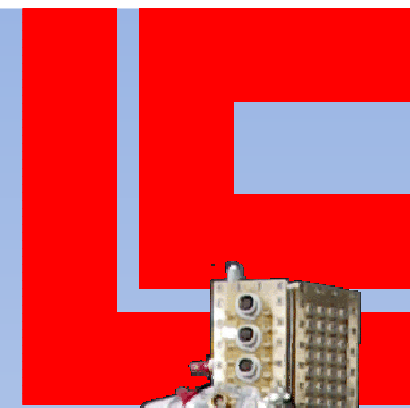


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# MNK Models

[www.leidencryogenics.com](http://www.leidencryogenics.com)

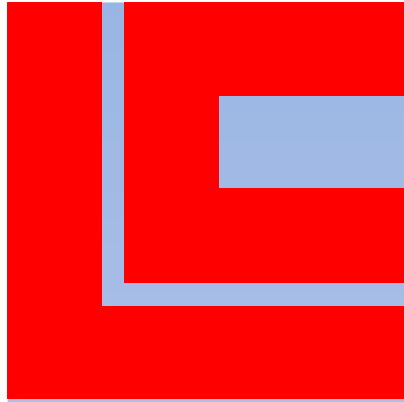
## LEIDEN CRYOGENICS B.V.

### MNK Models:

- MNK126-100
- MNK126-250
- MNK126-500
- MNK126-650
- MNK200-450







# MNK Models

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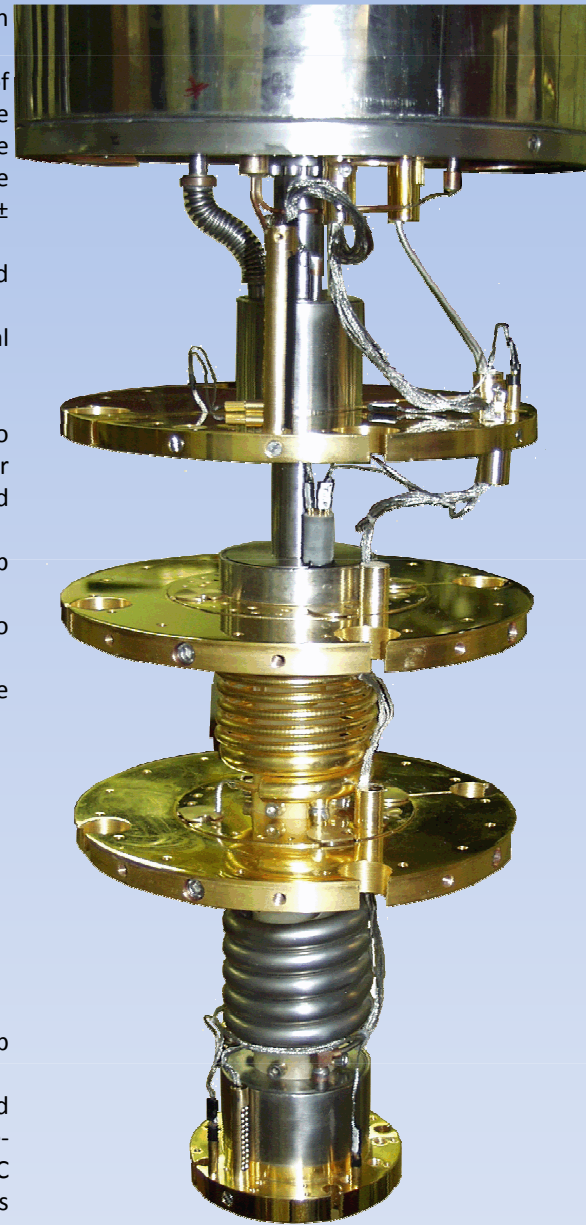
## LEIDEN CRYOGENICS B.V.

### Insert:

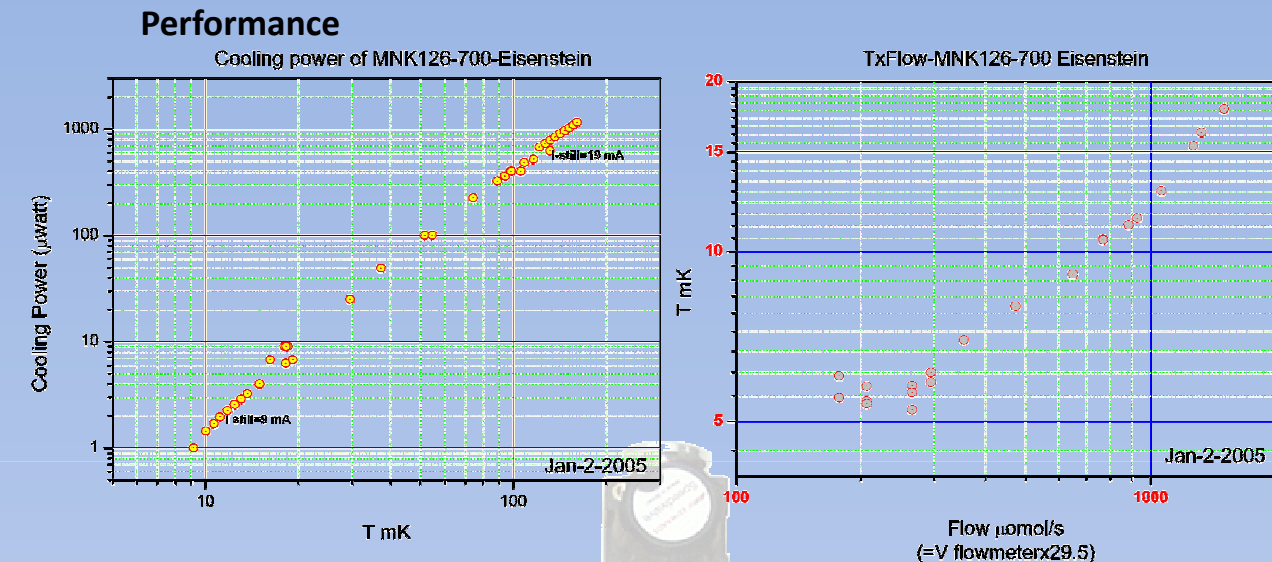
- Dilution refrigerator insert with an outer  $\phi$  of 126 mm with 109mm IVC
- Silver heat-exchanger dilution refrigerator unit with  $\phi$  of 94 mm mixing chamber with gold-plated copper bottom. The minimum temperatures outside the mixing chamber are typically 18,15,7 and 6mK with typical cooling power outside the mixing chamber of 100, 250, 500 and 700  $\mu$ W @ 120 mK ( $\pm$  10%).
- Three  $\phi$  = 17 mm clear shot tubes to IVC (one of them is used for wiring).
- 1 K pot and still resistance thermometers (with typical calibration).
- MC calibrated thermometer
- 48 shielded phosphor bronze wires in twisted pairs (two Fishers 24 pin connectors) anchored at the 50 mK plate or mixing chamber (8 wires are used for mixing chamber, still and 1 K pot thermometers).
- 6 wires in a Fischer connector for the still, MC and sorb pump heaters
- 10 flexible coaxial cables anchored to the still or 1 K plate (two used to measure the still level)
- Double 1 K pot circuit with bypass valve and double  $^3$ He condensing circuit
- Radiation shields at the still and 50 mK plate (gold plated)

### Oil-free $^3$ He- $^4$ He Gas Handling System comprising:

- Turbo pump mounted inside the cabinet, backed by dry pump
- Two external nitrogen cold traps including nitrogen dewar.
- Two helium traps inside insert.
- Vacuum gauges (1 Pirani and 1 Penning/Pirani)
- Flow meter.
- Sorb-pump
- Triple power supply for still, mixing chamber and sorb pump heaters provided with LabView drivers.
- Microprocessor controlled electrical valves with manual and automatic operation. Automatic operation using pre-programmed microprocessor with LabView drivers. Laptop PC with GPIB-USB interface and USB to 4x-RS 232 interfaces included in models 500 and 650.
- $^4$ He gas handling system for 1 K pot including pump.
- IVC vacuum system uses  $^3$ He circulation turbo pump for pre-evacuation and sorb pump for final vacuum.
- Stainless steel pumping cabinet on wheels with two mixture dumps in the frame and containing all the primary pumps, traps, valves necessary to operate the refrigerator.
- Electropneumatic gate valve for insert (ISO 100) including flanges
- Optimized  $^3$ He- $^4$ He mixture



**MNK200-650**



| MNK Models | Tmin (mK) | Q @120mK ( $\mu$ W) |
|------------|-----------|---------------------|
| MNK126-100 | < 18      | 100                 |
| MNK126-250 | < 15      | 250                 |
| MNK126-500 | < 7       | 500                 |
| MNK126-650 | < 6       | 650                 |

### OPTIONS

- Aluminum superinsulated LHe dewar 73.5 liters reservoir (est.static loss rate 0.40 L/HR)
- Aluminum LN2 Shielded dewar 73.5 liters reservoir (est.static loss rate 0.50 L/HR)
- AC Resistance Bridge model AVS-47 with LabView drivers
- AV-47 IB Opt Isolated IEEE computer Interface
- Stainless steel flange with sliding seal including radiation shields
- Superconducting level gauge with controller
- 24 shielded phosphor bronze wires in twisted pairs in Fischer connector