 Box 66, Fabriksgatan 13 SE-342 21 ALVESTA, Sweden	Drive and control system Hydroelite 3G-1 Ver.2 Equipment list	Technical Documentation	
		T 100 44 EN	
		TECHNIC	2007-06-21
		JHK/BB	Side 1

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1 Function description

HydroElite is an integrated control and drive system for hydraulic elevators.

All the decentralised functions in the system, on lift car and at landings, communicate via a common data bus, CANbus.

The hydraulic unit (3.1) consists of an electric motor and a pump in oil-drained performance, for minimum noise level.

The valve system (3.2) uses a specially designed servo valve for precise regulation of the oil flow, which enables direct approach to floor without any creeping. The valve system is completely self-learning and requires no manual settings.

The control node (3.4) contains the following components:

- Main switch with motor protection
- Control of the servo valve
- Soft starter for the motor
- Printed circuit board with integrated electronics for regulation of the valve system, traffic control and communication between car and floors
- Digital display with push buttons for commissioning and diagnostics

The car node (3.5) manages all occurring inputs and outputs in the car and supervises the car safety circuit. A recall handle for inspection travel is attached to the car node.

The floor nodes (3.6) manage all occurring inputs and outputs with the floors and supervises their safety circuits.

The shaft information (3.7) contains an absolute encoder which senses the position and the speed of the car. The inductive encoder, placed on car roof, senses when the elevator is within a floor zone. Both of these encoders supervise each other.

2 System overview drive and control system, Hydroelite 3G-1

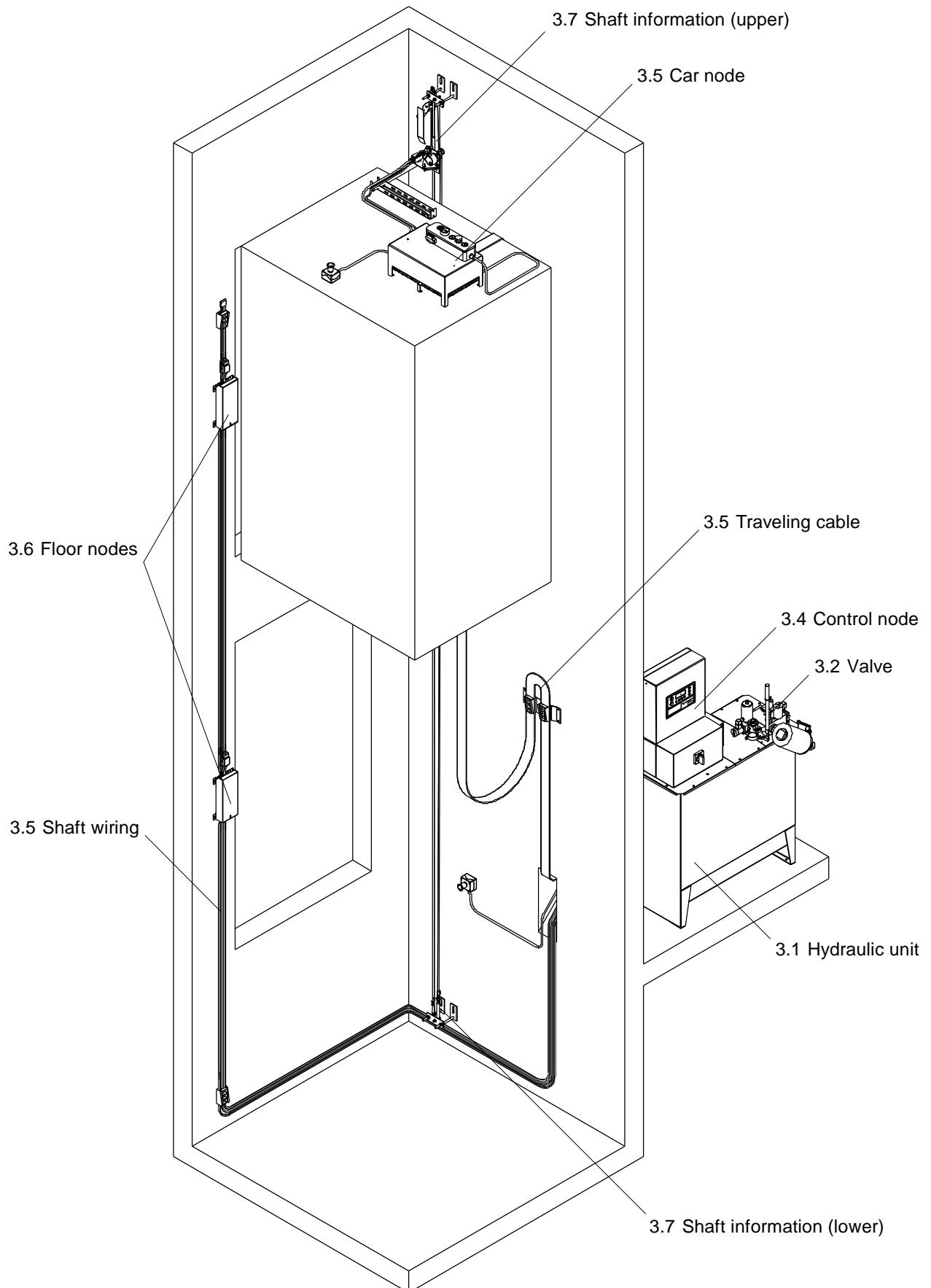


Fig.2 System overview drive and control system, Hydroelite 3G-1

3 Equipment list
3.1 Hydraulic unit

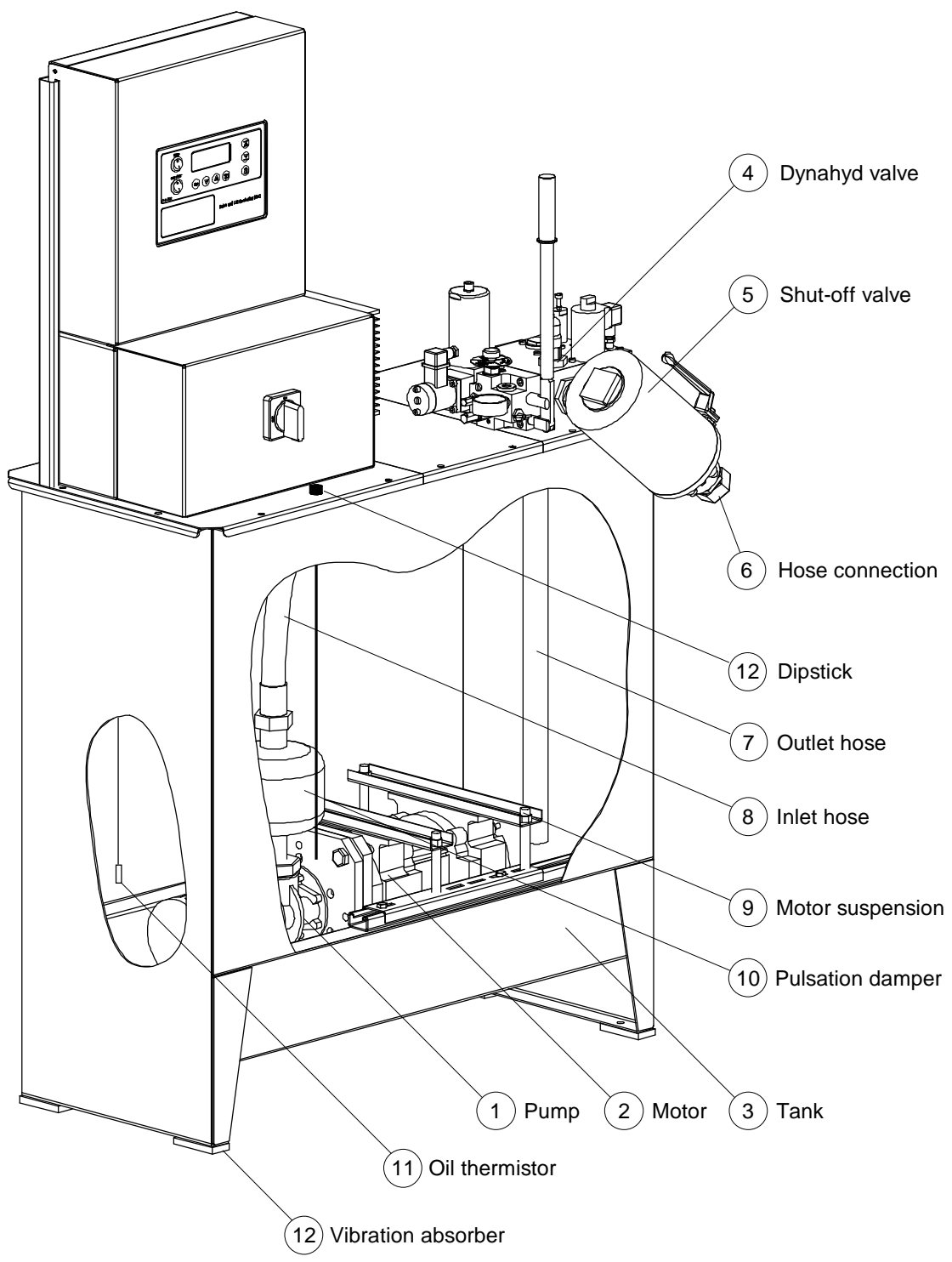


Fig.3.1 Hydraulic unit MR230 - MR1200

Pos	Description			Manufacturer		
	Alt	Artikel no.	Designation	Alt	Artikel no.	Designation
1	Pump			Settima		
		8130113	55 l/min		8130095	250 l/min
		8130107	75 l/min		8130114	300 l/min
		8130099	100 l/min		8130116	330 l/min
		8130091	125 l/min		8130218	380 l/min
		8130092	150 l/min		8130117	440 l/min
		8130093	180 l/min		8130123	500 l/min
		8130094	210 l/min		8130118	600 l/min
				8130124	800 l/min	
2	Motor			Elmo		
		8130109	4.4 kW 400/690 V 50 Hz		8130210	4.4 kW 230/400 V 50 Hz
		8140000	6.0 kW 400/690 V 50 Hz		8130111	6.0 kW 230/400 V 50 Hz
		8130086	7.7 kW 400/690 V 50 Hz		8130122	7.7 kW 230/400 V 50 Hz
		8140001	9.5 kW 400/690 V 50 Hz		8130110	9.5 kW 230/400 V 50 Hz
		8130087	11 kW 400/690 V 50 Hz			11 kW 230/400 V 50 Hz
		8140002	12 kW 400/690 V 50 Hz		8140004	12 kW 230/400 V 50 Hz
		8130126	13 kW 400/690 V 50 Hz		8130130	13 kW 230/400 V 50 Hz
		8130089	14.7 kW 400/690 V 50 Hz		8130127	14.7 kW 230/400 V 50 Hz
		8130125	16 kW 400/690 V 50 Hz		8130209	16 kW 230/400 V 50 Hz
		8130108	20 kW 400/690 V 50 Hz		8130133	20 kW 230/400 V 50 Hz
		8130090	24 kW 400/690 V 50 Hz		8130128	24 kW 230/400 V 50 Hz
		8130119	29 kW 400/690 V 50 Hz		8130191	29 kW 230/400 V 50 Hz
		8130115	33 kW 400/690 V 50 Hz			33 kW 230/400 V 50 Hz
		8130131	40 kW 400/690 V 50 Hz			40 kW 230/400 V 50 Hz
		8130132	47 kW 400/690 V 50 Hz			47 kW 230/400 V 50 Hz
		8130172	60 kW 400/690 V 50 Hz			60 kW 230/400 V 50 Hz
3	Tank			AVS		
		8110007	230 l		8110019	950 l
		8110008	400 l		8110022	1200 l
		8110009	700 l			
4	Dynahyd valve complete			Hydroware		
	9810148	1 1/4" - 55-210 l/min		9810149	2" - 250-800 l/min	
5	Shut-off valve			Hydroware		
		8150173	1 1/4" - 55-210 l/min		8150175	2" - 500-800 l/min
		8150174	1 1/2" - 250-440 l/min			
6	Hose connection			Dunlop Hiflex AB		
		8130135	1"		8130075	M36x2
		8130096	1 1/4"		8130074	M45x2
		8130136	1 1/2"		8130141	M52x2
		8130137	2"			
7	Outlet hose			Dunlop Hiflex AB		
		8150180	1" - 55-210 l/min			2" - 800 l/min
		8150181	1 1/2" - 250-600 l/min			
8	Inlet hose			Dunlop Hiflex AB		
		8150081	1" - 55-210 l/min			2" - 800 l/min
		8150179	1 1/2" - 250-600 l/min			
9	Motor suspension			Hydroware		
			230 l			700-1200 l
			400 l			
10	Pulsation damper			AVS		
		9810145	1"-1" - 55-150 l/min		9810179	1 1/2"-1 1/2" - 250-380 l/min
		9810291	1"-1 1/2" - 180-210 l/min		9810001	2"-1 1/2" - 440-800 l/min
11	Oil thermistor			Elmo		
		8130145	CA45H01-00			
12	Vibration absorber			Sunnex		
		9810147	Sunnex SP711			

Tab.3.1 Hydraulic unit

3.2 Valve, Dynahyd

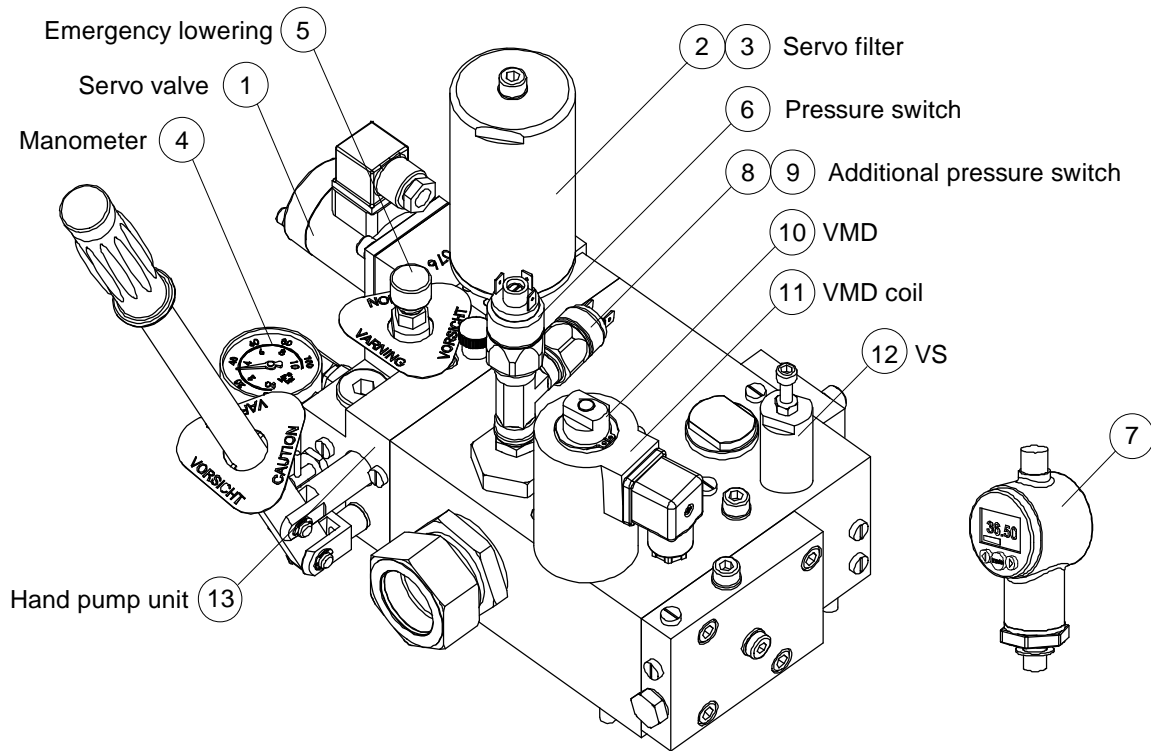
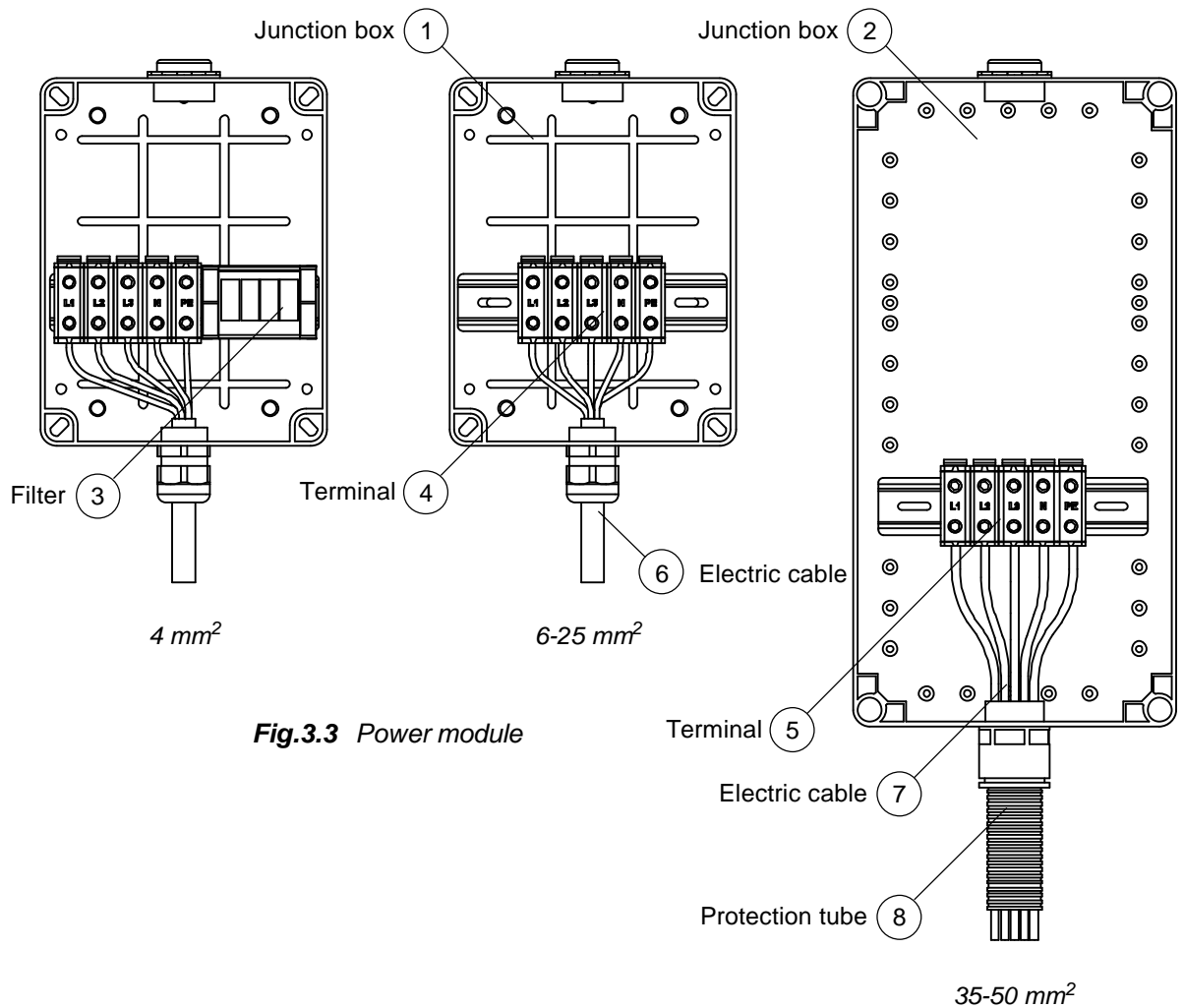


Fig.3.2 Valve, Dynahyd

Pos	Alt	Artikel no.	Description	Designation	Manufacturer
1		9610005	Servo valve	VB	Olsbergs
2		9610030	Servo valve incl. Servo filter 1 1/4"	Valve 55-210 l/min	Gamba
		9610011	Servo valve incl. Servo filter 2"	Valve 250-800 l/min	Gamba
3		8150202	Servo filter cartridge		Hydac
4		8150077	Manometer	0-100 bar	GMV
5		8150076	Emergency lowering valve	VSMA	Hydroware
6		9810128	Pressure switch max	<= 48 bar	OEM Automatic
		9810126	Pressure switch max	> 48 bar	OEM Automatic
7		9810411	Digital pressure switch max	DZE	Hydac
8		9810127	Pressure switch min		OEM Automatic
9		9810128	Pressure switch full load		OEM Automatic
10		8150084	Solenoid valve 1 1/4"	VMD	Hydroware
		8150085	Solenoid valve 2"	VMD	Hydroware
11		8150068	Solenoid coil 24V	VMD coil	Microvox
12			Pressure relief valve		Hydroware
			Hand pump unit 1 1/4"		Hydroware
13			Hand pump unit 2"		Hydroware

Pos	Alt	Artikel no.	Description	Designation	Manufacturer
		9610026	Gasket set 1 1/4"	Dynahyd valve 1 1/4"	Hydroware
		9610033	Gasket set 2"	Dynahyd valve 2"	Hydroware

Tab.3.2 Valve, Dynahyd

3.3 Power module

Fig.3.3 Power module

Pos	Alt	Artikel no.	Description	Designation	Manufacturer
1		8120029	Junction box 220x170x80 mm	4-25 mm ²	Malmbergs
2		8120049	Junction box 200x400x132 mm	35-50 mm ²	ENSTO
3		8120009	Filter, incoming power	4 mm ²	Hydroware
4		8120127	Terminal L1-L3	3x2.5-50mm ² Grey	ENSTO
		8120041	Terminal N	2.5-50mm ² Blue	ENSTO
		8120007	Terminal Ground wire PE	2.5-50mm ² Yellow/Green	ENSTO
5		8120006	Terminal L1	16-95mm ² Grey	ENSTO
		8120006	Terminal L2	16-95mm ² Grey	ENSTO
		8120006	Terminal L3	16-95mm ² Grey	ENSTO
		8120041	Terminal Neutral wire N	16-95mm ² Blue	ENSTO
		8120007	Terminal Ground wire PE	16-95mm ² Yellow/Green	ENSTO
6		8120090	Electric cable	Öflex 5G4 mm ²	Miltronic AB
		8120091	Electric cable	Öflex 5G6 mm ²	Miltronic AB
		8120081	Electric cable	Öflex 5G10mm ²	Miltronic AB
		8120085	Electric cable	Öflex 5G16mm ²	Miltronic AB
7		8670126	Electric cable RK	RK 25mm ² Black	Selga
		8670124	Electric cable RK	RK 35mm ² Black	Selga
		8670130	Electric cable RK	RK 50mm ² Black	Selga
		8670127	Electric cable RK	RK 16mm ² Blue	Selga
		8670128	Electric cable RK	RK 16mm ² Yellow/Green	Selga
		8670133	Electric cable RK	RK 25mm ² Yellow/Green	Selga
8		8670044	Protection tube UW PP29	1,9 m	BoxCo AB

Tab. 3.3 Power module

3.4 Controller

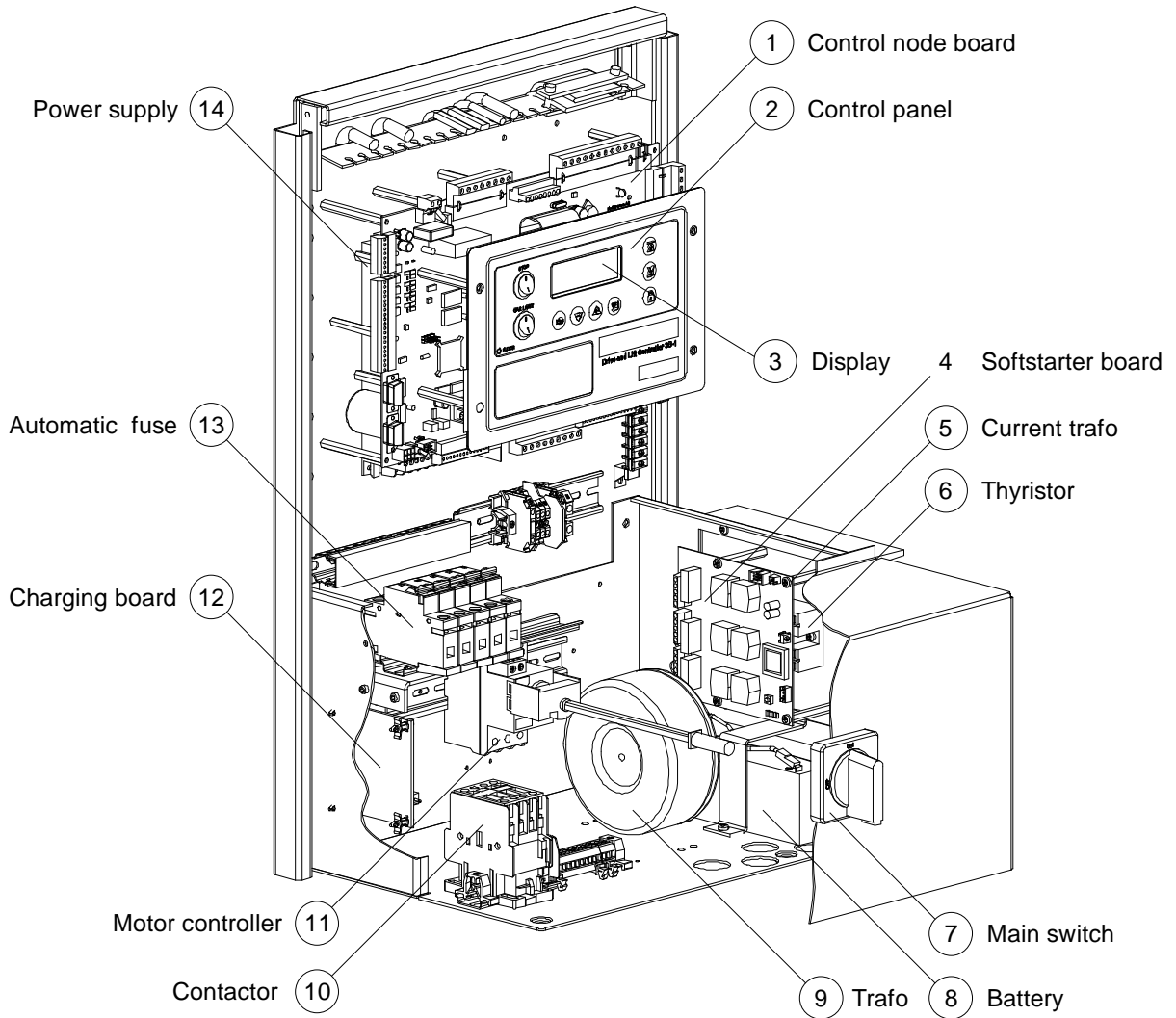


Fig. 3.4a Controller, front view

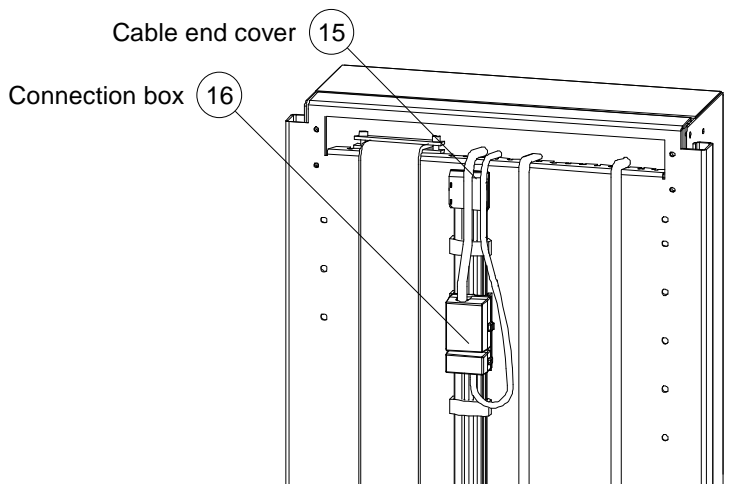


Fig. 3.4b Controller, back view

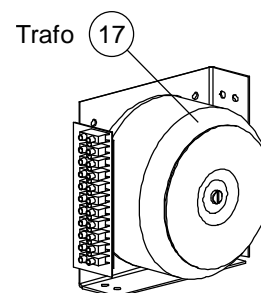


Fig. 3.4c Controller, appliances

Pos	Description			Manufacturer		
	Alt	Artikel no.	Designation	Alt	Artikel no.	Designation
1	Control node board			Elinter AG		
		8121200	A200 v4 230V		8121211	A200 v4 110V
		8121222	A200 v4 230V 2-valve		8121212	A200 v4 110V 2-valve
		8120052	Slave board 2-valve		8120305	Softstarter distributor 2-valve
2	Control panel			SweTouch		
		8120128	Schindler front		8120073	Hydroware front
3	LCD-Display 4x20			Multicomponent AB		
		8120302	LCD-Display incl. Cable			
4	Softstarter board incl. Surge suppressor			Elinter AG		
		9610004	VSU DA/VSU-807-S2 Ver 3.1			
5	Current transformer CT1			Inductive Components		
		9610018	TAW2 50/0.05A		9610020	TAW4 200/0.05A
		9610019	TAW3 100/0.05A			
6	Thyristor module Softstarter TY1			Inductive Components		
		8120304	PSUT 95/12		8120309	PSKT 132/12
		8120307	PSUT 145/12		8120310	PSKT 162/12
7	Main switch, handle			General Electric		
		8120018	GPA1HAR		8120089	FDNRDV
		8120019	GPA2HAR		8120285	FENRDV
8	Battery			Fiamm GS		
		8120044	2x12V 2Ah			
9	Safety circuit transformer			Noratel Sweden AB		
		8120321	42-127VDC 230V/42-56-92-127V Trafo restrictive circuit		8120317	230/110V Trafo restrictive circuit
		8120312	70VDC 230V/70V Trafo restrictive circuit			
		8120060	230V/42-56-92-127V - Multi		8120182	230V/110V
10	Contactor complete incl Aux.contacts			General Electric		
		9610070	CL02A + 2xBCLF01 + BCLF10		9610073	CL07A + 2xBCLF01 + BCLF10
		9610071	CL04A + 2xBCLF01 + BCLF10		9610074	CL10A + 2xBCLF01 + BCLF10
		9610072	CL06A + 2xBCLF01 + BCLF10			
11	Main switch, Motor controller			General Electric		
		8120011	GPS1BHAM 11-16A		8120108	FDS35TD080GD 64-80A
		8120171	GPS1BHAN 14-20A		8120109	FDS35TD100GD 80-100A
		8120012	GPS1BHAP 19-25A		8120087	FDS35TD125GD 100-125A
		8120013	GPS1BHAR 24-32A		8120161	FDS35TD160GD 100-160A
		8120015	GPS2BHAT 35-50A		8120164	FEN36TD200KF 200A
12	Battery charging board			Elinter AG		
		8121800	v4			
13	Automatic fuse			Hydroware		
		8120063	1P 2A C		8120178	2P 6A C
		8120064	1P 4A C		8120194	2P 10A C
		8120025	1P 6A C		8120026	3P 6A C
14	Power supply 24V			Mean Well		
		8670089	150W 24V/6.5A			
15	Connection box			Kaved		
		8670091	Ecobus 5x2,5+2x1,5			
16	Cable end cover			Kaved		
		8670110	Ecobus 5x2,5+2x1,5			
17	Transformer			Hydroware		
		6700084	400/230-230 500VA Ext - NO		6700083	400/230-230 1KVA Ext - NO

Tab.3.4 Control unit

3.5 Car node

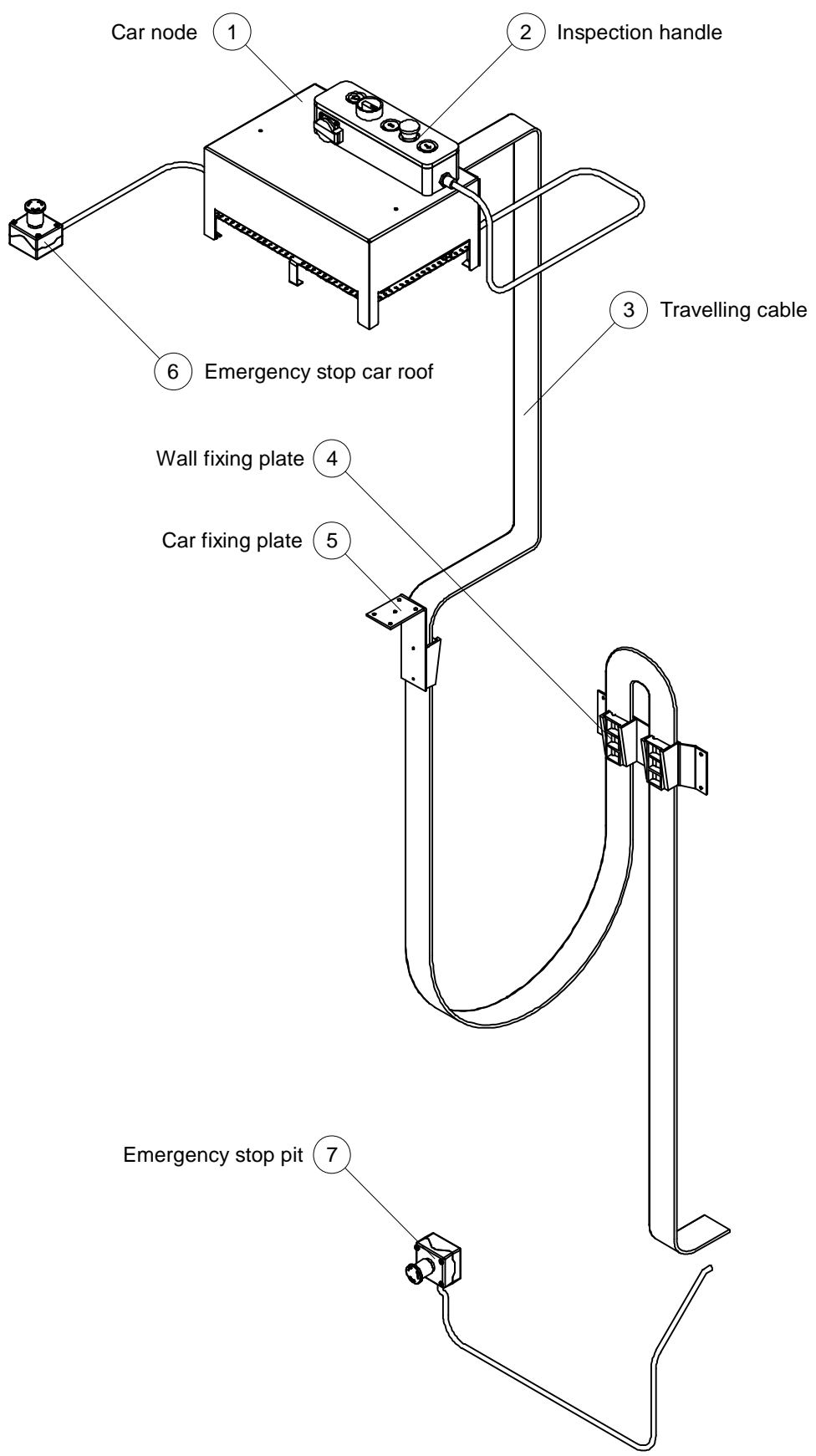


Fig.3.5a Car node, travelling cable, emergency stop

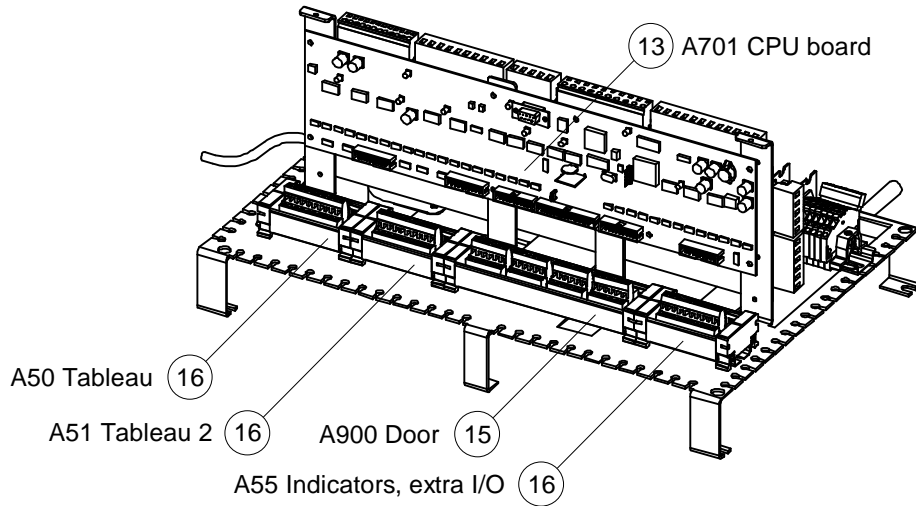


Fig.3.5b Car node, front view

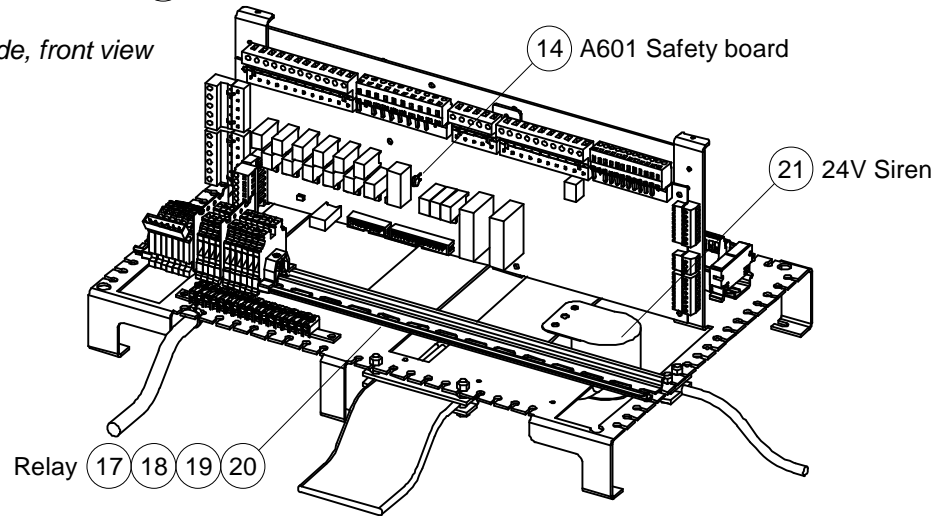


Fig.3.5c Car node, back view

Pos	Alt	Artikel no.	Description	Designation	Manufacturer
1		6600002	Car node complete		Hydroware
2		8660051	Inspection handle EU	P/N507	Giovenzana
		8660052	Inspection handle GB	P/N502	Giovenzana
3		8670160	Travelling cable	18x0,75 Wago	Kaved AG
4		8670059	Travelling cable	14x1+3x2,5+4*2*0,34	Kaved AG
5		8670142	Travelling cable wall fixing plate		Hydroware
6		8660043	Travelling cable car fixing plate		Hydroware
7		6700071	Emergency stop car roof swg.door		Hydroware
		6700072	Emergency stop car roof auto.door		Hydroware
		6700096	Pit Control box Standard + light		Hydroware
8		6700095	Pit Control box Standard		Hydroware
		6700073	Emergency stop Pit S2.S/S3.S		Hydroware
9		8660021	Outlet below car	2-way surface socket	Malmbergs
10		8670084	Alarm below car		Hydroware
11		8620107	Lamp	E14 24V 5W	Elfa AB
12		8620037	Lamp socket	E14	Elfa AB
13		8120701	Car node CPU board v4	A701	Elinter AG
14		8120601	Car node Safety board v4	A601	Elinter AG
15		8120702	Car node door board v4	A900	Elinter AG
16		8660064	Tableau1,Tableau2,Indicator I/O PCB	A50, A51, A55	Elinter AG
17		8670047	Contacor mini 6A 2,2kW	Door machinery 3-phase	Selga
		8660057	Surge suppressor kit Auto.door		Hydroware
		8660056	Surge suppressor kit Swg.door		Hydroware
18		8670019	Relay 230V 3TH2031-0AP0	Pawl device,Retracting ramp	
19		8670009	Relay 2-pole 24V DC	24V	
20		8120196	Relay 2-pole 120 V AC	Pawl dev, Retract. ramp GB	Phoenix
21		8660018	Emergency Siren 24V	Alarm	Multicomponent

Tab. 3.5 Car node

3.6 Floor node

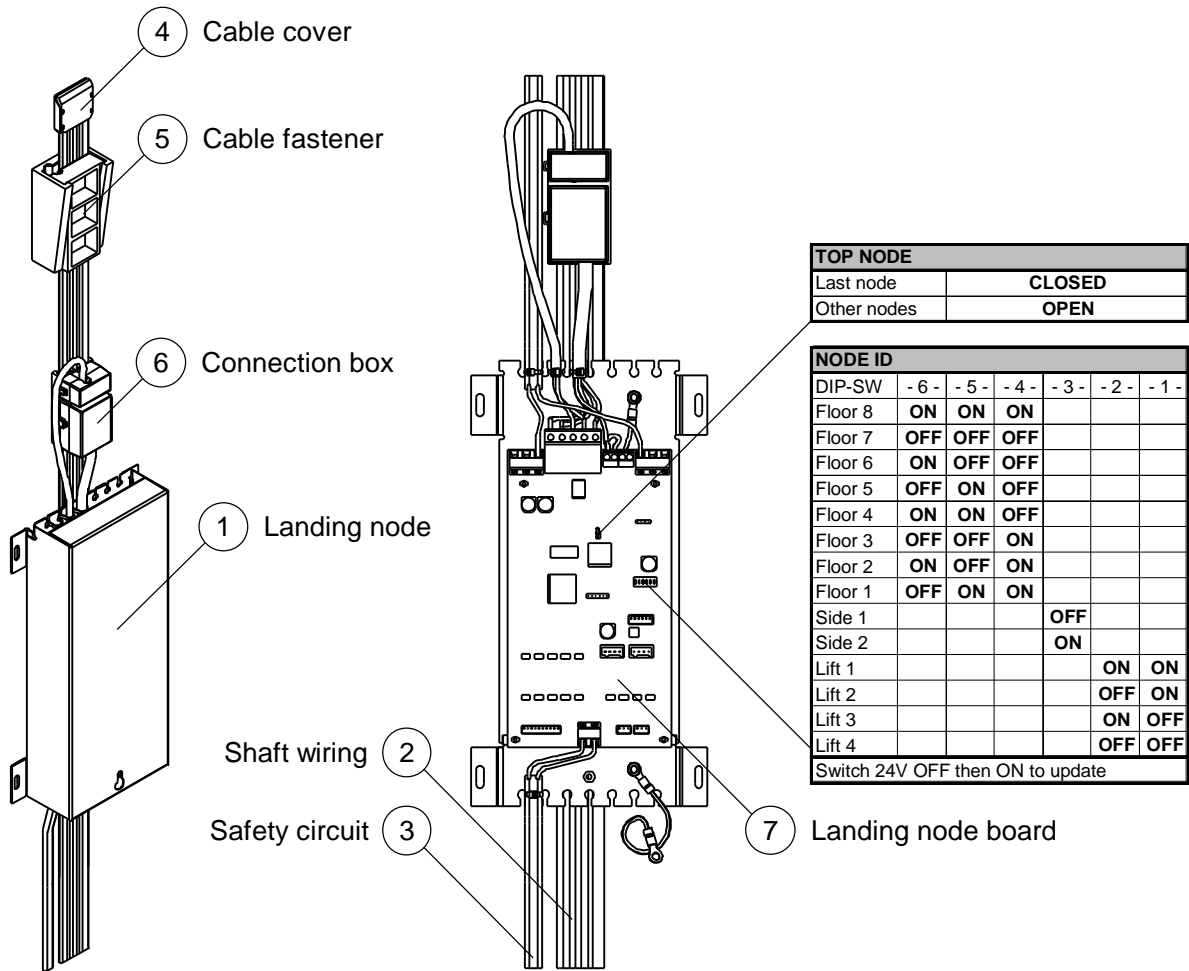


Fig. 3.6a Floor node complete

Fig. 3.6b Floor node without cover

Pos	Alt	Artikel no.	Description	Designation	Manufacturer
1		6100001	Landing node complete v4		Hydroware
2		6700062	Shaft wiring 5x2.5+1x2x1.5 mm ²	8500H Ecobus	Kaved AG
3		6700063	Safety circuit 2x1.5 mm ²	4547F PVC black	Kaved AG
4		8670110	Cable end cover		Kaved AG
5		8670094	Cable fastener		Kaved AG
6		8670091	Connection box	White	Kaved AG
7		8120000	Landing node board		Elinter AG

Tab. 3.6 Floor node

3.7 Shaft information

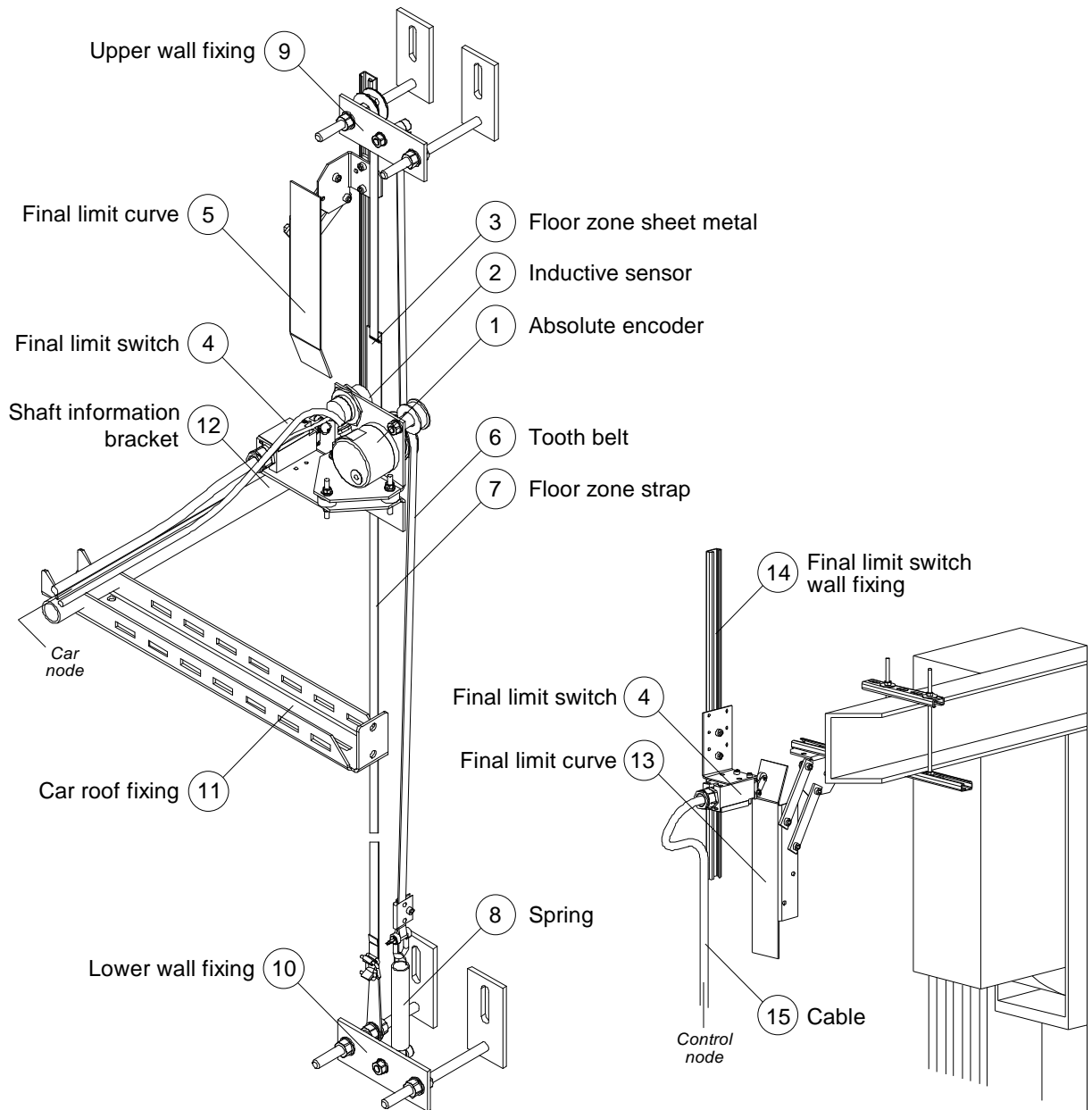


Fig. 3.7a Shaft information system overview, final limit switch mounted on the car

Fig. 3.7b Final limit switch mounted on the shaft wall

Pos	Alt	Artikel no	Description	Designation	Manufacturer
1		8620036	Absolute encoder with 5 m cable	AC58/1212EK.42SGB-40-X.5605	Hengstler GmbH
2		8670090	Inductive sensor with 5 m cable	IS52D-X	Sensor Control
3		8620085	Floor zone sheet metal (1 pcs per floor)	D200160	AVS
4		8620027	Final limit switch	608.6171.112	OEM Automation
5		8620029	Final limit curve (switch on the car)	D100080	Hydroware
6		8620100	Tooth belt	LLXL037G L= travel height+5 m	OEM Motor
7		9890008	Floor zone strap	VG13 L= travel height+5 m	Moheda Järnhandel
8		8620028	Spring	32030	Stece AB
9		8620110	Shaft information upper wall fixing		Hydroware
10		8620111	Shaft information lower wall fixing		Hydroware
11		8620032	Car roof fixing	D200390	Hydroware
12		8620063	Shaft information bracket		Hydroware
13		8620102	Final limit curve (switch on the wall)		Hydroware
14		8621001	Final limit switch wall fixing		Hydroware
15		8670098	Cable EKK 3G1,5	L= shaft top to control node	Selga

Tab. 3.7 Shaft information