 elevation technology ab Box 66, Fabriksgatan 13 SE-342 21 ALVESTA, Sweden	Drive and control system	Technical Documentation	
	Hydroelite 3G-1	T 100 22 EN	
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Contents

1	Product Overview	2
1.1	Drive and Control unit	3
1.1.1	<i>Technical Specifications</i>	3
1.1.1.1	<i>Oil Tank</i>	3
1.1.1.2	<i>Motor</i>	3
1.1.1.3	<i>Pump</i>	3
1.1.1.4	<i>Valve System</i>	3
1.1.1.5	<i>Oil Overheating Protection</i>	3
1.1.1.6	<i>Control Cabinet</i>	4
1.1.1.7	<i>Labels and Plates</i>	4
1.1.1.8	<i>Available Options</i>	4
1.2	Car Node	5
1.2.1	<i>Technical Specifications</i>	5
1.3	Travelling Cable	5
1.3.1	<i>Technical Specifications</i>	5
1.4	Floor Node	5
1.4.1	<i>Technical Specifications</i>	5
1.5	Shaft Wiring	6
1.5.1	<i>Technical Specifications</i>	6
1.6	Shaft Information	6
1.6.1	<i>Technical Specifications</i>	6
1.7	Emergency Stop Button	6
1.7.1	<i>Technical Specifications</i>	6
1.8	Miscellaneous	6
1.8.1	<i>Technical Specifications</i>	6
1.9	Group Connection	7
1.9.1	<i>Technical Specifications</i>	7
1.10	Remote Supervision	7
1.10.1	<i>Technical Specifications</i>	7
1.11	Packing Specifications	7
1.12	Peripherals and Interfaces	7
2	Scope of Applications	8
2.1	Basic Functions	8
2.2	Extra Functions	9
3	Standards and Regulations	14
4	Dispo Information	15
4.1	Hydroelite VENI MR	15
4.2	Hydroelite VIDI MR	16
4.3	MRL cabinet, VENI and VIDI	17
4.4	Hydroelite VENI MRx2	18
4.5	Motor characteristics	19
4.6	Selection of motor power - Submerged motor	20
4.7	Selection of motor power - Air-cooled motor	21
4.7	Floor node and shaft wiring	23
4.8	Car node	23
4.9	Shaft information	24

1 Product Overview

HydroElite is an integrated control and drive system for hydraulic lifts. All the decentralised functions in the system, on the lift car and at landings, communicate via a common data bus, CANbus.

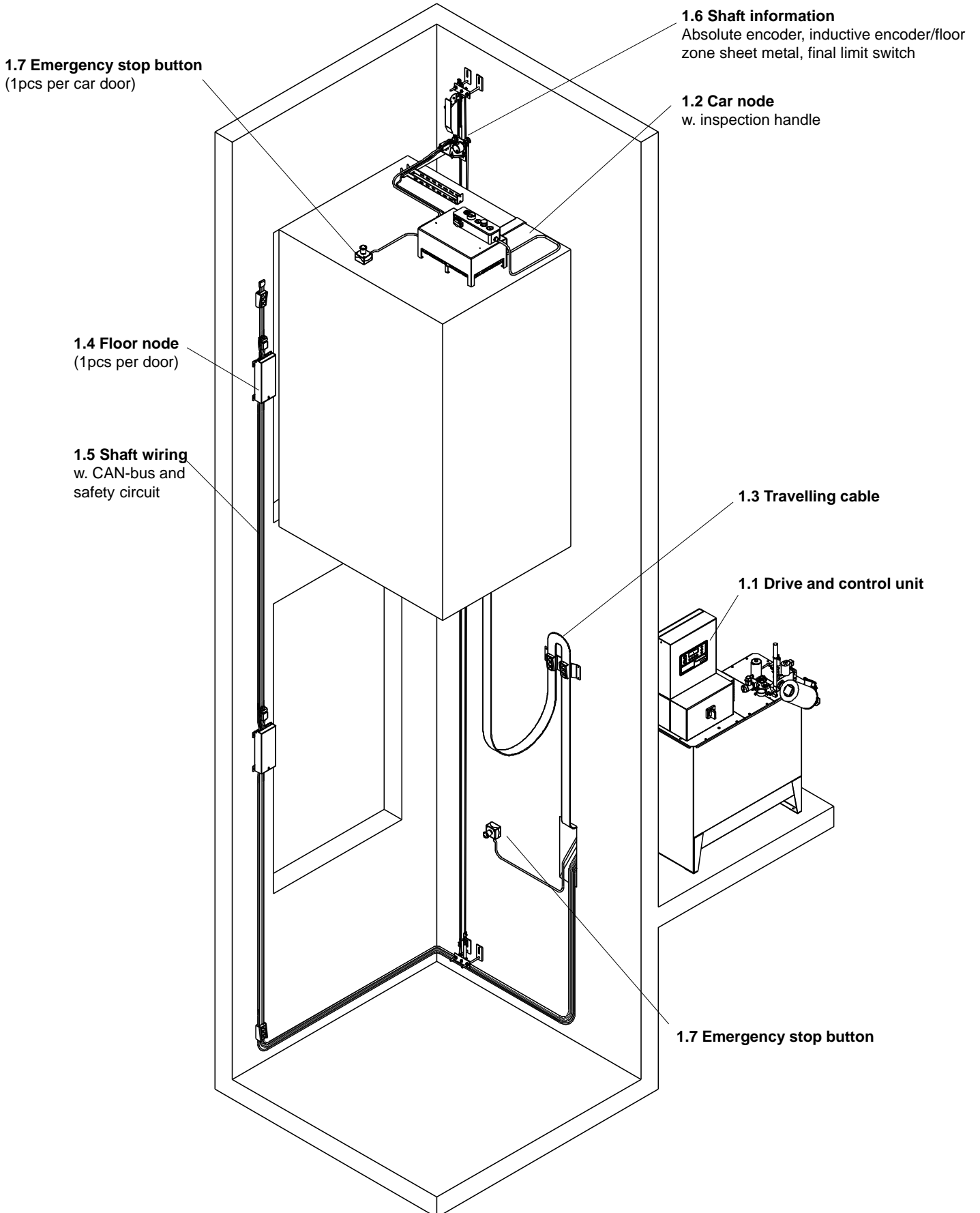


Fig. 1 System view for drive and control system, Hydroelite

1.1 Drive and Control unit

The drive and control unit is assembled around the oil tank and contains a pump and motor (inside the tank), a valve unit and a control cabinet (above the tank).

The valve system is electronic regulated with a specially designed servo valve for precise regulation of the oil flow. This enables direct approach to floor without any creeping. The system is completely self-learning and requires no manual settings.

The control cabinet controls the regulation of the valve, starts the motor and is the main part for controlling the lift.

1.1.1 Technical Specifications

1.1.1.1 Oil Tank

Tank types: 135, 230, 290, 400, 475, 700, 950, 1200, 200MRL, 365MRL provided with:

- An oil level gauge (dip stick)
- Color RAL 3020 (red), NCS 3060-Y70R (brick red), RAL 3004 and other colors on demand
- Four rubber pads for isolation between tank and floor.

1.1.1.2 Motor

Submerged or air-cooled three-phase motor, 2 poles

Without fly-wheel

With PTC thermistors for overheating protection (110°C).

a) Supply Voltages

- 50Hz: 230, 400 V AC+6% -10% / 415 V AC ±5%

b) Motor Starting

- Electronic soft starter, included in the control cabinet (submerged motor)
- Frequency inverter (air-cooled motor)

1.1.1.3 Pump

- Screw pump with strainer
- Pulsation damper situated between the pump and the valve system.

Pump capacity: 45-800 l/min.

Recommended static pressure ranges:

- 1.2-4.5 MPa for pumpflow up to 250 l/min (down speed = up speed)
- 1.4-4.5 MPa for pumpflow up to 250 l/min (down speed = 1.5 x up speed)
- 1.4-4.5 MPa for pump flow 300-600 l/min (down speed = up speed)
- 1.75-4.3 MPa for pump flow 800 l/min (down speed = up speed)

Maximum contracted speed: 1.0 m/s

Minimum contracted speed: 0.15 m/s

Maximum travel starts: 120 per hour

1.1.1.4 Valve System

The valve system have the following general data:

- Solenoid valve VMD: single winded(24 V DC±20%, 0.7 A) with terminals +24 V, common and ground
- Servo valve: single winded (24 V DC) with terminals +24 V and common
- Manual emergency lowering valve (VSMA) which maintains a minimum pressure during operation
- Pressure gauge (0-10 MPa) with shut-off valve and a test connection with internal thread G1/2
- Handpump
- Shut-off valve with hose coupling, silencer and filter. Turnable 360°
- Overload pressure switch

1.1.1.5 Oil Overheating Protection

The power unit is equipped with a thermo switch for overheating protection of the oil. The switch is activated at 70 °C.

1.1.1.6 Control Cabinet

The control cabinet contains the following components:

- Main switch with motor protection
- Soft starter which reduces the start current and one contactor for the motor (only with submerged motor)
- Connections for safety circuit
- Printed circuit board (control node) with integrated electronics for regulation of the valve system, traffic control and communication to car node and floor nodes

The control node manages inputs and outputs in the machine room and supervises the safety circuit that is connected there.

It supervises also the other nodes including their safety circuit and also processes their in- and outsignals.

The lift main program runs at the control node.

- Digital display with push buttons for commissioning/settings and diagnostics
- Battery + battery charging board (24V)
- Fuses
- Telealarm or intercom device
- Connection for recall handle
- 5 programmable inputs
- 4 programmable outputs (active -)

1.1.1.7 Labels and Plates

The power unit is delivered with:

- Labels with the designations VMD and SERVO placed on the valves respectively
- A plate with the valve size and the pump capacity placed on the valve block
- A motor data plate placed on the tank lid
- Warning plates for the handpump and the emergency lowering valve (in DE/EN/FR/IT/ES)
- A label indicating the oil type.
- Valve size is marked on the valve block

1.1.1.8 Available Options

- External oil level indicator (standard: oil dip stick)
- Minimum pressure switch
- Low hysteresis pressure switch (for full load control)
- Electric emergency lowering (standard: manual emergency lowering)
- Connection for oil cooler
- A drain plug with shut off valve located on the tank side
- Oil cooler thermostat (standard: not required. Only for exceptionally high start frequency)
- Oil level switch
- Another current than 230V for safety circuit/feed to pawl device/retracting ramp
- Digital pressure switch (DZE)
- Tank heater
- Oil spillage tray

1.2 Car Node

The car node is located on the car roof and is the interface for parts that are installed in the car and on the roof.

The car node is a CAN node and handle all occurring inputs and outputs in/on the car including the car safety circuit and forward the data to the control node.

1.2.1 Technical Specifications

The car node presents the following features:

- Connections for car safety circuit
- Emergency light supply (including a bulb and socket)
- Alarm buzzer and alarm buttons over and under the car
- Terminal point for the travelling cable
- Inspection panel
- Interface for 2 car doors
- COP interface:
 - 16 destination buttons with acknowledge
 - 2 door open buttons
 - 2 door close buttons
 - 7 outputs for floor indicator (active + or -)
 - 2 outputs for moving direction arrows (active + or -)
 - 8 programmable inputs
 - 8 programmable outputs (active + or -)
- Interface for shaft information

1.3 Travelling Cable

The travelling cable consists of a flat cable running between the control node and the car node.

1.3.1 Technical Specifications

- Flatcable 24x0.75 + 10x0.5 + 3x1.5 + 3x2x0.5 wire
- Wall mount material

1.4 Floor Node

The floor node is located at each door access and is the interface for the connections there.

The floor node is a CAN node and handle all occurring inputs and outputs with the landing including the door safety circuits and forward the data to the control node.

1.4.1 Technical Specifications

The floor node presents the following features:

- Two call buttons
- Two programmable inputs
- Two programmable outputs (active + or -)
- 7 outputs for floor indicator (active + or -)
- 2 hall lanterns (active + or -)
- Arrival signal (active + or -)
- Landing door lock contacts
- Landing door closed contacts - bridged if automatic landing doors.

Each node is supplied with a cable with a self-tapping connector to be connected to the shaft wiring.

1.5 Shaft Wiring

The shaft wiring is running from the controller to the top of the shaft. It is including the bus signal and the door safety circuit.

1.5.1 Technical Specifications

Shaft wiring is composed of:

- Double insulated flat cable, with formation $5 \times 2,5 + 2 \times 1,5 \text{ mm}^2$ shielded. It provides the floor nodes with 24V power feed and CAN bus wiring.
- $2 \times 0,75 \text{ mm}^2$ wires for the door safety circuit
- Wall fixing material

1.6 Shaft Information

This is the subsystem responsible to provide car position and the door overbridging zones information to the controller.

It contains of an absolute encoder which senses the position and an inductive encoder which senses when the lift is within a floor zone. Both of these encoders supervise each other.

It is also including a limit switch connected in the safety circuit to prevent the lift to travel above the highest floor, final limit switch.

1.6.1 Technical Specifications

The shaft information is composed of:

- Absolute encoder with fixings to be placed on the car roof together with
- inductive sensor and
- final limit switch
- A Shaft set, composed of:
 - a timing belt (length by commission),
 - a plastic stripe
 - steel sheets to indicate the door zone (one per floor)
 - limit switch curve and fixing material to the shaft wall.

Variant:

- Final limit switch mounted on the shaft wall with the curve on the pulley head (Rope hydraulic). In this case, it is supplied loose with a wire to the control cabinet.
- Two units of limit switches for shaft wall mounting (two-jack rope hydraulic system).

1.7 Emergency Stop Button

Two units of this device are always supplied, one for the pit, with a cable (length by commission) for the control cabinet.

The other one for the front access of the car, with a fixed length cable to be connected to the car node. Another unit could be required in case of two-access cars, to comply with the code requirement of having a stop-switch within 1 m of each access.

1.7.1 Technical Specifications

- NC contact to be connected to safety circuit

Variant:

- If automatic car door, an additional NC contact is included (car roof button) to be able to stop the door movement (24 V)

1.8 Miscellaneous

Extra wiring is delivered to be able to connect for example car panel, anti creep device.

1.8.1 Technical Specifications

- Cable $18 \times 0,75 \text{ mm}^2$ to carpanel
- if anticreep device, cable $5 \times 0,75 \text{ mm}^2$ for switches and $3 \times 0,75 \text{ mm}^2$ for supply power
- if swing doors, cable $3 \times 0,75 \text{ mm}^2$ wire for stopbutton in carpanel and feed to retracting ramp
- if swingdoor opener, cable $3 \times 0,75 \text{ mm}^2$ for supply power (1-phase) or $5 \times 0,75 \text{ mm}^2$ (3-phase)

1.9 Group Connection

In case of group lifts, a four-wire cable makes the connection between the control cabinets, to provide group communication between the lift processors.

All floor nodes are always feeded with 24V as long as one lift controller has power.

1.9.1 Technical Specifications

- 4x0.5 twisted pair (2 wires for bus, 2 wires for 24V to supply the other lifts floor nodes)

1.10 Remote Supervision

The hydraulic system contains supervision of the lift and can transmit error indications and service diagnostics via the telephone/GSM network which can be distributed via the internet.

Safeline

Safeline is a two-part alarm telephone consisting of one main unit and one remote unit.

The alarm telephone Safeline is available in two versions, internally mounted in the control unit or externally mounted in a separate unit. The functions of the alarm telephone are the same for both versions. The alarm telephone can be connected to the permanent telephone network (telephone jack in the machine room) or via a separate Safeline GSM module (option). Up to nine alarm telephones can be connected on the same line.

When a lift passenger presses the alarm button the alarm telephone makes an automatic call to an alarm central or an alarm receiver and the receiver can then take measures or speak directly to the distressed passenger. The alarm operator can also call up the lift and talk to the passengers.

The Hydroelite control unit can also use the alarm telephone to send service alarm when errors occur that blocks the lift, either shown on a service alarm receiver (SLCC) or to be sent forward via e-mail or SMS (option).

1.10.1 Technical Specifications

Alarm telephone

- Safeline alarm telephone
- Speaker-microphone unit (remote unit) incl. 7 meter 8-part cable for connection to the car node
- Telephone contact with a 5 meters modular cable (not delivered with GSM module)
- Program floppy disk and programming cable
- Safeline manual and installation instructions (see section 6 in Hydroelite folder).

Option

- Safeline Remote-LED speaker-microphone unit with built-in alarm light - Note! adapted for 24V
- Safeline GSM module (replaces the permanent telephone connection)
- Safeline Intercom module (voice communication between machine room and lift car).

1.11 Packing Specifications

- Package on EUR-pallet/pallets
- Package is stretch-wrapped with PE-film

	Tank type	Number of pallets		Total Weight [kg]
		EUR (1.2 x 0.8 m)	1/2 EUR (0.6 x 0.8 m)	
VENI MR	230	1	-	260
	400	1	1	300
	700	1	1	390
	950	2	1	450
	1200	2	1	520
VIDI MR	135	1	1	340
	290	1	1	380
	475	1	2	450
VENI MRx2	400 x 2	2	1	600
	700 x 2	2	1	780

Tab. 1.10 Package size and weight, Hydroelite Veni MR, Vidi MR and Veni MRx2

1.12 Peripherals and Interfaces

The Hydroelite drive and control unit is a complete package and is designed only for the regulated valve units that are incorporated on the drive unit.

The system is very flexible and easy to adjust to different surroundings.

2 Scope of Applications

The scope of application shows possibilities and restrictions of the Hydroelite control.

Main data	Details	Value
Group size	Number of lifts	1-4
Travel height / rise (HQ) [m]		<= 30
Short Interfloor Distance [mm]	Minimal floor distance for front and rear openings	75
Disposition		MR, MRL
Number of floors (ZE)		1-16
Number of openings (ZKE)		1-16
Speed range [m/s]	Discrete values	0.15 - 1.0
Pump flow [l/min]		45, 55, 75, 100, 125, 150, 180, 210, 250, 300, 330, 380, 440, 500, 600, 660, 800
Motor power - submerged [kW]		4.4, 6, 7.7, 9.5, 11, 12, 13, 14.7, 16, 20, 24, 29, 33, 40, 47, 60
Motor power - aircooled [kW]		4, 5.5, 7.5, 9, 11, 15, 18.5, 22, 30, 37
Supply voltage [V]		230, 400, 415
Tank size [l]		135, 230, 290, 400, 475, 700, 950, 1200, MRL200, MRL365
Pressure range	Min. pressure - max. pressure	10-50 bar
EMC filter		Yes, standard
Door types	Limit switches NC	Automatic, Swingdoor, Swing+cardoor, Swingdoor opener
Door reversal	Potential free contact NC, PNP or NPN	
Second access side	Parallel or selective openings	Yes

2.1 Basic Functions

These functions are included as standard.

Basic functions		
Control type		DE-Non-collective control (Direct)
		PI-Non-collective control with landing call registration (Pick-up)
		KA-One direction collective control /
		KS-Bi-directional collective control / collective selective
Floor Indicators	At floor and cabin	BCD, Gray or Decimal code
Moving direction	In cabin	
Next travel	At floors	
Arrival signal	At floors	
Anti creep device	Travel, catch and buffer contacts	0-2 devices
Automatic return		To adjustable floor
Trip counter	Implemented in software	
Hours in service	Implemented in software	
Test travel functions	Implemented in software	
Error log	Saves 60 errors in different priority levels	

2.2 Extra Functions

The following list are available special functions which could be set to every programmable input.

Name in Display	Description	Related Out.
NONE	o No function	
Disable Flr 1	o Disable floor calls and destinations to floor 1	
Disable Flr 2	o Disable floor calls and destinations to floor 2	
Disable Flr 3	o Disable floor calls and destinations to floor 3	
Disable Flr 4	o Disable floor calls and destinations to floor 4	
Disable Flr 5	o Disable floor calls and destinations to floor 5	
Disable Flr 6	o Disable floor calls and destinations to floor 6	
Disable Flr 7	o Disable floor calls and destinations to floor 7	
Disable Flr 8	o Disable floor calls and destinations to floor 8	
Disable Call/FI	o Disable floor calls, only on the floor node that the function is set to	
Disable FI.Call	o Disable all floor calls on the floor nodes that are set with "Disable Call/FI"	
Open/CI Floor	o Open/Closebutton for swing door opener, only on the floor node that the function is set to	
Call 1 Main	o Call Floor 1 side 1	
Call 2 Main	o Call Floor 2 side 1	
Call 3 Main	o Call Floor 3 side 1	
Call 4 Main	o Call Floor 4 side 1	
Call 5 Main	o Call Floor 5 side 1	
Call 6 Main	o Call Floor 6 side 1	
Call 7 Main	o Call Floor 7 side 1	
Call 8 Main	o Call Floor 8 side 1	
Fire Recall 1	Fire alarm that blocks Recall floor 1 o Input that blocks one floor for return, set in menu 5.6.2 o If recall floor 2 is not blocked this floor is selected for return, otherwise 3 o Parks elevator with door in position that is set in menu 5.6.2 o Disable destination and call buttons.	Fire Ind.
Fire Recall 2	Fire alarm that blocks Recall floor 2 o Input that blocks one floor for return, set in menu 5.6.2 o If recall floor 1 is not blocked this floor is selected for return, otherwise 3 o Parks elevator with door in position that is set in menu 5.6.2 o Disable destination and call buttons.	Fire Ind.
Fire Recall 3	Fire alarm that blocks Recall floor 3 o Input that blocks one floor for return, set in menu 5.6.2 o If recall floor 1 is not blocked this floor is selected for return, otherwise 2 o Parks elevator with door in position that is set in menu 5.6.2 o Disable destination and call buttons.	Fire Ind.
Fire block	o Blocks elevator at its location	
BR1 Fire	o Fire alarm with return to floor that is set in menu 5.6.2 o Parks elevator with door in position set in menu 5.6.2 o Disable destination and call buttons.	Fire Ind.
BR1 Fire 2	o Fire alarm with return to floor 2 that is set in menu 5.6.2 o Parks elevator with door in position set in menu 5.6.2 o Disable destination and call buttons.	Fire Ind.
CabinDisable	o Disable all new destinations from cabin	
CabinDbl Flr	o Disable destinations to one or more floors, that are set in menu 5.6.6 o Disable destinations to floor which floornode has the function "Dsbl CarCall/FI" active	
PB Time	o Activates output "Timer" for certain time, adjustable in menu 5.9.1 (minutes)	Timer
N/A	o Not available function	
LowPit	Contact at low pit o gives a blocking that has to be reset at the controller before a new travel can be done o Prevents start / interrupts a travel	

Name in Display	Description	Related Out.
LowPit door	Contact for door at low pit <ul style="list-style-type: none"> o gives a blocking that has to be reset at the controller before a new travel can be done o Prevents start / interrupts a travel o The contact is supervised at every door opening 	
LowTop door	Contact for door at low top <ul style="list-style-type: none"> o gives a blocking that has to be reset at the controller before a new normal travel can be done o Prevents start / interrupts a travel o The contact is supervised at every door opening o Inspection travel is possible 	
LowTop	Contact at low top <ul style="list-style-type: none"> o gives a blocking that has to be reset at the controller before a new normal travel can be done o Prevents start / interrupts a travel o Inspection travel is possible 	
ContCarPanel	Contact behind the car panel (sabotage switch) <ul style="list-style-type: none"> o gives a blocking that has to be reset at the controller before a new normal travel can be done 	
Disable OpDo	Elevator disable with opened door <ul style="list-style-type: none"> o Disable destination and call buttons. o Travel to floor that is set in menu 5.6.4, if floor=0 park at current floor o Parks elevator with door opened 	Out of Serv.
Disable Lift	Elevator disable <ul style="list-style-type: none"> o Disable destination and call buttons. o Travel to floor that is set in menu 5.6.4, if floor=0 park at current floor 	Out of Serv.
Disable Fan	<ul style="list-style-type: none"> o Disable output "Fan Timer" 	Fan Timer
Enable Light	<ul style="list-style-type: none"> o Makes the output "Aut.CabLight" constant active 	Aut.CabLight
Overload Ext	External overload contact <ul style="list-style-type: none"> o Keep automatic doors open o Prevent start 	Overload ind
Fulload Ext	Extern fullast kontakt <ul style="list-style-type: none"> o Tar emot anrop men behandlar de ej 	Fulload Ind
Minload Ext	External minload contact <ul style="list-style-type: none"> o Prevent new destinations 	
Evac. Travel	Evacuation travel <ul style="list-style-type: none"> o Activates a evacuation travel at external emergency power ("EmrgPow Dsbl" is active) to floor set in menu 5.6.4. If floor is set to 0 the elevator is evacuated to nearest floor below o Parks elevator with door in position set in menu 5.6.4 	Evac Finish
EmrgPow Dsbl	<ul style="list-style-type: none"> o Block destinations and calls at external emergency power 	EmPower Ind.
EmrgPow Rel	<ul style="list-style-type: none"> o Allows normal travels at external emergency power ("EmrgPow Dsbl" is active) 	
FireMan v1	Fireman control version 1 <ul style="list-style-type: none"> o Disable call buttons o Returns to recall floor and parks with door opened o Closes door at constant pressed destination button, reverses door if button is released o Do not opened the door when the elevator arrives to floor. Just opens at constant pressed open button and closes immediately when the button is released. o Door is parked when full opened 	FireCtrl Ind
FireMan v2	Fireman control version 2 <ul style="list-style-type: none"> o Disable call buttons o Returns to recall floor and parks with door opened o Closes door after new destination o Do not opened the door when the elevator arrives to floor. Just opens at constant pressed open button and closes immediately when the button is released. o Door is parked when full opened 	FireCtrl Ind

Name in Display	Description	Related Out.
FireMan v3	Fireman control version 3 <ul style="list-style-type: none"> o Disable call buttons o Returns to recall floor and parks with door opened o Closes door after new destination o Door opens automatically when arrival to floor o Door is parked when full opened 	FireCtrl Ind
FireMan ext. PB	o If an extra push button is needed to be activated to enable fireman control	
Hid.DoCont	Extra door contact at swing door <ul style="list-style-type: none"> o Prevents start / interrupts a travel 	
FireMan.Reset	o If an manual reset is needed to deactivate a fire alarm ("BR1 Fire" has to be inactive)	
Priority	Priority travel <ul style="list-style-type: none"> o Block calls o Park with automatic doors open o Just receives one destination at a time 	Priority Ind
Prio One Tr.	Priority travel, just one destination <ul style="list-style-type: none"> o Receive calls but do not process them o Parks with automatic door open for a time that is set in menu 5.5.1.1.7 o Just receives one destination at a time. o After a travel or time (menu 5.5.1.1.7) the elevator is automatically available 	Priority Ind
Park Op.Door	<ul style="list-style-type: none"> o Park with automatic doors opened o Blocks destinations and calls 	ParkOpDo Ind
PHCELL Norm	Photocell swing door <ul style="list-style-type: none"> o Prevents start, interrupts a travel and disable calls o Reset blocking with new destination 	
PHCELL Supv.	Photocell swing door, supervised <ul style="list-style-type: none"> o Prevents start, interrupts a travel and disable calls o Reset blocking with new destination o Check that photocell is inactive before start 	CabinDbl ind.
OpenSwg+Emst	Door reversing swing door + emergency stop <ul style="list-style-type: none"> o Door reversion of swing door opener o Prevents start, interrupts a travel and disable calls o Reset blocking with new destination 	
Close swg Door	o Close button for swing door opener, only on the floor node that the function is set to	
Open swg Door	o Open button for swing door opener, only on the floor node that the function is set to	
Send to 1	o Send button to floor 1	Ackn send 1
Send to 2	o Send button to floor 2	Ackn send 2
Send to 3	o Send button to floor 3	Ackn send 3
Set Output	o Activates the output "Output"	Output
Oil Level cntct	Oil level contact <ul style="list-style-type: none"> o Return to floor 1 o Gives a blocking that has to be reset at the controller before a new travel can be done 	
Dsbl CarCall/Fl	o If "CabinDbl Flr" is active, destinations are disabled to floor which floornode has the function "Dsbl CarCall/Fl" active	

The following list are available special functions which could be set to every programmable output.

Name in Display	Description	Related Input
NONE	o No function	
Swg door rel	Control of relay for swing door opener	
	o Active for all floors (door locking contact LKK11 - 81 is used)	
Swg d. rel 2	o Control of relay for swing door opener 2nd side at 2 entrances at same floor	
	Control of relay for swing door opener:	
Swgdoor re1:1	floor 1 side 1	
Swgdoor re2:1	floor 2 side 1	
Swgdoor re3:1	floor 3 side 1	
Swgdoor re4:1	floor 4 side 1	
Swgdoor re5:1	floor 5 side 1	
Swgdoor re6:1	floor 6 side 1	
Swgdoor re7:1	floor 7 side 1	
Swgdoor re8:1	floor 8 side 1	
Swgdoor re1:2	floor 1 side 2	
Swgdoor re2:2	floor 2 side 2	
Swgdoor re3:2	floor 3 side 2	
Swgdoor re4:2	floor 4 side 2	
Swgdoor re5:2	floor 5 side 2	
Swgdoor re6:2	floor 6 side 2	
Swgdoor re7:2	floor 7 side 2	
Swgdoor re8:2	floor 8 side 2	
	o Activated by door button	
	o Inactive after a new press on button or after a time that is set in menu 5.5.2.2	
Alarm Ind.	o Flashing indicator after alarm button is pressed (DM236) o Is reset at next door opening	
BatTrav ind.	o Active when emergency travel with battery is in progress	
N/A	Not available function	
DoorOpen s:1	o Active when automatic door opens, Side 1	
DoorCl. s:1	o Active when automatic door closes, Side 1	
DoorOpen s:2	o Active when automatic door opens, Side 2	
DoorCl. s:2	o Active when automatic door closes, Side 2	
N/A	Not available function	
Timer	o Output that is active an adjustable time, menu 5.9.1 (minutes) o activated by "PB Time"	PB Time
N/A	Not available function	
Door Nudge	Forced door closing o Active after the door has reversed ten times on photocell o or that the door has stand full opened, blocked by the photocell, for a time, that is adjustable in menu 5.5.1.1.6	
Direction Up	Travel direction Up o Next travel has priority upwards	
Direction Dw	Travel direction Down o Next travel has priority downwards	
HereLamp 1	o Lift stationary at floor 1	
HereLamp 2	o Lift stationary at floor 2	
HereLamp 3	o Lift stationary at floor 3	
HereLamp 4	o Lift stationary at floor 4	
HereLamp 5	o Lift stationary at floor 5	
CallAck 1:1	o Acknowledgement call button floor 1:1	
CallAck 2:1	o Acknowledgement call button floor 2:1	
CallAck 3:1	o Acknowledgement call button floor 3:1	
CallAck 4:1	o Acknowledgement call button floor 4:1	
CallAck 5:1	o Acknowledgement call button floor 5:1	
CallAck 6:1	o Acknowledgement call button floor 6:1	

Name in Display	Description	Related Input
Elev. Error	Elevator error indicator <ul style="list-style-type: none"> o at blocking error that has to be reset at the controller o after the elevator has made a number of start attempts without been able to start 	
EmPower Ind.	Emergency power indicator <ul style="list-style-type: none"> o Active when input "EmrgPow Dsbl" is active 	EmrgPow Dsbl
Evac Finish	Evacuation travel finished <ul style="list-style-type: none"> o active after an evacuation travel has been performed and the elevator is at the evacuation or the fire recall floor 	Evac. Travel
Fire Ind.	Fire alarm indicator <ul style="list-style-type: none"> o Active after a fire alarm input is activated 	Fire Recall 1, Fire Recall 3, BR1 Fire, BR1 Fire 2
FireCtrl Ind	Fireman control indicator <ul style="list-style-type: none"> o Active when fire alarm control is active 	FireMan v1, FireMan v3
DoorCl. Fire	<ul style="list-style-type: none"> o Active during door closing at fire alarm / fireman control 	
Fan Timer	Fan control <ul style="list-style-type: none"> o Active when door is open and during a travel o inactive after an adjustable time in stand still mode, menu 5.9.1 (minutes) o or if input "Disable Fan" is active 	Disable Fan
Aut.CabLight	Control of cabin light <ul style="list-style-type: none"> o Active when door is open and during a travel o inactive after an adjustable time in stand still mode, menu 5.9.1 (minutes) o or constant active if input "Enable Light" is active 	Enable Light
ArrivalFloor	<ul style="list-style-type: none"> o Active when elevator is in deceleration mode 	
Lift coming	<ul style="list-style-type: none"> o Active during deceleration, just at the floor node that the elevator is on its way to 	
FloorZon Buz	<ul style="list-style-type: none"> o Active if the elevator is within floor zone 	
Gate Open	Door open -buzzer <ul style="list-style-type: none"> o Active if door is open and call on other floor is pressed 	
Gong	Arrival signal in Cabin <ul style="list-style-type: none"> o Active when lift arrives to a floor call o Different variants can be set in menu 5.8.3 	
Occupied	Occupied lamp <ul style="list-style-type: none"> o Active when door is open, during travel and if elevator is not in normal mode 	
Out of Serv.	Lift out of service <ul style="list-style-type: none"> o at blocking error that has to be reset at the controller o after the elevator has made a number of start attempts without been able to start o When elevator is shut off or in special services(ex. fire alarm, priority) o when elevator is in inspection mode 	
Out of Func.	<ul style="list-style-type: none"> o at blocking error that has to be reset at the controller o after the elevator has made a number of start attempts without been able to start o when elevator is in inspection mode 	
Inspec. Ind.	<ul style="list-style-type: none"> o Active when elevator is in inspection mode 	
Overload ind	<ul style="list-style-type: none"> o Active at overload 	Overload Ext
Fulload Ind	<ul style="list-style-type: none"> o Active at fulload 	Fulload Ext
Output	<ul style="list-style-type: none"> o Active if input "Set Output" is active 	Set Output
ParkOpDo Ind	<ul style="list-style-type: none"> o Active if input "Park Op.Doo" is active 	Park Op.Door
Priority Ind	<ul style="list-style-type: none"> o Active if input "Priority" or "Prio One Tr." is active 	Priority, Prio
Phtcl/Travel	<ul style="list-style-type: none"> o Output inactive before start, active during start and travel 	PHCELL Supv.
Ackn send 1	<ul style="list-style-type: none"> o Acknowledgement of send button to floor 1 	Send to 1
Ackn send 2	<ul style="list-style-type: none"> o Acknowledgement of send button to floor 2 	Send to 2
Ackn send 3	<ul style="list-style-type: none"> o Acknowledgement of send button to floor 3 	Send to 3
N/A	<ul style="list-style-type: none"> o Not available function 	
Call blocked	<ul style="list-style-type: none"> o Active if "Disable Fl.Call" is active 	Disable Fl.Call
CabinDbl ind.	<ul style="list-style-type: none"> o Active if "CabinDbl Flr" is active 	CabinDbl Flr
Sound Acknow.	<ul style="list-style-type: none"> o Active 0.4sec after press on destination button 	

3 Standards and Regulations

The power unit complies with the Lift Directive 95/16/EG Directive 89/336/EEC with the standard EN81-2 and fulfills the EMC standards EN 12015 and En 12016. With option EMC-filter also the generic standards are fulfilled.

Type	Additional information
CE	CE conformity for European markets
95/16/EC	European lift directive
89/336/EEC	EMC generic standard
EN81-2,1998	Safety rules for the construction and installation of lifts Part 2: Hydraulic lifts
EN81-28	Remote alarm on passenger and goods passenger lifts
EN81-21	Safety rules for the construction and installation of lifts Part 21: Electric and hydraulic lifts - New passenger lifts and goods lift in existing buildings
EN81-70	Safety rules for the construction and installation of lifts part 70: Particular applications for passenger and goods passenger lifts - Accessibility to lifts for persons including persons with disability
EN81-72	Firefighter lifts, when combined with IP3X fixtures
EN12015:1998	Electromagnetic compatibility - Product family standard for lifts, escalators and passenger conveyors - Emission
EN12016:1998	Electromagnetic compatibility - Product family standard for lifts, escalators and passenger conveyors - Immunity
EN61000-4-2 -3, -4, -5, -6, -11,	Electromagnetic compatibility (EMC) - Part 4-2: Testing and measurements
EN55011 class B	Industrial, scientific and medical (ISM) radio-frequency equipment - Radio disturbance characteristics - Limits and methods of measurement
IEC60204-1	IEC standard voltages
IEC60364-1	Electrical installation of building - Part 1: Fundamental principles, assessment of general characteristics, definitions
IEC60529	Degree of protection provided by enclosures (IP code)
ISO4190-1	Installation of passenger and service lifts - Part 1
ISO4190-1	Installation of passenger and service lifts - Part 2 (Goods lifts)

4 Dispo Information

4.1 Hydroelite VENI MR

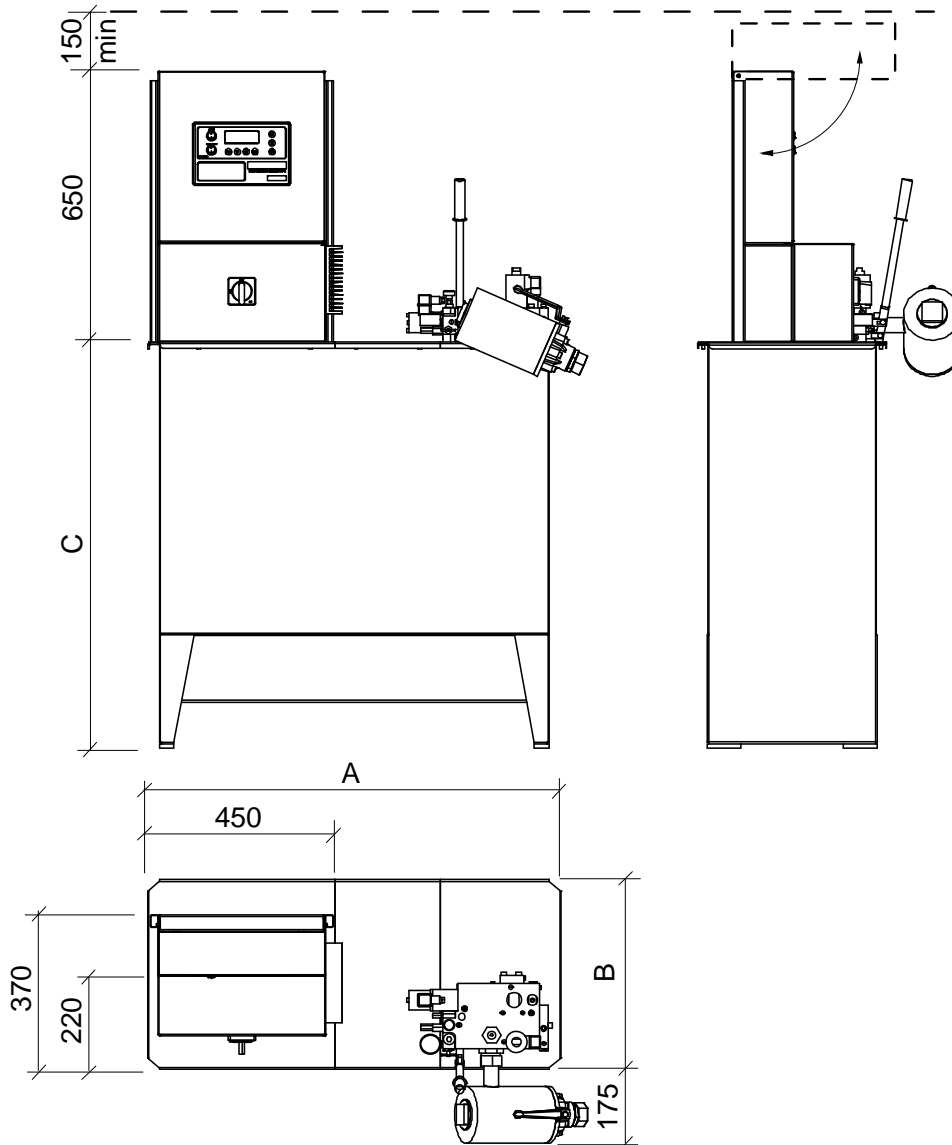


Fig. 4.1 Dimension sketch for drive and control unit, Hydroelite MR

Tank type	Pump [l/min]	Valve size	Dimension [mm]			Weight of complete unit without oil [kg]	Oil volume [l]	
			A	B	C		max	useful
230	55 - 210	1 ¼"	980	450	965	250	230	170
400	55 - 210	1 ¼"	1100	550	1110	300	400	310
400	250 - 440	2"	1100	550	1110	300	400	310
700	250 - 800	2"	1310	675	1130	390	700	435
950	250 - 800	2"	1800	675	1130	450	950	590
1200	250 - 800	2"	1750	850	1130	520	1200	700

Tab. 4.1a Dimension table for drive and control unit, Hydroelite MR

Pump [l/min]															
55	75	100	125	150	180	210	250	300	330	380	440	500	600	660	800

Tab. 4.1b Pump table

Motor [kW]															
4.4	6	7.7	9.5	11	12	13	14.7	16	20	24	29	33	40	47	77

Tab. 4.1c Motor table

4.2 Hydroelite VIDI MR

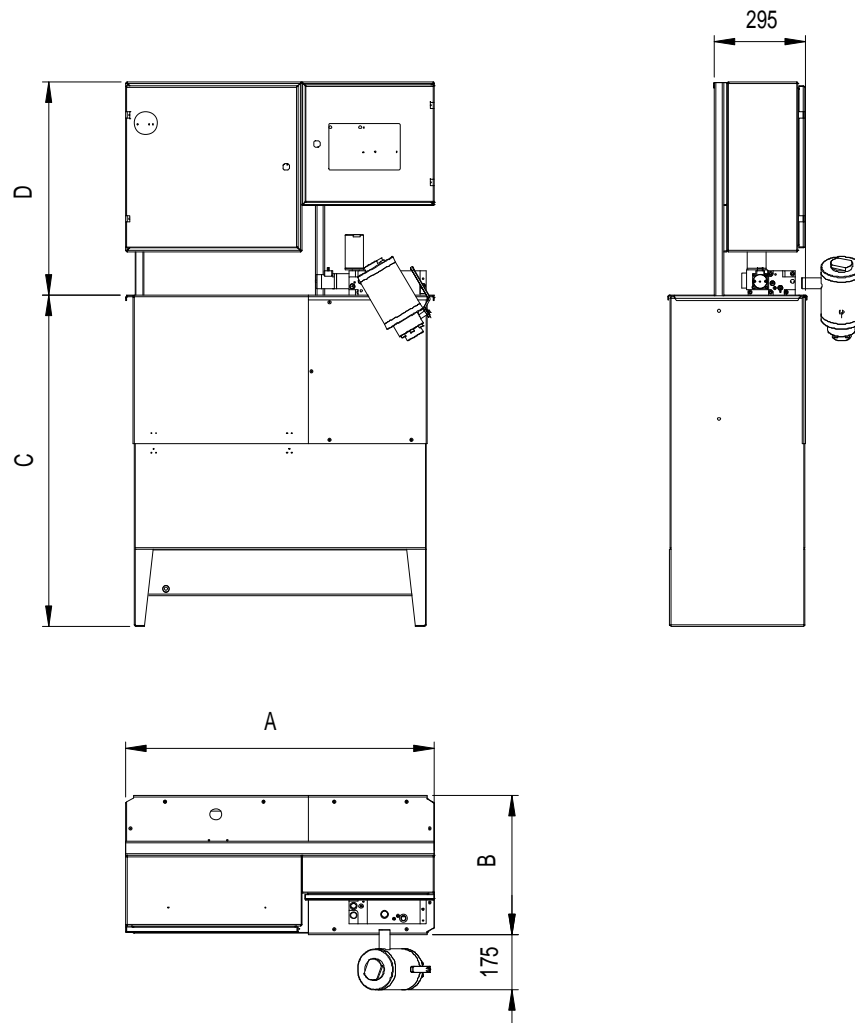


Fig. 4.2 Dimension sketch for drive and control unit, Hydroelite VIDI MR

Tank type	Pump [l/min]	Valve size	Dimensions [mm]				Weight of complete unit without oil [kg]	Oil volume [l]	
			A	B	C	D		max	useful
135	45 - 150	1 ¼"	1000	450	1073	690	250	135	95
290	180 - 330	2"	1200	600	1162	805	290	290	215
475	300-500	2"	1500	700	1415	570	360	475	370

Tab. 4.2a Dimension table for drive and control unit, Hydroelite VIDI MR

Pump [l/min]														
45	55	75	100	125	150	180	210	250	300	330	380	440	660	

Tab. 4.2b Pump table

Motor [kW]														
4	5.5	7.5	9	11	15	18.5	22	30	37	45				

Tab. 4.2c Motor table

4.3 MRL cabinet, VENI and VIDI

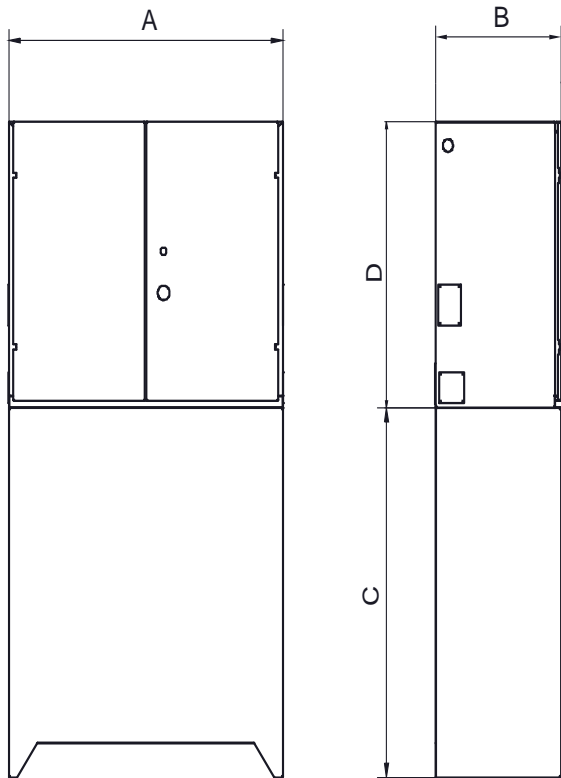


Fig. 4.3a Dimension sketch for MRL cabinet VENI

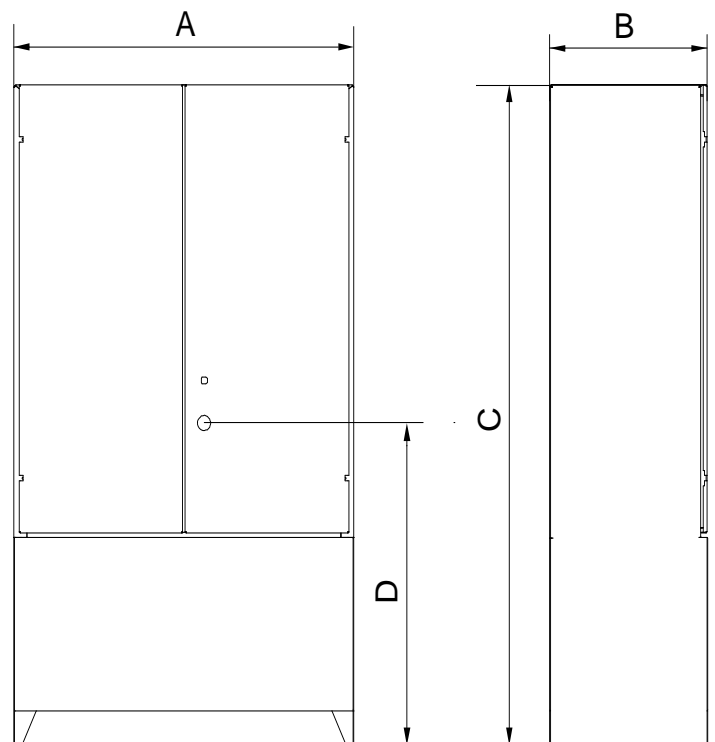


Fig. 4.3b Dimension sketch for MRL cabinet VIDI

Tank type VENI	Pump [l/min]	Valve size	Dimensions [mm]				Oil volume [l]	
			A	B	C	D	max	useful
MRL150	55 - 150	1 ¼"	990	454	860	840	150	80
MRL150	55 - 150	1 ¼"	670	454	1085	840	150	120
MRL200	55 - 210	1 ¼"	990	454	1085	840	230	160
MRL365	250 - 440	2"	1200	550	1085	865	365	250
Tank type VIDI	Pump [l/min]	Valve size	Dimensions [mm]				Oil volume [l]	
			A	B	C	D	max	useful
MRL135	45 - 150	1 ¼"	1105	510	1900	926	135	95
MRL290	180 - 330	2"	1305	660	2100	1026	300	215

Tab. 4.3 Dimension table for MRL cabinet

4.4 Hydroelite VENI MRx2

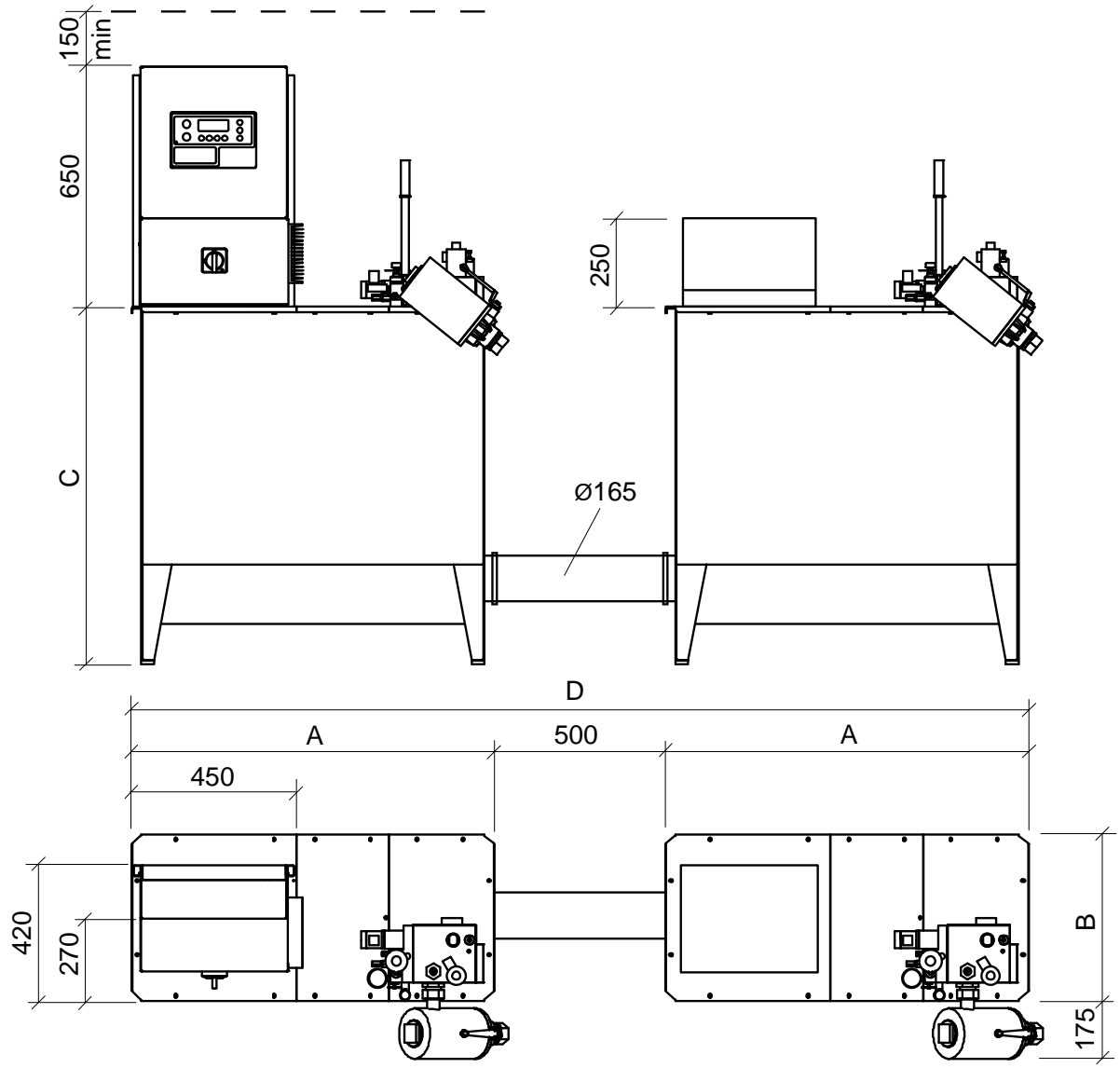


Fig. 4.4 Dimension sketch for drive and control unit, Hydroelite MRx2

Tank type	Pump [l/min]	Valve size	Dimension [mm]				Weight of complete unit without oil [kg]	Oil volume [l]	
			A	B	C	D		max	useful
400 x 2	440 x 2	2"	1100	550	1110	2700	460	800	620
700 x 2	440 x 2	2"	1310	675	1130	3120	580	1400	870

Tab. 4.4a Dimension table for drive and control unit, Hydroelite MRx2

Pump [l/min]											
440											

Tab. 4.4b Pump table

Motor [kW]											
20	24	29	33	40	47						

Tab. 4.4c Motor table

4.5 Motor characteristics

Supply voltage 230V 50Hz		Motor [kW]															
Nominal power	kW	4.4	6	7.7	9.5	11	12	13	14.7	16	20	24	29	33	40	47	60
Maximum power*	kW	5,6	7,7	9,9	12,2	14,1	15,4	16,8	18,8	20,6	25,7	30,7	37,7	41,9	50,8	59,6	75,8
Cosφ		0,80	0,78	0,79	0,77	0,77	0,79	0,81	0,83	0,85	0,88	0,85	0,84	0,85	0,85	0,86	0,86
Nominal current	A	18	25	32	41	47	48	52	56	61	73	90	110	125	148	169	209
Maximum current*	A	23	32	40	50	58	60	66	71	78	94	115	139	165	195	221	273
Starting current**	A	36	51	64	82	94	96	104	112	122	146	180	220	250	296	338	418
Soft starter setting	pos	3	4	5	7	8	8	8	8	A	A	C	D	D	D	E	F

Tab. 4.5a 230V 50Hz - Submerged motor

Supply voltage 400V 50Hz		Motor [kW]																
Nominal power	kW	4.4	6	7.7	9.5	11	12	13	14.7	16	20	24	29	33	40	47	60	77
Maximum power*	kW	5,6	7,7	9,9	12,2	14,1	15,4	16,8	18,8	20,6	25,7	30,7	37,7	41,9	50,8	59,6	75,8	97,6
Cosφ		0,80	0,78	0,79	0,77	0,77	0,79	0,81	0,83	0,85	0,88	0,85	0,84	0,85	0,85	0,86	0,86	0,88
Nominal current	A	10,4	14,6	18,5	23,4	26,8	27,8	29,7	32	35	42	52	63	72	85	97	120	152
Maximum current*	A	13,3	18,4	23,1	29	33	35	37,8	41	45	54	66	80	95	112	127	157	195
Starting current**	A	20,8	29,2	37	46,8	53,6	55,6	59,4	64	70	84	104	126	144	170	194	240	304
Soft starter setting	pos	0	1	2	3	4	5	5	6	6	7	8	A	B	C	C	D	D

Tab. 4.5b 400V 50Hz - Submerged motor

Supply voltage 415V 50Hz		Motor [kW]																
Nominal power	kW	4.4	6	7.7	9.5	11	12	13	14.7	16	20	24	29	33	40	47	60	77
Maximum power*	kW	5,6	7,7	9,9	12,2	14,1	15,4	16,8	18,8	20,6	25,7	30,7	37,7	41,9	50,8	59,6	75,8	97,6
Cosφ		0,80	0,78	0,79	0,77	0,77	0,79	0,81	0,83	0,85	0,88	0,85	0,84	0,85	0,85	0,86	0,86	0,88
Nominal current	A	10,1	14,1	17,8	22,6	25,8	26,7	28,6	31	34	40	50	61	69	82	93	116	147
Maximum current*	A	12,8	17,7	22,3	28	32	33	37	40	43	52	64	77	92	108	122	151	188
Starting current**	A	20,2	28,2	35,6	45,2	51,6	53,4	57,2	62	68	80	100	122	138	164	186	232	294
Soft starter setting	pos	0	1	2	3	4	5	5	6	6	7	8	A	B	C	C	D	D

Tab. 4.5c 415V 50Hz - Submerged motor

Supply voltage 400V 50Hz		Air-cooled Motor [kW]										
Nominal power	kW	4	5.5	7.5	9	11	15	18.5	22	30	37	45
Maximum power*	kW	5,2	7,2	9,8	11,7	14,3	19,5	24,1	28,6	39,0	48,1	58,5
Cosφ		0,86	0,91	0,91	0,82	0,86	0,89	0,89	0,90	0,92	0,89	0,88
Nominal current	A	7,8	10,0	13,5	17,8	20,6	26,9	33,0	38,0	51,0	65,0	79,0
Maximum current*	A	10	13,0	17,6	23,1	26,8	35	42,9	49,4	66,3	84,5	130

Tab. 4.5d 400V 50Hz - Air-cooled motor

Frequency inverter	kW	4	5.5	7.5	11	15	18.5	22	30	37	45
Nominal current	A	9	13	16.5	25	29	40	46	60	74	96
Starting/Max current***	A	13.5	19.5	25	34.5	43.5	60	69	90	111	144

Tab. 4.5e Frequency inverter for air-cooled motors

- * Due to intermittent drive, it is allowed to overload the motor by 30%
Maximal power/current are stated at maximal load and at an oil viscosity of 75 cSt.
- ** The starting current is electronically limited to twice the nominal current.
Electronic supervised soft starter.
- *** The starting current with a frequency inverter is never higher than the maximal current of the inverter.

4.6 Selection of motor power - Submerged motor

		Nominal pump capacity [l/min]															
		55	75	100	125	150	180	210	250	300	330	380	440	500	600	660	800
		1x	2x									380	440	500			
Maximum static pressure [bar]	20				4.4												
	21					6						14,7					
	22			4.4						13	14,7					29	
	23							9.5				16	20		24	29	
	24							9.5		13							
	25																
	26			4.4		6											33
	27					7.7					14.7	16					
	28																
	29				6												
	30									16			24		33	40	
	31										20			29			
	32	4.4				7.7		11	13	14.7			24				60
	33													29		40	
	34						9.5				20				33		47
	35																
	36							12	14.7	16							
	37											24					
	38			6	7.7								29	33			
	39					9.5									40	47	
	40						11	13									
	41									20	24						
	42												33				60
	43						12	14.7						40			
	44																77
	45					11									47		
	46	6					13	16								60	
	47		7.7	9.5						20	24	29		40			
	48											33			47		
	49					12								47	60		
	50						13	14.7	20								

Tab.4.6a Selection of motor power 50 Hz

Selection is taken in consideration to an additional dynamic pressure of 15% from the lift (but at least min 5bar).

		Pump	
		800	
Maximum static pressure [bar]	10		
	11		
	12	33	
	13		
	14		
	15		
	16	40	
	17		
	18		
	19		

Tab.4.6b Selection of motor power 50 Hz Low pressure

4.7 Selection of motor power - Air-cooled motor

50Hz

70Hz

	Nominell pumpkapacitet [l/min]										Motoreffekt [kW]	
	45	F.O	55	F.O	75	F.O	100	F.O	125	F.O		150
10												
11												
12												
13												
14												
15												
16												
17												
18												
19	4	3kW	4	3kW				7,5	5,5kW			
20										9		
21					5,5	4kW						
22							7,5	5,5kW				
23												
24												
25									(17,7A)			
26									18,6A			
27												
28			(10A)	10A						(216A)		
29	(10A)	10A										
30												
31								9	7,5kW			
32												
33												
34												
35												
36												
37												
38												
39	5,5											
40												
41												
42												
43												
44												
45												
46												
47												
48												
49												
50												32A

	Max pumpkapacitet [l/min]										Motoreffekt [kW]	
	45	F.O	55	F.O	75	F.O	100	F.O	125	F.O		150
10												
11												
12												
13	4	3kW										
14												
15												
16	(10A)	10A										
17												
18												
19												
20												
21												
22												
23												
24	5,5											
25												
26												
27												
28												
29												
30												
31												
32												
33												
34												
35												
36												
37												
38												
39												
40												
41												
42												
43												
44												
45												
46												
47												
48												
49												
50												

Tab.4.7a Selection of motorpower 50 Hz, 1 1/4"-ventil

Tab.4.7b Selection of motorpower 70 Hz, 1 1/4"-ventil

Note! Selection is taken in consideration to an additional dynamic pressure of 15% from the lift (at least min 5bar).

50Hz

70Hz

	Nominell pumpkapacitet [l/min]								Motoreffekt [kW]
	180	F.O	210	F.O	250	F.O	300	F.O	
10									
11									
12									
13									
14									
15									
16									
17									
18	11	7,5kW					18,5	15kW	
19									
20			15	11kW					
21					18,5	15kW			
22									18,5kW
23									
24									
25									
26		23.2A						40.5A	
27									
28						(42A)			
29	(25.4A)								
30								(50A)	
31		11kW		32A					56A
32					40.5A	22			
33									
34			(36A)		(42A)				
35									
36	15					(50A)			
37		32A		15kW				30	56A
38					22				
39									
40			18,5						22kW
41									
42						(50A)			56A
43							30	22kW	
44								(68A)	64A
45			(42A)	40.5A					
46	18,5								
47									
48			22	18,5kW			(68A)	64A	37
49									
50									

	Max pumpkapacitet [l/min]								Motoreffekt [kW]
	180	F.O	210	F.O	250	F.O	300	F.O	
10									
11									
12									
13									
14									
15									
16	(25.4A)								
17									
18									
19									
20									
21	15								
22		32A		15kW					30
23									
24						(50A)		30	
25	(36A)								
26									(68A)
27									
28									(68A)
29									
30	18.5								56A
31									30
32		40.5A		22					
33									
34	(42A)								
35									
36									(68A)
37									37
38									
39									
40	22								
41									
42									
43	(50A)								(83A)
44									
45									
46									
47	30								
48									
49									
50									

Tab.4.7c Selection of motorpower 50 Hz, 2"-ventil

Tab.4.7d Selection of motorpower 70 Hz, 2"-ventil

Note! Selection is taken in consideration to an additional dynamic pressure of 15% from the lift (at least min 5bar).

4.7 Floor node and shaft wiring

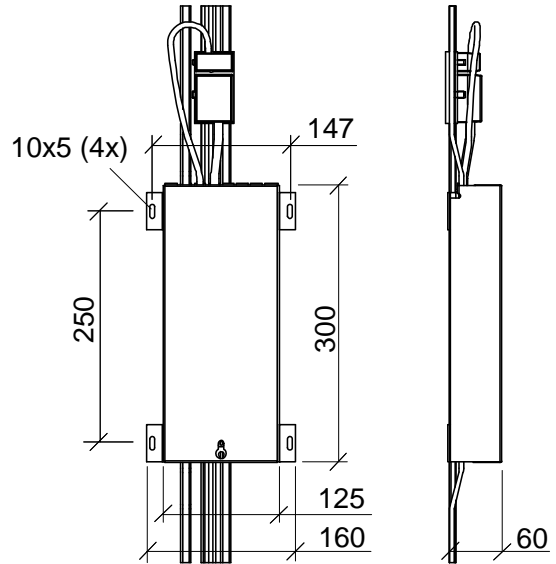
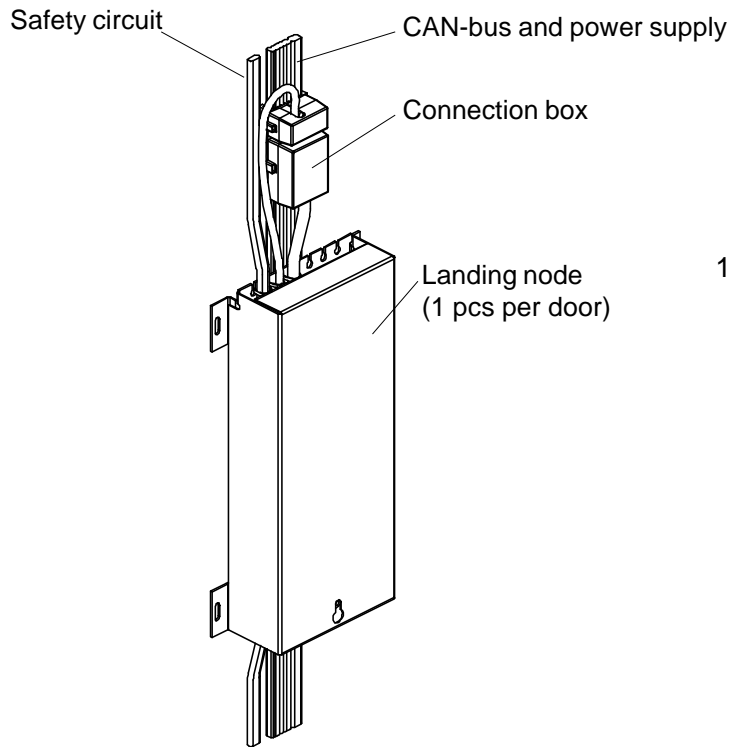


Fig.5 Dimension sketch floor node

4.8 Car node

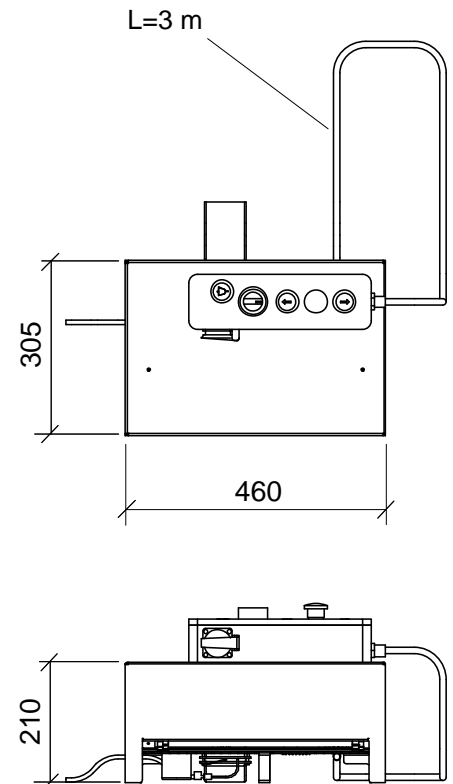
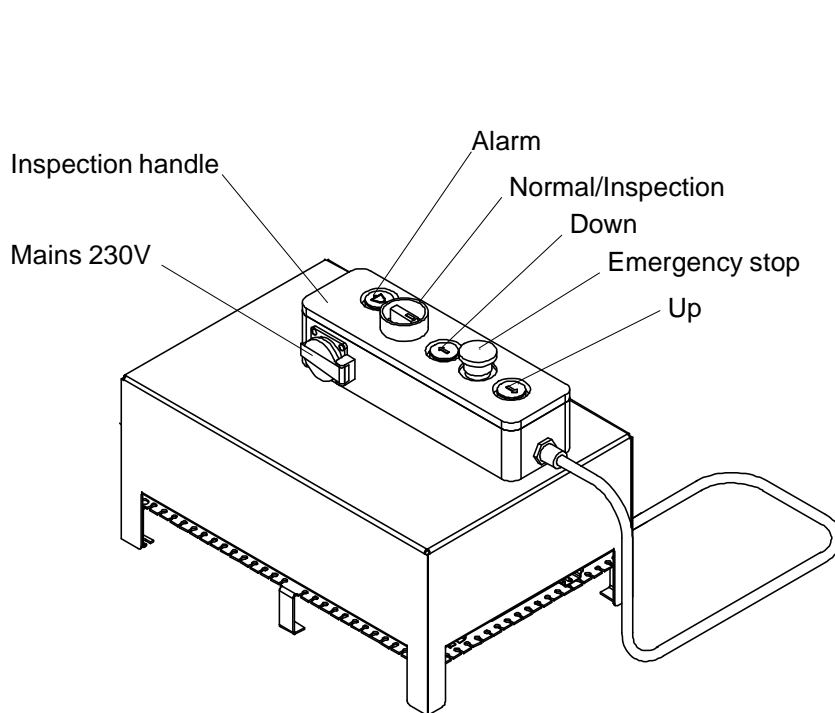


Fig.6 Dimension sketch Car node

4.9 Shaft information

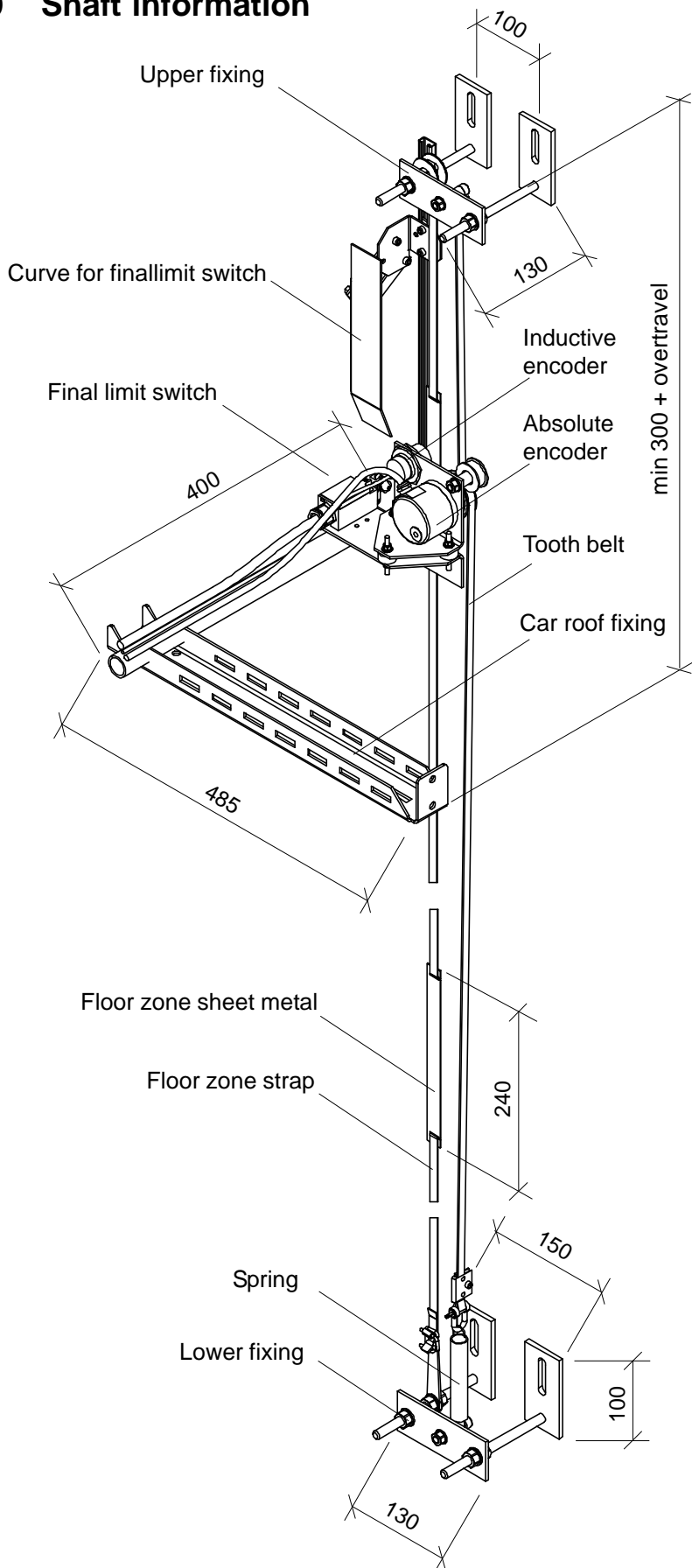


Fig.7a Shaft information complete, finallimit switch mounted on the car

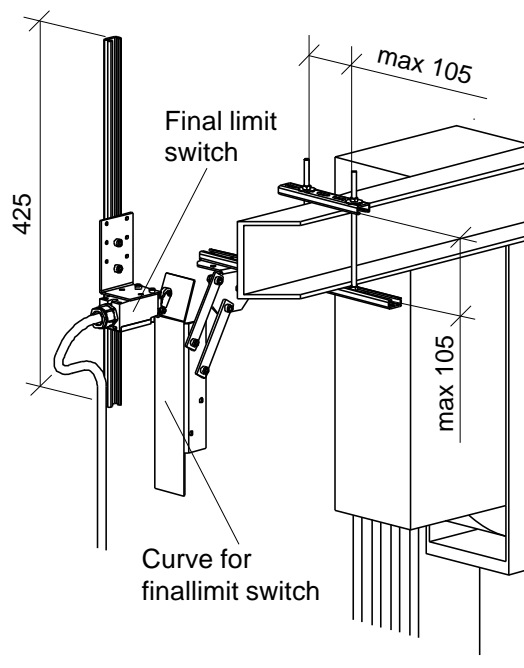


Fig.7b Finallimit switch mounted on the wall