Flex-Pro® PERISTALTIC METERING PUMPS

Which Flex-Pro® Metering Pump will work best in Your Application?

	A2	A3	A4
Flow Output Range	.02-14.9 GPH	.001-33.3 GPH	.01-158.5 GPH
Turndown	100:1	2,500:1	
Warranty	2 YEAR		
Variable Speed DC Motor	Brush	Brushless	
TFD (Pat.#7,001,153 and 7,284,964)	✓	✓	✓
Maintenance Mode (Pat. #8,215,931)	✓	✓	✓
Motor Reverse	✓	✓	✓
Tube Info Button	Timer	Revolution Counter and Timer	
Input: Remote Start/Stop	✓	✓	✓
Input: 4-20mA	✓	✓	✓
Input: Frequency (Pulsed)	✓	✓	✓
Output: 4-20mA	*Optional*	✓	✓
Output: Pulse	✗	✓	✓
Proportional Dosing	✗	✓	✓
Password Protect (PIN)	✗	✓	✓
Industrial Ethernet (IP)	*Optional*	✗	✗
Profinet or Profibus	*Optional*	✗	✗
Modbus TCP or Modbus RTU	*Optional*	✗	✗

FLEX-PRO® PERISTALTIC PUMPS have smooth, quiet pumping action and deliver accurate amounts of chemical to your system. Three Flex-Pro® models are offered featuring a broad range of output rates, electronics options and features. If you don't see the Flex-Pro® pump that meets your system requirements, please contact the factory. Blue-White® specializes in meeting OEM requirements.

FLEX-PRO® APPLICATIONS INCLUDE

- Chemical Metering
- Chlorination
- Chloramination
- Fluoridation
- Polymer Injection
- Pulp and Paper Slurries
- Printing Inks
- Oil Based Fluids
- Gaseous Fluids
- Shear Sensitive Fluids
- Caustics
- Chemical Slurries
- Food and Beverage

What makes Flex-Pro® a Superior Peristaltic Metering Pump?

Exceptional Innovation.

PATENTED TUBE FAILURE DETECTION
Detects tubing failure with no false triggering.

TFD system
Tube Failure Detection
Patents 7,001,153 & 7,284,964

ONE BUTTON PRIME
Operator-friendly touch pad.

MULTIPLE SIGNAL INPUT AND OUTPUT
(4-20mA, etc.)

PRECISE ENGINEERED ROLLERS
Two CNC precision machined squeeze rollers and two alignment rollers for optimum squeeze, unparalleled accuracy, and extended tube life.

EASY ACCESS
No tools required for pump head cover removal during routine maintenance.

PUMP HEAD COVER
Clear acrylic annealed for added strength and chemical resistance.

INNOVATIVE HEAVY DUTY ROTOR
Single piece plastic rotor means no flexing and increased accuracy with no metal springs or hinges to corrode. The pump can handle the same maximum pressure in either direction (clockwise or counter clockwise).

THREE POSITION PUMP HEAD ROTATION
Left, right, down facing.

TUBING MATERIAL OPTIONS
Norprene®, Tygothane® and Norprene® Chemical.

CHEMICAL RESISTANT FITTINGS
Natural PVDF for optimum chemical resistance and fluid purity.

Flex-Pro® A2

PERISTALTIC METERING PUMP

ProSeries® METERING PUMPS

PRECISION CHEMICAL METERING

IP66

NEMA 4X WASH DOWN

TFD system Tube Failure Detection

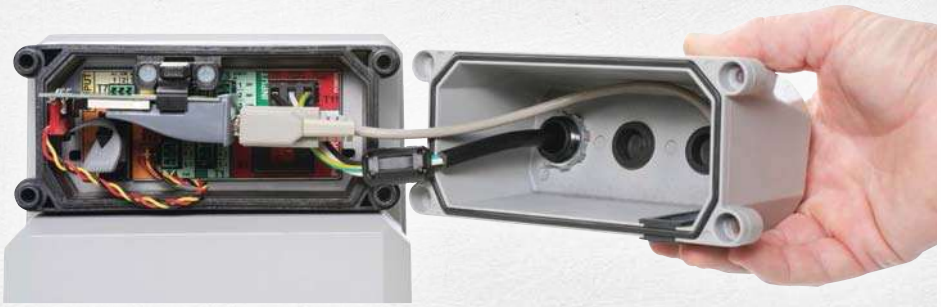
Patents 7,001,153 & 7,284,964

CE ETL

THE FLEX-PRO® MODEL A2 is the most compact of the Flex-Pro® Peristaltic line of metering pumps. Don't let the compact size mislead you, the A2 is capable of handling the aggressive, high viscosity fluid used in the treatment of water and waste water.

Flex-Pro® A2 is an excellent alternative to Solenoid pumps because peristaltic pumps provide more gentle and efficient pumping action. There are no costly rebuild kits required, ever. The A2's frame is ruggedly built and feature-packed, it includes easily accessible advanced electronics, a variable speed DC motor and exclusive Flex-Pro® features, such as patented built-in Tube Failure Detection.

The combined features and capabilities of the Flex-Pro A2 make it an excellent metering pump choice in several applications. The need to purchase several different pumps to service the one installation is often eliminated by chosing Flex-Pro A2.



ACCESSIBLE ELECTRONICS

- Color-coded overlay on the terminal block makes connections fast and efficient by clearly identifying terminals: Input, Output and Power Supply.
- Equipped with water tight connectors.
- Smart electronics: Profibus, Ethernet, Etc. available; SCADA ready; upgradeable firmware.

ELECTRONIC INTERFACE

- Operator friendly touchpad with menu driven software.
  - Features a one button prime mode
- VGA Graphic Multi-Color backlit LCD Displays:
  - Motor speed
  - Percent speed
  - Input signals
  - Service and alarm status

A2 FEATURES

- Heavy duty single piece rotor.
- Accepts FVS (Flow Verification Sensor) Alarm to monitor chemical injection failure.
- Patented TFD: Senses tube failure by detecting conductive non-compatible chemical in pump head. No false triggering. Patent Numbers 7,001,153 and 7,284,964.

More information on safety and monitoring system features found on page 12.

FLUIDS

- Chlorine, Caustic, Alum, Acid, Ferric chloride, Sodium Bisulfite, Ink, Dye, Sludge, Slurry, Flocculent and other fluids.

Customers are required to do their own compatibility testing.
Tube selection guide can be viewed on page 13.

TUBING

Choose from multiple pump tube sizes and material options:

- Norprene®, Norprene® Chemical and Tygothane®.
- Specially engineered tubing for long life at high pressures. Meets FDA 21 CFR requirements for food contact applications.

TECHNICAL SPECIFICATIONS

OUTPUT FEED RATES

Minimum .02 Gallons per Hour (.07 LPH)

Maximum 17.2 Gallons per Hour (65.1 LPH)

PRESSURE

Maximum 125 PSI (8.6 bar) (Norprene tubing)

Maximum suction lift: 30ft @ sea level (14.7 ATM PSI)

CONTROL OPTIONS

SCADA INPUTS

- Scalable 4-20mA.
- Frequency, AC Sine Wave, TTL, CMOS.
- Flow Verification Sensor.
- Remote start/stop (Wet 6-24 VDC and Dry non-powered Contact options).

OUTPUT

- 4-20mA (optional).
- Relay (3AMP).
- Open Collector Motor Active.

Communication interface available:
Profibus DPV1, Modbus RTU, Modbus TCP, Industrial EtherNet/IP, Profinet RT I/O. Communication interface only available with the 4-20mA option.

MOTOR

Variable speed DC motor.

MOTOR SPEED ADJUSTMENT RANGE

100:1 (1.0%–100% motor speed), (1.3–130RPM).

DIMENSIONS

Height	10.25" (26 cm)
Width	7.5" (19 cm)
Depth	14" (35.6 cm)
Weight	28.4 lbs. (12.9 kgs)

ENVIRONMENT

NEMA 4X (IP66) Washdown duty.

Flex-Pro® A3

PERISTALTIC METERING PUMP

ProSeries® METERING PUMPS

PRECISION CHEMICAL METERING

IP66

NEMA 4X WASH DOWN

TFD system Tube Failure Detection

Patents 7,001,153 & 7,284,964

CE ETL

THE FLEX-PRO® A3 PERISTALTIC METERING PUMP is designed to handle the demands of mid-range to large volume water and wastewater treatment applications, as well as many other applications where precision chemical feed is sought.

The A3 has a broad range of feed rates, a 2500:1 turndown ratio, and is capable of injecting a comprehensive spectrum of chemicals. Combined with exceptional overmolded pump tubes and advanced electronics, the A3 can be finely tuned for a custom fit in a number of processes, and for use in multiple applications at a single facility.

Peristaltic technology ensures smooth, quiet, low-velocity and eco-friendly pumping action, and the A3's rugged design ensures it will handle the demanding requirements of industrial use.

ACCESSIBLE ELECTRONICS

- A color-coded overlay on the terminal block helps to make connections fast and efficient, by clearly identifying the terminals: Input, Output and Power Supply.
- The Terminal Box is equipped with water tight connectors.

ELECTRONIC INTERFACE

- The operator friendly touchpad with menu driven software features a one button prime mode.
- VGA Graphic Multi-Color (RGB) backlit LCD Displays:
  - Remote/ local control status
  - Motor speed
  - Output rate
  - Input signals
  - Service and alarm status

A3 FEATURES

- Heavy duty single piece rotor.
- Automated PPM chemical dosing system.
- **Security:** Password protection.
- Three possible pump head position placements: Left, right, down facing.
- **Patented Safety Switch** *(See page 12 for details).*
- **Patented TFD System** *(See page 12 for details).*
- **Patent on extended tube life** *(See page 12 for details).*

For additional information on monitoring features please see page 12.

FLUIDS

- Chlorine, Caustic, Alum, Acid, Ferric chloride, Sodium Bisulfite, Ink, Dye, Sludge, Slurry, Flocculent and other fluids.

Customers are required to do their own compatibility testing.
Tube selection guide can be viewed on page 13.

TUBING

Choose from multiple pump tube sizes and material options:

- Pump Head tubing material options are: Norprene®, Norprene® Chemical and Tygothane®.
- Pump Head Tubing is specially engineered for long life at high pressures. All tubing meets FDA 21 CFR requirements for food contact applications.

TECHNICAL SPECIFICATIONS

OUTPUT FEED RATES

Minimum .001 Gallons per Hour (.003 LPH)

Maximum 33.3 Gallons per Hour (126 LPH)

PRESSURE

Maximum 125 PSI (8.6 bar)

Maximum suction lift: 30ft @ sea level (14.7 ATM PSI)

CONTROL OPTIONS

SCADA INPUTS

- Scalable 4-20mA.
- Frequency, AC Sine Wave, TTL, CMOS.
- 0-10V DC.
- Flow Verification Sensor.
- Remote start/stop (Wet 6-24 VDC and Dry non-powered Contact options).

OUTPUT

- 4-20mA.
- Frequency Open Collector.
- Relay (250V/6AMP).
- Three 115V/1A contact closures assignable to monitor up to 17 pump functions (including TFD, FVS, remote/local control setting, motor on, fault, current operating mode and more).

MOTOR

No maintenance, brushless, variable speed motor.

MOTOR SPEED ADJUSTMENT RANGE

2500:1 (0.04%–100% motor speed).

DIMENSIONS

Height	10.75" (27.3 cm)
Width	8.125" (20.6 cm)
Depth	15.25" (38.9 cm)
Weight	33 lbs. (15 kgs)

ENVIRONMENT

NEMA 4X (IP66) Washdown duty.

Flex-Pro® A4

PERISTALTIC METERING PUMP

ProSeries® METERING PUMPS

PRECISION CHEMICAL METERING

IP66

NEMA 4X WASH DOWN

TFD system Tube Failure Detection

THE HEAVY DUTY FLEX-PRO® A4 IS THE LARGEST OF THE PROSERIES® PERISTALTIC METERING PUMP LINE. The A4 combines technology and features that high output demand water and wastewater treatment systems require, while maintaining an operator-friendly design for ease of use.

The A4 can meter up to 158 GPH / 10,000 ML/Min of chemical while retaining the smooth, quiet and eco-friendly pumping action for which Flex-Pro® pumps are known. The Flex-Pro's two CNC precision machined squeeze rollers and two alignment rollers, provide optimum squeeze, and combine with the heavy duty single piece plastic rotor to provide unparalleled accuracy and long tube life.

When your installation calls for high volume chemical output combined with the latest design and engineering features, choose Flex-Pro® A4.

ACCESSIBLE ELECTRONICS

- A color-coded overlay on the terminal block makes connections fast and efficient, by clearly identifying the terminals: Input, Output and Power Supply.
- The Terminal Box is equipped with water tight connectors.

ELECTRONIC INTERFACE

- The operator friendly touchpad with menu driven software, features a one button prime mode.
- VGA Graphic Multi-Color (RGB) backlit LCD Displays:
  - Remote/ local control status
  - Motor speed
  - Output rate
  - Input signals
  - Service and alarm status

A4 FEATURES

- Heavy duty single piece rotor.
- Automated PPM chemical dosing system.
- **Security:** Password protection.
- The motor can run in reverse (counter-clockwise).
- **Patented Safety Switch** *(See page 12 for details).*
- **Patented TFD System** *(See page 12 for details).*
- **Patent on extended tube life** *(See page 12 for details).*

For additional information on monitoring features please see page 12.

FLUIDS

- Chlorine, Caustic, Alum, Acid, Ferric chloride, Sodium Bisulfite, Ink, Dye, Sludge, Slurry, Flocculent and other fluids.

Customers are required to do their own compatibility testing.
Tube selection guide can be viewed on page 13.

TUBING

Choose from multiple pump tube sizes and material options:

- Pump Head tubing material options are: Norprene®, Norprene® Chemical and Tygothane®
- Pump Head Tubing is specially engineered for long life at high pressures. All tubing meets FDA 21 CFR requirements for food contact applications.

TECHNICAL SPECIFICATIONS

OUTPUT FEED RATES

Minimum .01 Gallons per Hour (.04 LPH)

Maximum 158.5 Gallons per Hour (600 LPH)

PRESSURE

Maximum 125 PSI (8.6 bar)

Maximum suction lift: 30ft @ sea level (14.7 ATM PSI)

CONTROL OPTIONS

SCADA INPUTS

- Scalable 4-20mA.
- Frequency, AC Sine Wave, TTL, CMOS.
- 0-10V DC.
- Flow Verification Sensor.
- Remote start/stop (Wet 6-24 VDC and Dry non-powered Contact options).

OUTPUT

- 4-20mA.
- Frequency Open Collector.
- Relay (250V/6AMP).
- Three 115V/1A contact closures assignable to monitor up to 17 pump functions (including TFD, FVS, remote/local control setting, motor on, fault, current operating mode and more).

MOTOR

No maintenance, brushless, variable speed motor.

MOTOR SPEED ADJUSTMENT RANGE

2500:1 (0.04%–100% motor speed).

DIMENSIONS

Height	14.25" (36.1 cm)
Width	12.125" (30.8 cm)
Depth	18.625" (47.3 cm)
Weight	58 lbs. (26.3 kgs)

ENVIRONMENT

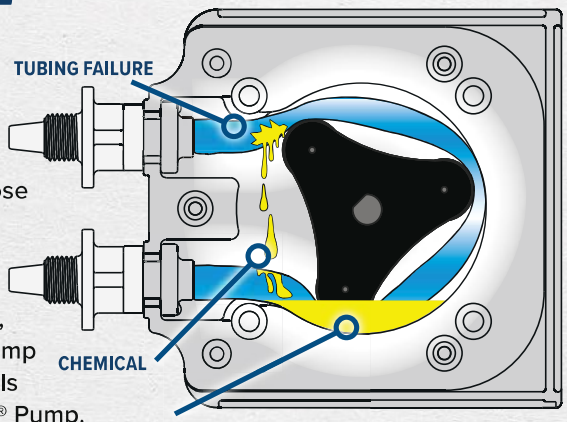
NEMA 4X (IP66) Washdown duty.

Flex-Pro® PATENTED FEATURES

TFD system
Tube Failure Detection

TUBE FAILURE DETECTION SYSTEM
(Patent Numbers 7,001,153 and 7,284,964)

Blue-White's exclusive Tube Failure Detection system – no one comes close to matching the breakthrough technology of Blue-White's exclusive Tube Failure Detection System. In fact, the TFD may be the most important patent ever awarded for peristaltic pumps. If the TFD senses tube failure, the pump will automatically shut off and energize a relay or switch, permitting communication with external equipment, such as a back-up pump or alarm. The TFD System will detect a wide range of conductive chemicals with no false triggering. Simple, efficient and BUILT-IN to every ProSeries® Pump.



COMPONENT CONTROL SYSTEM (Patent No. 8,639,363)

A method used to control two or more positive displacement pumps in a system. The Component Control System ensures that two or more positive displacement pumps, operating in a system together, will run only if all pumps in the system are running.This can reduce costs by eliminating the need for separate pump controllers for each unit. This feature will be particularly important when failure of one pump to meter the chemical could have a damaging effect on the entire process, for example; when pumping two or more chemicals into a system using multiple pumps, particularly when two or more chemicals rely on one-another to achieve desired results (i.e. Chemical reaction).

This new patented feature is currently available on Blue-White's Flex-Pro® A3 and A4 Metering Pumps.

METHOD OF EXTENDING TUBE LIFE (Patent No. 8,418,364)

The Method comprises switching the inlet and outlet connections of the peristaltic pump, and reversing the rotational direction of the roller assembly, thereby moving the wear point of the tube which results in approximately double the useful life of the tubing.

The patent includes: Identify usage information of the tubing of the peristaltic pump, and ability to stop the pump automatically after a certain number of rotor revolutions.

Implementation of the method discussed above can also result in cost and time savings. Clearly, by extending the life of the tubing, replacement costs are substantially decreased. However, implementing such a method can also save production and replacement time that would otherwise be sacrificed in maintaining the system. Included on all Flex-Pro® pumps.

SAFETY SWITCH (Patent No. 8,215,931)

Protects the pump operator when performing maintenance to the pump head, such as changing the pump tube. The switch stops the pump when the front cover is removed. The pump will only operate in maintenance mode while the front cover is removed, helping to ensure operator safety. Included on all Flex-Pro® pumps.

Flex-Pro® FLOW VERIFICATION SYSTEM

FVS (FLOW VERIFICATION SENSOR) READY

The FVS is an external, optional paddlewheel sensor which can be connected to the pumps' inlet for monitoring chemical injection. If chemical should fail to inject, the pump will stop and an alarm relay will engage, allowing for remote alarm indication, or for initiation of a backup metering pump.

Flex-Pro® TUBING AND CHEMICAL RESISTANCE CHART

FDA 21 CFR 11 Compliant

FDA 21 CFR: Tubing meets requirements for food contact applications.

Available Tubing Options for Flex-Pro® Metering Pumps are:
Norprene®, Norprene® Chemical, and Tygothane®

NORPRENE® TUBING

Meets FDA criteria for food • *Excellent* chemical resistance

- Alcohol general
- Aluminum Sulfate (Alum)
- Ammonium chloride
- Ammonium hydroxide
- Benzyl alcohol
- Bleach
- Brine solutions
- Calcium hydroxide
- Calcium hypochlorite 20%
- Citric Acid
- Ethylene glycol
- Ferric chloride
- Ferric nitrate
- Ferric sulfate
- Ferrous chloride - 43% in water
- Ferrous sulfate
- Fluosilic Acid (up to 25%)
- Formic acid
- Glucose
- Hydrochloric acid 33%
- Hydrocyanic acid
- Hydrogen peroxide
- Hypochlorous acid
- Iodine
- Magnesium chloride
- Magnesium sulfate
- Phosphoric acid
- Plating solutions
- Polyaluminum Chloride (PAC)
- Potassium hydroxide
- Propylene glycol
- Sodium hydroxide 50%
- Sodium bisulfite
- Sodium chlorite 12%
- Sodium hypochlorite 12.5%
- Sodium sulfide
- Sulfuric acid (up to 50%)
- Tannic acid

NORPRENE® CHEMICAL TUBING

Ultra smooth plasticizer-free bore (inner Linder)
Meets FDA criteria for food • *Superior* chemical resistance

- Ferrous chloride (up to 40%)
- Fluoboric acid (up to 48%)
- Fluosilicic acid (up to 25%)
- Hydrofluoric acid (up to 48%)
- Nitric Acid (up to 71%)
- Phosphoric acid (up to 85%)
- Potassium hypochlorite (up to 70%)
- Sodium phosphate (up to 30%)
- Sulfuric acid (up to 98%)
- Bases
- Salts
- Ketones
- Alcohols:
  - Isobutyl Alcohol
- Applications
  - Ink and solvent production
  - Battery acid filling
  - Specialty chemical production / processing
  - Sensitive fluid transfer

TYGOTHANE® TUBING

Meets FDA criteria for food
Resistant to oils, greases and fuels

- Tygothane®
- Cyclohexane
- Diesel Fuel
- Fatty acids
- Gasoline
- Heptane
- Hexane
- Kerosene
- Lard
- Mineral spirits
- Soap solutions

These are guidelines. Customers should do their own compatibility testing.