ProSeries® FLEX-PRO® Peristaltic Metering Pump

by Blue-White Ind.

FLEX-PRO A2

Feed Rates to 14.9 GPH (56.2 LPH)
Pressures to 125 PSI
4-20mA, Pulse Input and Manual Speed Control
Optional Modbus, Profibus, Industrial Ethernet
100:1 Turndown ratio
Tube Failure Detection System
Variable Speed DC Motor
NEMA 4X (IP 66) Washdown Duty
2 Year Warranty

NEMA 4X CE

Exclusive: TFD system Tube Failure Detection

Patent No. 7,001,153

Patents: 4,496,295 7,001,153 and other patents pending

Applications:

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

Features:

- Peristaltic pump design does not have valves that can clog requiring maintenance.
- Self priming - even against maximum line pressure. By-pass valves are not required. Cannot vapor lock or lose prime.
- Output rates to: 14.9 GPH (56.2 LPH) and pressures to 125 PSI (8.6 Bar).
- Variable speed DC motor.
- Specially engineered tubing for long life and high pressures. Meets FDA 21 CFR requirements for food contact applications.
- Patented Tube Failure Detection (TFD) system. Senses tube failure by detecting chemical in the pump head. No false triggering.
- 100:1 turndown ratio.
- SCADA Inputs include: 4-20mA and pulse inputs for remote external speed control and either powered 6-24 VDC or non-powered dry contact closure for remote start/stop.
- Operator friendly digital touch pad.
- Backlit LCD displays motor speed, input signal values, service and alarm status.
- Outputs include: one 250V/3A relay to monitor TFD (Tube Failure System) and FVS (Flow Verification System). A 4-20mA analog output signal scaled to the motor speed is optional.
- Two CNC precision machined squeeze rollers and two alignment rollers for optimum squeeze, unparalleled accuracy, and tube life.
- Heavy duty rotor - single piece plastic rotor means no flexing and increased accuracy with no metal springs or hinges to corrode.
- Inject at maximum pressure in either direction (clockwise and counter clockwise).
- Compatible with Blue-White's output Flow Verification Sensor (FVS) system. Sensor is sold separately.

Engineering Specifications:

Maximum working pressure (excluding pump tubes):
125 psig (8.6 bar)
Note: see individual pump tube assembly maximum pressure ratings.

Maximum Fluid temperature (excluding pump tubes):
3/8" OD x 1/4" ID tubing connections: 130° F (54° C)
M/NPT connections: 185° F (85° C)
Note: see individual pump tube assembly maximum temperature ratings.

Maximum fluid viscosity:
12,000 Centipoise

Maximum suction lift:
30 ft. of water at sea level (14.7 atm psi)

Ambient Operating Temperature
14°F to 115°F (-10°C to 46°C)

Ambient Storage Temperature
-40°F to 158°F (-40°C to 70°C)

Operating Voltage:
115VAC/60Hz, 1ph (1.5 Amp Maximum)
230VAC/60Hz, 1ph (0.7 Amp Maximum)
220VAC/50Hz, 1ph (1.0 Amp Maximum)
240VAC/50Hz, 1ph (1.0 Amp Maximum)

Power Cord Options:
115V60Hz = NEMA 5/15 (USA)
230V60Hz = NEMA 6/15 (USA)
220V50Hz = CEE 7/VII (EU)
240V50Hz = AS 3112 (Australia/New Zealand)

Motor:
Brushed DC, 1/8 H.P.

Duty cycle:
Continuous

Motor speed adjustment range 100:1:
1.0% - 100% motor speed (1.3 to 130 RPM)

Motor speed adjustment resolution:
0.1% increments

Display
Backlit LCD, UV resistant.

Keypad
Eight button positive action tactile switch keypad.

Enclosure:
NEMA 4X (IP66), Polyester powder coated aluminum.
Maximum Overall Dimensions:
7-1/2" W x 10-1/4" H x 14" D (19 W x 26 H x 35.6 D cm)

Product weight:
28.4lb. (12.9 Kg)

Approximate shipping wt:
35 lb. (15.9 Kg)

Materials of Construction:

Wetted components:

Pump Tube Assembly (Model Specific - 2 provided):
Tubing: . . . . . Norprene® or Norprene Chemical® or Tygothane®
Adapter fittings: .PVDF

Injection / Back-flow Check valve:
Body & insert: . . . . . PVDF
Check Ball: . . . . . Ceramic
Spring: . . . . . Hastelloy C-276
Ball Seat O-ring: . . . . . FKM (optional EPDM)
Static Seal O-ring: . . . . FKM (optional EPDM)
Duckbill anti-scale valve: Santoprene®

Ancillary Items provided

With "S" tubing type connections only:
Suction Tubing: . . . . . 3/8" OD x 1/4" ID x 10' Clear PVC
Discharge Tubing: . . . . 3/8" OD x 1/4" ID x 10' Polyethylene (LLDPE)
Suction Strainer: . . . . . Polypropylene

With "B" tubing and "M" M/NPT connections only:
Suction Strainer:
Body: . . . . . PVDF
Check Ball: . . . . . Ceramic
Ball Seat O-ring: . . . . . FKM (optional EPDM)

With "C" Tri-clamp connections only:
none

Non-Wetted components:

Enclosure:
413 Aluminum (Polyester powder coated)

Pump Head:
Valox® (PBT) thermoplastic

Pump Head Cover:
Clear Acrylic - Annealed for added strength and chemical resistance.
Permanently lubricated sealed motor shaft support ball bearing.
Brass shaft support bearing retainer.

Cover Screws:
Stainless Steel

Roller Assembly:
Rotor: .....Valox® (PBT)
Rollers: .....Nylon
Roller Bearings: .....SS Ball Bearings

Motor Shaft:
Chrome plated steel

TFD System Sensor pins:
Hastelloy C-276

Power Cord:
3 conductor, SJTW-A Water-resistant

Tube Installation Tool:
GF Nylon

Mounting Brackets and Hardware:
316 Stainless Steel

Output Specifications:

Feed Rate			Max Speed	Max Pressure	Max Temperature	A2 Model Numbers		
Norprene® A2 Tube Pumps								
Meets FDA criteria for food | Excellent chemical resistance | CIP | SIP								
GPH	**LPH**	**ML/Min**	**RPM**	**PSI (bar)**	**F (C)**	**115V AC**	**230V AC**	**220V AC**
.02 - 1.7	.07 - 6.5	1 - 108	130	125 (8.6)	185 (85)	A2V24-*ND	A2V25-*ND	A2V26-*ND
.06 - 5.5	.21 - 20.6	3 - 344	130	125 (8.6)	185 (85)	A2V24-*NF	A2V25-*NF	A2V26-*NF
.14 - 13.8	.52 - 52.2	9 - 870	130	125 (8.6)	185 (85)	A2V24-*NH	A2V25-*NH	A2V26-*NH
.14 - 13.8	.52 - 52.2	9 - 870	130	65 (4.5)	185 (85)	A2V24-*NHL	A2V25-*NHL	A2V26-*NHL
Norprene® Chemical A2 Tube Pumps								
Meets FDA criteria for food | Superb chemical resistance								
GPH	**LPH**	**ML/Min**	**RPM**	**PSI (bar)**	**F (C)**	**115V AC**	**230V AC**	**220V AC**
.15 - 14.9	.56 - 56.2	9 - 937	130	50 (3.4)	130 (54)	A2V24-*TH	A2V25-*TH	A2V26-*TH
Tygothane® A2 Tube Pumps								
Meets FDA criteria for food | Resistant to oils, greases and fuels								
GPH	**LPH**	**ML/Min**	**RPM**	**PSI (bar)**	**F (C)**	**115V AC**	**230V AC**	**220V AC**
.04 - 4.0	.15 - 15.2	3 - 253	130	65 (4.5)	130 (54)	A2V24-*GE	A2V25-*GE	A2V26-*GE
.09 - 9.3	.35 - 35.2	6 - 587	130	65 (4.5)	130 (54)	A2V24-*GG	A2V25-*GG	A2V26-*GG

* Inlet/outlet connection type
S = 3/8” OD x 1/4” ID tubing compressions type connections
M = ½” male NPT
C-= 3/4” tri-clamp connections

- The Flex-Pro Pump’s motor speed is linear over the entire 1% to 100% adjustment range.
- Output versus pressure is nearly linear in all models. Larger tubes exhibit greater losses.
- For optimum tube life, specify the pump to operate at the lowest possible RPM and pressure.

Chemical Resistance of Tubing:

Norprene® Tubing

Meets FDA criteria for food | Excellent chemical resistance

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

Norprene® Chemical Tubing - Ultra smooth plasticizer-free bore (inner liner)

Meets FDA criteria for food | Superb chemical resistance

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

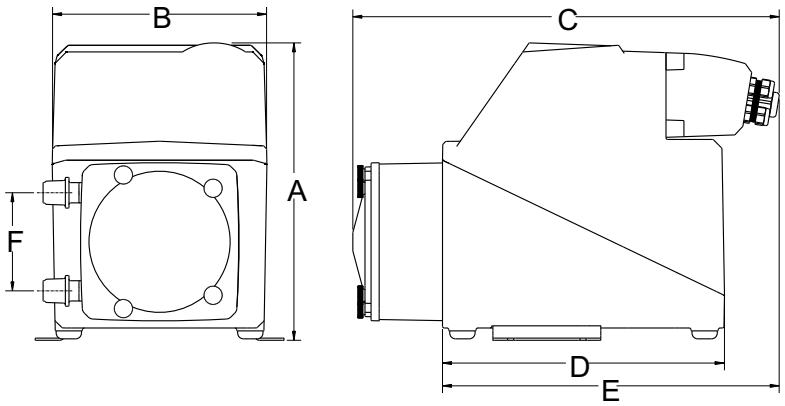
Tygothane® Tubing

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

Cyclohexane	Kerosene	Oils:	Oils:
Diesel Fuel	Lard	ASTM reference No.1,2,3	Linseed
Fatty acids	Mineral spirits	Castor	Lubricating
Gasoline	Soap solutions	Coconut	Mineral
Heptane	Turpentine	Fuel	
Hexane	Polymer		

Norprene® is a registered trademark of Saint-Gobain.
Tygothane® is a registered trademark of Saint-Gobain.
Note: Data shown at 72 degrees F.

Dimensions:



Dim	A2 Series	
	Inches	cm
A	10-1/4”	26
B	7-1/2”	19
C	14”	35.6
D	9-1/2”	24.1
E	11”	27.9
F	3-3/8”	8.6

Model Number Matrix:

Flex-Pro Model Number	
A2	Flex-Pro Peristaltic Metering Pump

Series Control Options	
F	Single manual output control (manual/local control only)
V	Multiple automatic input output control and alarm modes (remote control)

Maximum Motor Speed	
2	130 RPM (maximum rotor rotation speed)

Power Cord (operating voltage requirement 96VAC to 264VAC)	
4	115V / 60Hz, power cord NEMA 5/15 plug (US)
5	230V / 60Hz, power cord NEMA 6/15 plug (US)
6	220V / 50HZ, power cord CEE 7/VII plug (EU)
8	240V / 50HZ, power cord AS 3112 plug (Australia/New zealand)
X	No Power Cord

Inlet/Outlet Connection Size, Connection Type, Connection Material	
S	3/8” OD x 1/4” ID Tube Compression Fitting, Natural PVDF
M	½” Male NPT Fitting, Natural PVDF
C	3/4” Tri-clamp connections, Natural PVDF

Pump Tube Material, Pump Tube Size, operating flow range				
	ND	Norprene® .078 ID, 0.02 to 1.8 GPH	TH	Norprene® Chemical .250 ID, 0.16 to 16.0 GPH
	NF	Norprene® .156 ID, 0.06 to 6.2 GPH	GE	Tygothane® .125 ID, 0.04 to 4.5 GPH
	NH	Norprene® .250 ID, 0.15 to 15.0 GPH	GG	Tygothane® .187 ID, 0.09 to 9.3 GPH
	NHL	Norprene® .250 ID, 0.15 to 15.0 GPH (Low PSI)		

Options (leave this blank for standard model with left facing pump head inlet/outlet)	
1	TI40-6V Threadless injection check valve, replaces A-014NK-6A threaded check valve
2	C340A Foot valve, replaces standard C-342 inlet strainer (no check valve)
3	4-20 mA analog output (requires “V” series control)
R	Right facing pump head, input / output (Left facing fluid input / output is standard)
D	Down facing pump head, input / output (Left facing fluid input / output is standard)
C1	Communications Interface - Profibus DPV1 - (requires “V” series control)
C2	Communications Interface - Modbus RTU - (requires “V” series control)
C3	Communications Interface - Modbus TCP - (requires “V” series control)
C4	Communications Interface - Industrial EtherNet/IP - (requires “V” series control)
C5	Communications Interface - Profinet RT I/O - (requires “V” series control)

A2	V	2	4	-	S	NH	-	R - C5	Sample Model Number

Features list:

Features:
TFD (Tube Failure Detection) System Alarm
FVS (Flow Verification System) Alarm *
Motor reverse (rotor reversible)
Three position pump head rotation
Output: One, 6 amp alarm relay
Output: Analog 4-20mA (optional)
Input: One, dry contact closure 6-24 Vdc powered loop for remote start / stop
Input: Remote speed control via 4-20mA, 0-10VDC, high speed digital pulse, contact closure pulse
Optional: remote communications, Profibus DPV1, Modbus RTU, Modbus-TCP, EtherNet/IP, and Profinet RT I/O.
Display: Motor speed, Input signal values, Tube Failure Detection (TFD) system and Flow Verification System (FVS) alarm status
Available Operating Modes:
Manual (local): speed adjustment
Remote input: 4-20mA
Remote input: high speed frequency (pulse) input
Remote input: pulse triggered batch dispensing

Optional Communications Commands List

Control Commands	Available Pump Status Data
Start/Stop	Motor run/stop status
Set motor speed (0.5 to 100.0%)	Priming status
60 second prime at maximum speed	Pump head Cover on/off status
Lock and unlock any touch pad button	Status of each local touch pad button
Clear/reset general alarm	Motor direction
Reset pump tube timer	Current operating mode selection
Set operating mode	TFD (Tube Failure Detection) system status
	FVS (Flow Verification System) status
	General alarm status
	Alarm output relay status
	Current pump operating speed
	Current pump tube timer accumulated hours
	Current analog input signal value in mA
	Current frequency input signal value in Hz
	Current analog output signal value in mA
	Pump model and software version

* Requires Micro-Flo Sensor sold separately

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