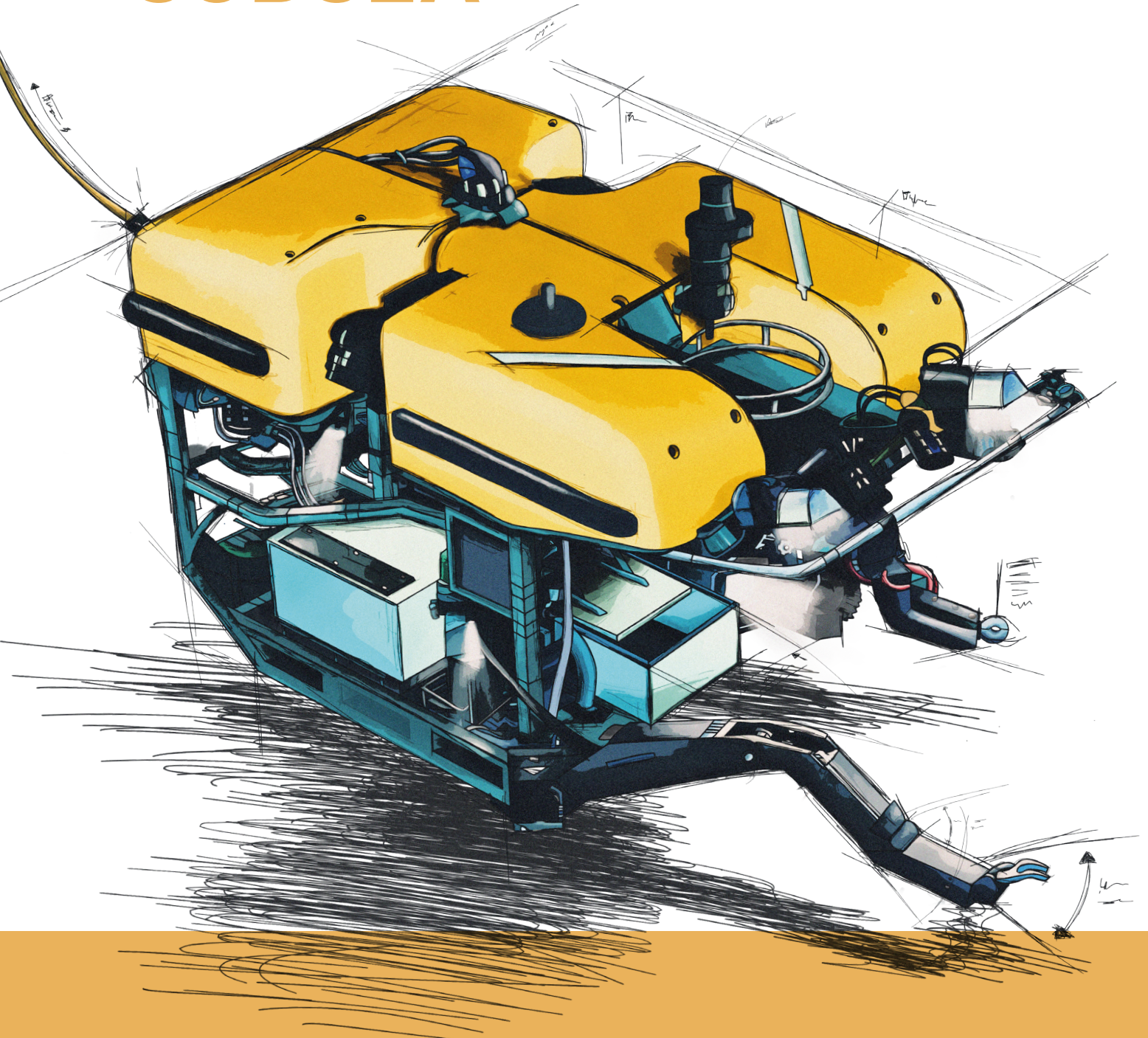


SOLUTIONS SINCE 1946 

WANDFLUH

SUBSEA



Quality products for
demanding applications

 **WANDFLUH**
Hydraulics + Electronics

SUB SEA

Subsea Seaworthy Innovation.

Wandfluh Valves are engineered to withstand ocean pressures when operating at typical depths of 4000- 6000m, offering durability and reliability, ensuring you stay on target for the contracts that you have won. Wandfluh products have established a Worldwide reputation over many decades, of providing the right valves for the demanding applications in subsea.



Global Subsea Competence Centre.

Here at Wandfluh UK, we take pride in our expertise in our subsea solutions. Through many years of working and listening to our customers, we worked together with them to define the concept. Design, manufacture, supplying the complete assembly, fully tested, offering a seamless integration into their machines.

Trevor Allen

FOCUS

Wandfluh UK solutions offer the "Plug and Play" approach when fitted to our customers machines, as we take pride in enabling Remotely Operated Vehicles (ROV), operating at depths of 4,000–6,000 meters below sea level. Our cutting-edge products have been instrumental in controlling Manipulators Arms / Thrusters plus Tooling Equipment for years, ensuring seamless operations in the most challenging underwater environments.

CAPABILITIES

Wandfluh Subsea, offer a full turnkey solution for Hydraulic and electronic bespoke builds and assemblies, covering:

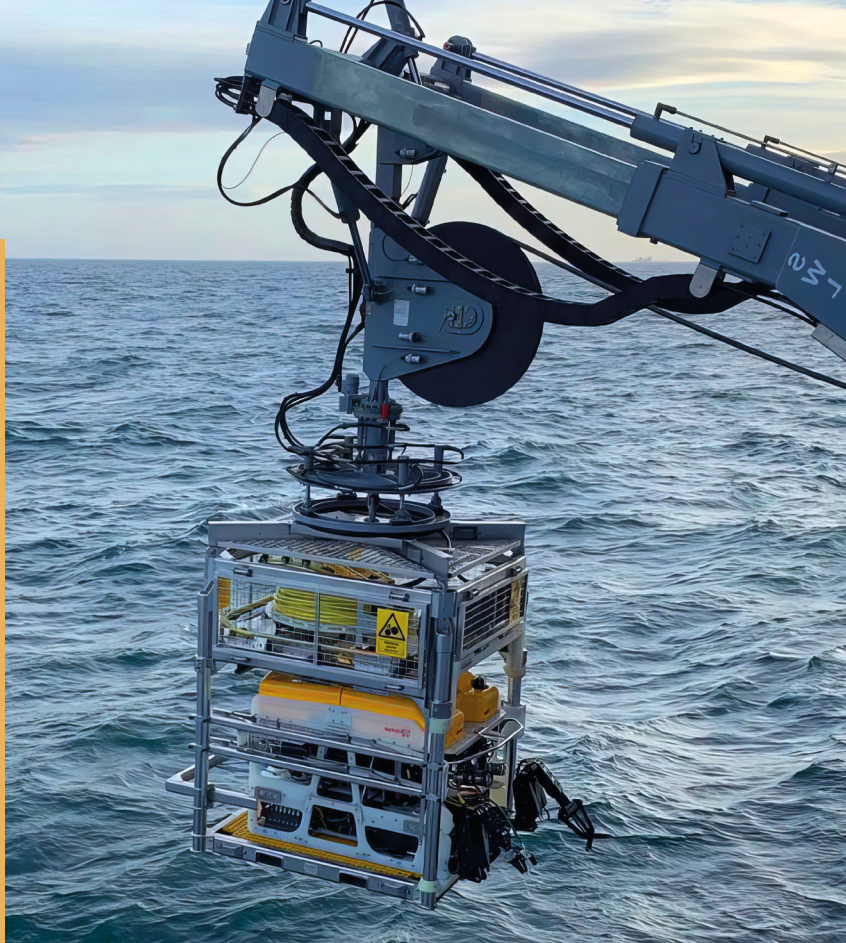
- Full design capabilities through conceptual design to interface with the customers' requirements.
- CAD models and drawings issued along with Hydraulic Schematics.
- Complete in-house manufacturing Capabilities.
- 100% of the product is assembled and tested on site.
- All products are offered with extensive certifications and traceability.
- Total support throughout the whole life cycle of products.

APPLICATION EXAMPLES

- Remotely Operated vehicles (ROV).
- Launch and Recovery Systems. (LARS).
- Tether Management Systems (TMS).
- Manipulator Arm Control.
- Thrusters and propulsion.
- Subsea Tooling and Accessories.
- Subsea Trenching.
- Subsea Mining.
- Subsea Oil field.
- Hull Cleaning Robotics.

APPLICATION TMS

Tether management systems (TMS) are used for storing and deploying an ROV to operate at depth independently of support vessels motion. TMS operate subsea and have a range of lengths of tether to allow the ROV to operate at a greater working radius. TMS systems are submerged in water, meaning all hydraulic and electronic components must be designed to operate at depth in harsh working environments. Trust in Wandfluh products to deliver for these specialist environments.



FOCUS

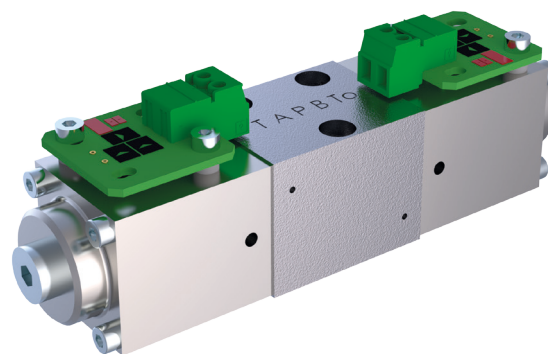
Tight working space constraints and harsh working environments offer challenges when designing tether management systems. Hydraulic and electronic assemblies need to fit within small space envelopes, whether being a garage type TMS or top hat TMS. Utilising Wandfluh's range of high-performance hydraulic control valves, maximum flow and pressure performance can be achieved in a small working envelope. This allows Wandfluh to incorporate all functions required for operational TMS, from proportional drive control to manual back pressure valves.

SPECIALITIES

- Wide range of flows available in number of Cetop interfaces, allowing optimal performance from smallest space envelope.
- Bespoke designs to fit in the most demanding of space constraints.
- Control manifolds for tether tension utilizing stainless steel valves meaning these can be placed around TMS for better space and weight distribution.
- Plug and play bespoke designs to suit TMS requirements, making it easy for integration and installation.

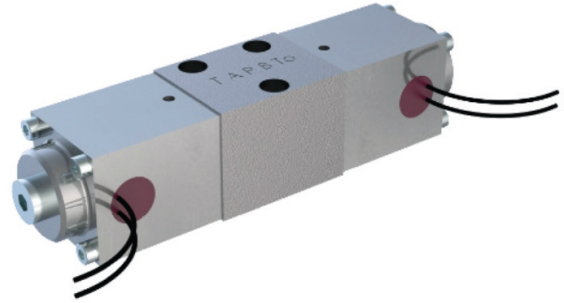
COMPONENTS

Haul in and pay out functions offered using Wandfluh proportional directional control, giving maximum control and adjustability when hauling in and paying out. Wandfluh's extensive range of manual cartridge valves offer control of back pressure in the system, to allow the tether to be at correct tension throughout. Stainless steel external valves are available, so that the valves that are used for tension control can be mounted with adjusting screws externally, allowing easy adjustment during setup.



COMPONENTS

Large range of hydraulic control valves with interchangeable functions, allowing you to have the choice between on/off and proportional style valves for your requirements. Strong performance vs size and weight from our NG3-mini range brings advantages to reduced weight and real estate requirements for an ROV. Manual control valves are offered in stainless steel, meaning they can be housed externally and accessed easily by operators for setup. Valve electronics are pressure tolerant and housed within valve pack builds, ensuring full functionality of valve is achieved via correct control signal.



FOCUS

Bespoke solutions to deliver on the most challenging of space requirements. Wandfluh offer a totally unique design process, working closely with clients to deliver the best solution for vehicle layout and demand. Strong focus on reduction of weight and real estate requirements, meaning valuable space is available for other components such as tooling. Innovations of designs are based around the client's needs, therefore positioning of ports and valves can be tailored to suit requirements for installation, operation and service.e.

SPECIALITIES

- Miniature valves offering the smallest space envelope required for hydraulic functions.
- Range of solenoid terminations available, allowing for considerations of maintenance and visual feedback.
- Customised and bespoke valve pack assemblies to suit layout requirements and efficiencies in performance vs weight.
- Integrated electronics housed within valve pack build which reduces external components and cable whips required.

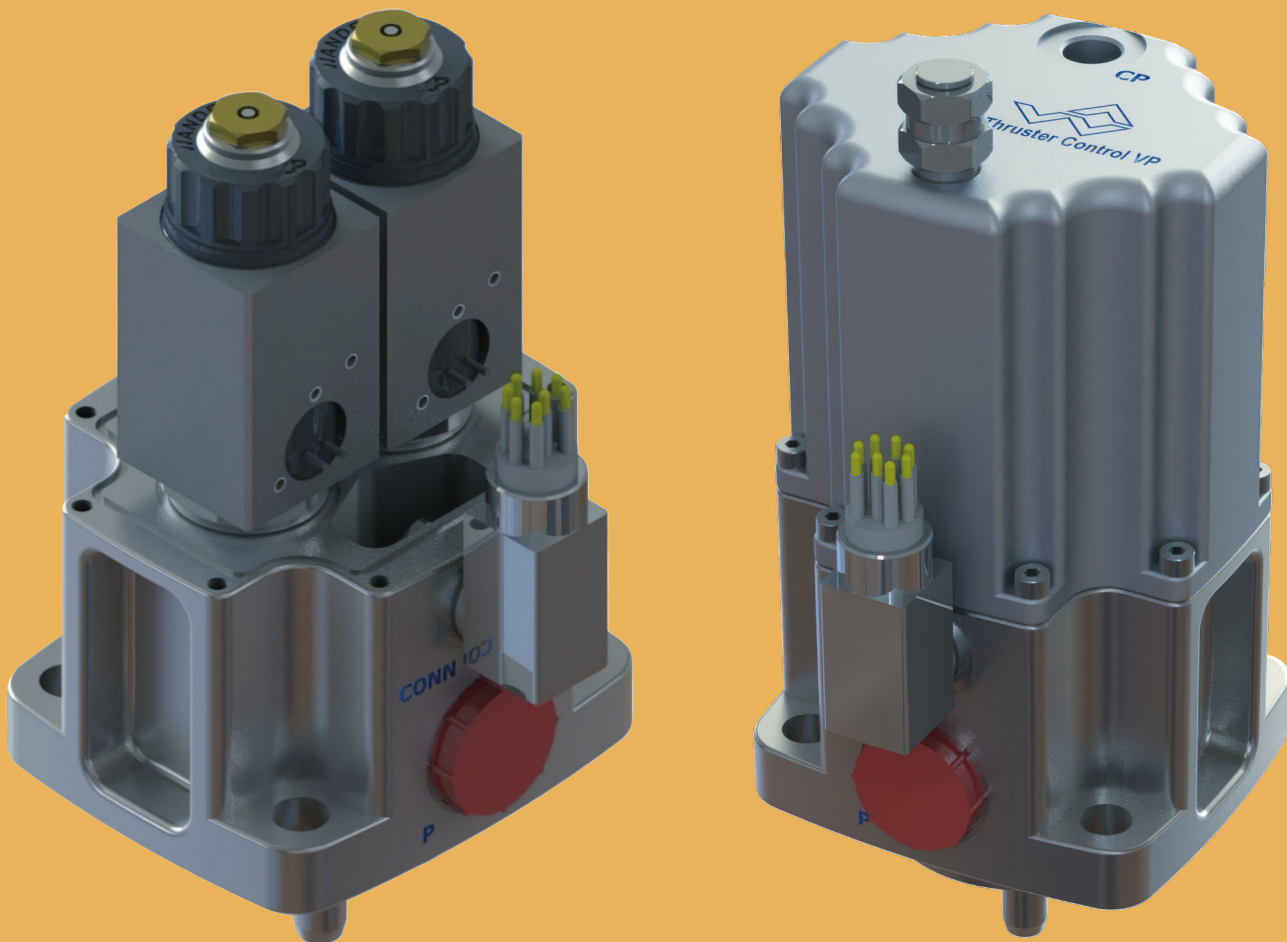
APPLICATION ROV

Remotely operated vehicles (ROV) are used for a number of subsea operations, from observation to work-class ROV's providing deepwater intervention at depths of up to 6000m in hostile and challenging environments. Reliability is key to an ROV, and Wandfluh has built up their reputation over the decades of being a market leader for control valves used on ROV's and subsea vehicles through high quality Swiss product, innovation and unparalleled support and service. Flexibility in design and different components mean that you can trust Wandfluh to offer the best solution for your needs.

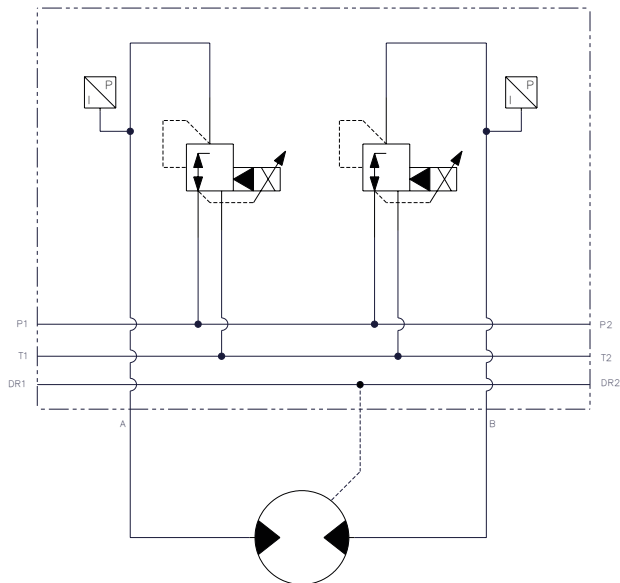


SUBSEA INNOVATION

For decades, Wandfluh has been the trusted build and supply partner for subsea applications. Constant development and innovation have grown Wandfluh's reputation as market leaders in supply of hydraulic and electronic control for demanding subsea applications. Wandfluh's close partnership with their clients ensures the best solution is always offered.



THRUSTER CONTROL



APPLICATION

By using Wandfluh proportional pressure reducing valves, fine thruster rotational speed can be achieved. High flow rates vs low delta P offer excellent levels of performance. Thruster rotation and speed can be finely controlled, and space requirements are kept to a minimum due to screw in cartridge design. Proportional pressure reducing valves offer infinitely adjustable rotational speed for thruster across flow requirements allowing vehicle positions to be finely tuned from user interface.

ADVANTAGES

High flow rates vs low delta P offer exceptional performance vs size. Screw in cartridge design allows for large oil galleries reducing energy consumption during operation. Contamination class requirement of 18/16/13 offers advantages from conventional servo valve control, leading to greater reliability and serviceability of subsea systems in demanding applications. Tested in the field on a wide range of fluid types, ensuring reliability and longevity in hydraulic systems. The thrusters will not rotate in air with our valves at rest, without the need for time consuming nulling of Servo valves offering many advantages in safety. Reliable control and performance, tested over decades in the field.

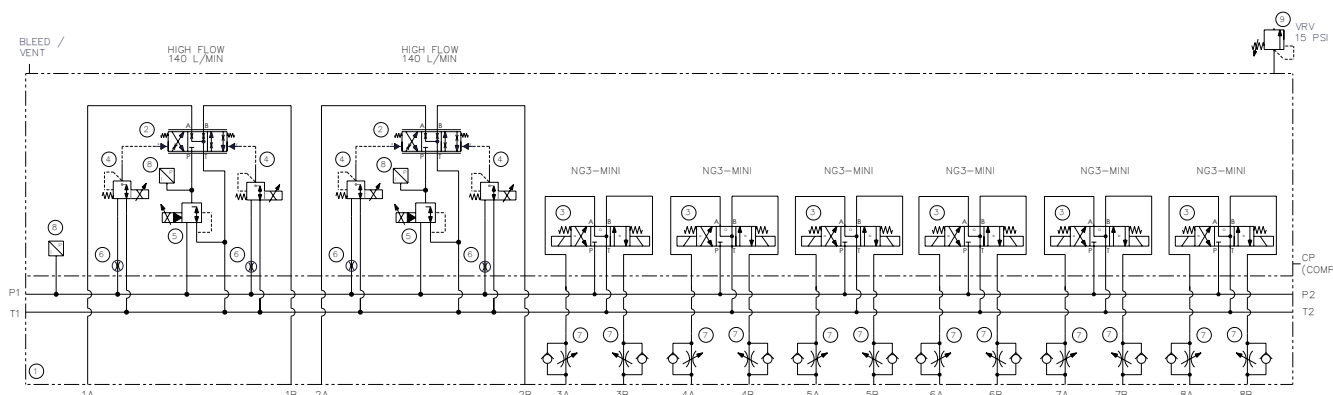
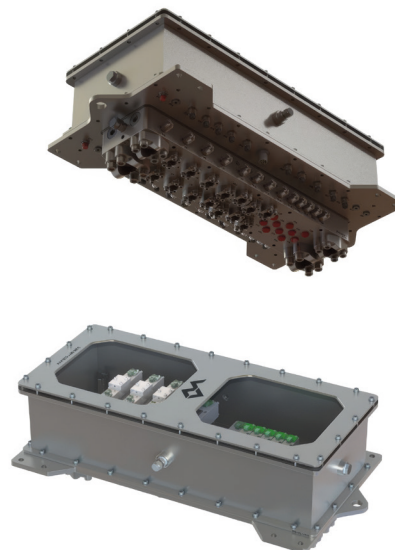
CHARACTERISTICS

- Range of sizes for screw in cartridges, from nominal flows of 20L/Min to 250L/Min
- Range of solenoid voltage and connector types to meet system requirements.
- Bespoke designs to offer the best solution.
- Pressure ranges of up to 350 Bar
- Cartridge valves offer best performance vs space envelope, ensuring system runs at optimal efficiency.
- High reliability
- Worldwide customer service and support

CUSTOM SOLUTIONS: VALVE PACKS

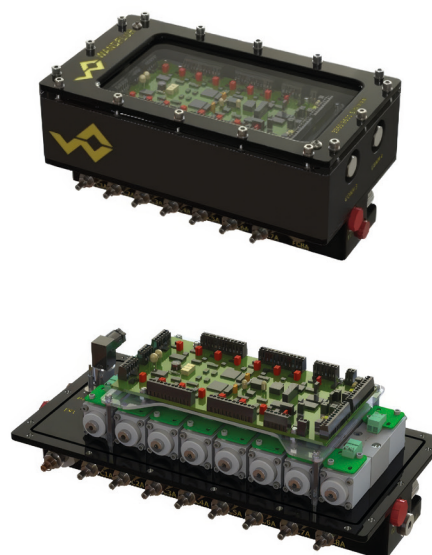
FEATURES

- Custom valve packs and designs to suit client requirements.
- Using years of industry leading expertise in design and manufacture of valve packs.
- Houses valves and electronics in pressure compensated covers.
- Range of materials offered, hard anodized Aluminum, Stainless steel 316.
- Designed to fit in the most demanding of space constraints.
- Full turnkey solution, from internal design to manufacture, to in-house build and test. All products 100% tested.
- Extensive documentation offered and product support.



ADVANTAGES

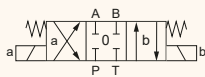
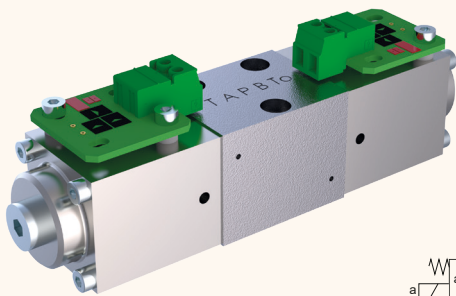
Wandfluh works in conjunction with clients to design and develop the best solution for application. From initial enquiry and circuit requirements to a final design fully integrated onto equipment or vehicle. Wandfluh offer a full turnkey solution for hydraulic and electronic valve pack assemblies. With in-house manufacturing, full assembly, and test capabilities, we can continue to provide products to meet the demanding quality expectations Wandfluh product achieves. Full documentation is delivered which includes GA drawing set, hydraulic and electrical schematics, along with a full suite of manufacturing certification which can be tailored to suit client needs. 3D CAD models of valve pack design are issued during design stage to ensure designs offer the best solution.



INDIVIDUAL SOLUTIONS

Wandfluh valves are modular in structure and can therefore be put together very flexibly. This allows different standard functional elements to be combined, so that individual solutions can be easily realised.

ROV CONTROL VALVES FOR WATER DEPTH UP TO 6000 M



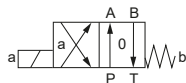
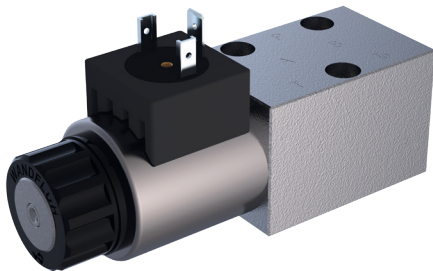
FEATURES

The valve utilisation in ROVs (Remotely Operated Vehicle) in the underwater area requires a resistance to a high external pressure.

CHARACTERISTICS

- Different solenoids with pressure compensation bore
- With screw terminal connections
- Potted loose cables without connectors
- Status display by means of LED

SPOOL VALVES FLANGE WDMF



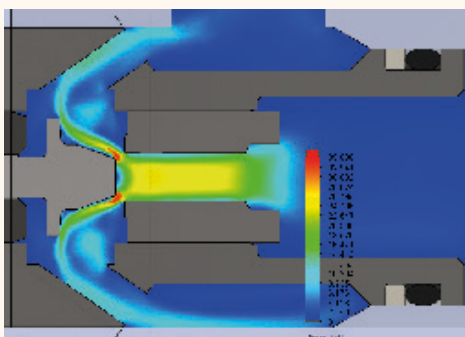
CHARACTERISTICS

Controls the oil flow and can thus, for example, determine the direction of movement of a cylinder. The valve is screwed as a flange onto a standardised mounting interface.

FEATURES

- Solenoid valve remotely controlled via intelligent electronics
- Direct or pilot operated
- Optionally detented, for safety in the case of power failure
- Small losses due to low leakage
- Soft switching for reduction of shocks
- Switching position monitoring
- Pressure max. 350 bar

DESIGNED FOR FLUIDS WITH LOW VISCOSITY AND HIGH WATER CONTENT



FEATURES

Valves for operation with low-viscosity fluids, sometimes require special construction features.

CHARACTERISTICS

For fluids such as HFC/HFA

- The functional components are mostly made of stainless steel
- This also results in a higher resistance to cavitation (see picture)
- Switching position monitoring
- Pressure max. 350 bar
- Flow max. 160 l/min
- Nominal sizes NG3, NG4, NG6, NG10

VALVES FROM SMALL TO BIG

DESCRIPTION

Wandfluh's products offers a diverse range of products to enable the products to give the best control, speed and pressure that is required. Whether it is a Mini3 on / off valve or a Proportional DCV, controlling a manipulator function or camera control, to the high flow rates needed for controlling large cylinders or motors, used on Subsea Mining or Trenching machines. We have the right products to suit the applications.

PRODUCT RANGE

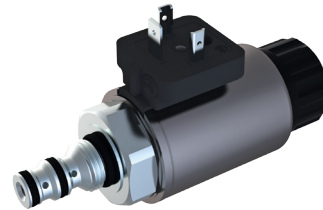
- Flange and sandwich valves according to ISO 4401 NG3-NG10 (10-160 l/min)
- Cartridge valves according to ISO 7789 M18-M42 (2-400 l/min)
- Cartridge valves according to UNF or Wandfluh standard
- 2-way built-in cartridge valves according to ISO 7368 NG16-NG50 (200-3530 l/min)

CHARACTERISTICS

- Proportional valves and switching valves
- Direct and pilot operated
- Hydraulic or mechanical actuation

FUNCTIONS

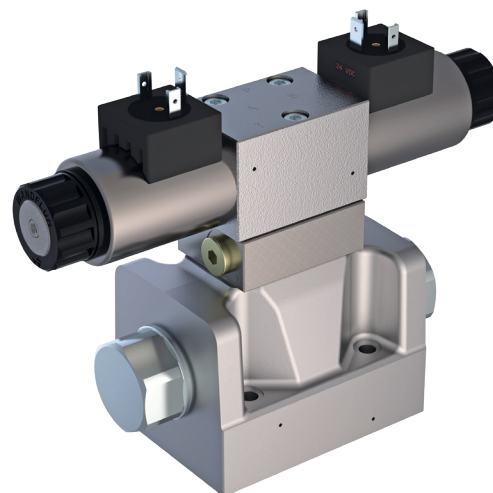
- Spool valves
- Poppet valves
- Pressure valves
- Flow valves
- Customer-specific functions



MDPPM16 Proportional pressure reducing valve, direct acting for precise pilot control of large capacity directional cartridge valves and pump swash control circuits.



WVPPM42 Remote Pilot operated Proportional DCV spool valve, to be used in the Valve packs or auxiliary control manifolds, reducing weight size and offering compact solutions.

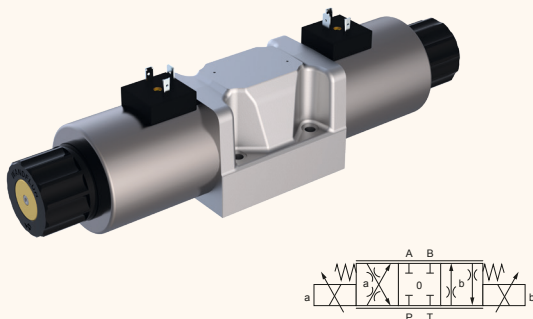


WVPFA10 Proportional Pilot operated DCV flanged mounted NG10 - 200L/min.

PROPORTIONAL VALVES

When hydraulic pressures or volume flows are continuously controlled, proportional hydraulics is used. The use of proportional solenoids enables continuous and proportional control of the valve. Proportional valves are operated with an electronic control device that transforms a control signal into a corresponding solenoid current for the valve. This solenoid current ensures an optimal, sensitive and precise control of the valve.

SPOOL VALVES FLANGE WDPFA



CHARACTERISTICS

The volume flow is controlled proportionally to the solenoid current. A cylinder can thus be moved forward and backward at variable speed..

FEATURES

- Progressive characteristic
- Good repeatability
- Direct or pilot operated
- Pressure max. 350 bar
- Flow max. 200 l/min
- Nominal sizes NG3, NG4, NG6, NG10

SPOOL VALVES CARTRIDGE WDPFU



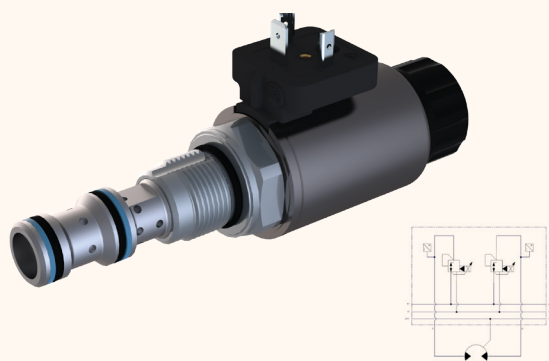
CHARACTERISTICS

The volume flow is controlled proportionally to the solenoid current. A cylinder can thus be moved forward and backward at variable speed.

FEATURES

- Progressive characteristic
- Good repeatability
- Direct operated
- Pull/push armature tube
- Compact construction through short solenoids
- Pressure max. 350 bar
- Flow adjustable 0... 28 l/min
- Nominal sizes U08, U10

PRESSURE REDUCING VALVES MVPPM



CHARACTERISTICS

Reduces the Pressure Proportionally due to the value adjusted by means of the solenoid current. Pressures and thus forces are Precisely adjusted.

FEATURES

- Linear characteristic and good repeatability
- Direct or pilot operated, optional inverse function
- Pressure max. 350 bar
- Flow max. 250 l/min
- Nominal sizes M18, M22, M33, M42, U10

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