MK Fluidic Systems
PRECISION · FLUID HANDLING

ISO 13485:2016 · LAS VEGAS, NEVADA

Fluidic components built to your drawing.

Precision fluidic components for diagnostic, life science, and analytical instruments: syringe pumps, glass syringes, rotary & shear valves, probes, manifolds, and tubing assemblies. Engineered, machined, assembled, and tested in the United States.

WHY MK FLUIDIC SYSTEMS

Five reasons OEM engineers move a program here.

Most fluidic components are sold from a catalog, and the instrument gets designed around whatever the catalog offers. We work the other way. You bring the flow path, the envelope, and the chemistry. We build the part that fits it.

01

Custom is the default, not the exception

Our library of syringe, valve, and fitting components is a starting point for your design, not a fixed menu. We change port counts, flow paths, materials, tip geometry, and dead volume to match the instrument. Prototypes run on production equipment, so what you qualify is what we ship.

02

One US facility

Manufacturing, assembly, and final test all happen under one roof in Las Vegas. If you need to talk something through, the engineer, the machine, and the accountability are in the same building.

03

You talk to the engineer, not a sales channel

Send a drawing and an engineer reviews it. Feedback comes in days, not weeks. Minimum order quantities are set to the program you're actually running, including pilot builds and production volumes.

04

Application depth in diagnostics and life science

Low dead volume, carryover, chemical compatibility, freezing and elevated temperatures, high pressure, solvents, volatiles, and gases. We've solved these constraints on production instruments, and we will tell you when a material or a geometry will not hold up.

05

A quality system you can follow

Material traceability, controlled drawings and revisions, documented change control, first article inspection, and validation support.

55,000	ISO 13485	THIRD GEN	In House
SQ FT · LAS VEGAS, NV	:2016 CERTIFIED	KLOEHN FAMILY · FLUIDICS SINCE 1970	DESIGN · MACHINING · ASSEMBLY · TEST

WHAT WE BUILD

Six product families, one integrated fluidic subassembly.

Every family below is machined and assembled in house. Buy a single component, or hand us the whole flow path and take delivery of a tested subassembly with one part number.

FAMILY 01

SureShot™ syringe pumps

Programmable OEM pumps, 50 µL to 50 mL, with 2 to 14 port valve heads. Mechanical only versions available without a PCB. Custom valve and manifold configurations are available to your requirements.

SS3 · SS6 · TRUEPORT™

FAMILY 02

Precision glass syringes

Precision bore borosilicate barrels screened for dimensional accuracy and bore quality, with proprietary tips, plungers, and valve connectors.

CUSTOM · REPLACEMENT

FAMILY 03

Rotary and shear valves

Switching, rotary, distribution, and loop valves up to 20 ports, in PCTFE, PTFE, PEEK, PPS, UHMW-PE, ceramic, and alloy. Driven by the TruePort valve positioner, which holds custom port positions within 1°.

TRUEPORT · 2–20 PORTS · DIRECT FIT

FAMILY 04

Tubing assemblies and fittings

Flanged and flangeless assemblies cut to your lengths, with ID tags and custom connectors when off the shelf will not fit. Tubing materials include FEP, PTFE, PFA, PEEK, PVC, and more.

FLANGED · FLANGELESS

FAMILY 05

Probes, needles, and manifolds

Probes drawn and finished to your geometry, with side venting, multi-lumen bores, cap piercing, and capacitive level sensing. Machined manifolds consolidate shared flow paths into one part.

STAINLESS · ALLOYS

FAMILY 06

Custom modules and service kits

The whole wetted path built as one subassembly, mounted on your bracket, plumbed, flow tested, and labeled. Or every wear part for a service call, packaged and numbered as one kit.

MODULE · PM KIT · SINGLE SKU

PRODUCT · 01

SureShot syringe pumps

High precision liquid handling for OEM life science, diagnostic, and analytical systems, built to last for millions of cycles. Available with a full set of compatible syringes and multi-port valves.

SureShot 3

3 cm stroke

The short stroke frame. Same drivetrain and valve interface in a smaller envelope. Standard resolution 3,000 / 24,000 steps.

SureShot 6

6 cm stroke

The long stroke frame. Twice the travel for larger dispense volumes and higher resolution. Standard resolution 6,000 / 48,000 steps.

Syringe sizes	50 µL – 50 mL
Dispense resolution	sub-µL
Valve ports	2 – 14

COM	RS-232, RS-485, CAN
Connection	DA-15 or flying lead (JST)
TruePort positioning	within 1°

Solid machined frame

Both frames are machined in one operation on a 5-axis mill out of 6061 billet aluminum, then anodized. The single piece construction prevents inaccuracy caused by frame flex.

Drivetrain

A precision lead screw and linear rail hold accuracy across aspirate and dispense. The anti-backlash nut keeps lash out of the system when direction reverses. No routine lubrication required.

Mechanical only version

Either model is available without a PCB. It lowers unit cost and hands control of the motion profile back to your firmware team.

INTEGRATION NOTE

Valve and manifold design, syringe volume, plunger seal, and port mapping are all customizable. Send the envelope drawing and the flow path and we will quote the configuration your instrument needs.

PRODUCT · 02

Precision glass syringes

We use proprietary fabrication techniques to build glass syringes with the precision and accuracy an instrument needs to meet specification. Barrels, tips, plungers, and connectors all come out of our own component library, so an assembly can be tailored to one instrument without starting from zero.

Custom designs

Custom designs turn around in weeks, not months. Our component library covers demanding system specifications without a full new tool, which shortens the design loop

We build for low dead volume, freezing temperatures, high pressure, corrosive environments, solvents, volatile solutions, gases, and elevated temperatures. Everything is manufactured in house under our QMS.

Material selection

Material choice drives lifespan. We work through functionality, chemical compatibility, longevity, and cost with your team before the drawing is fixed, rather than after the first field failure.

Replacement syringes

Send the syringe you use today. We build a replacement that costs less per unit and lasts longer, which lowers the total cost of every instrument you support.

Each glass barrel is inspected on dedicated equipment to ensure accuracy and precision. Optical screening checks bore quality, which impacts syringe seal longevity.

TESTING	
Barrel accuracy	100% inspected
Bore quality	100% inspected
Final product testing	Results with NDA

PRODUCT · 03

Rotary and shear valves

Dedicated machines and tooling let us produce a wide range of rotary and shear valves. Simple or complex, the valve is designed around your flow path and the materials that suit your chemistry, which is what determines cycle life.

Complex configurations

Demand for higher port counts keeps rising as instruments consolidate flow paths. Our equipment machines valves with up to 20 ports, and handles elevated pressures, specialty materials, specific flow paths, and wider temperature ranges. One complex valve often replaces two simple ones.

Direct replacements

Switching, rotary, distribution, and loop valves that drop into instruments already in the field. Choosing the right wetted material for the assay usually extends service interval and cuts unscheduled service calls.

WETTED MATERIALS			
PCTFE	PTFE	PEEK	PPS
UHMW-PE	Ceramic	Stainless steel	Aluminum

Available valve configurations

Our valves are compatible with many existing OEM syringe pumps and valve drivers. Custom port configurations are available when the standard map does not match your flow path.

PORT OPTIONS

VALVE TYPE	TYPICAL USE	PORTS
Distribution	One common port to many outlets	2 – 20
Switching	Reagent or wash line pumping	2 – 4
Loop / injection	Fixed volume sample loading	4 – 10
Rotary shear	High cycle life, low internal volume	2 – 20
Custom port map	Built to your flow diagram	Specify

TO SPECIFY · 01

Flow diagram

Which ports connect in each valve position, and which position is home.

TO SPECIFY · 02

Wetted chemistry

Reagents, solvents, and the temperature range the valve sees in service.

TO SPECIFY · 03

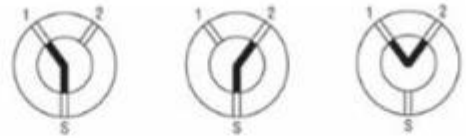
Cycle expectation

Switches per run and the service interval you are designing to.

Send a flow diagram or a marked-up port map and we will confirm the configuration, the wetted materials, and the tooling path before you commit to a drawing revision.

Standard port maps

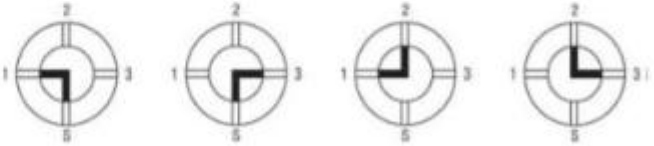
3-Port



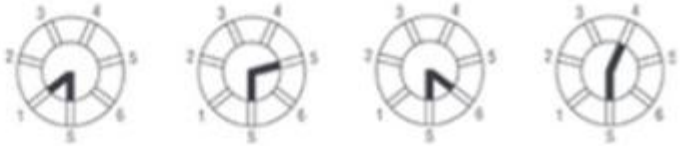
T Valve

3-Port Distribution

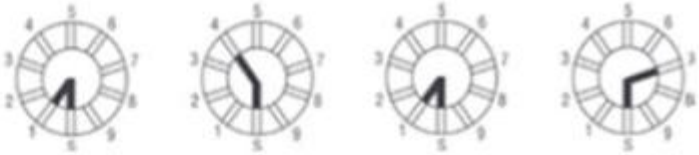
4-Port



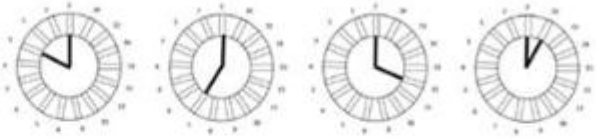
6-Port Distribution



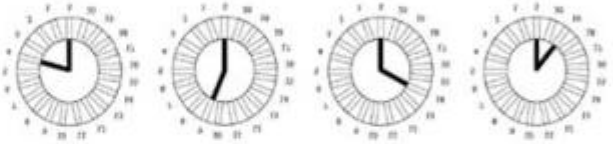
9-Port Distribution



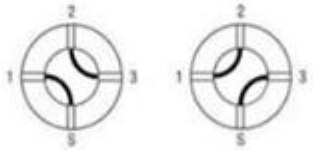
16-Port Distribution



20-Port Distribution



Dual-Loop Valve



Y-Block

PRODUCT · 04

Tubing assemblies and fittings

Tubing kits are built to your specification, including lengths, connectors, and identification tags. The same kit is installed on the line during instrument build and is also supplied later as a service replacement part under the same part number.

Flanged and flangeless

Both fitting configurations are built for OEM customers. When an off-the-shelf fitting does not work, we design, develop, test, and manufacture the connector.

Assemblies are cut to your lengths and tagged, so a field technician never has to measure, trim, or guess; the kit drops in exactly as the original did.

Tubing or a manifold

Tubing suits connections between assemblies that move, and lines where cost-efficient flexibility is needed. A manifold suits short connections packed into a fixed envelope. Most instruments use both, and we build both.

If you are not sure which fits a section of the flow path, send the layout. We'll help determine which one we would build and why.

TUBING MATERIALS				
FEP	PTFE	PFA	PEEK	PVC

WHAT TO SEND

Send a tubing schedule, or a photograph of the assembly you install today with the lengths marked. We will quote it as one numbered kit.

PRODUCT · 05

Probes, needles, and manifolds

Probes with capacitive level detection, side venting, multi-lumen aspirate and dispense, cap piercing, quick disconnects, and reduced carryover. Stainless steel, plastics, and specialty alloys.

Built to the tip geometry

Needle tipping, drawn tips, swaging, centerless grinding, and polishing run in house.

Carryover and service life

Surface finish and coating are specified with the assay in mind, since both drive carryover and probe service life.

MANIFOLDS

One machined block instead of six fittings and five lengths of tube.

Where a flow path is shared, dense, or fixed in place, a manifold does the job a bundle of tubing runs would otherwise do. We design and machine manifolds that distribute, control, and regulate flow inside one part, which removes joints and shortens the path between samples.

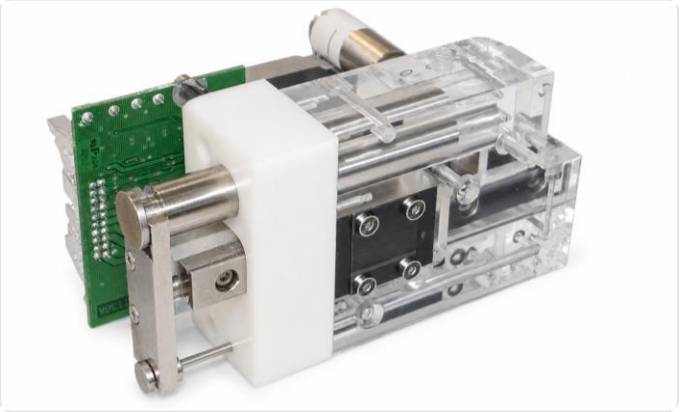
Bodies are machined from PEEK, PEI (ULTEM), and clear acrylic where the flow path needs to be visible. Port threads, O-ring bores, and internal cross-drills are cut in house, so a revision to the flow diagram is a program change and not a new supplier.

PRODUCT · 06

Custom modules and service kits

A module is the whole wetted path built as one deliverable. A kit is every wear part that path needs at its next service call. Both leave here under a single part number, with one drawing and one record behind it.

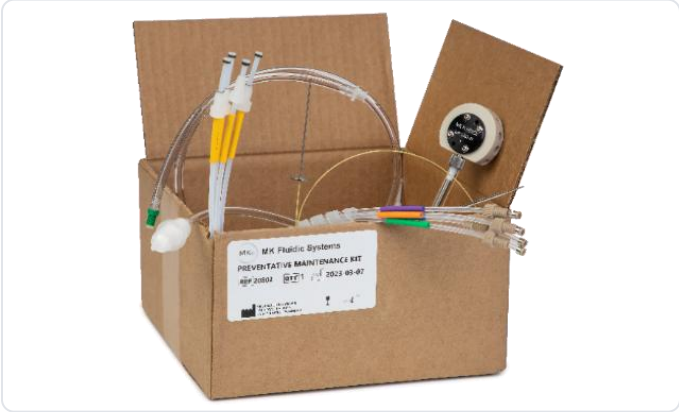
Custom modules



Pump, valve, syringe, manifold, tubing, fittings, and probe arrive mounted on your bracket, plumbed, flow tested, labeled, and packaged to your work instruction. Your line receives one tested module instead of assembling seven components.

We start from your flow diagram and envelope, propose the build, and prototype on production equipment. Once the configuration is fixed it carries one part number, one drawing, one revision history, and one first article report.

Service and maintenance kits



Complete preventive maintenance kits and individual components, each packaged separately with its own part number. Your support team replaces only what the call requires.

Ordering a single packaged kit instead of a list of SKUs lowers unit cost and removes the missing part that turns one service visit into two.

SYRINGES · VALVES · PROBES · NEEDLES · FILTERS · TUBING ASSEMBLIES · ID TAGS

EVERY STEP IN HOUSE

√ Design for manufacture	√ Component fabrication	√ Assembly
√ Flow testing	√ Labeling and kitting	√ Documentation and traceability

WHERE TO START

For a module, send the flow diagram and the envelope it has to fit inside. For a kit, send your current service bill of materials.

QUALITY

The record travels with the part.

Many of our customers are audited, so our quality system is built to support theirs. Documentation is generated as the part is made and guided through your approval process.

Certified to ISO 13485:2016 by BSI

Registered scope: the manufacture of fluid handling components such as syringes, valves, fittings, tubing assemblies, probes and sub-assemblies for the medical devices markets.

One system for every part we ship. Life science, analytical, and industrial programs run through the same traceability, inspection, and change control.

Traceability

Raw material certifications, lot control, and build records tie a finished component back to the material it came from and the operations it passed through.

Document and change control

Controlled drawings, revision history, and engineering change orders with review and approval before a change reaches the floor.

Inspection

First article inspection, in-process checks, and dedicated equipment for inspection. Calibrated instruments on a scheduled interval.

Validation support

Protocol support and documented evidence for your IQ, OQ, and PQ activities, plus nonconformance and corrective action records you can review.

DOCUMENTATION PACKAGE — AVAILABLE WITH ANY PROGRAM

What we can send with the part

- → Certificate of conformance referencing the lot
- → First article inspection report
- → Shipment traceability
- → RoHS and REACH declarations
- → Raw material certifications
- → Performance test results
- → Protocol support for your IQ, OQ, and PQ

START A PROGRAM

Send the drawing. Talk to an engineer.

Send a part drawing, a flow diagram, or a photograph of the component you are replacing. An application engineer reviews it and comes back with questions, a manufacturability read, and a quote.

→ QUOTES RETURNED WITHIN ONE WEEK

We started MK Fluidic Systems in 2012 to build fluidic components in the United States, on equipment we own, in a building we run. Our company is the third generation of the Kloehn family in the industry.

SALES	MAIN	EMAIL
702-622-6262	702-243-0464	info@mkfluidics.com

SEND WITH YOUR INQUIRY

- → Drawing or flow diagram, any revision
- → Wetted chemistry and temperature range
- → Annual volume and first build date
- → The part you are replacing, if there is one

FACILITY

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Las Vegas, Nevada 89144