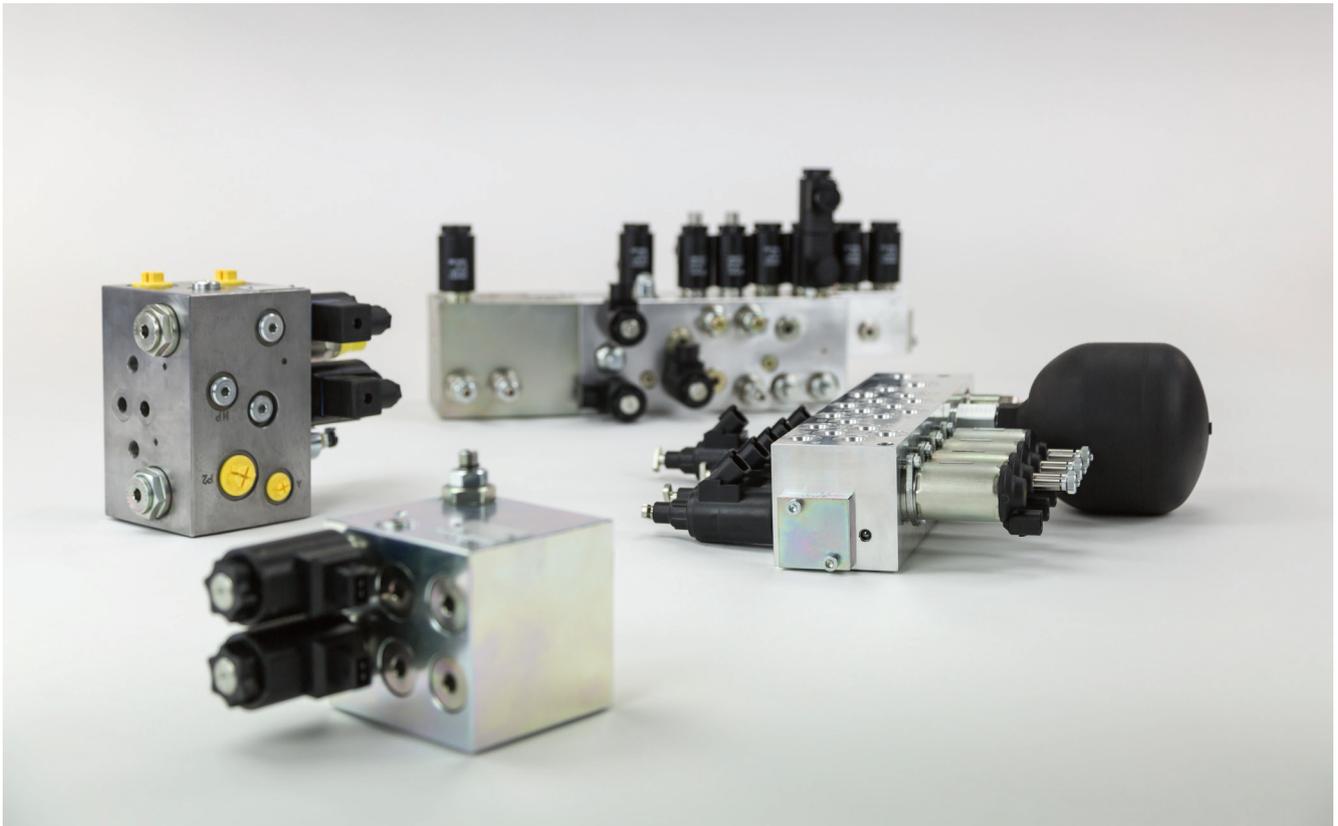


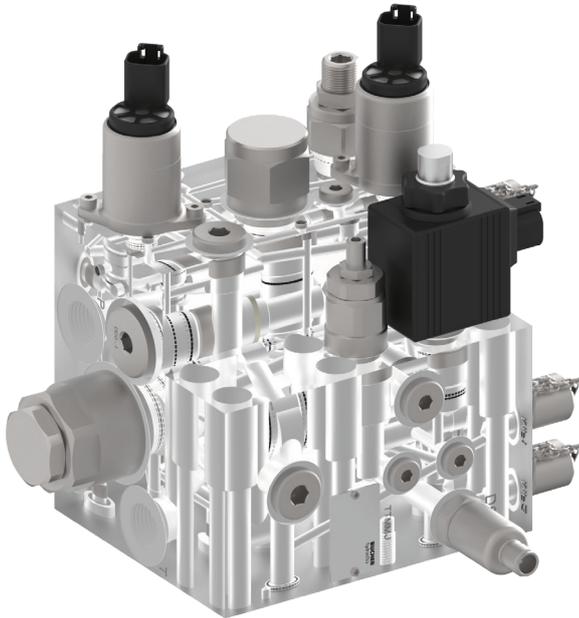
# Smart Control Blocks

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High hydraulic performance remains crucial for agricultural and forestry machinery, even in electrically driven units. Bucher Hydraulics meets today's challenges with extensive know-how, a customer-centric approach, and highly automated manufacturing.

Especially in this era of increasing electrification, hydraulics remain vital. This is particularly true for agricultural and forestry machines where compact installation and weight optimization are key. Hydraulics play a significant role in energy efficiency. When combined with the right expertise, both drive types complement each other perfectly.

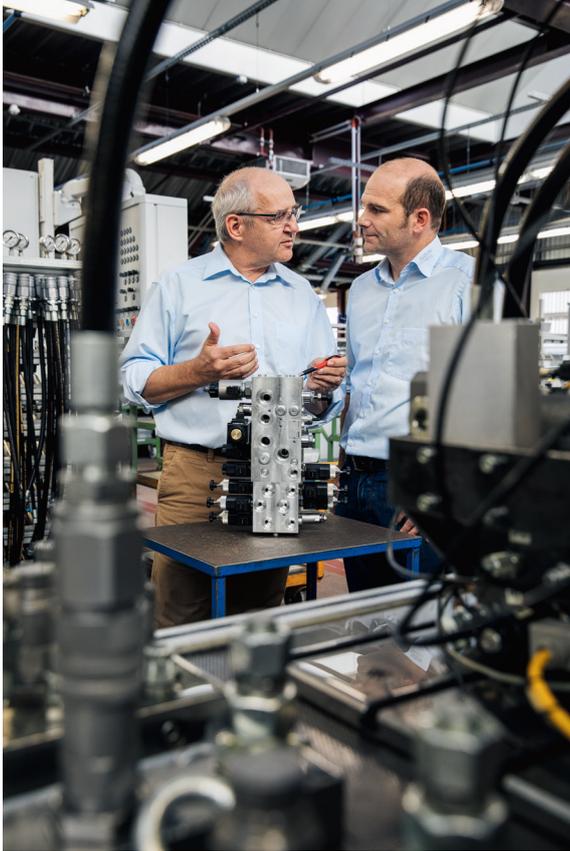


Bucher Hydraulics' control blocks stand out for their compactness, light weight, and high energy efficiency. Behind them lies a wealth of expertise not only about the product but also its application and manufacturing technique.

### Optimized hydraulics: the key to efficiency

Despite increasing electrification, agriculture and forestry machinery rely on the power of hydraulics. However, hydraulics often suffer from a perception of inefficiency. This isn't a technical failing, but rather the priorities historically set: high power density, reliability, durability, and, of course, cost pressures. But hydraulics can indeed be efficient. Minimized pressure drops and flow-optimized designs allow for smaller batteries in electrified machines, saving both weight and cost. Bernhard Zbären, overseeing sales and project engineering of control blocks at the Swiss location in Frutigen, sees electrification as an ally of hydraulics, not an opponent. He explains, "In agriculture, you can't just send one battery pack after another across a field. Besides the cost, the pressure on the soil from such an immense weight would be an almost insurmountable problem."

Everyone must do their part to cut unnecessary energy consumption. In particular, hydraulic control blocks can consume a lot of energy if improperly designed. That's why Bucher Hydraulics always aims to meet customer demands, even with standard products. This involves considerable effort, but in the long term, it pays off for everyone involved.



### One point of contact – building long-term relationships

A key aspect in finding the perfect solution is establishing a direct customer relationship managed by a single individual responsible for both technical and sales aspects. Zbären's department handles both project planning and sales. Their comprehensive project management allows customers flexibility in their level of involvement, ranging from initial contact to prototype implementation, on-site commissioning, post-sale support, and even product phase-out.

Project development includes material and bore selection, connection, and valve layout of the selected cartridge valves, documented as a circuit diagram, a 3D model, and a technical drawing. On the commercial side, desired services, target price agreements, and the project's timeline are discussed with the customer. Additionally, the project team handles the ramp-up phase of pilot or production runs, forecasting, after-sales service, documentation, and product phase-out. Having a single point of contact for often long-term customers over years leads to good customer relationships, mutual understanding, and quick response times.



The team responsible for the hydraulic control blocks has a high level of education. Technical and business expertise are combined, leading to smart solutions.

### Good training is essential

Well-trained employees are the foundation of such an organization. In Frutigen, almost all have undergone the proven Swiss dual education system. It combines theory and practice in a three or four-year apprenticeship, followed by further training and internal schooling at all levels, both technical as well as administrative and commercial. Zbären: "It initially takes a lot of time and money, but it's a worthwhile investment. Well-trained specialists achieve their goals faster, which benefits both our customers and us."

When designing according to customer specifications and with the help of the 3D CAD program, the aim is to achieve a particularly compact design of the control block in order to meet all weight and dimension specifications. A crucial aspect: production-related specifications, like machinery and deburring processes, are considered during the design phase since manufacturing is done in-house at Bucher. The design engineers are very familiar with the possibilities and requirements resulting from the machinery, so that automation can already start in the project planning phase. The results are the manufacturing and assembly drawings, and the customer spare parts drawing. Speaking of spare parts, they are available for at least ten years after the product ends, often even longer. Additionally, there's a 3D CAD model that customers can integrate into their design.



The test benches at Bucher Hydraulics are developed by a separate, specialized department.

### Prototypes and 100% inspections ensure production quality

Prototypes are also made in-house. Using prototypes, extensive tests can be carried out on test benches specially designed by Bucher test and automation specialists. This prevents nasty surprises in later series production. Once everything is tested, approved, and manufactured, assembly is fully carried out by trained personnel at Bucher Hydraulics.

Every product undergoes an automatic function and leak test with oil before being shipped to the customer. Pressure and flow rate adjustments are made on the test bench, and if requested, the valve characteristic curve can be attached as a QR code.



The highly automated production with cutting edge 5-axis machining centers is located in-house at Bucher Hydraulics.

### Cutting-edge machining centers and automation technology

Bucher Hydraulics' machining centers allow multi-sided machining with utmost precision, as there are no reclamping operations. To achieve short chip-to-chip times, fully automatic workpiece storage systems, in collaboration with industrial robots, handle loading and unloading. Tool changes, even for small batches, are as streamlined as in mass production. This boosts productivity and flexibility while reducing lead times.

Bucher's proprietary equipment design ensures that the strengths of each manufacturing machine are fully utilized through its clamping devices, tools, and grippers. As the production know-how is also available to the project managers who design the system control blocks, they can design smart solutions with a particular focus on production.

In this way, Bucher Hydraulics provides customers with superior support in the construction of their hydraulic machines. The goal is to deliver a top-tier product that meets all the customer's requirements. "We are driven to make our clients successful because that's the only way we can be successful ourselves. Hydraulics will continue to be essential, complementing electrification effectively in the future," Bernhard Zbären is convinced.



Typical uses for Bucher Hydraulics' hydraulic control blocks include hay turners and rakes, seed drills, and mowers.

### Bucher Hydraulics and agricultural technology

Bucher Hydraulics is a leading international provider of innovative hydraulic drive and control technology for both mobile and industrial applications, with production facilities and sales branches worldwide. Target sectors include construction machinery, conveying and lifting technology, municipal technology, renewable energies, mechanical engineering, elevator technology, as well as agriculture and forestry. The manufacturers of agricultural and forestry machinery include global players as well as medium-sized companies.

A common trend across all applications is the optimization of hydraulics. While large customers usually handle the design and optimization of their systems in-house, medium and small manufacturers count on extensive expertise and services from their hydraulic partner, necessitating close collaboration. Bucher Hydraulics meets these ever-growing demands through decades of product and application experience and combines this knowledge with extensive expertise in production techniques of system solutions.

# Smart Solutions. Superior Support.<sup>®</sup>

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**Contact for reader inquiries:**  
Bucher Hydraulics AG Frutigen  
Schwandistraße 25  
CH-3714 Frutigen  
Tel.: +41 33 672 61 73  
info.ch@bucherhydraulics.com  
www.bucherhydraulics.com

**Contact for editors:**  
Lorenz Kallen  
Techn. Redaktion  
Tel.: +49 (0)7742 85 21 78  
lorenz.kallen@bucherhydraulics.com