

Graphite Annular Groove Dilution Cooler RA-K / WA-K Series

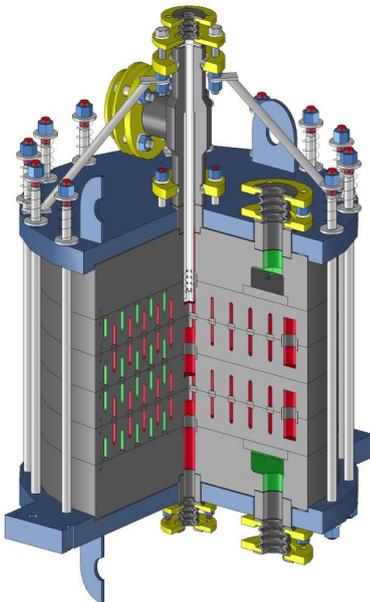
Product Information (RN-15)

Graphite Annular Groove Dilution Cooler

- Impregnated graphite heat exchanger for diluting and cooling of concentrated sulphuric acid
- Resistant to dilution processes of highly concentrated sulphuric acid 98.5%
- Diluting, mixing and cooling in one single unit, no external static mixer required
- Mixing inside of cooled main body allows for both highest efficiency and lowest corrosion stress
- Resistant to corrosion on one side: RA-K series
- Resistant to corrosion on both sides: WA-K series

Design

- Special T-piece separates inputs for acid and dilution fluid
- Dilution and mixing using perforated nozzles and subsequent turbulent flow
- Cylindrical graphite discs with spiral groove arrangement
- Three different groove widths possible
- Parallel groove arrangement of between 1 and 21 grooves
- Gasket-free, completely fused annular-groove discs
- Wavy duct arrangement for increased turbulence (optional)
- Carbon fibre reinforcement (optional)
- Max. transfer area: 55 m² (592 ft²)
- Max. disc diameter: bis 900 mm (36")



Annular groove dilution cooler (cross section)

Potential Applications

- Battery acid production
- Concentrated acid dilution in chemical production plants
- Diluted acid supply in fertilizer production
- Sulphate production for water treatment
- Heat recovery during neutralisation and dilution processes

Features

Optional resistance to corrosion for dilutions of sulphuric acid at 98.5% concentration

Mixing and cooling in one unit

Final concentration and final temperature in one step

Great efficiency from mixing in cooled body

Continuous mixing process

Both flow sections are variable and create high turbulence

No gaskets and therefore no risk of leakage

Small overall height

Excellent heat transfer performance

Self-cleaning

No cross-contamination

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



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Materials Used and Material Options

Graphite	Phenolic formaldehyde resin-impregnated graphite GAB GPX1 / GPX1T resp. GAB GPX2 with low resin content (optional)
Gaskets	n/a (fused discs)
Steel parts	Pressure plates and flanges: carbon steel (optional stainless steel) Rods, nuts, springs: stainless steel
T-piece	Graphite / PTFE

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 available upon request



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

Graphite annular groove dilution cooler
RA7.1-10-02/05-K

Additional information

- Data sheet RN-15 includes information on terminology and main dimensions
- Further precisions and complementary information (brochures, corrosion resistance charts, product information, data sheets,...)

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