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Parker

SciLog® FilterTec™ / FilterTec™ Plus

- intelligent bioprocessing system
- dead-end single / multi-filtration system

The SciLog® FilterTec™ is an automated laboratory scale normal flow filtration (NFF) system that monitors, adjusts and documents filter back pressure and filtrate.

The result is a system that can optimize filtration parameters, maximize filter throughput and can also be used as a tool to evaluate / compare different filters by calculating Vmax. The system also offers the patented R/P Stat (rate / pressure) method, which has been proven to increase filter throughput up to 30%.

The automatic documentation and alarm / pump stop settings allow the user to focus on other tasks while the system is running. Programmable end points ensure the system stops operating when a given back pressure, filtrate rate or total filtrate limit has been reached. When sold with SciDoc software, documentation capabilities include collection of 15 real-time filtration parameters. The FilterTec™ is also an integral component in the HarvestClear Filtration System, a complete solution for clarifying bioreactor outputs up to 20L.

Note: SciLog®, HarvestClear® & FilterTec™ are trademarks of Parker Hannifin Corporation.

Features and Benefits

- Safe, walk-away system operation
- Filterability studies and Vmax determination
- Real-time data collection of 15 filtration parameters
- Increased NFF filter efficiency up to 30%
- 3 pressures sensor connections for serial or parallel filter trains
- Compatible with all filters
- Optional scale enables gravimetric control

FilterTec™ Plus

Triple your NFF productivity with the FilterTec™ Plus and enjoy the same features of the SciLog FilterTec™ for filterability studies, filter size determination and filter scale-up. The FilterTec™ Plus has expanded upon the capabilities of the FilterTec™ to communicate with up to three electronic balances and control three pump heads simultaneously. This product allows for testing of three identical NFF filters at the same rates or three different filters at the same pressure. Parallel processing of a solution through three filters provides statistical verification of filter capacity. The FilterTec™ Plus is compatible with all manufacturers' filters.

Applications

Normal Flow Filtration (NFF)

The FilterTec™ uses a pressure sensor and scale feedback to perform normal flow operations by constant rate or constant pressure. The end point controls ensure the system shuts off when a user defined maximum filter pressure, minimum filtrate rate or maximum filtrate limit is reached.

Normal Flow Filtration (NFF) - Optimized

The FilterTec™ achieves optimized normal flow operations by utilizing the patented R/P Stat Method. This automated procedure maintains a selected pump rate until a user-defined upper pressure limit has been attained as a result of filter plugging. The system automatically switches from a constant rate to a constant pressure fluid delivery (see Fig. 1). The pump continuously reduces the flow rate to maintain the pressure across the filter until a user-defined minimum filtrate rate is attained. This method allows full utilization of the existing filter capacity and is accompanied by a significant increase in total filter throughput upwards of 30% compared to constant pressure or constant flow throughput data.

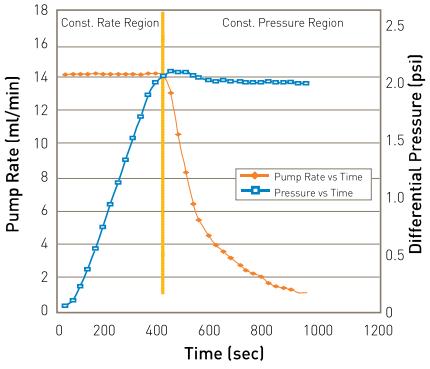
Filterability Studies

The FilterTec™ is capable of simultaneously monitoring three pressure points. This capability is particularly useful in monitoring the pressure differentials of multiple filters in a serial or a parallel filter train. Excessive pressure build-up across a filtration stage element typically indicates the need for a larger porosity and/or a larger area filter element. The FilterTec™'s R/P programmable mode allows you to modify the pump rate and/or pressure over a selected time interval, in a stair-step (Step) or ramped (Scan) manner, (see Fig. 2) until the user defined filtrate weight has been attained.

Vmax Determination

When used with an electronic scale, the FilterTec™ collects and documents the filtrate weight in the constant pressure, constant rate or R/P Stat Method. The parameter T / W (Time / Filtrate Weight) is plotted against time. The inverse of the resulting slope represents Vmax. The FilterTec™ reports the instantaneous Vmax from the slope of the neighboring data points. (see Fig. 3).

Performance Characteristics



Cellulose Acetate Membrane Filter
Porosity: 0.45 micron, Filter Area: 17.3 cm²
Solution: Fat Free Skim Milk, 20 x Diluted

Fig. 1 - Normal Flow Filtration by R/P Stat Method

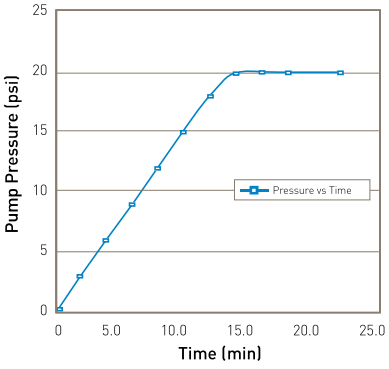
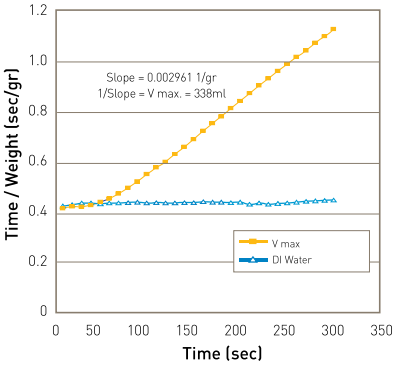


Fig. 2 - FilterTec™ R/P Programmable Mode Time-Programmable Pump Pressure



Cellulose Actate Membrane Discs, 47 mm
Porsity: 0.45 micron Surrogate Sample; 30 x Skim Milk,
Pump: #14 Silicone Tubing, FilterTec™ 'P-State Mode', 20 psi

Fig. 3 - V max: NFF Capacity Determination

Specifications

	Description
Dimension / Weight	Width: 5.75" (146 mm) x Height: 8.5" (2126 mm) x Depth: 11" (279 mm): 14 lbs (6.4 Kg)
Enclosure & Rating	16 Ga, aluminium baked epoxy blue 4-40dC, 0-100% humidity
Pressure Sensors	Accommodates up to three disposable pressure sensors. The calibrated pressure range is 0 - 60 psi. Any point within this range can be recalibrated using an external pressure reference source.
Power	115 / 220-240 VAC, 60 / 50 Hz, 75 Watts, double fused: T1AL 250V (CE: IR35A 250VAC)
Motor / Encoder	8, 160, 600 RPM, 30 VDC, 3.8A, 120 ppr 8 and 160 RPM, 100 ppr 600 RPM
I/O Ports	Male DB9 scale connections (RS-232), female DB9 printer or PC connection (RS-232), external IO DB37 connector, 1 TTL input, 4 TTL output, 3 4-20mA
Operational Mode	Constant rate (can be used to perform R/P Stat Method), constant pressure, R/P programmable and manual mode

Options and Accessories

FilterTec™ Pump Heads: SciLog® Tandem

- Pressure: 25 psi continuous, 45 psi max.
- 1081 Flow Rate (ml/min): 0.03 - 1515
- 1082 Flow Rate (ml/min): 0.5 - 2258

FilterTec™ Plus Pump Heads: MasterFlex Easyload II

- 3 heads (thin walled tubing) with 8 RPM motor. Flow rate*: 0.03 to 24 ml/min.
- 3 heads (thin walled tubing) with 160 RPM motor. Flow rate*: 0.5 to 554 ml/min.
- 3 heads (thin walled tubing) with 600 RPM motor. Flow rate*: 2 to 1515 ml/min.
- 3 heads (thick walled tubing) with 600 RPM motor. Flow rate*: 59 to 2258 ml/min.

Electronic Scales

- 8 RPM System: 2100g capacity x 0.01g resolution
- 160 or 600 RPM System: 8200g capacity x 0.1g resolution

Ordering Information

FilterTec™

200 - FLTR - ☐ ☐ ☐

Code	Scale
5	None
7	Scale Included

Code	Motor
0	8 RPM
1	160 RPM
6	600 RPM

Code	Pump Head
81	1081 Pump
82	1082 Pump

Example: 200-FLTR-7181 - SciLog® FilterTec™ - with scale, 160 RPM motor and 1081 head

FilterTec™ Plus

200 - FLTR - ☐ ☐ ☐

Code	Scale
6	None
8	Scale Included

Code	Motor
0	8 RPM
1	160 RPM
6	600 RPM

Code	Pump Head
21	Easyload II, thin walled tubing
22	Easyload II, thick walled tubing

Example: 200-FLTR-8121- SciLog® FilterTec™ Plus - with scale, 160 RPM motor and 3 MasterFlex Easyload II heads for thin walled tubing.

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