Power Unit Series
Comfort Line, Eco Line

Ingeniously simple
Unmatched hydraulic efficiency

Electronically Controlled Lift Control Valve iValve

The graph below impressively illustrates the stability of the travel curve from the electronic iValve, independent of the operating condition.

Controller iCon-2 and ParamCard
- The iCon-2 features the latest digital technology, complete with a range of interfaces for external peripheral equipment
- Any required number of option boards can be seated on the iCon-2: The system is open for any kind of interfaces and technologies that exist now and in future
- iCon-2 and iValve are not tied to a specific installation, and can be exchanged
- Data for the installation are saved on the ParamCard and can be quickly and simply transferred to other installations without any other settings
- Adjustments, supervisory operations and monitoring are possible via an external PC, handterminal or CANopen connection
Comfort Line – the Standard Power Unit
Maximum ride comfort independent of load and temperature

The hydraulic power unit with the electronic iValve guarantees maximum ride comfort, independent of load and temperature. The many options available allow it to be used in a wide range of locations, from new buildings to modernization.

The Comfort Line can be supplied for hydraulic elevators for any required total loads and travel heights up to 25 m.

Advantages

- Straightforward, compact design and construction
- Optimized tank sizes, tailored to the floor area
- Constant travel times, even with changes in load and temperature
- Low energy costs
- Wide operating temperature range
- Short total travel time due to the short slow speed travel
- Oil cooling or heating only in very few cases necessary
- Down speeds can be increased by up to 50 % at no extra cost and without loss of comfort

Benefits for you

- Short commissioning time thanks to the „iTeach algorithm“
- Outstanding travel characteristics in the widest possible range of conditions
- Short set-up time
- Freedom of planning for architects, thanks to flexible positioning of drive system

Usage category

Options

Comfort Line
Comfort Line

Many Drive Variants

Wide variations for a broad range of applications
Thanks to the high flexibility, most customer wishes can be satisfied and technical demands fulfilled.

Valve sizes
30 – 500 l/min

Power unit sizes
150 – 1400 Liter

Various options
- Further pressure switch outputs
- Soft starter
- Relevelling unit
- Visual oil level gauge
- Oil heating
- Oil cooling
- Oil spillage tray
- Level switch
- Thermostat
- Bypass for testing the pipe-rupture valve
- Handterminal
- PC software
- Interconnecting pipe/hose for multiple power units

Additional accessories available on request

Numerous drive combinations
- Many variants of pumps and motors combinations

Suitable for the following power units:
System cabinet 150
UDA 150
with integrated oil spillage tray

Machine room cabins
UDA 150
UDA 230
UDA 350

Modular design provides the suitable solution
VF-light and VF-light<sup>plus</sup>

**Frequency-controlled drive in UP direction**

**VF-light**
- Constant UP speed, regardless of the car load
- Electrical supply rating is based on the maximum speed and load
- “No contactors” design can be implemented

**VF-light<sup>plus</sup>**
- Constant electrical power demand, regardless of the car load
- Variable UP speed, dependent on the car load
- Electrical supply rating is based on the nominal speed at 10% payload
- “No contactors” design can be implemented
Eco Line – the Energy Efficient Power Unit
Frequency-controlled drive in UP and DOWN direction

Save up to 60 % energy
- Continuous short travel curve, independent of load and temperature thanks to VVVF technology
- Up to 200 rides per hour are possible without oil cooler and costly machine-room ventilation

Up to 10 dBA quieter
- The VVVF drive minimizes bypassing sounds
- Optional operation without motor contactors

Minimal installation effort
- No more settings of hydraulic parameters required
- The self-teaching algorithm „iTeach“ provides the shortest travel curve autonomously

Highest safety
- Always an accurate positioning of ± 3 mm, to prevent trip hazard
- The self-monitoring function guarantees fully integrated A3 compliance (TÜV-certified)

Maximum ride comfort, minimal travel time
- No start lag, fast and smooth ride curve, short and consistent slow-speed travels
- The soft-stop function allows almost direct landing

Options
- Up to 40% lower mains power rating and up to 20% cheaper with Eco Lineplus
- Further reduction of installation and maintenance costs through operation without motor contactors (TÜV-certified)
- Regeneration package available to feed up to 30% of the drive energy back into the grid or SuperCap
The powerful, economical and low-noise drive solutions with reduced energy consumption of as much as 80%.

Unmatched hydraulic efficiency

Variable-frequency technology
Your investment in VVVF technology easily pays for itself.

We will be pleased to calculate the possible energy- and cost-savings for an actual project!

Further advantages of variable frequency drives
The combination of electronic iValve and the frequency inverter allows for absolutely perfect ride characteristics:
- Stopping accuracy ± 3 mm in UP and DOWN directions
- No start lag, fast and smooth start
- Start current limited without soft starter

Optional
- Further reduction of installation and maintenance costs
- Operation without motor contactors (TÜV-certified)
- Max. reduction of power connection > load dependent speed control (limits current required)
- Regeneration package available to feed up to 30% of the drive energy back into the grid or SuperCap

There are several variants of the Eco Line
- Eco Line
- Eco Line plus
- Eco Line with SuperCap
- Eco Line with Regeneration
Reduce mains power rating and costs

Additional advantages:
Up to 40% lower mains power rating
With Eco Line\textsuperscript{plus} we offer the possibility to define a load-dependent travel speed. With heavy car loading the UP ride is reduced. Therefore the maximum mains power rating does not have to meet the demands of maximum car loading at maximum speed. The maximum mains power rating can be significantly reduced - this can amount up to 40%! Travel DOWN remains constant at the nominal speed.

Up to 20% cost savings
Not only the mains power rating is reduced considerably, the frequency inverter as well as other components can be configured smaller, too. Thus, the cost can be reduced up to another 20%.

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This graph shows the reduction of mains power rating of a typical lift that can be realised with this option:

In this example with Eco Line\textsuperscript{plus} the mains power rating can be reduced by 40% compared with our standard Eco Line. With a car loading of 1000 kg, the lift now rides with a reduced speed of 0.6 m/s instead of 1 m/s.
Eco Line

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Braking Resistor

**Standard: Energy is converted into heat**
- The basic solution in the elevator business
- In most cases no oil cooling necessary as the heat is dissipated via the braking resistor
- Increased numbers of drives can be realized without any problems

System visualisation shows downward travel

The pump turns backwards and the motor generates electrical energy, which is dissipated via the braking resistor.

Braking resistor

Frequency inverter
Eco Line

Energy Recovery System
ERS

Option: Energy recovery into the power grid
- Simple energy recovery for new and existing systems
- 5 kW peak power per unit
- Several devices can be connected (parallel)

The pump turns backwards and the motor generates electrical energy, which is returned via the energy recovery system into the power grid.

System visualisation shows downward travel
SuperCap

**Option: Intermediate energy storage**
- Reduced main power at maximum load and nominal speed
- Simple retrofitting are possible

The pump turns backwards and the motor generates electrical energy, which is temporarily stored in the SuperCap.

System visualisation shows downward travel
MULTIvalve

MULTIvalve
- Several iValves can be controlled via the master-slave concept
- Electrical supply rating can be reduced without frequency inverter
- Easy wiring
- On demand, the lift can be operated with just one drive, at reduced speed

MULTIvalve Power Unit
- Power unit with two drives and output flow up to 1000 l/min
- Drives can be operated independently
- Each drive can be fitted with a soft-starter
Digitalization and networking offer completely new possibilities for modern elevator hydraulics. With the ongoing development of its valve technology in conjunction with sensors and bus systems, Bucher Hydraulics is at the forefront of innovative solutions in this field.

Big potential for greater efficiency
Viewed as a development platform, the intelligent iValve with CANopen-Lift interface offers far-reaching improvement potential for hydraulic elevators – a potential that is already being exploited in the area of time- and cost-saving installation and commissioning. In addition, elevator manufacturers can develop new service concepts thanks to remote monitoring and the predictive maintenance that results from it. All in all, these advantages increase competitiveness and secure the elevator manufacturer’s market position.

Main features of a CANopen elevator
- Simplified interface and reduced wiring effort
- The elevator system can be accessed remotely via the elevator control system
- Identical functionality as with a handterminal
- Viewing and setting of various operating data & parameters

Summary
All in all, digitalization and networking change not only the manufacturing of elevators, but also their commissioning and the entire service process, in which reliable and life-extending maintenance measures are key factors. Maintaining a hold on a market position and/or aiming for company growth already demand that elevator manufacturers have larger sales territories involving longer journeys. Integrating new technologies into the business model can significantly improve the management of these larger territories, as service personnel can be deployed more efficiently thanks to up-to-date information. The intelligent iValve from Bucher Hydraulics already offers the prerequisites needed to meet all these challenges and to be able to press the strategic UP button to „Lift 4.0“ at an early stage.
Our CANopen Solution
The unique diagnostic functions, which are based on the information made available and then transmitted via bus systems, form the basis for the predictive maintenance or needs-oriented service that has the aim of increasing the system availability. The early planning of predictable measures saves time, travel and costs, as potential faults can be identified long before a possible stoppage.

Applying the innovative valve technology of the iValve in conjunction with CANopen-Lift, elevator manufacturers can use it to suit the particular requirements that the elevator must fulfill, and configure it for future customer needs. In further steps, systems can increasingly be networked and digitalized, thus making them smarter. Of course, this also applies to the modernization of existing hydraulic systems.

The available options
- Remote and local access to the lift control valve iValve or VF-iValve via the lift control system
- Output of operating data, e.g:
  - pressure
  - temperature
  - error logs
- Setting of parameters, e.g:
  - driving curve
  - pressure switch
  - CANopen interface
- Can be used with Comfort- and Eco Line
- Can be retrofitted to existing lift systems with the lift control valve iValve or VF-iValve

REMOTE ACCESS TO YOUR HYDRAULIC ELEVATOR
Cross-linked with CANopen-Lift
The Bucher Hydraulics Range

Electronically controlled lift valves (iValve)
Bucher Hydraulics lift control valves provide unsurpassed ride comfort, irrespective of load and temperature.

All lift control valves are factory preset to the installation-specific parameters. This reduces the on-site installation time to the minimum.

Power Units
Comfort Line
The standard power unit with the iValve electronically controlled lift valve offers unlimited application possibilities and numerous options.

Eco Line
The high-performance, economical, and low-noise drive solution with the VF-iValve electronically controlled lift valve reduces energy consumption by up to 80% in comparison with mechanically controlled hydraulic lift drives.

Cylinders
Plunger Cylinder
The plunger cylinder BZG is suitable for personnel and freight elevators. For each piston rod are different cylinder diameters and wall thicknesses available.

Synchronised Telescopic Cylinder
The synchronised telescopic cylinder from the series BGLZ are single acting and it's particular design principle produces uniformly-distributed lifting and lowering speeds. Telescopic cylinders are used especially in central arrangements.

Modernizations
MULTikit
The route to perfect modernization of a hydraulic lift drive, without time-consuming and costly replacement of the lift controller.