3.0.1 Electrical Installation

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Fundamental rules for fault location in vehicle electric systems

Check the following before starting any work:

- Check the fuses in the electric system and that the fuses are in the correct location in the fuse boxes.
- Check the fuses are in working order for the corresponding functions. Use a multimeter to check them properly.
- Check the power and ground connections for the control units (electronic systems) are in proper working order.
- Check the ground and positive terminals on the battery are fixed firmly and for signs of damage on the pole terminals
- Check the charge status of the battery and the function of the alternator (generator); in the event of voltage drops to below 10.5 V when in operation, errors could be indicated by the control units which are not relevant.
- In the case of errors which occur sporadically or flickering control lamps / headlights, check the grounding line from the negative pole of the battery to the vehicle frame and the cab for secure fixation and signs of corrosion.

Before beginning the checks, ensure that the function of the component to be tested is clearly known.
It is essential to use the electrical circuit diagram, training documents and diagnostics system for the respective vehicle in this case.

Fundamental rules for fault location in vehicle electric systems

In order to be able to help in the event of problems, it is essential that we are provided with the results of the 6 points comprising the error diagnosis. Please report the results of the diagnosis to us by phone or e-mail in the sequence Point 1 to Point 6.

Re. Point 1: Did you use the technical documents, training documents electrical circuit diagrams and diagnostics system?

Re. Point 2: Was it possible for you to reproduce the error described by the customer?

Re. Point 3: Did you put the electric system into operation? Could you reproduce the error or malfunction yourself?

Re. Point 4: What possible causes could you determine? Are any error messages indicated by the control units?

Re. Point 5: What conclusions (cause of functional faults) have you drawn?

Re. Point 6: What tests have you completed (function test, electrical measurements, diagnostics system)? Have the error messages indicated by the control units been checked with the aid of the training documents?

3.0.1 Electrical Installation

Component names (equipment identifiers, letters) for electrical components

Basic Electrotechnology

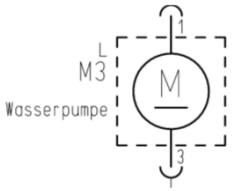
Switching and circuit diagrams are always comprised of the drawings and reference lists.
The reference lists contain all the components within the machine.
The letter identifiers are assigned as follows:

- A Electronics, control units
- B Sensors, transducers
- C Capacitors
- E Headlights, lighting, indicators
- F Fuses
- G Batteries, generators
- H Control lamps
- K Relays
- M Starters, electric motors, lifting elements, pumps
- R Resistors, potentiometers, glow plugs
- S Switches, buttons
- V Diodes
- X Connectors, power distributors
- Y Valves, solenoid valves, proportional solenoid valves, magnetic clutches

3.0.1 Electrical Installation

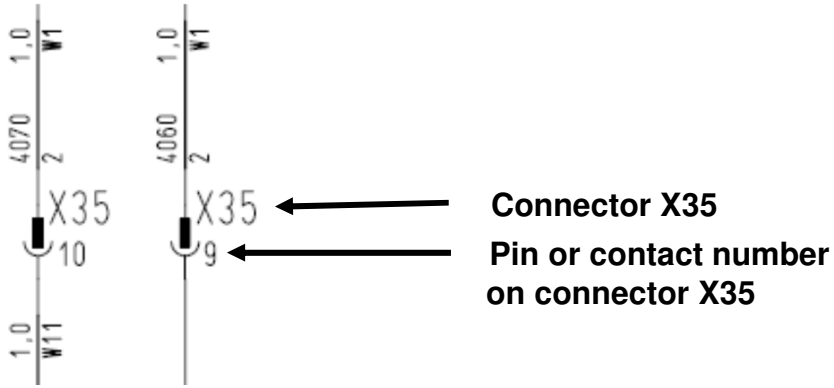
Example of the equipment identifying letters of components in the circuit diagram

Each component is assigned and identified by letter and consecutive number e.g.:
M1 for a starter, M2 for a pump, M3 for an electric motor etc.



Connectors on electronic units are identified by A1; X1 or A1;X2.
Connectors with several PINs are identified by A1; X1:1 or A1; X1:2 etc.

Plug connectors or power distributors, which are not fitted on an electrical unit, are only identified by X1, X2 etc. A lower case number indicates the pin or contact number.



3.0.1 Electrical Installation

Examples of further information available in the circuit diagram

Teil part	Beschreibung description	Sachnummer code number	Position sheet position	Ort location
K17	Relais Kraftstoffventil relay fuel valve	-	5/21	E
K18	Steuergerät Anlasser control unit starter	-	4/15	G
K19	Relais 12V 20/10A relay 12V 20/10A	90471103	6/10	E
K20	Relais 12V 20/10A (Opt.Rückfahrsignal) relay 12V 20/10A (opt. backw. signal)	90471103	17/12	E
K23	Relais 12V 20/10A relay 12V 20/10A	90471103	4/31	E
K24	Relais 12V 20/10A relay 12V 20/10A	90471103	4/39	E
K25	Relais 12V 20/10A (Opt. Dr./Entl.) relay 12V 20/10A (opt. carr. pressure)	90471103	15/24	R
K26	Relais 12V 20/10A (Opt. Dr./Entl.) relay 12V 20/10A (opt. carr. pressure)	90471103	15/36	R
K27	Relais 12V 20/10A (Var.Citycleaner) relay 12V 20/10A (var. Citycleaner)	90471103	18/5	R
K28	Relais 12V 20/10A (Var.Citycleaner) relay 12V 20/10A (var. Citycleaner)	90471103	18/13	R
K29	Steuergerät Lastanzeige (Opt.) control unit load monitor	90589300	7/12	R
M1	Anlasser starter	-	4/10	G
M2	Kraftstoffpumpe fuel pump	-	5/9	G
M3	Sprühwasserpumpe spraying pump	97092258	13/38	L

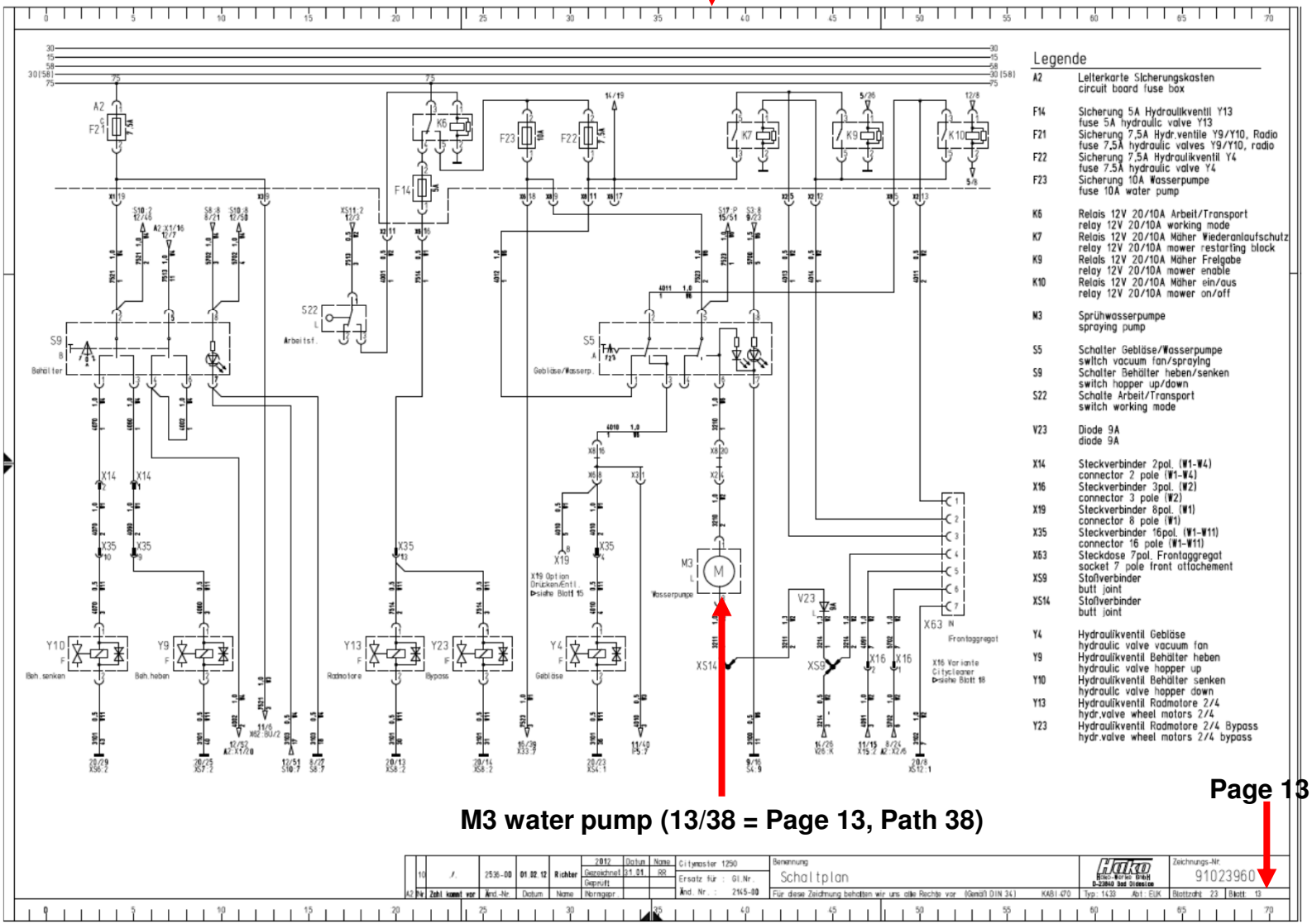
Detailed information on the water pump
Is available on Page 13; Path 38

Installation location of the water pump (component) in the vehicle

3.0.1 Electrical Installation

Examples of locating electrical components in the circuit diagram

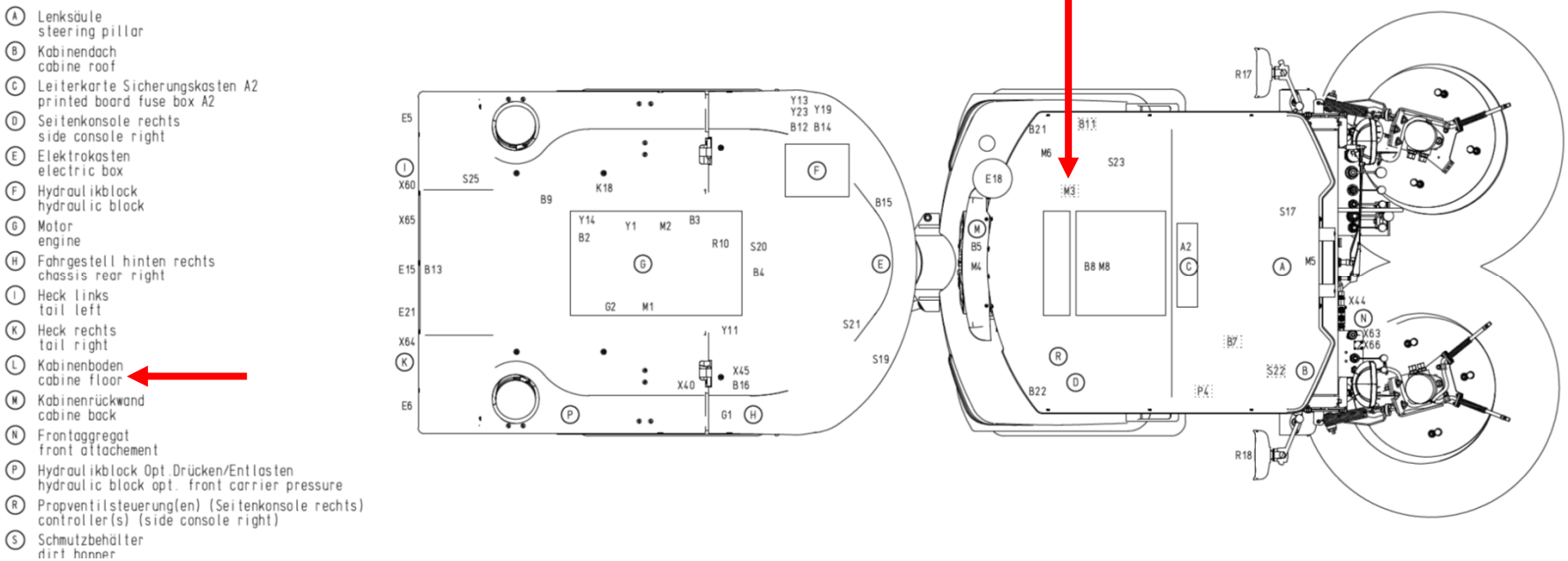
Path 38



3.0.1 Electrical Installation

Installation location of the M3 water pump (component) in the vehicle

Installation location of the M3 water pump; L = cab floor

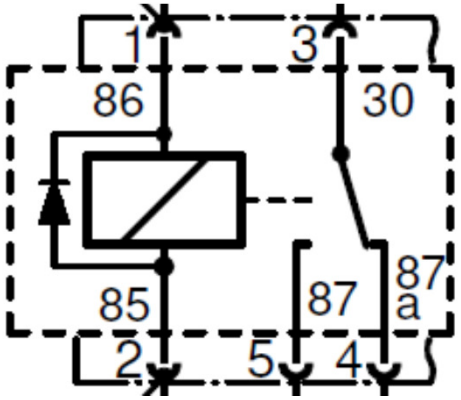


Klemmbezeichnungen in der KFZ- Elektrik
List of terminal names in the automotive electrical system

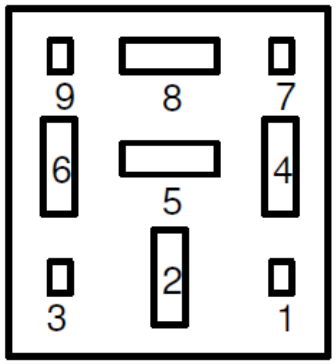
Klemme/ Clamp	Beschreibung	Description
	Spannungsversorgung Fahrzeug	Power supply vehicle
30	Eingang Batterie Plus (B+) direkt von der Batterie	Input battery plus (B+) from battery plus pole
15	Geschaltetes Plus (B+) hinter Batterie, z.B. über den Zündstartschalter	Switched positive (B+) behind the battery, for Example switched over the ignition switch.
31	Batterie Minus (B-) Masse (GND)	Battery Minus (B-) Ground (GND)
75	Geschaltetes Plus vom Zündstartschalter	Switched plus, over the ignition switch
	Vorglühen, Starten	Preheating, Start
19	Glühstartschalter, Vorglühen, Glühkerzen	Glow plug start switch, preheat, glow plugs
50	Startersteuerung Startermotor (Anlasser)	Starter control starter Motor,
	Beleuchtungsanlage (Licht)	Lighting system
54	Bremslicht	Brake light
56	Scheinwerferlicht	Headlight beam
58	Begrenzungs-, Schluss-, Kennzeichen- und Instrumentenleuchten	Clearance, rear, licence plate and dashboard lights
	Relais	Relays
30	Spannungsvervorgung für das Relais	Power supply for the relay
87	Relaisausgang (NO) geöffnet wenn die Klemmen 85 und 86 (Spule) nicht bestromt sind.	Relay output (NO) is opened when the clamps 85 and 86 (coil) are not energized.
87a	Relaisausgang (NC) geschlossen wenn die Klemmen 85 und 86 (Spule) nicht bestromt sind.	Relay output (NC) closed when the terminals 85 and 86 (coil) are not energized.
85	Schalteingang Batterie Minus (Masse,B-) an der Relaisspule	Switching input battery minus (B-, GND) to the relay coil
86	Schalteingang Batterie Plus (B+, 15) an der Relaisspule	Switching input battery positive (B +, 15) on the relay coil

Standart Relais und Mikrorelais
Standard Relay and Mirco Relay

Beispiel: Standart Relais
Excample: Standard Relay



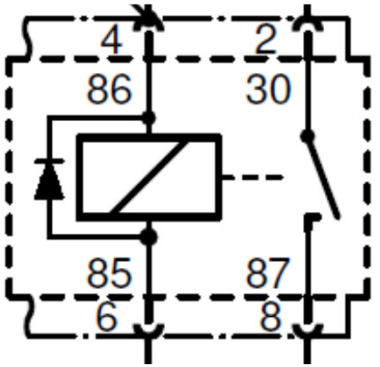
Relay socket: View from top side



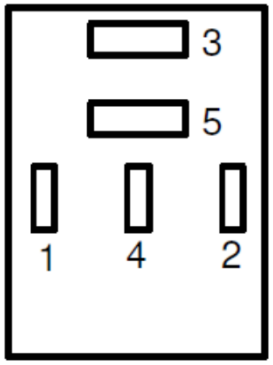
Relaissockel

von oben gesehen

Beispiel Mikro relais
Excample : Micro Relay



Relay socket mirco relay: View from top side

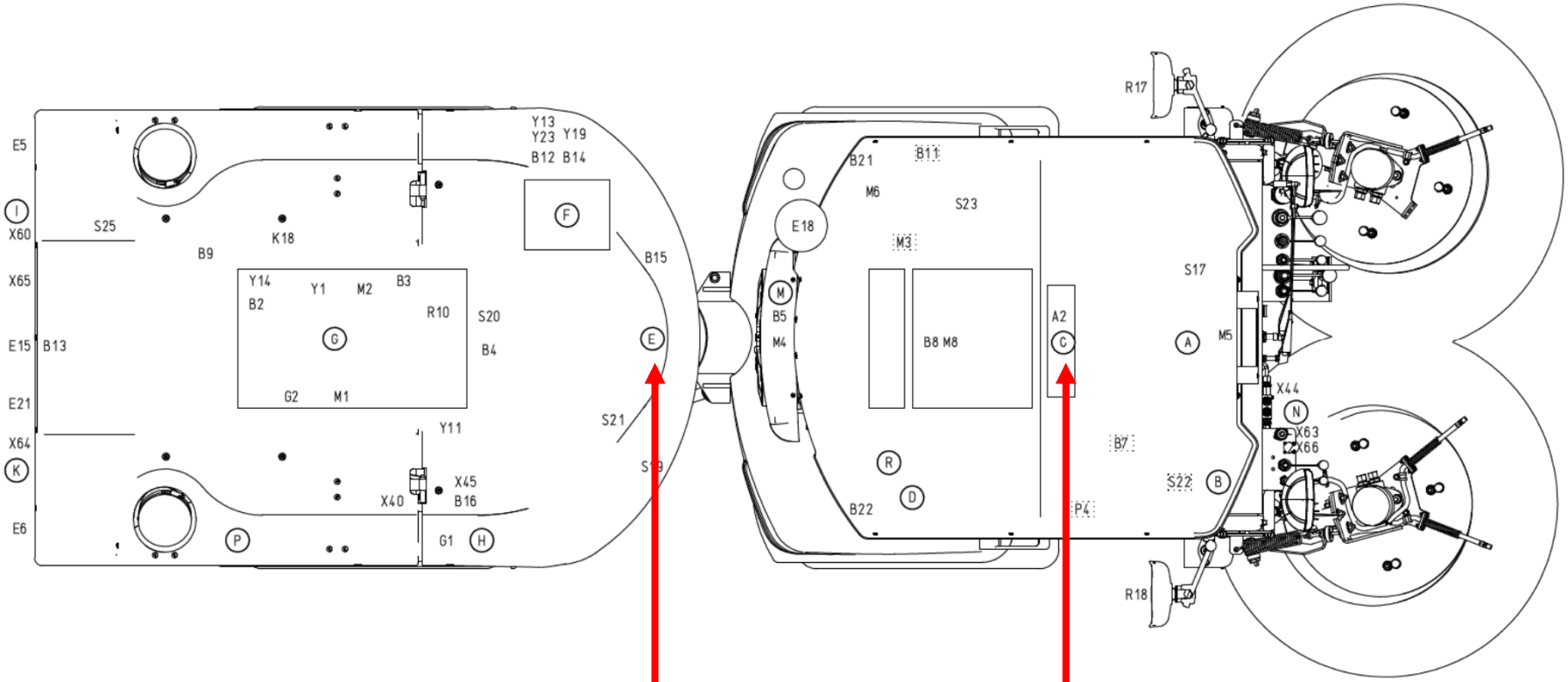


Microrelaissockel

von oben gesehen

3.0.1 Electrical Installation

Arrangement of circuit board A2 and electric box E in the vehicle

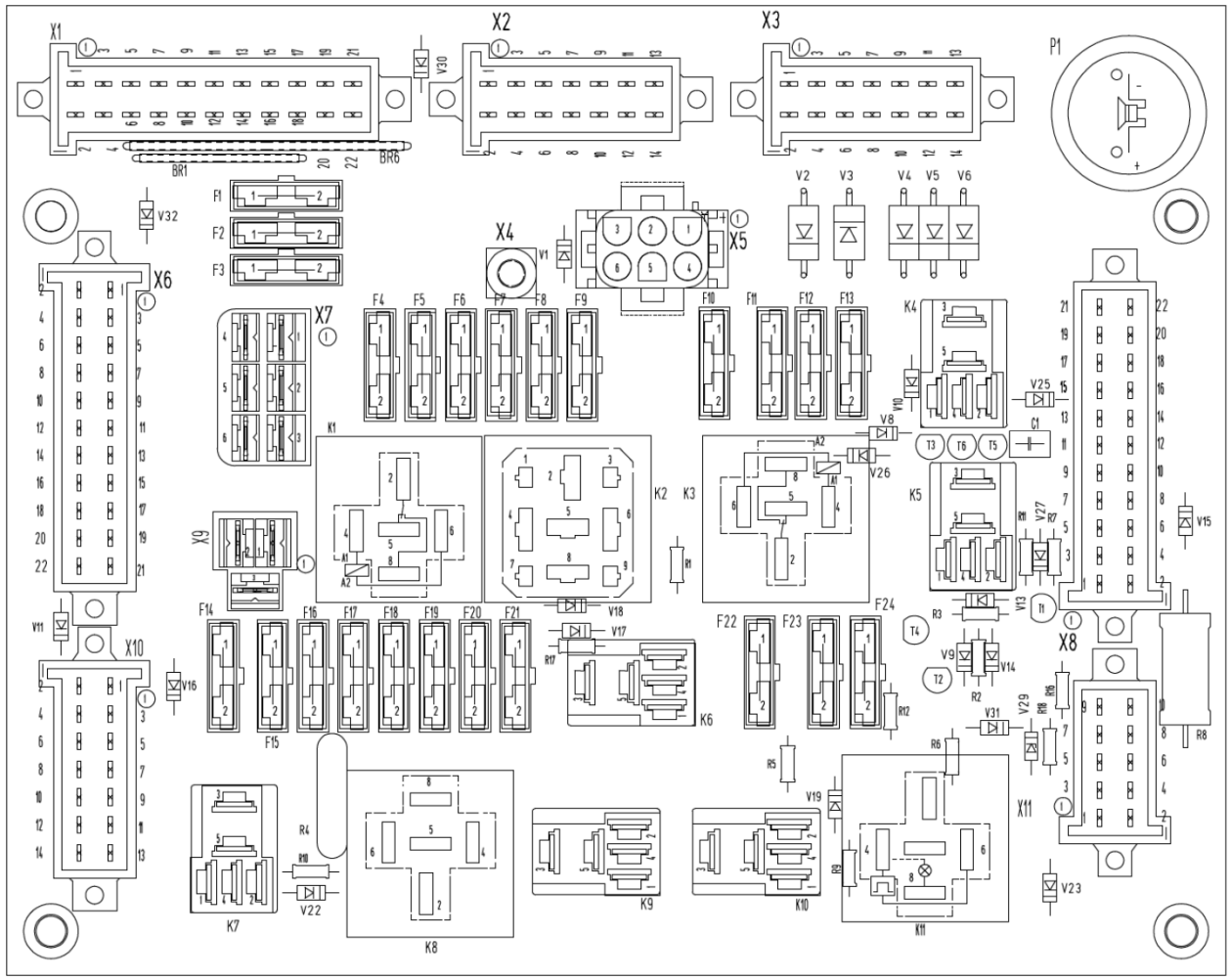


E: Electric box at rear of vehicle
Fuses F30- F32
Relays K12, K14,K16, K17, K19, K20, K23, K24

C : Circuit board A2 ,with fuses and relays in cab
Fuses F1- F24
Relays K1- K11

3.0.1 Electrical Installation

C circuit board A2 and fuse box in the cab



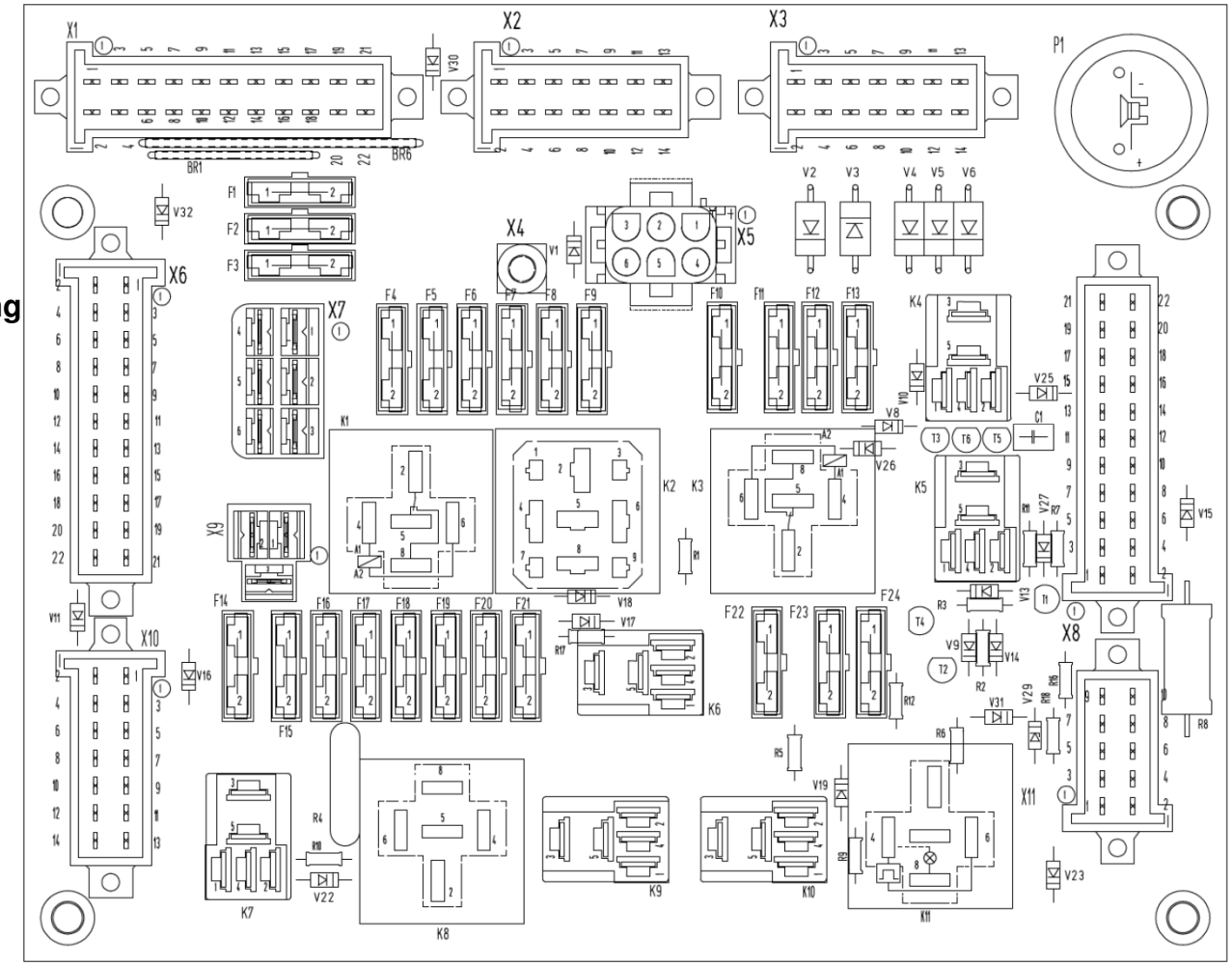
F1 fuse side light/ tail light R-H, 5A
F2 fuse side light/ tail light L-H, 5A
F3 fuse rotating beacon lamp, 7.5A
F4 fuse supply 58/30, 30A
F5 fuse supply 15, 30A
F6 fuse supply 75, 30A
F7 fuse control unit seat switch K2, 3A
F8 fuse air condition system, 20A
F9 fuse socket,10A
F10 fuse heating fan, 15A
F11 fuse hydraulic valve Y6
F12 fuse brake lamps, horn, 10A
F13 fuse hydraulic valves, seat, 10A
F14 fuse hydraulic valve Y13, 5A
F15 fuse fuel valve, 25A
F16 fuse head light, 15A
F17 fuse windsren wiper, 10A
F18 fuse work light, 15A
F19 fuse engine, pilot lamps, 7.5A
F20 fuse direction indicator, 10A
F21 fuse hydraulic valves Y9 + Y10, 7.5A
F22 fuse hydraulic valve Y4, 7.5A
F23 fuse water pump, 10A
F24 fuse fuel valve, 25A

3.0.1 Electrical Installation

C circuit board A2 and fuse box in the cab

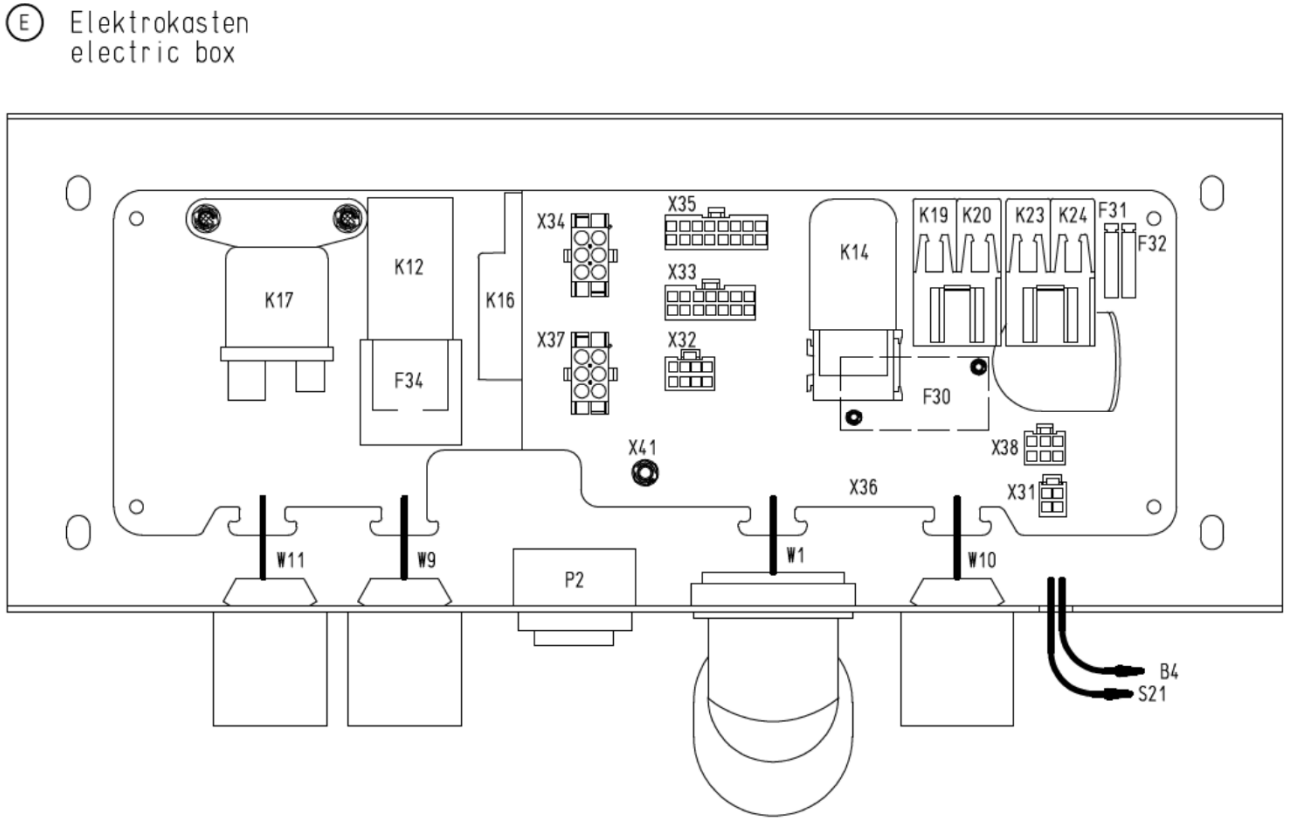
Ⓒ Leiterkarte Sicherungskasten A2
printed board fuse box A2 **CM 1250**

K1 relay 12V 40/20A, supply 75
K2 relay control unit seat switch
K3 relay 12V 40/20A, AC- system
K4 relay 12V 20/10
front tool carrier relased
K5 relay 12V 20/10 broom speed
K6 relay 12V 20/10A working mode
K7 relay 12V 20/10A mower restarting
K9 relay 12V 20/10A mower enable
K10 relay 12V 20/10A mower on/ off
K11 relay control unit flasher



3.0.1 Electrical Installation

E Electric box at rear of vehicle

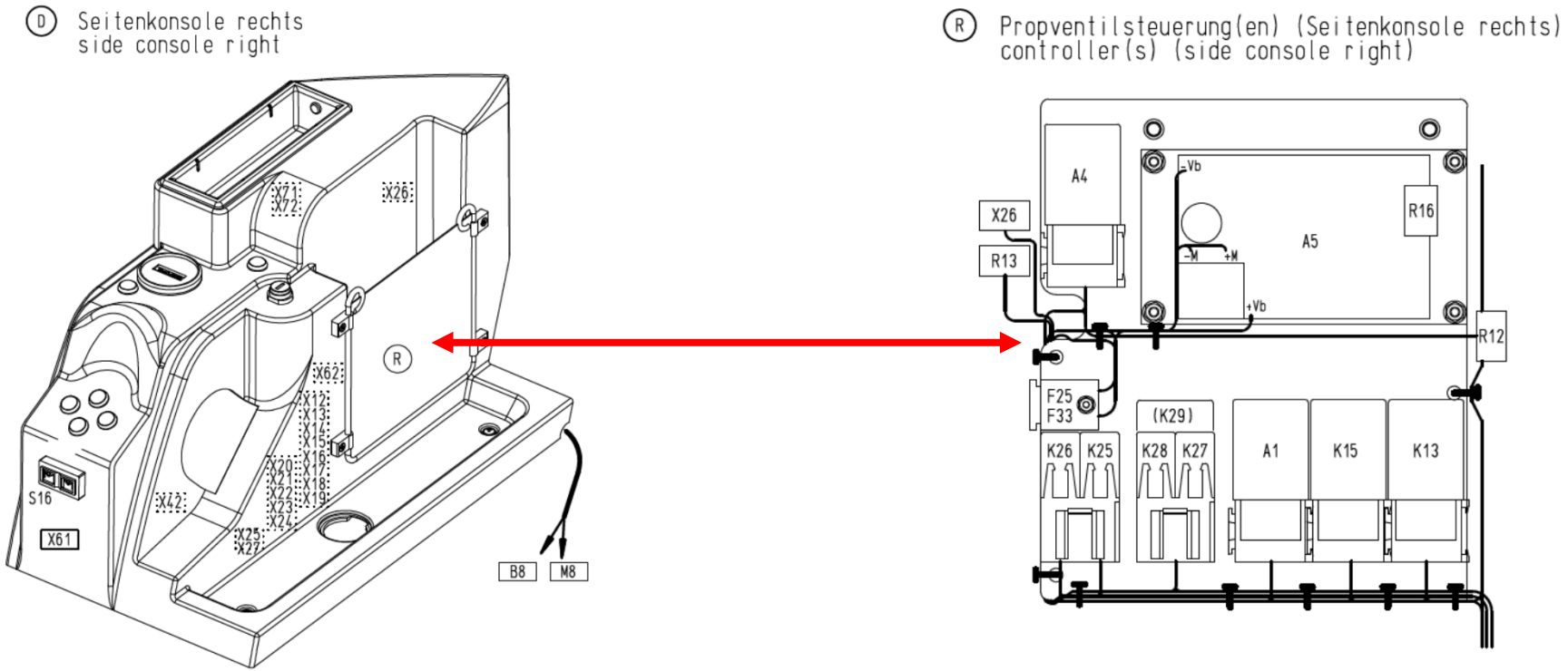


F30 Fuse, main fuse 80A
F31 Fuse, reversing signal (option) 5A
F32 Fuse, battery main switch (option) 3A
F33 fuse variant Citycleaner 15A

K12 Relay, preheating control unit
K14 Relay, cooling water level control unit
K16 Relay, timer unit fuel valve
K17 Relay, fuel valve
K19 Relay, 12V 20/10 A
K20 Relay, reversing signal (option)
K23 Relay, 12V 20/10A
K24 Relay, 12V 20/10A

3.0.1 Electrical Installation

D Seitenkonsole rechts - D Side console R/H



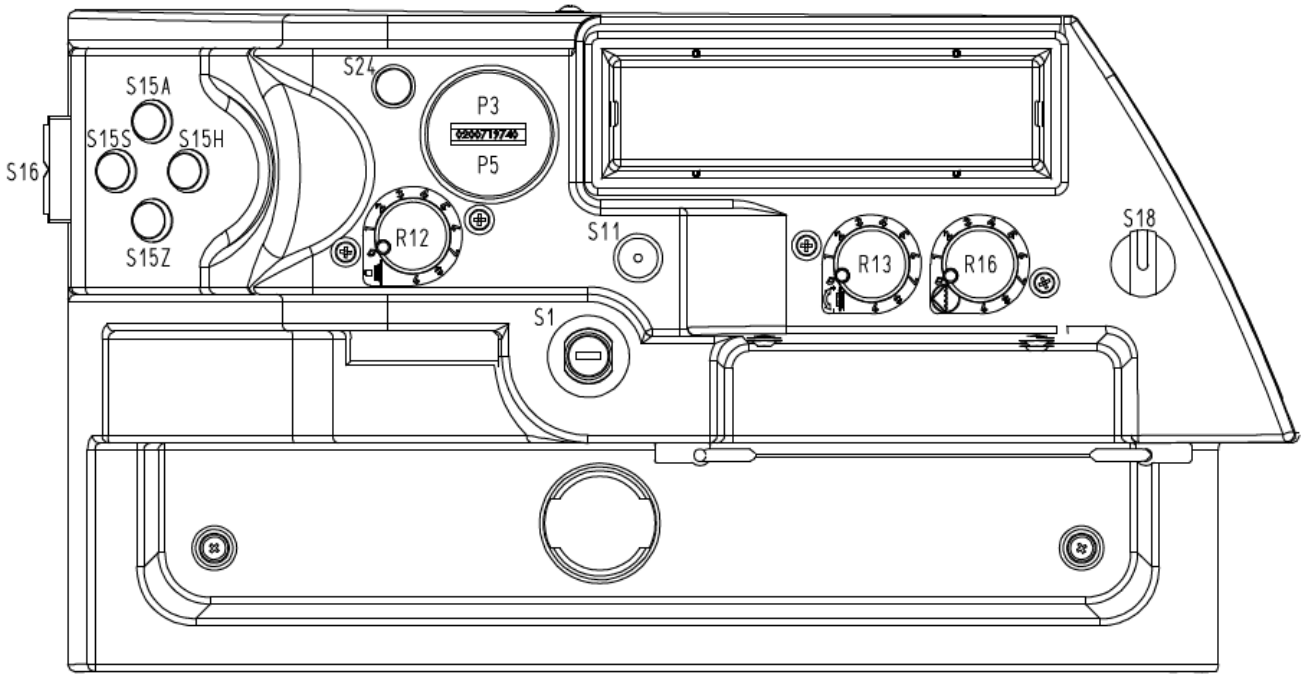
A1 Control unit, circular brush speed (standard)
A4 Control unit, front attachment support, incr./decr. pressure option
A5 Control unit, water pump, Citycleaner option

F25 Fuse mirror heater option
F33 Fuse, Citycleaner option, 15A
K21 Relay, dist.-dependent spreading option
K25 Relay, front attachment support, incr./decr. pressure option
K26 Relay, front attachment support, incr./decr. pressure option
R12 Potentiometer, pressurize front attachment support
R13 Potentiometer, side brush speed
R16 Potentiometer, water pump, Option Citycleaner

3.0.1 Electrical Installation

Seitenkonsole rechts - Side console R/H

Ⓓ Seitenkonsole rechts
side console right



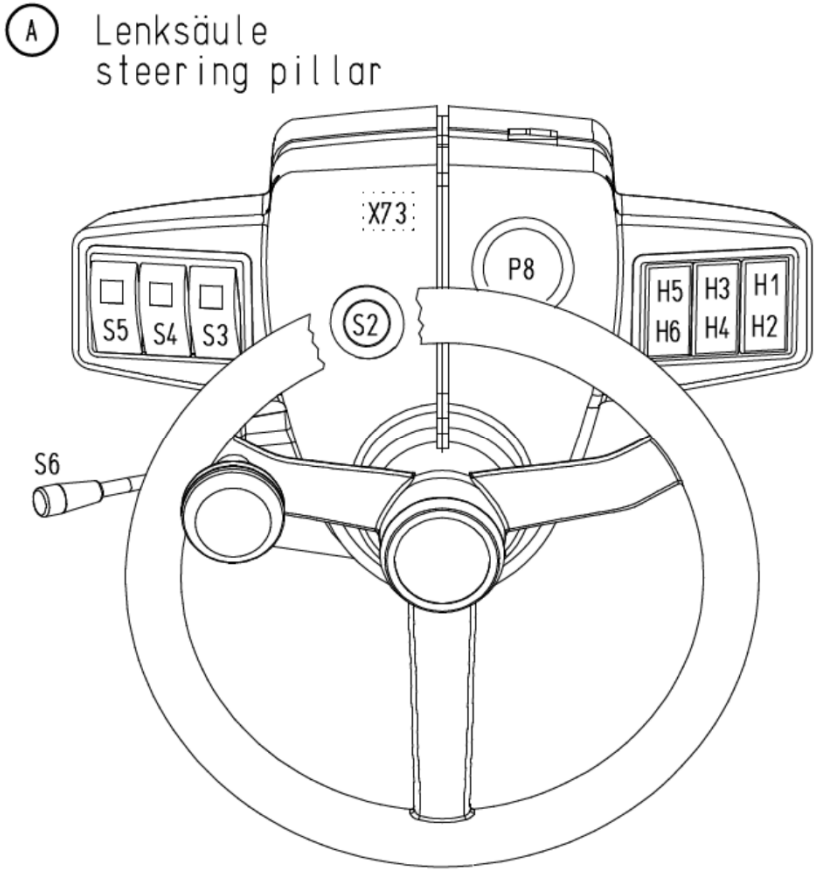
S1 Starter switch/ key swith
S11 buttom mirror heater
S15 H buttom brooms up
S15 S buttom brooms down
S15 A buttom brooms wide
S15 Z buttom brooms narrow
S16 swivel wedge type snow blade

P3 houer meter
P5 work cyclometer (option)
R12 potentiometer pressure / unload front tool carrier
R13 potentiometer speed side brooms
R16 potentiometer water pump, Option Citycleaner

3.0.1 Electrical Installation

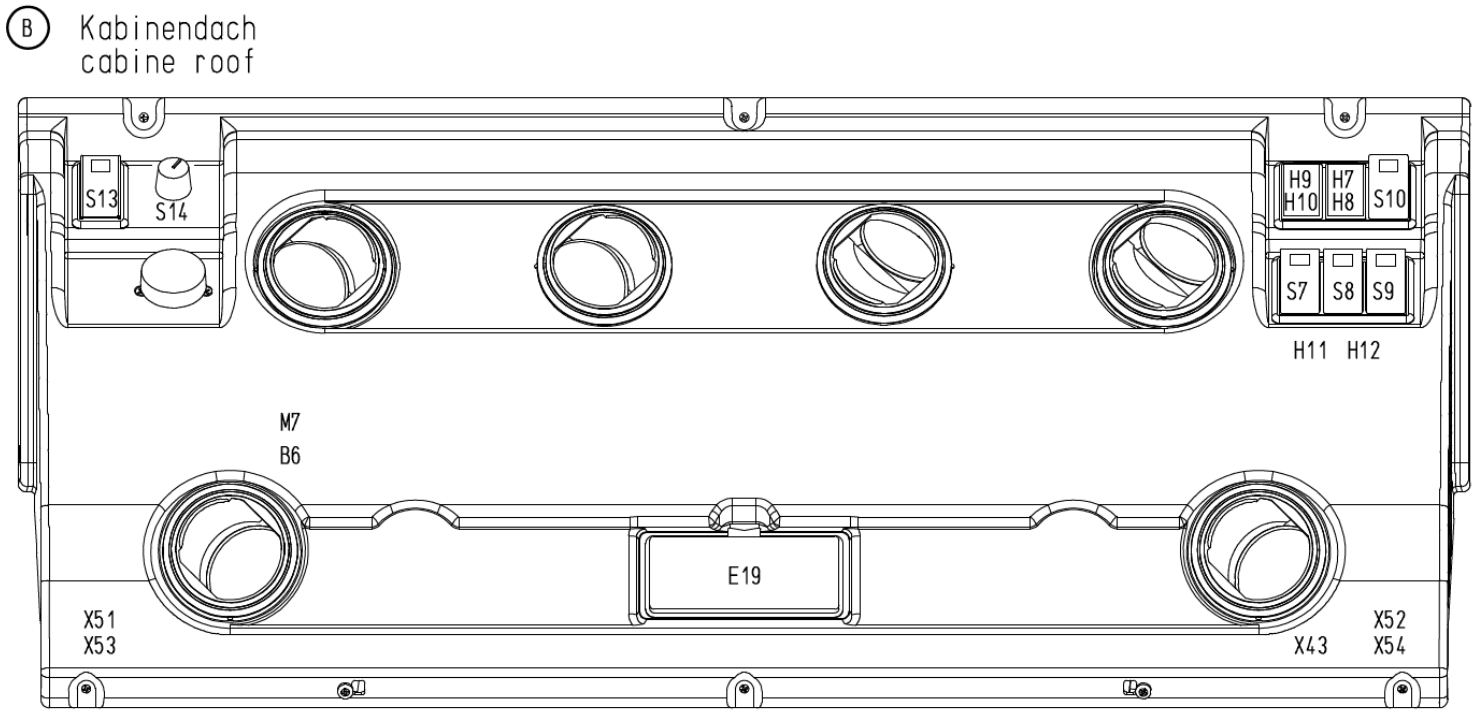
Electrical components in the steering column

H1 Kontrollleuchte Batterie- Ladekontrolle
H1 Pilot lamp battery
H2 Kontrollleuchte Vorglühen
H2 Pilot Lamp pre heat glow plugs
H3 Kontrollleuchte Kühlwasser- Temperatur Motor
H3 Pilot lamp coolant temperature engine
H4 Kontrollleuchte Motoröldruck
H4 Pilot lamp engine oil pressure
H5 Kontrollleuchte Blinker
H5 Pilot lamp direction indicator
H6 Reserveanzeige Kraftstoff
H6 Pilot lamp fuel level
P8 Anzeigeinstrument Hydrauliköltemperatur
P8 Display hydraulic oil temperature
S2 Warnblinkschalter
S2 Switch warning flasher
S3 Schalter Rundumkennleuchte (RKL)
S3 Switch rotating beacon
S4 Schalter Arbeitsscheinwerfer (Option)
S4 Switch work light (opt. 2nd work light)
S5 Schalter Sauggebläse/ Wasserpumpe
S5 Schalter Mähwerk ein, Variante Citytrac
S5 Switch vacuum fan/ water pump
S5 Switch lawnmower variant Citytrac
S6 Lenkstockschalter
S6 Guidance stick switch



3.0.1 Electrical Installation

Electrical components in the cabine roof



B6 Einfrierschutz f. die Klimaanlage (Option
B6 freeze switch AC (option)
E19 Innenleuchte
E19 Lamp
H11 Kontrolleuchte Überlast- Anzeige (Option)
H11 pilot lamp overload (option)
H12 Summer Überlast- Anzeige (Option)
H12 buzzer overload (option)
M7 Heizungsgebläse
M7 heater fan

S7 Schalter Scheibenwischer/ Waschpumpe
S7 Switch windsreen wiper
S8 Lichtschalter
S8 Head light switch
S9 Schalter Kehrgutbehälter heben/ senken
S9 Switch hopper up and down
S10 Schalter Geräteträger drücken/ Streuer- Schnellentleerung
S10 Switch front tool carrier push enable/ gritter
S13 Schalter Klimaanlage
S13 Switch AC

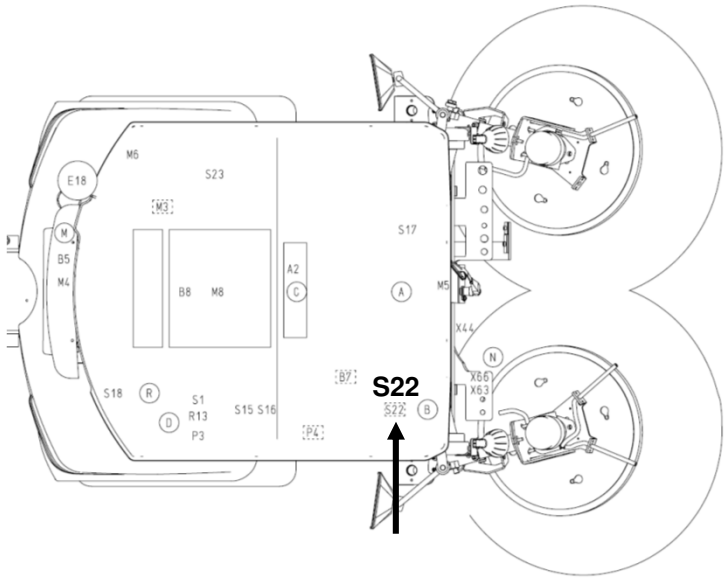
3.0.1 Electrical Installation

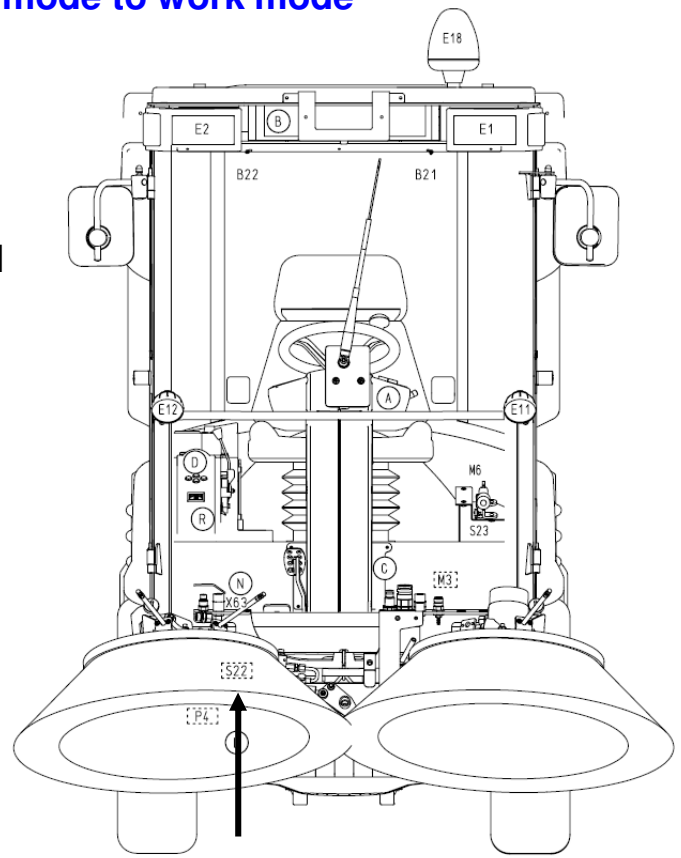
S22 switch for switching from transport mode to work mode

The switch S22 is installed on the accelerator pedal.
The switch S22 is actuated via the hand throttle lever.
If the switch S22 is activated, the vehicle is in work mode, i.e. no power is supplied the solenoid valve Y13.
The vehicle's all-wheel drive is activated, the maximum speed is 12.5 kph.

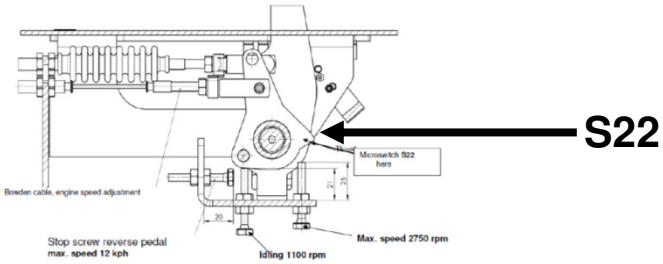
In the case of the CM 1200, the suction turbine can now be switched on.

In the case of the CT 4200, the mower can be switched on.

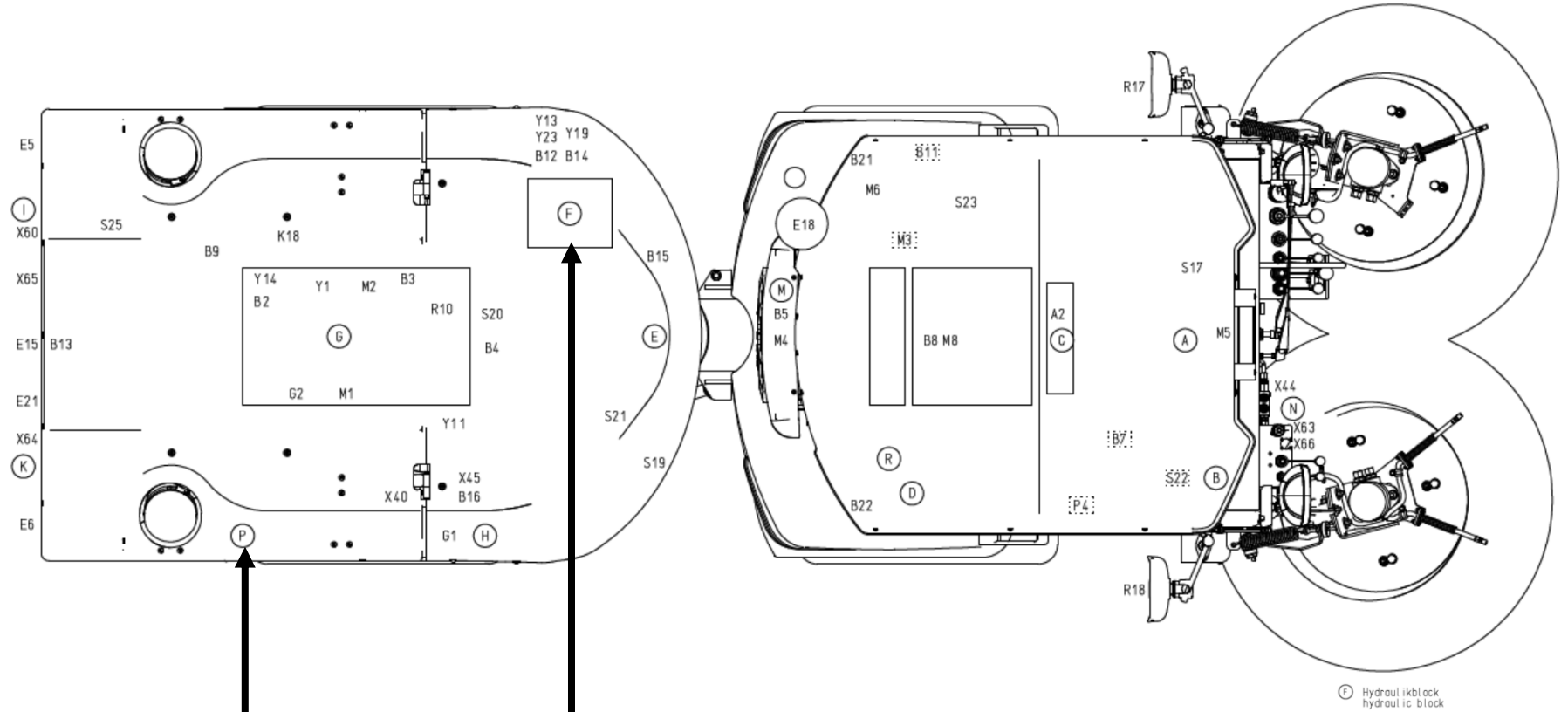




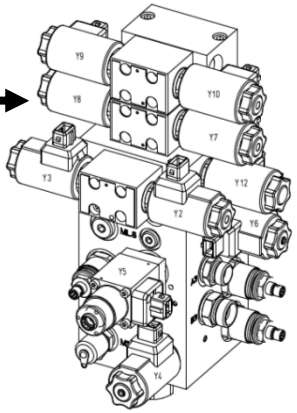
S22 Schalter Transport/ Arbeitsbetrieb am Fahrpedal
S22 Switch transport/ working mode via the drive pedal



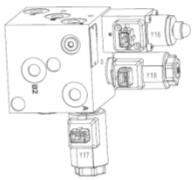
3.0.1 Electrical Installation



F hydraulic block
Y2, Y3, Y4; Y5; Y6;
Y7; Y8; Y9, Y10; Y12

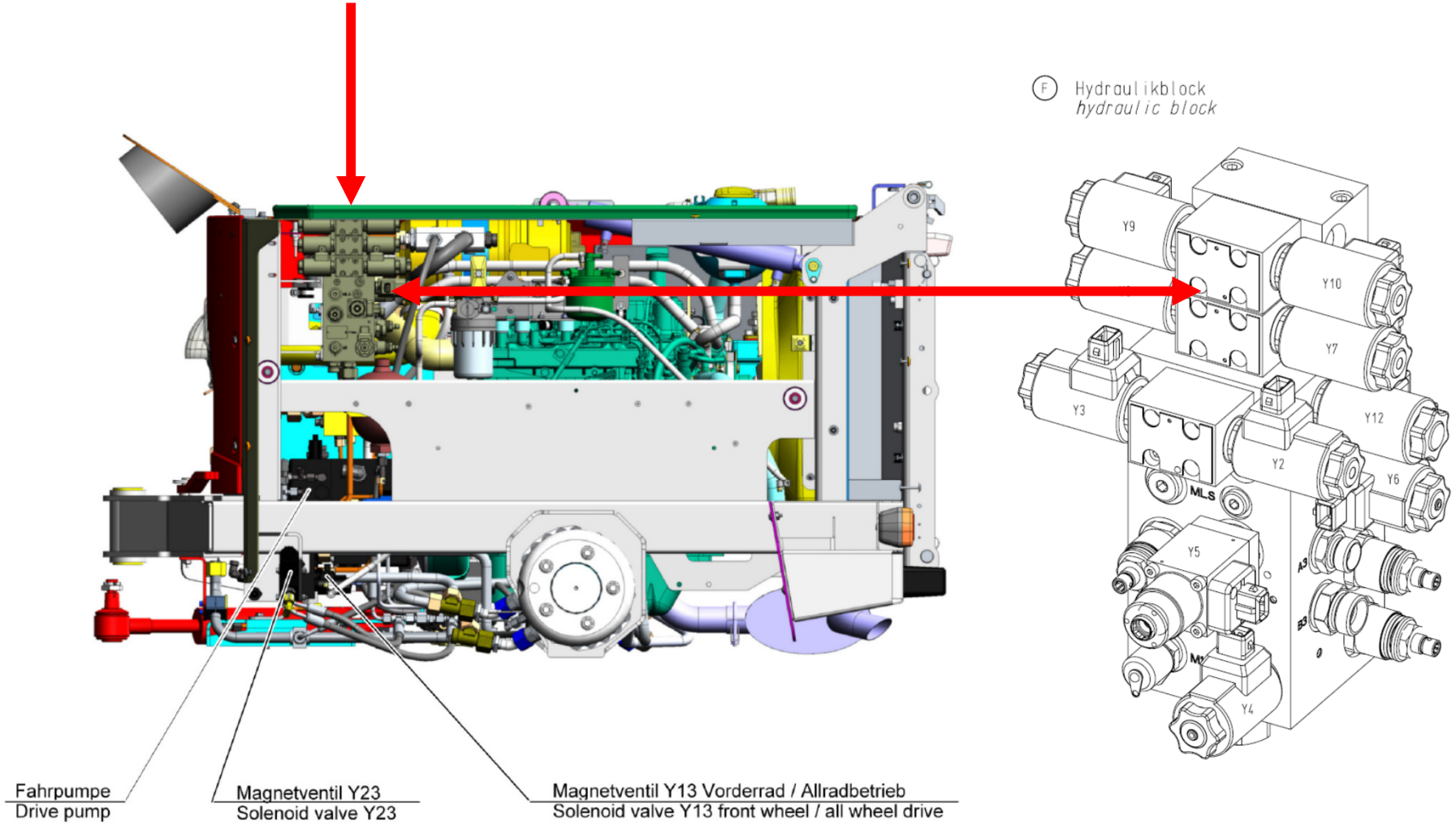


P Hydraulikblock Opt.Drücken/Entlasten **Y16, Y17; Y18;**
hydraulic block opt. front carrier pressure



3.0.1 Electrical Installation

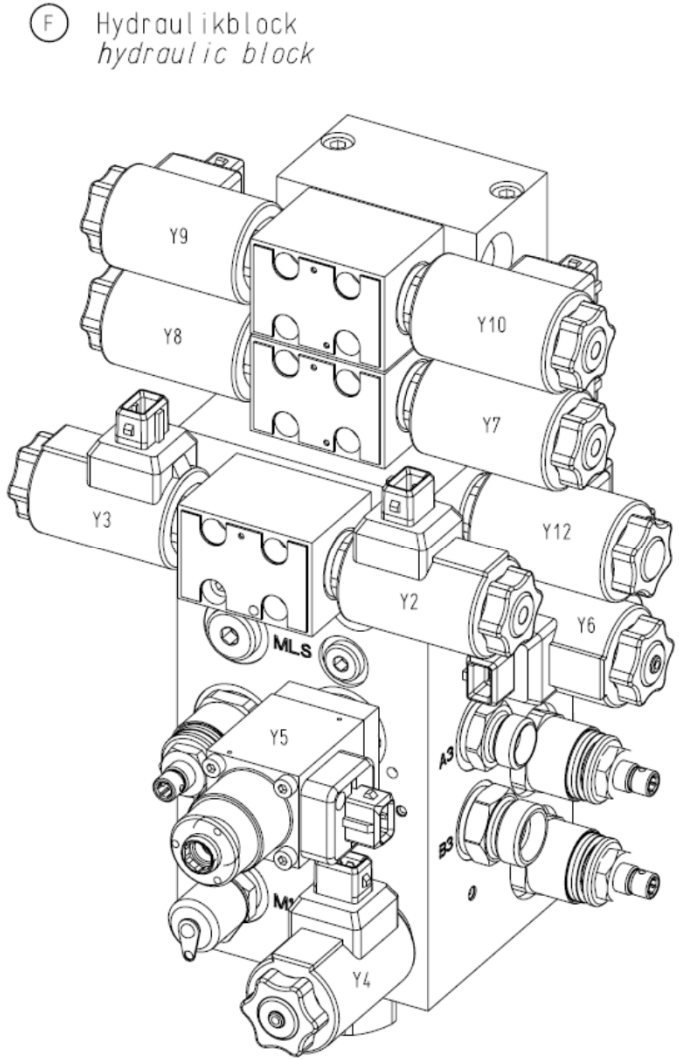
Main hydraulic mainfold for work hydraulics, solenoid valves Y2 to Y10 and Y12



3.0.1 Electrical Installation

Main hydraulic manifold for work hydraulics, solenoid valves Y2 to Y10 and Y12

Y2	Hydraulikventil Geräteträger senken *hydraulic valve front carrier down*
Y3	Hydraulikventil Geräteträger heben *hydraulic valve front carrier up*
Y4	Hydraulikventil Gebläse *hydraulic valve vacuum fan*
Y5	Proportionalventil Seitenbesen *proportional valve side brooms*
Y6	Hydraulikventil Umlauf aus *hydraulic valve circulation*
Y7	Hydraulikventil Besen auf *hydraulic valve brooms wide*
Y8	Hydraulikventil Besen zu *hydraulic valve brooms narrow*
Y9	Hydraulikventil Behälter heben *hydraulic valve hopper up*
Y10	Hydraulikventil Behälter senken *hydraulic valve hopper down*
Y12	Hydraulikventil Gerätetr.Schwimmst. *hydr.valve front carrier released*



3.0.1 Electrical Installation

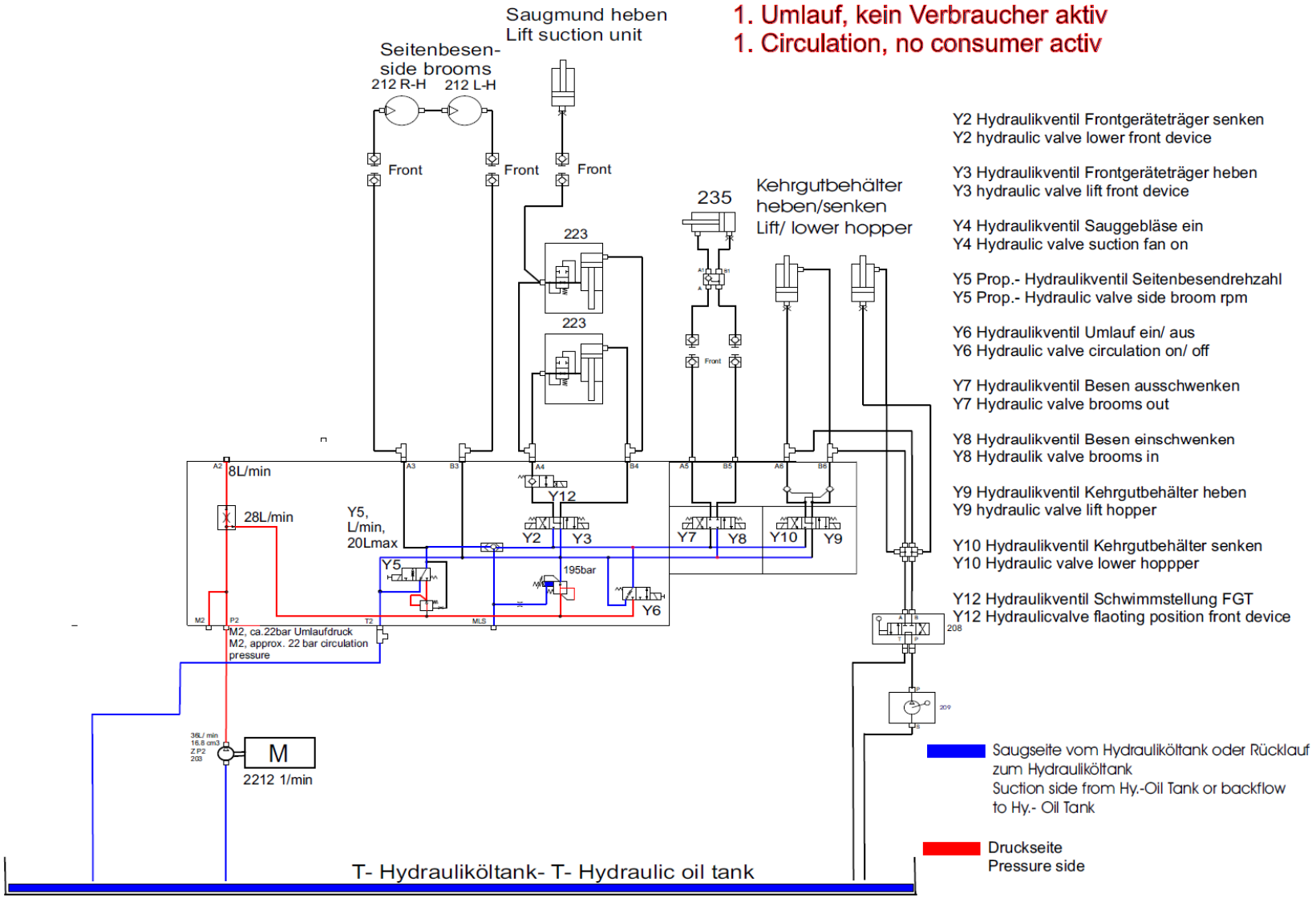
Measured values of solenoid valve hydraulic manifold for work hydraulics Y2 to Y10 + Y12

	Beschreibung- Description	Spannung (V) Voltage(V)	Stromstärke (A) Current flow (A)	Widerstand der Spule (Ω) Resistance of the coil (Ω)
Y2	Hydraulikventil Geräteträger senken Hydraulic valve front carrier down	12V	2000mA	6Ω
Y3	Hydraulikventil Geräteträger heben Hydraulic valve frontcarrier up	12V	2000mA	6Ω
Y4	Hydraulikventil Sauggebläse ein/ Mähwerk ein Hydraulic valve vacuum fan (suction turbine) on/ mower on	12V	2000mA	6Ω
Y5	Proportionalventil Seitenbesen/ Streuer Proportional valve side brooms/ spreader	4- 8	700- 1250mA	6Ω
Y6	Hydraulikventil Umlauf aus; Arbeitshydraulik ein Hydraulic valve circulation off; work hydraulic on	12V	2000mA	6Ω
Y7	Hydraulikventil Besen auf (Besen ausschwenken) Hydraulic valve brooms wide (brooms	12V	2000mA	6Ω
Y8	Hydraulikventil Hydraulic valve	12V	2000mA	6Ω
Y9	Hydraulikventil Behälter heben Hydraulic valve hopper up	12V	2000mA	6Ω
Y10	Hydraulikventil Behälter senken Hydraulic valve hopper down	12V	2000mA	6Ω
Y12	Hydraulikventil Frontgeräteträger senken/ Schwimmstellung Hydraulic valve lowering / floating position front device	12V	2000mA	6Ω

Achtung: Meßtoleranz +/- 20% durch unterschiedliche Meßgeräte ist möglich!
Caution: Measuring tolerance of +/- 20% due to diffrent measuring devices!

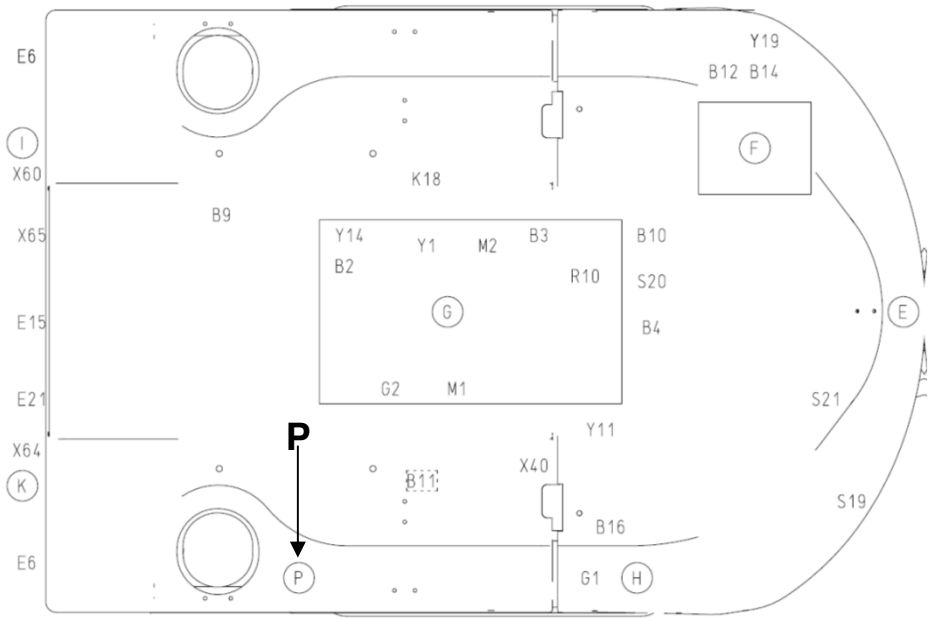
3.0.1 Electrical Installation

Hydraulic function diagram, work hydraulics, main hydraulic manifold Y2- Y10 and Y12

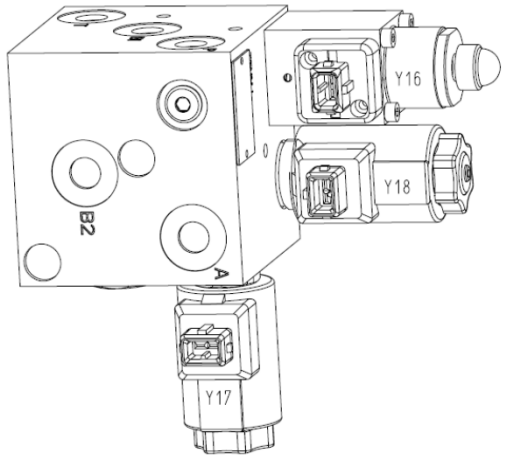


3.0.1 Electrical Installation

Hydraulic manifold option, incr./decr. pressure, front attachment support Y16, Y17, Y18



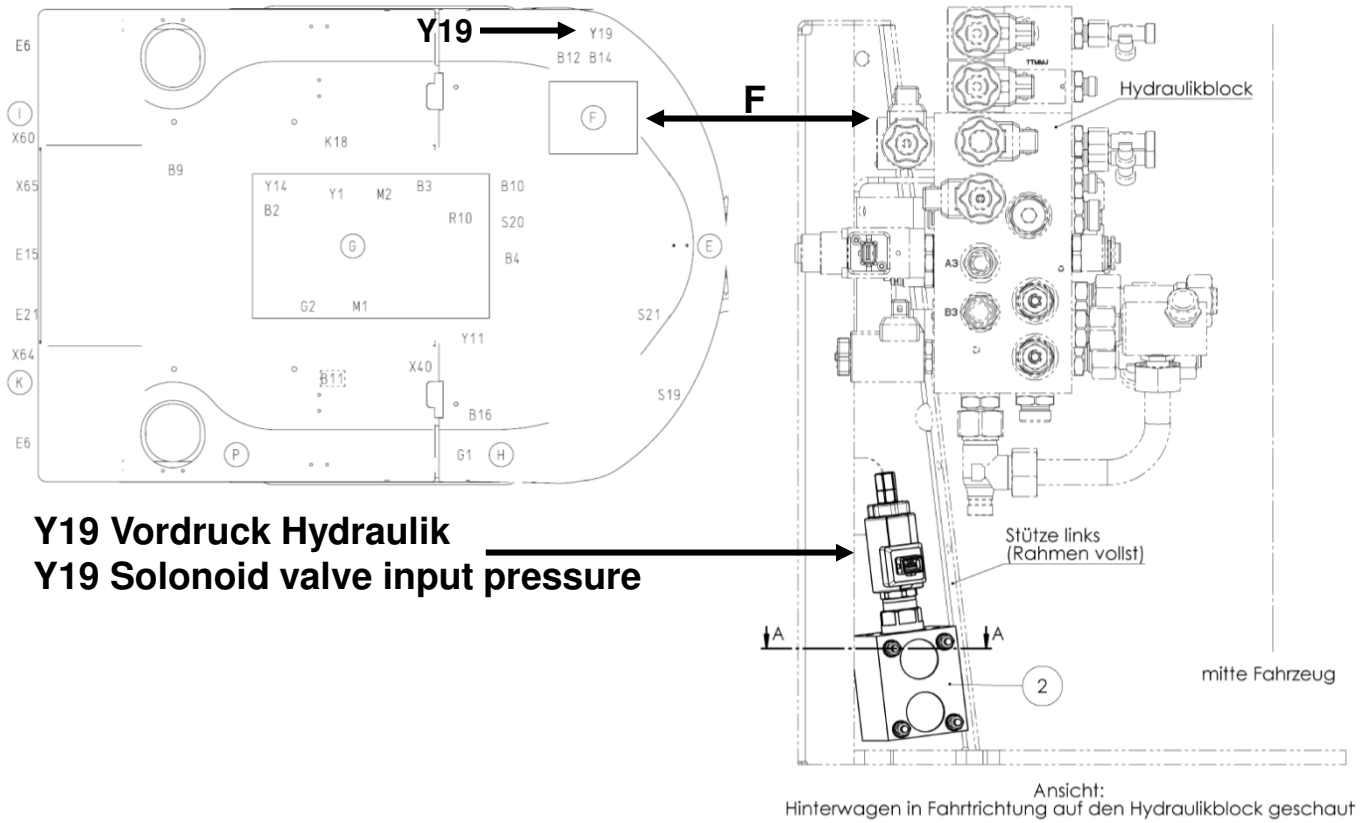
P (P) Hydraulikblock Opt.Drücken/Entlasten
hydraulic block opt. front carrier pressure



	Beschreibung- Description	Spannung (V) Voltage(V)	Stromstärke (A) Current flow (A)	Widerstand der Spule (Ω) Resistance of the coil (Ω)
Y16	**Hydraulikventil Geräteträger drücken (Option Citycleaner)** **Hydraulic valve front carrier pressure (Option Citycleaner)**	**0.95- 2.5V**	**150- 450mA**	**6.3Ω**
Y17	**Hydraulikventil Geräteträger Schwimmstellung (Opt.Citycleaner)** **Hydraulic valve front carrier released (floating) (Opt.Citycleaner)**	**12V**	**1280mA**	**9.1Ω**
Y18	**Hydraulikventil Umschaltung Druck/ Entlastung (Opt.Citycleaner)** **Hydraulic valve weight/ unweight (Opt.Citycleaner)**	**12V**	**1765mA**	**6.1Ω**

3.0.1 Electrical Installation

Solenoid valve Y19, hydraulic input pressure

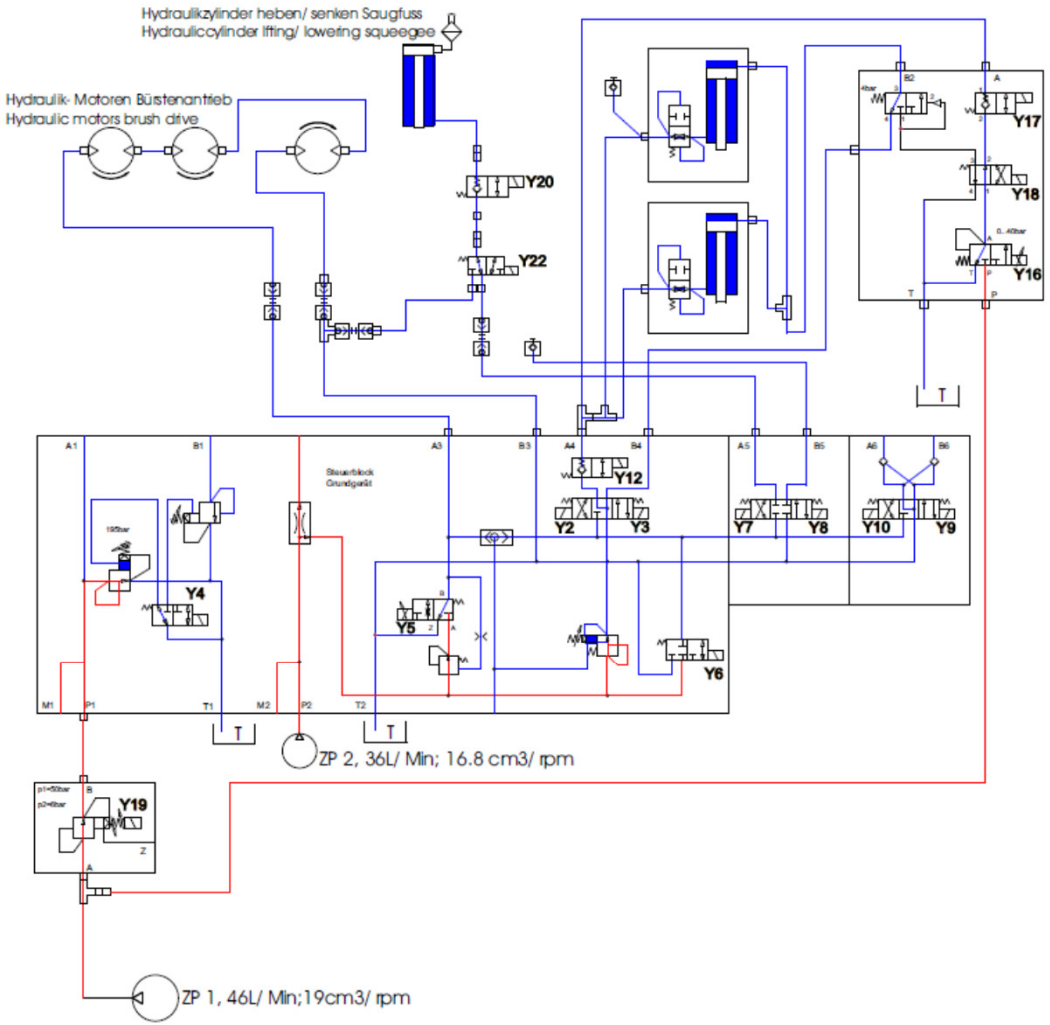


Messwerte Magnetventile Mesurment values solonoid valves	Spannung (V) Voltage (V)	Stromstärke (A) Current flow (A)	Widerstand der Spule (Ω) Resictance of the coil (Ω)
Y19 Magnetventil Vordruck (Option Citycleaner)	12V	1825mA	6.2Ω
Y19 Solonoid valve input pressure (Option Citycleaner)	12V	1825mA	6.2Ω

3.0.1 Electrical Installation

Hydraulic function diagram, Citycleaner option or incr./decr. pressure, front attachment support

Hydraulik- Funktions- Schaltplan Option Citycleaner(6150.10) Hydraulic funktional diagram option Citycleaner (6150.10)
1. Umlauf, kein hydraulischer Verbraucher aktiv - Circulation, no hydraulic consumer activ



Y2 Magnetventil Geräteträger senken
Y2 Hydraulic valve front carrier down

Y3 Magnetventill Geräteträger heben
Y3 Solonoid valve front carrier up

Y5 Prop.-Magnetventil Bürstendrehzahl (0-20 Ltr.)
Y5 Prop.- Solonoid valve brush rpm (0-20 Ltr.)
(4- 8V, 700 - 1250 mA)

Y4 Magnetventil Sauggbläse ein- aus
Y4 Solonoid valve Suction fan on- off

Y6 Magnetventil Umlauf ein- aus
Y6 Solonoid valve circulation on- off

Y8 Magnetventil Saugfuss heben
Y8 Solonoid valve raise squeegee

Y12 Magnetventil Geräteträger Schwimmstellung
Y12 Hydraulic valve front carrier released

Y16 Prop. Magnetventil Geräteträger drücken
Y16 Prop. Solonoid valve front carrier pressure
(0.95 - 2.5V, 150 - 450 mA)

Y17 MagnetventilGeräteträger Schwimmstellung
Y17 Solonoid valve front carrier released

Y18 Magnetventil Umschaltung
Druck- Entlastung Geräteträger
Y18 Solonoid valve weight- unweight
front carrier

Y19 Umschaltbares Druckbegrenzungsventil
nicht geschaltet, aus; max. 6bar
geschaltet, ein max. 50bar

Y19 Pressure relief valve
not powered; off, max. 6 bar
powered; on max. 50 bar

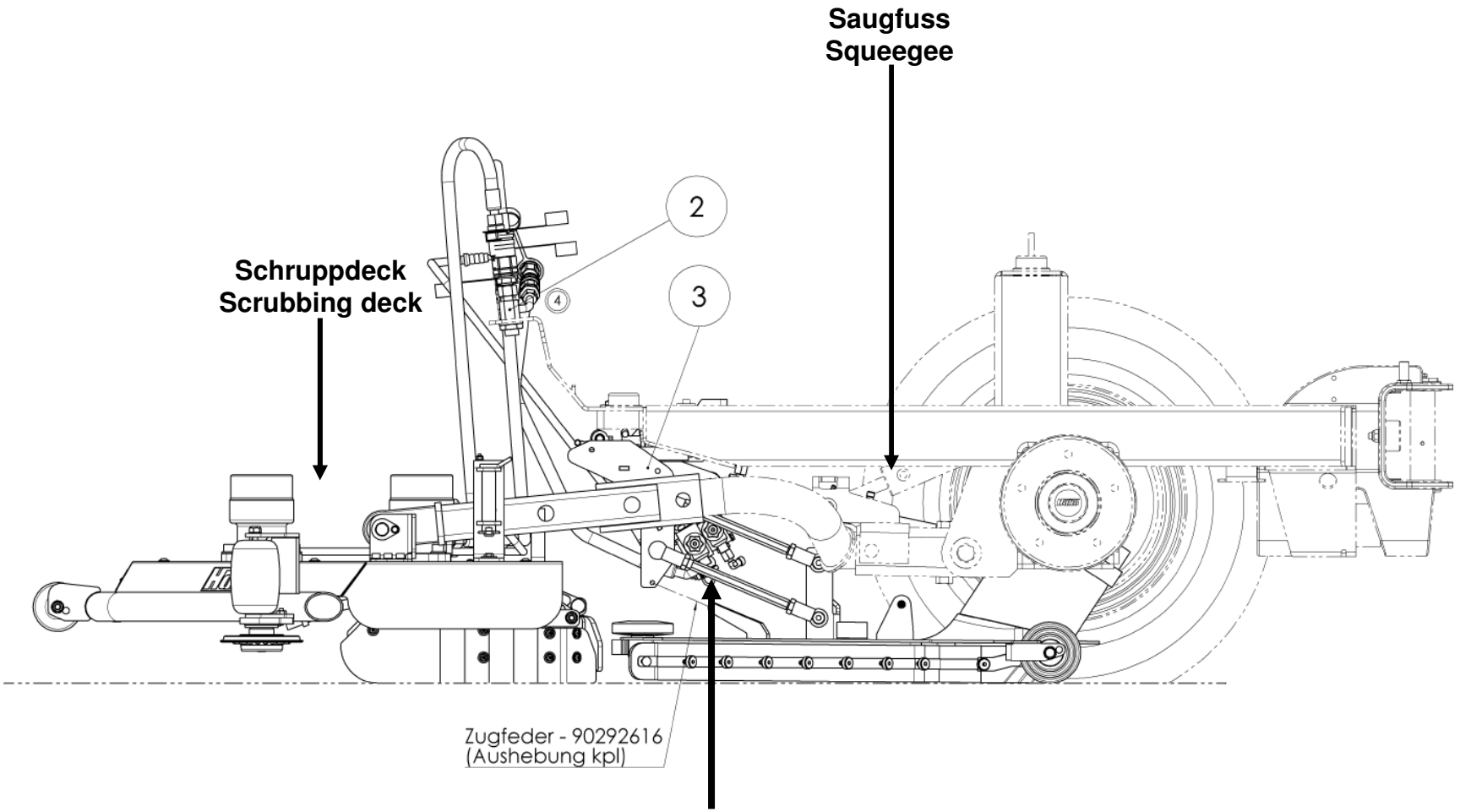
Y20 Magnetventil Saugfuss senken/ Schwinnstellung
Y20 solonoid valve squeegee lowering/ floating position

Y22 Magnetventil Saugfuss senken/ Schwimmst.
Y22 Solonoid valve squeegee lowering/ floating position

Blau; Tank,Rücklauf zum Tank
Blue; Tank, backflow to Tank
Rot, Ölversorgung d.Hy.- Pumpe,
Red; oil flow from hy.-pump

3.0.1 Electrical Installation

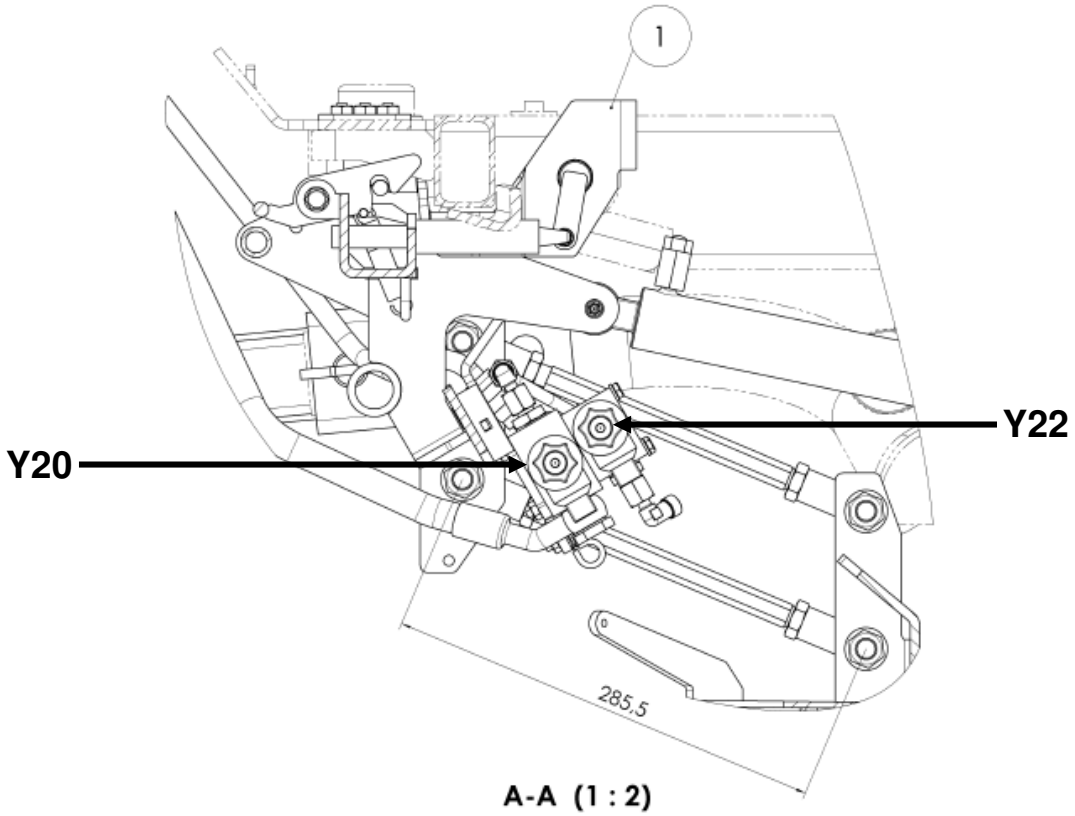
Solenoid valves Y20 and Y22, Citycleaner option 6150.10



Position of solenoid valves Y20 and Y22

3.0.1 Electrical Installation

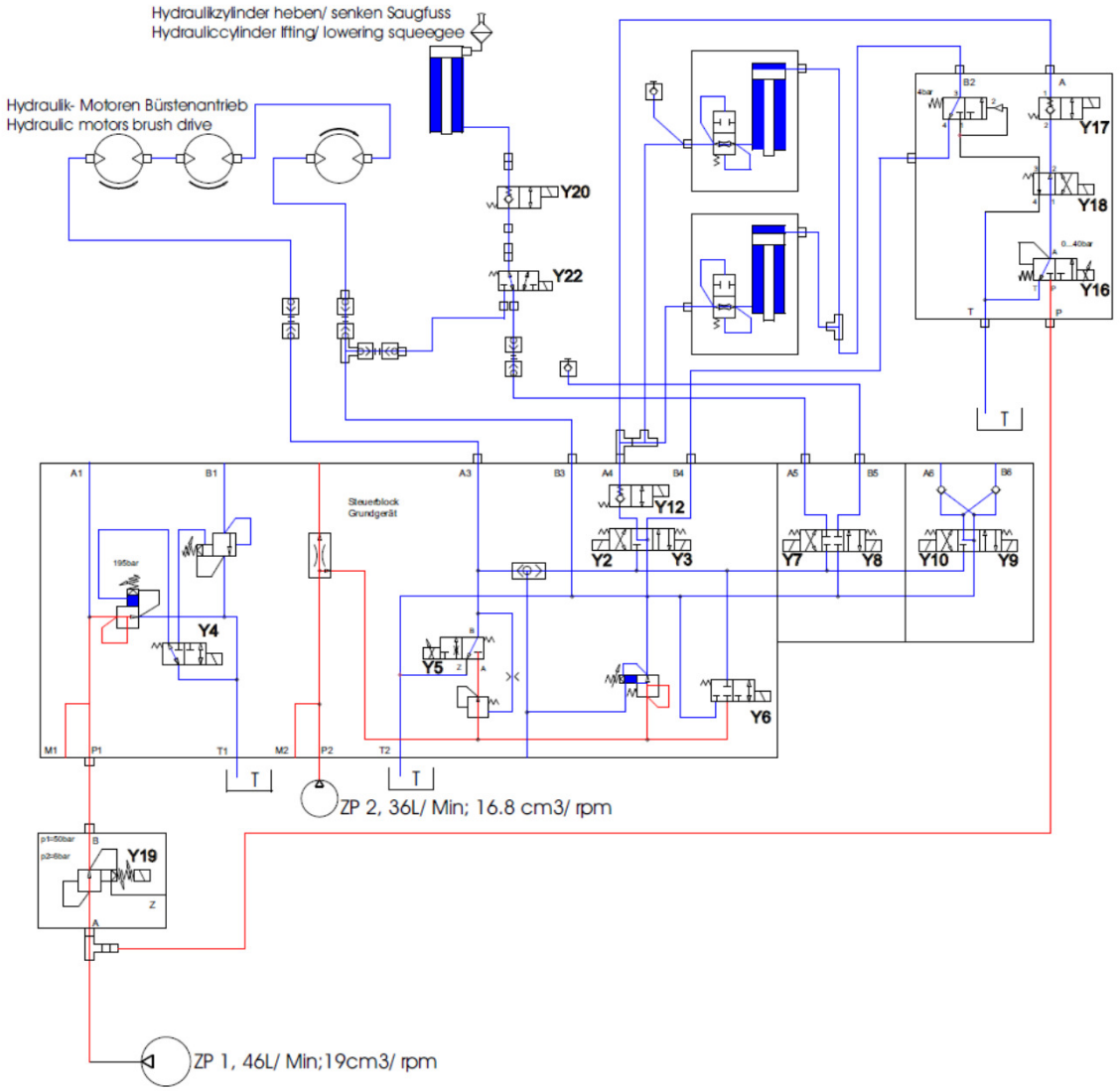
Solenoid valves Y20 and Y22 Citycleaner option 6150.10 with measured values



Y20	**Hydraulikventil Saugfuss senken/ Schwimmstellung Hydraulic valve squeegee released (floating)**	**12V**	**1600mA**	**6.5Ω**
Y22	**Hydraulikventil Saugfuss senken/ Schwimmstellung Hydraulic valve squeegee released (floating)**	**12V**	**1600mA**	**6.5Ω**

3.0.1 Electrical Installation

Hydraulic function diagram Citycleaner option



Y2 Magnetventil Geräteträger senken
Y2 Hydraulic valve front carrier down

Y3 Magnetventill Geräteträger heben
Y3 Solonoid valve front carrier up

Y5 Prop.-Magnetventil Bürstendrehzahl (0-20 Ltr.)
Y5 Prop.- Solonoid valve brush rpm (0-20 Ltr.)
(4- 8V, 700 - 1250 mA)

Y4 Magnetventil Sauggbläse ein- aus
Y4 Solonoid valve Suction fan on- off

Y6 Magnetventil Umlauf ein- aus
Y6 Solonoid valve circulation on- off

Y8 Magnetventil Saugfuss heben
Y8 Solonoid valve raise squeegee

Y12 Magnetventil Geräteträger Schwimmstellung
Y12 Hydraulic valve front carrier released

Y16 Prop. Magnetventil Geräteträger drücken
Y16 Prop. Solonoid valve front carrier pressure
(0.95 - 2.5V, 150 - 450 mA)

Y17 MagnetventilGeräteträger Schwimmstellung
Y17 Solonoid valve front carrier released

Y18 Magnetventil Umschaltung
Druck- Entlastung Geräteträger
Y18 Solonoid valve weight- unweight
front carrier

Y19 Umschaltbares Druckbegrenzungsventil
nicht geschaltet, aus; max. 6bar
geschaltet, ein max. 50bar

Y19 Pressure relief valve
not powered; off, max. 6 bar
powered; on max. 50 bar

Y20 Magnetventil Saugfuss senken/ Schwinnstellung
Y20 solonoid valve squeegee lowering/ floating position

Y22 Magnetventil Saugfuss senken/ Schwimmst.
Y22 Solonoid valve squeegee lowering/ floating position

Blau; Tank,Rücklauf zum Tank
Blue; Tank, backflow to Tank
Rot, Ölversorgung d.Hy.- Pumpe,
Red; oil flow from hy.-pump

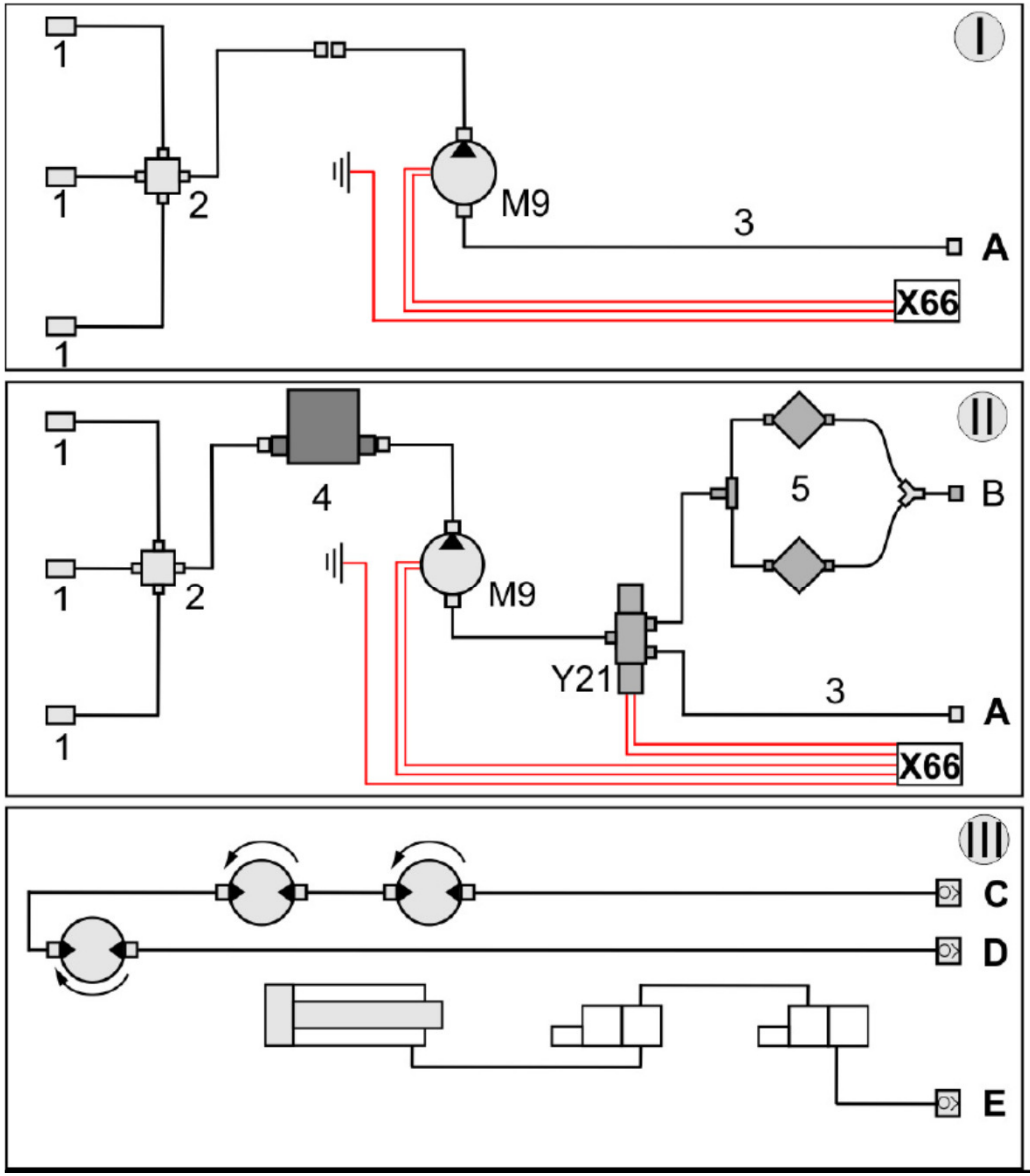
3.0.1 Electrical Installation

Schema Srubber system- connections for water, hydraulic and electric

Schema Scrubber system
I = Scrubber system without option
II = Scrubber system with option
III = Hydraulic schema

1 Nozzle
2 Distributor
3 Hose 850 mm
4 Dosage system (option)
5 Water recycling system (option)
M9 = Water pump
Y21 = Valve for Solution/Circulation water

A = Solution
B = Circulation water
C = Flow brush motors
D = Return brush motors
E = Hydraulics for squeegee
X66 = Encoding connector

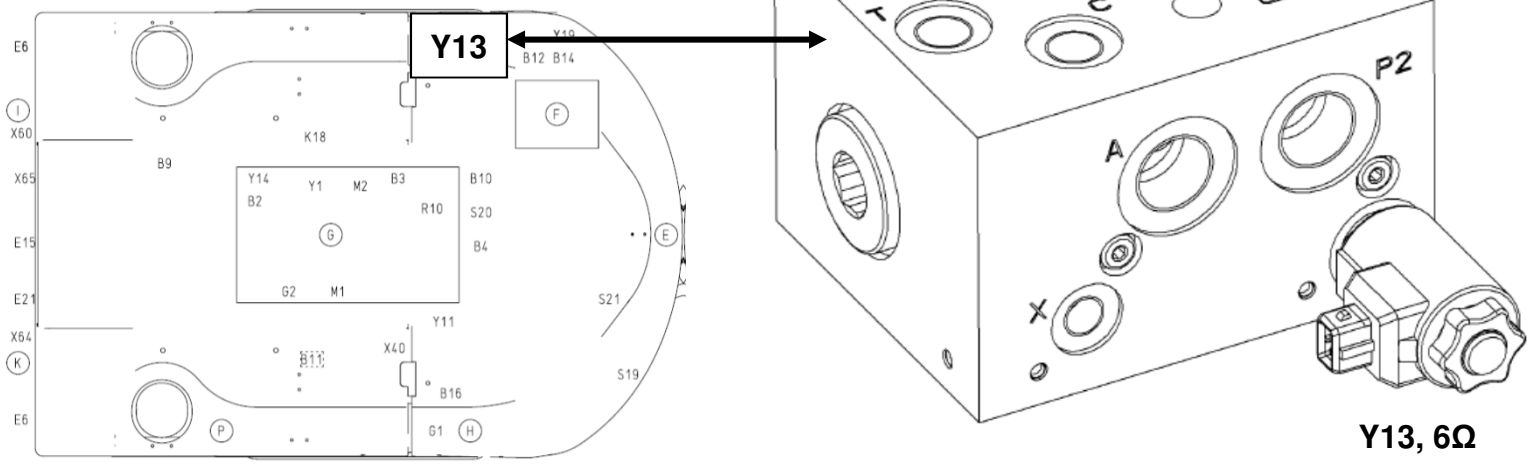


3.0.1 Electrical Installation

Y13 Solenoid valve (switching valve), front wheel drive (transport mode) / all-wheel drive (work mode)

In transport mode, only the front wheels are driven.
Power is applied to solenoid valve Y13.
The maximum speed is now 30 kph.

In work mode (sweeping mode) the front and rear wheels are driven. No power is applied to solenoid valve Y13.
The maximum speed is now 15 kph.

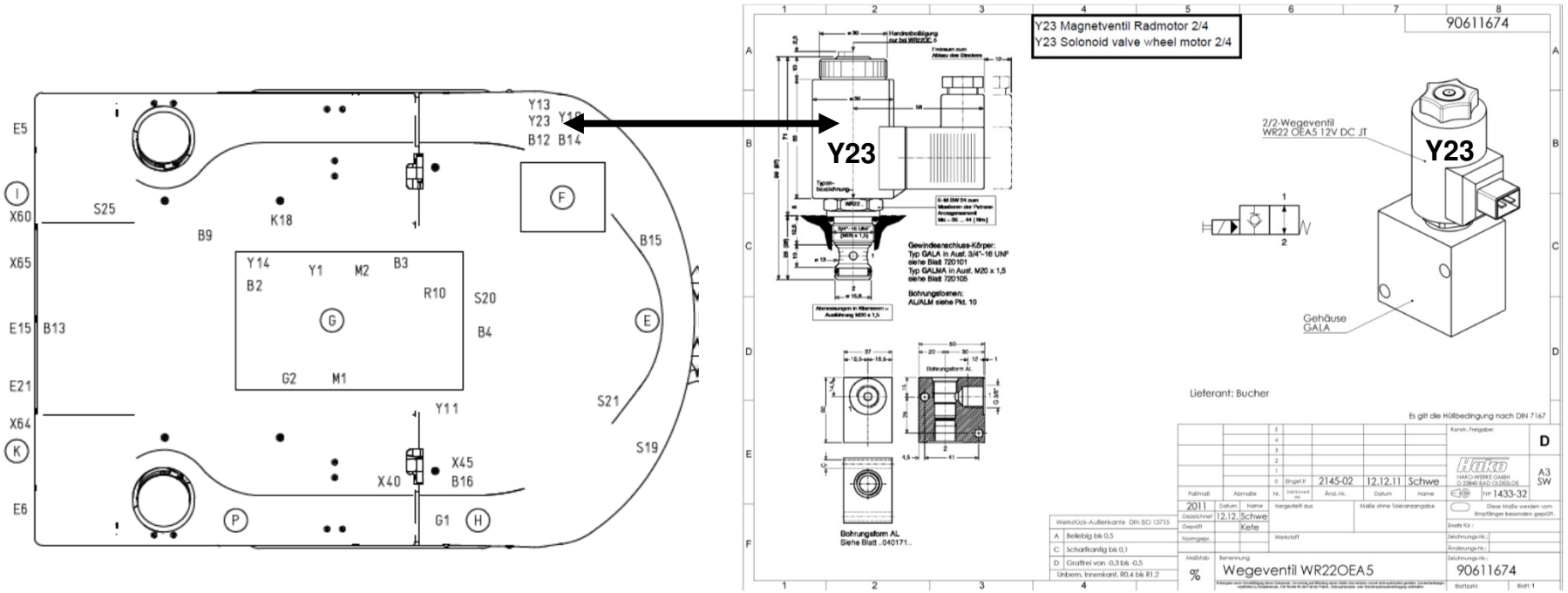


Y13, 6Ω

Messwerte Magnetventile Mesurment values solonoid valves	Spannung (V) Voltage (V)	Stromstärke (A) Current flow (A)	Widerstand der Spule (Ω) Resictance of the coil (Ω)
Y13 Umschaltventil Vorderrad/ Allradantrieb 2/4 Y13 bestromt/ ein = 25km/h	12V	2000mA	6Ω
Y13 Solonoid valve 2 wheel / 4 wheel drive 2/4 Y13 powered/ on = 25 km/h	12V	2000mA	6Ω

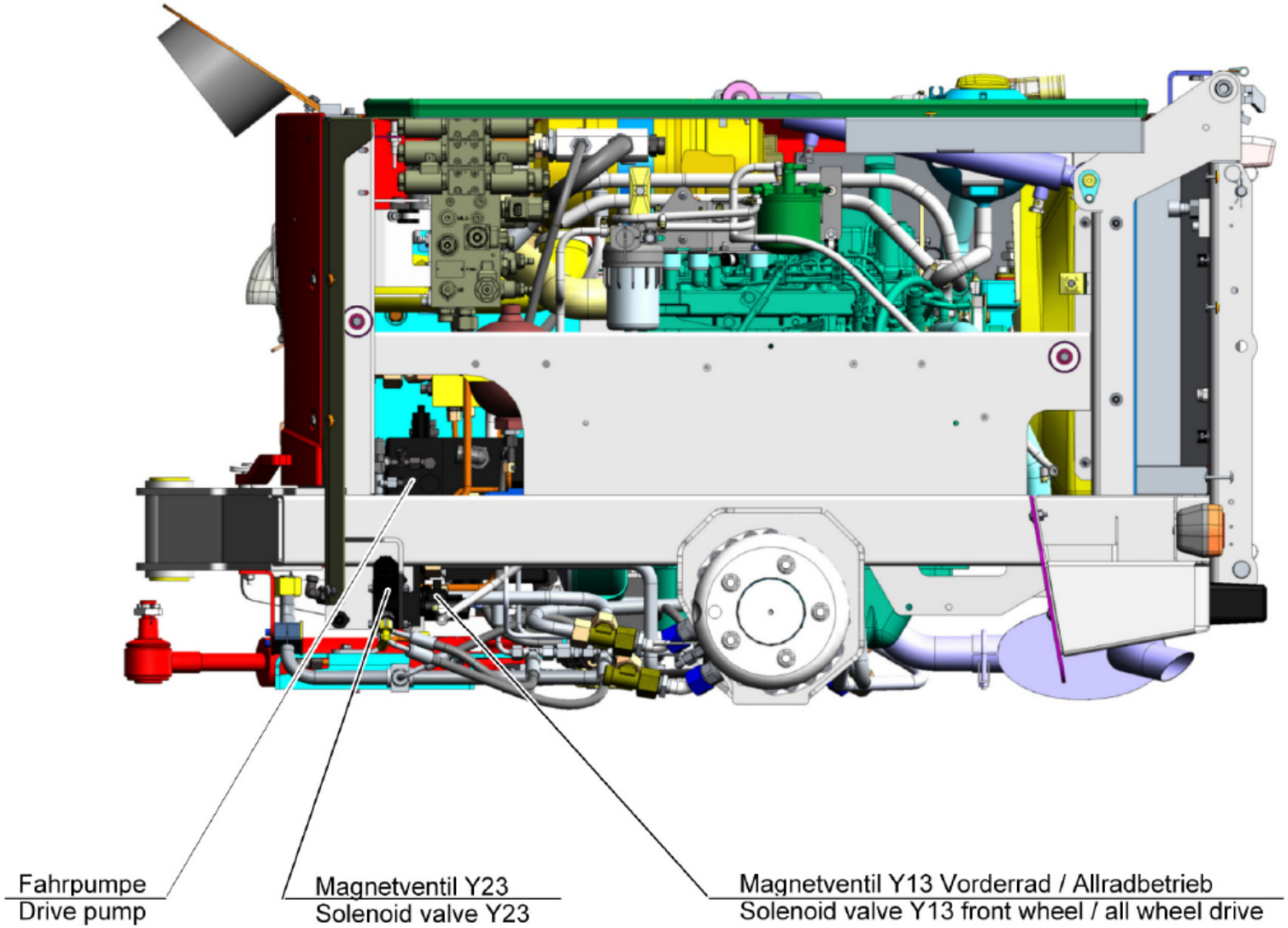
3.0.1 Electrical Installation

Solonoid valve Y23



3.0.1 Electrical Installation

Solonoid valves Y13 and Y23 rear vehicle, L-H



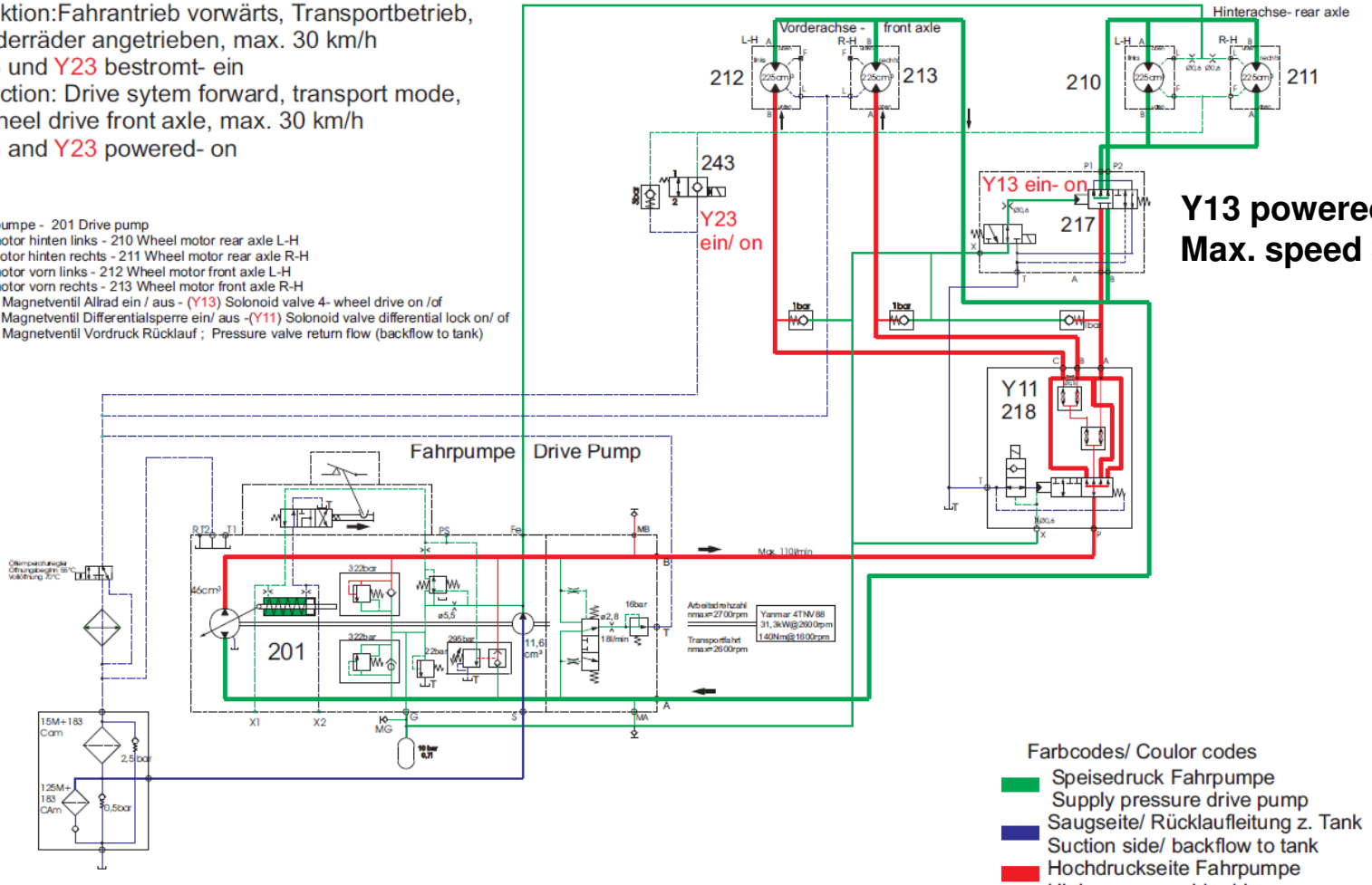
3.0.1 Electrical Installation

Function circuit diagram, front wheel drive (transport mode), solenoid valve Y13 on, max. 30 kph

Fahrantrieb (Hydrostat) CM 1250 Drive System (Hydrostat) CM 1250

Funktion:Fahrantrieb vorwärts, Transportbetrieb,
Vorderräder angetrieben, max. 30 km/h
Y13 und Y23 bestromt- ein
Function: Drive sytem forward, transport mode,
2 wheel drive front axle, max. 30 km/h
Y13 and Y23 powered- on

201 Fahrpumpe - 201 Drive pump
210 Radmotor hinten links - 210 Wheel motor rear axle L-H
211 Radmotor hinten rechts - 211 Wheel motor rear axle R-H
212 Radmotor vorn links - 212 Wheel motor front axle L-H
213 Radmotor vorn rechts - 213 Wheel motor front axle R-H
217 (Y13) Magnetventil Allrad ein / aus - (Y13) Solonoid valve 4- wheel drive on /of
218 (Y11) Magnetventil Differentialsperre ein/ aus -(Y11) Solonoid valve differential lock on/ of
243 (Y23) Magnetventil Vordruck Rücklauf ; Pressure valve return flow (backflow to tank)



Y13 powered- on
Max. speed 30 kph

Fahrantrieb CM 1250

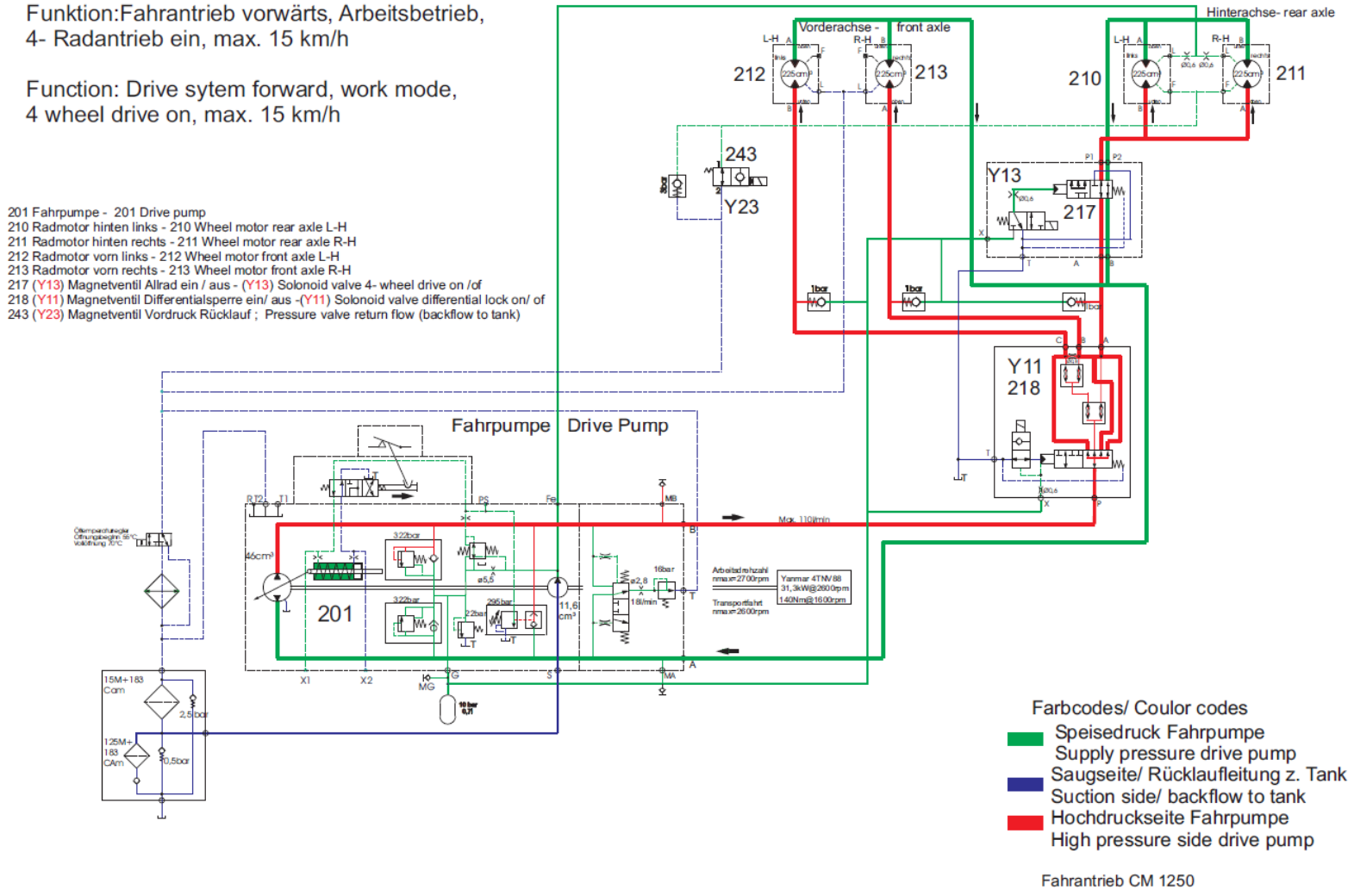
3.0.1 Electrical Installation

Function circuit diagram, all-wheel drive (work mode), solenoid valve Y13 off, max. 15 kph

Fahrantrieb (Hydrostat) CM 1250 Drive System (Hydrostat) CM 1250

Funktion:Fahrantrieb vorwärts, Arbeitsbetrieb,
4- Radantrieb ein, max. 15 km/h

Function: Drive sytem forward, work mode,
4 wheel drive on, max. 15 km/h



Fahrantrieb CM 1250

3.0.1 Electrical Installation

Fault: Final speed of 30 kph not reached in transport mode

Possible cause:

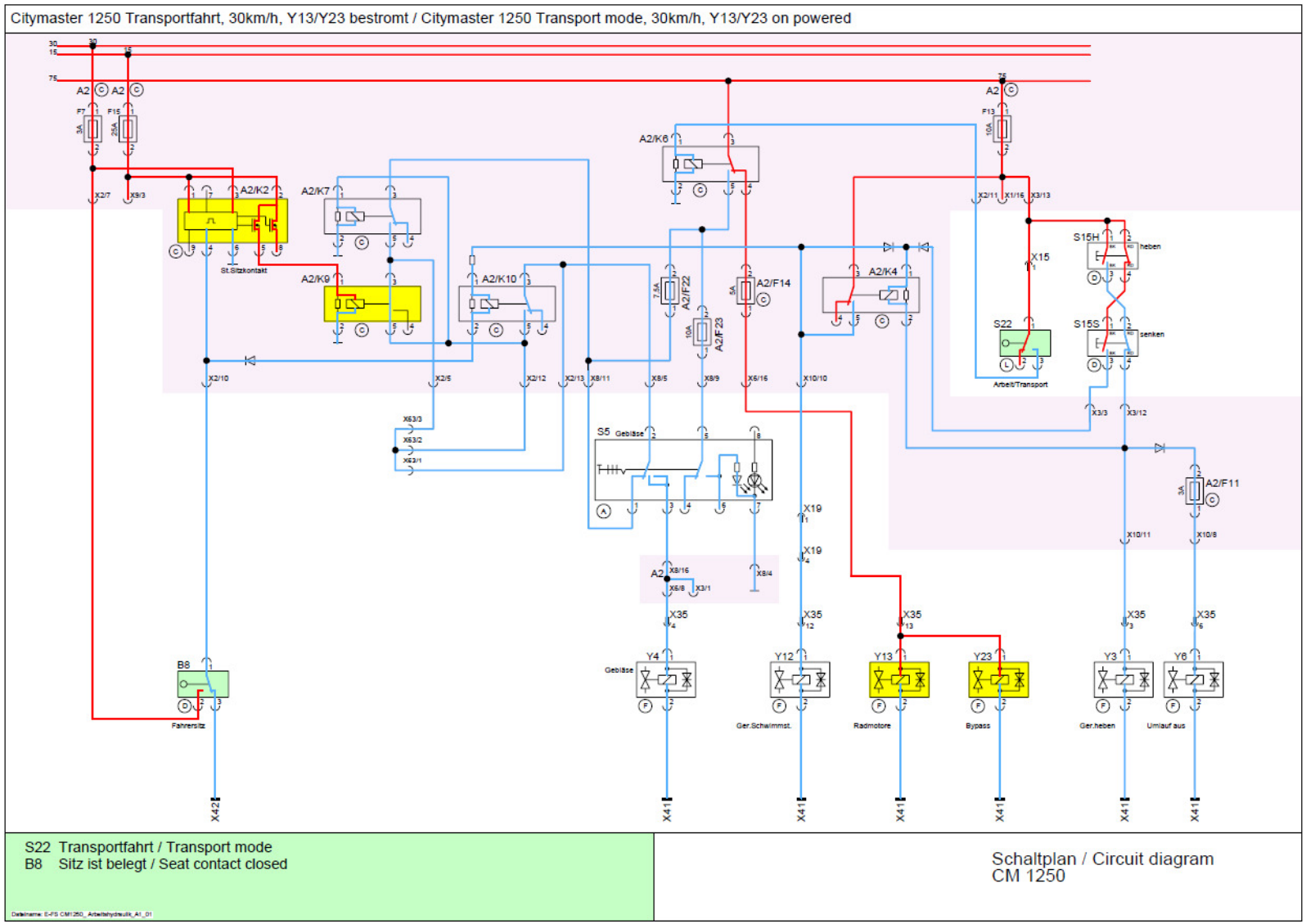
1. The bypass valve for towing mode is not closed (in towing position).
2. The fuel filter is clogged, the maximum engine speed is not reached.
3. The air filter from the engine is clogged, the maximum engine speed is not reached.
4. The solonoid valve Y13 is not powered.
5. . Y13 does not switch mechanically. Valve Y13 is sticking or jammed.

Solution:

1. Close the bypass valve for towing mode.
2. Check the engine rpm, check the fuel filter and replace if required.
3. Check the engine rpm, check the air filter from the engine and replace if required.
4. Set the hand thottle in the transport position. Check the fuses F6 and F14 and the relay K6. Check the power supply from Y13 with solonoid test box.
5. If there is no electrical fault at the solonoid valve Y13, (see point 4), dismantle Y13 and clean it; in the case of mechanically defective parts, change the valve.

3.0.1 Electrical Installation

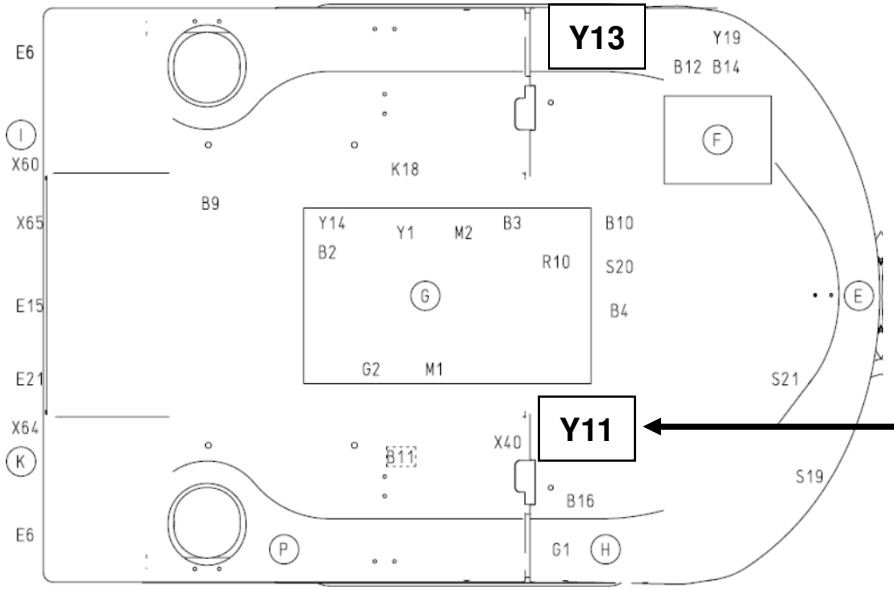
Fault: Final speed of 30 kph not reached in transport mode

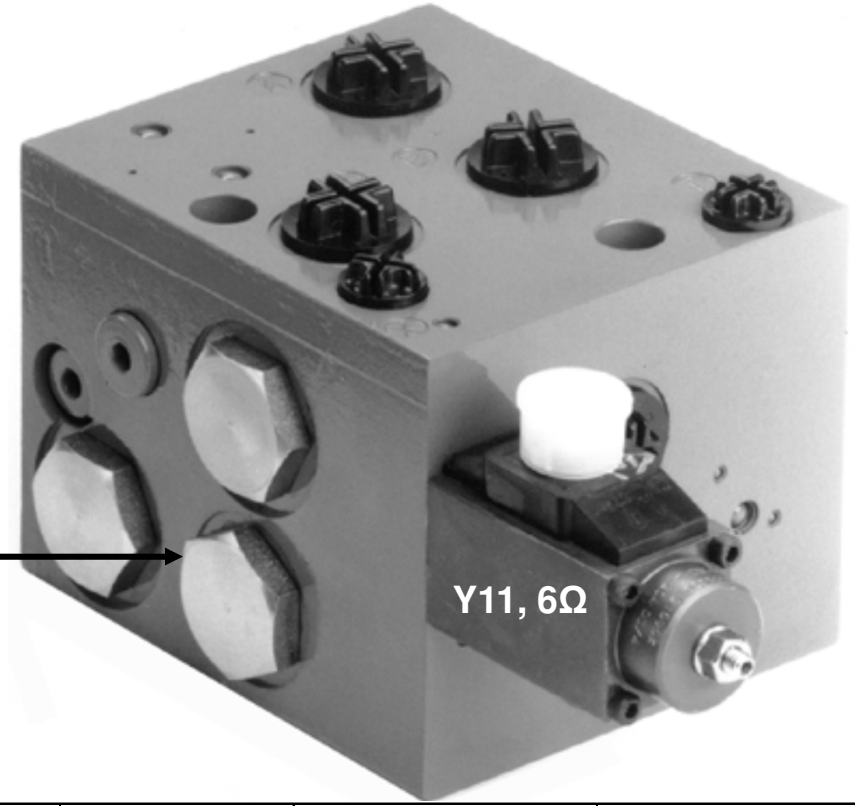


3.0.1 Electrical Installation

Y11 solenoid valve, differential lock (option)

The differential lock is switched on when power is applied to solenoid valve Y11.

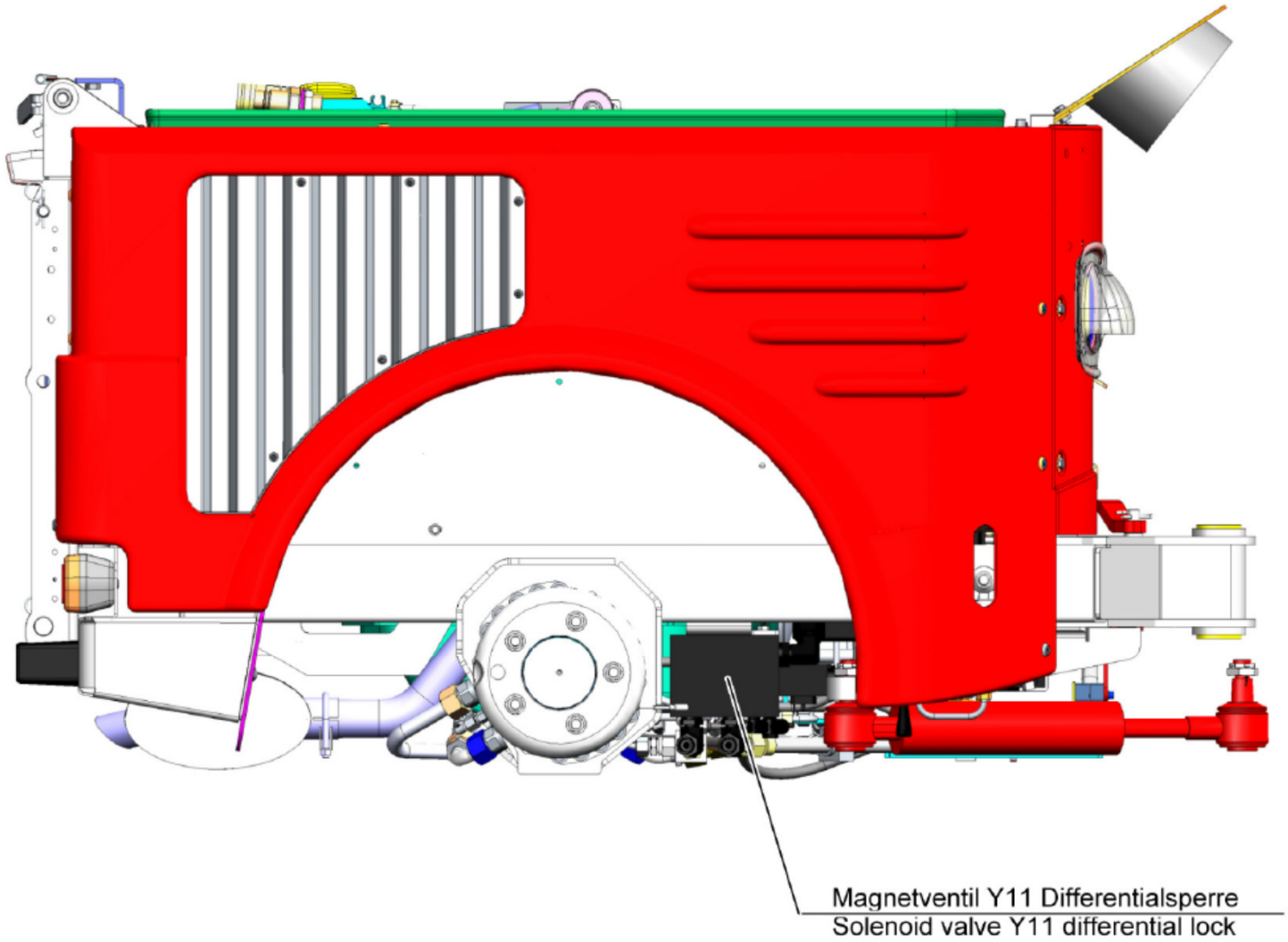




	Beschreibung- Description	Spannung (V) Voltage(V)	Stromstärke (A) Current flow (A)	Widerstand der Spule (Ω) Resistance of the coil (Ω)
Y11	**Hydraulikventil Differentialsperre ein (Opt.)** **Hydraulic valve differential lock on (Option)**	**12V**	**2000mA**	**6Ω**

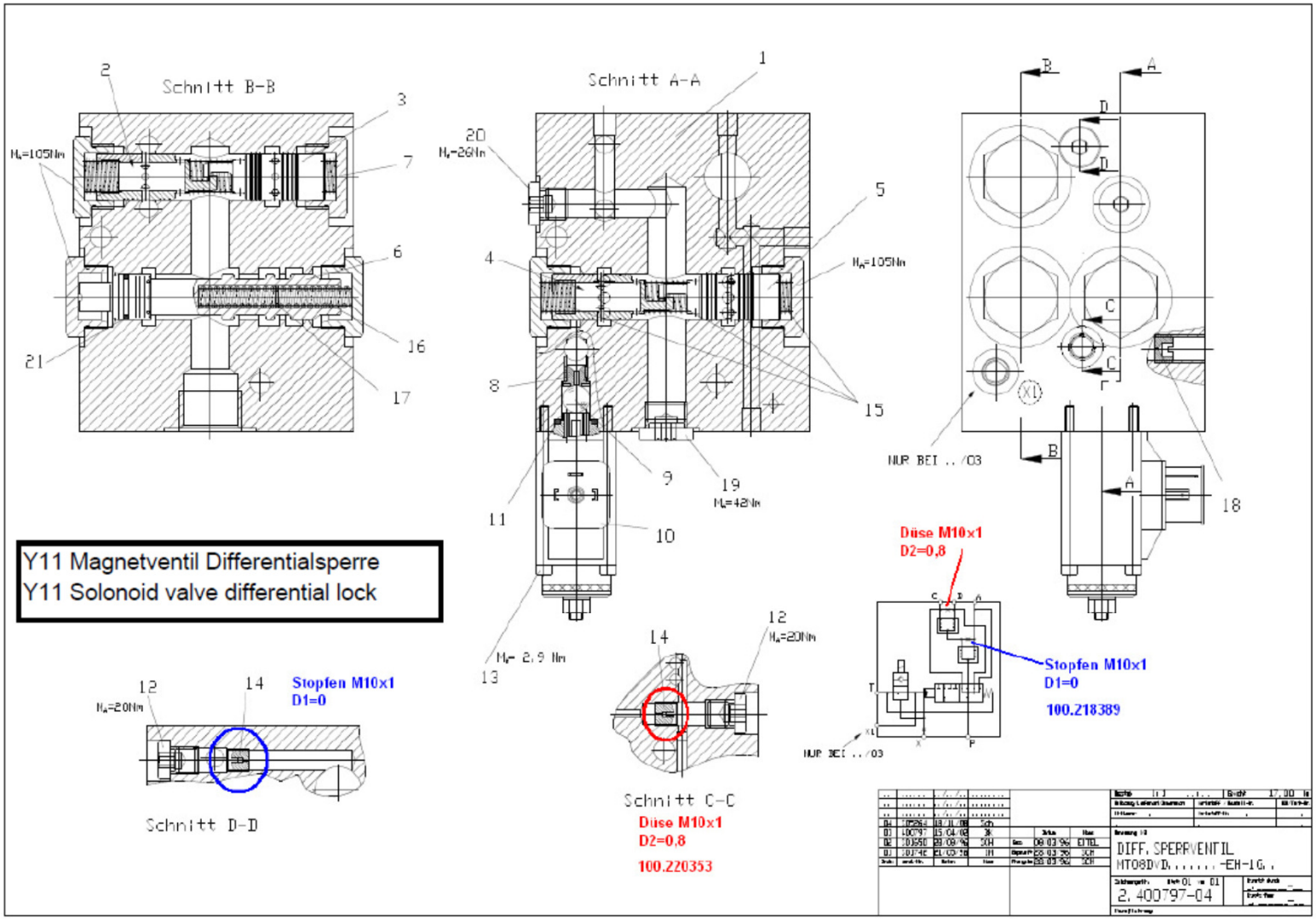
3.0.1 Electrical Installation

Y11 solenoid valve differential lock rear vehicle, L-H



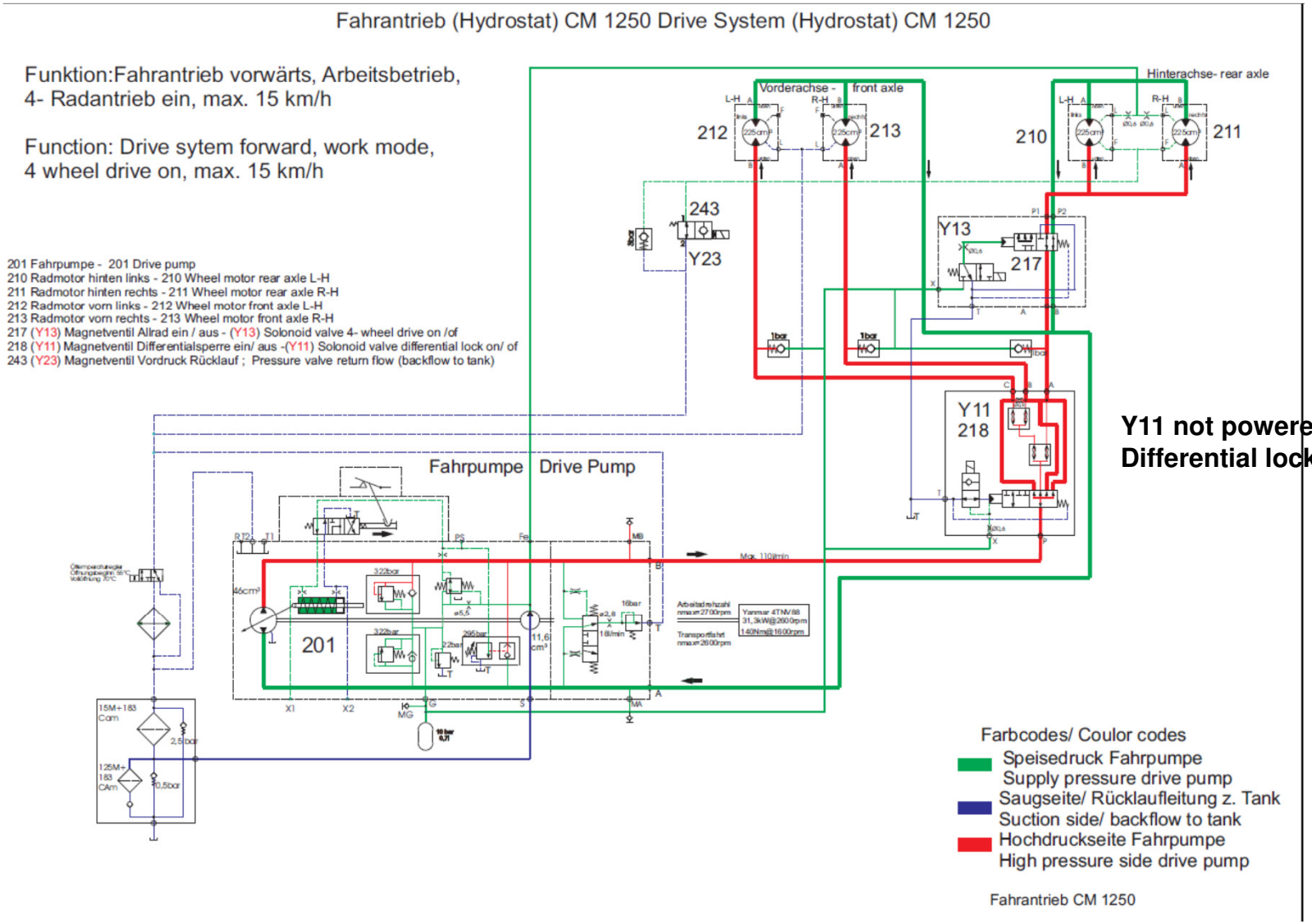
3.0.1 Electrical Installation

Y11 solenoid valve, differential lock (option)



3.0.1 Electrical Installation

Differential lock off, differential lock solenoid valve Y11 off



Y11 not powered – off,
Differential lock off

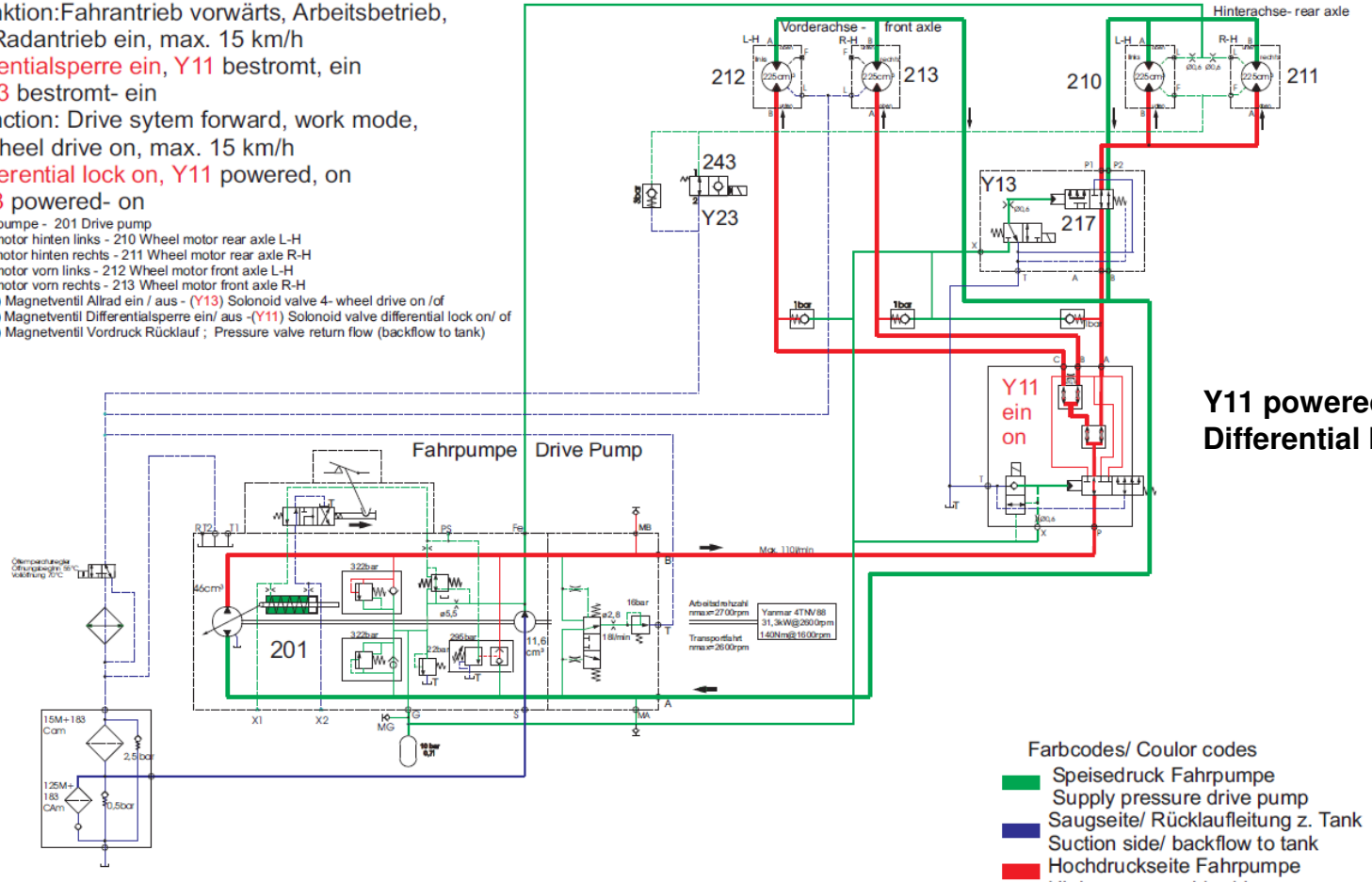
3.0.1 Electrical Installation

Differential lock on, differential lock solenoid valve Y11 on

Fahrantrieb (Hydrostat) CM 1250 Drive System (Hydrostat) CM 1250

Funktion:Fahrantrieb vorwärts, Arbeitsbetrieb,
4- Radantrieb ein, max. 15 km/h
Diffentialsperre ein, Y11 bestromt, ein
Y23 bestromt- ein
Function: Drive sytem forward, work mode,
4 wheel drive on, max. 15 km/h
Differential lock on, Y11 powered, on
Y23 powered- on

201 Fahrpumpe - 201 Drive pump
210 Radmotor hinten links - 210 Wheel motor rear axle L-H
211 Radmotor hinten rechts - 211 Wheel motor rear axle R-H
212 Radmotor vorn links - 212 Wheel motor front axle L-H
213 Radmotor vorn rechts - 213 Wheel motor front axle R-H
217 (Y13) Magnetventil Allrad ein / aus - (Y13) Solonoid valve 4- wheel drive on /of
218 (Y11) Magnetventil Differentialsperre ein/ aus -(Y11) Solonoid valve differential lock on/ of
243 (Y23) Magnetventil Vordruck Rücklauf ; Pressure valve return flow (backflow to tank)



Y11 powered – on
Differential lock on

Fahrantrieb CM 1250

3.0.1 Electrical Installation

Measured values for all solenoid valves in the vehicle, Y2 to Y22

	Beschreibung- Description	Spannung (V) Voltage(V)	Stromstärke (A) Current flow (A)	Widerstand der Spule (Ω) Resistance of the coil (Ω)
Y2	Hydraulikventil Geräteträger senken Hydraulic valve front carrier down	12V	2000mA	6Ω
Y3	Hydraulikventil Geräteträger heben Hydraulic valve front carrier up	12V	2000mA	6Ω
Y4	Hydraulikventil Sauggebläse ein/ Mähwerk ein Hydraulic valve vacuum fan (suction turbine) on/ mower on	12V	2000mA	6Ω
Y5	Proportionalventil Seitenbesen/ Streuer Proportional valve side brooms/ spreader	4- 8V	700- 1250mA	6Ω
Y6	Hydraulikventil Umlauf aus; Arbeitshydraulik ein Hydraulic valve circulation off; work hydraulic on	12V	2000mA	6Ω
Y7	Hydraulikventil Besen auf (Besen ausschwenken) Hydraulic valve brooms wide (side brooms out)	12V	2000mA	6Ω
Y8	Hydraulikventil Besen ein (Besen einschwenken) Hydraulic valve brooms wide (side brooms in)	12V	2000mA	6Ω
Y9	Hydraulikventil Behälter heben Hydraulic valve hopper up	12V	2000mA	6Ω
Y10	Hydraulikventil Behälter senken Hydraulic valve hopper down	12V	2000mA	6Ω
Y11	Hydraulikventil Differentialsperre ein (Opt.) Hydraulic valve differential lock on (Option)	12V	2000mA	6Ω
Y12	Hydraulikventil Frontgeräteträger senken/ Schwimmstellung Hydraulic valve lowering / floating position front device	12V	2000mA	6Ω

3.0.1 Electrical Installation

Measured values for all solenoid valves in the vehicle, Y2 to Y22

	Beschreibung- Description	Spannung (V) Voltage(V)	Stromstärke (A) Current flow (A)	Widerstand der Spule (Ω) Resistance of the coil (Ω)
Y13	Hydraulikventil Radmotore 2/4 ein (Radmotore ein 25km/h) Hydraulic valve wheel motors 2/4 on (wheel motor on 25 km/h)	12V	2000mA	6Ω
Y16	Hydraulikventil Geräteträger drücken (Option Citycleaner) Hydraulic valve front carrier pressure (Option Citycleaner)	0.95- 2.5V	150- 450mA	6.3Ω
Y17	Hydraulikventil Geräteträger Schwimmstellung (Opt.Citycleaner) Hydraulic valve front carrier released (floating) (Opt.Citycleaner)	12V	1280mA	9.1Ω
Y18	Hydraulikventil Umschaltung Druck/ Entlastung (Opt.Citycleaner) Hydraulic valve weight/ unweight (Opt.Citycleaner)	12V	1765mA	6.1Ω
Y19	Hydraulikventil Vordruck (Opt.Citycleaner) Hydraulic valve input pressure (Opt.Citycleaner)	12V	1825mA	6.2Ω
Y21	Magnetventil Umschaltung Frischwasser/ Umlaufwasser Option Citycleaner Solonoid valve fresh/ recirculating (sloopy) water (Option Citycleaner)	12V	2000mA	5.6Ω
Y20	Hydraulikventil Saugfuss senken/ Schwimmstellung Hydraulic valve squeegee released (floating) (Citycleaner)	12V	1600mA	6.5Ω
Y22	Hydraulikventil Saugfuss senken/ Schwimmstellung Hydraulic valve squeegee released (floating) (Citycleaner)	12V	1600mA	6.5Ω

Achtung: Meßtoleranz +/- 20% durch unterschiedliche Meßgeräte ist möglich!
Caution: Measuring tolerance of +/- 20% due to diffrent measuring devices!

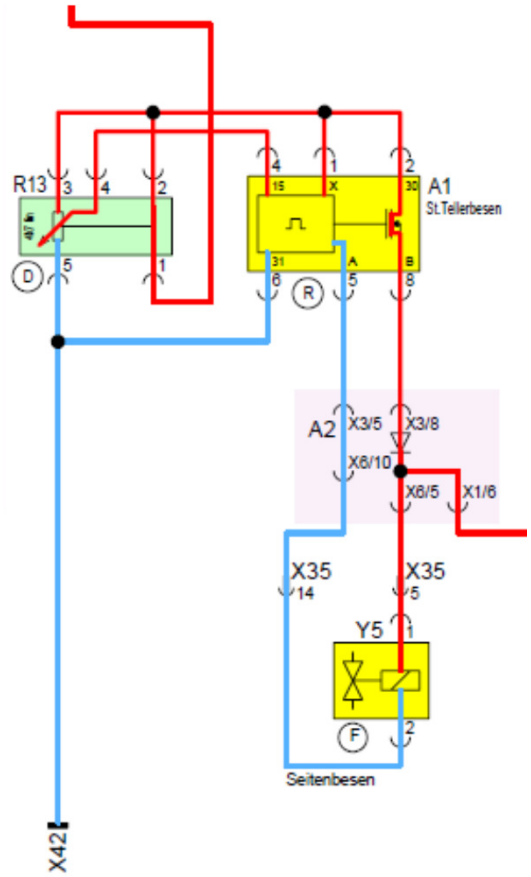
3.0.1 Electrical Installation

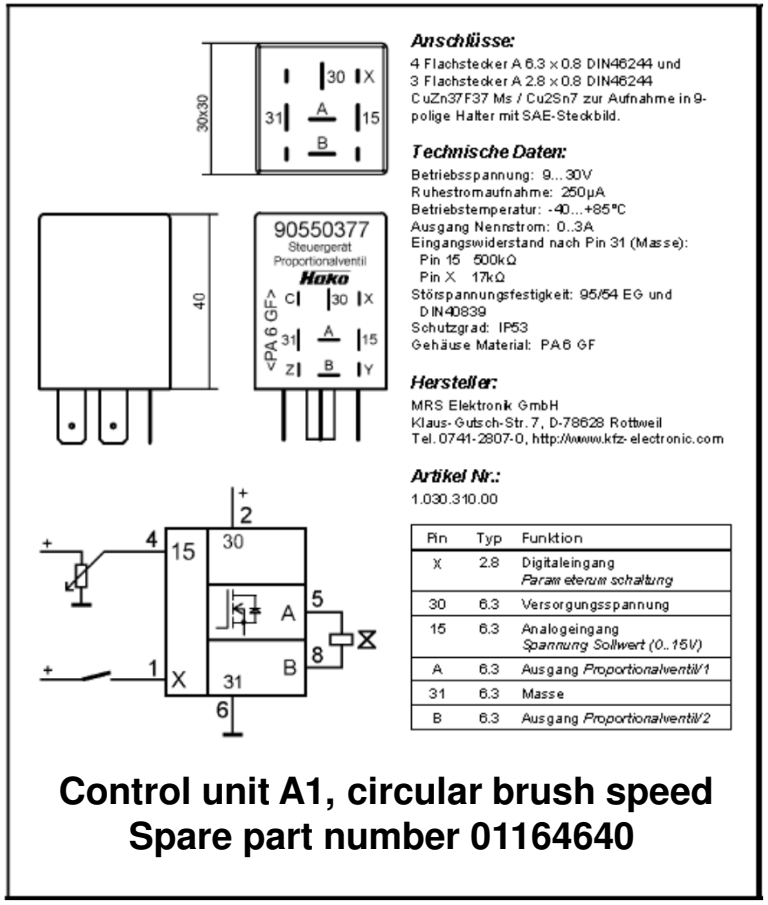
A1 control unit, circular brush speed (normal version)

A1 control unit
circular brush speed

R13 potentiometer
circular brush speed

Y5 proportional valve
circular brush speed





Control unit A1, circular brush speed
Spare part number 01164640

Note: The A1 control unit, circular brush speed, is adjusted when supplied as a spare part!
No further adjustment is normally necessary!

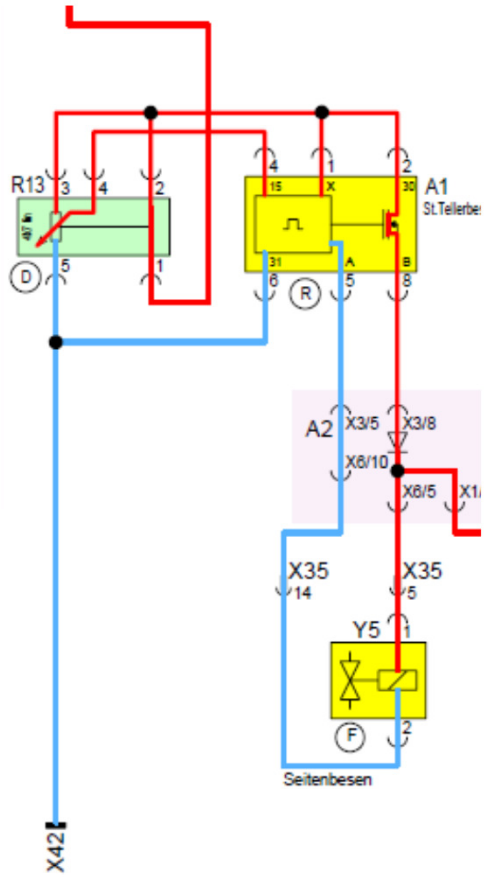
3.0.1 Electrical Installation

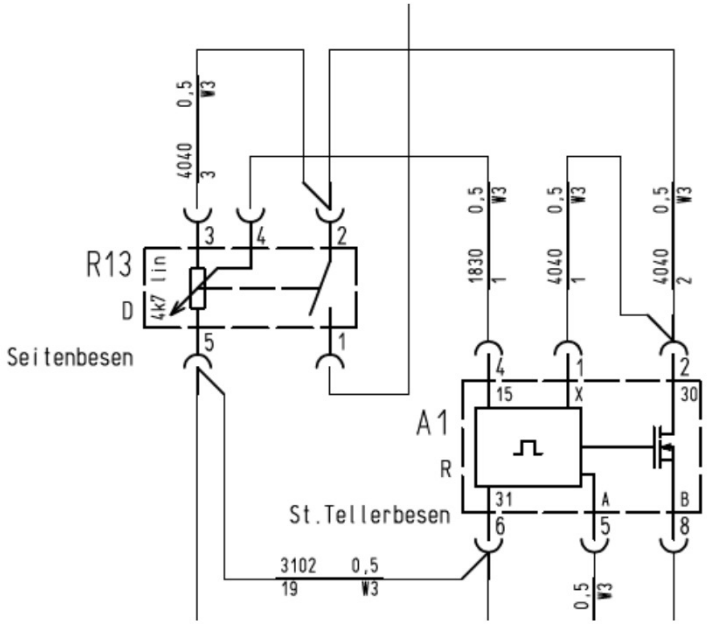
R13 potentiometer R13 circular brush speed

A1 control unit circular brush speed

R13 potentiometer circular brush speed (0- 4700 Ohm)

Y5 proportional valve circular brush speed



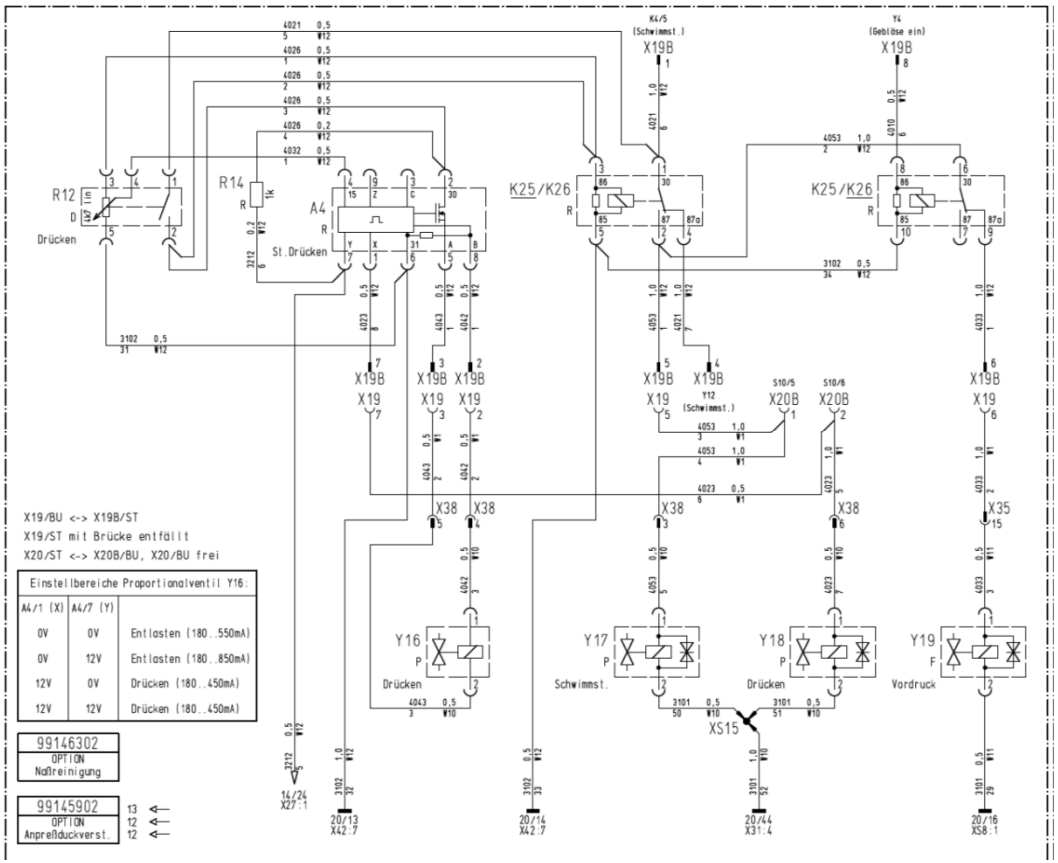


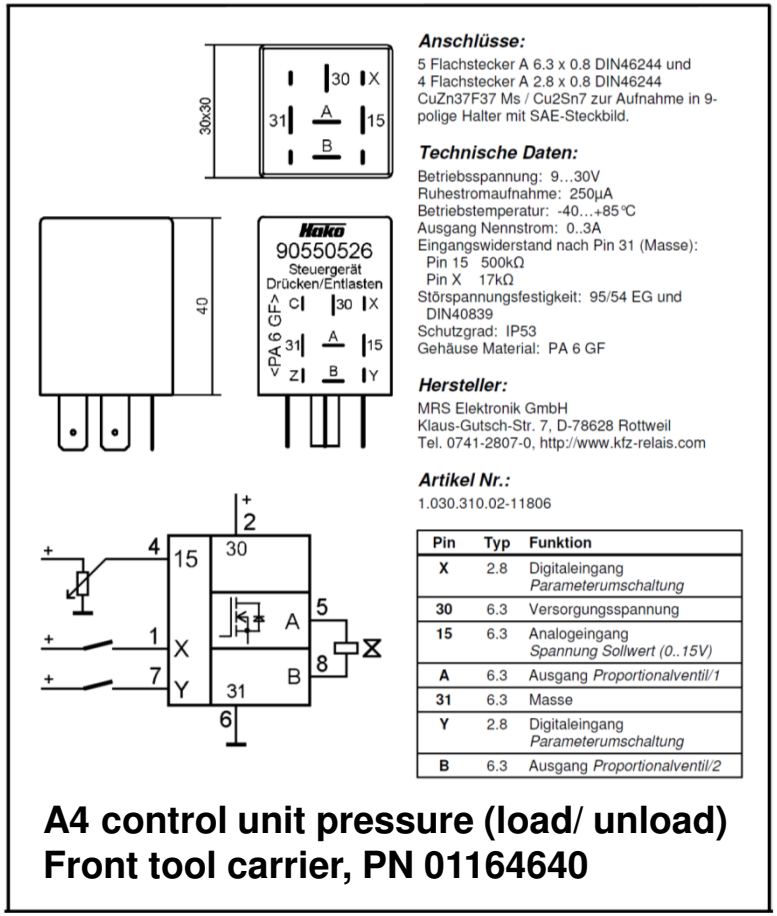
Pin 1, yellow cable, B+ from relay K5 Pin 5
Pin 2, gray cable, N/O contact
Pin 3, brown cable, winding
Pin 4, white cable, wiper
Pin 5, green cable, winding, ground form X42

Resistance between Pin 4 white cable and Pin 5 green cable 0 Ohm to 4.7 KOhm

3.0.1 Electrical Installation

A4 control unit, increase/decrease pressure to front attachment support
Multifunctional display option or Citycleaner 6150.10 option





Anschlüsse:

5 Flachstecker A 6.3 x 0.8 DIN46244 und
4 Flachstecker A 2.8 x 0.8 DIN46244
CuZn37F37 Ms / Cu2Sn7 zur Aufnahme in 9-polige Halter mit SAE-Steckbild.

Technische Daten:

Betriebsspannung: 9...30V
Ruhestromaufnahme: 250µA
Betriebstemperatur: -40...+85°C
Ausgang Nennstrom: 0..3A
Eingangswiderstand nach Pin 31 (Masse):
Pin 15 500kΩ
Pin X 17kΩ
Störspannungsfestigkeit: 95/54 EG und DIN40839
Schutzgrad: IP53
Gehäuse Material: PA 6 GF

Hersteller:

MRS Elektronik GmbH
Klaus-Gutsch-Str. 7, D-78628 Rottweil
Tel. 0741-2807-0, http://www.kfz-relais.com

Artikel Nr.:

1.030.310.02-11806

Pin	Typ	Funktion
X	2.8	Digitaleingang *Parameterumschaltung*
30	6.3	Versorgungsspannung
15	6.3	Analogeingang *Spannung Sollwert (0..15V)*
A	6.3	Ausgang *Proportionalventil/1*
31	6.3	Masse
Y	2.8	Digitaleingang *Parameterumschaltung*
B	6.3	Ausgang *Proportionalventil/2*

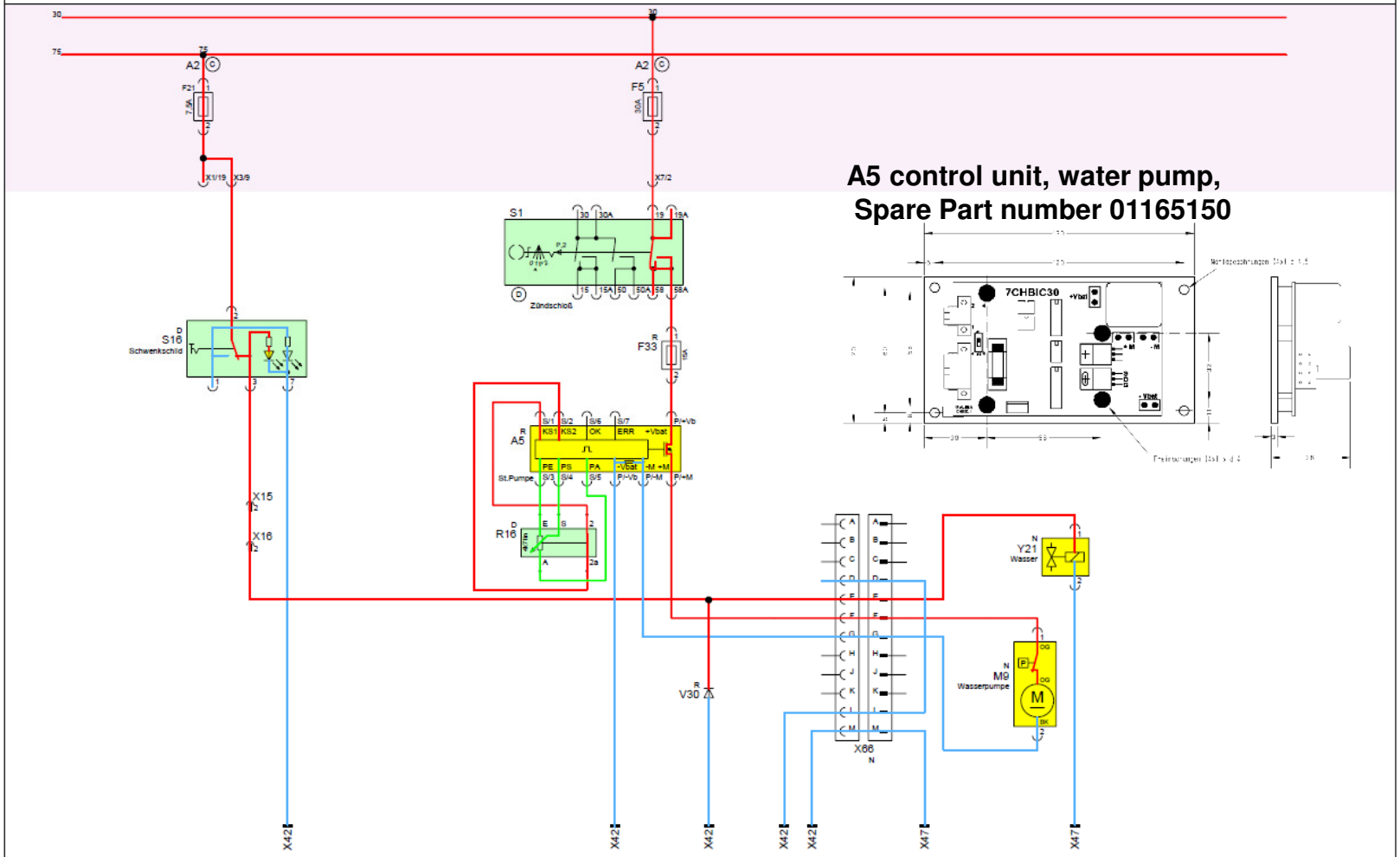
A4 control unit pressure (load/ unload)
Front tool carrier, PN 01164640

Note: The A4 control unit, increase/decrease pressure to front attachment, is already adjusted when supplied as a spare part. No further adjustment is normally necessary!

3.0.1 Electrical Installation

A5 control unit, water pump, Citycleaner version

Citycleaner 6150.10 Wasserpumpe ein, Wasserventil geöffnet / Citycleaner 6150.10 Water pump on, water valve openend



S1 Zündung ein (Stufe 1) / Ignition on (stage 1)
R16 Potentiometerschalter Pumpe eingeschaltet / Potentiometer switch pump switched on
S16 Schalter Schwenkschild eingeschaltet / Switch swivel wedge-type snow shield switched on

Schaltplan / Circuit diagram
Citymaster 1200 / Citycleaner (6150.10)
ab Maschinen Nr. 1433.02.8.1138.6

3.0.1 Electrical Installation

Work mileometer option (1442)

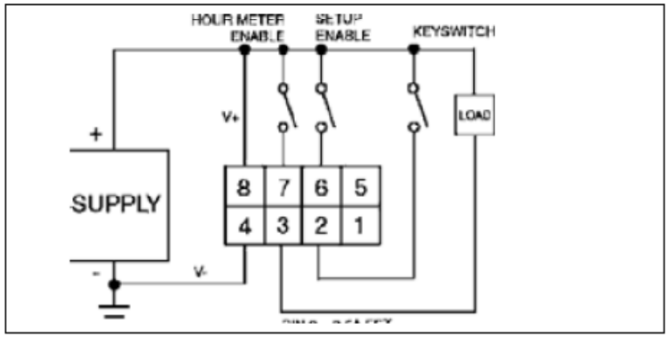
Work mileometer (1442)

Functions:

Total operating hours counter (1/1 h display)
Total mileage (kilometres)
Work operating hours can be reset (1/10 h display)
Work mileage can be reset (1/10 h display)
Time (24 h format)
Speed (1/10 h display)

- Tank-Reserve optional (LED blinkend und Schaltausgang)

PIN	Function
1	Tank transducer (voltage against GND)
2	Operating voltage 15
3	Switch output against GND
4	Earth 31
5	Speed sensor (PNP according to +12 V)
6	Configuration on (+12 V)
7	Work hours / Mileage on (+12V)
8	Operating voltage 30



3.0.1 Electrical Installation

Operating and setting the work mileometer option (1442)

Operation

The clock runs as long as voltage is applied to Pin 8 (30) (starting at 00:00). When the operating voltage is applied to Pin 2 (15), the time appears in the 7-segment display. On pressing the left-hand button briefly (< 3 s), the working hours appear, press again and the mileage appears, followed by the total operating hours, then the total mileage and finally the speed. Pressing the button again calls the clock back into the display etc. The work hours, work mileage, total operating hours, total mileage and division factor (refer to configuration) are retained at an Pin 8 or Pin 2 even when no power is supplied.
The total operating hour counter continues to counts as long as voltage is applied to Pin 8 and Pin 2. The tank transducer is then evaluated and the tank content depicted in the bar graph display. In addition, the pulses received at Pin 5 from the wheel motor sensor is divided by a dividing factor and saved as the total mileage.
The speed display indicates the current speed with a delay of 2 s.
These display indicators cannot be adjusted by the operator.

The work hour counter counts when voltage is applied to Pin 7 in addition to Pin 8 and Pin 2. The work mileage counter also counts the pulses divided by the dividing factor at Pin 5.

Select the button depicting a clock (see above) to set the time. Then press the button longer than 3 s until the hour digits flash. The hour setting can then be incremented using the right-hand button.
On reaching the correct digit, press the button to set the minute. When the minute digits flash use the right-hand button to increment the value displayed.

Press the button again to end programming of the time.

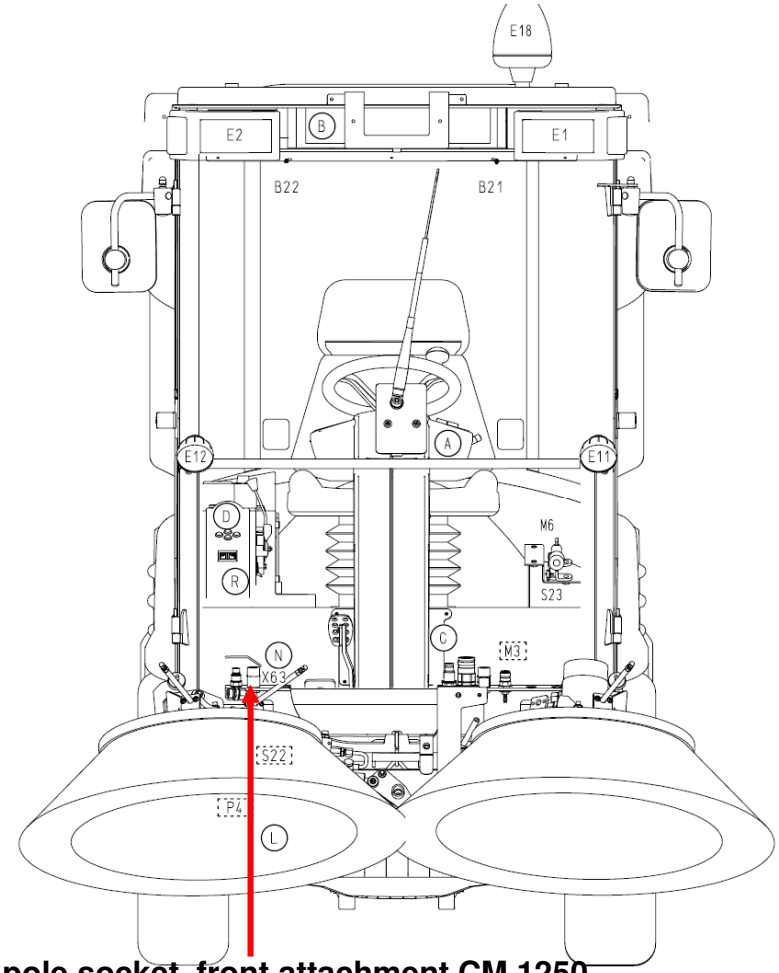
This button appears in order to set the work hours and mileage to zero.
Then press both buttons simultaneously for 3 sec until the work hours indicator flashes and a further 3 s until the setting returns to zero.

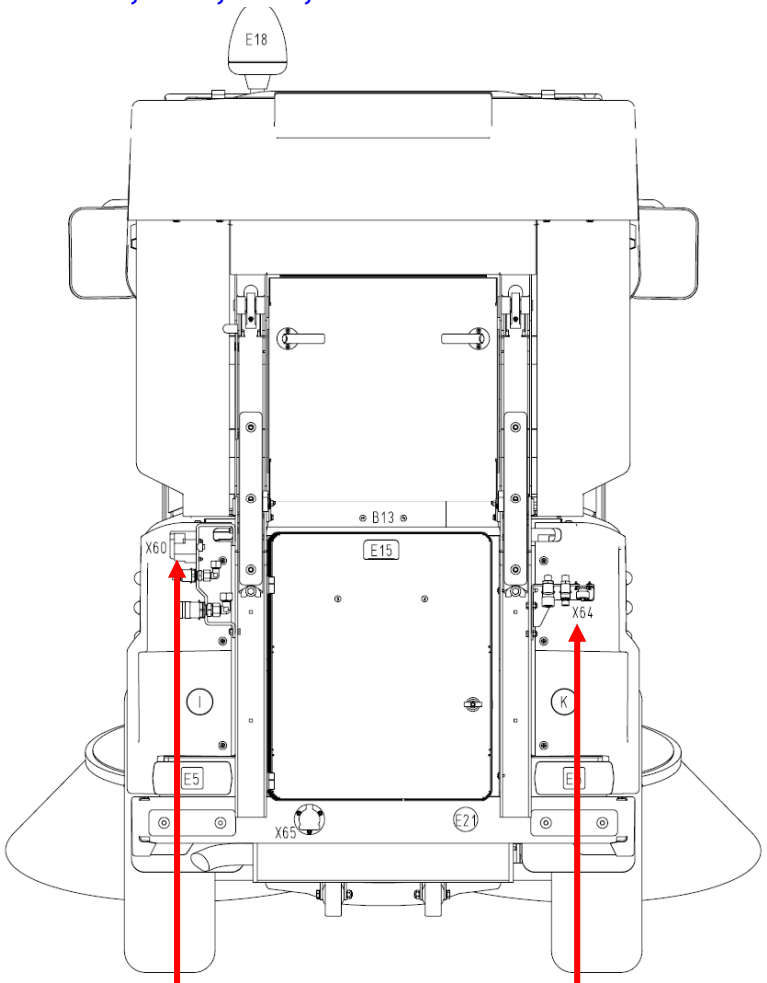
Setting

To set the dividing factor for the work hours and total mileage counters as well as the speed indicator, a voltage is applied to Pin 8 and Pin 2 (Display on) and to configuration input Pin 6. Press the button longer than 3 s until the four-character dividing factor is displayed and its highest unit flashes. The decimal places 0 to 9 of the dividing factor can then be set analogue to setting the time, using the buttons (select and end) and (increment), beginning at the highest decimal place. The dividing factor corresponds to the number of pulses provided by the speed generator at Pin 5 per 0.1 unit (0.1 km or 0.1 mi). It is set to value 3537 at the factory (km for CM 1200).

3.0.1 Electrical Installation

Connector for device detection, X60, X63, X64





X63 7-pole socket, front attachment CM 1250

X63 7-pole plug, sweeping attachment CM 1250

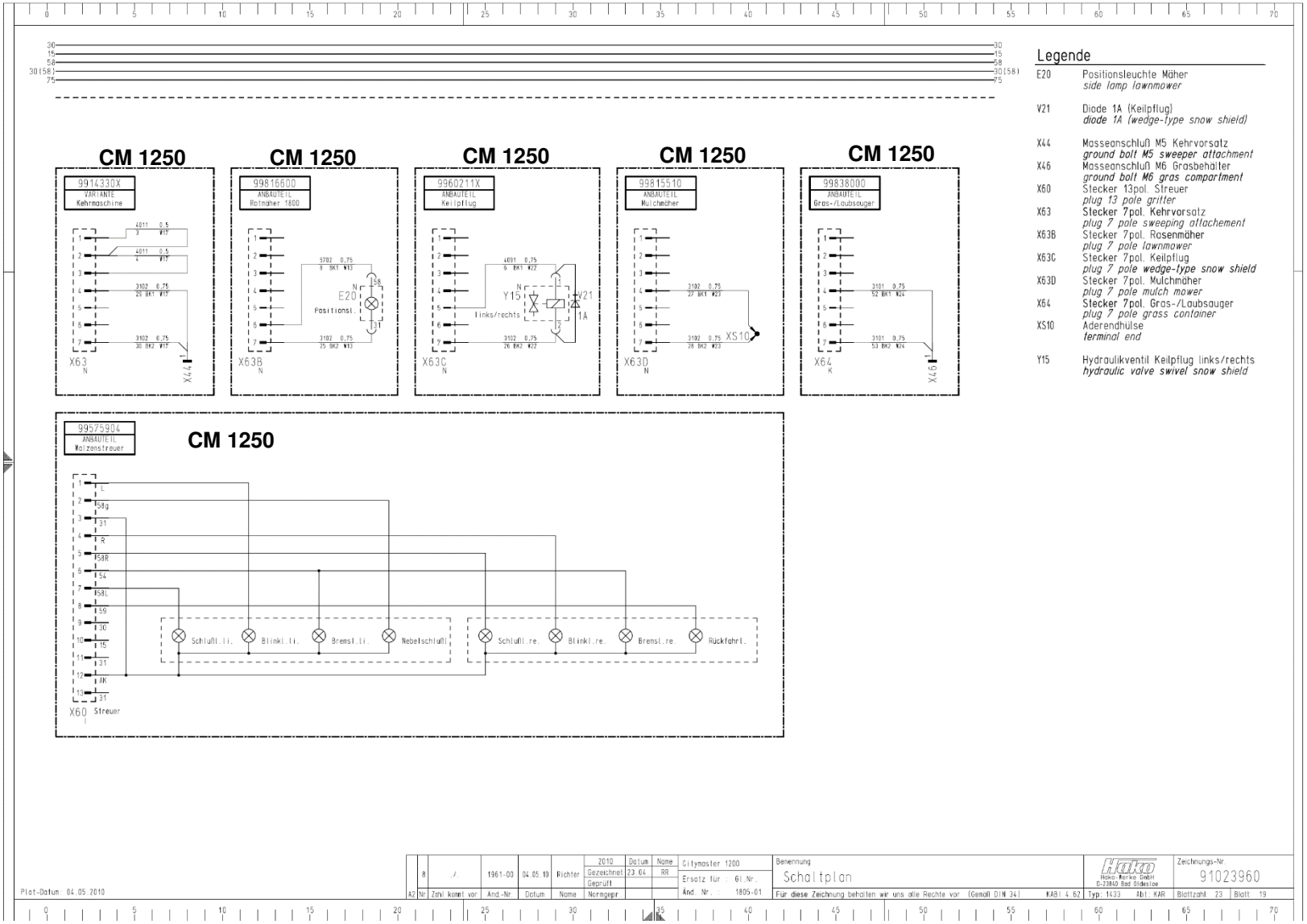
X60 13-pole spreader socket

X64 7-pole socket, rear attachment

X64 7-pole connector, grass + foliage vacuum

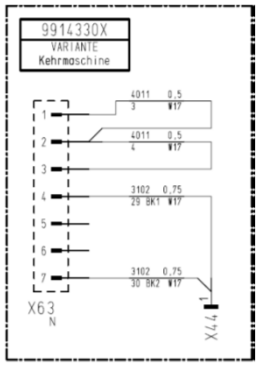
3.0.1 Electrical Installation

Bridges for device detection in connectors X60, X63, X64

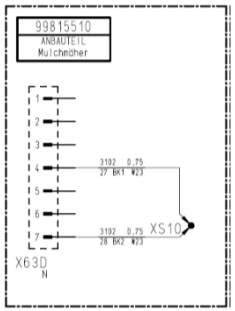


3.0.1 Electrical Installation

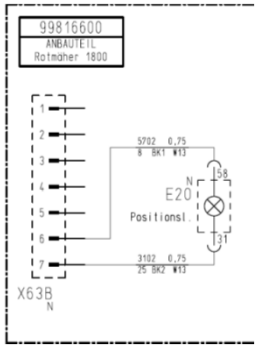
Bridges for device detection in connectors X63 and X64



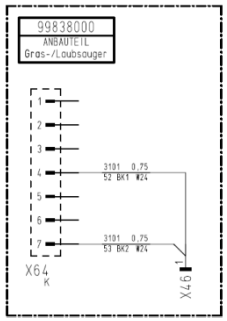
CM 1250, version as sweeping vehicle
X63 bridge pin 1, pin 2 + pin 3 for self-retention K7 + K9
X63 bridge pin 4 to pin 7, detection as sweeping vehicle CM 1250
When front attachment is raised, the side brushes switch off.
On leaving the driver‘s seat, the suction turbine (Y4) continues to run.



CM 1250 with mulching mower
X 63 bridge pin 4 to pin 7
sum logic circuit.

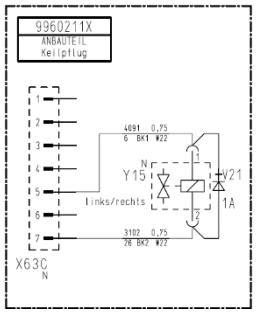


CM 1250 with front mower, X63 bridge pin 6 to pin 7 for the lighting E 20.
When front attachment is raised, the Mower or snow blower switches off.
On leaving the driver‘s seat, the mower or snow blower switches off immediately and must be reactivated by turning the switch S5 "off and on again".



CM 1250
X64 bridge pin 4 to pin 7,
Y5 (prop. valve) power applied continually.

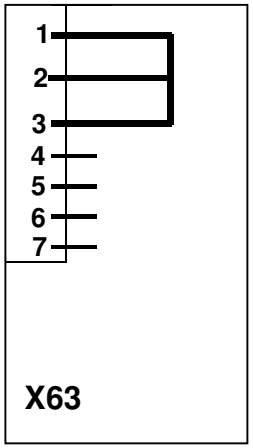
In the case of a spreader attachment with its own control unit, the speed signal from the speedometer transducer on an X64 pin 1 can also be used.



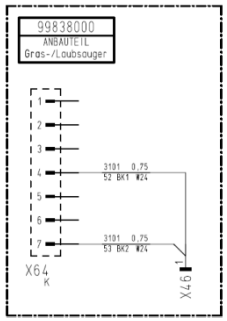
CM 1250 with snow plow (adjustable snow plow)
X63 bridge pin 5 to pin 7

3.0.1 Electrical Installation

Jumpers for the Identification of Attachment Devices in Connectors X63 and X64

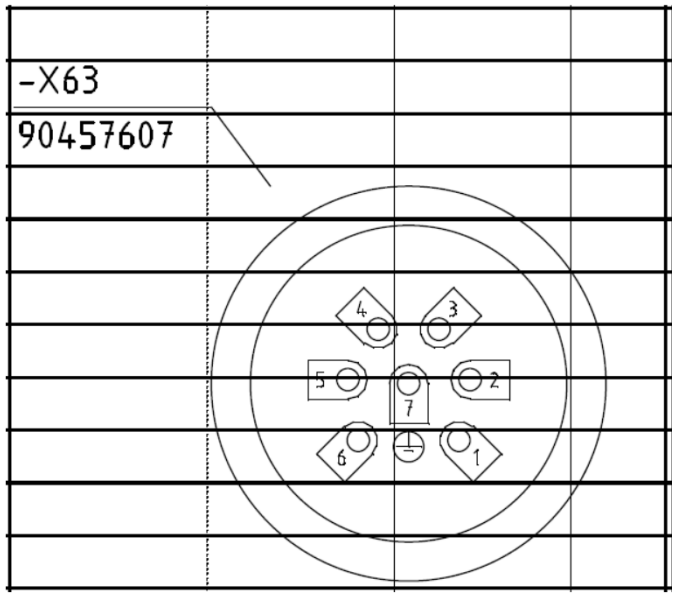


CM 1250, models with the Fiedler FLA 1250 H (5823) for foliage and light refuse collection.
X63 Jumper Pin 1, Pin 2 + Pin 3 for lock K7 + K9
The foliage and light refuse vacuum (5823) continues to run when the front attachment holder is raised.



CM 1250
X64 Jumper Pin 4 to Pin 7,
Y5 (prop. valve) power continually applied, e.g. grass and foliage vacuum (8380.02)
The suction fan of the grass and foliage vacuum continues to run with front attachment holder raised.

View from rear of the coded plug X63

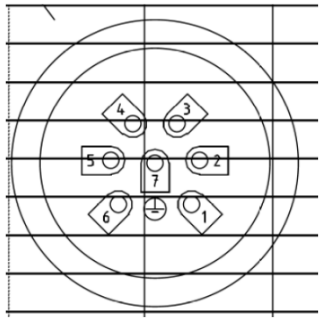


If an attachment device from a supplier has no coded plug mounted, the test plug (Hako spare part no. 03007050) must be ordered from the spare parts store.
The jumpers necessary (coding) must be produced by removing the corresponding cable.

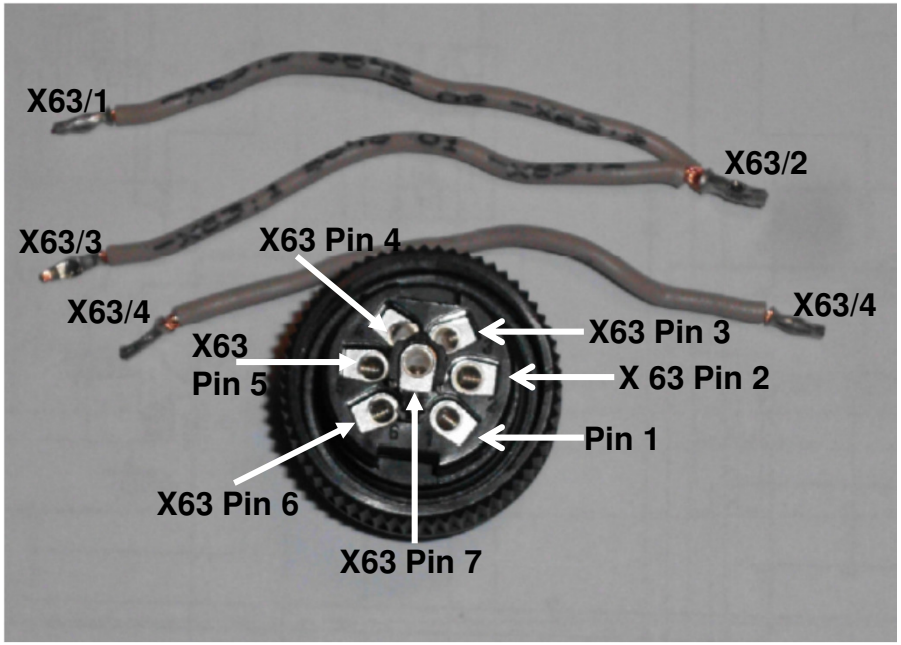
Important Information:
For reasons of safety, the removal of cable (coding the devices) from the test plug X63 (PN 03007050) may only be performed by properly trained personnel!

3.0.1 Electrical Installation

Jumpers for the Identification of Devices in Connectors X63 and X64, Hako Spare Parts Number 03007050

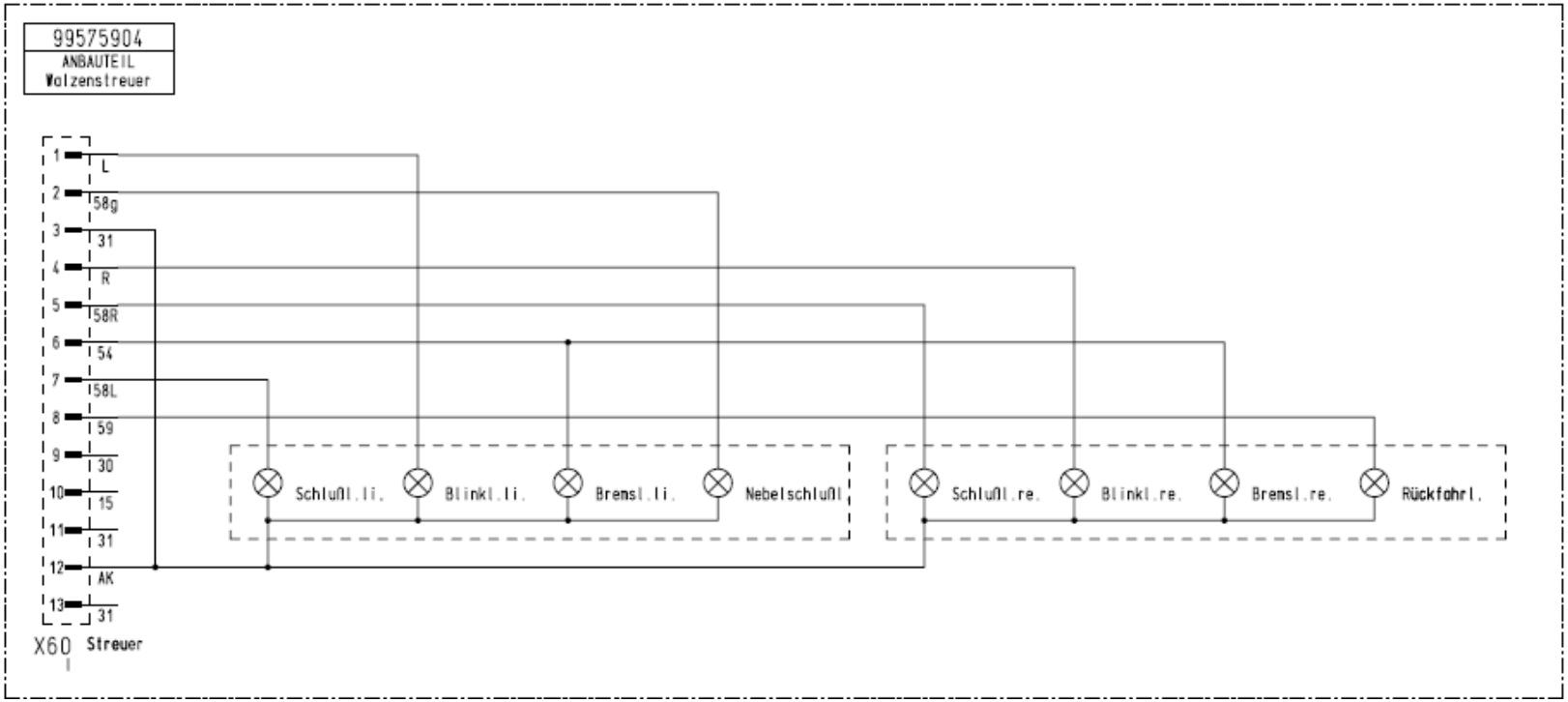


X 63 with jumpers X63/ 1 to X63/2 and X63/3 and with jumpers X63/4 and X63/7
Jumpers must be connected according to the specifications for the corresponding attachment devices.



3.0.1 Electrical Installation

Bridges for device detection in connector X60



CM 1200, CT4200
X60 bridge pin 3 to pin 12, detects a spreader.
Vehicle halts – spreader stops!

The pins 1, 4, 5, 6, 7, 8, 12 are used for the spreader lighting system.

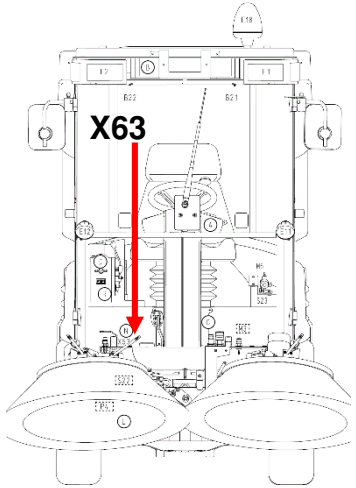
3.0.1 Electrical Installation

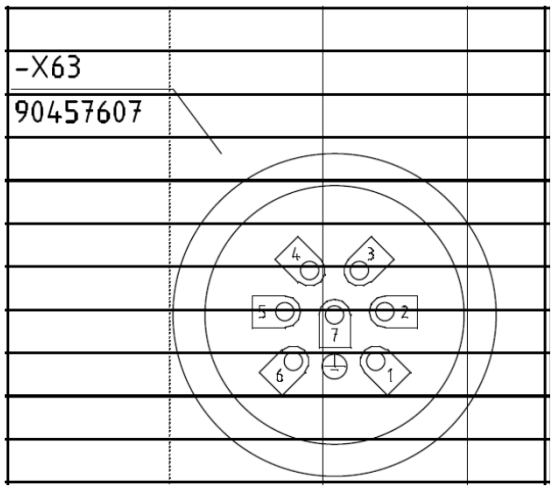
Front attachment connector X63, 7-pole

Front attachment connector X63, 7-pole
mounted at the front right of the vehicle, viewing towards the front

The connector X63 has the following functions:
- **Power supply for attachment device lighting**
- **Detection of attachment devices (e.g. sweeping unit CM 1250)**
- **Power supply for the attachment devices (e.g. snow plow)**

Pin assignment:
Pin 1 power supply B+ from F22, when S5 (fan switch) is switched on
Pin 2 connection to K CM 1200, when bridged
Pin 3 connection to K7/5 and K9/3 CM 1250, when bridged
Pin 4 detection as sweeping vehicle (bridge pin 4 to pin 7)
Pin 5 power supply B+ (12V) from F21 when S16 (pivoting snow plow) is switched on
Pin 6 power supply B+ (12V) from F1
Pin 7 ground (31) detection as sweeping vehicle (bridge pin 7 to pin 4)





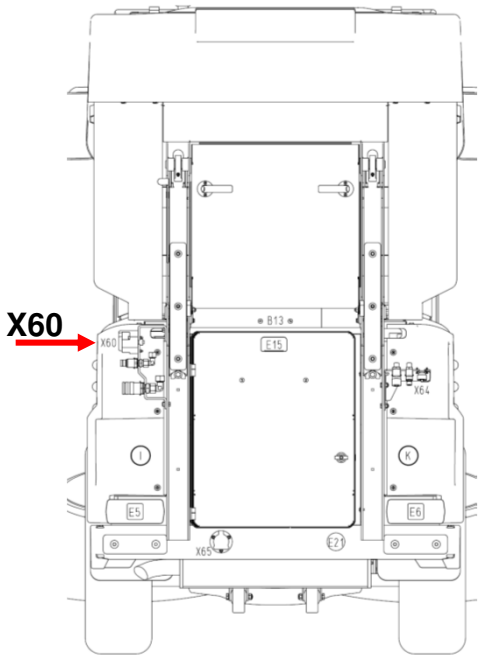
3.0.1 Electrical Installation

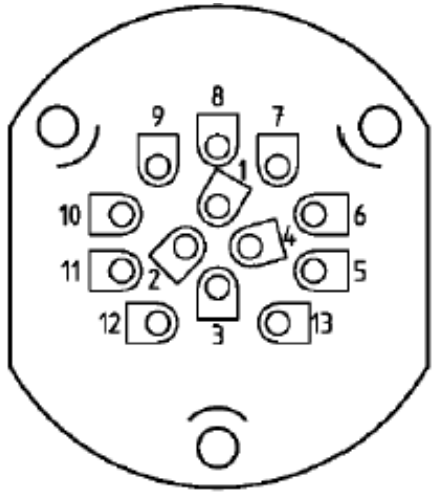
Rear attachment connector, X60, 13-pole

The connector X60 is mounted at the rear left of the vehicle, viewing towards the front

The connector X 60 has the following functions
- **Power supply for the lighting**
- **Detection of the rear attachment (e.g. spreader)**
- **Power supply for the rear attachment device**

Pin assignment, X 60 (view of rear of connector)
1. **Indicator, left (L)**
2. **Open at X13/1**
3. **Ground (31)**
4. **Indicator, right (R)**
5. **Rear light, right (58R)**
6. **Brake lights (54)**
7. **Rear light, left (58L)**
8. **Reversing light (option)**
9. **Not assigned**
10. **Power supply from F 23**
11. **Ground (31)**
12. **Spreader detector (bridge pin 3 to pin 12)**
13. **Not assigned**





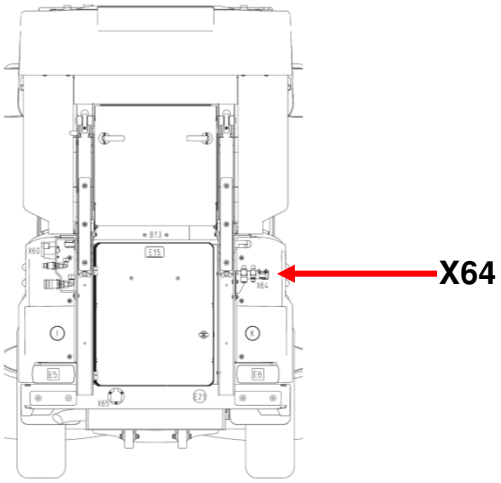
3.0.1 Electrical Installation

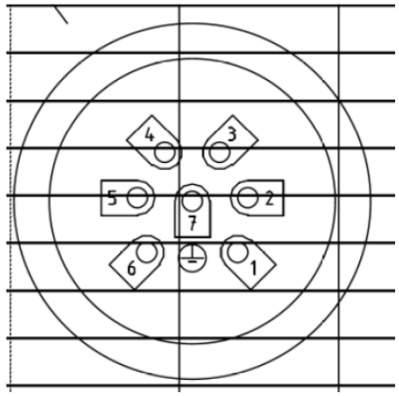
Attachment device connector, X64, 7-pole

Attachment device connector X64, 7-pole, mounted at rear right of vehicle, viewing towards the front

The connector X64 has the following functions:
- **Power supply for the attachment device lighting**
- **Detection of the attachment devices (e.g. grass + foliage vacuum)**
- **Power supply for the attachment device**

Pin assignment:
Pin 1 Speedometer transducer (e.g. attachment spreader)
Pin 2 Power supply 12V from F23
Pin 3 Not assigned
Pin 4 Detection e.g. grass + foliage vacuum, bridge pin 4 to pin 7
Pin 5 Switch signal S16
Pin 6 Rear light (58R)
Pin 7 Ground (31) and detection e.g. grass + foliage vacuum, bridge pin 7 to pin 4

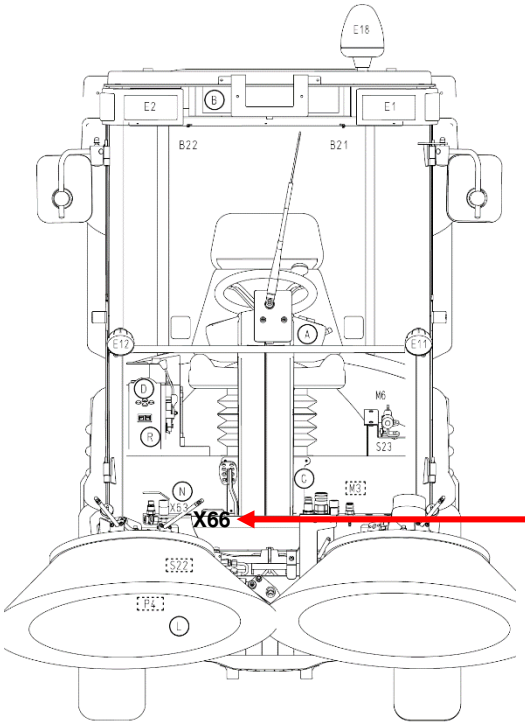




View of pin contacts X 64

3.0.1 Electrical Installation

Front attachment connector X66, 12-pole, Citycleaner option only



Front attachment connector X66, 12- pole mounted on front right of the vehicle, viewing towards the front

The X66 connector has the following functions:
- Power supply to the M9 water pump
- Power supply to the switching valve Y21, fresh/circulation water

Pin assignment:

Pin A, Spare, not connected
Pin B, Spare, not connected
Pin C, Spare, not connected
Pin D, Ground (31) of X42
Pin E,
Pin F, Control unit, M9 water pump from A5 (B+)
Pin G, Control unit, M9 water pump from A5 (B-)
Pin H, Spare, not connected
Pin J, Spare, not connected
Pin K, Spare, not connected
Pin L, Ground (31) from X42
Pin M, Ground (31) from X42

X66

3.0.1 Electrical Installation

Vehicle (engine) does not start

Conditions for start:

1. The seat contact switch B8 must be actuated, i.e. there must be a driver on the driver‘s seat.
2. The zero position switch S20 of the drive pump must be at its zero position, i.e. the accelerator must not be actuated.
3. The fuses F5, F7, F15 and F30 must be in working condition.

Test:

1. Switch the ignition on and check that the fuel pump M12 is running (the purr of the fuel pump is audible). If it is, the power supply from the ignition switch S1 to the relay K2 is in order.
If this is not the case, check the power supply between the ignition switch S1 and relay K2!

2. Does the seat contact switch B8, connect B-/Ground (31) through to relay socket K2 pin 4?
Note: pull the relay K2 out of the control unit K2 a measure it directly at the relay socket of K2/4!
If this is not the case, check the seat contact switch and cable for electrical faults; replace, if necessary.

3. Does the zero position switch S20 connect the drive pump B+ (12V) through to relay socket K2 pin 7?

Note: pull the relay K2 out of the control unit K2 a measure it directly at the relay socket of K2/7!

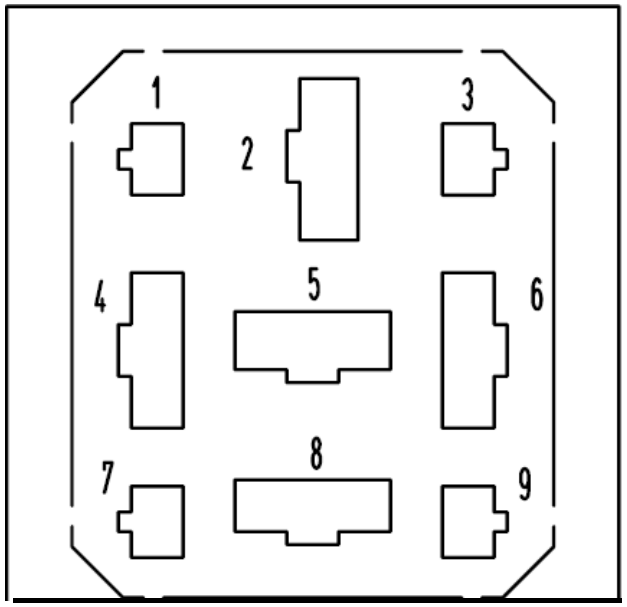
If this is not the case, check the zero position switch S20 of the drive pump and cable for electrical faults; replace, if necessary.

4. When all the tests (1- 3) are completed and no faults are detected, the relay K2 must be replaced.

Important note: Seat contact switch B8 and zero position switch S20 of the drive pump may only be bridged for test purposes!
If no switching signal is issued within 6 hours of bridging B8 and S20 or through a defect on the zero position switch S20, K2 is switched off and the vehicle can no longer be started!
Test: Unplug relay K2 and plug in again; if the vehicle now starts, check B8 and S20!

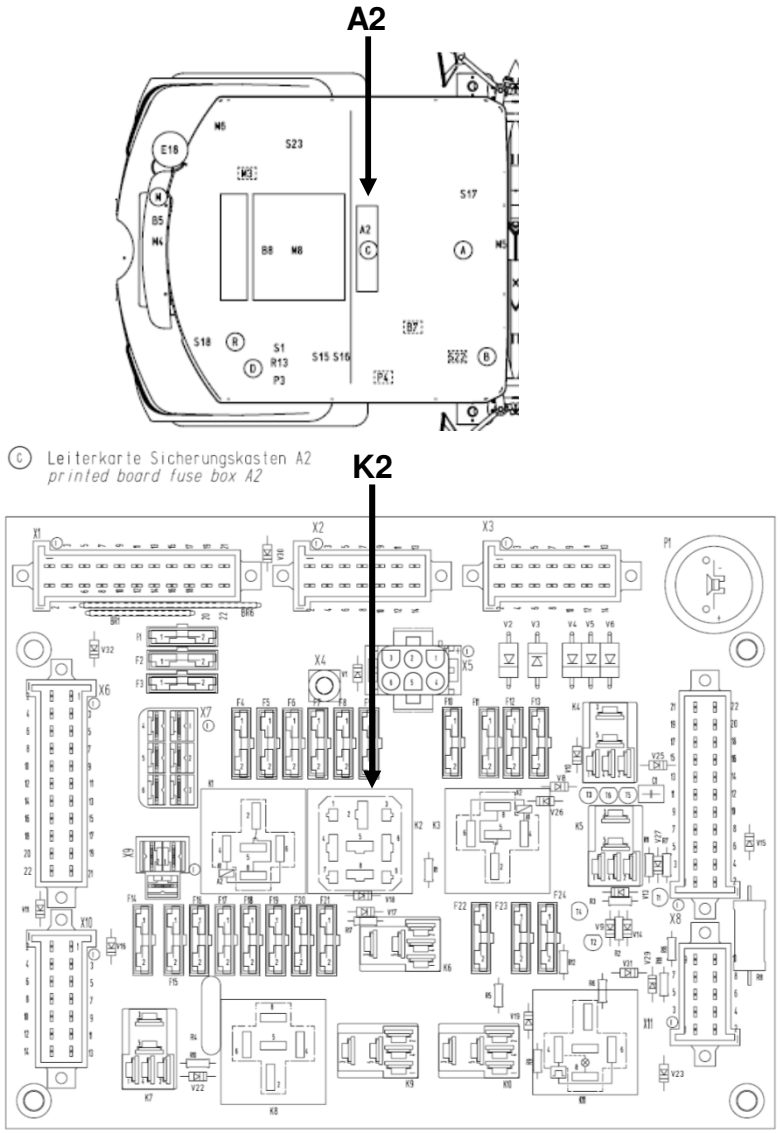
3.0.1 Electrical Installation

Relaissockel von K2 - Relay socket from K2



Pin 1, B+ (12V) from F15, 20A
Pin 2, B+ (12V) from F15, 20A
Pin 3, B+ (12V) from F7, 3A
Pin 4, B+ (12V) from B8 when the seat contact switch is not closed!
Pin 4, B- /Ground (31), from B8 when the seat contact switch is closed! Necessary to start!
Pin 6, B- /Ground 31
Pin 7,B+ (12V), from S20, drive pump in zero position. Necessary to start!

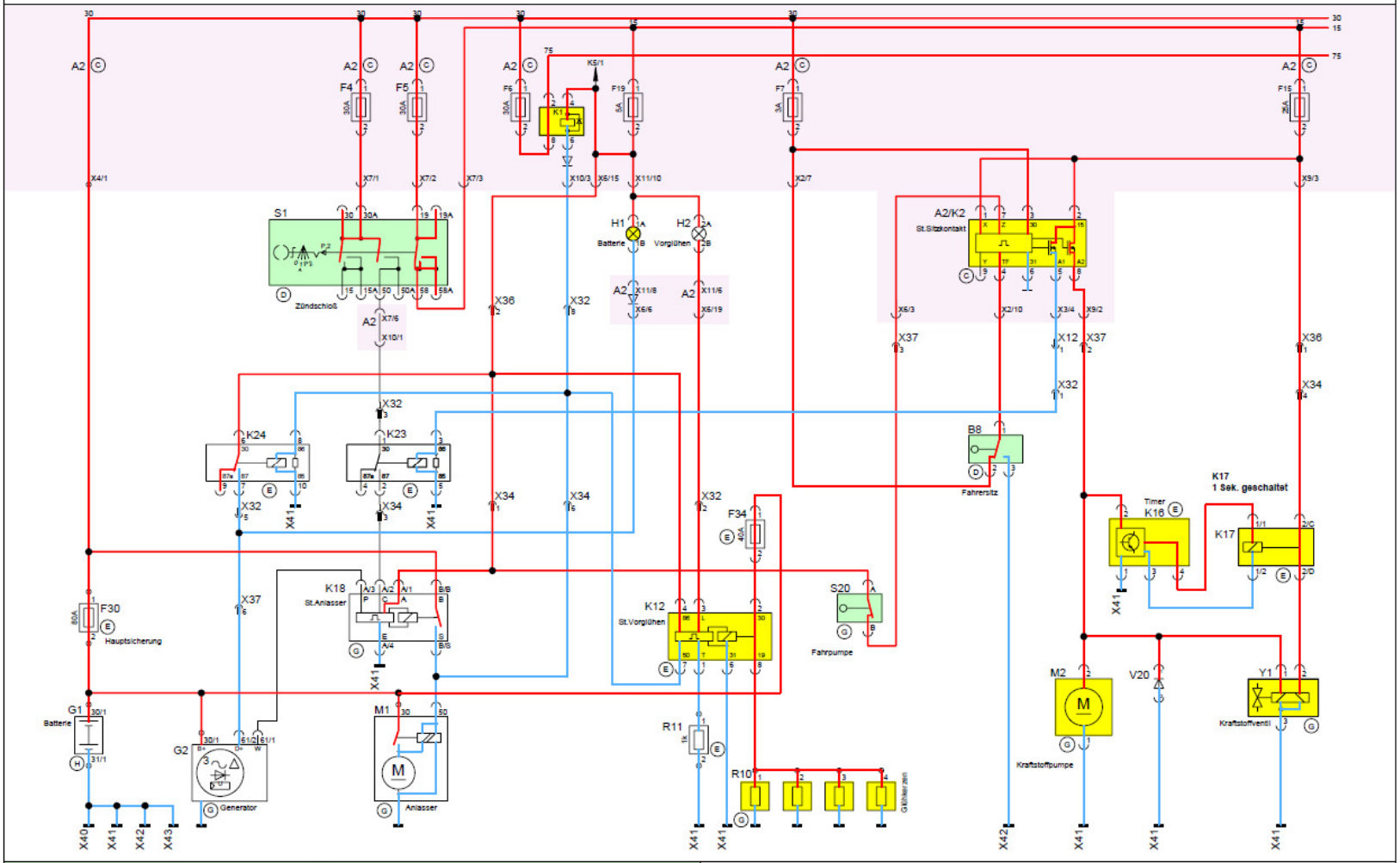
Kabine - Cabine



3.0.1 Electrical Installation

Function circuit diagram, starting CM 1250

Citymaster 1250 Motor aus / Citymaster 1250 Engine stopped

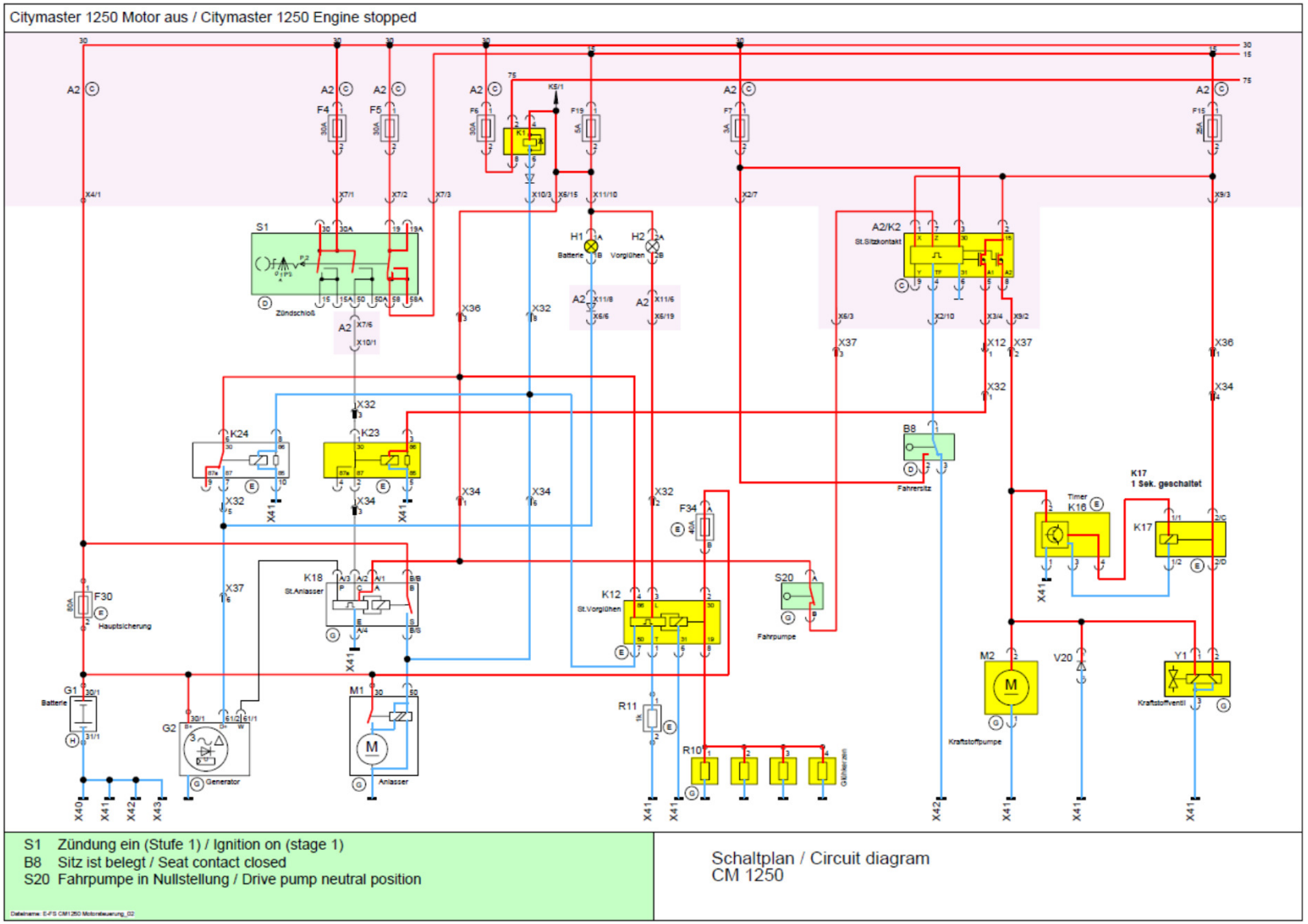


S1 Zündung ein (Stufe 1) / Ignition on (stage 1)
B8 Sitz nicht belegt / Seat contact open
S20 Fahrpumpe in Nullstellung / Drive pump neutral position

Schaltplan / Circuit diagram
CM 1250

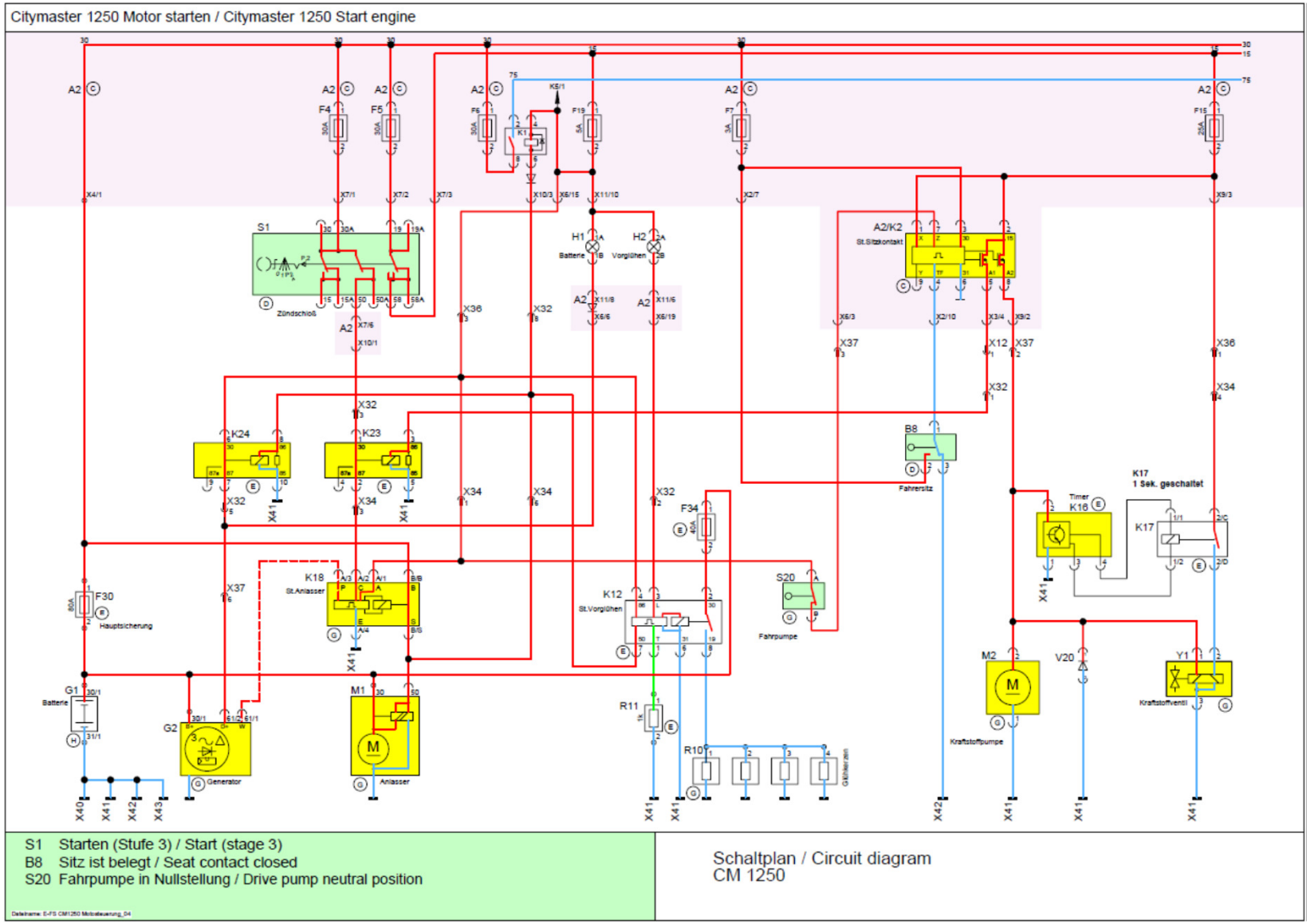
3.0.1 Electrical Installation

Function circuit diagram, starting CM 1250



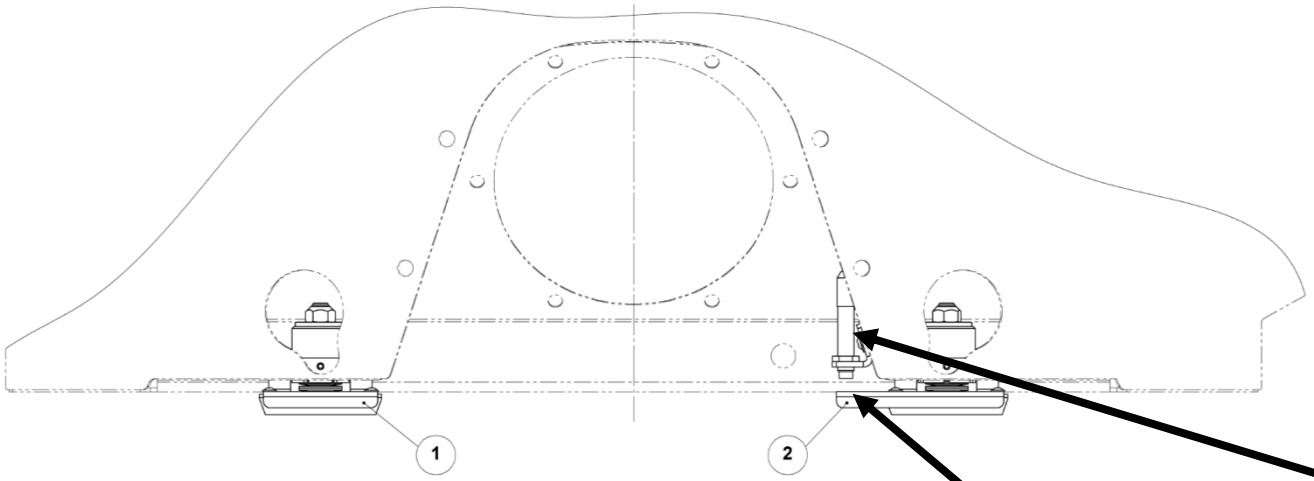
3.0.1 Electrical Installation

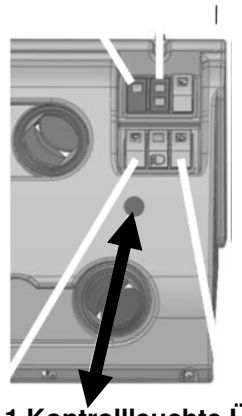
Function circuit diagram, starting CM 1250



3.0.1 Electrical Installation

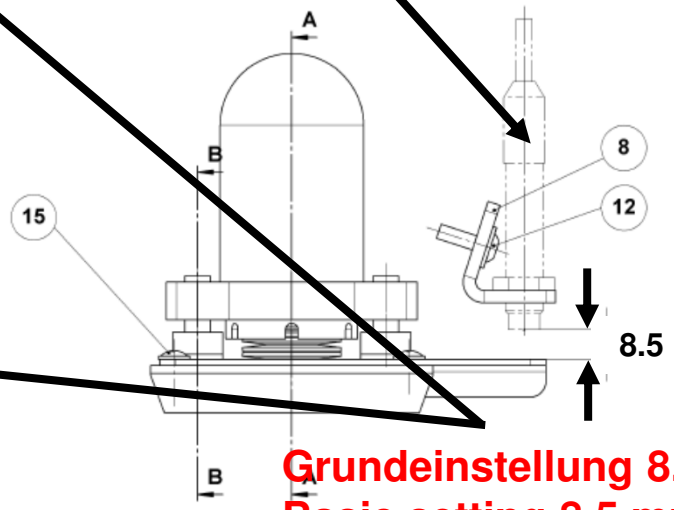
Option, load indicator CM 1250 (2617.00) Load indicator B15 adjustment





H11 Kontrollleuchte Überlast
H11 Pilot lamp overlad hopper

B15 Näherungsschalter
B 15 proximity switch



Grundeinstellung 8.5mm
Basic setting 8.5 mm

3.0.1 Electrical Installation

Option, load indicator CM 12050 (2617.00) Load indicator B15 adjustment

Note: After switching on the ignition or after lowering the hopper, the load indicator B15 for 5 minutes is not evaluated!

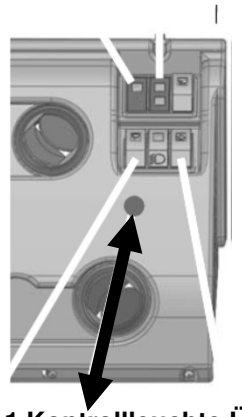
Load indicator B15 adjustment

Align the bearing blocks position 1+ 2 from the hopper to the contact points of the CM. Adjust the contact points using the thread M42x2 to make the adjustment so that the blocks are applied simultaneously and evenly. Fill the hopper with water, measure from the floor pan between the sump flap and rear slanting panel.

440 mm water in the hopper, corresponds to the total weight of the CM.

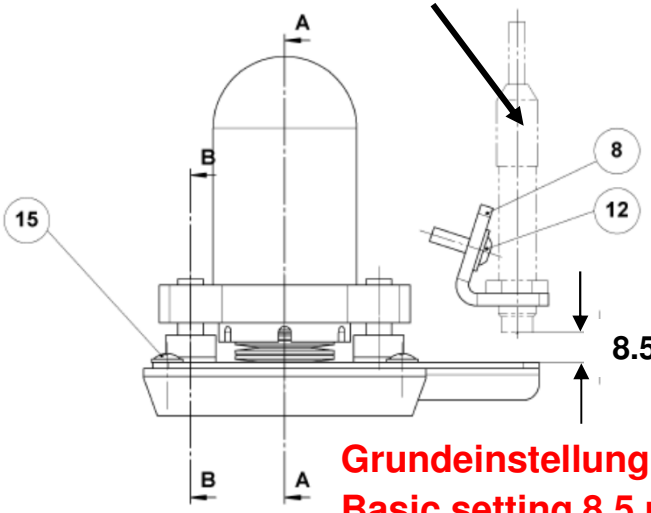
Exact adjustment using the proximity switch.

Lower the hopper using the hydraulics and then relieve using the hand pump. After relieving, the proximity switch control lamp should light up but, following the slightest movement of the hopper (pull and push) the control lamp should indicate a switch (control lamp flickers).The exact adjustmentis achieved using the thread on the proximity switch – it is an advantage here to raise the hopper a little, lower it again and relieve it.



H11 Kontrollleuchte Überlast
H11 Pilot lamp overload hopper

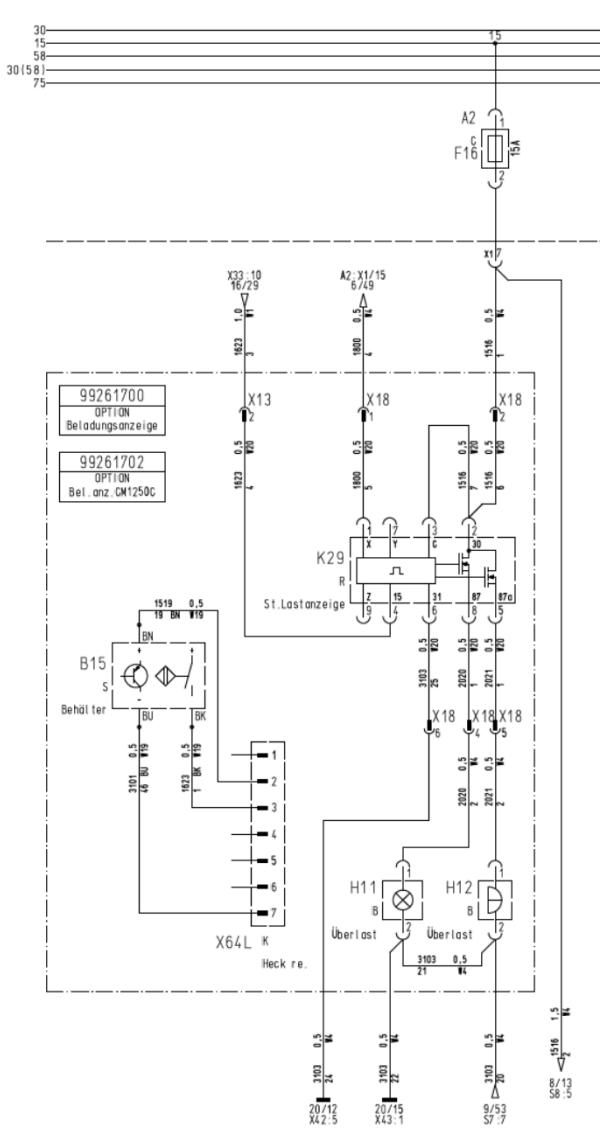
B15 Näherungsschalter
B 15 proximity switch



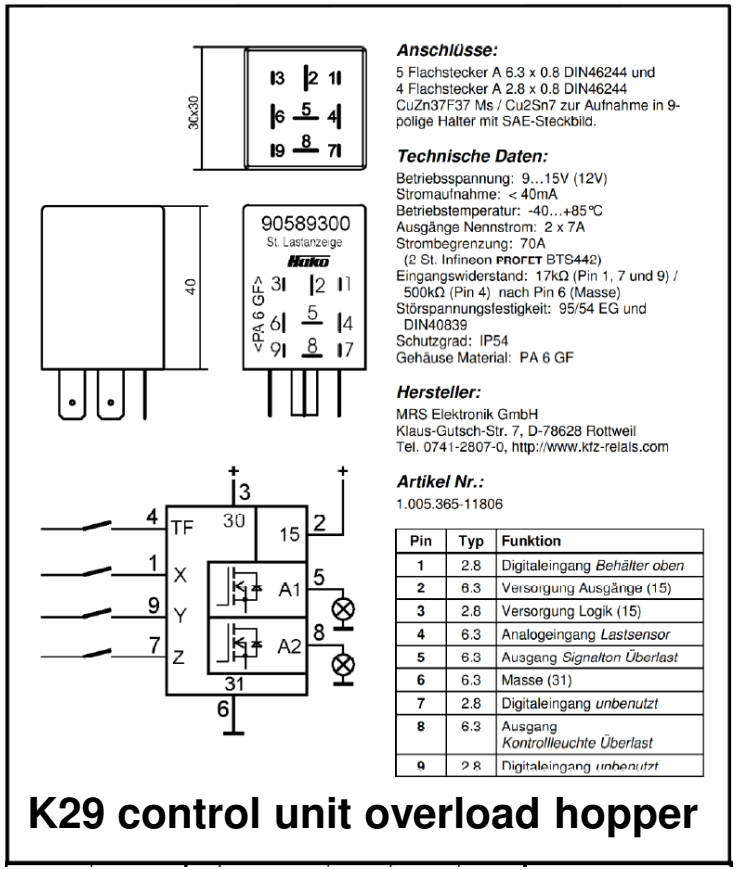
Grundeinstellung 8.5mm
Basic setting 8.5 mm

3.0.1 Electrical Installation

Option, load indicator CM 12050 (2617.00) Load indicator B15 adjustment



Details: Electric Diagram 3.0.2, page 7



Pin	Typ	Funktion
1	2.8	Digitaleingang *Behälter oben*
2	6.3	Versorgung Ausgänge (15)
3	2.8	Versorgung Logik (15)
4	6.3	Analogeingang *Lastsensor*
5	6.3	Ausgang *Signalton Überlast*
6	6.3	Masse (31)
7	2.8	Digitaleingang *unbenutzt*
8	6.3	Ausgang *Kontrollleuchte Überlast*
9	2.8	Digitaleingang *unbenutzt*

K29 control unit overload hopper

B15 Näherungssensor Kehrgutbehälter
B15 Proximily sensosor hopper
H11 Kontolleuchte Überlast Kehrgutbehälter
H11 Pilot lamp overload hopper
H12 Summer Überlast Kehrgutbehälter
H12 Buzzer overload hopper
K29 Steuergerät Lastanzeige/ Überlast Kehrgutbehälter
K29 Control unit overload hopper

3.0.1 Electrical Installation

Further information on the electical installation is provided in :

3.0.2 Electric Diagram Hako- Citymaster 1250

3.0.3 Electric Function Diagram Engine Control (Starting Engine) CM 1250

3.0.4 Electric Function Diagram Work Hydraulic, with Control Unit A1 Standart) and A4 (Option)

3.0.5 Electric Function Diagram CM 1250 Work Hydraulic- Citycleaner A1 (6150.10)
with pressure control A4 srubdeck (1459)

3.0.6 Electric Function Diagram CM 1250 with salt or sand spreader with standart hydraulic A1

3.0.7 Electric Function Diagram Hako Citytrac 1250 working with mower deck

3.0.1 Electrical Installation

Notes