

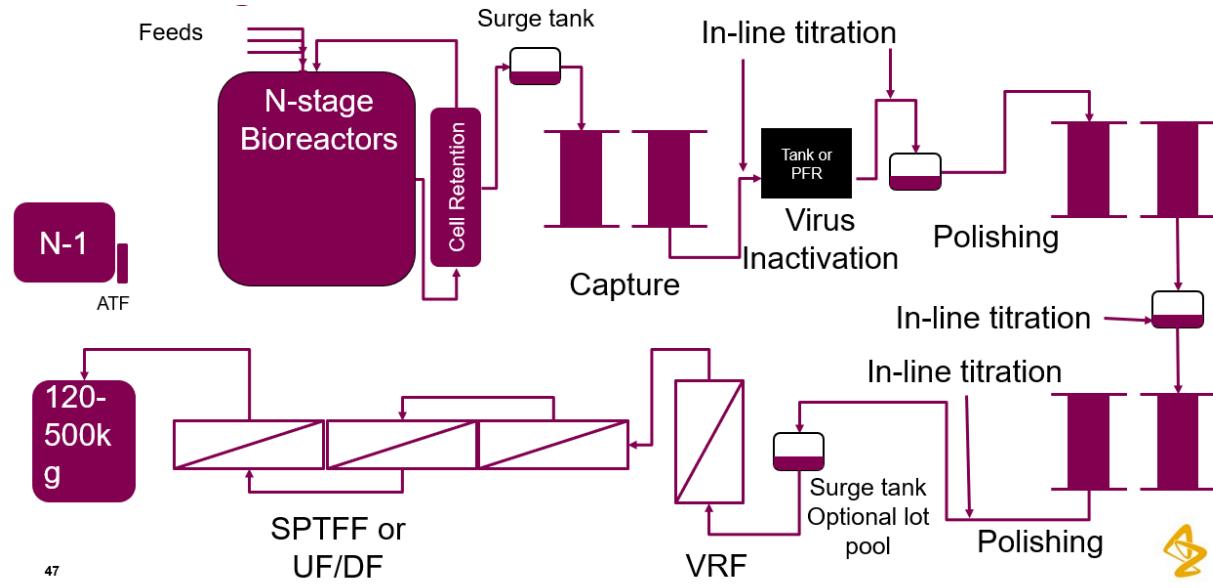


The National Institute for Innovation in Manufacturing Biopharmaceuticals





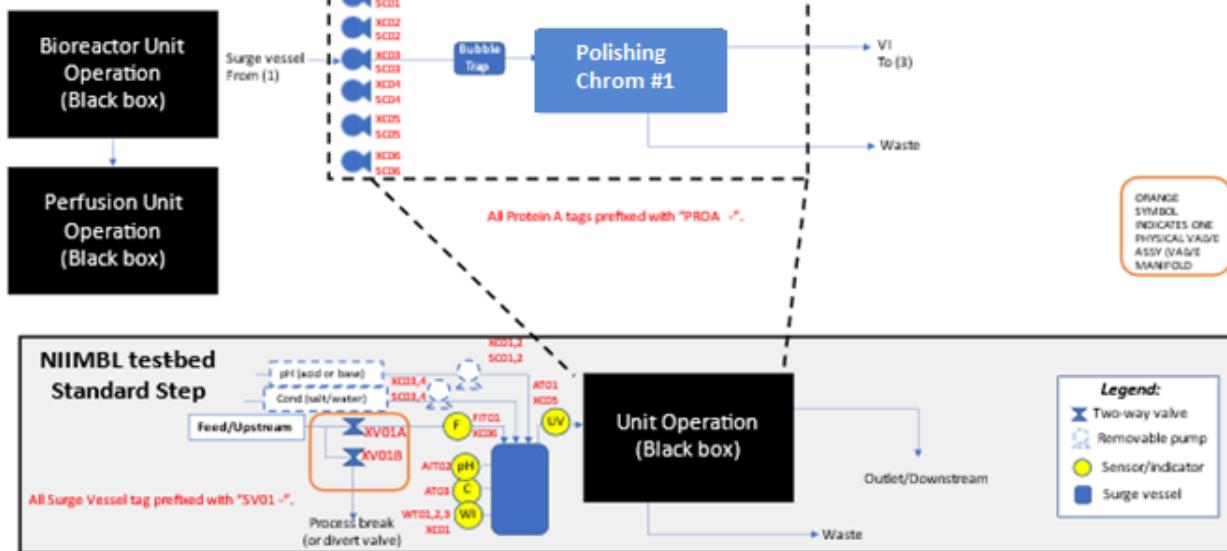








**Polishing
(2) Chrom #1**







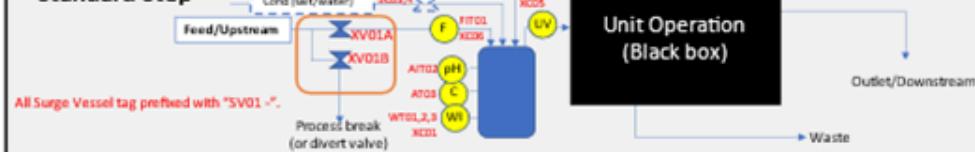


(2) Polishing Chrom #2



ORANGE SYMBOL INDICATES ONE PHYSICAL VALVE ASSY (VALVE MANIFOLD)

NIIMBL testbed Standard Step



Legend:

- Two-way valve
- Removable pump
- Sensor/Indicator
- Surge vessel

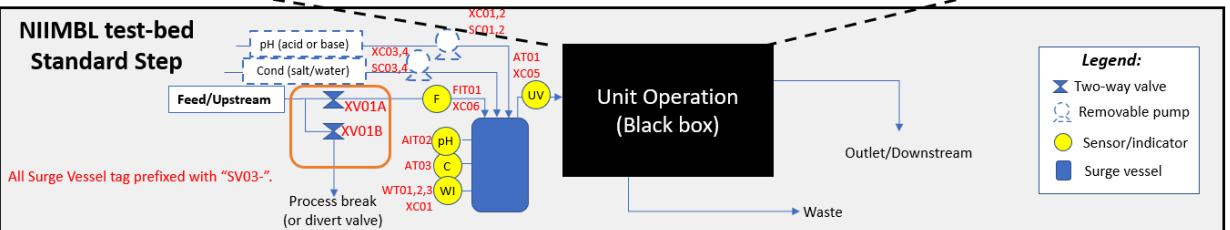








(4) Post-VI Depth Filtration











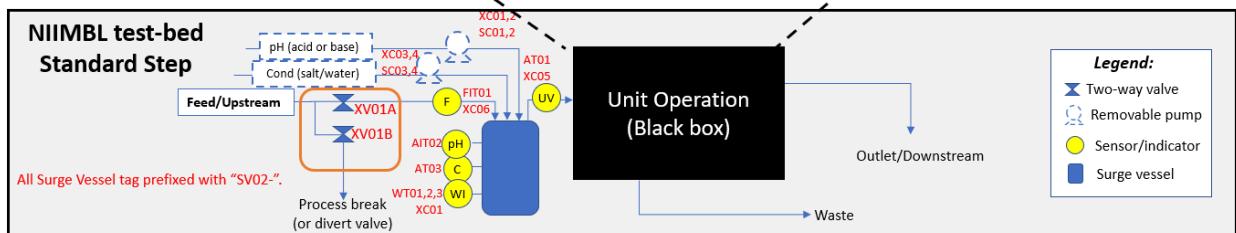






(3)

Viral inactivation black box:

















(8) Ultrafiltration

