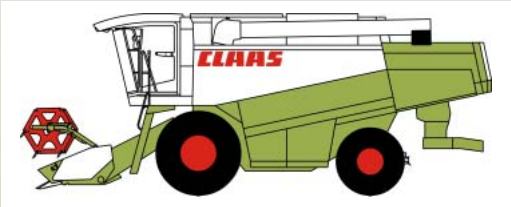
CLAAS



LEXION 480 - 405

Technical Systems

Electric System

SERVICE & PARTS

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B

Central electrics
013 701.1

Module A9 – Autopilot (analogue)

Pin	Function	Com-ponent	Measured value	Direction	Circuit diagram no.
1	Power	S10	12V / 15A	Input	28
2	Power	S10	12V / 15A	Input	28
3	Steering right	Y10	12V	Output	28
4	Steering right	Y10	12V	Output	28
5	Signal seat contact	Z5	Ground	Input	17,28
6	Control ATP	H2	12V	Input	28
7	Ground (GND)	31	Ground	Input	28
8	Ground (GND)	31	Ground	Input	28
9	Ground (GND)	31	Ground	Input	28
10	Ground (GND)	Y9,Y10	Ground	Output	28
11	Ground (GND)	Y9,Y10	Ground	Output	28
12	Steering left	Y9	12V	Output	28
13	Steering left	Y9	12V	Output	28
14	Signal wheel angle - actual value	R36	0.25-4.75 V	Input	28
15	Signal ATP ON	S9	Ground	Input	28
16	Signal ATP OFF	B83	Ground	Input	28
17	Reference output	R36	Ground	Output	28
18	Reference voltage	R3,R36	5V	Output	28
19	Bridge to pin 20	-	-	-	28
20	Bridge to pin 19	-	-	-	28
21	Reference output feeler	B7,B8	Ground	Input	28
22	Reference voltage feeler	B7,B8	5V	Output	28
23	Signal centralizing switch - setpoint	R3	0.25-4.75 V	Input	28
24	Signal feeler left or Laserpilot - actual value	B7, B50	2.25-2.85V 0.25-4.75 V	Input	28
25	Signal feeler right - actual value	B8	2.25-2.85V	Input	28

Module A28 – Spreader fan

Pin	Function	Com-ponent	Measured value	Direction	Circuit diagram no.
1	---	---	---	---	---
2	Ground (GND)	31	Ground	Input	6
3	CAN high	-	-	-	6
4	---	---	---	---	---
5	Ground sensor	R27, R29 B71	Ground	Output	13
6	---	---	---	---	---
7	Signal chopper circuit	Z59	12V	---	7,13
8	Reference voltage sieve adjustment	R31	5V	Output	13
9	Signal spreading direction - setpoint	R29	0.25-4.75 V	Input	13
10	Signal spreading width - setpoint	R27	0.25-4.75 V	Input	13
11	Signal swivel position - actual value	B71, R31	0.25-4.75 V	Input	13
12	Slew left	Y83	12V	Output	13
13	Circulation shut-off valve	Y78	12V	Output	13
14	---	---	---	---	---
15	Electronics	F54	12V / 1A	Input	6
16	CAN low	-	-	-	6
17	---	---	---	---	---
18	---	---	---	---	---
19	---	---	---	---	---
20	Power	Z59	12V / 15A	Input	20
21	---	---	---	---	---
22	---	---	---	---	---
23	---	---	---	---	---
24	---	---	---	---	---
25	Slew right	Y84	12V	Output	13

2a

Starting the diesel engine, Diesel engine speed adjustment

MERCEDES + PERKINS mechanically controlled engine

up to machine no.	468-0084
	466-1655
	457-0107
	454-4799*
	453-2581
	452-1056

* except for LEXICON 440 with HEUI

Error code	Description
321	Coolant temperature sensor (ECT): Coolant temperature too high - warning
322	Coolant temperature sensor (ECT): Coolant temperature too high - engine shutoff
325	Coolant temperature sensor (ECT): Coolant temperature too high - engine power reduced
331	Injection pressure regulator (IPR): Pressure exceeding
332	Injection pressure sensor (ICP): Pressure indicator in case of engine stop
333	Injection pressure regulator (IPR): Pressure above or below setpoint
334	Injection pressure regulator (IPR): Pressure difference too high
335	Injection pressure regulator (IPR): No pressure build-up at engine start
421	Cylinder 1: Signal line "high or low" open
422	Cylinder 2: Signal line "high or low" open
423	Cylinder 3: Signal line "high or low" open
424	Cylinder 4: Signal line "high or low" open
425	Cylinder 5: Signal line "high or low" open
426	Cylinder 6: Signal line "high or low" open
431	Cylinder 1: Signal line "high or low" short circuit
432	Cylinder 2: Signal line "high or low" short circuit
433	Cylinder 3: Signal line "high or low" short circuit
434	Cylinder 4: Signal line "high or low" short circuit
435	Cylinder 5: Signal line "high or low" short circuit
436	Cylinder 6: Signal line "high or low" short circuit
451	Cylinder 1: Signal line short circuit to plus or ground
452	Cylinder 2: Signal line short circuit to plus or ground
453	Cylinder 3: Signal line short circuit to plus or ground
454	Cylinder 4: Signal line short circuit to plus or ground
455	Cylinder 5: Signal line short circuit to plus or ground
456	Cylinder 6: Signal line short circuit to plus or ground
513	Cylinder 1,2,3: Common signal line "low" open
514	Cylinder 4,5,6: Common signal line "low" open
515	Cylinder 1.2.3: Common signal line "low" short circuit to plus or ground
521	Cylinder 4,5,6: Common signal line "low" short circuit to plus or ground
626	Power supply on the engine control module (ECM) too low
631	Engine control module (ECM) defective
632	Engine control module (ECM) defective
655	Engine control module (ECM) configured wrongly or hardware defective
661	Engine control module (ECM) defective
664	Engine control module (ECM) configured wrongly or hardware defective
665	Engine control module (ECM) defective

3a

Diesel engine cut-off system

04b

Road travel release, Circulation shut-off valve

from machine no.	548-0011
	547-0011
	546-0011
	545-0011
	544-0011
	543-0011
	568-0800
	567-0800
	566-0800
	565-0800
	557-0800
	554-0800
	553-0800

Description of functions:

Plug connections	The plug connections L and ML are assigned signal outputs to the individual machine functions. The plug connection A is assigned the signal inputs of switches. The terminal recognizes the machine functions by the state of these switches, open or closed. The analogue signals of the machine sensor system are converted by the corresponding modules (A10/A12) and read by the terminal as digital signals from the CAN bus system.

6b

CAN bus, Power supply modules

equipped with ground drive hydraulic motor (HBM)
brake restrictor module A45
(see Central electrics 014 501.0 – Page E8)

08a

Threshing drum variable speed drive, rotor variable speed drive

Description of functions:

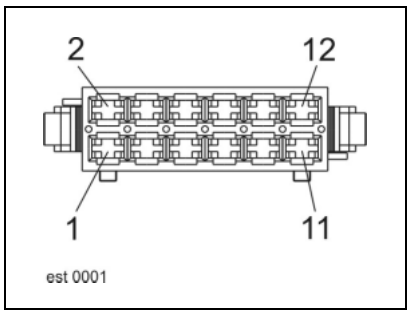
Fan variable speed drive circuit

When the threshing mechanism is turned on, the relay K14 controls the relay K63 and thus supplies the relays K37 and K38 with ground on pin 85. As long as the rotary switch function preselection (T11) is set to the fan position, the pushbuttons +/- (T37/T38) control the voltage for the corresponding relays K19 or K26 on pin 86.
Depending on the direction of the rotation, the electric motor fan speed adjustment (M3) is supplied with mass by one of the relays K37/K38 on pin 87a, while the other relay, K38 or K37, controls the voltage on pin 87.

During the automatic crop selection, the fieldwork computer module (A10) takes over the control over the relays K37 and K38.

Pin assignment

Plug Y



Connection list

from	to 1	to 2	to 3	to 4	to 5	mm²	Colour
Y-5	K37-30	DS-8				2.5	wh-ye
Y-6	K38-30	DS-9				2.5	wh-bk

13a

Spreader fan control

Description of functions

Grain tank unloading	When the road travel circuit is unlocked, the foot switch (S31) supplies the solenoid coil (Y35) with voltage while the limit switch (Z30) switches the ground when the unloading tube is swung out.
Grain tank unloading aid	When the road travel circuit is unlocked, the foot switch (S31) supplies the switch for the unloading aid (S32), and thus the relay K71, with voltage on pin 86. The limit switch (Z30) switches the ground on pin 85 when the unloading tube is swung out. If the relay K71 is closed, the solenoid coil (Y36) is addressed through the connection pin 30-87a in the open relay K72. When the hydraulic cylinder then reaches its final position, the oil pressure switch (Z25) is closed briefly, thus closing the relay K72. The connection pin 30-87 then controls the solenoid coil (Y37). The diode (D4) keeps the relay K72 closed until the hydraulic cylinder reaches its other final position and the oil pressure switch (Z26) interrupts the circuit at pin 86. Parallel to one of the two solenoid coils (Y36/Y37), the circulation shut-off valve (Y77) is also switched through the diode printed circuit board (Do) because it is necessary to build up pressure in the system for this function.

17b

Front attachment drive, reversing drive

from machine no.	548-0011
	547-0011
	546-0011
	545-0011
	544-0011
	543-0011
	568-0800
	567-0800
	566-0800
	565-0800
	557-0800
	554-0800
	553-0800

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Description of functions:

Reel variable speed drive

When the threshing mechanism and the cutterbar are turned on, the relay K64 is closed and thus supplies the relays K39 and K40 with ground on pin 85. As long as the rotary switch function preselection (T11) is set to the reel position, the pushbuttons +/- (T19/T26) control the voltage for the corresponding relays K39 or K40 on pin 86. Depending on the direction of the rotation, the electric motor reel speed adjustment (M6) is supplied with mass by one of the relays K39/K40 on pin 87a, while the other relay, K40/K41, controls the voltage on pin 87.

Automatic shaft speed

The automatic reel speed control takes over the automatic reel speed module (A16), which receives the necessary information on the ground travel speed from the fieldwork computer module (A10) through the CAN bus connection. The reel speed (B17) is adjusted according to the ground travel speed and the given difference speed set on the CEBIS terminal (A30).

For machines with IMO terminal (A30), the release of the automatic reel speed adjustment is done with the switch S23 and the speed difference is set using the setpoint potentiometer (R10).

Connection list

from	to 1	to 2	to 3	to 4	to 5	mm²	Colour
A-25	HAS-8	E-24				0.5	br-bl
A-26	HAS-23					0.5	wh-rd
A-27	32					0.5	br-rd

from	to 1	to 2	to 3	to 4	to 5	mm²	Colour
N-11	HAS-7					0.5	wh

from	to 1	to 2	to 3	to 4	to 5	mm²	Colour
P-12	31					2.5	br

from	to 1	to 2	to 3	to 4	to 5	mm²	Colour
E-13	K39-30	DS-24	Q-7			1.5	wh-ye
E-14	K40-30	DS-25	Q-8			1.5	wh-bk
E-22	HAS- 5					0.75	wh-gr
E-36	31					1.5	br

from	to 1	to 2	to 3	to 4	to 5	mm²	Colour
Q-3	HAS-22					1	rd-wh
Q-4	F26-A	HAS-20	K1-86/30	K2-86/30	K3-86/30		
	K4-86/30	K39-87	K40-87	CH-8		1	bk
O-7	E-13	K39-30	DS24			1.5	wh-bk
O-8	E-16	DS-36				1.5	wh-gr

from	to 1	to 2	to 3	to 4	to 5	mm²	Colour
V-11	31					2.5	br
V-12	31					2.5	br

21a

Reel adjustment

Standard cutterbar

21c

Reel adjustment

Folding cutterbar

Connection list

from	to 1	to 2	to 3	to 4	to 5	mm²	Colour
N-2	E-17	DO-6	DS-31			1.5	br-ye
N-3	E-18	DO-7	DS-32			1.5	br-vi
N-12	F35-A	K5-86/30	K6-86/30	K19-30	U-7		
	CAC-20					2.5	bk

from	to 1	to 2	to 3	to 4	to 5	mm²	Colour
E-1	31					1.5	br
E-8	K3-87	DO-4	DS-22			1.5	gn-rd
E-9	K4-87	DO-5	DS-23			1.5	gn-bl
E-12	31					1.5	br
E-17	N-2	DO-6	DS-31			1.5	vi-gr
E-18	N-3	DO-7	DS-32			1.5	vi-ye
E-21	F49-A					1.5	bl
E-25	CAC-8	B-31	A-37	MU-8	BB-10		
	DS-48					0.75	rd-ye
E-26	CAC-10					0.75	or-wh
E-27	CAC-22					0.75	or-ye
E-36	31					1.5	br

from	to 1	to 2	to 3	to 4	to 5	mm²	Colour
M-3	K3-85					0.5	gr-br
M-4	K4-85					0.5	gr-gn

from	to 1	to 2	to 3	to 4	to 5	mm²	Colour
P-12	31					2.5	br

Description of functions:

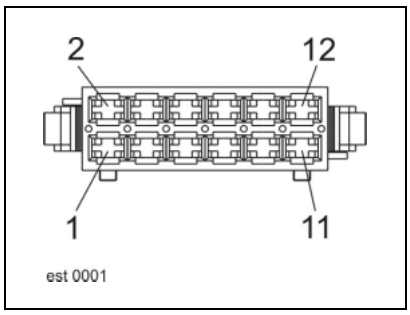
Cutting table adjustment

When the road travel circuit is unlocked, the switches of the external operation for the VARIO cutting table (U15/U16) and the VARIO module (A27) are supplied with power.
By operating the switches (U15/U16) the power is passed directly to the solenoid coils (Y79/Y80).
If the VARIO cutting table is operated using the multifunction handle, the solenoid coils (Y79/Y80) are switched via the relays K9/K10.
During operation in automatic mode (VARIO automatic ON), the VARIO module (A27) controls the solenoid coils (Y79/Y80) according to the values programmed in the terminal (A30).
The limit switch (Z65) on the v-belt spring tensioner prevents the rape position to be started when the v-belt is put on.

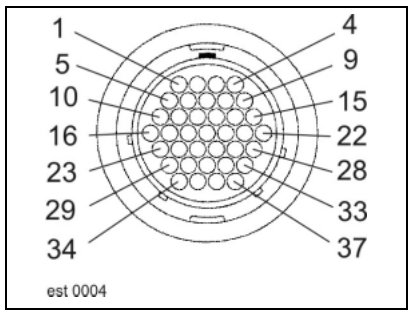
Note: Any cutting table adjustment requires the switch of the cutting table lock (U17) to be in ON position.

Pin assignment

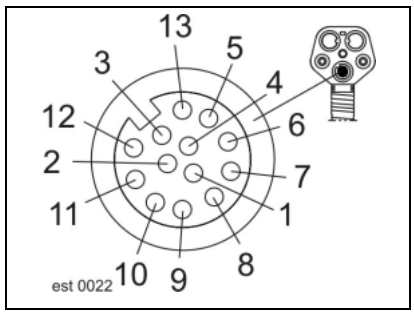
Plug M, P



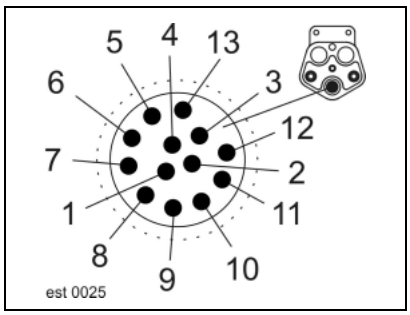
Plug A, B, BB, E



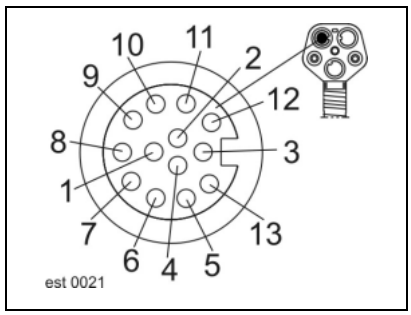
Plug socket XA



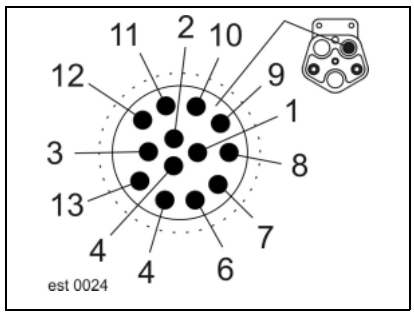
Plug XA



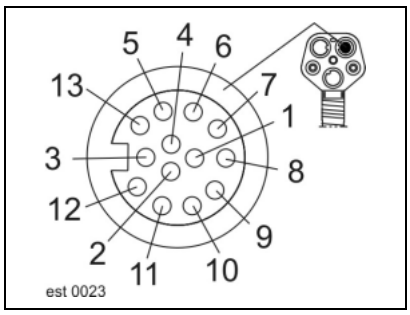
Plug socket XB



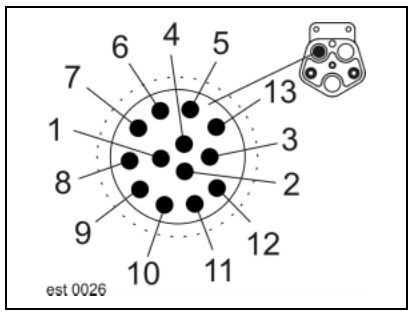
Plug XB



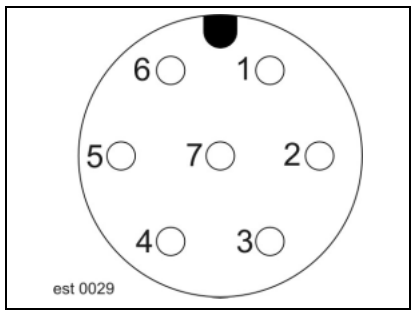
Plug socket XC



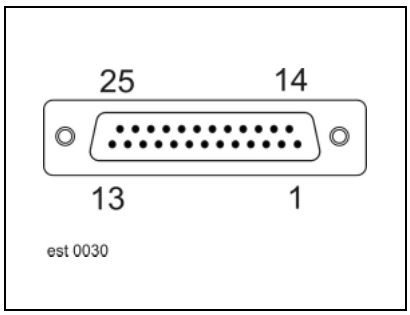
Plug XC



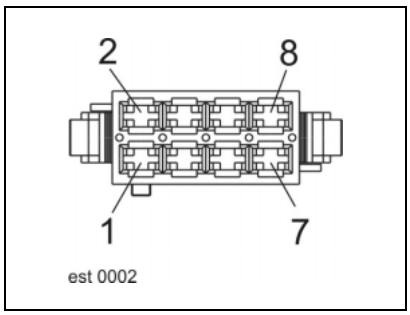
Plug XV1, XV3



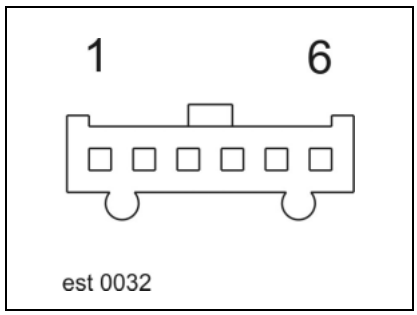
Plug X8



Plug X11



Plug X12



26a

Machine monitor

Description of functions:

Yield measurement

The yield measurement is based on the volume flow measurement of the light barrier (B59/B60) in the grain elevator, depending on the transverse and longitudinal angle of the machine. Based on these signals, the quantimeter module (A21) calculates the yield and displays this information through the CAN bus on the terminal (A30).
An important basis for a precise calculation is the calibration of the system. This is done by entering the weight per litre and checking the information by weighing a certain amount of a harvest.

Note: All yield data is saved in the quantimeter module (A21). For this reason, it is recommended to save the data and transfer it to the new module with the CDS3000 before changing a defective module.

Humidity measurement

The measurements of the humidity sensor (B61) are also displayed by the quantimeter module (A21) via the CAN bus on the terminal (A30). However, they are not taken into account when calculating the gross weight. Only when giving the net weight in the job processing, the terminal (A30) needs these measured values for the calculation.
The quantimeter module (A21) controls the measurement intervals depending on the yield by using the sample slide (Y52). The time between individual measurements is reduced linearly from approx. 2 min at 3 t/h to approx. 15 s at 50 t/h.
In order to empty and clean the measuring chamber, the sample slide (Y52) is also operated once when turning off the threshing mechanism.

Returns elevator measurement

The returns elevator measurement is based on the volume flow measurement of the light barrier (B75/B76) in the returns elevator, depending on the transverse and longitudinal angle of the machine. Based on these signals, the quantimeter module (A21) calculates the yield and displays this information through the CAN bus on the terminal (A30).

28b

Autopilot

from machine no.	548-0011
	547-0011
	546-0011
	545-0011
	544-0011
	543-0011
	568-0800
	567-0800
	566-0800
	565-0800
	557-0800
	554-0800
	553-0800

Description of functions:

Front attachment damping

If the solenoid coil (Y97) is not switched, the front attachment damping is active.
If the threshing mechanism and the cutterbar are turned on, the machine is running at full speed and the work position is reached, cutterbar damping is hydraulically locked by the solenoid coil (Y97). This is the only way to ensure a safe CAC function.

Important: On machines built in 2002, the front attachment damping works only in connection with the hydraulic reel drive.

Servo circuit

When the button (S41) is pushed, the solenoid coil (Y59) for the servo circuit is addressed.
Via the solenoid valve (Y59), the gear engagement in the switch gear is released while the high pressure cycle of the motor of the hydrostatic drive is short-circuited. This achieves that the transmission line is stress-free while the gear is switched.

Auxiliary fuel tank

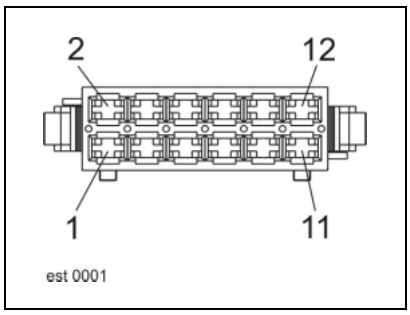
If at maximum shaft speed with no load of the diesel engine a fill level of >10% and <70% is measured in the main fuel tank, the fieldwork computer module (A10) opens the solenoid valve (Y91) so that fuel flows from the auxiliary tank into the main tank.

32a

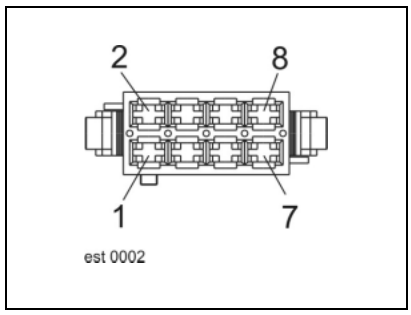
Main circuit for light, taillight, position light

Pin assignment

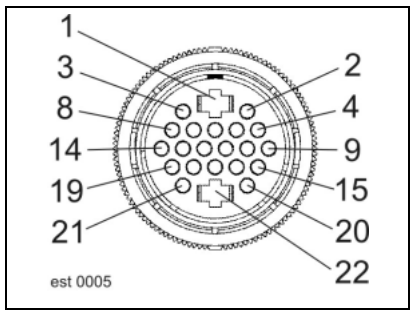
Plug X



Plug MM, MO



Plug D



Connection list

from	to 1	to 2	to 3	to 4	to 5	mm²	Colour
MM-1	31					1.5	br
MM-2	F55-A	D11				1.5	gr-br

from	to 1	to 2	to 3	to 4	to 5	mm²	Colour
D-1	31					4	br
D-9	K59-85					0.5	br-bl
D-10	K50-85					0.5	br-wh
D-11	F55-A	MM-2				1.5	gr-bl
D-12	F11-A	D-13				1.5	gr-ye
D-13	F11-A	D-12				1.5	gr-gn
D-14	31					1.5	br
D-15	31					1.5	br
D-16	31					1.5	br

from	to 1	to 2	to 3	to 4	to 5	mm²	Colour
X-9	F12-A	X-10				1.5	rd-wh
X-10	F12-A	X-9				2.5	gr-br
X-12	31					2.5	br

from	to 1	to 2	to 3	to 4	to 5	mm²	Colour
MO-1	31					2.5	br

37a

Windshield wiper, windshield washer

Description of functions: 3/7

2nd menu item

Blow-out temperature

Press key (3) once.
The blow-out temperature in °C is displayed.

Example: 29.3°C

If the temperature display is incorrect, please check the following:

1. Position and possibly soiling of the AC blow-out temperature sensor (B87), (behind the large blow-out nozzle, top left).
2. Connector on the automatic air conditioner module (A6).
3. Measure the resistance of the AC blow-out temperature sensor (B87), must be 10 kOhm at 25°C.
4. Offset value of AC blow-out temperature sensor (B87) in the controller menu.

3rd menu item

Outside temperature

Press key (3) once.
The outside temperature in °C is displayed.

Example: 21.1°C

If the temperature display is incorrect, please check the following:

1. Position and possibly soiling of AC outside temperature sensor (B88), (top left, below the roof cover, behind the fresh air filter).
2. Connector on the automatic air conditioner module (A6).
3. Measure the resistance of the AC outside temperature sensor (B88), must be 10 kOhm at 25°C.
4. Offset value of AC outside temperature sensor (B88) in the controller menu.

4th menu item

Heater solenoid coil (Y109)

Press key (3) once.
The heater solenoid coil (Y109) is switched on.

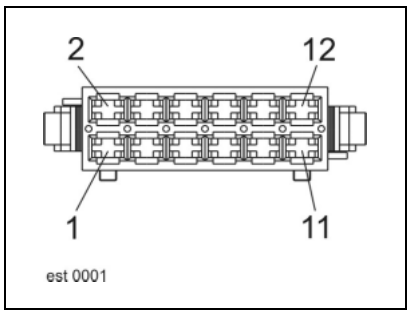
Example: Test step 4 is displayed

If the solenoid coil is not activated, please check the folllwing:

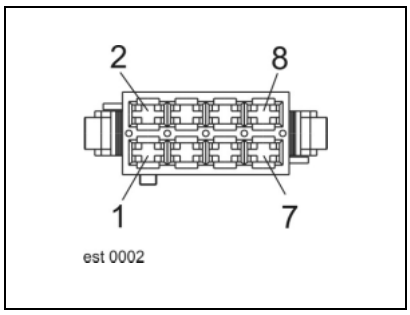
1. Connector on the heater solenoid coil (Y109)
   (top right, below the roof cover).
2. Voltage at the solenoid coil of 11.5 – 14.5 V, with the output activated.
   The solenoid coil must be connected.
3. Connector on the automatic air conditioner module (A6).
4. Check for short-circuit or break in the cable on the heater solenoid coil (Y109).

Pin assignment

Plug H, O, Y



Plug MI, MU



Connection list

from	to 1	to 2	to 3	to 4	to 5	mm²	Colour
MI-1	31						
MI-2	31					2.5	br
MI-3	F10-A	MP-5					
MI-8	F13-A	Y-8				2.5	vi

from	to 1	to 2	to 3	to 4	to 5	mm²	Colour
O-7	F14-A					2.5	bk

from	to 1	to 2	to 3	to 4	to 5	mm²	Colour
Y-1	31					2.5	br
Y-8	F13-A	MI-8				2.5	vi

from	to 1	to 2	to 3	to 4	to 5	mm²	Colour
MU-2	31						
MU-5	F6-A						
MU-6	31						

from	to 1	to 2	to 3	to 4	to 5	mm²	Colour
H-1	31						
H-2	F58-A						
H-7	DO-10	MW-6					

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