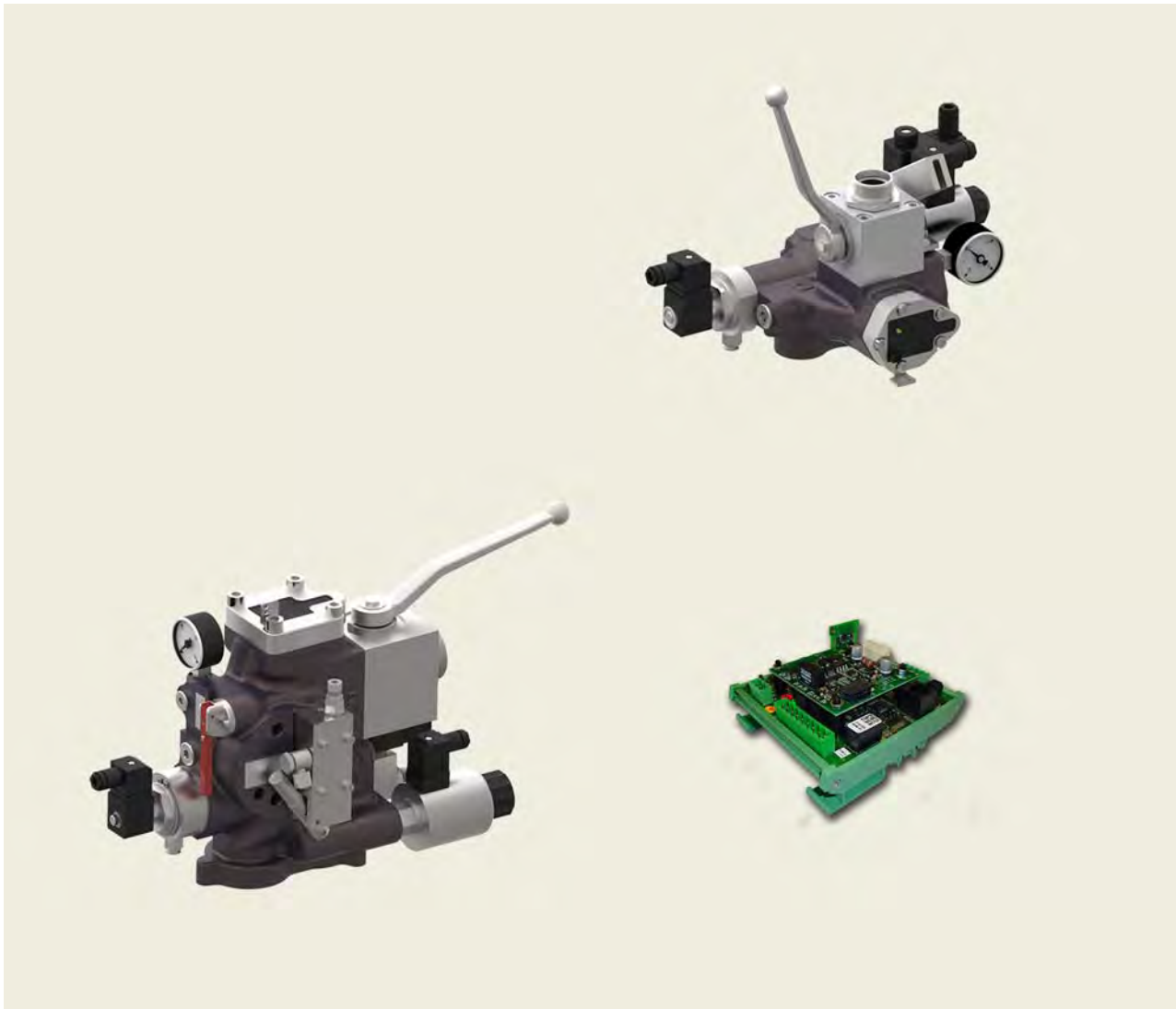


Operating Instructions



Lift Control Valve VF-iValve – VF-i250... and VF-i500...

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Contents

Page

1	About this document	5
1.1	Scope	5
1.2	Target group	5
1.3	Other applicable documents	5
1.4	Specialist terms	5
2	Safety instructions	6
2.1	Description of the safety notices	6
2.1.1	Meaning of the signal words	6
2.1.2	Meaning of the pictograms	6
2.1.3	Example of a safety notice	7
2.2	Basic principles	7
2.3	General safety instructions	7
2.3.1	Intended use	7
2.3.2	Operator's obligations	8
2.3.3	Duties of the operating staff	8
3	Product description	9
3.1	Intended use	9
3.1.1	Conformity	9
3.2	Product identification	9
4	Construction and function	10
4.1	Factory settings	10
5	Operating controls and indicators	11
5.1	VF-iValve lift control valve	11
5.1.1	Components of the VF-iValve – VF-i250	11
5.1.2	Components of the VF-iValve – VF-i500	12
5.2	Hand pump / Emergency lowering	13
5.3	Electronic card iCon with VF-board	15
5.3.1	LED indications	16
5.3.2	LED indications (options board – switching outputs)	18
5.3.3	LED indications (options board – VF)	18
6	Installation and commissioning	19
6.1	Safety information	19

6.1.1	Surroundings	19
6.2	Assembly	19
6.2.1	Hose or pipe	19
6.2.2	Electrical installation	20
6.2.3	Installation of the ParamCard	21
6.2.4	Hydraulic fluids and oil additives	23
6.2.5	Positioning of the deceleration switches	24
6.2.6	Check/setting of the max. operating pressure (EN 81-2, art. 12.5.3)	24
6.3	Safety checks	25
6.3.1	Test of the monitoring of the UCM/A3-valve	25
6.3.2	Pipe rupture valve test	27
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7	Maintenance	29
7.1	Maintenance schedule	29
7.2	Maintenance work	30
7.2.1	Pilot filter	30
7.2.2	Cleaning/replacing the VF-i250 pilot filter	30
7.2.3	Cleaning/replacing the VF-i500 pilot filter	30
<hr/>		
8	Repair	33
8.1	Troubleshooting and clearing faults	33

1 About this document

This commissioning and maintenance manual provides the basis for using the lift control valve VF-iValve – VF-i250 / VF-i500 and iCon electronic card for its intended purpose in a proper, effective, and safe manner. This manual must be accessible to the commissioning and service personnel.

1.1 Scope

This manual is:

- a part of the lift-control VF-iValve / iCon for commissioning and maintenance
- applicable to the valve and all components referred to, such as the iCon, Handterminal, iWIN, power supply unit and their connectors and cables.

1.2 Target group

This commissioning and maintenance manual provides commissioning and service personnel with all the information required for installation and commissioning.

1.3 Other applicable documents

Reference No.	Definition
300-P-9010073	Recommended hydraulic fluids
300-D-9010545	Planning information VF-iValve
300-P-9010553	Data sheet for handterminal
300-I-9010531	Parametrisation and Maintenance Manual
ESVH 018	Type examination certificate
300-S-9010554	Service manual for iBox
300-S-9010547	Spare parts VF-iValve i250
300-S-9010459	Spare parts VF-iValve i250



IMPORTANT!: These and other documents can be found in the LOGintern section of our website
www.bucherhydraulics.com

1.4 Specialist terms

Term	Definition
VF-iValve	Intelligent lift control valve
iCon	Electronic control card for VF-iValve valve
Handterminal	Terminal (optional) for the parameterisation of the VF-iValve
iWIN	PC-software (optional) for the parameterisation of the VF-iValve
iBox	Sensor unit in the VF-iValve
iTeach	Program on the iCon
ParamCard	Memory card
SMA	Monitoring of the UCM/A3-valve ("Self Monitoring Acknowledgement")

2 Safety instructions

This documentation (manual) advises the user of the dangers and remaining risks that can arise even when the product is being used properly and for its intended purpose. It is essential to take note of the safety instructions in each section.

2.1 Description of the safety notices

This commissioning and maintenance manual contains safety information for the safe operation of the product. Dangers and residual risks are signalled with the following elements:




2.1.1 Meaning of the signal words

The table below shows the meaning of the signal words that are used to identify the different levels of danger.

Signal words	Meaning
DANGER!	This denotes a directly imminent danger. If it is not attended to, it will result in death or serious injuries to people.
WARNING!	Denotes a potentially dangerous situation. If it is not prevented, it may result in death or serious injuries to people.
CAUTION!	Denotes a potentially dangerous situation. If it is not prevented, it may result in slight or minor injuries to people.
ATTENTION!	Denotes a potentially harmful situation. If it is not prevented, the product or its surroundings may be damaged.

2.1.2 Meaning of the pictograms

The following pictograms are used as warning symbols. They are combined with the appropriate signal word, depending on the danger level.

	Meaning
	This warning symbol is used in conjunction with the signal words "DANGER", "WARNING" or "CAUTION".
	Warning of dangerous electrical voltage. This warning symbol is used exclusively in conjunction with the signal word "WARNING".
	This warning symbol indicates the risk of a large potential difference (ESD).

2.1.3 Example of a safety notice

- Pictogram
- Signal word
- Type and source of danger
- Possible consequences of the danger
- Measures for preventing the danger



WARNING!

Dangerous electrical voltage

Touching electrical components may result in serious injury or death. During installation or repair work, ensure that the power supply is interrupted.

2.2 Basic principles

The intelligent lift control valve VF-iValve is an electronically controlled hydraulic valve block for controlling hydraulic lifts. The VF-iValve is situated on the hydraulic power unit and activated by the lift control system.

2.3 General safety instructions

ATTENTION!

Take note of the following instructions before carrying out any work.

2.3.1 Intended use

The Lift Control Valve has been built in accordance with the state of the art and recognised safety regulations. Nevertheless, risks to the life and limb of users or third parties may arise during its use, or damage to the car frame kit or other material assets may result.

- Keep this manual and all other applicable documents complete and legible, and accessible to all personnel at all times
- Do not work in any manner that endangers personnel or uninvolved third parties
- If there is a safety-related fault, shut down the Lift Control Valve immediately and have the fault rectified by a competent person
- In addition to the entire documentation for the product, always comply with statutory or other safety and accident-prevention rules as well as with the applicable standards and guidelines in the country where the valve is operated

2.3.2 Operator's obligations

Working with safety in mind

- Only operate the valve if it is in perfect technical condition; only use it as intended, staying aware of safety and risks, and adhering to the instructions in this manual
- Ensure that the following are observed and monitored:
 - adherence to intended use
 - statutory or other safety and accident-prevention rules
 - safety regulations governing the handling of hazardous substances
 - applicable standards and guidelines in the country where the valve is operated
- Make protective equipment available

Staff qualifications

- Ensure that all personnel tasked with work on the valve have read and understood this manual and all other applicable documents, especially the safety, maintenance and repair instructions, before they begin the job
- Organize responsibilities, who is in charge of any specific duty and how personnel are supervised
- Ensure that all work is carried out by specialist technicians only:
 - fitting, repair and maintenance work
 - work on the valve electrical system

Warranty

- Obtain the manufacturer's approval prior to carrying out any modification, repair or alterations during the warranty period

2.3.3 Duties of the operating staff

- Observe and keep legible all instructions given on the Lift Control Valve, e.g. the arrow indicating the direction of rotation and the markings for fluid connections
- Carry out work on the Lift Control Valve only while the motor is not running
- Isolate the motor from its supply voltage and keep it locked in that state while carrying out any fitting or maintenance work

3 Product description

3.1 Intended use

The VF-iValve intelligent lift control valve is an electronically controlled hydraulic valve block for controlling hydraulic lifts. The VF-iValve is situated on the hydraulic power unit and activated by the lift control system. Electronic control is accomplished by an electronic unit – the iCon – that is housed in the control cabinet. At standstill, the weight of the lift is supported by a check valve integrated in the VF-iValve. In operation, the electronic controller regulates the three states "Bypass", "Travel UP" and "Travel DOWN", and the transitions between them. In the electronic unit, this travel is represented in a form known as travel curves. During operation, the travel curves for that particular lift are optimised by the learning algorithm "iTeach". In addition, the valve block includes the following functions and components: a hand pump with manual emergency lowering (with piston-creep prevention), a ball valve, a pressure gauge, a pressure sensor with up to two pressure switches, speed monitoring, a temperature sensor, a UCM/A3 valve in accordance with EN 81-2 + A3.

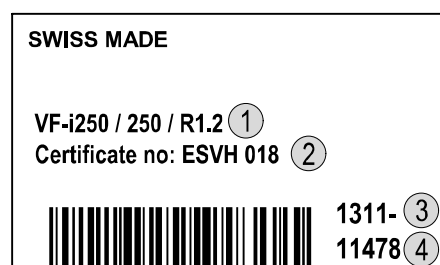
3.1.1 Conformity

The product was designed and developed in conformity with the following directives and standards:

EC-directive	2006/42/EG
EC-directive	95/16/EG
Standards	EN 81-2:1998+A3:2009 Safety rules for hydraulic lifts
Standards	EN 12015:2014, EN 12016:2013 (Electromagnetic compatibility for lifts)

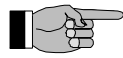
3.2 Product identification

The lift control valve has a stuck-on nameplate with the following information:



1. Valve type
2. Certificate no.
3. Month / year
4. Serial number

4 Construction and function



IMPORTANT!: Information on schematics and diagrams is available in the VF-iValve Planning Information (300-D-9010545).

4.1 Factory settings

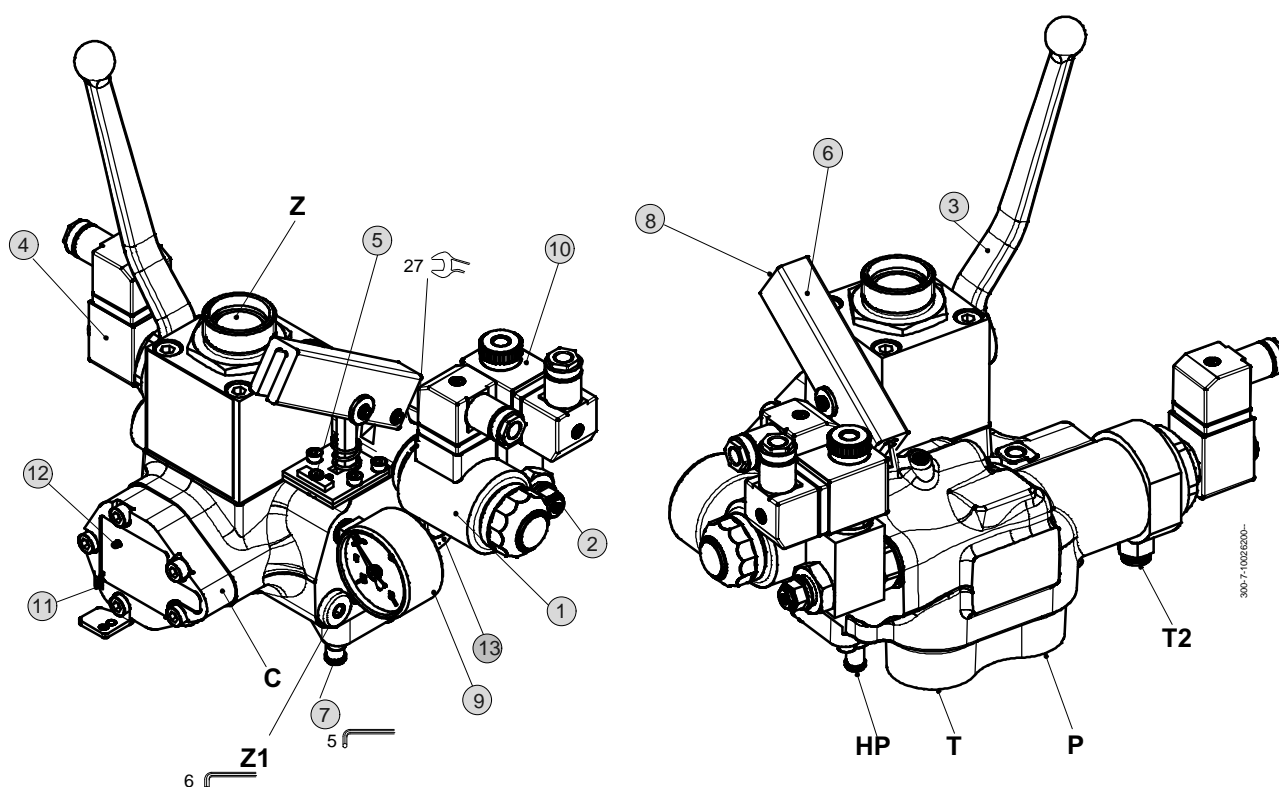
Installation specific settings are stored on the ParamCard:

- Kit type
- Cylinder type and diameter
- Max. speed UP and DOWN
- Deceleration distance acc. to diagram
- Travel curve settings
- Other settings

5 Operating controls and indicators

5.1 VF-iValve lift control valve

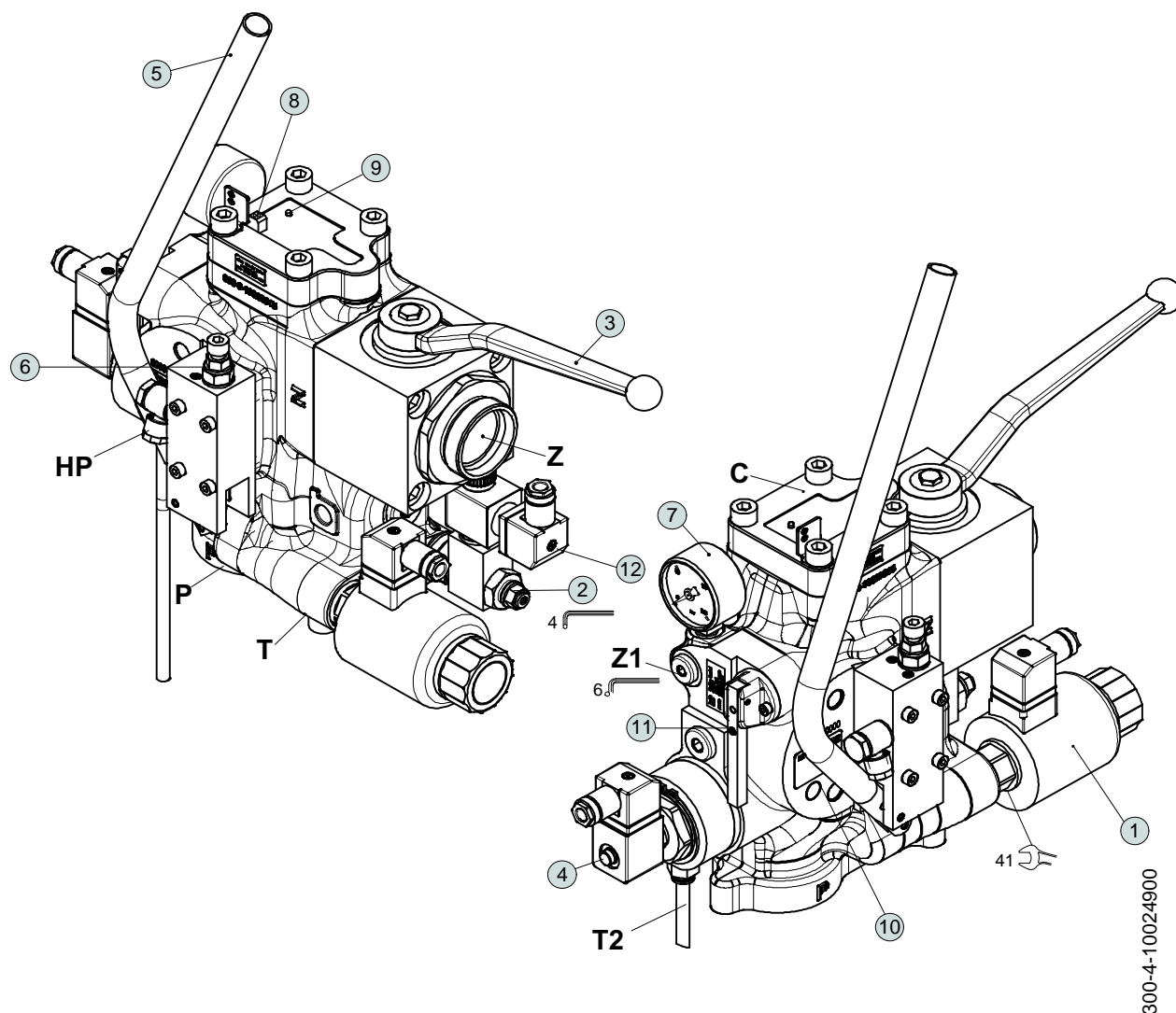
5.1.1 Components of the VF-iValve – VF-i250



Legend

1	Solenoid UP/DOWN	11	Connection, sensor cable iBox
2	Pressure relief valve	12	LED
3	Ball valve	13	Nameplate
4	Solenoid UCM / A3	C	iBox
5	Slack rope safety device	P	Pump port
6	Hand pump/emerg. lowering	T	Tank port
7	Pressure relief valve for the hand pump	HP	Tank port, hand pump / emergency lowering
8	Handle for hand pump (supplied loose)	T2	Pilot oil port
9	Pressure gauge	Z	Cylinder port
10	Solenoid VF-Emergency stop valve	Z1	Port for relevering / test port

5.1.2 Components of the VF-iValve – VF-i500



300-4-10024900

Legend

1	Solenoid UP/DOWN	11	Nameplate
2	Pressure relief valve	12	Emergency-lowering valve
3	Ball valve	C	Solenoid VF-Emergency stop valve
4	Solenoid UCM / A3	P	iBox
5	Hand pump	HP	Pump port
6	Pressure relief valve for the hand pump	T	Tank port
7	Pressure gauge	T2	Tank port, hand pump
8	Connection, sensor cable iBox	Z	Pilot oil Port
9	LED	Z1	Cylinder port
10			Port for relevering / test port

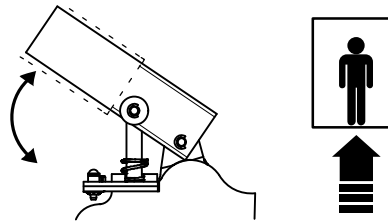
5.2 Hand pump / Emergency lowering

VF-iValve – VF-i250

The VF-iValve (VF-i250) comes with a combination of hand pump and emergency lowering valve as standard. The car can be moved upward with the hand pump when needed, and downward by means of the emergency-lowering facility.

Operating the hand pump

Achtung
Caution



1. Push the extension lever onto the lever stub of the hand pump as far as it will go.
2. Swing the hand pump lever up and down

Operating the emergency lowering



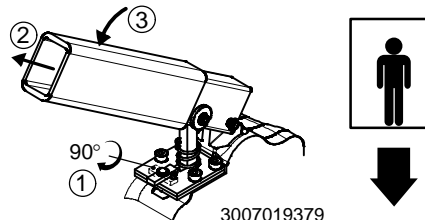
DANGER!

Car descent

Can lead to death or serious injuries.

Before operating the emergency-lowering valve, make sure that there are no people or materials in the lift shaft.

Achtung
Caution



1. Push the extension lever onto the lever stub of the hand pump as far as it will go, then retract by approx. 3 cm
2. Push the hand pump lever down

Temporary deactivation of piston slack rope safety device (preload pressure)

In order to prevent slack-rope build-up as per EN 81-2 no. 12.9.1.5 operation of the emergency lowering valve will leave a preload pressure of 6 bar.

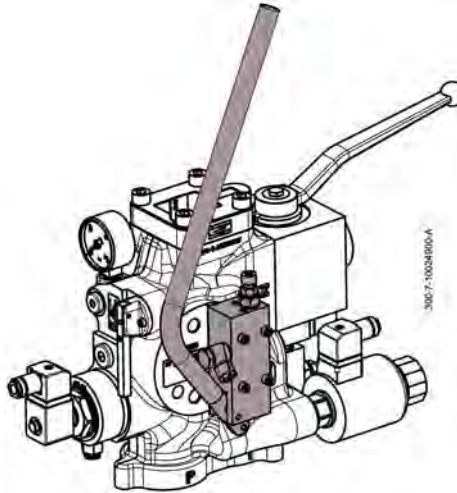
In order to temporarily deactivate the preload pressure:

3. Turn the slack rope safety device (1) by 90° clockwise.
4. Push the hand pump lever down (with extension lever) until the pressure is completely relieved
5. Turn the slack rope safety device (1) by 90° anticlockwise to the original position

VF-iValve – VF-i500

In the VF-iValve i500, the hand pump and emergency-lowering facility are separated. The car can be moved upward with the hand pump when needed, and downward by means of the emergency-lowering facility.

Hand pump



Emergency lowering



DANGER!

Car descent

Can lead to death or serious injuries.

Before operating the emergency-lowering valve, make sure that there are no people or materials in the lift shaft.

The car is lowered by pressing the lever of the emergency-lowering valve.

Note: The minimum preload pressure of 6 bar remains (prevents slack-rope build-up as per EN 81-2, sect. 12.9.1.5).

Temporary deactivation of preload pressure

For the purpose of checks or maintenance the preload pressure can be temporarily deactivated.

If no other M3-screw is ready to hand:

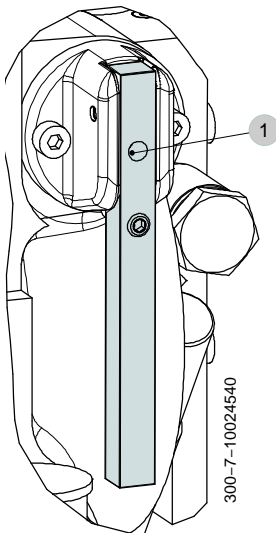
1. Remove the fastening screw from a solenoid plug
2. Screw the M3-screw into the opening (1) of the lever of the emergency-lowering valve

In order to deactivate the preload pressure:

3. Pull the M3-screw and simultaneously press the lever of the emergency-lowering valve
4. Undo the M3-screw from the lever of the emergency lowering

If the M3-screw had been undone from the solenoid plug:

5. Screw the M3-screw back into the solenoid plug



5.3 Electronic card iCon with VF-board

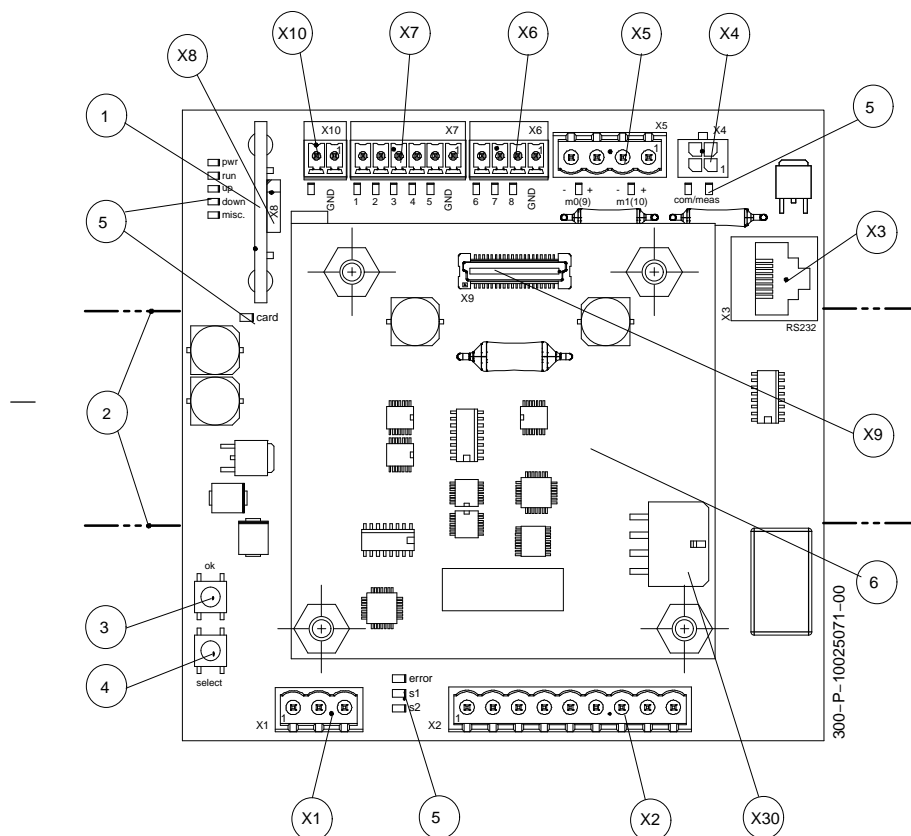


ATTENTION!

Electrostatic discharge (ESD)

The iCon can be damaged by incorrect handling.

Always keep the iCon in its ESD protective bag and only hold it by the frame.



Item	Description	Item	Description
1	ParamCard	X4	Connection, iBox
2	Top-hat rail TS15, TS35 (EN 50022) or G-type rail G32 (EN 50035)	X5	Connector block, solenoids
3	Push button ok	X6	Connector block, command signals K6...K8
4	Push button select	X7	Connector block, command signals K1...K5
5	LEDs	X8	Socket for ParamCard
6	VF-board	X9	Socket for options boards
X1	Connector block, power supply	X10	Connector block, SMA
X2	Connector block, switching outputs	X30	Connector inverter (on VF-board)
X3	Connection, Handterminal / PC		

5.3.1 LED indications

LED	Description	Status	Function
com	Communication with valve	on	communication with valve ok, data packages properly transmitted/received
		flashes rapidly	no (correct) communication with valve
meas	Measurement of feedback values	on	feedback values from valve (flow, pressure, temperature) plausible
		off	when LED "com" flashes rapidly simultaneously: no correct communication with valve
		flashes rapidly	feedback values from valve (flow, pressure, temperature) not plausible, zero point outside permissible range
		flashes slowly	versions of iCon and iBox not compatible with each other or error during function/EEPROM access on valve
m1(10)	Solenoid UP/DOWN	on	solenoid actuated, current correct
		off	solenoid not actuated
		flashes rapidly	solenoid actuated, resistance not correct
		flashes slowly	current not correct
m0(9)	Solenoid UCM/A3	on	solenoid actuated, current correct
		off	solenoid not actuated
		flashes rapidly	solenoid actuated, resistance not correct
		flashes slowly	current not correct
8	Command input 8	on	command signal K8 present
7	Command input 7	on	command signal K7 present
6	Command input 6	on	command signal K6 present
5	Command input 5	on	command signal K5 present
4	Command input 4	on	command signal K4 present
3	Command input 3	on	command signal K3 present
2	Command input 2	on	command signal K2 present
1	Command input 1	on	command signal K1 present
+SMA	Monitoring of UCM/A3-valve	on	terminal +SMA (X10-2) supplies +24 V

LED	Description	Status	Function
pwr	Power supply	on	all monitored voltages within the permissible range
		flashes rapidly	one of the internally generated voltages outside the permissible range
		flashes slowly	external supply voltage (+24 V) outside the permissible range
run	Readiness for operation	on	program running, ready for travel
		off	not ready for travel
		flashes slowly	not ready for travel, error while starting the program (e.g. EEPROM could not be read), incorrect parameters, parameter synchronisation running (during start, can take up to 10 s)
up	Travel UP	on	travel UP
down	Travel DOWN	on	travel DOWN
		flashes	pipe rupture test activated
misc	iTeach	on	All iTeach functions on and operating in the permissible range
		off	All iTeach functions off
		flashes slowly	At least one iTeach function has reached correction limit
		on for 8 ... 9 s, then interrupted for an instant	Indication of deactivated iTeach-functions (number of interruptions = number of deactivated iTeach-functions)
card	ParamCard	on	ParamCard plugged in, with plausible data
		flashes rapidly	no ParamCard detected
		flashes slowly	data not plausible
error	Error	flashes rapidly	Error present (error relay is energised; list of error messages)
s1	Switching output 1	flashes rapidly	Switching point 1 under-run or exceeded (relay s1 is energised)
s2	Switching output 2	flashes rapidly	Switching point 2 under-run or exceeded (relay s2 is energised)

5.3.2 LED indications (options board – switching outputs)

LED	Description	Status	Function
RUN	Readiness for operation	on	program running correctly
		off	programm not running correctly
		flashes	communication problem with iCon
s3	Switching output 3	flashes rapidly	switching point 3 was under-shot/ exceeded (relay s3 energised)
s4	Switching output 4	flashes rapidly	switching point 4 was under-shot/ exceeded (relay s4 energised)

5.3.3 LED indications (options board – VF)

LED	Description	Status	Function
RUN	Readiness for operation	on	programm running correctly
		off	programm not running correctly
		flashes	communication problem with iCon
RDY	Ready for operation FU	on	inverter signals ready
		flashes	unexpected ready status
EN	Inverter enable	on	inverter receives enable signal
TRQ	Motor energised	on	inverter signals that motor is energised
		flashes	unexpected motor-energisation status
ANA OUT +	Positive speed setting	on	lights when speed is positive (intensity depends on setting)
ANA OUT -	Negative speed setting	on	lights when speed is negative (intensity depends on setting)

6 Installation and commissioning

Packaging materials must be disposed of in accordance with the generally recognised regulations of the respective countries

6.1 Safety information

Before beginning any installation and commissioning work, it is a requirement that all personnel have read and understood the chapter "Safety instructions".

6.1.1 Surroundings

For reliable operation, the following conditions must be maintained in the surroundings:

General characteristics	Description, value, unit
Machine room temperature	+2°C ... +40°C
Relative air humidity	max. 90 % (non-condensing)

6.2 Assembly

6.2.1 Hose or pipe



CAUTION!

Contamination in the line

Contamination adversely affects the valve's function. This can lead to a dangerous system condition.

Preventive measures:

- Clean the hose or pipe before fitting it
- Leave sealing caps/plugs in place until assembly
- Check that all fittings are assembled correctly

- Do not twist the hoses
- Do not mount hoses under tensile strain
- Observe minimum bending radiuses
- Protect hoses against mechanical damage (e.g. from sharp edges)
- Support hoses with hose clamps (approx. 1.5 m away from valve)

6.2.2 Electrical installation

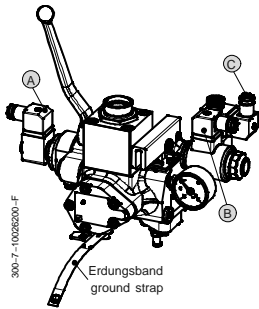


DANGER!

Dangerous voltage

Leads to death or serious injuries.

Before starting electrical installation works, disconnect all power to the control cabinet.



1. Check whether the 24 V DC output of the lift control meets the requirements of the iCon (see Planning Information 300-D-9010545)

When the 24 V DC output of the lift control meets the requirements of the iCon:

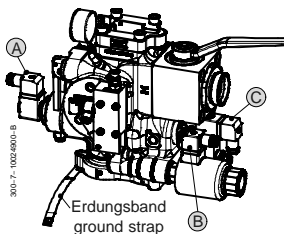
2. Execute the cabling acc. to the diagram (see Planning Information 300-D-9010545)

- Plug the grey connector (A) onto the solenoid UP/DOWN, plug the black connector (B) onto the solenoid UCM/A3

To reduce electromagnetic interference fields and for trouble-free operation, the VF-iValve valve block must also be separately earthed:

3. Using an earth conductor with a minimum crosssection of 4 mm², create a connection from the valve block to the earth potential in the control cabinet. Run the wiring as per the diagram (see Planning Information 300-D-9010545).

- The earth connection on the valve block is clearly identified, but can also be seen in the leaflet 300-D-9010545, Chapter 3.2.3.



When the 24 V DC output of the lift control does NOT meet the requirements of the iCon:

4. Install the optionally available power supply unit and execute the wiring acc. to the diagram (see Planning Information 300-D-9010545)

- Plug the grey connector (A) onto the solenoid UP/DOWN, plug the black connector (B) onto the solenoid UCM/A3

ATTENTION!

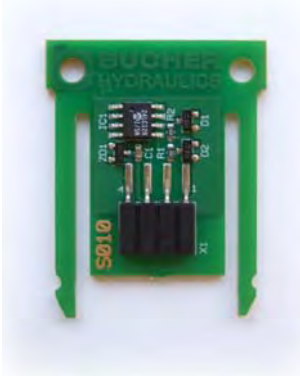
Unexpected behaviour of the lift

Air in the VF-iValve can cause unexpected behaviour of the lift such as

- severe starting jolt UP
- no start DOWN

Make sure that the connections between the VF-iValve and the tube to the pump (P) as well as the hoses to the tank (T, T1) are tight and that there will be no venting and hence draining of the tube or of the hoses.

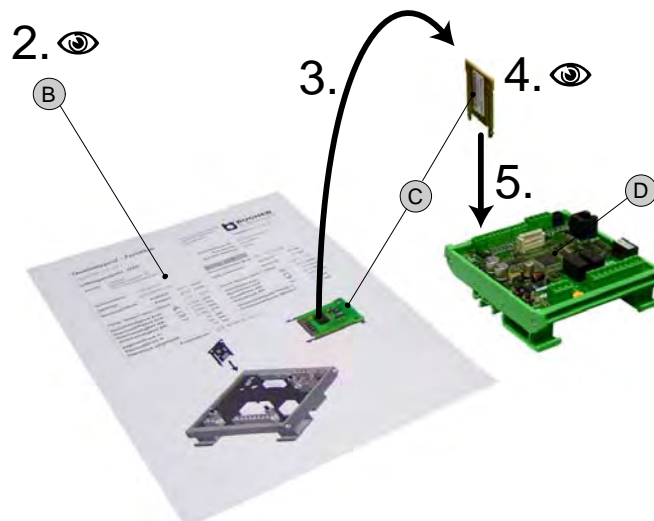
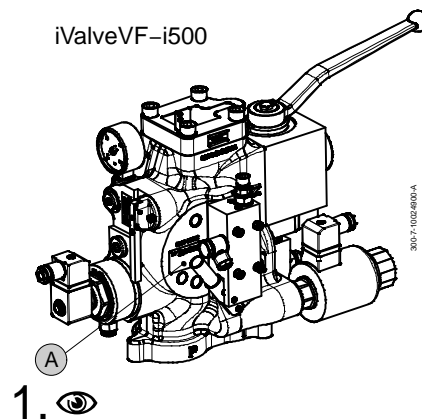
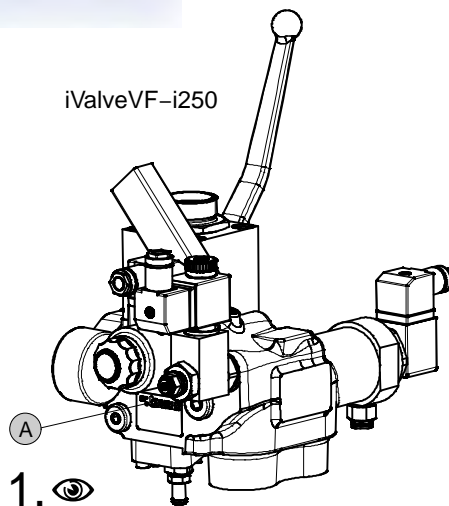
6.2.3 Installation of the ParamCard



The ParamCard is a memory card which stores installation specific parameters and data. The ParamCard is plugged onto the iCon. There is no travel without ParamCard.

If the iCon needs to be replaced the ParamCard will be pulled off the old iCon and plugged onto the new iCon. Hence all installation specific parameters and data will be available to the new iCon from the first travel on.

As a rule the VF-iValve and the pertinent ParamCard come with factory settings for the lift to be installed.



1. Read the serial no. (A) from the housing of the VF-iValve
2. Read the serial no. (B) from the Quality-Certificate and check that it matches the serial no. (A) on the VF-iValve

	ATTENTION!
--	-------------------

Note: Always quote the serial no. when making enquiries. This makes it easier for the factory to help you!

Note: The serial numbers on the ParamCard and the VF-iValve must be the same to avoid the need for resetting.

3. Detach the ParamCard (C) from the Quality-Certificate
4. Read the serial no. (C) from the backside of the ParamCard and check that it matches the serial no. (A) on the VF-iValve

When the serial no.s on the VF-iValve, on the Quality-Certificate and on the ParamCard match:

5. Insert ParamCard (C) on the iCon (D) and snap it into place
6. File the Quality-Certificate in the lift register/file
7. Make sure that the lift power unit is ready for operation
8. Energise the iCon
9. Check after approx. 10 s that every single LED on the iCon either lights up or is off, there must be no flashing LED

When one or more LEDs flash:

10. Inquire the meaning of the flashing LED(s)

6.2.4 Hydraulic fluids and oil additives

Hydraulic characteristics Surroundings	Description, value, unit Requirement
Hydraulic fluids	HL and HLP mineral oils to DIN 51 524, other fluids – contact BUCHER!

Oil additive: **Shell Tonna S**.

When the movement of the lift cylinder at low speeds tends to be jerky, an oil additive with special sliding properties is required. In this case, the oil additive **Shell Tonna S** is approved.

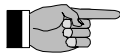
Alternatively: standard HLP hydraulic oil **Motorex Hydrogliss 202**.

When Shell Tonna S cannot be employed, an alternative is to use a standard HLP hydraulic oil together with the oil additive supplied by Bucher Hydraulics AG.

Other oil additives are not permitted.

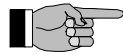
	ATTENTION!
	The volume of oil additive that is mixed in must not exceed 2% of the existing total oil volume.

Bucher Hydraulics cannot guarantee the proper functioning of the lift control valve if other additives are used or if the maximum permissible amount of the above additives is exceeded.



IMPORTANT!: For more information about our recommended hydraulic fluids, can be found on our website: www.bucherhydraulics.com in the LOGintern area.

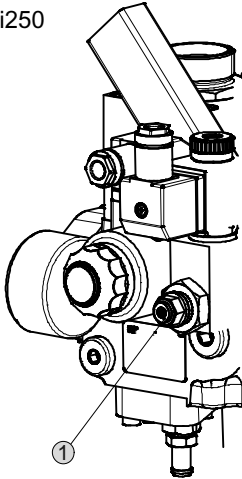
6.2.5 Positioning of the deceleration switches



IMPORTANT!: Information on "Positioning the deceleration switches" is available in the Planning Information publication 300-D-9010545.

6.2.6 Check/setting of the max. operating pressure (EN 81-2, art. 12.5.3)

VF-i250

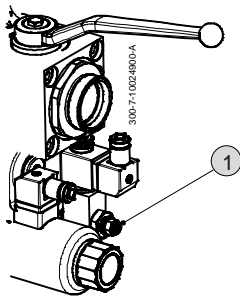


To check the minimum load static pressure (with empty car):

1. Read the minimum load static pressure on the pressure gauge
2. Compare the minimum static load pressure on the Quality-Certificate with actual minimum static system pressure on the pressure gauge
3. If the difference is more than 5 bar, but less than 10 bar: decrease or increase the maximum operating pressure resp. by the amount of the difference (see below)
4. If the difference is more than 10 bar: contact the customer service

Adjusting the maximum pressure (Pressure relief adjustment)

VF-i500



1. Slacken the locknut for screw (1)
2. Turn screw (1) approx. 2 turns counterclockwise
3. Bypass the overload pressure switch (switching output s1)
4. Press emergency-lowering lever until a relevelling is triggered and close the ball valve immediately (before the relevelling is completed)
5. Slowly turn screw (1) clockwise until calculated pressure is reached
6. Tighten locknut for screw (1)
7. Open the ball valve
8. Remove the bypass from the overload pressure switch (switching output s1)
9. Overwrite the value of the max. pressure setting valve given on the Quality-Certificate with the new value

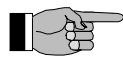
6.3 Safety checks

6.3.1 Test of the monitoring of the UCM/A3-valve

Testing the monitoring of the UCM/A3 valve (⇒ see Planning Information) can be carried out using two different methods.

Test with Handterminal

The iCon-firmware includes two functions ("Test SMA GND" and "Test SMA +24V") which switch off the normal sequence of 0V/24V-signals. Depending on the selected function the terminal +SMA either supplies permanently 0 V until after the next travel or supplies permanently 24 V as from selection of the function until the beginning of the after next travel.



IMPORTANT!: The functions "Test SMA GND" and "Test SMA +24V" reset themselves automatically after a successful travel. If the test is carried out several times, the function must be re-invoked before each travel.

1. Make sure that the Handterminal is connected to the iCon
2. On the Handterminal select menu 3 Adjust./tests ⇒ Test SMA GND
3. Select the execution of the function by pressing the key "+" and confirm by pressing the key "+" again
4. Execute a travel in any direction
 - | This travel shall complete normally until the selected stop is reached. Afterwards the lift control shall indicate an SMA-error.
5. Issue the command for another travel
 - | The lift must refuse to execute further travels until the SMA-error is reset on the lift control.
6. Reset the SMA-error on the lift control
7. Carry out test again using the "Test SMA +24V" function

Test with 24 V supply and shorting cable

1. Disconnect the connection cable between the terminal block SMA (X10) on the iCon and the input "UCM/A3-valve" on the lift control
2. Apply 24 V (e.g. from the iCon power supply) to the input "Monitoring UCM/A3-valve" on the lift control
3. Execute a travel in any direction
 - | This travel shall complete normally until the selected stop is reached. Afterwards the lift control shall indicate an SMA-error.

-
4. Issue the command for another travel

 - | The lift must refuse to execute further travels until the SMA-error is reset on the lift control.
 5. Reset the SMA-error on the lift control

 6. Disconnect the 24 V supply from the input "Monitoring UCM / A3-valve" on the lift control

 7. Short circuit the input "Monitoring UCM/A3-valve" on the lift control to GND

 8. Execute a travel in any direction

 - | This travel shall complete normally until the selected stop is reached. Afterwards the lift control shall indicate an SMA-error.
 9. Issue the command for another travel

 - | The lift must refuse to execute further travels until the SMA-error is reset on the lift control.
-

Test of the UCM/A3-valve

Compliance with the permissible stop distances and decelerations under all imaginable operating conditions is confirmed by the type examination of the VF-iValve and NOT subject to this test.

In the course of the acceptance test the installer must prove the proper placement of the shaft switches at

$d_{\max} = 250 \text{ mm} - v_{\max} \cdot t$

below the floor. (see Planning Information 300-D-9010545).

Then evidence of the basic function of the UCM/A3-valve and stopping within 1000 mm below the floor must be provided by a test to be specified by the lift control manufacturer. The test can be executed e.g. at inspection speed.

6.3.2 Pipe rupture valve test

A precondition for testing the pipe-rupture valve is that the lift must be working properly, without any faults.



DANGER!

Uncontrolled descent (free fall)

Leads to death or serious injuries.

Before testing the pipe-rupture valve, make sure that there are no people or materials in the lift shaft.

1. Load the car (the amount of load as per specifications from lift builder, standards authority, etc.).

ATTENTION!

- When the car is empty, and under certain circumstances, the speed required to trigger the pipe-rupture valve may not be reached.
- Do not carry out the test if the car is too close to the lowest floor.

2. Drive the car to the top floor
3. Connect the Handterminal

ATTENTION!

Uncontrolled descent (free fall)

Can cause damage to the support frame and car.

The elevator car must come to rest within 3 ... 5 metres.

If it does not, immediately release the push buttons on the iCon. Resolve the problem and repeat the test.

ATTENTION!

Pipe rupture valves do not close completely leakage free.

In case of a simulated pipe rupture, as described in this test procedure, the leakage causes the pipe between the pipe rupture valve and the lift control valve to assume the same pressure as the hydraulic cylinder after a certain time.

This pressure compensation causes the automatic reopening of the pipe rupture valve.

This does not impede the safe function of the pipe rupture valve in case of an actual pipe rupture, since in case of an actual pipe rupture the pipe between the rupture valve and the lift control valve would remain pressure-less, the pressure compensation would not occur.

If the pipe rupture valve is meant to remain closed after the test, the pipe between the rupture valve and the lift control valve must remain pressure-less, e.g. by continuous pressing of the manual emergency lowering valve.

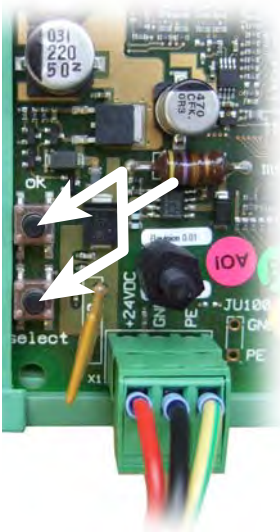
Carrying out Pipe rupture valve test with Handterminal

1. On the Handterminal select menu 3, then "Adjust./tests", then "Pipe rupt. test"

Various LEDs start to flicker (at high frequency = fast).

2. On the iCon press and hold the push buttons "ok" and "select"
3. Send DOWN command
4. Wait until the car is accelerating
The LED "down" on the iCon flashes faster.

When the triggering speed is reached, the pipe rupture valve closes and travel stops.



ATTENTION!

If one of the two buttons "ok" or "select" on the iCon is released during this examination before the pipe rupture valve has tripped, the VF-iValve closes immediately and the down travel is stopped. When using the Handterminal the max. actual value / maximum speed is shown on the display.

In order to finish the pipe rupture test sequence properly:

5. Withdraw the DOWN command
6. On the handterminal, press the "-" key
7. In order to reopen the pipe rupture valve and make the lift ready for service: build up pressure using the hand pump or carry out an UP travel

Carrying out Pipe rupture valve test without Handterminal

1. on iCon press the push buttons „ok“ and „select“ simultaneously when switching ON power supply of iCon => various LEDs start to flicker (at high frequency = fast)
2. press „select“ => error relay is switched on for about 1 sec.
3. press „ok“ => LED „down“ starts to flash slowly
4. press and hold „ok“ and „select“
5. send DOWN-command
6. continue as under item 4 "Carrying out Pipe rupture valve test with Handterminal" described
7. in order to quit the pipe rupture valve test mode: switch iCon off and on

The test can also differ from the above description and be carried out in accordance with alternative specifications.

7 Maintenance

7.1 Maintenance schedule

This service plan is just a guide. Adjustments or changes should be undertaken by the installer.

	Work to be carried out	Time						
		Before commissioning	During commissioning	First service after commissioning, not later than after 3 months	At every service, at least 2x per year	Annually	After 5 years	After 10 years
Valve	Check error memory				X			
	Check internal leakage		X	X	X			
	Check external leakage		X	X	X			
	Check the maximum pressure setting (pressure relief valve/ maximum-pressure setscrew)		X			X		
	Clean pilot filter		X	X				
	Replace pilot filter				X			
	Clean main filter					X — X		
Valve	Renew O-rings (when valve is dismantled, or as required)						X — X	
Pipe Hose	Check for leakage	X	X	X	X			
	Check for <ul style="list-style-type: none"> • Damage to the outer surface (chafings, cracks, cuts) • Embrittlement of the outer surface • Discolouration of the outer surface • Bubbles • Pinches • Kinks • Damaged/ deformed fittings 		X			X	X	
	Replace							X

7.2 Maintenance work

7.2.1 Pilot filter

The Filter-strainer of the pilot valve is positioned in accordance with the international standards for lifts (EN 81.2 art. 12.5.7).

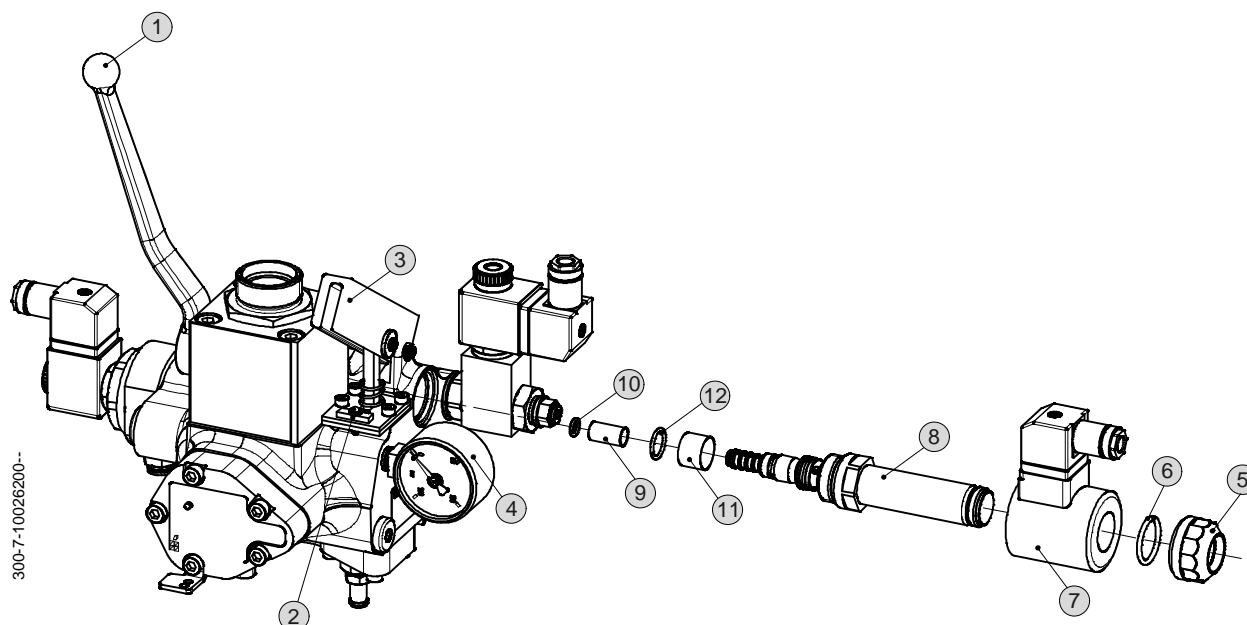


CAUTION!

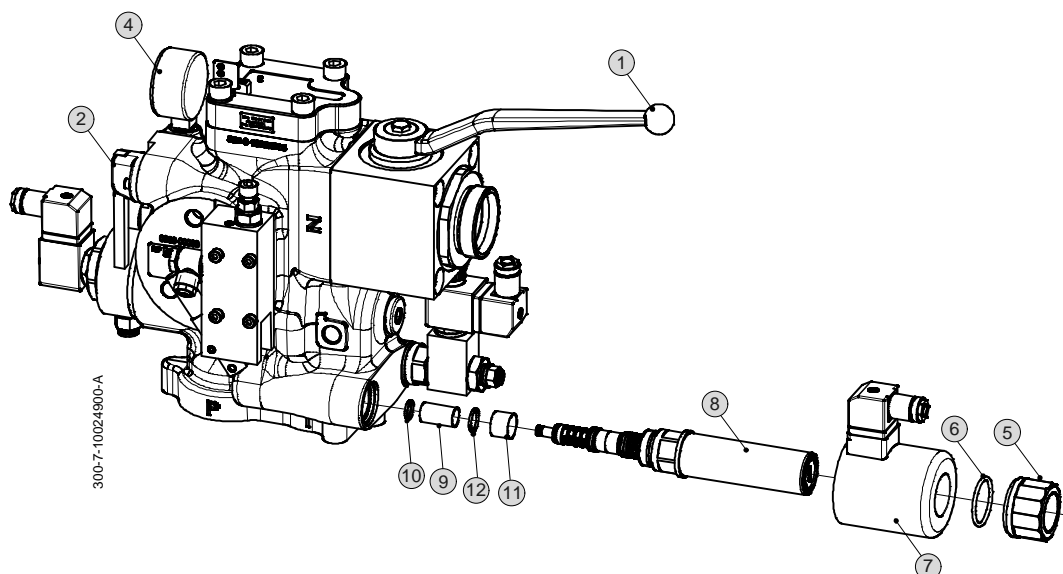
Contamination in valve (filter)

Severe malfunction possible. People may suffer injury and materials may be damaged. Never operate the lift without the pilot filter installed. Carry out regular maintenance as per maintenance plan ⇒ chapter 7.1

7.2.2 Cleaning/replacing the VF-i250 pilot filter



7.2.3 Cleaning/replacing the VF-i500 pilot filter



For VF-i250 only

1. Switch the main switch OFF
2. Close the ball valve (1)
3. Turn the slack rope safety device (2) by 90° clockwise.
(see Chapter 5.2)
4. Push the extension lever onto the lever stub (3) of the hand pump as far as it will go, then retract by approx. 2...3 cm
5. Push the hand pump lever (3) to the bottom stop (= operation of the emergency lowering)
6. Make sure that the indication on the pressure gauge (4) has dropped to zero
7. Remove the extension lever from the lever stub (3) of hand pump
8. Turn the slack rope safety device (2) by 90° anticlockwise to the original position. (see Chapter 5.2)

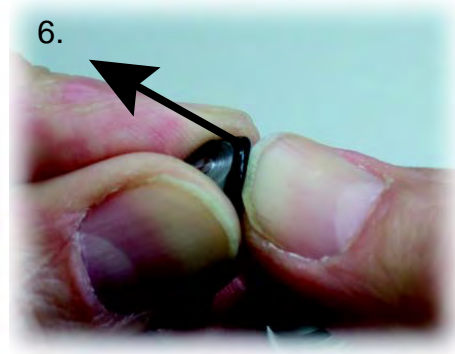
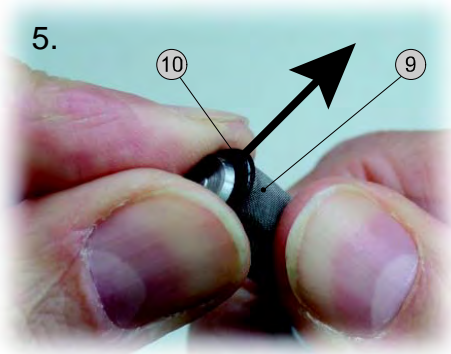
For VF-i500 only

1. Switch the main switch OFF
2. Close the ball valve (1)
3. Press emergency-lowering lever (2) and deactivate preload pressure of slack rope safety device by use of M3 screw
(see Chapter 5.2).
The pressure in the valve decays.
4. Make sure that the indication on the pressure gauge (4) has dropped to zero

For VF-i250 and VF-i500

1. Undo the nut (5) in front of the solenoid UP/DOWN
2. Pull the solenoid coil UP/DOWN (7) together with the o-ring (6) off the solenoid tube (8)
3. Unscrew the solenoid tube (8)(with a 27 mm A/F open-ended spanner)
4. Check the outer surface of the filter strainer (9) for soiling, clean if necessary or replace the filter strainer (9) resp.

In order to replace the filter strainer (9):



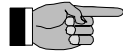
5. Pinch the o-ring (10) between the tips of forefinger and thumb
6. Push the o-ring (10) off the solenoid tube (8) with the thumb of the other hand
7. Pull the filter strainer (9) off the solenoid tube (8)
8. Push the new filter strainer (9) onto the solenoid tube (8)
9. Insert the new o-ring (10) into the groove of the solenoid tube (8)

In order to replace the filter strainer (11):

10. Pinch the o-ring (12) between the tips of forefinger and thumb
11. Push the o-ring (12) off the solenoid tube(8) with the thumb of the other hand
12. Pull the filter strainer (11) off the solenoid tube (8)
13. Push the new filter strainer (11) onto the solenoid tube (8)
14. Insert the new o-ring (12) into the groove of the solenoid tube(8)
15. Screw in the solenoid tube (8) and tighten with 39 ± 2 Nm
16. Push the solenoid coil UP/DOWN (7) together with the o-ring (6) onto the solenoid tube (8)
17. Mount the nut (5) and hand-tighten it ($5,5 \pm 0,5$ Nm)
18. Switch main switch ON
19. Operate the pump of the power unit for a few seconds
20. Open the ball valve (1)

8 Repair

8.1 Troubleshooting and clearing faults



IMPORTANT!: Additional information on troubleshooting / fault diagnosis and fault clearing is available in the Parametrisation and Maintenance Manual in the LOGintern area of our homepage www.bucherhydraulics.com.

=> see Section 1.3 "Other applicable documents"