

# Maximum safety and precision

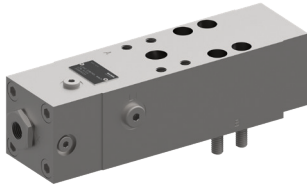
---



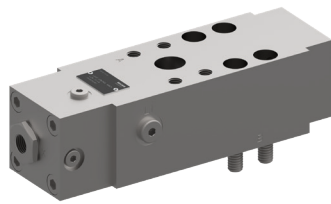
**Bucher Hydraulics is expanding its portfolio of safety valves with a new load-control valve for winches, as well as additional sizes of other load-control valves and pipe-rupture safety devices.**

When enormous wind turbine rotor blades or entire building roofs have to be positioned with millimeter accuracy, valves from Bucher Hydraulics are usually used – especially when it comes to really heavy loads. The hydraulics specialists are currently expanding their already wide range of safety load-control valves. The CINDY follower principle, which has been tried and tested for decades, continues to play an important role.

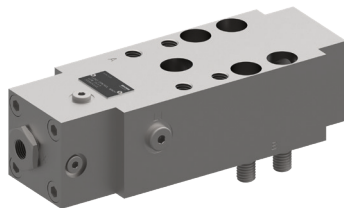
“We have expanded our range of load-control valves with the new LCW version, developed specifically for winch applications,” explains René Müller, Product Manager – Safety Valves at Bucher Hydraulics. LCW stands for Load-Control Valve for Winches. Also new to the product portfolio: the Compact Flow Control and Safety Valve (CFS), a size 25 pipe-rupture valve with a flat design.



LCW 16-A-S...



LCW 20-A-S...



LCW 25-A-S...

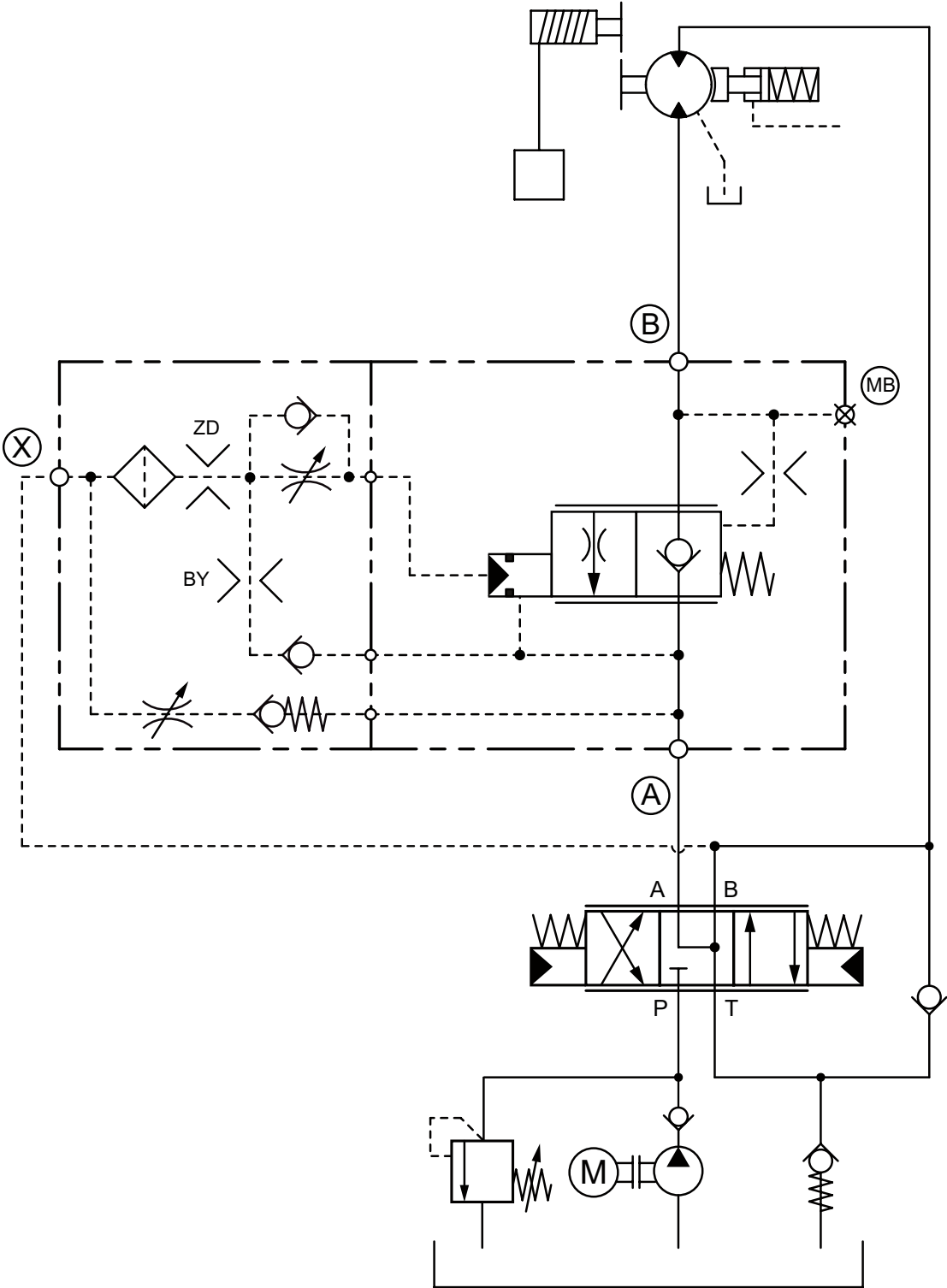
### Functional integration saves pipework and installation costs

“The pilot pressure bypass formerly needed a separate line. With the new LCW, we have succeeded in integrating it into the return line of the winch load-control valve.”

According to Müller, this saves OEMs costs during installation because they have to install fewer components, and the piping requirements are reduced. In addition, the LCW is characterized by particularly sensitive and responsive starting behavior – important when it comes to positioning the heaviest loads with millimeter precision. Another aspect in times of rapidly rising energy costs: the optimized energy efficiency, which is due to reduced throttling losses during lifting as well as to reduced pressures and pressure peaks during lowering.

Basically, safety valves protect man and machine, thanks to the fact that – depending on the applicable standards – load-control valves or pipe-rupture safety devices are used. If heavy loads have to be precisely moved, held and positioned, or if work access platforms have to hold their position and withstand large forces, safety valves from Bucher Hydraulics are a good choice. Why? Müller gives the reasons: with the CINDY technology, the company has a long-proven concept for safety valves in a modular system. The valves offer a high opening ratio of 113:1. This results in very small changes in pilot pressure for widely differing loads. Operators will be happy that the joystick provides load-independent and very responsive travel behavior. The low pilot pressure minimizes the energy required for lowering. For the end user, better energy efficiency saves operating costs.

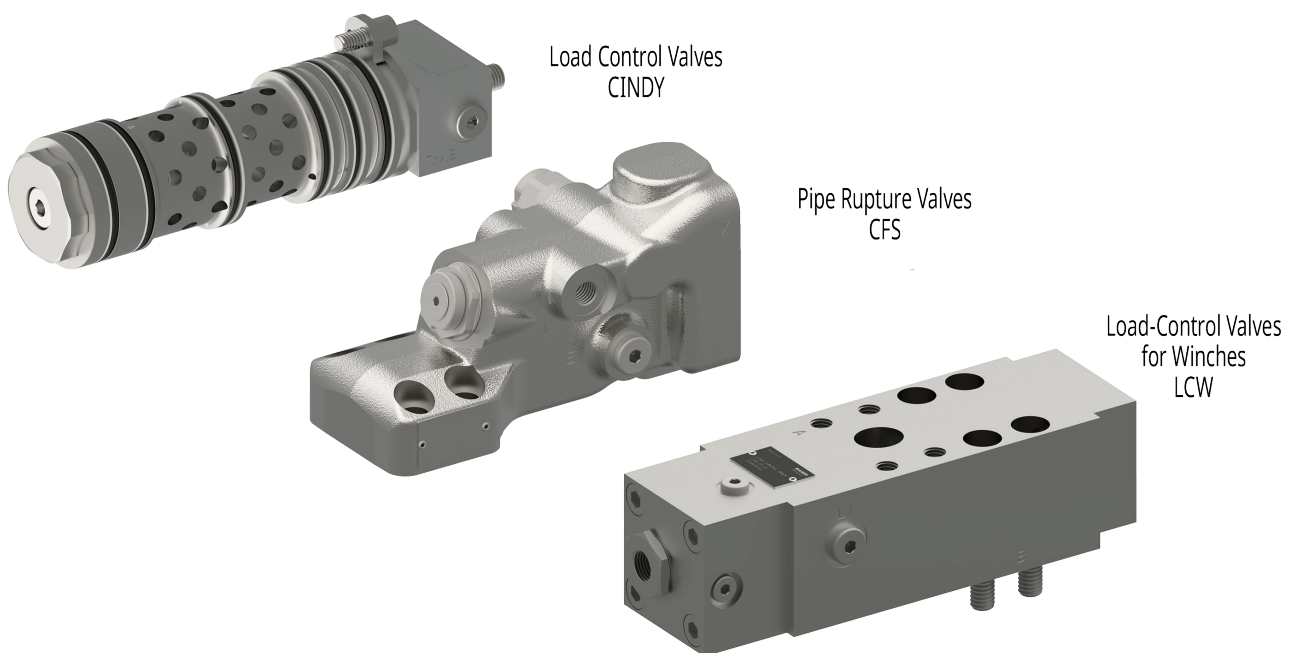
“In addition, the bypass check valve, which is functionally integrated in a coaxial valve assembly, means a significantly smaller installation space for the valve.” Common safety valves close by means of spring force, which means that the safety depends solely on the spring. Depending on the cylinder pressure, considerable forces can be applied to the spring, which is why this type of valve has an inherently lower level of safety. “CINDY valves, on the other hand, close due to the load pressure applied to the valve, which ensures maximum safety.”



Possible design of a winch drive with LCW. Further information and references can be found on our product data sheet.

**Multiple combination possibilities thanks to modular system**

CINDY valves can lift, hold and lower. With SAE flange mounting, manifold mounting and cartridge designs, three installation types are available. Valves with SAE flanges are available up to size 32 and allow a flow rate up to 1200 l/min. The manifold-mounting version is available up to size 25 and has a maximum flow rate of 500 l/min. The cartridge design has a maximum size of 40, and it can be operated at a maximum flow rate of 1300 l/min. The maximum operating pressure for all variants is 420 bar, which represents a design safety factor of 3. In line with the modular system concept, these three installation types can be equipped with various operating/control options for a wide range of applications. In addition, the system can be adapted quickly and easily to meet customer-specific requirements.



Bucher Hydraulics' safety valve portfolio includes load-control valves, pipe-rupture valves, and now also load-control valves for winches.



Safety standards require the use of pipe-rupture safety devices for excavators and other machines working under particular conditions. In addition to meeting those standards, products from Bucher Hydraulics deliver numerous other positive features and functions.

### Pipe-rupture protection with minimal space requirement

In the event of a pipe or hose burst, pipe-rupture safety devices prevent an uncontrolled lowering movement. The relevant standards (EN 474 and ISO 8643) require this type of valve for machines working under certain conditions. For example, excavator pipe-rupture valves are required whenever a lifting device such as a load hook is attached to the excavator bucket, and it can be used to lift a load of more than one metric ton. Müller: "As a general principle, work machinery must be equipped with pipe-rupture safety devices on actuators where dangerous situations for people can occur." This includes equipment for materials handling and demolition/dismantling.

Taking the example of an excavator, the standards refer to boom cylinders as well as stick and adjusting cylinders. In the event of a pipe or hose burst, a vertical lowering speed of 150 mm/s at the bucket (the specification for burst tests) may at most double. Müller: "Our CFS pipe-rupture valve for excavators goes well beyond this standard: it keeps the lowering speed virtually constant." Another important point: the falling speed of the load must not exceed 10 mm/s in the holding position. "Because our excavator pipe-rupture valves are leak-free, we exceed this requirement."

The valve must be mounted directly on the cylinder – without any hose or pipe in between. However, the gap between the excavator superstructure and the boom cylinder is often quite narrow in relation to the hose peripherals or the maximum deflection of the boom, and there is a risk of collision. The flat design of the CFS provides the decisive millimeters that save the need for any alteration to the excavator's design, or even any modifications when this safety device is retrofitted.

The CFS valves also have an integral secondary pressure relief valve to protect the actuators against overload. The actuator and inlet connections are standard SAE flanged ports, and the valves can therefore be retrofitted to existing machines without any difficulty. Variations in load pressure – even right up to the maximum – have no effect on the fine-control characteristics and the hydraulic performance of the valve. In addition, the valve holds the actuator in its position when the main valve is centered.

### Easy to use, functionally safe and reliable

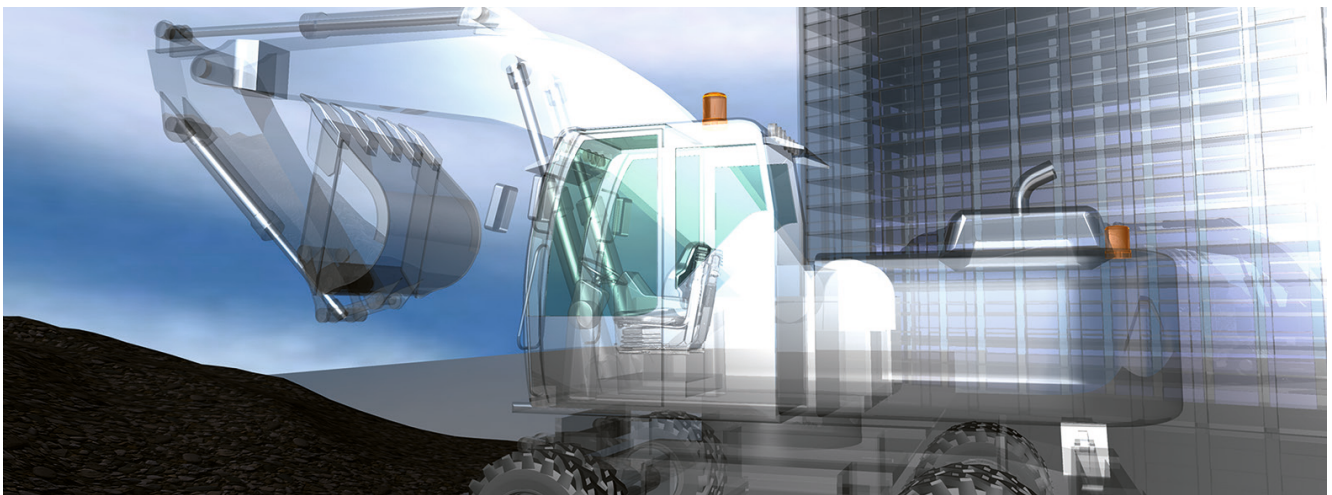
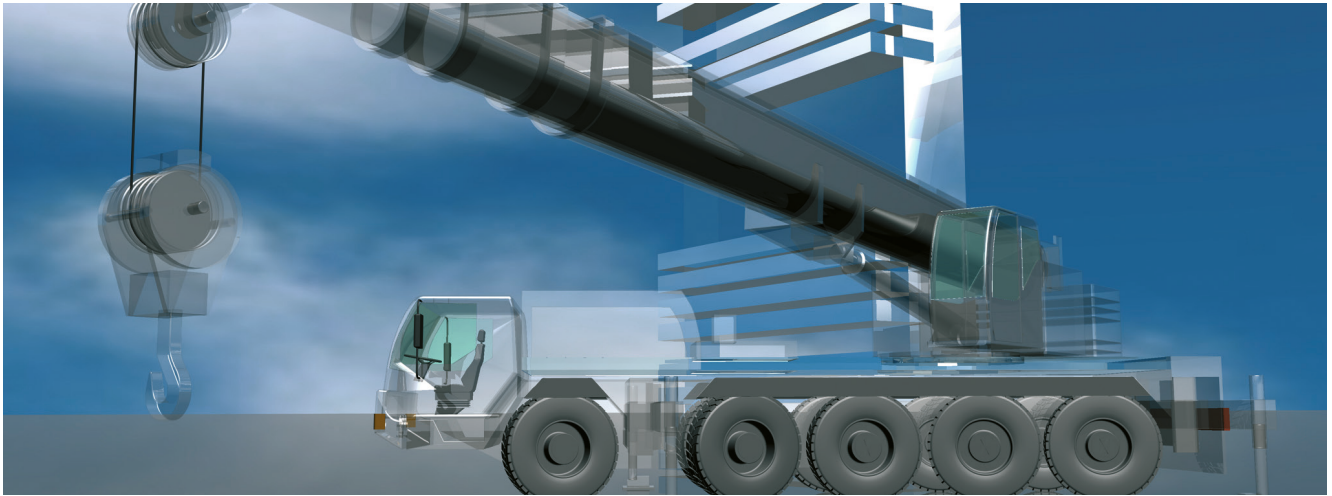
The large opening ratio of 480:1 makes its mark with operators by delivering load-independent operation. The guaranteed closing force, even in the event of spring breakage, provides a high level of safety for man and machine if there is a malfunction.

Because the CFS pipe-rupture safety devices do not contain dynamic seals, the hysteresis is very low and the setting remains constant. Balanced load-lowering significantly reduces wear on the cylinder and ensures long service life as well as precise, finger-tip controllability. "Even enormous loads can be positioned with millimeter accuracy."

The CFS pipe-rupture safety valves are available in the three sizes 16 (SAE ¾" 6000 psi – 250 l/min), 20 (SAE 1" 6000 psi – 350 l/min) and 25 (SAE 1¼" 6000 psi – 600 l/min). In its standard design, the CFS weighs half as much as most comparable products on the market. Thanks to the zinc-nickel plating, all valves meet exacting requirements for corrosion protection in the harsh working environment of the excavator.

If the standard models are not adequate, Müller says that the experts at Bucher Hydraulics welcome inquiries for customized versions: "Our expertise and services range from development, including simulation, through manufacturing and assembly using the latest technology and final hydraulic testing of each valve, to commissioning and acceptance on site at the machine manufacturer's facility."





Three of many applications for the various safety valves from Bucher Hydraulics: mobile cranes, hydraulic excavators and materials handling machines.

# Smart Solutions. Superior Support.

---

**Contact for reader inquiries:**

Bucher Hydraulics AG  
Industriestraße 15  
CH-6345 Neuheim  
info.ch@bucherhydraulics.com  
www.bucherhydraulics.com

**Contact for editors:**

Lorenz Kallen  
Techn. Redaktion  
+41 33 672 61 73  
lorenz.kallen@bucherhydraulics.com