CLOSED ACTIVE BEAM : K60

PRODUCT DATA

Introduction

The closed active beam K-60 (600 mm wide) is designed to provide sensible cooling, ventilation and also heating if necessary. Standard active heat exchangers lengths of 600, 900, 1000, 1100, 1200, 1500, 1800, 2100, 2400, 2700 and 2950 mm are offered to suit many applications including offices, hotels, retail shops, bank halls, hospitals,...

The benefits of this beam include:

- free cooling (Supply water 14-18°C)
- low noise
- easy set up with static pressure
- minimal primary fresh air
- linear capacity control utilising Variable Air Volume
- dummy sections can be ordered
- choice of perforated face panel
- can be used for either heating or cooling
- simple installation using integral hanging rail and mounting brackets
- suitable for all ceilings: T-bar, recessed or surface mounting

Description

The K-60 closed active beam has a nominal width of 600 mm and provides a 2 way opposite horizontal air pattern. A choice of perforated steel faceplate is possible, with either a circular Ø4,1 mm (51% open) or a square 6 mm (44% open) mesh. The standard colour finish is RAL 9010, other RAL-colours upon request. The beam is supplied in standard modular total lengths of 600, 900, 1000, 1100, 1200, 1500, 1800, 2100, 2400, 2700 and 2950 mm to suit the application.
Other special lengths are also available upon request. The overall height is 250 mm including the plenum box, although inactive beams are 160 mm and dummy beams are only 70 mm.
Plenum boxes are normally supplied without internal lining with a Ø 125 mm spigot, but can also optionally be supplied with 6 mm melamine internal lining.

All our closed active beams are certified by Eurovent.

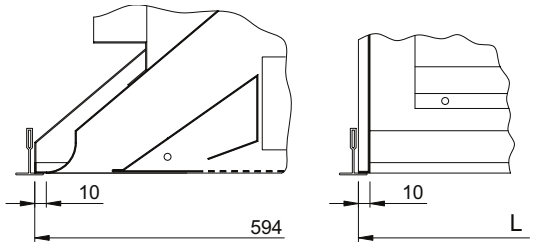
www.eurovent-certification.com

CLOSED ACTIVE BEAM : K60
PRODUCT DATA

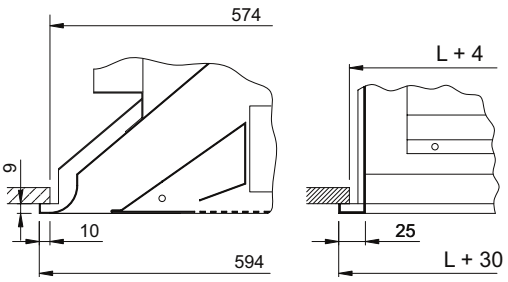
When the primary air is > 130 m^3/h, the plenum will be provided with 2 spigots of Ø 125 mm. A heat exchanger with aluminium fins and 4 separate Ø 12 mm copper pipes are pulled into the beam casing. These pipes have plain tails and are suitable for compression fittings.

The K-60 has a hinged front panel, providing easy access to the heat exchanger for any routine maintenance. The heat exchanger should be industrially cleaned once every 1-5 years depending on the use of area. The more dust generated during use, the more often it needs cleaning. The beam does not have filters or condensation collection drains and pipes which require cleaning.

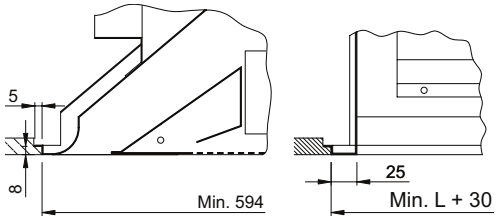
T-bar mounting - KT



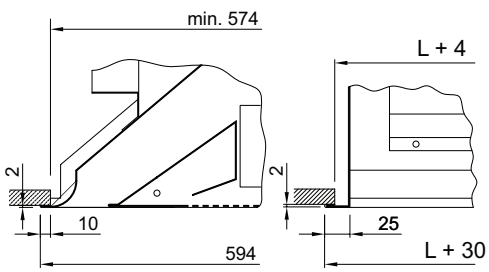
Recessed mounting - KS



Surface mounting - KZ



Flush mounting - KV



CLOSED ACTIVE BEAM : K60
PRODUCT DATA

Operation

A closed active beam is used for cooling and heating. Active beams contain a supply air plenum. Primary fresh air is supplied directly into the plenum where it is forced through induction nozzles. The air leaves the nozzles and the induction effect pull the secondary room air through the heat exchanger from below the beam. The mixture of the primary supply air and induced secondary air enters the room, through the longitudinal slots at both sides of the beam, with a horizontal air pattern.

The chilled beam system is a dry-cooling system. To avoid condensation, the inlet water temperature for the beam should always be above the dew point temperature of the surrounding air. If windows can be opened, the water flow to the beams should be disabled to avoid condensation.
If for some reason the room air has become too humid, the water circulation must be stopped and the ventilation should be switched on. After the area is dehumidified, the water circulation can be restarted.

The principle method for individual room temperature control is by regulating water flow ON/OFF. This method of continuous air movement and fresh primary air provide optimum comfort. The capacity can also be controlled by using Variable Air Volume units for the primary air. By zoning the chilled beams, the diversity resulting from VAV control allows a reduction of the primary supply air.

Standard required water temperatures are 14-18 ºC for cooling and 35-50 ºC for heating, which allows free cooling using a heat pump system or ground source energy.

Maximum water pressure is 7 bar.

Primary air: 16-20 ºC (summer) and 18–21 ºC (winter) is standard. The dew point of the surrounding air should always be 1-2 ºC below the cold water supply temperature to allow dehumidification.

Optimum minimum plenum pressure of the primary air is 100 Pa.
Minimum primary air plenum pressure is 50 Pa.

Dehumidification of the primary air from the main air-handling unit is necessary to control humidity levels and to avoid condensation.

Due to the aerodynamic design of the nozzles greater levels of primary air can be introduced into the beam, creating high secondary cooling. This is particularly useful for higher air volume applications.

Standard sizes:

600 mm
900 mm
1000 mm
1100 mm
1200 mm
1500 mm
1800 mm
2100 mm
2400 mm
2700 mm
2950 mm

Product specifications

Material

Steel beam casing with a choice of perforated front panel with either circular Ø 4.1 mm (51% free area) or square 6 mm (44% free area) mesh. Heat exchanger coil with aluminium fins and Ø 12 mm copper pipes. Galvanised steel sheet plenum box.

Construction

Single sheet beam casing with mechanically joined end plates with a hinged perforated front panel. The plenum box section has a Ø 125 mm circular spigot with end plates mechanically joined and sealed to the beam casing.
Plenum Box with pressure measuring-point behind front panel.

Installation

Possibilty to mount with drop rod or wire using preformed lugs with a sliding rail-arrangement. Suitable for T-Bar, surface or recessed ceiling systems.
Heat exchanger coil, Ø 12 mm copper pipes have plain tails suitable for compression fittings.

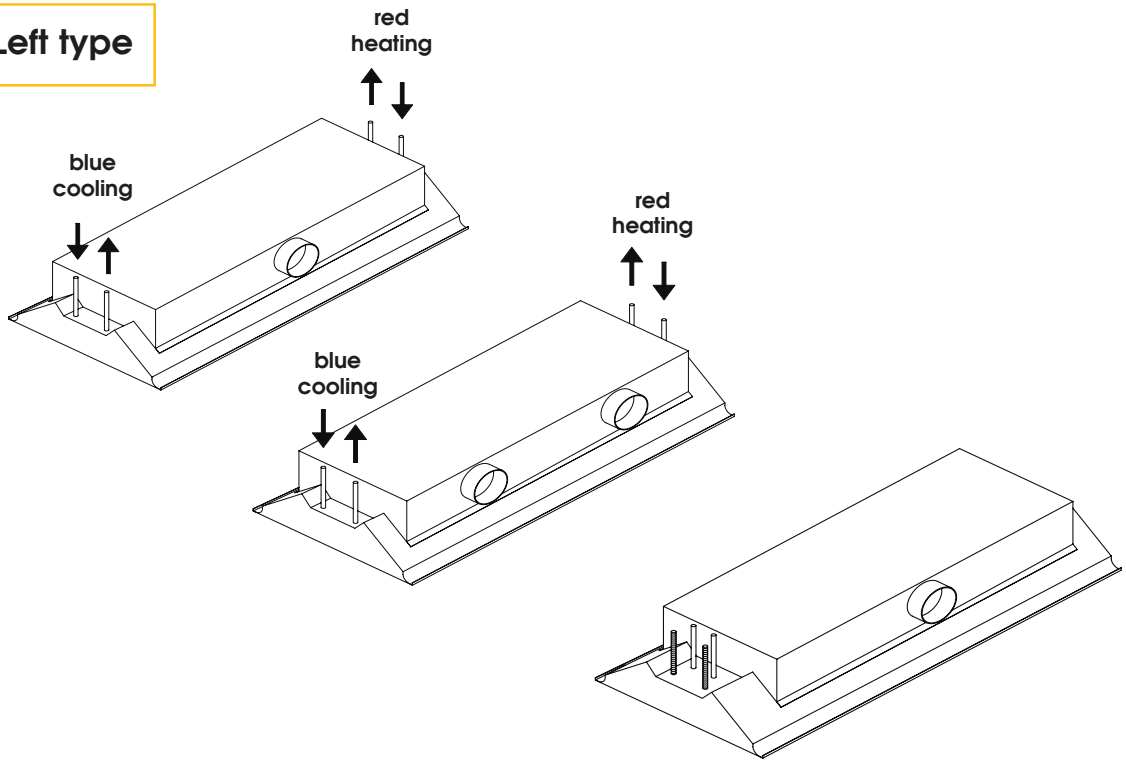
Finish

RAL 9010 standard finish

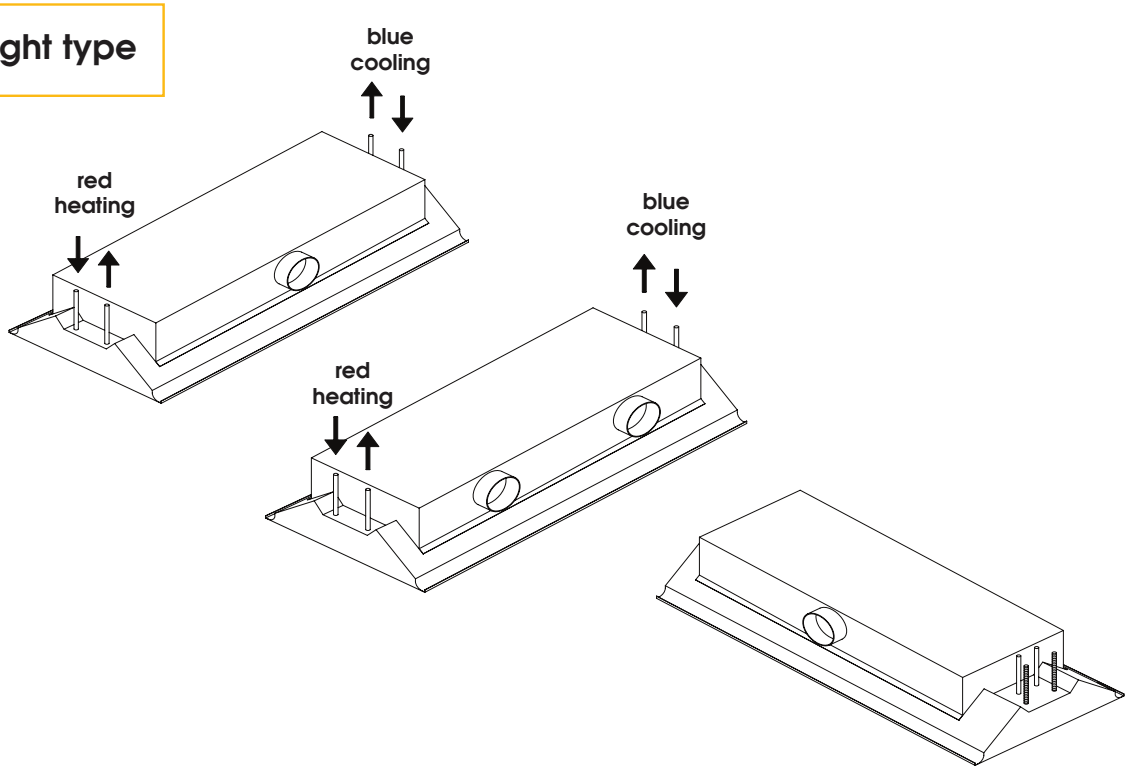
CLOSED ACTIVE BEAM : K60

PRODUCT DATA

Left type



Right type

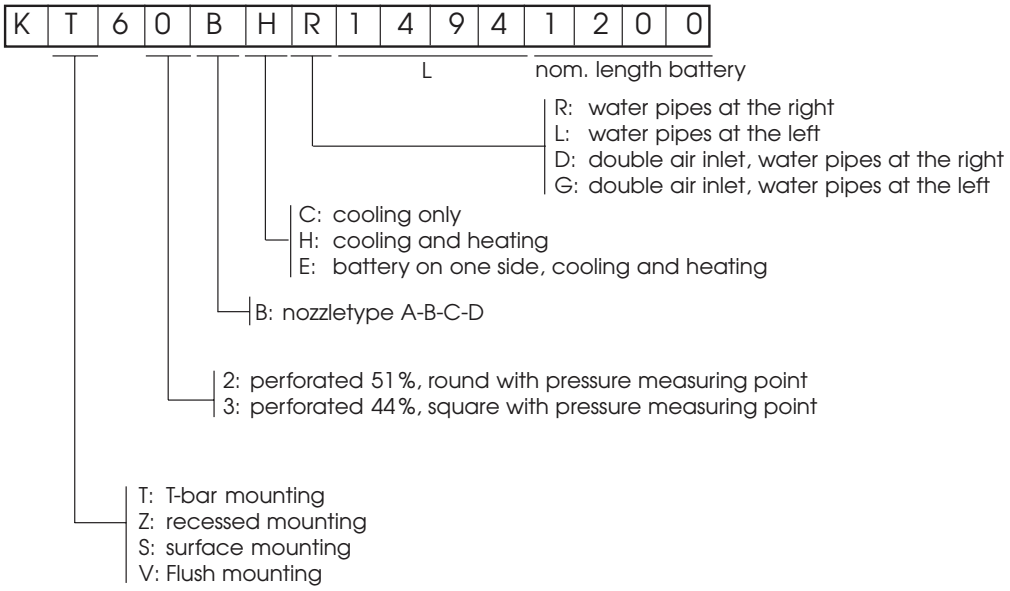


CLOSED ACTIVE BEAM : K60

PRODUCT DATA

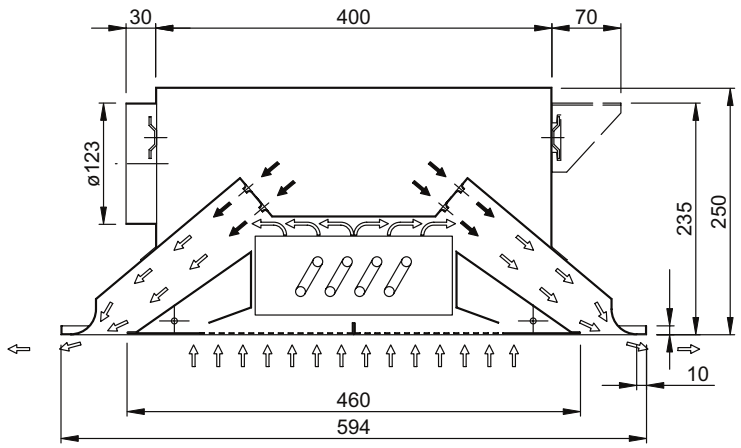
How to order

Chilled beam unit, KT60BH 1500, 600 mm wide, L = 1494 mm, nominal length of the battery 1200 mm, suited for T-bar mounting with heating and cooling, nozzle type B.



CLOSED ACTIVE BEAM : K60

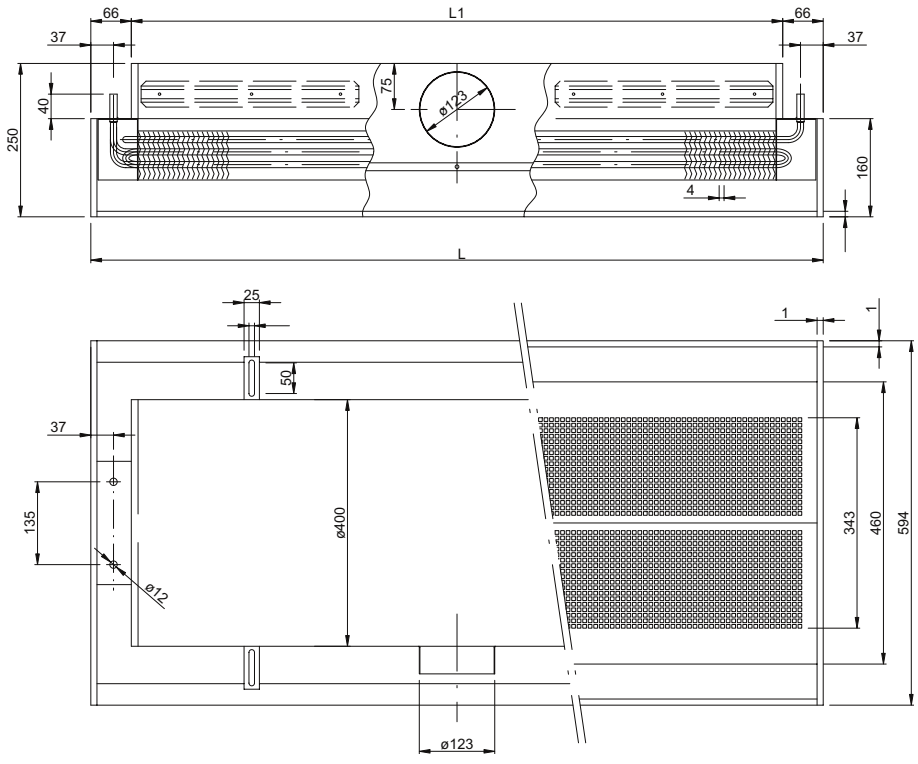
PRODUCT DATA



L (mm)	L_1 (mm)	L (mm)	L_1 (mm)
594	462	2094	1962
894	762	2394	2262
1194	1062	2694	2562
1494	1362	2950	2862
1794	1662		

L = total length
L_1 = plenum length

T-Bar mounting



CLOSED ACTIVE BEAM : K60

TECHNICAL DATA

Cooling tables: length 600mm

K-60 Cooling	Primary Air Volume q_v			L_W (NR)	Primary capacity (W) Δ Ta = Trm-Tprim			Secondary capacity (W) ΔT = Trm - Twi qw = 100 l/h Δ Pw = 4 kPa				
	l/s	m^3/h	P_s (Pa)		8K	9K	10K	6K	7K	8K	9K	10K
nozzle "A" 600mm	3,7	13	130	<23	35	40	44	82	96	110	124	137
	4,0	14	150	23	38	43	47	91	106	121	137	152
	4,3	15	170	24	40	45	50	98	115	131	148	164
	4,5	16	190	25	43	48	53	104	121	138	156	173
	4,7	17	210	27	45	51	56	109	127	145	163	181
	5,2	19	250	29	49	55	61	118	138	157	177	196
nozzle "B" 600mm	4,5	16	130	<23	42	48	53	90	105	121	136	151
	4,8	17	150	23	45	51	57	99	115	131	148	164
	5,1	18	170	24	48	54	61	105	122	139	157	174
	5,4	19	190	25	51	58	64	110	128	147	165	183
	5,7	20	210	27	54	61	67	115	135	154	173	192
	6,2	22	250	29	59	66	73	123	144	164	185	205
nozzle "C" 600mm	7,0	25	130	<23	67	75	83	122	143	163	183	204
	7,5	27	150	23	72	81	89	126	148	169	190	211
	8,0	29	170	24	76	86	95	130	152	174	195	217
	8,5	31	190	25	81	91	101	134	156	178	200	223
	8,9	32	210	27	85	95	106	136	159	181	204	227
	9,7	35	250	29	92	104	115	142	166	189	213	237
nozzle "D" 600mm	9,5	34	130	<23	90	101	113	123	143	164	184	204
	10,2	37	150	23	97	109	121	127	148	169	190	212
	10,8	39	170	24	103	116	129	131	152	174	196	218
	11,5	41	190	25	109	122	136	132	154	176	198	220
	12,0	43	210	27	114	129	143	136	159	182	205	227
	13,1	47	250	29	125	140	156	142	166	190	214	237

EUROVENT CERTIFIED PERFORMANCE

All our closed active beams are certified by Eurovent.

www.eurovent-certification.com

CLOSED ACTIVE BEAM : K60
TECHNICAL DATA

Cooling tables: length 900mm

K-60 Cooling	Primary Air Volume q_v			L_W (NR)	Primary capacity (W) Δ Ta = Trm-Tprim			Secondary capacity (W) Δ T = Trm - Twi qw = 150 l/h ΔPw = 1,7 kPa				
	l/s	m^3/h	P_s (Pa)		8K	9K	10K	6K	7K	8K	9K	10K
nozzle "A" 900mm	6,4	23	130	<23	60	68	76	142	166	190	213	237
	6,8	25	150	23	65	73	81	155	181	207	233	259
	7,3	26	170	24	69	78	86	167	195	222	250	278
	7,7	28	190	25	73	82	91	176	205	235	264	293
	8,1	29	210	27	77	86	96	184	214	245	276	306
	8,8	32	250	29	84	94	105	199	232	266	299	332
nozzle "B" 900mm	7,6	27	130	<23	72	81	90	154	180	205	231	257
	8,2	29	150	23	78	87	97	167	195	222	250	278
	8,7	31	170	24	83	93	103	177	206	236	265	295
	9,2	33	190	25	87	98	109	186	217	248	278	309
	9,7	35	210	27	92	103	115	195	227	260	292	325
	10,6	38	250	29	100	113	125	205	239	273	307	341
nozzle "C" 900mm	12,0	43	130	<23	114	128	142	206	240	275	309	343
	12,8	46	150	23	122	137	153	213	249	284	320	355
	13,7	49	170	24	130	146	162	219	256	292	329	366
	14,5	52	190	25	137	155	172	222	259	296	333	370
	15,2	55	210	27	144	163	181	227	264	302	340	378
	16,6	60	250	29	158	177	197	237	277	316	356	395
nozzle "D" 900mm	16,9	61	130	<23	161	181	201	209	244	278	313	348
	18,2	65	150	23	173	194	216	217	253	289	325	361
	19,3	70	170	24	184	207	230	221	257	294	331	368
	20,4	74	190	25	194	219	243	226	264	302	340	377
	21,5	77	210	27	204	230	255	231	269	308	346	385
	23,4	84	250	29	223	251	279	242	283	323	363	404

Cooling tables: length 1000mm

K-60 Cooling	Primary Air Volume q_v			L_W (NR)	Primary capacity (W) ΔTa = Trm-Tprim			Secondary capacity (W) ΔT = Trm - Twi qw = 150 l/h ΔPw = 1,8 kPa				
	l/s	m^3/h	P_s (Pa)		8K	9K	10K	6K	7K	8K	9K	10K
nozzle "A" 1000mm	7,1	26	130	<23	68	76	85	156	182	208	234	260
	7,7	28	150	23	73	82	91	173	202	231	259	288
	8,2	29	170	24	78	87	97	186	216	247	278	309
	8,6	31	190	25	82	92	103	195	228	261	293	326
	9,1	33	210	27	86	97	108	204	238	272	306	340
	9,9	36	250	29	94	106	118	221	258	295	332	369
nozzle "B" 1000mm	8,6	31	130	<23	82	92	102	172	201	229	258	287
	9,2	33	150	23	88	99	109	186	217	248	279	310
	9,8	35	170	24	93	105	117	197	230	263	296	329
	10,4	37	190	25	99	111	123	207	241	276	310	345
	10,9	39	210	27	104	117	130	217	253	289	325	362
	11,9	43	250	29	113	127	141	231	270	308	347	385
nozzle "C" 1000mm	13,6	49	130	<23	129	145	162	231	270	308	347	385
	14,6	53	150	23	139	156	173	235	275	314	353	392
	15,5	56	170	24	148	166	185	240	280	320	360	400
	16,4	59	190	25	156	176	195	249	290	332	373	415
	17,3	62	210	27	164	185	205	254	296	338	381	423
	18,9	68	250	29	179	202	224	265	310	354	398	442
nozzle "D" 1000mm	19,0	68	130	<23	180	203	225	231	270	309	347	386
	20,4	73	150	23	194	218	242	240	280	320	360	400
	21,7	78	170	24	206	232	258	244	285	326	367	407
	22,9	83	190	25	218	245	272	251	292	334	376	418
	24,1	87	210	27	229	258	286	258	301	344	387	430
	26,3	95	250	29	250	281	313	268	313	357	402	446

CLOSED ACTIVE BEAM : K60

TECHNICAL DATA

Cooling tables: length 1100mm

K-60 Cooling	Primary Air Volume q_v			L_W (NR)	Primary capacity (W) ΔTa = Trm-Tprim			Secondary capacity (W) ΔT = Trm - Twi qw = 160 l/h ΔPw = 2,2 kPa				
	l/s	m^3/h	P_s (Pa)		8K	9K	10K	6K	7K	8K	9K	10K
nozzle "A" 1100mm	8,2	30	130	<23	78	88	98	181	211	242	272	302
	8,8	32	150	23	84	94	105	199	232	265	298	332
	9,4	34	170	24	89	101	112	212	247	283	318	354
	9,9	36	190	25	94	106	118	223	260	297	335	372
	10,4	38	210	27	99	112	124	233	272	311	349	388
	11,4	41	250	29	108	122	135	252	294	336	378	420
nozzle "B" 1100mm	9,9	35	130	<23	94	105	117	197	230	263	296	329
	10,6	38	150	23	101	113	126	212	248	283	318	354
	11,3	41	170	24	107	120	134	225	262	300	337	375
	11,9	43	190	25	113	127	142	236	276	315	355	394
	12,5	45	210	27	119	134	149	247	288	329	371	412
	13,7	49	250	29	130	146	162	259	303	346	389	432
nozzle "C" 1100mm	15,3	55	130	<23	145	163	181	254	296	339	381	423
	16,4	59	150	23	156	175	195	263	306	350	394	438
	17,4	63	170	24	166	186	207	268	312	357	402	446
	18,4	66	190	25	175	197	219	277	324	370	416	462
	19,4	70	210	27	184	207	230	283	330	377	424	471
	21,2	76	250	29	201	226	251	296	345	394	444	493
nozzle "D" 1100mm	21,4	77	130	<23	204	229	255	260	303	346	390	433
	23,0	83	150	23	219	246	274	269	314	359	404	449
	24,5	88	170	24	233	262	291	274	320	366	411	457
	25,9	93	190	25	246	277	308	281	328	375	422	469
	27,2	98	210	27	259	291	324	287	334	382	430	478
	29,7	107	250	29	282	318	353	300	350	400	451	501

Cooling tables: length 1200mm

K-60 Cooling	Primary Air Volume q_v			L_W (NR)	Primary capacity (W) Δ Ta = Trm-Tprim			Secondary capacity (W) Δ T = Trm - Twi qw = 180 l/h ΔPw = 3,0 kPa				
	l/s	m^3/h	P_s (Pa)		8K	9K	10K	6K	7K	8K	9K	10K
nozzle "A" 1200mm	9,0	32	130	<23	86	96	107	199	232	265	298	331
	9,7	35	150	23	92	103	115	218	255	291	328	364
	10,3	37	170	24	98	110	122	233	272	311	349	388
	10,9	39	190	25	103	116	129	245	286	327	368	409
	11,4	41	210	27	109	122	136	256	298	341	384	426
	12,5	45	250	29	119	133	148	277	323	370	416	462
nozzle "B" 1200mm	10,8	39	130	<23	103	115	128	217	253	289	325	361
	11,6	42	150	23	110	124	138	233	272	311	350	389
	12,3	44	170	24	117	132	147	247	288	329	370	411
	13,1	47	190	25	124	140	155	259	302	345	388	432
	13,7	49	210	27	130	147	163	271	317	362	407	452
	15,0	54	250	29	142	160	178	285	332	380	427	475
nozzle "C" 1200mm	16,9	61	130	<23	161	181	201	282	329	376	423	470
	18,2	65	150	23	173	194	216	292	340	389	437	486
	19,3	70	170	24	184	207	230	297	347	396	446	495
	20,4	74	190	25	194	219	243	304	354	405	456	506
	21,5	77	210	27	204	230	255	314	367	419	471	524
	23,4	84	250	29	223	251	279	324	378	432	486	540
nozzle "D" 1200mm	23,9	86	130	<23	227	255	284	290	338	387	435	483
	25,7	92	150	23	244	274	305	301	351	401	451	501
	27,3	98	170	24	260	292	325	306	357	408	459	510
	28,9	104	190	25	275	309	343	314	366	418	471	523
	30,4	109	210	27	289	325	361	320	373	427	480	533
	33,1	119	250	29	315	354	394	333	388	444	499	555

CLOSED ACTIVE BEAM : K60

TECHNICAL DATA

Cooling tables: length 1500mm

K-60 Cooling	Primary Air Volume q_v			L_W (NR)	Primary capacity (W) ΔTa = Trm-Tprim			Secondary capacity (W) ΔT = Trm - Twi qw = 240 l/h ΔPw = 6,3 kPa				
	l/s	m^3/h	P_s (Pa)		8K	9K	10K	6K	7K	8K	9K	10K
nozzle "A" 1500mm	11,6	42	130	<23	111	125	138	258	301	344	387	430
	12,5	45	150	23	119	134	149	283	330	378	425	472
	13,3	48	170	24	127	142	158	302	353	403	453	504
	14,1	51	190	25	134	151	167	318	371	424	477	530
	14,8	53	210	27	141	158	176	332	387	443	498	553
	16,2	58	250	29	153	173	192	360	420	480	540	599
nozzle "B" 1500mm	14,0	50	130	<23	133	149	166	281	328	375	422	469
	15,0	54	150	23	143	160	178	303	353	404	454	504
	16,0	58	170	24	152	171	190	320	374	427	481	534
	16,9	61	190	25	161	181	201	337	393	450	506	562
	17,8	64	210	27	169	190	211	352	411	470	529	587
	19,4	70	250	29	184	207	230	370	432	493	555	617
nozzle "C" 1500mm	21,8	79	130	<23	208	233	259	365	426	487	548	609
	23,5	84	150	23	223	251	279	378	441	504	567	630
	25,0	90	170	24	237	267	297	385	450	514	578	642
	26,4	95	190	25	251	282	314	394	460	525	591	656
	27,8	100	210	27	264	297	330	407	475	543	611	679
	30,3	109	250	29	288	324	360	420	490	560	630	700
nozzle "D" 1500mm	30,9	111	130	<23	294	330	367	376	439	502	565	627
	33,2	120	150	23	316	355	394	390	455	520	585	651
	35,3	127	170	24	336	378	420	392	457	523	588	653
	37,4	135	190	25	355	399	444	407	475	543	611	679
	39,3	141	210	27	373	420	467	415	485	554	623	692
	42,9	154	250	29	407	458	509	432	504	576	648	720

Cooling tables: length 1800mm

K-60 Cooling	Primary Air Volume q_v			L_W (NR)	Primary capacity (W) ΔTa = Trm-Tprim			Secondary capacity (W) ΔT = Trm - Twi qw = 240 l/h ΔPw = 7,5 kPa				
	l/s	m^3/h	P_s (Pa)		8K	9K	10K	6K	7K	8K	9K	10K
nozzle "A" 1800mm	14,3	51	130	<23	136	153	170	311	363	414	466	518
	15,3	55	150	23	146	164	182	341	398	455	511	568
	16,3	59	170	24	155	175	194	363	424	484	545	605
	17,3	62	190	25	164	185	205	382	445	509	573	636
	18,2	65	210	27	173	194	216	398	465	531	597	664
	19,8	71	250	29	188	212	235	425	496	567	637	708
nozzle "B" 1800mm	16,8	61	130	<23	160	180	200	331	387	442	497	552
	18,1	65	150	23	172	193	215	358	418	477	537	596
	19,3	69	170	24	183	206	229	379	442	505	569	632
	20,4	73	190	25	194	218	242	397	463	529	596	662
	21,4	77	210	27	203	229	254	416	485	555	624	693
	23,4	84	250	29	222	250	277	436	509	581	654	727
nozzle "C" 1800mm	26,8	96	130	<23	255	286	318	437	510	583	656	729
	28,8	104	150	23	273	308	342	452	527	603	678	753
	30,6	110	170	24	291	328	364	461	537	614	691	768
	32,4	117	190	25	308	346	385	471	549	627	706	784
	34,0	123	210	27	324	364	404	479	559	639	719	799
	37,1	134	250	29	353	397	441	501	584	668	751	835
nozzle "D" 1800mm	38,3	138	130	<23	364	410	455	448	522	597	672	746
	41,2	148	150	23	391	440	489	460	537	613	690	767
	43,8	158	170	24	416	469	521	473	551	630	709	788
	46,3	167	190	25	440	495	550	484	564	645	726	806
	48,7	175	210	27	463	521	579	497	579	662	745	828
	53,1	191	250	29	505	568	631	520	606	693	780	866

CLOSED ACTIVE BEAM : K60

TECHNICAL DATA

Cooling tables: length 2100mm

K-60 Cooling	Primary Air Volume q_v			L_W (NR)	Primary capacity (W) ΔTa = Trm-Tprim			Secondary capacity (W) ΔT = Trm - Twi qw = 240 l/h ΔPw = 8,6 kPa				
	l/s	m^3/h	P_s (Pa)		8K	9K	10K	6K	7K	8K	9K	10K
nozzle "A" 2100mm	17,0	61	130	<23	161	181	201	368	430	491	552	614
	18,2	66	150	23	173	195	216	399	466	533	599	666
	19,4	70	170	24	184	207	230	422	493	563	634	704
	20,5	74	190	25	195	219	243	443	517	591	665	739
	21,5	78	210	27	205	230	256	462	539	616	693	770
	23,5	85	250	29	223	251	279	492	575	657	739	821
nozzle "B" 2100mm	20,0	72	130	<23	190	214	238	389	453	518	583	648
	21,5	77	150	23	204	230	255	417	486	556	625	695
	22,9	82	170	24	217	245	272	441	514	588	661	735
	24,2	87	190	25	230	259	287	461	538	615	692	769
	25,4	92	210	27	242	272	302	482	563	643	724	804
	27,7	100	250	29	264	297	329	505	590	674	758	842
nozzle "C" 2100mm	31,3	113	130	<23	298	335	372	501	584	667	751	834
	33,7	121	150	23	320	360	400	517	603	689	775	861
	35,8	129	170	24	341	383	426	526	614	702	790	877
	37,9	136	190	25	360	405	450	545	635	726	817	908
	39,8	143	210	27	378	426	473	555	648	740	833	925
	43,4	156	250	29	413	465	516	579	676	772	869	965
nozzle "D" 2100mm	44,9	162	130	<23	427	480	534	520	607	694	781	867
	48,3	174	150	23	459	516	573	527	614	702	790	878
	51,4	185	170	24	488	549	610	541	631	721	812	902
	54,3	196	190	25	516	581	645	553	646	738	830	922
	57,1	206	210	27	543	610	678	568	662	757	851	946
	62,3	224	250	29	592	666	740	593	692	791	890	989

Cooling tables: length 2400mm

K-60 Cooling	Primary Air Volume q_v			L_W (NR)	Primary capacity (W) ΔTa = Trm-Tprim			Secondary capacity (W) ΔT = Trm - Twi qw = 280 l/h ΔPw = 1,7 kPa				
	l/s	m^3/h	P_s (Pa)		8K	9K	10K	6K	7K	8K	9K	10K
nozzle "A" 2400mm	19,3	70	130	<23	184	207	230	415	484	553	622	691
	20,8	75	150	23	197	222	247	454	529	605	680	756
	22,1	80	170	24	210	236	263	483	563	644	724	805
	23,4	84	190	26	222	250	278	508	592	677	761	846
	24,6	88	210	27	233	263	292	529	617	705	793	881
	26,8	96	250	29	255	287	318	571	666	761	856	952
nozzle "B" 2400mm	23,2	83	130	<23	220	248	275	451	526	601	676	751
	24,9	90	150	23	237	266	296	484	564	645	725	806
	26,5	95	170	24	252	283	315	511	596	681	766	851
	28,0	101	190	26	266	300	333	535	624	713	803	892
	29,5	106	210	27	280	315	350	560	653	746	840	933
	32,1	116	250	29	306	344	382	586	684	782	880	977
nozzle "C" 2400mm	36,3	131	130	<23	345	388	431	580	677	773	870	967
	38,9	140	150	23	370	416	463	599	699	798	898	998
	41,5	149	170	24	394	443	493	610	712	813	915	1017
	43,8	158	190	26	417	469	521	623	727	831	934	1038
	46,1	166	210	27	438	493	547	643	750	858	965	1072
	50,3	181	250	29	478	538	597	662	772	883	993	1103
nozzle "D" 2400mm	51,9	187	130	<23	494	555	617	594	693	792	891	990
	55,8	201	150	23	530	596	663	610	711	813	915	1016
	59,4	214	170	24	564	635	706	626	731	835	939	1044
	62,8	226	190	26	597	671	746	641	748	854	961	1068
	66,0	238	210	27	627	706	784	657	767	876	986	1095
	72,0	259	250	29	684	770	856	687	802	916	1031	1145

CLOSED ACTIVE BEAM : K60

TECHNICAL DATA

Cooling tables: length 2700mm

K-60 Cooling	Primary Air Volume q_v			L_W (NR)	Primary capacity (W) ΔTa = Trm-Tprim			Secondary capacity (W) ΔT = Trm - Twi qw = 350 l/h ΔPw = 3,0 kPa				
	l/s	m^3/h	P_s (Pa)		8K	9K	10K	6K	7K	8K	9K	10K
nozzle "A" 2700mm	22,0	79	130	<23	209	235	261	476	555	634	713	793
	23,6	85	150	23	224	252	280	521	608	695	782	869
	25,1	90	170	24	239	269	298	555	648	740	833	925
	26,6	96	190	26	252	284	316	584	681	779	876	973
	27,9	101	210	27	265	299	332	608	710	811	913	1014
	30,5	110	250	29	290	326	362	658	767	877	987	1096
nozzle "B" 2700mm	26,4	95	130	<23	251	282	313	518	604	691	777	863
	28,3	102	150	23	269	303	336	556	649	741	834	927
	30,1	109	170	24	286	322	358	588	686	784	882	980
	31,9	115	190	26	303	341	379	616	719	821	924	1027
	33,5	121	210	27	318	358	398	645	752	860	967	1075
	36,6	132	250	29	347	391	434	676	789	901	1014	1127
nozzle "C" 2700mm	41,2	148	130	<23	392	441	490	668	780	891	1002	1114
	44,3	159	150	23	421	473	526	690	805	920	1035	1150
	47,1	170	170	24	448	504	560	703	821	938	1055	1172
	49,8	179	190	26	473	533	592	718	838	958	1078	1197
	52,4	189	210	27	498	560	622	742	866	990	1113	1237
	57,1	206	250	29	543	611	679	764	891	1019	1146	1273
nozzle "D" 2700mm	58,5	211	130	<23	556	626	695	689	804	919	1034	1149
	62,9	226	150	23	597	672	747	698	814	930	1047	1163
	66,9	241	170	24	636	716	795	717	837	956	1076	1195
	70,7	255	190	26	672	756	840	734	856	978	1101	1223
	74,4	268	210	27	707	795	884	758	885	1011	1137	1264
	81,2	292	250	29	771	868	964	788	919	1051	1182	1313

CLOSED ACTIVE BEAM : K60

TECHNICAL DATA

Cooling tables: length 2950mm

K-60 Cooling	Primary Air Volume q_v			L_W (NR)	Primary capacity (W) ΔTa = Trm-Tprim			Secondary capacity (W) ΔT = Trm - Twi qw = 400 l/h ΔPw = 4,3 kPa				
	l/s	m^3/h	P_s (Pa)		8K	9K	10K	6K	7K	8K	9K	10K
nozzle "A" 2950mm	23,6	89	130	<23	234	263	293	543	633	724	814	905
	26,5	95	150	23	241	271	314	589	688	786	884	982
	28,2	101	170	24	268	302	335	624	728	832	936	1041
	29,8	107	190	25	272	319	354	656	765	874	983	1093
	31,3	113	210	27	285	335	372	686	800	914	1029	1143
	34,2	123	250	29	325	365	406	729	851	972	1094	1216
nozzle "B" 2950mm	28,9	104	130	<23	275	309	343	571	666	761	856	951
	31,1	112	150	23	295	332	369	613	715	1043	919	1021
	33,1	119	170	24	314	353	393	648	756	1117	972	1080
	35,0	126	190	25	332	374	415	679	792	906	1019	1132
	36,7	132	210	27	349	393	437	711	830	948	1067	1185
	40,1	144	250	29	381	429	476	746	870	994	1119	1243
nozzle "C" 2950mm	45,3	163	130	<23	431	485	538	739	862	985	1108	1231
	48,7	175	150	23	463	521	578	763	891	1018	1145	1272
	51,8	187	170	24	493	554	616	778	908	1037	1167	1296
	54,8	197	190	25	521	586	651	795	927	1059	1192	1324
	57,6	207	210	27	548	616	684	809	944	1079	1214	1349
	62,9	226	250	29	597	672	747	845	986	1127	1268	1409
nozzle "D" 2950mm	64,7	233	130	<23	615	692	769	755	881	1006	1132	1258
	69,5	250	150	23	661	743	826	775	904	1034	1163	1292
	74,0	266	170	24	703	791	879	797	929	1062	1195	1328
	78,2	282	190	25	743	836	929	815	951	1087	1223	1359
	82,2	296	210	27	782	879	977	837	976	1116	1255	1395
	89,7	323	250	29	853	959	1066	876	1022	1168	1314	1460

q_V (l/s and m^3/h): Primary air volume supplied into the plenum

P_S (Pa): Static plenum pressure in Pascal

Note: - Due to the low velocity at the 125 mm inlet, the inlet static pressure is practically equal to the plenum static pressure
- Minimum primary air plenum pressure is 100 Pa

L_W (NR): Noise rate, based on sound power (Lw) without room attenuation or multiple units

Primary capacity (W): Supply air cooling capacity in Watt (W)

ΔTa: Temperature difference between the room air temperature and the supply ai temperature (K)

Trm: Room air temperature (°C)

Tprim: Supply air temperature (°C)

Secondary capacity (W): Water cooling capacity in Watt (W)

ΔT: Temperature difference between room air temperature and inlet water temperature(K)

Twi: Inlet water temperature (°C)

q_W: Water flow rate (l/h)

ΔP_W: Water pressure loss (Pa)

CLOSED ACTIVE BEAM : K60
TECHNICAL DATA

Cooling tables: length 600mm

K-60 Heating	Primary Air Volume q_v			L_W (NR)	Primary capacity (W) ΔTa = Tprim - Trm			Secondary capacity (W) Trm=20°C ΔT = Twi - Trm Δa = Toff coil - Ton coil qw = 60 l/h Δ Pw = 0,6 kPa					
	l/s	m^3/h	P_s (Pa)		8K	9K	10K	10K	ΔaK	20K	ΔaK	30K	ΔaK
nozzle "A" 600mm	3,7	13	130	<23	35	40	44	111	4	221	9	332	13
	4,0	14	150	23	38	43	47	122	5	244	9	365	14
	4,3	15	170	24	40	45	50	129	5	258	9	387	14
	4,5	16	190	26	43	48	53	136	4	271	9	407	13
	4,7	17	210	27	45	51	56	142	4	284	9	425	13
	5,2	19	250	29	49	55	61	153	4	307	9	460	13
nozzle "B" 600mm	4,5	16	130	<23	42	48	53	121	5	242	10	363	14
	4,8	17	150	23	45	51	57	129	5	258	10	387	14
	5,1	18	170	24	48	54	61	137	5	273	10	410	14
	5,4	19	190	26	51	58	64	144	5	287	9	431	14
	5,7	20	210	27	54	61	67	150	5	300	9	450	14
	6,2	22	250	29	59	66	73	160	5	320	9	479	14
nozzle "C" 600mm	7,0	25	130	<23	67	75	83	159	5	317	11	476	16
	7,5	27	150	23	72	81	89	166	5	333	10	499	15
	8,0	29	170	24	76	86	95	173	5	346	10	519	15
	8,5	31	190	26	81	91	101	182	5	364	10	545	15
	8,9	32	210	27	85	95	106	187	5	374	10	561	15
	9,7	35	250	29	92	104	115	195	5	390	9	585	14
nozzle "D" 600mm	9,5	34	130	<23	90	101	113	159	5	318	11	478	16
	10,2	37	150	23	97	109	121	167	5	334	11	501	16
	10,8	39	170	24	103	116	129	174	5	347	10	521	16
	11,5	41	190	26	109	122	136	180	5	359	10	539	15
	12,0	43	210	27	114	129	143	188	5	375	10	563	15
	13,1	47	250	29	125	140	156	196	5	392	10	587	15

Cooling tables: length 900mm

K-60 Heating	Primary Air Volume q_v			L_W (NR)	Primary capacity (W) ΔTa = Tprim - Trm			Secondary capacity (W) Trm=20°C Δ T = Twi - Trm Δa = Toff coil - Ton coil qw = 60 l/h Δ Pw = 0,9 kPa					
	l/s	m^3/h	P_s (Pa)		8K	9K	10K	10K	Δ aK	20K	Δ aK	30K	Δ aK
nozzle "A" 900mm	6,4	23	130	<23	60	68	76	184	4	369	9	553	13
	6,8	25	150	23	65	73	81	196	4	392	9	588	13
	6,8	25	170	24	65	73	81	196	4	392	9	588	13
	7,3	26	190	26	69	78	86	207	4	414	8	621	13
	7,7	28	210	27	73	82	91	217	4	434	8	651	13
	8,1	29	250	29	77	86	96	226	4	452	8	679	12
nozzle "B" 900mm	7,6	27	130	<23	72	81	90	195	5	389	9	584	14
	8,2	29	150	23	78	87	97	207	4	414	9	620	13
	8,7	31	170	24	83	93	103	218	4	436	9	654	13
	9,2	33	190	26	87	98	109	229	4	457	9	686	13
	9,7	35	210	27	92	103	115	238	4	476	9	715	13
	10,6	38	250	29	100	113	125	252	4	505	8	757	13
nozzle "C" 900mm	12,0	43	130	<23	114	128	142	251	5	501	10	752	15
	12,8	46	150	23	122	137	153	262	5	524	10	786	14
	13,7	49	170	24	130	146	162	272	5	543	9	815	14
	14,5	52	190	26	137	155	172	280	5	560	9	840	14
	15,2	55	210	27	144	163	181	287	4	574	9	861	13
	16,6	60	250	29	158	177	197	303	4	606	9	909	13
nozzle "D" 900mm	16,9	61	130	<23	161	181	201	257	5	514	10	771	15
	18,2	65	150	23	173	194	216	269	5	537	10	806	14
	19,3	70	170	24	184	207	230	278	5	557	9	835	14
	20,4	74	190	26	194	219	243	287	5	573	9	860	14
	21,5	77	210	27	204	230	255	294	4	588	9	882	13
	23,4	84	250	29	223	251	279	310	4	620	9	930	13

CLOSED ACTIVE BEAM : K60

TECHNICAL DATA

Cooling tables: length 1000mm

K-60 Heating	Primary Air Volume q_v			L_W (NR)	Primary capacity (W) ΔTa = Tprim - Trm			Secondary capacity (W) Trm=20°C Δ T = Twi - Trm Δa = Toff coil - Ton coil qw = 100 l/h Δ Pw = 2,6 kPa					
	l/s	m^3/h	P_s (Pa)		8K	9K	10K	10K	Δ aK	20K	Δ aK	30K	Δ aK
nozzle "A" 1000mm	7,1	26	130	<23	68	76	85	210	8	420	17	629	25
	7,7	28	150	23	73	82	91	231	9	462	17	693	26
	8,2	29	170	24	78	87	97	224	8	449	16	673	24
	8,6	31	190	26	82	92	103	257	8	513	17	770	25
	9,1	33	210	27	86	97	108	268	8	537	17	805	25
	9,9	36	250	29	94	106	118	290	8	579	17	869	25
nozzle "B" 1000mm	8,6	31	130	<23	82	92	102	230	9	459	18	689	27
	9,2	33	150	23	88	99	109	245	9	490	18	734	27
	9,8	35	170	24	93	105	117	259	9	518	18	777	27
	10,4	37	190	26	99	111	123	272	9	544	18	816	27
	10,9	39	210	27	104	117	130	284	9	568	18	852	27
	11,9	43	250	29	113	127	141	302	9	604	17	906	26
nozzle "C" 1000mm	13,6	49	130	<23	129	145	162	302	10	604	20	906	30
	14,6	53	150	23	139	156	173	317	10	633	20	950	29
	15,5	56	170	24	148	166	185	329	10	658	19	987	29
	16,4	59	190	26	156	176	195	340	9	680	19	1019	28
	17,3	62	210	27	164	185	205	349	9	698	18	1047	27
	18,9	68	250	29	179	202	224	370	9	740	18	1110	27
nozzle "D" 1000mm	19,0	68	130	<23	180	203	225	307	11	614	21	921	32
	20,4	73	150	23	194	218	242	322	10	643	21	965	31
	21,7	78	170	24	206	232	258	334	10	668	20	1002	30
	22,9	83	190	26	218	245	272	345	10	690	20	1035	30
	24,1	87	210	27	229	258	286	360	10	720	20	1080	29
	26,3	95	250	29	250	281	313	375	9	750	19	1126	28

Cooling tables: length 1100mm

K-60 Heating	Primary Air Volume q_v			L_W (NR)	Primary capacity (W) ΔTa = Tprim - Trm			Secondary capacity (W) Trm=20°C Δ T = Twi - Trm Δa = Toff coil - Ton coil qw = 120 l/h Δ Pw = 4,1 kPa					
	l/s	m^3/h	P_s (Pa)		8K	9K	10K	10K	Δ aK	20K	Δ aK	30K	Δ aK
nozzle "A" 1100mm	8,2	30	130	<23	78	88	98	250	6	500	12	750	18
	8,8	32	150	23	84	94	105	267	6	534	12	800	17
	9,4	34	170	24	89	101	112	282	6	564	12	847	18
	9,9	36	190	26	94	106	118	297	6	593	12	890	18
	10,4	38	210	27	99	112	124	310	6	620	12	931	18
	11,4	41	250	29	108	122	135	335	6	670	12	1005	18
nozzle "B" 1100mm	9,9	35	130	<23	94	105	117	265	6	530	12	795	19
	10,6	38	150	23	101	113	126	283	6	565	12	848	18
	11,3	41	170	24	107	120	134	299	6	598	12	896	18
	11,9	43	190	26	113	127	142	314	6	628	12	942	18
	12,5	45	210	27	119	134	149	328	6	656	12	984	18
	13,7	49	250	29	130	146	162	349	6	698	12	1047	18
nozzle "C" 1100mm	15,3	55	130	<23	145	163	181	342	7	684	13	1025	20
	16,4	59	150	23	156	175	195	359	7	719	13	1078	20
	17,4	63	170	24	166	186	207	373	6	745	13	1118	19
	18,4	66	190	26	175	197	219	385	6	770	12	1155	19
	19,4	70	210	27	184	207	230	396	6	791	12	1187	18
	21,2	76	250	29	201	226	251	419	6	839	12	1258	18
nozzle "D" 1100mm	21,4	77	130	<23	204	229	255	350	7	699	14	1049	20
	23,0	83	150	23	219	246	274	366	7	733	13	1099	20
	24,5	88	170	24	233	262	291	381	6	762	13	1142	19
	25,9	93	190	26	246	277	308	393	6	786	13	1180	19
	27,2	98	210	27	259	291	324	404	6	808	12	1212	18
	29,7	107	250	29	282	318	353	428	6	856	12	1284	18

CLOSED ACTIVE BEAM : K60

TECHNICAL DATA

Cooling tables: length 1200mm

K-60 Heating	Primary Air Volume q_v			L_W (NR)	Primary capacity (W) ΔTa = Trm-Tprim			Secondary capacity (W) Trm=20°C Δ T = Twi - Trm Δ a = Toff coil - Ton coil qw = 120 l/h Δ Pw = 4,4 kPa					
	l/s	m^3/h	P_s (Pa)		8K	9K	10K	10K	Δ aK	20K	Δ aK	30K	Δ aK
nozzle "A" 1200mm	9,0	32	130	<23	86	96	107	272	11	543	22	815	33
	9,7	35	150	23	92	103	115	290	11	579	22	869	32
	10,3	37	170	24	98	110	122	306	11	612	21	919	32
	10,9	39	190	26	103	116	129	322	11	643	21	965	32
	11,4	41	210	27	109	122	136	336	11	672	21	1009	32
	12,5	45	250	29	119	133	148	363	10	726	21	1088	31
nozzle "B" 1200mm	10,8	39	130	<23	103	115	128	288	11	575	23	863	34
	11,6	42	150	23	110	124	138	307	11	613	23	920	34
	12,3	44	170	24	117	132	147	324	11	648	23	972	34
	13,1	47	190	26	124	140	155	340	11	681	22	1021	34
	13,7	49	210	27	130	147	163	355	11	711	22	1066	33
	15,0	54	250	29	142	160	178	378	11	756	22	1133	33
nozzle "C" 1200mm	16,9	61	130	<23	161	181	201	374	12	748	25	1122	37
	18,2	65	150	23	173	194	216	392	12	784	24	1176	36
	19,3	70	170	24	184	207	230	407	12	814	24	1222	36
	20,4	74	190	26	194	219	243	420	12	841	23	1261	35
	21,5	77	210	27	204	230	255	432	11	864	23	1296	34
	23,4	84	250	29	223	251	279	450	11	900	22	1351	32
nozzle "D" 1200mm	23,9	86	130	<23	227	255	284	384	13	768	27	1153	40
	25,7	92	150	23	244	274	305	402	13	805	26	1207	39
	27,3	98	170	24	260	292	325	418	13	836	25	1254	38
	28,9	104	190	26	275	309	343	431	12	863	25	1294	37
	30,4	109	210	27	289	325	361	443	12	886	24	1329	36
	33,1	119	250	29	315	354	394	461	11	923	23	1384	34

Cooling tables: length 1500mm

K-60 Heating	Primary Air volume q_v			L_W (NR)	Primary capacity (W) ΔTa = Trm-Tprim			Secondary capacity (W) Trm=20°C Δ T = Twi - Trm Δ a = Ton coil - Toff coil qw = 140 l/h Δ Pw = 7,3 kPa					
	l/s	m^3/h	P_s (Pa)		8K	9K	10K	10K	Δ aK	20K	Δ aK	30K	Δ aK
nozzle "A" 1500mm	11,6	42	130	<23	111	125	138	348	4	695	9	1043	13
	12,5	45	150	23	119	134	149	370	4	741	9	1111	13
	13,3	48	170	24	127	142	158	391	4	783	9	1174	13
	14,1	51	190	26	134	151	167	411	4	822	9	1233	13
	14,8	53	210	27	141	158	176	429	4	858	9	1288	13
	16,2	58	250	29	153	173	192	463	4	925	9	1388	13
nozzle "B" 1500mm	14,0	50	130	<23	133	149	166	368	5	736	9	1104	14
	15,0	54	150	23	143	160	178	392	5	784	9	1176	14
	16,0	58	170	24	152	171	190	414	5	828	9	1242	14
	16,9	61	190	26	161	181	201	435	5	869	9	1304	14
	17,8	64	210	27	169	190	211	454	5	908	9	1361	14
	19,4	70	250	29	184	207	230	482	4	964	9	1446	13
nozzle "C" 1500mm	21,8	79	130	<23	208	233	259	476	5	952	10	1428	15
	23,5	84	150	23	223	251	279	499	5	997	10	1496	15
	25,0	90	170	24	237	267	297	518	5	1035	10	1553	15
	26,4	95	190	26	251	282	314	534	5	1069	9	1603	14
	27,8	100	210	27	264	297	330	549	5	1097	9	1646	14
	30,3	109	250	29	288	324	360	571	4	1143	9	1714	13
nozzle "D" 1500mm	30,9	111	130	<23	294	330	367	490	5	979	10	1469	16
	33,2	120	150	23	316	355	394	512	5	1025	10	1537	15
	35,3	127	170	24	336	378	420	532	5	1064	10	1596	15
	37,4	135	190	26	355	399	444	549	5	1097	10	1646	14
	39,3	141	210	27	373	420	467	563	5	1126	9	1689	14
	42,9	154	250	29	407	458	509	586	4	1172	9	1758	13

CLOSED ACTIVE BEAM : K60

TECHNICAL DATA

Cooling tables: length 1800mm

K-60 Heating	Primary Air volume q_v			L_W (NR)	Primary capacity (W) Δ Ta = Trm-Tprim			Secondary capacity (W) Trm=20°C Δ T = Twi - Trm Δ a = Ton coil - Toff coil qw = 150 l/h Δ Pw = 9,9 kPa					
	l/s	m^3/h	P_s (Pa)		8K	9K	10K	10K	Δ aK	20K	Δ aK	30K	Δ aK
nozzle "A" 1800mm	14,3	51	130	<23	136	153	170	420	4	840	9	1260	13
	15,3	55	150	23	146	164	182	447	4	894	9	1341	13
	16,3	59	170	24	155	175	194	472	4	944	9	1416	13
	17,3	62	190	26	164	185	205	495	4	990	9	1485	13
	18,2	65	210	27	173	194	216	517	4	1033	8	1550	13
	19,8	71	250	29	188	212	235	548	4	1097	8	1645	12
nozzle "B" 1800mm	16,8	61	130	<23	160	180	200	437	5	875	9	1312	14
	18,1	65	150	23	172	193	215	465	5	931	9	1396	14
	19,3	69	170	24	183	206	229	491	5	983	9	1474	14
	20,4	73	190	26	194	218	242	515	4	1030	9	1546	13
	21,4	77	210	27	203	229	254	538	4	1075	9	1613	13
	23,4	84	250	29	222	250	277	570	4	1140	9	1710	13
nozzle "C" 1800mm	26,8	96	130	<23	255	286	318	572	5	1144	10	1715	15
	28,8	104	150	23	273	308	342	598	5	1196	10	1795	15
	30,6	110	170	24	291	328	364	621	5	1241	9	1862	14
	32,4	117	190	26	308	346	385	640	5	1280	9	1920	14
	34,0	123	210	27	324	364	404	657	5	1314	9	1971	14
	37,1	134	250	29	353	397	441	684	4	1367	9	2051	13
nozzle "D" 1800mm	38,3	138	130	<23	364	410	455	593	5	1186	10	1779	15
	41,2	148	150	23	391	440	489	620	5	1240	10	1860	15
	43,8	158	170	24	416	469	521	643	5	1286	10	1929	14
	46,3	167	190	26	440	495	550	663	5	1325	9	1988	14
	48,7	175	210	27	463	521	579	680	5	1359	9	2039	14
	53,1	191	250	29	505	568	631	707	4	1413	9	2120	13

Cooling tables: length 2100mm

K-60 Heating	Primary Air Volume q_v			L_W (NR)	Primary capacity (W) ΔTa = Tprim - Trm			Secondary capacity (W) Trm=20°C Δ T = Twi - Trm Δ a = Toff coil - Ton coil qw = 150 l/h ΔPw = 11,4 kPa					
	l/s	m^3/h	P_s (Pa)		8K	9K	10K	10K	Δ aK	20K	Δ aK	30K	Δ aK
nozzle "A" 2100mm	17,0	61	130	<23	161	181	201	487	4	974	9	1462	13
	18,2	66	150	23	173	195	216	518	4	1036	8	1554	13
	19,4	70	170	24	184	207	230	546	4	1092	8	1638	13
	20,5	74	190	26	195	219	243	572	4	1144	8	1717	12
	21,5	78	210	27	205	230	256	597	4	1193	8	1790	12
	23,5	85	250	29	223	251	279	632	4	1264	8	1896	12
nozzle "B" 2100mm	20,0	72	130	<23	190	214	238	507	5	1015	9	1522	14
	21,5	77	150	23	204	230	255	539	4	1078	9	1618	13
	22,9	82	170	24	217	245	272	568	4	1137	9	1705	13
	24,2	87	190	26	230	259	287	595	4	1190	9	1786	13
	25,4	92	210	27	242	272	302	620	4	1241	9	1861	13
	27,7	100	250	29	264	297	329	657	4	1314	8	1971	13
nozzle "C" 2100mm	31,3	113	130	<23	298	335	372	651	5	1301	10	1952	15
	33,7	121	150	23	320	360	400	680	5	1360	9	2039	14
	35,8	129	170	24	341	383	426	705	5	1409	9	2114	14
	37,9	136	190	26	360	405	450	726	4	1452	9	2178	13
	39,8	143	210	27	378	426	473	744	4	1489	9	2233	13
	43,4	156	250	29	413	465	516	785	4	1571	8	2356	13
nozzle "D" 2100mm	44,9	162	130	<23	427	480	534	675	5	1350	10	2026	15
	48,3	174	150	23	459	516	573	705	5	1410	10	2115	14
	51,4	185	170	24	488	549	610	730	5	1461	9	2191	14
	54,3	196	190	26	516	581	645	752	5	1504	9	2256	14
	57,1	206	210	27	543	610	678	771	4	1542	9	2312	13
	62,3	224	250	29	592	666	740	800	4	1601	8	2401	13

CLOSED ACTIVE BEAM : K60

TECHNICAL DATA

Cooling tables: length 2400mm

K-60 Heating	Primary Air Volume q_v			L_W (NR)	Primary capacity (W) ΔTa = Tprim - Trm			Secondary capacity (W) Trm=20°C Δ T = Twi - Trm Δa = Toff coil - Ton coil qw = 150 l/h Δ Pw = 12,9 kPa					
	l/s	m^3/h	P_s (Pa)		8K	9K	10K	10K	ΔaK	20K	ΔaK	30K	ΔaK
nozzle "A" 2400mm	19,3	70	130	<23	184	207	230	545	4	1089	8	1634	13
	20,8	75	150	23	197	222	247	578	4	1157	8	1735	12
	22,1	80	170	24	210	236	263	609	4	1218	8	1828	12
	23,4	84	190	26	222	250	278	638	4	1275	8	1913	12
	24,6	88	210	27	233	263	292	664	4	1328	8	1992	12
	26,8	96	250	29	255	287	318	712	4	1424	8	2137	12
nozzle "B" 2400mm	23,2	83	130	<23	220	248	275	575	4	1149	9	1724	13
	24,9	90	150	23	237	266	296	610	4	1220	9	1830	13
	26,5	95	170	24	252	283	315	642	4	1284	9	1926	13
	28,0	101	190	26	266	300	333	672	4	1343	9	2015	13
	29,5	106	210	27	280	315	350	699	4	1398	8	2097	13
	32,1	116	250	29	306	344	382	739	4	1478	8	2217	12
nozzle "C" 2400mm	36,3	131	130	<23	345	388	431	731	5	1463	9	2194	14
	38,9	140	150	23	370	416	463	763	5	1527	9	2290	14
	41,5	149	170	24	394	443	493	790	4	1581	9	2371	13
	43,8	158	190	26	417	469	521	814	4	1627	9	2441	13
	46,1	166	210	27	438	493	547	833	4	1667	8	2500	13
	50,3	181	250	29	478	538	597	865	4	1730	8	2595	12
nozzle "D" 2400mm	51,9	187	130	<23	494	555	617	758	5	1515	10	2273	14
	55,8	201	150	23	530	596	663	790	5	1580	9	2370	14
	59,4	214	170	24	564	635	706	818	4	1635	9	2453	13
	62,8	226	190	26	597	671	746	841	4	1682	9	2523	13
	66,0	238	210	27	627	706	784	861	4	1722	9	2584	13
	72,0	259	250	29	684	770	856	893	4	1786	8	2679	12

Cooling tables: length 2700mm

K-60 Heating	Primary Air Volume q_v			L_W (NR)	Primary capacity (W) ΔTa = Tprim - Trm			Secondary capacity (W) Trm=20°C Δ T = Twi - Trm Δ a = Toff coil - Ton coil qw = 160 l/h Δ Pw = 16,4 kPa					
	l/s	m^3/h	P_s (Pa)		8K	9K	10K	10K	Δ aK	20K	Δ aK	30K	Δ aK
nozzle "A" 2700mm	22,0	79	130	<23	209	235	261	613	4	1226	8	1839	12
	23,6	85	150	23	224	252	280	650	4	1301	8	1951	12
	25,1	90	170	24	239	269	298	685	4	1369	8	2054	12
	26,6	96	190	26	252	284	316	716	4	1432	8	2149	12
	27,9	101	210	27	265	299	332	746	4	1491	8	2237	12
	30,5	110	250	29	290	326	362	799	4	1598	8	2396	12
nozzle "B" 2700mm	26,4	95	130	<23	251	282	313	647	4	1293	9	1940	13
	28,3	102	150	23	269	303	336	686	4	1371	9	2057	13
	30,1	109	170	24	286	322	358	721	4	1442	8	2164	13
	31,9	115	190	26	303	341	379	754	4	1508	8	2262	13
	33,5	121	210	27	318	358	398	785	4	1569	8	2354	12
	36,6	132	250	29	347	391	434	829	4	1658	8	2486	12
nozzle "C" 2700mm	41,2	148	130	<23	392	441	490	820	5	1640	9	2460	14
	44,3	159	150	23	421	473	526	855	5	1710	9	2565	14
	47,1	170	170	24	448	504	560	885	4	1770	9	2655	13
	49,8	179	190	26	473	533	592	911	4	1821	9	2732	13
	52,4	189	210	27	498	560	622	933	4	1865	8	2798	12
	57,2	206	250	29	543	611	679	967	4	1935	8	2902	12
nozzle "D" 2700mm	58,5	211	130	<23	556	626	695	843	5	1687	9	2530	14
	62,9	226	150	23	597	672	747	879	5	1758	9	2637	14
	66,9	241	170	24	636	716	795	909	4	1818	9	2727	13
	70,7	255	190	26	672	756	840	935	4	1870	9	2805	13
	74,4	268	210	27	707	795	884	957	4	1914	8	2871	13
	81,2	292	250	29	771	868	964	992	4	1984	8	2976	12

CLOSED ACTIVE BEAM : K60

TECHNICAL DATA

Cooling tables: length 2950mm

K-60 Heating	Primary Air Volume q_v			L_W (NR)	Primary capacity (W) ΔTa = Tprim - Trm			Secondary capacity (W) Trm=20°C ΔT = Twi - Trm Δa = Toff coil - Ton coil qw = 160 l/h ΔPw = 18,1 kPa					
	l/s	m^3/h	P_s (Pa)		8K	9K	10K	10K	ΔaK	20K	ΔaK	30K	ΔaK
nozzle "A" 2950mm	24,6	89	130	<23	234	263	293	674	4	1347	8	2021	12
	26,5	95	150	23	251	283	314	714	4	1428	8	2142	12
	28,2	101	170	24	268	301	335	751	4	1502	8	2252	12
	29,8	107	190	26	283	318	354	785	4	1569	8	2354	12
	31,3	113	210	27	298	335	372	816	4	1632	8	2448	12
	34,2	123	250	29	325	365	406	862	4	1723	7	2585	11
nozzle "B" 2950mm	28,9	104	130	<23	275	309	343	697	4	1395	9	2092	13
	31,1	112	150	23	295	332	369	739	4	1478	8	2216	13
	33,1	119	170	24	314	353	393	776	4	1553	8	2329	13
	35,0	126	190	26	332	374	415	811	4	1622	8	2433	12
	36,7	132	210	27	349	393	437	843	4	1687	8	2530	12
	40,1	144	250	29	381	429	476	890	4	1780	8	2669	12
nozzle "C" 2950mm	45,3	163	130	<23	431	485	538	883	5	1765	9	2648	14
	48,7	175	150	23	463	521	578	919	4	1839	9	2758	13
	51,8	187	170	24	493	554	616	951	4	1902	9	2852	13
	54,8	197	190	26	521	586	651	978	4	1955	8	2933	12
	57,6	207	210	27	548	616	684	1001	4	2001	8	3002	12
	62,9	226	250	29	597	672	747	1037	4	2074	8	3111	12
nozzle "D" 2950mm	64,7	233	130	<23	615	692	769	911	5	1821	9	2732	14
	69,5	250	150	23	661	743	826	948	4	1896	9	2844	13
	74,0	266	170	24	703	791	879	980	4	1960	9	2939	13
	78,2	282	190	26	743	836	929	1007	4	2014	8	3021	13
	82,2	296	210	27	782	879	977	1030	4	2060	8	3090	12
	89,7	323	250	29	853	959	1066	1067	4	2133	8	3200	12

qv (l/s and m^3/h): Primary air volume supplied into the plenum

Ps (Pa): Static plenum pressure in Pascal
Note: - Due to the low velocity at the 125 mm inlet, the inlet static pressure is practically equal to the plenum static pressure
- Minimum primary air plenum pressure is 50 Pa

Lw (NR): Noise rate, based on sound power (Lw) without room attenuation or multiple units

Primary capacity (W): Supply air heating capacity in Watt (W)

ΔTa: Temperature difference between the supply air temperature (K) and the room air temperature

Trm: Room air temperature (°C)

Tprim: Supply air temperature (°C)

Secondary capacity (W): Water heating capacity in Watt (W)

ΔT: Temperature difference between inlet water temperature (K) and room air temperature

Twi: Inlet water temperature (°C)

Δa: Temperature difference between the secondary (induced) air temperature after coil and the secondary (induced) air temperature on the coil (K)

Toff coil: Secondary (induced) air temperature after coil

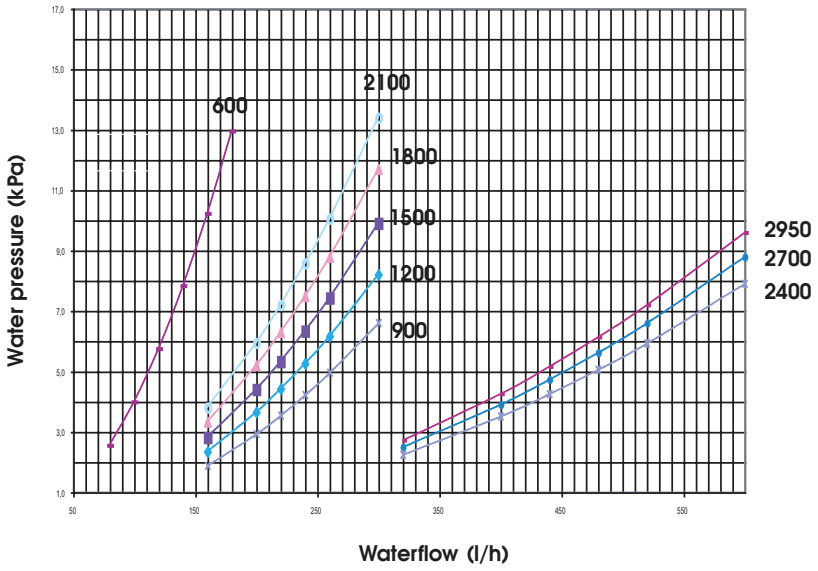
Ton coil: Secondary (induced) air temperature on coil (Trm)

qw: Waterflow (l/h)

ΔP_W: Water pressure loss (Pa)

CLOSED ACTIVE BEAM : K60
TECHNICAL DATA

Water pressure loss in kPa (Cooling)



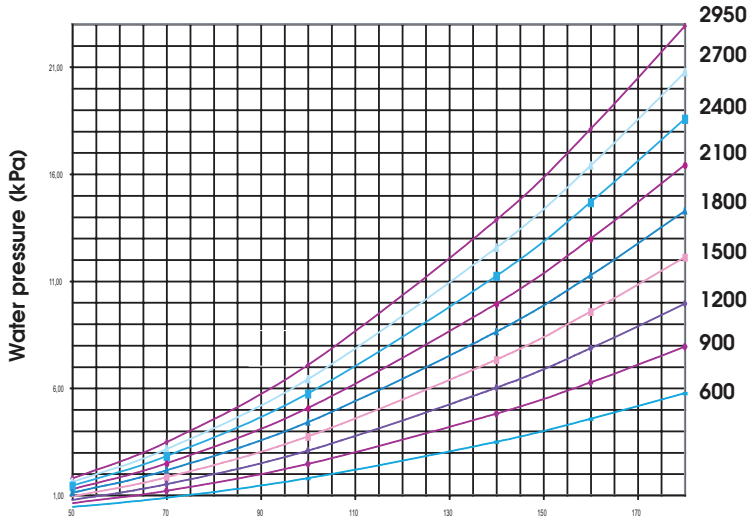
Water flow rate should be turbulent to ensure effective heat transfer. Minimum recommended flow is 80 l/h for single circuit coils and for dual circuit coils 160 l/h.

Example:

Given:
- beam active length 1500 mm **cooling;** this is a dual circuit coil

Solution:
- ΔP_W at 210 l/h is 5 kPa
- ΔP_W at 270 l/h is 8 kPa

Water pressure loss in kPa (Heating)



Example:

Given:
- beam active length 1800 mm **heating**; this is a single circuit coil

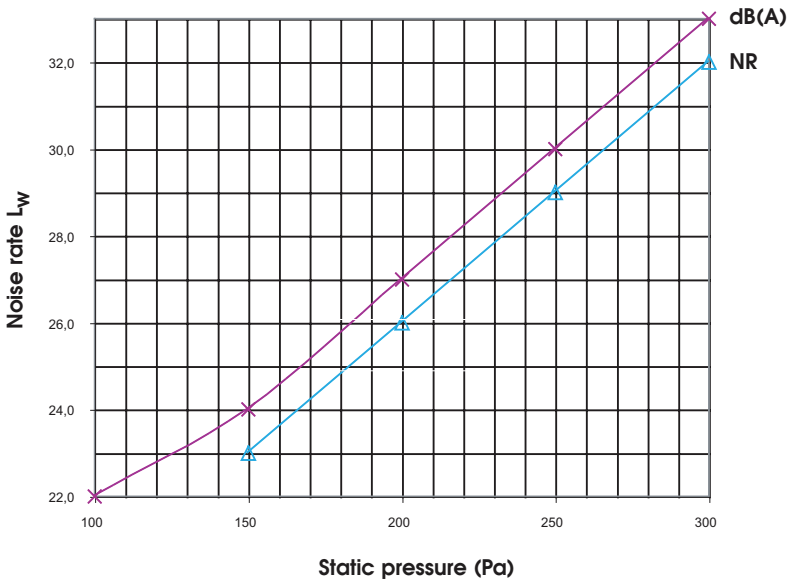
Solution:
- ΔP_W at 125 l/h is 7 kPa
- ΔP_W at 95 l/h is 4 kPa

Note: Chilled beams do not use control valves. The open/close valves used have low water pressure loss.

CLOSED ACTIVE BEAM : K60

TECHNICAL DATA

Sound power without room attenuation



Sound power NR level measurements are determined by values in the 4 kHz octave band.

Example:

Given:
- beam active length 1500 mm
- 50 m^3/h
- A-nozzle

Solution:
- look up the performance guide (cooling or heating) for this beam length and type of nozzle
- 50 m^3/h = 190 Pa
- 190 Pa = 27 dB(A) or NR26

NOTE:

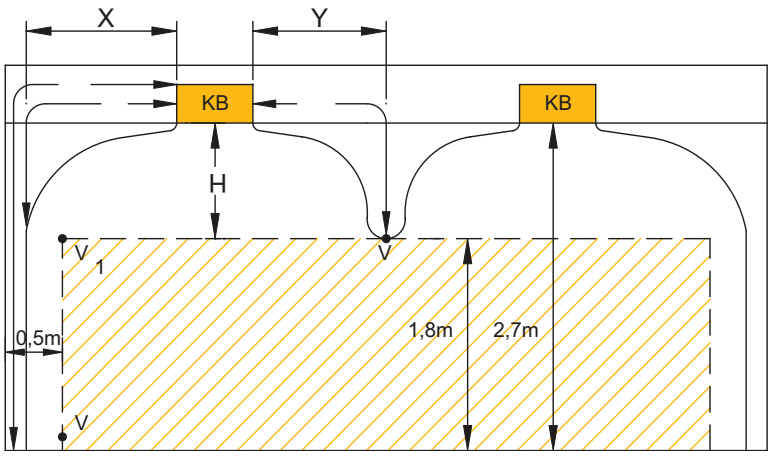
- **The difference between the NR and the dB(A) value is more or less 1. This is because the acoustic spectrum contains much high frequency noise and less low frequency noise.**
- **Sound power for all models is without allowance for room attenuation or multiple units.**

CLOSED ACTIVE BEAM : K60
TECHNICAL DATA

Table 1: conversion factor for primary air volume of different nominal beam lengths to primary air per meter used in the graphs.

Nom. length (mm)	600	900	1000	1100	1200	1500	1800	2100	2400	2700	2950
K-60 A	2,333	1,458	1,296	1,167	1,061	0,833	0,686	0,583	0,507	0,449	0,409
K-60 B	2	1,250	1,111	1	0,909	0,714	0,588	0,500	0,435	0,385	0,351
K-60 C	1,667	1,042	0,926	0,833	0,758	0,595	0,490	0,417	0,362	0,321	0,292
K-60 D	1,333	0,833	0,741	0,667	0,606	0,476	0,392	0,333	0,290	0,256	0,234

V_1, V_2 and V_3: room air velocities (the occupied zone is shaded).



- V_1 = room air movement at 1,8 m height and on 0,5 m from the wall (m/s)
- V_2 = room air movement at 0,1 m height and on 0,5 m from the wall (m/s)
- V_3 = room air movement at 1,8 m height and in the middle of two beams (m/s)
- H = ceiling height - height occupied zone (1,8 m)
- L_1 = X + H where X = is distance to the wall
- L_2 = X + ceiling height - 0,1 m
- L_3= Y + H where 2 x Y is the distance between similar beams with an equal primary air volume
- occupied zone = marked height 1,8 m (shaded)

Graph v1, v2 and v3 room air velocities (the occupied zone is shaded).

Room air movement diagrams

These are average velocities for undisrupted air flow, cooling. Actual measured values at ΔTa = 8K were within the limits shown.

Example:

Given:
- K-60B 1800 mm (nozzle B)
- Primary air volume is 75 m^3/h

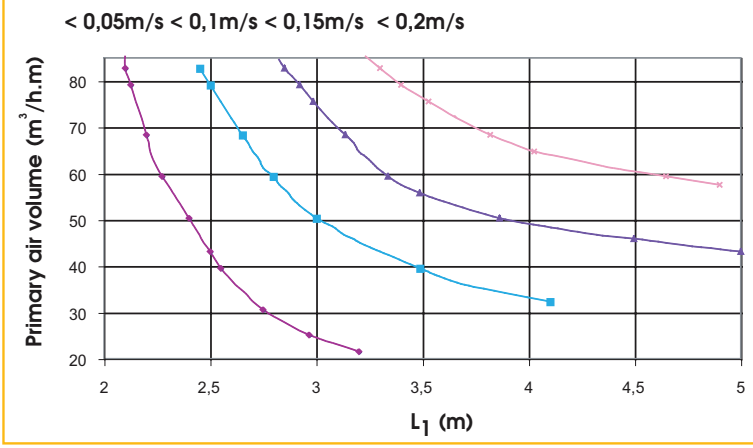
Required:
- $m^3/h,m$
- volume per (active) meter

Solution:
- Factor from table no 1 for K-60B 1800mm is 0,59
- $m^3/h,m$ = 0,59 x 75 = 44 $m^3/h,m$

CLOSED ACTIVE BEAM : K60

TECHNICAL DATA

Room air velocity in m/s at point V_1

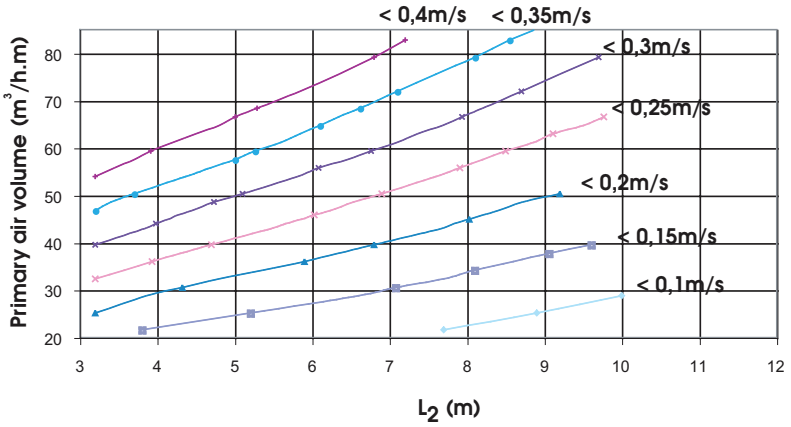


Example:

Given:
- active length 1800 mm, **nozzle C**
- primary air volume = 126 m³/h or 62 m³/h,m (from table n°1)
- ceiling height = 2,7 m or H = 2,7 - 1,8 = 0,9 m
- required air movement V1 < 0,15 m/s

Solution:
- L1 = 3,3 m and X = 3,3 - 0,9 = 2,4 m maximum distance from the wall
- if the ceiling height was 2,9 m then H = 1,1 m and X = 2,2 m maximum distance from the wall

Floor air velocity in m/s at point V_2

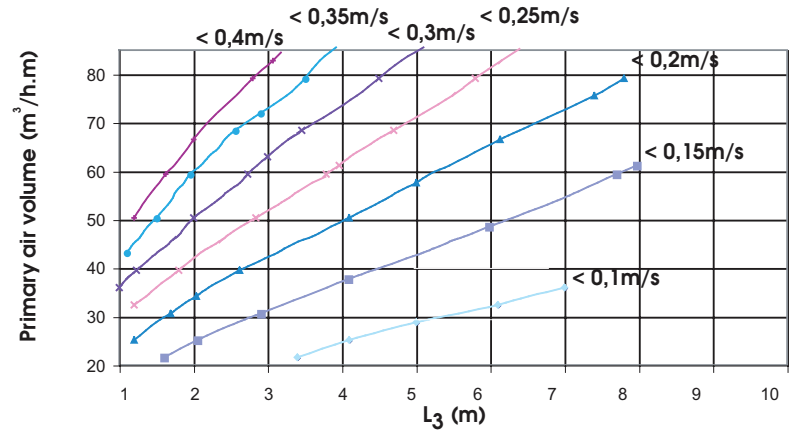


Example:

Given:
- active length 1800 mm, **nozzle C**
- primary air volume = 95 m³/h or 46 m³/h,m (from table n°1)
- ceiling height = 2,7 m
- required air movement V2 < 0,25 m/s

Solution:
- L2 = 6 m and X = 6 - 2,6 = 3,4 m minimum distance from the wall
- for air movement V2 < 0,30 m/s L2 = 4,1 m and X = 4,1 - 2,6 = 1,5 m minimum distance from the wall
- for air movement V2 < 0,35 m/s L2 = 3,2 m and X = 3,2 - 2,6 = 0,6 m minimum distance from the wall

Room air velocity in m/s at point V_3.
This is midway between two beams with an equal volume.



Example:

Given:
- active length 1800 mm, **nozzle C**
- primary air volume = 126 m³/h or 62 m³/h.m (from table n°1)
- ceiling height = 2,6 m or H = 2,6 - 1,8 = 0,8 m
- required air movement V_3 < 0,25 m/s

Solution:
- L_3 = 4 m and Y = 4 - 0,8 = 3,2 m. The minimum distance between the beams should be 6,4m
- if the ceiling height was 2,8 m, then H = 1 m and Y = 3 m, then 6 m would be sufficient distance between similar diffusers.

The testing for these results was done under strictly controlled laboratory conditions. A room with furniture and people will obstruct air movement. Air velocities shown are average values.
Deviations are largest at V_3 where two air streams meet.