

IVAC CYLINDERS
INNOVATION TO REDUCE
ENERGY USAGE AND
OPERATING COSTS

YOU CAN SEE
OUR THINKING

ENGINEERING ADVANTAGE





CREATING ADVANTAGE WITH PEOPLE, PRODUCTS, INNOVATION AND SERVICES

A WORLD LEADER IN MOTION AND FLUID CONTROL TECHNOLOGIES, NORGREN WORKS CLOSELY WITH CUSTOMERS TO GAIN A DEEPER UNDERSTANDING OF THEIR ENGINEERING NEEDS, AND THEN CONNECTS ITS PEOPLE, PRODUCTS AND EXPERTISE TO GIVE THEIR EQUIPMENT AND THEIR BUSINESS A CLEAR ADVANTAGE. WE CALL THIS ENGINEERING ADVANTAGE



WITH A SALES AND SERVICE NETWORK IN 75 COUNTRIES – AS WELL AS MANUFACTURING CAPABILITY IN THE USA, GERMANY, CHINA, UK, SWITZERLAND, CZECH REPUBLIC, MEXICO AND BRAZIL – WE HAVE GENUINE GLOBAL CAPABILITY.

We also think local and niche: on focusing our resources on delivering a specific product, solution or service to meet our customers' needs.

As a responsible business, we're committed to working practices which contribute positively to the environments in which we work. Our products – including our brand new IVAC – are setting new standards for efficiency, helping customers reduce air usage and energy costs while improving overall performance. We offer:

- **INNOVATION & TECHNICAL EXCELLENCE** through four global technical centres and the experience of specialist engineering teams. We have a portfolio of patented solutions, and are always developing new and cost-effective technologies
- **HIGH PERFORMANCE PRODUCTS** covering pneumatic actuators, airline preparation, fittings and valves. We can supply these either singly to meet MRO needs, or combined in powerful customised solutions
- **EXCEPTIONAL LOCAL SERVICE** delivered through Key Account Management teams and sector specialists committed to understanding and meeting our customers' engineering challenges, wherever they are



IVAC

Norgren has worked closely with customers in key industry sectors to understand what improvements they wanted from their pneumatic controls. The response highlighted a widespread need for improved energy efficiency, reduced downtime, reduced installation time and improved aesthetics.

THE IVAC CYLINDER FROM NORGREN ANSWERS THESE NEEDS.

A family of products incorporating proven Norgren technologies, IVAC is a weight-optimised actuator featuring integrated valve and magnetically operated switches for complete actuator control. It can be retrofitted or integrated within new systems and, compared with conventional pneumatic systems, can help reduce energy consumption by up to 50%.

IVAC has been rigorously tested in operational conditions by customers in a wide range of industries.

The feedback has been exceptional.

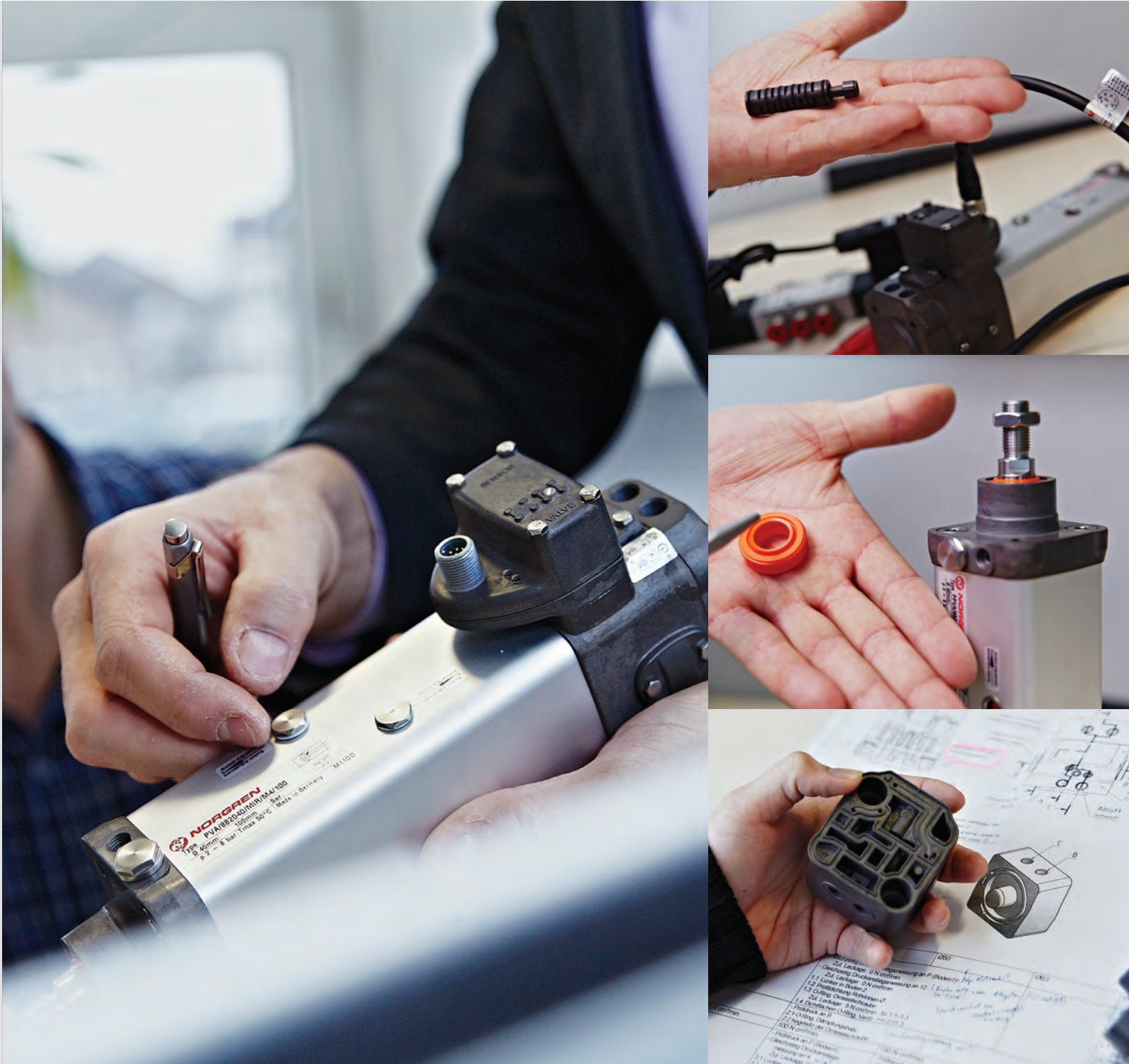
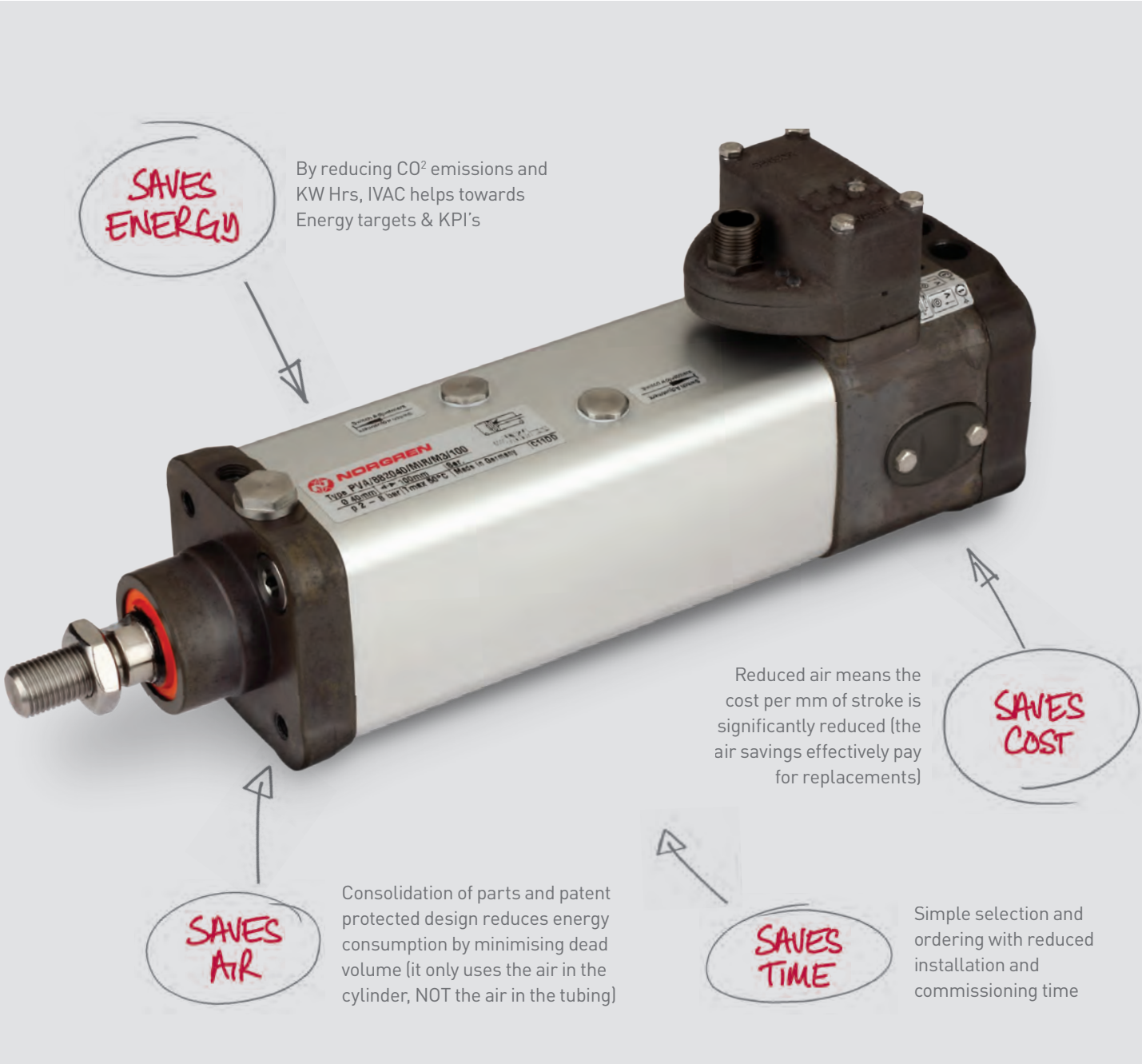
THIS UNIQUE PATENTED DESIGN DELIVERS SIGNIFICANT BENEFITS:

- REDUCED ENERGY USAGE
- LOWER OPERATING COSTS
- FASTER ACTUATOR RESPONSE TIMES
- OPTIMUM SPACE USAGE
(DIMENSIONS ARE IN LINE WITH ISO 15552 / VDMA 24562)
- CLEANLINE VERSIONS FOR RAPID WASHDOWN
- SIMPLIFIED SELECTION AND ORDERING
- REDUCED INSTALLATION AND LOGISTICS COSTS
- IMPROVED MACHINE AESTHETICS

IVAC INNOVATION TO
REDUCE ENERGY USAGE
AND OPERATING COSTS

A UNIQUE & SUSTAINABLE ENERGY IMPROVEMENT

- REDUCE COMPONENTS
- SIMPLIFY ORDERING, INSTALLATION AND MAINTENANCE
- CLEANLINE VERSIONS
- REDUCE MACHINE DOWNTIME
- **IVAC CLEANLINE**
IP67, integrated valve, switches & flow controls for fast installation and easy washdown
- **IVAC INDUSTRIAL**
IP65, integrated valve & flow controls for fast installation
- Adjustable & buffer cushioning for end of stroke damping
- Fully integrated sensor adjustment
- 1 single M12 connection
- Fully integrated flow controls
- 1 single air connection, 1 single exhaust port
- Integrated pressure protection
- Long life glandless valve technology
- ISO VDMA footprint



ENERGY EFFICIENT

IVAC – A SUSTAINABLE ENERGY IMPROVEMENT

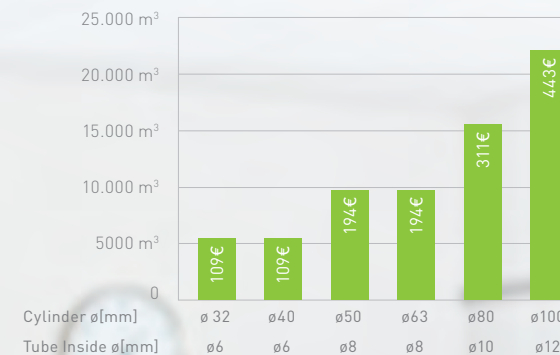
Responsible businesses are taking important steps to minimise not just costs – but environmental impact. IVAC is a sustainable energy improvement which performs strongly in both areas. Using an energy efficient design, it

optimises cylinder air consumption while reducing the overall cost per mm of stroke. At the same time, it reduces KWH hours and helps lower CO₂ emissions, both contributing towards your energy targets and KPIs.



COMPRESSED AIR SAVINGS POTENTIAL

Calculation based on: 6 bar operating pressure, recommended tube diameter see table, 5m installation length between valve and actuator with conventional separate arrangement of valves and cylinders, 30 cycles/min, 8 hours, 225 days/year, compressed air costs EUR 0.02/m³.



FULLY MODULAR DESIGN WITH KEY BENEFITS



ELECTRONIC / PILOT MODULE

- Pilot valves
- Manual overrides
- LED indication for valve solenoids and sensors
- Single M12 connector for power and control



CONNECTION

- M12 IP67
- Valves & sensors
- All connections in one place

SOLENOIDS

- Plug in
- Fully serviceable



BARREL

- Smooth washdown design
- Switch adjustment



VALVE SLICE

- Interface for electronic / pilot module
- Long life glandless valve technology
- Fully integrated speed regulators 3 + 5
- Common exhaust
- Rear end cushion



REAR END COVER

- Single air supply connection
- Single air exhaust connection
- ISO/VDMA mounting interface



Easier selection and ordering

In typical actuator functions, 13 different components are needed. IVAC uses just four. You simply select bore size, stroke length, valve function and switch type – all other calculations are performed automatically for you.

Reduced installation time and cost

IVAC is a fully integrated unit, with just one single air supply and one single electrical connection. Connection is easy, making for reduced installation time and cost.

Improved speed control

Built in flow regulators for improved and more precise speed control.

Reduced cleaning time

Cleanline design with minimal tubing and no valves reduces the machine cleaning cycle and increases uptime.

The more innovation we put into IVAC,
the more benefits you get out

IVAC – A
sustainable
energy
improvement

IVAC – THE SOLUTION FOR RESPONSIBLE BUSINESSES

INCREASED ENERGY EFFICIENCY:

Consolidation of parts and significantly reduced tubing helps reduce air consumption and running costs by up to 50%.

SIMPLIFIED MAINTENANCE AND SERVICING:

IVAC can be removed and replaced quickly and easily, allowing you to undertake offline diagnosis. It's equally easy to add extra or new machine functions.

FASTER, MORE CONSISTENT RESPONSE:

An integrated valve provides much quicker response times.

FASTER CYCLING: Physical and air cushioning increase cycling speed.

MULTIPOLE OR FIELDBUS CONNECTIVITY:

There is only one M12 connection for power and control, making it suitable for hardwired or fieldbus systems, regardless of fieldbus protocol.

IMPROVED AESTHETICS:

Separate valves are not required so a smaller control cabinet can be used, while IVAC uses less tubing and fittings (and no tubing at all between the valves and cylinders). This, plus fewer electrical connections, makes for neater systems.

NO MECHANICAL DESIGN CHANGES:

IVAC conforms to the latest ISO/VDMA dimensional standards meaning there is no need for any design changes, making IVAC ideal for retrofitting to existing installations.

ADDED SAFETY:

Built in pressure protection ensures safe operation. This means that no unwanted pressure is ever trapped within the IVAC meaning that components can always be safely removed for maintenance or modification.

DESIGN FLEXIBILITY:

IVAC is available with four different valve configurations offering maximum application flexibility.

POSITIVE ENVIRONMENTAL IMPACT:

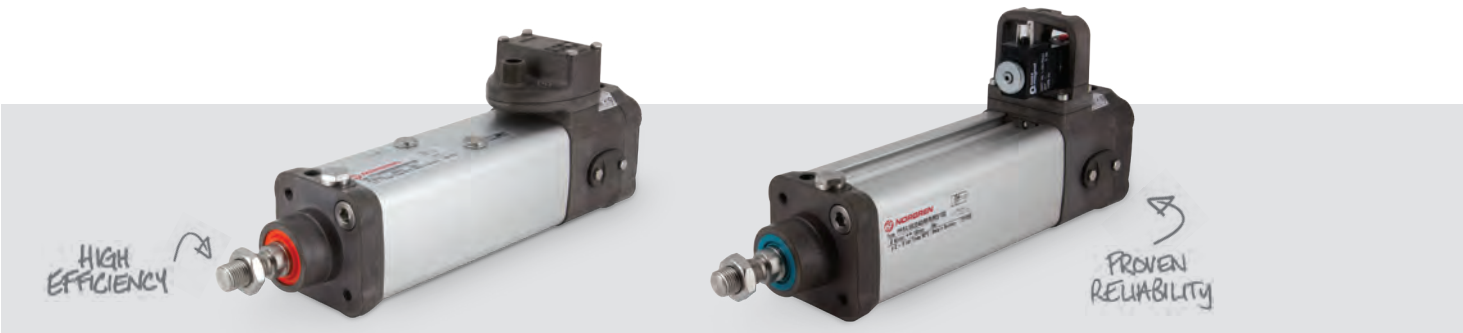
IVAC is a sustainable energy improvement which optimises cylinder air consumption while reducing CO² emissions and your carbon footprint.

Proven long life technology

Incorporating tried and tested Norgren technologies, the IVAC cylinder combines solenoid piloted control valve, position sensors and flow regulators in one unit. It's versatile, complete and ready-to-fit, and can deliver a range of measurable benefits.



OPTIONS, VARIATIONS* & ACCESSORIES



PRA/882000/M – IVAC CLEANLINE

- Smooth cleanline body profile cylinder, double acting with 5/2 or 5/3 glandless spool integral valve
- Pneumatic cushioning and magnetic piston as standard
- Reed or Solid State switches are integrated and adjustable
- Multipole connection, M12 x 8 pin
- Hygienic design according to EN1672-2
- IP67 Protection Class
- Cylinder and mountings conform to ISO 15552

PRA/862000/M – IVAC INDUSTRIAL

- Smooth semi-cleanline body profile cylinder, double acting with 5/2 or 5/3 glandless spool integral valve
- Pneumatic cushioning and magnetic piston as standard
- Reed or Solid State switches can be mounted flush with the profile
- Solenoid connection DIN EN 175301-803 Form C
- IP65 Protection Class
- Cylinder and mountings conform to ISO 15552

OPTIONS						
Cylinder diameters	32mm	40mm	50mm	63mm	80mm	100mm
Stroke Lengths	25mm to 1000mm					
Valve Functions	5/2 solenoid/spring		5/2 solenoid/solenoid		5/3 APB or COE	
Switch Functions	Reed or Solid State in adjustable positions					
Cylinder options	Extended piston rod, locking unit, piston rod bellow and special wiper seal options					
Piston rod material	Hard chromium plated, stainless steel (Martensitic or Austenitic) or stainless steel hard chromium plated					
Other Options	Non valve versions also available - Please contact your local Norgren technical service					



IVAC CLEANLINE

- M12 Connector cable 2M, 5M, 10M to flying lead
- M12 Connector cable 0.45M to 2 x M12 Connectors – For connection to I/O module

IVAC INDUSTRIAL

- 15mm plugs and cables to DIN EN 175301-803 Form C
- Magnetically operated switches Reed or Solid state. Flying lead or M8 or M12 connection

* Please see data sheets for more information



FOOD & BEVERAGE



RAIL



INDUSTRIAL AUTOMATION

**IN-DEPTH UNDERSTANDING
TO MATCH BREADTH OF SERVICE**

Norgren has a commitment to developing emerging technologies which set new standards for performance.

We focus our expertise in key sectors where our knowledge and understanding of legislation and engineering means we can make a real difference to our customers' business.

These sectors are increasing as we develop new cross-over products and build up a track-record of cost-effective solutions and services.

Using our deep understanding of legislation, standards and specifications, our Engineers and local Key Account Management teams use their expertise to:

- Create tailor-made solutions for individual customers
- Develop 'platform' products that we make available to other businesses in the sector

Currently, our expertise covers the following key sectors:

- COMMERCIAL VEHICLES
- ENERGY
- FOOD & BEVERAGE
- LIFE SCIENCES
- RAIL
- INDUSTRIAL AUTOMATION

IVAC CUSTOMER APPLICATIONS



**PET BOTTLING
MACHINERY – CHINA**

Main Customer Benefits –

- Improved overall aesthetics of the machine with much reduced tubing and cabling
- Lower energy consumption and running costs



**KEGGING /
FILLING MACHINERY – USA**

Main Customer Benefits –

- Reduced installation time
- Reduced washdown time
- Improved machine aesthetics
- Lower running costs



**CONVEYORISED HANDLING
SYSTEMS – GERMANY**

Main Customer Benefits –

- Easier installation and much simplified commissioning
- Lower air usage and running costs

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