KOOLAIR

series IHK

Induction terminal units

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Certification
Sistema de Gestión

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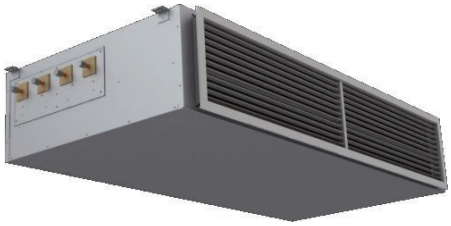
Induction terminal units

IHK



IHK-F

IHK-V

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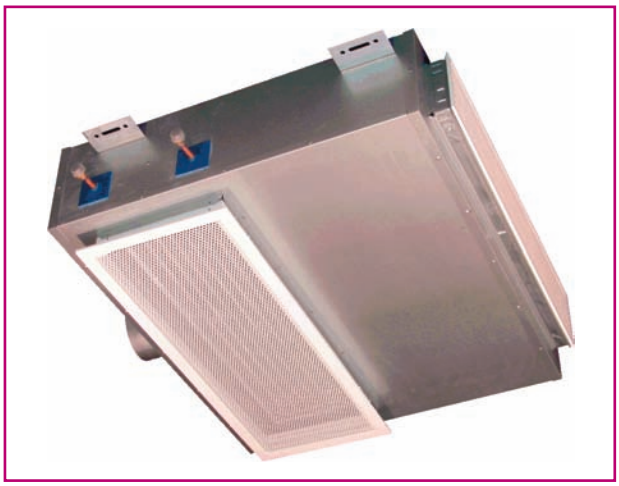
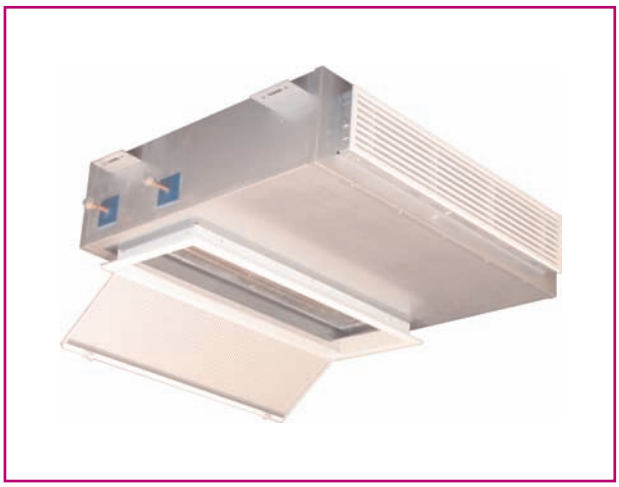
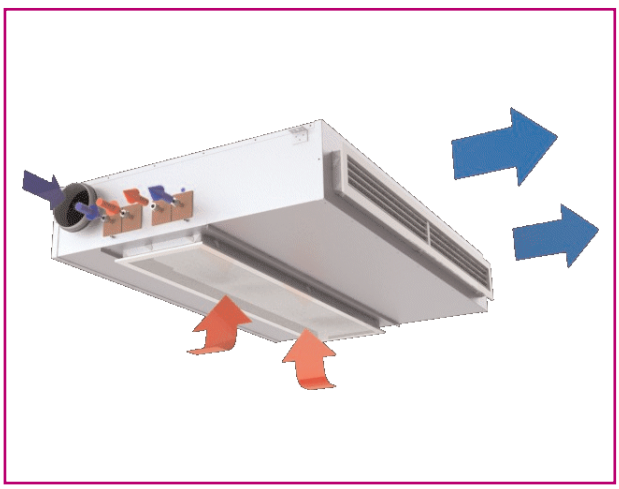
General Features



IHK



IHK hinged perforated return grille



Detailed view of operating principle

Description

The IHK ceiling-mounted induction terminal units are used in air-water systems to provide a high level of comfort in interior environments with high internal thermal loads in cooling operation. The IHK units are recommended for bulkhead and suspended ceiling installation. Ideal for hotel guest rooms and hospitals.
The units include the following components:

- Primary air plenum, with one round duct connections for primary air inlet and a distribution of small nozzles with alternative settings.
- Hot or chilled water (two-pipe installation) or hot and chilled water (four-pipe installation) coil.
- Grille, for supply and diffusion of the combined primary and induced air to the room.
- Return grille, used also as access for unit cleaning. Available in different perforation designs.

As primary air exits the nozzles, this induces air from the room (which we will call secondary), that flows through the coil, cooling and/or heating, as applicable, and is mixed with the primary air inside the unit before it is supplied to the room through the grille.

As in all air-water air conditioning systems, choosing an induction terminal unit has the advantage of using water as a vehicle to carry the cooling or heating power to the rooms, which saves on energy and space compared to all-air A/C systems. In addition, the temperature of each room or independent area can be controlled by adding a 2- or 3-way valve to the terminal unit controlled by the respective room control.

Materials

The outer and inner housings, nozzle plate are of galvanised steel sheet construction and have a standard powder-paint finish of RAL 9010. Other RAL colours are available upon request. Plastic nozzles assembled in sheet metal plate. Supply and return grilles are available in aluminium or steel material. The coil is manufactured of copper pipes and aluminium fins.

General Features

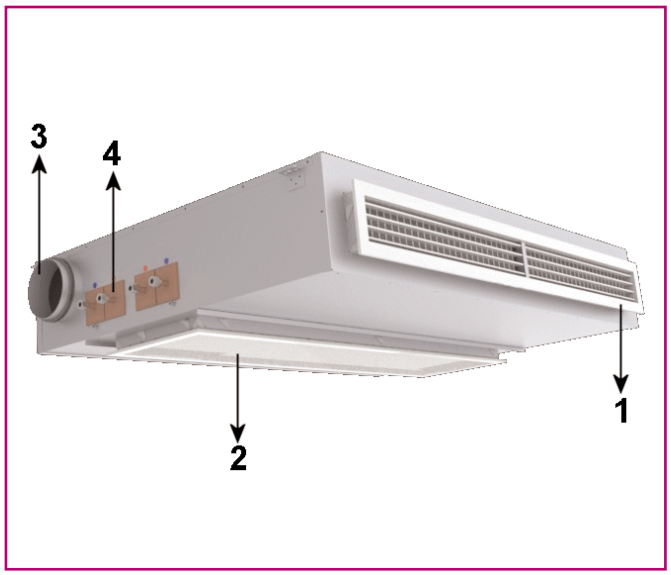
Advantages

The IHK ceiling-mounted induction units are terminal units for central air conditioning installations that provide solutions to meet the needs of the following:

- Ventilation achieved with primary air
- Cooling, based on the primary air itself and the water circulation coil
- Heating, based on a water circulation coil
- Control. Possibility of individual or combined unit control by room or area, using control and regulation valves in the unit to adjust the water volume and room thermostats
- Air diffusion based on a grille that ensure effective air diffusion.

In addition to the functional advantages described, the IHK units have the following main advantages over conventional HVAC systems (fan coils, VRV, all air, etc.):

- High energy efficiency and low life-cycle or operating costs; this advantage is mainly due to the absence of a fan in the terminal unit
- Lowest maintenance costs; the unit contains no filter or condensate pan to replace or clean and only cleaning of the coil surface is needed (recommended every 2 years)
- Low noise level
- No draughts in occupied area
- Extremely hygienic systems, since no filters, condensation tray and drainage tubing are used.
- Space-saving: smaller air ductwork and equipment units
- Easy to mount
- Adaptation to the installation conditions.



1- Supply air grille
2- Return air grille
3 - Supply air connection
4 - Water pipe connections (2 pipes)

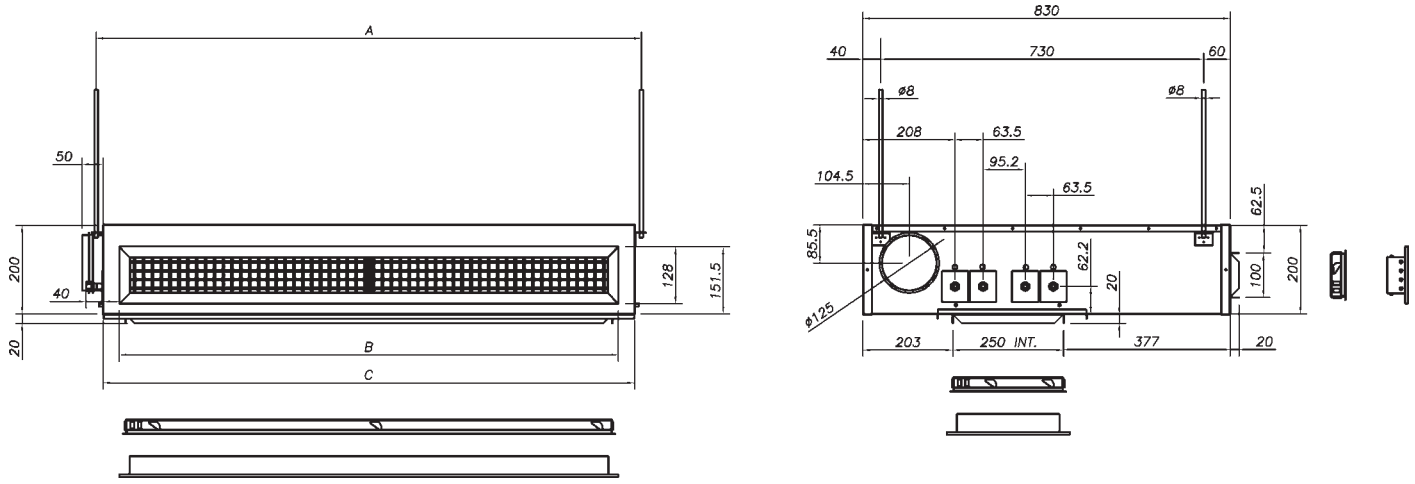
Dimensions. Configurations

LATERAL ENTRY

Sizes 900 to 1500 - 4-pipe system (2-pipe system connections also available)

Four types of configurations are available, defined according to the position of the primary air and water connections:

1. Lateral primary air connection and water on left side, **(-LIWI)** type
2. Lateral primary air connection on left side and water on rigth side, **(-LIWD)** type
3. Lateral primary air connection and water on rigth side, **(-LDWD)** type
4. Lateral primary air connection on rigth side and water on left side, **(-LDWI)** type



MODEL	A	B	C
900	932	828	900
1200	1232	1128	1200
1500	1532	1428	1500

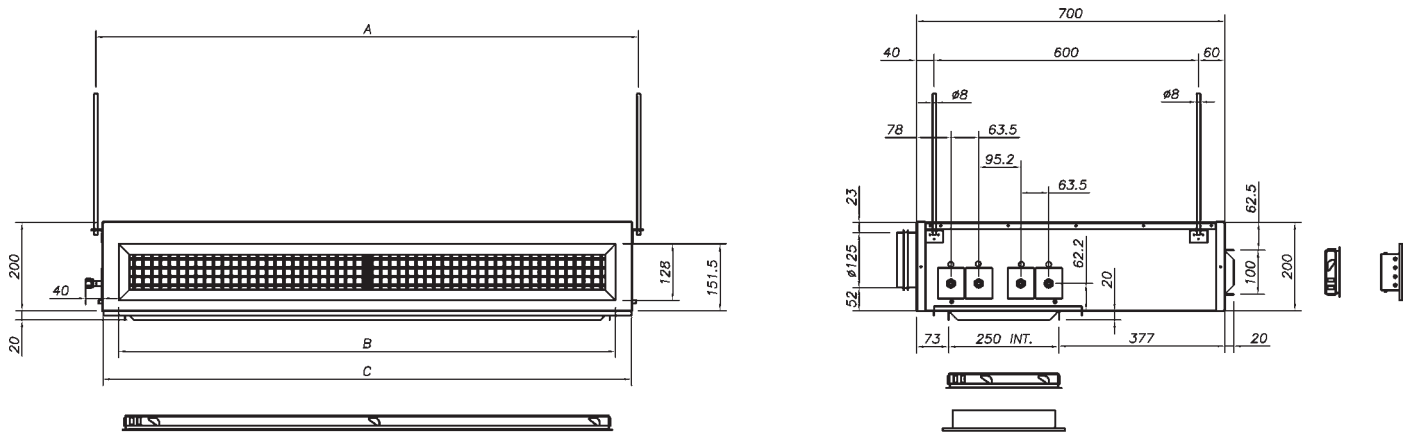
Dimensions. Configurations

FRONT ENTRY

Sizes 900 to 1500 - 4-pipe system (2-pipe system connections also available)

Two types of configurations are available, defined according to the position of the primary air and water connections:

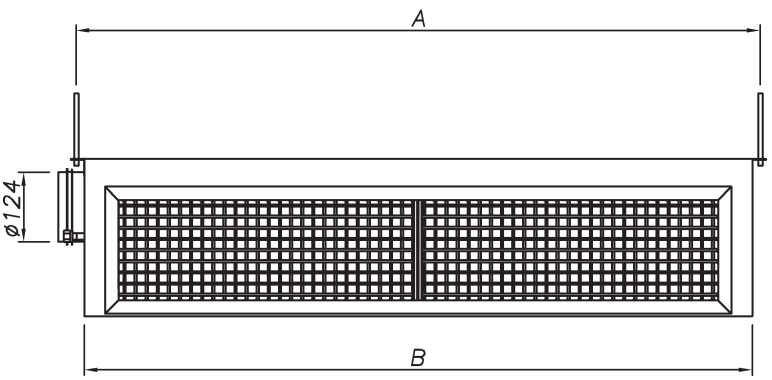
1. Front face primary air connection and water on left side, **(-FWI)** type
2. Front face primary air connection and water on rigth side, **(-FWD)** type

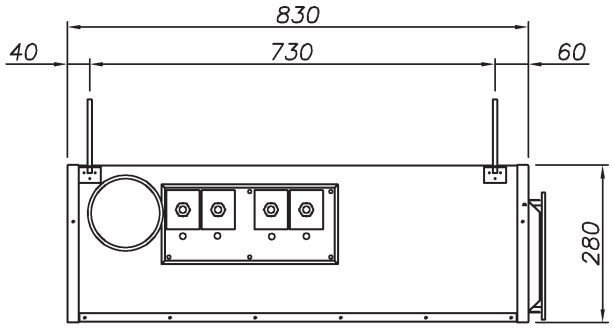


MODEL	A	B	C
900	932	828	900
1200	1232	1128	1200
1500	1532	1428	1500

IHK-F

The IHK-F ceiling-mounted induction terminal unit from Koolair are specifically designed for use in hotels and hospitals, where the area to be cooled has not suspended ceiling and therefore their installation is in the hall annex. The one-way horizontal supply air and the return is made in the same grille.



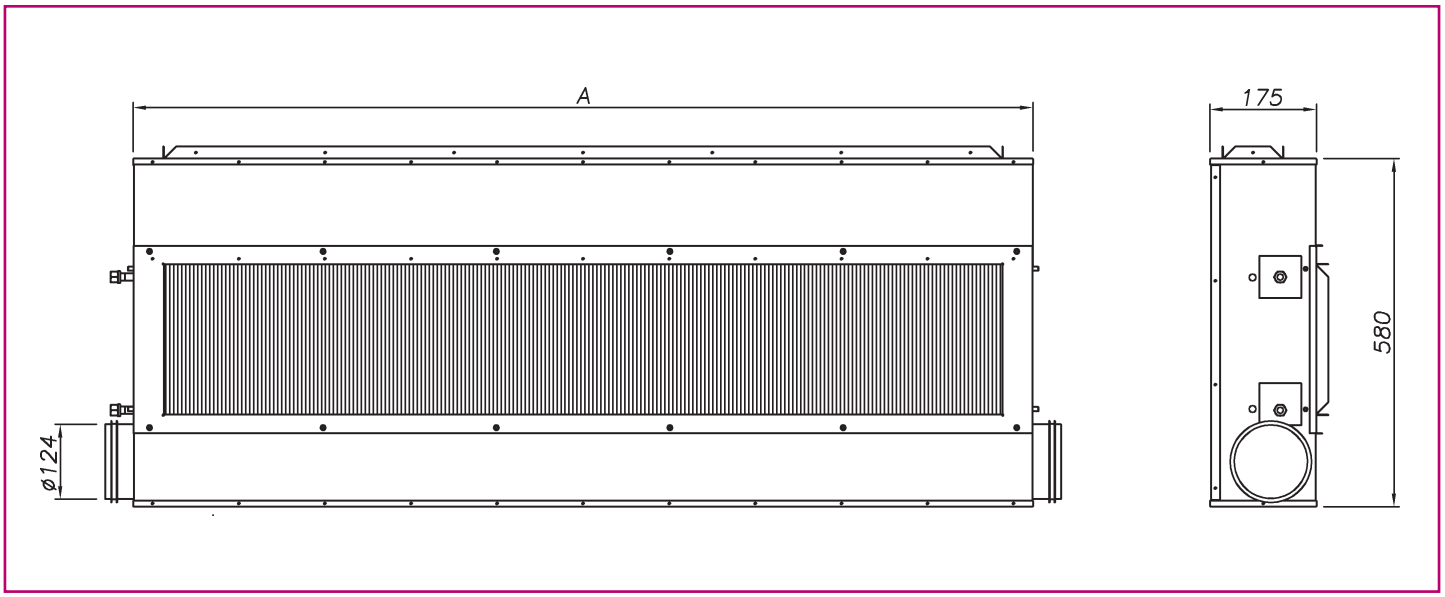


MODEL	A	B
900	932	900
1200	1232	1200
1500	1532	1500

The cooling and heating powert are 8% lower than the IHK model whose values found in pages from 11 to 14.

IHK-V

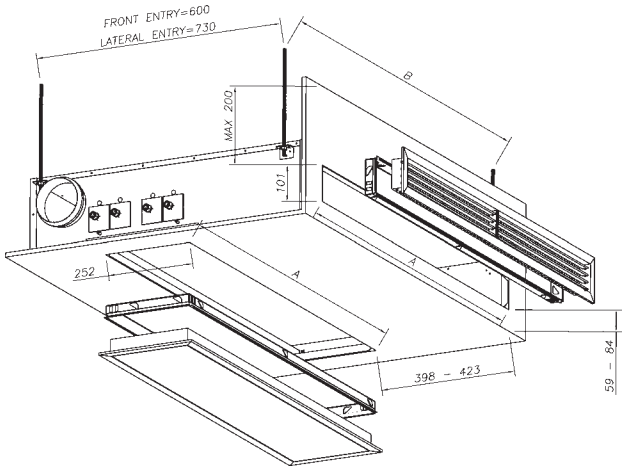
The IHK-V induction terminal unit from Koolair are specifically designed for installation along the perimeter zones.
The unit is installed against the facade, it is not required space on the floor, ceiling or corridor.
This model is available with condensation tray.



MODEL	A
900	900
1200	1200
1500	1500

The cooling and heating powert are equals the IHK model whose values found in pages from 11 to 14.

Installation

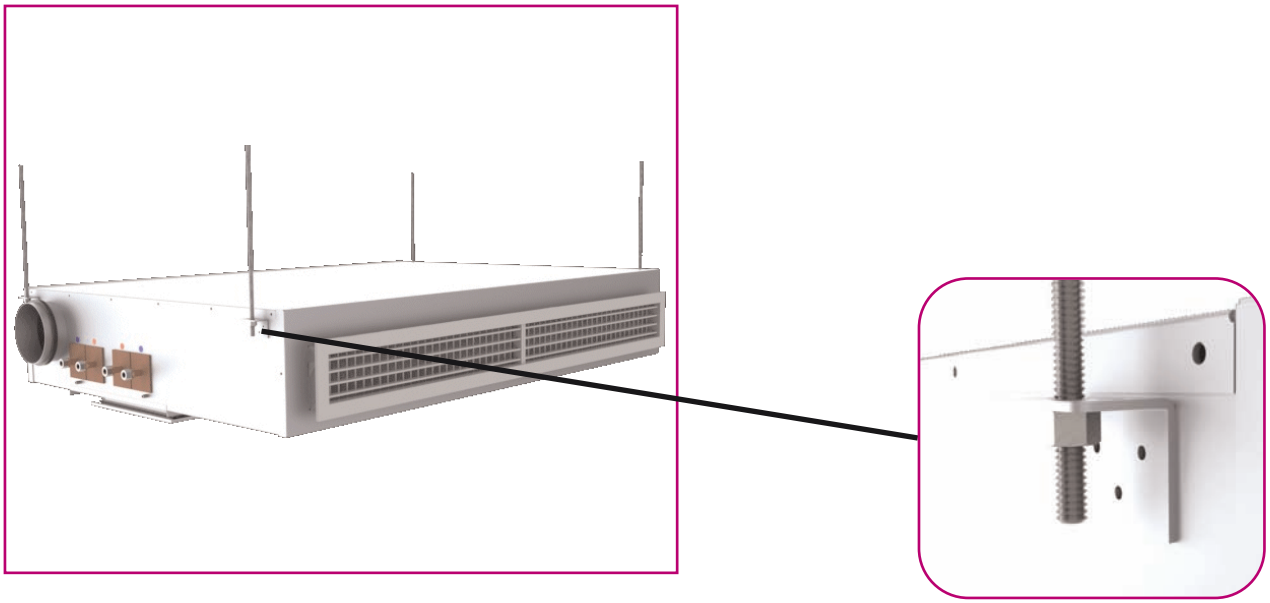


MODEL	A	B
900	802	932
1200	1102	1232
1500	1402	1532

The IHK units include a series of hanging brackets on the two upper longitudinal sides of the units, as shown in the following photographs. There are two brackets per side.

These brackets have a slot hole to hold a Ø6 mm threaded rod, which is first attached to the ceiling slab to hang the unit.

The unit can be fixed directly to the ceiling surface or suspended using threaded drop rods.



Volume Regulation and Control Components

Mechanical constant air flow self-regulator, KCR model

Constant air volume regulator, RCCK model

- Air Control

Usually, the constant flow system is used most often to distribute primary air to the induction terminal units. To ensure that the installation is correctly balanced, an extremely important aspect for proper operation of the active chilled beam, Koolair RCCK mechanical self-regulators are used because they ensure self-balancing of the installation. CRC-M manual volume control dampers can be selected but require manual balancing of the installation.

Ductwork pressure dampers (RVV) can be used to ensure the specific inlet pressure in each beam.

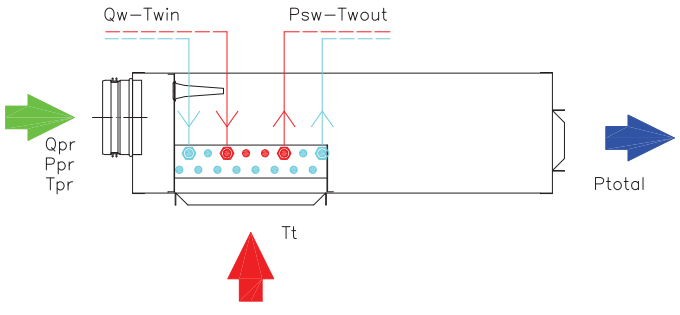
If a variable air flow system based on occupancy, for example, is designed, then the minimum design flow rate per unit should correspond to a minimum inlet pressure of approximately 40 P_a to the beam.

Technical Data

Symbols

The symbols used in the selection tables for the IHK are the following:

Q_{pr}	*Primary air flow*
L_w-dB(A)	*Sound power level, in dB(A)*
ΔP_{pr}	*Primary air pressure drop, in Pa*
T_{pr}	*Primary air temperature, in °C*
T_R	*Room air temperature °C*
ΔT_{pr}	*Temperature difference between room air and primary air (T_R - T_{pr})*
Q_W	*Water flow rate, in L/h*
ΔP_W	*Water pressure drop in the coil, in kPa*
T_{WIN}	*Water inlet temperature in the coil, in °C*
ΔT_W	*Water temperature difference in the coil*
ΔT_{SWIN}	*Temperature difference between room and unit water inlet*
P_{pr}	*Capacity supplied by primary air, in W*
P_{SW}	*Capacity supplied by the coil, in W*
P_T	*Total capacity P_{pr} + P_{SW} in W*
X	*Throw of the air jet, in m, for a maximum velocity in the occupied area of 0.25 m/s with ΔT = 0 °C (supply - room)*



Technical Data. Selection Tables

COOLING - 2-PIPE SYSTEM

Reference water flow (Q_W) of 200 L/h

For other water flow rates, correct the unit capacity (P_{SW}) in the table by the factors listed in the attached table.

IHK -2-PIPE SYSTEM COOLING			
SIZE	900	1200	1500
Q_W (l/h)	Capacity coil correction factor		
80	0,79	0,79	0,79
100	0,85	0,84	0,85
120	0,89	0,88	0,89
150	0,95	0,94	0,95
180	0,98	0,98	0,98
200	1,00	1,00	1,00
250	1,03	1,03	1,03
290	1,05	1,05	1,05
340	1,07	1,07	1,07

IHK - 2-PIPE SYSTEM - COOLING

SIZE	TYPE NOZZLE	Q_{Pr}		L_W - dB(A)	ΔP_{pr} (Pa)	X (m)	ΔT_{pr} (K)					ΔT_{SWIN} (K)						ΔP_W (kPa)
		l/s	m³/h				6	7	8	9	10	6	7	8	9	10	12	
							P_{pr} (W)					P_{SW} (W)						
900	P	6,9	25	<20	53	2,2	50	58	66	75	83	172	201	223	258	284	341	5.5
		9,2	33	23	92	2,8	66	77	88	99	110	212	244	277	315	349	418	
		11,1	40	28	136	3,5	80	93	106	120	133	245	281	321	362	403	483	
		12,5	45	31	172	3,9	90	105	120	135	150	267	307	352	395	440	528	
		13,9	50	34	212	4,3	100	116	133	150	166	288	332	381	427	476	571	
	M	12,5	45	<20	55	3,1	90	105	120	135	150	223	257	292	331	367	440	
		16,1	58	24	92	4,1	116	135	154	174	193	270	310	355	399	444	533	
		19,4	70	30	134	4,9	140	163	186	210	233	308	356	409	457	510	612	
		22,2	80	33	176	5,6	160	186	213	240	266	338	393	450	503	561	673	
		25,0	90	36	223	6,3	180	210	240	270	300	364	426	488	545	607	729	
	G	19,4	70	20	54	3,6	140	163	186	210	233	252	290	332	373	415	498	
		25,0	90	27	90	4,7	180	210	240	270	300	303	349	401	449	500	600	
		30,6	110	33	135	5,7	220	256	293	330	366	347	404	463	517	577	692	
		34,7	125	36	175	6,5	250	291	333	375	416	376	441	504	564	628	754	
		38,9	140	39	219	7,3	280	326	373	420	466	402	473	540	605	672	808	
1200	P	9,2	33	<20	50	2,4	66	77	88	99	110	223	258	299	335	377	453	7,0
		12,5	45	25	93	3,3	90	105	120	135	150	283	330	379	425	476	571	
		15,0	54	30	134	3,0	108	126	144	162	180	325	379	434	486	543	651	
		17,5	63	34	182	4,6	126	147	168	189	210	363	424	484	543	606	726	
		20,8	75	39	258	5,5	150	175	200	225	250	409	478	545	612	682	816	
	M	16,1	58	<20	50	3,5	116	135	154	174	193	286	333	383	429	480	576	
		20,6	74	25	81	4,4	148	172	197	222	246	343	400	457	513	573	686	
		25,6	92	31	126	5,5	184	214	245	276	306	399	466	532	597	665	797	
		30,0	108	35	173	6,4	216	252	288	324	360	444	519	590	663	739	884	
		36,1	130	40	251	7,7	260	303	346	390	433	497	582	661	744	828	991	
	G	25,0	90	22	49	3,0	180	210	240	270	300	323	377	431	483	540	648	
		30,6	110	27	73	4,9	220	256	293	330	366	373	436	497	557	622	745	
		40,3	145	35	127	6,4	290	338	386	435	483	448	524	596	671	747	894	
		47,2	170	39	175	7,5	340	396	453	510	566	495	579	657	740	823	985	
		52,8	190	42	218	8,4	380	443	506	570	633	528	618	701	790	878	1052	
1500	P	11,7	42	<20	53	2,7	84	98	112	126	140	285	328	376	422	471	566	8.5
		14,4	52	24	81	3,4	104	121	138	156	173	333	385	442	495	553	663	
		17,5	63	30	119	4,1	126	147	168	189	210	383	443	508	569	635	762	
		21,1	76	35	173	4,0	152	177	202	228	253	436	506	580	649	724	869	
		25,0	90	40	244	5,9	180	210	240	270	300	488	567	649	728	811	971	
	M	19,4	70	20	47	3,7	140	163	186	210	233	347	401	460	516	576	691	
		25,0	90	27	79	4,8	180	210	240	270	300	415	481	551	618	689	827	
		30,6	110	32	118	5,8	220	256	293	330	366	475	552	632	708	790	946	
		36,1	130	37	164	6,9	260	303	346	390	433	529	616	703	789	878	1052	
		41,7	150	41	219	7,9	300	350	400	450	500	577	672	767	861	957	1146	
	G	31,9	115	23	52	4,5	230	268	306	345	383	406	470	539	604	674	808	
		40,3	145	29	83	5,7	290	338	386	435	483	475	552	631	708	789	945	
		49,4	178	35	125	7,0	356	415	474	534	593	541	630	719	807	898	1076	
		58,3	210	40	175	8,3	420	490	560	630	700	597	696	794	891	990	1185	
		69,4	250	44	248	9,8	500	583	666	750	833	656	766	875	983	1089	1305	

Technical Data. Selection Tables

COOLING - 4-PIPE SYSTEM

Reference water flow (Q_W) of 200 L/h

For other water flow rates, correct the unit capacity (P_{SW}) in the table by the factors listed in the attached table.

IHK - 4-PIPE SYSTEM COOLING			
SIZE	900	1200	1500
Q_W (l/h)	Capacity coil correction factor		
80	0,79	0,79	0,79
100	0,85	0,84	0,85
120	0,89	0,88	0,89
150	0,95	0,94	0,95
180	0,98	0,98	0,98
200	1,00	1,00	1,00
250	1,03	1,03	1,03
290	1,05	1,05	1,05
340	1,07	1,07	1,07

IHK - 4-PIPE SYSTEM - COOLING

SIZE	TYPE NOZZLE	Q_{Pr}		L_W - dB(A)	ΔP_{pr} (Pa)	X (m)	ΔT_{pr} (K)					ΔT_{SWIN} (K)						ΔP_W (kPa)
		l/s	m³/h				6	7	8	9	10	6	7	8	9	10	12	
							P_{pr} (W)					P_{SW} (W)						
900	P	6,9	25	<20	53	2,2	50	58	66	75	83	136	167	201	235	276	346	4.1
		9,2	33	23	92	2,8	66	77	88	99	110	180	217	253	288	327	401	
		11,1	40	28	136	3,5	80	93	106	120	133	214	256	294	331	370	448	
		12,5	45	31	172	3,9	90	105	120	135	150	236	281	321	360	400	481	
		13,9	50	34	212	4,3	100	116	133	150	166	257	304	346	387	429	514	
	M	12,5	45	<20	55	3,1	90	105	120	135	150	198	238	275	311	350	426	
		16,1	58	24	92	4,1	116	135	154	174	193	246	291	332	372	413	496	
		19,4	70	30	134	4,9	140	163	186	210	233	284	334	378	423	467	558	
		22,2	80	33	176	5,6	160	186	213	240	266	312	364	412	462	510	609	
		25,0	90	36	223	6,3	180	210	240	270	300	337	392	443	498	550	657	
	G	19,4	70	20	54	3,6	140	163	186	210	233	229	272	311	350	389	469	
		25,0	90	27	90	4,7	180	210	240	270	300	279	328	371	416	459	549	
		30,6	110	33	135	5,7	220	256	293	330	366	321	374	422	475	524	625	
		34,7	125	36	175	6,5	250	291	333	375	416	348	404	456	514	568	679	
		38,9	140	39	219	7,3	280	326	373	420	466	373	431	488	551	610	729	
1200	P	9,2	33	<20	50	2,4	66	77	88	99	110	209	247	272	307	332	382	5,3
		12,5	45	25	93	3,3	90	105	120	135	150	261	308	344	387	428	504	
		15,0	54	30	134	3,0	108	126	144	162	180	297	350	395	442	493	585	
		17,5	63	34	182	4,6	126	147	168	189	210	330	389	441	493	550	658	
		20,8	75	39	258	5,5	150	175	200	225	250	370	436	498	555	618	743	
	M	16,1	58	<20	50	3,5	116	135	154	174	193	263	311	348	391	433	510	
		20,6	74	25	81	4,4	148	172	197	222	246	312	368	416	466	520	620	
		25,6	92	31	126	5,5	184	214	245	276	306	362	426	485	542	604	724	
		30,0	108	35	173	6,4	216	252	288	324	360	401	471	540	602	668	804	
		36,1	130	40	251	7,7	260	303	346	390	433	450	526	606	675	743	896	
	G	25,0	90	22	49	3,0	180	210	240	270	300	295	348	392	439	490	582	
		30,6	110	27	73	4,9	220	256	293	330	366	338	399	453	506	565	676	
		40,3	145	35	127	6,4	290	338	386	435	483	406	476	546	609	674	812	
		47,2	170	39	175	7,5	340	396	453	510	566	447	523	603	672	740	892	
		52,8	190	42	218	8,4	380	443	506	570	633	478	558	642	716	786	948	
1500	P	11,7	42	<20	53	2,7	84	98	112	126	140	254	299	338	391	445	546	6.4
		14,4	52	24	81	3,4	104	121	138	156	173	302	354	400	455	512	621	
		17,5	63	30	119	4,1	126	147	168	189	210	350	408	462	520	581	699	
		21,1	76	35	173	4,0	152	177	202	228	253	400	466	527	590	657	786	
		25,0	90	40	244	5,9	180	210	240	270	300	447	520	589	659	731	873	
	M	19,4	70	20	47	3,7	140	163	186	210	233	316	369	417	473	532	642	
		25,0	90	27	79	4,8	180	210	240	270	300	381	443	501	562	627	751	
		30,6	110	32	118	5,8	220	256	293	330	366	436	507	574	642	713	851	
		36,1	130	37	164	6,9	260	303	346	390	433	483	561	637	712	790	944	
		41,7	150	41	219	7,9	300	350	400	450	500	524	609	693	776	860	1028	
	G	31,9	115	23	52	4,5	230	268	306	345	383	372	433	490	550	614	736	
		40,3	145	29	83	5,7	290	338	386	435	483	435	506	574	641	712	851	
		49,4	178	35	125	7,0	356	415	474	534	593	493	573	651	728	807	965	
		58,3	210	40	175	8,3	420	490	560	630	700	540	628	716	802	889	1065	
		69,4	250	44	248	9,8	500	583	666	750	833	591	688	785	883	980	1176	

Technical Data. Selection Tables

HEATING - 2 -PIPE SYSTEM

Reference water flow (Q_W) of 200 L/h

For other water flow rates, correct the coil capacity (P_{SW}) in the table by the factors listed in the attached table.

IHK - 2-PIPE SYSTEM HEATING			
SIZE	900	1200	1500
Q_W (l/h)	Capacity coil correction factor		
80	0,81	0,81	0,81
100	0,86	0,86	0,86
120	0,89	0,89	0,89
150	0,96	0,96	0,96
180	0,98	0,98	0,98
200	1,00	1,00	1,00
250	1,03	1,03	1,03
290	1,04	1,04	1,04
340	1,06	1,06	1,06

IHK - 2-PIPE SYSTEM - HEATING

SIZE	TYPE NOZZLE	Q_{Pr} l/s	Q_{Pr} m³/h	L_W - dB(A)	ΔP_{pr} (Pa)	X (m)	ΔT_{pr} (K) 6	7	8	9	10	ΔT_{SWIN} (K) 10	15	20	25	30	35	ΔP_W (kPa)
							P_{pr} (W)					P_{SW} (W)						
900	P	6,9	25	<20	53	2,2	50	58	66	75	83	223	337	451	566	680	792	5.5
		9,2	33	23	92	2,8	66	77	88	99	110	279	421	564	708	850	993	
		11,1	40	28	136	3,5	80	93	106	120	133	325	491	657	825	991	1158	
		12,5	45	31	172	3,9	90	105	120	135	150	357	539	721	905	1087	1271	
		13,9	50	34	212	4,3	100	116	133	150	166	387	584	782	981	1179	1379	
	M	12,5	45	<20	55	3,1	90	105	120	135	150	282	425	569	714	858	1002	
		16,1	58	24	92	4,1	116	135	154	174	193	345	520	696	874	1050	1227	
		19,4	70	30	134	4,9	140	163	186	210	233	399	602	805	1010	1214	1420	
		22,2	80	33	176	5,6	160	186	213	240	266	441	665	890	1117	1343	1571	
		25,0	90	36	223	6,3	180	210	240	270	300	481	725	971	1218	1464	1713	
	G	19,4	70	20	54	3,6	140	163	186	210	233	300	453	606	761	914	1068	
		25,0	90	27	90	4,7	180	210	240	270	300	366	552	739	927	1114	1303	
		30,6	110	33	135	5,7	220	256	293	330	366	427	644	861	1081	1299	1519	
		34,7	125	36	175	6,5	250	291	333	375	416	469	707	947	1188	1428	1671	
		38,9	140	39	219	7,3	280	326	373	420	466	510	768	1027	1289	1550	1813	
1200	P	9,2	33	<20	50	2,4	66	77	88	99	110	298	447	595	744	897	1047	7,0
		12,5	45	25	93	3,3	90	105	120	135	150	379	570	760	952	1146	1341	
		15,0	54	30	134	3,0	108	126	144	162	180	437	657	877	1098	1321	1548	
		17,5	63	34	182	4,6	126	147	168	189	210	492	739	987	1237	1487	1742	
		20,8	75	39	258	5,5	150	175	200	225	250	561	842	1125	1410	1695	1984	
	M	16,1	58	<20	50	3,5	116	135	154	174	193	366	551	734	919	1106	1295	
		20,6	74	25	81	4,4	148	172	197	222	246	443	666	888	1113	1338	1568	
		25,6	92	31	126	5,5	184	214	245	276	306	523	785	1049	1314	1580	1851	
		30,0	108	35	173	6,4	216	252	288	324	360	589	884	1181	1480	1779	2082	
		36,1	130	40	251	7,7	260	303	346	390	433	672	1007	1347	1687	2029	2373	
	G	25,0	90	22	49	3,0	180	210	240	270	300	389	584	780	976	1175	1376	
		30,6	110	27	73	4,9	220	256	293	330	366	454	683	912	1142	1373	1609	
		40,3	145	35	127	6,4	290	338	386	435	483	560	841	1123	1407	1692	1981	
		47,2	170	39	175	7,5	340	396	453	510	566	628	943	1260	1579	1899	2222	
		52,8	190	42	218	8,4	380	443	506	570	633	679	1019	1362	1707	2052	2400	
1500	P	11,7	42	<20	53	2,7	84	98	112	126	140	373	566	751	936	1127	1319	8.5
		14,4	52	24	81	3,4	104	121	138	156	173	443	668	889	1110	1335	1562	
		17,5	63	30	119	4,1	126	147	168	189	210	515	774	1032	1290	1551	1814	
		21,1	76	35	173	4,0	152	177	202	228	253	594	891	1190	1489	1790	2092	
		25,0	90	40	244	5,9	180	210	240	270	300	673	1008	1347	1687	2027	2369	
	M	19,4	70	20	47	3,7	140	163	186	210	233	442	667	888	1109	1334	1561	
		25,0	90	27	79	4,8	180	210	240	270	300	538	808	1079	1350	1622	1897	
		30,6	110	32	118	5,8	220	256	293	330	366	626	939	1254	1570	1887	2206	
		36,1	130	37	164	6,9	260	303	346	390	433	707	1059	1415	1773	2130	2490	
		41,7	150	41	219	7,9	300	350	400	450	500	780	1169	1563	1958	2353	2750	
	G	31,9	115	23	52	4,5	230	268	306	345	383	491	739	985	1232	1481	1732	
		40,3	145	29	83	5,7	290	338	386	435	483	587	881	1176	1472	1769	2068	
		49,4	178	35	125	7,0	356	415	474	534	593	683	1023	1367	1712	2057	2405	
		58,3	210	40	175	8,3	420	490	560	630	700	766	1148	1535	1923	2311	2701	
		69,4	250	44	248	9,8	500	583	666	750	833	860	1290	1724	2159	2595	3033	

Technical Data. Selection Tables

HEATING - 4 -PIPE SYSTEM

Reference water flow (Q_W) of 200 L/h

For other water flow rates, correct the coil capacity (P_{SW}) in the table by the factors listed in the attached table.

IHK - 4-PIPE SYSTEM HEATING			
SIZE	900	1200	1500
Q_W (l/h)	Capacity coil correction factor		
30	0,65	0,65	0,65
50	0,78	0,78	0,78
70	0,85	0,85	0,85
90	0,90	0,90	0,90
110	0,93	0,93	0,93
130	0,95	0,95	0,95
150	0,97	0,97	0,97
180	0,99	0,99	0,99
200	1,00	1,00	1,00
250	1,02	1,02	1,02

IHK - 4-PIPE SYSTEM - HEATING

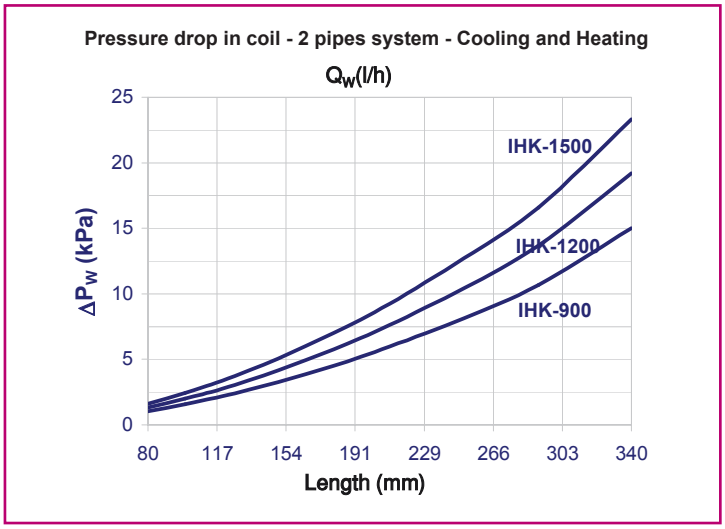
SIZE	TYPE NOZZLE	Q_{Pr}		L_W - dB(A)	ΔP_{pr} (Pa)	X (m)	ΔT_{pr} (K)					ΔT_{SWIN} (K)						ΔP_W (kPa)
		l/s	m³/h				6	7	8	9	10	10	15	20	25	30	35	
							P_{pr} (W)					P_{SW} (W)						
900	P	6,9	25	<20	53	2,2	50	58	66	75	83	146	224	298	375	452	529	5.5
		9,2	33	23	92	2,8	66	77	88	99	110	171	263	346	433	520	610	
		11,1	40	28	136	3,5	80	93	106	120	133	190	290	381	476	571	671	
		12,5	45	31	172	3,9	90	105	120	135	150	201	306	402	504	604	711	
		13,9	50	34	212	4,3	100	116	133	150	166	211	320	421	529	635	746	
	M	12,5	45	<20	55	3,1	90	105	120	135	150	178	273	359	448	538	632	
		16,1	58	24	24	4,1	116	135	154	174	193	202	308	405	507	609	716	
		19,4	70	30	134	4,9	140	163	186	210	233	219	333	439	552	663	779	
		22,2	80	33	176	5,6	160	186	213	240	266	230	348	461	461	701	824	
		25,0	90	36	223	6,3	180	210	240	270	300	239	361	481	609	734	864	
	G	19,4	70	20	54	3,6	140	163	186	210	233	190	291	382	478	573	673	
		25,0	90	27	90	4,7	180	210	240	270	300	214	325	427	537	644	758	
		30,6	110	33	135	5,7	220	256	293	330	366	231	349	462	583	702	825	
		34,7	125	36	175	6,5	250	291	333	375	416	240	362	483	612	738	868	
		38,9	140	39	219	7,3	280	326	373	420	466	248	374	501	637	769	906	
1200	P	9,2	33	<20	50	2,4	66	77	88	99	110	181	276	374	473	569	662	7,0
		12,5	45	25	93	3,3	90	105	120	135	150	210	320	435	550	659	769	
		15,0	54	30	134	3,0	108	126	144	162	180	229	349	473	599	716	837	
		17,5	63	34	182	4,6	126	147	168	189	210	246	373	506	640	765	896	
		20,8	75	39	258	5,5	150	175	200	225	250	266	400	543	685	820	963	
	M	16,1	58	<20	50	3,5	116	135	154	174	193	211	323	438	438	663	774	
		20,6	74	25	81	4,4	148	172	197	222	246	237	361	490	619	740	866	
		25,6	92	31	126	5,5	184	214	245	276	306	262	395	536	677	809	950	
		30,0	108	35	173	6,4	216	252	288	324	360	280	420	568	717	858	1010	
		36,1	130	40	251	7,7	260	303	346	390	433	299	446	603	760	912	1074	
	G	25,0	90	22	22	3,0	180	210	240	270	300	225	342	464	587	702	820	
		30,6	110	27	73	4,9	220	256	293	330	366	247	374	507	641	766	897	
		40,3	145	35	127	6,4	290	338	386	435	483	277	416	564	712	852	1002	
		47,2	170	39	175	7,5	340	396	453	510	566	294	440	594	749	899	1059	
		52,8	190	42	218	8,4	380	443	506	570	633	306	455	614	774	930	1095	
1500	P	11,7	42	<20	53	2,7	84	98	112	126	140	218	328	446	564	676	792	8.5
		14,4	52	24	81	3,4	104	121	138	156	173	239	361	493	623	748	877	
		17,5	63	30	119	4,1	126	147	168	189	210	260	393	537	393	815	956	
		21,1	76	35	173	4,0	152	177	202	228	253	281	424	579	732	879	1032	
		25,0	90	40	244	5,9	180	210	240	270	300	300	452	615	778	934	1097	
	M	19,4	70	20	47	3,7	140	163	186	210	233	245	371	506	640	768	901	
		25,0	90	27	79	4,8	180	210	240	270	300	273	413	563	713	855	1004	
		30,6	110	32	118	5,8	220	256	293	330	366	296	446	607	768	922	1083	
		36,1	130	37	164	6,9	260	303	346	390	433	314	472	640	809	972	1142	
		41,7	150	41	219	7,9	300	350	400	450	500	328	493	666	840	1008	1186	
	G	31,9	115	23	52	4,5	230	268	306	345	383	265	401	547	693	831	975	
		40,3	145	29	83	5,7	290	338	386	435	483	292	440	599	757	909	1068	
		49,4	178	35	125	7,0	356	415	474	534	593	314	472	640	809	971	1141	
		58,3	210	40	175	8,3	420	490	560	630	700	330	495	669	844	1013	1192	
		69,4	250	44	248	9,8	500	583	666	750	833	345	518	696	877	1051	1236	

Technical Data

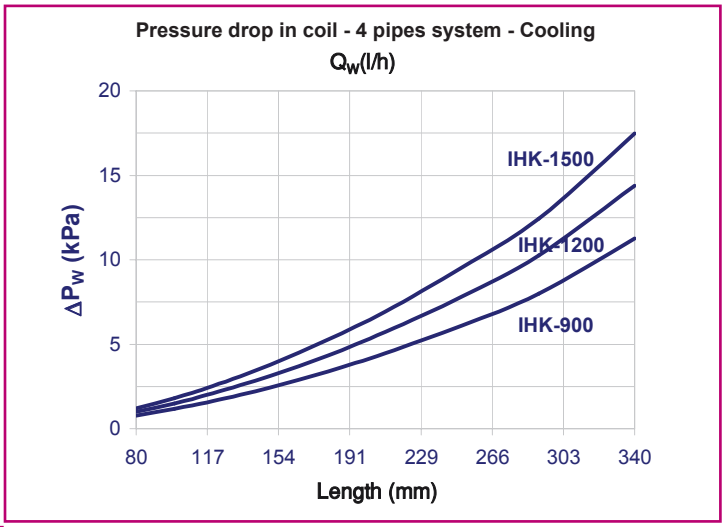
Pressure drop in water

The charts to obtain the pressure drop in the coil for different water flow rates in the various systems are shown below:

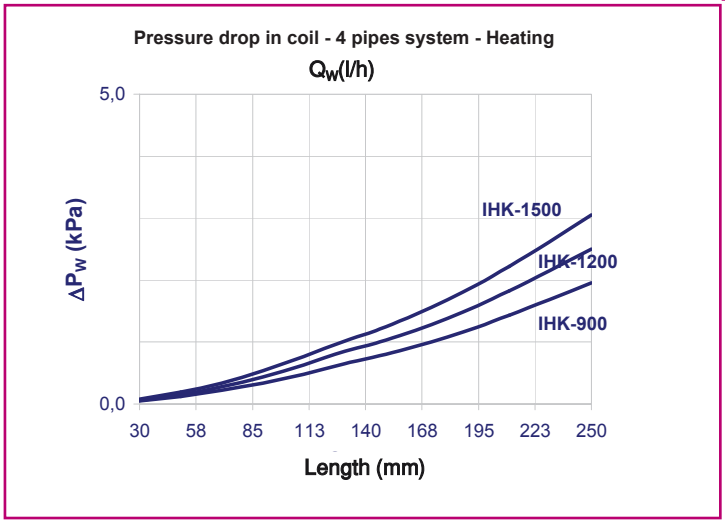
2-pipe system. Cooling - Heating



4-pipe system. Cooling



4-pipe system. Heating



Product Codes

Coding example of an order. All of the different models, sizes, accessories, etc., existing in the KOOLAIR IHK series are listed.

(a): **Model**

IHK standard induction terminal unit
IHK-F induction terminal unit, supply and return in the same grille
IHK-V perimetral induction terminal unit

(b): **Length**

IHK : 900 – 1200 – 1500 (mm)

(c): **Nozzle configuration**

- P
- M
- G

(d): **Coil Type of system.**

- 2 2-pipe system coil
- 4 4-pipe system coil

(e): **Air/water connection configuration**

- FWI Front face primary air connection and water connection on left
- FWD Front face primary air connection and water connection on rigth
- LIWI Lateral primary air and water connections on left
- LIWD Lateral primary air connection on left and water connection on rigth
- LDWD Lateral primary air and water connections on rigth
- LDWI Lateral primary air connection on rigth and water connection on left

(f): **Type of supply grille**

- 20-DH *Double deflection grille*
- 31-1 *Linear grille with horizontal fixed blades*

(g): **Type of return grille**

- 22-5 *Egg crate grille*
- 27-R *Perforate plate grille*

(h): **Finish**

- RAL 9010 *Standard finish in RAL 9010*
- RAL … *Finish in RAL paint upon request*

(i): **Other accessories or components**

By special request on the order, other components can be requested, e.g.:

- **Electric resistor**: For 2-pipe systems (chilled water), included inside the unit. Specify the power in watts (W) provided by it.

- **Control valve**: Control and/or balancing valves can be included in the water connections by special order. Specify the model and type, as well as the respective servo drive if applicable.

- **Condensation detector**: The unit can be fitted with a condensation detector attached to the surface of the chilled water inlet pipe by special order.

- Coding example

(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
IHK –	1200 –	M –	2 –	LIWI –	20-DH –	22-5 –	RAL 9010 –	others

Technical specifications

Active chilled beams with one way air discharge, Koolair´s type IHK, length **C** mm, heigth 200 mm, suitable to be installed with horizontal position in false ceilings or plaster board bulkhead, for hotel bedrooms, individual hospital wards and cellular offices. It can be equipped with many options of induced and supply air grille design.

Consisting of a casing with suspension holes, connecting spigot Ø125 mm (frontal or lateral), with plastic nozzles assembled in sheet metal plate, in three sizes (P-M-G) to optimise induction. Batteries can be 2 or 4 pipes system, made of copper tubes, formed aluminium fins and provide water-side connecting tails external threaded G1/2”.

Units are manufactured combined galvanised sheet steel and aluminium grilles finished Ral 9010, others colours are available under request.

KOOLAIR, S.L.
Calle Urano, 26
Poligono industrial nº 2 – La Fuensanta
28936 Móstoles - Madrid - (España)
Tel: +34 91 645 00 33
Fax: +34 91 645 69 62
e-mail: info@koolair.com

www.koolair.com