

- intelligent bioprocessing system
- dispensing system

The SciLog LabTec® is an automated laboratory scale dispensing system by volume, weight or weight ratio.

The LabTec® automates, optimizes and documents repetitive liquid dispensing with or without in-line filter sterilization. The LabTec® models are ideally suited for dispensing sterile solutions in media kitchens and microbiology laboratories. Also widely used in small production runs to fill your final product into vials, bottles, bags, and containers.

The automatic documentation and alarm/pump stop settings allow the user to focus on other tasks while the system is running. Remote control and programmable end points ensure the system starts and stops operating when a given dispense is complete or an interlock condition occurs. When sold with SciDoc software or a printer, documentation capabilities include 7 real-time parameters.

### Features and Benefits

- Rapid, high precision dispensing by volume, weight or weight ratio
- Self priming
- Reversible flow
- Remote activation
- Accuracy +/- 0.5% by volume
- Accuracy +/- 0.3% by weight
- Pressure alarm alerts when in-line filter needs to be replaced
- PC or printer documentation of dispensing



Note: LabTec® is a registered trademark of Parker Hannifin Ltd.

## Performance Characteristics

**Table 1 - Automated Weighing and Dilution of Food Samples**

Trial	Sample Weight (g)	Theoretical Diluent Weight (g)	Actual Diluent Weight (g)	Errors (g)
1	10.0	90.0	90.0	0.0
2	10.0	90.0	89.9	-0.1
3	10.0	90.0	90.1	+0.1
4	10.0	90.0	89.8	-0.2
5	10.0	90.0	90.1	+0.1
6	10.0	90.0	90.0	+0.1
7	10.0	90.0	89.9	-0.1
8	10.0	90.0	90.2	+0.2
9	10.0	90.0	90.1	+0.1
10	10.0	90.0	89.8	-0.2

**Table 2 - High Speed Volumetric Dispensing**

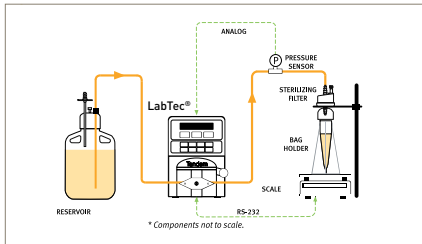
Dispensed Volume (ml)	Tubing Size	Pump Speed (%)	Slow Factor (ml)	Typical Precision (%)	Dispensing Time / Aliquot (sec)
5.0	#15	100%	2.50	1.7%	2.1
10.0	#15	100%	2.50	0.5%	2.0
25.0	#15	100%	2.50	0.20%	2.7
25.0	#24	100%	4.75	0.15%	2.9
50.0	#24	100%	4.75	0.50%	3.9
100.0	#24	100%	4.75	0.35%	6.3
100.0	#35	100%	5.00	<0.5%	4.5
200.0	#35	100%	5.00	<0.5%	6.0
300.0	#35	100%	5.00	<0.5%	12.0

**Table 3 - Gravimetric Solution Dispensing**

Weight Entered (g)	Average Dispensed Weight (g)	RSD (%)	Dispensing Time per Aliquot (sec)
200.00	199.95	0.03%	16
150.00	150.01	0.11%	14
100.00	100.01	0.11%	13
50.00	49.96	0.18%	12
25.00	25.05	0.25%	10

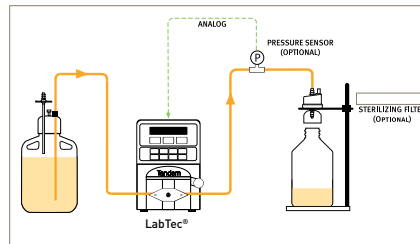
# Applications

## Weighing, Dilution and Sterilization



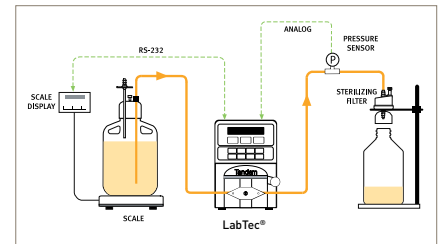
The LabTec® significantly increases the productivity of any microbiology laboratory. The dispensing system automates weighing and diluting of food samples, in preparation for bacteriological analysis. Only an approximate sample size is needed. The LabTec® dispenser calculates and rapidly dispenses the media required to achieve a user-selected diluent factor. See Table 1. Costly and time-consuming autoclaving of media is avoided with in-line filter sterilization of diluents using a filter capsule. A disposable pressure sensor monitors filter backpressure and provides an alarm signal when a failing sterilizing filter (high backpressure) needs to be replaced. An optional printer or PC hook-up automatically documents all sample and diluent weights. The LabTec® dispenser improves the speed, precision and accuracy of the entire sample preparation process by automating the weighing, dilution and documentation process.

## Precision Batch Dispensing



The LabTec® Smart Dispensing System is capable of high speed, high precision batch dispensing. The LabTec® comes with a 1082 Tandem peristaltic pump head. Up to 10 different dispensing volumes can be stored and easily retrieved for quick batch volume dispensing. An optional sterilizing filter and disposable pressure sensor provide for in-line buffer sterilization and reliable detection of filter plug-up conditions. Typical performance results including dispensing times are summarized in Table 2. The LabTec® is easy to calibrate. A stored calibration curve is provided for each pump head/pump tubing combination. From a stored menu, you select the pump tubing you have installed in the LabTec®. For high accuracy dispensing applications, you may want to use the LabTec®'s single-point re-cal feature.

## Fast, Accurate Dispensing and Sterilization



In this configuration, the LabTec® is connected to an electronic scale for high accuracy filling applications. A sterilizing filter and a disposable pressure transducer provide a safe and effective in-line filter sterilization capability. The LabTec® continuously monitors the filter backpressure and alarms when a user-defined pressure level has been exceeded, which indicates a filter plug-up condition. See Table 3. The high dispensing accuracy is achieved by reducing the pump rate as final target weight is being approached. The slow-down avoids overshooting the target weight. After slow-down, the LabTec® pump stops briefly when 99% of the final target weight has been dispensed. The electronic scale is allowed to come to a steady-state readout and the LabTec® slowly starts up again to dispense the remaining solution.

## 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, IP20
Pressure Sensors	Accommodates one (1) disposable pressure sensor. 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, 3400 RPM, 30 VDC, 3.8A, 100 ppr
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	Dispense by volume, weight or weight ratio. Store up to 10 programs per mode. Pump re-calibration.

## Options and Accessories

### Pump Heads:

Tandem Peristaltic

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

- FMI RH Piston: 0.002-320 (600, 3400 RPM)  
(Pressure: 100 psi max)
- Micropump MAG: 0.54-3488 (3400 RPM)  
(Pressure: 40 - 70 psi max[model dependant] )

- Masterflex Peristaltic:  
0.03- 2900 (8, 160, 600 RPM)  
(Pressure: 25 psi continuous - 45 psi max)

## Ordering Information



Code   Electricity Input		Code   Motor		Pump Head							
				Code   SciLog	Code   Masterflex	Code   Micro Pump	Code   FMI RH				
0	120 VAC	0	8 RPM	81	Thin Wall	31	MAG 120	35	MAG 200	41	OCKC
1	220 VAC	1	160 RPM	22	Thick Wall	32	MAG 201	36	MAG 201	42	1CKC
3		3	3400 RPM	82	Hi Performance L/S	33	MAG 1840	37	MAG 187		
6		6	600 RPM			34	MAG 040				

Example: 200-LABT-1181 - SciLog LabTec® - 120 VAC, 160 RPM motor and 1081 head

Parker dominick hunter has a continuous policy of product development and although the Company reserves the right to change specifications, it attempts to keep customers informed of any alterations. This publication is for general information only and customers are requested to contact our Process Filtration Sales Department for detailed information and advice on a products suitability for specific applications. All products are sold subject to the company's Standard conditions of sale.



## SciLog MabTec®

- intelligent bioprocessing system
- automated high density cell culture system

The SciLog MabTec® is an automated high density cell culture system.

The MabTec® high density cell culture system is a fully automated gravimetric bioreactor maintenance system. Its capabilities include automated feed, harvest or recirculation in fully disposable or hybrid bioreactor flow paths. The system also includes the ability to conduct unattended bioreactor inoculations, bolus feed and/or pump flow reversals (to prevent filter fouling) all on one unit with run times from hours to months.

The MabTec® is available with a choice of pump heads and can feed bioreactor sizes from 50mL to 2000L. The MabTec® is engineered to fit seamlessly with any bioreactor and enhance its performance. A laboratory scale, available separately, must be connected to use the MabTec®'s gravimetric features.

### Features and Benefits

- Safe, walk-away system operation
- Maintains a steady state bioreactor weight / volume within +/- 0.5%
- Real-time data collection with optimization tools
- Small, lightweight and mobile
- Works with any bioreactor
- Eliminates bioractor addition errors
- Reduces aggregation of cells in the perfusion filter
- Intuitive application interface



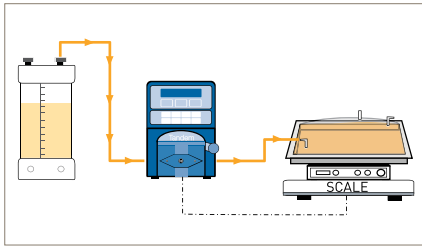
Note: MabTec® is a registered trademark of Parker Hannifin Corporation.

## MabTec® motor size, pump head and tubing recommendations vs reactor size and reactor exchanges per day

		Reactor Volume Size																							
		0.05	0.25	0.5	1	1.5	2	2	2.2	3	3	4	4	5	5	10	20	50	100	250	500	1000	2000		
#Exchange per day	1	0.03	0.17	0.35	0.69	1.04	1			2	2			3		3		7	14	35	69	174	347	694	1389
	2	0.07	0.35	0.69	1	2	3			3	4			6	6	7		14	28	69	139	347	694	1389	
	3	0.10	0.52	1	2	3	4			4	5	6			8	8	10	10	21	42	104	208	521	1042	2083
	4	0.14	0.69	1	3	4	6			6	6	8			8	11	11	14	14	28	56	139	278	694	1389
	5	0.17	0.87	2	3	5	7			7	8	10			10	14	14	17	17	35	69	174	347	868	1736
	10	0.35	2	3	7	10	14			14	15	21			21	28	28	21	35	69	139	347	694	1736	
	15	0.52	3	5	10	16	21			21	23	31			31			42	52	104	208	521	1042		
20	0.69	3	7	14	21				28	31				63			56	69	139	278	694	1389			
		#13	#15		#24			#16	#14		#15	#16		#24	#15	#24	#15	#24	#15	#24			#35		
		8 RPM				160 RPM				8				160 RPM				600 RPM							
		1081	1082			1081			1082	1081					1082										

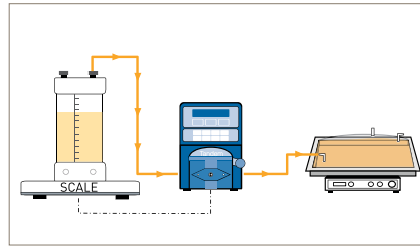
\*Flow rates in grams per minute

- 8 RPM with 1081 and #13 tubing
- 8 RPM with 1082 and #15 tubing
- 8 RPM with 1082 and #24 tubing
- 160 RPM with 1081 and #14 tubing
- 160 RPM with 1081 and #16 tubing
- 160 RPM with 1082 and #15 tubing
- 160 RPM with 1082 and #24 tubing
- 600 RPM with 1082 and #15 tubing
- 600 RPM with 1082 and #24 tubing
- 600 RPM with 1082 and #35 tubing



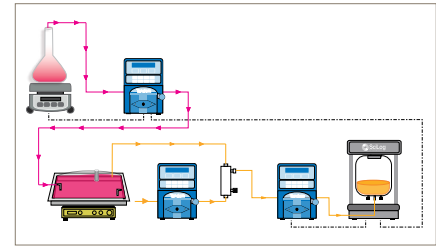
**Fig. 1 Pre-Programmed Modes**

The MabTec® has a pre-programmed mode for inoculating, transfecting and induction when used with a laboratory scale. This pre-programmed mode allows the user to deliver precise additions without being physically present, which is ideal for processes that are scheduled to run at inconvenient hours or on a repeated schedule.



**Fig.2 - Fed Batch**

The MabTec® can be used to automate the feeding of cell cultures. Automation of this process greatly reduces the possibility of human error while reducing operator time. The MabTec® can be programmed to deliver a continuous feed for a specified number of days up to 100. Two modes exist for feeding; one that monitors levels in the reactor and makes additions while the other monitors the reactor and amount of feed media.



**Fig. 3 - Ultra High Density Cell Culture**

The MabTec® system is uniquely designed to provide a complete perfusion strategy. The user is able to maintain fresh media in the reactor, remove the desired component or prevent the build-up of waste products, all without a scale under the bioreactor. By keeping bioreactor weight maintained to within 2% and providing a constant stream of nutrient rich and pH buffered media, the bioreactor environment becomes ideal for ultra high density cell cultures.

## 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, IP20
Pressure Sensors	Accommodates three (3) disposable pressure sensors [included]. 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, 600 RPM 100 ppr
I/O Ports	Male DB9 scale connections, female DB9 printer or PC connection, external IO DB37 connector 4 TTL input, 3 4-20mA analog input: constant rate / constant pressure filtration with size user-definable alarms
Operational Mode	Exact Feed: 2 scales, perfusion, re-circulation, feed: 2 scale, feed: 1 scale, seed induction, manual

## Options and Accessories

### Pump Heads:

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

### Accessories:

- SciPres® Pressure sensors
- Fittings and tubing kit
- Manifolds
- Printer
- Master slave cables
- Laboratory balance
- WeighStation™

## Ordering Information

20 - MTEC - 1

Code	Electricity Input	Code	Motor	Code	Pump Head
0	120 VAC	0	8 RPM	81	1081 Pump
1	220 VAC	1	160 RPM	82	1082 Pump
		6	600 RPM		

Example: 200-MTEC- 1181- SciLog MabTec® - 120 VAC with scale, 160 RPM motor and 1081 head

- intelligent bioprocessing system
- tangential flow filtration system

The SciLog® PureTec® is a laboratory-scale tangential flow filtration (TFF) and parameter development system.

The PureTec® system is delivered as a complete development system including three pressure sensors, an 8.1kg balance, a 500mL vessel with magnetic stirrer and startup kit including tubing and fittings. Methods can be performed using constant or step cross flow, inlet or transmembrane pressure (TMP).

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 user defined concentration or diafiltration is reached. When sold with SciDoc software or a printer, documentation capabilities include 17 real-time filtration parameters such as TMP, permeate flow rate and quantity, Normalized Water Permeability (NWP), concentration factor, and other parameters over time.

## Features and Benefits

- Complete development system
- Real-time data collection with optimization tools
- Scalable parameters, easy tech transfer
- Flow and automated pressure control
- Safe, walk away system operation
- Intuitive application interface



Note: SciLog® & PureTec® are registered trademarks of Parker Hannifin Corporation.

## Performance Characteristics

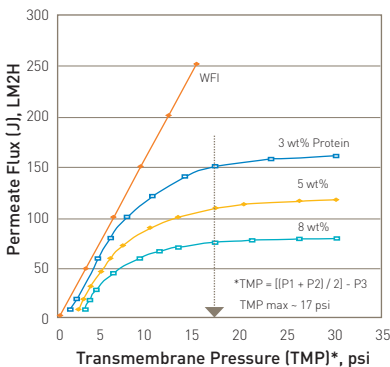


Fig. 1 - Transmembrane Pressure vs. Permeate Flux

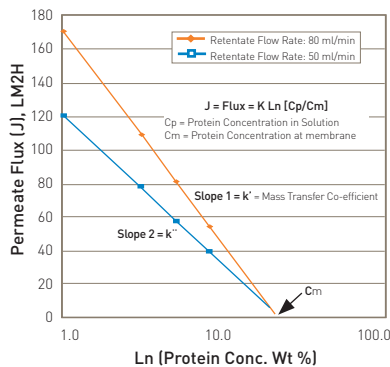


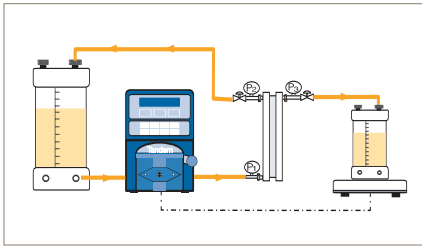
Fig. 2 - Ln [Protein Conc, [CP]] vs. Permeate Flux (J)

In TFF, concentration procedures, a dilute protein solution (~1.0 g/L) is re-circulated, through a TFF filter whose selected porosity allows only solvent (water) and dissolved salt to pass through the filter pores and is collected as permeate. The removal of water leaves an increasingly concentrated protein solution behind as retentate. The gradual removal of water causes a gradual increase in solution viscosity during the TFF concentration step. Permeate flux, transmembrane pressure (TMP) and cross flow rate are significantly affected by solution viscosity changes.

In order to maintain an optimal permeate flux, both cross flow rate and measured TMP require frequent, manual adjustment during the TFF concentration procedure. The PureTec® has the control methods to perform the operation automatically via constant or stepped cross flow rate, inlet pressure or transmembrane pressure. The system will automatically stop when the user defined concentration factor has been reached.

# Applications

## Concentration

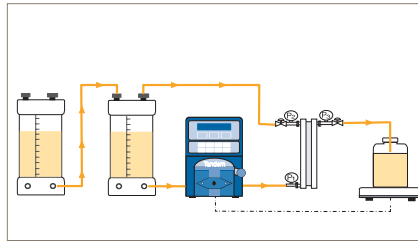


In the constant pump rate or pressure modes, you can implement your selected pump rate or pressures and use some or all of five alarm conditions. The pump rate or pressures can be increased or decreased "on-the-fly" without stopping the pump action.

In the constant rate mode, increasing the feed rate in a stepwise fashion and simultaneously monitoring the permeate collection rate allows you to readily determine the optimal feed rate with the highest permeate yield (See figure 2).

In the constant pressure mode, increasing the trans-membrane pressure (TMP) in a step-wise fashion and simultaneously monitoring the permeate collection rate allows you to determine the optimal TMP with the highest permeate yield (See figure 1).

## Diafiltration via Suction

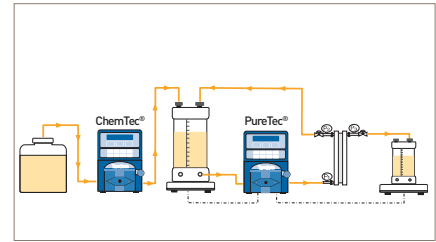


In diafiltration procedures, a protein solution is "washed", i.e. de-salted, using an exchange buffer to remove undesirable electrolyte [dissolved salt]. The concentrated protein solution is re-circulated, through a TFF filter whose selected porosity allows only the undesirable electrolyte to pass through the filter pores, which is collected as permeate. The permeate volume (undesirable electrolyte) that has been removed from the concentrated protein solution (retentate) is replaced with an (desirable) exchange buffer. In constant volume diafiltration or "washing" procedure, the collected electrolyte is automatically replaced by an equal volume of exchange buffer. Approximately ten (10x) volume exchanges are typically required for substantial removal of undesirable electrolyte from the concentrated protein solution.

### Diafiltration via suction:

For small volumes a SciLog® pressure vessel stored with buffer can be connected to the secondary inlet port on the retentate vessel. While keeping a closed system the retentate vessel will automatically draw out buffer to replace the salt and solvent that has been removed by the filter. The process will continue until the PureTec® has reached its programmable end points.

## Diafiltration via ChemTec®



### Diafiltration via ChemTec®:

For larger volumes the SciLog® ChemTec® system and an appropriately sized balance will monitor and maintain the fluid in the PureTec®'s retentate vessel. The ChemTec® will maintain the level until a user defined volume exchange has been reached.

# 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, IP20
Pressure Sensors	Accommodates 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 30 VDC, 3.8A, 120 ppr 8 & 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 Analog Input: Constant rate / constant pressure filtration with size user-definable alarms
Operational Mode	Constant pump rate, constant inlet or transmembrane pressure (TMP)

# Options and Accessories

## 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

## Accessories

- Ohaus balance 8200g  
0.1g resolution
- Vessel 500 mL
- Magnetic mixer
- Pressure sensors (3x)
- Fittings & tubing kit

# Ordering Information

20	- PURE-						
Code	Electricity Input	Code	Scale	Code	Motor	Code	Pump Head
0	120 VAC	7	Scale Included	0	8 RPM	81	1081 Pump
1	220 VAC			1	160 RPM	82	1082 Pump
				6	600 RPM		

Example: 200-PURE-7181 - SciLog® PureTec® - 120 VAC with scale, 160 RPM motor and 1081 head