

Industrial Automation

IMI Norgren

IVAC Cylinders

Innovation to Reduce Energy
Usage and Operating Costs



Breakthrough
engineering for
a better world

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Breakthrough engineering for a better world

We create solutions for our customers which enable smarter, safer, more productive and sustainable factories, production lines and warehouse operations. Our pneumatic and electric motion systems help machine builders and end users around the world automate and optimise manufacturing and warehousing processes.

We have partnered with customers in industrial automation for over a century, applying our experience and innovation to create lasting value for their businesses. Our solutions support critical industries such as automotive, food and beverage, pharmaceuticals and even the space industry. We support the automation of precision manufacturing, product assembly, testing and packaging.

We use the latest digital technologies in our automation products and constantly innovate in close partnership with our customers. By applying our deep expertise, we can solve their toughest automation challenges, today and tomorrow. Through increased productivity, efficiency and safety, our customers can serve their own customers better, creating sustainable competitive advantage and delivering growth.

Our world-class product portfolio includes IMI Norgren, IMI Bimba, IMI Bahr and IMI Buschjost.



IVAC

We 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 reduced energy costs, reduced downtime, simplification of designs and quicker installation.

The IVAC cylinder answers these needs

A family of products incorporating proven IMI Norgren technologies, IVAC is a weight-optimised ISO-standard actuator featuring an integrated valve and magnetically operated switches for complete actuator control. It can be retrofitted or integrated within new systems and, compared with conventional pneumatic actuator and valve assemblies, 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

Integrated valve actuator control



Cut energy consumption by up to 50%

Innovation to reduce energy usage and operating costs

A unique & sustainable operational improvement

- Reduce operating costs
- Reduce components
- Simplify ordering, installation and maintenance
- Reduce machine downtime
- Ready for predictive maintenance with our M/50 IO-Link capable switch
- Cleanline versions for washdown applications

Saves Air

Consolidation of parts and patent protected design reduces air consumption by minimising dead volume (it only uses the air in the cylinder, NOT the air in the tubing)

Saves Cost

Reduced air means the cost per mm of stroke is significantly reduced (the air savings effectively pay for replacements)

Saves Energy

Lower your energy costs by reducing air consumption and thereby the demand on your compressors. By reducing energy costs and related CO₂ emissions, IVAC helps OEMs and End users meet Energy targets and sustainability KPIs.

Saves Time

Less components, wiring and tubing simplifies design and ordering and allows for quicker installation and commissioning

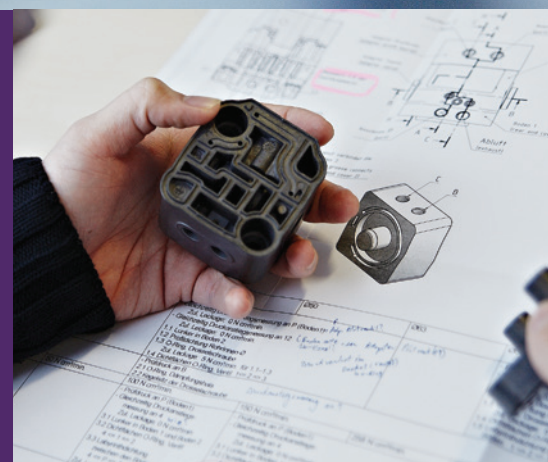
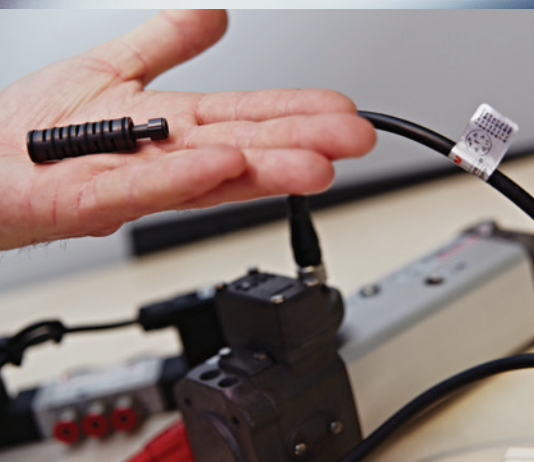


●● IVAC Industrial

IP65, integrated valve & flow controls for fast installation ●●

●● IVAC Cleanline

IP67, integrated valve, switches & flow controls for fast installation and easy washdown ●●



- Adjustable & buffer cushioning for end of stroke damping
- Fully integrated sensor adjustment
- 1 single M12 connection (IVAC Cleanline)
- Fully integrated flow controls

- 1 single air connection, 1 single exhaust port
- Integrated pressure protection
- Long life glandless valve technology
- ISO VDMA footprint

Operating Life

- Life expectation seals:
Stroke < 100 mm : 10 Mio. Cycles
Stroke > 100 mm : 5000 km
- Life expectation solenoid valves:
50 Mio. Cycles

* based on the technical specification in our data sheets

●● IVAC

A sustainable energy improvement ●●

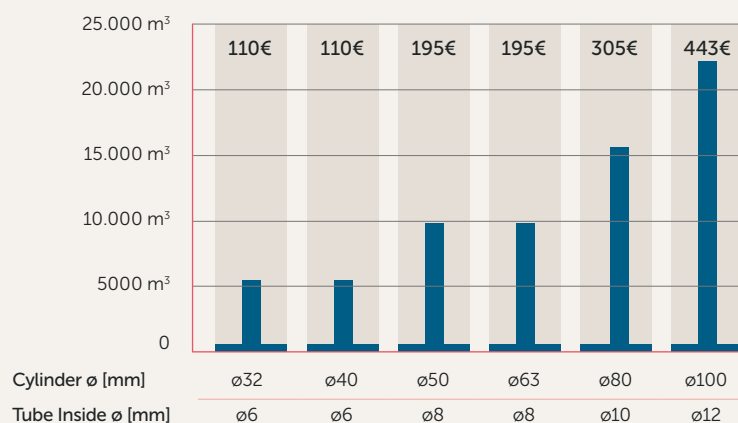
Energy efficient

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/day, 225 days/year, compressed air costs EUR 0.02/m³.



Fully modular design with key benefits

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. Calculations are performed automatically for you.

Improved speed control

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

Reduced cleaning time

Cleanline design with minimal tubing and integrated valves reduces the machine cleaning cycle and increases uptime.

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

Valve Slice

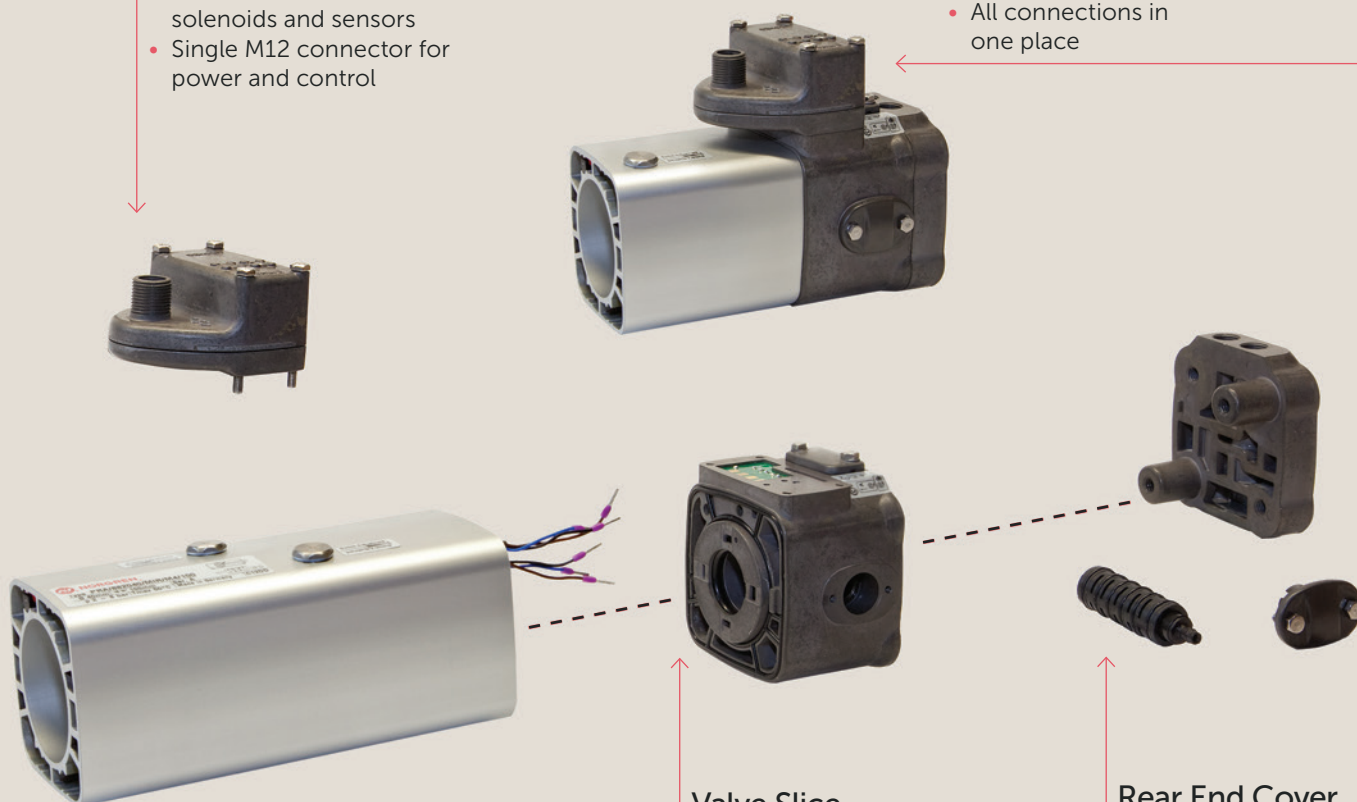
- Interface for electronic / pilot module
- Long life glandless valve technology
- Fully integrated speed regulators 3 + 5
- Common exhaust
- Rear end cushion

Rear End Cover

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

Barrel

- Smooth washdown design
- Switch adjustment



Options and Accessories*

* Based on the technical specification in our data sheets

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

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



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 (Ø32mm with Solid State switch only)					
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					



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.



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

For full machine design flexibility, IVAC cylinders can also be configured without a control valve. If your application is not suited to an integrated valve and actuator but you would still like the benefits of the IVAC cylinder body profile, consider these alternative options:

PRA/822000/M & PRA/822000 Smoothline Cylinder

- Smooth semi-cleanline body profile cylinder
- Pneumatic cushioning and magnetic/non-magnetic versions as standard
- Cylinder and mountings conform to ISO 15552
- Additional ports on rear end cover to enable simpler design, installation and maintenance

PRA/842000/M & PRA/842000 Cleanline Cylinder

- Smooth Cleanline body profile cylinder conforming to EN1672-2 hygienic cleanliness standard
- Integrated adjustable reed or solid state switches
- Cylinder and mountings conform to ISO 15552
- Additional ports on rear end cover to enable simpler design, installation and maintenance



Options

Cylinder diameters	32mm	40mm	50mm	63mm	80mm	100mm
Stroke Lengths	25mm to 1000mm					
Switch Functions	Reed or Solid state switches (integrated or externally mounted)					
Cylinder options	Magnetic and non-magnetic 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					

IVAC – the solution for responsible businesses

Incorporating tried and tested IMI 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.

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.

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 ●●

Sector expertise

In-depth understanding to match breadth of service

We have 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



Food and Beverage



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



Conveyor Systems for Material Handling Germany

Main Customer Benefits

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



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Industrial Automation

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