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Electrical System, Table of Contents

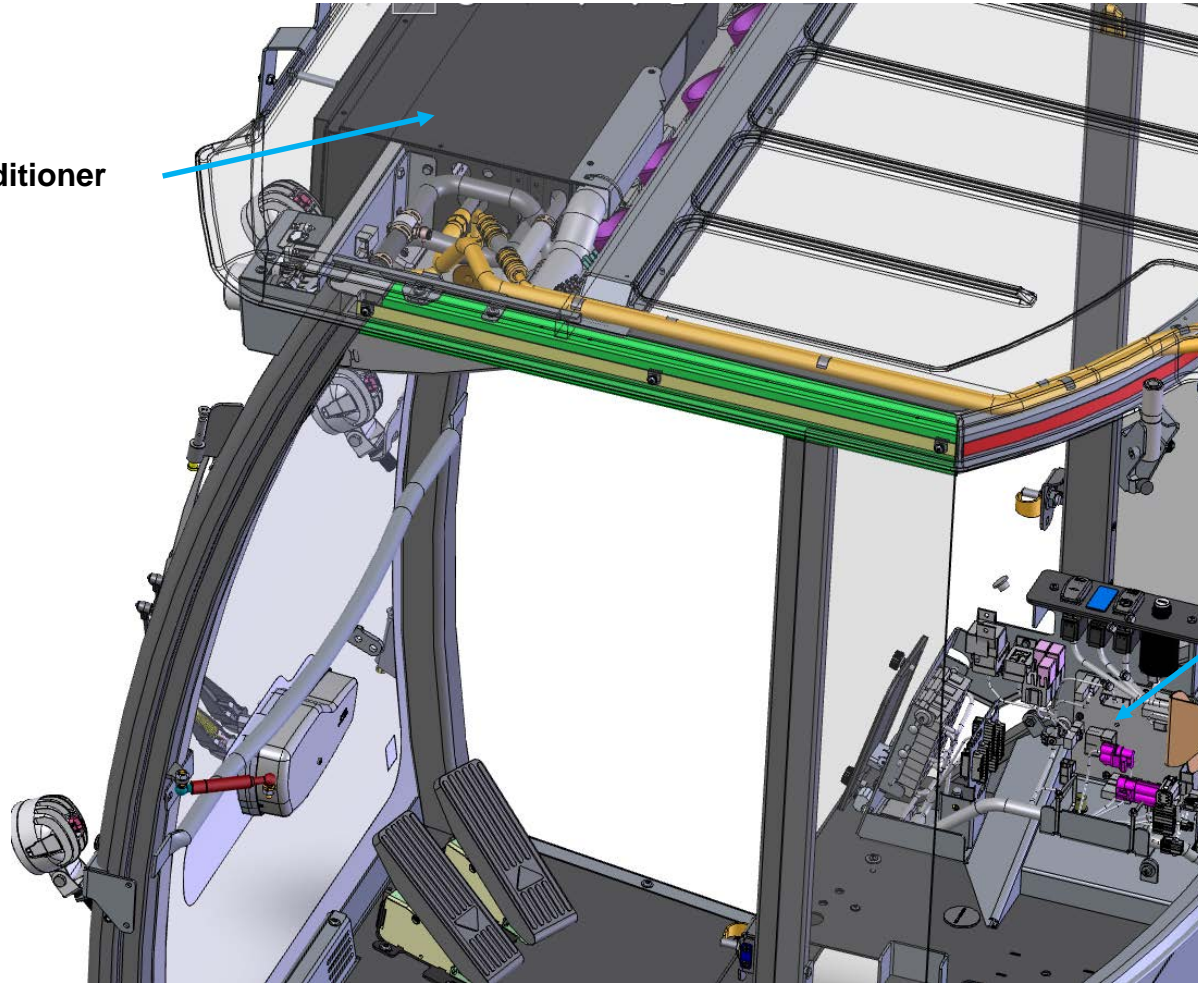
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3.0.1 Electric



Side console on the right

Air conditioner

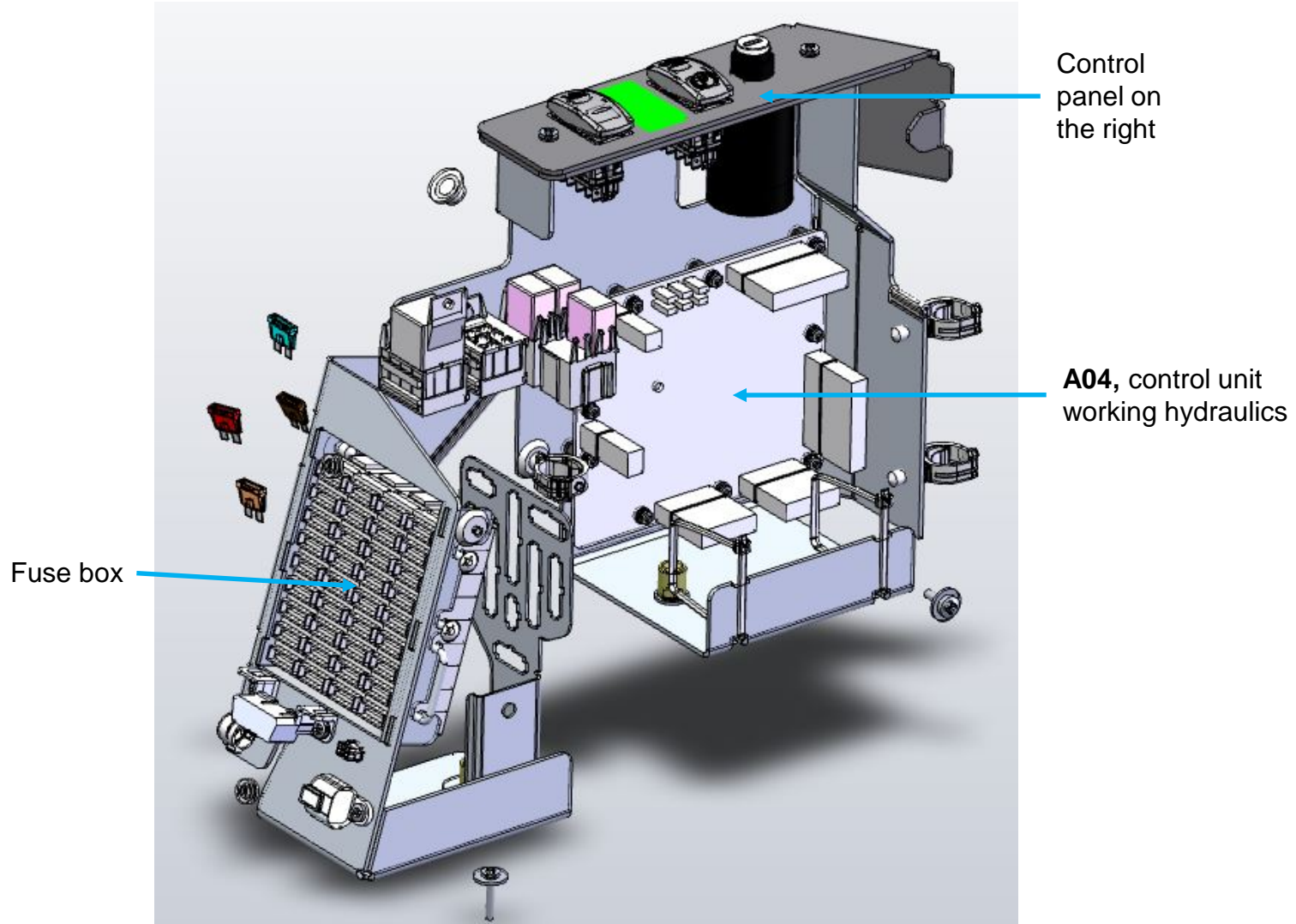


side console
on the right

3.0.1 Electric



Fuse box in the cabine , side console on the right



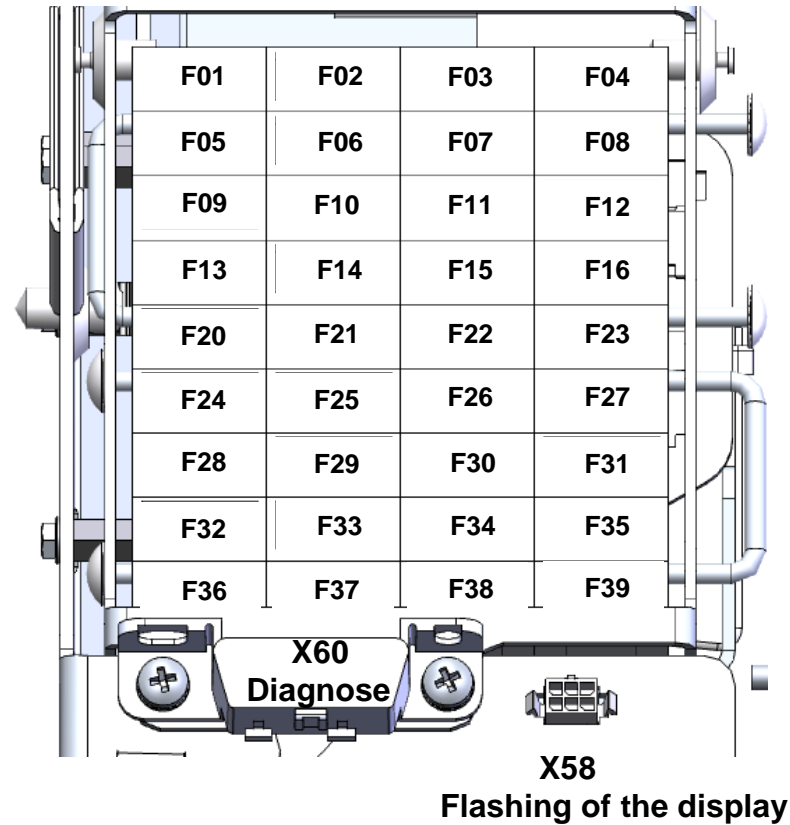
3.0.1 Electric



Fuse box in the cab (control panel on the right) (D)

(F01) 20A	(F02)15A	(F03) 20A	(F04) 10A
(F05) 5A	(F06)10A	(F07) 15A	(F08) 15A
(F09) 10A	(F10)15A	(F11) 15A	(F12) 15A
(F13) 10A	(F14)15A	(F15)7,5A	(F16)7,5A
(F20)7,5A	(F21)10A	(F22) 5A	(F23) 15A
(F24) 5A	(F25)10A	(F26) 15A	(F27) 15A
(F28) 10A	(F29) 5A	(F30) 10A	(F31) 5A
(F32) n.b.	(F33) n.b.	(F34) n.b.	(F35) n.b.
(F36) 5A	(F37)7,5A	(F38)10A	(F39) 15A

Attention! Not used in vehicle



3.0.1 Electric



Allocation fuse box

- F01** = Air conditioning **20A** (terminal 30, F18)
- F02** = blower activation auxiliary heating **15A** (terminal 30, F18)
- F03** = A04 **20A** (terminal 30, F18)
- F04** = Video socked, radio socket X71 **10A** (terminal 15, S01)
- F05** = Display, A01, A04, more **5A** (terminal 15, S01)
- F06** = starter relay, A03, A04 **10A** (terminal 15, S01)
- F07** = A04 **15A** (terminal 15, S01)
- F08** = A04, X64 **15A** (terminal 75, K05)
- F09** = windscreen wiper relays and motor **10A** (terminal 75, K05)
- F10** = Relays auxiliary heating blower **15A** (terminal 75, K05)
- F11** = Working lights **15A** (terminal 75, K05)
- F12** = Headlights **15A** (terminal 75, K05)
- F13** = Rotating beacon **10A** (terminal 58, S01)
- F14** = Hazard warning, A04 **15A** (terminal 30, F18)
- F15** = rear lights left, S11, X64, X65, X71 **7,5A** (terminal 57, S08)
- F16** = rear lights right, X63 **7,5A** (terminal 57, S08)
- F20** = starter clearance relay **7,5A** (terminal 50, S01)
- F21** = Horn **10A** (terminal 30, F18)
- F22** = A03, A04, P01, P03, X58, X60, X66 **5A** (terminal 30, F18)
- F23** = Headlights **15A** (terminal 58, S01)
- F24** = USB socket **5A** (terminal 58, S01)
- F25** = LED lights cab rear side, suction mouth **10A** (terminal 75, K05)
- F26** = Radio socket X71 **15A** (terminal 30, F18)
- F27** = Socked speed signal X61 **15A** (terminal 15, S01)
- F28** = Seat switch B08 **10A** (terminal 75, K05)
- F29** = Fleet recorder A20 **5A** (terminal 15, S01)
- F30** = Relay K06B, brake lights **10A** (terminal 75, K05)
- F31** = Fleet recorder A20 **5A** (terminal 30, F18)
- F32** = free (SOW) max. 20A (terminal 30, F18)
- F33** = free (SOW) max. 20A (terminal 30, F18)
- F34** = free (SOW) max. 15A (terminal 15, S01)
- F35** = free (SOW) max. 7,5A (terminal 57, S08)
- F36** = Reserve **5A** (not used)
- F37** = Reserve **7,5A** (not used)
- F38** = Reserve **10A** (not used)
- F39** = Reserve **15A** (not used)

3.0.1 Electric



Elektric components (switch, relay) in cab, side console right

S01, Starter switch

S15, Switch Parking Brake

S11, Pushbutton, raise/lower hopper/platform

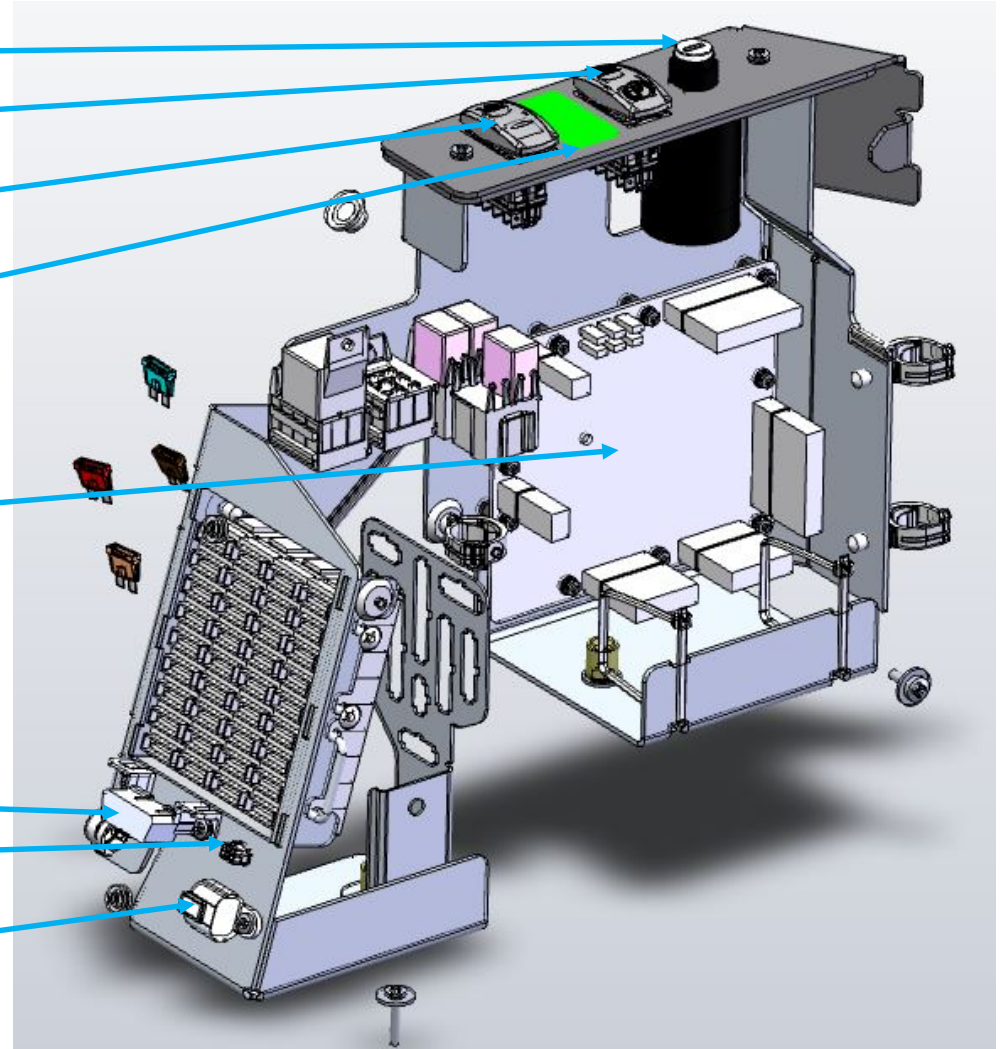
S18, Switch Reversible Fan

A04, control unit working hydraulics

X60, Diagnosis socket 16-pole

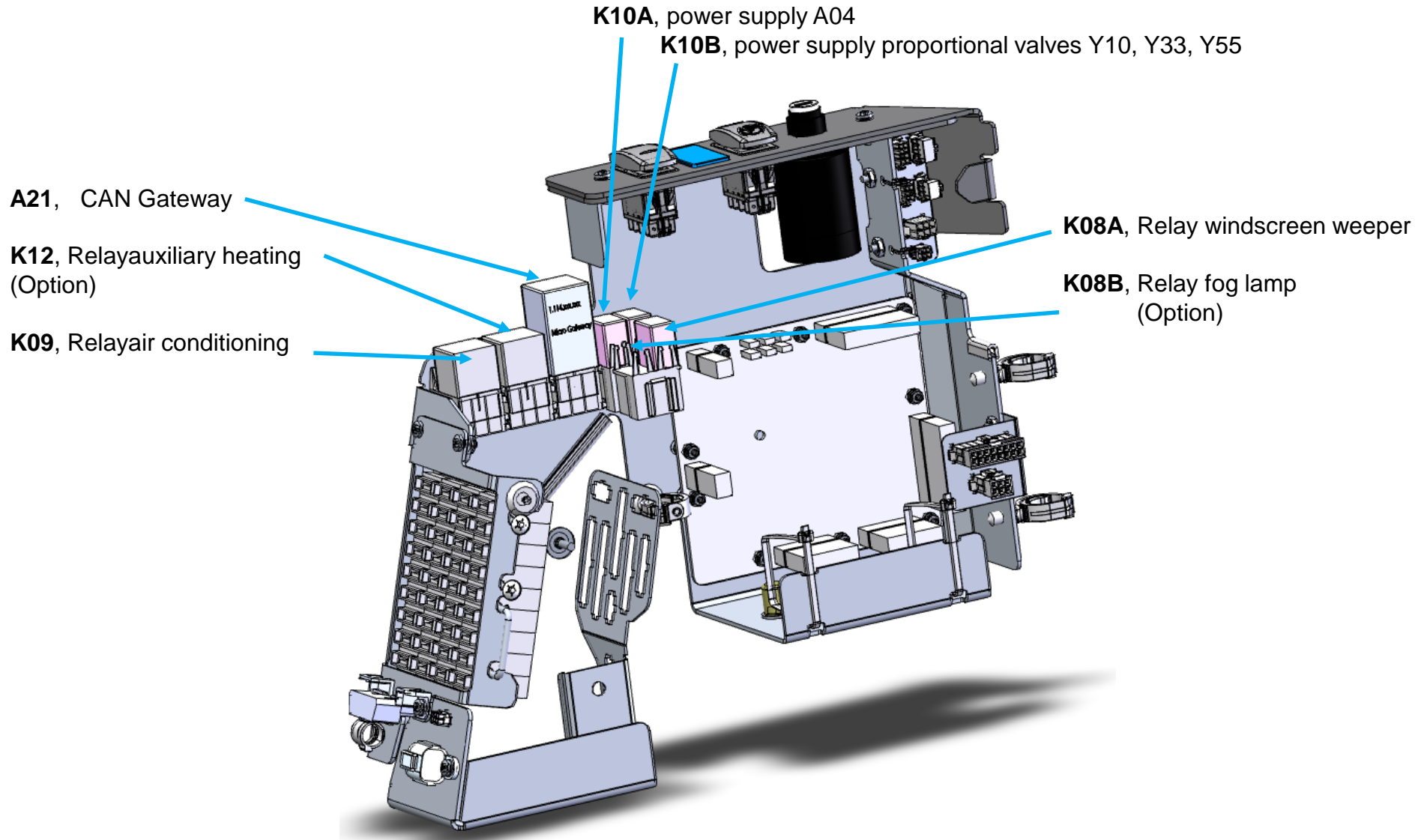
X58, Flash socket display

X59, Diagnose socket Hatz (next to X60))



3.0.1 Electric

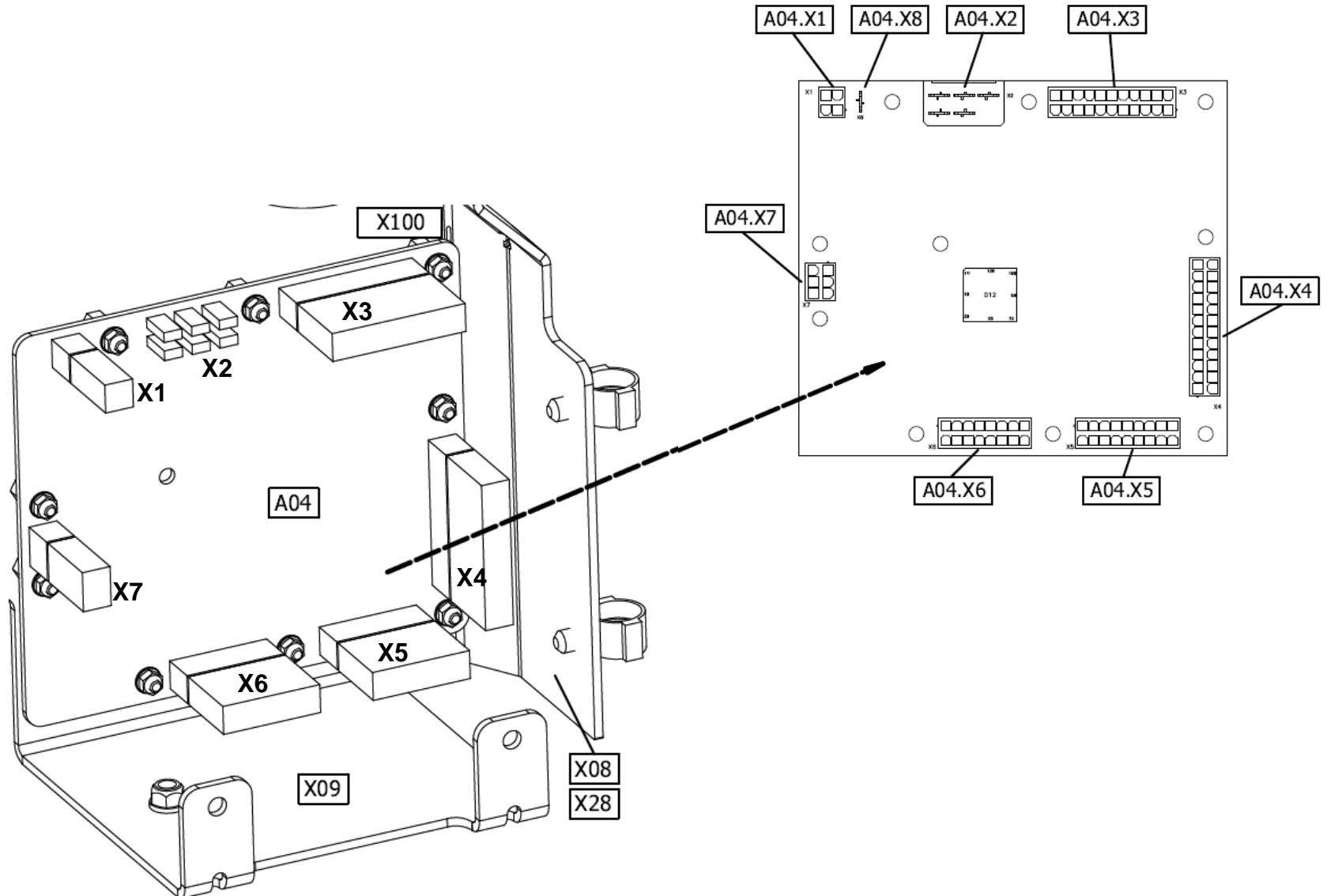
Elektric components (switch, relay) in cab, side console right



3.0.1 Electric



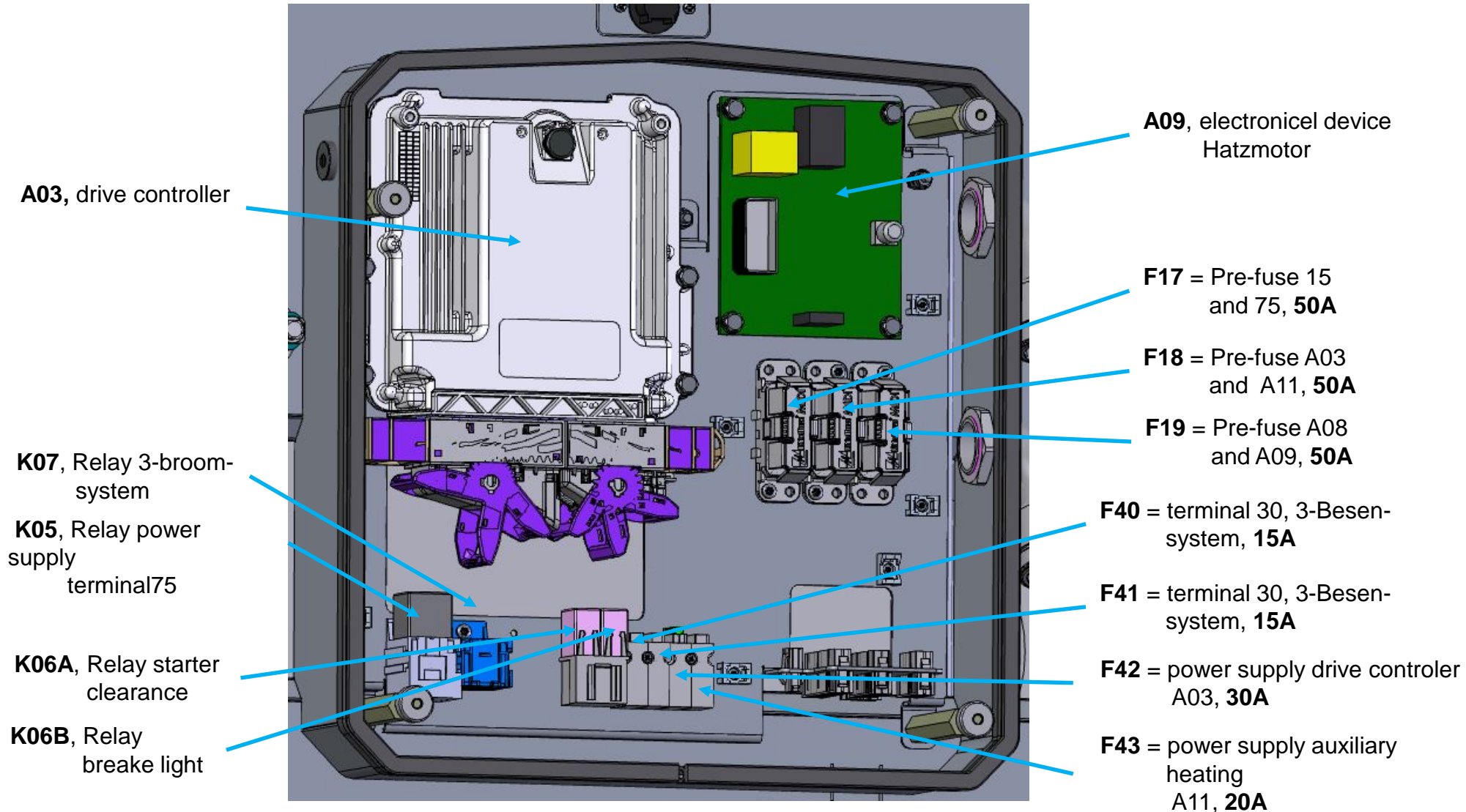
Plugs at the working hydraulics control unit A04, control panel on the right



3.0.1 Electric



Electric Box rear wagon



3.0.1 Electric



Electrical Components (Switches) in the Cab

Steering post / Comfort steering post

H03, Pilot lamps engine, pre heating engine

M06, Windscreen washer pump

S02, Hazard warning lights

S03, Steering wheel switch (direction indicator, horn)

S07, Switch engine speed (working mode)

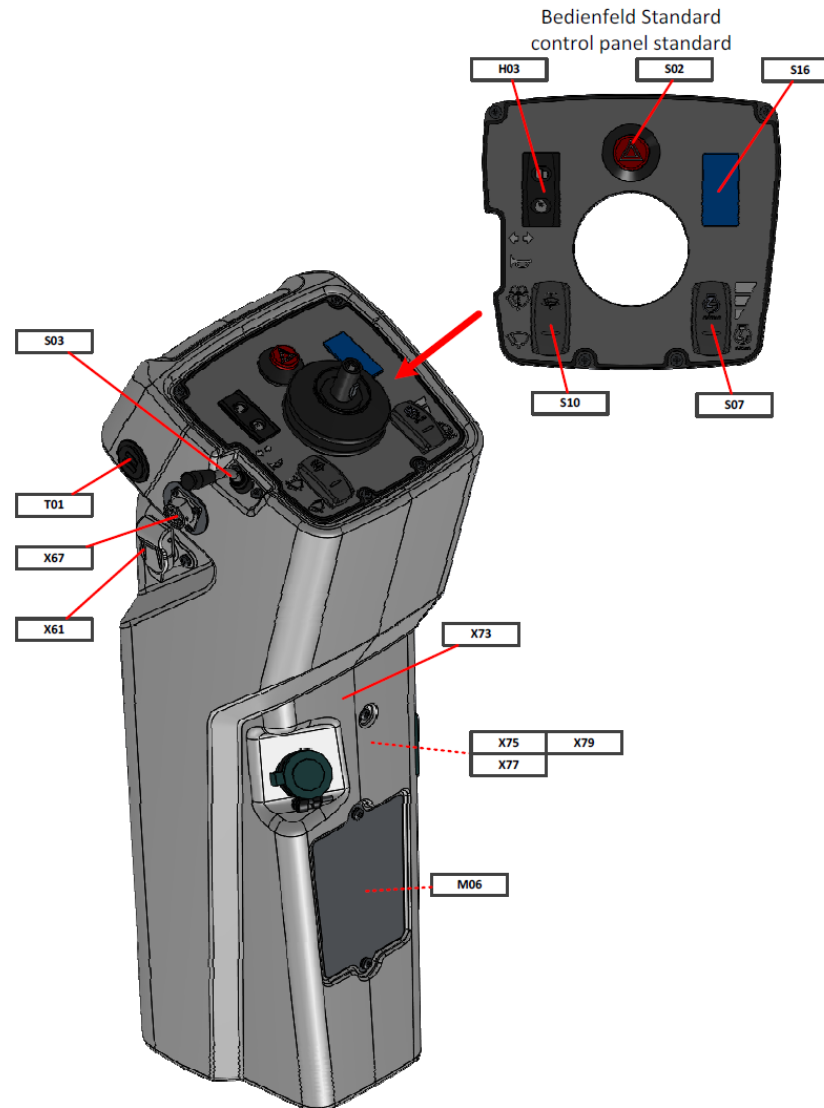
S10, Switch windscreen wiper

S16, Push button cruise control (Option)

T01, USB socket

X61, Socket speed signal

X67, socket (12- pins spreader/ gateway)



3.0.1 Electric



Electrical Components (Switches) in the Cab

Steering post / Comfort steering post

H03, Pilot lamps engine, pre heating engine

M06, Windscreen washer pump

S02, Hazard warning lights

S07, Switch engine speed (working mode)

S09, Steering wheel lever comfort (direction, horn, wiper)

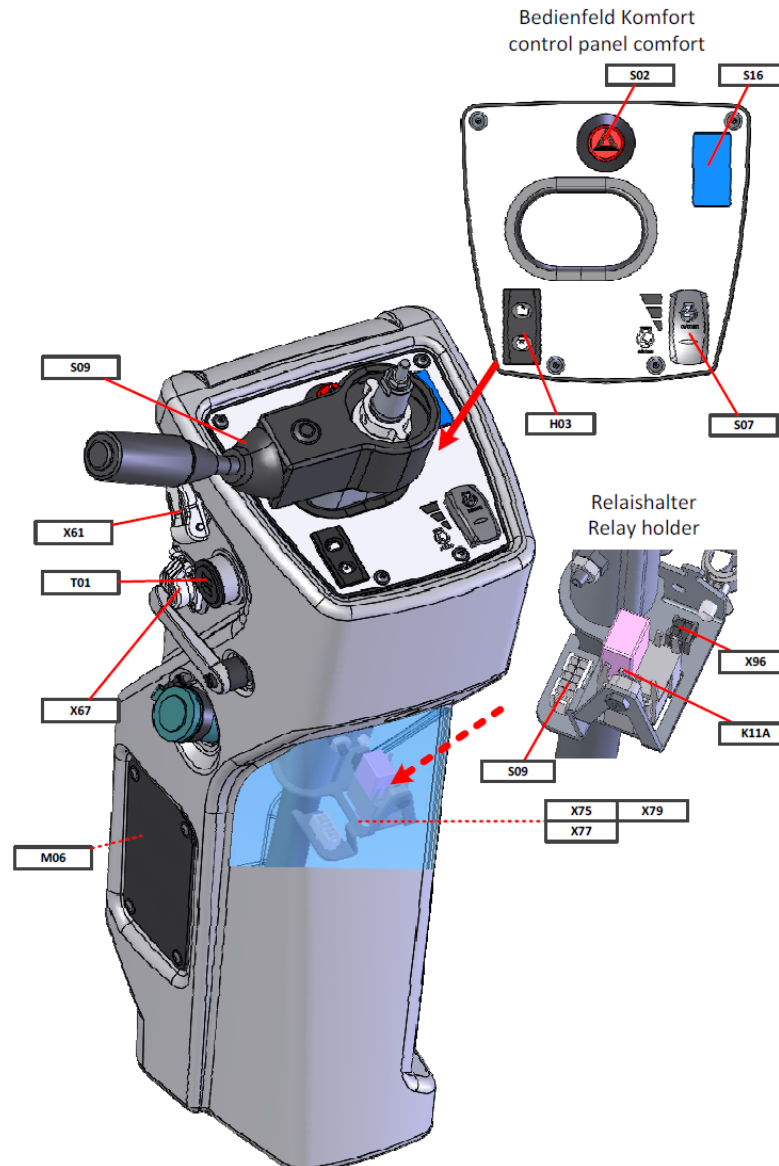
S16, Push button cruise control (Option)

K11A, Relay windscreen washer pump (Option)

T01, USB socket

X61, Socket speed signal

X67, socket (12- pins spreader/ gateway)



3.0.1 Electric

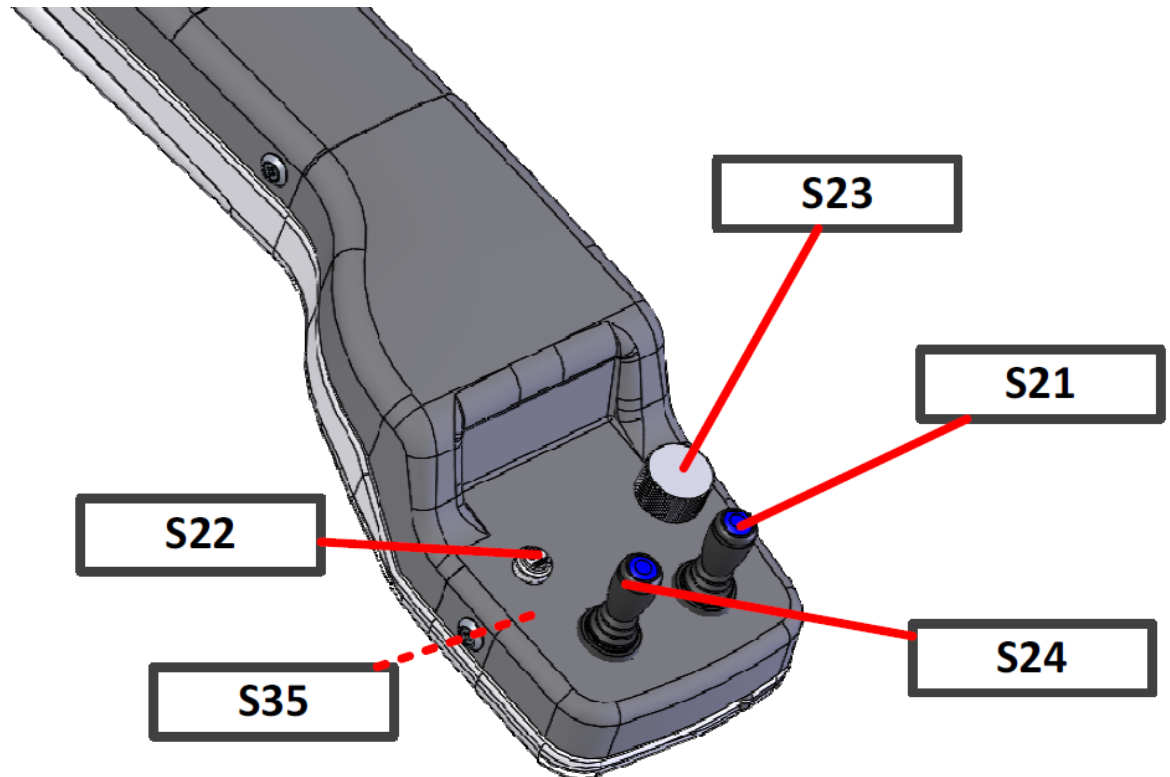
P Armrest right

S21, Joystick (switch) Hydraulic-Functions L- H

S22, Push button (switch) work mode on/ off

S23, Encoder switch with push button

S24, Joystick (switch) Hydraulic-Functions R- H

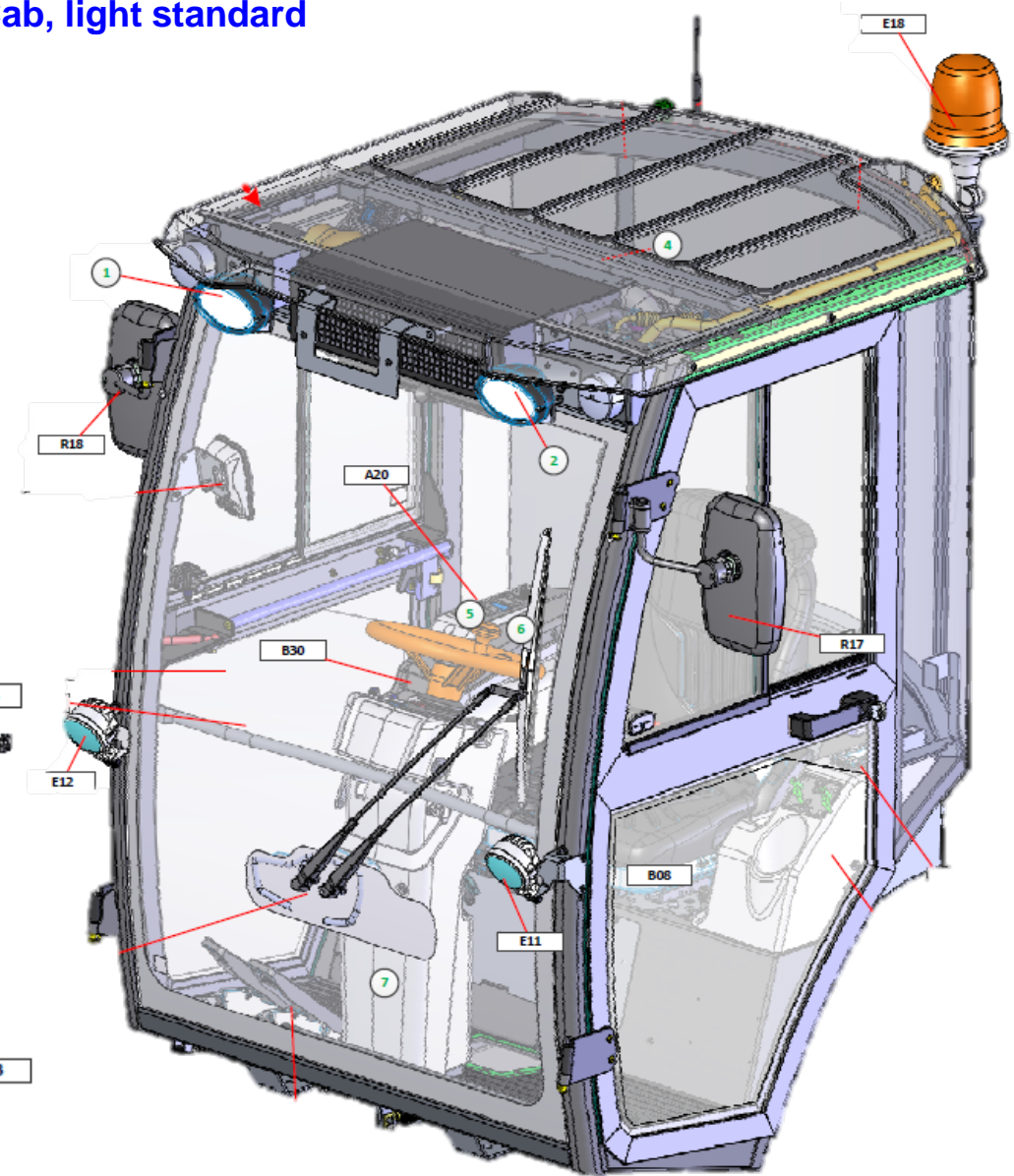
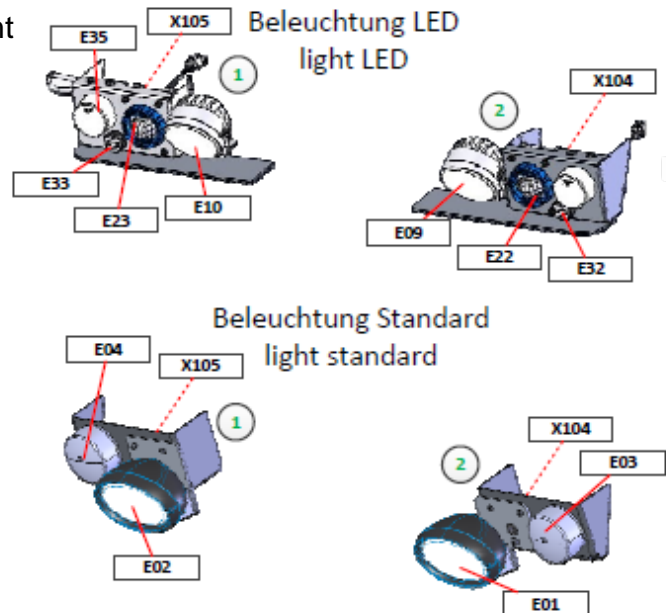


3.0.1 Electric



Front View Cab, light standard

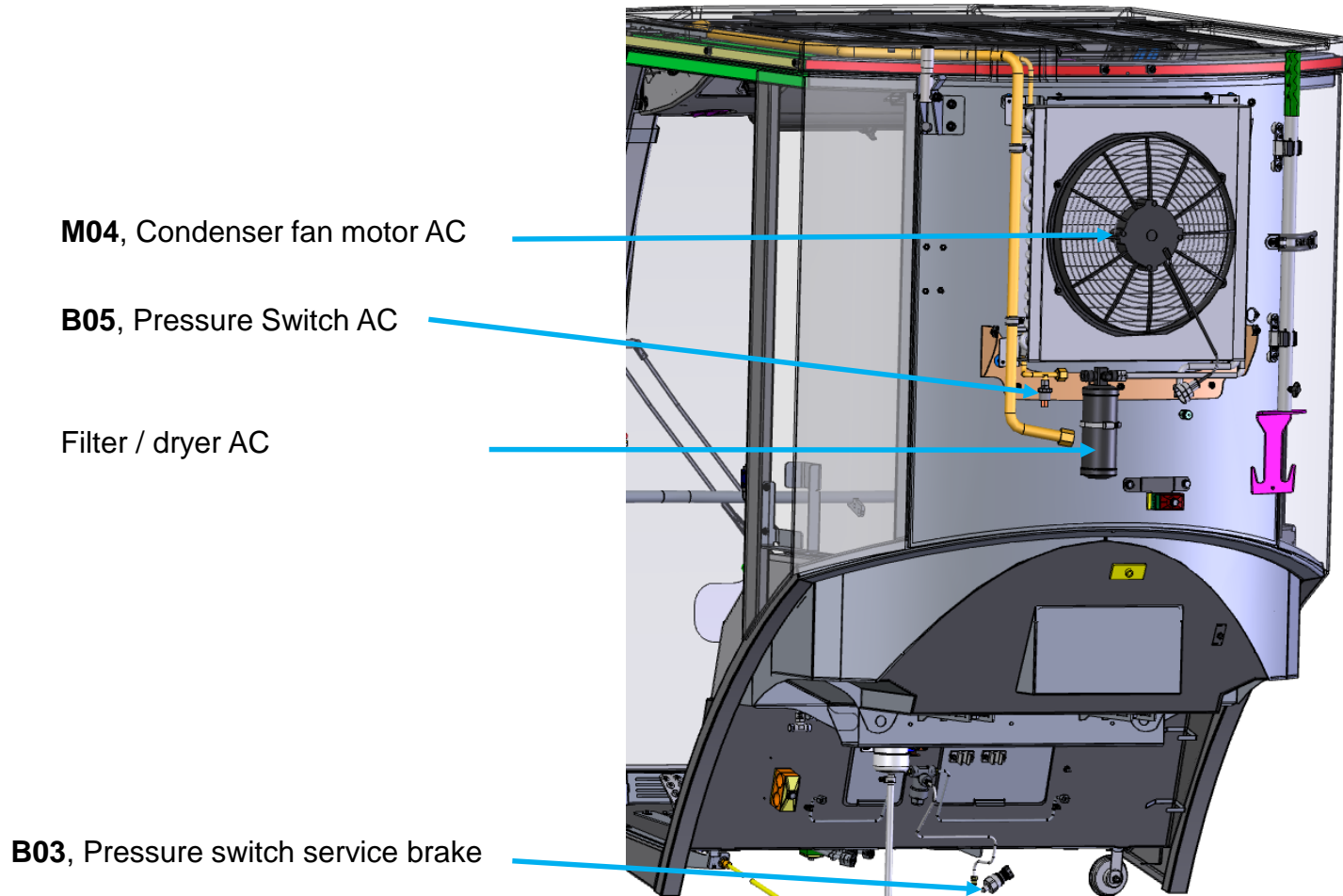
- E01, Headlight left
- E02, Headlight right
- E03, Front indicator, position light left
- E04, Front indicator, position light right
- E09, Working light top left (opt.)
- E10, Working light top left (opt.)
- E11, Working light lamp bottom left
- E12, Working light, bottom right
- E22, Headlight L-H (Option)
- E23, Headlight R-H (Option)
- E32, Position light left
- E33, Position light right
- E34, Indicator left
- E35, Indicator right
- E36, extra indicator left
- E37, extra indicator right



3.0.1 Electric



Cab, rearwall



3.0.1 Electric



Operator Panel Cab Roof

P03, control panel auxiliary heating

S04, Switch work light

S05, button (switch) mirror heating (opt.)

S06, Switch rotating beacon

S08, Switch driving lights

S12, Switch, rear fog lamp (option)

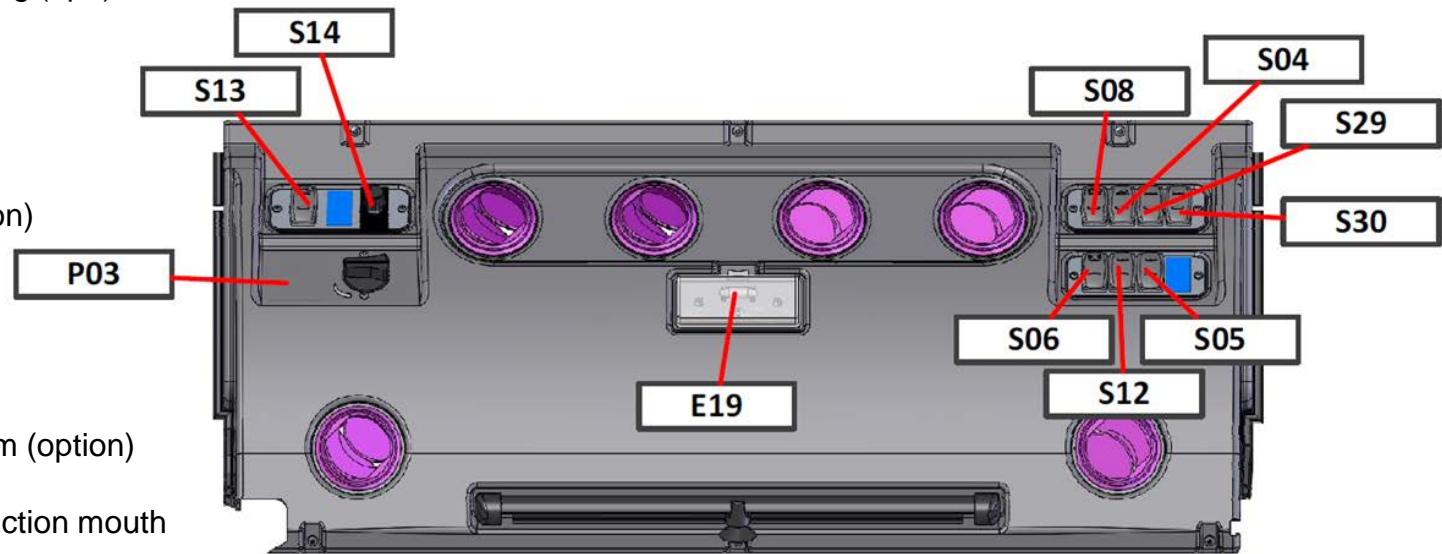
S13, Switch A/C

S14, Knob heating fan

S29, Switch headlight top/ bottom (option)

S30, Switch working light top /suction mouth

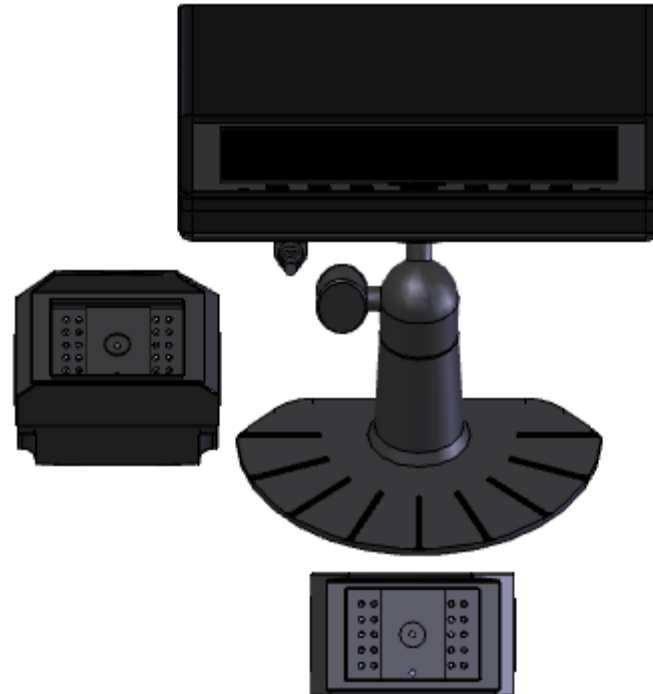
E19, interior light



3.0.1 Electric



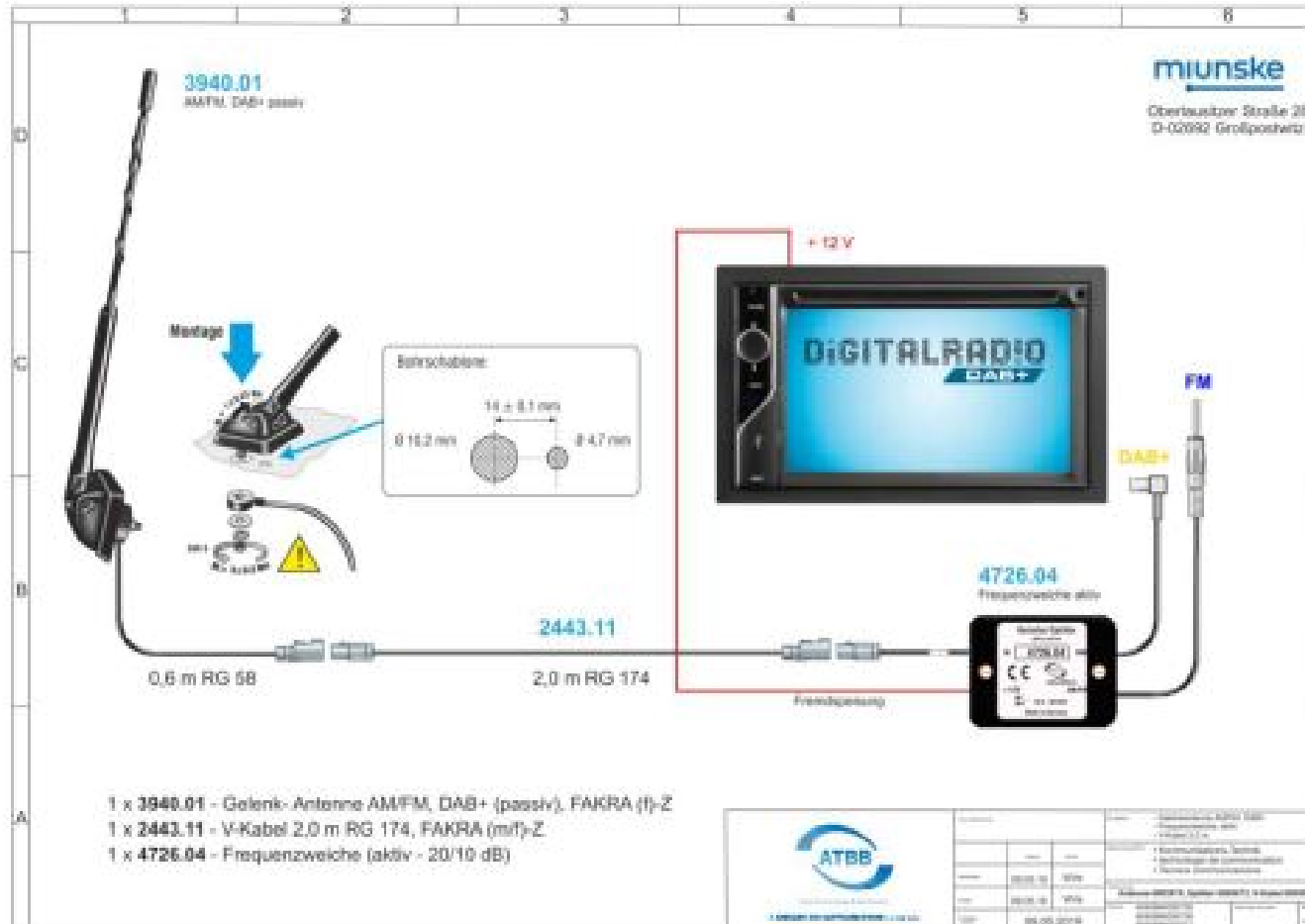
Camera / Monitor 1446.12/13 (option)



3.0.1 Electric



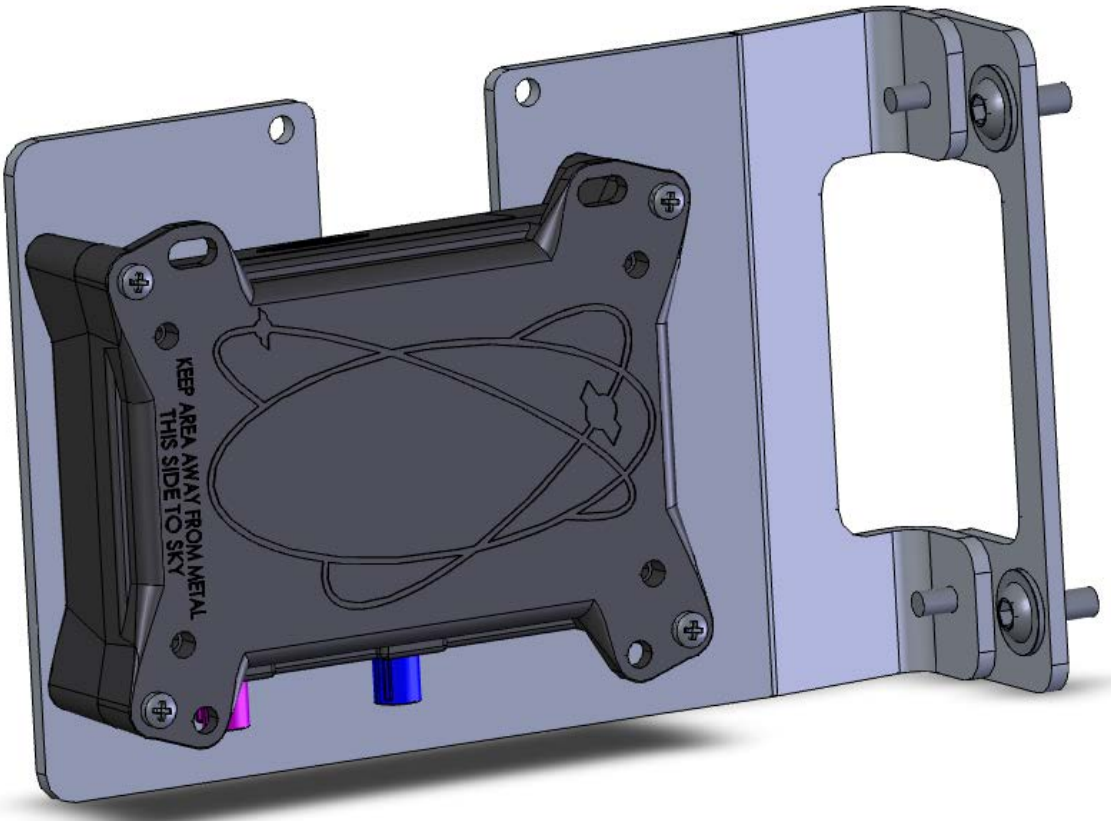
DAB Plus radio 2613.11 (option)



3.0.1 Electric



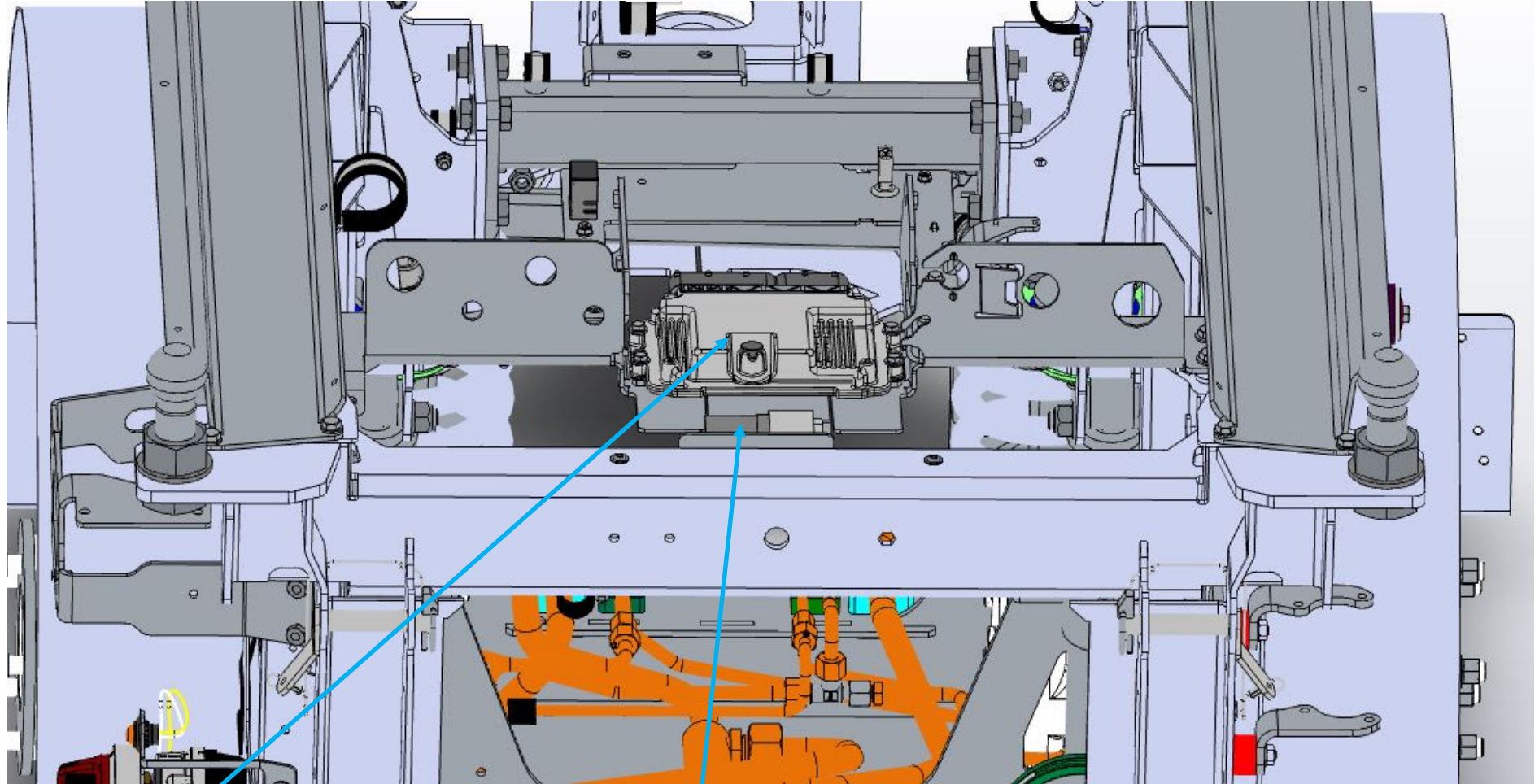
Fleet recorder 5302.06 (Option)



3.0.1 Electric



Engine control unit and glow-time control unit



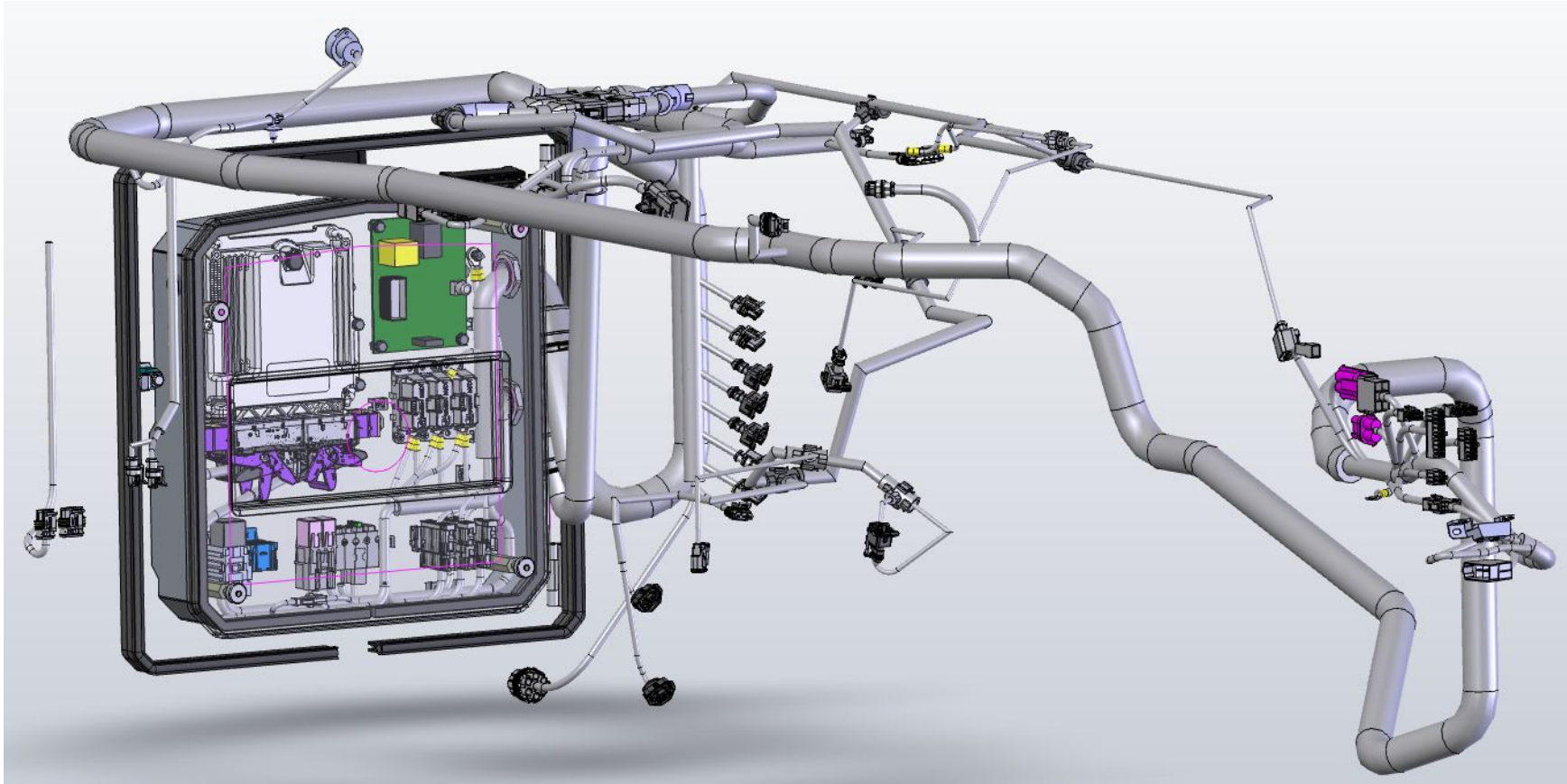
A01, Motorsteuergerät

A100, Glühzeitsteuergerät

3.0.1 Electric



Hatz electric

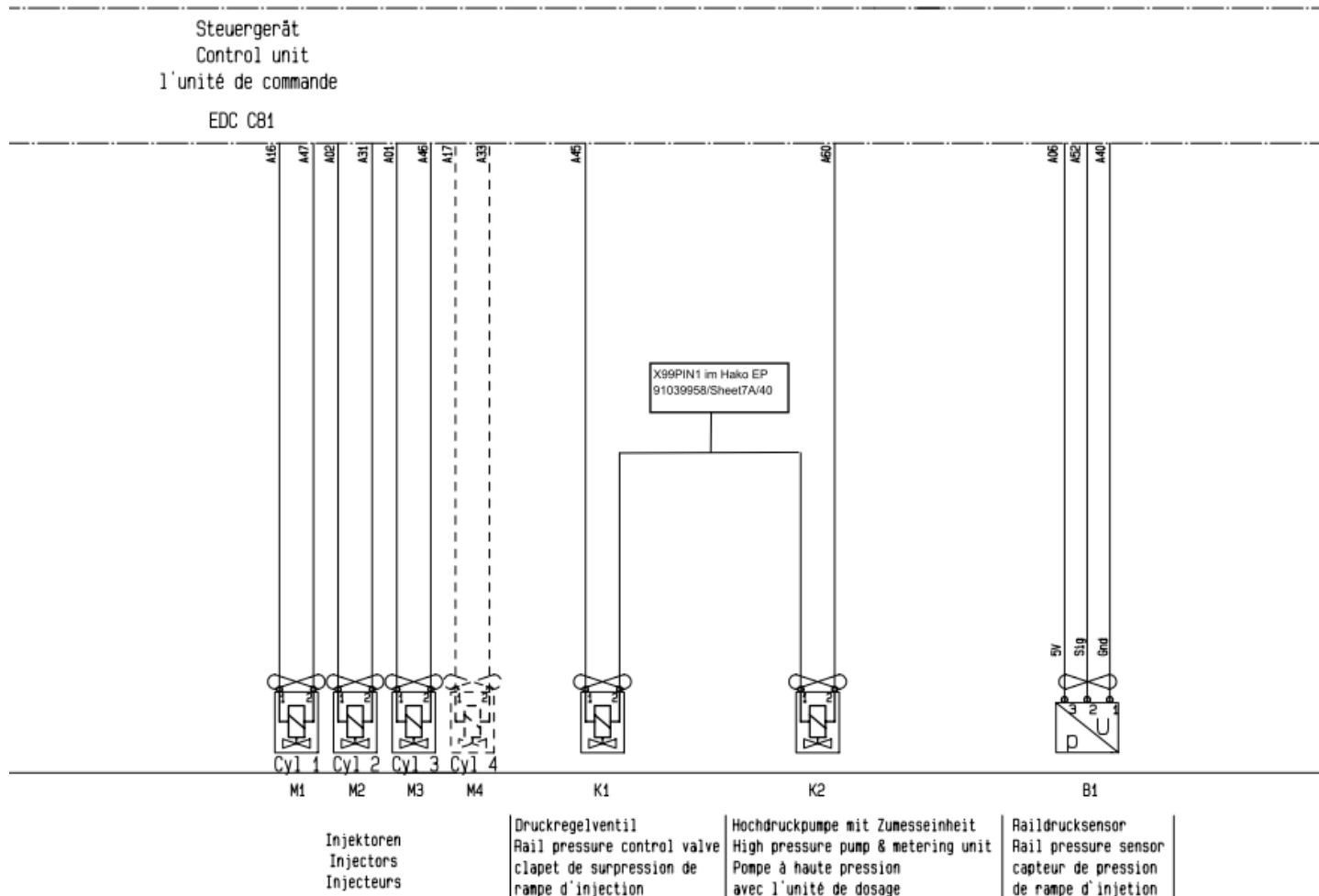


Harnes Hatz and Hako and E-Box back door

3.0.1 Electric



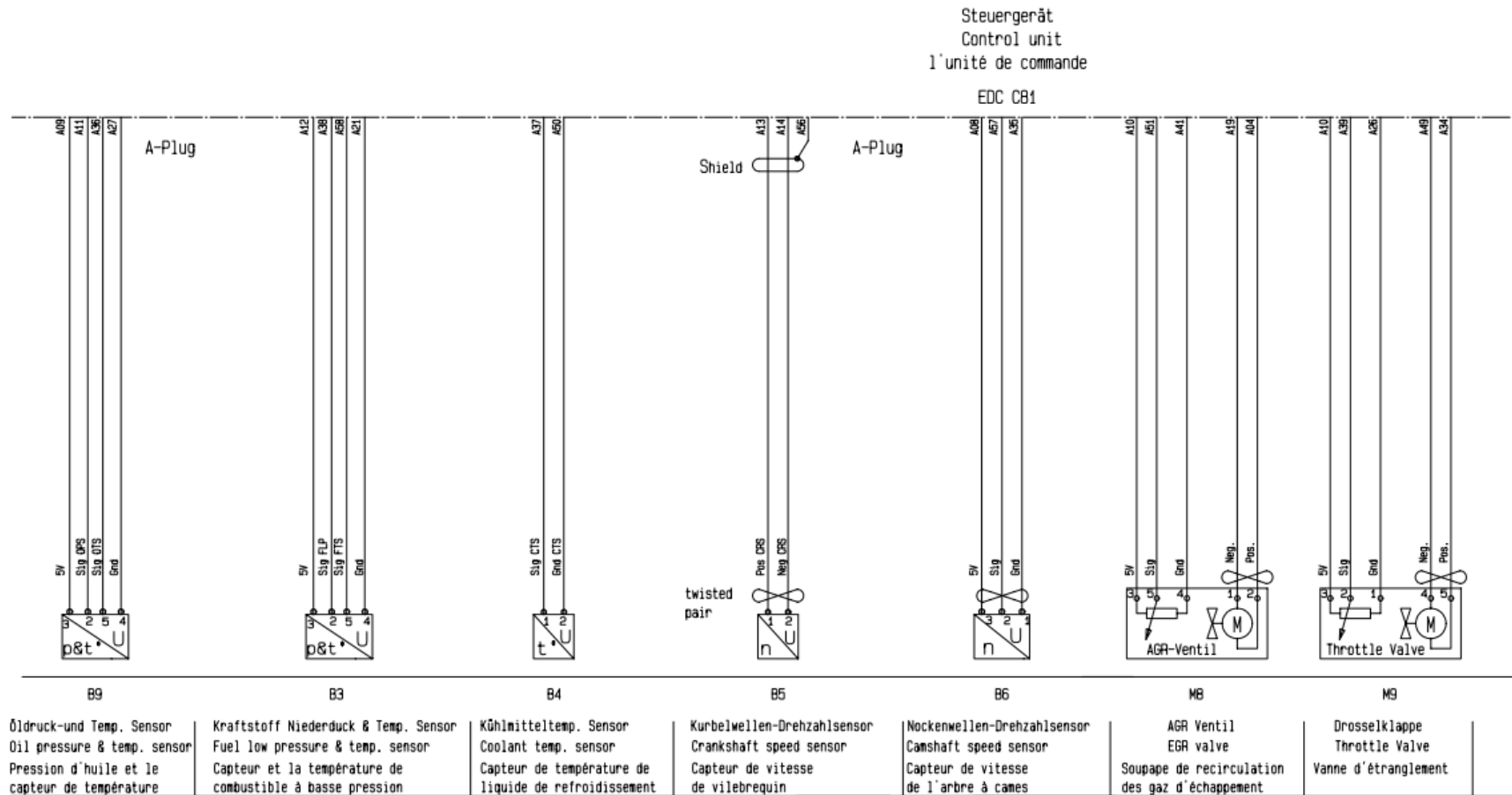
Hatz Elektrik



3.0.1 Electric

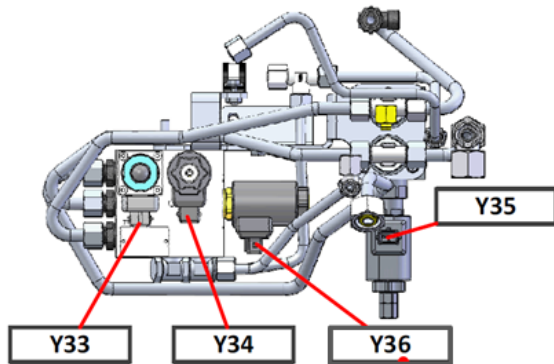


Hatz Elektrik



3.0.1 Electric

Installation location of the hydraulic control blocks (2.11, 2.13, 2.23) in the front wagon CM 1650



Option 1459.31

Pressure control front lift system

Hydraulic control block (2.23)

Solenoid valves:

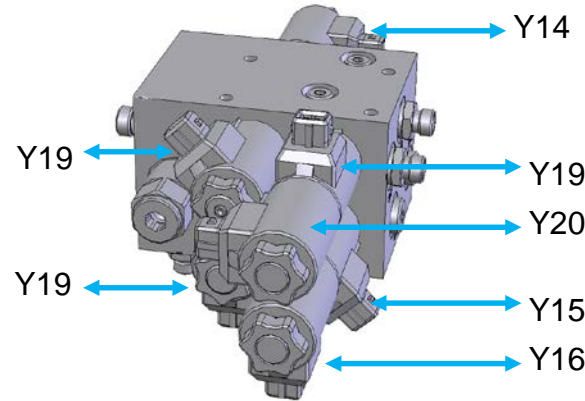
Y33 Proportional valve

Front tool carrier release

Y35 Pressure relief valve 50or 200 ba

Y36 solenoid valve floating position

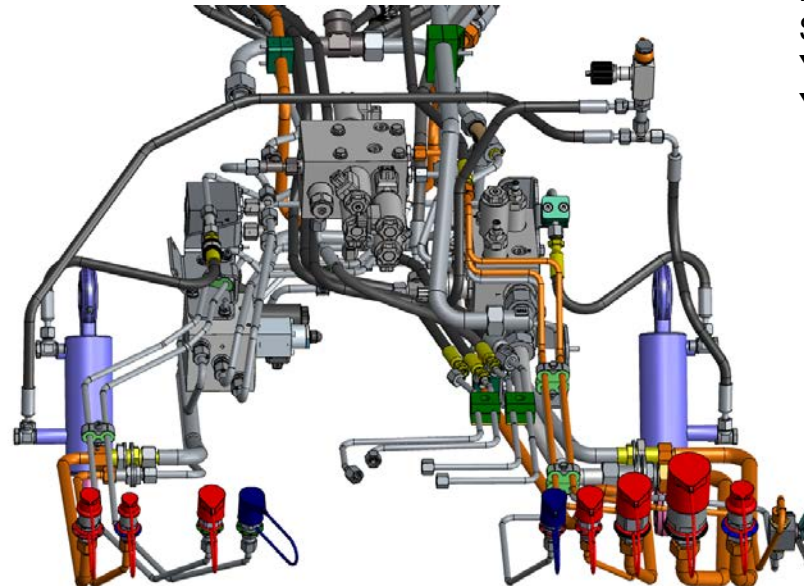
Y34 Is not used



Hydraulic control block 2.11

Solenoid valves:

Y12, Y13, Y14, Y15 + Y16, Y19 + Y20

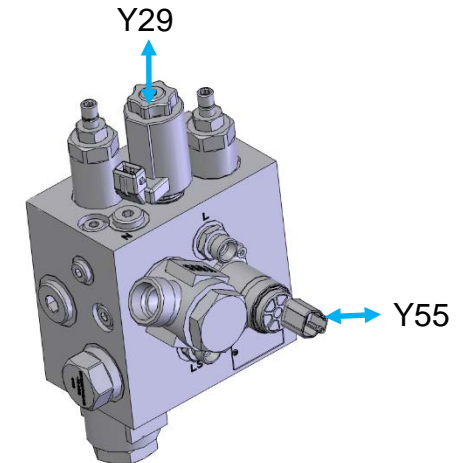


Hydraulic control block (2.13)

Solenoid valves:

Y55 proportional solenoid valve for rotation

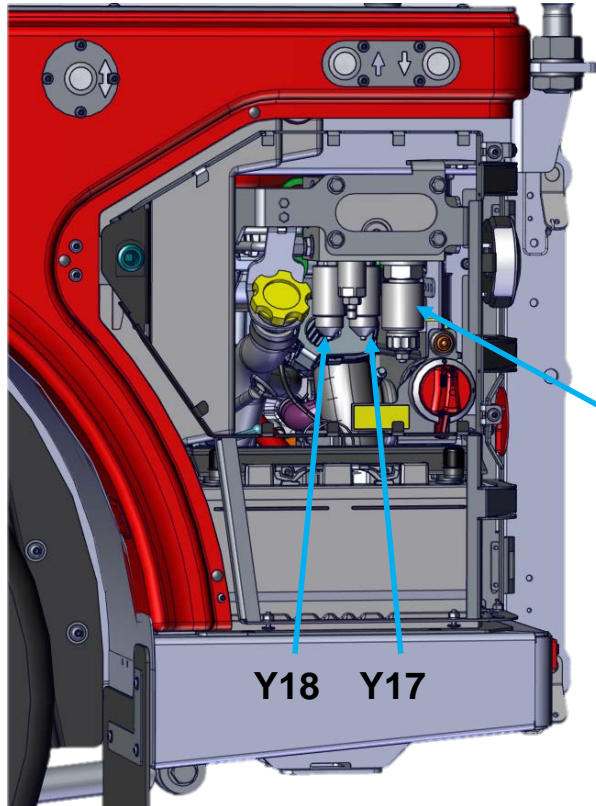
Y29, Front attachment braking function



3.0.1 Electric



Installation location hydraulic control block 2.11 in the front wagon CM 1650



Hydraulic control block 2.12 blower / hopper in the rear wagon with the solenoid valves
Y10, suction fan / spreader on / off
Y17, raise dirt hopper
Y18, lower dirt hopper
Installation location:
Rear wagon in the rear, on the left in driving direction

Y10

Y18 Y17

3.0.1 Electric

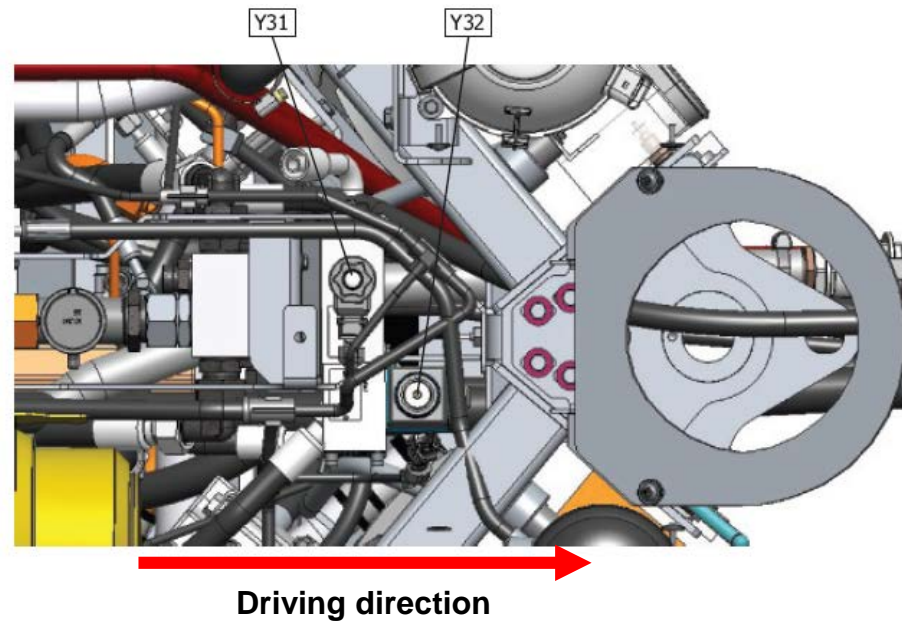


Installation of the Hydraulic control block radiator fan drive 2.41

Y31 proportional solenoid valve
radiator fan speed

Y32 Option 8436.00 reversing fan
for brief reversal of the radiator ventilation to blow out
the radiator sieve

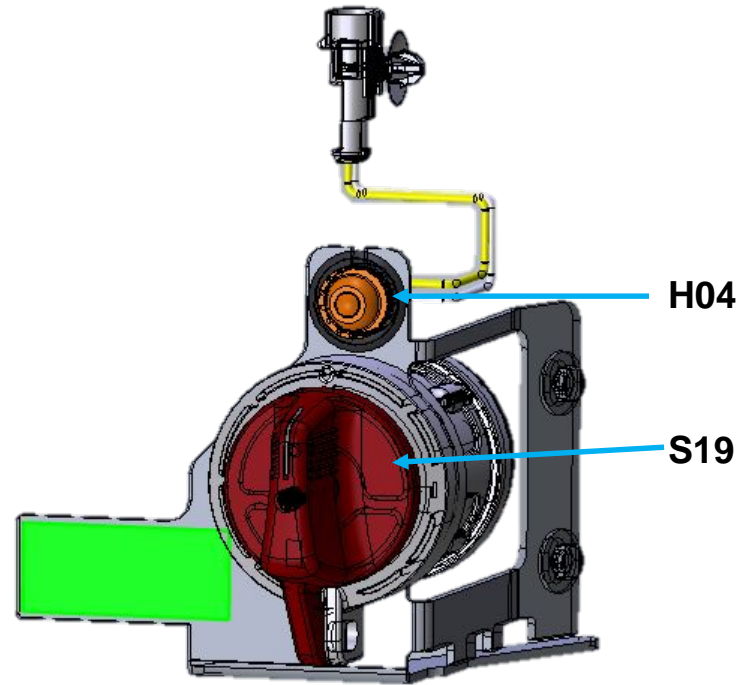
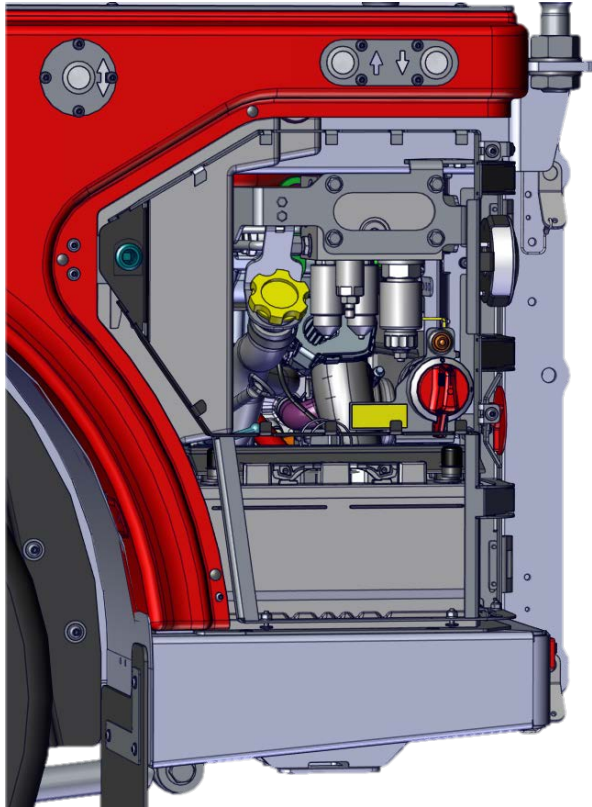
Installation location:
Rear wagon behind the articulated joint
View from above onto the rear wagon



3.0.1 Electric



Battery interrupter 2614.31 / Option



3.0.1 Electric



Socket X63 for tool recognition of attachments on the vehicle (19-pin)

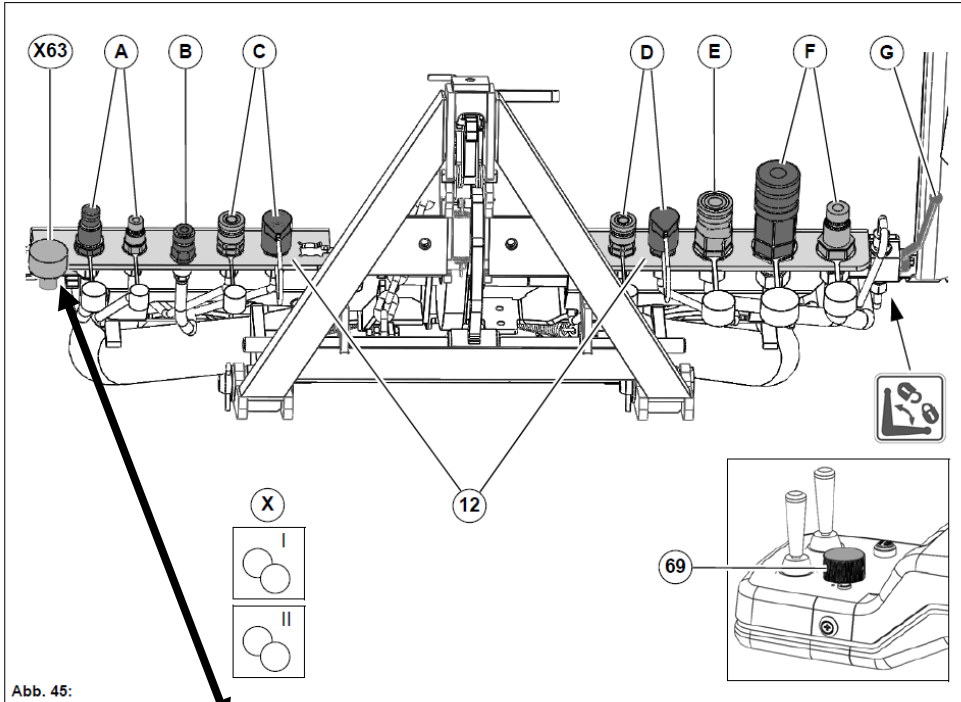
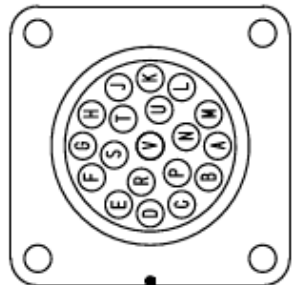
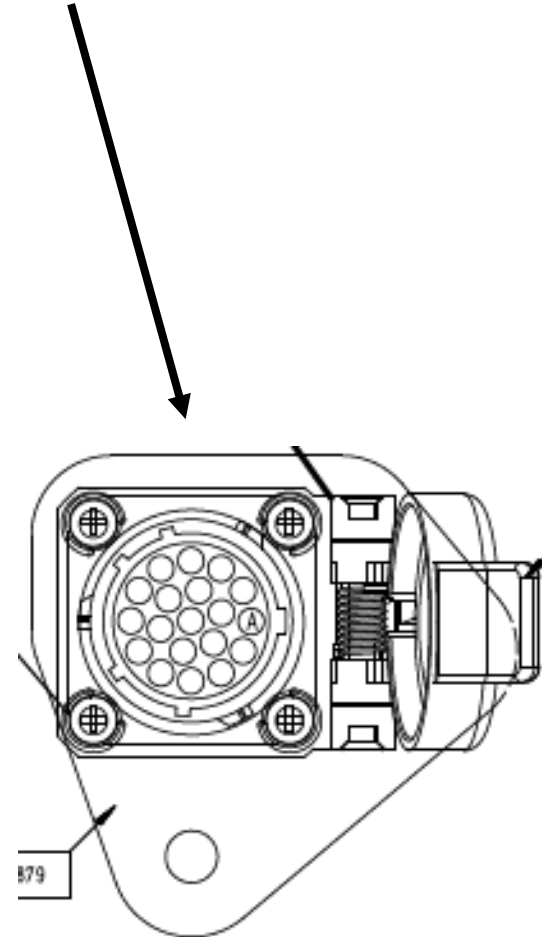


Abb. 45:

Socket X63 on the vehicle (view onto the socket)

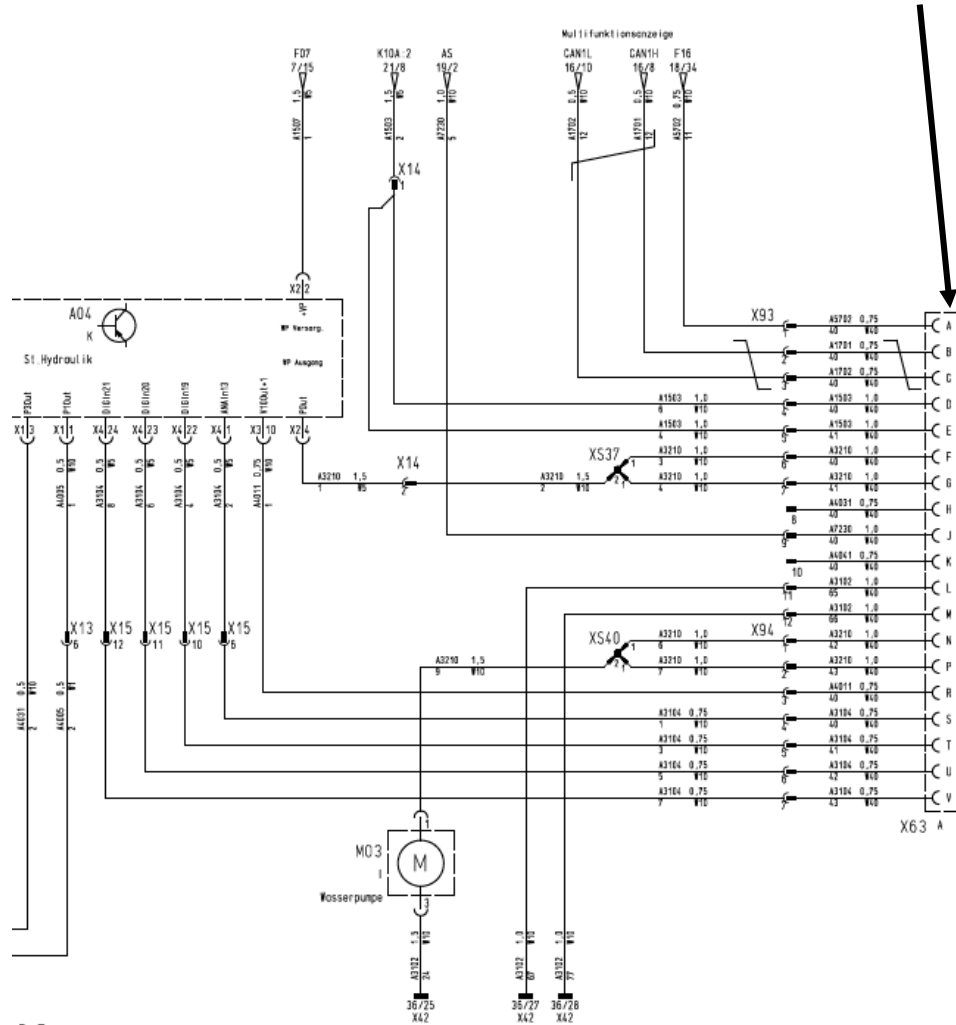


3.0.1 Electric



Socket X63 for tool recognition of attachments on the vehicle (19-pin)

Socket X63 on the vehicle

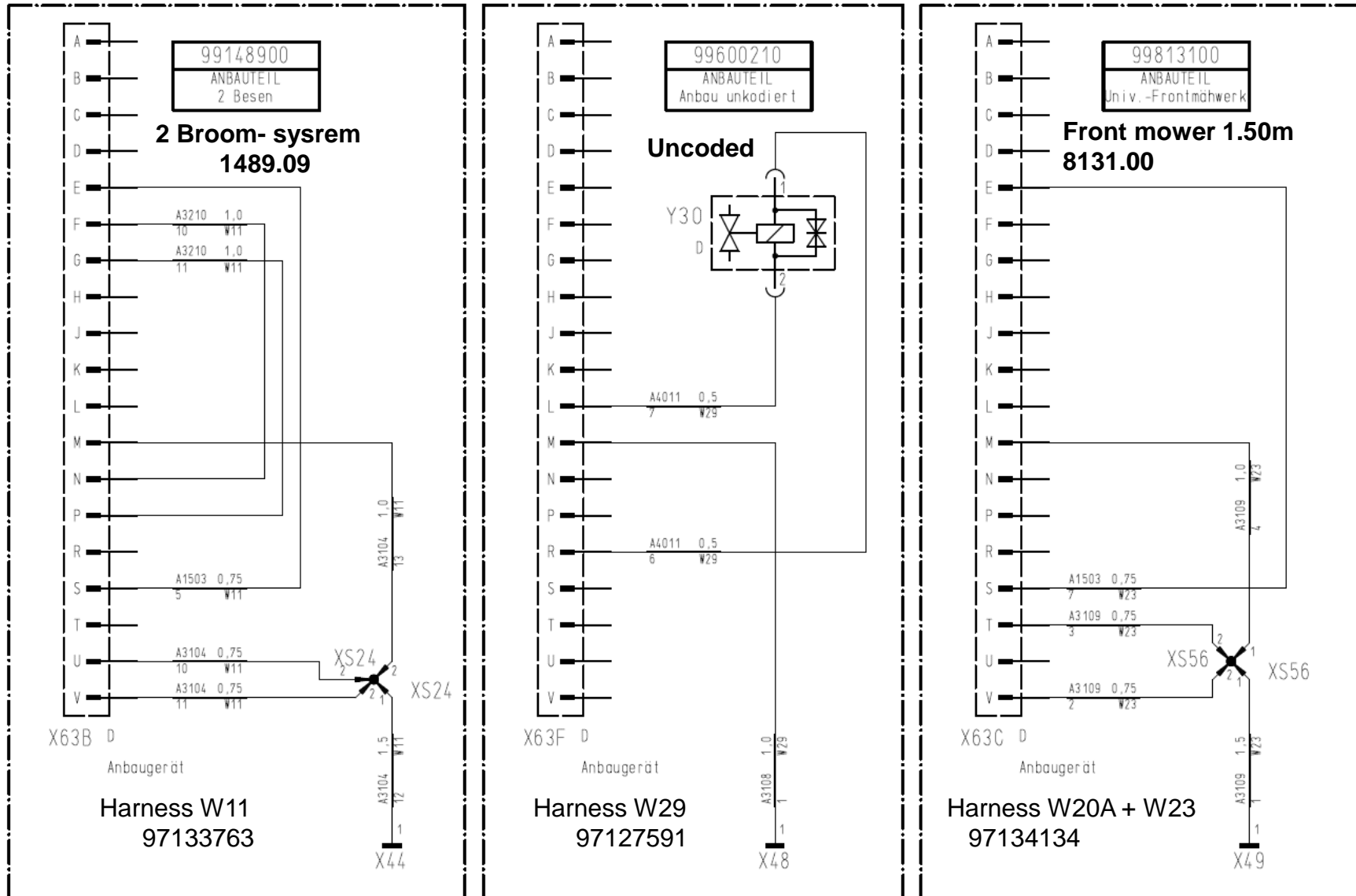


- Pin A**, 12 V switched, repeating marker light, F16 7.5 A
- Pin B**, CAN 1 high, working hydraulics/display
- Pin B**, CAN low, working hydraulics/display
- Pin E**, 12 V via S1, F03
- Pin F**, 12 V transistor output (high side) max. 10 A, PVM frequency, max. 200 Hz (e.g. external water pump M09)
- Pin G**, 12 V transistor output (high side) max. 10 A, PVM frequency, max. 200 Hz (e.g. external water pump M09)
- Pin H**, not used
- Pin J**, 12 V switched via working spotlight e.g. brush light
- Pin K**, not used
- Pin L**, Ground pin X42
- Pin M**, Ground pin X42
- Pin N**, Proportional power supply to the spray water pump M03
- Pin P**, Proportional power supply to the spray water pump M03
- Pin R**, digital OUT, (high side) max. 3 A
- Pin S**, analogue IN = attachment coding (reserve)
- Pin T**, digital IN = attachment coding
- Pin U**, digital IN = attachment coding
- Pin V**, digital IN = attachment coding

3.0.1 Electric



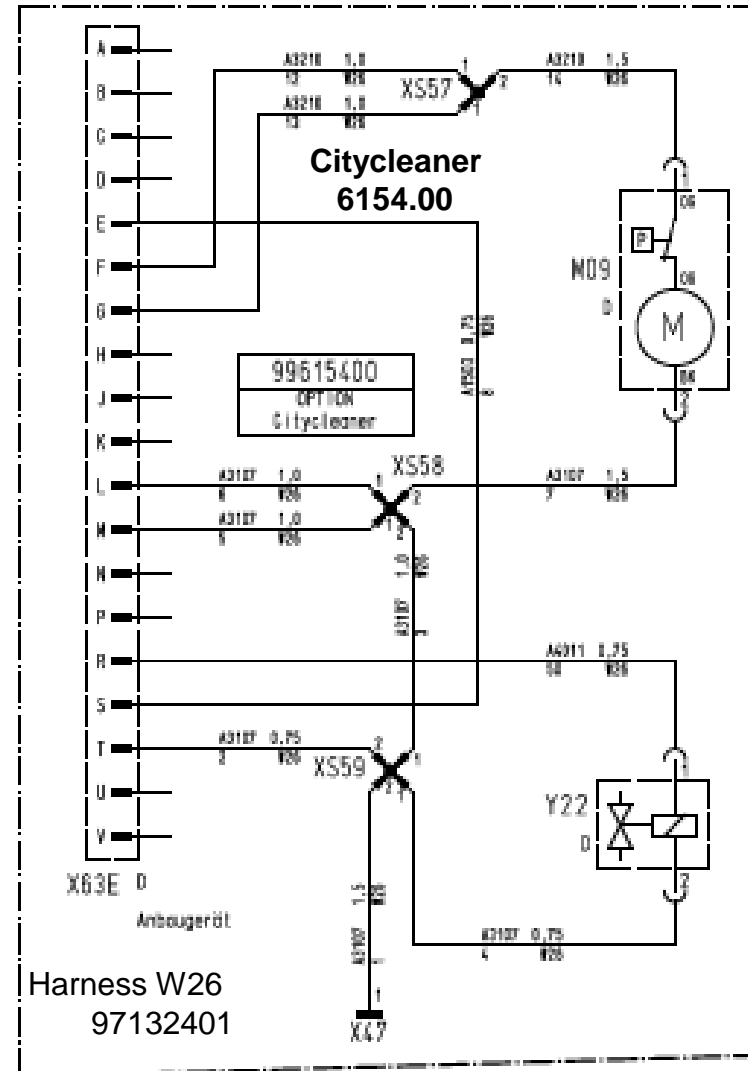
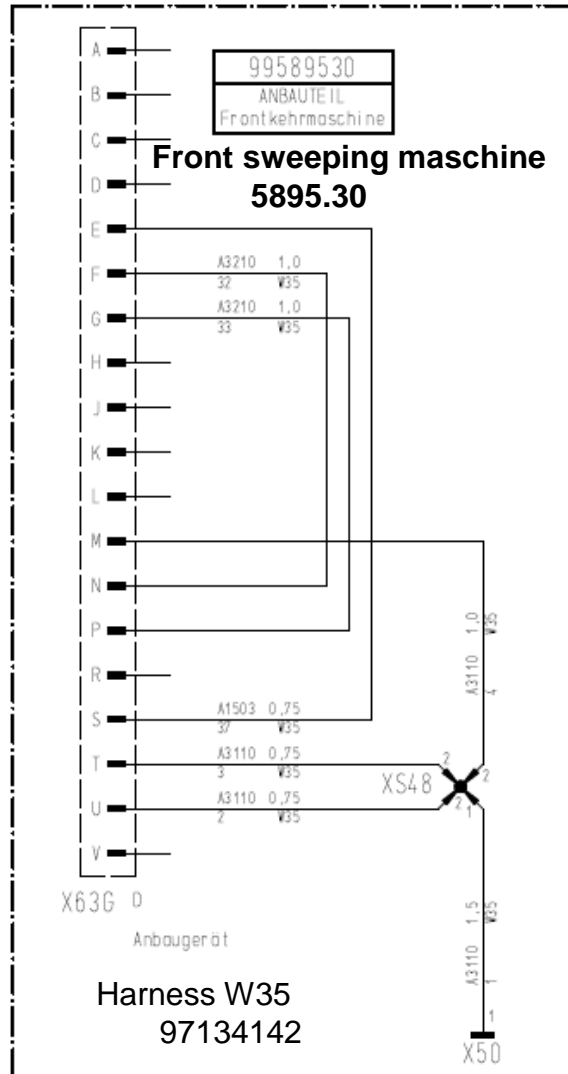
Jumpers for tool recognition of attachments in the plug X63 (19-pin)



3.0.1 Electric



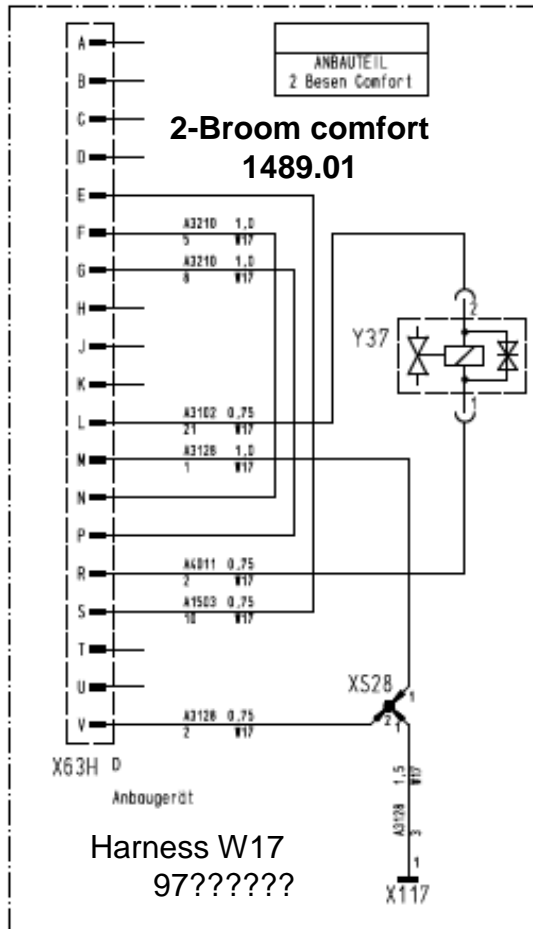
Jumpers for tool recognition of attachments in the plug X63 (19-pin)



3.0.1 Electric



Jumpers for tool recognition of attachments in the plug X63 (19-pin)



Weed brush
5513.00

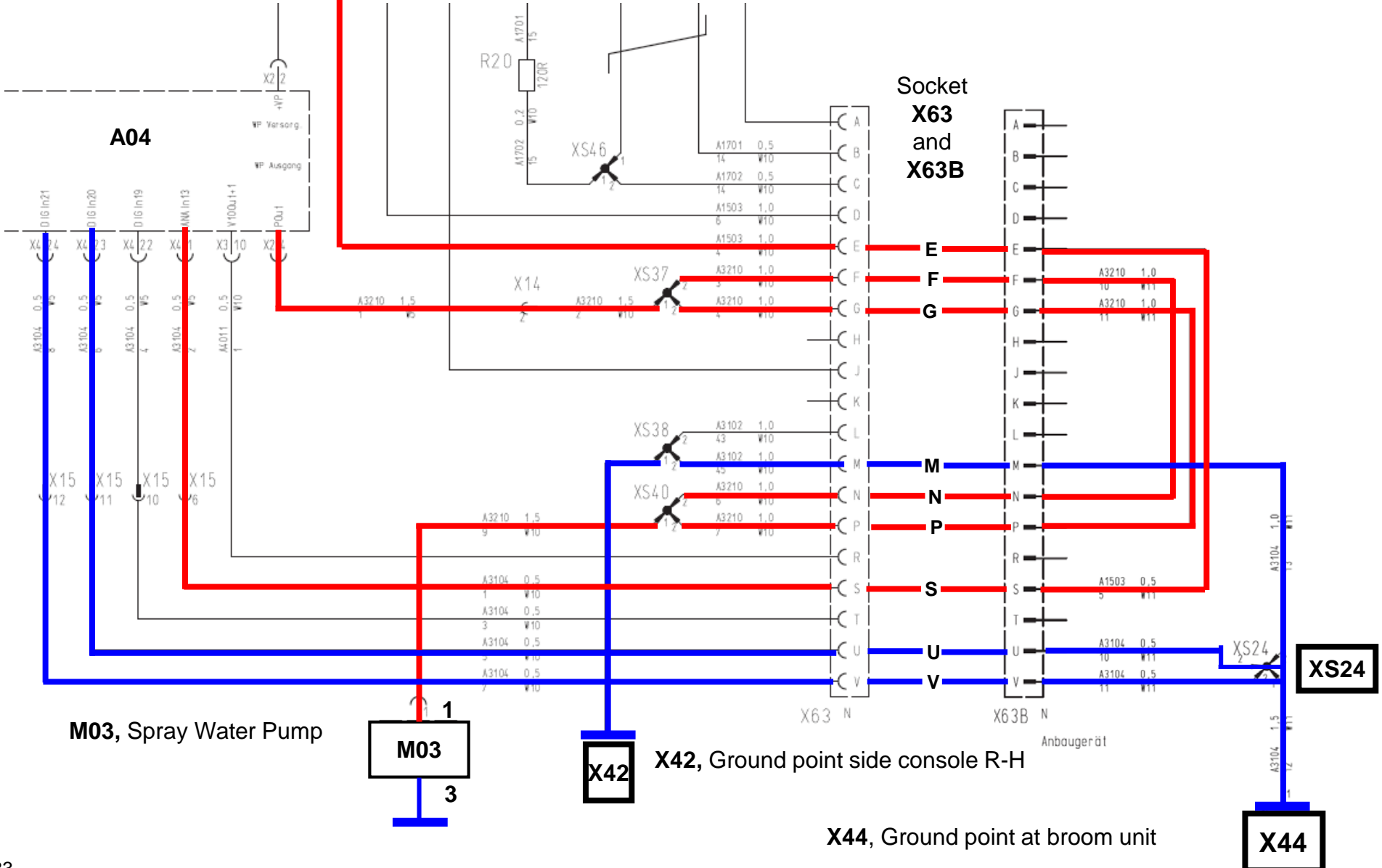
Harness W??
97???????

**B+(15), F03,
K10A:2 (87)**

3.0.1 Electric



X63 CM 1600 with 2 broom- system



3.0.1 Electric



Jumpers for tool recognition of attachments in the plug X63 B

B) Stecker für Anbaugerät

kabelbaumseitig

Details siehe Hako Datenblätter

Ausführung: 19 polig

Zubehör

ET-Nr.: 01475610

ET-Nr.: 0147556

ET-Nr.: 01475720



19730381
19730373
19730357

19721315	E	0	A1507	1	WH
19721315	F	1	A3210	6	WH
19721315	G	1	A3210	2	WH
19721315	H	0	A4031	1	WH
19721315	M	1	A3104	1	WH
19721315	N	1	A3210	6	WH
19721315	P	1	A3210	7	WH
19721315	S	0	A3104	5	WH
19721315	U	0	A3104	3	WH
19721315	V	1	A3104	4	WH

Spare parts for plug X63B

Bushing contact (19 pcs.) for plug X63, PN 01478580, Hako-part-no. 19721414

Plug for pin contact 19-pin, PN 01475560, Hako-part-no. 19730613

Cable gland end housing, PN 01475610, Hako-part-no. 19730621

Dust protection cap, PN 01475720, Hako-part-no. 19730639

Nyogel 760G, PN 03009180, Hako-part-no. 28030104



Kette der Schutzkappe mit Schlüsselring verbindet
Connect chain of the protection cap with key ring

3.0.1 Electric



Spare parts for plug X63 (at vehicle)

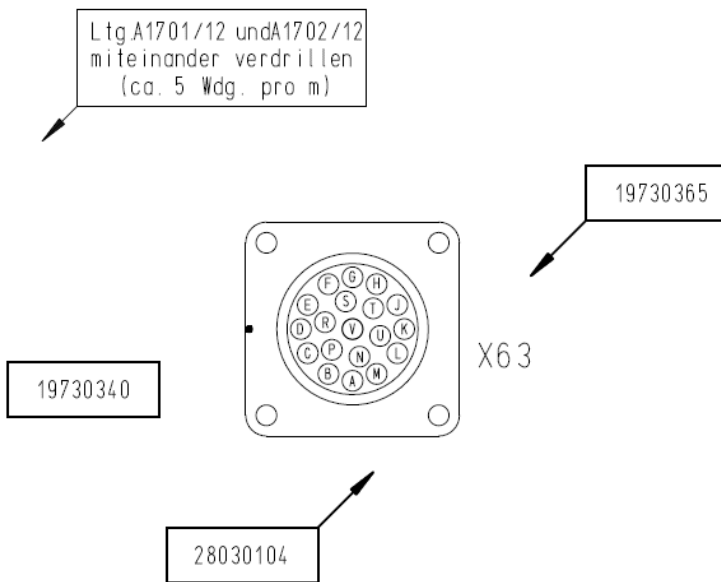
Plug X63, 19 polig, PN 01475830, Hako-part-number 19730605

Hinged flip X63, PN 01496210, Hako-part-number 19730641

Bushing contact X63, PN 01275850 (19 pcs.), Hako-part-number 19721422

Nyogel 760G, PN 03009180, Hako-part-number 28030140

WH	A5702	11	0,5	A	1972 1307
WH	A1701	14	0,5	B	1972 1307
WH	A1702	14	0,5	C	1972 1307
WH	A1503	6	1,0	D	1972 1307
WH	A1503	4	1,0	E	1972 1307
WH	A3210	3	1,0	F	1972 1307
WH	A3210	4	1,0	G	1972 1307
				H	
20	A7230	5	1,0	J	1972 1307
				K	
WH	A3102	43	1,0	L	1972 1307
WH	A3102	45	1,0	M	1972 1307
WH	A3210	6	1,0	N	1972 1307
WH	A3210	7	1,0	P	1972 1307
WH	A4011	1	0,5	R	1972 1307
WH	A3104	1	0,5	S	1972 1307
WH	A3104	3	0,5	T	1972 1307
WH	A3104	5	0,5	U	1972 1307
WH	A3104	7	0,5	V	1972 1307

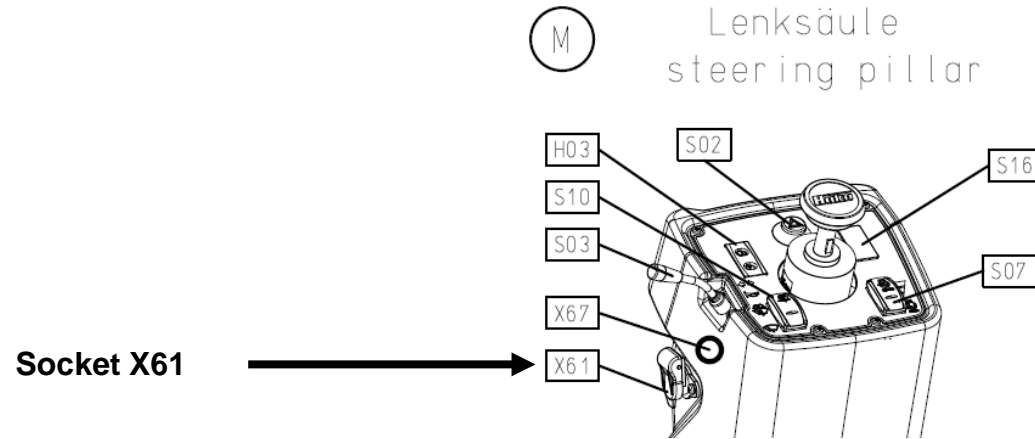


Kontakte des X63 mit Nyogel 760G betreiben
Coat contacts of X63 with Nyogel 760G

3.0.1 Electric



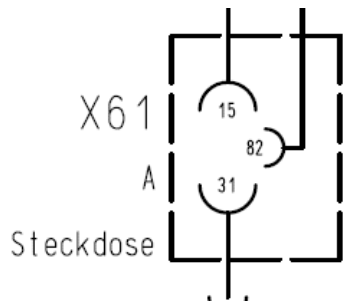
Geschwindigkeitssignal / C3- Signal an der Steckdose X61/Pin82 in der Lenksäule



Speed signal / C3- Signal at socket X61/82 from A04 X3/PIN22 (Cabel Nr. A1638)

Note: Ground controls!

You will find mor information under 3.0.5 Measured values



- terminal 15 = Battery plus (B+) from key switch S01:15, F04, 10A (F27)
- terminal 82 = Frequence signal from A04 X3/PIN22
- terminal 31 = Ground from PIN X42

3.0.1 Electric



You will find further information about the electrical system of the Hako Citymaster 1650 in the training documents in the sections:

3.0.2 Electrical circuit diagram CM 1650

3.0.3 Hatz electric

3.0.4 Documentation of cable layout

3.0.5 Measured values and function of the solenoid valves

3.0.6 Principle of electrical engineering

3.0.7 Terminal designations in vehicle electrical systems