

Proportional Technology

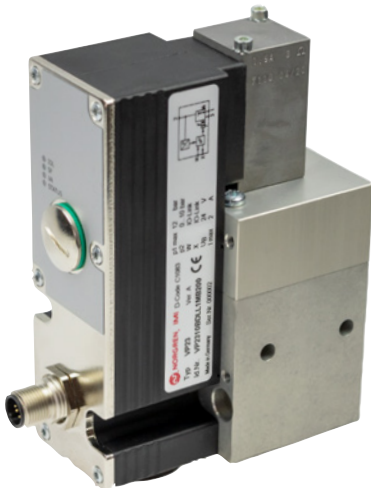
*IO-Link
technology*



High Stability



FAIL-SAFE



ATEX approvals

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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.

Proportional Expertise

Proportional control is essential when you need the flexibility to control the output pressure or flow in an application. This can be achieved with simple programming steps. Norgren offers unrivalled expertise to find the right solution for you. Choose from our extensive range of proportional valves - analogue and digital, open or closed loop, flow or pressure control.

Our pressure and flow control proportional valves incorporate advanced spool and balanced-poppet technologies. Unlike competitor products which rely upon miniature snap-action seats, our valves provide true stepless pressure or flow control. The result is smooth high speed response, low noise, and a long trouble free cycle life.

On-board digital electronics assure maximum flexibility and ease of tuning for specific application conditions. Self diagnostics, optional digital displays, and a variety of Fieldbus interfaces are all benefits of the microprocessor-based design.

Precise closed-loop performance is achieved via internal pressure feedback (pressure control valves).

- » Comprehensive range to meet all application requirements
- » Smooth stepless response for better resolution
- » Quiet and reliable due to pilot valve operation
- » Highly configurable for application specific requirements
- » Short set up time to increase productivity
- » Digital electronics offers multiple interface possibilities

High Speed
Pressure Control
(< 80 ms)



Input Signal and
Output Pressure
Displayed



Food Processing



High Speed Filling Control



Welding System Control

IO-Link Proportional Valves

IO-Link is revolutionising Industrial Automation by offering a standardised communication interface with simple installation and a complete range of diagnostics functionality.

IO-Link is the ideal solution for cost effective, more efficient and reliable production. It enables seamless communication and a powerful infrastructure to manage data through your manufacturing process. Intelligent devices can be used to their full potential with IO-Link, paving the way for Industry 4.0 in Industrial Automation.



- » Remote configuration allows users to set up the device parameters through the control system software, enabling fast configuration and commissioning
- » No external influence of the signal
- » No measured value losses - transmission is digital
- » IO-Link values are digitally transferred from the proportional valve to the PLC. The transferred value is always identical with the measured value.
- » Overall cost savings with IO-Link versus analogue solutions
- » No analogue to digital cards in the PLC
- » No shielded cables

 Find out more
[norgren.com](https://www.norgren.com)

Proportional Pressure Control

VP50 IO-link

Digital 3/2 proportional valve using the proven air piloted glandless spool design of the VP50. IO-link communication provides both control and detailed feedback to the application in real time.

- » Input control signal: IO-Link
- » Feedback signal: IO-Link
- » Output pressure: 0 to 2, 0 to 6, 0 to 10 bar
- » Linearity: < 1% of span
- » Hysteresis: < 1% of span
- » Response time: < 100 ms
(10 to 90% of output pressure, 0.1 litre load)
- » Power Consumption: < 1.0 Watts
- » Supply pressure: up to 14 bar (min. 2 bar above output pressure)
- » Ports: G1/4 or 1/4 NPT or Manifold mount
- » Flow rate up to: 1.000 NI/min
- » Air consumption: < 5 NI/min
- » Operating temperature range: 0 to 50°C

IO-Link

VP50

Three way, closed loop proportional valve using air piloted glandless spool technology. Ideally suited to general purpose industrial pressure control applications requiring high flow and fast response time.

- » Output pressure range: 0 to 2, 0 to 6, 0 to 10 bar
- » Linearity: < 1% of span
- » Response time: < 80 ms
(10 to 90% of output pressure, 0.1 litre load)
- » Power Consumption: < 1.0 Watts
- » Supply pressure: up to 14 bar
(min. 2 bar above output pressure)
- » Supply port: G1/4 or 1/4 NPT or Manifold mount
- » Input control signal: 4 to 20 mA or 0 to 10 V
- » Flow rate up to: 1.400 NI/min
- » Air consumption: < 5 NI/min
- » Enclosure protection: IP65
- » Operating temperature range: 0 to 50°C
- » Hysteresis: < 1% of span
- » ISO 2 manifold option available
- » Vacuum control option available



VP50 IO-link



VP50

VP50S



VP51



VP50S

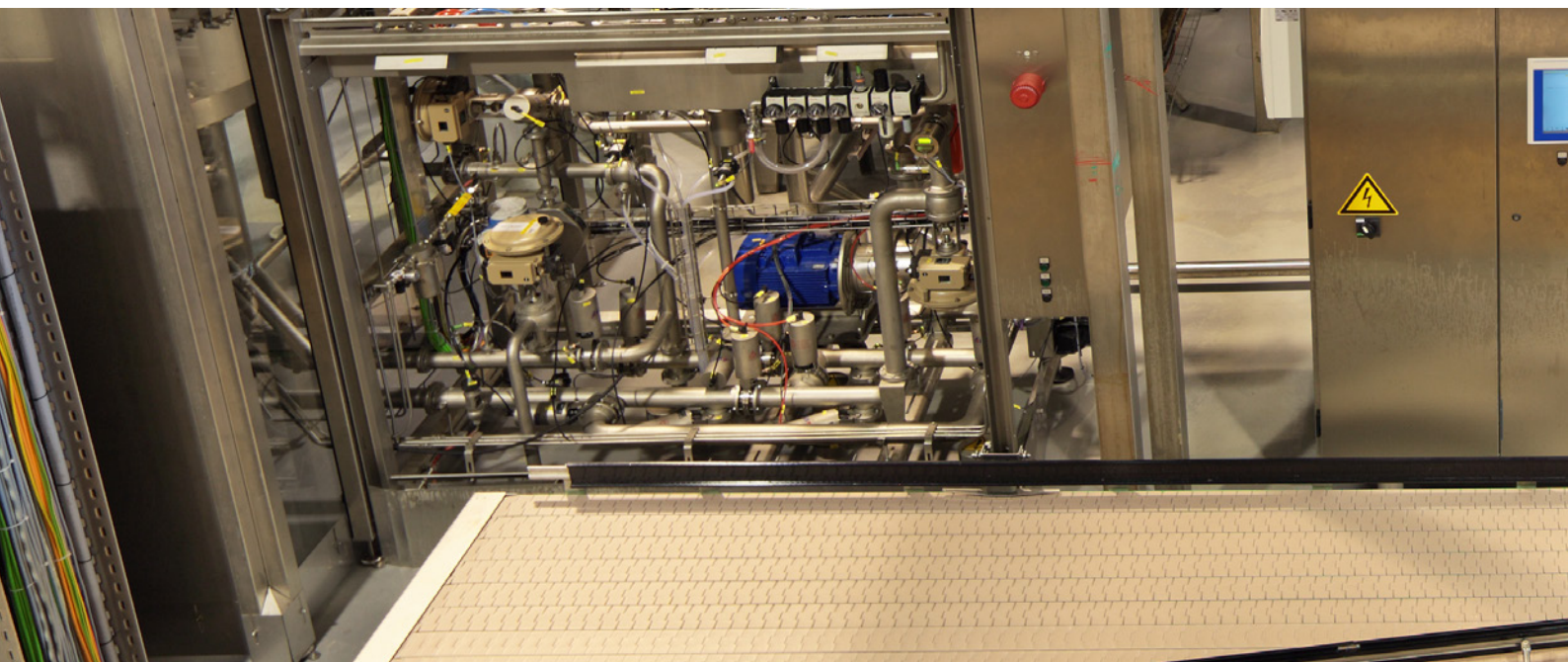
Combination of proven glandless spool valve and air pilot technology with a digital display. Ideally suited to industrial process control applications for ease of installation and life servicing.

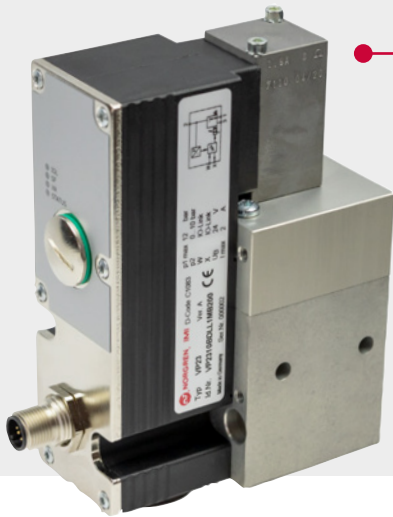
- » Backlit LCD display showing live input signal and output pressure
- » Output pressure range: 0 to 2, 0 to 6, 0 to 10 bar
- » Linearity: < 1% of span
- » Response time: < 80 ms
(10 to 90% of output pressure, 0.1 litre load)
- » Power Consumption: < 1.0 Watts
- » Supply pressure: up to 14 bar
(min. 2 bar above output pressure)
- » Supply port: G1/4 or 1/4 NPT or Manifold mount
- » Input control signal: 4 to 20 mA or 0 to 10 V
- » Flow rate up to: 1.400 NI/min
- » Air consumption: < 5 NI/min
- » Enclosure protection: IP65
- » Operating temperature range: 0 to 50°C
- » Hysteresis: < 1% of span
- » Supplied with M12x1 5-pin connector as standard

VP51

Digital closed loop proportional valve enhancing proven spool and pilot technologies. Digital interface allows end user modification to all parameters including, language, pressure range and response. Ideally suited to general purpose industrial pressure control applications requiring precise customising to ensure optimum system output and quality.

- » Output pressure range: 0 to 6, 0 to 10 bar
- » Supply port: G1/4 or 1/4 NPT or Manifold mount
- » Flow rate up to: 1400 NI/min
- » Air consumption: < 5 NI/min
- » Response time: < 80 ms
(10 to 90% of output pressure, 0.1 litre load)
- » Operating temperature range: 0 to 50°C
- » Backlit LCD display showing live input signal and output pressure
- » Language options
- » Selectable pressure units
- » Supplied with M12x1 5-pin connector as standard
- » Password Protection
- » Selectable Reverse Acting





Three way closed loop proportional pressure control valve - VP23 Series



Three way open loop proportional pressure control valve - VP40 Series

VP23

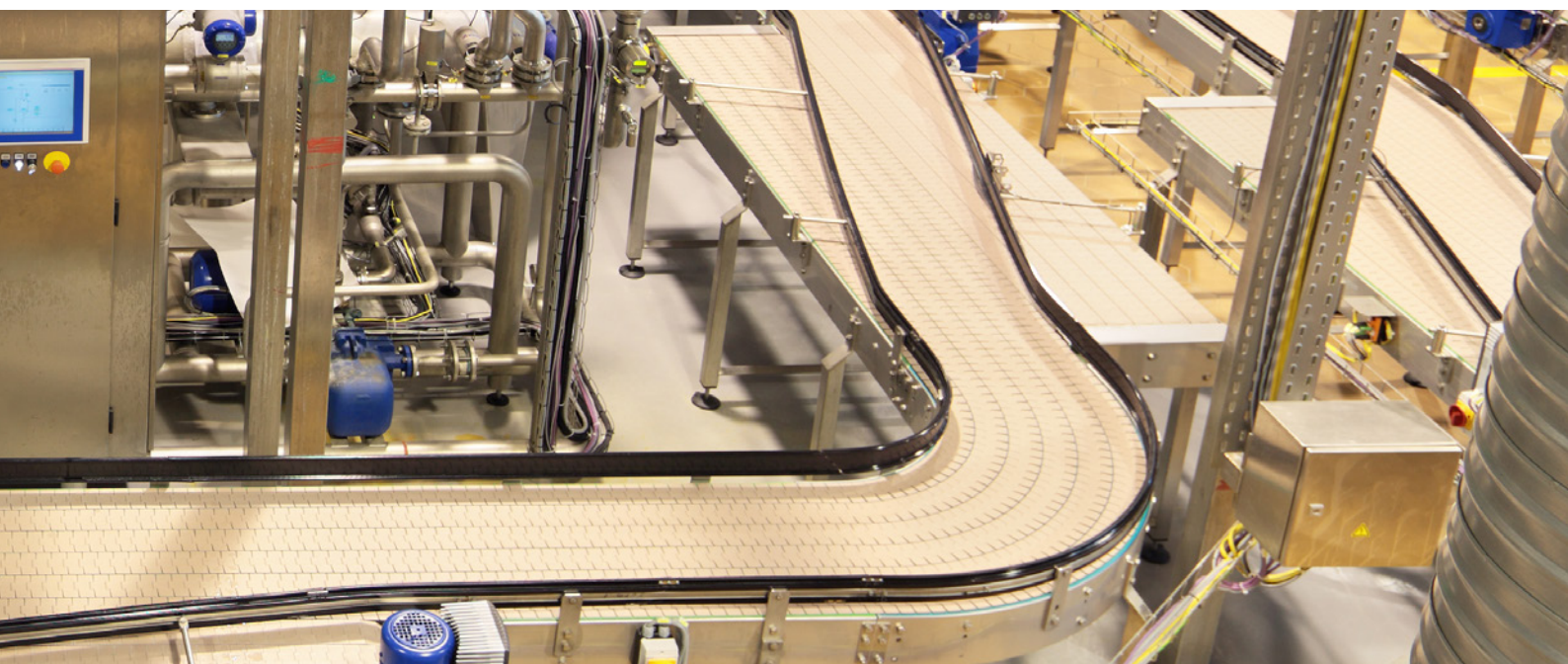
Three way closed loop proportional pressure control valve with microprocessor controlled seat valve. Available in two body sizes ND8 and ND16. Optional Software VP-Tool allows Enduser modification of parameters like pressure range, set point, controller properties. Optional Fieldbus control capability: Two color LED-display.

- » Supply pressure: up to 17 bar
- » Output pressure range: 0 to 2, 0 to 10, 0 to 16 bar
- » Supply port: G1/4 to G3/4
- » Input control signal: 4 to 20 mA; 0 to 10 V or Fieldbus
- » Output signal: 4 to 20 mA and 0 to 10 V
- » Flow rate up to: 16.000 NI/min
- » Air consumption: < 4 NI/min
- » Response time: 100 ms
- » Operating temperature range: -5 to +50°C
- » Linearity: < $\pm 1\%$ of span
- » Hysteresis: < $\pm 0.5\%$ of span
- » Repeatability: < $\pm 0.5\%$ of span

VP40

Three way open loop proportional pressure control valve with directly actuated poppet seat driven by an external power amplifier/drive electronics. Extremely robust, ideally suited to mobile/on vehicle applications. Option for power amplifier/drive electronics to be integrated in the solenoid plug.

- » Output pressure range: 0 to 2, 0 to 6, 0 to 10 bar
- » Linearity: < 1% of span
- » Response time: < 80 ms
(10 to 90% of output pressure, 0.1 litre load)
- » Power Consumption: < 1.0 Watts
- » Supply pressure: up to 14 bar
(min. 2 bar above output pressure)
- » Supply port: G1/4 or 1/4 NPT or Manifold mount
- » Input control signal: 4 to 20 mA or 0 to 10 V
- » Flow rate up to: 1.400 NI/min
- » Air consumption: < 5 NI/min
- » Enclosure protection: IP65
- » Operating temperature range: 0 to 50°C
- » Hysteresis: < 1% of span
- » ISO 2 manifold option available
- » Vacuum control option available





Minature proportional valve - VP12 Series



Low power proportional valve - VP10 / 100X Series

VP12

Minature proportional current to pressure and voltage to pressure converters. Using proven low Power Pilot Technology. Suited to applications where size matters.

- » Supply pressure: 10 bar
- » Output pressure range: 0.2 to 8.0 bar
- » Supply port: G1/8 or 1/8 NPT or Manifold mount
- » Input control signal: 4 to 20 mA, 0 to 10V
- » Flow rate up to: 200 NI/min
- » Air consumption: < 3.0 NI/min
- » Enclosure protection: IP20
- » Response time: < 0.5 second
- » Operating temperature range: 0 to +60°C
- » Linearity: < 1.5% of Span
- » Hysteresis: < 1.0% of Span
- » Power Consumption: < 1.0 Watts

VP10 / 100X

Low power proportional current to pressure and voltage to pressure converters. Reliable, rugged, open loop control. ATEX certified units are available as intrinsically safe. Suited to both Industrial and Process control applications.

- » Supply pressure: 13 bar
- » Output pressure range: 0.2 to 8.0 bar
- » Supply port: G1/4 or 1/4 NPT
- » Input control signal: 4 to 20 mA, 0 to 10 V
- » Flow rate up to 300 NI/min
- » Air consumption: < 9.0 NI/min
- » Enclosure protection: IP65
- » Response time: < 0.5 second
- » Operating temperature range: -40 to +85°C
- » Linearity: < 0.5% of Span
- » Hysteresis: < 0.5% of Span
- » Power Consumption: < 1.0 Watts

Process Pressure Control

Type 140 Fail Safe

Proportional current to pressure closed loop converter, intrinsically safe with ATEX, FM and CSA approvals. Fail safe operation so that in the event of a control signal failure output pressure falls to zero. Ideally suited to process control applications in hazardous environments where certified products are required.

- » Supply pressure: up to 10 bar
- » Output pressure range: 0.2 to 2 bar
- » Supply port: G1/4 or 1/4 NPT
- » Input control signal: 4 to 20 mA
- » Flow rate: up to 300 NI/min
- » Air consumption: < 2.5 NI/min at 50% input control signal
- » Response time: < 1 second
- » Operating temperature range: -40 to +85°C
- » Linearity: average < 0.1% of span
- » Hysteresis: average < 0.1% of span
- » Power Consumption: < 0.13 Watts
- » Certification ATEX, FM, CSA
- » Marine Approvals: DNV-GL, BV

422IS Fail Freeze

Uniquely available as the only ATEX Intrinsically Safe fail freeze proportional valve in the world; ATEX IS means that this device can operate safely in hazardous environments and can even pilot flammable media such as natural gas or methane.

- » Supply Pressure: 4 bar max.
- » Output Pressure Range: 0.2 to 1 bar
- » Supply port: G1/4 or 1/4 NPT
- » Input Control Signal: 4 to 20 mA
- » Flow rate: up to 250 NI/min
- » Enclosure protection: IP65 with piped exhaust
- » Operating Temperature range: -10 to +70°C
- » Linearity: less than 0.5% of span
- » Hysteresis: less than 0.5% of span
- » Power Consumption: < 0.15 Watts
- » Certified: ATEX IS
- » Options: Captured Bleed, Conduit, etc.

Type 220 Modular I/P Pilot

The Type 220 is an extremely low power pilot technology designed for use within a wide array of custom pneumatic systems. The patented design and operation of this open loop pilot means that it can accurately control in excess of 1 bar pressure whilst using just 6 milliwatts of power. This extreme low power capability makes the technology easily certifiable and allows designers greater flexibility when developing their systems electrical parameters.

- » Supply Pressure: 10 bar max.
- » Output Pressure Range: 0 to 1 bar
- » Input Control Signal: 0 to 1.7 mA
- » Response: < 650 ms
- » Operating Temperature range: -40 to +85°C
- » Temperature sensitivity: < 0.2% span/°C
- » Linearity: less than 2.0% of span
- » Hysteresis: less than 0.35% of span
- » Air Consumption: 1.5 NI/min
- » Power Consumption: < 6 milliwatt
- » Base design: System Specific
- » Electrical Connections: System Specific



Type 140
Fail Safe



422IS Fail Freeze



Type 220
Modular I/P Pilot



Proportional High Pressure Control

Proportional Pressure Control Valves

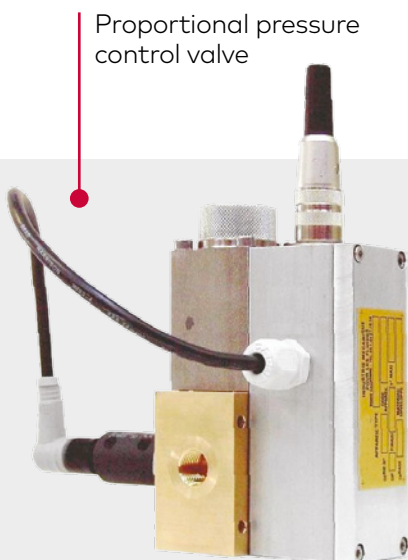
Three way, closed loop proportional valves with integrated 25 micron filters, typically used to control the pilot pressure on high pressure dome loaded regulators. Ideally suited to control the pressure on PET blowing systems and gas pressure control on laser cutting machine tools. Proven technology, compatible with most common industrial gases.

- » Port sizes: 1/4" or flange mounted directly on dome loaded regulator
- » Pressure range: Up to 420 bar
- » Temperature range: -20 to +80°C
- » Control signal: 4-20 mA or 0-10V
- » Internal closed loop control
- » Body Materials: Brass or Aluminium bronze

Dome Loaded Regulators

Dome loaded regulators control the outlet pressure over a range of varying inlet pressures and flows. Force is applied to the control element (diaphragm or piston) by pressure inside the dome of the regulator. The pilot pressure can be applied from a proportional valve, or a small low flow spring loaded regulator.

- » Particularly suited to high flow applications
- » Can be remotely electrically adjusted by using a proportional valve
- » Port sizes: 3/8" to 3"
- » Pressure range: 100 to 420 bar
- » Flow rate: up to 10.000 Nm³/h
- » Temperature range: -20 to +80°C
- » Body materials: Aluminium bronze, Brass or Stainless Steel



Proportional pressure control valve

temp. range:
-40 to +150°C

port sizes:
1" to 4"



Dome loaded regulator

output pressure;
0.5 to 300 bar



Proportional Flow Control

VP60

5/3 open loop proportional flow control valve. Direct operated spool with microprocessor driven position control. Closed loop on request. Excellent regulation of the centre position (very small overlap). Optional Software VP-Tool allows Enduser modification of Parameters like center position, valve function, set point.

- » Supply pressure: -1 to 16 bar
- » Supply port: G1/4; 1/4 NPT; ISO1
- » Input control signal: 4 to 20 mA, 0 to 10 V, -5 to +5 V
- » Flow rate up to: max. 5.000 l/min
- » Air consumption centre position: Typical 8 NI/min
- » Response time: 5 ms
- » Operating temperature range:
Ambient: 0 to +60°C, Medium: +5 to +60°C
- » Shock resistance: DIN EN 60068-2-67, 30 g/18 shocks
- » Several valve functions (5/3; 3/2; 2/2)
- » Service life: > 250 million full stroke

82880

Motorized 2/2 open or closed loop proportional valve controlling the flow of media via rotating ceramic discs, suitable for use with fluids or gases down to vacuum pressure. The motor can be either DC synchronous or stepper designs, driving the disc through a low-backlash gear.

A new stepper motor 9668 that fits with the 82880 Buschjost range and which is used in the majority of cases, was entirely redeveloped and comes with a wealth of new features.

- » Motor is factory-calibrated to improve the control characteristics
- » It detects "stiction" and adjusts torque automatically up to the 2.5 fold
- » Position feedback can be set to 0-20 mA or 4-20 mA
- » Supply voltage is 24 Volts



5/3 open loop
proportional flow control
valve - VP60 Series

Motorized 2/2 open or
closed loop proportional
valve - 82880 Series



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.

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Incorporating



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