



INTEGRATED SOLUTIONS FOR LIFE SCIENCES

Pneumatics
It's that easy



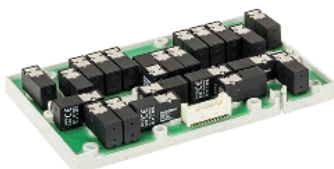
A partner you can rely on

AVENTICS delivers exceptional value in Life Sciences applications by drawing upon our core technological competencies, global presence and deep industry knowledge.

Why AVENTICS?

- AVENTICS is a partner you can rely on for all of the above: with experience in pneumatics for oxygen concentrators going back more than 30 years, we offer both high-volume, standardized components and customized solutions that suit customers' specific needs.
- Experienced in low pressure and vacuum systems with electrical integration
- Worldwide market leader in fluid control products for oxygen therapy devices
- Sub-assembly production for maximum value and easy, error free customer installation
- Expertise in ergonomic weight compensation with best in class proportional pressure regulation and low-friction actuators (sensitive and strong)
- Strong investments in R&D for Life Sciences and continuous product platform development
- Revision control and traceability of sub-components for serial device OEMs is a long standing competence

- ▶ Assembly of oxygen service products in state of the art facilities
- ▶ Technology roadmap in partnership with OEMs of surgical and acute care devices



- ◀ Highly optimized sub-assemblies pre tested with parameters relevant to customer application

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Experience you can count on

Since we entered the field many years ago, Life Sciences has advanced enormously. But our mission has never changed. In fact, the essence of AVENTICS is more than a century old, back to our invention of the pneumatic valve. As a manufacturer and partner, we're a known quantity that you can rely on – now, and in the future.

Quality carries on: Pneumatics – It's that easy

2014
AVENTICS
is established.



1972

Solenoid valves with integrated diaphragm technology for low pressure devices

1997

Ergonomic variable weight compensation with electro-pneumatics

1986

Pioneered ceramic sealing technology in solenoid valves

2002

Process control valves with integrated ethernet and bit level diagnostics

2008

Dialysis control valve system

2009

First portable oxygen concentrator (feed/waste and product side) valve assembly

2011

More than ¼ million valves per year shipped to medical device manufacturers established

2012

Created special "medical assembly" area for segregated/advanced assembly

2017

Stainless steel micro solenoid valves for oxygen, gas and liquid media

1987

First stationary oxygen concentrator valve assembly (more than 4 million valve assemblies sold to date!)

1999

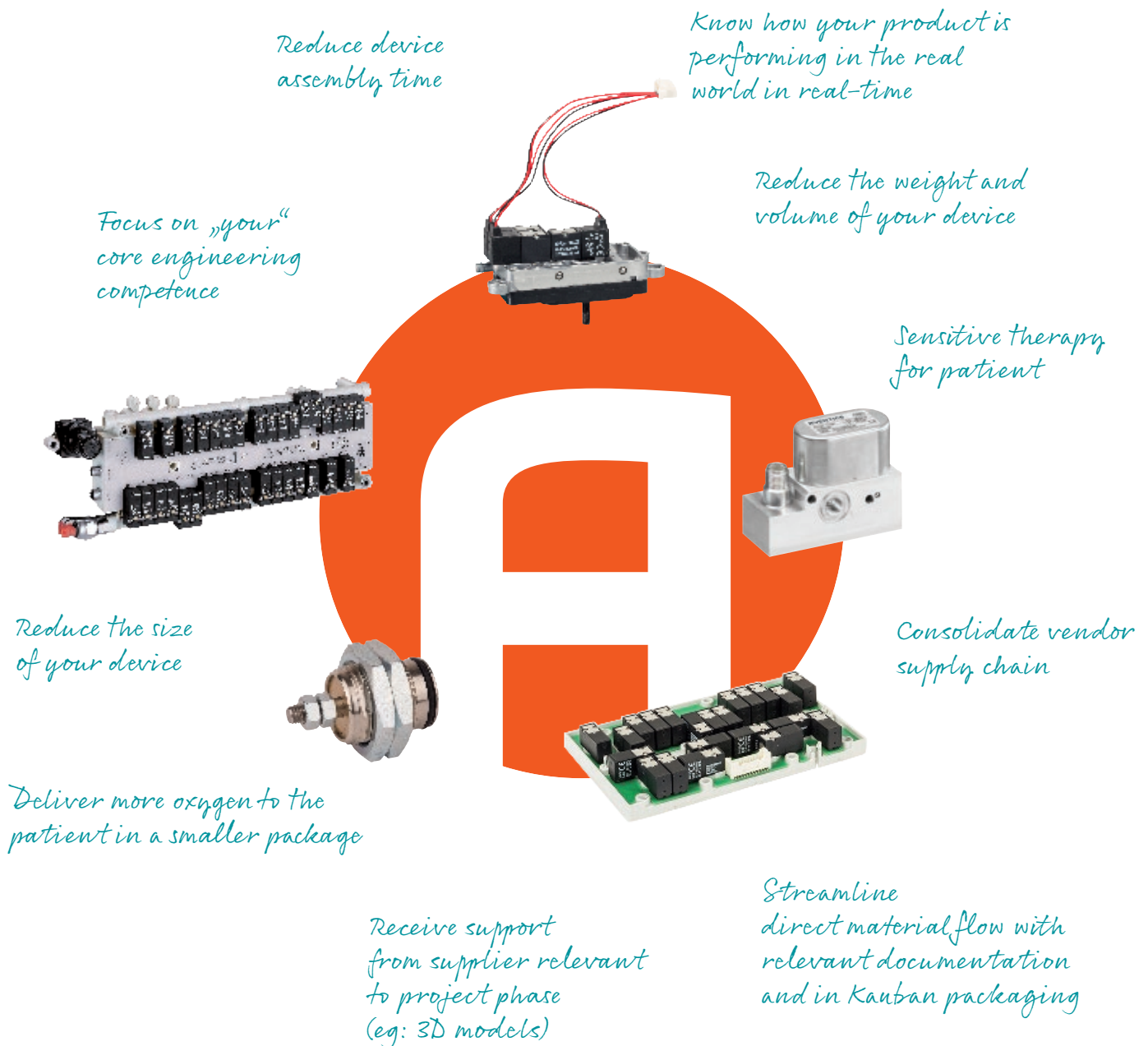
Polymer "feed/waste" valve assembly introduced to oxygen concentrator market

We are specialists in the design, application, and manufacturing of components and sub-assemblies well suited for medical devices and analytical and diagnostic equipment.

Paul Gant – Director, Global Life Sciences



Your vision, our solutions



Our value proposition

We are keenly focused on understanding your needs and developing solutions that exactly fulfil them. We channel our wide ranging areas of expertise – from components integration and systems experience to in-house research and development – into solutions that work for you.

With a strong technology platform, our dedicated international sales and support organization for Life Sciences are ready to discuss your specific requirements and identify the optimal solution for your success. From off the shelf products to highly function integrated closed loop controlled pneumatic assemblies.

YOUR APPLICATION PARAMETERS & SUPPLY CHAIN REQUIREMENTS

- Media (gas, liquid)
- Control interfaces
(electric, manual, mechanical, pneumatic)
- Function (pressure, flow, logic, transducer)
- Monitoring (sensor, status indication, ethernet)
- Precision
- Duty cycle
- Environment
- Mechanical interfaces, physical envelope
- Time-line and commercial info
- Format (component, kit, sub-assembly, labelling)
- Future proofing, enhancing

WHAT WE OFFER TO YOU



Core product platform
for Life Sciences



Concept solution,
CAD, additive
manufacturing models



Pre tested sub-assembly
with function integration

Kit of direct materials packaged
and documented for your
production material flow

Core valve platform for Life Sciences

We have a large palette of pneumatic valves, actuators and other components for various applications within Life Sciences. Each is targeted to a specific need, but some things they all have in common: reliability, quality and precision.

MSV8 – high efficiency micro solenoid valve (8 mm Ø)

- Cartridge and flange mount
- Suitable for vacuum and pressurized oxygen, reactive gas and liquid service
- Corrosion resistant stainless steel
- Multiple electric interface and orifice diameter options

MSV12 – high flow micro solenoid valve (12 mm Ø)

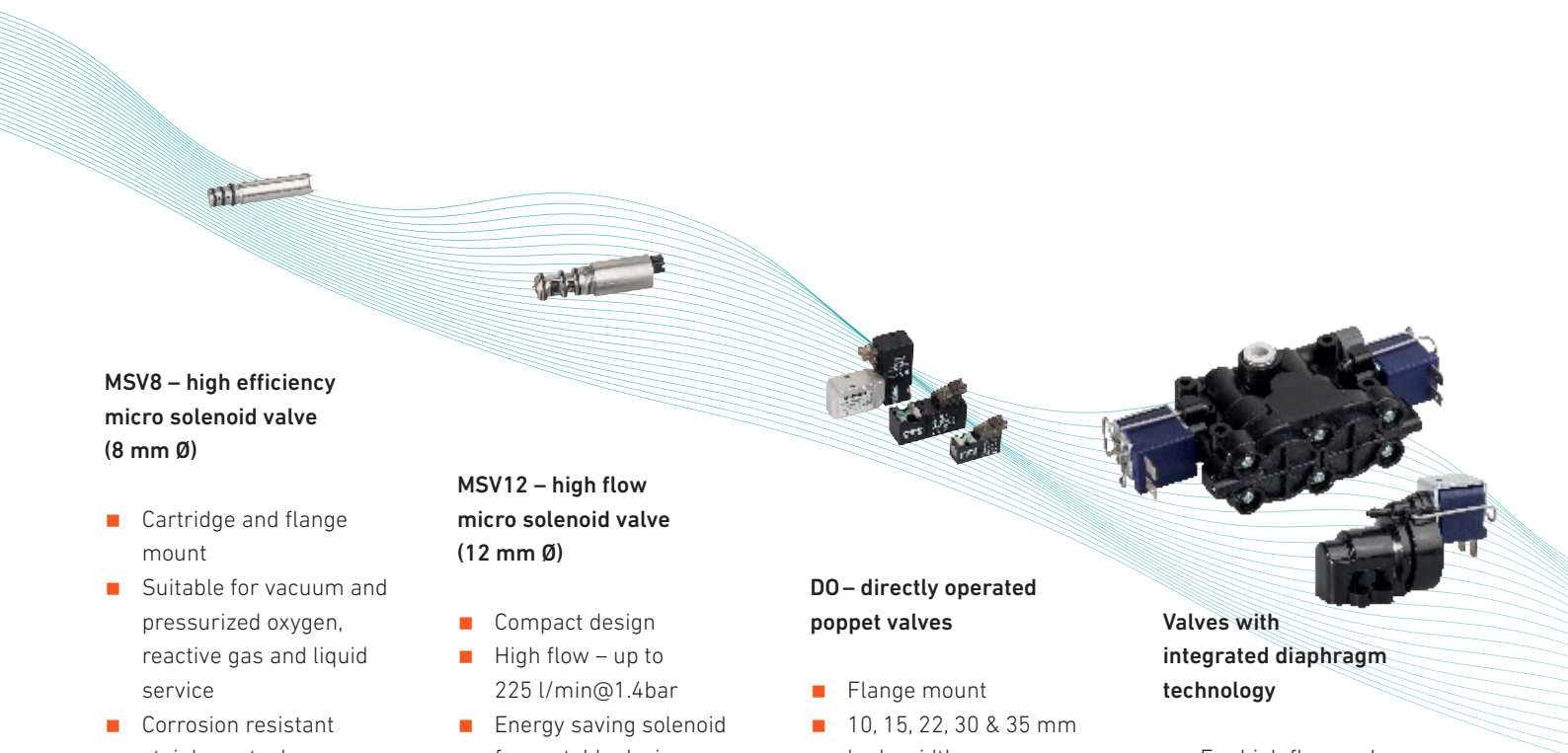
- Compact design
- High flow – up to 225 l/min@1.4bar
- Energy saving solenoid for portable devices
- 0.32 W holding power
- Economic screw-in cartridge mount – no fasteners required

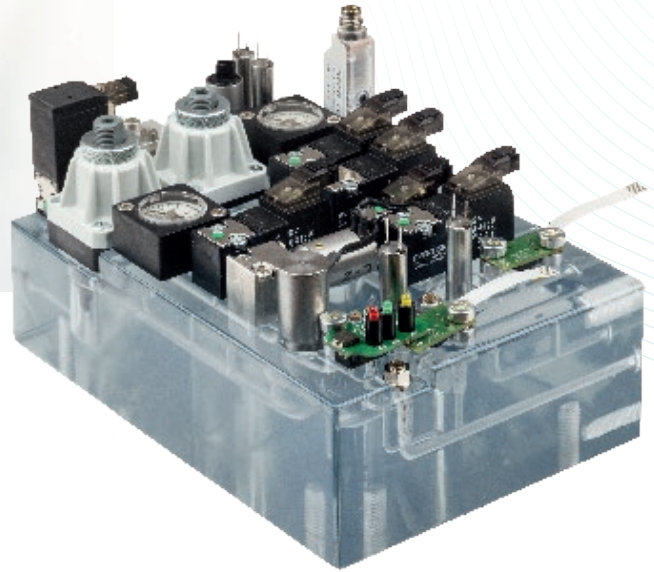
DO – directly operated poppet valves

- Flange mount
- 10, 15, 22, 30 & 35 mm body width
- Configurable orifice/pressure ranges
- Multiple voltage and electrical interface options
- Volume booster for 16 mm body

Valves with integrated diaphragm technology

- For high flow and dependable switching at very low pressure (0.5bar)
- Robust polymer housing
- Light weight with energy saving coils
- 3/2 NO or 2 x 3/2 NO/NO function
- Multiple voltage/ electric interface options
- Custom Poka Yoke designs





ED02 – proportional pressure regulator

- Silent operating due to variable force (non PWM) solenoids
- Excellent sensitivity due to extremely low hysteresis with full flow exhaust
- In line or compact manifold mount
- Multiple closed-loop control functions possible (weight compensation, force, air flow, vacuum level, positioning, actuator speed)

Integrated fluid blocks

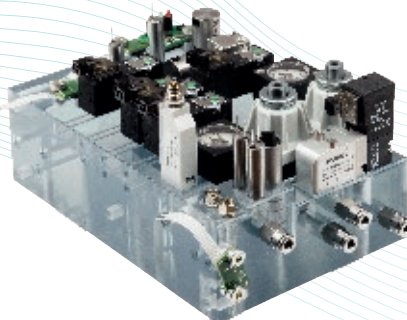
- Highly optimized sub-assembly
- Electrical connectivity (including ethernet IoT)
- All fluid logic control functions integrated
- Multiple polymer and metal material options
- Reduce footprint, prevent end of line failures and speed up production rate
- Integrated viewing chamber

Internet of Things

- Predictive maintenance through integrated diagnostics
- Energy efficiency through effective use of compressed air
- Operating comfort thanks to simple plug-and-run application

AV – advanced valve system

- Integrated ethernet interface
- Condition monitoring function (IoT)
- Directional valve functions with plug-in accessories
- Multiple electrical I/O function blocks including closed loop electro-pneumatic positioning



Air supply management

The ever-increasing complexity and sensitivity of pneumatically controlled work processes continually redefine the requirements for compressed air preparation. AVENTICS confronts this challenge with comprehensive air supply management to cover any need.

CR1-OX compact pressure regulator

- Media: oxygen, compressed air, inert and medical gases
- High repeatability ($\pm 0.2\%$ FS)
- Compact 30 x 30 mm footprint
- Special pressure range options



▲ CR1-OX

Electronic pressure and flow sensors



▲ PE5 ▲ Miniature P/E sensors

Pneumatic connection technologies

Plastic, nickel plated brass, and stainless steel variants



▲ Push-in and barbed fittings

Vacuum generators



▲ Single-stage ejectors (EBS)



▲ Compact ejectors (ECD)



▲ Multi-stage ejectors (EMS)

Pressure gauges



▲ PG1-SAS-ADJ

Plastic tubing



▲ TU series

AIR PREPARATION

- Complete range of modular air preparation functions in multiple sizes (multiple pressure ranges, particulate, coalescing, and active, carbon filters, maintenance-free diaphragm principle air dryers, lockable pressure adjustment, manual and solenoid supply/ exhaust valves, electronic pressure and flow monitoring)
- Pressure regulators from M5 to G2 port-size
- Sanitary design and corrosion resistant versions



Pneumatic cylinders

Clean with ease, balance variable weights, locate and hold any desired position. The power, endurance and sensitivity of AVENTICS pneumatic cylinders are the optimal choice for advanced applications in Life Sciences.

Mini and round cylinders

Ø 8–100 mm
Options for sanitary design and pre-adjusted air cushions



▲ CSL-RD series (ISO 6432) ▲ MNI series (ISO 6432)

Short-stroke and compact cylinders

Ø 12–100 mm
Concentrated power in a minimum of space



▲ SSI series (ISO 21287)

Profile and tie rod cylinders

Ø 32–320 mm
Standardized to international norms and with an outstanding profile



▲ PRA series (ISO 15552) ▲ TRB series (ISO 15552)

Rodless cylinders

Ø 16–80 mm
Precision and speed for long strokes



▲ RTC series

Mini-slides and rotary actuators

Ø 6–100 mm
Components for moving and positioning



▲ MSC series



▲ RCM series

Miniature cartridge cylinders

Ø 6–16 mm



▲ SWN

Full range of detachable accessories

Rod locks and guide-units



Sensors and accessories



Cylinder and piston rod mountings

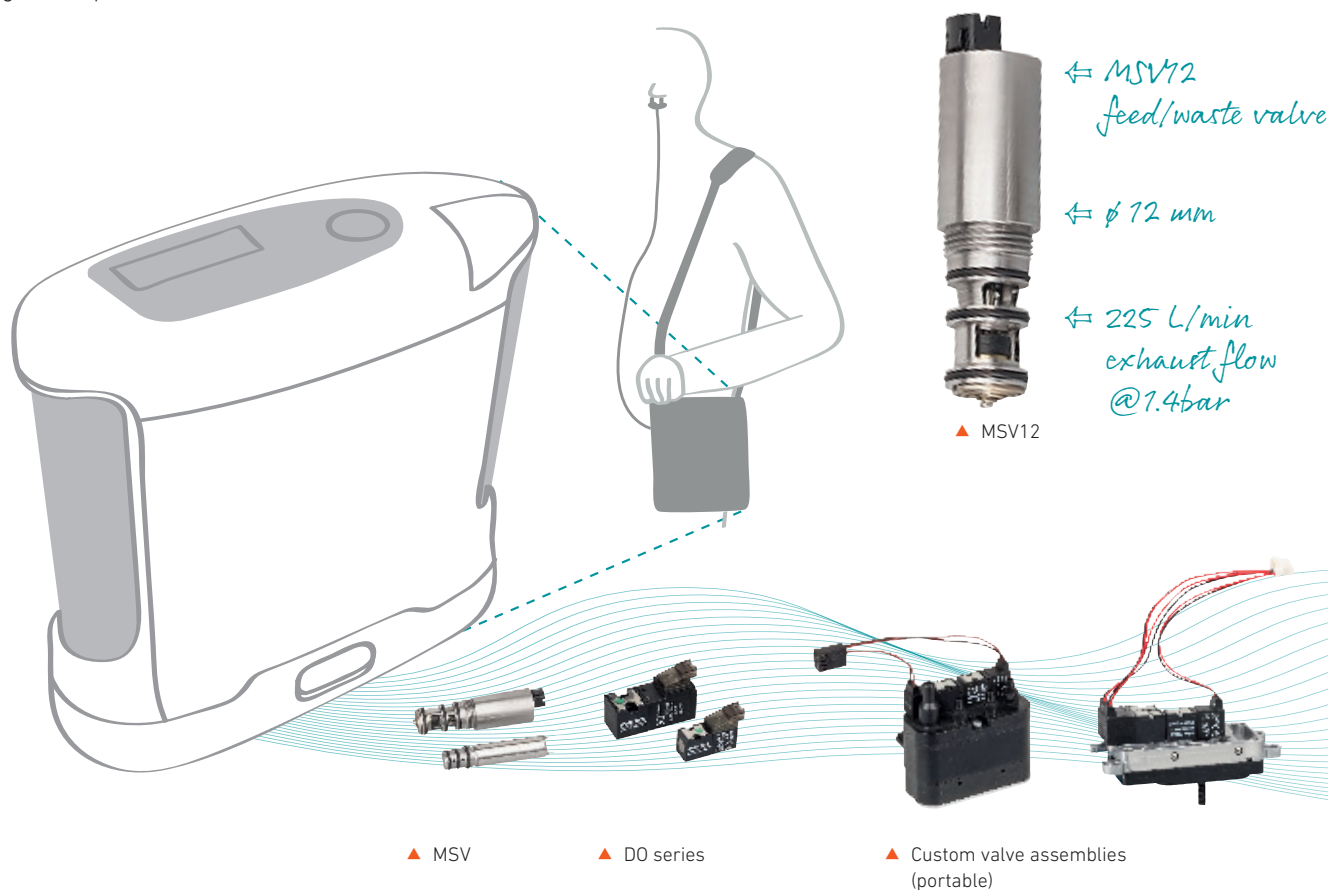


Many additional cylinder variants available

Oxygen concentrators

When a patient's lungs are unable to absorb enough oxygen, they need permanent artificial respiration. Just a few years ago, this diagnosis meant a lifetime spent in a hospital bed. Today, patients can take part in life thanks to stationary and portable oxygen devices.

These devices feature customer-specific pneumatic valves from AVENTICS. We work closely with customers to design valves that suit their plans – after all, producers of complex oxygen concentrators shouldn't need to design their devices around the valves. Our experience in oxygen concentrators, both stationary and portable, stretches back over 30 years. As with all our components produced for life science applications, cleanliness during production is of the highest importance.





▲ Stationary oxygen concentrator

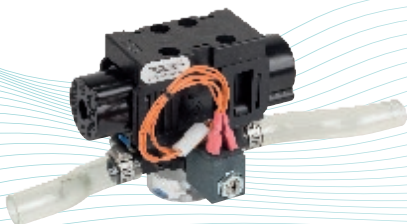
Custom valve ensemble

- Maximize air flow at very low pressure with integrated diaphragm technology – ideal for feed/waste functions
- Excellent repeatability at low pressures due to uniform switching times
- Low pressure volume amplification with optimized surface area



▲ Valves with integrated diaphragm technology

AVENTICS is focused on the complete spectrum of pneumatics for oxygen concentrators



▲ Custom valve assemblies (stationary)



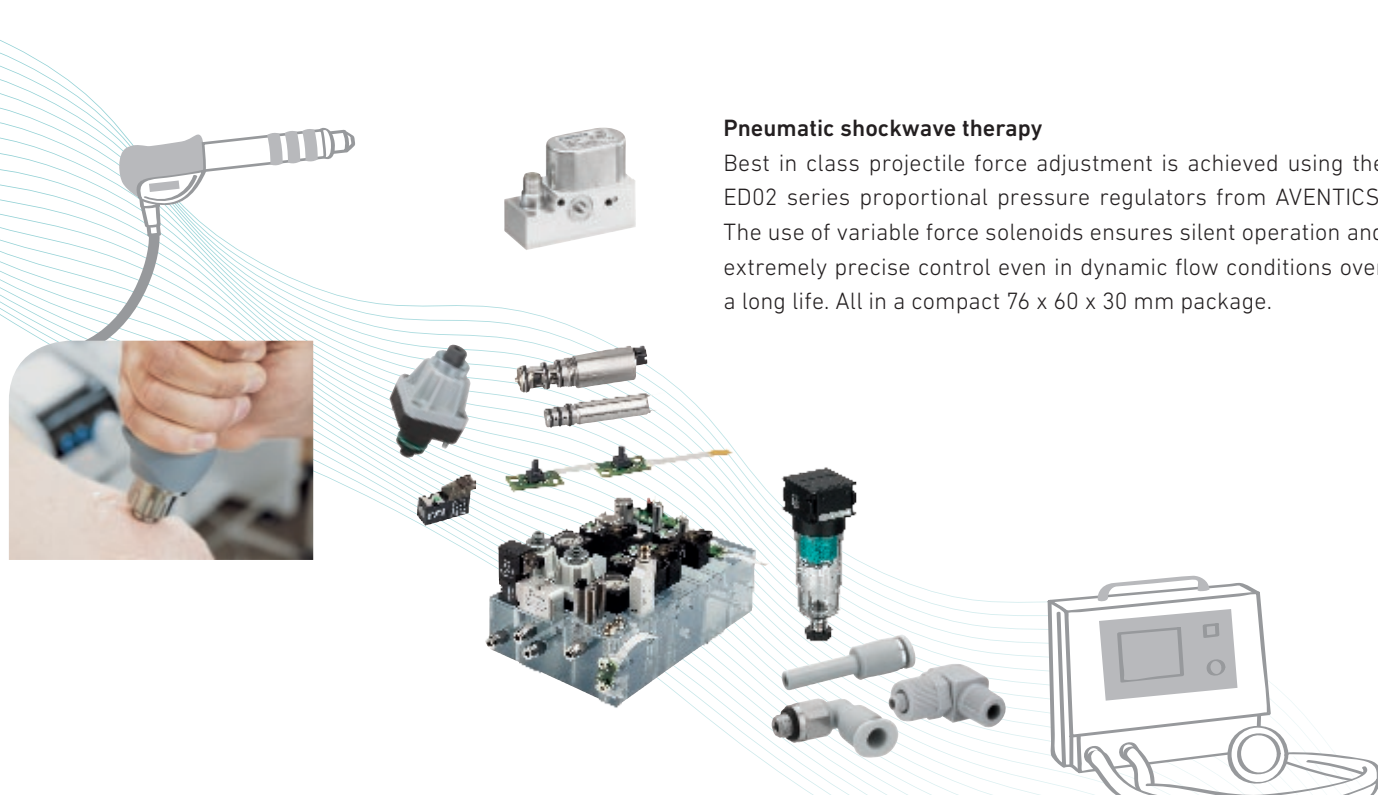
▲ Miniature P/E sensors



▲ CR1-OX

Wide ranging applications

Through intensive investment in R&D and our teams of experts dedicated to Life Sciences, we have successfully applied our knowledge and expertise to the sector for over 30 years. Leave the production of complex, high-quality components to us and you can concentrate on what you know and love best: building robust appliances of unmatched quality. Here's an overview of where our components are often used:



Pneumatic shockwave therapy

Best in class projectile force adjustment is achieved using the ED02 series proportional pressure regulators from AVENTICS. The use of variable force solenoids ensures silent operation and extremely precise control even in dynamic flow conditions over a long life. All in a compact 76 x 60 x 30 mm package.

Ventilators and anesthesia equipment

To control the appropriate medical gas (be it oxygen, nitrous oxide, and/or air), AVENTICS designs fluidic blocks containing solenoid valves and pressure regulators with integrated miniature electronic pressure sensors.

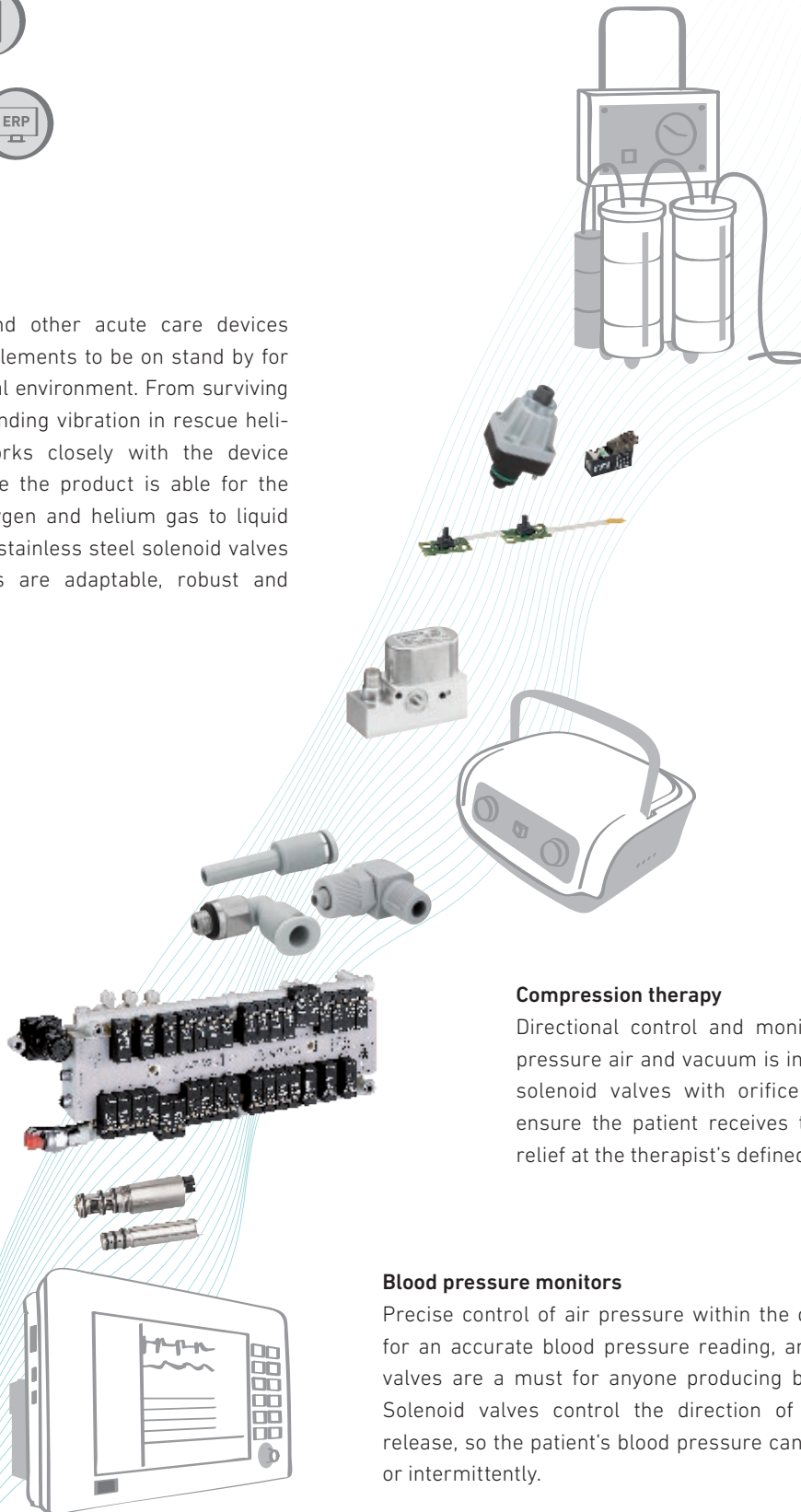
Assembly of the OEM's device is accelerated and end-of-line failures are prevented by pre-connecting all electrical elements to a multi-pin connector.





Surgical equipment

Surgical equipment and other acute care devices require fluidic control elements to be on stand by for their real life operational environment. From surviving cold storage to withstanding vibration in rescue helicopters, AVENTICS works closely with the device manufacturer to ensure the product is able for the defined task. From oxygen and helium gas to liquid media, our MSV series stainless steel solenoid valves and miniature sensors are adaptable, robust and ready for duty.



Compression therapy

Directional control and monitoring of extremely low pressure air and vacuum is in our milieu. Direct acting solenoid valves with orifice diameter up to 5 mm ensure the patient receives the desired support and relief at the therapist's defined rate.

Blood pressure monitors

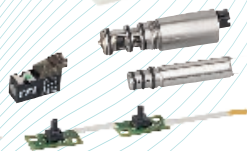
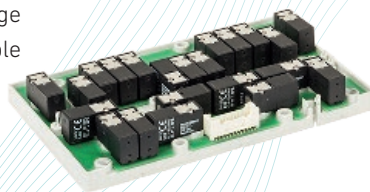
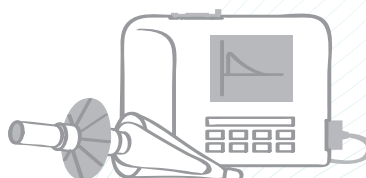
Precise control of air pressure within the compressor is important for an accurate blood pressure reading, and this is why AVENTICS valves are a must for anyone producing blood pressure monitors. Solenoid valves control the direction of flow and the pressure release, so the patient's blood pressure can be measured constantly or intermittently.

Although it is possible to use our valves for home use units, they are ideal for use in surgical monitors.



Pulmonary function tester

AVENTICS products are ideal for controlling air and gases at low pressures, as required by pulmonary function testers. Not only patients, but manufacturers of this equipment can breathe easy too: safe in the knowledge that our components and sub-assemblies will enable you to deliver safe, reliable devices.

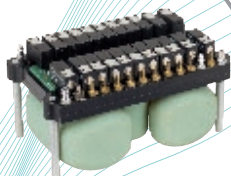
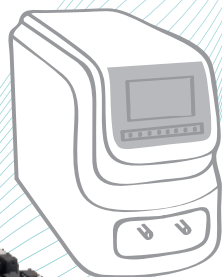


Wound therapy

AVENTICS produces the components necessary for directing and regulating the low pressures and vacuum waves used in negative pressure wound healing.

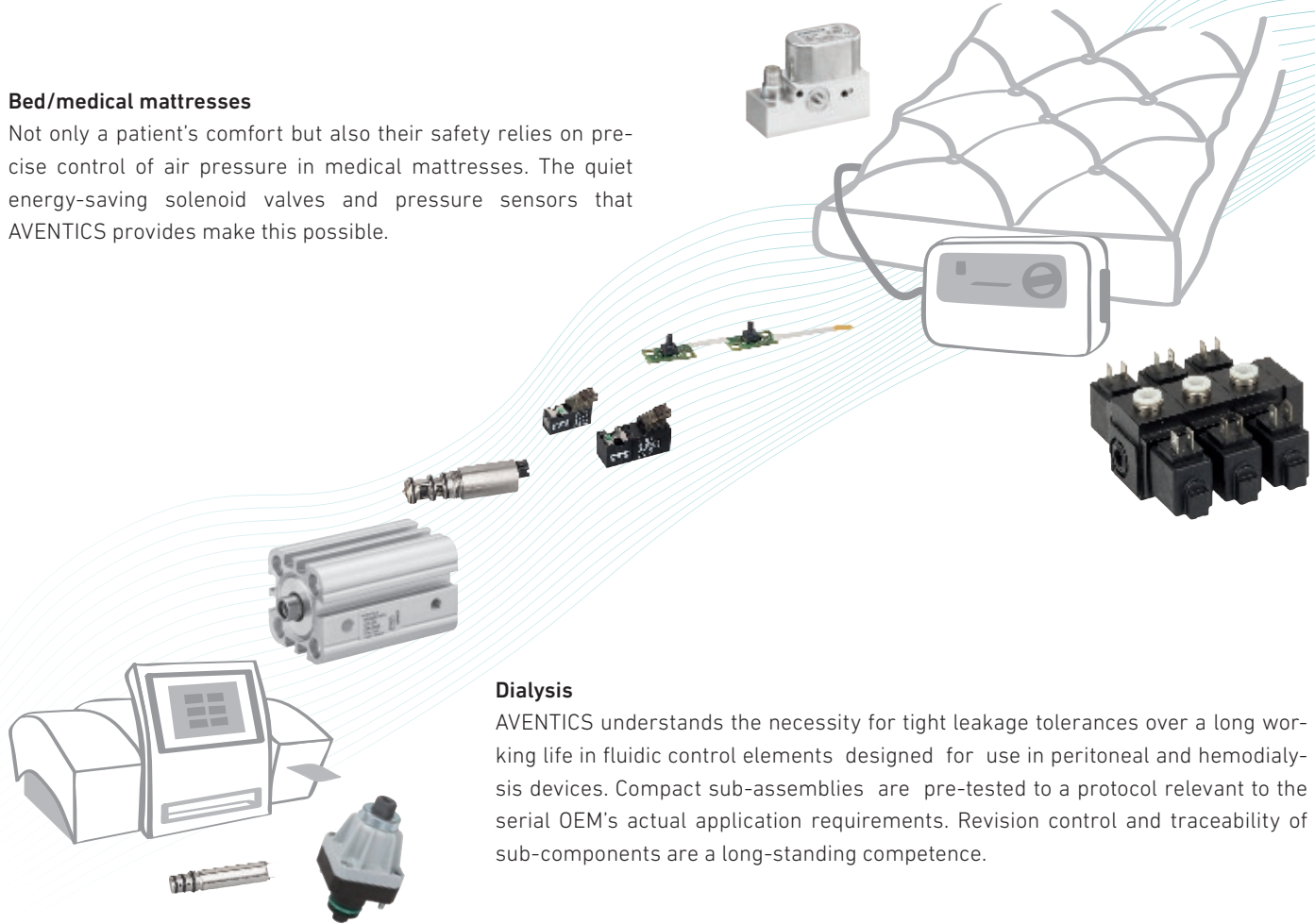
Medical diagnostic equipment

Medical diagnostic equipment often requires air and gases to be controlled at low pressure, and this is where AVENTICS components come in. Our valves are ideally suited for directing reagents and other liquids through the system, using gas as the motive force. Our valves are reliable and durable – even where contact is made between components and reagents or other liquids.



Bed/medical mattresses

Not only a patient's comfort but also their safety relies on precise control of air pressure in medical mattresses. The quiet energy-saving solenoid valves and pressure sensors that AVENTICS provides make this possible.



Dialysis

AVENTICS understands the necessity for tight leakage tolerances over a long working life in fluidic control elements designed for use in peritoneal and hemodialysis devices. Compact sub-assemblies are pre-tested to a protocol relevant to the serial OEM's actual application requirements. Revision control and traceability of sub-components are a long-standing competence.

Also available are products for patient simulators and training equipment.

Engineering Tools

Our online portal is available around the clock, with comprehensive information about our product portfolio and refined tools for engineers that you can use free of charge.



Online catalog



Calculation programs



Cross reference tool



CAD



Circuit diagram software



CylinderFinder



Configurators



eShop



Extranet



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