ÄKTA ready™ systems

SINGLE-USE CHROMATOGRAPHY SYSTEMS

The ÄKTA ready™ system family consists of a range of single-use liquid chromatography hardware options that are built for process scale-up and manufacturing (Fig 1). The systems operate with ready-to-use, disposable flow paths that are available in two sizes for each system option — high or low flow — providing a wide operating flow rate range. The disposable flow path removes the need for cleaning between products/batches, and no development and validation of cleaning procedures is required. When used together with ReadyToProcess™ columns, the risk for cross-contamination is minimized. Replacing flow paths between batches is fast and intuitive, enabling fast campaign changeover while minimizing the risk for operator errors.

This range includes the ÄKTA ready™ system (with isocratic or gradient capability), ÄKTA ready™ variable UV, and ÄKTA ready™ extended chromatography systems. Each option provides different levels of functionality and performance. The flow paths for all hardware options are made of biocompatible material that is well suited for use in a GMP-regulated environment and easily disposed of. ÄKTA ready™ chromatography systems are controlled by UNICORN™ software or DeltaV™ software, including a complete installation guide and documentation for installation of Flow Kits and columns.

We can also provide modified versions of the ÄKTA ready™ system with additional features upon request or with other control software.

Fig 1. ÄKTA ready™ extended chromatography system.

ÄKTA ready™ systems provide the following benefits:

- Improved process economy and productivity due to the fully disposable flow path and easy campaign changeover
- Simplified equipment installation and validation takes less time to obtain production capacity
- No need for system cleaning validation and minimized risk of cross-contamination between products/batches
- Extensive product documentation to facilitate implementation in GMP environment.

After completion of a purification run, the columns and flow path (i.e., a flow kit and a gradient section) are disposed of, minimizing the risk of cross-contamination, which can speed processes up considerably due to fewer operations. The flow path can be changed quickly, with a downtime of less than 1 h for a changeover, saving time in manufacturing, and allowing better utilization of capital investment while lowering start-up cost and utility consumption.

Each system comprises an ÄKTA ready™ chromatography unit, UNICORN™ or DeltaV™ control software, and a disposable ÄKTA ready™ flow path including sensors and detection flow cells. Comprehensive hardware and flow path documentation are provided. Users can execute installation and operation qualification (IQ/OQ) protocols or can have these done by a certified Cytiva specialist. An optional component test checks that the kit has been correctly installed and that sensors are functional prior to start operating the system.

System capacity

The ÄKTA ready™ Low Flow and High Flow Kits are available for all system versions and allow a wide range of flow rates — from 3 L/h to 510 L/h.

- The Low Flow Kit (small diameter) manages flows of up to 175 L/h using columns typically less than 20 cm in diameter (~ 5 L column volume). The Low Flow Kit enhances system performance at low flow rates.
- The High Flow Kit (large diameter), typically used with larger columns (diameter > 20 cm, ~10 L column volume and higher), allows flow rates of up to 510 L/h.

ÄKTA ready™ system configurations

ÄKTA ready™ single-use chromatography systems are available in four standard configurations (Table 1):

- **ÄKTA ready™ system (isocratic and gradient capability)** provides essential functionality in chromatography operations with isocratic or gradient capability (Fig 2).
- **The ÄKTA ready™ variable UV system** includes gradient capability, three variable UV wavelengths, and an integrated pH electrode in the flow kit.
- **The ÄKTA ready™ extended system** provides additional functionalities compared to ÄKTA ready™ variable UV system.

Other configurations of the system are also available upon request.

Table 1. High-level comparison of functionality across ÄKTA ready™ systems

	ÄKTA ready™		ÄKTA ready™ variable UV	ÄKTA ready™ extended
	Isocratic	Gradient		
Essential functionality	•	•	•	•
Gradient capability		One inlet	One inlet	Six inlets
Three variable UV wavelengths			•	•
Integrated pH electrode in flow kit			•	•
Pre-column conductivity and air sensors				•
Automated air trap				•
Up/down flow on column				•
Integrated HMI*				•

*Human-machine interface

ÄKTA ready™ system (isocratic and gradient configurations)

The isocratic and gradient versions of the ÄKTA ready™ system have the functionality and sensor capability needed for most common chromatography operations. Isocratic systems can also be upgraded to gradient capability. The systems have a visual installation aid integrated into the software. Typical applications include mAbs and recombinant protein purification.

Fig 2. ÄKTA ready™ gradient system.

The configuration of the ÄKTA ready™ system (isocratic and gradient) is shown in Figure 3. Six inlets are available for the isocratic pump and one for the gradient pump. The pumps deliver fluid to the column via a pressure sensor (P) and the air trap. There are two sets of valves between the pump and the column: the air trap valves allow bypassing of the air trap, and the column valves allow bypassing of the column. The air trap has a manual air vent valve. After the column, the fluid passes through a second pressure sensor (P), where an electrode (pH) can be inserted (optional). Thereafter, the fluid continues through a flow meter (F), which includes an infrared (IR) temperature sensor (T), a conductivity cell (C), and a UV cell (UV). The last sensor in the path shown in Figure 3 is a third pressure sensor (P). After the sensors, the fluid continues via the outlet tubing to the outlet manifold, where valves divert the fluid to either waste or fraction collection.

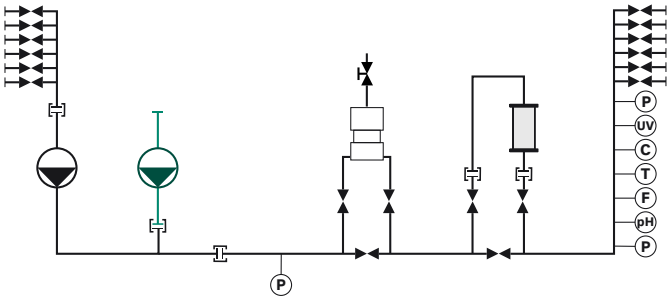

Fig 3. Flow chart for ÄKTA ready™ (isocratic and gradient configurations) and ÄKTA ready™ variable UV systems. Note that the green pump is not included in the isocratic system configuration.

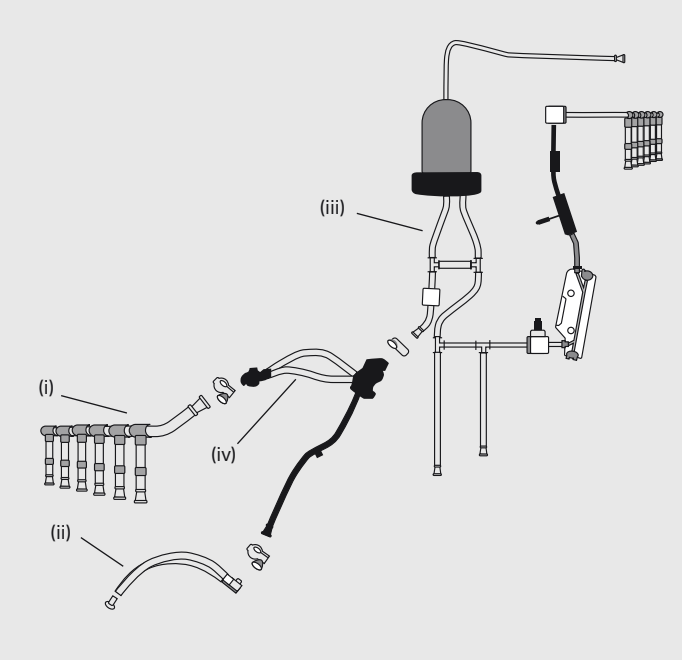

Fig 4. Flow kit with gradient section for ÄKTA ready™ system, showing inlet (i), pump tubing (ii), main section (iii), and gradient section (iv).

Each flow kit consists of three separate parts: the inlet manifold (i), the pump tubing (ii), and the main section (iii). These are assembled when the flow kit is connected to the system. A gradient section (iv), together with a flow kit, is required to run gradient elution. It should be inserted in the main pump position (Fig 4). Step-by-step installation guidance and documentation are provided by the UNICORN™ Installation Wizard.

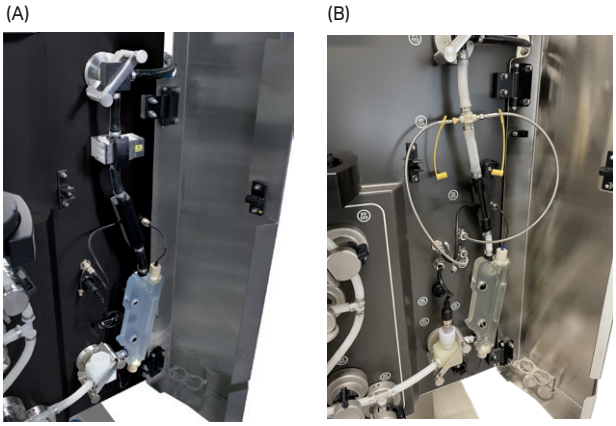

Fig 5. (A) Post-column sensors on ÄKTA ready™ chromatography system (isocratic and gradient configurations) displaying pressure, flow and temperature, conductivity, UV, and final pressure flow cell. (B) Post-column sensors on ÄKTA ready™ variable UV system displaying the two different sensor units: integrated pH electrode and three-wavelength UV cell.

ÄKTA ready™ variable UV system

Compared to ÄKTA ready™ system (isocratic and gradient), the ÄKTA ready™ variable UV chromatography system incorporates two different types of sensors in the system: a three-wavelength variable UV sensor and an integrated single-use pH electrode in the flow path (Fig 5B). The UV sensor can measure any three wavelengths in the range of 206–700 nm simultaneously during processing. The software can also calculate UV absorbance ratios during processing — for instance, the absorbance ratio of 260 nm and 280 nm, can be useful when separating empty from full adeno-associated virus (AAV) capsids. To enable closed processing, the pH electrode is integrated into the flow kit. Flow kits with aseptic connectors must be used in this scenario. The pH sensor is pre-calibrated and the calibration constants are easily entered into the software at installation.

The flow kit functionality, including combination with gradient section, is the same as for the ÄKTA ready™ system (isocratic and gradient) described above and shown in Figure 3. However, the UV and pH sensor cells in the flow kit have a different design (Fig 5B).

ÄKTA ready™ extended system

Compared to the ÄKTA ready™ system (isocratic and gradient) and ÄKTA ready™ variable UV system, the ÄKTA ready™ extended system is designed with extra features to provide more flexibility in processing. Like the ÄKTA ready™ variable UV system, the extended system has a three-wavelength UV sensor and single-use pH electrode. In addition, the system has an integrated HMI and PROFIBUS connectivity to Xcellerex™ XDUO single-use mixing systems. This enables monitoring of sensors and control of the agitation on up to five Xcellerex™ XDUO mixers.

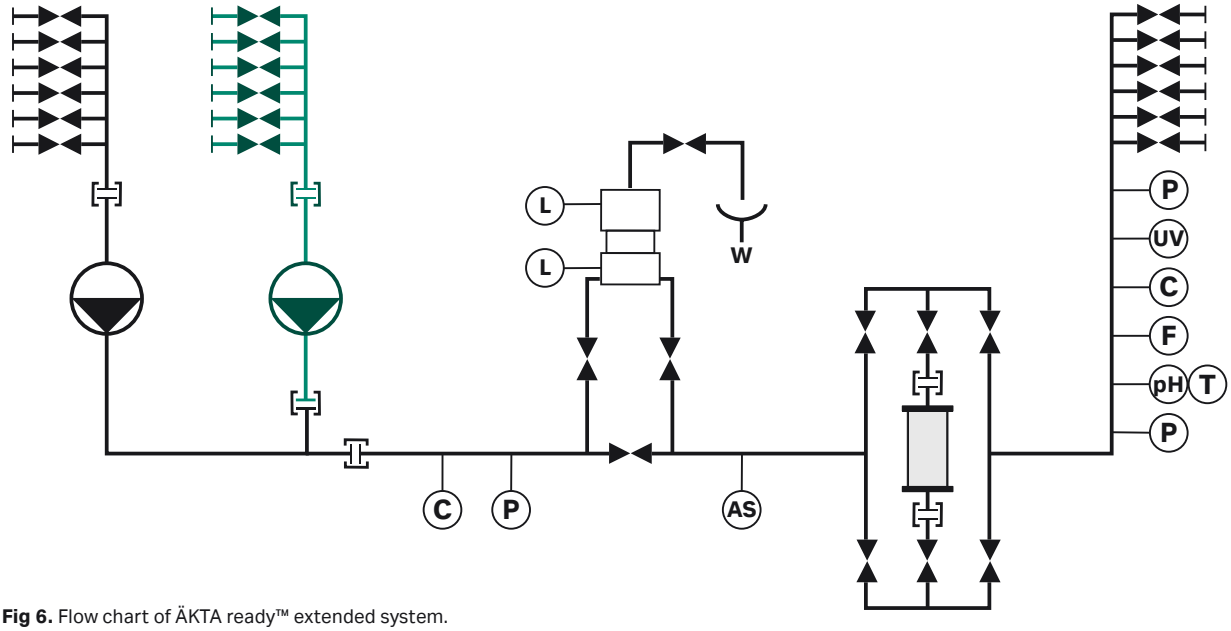

Fig 6. Flow chart of ÄKTA ready™ extended system.

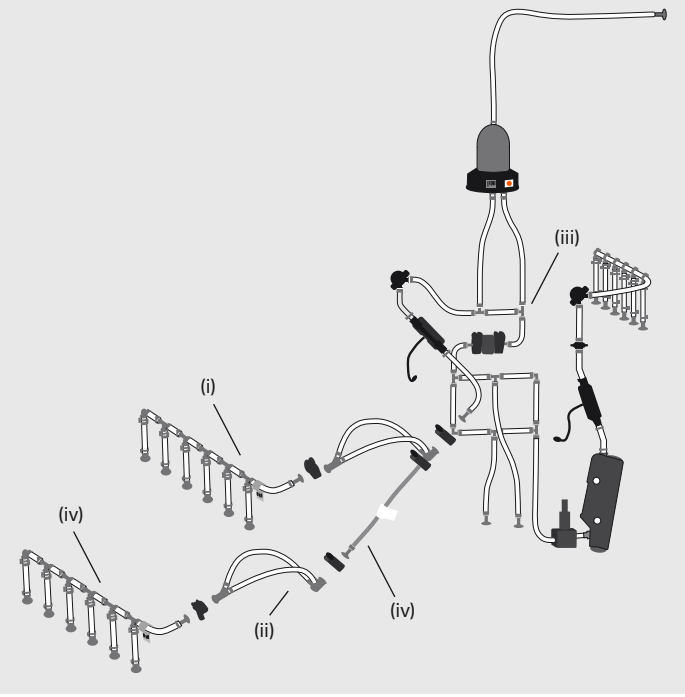

Fig 7. Flow kit with gradient section for ÄKTA ready™ extended system, showing inlet (i), pump tubing (ii), main section (iii), and gradient section with six additional inlets (iv).

The configuration of the ÄKTA ready™ extended system is shown in Figure 6. There are six inlets on the isocratic pump and six additional inlets on the gradient pumps. There is a conductivity sensor (C) directly located after the pumps that is used to monitor pre-column conductivity and can also be used for gradient control. A pressure sensor (P) is located after the conductivity sensor for safety and to measure the delta pressure over the chromatography column. The air trap is fully automated with two level sensors located on the chromatography unit. These controls the fill and stop fill function of the air trap. A pre-column in-line air sensor (AS) can be activated to prevent introduction of air into the column. The column valve assembly can run up or down flow, or it can be bypassed. Post-column sensors include a pressure sensor (P) with integrated pH electrode (pH) with integrated temperature sensor (T), followed by a flow meter (F) and conductivity (C) and ultraviolet (UV) sensors. A pressure sensor (P) is located before the six outlets to protect the operation from tubing blockage. The optional gradient section can be combined with the flow kit (Fig 7). The gradient runs can be controlled based on conductivity feedback or by mass flow.

Pressure and flow control

This feature allows for continued processing when running at constant flow rate and the pressure increases above the set maximum pressure. The system will use this function to automatically regulate the flow rate to a defined pressure set point. The chromatogram in Figure 8 shows the principle of the pressure-flow control function. Initially, the system is run at constant flow rate (50 L/h) (A). When pressure increases above the defined set point (1.0 bar [14.5 psi, 0.1 MPa]), the system regulates the flow rate to achieve constant pressure (B). As the pressure decreases, the flow rate increases until reaching the set point and is maintained again at constant flow rate of 50 L/h (C).

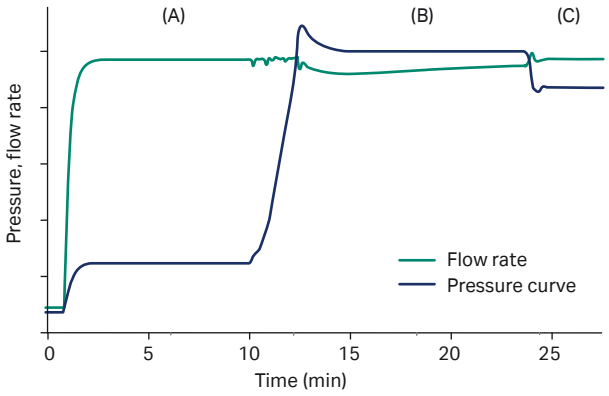

Fig 8. Control features of ÄKTA ready™ system flow rate (green curve) and pressure (blue curve). The figure shows the initial flow rate control (A); regulated flow rate to achieve constant pressure (B); and return to flow rate control (C).

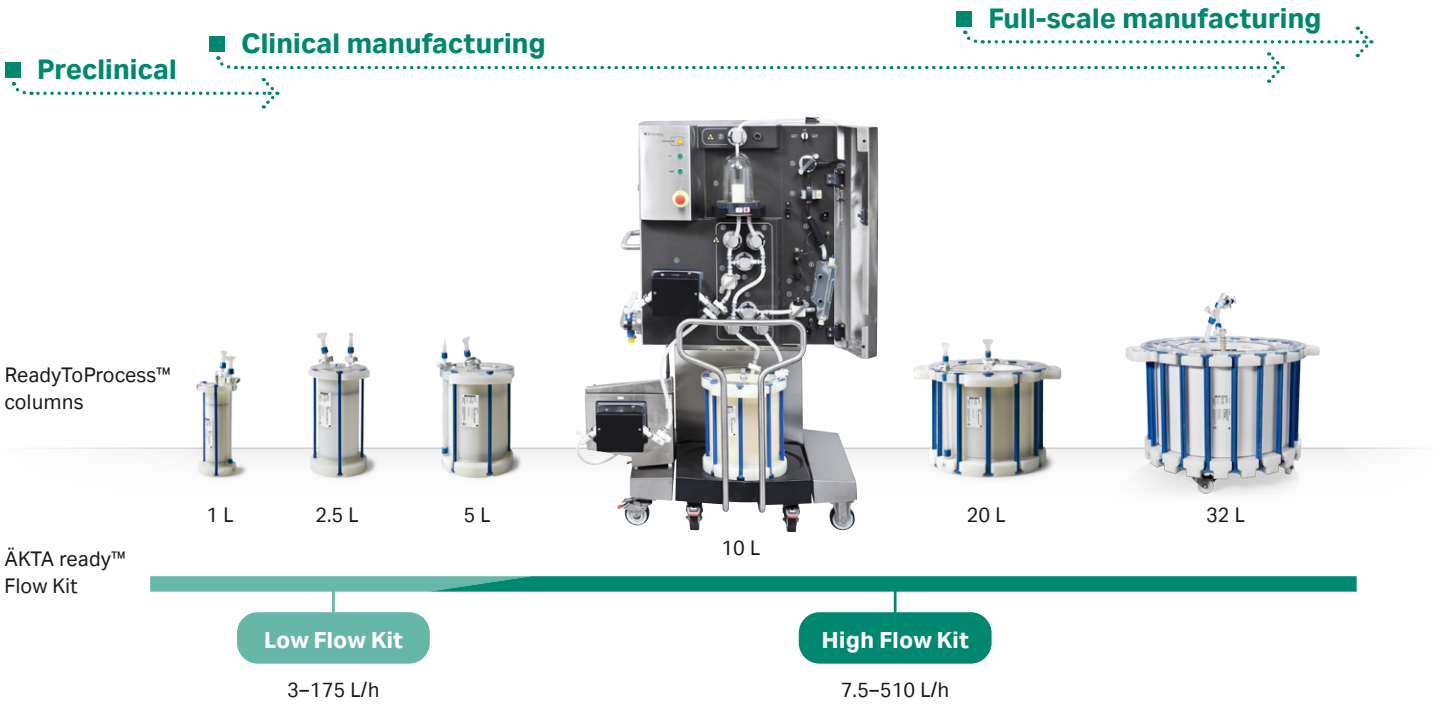

Fig 9. Consistency in column geometry allows for convenient scaling of ReadyToProcess™ columns, from 1 L to 32 L columns with 20 cm bed height.

Flow kits

ÄKTA ready™ flow kits are resistant to common chemical agents used in protein recovery, including buffer solutions for adsorption, elution, and washing as well as regeneration and cleaning solutions.

All materials are of proven quality, and the entire flow path is disposable. All wetted materials are fully biocompatible (USP class VI) and the materials used are traceable back to their production batches. All the materials are listed under Specifications.

All flow kits are produced under controlled conditions and packed in a clean room environment (class ISO 7) using validated protocols. The pump tubing elements (in flow kits and gradient sections) are autoclaved. The other flow kit parts are gamma irradiated. To protect against contamination, and for easy transfer into the clean room, flow kits are delivered in double plastic bags.

Product documentation and services

Regulatory authorities expect manufacturers of pharmaceuticals to qualify equipment before use in production. Rigorous documentation is an integral part of the ÄKTA ready™ concept, including the single-use flow kit. Both the ÄKTA ready™ hardware and flow kits are supported with an extensive documentation package.

- Product documentation: provides information about the materials used in wetted parts. Specific product documentation is available for flow kits. Extensive system documentation, such as drawings and schematics, is delivered with the ÄKTA ready™ system.
- Validation guide: includes a description of the flow kit manufacturing process, qualification tests, and extractable information.
- Release documentation is delivered with a functional test protocol. Flow kits are also delivered with a certificate of quality, including product release criteria.
- The system can be delivered with installation and operational qualification (IQ/OQ) documentation and the qualification can be performed by certified Cytiva specialists.

Comprehensive control with UNICORN™ software

The ÄKTA ready™ system (isocratic or gradient) includes an Installation Wizard that consists of instructions for correct and easy attachment. You can use UNICORN™ software's Installation Wizard to set up the flow kit and check functionality control of the flow paths before starting a batch run. A report is generated with completed installation procedures, including instructions from the installation guide, traceability to flow path, process information, and results from the component test. The installation guide also contains instructions and reports for column installation.

External, independent audits, have shown that the UNICORN™ development process provides good adherence to the framework, principles, and practices described in GAMP 5 and that functionality of the product is acceptable for use in a GMP-regulated environment in a manner complying with 21 CFR Part 11.

The UNICORN™ software communicates via OLE for Process Control (OPC), allowing for real-time and historical data access as well as third-party software control. The ÄKTA ready™ extended chromatography system can also be connected to Xcellerex™ XDUO mixers where process data can monitored and agitation controlled. The ÄKTA ready™ system can also be delivered with other software, such as Figurate™ automation control system powered by DeltaV™ software, on request.

ReadyToProcess™ columns

ReadyToProcess™ columns are available with a range of BioProcess™ chromatography resins in several different diameters. The columns are prepacked, presanitized, and prequalified. The columns are designed for purification of biopharmaceuticals for clinical phase I and II studies. Depending on the scale of operation, the columns can also be used for preclinical studies and full-scale manufacturing (Fig 9). The columns can be used in chromatographic applications for separation of proteins, endotoxins, DNA, plasmids, and viruses.

ReadyToProcess™ columns make several steps redundant (column packing, column qualification [HETP and asymmetry tested], sanitization, and cleaning validation), to ensure that significant time can be saved in downstream processing. ReadyToProcess™ columns are closed units and the design allows easy disposal after completed production.

Reproducible results with scalability

ÄKTA ready™ chromatography systems are designed for process scale-up and small- scale production. Methods can be developed at laboratory scale and then scaled up to the ÄKTA ready™ system. In addition, the process developed for ÄKTA ready™ systems can be transferred to the ÄKTA process™ system for production with conventional clean and reused technology if desired. Most ÄKTA™ systems use the same UNICORN™ control software, so methods can be scaled quickly and easily.

Scale-up studies

A study was performed to verify that similar results from protein separation experiments can be obtained regardless of column size or chromatography system used. A mixture of two proteins, bovine serum albumin (BSA) (M_r 66 000) and lactoferrin (M_r 90 000), was applied to columns of different sizes, and eluted. The elution peaks in the resulting chromatograms were compared. The columns used were: HiScale™ 16/40 packed with Capto™ S (20 cm bed height); ReadyToProcess™: Capto™ S 5 L (178/200); Capto™ S 32 L (450/200); and Capto™ S 57 L (600/200) (Fig 10).

The results shown in Figure 10 indicate that scale-up from an HiScale™ 16/40 to the ReadyToProcess™ columns was possible and that the results were similar regardless of the chromatography system used.

A study was conducted to compare gradient elution performance on ÄKTA ready™ gradient system and an ÄKTAprocess™ (now replaced by ÄKTA process™ CFG system) chromatography system. BSA and lactoferrin were separated through gradient elution on 2.5 L and a 10 L ReadyToProcess™ columns. Figure 11 indicates comparable results for ÄKTAprocess™ (A) and ÄKTA ready™ gradient (B) systems.

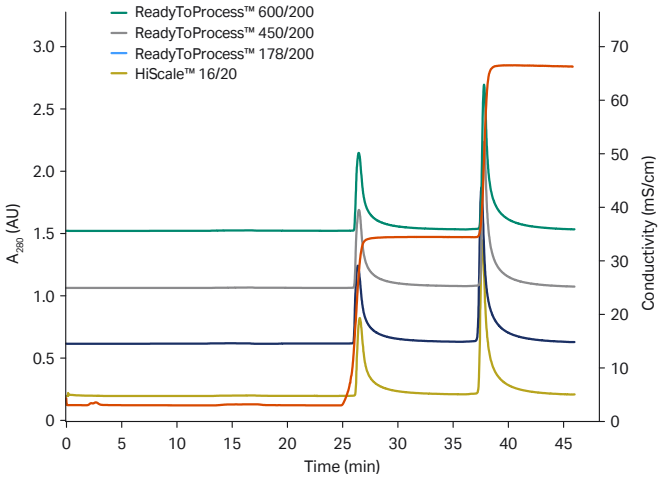

Fig 10. Stacked chromatogram from ÄKTA pure™, ÄKTA ready™, and ÄKTA ready™ XL systems comparing step elution on four different columns (the HiScale™ 16/40 packed with Capto™ S chromatography resin was run on an ÄKTA pure™ system). The elution buffers were 50 mM sodium acetate, 0.3 M NaCl, pH 5.0 and 50 mM sodium acetate, 0.65 M NaCl, pH 5.0. The elution steps were 3 column volumes (CV) each. The height of the UV-curves has been normalized based on the height of the first peak.

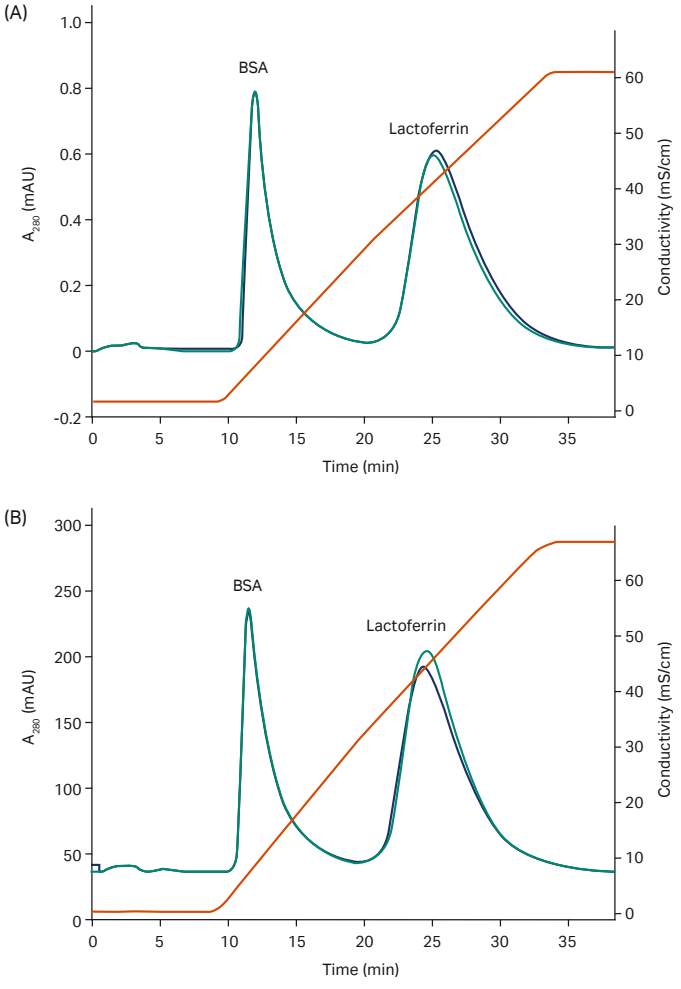

Fig 11. Chromatogram from ÄKTAprocess™ (now replaced by ÄKTA process™ CFG system) (A) and ÄKTA ready™ gradient (B) systems comparing gradient elution on 2.5 L and 10 L Capto™ S ReadyToProcess™ columns. The equilibration buffer was 50 mM sodium acetate, pH 5.0 and the elution buffer was 50 mM sodium acetate, 0.65 M NaCl, pH 5.0. The elution was performed over 10 CV followed by 100% elution buffer for 3 CV. The gradient is based on gradually changing the pump speed over time, which creates a volumetric gradient with ± 2% linearity. When conductivity is measured, linearity is ± 4% due to the non-linear relationship to the salt concentration.

Specifications

General specifications

	ÄKTA ready™ (isocratic and gradient)	ÄKTA ready™ variable UV	ÄKTA ready™ extended
General specifications W × H × D	1000 × 1650 × 800 mm (isocratic) 1160 × 1650 × 800 mm (gradient)	1140 × 1670 × 840 mm	1060 × 1760 × 1000 mm
Weight (kg)	230 (isocratic) 250 (gradient)	258	360
Ingress protection	IP45, pump head IP25		IP55, pump head IP25
Compressed air interface	5.5–7 bar, 50 NL/min, oil- and particle-free		

Sensor specifications

Flow rate accuracy[†]	**High flow kit:** ± 5% actual value at flow[‡] ≥ 40 L/h ± 10% actual value at flow < 40 L/h **Low flow kit:** ± 5% actual value at flow[‡] ≥ 20 L/h ± 10% actual value at flow < 20 L/h
Pressure sensor	Range: 0–5 bar g Accuracy: ± 0.20 bar g
Conductivity sensor[§]	Range: 0–150 mS/cm Accuracy: ± 5% full scale[¶]

	ÄKTA ready™ (isocratic and gradient)	ÄKTA ready™ variable UV	ÄKTA ready™ extended
Temperature sensor	Range: 2°C to 40°C. Accuracy: ± 3°C	2°C to 40°C ± 3°C	Range: 2°C to 30°C. Accuracy: ± 2°C
UV sensor	Range: 0.01–1.0 AU (AU linearity ± 5%)	3-wavelengths Range: 0–2 AU (AU linearity ± 2%***)	3-wavelengths Range: 0–2 AU (AU linearity ± 2%***)
pH sensor	Range: pH 2–12 (Accuracy: ± 0.2 pH at calibration temperature**)	Range: 3–10 (Accuracy: ± 0.3)	Range: 3–10 (Accuracy: ± 0.3)

[†] Flow meter cells for high flow and low Flow Kits are designed with different flow path geometries
[‡] Valid for liquid with density of water and 1.0 to 1.3-fold the viscosity of water at the actual liquid temperature; and max. temperature difference of 10°C between liquid and ambient temperature
[§] Temperature compensation optional
[¶] Valid at actual temperature (no temperature compensation)
** Temperature compensation not available
*** Valid for 250–700 nm, 2% linearity 0–1 AU for 206–250 nm

Operating conditions

Surrounding temperature	2°C to 30°C
Fluid temperature	2°C to 40°C
Fluid density	950–1050 kg/m^3
Fluid viscosity	1.0–1.3-fold water viscosity at actual temperature, max. 2.5 cP

System capacity

Volumetric flow rates	3–175 L/h Low Flow Kit 7.5–510 L/h High Flow Kit
Pump speed	225 rpm (100%) Low Flow Kit 340 rpm (100%) High Flow Kit
Max. pressure,peristaltic pump	4.0 bar
System pressure rating	5.0 bar (high-pressure flow path, upstream column) 2.0 bar (high-pressure flow path, downstream column) 0.95 bar (low-pressure outlet manifold) 0.6 bar (low-pressure inlet manifold)
Flow gradient	10–90% gradient buffer with ± 4% linearity, up to 3 bar
Conductivity gradient (ÄKTA ready™ extended system)	10–90% gradient buffer with ±2% linearity, up to 3 bars
Gradient flow range	20–175 L/h Low Flow Kit 40–510 L/h High Flow Kit

Wetted materials

Tubing	Silicone, platinum cured, reinforced tubing in high-pressure flow path
Pump tubing	Composite of expanded Polytetrafluoroethylene (PTFE) and platinum-cured silicone
Connectors	Polypropylene (PP), Polyetheretherketone (PEEK)
Pressure cell	Polypropylene (PP)
Flow meter body	Polymethylpentene (TPX)
Air sensor (ÄKTA ready™ extended system)	Polypropylene (PP)
Air trap	Polyamide (PA), transparent; Polypropylene (PP)
pH electrode	ÄKTA ready™ system (isocratic and gradient): Polyoxymethylene (POM), ceramics (junction), glass ÄKTA ready™ variable UV and ÄKTA ready™ extended systems: Polysulfone (PSU), high density polyethylene (HDPE), glass, Loctite M121HP, porous zirconia
pH electrode housing	PSU
pH electrode dummy	Polypropylene (PP)
Conductivity cell	Polypropylene (PP); Titanium
UV cell	ÄKTA ready™ system (isocratic and gradient): Polypropylene (PP) ÄKTA ready™ variable UV and ÄKTA ready™ extended: PEEK, quartz, titanium
Sealing materials	Ethylene propylene diene monomer (EPDM); fluoroelastomer (FKM); thermoplastic elastomer (TPE)

Material compliance

USP <88> Class VI Test for biocompatibility
Animal free or complies with the conditions in EMA/410/01

Site preparation guide

1. Containers

The ÄKTA ready™ system is shipped in a container with the following dimensions:

Systems	Dimensions (W × H × D)
ÄKTA ready™ (isocratic)	1150 × 1900 × 1100 mm
ÄKTA ready™ gradient	1350 × 1900 × 1100 mm
ÄKTA ready™ variable UV	1350 × 1900 × 1100 mm
ÄKTA ready™ extended	1300 × 2050 × 1300 mm

2. Uncrating the system

Space and tools needed to uncrate the system:

- Floor space 3800 × 1100 mm
- 13 mm Hexagonal tool
- Phillips bits no. 2
- Electrical screwdriver
- Knife

3. Transportation route

Doors, corridors, and elevators should have a minimum width of 90 cm and a minimum height of 200 cm to allow transport of the system to the production area.

4. Lifting device

A forklift capable of carrying up to 400 kg is required. For the ÄKTA ready™ extended system, a forklift capable of carrying 500 kg is required.

5. Power supply requirements

Supply voltage	All systems except ÄKTA ready™ extended ETL version: 100, 120, 200–208, 220–230, or 240 VAC ± 10%, 50/60Hz ÄKTA ready™ extended (ETL version) system: 1 × 120 VAC ±10%, 60 Hz
Max power consumption	1000 VA
Max branch circuit protection	16 A

6. Air supply requirements

Compressed air pressure	5.5–7.0 bar (oil- and particle-free)
Compressed air supply	Minimum 50 NL/min Male air hose connector for 7.5 mm hose

7. Service access area

To allow service and maintenance, leave 1 m of free space around the system.

Systems	Area needed
ÄKTA ready™ (isocratic)	2800 × 3000 mm
ÄKTA ready™ gradient	2800 × 3160 mm
ÄKTA ready™ variable UV	2800 × 3160 mm
ÄKTA ready™ extended	3000 × 3060 mm

8. Operating room climate

Ambient temperature	2°C to 30°C
Relative humidity	20% to 95%, noncondensing

9. Transport and storage requirements

Ambient temperature	–25°C to 60°C
Relative humidity	20% to 95%, noncondensing

Pretreatment of flow kits (wetted components)

Assembly of cleaned parts in ISO class 7 clean room.

The complete flow kit is gamma irradiated, except for pump tubing which is autoclaved.

Ordering information

ÄKTA ready™ (with isocratic and gradient capability)

Chromatography system	Product code
ÄKTA ready™ (isocratic) including Column Trolley	28906261
ÄKTA ready™ gradient including Column Trolley	29032038
Gradient upgrade ÄKTA ready™	29032784

Flow kits	Product code
ÄKTA ready™ Low Flow Kit	28930182
ÄKTA ready™ High Flow Kit	28930183
ÄKTA ready™ Low Flow Kit (ReadyMate™)	29007855
ÄKTA ready™ High Flow Kit (ReadyMate™)	29007856
ÄKTA ready™ Gradient Low Flow Section[1]	29021085
ÄKTA ready™ Gradient High Flow Section[2]	29021086

[1] To obtain a complete gradient low flow path a low flow kit has to be ordered together with the gradient low flow section
[2] To obtain a complete gradient high flow path, a high flow kit has to be ordered together with the gradient high flow section

Flow kits with other connectors can be made available on request.

IQ/OQ qualification	Product code
IQ/OQ Document	28933443
IQ/OQ Performance	28949980

ÄKTA ready™ variable UV system

Chromatography system	Product code
ÄKTA ready™ variable UV including trolley	On request

Flow kits	Product code
ÄKTA ready™ Low Flow Kit E	29511188
ÄKTA ready™ High Flow Kit E	29511193
ÄKTA ready™ Gradient Low Flow Section[1]	29021085
ÄKTA ready™ Gradient High Flow Section[2]	29021086
ÄKTA ready™ Low Flow Kit E (AseptiQuik®)	29424571
ÄKTA ready™ High Flow Kit E (AseptiQuik®)	29645508
ÄKTA ready™ Low Flow Gradient Section (AseptiQuik®)[1]	29398155
ÄKTA ready™ High Flow Gradient Section (AseptiQuik®)[2]	29417678

Flow kits with other connectors can be made available on request.

[1] To obtain a complete gradient low flow path a low flow kit has to be ordered together with the gradient low flow section.
[2] To obtain a complete gradient high flow path, a high flow kit has to be ordered together with the gradient high flow section.

IQ/OQ qualification	Product code
IQ/OQ Document Type B	29310217
IQ/OQ Performance Type B	28992658

ÄKTA ready™ extended

Chromatography system	Product code
ÄKTA ready™ extended including trolley	On request

Flow kits	Product code
ÄKTA ready™ High Flow Kit F	29477427
ÄKTA ready™ Low Flow Kit F	29487803
ÄKTA ready™ Low Flow Gradient F[1]	29490879
ÄKTA ready™ High Flow Gradient C[2]	29184612
ÄKTA ready™ Low Flow Kit F (AseptiQuik®)	29660555
ÄKTA ready™ High Flow Kit F (AseptiQuik®)	29660540
ÄKTA ready™ Low Flow Gradient F (AseptiQuik®)[1]	29709714
ÄKTA ready™ High Flow Gradient F (AseptiQuik®)[2]	29699095

Flow Kits with other connectors can be made available on request.

[1] A complete gradient low flow path includes a low flow kit and a gradient low flow section.
[2] A complete gradient high flow path includes a high flow kit and a gradient high flow section.

IQ/OQ qualification	Product code
IQ/OQ Document Type B	29310217
IQ/OQ Performance Type B	28992658

Accessories

Accessories	Product code
ÄKTA ready™ Low Flow Test Kit (excludes ÄKTA ready™ extended system)	28933680
ÄKTA ready™ High Flow Test Kit (excludes ÄKTA ready™ extended system)	29006727
ÄKTA ready™ UV Cond. Test Tools	28933688
ÄKTA ready™ Pressure Calib. Tool	28932942
Temp Kit	28938864
Industrial UV-Cell PEEK (for variable UV and extended)	28959578
ÄKTA ready™ RTP Column Trolley	28937588
Air Sensor (external clamp-on)	29003879

Related literature

	Product code
ReadyToProcess™ columns product list	CY1797
ReadyToProcess™ columns data file	CY11724
Extractables studies for single-use systems used in antibody-drug conjugate manufacturing	CY13922
Scale-up and process economy calculations of a dAb purification process using ready-to-use products	CY13817

cytiva.com/AKTAready

For local office contact information, visit cytiva.com/contact

CY10671-07Jul23-DF