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## COIL TYPE HEAT EXCHANGER

These heat exchangers consist of spiral-shaped, rolled glass coils that are fused into a glass shell with two connecting sleeves. The devices, which are mainly used for condensation, are equipped with supports for horizontal installation of the coil packages to suit the compact design of our Miniplant facilities.

Tempering of liquids and condensing of solvents out of inert gases, for which special components are available, are additional applications for heat exchange. The standardized circulating vaporizers are used together with the components of the "Columns" chapter.

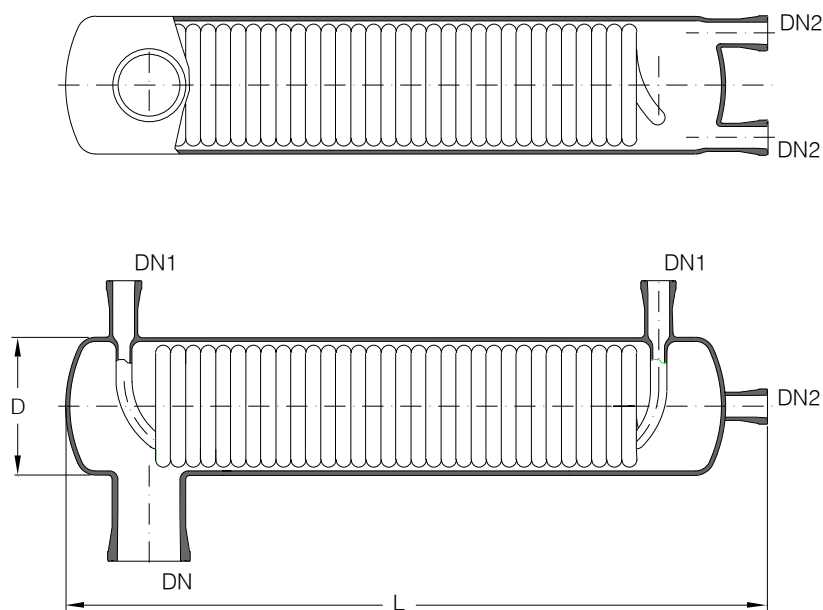
### Important notes for operation / operating conditions

- Coil heat exchangers must be connected on the tube side without tension by means of hoses or bellows and must be prevented from exceeding the permissible excess operating pressure through suitable measures.
- They must not be operated with steam in the coils. Also, a short-term boiling of the refrigerant due to too little flow is not permissible.
- To avoid pressure shocks, valves should always be opened and closed slowly. A free outlet nozzle, which should be as close as possible to the outlet supports, must be planned for the refrigerant.
- A closed brine circulation is possible if measures are taken to prevent pressure shocks.
- The permissible operating pressure for the jacket is 0.5 bar up to a maximum temperature difference between jacket area and ambient temperature of 180°C.
- For cooling water operation (fluid group II) and with a temperature difference of 130°C between the product side and coolant, pressure of 3 bar can be applied to the pipe coil.

## CONDENSERS, HORIZONTAL

The vapor stream enters the condenser from the side and is condensed in the coils. With the device inclined toward the outlet nozzle, the distillate leaves the device through the lower nozzle, while the upper nozzle is used for ventilation, evacuation or flushing. The outlets are placed so that no residue remains in the condenser.

Area A (m <sup>2</sup> )	D	DN	DN1	DN2	L	Reference
0,3	90	50	15	15	580	M-HECH50/3
0,5	120	50	15	15	630	M-HECH50/5
0,3	90	80	15	15	580	M-HECH80/3
0,5	120	80	15	15	630	M-HECH80/5
0,7	165	80	25	25	610	M-HECH80/7
1,0	165	80	25	25	840	M-HECH80/10
0,7	165	100	25	25	610	M-HECH100/7
1,0	165	100	25	25	840	M-HECH100/10



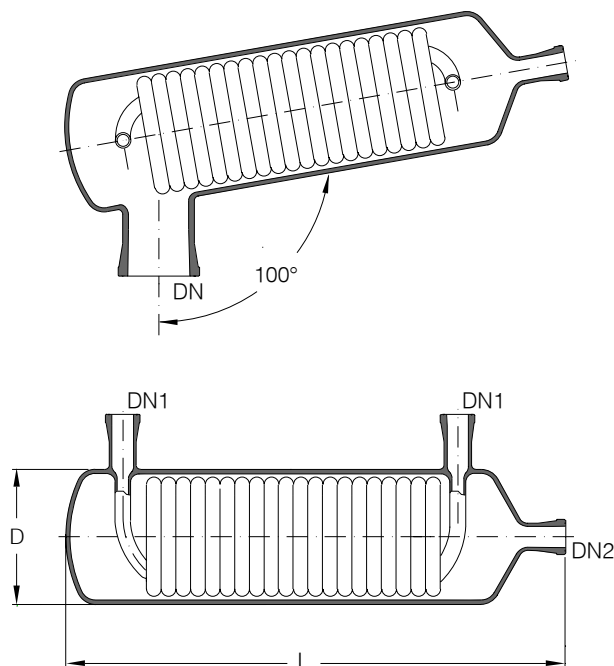
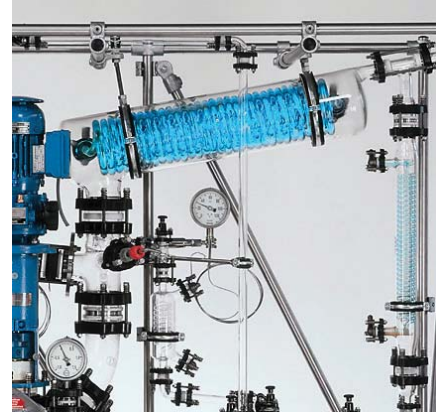
### Technical data

Reference	Area A (m <sup>2</sup> )	Capacity	
		Coil (l)	Jacket (l)
M-HECH50/3	0,3	0,3	2,7
M-HECH50/5	0,5	0,7	5,1
M-HECH80/3	0,3	0,3	2,5
M-HECH80/5	0,5	0,7	5,1
M-HECH80/7	0,7	1,9	8,9
M-HECH80/10	1,0	2,7	12,7
M-HECH100/7	0,7	1,9	8,9
M-HECH100/10	1,0	2,7	12,1

## CONDENSERS, 10°

The 10° inclined condenser is placed directly on the column or the vapor tube. The condensate runs back through the vapor nozzle and can be divided in the return separator into outflow and return flow.

Area A (m <sup>2</sup> )	DN	DN1	DN2	D	L	Reference
0,3	50	15	25	90	555	M-HECR50/3
0,3	80	15	25	90	555	M-HECR80/3
0,7	80	25	25	165	595	M-HECR80/7
1,0	80	25	25	165	825	M-HECR80/10
0,7	100	25	25	165	605	M-HECR100/7
1,0	100	25	25	165	835	M-HECR100/10



### Technical data

Reference	Area A (m <sup>2</sup> )	Capacity	
		coil (l)	Jacket (l)
M-HECR50/3	0,3	0,3	2,5
M-HECR80/3	0,3	0,3	2,5
M-HECR80/7	0,7	1,9	8,0
M-HECR80/10	1,0	2,7	12,1
M-HECR100/7	0,7	1,9	8,0
M-HECR100/10	1,0	2,7	12,1

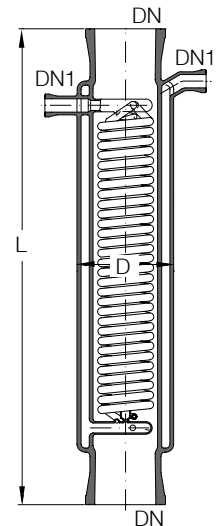
## VENT COOLERS

Vent coolers are used with cooling jackets to intensify the cooling performance and avoid creeping flow on the outer wall. The coolant first flows through the coil and then through the jacket. This design is suitable for vertical installation.

Area A (m <sup>2</sup> )	DN	DN1	D	L	Reference
0,2	50	15	85	625	M-THEC50/2
0,3	50	15	120	625	M-THEC50/3
0,3	80	15	120	625	M-THEC80/3
0,5	100	15	165	675	M-THEC100/5

### Technical data

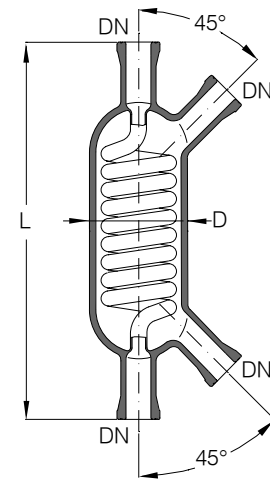
Reference	Area A (m <sup>2</sup> )	Capacity	
		Coil (l)	Jacket (l)
M-THEC50/2	0,2	1,0	1,1
M-THEC50/3	0,3	2,0	2,5
M-THEC80/3	0,3	2,0	2,8
M-THEC100/5	0,5	4,3	5,6



## LIQUID COOLERS

Liquid coolers, in which the fluid to be cooled flows through the coil, offer very diverse possible uses. They can also be installed immediately after a fluid separator, that is, as a distillate aftercooler. For large fluid throughput, sufficient inlet height must be assured.

Area A (m <sup>2</sup> )	DN	GL	D	L	Reference.
0,03	15	-	65	250	M-HEF15/03
0,06	15	-	65	350	M-HEF15/06
0,1	15	-	65	500	M-HEF15/1



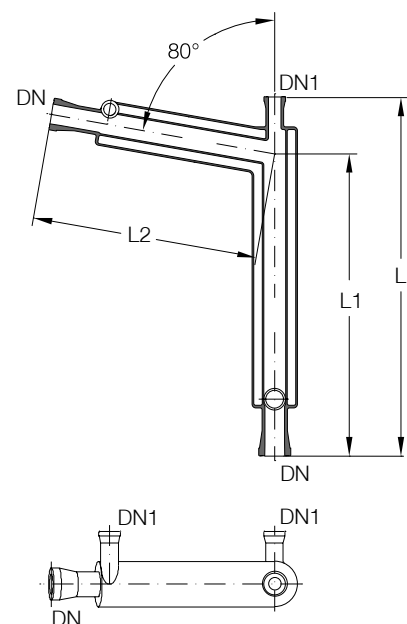
### Technical data

Reference	Area A (m <sup>2</sup> )	Capacity	
		Coil (l)	Jacket (l)
M-HEF15/03	0,03	0,25	0,08
M-HEF15/06	0,06	0,43	0,11
M-HEF15/1	0,1	0,68	0,18

## DISTILLATE COOLERS

They are preferably placed directly after the fluid separator to quickly cool the condensate leaving the column to a temperature below its boiling point. An additional nozzle permits connection of a pressure compensating line or the use of a thermometer.

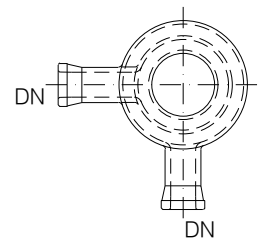
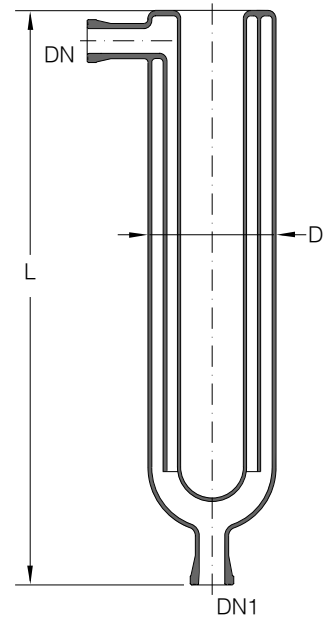
Area A (m <sup>2</sup> )	DN	DN1	L	L1	L2	Reference
0,045	15	15	460	400	300	M-DNK15



## CONDENSATION TRAPS

Condensation traps normally serve as safety coolers in a system's ventilation line to lower the partial pressure of solvents in the exhaust air. The cooling vessel can be filled with dry ice and the exhaust air directed along this vessel. Condensed-out solvent can be removed at the bottom drain valve.

Area A (m <sup>2</sup> )	D	DN	DN1	Capacity (l)	L	Reference
0,04	85	15	15	0,4	360	M-CT85/04
0,06	100	25	15	0,9	410	M-CT100/06
0,09	140	25	15	1,7	440	M-CT140/09



## CIRCULATING VAPORIZER

The circulating vaporizer with quartz heater plugs is used for continuous heating of rectification columns and offers the following advantages over simple blown heating:

- The sump volume is reduced considerably.
- Large heating performance in proportion to the sump volume can be installed.  
Operating voltage for heater plugs: 230 V.
- Through thermoconvection, the fluid circulation considerably reduces the staying time in the heating zone of the fluid to be vaporized.
- Sedimentation and delays in boiling are prevented.

With continuously operating rectification, it is necessary that the sump level be maintained largely constant. To achieve this, an overflow tube, with which the fluid level can be set, is inserted into the vaporizer at the height required for the sump level.

The heater plugs are not heated in the unmoistened area.

Capacity (l)	DN	DN1	L	L1	D	Number of quartz heater plugs	Type	Power kW	Reference
1,3	50	25	360	145	90	1	A	1	M-UV50/1
1,5	50	25	360	145	90	2	B	2	M-UV50/2
1,85	80	50	455	145	90	1	A	1,5	M-UV80/1
2,5	80	50	455	145	90	2	B	3	M-UV80/2

