switch ECAS axle lifting	641
C742	Auxiliary drive-off switch	645
C743	Switch for electric window control on co-driver's side (door on driver's side)	730
C744	Switch for electric window control on co-driver's side (door on co-driver's side)	735
C745	Switch for electric window control on driver's side (door on driver's side)	738
C746	Switch, mirror heating	759
C747	Control switch for fuel filter/water separator	791
C748	Axle locking differential control switch	266
C749	Inter-axle locking differential control switch	270
C750	PTO control switch	275
C751	PTO control switch	278

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## MODIFICATIONS TO THE ELECTRICAL INSTALLATION

95XF series Modifications to the electrical installation from chassis number 0E477514

Column 1	Column 2	Column 3
C760	Air-conditioning switch	372
C761	CWS switch, more warnings	155
C763	Potentiometer for instrument light dimming	119
C764	Potentiometer for headlight-height adjustment	667
C765	Hazard light switch (with LED search light)	38
C774	Central door locking switch	682
C775	Switch for direction indicator, main beam/dipped beam/horn	41/219/762
C776	Stalk switch	91/496/560
C778	Switch for auxiliary heating	510/540
C799	Switch for retarder	458/471
C802	Recirculation switch	383
C803	Central door locking switch	674
C804	Flexible vehicle speed limitation switch	557
C844	Switch for auxiliary heating	521
C863	Rear fog light switch	210
D503	Electronic unit for lifting gear	602
D529	Electronic unit for ECAS remote control	615/636
D587	Electronic unit for ZF intarder	472
D591	Electronic unit for E-gas 3	482
D597	Electronic unit for speed limiter for ASL-V	692
D600	Diode, rear fog light/dipped beam	211
D601	Diode for front and rear fog lights	214
D609	Diode for light switch	208
D610	Diode for main beam/dipped beam	219
D611	Diode for lifting gear lowering valve damping	603
D612	Diode for lifting gear lifting valve damping	609
D613	Diode for lifting gear relay pump damping	606
D622	Diode for lifting gear lifting lock	610
D623	Diode for lifting gear lowering lock	604
D668	Diode for generator safety (D+)	6
D703	Diode for switching off the auxiliary heating/door contact at driver's side	503
D704	Diode for switching off the auxiliary heating/door contact at co-driver's side	502
D705	Diode for switching off the auxiliary heating with running engine	501
D708	Diode for interior lighting, prevent feedback to co-driver's stepwell	316/335
D709	Diode for interior lighting, prevent feedback to co-driver's switch	336
D710	Diode for interior lighting, prevent feedback to driver's switch	312/340
D721	Diode for parking brake, prevent feedback	104
D722	Diode for brake lights, prevent feedback	283
D745	Diode for engine brake (DEB) valves	443
D758	Diode prevent feedback to CWS	292
D759	Diode prevent feedback to brake lights	287
D802	Electronic unit for ECAS-2	647
D809	Electronic unit for speed limiter for ASL-G	685
D814	Electronic unit ECS	569
D850	Electronic unit for ABS/ASC D-version	407

Column 1	Column 2	Column 3
D851	Electronic unit for ECAS-2 (4x2)	620
D852	Instrument panel DIP-3	105
D853	Electronic unit for CWS-2	155
D855	Electronic unit for water separator	788
D862	Electronic unit, central door locking	674
D870	Electronic unit for Voith retarder 133-2	448
D871	Electronic unit for auxiliary heating D3LC	509/520
D884	Electronic unit CTE-3	43
D895	Electronic unit for converter 24/12V	704
D901	Electronic unit for auxiliary heating Eberspächer Hydronic 10	535
E000	Fuse for side-light, rear left	222
E001	Fuse for side-light, rear right	233
E004	Fuse, dipped beam, driver's side	247
E005	Fuse for dipped lights indicator lamp, co-driver's side	248
E006	Fuse for main beam, driver's side	250
E007	Fuse for main beam indicator lamp, co-driver's side	251
E008	Fuse, spot lights	252
E009	Fuse, front fog lights	255
E010	Fuse, rear fog lights	257
E013	Fuse, brake lights	281
E016	Fuse, reversing lights	261
E019	Fuse for the control of glow plug/ CTE/ direction indicators/ engine brake	32
E023	Fuse for switch for cold start, tachograph, auxiliary heating programming clock	22
E025	Fuse, windscreen wiper, headlight washer	91
E026	Fuse, cigarette lighter	362
E027	Fuse for 24/12V converter	17
E028	Fuse, cab interior lighting	302/330
E029	Fuse for engine brake/retarders	446
E030	Fuse, horn	762
E031	Fuse for heater fan ITC unit	369/527
E033	Fuse, electric window control motor, co-driver's side	723
E034	Fuse, electric window control motor, driver's side	727
E035	Fuse for instruments and indicator lamps	101
E037	Fuse for contact switch	15
E040	Fuse, ABS	420
E041	Fuse, ABS	407
E042	Fuse, ABS	408
E043	Fuse, ABS, (semi-)trailer	404
E044	Fuse, mirror heating/adjustment	731
E048	Fuse, central power supply, (semi-)trailer	397
E051	Fuse for ECAS-1	622/650
E052	Fuse for ECAS remote control working light	19
E053	Fuse for ECAS diagnostic connector (16-pin)	191
E062	Fuse, lifting gear and ECAS	610/621/634
E084	Fuse, lighting	201
E091	Fuse, for air dryer element/fuel contamination separator	386
E108	Fuse for CTE-2/CTE-3	46

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## MODIFICATIONS TO THE ELECTRICAL INSTALLATION

95XF series

Modifications to the electrical installation from chassis number 0E477514

Column 1	Column 2	Column 3
E112	Fuse for glow indicator lamp	30/600
E114	Fuse, auxiliary heating Eberspächer	507/520/528
E117	Fuse for search light	245
E118	Fuse, relay for UPEC power supply	571
E143	Fuse for E-gas tachograph	27
E157	Fuse, automatic lubrication	476
E164	Fuse for fuel heater before contact	797
E168	Fuse for accessories/microwave	393
E170	Fuse for fuel filter/water separator control	789
E171	Fuse for fuel filter/water separator	785
E172	Fuse for ABS (semi-)trailer 10A	405
E184	Fuse UPEC	569
E194	Fuse for UPEC for the body builder	568
E197	Fuse for E-gas	483
E501	Control switch for back-up light	261
E507	Proximity switch for axle load protection of lifting-gear (10 tonnes)	601
E508	Thermal switch for air-conditioning compressor	372
E509	High / low pressure air-conditioning control switch	372
E511	Brake light control switch	281
E514	Control switch for stepwell/ interior lighting, door switch on driver's side	309/332
E515	Control switch for stepwell/interior lighting, door switch on co-driver's side	315/334
E524	Control switch for lifting-gear limit switch oil pressure	608
E525	Control switch for central upper storage compartment lighting	304/356
E526	Control switch for central lower storage compartment lighting	306
E527	Control switch for right-hand storage compartment lighting	308
E528	Control switch for left-hand storage compartment lighting	325/358
E529	Control switch for right-hand tool compartment lighting	326/359
E550	Control switch for glow filament temperature	586
E560	Control switch for left-hand storage compartment lighting	355
E561	Control switch of gearbox gate safety	45
E564	Engine brake control switch	35/59
E566	Control switch for thermostat for auxiliary heating Eberspächer (D1LC)	508
E570	Control switch for coupling/PTO N/10	273
E571	Control switch for auxiliary heating Thermo 90	540
E575	Clutch proximity switch	480/567
E579	Proximity switch for thermostat for auxiliary heating fan Eberspächer	542
E580	Proximity switch for timer for auxiliary heating fan Eberspächer	545
F000	Parking brake control switch	101



Column 1	Column 2	Column 3
F006	Control switch for differential lock, 1st differential	144
F007	Control switch for differential lock, 3rd differential	148
F011	Control switch for engine oil pressure	164
F033	Control switch for splitter signalling	127
F038	Control switch for differential lock, 2nd differential	147
F047	Control switch for steering system (1st circuit)	160
F048	Control switch for steering system (2nd circuit)	162
F050	Control switch for differential lock pressure (1st and 2nd differentials)	145
F087	Control switch for gearbox PTO	150
F088	Control switch for gearbox PTO	152
F501	Engine-speed sensor	107
F509	Cab temperature sensor of auxiliary heating	519/544
F512	Sensor for ABS blocking signal, front left	406
F513	Sensor for ABS blocking signal, front right	407
F514	Sensor for ABS blocking signal, left-hand drive axle	408
F515	Sensor for ABS blocking signal, right-hand drive axle	410
F531	Sensor for accelerator pedal E-gas	492
F533	Vehicle-speed sensor (4-pin), 1st	22
F535	Sensor for engine coolant temperature	115
F544	Sensor for coolant temperature of secondary retarder	456/469
F552	Crankshaft position sensor	571
F555	Boost pressure sensor	576
F558	Camshaft position sensor	569
F561	Inlet-air temperature sensor	572
F565	Fuel temperature sensor	574
F566	Sensor for engine coolant temperature	575
F571	Sensor for accelerator pedal ECS	578/581
F585	Sensor for engine coolant level	167
F608	Sensor for fuel level	116
F612	Height sensor, ECAS left-hand rear axle	620/647
F613	Height sensor, ECAS right-hand rear axle	621/649
F614	Height sensor, ECAS front axle	623/650
F615	Pressure sensor, ECAS driven axle, left/right	651
F616	Cab locking sensor	291
F620	Sensor for oil temperature in Voith retarder 133-2	454
G000	Relay, width/marker/tail lights	207/222
G001	Relay, dipped beam	219/247
G002	Relay, main beam	220/250
G003	Relay, spotlights	221/252
G004	Relay, front fog light	215/255
G005	Relay, rear fog light	210/257
G014	Glow-filament relay	29/76/586/598
G015	Contact relay	5/15
G028	Relay for electric window control, co-driver's side	722/730
G029	Relay for electric window control, co-driver's side	724/732
G030	Relay for electric window control, driver's side	726/738

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## MODIFICATIONS TO THE ELECTRICAL INSTALLATION

95XF series Modifications to the electrical installation from chassis number 0E477514

Column 1	Column 2	Column 3
G031	Relay for electric window control, driver's side	728/739
G036	Relay for brake light, 1st	281/284
G052	Lifting-gear motor relay	606/613
G065	Heater fan relay	528/533
G066	Lifting-gear takeover relay	606/608
G126	Relay for UPEC power supply	570/571
G170	Auxiliary-heating fan relay	528/540
G178	Relay, accessories	16/17
G201	Relay for fuel heater EFPH	794/797
G231	Radio lighting relay (12V)	706/708/712/713
G234	Relay for window control, fuel filter/water separator	785/791
G236	Windscreen wiper microrelay (speed 1 or 2)	84/86
G237	Windscreen wiper microrelay (automatic zero position)	85/88
G238	Headlight-washer microrelay	83/94
G239	Relay for disengaging third brake	421/434
G240	PTO/engine speed microrelay	101/153
G243	Engine brake (DEB) microrelay	438/440/443/590
G247	Auxiliary-heating fan relay	527/534
G257	Recirculation valve microrelay	381/383
G258	Recirculation valve microrelay	381/384
G259	N-10-PTO control relay	273/275
G267	Air-conditioning microrelay	369/372
G279	Air-conditioning microrelay	371/375
G280	Heater fan relay	378/380
G284	Microrelay for Voith retarder 133-2	446/447
G297	Cab air suspension relay	289/292
G300	Microrelay for auxiliary heating, Thermo 90	525/526
G301	Microrelay, light D+	203/204
G302	Microrelay for Swedish lighting	202/206
G321	UPEC connector relay for the body builder	565/566
G328	UPEC engine stop relay	565/596
G372	Starting motor lock relay	6/12
G392	Rear fog light transfer microrelay	210/212
G516	Central earth cab co-driver's side	294
G718	Connection parking brake/PTO	102
G723	Connection for central door locking	683
G725	Connection for auxiliary heating D3LC	507/517

**4.4 SUBDIAGRAMS OF CIRCUIT DIAGRAM 1316630/24-29**

- 1 Charging circuit/starting motor/  
contact switch /  
starter switch
- 11 Front and rear fog lights
- 27 AGS
- 35 Converter/radio
- 36 Automatic windows / central door  
locking /roof hatch
- 40A Auxiliary heating Eberspächer  
(with thermostat unit)
- 40B Auxiliary heating Eberspächer  
(with timer)
- 42 Connector sockets FT, diagnostic  
connector, alarm connector
- 43 Connector sockets FA, diagnostic  
connector, alarm connector
- 46 Auxiliary heating Eberspächer  
Hydronic 10
- 48 ECAS 3

## 1. CHARGING CIRCUIT / STARTING MOTOR / CONTACT/STARTER SWITCH

### CONTACT CIRCUIT

If a connection is made between contacts 1 and 6 with contact/starter switch C539, a voltage is applied through fuse E037, switch C539 and wire 1130 to contact 85 of relay G178.

Because relay G178 is activated, a connection is made between contacts 30 and 87 and a voltage is applied through fuse E037, wire 1100, the contacts 30 and 87 of relay G178, wire 1147, and through fuses E027 and E052 to the electronic unit of converter 24 V/12V (D525) and the work light switch (C725).

If a connection is made between contacts 1 and 4 with contact/starter switch C539, a voltage is applied through fuse E037, wire 1100, switch C539 and wire 4001 to contact 85 of relay G015.

As a result, relay G015 is activated, so that wire 1000 is connected to wire 1010. Now voltage is applied to the supply after contact circuit (connection point 1010) and, through resistor B036 and diode D668, to the connection points D+ of the alternator (A502) and connection point 1 of relay G372.

### START CIRCUIT

When the engine is started, a connection is made between the contacts 1 and 2 with contact/starter switch C539. The voltage now runs from the batteries through wire 1000, fuse E037, connection 1–2 of the contact/starter switch, wire 4004 and contacts 3 and 4 of relay G372, wire 4002, to connection point 50 of starting motor B010. The coil of the starting motor relay is now activated, so that a voltage is supplied to the starting motor, as a result of which the motor will start operating.

As soon as the engine is running, the voltage on connection D+ of the alternator will increase to the adjustment voltage (+ board voltage). This voltage will cause the coil of relay G372 to be energised. It will break the connection between 3 and 4 and connects 3 to 5. As a result, wire 4002 is disconnected from wire 4004. In this situation it is no longer possible to start.

**CHARGING CIRCUIT**

If the contact is activated, voltage is applied to resistor generator B036 and diode D668 through wire 1010.

The other side of the diode is connected to the D+ connection of the alternator through wire 1020.

The D+ connection is connected to earth through the integrated voltage regulator in the alternator A502. This will cause a small current to run, causing a magnetic field in the alternator.

After starting, the voltage on clamps B+ and D+ will increase to approx. 29 V. This is caused by the fact that the regulator disconnects the earth connection in the regulator and connects it to the battery voltage. This voltage is also applied to wire 1020, so that the difference of potential over the diode becomes 0 V. The magnetic field now disappears, so that the generator is not activated for a short time. This will reduce the voltage on outputs B+ and D+.

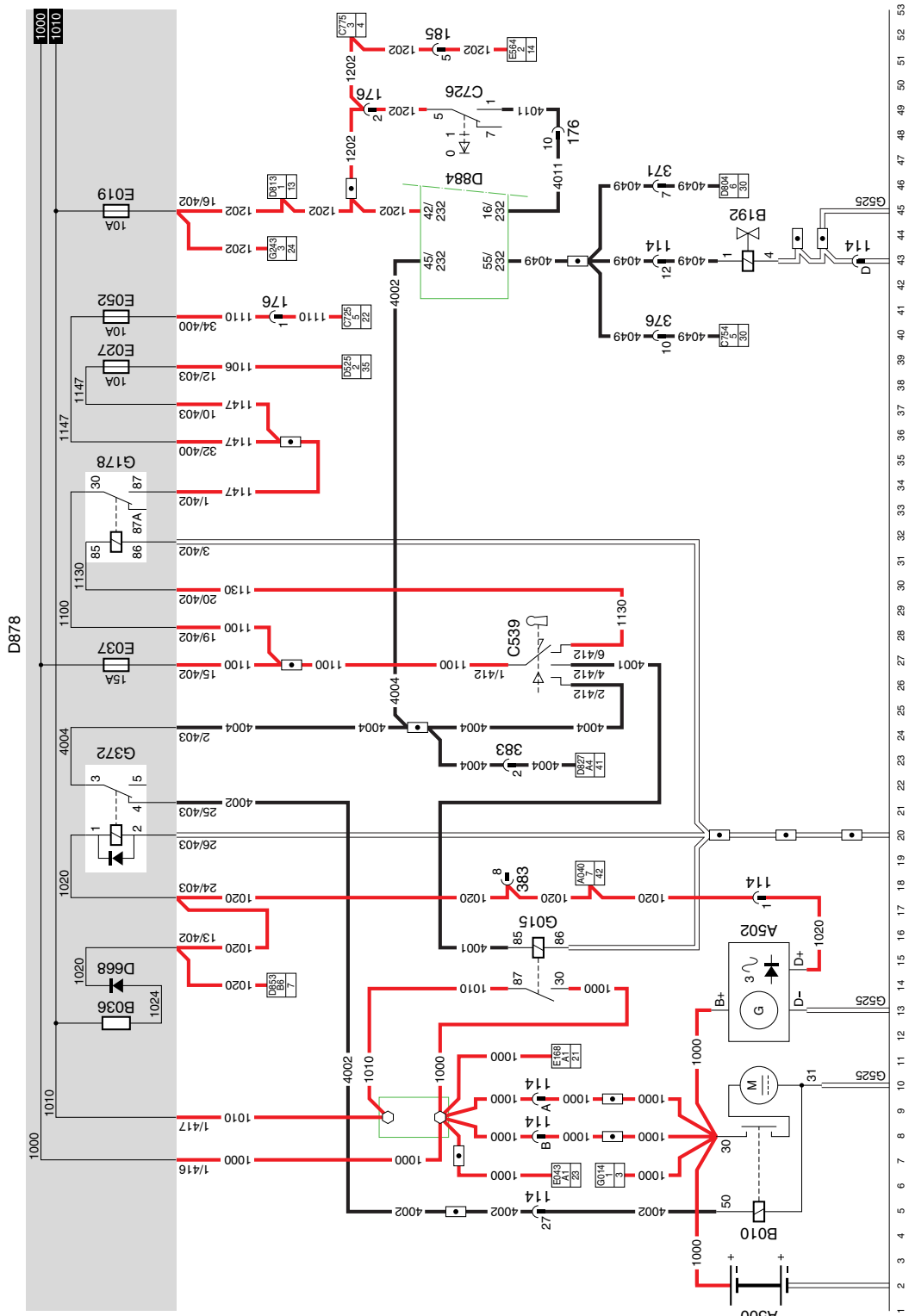
The regulator is activated if the voltage drops below 27.6 V. This way, the generator voltage supply remains relatively constant. The batteries are fed by generator output B+.

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# MODIFICATIONS TO THE ELECTRICAL INSTALLATION

95XF series

Modifications to the electrical installation from chassis number 0E477514



1

1316630/24-29

EL000343

## 11. FRONT AND REAR FOG LIGHTS

There are three possible situations:

- Rear fog lights only.
- Front fog lights only.
- Front and rear fog lights.

### REAR FOG LIGHTS (standard)

The rear fog lights can only be activated in combination with the dipped beam.

If the lighting switch (C622) is switched into the "dipped beam" position (connection between the contacts 2 and 4), a voltage is applied through wire 1101, switch C622, wire 2110 and the diode for rear fog light/dipped beam (D600), to switch rear fog lights with contact 3 of transfer relay (C863). A voltage is also applied to contact 6 of switch C863 and to contact 5 of the front fog light switch (C728) through the diode for the light switch (D609) and wire 2100.

The rear-light/side light (G000) is energised. This will cause the contacts 30 and 87 to be closed. A voltage is applied to the position, marker and tail lights on the left and right-hand sides of the vehicle respectively through the fuse for the rear left side-light (E000) and the fuse for the rear right side-light (E001).

If switch C863 is engaged (connection between contacts 3 - 1 and 6 - 2), a voltage is applied to connection point 1 of the rear fog light transfer microrelay (G392) and to connection point 85 of the rear fog light relay (G005). Both relays are energised.

A voltage is applied to the left and right rear fog lights through the rear fog lights fuse (E010) and contacts 30 and 87 of relay G005. The rear fog lights will now come on.

Microrelay G392 ensures that a connection is made between contact 2 of switch C863, through wire 2171, contacts 3 - 5 of relay G392 and wire 2150 at connection point 85 of the rear fog light relay G005. This relay will remain activated until the connections 3 - 7 and 6 - 8 are made for a short time with the aid of switch G863. That is when the coil of relay G392 will be de-energised. The connection between contacts 3 - 5 will be broken at the same time, so that G005 will be de-energised as well. The rear fog lights will now go out.

**FRONT FOG LIGHTS (option)**

The front fog lights can be activated in combination with town light and with the dipped beam.

Fog lights in combination with town light.

If the lighting switch C622 is switched into "town light" position (connection between contacts 2 and 1), a voltage is applied to contact 6 of switch C863, to contact 5 of the front fog light switch (C728) and to connection point 85 of relay G000 through wire 2100.

Relay G000 is activated. This will cause the contacts 30 and 87 to be closed. A voltage is applied to the position, marker and tail lights on the left and right-hand sides of the vehicle respectively through fuses E000 and E001.

If switch C728 is engaged, the voltage will be applied to connection point 85 of the front fog light relay (G004) through the contacts 5 - 1 of switch C728 and wire 2140. The coil will be energised, and the contacts 30 and 87 will close as a result. A voltage is now applied to the front fog lights through wire 1000, the front fog lights fuse (E009), wire 2141, contacts 30 and 87 and wire 2142.

**Front and rear fog lights in combination with the dipped beam**

If the lighting switch C622 is switched into "dipped beam" position (connection between contacts 2 and 4), a voltage is applied to contact 3 of switch C863, to contact 5 of switch C728 and to connection point 85 of relay G000 through diode D609. An identical voltage is applied to connection point 6 of switch C863 and connection point 5 of switch C728 through wire 2100.

The operation is the same as the operation described above, however, both switches need to be engaged.

**VARIANTS****Location**

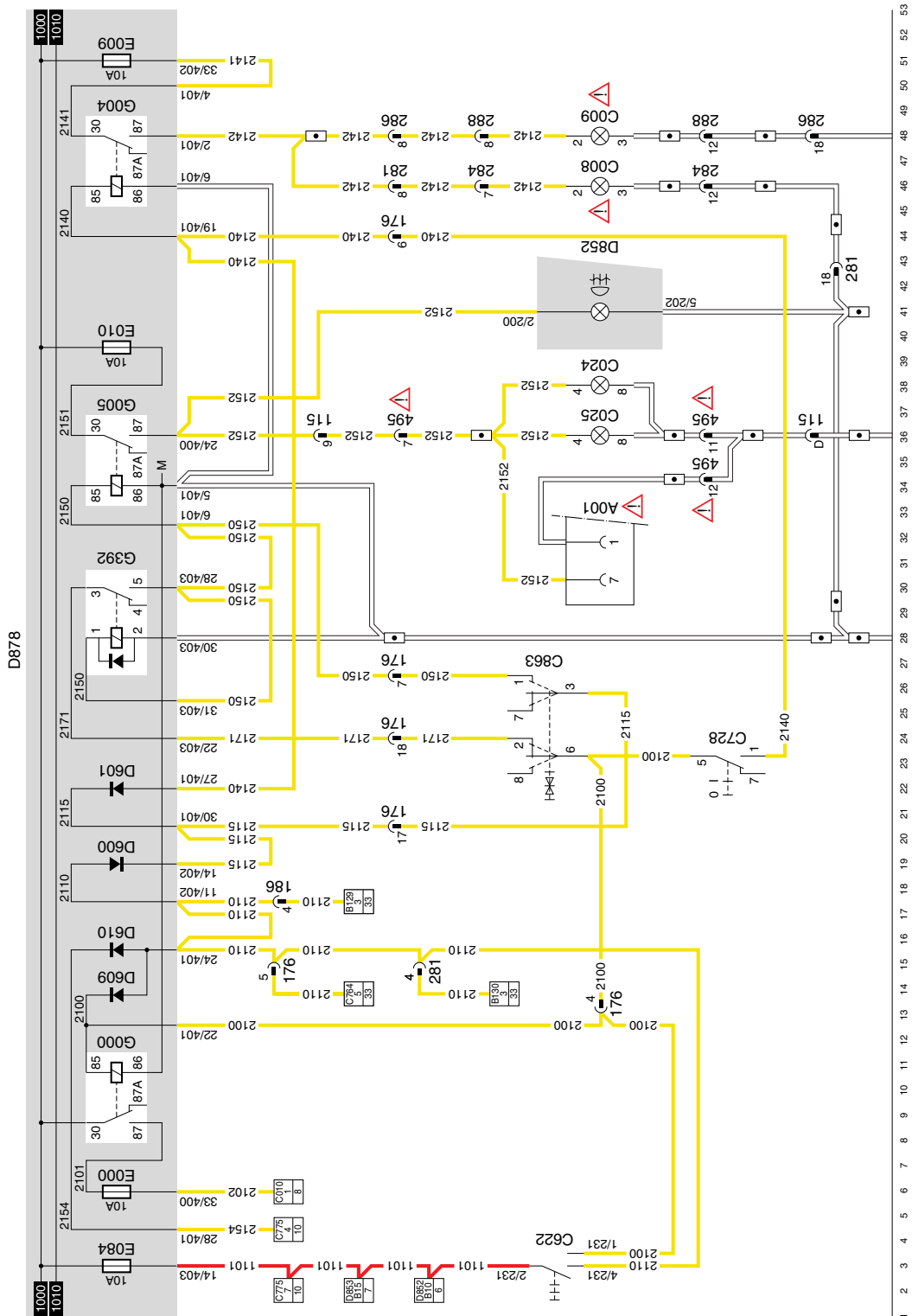
27

29,33 Connector 495 is only used in the case of an FA. Connector 493 is used in the case of an FT.

Connector A001 is only used in the case of an FA. Connector A003 is used in the case of an FT.

43,48 The left and right front fog lights (C008 and C009 respectively) are **not** standard.





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1316630/24-29

EL000392

# 5

## MODIFICATIONS TO THE ELECTRICAL INSTALLATION

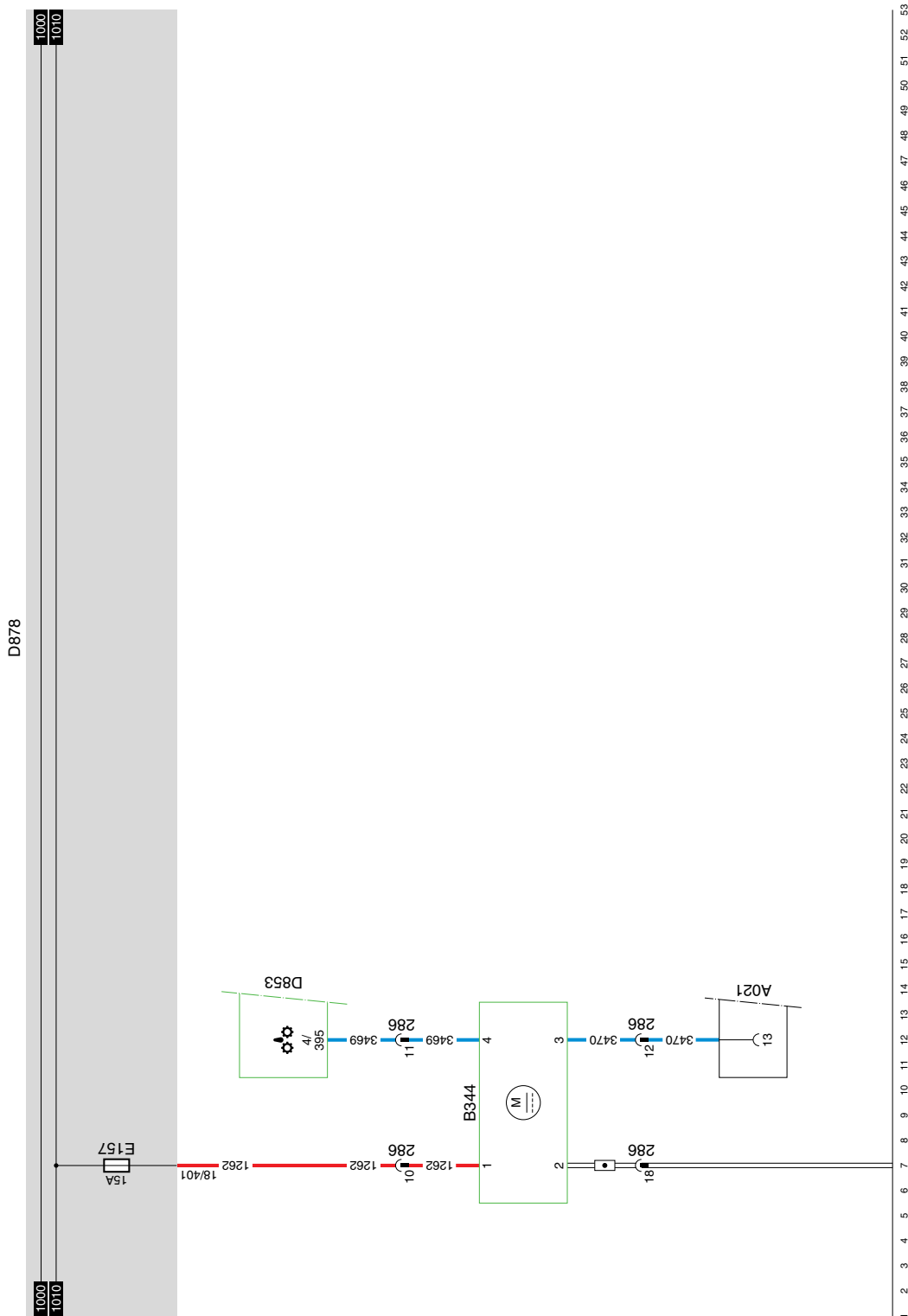
**95XF** series

Modifications to the electrical installation from chassis number 0E477514

### 27. AGS

SEE THE SYSTEM MANUAL FOR MORE INFORMATION.

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1316630/24-29

EL000344

### 35. CONVERTER/RADIO

The following description of operation and installation is merely advisory.

Read the manufacturer's installation instructions supplied with the radio.

For more information, see chapter 6: "Connecting the radio".

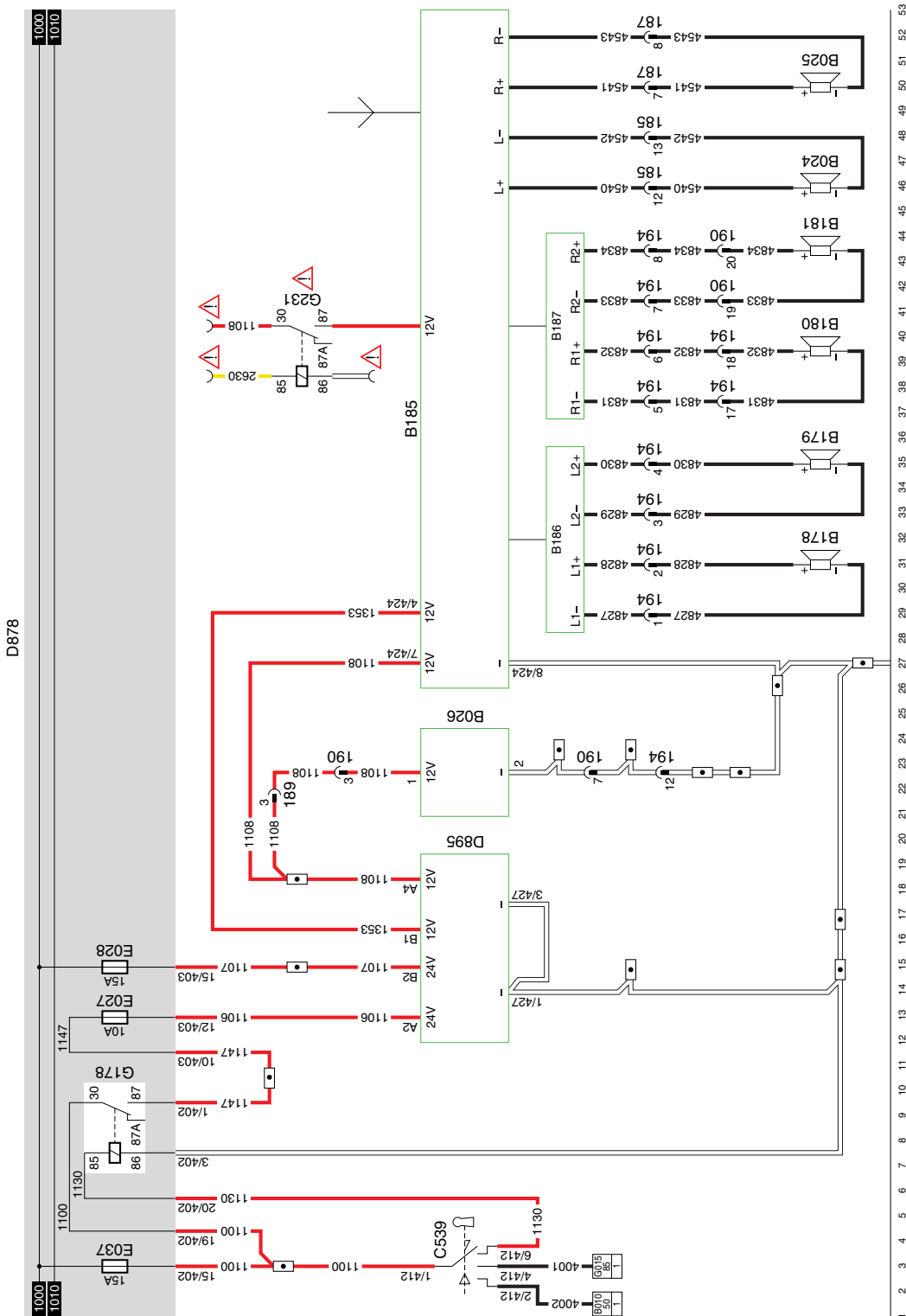
The radio is equipped with one antenna connection and two loudspeaker outputs used to connect loudspeakers B024 and B025. Two filters for the loudspeakers can also be connected to the radio. To each of these filters (B186 en B187) two loudspeakers can be connected (B178, B179 and B180 and B181).

The 12V output (pin A4) of the converter (D895) can also be connected to a CB transmitter (B026) to provide it with a supply voltage.

#### VARIANTS

##### Location

- 37 Wire No. 2630. This wire should be connected to one of the search light switch wires.
- 41 Wire No. 1108. This wire should be connected to wire 1108 coming from the 24/12V converter.



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35

1316630/24-29

EL000341

**36 AUTOMATIC WINDOWS/ROOF HATCH/CENTRAL DOOR LOCKING****ELECTRIC WINDOW CONTROL, DRIVER'S SIDE (OPENING)****(Switch in door panel, driver's side)**

If the electric window control switch (C745) is activated and a connection is made (contacts 2 and 4), relay G030 will be activated through fuse E044 and switch C745 (wire 4526). As a result, a supply voltage is applied through fuse E034 to connection point 2 of the motor (B003). The other connection point (1) is connected to earth through relay G031. The motor will start operating counter-clockwise and the window on driver's side will open.

**ELECTRIC WINDOW CONTROL, DRIVER'S SIDE (CLOSING)****(Switch in door panel, driver's side)**

If the electric window control switch (C745) is activated and a connection is made (contacts 4 and 1), relay G031 will be activated through fuse E044 and switch C745 (wire 4527). As a result, a supply voltage is applied through fuse E034 to connection point 1 of the motor (B003). The other connection point (2) is connected to earth through relay G030. The motor will start operating clockwise and the window on driver's side will close.

**ELECTRIC WINDOW CONTROL, CO-DRIVER'S SIDE (OPENING)****(Switch in door panel, driver's side)**

If the electric window control switch (C743) is activated and a connection is made (contacts 2 and 4), relay G028 will be activated through fuse E044 and switch C743 (wire 4522). As a result, a supply voltage is applied through fuse E033 to connection point 2 of the motor (B004). The other connection point (1) is connected to earth through relay G029. The motor will start operating counter-clockwise and the window on co-driver's side will open.

**ELECTRIC WINDOW CONTROL,  
CO-DRIVER'S SIDE (CLOSING)****(Switch in door panel, driver's side)**

If the electric window control switch (C743) is activated and a connection is made (contacts 4 and 1), relay G029 will be activated through fuse E044 and switch C743 (wire 4523). As a result, a supply voltage is applied through fuse E033 to connection point 1 of the motor (B004). The other connection point (2) is connected to earth through relay G028. The motor will start operating clockwise and the window on co-driver's side will close.

**ELECTRIC WINDOW CONTROL, CO-DRIVER'S  
SIDE****(Switch in door panel, driver's side)**

The automatic window control using C744 on the co-driver's side is similar to the automatic window control on the driver's side. When switch C744 (connection between contacts 4 and 2) is engaged, relay G028 is activated through switch C743 (contacts 5 and 2) and the motor (B004) will open the automatic window. When switch C744 (connection between contacts 4 and 1) is engaged, relay G029 is activated through switch C743 (contacts 3 and 1) and the motor will operate clockwise and close the automatic window.

The electric window control will only function if the contact is switched on.

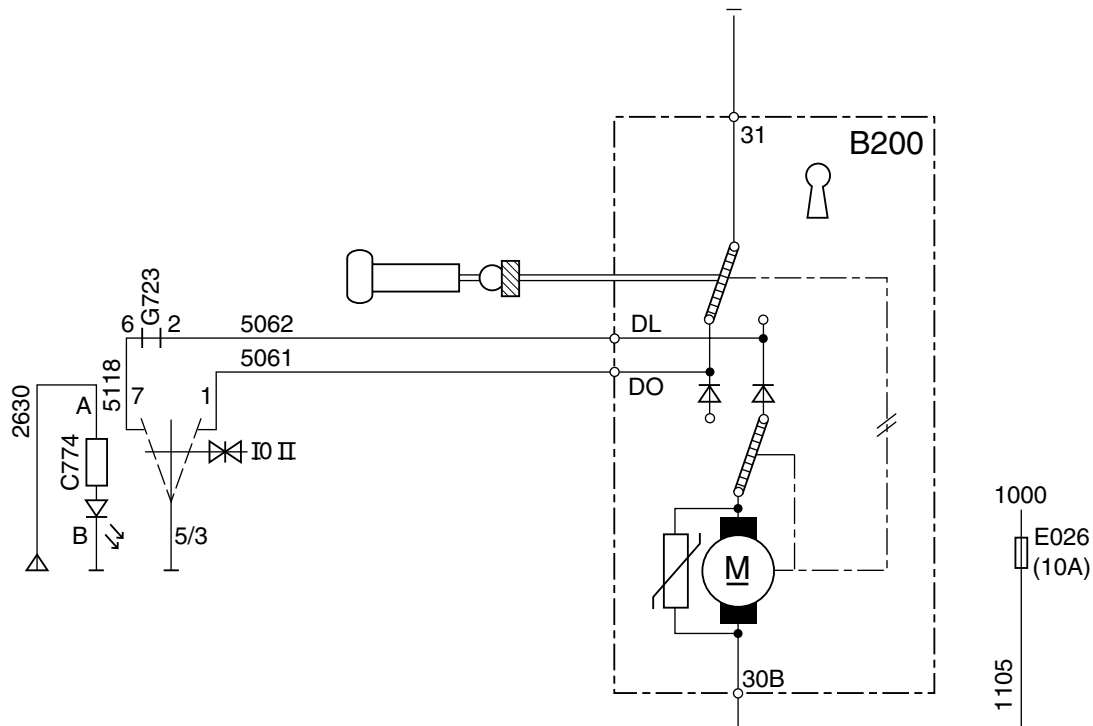
**ROOF HATCH, OPENING**

If the roof-hatch switch (C736) is used to make a connection between contacts 2 and 6, and therefore between contacts 1 and 3, a voltage is applied to pin 1 of the roof-hatch motor (B175) through fuse E030, switch C736 and wire 4761. The roof hatch will open.

**ROOF HATCH, CLOSING**

If the roof-hatch switch (C736) is used to make a connection between contacts 8 and 6, and therefore between contacts 7 and 3, a voltage is applied to pin 2 of the roof-hatch motor (B175) through fuse E030, switch C736 and wire 4760. The roof hatch will close.

## CENTRAL DOOR LOCKING, CO-DRIVER'S SIDE (STANDARD)



K100851

**Purpose:**

To lock the co-driver's side door using button/key or switch (C774). The driver can lock/unlock the co-driver's side door from behind the steering wheel.

**Central door locking motor, co-driver's side (B200):**

The motor has two (internal) switches, i.e.:

- a "stroke-end" switch (always reverses at end of stroke) (lower drawing);
- a switch which is mechanically connected to the locking button (always reverses at the beginning of the upward or downward movement of the locking button) (upper in drawing).

**Note:**

A mechanical connection consisting of a linkage mechanism between the cylinder lock and the locking button will remain.



**Starting position: door unlocked (see drawing).**

- The door is locked using the button/key. The mechanical linkage reverses the upper switch directly. As a result, a current will flow through the fuse (E026), the connection (30b), the motor, the lower switch and the upper switch through connection 31 to earth. The mechanical linkage between the motor and unlock button will move the button down.

Having reached the lower position, the "stroke end" switch reverses.

The same occurs during unlocking. The direction of rotation of the motor is the same. The position of the switches is different, however. The power between motor/lock button is transmitted through a lever/connecting rod mechanism.

- The door is locked using the switch (C774). If the spring-loaded switch (C774) makes a connection between connections 5/3 and 7, point DL of (B200) is connected to earth. One brief moment is sufficient to start the motor moving. Because there is a mechanical linkage between the motor and the lock button, the upper switch will reverse immediately afterwards. A current will flow until the "stroke-end" switch breaks the circuit.
- The door is unlocked using the switch (C774). To this end, connection DO is briefly connected to earth. The action is the same, except that the switches resume their other position once the locking button has moved upwards.

**Variants:**

- 36 If the standard version is installed, the driver's side central door locking (B199) and the central door locking electronic unit (D862) will also not be installed. In that case cascade G723 is placed on connector 394, and switch C774 replaces switch C803.

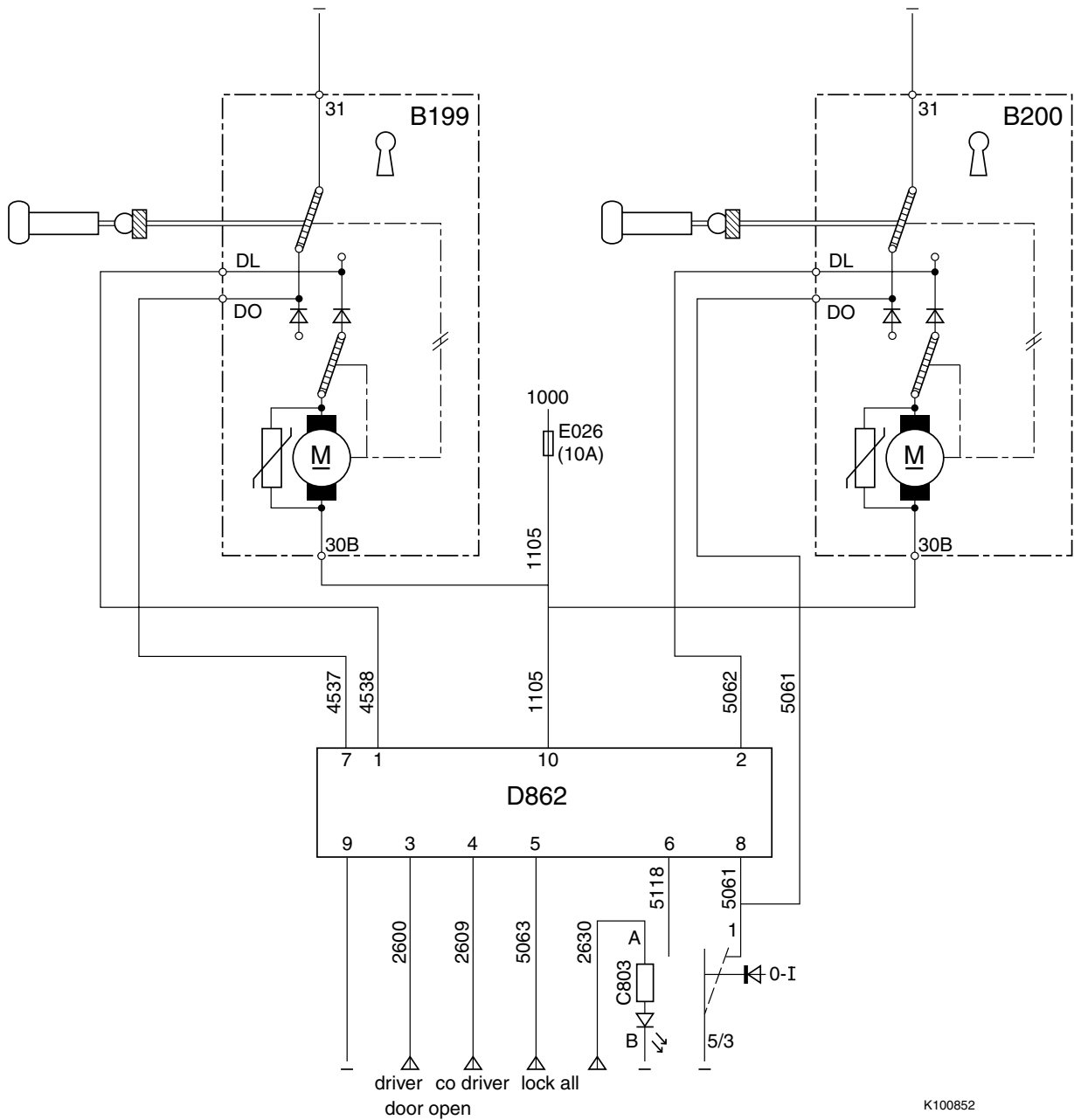
# 5

## MODIFICATIONS TO THE ELECTRICAL INSTALLATION

95XF series

Modifications to the electrical installation from chassis number 0E477514

### CENTRAL DOOR LOCKING (OPTION)



K100852

#### Purpose:

- To automatically lock both doors if one of the doors is locked using the key/button.
- To automatically lock both doors using the alarm-system remote control (if available).
- If one of the two doors is unlocked, only this door will open while other door remains locked.

**Description of central door locking, driver's side (B199) and central door locking motor, co-driver's side (B200).**

The description of both components is similar to description B200 as above.

**Starting position: both doors locked.**

Unlock the co-driver's side door using the key. This is the same as the standard version. The other door remains locked.

Unlock the co-driver's side door using switch C803.

If switch C803 is engaged (connection between pin 1 and 5/3), connection DO of component B200 is connected to earth. B200 is activated in the same way as in the standard version.

**Starting position: both doors unlocked.**

Driver's side door locked using key/button. The action is similar to that in the standard version; in this case, however, unit D862 will measure an earth signal through connection DL (wire 4538) to pin 1. D862 now connects pin 2 to earth, also activating B200. The co-driver's side door is now also locked.

Locking co-driver's side door using key/button. The operation is the same as the operation described above. However, unit D862 now measures an earth signal at pin 2 and will, therefore, connect pin 1 of component B199 to earth. The driver's side door is now also locked.

**Note:**

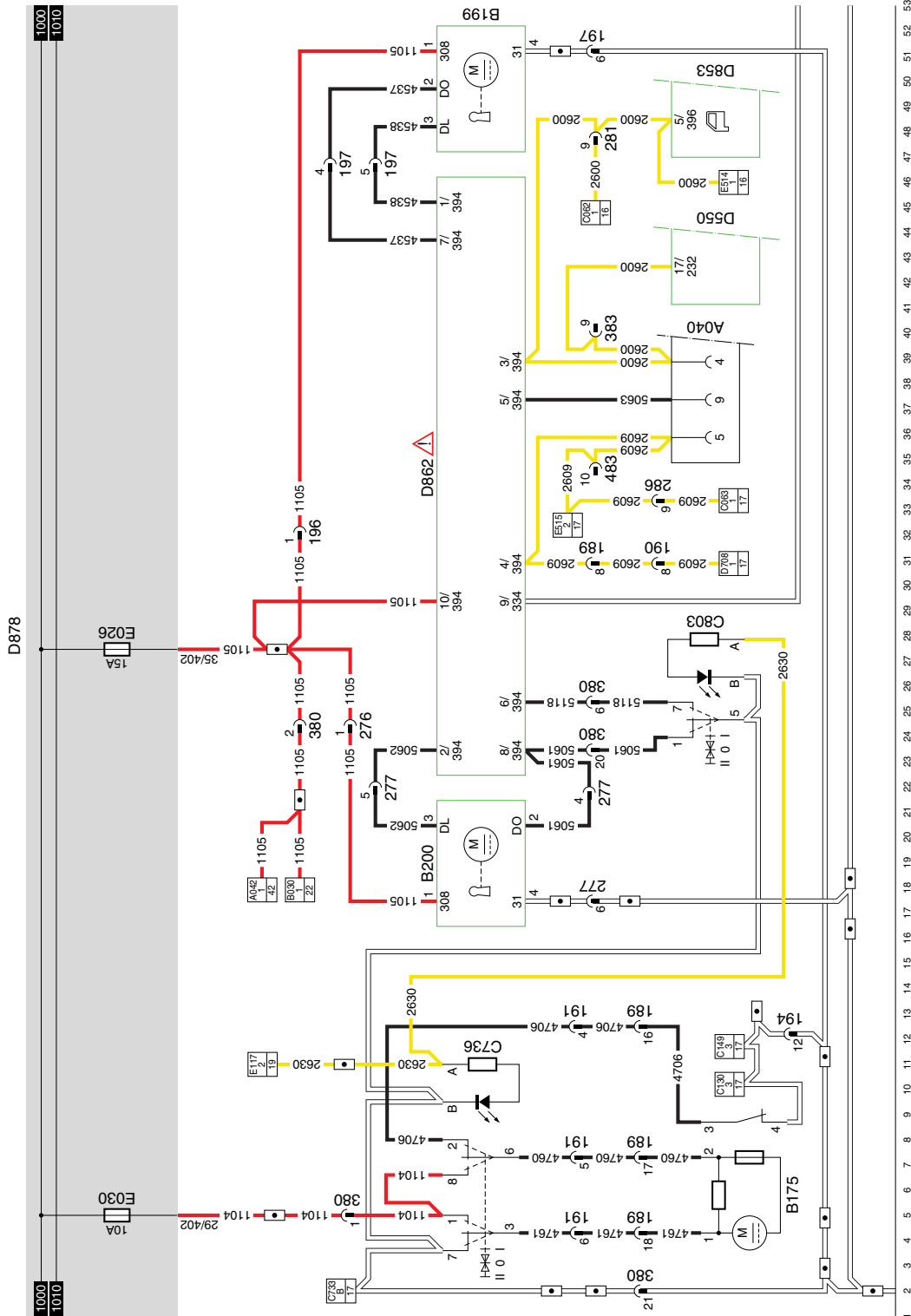
If one or both door switches sends a positive signal to pin 3 or 4 of unit D862, the accompanying components B199 and/or B200 will not be activated.

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# MODIFICATIONS TO THE ELECTRICAL INSTALLATION

95XF series

Modifications to the electrical installation from chassis number 0E477514

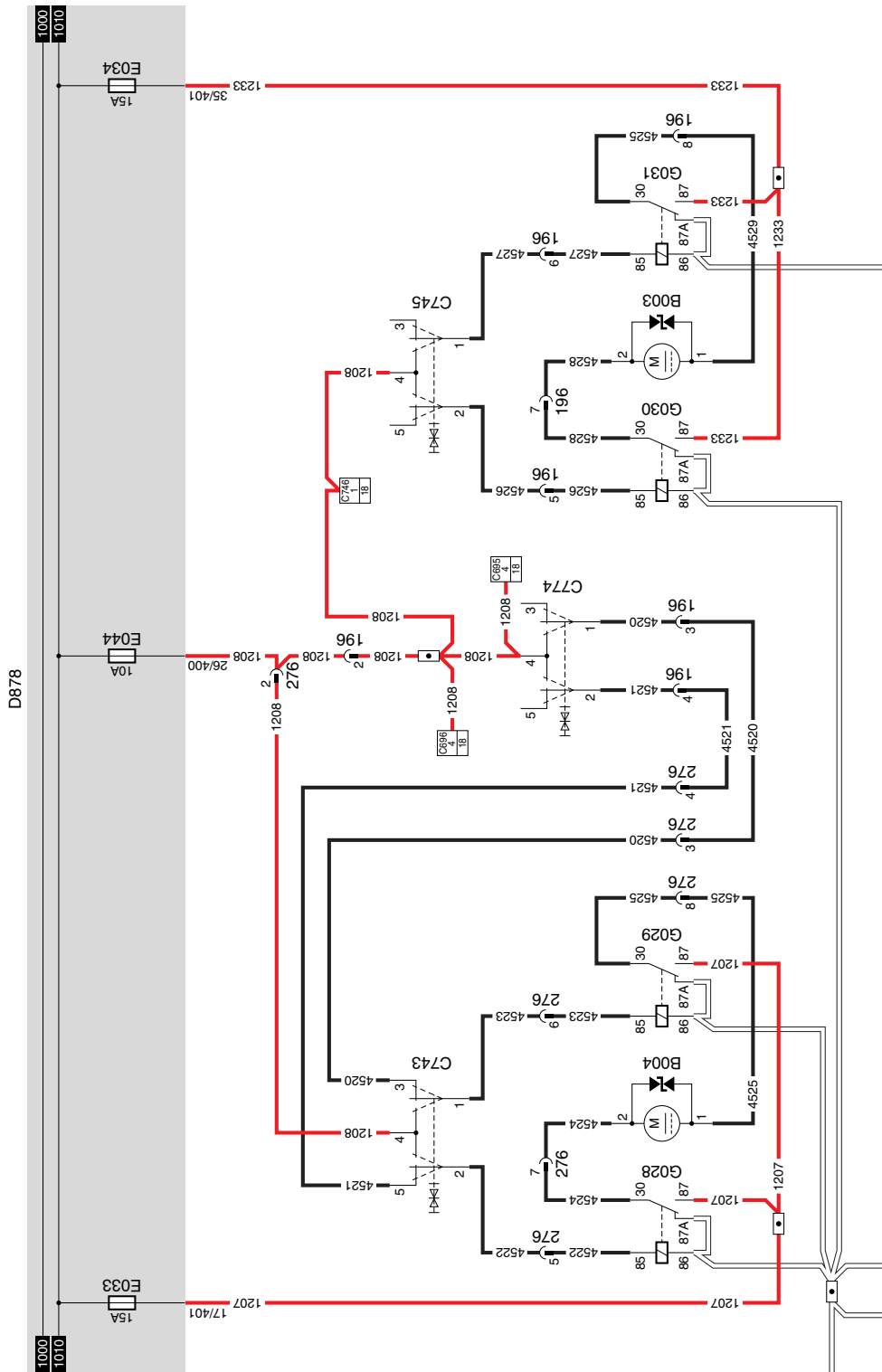


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1316630/24-29

EL000364

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53



54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 96 97 98 99 100 101 102 103 104 105 106

36

1316630/24-29

EL000365

#### 40A. AUXILIARY HEATING EBERSPÄCHER (with thermostat unit)

The auxiliary air heating is a separate heating which functions entirely independent of the vehicle. The cab temperature is measured by a temperature sensor which is installed in the thermostat unit (E566). This sensor sends a signal to the electronic unit (D871) which controls the heating.

As a result, the cab temperature automatically remains at the preset temperature. In that case, the blower is in continuous operation.

##### OPERATION OF AUXILIARY HEATING

The auxiliary air heating can be activated using the button on thermostat unit E566. If this button is switched to the "interior heating" position, the heating will be activated. A green lamp will now light up in the thermostat unit.

If the heating is activated, it activates the fan in the heating unit.

At the same time the fuel metering pump for the auxiliary Eberspächer heating (B122) is activated, so that the correct amount of fuel is fed to the ignition chamber of the heating unit.

If the fuel is ignited, a temperature sensor (installed in the thermostat unit) will apply a voltage to the heating unit so that at a certain temperature, the heating unit switches off.

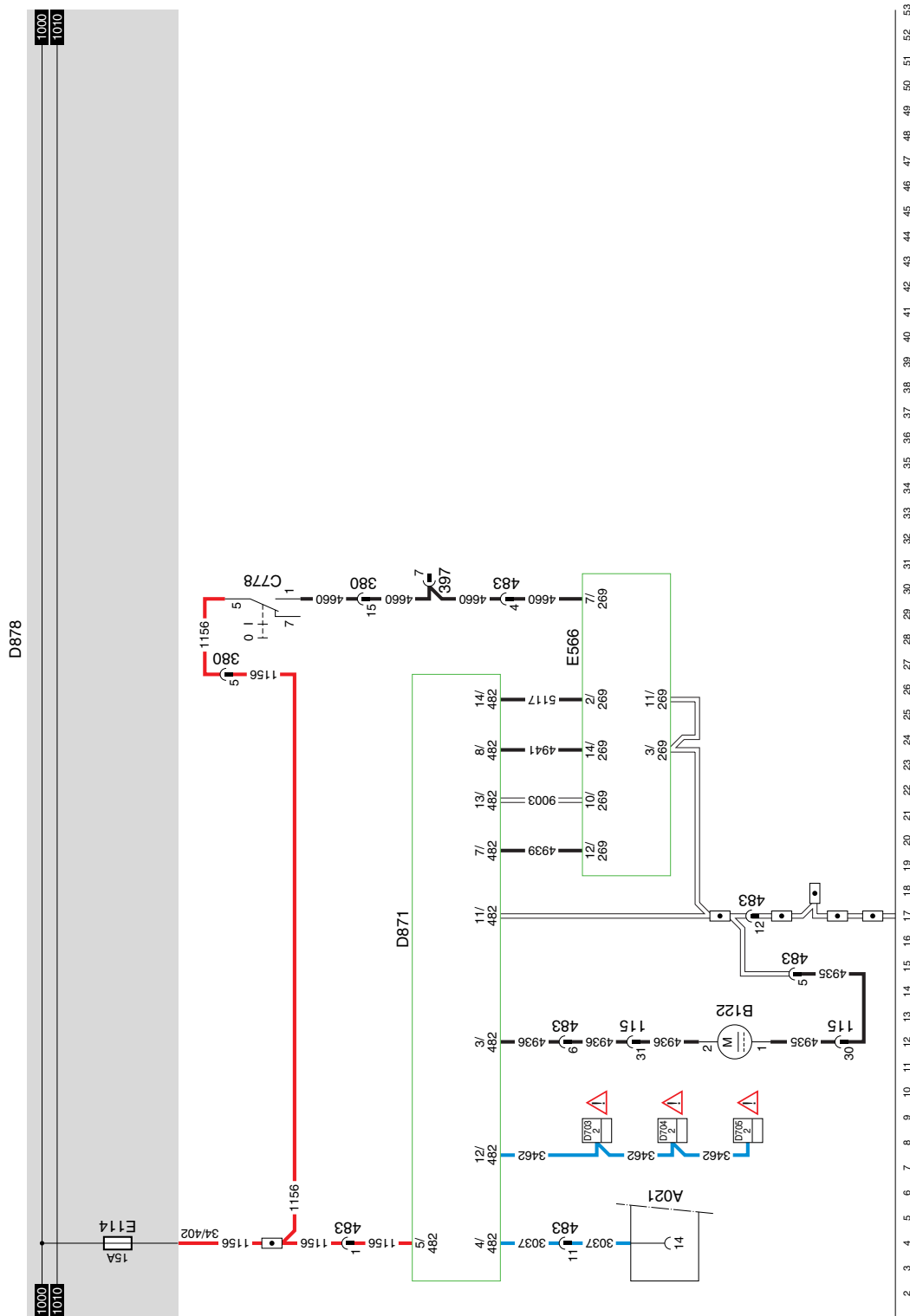
If the sensor measures a lower temperature than the temperature preset by the driver (using the temperature control button on the thermostat unit), the heating power will be adjusted.

In the case of overheating, the thermal protection will switch off the fuel pump. This will switch off the heating.

##### VARIANTS

###### Location

- 10 Only applicable when transporting hazardous substances.



# 40A

1316630/24-29

EL000356

**40B. AUXILIARY HEATING EBERSPÄCHER (with timer)**

The auxiliary air heating is a separate heating which functions entirely independent of the vehicle. The cab temperature is measured by a temperature sensor (F509). This sensor sends a signal to the electronic unit D871 which controls the heating.

As a result, the cab temperature automatically remains at the preset temperature. In that case, the blower is in continuous operation.

**OPERATION OF AUXILIARY HEATING**

The auxiliary air heating can be activated using switch C844. A green lamp in the timer unit will light up if the system is activated by means of this switch.

If the heating is activated, it activates the fan in the heating unit.

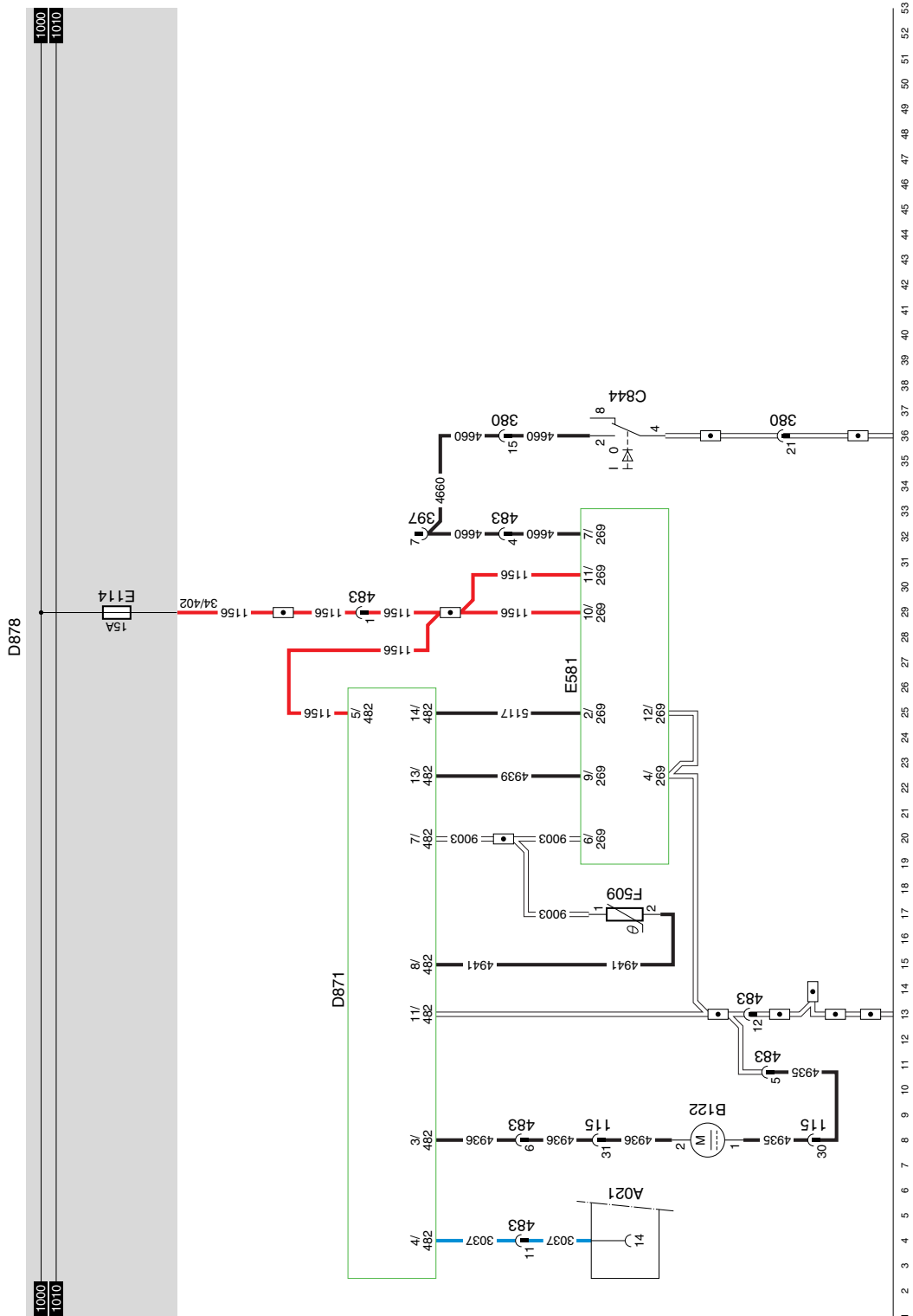
At the same time the fuel metering pump for the auxiliary Eberspächer heating (B122) is activated, so that the correct amount of fuel is fed to the ignition chamber of the heating unit.

If the fuel is ignited, the temperature sensor (F509) will apply a voltage to electronic unit D871 through wire 4941 so that at a certain temperature, the heating unit (D871) switches off.

If the sensor measures a lower temperature than the temperature preset by the driver (using the temperature control button on the timer unit), the heating power will be adjusted.

In the case of overheating, the thermal protection will switch off the fuel pump. This will switch off the heating.





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40B

1316630/24-29

EL000363

## 42. CONNECTOR SOCKETS FT, DIAGNOSTIC CONNECTOR, ALARM CONNECTOR

### DIAGNOSTIC CONNECTOR (A021)

The diagnostic connector is installed on the left-hand side in the central cabinet. This is the connector to which DAVIE is connected. After the contact has been activated, the supply voltage for DAVIE is applied to pin 1 through fuse E053. Pin 2 is connected to earth. The remaining pins are meant for the communication with various systems and are connected to those systems.

Pin no.	Wire no.	Colour	Description
1	1229	red	Supply for DAVIE
2	9107	white	Earth
3	3425	blue	ABS/ASC-D
4	4788	black	ASL-G
5	4697	black	ECAS remote control, E-gas 3
6			
7	4732	black	ECAS 2
8			
9	4047	black	CTE-3
10			
11	4883	black	ZF intarder
12			
13	3470	blue	AGS
14	3037	blue	D3LC auxiliary heating
15			
16			

### ABS CONNECTOR (A005)

This ABS connector is located at the rear of the cab.

- Pin 1 of the ABS connector (A005) is connected directly to the supply voltage through wire 1119 and fuse E043.
- Pin 2 is connected directly to the supply voltage after contact through fuse E040. This voltage also serves to feed the ABS unit.
- Pins 3, 4 are both connected to earth.
- Pin 5 is connected to pin 7 of the CWS-2 unit (D582) through wire 3428.

## FT TRAILER CONNECTOR (7-pin) (A002)

This FT trailer connector is located at the rear of the cab.

- Pin 1 of the FT trailer connector (A002) is connected to earth. If a connection is made between contacts 2 and 1 (rear/side marker and parking lights position) with the lighting switch (C622), a voltage is applied to contact 85 of relay G000 through fuse E084, wire 1101, switch C622 and wire 2100. The relay is activated and a voltage is applied from wire 1000, contacts 30 and 87 (from relay G000) through fuses E000 and E001 to pins 2 (through wire 2102) and 6 (through wire 2103) respectively.
- Pin 2 switches the left-hand rear light.
- Pin 3 is connected to the CTE-3 unit (2/232) (left direction) through wire 2008.
- Pin 4 is connected to relay G036 (brake-light relay) through wire 4601.
- Pin 5 is connected to the CTE-3 unit (30/232) (right direction) through wire 2009.
- Pin 6 switches the right-hand rear light.

## REAR FOG LIGHT / BACK-UP LIGHT CONNECTOR (7-pin) (A003)

This connector is located at the rear of the cab.

- Pin 1 is connected to earth.
- Pin 3 is connected to the supply voltage once the contact has been activated and the gearbox is in reverse gear. The voltage is applied as follows: through fuse E016 (wire 1217), back-up switch E501 (wire 4591) to pin 3.
- Pin 5 is connected directly to the supply voltage through fuse E048 and wire 1113.
- Pin 7 (rear fog lights) is connected to the supply voltage through fuse E010, relay G005 and wire 2152.

**ALARM SYSTEM SOCKET (A033)**

The alarm system socket is located at the front, below the central printed circuit in the cable harness.

- Pin 1 is connected directly to the supply voltage in front of the contact through wire 1114 and fuse E108 (wire 1000).
- Pin 2 is connected to the direction indicator, front left (C014), side direction indicator, left (C016), direction indicator, rear left (C018) and the electronic unit CTE-3 (D884) (4/232) through wire 2006.
- Pin 3 is connected to the direction indicator, front right (C015), side direction indicator, right (C017), direction indicator, rear right (C019) and the electronic unit CTE-3 (D884) (31/232) through wire 2007.
- Pin 4 is connected directly to the control switch for interior stepwell lighting, door switch on driver's side (E514), the stepwell lighting on driver's side (C062), the electronic unit CTE-3 (D884) and the lighting buzzer relay (G235) through wire 2600.
- Pin 5 is connected directly to the stepwell lighting on co-driver's side (C063), the interior lighting switch on co-driver's side (C120), the control switch for interior stepwell lighting, door switch on co-driver's side (E515) through wire 2609, and the interior-lighting diode prevent feedback to the co-driver's stepwell (D704).
- Pin 6 is connected directly to the cab-lock control switch (F009) through wire 3412 and to the electronic unit CWS (D582) (20/215).
- Pin 7 is connected directly to the generator of integrated voltage regulator (A502) (D+) and to lighting relay D+ (G107) through wire 1020. At the same time pin 7 is connected directly to the lighting buzzer (B242) and to the electronic unit CWS (D582) (12/214).
- Pin 8 is connected to earth.
- Pin 9 is not connected.

## 24V CONNECTOR (A042)

- Pin 1 of the 24V connector (A402) is connected directly to the supply voltage through wire 1000 and fuse E026.
- Pin 2 is connected to earth.

## 24V CONNECTOR (A043)

- Pin 1 of the 24V connector (A034) is connected directly to the supply voltage through wire 1240 and fuse E091 (behind the contact).
- Pin 2 is connected to earth.

## 24V CONNECTOR (A038)

- Pin 1 of the 24V connector (A038) is connected directly to the supply voltage through wire 1000 and fuse E168.
- Pin 2 is connected to earth.

## VARIANTS

### Location

- 104, 134 In the case of a 15-pin connector, connectors A002 and A003 are combined.  
The FT trailer connector is located at the rear of the cab.  
The pins will be allocated as follows:
- Pin 1 is connected to the CTE-3 unit (2/232) (left direction) through wire 2008.
  - Pin 2 is connected to the CTE-3 unit (30/232) (right direction) through wire 2009.
  - Pin 3 (rear fog lights) is connected to the supply voltage through fuse E010 and wire 2152.
  - Pin 4 is connected to earth.
  - Pin 5 switches the left-hand rear light through wire 2102. If a connection is made between contacts 2 and 1 (rear/side marker and parking lights position) with the lighting switch (C622), a voltage is applied to contact 85 of relay G000 through fuse E084, wire 1101, switch C622 and wire 2100. The relay is activated and a voltage is applied from wire 1000, contacts 30 and 87 (from relay G000) through fuse E000 to pin 2 (through wire 2102).

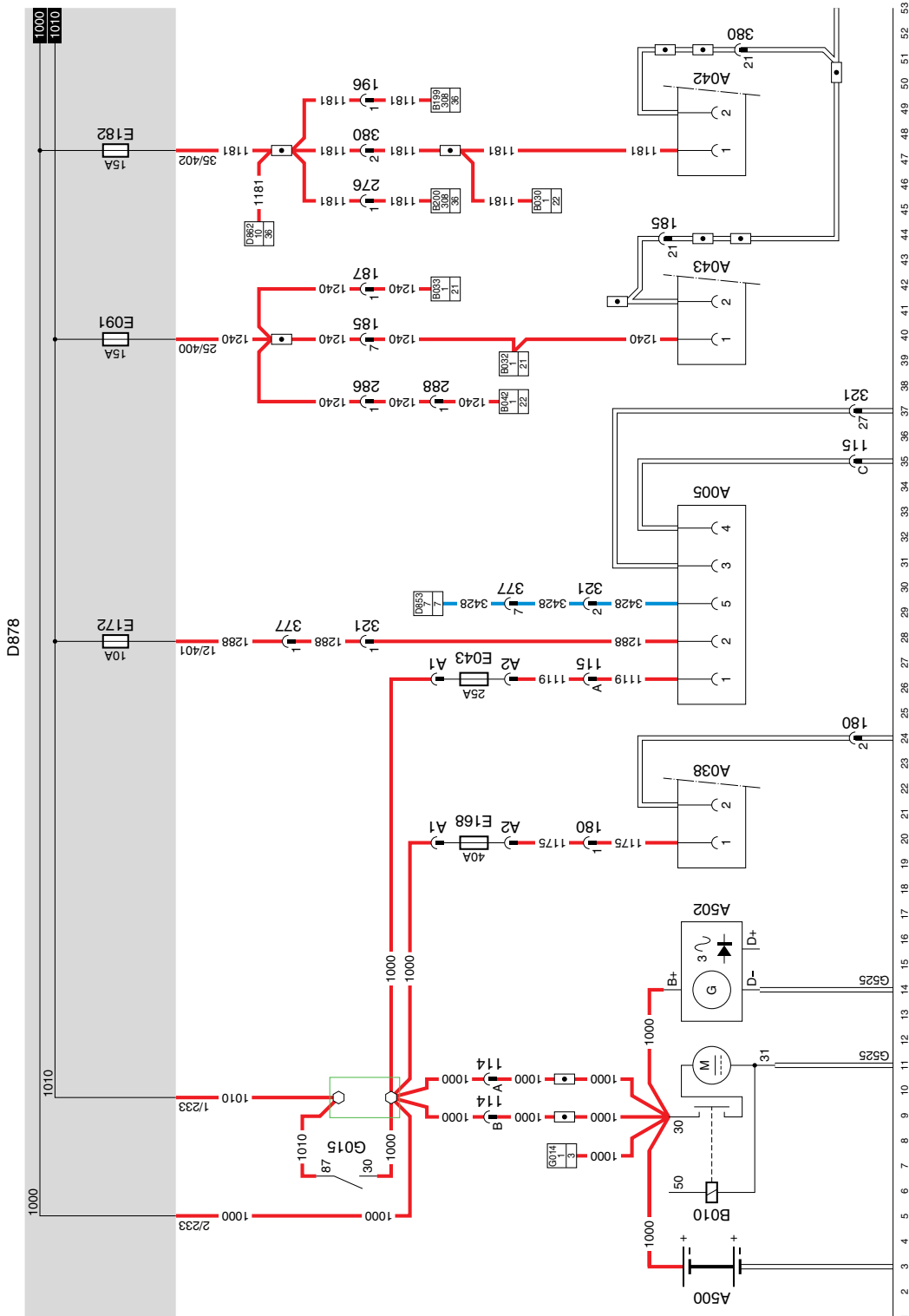
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## MODIFICATIONS TO THE ELECTRICAL INSTALLATION

**95XF** series

Modifications to the electrical installation from chassis number 0E477514

- Pin 6 switches the right-hand rear light through wire 2103. If a connection is made between contacts 2 and 1 (rear/side marker and parking lights position) with the lighting switch (C622), a voltage is applied to contact 85 of relay G000 through fuse E084, wire 1101, switch C622 and wire 2100. The relay is activated and a voltage is applied from wire 1000, contacts 30 and 87 (from relay G000) through fuse E001 to pin 6 (through wire 2103).
- Pin 7 is connected to relay G036 (brake-light relay) through wire 4601.
- Pin 8 is connected to the supply voltage once the contact has been activated and the gearbox is in reverse gear. The voltage is applied as follows: through fuse E016 (wire 1217), back-up switch E501 (wire 4591) to pin 3.
- Pin 9 is connected directly to the supply voltage through fuse E048 and wire 1113.
- 147 This location provides the power supply for accessories (M6 bolt on the central printed circuit).



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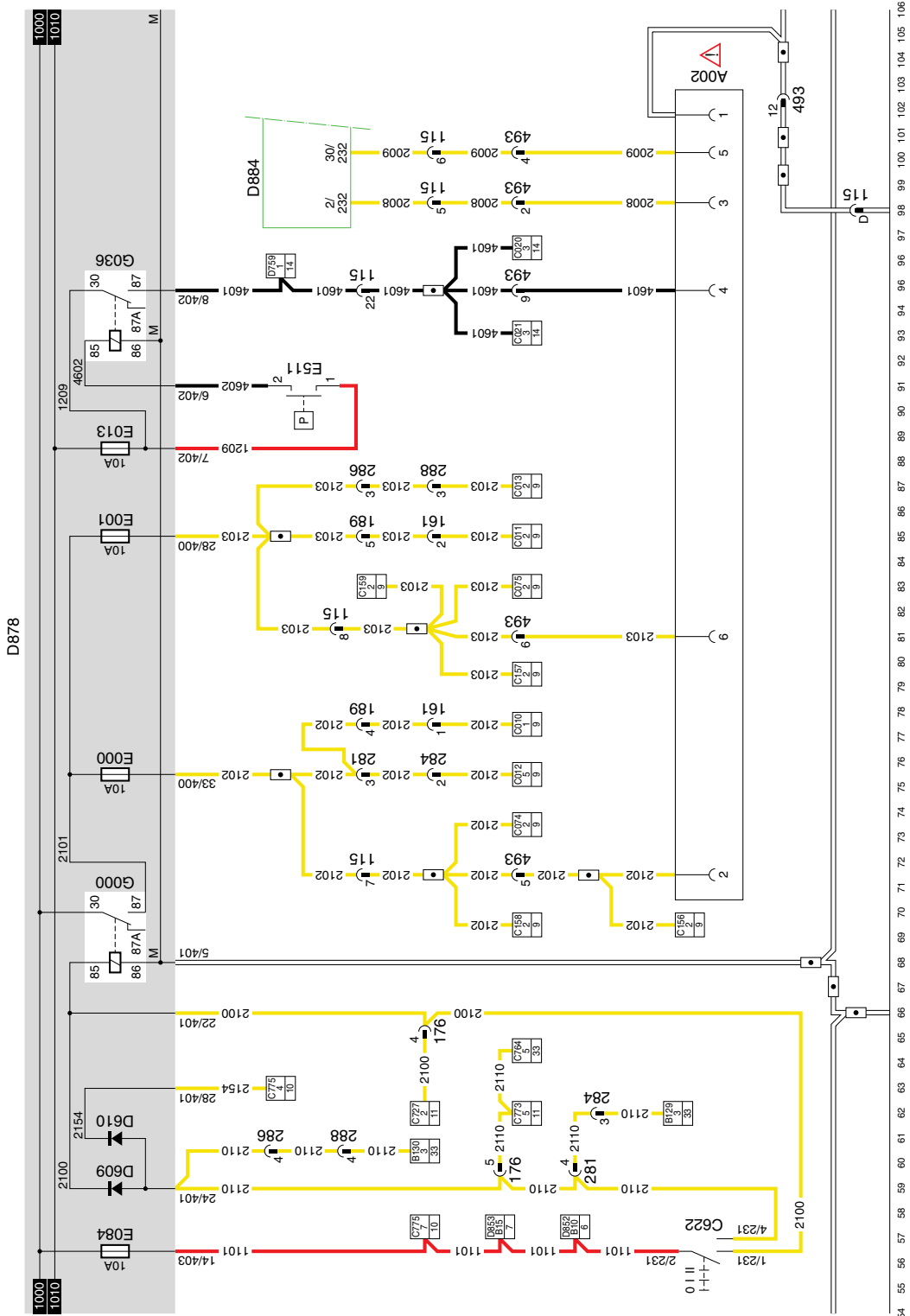
EL000375

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# MODIFICATIONS TO THE ELECTRICAL INSTALLATION

95XF series

Modifications to the electrical installation from chassis number 0E477514



# 42

1316630/24-29

EL000376

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### 43. CONNECTOR SOCKETS FA, DIAGNOSTIC CONNECTOR, ALARM CONNECTOR

#### DIAGNOSTIC CONNECTOR (A021)

The diagnostic connector is installed on the top left-hand side in the central cabinet. This is the connector to which DAVIE is connected. After the contact has been activated, the supply voltage for DAVIE is applied to pin 1 through fuse E053. Pin 2 is connected to earth. The remaining pins are meant for the communication with various systems and are connected to those systems.

Pin no.	Wire no.	Colour	Description
1	1229	red	Supply for DAVIE
2	9107	white	Earth
3	3425	blue	ABS/ASC-D
4	4788	black	ASL-G
5	4697	black	ECAS remote control, E-gas 3
6			
7	4732	black	ECAS 2
8			
9	4047	black	CTE-3
10			
11	4883	black	ZF intarder
12			
13	3470	blue	AGS
14	3037	blue	D3LC auxiliary heating

#### 24V CONNECTOR (A007)

This 24V connector is located on the right-hand side, along the air vents of the heater (central console).

Pin 1 of the 24V connector (A007) is connected directly to the supply voltage through wire 1000 and fuse E036.

Pin 2 is connected to earth.

#### ABS CONNECTOR (A004)

This ABS connector is installed in the back cross member of the chassis.

Pin 1 of the ABS connector (A004) is connected directly to the supply voltage through wire 1119 and fuse E043.

Pin 2 is connected directly to the supply voltage through fuse E040 behind the contact. This voltage also serves to feed the ABS unit.

Pins 3,4 are both connected to earth.

Pin 5 is connected to the CWS-2 unit (D582) through wire 3428.

## FA TRAILER CONNECTOR (7-pin) (A000)

This FA trailer connector is installed in the back cross member of the chassis.

- Pin 1 of the FA trailer connector (A000) is connected to earth.  
If a connection is made between contacts 2 and 1 (rear/side marker and parking lights position) with the lighting switch (C622), a voltage is applied to contact 85 of relay G000 through fuse E084, wire 1101, switch C622 and wire 2100. The relay is activated and a voltage is applied from wire 1000, contacts 30 and 87 (from relay G000) through fuses E000 and E001 to pins 2 (through wire 2102) and 6 (through wire 2103) respectively.
- Pin 2 switches the left-hand rear light.
- Pin 3 is connected to the CTE-3 unit (2/232) (left direction) through wire 2008.
- Pin 4 is connected to relay G036 (brake-light relay) through wire 4601.
- Pin 5 is connected to the CTE-3 unit (30/232) (right direction) through wire 2009.
- Pin 6 switches the right-hand rear light.

## REAR FOG LIGHT / BACK-UP LIGHT CONNECTOR (7-pin) (A001)

This connector is installed in the back cross member of the chassis.

- Pin 1 is connected to earth.
- Pin 3 is connected to the supply voltage once the contact has been activated and the gearbox is in reverse gear. The voltage is applied as follows: through fuse E016 (wire 1217), back-up switch E501 (wire 4591) to pin 3.
- Pin 5 is connected directly to the supply voltage through fuse E048 and wire 1113. Pin 3 is also connected to connector A026 (superstructure side-lights, 4-pin).
- Pin 7 (rear fog lights) is connected to the supply voltage through fuse E010, relay G005 and wire 2152.

**ALARM SYSTEM SOCKET (A033)**

The alarm system socket is located at the front, below the central printed circuit in the cable harness.

- Pin 1 is connected directly to the supply voltage in front of the contact through wire 1114 and fuse E108 (wire 1000).
- Pin 2 is connected to the direction indicator, front left (C014), side direction indicator, left (C016), direction indicator, rear left (C018) and the electronic unit CTE-3 (D884) (4/232) through wire 2006.
- Pin 3 is connected to the direction indicator, front right (C015), side direction indicator, right (C017), direction indicator, rear right (C019) and the electronic unit CTE-3 (D884) (31/232) through wire 2007.
- Pin 4 is connected directly to the control switch for interior stepwell lighting, door switch on driver's side (E514), the stepwell lighting on driver's side (C062), the electronic unit CTE-3 (D884) and the lighting buzzer relay (G235) through wire 2600.
- Pin 5 is connected directly to the stepwell lighting on co-driver's side (C063), the interior lighting switch on co-driver's side (C120), the control switch for interior stepwell lighting, door switch on co-driver's side (E515) through wire 2609, and the interior-lighting diode prevent feedback to the co-driver's stepwell (D704).
- Pin 6 is connected directly to the cab-lock control switch (F009) through wire 3412 and to the electronic unit CWS (D582) (20/215).
- Pin 7 is connected directly to the generator of integrated voltage regulator (A502) (D+) and to lighting relay D+ (G107) through wire 1020. At the same time pin 7 is connected directly to the lighting buzzer (B242) and to the electronic unit CWS (D582) (12/214).
- Pin 8 is connected to earth.
- Pin 9 is not connected.

## SUPERSTRUCTURE SIDE-LIGHTS CONNECTOR (A026)

This connector is located in the side member at the rear left (connector 516).

- Pin 1 is connected directly to the (semi-)trailer socket (A000) pin 2 through wire 2102, and to the rear-light/ side light relay (G000) through fuse E000.
- Pin 2 is connected directly to the (semi-)trailer socket (A000) pin 6 through wire 2103, and to the rear-light/ side light relay (G000) through fuse E001.
- Pin 3 is connected directly to pin 5 of the rear fog light socket (A001) through wire 1113 and to the supply voltage through fuse E048.
- Pin 4 is connected to earth.

## AUTOMATIC GEARBOX (A047)

- Pin 1 is connected to contact 87 of relay G291 through wire 5638.
- Pin 2 is connected to contact 87A of relay G291 through wire 5639.
- Pin 3 is connected to contact 30 of relay G291 through wire 5640.
- Pin 4 is connected to contact 30 of relay G294 through wire 5641.
- Pin 5 is connected to contact 87A of relay G294 through wire 5642.
- Pin 6 is connected to contact 87 of relay G294 through wire 5643.
- Pin 7 is connected to the electronic unit for gearbox control (D866) through wire 5644.
- Pin 8 is connected to the PTO control switch (C714) through wire 5628.
- Pin 9 is connected to earth.

## VARIANTS

### Location

104, 134 In the case of a 15-pin connector, connectors A000 and A001 are combined.

The FA trailer connector is installed in the back cross member of the chassis.

The pins will be allocated as follows:

- Pin 1 is connected to the CTE-3 unit (2/232) (left direction) through wire 2008.
- Pin 2 is connected to the CTE-3 unit (30/232) (right direction) through wire 2009.
- Pin 3 (rear fog lights) is connected to the supply voltage through fuse E010, relay G005 and wire 2152.
- Pin 4 is connected to earth.

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## MODIFICATIONS TO THE ELECTRICAL INSTALLATION

**95XF** series

Modifications to the electrical installation from chassis number 0E477514

- Pin 5 switches the left-hand rear light through wire 2102. If a connection is made between contacts 2 and 1 (rear/side marker and parking lights position) with the lighting switch (C622), a voltage is applied to contact 85 of relay G000 through fuse E084, wire 1101, switch C622 and wire 2100. The relay is activated and a voltage is applied from wire 1000, contacts 30 and 87 (from relay G000) through fuse E000 to pin 2 (through wire 2102).
- Pin 6 switches the right-hand rear light through wire 2103. If a connection is made between contacts 2 and 1 (rear/side marker and parking lights position) with the lighting switch (C622), a voltage is applied to contact 85 of relay G000 through fuse E084, wire 1101, switch C622 and wire 2100. The relay is activated and a voltage is applied from wire 1000, contacts 30 and 87 (from relay G000) through fuse E001 to pin 6 (through wire 2103).
- Pin 7 is connected to relay G036 (brake-light relay) through wire 4601.
- Pin 8 is connected to the supply voltage once the contact has been activated and the gearbox is in reverse gear. The voltage is applied as follows: through fuse E016 (wire 1217), back-up switch E501 (wire 4591) to pin 3.
- Pin 9 is connected directly to the supply voltage through fuse E048 and wire 1113. Pin 3 is also connected to connector A026 (superstructure side-lights, 4-pin).
- 151 This location provides the power supply for accessories (M6 bolt on the central printed circuit).



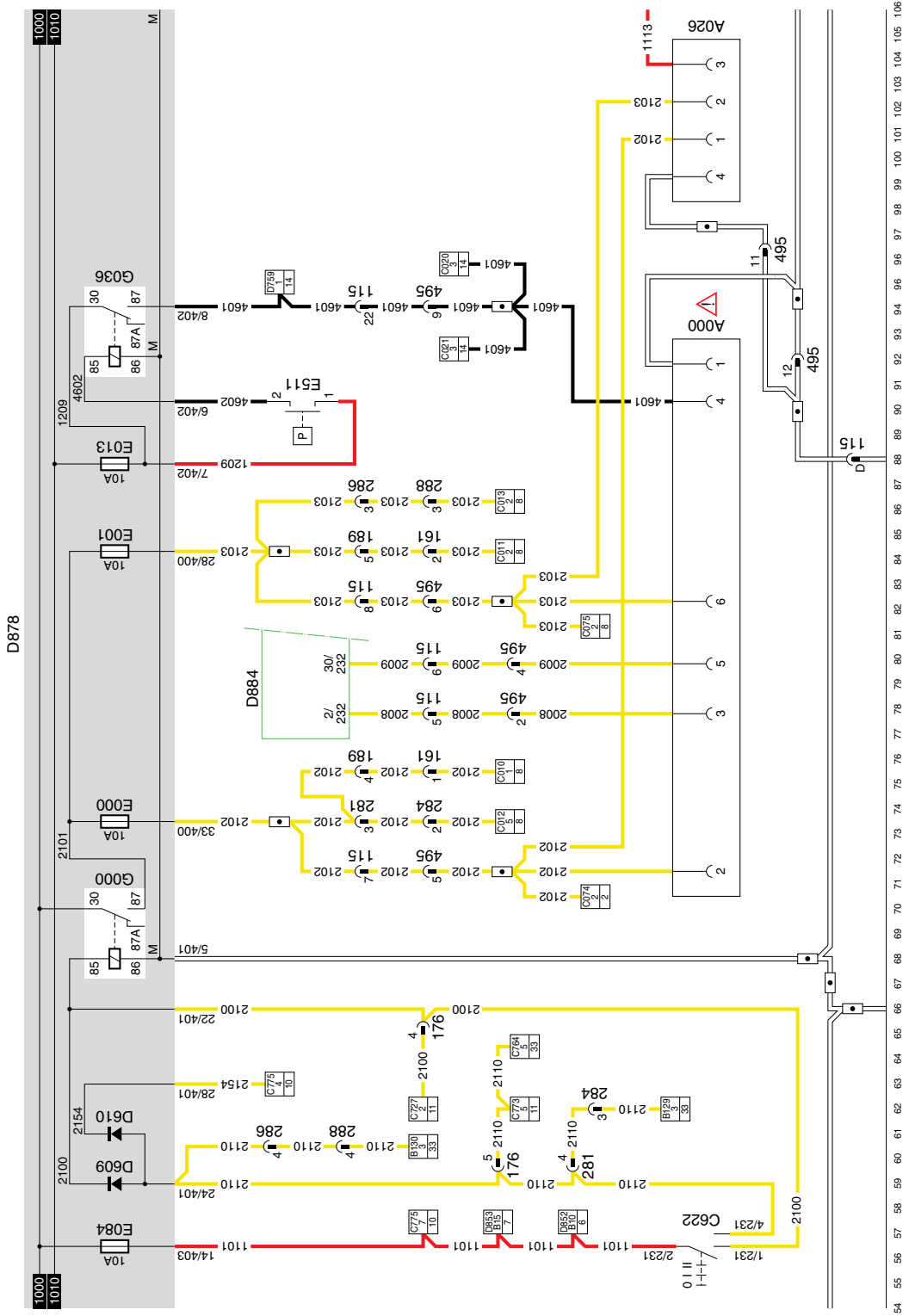


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# MODIFICATIONS TO THE ELECTRICAL INSTALLATION

95XF series

Modifications to the electrical installation from chassis number 0E477514

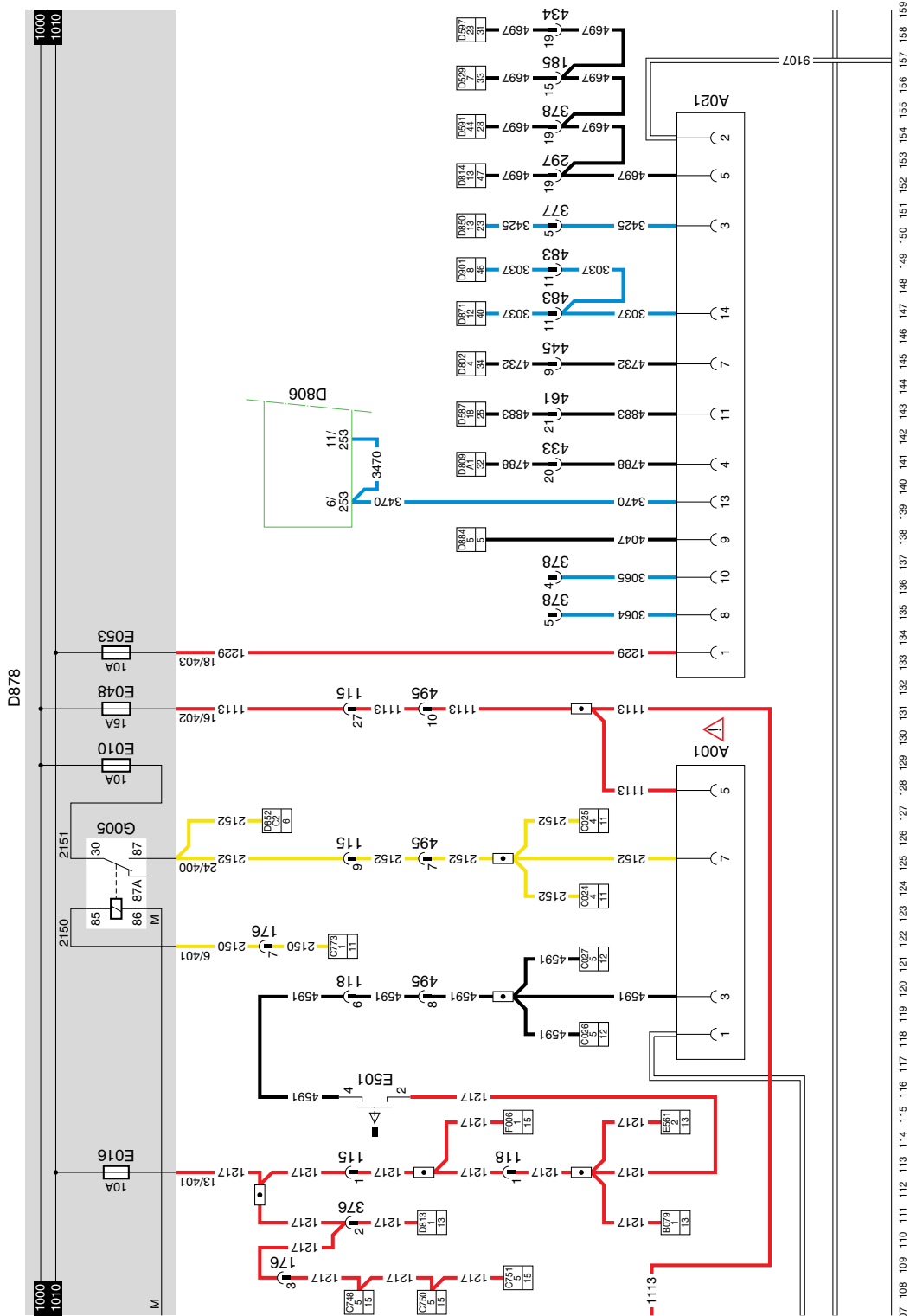


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1316630/24-29

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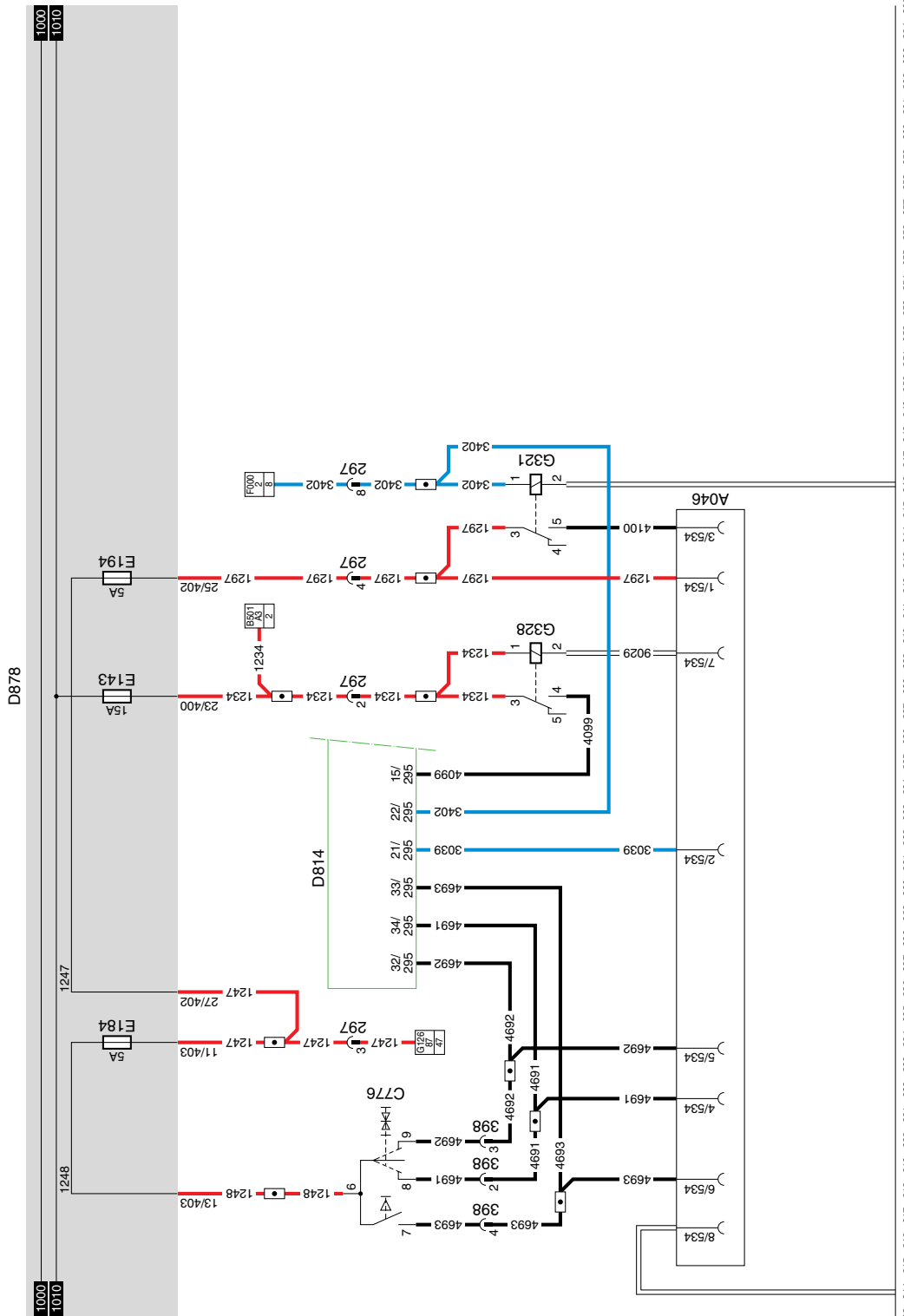


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1316630/24-29

EL000382





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## MODIFICATIONS TO THE ELECTRICAL INSTALLATION

**95XF** series      Modifications to the electrical installation from chassis number 0E477514

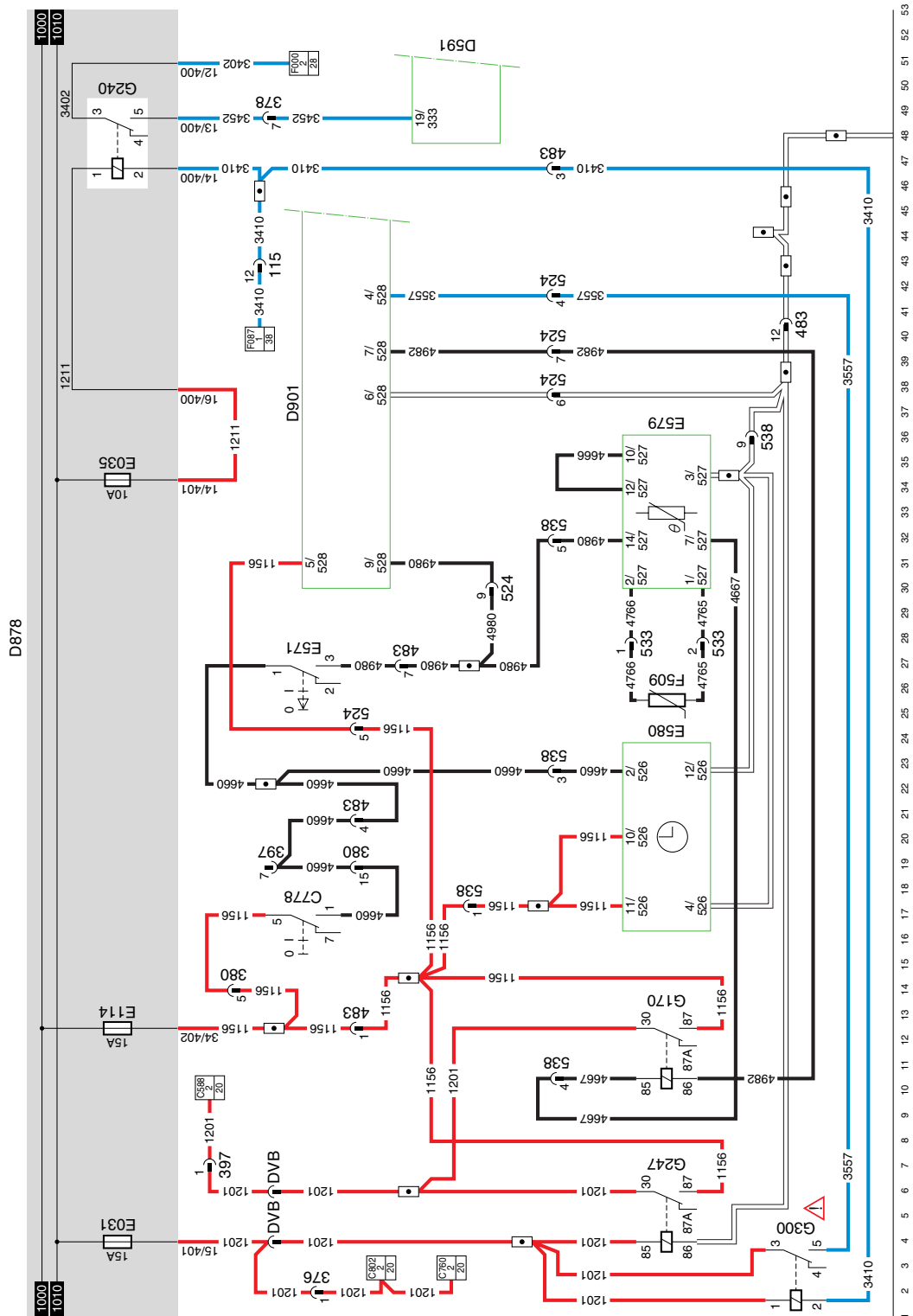
### 46 AUXILIARY HEATING EBERSPÄCHER HYDRONIC 10

#### VARIANTS

##### Location

- 6    Only when transporting hazardous substances. The auxiliary heating will be switched off upon activation of the PTO.
- 79   Wire 4009 only applies in the case of a VF.

**SEE THE SYSTEM MANUAL FOR MORE INFORMATION.**



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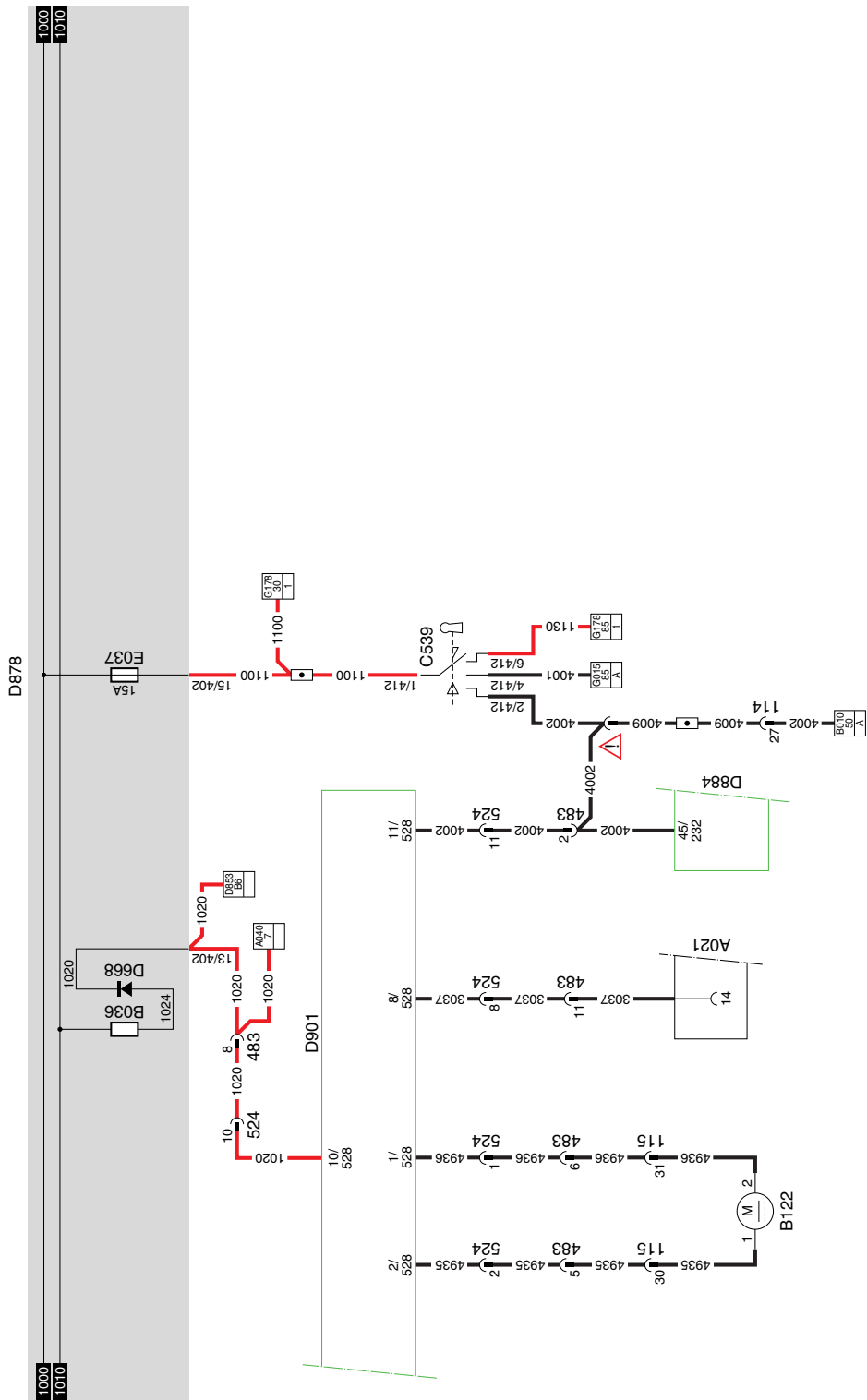
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MODIFICATIONS TO THE ELECTRICAL INSTALLATION

95XF series

Modifications to the electrical installation from chassis number 0E477514





## 48. ECAS 3 (4x2)

### VARIANTS

#### Location

80 For vehicle type FA: component B250

For vehicle type FT: component B238

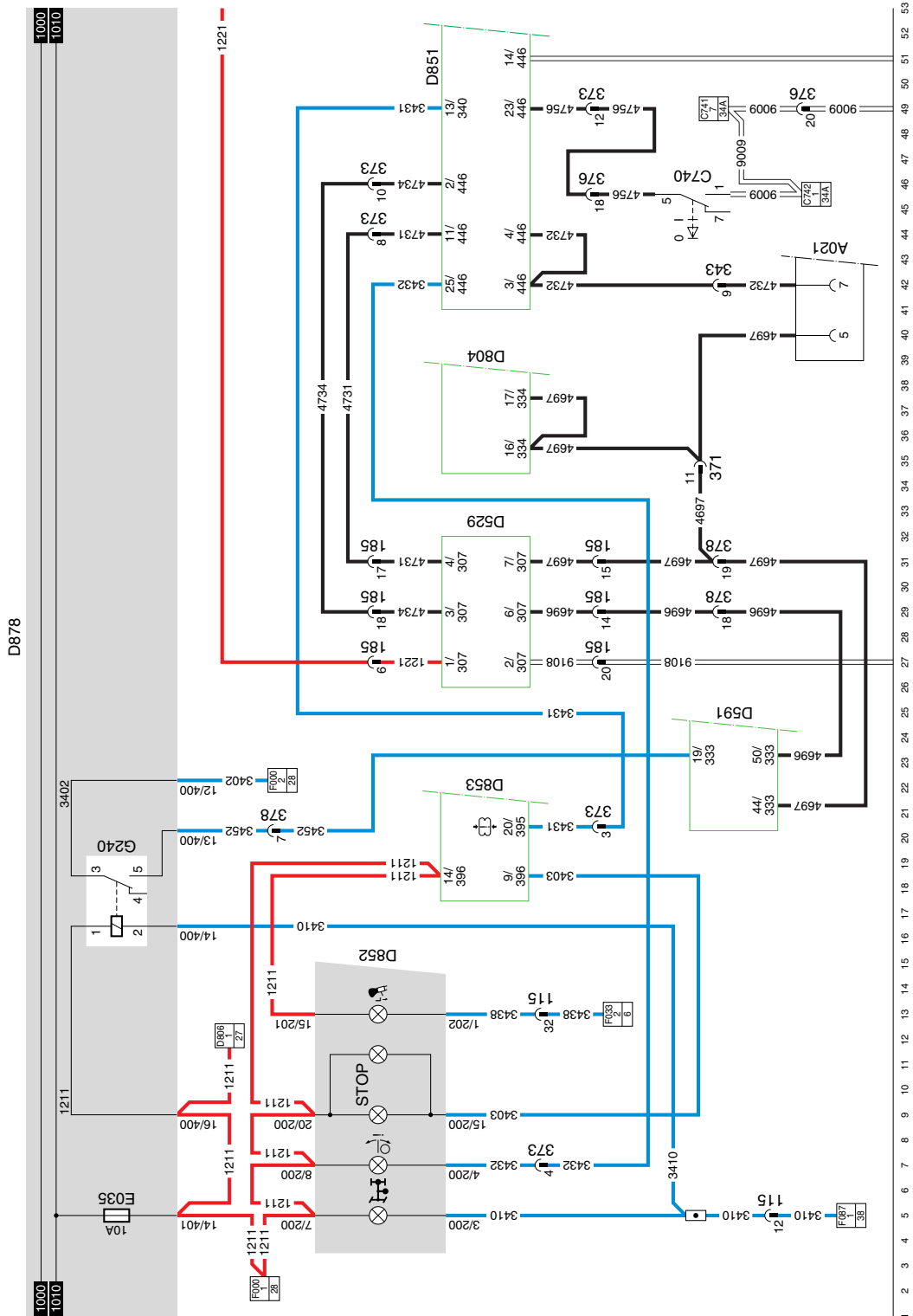
**SEE THE SYSTEM MANUAL FOR MORE INFORMATION.**

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## MODIFICATIONS TO THE ELECTRICAL INSTALLATION

95XF series

Modifications to the electrical installation from chassis number 0E477514

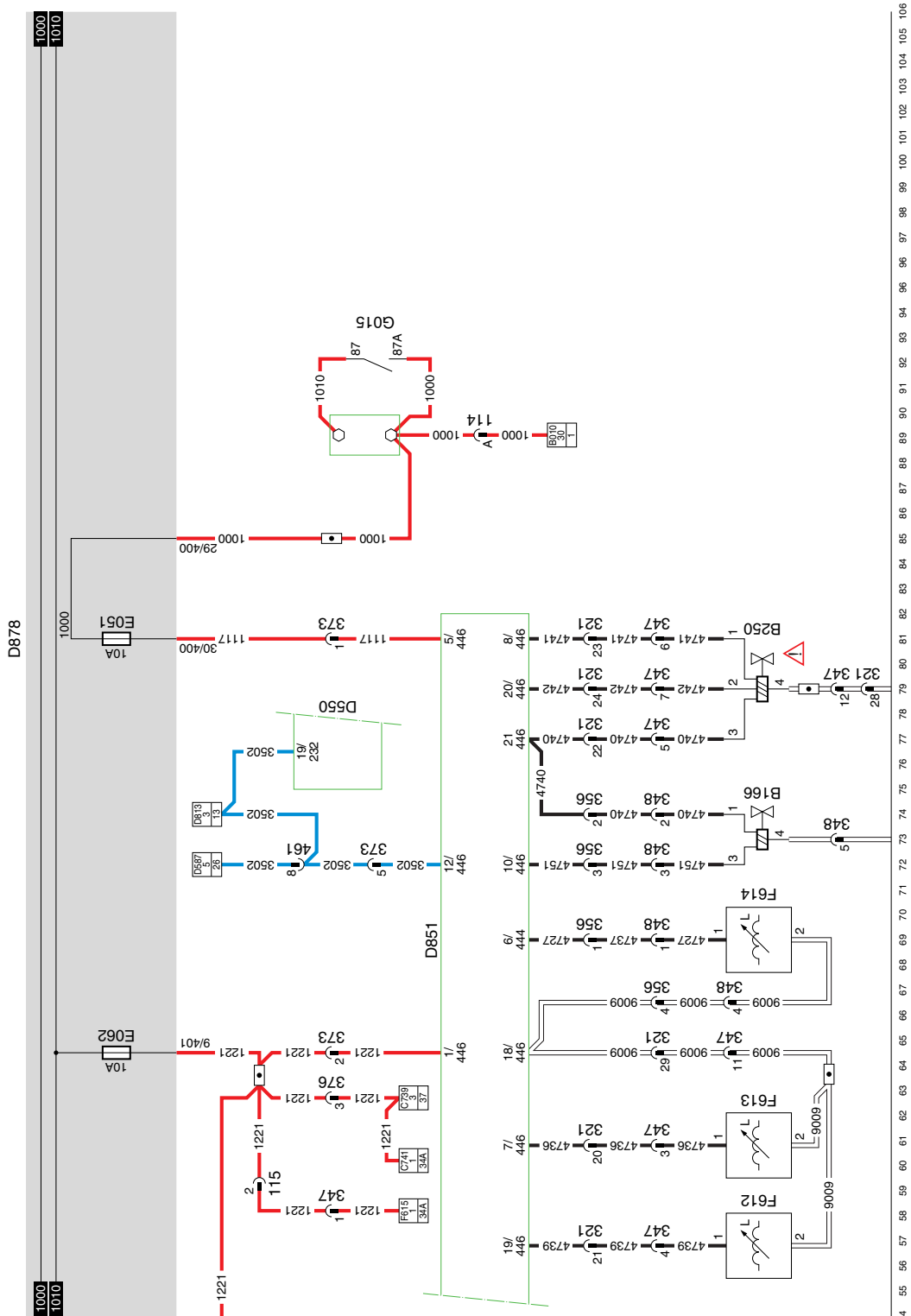


# 48

1316630/24-29

EL000337

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EL000738

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## CHANGES IN THE ELECTRICAL SYSTEM

95XF series

Changes in the electrical system from chassis number 0E527418

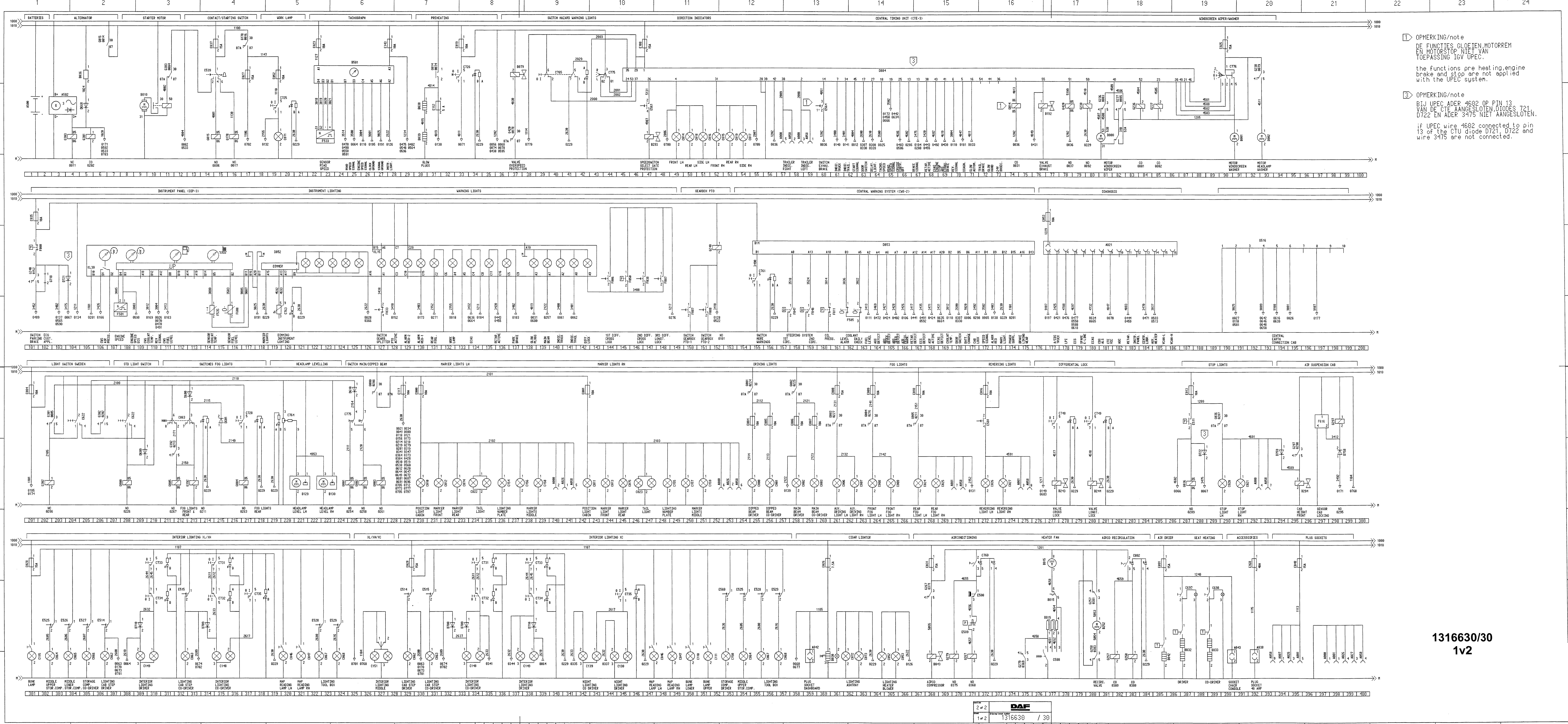
### 5. CHANGES IN THE ELECTRICAL SYSTEM FROM CHASSIS NUMBER 0E527418

#### 5.1 OVERVIEW OF THE CHANGES IN THE ELECTRICAL SYSTEM

CHANGE/Chassis numbers

Electrical system	From chassis number	Change	See section diagram number
Rotating lights on roof	0E527418	Rotating lights on roof included in circuit diagram	49
Heater fan	0E531311	Electrical connection of temperature controlled circuit breaker for fan heater modified	20
Ignition/starter switch	0E532297	Relay G372 (micro relay) changed to G303 (mini relay)	1
Converter/Radio	0E537437	Loudspeaker wiring modified	35
Gearbox and gate protection	0E550289	High/Low valve (B079) control modified	13
CTE-3	0E550289	Connection of pin 51: High/Low valve (B079) control modified	5
Heater fan	0E565651	Connection of five-position switch (C882) modified	20
Cab heater	0E565651	Wire marking modified	46
Cab heater	0E574689	Connection of Eberspächer cab heater (air) modified	40A/40B

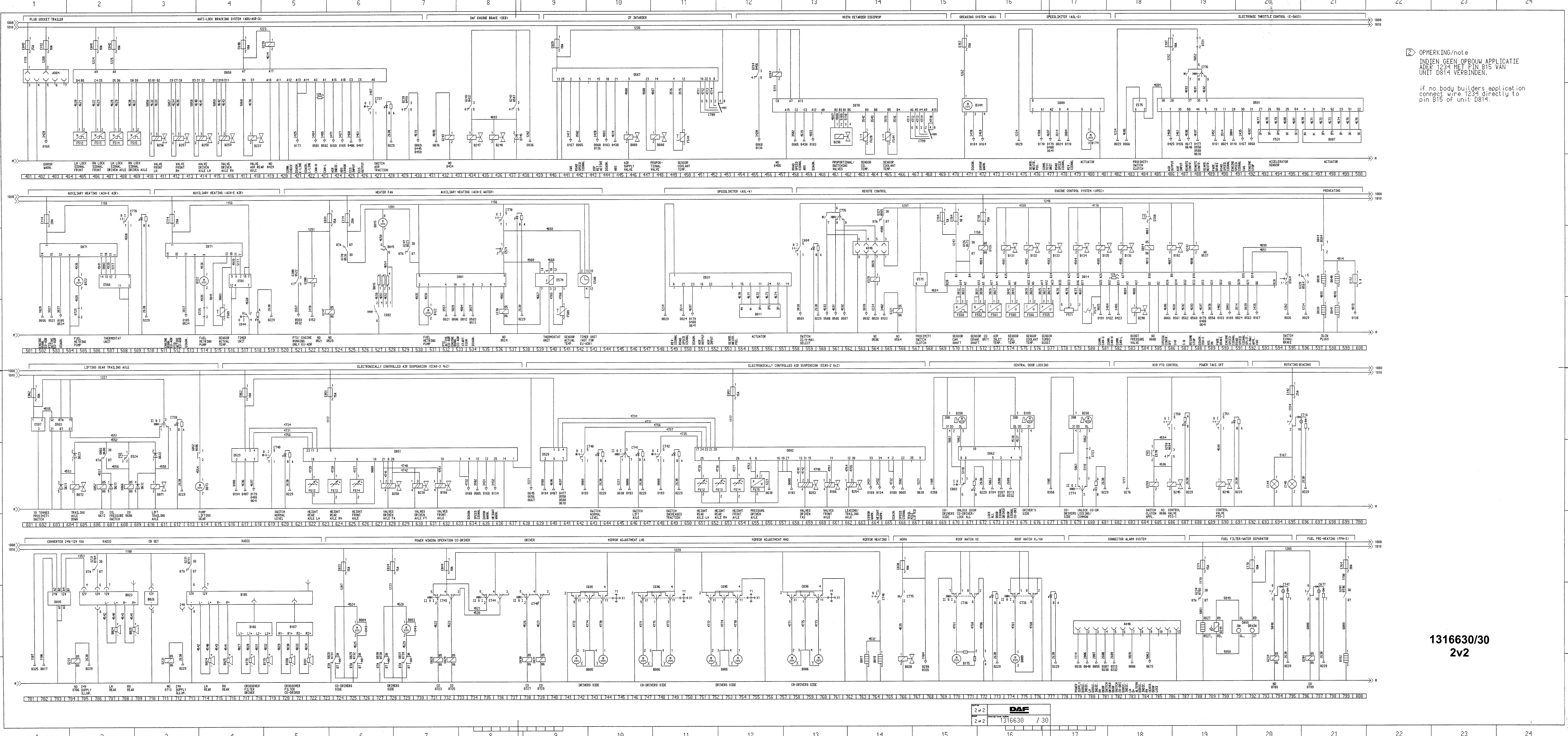




OPMERKING/note  
 DE FUNCTIES GLOEIEN, MOTORREM EN MOTORSTOP NIET VAN TOEPASSING IGV UPEC.  
 the functions pre heating, engine brake and stop are not applied with the UPEC system.

OPMERKING/note  
 BIJ UPEC ADER 4602 OP PIN 13 VAN DE CTE AANGESLOTEN, DIODES D721, D722 EN ADER 3475 NIET AANGESLOTEN.  
 if UPEC wire 4602 connected to pin 13 of the CTU diode D721, D722 and wire 3475 are not connected.

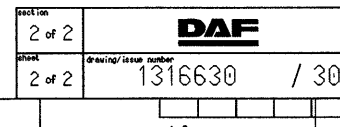




OPMERKING/note  
 INDIEN GEEN OPBOUW APPLICATIE  
 ADEE 1234 MET PIN B15 VAN  
 UNIT D814 VERBINDEN.

if no body builders application  
 connect wire 1234 directly to  
 pin B15 of unit D814.

1316630/30  
 2v2



## 5.3 OVERVIEW OF BASIC CODES IN CIRCUIT DIAGRAM 1316630/30

Column 1 Basic code  
 Column 2 Description  
 Column 3 Number on search bar of circuit diagram 1316630/ 30

Column 1	Column 2	Column 3
A000	Trailer socket (7-pin)	57/58/240/252/292/397
A001	Rear fog lamp/reversing light socket (7-pin)	270/275/395/398
A004	ABS FA socket (7-pin)	403
A007	24-V socket, 2-pin	394
A021	Diagnostic socket (16-pin)	181
A026	Superstructure width marker lights (4-pin)	241/253/395/399
A027	Accessories socket (4-pin)	399
A038	Accessories socket, 2-pin, 40A	392
A040	Alarm system socket	782
A042	Dashboard socket (2-pin)	359
A043	Seat console socket, driver's side (2-pin)	391
A046	Connector for superstructure for remote control connection	563
A058	Trailer socket (15-pin)	58/59/241/254/270/275/293/393/400
A500	Batteries (2x)	1
A502	Integrated voltage regulator generator	3
B000	Windscreen wiper motor	81
B001	Windscreen washer pump motor	91
B002	Headlamp washer pump motor	93
B003	Electric window motor, driver's side	729
B004	Electric window motor, co-driver's side	726
B005	Left mirror adjustment motor	742/752
B006	Right mirror adjustment motor	747/758
B007	E-gas speed/engine actuator	498
B009	Roof hatch motor	775
B010	Starter motor	9
B011	Speed limiter motor	555
B015	Heater fan, 4-speed	377/527/528
B017	Mirror heating, driver's side	763
B018	Mirror heating, co-driver's side	764
B023	Radio	708
B024	Loudspeaker, left	707/714
B025	Loudspeaker, right	709/716
B026	CB	710
B028	Horn	766
B030	Cigar lighter, driver's side	361
B032	Seat heating, driver's side	387
B033	Seat heating, co-driver's side	389
B036	D+ generator resistor	5
B038	Glow plug	30/597
B039	Glow plug	30/597
B040	Glow plug	598
B041	Glow plug	598
B042	Air dryer heating element	386
B043	Air-conditioning compressor	368
B071	Lifting-gear lifting valve	611
B072	Lifting-gear lowering valve	605



Column 1	Column 2	Column 3
B073	Lifting gear motor pump	614
B079	Valve, single-H protection	37
B088	Intarder proportional valve	488
B089	Intarder air supply valve	446
B122	Fuel feed pump for Eberspächer cab heater	505/514/531
B129	Headlamp height adjusting motor, left	221
B130	Headlamp height adjusting motor, right	223
B131	Pump unit/injector solenoid valve, cylinder 1	574
B132	Pump unit/injector solenoid valve, cylinder 2	576
B133	Pump unit/injector solenoid valve, cylinder 3	577
B134	Pump unit/injector solenoid valve, cylinder 4	579
B135	Pump unit/injector solenoid valve, cylinder 5	581
B136	Pump unit/injector solenoid valve, cylinder 6	583
B166	ECAS valve, front axle	632/661
B174	Speed limiter motor	480
B175	Roof hatch motor, Superspace cab	771
B178	Loudspeaker, left	717
B179	Loudspeaker, left	719
B180	Loudspeaker, right	720
B181	Loudspeaker, right	722
B182	Fuel heating	799
B185	Radio	717
B186	Loudspeaker filter, driver's side	717
B187	Loudspeaker filter, co-driver's side	720
B192	Engine brake valve	77/586
B199	Central door lock, driver's side	675
B200	Central door locking motor, co-driver's side F249 XH/ XC	670/679
B237	ASR valve	418
B238	Air supply valve, ECAS driven axle left/right (FT)	630
B241	Fuel filter/water separator heating element sensor	790
B243	Cross-axle lock control valve	278
B244	Longitudinal controlled slip differential control valve	280
B245	PTO control valve	686
B246	PTO control valve	690
B247	Engine brake (DEB) valve	434
B248	Engine brake (DEB) valve	436
B250	Air supply valve, ECAS driven axle left/right (FA)	628
B252	Recirculation valve	381
B253	Air supply valve, ECAS driven axle left/right	659
B254	Valve ECAS trailing/leading axle, lifting/lowering	662
B256	ABS valve, front left	411
B257	ABS valve, front right	412
B258	ABS valve, rear left	414
B259	ABS valve, rear right	416
B290	Electropneumatic boost pressure valve	584
B293	Gearbox gate protection valve	47
B294	Cab air suspension valve, switching off height control, front of cab	296
B298	Cab air suspension valve, switching off height control, rear of cab	461
B344	Electronic unit for automatic lubrication	472
B501	Compact tachograph	25
C000	Dipped beam, left	255
C001	Dipped beam, right	257
C002	Main beam, left	259
C003	Main beam, right	260
C006	Spotlights, left	262

Column 1	Column 2	Column 3
C007	Spotlights, right	263
C008	Fog light, front left	264
C009	Fog light, front right	266
C010	Width marker light, headlight, left	231
C011	Width marker light, headlight, right	243
C012	Width marker light, front left	232
C013	Width marker light, front right	244
C014	Front left direction indicator lamp	50
C015	Front right direction indicator lamp	53
C016	Side left direction indicator lamp	52
C017	Side right direction indicator lamp	55
C018	Rear left direction indicator lamp	51
C019	Rear right direction indicator lamp	54
C020	Brake light, left	290
C021	Brake light, right	292
C022	Rear light, left	234
C022	Rear light, right	246
C024	Fog light, rear left	268
C025	Fog light, rear right	269
C026	Reversing light, left	273
C027	Reversing light, right	274
C046	Map reading light, driver's side	320/348
C047	Map reading light, co-driver's side	322/349
C052	Heater fan light, left	365
C053	Heater fan light, right	366
C062	Stepwell lighting, driver's side	307/330
C063	Stepwell lighting, co-driver's side	313/331
C064	Central upper storage compartment lighting	303/355
C065	Central lower storage compartment lighting	304
C066	Right-hand storage compartment lighting	306
C067	Left-hand tool compartment lighting	323/356
C068	Right-hand tool compartment lighting	324/357
C071	Work lamp	20
C072	Ashtray light, left	362
C073	Ashtray light, right	363
C074	Width marker light, rear left	233
C075	Width marker light, rear right	246
C110	Bunk light with switch down	351
C111	Bunk light with switch up	352
C115	Bunk light with switch	302
C130	Red interior nightlight, driver's side	345
C139	Red interior nightlight, co-driver's side	342
C144	Rotating light, left	693
C145	Rotating light, right	695
C148	Interior lighting, driver's side, 2 x 21W	315/334
C149	Interior lighting, co-driver's side, 2 x 21W	309/338
C150	Left-hand storage compartment lighting	353
C151	Interior lighting with central switch	326
C154	Rear number plate light, left (tractors)	237
C155	Rear number plate light, right (tractors)	249
C156	Width marker light, left, 1st (tractors))	238
C157	Width marker light, right, 1st (tractors))	250
C158	Width marker light, left, 2nd (tractors))	239
C159	Width marker light, right, 2nd (tractors))	252
C539	Accessories contact-start switch	14

Column 1	Column 2	Column 3
C588	Heater fan switch, 4-speed	377
C622	Lighting switch	205/209
C677	Fuel heater switch	797
C695	Mirror adjusting switch, driver's side	743/753
C696	Mirror adjusting switch, co-driver's side	748/759
C697	Seat heating switch, driver's side	387
C698	Seat heating switch, co-driver's side	389
C716	Rotating light switch	696
C725	Work lamp switch	20
C726	Glow plug switch	33
C728	Front fog light switch	217
C731	Interior roof console lighting switch (bed control), co-driver's side F249 XC	315/335
C732	Interior roof console lighting switch, co-driver's side F249 XC	315/335
C733	Interior roof console lighting switch (bed control), driver's side F249 XC	310/339
C734	Interior roof console lighting switch, driver's side F249 XC	310/339
C735	Interior nightlight switch FG249 XC	318/345
C736	Roof hatch switch F249 XL/XH/XC	771/775
C737	ASR traction switch	427
C739	Lifting-gear switch	612
C740	ECAS switch, normal driving level	619/643
C741	ECAS switch, axle lifting	646
C742	Traction control switch	648
C743	Electric window switch, co-driver's side (driver's side door)	732
C744	Electric window switch, co-driver's side (co-driver's side door)	736
C745	Electric window switch, driver's side (driver's side door)	739
C746	Mirror heating switch	765
C747	Fuel filter/water separator heating element switch	794
C748	Cross-axle lock control switch	278
C749	Longitudinal controlled slip differential control switch	280
C750	PTO control switch	686
C751	PTO control switch	690
C760	Air-conditioning switch	372
C761	CWS switch more warnings	155
C763	Instrument lighting dimming potentiometer	120
C764	Headlamp height adjustment potentiometer	220
C765	Warning lights switch (with LED search lighting)	40
C774	Central door locking switch	679
C775	Switch for direction indicator lamps/main beam/dipped beam/horn	44/225/766
C776	Multi-function switch	91/488/561
C778	Cab heater switch	509/537
C799	Retarder switch	452/467
C802	Recirculation switch	383
C803	Central door locking switch	670
C804	Flexible speed limiter switch	559
C844	Cab heater switch	517
C863	Rear fog light switch	212
C882	Heater fan switch	527
D503	Electronic unit for lifting gear	603
D529	Electronic unit, ECAS remote control	616/639
D587	Electronic unit for ZF intarder	446
D591	Electronic unit for E-gas 3	492
D597	Electronic unit for ASL-V speed limiter	551
D600	Diode for rear fog light/dipped beam	212

Column 1	Column 2	Column 3
D601	Diode for rear and front fog lights	215
D609	Diode for light switch	209
D610	Diode for main beam/dipped beam	225
D611	Diode for lifting-gear lowering valve damping	604
D612	Diode for lifting-gear lifting valve damping	609
D613	Diode for lifting-gear for pump relay damping	607
D622	Diode for lifting-gear lifting lock	611
D622	Diode for lifting-gear lowering lock	605
D668	Diode for generator safety (D+)	5
D708	Diode for interior lighting, prevent feedback to co-driver's stepwell	332
D709	Diode for interior lighting, prevent feedback to switch, co-driver's side	314/333
D710	Diode for interior lighting, prevent feedback to switch, driver's side	309/338
D721	Diode for parking brake, prevent feedback	103
D722	Diode for brake lights, prevent feedback	288
D745	Diode for engine brake valves (DEB)	438
D758	Diode, prevent feedback to CWS	299
D759	Diode, prevent feedback to brake lights	294
D802	Electronic unit, ECAS-2	657
D809	Electronic unit, ASL-G speed limiter	478
D814	Electronic unit, ECS	579
D850	Electronic unit, ABS/ASR, D version	416
D851	Electronic unit, ECAS-2 (4x2)	628
D852	DIP-3 instrument panel	119
D853	Electronic unit, CWS-2	164
D855	Electronic unit, water separator	791
D862	Electronic unit, central door locking	672
D870	Electronic unit, Voith retarder 133-2	462
D871	Electronic unit, cab heater D3LC	505/514
D884	Electronic unit, CTE-3	64
D895	Electronic unit, 24/12 V converter	703
D901	Electronic unit, Eberspächer Hydronic 10 cab heater	533
E000	Fuse, rear left width marker light	230
E001	Fuse, rear right width marker light	242
E004	Fuse, dipped beam, driver's side	254
E005	Fuse, dipped beam warning light, co-driver's side	256
E006	Fuse, main beam, driver's side	258
E007	Fuse, main beam warning light, co-driver's side	259
E008	Fuse, spotlights	261
E009	Fuse, front fog lights	263
E010	Fuse, rear fog lights	267
E013	Fuse, brake lights	287
E016	Fuse, reversing lights	272
E019	Fuse, operation of glow plug/CTE/direction indicator lamps/engine brake	33
E023	Fuse, switch for cold start/tachograph/ cab heater program clock	22
E025	Fuse, windscreen wiper motor/headlamp washer	90
E026	Fuse, cigar lighter	360
E027	Fuse, 24V/12 V converter	17
E028	Fuse, interior lighting	301/329
E029	Fuse, retarders/engine brake	440
E030	Fuse, horn	766
E031	Fuse, heater fan ITC unit	368/523
E033	Fuse, electric window motor, co-driver's side	724

Column 1	Column 2	Column 3
E034	Fuse, electric window motor, driver's side	728
E035	Fuse, instruments and warning lights	101
E037	Fuse, ignition switch	14
E040	Fuse, ABS	417
E041	Fuse, ABS	406
E042	Fuse, ABS	407
E043	Fuse, trailer ABS	401
E044	Fuse, mirror heating	732
E048	Fuse, trailer power supply	395
E051	Fuse, ECAS-1	623/653
E052	Fuse, ECAS remote control work lamp	19
E053	Fuse, ECAS diagnostic connector (16-pin)	176
E062	Fuse, lifting gear and ECAS	601/617
E084	Fuse, lighting	201
E091	Fuse, air dryer/fuel contamination separator heating element	385
E108	Fuse, CTE-2/CTE-3	46
E112	Fuse, glow indicator light	31/599
E114	Fuse, Eberspächer cab heater	502/511/524
E117	Fuse, search light	228
E118	Fuse, UPEC power supply relay	572
E142	Fuse, accessories before ignition	695
E143	Fuse, E-gas tachograph	27
E157	Fuse, automatic lubrication	470
E164	Fuse, fuel heating before ignition	799
E168	Fuse, accessories/microwave	392
E710	Fuse, operation of fuel filter/water separator	792
E171	Fuse, fuel filter/water separator	788
E172	Fuse, trailer ABS, 10 A	402
E184	Fuse, UPEC	570
E194	Fuse, UPEC superstructure	569
E197	Fuse, E-gas	486
E501	Reversing light control switch	272
E507	Proximity switch for axle load protection lifting gear (10-ton)	601
E508	Air-conditioning compressor temperature switch	371
E509	Air-conditioning operating switch, high/low pressure	370
E511	Brake light control switch	288
E514	Control switch for stepwell/interior lighting, door switch, driver's side	306/329
E515	Control switch for stepwell/interior lighting, door switch, co-driver's side	312/330
E524	Lifting gear control switch, oil pressure limit switch	609
E525	Control switch for central upper storage compartment lighting	302/354
E526	Control switch for central lower storage compartment lighting	303
E527	Control switch for right-hand storage compartment lighting	305
E528	Control switch for left-hand tool compartment lighting	322/355
E529	Control switch for right-hand tool compartment lighting	323/356
E550	Control switch for glow plug temperature	585
E560	Control switch for left-hand storage compartment lighting	352
E561	Gearbox gate protection control switch	47
E564	Engine brake control switch	60/595
E566	Control switch for Eberspächer cab heater (D1LC) thermostat	507
E570	Control switch for coupling/PTO N/10	685
E571	Control switch for Thermo 90 cab heater	537
E575	Clutch proximity switch	483/567
E579	Proximity switch for Eberspächer cab heater/fan thermostat	540

Column 1	Column 2	Column 3
E580	Proximity switch for Eberspächer cab heater/fan timer	543
E581	Cab heater control switch	517
F000	Parking brake control switch	102
F006	Control switch, differential lock, 1st differential	144
F007	Control switch, differential lock, 3rd differential	148
F011	Control switch for engine oil pressure	161
F033	Splitter signalling control switch	128
F038	Control switch, differential lock, 2nd differential	147
F047	Control switch for steering system (1st circuit)	158
F048	Control switch for steering system (2nd circuit)	159
F050	Control switch for differential lock pressure (1st and 2nd differential)	146
F087	Control switch for gearbox PTO	150
F088	Control switch for gearbox PTO	152
F501	Speed sensor	107
F509	Cab temperature sensor of cab heater	516/541
F512	Sensor for ABS blocking signal, front left	405
F513	Sensor for ABS blocking signal, front right	406
F514	Sensor for ABS blocking signal, driven axle, left	407
F515	Sensor for ABS blocking signal, driven axle, right	409
F531	Sensor for E-gas accelerator pedal	494
F533	Speed sensor (4-pin), 1st	23
F535	Engine coolant temperature sensor	115
F544	Coolant temperature sensor, secondary retarder	450/466
F552	Crankshaft position sensor	571
F555	Boost pressure sensor	576
F558	Camshaft position sensor	570
F561	Inlet air temperature sensor	573
F565	Fuel temperature sensor	574
F566	Engine coolant temperature sensor	575
F571	Sensor, accelerator pedal, ECS	578/580
F585	Engine coolant level sensor	162
F608	Fuel level sensor	116
F612	ECAS height sensor, left, rear axle	622/651
F613	ECAS height sensor, right, rear axle	623/652
F614	ECAS height sensor, front axle	625/653
F615	Pressure sensor, ECAS, driven axle, left/right	655
F616	Cab locking sensor	297
F620	Sensor for Voith retarder 133-2 oil temperature	464
G000	Relay, rear light/width marker light	208/226
G001	Relay, dipped beam	224/254
G002	Relay, main beam	225/258
G003	Relay, spotlights	227/261
G004	Relay, front fog light	216/263
G005	Relay, rear fog light	211/267
G014	Relay, glow plug	31/74/584/597
G015	Relay, ignition	6/14
G028	Relay, electric window, co-driver's side	723/731
G029	Relay, electric window, co-driver's side	725/732
G030	Relay, electric window, driver's side	727/738
G031	Relay, electric window, driver's side	729/739
G036	Relay, brake light, 1st	287/289
G052	Relay, lifting-gear motor	606/613
G066	Relay, lifting-gear takeover	606/608
G126	Relay, UPEC power supply	571/573
G170	Relay, heater fan of cab heater	524/536



<b>Column 1</b>	<b>Column 2</b>	<b>Column 3</b>
G178	Relay, accessories	16/17
G201	Relay, EFPH fuel heating	796/799
G231	Relay, radio lighting (12V)	704/706/711/713
G234	Relay, fuel filter/water separator control	788/793
G236	Micro relay, windscreen wiper (speed 1 or 2)	81/83
G237	Micro relay, windscreen wiper (automatic zero position)	82/85
G238	Micro relay, headlamp washer	79/92
G239	Relay, disengage third brake	419/429
G240	Micro relay, PTO/speed control	101/152
G243	Micro relay, engine brake (DEB)	432/434/437/587
G247	Relay, heater fan of cab heater	523/529
G257	Micro relay, recirculation valve	380/381
G258	Micro relay, recirculation valve	380/383
G259	Relay, N10-PTO control	684/686
G267	Micro relay, air-conditioning	368/371
G279	Micro relay, air-conditioning	369/375
G284	Micro relay, Voith retarder 133-2	455/456
G297	Relay, cab air suspension	295/298
G300	Micro relay, Thermo 90 cab heater	521/522
G301	Micro relay, lighting D+	5/202
G302	Micro relay, Swedish lighting	202/206
G303	Relay, starter motor lock	4/11
G321	Relay, UPEC superstructure connector	564/565
G328	Relay, UPEC engine stop	564/596
G392	Micro relay, rear fog light takeover	211/213
G420	Relay, gearbox gate protection takeover	37/78
G516	Central cab earth, co-driver's side	192
G718	Connection parking brake/PTO	103
G721	Connection multi-function switch	489
G723	Connection central door locking	680
G725	Connection D3LC cab heater	505/514

**5.4 SECTION DIAGRAMS OF CIRCUIT DIAGRAM 1316630/30**

- 1 Charging circuit/starter motor/ignition / starting switch
- 5 CTE-3
- 13 Gearbox and gate protection
- 20 Heater fan/air-conditioning
- 35 Radio converter
- 40A Eberspächer cab heater (with thermostat unit)
- 40B Eberspächer cab heater (with timer)
- 46 Eberspächer Hydronic 10 cab heater
- 49 Rotating lights on roof



**1 CHARGING CIRCUIT/STARTER MOTOR/IGNITION /STARTING SWITCH****CONTACT CIRCUIT**

If ignition/starter switch C539 is turned (contact 1 is connected to pin 6), the “accessories” relay (G178) will be activated.

Voltage is now applied through fuse E037, wire 1100, switch C539 and wire 1130 to contact 85 of relay G178 (“accessories” relay). As a result of the activation of relay G178 a connection is made between contacts 30 and 87 and a voltage is applied to D525 (electronic 24V/12V converter) through fuse E037, wire 1100, contacts 30 and 87, wire 1147, fuse E027, wire 1106. At the same time a voltage is applied to C725 (work lamp switch) through fuse E052 and wire 1100.

If the vehicle ignition is turned off, no voltage is applied to connection point 42. As a result, pin 55 of the CTE-3 unit will be connected to the supply voltage for 3 minutes, causing the engine stop/engine brake valve (B082) to become activated.

If the vehicle is switched to contact again within these 3 minutes, the engine stop/engine brake valve (B082) is deactivated again.

For more information on activating the engine brake: see the system manual.

**STARTING CIRCUIT**

If contact switch C539 is turned (contact 1 is connected to contacts 4 and 6), contact relay G015 is activated through wire 4001. If the contact switch is turned into the “starting” position, a connection between points 1 and 2 is made in this switch. The supply now runs from the batteries through fuse E037, connection 1-2 of the contact/starter switch and wire 4004, contacts 30 and 87 of relay G303 (starter motor lock relay) to connection point 50 of starter motor B010. The relay coil is located between points 50 and 31 (earth) and will supply the starter motor with voltage through connection points 30 and 31, as a result of which the motor will start operating.

Voltage is also applied to pin 45 of the CTE-3 through fuse E037, wire 1100, switch C539 (connections 1 and 2) and wire 4004.

Depending on the condition (engine speed exceeding approx. 400 rpm and supply voltage (battery voltage) on the CTE unit exceeding 17 V), glowing is activated during starting, on the understanding that preglowing has taken place first.

Via the same circuit there is a voltage on D827 (Electronic unit, cab heater).

For more information on glowing: see the system manual.

As soon as the motor is running, a voltage is applied from A502 to wire 1020. This wire is connected to both D853 (CWS-2), D871 (electronic unit, cab heater) (D3LC) (if fitted) and A040 (socket for alarm system) (if fitted). This voltage is also applied to connection point 85 of relay G303 (Starter motor lock relay). It is activated and will interrupt the starting circuit.

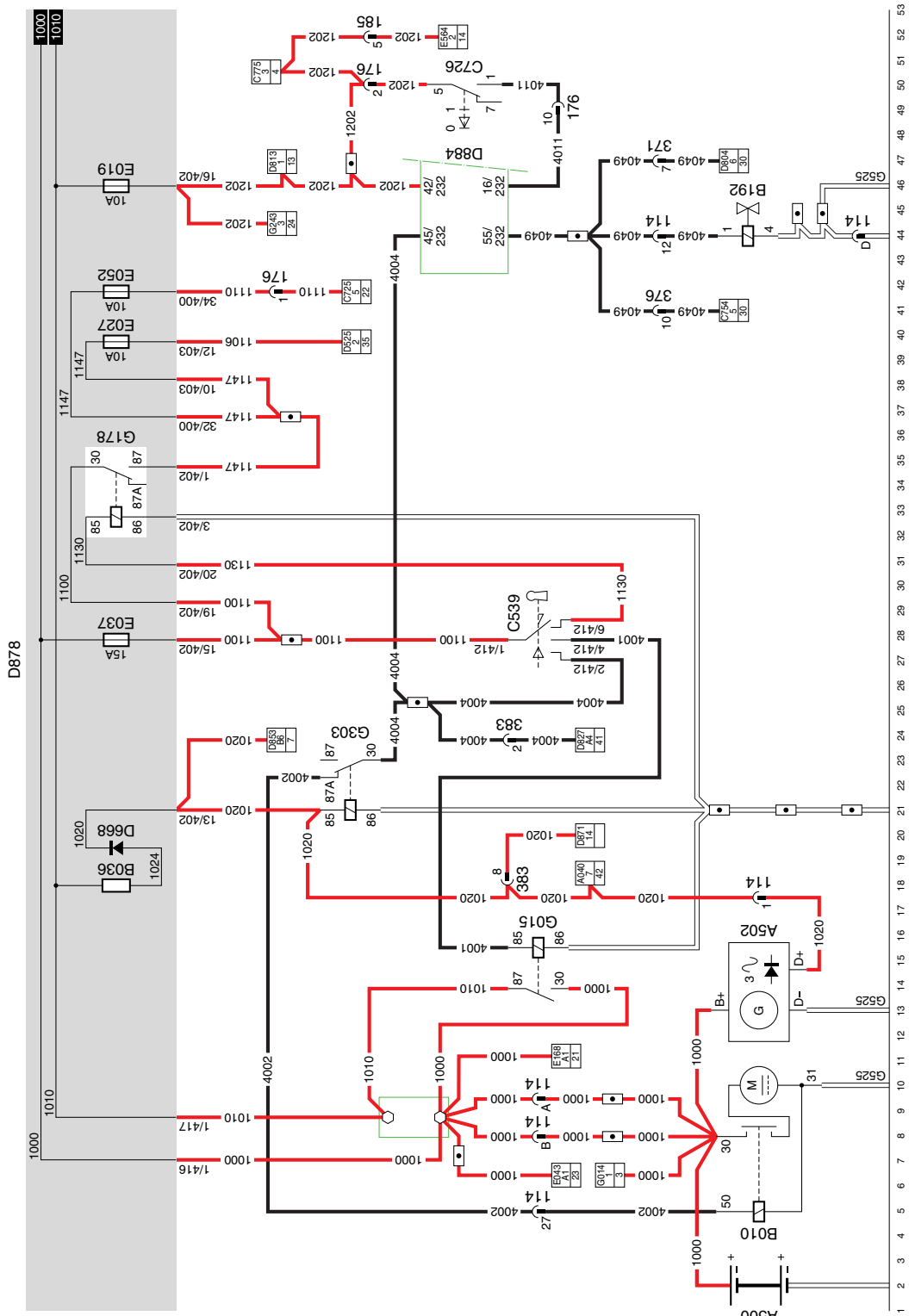
### CHARGING CIRCUIT

If the contact is activated, voltage is applied to generator resistor D+ (B036).

The other side of the resistor is connected to earth through the diode for generator safety (D+) (D668), wire 1020, D+ connection of the alternator and the integrated voltage regulator (A502) in the generator. This will cause a small current to run, causing a magnetic field in the alternator.

After starting, the voltage on clamps B+ and D+ will increase to approx. 28.4 V. This is caused by the fact that the regulator disconnects the earth connection in the regulator and connects it to the battery voltage. This voltage is also applied to wire 1020, so that the voltage difference over the resistor becomes 0 V. The magnetic field will now disappear, so that the generator will not be energised for a short period of time. This will reduce the voltage on outputs B+ and D+.

The regulator reactivates when the voltage drops below 27.6 V. This means that the voltage supplied by the generator remains relatively constant. The batteries are fed via generator output B+.



1

1316630/30

EL000623

**5 CTE-3**

If the vehicle speed is lower than a certain value (this value depends on the engine type and gearbox model), connection point 51 will be earthed in the unit. Voltage is now applied to connection point 85 of relay G420 through fuse E019, wire 1202. Connection point 86 is earthed via connection point 51 of the CTE unit (D884). Relay G420 is energised (points 30 and 87 are connected). A voltage is now applied to connection point 2 of valve B079 (Valve, single-H protection) through fuse E019 and wire 1202). Connection point 1 of valve B079 is connected to connection point 30 of relay G420 through wire 4030. If the contacts of relay G420 are closed (points 30 and 87 are connected), valve B079 will be activated. Now it is possible to shift down.

**VARIANTS****Location**

14	Not applicable if the vehicle is equipped with a UPEC system.
22,29	Connector 495 is only used in the case of an FA. Connector 493 is used in the case of an FT.
50,85,89	Not applicable if the vehicle is equipped with a UPEC system.

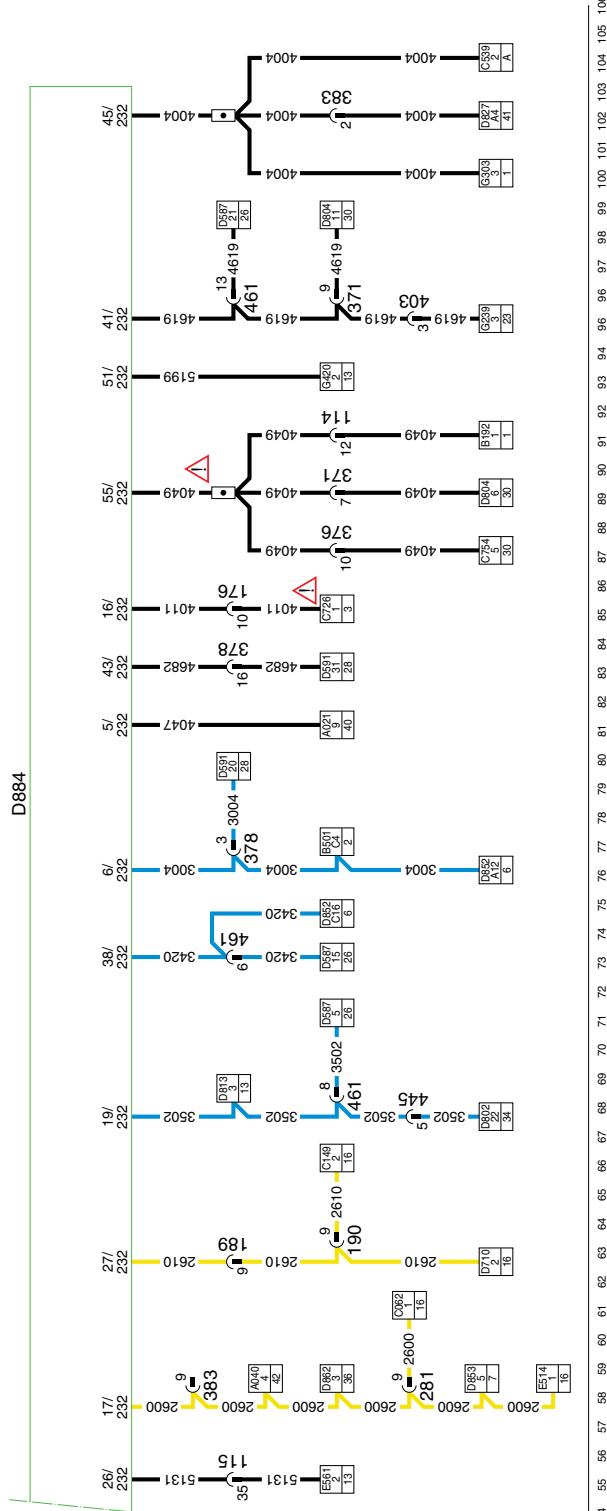
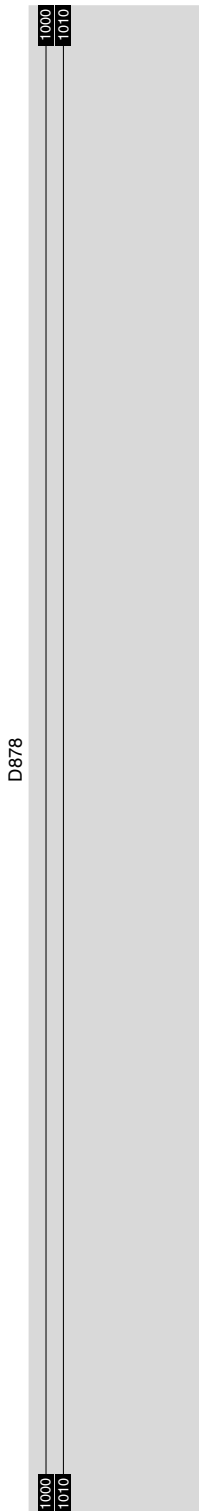
**SEE THE SYSTEM MANUAL FOR MORE INFORMATION**

# CHANGES IN THE ELECTRICAL SYSTEM

5

Changes in the electrical system from chassis number 0E527418

95XF series



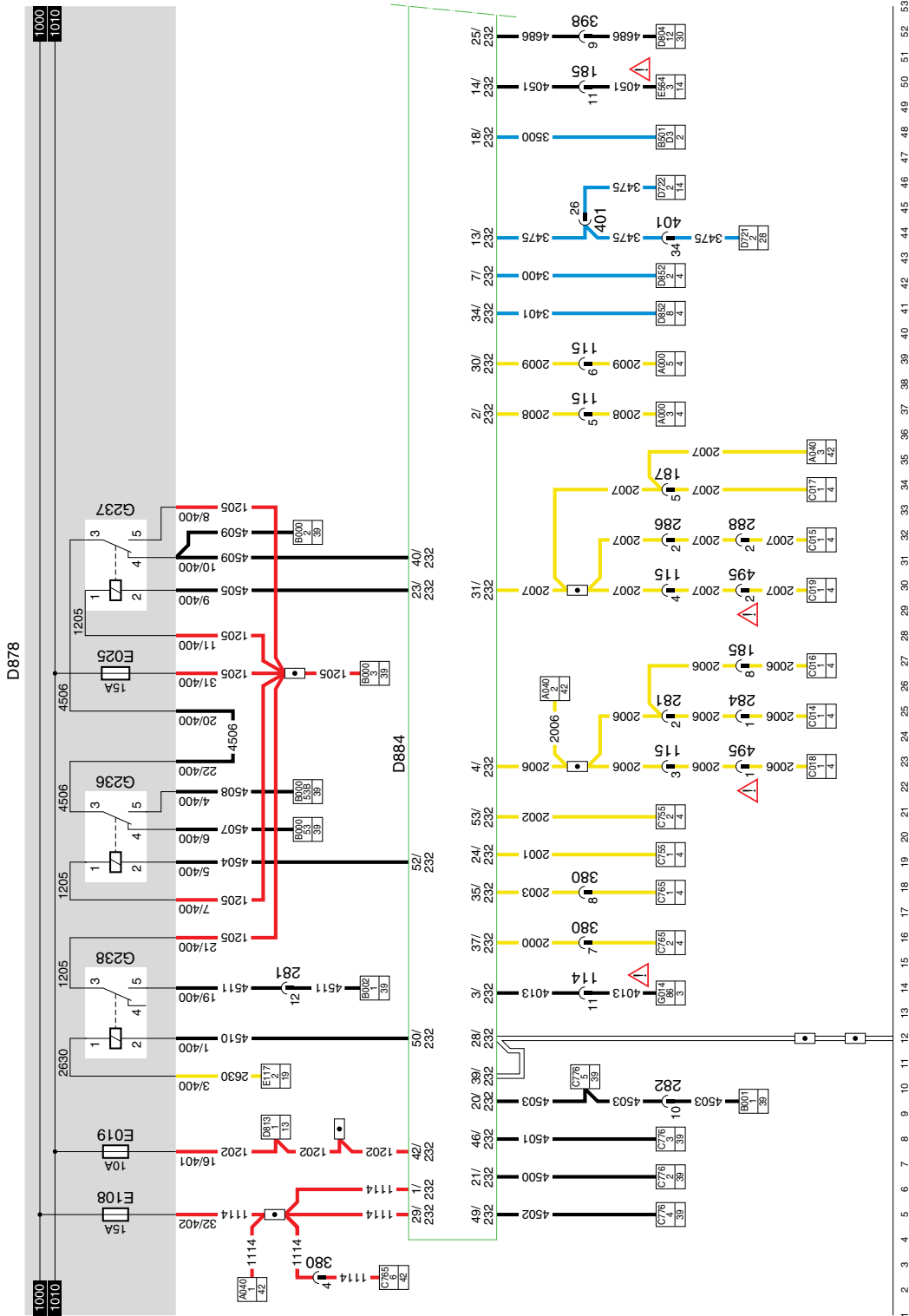
54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 96 96 97 98 99 100 101 102 103 104 105 106

5

1316630/30

EL000625

11



**13 GEARBOX AND GATE PROTECTION****RANGE-CHANGE PROTECTION, GEARBOX  
(gears 1 -> 5)**

This shift-down safety prevents shifting down into the lower range (gears 1, 2, 3 and 4) once the vehicle speed has exceeded approx. 30 km/h. The shift-down safety is installed on vehicles with single H-type gearing.

In the case of an electrical malfunction (voltage drop out), the safety is activated and the gears 1, 2, 3 and 4 cannot be re-engaged.

**OPERATION**

If the vehicle speed is lower than 30 km/h (this value depends on the engine type and gearbox model), connection point 51 will be earthed in the unit. Voltage is now applied to connection point 85 of relay G420 through fuse E019 and wire 1202. Connection point 86 is earthed via connection point 51 of the CTE unit (D884). Relay G420 is energised (points 30 and 87 are connected). A voltage is now applied to connection point 2 of valve B079 (Valve, single-H protection) through fuse E019 and wire 1202). Connection point 1 of valve B079 is connected to connection point 30 of relay G420 through wire 4030. If the contacts of relay G420 are closed (points 30 and 87 are connected), valve B079 will be activated. Now it is possible to shift down.

If the vehicle speed exceeds 30 km/h, the CTE-3 unit will break the earth connection and shifting down is no longer possible.

**GATE PROTECTION (gears 4 -> 1)**

If the relay contact (G015) is closed, the supply voltage will be applied to the control switch (E561) through fuse E016.

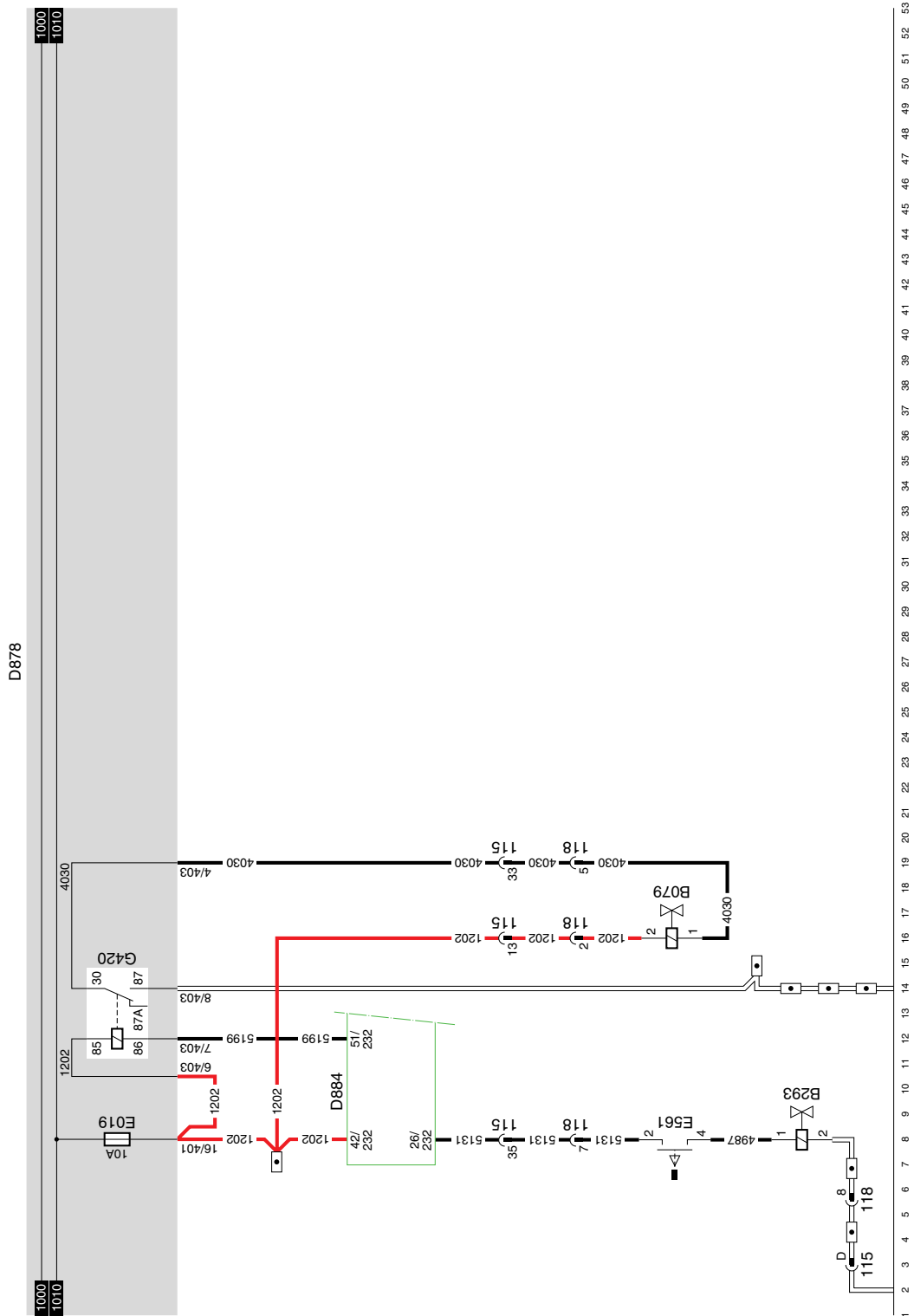
If the low range is activated, switch E561 is closed and a voltage is applied to valve B293. A supply voltage is applied to point 1 of electronic unit D813 through fuse E019 and wire 1202.

Connection 3 of electronic unit D813 is connected to the CTE-2. This is the speed-dependent signal. Depending on the speed, the electronic unit of the gearbox gate protection (D813) connects valve B293 to earth. If both conditions are met, valve B293 is activated and the gate protection is active. Shifting down from 3rd and 4th gear into the 1st and 2nd gear is now impossible.

If the high range is activated, switch E561 is opened and the voltage to valve B293 drops out. At a speed in excess of approx. 12 km/h, pin 4 of the electronic unit D813 is constantly connected to earth. Shifting down into 5th or 6th gear is possible, however.

**SEE THE SYSTEM MANUAL FOR MORE INFORMATION**





11

13

1316630/30

EL000626

## 20 HEATER FAN/AIR-CONDITIONING

A voltage is applied to connection point 8 of heater fan (B015) through the heater fan fuse (E031). Connection point 7 is connected to point 6 of the thermal switch. Connection point 5 of the thermal switch is connected to point 4 of B015 (series resistors). There is also a voltage on connection point 3 of switch C588 (five-position switch). Depending on the position of this switch, the fan will start operating at a certain speed.

The knob has five positions:

**Off:** Heater fan (B015) off.

**Position 1:** The fan runs at the lowest speed. Voltage is applied to connection point 8 of heater fan B015 through fuse E031 and wire 1201. The earth is formed through wire 4658, the thermal switch, via 3 resistors, wire 4650 and switch C588 (through-connection between points 1 and 2).

**Position 2:** The fan runs slightly faster. Voltage is applied to connection point 8 of heater fan B015 through fuse E031 and wire 1201. The earth is formed through wire 4658, the thermal switch, via 2 resistors, wire 4651 and switch C588 (through-connection between points 4 and 2).

**Position 3:** The heater fan runs at the highest speed but one. Voltage is applied to connection point 8 of heater fan B015 through fuse E031 and wire 1201. The earth is formed through wire 4658, the thermal switch, via 1 resistor, wire 4652 and switch C588 (through-connection between points 4 and 2).

**Position 4:** The heater fan runs at its highest speed. Voltage is applied to connection point 8 of heater fan B015 through fuse E031 and wire 1201. The earth is formed through wire 4658, the thermal switch, a direct connection to connection point 3 of switch C588 (through-connection between points 4 and 2).

**BRIEF DESCRIPTION OF THE  
RECIRCULATION VALVE**

If switch C802 (air-conditioning recirculation valve) is activated, a voltage is applied to point 1 of relays G257 and G258. As a result, pin 2 of recirculation-valve motor B252 is connected to earth and simultaneously pin 1 of B252 is connected to the positive voltage. This will activate motor B252 and close the recirculation valve.

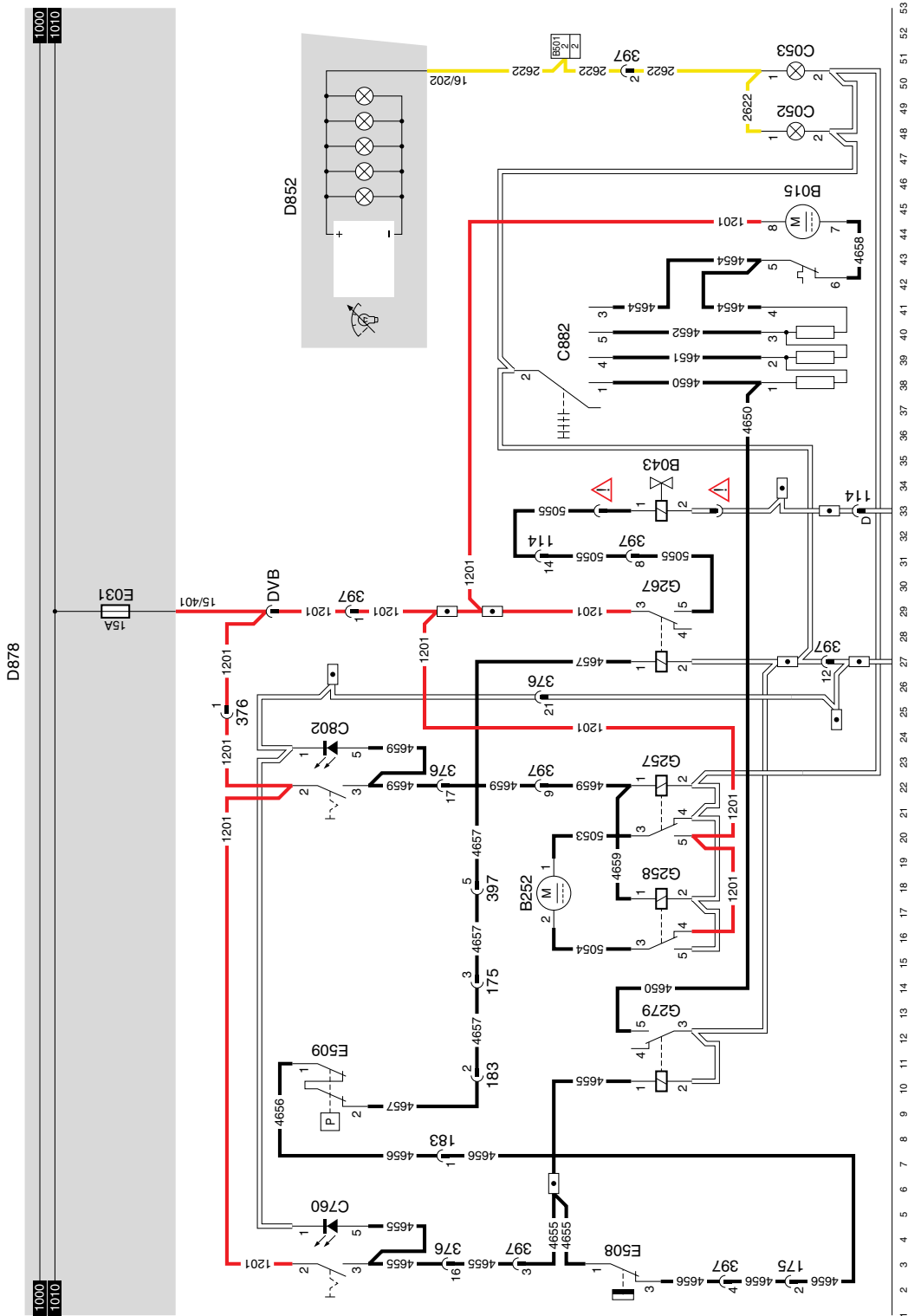
If C802 is not activated, no voltage is applied to relays G257 and G258. As a result, the direction of flow of the current through motor B252 is reversed and the recirculation valve will open.

**BRIEF DESCRIPTION OF THE  
AIR-CONDITIONING SYSTEM**

When the air-conditioning system is engaged with switch C760, a voltage is applied to both relay G279 and G267 through wire 4655, switch E508 (air-conditioning compressor temperature switch), E509 (air-conditioning high/low pressure operating switch) and wire 4657.

As a result, the heater fan (B015) will start operating in position 1 and the air-conditioning is activated.

**SEE THE SYSTEM MANUAL FOR MORE  
INFORMATION**



**35 CONVERTER/RADIO**

The following description of the operation and connection is intended as a general guideline only.

Also refer to the manufacturer's installation instructions supplied with the radio.

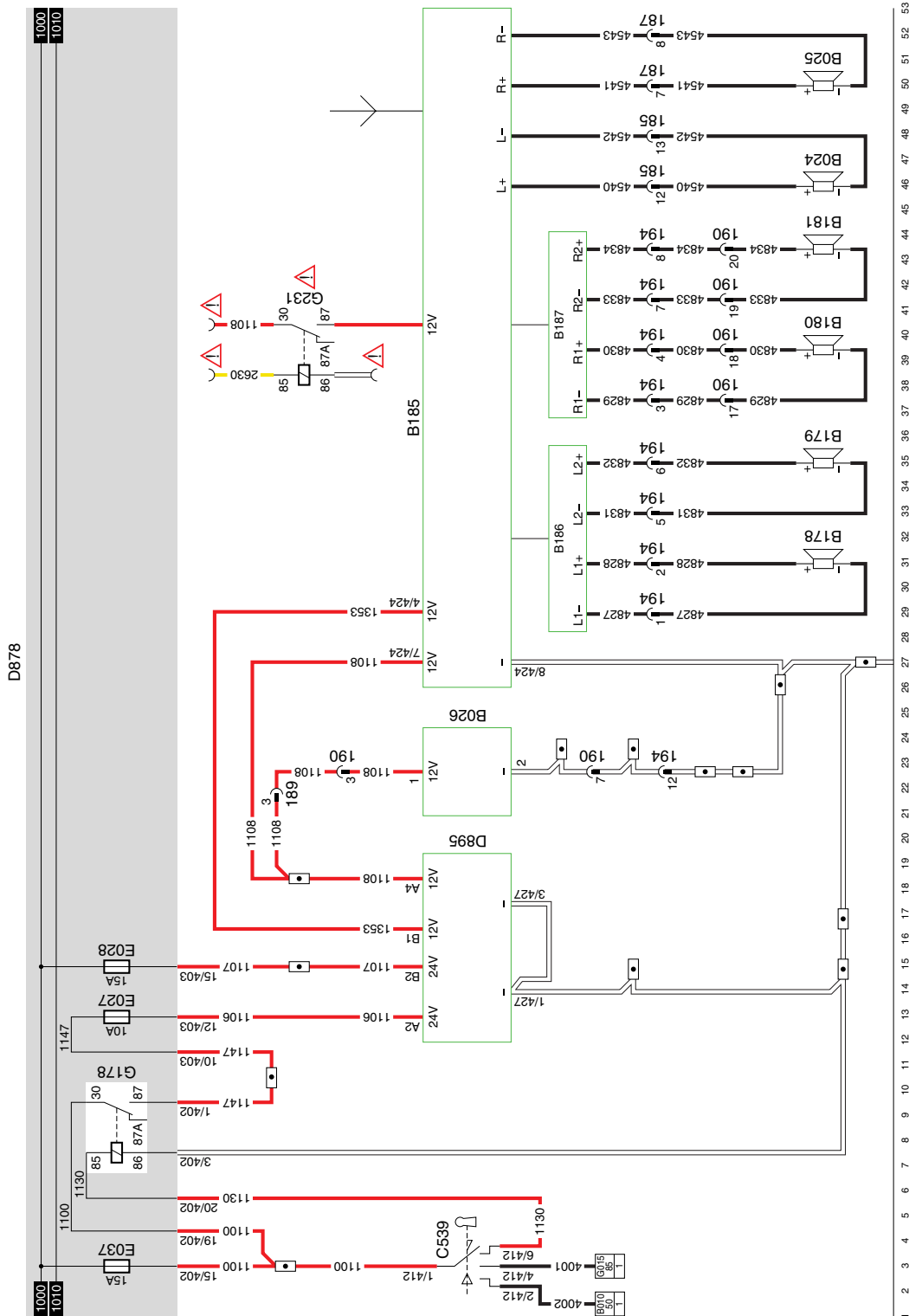
For more information, also see block 6, "Connecting the radio".

The radio has an aerial connection and two loudspeaker outputs, to which the speakers B024 and B025 can be connected. Two filters for the loudspeakers can also be connected to the radio. To each of these filters (B186 and B187) two loudspeakers can be connected (B178, B179 and B180 and B181).

The 12-V output (pin A4) of the converter (D895) can also be connected to a transmitter (B026) to provide it with a supply voltage.

**VARIANTS****Location**

- 22 Connector 190: only for XC. For XH and XL this is connector 291.
- 38 Wire no.: 2630. This wire should be connected to one of the search lighting switch wires.
- 41 Wire no.: 1108. This wire should be connected to wire 1108 coming from the 24/12V converter.



**40A EBERSPÄCHER CAB HEATER (WITH THERMOSTAT UNIT)**

The air heater is a separate heater which functions entirely independent of the vehicle. A temperature sensor which is installed in the thermostat unit (E566) measures the cab temperature. This sensor sends a signal to the electronic unit (D871) which controls the heating.

As a result, the cab temperature automatically remains at the preset temperature. In that case, the blower is in continuous operation.

**OPERATION OF CAB HEATER**

The air heater can be activated using the button on thermostat unit E566. If this button is switched to the "interior heating" position, the heater will be activated. A green lamp will now light up in the thermostat unit.

If the heater is on, it will activate the fan in the heating unit.

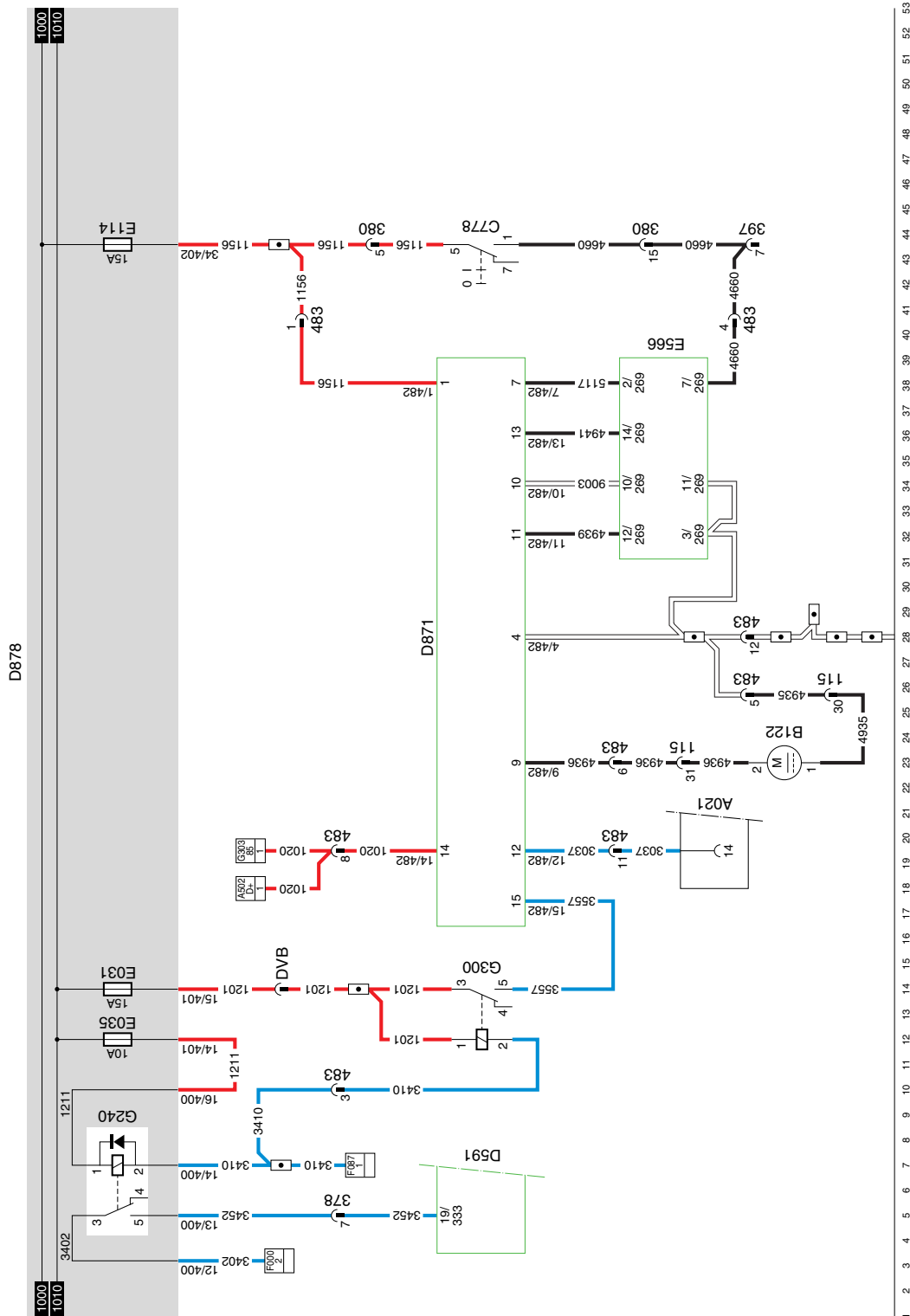
At the same time the fuel feed pump for the Eberspächer cab heater (B122) is activated, so that the correct amount of fuel is fed to the ignition chamber of the heating unit.

If the fuel is ignited, a temperature sensor (installed in the thermostat unit) will apply a voltage to the heating unit so that the heating unit switches off when a certain temperature is reached.

If the sensor measures a lower temperature than the temperature preset by the driver (using the temperature adjusting knob on the thermostat unit), the heating power will be adjusted.

In the case of overheating, the thermal protection will switch off the fuel pump. This will switch off the heating.

**SEE THE SYSTEM MANUAL FOR MORE INFORMATION**



40A

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EL000629



**40B EBERSPÄCHER CAB HEATER (WITH TIMER)**

The air heater is a separate heater which functions entirely independent of the vehicle. A temperature sensor (F509) measures the temperature inside the cab. This sensor sends a signal to the electronic unit (D871) which controls the heating.

As a result, the cab temperature automatically remains at the preset temperature. In that case, the blower is in continuous operation.

**OPERATION OF CAB HEATER**

The air heater can be started with switch C844.

If the system is activated with this switch, a green lamp in the timer will light up.

If the heater is on, it will activate the fan.

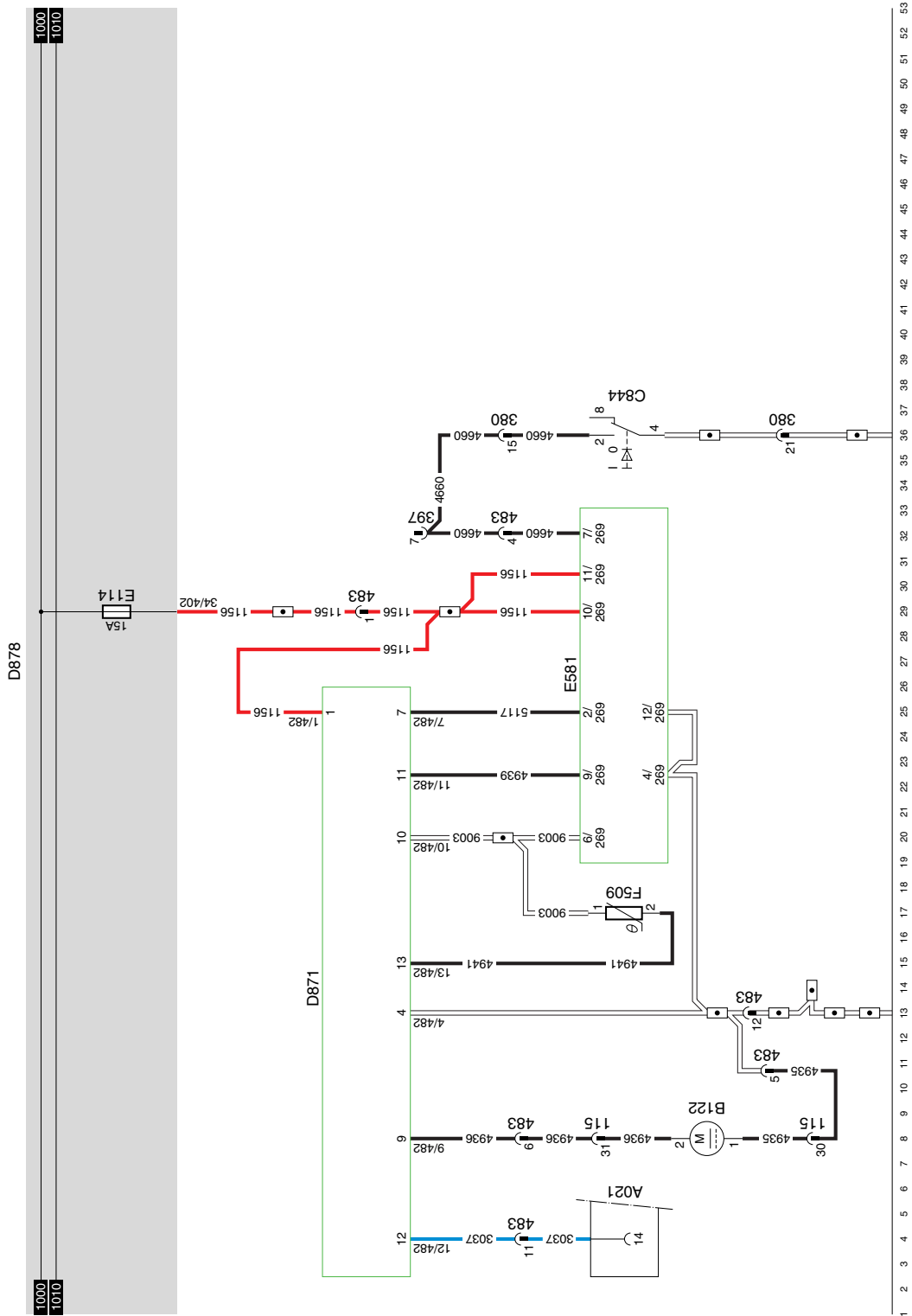
At the same time the fuel feed pump for the Eberspächer cab heater (B122) is activated, so that the correct amount of fuel is fed to the ignition chamber of the heating unit.

If the fuel is ignited, a temperature sensor (F509) will apply a voltage to the electronic unit D871 through wire 4941 so that the heating unit (D871) switches off when a certain temperature is reached.

If the sensor measures a lower temperature than the temperature preset by the driver (using the temperature adjusting knob on the timer), the heating power will be adjusted.

In the case of overheating, the thermal protection will switch off the fuel pump. This will switch off the heating.

**SEE THE SYSTEM MANUAL FOR MORE INFORMATION**



40B

1316630/30

EL000630

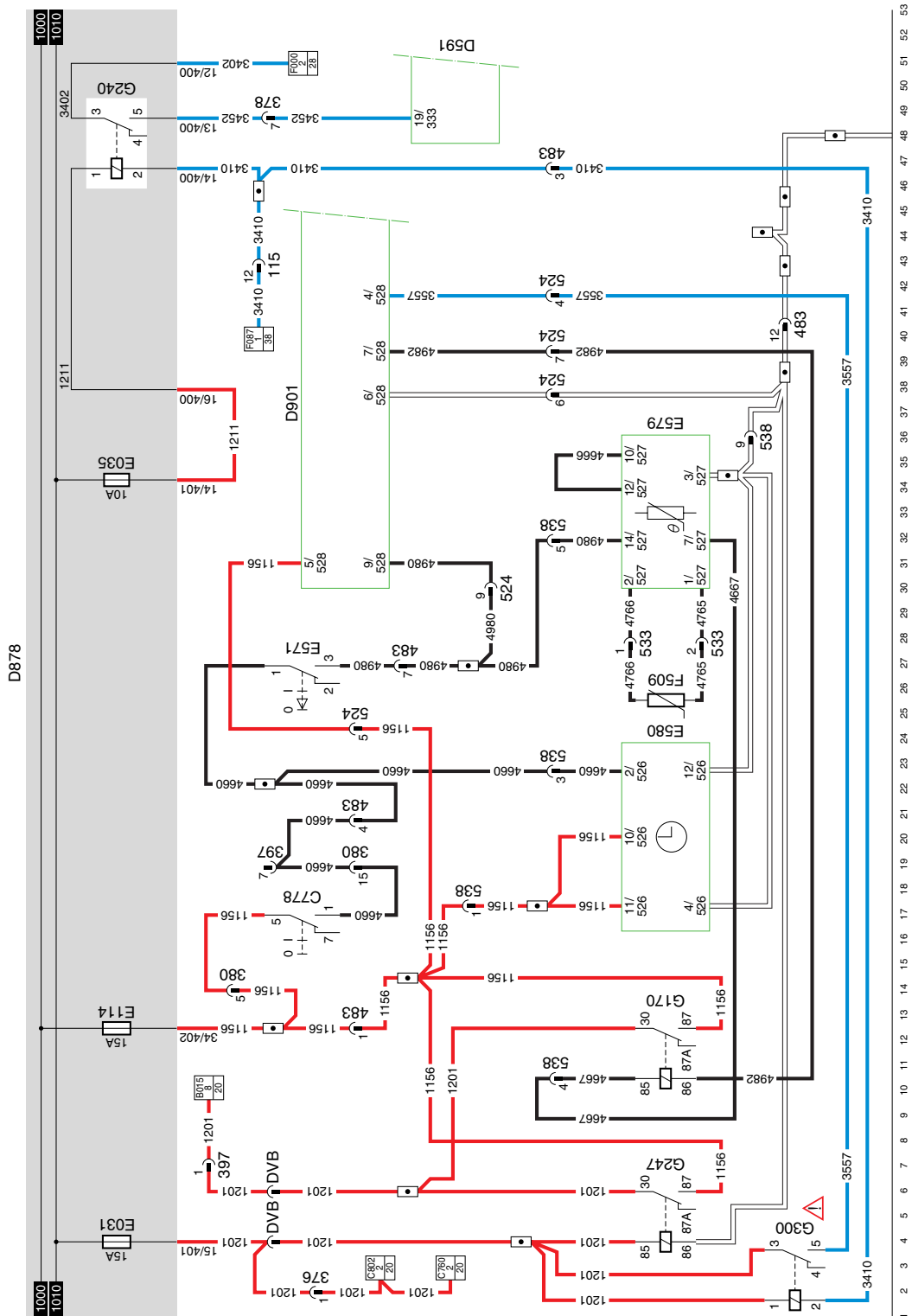
### 46 EBERSPÄCHER HYDRONIC 10 CAB HEATER

#### VARIANTS

##### Location

- 10 Only in case of transport of hazardous substances. The cab heater will be switched off when the PTO is activated.

**SEE THE SYSTEM MANUAL FOR MORE INFORMATION**



46

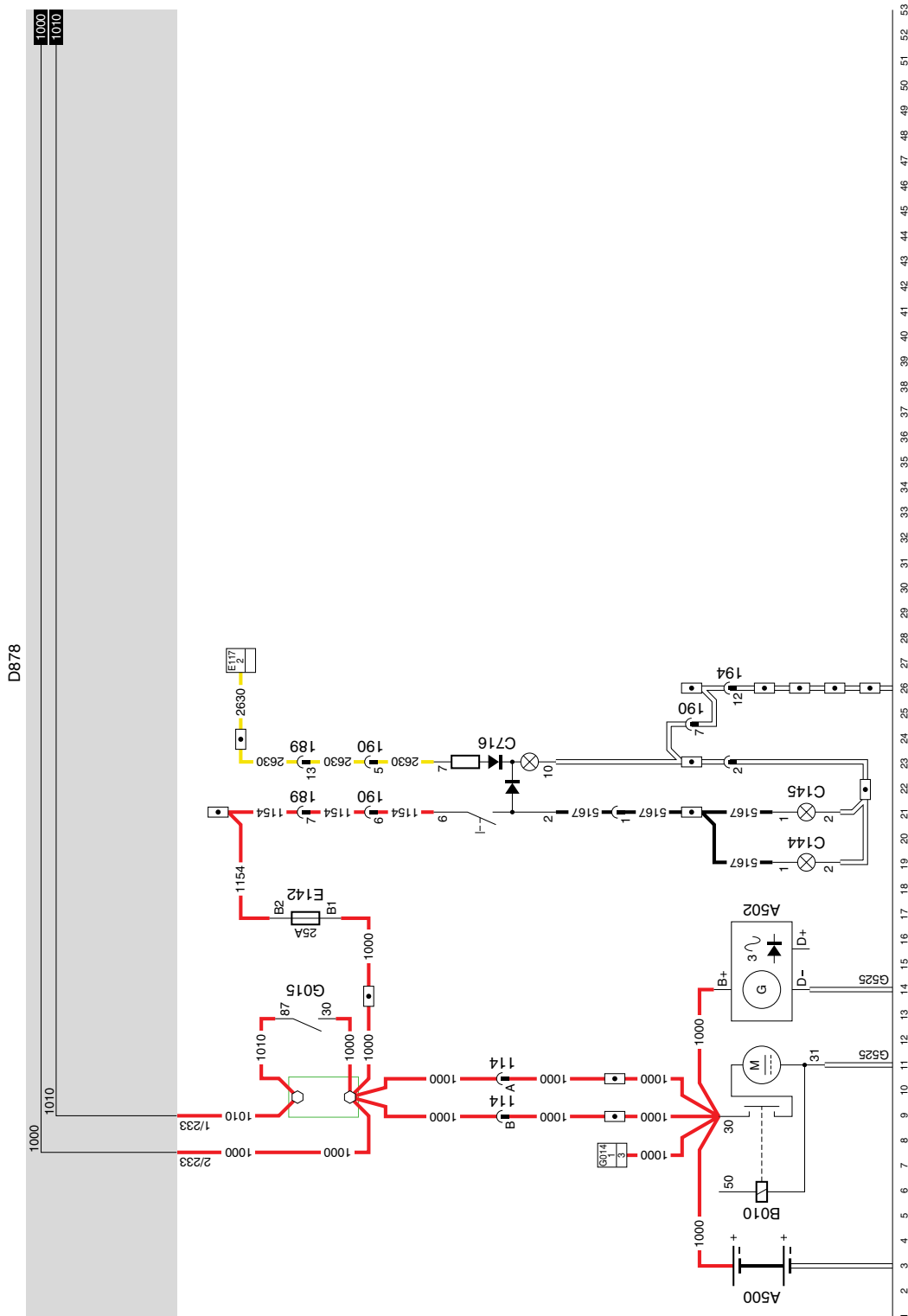
1316630/30

EL000631



**49 ROTATING LIGHTS ON ROOF**

A constant voltage is applied to connection point 6 of switch C716 (rotating light switch) through wire 1000 (power supply before ignition), fuse E142 and wire 1154. When the rotating light is switched on (points 6 and 2 are connected), voltage is applied to the left rotating light (C144) and the right rotating light (C145). The warning lamp in the switch will also light up.



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1316630/30

EL000633

**CONTENTS**

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1. INTRODUCTION .....	1-1 .....	9811
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2.1 Circuit diagram 1232300/ 34 .....	2-1 .....	9811
2.2 Overview of basic code numbers in circuit diagram 1232300/ 34 .....	2-3 .....	9811
2.3 Subdiagrams of circuit diagram 1232300/ 34 .....	2-7 .....	9811





## 1. INTRODUCTION

This main group shows the entire electrical system: "options and special applications" by means of **circuit diagrams** and **subdiagrams**.

### **Circuit diagram**

The circuit diagram contains all information relating to the entire electrical system: options and special applications which can be used in the vehicle, with the exception of the connectors.

### **Subdiagrams**

The subdiagrams show the entire electrical system: options and special applications in parts. These diagrams also contain the connectors.

### **Note:**

For the location of the connectors in the vehicle, see main group "Location of connectors".







**2.2 OVERVIEW OF BASIC CODE NUMBERS IN CIRCUIT DIAGRAM 1232300/34**

Column 1: Basic code number  
 Column 2: Designation  
 Column 3: Number on search bar of  
 circuit diagram 1232300/34

<b>Column 1</b>	<b>Column 2</b>	<b>Column 3</b>
A000	(Semi-)trailer socket (7-pin)	284/286
A001	Rear fog light back-up light socket (7-pin)	269/270/273/274/279
A011	12V socket (2-pin)	238/239
A027	24V accessory socket (4-pin)	3/4/6/7
A038	Accessory socket (2-pin) 40A	336
B015	4-speed heater fan	205/206
B028	Air horn	331
B043	Air-conditioning compressor	218/232
B070	Pump for centralised lubrication motor	262
B071	Lifting-gear lifting valve	32/139
B072	Lifting-gear lowering valve	25/132
B073	Lifting-gear motor pump	37/143
B138	Steered leading axle valve	60
B139	Leading axle lifting valve	61
B159	Air-conditioning condenser fan	219/233
B163	Horn compressor	325
B164	Radiotelephone	329
B166	Valve, ECAS front axle	116
B182	Fuel heater	260
B238	Valve, ECAS-2 driven axle left/right, air supply (FT)	115
B241	Sensor for heating element fuel filter/water separator	67
B250	Valve, ECAS-2 driven axle left/right air, supply (FA)	113
B260	PTO control valve	246
B262	PTO valve	251
B263	Clutch valve	249
B304	Air pressure buzzer	281
C040	Orange rotating light	304
C071	Work lamp	316
C129	Interior lighting with switch	12
C142	Work lamp	317
C143	Work lamp	318
C144	Blue rotating light	320
C145	Blue rotating light	321
C146	Blue rotating light	323
C162	High-beam headlight, roof	341
C163	Side-light/high-beam headlight, roof	347

<b>Column 1</b>	<b>Column 2</b>	<b>Column 3</b>
C164	High-beam headlight, roof	343
C165	Side-light/high-beam headlight, roof	349
C166	High-beam headlight, roof	344
C167	Side-light/high-beam headlight, roof	350
C168	High-beam headlight, roof	345
C169	Side-light/high-beam headlight, roof	351
C506	Switch, direction indicators, main beam/dipped beam, horn	332
C526	Air-conditioning switch	213/226
C588	Switch, 4-speed heater fan	206
C607	Lifting-gear switch	139
C677	Fuel heater switch	256
C704	Lifting-gear switch	33
C709	Auxiliary drive-off switch	44
C710	Work light switch	301
C715	Orange rotating light switch	304
C716	Blue rotating light switch	309
C717	Horn compressor switch	313
C719	ECAS driving height switch	104
C722	Switch for lifting/lowering steered leading axle	57
C747	Control switch for fuel filter/water separator	72
C769	PTO control switch	249/388
C801	Switch for accessories	276
C813	Switch for high-beam headlight, roof	338
D503	Electronic unit for lifting gear	23/131
D525	Electronic unit for converter 24/12V	327
D529	Electronic unit for ECAS remote control	102
D548	Electronic unit for trailing axle protection 10 tonnes	43/129
D582	Electronic unit for CWS	146
D611	Diode for lifting gear lowering valve damping	24/131
D612	Diode for lifting gear lifting valve damping	31/138
D613	Diode for lifting gear relay pump damping	17/126
D621	Diode for air-conditioning	212/222
D622	Diode for lifting gear lifting lock	31/139
D623	Diode for lifting gear lowering lock	25/132
D630	Diode for functional lighting of lifting gear	141
D658	Diode for lifting gear of steered leading axle	53
D659	Diode for lowering steered leading axle	56
D660	Diode, prevent feedback lowering trailing axle	50
D664	Diode, prevent lifting trailing axle	51
D665	Diode for auxiliary drive-off, prevent feedback	39
D700	Diode for horn, compressor and blue rotating light	311
D717	Diode, prevent feedback to blue rotating light switch	309
D718	Diode, prevent feedback to lighting	306
D719	Fuel heater LED	77

Column 1	Column 2	Column 3
D802	Electronic unit for ECAS-2	106
D808	Blue rotating light flasher unit	322
D811	Electronic unit for fuel heating	77
D825	Converter, 24/12V, 15A, for accessories	238
D828	Electronic unit for radio memory power supply	242
D855	Electronic unit for water separator	70
D861	Electronic unit for vehicle-speed sensor PTO 1-2 km/h	246
E000	Fuse for side-light, rear left	284
E001	Fuse for side-light, rear right	286
E030	Fuse for horn	332
E031	Fuse for heater fan ITC unit	206
E051	Fuse for ECAS-1	109
E062	Fuse, lifting gear and ECAS	17/102/127
E079	Fuse for lifting-gear search light	141
E117	Fuse for search light	287
E123	Fuse for rear axle lift system	63
E136	Fuse for air-conditioning condenser/fan	216/230
E142	Fuse for accessories before contact	4
E146	Fuse for working lights/rotating light and horn	301
E147	Fuse for working lights	316
E148	Fuse for blue rotating light	320
E149	Fuse for horn compressor	325
E150	Fuse for radiotelephone	327
E151	Fuse for radiotelephone internal	329
E156	Fuse for accessory lighting	7
E162	Fuse for CWS before contact	146
E163	Fuse for accessories after contact	6
E164	Fuse for fuel heater before contact	77/260
E165	Fuse for fuel heater after contact	78/256
E168	Fuse for converter, 24/12V, 15A, for accessories	336
E169	Fuse for converter, 24/12V, 15A, for accessories	238
E170	Fuse for fuel filter/water separator control	72
E171	Fuse for fuel filter/water separator	67
E182	Fuse for central door locking	262
E185	Fuse for fuel heater indicator lamp	258
E186	Fuse, ABS, (semi-)trailer	270/273
E187	Fuse, central power supply, (semi-)trailer	276
E188	Fuse for high-beam headlight, roof	341
E507	Proximity switch for axle load protection of lifting-gear (10 tonnes)	21/127
E508	Thermal switch for air-conditioning compressor	213/226
E509	High / low pressure air-conditioning control switch	213/224
E524	Control switch for lifting-gear oil pressure limit switch	30/137
E557	Control switch for air-conditioning fan	216/230
E563	Control switch for air-conditioning compressor	224



<b>Column 1</b>	<b>Column 2</b>	<b>Column 3</b>
E573	PTO control switch	251
E574	PTO control switch	253
F006	Control switch for differential lock 1st diff.	158
F009	Control switch for cab locking, left	148
F011	Control switch for engine oil pressure	154
F016	Control switch for engine air filter	156
F050	Control switch for differential lock pressure (1st and 2nd diff.)	160
F051	Control switch for coolant level	157
F074	Control switch for four-wheel drive	163
F090	Control switch for ABS, handbrake, (semi-)trailer	267/281
F534	Fuel level sensor with spare switch	164
F562	Sensor, trailing axle down	46
F563	Sensor, prevent lifting leading axle (8 tons)	18
F612	Height sensor, ECAS left-hand rear axle	106
F613	Height sensor, ECAS right-hand rear axle	108
F614	Height sensor, ECAS front axle	109
F615	Pressure sensor, ECAS driven axle left/right	110
G018	Horn relay	313/326
G052	Lifting-gear motor relay	17/37/125/143
G065	Heater fan relay	208/209
G066	Lifting-gear takeover relay	29/30/135/137
G096	Auxiliary drive-off relay interrupted 60 sec.	39
G117	Lifting-gear takeover relay	17/28/125/134
G129	Relay for lifting steered leading axle	49/57
G130	Relay for lowering steered leading axle	49/63
G131	Relay, prevent lifting trailing axle	33/50
G132	Control relay for lifting of leading axle make-contact	22/27
G136	Relay, prevent lifting leading axle	19/57
G137	Control relay for lifting of leading axle breaker contact	48/53
G150	Relay for air-conditioning compressor	213/218/226/232
G151	Relay, airconditioning condenser fan	216/219/230/233
G182	Relay for working lights	301/316
G183	Relay for blue rotating light	309/320
G188	Relay for accessory lighting	7/8
G197	Relay for blue rotating light switch over, horn and siren	307/332
G198	Relay for control of radiotelephone, horn	330
G201	Relay for fuel heater EFPH	256/260
G234	Control relay for fuel filter/water separator	67/72
G269	PTO transfer relay	249/253
G287	Relay for centralised lubrication	262/265
G288	ABS relay, (semi-)trailer air supply	264/267
G296	Relay for (semi-)trailer power supply	276/279
G299	Relay for high-beam headlights, roof	338/341
G516	Central earth, cab, co-driver's side	182
G717	Connection (four-wheel drive without ABS)	163

**2.3 SUBDIAGRAMS OF CIRCUIT DIAGRAM 1232300/34**

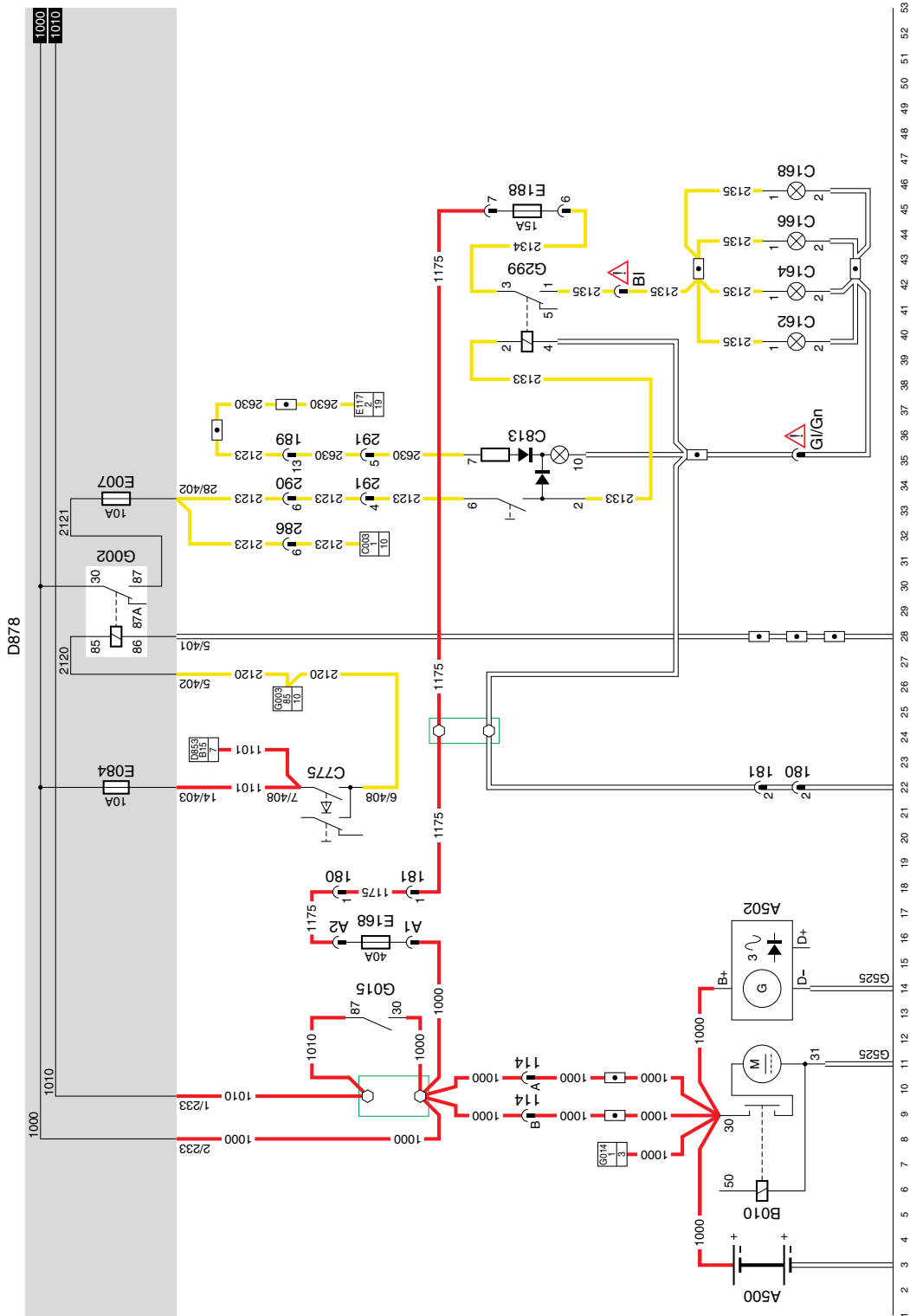
- 1 Roof-mounted high-beam headlights
- 2 Fuel heater/water separator
- 3 Accessory converter/radio memory power supply

**1. ROOF-MOUNTED HIGH-BEAM HEADLIGHTS**

A constant voltage is applied through wire 1000 (voltage before contact) and fuse E084 to connection point 7 of switch C775 (dipped beam/main beam switch). If the main beam is switched on (connection between points 7 and 6), a voltage is applied to main beam relay (G002). Once the relay is activated, a connection is made between points 30 and 87. As a result, a voltage is applied through fuse E007 and wire 2123 to connection point 6 of roof-mounted high-beam light switch (C813). If the switch is operated, voltage is applied to roof-mounted high-beam headlight relay (G299) as well. This relay is energised. Now voltage is applied through fuse E168 (in overhead box), wire 1175 (on Pertinax block) (in overhead box), and through fuse E188, wire 2134 to contacts 3 and 1 of roof-mounted high-beam headlight relay (C299). A voltage is also applied to the high-beam headlights through wire 2135.

**VARIANTS****Location**

36, 42 Yw/gr and bl: Involved is a 3-core cable. Yw/gn has no marking. This is the earth wire.  
Bl is marked 2135.



1

1232300/34

EL000162

## **2. FUEL HEATER/WATER SEPARATOR**

If the vehicle is switched to contact, a voltage is applied through wire 1010 and fuse E170 both to connection point 1 of the electronic unit (D855) and to the fuel heater/water separator switch (C747). If this switch is operated, relay G234 is energised. Now a voltage is applied, through wire 1000, fuse E171, wire 1179, contacts 3 and 1 of relay G234 and wire 5051, to connection point 3 of fuel heater/water separator sensor (B241).



### **3. POWER SUPPLY OF RADIO MEMORY/ACCESSORY CONVERTER**



30:

**Radio memory power supply**

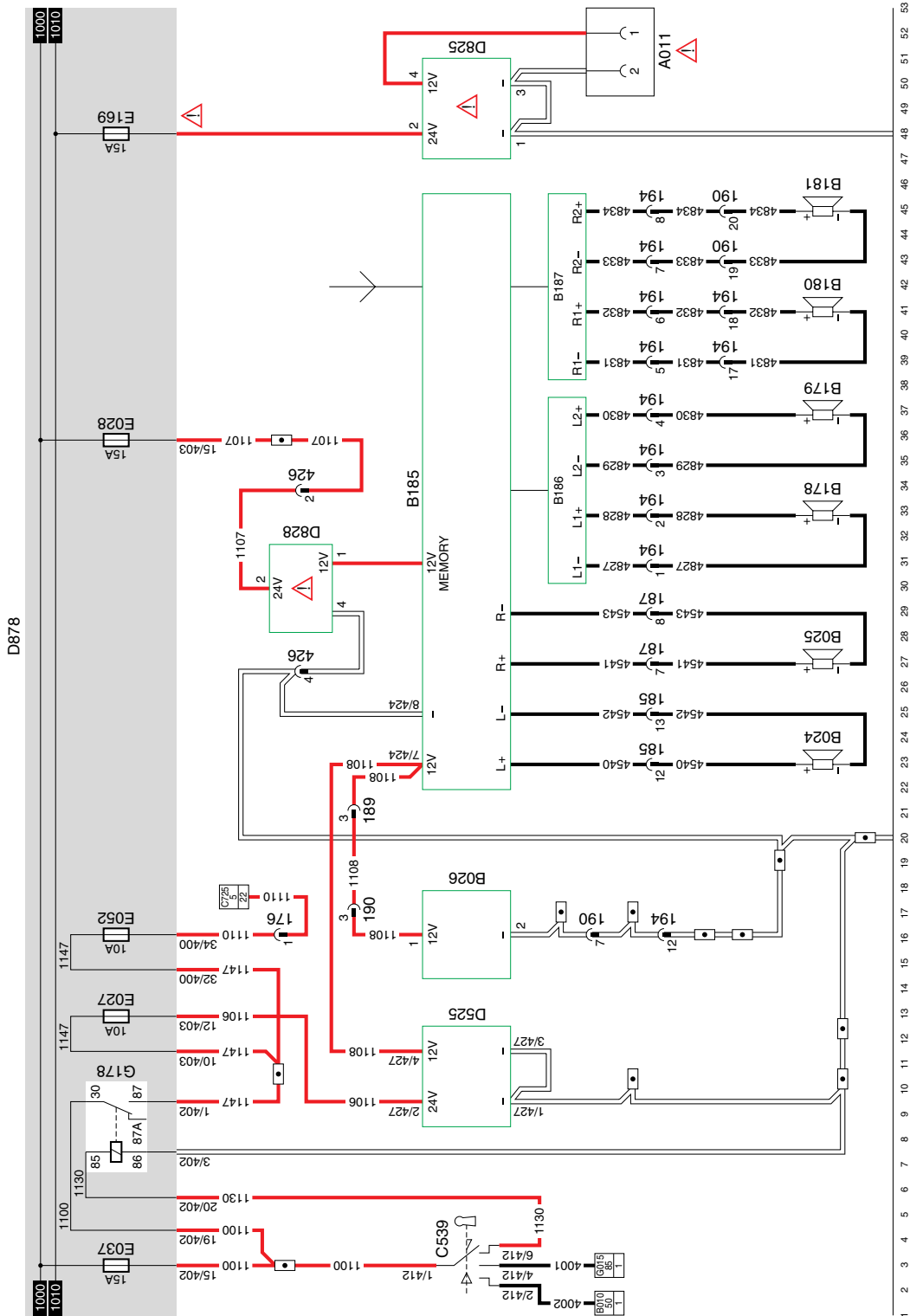
As an accessory, an electronic unit is available for the power supply of the radio memory (D828). This unit can be direct-connected to wire 1107 and earth. The output is 12 V.



48,49,51:

**Accessory converter**

As an accessory, a 24/12V, 15A converter is available for the accessories. The 24V side can be connected freely. But it is wise to include a fuse in the wiring and to position the converter after the contact (wire 1010).



3

1232300/34

EL000164



