

AKUFVE-120 - INSTRUMENT FOR RAPID AND ACCURATE MEASUREMENT OF PARTITION FACTORS IN SOLVENT EXTRACTION



Front view of AKUFVE-120

AKUFVE-120 is characterised as an idealised, one-stage mixer-(centrifugal)-settler unit. It was developed about 40 years ago (some hundred units are on the market) to improve accuracy and rapidity in the measuring technique of solvent extraction distribution data.

The AKUFVE-120 instrument is used for measuring partition factors and process dynamics in solvent extraction. It consists of:

- A dynamic-mixer (1000 cc) with variable speed stirrer
- The H-centrifuge (H-33, about 120 cc) with pneumatic motor drive
- A flow system with regulating, directing and sampling valves, flow meters, heat exchangers and pressure gauges

The flow system can directly be connected to detectors of different kind, e.g. radiometric, spectrophotometric, atomic absorption, pH instruments, and to burettes and thermostat.

The AKUFVE instrument is used for determination of distribution and complex constants, together with thermodynamical values obtained in the temperature range +5 to +60°C. It has also been found most efficient in the study of reaction kinetics, yielding a complete set of data points every 30 seconds.

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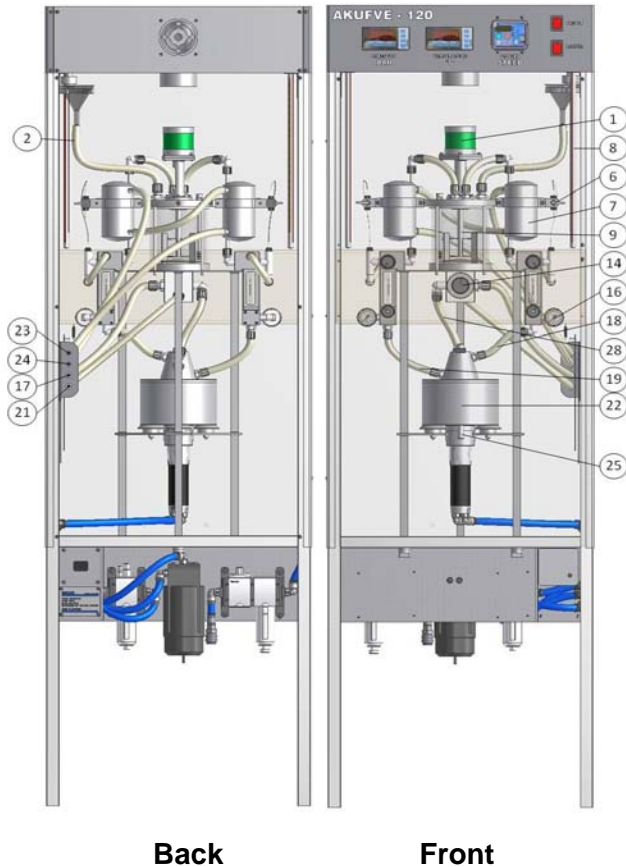
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1. Stirrer motor with variable speed
2. Main feed inlet
3. Inlets to mixer of separated liquids
4. Burette inlets, holes
5. Connection to thermistor - PT-100 sensor
6. Sampling valve
7. Heat exchanger
8. Lamp - strip light
9. Dynamic mixing chamber
10. Directing valve to external DETECTOR - MIXER through heat exchanger
11. Special cavity with connection to detector and sampling valve
12. Connection for return flow from detector (figure 4)
13. Flow meter
14. Directing and regulating valve CENTRIFUGE - CLOSED - DRAIN (Rinse)
15. Throttling valve
16. Pressure gauge
17. Connection to drain, outlet
18. Centrifuge outlet - heavy phase
19. Centrifuge outlet - light phase
20. Centrifuge inlet
21. Rinse liquid inlet
22. H-33 Centrifuge
23. Cooling water inlet to heat exchangers
24. Cooling water outlet from heat exchangers
25. Centrifuge emergency drain

The equipment is mounted in a Perspex housing with control boxes for the pneumatic and electric auxiliary equipment for the operation of the instrument

- The dimensions of AKUFVE-120 are, height 1700 mm, width 560 mm, and depth 360 mm.
- The weight is 95 kg.
- The pneumatic motor of the H-33 centrifuge is driven by compressed air, ca 0.5 m³/min and 6 kp/cm² (85 psig).
- The AKUFVE-120 is designed for 220/110 V, 50/60 Hz, 500 W.