

Cross Flow Membrane Filtration – FT17

The Armfield FT17 is a lab-scale system for evaluating membranes in a cross flow filtration application. This enables rapid determination of cross flow filtration performance using a range of membrane types with small product volumes (1 litre).

It can also be used in teaching applications to demonstrate features of different membrane types and the effect of varying filtration variables.

COMPUTER CONTROLLED**Features / benefits**

- ▶ Rapid determination of the best membrane for a particular product for efficient process development
- ▶ Small-scale, only one litre of material is required
- ▶ Simple cleaning and maintenance protocols
- ▶ Ability to determine effect of operating parameters on flux profiles
- ▶ Uses a standard filtration size of 90mm enabling a wide range of filtration membranes to be used
- ▶ Supplied with a range of polymer membranes
- ▶ Optional ceramic membrane available (FT17-5)
- ▶ Suitable for microfiltration, ultrafiltration, nanofiltration and reverse osmosis membranes and pressures. Pressure operating range 0-40 bar
- ▶ Variable retentate cross flow velocity over the filtration membrane
- ▶ Data logging of filtration pressure, permeate mass, retentate flow rate, retentate temperature (optional)
- ▶ Electronic balance to measure filtration performance (optional)
- ▶ Buffer addition / Diafiltration capabilities
- ▶ Optional retentate temperature control (FT17-15)

Description

The FT17 is available in two basic configurations. The standard FT17 is the simplest system. It uses a high pressure stainless steel piston pump to circulate product from a feed vessel to the filtration assembly with simple on/off control. A backpressure valve is used to adjust the transmembrane pressure with a maximum allowable system pressure of 40 bar (analogue pressure indicator). As standard the filtration assembly works with polymer membrane filters (90mm diameter) and sample filters are included for microfiltration (MF), ultrafiltration (UF), nanofiltration (NF) and reverse osmosis (RO). A wider range of filters are available on request.

The FT17-50 is an enhanced unit, with all the additional benefits of computer control, data logging and diafiltration capability. It includes an electronic pressure sensor to measure filtration pressure (0-40 bar) and electronic temperature sensor (thermocouple) to measure retentate temperature. It also includes a feed pump speed controller, which enables the retentate cross flow velocity over the filtration membrane to be varied. There is also an electronic mass balance to measure the mass of permeate collected. This option also enables diafiltration using a peristaltic pump and high level sensor.

The software can be used to define the mass of permeate collected prior to addition of water/buffer (batch diafiltration). The data from all these is logged in the software enabling plotting of permeate flow rate with time so that the effect of variables (filtration pressure, cross flow velocity, product temperature and diafiltration) on process performance can be determined. Communication to the PC (not supplied) is via an internal USB interface.

FT17-5 Ceramic membrane filtration can be examined with the option FT17 5, which is supplied with a 15 kDa cut-off filter (other filter cut-offs are available on request). This accessory can be used with both FT17 and FT17-50.

FT17-15 Enables temperature control of the retentate by connecting a recirculating chiller to the jacket of the feed vessel. This enables filtration at operating temperatures between 5 and 60 °C.

An analogue temperature gauge indicates the retentate temperature unless FT17-50 is specified in which case the temperature is measured by a thermocouple and displayed on the software. This accessory requires the FT17-50 system.

Applications

- ▶ Fruit juices
- ▶ Dairy
- ▶ Fermented foods
- ▶ Food processing waste treatment
- ▶ Pharmaceutical/biopharmaceutical
- ▶ Water treatment
- ▶ Medical applications
- ▶ Biofuels

Requirements



Scale



- ▶ Electrical Supply: Single phase (see Ordering codes)
- ▶ FT17-50 requires a Windows PC with USB interface



FT17-15 Temperature Control accessory

Technical specifications

Vessel volume	1l
Maximum Operating Pressure	40 bar
Retentate control temperature range	5-60°C
Filter size	90mm

Overall dimensions

Length	0.70m
Width	0.60m
Height	0.60m

Packed and crated shipping specifications

Volume	0.4m ³
Gross weight	70Kg

Ordering codes

- ▶ FT17-A 220-240V/1ph/50Hz
- ▶ FT17-G 220-240V/1ph/60Hz
- ▶ FT17-50-A 220-240V/1ph/50Hz
- ▶ FT17-50-G 220-240V/1ph/60Hz
- ▶ FT17-5 Ceramic membrane filtration accessory
- ▶ FT17-15 Temperature control accessory (requires FT17-50)
- ▶ FT17-CONSUM Set of additional polymer membranes



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