

NO series

Slide in reheat coil (hot water/electric)

HC BARCOL-AIR

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Slide in reheat coil

Type designation
(NO)

Composition type designation:

N - O - O - O - E - O - O

N Position 1: Product group

N = air volume control terminals

Ordering example:

N	O	.	E	O	O	2	0	0	R	1	5	0	0
---	---	---	---	---	---	---	---	---	---	---	---	---	---

See above Model Handing controls Capacity

O Position 2: Function

. = For code, use specified CAV / VAV type designation

O Position 3: Controls (manufacturer)

O = without controls
For controls, contact our sales staff

O Position 4: Distribution plenum

. = For code, use specified CAV / VAV type designation

E Position 5: Reheat coil

A = 1-row hot water reheat coil
B = 2-row hot water reheat coil
D = 4-row hot water reheat coil
E = 1-stage 230VAC/1-phase electric reheat coil
F = 2-stage 230VAC/1-phase electric reheat coil
G = 3-stage 230VAC/1-phase electric reheat coil
H = 1-stage 400VAC/3-phase electric reheat coil
J = 2-stage 400VAC/3-phase electric reheat coil
1 = non standard, specify separately

The slide in electric and hot-water reheat coils are applicable for all HC Barcol-Air CAV / VAV air terminals.

O Position 6: Controls (type & function)

O = without controls
For controls, contact our sales staff

Ordering information:

Standard terminals:

- quantity of terminals
- complete 7 digit code
- terminal size or model
- air volume setting (V_{\max} , V_{\min} etc)
- control handing (standard right side)
- if applicable, electric reheat coil capacity
- supply or return air

Non standard terminals:

- for non standard terminals a full description and/or drawing are requested

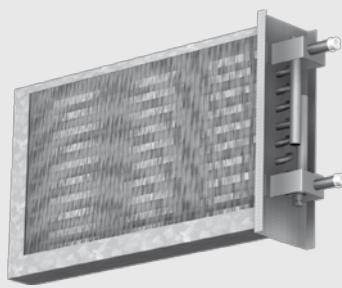
O Position 7: Sensor

O = not applicable

Hot water reheat coil

Technical data

Type N . . A . . (1-row)
N . . B . . (2-row)
N . . D . . (3-row)



Application

Types NOOOAOO, NOOOBOO and NÖOODOO hot water reheat coils are suitable for incorporation in the HC Barcol-Air VAV and CAV terminals. The dimensions of these "slide in" reheat coils are adapted to the dimensions and the airflow range of the corresponding VAV or CAV terminal size.

Technical information

Features:

- Factory fitted into the corresponding VAV or CAV terminal which saves valuable mounting time at site.
- High heat exchange efficiency.
- Available in 1-, 2- or 4-row design.
- Low air side pressure drop.

Construction:

- Copper tubes with aluminium fins.
- Test pressure 30 bar.
- Max. operating pressure (PN) 12,5 bar.
- Copper tube connections 12 or 15 mm.
- Suitable for all standard controls such as; 2- or 3-Way valves with Thermal-, 3-point or 0-10 VDC actuators.

Delivery format:

- The reheat coils are factory fitted into the corresponding CAV or VAV terminal.
- The connections are located, as standard, on the right hand side of the terminal when looking in the direction of air flow, unless otherwise requested.
- Coil connections are closed and protected with plastic caps.

Specify as:

The reheat coils are specified with the corresponding VAV or CAV terminals.

Selection example:

Given:

1. Reheat coil size : 160
2. Air flow : $V = 0.097 \text{ m}^3/\text{s}$
3. Primary(entering) air temp. : EAT = 15°C
4. Hot water entering temp. : EWT = 65°C
5. Required capacity : $P = 1400 \text{ W}$

Requested:

1. Capacity factor : $W/\text{°C}$
2. Water flow : $Q_w (\text{l}/\text{h})$
3. Water side pressure drop : $\Delta P_w (\text{kPa})$
4. Water side temp.difference : $\Delta T_w (\text{°C})$
5. Water leaving temperature : LWT ($^\circ\text{C}$)
6. Air side temp. difference : $\Delta T_A (\text{°C})$
7. Air leaving temperature : LAT ($^\circ\text{C}$)

Calculation:

1. Capacity factor (see tabel Pn)
 $C = EWT - EAT = 65 - 15 = 50^\circ\text{C}$
 $W/C = 1400 / 50 = 28 \text{ W}$

2. Water flow (Q_w)

The required capacity can be achieved by a 1-row coil.
100 l/h results in 26.4 W
175 l/h results in 30 W
By interpolation the final water quantity can be calculated:

$$Q_w = 100 + \frac{(28 - 26.4)}{(30 - 26.4)} \times (175 - 100) = 133.3 \text{ l/h}$$

3. Water-side pressure drop ΔP_w

At 100 l/h $\Delta P_w = 1.46 \text{ kPa}$, the pressure drop is related to the water flow to the 1.8th:

$$\Delta P_w = \left(\frac{133.3}{100} \right)^{1.8} \times 1.46 = 2.3 \text{ kPa}$$

4. Water side temperature difference (ΔT_w)

$$\Delta T_w = \frac{W}{Q_w \times 1.16} = \frac{1400}{133.3 \times 1.16} = 9^\circ\text{C}$$

5. Hot water leaving temperature (LWT)

$$LWT = EWT - \Delta T_w = 65 - 9 = 56^\circ\text{C}$$

6. Air side temperature difference (ΔT_A)

$$\Delta T_A = \frac{P}{V \times 1200} = \frac{1400}{0.097 \times 1200} = 12^\circ\text{C}$$

7. Air leaving temperature LAT

$$LAT = EAT + \Delta T_A = 15 + 12 = 27^\circ\text{C}$$

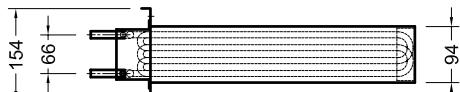
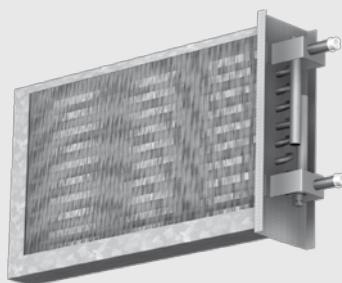
Hot water reheat coil

Model overview

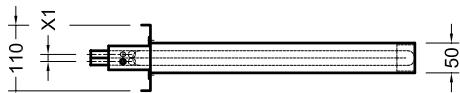
Type N . . . A . . (1-row)

N . . . B . . (2-row)

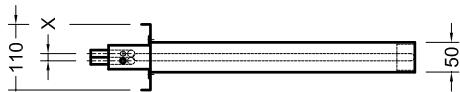
N . . . D . . (3-row)



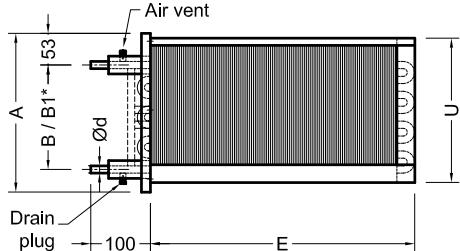
Type NOOODOO (4-row)



Type NOOBOO (2-row)



Type NOOOAOO (1-row)



Dimensions

Model	100	125	160	200	250	315	400
A	226	226	246	266	311	406	456
B	125	125	125	175	175	275	375
B1*	137.5	137.5	137.5	137.5	187.5	287.5	375
Ød	12	12	12	12	15	15	15
E	320	320	390	490	590	730	900
U	202	202	222	242	287	382	432
X	0	0	0	12	15	15	15
X1	12	12	12	12	15	15	15

Other dimensions are available upon request.

Notes:

1. All dimensions are in mm.

2. Size B1 applicable for 2-row and 4-row version.

Hot water reheat coil

Type N . . . A . . (1-row)
 N . . . B . . (2-row)
 N . . . D . . (3-row)

Selection; capacity factor (Pn), water flow (Qw) and pressure drop (ΔP)

8.7 - 466.5 W/ $1^{\circ}\text{C}\Delta T$

Model	Air velocity at inlet m/s	Air volume l/s CFM m^3/h				1-row (NOOOAOO) heating capacity in W/ $1^{\circ}\text{C}\Delta T$ ($\Delta T = \text{EWT} - \text{EAT}$)				2-row (NOOOBOO) heating capacity in W/ $1^{\circ}\text{C}\Delta T$ ($\Delta T = \text{EWT} - \text{EAT}$)				4-row (NOOODOO) heating capacity in W/ $1^{\circ}\text{C}\Delta T$ ($\Delta T = \text{EWT} - \text{EAT}$)				
						Qw in l/h	50	75	100	150	75	150	250	300	75	150	250	300
100	2 3 4 5 6	15 22 29 37 44	32 46 61 78 93	54 79 104 133 158		ΔP in kPa	0.4	0.8	1.3	2.7	0.3	1.0	2.4	3.3	0.8	2.6	6.3	8.6
						Qw in l/h	9	9	10	10	13	14	15	15	17	17	18	18
						ΔP in kPa	11	11	12	12	17	18	19	19	23	24	25	25
						Qw in l/h	12	13	14	15	20	22	23	23	27	30	31	31
						ΔP in kPa	13	15	16	17	22	25	27	28	32	36	37	38
						Qw in l/h	14	16	17	18	24	28	30	31	35	40	43	43
125	2 3 4 5 6	23 35 47 58 70	49 74 99 123 148	83 126 169 209 252		Qw in l/h	50	75	100	175	75	150	250	350	75	150	300	350
						ΔP in kPa	0.4	0.8	1.3	3.6	0.3	1.0	2.4	4.4	0.8	2.6	8.6	11.3
						Qw in l/h	11	12	12	13	17	19	20	20	23	25	26	26
						ΔP in kPa	13	14	15	16	21	25	26	27	31	34	36	37
						Qw in l/h	15	16	18	19	25	29	31	33	36	42	45	46
						ΔP in kPa	16	18	19	21	27	32	35	37	40	48	53	54
160	2 3 4 5 6	39 58 77 97 116	82 123 163 205 246	140 209 277 349 418		Qw in l/h	50	75	100	175	75	150	250	350	75	150	300	350
						ΔP in kPa	0.4	0.9	1.5	3.9	0.3	1.1	2.7	4.8	0.8	2.8	9.6	12.6
						Qw in l/h	15	17	18	19	25	28	30	31	35	39	41	42
						ΔP in kPa	18	20	21	24	30	35	39	40	43	51	56	57
						Qw in l/h	20	22	24	27	33	41	45	47	48	61	68	69
						ΔP in kPa	21	24	26	30	36	45	51	54	52	68	79	81
200	2 3 4 5 6	62 91 122 152 183	131 193 258 322 388	223 328 439 547 659		Qw in l/h	50	100	150	200	75	200	300	400	75	200	300	400
						ΔP in kPa	0.1	0.3	0.6	1.0	0.5	2.7	5.4	9.0	1.3	7.1	14.4	23.9
						Qw in l/h	20	25	27	29	36	45	47	49	49	61	64	65
						ΔP in kPa	23	29	33	35	42	56	60	63	58	80	85	88
						Qw in l/h	25	33	37	40	46	65	71	74	64	95	103	108
						ΔP in kPa	26	36	41	44	49	72	80	84	68	106	118	125
250	2 3 4 5 6	95 144 192 239 287	201 305 406 506 608	342 518 691 860 1033		Qw in l/h	75	125	175	225	150	250	350	450	150	250	350	450
						ΔP in kPa	0.2	0.5	0.9	1.4	1.8	4.4	8.0	12.4	4.8	11.8	21.3	33.1
						Qw in l/h	31	36	39	41	60	67	70	72	84	92	96	98
						ΔP in kPa	35	42	46	49	72	83	89	92	103	120	128	132
						Qw in l/h	38	46	52	55	81	95	103	108	115	139	152	159
						ΔP in kPa	40	50	56	60	87	104	114	121	122	154	171	181
315	2 3 4 5 6	153 229 306 382 459	324 485 648 809 972	551 824 1102 1375 1652		Qw in l/h	75	125	200	300	150	250	400	600	150	250	400	600
						ΔP in kPa	0.3	0.8	1.9	3.9	0.5	1.1	2.5	5.2	1.2	3.0	6.8	13.9
						Qw in l/h	46	56	64	70	85	99	110	116	116	137	150	157
						ΔP in kPa	51	65	76	84	98	120	136	147	133	169	194	209
						Qw in l/h	55	71	85	96	106	134	156	172	142	189	227	251
						ΔP in kPa	57	75	92	105	112	144	172	192	147	203	251	284
355	2 3 4 5 6	195 292 389 487 584	413 618 824 1031 1237	702 1051 1400 1753 2102		Qw in l/h	100	200	300	400	175	300	450	650	175	300	450	650
						ΔP in kPa	0.6	2.1	4.2	7.0	0.6	1.7	3.4	6.4	1.7	4.5	9.1	17.3
						Qw in l/h	59	74	82	86	102	121	132	140	139	168	183	193
						ΔP in kPa	66	87	98	104	116	144	162	175	158	205	233	253
						Qw in l/h	70	96	110	118	126	161	184	203	168	229	269	299
						ΔP in kPa	73	103	119	130	132	173	202	225	174	245	296	336
400	2 3 4 5 6	248 371 495 619 743	525 786 1048 1311 1574	893 1336 1782 2228 2675		Qw in l/h	150	250	350	450	200	350	550	700	200	350	550	700
						ΔP in kPa	0.3	0.6	1.2	1.8	1.2	3.1	6.8	10.4	3.1	8.4	18.5	28.3
						Qw in l/h	79	94	103	109	131	158	174	181	174	215	237	245
						ΔP in kPa	90	111	123	132	150	191	218	229	195	263	306	323
						Qw in l/h	97	123	138	149	163	214	250	267	206	294	355	382
						ΔP in kPa	102	131	150	163	171	231	276	297	213	314	393	429
						Qw in l/h	106	139	160	175	177	245	297	322	217	329	422	467

1. The selection above is to calculate the heating capacity per 1 degree temperature difference between entering water temperature (EWT) and entering air temperature (EAT).

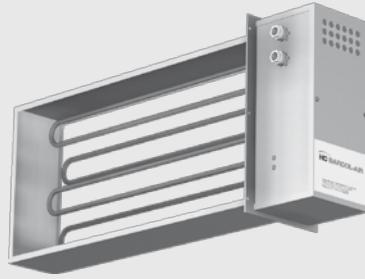
2. To calculate water pressure drop (ΔP_w) and leaving water temperature (LWT) see selection on page 2.

3. 4-Row coils can not be exchanged by 1- or 2-row coils.

Electric reheat coil

Technical data

Type N...E.. / N...H..
N...F.. / N...J..
N...G..



Application

Types N...E.., N...F.., N...G.., N...H.. and N...J.. electrical heating coils are suitable for incorporation in the HC Barcol-Air VAV and CAV terminals. The dimensions of these "slide in" reheat coils are adapted to the dimensions and the airflow range of the corresponding VAV or CAV terminal size.

Technical information

Features:

- Factory fitted into the corresponding VAV or CAV terminal which saves valuable mounting time at site.
- Low air-side pressure loss.
- Available in 1 to 3 stage control type.
- 230VAC/1-phase or 400VAC/3-phase.

Construction:

- Heater element: stainless steel, CrNi (1.4541) 8 mm diameter.
- thermal 'cut-out': bimetal disc thermostat, auto reset (55°C) (optional manual reset 70°C).
- Controls enclosure: galvanized sheet steel.

Delivery format

Delivery format:

- The reheat coils are factory fitted into the corresponding CAV or VAV terminal.
- The connections are located, as standard, on the right hand side of the terminal when looking in the direction of air flow, unless otherwise requested.
- Standard supplied with 12A relays, suitable for control signal of 24VAC, optional solid state relays or thyristor controls are available.

Specify as:

Given:

Reheat coil size 200
Air flow: $V = 0.122 \text{ m}^3/\text{s}$
Primary (entering) air temperature:
EAT = 15°C
Required supply (leaving) air temperature
LAT = 35°C

Requested:

The capacity of the electric reheat coil?

Calculation:

The required coil capacity can also be calculated using the formula:

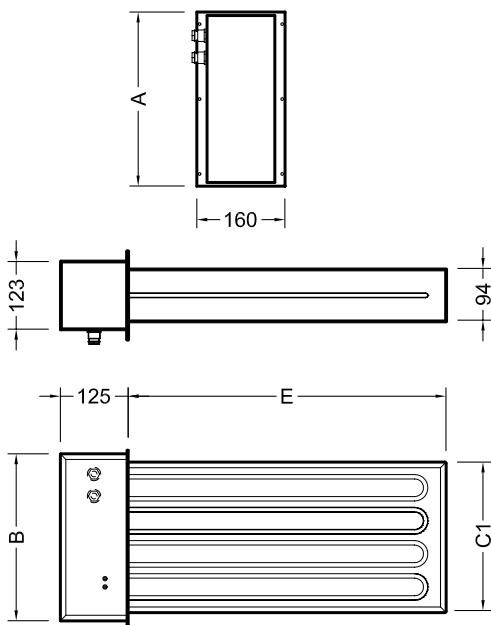
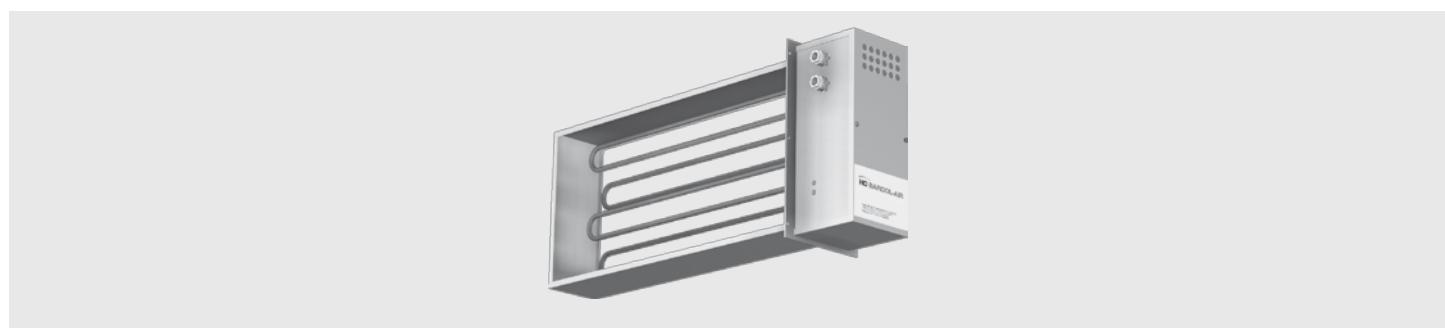
$$P = 1200 \times V \times \Delta T$$

$$P = 1200 \times 0.122 \times 20 = 2928 \text{ W}$$

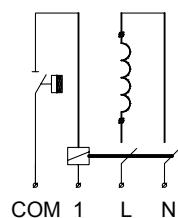
Electric reheat coil

Model overview

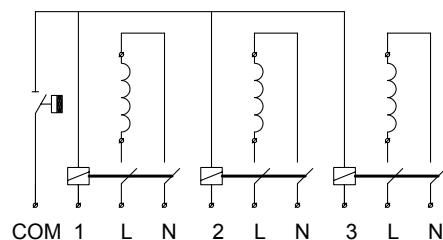
Type N...E... / N...H...
 N...F... / N...J...
 N...G...



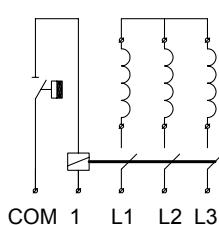
Type NOOO . OO



Wiring diagram, 1-stage, 230VAC/1-phase



Wiring diagram, 3-stage, 230VAC/1-phase



Wiring diagram, 1-stage, 400VAC/3-phase

Legend:

- = clixon
- = relais
- = coil

COM = common

L 1/2/3 = load

N = neutral

Dimensions

Model	100	125	160	200	250	315	355	400
A	226	226	246	266	316	406	406	456
B	203	203	203	203	303	303	303	303
C1	183	183	203	223	273	363	363	413
E	307	307	377	477	577	717	797	887

All dimensions are in mm.

Electric reheat coil

Type N...E... / N...H...
N...F... / N...J...
N...G

Selection

53 - 4456 m³/h ; 0.5 - 9 KW

Model	Air velocity at inlet	Air volume	temperature increase due to electric reheat coil									
			1phase/230 VAC (maximum 12 A)						3phase/400 VAC (star)			
			0.5 KW	1 KW	1.5 KW	2 KW	2.5 KW	3 KW	4,5 KW	6 KW	9 KW	
	m/s	l/s CFM m ³ /h	Δ T °C	Δ T °C	Δ T °C	Δ T °C	Δ T °C	Δ T °C	Δ T °C	Δ T °C	Δ T °C	
100	2	15 31 53	28									
	4	29 62 106	14	28								
	6	44 94 160	9	19	28							
	8	59 125 213	7	14	21	28						
	10	74 156 266	6	11	17	22						
125	2	23 49 84	18									
	4	47 99 168	9	18	27							
	6	70 149 253	6	12	18	24						
	8	94 198 337	4	9	13	18						
	10	117 248 421	4	7	11	14						
160	2	39 82 139	11	21	32							
	4	78 164 279	5	11	16	21	27					
	6	116 246 418	4	7	11	14	18	21				
	8	155 328 558	3	5	8	11	13	16				
	10	194 410 697		4	6	9	11	13				
200	2	61 129 219		14	20	27						
	4	122 258 439		7	10	14	17	20				
	6	183 387 658		5	7	9	11	14				
	8	244 516 878		3	5	7	9	10				
	10	305 645 1097		3	4	5	7	8				
250	2	96 203 345			13	17	22	26				
	4	192 406 690			6	9	11	13	19			
	6	288 609 1035			4	6	7	9	13			
	8	383 812 1380			3	4	5	6	10			
	10	479 1015 1725			3	3	4	5	8			
315	2	153 324 550				11	14	16	24			
	4	306 648 1101				5	7	8	12	16	24	
	6	459 971 1651				4	5	5	8	11	16	
	8	612 1295 2202				3	3	4	6	8	12	
	10	764 1619 2752				3	3	3	5	7	10	
355	2	195 412 701				9	11	13	19	26		
	4	389 824 1401				4	5	6	10	13	19	
	6	584 1236 2102				3	4	4	6	9	13	
	8	779 1649 2803				3	3	3	5	6	10	
	10	973 2061 3503				3	3	3	4	5	8	
400	2	248 524 891				7	8	10	15	20	30	
	4	495 1049 1783				3	4	5	8	10	15	
	6	743 1573 2674				3	3	3	5	7	10	
	8	990 2097 3565							4	5	8	
	10	1238 2621 4456							3	4	6	

1. The maximum recommended supply air temperature is 35°C.

At this temperature room height, supply air velocity, diffuser type and location has to be taken into account.

2. To calculate the capacity of an electric reheat coil, see selection example on page 5.

3. See price list for standard configurations and capacities.

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