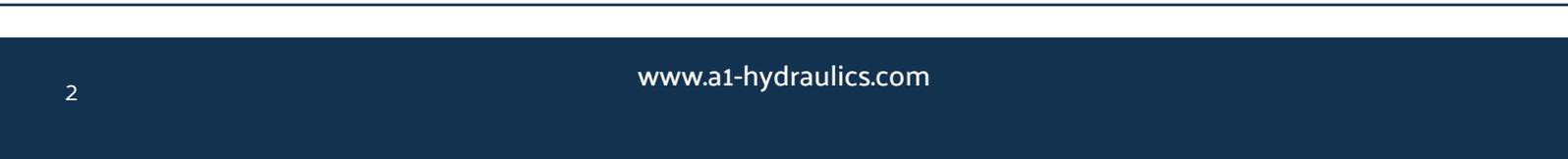


HYDRAULICS AND SYSTEMS ENGINEERING



MAXIMUM POWER
FOR YOUR ECONOMIC EFFICIENCY



WHAT'S INSIDE

System Solutions

■ Forestry Technology	6
■ Agricultural Machinery	7
■ Logistics • Transportation	8
■ Construction Machinery	9
■ Shipyard	10

Control Units

■ Radio Remote Controls	12
■ Cable Controls • Electronic Components	18
■ Mechanical Actuators	20

Valves

■ Monobloc Directional Control Valves	24
■ Sectional Valves	26
■ Load Sensing Directional Control Valves	28
■ Valves for In-line Installation	30

Hydraulic Components

■ Pumps • Motors • Tanks • Filters	32
■ Cylinders	33

Connection Technology for Hydraulics

■ Hydraulic Hoses	34
■ Hose Couplings • Screw Fittings	36

HISTORY

In 1976, company founder Hans Günter Ley began his career in the hydraulics industry, and in 2004 he founded A1-Hydraulics GmbH. Three years later, the company moved into its current premises, which were extended in 2012. Next, the product range was significantly expanded in 2015 with the production of hydraulic hoses according to customer specifications.

Since 2018, the company has been managed by Jennifer Grabowski, the daughter of the company founder. Our interdisciplinary team is constantly optimizing the product range, procedures and processes in order to offer you professional service, innovative technology and reasonable prices.

We are your committed, reliable and fair partner in mobile hydraulics!



AT WORK FOR YOU

PRODUCTS AND SERVICES

Due to our long-standing experience as a supplier in commercial vehicle construction, we have the expertise and competence to advise you in detail on your hydraulic application. We are happy to support you with our specialized knowledge from prototype development through to series production.

We already supply various industries with system solutions and hydraulic components whereby we are often involved in the development. We provide you with an individual solution that is tailored to your needs.

When it comes to our product range, the maxim is: Leading manufacturers and quality! On the one hand, you benefit from solutions that are characterized by optimum operability, durability and reliability. On the other hand, you also benefit from factors such as the best possible availability and long-term spare parts supply.

We think in terms of solutions. The advantage for you is that all components of the system and control technology we offer function optimally together - your benefit is a sustainable increase in efficiency and occupational safety.

Our service is complemented by individual, optional product stocking, time-saving product pre-assembly and just-in-time delivery. To ensure quality, all valves assembled in our company are fully tested.



FORESTRY TECHNOLOGY

WE KNOW

In forests and fields, robust, reliable technology that combines practical functionality and user-friendliness is essential. A high standard of safety is imperative when working with logging trucks, forestry cranes and hydraulic tools. Strong hydraulic cylinders and efficient control options are required for gripping and cutting tree trunks and branches. Well thought-out hydraulics in a solid design offer a long-lasting solution, even in tough use.

The modular design of the system solutions we offer allows easy replacement of individual components as well as effortless system expansion.

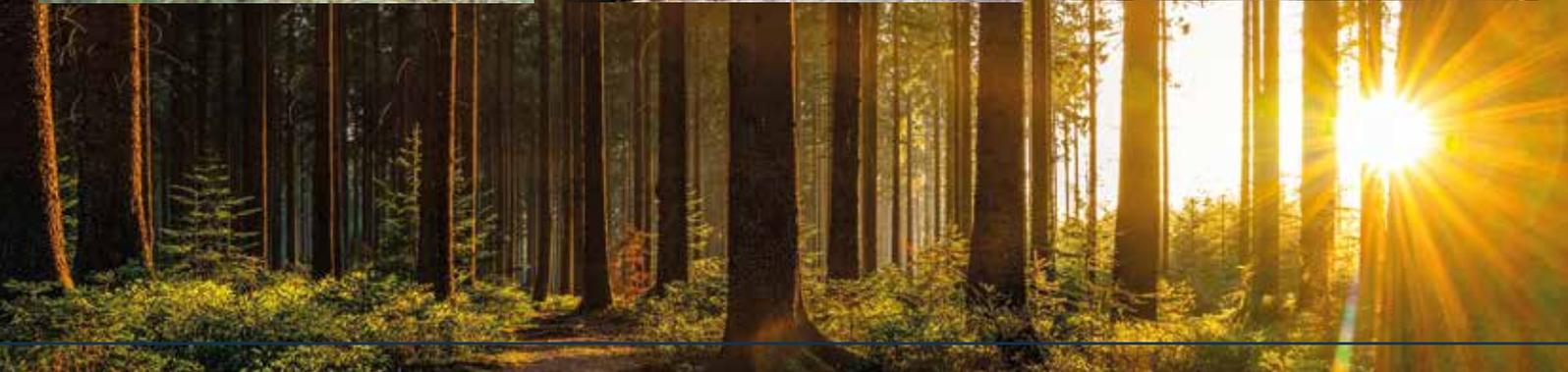
A POSSIBLE SOLUTION

Before making a purchase decision, the main focus is on the machine's handling. The system solution "Forest" turns your logging truck or forestry crane into a sensitive and efficient working tool. It consists of a proportional directional control valve from Hydrocontrol's EX38 series and a control system with a choice of radio, cable or joystick.

The EX38 hydraulic valve is constructed in sectional design, whereby it provides up to twelve functions. Due to the electro-hydraulic proportional control and the flow sharing principle, it is possible to control all functions of the forestry machine simultaneously, independent of the load and with high precision.

If the amount of oil is too low, the actuated hydraulic consumers are reduced in speed. This means that the required power of the respective functions is still kept, whereby a safe, smooth operation is ensured.

The system is designed for volume flows of up to 150 l/min and system pressures of up to 350 bar. It makes no difference whether the system is fed by a fixed displacement pump or load-sensing pump. Commissioning your new system is extremely simple thanks to the plug & play principle.





WE KNOW

Since its invention at the beginning of the 20th century, it is impossible to imagine agriculture without oil hydraulics. Nowadays, the technological requirements are extremely high due to the ever-increasing acreage and the prolonged operating times of the machines. The focus is on efficiency, reliability and functionality. In addition, the machine user attaches greater importance to comfort. Moreover, there are industry-specific requirements such as robustness and weather resistance, as well as different standards and legal requirements.

A POSSIBLE SOLUTION

The different requirements result in the use of individual solutions in hydraulic drive and control technology. Due to our many years of experience, we are able to develop and implement high-quality hydraulic systems ourselves.

Our system solutions for agriculture consist of either a single-lever control unit for front loaders with mechanical actuation via Bowden cable and operating lever or an electrohydraulic front loader control unit with actuation via joystick. The control units are designed for flows of up to 95 l/min, depending on requirements, and are suitable for both fixed displacement pumps and load-sensing pumps. There are appropriate sets for all known models, such as Alö, Baas Trima, Quicke, Stoll etc. Of course, spare parts are also available.

AGRICULTURAL MACHINERY

LOGISTICS • TRANSPORTATION

WE KNOW

In road traffic alone, 3.2 billion tons of goods are transported every year, and the trend is rising. In order to be able to handle these large quantities, state-of-the-art technology is required that can withstand the daily growing demands and function smoothly over the long term. Nonetheless, if a problem occurs or you would like to optimize your hydraulic system, we are there for you!

Our product range covers all necessary hydraulic components for utility vehicles. You can count on our experience and expert advice regarding the electro-hydraulic requirements of hydraulic work platforms, crane technology, towing vehicles, tipping vehicles as well as municipal and disposal technology.

A POSSIBLE SOLUTION

Radio remote controls enable efficient, safe and at the same time comfortable operation when moving loads. Safety plays an essential role for us, which is why most of our system solutions in this area have a stop function in accordance with EN-ISO 13849-1. We offer various crane radio systems and hand-held radio controls from renowned manufacturers, either as individual components and spare parts, or as a complete set for original equipment or retrofitting. In addition to high-quality components, only the latest technology is used for all radio remote controls.





WE KNOW

In the construction industry, machines are often subjected to extreme loads and tight schedules. Reliable hydraulic systems are therefore crucial to ensure continuous work with high precision and performance. A wide range of different construction machines are used on a construction site, from small and maneuverable work equipment to large, heavy vehicles. Every system requires a well thought-out, application-specific solution. Expertise makes the difference - drawing on many years of experience, we work together with our customers to develop a customized, targeted system solution with components that are optimally matched to each other for practical use.

A POSSIBLE SOLUTION

Valves with hydraulic pilot control are used particularly frequently in wheel loaders, excavators or dump trucks, for example, as they are especially robust, reliable, tried and tested. In this case, an RCX or RCM acts as a hydraulic pilot and ensures reliable control in combination with a directional control valve. In connection with suitable hydraulic cylinders from well-known manufacturers and hydraulic hoses produced by us to your specifications, the result is a reliable hydraulic system for series production that is tailored to the application. Of course, you can also obtain only individual components and spare parts from us.

CONSTRUCTION MACHINERY

SHIPYARD

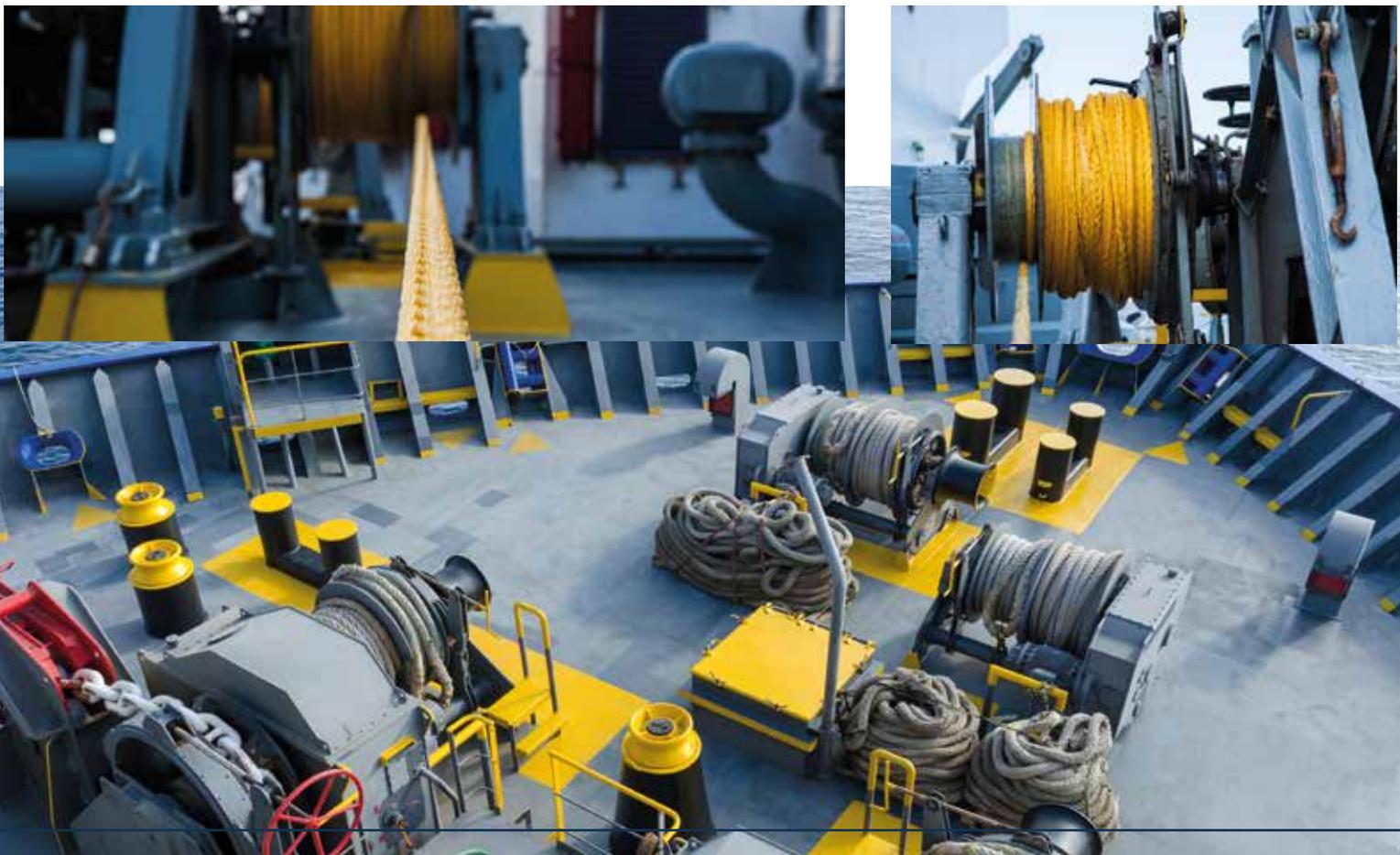
WE KNOW

The approximately 350 shipyards in Germany generate annual sales of around 15 billion euros. Hydraulic systems often move loads weighing several tons in shipbuilding and repair. In addition to robustness, corrosion protection is of decisive importance. We are at your side in the field of shipyards and shipbuilding with our cross-industry expertise and experience. It's all about solutions that are both precise and reliable to operate, as well as offering maximum stability and safety.

Many of our systems have their origins in other industries. Together with our customers, we define the requirements and develop the appropriate solution with our competence and expertise. We rely on proven and modern components. This ensures operational reliability and easy maintenance. As a result, our solutions are also investment-proof. Extensions or adaptations to additional requirements can be realized economically efficiently by replacing individual components.

A POSSIBLE SOLUTION

Tail lift systems on ships and stern garages on yachts often lower and lift heavy loads under difficult, unstable conditions. Whether ship cargo, vehicles on a ferry or the jet ski on the yacht, special systems are employed. Frequently used are reliable load holding and lowering valves made of high-quality stainless steel. This ensures the highest quality, reliability and service life in seawater applications. The systems are controlled with modern waterproof and floatable radio remote controls.



INDUSTRY EXPERTISE

CROSS-INDUSTRY EXPERTISE

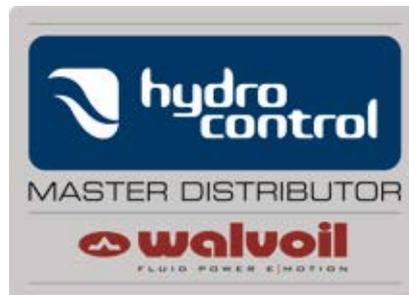
In the first years of our company, the focus was on agriculture, forestry and construction machinery. In the course of continuous further development, we have gained expertise in other sectors and become familiar with the special requirements. In new projects, our customers benefit from precisely this knowledge.

Our team is there for you across all sectors in the field of mobile hydraulics, even if your sector is not explicitly listed here. Talk to us about the specifications, your needs and requirements. We find solutions.

EXTRACT PRODUCT RANGE

Our product range covers the complete spectrum of mobile hydraulics technology. On the following pages we will introduce you to a selection of products. We are your partner, both when it comes to individual components and system solutions.

We look forward to receive your inquiry and will be happy to assist you with our knowledge.



RADIO REMOTE CONTROLS

FABERCOM
So easy, so safe

scanreco

The Scanreco transmitter units have been designed for daily use by professional users. Their operating elements are deliberately dimensioned and arranged to offer maximum ease of use.

Our product range includes versions with pushbuttons as well as models with joysticks and levers. The operator receives feedback from the controlled machine via two-way communication if required.

RC400 – CONTROL UNIT "MAXI" – FOR MAXIMUM PERFORMANCE

TECHNICAL DATA "SCANRECO MAXI" CONTROL UNIT

- 1 – 4 joysticks or 1 – 8 linear levers
- Several toggle switches and buttons for on/off functions
- Potentiometer or rotary switch
- Feedback via LEDs or graphic monochrome or color display
- Stop function in accordance with EN ISO 13849-1 Kat. 3, PL d
- Up to 10 hours working time with one battery charge
- Frequency bands 433 - 434 or 902 - 928 MHz (others on request)
- Radio range: > 100m
- Protection class: IP65
- Compatible receiver unit: Scanreco RC400 "G2B"



RC400 – CONTROL UNIT "MINI" – COMPACT AND VERSATILE

TECHNICAL DATA "SCANRECO MINI" CONTROL UNIT

- 1 - 6 linear levers or 1 - 3 joysticks
- Several toggle switches, buttons and rotary switches
- Feedback via LEDs or graphic monochrome or color display
- Stop function in accordance with EN ISO 13849-1, Kat. 3, PL d
- Up to 10 hours working time with one battery charge
- Frequency bands 433 - 434 or 902 - 928 MHz (others on request)
- Radio range: > 100m
- Compatible receiver unit: Scanreco RC400 "G2B" & "G4"



RC400 – CONTROL UNIT "HANDY 10" – PROPORTIONAL CONTROL BY KEYSTROKE

TECHNICAL DATA "SCANRECO HANDY 10" CONTROL UNIT

- 10 buttons
- Proportional and digital control
- Two operating modes (double assignment of all buttons possible)
- LCD display and LEDs to indicate the operating status and battery level
- Stop function in accordance with ISO 13849-1, Kat. 3, PL d
- Up to 20 hours working time with one battery charge
- Frequency bands 433 - 434 or 902 - 928 MHz (others on request)
- Radio range: > 100m
- Compatible receiver unit: Scanreco RC400 "G4"



The Scanreco receivers have been developed and optimized for the various transmitter models and diverse applications. The product range includes devices with conventional proportional or digital outputs as well as models with fieldbus technology. The receiver units are designed to withstand extreme environmental conditions such as shock, vibration and electromagnetic interference. Sealing with epoxy resin ensures protection against dust and moisture.

ACCESSORIES AND SPARE PARTS

In addition to the complete systems, we naturally also offer practical accessories and matching spare parts. Scanreco attaches great importance to ergonomics and user-friendliness when it comes to accessories. We also stock a large variety of original Scanreco spare parts so that, if the worst comes to the worst, the downtime of your remote control can be kept to a minimum.

RC400 - RECEIVER UNIT G2B - THE VERSATILE

TECHNICAL DATA "SCANRECO G2B" RECEIVER UNIT

- 8 bi-directional proportional outputs
- Voltage-controlled (ratiometric) or current-controlled (PWM)
- 14 digital outputs (including bypass valve)
- 1 Configurable digital input or output, CANopen interface
- Stop function in accordance with ISO 13849-1, Kat. 3, PL d
- Frequency bands 433 - 434 or 902 - 928 MHz (others on request)
- Two-way communication
- Operating voltage: 12/24 VDC
- Protection class: IP65
- Suitable control units: Scanreco "MAXI" & "MINI"



RC400 - RECEIVER UNIT G4 - THE BASIC SOLUTION

TECHNICAL DATA "SCANRECO G4" RECEIVER UNIT

- 6 bi-directional PWM proportional outputs
- 7 digital outputs (including bypass valve)
- 2 digital inputs
- CANopen interface
- Stop function in accordance with ISO 13849-1, Kat. 3, PL d
- Frequency bands 433 - 434 or 902 - 928 MHz (others on request)
- Operating voltage: 12/24 VDC
- Protection class: IP65
- Suitable control units: Scanreco "MINI" & "HANDY 10"



RC400 - RECEIVER UNIT G3 - FOR CAN INTERFACES

TECHNICAL DATA "SCANRECO G3" RECEIVER UNIT

- CANopen interface (other protocols on request)
- 2 digital outputs for bypass valves
- 2 security circuits
- Stop function in accordance with ISO 13849-1, Kat. 3, PL d
- Frequency bands 433 - 434 or 902 - 928 MHz (others on request)
- Two-way communication
- Connecting cable with M12 thread: 3 m
- Operating voltage: 12/24 VDC
- Protection class: IP65
- Suitable control units: Scanreco "MAXI" & "MINI"



RADIO REMOTE CONTROLS



The Autec radio remote controls of the Dynamic series have been developed according to the latest functional safety standards, in accordance with the EN ISO 13849-1 and IEC 62061.

The transmitter and receiver units communicate via a uniquely assigned, non-reproducible code. The operating units are available in different versions and cover almost all requirements.

CONTROL UNIT "FJR/FJS"

TECHNICAL DATA "AUTEC FIR/FJS" CONTROL UNIT

- Up to 12 proportional functions via master switch
- Several toggle switches and buttons for on/off functions
- Potentiometer or rotary switch
- Removable ON/OFF key
- Feedback via LEDs or graphic monochrome or color display
- Stop function up to PL e, Cat 3 (according to EN ISO13849-1 / EN IEC 62061)
- Up to 18 hours working time with one battery charge
- Frequency bands 870/915 MHz or 2.4 GHz (others on request)
- Radio range: >100m
- Protection class: IP65 (NEMA 4)



CONTROL UNIT "LINK"

TECHNICAL DATA "AUTEC LINK" CONTROL UNIT

- 4 - 6 Linearhebel4 - 6 linear levers
- Several toggle switches, buttons and rotary switches
- Removable ON/OFF key
- Feedback via LEDs or graphic monochrome or color display
- Stop function up to PL e, Cat 3 (in accordance with EN ISO13849-1 / EN IEC 62061)
- Up to 18 hours working time with one battery charge
- Frequency bands 870/915 MHz or 2.4 GHz (others on request)
- Radio range: >100m
- Protection class: IP65 (NEMA 4)



CONTROL UNIT "CURVE"

TECHNICAL DATA "AUTEC CURVE" CONTROL UNIT

- Up to 8 linear levers or 3 multi-axis joysticks
- Multiple toggle switches, buttons and rotary switches
- Removable ON/OFF key
- Feedback via LEDs or graphic monochrome or color display
- Stop function up to PL e, Cat 3 (in accordance with EN ISO13849-1 / EN IEC 62061)
- Up to 18 hours working time with one battery charge
- Frequency bands 870/915 MHz or 2.4 GHz (others on request)
- Radio range: >100m
- Protection class: IP65 (NEMA 4)



Communication between the Autec operating and receiver units takes place in "frequency hopping" mode. The systems select the operating frequency dynamically, even during operation. This ensures that a secure and stable radio connection can be maintained even in the event of interference.

Mechanical and chemical resistance and protection class IP65 are guaranteed for all configurations.

ACCESSORIES AND SPARE PARTS

In addition to complete systems, we also offer practical accessories and suitable spare parts.

RECEIVER UNIT "ARX"

TECHNICAL DATA "AUTEC ARX" RECEIVER UNIT

- 8 bidirectional proportional outputs voltage-controlled (ratiometric) or current-controlled (PWM)
- 16 digital outputs (incl. bypass valve)
- CANopen interface
- Stop function in accordance with ISO 13849-1, Cat. 3, PL e
- Two-way communication
- Operating voltage: 8/30 VDC
- Protection class: IP65



RECEIVER UNIT "ARM"

TECHNICAL DATA "AUTEC ARM" RECEIVER UNIT

- 12 bidirectional proportional outputs voltage-controlled (ratiometric) or current-controlled (PWM)
- Up to 64 digital outputs (incl. bypass valve)
- CANopen interface
- Stop function in accordance with ISO 13849-1, Cat. 3, PL e
- Two-way communication
- Operating voltage: 8/30 VDC
- Protection class: IP65



RECEIVER UNIT "CRP"

TECHNICAL DATA "AUTEC CRP" RECEIVER UNIT

- 12 bidirectional proportional outputs voltage-controlled (ratiometric) or current-controlled (PWM)
- Up to 64 digital outputs (incl. bypass valve)
- CANopen interface
- Stop function in accordance with ISO 13849-1, Cat. 3, PL e
- Two-way communication
- Operating voltage: 8/30 VDC
- Protection class: IP65



RADIO REMOTE CONTROLS



The operating units are made of a special plastic that reliably protects them in the event of a fall. The rubberized grip surfaces provide the operator with an excellent hold.

On customer request, the remote control can also be supplied with a logo or special lettering.

CONTROL UNIT "NIMBLE" – FOR SIMPLE APPLICATIONS

TECHNICAL DATA „SISTEMATICA NIMBLE“ CONTROL UNIT

- Radio remote control for simple applications
- 2 function buttons + 2 buttons for switching the system on and off
- Function buttons with arrows
- Display of system status and battery level via 2 LEDs
- Power supply via 2x AAA batteries
- Use of ISM frequencies 868/915 MHz
- Small dimensions: 109 x 56 x 30 mm
- Compatible receiver unit: CNTR4



CONTROL UNIT "EASY" – POCKET SIZE WITH UP TO 6 FUNCTIONS

TECHNICAL DATA "SISTEMATICA EASY" CONTROL UNIT

- Radio remote controls for up to 6 functions
- Up to 6 function buttons + 2 buttons for switching the system on and off
- Function buttons optionally with numbers or symbols
- Display of system status and battery level via 2 LEDs
- Power supply via 2x AAA batteries
- Use of ISM frequencies 868/915 MHz or 433 MHz
- Small dimensions: 109 x 56 x 30 mm
- Compatible receiver units: CNTR4, CNTR8, CNTR20 or RadioCAN



CONTROL UNIT "TREND" - UP TO 14 BUTTONS

TECHNICAL DATA "SISTEMATICA TREND" CONTROL UNIT

- Radio remote controls for up to 56 functions (via double configuration)
- Up to 14 function buttons + 2 buttons for switching the system on and off
- Optionally with emergency stop mushroom button
- Display of system status and battery level via 2 LEDs
- Power supply via 2x AA batteries
- Use of ISM frequencies 868/915 MHz or 433 MHz
- Dimensions: 165 x 80 x 40 mm
- Compatible receiver units: CNTR8, CNTR20 or RadioCAN



RECEIVER UNIT "CNTR4"

TECHNICAL DATA "SISTEMATICA CNTR4" RECEIVER UNIT

- 2 digital outputs + 1 digital "master output"
- Supply voltage 12/24 VDC \pm 10%
- Max. 5A per output / 7A total
- Protection class: IP68
- Use of ISM frequencies 868/915 MHz
- Dimensions: 58 x 80 x 22 mm
- 1.5m cable for free configuration



RECEIVER UNIT "CNTR8"

TECHNICAL DATA "SISTEMATICA CNTR8" RECEIVER UNIT

- 6 digital outputs + 1 digital "master output"
- 1 digital input possible
- Supply voltage 12/24 VDC \pm 10%
- Max. 5A per output / 10A total
- Protection class: IP66
- Use of ISM frequencies 868/915 MHz or 433 MHz
- Dimensions: 108 x 110 x 44 mm
- SICMA 24 plug connector



RECEIVER UNIT "CNTR20"

TECHNICAL DATA "SISTEMATICA CNTR20" RECEIVER UNIT

- 18 digital outputs + 1 digital "master output"
- 1 digital input possible
- Supply voltage 12/24 VDC \pm 10%
- Max. 5A per output / 10A total
- Protection class: IP66
- Use of ISM frequencies 868/915 MHz or 433 MHz
- Dimensions: 133 x 154 x 44 mm
- SICMA 24 plug connector



CABLE CONTROLS



In addition to hydraulic valves and radio remote controls, our portfolio also includes a wide range of electronic components and systems. These items are designed to be particularly robust and resistant to faults, making them ideal for use in mobile machinery.

We would be happy to work with you to develop the right control system for your application.

CABLE AND CABIN CONTROLS

Even for applications where a radio remote control cannot be used we have the perfect solution for you. Whether joysticks for the cab or permanently installed in a housing, the reliable and robust control units are manufactured in Radevormwald specifically to customer requirements.

Needless to say, these can also be combined with radio remote controls, so that the right type of control can be selected flexibly depending on the application and location.



CABLE HARNESSING

As an additional service, we offer our customers the assembly of required cable harnesses to match our controls and valves. It does not matter whether it is just one or a larger number. We usually have common connectors and cables in stock and can therefore react quickly to your needs.



ELECTRONIC COMPONENTS

CONTROLS AND SYSTEMS

Technical progress is also unstoppable in mobile machinery. To support operators in the increasingly complex tasks, we offer various control systems for your hydraulic application. In addition to freely programmable controls (PLC), we also supply prefabricated modules, such as electronic overload systems, systems for monitoring hydraulic columns or machine controls.



OPERATING ELEMENTS AND SENSORS

We offer a broad portfolio of control elements for mobile machinery. These can be simple switches and buttons or complex joysticks with integrated control electronics. We can also supply you with a wide range of sensors, temperature and pressure switches.



PROPORTIONAL AMPLIFIERS

Proportional amplifiers convert the analog signal from the operating elements into a modulated digital signal (PWM). Our modules range from a simple controller for a proportional solenoid to a controller for eight double-acting functions.



MECHANICAL ACTUATORS



The control levers and Bowden cables from Indemar are characterized by their durability and are manufactured using only high-quality materials in compliance with European quality standards.

Our product range includes all versions of operating levers and Bowden cables in various lengths.

BOWDEN CABLE CROSS CONTROL LEVER

- Available without button or with up to 5 buttons
- Suitable for Bowden cables with ball head
- Maximum stroke 14 mm + 14 mm
- Lateral safety lock
- Guaranteed spare parts supply



BOWDEN CABLE LINEAR CONTROL LEVER

- Flangeable
- For Bowden cables with fork head
- Maximum stroke 12.5 mm + 12.5 mm
- Spring returned
- Guaranteed spare parts supply



BOWDEN CABLE LINEAR CONTROL LEVER

- Flangeable
- For Bowden cables with hooks
- Maximum stroke 16 mm + 16 mm
- Spring returned
- Guaranteed spare parts supply



BOWDEN CABLE WITH BALL HEAD

- Suitable for cross operating levers
- Selectable lengths 700 mm - 3,000 mm
- Maximum stroke 30 mm +/- 2 mm
- Bending radius 200 mm



BOWDEN CABLE WITH FORK CROWN

- Suitable for linear operating lever
- Selectable lengths 1,000 mm - 5,000 mm
- Maximum stroke 35 mm +/- 2 mm
- Bending radius 200 mm



BOWDEN CABLE WITH HOOK

- Suitable for linear operating lever
- Selectable lengths 1,000 mm - 5,000 mm
- Maximum stroke 35 mm +/- 2 mm
- Bending radius 200 mm



MECHANICAL ACTUATORS



The control levers and Bowden cables from Indemar are characterized by their durability and are manufactured using only high-quality materials in compliance with European quality standards.

Our product range includes all versions of operating levers and Bowden cables in various lengths.

BOWDEN CABLE FOR VALVE BY NORDHYDRAULIK

- Selectable lengths 1,000 mm - 5,000 mm
- Maximum stroke 30 mm +/- 2 mm
- Bending radius 200 mm



BOWDEN CABLE FOR FRONT LOADER BY BAAS TRIMA OR QUICKE

- Selectable lengths 1,400 mm - 2,800 mm
- Maximum stroke 26 mm +/- 2 mm
- Bending radius 200 mm



BOWDEN CABLE WITH BALL HEAD FOR FRONT LOADER BY MAILLEUX

- Selectable lengths 1,800 mm - 2,800 mm
- Maximum stroke 30 mm +/- 2 mm
- Bending radius 200 mm



BOWDEN CABLE FOR FRONT LOADER BY ALÖ

- Selectable lengths 1,600 mm - 2,600 mm
- Maximum stroke 30 mm +/- 2 mm
- Bending radius 200 mm



SPARE PARTS FOR BOWDEN CABLES

Completing our product portfolio are a wide range of spare parts and accessories.

We stock the most common components to keep your downtimes as short as possible!



MONOBLOCK DIRECTIONAL CONTROL VALVES



		Hydrocontrol		Badestnost		Akon	Walvoil
Valve type designation		M45	TR55	RM40	RM80	LVM92/ EHP	SDM122/ DLM122
technical data	Maximum flow rate in l/min	45	50	40	80	90	80
	Maximum operating pressure in bar	350	350	250	250	250	250
	Number of sections	1 - 6	1 - 7	1 - 7	1 - 6	2	2
types of actuation	Mechanical	•	•	•	•		
	Hydraulic		•	•	•		
	Pneumatic on/off	•	•	•	•		
	Pneumatic proportional	•	•				
	Electric 12/24 VDC	•		•	•		•
	Electrohydraulic on/off 12/24 VDC	•	•	•	•		
	Electrohydraulic prop. 12/24 VDC	•	•			•	
	Elektropneumatic 12/24 VDC			•	•		
	Bowden cable	•	•	•	•	•	•
	Cross lever	•	•	•	•		

MONOBLOCK M45 HYDROCONTROL



TECHNICAL DATA MONOBLOCK M45

- 1 - 6 sections
- Maximum flow rate 45 l/min
- Maximum operating pressure 350 bar
- Control:
 - Operating lever
 - Cross lever
 - Bowden cable
 - Electrical 12/24 VDC
 - Pneumatic
 - Electrohydraulic 12/24 VDC

MONOBLOCK TR55 HYDROCONTROL



TECHNICAL DATA MONOBLOCK TR55

- 1 - 7 sections
- Maximum flow rate 50 l/min
- Maximum operating pressure 350 bar
- Control:
 - Operating lever
 - Cross lever
 - Pneumatic
 - Hydraulic
 - Electrohydraulic 12/24 VDC

MONOBLOCK RM40 BADESTNOST



TECHNICAL DATA MONOBLOCK RM40

- 1 - 7 sections
- Maximum flow rate 40 l/min
- Maximum operating pressure 250 bar
- Control:
 - Operating lever
 - Bowden cable
 - Cross lever
 - Pneumatic
 - Hydraulic
 - Electric 12/24 VDC
 - Electro-hydraulic 12/24 VDC on/off
 - Electropneumatic 12/24 VDC

MONOBLOCK RM80 BADESTNOST



TECHNICAL DATA MONOBLOCK RM80

- 1 - 6 sections
- Maximum flow rate 80 l/min
- Maximum operating pressure 250 bar
- Control:
 - Operating lever
 - Bowden cable
 - Cross lever
 - Pneumatic
 - Hydraulic
 - Electric 12/24 VDC
 - Electro-hydraulic 12/24 VDC on/off
 - Electropneumatic 12/24 VDC

MONOBLOCK LVM92 AKON



TECHNICAL DATA MONOBLOCK LVM92

- 2 sections
- Maximum flow rate 90 l/min
- Maximum operating pressure 250 bar
- Load-sensing or fixed displacement pump
- 1 x DW & 1 x DW with floating position
- Compatible with Faster multi-coupler
- Control:
 - Bowden cable
 - Electro-hydraulic 12 VDC

MONOBLOCK SDM122/DLM122 WALVOIL



TECHNICAL DATA MONOBLOCK SDM122 - DLM122

- 2 sections
- Maximum flow rate 80 l/min
- Maximum operating pressure 250 bar
- Load-sensing or fixed displacement pump
- 1 x DW & 1 x DW with floating position
- Compatible with Faster multi-coupler
- Control:
 - Bowden cable
 - Mechatronic 12 VDC

SECTIONAL DIRECTIONAL CONTROL VALVES



		Hydrocontrol							
Valve type designation		D3M	D4	D6	D16	D12	D20	D25	D40
technical data	Maximum flow rate in l/min	55	80	100	150	180	250	380	700
	Maximum operating pressure in bar	350	350	350	350	350	350	350	350
	Number of sections	1 - 12	1 - 12	1 - 12	1 - 12	1 - 12	1 - 12	1 - 12	1 - 10
types of actuation	Mechanical	.	.	.	.	.	.	.	.
	Hydraulic	.	.	.	.	.	.	.	.
	Pneumatic on/off	.	.	.	.	.	.
	Pneumatic proportional	.	.	.	.	.	.
	Electric 12/24 VDC	.	.						
	Electrohydraulic on/off 12/24 VDC	.	.	.	.	.	.
	Electrohydraulic prop. 12/24 VDC	.	.	.	.	.	.
	Elektropneumatic 12/24 VDC	.	.	.	.	.	.
	Bowden cable	.	.						
	Cross lever	.	.						

SECTIONAL VALVE D3M "THE CLASSIC"



TECHNICAL DATA D3M

- 1 - 12 sections
- Maximum flow rate 55 l/min
- Maximum operating pressure 350 bar
- Control:
 - Operating lever
 - Cross lever
 - Bowden cable
 - Electric 12/24 VDC
 - Hydraulic
 - Electro-hydraulic 12/24 VDC
 - Electropneumatic 12/24 VDC
 - Pneumatic

SECTIONAL VALVE D4



TECHNICAL DATA D4

- 1 - 12 sections
- Maximum flow rate 80 l/min
- Maximum operating pressure 350 bar
- Control:
 - Operating lever
 - Cross lever
 - Bowden cable
 - Electric 12/24 VDC
 - Hydraulic
 - Electro-hydraulic 12/24 VDC
 - Electropneumatic 12/24 VDC
 - Pneumatic

PROPORTIONAL VALVE D6



TECHNICAL DATA D6

- 1 - 12 sections
- Maximum flow rate 100 l/min
- Maximum operating pressure 350 bar
- Control:
 - Operating lever
 - Hydraulic
 - Electrohydraulic 12/24 VDC
 - Electropneumatic 12/24 VDC
 - Pneumatic

SECTIONAL VALVE D16



TECHNICAL DATA D16

- 1 - 12 sections
- Maximum flow rate 150 l/min
- Maximum operating pressure 350 bar
- Control:
 - Operating lever
 - Hydraulic
 - Electrohydraulic 12/24 VDC
 - Electropneumatic 12/24 VDC
 - Pneumatic

SECTIONAL VALVE D12



TECHNICAL DATA D12

- 1 - 12 sections
- Maximum flow rate 180 l/min
- Maximum operating pressure 350 bar
- Control:
 - Operating lever
 - Hydraulic
 - Electrohydraulic 12/24 VDC
 - Electropneumatic 12/24 VDC
 - Pneumatic

SECTIONAL VALVE D20



TECHNICAL DATA D20

- 1 - 12 sections
- Maximum flow rate 250 l/min
- Maximum operating pressure 350 bar
- Control:
 - Operating lever
 - Hydraulic
 - Electrohydraulic 12/24 VDC
 - Electropneumatic 12/24 VDC
 - Pneumatic

SECTIONAL VALVE D25



TECHNICAL DATA D25

- 1 - 12 sections
- Maximum flow rate 380 l/min
- Maximum operating pressure 350 bar
- Control:
 - Operating lever
 - Hydraulic

SECTIONAL VALVE D40



TECHNICAL DATA D40

- 1 - 10 sections
- Maximum operating pressure 350 bar
- Control:
 - Operating lever
 - Hydraulic



LOAD SENSING DIRECTIONAL CONTROL VALVES

Valve type designation		Hydrocontrol				NEM	ELT Fluid
		EX38	EX46	EX54	EX72	NVE4	MACH30
technical data	Maximum flow rate in l/min	150	220	300	450	70	50
	Maximum operating pressure in bar	350	350	350	350	350	250
	Number of sections	1 - 10	1 - 10	1 - 8	1 - 8	1 - 10	1 - 8
	Load sensing	•	•	•	•	•	•
	Fixed displacement pump	•	•	•	•	•	•
types of actuation	Mechanical	•	•	(•)*		(•)*	(•)*
	Hydraulic	•	•	•	•		
	Electrohydraulic on/off 12/24 VDC	•	•	•	•	•	•
	Electrohydraulic prop. 12/24 VDC	•	•	•	•	•	•
	Cross lever	•					

* Only in combination with electrohydraulic actuation

PROPORTIONAL VALVE EX38 "THE FORESTRY VALVE"



TECHNICAL DATA EX38

- 1 - 10 sections
- Maximum flow rate 150 l/min
- Maximum operating pressure 350 bar
- Load-sensing or fixed displacement pump
- Control:
 - Electrohydraulic 12/24 VDC proportional PWM
 - Hydraulic
 - Operating lever
 - Cross lever

PROPORTIONAL VALVE EX46



TECHNICAL DATA EX46

- 1 - 10 sections
- Maximum flow rate 220 l/min
- Maximum operating pressure 350 bar
- Load-sensing or fixed displacement pump
- Control:
 - Electrohydraulic 12/24 VDC proportional PWM
 - Hydraulic
 - Operating lever

PROPORTIONAL VALVE EX54



TECHNICAL DATA EX54

- 1 - 8 sections
- Maximum flow rate 300 l/min
- Maximum operating pressure 350 bar
- Load-sensing or fixed displacement pump
- Control:
 - Electrohydraulic 12/24 VDC proportional PWM
 - Hydraulic
 - Operating lever*

PROPORTIONAL VALVE EX72



TECHNICAL DATA EX72

- 1 - 8 sections
- Maximum flow rate 450 l/min
- Maximum operating pressure 350 bar
- Load-sensing or fixed displacement pump
- Control:
 - Electrohydraulic 12/24 VDC proportional PWM
 - Hydraulic

PROPORTIONAL VALVE NVE4



TECHNICAL DATA NVE4

- 1 - 10 sections
- Maximum flow rate 70 l/min
- Maximum operating pressure 350 bar
- Load-sensing or fixed displacement pump
- Control:
 - Electrohydraulic 12/24 VDC proportional PWM
 - Operating lever*

PROPORTIONAL VALVE MACH30



TECHNICAL DATA MACH30

- 1 - 8 sections
- Maximum flow rate 50 l/min
- Maximum operating pressure 250 bar
- Load-sensing or fixed displacement pump
- Control:
 - Electrohydraulic 12/24 VDC proportional PWM
 - Operating lever*

VALVES FOR INLINE INSTALLATION

Inline valves have a very wide range of applications. They are used, for example, in agricultural and forestry machinery, municipal vehicles, and in the logistics industry. The valves we sell comply with all common standards and are of the highest quality.

PRESSURE VALVES

Pressure valves are used to influence the system pressure in certain parts of the application. A distinction is made between pressure relief valves, which protect consumers and lines from excessively high pressures, and pressure reducing valves, which provide a specific pressure for a subsection of the overall system, e.g. to actuate valves in a pilot control circuit.



DIRECTIONAL SEATED VALVES

Seat valves are used to shut off a consumer or to influence the effective direction of pressure and volume flow. Commonly used in this category are electrically operated 2/2 way poppet valves and 3/2 way poppet valves, but other types of operation such as hydraulic or manual operation are also possible. A decisive advantage of poppet valves is that, due to their special design in the form of a ball or cone, they have extremely low leakage and are virtually free of leakage oil.



FLOW-CONTROL VALVES

Flow-control valves regulate and/or limit the volume flow to the respective consumer. This group includes, among others, flow-control valves as well as flow dividers. These divide the input volume flow into equally sized partial flows. Furthermore, flow-control valves include throttle check valves, which allow direction-dependent limitation of the volume flow.



SHUT-OFF VALVES

The group of shut-off valves includes check valves, pilot-operated check valves and shuttle valves. We stock a wide variety of shut-off valves as loose cartridges or as complete valves in housings.



LOAD-HOLDING VALVES

Load-holding valves perform safety-related functions in numerous hydraulic applications and ensure safe and sensitive operation. Furthermore, the valves create a leakage-free shut-off, which prevents e.g. unintentional retraction of cylinders or movements of motors.

With us, you will find different versions of lowering brake valves and pipe rupture safety devices.



BALL VALVES

Ball valves are used for manual shut-off or switching of volume flows. A distinction is made between 2-way and 3-way ball valves with a maximum operating pressure of up to 500 bar.

These are available with internal thread, external thread or flange connection.



PUMPS, MOTORS, TANKS AND FILTERS

Again, our product range offers a wide selection in this area, whether standard or customized. With a suitable PTO pump and tank, for example, you can become independent of the tractor hydraulics in order to operate the skidder or log splitter separately.

PUMPS

The hydraulic pump is a key element in hydraulics. Hydraulic valves can only deliver maximum performance if sufficient oil is available. Our product portfolio includes gear pumps and axial piston pumps in various designs and sizes for open or closed circuits.

MOTORS

The most common hydraulic drives include gear motors, axial piston motors and orbital motors. What's more, our products meet our customers' stringent requirements in terms of drive performance, efficiency and service life. Together we will work out the best solution for your daily application.

TANKS AND FILTERS

Clean oil is the basis for trouble-free operation of all hydraulic components. We adapt our tanks and high-pressure filters exactly to your application, so that long and trouble-free operation is possible.



CYLINDERS

Hydraulic cylinders are available in many different designs and variants. Among our products we offer a wide range of single- and double-acting cylinders as well as plunger cylinders. On request we also offer customized cylinders and special coatings.

SINGLE-ACTING CYLINDERS

Single-acting cylinders can only be pressurized in one direction by supplying hydraulic oil to the piston. The cylinder is moved back by its own mass or an external force, e.g. a spring.

DOUBLE-ACTING CYLINDERS

Double-acting cylinders differ from single-acting cylinders in that they have two ports. They can therefore be pressurized in both directions.

PLUNGER CYLINDERS

Plunger cylinders do not have an actual piston, instead the piston rod takes over this function. Due to its simple design, the plunger cylinder is particularly cost-effective.



HYDRAULIC HOSES

Every day, our qualified personnel manufacture hydraulic hose lines according to customer specifications. Depending on the application, the hose line type, the length as well as the connectors and, if necessary, the hose protector are determined. We will be happy to support you in making the right choice.

In addition to SC, SN, SH and SP type hoses, all common hose fittings for metric and inch threads as well as flange connectors, we stock a large selection of different fittings and quick couplings.

Both the short-term individual production of a replacement hose and the series production for well-known original equipment manufacturers are covered by our own production.

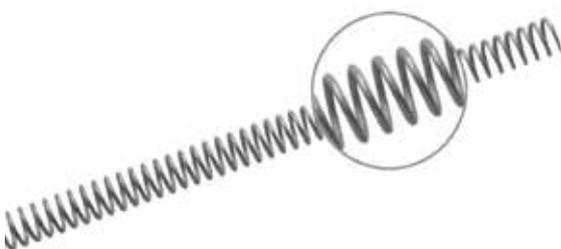


SELECTABLE HOSE PROTECTION:



PLASTIC ABRASION PROTECTION

The plastic protector is needed to protect hydraulic and pneumatic hoses against abrasion damage and external influences. Besides, it can also be used for bundling. Available in high quality HDPE, we offer plastic hose protector spirals for abrasion protection.



STEEL SCUFF PROTECTION

The steel guard serves as external protection for hydraulic hoses and to support the bending radius or as anti-kink protection.



TEXTILE BURSTING AND SPLASH PROTECTION

Textile mesh as burst and splash guard, made of high quality polypropylene thread. The textile burst and splash protector is a multi-purpose hose guard for various applications.

Operating pressure by nominal size



Typ	1 layer			2 layers			3 layers		4 layers	
	1 TE	1 SN	1 SC	2 TE	2 SN	2 SC	3 TE	3 SC _{HIPAC}	4 SP	4 SH
5										
3/16"	25	250		80	415		160			
6										
1/4"	25	225	225	75	400	400	145		450	
8										
5/16"	20	215	215	68	350	350	130			
10										
3/8"	20	180	180	63	330	330	110	500	445	
12										
1/2"	16	160	160	58	275	275	93	470	415	
16										
5/8"	16	130	130	50	250	250	80	410	350	450
19										
3/4"		105	105	45	215	215	70	375	350	420
25										
1"		88	88		165	165		310	280	380
31										
1.1/4"		63			125				210	350
38										
1.1/2"		50			90				185	290
51										
2"		40			80				165	250
60										
2.3/8"					90					
63										
2.1/2"					70					
76										
3"					45					

The operating pressures listed are in bar and may vary slightly depending on the fitting used. Other hose types such as spiral oil suction, longlife or PTFE hoses are also part of the range and can be supplied at short notice if required.

HOSE COUPLINGS

Hydraulic hoses can be connected and disconnected quickly and easily with hose couplings. In the process, they are exposed to enormous loads. For safety reasons, we therefore rely only on the best quality.

For every application, we offer the right coupling. The selection ranges from push-pull couplings to flat-sealing and screw couplings to multi-couplings including electrical inserts.



SCREW FITTINGS

Hydraulic fittings are used to securely connect hydraulic hose and consumer in the circuit, they are screwed into cylinders, valves, control blocks, etc. and provide sealing. We always keep a large number of different fittings and accessories in stock.



REFERENCES



YOU CAN COUNT ON US



As your partner for mobile hydraulics, we focus not only on quality but also on expert advice and personal service.

Everyone is an expert in their field, together we form a competent team - from business economists to state-certified technicians, we work hand in hand to find the right product for your application and provide you with a customized offer.

**Give us a call or send us an e-mail.
We look forward to hearing from you!**



Jennifer Grabowski
Managing Director
Phone: 02195-92975-25
E-Mail: j.grabowski@a1-hydraulics.com



Kristina Machleidt
Accounting
Phone: 02195-92975-13
E-Mail: k.machleidt@a1-hydraulics.com



Sonja Stöwe
Order processing & logistics
Phone: 02195-92975-15
E-Mail: s.stoewe@a1-hydraulics.com



Björn Ebbinghaus
Technical Sales
Phone: 02195-92975-14
E-Mail: b.ebbinghaus@a1-hydraulics.com



Christian Martin
Technical Sales
Phone: 02195-92975-19
E-Mail: c.martin@a1-hydraulics.com



Alexander Derksen
Head of production
Phone: 02195-92975-28
E-Mail: a.derksen@a1-hydraulics.com



Alexander Hinkel
Production
Phone: 02195-92975-0
E-Mail: a.hinkel@a1-hydraulics.com



Robin Frankenhausen
Production
Phone: 02195-92975-0
E-Mail: r.frankenhausen@a1-hydraulics.com



A1-Hydraulics GmbH

Rudolf-Diesel-Straße 1 • 42477 Radevormwald • Germany
Phone: +49 2195 929 75-0 • Fax: +49 2195 929 75-29
info@a1-hydraulics.com • www.a1-hydraulics.com

