Your Partner for Micro and High Pressure Hydraulics

For any application where space is limited and intelligent solutions are in demand, we are your competent solution partner. From components to systems.
About Us
BIERI Hydraulik

BIERI Hydraulik AG, more than 60 years experience and quality in Hydraulics and since 2011 part of the HYDAC Group of companies, is nowadays a leading international supplier of hydraulic and electrohydraulic solutions in the field of micro and high pressure hydraulics.

- For any application where space is limited and intelligent solutions are in demand, we are your competent solution partner. Our innovative solutions - from standard components to customer specific components and from sub-systems to complete systems - essentially contribute to the success of our customers.

- Through the HYDAC sales and service network, as well as through some selected independent distribution partners, we are always close to our customers and their applications.

- We cultivate a close partnership with our customers and suppliers, based on trust, profitability and sustainability.

HYDAC Group

HYDAC is your competent partner for all projects requiring fluid technology in connection with hydraulics, electronics and engineering.

- HYDAC was founded in 1963 as a company for hydraulic accessories and is today an internationally active company group with over 8000 employees, 50 branch offices and 500 trade and service partners world-wide.

- HYDAC components can be found in all areas of industrial and mobile hydraulics

- HYDAC solutions are based on
  - Competence for systems
  - Flair for innovation
  - Feeling for fluids.

Engineering Support
Simulation technologies
Project engineering / Fluid engineering

Modules / Manifolds / Accumulator stations
Filtration.cooling-systems / Power packs
Lubrication systems / Cylinder units

Fluid filters / Process filters/ Hydraulic - accumulators / Sensors / Valves / Coolers
Heat- exchangers / Pumps / Ball valves / Fittings
Our Products
5 Best in Class Product Lines

Hydraulic & Electro-Hydraulic Solutions

Micro (MI) vs. High Pressure (HP)
- Micro (MI)
  - 200 bar → 3 L/min
  - Customized Components
- High Pressure (HP)
  - 350 bar
  - 500 bar
  - 700 bar
  - 1000 bar
  - → 12 L/min
  - → 25 L/min

Components
- Pumps
  - Micro Axial Piston Pumps
  - Radial Piston Pumps
- Valves
  - Directional seat valves
  - Pressure valves
  - Flow control valves
  - Shut-off-valves
  - Load holding valves
  - Pressure Switches
  - Oil Level Switches
  - Micro Cylinders
- Sub-Systems
  - Motor - Pump
  - Motor – Pump – Tank
  - Modular Valve Manifold
  - Special Valve Manifold
  - Cylinder Assemblies
- Systems
  - EH Power Packs
  - Electro-Hydraulic Axes

Your Benefits
Features and Advantages of our Solutions

Compact design, high power density, robustness, durability and functionality are among the undisputed strengths of hydraulics. BIERI Hydraulik - as a leading international solution provider in the field of micro and high pressure hydraulics - sets the benchmark for these generally accepted advantages of hydraulics even higher.

Our solutions are created to help you - our customers - design your equipment in a space-optimized, energy-efficient way and with increased functionality. All this of course based on proven Swiss reliability.

Please let yourself be convinced.
Our Customer Approach

From the potential benefit of our products to the perfect solution for you

You – our customers – are in the focus of everything what we are doing. Our goal is to provide you with the most suitable product and to assist you in the designing or redesigning of your hydraulic equipment, which can give you a competitive advantage.

Our international network and partnership approach, our innovative strength, flexibility and reliability, can help you to reduce unnecessary interfaces and benefit from perfectly functioning solutions. When and wherever you need us, from the standard component to customer-specific components and from subsystems to complete systems in the area of micro and high pressure hydraulics.

Through close personal contact with you, we are inspired by your individual ideas and wishes to find and develop efficient solutions. In this way, we maintain close partnerships on all hierarchical levels and throughout the entire process: from application advice to product definition and even to the logistic and after-sales concept. With great implementation skills and passion for detail, we will contribute to make your equipment more competitive and with quicker availability. That is what drives us and is the key to our mutual success.

As a partner with solution-finding skills, we understand the challenges of your markets and we have the skills to meet your specific requirements. Therefore, the search for a solution begins with the first joint discussions. We critically question existing solutions, discuss innovative approaches and decide together the best individual solution for you. Our company structure allows a flexible adaptation to your own needs.

Our application and product know-how - Your competitive advantage.

Our internal organization – from order processing, production, assembly and logistics – is designed to meet your requirements. Again, our maxim is: the right product at the right time, in the right place, in the correct quantity and through the quality of internal processes and delivery to you.

Our reliability – a guarantee of our partnership.

BIERI Hydraulik -
Your partner for individual solutions
We have collected and implemented know-how in a targeted manner for more than 60 years. That is why we know very well how different the specific requirements for different markets, industries and applications can be. And we are aware of how quickly a technological advantage is gained or even overtaken, if one does not always strive to develop oneself further.

For that reason and for key applications, we have within Bieri Hydraulik and the Hydac Group experienced specialists, who are globally active and are fully focused on the requirements and trends of the industry. Optimal advanced technical solutions, targeted for these industries, are the result.

With our industry-specific solutions and our application knowledge, we can efficiently support you on the road to market success as your partner with thorough application knowledge in micro and high pressure hydraulics.

We are active in the following industries:

- Oil & Gas
- Maritime Applications
- Medical Technology
- Fun Park Safety Systems
- Special Vehicles
- Aerospace
- Clamping Technology & Jig construction
- Machine Tools Cutting - auxiliary functions
- Machine Tools Forming – Clamping
- Machine Tools Forming – Small Presses
- High-viscosity Lubrication Systems - Grease
- Hydraulic Tools
- Fire & Rescue Equipment
- Testing Systems
- Energy & Power Generation
- Construction & Recycling
- Lifting & Transport Systems
- Shipbuilding

BIERI Hydraulik -
Your solutions partner with application Know-How
Micro and High Pressure Components
Best in Class Pumps: Micro; 500; 700; 1000 bar

Micro-Axial piston pumps AKP
Valve controlled on pressure and suction side. High volumetric efficiency with a wide speed range. Small mounting dimensions and low noise. 3 and 5 pistons.

- \( p \) 250 bar, 350 bar, 500 bar, 800 bar
- \( Vg \)/n 0,012 \( \rightarrow \) 2.292 cm³/r; 100 \( \rightarrow \) 5000 min⁻¹

Radial piston pumps BRK

- \( P \) 500 bar, 700 bar, 1000 bar
- \( Vg \)/n 0,24 \( \rightarrow \) 8,14 cm³/r; 500 \( \rightarrow \) 2000 min⁻¹

Radial piston pumps SRK-ATEX
For use in explosive environments also mounted outside of the hydraulic tank. Class II: gases, vapours, mists.

- \( P \) 700 bar
- \( Vg \)/n 0,47 \( \rightarrow \) 6,33 cm³/r; 500 \( \rightarrow \) 1800 min⁻¹

Radial piston pumps SRK
Self priming, self venting, valve controlled. Suitable for operation with poor lubricating mediums. 3, 5, 7 and 9 low friction pumping elements with low sliding speed.

- \( P \) 700 bar
- \( Vg \)/n 0,47 \( \rightarrow \) 6,33 cm³/r; 500 \( \rightarrow \) 1800 min⁻¹

Multi outlet pumps MRK

- \( P \) 700 bar
- \( Vg/Circuit \)/n 0,16 \( \rightarrow \) 3,620cm³/r; 500 \( \rightarrow \) 2000 min⁻¹

Radial piston pumps HRK
Compact design. Direct installation of motor, no coupling, no bell-housing. Version with hollow shaft, with or without pressure relief valve. 1 and 2 pumping elements.

- \( P \) 700 bar
- \( Vg \)/n 0,12 \( \rightarrow \) 4,52 cm³/r; 500 \( \rightarrow \) 3600 min⁻¹

Combination pumps KKP
Compact and lightweight. Integrated low-pressure shut-off valve and pressure protection valve. Self-venting. Design with hollow shaft. 2 and 3 4 pumping elements.

- \( p \) LP 160 bar, HP 700 bar
- \( Vg \)/n LP 0,35 \( \rightarrow \) 5,43; HP 0,12 \( \rightarrow \) 2,71 cm³/r
- 500 \( \rightarrow \) 3600 min⁻¹ (KKP01/02); 500 \( \rightarrow \) 2000 min⁻¹ (KKP03/04/05)

Combination pumps SKP
Hollow shaft. Optionally integrated low-pressure shut-off valve. Self-venting. 2 or 3 pumping elements HP stage.

- \( p \) LP 100 bar, HP 700 bar
- \( Vg \)/n LP 4,45 - 16,71; HP 0,45 - 2,71 cm³/r 500 \( \rightarrow \) 2000 min⁻¹

Combination pumps BKP
Combination of BRK pump and gear pump. Outstanding energy efficiency ratio. Fixed displacement, any installation position possible.

- \( p \) LP 250 bar, HP 1000 bar
- \( Vg \)/n LP 4,0 \( \rightarrow \) 61,1 ; HP 0,47 \( \rightarrow \) 8,14 cm³/r 500 \( \rightarrow \) 2000 min⁻¹
High Pressure Components
Best in Class Valves 500 bar

Seated valves WVM-6I
Direct operated and leakage free. With hardened closing elements as cone seat. 2/2, 3/2, 3/3, 4/2, 4/3 or 4/4 functions with positive or negative overlap. Solenoids with slide on coil technology (turnable). Good corrosion resistance.

\[
p / \text{size} \quad 500 \text{ bar} / \text{NG 6} \quad | \quad Q \quad 25 \text{ L/min}
\]

Seated valves WVM
Direct operated and leakage free. With hardened closing elements as cone or ball seat. 2/2, 3/2, 3/3, 4/2 functions with negative or positive overlap. Solenoids with slide on coil technology (turnable) or alternative actuation. Good corrosion resistance.

\[
p / \text{size} \quad 500 \text{ bar} / \text{NG 4} \quad | \quad Q \quad 12 \text{ L/min}
\]

Seated valves ATEX WVMX
Direct operated and leakage free. With hardened closing elements as cone or ball seat. 2/2, 3/2, 4/2 functions. Solenoids with slide on coil technology (turnable in 90° steps. For use in explosive environments Class II: gases, vapours, mists.

\[
p / \text{size} \quad 500 \text{ bar} / \text{NG 4} \quad | \quad Q \quad 12 \text{ L/min}
\]

Flow control valves SDM and SDRVM
Adjustable while under pressure with high-precision control. The setting can be locked by a counter nut. Throttle valve as cartridge or in manifolds as throttle or throttle check valve.

\[
p \quad 500 \text{ bar} \quad | \quad Q \quad 25 \text{ L/min}
\]

Shut-off valves 500 bar / NG4
Leakage free in closed position. Available as cartridge or in modular and stand alone manifolds.

\[
p \quad 500 \text{ bar} \\
\quad \begin{array}{l}
\quad \text{Manual shut-off valve AVM} \\
\quad \text{Check valve RVM 45 L/min} \\
\quad \text{Pilot operated check valve ERVM} \\
\quad \text{P. o. CV with decompression ERVPM}
\end{array} \quad \begin{array}{l}
\quad Q \quad 25 \text{ L/min} \\
\quad 63 \text{ L/min} / \text{NG 10}
\end{array}
\]

Pressure valves 500 bar / NG4
Direct operated poppet valve as cartridge or with modular- or stand alone manifolds. Outstanding stability over the entire flow range. Low hysteresis and exact pressure control and adjustment.

\[
p / \text{size} \quad 500 \text{ bar} / \text{NG 4} \\
\quad \begin{array}{l}
\quad \text{Pressure relief valve DVM} \\
\quad \text{Pressure reducing valve DMM} \\
\quad \text{Unloading valve DAM}
\end{array} \quad \begin{array}{l}
\quad Q \quad 30 \text{ L/min} \\
\quad 30 \text{ L/min} \\
\quad 40 \text{ L/min}
\end{array}
\]
High Pressure Components

Best in Class Valves 700 bar

Seated valves WVH
Direct operated and leackage free. With hardened closing elements as cone or ball seat. 2/2, 3/2, 3/3, 4/2 functions with negative or positive overlap. Solenoids with slide on coil technology (turnable) or alternative actuation. Good resistance against corrosion.

<table>
<thead>
<tr>
<th>p / size</th>
<th>Q</th>
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<tbody>
<tr>
<td>700 bar / NG 4</td>
<td>12 L/min</td>
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</table>

Seated valves ATEX WVHX
Direct operated and leackage free. With hardened closing elements as cone or ball seat. 2/2, 3/2, 3/3, 4/2 functions. Solenoids with slide on coil technology (turnable in 90° steps). For use in explosive environments Class II: gases, vapours, mists.

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Seated valves WVM-4B-Bi
Direct operated, leackage free and suitable for bidirectional flow, with hardened closing elements as cone seat. 2/2 and 3/2 functions with low pressure drop (Δp). Solenoids with slide on coil technology (turnable) or alternative actuation. Good corrosion resistance.

<table>
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<td>12 L/min</td>
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Seated valves WV-700
Direct operated and leackage free. High duty cycle and long lifetime through hardened poppets and valve seats. 2/2, 3/2, 3/3, 4/2, 4/3 functions with positive overlap (exceptions see data sheet) and use of 1 to 4 valve cartridges. Solenoid or alternative actuation.

<table>
<thead>
<tr>
<th>p / size</th>
<th>Q</th>
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<tbody>
<tr>
<td>700 bar / NG 6</td>
<td>25 L/min</td>
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Manual spool valves HSV700
Minimum weight. Excellent price-performance ratio.

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Flow control valves SD700 und SDR700
Adjustable while under pressure with high-precision control. The setting can be locked by a counter nut. Throttle valve as cartridge or in manifolds as throttle or throttle check valve.

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Pressure valves 700 bar / NG6
Direct operated poppet valve as Cetop 3 flangeable sandwich plate. Outstanding stability over the entire flow range. Low hysteresis and exact pressure control and adjustment.

- Pressure relief valve DV700 | Q 25 L/min
- Pressure reducing valve DM700 | Q 25 L/min
- Unloading valve DA700 | Q 25 L/min

Proportional pressure relief valves PDV700
Available as direct and pilot operated version. High degree of pressure stability and linear curve. Force controlled proportional solenoid of robust design.

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Q direct operated 2 L/min; Q pilot operated 25 L/min

Shut-off valves 700 bar / NG6
Leakage free in closed position. Available as cartridge alone or in sandwich plates or manifolds.

- Manual shut-off valve AV700 | Q 25 L/min
- Check valve RVH | Q 45 L/min
- Pilot operated check valve ERV700 | Q 25 L/min
High Pressure Components
Pumps, Valves, Pressure Switches 1000 bar

Radial piston pumps BRK11/12
Self priming, self venting. Valve controlled.
High volumetric efficiency. 3, 5 and 7 pistons

\[
\begin{align*}
p & = 1000 \text{ bar} \\
Vg & = 0.47 \rightarrow 4.4 \text{ cm}^3/\text{rev.} \\
n & = 500 \text{ bis } 2000 \text{ min}^{-1}
\end{align*}
\]

Manual shut-off valve SPV2
Poppet design leakage free. Low operating force. Both connections designed for max. pressure. For in-line mounting systems.

\[
\begin{align*}
p & = 1000 \text{ bar} \\
Q & = 20 \text{ resp. } 32 \text{ L/min}
\end{align*}
\]

Pressure relief valve DV2
Cone seat valve direct operated. Max. pressure adjustable by locking nut. Pressure relief valves with threaded connection for in-line mounting systems, mainly test benches.

\[
\begin{align*}
p & = 1000 \text{ bar} \\
Q & = 3 \rightarrow 12 \text{ L/min}
\end{align*}
\]

Pressure switches DV7.1
Piston type pressure switch with one change-over switch, easily adjustable over the entire pressure range, with scale for pre-setting of the pressure switching point. 7 pressure ranges for the optimal adaptation to any operating pressure.

\[
p \rightarrow 1000 \text{ bar}
\]

Pressure switches DV7.2
Combined instruments for permanent pressure indication, available with two change-over switches, independently adjustable over the entire pressure range and which indicate the pressure settings. 7 pressure ranges for the optimal adaptation to any operating pressure.

\[
p \rightarrow 1000 \text{ bar}
\]

Oil level switches FS
With any length up to 1200mm available, our oil level switches can be threaded directly into tank cover. Level and temperature control in the tank. Guaranteed potential free switching. Can be dismounted without removing the tank cap. Suitable with many different fluids.
**Customized Components**

**Successful partnership for your technological advantage**

<table>
<thead>
<tr>
<th>Standard Components</th>
<th>Customized components</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pumps</strong></td>
<td>Based on our portfolio of standard components and our application-specific expertise, we have the willingness and ability to develop customized components, in cooperation with you.</td>
</tr>
<tr>
<td>• Micro Axial piston pumps</td>
<td></td>
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<tr>
<td>• Radial piston pumps</td>
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<tr>
<td><strong>Valves</strong></td>
<td></td>
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<tr>
<td>• Directional seat valves</td>
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<td>• Pressure valves</td>
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<tr>
<td>• Flow control valves</td>
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<tr>
<td>• Shut-off valves</td>
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<tr>
<td><strong>Micro-Cylinders</strong></td>
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</tbody>
</table>

**Perfect customized solutions as a result of close cooperation.**

- Together we define the design, and we assist you in your development work. This allows you to tread innovative paths, test prototypes or integrate the solution perfectly into your equipment.
- Once the solution has been developed, we turn to the zero series, volume production and the maintenance service of our components over the entire life of your equipment. A technological advantage therefore becomes a successful partnership.

**Example: Micro - Axial Piston Pump AKP**

**Application:**
Downhole directional drilling in the oil and gas industry

Down hole directional drilling tools are used in oil & gas industry to drill for oil. They are used to control the direction of the drilling head in order to change direction from vertical to horizontal and to bypass obstacles in the ground. These drilling tools as well as the special tools „LWD - Logging While Drilling“, „MWD - Measurement While Drilling“, „Wireline Tools“, „Completion Tools“ and „Well Tractors“ are used in the underground.

**Challenge:**
The position and direction of the drilling tools are directed and controlled from the drilling platform. The drilling tools are driven up to 3 km depth and additionally, up to 9 km horizontally. They must be very small and are exposed to extreme operating conditions. The ambient temperature can reach up to 175°C, the ambient pressure up to 2000 bar and all the while being subjected to extreme vibrations and shock stress.

**Solution:**
AKP Micro-Pumps from BIERI, which are components of the directional control unit, ensure that the drilling tool reaches the target destination exactly and reliably. The drilling direction is defined by three flaps in the tool, which are actuated by a plunger cylinder. Driven by a DC servo motor, our pumps ensure that reliable and accurate pressure is applied to the plunger cylinders.

**AKP – Technical data:**
- Suction volume: \[ V_g = 0.012 \, \text{cm}^3/\text{r} \rightarrow 2.2 \, \text{cm}^3/\text{r} \]
- Revolutions: \[ n = 50 \, \text{min}^{-1} \rightarrow 5 \, 000 \, \text{min}^{-1} \]
- Op. pressure: \[ p = 120 \rightarrow 850 \, \text{bar} \]
- Env. pressure: \[ \rightarrow 2000 \, \text{bar} \]
- Housing: \[ \varnothing 21.5 \times 66 \rightarrow \varnothing 62.2 \times 146 \, \text{mm} \]
- Shaft: \[ \varnothing 5 \rightarrow \varnothing 13 \text{ with wedge, SW, I-6kt.,slot.} \]
Systems and Sub-systems

Your reliable partner for system solutions
ONE supplier. ONE contact. ONE responsible.

Based on our many years of experience in the field of micro- and high-pressure hydraulic systems and as a result of our innovation and engineering expertise, we are offering our Best in Class products with the M. SYSTEM in a comprehensive modular system.

This helps us to find the best individual solution also for your complex requirements:
• The individual components complement each other to form customized solutions.
• Unified assemblies and the possibility to combine them individually serve to increase efficiency at an ideal price-performance ratio.

Together with you, we can integrate our components and assemblies into Best in Class systems, which will make your equipment more competitive and with faster availability.

Example: HP 700 bar Assemblies & Power Units
Industries and Applications

Oil & Gas
• Downhole Directional Drilling
• Wellhead Control Panels (WHCP)

Maritime Applications
• Oceanographic Research
• ROV’s
• Process Control

Medical Technology
• Surgical Tables
• Scanner Tables
• Rescue Beds / Stetchers

Fun Park Safety Systems
• Hydraulics Restraint Systems

Special Vehicles
• Armored Vehicles - Window Lifting
• Seat Adjustment

Aerospace
• Lifting Systems

Hydraulic Tools
• Torque Wrencher
• Nut Splitter
• Bolt Splitter
• Concrete Splitter
• Concrete Crusher
• Foundry Equipment

Fire & Rescue Equipment
• Cutters
• Forceps/Pinchers
• Spreaders

Clamping Technology & Jig Construction
• Clamping / Tensioning Systems

Machine Tools – auxiliary functions
• Milling & Machining Centers
• Grinding Machines
• Turning Lathes
• Sawing Machines

Machine Tools Forming - Clamping & auxiliary functions
• Mechanical & Servo Presses
• Hydraulic Presses
• Bending Machines
• Punches

Small Presses - Forming
• Filter Presses
• Crimping Tools
• Stamping Presses
• Punching and Rivet Presses
• Bench & Workshop Presses
• Material Testing Presses

High-Viscosity Lubrication (Grease)
• Lubrication Units
• Railway Lubrication

Testing Systems
• Hydraulic Test Benches
• Material Testing Systems

Energy & Power Generation
• High Voltage Circuit Breaker
• Wind Turbines
• Solar (Positioning)

Construction Engineering
• Climbing Systems
• Tunnel-/Pipeline Drilling
• Concrete Post Tensioning
• Pile Foundation
• Drilling Technology
• Vibration Dampening
• Bridge Construction
• Earthquake Devices

Recycling
• Scrap Cutting & Shredding

Lifting & Transport Systems
• Rail Track Tools
• Wheel Set Presses
• Portable Machine Lifting Systems
• Construction Lifting Systems

Shipbuilding
• Lifting & Synchronised Lifting & Fixing
• Instalation of Engines and Screws

For any application where space is limited and intelligent solutions are in demand, we will support you on your way to market success as your solution partner for MICRO & HIGH PRESSURE hydraulics.

And this everywhere in the world, close to you and your applications