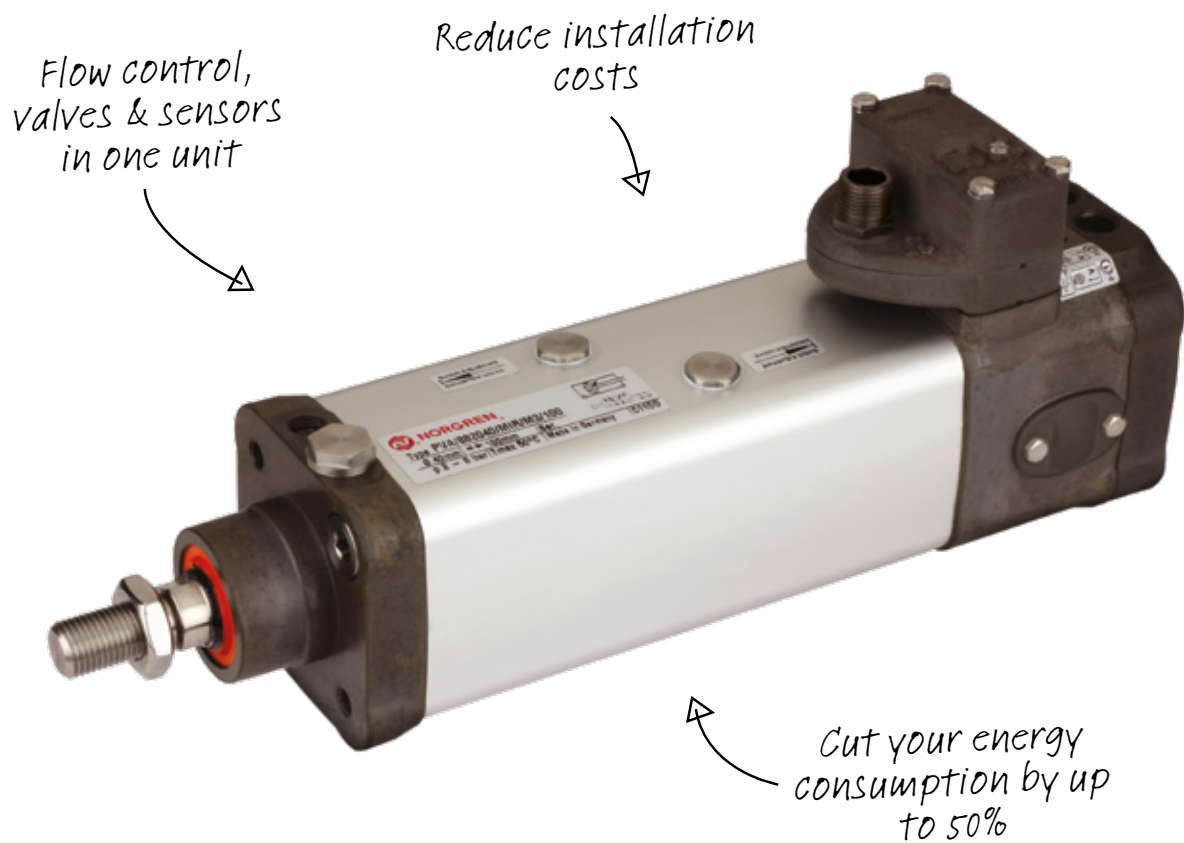




NORGREN

IVAC Cylinders

Innovation to Reduce Energy Usage and Operating Costs



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Breakthrough Engineering for a Better World

Norgren is part of global engineering organisation IMI plc. IMI is at the forefront of delivering the solutions we need in a changing world and is focused on **creating tremendous value by solving key industry problems in attractive markets and employing the best.**

Norgren has a proud history of creating innovative engineering solutions in precise motion control and fluid technology, and we collaborate with our customers across more than 50 countries in critical areas such as Factory Automation, Material Handling, Rail, Energy, Process Control, Life Science and Commercial Vehicles.

From improving speed, productivity, reliability and efficiency of equipment, to generating significant energy and cost savings, or lowering total cost of ownership across many industries, Norgren's high-quality solutions are designed to help customers pursue progress, achieve new goals and overcome problems.

With market-leading industry expertise, we offer the capability, resources, engineering intelligence and global support infrastructure to tackle the largest project demands.

Our world-class portfolio of fluid and motion control products include Norgren, Buschjost, FAS, Herion, Kloehn, Maxseal and Thompson Valves. Supplied either individually or combined into powerful customised solutions to meet customer needs.

Breakthrough engineering you can count on.

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 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

Integrated valve actuator control



Cut energy consumption by up to 50%

**Breakthrough
Engineering
for a Better World**



IVAC Innovation to Reduce Energy Usage and Operating Costs

A unique & sustainable energy improvement

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

Saves Energy

By reducing CO₂ emissions and KW Hrs, IVAC helps towards Energy targets & KPI's

Saves Cost

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


Saves Air

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


Saves Time

Simple selection and ordering with reduced installation and commissioning time

Integrated valve
actuator control



Cut energy consumption
by up to 50%

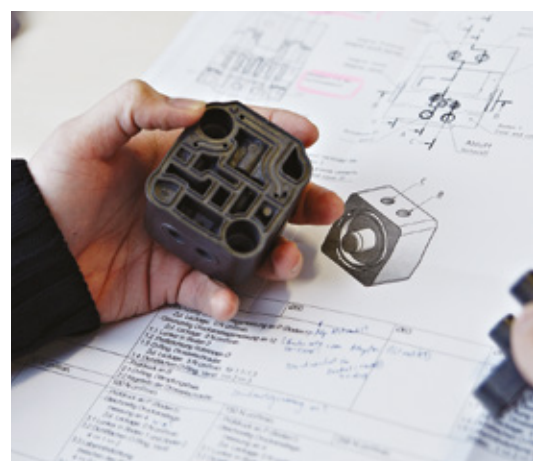


IVAC Industrial

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

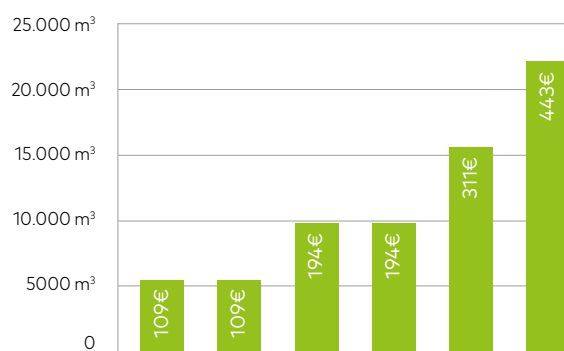
Energy efficient

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.



| Cylinder ø [mm] | ø32 | ø40 | ø50 | ø63 | ø80 | ø100 |
|--------------------|-----|-----|-----|-----|-----|------|
| Tube Inside ø [mm] | ø6 | ø6 | ø8 | ø8 | ø10 | ø12 |

IVAC
A sustainable energy
improvement



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.

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.

Electronic / Pilot Module

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

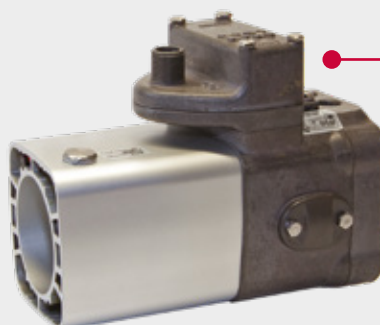


Connection

- 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



**Proven long
life technology**

IVAC – the solution for responsible businesses

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.

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.

Options, variations* & 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



Proven
reliability

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



High efficiency

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 technical service | | | | | |



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

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

Currently, our expertise covers the following key sectors:

- » Commercial Vehicles
- » Energy
- » Food & Beverage
- » Life Sciences
- » Rail
- » Industrial automation



Industry sector
Food and Beverage



Industry sector
Rail



Industry sector
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



Find out more
norgren.com

China

PET Bottling machinery

USA

Kegging / Filling Machinery

Germany

Conveyorised Handling Systems

Norgren operates four global centres of technical excellence and a sales and service network in 50 countries, as well as manufacturing capability in Brazil, China, Czech Republic, Germany, India, Mexico UK and the USA.

For information on all Norgren companies visit

www.norgren.com

Supported by distributors worldwide.

For further information, scan this QR code or visit

www.norgren.com



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Incorporating



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