

 hydroware elevation technology ab Box 66, Fabriksgatan 13 SE-342 21 ALVESTA, Sweden	Hydroelite 3G-1 Troubleshooting Ver. 2 Drive and control system	Technical Documentation	
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	SERVICE	BB/LAK/PF	Side 1

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1 Introduction

This troubleshooting instruction describes known faults which can be corrected without use of a PC.
For advanced troubleshooting, see T 100 34.

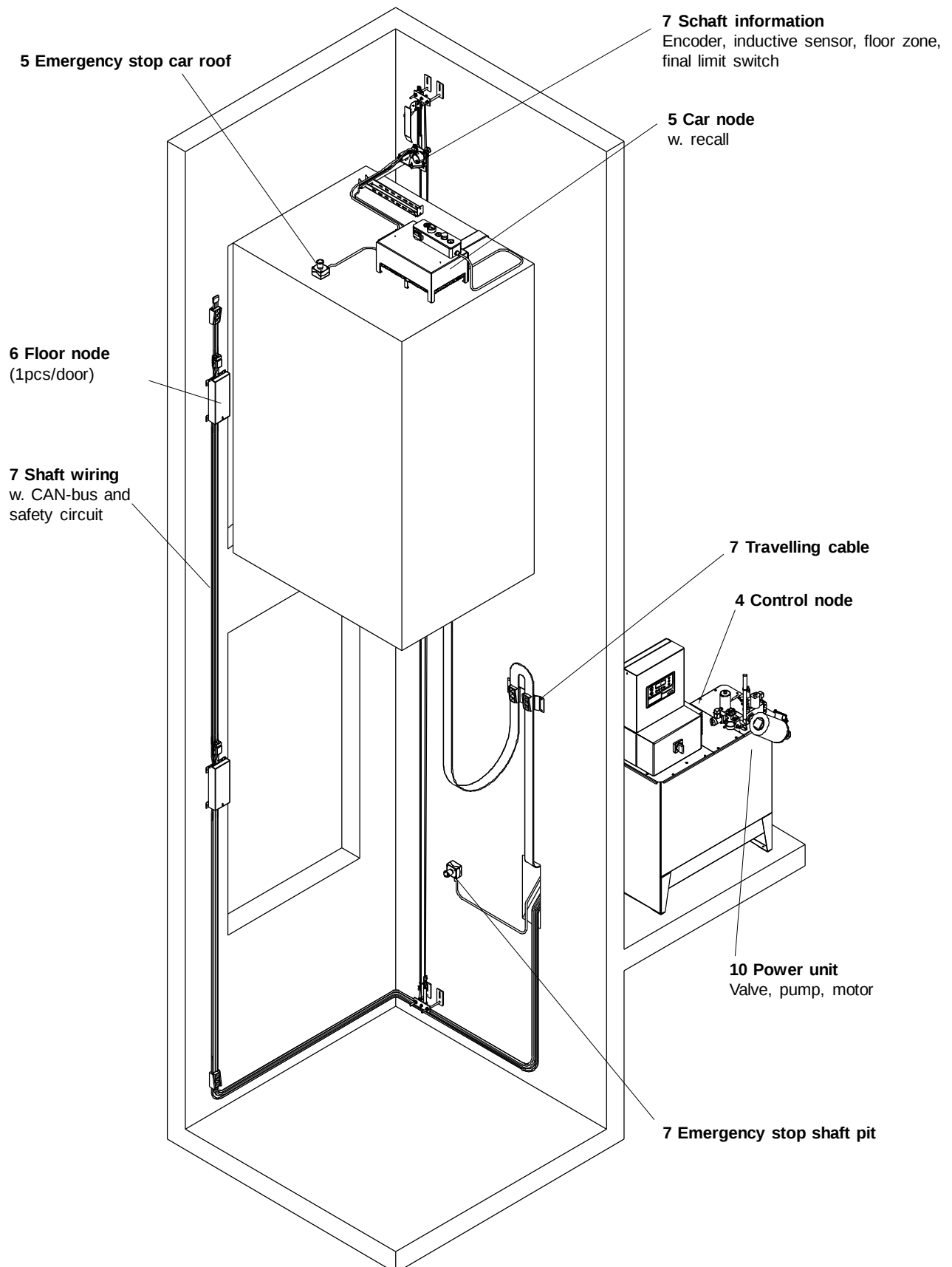


Fig. 1 System overview, Hydroelite

2 Control panel

In front of the Hydroelite control node there is a control panel with display. Complete description of the control node and its display function are described in instruction T 100 37 Control node menu.

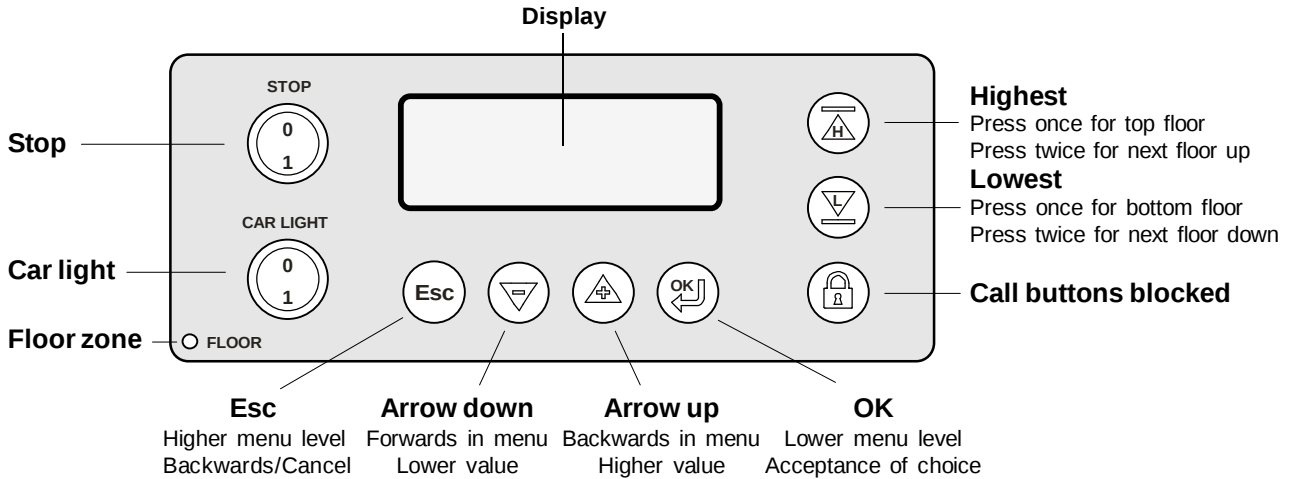


Fig. 3.1 Control panel

LIFT CAR

- Stop** - switch that gives/recalls stop command to lift car
- Car light** - switch that lights/unlights the car light
- Floor** - Yellow LED that lights when lift car is within floor zone
- Highest** - Button to make travel command upwards; press once for travel to top floor, and twice for travel to next floor in up-direction
- Lowest** - Button to make travel command downwards; press once for travel to bottom floor, and twice for travel to next floor in down-direction
- Call buttons blocked** - Button to block /unblock calls

DISPLAY

- Esc** - Button to step to higher menu level, and for step backwards or cancelling menu choices
- Arrow down** - Button to step forwards within menu level, and decrease digits/values at parameter adjustments
- Arrow up** - Button to step backwards within menu level, and increase digits/values at parameter adjustments
- OK** - Button to step to lower menu level, and for accept new parameter adjustments.

2.1 Display view

2.1.1 Description of display modes

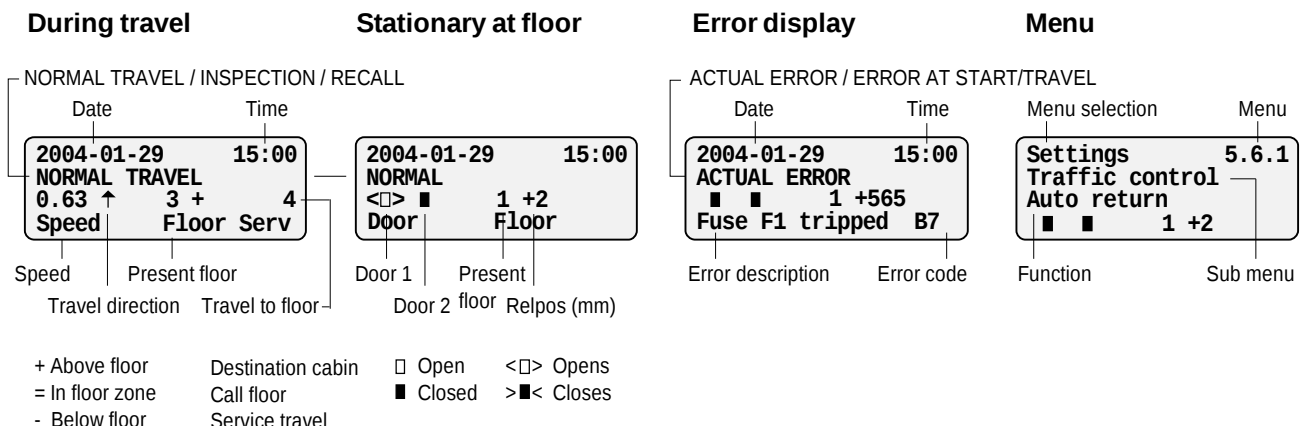


Fig. 2.2 Display modes

2.1.2 Display view of safety circuit

Menu level 1.5 shows the safety circuit in connected order with start at terminal P201 (supply safety circuit)

I = closed contact

o = open contact

- = node inactive

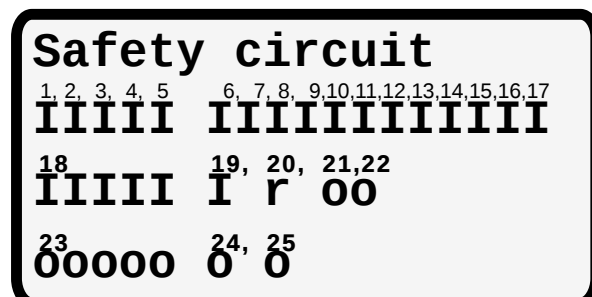


Fig. 2.3 Menu level 1.5 ,safety circuit

	Terminal no. no connection	Terminal no. sensor	Description	Error code
Control node:				
1.	P201:1-2	P201:1	Supply to safety circuit	B7
2.	P202:7-8	P202:7	Emergency stop Panel	B1
3.	P202:3-6	P202:3	Emergency stop Pit	B2
4.	P202:1-2	P202:1	Slack rope switch Pit	B8
5.	P203:6-7	P203:6	Emergency stop Recall handle	F6
Car node:				
6.	P204:11-12(m.r.)	P670:12	Final limit switch, shaft mounted	J6
7.	X6:101-102	P670:11	Final limit switch, car roof mounted	L2
8.	X6:102-104	P670:10	Safety gear switch	J5
9.	X6:104-106	P670:9	Slack rope switch/top runby buffer	J3
10.	X6:106-108	P670:8	Emergency stop car roof	G2
11.	X6:108-110	P670:7	Emergency stop car	G1
12.	X6:110-112	P670:6	Movable sill flap	J2
13.	X6:112-114	P670:5	Movable car flap	J1
14.	X6:114-115	P670:4	Trap door	G7
15.	P633:7,8-6	P670:3	Emergency stop car roof panel	G4
16.	X6:116-117	P670:2	Car door 1 closed	G5
17.	X6:117-118	P670:1	Car door 2 closed	G6
Floor nodes:				
18.	P1:2-1	P1:2	Closed landing door / floor	N1->N8 (side1) X1->X8 (side2)
Control node:				
19.	P204:3-2	P204:3	Closed landing door return from last node	R8
Car node:				
20.	r/R		Travel relay K609 (R=active, r=inactive)	G8
21.	X6:119-120	P671:4	Locking contact car door 1	G8
22.	X6:120-121	P671:3	Locking contact car door 2	G9
Floor nodes:				
23.	P8:2-3	P8:2	Locked landing door / floor	M1->M8 (side1) Y1->Y8 (side2)
Car node:				
24.	P208:5 (m.r. node)	P608:5	Safety circuit end	G3
25.	Relay K204/206		Safety circuit relay	C1/E4

2.2 Error - and information codes

The display shows the current error or information code or that error that interrupt the latest travel or start attempt.

The system holds a error log, a caution log and an information log (1.2 System log) which in each case holds up to thirty error- or information codes in reverse chronological order, i.e. the latest error is shown first (1.2.1.1 Latest error)

The log also shows when every error occurred (date and time) and at which floor and position and also in which mode the error occurred (at start, during travel or stationary at floor).

The error log (1.2.1) stores:

1. Blocking error s(are reset by ESC)
2. Errors that have prevented a serie of start attempts

The caution log (1.2.2) stores:

1. Errors that are blocking but do not interrupt a travel or a start attempt.
2. Errors that occur stationary a floor e.i. door opening/closing errors.

The Information log (1.2.3) stores:

1. Occurrences that interrupt a travel or start attempt, but normally are not an error e.i. emergency stop button, photocell.

There are also a Total log (1.2.4) which contains all the three backlogs in chronological order and also a short description of all error codes. (1.2.5 Info, all errors).

When login, it is possible to retrieve the logs.

Error and information log is not erased at power failure.

The possible error and information codes are listed in the following table together with short descriptions, suggestions on what might have caused the errors and possible actions.



Error blocks upwards travels



Error blocks all travels

If the error blocks the lift, the blocking can be removed by pressing the ESC-button on the display.

Code	Description	Possible Cause	Suggested Action
ERR A1	No upstart due to overheated motor windings	Motor is overheated Thermistor, connected to X3:7-8 (P213:7-8)	Wait for motor to cool down. Check out the motor Search for rupture in the wiring/ Thermistor function error
ERR A2	No upstart due to one/more thyristors of softstarter being already active	Contactor K1 active, contacts are welded together Short circuit in at least one of the thyristors TY1 Softstarter board error	Check out the contactor Check out the thyristor module Replace the softstarter board
ERR A3	No upstart due to overheated oil	Oil temperature exceeds 70°C Thermistor, connected to X3:5-6 (P213:5-6)	Wait for oil to cool down Search for rupture in the wiring/ Thermistor function error
ERR A4	No downstart, or upstart cancelled after 3s due to system pressure below min limit	Hose rupture Pressure guard min press. X3:9-10 (P213:9-10)	Check out the hose Search for the break/function error in pressure guard
ERR A5	No upstart due to phase error	Incoming phase rotation faults A least one phase is missing Softstarter board error	Exchange two phases Search for blown fuse or some kind of break Replace softstarter board
ERR A6	No upstart due to top of ramp signal being already active	Softstarter board error	Replace softstarter board
ERR A7	No upstart due to Top of ramp signal came too late during previous start	Motor size incorrect set on softstarter board Softstarter board error	Choose correct motor size acc. table 4.1 Replace softstarter board
ERR B1	Emergency stop controller	Emergency stop on panel pressed, safety circuit open at P202:7	Reset emergency stop button
ERR B2	Emergency stop pit	Emergency stop in shaft pit pressed, safety circuit open at P202:5 or 3	Reset emergency stop button
ERR B3	High system pressure	Overloaded lift car Pressure guard is maladjusted Interruption/function error on pressure guard or wiring, connected to X3:1-2 (P213:1-2)	Unload the overload Adjust the pressure guard Search for interruption/function error in pressure guard/wiring
ERR B4	No upstart due to relay K205 is active before start	Relay K205 in controller faults	Replace control node board
ERR B5	No upstart due to relays K201,203 are active before start	Relays K201,203 in controller fault	Replace control node board
ERR B6	No start due to relays K204,206 are active before start	Travel relay K609 is not deenergized, i.e. safety circuit is closed up to relays K204,206 (P208:5) Fault connection that bridges relay K609 Relays K204,206 in controller fault	Check out relay K609 / replace car node board Check out the connection Replace control node board
ERR B7	Fuse F1 tripped / No supply to safety circuit	Fuse F1 (or F8, 110V trafo) tripped, Safety circuit open at P201:1 Short circuit in safety circuit Too high load of safety circuit due to supply to retracting ramp/pawl device	Reset fuse/s Take actions of short circuit Decrease the power consumption to below fuse value(F1)
ERR B8	Slack rope pit	Slack rope contact in pit activated, safety circuit open at P202:1	Reset the contact
ERR C1	No start due to relay are K204, 206 inactive	System nodes/sensors report no interruptions in the safety circuit Relays K204, 206 in controller fault, inactive though closed safety circuit at P208:5	Check out the safety circuit at P208:5 Replace control node board

Code	Description	Possible Cause	Suggested Action
ERR C2	No upstart due to contactor K1 is active before start	K1:31-32 not released before start	Check out help contact K1:31-32
		Contactor K1 active, contacts welded together	Replace the contactor
		Contact in relay K205 is welded together	Replace the control node board
		Short circuit in transistor that controls relay K205	Replace the control node board
ERR C3	No upstart due to contactor K1 is inactive at start attempts	K1:31-32 not pulling in when contactor is active	Check out help contact K1:31-32
		Contactor faults	Replace the contactor
		Supply is missing to K1:A1 (P215:7)	Check out the supply by relays K205, K206 / K204, replace the control node board
		Transistor that controls relay K205 faults	Replace the control node board
ERR C4	No upwards start due to softstarter inactive	Softstarter board faults	Replace the softstarter board
ERR C5	No upwards start due to servo voltage faults	Servo valve contact disconnected	Reconnect/Check out the contact
		No voltage X3:3-4 (P213:3-4)	Search for break
		The final stage transistor that controls the servo coil current, faults	Replace the control node board
		Servo valve faults	Replace the servo valve (see 10.5)
ERR C6	No downwards start due to lack of servo current through servo valve coil	Servo valve contact disconnected	Reconnect/Check out the contact
		No voltage X3:3-4 (P213:3-4)	Search for break
		The final stage transistor that controls the servo coil current, faults	Replace the control node board
		Servo valve faults	Replace the servo valve (see 10.5)
ERR E1	Stopped during up travel due to overheated motor	Motor is overheated	Wait for motor to cool down. Check out the motor
		Thermistor, connected to X3:7-8 (P213:7-8)	Search for rupture in the wiring/ Thermistor function error
ERR E2	Stopped during up travel due to thyristor inactive	Soft starter board error	Replace the softstarter board
ERR E3	Stopped during travel due to system pressure has fallen below its lower limit	Hose rupture	Check out the hose
		Rupture valve released	Check out set value
		Pressure guard min pressure X3:9-10 active (P213:9-10)	Search for rupture in the wiring/ Pressure guard function error
ERR E4	Stopped during travel due to relays K204, 206 is inactive (safety circuit open)	System nodes/sensors report no interruptions in the safety circuit (possibly a very short interruption)	Check out the safety circuit at P208:5
ERR E5	Stopped during uptravel due to contactor K1 is inactive	K1:31-32 closed when contactor is active	Check out help contact K1:31-32
		Contactor faults	Replace the contactor
		Supply is missing to K1:A1 (P215:7)	Check out the supply by relays K205, K206 / K204
		Transistor that controls relays K205 faults	Replace the control node board
ERR E6	Stopped during up travel due to phase error	At least one phase is missing to main supply	Check out the fuses or search for break
ERR E7	Stopped during up travel due to motor run time error	Full speed up reduced	Check out servo valve, pump and leakage in hose and pulse damper See T10033 9
ERR F1	Software -timing error	Control node board faults	Replace the control node board
		Program error	Contact Hydroware
ERR F2	Software -Watchdog error	Control node board faults	Replace the control node board
		Program error	Contact Hydroware

Code	Description	Possible Cause	Suggested Action
ERR F4	Recall missing voltage at P203:8	Recall missing voltage at P203:8	
ERR F5	Recall call when not in recall mode P203:5	This travel type needs normal mode recall P203:5	Reset to normal mode
ERR F6	Recall do not complete the safety circuit when start command is sent.	Emergency stop or recall switch in wrong mode Contacts for safety circuit on up/down button out of order Safety circuit open at P203:6	Reset emergency stop or switch on recall Check out contacts for safety circuit on up/down button
ERR F7	High temperature in machine room Sensor on control node board	Too high temperature in controller Control node board faults	Wait for temperature in the machine room has cool down. Check out the controller Replace control node board
ERR F9	Buffer pawl device 2 active during down travel	Lift car stand on stoplug Buffer contact out of order or maladjusted No 24V on P208:2	Run the lift off stoplug (Run off travel is automatically done) Check out the contact
ERR G1	Emergency stop in car	Emergency stop button in car is pressed safety circuit is open at P670:7(X6:108-110)	Check out the cause of emergency stop
ERR G2	Emergency stop on car roof	Emergency stop button on car roof is pressed safety circuit is open at P670:8(X6:106-108)	Reset the emergency stop button
ERR G3	Safety circuit open at P208:5 (sensor is placed at P608:5)	No voltage at P208:5 (P608:5) Landing nodes report no interruptions in the safety circuit	Check out safety circuit at P208:5 Fault connection of door locking circuit No communication to floor nodes
ERR G4	Stop car roof panel	Emergency stop on car roof panel pressed Contacts for safety circuit on up/down button out of order at inspection travel, safety circuit open at P633:6	Reset the emergency stop button Check out contacts for safety circuit on up/down button
ERR G5	Car door 1 open	Car door side 1 open, safety circuit open at P670:2(X6:116-117)	Check out and close car door side 1
ERR G6	Car door 2 open	Car door side 2 open, safety circuit open at P670:1(X6:117-118)	Check out and close car door side 2
ERR G7	Trap door car open	Trap door car open, safety circuit open at P670:4(X6:114-115)	Close the trap door in car
ERR G8	Car door 1 unlocked	Car door side 1 unlocked safety circuit open at P671:4(X6:119-120) K609, travel relay inactive	Check out locking contact car door side 1 Check out travel relay, Replace car node board
ERR G9	Car door 2 unlocked	Car door side 2 unlocked safety circuit open at P671:3(X6:120-121)	Check out locking contact car door side 2
ERR H1	1. No speed signal in upstart despite max servo valve current 2. Lift emergency stopped just after start	Pressure relief valve is active Air in system at commissioning Too low supply voltage to servo valve Servo valve error Pilot filter up is clogged Fault information from encoder/control node board	Unload if overload. Adjust pressure relief valve (see T10033 11) Repeat start procedure Check bypass pressure (see 10.1.3) Check servo (see 10.1.1), replace if required (see 10.5) Check / replace pilot filter (see 10.9) Check out the encoder and its rope system incl. suspension and and gear belt. Replace if required.
ERR H2	Stopped during uptravel due to disappearance of speed signal	Pressure relief valve is active Fault information from encoder/control node board	Unload if too much load. Adjust pressure relief valve(see T10033 11) Check out the encoder and its rope system incl. suspension and and gear belt. Replace if required.

Code	Description	Possible Cause	Suggested Action
ERR H3	No speed signal in downstart despite min servo valve current	VMD cannot open Check valve VR near pressure relief valve not close Fault information from encoder/control node board	Check out the function by manually affect the VMD valve Search for break in the wirings Replace the coil If required, replace the VMD valve Dismantle VMD under M8-screw, check for dirt Check out the encoder and its rope system incl. suspension and and gear belt. Replace if required.
ERR H4	No speedsignal in downstart, or stopped during downtravel due to disappearance of speedsignal	Rupture valve tripped VMD cannot open Check valve VR near pressure relief valve not close Fault information from encoder/control node board	Check out the hose or adjust the valve (see T10033 and T10015 4.6) Check out the function by manually affect the VMD valve Search for break in the wirings Replace the coil If required, replace the VMD valve Dismantle VMD under M8-screw, check for dirt Check out the encoder and its rope system incl. suspension and and gear belt. Replace if required.
ERR H5	Stopped during a downtravel due to overspeed	Servo valve error Power failure in servo supply Fault information from encoder/control node board	Check servo (see 10.1.1), replace if required (see 10.5) Search for break in the wirings Check out the encoder and its rope system incl. suspension and and gear belt.
ERR H6	Abnormal stop after downtravel due to VMD not closing.	VMD stucked	Check out the function by manually affect the VMD valve Search for break in the wirings Replace the coil If required, replace the VMD valve
	NOTE: Do not switch off the main switch until the lift has been emergency lowered to the bottom floor! (Use the manual emergency lowering equipment)	VRP cannot close	Check out the VRP valve
		VMD coil do not became deenergized, due to short circuit in the transistor that contols VMD Fault information from encoder/control node board	Replace the control node board Check out the encoder and its rope system incl. suspension and and gear belt. Replace if required
ERR H7	Stopped during uptravel after passed the destination floor with more than 10 mm	Hydraulic parameters fault Servo valve error Fault information from encoder/control node board	Delete Learn hydraulic travel and switch on/off the power, make a new Learn hydraulic travel (see T10033 5) Check the servofilters, replace if required (see T10005 5.3) Check out the encoder and its rope system incl. suspension and and gear belt. Replace if required
ERR H8	Speed was indicated during the air bleeding procedure	Start from buffer Servo valve error	Make a new start Replace the servo valve (see T10005 9)

Code	Description	Possible Cause	Suggested Action
ERR H9	The speed exceeded 0.3 m/s while releveling to floor	Too low supply feed to servo valve Servo valve error	Check bypass pressure (see 10.1.3) Check servo (see 10.1.1), Replace if required (see 10.5)
ERR J1	Roof flap open	Roof flap at swing door active, safety circuit open at P670:5 (X6:112-114)	Search for cause to emergency stop Reset the roof flap
ERR J2	Sill flap open	Sill flap at swing door active, safety circuit open at P670:6 (X6:110-112)	Search for cause to emergency stop Reset the sill flap
ERR J3	Slack rope car or overspeed governor	Slack rope car or overspeed governor active, safety circuit open at P670:9 (X6:104-106)	Search for cause to emergency stop Reset the switch
ERR J4	Blocked car after final limit switch is activated (see ERR J6)	Lift has activated the final limit switch, connected at P204:11	Search for cause to emergency stop Reset the blocking by Esc-button
ERR J5	Safety gear tripped	Safety gear contact released, safety circuit open at P670:10 (X6:102-104)	Search for cause to emergency stop Reset the safety gear device
ERR J6	Final limit switch activated	Final limit switch, shaft-mounted, activated safety circuit open at P204:11	Search for cause to emergency stop Reset the limit switch
ERR J7	Communication error car node	Short circuit in bus-system 24 V on car roof overloaded Interference from external component Car node faults	Check the resistance between bus-wirings (see 9) Measure/check power consumption on car roof (max 2A) Separate low and high voltage signals. Mount interference eliminator on connected magnets/motors (see T10060) Replace car node board
INFO J8	Emergency stop photocell, swing door	Photocell beam is broken Break/function error of photocell or wiring, connected to programmable input	Search for cause to emergency stop Search for break/function error on photocell / wiring
INFO J9	Fulload pressure	Load in car is more than 75% of max load Pressure switch is maladjusted Break/function error of pressure switch or wiring, connected to X3:11-12 (P213:11-12)	Unload Adjust the pressure switch Search for break/function error on pressure switch / wiring
ERR K2	Buffer pawl device 1 activated at down travel	Lift car stand on stoplug Buffert contact faults or maladjusted No 24V at P672:9 (X6:76)	Run the lift off stoplug (Run off travel is automatically done) Check the contact
ERR K4	Pawl device 2 in not extend position before upwards start	Pawl device stucked in not extend position Lift is stopped with pawl device against stop lug Pawl device contact faults or maladjusted KKN2 open, No 24V at P672:4 (X6:74)	Check pawl device Run off travel is automatically done if lift is beyond floor zone Check contact
ERR K5	Pawl device 2 in not retract position at start upwards	Pawl device magnet not functions Lift is stopped on stop lug Pawl device contact faults or maladjusted KKN2 closed, 24V at P672:4 (X6:74)	Check supply voltage/magnet Run off travel is automatically done if lift is beyond floor zone Check contact
ERR K7	Pawl device1 in not extend position before start upwards	Pawl device stucked in not extend position Lift is stopped with pawl device against stop lug Pawl device contact faults or maladjusted KKN1 open, no 24V at P672:6 (X6:72)	Check out pawl device Run off travel is automatically done if lift is beyond floor zone Check contact

Code	Description	Possible Cause	Suggested Action
ERR K8	Pawl device 1 in not retract position at start upwards	Pawl device magnet not functions Lift is stopped on stop lug Pawl device contact faults or maladjusted KKN1 closed, 24V at P672:6 (X6:72)	Check supply voltage/magnet Run off travel is automatically done if lift is beyond floor zone Check contact
ERR K9	Pawl device 2 in not retract position at down travel	Pawl device magnet not functions Lift is stopped on stop lug Pawl device contact faults or maladjusted SKN2 open, no 24V at P672:5 (X6:73)	Check supply voltage/magnet Run off travel is automatically done if lift is beyond floor zone Check contact
ERR L1	Pawl device 1in not retract position at down travel	Pawl device magnet not functions Lift is stopped on stop lug Pawl device contact faults or maladjusted SKN2 open, no 24V at P672:7 (X6:71)	Check supply voltage/magnet Run off travel is automatically done if lift is beyond floor zone Check contact
ERR L2	Final limit switch, car roof mounted, is activated	Safety circuit open at P670:11 (X6:101-102)	Search for cause to emergency stop Reset switch
ERR L3	Blocked car after final limit switch is activated (see ERR L2)	Lift has activated final limit switch, connected at P670:11 (X6:101-102)	Search for cause to emergency stop Reser blocking by Esc-button
ERR L4	Relay K205 active	Error at relay K205 in control node	Replace control node board
ERR L5	Relay K205 inactive	Error at relay K205 in control node	Replace control node board
ERR L6	Floor zone sensor GZ permanent active	Sensor GZ is active between two floors 24V between P632:1-2 (sensor P210:2)	Check/replace sensor GZ
ERR L7	Photocell active before start	Photocell receivers are active when lift is stationary, connected to programmable input	Check/replace photocells
ERR L8	Levelling speed is higher than max - levelling speed during deceleration (Speed is adjustable in menu 5.5.4.3)	Too low supply pressure to servo valve Servo valve error Fault set value in menu 5.5.4.3 Fault information from encoder/control node board	Check bypass pressure (see 10.1.3) Check servo (see 10.1.1), Replace servo if required (see 10.5) Check / change value Check out the encoder and its rope system incl. suspension and gear belt. Replace if required
ERR L9	Levelling zone passed at deceleration and early door opening is activated (Levelling zone is adjustable in menu 6.1.4.3.1)	Hydraulic parameters fault Servo valve error Fault information from encoder/control node board	Cancel learn hydraulic travel and switch on/off the power and make a new learn hyd.travel (see T10033 5) Check servo (see 10.1.1), Replace servo if required (see 10.5) Check out the encoder and its rope system incl. suspension and gear belt. Replace if required
ERR M(n)	Landing door floor (n) side 1 open	Door contact closed door (swing door) not closed Safety circuit open at P1:2	Check door contact closed door Check wiring routing
ERR N(n)	Landing door floor (n) side 1 unlocked	Door contact locked door not closed Retracting ramp not functions Safety circuit open at P8:2	Check door contact locked door Check retracting ramp magnet / supply Check wiring routing

Code	Description	Possible Cause	Suggested Action
ERR N9	Door reversal contact active Door is full opened and refuses closing	Photocell, light barrier or close force limiter active No +24V at: Side 1 P901:4 Side 2 P902:4	Remove foreign objects that prevents door closing Check photocells / contacts Check wiring routing
ERR O(n)	Node at floor (n) side 1 no communication	No bus communication with or power supply to floor node There are no node with correct address Floor node faults	Check connections Check address switches Replace floor node
ERR O9	Switch SW201 (ON) (switch for force operation)	Switch SW201 on control node board is not in normal mode	Set switch SW201 on control node board in normal mode
ERR P1	Learn floor travel up is not accepted	Floor zone information faults Fault information from encoder/control node board	Check floor zone sheet metal Check out the encoder and its rope system incl. suspension and and gear belt.
ERR P2	Learn floor travel down is not accepted	Floor zone information faults Fault information from encoder/control node board	Check floor zone sheet metal Check out the encoder and its rope system incl. suspension and and gear belt.
INFO P3	Power failure System is supplied by battery backup	Main switch off Power failure incoming phases	Switch on main switch Check incoming phases
ERR P4	Speed during a downtravel decreased by 30% from maxspeed during this downtravel	Rupture valve has tripped Temporarily pressure drop in the system	Check the rupture valve Search for foreign objects in the hose system (eg. forgotten plastic plug)
ERR P6	Learn hydraulic travel is not accepted due to too low max servo current is learned (<25 000)	Servo valve error	Check the stick-out on the servo valve (see 10.1.4) Adjust the servo screws (see 10.1.2) Replace servo valve (see 10.5)
ERR P7	Learn hydraulic travel is not accepted due to too high max servo is learned (>29 000)	It can depend on a bad run on the guide rails or a fault in the servo valve	Check the stick-out on the servo valve (see 10.1.4) Adjust the servo screws (see 10.1.2) Replace servo valve (see 10.5)
INFO P8	Warning of too high max servo current is learned (>28 000) Learn hydraulic travel is accepted.	It can depend on a bad run on the guide rails or a fault in the servo valve	If lift runs normally, take no actions. Otherwise: Check the stick-out on the servo valve (see 10.1.4) Adjust the servo screws (see 10.1.2) Replace servo valve (see 10.5)
INFO P9	1. Learn hydraulic travel is not accepted due to max speed is not learned in up travel	Up travel has been interrupted to early or is not performed at all Fault information from encoder/control node board	Kör en längre uppresas Check out the encoder and its rope system incl. suspension and and gear belt. Replace if required.
	2. Max servocurrent has neither been learned in up travel nor in down travel	It can depend on a bad run on the guide rails or a fault in the servo valve	Check the stick-out on the servo valve (see 10.1.4) Adjust the servo screws (see 10.1.2) Replace servo valve (see 10.5)

Code	Description	Possible Cause	Suggested Action
INFO Q1	Disabled call buttons	Button "Call buttons blocked" has been pressed	Press button "Call buttons blocked" (at the bottom right of display) again
INFO Q2	Alarm activated	Alarm button has been pressed and relay K208 for alarm forwarding is active	Reset relay K208 by ESC-button
INFO Q3	Fire alarm activated Lift disabled	Fire alarm function is active, switch or signal from building	Reset switch
ERR Q5	Relevelling speed is higher than 0.3 m/s with open door	Hydraulic parameters fault Servo valve error Fault information from encoder/control node board	Cancel learn hydraulic travel and switch on/off the power and make a new learn hyd.travel (see T10033 5) Check servo (see 10.1.1), Replace servo if required (see 10.5) Check out the encoder and its rope system incl. suspension and and gear belt. Replace if required
ERR Q5	Relevelling zone passed at relevelling with open door (relevelling zone is adjustable in menu 6.1.4.3.1)	Hydraulic parameters fault Servo valve error Fault information from encoder/control node board	Cancel learn hydraulic travel and switch on/off the power and make a new learn hyd.travel (see T10033 5) Check servo (see 10.1.1), Replace servo if required (see 10.5) Check out the encoder and its rope system incl. suspension and and gear belt. Replace if required
ERR Q7	Limit switch Door open is not activated Door open sequence runs out of time (15s)	Limit switch "full opened door" faults Voltage not switched off: side 1 P901:2 side 2 P902:2	Check / replace contact Check connections / wiring
ERR Q8	Limit switch Door closed is not activated Door open sequence runs out of time (15s)	Limit switch "closed door" faults Safety circuit is not been closed: side 1 P670:2 (X6:116-117) side 2 P670:1 (X6:117-118)	Check / replace contact Check connections / wiring
ERR Q9	Start attempt error Internal start attempt has fault values	Program error	Contact Hydroware
ERR R1	Overload switch External activated (must be set lower than pressure switch PH (see ERR B3))	Overload car Interruption/function error of switch or wiring, connected to programable input	Unload overload Search for break/function error in switch/wiring
INFO R2	Fulload switch External activated Function is set as extra input.	Lasten i hisskorgen är > 75% av maxlast Switch is maladjusted Interruption/function error of switch or wiring, connected to programable input	Unload overload Adjust switch Search for break/function error in switch/wiring
INFO R3	Minload switch External activated (destination is blocked at empty car)	No load in lift car Switch is maladjusted Interruption/function error of switch or wiring, connected to programable input	Enter the lift and destinate Adjust switch Search for break/function error in switch/wiring
ERR R4	No bus communication with floor nodes or car node	see ERR J7(car node) and ERR Z9(floor nodes)	
INFO R5	Fireman control active	Fireman control function is activated, switch or signal from building	Reset the switch
ERR R6	Security bar pit activated	Security bar in pit is raised Safety circuit open at P202:5 or 3	Reset the security bar Search for break/function error in switch/wiring

Code	Description	Possible Cause	Suggested Action
ERR R8	Landing door open (any door in safety circuit is open)	Door contact closed door (swing door) not closed Safety circuit open at P204:3	Check door contact closed door Check wiring routing
ERR R9	Landing door unlocked (at "one floor node in machine room" for connection of all doors)	Door contact locked door (swing door) is not locked Retracting ramp do not functions Safety circuit open at P8:2	Check door contact locked door Check retracting ramp magnet / supply Check wiring routing
ERR S1	Orderspecific error		
ERR S2	Low oil level	Oil leakage somewhere in system Interruption/function error of switch or wiring, connected to programable input	Check all hydraulic system Refill oil Search for break/function error in switch/wiring
ERR S3	Encoder is not initiated	Power is on without connected encoder Fault at power supply / wiring routing Fault information from encoder/control node	Switch off the power and restart Check voltage and connections Replace if required
ERR S4	Abnormal stop beyond floor zone	Pressure relief valve has been tripped during deceleration up Servo valve error	Unload if overload Adjust the pressure relief valve (see T10033 11) Check servo (see 10.1.1), Replace servo if required (see 10.5)
ERR T1	Door do not open despite voltage at opened relays K604 (side 1) K600 (side 2)	No power supply to door machinery Fuse to door machinery is tripped If relay K62/K64 is used, relay faults The door mechanics/electronics do not function	Check and reset fuse Check / replace relay Check the door
ERR T2	No opening door movement side 1 or 2	Emergency stop button on car roof is pressed Limit switch door open is not closed No +24V voltage at P901:2 (side 1) P902:2 (side 2)	Reset emergency stop Check contact Check power supply / bridges from P661:6
ERR T3	Door is not closing despite voltage at opened relays K605 (side 1) K601 (side 2)	No power supply to door machinery Fuse to door machinery is tripped If relay K61/K63 is used, relay faults The door mechanics/electronics do not function	Check and reset fuse Check/replace relay Check the door
ERR T4	No doorclosing movement side 1 or 2	Emergency stop button on car roof is pressed Limit switch door close is not closed No +24V voltage at P901:3 (side 1) P902:3 (side 2)	Reset emergency stop Check contact Check power supply / bridges from P661:6
INFO T5	Swing door open more than 10 minutes	Swing door is blocked in open position when lift is within floor zone (also see ERR M1-M8, X1-X8)	see ERR M1-M8, X1-X8
ERR T6	Floor node with safety switch has no communication Safety switch: Contacts lowpit/top Fire recall switch FiremanCtrl switch	see ERR 01-08, Z1-Z8	see ERR 01-08, Z1-Z8
ERR U1	Emergency stop in uptravel: Speed/servo current error Speed has not been decreased correspondingly to the servo current, during a deceleration to top floor. Lift runs the risk of entering the final limit	Servo valve error Fault information from encoder/control node board	Check the stick-out on the servo valve (see 10.1.4) Adjust the servo screws (see 10.1.2) Replace servo valve (see 10.5) Check out the encoder and its rope system incl. suspension and gear belt. Replace if required

Code	Description	Possible Cause	Suggested Action
ERR U2	Emergency stop during down travel: Speed/Servo current down faults Speed has not been decreased correspondingly to the servo current, during a deceleration to bottom floor. Lift runs the risk of entering the final limit	Servo valve error Fault information from encoder/control node board	Check the stick-out on the servo valve (see 10.1.4) Adjust the servo screws (see 10.1.2) Replace servo valve (see 10.5) Check out the encoder and its rope system incl. suspension and gear belt. Replace if required
ERR U3	1. Floor zone signal disappeared during relevelling up 2. Lift has passed floor zone during relevelling up	Floor zone sheet metal has been moved outside the sensor zone, at relevelling Servo valve error	Adjust suspension of floor zone sheet metal / sensor Check bypass pressure (see 10.1.3) Check servo (see 10.1.1), Replace if required (see 10.5)
ERR U4	1. Floor zone signal disappeared during relevelling down 2. Lift has passed floor zone during relevelling down	Floor zone sheet metal has been moved outside the sensor zone, at relevelling Servo valve error	Adjust suspension of floor zone sheet metal / sensor Check bypass pressure (see 10.1.3) Check servo (see 10.1.1), Replace if required (see 10.5)
ERR U5	Sensor for floor zone GZ is active outside floor zone	Floor zone sheet metals has been moved without a new learn floor travel has been done Sensor has indicated a foreign metal object without floor zone Encoder position has been moved in relation to the floor zone 24V between P632:1-2 (sensor at P210:2)	Make a new learn floor travel Check/Search for metal objects close to the sensor Check encoder and its suspension incl. gear belt and gear wheel Check/replace sensor GZ
ERR U6	Sensor for floor zone GZ is inactive inside floor zone	Floorzone sheet metal is missing at deceleration to floor Floorzone sheet metal has been moved outside the sensor zone at deceleration to floor Encoder position has been moved in relation to the floor zone No 24V between P632:1-2 (sensor at P210:2)	Mount a new floor zone sheet metal and make a new learn floor travel Adjust the suspension of floor zone sheet metal / sensor Check encoder and its suspension incl. gear belt and gear wheel Check/replace sensor GZ
ERR U7	Lost servo current during down travel Lift speed has probably increased some and then emergency stopped	Power failure in circuit to servo valve The outputstage transistor that controls the power to the servo, faults	Check power supply circuit Replace control node board
ERR U8	Door overbridging relay active at start (Relay K607,K608)	Car node board faults	Replace car node board
ERR U9	Door overbridging relay active before door opening	Car node board faults	Replace car node board
ERR V1	Door overbridging relay became inactive during door opening	Floorzone sheet metal has been moved outside sensor zone at deceleration to floor	Adjust the suspension of floor zone sheet metal / sensor
ERR V2	Sabotage switch behind car panel activated	Car panel has been removed Interruption/function error of switch or wiring, connected to programmable input	Restore car panel Search for break/function error in switch/wiring
ERR V3	Extra contact low pit active	Contact in security carpet or door is activated Interruption/function error of switch or wiring, connected to programmable input	Reset blocking by Esc-button Search for break/function error in switch/wiring
INFO V4	Auxiliary power Lift disabled	Auxiliary power of the buldning is active, Info Interruption/function error of switch or wiring, connected to programmable input	 Search for break/function error in switch/wiring

Code	Description	Possible Cause	Suggested Action
INFO V5	Priority travel in car	Information Interruption/function error of switch or wiring, connected to programmable input	Search for break/function error in switch/wiring
INFO V6	"Out of service"-switch activated	Information Interruption/function error of switch or wiring, connected to programmable input	Search for break/function error in switch/wiring
INFO V7	Lift parked	Information Interruption/function error of switch or wiring, connected to programmable input	Search for break/function error in switch/wiring
ERR V8	Hidden Door contact landing door inactive (Extra door contact)	Landing door safety circuit is closed, but not the extra door contact, connected to programmable input	Search for break/function error in switch/wiring
ERR V9	Extra contact low top activated	Contact in security carpet on car roof or door is activated Interruption/function error of switch or wiring, connected to programmable input	Reset blocking by Esc-button Search for break/function error in switch/wiring
ERR X(n)	Landing door floor (n) side 2 open	Door contact closed door (swing door) not closed Safety circuit open at P1:2	Check door contact closed door Check wiring routing
ERR X9	Door reversals more than 10 times without that door has been closed. Closing force limiter or photocell is activated at every door closing	Foreign object in door opening prevents door closing Photocell/closing force limiter faults (side 1 P901:4, side 2 P902:4)	Check and clean door opening Search for break/function error in switch/wiring
ERR Y(n)	Landing door floor (n) side 2 unlocked (not main side)	Door contact locked door is not closed Retracting ramp do not functions Safety circuit open at P8:2	Check door contact locked door Check retracting ramp magnet/ power supply Check wiring routing
ERR Y9	Door reversal button activated	Door button, Destination buttons or Call buttons keeps the door open	Check buttons
ERR Z(n)	Floor node at floor (n) side 2 no communication (not main side)	No bus communication with or power supply to floor node There are no floor node with correct address Floor node faults	Check connections Check address switches Replace floor node board
ERR Z9	No communication with floor nodes	No bus communication with or power supply to any floor node There are no floor node with correct address Floor nodes fault	Check connection in machine room (X1, P204:7-10) Check address switches Replace floor node boards
ERR PC	System blocked	Connected PC is in log in mode	Log out of menu "change of parameters" in connected PC

3 Errors not shown at the Display

Description	Possible Cause	Suggested Action
Lift is sinking and therefore relevelling frequently	Car sinking due to decreasing oil temperature Internal leakage in hydraulic system	Normal with warm oil See 10.3
Handpump out of service	See 10.4	See 10.4
Uncomfortable start upwards	Too low supply pressure to servo valve Hydraulic parameters fault Dirt in servofilter	Check bypass pressure (see 10.1.3) Check servo (see 10.1.1), Replace if required (see 10.5) Make a new learn hydraulic travel with cold oil (max 30°C) (see T10033 5) Check / replace pilotfilter (see 10.9)
Full speed up reduced	Some of the oil bypassed to the tank due to hydraulic parameters fault Pump is worn	Make a new learn hydraulic travel with cold oil (max 30°C) (see T10033 5) Replace the pump
Speed is varying tremendously on display during full speed up, but the lift does not swing	Encoder defect	Check out the encoder and its rope system incl. suspension and and gear belt. Replace if required
Lift swings during full speed down	Encoder defect	Check out the encoder and its rope system incl. suspension and and gear belt. Replace if required
1. Brief speed alternations at full speed up 2. Hard deceleration up 3. Powerfull swings during acceleration up 4. Bad stopping accuracy	Servo dither not functions	Check servo (see 10.1.1), Replace if required (see 10.5)
Sonic disturbance in car		See 10.2

4 Control node

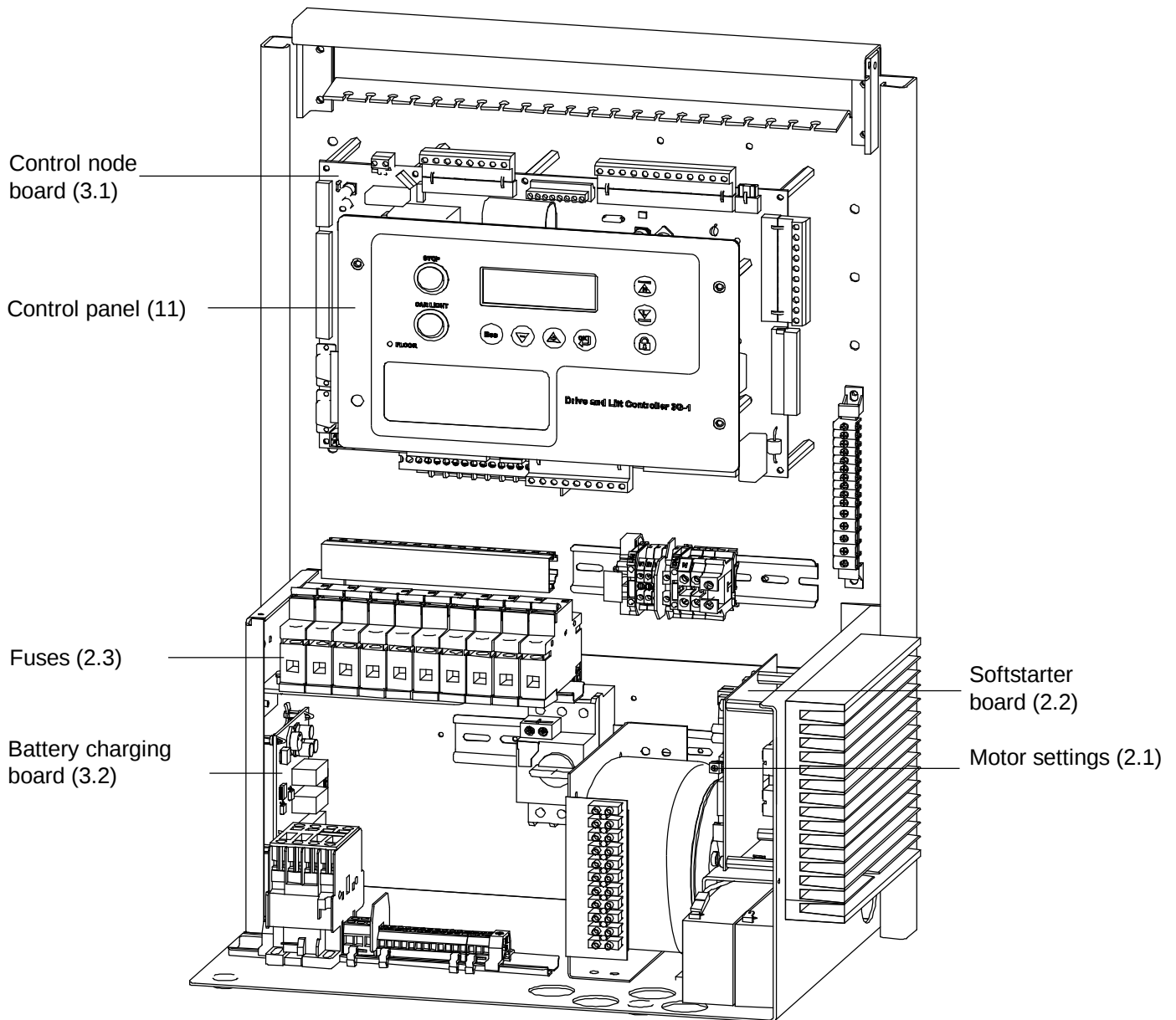


Fig. 4.1 Control node Component overview

4.1 Control node board

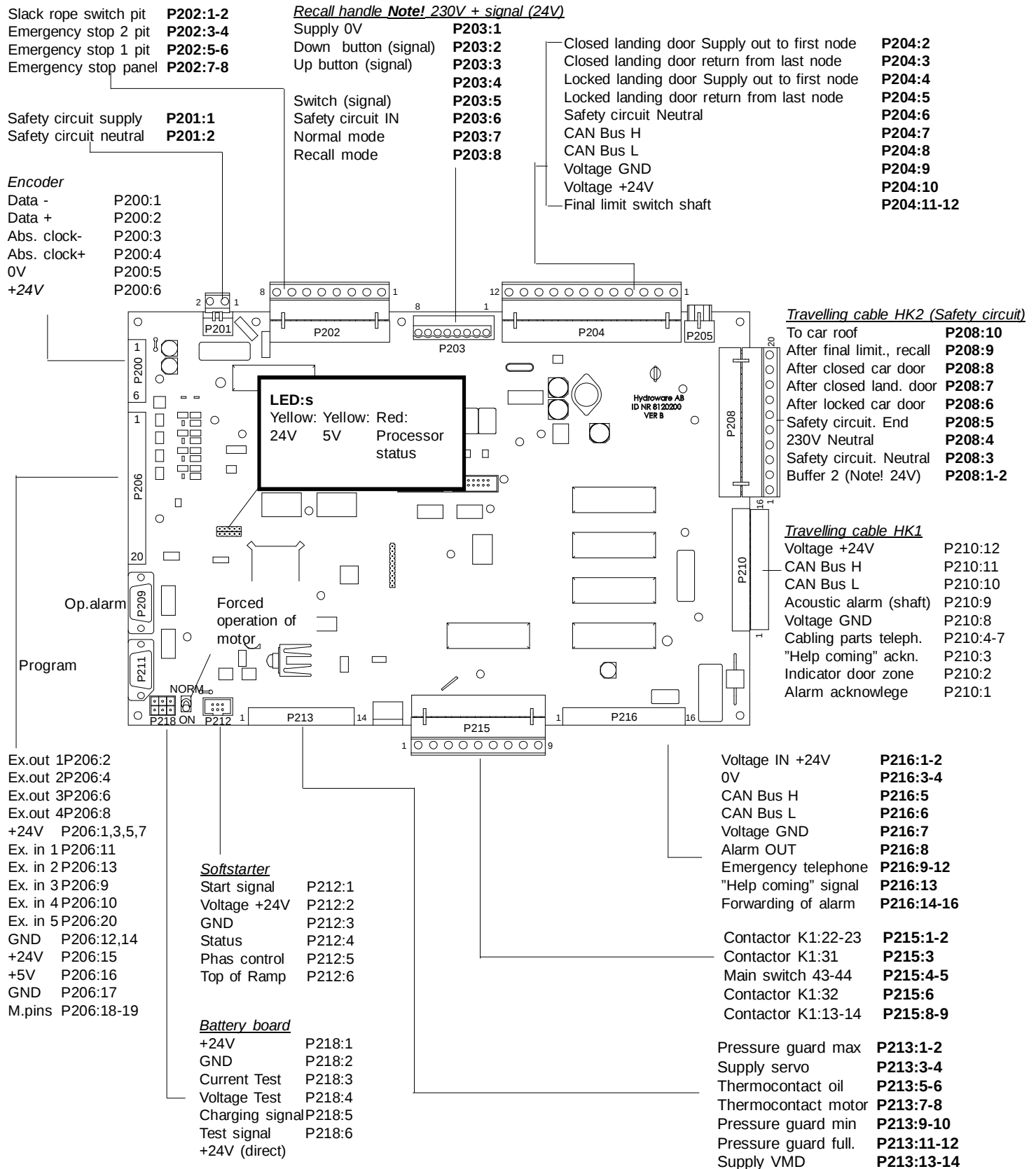


Fig 4.2 Control node board A200

4.2 Softstarter board

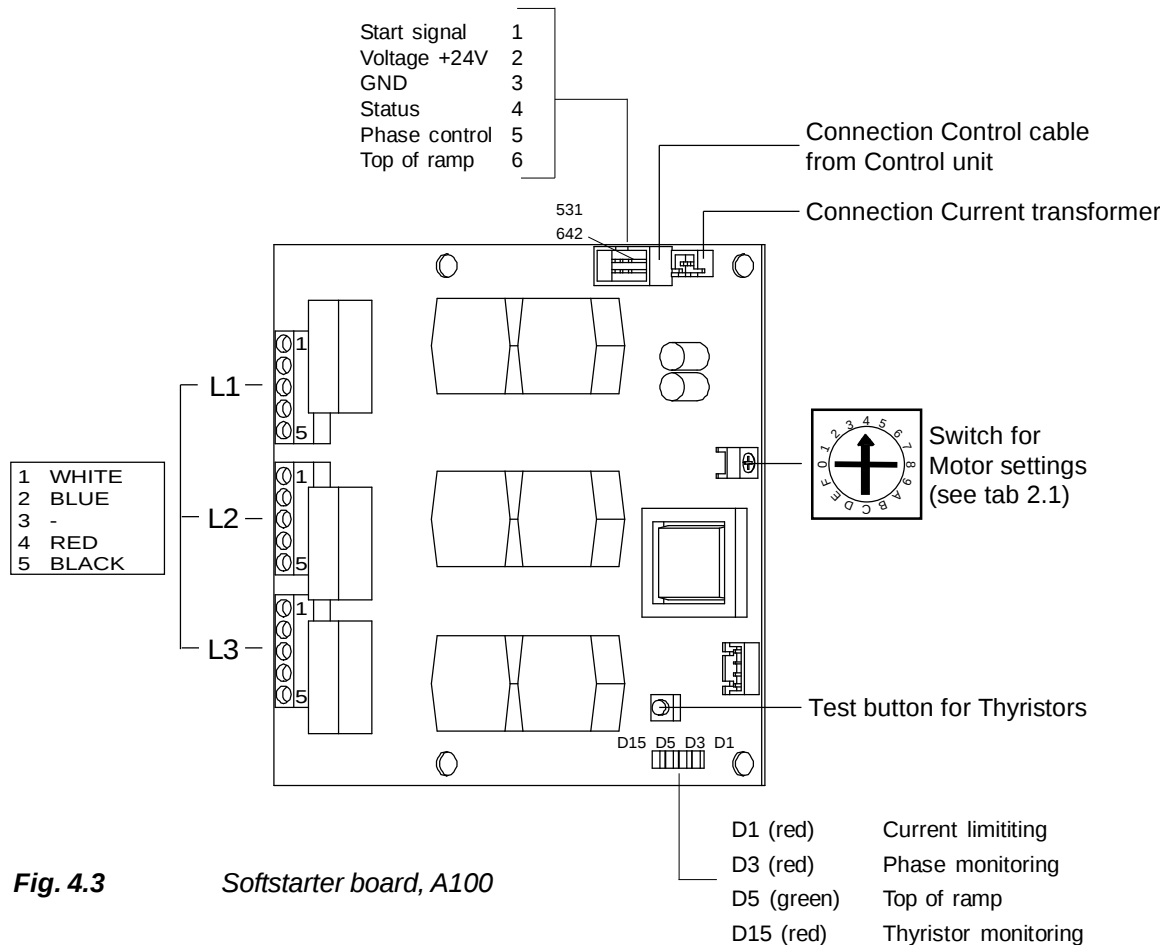


Fig. 4.3 Softstarter board, A100

Indicator LED:s (Light emitting diods):

D1 (red) Current limit	Indicates that the motor current equals to the limit set for the particular motor
D3 (red) Phase monitoring	Indicates that the relative order of the incoming phases is wrong or that at least one phase is missing. See error codes A5 and E6 (error code list 2.2).
D5 (green)Top of ramp	Indicates that starting sequence of the motor is finished and the motor should be running in full speed. The firing angle causes the thyristors to conduct during the entire AC cycle. See error codes A6 and A7 (error code list 2.2)
D15 (red) Thyristor monitoring	Indicates that there is a mismatch between the individual thyristors while the motor is not connected. There might be a short circuit or a rupture in one thyristor. See error code A2. While the motor is supposed to be running the lit LED indicates that the motor is connected and the thyristors are functioning. See error codes C4 and E2.

4.3 Motor settings

For each motor size, the switch on the softstarter board (see fig 4.3) should be set according to tab 4.1.

Switch position	ELMO Motor size (kW)			GMV Motor size (kW)		
	230V/50Hz	400V/50Hz	415V/50Hz	230V/50Hz	400V/50Hz	415V/50Hz
0	-	4.4	4.4	-	4.7	4.7
1	-	6	6	-	5.8	5.8
2	-	7.7	7.7	-	7.7	7.7
3	4.4	9.5	9.5	4,7	9.5	9.5
4	6	11	11	5,8	11	11
5	7,7	12/13	12/13	7.7	12.5	12.5
6		14.7/16	14.7/16	9.5	14.7	14.7
7	9.5 / 11	20	20	-	18.4	18.4
8	12 / 13 / 14.7/16	24	24	11 / 12.5 / 14.7	22.1	22.1
9	-	-	-	-	29.4	29.4
A	20/24	29	29	18.4	36.8	36.8
B	29	33	33	22.1	44.1 / 51.5	44.1 / 51.5
C	-	40/47	40/47	-	-	-
D	33/40	60	60	29.4 / 36.8	-	-
E	47	-	-	44.1	-	-
F	60	-	-	51.5	-	-

Tab. 4.1 Switch modes Softstarter board

4.4 Fuses

Power supply wirings are secured by automatic fuses. If such fuse is subjected to overload, it will automatically disconnect the circuit (switch set in position "0").

Direct after the error has been corrected, the circuit has to be manually reconnected (switch set in position "1").

1 0			
F1		F1 Safety circuit	- Automatic fuse 1-pol 2A
F2		F2 Controller 24V	- Automatic fuse 1-pol 2A
F3		F3 Car light	- Automatic fuse 1-pol 6A, not Norway; Automatic fuse 2-pol 6A, Norway (F3:1,2)
F4		F4 Ev. trafo control	- Automatic fuse 1-pol 10A, only Norway
F5		F5 Ev. trafo control	- Automatic fuse 1-pol 10A, only Norway
F11		F11 Ev. door drive	- Automatic fuse 3-pol 6A (F11-F13)
F12		F12 Ev. door drive	
F13		F13 Ev. door drive	
F14		F14 Ev. extra trafo primary	- Automatic fuse 1-pol 10A
F15		F15 Ev. ex. trafo secondary	- Automatic fuse 1-pol 6A
F16		F16 Ev. door drive	- Automatic fuse acc. electric diagram side 7
F20		F20 Emergency battery	- Automatic fuse 1-pol 4A
1 0			

Fig 4.4 Fuses in power module

Fuse **F3** - supply voltage to car light - is not switched off by main switch, but must be **switched off by the car light switch in electrical group central**.

Fuses **F4 - F16** are only used **when ever applicable**

4.5 Battery charging board

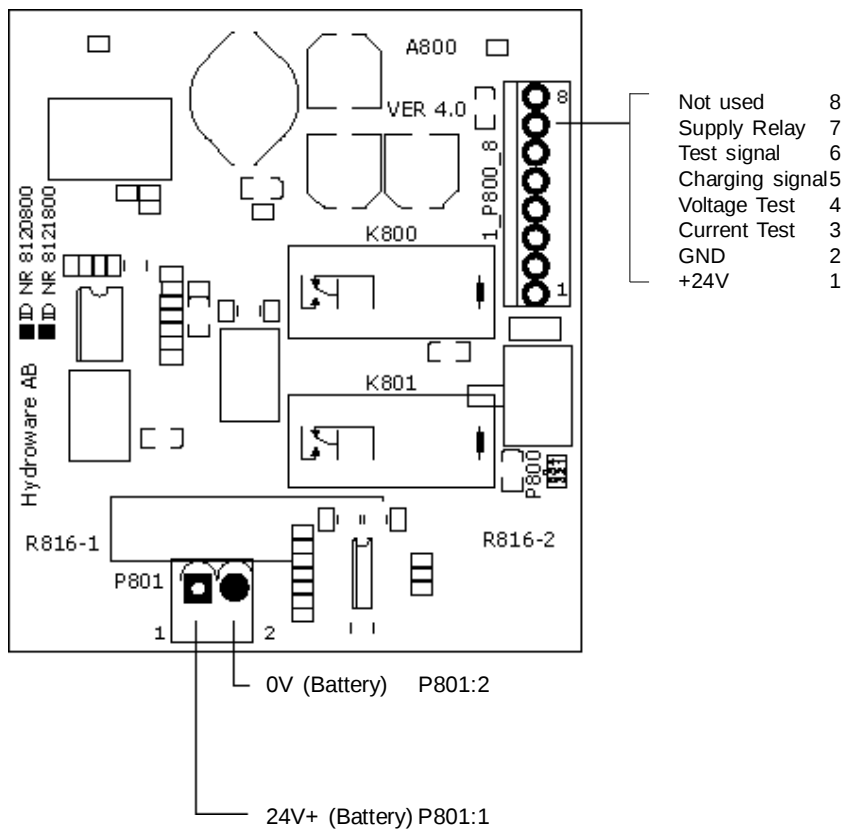


Fig 4.5 Battery charging board A800

The controller is provided with battery backup 24V, 2Ah (2x12V 2Ah lead accumulator). The recharge is done with permanent constant voltage.

Charge voltage: 28.8V

Compensating charge voltage: 27.6V

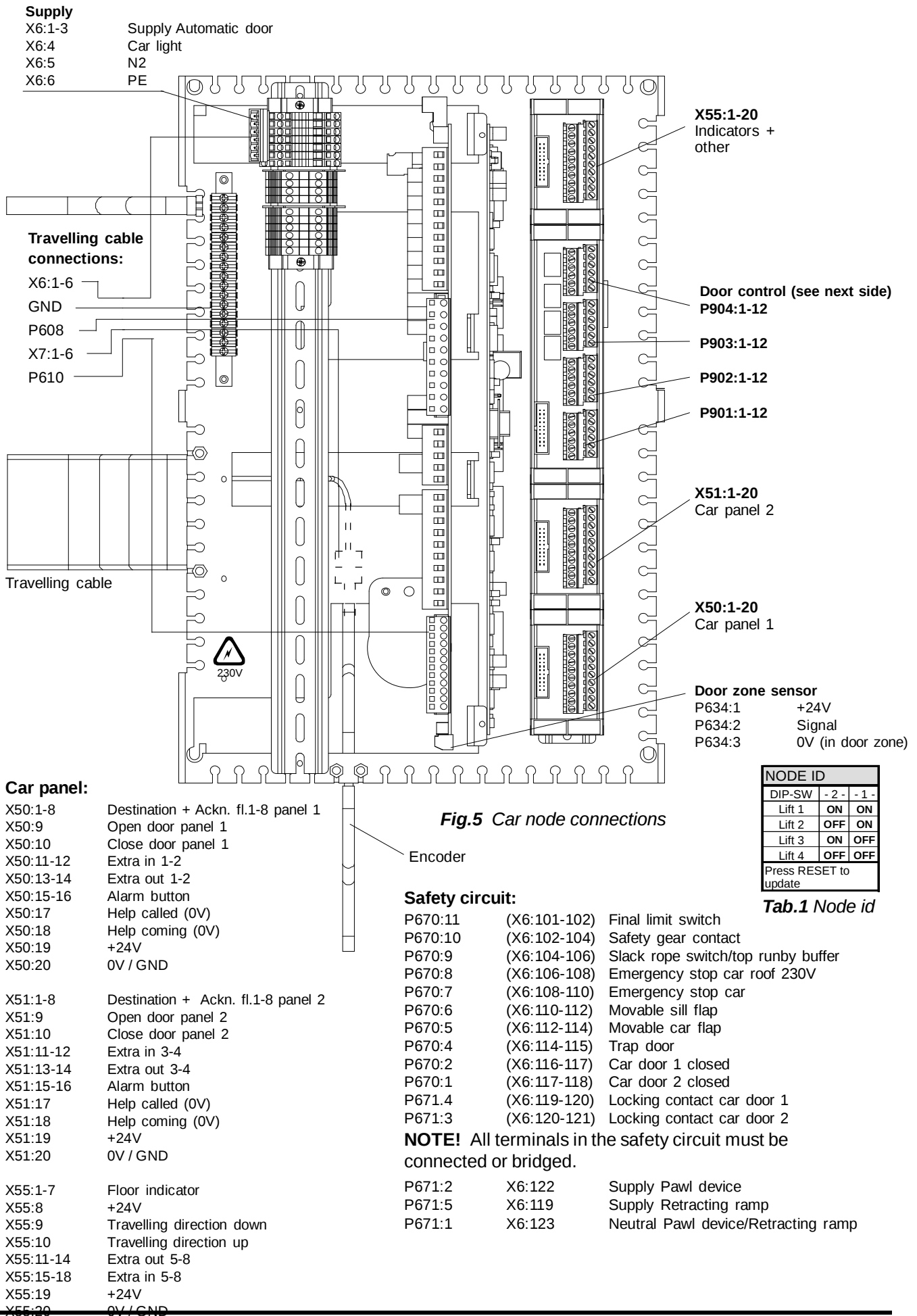
Measure the voltage between fuse F20 and the negative pole of the battery.

At power failure the battery would supply an emergency lamp in the car (5W) for one hour.

If the voltage decreases below 20V the battery supply is switched off.

A manual battery test can be performed from menu 2.8.1. The test will last for 45 minutes and the lift must be stationary at floor in the meantime.

5 Car node board



Supply

P904:1-5 +24V
P904:7-11 0V
P904:6->12 Supply to all relays (stop door motion) (+24V)

Door relays side 1

P903:3->1 Open signal (Open contact at active relay)
P903:3->2 Open signal (Closed contact at active relay)
P903:6->4 Close signal (Open contact at active relay)
P903:6->5 Close signal (Closed contact at active relay)

Door relays side 2

P903:9->7 Open signal (Open contact at active relay)
P903:9->8 Open signal (Closed contact at active relay)
P903:12->10 Close signal (Open contact at active relay)
P903:12->11 Close signal (Closed contact at active relay)

Door side 2

P902:1->7 Supply to relay (+24V)
P902:2->8 Limit switch open
P902:3->9 Limit switch close
P902:4->10 Photocell
P902:5->11 Door reversal
P902:6->12

Door side 1

P901:1->7 Supply to relay (+24V)
P901:2->8 Limit switch open
P901:3->9 Limit switch close
P901:4->10 Photocell
P901:5->11 Door reversal
P901:6-12

Pawl device + Acoustic alarm

P672:1 X6:70 0V
P672:2 X6:78 Emergency light +24V
P672:3 Acoustic alarm +24V
P672:4 X6:74 Not retract KKN 2
P672:5 X6:73 Not extend SKN 2
P672:6 X6:72 Not retract KKN 1
P672:7 X6:71 Not extend SKN 1
P672:8 X6:77 Buffer 2
P672:9 X6:76 Buffer 1
P672:10 X6:75 +24 V at down travel

X661:1 PE Wall socket
X661:2 230V Wall socket
X661:3 N2 Wall socket
X661:4 +24V
X661:5 Alarm button

Travelling cable HK2

P608:10 To car roof
P608:9 After final limit sw., recall
P608:8 After closed car door
P608:7 After closed landing door
P608:6 After locked car door
P608:5 Safety circuit End
P608:4 230V Neutral
P608:3 Safety circuit Neutral
P608:1-2 Buffer 2 (NOTE! 24V)

Travelling cable HK1

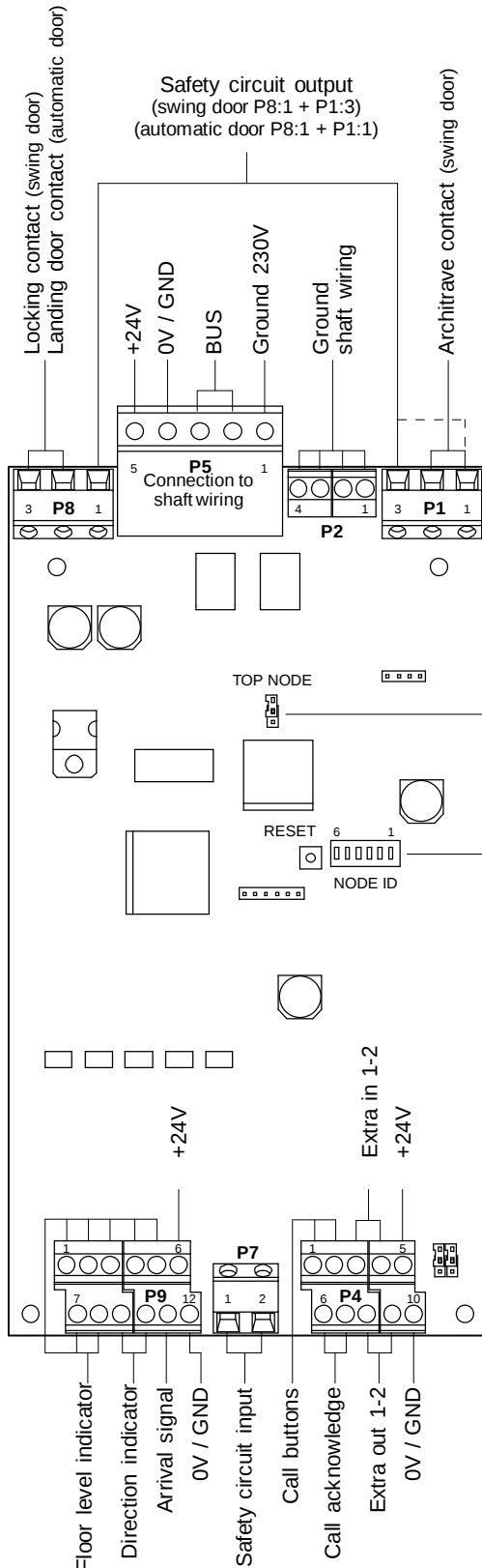
P610:12 Voltage +24V
P610:11 CAN Bus H
P610:10 CAN Bus L
P610:9 Acoustic alarm (shaft)
P610:8 Voltage GND
P610:4-7 Cabling parts telephone
P610:3 "Help coming" acknowledge
P610:2 Indicator door zone
P610:1 Alarm acknowledge

Encoder

X7:1 Data -
X7:2 Data +
X7:3 Abs. clock-
X7:4 Abs. clock+
X7:5 0V
X7:6 +24V

6 Floor node

One floor node for each landing door is mounted on the shaft wiring.
The safety circuit connection is described installation schematic S420xxx_xx
Safety circuit landing doors.
Note that incorrect connectin of terminal P1 resp P8 can cause a bridge connection of the saftey circuit.



TOP NODE	
Last node	CLOSED
Other nodes	OPEN

Tab. 5.1 Top node

NODE ID							
DIP-SW	- 6 -	- 5 -	- 4 -	- 3 -	- 2 -	- 1 -	
Floor 8	ON	ON	ON				
Floor 7	OFF	OFF	OFF				
Floor 6	ON	OFF	OFF				
Floor 5	OFF	ON	OFF				
Floor 4	ON	ON	OFF				
Floor 3	OFF	OFF	ON				
Floor 2	ON	OFF	ON				
Floor 1	OFF	ON	ON				
Side 1				OFF			
Side 2				ON			
Lift 1					ON	ON	
Lift 2					OFF	ON	
Lift 3					ON	OFF	
Lift 4					OFF	OFF	

Press RESET to update

Tab. 5.2 Node id

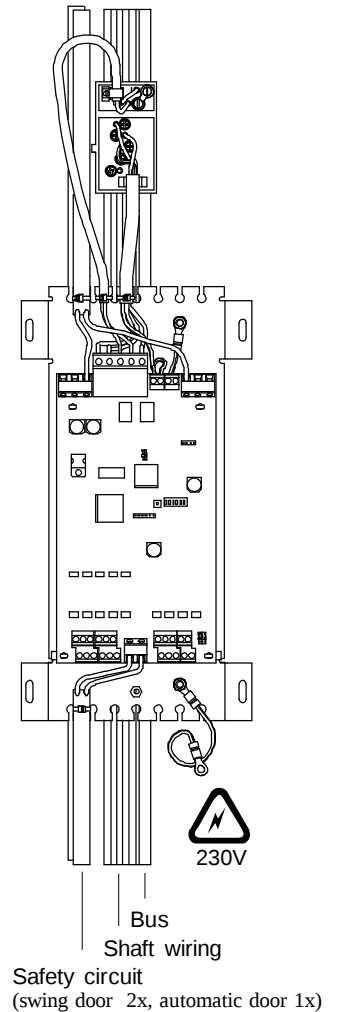


Fig. 6.1 Floor node

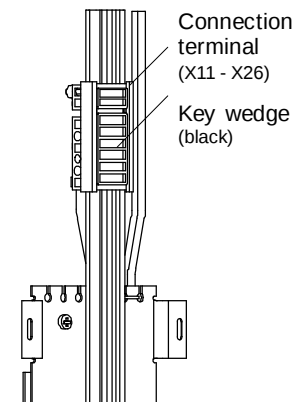


Fig. 6.2 Connection terminal

Check that the key wedge is properly inserted into the connection terminal and that all screws are tightened.

Fig. 6.3 Floor node board

7 Shaft wiring and Shaft information

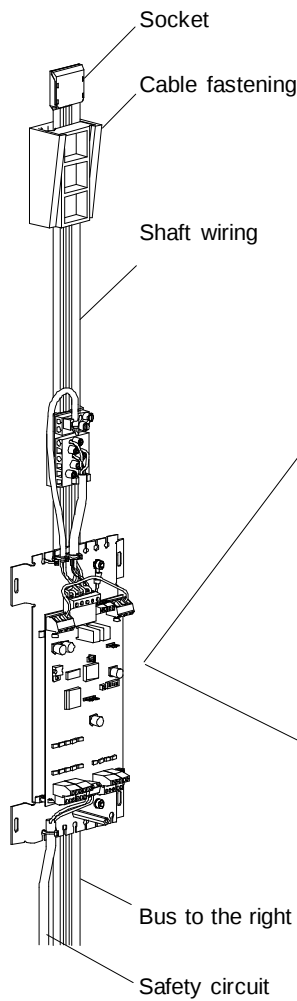


Fig.7.2 Floor nodes
Note! Marking on cover

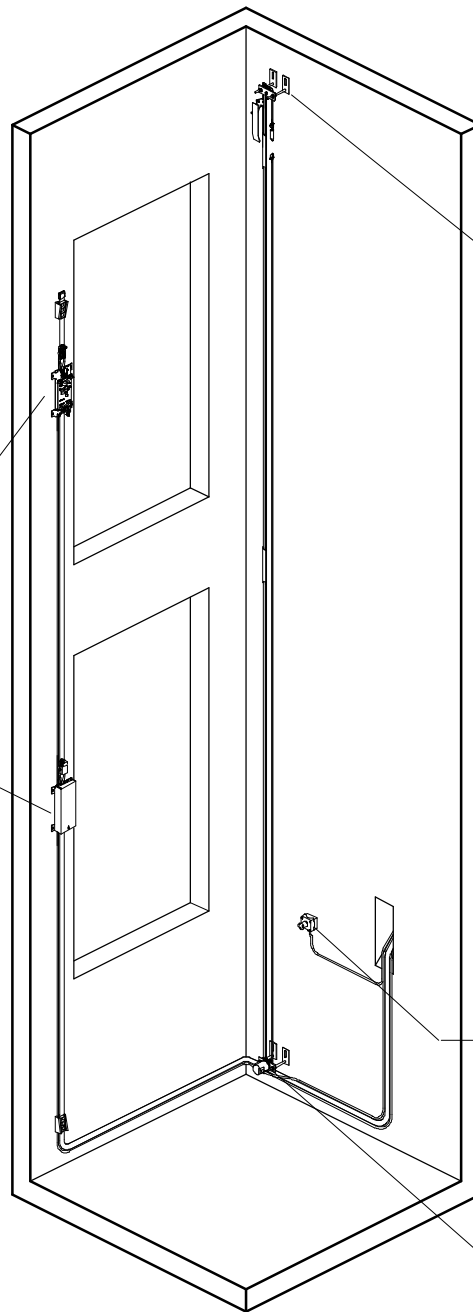


Fig.7.1 Lift shaft

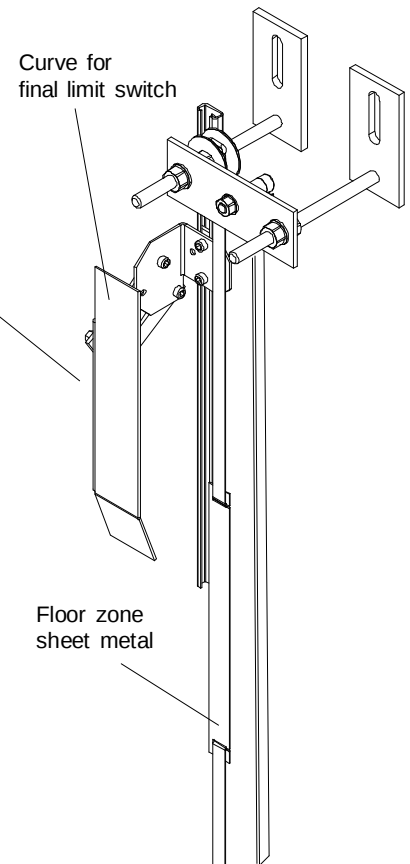


Fig.7.3 Shaft information top fixing

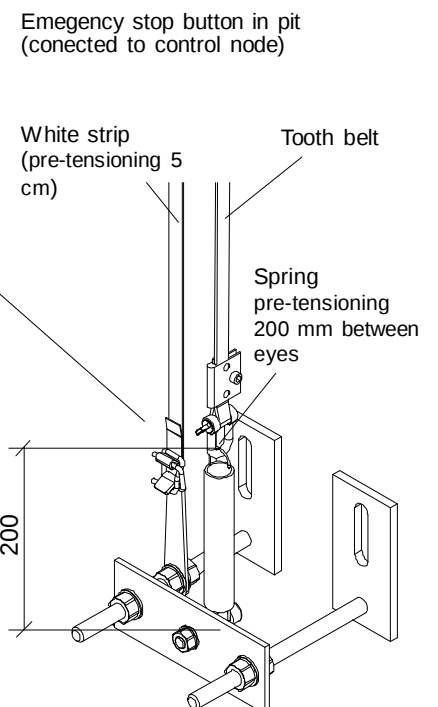


Fig.7.4 Shaft information lower fixing

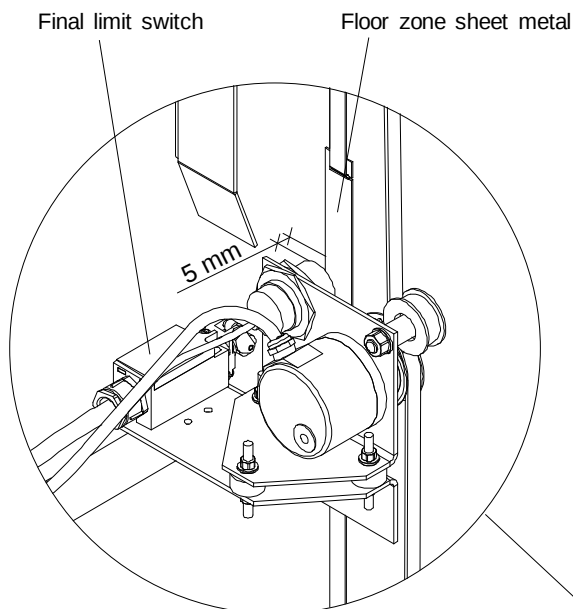


Fig.7.5 Fixing of shaft information

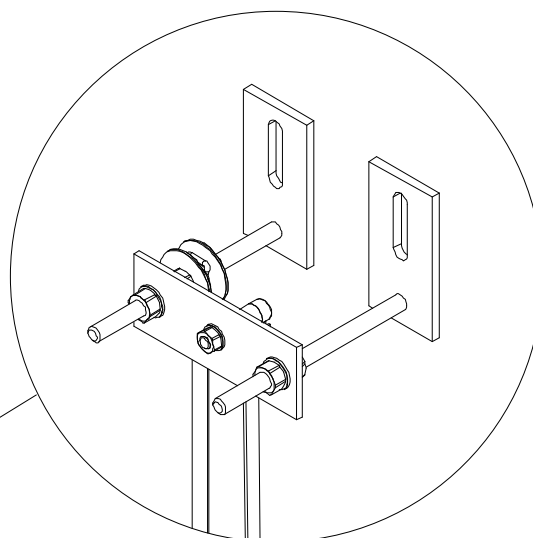


Fig.7.6 Top fixing of shaft information
in shaft wall (white strip to the left)

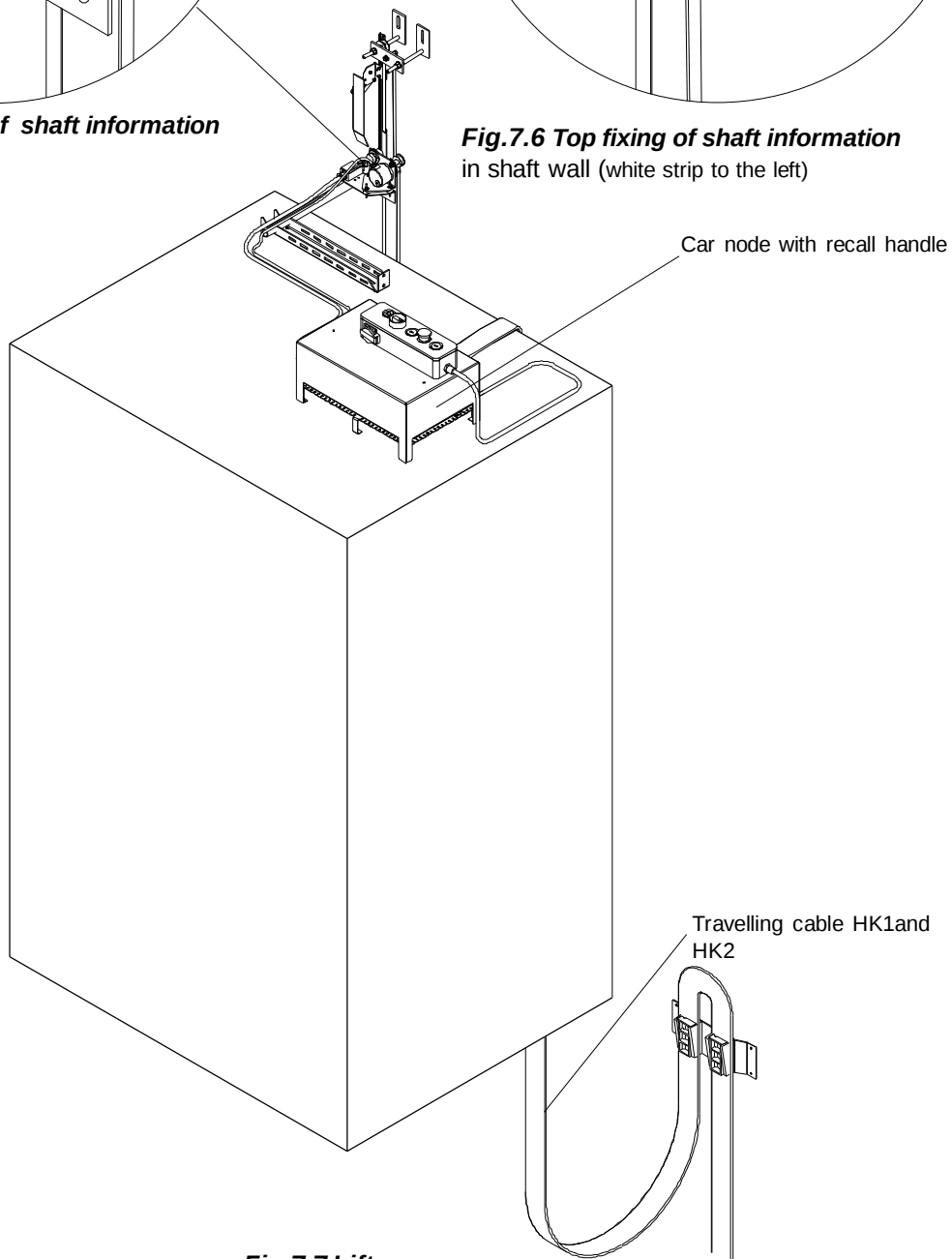


Fig.7.7 Lift car

8 Alarm telephone

8.1 Safeline 2000-Light

(See Hisselektronik "Manual for installation and programming of Safeline 2000-Light")

8.2 Safeline GSM

(See Hisselektronik "Safeline manual GSM 2002")

9 Test points

There are some test points available for measuring of voltages, car speed and the set value speed signal. They are arranged as follows:

P206:15 +24V (22.8 - 25.2 V)

P206:16 +5V (4.75 - 5.25 V)

P206:17 GND (0V)

P206:18 Set value speed signal 1V = 0.1 m/s

P206:19 Speed 1V = 0.1 m/s

Tab. 10.1 Test points

To check out that the wiring for the bus system is correct, the resistance between bus wirings can be measured. All voltages must be switch off during the measurement (even the battery backup)

When the complete bus system is connected, the resistance should be 60 ohm.

If car node (P610) or shaft wiring (P204) are disconnected, the resistance between the wirings should be 120 ohm.

The servo valve current can be measured with a voltmeter applied across terminal X3:3-4. 1 V equals 1 A.

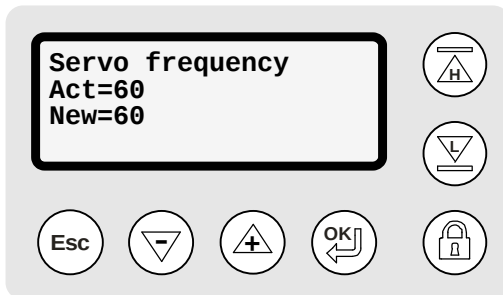
10 Power unit

10.1 Test and action of servo valve function

10.1.1 Temporary alternation of dither frequency

If you suspect an error in the servo valve you can find out if this really the fact by temporarily alter the dither frequency of the valve current. This can be done when being in air bleeding mode, which is obtained when the display is in menu level 6.1.6.1.

1. Change the servo frequency to 50 Hz, save, and return to normal mode.



2. Make a normal travel. If the lift performs better with the new dither frequency, the error probably is related to the servo valve.
3. Reset the servo frequency to the earlier value (usually 100 Hz) and perform a new hydraulic travel.
4. Make a new normal travel. The lift might now perform the travel correct, but if not, you have to replace the servo valve.

10.1.2 Torque of the screws

Wrong tightened fastening screws can degrade the servo function (the dither frequency decreases). Therefore, always check the torquing according to below if you suspects error in the servo valve.

1. Loosen the two fastening screws (M6) ca one turn. (See the fastening screws position Fig. 13.6.)
2. Alternately tighten the two fastening screws.

NOTE: Tighten the screws with the *same* torque, but do not tighten the screws too tight!

10.1.3 Check of the servo valve supply pressure

Too low supply pressure can cause that the lift starts with jerk upwards or not starts at all.

Too low supply pressure is caused either of a too low bypass pressure at start upwards, or that any of the filters in the valve is clogged. See filter positions according to Fig. 10.5, Fig. 10.6 and Fig. 10.12.

Check of the bypass pressure (start pressure)

1. Switch off the current.
2. Connect a wire link between the safety terminal F1 and the connector A1 of the contactor K1.
3. Switch on the power again.
4. Close the shut-off tap and make the valve pressure less by pressing the VMD valve.
5. Start the motor manually by switch on the switch S8 on the main board.
6. The bypass pressure can now be read off on the manometer.
7. Check that the bypass pressure is higher than 3.5 bar. If the pressure is lower, check the servo valve out-stick according to section 10.1.4.

Increase the bypass pressure

If the bypass pressure is too low despite that the servo valve out-stick is correct, you can increase the servo valve by:

1. Remove the servo back according to Fig. 10.1.
2. Plug in a stop screw SK6SS M8x12 to the threaded hole in the back of the servo piston.
3. Replace the short screw in the servo back with a longer screw M6x25. Also mount a check nut M6 on the screw.
4. Reassemble the back on the servo again.
5. Make sure that the M&-screw in the back is almost totally screwed out.
6. Check the bypass pressure according to section 5.3.1, at the same time as the M6-screw is slowly screwed in. Lock up the screw with the cheek nut when the manometer shows 5 bar.
7. Perform a new learn hydraulic travel (see T10033 5).

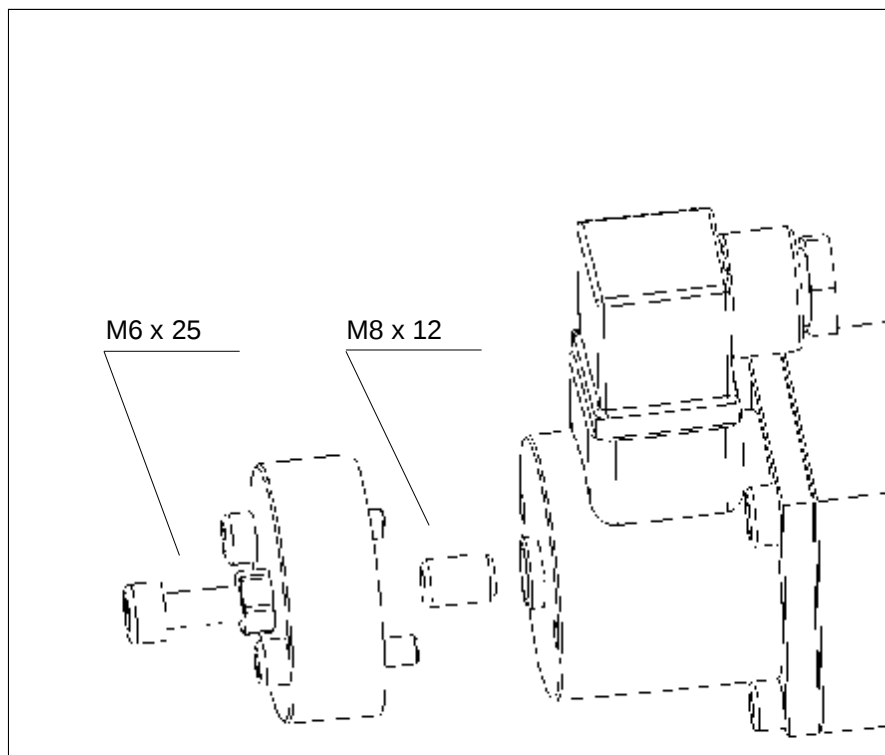


Fig. 10.1 Removal of the servo valve back

10.1.4 Check of the servo valve out-stick

Wrong servo out-stick can also lead to that the servo current will be beyond the allowable current range for the servo.

A too small servo out-stick can also cause a too low start pressure (bypass pressure).

Check and if required adjust the servo out-stick according to instructions below (see Fig. 10.2):

1. Remove the servo back.
2. Press in the servo piston as far as possible and measure by vernier calliper howmuch the servo spool sticks out. Measured value should be 2.3-3.0 mm.
3. To adjust the servo out-stick: Remove the servo and the VB-spool from the valve manifold.
4. The servo is connected to the VB-spool by means of a articulated junction. Between this junction and the VB-spool there are thin washers (most often 2x0.5mm) that are used to adjust the servo out-stick.
Make the adjustment by add or remove washers.
5. Reassemble the servo and the VB-spool and then check the measure of the servo out-stick again.
6. Perform a new Learn hydraulic travel (see T100 33 5)

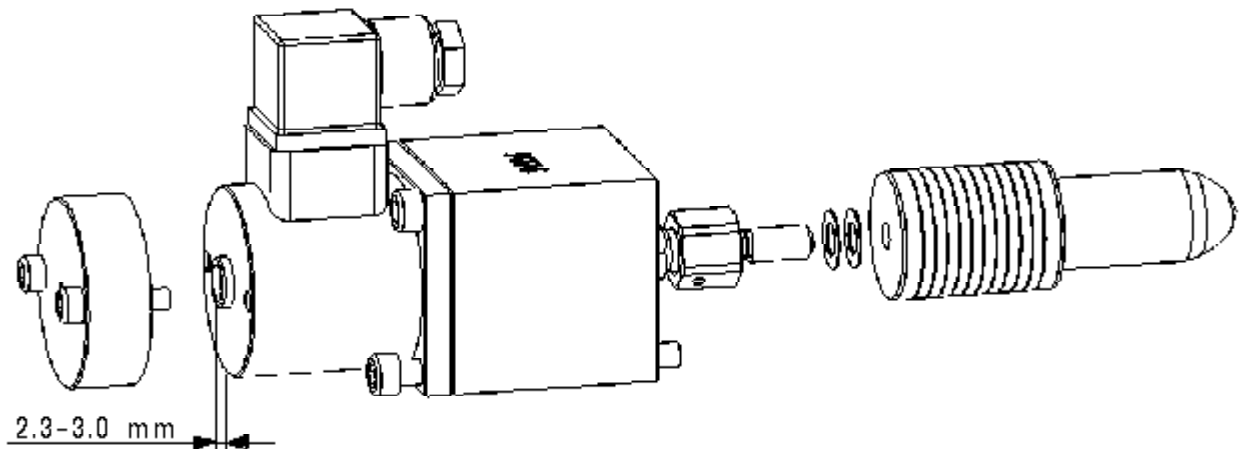


Fig. 10.2 Check and adjustment of the servo out-stick

10.2 Sonic disturbance in the car

If you hear a disturbing humming sound in the car, emanating from the dither frequency of the valve current, you can use the routine descriebed under section 10.1.1 . The tendency for sonic disturbances in car varies with the particular installation due to resonance phenomena.

The default value is100 Hz. There is a good chance that a minor change of the dither frequency to 120 Hz dramatically will reduce the sounds in the car.

10.3 Internal leakages in the valve system

Perform the following test to determine an internal leakage in the valve system:

NOTE: The oil temperature must be the same as the air temperature when this test is performed.

1. Close the shut-off valve.
2. Increase the pressure to ca 30 bar by operating the handpump.
3. If the pressure drops more than 5 bar in 3 minutes there is an internal leakage in the valve. Find out if the leakage is located in the handpump (10.3.1), in the emergency lowering valve VSMA (10.3.1 alt. 10.3.4), in the solenoid valve VMD (10.3.2), in the non-return valve VRP (10.3.3) according to the description for respective section. Eliminate the leakage according described corrective actions.

10.3.1 Leakage in handpump / Emergency valve VSMA

Search method:

Search for leakage by loosening the air bleeder screw on the hand pump. If oil comes out through the bleeder screw, there is a leak.

Corrective actions:

1. Remove the check valve located at the jack side of the hand pump (see 10.4.2).
2. Check the ball seat for any dirt.
3. Replace the ball.
4. Tap the ball gently by using a punch and a hammer.
5. Reassemble the check valve.
6. Search for leakage again.
If there still is a leakage, dismantle the emergency lowering valve VSMA (see 10.7.1).
7. Check the ball seat for any dirt.
8. Replace the ball.
9. Tap the ball gently by using a punch and a hammer.
10. Reassemble the VSMA valve (see 10.7.2)
11. Search for leakage again.
If there still is a leakage, replace the ball in the non-return valve of the handpump to a larger ball: 1st class 6.35mm.
12. (Only for valve size 52-216 l/min):
12. Search for leakage again.
If there still is a leakage, remove the side plate incl. handpump (see 10.8.2).
Remove the stop screw, which is mounted on the inside of the plate, according to Fig 10.3.
Clean the stop screw and provide it with teflon tape or sealing fluid before it is reassembled on the side plate again. Reassemble the side plate.
13. Search for leakage again.
If there still is a leakage, exchange the complete side plate of the valve including the handpump and the valve VSMA (see 10.8.2).

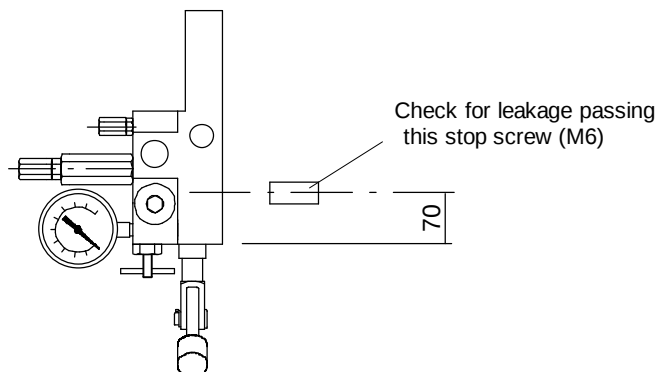


Fig 10.3 Check for leakage passing this stop screw (Only for valve size 52-216 l/min)

10.3.2 Leakage in solenoid valve VMD

Search method:

Search for leakage by inspecting the plastic tube connected to the valve manifold below the VMD valve. If there is oil coming out through the tube, there is a leak.

Corrective action:

1. Dismantle the VMD valve (see 10.6.1).
 2. Check the ball seat for any dirt
 3. Replace the ball.
 4. Tap the ball gently by using a punch and a hammer.
 5. Reassemble the valve (see 10.6.2).
 6. Search for leakage.
- If there is still a leakage, exchange the complete valve VMD.

10.3.3 Leakage in the non-return valve VRP

Search method:

Search for leakage by removing the plate on the right side of the valve manifold (see 10.8.1).

Corrective action:

1. Remove the left side of the block including the handpump.
2. Remove the valve VRP.
3. Exchange the seal of the valve VRP.
4. Reassemble in reverse order.

10.3.4 Large leakage in the emergency lowering valve VMSA

In exceptional cases it can be a leakage in the emergency valve despite that no oil comes out of the bleeder screw.

Search method:

This can be checked by removing the inlet tube to handpump (see 10.4.2). Dismantle and clean the valve according to 10.3.1: 11-13.

10.4 Faults in the handpump

Problem description	Possible Cause	Suggested Action
Either no resistance is felt when operating the handle, or a resistance like compressing air is felt	Air in handpump	Bleed the handpump according to installation instruction (see T10033 12).
	Coupling of the inlet tube is not airtight	Check the inlet tube with its coupling
	Leakage in check valve located at the tank side of handpump	Clean and tap the seat of check valve according to 10.4.1.
A squeaking noise is audible when the handle is pressed against the valve	The pressure relief valve of the handpump has been released	Check the adjusted pressure and readjust if necessary according to the installation instruction (see T10033 11).
When the handle is pressed it will slowly moves back to its outer position by itself	Leakage in the check valve located at the jack side of the handpump	Clean and tap the seat of the check valve according to 10.4.2.

10.4.1 Leakage in the check valve located at the tank side of the handpump

see Fig 10.4

1. Remove the inlet pipe and its coupling.
2. Remove the check valve including the adapter for the inlet tube.

NOTE: Be careful so that the ball does not fall into the tank.

3. Check the ball seat for any dirt.
4. Place the ball in the seat and tap the ball by using a punch and a hammer.
5. Reassemble.

10.4.2 Leakage in the check valve located at the jack side of the handpump

see Fig 10.4

Search method:

Search for leakage by undo the bleeder screw. If oil comes out through the bleeder screw there is a leakage.

Corrective action:

1. Remove the check valve located at the jack side of the handpump.
2. Check the ball seat for any dirt.
3. Replace the ball.
4. Tap the ball carefully towards the seat by using a punch and a hammer.

OBS: Aluminium seat, tap carefully!

5. Reassemble.

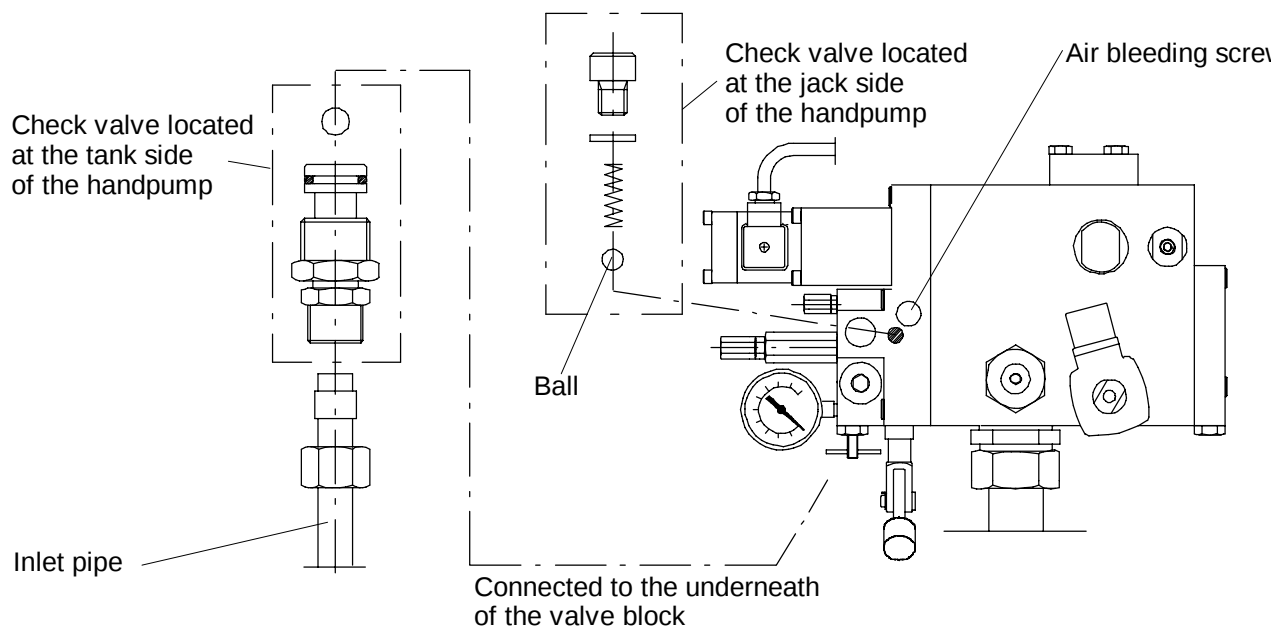


Fig. 10.4 Dismantling the check valve in the handpump

10.5 Exchange of servo valve

10.5.1 Removal

1. Close the shut-off valve.
2. Make the system pressureless by manually operating the valve VMD.
3. Remove the servo valve according to Fig. 10.5 (valve size 52-216 l/min) or Fig. 10.6 (valve size 250-600 l/min). The roll pin connection must not be removed. Use the pliers to hold the round bar and prevent that the roll pin connection is loaded and damaged.

10.5.2 Reassembling

1. Clean the threads of the coupling between servo and spool and apply some adhesive on the threads before reassembling.
2. Make sure that filter and o-rings are located in their correct positions (see Fig. 10.5 or Fig. 10.6).
3. Reassemble in reverse order. Exchange the roll pin connection (FRP 3x20) if it has been damaged during the servo removal.
4. Perform the air bleeding procedure according to T10033 section 3 and perform a new learn hydraulic travel according to T10033 section 5.

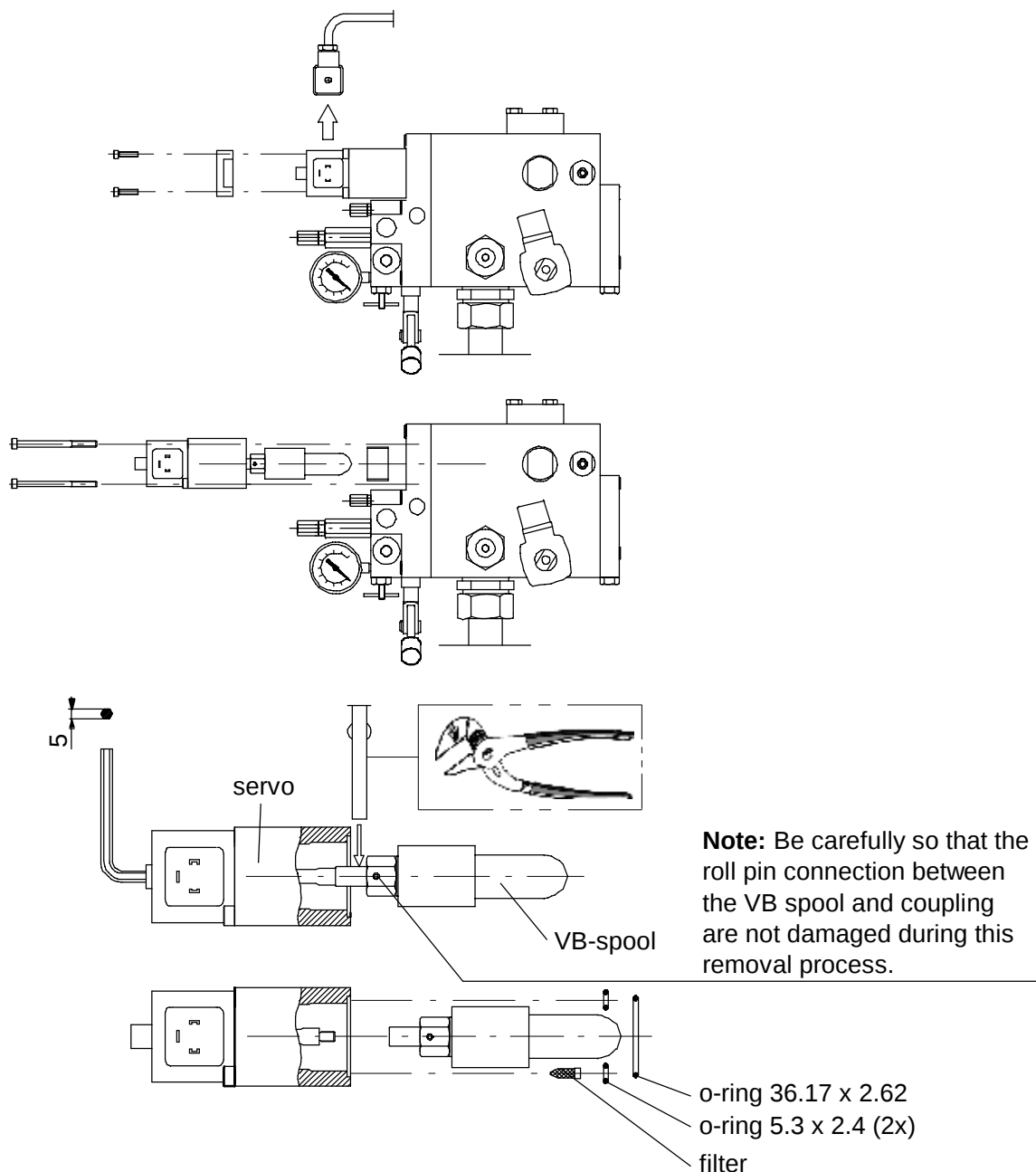


Fig. 10.5 Exchange of servo valve (Valve size 52-216 l/min)

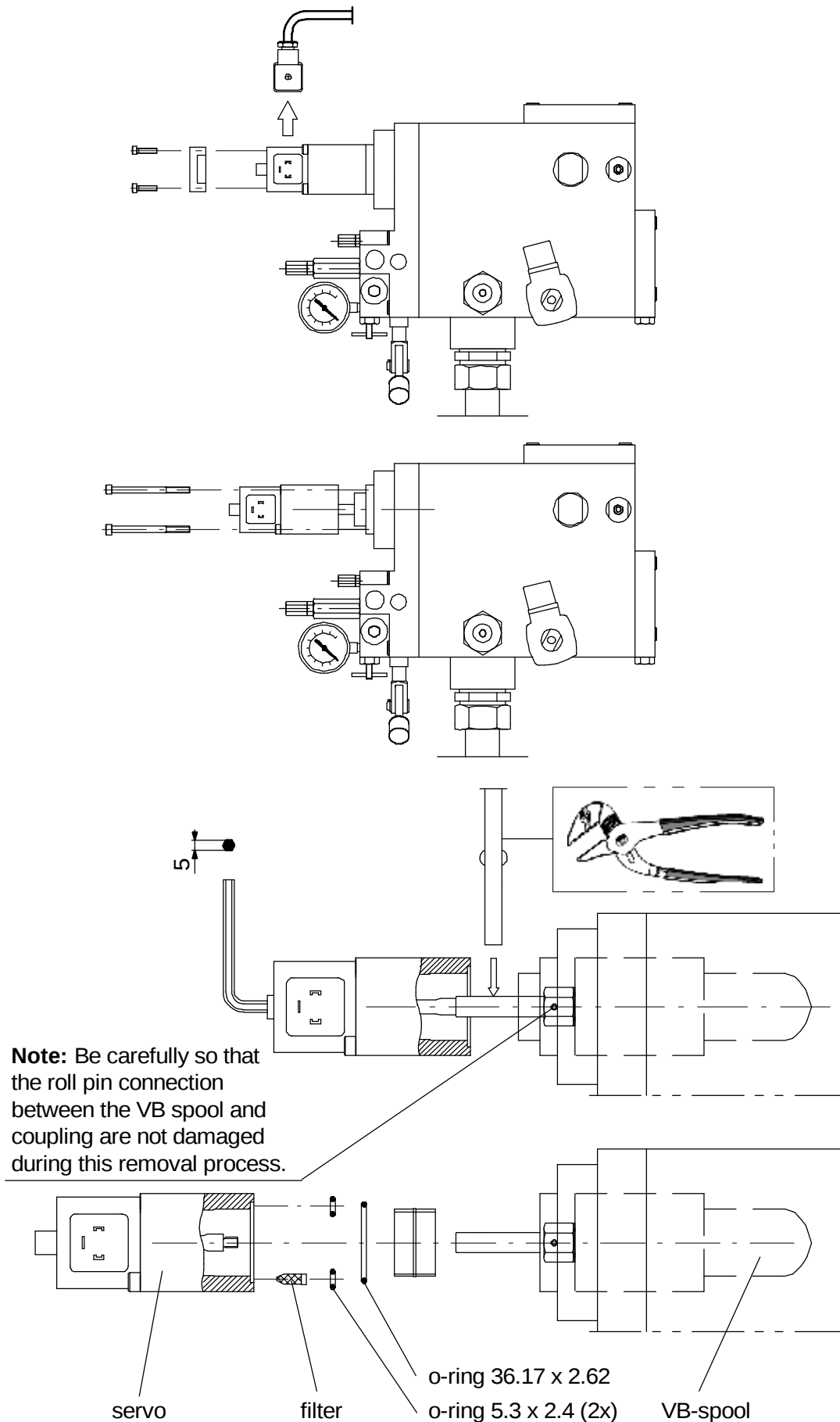


Fig. 10.6 Exchange of servo valve (Valve size 250-600 l/min)

10.6 Dismantling of the solenoid valve VMD

10.6.1 Removal

1. Close the shut-off valve.
2. Make the system pressureless by manually operate the valve VMD. (Press the peg on the top of the valve).
3. Remove the VMD valve according to Fig. 10.6.

10.6.2 Reassembling

1. Make sure that the o-rings are located in their correct positions.
2. Reassemble in reverse order.

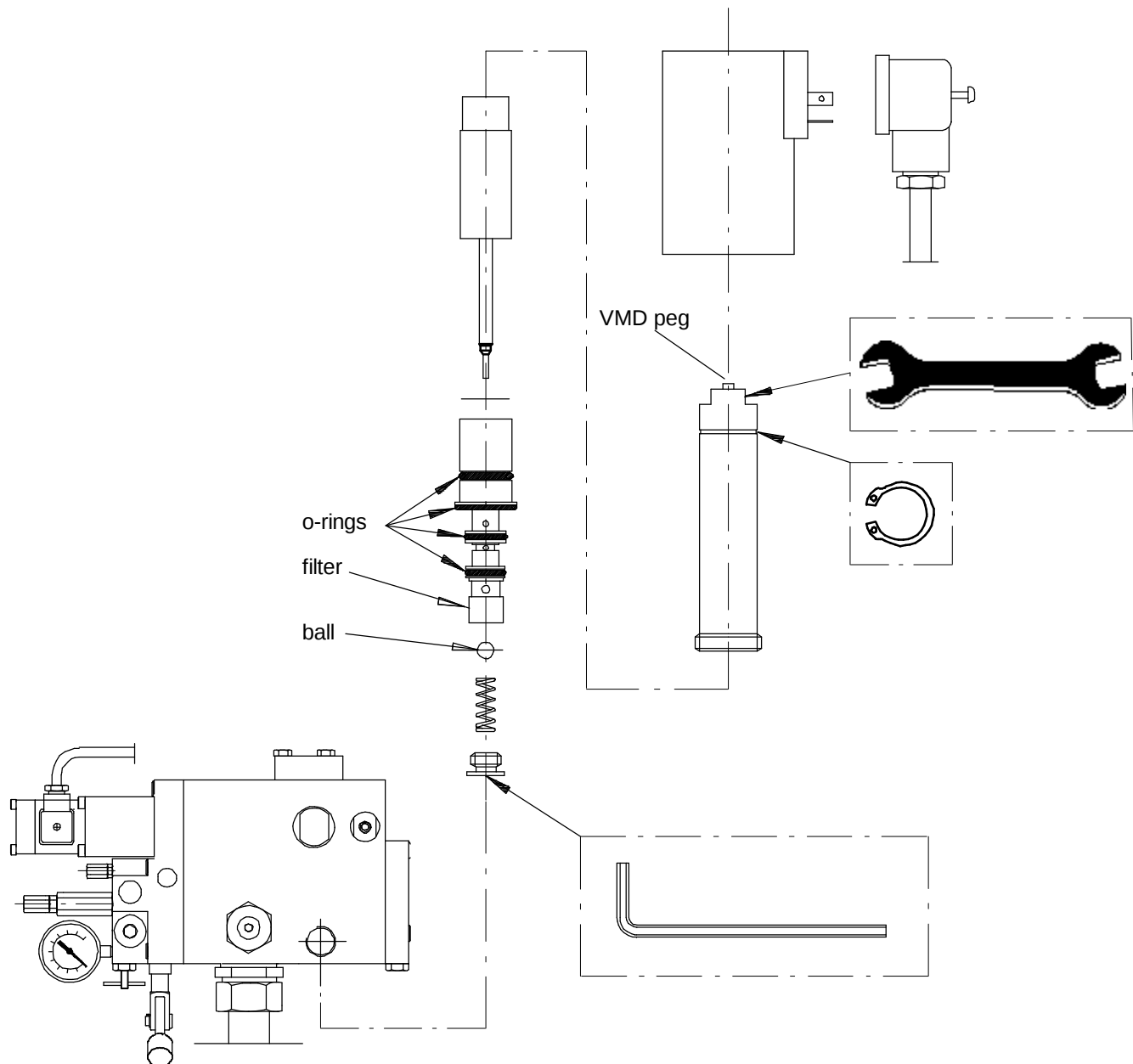


Fig. 10.7 Dismantling of the solenoid valve VMD

10.7 Dismantling the emergency lowering valve VSMA

10.7.1 Removal

1. Close the shut-off valve.
2. Make the system pressureless by manually operate the valve VMD. (Press the peg on the top of the valve.)
3. Remove the VSMA valve according to Fig. 10.8.

10.7.2 Reassembling

1. Make sure that the o-rings are located in their correct positions.
2. Reassemble in reverse order.

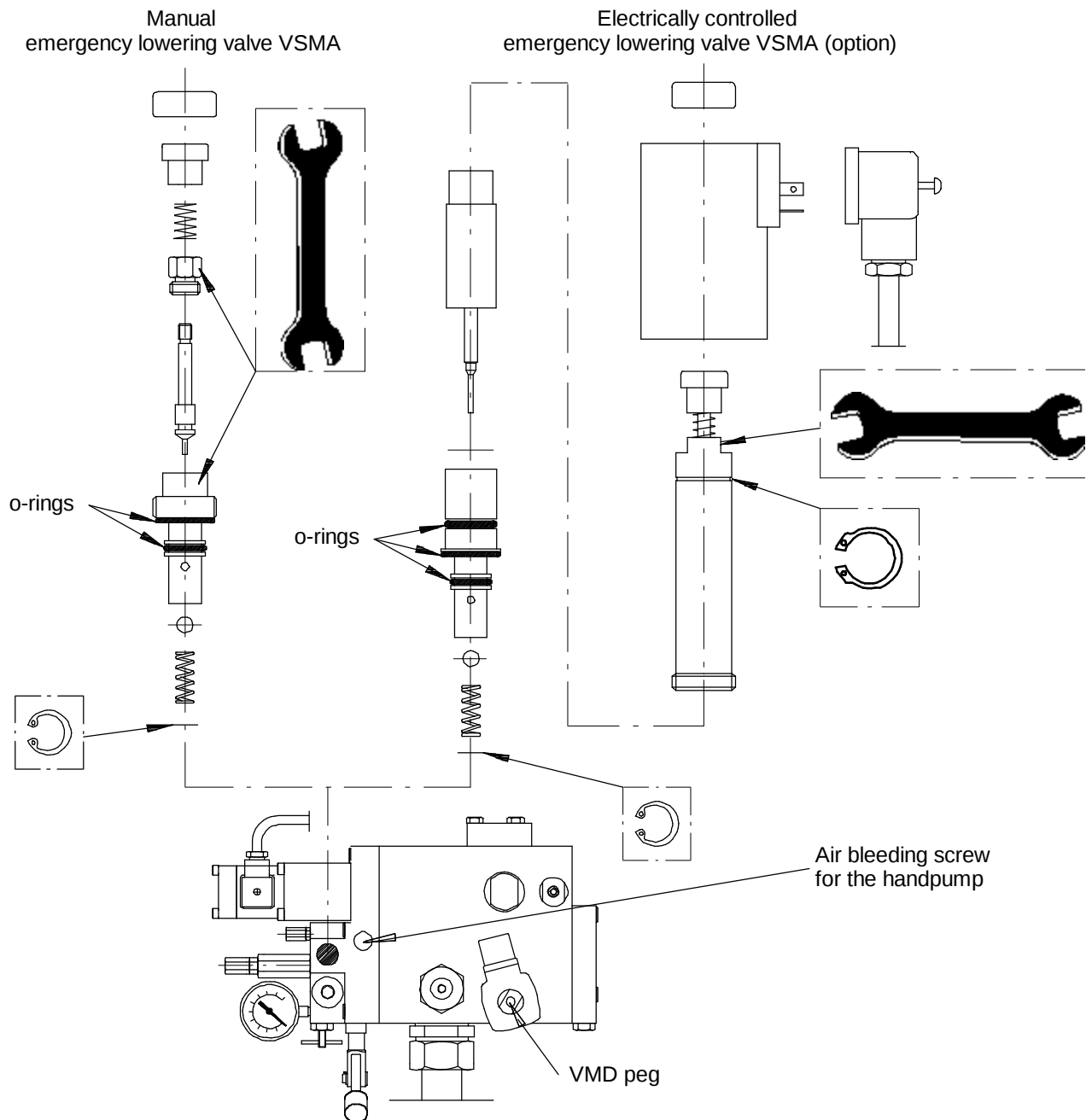


Fig 10.8 Dismantling of the Emergency lowering valve VSMA

10.8 Dismantling of side plates and the VRP valve

10.8.1 Check of leakage in the VRP valve

Search method:

Search for leakage by removing the side plate according to Fig. 10.9 and look for oil coming from the end of the VRP valve. This check must be done with the valve system in pressure.

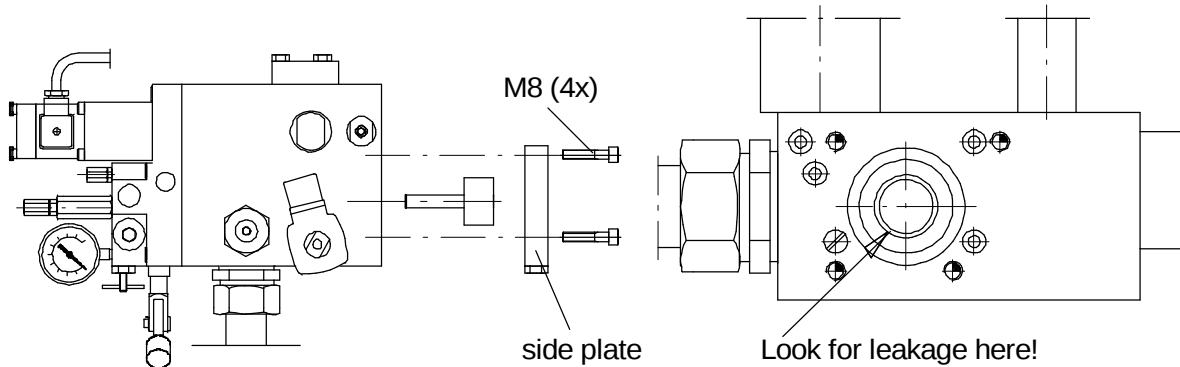


Fig. 10.9 Check of leakage in the VRP

10.8.2 Removal of the side plate including the handpump

1. Close the shut-off valve.
2. Make the system pressureless by manually operate the valve VMD. (Press the peg on the top of the valve.)
3. Remove the side plate and the VRP valve according to Fig. 10.10.

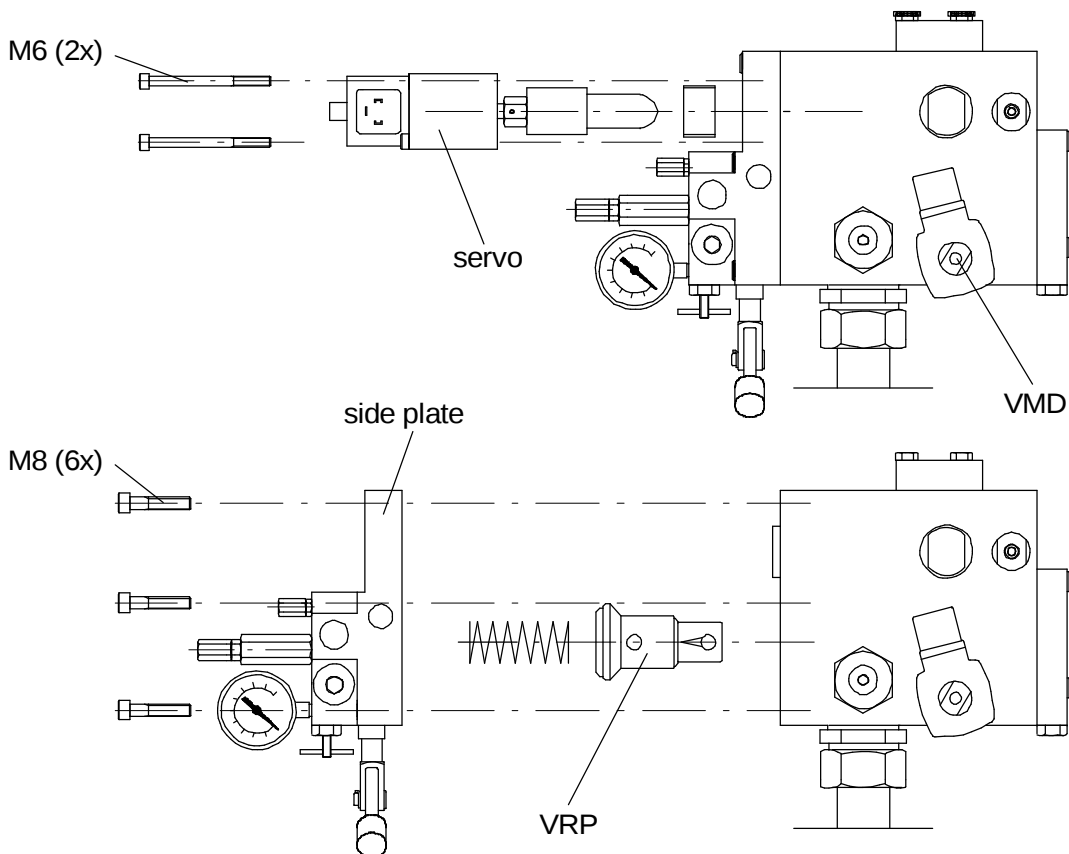


Fig. 10.10 VRP valve and side plate including handpump

10.8.3 Replacement of the seal

1. Remove the screw, but be careful so that the slide surface of the valve not is damaged.
2. Exchange the seal.
3. Apply adhesive on the screw and reassemble the valve.

NOTE: The seal for the VRP valve is included in the gasket set for the valve system.

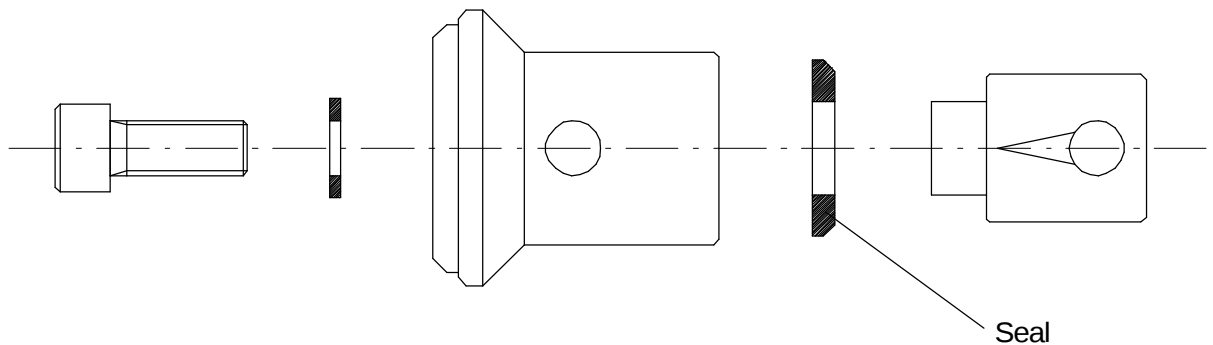


Fig. 10.11 Non-return valve VRP

10.8.4 Reassembling

1. Make sure that the o-rings are located in correct positions.
2. Reassemble in reverse order.

10.9 Exchange of pilot filter up and down

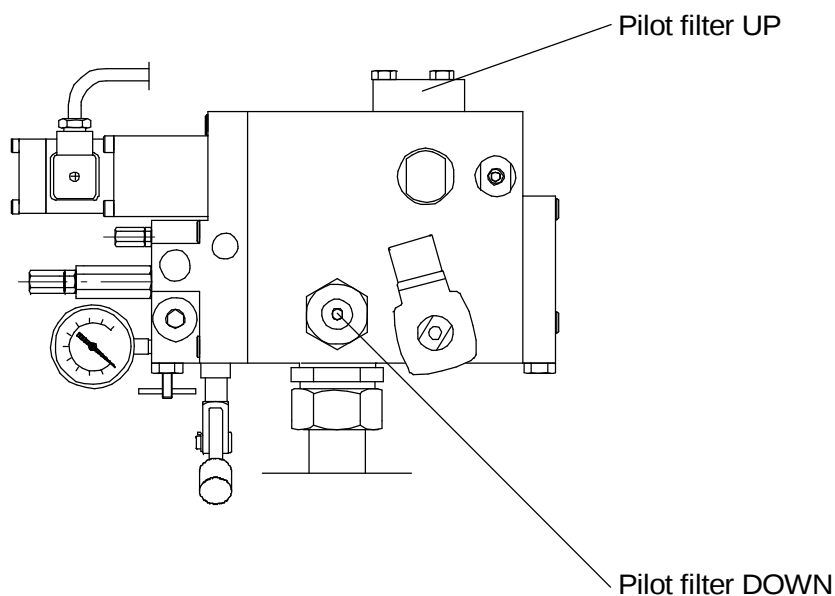


Fig. 10.12 Exchange of pilot filter

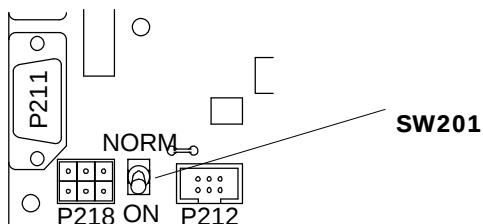
10.10 Forced Upwards travel procedure

Only if the electronic system by any reason should be out of order so that normal travel is impossible, you may follow the following procedure:

1. Switch off the main power.

NOTE: Before removing the screw, note the distance between the body of the pressure relief valve and the top of the screw head so that you do not influence the pressure adjustment when you replace it.

2. Remove the center screw from the end of the servo valve and replace it with the M6 screw from the pressure relief valve (see T10033 section 10).
The lift will not travel with normal speed with load again unless you have placed it back in its normal position again afterwards.
3. Make a bridge connection between P215:7 and P215:9.
4. Switch on the main power. Switch the switch SW201, at the bottom to the left on the control node board in its "ON" mode. The motor will perform a soft start.
You can start or stop the motor whenever you want by switching the switch SW201.



5. The display will show info code O9.
6. Now you will be able to force the lift upwards by carefully turning the screw in the center of the valve clockwise.
6. As soon as the car is moving, the display will show the car speed and then "O9" again when it has stopped. To stop the motor running, switch back the switch SW201 in NORM position again.

NOTE: Afterwards, switch off the main power again and remove the bridge between P215:7 and P215:9. Remove the M6-screw and replace with the ordinary screw!

10.11 Emptying the jack

1. Place the lift at the bottom floor.
2. Manually operate the VMD valve until the jack is pressureless.
3. Loosen the bleeder screw on the top of the jack.
4. Replace the M8 screw located in the middle of the side plate with a minimum 30mm long screw (see Fig. 10.13).
5. When the screw is screwed in it will force the check valve VRP to open and the oil in the jack is drained to the tank.
6. If compressed air is available, it is favorable to connect this to the bleeder point of the jack to empty the jack and the hose completely.
7. Do not forget to replace the original screw in the side plate.

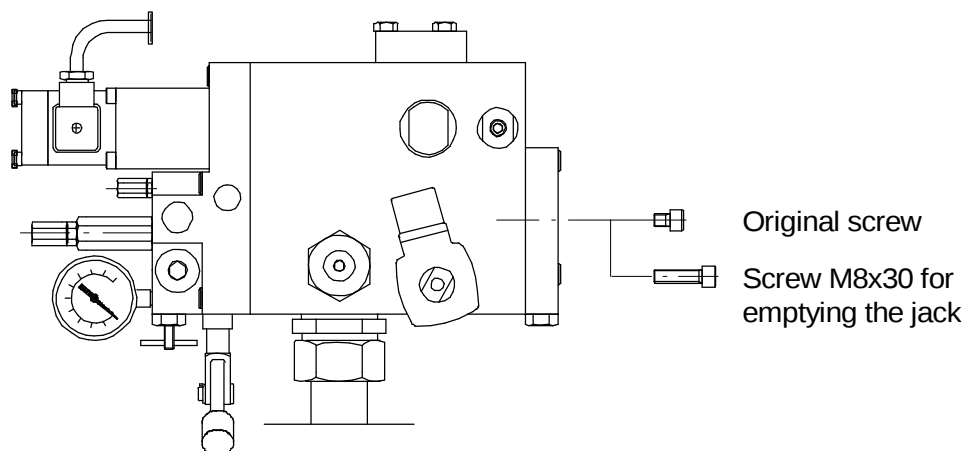


Fig. 10.13 Replacement of the screw in the side plate

10.12 View of the valve system Dynahyd-S1

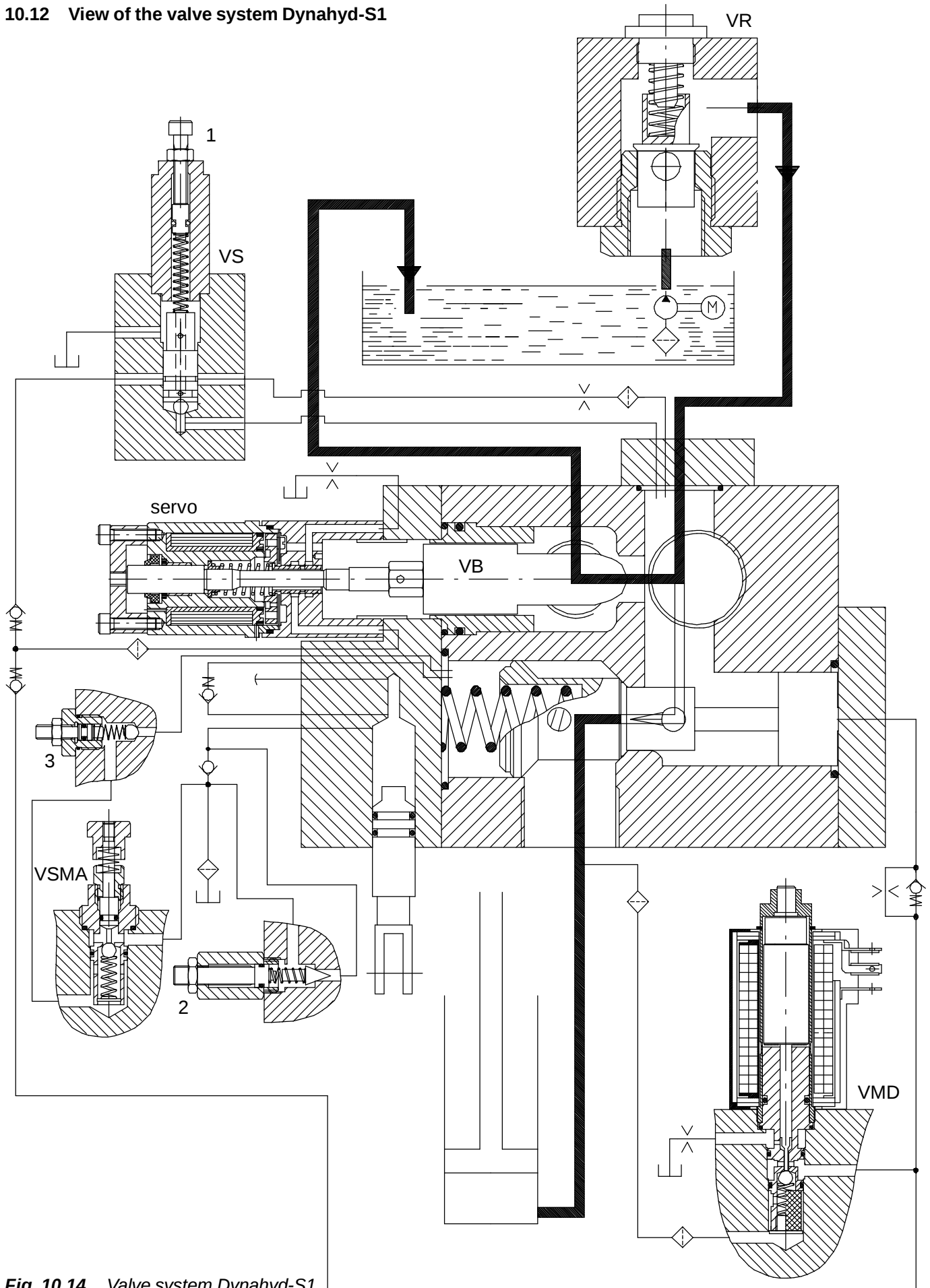
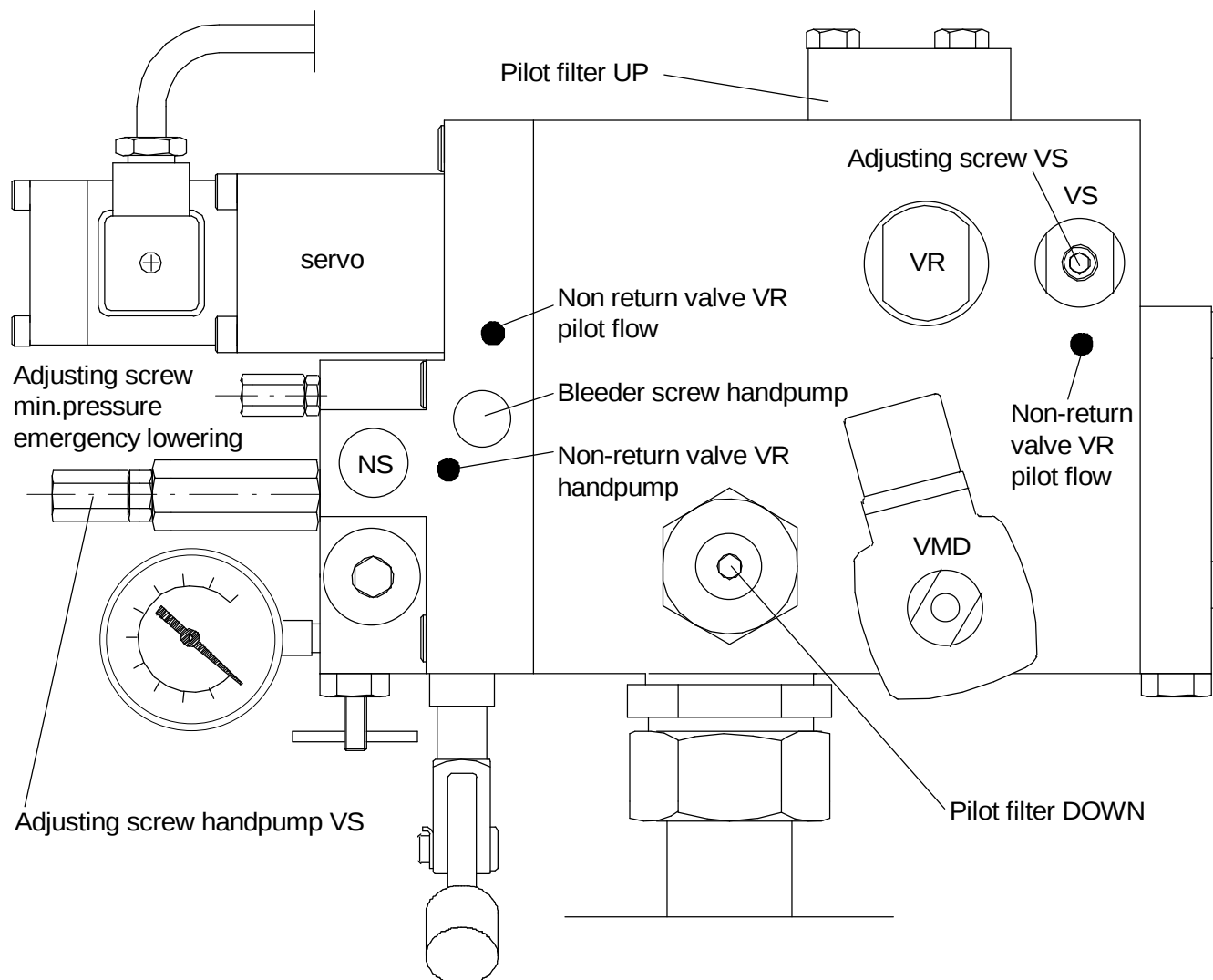


Fig. 10.14 Valve system Dynahyd-S1

10.13 Top view of the valve system Dynahyd-S1 incl. adjustment screws



VR =	Non-return valve
VS =	Pressure relief valve
VMD =	Solenoid valve
VS =	Manual emergency lowering valve

Fig 10.15 Valve system Dynahyd-S1 incl. adjustment screws