Precision Valveless Metering Pumps and Dispensers

- **Quality**
  - 100% Quality. 100% On Time Delivery.

- **Applications**
  - Medical: For precise dispensing, aspirating, rinsing, mixing systems and syringe pump replacement in diagnostic, clinical chemistry and medical equipment manufacturing.
  - Spraying Systems: For injection of insecticides, herbicides, and agricultural nutrients, as well as for ULV spray equipment.
  - Environmental & Pollution Control: For sampling stack gases, ground water & wastewater, as well as injection of monomers, polymers, and chemicals for water & waste treatment, TCLP and more.
  - Food & Dairy: For candy coating and polishing, as well as vitamin fortification, addition of flavors, colors, preservatives and a variety of other ingredients used to enhance food products.

- **Why FMI?**
  - Ultra-Precise Fluid Control. From Sub-Microliters to Liters
  - Patented “No-Valve” Design
  - One Moving Part!
  - Proven Performance!
  - Precision, Accuracy & Reliability

- **How Our Pump Works**
  - The valveless pumping function is accomplished by the synchronous rotation and reciprocation of a ceramic piston in a precisely mated ceramic cylinder liner.
  - One complete piston revolution is required for each suction/discharge cycle.

- **Who We Are**
  - FMI pioneered the first patented valveless rotating and reciprocating piston metering pump concept and has been delivering pumping excellence and precise fluid control for over 59 years.

- **Engineering & Development**
  - Our Engineering Team incorporates over 59 years of OEM design experience to meet specific customer & application requirements. With this knowledge and the necessary tools, we make sure our pumps meet or exceed expected performance and provide valuable assistance in application development.

- **eSupport (FMI web site)**
  - Need product and technical information immediately? Check our web site at www.fluidmetering.com and have instant access to product specifications, application information, literature downloads, and an animation of our unique CeramPump® valveless pumping principle.

- **Applications... We Do It All!**

- **Why FMI?**
  - Ultra-Precise Fluid Control. From Sub-Microliters to Liters
  - Patented “No-Valve” Design: Eliminates problems and errors caused by valves which clog, leak, hang up, and require service.
  - One Moving Part!
  - Proven Performance!
  - Precision, Accuracy, & Reliability

- **FMI Pumps**
  - How close the average value is to the true value
  - Accuracy
  - Precision

- **Applications**
  - Medical
  - Spraying Systems
  - Environmental & Pollution Control
  - Food & Dairy

- **Cutaway View**
  - How Our Pump Works

- **Typical Dispense Precision Test**
  - Data Point Number

- **FMI Pumps are the perfect solution to valveless metering in the medical field by providing the necessary pumping accuracy and precision that is required for the fast changing medical environment.

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**Medical, Analytical & Biotech Instrumentation 2018 Products Catalog**

www.FluidMetering.com / 516 922 6050

800-223-3388 / www.fluidmetering.com
Why FMI?

FMI: Precision Fluid Control... from Sub-Microliters to Liters

- Patented “No-Valve” Design
  - Eliminates cavitation, an adverse effect that reduces accuracy, hinders system operation, and increases maintenance.

- One Moving Part!
  - Our unique ceramic “CeramPump®” valveless design features a single moving part.

- Proven Performance!
  - Over 59 years of OEM experience and more than a million pumps sold.

- Accuracy, Precision, & Reliability
  - Our engineers incorporate dimensions of “Sub-micron” tolerances.

How Our Pump Works

The valveless pumping function is accomplished by the synchronous rotation and reciprocitation of a ceramic piston in a precisely mated ceramic cylinder liner.

One complete piston revolution is required for each suction/discharge cycle.

Check out our web site at www.fluidmetering.com for an animation of our unique pumping principle.

Accuracy, Precision, & Reliability... FMI Pump Typical Flow Data

Applications... We Do It All!

MEDICAL
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SPRAYING SYSTEMS
  - For injection of insecticides, herbicides, and agricultural nutrients, as well as for ULV spray equipment.

ENVIRONMENTAL & POLLUTION CONTROL
  - For sampling stack gases, ground water & wastewater, as well as injection of monomers, polymers, and chemicals for water & waste treatment, TCLP and more.

Who We Are

FMI has been the leader and a protected valveset manufacturer and recently acquired a flow monitoring company and process control experts for over 59 years.

Quality

We take quality seriously and back it up, not only on quality lab tests, but also by the success of our customers and the longevity of our product.

Most products are ISO 9001:2008. More... click here.

Innovative Design & Development

Our Engineering Team is comprised of over 50 years of OEM design experience. FMI’s engineers work closely with customer, with the knowledge and the insights, both, to our own in-house development team and outside vendors to make sure performance is matched and marketing priorities are met.

<www.FMI Valveless.png>

We provide technical information immediately! Check our web site at www.fluidmetering.com and access instant expert product assistance at our information center, LiveHelp, our online connection between our customers and FMI’s engineering specialists.

Have questions? Chat live with an FMI application specialist at www.fluidmetering.com

Applications... We Do It All!

INSTRUMENTATION
  - For all kinds of precision instruments and monitors including titrators, TOC, SO2 monitors, chromaticity systems, humidity control.

DISPENSING SYSTEMS
  - For dispensing of solvents, UV adhesives, lubricants, reagents, and mercury in the manufacture of electronics, pharmaceuticals, medical disposables, computer hard drives, audio speakers, and calibration equipment.

FOOD & DAIRY
  - For candy coating and polishing, as well as vitamin fortification, addition of flavors, colors, preservatives and a variety of other ingredients used to enhance food products.

Benefits of FMI Pumps

- 100% Accuracy, 100% Precision, and 100% Reliability.
- Better than ±1% measured in millions of “trouble-free” cycles.
- Precision Pumps are universal pumps for all OEM applications.
- One Pump/Dispenser...for All OEM Applications.

Accuracy, Precision, & Reliability... FMI Pump Typical Flow Data

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- One Pump/Dispenser...for All OEM Applications.
Who We Are

FMI pumps are the first patented variable-delivery, rotary-displacement positive- Displacement pumps in the design and performance of precision pump technology. Since 1959, FMI has been recognized by the industry as a leader in the design and manufacture of precision fluid dispensing pumps.

Engineering Design & Development

Our Engineering Team incorporates over 59 years of OEM design experience to meet specific customer & application requirements.

Our Mission Statement . . . 100% Quality, 100% On-Time Delivery . . . is supported by our valued OEM supplier awards.

Applications . . . We Do It All!

Medical

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Spraying Systems

For injection of insecticides, herbicides, and agricultural nutrients, as well as for ULV spray equipment.

Environmental & Pollution Control

For sampling stack gases, ground water & wastewater, as well as injection of monomers, polymers, and chemicals for water & waste treatment, TCLP and more. . .

Medical, Analytical & Biotech Instrumentation

For all kinds of precision instruments and monitors including titrators, TOC, SO2 monitors, chromatographic systems & humidity control.

Instruments

For dispensing of liquids. UV reflectors, lab Pan supports, racks, reagents, papers, and the production of precision systems or pastes and solutions, lab supplies, and documentation equipment.

Dispensing Systems

For metering, metering, and metering, as well as ultrafine filtration, precision and accuracy of any other ingredients used to enhance food products.

Quality

We take quality seriously and back it up. Not only do we have ISO 9001:2008 certification, but we also manufacture our own ceramic pistons and cylinder liners. Our Ceramic Pumps are 100% ceramic, each and every one.

Why FMI?

• Patented “No Valve” Design
• Accuracy, Precision & Reliability. . . FMI Pumps are made from Sub-Micron to Litters

How Our Pump Works

The synchronous pumping function is accomplished by the rotation and reciprocation of a ceramic piston in a precisely mated ceramic cylinder liner. One complete piston revolution is required for each suction/discharge cycle.

Five Dispenser / Pump. . . for All OEM Applications

One Dispenser / Pump. . . for All OEM Applications

Accuracy, Precision, & Reliability

Applications . . . We Do It All!

Accuracy & Precise

FMI Pumps offer high accuracy and precision in all applications.

Repeatability & degree of variation of a set of values

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Accuracy

Accuracy, Precision, & Reliability . . . FMI Pump Typical Flow Data

Why FMI?

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• Accuracy, Precision & Reliability. . . FMI Pump Typical Flow Data

Medical, Analytical & Biotech Instrumentation

2018 Products Catalog

www.FluidMetering.com / 516 922 6050
"STHP" Precision Adjustment Stepper Pump

- Ideal for Prototyping and Applications Requires Frequent, Accurate Change Displacement in Dispensers
- Precise, fine adjustable pump with integral design and pump adapter
- Perfect flow metering range 0.05 - 300 ml/min
- Accurate flow control
- Stepper motor and variable DC drive
- 52 RPM, 0.35 " shaft
- RS 232 Serial Port for PC offers
- Multiple Input and Output Connections
- Economical design with fixed displacement link
- Micrometer-like flow adjustment of 260 ml/min.
- FMI’s STH Stepper Pump with integral programmable Quick Start Control for All FMI Stepper Pumps

"STH" Low Flow

- Ideal for Medical, Analytical, & OEM Instrumentation Applications
- Isolation diaphragms are available for both STH & STQP models for handling crystallizing fluids
- Duplex model available for leak tight or multichannel dispensing
- Compact design
- Pumps are capable of handling the most demanding applications
- Low dead space design minimizes evaporation
- Single, Dispenser, Aspirate, Flush,

"STQ" High Flow

- Complete Pump Assembly
- Max. Dispense Range
- Microliters / Revolution
- 0 - 50 µl
- 0 - 25 µl
- 0 - 100 µl
- 0 - 200 µl
- 0 - 400 µl

"STG" Adjustable High Flow Stepper Pump

- Precise, variable displacement "G" Pump with integral stepper motor
- Accurate pump head displacements at head pressures to 240 psi
- Stepper motor and variable DC drive
- Easily handles slurries, suspensions, emulsions, biological suspensions, gels, and more
- C/C++, Delphi, Lab VIEW

"STU" High Flow

- Complete Pump Assembly
- Max. Flow Range
- Milliliters / Revolution
- 0 - 1.28 ml
- 0 - 0.72 ml
- 0 - 0.32 ml

"STF" Fixed Displacement Pump

- Ideal for Waste Box, Applicator for Medical, Analytical & Industrial Applications
- Economical design with fixed displacement link
- Displacement link can be customized for individual requirements
- Precision stepper motors with opto sensors
- Isolation diaphragm available for crystallizing fluids
- Gang flow control

"STN" Miniature Pump

- Ideal for Waste Box, Applicator for Medical, Analytical & Industrial Applications
- Economical design with fixed displacement link
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- Precision stepper motors with opto sensors
- Isolation diaphragms available for crystallizing fluids
- Gang flow control

"ST2H" Low Flow

- Isolation diaphragms are available for both STH & STQP models for handling crystallizing fluids
- Duplex model available for leak tight or multichannel dispensing
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- Single, Dispenser, Aspirate, Flush,

"ST2Q" High Flow

- Complete Pump Assembly
- Max. Flow Range
- Milliliters / Revolution
- 0 - 1.28 ml
- 0 - 0.72 ml
- 0 - 0.32 ml

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- Ideal for Waste Box, Applicator for Medical, Analytical & Industrial Applications
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- Gang flow control

"STG" Adjustable High Flow Stepper Pump

- Precise, variable displacement "G" Pump with integral stepper motor
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- Stepper motor and variable DC drive
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"STG" Adjustable High Flow Stepper Pump

- Precise, variable displacement "G" Pump with integral stepper motor
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- Economical design with fixed displacement link
- Displacement link can be customized for individual requirements
- Precision stepper motors with opto sensors
- Isolation diaphragms available for crystallizing fluids
- Gang flow control
**“STP” High Flow Stepper Pump**

- Precision adjustable pump with integral stepper motor & opto sensor.
- Pump head displacement is variable using an adjustable link.
- Low dead volume scheme ensures maximum accuracy.

**“STP” Adjustable High Flow Stepper Pump**

- Precision, variable displacement "Q" Pump with integral stepper motor.
- Accommodates at "Q" style pump heads and pump displacements independently variable.
- Digital flow control.

**“STQ” High Flow” Miniature Pump**

- Ideal for Medical, Analytical, & OEM Instrumentation Applications.
- Rotationless flow control.
- Dual modes available for dead volume or continuous flow pumping.

**“STH” Low Flow”” Miniature Pump**

- Ideal for Medical, Analytical, & Industrial Applications.
- Compact design.
- Flexible flow control.

**“STF” Fixed Displacement Pump**

- Economical design with fixed displacement.
- Displacement link can be customized for individual requirements.
- Precision stepped motors with 8 options.
- Option exists for flow sensors.

**“STH” Low Flow” Precision Pump**

- Microstepping resolution.
- Ideal for Research, Development.
- Standardized to various application schemes.
- Compact design.

**“STQ” High Flow” Microstepping Pump**

- Microstepping resolution.
- Ideal for Research, Development.
- Standardized to various application schemes.
- Compact design.

**“STH” Low Flow” Low Flow Metering Pump**

- High precision.
- Ideal for Research, Development.
- Standardized to various application schemes.
- Compact design.

**“ST2H” High Flow” High Flow Pump**

- Double head syringe design.
- Ideal for medical and analytical applications.
- Compact design.

**“ST2Q” High Flow” High Flow Pump**

- Double head syringe design.
- Ideal for medical and analytical applications.
- Compact design.

**“STQ” High Flow” High Flow Pump**

- Double head syringe design.
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- Compact design.

**“ST2Q” High Flow” High Flow Pump**

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**“STH” Low Flow” Low Flow Pump**

- Microstepping resolution.
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**“STH” Low Flow” Low Flow Metering Pump**

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- Standardized to various application schemes.
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**“STQ” High Flow” High Flow Pump**

- Double head syringe design.
- Ideal for medical and analytical applications.
- Compact design.
“STHP” Precision Adjustment Stepper Pump

- Ideal for Prototyping Applications
- Requires Practically Accumulator Change in Dispersive Volume
- Precise, fine adjustable pump with integral stepper motor & opto sensor.
- Pump head displacement capable as an assembly.
- Low dead volume design maximizes accuracy and reliability.
- Sample, Dispense, Aspirate, Flush.

“STHP” Low Flow STEPPER Pumps & Dispensers

- Ideal for Medical, Analytical & OEM Instrumentation Applications
- Precise, automated flow and pressure control
- Customized for specific applications (continuous vs. on-off).
“STF” Precision Adjustment Stepper Pump

- Ideal for Prototyping & Applications
- Requires Frequent, Accurate Change in Dispense Volume
- Precision 0.5% adjustable pump with integral stepper motor & opto sensor.
- Pump head displacement variable using an external variable DC drive or via integral stepper motor and variable DC drive.
- Low dead volume design maximizes accuracy and durability.
- Single, Duplex, or Quad head configurations.
- Compact design. Factors calibrated.

“STH” Low Flow

- Single & Duplex models available for dual channel or sequential metering & dispensing.

“STO” Adjustable High Flow Stepper Pump

- Precise, variable displacement "Q" Pump with integral stepper motor.
- Accurate at "Q" stroke pump heads and accurate across all overlapping speed ranges.
- Ideal for applications requiring precise, adjustable flow rates.
- Internal torque requirement of less than 10 oz.

“STU” High Flow

- Complete Pump Assembly: Stock
- Complete Pump Assembly: Custom
- Max. Dispense Range: 300 - 400 µL
- Microliter Dispense Range: 30 - 250 µL
- Microliter Dispense Range: 100 - 150 µL
- Microliter Dispense Range: 50 - 100 µL
- Microliter Dispense Range: 0 - 50 µL

“STQ” High Flow

- Ideal for OEM applications where accurate & frequent displacement changes are expected.
- RH pump heads (with RH/Q adaptor).
- Sample, Dispense, Aspirate, Flush.
- Low dead-volume design ensures maximum accuracy.

“STH” Low Flow

- Precision, variable displacement "Q" Pump with integral stepper motor.
- Accurate at "Q" stroke pump heads and accurate across all overlapping speed ranges.
- Ideal for applications requiring precise, adjustable flow rates.
- Internal torque requirement of less than 10 oz.

“STF” Fixed Displacement Pump

- Ideal for decades of reliable, high precision flow.
- High precision and high accuracy.
- Compact design and low stroke interference.
- Wide range of flow rates from 0 to 100 µL/stroke.
- Multiple programming platforms including Visual Basic, C, C++, Delphi, LabVIEW.
- 0.5% accuracy guaranteed for calibration.

“STH” Low Flow

- Ideal for low volume blending or proportioning in industrial applications.

“STT” Fixed Displacement Pump

- Ideal for decades of reliable, high precision flow.
- High precision and high accuracy.
- Compact design and low stroke interference.
- Wide range of flow rates from 0 to 100 µL/stroke.
- Multiple programming platforms including Visual Basic, C, C++, Delphi, LabVIEW.
- 0.5% accuracy guaranteed for calibration.

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- Ideal for applications requiring precise, adjustable flow rates.
- Internal torque requirement of less than 10 oz.

“STF” Fixed Displacement Pump

- Ideal for decades of reliable, high precision flow.
- High precision and high accuracy.
- Compact design and low stroke interference.
- Wide range of flow rates from 0 to 100 µL/stroke.
- Multiple programming platforms including Visual Basic, C, C++, Delphi, LabVIEW.
- 0.5% accuracy guaranteed for calibration.

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**Medical, Analytical & Biotech Instrumentation**

2018 Products Catalog

**Why FMI?**

**Ultra-Precise Fluid Control...from Sub-Microliters to Liters**

- **Patented “No-Valve” Design**
  - Eliminates valves and mechanisms that fail, wear out, leak, hang up, and require service.

- **One Moving Part!**
  - Ceramic piston design ensures long-term, precise fluid control.

- **Proven Performance!**
  - Over 59 years of engineering and design experience.

**Accuracy, Precision, & Reliability...FMI Pump Typical Flow Data**

**How Our Pump Works**

The valveless pumping function is accomplished by the synchronous rotation and reciprocation of a ceramic piston in a precisely mated ceramic cylinder liner.

One complete piston revolution is required for each suction/discharge cycle.

Check out our web site at www.fluidmetering.com for an animation of our unique pumping principle.

**Applications...We Do It All!**

**MEDICAL**

For precise dispensing, aspirating, rinsing, mixing systems and syringe pump replacement in diagnostic, clinical chemistry and medical equipment manufacturing.

**SPRAYING SYSTEMS**

For injection of insecticides, herbicides, and agricultural nutrients, as well as for ULV spray equipment.

**ENVIRONMENTAL & POLLUTION CONTROL**

For sampling stack gases, ground water & wastewater, as well as injection of monomers, polymers, and chemicals for water & waste treatment, TCLP and more...

**Who We Are**

FMI pioneered the first patented valveless rotating and reciprocating piston metering pump concept and has been delivering pumping excellence and precise fluid control for over 59 years.

**Quality**

We take quality seriously and back it up, not only by design and engineering but through our ISO 9001:2008 quality certification.

Most products are made in the USA.

**Technical Support**

Need product and technical information immediately?

Check our web site at www.fluidmetering.com and have instant access to product specifications, application information, literature downloads, and an animation of our unique CeramPump® valveless pumping principle.

**eSupport (FMI web site)**

Need product technical information immediately?

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**Applications. . . We Do It All!**

**INSTRUMENTATION**

For all kinds of precision instruments and monitors including titrators, TOC, UV-monitors, chromatographic systems & humidity control.

**DISPENSING SYSTEMS**

For dispensing of solvents, UV adhesives, lubricants, reagents, and mercury in the manufacture of electronics, pharmaceuticals, medical disposables, computer hard drives, audio speakers, and calibration equipment.

**FOOD & DAIRY**

For candy coating and polishing, as well as, vitamin fortification, addition of flavors, colors, preservatives and a variety of other ingredients used to enhance food products.

**Precision Valveless Metering Pumps and Dispensers**

Over 59 Years of Precision Valveless Fluid Control & Over One Million Pumps

**Service Life (Dispenses in Millions)**

**Dispense Precision**

- **PERCENT C.V.**

**Typical Dispense Precision Test**

**Dispense Precision**

(Volume (Microliters/Revolution)

**VOLUME**

(Microliters/Stroke)

**DATA POINT NUMBER**

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