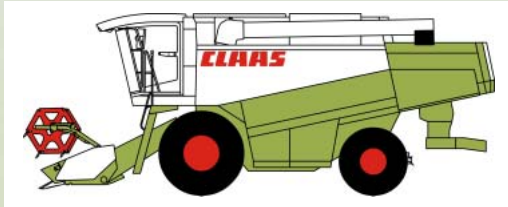


CLAAS



LEXION 480 - 405

Technical Systems

Electric System

SERVICE & PARTS

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* - These chapters are not available for EUROPE LEXION machines due to the equipment.

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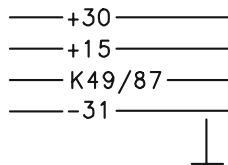
Build-up of electric circuit diagram

Following schematic diagrams, all electric circuits have been presented in individual circuit diagrams. In order to see how to read the plans, you will find some explanations in the following.

Circuit diagram numbering

lex-e-01

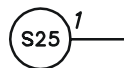
- The numbering can be found on the corresponding cover page and in the footer.
- Depending on the machine serial number, the equipment, and the country specification, there may be more than one individual diagram for a function.



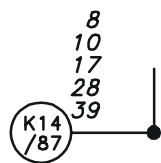
Potentials

- Main power supply (battery)
- Ignition switch power supply (switched)
- Power supply switched by relay
- Ground
- Casing ground (external)

Connections

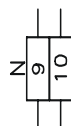


- The description **in** the circle (e.g. "S25") defines the connection.
- Numbers **beside** the circle (e.g. "1") describe where the wiring continues according to the numbering of the electric circuit. The numbering of the electric circuit can be found in the footer among other places.

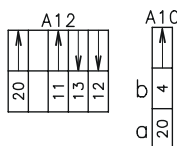


Example: When the threshing mechanism is turned on (see circuit diagram lex-e-07), the connection **K14/87** is supplied with power at the same time. This connection **K14/87** can be found again in the circuit diagrams **lex-e-8, 10, 17, 28** and **39**. There, it is the power supply for functions that depend on the threshing mechanism circuit.

Designations



- Plug (e.g. "N", Pin 9 and 10).
Every chapter lists the respective plugs and their assignment in the individual connection lists.



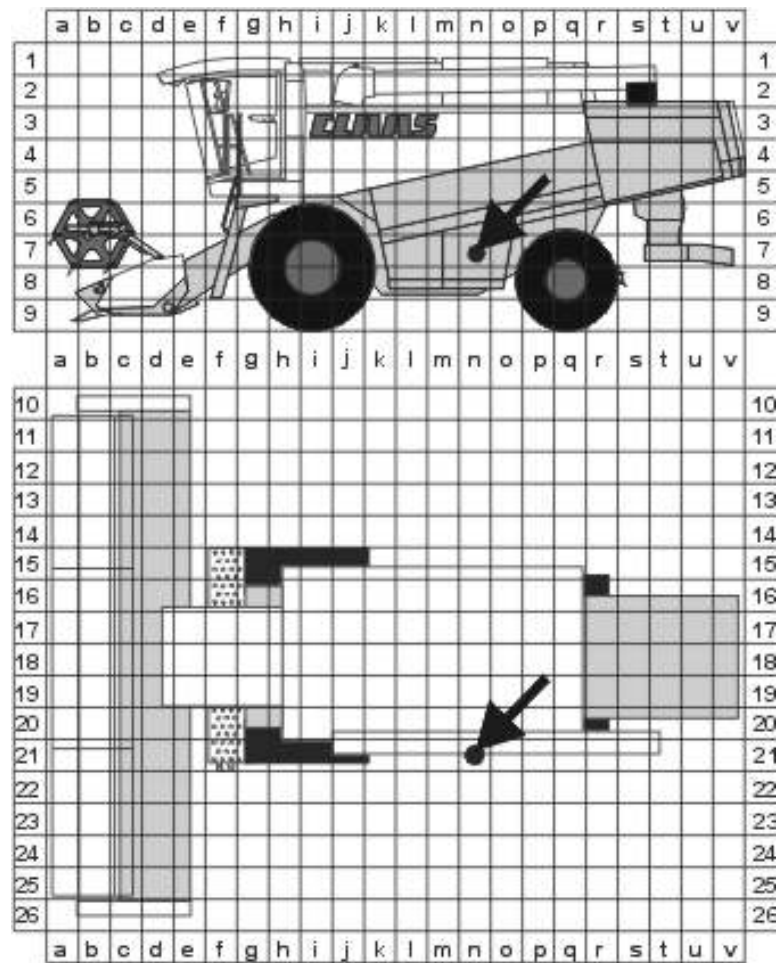
- Module (for example "A12" – shaft speed monitor).
The arrows designate the functional inputs and outputs according to the assignment table in chapter **E**. For module A10, **b-** refers to BIF (25 pin) and **a-** refers to BIF/CAB (42 pin).



- Remark on equipment version according to machine serial number

7-n-21

- Position of the component corresponding to the grid coordinates



A 1 ... Z 99

- Identification of the components according to CLAAS norm catalogue

- A- Terminal / module
- B- Sensor
- E- Lighting
- F- Fuse
- G- Power source
- H- Signal device / signal light
- K- Relay
- M- Electric motor
- P- Display instrument
- R- Potentiometer / resistor
- S- Operating switches - cab
- T- Operating switches - terminal
- U- Operating switches - external
- V- Electronic component
- W- Antenna
- X- Plug connector
- Y- Solenoid coil
- Z- Function switches - actual value

Connection list

from	to 1	mm ²	colour
E-13	K39-30	1.5	wh-ye
E-21	F49-A	1.5	bl
E-22	HAS-5	0.75	wh-gr

- Index of the connections in the central electrics with cross section (mm²) and colour of the wire on the machine-side.

rd-red
bk-black
br-brown
wh-white
bl-blue
gr-grey
ye-yellow
gn-green
pk-pink
or-orange
vi-violet

Notes

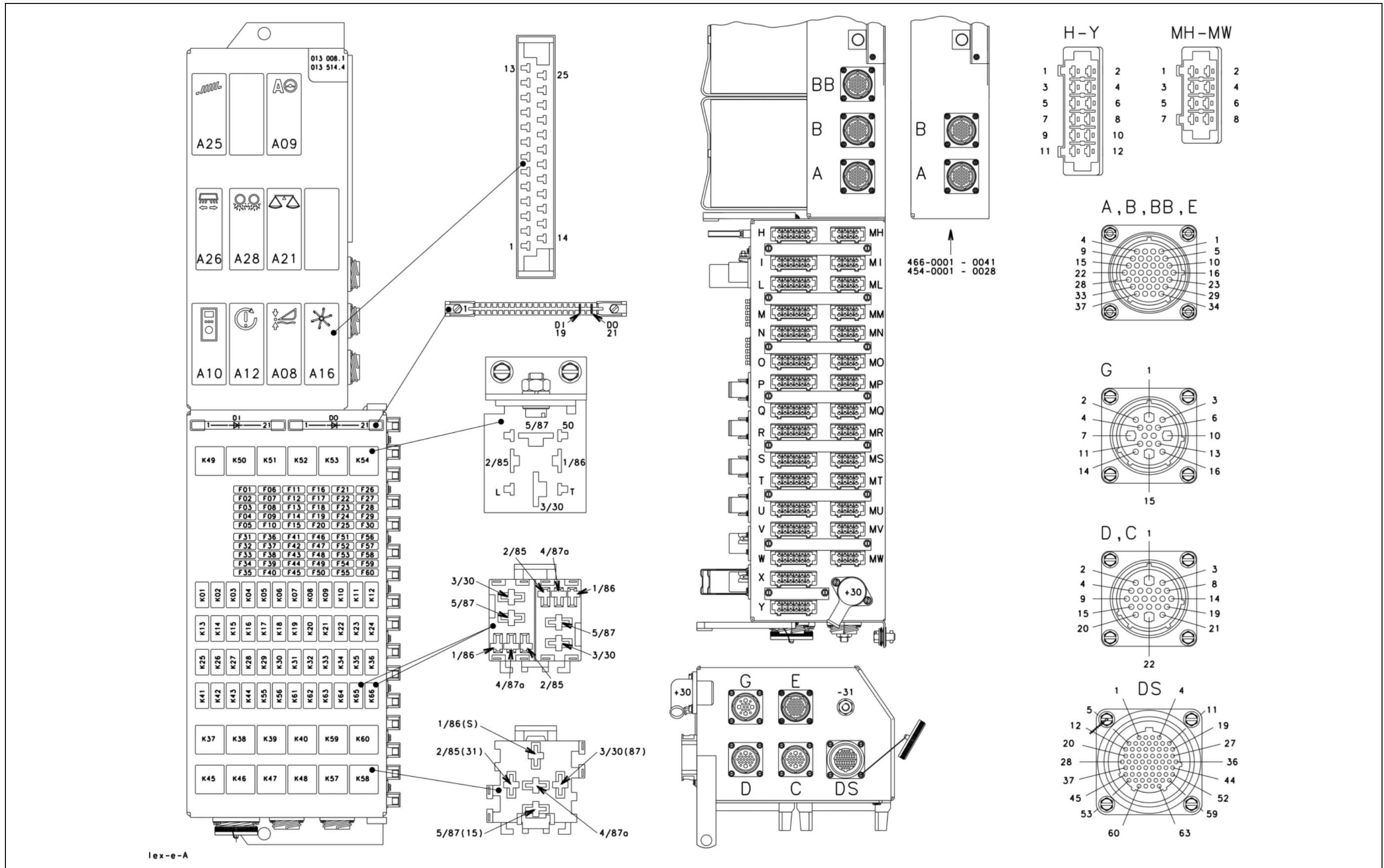
A

Central electrics

013 008.1

013 514.4

A - Central electrics
013 008.1 / 013 514.4

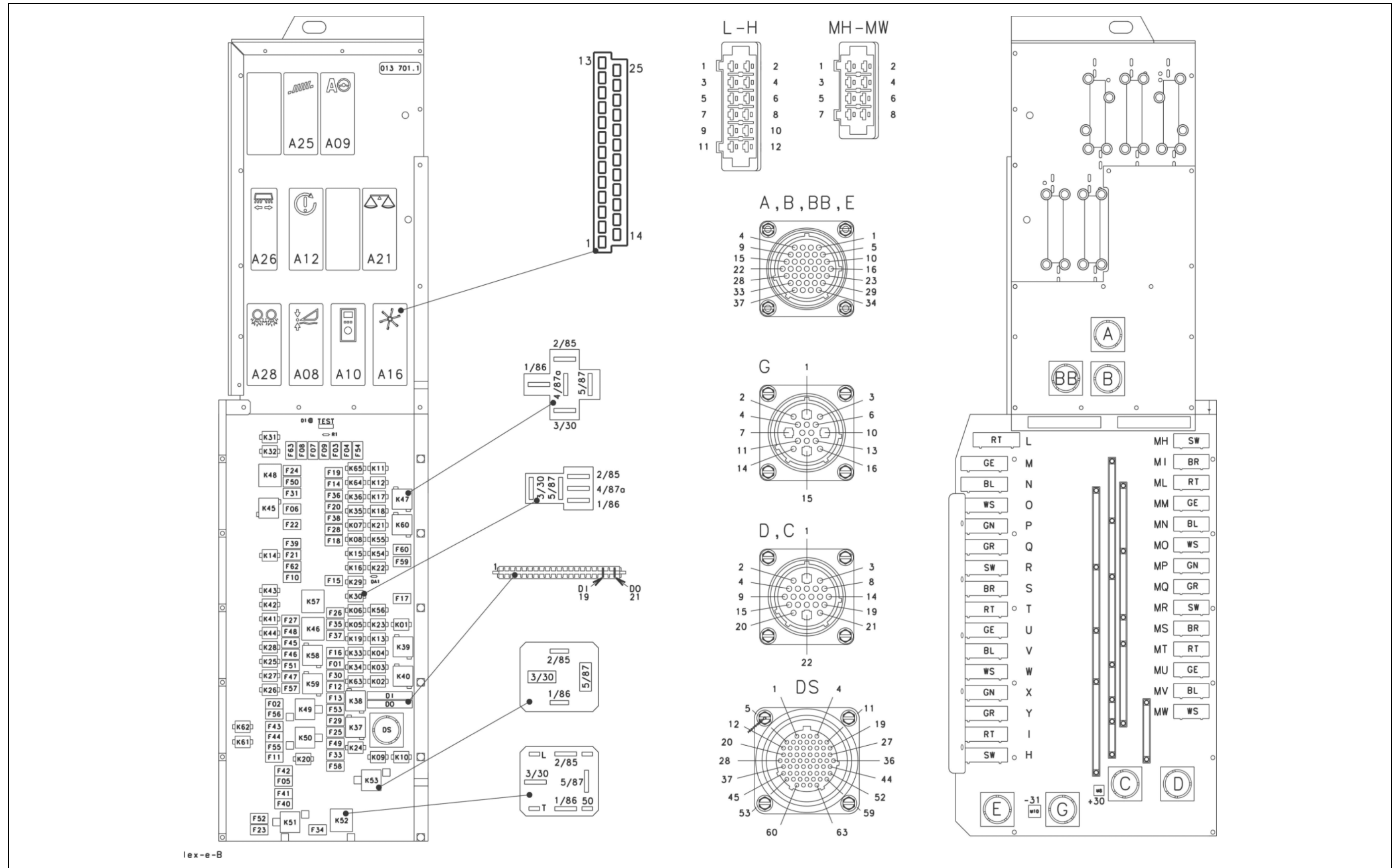


B

**Central electrics
013 701.1**

B - Central electrics

013 701.1

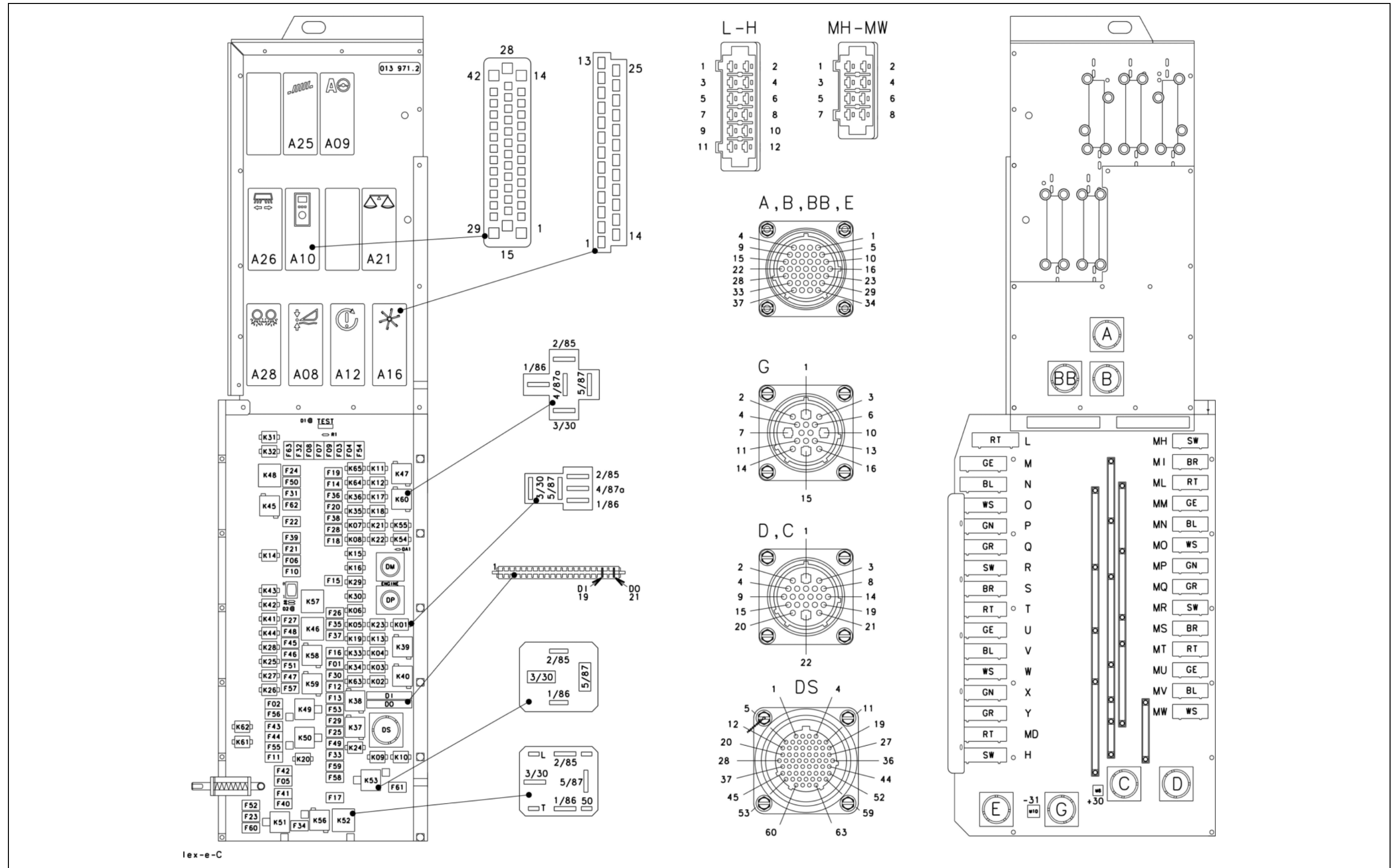


C

**Central electrics
013 971.2**

C - Central electrics

013 971.2

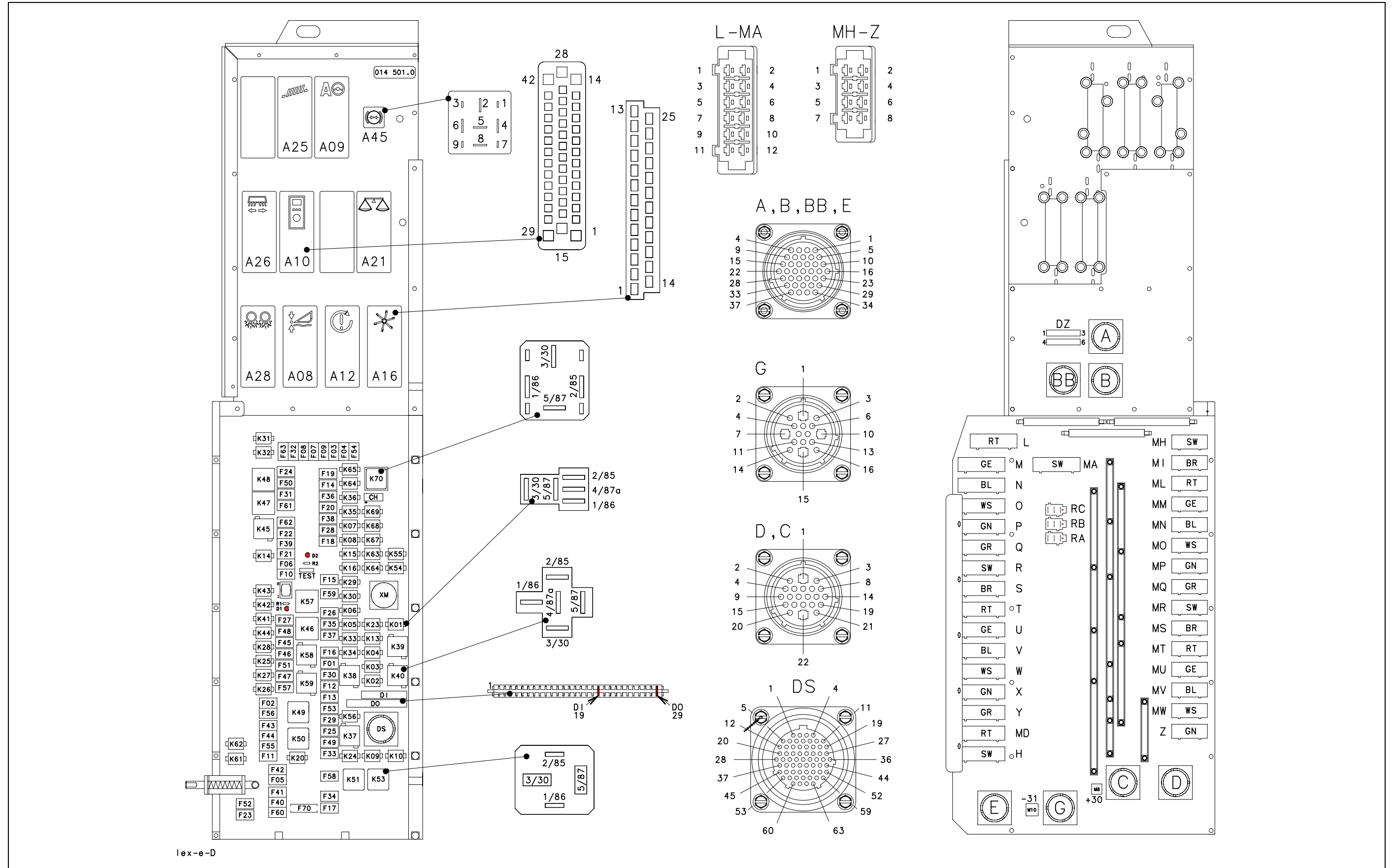


D

**Central electrics
014 501.0**

D - Central electrics

014 501.0

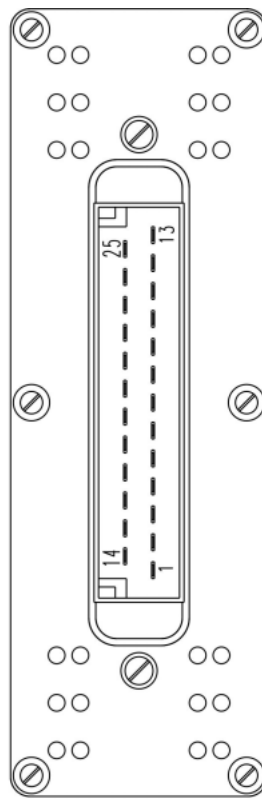


Circuit diagram assignment for fuses and relays

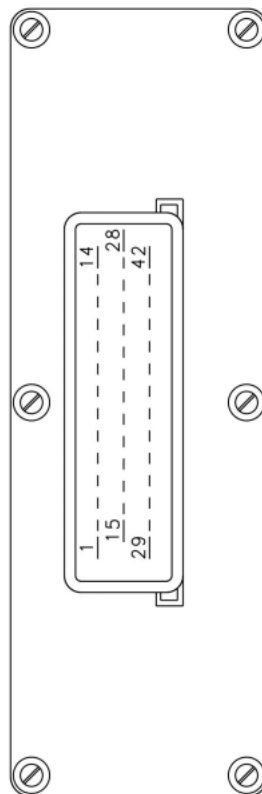
F1	1, 2, 3, 33	F26	19, 21, 29	F51	2
F2	6, 11, 26	F27	11	F52	36
F3	12	F28	28	F53	35
F4	6, 9	F29	2	F54	6, 13
F5	38	F30	35	F55	34
F6	40	F31	5	F56	15
F7	6, 24	F32	5	F57	6
F8	6	F33	38	F58	40
F9	6, 27	F34	2	F59	2
F10	27, 30, 40	F35	4, 14, 20, 21, 23	F60	2
F11	34	F36	18, 30		
F12	34	F37	14, 15		
F13	40	F38	15, 16, 17, 34	F63	9, 13, 24, 28
F14	40	F39	7		
F15	8	F40	32		
F16	8, 9, 10, 17, 18, 29	F41	30, 33		
F17	2	F42	3, 31, 35, 37		
F18	17, 29	F43	32		
F19	2, 4, 29	F44	32		
F20	4, 29	F45	33	F70	1
F21	7	F46	33		
F22	7, 10	F47	33		
F23	31, 36	F48	33		
F24	31	F49	6, 21, 22, 24, 28		
F25	10	F50	30		

K1	21	K26	33	K51	2
K2	21	K27	33	K52	2
K3	21	K28	33	K53	1
K4	21	K29	8	K54	8
K5	20	K30	8	K55	8
K6	20	K31	30	K56	2
K7	17, 20	K32	30	K57	3
K8	17, 20	K33	9	K58	3
K9	15, 22	K34	9	K59	34
K10	15, 22	K35	18		
K11	15	K36	18	K61	30
		K37	10	K62	30
K13	1	K38	10	K63	10
K14	7	K39	19	K64	19
K15	17	K40	19	K65	17
K16	17	K41	11		
K17	15	K42	11		
K18	15	K43	11		
K19	4	K44	11		
K20	32	K45	32	K70	15
K21	16	K46	14	K71	15
K22	15	K47	16, 31	K72	15
K23	3	K48	31		
K24	38	K49	4	DI	3, 15, 26, 35
K25	33	K50	34	DO	4

Module assignment



- A 8
- A 9
- A10
- A12
- A13
- A16
- A21
- A25
- A26
- A27
- A28



A10

lex-e-M

Module A8 – AUTOCONTOUR (CAC)

Pin	Function	Component	Measured value	Direction	Circuit diagram no.
1	Lateral control, right*	Y68	12V	Output*	20
2	Ground (GND)	32	Ground	Input	6
3	CAN high	-	-	-	6
4	LED cutting height preselection (only IMO)	H38	-	Input	24
5	Signal raise front attachment slowly	S38a	Ground	Input	20
6	Signal cutting height preselection	S38d	Ground	Input	24
7	Signal front attachment circuit	K16/87	12V	Input	17
8	Reference voltage CAC / Concave gap / Snapping plates	R1,R2 R8,R22 R5, R20	5V	Output	24 24 9 21
9	Position feeder housing - actual value	B35,R8	0.25-4.75 V	Input	24
10	Signal sensing band left - actual value	B3,R1	0.25-4.75 V	Input	24
11	Signal cutting height preselection - setpoint	R24	0.25-4.75 V	Input	24
12	Raise front attachment	Y85	12V	Output	20
13	Lower front attachment	Y87	12V	Output	20
14	Lateral control, left*	Y67	12V	Output*	20
15	Electronics	F7	12V / 1A	Input	6
16	CAN low	-	-	-	6
17	LED cutting height control (only IMO)	H37	-	Input	24
18	Signal cutting height control	S38c	Ground	Input	24
19	Signal lower front attachment slowly	S38b	Ground	Input	20
20	Power	F35	12V / 15A	Input	20
21	---	---	---	---	---
22	Signal sensing band left - actual value	B4,R2	0.25-4.75 V	Input	24
23	Signal cutterbar spring - actual value	B68,R22	0.25-4.75 V	Input	24
24	Signal cutting height control - setpoint	R23	0.25-4.75 V	Input	24
25	Circulation shut-off valve	Y77	12V	Output	4

* - Pins 1 and 14 are also used for manual lateral control as a signal input (see circuit diagram 20b).

Module A9 – Autopilot (digital)

Pin	Function	Component	Measured value	Direction	Circuit diagram no.
1	---	---	---	---	---
2	Ground (GND)	31	Ground	Input	6, 28
3	CAN high	-	-	-	6
4	---	---	---	---	---
5	Signal ATP OFF	B83	Ground	Input	28
6	---	---	---	---	---
7	Power	S10	12V/15A	Input	28
8	Reference voltage feeler	B7,B8	5V	Output	28
9	Signal wheel angle - actual value	B6	0.25-4.75 V	Input	28
10	Signal centralizing switch - setpoint	R3	0.25-4.75 V	Input	28
11	Signal pressure sensor (0-250 bar, linear)	B5	0.25-4.75 V	Input	28
12	Steering left	Y9	12V	Output	28
13	Steering right	Y10	12V	Output	28
14	Control ATP	H2	12V	Input	28
15	Electronics	F54	12V / 1A	Input	6
16	CAN low	-	-	-	6
17	---	---	---	---	---
18	Signal ATP ON	S9	Ground	Input	28
19	Signal seat contact	Z5	Ground	Input	17, 28
20	Power	S10	12V/15A	Input	28
21	Signal feeler left or Laserpilot - actual value	B7,B50	0.25-4.75 V	Input	28
22	Signal feeler right - actual value	B8	0.25-4.75 V	Input	28
23	Signal Laserpilot or feeler left - actual value	B50, B7	0.25-4.75 V	Input	28
24	---	---	---	---	---
25	Circulation shut-off valve	Y77	12V	Output	28

Module A9 – Autopilot (analogue)

Pin	Function	Component	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 A10 - Fieldwork computer (BIF/CAB)

Pin	Function	Component	Measured value	Direction	Circuit diagram no.
1	Power	F16	12V / 7.5A	Input	8, 10,17, 29
2	Fan speed +	K38/86	12V	Output	10
3	Front attachment ON	K16/86	12V	Output	17
4	Signal reverse motion (ha counter OFF)	Z57a	Ground	Input	35
5	Signal front attachment ON	S55	Ground	Input	17
6	---	---	---	---	---
7	Signal fuel tank level	R35	10-190 K Ω	Input	29
8	Signal main drive speed	B18	1.0 – 1.2 K Ω	Input	25
9	Signal front attachment OFF	S54	Ground	Input	17
10	Seat contact	Z5	Ground	Input	17
11	---	---	---	---	---
12	---	---	---	---	---
13	CAN 1 low	-	-	-	6
14	Electronics	F4	12V / 1A	Input	6
15	Threshing drum speed +	Y19	12V	Output	8
16	Fan speed -	K37/86	12V	Output	10
17	---	---	---	---	---
18	Signal Diesel engine full/half throttle	S35/Z41	12V	Input	2
19	Signal Diesel engine full throttle	S35	12V	Input	2
20	Signal threshing mechanism circuit (working hours)	F22	12V	Input	7
21	Signal fan speed	B15	1.0 – 1.2 K Ω	Input	25
22	Signal speed ISS front / finger roller	B20/B74	1.0 – 1.2 K Ω	Input	25
23	Signal Diesel engine speed	B10	1.0 – 1.2 K Ω	Input	25
24	---	---	---	---	---
25	---	---	---	---	---
26	---	---	---	---	---
27	CAN 2 high (J1939)	-	-	-	-
28	Ground (GND)	31	Ground	Input	6
29	Threshing drum speed -	Y20	12V	Output	8
30	Auxiliary fuel tank	Y91	12V	Output	29
31	---	---	---	---	---
32	---	---	---	---	---
33	---	---	---	---	---
34	Signal alternator / terminal 61 (engine hours)	G2	14V	Input	1
35	Signal threshing drum speed	B11	1.0 – 1.2 K Ω	Input	25
36	Signal travel speed (distance)	B16	1.0 – 1.2 K Ω	Input	25
37	---	---	---	---	---
38	---	---	---	---	---
39	---	---	---	---	---
40	CAN 1 high	-	-	-	-
41	CAN 2 high (J1939)	-	-	-	-
42	CAN 2 screen (J1939)	-	-	-	-

Module A10 - Fieldwork computer (BIF)

Pin	Function	Component	Measured value	Direction	Circuit diagram no.
1	Threshing drum speed +	Y19	12V	Output	8
2	Ground (GND)	31	Ground	Input	6
3	CAN high	-	-	-	6
4	Signal threshing mechanism circuit (working hours)	F22	12V	Input	7
5	Signal fan speed	B15	1.0 – 1.2 K Ω	Input	25
6	Signal Diesel engine speed	B10	1.0 – 1.2 K Ω	Input	25
7	Signal speed ISS front	B20	1.0 – 1.2 K Ω	Input	25
8	Signal threshing drum speed	B11	1.0 – 1.2 K Ω	Input	25
9	---	---	---	---	---
10	---	---	---	---	---
11	Signal alternator / terminal 61 (engine hours)	G2	14V	Input	1
12	Fan speed +	K38/86	12V	Output	10
13	Fan speed -	K37/86	12V	Output	10
14	Threshing drum speed -	Y20	12V	Output	8
15	Electronics	F4	12V / 1A	Input	6
16	CAN low	-	-	-	6
17	Signal reverse motion (ha counter OFF)	Z57a	Ground	Input	1, 35
18	Signal travel speed (distance)	B16	1.0 – 1.2 K Ω	Input	25
19	Signal main drive speed	B18	1.0 – 1.2 K Ω	Input	25
20	Power	F16	12V / 7.5A	Input	8, 9, 10, 17, 18, 29
21	Signal fuel tank level	R35	10-190 K Ω	Input	29
22	---	---	---	---	---
23	---	---	---	---	---
24	---	---	---	---	---
25	Auxiliary fuel tank	Y91	12V	Output	29

Module A12 - Shaft speed monitor (DZW)

Pin	Function	Component	Measured value	Direction	Circuit diagram no.
1	Front attachment speed +	Y90	12V	Output	18
2	Ground (GND)	31	Ground	Input	6
3	CAN high	-	-	-	6
4	Signal chopper circuit (chopper hours)	Z58	12V	Input	7
5	Signal feeder housing speed	B12	1.0 - 1.2 K Ω	Input	25
6	Signal grain elevator speed	B21	1.0 - 1.2 K Ω	Input	25
7	Signal speed ISS rear / rotor	B19/B24	1.0 - 1.2 K Ω	Input	25
8	Signal chaff spreader speed	B27	1.0 - 1.2 K Ω	Input	25
9	---	---	---	---	---
10	---	---	---	---	---
11	Signal concave position	B30/R5	0.25-4.75 V	Input	9
12	Concave distance +	Y18	12V	Output	9
13	Concave distance -	Y17	12V	Output	9
14	Front attachment speed -	Y89	12V	Output	18
15	Electronics	F4	12V / 1A	Input	6
16	CAN low	-	-	-	6
17	---	---	---	---	---
18	Signal returns speed	B29	1.0 - 1.2 K Ω	Input	25
19	Signal speed chopper / spreader fan	B28	1.0 - 1.2 K Ω	Input	25
20	Power	F16	12V / 7.5A	Input	9, 17, 18
21	Signal coolant temperature	B45	100-700 Ω	Input	3
22	---	---	---	---	---
23	---	---	---	---	---
24	---	---	---	---	---
25	Front attachment reverse	S57	12V	Output	17

Module A13 – Combine performance monitor

Pin	Function	Component	Measured value	Direction	Circuit diagram no.
1	---	---	---	---	---
2	Ground (GND)	31	Ground	Input	6
3	CAN high	-	-	-	6
4	---	---	---	---	---
5	Electronics	F3	12V / 1A	Input	12
6	Signal separation system right	B34	-	Input	12
7	---	---	---	---	---
8	---	---	---	---	---
9	---	---	---	---	---
10	---	---	---	---	---
11	---	---	---	---	---
12	---	---	---	---	---
13	---	---	---	---	---
14	---	---	---	---	---
15	---	---	---	---	---
16	CAN low	-	-	-	6
17	Signal separation system left	B33	-	Input	12
18	---	---	---	---	---
19	---	---	---	---	---
20	---	---	---	---	---
21	---	---	---	---	---
22	---	---	---	---	---
23	Signal cleaning system	B31	-	Input	12
24	---	---	---	---	---
25	---	---	---	---	---

Module A16 – Reel control

Pin	Function	Component	Measured value	Direction	Circuit diagram no.
1	Raise reel	Y22	12V	Output	21
2	Ground (GND)	32	Ground	Input	6
3	CAN high	-	-	-	6
4	Signal front attachment reverse	S57	12V	Input	17
5	Signal reel speed	B17	1.0 - 1.2 K Ω	Input	19
6	Signal reel speed – (terminal)	T19	12V	Input	19
7	Signal automatic speed (only IMO)	S23	Ground	Input	19
8	Reference voltage reel height	R11	5V	Output	19,24
9	---	---	---	---	---
10	Signal snapping plates - actual value	B55,R20	0.25-4.75 V	Input	21
11	---	---	---	---	---
12	Front attachment damping	Y97	12V	Output	29
13	Reel speed -	K39/86	12V	Output	19
14	Lower reel	Y23	12V	Output	21
15	Electronics	F8	12V / 1A	Input	6
16	CAN low	-	-	-	6
17	---	---	---	---	---
18	Signal hydraulic reel drive	---	12V	Output	19
19	Signal reel speed + (terminal)	T26	12V	Input	19
20	Power	F26	12V / 15A	Input	19,21,29
21	Signal reel height - actual value	B39,R11	0.25-4.75 V	Input	24
22	Signal adjustment pump - actual value	B73	0.25-4.75 V	Input	19
23	Signal reel speed - setpoint	R10	0.25-4.75 V	Input	19
24	---	---	---	---	---
25	Reel speed +	K40/86	12V	Output	19

Module A21 – Quantimeter

Pin	Function	Component	Measured value	Direction	Circuit diagram no.
1	Sample slide	Y52	12V	Output	27
2	Ground (GND)	31	Ground	Input	6
3	CAN high	-	-	-	6
4	---	---	---	---	---
5	Signal yield	B59	1.2V / >2.5V	Input	27
6	---	---	---	---	---
7	---	---	---	---	---
8	---	---	---	---	---
9	---	---	---	---	---
10	Signal longitudinal inclination - actual value	B62, B63	1.2-4.8 V	Input	27
11	Signal moisture +	B61	---	Input	27
12	---	---	---	---	---
13	---	---	---	---	---
14	---	---	---	---	---
15	Electronics	F9	12V / 1A	Input	6
16	CAN low	-	-	-	6
17	---	---	---	---	---
18	Signal returns	B75	1.2V / >2.5V	Input	27
19	---	---	---	---	---
20	Power	F10	12V / 10A	Input	19, 21, 29
21	Signal moisture -	B61	---	Input	27
22	Signal moisture temperature	B61	---	Input	27
23	Signal transversal inclination - actual value	B62, B64	1.2-4.8 V	Input	27
24	---	---	---	---	---
25	---	---	---	---	---

Module A25 – Sieve adjustment

Pin	Function	Component	Measured value	Direction	Circuit diagram no.
1	Top sieve open	K42/86	12V	Output	11
2	Ground (GND)	31	Ground	Input	6, 11
3	CAN high	-	-	-	6
4	---	---	---	---	---
5	---	---	---	---	---
6	---	---	---	---	---
7	---	---	---	---	---
8	Reference voltage sieve adjustment	R37,R38	5V	Output	11
9	---	---	---	---	---
10	---	---	---	---	---
11	---	---	---	---	---
12	Top sieve close	K41/86	12V	Output	11
13	Lower sieve open	K44/86	12V	Output	11
14	Lower sieve close	K43/86	12V	Output	11
15	Electronics	F2	12V / 3A	Input	6, 11
16	CAN low	-	-	-	6
17	---	---	---	---	---
18	---	---	---	---	---
19	---	---	---	---	---
20	Power	F2	12V / 3A	Input	11
21	---	---	---	---	---
22	Signal top sieve - actual value	R37	0.25-4.75 V	Input	11
23	Signal lower sieve - actual value	R38	0.25-4.75 V	Input	11
24	---	---	---	---	---
25	---	---	---	---	---

Module A26 – Deflector adjustment

Pin	Function	Component	Measured value	Direction	Circuit diagram no.
1	Power I	M22	12V	Output	12
2	Power I	M22	12V	Output	12
3	Power II	M22	12V	Output	12
4	Power II	M22	12V	Output	12
5	Power	Z59	12V / 15A	Input	12
6	Power	Z59	12V / 15A	Input	12
7	---	---	---	---	---
8	Ground (GND)	31	Ground	Input	12
9	Ground (GND)	31	Ground	Input	12
10	Signal servo-motor - actual value	R28	0.25-4.75 V	Input	12
11	Signal servo-motor - setpoint	R29	0.25-4.75 V	Input	12
12	Reference voltage servo-motor	R28,R29	5V	Output	12
13	Reference output servo-motor	R28,R29	Ground	Output	12
14	---	---	---	---	---
15	---	---	---	---	---
16	---	---	---	---	---
17	---	---	---	---	---
18	---	---	---	---	---
19	---	---	---	---	---
20	---	---	---	---	---
21	---	---	---	---	---
22	---	---	---	---	---
23	---	---	---	---	---
24	---	---	---	---	---
25	---	---	---	---	---

Module A27 – VARIO

Pin	Function	Component	Measured value	Direction	Circuit diagram no.
1	Reel fore	Y24	12V	Output	21
2	Ground (GND)	31	Ground	Input	6
3	CAN high	-	-	-	6
4	Signal limit switch reel (1)	Z64	12V	Input	21
5	---	---	---	---	---
6	---	---	---	---	---
7	---	---	---	---	---
8	Reference voltage reel horizontal	R12	5V	Output	24
9	---	---	---	---	---
10	---	---	---	---	---
11	---	---	---	---	---
12	Reel back	Y25	12V	Output	21
13	Table adjustment forward	U17	12V	Output	22
14	Table adjustment back	U17	12V	Output	22
15	Electronics	F49	12V / 1A	Input	6
16	CAN low	-	-	-	6
17	Signal cutting table end	Z65	12V	Input	22
18	---	---	---	---	---
19	---	---	---	---	---
20	Power	F49	12V / 15A	Input	22
21	---	---	---	---	---
22	Signal reel horizontal - actual value	B40,R12	0.25-4.75 V	Input	24
23	Signal cutting table - actual value	B70,R30	0.25-4.75 V	Input	24
24	---	---	---	---	---
25	Signal limit switch reel (2)	Z64	12V	Input	21

Module A28 – Spreader fan

Pin	Function	Component	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

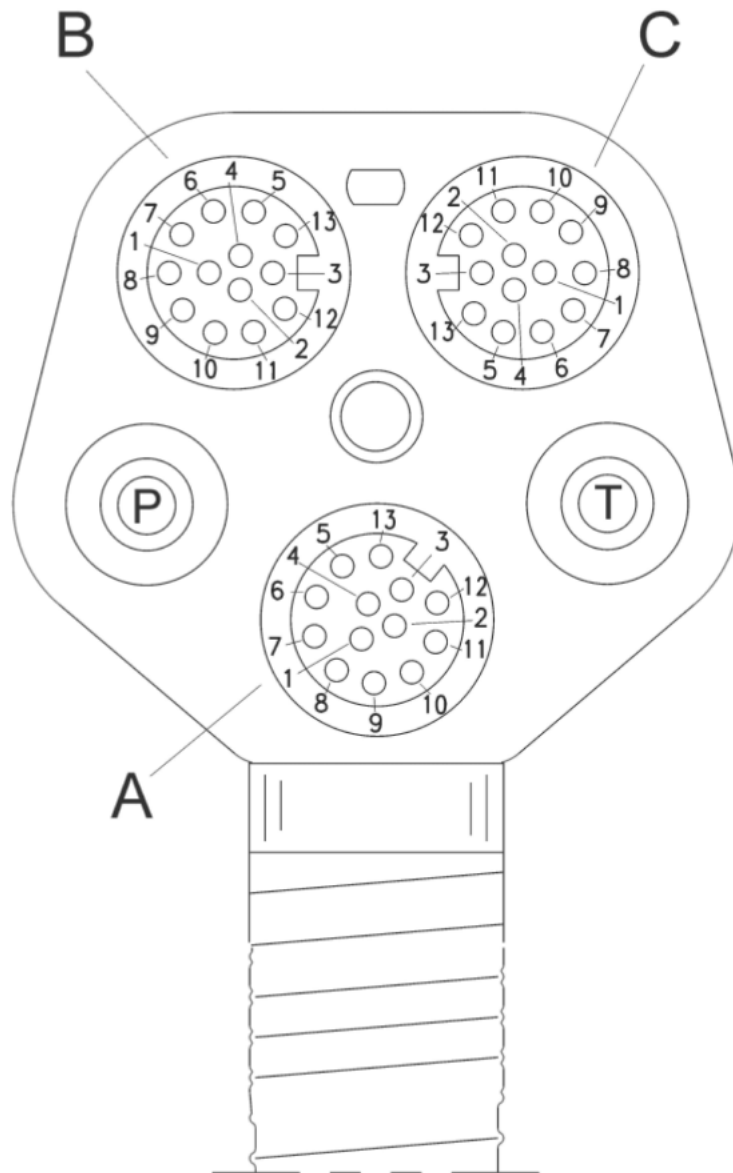
Module A30 – Terminal

Pin	Input / output	Circuit diagram no.
1	Float switch coolant level	5
2	Maintenance switch air filter	5
3	Oil pressure switch charge pressure ground drive	5
4	Oil pressure switch fault compressor-type air conditioner	5
5	Limit switch steering axle / 3-D sieve pan left	5
6	Sensor straw jam straw walker	5
7	Micro switch grain tank filling 70%	5
8	Foot switch grain tank unloading	5
9	Limit switch position grain tank unloading tube	5
10	CAN low	5
11	Power supply 12V (+30)	5
12	Power supply 12V (+30)	5
13	Power supply 12V (+30)	5
14	Temperature switch Diesel engine	5
15	Temperature switch hydraulic oil	5
16	Switch parking brake	5
17	Signal engine cut-off system switched	5
18	Limit switch steering axle / 3-D sieve pan right	5
19	Limit switch position straw chopper	5
20	Micro switch grain tank filling 100%	5
21	Limit switch position grain tank extension	5
22	CAN high	5
23	Ground	5
24	Ground	5
25	Ground	5

Rotary switch T11

Pin	Function	Component	Measured value	Direction	Circuit diagram no.
1	Ground (GND)	-	Ground	Input	5
2	Threshing drum speed +	-	12V	Output	5
3	Fan speed +	-	12V	Output	5
4	Concave open	-	12V	Output	5
5	Reel speed +	-	12V	Output	5
6	Top sieve open	-	12V	Output	5
7	Lower sieve open	-	12V	Output	5
8	Front attachment speed +	-	12V	Output	5
9	Rotor speed +	-	12V	Output	5
10	---	---	---	---	5
11	Power	-	12V / 1A	Input	5
12	Power	-	12V / 1A	Input	5
13	Buzzer	-	12V	Output	5
14	Ground (GND)	-	Ground	Input	5
15	Threshing drum speed -	-	12V	Output	5
16	Fan speed -	-	12V	Output	5
17	Concave close	-	12V	Output	5
18	Reel speed -	-	12V	Output	5
19	Top sieve close	-	12V	Output	5
20	Lower sieve close	-	12V	Output	5
21	Front attachment speed -	-	12V	Output	5
22	Rotor speed +	-	12V	Output	5
23	---	---	---	---	5
24	Power	-	12V / 1A	Input	5
25	Power	-	12V / 1A	Input	5

Multi-coupling



H 1071.0

Key to diagram:

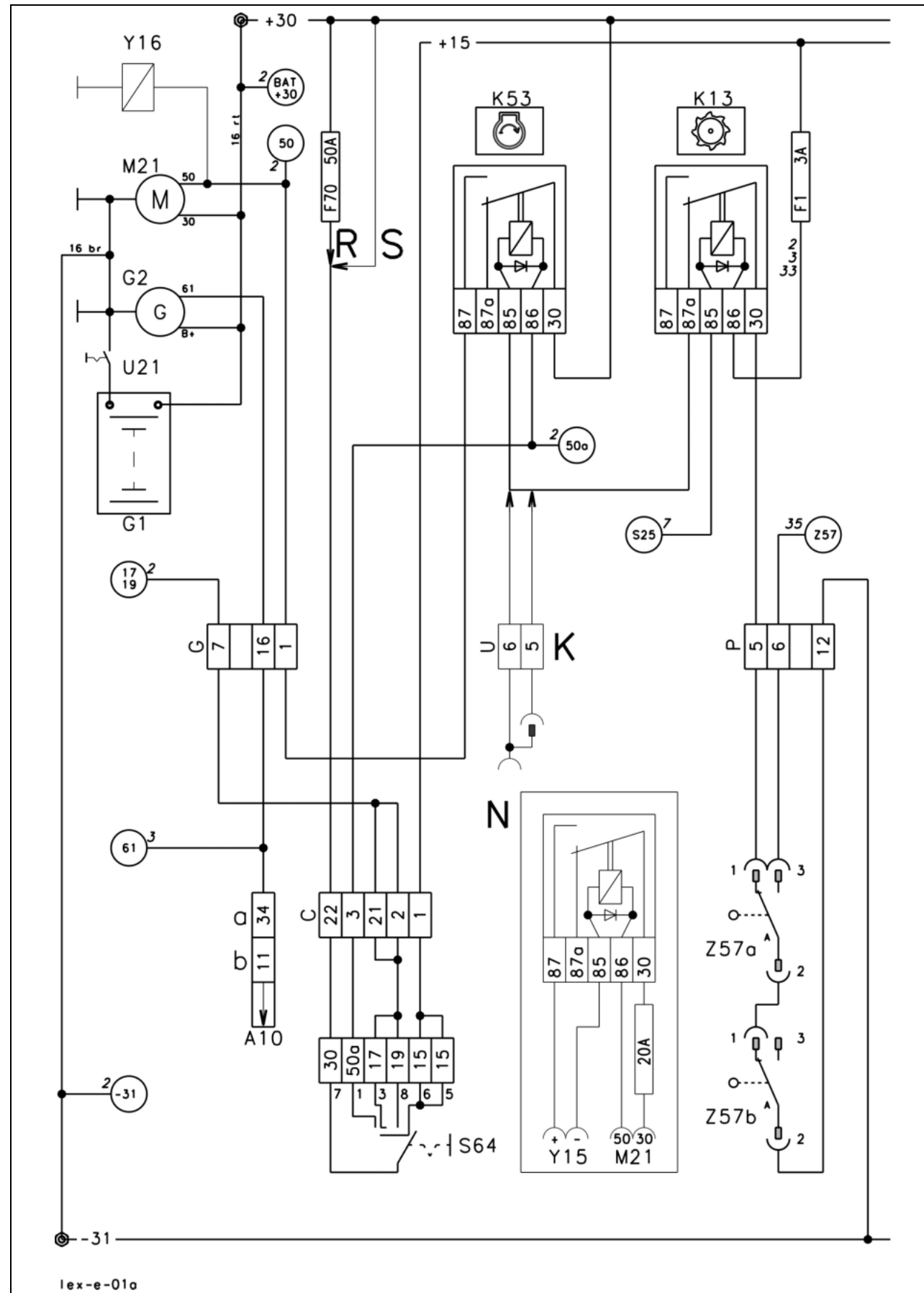
- A Connector A
- B Connector B
- C Connector C

- P Working hydraulics pump connection
- T Tank connection

1a

**Main power supply,
Diesel engine starter**

1a - Main power supply, diesel engine starter



Designations:

- A10 Fieldwork computer module (BIF/CAB) 2-h-20
- G1 Battery 7-n-21
- G2 Alternator 1-g-17
- K13 Threshing mechanism 3-h-20
- K53 Starter relay 3-h-20
- M21 Starter 3-n-19
- S25 Main drive (threshing mechanism coupling) 3-g-17
- S64 Ignition lock 3-f-18
- U21 Battery cut-off switch 6-o-20
- Y15 Diesel engine solenoid 1-n-18
- Y16 Diesel engine starting volume 1-n-18
- Z57 Starting lock ground speed control lever 3-g-18

Notes:

- K - up to machine no. 468-0018, 466-0700, 457-0026, 454-2048, 453-1412, 452-0571
- N - Retrofit kit starter relay (SP No. 174 839.0)
- R - from machine no. 548-0011, 547-0011, 546-0011, 545-0011, 544-0011, 543-0011
- S - up to machine no. 468-0084, 466-1655, 457-0107, 454-4799, 453-2581, 452-1056
- a - BIF/CAB module 42 plug-in contacts used
- b - BIF module 25 plug-in contacts used

Measured value table:

Item	Component	Measured value	Note
K13	Remote switching relay 15 A 30 A	95±10 Ω	(Pin 86/1 – 85/2) (Pin 87a/4 – 30/3) (Pin 87/5 – 30/3)
K53	Remote switching relay 70 A	115±10 Ω	(Pin 86/1 – 85/2) (Pin 87/5 – 30/3)

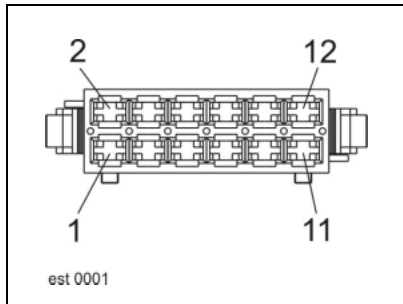
Description of functions:

Diesel engine starter

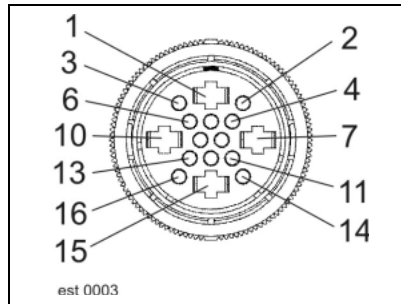
As an ignition lock, the relay K53 is only supplied with ground when the switches (Z57a/Z57b) on the ground speed control lever are in neutral position and the threshing mechanism is turned off by the relay K13. The ignition lock (S64) then turns on the starter for the diesel engine (M21) with the relay K53 with +50a.

Pin assignment

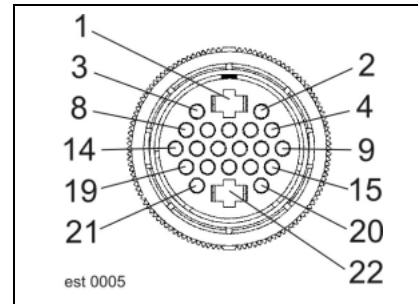
Plug U, P



Plug G



Plug C



Connection list

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
G-1	K53-87	DS-43				4	bk-ye
G-7	C-2	C-21				1.5	bk-rd
G-16	C -18	K58-86	Cab-34 / Bif-11			0.75	bl

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
C-1	15					6	bk
C-2	G-7	C-21				1.5	bk-rd
C-3	K53-86	K56-86	K52-86			0.75	bk-ye
C-21	G-7	C-2				1.5	bk-rd
C-22	30					6	rd

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
P-5	K13-30					1.5	vi-br
P-6	X-7	DI-7				1.5	vi-ye
P-12	31					2.5	br

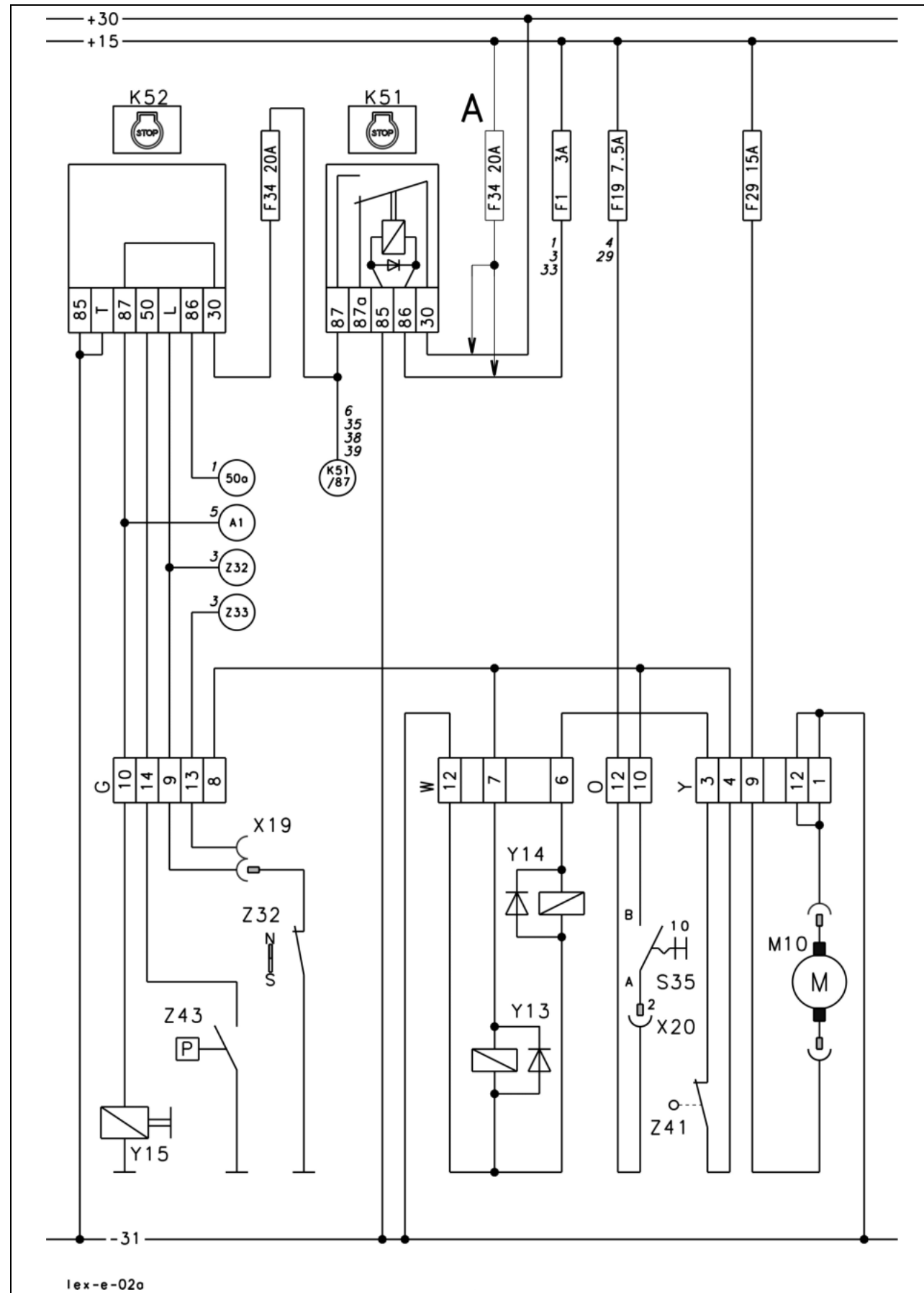
from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
K - U-5	K13-87a					0.75	br-gr
K - U-6	K53-85					0.75	br-gr

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

2a - Start the diesel engine, diesel engine speed adjustment for MERCEDES + PERKINS



Designations:

- K51 Ignition switch 3-h-20
- K52 Engine cut-off system 3-h-20
- M10 Fuel pump 7-n-16
- S35 Motor speed adjustment 3-g-17
- X19 Cooling water tank 1-m-17
- X20 Gearbox 7-i-17
- Y13 Diesel engine stage 1 2-p-19
- Y14 Diesel engine stage 2 2-p-19
- Y15 Diesel engine solenoid 1-n-18
- Z32 Coolant level with engine cut-off system 1-m-17
- Z33 Coolant level 1-m-17
- Z41 Engine speed reduction for road travel 7-i-17
- Z43 Diesel engine oil pressure with engine cut-off system ... 1-o-17

Notes:

A - up to machine no. 466-0041, 454-0028

Measured value table:

Item	Component	Measured value	Note
K51	Remote switching relay 70 A	115±10 Ω	(Pin 86/1 – 85/2) (Pin 87/5 – 30/3)
K52	Relay engine cut-off system	- - -	Electronic relay
Y13 Y14	Solenoid coil	0.75 A / 16 Ω 1.8 A / 6.6 Ω 2.0 A / 6.0 Ω	* ** ***
Y15	Solenoid coil	44.0 A / 0.3 Ω 1.1 A / 11.0 Ω	Pulling winding Holding winding

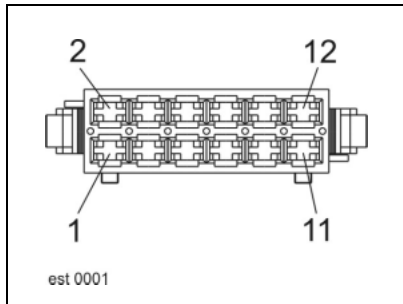
- * - from year 2000
- ** - from machine no. 466-0166
454-0256
453-0042
452-0017
- *** - up to machine no. 466-0165
454-0255
453-0041
452-0016

Description of functions:

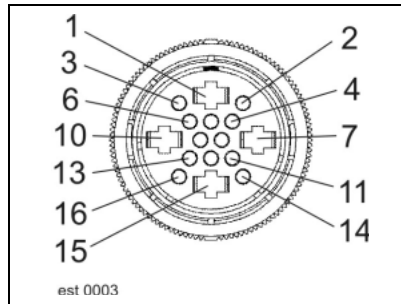
Solenoid injection pump	<p>The ignition lock (S64) switches the solenoid diesel engine (Y15) through the relay K51 and the relay engine cut-off system K52 with +15.</p> <p>Note: If the machine is equipped "without engine cut-off system", the relay K52 is not used and replaced by a bridge. At the same time, the wiring and the characteristics of the oil pressure sensor and the water level sensor are changed (cf. diagram 3 – diesel engine cut-off system).</p>
Function engine cut-off system*	<p>If the ground signal of the float switch coolant level (Z32) and the oil pressure switch (Z43) is missing, the relay engine cut-off system (K52) interrupts the power supply to the solenoid diesel engine (Y15). The relay K52 switches with a delay of approx. 5-7 sec. so that the diesel engine may build up sufficient oil pressure in the start-up phase.</p>
Speed adjustment engine	<p>Both solenoid coils (Y13/Y14) are switched on or off at the same time by the switch diesel engine speed (S35) according to the switch position. If the third gear is selected in the gearbox, the connection to the solenoid valve (Y14) is interrupted by the gear switch (Z41). This means that, in the upper range of the shaft speed with no load in the third gear, the switch (S35) can only switch the solenoid coil (Y13) and one of the hydraulic cylinders at the injection pump.</p>

Pin assignment

Plug W, O, Y



Plug G

**Connection list**

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
G-8	O-10	DS-1	Y-4	W-7		0.75	wh
G-9	K52-L	DS-40	GX-2			0.75	br-bk
G-10	K52-87	GX-1	DS-4			4	bk-rd
G-13	K23-87a	A-17				0.5	wh
G-14	K52-50	DS-42				0.75	br-gn

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
W-6	Y-3	DS-2				1.5	wh
W-7	O-10	DS-1	Y-4	G-8		1	bk-rd
W-12	31					2.5	br

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
O-10	W-7	DS-1	Y-4	G-8		1.5	wh-rd
O-12	F19-A					2.5	bk

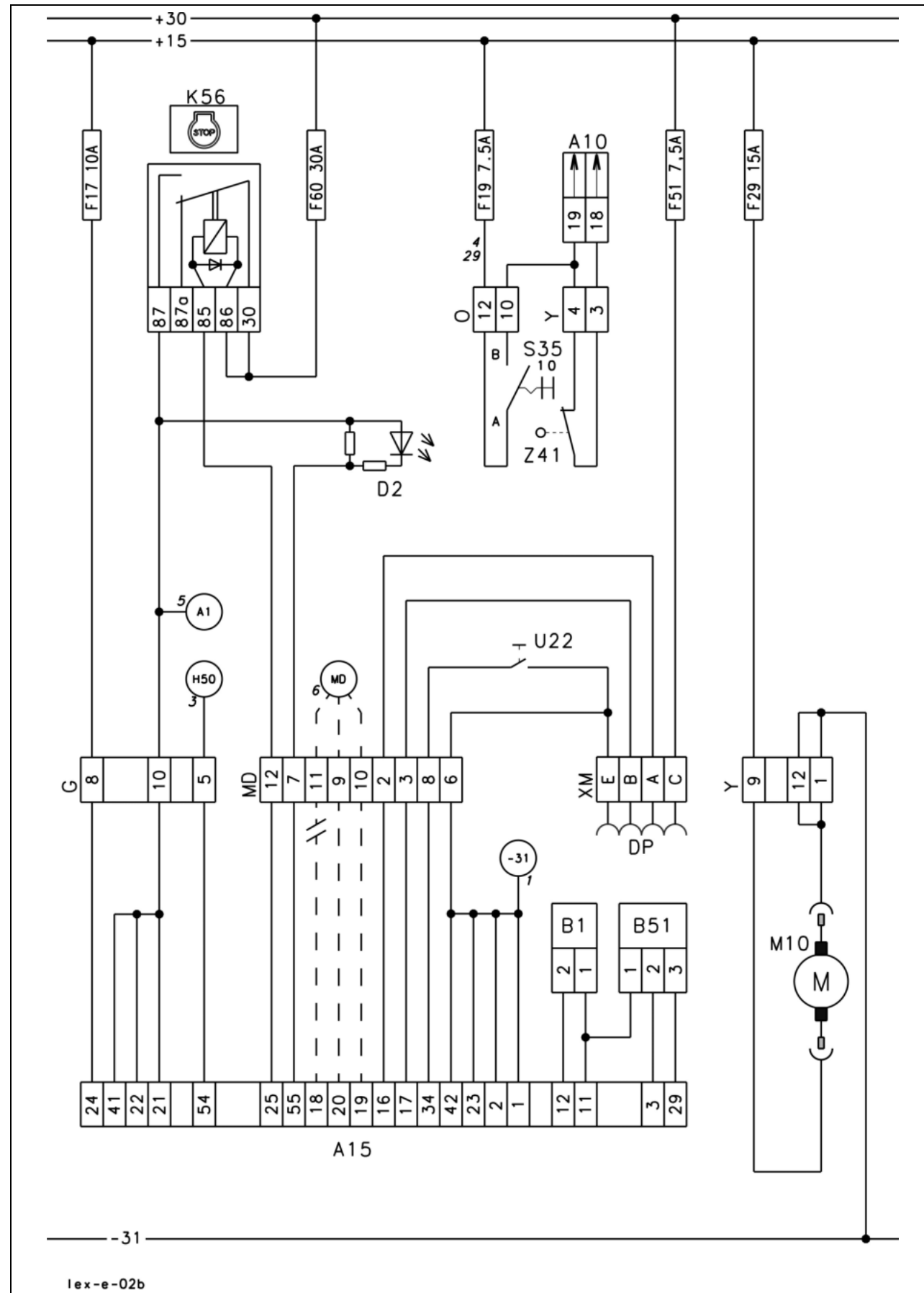
from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
Y-1	31					2.5	br
Y-3	W-6	DS-2				1.5	br-wh
Y-4	W-7	DS-1	O-10	G-8		1.5	br-ye
Y-9	F29-A	DS-3				1.5	bk
Y-12	31					2.5	br

2b

**Starting the diesel engine,
Diesel engine speed adjustment**

**PERKINS HEUI
electronically controlled engine**

2b - Start the diesel engine, diesel engine speed adjustment for PERKINS HEUI



Designations:

- A10 Fieldwork computer (BIF/CAB) 2-h-20
- A15 Electronic motor control module 2-o-18
- D2 LED diesel engine fault code 3-h-20
- DP Perkins engine diagnostics 3-h-20
- H50 Diesel engine oil pressure 3-f-18
- K56 Fuel feeding pump 3-h-20
- M10 Fuel pump 7-n-16
- S35 Motor speed adjustment 3-g-17
- U22 Diesel engine diagnostics 3-h-20
- Z41 Engine speed reduction for road travel 7-j-18

Measured value table:

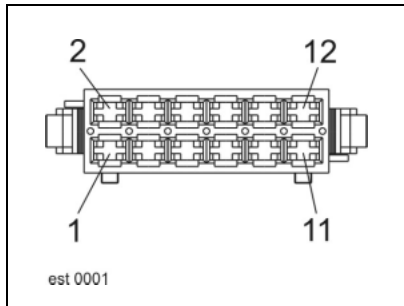
Item	Component	Measured value	Note
K56	Remote switching relay	90±10 Ω 40 A 60 A	(Pin 86/1 – 85/2) (Pin 87a/4 – 30/3) (Pin 87/5 – 30/3)

Description of functions:

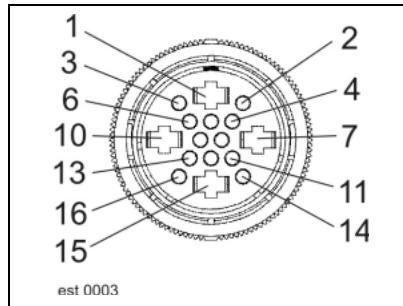
Starting process	<p>The circuit of the ignition lock of this engine is the same as in mechanically controlled engines.</p> <p>The ignition lock (S64) activates the engine control module (A15). It then automatically connects the power supply through the relay K56. During the starting process, the engine control module (A15) receives the shaft speed signal from the camshaft sensor and initiates the injection.</p>
Engine cut-off system	<p>All sensors for operating and monitoring the engine are located on the engine wiring loom. Only the sensors for the environmental air pressure and the environment temperature are part of the CLAAS wiring loom. For the display of the engine speed and the coolant temperature, the module CAB (A10) receives the corresponding signal from the engine control module (A15) through CAN BUS J1939. This signal is converted to the CLAAS CAN BUS by the module CAB (A10) and thus displayed on the terminal.</p>
Engine diagnosis	<p>The PERKINS diagnostic tool PRO-LINK may be connected to the diagnostic plug DP in the central electrics. The display of error codes can also be activated by the diagnostics LED (D2) after the rocker switch (U22) is switched.</p>

Pin assignment

Plug MD, Y



Plug G



Connection list

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
G-5	C-19	DI-5				0.75	gn
G-8	O-10	DS-1	Y-4	W-7		0.75	wh
G-10	K52-87	GX-1	DS-4			4	bk-rd

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
Y-3	W-7	DS-2	Cab-18			1.5	br-wh
Y-4	W-6	DS-1	O-10	Cab-19		1.5	br-ye
Y-9	K56-87a	DS-3				1.5	bk

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
O-10	W-6	DS-1	Y-4	Cab-19		1.5	wh-rd
O-12	F19-A					2.5	bk

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
MD-2	XM-A					0.5	wh
MD-3	XM-B					0.5	wh
MD-6	XM-E	U22-2				0.5	wh
MD-7	D2-K					0.5	wh
MD-8	U22-1					0.5	wh
MD-9	CAN1939-L					0.5	wh
MD-10	CAN1939-H					0.5	wh
MD-11	CAN1939-G					0.5	wh
MD-12	K56-85					0.5	wh

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
XM-A	MD-2	D2-A				0.5	wh
XM-B	MD-3					0.5	wh
XM-C	F51-A					0.5	wh
XM-E	MD-6	U22-2				0.5	wh

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
Y-1	31					2.5	br
Y-9	K56-87a	DS-3				1.5	bk
Y-12	31					2.5	br

Pin assignment of the electrical system CLAAS in the module of the electronic engine control (ECM)

Pin	Description
1-2-23-42	Ground
3	Reference voltage (5V) for air pressure sensor (BAP) - 328
11	Ground supply for air temperature sensor (AAT) - 329 and air pressure sensor (BAP) - 328
12	Signal input from air temperature sensor (AAT) - 329
16	Connection to the diagnostic plug (DP) Pin A - 326
17	Connection to the diagnostic plug (DP) Pin B - 326
18	CAN-BUS J1939 - ground
19	CAN-BUS J1939 - High
20	CAN-BUS J1939 - Low
21-22-41	Power supply via relay K56
24	Power supply via F17-10A
25	Control of relay K56 (ground output)
29	Signal input from air pressure sensor (BAP) - 328
34	Signal input diagnostic switch - 327
54	Signal output to oil pressure indicator light (OWL) on the steering column - 31
55	Signal output to diagnostics LED in the central electrics - 325

Display of error codes

If a serious fault occurs during operation, the driver will be warned by the illuminated oil pressure indicator light (31) on the steering column. Illumination of the diagnostics LED (325) in the central electrics during the operation of the engine indicates that one or more faults have occurred in the system.

The codes are divided into the categories "active" and "inactive" errors. When the ignition is turned on or the diagnostic button (327) is pressed, the category of the saved errors is indicated by the oil pressure indicator light (31) by one flash for active errors and two flashes for inactive errors. After this, the diagnostics LED (325) in the central electrics flashes the errors of the indicated category one after another. The code is made up of flashes for each individual digit with a short pause in between each digit.



Sample error code: 263

Three flashes of the oil pressure indicator light (31) indicate the end of the transmission of all saved errors.

Overview for some of the error codes of the electronic engine control

Error code	Description
111	System OK
112	Power supply on the engine control module (ECM) too high
113	Power supply on the engine control module (ECM) too low
114	Coolant temperature sensor (ECT): Signal voltage too low
115	Coolant temperature sensor (ECT): Signal voltage too high
121	Boost pressure sensor (MAP): Signal voltage too high
122	Boost pressure sensor (MAP): Signal voltage too low
123	Boost pressure sensor (MAP): Signal voltage not OK
124	Injection pressure sensor (ICP): Signal voltage too low
125	Injection pressure sensor (ICP): Signal voltage too high
143	Camshaft sensor (CMP): Interference frequency internal (distorted signal)
144	Camshaft sensor (CMP): Interference frequency external (distorted signal)
145	Camshaft sensor (CMP): No signal
151	Air pressure sensor (BAP) in central electrics: Signal voltage too high
152	Air pressure sensor (BAP) in central electrics: Signal voltage too low
154	Air temperature sensor (AAT): Signal voltage too low
155	Air temperature sensor (AAT): Signal voltage too high
211	Oil pressure sensor (EOP): Signal voltage too low
212	Oil pressure sensor (EOP): Signal voltage too high
216	Hydraulic speed controller (HPG): Signal voltage too low
225	Oil pressure sensor (EOP): Signal voltage not OK
226	Hydraulic speed controller (HPG): Signal voltage too high
231	Communication error on the data bus
241	Injection pressure regulator (IPR): Wiring faulty
263	Warning light for engine oil pressure and coolant temperature (steering column): Wiring faulty
266	Diagnostics LED (central electrics): Wiring faulty
311	Oil temperature sensor (EOT): Signal voltage too low
312	Oil temperature sensor (EOT): Signal voltage too high
313	Oil pressure sensor (EOP): Oil pressure too low - warning
314	Oil pressure sensor (EOP): Oil pressure too low - engine shutoff
315	Camshaft sensor (CMP): Engine speed too high

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

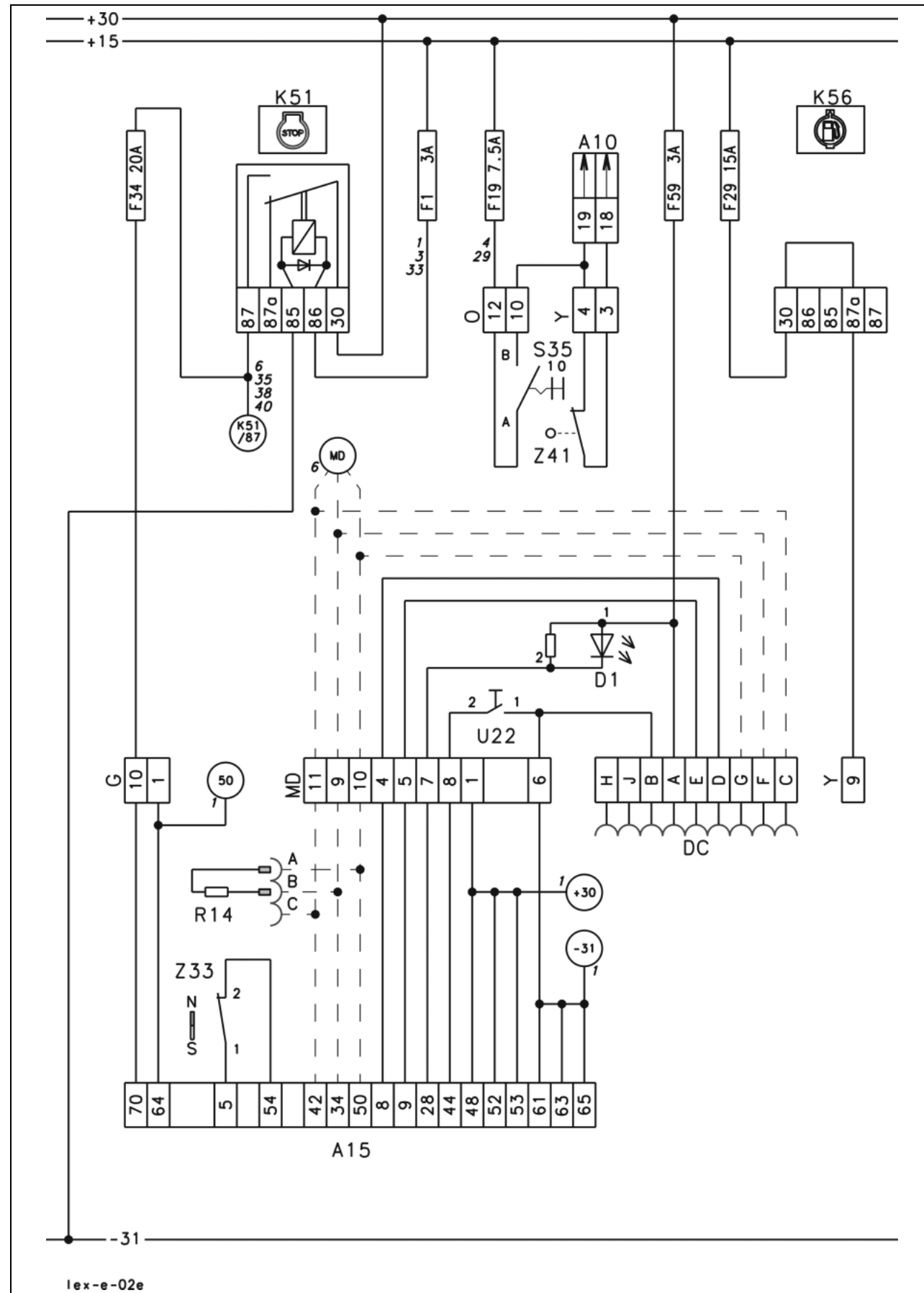
Notes

02e**Starting the diesel engine,
Diesel engine speed adjustment****CAT - C12, C9, 3126B
electronically controlled engine**

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

02e- Starting the Diesel engine, Diesel engine speed adjustment CAT - C12, C9, 3126B



Designations:

- A10 Fieldwork computer module (BIF/CAB) 2-h-20
- A15 Electronic motor control module 2-o-18
- D1 LED diesel engine fault code 3-h-20
- DC Diagnostics Caterpillar 3-h-20
- K51 Ignition switch 3-h-20
- K56 Fuel feeding pump 3-h-20
- R14 CAN BUS J1939 terminator 3-h-20
- S35 Motor speed adjustment 3-g-17
- U22 Diesel engine diagnostics 3-h-20
- Z33 Coolant level 1-m-17
- Z41 Engine speed reduction for road travel 7-j-18

Measured value table:

Item	Component	Measured value	Note
K51	Remote switching relay 70 A	115±10 Ω	(Pin 86/1 – 85/2) (Pin 87/5 – 30/3)

Description of functions:**Starting process**

The circuit of the ignition lock of this engine is the same as in mechanically controlled engines.

The ignition lock (S64) activates the module engine control (A15) through the relay K51. During the starting process, the engine control module (A15) receives the shaft speed signal from the camshaft sensor and initiates the injection.

Engine cut-off system

All sensors for operating and monitoring the engine are located on the engine wiring loom. Only the water level sensor is part of the CLAAS wiring loom.

For the display of the engine speed and the coolant temperature, the module CAB (A10) receives the corresponding signal from the engine control module (A15) through CAN BUS J1939. This signal is converted to the CLAAS CAN BUS by the module CAB (A10) and thus displayed on the terminal.

Engine diagnosis

The number of engine errors that occurred and the corresponding error codes can be displayed on the terminal.

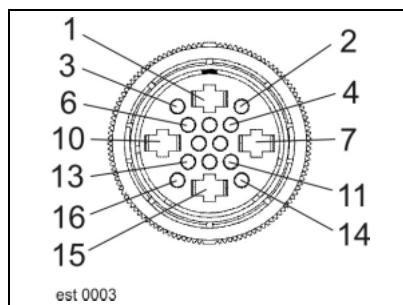
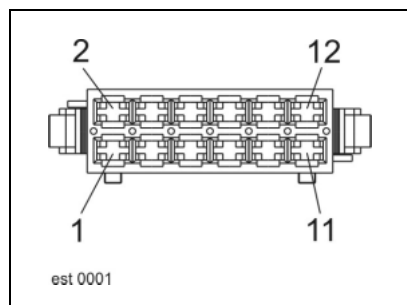
A more detailed diagnosis is done with the diagnostics plug in the central electrical system with the Caterpillar - diagnostics tool CAT-ET.

The display of error codes can also be activated by the diagnostics LED (D2) after the rocker switch (U22) is switched.

Pin assignment

Plug MD, O, Y,

Plug G



Connection list

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
G-1	K53-87	DS-43	A15-64	M21-50		4	bk-ye
G-10	F34-A	DS-4	A15-70			4	bk-rd

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
Y-3	W-7	DS-2	Cab-18			1.5	br-wh
Y-4	W-6	DS-1	O-10	Cab-19		1.5	br-ye
Y-9	K56-87a	DS-3				1.5	bk

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
O-10	W-6	DS-1	Y-4	Cab-19		1.5	wh-rd
O-12	F19-A					2.5	bk

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
MD-1	30	A15-48	A15-52	A15-53		0.5	wh
MD-4	A15-8	XM-D				0.5	wh
MD-5	A15-9	XM-E				0.5	wh
MD-6	31	A15-61	A15-62	A15-63	XM-B		
	U22-1					0.5	wh
MD-7	A15-28	D2-K				0.5	wh
MD-8	A15-44	U22-2				0.5	wh
MD-9	A15-34	R14-B				0.5	wh
MD-10	A15-50	R14-A				0.5	wh
MD-11	A15-42	R14-C				0.5	wh

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
XM-A	F59-A					0.5	wh
XM-B	MD-6	U22-1				0.5	wh
XM-C	MD-11					0.5	wh
XM-D	MD-4					0.5	wh
XM-E	MD-5					0.5	wh
XM-F	MD-9					0.5	wh
XM-G	MD-10					0.5	wh

Overview for some of the error codes of the electronic engine control

SPN	FMI	Description
94		Engine fuel pressure
	0	Fuel pressure above the set range
	1	Fuel pressure below the set range
	3	Fuel pressure sensor; open circuit or short circuit to battery +
	4	Fuel pressure sensor; short circuit to ground
	13	Fuel pressure sensor; calibration error
	15	High fuel pressure; warning
	16	High fuel pressure (engine power reduced)
	17	Low fuel pressure; warning
100		Engine oil pressure
	1	Oil pressure is too low (engine power reduced)
	3	Fuel pressure sensor; open circuit or short circuit to battery +
	4	Oil pressure sensor; short circuit to ground
	13	Oil pressure sensor; calibration error
	17	Low oil pressure; warning
	18	Low oil pressure (engine power reduced)
102		Engine boost pressure
	3	Fuel pressure sensor; open circuit or short circuit to battery +
	4	Boost pressure sensor; short circuit to ground
	13	Boost pressure sensor; calibration error
	15	High boost pressure; warning
	16	High boost pressure (engine power reduced)
108		Atmospheric pressure sensor
	3	Atmospheric pressure sensor; open circuit or short circuit to battery +
	4	Atmospheric pressure sensor; short circuit to ground
	13	Atmospheric pressure sensor; calibration error
110		Cooling liquid temperature
	0	High cooling liquid temperature (engine power reduced)
	3	Cooling liquid temperature sensor; open circuit or short circuit to battery +
	4	Cooling liquid temperature sensor; short circuit to ground
	15	High cooling liquid temperature; warning
	16	High cooling liquid temperature (engine power reduced)
111		Cooling liquid level
	1	Engine cooling liquid; level too low
	17	Engine cooling liquid; level warning
152		ADEMIII ECM
	12	ECM error

-
- 164 Injection drive pressure sensor**
- 0 Injection pressure outside of the set range
 - 3 Injection pressure sensor; open circuit or short circuit to battery +
 - 4 Injection pressure sensor; short circuit to ground
 - 11 Injection pressure system error
- 168 Engine check and battery voltage**
- 0 Battery voltage too high, overvoltage
 - 1 Battery voltage too low, undervoltage
 - 2 Battery voltage with interruption
- 172 Engine intake air temperature**
- 0 High intake air temperature (engine power reduced)
 - 3 Intake air temperature sensor; open circuit or short circuit to battery +
 - 4 Intake air temperature sensor; short circuit to ground
 - 15 High intake air temperature; warning
 - 16 High intake air temperature (engine power reduced)
- 174 Engine fuel temperature**
- 0 High fuel temperature; warning
 - 3 Fuel temperature sensor; open circuit or short circuit to battery +
 - 4 Fuel temperature sensor; short circuit to ground
 - 15 High fuel temperature; warning
- 175 Engine oil temperature**
- 3 Middle oil temperature sensor; open circuit or short circuit to battery +
 - 4 Middle oil temperature sensor; short circuit to ground
- 190 Engine speed**
- 0 Engine overspeed warning
 - 2 Engine speed signal not available
 - 3 Engine speed sensor open circuit or short circuit to battery +
 - 8 Engine speed signal is disturbed
 - 11 Indefinable engine speed sensor error
- 228 Engine speed calibration**
- 13 Engine speed; calibration necessary
- 234 Engine software**
- 2 Engine software faulty
- 620 5 V power supply**
- 3 ECM 5 volt sensor supply; open circuit or short circuit to battery +
 - 4 ECM 5 volt sensor supply; short circuit to ground
- 639 J1939 Communication**
- 9 J1939 Communication not available

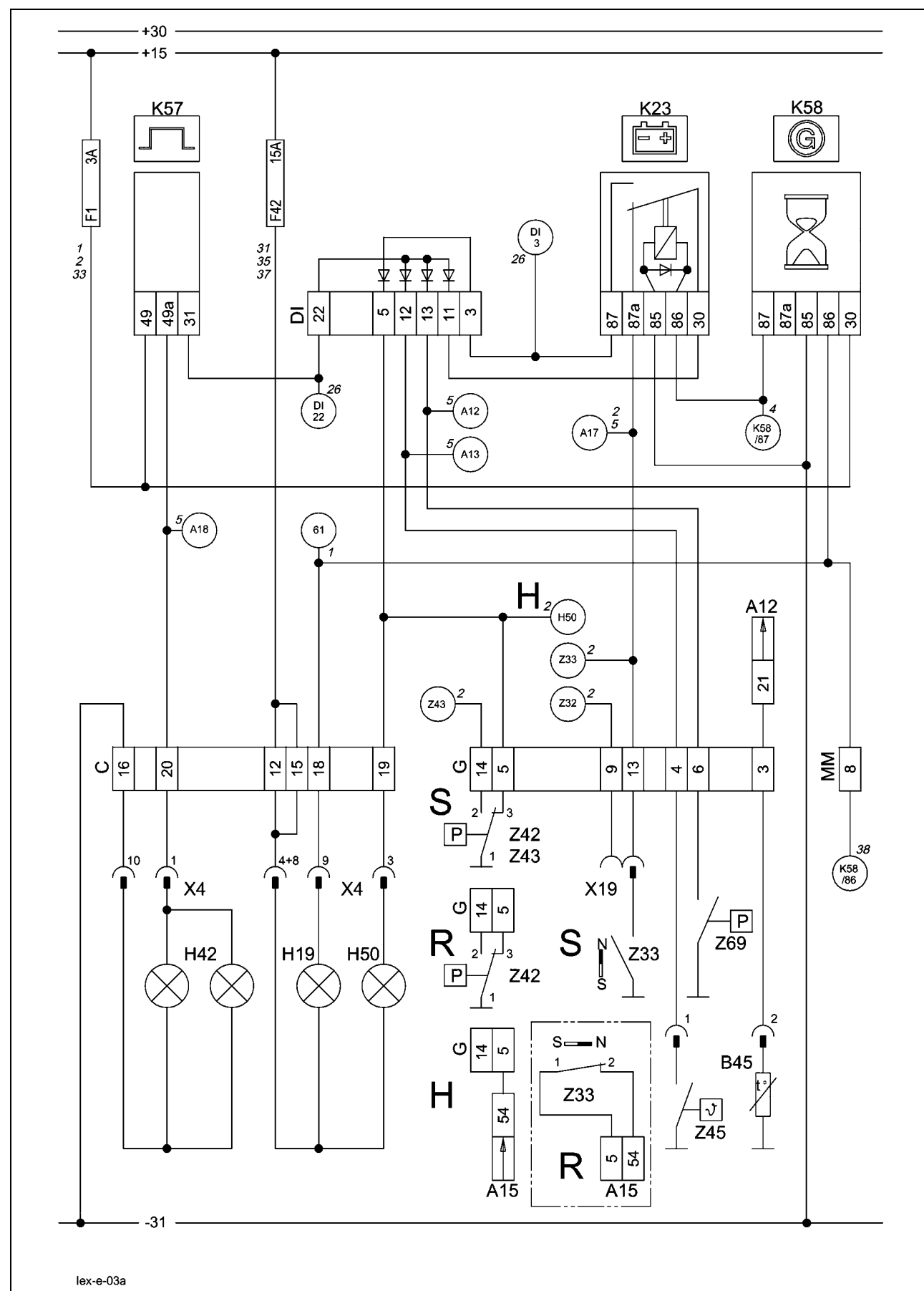
- 651 Injection cylinder 1**
11 Cylinder injection 1 mechanical fault
- 652 Injection cylinder 2**
11 Cylinder injection 2 mechanical fault
- 653 Injection cylinder 3**
11 Cylinder injection 3 mechanical fault
- 654 Injection cylinder 4**
11 Cylinder injection 4 mechanical fault
- 655 Injection cylinder 5**
11 Cylinder injection 5 mechanical fault
- 656 Injection cylinder 6**
11 Cylinder injection 6 mechanical fault
- 678 8 V sensor voltage supply**
3 ECM 8 volt sensor supply; open circuit or short circuit to battery +
4 ECM 8 volt sensor supply; short circuit to ground
- 679 Injection drive valve controller**
11 Injection drive; valve control driver faulty
- 723 Second engine speed sensor**
2 Second engine speed sensor not available
3 Second engine speed sensor; circuit open or short circuit to battery +
8 Second engine is disturbed
11 Indefinable engine speed sensor error
- 729 Intake air heating**
5 Intake air heating; open circuit
6 Intake air heating; short circuit to earth
- 1135 Oil temperature outside sensor**
3 Oil temperature outside sensor; open circuit or short circuit to battery +
4 Oil temperature outside sensor; short circuit to earth

Notes

3a

Diesel engine cut-off system

03a - Diesel engine cut-off system



Designations:

- A12 Shaft speed monitor module (DZW) 2-h-20
- A15 Electronic motor control module 2-o-18

- B45 Coolant temperature 2-n-19

- DI Diode printed circuit board warning device 3-h-20

- H19 Battery charge monitor 3-f-18
- H42 STOP 3-f-18
- H50 Diesel engine oil pressure 3-f-18

- K23 Alternator 3-h-20
- K57 Pulse generator 3-h-20
- K58 Time relay alternator 3-h-20

- X4 Steering column indicator lights 3-f-18
- X19 Cooling water tank 1-m-17

- Z32 Coolant level with engine cut-off system 1-m-17
- Z33 Coolant level 1-m-17
- Z42 Diesel engine oil pressure 1-o-17
- Z45 Diesel engine temperature
(not for electronically controlled diesel engine) 2-n-17
- Z45 Diesel engine temperature 2-n-17
- Z69 Maintenance - air filter 2-q-18

Notes:

- H - only for HEUI engine (Perkins)

- R - from machine no. 548-0011, 547-0011, 546-0011, 545-0011, 544-0011, 543-0011

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

Measured value table:

Item	Component	Measured value	Note
K23	Remote switching relay 15 A 30 A	95±10 Ω	(Pin 86/1 – 85/2) (Pin 87a/4 – 30/3) (Pin 87/5 – 30/3)
K57	Pulse generator	---	
K58	Alternator relay	---	Time controlled ON after approx. 1.5 sec

Description of functions:

Time relay K58	The electrical system in the time relay K58 delays the release switch to the individual consumers for approx. 1.5 s to ensure a stable operating voltage for the starting process.
Warning charging voltage	<p>If the charging voltage is too low or non-existent, the warning light (H19) lights up.</p> <p>At the same time, the analogue voltage signal of the alternator (G2) is monitored by the fieldwork computer module (A10) and shown as an alarm message on the terminal (A30) as the case may be.</p> <p>A complete failure of the alternator (G2) is reported on the terminal (A30) as a defective V-belt of the water pump (cf. diagram 1).</p>
Warning coolant level	
- without engine cut-off system*	<p>Ignition on; diesel engine not started:</p> <p>The ground signal of the float switch (Z33) is switched to the pulse generator K57 through the open relay K23 and the diode printed circuit board (DI).</p> <p>Diesel engine started:</p> <p>The ground signal of the float switch (Z33) is displayed on the terminal (A30) as an alarm message.</p>
- with engine cut-off system*	<p>When the ground signal of the float switch (Z32) is not connected to the engine cut-off system relay (K52), the diesel engine switches off automatically. In addition, the terminal (A30) recognises the interruption of the power supply to the solenoid (Y15) and displays it as an alarm message (cf. plan 2a).</p>
Warning engine oil pressure	
- without engine cut-off system*	<p>The ground signal of the oil pressure switch (Z42) is switched to the pulse generator K57 through the closed relay K23 and the diode printed circuit board (DI) and also sent to the indicator light (H50).</p>
- with engine cut-off system*	<p>The ground signal of the oil pressure switch (Z43) is switched to the pulse generator K57 through the closed relay K23 and the diode printed circuit board (DI) and also sent to the indicator light (H50). The lack of a ground signal from the oil pressure switch (Z43) on the relay K52 also causes the diesel engine to shut off automatically.</p>
Warning air filter maintenance	<p>The ground signal of the low pressure switch (Z69) is sent to the terminal (A30) and also through the diode printed circuit board (DI) to the pulse generator K57.</p>

Description of functions:

Temperature warning
(for mechanically controlled
diesel engine)

The earth signal of the temperature switch (Z45) is connected to terminal (A30) and in parallel via the diode PCB (DI) to the transducer K57 (not for CATERPILLAR).

Temperature warning
(for electronically controlled
diesel engine)

For a coolant excess temperature warning, the engine controller module (A15) transmits the corresponding signal to the CAB module (A10) via the CAN bus J1939. The CAB module (A10) converts this signal to the CLAAS CAN bus, allowing display on the terminal. At the same time and as a protective function, the diesel engine reduces its maximum power.

Temperature display
(for mechanically controlled
diesel engine)

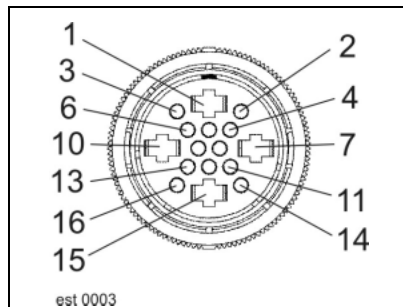
The speed monitor module (A12) converts the analog signal from temperature sensor (B45) into a digital signal which is displayed on terminal (A30) via the CAN bus.

Temperature display
(for electronically controlled
diesel engine)

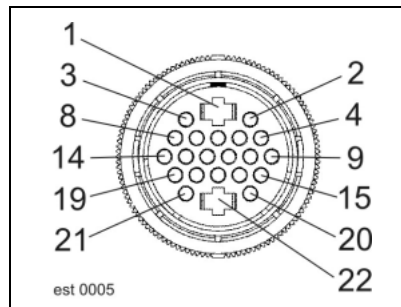
For coolant temperature display, the engine controller module (A15) transmits the corresponding signal to the CAB module (A10) via the CAN bus J1939. The CAN module (A10) converts this signal to the CLAAS CAN bus, thus allowing display on the terminal.

Pin assignment

Plug G



Plug C

**Connection list**

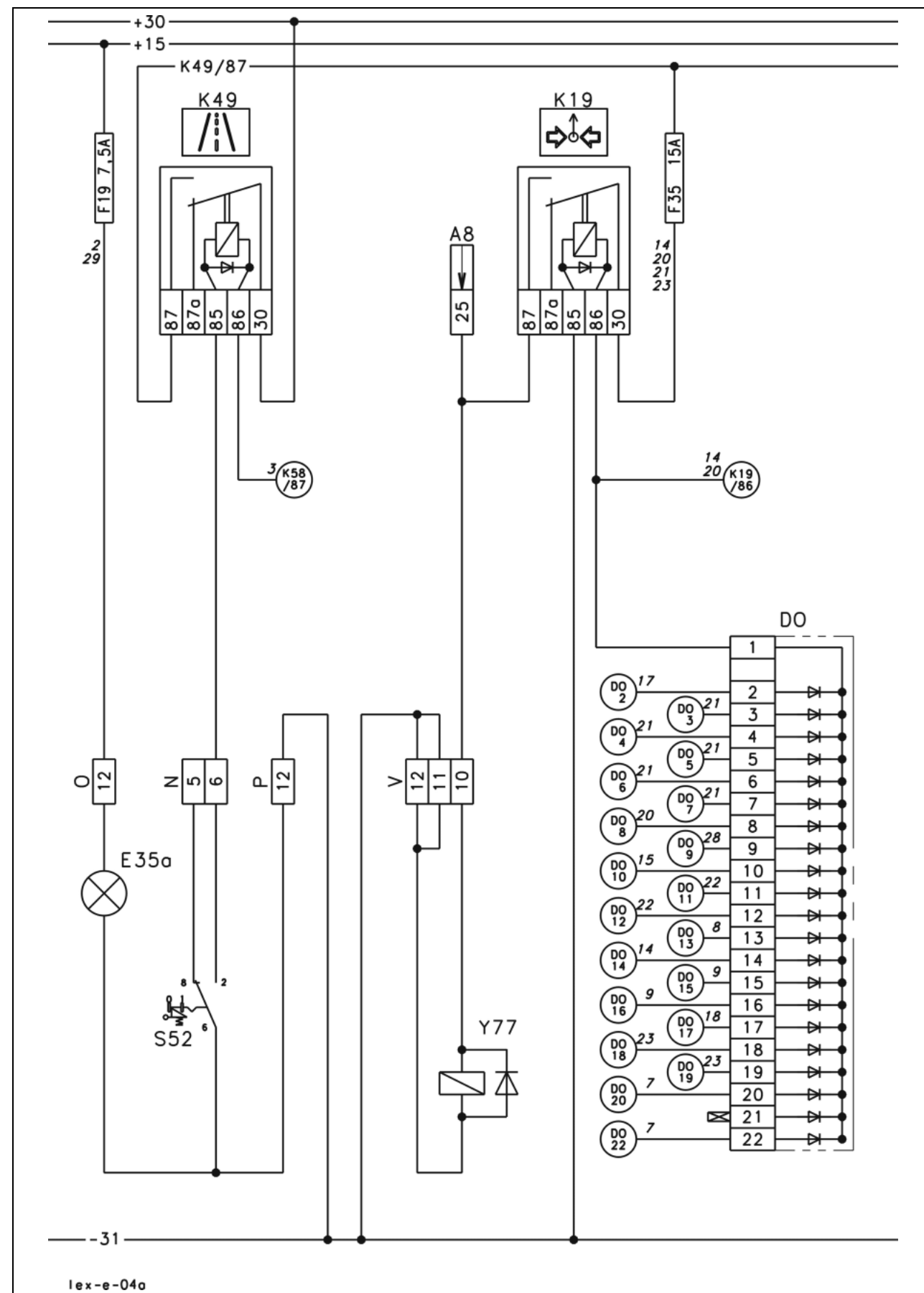
from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
C-12	F42-A	C-15				1.5	bk
C-15	F42-A	C-12				1.5	bk
C-16	31					1.5	br
C-18	G-16	K58-86	Cab-34 / Bif-11			0.5	bl-wh
C-19	G-5	DI-5				0.6	gn
C-20	A-18	K57-49a				0.5	wh

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
G-3	DZW-21					0.75	gn-wh
G-4	A-13	Di-12				0.75	bl-wh
G-5	C-19	DI-5				0.75	gn
G-6	A-12	Di-13				0.75	bl-ye
G-9	K52-L	DS-40	GX-2			0.75	br-bk
G-13	K23-87a	A-17				0.75	wh
G-14	K52-50	DS-42				0.75	br-gn

04a**Road transport release,
circulation shut-off valve**

up to machine no. 468-0084
466-1655
457-0107
454-4799
453-2581
452-1056
568-0547
566-0686
565-0542
557-0543
554-0672
553-0551

04a - Road transport release, circulation shut-off valve



Designations:

- A8 AUTOCONTOUR module (CAC) 2-h-20
- DO Diode pcb circulation shut-off valve 3-h-20
- E35a Instrument lighting 3-g-17
- K19 Circulation pressure 3-h-20
- K49 Main relay road transport 3-h-20
- S52 Road transport (red) 3-g-17
- Y77 Circulation shut-off valve - working hydraulics 6-m-21

Measured value table:

Item	Component	Measured value	Note
K19	Remote switching relay 15 A 30 A	95±10 Ω	(Pin 86/1 – 85/2) (Pin 87a/4 – 30/3) (Pin 87/5 – 30/3)
K49	Remote switching relay 70 A	115±10 Ω	(Pin 86/1 – 85/2) (Pin 87/5 – 30/3)
Y77	Solenoid coils	3.8 A 3.2 Ω	

Description of functions:

Circuit road transport

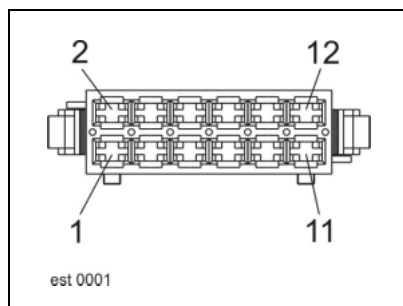
For driving in traffic, the safety tumbler switch (S52) must be locked to interrupt the power supply for all unnecessary electric and hydraulic functions.

Circuit circulation shut-off valve

In order to build up the working pressure that is needed for many hydraulic controls, it is necessary to close the neutral hydraulic circulation (cf. chapter Hydraulics). In this case, the relay K19, and thus the solenoid coil (Y77), is switched parallel to the function.

Pin assignment

Plug N, O, P, V,

**Connection list**

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
O-12	F19-A					2.5	bk

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
N-5							
N-6	K49-85					0.5	br-bl

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

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
V-10	K19-87	CAC-25	DS-50			1.5	rd-wh
V-11	31					2.5	br
V-12	31					2.5	br

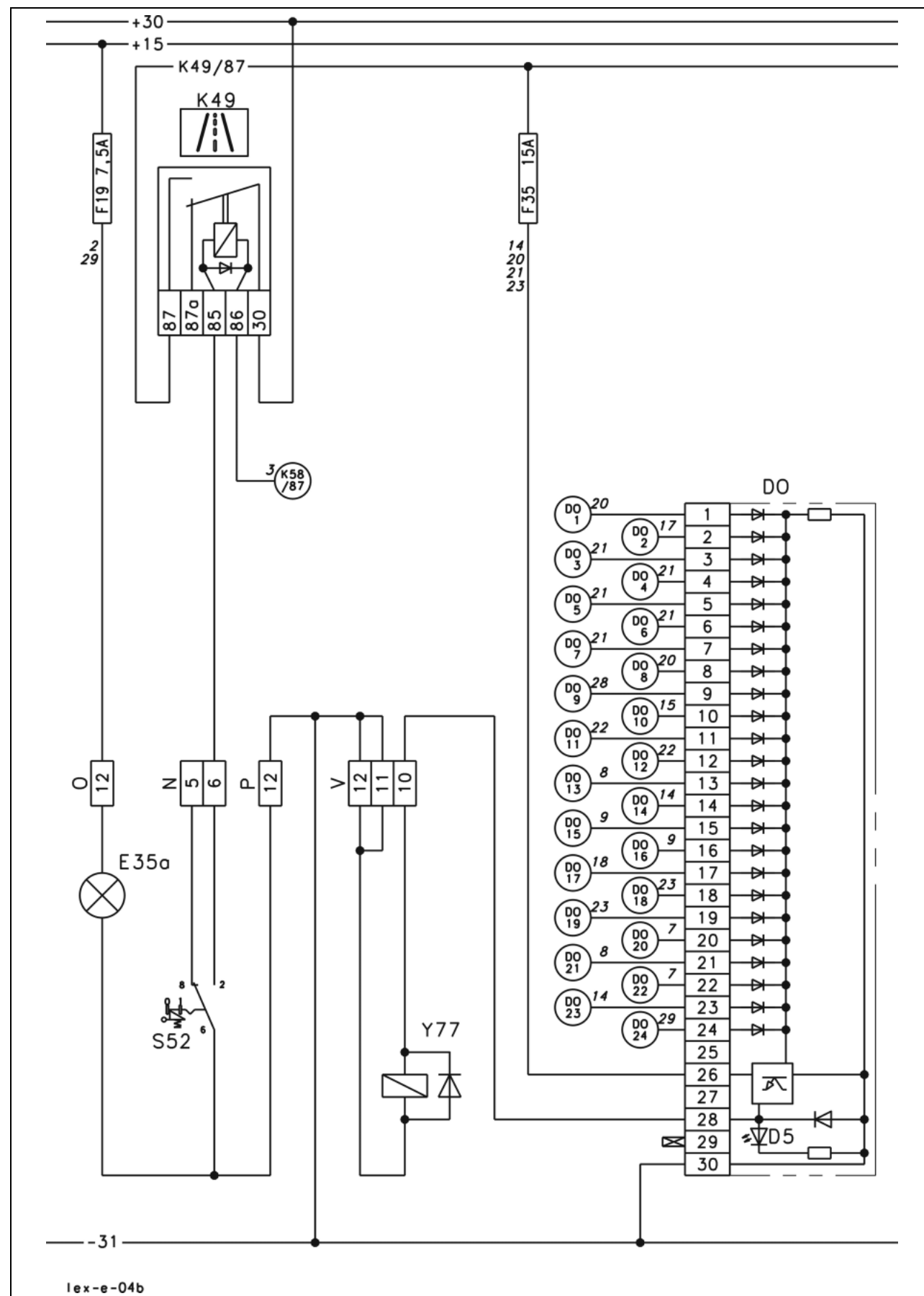
Notes

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

04b - Road travel release, circulation shut-off valve



Designations:

- DO Diode printed circuit board circulation shut-off valve 3-h-20
- D5 LED Diode printed circuit board
- DO circulation shut-off valve 3-h-20
- E35 Instrument lighting 3-g-17
- K49 Main relay road travel 3-h-20
- S52 Road travel (red) 3-g-17
- Y77 Circulation shut-off valve - working hydraulics 6-m-21

Measured value table:

Item	Component	Measured value	Note
K49	Remote switching relay 70 A	115±10 Ω	(Pin 86/1 – 85/2) (Pin 87/5 – 30/3)
Y77	Solenoid coil	3.8 A 3.2 Ω	

Description of functions:

Road travel circuit

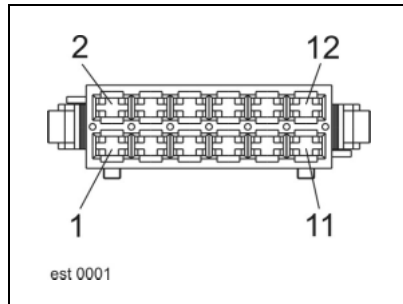
For driving in traffic, the safety rocker switch (S52) must be locked to interrupt the power supply for all unnecessary electric and hydraulic functions.

Circulation shut-off valve

In order to build up the working pressure that is needed for many hydraulic controls, it is necessary to close the neutral hydraulic circulation (cf. chapter Hydraulics). In this case, the solenoid coil (Y77) is switched directly through the diode printed circuit board (DO) parallel to the function. A LED (D5) on the diode printed circuit board gives an optical indication of the activation of the circuit.

Pin assignment

Plug N, O, P, V

**Connection list**

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
O-12	F19-A					2.5	bk

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
N-5						0.5	br-bk
N-6	K49-85					0.5	br-bl

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

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
V-10	DO-28	DS-50				1.5	pk-wh
V-11	31					2.5	br
V-12	31					2.5	br

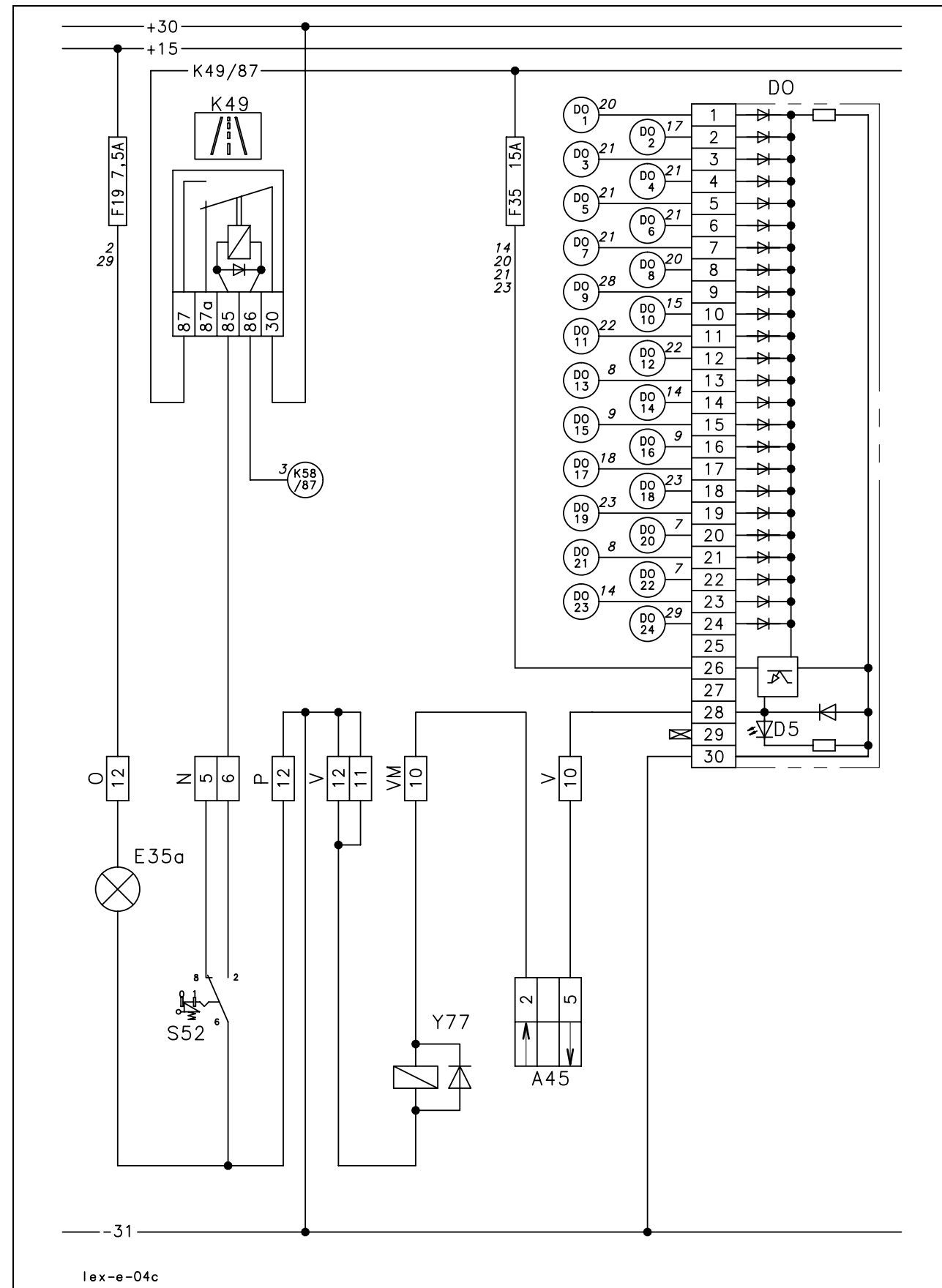
Notes

04c**Road travel release, Circulation shut-off valve**

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

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

04c - Road travel release, circulation shut-off valve equipped with ground drive hydraulic motor (HBM) brake restrictor module A45



Designations:

- A45 Ground drive hydraulic motor (HBM) brake restrictor module 2-h-20
- DO Diode printed circuit board circulation shut-off valve 3-h-20
- D5 LED Diode printed circuit board DO circulation shut-off valve 3-h-20
- E35 Instrument lighting 3-g-17
- K49 Main relay road travel 3-h-20
- S52 Road travel (red) 3-g-17
- Y77 Circulation shut-off valve - working hydraulics 6-m-21

Important!

In this version, actuation of the working hydraulics circulation shut-off valve (Y77) is **always** via the ground drive hydraulic motor (HBM) brake restrictor module A45.

Measured value table:

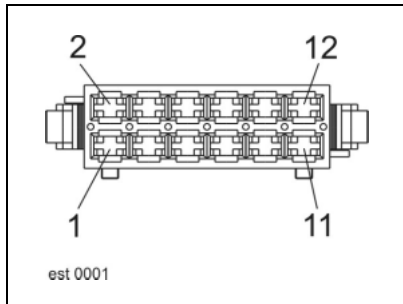
Item	Component	Measured value	Note
K49	Remote switching relay 70 A	115±10 Ω	(Pin 86/1 – 85/2) (Pin 87/5 – 30/3)
Y77	Solenoid coil	3.8 A 3.2 Ω	

Description of functions:

Road travel circuit	<p>For driving in traffic, the safety rocker switch (S52) must be locked to interrupt the power supply for all unnecessary electric and hydraulic functions.</p>
Circulation shut-off valve	<p>In order to build up the working pressure that is needed for many hydraulic controls, it is necessary to close the neutral hydraulic circulation (cf. chapter Hydraulics). In this case, the solenoid coil (Y77) is switched directly through the diode printed circuit board (DO) and the ground drive hydraulic motor (HBM) brake restrictor module A45 parallel to the function.</p> <p>A LED (D5) on the diode printed circuit board gives an optical indication of the activation of the circuit.</p> <p>In order to avoid damage to hydrostatic systems due to excess speeds, the ground drive hydraulic motor (HBM) brake restrictor module A45 automatically actuates the circulation shut-off valve Y77 when an engine speed of 2230 rpm has been reached. The hydraulic load on the diesel engine boosts the braking effect. When the engine speed drops to 2200 rpm, the circulation shut-off valve Y77 is deactivated (see also diagram 42a).</p> <p>Note: The function of the ground drive hydraulic motor (HBM) brake restrictor module A45 may be checked using terminal A30. In the menu "Settings – Max. no-load speed – Speeds learn– OK", the outputs to the circulation shut-off valve (Y77) and to the module A45 are automatically switched for 5 seconds.</p>

Pin assignment

Plug N, O, P, V, VM

**Connection list**

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
O-12	F19-A					2.5	bk

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
N-5						0.5	br-bk
N-6	K49-85					0.5	br-bl

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

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
V-10	DO-28	DS-50				1.5	pk-wh
V-11	31					2.5	br
V-12	31					2.5	br

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
VM-10	A36-15+16					1.5	pk-wh

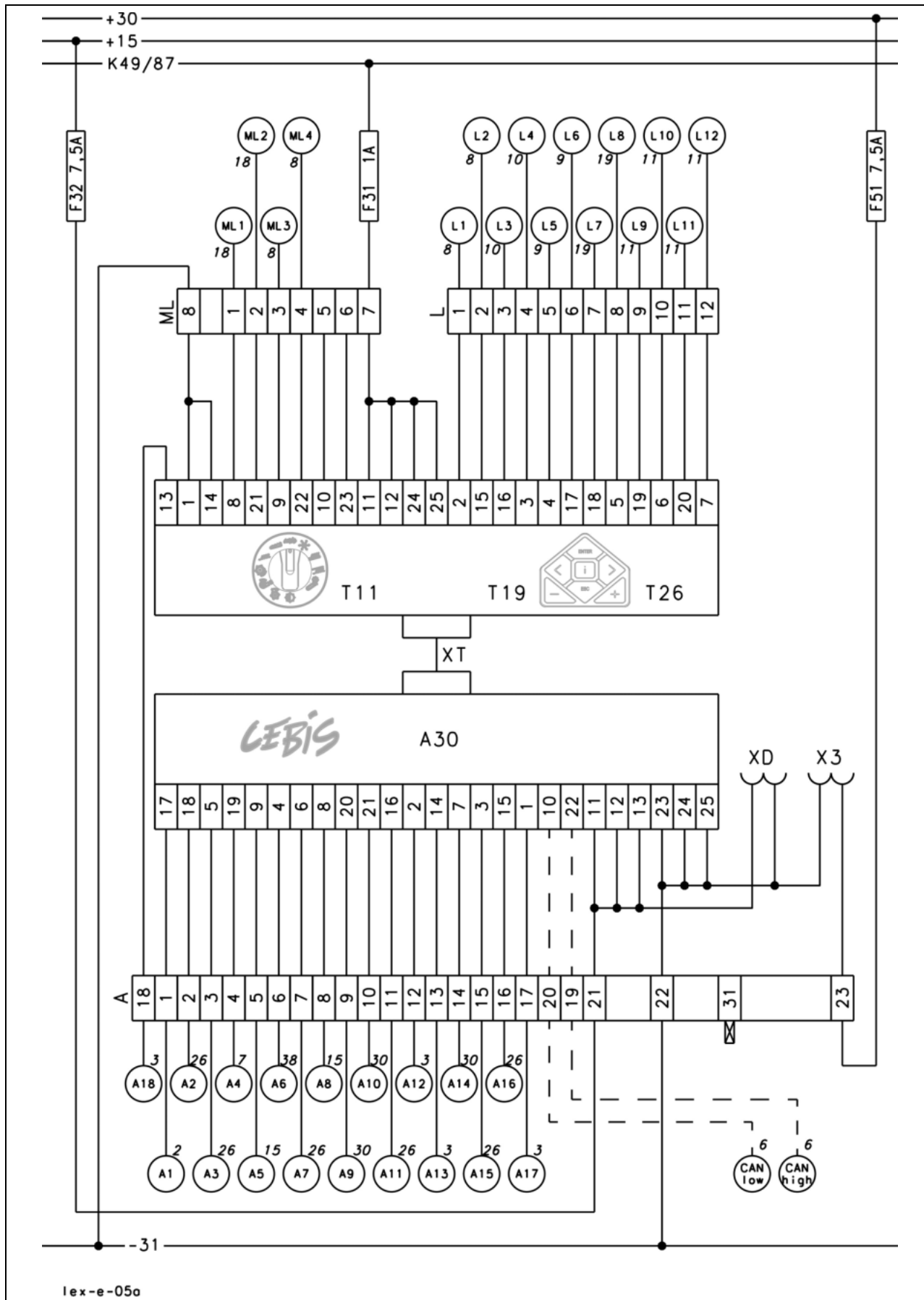
05a

**Terminal,
rotary switch,
printer**

05a - Terminal, rotary switch, printer

Designations:

- A30 Terminal 3-f-17
- T11 Function preselection 3-f-17
- T19 Minus 3-f-17
- T26 Plus 3-f-17
- XD CAN bus (7 pin) terminal 4-f-17
- X3 Printer 4-f-17



Description of functions:

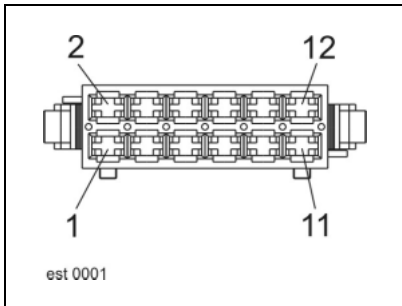
Plug connections

The plug connections L and ML are assigned signal outputs to the individual machine functions.

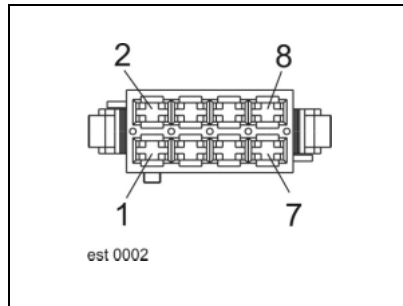
The plug connection A is assigned the signal inputs of switches. The terminal recognizes the machine functions by the state of these switches, open or closed. The analogue signals of the machine sensor system are converted by the corresponding modules (A10/A12) and read by the terminal as digital signals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

Pin assignment

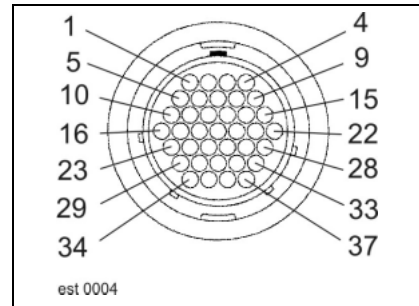
Plug L



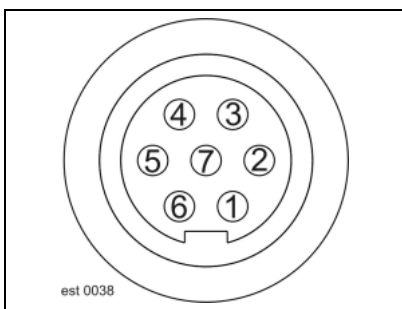
Plug ML



Plug A



Plug XD



Connection list

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
ML-1	K35-86					0.5	rd-bl
ML-2	K36-86					0.5	rd-bk
ML-3	K54-86					0.5	br-wh
ML-4	K55-86					0.5	br-gr
ML-7	F-31A	DS-56				1	bk-wh
ML-8	31					1	br

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
L-1	K29-86					0.5	ye-rd
L-2	K30-86					0.5	ye-br
L-3	K37-86	Cab-16 / Bif-13				0.5	ye-bl
L-4	K38-86	Cab-2 / Bif-12				0.5	ye-bk
L-5	K33-86					0.5	gr-wh
L-6	K34-86					0.5	gr-gn
L-7	K39-86	HAS-13				0.5	gr-rd
L-8	K40-86	HAS-25				0.5	gn-rd
L-9	K41-86	S-5				0.5	gn-br
L-10	K42-86	S-1				0.5	gn-bl
L-11	K43-86	S-7				0.5	gn-bk
L-12	K44-86	S-6				0.5	rd-wh

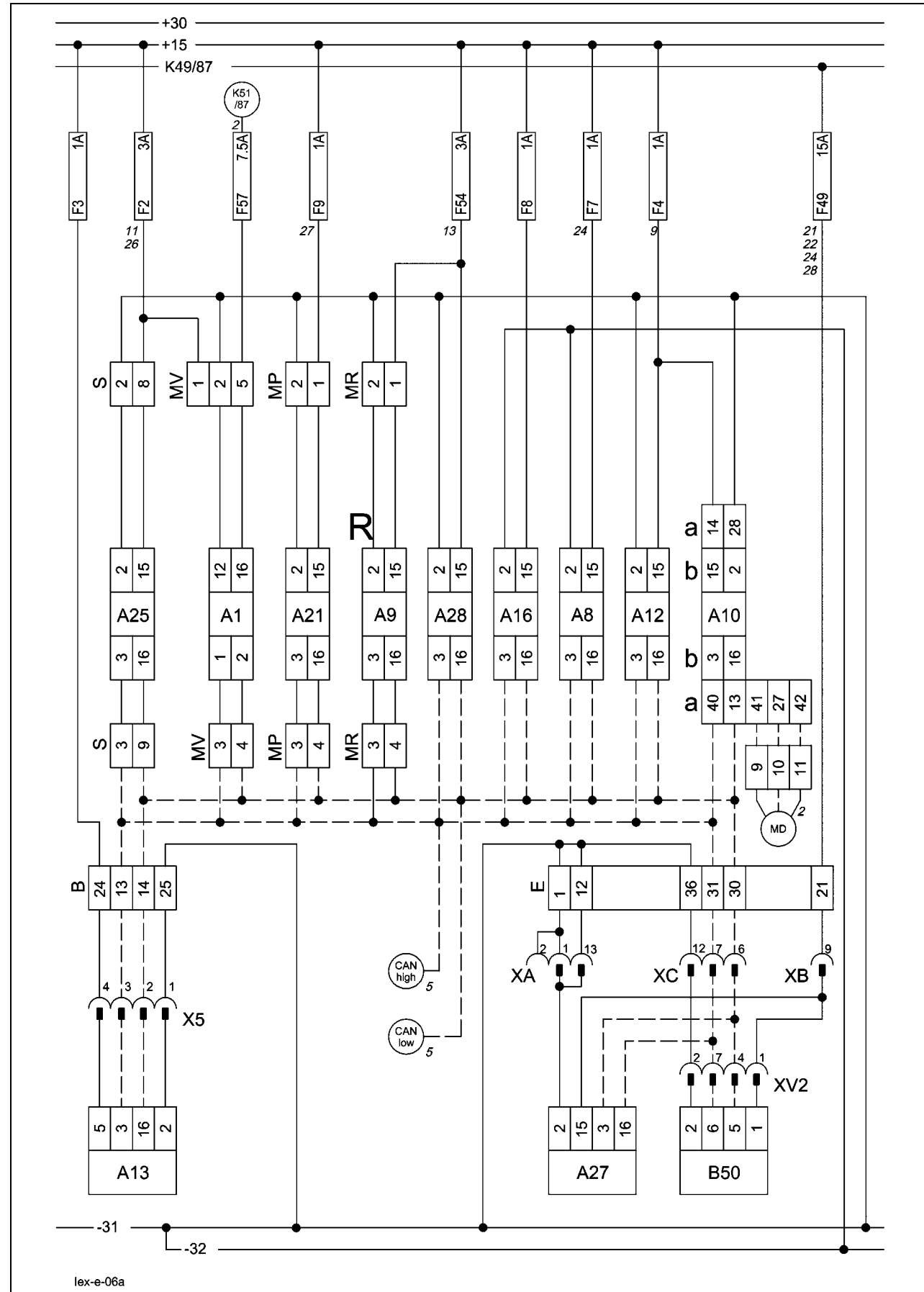
from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
A-1	GY-1					0.5	wh
A-2	B-22					0.5	gn
A-3	B-21					0.5	ye
A-4	MN-4	DS_33				0.5	gr
A-5	B-20	W-11	DS-16	DA1-K	K11-85		
	H-6					0.5	pk
A-6	G-2	K24-85				0.5	bl
A-7	B-19					0.5	rd
A-8	K11-87	DS-15				0.5	bk
A-9	MH-6					0.5	vi
A-10	MH-8					0.5	gr-pk
A-11	T-8	Y-2				0.5	rd-bl
A-12	G-6	DI-13				0.5	wh-gn
A-13	G-4	DI-12				0.5	br-gn
A-14	MH-5	K62-85				0.5	wh-ye
A-15	W-9	DI-4				0.5	ye-br
A-16	W-5					0.5	wh-gr
A-17	K23-87a	G-13				0.5	gr-br
A-18	K57-49a	C-20				0.5	gr
A-19	Cab-40 /Bif-3	DZW-3	MP-3	HAS-3	CAC-3		
	B-13	S-3	MV-3	MW-3	DS-62		
	E-31	MU-3	VGS-3			0.5	pk-br
A-20	Cab-13 / Bif-16	DZW-16	MP-4	HAS-16	CAC-16		
	B-14	S-9	MV-4	MW-4	DS-63		
	E-30	MU-4	VGS-16			0.5	wh-bl
A-21	F-32A					1	bk
A-22	31					1	br
A-23	F-51A	DS-58	DS-59			1	rd

Notes

6a

**CAN bus,
Power supply modules**

06a - CAN bus, power supply modules



Designations:

- A1 AGROCOM terminal 2-h-17
- A8 AUTOCONTOUR (CAC) module 2-h-20
- A9 AUTOPILOT module 2-h-20
- A10 Fieldwork computer module (BIF/CAB) 2-h-20
- A12 Shaft speed monitor module (DZW) 2-h-20
- A13 Combine performance module (DKG) 4-p-21
- A16 Reel control module (HAS) 2-h-20
- A21 QUANTIMETER module (LEM) 2-h-20
- A25 Sieve adjustment module 2-h-20
- A27 VARIO module 2-h-20
- A28 Spreader fan module (VGS) 2-h-20

- B50 AUTOPILOT laser 6-d-26

- XA Multifunction coupling A 8-e-21
- XB Multifunction coupling B 8-e-21
- XC Multifunction coupling C 8-e-21

- XV2 Variant connector AUTOPILOT 8-e-21

- X5 Combine performance monitor 6-p-20

Notes:

- R- from machine no. 548-0011, 547-0011, 546-0011, 545-0011, 544-0011, 543-0011

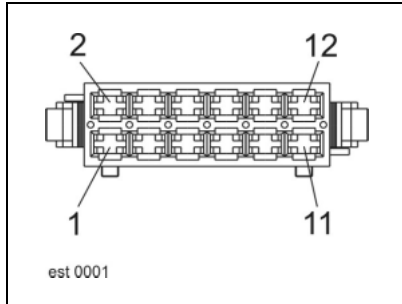
- a - BIF/CAB module 42 plug-in contacts used
- b - BIF module 25 plug-in contacts used

Description of functions:

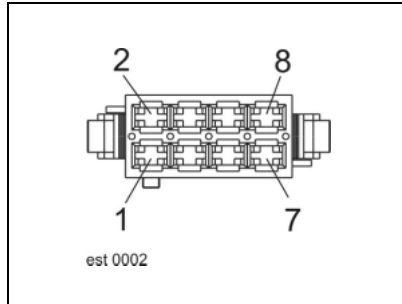
All yield data is saved in the QUANTIMETER module (A21) while all other performance data is saved in the module fieldwork computer / CAN bridge (A10). For this reason, it is recommended to transfer the data before changing a defective module using the diagnosis system CDS3000/CDS5000.

Pin assignment

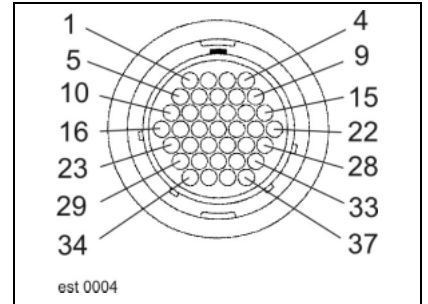
Plug S



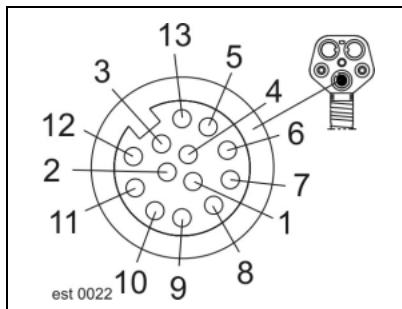
Plug MV MP, MR



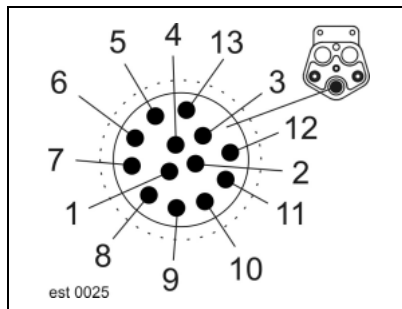
Plug B, E



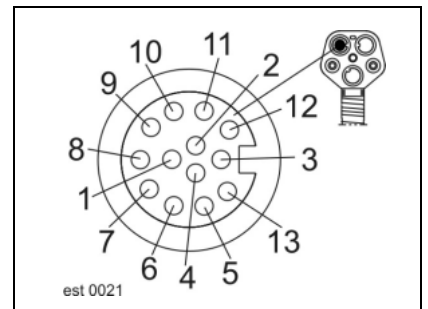
Plug socket XA



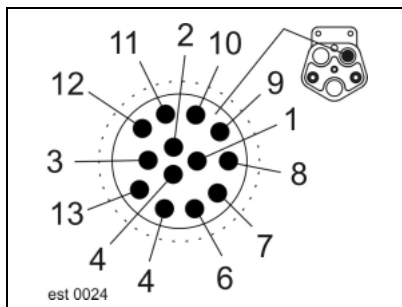
Plug XA



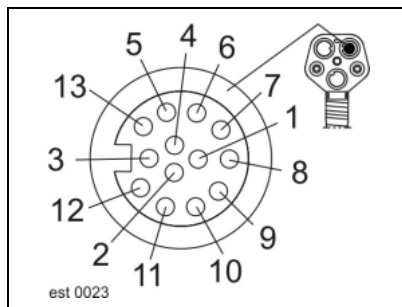
Plug socket XB



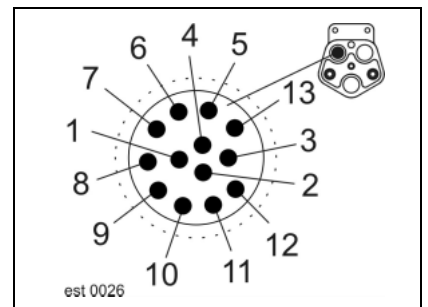
Plug XB



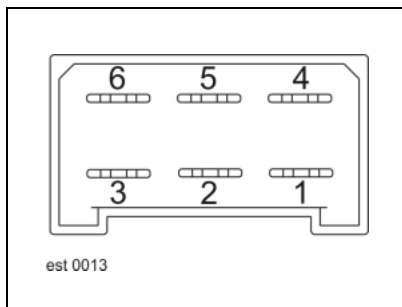
Plug socket XC



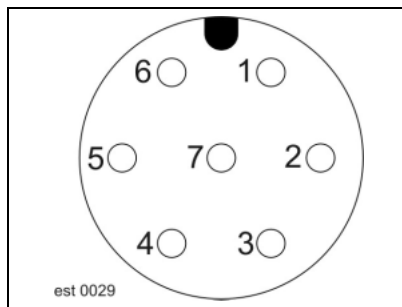
Plug XC



Plug X5



Plug XV2



Connection list I

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
S-2	31					0.5	br
S-3	Cab-40 / Bif-3	DZW-3	MP-3	HAS-3	A-19		
	B-13	CAC-3	MV-3	MW-3	DS-62		
	E-31	MU-3	VGS-3	MR-3		0.5	or
S-8	F-2A	MV-1	MW-1			0.5	bk
S-9	Cab-13 / Bif-16	DZW-16	MP-4	HAS-16	A-20		
	B-14	CAC-16	MV-4	MW-4	DS-63		
	E-30	MU-4	VGS-16	MR-4		0.5	ye

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
MV-1	F2-A	MW-1	S-8			0.5	bk
MV-2	31					1.5	br
MV-3	Cab-40 / Bif-3	DZW-3	CAC-3	HAS-3	A-19		
	B-13	S-3	MW-3	MP-3	DS-62		
	E-31	MU-3	VGS-3	MR-3		0.5	or
MV-4	Cab-13 / Bif-16	DZW-16	CAC-16	HAS-16	A-20		
	B-14	S-9	MW-4	MP-4	DS-63		
	E-30	MU-4	VGS-16	MR-4		0.5	ye
MV-5	F57-A					1.5	bk

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
MP-1	F9-A					0.5	bk
MP-2	31					1.5	br
MP-3	Cab-40 / Bif-3	DZW-3	CAC-3	HAS-3	A-19		
	B-13	S-3	MV-3	MW-3	DS-62		
	E-31	MU-3	VGS-3	MR-3		0.5	or
MP-4	Cab-13 / Bif-16	DZW-16	CAC-16	HAS-16	A-20		
	B-14	S-9	MV-4	MW-4	DS-63		
	E-30	MU-4	VGS-16	MR-4		0.5	ye

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
MR-1	F9-A					0.5	bk
MR-2	31					1.5	br
MR-3	Cab-40 / Bif-3	DZW-3	CAC-3	HAS-3	A-19		
	B-13	S-3	MV-3	MW-3	DS-62		
	E-31	MU-3	VGS-3	MP-3		0.5	or
MR-4	Cab-13 / Bif-16	DZW-16	CAC-16	HAS-16	A-20		
	B-14	S-9	MV-4	MW-4	DS-63		
	E-30	MU-4	VGS-16	MP-4		0.5	ye

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
B-13	Cab-40 / Bif-3	DZW-3	CAC-3	HAS-3	A-19		
	MV-3	S-3	MW-3	MP-3	DS-62		
	E-31	MU-3	VGS-3	MR-3		0.5	or
B-14	Cab-13 / Bif-16	DZW-16	CAC-16	HAS-16	A-20		
	MV-4	S-9	MW-4	MP-4	DS-63		
	E-30	MU-4	VGS-16	MR-4		0.5	ye
B-24	F3-A	MU-1				1.5	bk
B-25	31					1.5	br-bl

Connection list II

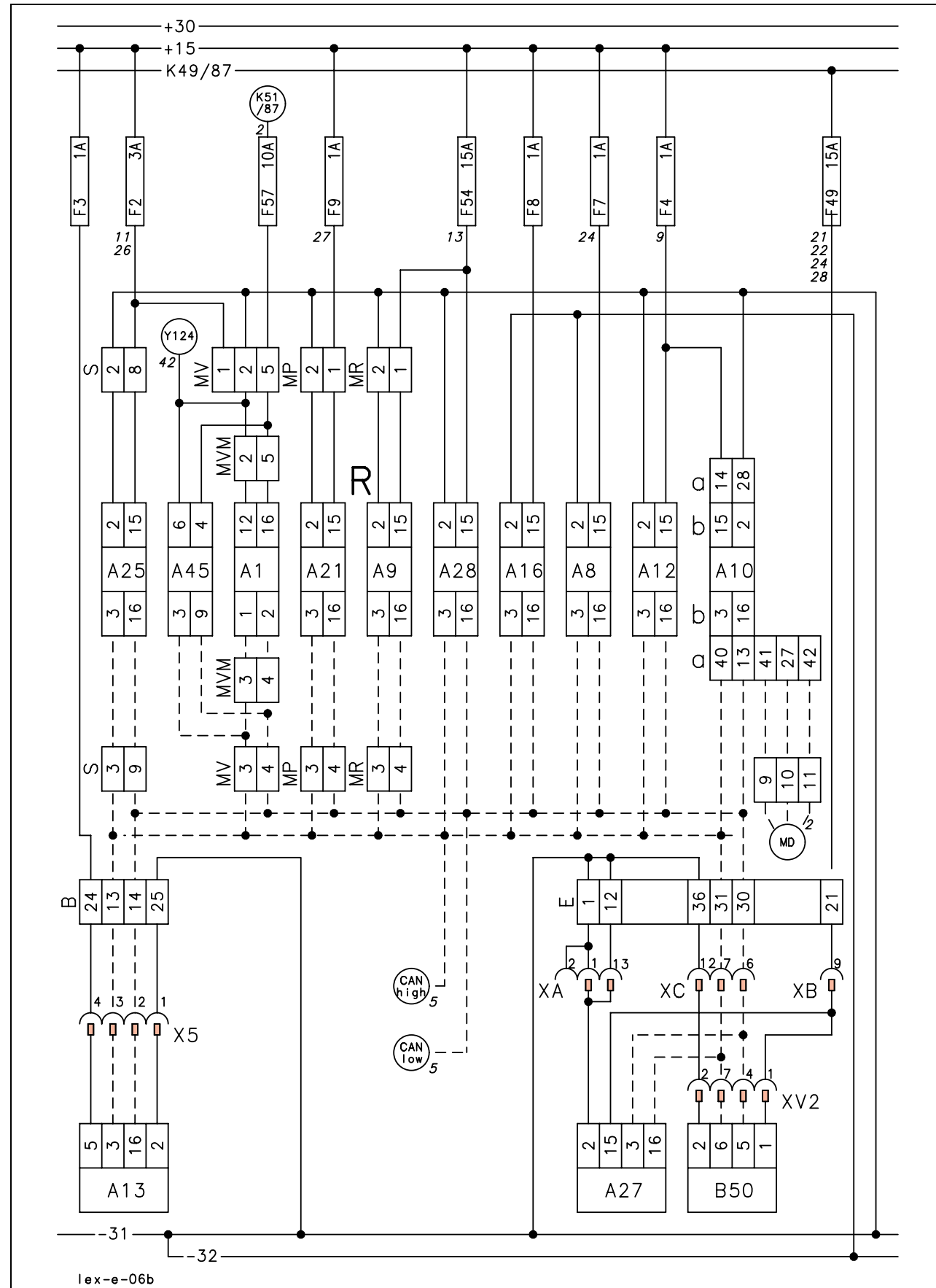
from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
E-1	31					1.5	br
E-12	31					1.5	br
E-21	F49-A					1.5	bl
E-30	Cab-13 / Bif-16	DZW-16	CAC-16	HAS-16	A-20		
	MV-4	S-9	MW-4	MP-4	DS-63		
	B-14	MU-4	VGS-16	MR-4		0.5	ye
E-31	Cab-40 / Bif-3	DZW-3	CAC-3	HAS-3	A-19		
	MV-3	S-3	MW-3	MP-3	DS-62		
	B-13	MU-3	VGS-3	MR-3		0.5	or
E-36	31					2.5	br

Notes

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)

06b - CAN bus, Power supply modules
equipped with ground drive hydraulic motor (HBM) brake restrictor module A45



Designations:

A1	AGROCOM terminal	2-h-17
A8	AUTOCONTOUR (CAC) module	2-h-20
A9	AUTOPILOT module	2-h-20
A10	Fieldwork computer module (BIF/CAB)	2-h-20
A12	Shaft speed monitor module (DZW)	2-h-20
A13	Combine performance module (DKG)	4-p-21
A16	Reel control module (HAS)	2-h-20
A21	QUANTIMETER module (LEM)	2-h-20
A25	Sieve adjustment module	2-h-20
A27	VARIO module	2-h-20
A28	Spreader fan module (VGS)	2-h-20
A45	Ground drive hydraulic motor (HBM) brake restrictor module	2-h-20
B50	AUTOPILOT laser	6-d-26
XA	Multifunction coupling A	8-e-21
XB	Multifunction coupling B	8-e-21
XC	Multifunction coupling C	8-e-21
XV2	Variant connector AUTOPILOT	8-e-21
X5	Combine performance monitor	6-p-20

Important!

In this version, the ground drive hydraulic motor (HBM) brake restrictor module A45 is connected with the CAN bus via a branch cable on plug MV to MVM.

Notes:

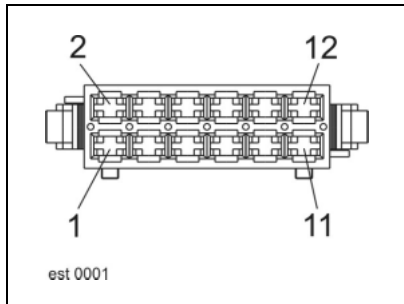
- R - from machine no. 548-0011, 547-0011, 546-0011, 545-0011, 544-0011, 543-0011
- a - BIF/CAB module 42 plug-in contacts used
- b - BIF module 25 plug-in contacts used

Description of functions:

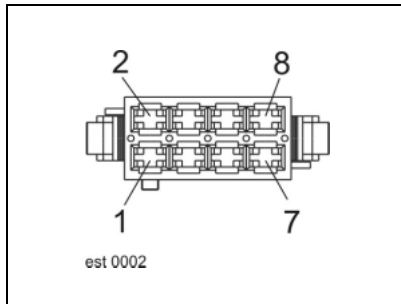
All yield data is saved in the QUANTIMETER module (A21) while all other performance data is saved in the module fieldwork computer / CAN bridge (A10). For this reason, it is recommended to transfer the data before changing a defective module using the diagnosis system CDS3000/CDS5000.

Pin assignment

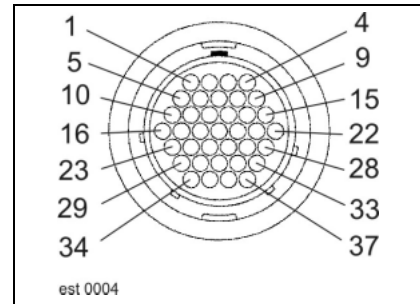
Plug S



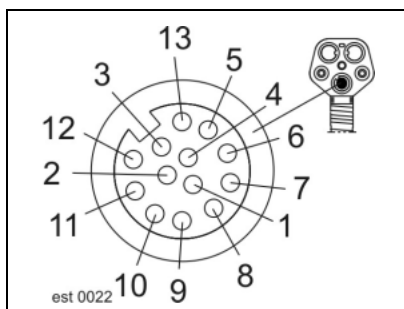
Plug MV MP, MR, MVM



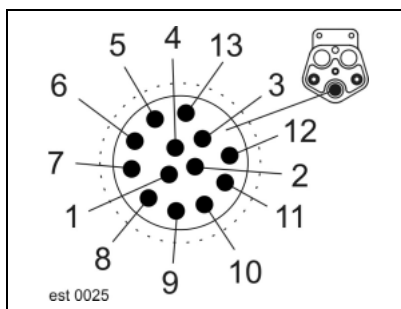
Plug B, E



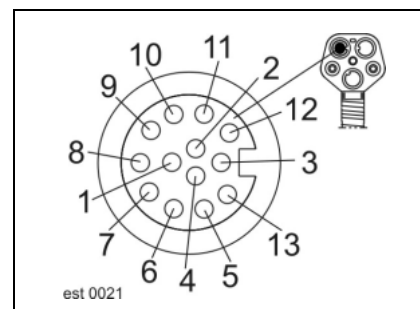
Plug socket XA



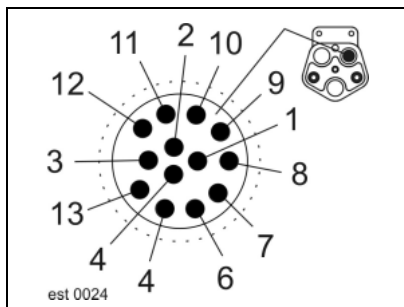
Plug XA



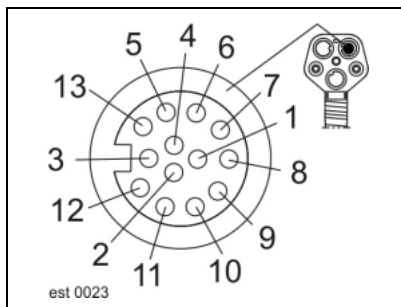
Plug socket XB



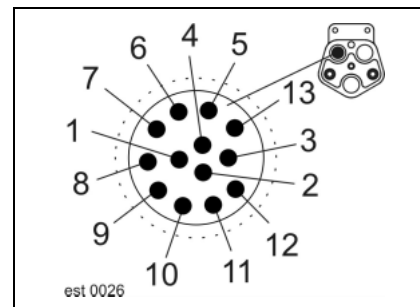
Plug XB



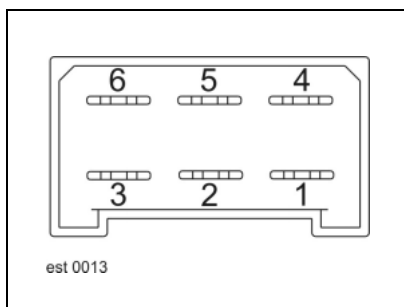
Plug socket XC



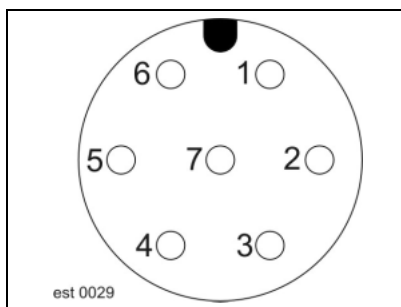
Plug XC



Plug X5



Plug XV2



Connection list I

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
S-2	31					0.5	br
S-3	Cab-40 / Bif-3	DZW-3	MP-3	HAS-3	A-19		
	B-13	CAC-3	MV-3	MW-3	DS-62		
	E-31	MU-3	VGS-3	MR-3		0.5	or
S-8	F-2A	MV-1	MW-1			0.5	bk
S-9	Cab-13 / Bif-16	DZW-16	MP-4	HAS-16	A-20		
	B-14	CAC-16	MV-4	MW-4	DS-63		
	E-30	MU-4	VGS-16	MR-4		0.5	ye

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
MV-1	F2-A	MW-1	S-8			0.5	bk
MV-2	31					1.5	br
MV-3	Cab-40 / Bif-3	DZW-3	CAC-3	HAS-3	A-19		
	B-13	S-3	MW-3	MP-3	DS-62		
	E-31	MU-3	VGS-3	MR-3		0.5	or
MV-4	Cab-13 / Bif-16	DZW-16	CAC-16	HAS-16	A-20		
	B-14	S-9	MW-4	MP-4	DS-63		
	E-30	MU-4	VGS-16	MR-4		0.5	ye
MV-5	F57-A					1.5	bk

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
MVM-2	31					1.5	br
MVM-3	Cab-40 / Bif-3	DZW-3	CAC-3	HAS-3	A-19		
	B-13	S-3	MW-3	MP-3	DS-62		
	E-31	MU-3	VGS-3	MR-3		0.5	or
MVM-4	Cab-40 / Bif-16	DZW-16	CAC-16	HAS-16	A-20		
	B-14	S-9	MW-4	MP-4	DS-63		
	E-30	MU-4	VGS-16	MR-4		0.5	ye
MVM-5	F57-A					1.5	bk

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
MP-1	F9-A					0.5	bk
MP-2	31					1.5	br
MP-3	Cab-40 / Bif-3	DZW-3	CAC-3	HAS-3	A-19		
	B-13	S-3	MV-3	MW-3	DS-62		
	E-31	MU-3	VGS-3	MR-3		0.5	or
MP-4	Cab-13 / Bif-16	DZW-16	CAC-16	HAS-16	A-20		
	B-14	S-9	MV-4	MW-4	DS-63		
	E-30	MU-4	VGS-16	MR-4		0.5	ye

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
MR-1	F9-A					0.5	bk
MR-2	31					1.5	br
MR-3	Cab-40 / Bif-3	DZW-3	CAC-3	HAS-3	A-19		
	B-13	S-3	MV-3	MW-3	DS-62		
	E-31	MU-3	VGS-3	MP-3		0.5	or
MR-4	Cab-13 / Bif-16	DZW-16	CAC-16	HAS-16	A-20		
	B-14	S-9	MV-4	MW-4	DS-63		
	E-30	MU-4	VGS-16	MP-4		0.5	ye

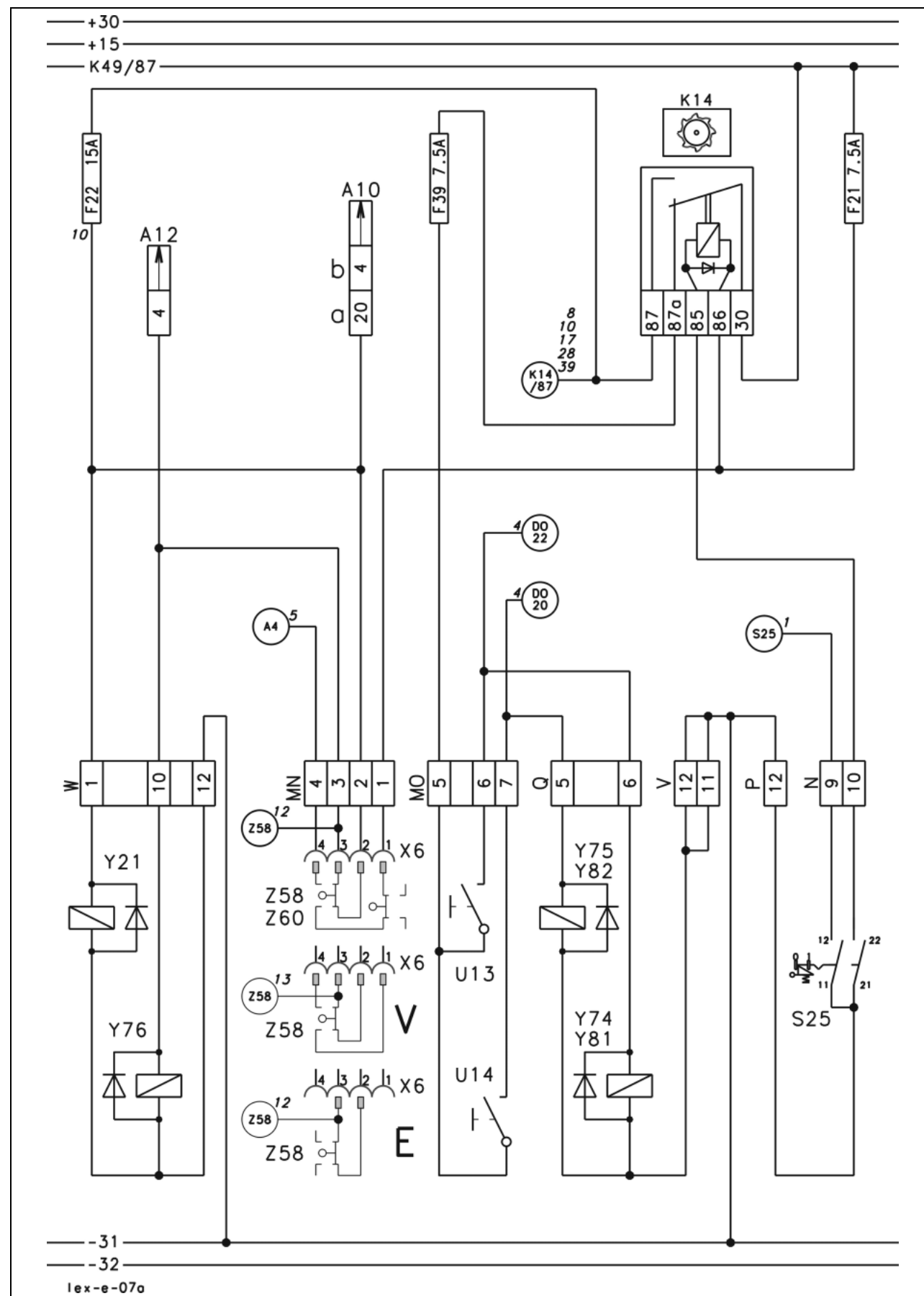
Connection list II

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
B-13	Cab-40 / Bif-3	DZW-3	CAC-3	HAS-3	A-19		
	MV-3	S-3	MW-3	MP-3	DS-62		
	E-31	MU-3	VGS-3	MR-3		0.5	or
B-14	Cab-13 / Bif-16	DZW-16	CAC-16	HAS-16	A-20		
	MV-4	S-9	MW-4	MP-4	DS-63		
	E-30	MU-4	VGS-16	MR-4		0.5	ye
B-24	F3-A	MU-1				1.5	bk
B-25	31					1.5	br-bl

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
E-1	31					1.5	br
E-12	31					1.5	br
E-21	F49-A					1.5	bl
E-30	Cab-13 / Bif-16	DZW-16	CAC-16	HAS-16	A-20		
	MV-4	S-9	MW-4	MP-4	DS-63		
	B-14	MU-4	VGS-16	MR-4		0.5	ye
E-31	Cab-40 / Bif-3	DZW-3	CAC-3	HAS-3	A-19		
	MV-3	S-3	MW-3	MP-3	DS-62		
	B-13	MU-3	VGS-3	MR-3		0.5	or
E-36	31					2.5	br

7a**Threshing mechanism circuit,
Straw chopper position and circuit**

07a - Threshing mechanism circuit, straw chopper position and circuit



Designations:

- A10 Fieldwork computer module (BIF/CAB) 2-h-20
- A12 Shaft speed monitor module (DZW) 2-h-20
- K14 Threshing mechanism 3-h-20
- S25 Main drive (threshing mechanism coupling) 3-g-17
- U13 Straw chopper in working position 5-r-20
- U14 Straw chopper in parked position 5-r-20
- X6 Straw chopper 5-s-16
- Y21 Threshing mechanism clutch 2-p-19
- Y74 Straw chopper in working position 5-m-21
- Y75 Straw chopper in parked position 5-m-21
- Y76 Straw chopper clutch 2-p-19
- Y81 Spreader fan in working position 5-m-21
- Y82 Spreader fan in parked position 5-m-21
- Z58 Straw chopper / spreader fan working position 5-v-16
- Z60 Straw chopper parked position 5-s-16

Notes:

- V - on Lexion 480 with spreader fan
- E - on machines with fixed straw chopper position
- a - BIF/CAB module 42 plug-in contacts used
- b - BIF module 25 plug-in contacts used

Measured value table:

Item	Component	Measured value	Note
K14	Remote switching relay 15 A 30 A	95±10 Ω	(Pin 86/1 – 85/2) (Pin 87a/4 – 30/3) (Pin 87/5 – 30/3)
Y21	Solenoid coil	0.75 A / 16 Ω 1.8 A / 6.6 Ω 2.0 A / 6.0 Ω	* ** ***
Y74 Y75	Solenoid coil	3.8 A 3.2 Ω	
Y76	Solenoid coil	0.75 A / 16 Ω 1.8 A / 6.6 Ω 2.0 A / 6.0 Ω	* ** ***
Y81 Y82	Solenoid coil	3.8 A 3.2 Ω	

- * - from year 2000
- ** - from machine no. 466-0166
454-0256
453-0042
452-0017
- *** - up to machine no. 466-0165
454-0255
453-0041
452-0016

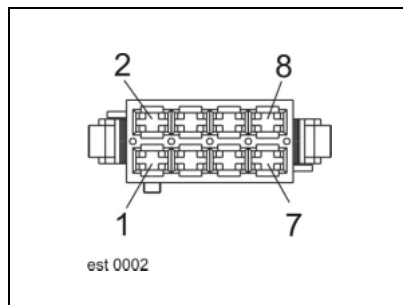
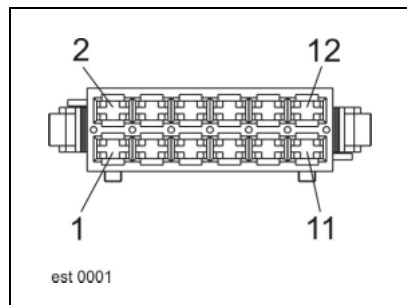
Description of functions:

Threshing mechanism circuit	<p>Conditions for the threshing mechanism drive are that the relay K58 is switched by the alternator (G2) and the relay K49 is switched by unlocking the road travel switch (S52).</p> <p>The threshing mechanism clutch switch (S25) controls the relay K14 using the power supply for the solenoid coil (Y21) also for operating the hourmeter in the fieldwork computer module (A10).</p>
Straw chopper position	<p>If the road travel circuit is unlocked and only if the threshing mechanism is turned off, the switches (U13/U14) for the adjustment of the straw chopper, and thus the corresponding solenoid coils (Y74/Y81 or Y75/Y82), will be supplied with voltage. Parallel to the solenoid coils (Y74/Y81 or Y75/82), 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 these functions.</p> <p>Note: The circuit with the position of the limit switches (Z58/Z60) shows the straw chopper in working position. On machines with spreader fan or fixed straw chopper position, the limit switch (Z60) is dropped.</p>
Straw chopper circuit	<p>Conditions for the drive of the straw chopper are that the relay K49 is switched by unlocking the road travel switch (S52) and the limit switch (Z58) is closed in the working position.</p> <p>The threshing mechanism clutch switch (S25) controls the relay K14 and thus switches the power supply for the solenoid coil (Y21) of the threshing mechanism clutch. In the working position of the straw chopper, the solenoid coil (Y76) for the drive of the straw chopper is also switched through the limit switch (Z58).</p>
Straw chopper display	<p>If the straw chopper is not in one of the end positions when the road travel switch is unlocked, it will be shown as an error message by the position of the limit switch (Z58/Z60) in the terminal (A30). When the straw chopper is turned on, the shaft speed monitor module (A12) receives the start signal for monitoring the shaft speed by the sensor (B28) on the measuring shaft.</p>

Pin assignment

Plug N, P, Q, V, W

Plug MN, MO, X6-rd

**Connection list**

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
W-1	F22-A	K63-86	MN-2	Cab-20 / Bif-4	DS-52	1	ye-bk
W-10	MN-3	DZW-4	DS-17			1	rd-bl
W-12	31					2.5	br

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
MN-1	F21-A	K14-86				1.5	wh-gn
MN-2	F22-A	K63-86	W-1	Cab-20 / Bif-4	DS-52	2.5	rd-ye
MN-3	W-10	DZW-4	DS-17			2.5	rd-bl
MN-4	A-4	DS-33				1.5	gn-ye

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
MO-5	F39-A					1.5	br-bl
MO-6	Q-6	DO-22	DS-18			1.5	wh-or
MO-7	Q-5	DO-20	DS-19			1.5	or-ye

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
Q-5	MO-7	DO-20	DS-19			1.5	bk-gn
Q-6	MO-6	DO-22	DS-18			1.5	bk-br

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

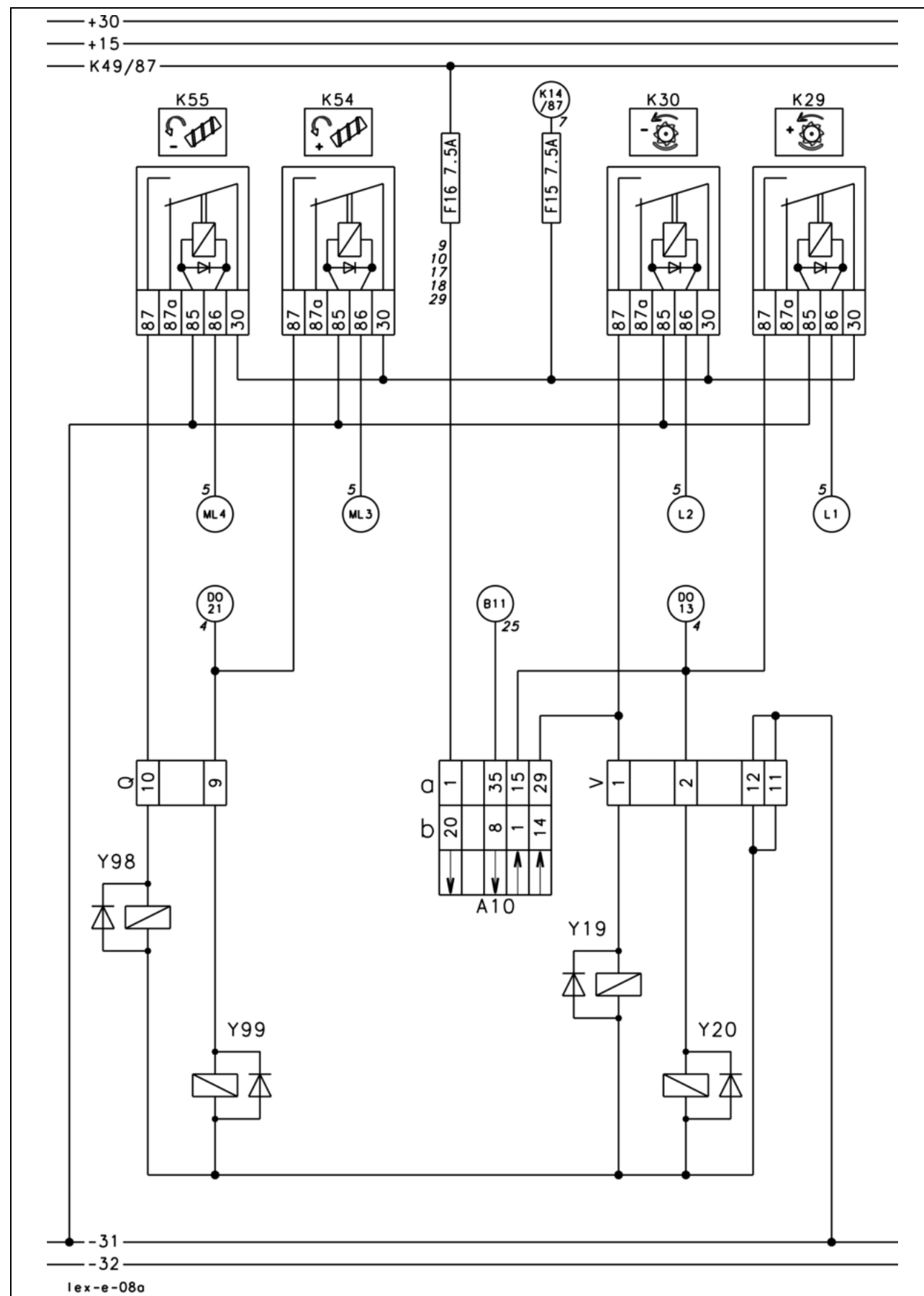
from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
P-12	31					2.5	br

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
N-9	K13-85					0.5	gn-gr
N-10	K14-85					0.5	ye-wh

08a

**Threshing drum variable speed drive,
rotor variable speed drive**

08a - Threshing drum variable speed drive, rotor variable speed drive



Designations:

- A1 Starter 2-h-20
- A10 Fieldwork computer module (BIF/CAB) 2-h-20
- B11 Threshing drum speed 6-i-16
- K29 Drum variable speed drive fast 3-h-20
- K30 Drum variable speed drive slow 3-h-20
- K54 Rotor variable speed drive fast 3-h-20
- K55 Rotor variable speed drive slow 3-h-20
- Y19 Drum variable speed drive slow 4-m-21
- Y20 Drum variable speed drive fast 4-m-21
- Y98 Rotor variable speed drive slow 4-m-21
- Y99 Rotor variable speed drive fast 4-m-21

Note:

- a - BIF/CAB module 42 plug-in contacts used
- b - BIF module 25 plug-in contacts used

Measured value table:

Item	Component	Measured value	Note
K29 K30 K54 K55	Remote switching relay 15 A 30 A	95±10 Ω	(Pin 86/1 – 85/2) (Pin 87a/4 – 30/3) (Pin 87/5 – 30/3)
Y19 Y20 Y98 Y99	Solenoid coils	3.8 A 3.2 Ω	

Description of functions:**Threshing drum variable speed drive circuit**

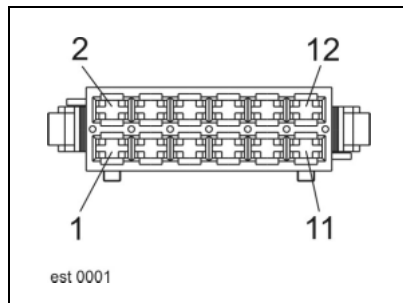
When the threshing mechanism is turned on, the relays K29 and K30 are supplied with voltage by the relay K14. As long as the rotary switch function preselection (T11) is set to the position threshing drum, the relay K29 or K30 is switched by the pushbuttons +/- (T19/T26) and the corresponding solenoid coil (Y19/Y20) is addressed. Parallel to the solenoid coil threshing drum fast (Y20), the circulation shut-off valve (Y77) is also switched through the diode pcb (DO) because it is necessary to build up pressure in the system for this function. During the automatic crop selection, the fieldwork computer module (A10) takes over switching the solenoid coils (Y19/Y20) and the control of the circulation shut-off valve (Y77).

Rotor variable speed drive circuit

When the threshing mechanism is turned on, the relays K29 and K30 are supplied with voltage by the relay K14. As long as the rotary switch function preselection (T11) is set to the rotor position, the relay K54 or K55 is switched by the pushbuttons +/- (T19/T26) and the corresponding solenoid coil (Y98/Y99) is addressed. Parallel to the solenoid coil rotor fast (Y99), the circulation shut-off valve (Y77) is also switched through the diode pcb (DO) because it is necessary to build up pressure in the system for this function.

Pin assignment

Plug Q, V

**Connection list**

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
Q-9	K54-87					1.5	ye-bk
Q-10	K55-87					1.5	ye-bk

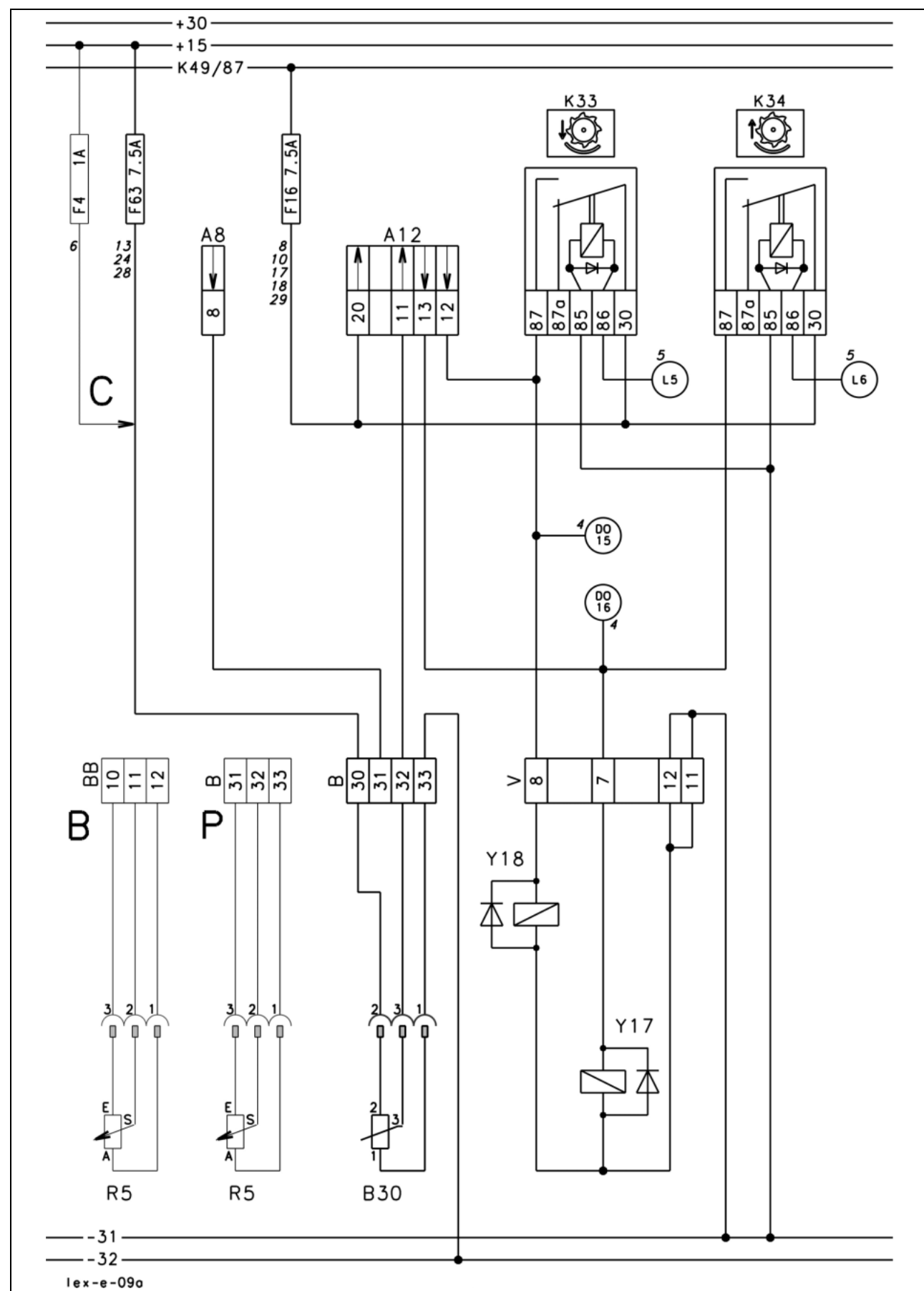
from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
V-1	K30-87	Cab-29 / Bif-14				1.5	wh-ye
V-2	K29-87	Cab-15 / Bif-1	Do-13			1.5	wh-gr
V-11	31					2.5	br
V-12	31					2.5	br

Notes

9a

**Concave adjustment,
Concave display**

09a - Concave adjustment, concave display



Designations:

- A8 AUTOCONTOUR (CAC) module 2-h-20
- A12 Shaft speed monitor module (DZW) 2-h-20
- B30 Concave position 5-j-20
7-i-16

- K33 Concave gap wide 3-h-20
- K34 Concave gap narrow 3-h-20

- R5 Concave position (actual value) 5-j-20
7-i-16

- Y17 Concave gap narrow 5-m-21
- Y18 Concave gap wide 5-m-21

Notes:

- B - only machine no. 468-0011 to 468-0021
466-0042 to 466-0397
457-0011 to 457-0016
454-0029 to 454-1567
453-0011 to 453-1046
452-0011 to 452-0571

- C - only machine no. 468-0022 to 468-0033
466-0862 to 466-0929

- P - only machine no. 466-0011 to 466-0041
466-0398 to 466-0861
457-0017 to 457-0046
454-0011 to 454-0028
454-1568 to 454-3296
453-1047 to 453-2066
452-0572 to 452-0901

Measured value table:

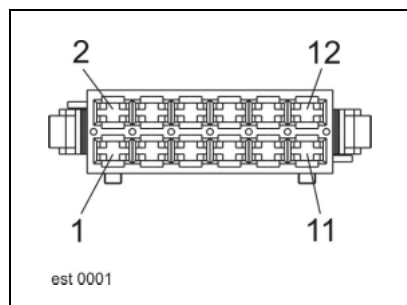
Item	Component	Measured value	Note
B30	Sensor	12 V 0.25 V - 4.75 V	(Pin 1-2) (Pin 1-3)
K33 K34	Remote switching relay 15 A 30 A	95±10 Ω	(Pin 86/1 – 85/2) (Pin 87a/4 – 30/3) (Pin 87/5 – 30/3)
R 5	Potentiometer	4.25 KΩ 1.50 - 5.75 KΩ	(Pin A - E) coil (Pin S - E) slider
Y17 Y18	Solenoid coil	3.8 A 3.2 Ω	

Description of functions:

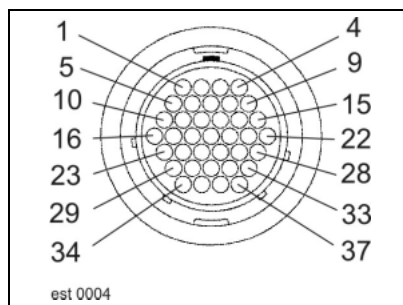
Concave adjustment	<p>As long as the rotary switch function preselection (T11) is set to the concave position, the relay K33 or K34 is switched by the pushbuttons +/- (T19/T26) and the corresponding solenoid coil (Y17/Y18) is addressed. Parallel to one of the two solenoid coils (Y17/Y18), the circulation 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.</p> <p>During the automatic crop selection, the shaft speed monitor module (A12) takes over switching the solenoid coils (Y17/Y18) and the control of the circulation shut-off valve (Y77).</p>
Concave display (12V system)	<p>The sensor (B30) receives the necessary 12V reference voltage from the ignition lock +15. The shaft speed monitor module (A12) converts the analogue signal of the sensor (B30) into a digital signal, which is displayed through the CAN bus of the terminal (A30).</p>
Concave display (5V system)	<p>The potentiometer (R5) receives the necessary 5 V reference voltage from the module AUTOCONTOUR (A8). The shaft speed monitor module (A12) converts the analogue signal of the potentiometer (R5) into a digital signal, which is displayed through the CAN bus on the terminal (A30).</p>

Pin assignment

Plug V



Plug BB, B



Connection list

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
B - BB-10	CAC-8	E-25	A-37	MU-8	B-31		
	DS-48					1	rd-bk
B - BB-11	DZW-11	B-32				1	gn-rd
B - BB-12	31					1	pk-bl

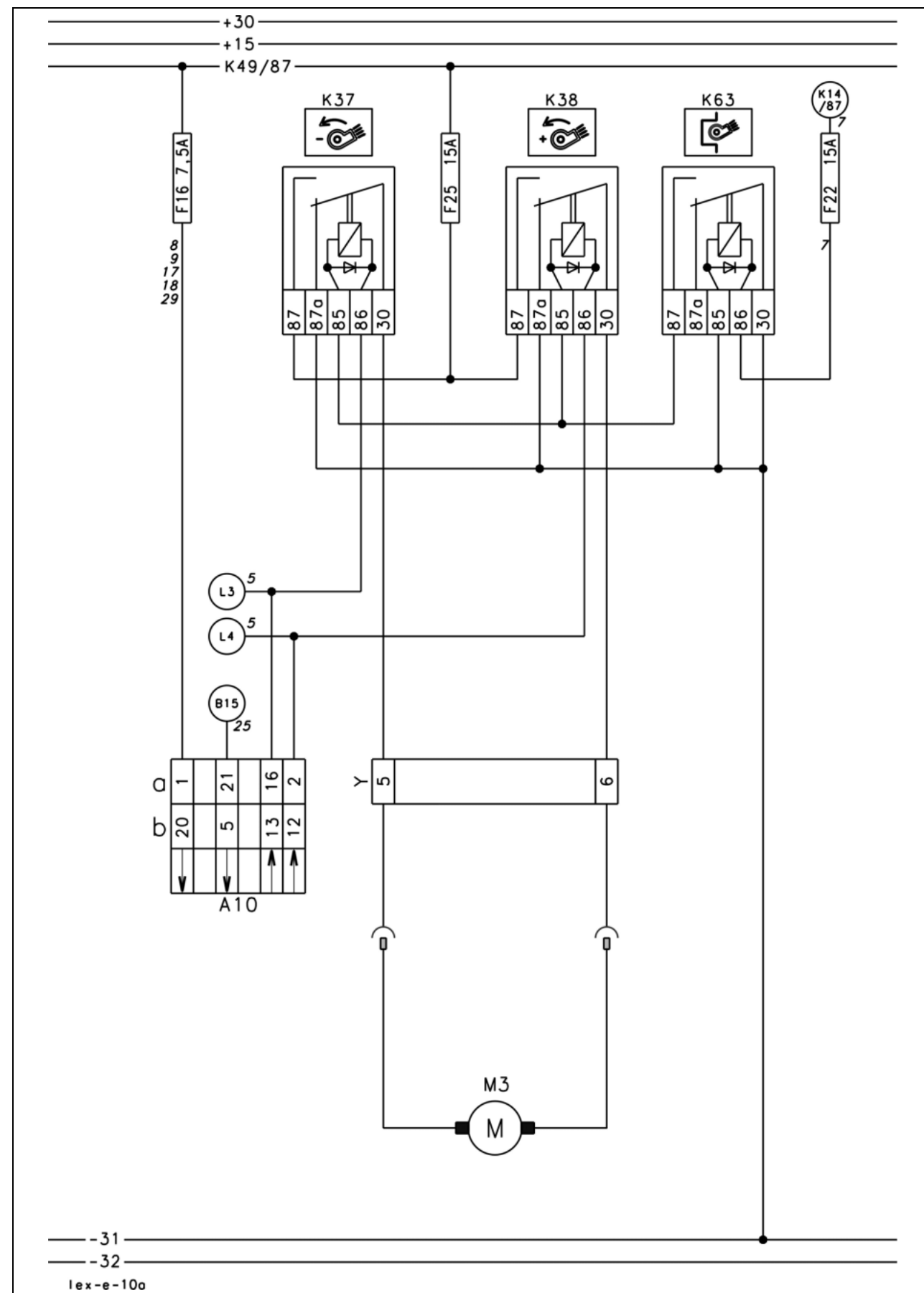
from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
C - B-30	F4-A	DZW-15	Cab-14 /Bif-15			1	bk-bl
B-30	F63-A	BB-13	B-29	MU-8	MR-5		
	DS-57					1	bk-bl
P - B-31	CAC-8	E-25	A-37	MU-8	BB-10		
	DS-48					1	bk-bl
B-32	BB-11	DZW-11				1	gn-rd
B-33	32					1	pk-bl

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
V-7	K34-87	DZW-13	DO-16			1.5	wh-bl
V-8	K33-87	DZW-12	DO-15			1.5	wh-br
V-11	31					2.5	br
V-12	31					2.5	br

10a

Fan variable speed drive

10a - Fan variable speed drive



Designations:

- A10 Fieldwork computer module (BIF/CAB) 2-h-20
- B15 Fan speed 7-l-16
- K37 Fan speed adjustment slow 3-h-20
- K38 Fan speed adjustment fast 3-h-20
- K63 Fan speed adjustment lock 3-h-20
- M3 Fan speed adjustment 6-m-15

Note:

- a - BIF/CAB module 42 plug-in contacts used
- b - BIF module 25 plug-in contacts used

Measured value table:

Item	Component	Measured value	Note
M 3	Electric motor	14 A	Current max.
K37 K38	Remote switching relay 40 A 60 A	90±10 Ω	(Pin 86/1 – 85/2) (Pin 87a/4 – 30/3) (Pin 87/5 – 30/3)
K63	Remote switching relay 15 A 30 A	95±10 Ω	(Pin 86/1 – 85/2) (Pin 87a/4 – 30/3) (Pin 87/5 – 30/3)

Description of functions:

Fan variable speed drive circuit

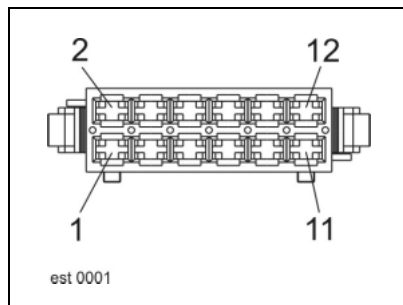
When the threshing mechanism is turned on, the relay K14 controls the relay K63 and thus supplies the relays K37 and K38 with ground on pin 85. As long as the rotary switch function preselection (T11) is set to the fan position, the pushbuttons +/- (T37/T38) control the voltage for the corresponding 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**

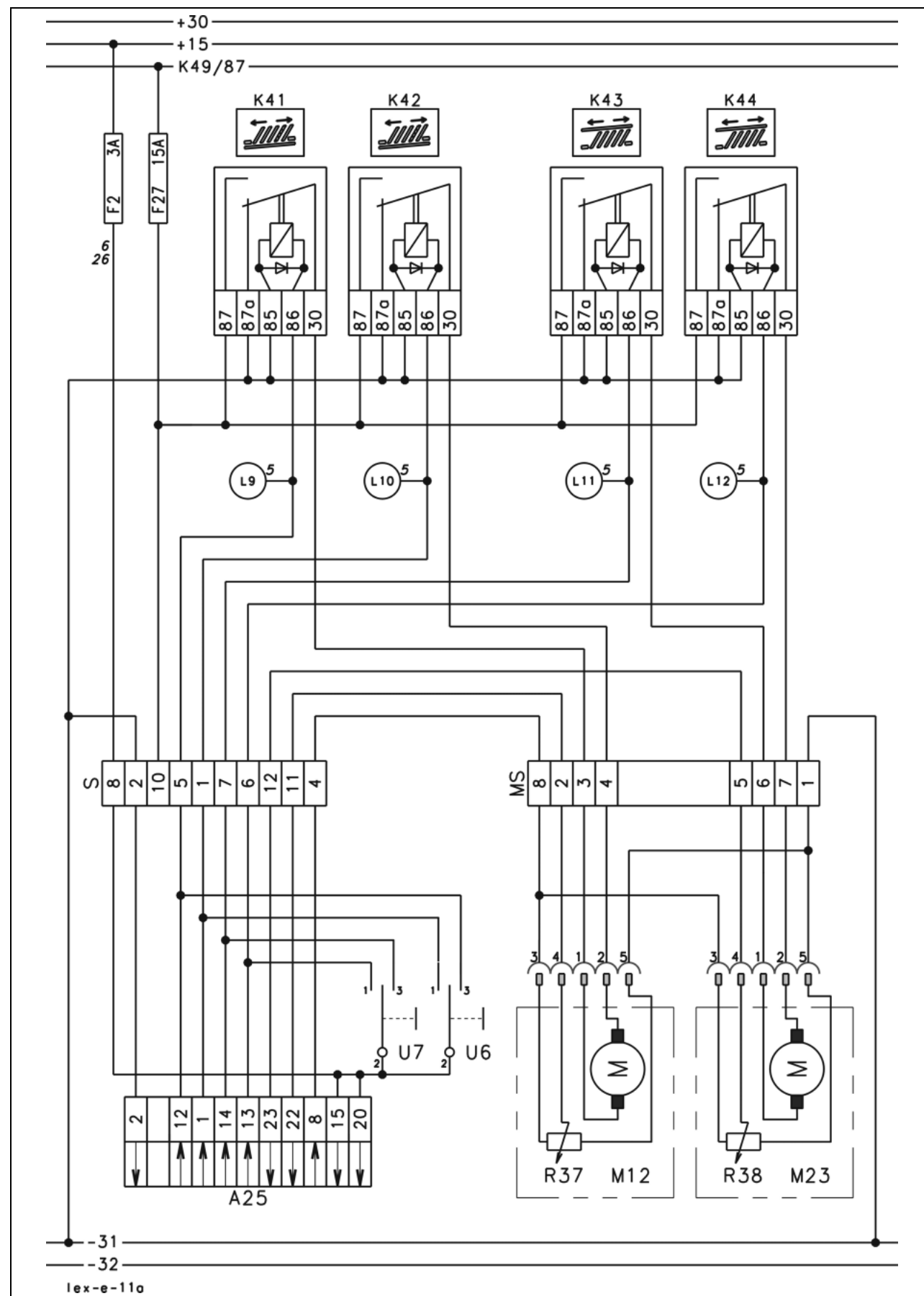
from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
Y-5	K37-30	DS-8				2.5	wh-ye
Y-6	K38-30	DS-9				2.5	wh-bk

Notes

11a

Sieve adjustment

11a - Sieve adjustment



Designations:

- A25 Sieve adjustment module 2-h-20
- K41 Upper sieve pan adjustment (close) 3-h-20
- K42 Upper sieve pan adjustment (open) 3-h-20
- K43 Lower sieve pan adjustment (close) 3-h-20
- K44 Lower sieve pan adjustment (open) 3-h-20
- M12 Upper sieve pan adjustment 4-r-21
..... 7-q-18
- M23 Lower sieve pan adjustment 4-r-21
..... 7-q-18
- R37 Upper sieve pan adjustment 4-r-21
..... 7-q-18
- R38 Lower sieve pan adjustment 4-r-21
..... 7-q-18
- U6 Upper sieve pan adjustment 5-r-20
- U7 Lower sieve pan adjustment 5-r-20

Measured value table:

Item	Component	Measured value	Note
M12 M23	Electric motor	2.5 A max. 5.6 A max.	swinging bowden cable
K41 K42 K43 K44	Remote switching relay	95±10 Ω	(Pin 86/1 – 85/2) (Pin 87a/4 – 30/3) (Pin 87/5 – 30/3)
R37 R38	Potentiometer	0.5 - 5.2 K Ω 0.45 - 4.55 V	Coil Signal

Description of functions:**Adjustment motor circuit**

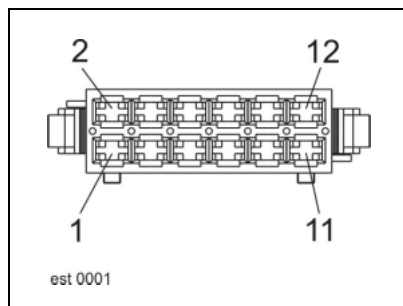
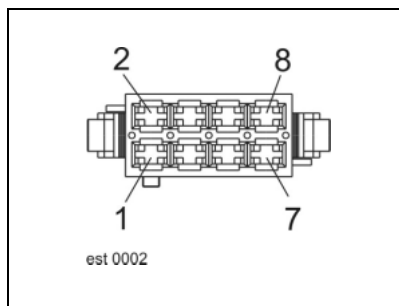
As long as the rotary switch function preselection (T11) is set to the sieve position, the pushbuttons +/- (T19/T26) control the voltage for the corresponding relay K41 (K43) or K42 (K44) on pin 86.

Depending on the direction of the rotation, the electric motor sieve adjustment (M12/M23) is supplied with mass by one of the relays K41/K42 (K43/K44) on pin 87a, while the other relay, K42/K41 (K44/K43), controls the voltage on pin 87.

During the automatic crop selection, the sieve adjustment module (A25) takes over the control over the relays K41 (K43) and K42 (K44).

Sieve position display

The sieve adjustment module (A25) converts the analogue signal of the potentiometer in the actuating motors (R37/R38) into a digital signal, which is displayed through the CAN bus on the terminal (A30).

Pin assignment**Plug S****Plug MS****Connection list**

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
S-1	K42-86	L-10				0.75	gn-bl
S-2	31					1.5	br-bk
S-4	MS-8					0.75	rd-wh
S-5	K41-86	L-9				0.75	gn-br
S-6	K44-86	L-12				0.75	rd-bk
S-7	K43-86	L-11				0.75	gn-bk
S-8	F-2A	MV-1	MW-1			0.75	bk-ye
S-10	F-27A	K41-87	K42-87	K43-87	K44-87	-	-
S-11	MS-2					0.75	gn-wh
S-12	MS-5					0.75	gn-ye

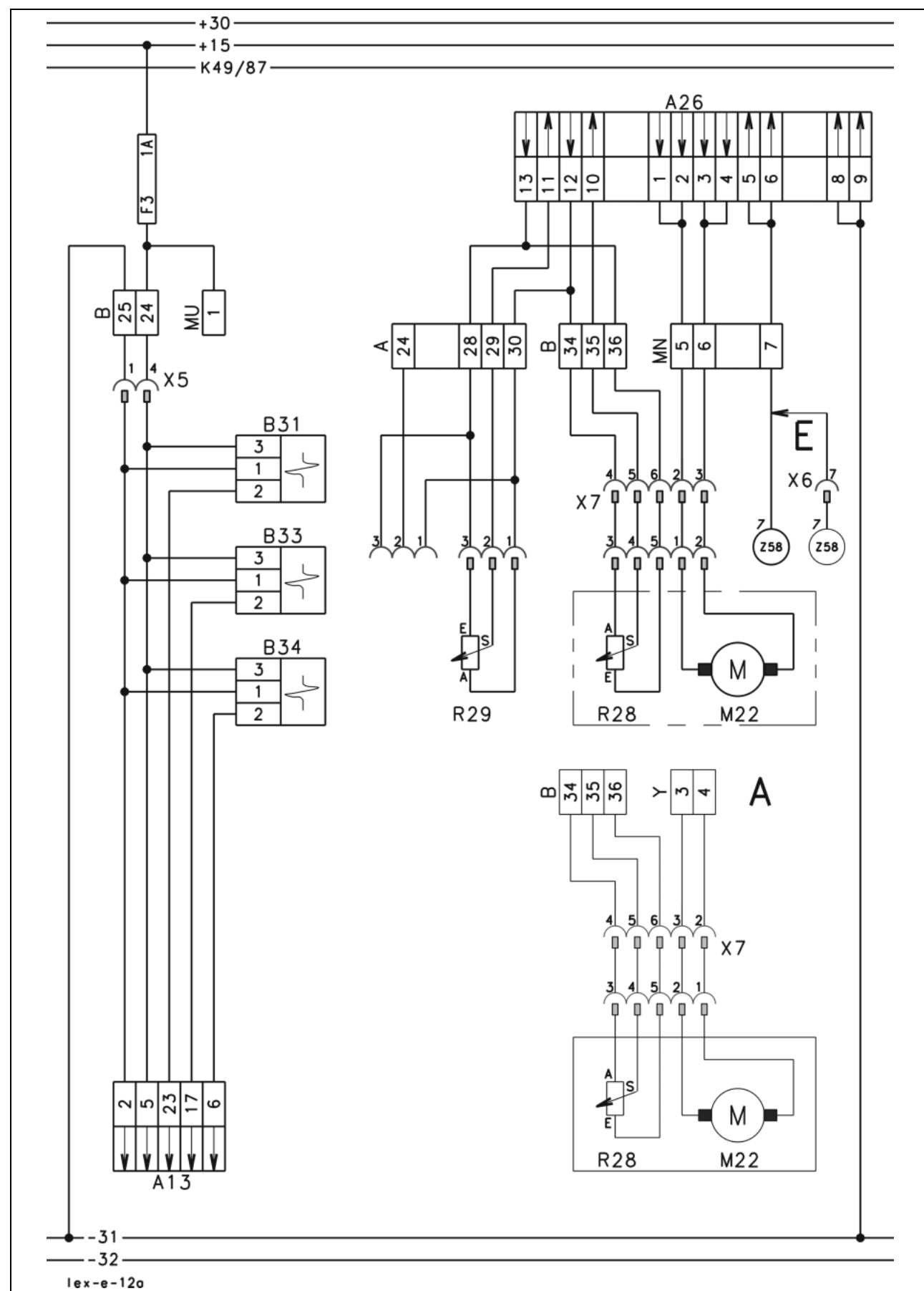
from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
MS-2	S-11					0.75	gn-wh
MS-3	K41-30					1.5	bl-wh
MS-4	K42-30					1.5	bl-ye
MS-5	S-12					0.75	gn-ye
MS-6	K43-30					1.5	bk-gn
MS-7	K44-30					1.5	bk-rd
MS-8	S-4					0.75	rd-wh

Notes

12a

**Deflector adjustment,
Combine performance monitor**

12a - Deflector adjustment, combine performance monitor



Designations:

- A13 Combine performance module (DKG) 4-p-21
- A26 Deflector adjustment module 2-h-20
- B31 Combine performance - cleaning system 7-r-19
- B33 Combine performance - remains separation (left) 4-r-20
- B34 Combine performance - remains separation (right) 4-r-16
- M22 Deflector adjustment 6-v-18
6-u-16
- R28 Spreading direction potentiometer (actual value) 7-t-16
6-v-18
6-u-16
- R29 Spreading direction potentiometer (setpoint) 3-g-17
- X5 Combine performance monitor 6-p-20
- X6 Straw chopper 5-s-16
- X7 Deflector adjustment / spreader fan 5-s-16
- Z58 Straw chopper / spreader fan working position 5-v-16

Notes:

- A - up to machine no. 466-0041, 454-0028
- E - on machines with fixed straw chopper position

Measured value table:

Item	Component	Measured value	Note
B31 B32 B33	Sensor	4 V	Basic signal
M22	Electric motor	5.6 A	Current max.
R28	Potentiometer	0.2 - 5.0 KΩ 0.15 - 4.85 V	Coil Signal
R29	Potentiometer	4.70 KΩ 1.7 - 6.4 KΩ	(Pin A - E) coil (Pin S - E) slider

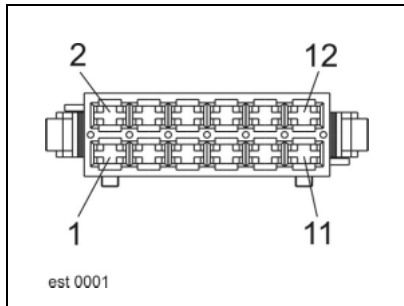
Description of functions:

Adjustment motor circuit

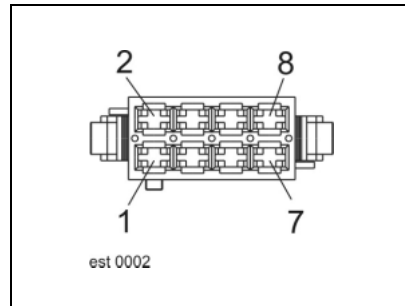
The deflector adjustment module (A26) is supplied with voltage through the relay K14 and the limit switch (Z58) if the threshing mechanism is turned on and the straw chopper is in working position. According to the setting of the setpoint potentiometer (R29) in the cab, the deflector adjustment module (A26) controls the actuating motor (M22) until the pre-set corresponds to the integrated actual value potentiometer (R28).

Pin assignment

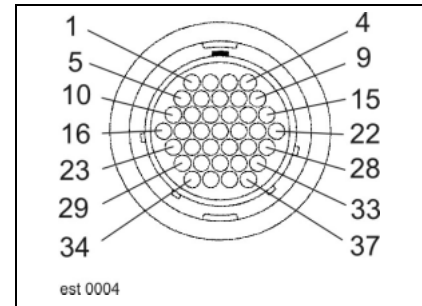
Plug Y



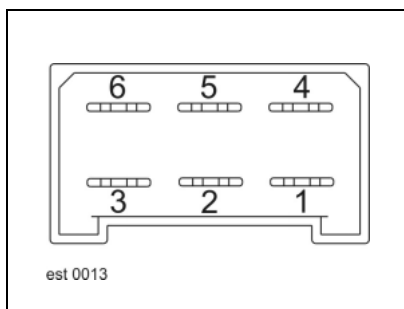
Plug MN, MU



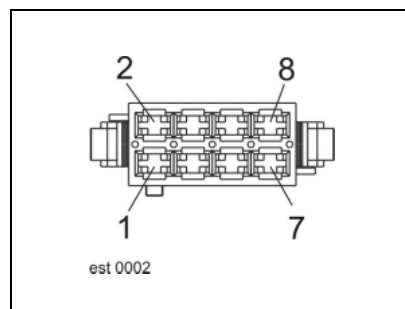
Plug A, B



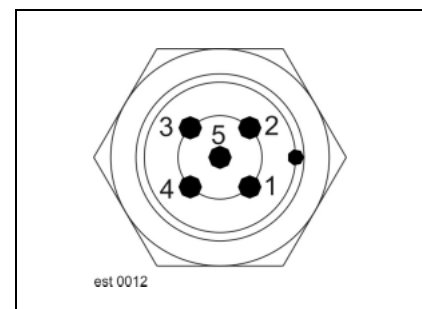
Plug X5-wt



Plug X6-rd, X7-blk



Sieve adjustment motor plug



Connection list

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
A-24	VGS-10					0.5	wh-br
A-28	STB-13	B-36	VGS-5			0.5	br-bk
A-29	STB-11	VGS-9				0.5	gr-gn
A-30	STB-12	B-34	DS-46	VGS-8		0.5	wh-bk

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
B-24	F3-A	MU-1				1.5	bk
B-25	31					1.5	br-bl
B-34	STB-12	A-30	DS-46	VGS-8		1	gn-gr
B-35	STB-10	DS-47	VGS-11			1	gn
B-36	STB-13	A-28	VGS-5			1	gn-br

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
MN-5	STB-1	STB-2	DS-26	VGS-12		2.5	wh-rd
MN-6	STB-3	STB-4	DS-27	VGS-13		2.5	wh-bl
MN-7	STB-5	STB-6	DS-49	VGS-20	VGS-7	2.5	bl-wh

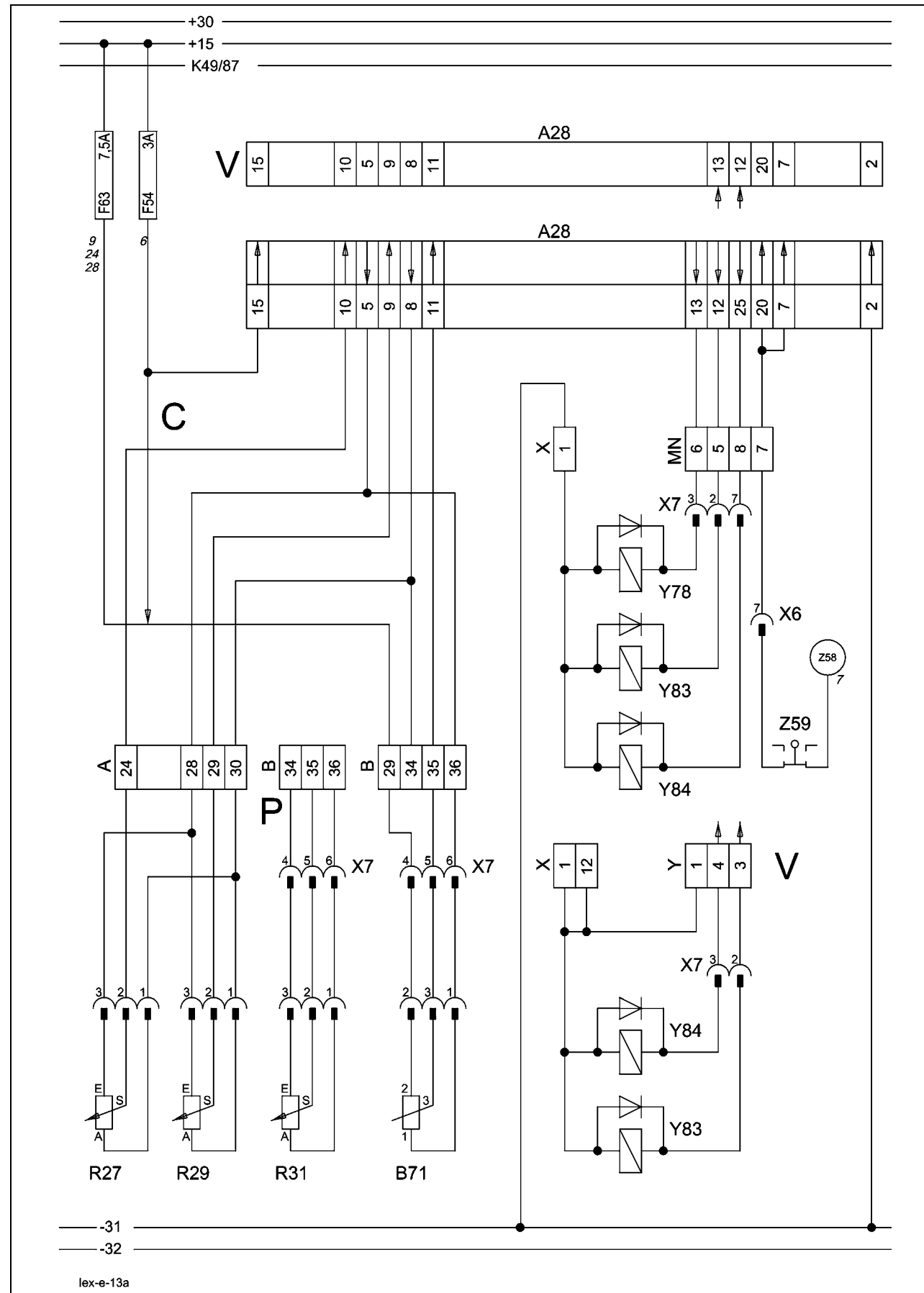
from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
A - Y-3	STB-1	STB-2	Q-3	DS-26	VGS-12	2.5	wh-rd
A - Y-4	STB-3	STB-4	Q-4	DS-27	VGS-13	2.5	wh-rd

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
MU-1	F3-A	B-24				-	-

13a

Spreader fan control

13a - Spreader fan control



Designations:

- A28 Spreader fan module (VGS) 2-h-20
- B71 Spreader fan position 7-t-19
- R27 Spreading width (setpoint) 3-g-17
- R29 Spreading direction potentiometer (setpoint) 3-g-17
- R31 Uni-spreader position (actual value) 8-e-24
- X6 Straw chopper 5-s-16
- X7 Deflector adjustment / spreader fan 5-s-16
- Y78 Circulation shut-off valve - spreader fan 7-t-18
- Y83 Spreader fan slew left 7-t-18
- Y84 Spreader fan slew right 7-t-18
- Z58 Straw chopper/spreader fan working position 5-v-16
- Z59 Straw chopper deflector position 6-s-20

Notes:

- C - only machine no. 468-0022 to 468-0033
466-0862 to 466-0929
- P - up to machine no. 488-0021, 466-0861
- V - only machine no. 468-0011 to 468-0021
466-0011 to 466-0300
466-0326 to 466-0487

Measured value table:

Item	Component	Measured value	Note
B71	Sensor	12 V 0.25 V - 4.75 V	(Pin 1-2) (Pin 1-3)
R27 R29	Potentiometer	4.70 KΩ 1.7 - 6.4 KΩ	(Pin A - E) coil (Pin S - E) slider
R31	Potentiometer	4.25 KΩ 1.50 - 5.75 KΩ	(Pin A - E) coil (Pin S - E) slider
Y78 Y83 Y84	Solenoid coil	3.8 A 3.2 Ω	

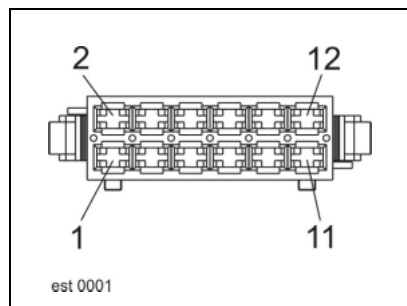
Description of functions:

Spreader fan circuit

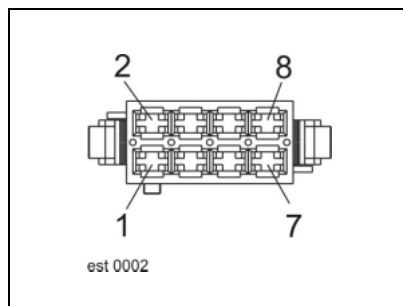
In the chopper position of the straw guide plate, the limit switch (Z59) is closed. The spreader fan module (A28) now receives the signal to address the solenoid coils (Y83/Y84) is the straw chopper (Z58) is turned on. The circulation shut-off valve (Y78) is also switched modulated to absorb pressure peaks during the fluctuation of load. Meanwhile, the spreading width and the spreading direction are controlled according to the comparison between the setpoint potentiometer (R27/R29) and the actual value of the sensor (B71) or the actual value of the potentiometer (R31).

Pin assignment

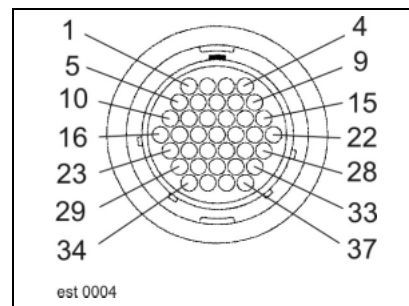
Plug X, Y



Plug MN, X6-rd, X7-bk



Plug A, B



Connection list

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
A-24	VGS-10					0.5	wh-br
A-28	STB-13	B-36	VGS-5			0.5	br-bk
A-29	STB-11	VGS-9				0.5	gr-gn
A-30	STB-12	B-34	DS-46	VGS-8		0.5	wh-bk

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
C - B-29	F54-A	VGS-15				1	rd-bk
B-29	F63-A	BB-13	B-30	MU-8	MR-5		
	DS-57					1	rd-bk
P - B-34	STB-12	A-30	DS-46	VGS-8		1	gn-gr
B-35	STB-10	DS-47	VGS-11			1	gn
B-36	STB-13	A-28	VGS-5			1	gn-br

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
MN-5	STB-1	STB-2		DS-26	VGS-12	2.5	wh-rd
MN-6	STB-3	STB-4		DS-27	VGS-25	2.5	wh-bl
MN-7	STB-5	STB-6	DS-49	VGS-20	VGS-7	2.5	bl-wh
MN-8	VGS-13					1.5	bk-vi

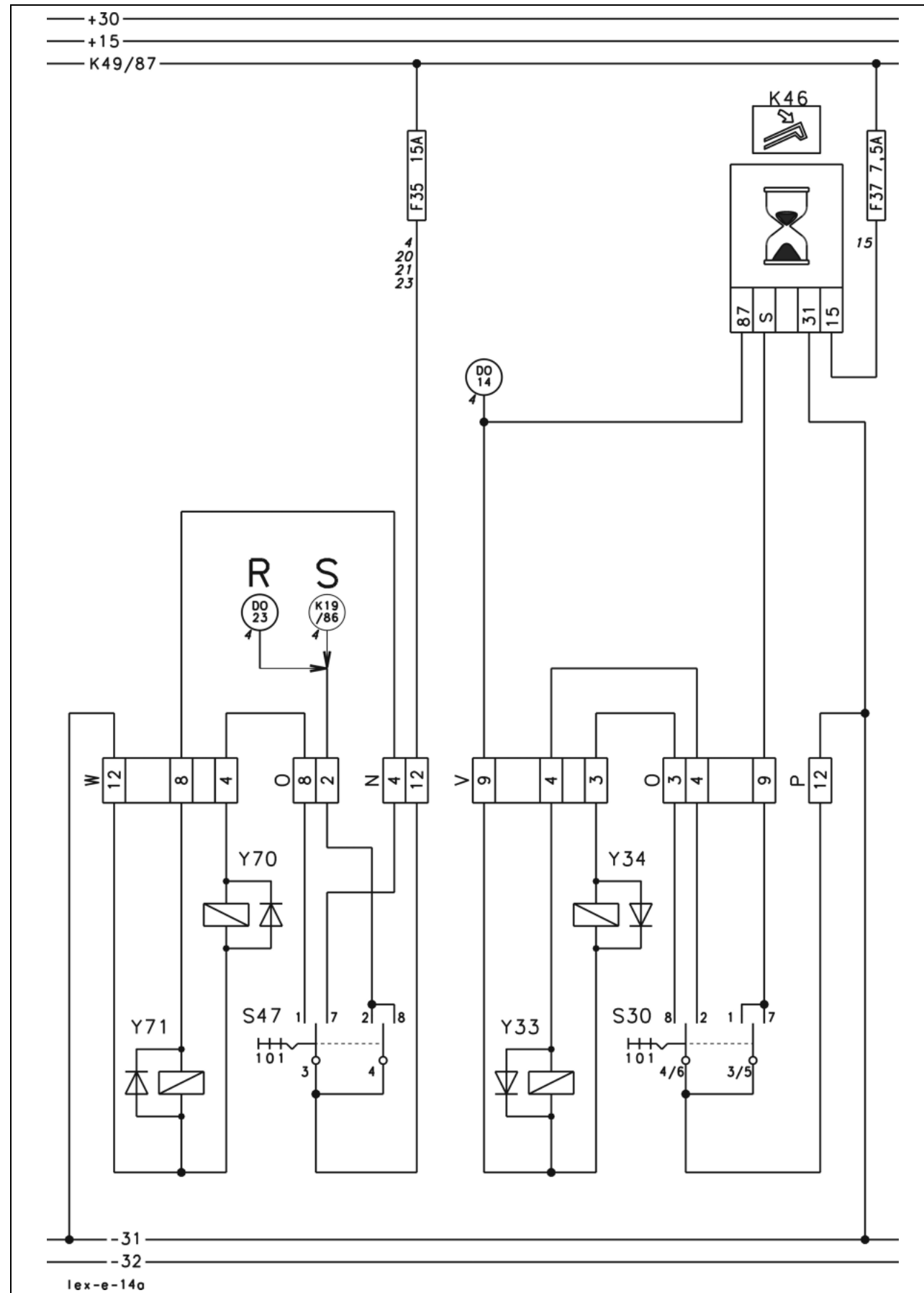
from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
V - Y-1	31					2.5	br
V - Y-3	STB-1	STB-2	Q-3	DS-26	VGS-12	2.5	wh-rd
V - Y-4	STB-3	STB-4	Q-4	DS-27	VGS-13	2.5	wh-rd

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
X-1	31					2.5	br
V - X-12	31					2.5	br

14a

**Grain tank unloading tube slewing,
Cutterbar spring lock**

14a - Grain tank unloading tube slewing, cutterbar spring lock



Designations:

- K46 Time relay grain tank unloading tube slewing 3-h-20
- S30 Grain tank unloading tube slewing 3-g-17
- S47 Cutterbar spring lock 3-g-17
- Y33 Swing out grain tank unloading tube 5-m-21
- Y34 Swing in grain tank unloading tube 5-m-21
- Y70 Release cutterbar springs 5-m-21
- Y71 Lock cutterbar springs 5-m-21

Notes:

- R - from machine no. 548-0011, 547-0011, 546-0011, 545-0011, 544-0011, 543-0011
- S - up to machine no. 468-0084, 466-1655, 457-0107, 454-4799, 453-2581, 452-1056

Measured value table:

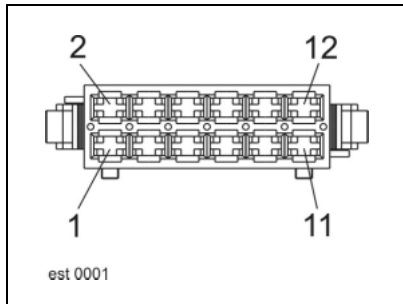
Item	Component	Measured value	Note
K46	Relay grain tank unloading tube	- - -	Time controlled OFF after approx. 20 sec
Y33	Solenoid coil	3.8 A	
Y34			
Y70			
Y71			

Description of functions:

Unloading tube slewing	<p>When the road travel circuit is unlocked, the time relay K46 is supplied with voltage. The rocker switch (S30) supplies the ground to one of the two solenoid coils (Y33/Y34) and also the start signal for the time control in the relay K46. For about 20 seconds, the power supply is turned on for the corresponding solenoid coil (Y33/Y34) and for the circulation shut-off valve (Y77) at the same time.</p> <p>The electronics in the relay K46 is designed so that voltage has to be supplied for the activation of the time control before the controlled ground is accepted as a start signal.</p>
Spring locking	<p>When the road travel circuit is unlocked, the rocker switch (S47) supplies one of the two solenoid coils (Y70/Y71) with voltage at the same time as the circulation shut-off valve (Y77).</p>

Pin assignment

Plug N, O, P, V, W

**Connection list**

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
W-4	O-8					1	wh-bl
W-8	N-4					1	gn-vi
W-12	31					2.5	br

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
O-2	K19-86	DO-1				1.5	ye-gr
R - O-2	K19-86	DO-23				0.5	gn-bl
O-3	V-3	DS-10				0.5	ye-br
O-4	V-4	DS-11				1.5	ye-gn
O-8	E-16	DS-36				1.5	wh-bl
O-9	K46-S					0.5	rd-bk

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
V-3	O-3	DS-10				1.5	wh-gn
V-4	O-4	DS-11				1.5	wh-vi
V-9	K46-87	DO14	DS-12			1.5	bk-gr

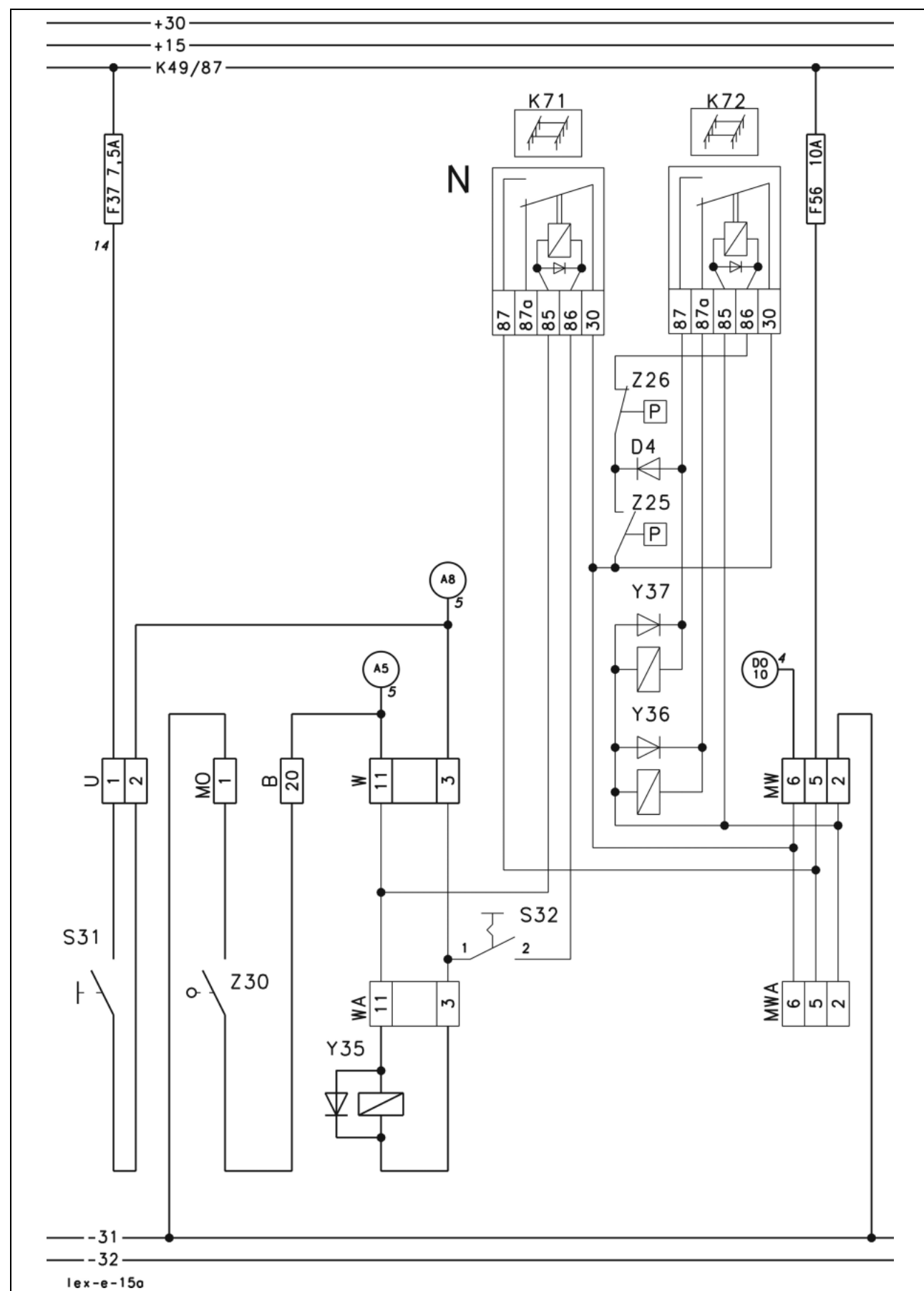
from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
N-4	W-8					1.5	br-gn
N-12	F35-A	K5-86/30	K6-86/30	K19-30	U-7		
	CAC-20					2.5	bk

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

15a**Grain tank unloading,
Grain tank unloading aid**

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

15a - Grain tank unloading, grain tank unloading aid



Designations:

- D4 Grain tank unloading aid 3-h-20
- K71 Grain tank unloading aid 3-h-20
- K72 Grain tank unloading aid forward / back 3-h-20
- S31 Grain tank unloading (foot switch) 5-f-19
- S32 Grain tank unloading aid - main switch 3-g-17
- Y35 Grain tank unloading 2-p-19
- Y36 Grain tank unloading aid forward 5-m-21
- Y37 Grain tank unloading aid back 5-m-21
- Z25 Grain tank unloading aid forward oil pressure 5-m-21
- Z26 Grain tank unloading aid back oil pressure 5-m-21
- Z30 Grain tank unloading tube swung out 4-j-21

Notes:

N- Retrofit kit grain tank unloading aid (SP No. 758 600.0)

Measured value table:

Item	Component	Measured value	Note
K71 K72	Remote switching relay 20 A 30 A	75±10 Ω	(Pin 86/1 – 85/2) (Pin 87a/4 – 30/3) (Pin 87/5 – 30/3)
Y35	Solenoid coil	0.75 A / 16 Ω 1.8 A / 6.6 Ω 2.0 A / 6.0 Ω	* ** ***
Y36 Y37	Solenoid coil	3.8 A 3.2 Ω	

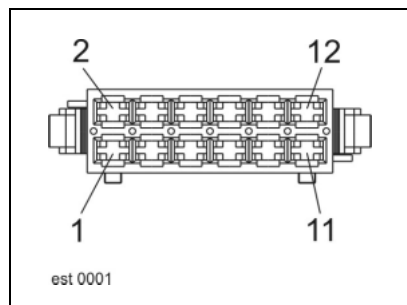
- * - from year 2000
- ** - from machine no. 466-0166
454-0256
453-0042
452-0017
- *** - up to machine no. 466-0165
454-0255
453-0041
452-0016

Description of functions

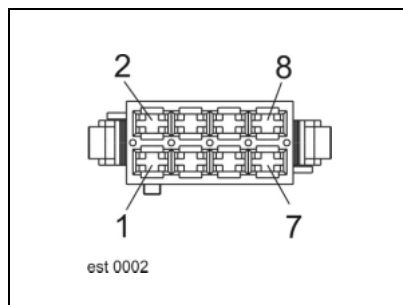
Grain tank unloading	When the road travel circuit is unlocked, the foot switch (S31) supplies the solenoid coil (Y35) with voltage while the limit switch (Z30) switches the ground when the unloading tube is swung out.
Grain tank unloading aid	<p>When the road travel circuit is unlocked, the foot switch (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.</p> <p>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.</p> <p>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.</p>

Pin assignment

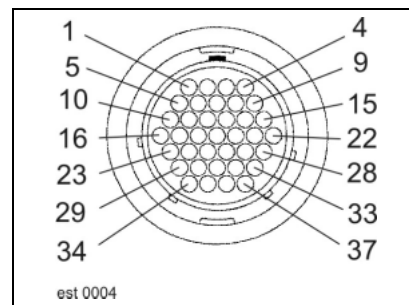
Plug U, W, WA



Plug MO, MW, MWA



Plug B



Connection list

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
U-1	F37-A	K46-15				1.5	gn-rd
U-2	W-3	A-3	H-3	DS-15		1.5	gn-rd

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

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
B-20	A-5	W-11	DS-16	DA1-K	K11-85		
	H-6					1	gr-rd

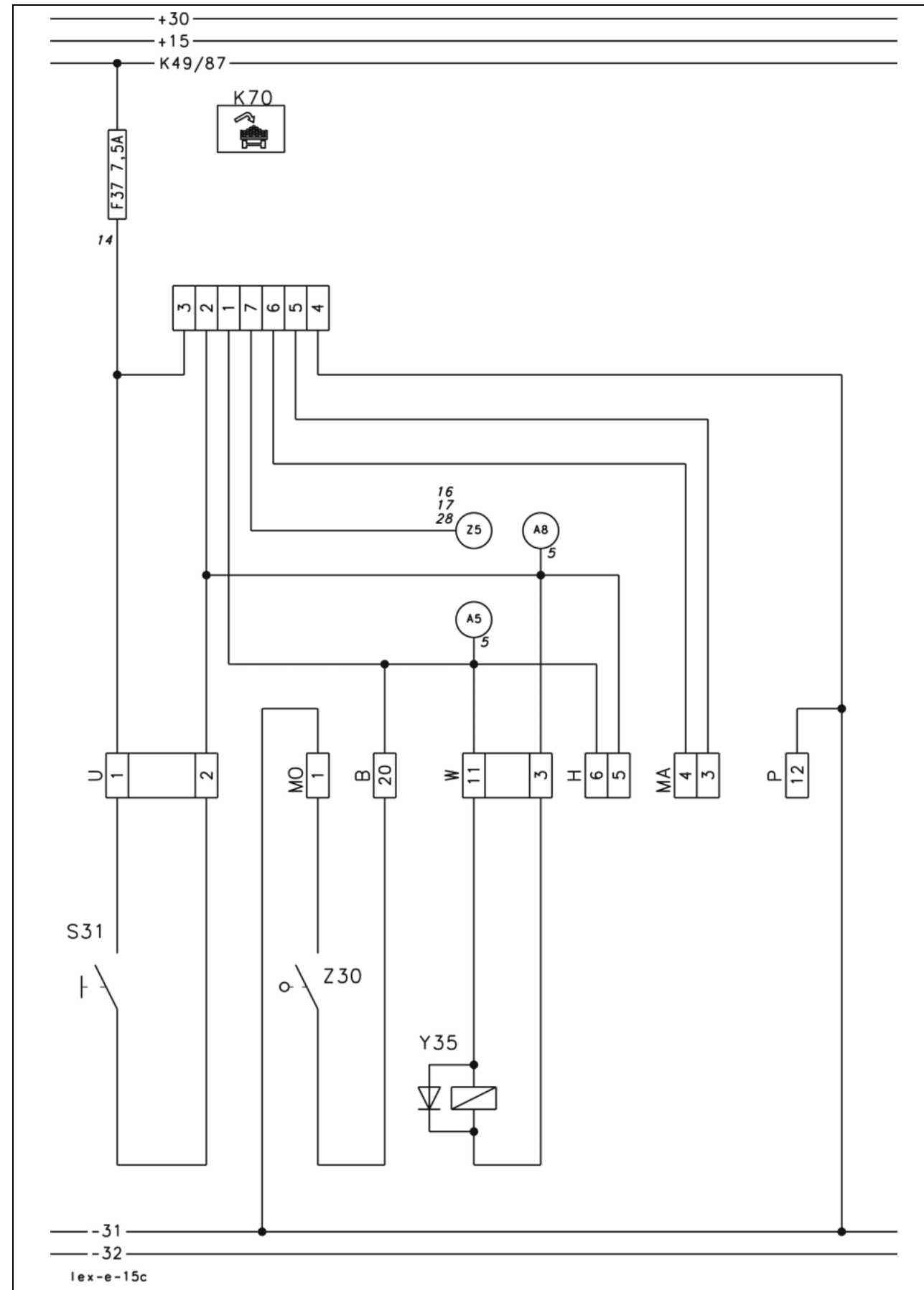
from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
W-3	K18-87	H-5	DS-15	K11-86/30		1.5	wh
W-11	B-20	A-5	DS-16	DA1-K	K11-85		
	H-6					1.5	wh

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
MW-2	31					1.5	br
MW-5	F56-A					1.5	bk
MW-6	DO-10	H-7				0.5	wh

15c**Grain tank unloading**

from machine no. 548-0011
547-0011
546-0011
545-0011
544-0011
543-0011

15c - Grain tank unloading



Designations:

- K70 Grain tank unloading 3-h-20
- S31 Grain tank unloading 3-g-17
- Y35 Grain tank unloading 2-p-19
- Z5 Seat contact 4-g-18
- Z30 Grain tank unloading tube swung out 4-j-21

Measured value table:

Item	Component	Measured value	Note
K70	Relay grain tank unloading	- - -	Electronic relay
Y35	Solenoid coil	0.75 A / 16 Ω 1.8 A / 6.6 Ω 2.0 A / 6.0 Ω	* ** ***

- * - from year 2000
- ** - from machine no. 466-0166
454-0256
453-0042
452-0017
- *** - up to machine no. 466-0165
454-0255
453-0041
452-0016

Description of functions:

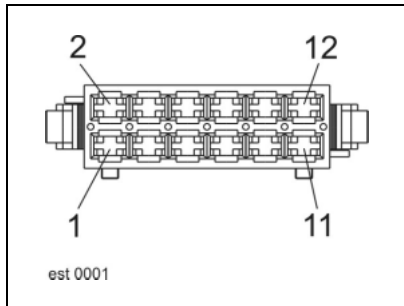
Grain tank unloading

To supply the solenoid coil (Y35) with earth, the grain tank unloading tube (Z30) must be swung out. When the road travel circuit is unlocked, the grain tank unloading (Y35) is activated by pushing the foot switch (S31).

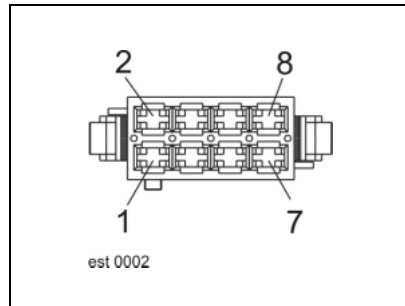
Important: Relay socket K70 is not equipped on these machine types.

Pin assignment

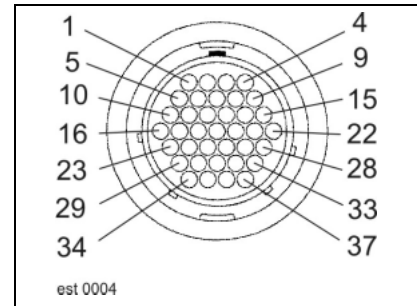
Plug H, P, U, W



Plug MO



Plug B



Connection list

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
U-1	F37-A	K70-3				1.5	gn-rd
U-2	W-3	A-8	H-5	K70-2	DS-15	1.5	gn-rd

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

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
B-20	A-5	W-11	DS-16	DA1-K	K11-85		
	H-6					1	gr-rd

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
W-3	K18-87	H-5	DS-15	K11-86/30		1.5	wh
W-11	B-20	A-5	DS-16	DA1-K	K11-85		
	H-6					1.5	wh

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
H-5	U-2	W-3	K70-2	DS-15		-	-
H-6	W-11	B-20	A-5	DS-16	DA1-K		
	K11-85					-	-

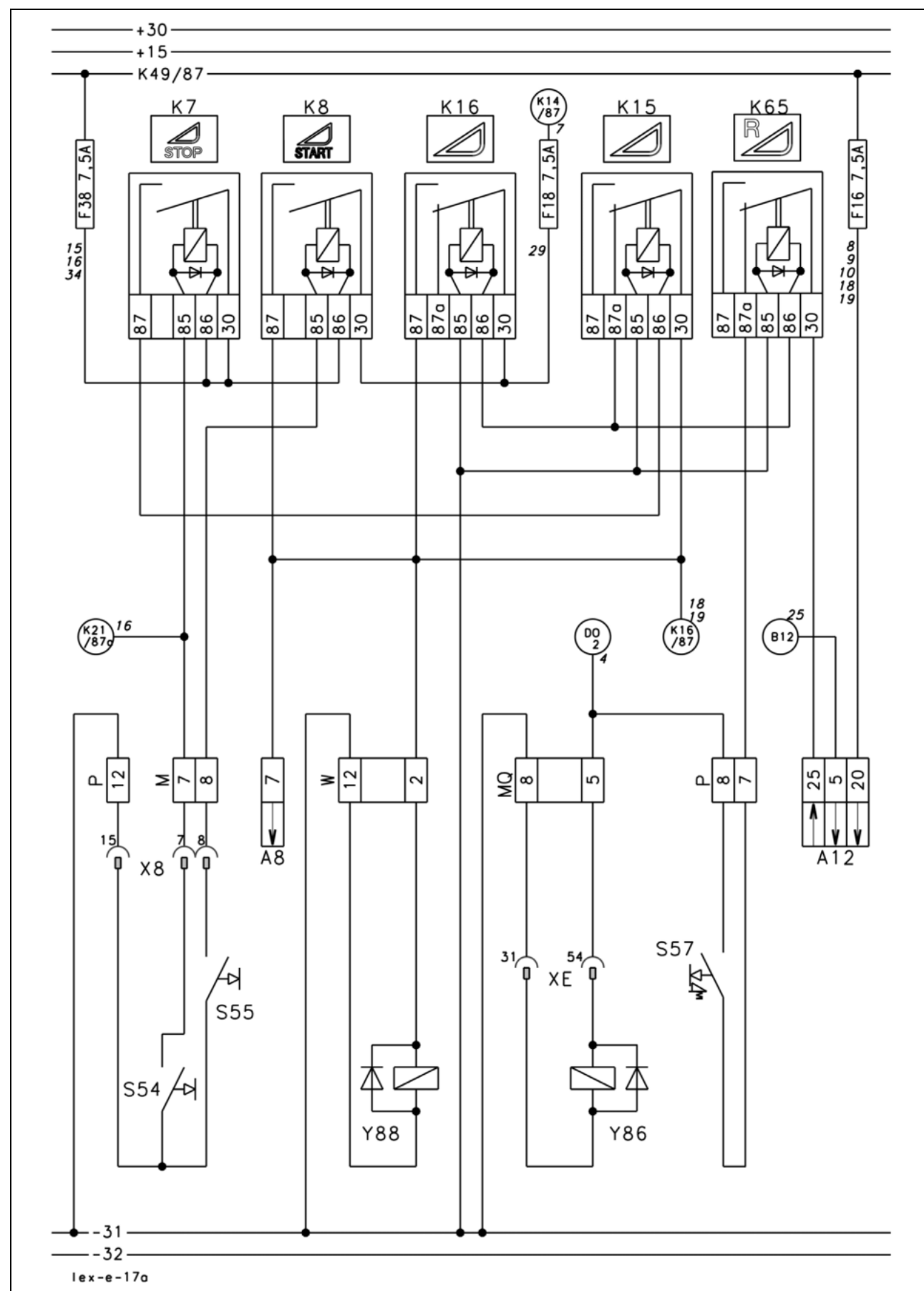
from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
MA-3	K70-5					-	-
MA-4	K70-6					-	-

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

17a**Front attachment drive,
Reversing drive**

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

17a - Front attachment drive, reversing drive



Designations:

- A8 AUTOCONTOUR (CAC) module 2-h-20
- A12 Shaft speed monitor module (DZW) 2-h-20

- B12 Feeder housing speed 6-h-16

- K7 Front attachment OFF 3-h-20
- K8 Front attachment OFF 3-h-20
- K15 Front attachment ON 3-h-20
- K16 Front attachment ON 3-h-20
- K65 Front attachment reverse 3-h-20

- S54 Front attachment OFF 3-g-17
- S55 Front attachment ON 3-g-17
- S57 Front attachment reverse 3-g-17

- XE Feeder housing 5-f-20
- X8 Ground speed control lever 4-h-17

- Y86 Front attachment reverse 6-m-21
- Y88 Front attachment clutch 2-p-19

Measured value table:

Item	Component	Measured value	Note
K7 K8	Remote switching relay 30 A	200±20 Ω	(Pin 86/1 - 85/2) (Pin 87/5 - 30/3)
K15 K16 K65	Remote switching relay 15 A 30 A	95±10 Ω	(Pin 86/1 - 85/2) (Pin 87a/4 - 30/3) (Pin 87/5 - 30/3)
Y86	Solenoid coil	3.8 A 3.2 Ω	
Y88	Solenoid coil	0.75 A / 16 Ω 1.8 A / 6.6 Ω 2.0 A / 6.0 Ω	* ** ***

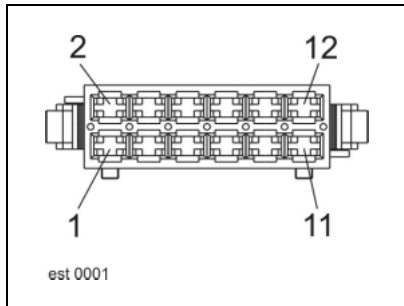
- * - from year 2000
- ** - from machine no. 466-0166
454-0256
453-0042
452-0017
- *** - up to machine no. 466-0165
454-0255
453-0041
452-0016

Description of functions:

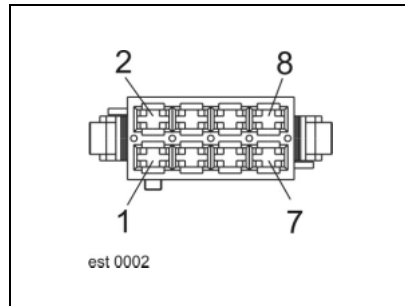
Front attachment ON	<p>Conditions for the front attachment drive are that the relay K49 is switched by the road travel circuit and the threshing mechanism is switched by the relay K14.</p> <p>When the START button (S55) is pushed, the relay K8 is addressed so that the relay K16 is switched through the rest position of the relay K15. This supplies the solenoid coil (Y88) with voltage and the relay K16 activates the self-hold through the relay K15.</p> <p>The AUTOCONTOUR module (CAC) needs the power supply of the front attachment circuit to release the automatic functions.</p>
Front attachment OFF	<p>When the STOP button (S54) is pushed, the relay K7 is addressed, causing the relay K15 to close and releasing the self-hold of the relay K16 for the power supply of the solenoid coil (Y88).</p>
Reversing drive	<p>The conditions for the reversing function are that the front attachment, and thus the relays K16 and K65, are not closed. For added safety, the shaft speed monitor module (A12) only supplies power to the relay K65 after the shaft speed sensor of the feeder housing (B12) doesn't send a signal for approx. 2 seconds.</p> <p>If these conditions are met, the reversing switch (S57) sends power from the shaft speed monitor module (A12) through the open relay K65 to the solenoid coil (Y86). Parallel to the solenoid coil (Y86), the circulation shut-off valve (Y77) is also switched through the diode printed circuit board (DO) and the relay K19 because it is necessary to build up pressure in the system for this function.</p>

Pin assignment

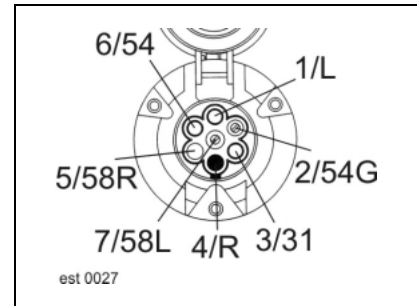
Plug M, P, W



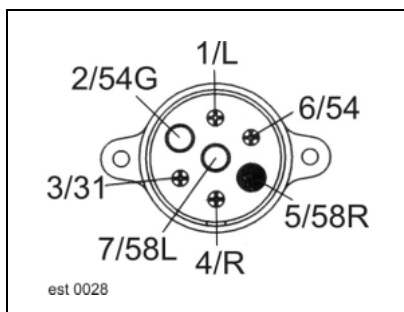
Plug MQ



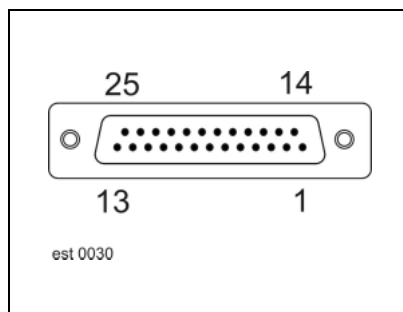
Plug socket XE



Plug XE



Plug X8



Connection list

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
M7	K7-85	K21-87a				0.5	gr-bk
M8	K8-85					0.5	bl-vi

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
W-2	K35-30	K16-87	K8-87	K15-30	CAC-7		
	K36-30	H-3	K64-86	DS-53		1	ye-rd
W-12	31					2.5	br

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
MQ-5	P-8	Do-2	DS-7			1.5	ye-bl
MQ-8	31					2.5	br

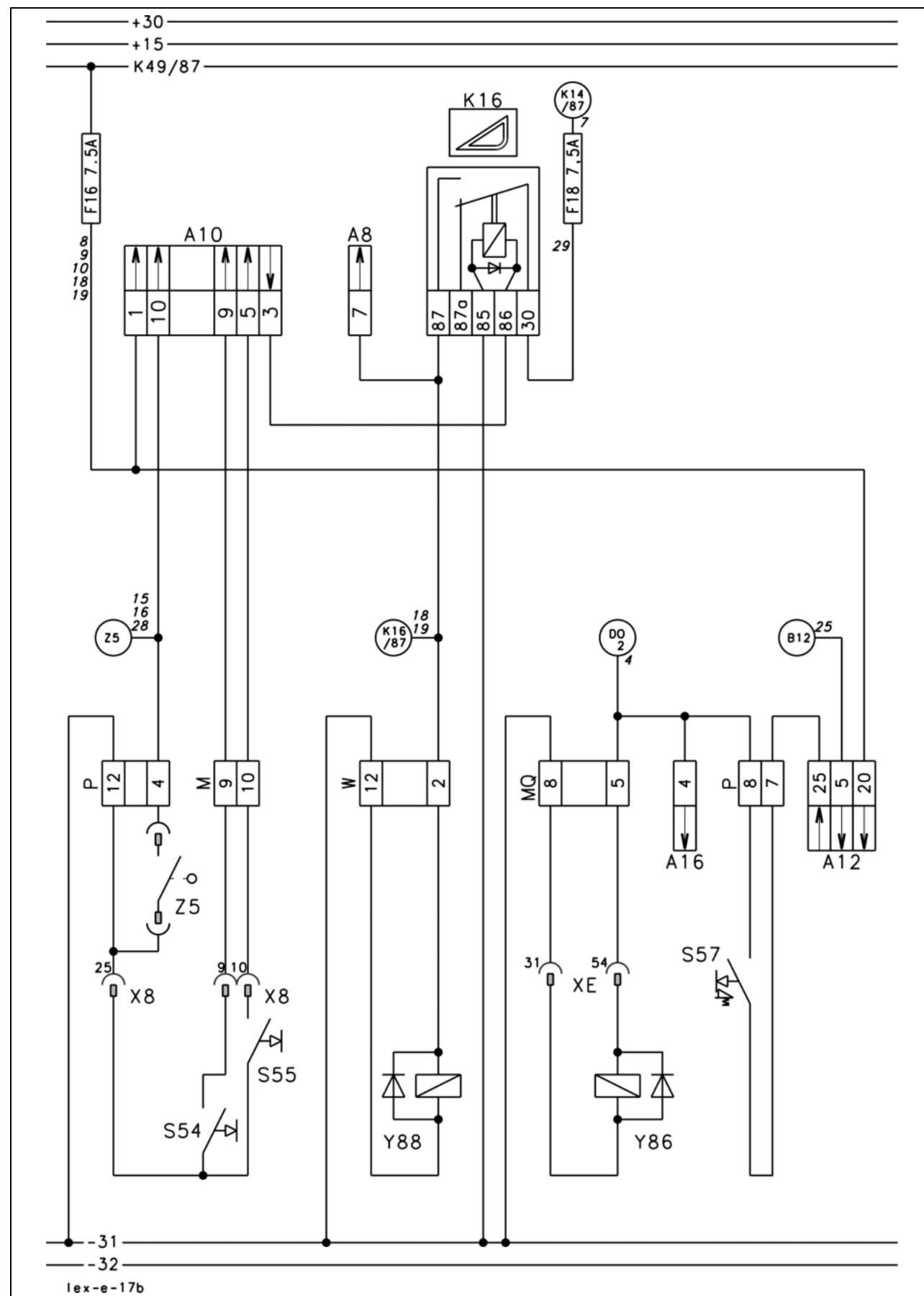
from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
P-7	K65-87a					1.5	gr
P-8	MQ-5	DO-2	DS-7			1.5	gr
P-12	31					2.5	br

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

17b - Front attachment drive, reversing drive



Designations:

- A8 AUTOCONTOUR module (CAC) 2-h-20
- A10 Fieldwork computer module (BIF/CAB) 2-h-20
- A12 Shaft speed monitor module (DZW) 2-h-20
- A16 Reel control module (HAS) 2-h-20

- B12 Feeder housing speed 6-h-16
- K16 Front attachment ON 3-h-20
- S54 Front attachment OFF 3-g-17
- S55 Front attachment ON 3-g-17
- S57 Front attachment reverse 3-g-17

- XE Feeder housing 5-f-20
- X8 Ground speed control lever 4-h-17

- Y86 Front attachment raise 6-m-21
- Y88 Front attachment clutch 2-p-19

- Z5 Seat contact 4-g-18

Measured value table:

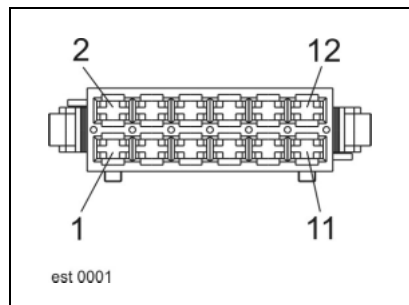
Item	Component	Measured value	Note
K16	Remote switching relay 15 A 30 A	95±10 Ω	(Pin 86/1 – 85/2) (Pin 87a/4 – 30/3) (Pin 87/5 – 30/3)
Y86	Solenoid coils	3.8 A 3.2 Ω	
Y88	Solenoid coils	0.75 A 16 Ω	

Description of functions:

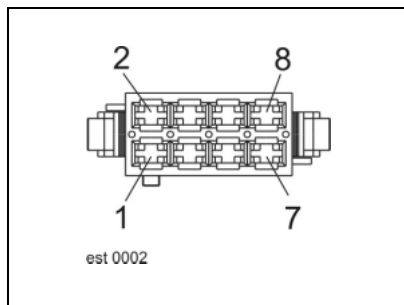
Front attachment I/O circuit	<p>Conditions for the front attachment drive are that the relay K49 is switched by the road transport circuit and the threshing mechanism is switched by the relay K14.</p> <p>When the START button (S55) is pushed, ground is supplied as a signal to the fieldwork computer module (A10). The fieldwork computer module (A10) then closes the relay K16. The solenoid coil Y88 is supplied with power - front attachment ON function.</p> <p>When the STOP button (S54) is pushed, ground is supplied as a signal to the fieldwork computer module (A10). The fieldwork computer module (A10) interrupts the power supply to relay K16 - front attachment OFF function.</p> <p>The front attachment circuit is dependent on the closed switch Z5 – seat contact.</p>
Front attachment reverse circuit	<p>The condition for the reverse function is that the front attachment is not switched. For added safety, the shaft speed monitor module (A12) only supplies power to the reverse switch (S57) after the shaft speed sensor of the feeder housing (B12) doesn't send a signal for approx. 2 seconds.</p> <p>If these conditions are met, the reversing switch (S57) sends power from the shaft speed monitor module (A12) to the solenoid coil (Y86) - front attachment reversing function.</p> <p>Parallel to the solenoid coil (Y86), the circulation shut-off valve (Y88) is also switched through the diode pcb (DO) because it is necessary to build up pressure in the system for this function.</p> <p>Note: If reversing is activated, a signal is switched in the reel module (A16), setting the variable displacement pump for the reel speed adjustment to maximum supply in the case of hydraulic test reel drive.</p>

Pin assignment

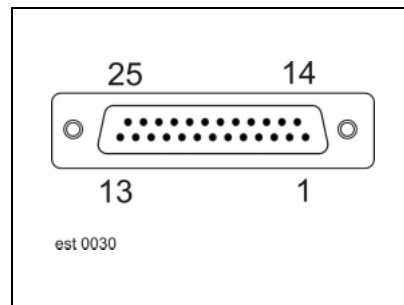
Plug M, P, W



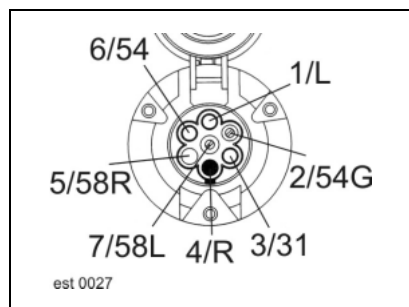
Plug MQ



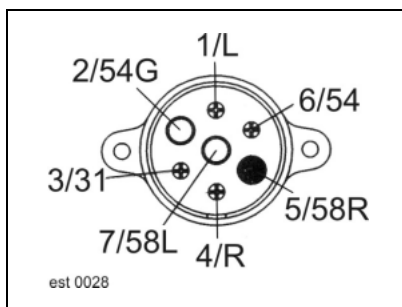
Plug X8



Plugsocket XE



Plug XE



Connection list

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
M9	CAC-9					0.5	bl-gr
M10	CAC-5					0.5	wh-gn

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
W-2	K35-30	K16-87	K8-87	K15-30	CAC-7		
	K36-30	H-3	K64-86	DS-53		1	ye-rd
W-12	31					2.5	br

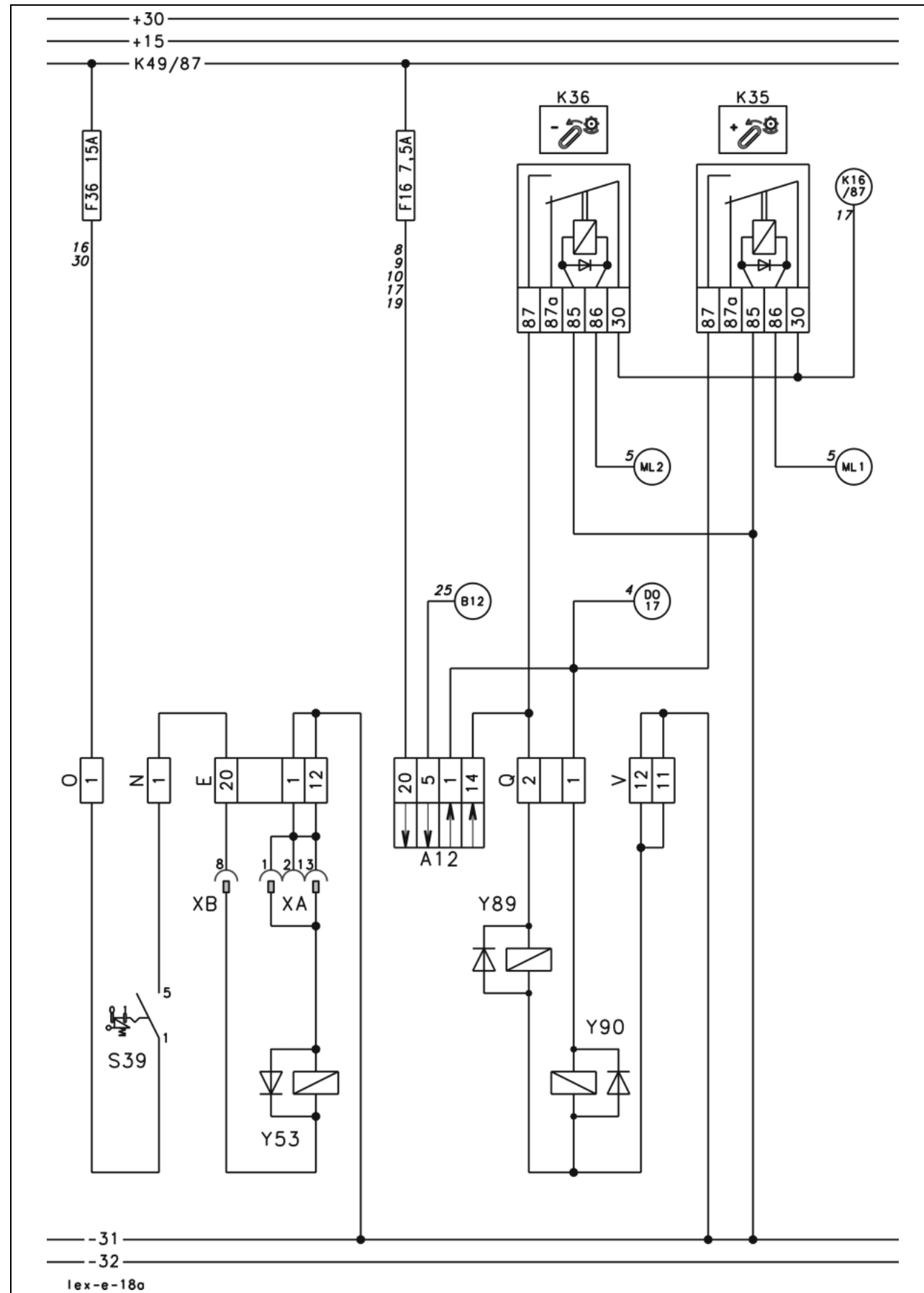
from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
MQ-5	P-8	Do-2	DS-7			1.5	ye-bl
MQ-8	31					2.5	br

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
P-4	K47-TK	R-1				0.5	bl-gn
P-7	K65-87a					1.5	gr
P-8	MQ-5	DO-2	DS-7			1.5	gr
P-12	31					2.5	br

18a

**Front attachment variable speed drive,
Cutter knife circuit rape**

18a - Front attachment variable speed drive, cutter knife circuit rape



Designations:

- A12 Shaft speed monitor module (DZW) 2-h-20
- B12 Feeder housing speed 6-h-16
- K35 Front attachment variable speed drive fast 3-h-20
- K36 Front attachment variable speed drive slow 3-h-20
- S39 Rape seed knife drive left 3-g-17
- XA Multifunction coupling A 8-e-21
- XB Multifunction coupling B 8-e-21
- Y53 Rape seed knife circuit left 8-d-10
6-a-26
- Y89 Front attachment variable speed drive slow 4-m-21
- Y90 Front attachment variable speed drive fast 4-m-21

Measured value table:

Item	Component	Measured value	Note
K35 K36	Remote switching relay 15 A 30 A	95±10 Ω	(Pin 86/1 – 85/2) (Pin 87a/4 – 30/3) (Pin 87/5 – 30/3)
Y53 Y89 Y90	Solenoid coil	3.8 A 3.2 Ω	

Description of functions:

Front attachment variable speed drive

When the threshing mechanism and the cutterbar are turned on, the relays K35 and K36 are supplied with power on pin 30. As long as the rotary switch function preselection (T11) is set to the feeder housing position, the relay K35 or K36 is switched by the pushbuttons +/- (T19/T26) and the corresponding solenoid coil (Y89/Y90) is addressed. Parallel to one of the two solenoid coils (Y89/Y90), the circulation shut-off valve (Y88) is also switched through the diode printed circuit board (DO) because it is necessary to build up pressure in the system for this function.

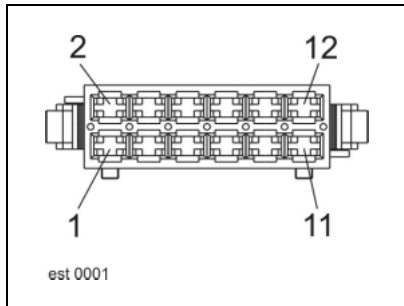
During the automatic crop selection, the shaft speed monitor module (A12) takes over switching the solenoid coils (Y89/Y90) and the control of the circulation shut-off valve (Y88).

Front attachment speed display

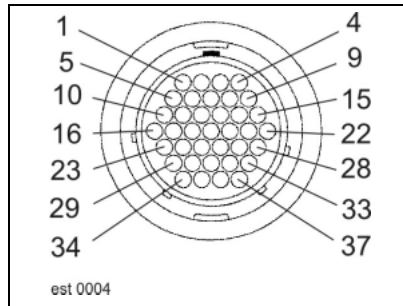
The shaft speed monitor module (A12) converts the analogue signal of the feeder housing shaft speed sensor (B12) into a digital signal, which is displayed through the CAN bus on the terminal (A30).

Pin assignment

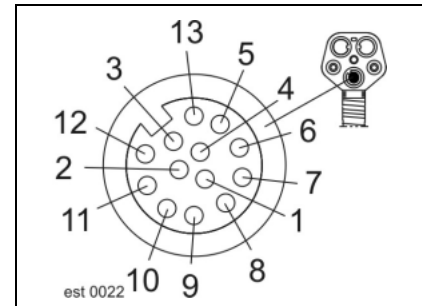
Plug N, O, Q, V



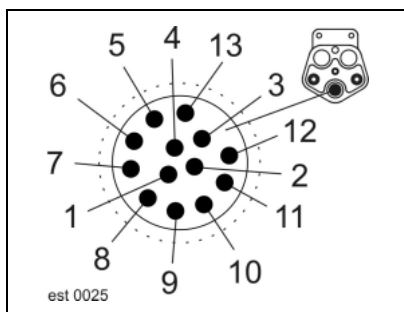
Plug E



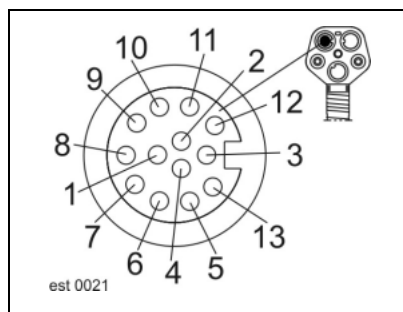
Plug socket XA



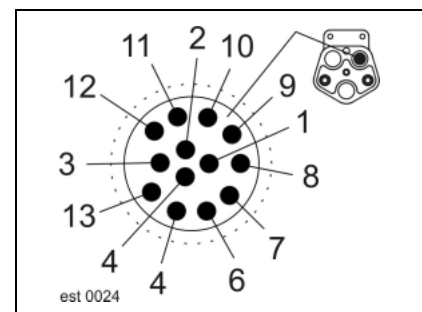
Plug XA



Plug socket XB



Plug XB



Connection list

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
O-1	F36-A					2.5	bk

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
N-1	E-20	H-4				1.5	br-wh

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
E-1	31					1.5	br
E-12	31					1.5	br
E-20	N-1	H-4				1.5	vi

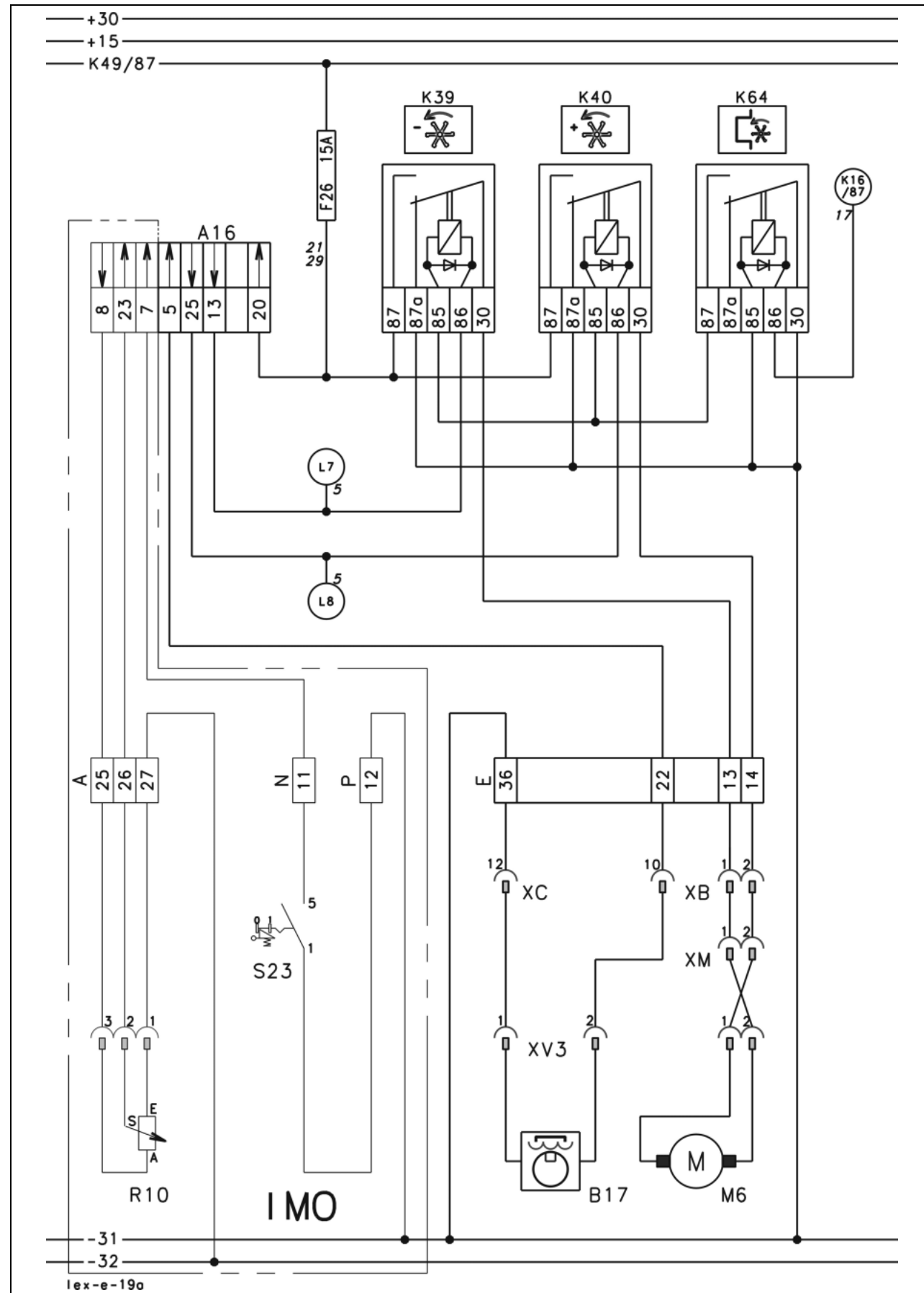
from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
Q-1	K35-87	DZW-1	Do-17			1.5	ye-gr
Q-2	K36-87	DZW-14				1.5	ye-gn

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

19a**Reel variable speed drive****electrical**

up to machine no.	468-0084
	466-1655
	457-0107
	454-4799
	453-2581
	452-1056
	568-0547
	566-0686
	565-0542
	557-0543
	554-0672
	553-0551

19a - Reel variable speed drive - electrical



Designations:

- A16 Reel control module (HAS) 2-h-20
- B17 Reel speed 6-c-10
7-d-10
9-e-26
- K39 Reel speed control slow 3-h-20
- K40 Reel speed control fast 3-h-20
- K64 Lock reel speed control 3-h-20
- M6 Reel speed adjustment 7-e-25
7-e-12
- R10 Reel speed control IMO (setpoint) 3-g-17
- S23 Automatic reel speed - main switch (IMO) 3-g-17
- XB Multifunction coupling B 8-e-21
- XC Multifunction coupling C 8-e-21
- XM Reel speed 8-e-21
- XV3 Variant connector reel functions 8-e-21

Notes:

IMO - only for equipment with IMO terminal

Measured value table:

Item	Component	Measured value	Note
B17	Sensor	1000 - 1200 Ω	inductive
K39 K40	Remote switching relay 40 A 60 A	90±10 Ω	(Pin 86/1 – 85/2) (Pin 87a/4 – 30/3) (Pin 87/5 – 30/3)
K64	Remote switching relay 15 A 30 A	95±10 Ω	(Pin 86/1 – 85/2) (Pin 87a/4 – 30/3) (Pin 87/5 – 30/3)
M6	Electric motor	14 A	current max.
R10	Potentiometer	4.70 KΩ 1.7 - 6.4 KΩ	(Pin A - E) coil (Pin S - E) slider

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.

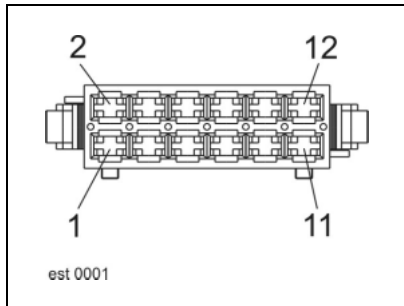
Automatic shaft speed

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).

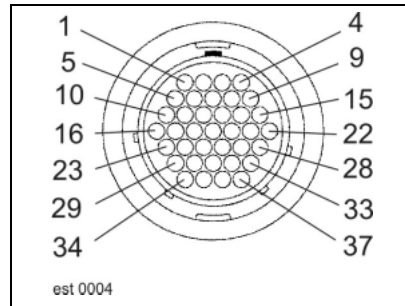
For machines with IMO terminal (A30), the release of the automatic reel speed adjustment is done with the switch S23 and the speed difference is set using the setpoint potentiometer (R10).

Pin assignment

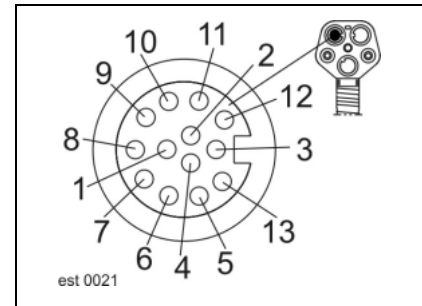
Plug N, P



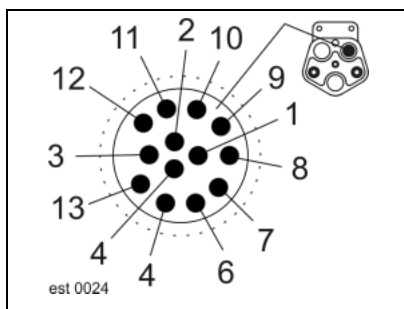
Plug A, E



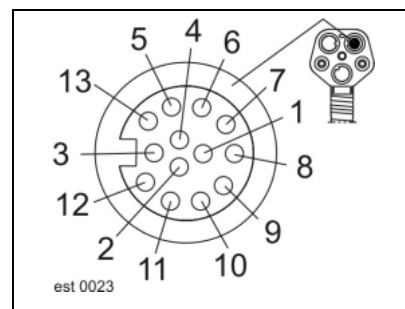
Plug socket XB



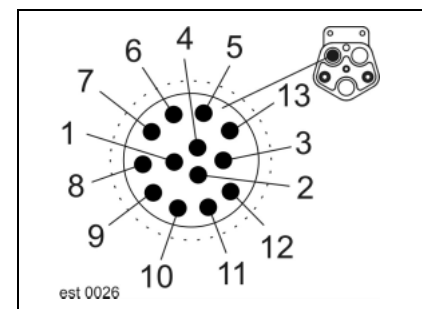
Plug XB



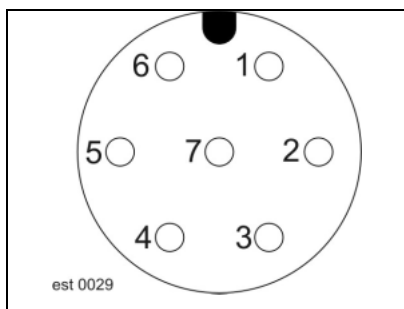
Plug socket XC



Plug XC



Plug XV3



Connection list

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

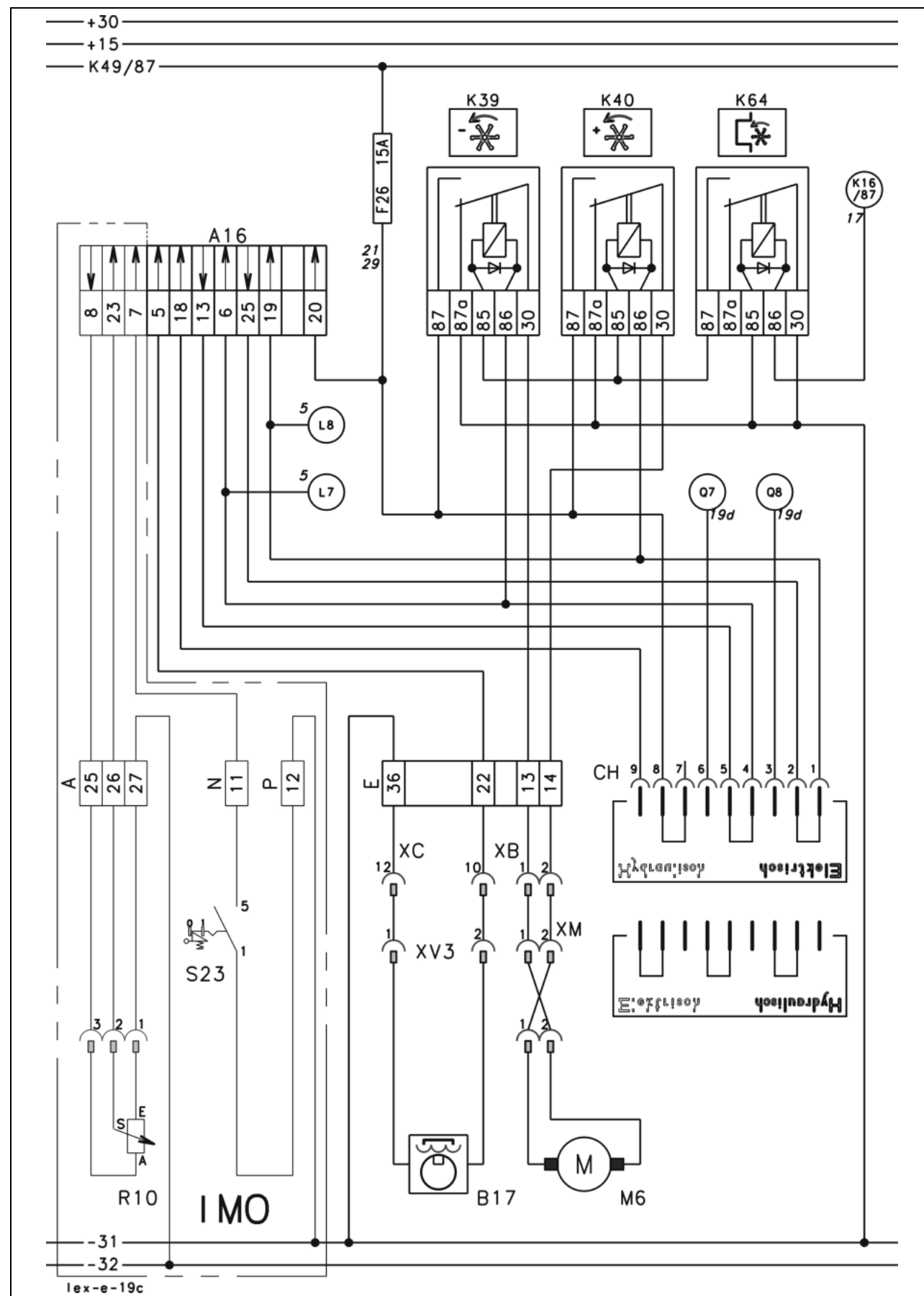
from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
P-12	31					2.5	br

from	to 1	to 2	to 3	to 4	to 5	mm ²	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

19c**Reel variable speed drive,
electrical**

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

19c - Reel variable speed drive, electrical



Designations:

- A16 Reel control module (HAS) 2-h-20
- B17 Reel speed 6-c-10
..... 7-d-10
..... 9-e-2
- CH Plug-in pcb (electrical / hydraulic reel drive) 3-h-20
- K39 Reel speed control slow 3-h-20
- K40 Reel speed control fast 3-h-20
- K64 Lock reel speed control 3-h-20
- M6 Reel speed adjustment 7-e-25
..... 7-e-12
- R10 Reel speed control IMO (setpoint) 3-g-17
- S23 Reel automatic speed - main switch (IMO) 3-g-17
- XB Multifunction coupling B 8-e-21
- XC Multifunction coupling C 8-e-21
- XM Reel speed 8-e-21
- XV3 Variant connector reel functions 8-e-21

Notes:

IMO- only if equipped with IMO screen

Measured value table:

Item	Component	Measured value	Note
B17	Sensor	1000 - 1200 Ω	inductive
K39 K40	Remote switching relay 40 A 60 A	90±10 Ω	(Pin 86/1 – 85/2) (Pin 87a/4 – 30/3) (Pin 87/5 – 30/3)
K64	Remote switching relay 15 A 30 A	95±10 Ω	(Pin 86/1 – 85/2) (Pin 87a/4 – 30/3) (Pin 87/5 – 30/3)
M 6	Electric motor	14 A	Current max.
R10	Potentiometer	4.70 KΩ 1.7 - 6.4 KΩ	(Pin A - E) coil (Pin S - E) slider

Description of functions:


Reel variable speed drive circuit (electric)

When the threshing mechanism and the cutterbar is 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 symbol, 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 or K41, controls the voltage on pin 87.

Note: The plug-in pcb (CH) is used for electric as well as hydraulic reel drive. However, the parts orientation must be observed.

With **electric reel control**, the symbols on the plug-in printed circuit board (CH)

▼  (M) must be brought into correspondence with ▲ the marking on the Central electrics.

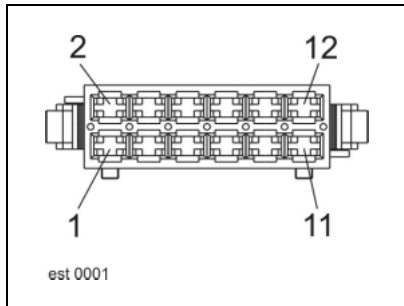
Automatic shaft speed

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).

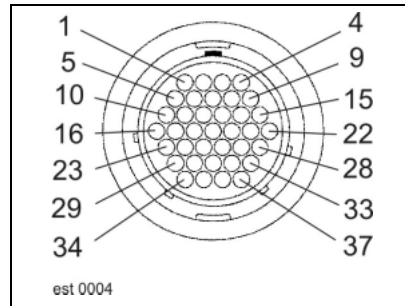
For machines with IMO terminal (A30), the release of the automatic reel speed adjustment is done with the switch S23 and the speed difference is set using the setpoint potentiometer (R10).

Pin assignment

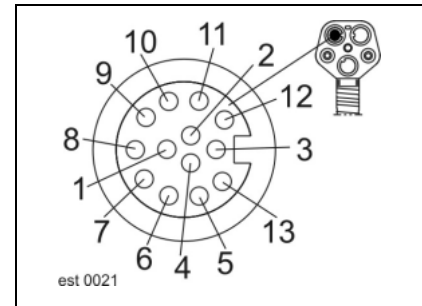
Plug N, P



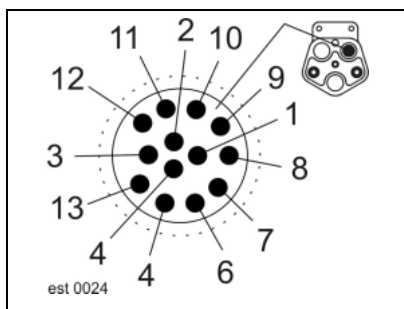
Plug A, E



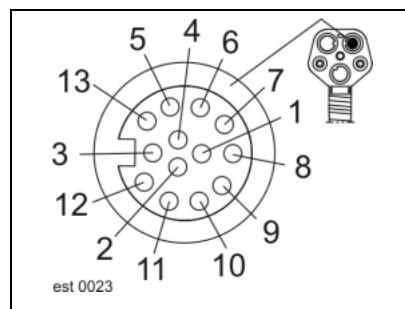
Plug socket XB



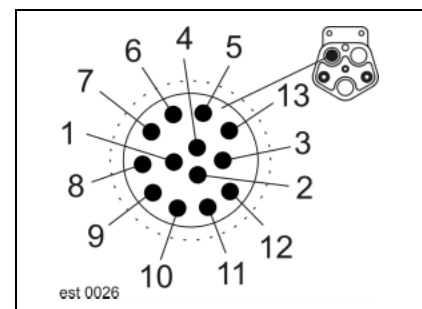
Plug XB



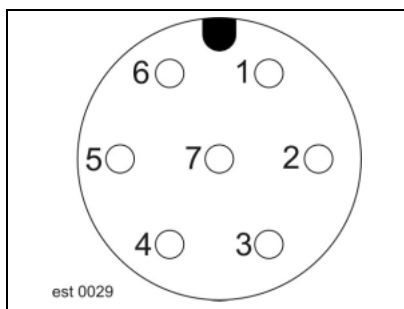
Plug socket XC



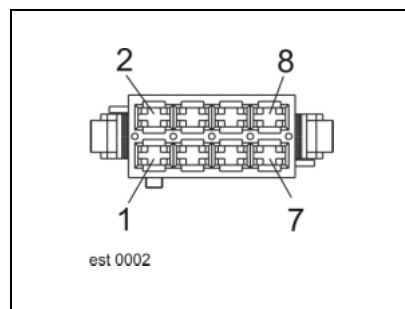
Plug XC



Plug socket XV3



Plug XM



Connection list

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

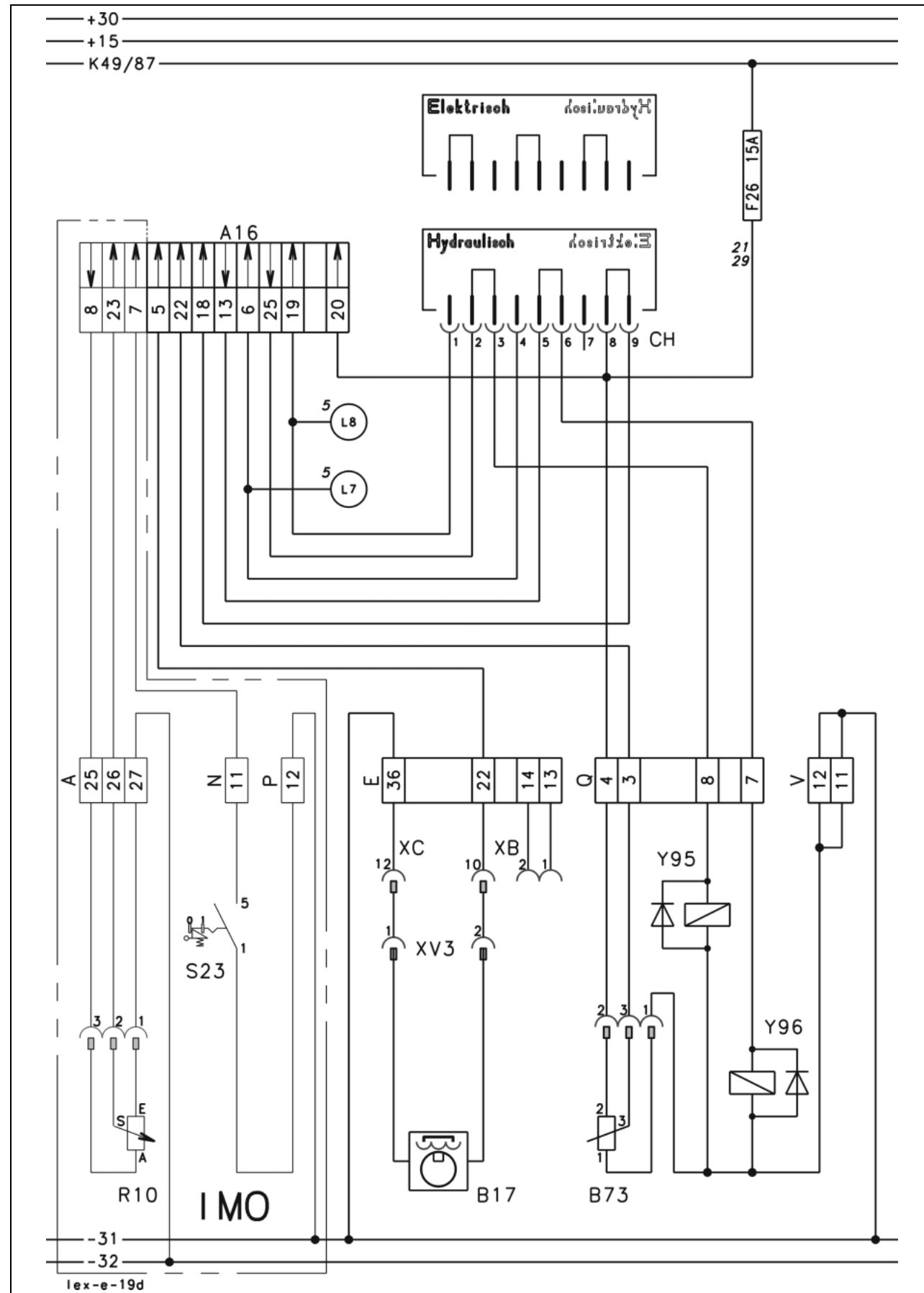
from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
P-12	31					2.5	br

from	to 1	to 2	to 3	to 4	to 5	mm ²	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

19d**Reel variable speed drive, hydraulic**

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

19d - Reel variable speed drive, hydraulic



Designations:

- A16 Reel control module (HAS) 2-h-20
- B17 Reel speed 6-c-10
..... 7-d-10
..... 9-e-26
- B73 Variable displacement pump reel speed control 4-k-20
- CH Plug-in pcb (electrical / hydraulic reel drive) 3-h-20
- R10 Reel speed control IMO (setpoint) 3-g-17
- S23 Reel automatic speed - main switch (IMO) 3-g-17
- XB Multifunction coupling B 8-e-21
- XC Multifunction coupling C 8-e-21
- XV3 Variant connector reel functions 8-e-21
- Y95 Reel speed fast 4-k-20
- Y96 Reel speed slow 4-k-20

Notes:

IMO - only if equipped with IMO screen

Measured value table:

Item	Component	Measured value	Note
B17	Sensor	1000 - 1200 Ω	inductive
B73	Sensor	12 V 0.25 V - 4.75 V	(Pin 1-2) (Pin 1-3)
R10	Potentiometer	4.70 K Ω 1.7 - 6.4 KΩ	(Pin A - E) coil (Pin S - E) slider
Y95 Y96	Solenoid coils	0.75 A 16 Ω	

Description of functions:

Reel variable speed drive circuit (hydraulic)

The hydraulic reel speed control is achieved with an adjustable axial-piston hydraulic pump. The pump drive, and thus the direction of rotation, is dependent on the front attachment.


As long as the rotary switch function preselection (T11) is set to the reel symbol, the pushbuttons +/- send a signal voltage to the reel module A16. The module A16 now controls the solenoid coils Y95 or Y96 through the plug-in pcb (CH), depending on the necessary swivel angle of the adjustment pump (cf. chapter Hydraulics).

The sensor B73 sends the swivel angle of the adjustment pump to the module A16. When adjusting the basic settings of the sensor, it must be made sure that the **signal voltage is 0.5 V** (± 0.1 V) when the piston is fully inserted (the pump has fully swivelled back).

Note: If reversing is activated, a signal is switched in the reel module (A16), setting the variable displacement pump for the reel speed adjustment to maximum supply in the case of hydraulic test reel drive.

Note: The plug-in pcb (CH) is used for electric as well as hydraulic reel drive. However, the parts orientation must be observed.

With **hydraulic reel control**, the symbols on the plug-in printed circuit board (CH)

▼  (M) must be brought into correspondence with
▲ the marking on the Central electrics.

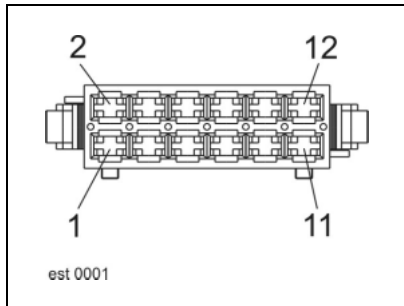
Automatic shaft speed

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).

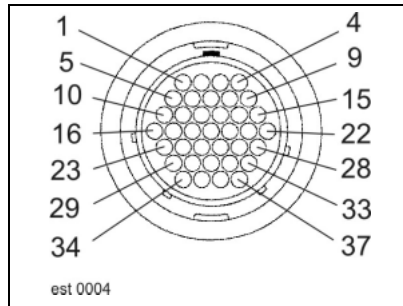
For machines with IMO terminal (A30), the release of the automatic reel speed adjustment is done with the switch (S23) and the speed difference is set using the setpoint potentiometer (R10).

Pin assignment

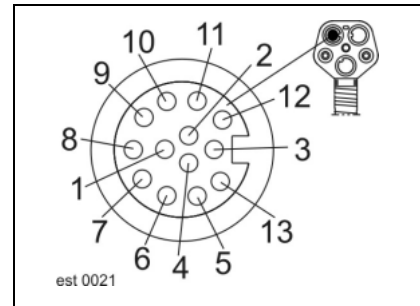
Plug N, P, Q, V



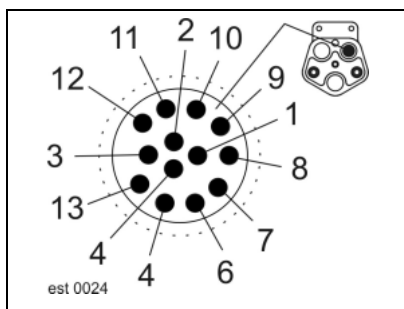
Plug A, E



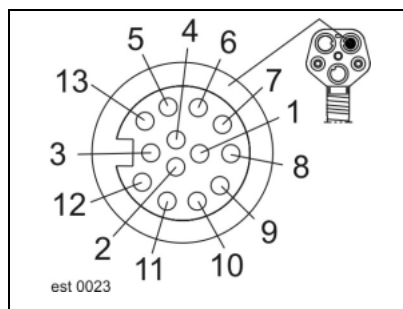
Plug socket XB



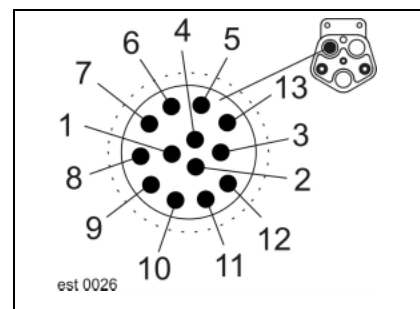
Plug XB



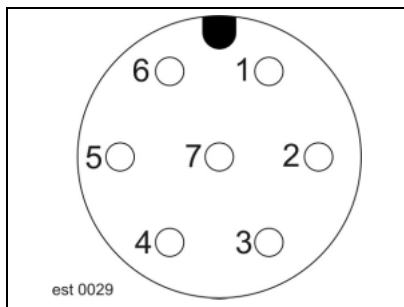
Plug socket XC



Plug XC



Plug XV3



Connection list

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

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

from	to 1	to 2	to 3	to 4	to 5	mm ²	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	mm ²	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

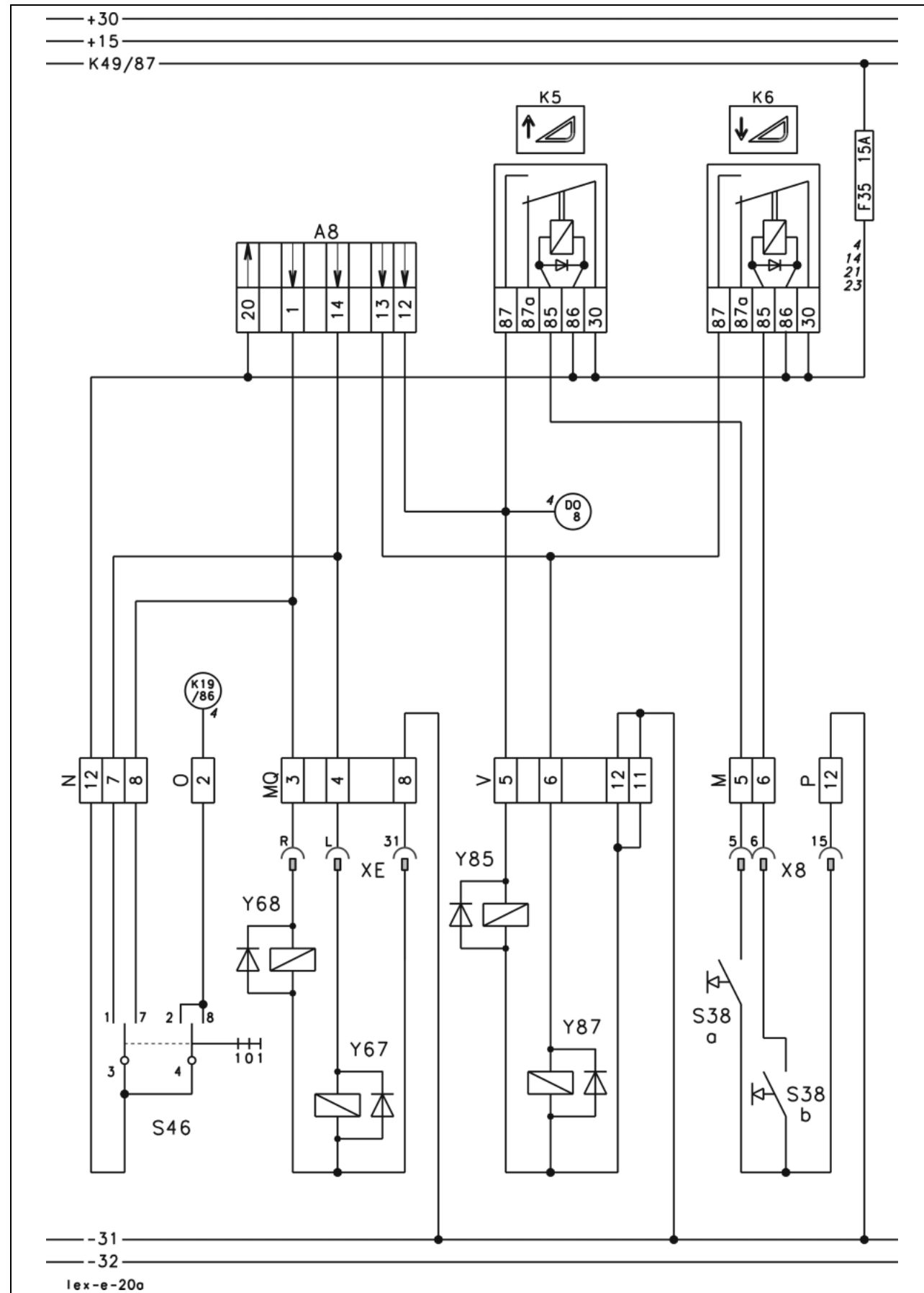
from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
V-11	31					2.5	br
V-12	31					2.5	br

Notes

20a**Raise/lower front attachment,
lateral control**

up to machine no.	468-0084
	466-1655
	457-0107
	454-4799
	453-2581
	452-1056
	568-0547
	566-0686
	565-0542
	557-0543
	554-0672
	553-0551

20a - Raise/lower front attachment, lateral control



Designations:

- A8 AUTOCONTOUR module (CAC) 2-h-20
- K5 Front attachment raise 3-h-20
- K6 Front attachment lower 3-h-20
- S38a Multifunction switch front attachment raise 3-f-18
- S38b Multifunction switch front attachment lower 3-f-18
- S46 Lateral control cutter bar (manual) 3-g-17
- XE Feeder housing 5-f-20
- X8 Ground speed control lever 4-h-17
- Y67 AUTOCONTOUR lateral control left 7-f-20
- Y68 AUTOCONTOUR lateral control right 7-f-20
- Y85 Front attachment raise 6-m-21
- Y87 Front attachment lower 6-m-21

Measured value table:

Item	Component	Measured value	Note
K 5 K 6	Remote switching relay 30 A	200±20 Ω	(Pin 86/1 - 85/2) (Pin 87/5 - 30/3)
Y67 Y68 Y85 Y87	Solenoid coils	3.8 A 3.2 Ω	

Description of functions:

Front attachment raise/lower circuit

When the road transport circuit is unlocked, the relays K5 and K6 are supplied with voltage by the relay K49. The pushbuttons (S38a and S38b) control the corresponding relay K5 or K6 and thus one of the solenoid coils (Y85/Y86). Parallel to the solenoid coil "raise" (Y85), the circulation shut-off valve (Y77) is also switched through the diode pcb (DO) and the relay K19 because it is necessary to build up pressure in the system for this function.

During the automatic guiding of the cutterbar, the AUTOCONTOUR module (A8) switches the corresponding solenoid coils until the setpoints and the actual values of the corresponding potentiometers/sensors agree.

Slowly raise/lower

With the front attachment drive disengaged, the front attachment may be slowly lowered using the cutting height control (S38c) and slowly raised using the pre-set cutting height control (S38d). During this, the corresponding solenoid coil is actuated by the AUTOCONTOUR module (A8) using pulse width modulation (see also circuit diagram 24a).

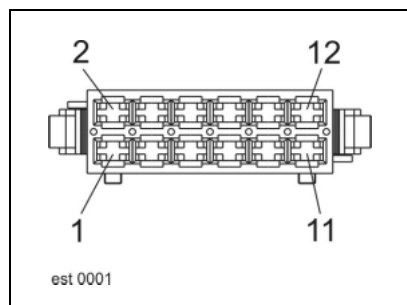
Lateral control circuit

When the road transport circuit is unlocked, the corresponding solenoid coil (Y67/Y68) may be switched by using the tumbler switch (S46). Parallel to the solenoid coils "lateral control" (Y67/Y68), the circulation shut-off valve (Y68) is also switched through the diode pcb (DO) and the relay K19 because it is necessary to build up pressure in the system for this function.

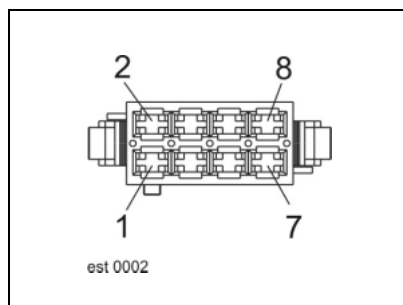
During the automatic guiding of the cutterbar, the AUTOCONTOUR module (A8) switches the corresponding solenoid coils until the setpoints and the actual values of the corresponding potentiometers/sensors agree.

Pin assignment

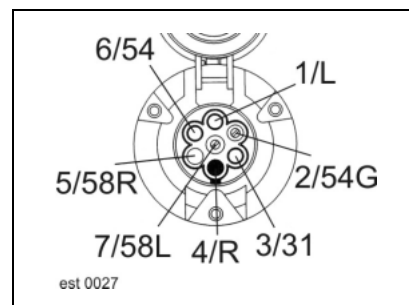
Plug M, N, O, P, V



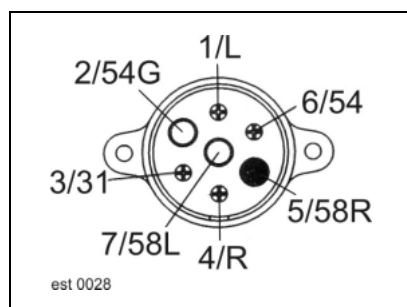
Plug MQ



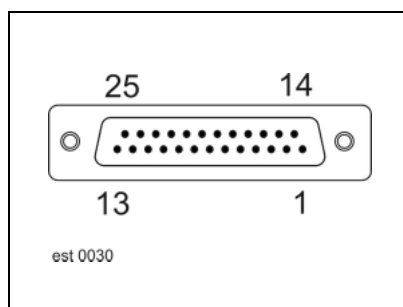
Plug socket XE



Plug XE



Plug X8



Connection list

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
N-7	MQ-4	CAC-14				1.5	gn-wh
N-8	MQ-3	CAC-1				1.5	gn-ye
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	mm ²	Colour
O-2	K19-86	DO-1				0.5	gn-bl

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
MQ-3	N-8	CAC-1				1.5	ye-vi
MQ-4	N-7	CAC-14				1.5	ye-br
MQ-8	31					2.5	br

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
V-5	K5-87	CAC-13	Do-8	DS-5		1.5	wh-rd
V-6	K6-87	CAC-12	DS-6			1.5	wh-bk
V-11	31					2.5	br
V-12	31					2.5	br

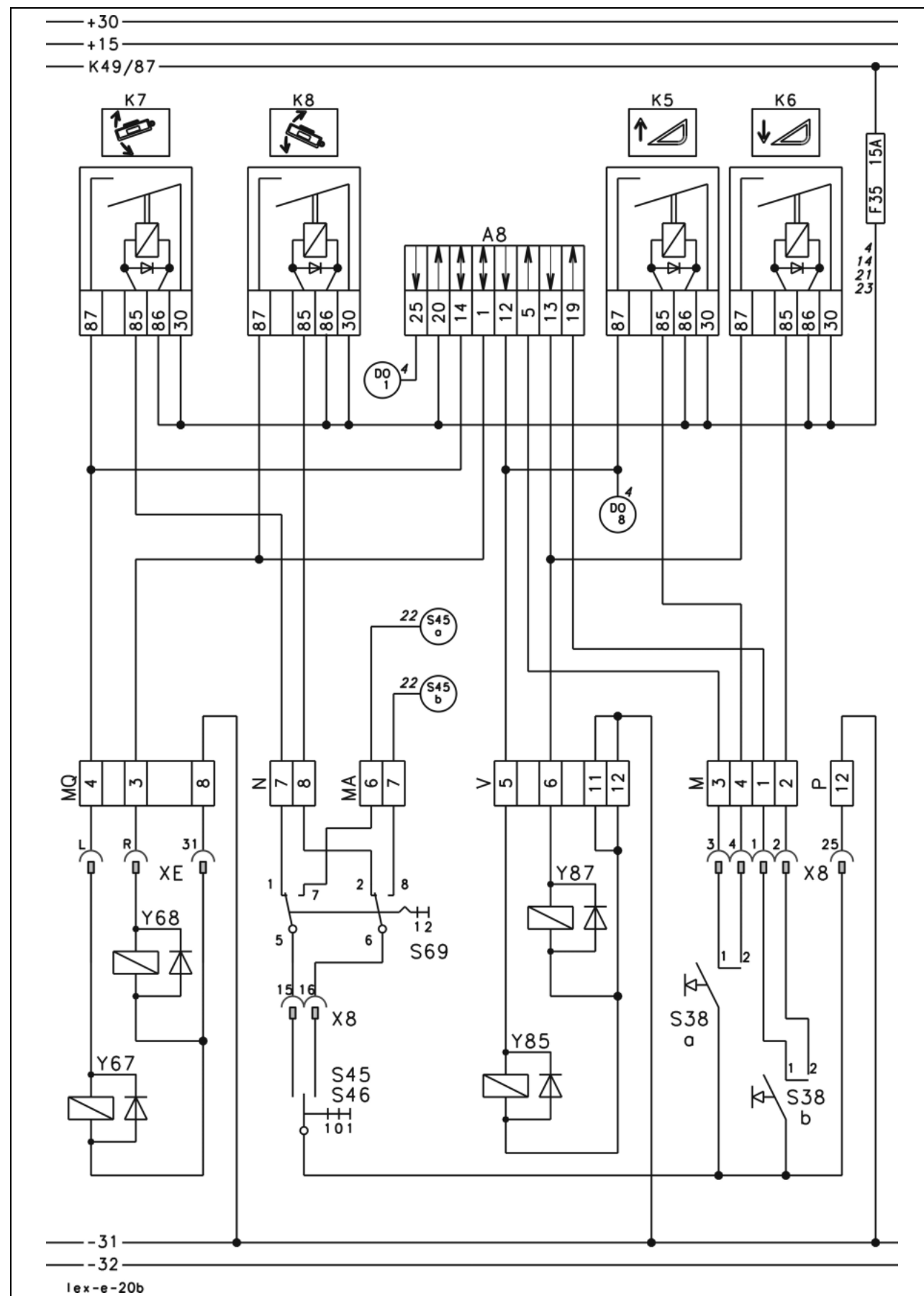
from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
M5	K5-85					0.5	gr-rd
M6	K6-85					0.5	gr-bl

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

20b**Raise/lower front attachment,
lateral control**

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

20b - Raise/lower front attachment, lateral control



Designations:

- A8 AUTOCONTOUR module (CAC) 2-h-20
- K5 Front attachment raise 3-h-20
- K6 Front attachment lower 3-h-20
- K7 Cutter bar lateral control left 3-h-20
- K8 Cutter bar lateral control right 3-h-20
- S38a Multifunction switch front attachment raise 3-f-18
- S38b Multifunction switch front attachment lower 3-f-18
- S45 VARIO cutting table adjustment 3-f-18
- S46 Lateral control cutter bar (manual) 3-g-17
- S69 Lateral control /
table adjustment function pre-selection 3-g-17
- XE Feeder housing 5-f-20
- X8 Ground speed control lever 4-h-17
- Y67 AUTOCONTOUR lateral control left 7-f-20
- Y68 AUTOCONTOUR lateral control right 7-f-20
- Y85 Front attachment raise 6-m-21
- Y87 Front attachment lower 6-m-21

Measured value table:

Item	Component	Measured value	Note
K 5 K 6 K 7 K 8	Remote switching relay 30 A	200±20 Ω	(Pin 86/1 - 85/2) (Pin 87/5 - 30/3)
Y67 Y68 Y85 Y87	Solenoid coils	3.8 A 3.2 Ω	

Description of functions:

Front attachment raise/lower circuit

When the road transport circuit is unlocked, the relays K5 and K6 are supplied with voltage by the relay K49.

The pushbuttons (S38a and S38b) have different pressure levels. If the button is pushed lightly (first pressure level), ground is sent as a signal to the AUTOCONTOUR module (A8). The module (A8) switches the respective solenoid coils (Y85 or Y86) modulated – slow raise/lower function.

If the button (S38a or S38b) is pushed all the way (second pressure level), the corresponding relays K5 or K6, and thus the respective solenoid coils (Y85 or Y86) are switched – fast raise/lower function. Parallel to the solenoid coil "front attachment raise" (Y85), the circulation shut-off valve (Y77) is also switched through the diode pcb (DO) because it is necessary to build up pressure in the system for this function.

During the automatic guiding of the cutterbar, the AUTOCONTOUR module (A8) switches the corresponding solenoid coils until the setpoints and the actual values of the corresponding potentiometers/sensors agree.

Lateral control circuit

When the road transport circuit is unlocked, the relays K7 and K6 are supplied with voltage by the relay K49.

If the switch function preselection (S69) is switched in the position lateral control, the corresponding relay K5 or K6, and thus the respective solenoid coil (Y67/Y68) is switched depending on the switch S46.

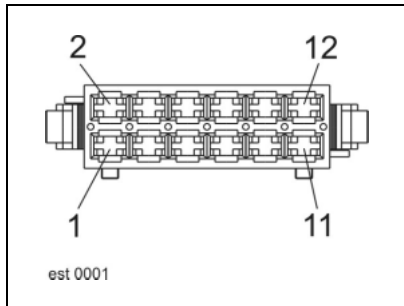
The AUTOCONTOUR module (A8) receives the signal for manual lateral control in parallel with the lateral control solenoid coils (Y67/Y68). Next, the circulation shut-off valve (Y77) is actuated via the diode printed circuit board (DO) by the AUTOCONTOUR module (A8) because this function requires pressure build-up within the system.

During the automatic guiding of the cutter bar, the AUTOCONTOUR module (A8) switches the corresponding solenoid coils until the setpoints and the actual values of the corresponding potentiometers/sensors agree.

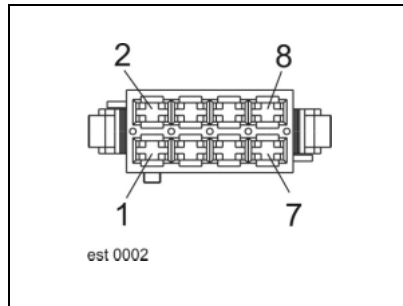
Note: The switch on the bottom of the multifunction controller controls the cutting table adjustment VARIO (S45) as well as the manual cutter bar adjustment (S46), depending on the function preselection switch (S69).

Pin assignment

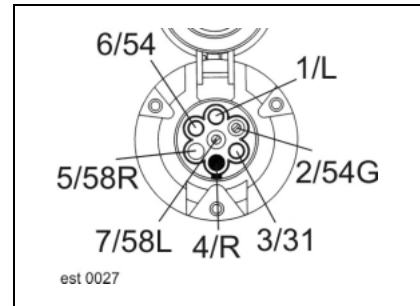
Plug M, MA, N, P, V



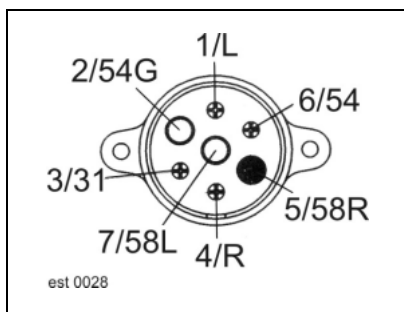
Plug MQ



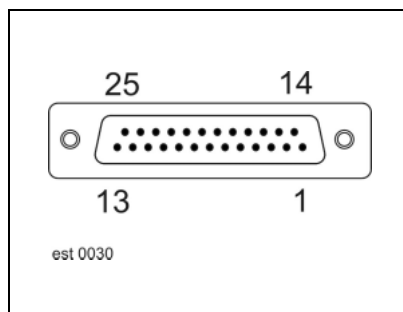
Plug socket XE



Plug XE



Plug X8



Connection list

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
MQ-3	K8-87	CAC-1				1.5	ye-vi
MQ-4	K7-87	CAC-14				1.5	ye-br
MQ-8	31					2.5	br

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
N-7	K7-85					1.5	gn-wh
N-8	K8-85					1.5	gn-ye

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
MA-6	K9-85					1.5	gr-gn
MA-7	K10-85					1.5	gr-br

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
V-5	K5-87	CAC-13	Do-8	DS-5		1.5	wh-rd
V-6	K6-87	CAC-12	DS-6			1.5	wh-bk
V-11	31					2.5	br
V-12	31					2.5	br

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
M-1	CAC-19					0.5	gr-wh
M-2	K6-85					0.5	gr-ye
M-3	CAC-5					0.5	gr-br
M-4	K5-85					0.5	gr-gn

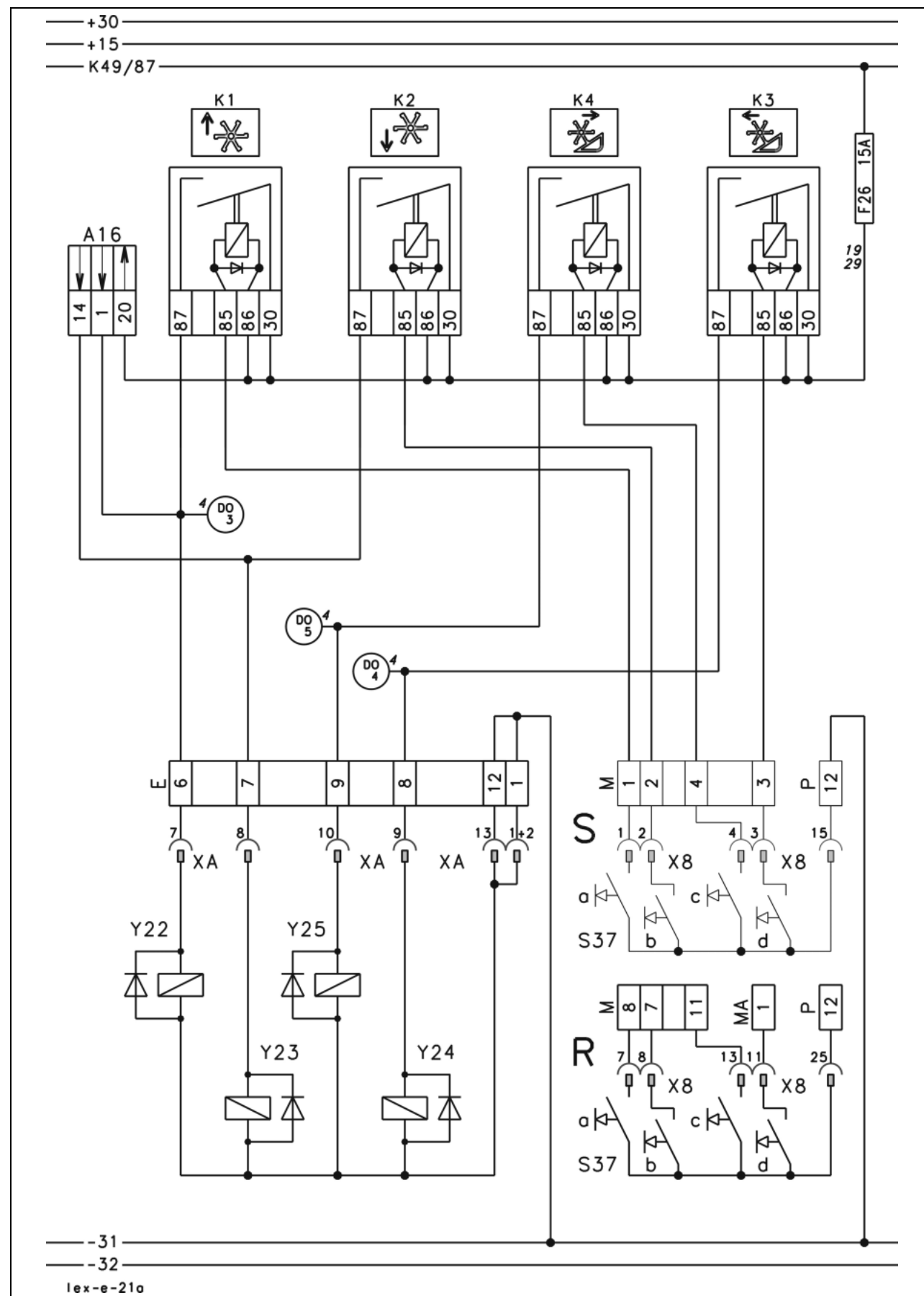
from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
P-12	31					2.5	br

21a

Reel adjustment

Standard cutterbar

21a - Reel adjustment standard cutterbar



Designations:

- A16 Reel control module (HAS) 2-h-20
- K1 Raise reel 3-h-20
- K2 Lower reel 3-h-20
- K3 Reel forward 3-h-20
- K4 Reel back 3-h-20
- S37a Multifunction switch, raise reel 3-f-18
- S37b Multifunction switch, lower reel 3-f-18
- S37c Multifunction switch, reel back 3-f-18
- S37d Multifunction switch, reel forward 3-f-18
- XA Multifunction coupling A 8-e-21
- X8 Ground speed control lever 4-h-17
- Y22 Raise reel 8-e-21
- 8-e-15
- Y23 Lower reel 8-e-21
- 8-e-15
- Y24 Reel forward 8-e-21
- 8-e-15
- Y25 Reel back 8-e-21
- 8-e-15

Notes:

- R - from machine no. 548-0011, 547-0011, 546-0011, 545-0011, 544-0011, 543-0011
- S - up to machine no. 468-0084, 466-1655, 457-0107, 454-4799, 453-2581, 452-1056

Measured value table:

Item	Component	Measured value	Note
K 1 K 2 K 3 K 4	Remote switching relay 30 A	200±20 Ω	(Pin 86/1 - 85/2) (Pin 87/5 - 30/3)
Y22 Y23 Y24 Y25	Solenoid coils	3.8 A 3.2 Ω	

Description of functions:

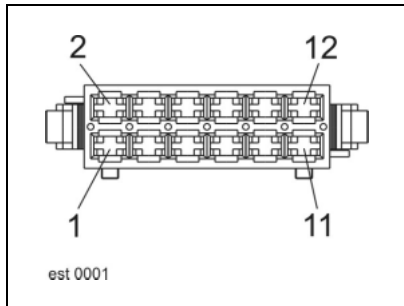
Reel adjustment

When the road travel circuit is unlocked, the relays K1, K2, K3, and K4 are supplied with voltage on pin 30 and pin 86. The corresponding pushbutton (S37a/b/c/d) controls the relay K1, K2, K3 or K4 and thus the respective solenoid coil (Y22/Y23/Y24/25). Parallel to one of the solenoid coils (Y22/Y23/Y24/25), 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.

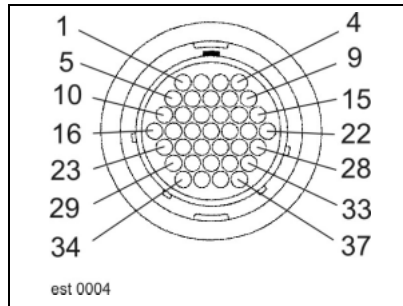
If the automatic cutterbar system is activated in machines with CEBIS, the automatic reel speed module (A16) takes over switching the solenoid coils (Y22/Y23) and controlling the circulation shut-off valve (Y77). In the process, the setting for the reel height in the terminal (A30) is compared to the actual value of the sensor (B39) or the potentiometer (R11) (cf. diagram 24).

Pin assignment

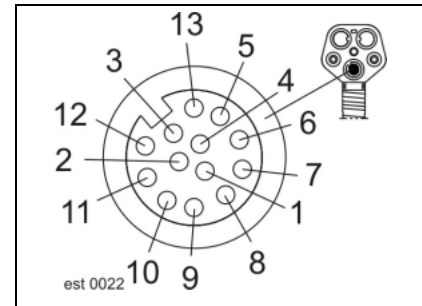
Plug M, MA, P



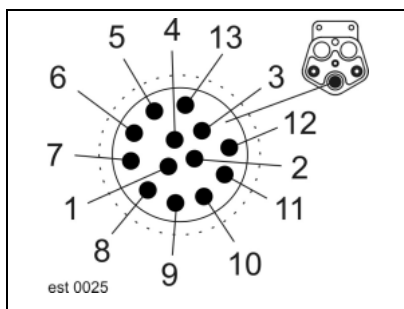
Plug E



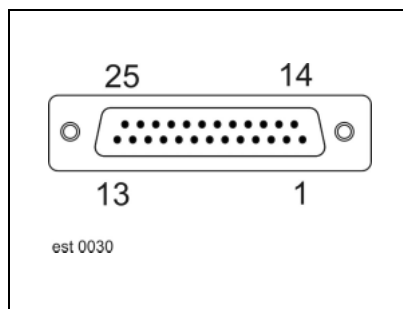
Plug socket XA



Plug XA



Plug X8



Connection list

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
E-1	31					1.5	br
E-6	K1-87	HAS-1	DO-3	DS-20		1.5	gn-gr
E-7	K2-87	HAS-14	DS-21			1.5	gn-wh
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

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
M-1	K1-85					0.5	gr-wh
M-2	K2-85					0.5	gr-ye
M-3	K3-85					0.5	gr-br
M-4	K4-85					0.5	gr-gn

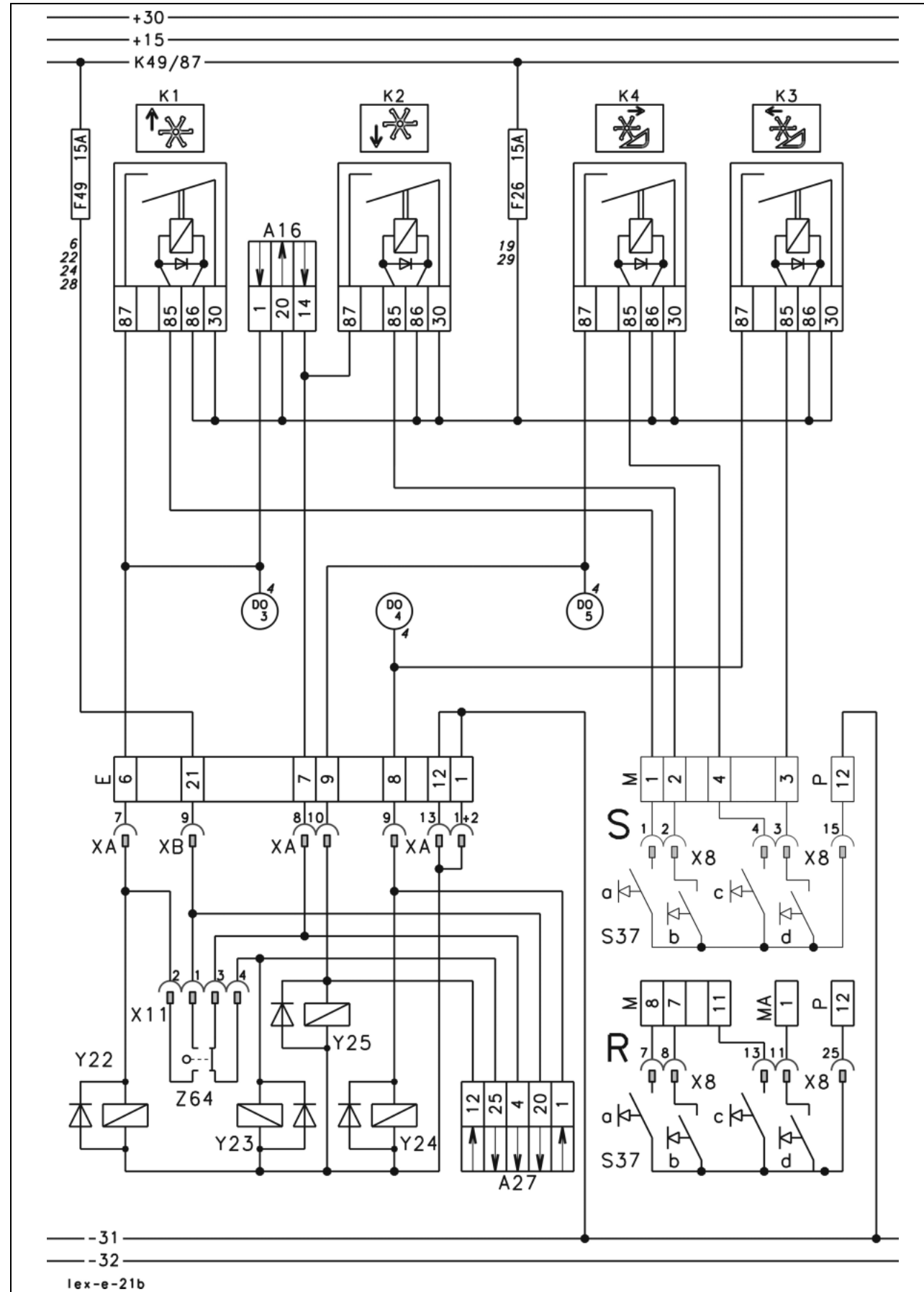
from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
P-12	31					2.5	br

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
R - M-7	K2-85					0.5	bl-vi
R - M-8	K1-85					0.5	gr-bk
R - M-11	K4-85					0.5	gr

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
R - MA-1	K3-85					0.5	wh-ye

21b**Reel adjustment****VARIO cutterbar**

21b - Reel adjustment VARIO cutterbar



Designations:

- A16 Reel control module (HAS) 2-h-20
- A27 VARIO module 8-e-22

- K1 Raise reel 3-h-20
- K2 Lower reel 3-h-20
- K3 Reel forward 3-h-20
- K4 Reel back 3-h-20

- S37a Multifunction switch, raise reel 3-f-18
- S37b Multifunction switch, lower reel 3-f-18
- S37c Multifunction switch, reel back 3-f-18
- S37d Multifunction switch, reel forward 3-f-18

- XA Multifunction coupling A 8-e-21
- XB Multifunction coupling B 8-e-21
- X8 Ground speed control lever 4-h-17
- X11 VARIO cutterbar sensors 8-e-22

- Y22 Raise reel 8-e-21
- 8-e-15
- Y23 Lower reel 8-e-21
- 8-e-15
- Y24 Reel forward 8-e-21
- 8-e-15
- Y25 Reel back 8-e-21
- 8-e-15
- Z64 VARIO reel emergency raise 7-b-25

Notes:

- R - from machine no. 548-0011, 547-0011, 546-0011, 545-0011, 544-0011, 543-0011

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

Measured value table:

Item	Component	Measured value	Note
K 1 K 2 K 3 K 4	Remote switching relay 30 A	200±20 Ω	(Pin 86/1 - 85/2) (Pin 87/5 - 30/3)
Y22 Y23 Y24 Y25	Solenoid coil	3.8 A 3.2 Ω	

Description of functions:

Reel adjustment

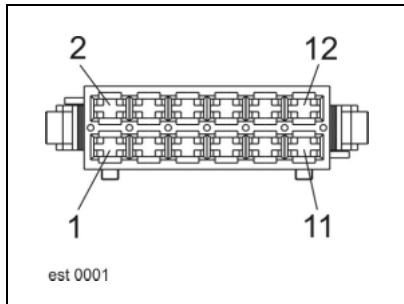
When the road travel circuit is unlocked, the relays K1, K2, K3, and K4 are supplied with voltage on pin 30 and pin 86. The corresponding pushbutton (S37a/b/c/d) controls the relay K1, K2, K3 or K4 and thus the respective solenoid coil (Y22/Y23/Y24/25). Parallel to one of the solenoid coils (Y22/Y24/25), 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.

If the automatic cutterbar system is activated for machines with CEBIS, the module automatic reel system (A16) takes over the adjustment of the reel height while the VARIO module (A27) is responsible for the horizontal adjustment of the cutting table and the reel. To do so, the terminal (A30) compares the given values with the actual values of the sensors (B39/B40/B70) or the potentiometers (R11/R12/R30).

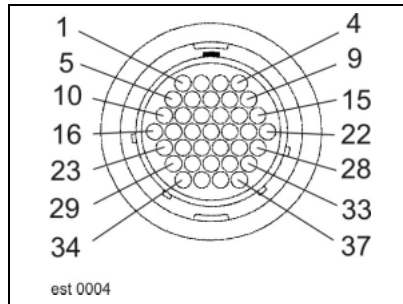
The limit switch (Z64) ensures that the reel always avoids the cutting table horizontally and does not lower itself onto the knife. The limit switch (Z64) on the v-belt spring tensioner prevents the rape position to be started when the v-belt is put on.

Pin assignment

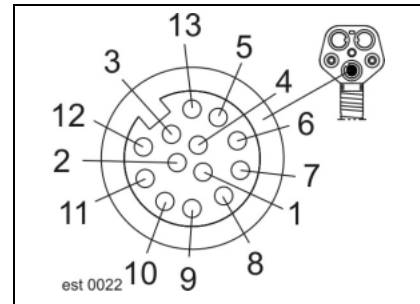
Plug M, MA, P



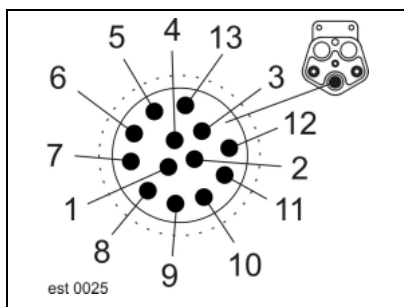
Plug E



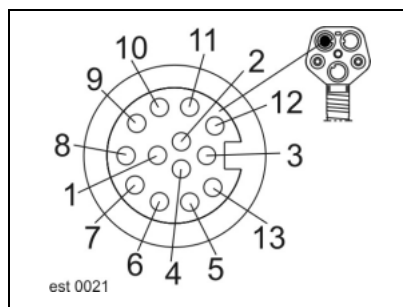
Plug socket XA



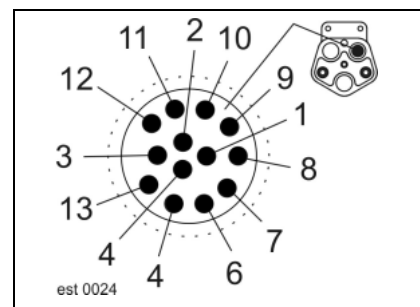
Plug XA



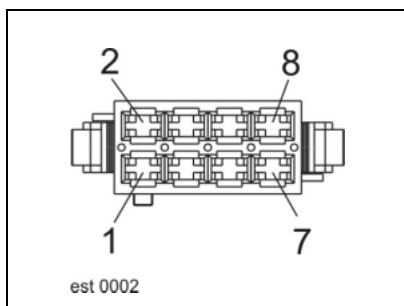
Plug socket XB



Plug XB



Plug X11



Connection list

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
E-1	31					1.5	br
E-6	K1-87	HAS-1	DO-3	DS-20		1.5	gn-gr
E-7	K2-87	HAS-14	DS-21			1.5	gn-wh
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-21	F49-A					1.5	bl

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
M-1	K1-85					0.5	gr-wh
M-2	K2-85					0.5	gr-ye
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	mm ²	Colour
P-12	31					2.5	br

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
R - M-7	K2-85					0.5	bl-vi
R - M-8	K1-85					0.5	gr-bk
R - M-11	K4-85					0.5	gr

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
R - MA-1	K3-85					0.5	wh-ye

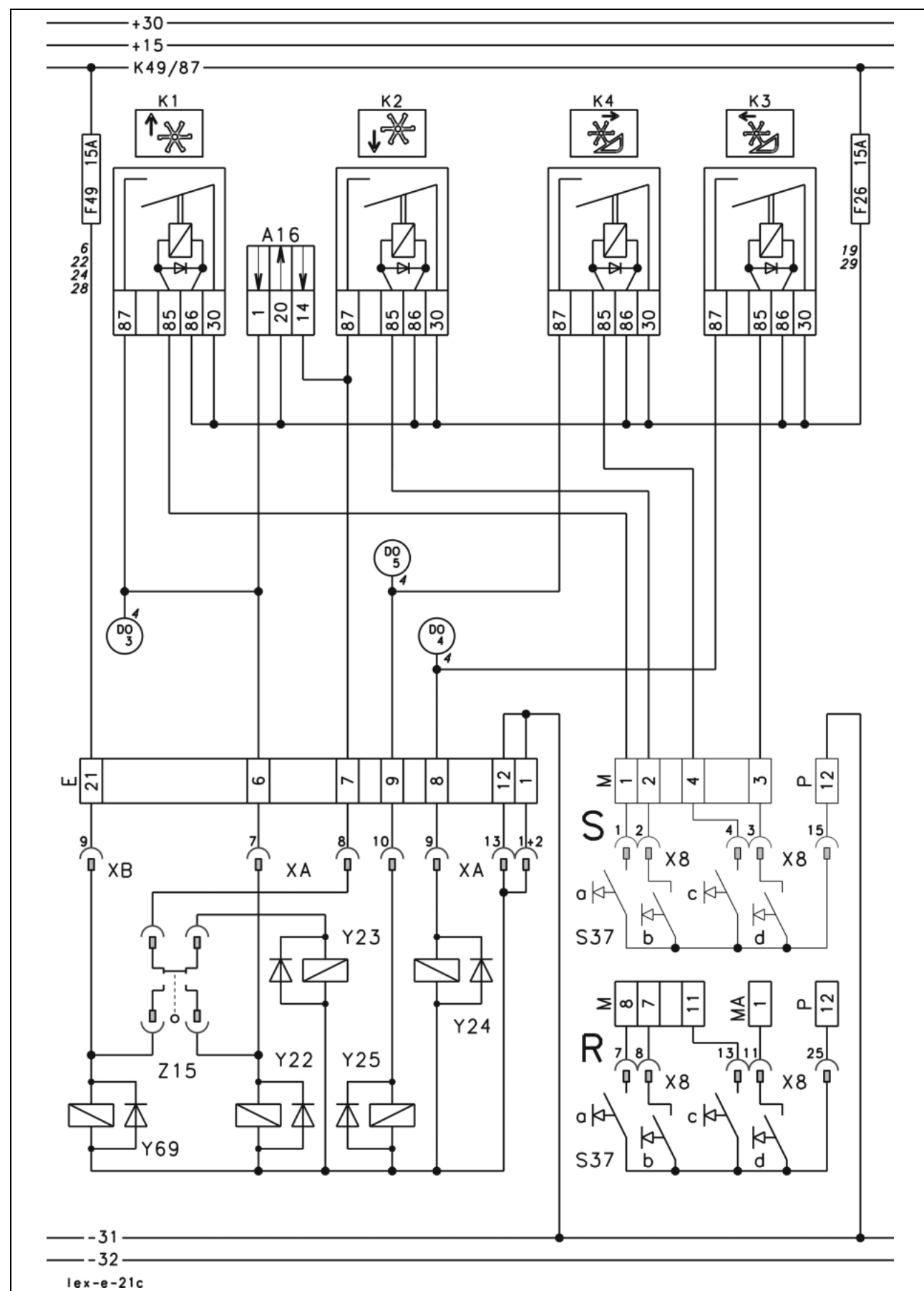
Notes

21c

Reel adjustment

Folding cutterbar

21c -Reel adjustment folding cutterbar



Designations:

- A16 Reel control module (HAS) 2-h-20
- K1 Raise reel 3-h-20
- K2 Lower reel 3-h-20
- K3 Reel forward 3-h-20
- K4 Reel back 3-h-20
- S37a Multifunction switch, raise reel 3-f-18
- S37b Multifunction switch, lower reel 3-f-18
- S37c Multifunction switch, reel back 3-f-18
- S37d Multifunction switch, reel forward 3-f-18
- XA Multifunction coupling A 8-e-21
- XB Multifunction coupling B 8-e-21
- X8 Ground speed control lever 4-h-17
- Y22 Raise reel 8-e-21
- 8-e-15
- Y23 Lower reel 8-e-21
- 8-e-15
- Y24 Reel forward 8-e-21
- 8-e-15
- Y25 Reel back 8-e-21
- 8-e-15
- Y69 Cutterbar shut-off valve (folding) 8-e-15
- Z15 Reel drive shaft guard 7-d-25

Notes:

- R - from machine no. 548-0011, 547-0011, 546-0011, 545-0011, 544-0011, 543-0011
- S - up to machine no. 468-0084, 466-1655, 457-0107, 454-4799, 453-2581, 452-1056

Measured value table:

Item	Component	Measured value	Note
K 1 K 2 K 3 K 4	Remote switching relay 30 A	200±20 Ω	(Pin 86/1 - 85/2) (Pin 87/5 - 30/3)
Y22 Y23 Y24 Y25 Y69	Solenoid coil	3.8 A 3.2 Ω	

Description of functions:

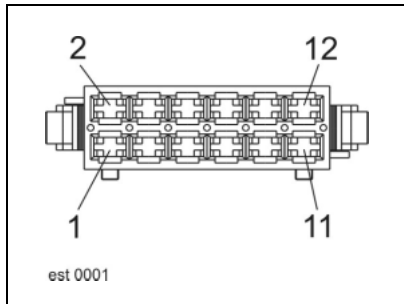
Reel adjustment

When the road travel circuit is unlocked, the relays K1, K2, K3, and K4 are supplied with voltage on pin 30 and pin 86. The corresponding pushbutton (S37a/b/c/d) controls the relay K1, K2, K3 or K4 and thus the respective solenoid coil (Y22/Y23/Y24/25). Parallel to one of the solenoid coils (Y22/Y24/25), 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. If the automatic cutterbar system is activated in machines with CEBIS, the automatic reel speed module (A16) takes over switching the solenoid coils (Y22/Y23) and controlling the circulation shut-off valve (Y77). In the process, the setting for the reel height in the terminal (A30) is compared to the actual value of the sensor (B39) or the potentiometer (R11) (cf. diagram 24).

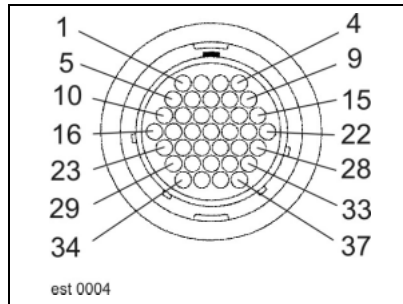
Note: All hydraulic functions of the cutterbar are only supplied with oil if the shut-off valve (Y69) is opened by the road travel circuit. Furthermore, the reel is automatically lowered by the limit switch (Z15) if there is a risk of the universal drive shaft being damaged. In this position, the reel also cannot be lifted further.

Pin assignment

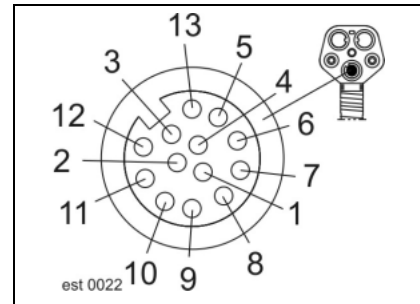
Plug M, MA, P



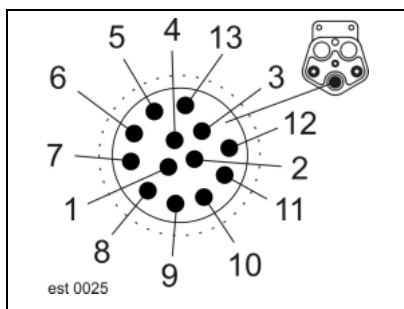
Plug E



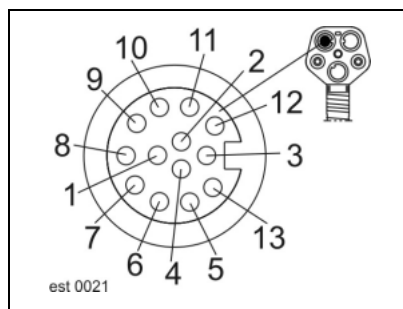
Plug socket XA



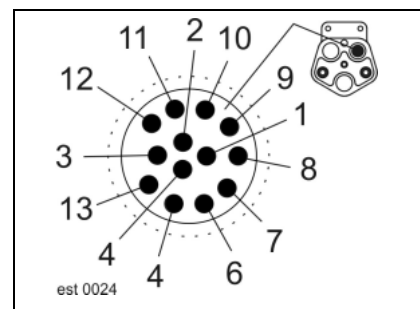
Plug XA



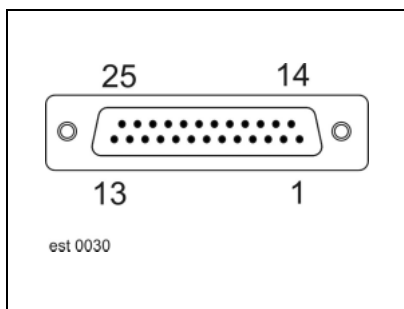
Plug socket XB



Plug XB



Plug X8



Connection list

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
E-1	31					1.5	br
E-6	K1-87	HAS-1	DO-3	DS-20		1.5	gn-gr
E-7	K2-87	HAS-14	DS-21			1.5	gn-wh
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-21	F49-A					1.5	bl

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
M-1	K1-85					0.5	gr-wh
M-2	K2-85					0.5	gr-ye
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	mm ²	Colour
P-12	31					2.5	br

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
R - M-7	K2-85					0.5	bl-vi
R - M-8	K1-85					0.5	gr-bk
R - M-11	K4-85					0.5	gr

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
R - MA-1	K3-85					0.5	wh-ye

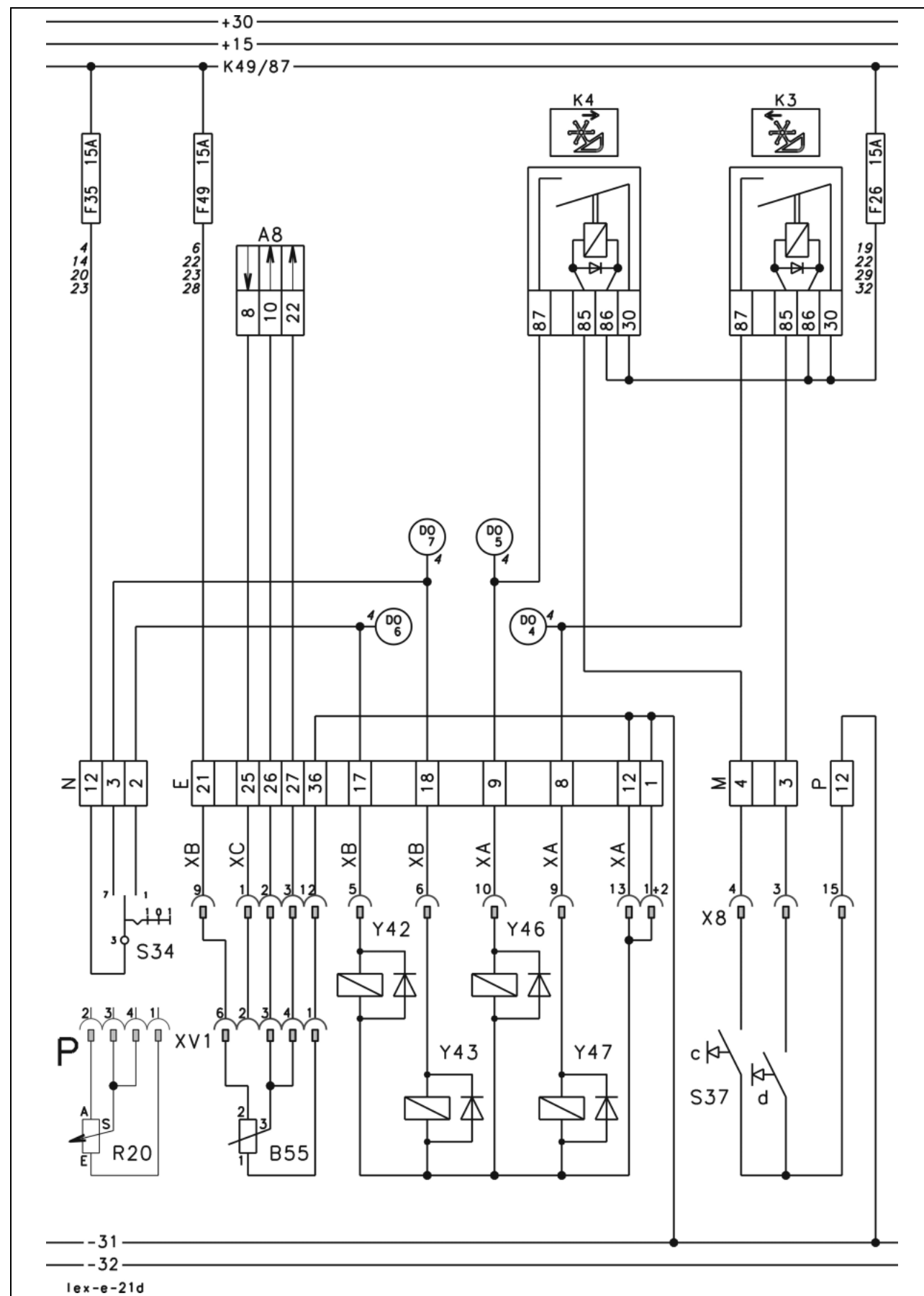
Notes

21d**Fold maize picker head,
snapping plate adjustment**

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

568-0547
566-0686
565-0542
557-0543
554-0672
553-0551

21d - Fold maize picker head, snapping plate adjustment



Designations:

- A8 AUTOCONTOUR module (CAC) 2-h-20
- B55 Snapping plate position 9-d-17
- K3 Reel fore 3-h-20
- K4 Reel back 3-h-20
- R20 Snapping plate position (actual value) 9-d-17
- S34 Fold maize picker head 3-g-17
- S37c Multifunction switch, reel back 3-f-18
- S37d Multifunction switch, reel fore 3-f-18
- XA Multifunction coupling A 8-e-21
- XB Multifunction coupling B 8-e-21
- XC Multifunction coupling C 8-e-21
- XV1 Variant connector AUTOCONTOUR 8-e-21
- X8 Ground speed control lever 4-h-17
- Y42 Fold maize picker head to working position 8-e-21
- Y43 Fold maize picker head to transport position 8-e-21
- Y46 Snapping plate gap narrow 8-e-21
- Y47 Snapping plate gap wide 8-e-21

Notes:

P - if equipped with potentiometer (5V system)

Measured value table:

Item	Component	Measured value	Note
B55	Sensor	12 V 0.25 V - 4.75 V	(Pin 1-2) (Pin 1-3)
K 3 K 4	Remote switching relay 30 A	200±20 Ω	(Pin 86/1 - 85/2) (Pin 87/5 - 30/3)
R20	Potentiometer	4.25 KΩ 1.50 - 5.75 KΩ	(Pin A - E) coil (Pin S - E) slider
Y42 Y43 Y46 Y47	Solenoid coils	3.8 A 3.2 Ω	

Description of functions:

Fold maize picker
head/snapping plate
adjustment circuit

When the road transport circuit is unlocked, the relays K3, K4 and the switch fold maize picker head (S34) are supplied with voltage by the relay K49.

The pushbuttons (37c/37d) switch one of the two solenoid coils (Y46/Y47) via the corresponding relay K3 or K4 in order to adjust the snapping plate while the switch (S34) directly addresses the solenoid coils (Y42/Y43) in order to fold the maize picker head. Parallel to one of the solenoid coils (Y42/Y43/Y46/47), the circulation shut-off valve (Y77) is switched through the diode pcb (DO) because it is necessary to build up pressure in the system for this function.

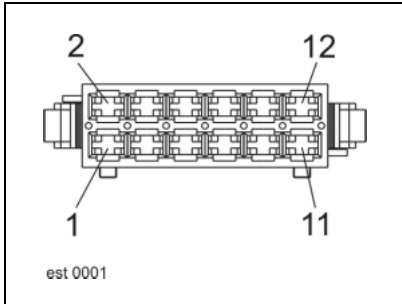
The auto contour module (A8) converts the analogue signal of the sensor (B55) or the potentiometer (R20) into a digital signal, which is displayed through the CAN bus on the terminal (A30).

The sensor (B55) receives the necessary 12V reference voltage from the closed main relay, road transport, K49.

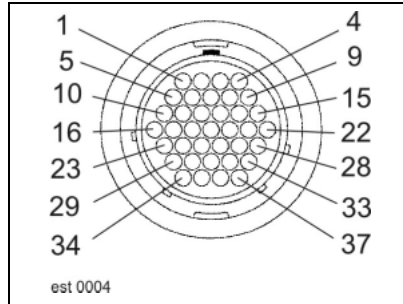
The potentiometer (R20) receives the necessary 5V reference voltage from the module Auto Contour (A8).

Pin assignment

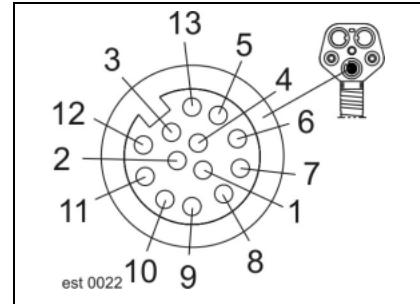
Plug M, N, P



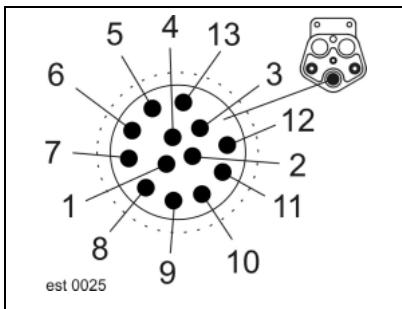
Plug E



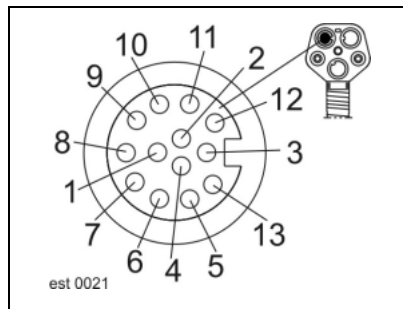
Plug socket XA



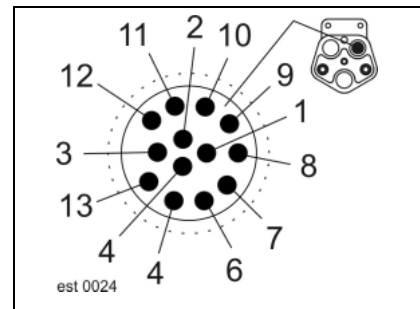
Plug XA



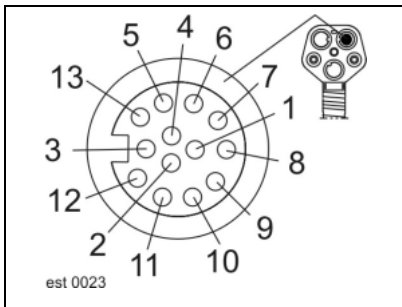
Plug socket XB



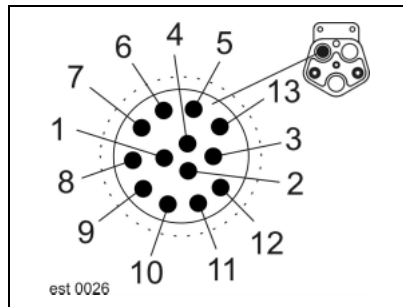
Plug XB



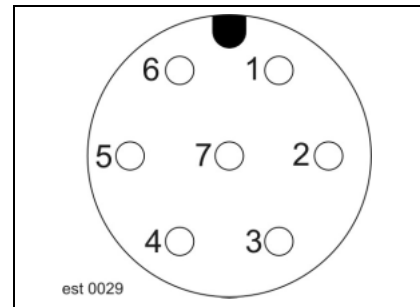
Plug socket XC



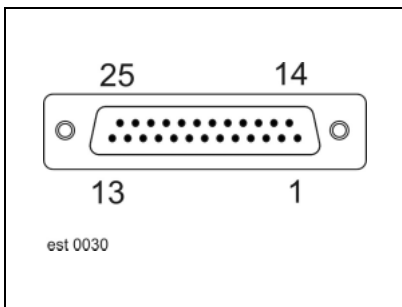
Plug XC



Plug XV1



Plug X8



Connection list

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

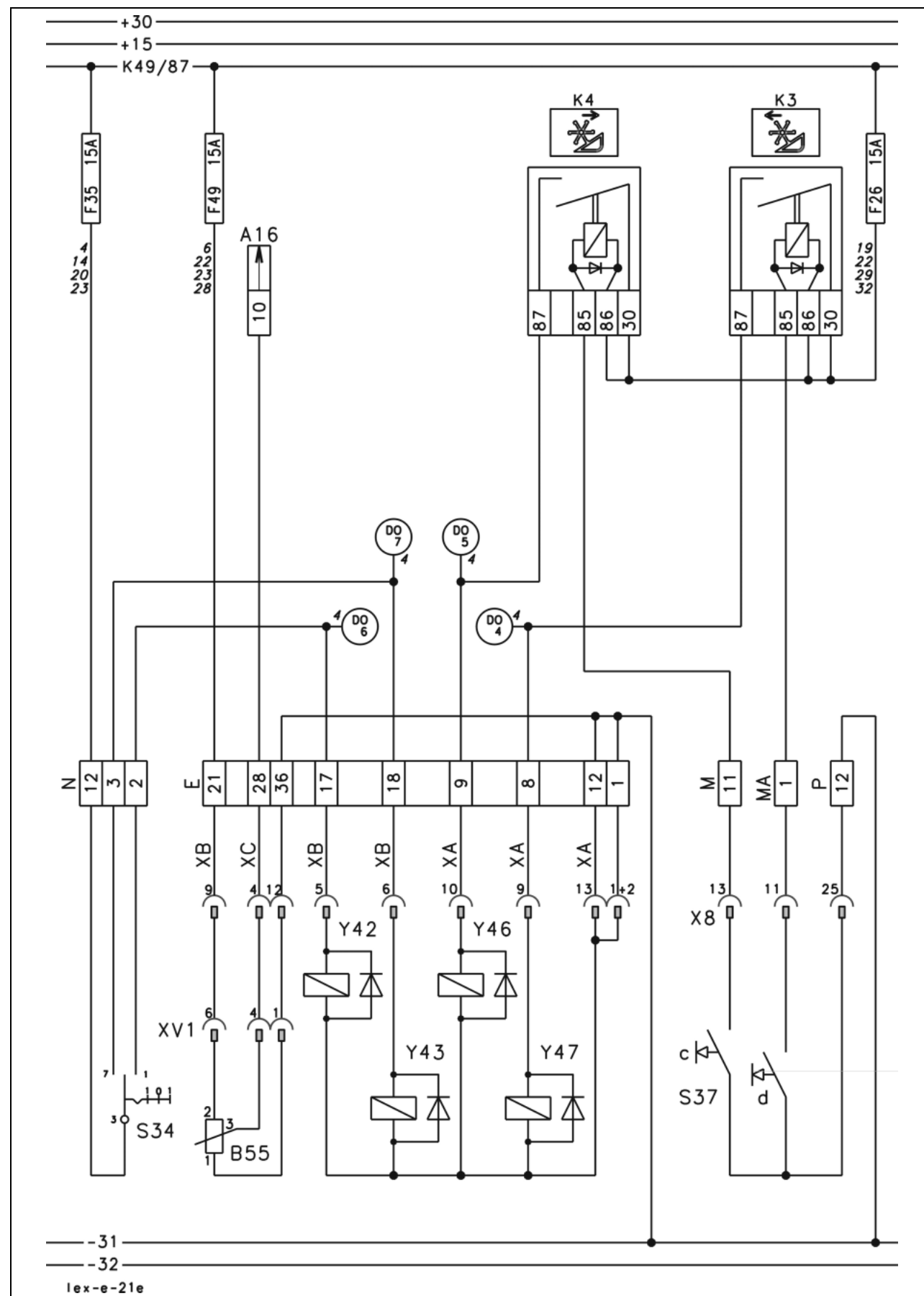
Notes

21e**Fold maize picker head,
Snapping plate adjustment**

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

21e- Fold maize picker head, snapping plate adjustment



Designations:

- A8 AUTOCONTOUR (CAC) module 2-h-20
- A16 Reel control module (HAS) 2-h-20

- B55 Snapping plate position 9-d-17

- K3 Reel forward 3-h-20
- K4 Reel back 3-h-20

- R20 Snapping plate position (actual value) 9-d-17

- S34 Fold maize picker head 3-g-17
- S37c Multifunction switch, reel back 3-f-18
- S37d Multifunction switch, reel forward 3-f-18

- XA Multifunction coupling A 8-e-21
- XB Multifunction coupling B 8-e-21
- XC Multifunction coupling C 8-e-21
- XV1 Variant connector AUTOCONTOUR 8-e-21
- X8 Ground speed control lever 4-h-17

- Y42 Fold maize picker head to working position 8-e-21
- Y43 Fold maize picker head to transport position 8-e-21
- Y46 Snapping plate gap narrow 8-e-21
- Y47 Snapping plate gap wide 8-e-21

Measured value table:

Item	Component	Measured value	Note
B55	Sensor	12 V 0.25 V - 4.75 V	(Pin 1-2) (Pin 1-3)
K 3 K 4	Remote switching relay	200±20Ω 30 A	(Pin 86/1 - 85/2) (Pin 87/5 - 30/3)
R20	Potentiometer	4.25 KΩ 1.50 - 5.75 KΩ	(Pin A - E) coil (Pin S - E) slider
Y42 Y43 Y46 Y47	Solenoid coils	3.8 A 3.2 Ω	

Description of functions:

Fold maize picker head/
snapping plate adjustment

When the road travel circuit is unlocked, the relays K3, K4 and the switch fold maize picker head (S34) are supplied with voltage by the relay K49.

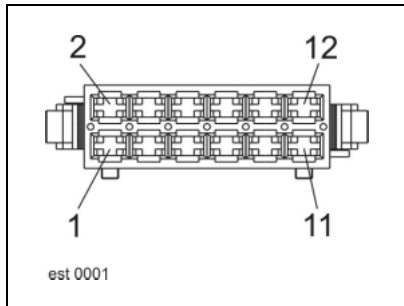
The pushbuttons (37c/37d) switch one of the two solenoid coils (Y46/Y47) via the corresponding relay K3 or K4 in order to adjust the snapping plate while the switch (S34) directly addresses the solenoid coils (Y42/Y43) in order to fold the picker head. Parallel to one of the solenoid coils (Y42/Y43/Y46/47), the circulation shut-off valve (Y77) is switched through the diode printed circuit board (DO) because it is necessary to build up pressure in the system for this function.

The module reel control (HAS) (A16) converts the analogue signal of the sensor (B55) into a digital signal, which is displayed through the CAN bus on the terminal (A30).

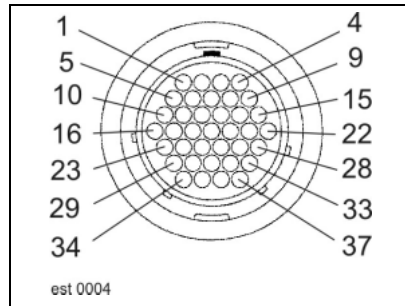
The sensor (B55) receives the necessary 12V reference voltage from the closed main relay, road transport, K49.

Pin assignment

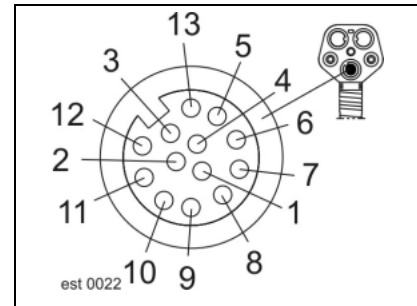
Plug M, N, P



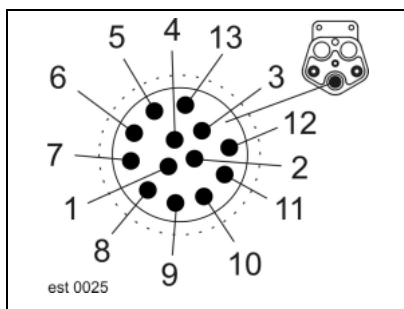
Plug E



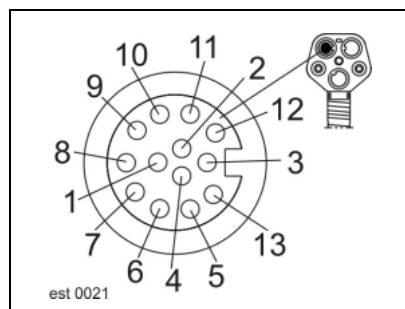
Plug socket XA



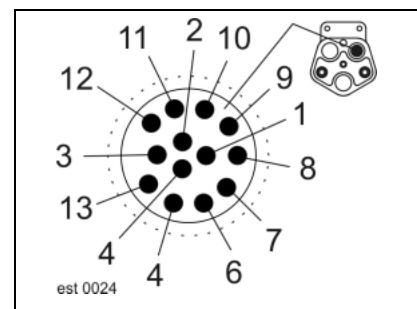
Plug XA



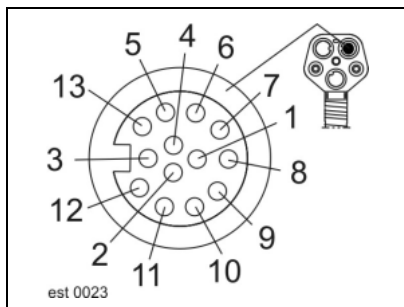
Plug socket XB



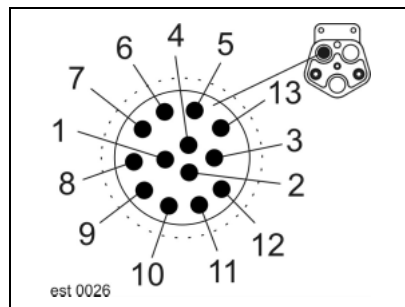
Plug XB



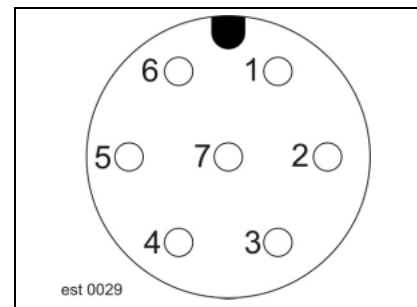
Plug socket XC



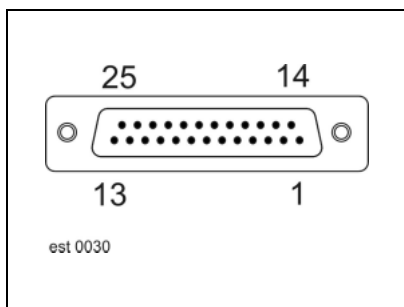
Plug XC



Plug XV1



Plug X8



Connection list

from	to 1	to 2	to 3	to 4	to 5	mm ²	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	mm ²	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-28	HAS-10					0.75	bl-wh
E-36	31					1.5	br

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
M-11	K4-85					0.5	gr

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
MA-1	K3-85					0.5	wh-ye

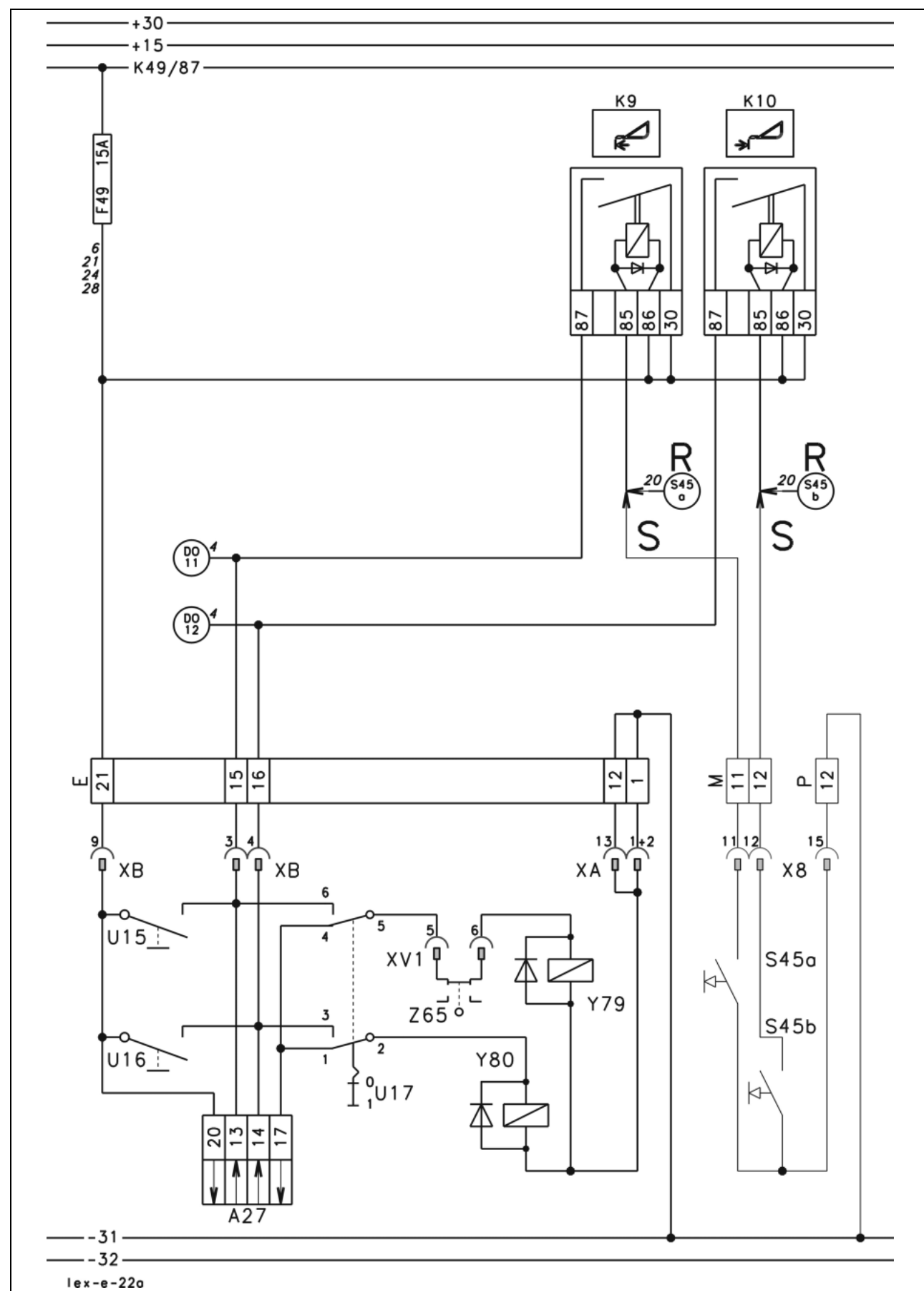
from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
P-12	31					2.5	br

Notes

22a

Cutting table adjustment

22a - Cutting table adjustment



Designations:

- A27 VARIO module 8-e-22
- K9 Cutting table adjustment VARIO back 3-h-20
- K10 Cutting table adjustment VARIO forward 3-h-20
- S45a Cutting table adjustment VARIO forward 3-f-18
- S45b Cutting table adjustment VARIO backward 3-f-18
- U15 VARIO cutting table forward 8-e-21
- U16 VARIO cutting table back 8-e-21
- U17 VARIO cutting table lock 8-e-21
- XA Multifunction coupling A 8-e-21
- XB Multifunction coupling B 8-e-21
- XV1 Variant connector AUTOCONTOUR 8-e-21
- X8 Ground speed control lever 4-h-17
- Y79 VARIO cutting table forward 8-e-21
- Y80 VARIO cutting table back 8-e-21
- Z65 VARIO cutting table end position 9-e-25

Notes:

- R - from machine no. 548-0011, 547-0011, 546-0011, 545-0011, 544-0011, 543-0011
- S - up to machine no. 468-0084, 466-1655, 457-0107, 454-4799, 453-2581, 452-1056

Measured value table:

Item	Component	Measured value	Note
K 9 K10	Remote control relay 30 A	110±20 Ω	(Pin 86/1 - 85/2) (Pin 87/5 - 30/3)
Y79 Y80	Solenoid coil	3.8 A 3.2 Ω	

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.

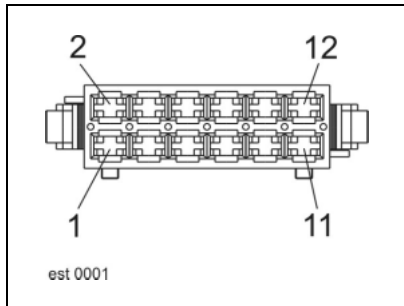
During operation in automatic mode (VARIO automatic ON), the VARIO module (A27) controls the solenoid coils (Y79/Y80) according to the values programmed in the terminal (A30).

The limit switch (Z65) on the v-belt spring tensioner prevents the rape position to be started when the v-belt is put on.

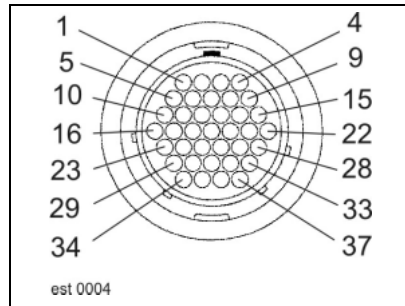
Note: Any cutting table adjustment requires the switch of the cutting table lock (U17) to be in ON position.

Pin assignment

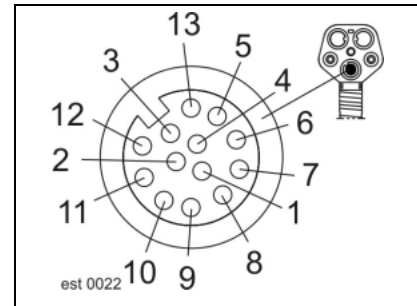
Plug M, P



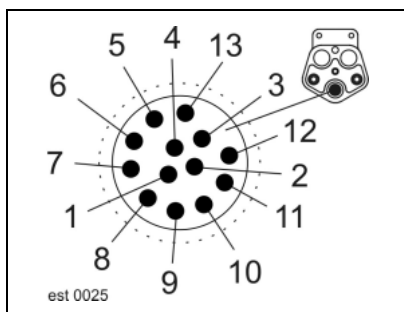
Plug E



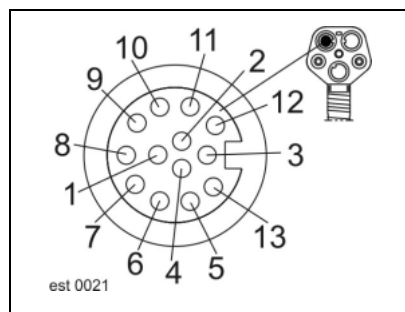
Plug socket XA



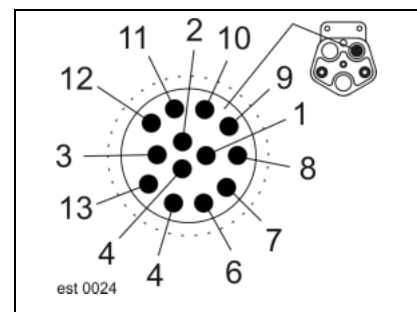
Plug XA



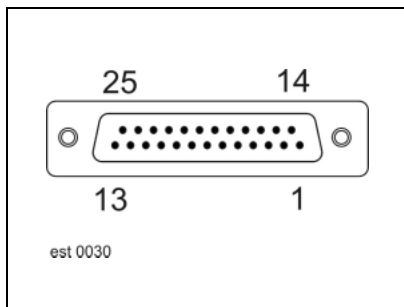
Plug socket XB



Plug XB



Plug X8



Connection list

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
E-1	31					1.5	br
E-12	31					1.5	br
E-15	N-4	DS-35				1.5	gn-br
E-16	O-8	DS-36				1.5	gn-bk
E-21	F49-A					1.5	bl

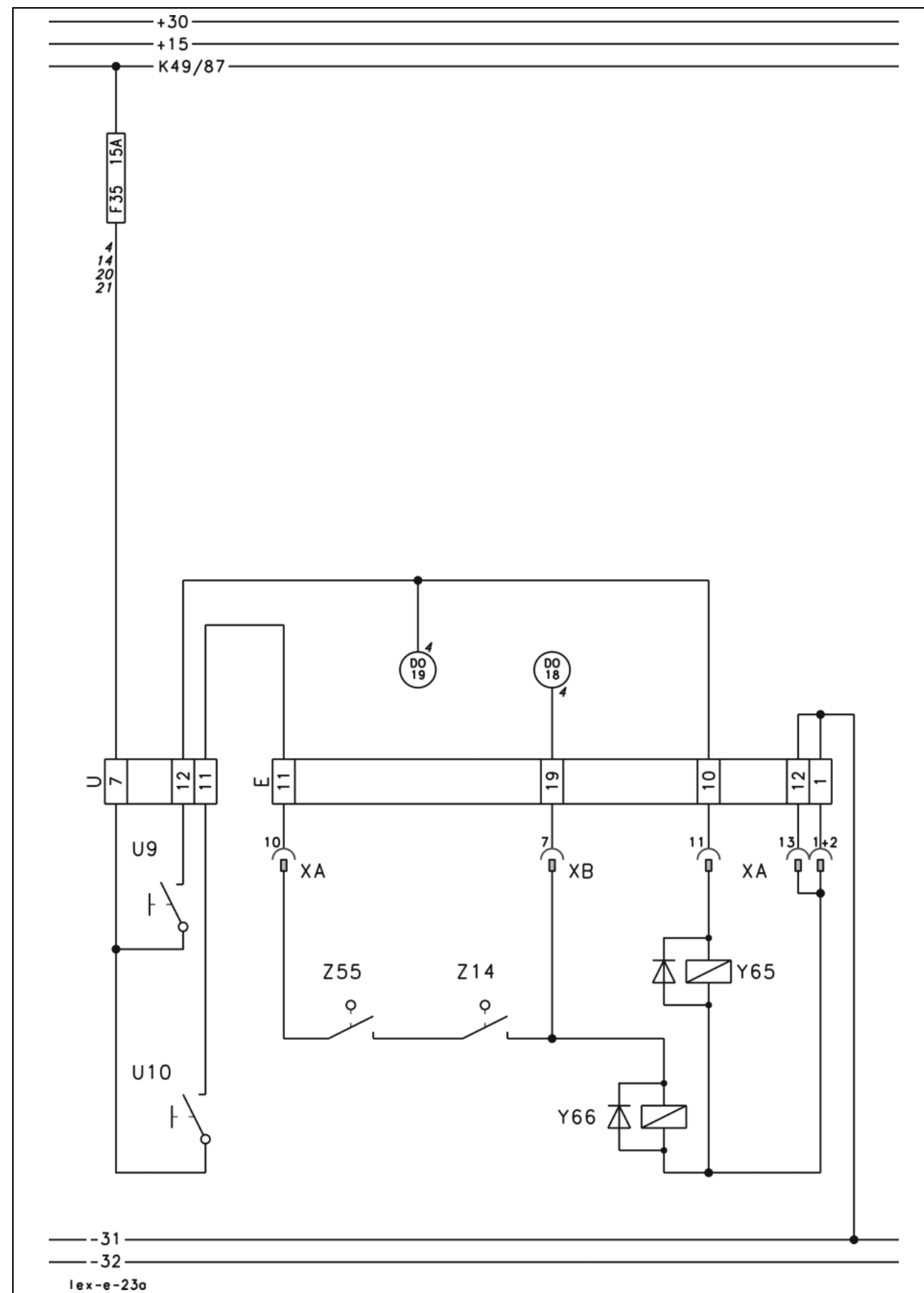
from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
M-11	K9-85					0.5	wh-ye
M-12	K10-85					0.5	wh-vi

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

23a

Fold cutterbar

23a - Fold cutterbar



Designations:

- XA Multifunction coupling A 8-e-21
- XB Multifunction coupling B 8-e-21

- U9 Fold cutterbar to working position 5-f-16
- U10 Fold cutterbar to transport position 5-f-16

- Y65 Fold cutterbar to working position 8-e-15
- Y66 Fold cutterbar to transport position 8-e-15

- Z14 Reel end position rear (folding cutterbar) 6-c-25
- Z55 Cutterbar locked (folding cutterbar) 7-e-20

Measured value table:

Item	Component	Measured value	Note
Y65	Solenoid coil	3.8 A	
Y66		3.2 Ω	

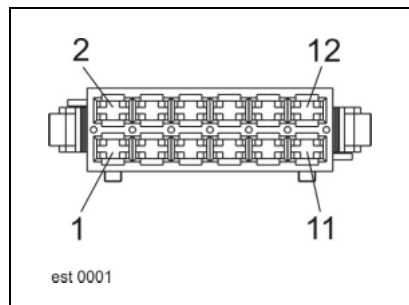
Description of functions:

Fold cutterbar

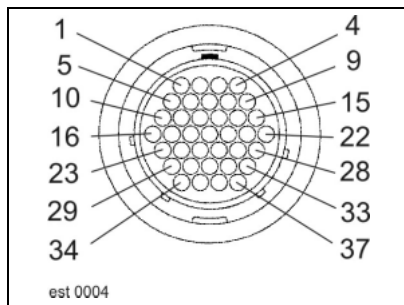
The cutterbar can only be folded if the limit switches (Z14/Z55) are closed. To do so, the reel must be pulled back all the way and the lock must be released.

Pin assignment

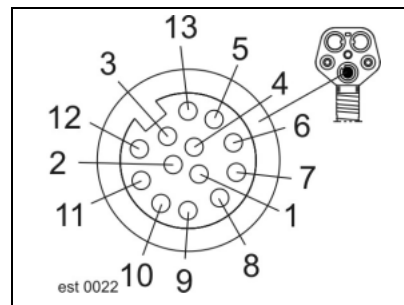
Plug U



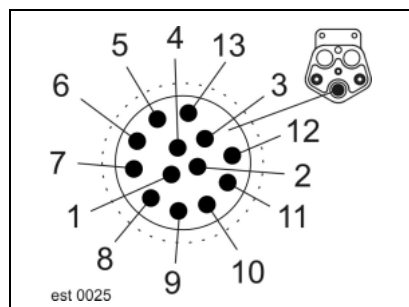
Plug E



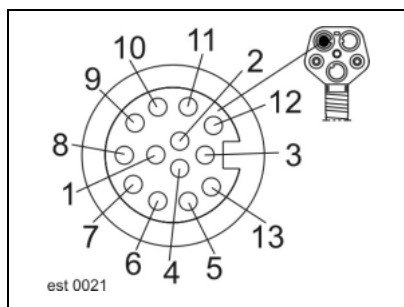
Plug socket XA



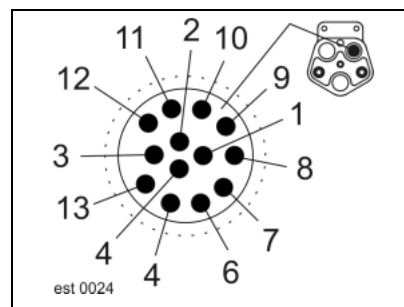
Plug XA



Plug socket XB



Plug XB



Connection list

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
U-7	F35-A	K5-86/30	K6-86/30	K19-30	CAC-20		
	N-12					1.5	bk-br
U-11	E-11					1.5	vi-ye
U-12	E-10	DO-19	DS-28			1.5	vi-gn

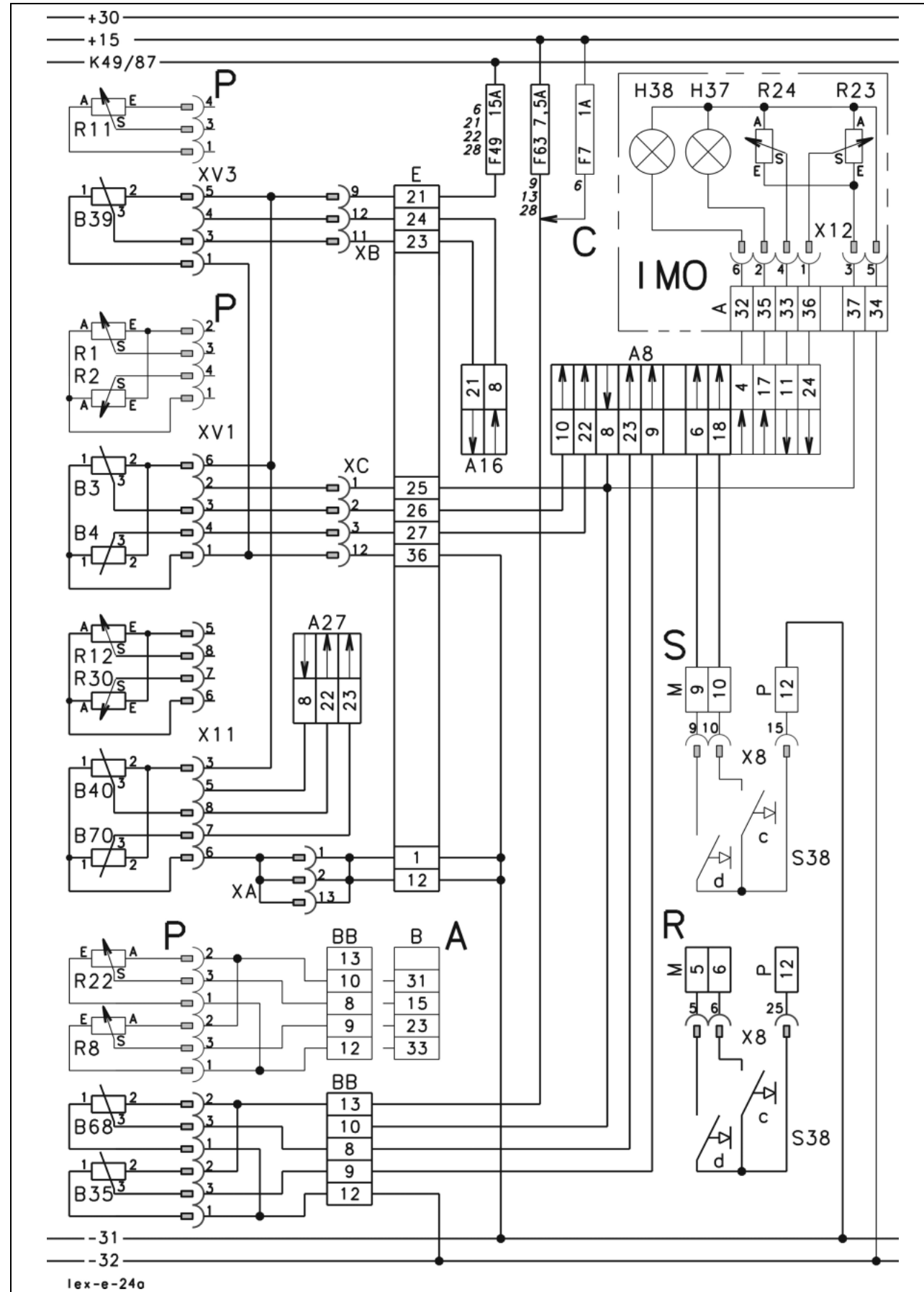
from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
E-1	31					1.5	br
E-10	U-12	DO-19	DS-28			1.5	gn-vi
E-11	U-11					1.5	gn-ye
E-12	31					1.5	br
E-19	DO-18	DS-29				0.75	gr-br

24a

AUTOCONTOUR (CAC)

24a - AUTOCONTOUR (CAC)

Designations:



A8	AUTOCONTOUR (CAC) module	2-h-20
A16	Reel control module (HAS)	2-h-20
A27	VARIO module	8-e-22
B3	AUTOCONTOUR sensing band left (actual value)	9-d-26
B4	AUTOCONTOUR sensing band right (actual value)	9-d-10
B35	Feeder housing position (actual value)	6-h-16
B39	Reel height position (actual value)	7-d-11
B40	Reel fore-and-aft position (actual value)	7-c-25
B68	Cutterbar spring pretension (actual value)	8-i-17
B70	VARIO cutting table position (actual value)	8-e-24
H37	Cutting height control	3-g-17
H38	Cutting height preselection	3-g-17
R1	AUTOCONTOUR sensing band left (actual value)	9-d-26
R2	AUTOCONTOUR sensing band right (actual value)	9-d-10
R8	Feeder housing position (actual value)	6-h-16
R11	Reel height position (actual value)	7-d-11
R12	Reel fore-and-aft position (actual value)	7-c-25
R22	Cutterbar spring pretension (actual value)	8-i-17
R23	Cutting height control (setpoint)	3-g-17
R24	Cutting height preselection (setpoint)	3-g-17
R30	VARIO cutting table position (actual value)	8-e-24
S38c	Multifunction switch for front attachment CAC cutting height control	3-f-18
S38d	Multifunction switch for front attachment CAC cutting height preselection	3-f-18
XA	Multifunction coupling A	8-e-21
XB	Multifunction coupling B	8-e-21
XC	Multifunction coupling C	8-e-21
XV1	Variant connector AUTOCONTOUR	8-e-21
XV3	Variant connector reel functions	8-e-21
X8	Ground speed control lever	4-h-17
X11	Sensors VARIO cutterbar	8-e-22
X12	Potentiometer IMO panel	6-o-16

- Notes:**
- A - up to machine no. 466-0041, 454-0028
 - C - only machine no. 468-0022 to 468-0033
466-0862 to 466-0929
 - IMO - only for equipment with IMO terminal
 - P - if equipped with potentiometer (5V system)
 - R - from machine no. 548-0011, 547-0011, 546-0011, 545-0011,
544-0011, 543-0011
 - S - up to machine no. 468-0084, 466-1655, 457-0107, 454-4799,
453-2581, 452-1056

Measured value table:

Item	Component	Measured value	Note
B 3 B 4 B35 B39 B40 B68 B70	Sensor	12 V 0.25 V - 4.75 V	(Pin 1-2) (Pin 1-3)
R 1 R 2 R 8 R11 R12 R22	Potentiometer	4.25 K Ω 1.50 - 5.75 K Ω	(Pin A - E) coil (Pin S - E) slider
R23 R24	Potentiometer	4.70 K Ω 1.7 - 6.4 K Ω	(Pin A - E) coil (Pin S - E) slider
R30	Potentiometer	4.25 K Ω 1.50 - 5.75 K Ω	(Pin A - E) coil (Pin S - E) slider

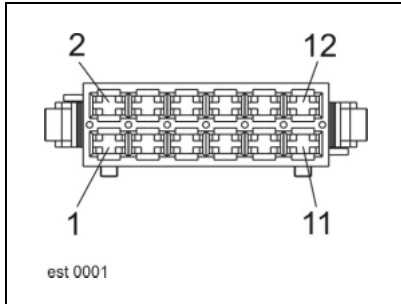
Description of functions:

AUTOCONTOUR system

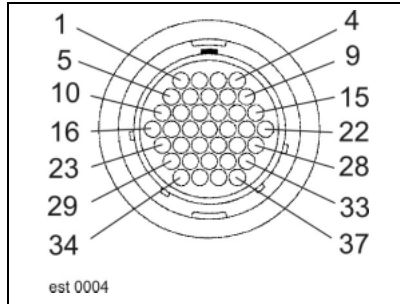
The pushbuttons (S38c/d) activate the function cutting height preselection or cutting height control in the AUTOCONTOUR module (A8). As a result, the solenoid coils responsible for the individual functions of the module (A8) are switched until the actual values of the respective sensors agree with the setpoints.

Pin assignment

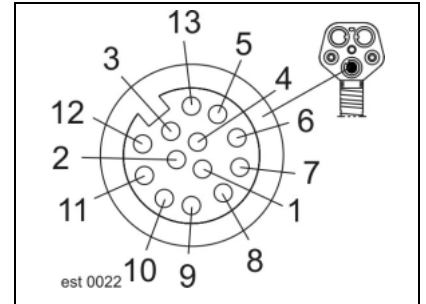
Plug M, P



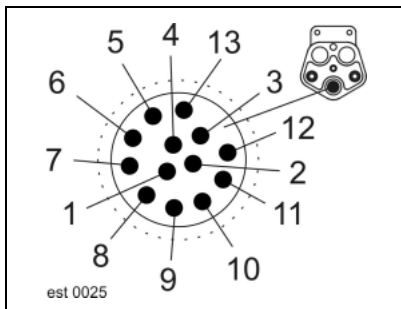
Plug A, B, BB, E



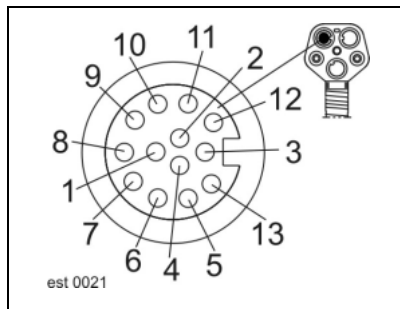
Plug socket XA



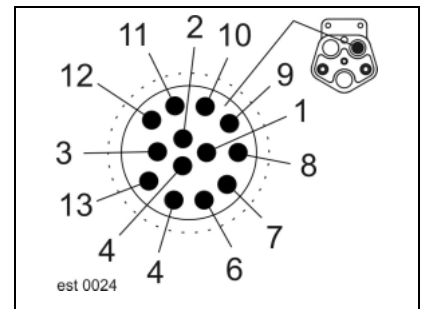
Plug XA



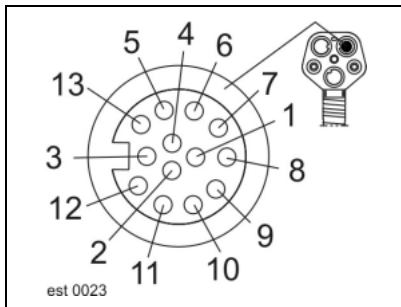
Plug socket XB



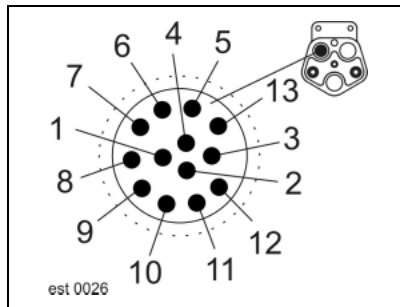
Plug XB



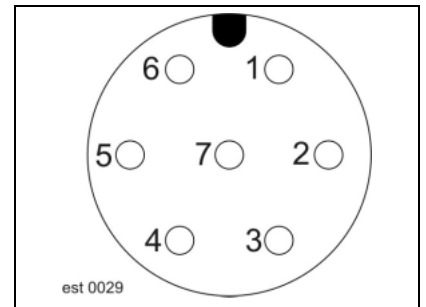
Plug socket XC



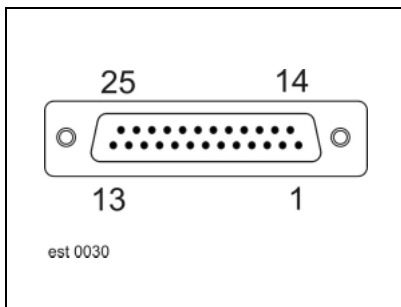
Plug XC



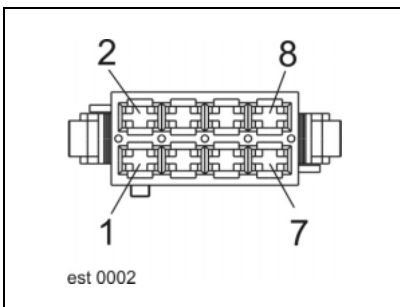
Plug XV1, XV3



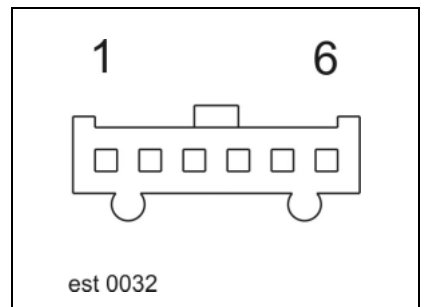
Plug X8



Plug X11



Plug X12



Connection list

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
A-32	CAC-4					0.5	ye-pk
A-33	CAC-11					0.5	pk-gn
A-34	32					0.5	gn-bl
A-35	CAC-17					0.5	ye-bl
A-36	CAC-24					0.5	gn-rd
A-37	CAC-8	BB-10	E-25	MU-8	B-31		
	DS-48					0.5	ye-rd

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
E-1	31					1.5	br
E-12	31					1.5	br
E-21	F49-A					1.5	bl
E-23	HAS-21					0.75	wh-vi
E-24	HAS-8	A-25				0.75	rd-wh
E-25	CAC-8	BB-10	A-37	MU-8	DS-48	0.75	rd-ye
	BB-10						
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	mm ²	Colour
BB-8	CAC-23					1	gr-vi
BB-9	CAC-9					1	gn-vi
P - BB-10	CAC-8	E-25	A-37	MU-8	B-31		
	DS-48					1	rd-bk
BB-12	32					1	pk-bl
BB-13	F63-A	B-29	B-30	MU-8	MR-5		
	DS-57					1	rd-bk
C - BB-13	F7-A	CAC-15				1	rd-bk

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
B - B-15	CAC-23					1	gr-vi
B - B-23	CAC-9					1	gn-vi
B - B-31	CAC-8	E-25	A-37	MU-8	BB-10		
	DS-48					1	wh
B - B-33	32					1	br

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
R - M-5	CAC-6					0.5	gr-rd
R - M-6	CAC-18					0.5	gr-bl
S - M-9	CAC-6					0.5	bl-gr
S - M-10	CAC-18					0.5	wh-gn

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

25a**Speed monitor**

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

25a - Speed monitor

Designations:

- A10 Fieldwork computer module (BIF/CAB) 2-h-20
- A12 Shaft speed monitor module (DZW) 2-h-20

- B10 Diesel engine speed 2-o-20
- B11 Threshing drum speed 6-i-16
- B12 Feeder housing speed 6-h-16
- B15 Fan speed 7-l-16
- B16 Transmission speed (ground travel speed) 7-i-18
- B18 Main drive speed 4-m-20
- B19 Shaft speed - intensive separation system rear 3-q-20
- B20 Shaft speed - intensive separation system front 4-m-20
- B21 Grain elevator shaft speed 3-m-16
- B24 Rotor speed 3-t-16
- B27 Chaff spreader shaft speed 6-s-17
- B28 Straw chopper shaft speed (spreader fan) 7-t-17
- 5-u-16
- B29 Returns shaft speed 5-i-16

- X6 Straw chopper 5-s-16

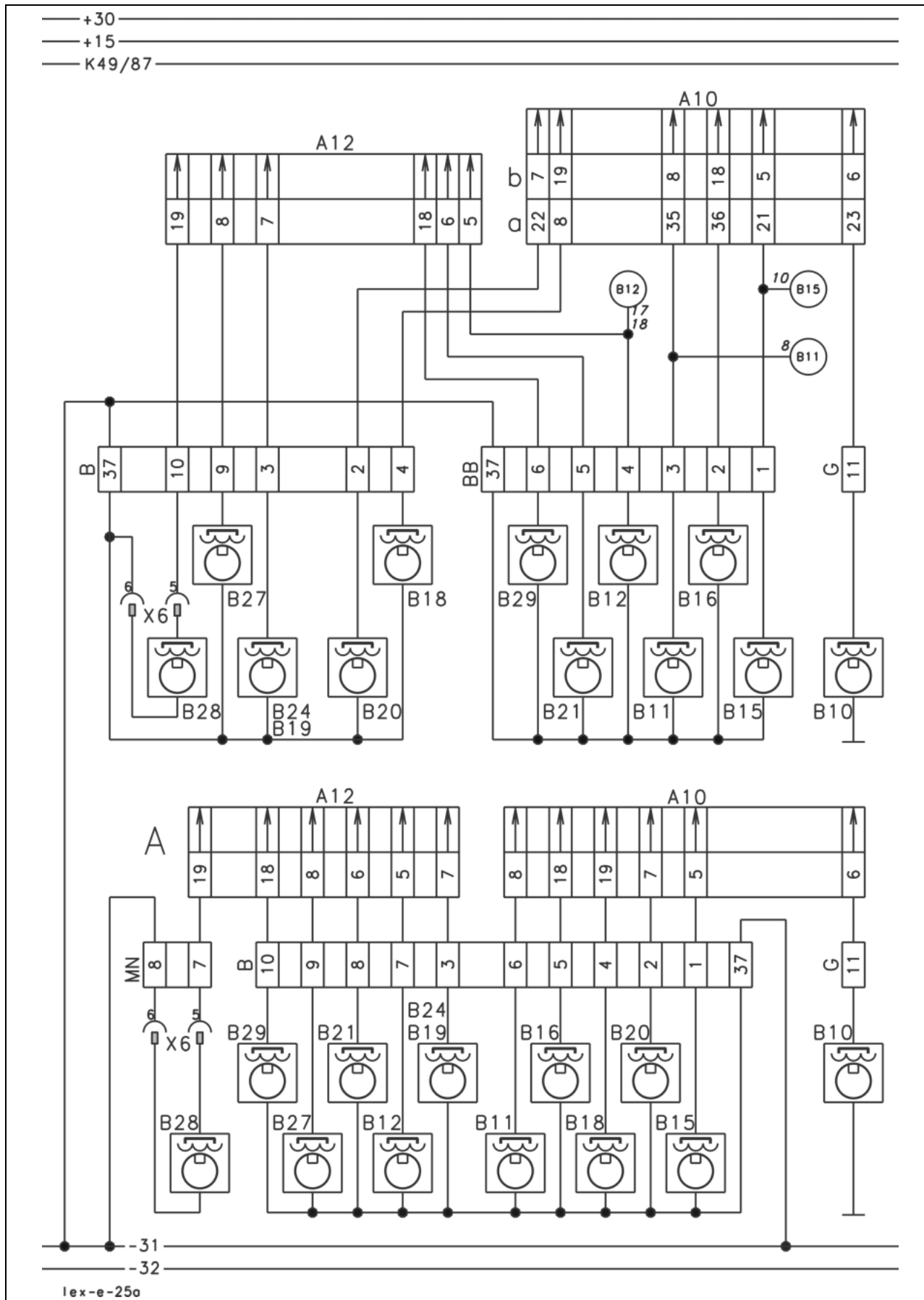
Notes:

A - up to machine no. 466-0041, 454-0028

- a - BIF/CAB module 42 plug-in contacts used
- b - BIF module 25 plug-in contacts used

Measured value table:

Item	Component	Measured value	Note
B10	Sensor	1000 - 1200 Ω	Inductive
B11			
B12			
B15			
B16			
B18			
B19			
B20			
B21			
B24			The signal voltage depends on the shaft speed and the distance from the cam wheel on the shaft.
B27			
B28			
B29			
B29			



Shaft speed table:

Diesel engine	Lexion 480-440 Lexion 430-405	2,100 -2,200 rpm 2,500 -2,600 rpm
Main shaft		1,400 rpm
Feeder housing	without variable speed drive with variable speed drive	425 rpm 285 -425 rpm
Threshing drum	without reduction gearbox with reduction gearbox	360 -1,050 rpm 150 -440 rpm
Returns elevator		400 rpm
Grain elevator		350 rpm
Fan	Lexion 480-415 Lexion 410-405	700 -1,600 rpm 480 -1,070 rpm
Intensive separation system front (Lexion 460-405)		140 rpm
Intensive separation system rear (Lexion 460-405)		140 rpm
Rotors (Lexion 480)	Stage 1, standard Stage 2, standard Stage 3, standard Stage 4 for maize	960 rpm 800 rpm 640 rpm 500 rpm
Straw chopper (Lexion 460-405)	Grain Maize	3,310 rpm 1,950 rpm
Chaff spreader (Lexion 460-405)		400 -1000 rpm
Spreader fan (Lexion 480)	Grain Maize	1,500 rpm 800 rpm

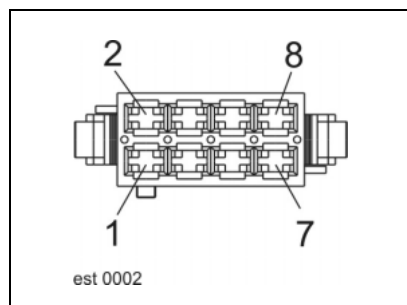
Description of functions:

Speed monitor

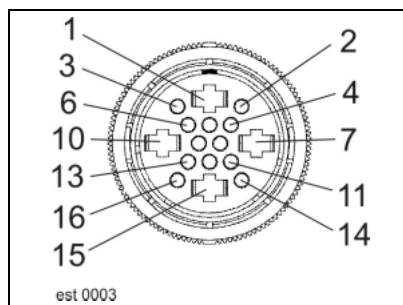
The frequencies of the individual sensors are converted into a digital signal by the fieldwork computer (A10) or shaft speed monitor module (A12) and then displayed through the CAN bus on the terminal (A30). If admissible slippage limits are exceeded, a corresponding alarm message is also displayed.

Pin assignment

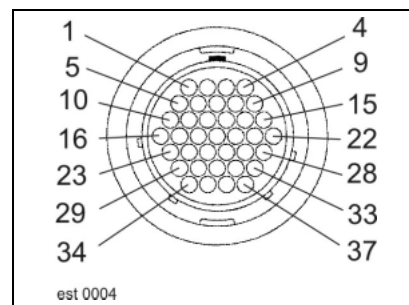
Plug MN, X6-rd



Plug G



Plug B, BB



Connection list

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
B-2	Cab-22 /Bif-7					1	wh-gr
B-3	DZW-7					1	wh-gn
B-4	Cab-8 /Bif-19					1	wh-vi
B-9	DZW-8					1	ye-gr
B-10	DZW-19					1	ye-rd
B-37	31					1.5	br

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
BB-1	Cab-21 /Bif-5					1	wh-ye
BB-2	Cab-36 /Bif-18					1	wh-br
BB-3	Cab-35 /Bif-8					1	wh-bl
BB-4	DZW-5					1	wh-bk
BB-5	DZW-6					1	wh-rd
BB-6	DZW-18					1	ye-gn
BB-37	31					1.5	br

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
G-11	Cab-23 /Bif-6					0.75	rd-ye

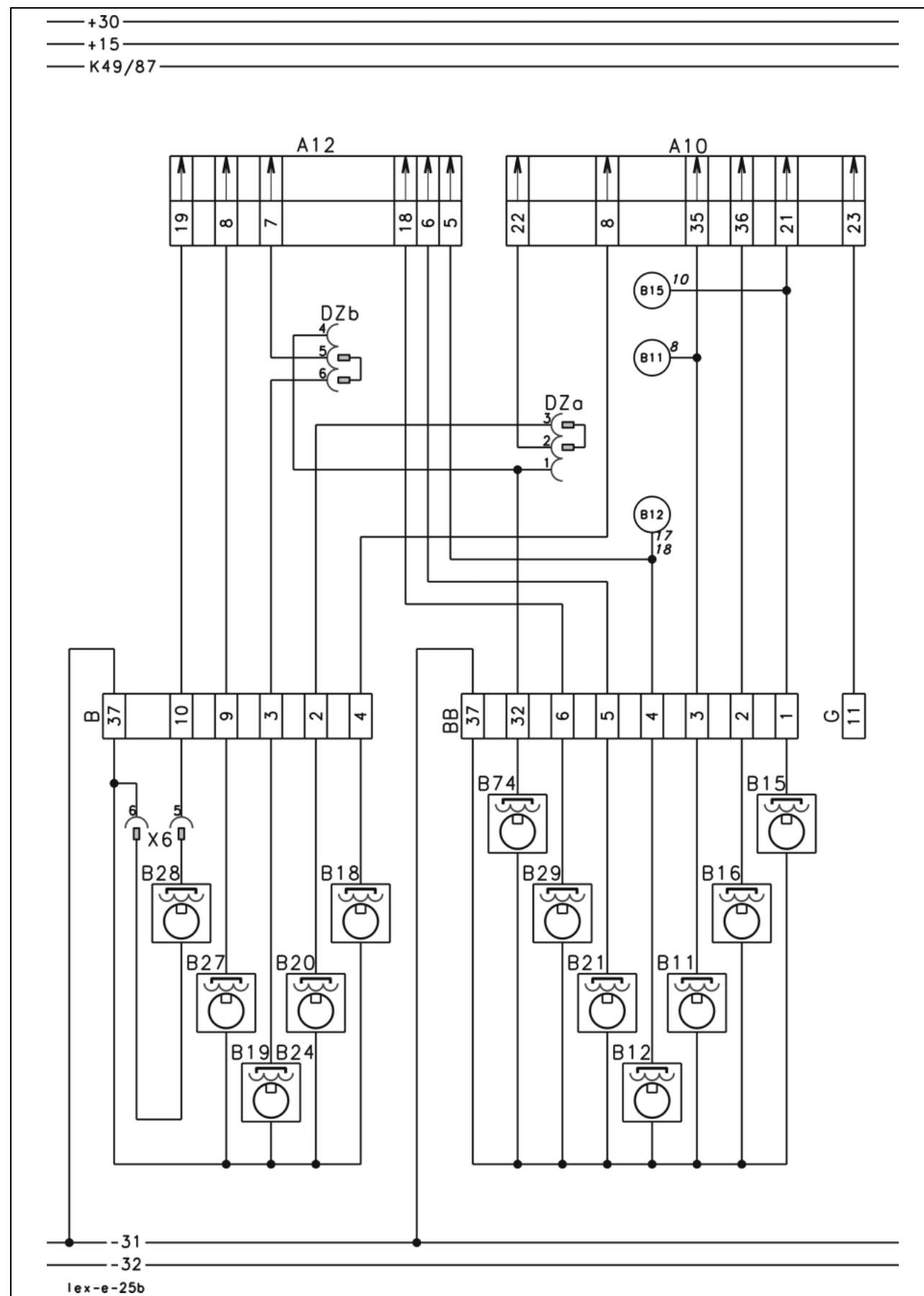
from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
A - B-1	BIF-5					1	wh-ye
A - B-2	BIF-7					1	wh-gr
A - B-3	DZW-7					1	wh-gn
A - B-4	BIF-19					1	wh-vi
A - B-5	BIF-18					1	wh-br
A - B-6	BIF-8					1	wh-bl
A - B-7	DZW-5					1	wh-bk
A - B-8	DZW-8					1	wh-rd
A - B-9	DZW-6					1	ye-gr
A - B-10	DZW-18					1	ye-gn
A - B-37	31					1.5	br

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
A - MN-7	DZW-19					0.5	ye-rd
A - MN-8	31					0.5	br

25b**Speed monitor**

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

25b - Speed monitor



Designations:

- A10 Fieldwork computer module (BIF/CAB) 2-h-20
- A12 Shaft speed monitor module (DZW) 2-h-20
- B11 Threshing drum speed 6-i-16
- B12 Feeder housing speed 6-h-16
- B15 Fan speed 7-l-16
- B16 Transmission speed (ground travel speed) 7-i-18
- B18 Main drive speed 4-m-20
- B19 Intensive separation system shaft speed rear 3-q-20
- B20 Intensive separation system shaft speed front 4-m-20
- B21 Grain elevator shaft speed 3-m-16
- B24 Rotor speed 3-t-16
- B27 Chaff spreader shaft speed 6-s-17
- B28 Straw chopper shaft speed (spreader fan) 7-t-17
- 5-u-16
- B29 Returns elevator shaft speed 5-i-16
- B74 Finger roller shaft speed 4-m-16
- Dza Jumper 3-h-20
- DZb Jumper 3-h-20
- X6 Straw chopper 5-s-16

Measured value table:

Item	Component	Measured value	Note
B10	Sensor	1000 - 1200 Ω	Inductive
B11			The signal voltage depends on the shaft speed and the distance from the cam wheel on the shaft.
B12			
B15			
B16			
B18			
B19			
B20			
B21			
B24			
B27			
B28			
B29			
B74			

Shaft speed table:

Diesel engine		2,100 – 2,200 rpm
Main shaft		1,400 rpm
Feeder housing	without variable speed drive with variable speed drive	425 rpm 285 – 425 rpm
Threshing drum	without reduction gearbox with reduction gearbox	395 – 1,150 rpm 160 – 480 rpm
Returns elevator		400 rpm
Grain elevator		350 rpm
Fan	Lexion 480-420 Lexion 410	700 – 1,600 rpm 480 – 1,070 rpm
Intensive separation system front (Lexion 460-410)		140 rpm
Intensive separation system rear (Lexion 460-410)		140 rpm
Finger roller (Lexion Evolution)		155 rpm
Straw walkers (Lexion 460-410)		240 rpm
Rotors (Lexion 480/470)	Speed variation gear Stage drive	360 – 1,050 rpm
	1. stage, standard	960 rpm
	2. stage, standard	800 rpm
	3. stage, standard	640 rpm
	4. stage for maize	500 rpm
Straw chopper (Lexion 460-410)	Grain Maize	3,310 rpm 1,950 rpm
Chaff spreader		400 – 1,000 rpm
Straw spreader	without reduction gearbox with reduction gearbox	420 – 1,230 rpm 180 – 560 rpm
Spreader fan (Lexion 480)	Grain Maize	1,750 rpm 900 rpm

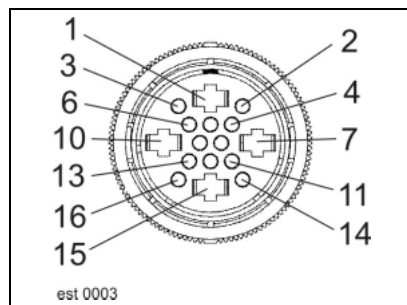
Description of functions:

Shaft speed monitor circuit

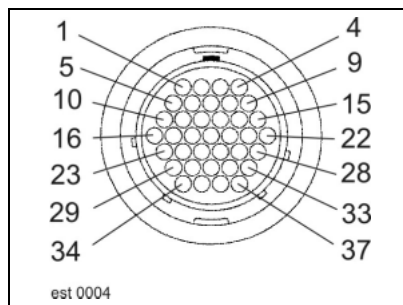
The frequencies of the individual sensors are converted into a digital signal by the fieldwork computer (A10) or shaft speed monitor module (A12) and then displayed through the CAN bus on the terminal (A30). If admissible slippage limits are exceeded, a corresponding alarm message is also displayed.

Pin assignment

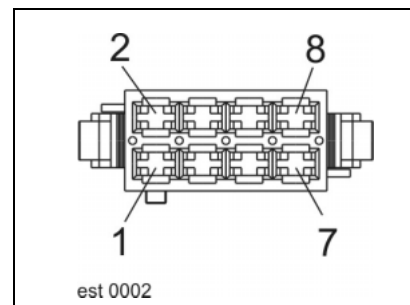
Plug G



Plug B, BB



X6-rd



Connection list

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
B-2	Dza-3					1	wh-gr
B-3	DZb-6					1	wh-gn
B-4	Cab-8 / Bif-19					1	wh-vi
B-9	DZW-8					1	ye-gr
B-10	DZW-19					1	ye-rd
B-37	31					1.5	br

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
BB-1	Cab-21 / Bif-5					1	wh-ye
BB-2	Cab-36 / Bif-18					1	wh-br
BB-3	Cab-35 / Bif-8					1	wh-bl
BB-4	DZW-5					1	wh-bk
BB-5	DZW-6					1	wh-rd
BB-6	DZW-18					1	ye-gn
BB-32	Dza-1	DZb-4				1	wh-gr
BB-37	31					1.5	br

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
G-11	Cab-23 /Bif-6					0.75	rd-ye

26a

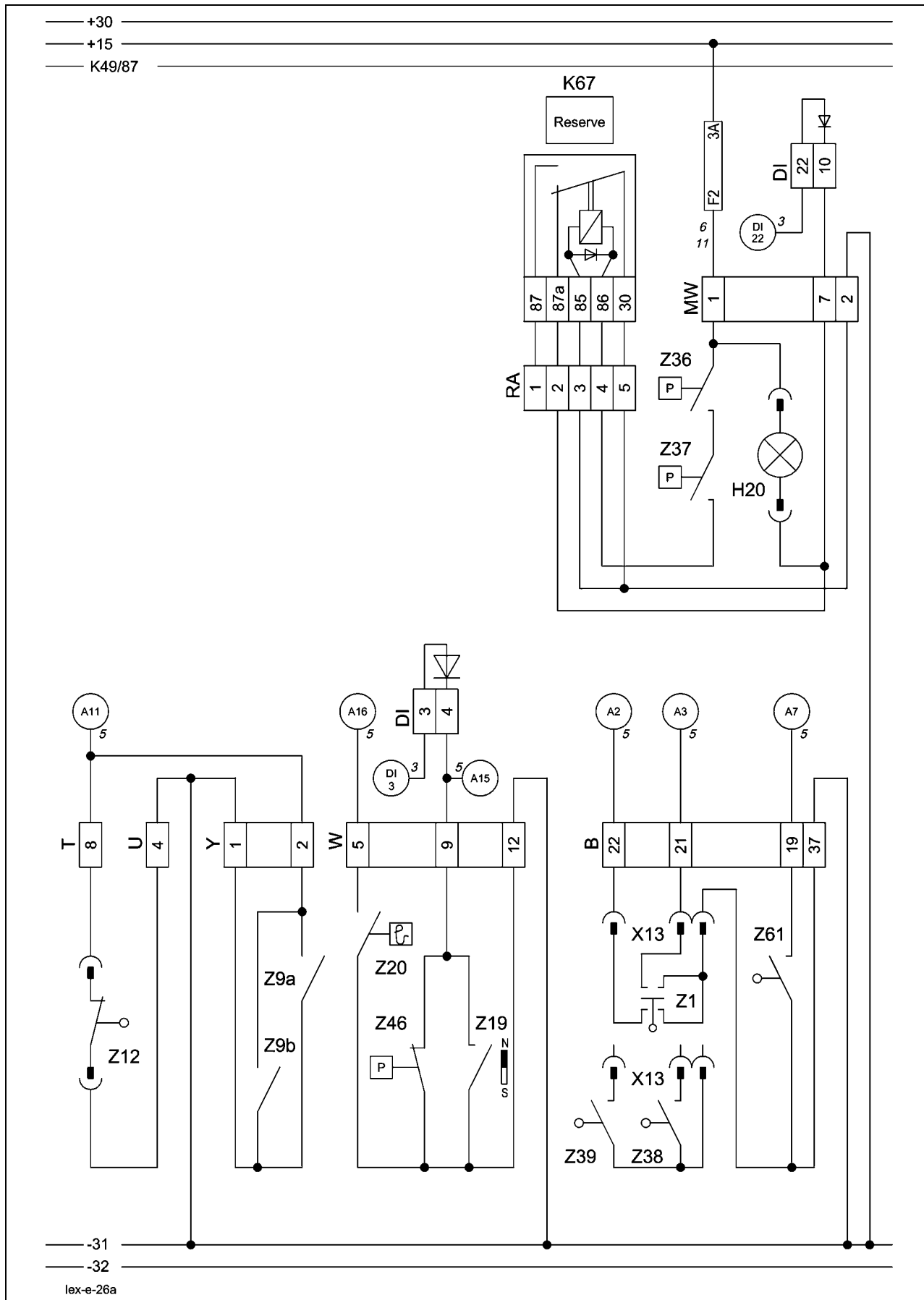
Machine monitor

26a - Machine monitor

Designations:

DI	Diode pcb warning device	3-h-20
H20	Belt tension	3-g-17
K67	Relay (belt tension)	
X13	3D / steering axle	3-g-17
Z1	3D sieve pan position	6-o-16
Z9a	Brake lining wear	7-i-17
Z9b	Brake lining wear	7-i-19
Z12	Parking brake	5-f-19
Z19	Hydraulic oil level (min.)	2-p-20
Z20	Hydraulic oil temperature	2-p-20
Z36	Belt tension left	8-i-19
Z37	Belt tension right	8-i-17
Z38	Steering position left	7-q-16
Z39	Steering position right	7-q-16
Z46	Low-pressure hydraulics/ ground travel drive oil pressure	2-p-19
Z61	Straw jam warning	2-t-18 4-t-20

Note: The rubber track tension actual value switches (Z36/Z37) are shown in their unactuated condition.
If the rubber track tension is correct, both switches are closed and consequently relay K67 is actuated when the machine is running.

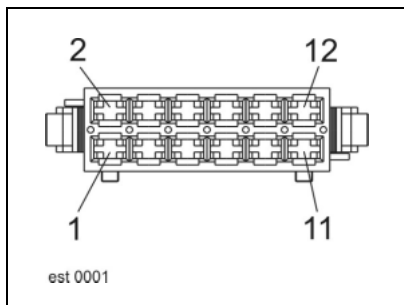


Description of functions:

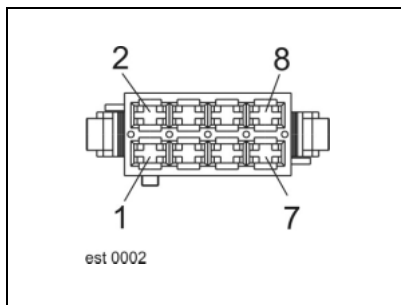
Fill level warning	If the diesel engine is not started, the terminal (A30) recognizes a ground signal on pin 15 as the signal of the float switch (Z19) and displays the fill level alarm message. At the same time, the ground signal is sent to the pulse generator K57 through the diode pcb (DI).
Oil pressure warning	If the diesel engine is started, the terminal (A30) recognizes a ground signal on pin 15 as the signal of the oil pressure switch (Z46) and displays the oil pressure alarm message. At the same time, the ground signal is sent to the pulse generator (K57) through the diode pcb (353).
Temperature warning	The ground signal of the temperature switch (Z20) is sent to the terminal (A30) and displayed as an alarm message.
Parking brake/brake lining monitor warning	The ground signal of the parking brake switch (Z12) or brake lining monitor (Z9a/b) is sent to the terminal (A30) and displayed as an alarm message. In the diagram, the state of the switch (Z12) is shown with the parking brake pulled.
Straw jam warning	The ground signal of the switch (Z61) is sent to the terminal (A30) and displayed as an alarm message.
Display steering position half-track/3-D sieve pan	For machines with half-track, the plug connection X13 on the limit switch (Z1) of the 3-D sieve pan is cut and connected to the microswitches (Z38/Z39) on the steering axle.
Belt tension half-track	If the oil pressure in one of the tensioning systems falls below 160 bar, the ground signal of the corresponding oil pressure switch (Z36/Z37) is sent to the indicator light (H20) and at the same time to the pulse generator via the diode pcb (DI).

Pin assignment

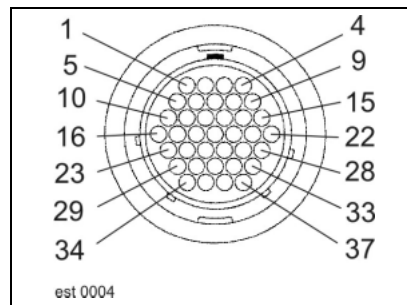
Plug T, U, W, Y



Plug MW



Plug B



Connection list

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
T-8	A-11	Y-2				1.5	br-wh

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
U-4	31					2.5	br

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
Y-1	31					2.5	br
Y-2	T-8	A-11				0.75	br-rd

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
W-5	A-16					0.75	br-wh
W-9	A-15	DI-4				1	gn-rd
W-12	31					2.5	br

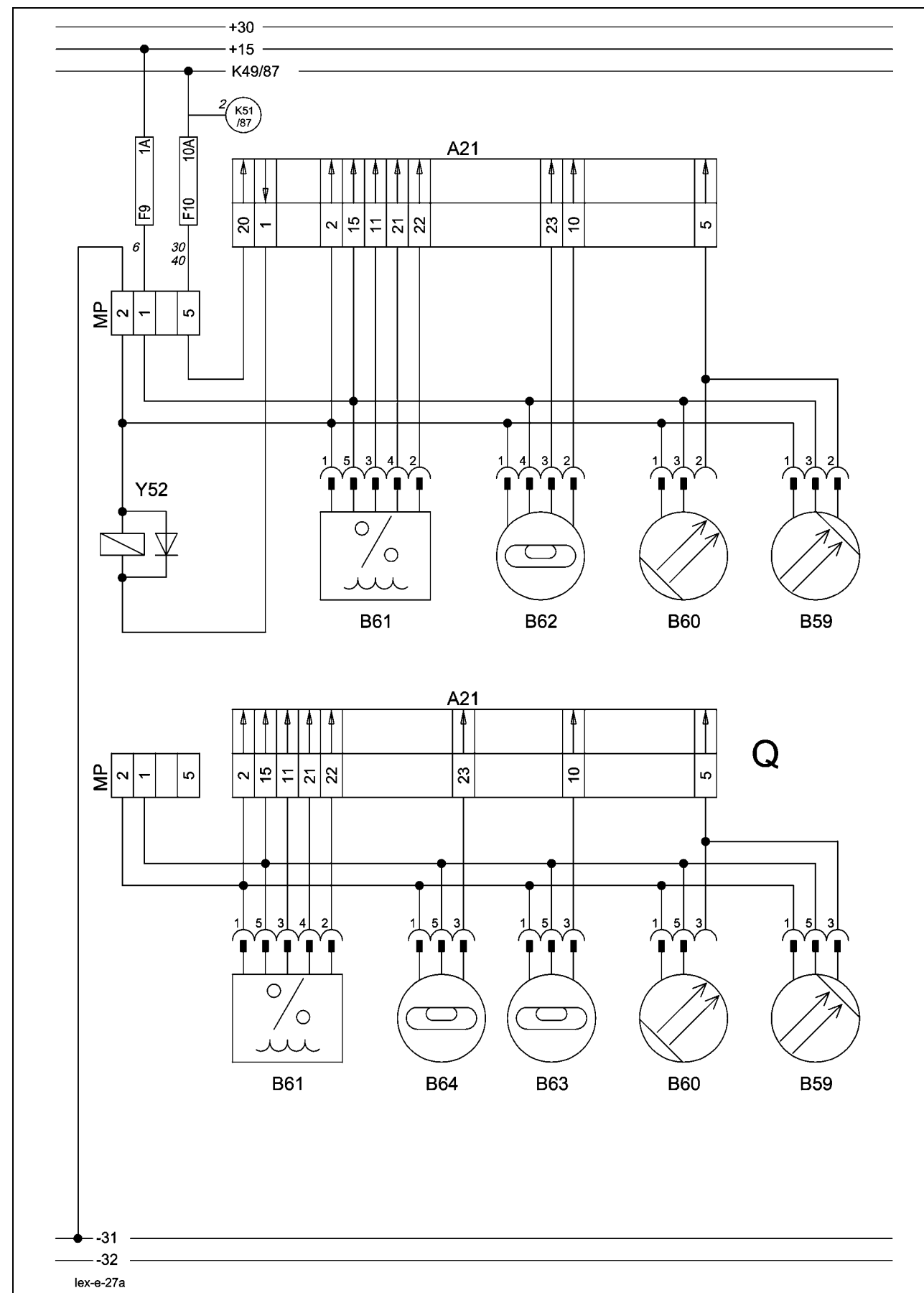
from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
B-19	A-7					1	bk-gr
B-21	A-3					1	bl-gr
B-22	A-2					1	bl-vi
B-37	31					1.5	br

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
MW-1	F2-A	MV-1	S-8			0.5	bk
MW-2	31					1.5	br
MW-7	DI-10					0.5	wh

27a**Quantimeter**

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

27a - Quantimeter



Designations:

- A21 QUANTIMETER module (LEM) 2-h-20
- B59 QUANTIMETER (LEM) receiver 3-n-16
- B60 QUANTIMETER (LEM) transmitter 3-n-16
- B61 QUANTIMETER grain moisture content 6-n-16
- B62 QUANTIMETER angle 8-h-18
- B63 QUANTIMETER longitudinal angle 8-h-18
- B64 QUANTIMETER transverse angle 8-h-18
- Y52 QUANTIMETER sample slide 6-n-16

Notes:

Q - if equipped with mechanical pendulum for longitudinal and transverse inclination

Measured value table:

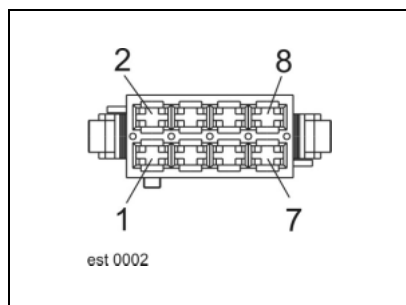
Item	Component	Measured value	Note
B59	Receiver	> 2.5 V ~ 1.2 V	In case of incidence of light In case of shading
B60	Transmitter	12 V	Transmission of infrared light
B61	Humidity sensor	7 V	Reference voltage (Pin 3)
B62	Inclination sensor	30° - 0° - 30° 1.2 - 3.0 - 4.8 V	Conductive liquid
B63	Inclination sensor (longitudinal)	30° - 0° - 30° 1.2 - 3.0 - 4.8 V	
B64	Inclination sensor (transverse)	30° - 0° - 30° 1.2 - 3.0 - 4.8 V	
Y52	Solenoid coil	16 A 0.75 Ω	

Description of functions:

Yield measurement	<p>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.</p> <p>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.</p>
Humidity measurement	<p>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.</p>
- in the elevator	<p>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.</p>
- in the grain tank	<p>The measured value is updated whenever the grain tank is filled again by using the signal of the grain tank fill switch 70% over the CAN bus. It is then frozen until the next measurement.</p>

Pin assignment

Plug MP

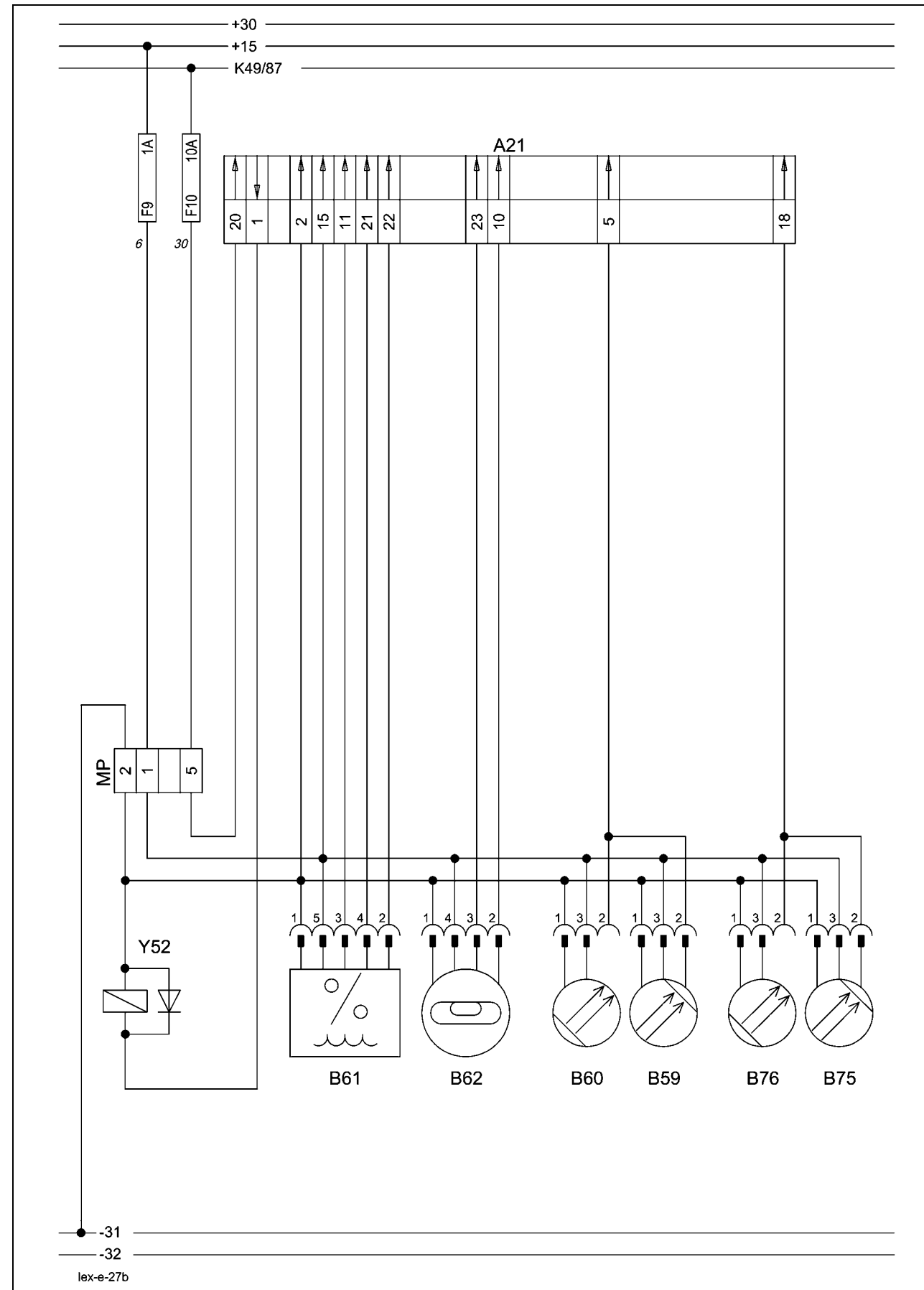
**Connection list**

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
MP-1	F9-A					0.5	bk
MP-2	31					1.5	br
MP-5	F10-A	MI-3				1	bk

27b**Quantimeter**

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

27b - Quantimeter



Designations:

- A21 QUANTIMETER module (LEM) 2-h-20
- B59 QUANTIMETER (LEM) receiver 3-n-16
- B60 QUANTIMETER (LEM) transmitter 3-n-16
- B61 QUANTIMETER grain moisture content 6-n-16
- B62 QUANTIMETER angle 8-h-18
- B75 Returns monitor (LEM) receiver 4-i-15
- B76 Returns monitor (LEM) transmitter 4-i-15
- Y52 QUANTIMETER sample slide 6-n-16

Measured value table:

Item	Component	Measured value	Note
B59 B75	Receiver	> 2.5 V ~ 1.2 V	Reception of infrared light Shading of the transmitter
B60 B76	Transmitter	12 V	Transmission of infrared light
B61	Humidity sensor	7 V	Reference voltage (Pin 3)
B62	Inclination sensor	30° - 0° - 30° 1.2 - 3.0 - 4.8 V	Conductive liquid
Y52	Solenoid coils	16 A 0.75 Ω	

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.

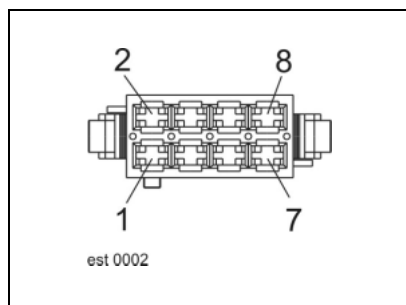
In order to empty and clean the measuring chamber, the sample slide (Y52) is also operated once when turning off the threshing mechanism.

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).

Pin assignment

Plug MP

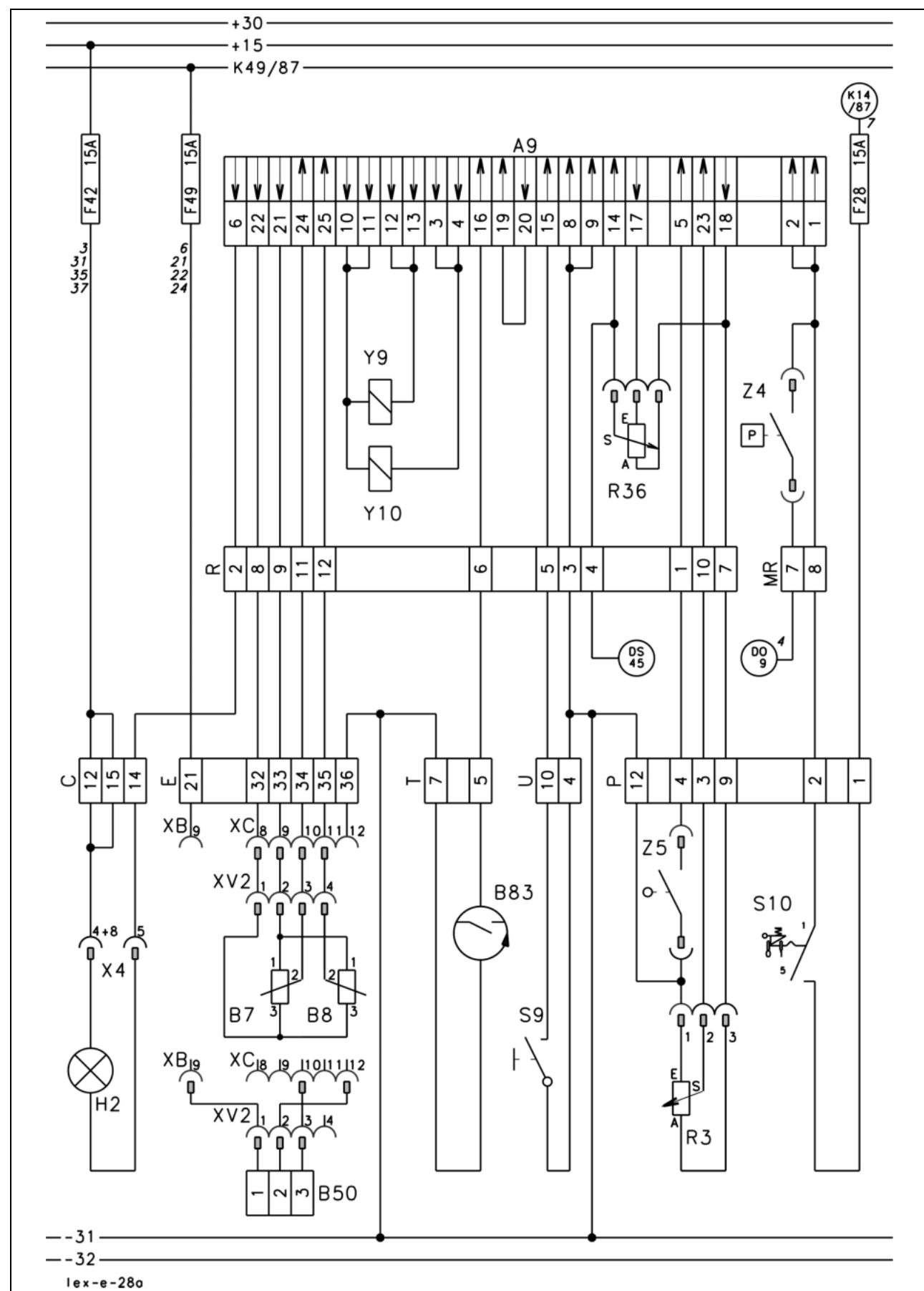
**Connection list**

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
MP-1	F9-A					0.5	bk
MP-2	31					1.5	br
MP-5	F10-A	MI-3				1	bk

28a**Autopilot**

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

28a - Autopilot



Designations:

- A9 AUTOPILOT module 2-h-20
- B7 AUTOPILOT sensor left 9-a-17
- B8 AUTOPILOT sensor right 9-a-17
- B50 AUTOPILOT laser 6-d-26
- B83 AUTOPILOT OFF (turn signal) 3-f-18
- H2 AUTOPILOT 3-f-18
- R3 AUTOPILOT centre adjustment (setpoint) 3-g-17
- R36 AUTOPILOT wheel angle 8-q-20
- S9 AUTOPILOT ON 5-f-19
- S10 AUTOPILOT main switch 3-g-17
- XB Multifunction coupling B 8-e-21
- XC Multifunction coupling C 8-e-21
- XV2 Variant connector AUTOPILOT 8-e-21
- X4 Steering column indicator lights 3-f-18
- Y9 AUTOPILOT left 5-p-21
- Y10 AUTOPILOT right 5-p-21
- Z4 AUTOPILOT oil pressure 5-p-21
- Z5 Seat contact 4-g-18

Measured value table:

Item	Component	Measured value	Note
B 7 B 8	Pushbutton (analogue) AUTOPILOT	2.25 - 2.85 V	see description of functions
B50	AUTOPILOT laser	6° - 0° - 6° 1.0 - 2.5 - 4.0 V	see description of functions
R 3	Potentiometer	4.70 KΩ 1.7 - 6.4 KΩ	(Pin A - E) coil (Pin S - E) slider
R36	Potentiometer	1.0 - 20 KΩ 0.25 V - 4.75 V	Coil Signal
Y 9 Y10	Solenoid coil	3.8 A 3.2 Ω	

Description of functions:**AUTOPILOT**

When the road travel circuit is unlocked and the threshing mechanism is turned on, the AUTOPILOT module (A9) is supplied with power by the main switch (S10). After the start signal from switch (S9), the solenoid coils (Y9/Y10) are switched according to the signals of the sensors (B7/B8) or according to the signals of the laser pilot (B50). The control of the steering position is performed by the wheel angle sensor (R36) in the steering cylinder.

For safety reasons, the autopilot function is interrupted immediately by the signal of the override switch (B83) when using manual steering. If the driver seat is left, the seat contact (Z5) will interrupt the autopilot function after approx. 5 s.

The centre adjustment (R3) enables the machine to drive precisely straight ahead even when driving on a slope.

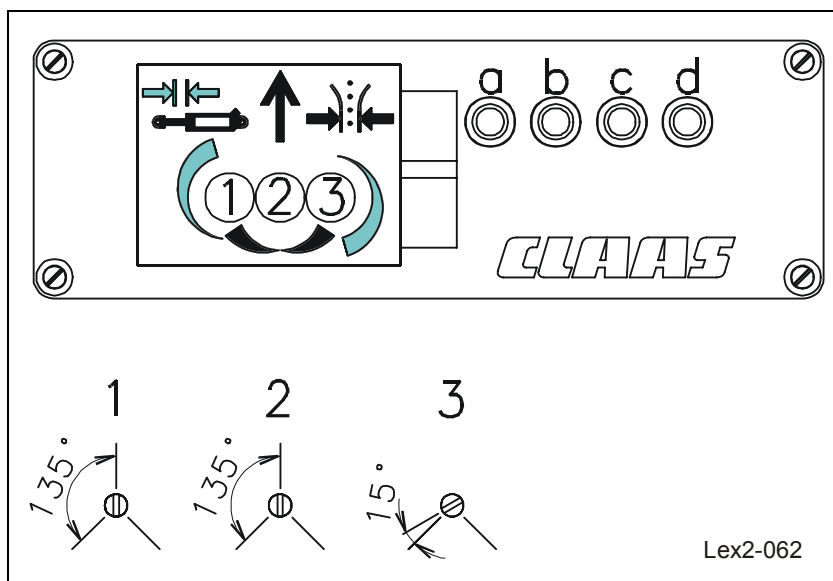
For quick response of the steering in autopilot mode, the hydraulic system is equipped with a pressure accumulator. If the pressure in the pressure accumulator falls below approx. 135 bar, an oil pressure switch (Z4) opens the circulation shut-off valve (Y77) until the pressure level reaches approx. 165 bar again.

Settings at the module

- a – Steering signal right
- b – Steering signal left
- c – Fault display
- d – Operating control

- 1 – Steering angle
- 2 – Drive straight ahead
- 3 – Sensitivity limit

The three potentiometers are shown in their basic state here.



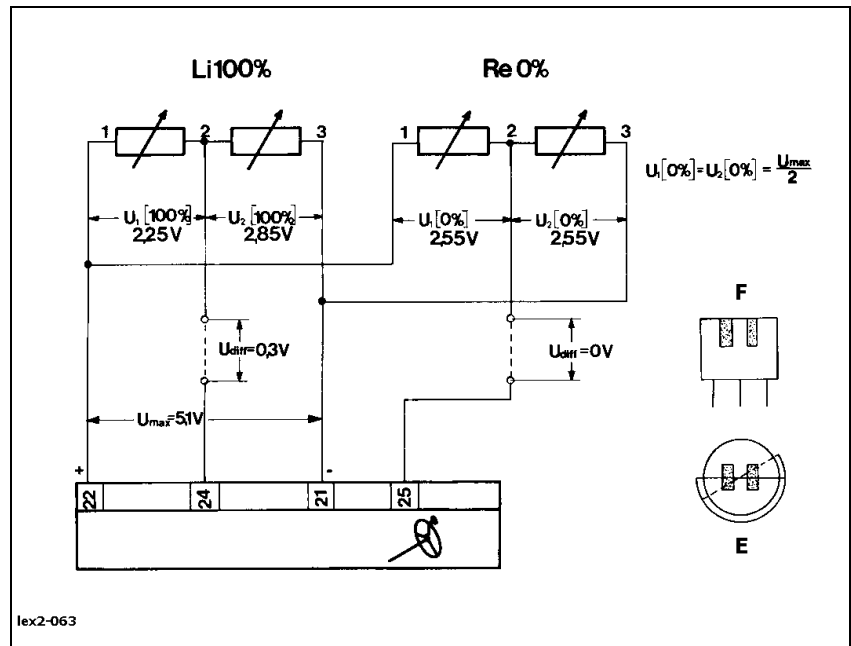
- Steering angle:** For the maximum steering angle controlled by the sensory system, the stroke of the steering cylinder is set to **26-34 mm** for both directions.
- Drive straight ahead:** Setting the drive straight ahead for the neutral position of the centre adjustment.
- Sensitivity limit:** The sensitivity of the steering response is adjusted to stabilize the system.

Sensor system function

E – Iron core
F – Field plate

Voltage signals on
sensor pin 1-2 / 3-2:

Straight ahead - **2.55V**
Max. path - **2.85V**
Min. path - **2.25V**



The electric magnetic field of the field plate (F) is partially shielded by moving the iron core (E), so that a potential drop is created between pin 1-2 or pin 2-3. In the middle position, both semiconductors of the field plate (F) are covered uniformly, which is measured by the autopilot module as an identical potential drop of **2.55 V** on each side. According to the turn of the iron core (E), a potential difference of up to **0.3 V** is created between pin 1-2 and pin 2-3, which indicates the steering angle to the autopilot module.

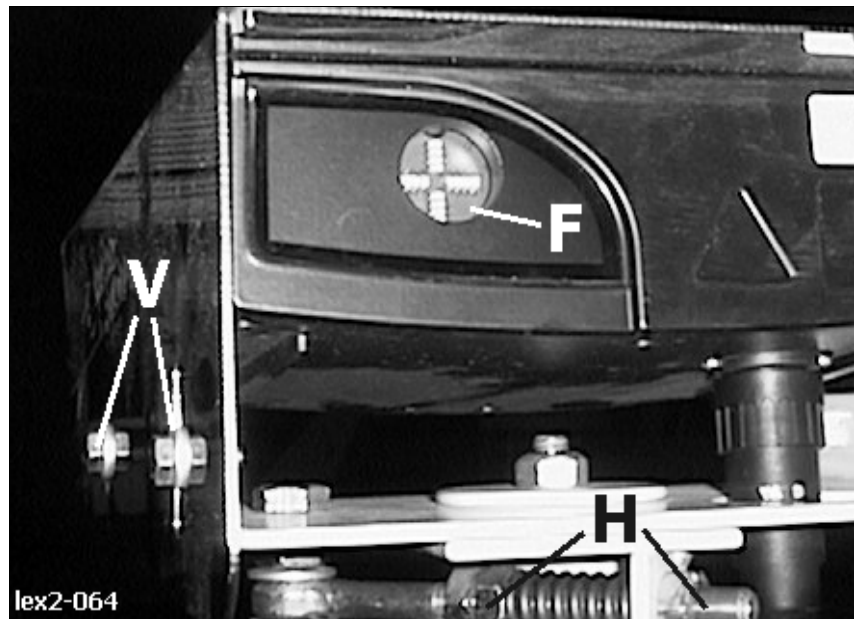
Laser system function

F – Crosshairs

H – horizontal

V – vertical

Voltage signals on sensor pin 3:

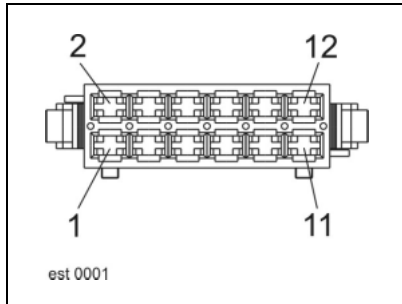
Straight ahead - **2.5V**Max. right - **1.0V**Max. left - **4.0V**

The laser beam sent out by the device is reflected **approx. 14 m** in front of the machine and received by a second optical system. From the difference of the travel time of the signal between crop and stubble, an edge is recognized that is used to steer the machine.

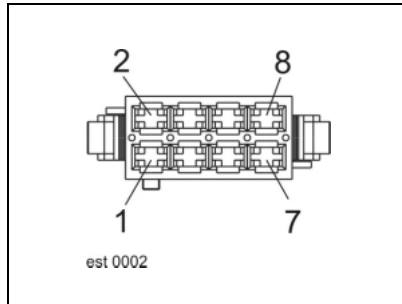
The alignment of the laser pilot in the field is performed on a manual cut crop edge. The device is adjusted vertically (V) and horizontally (H) until both the inside LEDs of the respective light band in the crosshairs (F) light up.

Pin assignment

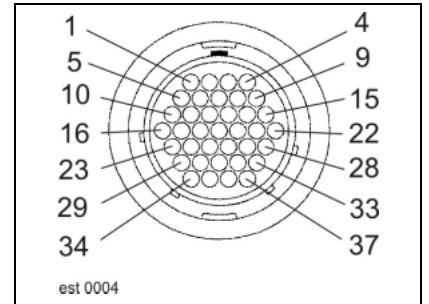
Plug P, R, T, U



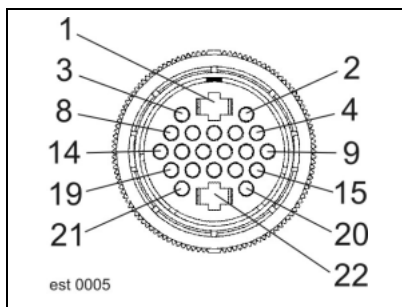
Plug MR



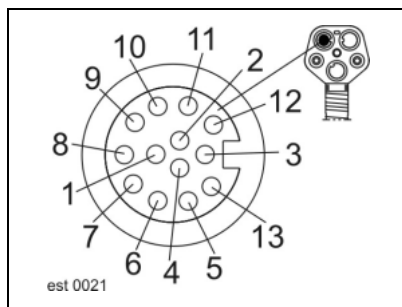
Plug E



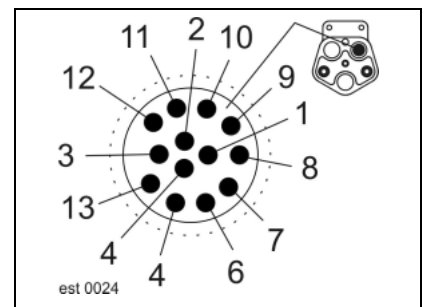
Plug C



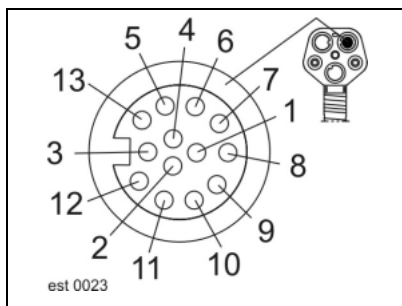
Plug socket XB



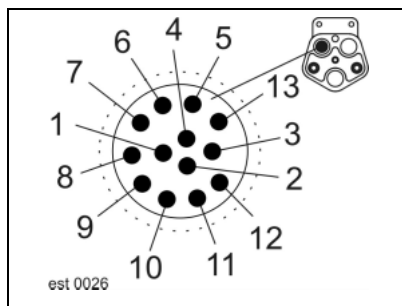
Plug XB



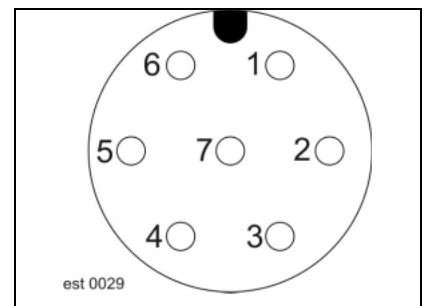
Plug socket XC



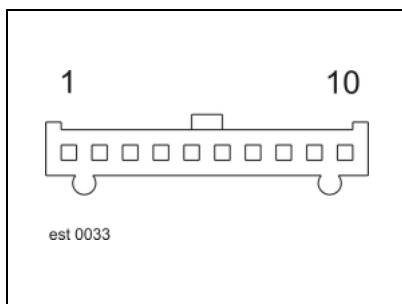
Plug XC



Plug XV2



Plug X4



Connection list

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
C-12	F42-A	C-15				1.5	bk
C-14	R-2					0.5	bl-gr
C-15	F42-A	C-12				1.5	bk

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
E-21	F49-A					1.5	bl
E-32	R-8					0.75	or-bl
E-33	R-9	DS-37				0.75	or-bk
E-34	R-11	DS-38				0.75	or-gn
E-35	R-12	DS-39				0.75	or-gr
E-36	31					1.5	br

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
T-5	R-6					0.75	gn
T-7	31					1.5	br

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
U-4	31					2.5	br
U-10	R-5	MU-7				0.75	br-wh

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
P-1	F28-A					1.5	rd-wh
P-2	MR-3					1.5	rd-bk
P-3	R-10					0.5	bl-rd
P-4	R-1	K47-TK				0.5	bl-gn
P-9	R-7	DS-44				0.5	rd-bk
P-12	31					2.5	br

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
R-1	P-4	K47-TK				0.5	wh
R-2	C-14					0.5	wh
R-3	31					2.5	br
R-4	DS-45					0.5	wh
R-5	U-10	MU-7				0.5	wh
R-6	T-5					0.75	gn
R-7	DS-44	P-9				0.5	wh
R-8	E-32					0.5	wh
R-9	E-33	DS-37				0.5	wh
R-10	P-3					0.5	wh
R-11	E-34	DS-38				0.5	wh
R-12	E-35	DS-39				0.5	wh

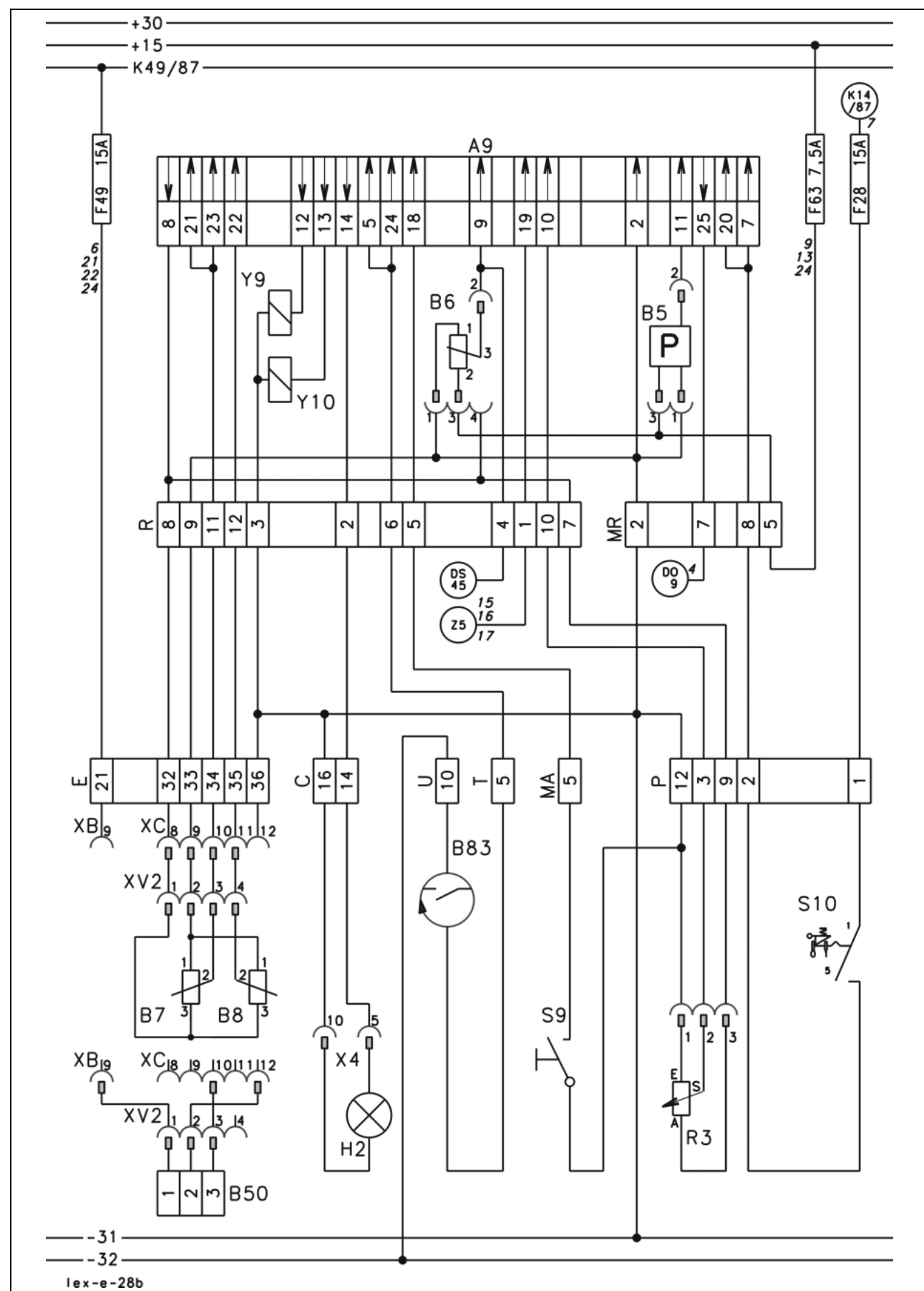
from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
MR-7	DO-9					0.5	wh
MR-8	P-2					2.5	bk

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

28b - Autopilot



Designations:

- A9 AUTOPILOT module 2-h-20
- B5 Oil pressure working hydraulics / Autopilot 5-p-21
- B6 AUTOPILOT wheel angle 8-q-20
- B7 AUTOPILOT sensor left 9-a-17
- B8 AUTOPILOT sensor right 9-a-17
- B50 Laser AUTOPILOT 6-d-26
- B83 AUTOPILOT OFF (turn signal) 3-f-18
- H2 AUTOPILOT 3-f-18
- R3 AUTOPILOT centre adjustment (setpoint) 3-g-17
- S9 AUTOPILOT ON 5-f-19
- S10 AUTOPILOT main switch 3-g-17
- XB Multifunction coupling B 8-e-21
- XC Multifunction coupling C 8-e-21
- XV2 Variant connector AUTOPILOT 8-e-21
- X4 Steering column indicator lights 3-f-18
- Y9 AUTOPILOT left 5-p-21
- Y10 AUTOPILOT right 5-p-21
- Z5 Seat contact 4-g-18

Measured value table:

Item	Component	Measured value	Note
B 5	Oil pressure working hydraulics / Autopilot	Closed Open	< 135 bar > 165 bar
B 6	Wheel angle AUTOPILOT	12 V 0.25 V - 4.75 V	Supply Signal
B 7 B 8	Sensor AUTOPILOT	2.25 - 2.85 V	see description of functions
B50	Laser AUTOPILOT	6° - 0° - 6° 1.0 - 2.5 - 4.0 V	see description of functions
R 3	Potentiometer	4.70 KΩ 1.7 - 6.4 KΩ	(Pin A - E) coil (Pin S - E) slider
Y 9 Y10	Solenoid coils	3.8 A 3.2 Ω	

Description of functions:

AUTOPILOT circuit

When the road transport circuit is unlocked and the threshing mechanism is turned on, the AUTOPILOT module (A9) is supplied with power by the main switch (S10). After the start signal from switch (S9), the solenoid coils (Y9/Y10) are switched according to the signals of the sensors (B7/B8) or according to the signals of the laser pilot (B50). The control of the steering position is performed by the wheel angle sensor (B6) in the steering cylinder.

For safety reasons, the autopilot function is interrupted immediately by the signal of the turn signal (B 83) when using manual steering. If the driver seat (Z5) is left, the seat contact will interrupt the autopilot function after approx. 5 s.

The centre adjustment (R3) enables the machine to drive precisely straight ahead even when driving on a slope.

For quick response of the steering in autopilot mode, the hydraulic system is equipped with a pressure accumulator. If the pressure in the pressure accumulator falls below approx. 135 bar, an oil pressure switch (B5) opens the circulation shut-off valve (Y77) until the pressure level reaches approx. 165 bar again.

Setting

The calibration of the AUTOPILOT system (drive straight ahead, sensitivity, zero point of front attachment sensor) is performed in the CEBIS terminal in the speedometer sub-menu.

Note: Regardless of whether a laser or sensor system is used, the same autopilot module A09 is employed.

Sensor system function

E - Iron core
F - Field plate

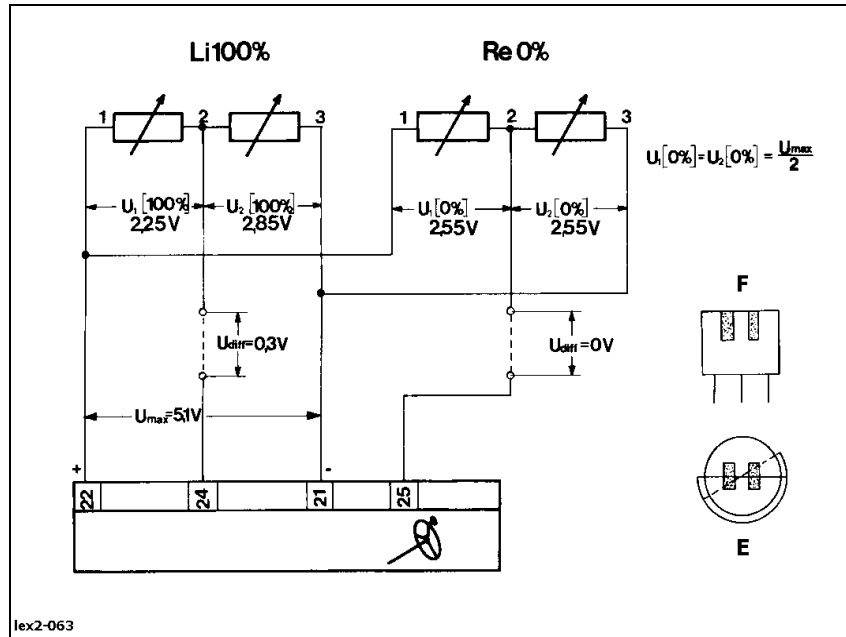
Voltage signals on sensor pin 1-2 / 3-2:

System analogue:

Straight ahead - 2.55V
Max. path - 2.85V
Min. path - 2.25V

System digital:

Straight ahead - approx. 0.5 V
Max. path - approx. 4.5 V



The electric magnetic field of the field plate (F) is interrupted partially by moving the iron core (E), so that a potential drop is created between pin 1-2 or pin 2-3. In the middle position, both semiconductors of the field plate (F) are covered uniformly, which is measured by the autopilot module as an identical potential drop of 2.55 V on each side. According to the turn of the iron core (E), a potential difference of up to 0.3 V is created between pin 1-2 and pin 2-3, which indicates the steering angle to the autopilot module.

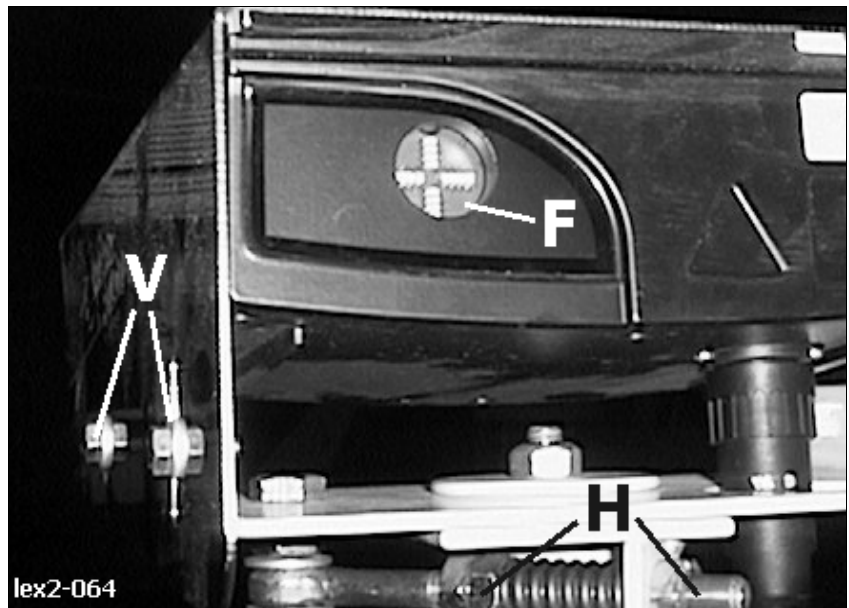
Laser system function

F - crosshairs

H - horizontal

V - vertical

Voltage signals on sensor pin 3:

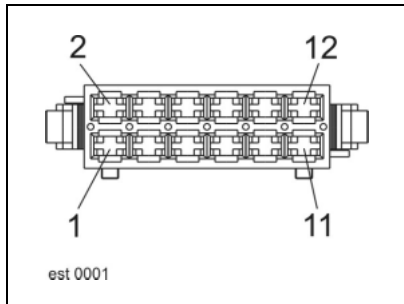
Straight ahead - **2.5V**Max. Right - **1.0V**Max. Left - **4.0V**

The laser beam sent out by the device is reflected **approx. 14 m** in front of the machine and received by a second optical system. From the difference of the travel time of the signal between crop and stubble, an edge is recognized that is used to steer the machine.

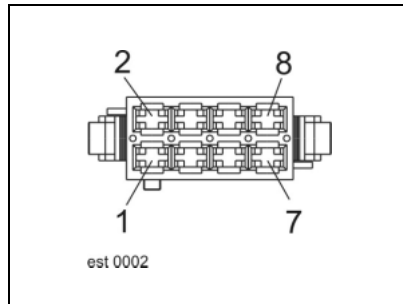
The alignment of the laser pilot in the field is performed on a manual cut crop edge. The device is adjusted vertically (V) and horizontally (H) until both the inside LEDs of the respective light band in the crosshairs (F) light up.

Pin assignment

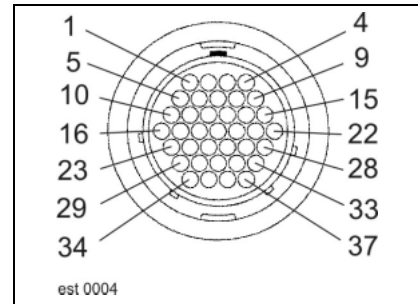
Plug P, R, T, U



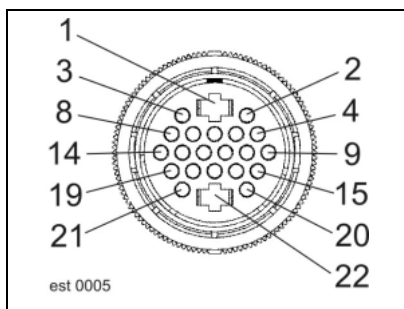
Plug MR



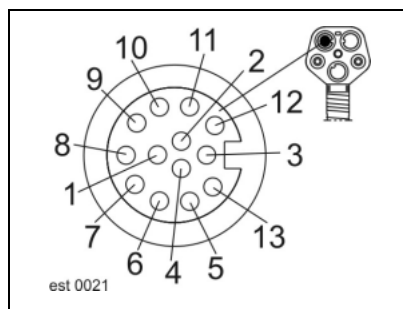
Plug E



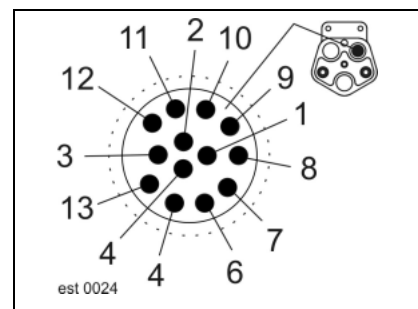
Plug C



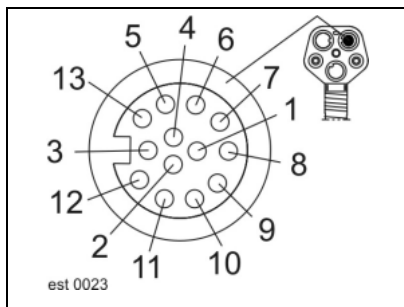
Plug socket XB



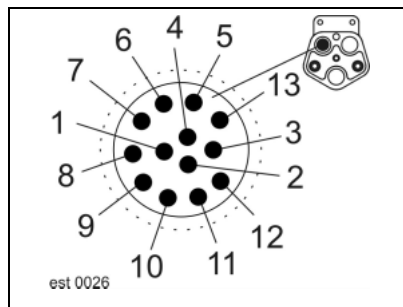
Plug XB



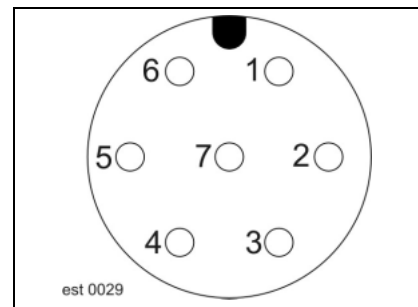
Plug socket XC



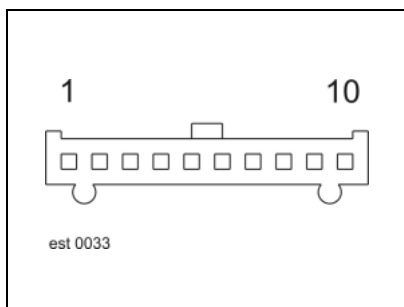
Plug XC



Plug XV2



Plug X4



Connection list

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
C-14	R-2					0.5	bl-gr
C-16	31					1.5	br

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
E-21	F49-A					1.5	bl
E-32	R-8					0.75	or-bl
E-33	R-9	DS-37				0.75	or-bk
E-34	R-11	DS-38				0.75	or-gn
E-35	R-12	DS-39				0.75	or-gr
E-36	31					1.5	br

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
U-10	32					1.5	vi-gn

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
T-5	R-6					0.75	gn

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
MA-5	R-5	MU-7				0.75	ye-rd

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
P-1	F28-A					1.5	rd-wh
P-2	MR-3					1.5	rd-bk
P-3	R-10					0.5	bl-rd
P-9	R-7	DS-44				0.5	rd-bk
P-12	31					2.5	br

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
R-1	P-4	K47-TK				0.5	wh
R-2	C-14					0.5	wh
R-3	31					2.5	br
R-4	DS-45					0.5	wh
R-5	U-10	MU-7				0.5	wh
R-6	T-5					0.75	gn
R-7	DS-44	P-9				0.5	wh
R-8	E-32					0.5	wh
R-9	E-33	DS-37				0.5	wh
R-10	P-3					0.5	wh
R-11	E-34	DS-38				0.5	wh
R-12	E-35	DS-39				0.5	wh

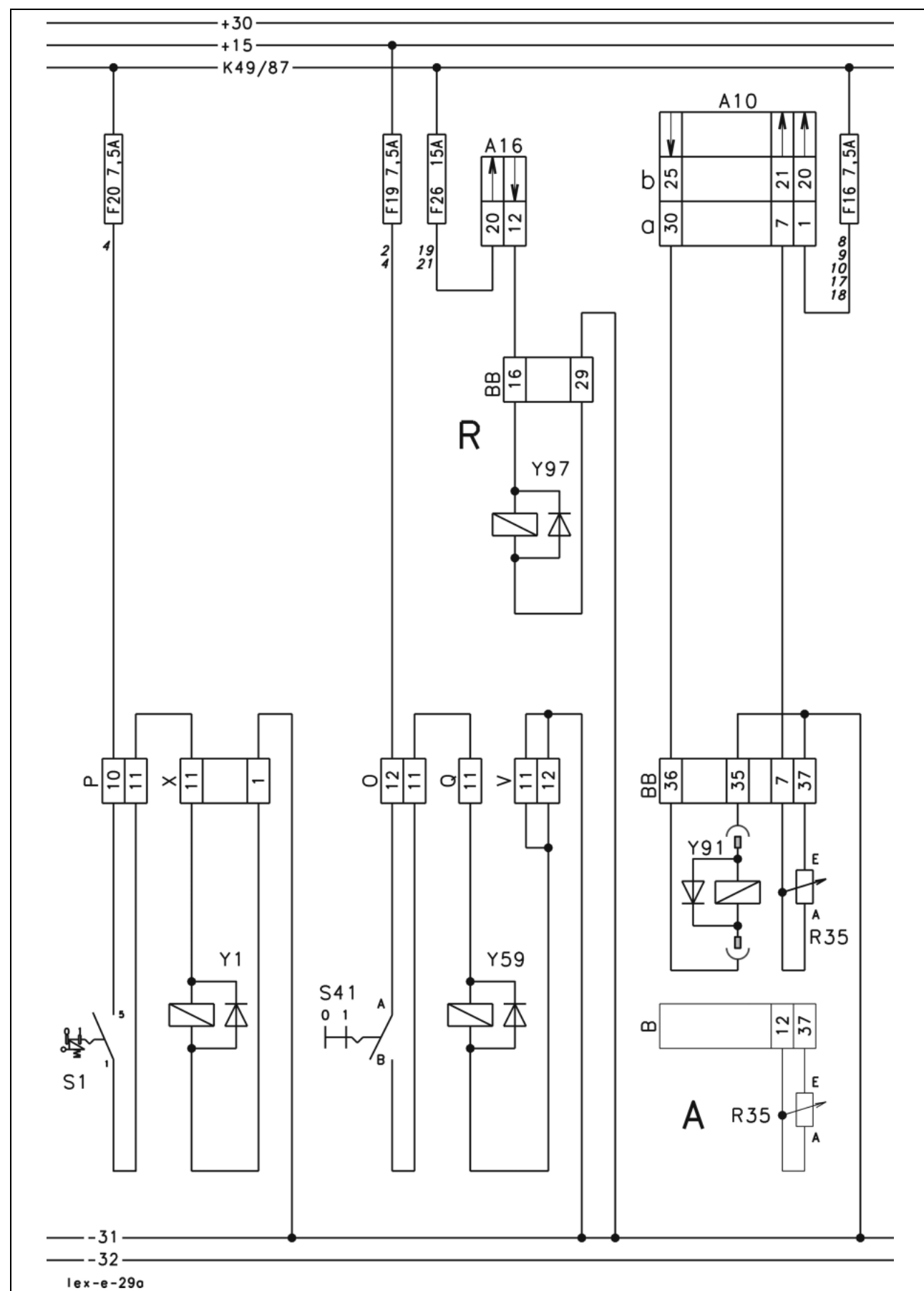
from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
MR-2	31					1.5	br
MR-5	F63-A	BB-13	B-29	B-30	MU-8		
	MR-5	DS-57				1	bk
MR-7	DO-9					0.5	wh
MR-8	P-2					2.5	bk

Notes

29a

**Four-wheel circuit,
Servo circuit,
Fuel tank,
Front attachment damping**

29a - Four-wheel circuit, servo circuit, fuel tank, front attachment damping



Designations:

- A10 Fieldwork computer module (BIF/CAB) 2-h-20
- A16 Reel control module (HAS) 2-h-20
- R35 Fuel level 5-n-15
- S1 4-Trac (all-wheel) 3-g-17
- S41 Servo circuit 3-g-17
- Y1 4-Trac (all-wheel) 8-p-18
- Y59 Servo circuit 2-p-19
- Y91 Auxiliary fuel tank (option) 3-n-16
- Y97 Front attachment damping 7-i-18

Notes:

- A - up to machine no. 466-0041, 454-0028
- R - from machine no. 548-0011, 547-0011, 546-0011, 545-0011, 544-0011, 543-0011
- a - BIF/CAB module 42 plug-in contacts used
- b - BIF module 25 plug-in contacts used

Measured value table:

Item	Component	Measured value	Note
R35	Resistor (adjustable)	10 - 190 KΩ	
Y 1	Solenoid coil	4.0 A 3.0 Ω	
Y59	Solenoid coil	0.75 A / 16 Ω 1.8 A / 6.6 Ω	* **
Y91	Solenoid coil	17 Ω	
Y97	Solenoid coil	2.75 A 4.4 Ω	

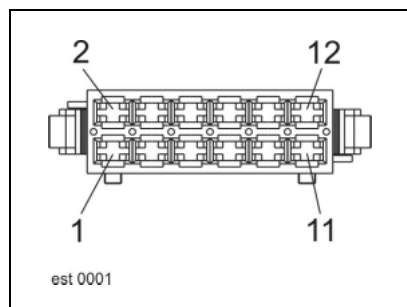
- * - form year 2000
- ** - from machine no. 466-0166
454-0256
453-0042
452-0017

Description of functions:

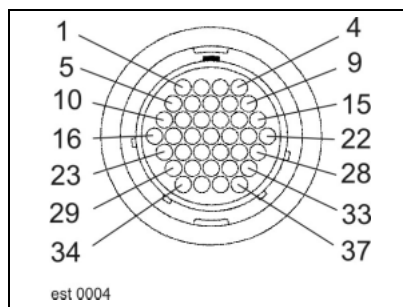
Front attachment damping	<p>If the solenoid coil (Y97) is not switched, the front attachment damping is active.</p> <p>If the threshing mechanism and the cutterbar are turned on, the machine is running at full speed and the work position is reached, cutterbar damping is hydraulically locked by the solenoid coil (Y97). This is the only way to ensure a safe CAC function.</p> <p>Important: On machines built in 2002, the front attachment damping works only in connection with the hydraulic reel drive.</p>
Servo circuit	<p>When the button (S41) is pushed, the solenoid coil (Y59) for the servo circuit is addressed.</p> <p>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.</p>
Auxiliary fuel tank	<p>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.</p>

Pin assignment

Plug O, P, Q, V, X



Plug B, BB

**Connection list**

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
P-10	F20-A					1.5	gn-rd
P-11	X-11	DS-34				1.5	gn-rd

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
X-1	31					2.5	br
X-11	P-11	DS-34				1.5	gn-rd

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
O-11	Q-11					1.5	bl-wh
O-12	F19-A					2.5	bk

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
Q-11	O-11					1.5	bl-wh

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

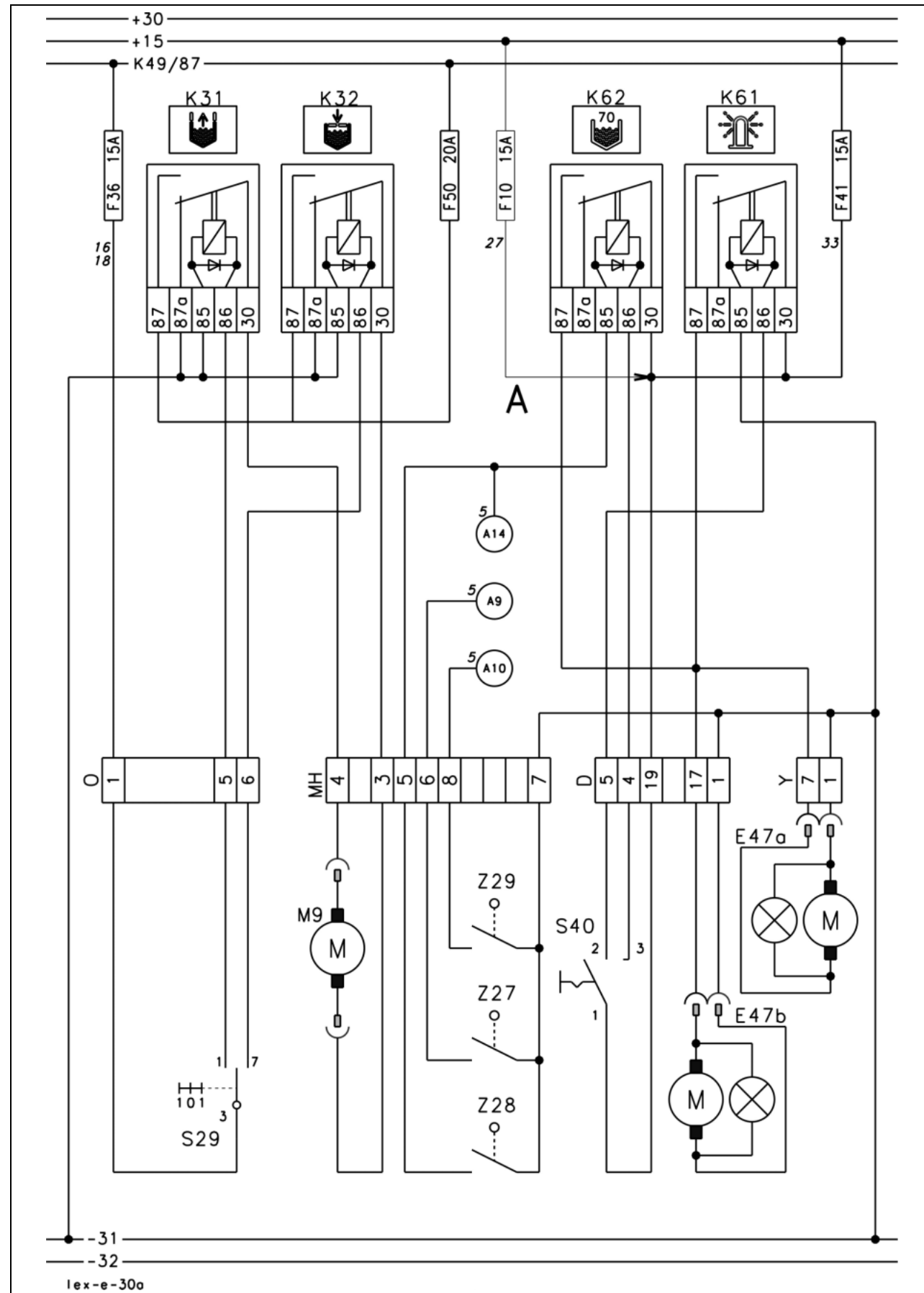
from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
BB-7	Cab-7 /Bif-21					0.5	wh
R - BB-16	HAS-12					1.5	bk-br
R - BB-29	31					1.5	br
BB-35	31					1	br
BB-36	Cab-30 /Bif-25					1	bk-rd
BB-37	31					1.5	br

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
A - B-12	BIF-21					1	ye-br
A - B-37	31					1.5	br

30a

**Open / close grain tank,
Grain tank full signal,
Warning beacon**

30a - Open / close grain tank, grain tank full signal, warning beacon



Designations:

- E47a Warning beacon front 1-e-20
- E47b Warning beacon rear 1-q-15
- K31 Grain tank extension open 3-h-20
- K32 Grain tank extension close 3-h-20
- K61 Warning beacon 3-h-20
- K62 Warning beacon grain tank full signal 3-h-20
- M9 Grain tank extension 2-k-15
- S29 Grain tank extension 3-g-17
- S40 Warning beacon 1-f-17
- Z27 Grain tank full signal 100% 1-j-18
1-l-18
- Z28 Grain tank full signal 70% 1-h-17
- Z29 Grain tank extension opened 2-j-20

Notes:

A - up to machine no. 466-0041, 454-0028

Measured value table:

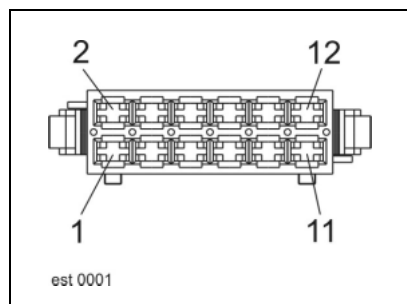
Item	Component	Measured value	Note
K31 K32	Remote switching relay	95±10 Ω	(Pin 86/1 – 85/2) (Pin 87a/4 – 30/3)
K61 K62	15 A 30 A		(Pin 87/5 – 30/3)
M 9	Electric motor	12 A	Current max.

Description of functions:

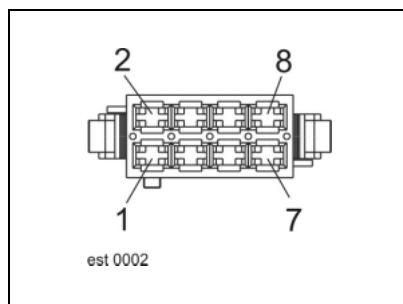
Grain tank extension	With the switch grain tank extension (S29), one of the relays K31 or K32 is addressed to open or close the grain tank. Depending on the direction of the rotation, the electric motor grain tank extension (M9) is supplied with mass by one of the relays K31/K32 on pin 87a, while the other relay, K32 or K31, controls the voltage on pin 87.
Grain tank full signal / warning beacon	The ground signal of the microswitches 70% (Z28) and 100% (Z27) is displayed as a message on the terminal (A30). If the 70 % full signal via warning beacon (E47a/b) is activated through the switch (S40), it is switched via the microswitch (Z28) and the relay K62.

Pin assignment

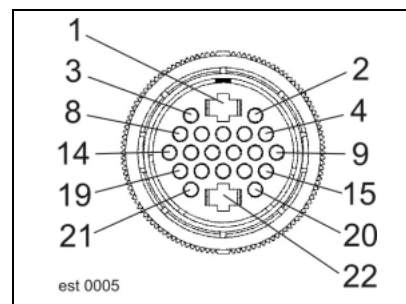
Plug O, Y



Plug MH



Plug D



Connection list

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
O-1	F36-A					2.5	bk
O-5	K31-86					1.5	ye-bk
O-6	K32-86					1.5	ye-bl

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
MH-3	K32-30	DS-14				2.5	ye
MH-4	K31-30	DS-13				2.5	wh
MH-5	A-14	K62-85				1	br-vi
MH-6	A-9					1	br-bk
MH-7	31					1	br
MH-8	A-10					1	br-gn

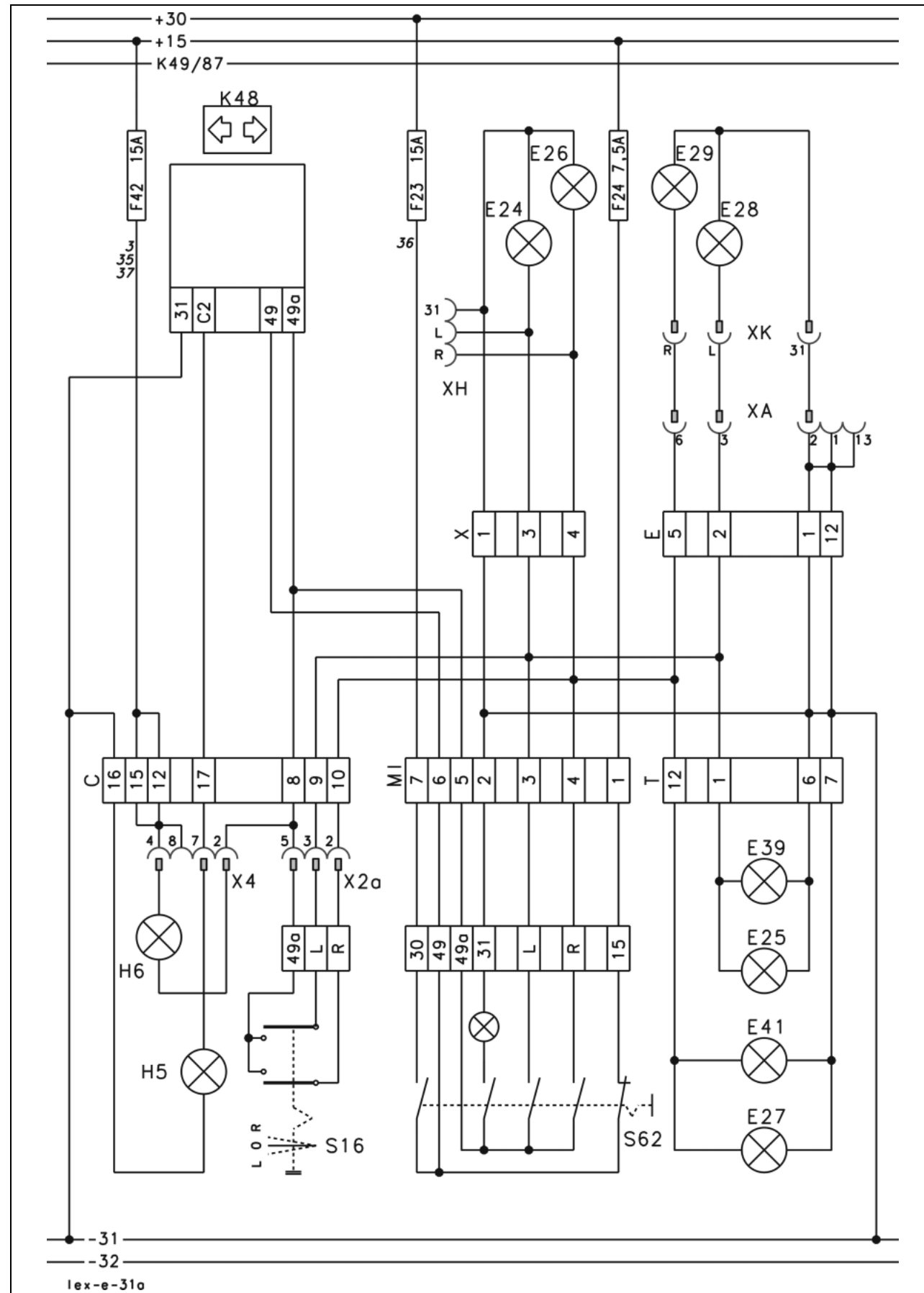
from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
D-1	31					4	br
D-4	K62-86					0.5	bk-rd
D-5	K61-86					0.5	br-gn
D-17	Y-7	K61-87	K62-87			1.5	wh-vi
D-19	F41-A	K61-30	C-7	K62-30		1.5	rd-wh

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
Y-1	31					2.5	br
Y-7	K61-87	K62-87	D-17			2.5	wh-vi

31a

Turn indicator system

31a - Turn indicator system



Designations:

- E24 Turn signal indicator left rear 5-v-21
- E25 Turn signal indicator left front 5-f-21
- E26 Turn signal indicator right rear 5-v-15
- E27 Turn signal indicator right front 5-f-15
- E28 Turn signal indicator front attachment left
- E29 Turn signal indicator front attachment right
- E39 Position light left front 5-f-21
- E41 Position light right front 5-f-15

- H5 Turn signal indicator - trailer 3-f-18
- H6 Turn signal indicator - vehicle 3-f-18

- K48 Blinking light 3-h-20

- S16 Turn signal indicator 3-f-18
- S62 Warning flasher 3-g-17

- XA Multifunction coupling A 8-e-21
- XH Trailer light 8-r-18
- XK Front attachment light 7-c-18
- X2 Steering column switch lever 4-f-18
- X4 Steering column indicator lights 3-f-18

Measured value table:

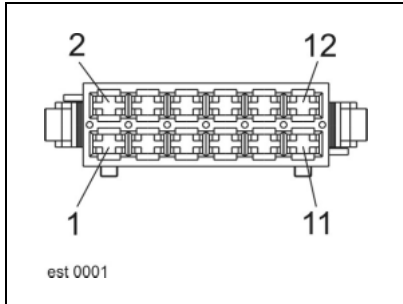
Item	Component	Measured value	Note
K48	Relay blinking light	- - -	Electronic relay

Description of functions:

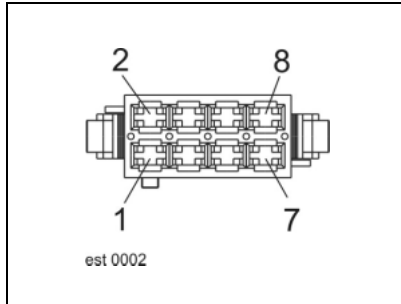
none

Pin assignment

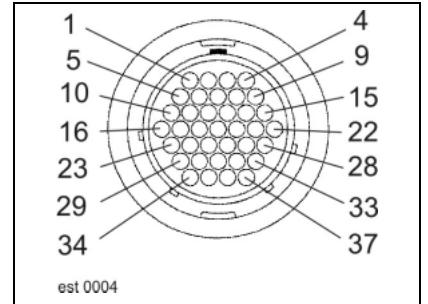
Plug T, X



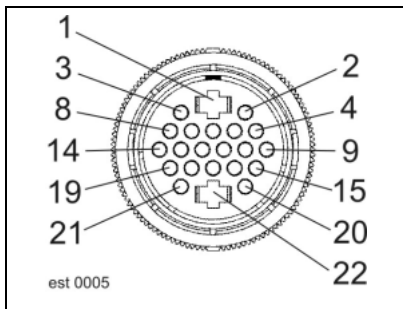
Plug MI



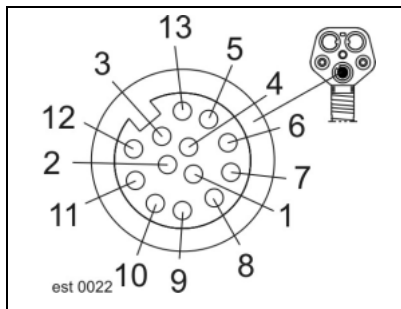
Plug E



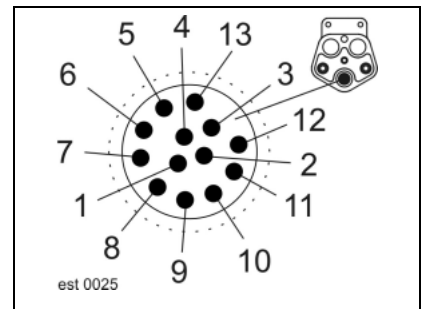
Plug C



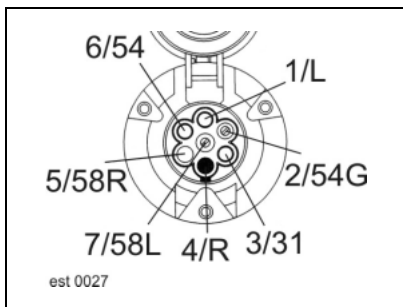
Plug socket XA



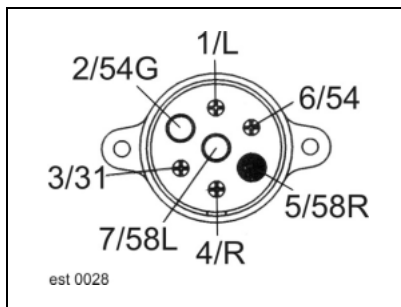
Plug XA



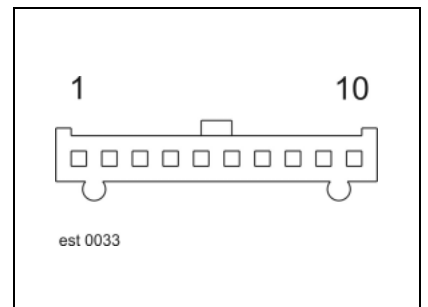
Plug socket XH, XK



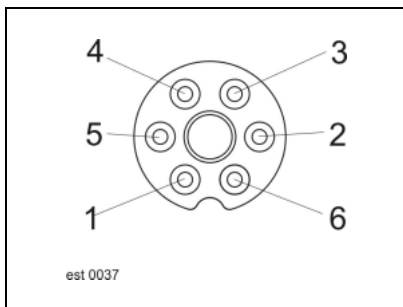
Plug XH, XK



Plug X4



Plug X2a



Connection list

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
C-8	K48-1	K48-2	MI-6			2.5 / 1.5	rd-ye
C-9	T-12	X-4	K48-5	E-5		1.5	bk-wh
C-10	T-1	X-3	K48-7	E-2	MI-4	1.5	bk-gn
C-12	F42-A	C-15				1.5	bk
C-15	F42-A	C-12				1.5	bk
C-16	31					1.5	br
C-17	K48-3	K48-6				1.5	bl-wh

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
MI-1	31					2.5	br
MI-2	31					2.5	br
MI-3	F10-A	MP-5				2.5	bk
MI-4	T-1	X-3	K48-7	E-2	C-10	1.5	bk-gn
MI-5	K48-49a	C-8				1.5	bk-wh-gn
MI-6	K48-1	K48-2	C-8			1.5	rd-ye
MI-7	F24-A					2.5	rd

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
T-1	X-3	E-2	K48-7	C-10	MI-4	1.5	bk-wh
T-6	31					1.5	br
T-7	31					1.5	br
T-12	X-4	E-5	K48-5	C-9		1.5	bk-gn

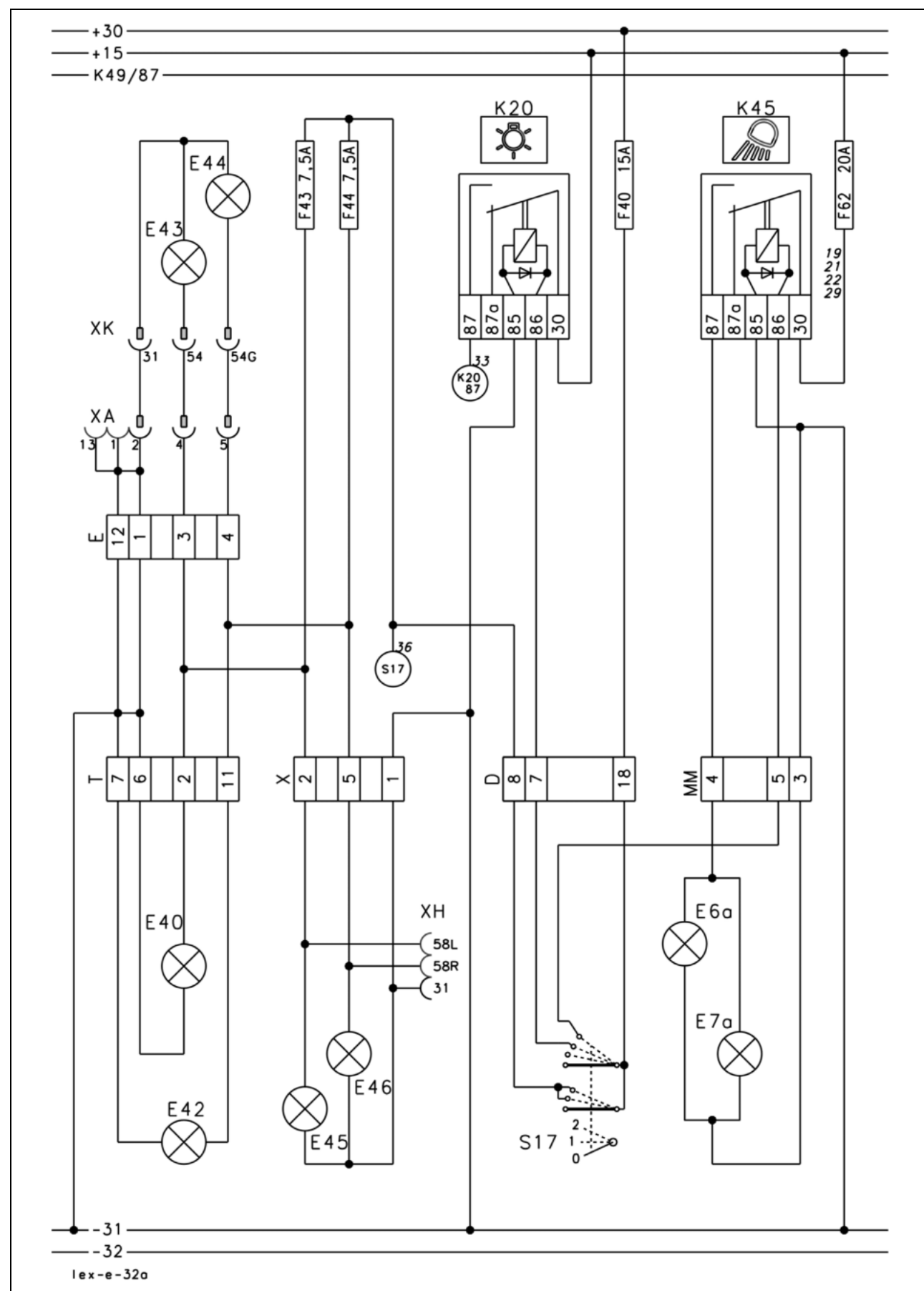
from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
X-1	31					2.5	br
X-3	T-1	E-2	K48-7	C-10	MI-4	1.5	bk-wh
X-4	T-12	E-5	K48-5	C-9		1.5	bk-gn

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
E-1	31					1.5	br
E-2	T-1	X-3	K48-7	C-10	MI-4	1.5	bk-wh
E-5	T-12	X-4	K48-5	C-9		1.5	bk-gn
E-12	31					1.5	br

32a

**Main circuit for light,
taillight,
position light**

32a - Main circuit for light, taillight, position light



Designations:

- E6a Worklight railing left 2-e-20
- E7a Worklight railing right 2-e-16
- E40 Position light left rear 5-v-21
- E42 Position light right rear 5-f-21
- E43 Position light front attachment left
- E44 Position light front attachment right
- E45 Taillight left 5-v-21
- E46 Taillight right 5-v-15

- K20 Main relay light 3-h-20
- K45 Working lights 3-h-20

- S17 Vehicle lighting main switch 1-f-18

- XA Multifunction coupling A 8-e-21
- XH Trailer light 8-r-18
- XK Front attachment light 7-c-18

Measured value table:

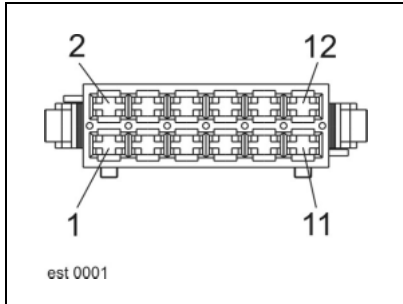
Item	Component	Measured value	Note
K20	Remote switching relay 15 A 30 A	95±10 Ω	(Pin 86/1 – 85/2) (Pin 87a/4 – 30/3) (Pin 87/5 – 30/3)
K45	Remote switching relay 40 A 60 A	90±10 Ω	(Pin 86/1 – 85/2) (Pin 87a/4 – 30/3) (Pin 87/5 – 30/3)

Description of functions:

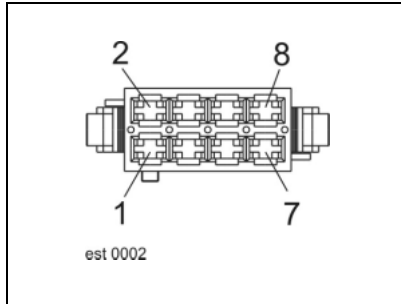
none

Pin assignment

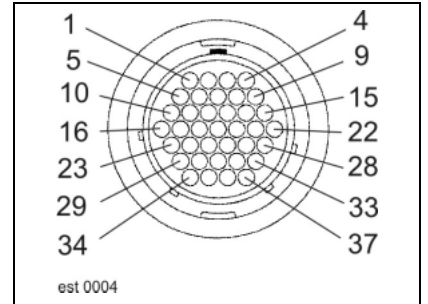
Plug T, X



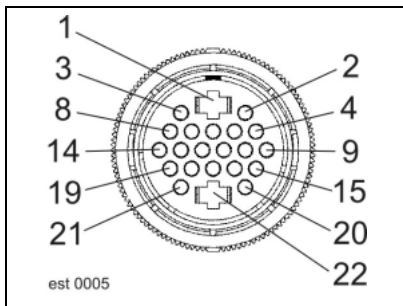
Plug MM



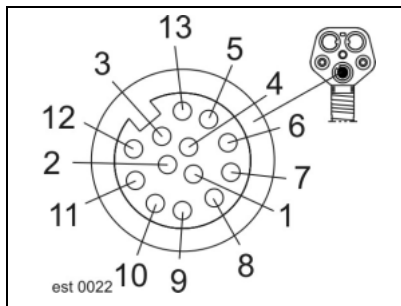
Plug E



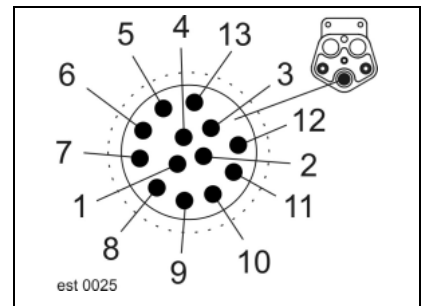
Plug D



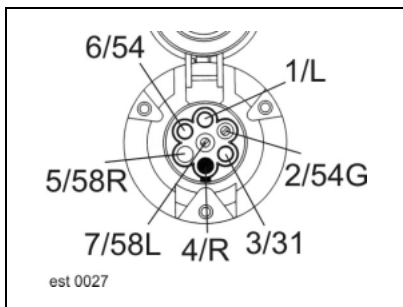
Plug socket XA



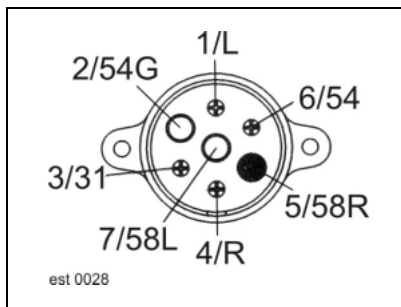
Plug XA



Plug socket XH, XK



Plug XH, XK



Connection list

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
T-2	F43-A	X-2	E-3			1.5	gr-bk
T-6	31					1.5	br
T-7	31					1.5	br
T-11	F44-A	X-5	E-4			1.5	gr-rd

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
X-1	31					2.5	br
X-2	F43-A	E-3	T-2			1.5	gr-bk
X-5	F44-A	E-4	T-11			1.5	gr-rd

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
D-7	K20-86					0.5	wh-bk
D-8	F43-E	F44-E	F52-E			1.5	gr
D-18	F40-A					1.5	bk-gn

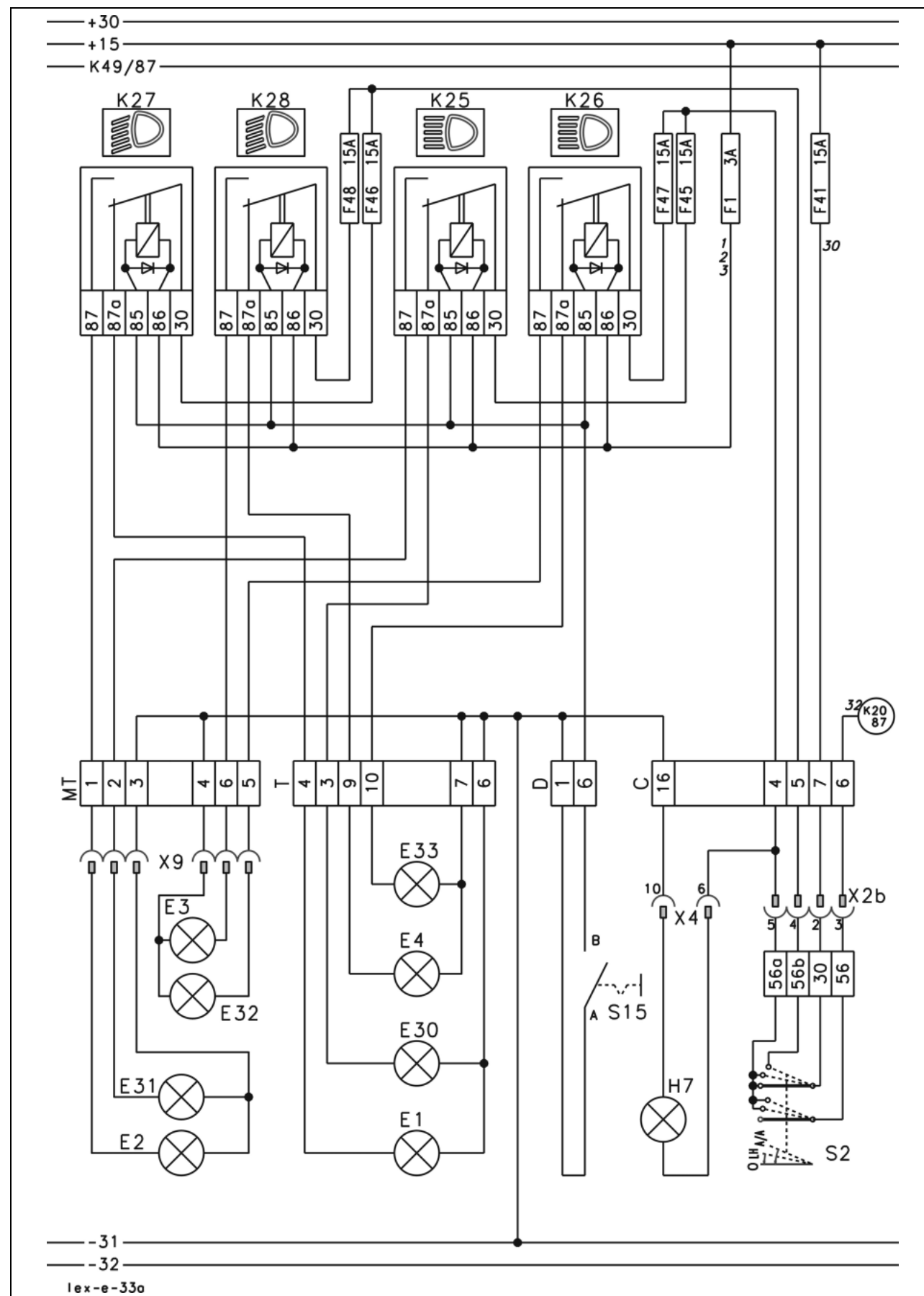
from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
MM-3	31					1.5	br
MM-4	K45-87					1.5	gr-wh
MM-5	K45-86					1.5	wh-bl

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
E-1	31					1.5	br
E-3	F43-A	X-2	T-2			1.5	gr-bk
E-4	F44-A	X-5	T-11			1.5	gr-rd
E-12	31					1.5	br

33a

**Dipped headlights,
full beam,
road travel light switch**

33a - Dipped headlights, full beam, road travel light switch



Designations:

- E1 Dipped headlights left 5-f-21
- E2 Dipped headlights top left 4-f-21
- E3 Dipped headlights top right 4-f-15
- E4 Dipped headlights right 5-f-15
- E30 Full beam left 5-f-21
- E31 Full beam top left 4-f-21
- E32 Full beam top right 4-f-15
- E33 Full beam right 5-f-15

- H7 Full beam 3-f-18

- K25 Full beam 3-h-20
- K26 Full beam 3-h-20
- K27 Dipped headlights 3-h-20
- K28 Dipped headlights 3-h-20

- S2 Dipped headlights/full beam 3-f-18
- S15 Road travel light switch 1-f-18

- X2b Steering column switch lever 4-f-18
- X4 Steering column indicator lights 3-f-18
- X9 Auxiliary lighting 5-f-15
5-f-21

Measured value table:

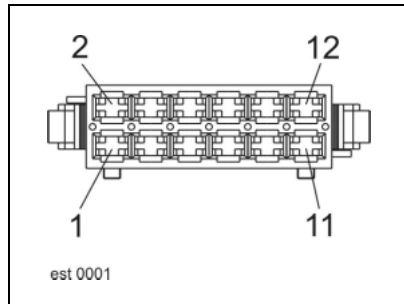
Item	Component	Measured value	Note
K25	Remote switching relay	95±10 Ω	(Pin 86/1 – 85/2)
K26		15 A	(Pin 87a/4 – 30/3)
K27		30 A	(Pin 87/5 – 30/3)
K28			

Description of functions:

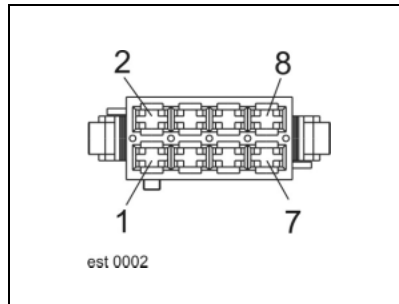
none

Pin assignment

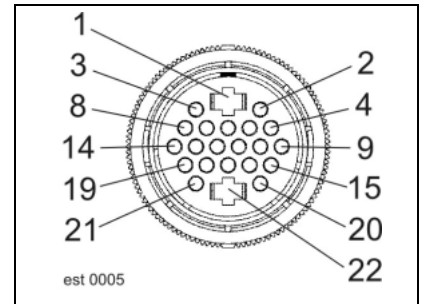
Plug T



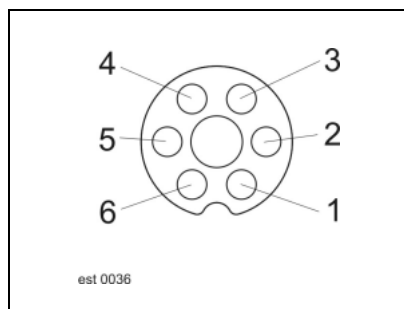
Plug MT



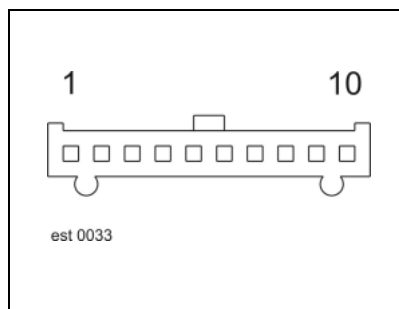
Plug C, D



Plug X2b



Plug X4



Connection list

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
MT-1	K27-87					1.5	ye-bk
MT-2	K25-87					1.5	wh-bk
MT-3	31					1.5	br
MT-4	31					1.5	br
MT-5	K26-87					1.5	wh-bk
MT-6	K28-87					1.5	ye-bk

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
T-3	K25-87a					1.5	wh
T-4	K27-87a					1.5	ye
T-6	31					1.5	br
T-7	31					1.5	br
T-9	K28-87a					1.5	ye
T-10	K26-87a					1.5	wh

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
D-1	31					4	br
D-6	K25-85	K26-85	K27-85	K28-85		0.5	br-ye

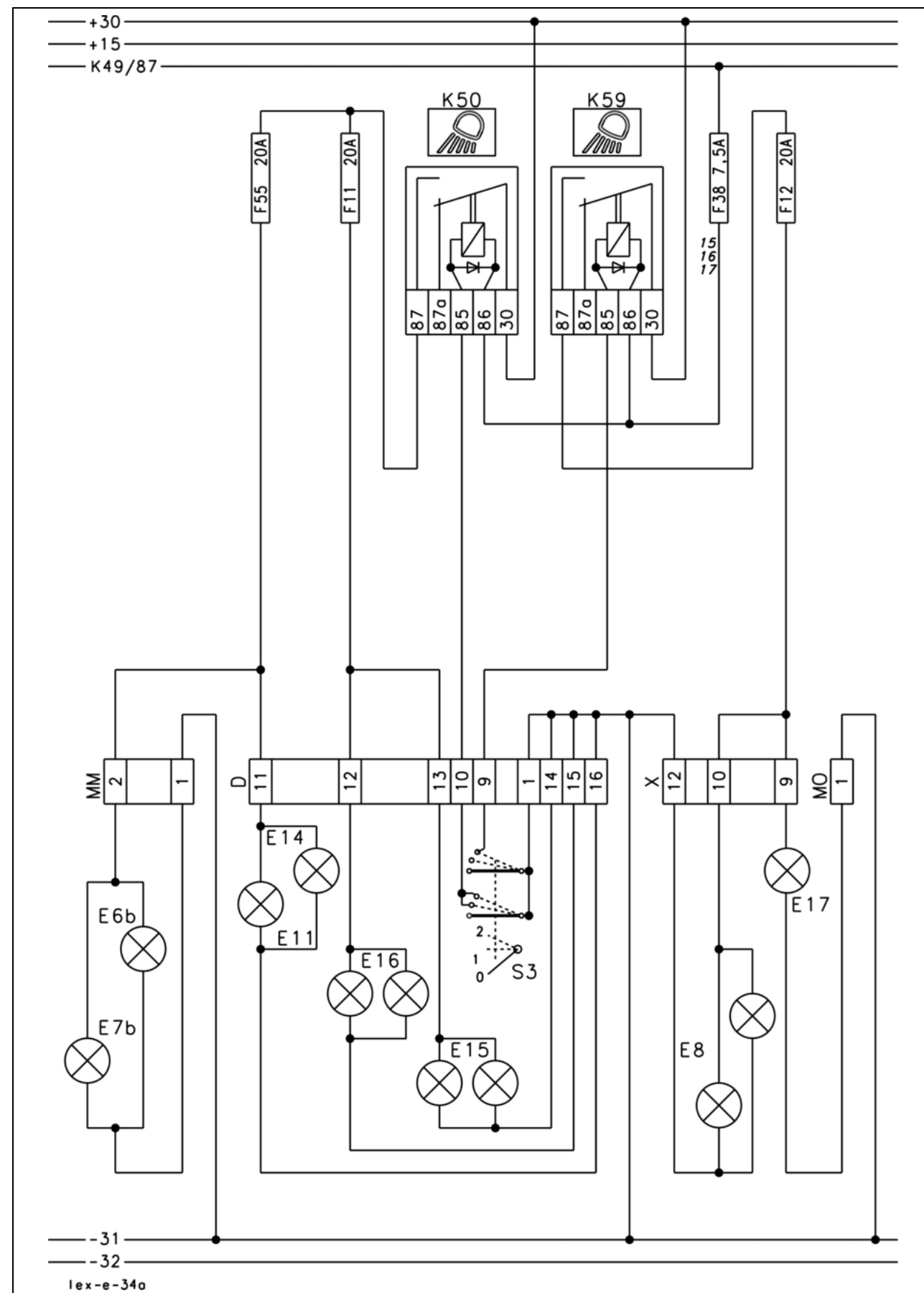
from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
C-4	F45-E	F47-E				2.5 / 1.5	wh
C-5	F46-E	F48-E				2.5 / 1.5	ye
C-6	K20-87					2.5 / 1.5	bk-ye
C-7	F41-A	D-19	K61-30	K62-30		2.5 / 1.5	rd
C-16	31					1.5	br

Notes

34a

Working lights

34a - Working lights



Designations:

- E6b Worklight railing left 2-e-20
- E7b Worklight railing right 2-e-16
- E8 Worklight rear 3-v-17
- E11 Worklight cab left middle 2-d-19
- E14 Worklight cab right middle 2-d-17
- E15 Worklight working area illumination left 2-e-19
- E16 Worklight working area illumination right 2-e-17
- E17 Worklight grain tank unloading tube 2-l-21

- K50 Working lights 3-h-20
- K59 Working lights 3-h-20

- S3 Working lights main switch 1-f-18

Measured value table:

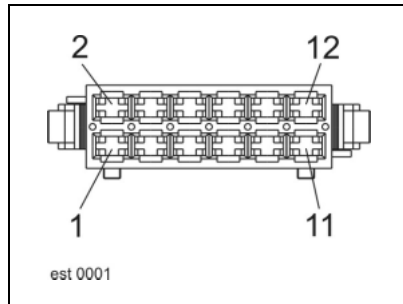
Item	Component	Measured value	Note
K50	Remote switching relay 70 A	115±10 Ω	(Pin 86/1 – 85/2) (Pin 87/5 – 30/3)
K59	Remote switching relay 40 A 60 A	90±10 Ω	(Pin 86/1 – 85/2) (Pin 87a/4 – 30/3) (Pin 87/5 – 30/3)

Description of functions:

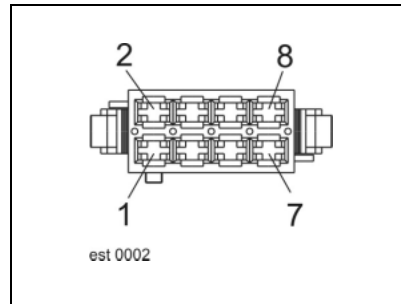
none

Pin assignment

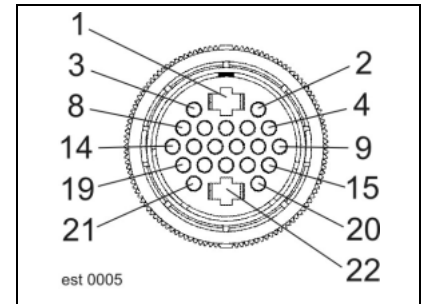
Plug X



Plug MM, MO



Plug D



Connection list

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

Notes

35a

**Sieve lights, grain tank lights,
return lights, horn,
brake lights,
reversing horn**

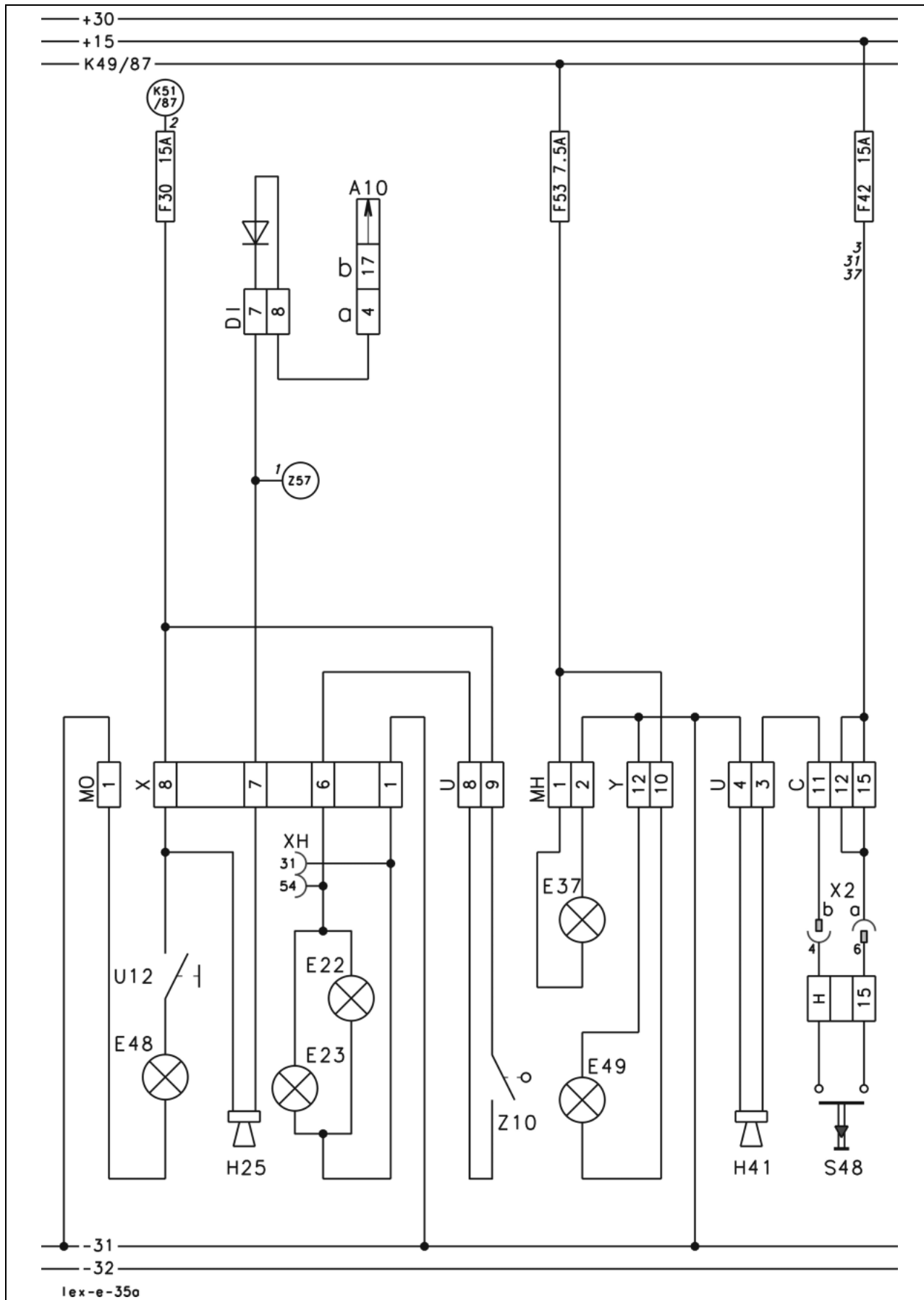
35a - Sieve lights, grain tank lights, return lights, horn, brake lights

Designations:

A10	Fieldwork computer module (BIF/CAB)	2-h-20
DI	Diode pcb warning device	3-h-20
E22	Brake light left	5-v-21
E23	Brake light right	5-v-15
E37	Grain tank light	1-h-16
E48	Sieve pan light	5-r-20
E49	Return lights	5-h-16
H25	Reversing horn	6-p-16
H41	Signal horn	5-f-19
S48	Signal horn	3-f-18
U12	Sieve pan light	5-r-20
XH	Trailer light	8-r-18
X2	Steering column switch lever	4-f-18
Z10	Brake light	5-f-17
Z57	Ground speed control lever safety start switch	3-g-18

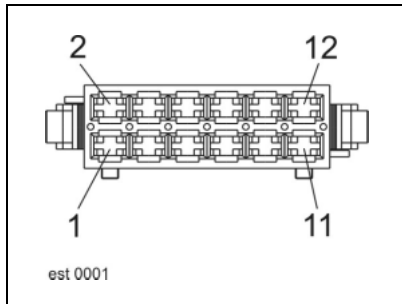
Description of functions:

none

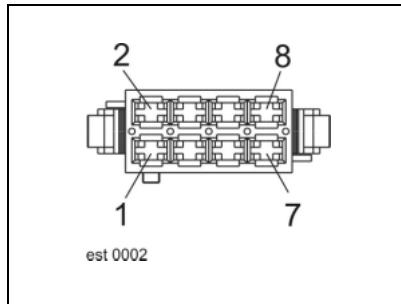


Pin assignment

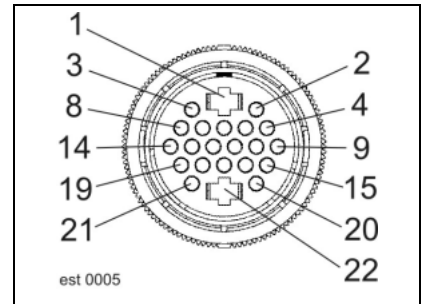
Plug U, X, Y



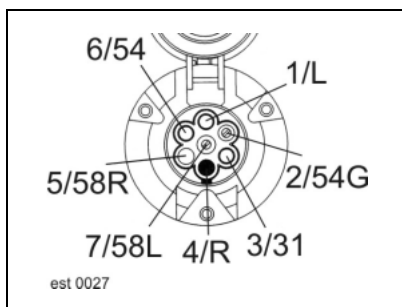
Plug MH, MO



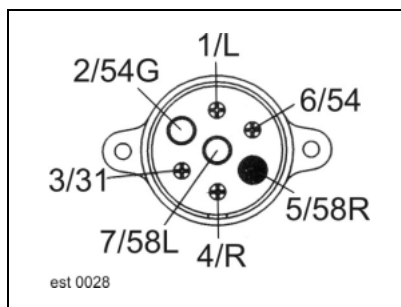
Plug C



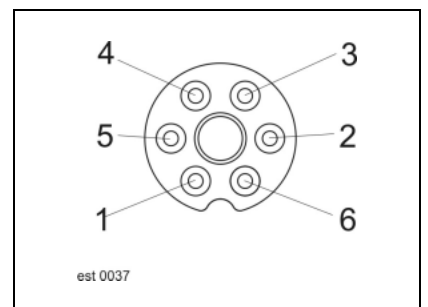
Plug socket XH



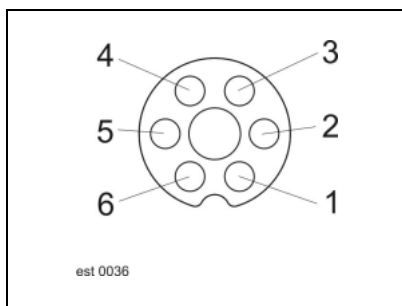
Plug XH



Plug X2a



Plug X2b



Connection list

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

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
X-1	31					2.5	br
X-6	U-8					1.5	bk-rd
X-7	P-6	DI-7				1.5	gr-wh
X-8	F30-A	U-9				1.5	gr-gn

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
U-3	C-11					1.5	gr-wh
U-4	31					2.5	br
U-8	X-6					1.5	bk
U-9	F30-A	X-8				1.5	bk-rd

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
MH-1	F53-A	Y-10				1.5	gr-vi
MH-2	31					1.5	br

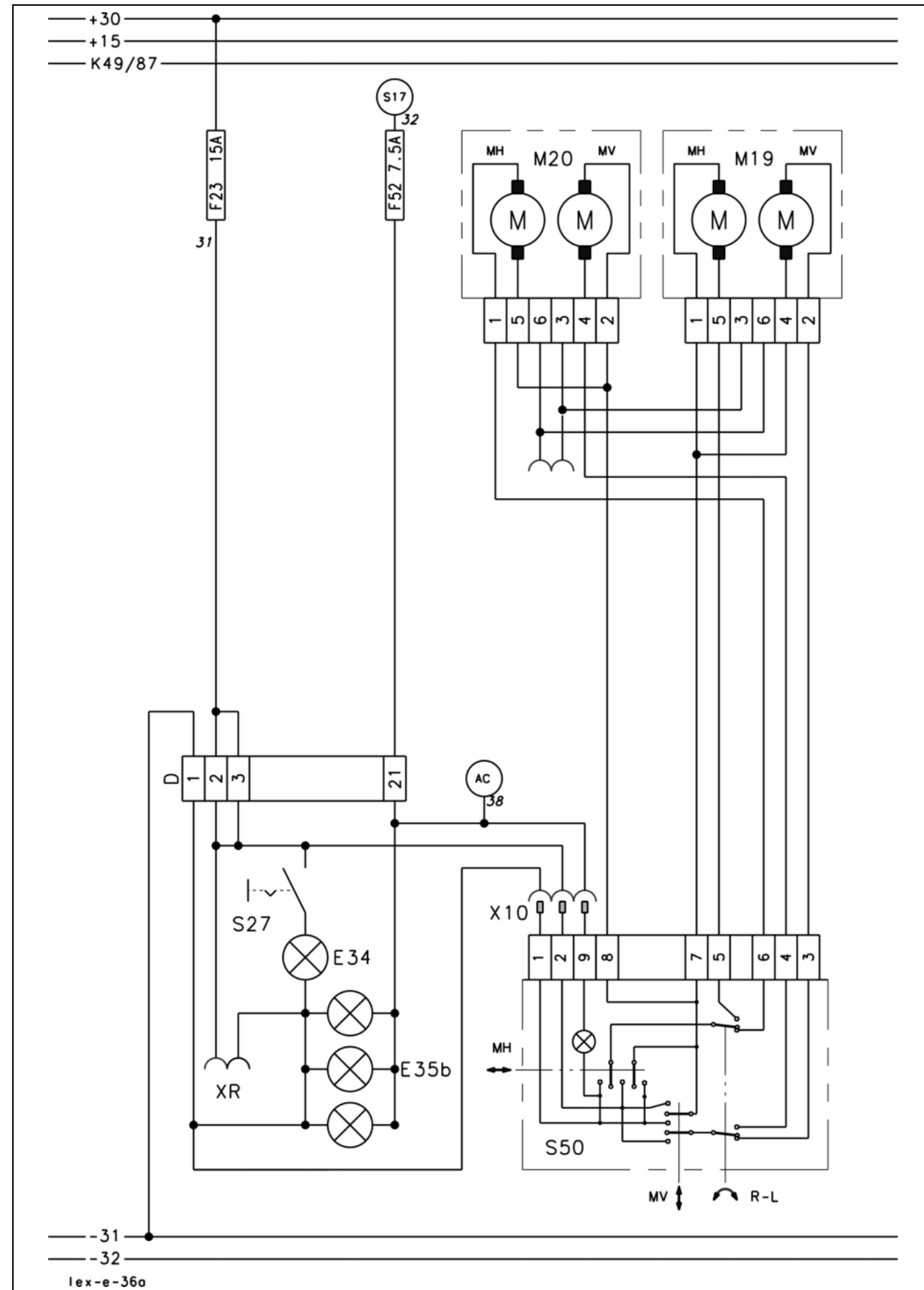
from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
Y-10	F53-A	MH-1				1.5	gr-vi
Y-12	31					2.5	br

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
C-11	U-3					1.5	bk-gr
C-12	F42-A	C-15				1.5	bk
C-15	F42-A	C-12				1.5	bk

36a

**Instrument lighting,
radio,
mirror adjustment**

36a - Instrument lighting, radio, mirror adjustment



Designations:

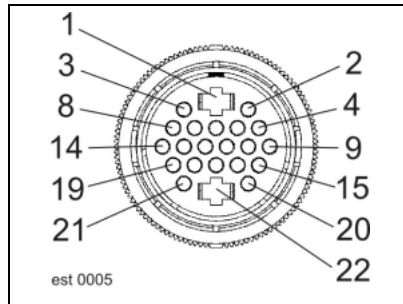
E34	Inside light	1-g-17
E35b	Instrument lighting	3-g-17
M19	Mirror adjustment left	2-f-20
M20	Mirror adjustment right	2-f-16
S17	Vehicle lighting main switch	1-f-18
S27	Inside light	1-g-17
S50	Mirror adjustment	1-f-19
XR	Plug connector / radio / mobile radio	1-e-17
X10	Mirror adjustment	2-f-18

Description of functions:

none

Pin assignment

Plug D

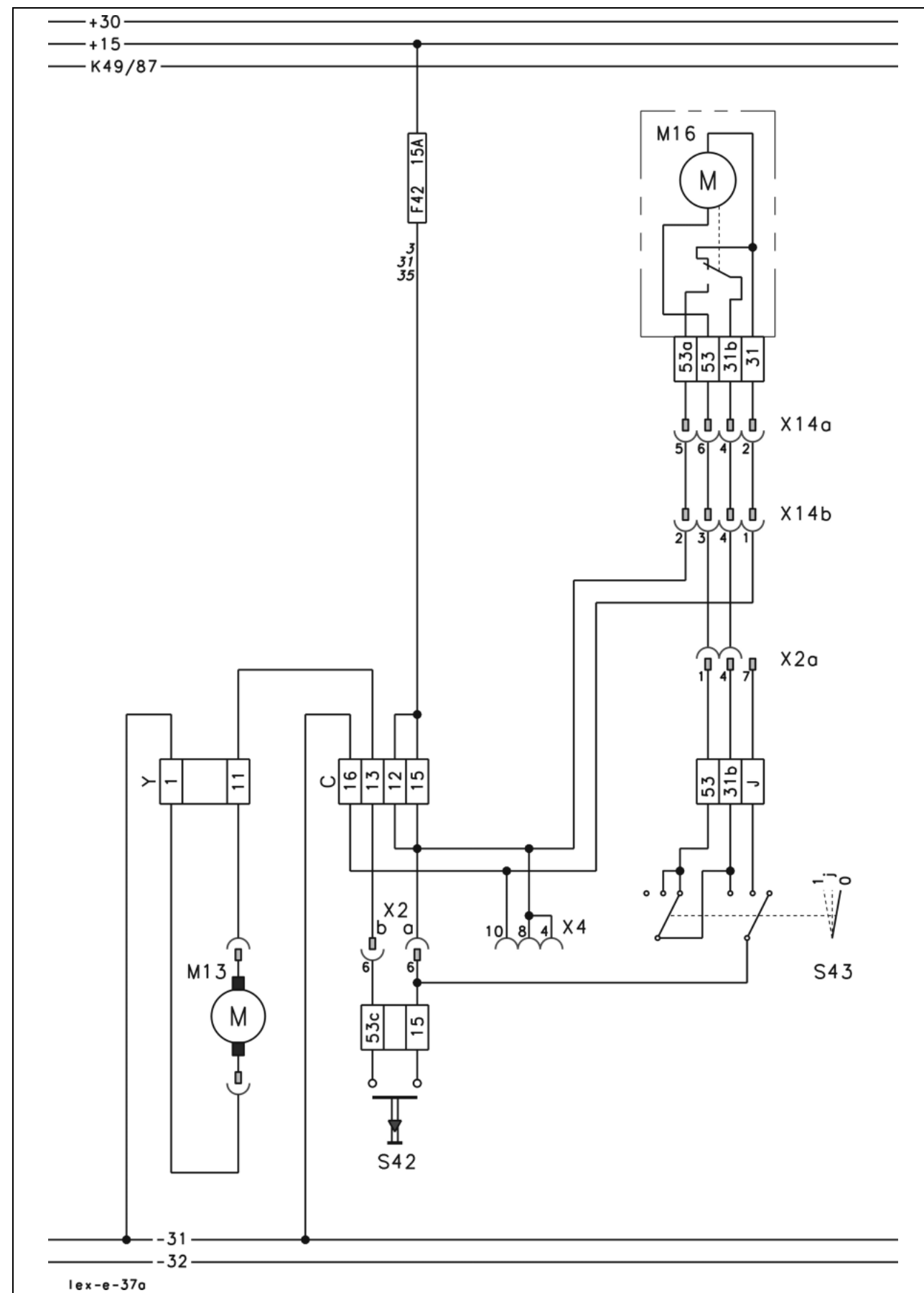
**Connection list**

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
D-1	31					4	br
D-2	F23-A		D-3			1.5	rd
D-3	F23-A		D-2			1.5	rd
D-21	F52-A					1.5	gr

Notes

37a**Windshield wiper,
windshield washer**

37a - Windshield wiper, windshield washer



Designations:

- M13 Windshield washer front 5-f-16
- 6-m-15
- M16 Windshield wiper front 3-e-18
- S42 Windshield washer 3-f-18
- S43 Windshield wiper 3-f-18
- X2 Steering column switch lever 4-f-18
- X2a Steering column switch lever 4-f-18
- X4 Steering column indicator lights 3-f-18
- X14a Windshield wiper 3-f-18
- X14b Windshield wiper 3-f-18

Measured value table:

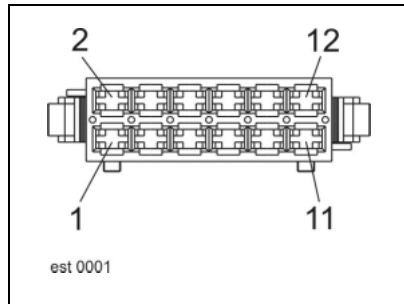
Item	Component	Measured value	Note
M16	Electric motor	8.5 A	Current max.

Description of functions:

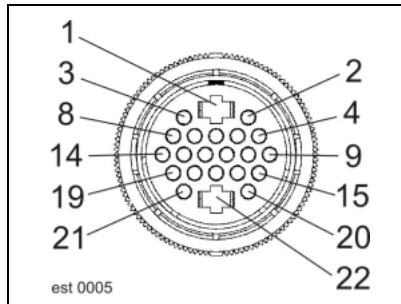
none

Pin assignment

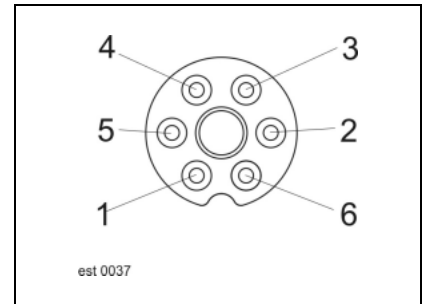
Plug Y



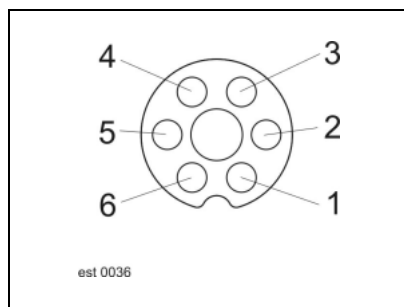
Plug C



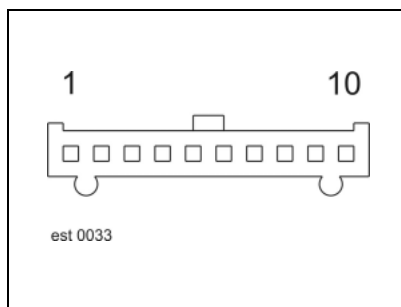
Plug X2a



Plug X2b



Plug X4



Connection list

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
Y-1	31					2.5	br
Y-11	C-13					1.5	vi-ye

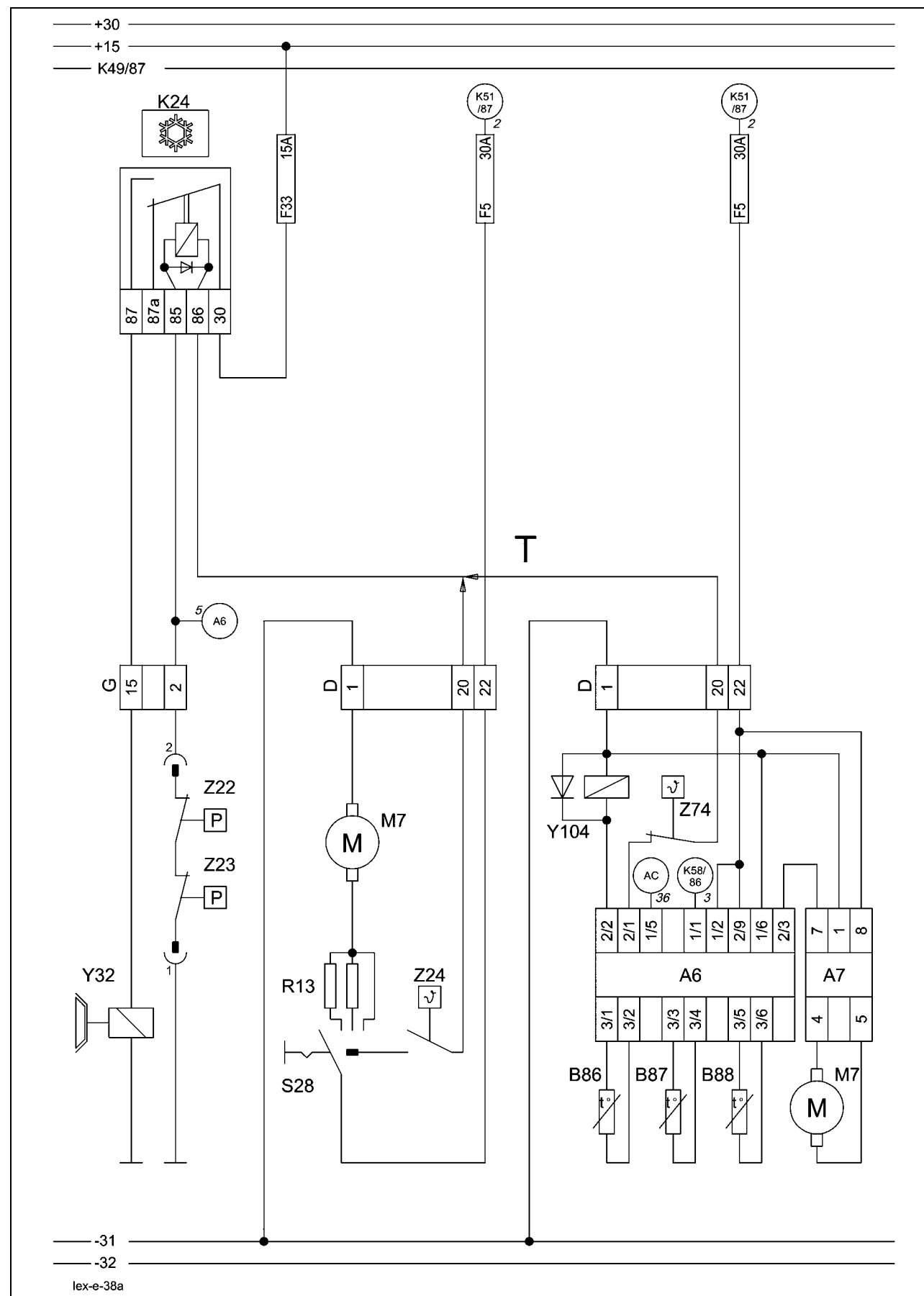
from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
C-12	F42-A	C-15				1.5	bk
C-13	Y-11					1.5	vi
C-15	F42-A	C-12				1.5	bk
C-16	31					1.5	br

Notes

38a

**Automatic air conditioner,
compressor-type air conditioner**

38a - Automatic air conditioner, compressor-type air conditioner



Designations:

- A6 Automatic climate control 2-f-18
- A7 Cab fan speed controller 1-f-18
- B86 Cab temperature AC 1-g-17
- B87 Output temperature AC 2-e-18
- B88 External temperature AC 1-f-19
- K24 Compressor-type air conditioner 3-h-20
- M7 Cab fan
- R13 Cab fan line resistor 1-f-18
- S28 Cab fan 1-f-18
- Y32 Compressor-type air conditioner electromagnet clutch . 2-p-17
- Y104 Heating
- Z22 Compressor-type air conditioner high pressure 1-m-18
- Z23 Compressor-type air conditioner low pressure 1-m-18
- Z24 Compressor-type air conditioner temperature 1-f-18
- Z74 Anti-icing 1-e-18

Notes:

T - with automatic climate control

Measured value table:

Item	Component	Measured value	Note
B86	Cab temperature sensor	-20° - 97070 Ω -10° - 55330 Ω	blue; Error by blinking code in display
B87	Output temperature sensor	0° - 32650 Ω 10° - 19900 Ω	yellow; Error by blinking code in display
B88	External temperature sensor	20° - 12490 Ω 30° - 8057 Ω 40° - 5327 Ω 50° - 3603 Ω 60° - 2488 Ω	red; Error by blinking code in display
K24	Remote switching relay 15 A 30 A	95±10 Ω	(Pin 86/1 – 85/2) (Pin 87a/4 – 30/3) (Pin 87/5 – 30/3)
Y32	Solenoid coils	3.0 A 4.0 Ω	
Y104	Solenoid coils	0.8 A 15 Ω	

Description of functions: 1/7

Compressor-type air conditioner circuit (manual)

The condition for the functioning of the electromagnetic clutch (Y32) is the ground supply of the relay (K24) via the two closed gas pressure switches (Z22/Z23). If the fan switch (S28) and the thermostat switch (Z24) are closed, the relay (K24) is closed and the electromagnetic clutch (Y32) is thus supplied with voltage by the ignition lock (+15). If the ground signal through one of the two gas pressure switches (Z22/Z23) fails, the electromagnetic clutch (Y32) is turned off and this failure is displayed in the terminal (A30).

Gas pressure table for **R134a**

Outside temperature in °C	Low pressure compressor in bar	High pressure compressor in bar	Air temperature at nozzle in °C
20	0.80	9.0	---
25	0.85	11.0	2.0
30	0.90	13.0	3.0
35	0.95	15.0	4.0
40	1.00	17.0	5.5
45	1.50	19.0	7.0

Automatic air conditioner

Together with the cab fan speed controller module (A7), the automatic air conditioner module (A6) provides the complete temperature control inside the cab.

This involves both actuating the cooling compressor electro-magnetic clutch (Y32) via relay K24 and switching the heater circuit on and off if required via solenoid coil (Y109) until the set values agree with the actual values of the corresponding sensors.

The two closed gas-pressure switches (Z22/Z23) must supply relay K24 with earth in order to allow the function of the electro-magnetic clutch (Y32).

The temperature switch (Z74) prevents icing on the evaporator.

If the earth signal fails due to one of the two gas-pressure switches (Z22/Z23), the electro-magnetic clutch (Y32) disengages and this fault is displayed in terminal (A30).

econ operation

In this operating mode, the cooling compressor is not activated. The entire air conditioner control is realised by the heater and the fan.

REHEAT function

In this operating mode, the cooling compressor is permanently activated. The ambient sensors (e.g. outside temperature sensor) is not considered here.

Activation is for a defined period of time (see also Operator's Manual).

Test menu:



Key to diagram:

- 1 Key for activating the test menu
- 2 LED (without function in the test menu)
- 3 Key for activating the test menu
- 4 LED (without function in the test menu)
- 5 Key (without function in the test menu)
- 6 Key (without function in the test menu)
- 7 LED bar display indicates the evaporator fan speed
- 8 Display field (3 digits) Indicates the temperature in the test menu.
- 9 Display (1 digit). Indicates the measuring points in the test menu.
- 10 LED (without function in the test menu)
- 11 Key for leaving the test menu A RESET is triggered after pressing this key.
- 12 LED (without function in the test menu)
- 13 Key for activating the test menu
- LED (without function in the test menu)

Description of functions: 2/7

- Test menu operation



1. Switch on the ignition and start the engine.

2. Display of software version

The software version is displayed for 3 seconds.

If the software version flashes, the factory setting of the software in the automatic air conditioner module (A6) was modified.



3. Temperature display

- Test menu access

1. Press key (3) and release it.

2. Press key (1) and hold it.

3. Press keys (11) and (13) simultaneously.

4. Release keys (1), (11) and (13) simultaneously.



The display field (8) shows the total of the factory software setting values = 370.

If the setting value flashes, the factory software setting values in the automatic air conditioner module (A6) were modified.

1st menu item

Press key (3) once.

Cab temperature

The cab temperature in °C is displayed.



Example: 25.5°C

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

1. Position and possibly soiling of AC cab temperature sensor (B86), (on the rear right, behind the suction lamellas).
2. Connector on the automatic air conditioner module (A6).
3. Measure the resistance of the AC cab temperature sensor (B86), must be 10kOhm at 25°C.
4. Offset value of AC cab temperature sensor (B86) in the controller menu.

Description of functions: 3/72nd menu item

Press key (3) once.

Blow-out temperature

The blow-out temperature in °C is displayed.

A digital display showing the number 29.3 with a degree Celsius symbol to the right.

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

Press key (3) once.

Outside temperature

The outside temperature in °C is displayed.

A digital display showing the number 21.1 with a degree Celsius symbol to the right.

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

Press key (3) once.

Heater solenoid coil (Y109)

The heater solenoid coil (Y109) is switched on.

A digital display showing the number 4.

Example: Test step 4 is displayed

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

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).

Description of functions: 4/7

Important note: The further test steps (menu items) can be carried out only when a voltage is applied to pin 1/1 of the automatic air conditioner module (A6).

5th menu item
Compressor-type air conditioner electro-magnetic clutch solenoid coil Y32

Press key (3) once.
The compressor-type air conditioner electro-magnetic clutch solenoid coil (Y32) is activated.



Example: Test step 5 is displayed

If the electro-magnetic clutch (Y32) is not activated, please check the following:

1. Connector on the compressor.
2. Fuse (F33, 1.5A) and compressor-type air conditioner relay (K24)
3. Check electro-magnetic clutch mechanically
4. Connector on the automatic air conditioner module (A6).
5. Check for short-circuit or break in the cable on the compressor-type air conditioner solenoid coil electro-magnetic clutch (Y32).

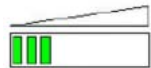
The solenoid is deactivated again when selecting the next menu item.

6th menu item
Fan speed (30%)
Cab fan (M7)

Press key (3) once.
The fan speed (30%) of the cab fan (M7) is activated.



Example: Test step 6 is displayed



The speed is displayed as a bar display.

If the cab fan does not start, please check the following:

1. Connector on the evaporator fan below the roof cover. Slacken off the cover screws and remove the cover.
2. Check the cab fan motor mechanically. Abraded particles of carbon brushes
3. Connector on the automatic air conditioner module (A6).
4. Fuse (F33, 1.5A)
5. Check cable to the cab fan motor (M7) for short-circuit or break.

Description of functions: 5/77th menu item

Press key (3) once.

The fan speed (50%) of the cab fan (M7) is activated.

Fan speed (50%)

Cab fan (M7)



Example: Test step 7 is displayed



The speed is displayed as a bar display.

If the cab fan does not start, please check the following:

1. Connector on the cab fan (below the roof cover).
2. Check the cab fan motor mechanically. Abraded particles of carbon brushes
3. Connector on the automatic air conditioner module (A6).
4. Fuse (F33, 1.5 A)
5. Check cable to the cab fan motor (M7) for short-circuit or break.

8th menu item

Press key (3) once.

The fan speed (80%) of the cab fan (M7) is activated.

Fan speed (80%)

Cab fan (M7)



Example: Test step 8 is displayed



The speed is displayed as a bar display.

If the cab fan does not start, please check the following:

1. Connector on the cab fan (below the roof cover).
2. Check the cab fan motor mechanically. Abraded particles of carbon brushes
3. Connector on the automatic air conditioner module (A6).
4. Fuse (F33, 1.5 A)
5. Check cable to the cab fan motor (M7) for short-circuit or break.

Description of functions: 6/79th menu item

Press key (3) once.

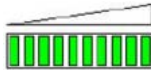
The fan speed (100%) of the cab fan (M7) is activated.

Fan speed (100%)

Cab fan (M7)



Example: Test step 9 is displayed



The speed is displayed as a bar display.

If the cab fan does not start, please check the following:

1. Connector on the cab fan (below the roof cover).
2. Cab fan speed controller module (A7) below the roof cover. Slacken off the cover screws and remove the cover.
3. Voltage on the cab fan motor. Target value: 11.5 – 14.5 V. The cab fan speed controller module (A7)
4. Check the cab fan motor mechanically. Abraded particles of carbon brushes
5. Connector on the cab fan speed controller (A7)
6. Fuse (F33, 1.5 A)
7. Check cable to the cab fan motor (M7) for short-circuit or break.

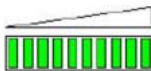
10th menu item

Press key (3) once.

All outputs of the automatic air conditioner module (A6) are activated.

Automatic air conditioner
module (A6) outputs

Example: Test step 10 is displayed



The speed is displayed as a bar display.

1. The heater solenoid coil (Y109) is switched on.
2. The compressor-type air conditioner electro-magnetic clutch solenoid coil (Y32) is activated.
3. The cab fan motor (M7) is switched on and works at max. speed.

Description of functions: 7/711th. menu item

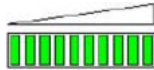
Press key (3) once.

Segment display

All segments of the bar and seven-segment displays are switched on.



All segments of the seven-segment displays are switched on.



All segments of the bar displays are switched on.

The display function can be checked by visual control.

12th menu item

Press key (3) once. The automatic air conditioner module (A6) performs a RESET. Now the software version is displayed – the automatic air conditioner module (A6) now is in normal operation again.

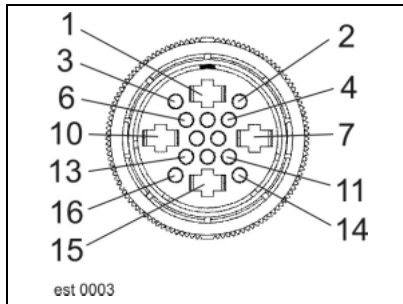
Leaving the menu



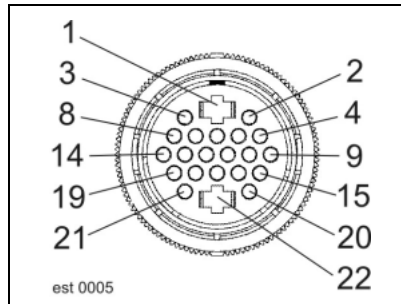
The software version is displayed.

Pin assignment

Plug G



Plug D



Connection list

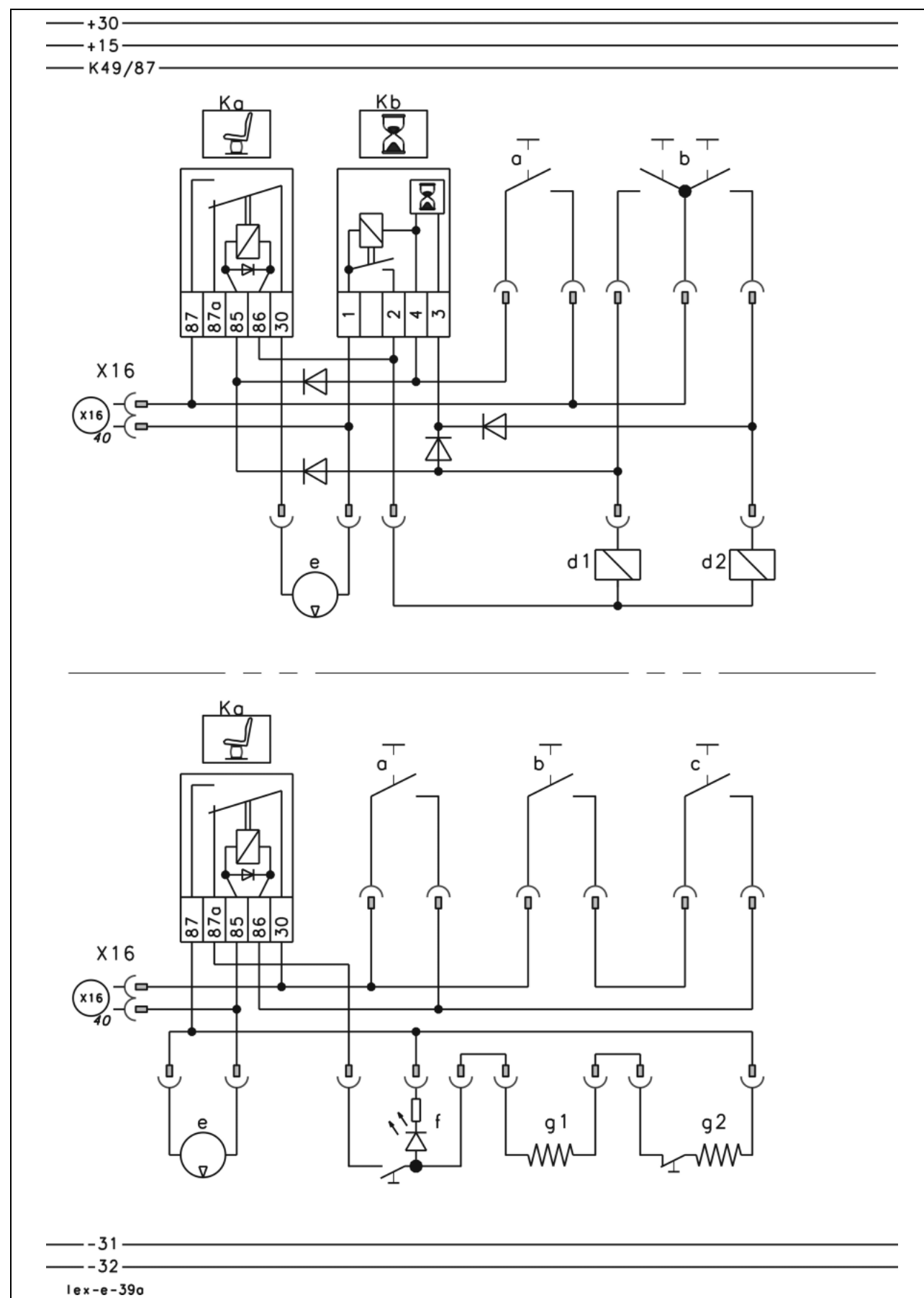
from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
G-2	A-6	K24-85				0.75	gn-vi
G-15	K24-87	DS-41				2.5	bk-gn

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
D-1	31					4	br
D-20	K24-86					0.5	rd-gn
D-22	F5-A					4	bk

39a

Compressor-type air seat

39a - Compressor-type air seat



Designations:

a	Pushbutton air chamber set backrest	4-h-18
b	Pushbutton fill / release air spring	4-h-18
c	Releasing switch	4-h-18
d	Air suspension seat solenoid valve	4-h-18
e	Compressor air seat	4-h-18
f	Seat-heater switch	4-h-18
g	Heating element	4-h-18
Ka	Compressor air seat	4-h-18
Kb	Compressor air seat time relay	4-h-18
X16	Compressor air seat	4-h-18

Description of functions:

Compressor-type air seat circuit

- automatic adjustment

The sensor switch (b) is activated by loading or unloading the seat, and the corresponding solenoid coil (d1/d2) is thus supplied with voltage. At the same time, the time relay (Kb) is addressed and switches the ground to the solenoid coils and to the relay (Ka) for the function of the compressor (e) after approx. 4 seconds.

When the seat is loaded, the sensor switch (b) activates the relay (Ka) parallel to the solenoid valve so that the compressor (e) is turned on.

Compressor-type air seat circuit

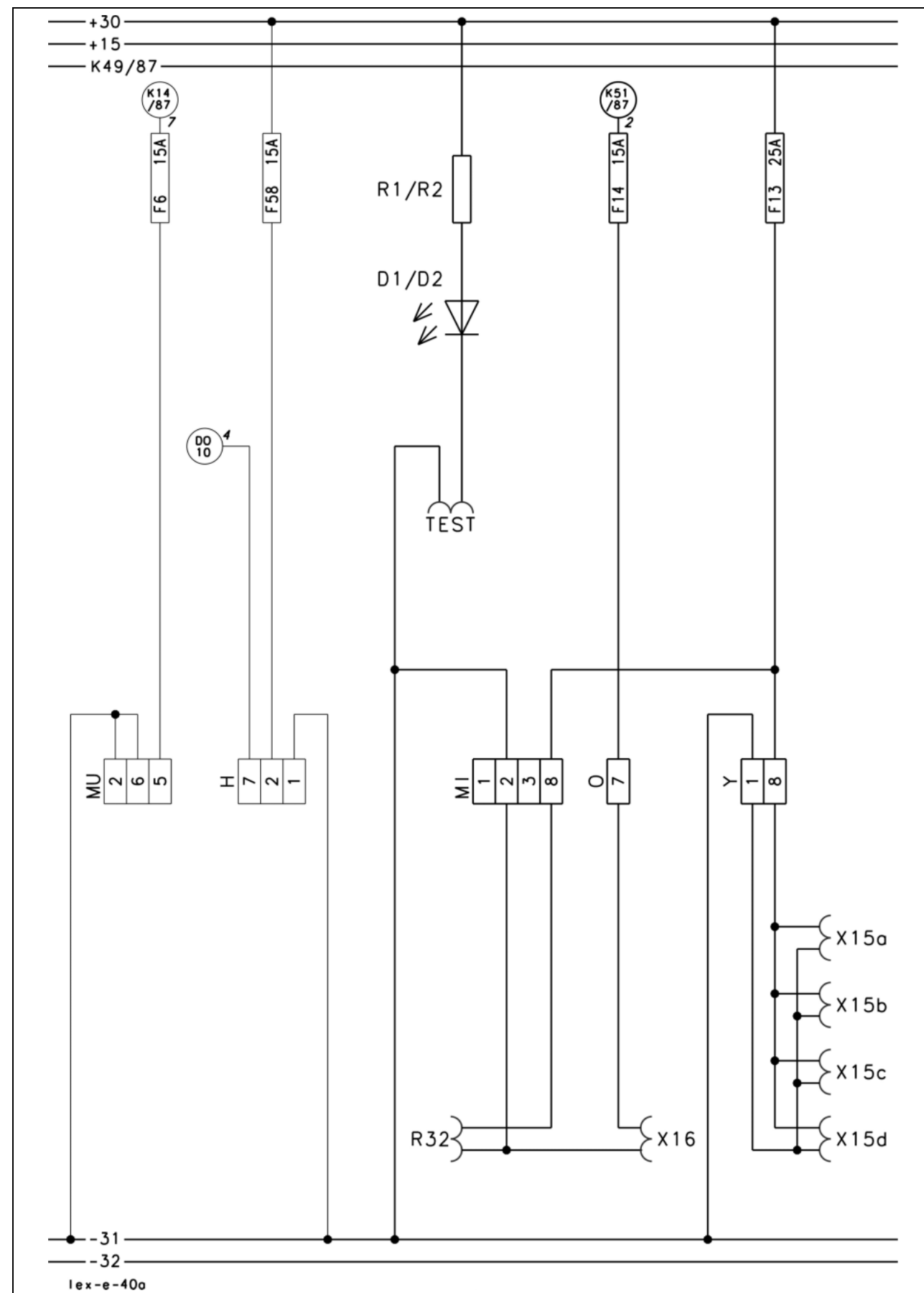
- manual adjustment with seat heater

The compressor (e) is only turned on if the unlock switch (c) is closed by loading the seat. This avoids an overload of the system due to the compressed air.

The heating elements (g) are automatically turned off when the compressor (e) is operated through the relay (Ka).

40a**Additional sockets,
Fuse tester**

40a - Additional sockets, fuse tester



Designations:

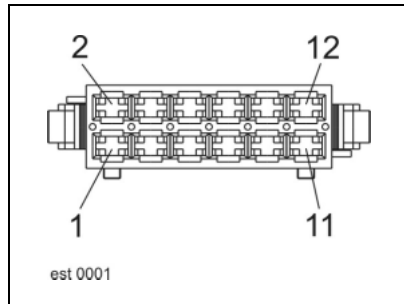
- D1/2 Fuse test LED 2-h-20
- R32 Cigarette lighter 3-g-17
- R1/2 Fuse test line resistor 2-h-20
- TEST Fuse test plug socket 2-h-20
- X15 Additional socket 6-m-15
- X16 Compressor-type air seat 4-h-18

Description of functions:

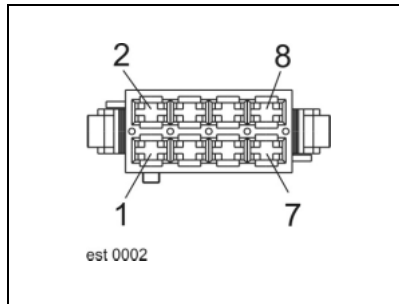
none

Pin assignment

Plug H, O, Y



Plug MI, MU

**Connection list**

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

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

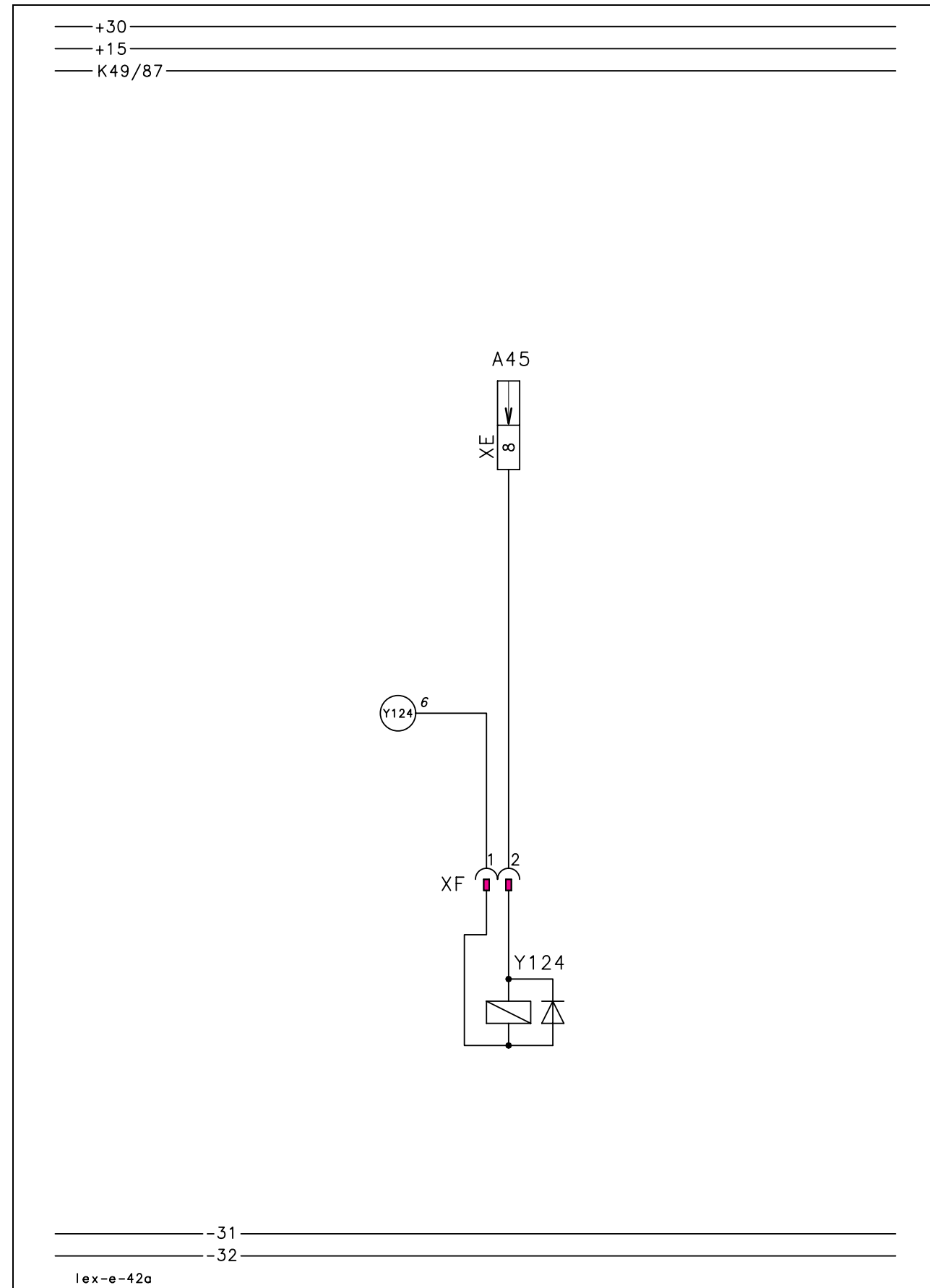
from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
H-1	31						
H-2	F58-A						
H-7	DO-10	MW-6					

Notes

42a

Ground drive and brake control

42a - Brake control



Designations:

- A45 Ground drive hydraulic motor (HBM)
brake restrictor module 2-h-20
- Y124 Ground drive brake restrictor 3-p-20

Measured value table:

Item	Component	Measured value	Note
Y124	Solenoid coil	3.8 A 3.2 Ω	

Description of functions:

Hydrostatic brake valve system

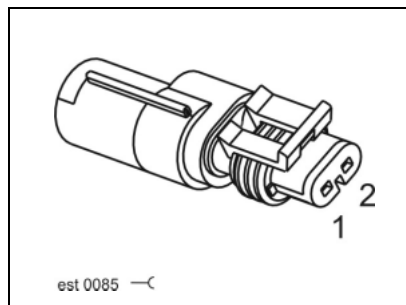
When the diesel engine speed exceeds the allowed maximum of 2230 rpm (e.g. downhill travel), the ground drive hydraulic motor (HBM) brake restrictor module A45 also receives this information from the fieldwork computer module via the CAN bus. Now the ground drive hydraulic motor (HBM) brake restrictor module A45 actuates the circulation shut-off valve (Y77) in order to put a greater load on the drive (see also diagram 4b).

When the diesel engine speed exceeds 2300 rpm, the brake restrictor (Y124) is additionally actuated in order to restrict the high-pressure circuit in the ground drive. When the speed now drops below 2210 rpm, the brake restrictor (Y124) is deactivated.

Note: The function of the ground drive hydraulic motor (HBM) brake restrictor module A45 may be checked using terminal A30. In the menu "Settings – Max. no-load speed – Speeds learn – OK", the outputs to the circulation shut-off valve (Y77) and to the module A45 are automatically switched for 5 seconds.

Pin assignment

Socket XF

**Connection list**

from	to 1	to 2	to 3	to 4	to 5	mm ²	Colour
XF-1						1.5	br
XF-2						1.5	bl-rd

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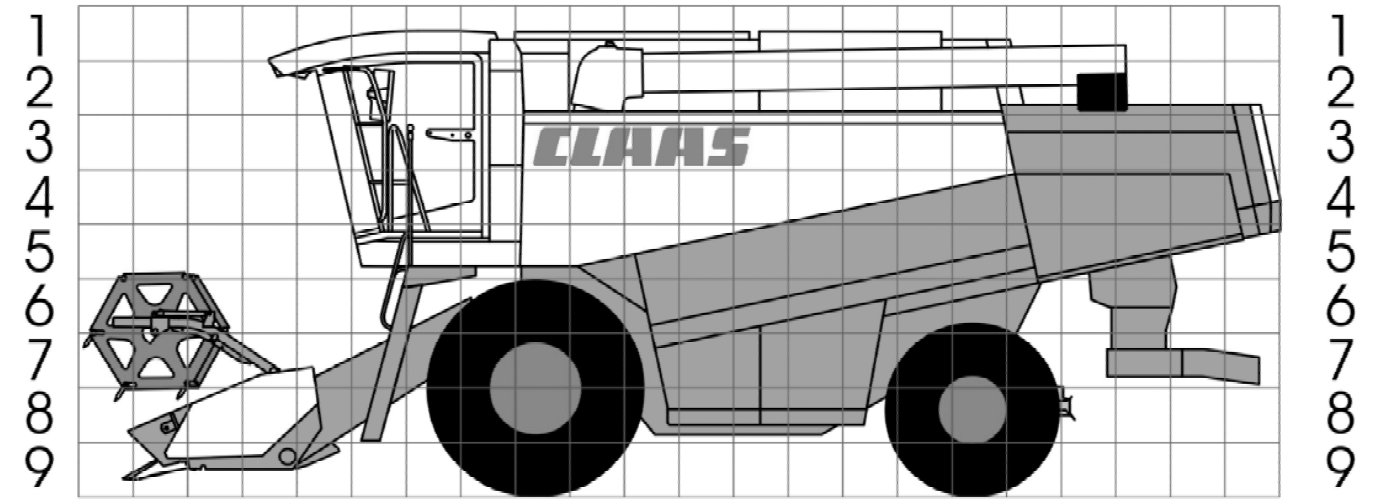
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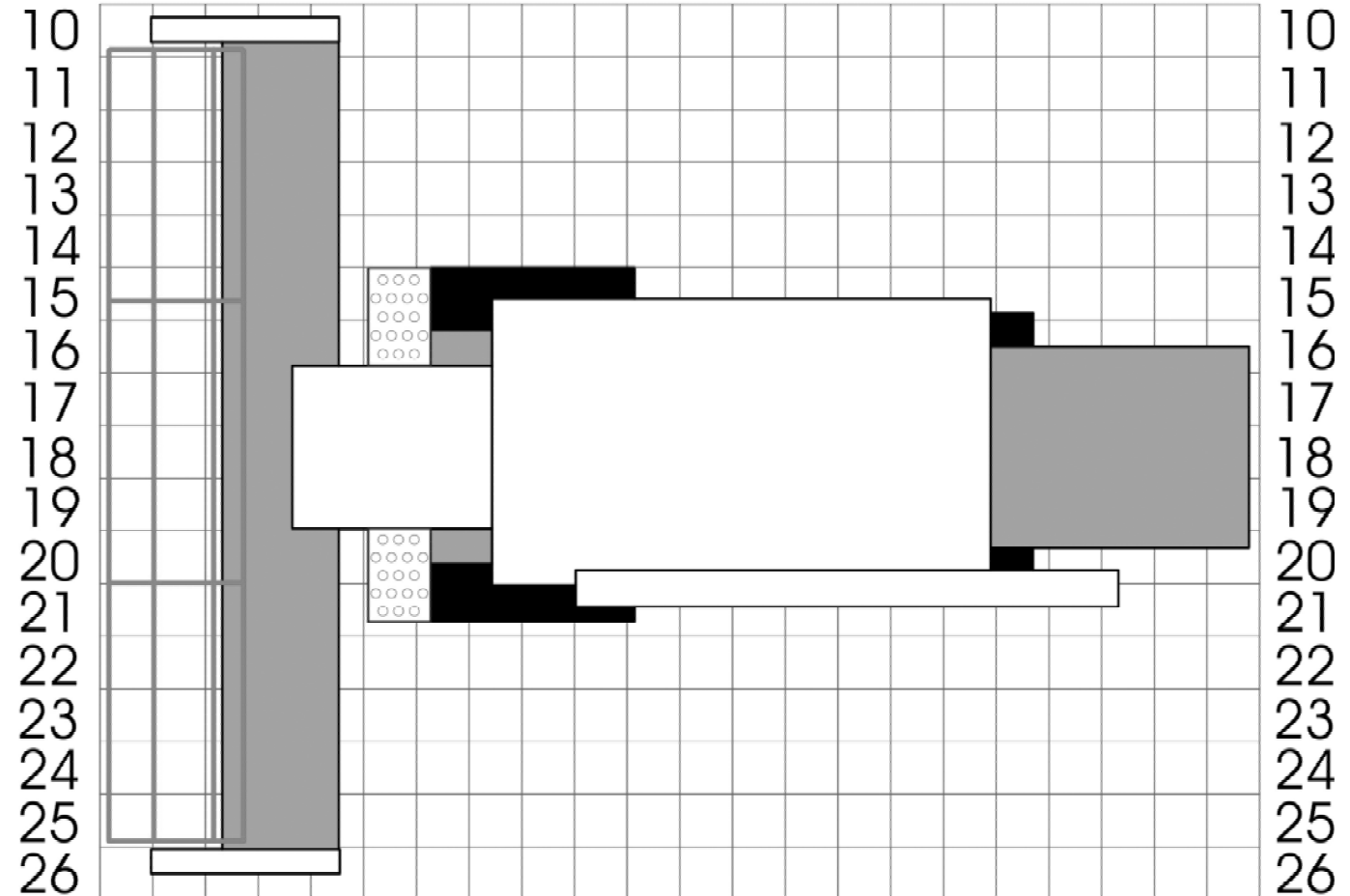
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Component grid

a b c d e f g h i j k l m n o p q r s t u v



a b c d e f g h i j k l m n o p q r s t u v



a b c d e f g h i j k l m n o p q r s t u v

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CLAAS KGaA mbH
Postfach 1163
33426 Harsewinkel
Tel. +49 (0)5247 12-0
www.claas.com

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