

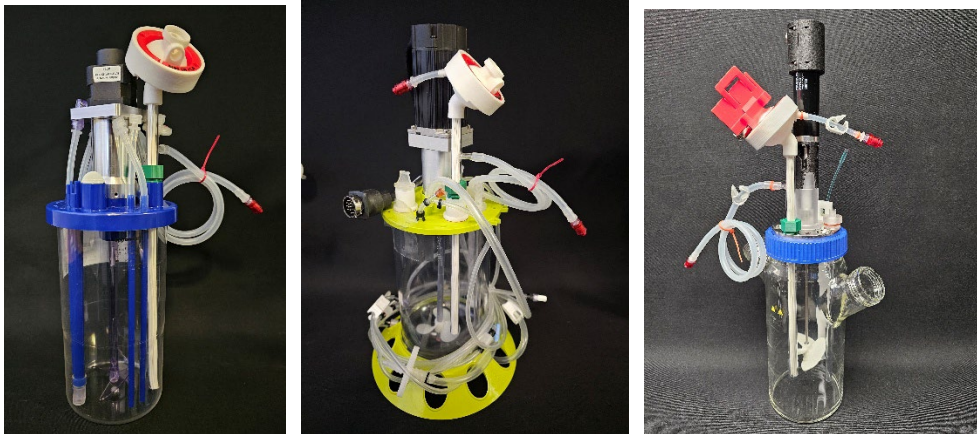
TOP text **PG13.5 port ATF-SUBmerged kit**

2nd line text ATF-SUBmerged kits up to 5 liter Vessel Volume STR or SUB

Date: 2026-06-28

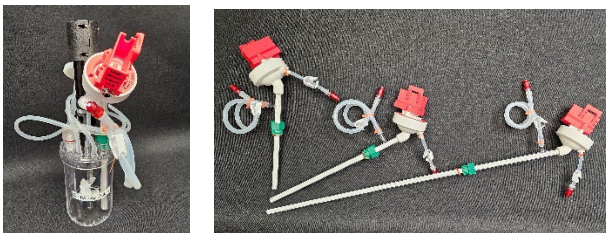
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Most batch Stirred-Tank-Reactor (STR) or Single-Use-Bioreactor (SUB) for Process Development (PD) of mAbs are equipped with a free PG13.5 port for an upgrade to ATF-SUBmerged for expressing mAbs. The presented revolutionizing DIY kit allows anyone with such need and a hood to upgrade - no extra autoclaving needed.



Check this out - a 1 liter BioBLU® 1c OD110 mm - a 3 liter CellReady OD138 mm - a 1 liter glass/steel OD110 mm STR - all 3 mounted with an ATF-SUBmerged kit unifying SeptraPor® OD12 x 300 mm 186 cm² HFF with Thalia TM60A Single-Use-Pump (SUP). Easily installed at end-user site, converts most STR / SUB to a perfusion P-STR / P-SUB when one PG13.5 port is free. Angled Thalia SUP eliminates conflicts with servo motor mounted on head plate.

Clotho Drive Unit is required and integrates pressures, vacuum, volume sensing eliminating the need for external sensors for HFF **DeltaP** / ΔP and mass-flow measurements. Clotho process software controls accurately the programmable stroke volume, number of strokes, the allowed **DeltaP** / ΔP along the HFF for fully automatic broth low harvest velocity and fully selectable broth high velocity for the sequential lumen cleaning eliminating HFF blockage.



*Right photo show 500 ml P-SUB with a PG13-200 ATF-SUBmerged DIY kit installed. Centre photo the three sizes of the **CellRetention-PG13 ATF** kit family.*

INSIDE the STR / SUB the **CellRetention-PG13 ATF** kit integrates:

1. The SeptraPor HFF model CZ12 or CZ24 (manufactured by Meissner Corp)

OUTSIDE the STR / SUB the **CellRetention-PG13 ATF** kit integrates:

1. Thalia™ LASER guided Single-Use-Pump controlled by outstanding Clotho™ drive unit and its software with unlimited opportunities
2. 900 mm weldable M-Flex® hose connected to SeptraPor permeate barb

The PG13 kit:

1. SepraPor OD12 mm HFF (manufactured by Meissner) available in 2 lengths: 300 mm (CZ12 - 186 cm² surface area) unified with angled Thalia TM60-A SUP and 600 mm long (CZ24 - 406 cm² surface area) unified with angled Thalia TM80-A SUP. Angled SUPs gives space on a crowded head plate for sensors and servo motor.
2. The perfusion ATF-SUBmerged kits are designed as single-use, delivered dual bag packed and E-beam irradiated. And as such not designed to be autoclaved but installed to the SUB / STR under the hood.
3. Don't forget to pre-wet the HFF before use.

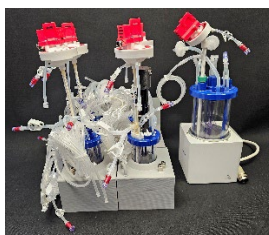
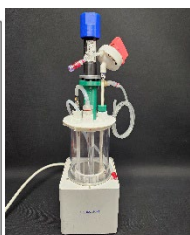
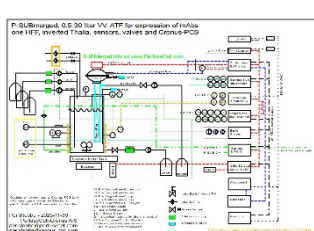
Benefits:

- A. **avoid HFF fouling** – freedom to select any broth velocity flushing out debris from inside the HFF by LASER guided Thalia diaphragm pump
- B. **avoid dead volumes** – skip hoses, fittings - **SUBmerged** SepraPor HFF integrated with Thalia diaphragm pump eliminates dead volumes
- C. **avoid cell death** - innovative inverted Thalia pump arranged above the **SUBmerged** SepraPor so the Thalia pump cannot accumulate cells
- D. **reduce shear stress** – eliminating hoses, fittings and **SUBmerged** the cartridge into the broth reduces shear stress to lowest possible
- E. **SUBmerged** - HFF cartridge directly in the broth inside the SUB - no hoses, fittings needed = simplified, reliable and ready to use

Installation (inside the hood):

1. Locate a free PG13 port
2. Inset the **CellRetention-PG13 ATF** kit and tighten the SW17 / PG13 nut like a sensor nut with 1 Nm
3. Don't forget to pre-wet HFF as usual by adding suitable liquid and amount into the STR / SUB. Activate Clotho for 15 strokes and pump entire volume out through the permeate port by external peri pump

Tips & Tricks here - <https://perfusecell.com/perfusion-support/tips-tricks-in-details/tips-tricks-small-volume>



Notice the SepraPor model CZ12-xx1x part of the PG13 kit is partly SUBmerged. *Built-in one-hole sparger works acceptable for batch processes and reaches in the area of 50 mio/cells/ml. Higher cell density requires optimised gassing. The ThermoWell support a range of OD110 mm 2 liter SUBs / STRs here one SUB equipped with an OD12x300 mm ATF-SUBmerged DIY kit based on SepraPor HFF unified with Thalia TM60A and HPD drive via Maxon RE30 from SciVario.*

Download documentation

