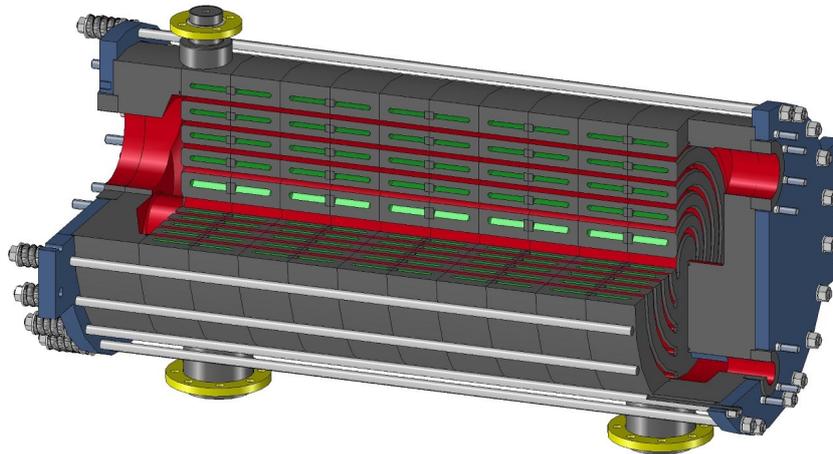


GMP-Compliant Annular Groove Condenser HB/GMP Series

Product Information (RN-10)

Graphite Annular Groove Condenser

- Impregnated graphite heat exchanger for condensing uses in corrosive environments in GMP-compliant processes
- Design and materials used comply with relevant FDA regulations and recommendations
- Resistant against corrosion by virtually all leaches, acids, solvents, halogens and their alloys
- Resistant to corrosion on both product and service sides, i.e. applicable in heat recovery of corrosive processes
- For horizontal installation



GMP-compliant graphite annular groove condenser (cross section)

Design

- Cylindrical graphite discs with straight channels for the product condensation
- Completely drainable, no dead space, no crevices
- Gasket-free, completely fused annular groove discs
- No black particles due to special manufacturing procedure
- Sight glass
- Detachable headers for cleaning
- Carbon fiber reinforcement of main body (optional)
- Gas / liquid separation
- Max. transfer area: 55 m² (592 ft²)
- Max. disc diameter: 900 mm (36")

Applications (examples)

- Condensing of solvents in synthesis plants, especially in multi-purpose plants in the pharmaceutical and speciality chemical industry
- Condensing duties within the production of APIs (active pharmaceutical ingredients)
- Use within the production of food and food ingredients

Features

- GMP compliance
- No black particles
- No cross or batch contamination risk
- Sight glass
- Documentation in accordance with FDA requirements
- Optimal corrosion resistance
- No critical swelling stress cracks caused by organic solvents
- Excellent heat transfer performance
- Self-cleaning
- No gaskets and therefore no risk of leakage
- Small overall height, compact design
- Low maintenance cost
- High plant availability

Design parameters

- 1 bar to +6 (+10) bar max. allowable pressure
- Full vacuum to 90 psig (150 psig)
- 30 (-60)°C to +180 (+200)°C
- 22°F (-74°F) to 356°F (392°F)
- max. allowable temperature

GMP-Compliant Annular Groove Condenser HB/GMP Series

Materials Used and Material Options

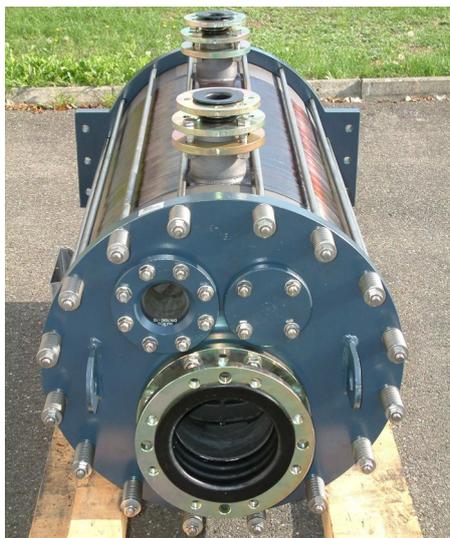
Graphite	Phenolic formaldehyde resin-impregnated graphite GAB GPX1 / GPX1T resp. GPX2 with lower resin content (optional)
Reinforcement	Carbon fibre fabric (Type HB7: standard 90/45 resp. 90/90 psi)
Gaskets	None (fused discs) Optional flat gaskets (with detachable headers)
Steel parts	Cover plates and flanges: carbon steel (optional stainless steel) Tie rods, nuts, screws: stainless steel

All product side MOC include FDA conformity declaration

Specifications and Price Quotes

For a detailed offer, please provide the following data:

- Quantity and physical properties of the process and service medium
- Required inlet and outlet temperatures
- Operational pressure and allowed pressure drops
- Further process details (optional)
- Please fill out our questionnaire: WS 1550



Design and Inspection

- Annular groove heat exchangers are designed, manufactured and inspected according to AD 2000 Merkblatt (in compliance with the European Pressure Equipment Directive, PED)
- Other design and manufacturing standards are available upon request

GMP-compliant graphite annular groove condenser NB7-10/GMP (cross section)

Additional Information

- Data sheet RN-10 includes information on terminology and main dimensions
- Further precisions and complementary information (brochures, corrosion resistance charts, product information, data sheets,...) are available for download at www.gab-neumann.de.

Advantages

- Robust design
- Modular setup
- Easy assembly
- High operational safety
- Easy mechanical cleaning

Technical Perfection

- Application preferred in single-purpose and mono plants
- Optimal thermal performance at compact dimensions
- Long lifetime

Economically Outstanding

- Low-cost alternative to shell & tube exchangers for small and medium-sized transfer areas
- Low maintenance and spare part cost
- Competitive pricing
- Short lead times