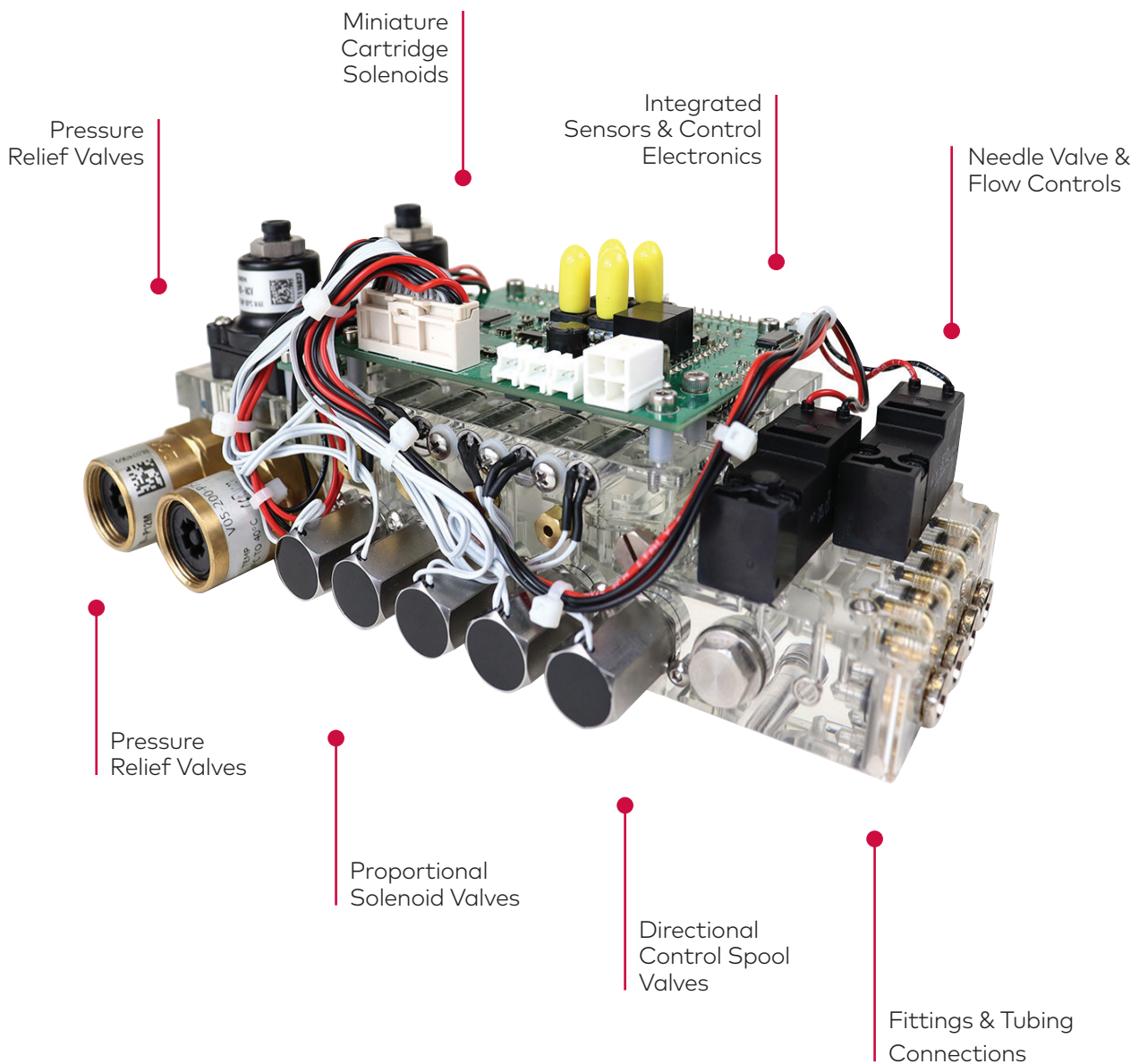




NORGREN

Manifolds

Small Footprint, Big Functionality



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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, Bimba, Buschjost, FAS, Herion, Kloehn and Maxseal. Supplied either individually or combined into powerful customised solutions to meet customer needs.

Breakthrough engineering you can count on.



Providing Industries Fluid Control Solutions for over 45 years



Find out more
norgren.com



Innovation & Technical Excellence

Norgren's manifolds are constructed incorporating the **latest technologies and production techniques** and available in a variety of materials. Whether you need a simple machined manifold or a fully integrated fluidic circuit in a multi-layer manifold, Norgren's team of experienced engineers and technicians design and build a manifold specific to your unique application requirements.

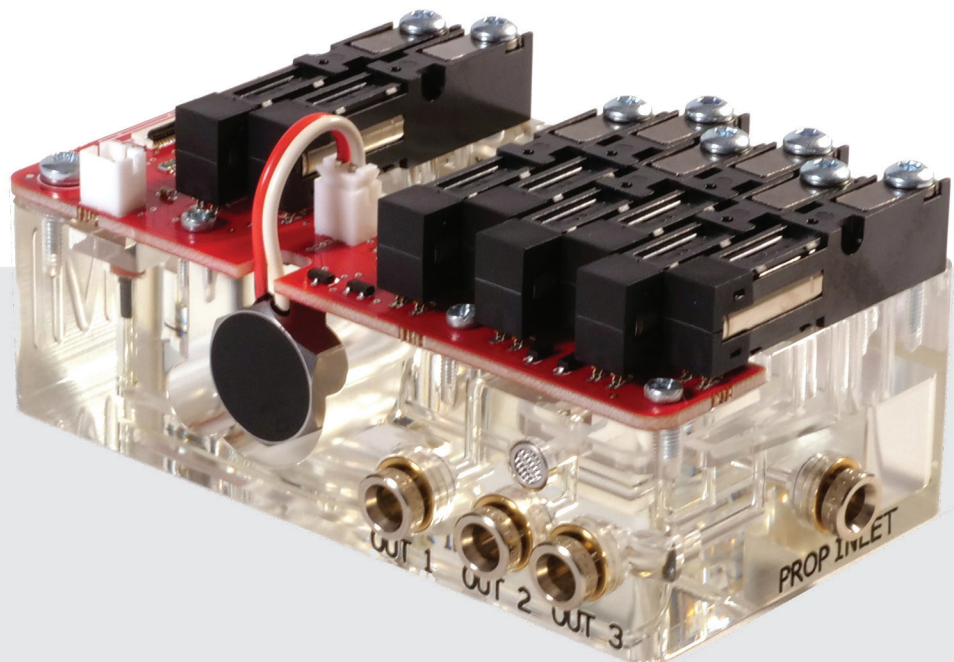
Exceptional Local Service

We're a global business with extensive resources, but our focus is always local. Whether you're being helped by a Key Account Manager or working directly with one of our design engineers, we will work with you and your team to determine the best solution for your challenge.

High Performance Products

With our extensive selection of products, we will be able to design a manifold solution that will deliver some or all of the following advantages.

- » Reduce overall solution footprint and weight
- » Eliminate potential leak paths
- » Integrate multiple discrete components such as fittings, valves, pressure regulators, check valves, restrictors, filters, pressure and flow sensors
- » Incorporate complex pneumatic and/or fluidic circuits directly into the manifold
- » Allow for the maximum number of components on a given manifold face (high density of fluidic circuits)
- » Consistently maintain the exact fluidic volume between discrete components
- » Eliminates potential dead spaces within the manifold
- » Improved reliability
- » Complex multi-directional flow paths



Multi-station Manifolds

Multi-station Manifold Solutions

- » Customer selectable materials, ports, fittings and electrical connectors
- » Proven designs
- » Fast turnaround



Custom Integrated Manifolds

Custom Machined Solutions

- » Improved reliability
- » Simplified designs
- » Reduced complexity
- » Out of the box ready



Multi-stage CO2
Pressure Regulator

Integrated Bonded Multi-layer Manifold Assemblies

Custom Multi-layer Solutions

- » Simplified designs
- » Reduced overall footprint
- » High density fluid circuitry
- » Integrated control components



Standard Manifolds



Norgren's standard manifolds are available in a number of materials and porting configurations. Opt for a multi-station manifold assembly with your choice of valve and we will do the rest.

Manifold for KIP Series Solenoid Valves

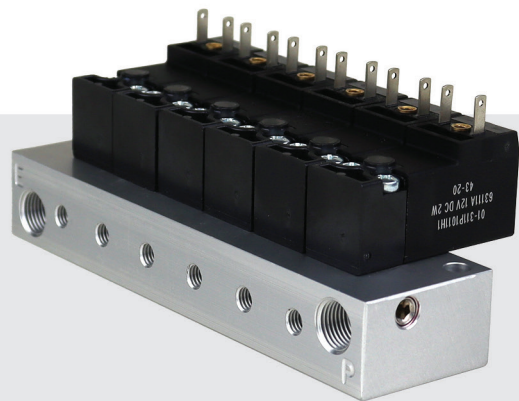
- » For KIP Series 1, 2, 3, 6, 9
- » Up to 16 stations*
- » 2/2 and 3/2 valve operation
- » Stainless steel, brass, aluminum and Delrin® polymer base material



*16 station manifold available with Series 1 and 2

Manifolds for Sub-base Mounted Solenoid Valves

- » For FAS and Norgren Pneumadyne Series 10 and 15mm valves
- » Up to 10 stations
- » Anodized aluminium construction
- » 2/2 and 3/2 Valves



Breakthrough
Engineering
for a Better World





Creating Your Custom Manifold

Create your custom manifold solution with the help of Norgren's design engineers. Our engineers can design a custom fluidic solution for you from the ground up, or work directly with your engineering team to implement your design.



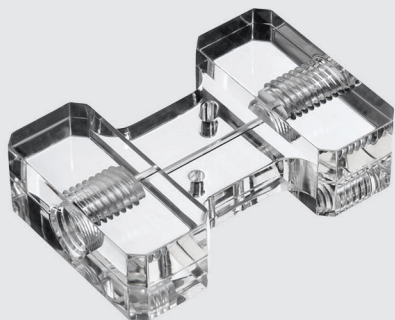
Contact Norgren for a design consultation today!

How to build your manifold

- » Choose a material specific to your application requirements
- » Determine ideal construction and bonding method for your design and material choice
- » Select from Norgren's full product suite of valves, regulators, fittings, switches, sensors, controls, and custom components

Material Options

Manifolds can be made from a variety of materials. Norgren can help you **select** the most suitable material for your application and media

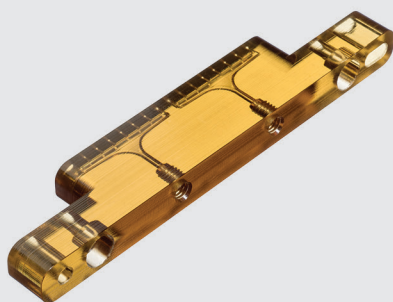


Acrylic, PMMA

Acrylic manifolds are commonly utilized because of their exceptional value, transparent optical qualities and consistent bonding properties

Polycarbonate

Polycarbonate is tolerant to a greater temperature range and has better chemical compatibility than Acrylic



Tecadur®

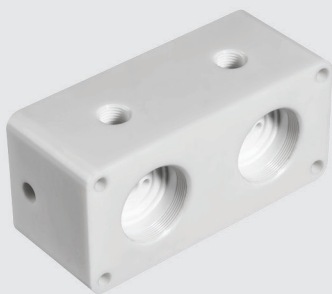
Tecadur is a durable transparent copolyester with chemical resistance to many acids, chlorine (bleach) and caustics

Ultem®

Ultem manifolds are resistant to many chemicals and are able to withstand high temperatures

PEEK®

PEEK® manifolds offer the highest heat and chemical resistance of any polymer based manifold



PVC, CPVC

Machined PVC and CPVC manifolds can be NSF rated and are ideal for potable water applications

Other Plastics

Drilled manifolds can be manufactured using any machinable plastics including Delrin®, Polyethylene, Teflon® etc



Metals

Manifolds can be machined in stainless steel, aluminum and brass in a variety of formats

Special Materials

Other materials can be machined on request



Construction and Bonding Methods

Norgren's design team will help **determine the optimal manifold solution** for your application and pricepoint.

Multi-layer Bonded

Multi-layer manifolds are constructed by machining flow paths into individual layers and bonding them together. They offer precise and compact flow paths, and a much greater degree of design flexibility than cross drilled designs. Laminated manifolds are available in Acrylic, Ultem®, Teflon®, and more.

Drilled

Cross drilled manifolds are machined from a single block and are available in a variety of material options. They offer excellent pressure and flow capacities, and can be machined to interface with a near infinite number of valves and components.

Bonding Technologies

Laser Bonding

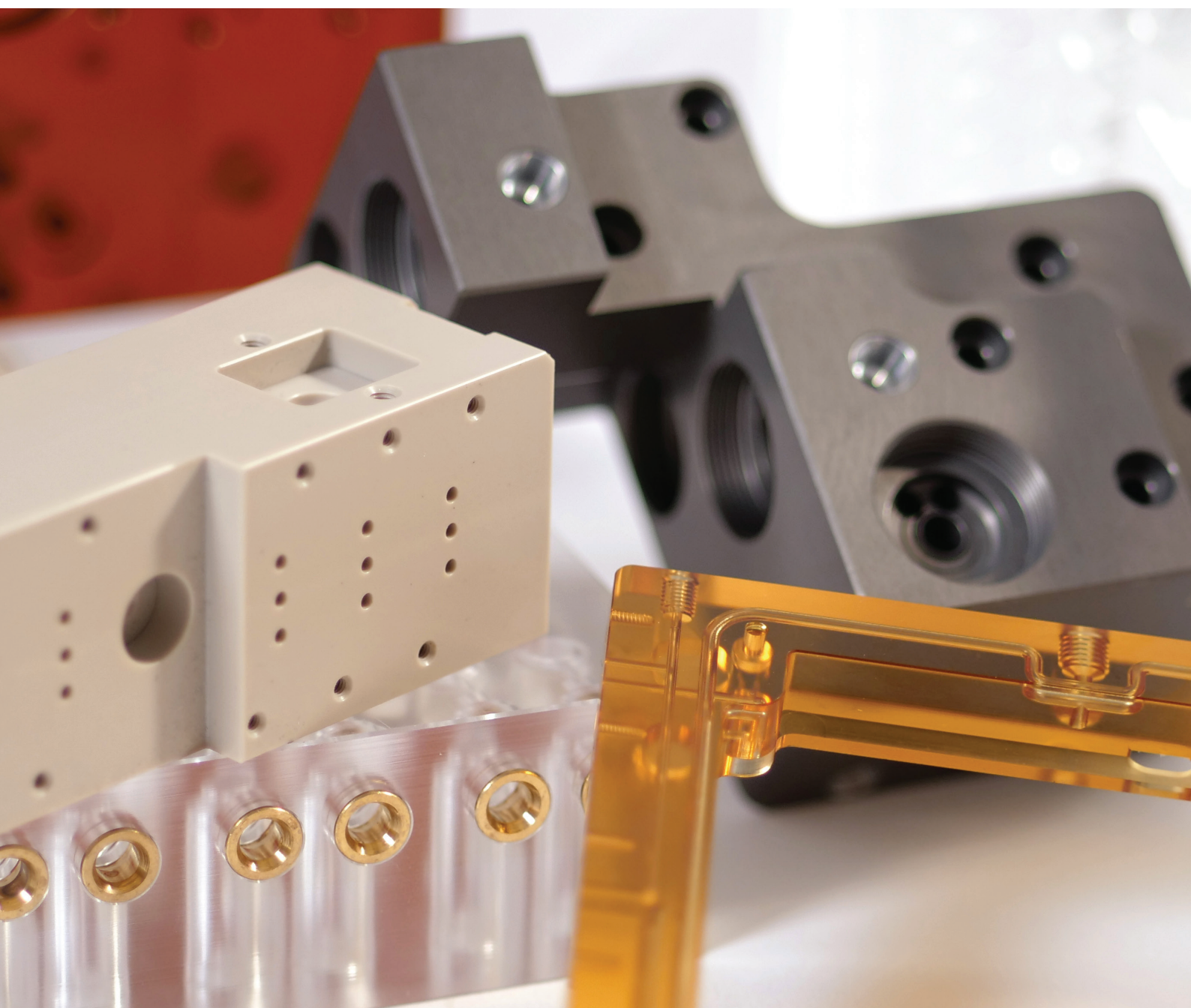
Manifold layers are fused together utilizing a laser, preventing distortion of fluid channels.

Diffusion Bonding

Manifold layers are fused together utilizing pressure and heat.

Solvent Bonding

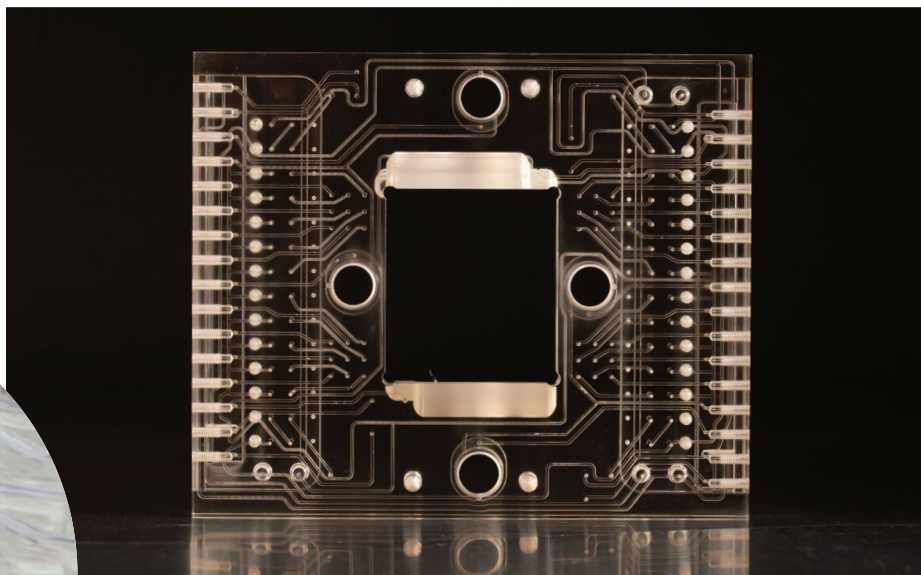
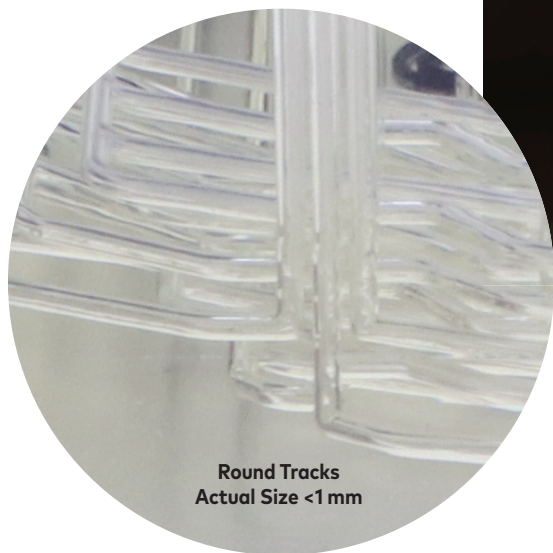
Manifold layers are fused together using a solvent that joins the faces together.



Complex Design - Superior Results

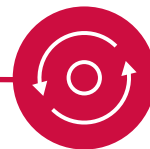
Advantages of Laser Bonding

Laser bonding technology has a direct impact on the quality and performance of multi-layer manifold technology. Laser bonding precisely bonds transparent polymers without deformation of flow paths. Manifolds can be designed with smaller and more complex fluidic circuits, creating design flexibility and expanding the capabilities of OEM equipment designs.



System Miniaturization

Reduce overall system footprint by allowing the miniaturization and integration of multiple circuits and functions in a compact manifold.



Repeatable Results

Laser bonding techniques offer repeatable bonding results for unrivaled quality.



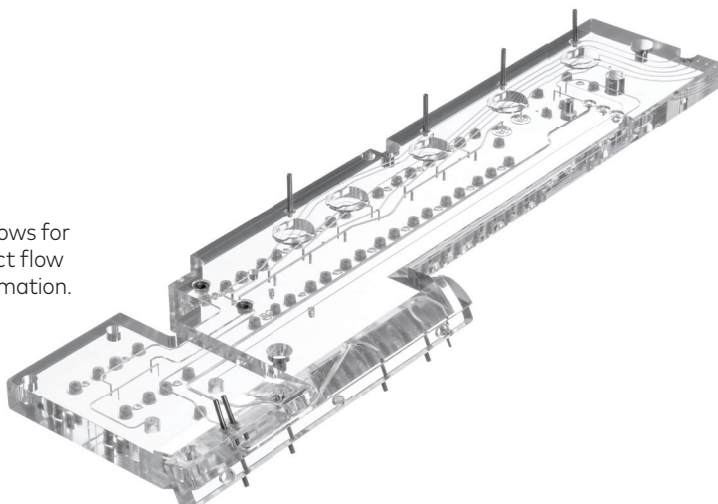
Production Capabilities

Designs optimized for laser bonding can enter production faster and can be produced at higher volumes than manifold designs utilizing diffusion bonding.



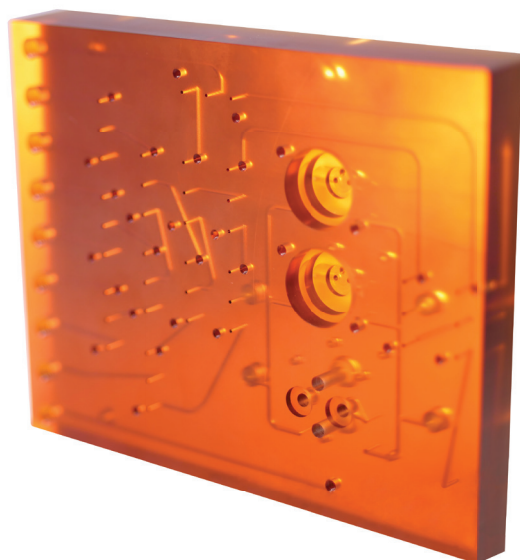
Precision

Precision bonding allows for complex and compact flow paths without deformation.



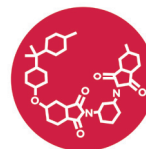
Diffusion Bonding

When bonding materials in which laser bonding is not permissible, customers can opt for diffusion bonding. Diffusion bonding uses heat, pressure and time to bond materials at a molecular level. Diffusion bonding is ideal for materials with low laser transmission like Ultem® and PEEK®.



Material Options

Diffusion bonding enables precision bonding of non-transparent materials.



No Chemical Additives

Diffusion bonding creates a pure molecular bond without solvent or other chemicals.

Solvent Bonding

Acrylic and other polymer materials can be bonded by using solvents to soften and join layers together. Solvent bonding is effective for simple manifold designs with large features and in situations where slight variations of flow path are acceptable.



Large Design Features

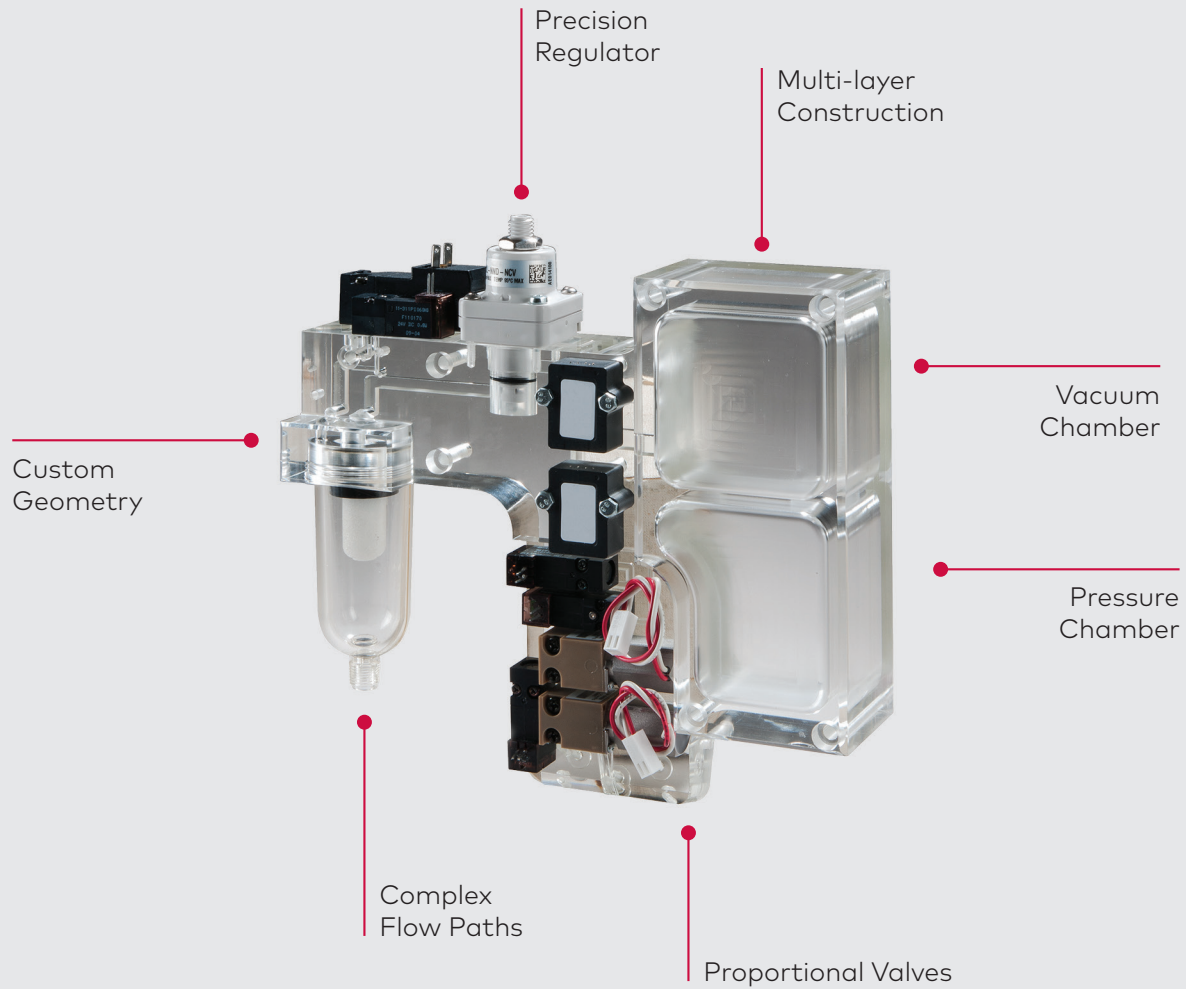
Solvent bonding is able to accommodate large machined features.



Manufacturing Volume

Manifolds can be built in high volumes due to the simplicity of the solvent bonding process.





Build Your Integrated Sub System

Norgren's manifolds enable component integration for a compact, clean, and manageable package.

These products represent some of the unlimited component possibilities.



Fluid Control Products

- » High flow proportional controls
- » Low watt digital solenoids
- » 2/2 and 3/2 Media Separated Valves

FLATPROP
Miniature
Proportional
Valve



CHIPREG
Miniature Mass
Flow Controller



FLEXISOL
Miniature
Valve



CHIPSOL
8mm Valve



Rotary
Valves



Fluid Preparations

- » Precision and manifold mount pressure regulation
- » Oxygen compatible
- » Filtration down to 0.01 micron

Filter
Elements



Miniature
Regulator



Precision
Regulator



Miniature
Relief
Valve



Fitting and Accessories

- » Cartridge, threaded or coupling designs
- » Easily connected
- » Check and relief valves

Barbed
Fittings



Push to
Connect
Fittings



Cartridge
Fitting



Elbow
Fittings

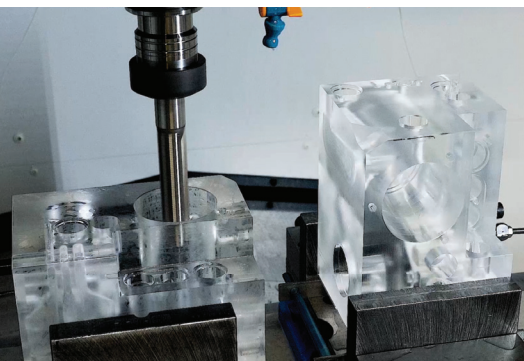


Manufacturing Capabilities

Let Norgren build your integrated manifold solution utilizing our suite of high quality components and advanced manufacturing



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



In-house Machining
and Bonding

Clean Room
Build Options

Manifold Assembly
& Testing

Customer Applications



Rail

Customer Challenge

- » Low profile air horn control
- » In-field adjustable

Our Solution

- » Low profile for ceiling mounting
- » Wide range operational range



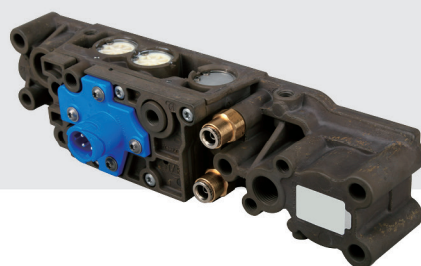
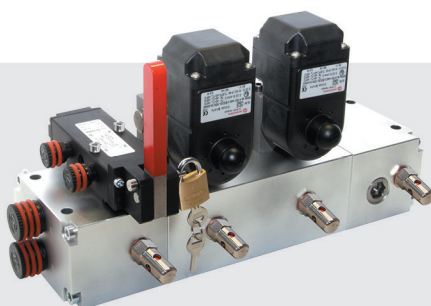
Energy

Customer Challenge

- » Simple to maintain system
- » Meet certifications levels

Our Solution

- » Serviceable design
- » Fully certified components



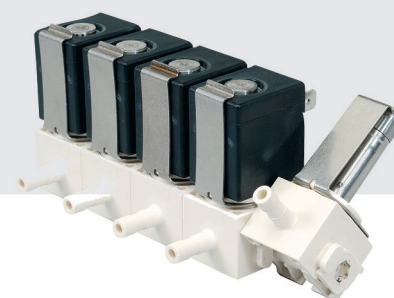
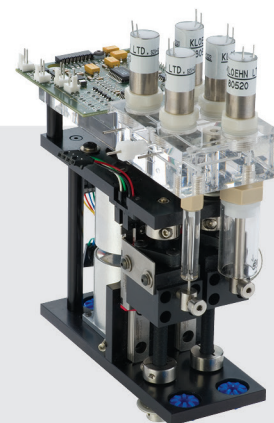
Life Sciences

Customer Challenge

- » Small envelope
- » Ensure precise fluid dispense

Our Solution

- » 12-channel syringe pump
- » Simplified fluidic circuit



Industrial Automation

Customer Challenge

- » Reduce leaks
- » Centralized controls

Our Solution

- » Reduced connections
- » Reduced footprint



Commercial Vehicles

Customer Challenge

- » Consolidate air accessories
- » Handling discrete input/output

Our Solution

- » Reduction of potential leaks
- » Faster installations



Food & Beverage

Customer Challenge

- » Small envelope
- » Ensure precise fluid dispense

Our Solution

- » Easy expandability
- » Minimal lime scale for long life

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
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Incorporating



IMI