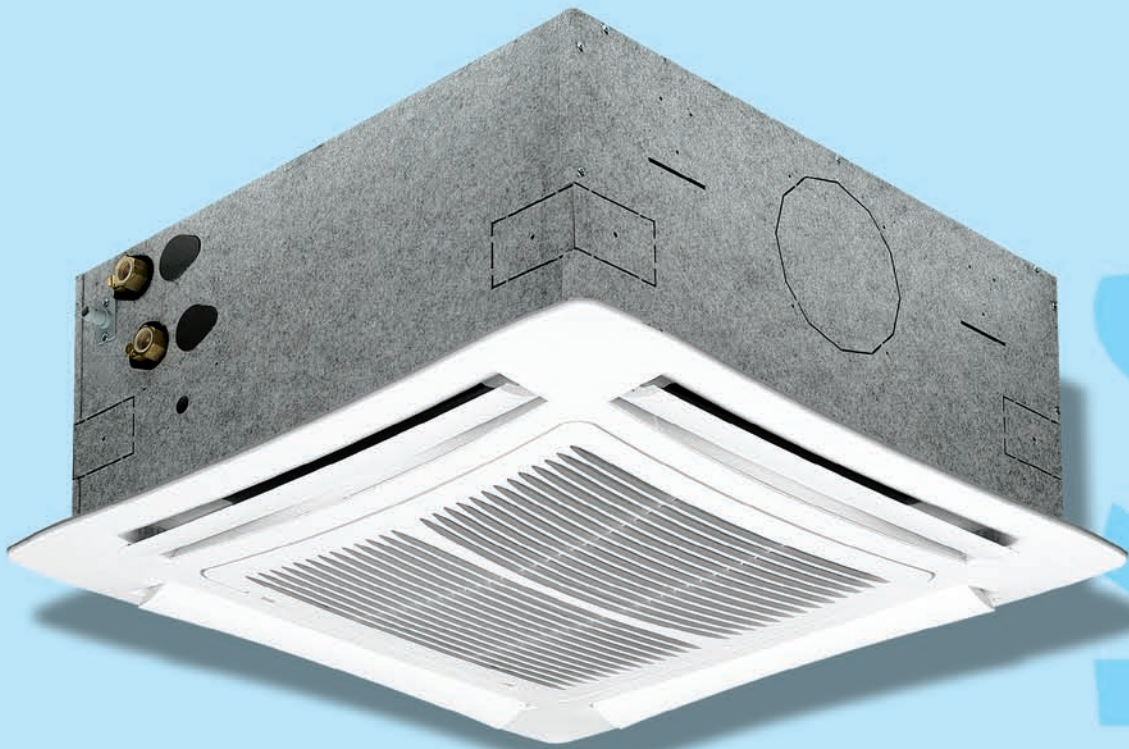


 **YORK**[®]

BY JOHNSON CONTROLS

NEW
Low energy
consumption ECM motors



YHK
YHK-ECM

Cassette Fan Coil Units



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www.certiflash.com

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Johnson Controls take part to the Eurovent program of fan coil performance certification. The official figures are published in the web site

www.eurovent-certification.com and in the web site www.certiflash.com.

The tested performances are:

- Cooling total emission at the following conditions:
 - Water temperature +7°C E.W.T. +12°C L.W.T.
 - Entering air temperature +27°C dry bulb +19°C wet bulb
- Heating emission (2 pipe units) at the following conditions:
 - Entering water temperature +50°C
 - Entering air temperature +20°C
 - *Water flow rate as for the cooling conditions*
- Cooling sensible emission at the following conditions:
 - Water temperature +7°C E.W.T. +12°C L.W.T.
 - Entering air temperature +27°C dry bulb +19°C wet bulb
- Heating emission (4 pipe units) at the following conditions:
 - Water temperature +70°C E.W.T. +60°C L.W.T.
 - Entering air temperature +20°C

• Fan absorption

• Water pressure drop

• Sound power

Innovating and beautiful design, seven different sizes, high control flexibility, easy maintenance: the new YHK chilled water cassette is the result of an extended technical and design development aimed at achieving the highest level in terms of performance, silent operation and control possibilities.

The air diffuser has an highly attractive aesthetical appearance, very innovative, and is also able to offer the best air distribution performance thanks to long computer studies and laboratory tests. The standard colour is RAL 9003, other colours available on request.

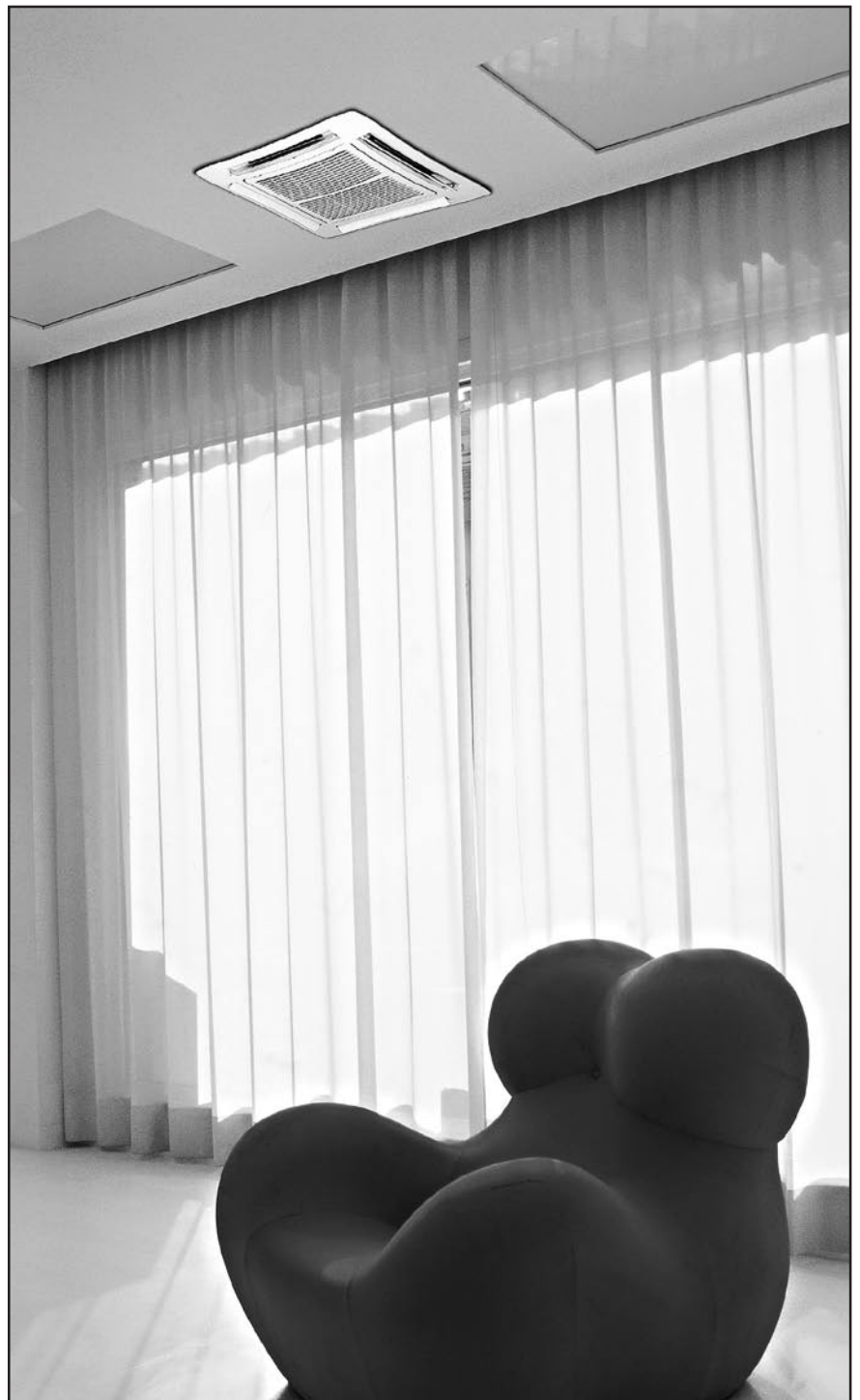
The 4 smaller sizes are designed to fit into 600x600 mm false ceiling standard modules. The 3 bigger sizes have a dimension of 800x800 mm which allows the best outcome in terms of quietness and of price/performance ratio for these high capacity models.

Every unit can be supplied with 1 battery (2 pipe system) and a possible electric resistance or with 2 batteries (4 pipe system). Each model can have fresh air intake and a remote air diffuser can be connected to the unit.

The condensate pump is integral with the unit, is very quiet and has a maximum head of 650 mm.

In addition to the temperature and speed standard controls, automatic speed selection is also available. More than one unit can be connected to a single control, and the unit control panel can be installed in a position that facilitates the maintenance operation. Every unit can also be operated by the means of an infra-red remote control. The YHK cassettes can also be connected to the most common automatic building management systems.

Finally, each unit can be equipped with a low energy consumption electric motor that is controlled by an inverter card that makes possible continuous air flow variations.



INTAKE GRID AND DISTRIBUTION OF THE AIR

Intake grids, frame and adjustable air distribution louvers on each side, made from ABS.

AKPA version : white ABS, RAL 9003

AKPB version : with intake grid, frame and louvers, choice of one colour only

AKPC version : with intake grid and louvers, choice of one colour, plus white ABS frame RAL 9003

AKPD version : with louvers, choice of one colour, while the grid and frame are made from ABS, RAL 9003

MD-600 version : metal diffuser painted in RAL 9003 white colour with 600x600 dimension to perfectly fit into the false ceiling standard modules without overlapping parts (800x800 model is not available).

CASING

Is made from galvanized steel with inside thermal insulation (closed cell polyethelene 10 mm thick) and outside anti-condensate lining.

CONTROL PANEL

Made of an external box with the control electronic board with an easily accessible terminal board.

FAN ASSEMBLY

The fan assembly, which is mounted on anti-vibrating supports, is extremely silent.

The radial fan has been designed to optimise performance, using wing profile blades with a shape that reduce turbulence, increasing efficiency and reducing noise.

The single air inlet radial fan is connected to a 6 speed electric motor with single phase 230V/50Hz supply, class B insulation and integrated Klixon thermal contact for motor protection.

The units are supplied with 3 standard speeds connected and it is possible to change them on site if necessary.

HEAT EXCHANGER

Made of copper tubes with bonded aluminium fins for maximum transfer contact.

The batteries are with 1, 2 or 3 rows for 2 pipe models and 2+1 rows for 4 pipe models (the heating row is on the inside part of the battery).

The heat exchanger is not suitable for use in corrosive atmosphere or in environments where aluminium may be subject to corrosion.

CONDENSATE COLLECTION TRAY

High density ABS polystyrene foam condensate tray, shaped in order to optimize the air diffusion, fire retardant rating B2 to DIN 4102.

AIR FILTER

Synthetic washable filter, easily removable.

CONDENSATE PUMP

Float switch centrifugal pump with 650 mm of maximum head, integral to the unit and wired to the control panel on the outside of the casing.

VALVE SET

Two or three way valves for ON/OFF operation, with pipe mounting kit and thermostatic actuator.

Technical features

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www.certiflash.com

2 pipe units. The following standard rating conditions are used:

COOLING

Entering air temperature: + 27°C d.b., + 19°C w.b.
Water temperature: + 7/12°C

HEATING

Entering air temperature: + 20°C
Water temperature: + 50°C
water flow rate as for the cooling conditions

MODEL		YHK 20-2			YHK 25-2			YHK 40-2			YHK 50-2			YHK 65-2			YHK 95-2			YHK 110-2			
		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
Speed																							
Air flow	m³/h	310	420	610	310	420	520	320	500	710	430	610	880	630	820	1140	710	970	1500	710	1280	1820	
Cooling total emission	kW	1,27	1,63	1,98	1,84	2,34	2,68	2,25	3,34	4,33	2,94	3,88	5,02	4,21	4,91	6,16	5,31	6,78	9,51	5,31	8,45	11,10	
Cooling sensible emission	kW	1,01	1,32	1,64	1,35	1,75	2,04	1,57	2,39	3,18	2,08	2,81	3,74	3,03	3,58	4,59	3,46	4,48	6,48	3,71	6,09	8,25	
Heating	kW	1,62	2,12	2,64	2,22	2,90	3,35	2,56	3,93	5,23	3,43	4,63	6,17	5,12	6,03	7,77	5,61	7,34	10,71	6,13	10,30	14,00	
Water flow	l/h	219	280	340	316	402	461	387	574	745	506	667	863	724	845	1060	913	1166	1636	913	1453	1909	
ΔP Cooling	kPa	4,5	7,0	10,0	4,9	7,6	9,7	4,6	9,4	15,1	7,5	12,4	19,7	10,9	14,3	21,6	9,4	14,7	26,9	9,4	21,8	35,6	
ΔP Heating	kPa	4,0	6,0	9,0	4,1	6,3	8,2	3,5	7,3	11,4	6,7	11,2	17,7	6,7	9,9	15,1	7,9	12,4	23,0	7,9	18,6	30,6	
Sound power Lw	dB(A)	33	40	49	33	40	45	33	45	53	41	49	59	33	40	48	34	40	53	34	48	58	
Sound pressure Lp	dB(A)	24	31	40	24	31	36	24	36	44	32	40	50	24	31	39	25	31	44	25	39	49	
Fan	W	25	32	57	25	32	44	25	44	68	32	57	90	33	48	77	42	63	120	42	95	170	
	A	0,11	0,15	0,27	0,11	0,15	0,20	0,11	0,20	0,32	0,15	0,27	0,45	0,15	0,23	0,36	0,18	0,28	0,53	0,18	0,42	0,74	
Water content	l	0,8			1,4			2,1			2,1			3,0			4,0			4,0			
Dimensions	mm	575 x 575 x 275												820 x 820 x 303									

4 pipe units. The following standard rating conditions are used:

COOLING

Entering air temperature: + 27°C d.b., + 19°C w.b.
Water temperature: + 7/12°C

HEATING

Entering air temperature: + 20°C
Water temperature: + 70/60°C

MODEL		YHK 20-4			YHK 25-4			YHK 40-4			YHK 50-4			YHK 65-4			YHK 95-4			YHK 110-4			
		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
Speed																							
Air flow	m³/h	310	420	610	310	420	520	320	500	710	430	610	880	630	820	1140	710	970	1500	710	1280	1820	
Cooling total emission	kW	1,51	1,96	2,33	1,85	2,36	2,70	1,85	2,65	3,34	2,36	3,02	3,81	4,14	5,03	6,34	4,52	5,66	7,71	4,52	6,93	8,89	
Cooling sensible emission	kW	1,15	1,55	1,90	1,34	1,71	1,98	1,34	1,98	2,56	1,75	2,29	2,97	2,96	3,65	4,69	3,25	4,15	5,83	3,25	5,18	6,84	
Water flow	l/h	260	337	401	318	406	464	318	456	574	406	519	655	712	865	1090	777	974	1326	777	1192	1529	
ΔP Cooling	kPa	6,0	10,0	13,5	4,6	6,9	8,8	4,6	8,8	13,4	7,2	11,2	17,0	8,8	12,5	18,9	10,3	15,4	26,9	10,3	22,1	34,7	
Heating	kW	1,96	2,54	3,03	2,43	3,02	3,46	2,43	3,46	4,40	3,10	3,97	4,95	5,91	7,19	9,10	6,45	8,10	11,00	6,45	9,98	12,70	
Water flow	l/h	169	219	261	209	260	298	209	298	378	267	341	426	508	618	783	555	697	946	555	858	1092	
ΔP Heating	kPa	6,5	10,5	14,5	5,7	8,5	10,8	5,7	10,8	16,6	8,8	13,8	20,5	9,8	14,0	21,4	11,5	17,4	29,9	11,5	25,3	38,8	
Sound power Lw	dB(A)	33	40	49	33	40	45	33	45	53	41	49	59	33	40	48	34	40	53	34	48	58	
Sound pressure Lp	dB(A)	24	31	40	24	31	36	24	36	44	32	40	50	24	31	39	25	31	44	25	39	49	
Fan	W	25	32	57	25	32	44	25	44	68	32	57	90	33	48	77	42	63	120	42	95	170	
	A	0,11	0,15	0,27	0,11	0,15	0,20	0,11	0,20	0,32	0,15	0,27	0,45	0,15	0,23	0,36	0,18	0,28	0,53	0,18	0,42	0,74	
Cooling water content	l	1,0			1,4			1,4			1,4			3,0			3,0			3,0			
Heating water content	l	0,6			0,7			0,7			0,7			1,4			1,4			1,4			
Dimensions	mm	575 x 575 x 275												820 x 820 x 303									

The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m³ room and a reverberation time of 0.5 sec.

Cooling emission of 1 battery units (2 pipe installation)

Entering air temperature: +27°C d.b. +19°C w.b.

Model	Speed	Air flow	EWT 5 - LWT 10°C			EWT 7 - LWT 12°C			EWT 9 - LWT 14°C			EWT 12 - LWT 17°C		
			Water flow	Total emission	Sensible emission	Water flow	Total emission	Sensible emission	Water flow	Total emission	Sensible emission	Water flow	Total emission	Sensible emission
			m³/h	l/h	kW	kW	l/h	kW	kW	l/h	kW	kW	l/h	kW
YHK 20-2	High	610	421	2,45	1,83	340	1,98	1,64	254	1,47	1,45	199	1,16	1,16
	Med	420	346	2,01	1,48	280	1,63	1,32	210	1,22	1,16	160	0,93	0,93
	Low	310	269	1,57	1,14	219	1,27	1,01	165	0,96	0,89	123	0,71	0,71
YHK 25-2	High	520	554	3,22	2,22	462	2,68	2,04	362	2,10	1,75	252	1,47	1,47
	Med	420	482	2,80	1,91	403	2,34	1,75	317	1,84	1,50	220	1,28	1,28
	Low	310	417	2,42	1,64	317	1,84	1,35	276	1,61	1,29	188	1,09	1,09
YHK 40-2	High	710	926	5,38	3,64	745	4,33	3,18	617	3,59	2,87	420	2,44	2,44
	Med	500	715	4,15	2,77	575	3,34	2,39	483	2,81	2,18	319	1,86	1,86
	Low	320	508	2,95	1,94	387	2,25	1,57	349	2,03	1,53	225	1,31	1,31
YHK 50-2	High	880	1049	6,10	4,17	863	5,02	3,74	694	4,03	3,29	479	2,79	2,79
	Med	610	835	4,85	3,26	667	3,88	2,81	559	3,25	2,57	376	2,19	2,19
	Low	430	633	3,68	2,44	506	2,94	2,08	430	2,50	1,92	283	1,65	1,65
YHK 65-2	High	1140	1264	7,35	5,00	1060	6,16	4,59	840	4,88	3,95	573	3,33	3,33
	Med	820	1003	5,83	3,92	845	4,91	3,58	674	3,92	3,09	453	2,63	2,63
	Low	630	858	4,99	3,32	722	4,21	3,03	580	3,37	2,62	384	2,23	2,23
YHK 95-2	High	1500	1943	11,30	7,59	1635	9,51	6,48	1301	7,57	5,99	880	5,12	5,12
	Med	970	1374	7,99	5,27	1166	6,78	4,48	939	5,46	4,15	612	3,56	3,56
	Low	710	1070	6,22	4,06	913	5,31	3,46	740	4,30	3,20	434	2,52	2,52
YHK 110-2	High	1820	2277	13,24	9,01	1909	11,10	8,25	1511	8,78	7,11	1044	6,07	6,07
	Med	1280	1722	10,01	6,68	1454	8,45	6,09	1162	6,75	5,27	775	4,51	4,51
	Low	710	1070	6,22	4,06	913	5,31	3,71	740	4,30	3,20	434	2,52	2,52

Heating emission of 1 battery units (2 pipe installation)

Entering air temperature: +20°C

Model	Speed	Air flow	EWT 45 - LWT 40°C		EWT 50 - LWT 40°C		EWT 60 - LWT 50°C		EWT 70 - LWT 60°C		EWT 80 - LWT 70°C	
			Water flow	Emission	Water flow	Emission	Water flow	Emission	Water flow	Emission	Water flow	Emission
			m³/h	l/h	kW	l/h	kW	l/h	kW	l/h	kW	l/h
YHK 20-2	High	610	386	2,24	203	2,37	298	3,46	393	4,56	488	5,67
	Med	420	310	1,80	164	1,91	239	2,78	315	3,66	391	4,55
	Low	310	237	1,38	126	1,46	183	2,13	240	2,80	298	3,47
YHK 25-2	High	520	482	2,80	266	3,10	377	4,39	488	5,68	599	6,97
	Med	420	417	2,42	232	2,69	327	3,80	422	4,91	513	5,96
	Low	310	356	2,07	198	2,31	279	3,25	360	4,19	441	5,12
YHK 40-2	High	710	787	4,57	440	5,12	619	7,19	795	9,25	972	11,30
	Med	500	593	3,45	334	3,89	467	5,43	598	6,96	730	8,48
	Low	320	412	2,39	235	2,73	326	3,79	415	4,83	505	5,87
YHK 50-2	High	880	903	5,25	504	5,86	709	8,25	914	10,63	1118	13,00
	Med	610	702	4,08	394	4,58	552	6,42	709	8,25	866	10,07
	Low	430	520	3,02	294	3,42	410	4,77	524	6,10	639	7,43
YHK 65-2	High	1140	1118	6,50	624	7,26	878	10,21	1130	13,14	1383	16,08
	Med	820	865	5,03	486	5,65	681	7,92	874	10,16	1067	12,41
	Low	630	734	4,27	415	4,82	578	6,72	741	8,61	903	10,50
YHK 95-2	High	1500	1683	9,78	951	11,06	1327	15,43	1699	19,76	2071	24,08
	Med	970	1146	6,67	655	7,62	906	10,54	1155	13,43	1403	16,32
	Low	710	876	5,09	505	5,87	694	8,07	882	10,25	1068	12,42
YHK 110-2	High	1820	2015	11,72	1132	13,17	1586	18,45	2037	23,68	2486	28,91
	Med	1280	1471	8,55	834	9,70	1161	13,50	1484	17,26	1807	21,01
	Low	710	876	5,09	505	5,87	694	8,07	882	10,25	1068	12,42

Emission correction factors for different working conditions. Multiply the factors by the emission figures in the 7-12°C table above.

Total emission					Sensible emission				
Water (°C)	Air (°C)	25-18	26-18.5	28-20	Water (°C)	Air (°C)	25-18	26-18.5	28-20
7/12 °C	K	0,82	0,89	1,11	7/12 °C	K	0,9	0,94	1,06
10/15 °C	K	0,56	0,63	0,82	10/15 °C	K	0,72	0,78	0,9
14/18 °C	K	0,35	0,41	0,52	14/18 °C	K	0,5	0,58	0,72

Note:
the correction factors are indicative, as they are average values.

Emission of 4 pipe units with standard cooling battery

Cooling emission of 2 battery units (4 pipe installation)

Entering air temperature: +27°C d.b. +19°C w.b.

Model	Speed	Air flow m ³ /h	EWT 5 - LWT 10°C			EWT 7 - LWT 12°C			EWT 9 - LWT 14°C			EWT 12 - LWT 17°C		
			Water flow	Total emission	Sensible emission	Water flow	Total emission	Sensible emission	Water flow	Total emission	Sensible emission	Water flow	Total emission	Sensible emission
			l/h	kW	kW	l/h	kW	kW	l/h	kW	kW	l/h	kW	kW
YHK 20-4	High	610	490	2,85	2,12	401	2,33	1,90	307	1,78	1,69	239	1,39	1,39
	Med	420	410	2,38	1,73	337	1,96	1,55	260	1,51	1,37	196	1,14	1,14
	Low	310	314	1,82	1,29	260	1,51	1,15	201	1,17	1,02	148	0,86	0,86
YHK 25-4	High	520	569	3,31	2,26	465	2,70	1,98	374	2,18	1,79	260	1,51	1,51
	Med	420	465	2,71	1,83	405	2,36	1,70	309	1,80	1,44	210	1,22	1,22
	Low	310	398	2,31	1,55	318	1,85	1,34	267	1,55	1,22	177	1,03	1,03
YHK 40-4	High	710	718	4,18	2,91	574	3,34	2,56	467	2,72	2,30	330	1,92	1,92
	Med	500	569	3,31	2,26	455	2,65	1,98	374	2,18	1,79	260	1,51	1,51
	Low	320	398	2,31	1,55	318	1,85	1,34	267	1,55	1,22	177	1,03	1,03
YHK 50-4	High	880	791	4,60	3,23	656	3,81	2,97	512	2,98	2,56	366	2,13	2,13
	Med	610	632	3,67	2,53	520	3,02	2,29	413	2,40	2,00	288	1,67	1,67
	Low	430	510	2,97	2,01	405	2,36	1,75	337	1,96	1,59	231	1,35	1,35
YHK 65-4	High	1140	1299	7,55	5,12	1090	6,34	4,69	864	5,02	4,04	586	3,41	3,41
	Med	820	1027	5,97	4,00	866	5,03	3,65	691	4,02	3,15	462	2,68	2,68
	Low	630	842	4,89	3,24	713	4,14	2,96	572	3,33	2,56	374	2,17	2,17
YHK 95-4	High	1500	1588	9,23	6,35	1327	7,71	5,83	1046	6,08	5,02	7,26	4,22	4,22
	Med	970	1158	6,73	4,53	974	5,66	4,15	775	4,50	3,57	524	3,05	3,05
	Low	710	920	5,35	3,56	778	4,52	3,25	623	3,62	2,81	411	2,39	2,39
YHK 110-4	High	1820	1836	10,67	7,43	1529	8,89	6,84	1199	6,97	5,98	849	4,94	4,94
	Med	1280	1423	8,27	5,64	1191	6,93	5,18	942	5,48	4,46	646	3,75	3,75
	Low	710	920	5,35	3,56	778	4,52	3,25	623	3,62	2,81	411	2,39	2,39

Heating emission of 2 battery units (4 pipe installation)

Entering air temperature: +20°C

Model	Speed	Air flow m ³ /h	EWT 45 - LWT 40°C		EWT 50 - LWT 40°C		EWT 60 - LWT 50°C		EWT 70 - LWT 60°C		EWT 80 - LWT 70°C	
			Water flow	Emission	Water flow	Emission	Water flow	Emission	Water flow	Emission	Water flow	Emission
			l/h	kW	l/h	kW	l/h	kW	l/h	kW	l/h	kW
YHK 20-4	High	610	256	1,49	134	1,56	197	2,29	261	3,03	325	3,78
	Med	420	215	1,25	113	1,31	166	1,93	219	2,54	272	3,17
	Low	310	166	0,96	87	1,01	128	1,49	169	1,96	210	2,44
YHK 25-4	High	520	283	1,65	149	1,73	218	2,54	298	3,46	358	4,17
	Med	420	247	1,44	130	1,51	191	2,22	260	3,02	312	3,63
	Low	310	196	1,14	103	1,20	151	1,76	209	2,43	247	2,87
YHK 40-4	High	710	351	2,04	184	2,14	270	3,14	378	4,40	444	5,17
	Med	500	277	1,61	146	1,69	214	2,48	298	3,46	350	4,07
	Low	320	196	1,14	103	1,20	151	1,76	209	2,43	247	2,87
YHK 50-4	High	880	402	2,34	211	2,45	310	3,60	426	4,95	510	5,93
	Med	610	317	1,84	166	1,94	244	2,84	341	3,97	401	4,67
	Low	430	247	1,44	130	1,51	191	2,22	267	3,10	312	3,63
YHK 65-4	High	1140	771	4,48	410	4,76	596	6,93	783	9,10	970	11,28
	Med	820	609	3,54	324	3,77	471	5,48	618	7,19	766	8,90
	Low	630	501	2,91	267	3,11	388	4,51	508	5,91	629	7,31
YHK 95-4	High	1500	929	5,40	493	5,73	718	8,34	946	11,00	1170	13,60
	Med	970	686	3,99	365	4,25	531	6,17	697	8,10	864	10,04
	Low	710	547	3,18	291	3,39	423	4,92	555	6,45	686	7,98
YHK 110-4	High	1820	1074	6,24	569	6,61	829	9,64	1092	12,70	1353	15,74
	Med	1280	845	4,91	449	5,22	653	7,60	858	9,98	1064	12,37
	Low	710	547	3,18	291	3,39	423	4,92	555	6,45	686	7,98

Emission correction factors for different working conditions.

Multiply the factors by the emission figures in the 7-12°C table above.

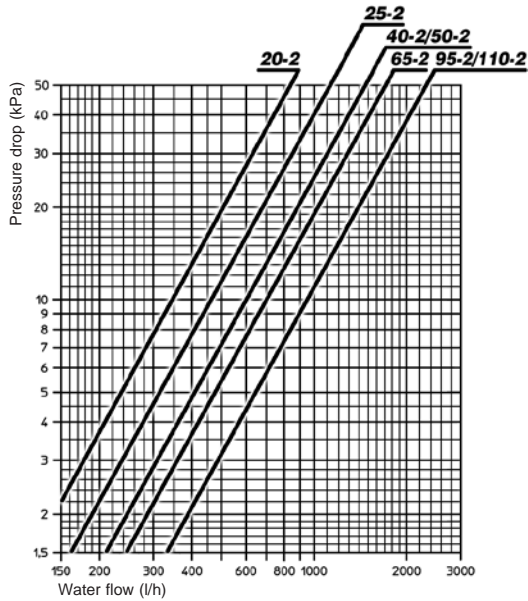
Total emission				
Water (°C)	Air (°C)	25-18	26-18.5	28-20
7/12 °C	K	0,82	0,89	1,11
10/15 °C	K	0,56	0,63	0,82
14/18 °C	K	0,35	0,41	0,52

Sensible emission				
Water (°C)	Air (°C)	25-18	26-18.5	28-20
7/12 °C	K	0,9	0,94	1,06
10/15 °C	K	0,72	0,78	0,9
14/18 °C	K	0,5	0,58	0,72

Note:

the correction factors are indicative, as they are average values.

2 pipe installation

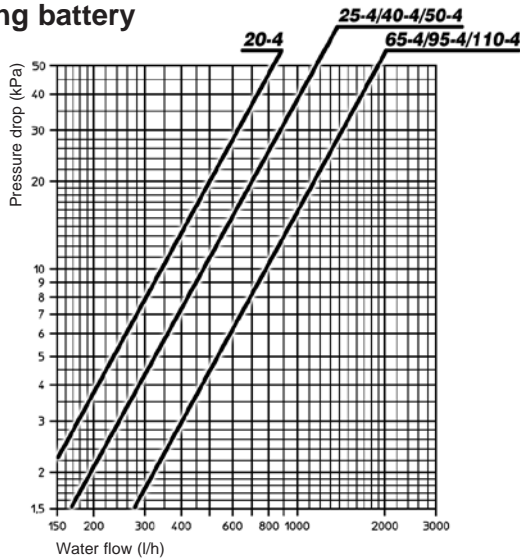


Pressure drop
for mean water temperature of 10°C,
for different temperatures multiply the pressure drop figure
by the K correction factors in the table.

°C	20	30	40	50	60	70	80
K	0,94	0,90	0,86	0,82	0,78	0,74	0,70

4 pipe installation

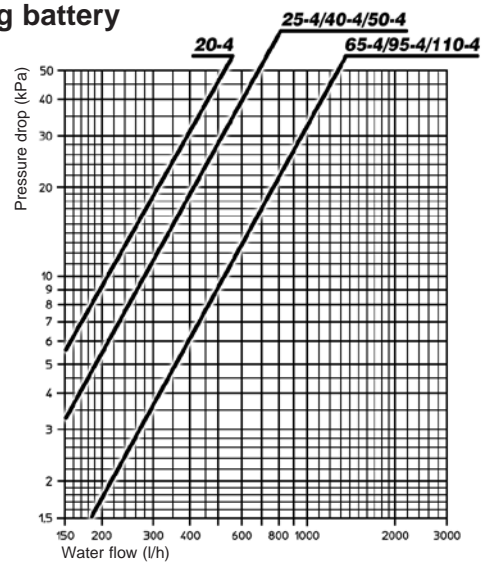
Pressure drop for cooling battery



Pressure drop
for mean water temperature of 10°C,
for different temperatures multiply the pressure drop figure
by the K correction factors in the table.

°C	20	30	40	50	60	70	80
K	0,94	0,90	0,86	0,82	0,78	0,74	0,70

Pressure drop for heating battery



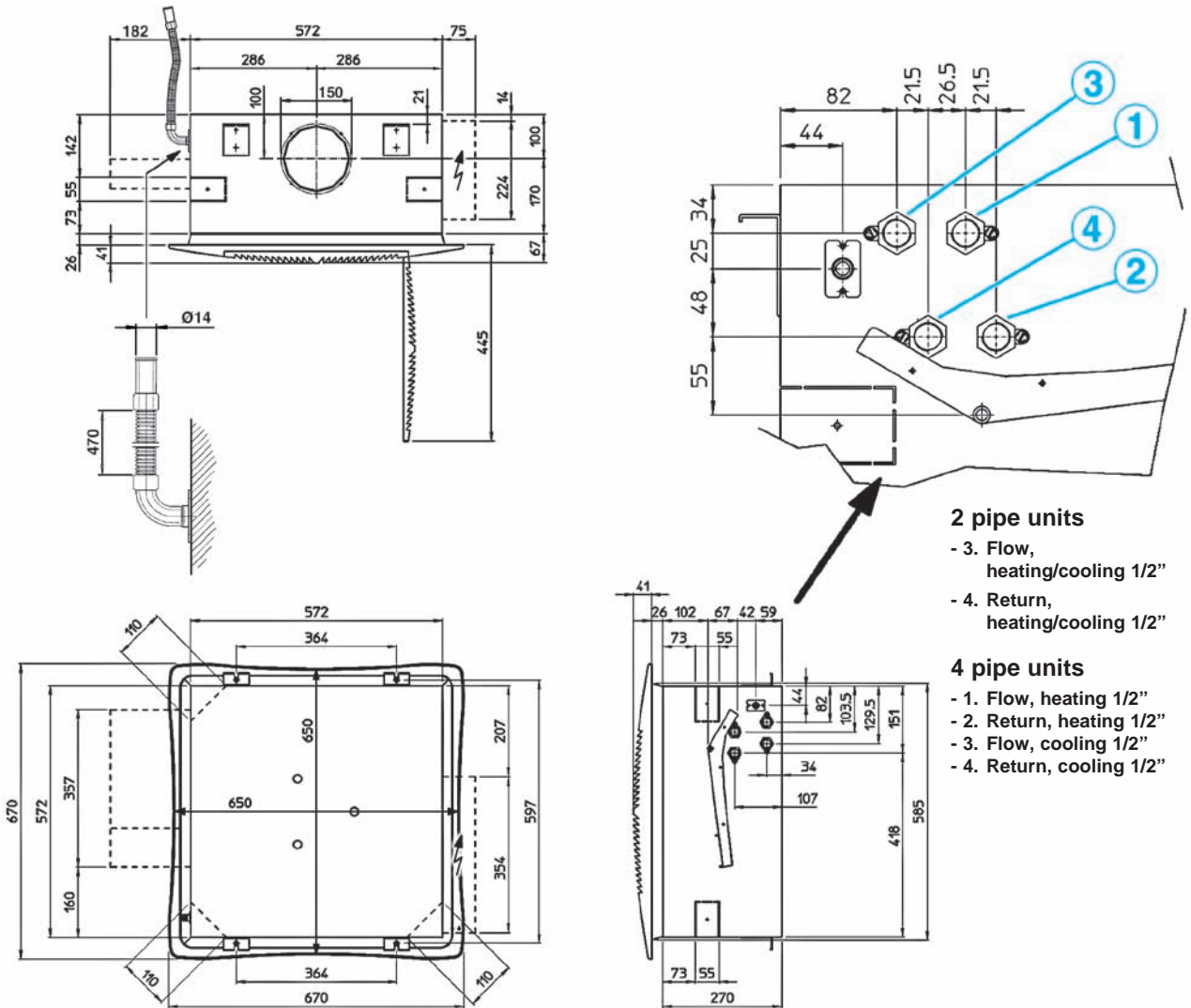
Pressure drop
for mean water temperature of 65°C,
for different temperatures multiply the pressure drop figure
by the K correction factors in the table.

°C	40	50	60	70	80
K	1,14	1,08	1,02	0,96	0,90

Working conditions

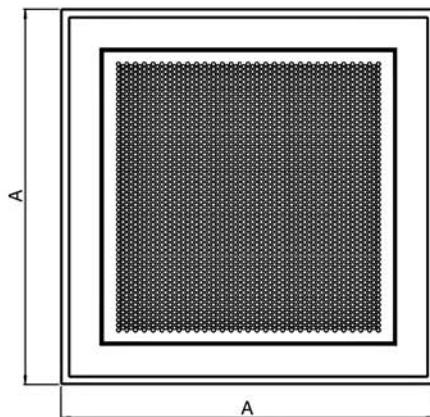
Water flow	MAX. working pressure	MIN. entering water temperature: + 5°C
	8 bars	MAX. entering water temperature: + 80°C
Air flow	Suitable relative humidity	MIN. entering air temperature: 6°C
	15 - 75%	MAX. entering air temperature: 40°C
Supply	Single phase 230V 50Hz	
Installation	MAX. height: See table on page 12	

YHK 20/25/40/50-2
YHK 20/25/40/50-4 (Version 600 x 600)



MD-600
METAL DIFFUSER

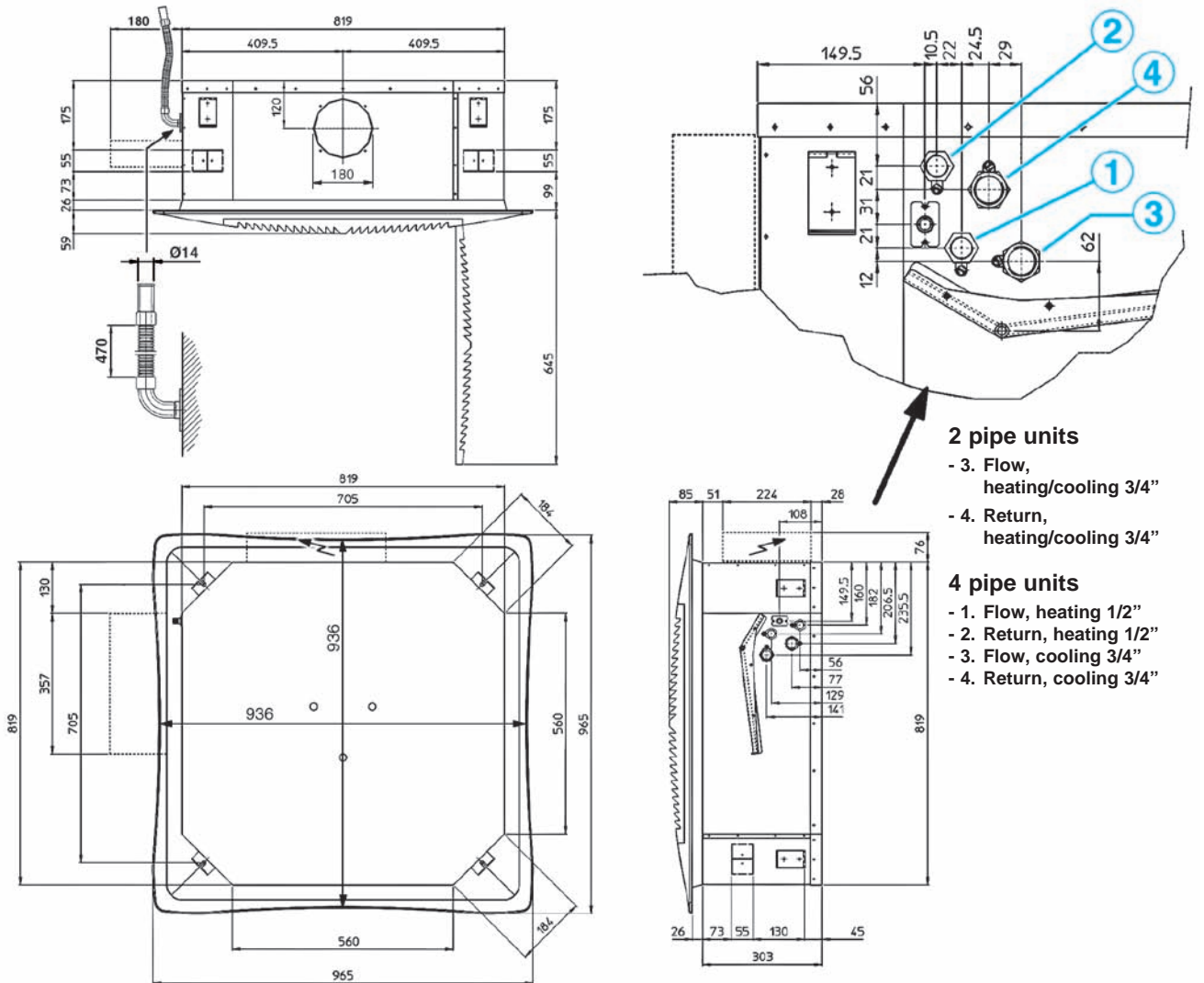
(receiver kit for MD diffuser for infra-red control: Code 9060178)



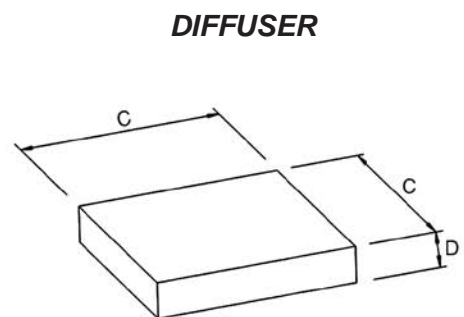
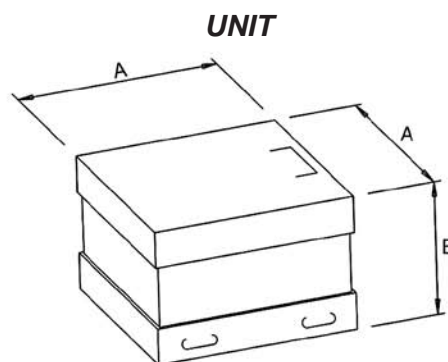
Model	A (mm)
MD	599
MDA	625

Model	UNIT		DIFFUSER		Packed unit Dimensions			
	Weights packed unit	Weights unpacked unit	Weights packed unit	Weights unpacked unit	A	B	C	D
	kg	kg	kg	kg	mm			
YHK 20-2 / 25-2	28	22	6	3	790	350	750	150
YHK 20-4 / 25-4	30	24						
YHK 40-2 / 40-4								
YHK 50-2 / 50-4								

YHK 65/95/110-2
YHK 65/95/110-4 (Version 800 x 800)



PACKED UNIT

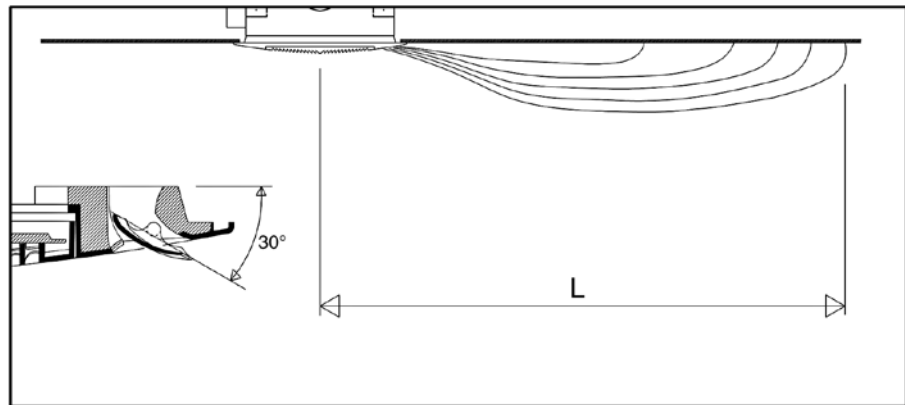


Model	UNIT		DIFFUSER		Packed unit Dimensions			
	Weights packed unit	Weights unpacked unit	Weights packed unit	Weights unpacked unit	A	B	C	D
	kg	kg	kg	kg	mm			
YHK 65-2	44	36	10	6	1050	400	1000	200
YHK 65-4	47	39						
YHK 95-2 / 95-4								
YHK 110-2 / 110-4								

The air throw indicated in the tables must only be considered the maximum value, as it may change significantly in relation to the dimensions of the room in which the appliance is installed and the positioning of the furniture in the room.

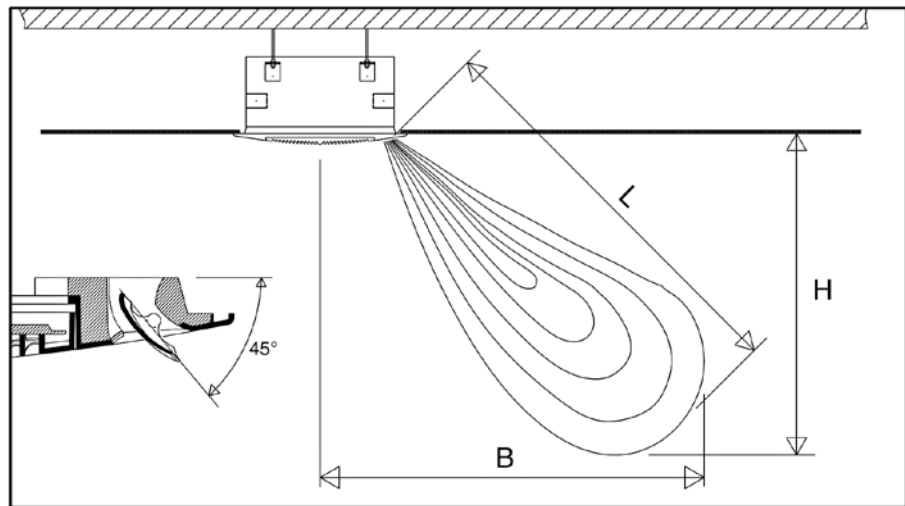
The useful throw **L** refers to the distance between the unit and the point where the air speed is 0.2 m/sec; if the louver has a gradient of 30° (recommended in cooling mode), the so-called “Coanda” effect will occur, illustrated in the first figure, while at a gradient of 45° (recommended in heating mode), there will be a downwards throw, as illustrated in the second figure.

With adjustable air diffusion louvers at 30°



Model	YHK 20/25			YHK 40			YHK 50			YHK 65			YHK 95			YHK 110		
Speed	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Air throw L m	3,0	3,5	3,8	3,0	3,8	4,5	3,5	4,2	5,0	3,2	3,7	4,3	3,4	4,0	5,0	3,4	4,6	5,5

With adjustable air diffusion louvers at 45°



Model	YHK 20/25			YHK 40			YHK 50			YHK 65			YHK 95			YHK 110		
Speed	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Air throw L m	3,3	3,9	4,2	3,3	4,2	4,8	3,9	4,5	5,2	3,5	4,1	4,8	3,8	4,6	5,4	3,8	5,1	5,8
Height H m	2,2	2,6	2,8	2,2	2,8	3,2	2,6	3,0	3,4	2,2	2,6	3,0	2,4	2,8	3,4	2,4	3,1	3,6
Distance B m	2,5	2,9	3,1	2,5	3,1	3,6	2,9	3,4	3,9	2,7	3,2	3,8	3,0	3,6	4,2	3,0	4,0	4,6

NOTE:

On heating it must be payed attention to rooms where the floor temperature is particularly low (for example less than 5°C).

In this situation the floor can cool the lower layer of air to a level that stop the uniform diffusion of the hot air coming from the unit, decreasing the throw figures shown in the table.

The cassette is fitted with inlets for fresh air to be mixed with return air inside the unit (Fig. 3).

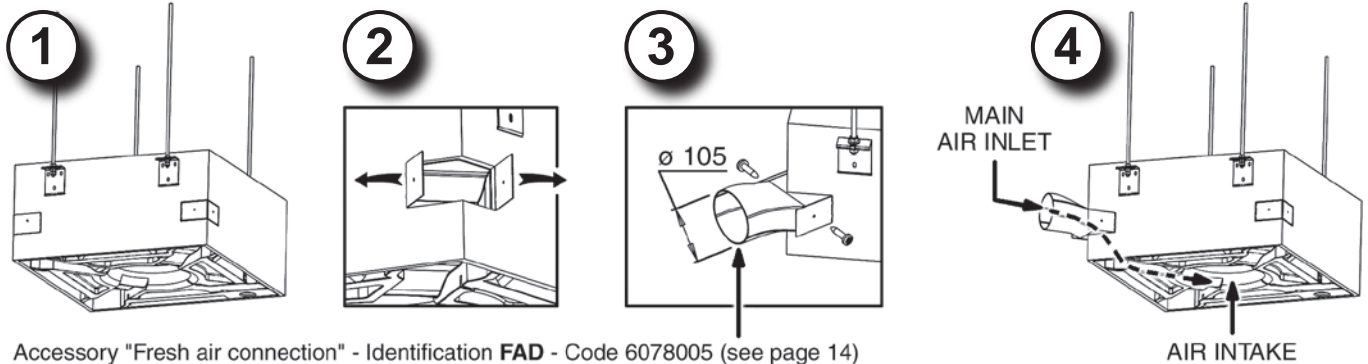
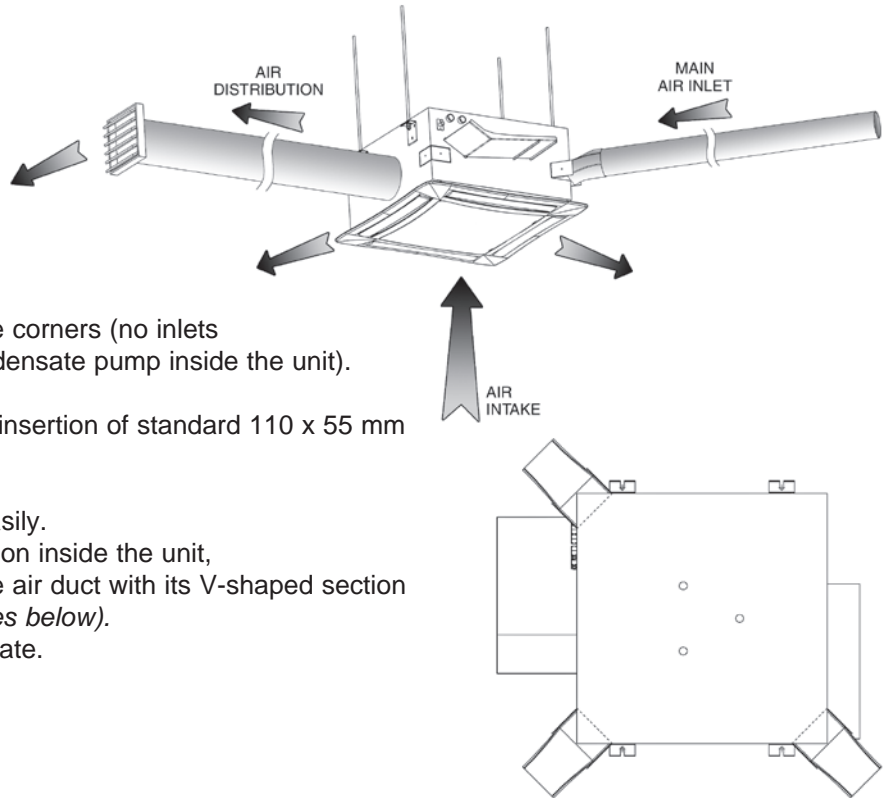
The fresh air flow is limited to 20% of the total fan coil air flow at medium speed and 100 m³/h for each treated air inlet.

The units feature fresh air inlets on three corners (no inlets on the fourth corner because of the condensate pump inside the unit).

The fresh air inlets are designed for the insertion of standard 110 x 55 mm rectangular ducts.

The air duct is connected quickly and easily. After removing the blank and the insulation inside the unit, the mounting plate is rolled back and the air duct with its V-shaped section must be pushed into the unit (see Figures below). The duct is then fixed to the mounting plate.

Note:
the fresh air must be filtered.



Accessory "Fresh air connection" - Identification **FAD** - Code 6078005 (see page 14)

Air distribution

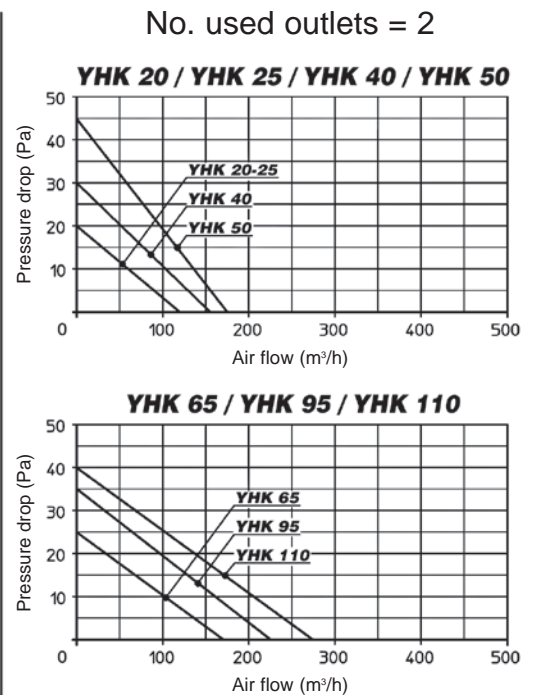
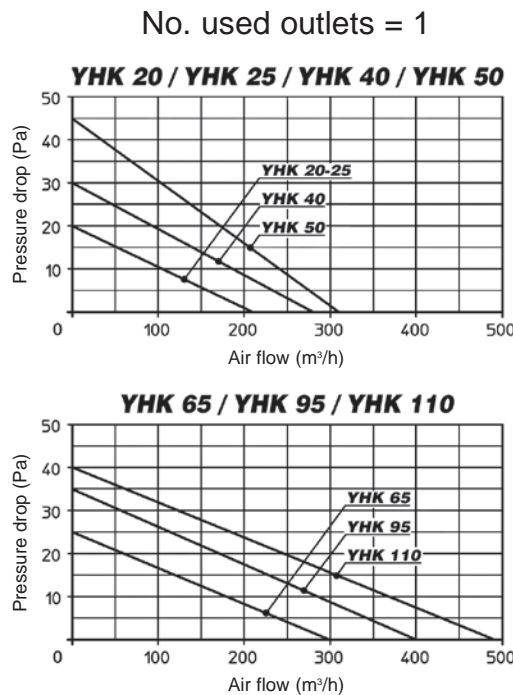
Two air outlets are provided on the side of the unit for connection to separate supply air outlets.

They can be used to supply air from the fan coil unit to distant areas of a room or even to a different room.

The total air flow does not change.

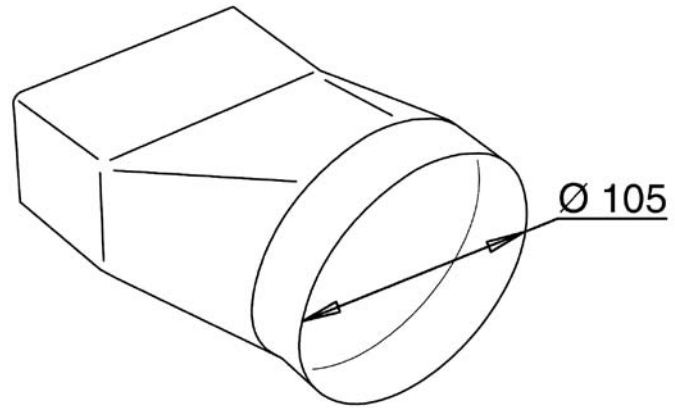
The air flow at high speed depending on the air duct pressure drop is shown in the tables below.

Note: all air ducts must be insulated in order to avoid condensation.



Fresh air connection

See page 13.

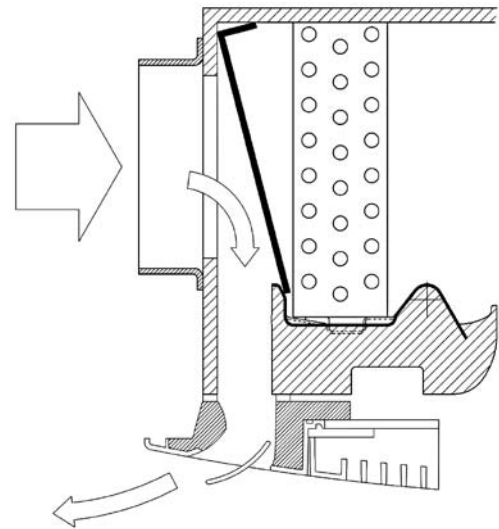


IDENTIFICATION	CODE
FAD	6078005

Fresh air kit

This is used to introduce primary air into the environment directly through the diffuser. The kit includes a flow separator to be fitted inside the cassette, and a circular fitting for connection to the flexible system ducting. The flow of air is sent directly to just one of the outlet louvers, without passing through the coil. The air flow of fresh air introduced into the environment depend on the inlet static pressure.

MODEL	YHK 20/25/40/50	YHK 65/95/110
IDENTIFICATION	FAK 600	FAK 800
CODE	9079230	9079231



The diameter of the fitting is 150 mm for YHK 20/25/40/50 and 180 mm for YHK 65/95/110.

Correlation between flow-rate / static pressure

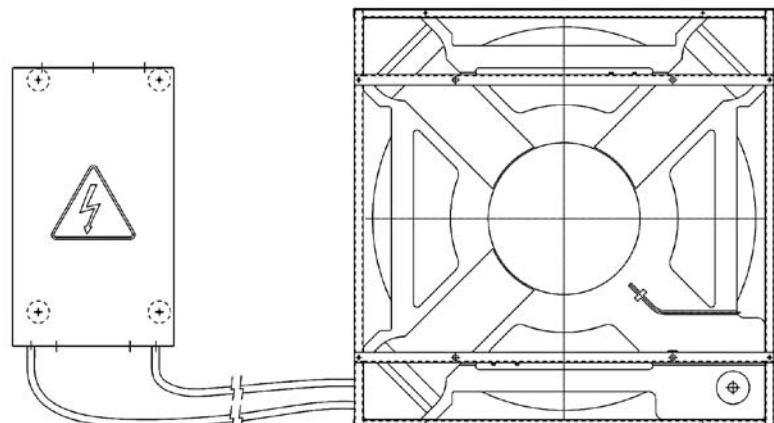
YHK 20/25/40/50		YHK 65/95/110	
m³/h	Pa	m³/h	Pa
80	3	160	3
120	8	200	8
160	15	300	15
200	25	400	25
240	36	500	36

Units with remote electric board

On request the YHK cassettes are available with electric control panel reachable from below and with the electric board that can be placed in a remote position. In this case the units are supplied with an electronic connecting control panel, fitted to the bottom side on the 4 smallest sizes and to the lateral side on the 3 biggest sizes.

The electronic control panel is connected to the fan motor, to the condensate pump and to the condensate level control.


A 6 m wire is also supplied with integral plug-in connections to connect the unit with the remote electric board that can be installed in a suitable and comfortable position, where the power and system connections can be made easily. This feature is not available for units with electric resistance or infra-red remote control.



ON-OFF valves with thermoelectric actuator

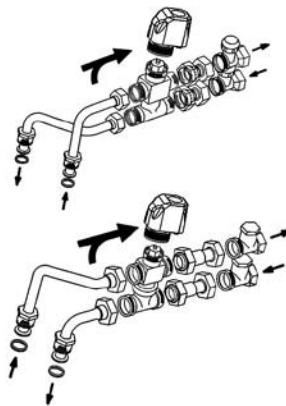
VALVE WITH MICROMETRIC LOCKSHIELD VALVE

3 ways




YHK
 20-2/20-4
 25-2/25-4
 40-2/40-4
 50-2/50-4

YHK
 65-2/65-4
 95-2/95-4
 110-2/110-4

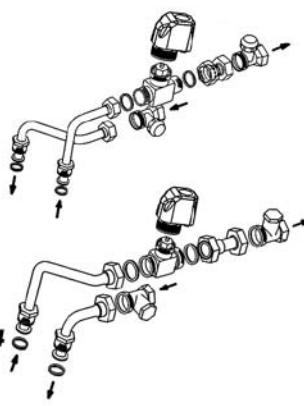


2 ways




YHK
 20-2/20-4
 25-2/25-4
 40-2/40-4
 50-2/50-4

YHK
 65-2/65-4
 95-2/95-4
 110-2/110-4



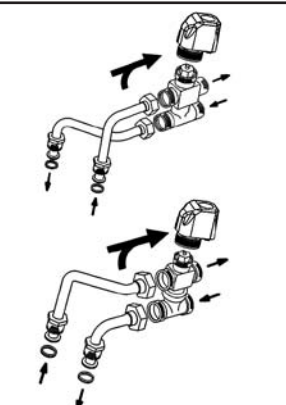
VALVE WITH SIMPLIFIED KIT

3 ways




YHK
 20-2/20-4
 25-2/25-4
 40-2/40-4
 50-2/50-4

YHK
 65-2/65-4
 95-2/95-4
 110-2/110-4

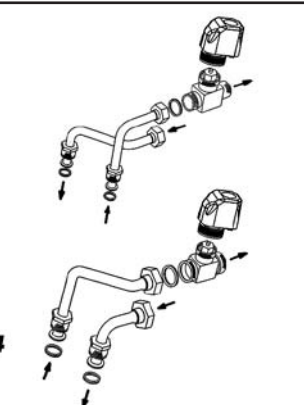


2 ways



YHK
 20-2/20-4
 25-2/25-4
 40-2/40-4
 50-2/50-4

YHK
 65-2/65-4
 95-2/95-4
 110-2/110-4



Technical data:

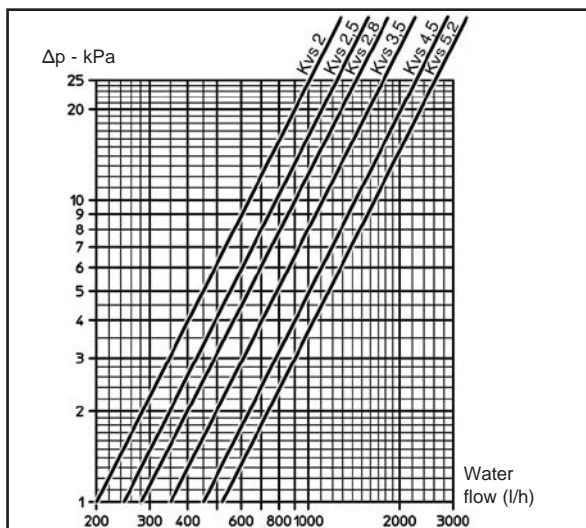
Rated pressure:	16 bar
Max. ambient temperature:	50 °C
Max. water flow temperature:	110 °C
Power:	230 V - 50/60 Hz
Rating:	3 VA
Protection:	IP 43
Travel time:	approx. 3 min.
Max. glycol content of water:	50%

Valves characteristics

Battery type	Model	2 way valves			3 way valves		
		K _{vs} m ³ /h	Δp _{max} kPa *	Valve ** connection	K _{vs} m ³ /h	Δp _{max} kPa *	Valve ** connection
Main	20/25/40/50-2	2,8	50	3/4"	2,5	50	3/4"
	20/25/40/50-4						
	65/95/110-2	5,2	60	1"	4,5	50	1"
	65/95/110-4						
Auxiliary	20/25/40/50-4	2,8	50	3/4"	2,5	50	3/4"
	65/95/110-4						

* maximum pressure difference for valve to close ** external thread, flat seal

Valves pressure drop



Valve set, 2 or 3 ways, ON-OFF, with thermoelectric actuator. The set includes connection pipes.

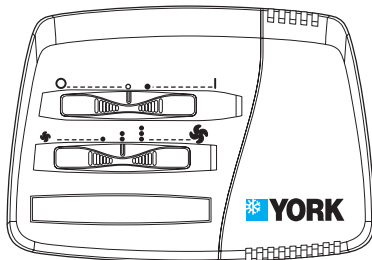
Note: The main battery lockshield valve connection is 1/2" female (Kvs 2) for YHK 20/25/40/50 sizes and 3/4" female (Kvs 3,5) for YHK 65/95/110 sizes, the auxiliary battery valve connection is 1/2" female (Kvs 2).

Note: The maximum pressure drop across the fully open valve should not exceed 25 kPa for cooling operation and 15 kPa for heating operation.



If using the YHK Cassette fan coils with electronic controllers, the voltage values at the autotransformer terminals must be kept in consideration (transformer return voltages). These values may reach 500 Vac.

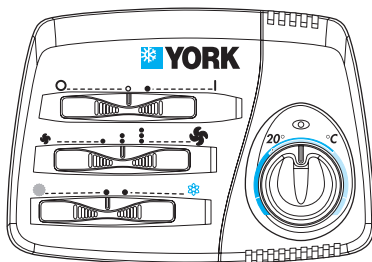
IDENTIFICATION	CODE
BR	9060540



Dimensions: 133x93x37 mm

- ON-OFF switch and 3 speed switch.
- Without thermostatic control.
- It can not control the valves.

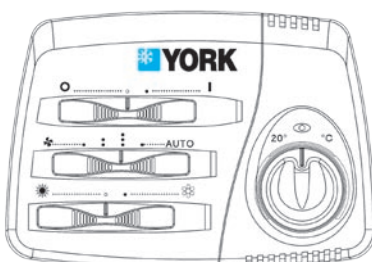
IDENTIFICATION	CODE
TR	9060541



Dimensions: 133x93x37 mm

- ON-OFF switch.
- Manual 3 speed switch.
- Summer/Winter switch.
- Electronic room thermostat for fan control (ON-OFF).
- Electronic room thermostat for valve(s) control (ON-OFF) (the fan keeps working).
- It allows to control the low temperature cut-out thermostat (TME).
- It allows to control the chilled water valve (ON-OFF) and the electric heater in the YHK-E version.
- It allows to control the Summer/Winter switch centralized and remote, or to control it with an automatic change-over fitted on the water pipe (for 2 pipe installations only). The latter case needs the adjustment of the jumper on the control board (see the instruction leaflet supplied with the control).

IDENTIFICATION	CODE
ATR	9060542



Dimensions: 133x93x37 mm

- ON-OFF switch.
- Manual or automatic 3 speed switch.
- Summer/Winter switch.
- Electronic room thermostat for fan control (ON-OFF).
- Electronic room thermostat for valve(s) control (ON-OFF) (the fan keeps working).
- Simultaneous thermostatic control of the valves and fan.
- It allows to control the low temperature cut-out thermostat (TME).
- It allows to control the chilled water valve (ON-OFF) and the electric heater in the YHK-E version.
- It allows to control the Summer/Winter switch centralized and remote, or to control it with an automatic change-over fitted on the water pipe (for 2 pipe installations only). The latter case needs the adjustment of the jumper on the control board (see the instruction leaflet supplied with the control).

N.B.: with 4 pipe installations and continuous chilled and hot water supply, it allows the automatic summer winter change-over in accordance to the room temperature (-1°C = Winter, +1°C = Summer, Neutral Zone 2°C).

Wall electronic controls

IDENTIFICATION	CODE
TMO-503-SV2	9060172



Dimensions: 118x87x8 mm

The TMO-503-SV2 control for fan coils with valves, is designed to be installed in a DIN 503 wall box. It is easy to use, it has a big and clear display, and a great precision. The control is supplied integral with the external frame, but it is possible to use frames of the most known brand on the market (BTicino, Vimar, AVE, Gewiss). The highest working electric absorption is 200 W. If the fan coil has an higher absorption or more units are connected to the same control, the speed switch REC-S must be installed.

- Manual or automatic speed switch.
- Manual Summer/Winter switch.
- Electronic thermostat for valves control (ON-OFF).
- Simultaneous thermostatic control of the valves and fan.
- It allows to control the low temperature cut-out thermostat, included with the control.

N.B.: with 4 pipe installations and continuous chilled and hot water supply, it allows the automatic summer/winter change-over in accordance to the room temperature (-1°C = Winter, +1°C = Summer, Neutral Zone 2°C).

IDENTIFICATION	CODE
DTR	9060521



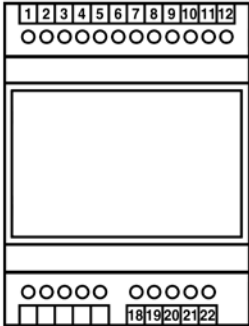
Dimensions on the wall: 133x93x27 mm
 Dimensions in the DIN 503 box: 133x93x18 mm

To be installed on the wall or in the DIN 503 box.

- Manual or automatic speed switch.
- Manual or centralized Summer/Winter switch.
- Electronic thermostat for fan control (ON-OFF).
- Electronic thermostat for valve(s) control (ON-OFF).
- Simultaneous thermostatic control of the valves and fan.
- It allows to control the low temperature cut-out thermostat (TME) (not to be used with YHK-E models).
- It allows to control the chilled water valve (ON-OFF) and the electric heater in the YHK-E version.
- It allows to control the fan and the electric heater.
- It allows to control up to 10 units with REC-D speed switch.

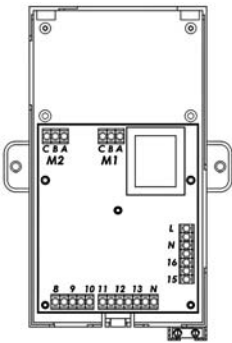
N.B.: with 4 pipe installations and continuous chilled and hot water supply, it allows the automatic summer/winter change-over in accordance to the room temperature (-1°C = Winter, +1°C = Summer, Neutral Zone 2°C).

IDENTIFICATION	CODE
REC-S	9079110



- Speed switch (Slave).
- It allows to control up to 8 units with only one centralized wall control (1 speed switch for each unit).
- For controls TR, ATR, and TMO-503-SV2.

IDENTIFICATION	CODE
REC-D	9060139



- Speed switch (Slave) for DTR.
- It allows to control up to 10 units with only one DTR centralized wall control.

Wall electronic control accessories

TME low temperature cut-out thermostat

Suitable for wall controls only (not infra-red remote control).
 To be fitted between the coil fins; when connecting the control, the TME probe cable must be separated from the power supply wires.
 To be used with the following controls: TR, ATR, DTR.
 It stops the fan when the water temperature is lower than 38°C and it starts the fan when is higher than 42°C.

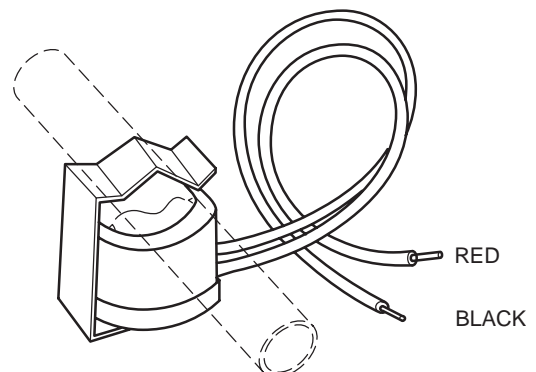
IDENTIFICATION	CODE
TME	3021091

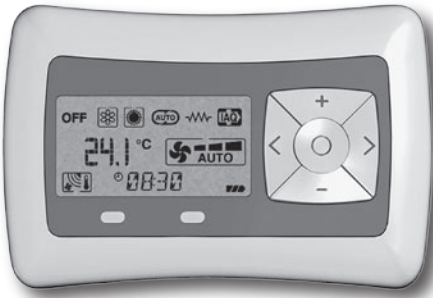


Change-Over CH 15-25

Suitable for wall controls only (not infra-red remote control).
 Automatic summer/winter switch
 to be installed in contact with the water circuit.
 For 2-tube installations only.
 To be used with the following controls: TR, ATR, DTR.

IDENTIFICATION	CODE
CH 15-25	9053049





Free

Free is an innovative, **fully wireless**, electronic system for use with fan coil units, based on radio communication.

This technology **provides installation flexibility and a more accurate measurement of the room temperature**. The probe can be moved until the most suitable position is found, without the worry of changes in the environment layout and of its furniture and also without mounting it on a wall.

If a new fan coil unit is added, no electrical wiring for the control system is required: just define the control unit and the probe which regulates it. The improved measurement accuracy derives from the possibility to position the probe near the typical location of the user: this enables to keep the temperature exactly at the required value with more energy savings compared with a traditional measurement system.

Transmission is based on communication protocol IEE802.15.4, the most suitable way to transmit a relatively low amount of information with very low consumption and high reliability.

The system has been certified by a leading independent body, officially recognized by the EU authorities and its sale has been authorized in all the EU and EFTA countries.

Main components

Free includes 3 main components:

- A remote **control** which features a button panel and LCD display and can be wall-mounted or positioned on a dedicated table support. It enables the control of all the operating variables of the fan coil units in different configurations. The control is battery powered. The temperature and the operating speed of the fan coil unit are set with two large buttons featuring user friendly graphics.

DESCRIPTION	IDENTIFICATION	CODE
Remote control	Free-Com	9060572



Control unit with support

- A **power unit** to be installed on the fan coil (fan coil interface). It controls the fan and the valves of the fan coil. The power unit is connected to the electric supply. The power unit receives the information required to control the fan coil both from the remote control and locally, such as the temperature of the coil.

DESCRIPTION	IDENTIFICATION	CODE
Power unit fitted on the unit	Free-Upm	9060571
Power unit not fitted on the unit	Free-Ups	9060570



Power unit

- A room **temperature probe**, which can be wall-mounted or positioned on a dedicated table support. It is a battery powered device, able to measure the air temperature in the spot where it is positioned, generating temperature information which is communicated to the other devices.

DESCRIPTION	IDENTIFICATION	CODE
Temperature probe	Free-Sen	9060573



Probe with support

Free wireless control system

Main features of the remote control

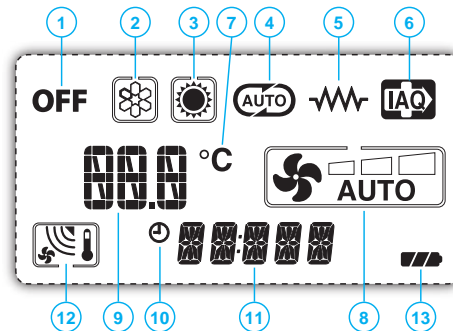
The control enables:

- Fan coil on/off switching
- Fan speed selection (high - medium - low - automatic)
- Summer/winter operation selection
- Valve on/off
- Real time clock setting
- Temperature setting
- Daily switch on/off setting (timer function)
- Enable/disable the timer function
- Activation of the (eventual) electrostatic filter
- Activation of the (eventual) electric heater



Main information displayed:

- ① On-off status
- ② Summer operation
- ③ Winter operation
- ④ Automatic season change
- ⑤ Electric heater
- ⑥ Electronic filter
- ⑦ Room temperature (with decimal accuracy)



- ⑧ Fan operating speed
- ⑨ Required/measured temperature
- ⑩ Timer
- ⑪ Clock
- ⑫ Transmission signal
- ⑬ Battery level

Main features of the power unit to be installed on the fan coil



The power unit controls the fan and the valves of the fan coil. The power unit receives the information required to control such units both from the remote control and locally.

It enables the following main actions:

- Fan on/off at a set speed
- Fan speed change (fan on/off)
- Water valve/s on/off (1 valve for 2 tube system - 2 valves for 4 tube system)
- Fan speed change operating the water valve/s
- Control of the electric heater as main heating unit or as integration to the battery supplied with hot water
- Control of the operation of the electrostatic filter (in parallel to the fan)
- Management of the dead zone function for 4-tube systems
- Available functional inputs:
 - Consent for remote on/off
 - Consent for remote Summer/Winter switch (centralized)
 - Consent for the activation of the Energy Saving function with setting change
 - Minimum probe
 - Probe for season change

Main features of the temperature probe



This device is able to measure the temperature of the air in the spot where it is positioned and to transmit it by means of radio communication to the other devices in the system. It is battery powered and can be freely positioned in the area to be air-conditioned.

Display:

- Measured environment temperature
- Transmission signal
- Clock
- Battery status

The YHK cassettes can be supplied with a micro-processor managing system operated by an infra-red remote control with liquid crystal display.

Integral with the unit is the room temperature probe, the water temperature probe (cut-out thermostat), the infra-red remote control and the electronic board with RS485 communicating connection which can control up to 20 units connected between them.

The electronic board is of master/slave mode and the serial communicating connection allows the serial connection; in the master/slave connection of more units, it is recommended to install the infra-red receiver on the master unit.



Control operations:

- Temperature set.
- Fan speed switch with possible automatic speed selection.
- 24 hours on/off program.
- on/off cooling valve control.
- on/off heating valve control.
- Control of the valves only or of the valves and the fan together.
- Valve control of 2 or 4 pipe systems with winter/summer switch on the infra-red control.
- Valve control of 4 pipe systems with automatic heating/cooling mode selection with 2°C dead zone.
- Activating the sensor connected to the T3 contact of the board (non active in the standard configuration), it works like a cut-out thermostat: fitted between the coil fins it stops the fan when the water temperature is lower than 38°C and it starts the fan when the water temperature reaches 42°C.



Unit with infra-red remote control

The electronic board, fitted inside the electrical panel, can manage different control modes so as to best satisfy the requirements of the installation. These modes are selected by suitably positioning the configuration dipswitches, which define the following main functions:

- **2 pipe / 4 pipe system:**
dip switch N.ro 1 = ON/OFF
- Operation **without / with** remote control:
dip switch N.ro 3 = ON/OFF
- Continuous ventilation:
dip switch N.ro 4 = ON
- Close valve and stop fan in cooling (autofan function):
dip switch N.ro 4 = OFF N.ro 5 = ON N.ro 6 = OFF
- Close valve and stop fan in heating mode (autofan function):
dip switch N.ro 4 = OFF N.ro 5 = OFF N.ro 6 = OFF
- Close valve and stop fan in both cooling and heating mode (autofan function):
dip switch N.ro 4 = OFF N.ro 5 = ON N.ro 6 = ON

The autofan function allows the simultaneous on/off control of the water valve and the fan, while at the same time optimising the operation of the unit. When reaching the set point, the controller closes the water valve (valve off) and only 3 minutes later stops the fan, so as to correctly compensate for the valve closing time. To prevent the air probe from measuring an incorrect temperature, when the fan is off the controller runs a number of fan ON cycles to annul the effect of any stratification of the air in the room.

In two pipe systems, a water probe (T2 accessory) can be installed on the supply pipe to the unit upstream of the water valve. Based on the temperature read in this section of the pipe, the device will select either cooling or heating operation.

The electronic board also features a contact for connection to a window switch or remote enabling signal. When the contact is closed, the unit can operate, when the contact is open, the unit stops. The same contact can be used for starting and stopping the unit from an external timer or any other remote switching device.

In addition, a series of units can be switched on or off at the same time, by using a flip-flop switch connected to the terminals present on the board.

Sensors that require a 12 volt power supply, for example occupancy sensors, can be connected to other terminals on the electronic board and then to the on/off contacts. The board is able to power external sensors with a maximum current of 60mA.

T2 Change-Over for infra-red remote control (accessory)

Suitable for units with infra-red remote control only.

The NTC sensor, if connected to the T2 contact of the board, works like a change-over: fitted in contact to the supply pipe it controls automatically the winter/summer switch in accordance to the water temperature.



IDENTIFICATION	CODE
T2	9079103

ETN +/-3°C control (wall-mounted control)

The ETN +/- 3 is a wall-mounted controller that can be connected to fan coils fitted with the **IR** electronic board.

The **ETN +/-3°C** control features the following functions:

- Switch the appliance ON and OFF.
- Set the fan speed.
- Set the range of temperature settings (default +/- 3 °C, modifiable on site up to +/- 9°C).
- Modify the set point determined by the MaxiNet system by a value of +/- X°C.

The Maxinet system (see the following pages) can set the operating mode, the set point and all other operating parameters of the unit, as well as display the settings made by the user. The Maxinet system always has priority over the ETN controller. For the correct use of the system, also see the manual for the cassette with remote control and the Maxinet supervision program.

IDENTIFICATION	CODE
ETN +/-3°C	9079106



Connection of a group of units with one control

A group of YHK cassette units with **IR** electronic board can be connected via a serial link and can consequently be managed at the same time by just one infra-red remote control or **ETN +/-3°C** wall mounted control. Using the special jumper present on the board, one unit must be configured as the master, and all the others as slaves. It is clear that the remote control must be pointed at the receiver on the master unit. To avoid problems, it is recommended to install and connect the receiver only on the master unit.

With infra-red remote control

One control for each cassette



One control for more cassettes (20 units max.)

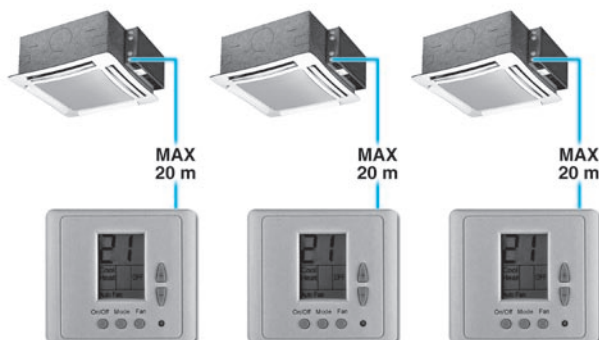
(MAXIMUM TOTAL LENGTH OF THE CONNECTION CABLE = 800 m)



With ETN +/-3°C

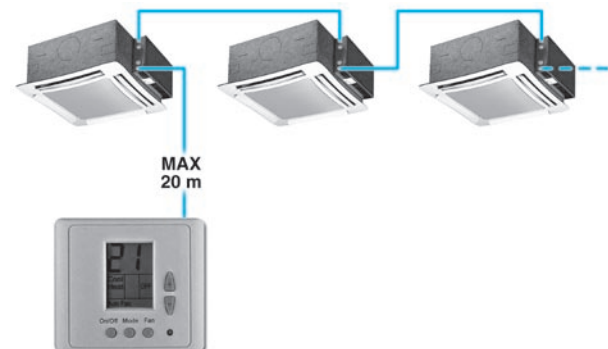
One control for each cassette

(MAXIMUM LENGTH OF THE CONNECTION CABLE = 20 m)



One control for more cassettes (20 units max.)

(MAXIMUM TOTAL LENGTH OF THE CONNECTION CABLE = 800 m)



Electric resistance YHK-E

The YHK 2 pipe models are available with electric resistance that is controlled in place of the heating battery valve. The electric resistance is controlled in place of the hot water valve and not as integration to it. The resistance is hermetically sealed and supplied inside the battery pipes and therefore can be only factory mounted.

The electric resistances of the YHK 25/40/50-2 units are for single phase 230V supply.

The electric resistances of the YHK 65/95/110-2 units are for three phase 400V supply.

A specific electronic board is fitted in the unit control panel and it is connected to the resistance and to the safety thermostat.

When the safety thermostat operates, it keeps open the resistance supply relays on the electronic board.

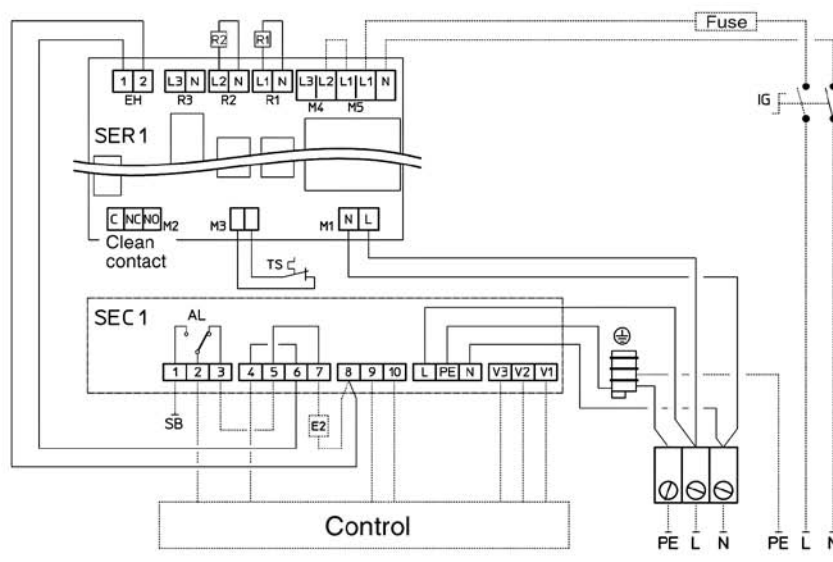
The rearmement is by electric means, cutting off the supply to the unit.

Model	YHK 25-2-E	YHK 40-2-E / 50-2-E	YHK 65-2-E / 95-2-E / 110-2-E
Emission	1500 Watt	2500 Watt	3000 Watt
Supply	230V ~	230V ~	400V ~
Number and Dia. of connecting wires	3 x 1,5 mm ²	3 x 2,5 mm ²	5 x 1,5 mm ²

Note: the cooling emission of the units is 95% of the emission in the tables of page 6.

Electric diagrams

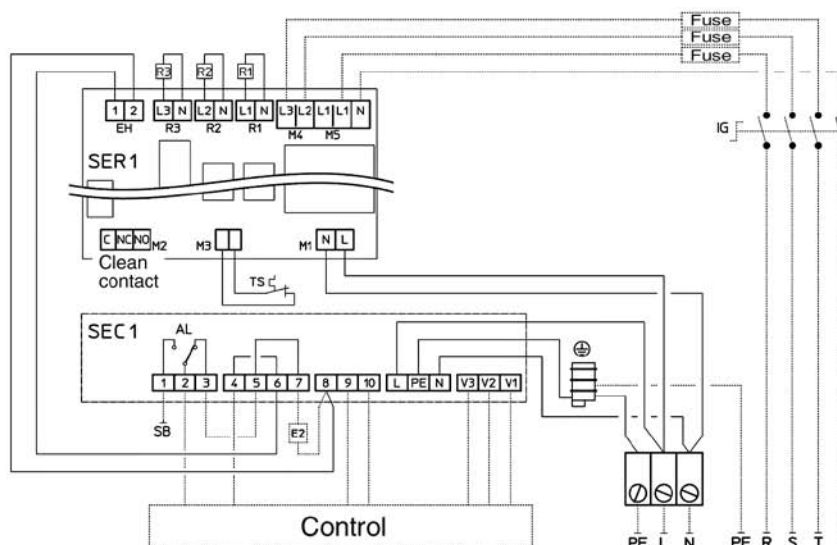
MODELS YHK 25-2 YHK 40-2 YHK 50-2



LEGEND

- IG = Main switch
- TS = Safety thermostat
- R1 = Resistance 1
- R2 = Resistance 2
- R3 = Resistance 3

MODELS YHK 65-2 YHK 95-2 YHK 110-2



Cassette unit operating limits with electric coil

Max. ambient temperature for Cassette unit with electric coil in heating mode: 25°C

Introduction

The YHK-ECM series uses an innovative brushless synchronous permanent magnet electric motor controlled by an inverter card that is directly installed on the unit.

The air flow can be varied **continuously** by means of a 1-10 V signal generated by JCI controls or by independent controllers (programmable controllers with a 1-10 V output).

The extreme efficiency, also at a low speed, makes possible a great reduction in electric consumption (**more than 75% less in comparison to a traditional motor**) with absorption values, under normal operating conditions, that are **no greater than 10 Watt** in the entire range.

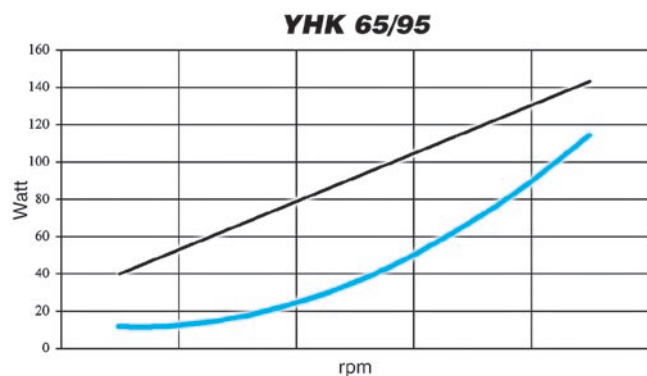
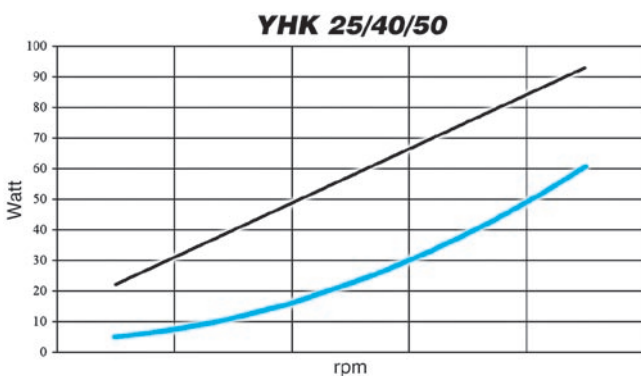
The brushless motor is characterised by a constant synchronous speed, independently of the applied load, that depends only on the motor power supply frequency, which is modulated by the inverter. It consumes less because:

- The motor always works at its point of maximum efficiency.
- In the brushless motor, the rotor's permanent magnets generate the magnetising power autonomously.
- The motor always operates at the synchronous speed, as a result there are no induced currents that reduce efficiency.

The main advantages are:

- Large reduction in energy consumption, thanks to an optimal response to the thermal load of the environment during every moment of the day.
- Operating silence at all rotation speeds.
- Ability to operate at any rotation speed.

MOTOR ABSORPTION



———— = **YHK** ————— = **YHK-ECM**

Main components

INTAKE GRID AND DISTRIBUTION OF THE AIR

Intake grids, frame and adjustable air distribution louvers on each side, made from ABS.

AKPA version : white ABS, RAL 9003

AKPB version : with intake grid, frame and louvers, choice of one colour only

AKPC version : with intake grid and louvers, choice of one colour, plus white ABS frame RAL 9003

AKPD version : with louvers, choice of one colour, while the grid and frame are made from ABS, RAL 9003

MD-600 version : metal diffuser painted in RAL 9003 white colour with 600x600 dimension to perfectly fit into the false ceiling standard modules without overlapping parts (800x800 model is not available).

CASING

Is made from galvanized steel with inside thermal insulation (closed cell polyethelene 10 mm thick) and outside anti-condensate lining.

CONTROL EQUIPMENT

YHKY-ECM version

It consists of the pump control circuit board and the inverter circuit board.

YHKH-ECM version

It consists of the IR10 electronic board (that integrates pump control) and the inverter board.

FAN ASSEMBLY

The fan assembly, which is mounted on anti-vibrating supports, is extremely silent.

The radial fan has been designed to optimise performance, using wing profile blades with a shape that reduce turbulence, increasing efficiency and reducing noise.

The fans are connected to a BLAC three phase permanent magnet DC brushless electronic motor that is controlled with current reconstructed according to a sinusoidal wave.

The inverter board that controls the motor operation is powered by 230 Volt, single-phase and, with a switching system, it generates a three-phase frequency modulated, wave form power supply.

The electric power supply required for the machine is therefore single-phase with voltage of 220 - 240 V and frequency of 50 - 60 Hz.

HEAT EXCHANGER

Made of copper tubes with bonded aluminium fins for maximum transfer contact.

The batteries are with 2 or 3 rows for 2 pipe models and 2+1 rows for 4 pipe models (the heating row is on the inside part of the battery).

For 4 pipe systems two versions are available:

YHK 25-4 and YHK 65-4 supply an higher heating emission;

YHK 40-6, YHK 50-6, YHK 95-6 supply an higher cooling emission.

The heat exchanger is not suitable for use in corrosive atmosphere or in environments where aluminium may be subject to corrosion.

CONDENSATE COLLECTION TRAY

High density ABS polystyrene foam condensate tray, shaped in order to optimize the air diffusion, fire retardant rating B2 to DIN 4102.

AIR FILTER

Synthetic washable filter, easily removable.

CONDENSATE PUMP

Float switch centrifugal pump with 650 mm of maximum head, integral to the unit and wired to the control panel on the outside of the casing.

VALVE SET

Two or three way valves for ON/OFF operation, with pipe mounting kit and thermostatic actuator.

EUROVENT Certification

Technical features

2 pipe units. The following standard rating conditions are used:

COOLING

Entering air temperature: + 27°C d.b., + 19°C w.b.
Water temperature: + 7/12°C

HEATING

Entering air temperature: + 20°C
Water temperature: + 50°C
water flow rate as for the cooling conditions

ECM MODEL		YHK 25-2			YHK 40-2			YHK 50-2			YHK 65-2			YHK 95-2		
		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Speed																
Air flow	m³/h	310	380	535	310	445	710	360	610	880	630	870	1165	710	1130	1770
Cooling total emission	kW	1,84	2,17	2,75	2,24	3,05	4,33	2,56	3,87	5,02	4,21	5,15	6,33	5,29	7,72	10,75
Cooling sensible emission	kW	1,35	1,61	2,09	1,57	2,17	3,18	1,81	2,81	3,74	3,03	3,77	4,72	3,69	5,53	7,94
Heating	kW	2,22	2,67	3,44	2,55	3,58	5,24	2,96	4,63	6,2	5,11	6,35	8,01	5,89	8,83	12,73
Water flow	l/h	317	373	473	385	524	744	441	666	864	723	885	1089	909	1328	1848
ΔP Cooling	kPa	4,9	6,6	10,1	4,6	9,4	15,1	5,9	12,4	19,7	10,9	15,6	22,7	9,4	18,5	33,6
ΔP Heating	kPa	4	5,5	8,7	3,6	6,6	13,1	4,7	10,5	17,7	8,7	12,8	19,5	7,2	14,9	28,8
Sound power Lw	dB(A)	33	39	47	33	43	54	37	50	60	33	39	48	34	47	57
Sound pressure Lp	dB(A)	24	30	38	24	34	45	28	41	51	24	30	39	25	38	48
Fan	W	5	8	16	5	11	31	7	21	62	10	17	33	10	32	108
Water content	l	1,4			2,1			2,1			3,0			4,0		
Dimensions	mm	575 x 575 x 275									820 x 820 x 303					

4 pipe units. The following standard rating conditions are used:

COOLING

Entering air temperature: + 27°C d.b., + 19°C w.b.
Water temperature: + 7/12°C

HEATING

Entering air temperature: + 20°C
Water temperature: + 70/60°C

ECM MODEL		YHK 25-4			YHK 40-6			YHK 50-6			YHK 65-4			YHK 95-6		
		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Speed																
Air flow	m³/h	310	380	535	310	445	710	360	610	880	630	870	1165	710	1130	1770
Cooling total emission	kW	1,85	2,18	2,77	2,09	2,81	3,93	2,38	3,53	4,53	4,3	5,28	6,51	4,98	7,17	9,87
Cooling sensible emission	kW	1,34	1,6	2,08	1,49	2,04	2,95	1,71	2,62	3,46	3,08	3,84	4,83	3,52	5,2	7,4
Water flow	l/h	318	375	476	359	483	676	409	608	779	740	908	1120	856	1233	1697
ΔP Cooling	kPa	4,6	6,2	9,5	3,5	5,7	10,5	4,1	8,4	13,1	9,4	13,6	19,8	8,8	17	30,1
Heating	kW	2,43	2,85	3,62	1,98	2,53	3,35	2,2	3,06	3,79	6,14	7,54	9,36	5,22	7,16	9,51
Water flow	l/h	209	245	311	170	217	288	189	263	326	528	649	805	449	616	818
ΔP Heating	kPa	5,7	7,6	11,7	3,5	5,5	9	4,5	7,5	11	10,5	15,5	22,5	6,5	11	18
Sound power Lw	dB(A)	33	39	47	33	43	54	37	50	60	33	39	48	34	47	57
Sound pressure Lp	dB(A)	24	30	38	24	34	45	28	41	51	24	30	39	25	38	48
Fan	W	5	8	16	5	11	31	7	21	62	10	17	33	10	32	108
Cooling water content	l	1,4			1,7			1,7			3,0			3,6		
Heating water content	l	0,7			0,5			0,5			1,4			1,1		
Dimensions	mm	575 x 575 x 275									820 x 820 x 303					

Condensate pump absorption: 8 W

The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m³ room and a reverberation time of 0.5 sec.

Emission

Cooling emission of 1 battery units (2 pipe installation)

Entering air temperature: +27°C d.b. +19°C w.b.

ECM Model	Speed	Air flow m³/h	EWT 5 - LWT 10°C			EWT 7 - LWT 12°C			EWT 9 - LWT 14°C			EWT 12 - LWT 17°C		
			Water flow	Total emission	Sensible emission	Water flow	Total emission	Sensible emission	Water flow	Total emission	Sensible emission	Water flow	Total emission	Sensible emission
			l/h	kW	kW	l/h	kW	kW	l/h	kW	kW	l/h	kW	kW
YHK 25-2	High	535	570	3,32	2,33	473	2,75	2,09	368	2,14	1,84	266	1,54	1,54
	Med	380	448	2,60	1,80	373	2,17	1,61	293	1,70	1,42	207	1,21	1,21
	Low	310	379	2,2	1,51	317	1,84	1,35	250	1,45	1,18	174	1,01	1,01
YHK 40-2	High	710	888	5,17	3,55	744	4,33	3,18	588	3,42	2,80	410	2,38	2,38
	Med	445	621	3,61	2,43	524	3,05	2,17	419	2,43	1,91	281	1,63	1,63
	Low	310	453	2,63	1,75	385	2,24	1,57	311	1,81	1,38	204	1,18	1,18
YHK 50-2	High	880	1035	6,02	4,18	864	5,02	3,74	678	3,94	3,30	482	2,80	2,80
	Med	610	793	4,61	3,15	666	3,87	2,81	528	3,07	2,48	363	2,11	2,11
	Low	360	520	3,02	2,02	441	2,56	1,81	354	2,06	1,59	235	1,37	1,37
YHK 65-2	High	1165	1304	7,58	5,27	1089	6,33	4,72	857	4,98	4,17	604	3,51	3,51
	Med	870	1055	6,13	4,21	885	5,15	3,77	701	4,07	3,32	483	2,81	2,81
	Low	630	859	4,99	3,39	723	4,21	3,03	576	3,35	2,67	392	2,28	2,28
YHK 95-2	High	1770	2210	12,85	8,88	1848	10,75	7,94	1456	8,47	7,00	1031	5,99	5,99
	Med	1130	1574	9,15	6,18	1328	7,72	5,53	1059	6,16	4,86	718	4,18	4,18
	Low	710	1068	6,21	4,12	909	5,29	3,69	734	4,27	3,24	482	2,80	2,80

Heating emission of 1 battery units (2 pipe installation)

Entering air temperature: +20°C

ECM Model	Speed	Air flow m³/h	EWT 45 - LWT 40°C		EWT 50 - LWT 40°C		EWT 55 - LWT 45°C		EWT 60 - LWT 50°C		EWT 70 - LWT 60°C	
			Water flow	Emission	Water flow	Emission	Water flow	Emission	Water flow	Emission	Water flow	Emission
			l/h	kW	l/h	kW	l/h	kW	l/h	kW	l/h	kW
YHK 25-2	High	535	493	2,87	272	3,17	330	3,83	387	4,49	500	5,82
	Med	380	383	2,22	213	2,48	257	2,99	300	3,49	387	4,51
	Low	310	318	1,85	178	2,07	214	2,49	250	2,91	322	3,75
YHK 40-2	High	710	749	4,36	420	4,89	505	5,87	589	6,85	758	8,81
	Med	445	512	2,98	290	3,38	347	4,04	404	4,70	517	6,01
	Low	310	365	2,12	209	2,43	249	2,90	289	3,36	368	4,28
YHK 50-2	High	880	886	5,15	494	5,75	595	6,92	696	8,09	896	10,42
	Med	610	663	3,85	373	4,34	448	5,20	522	6,07	670	7,79
	Low	360	423	2,46	241	2,81	288	3,35	335	3,89	427	4,96
YHK 65-2	High	1165	1152	6,70	642	7,47	774	9,00	904	10,51	1165	13,54
	Med	870	912	5,30	512	5,95	615	7,15	717	8,34	922	10,72
	Low	630	734	4,27	415	4,82	497	5,78	578	6,72	741	8,61
YHK 95-2	High	1770	1817	10,56	1015	11,81	1222	14,21	1428	16,60	1837	21,37
	Med	1130	1262	7,34	713	8,29	854	9,93	994	11,56	1274	14,82
	Low	710	842	4,90	481	5,60	574	6,67	666	7,74	849	9,87

Emission correction factors for different working conditions.
Multiply the factors by the emission figures in the 7-12°C table above.

Total emission				
Water (°C)	Air (°C)	25-18	26-18.5	28-20
7/12 °C	K	0,82	0,89	1,11
10/15 °C	K	0,56	0,63	0,82
14/18 °C	K	0,35	0,41	0,52

Sensible emission				
Water (°C)	Air (°C)	25-18	26-18.5	28-20
7/12 °C	K	0,9	0,94	1,06
10/15 °C	K	0,72	0,78	0,9
14/18 °C	K	0,5	0,58	0,72

Note:
the correction factors are indicative, as they are average values.

**Emission of 4 pipe units
with standard and enhanced cooling battery**

Cooling emission of 2 battery units (4 pipe installation)

Entering air temperature: +27°C d.b. +19°C w.b.

ECM Model	Speed	Air flow m ³ /h	EWT 5 - LWT 10°C			EWT 7 - LWT 12°C			EWT 9 - LWT 14°C			EWT 12 - LWT 17°C		
			Water flow	Total emission	Sensible emission	Water flow	Total emission	Sensible emission	Water flow	Total emission	Sensible emission	Water flow	Total emission	Sensible emission
			l/h	kW	kW	l/h	kW	kW	l/h	kW	kW	l/h	kW	kW
YHK 25-4	High	535	572	3,32	2,32	476	2,77	2,08	372	2,17	1,83	264	1,54	1,54
	Med	380	448	2,61	1,79	375	2,18	1,60	296	1,72	1,41	206	1,20	1,20
	Low	310	378	2,20	1,50	318	1,85	1,34	252	1,46	1,18	172	1,00	1,00
YHK 40-6	High	710	812	4,72	3,29	676	3,93	2,95	528	3,07	2,60	378	2,20	2,20
	Med	445	576	3,35	2,28	483	2,81	2,04	382	2,22	1,79	262	1,53	1,53
	Low	310	425	2,47	1,66	359	2,09	1,49	287	1,67	1,31	192	1,12	1,12
YHK 50-6	High	880	940	5,46	3,86	779	4,53	3,46	606	3,52	3,05	442	2,57	2,57
	Med	610	729	4,24	2,93	608	3,53	2,62	477	2,77	2,31	337	1,96	1,96
	Low	360	486	2,82	1,91	409	2,38	1,71	325	1,89	1,50	221	1,29	1,29
YHK 65-4	High	1165	1341	7,79	5,40	1120	6,51	4,83	882	5,13	4,26	619	3,6	3,6
	Med	870	1081	6,29	4,30	908	5,28	3,84	719	4,18	3,38	497	2,89	2,89
	Low	630	877	5,10	3,45	740	4,30	3,08	590	3,43	2,71	398	2,32	2,32
YHK 95-6	High	1770	2035	11,83	8,26	1697	9,87	7,40	1332	7,74	6,53	951	5,53	5,53
	Med	1130	1467	8,53	5,82	1233	7,17	5,20	979	5,69	4,58	672	3,90	3,90
	Low	710	1010	5,87	3,93	856	4,98	3,52	687	3,99	3,09	457	2,66	2,66

Heating emission of 2 battery units (4 pipe installation)

Entering air temperature: +20°C

ECM Model	Speed	Air flow m ³ /h	EWT 45 - LWT 40°C		EWT 50 - LWT 40°C		EWT 55 - LWT 45°C		EWT 60 - LWT 50°C		EWT 70 - LWT 60°C	
			Water flow	Emission	Water flow	Emission	Water flow	Emission	Water flow	Emission	Water flow	Emission
			l/h	kW	l/h	kW	l/h	kW	l/h	kW	l/h	kW
YHK 25-4	High	535	305	1,78	161	1,87	198	2,30	236	2,74	311	3,62
	Med	380	241	1,40	127	1,48	156	1,82	186	2,16	245	2,85
	Low	310	205	1,19	108	1,26	133	1,55	158	1,84	209	2,43
YHK 40-6	High	710	279	1,62	139	1,61	176	2,04	213	2,48	288	3,35
	Med	445	211	1,23	106	1,23	133	1,55	161	1,87	217	2,53
	Low	310	165	0,96	83	0,97	105	1,22	127	1,47	170	1,98
YHK 50-6	High	880	315	1,83	156	1,82	198	2,31	241	2,80	326	3,79
	Med	610	255	1,48	127	1,48	161	1,87	195	2,27	263	3,06
	Low	360	184	1,07	93	1,08	117	1,36	141	1,64	189	2,20
YHK 65-4	High	1165	793	4,61	421	4,90	517	6,01	613	7,13	805	9,36
	Med	870	639	3,72	340	3,96	417	4,85	494	5,75	649	7,54
	Low	630	521	3,03	278	3,23	340	3,96	403	4,68	528	6,14
YHK 95-6	High	1770	800	4,65	413	4,80	514	5,97	615	7,15	818	9,51
	Med	1130	603	3,50	312	3,63	388	4,51	464	5,39	616	7,16
	Low	710	440	2,56	229	2,67	284	3,30	339	3,94	449	5,22

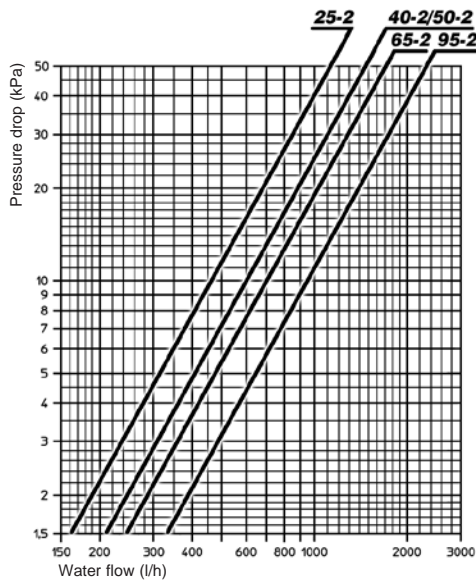
Emission correction factors for different working conditions.
Multiply the factors by the emission figures in the 7-12°C table above.

Total emission					Sensible emission				
Water (°C)	Air (°C)	25-18	26-18.5	28-20	Water (°C)	Air (°C)	25-18	26-18.5	28-20
7/12 °C	K	0,82	0,89	1,11	7/12 °C	K	0,9	0,94	1,06
10/15 °C	K	0,56	0,63	0,82	10/15 °C	K	0,72	0,78	0,9
14/18 °C	K	0,35	0,41	0,52	14/18 °C	K	0,5	0,58	0,72

Note:
the correction factors are indicative, as they are average values.

Water side pressure drop

2 pipe installation

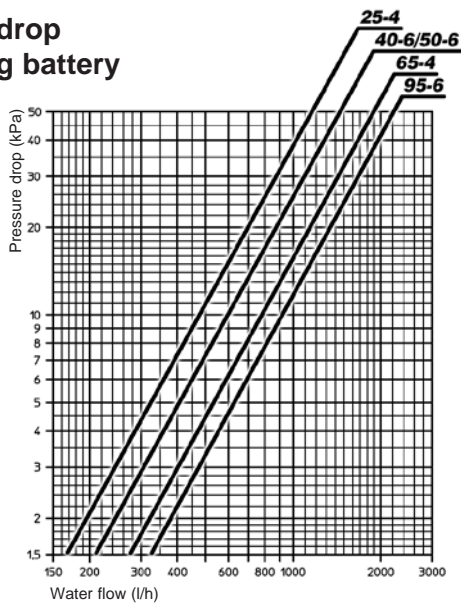


Pressure drop
for mean water temperature of 10°C,
for different temperatures multiply the pressure drop figure
by the K correction factors in the table.

°C	20	30	40	50	60	70	80
K	0,94	0,90	0,86	0,82	0,78	0,74	0,70

4 pipe installation

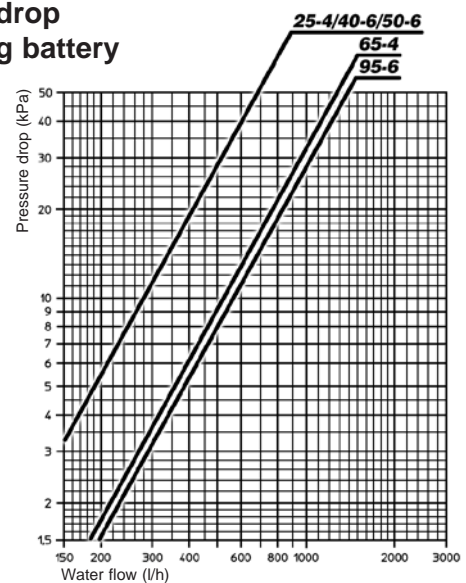
Pressure drop for cooling battery



Pressure drop
for mean water temperature of 10°C,
for different temperatures multiply the pressure drop figure
by the K correction factors in the table.

°C	20	30	40	50	60	70	80
K	0,94	0,90	0,86	0,82	0,78	0,74	0,70

Pressure drop for heating battery



Pressure drop
for mean water temperature of 65°C,
for different temperatures multiply the pressure drop figure
by the K correction factors in the table.

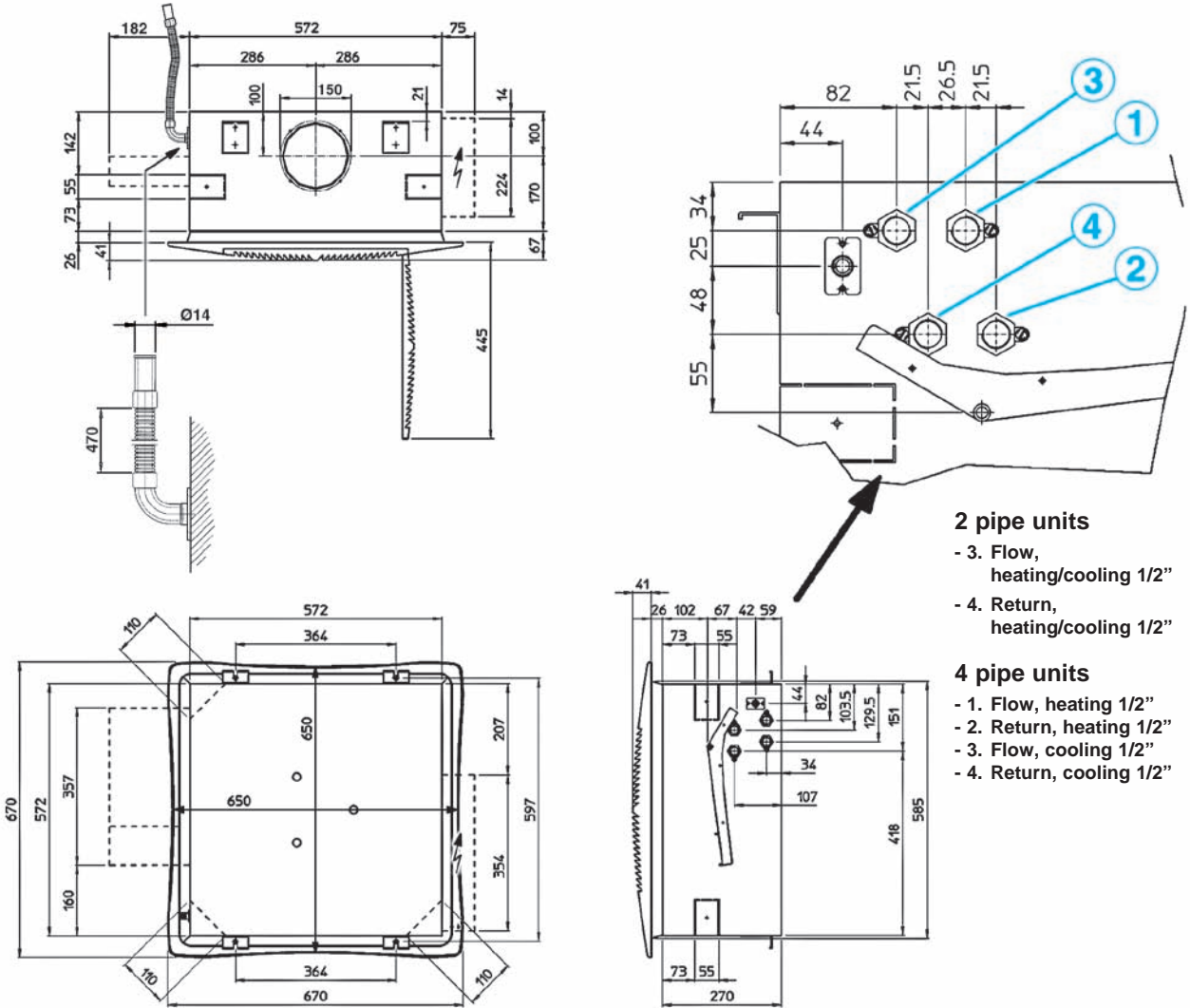
°C	40	50	60	70	80
K	1,14	1,08	1,02	0,96	0,90

Working conditions

Water flow	MAX. working pressure 8 bars	MIN. entering water temperature: + 5°C
		MAX. entering water temperature: + 80°C
Air flow	Suitable relative humidity 15 - 75%	MIN. entering air temperature: 6°C
		MAX. entering air temperature: 40°C
Supply	Single phase 230V 50Hz	
Installation	MAX. height: See table on page 12	

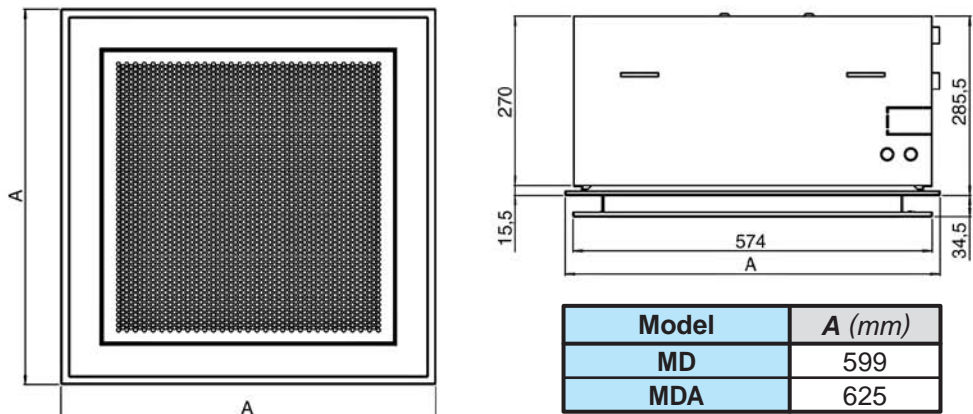
Dimensions and weights

YHK 25-2 / 25-4 / 40-2 / 40-6 / 50-2 / 50-6 (Version 600 x 600)



MD-600 METAL DIFFUSER

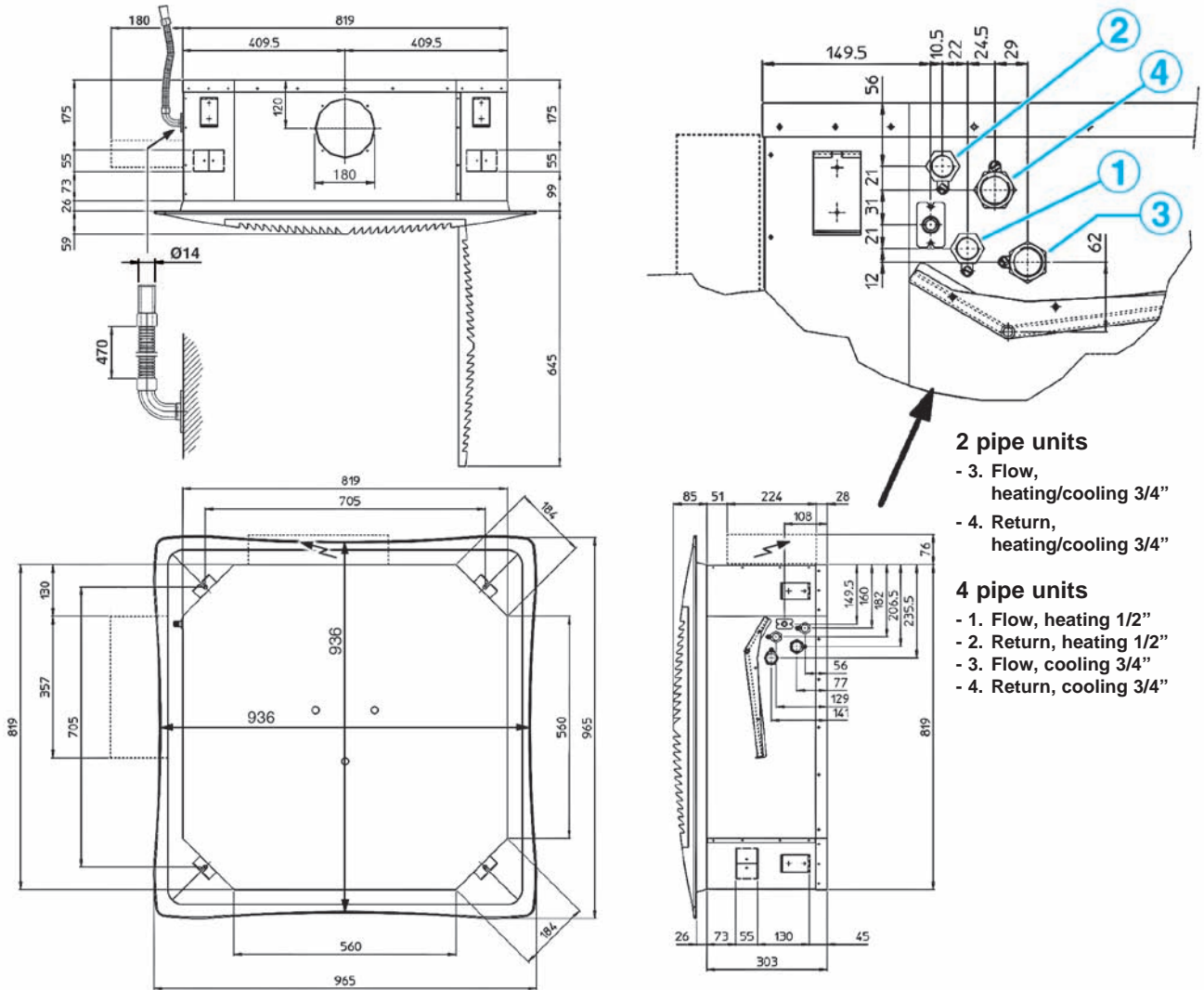
(receiver kit for MD diffuser for infra-red control: Code 9060178)



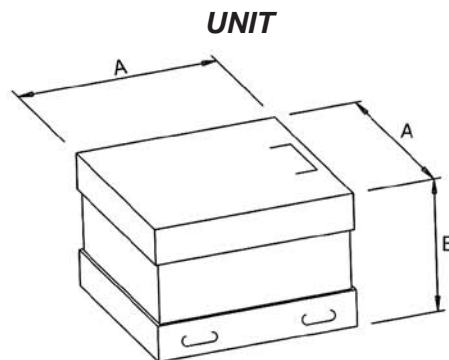
ECM Model	UNIT		DIFFUSER		Packed unit Dimensions			
	Weights packed unit	Weights unpacked unit	Weights packed unit	Weights unpacked unit	A	B	C	D
	kg	kg	kg	kg	mm			
YHK 25-2	28	22	6	3	790	350	750	150
YHK 25-4	30	24						
YHK 40-2 / 40-6								
YHK 50-2 / 50-6								

Dimensions and weights

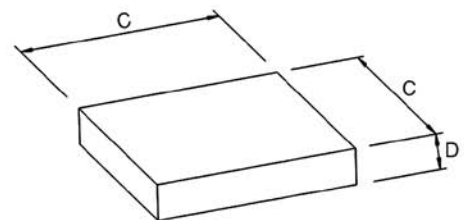
YHK 65-2 / 65-4 / 95-2 / 95-6 (Version 800 x 800)



PACKED UNIT



DIFFUSER



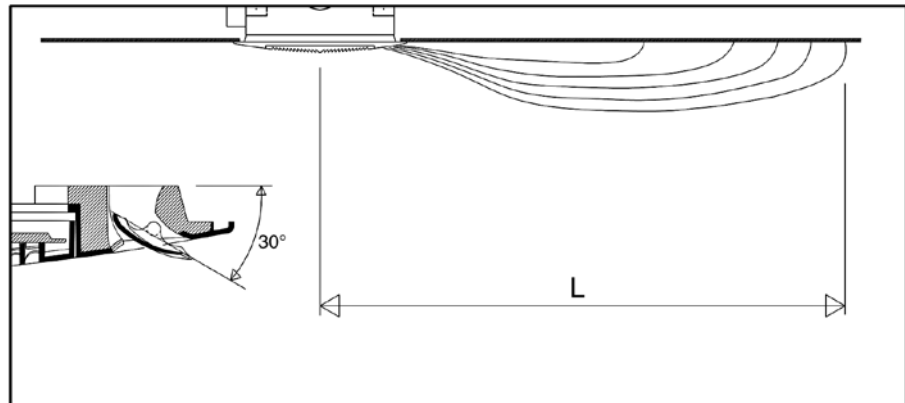
ECM Model	UNIT		DIFFUSER		Packed unit Dimensions			
	Weights packed unit	Weights unpacked unit	Weights packed unit	Weights unpacked unit	A	B	C	D
					mm			
YHK 65-2	kg	kg	kg	kg	1050	400	1000	200
YHK 65-4	44	36	10	6				
YHK 95-2 / 95-4	47	39						

Air throw

The air throw indicated in the tables must only be considered the maximum value, as it may change significantly in relation to the dimensions of the room in which the appliance is installed and the positioning of the furniture in the room.

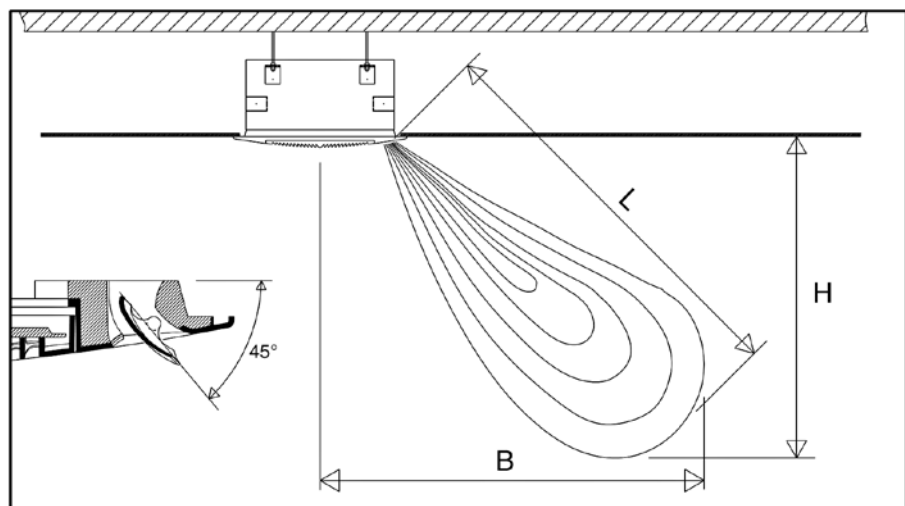
The useful throw **L** refers to the distance between the unit and the point where the air speed is 0.2 m/sec; if the louver has a gradient of 30° (recommended in cooling mode), the so-called “Coanda” effect will occur, illustrated in the first figure, while at a gradient of 45° (recommended in heating mode), there will be a downwards throw, as illustrated in the second figure.

With adjustable air diffusion louvers at 30°



ECM Model		YHK 25			YHK 40			YHK 50			YHK 65			YHK 95		
Speed		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Air throw	L m	3,0	3,5	3,8	3,0	3,8	4,5	3,5	4,2	5,0	3,2	3,7	4,3	3,4	4,0	5,0

With adjustable air diffusion louvers at 45°



ECM Model		YHK 25			YHK 40			YHK 50			YHK 65			YHK 95		
Speed		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Air throw	L m	3,3	3,9	4,2	3,3	4,2	4,8	3,9	4,5	5,2	3,5	4,1	4,8	3,8	4,6	5,4
Height	H m	2,2	2,6	2,8	2,2	2,8	3,2	2,6	3,0	3,4	2,2	2,6	3,0	2,4	2,8	3,4
Distance	B m	2,5	2,9	3,1	2,5	3,1	3,6	2,9	3,4	3,9	2,7	3,2	3,8	3,0	3,6	4,2

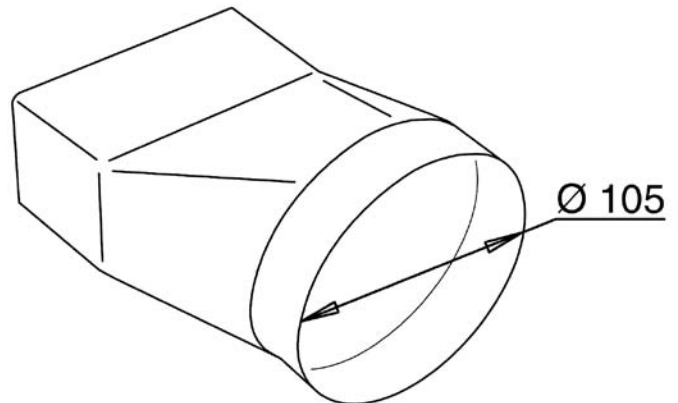
NOTE: On heating it must be payed attention to rooms where the floor temperature is particularly low (for example less than 5°C).

In this situation the floor can cool the lower layer of air to a level that stop the uniform diffusion of the hot air coming from the unit, decreasing the throw figures shown in the table.

Accessories

Fresh air connection

See page 13.



IDENTIFICATION	CODE
FAD	6078005

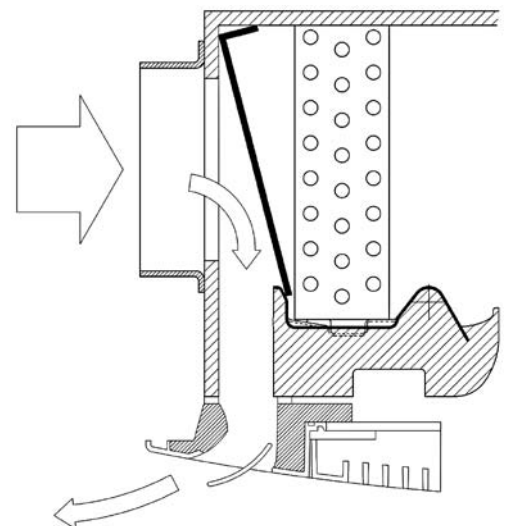
Fresh air kit

This is used to introduce primary air into the environment directly through the diffuser. The kit includes a flow separator to be fitted inside the cassette, and a circular fitting for connection to the flexible system ducting. The flow of air is sent directly to just one of the outlet louvers, without passing through the coil. The air flow of fresh air introduced into the environment depend on the inlet static pressure.

MODEL	YHK 25/40/50	YHK 65/95
IDENTIFICATION	FAK 600	FAK 800
CODE	9079230	9079231

Correlation between flow-rate / static pressure

YHK 25/40/50		YHK 65/95	
m ³ /h	Pa	m ³ /h	Pa
80	3	160	3
120	8	200	8
160	15	300	15
200	25	400	25
240	36	500	36




The diameter of the fitting is 150 mm for YHK 25/40/50 and 180 mm for YHK 65/95.

ON-OFF valves with thermoelectric actuator

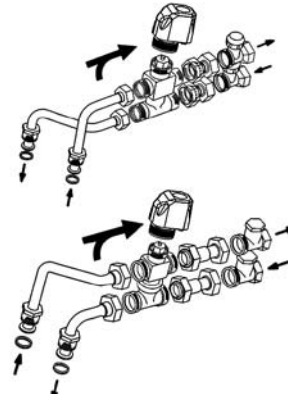
VALVE WITH MICROMETRIC LOCKSHIELD VALVE

3 ways




YHK
25-2/25-4
40-2/40-6
50-2/50-6

YHK
65-2/65-4
95-2/95-6

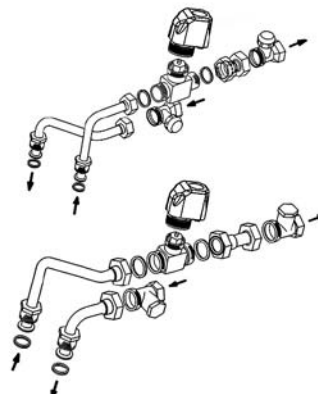


2 ways




YHK
25-2/25-4
40-2/40-6
50-2/50-6

YHK
65-2/65-4
95-2/95-6



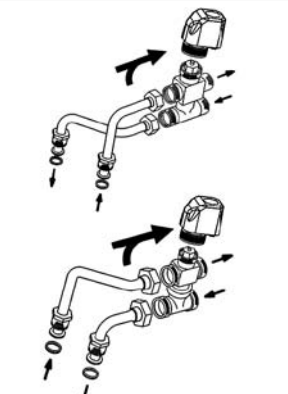
VALVE WITH SIMPLIFIED KIT

3 ways




YHK
25-2/25-4
40-2/40-6
50-2/50-6

YHK
65-2/65-4
95-2/95-6

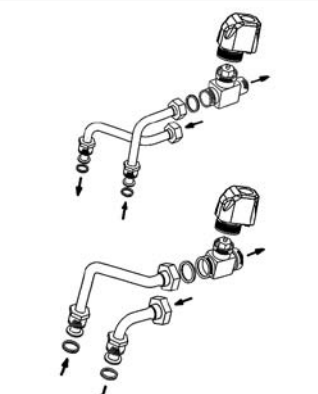


2 ways



YHK
25-2/25-4
40-2/40-6
50-2/50-6

YHK
65-2/65-4
95-2/95-6



Technical data:

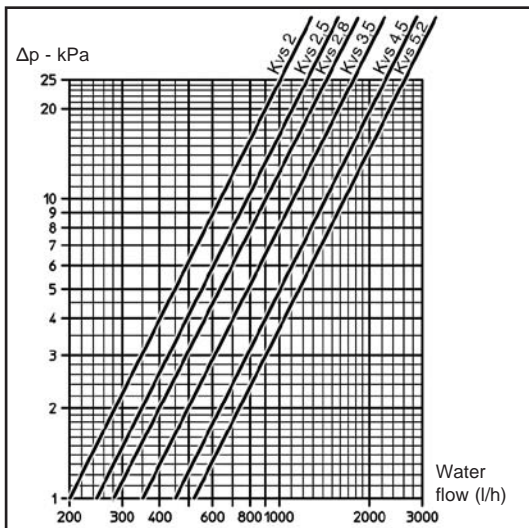
Rated pressure:	16 bar
Max. ambient temperature:	50 °C
Max. water flow temperature:	110 °C
Power:	230 V - 50/60 Hz
Rating:	3 VA
Protection:	IP 43
Travel time:	approx. 3 min.
Max. glycol content of water:	50%

Valves characteristics

Battery type	ECM Model	2 way valves			3 way valves		
		Kvs m ³ /h	Δp _{max} kPa *	Valve ** connection	Kvs m ³ /h	Δp _{max} kPa *	Valve ** connection
Main	25/40/50-2	2,8	50	3/4"	2,5	50	3/4"
	25-4 40/50-6						
	65/95-2	5,2	60	1"	4,5	50	1"
	65-4 / 95-6						
Auxiliary	25-4 40/50-6	2,8	50	3/4"	2,5	50	3/4"
	65-4 / 95-6						

* maximum pressure difference for valve to close ** external thread, flat seal

Valves pressure drop



Valve set, 2 or 3 ways, ON-OFF, with thermoelectric actuator. The set includes connection pipes.

Note: The main battery lockshield valve connection is 1/2" female (Kvs 2) for YHK 25/40/50 sizes and 3/4" female (Kvs 3,5) for YHK 65/95 sizes, the auxiliary battery valve connection is 1/2" female (Kvs 2).

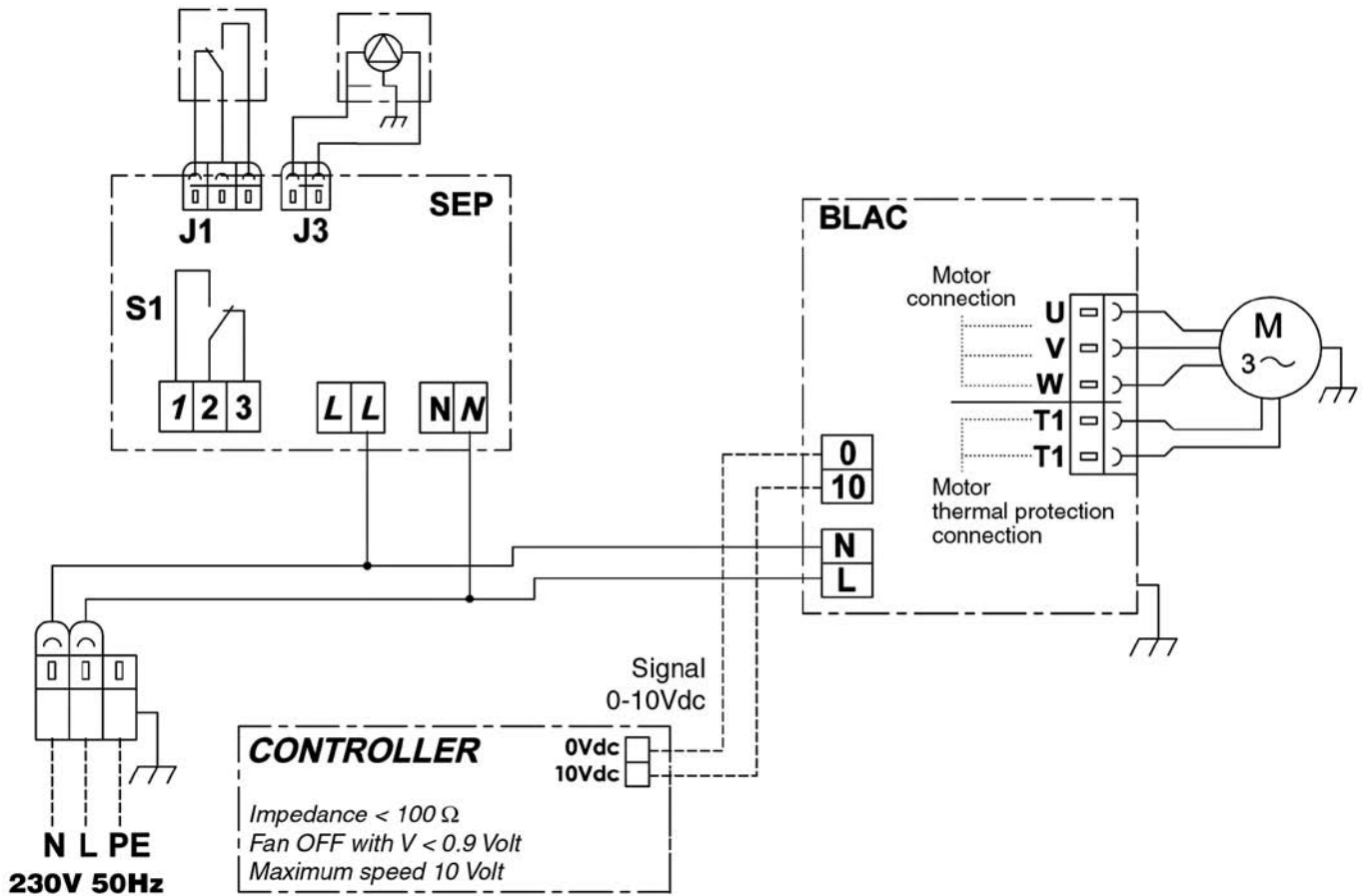
Note: The maximum pressure drop across the fully open valve should not exceed 25 kPa for cooling operation and 15 kPa for heating operation.

YHKY-ECM configuration

For this cassette configuration, the 1-10 Vdc signal, which controls the inverter, must be supplied by a controller with the following signal specifications:

- Impedance < 100 Ω;
- Maximum speed 10Vdc;
- Fan OFF with V < 0.9Vdc.

YHKY-ECM electric diagram

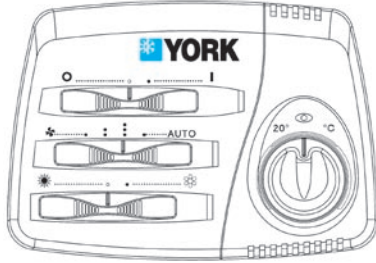


LEGEND

- SEP = Pump control board M = Electronic motor
 BLAC = Inverter circuit board CONTROLLER = Controller

Wall electronic control

IDENTIFICATION	CODE
CR-T-ECM	9066342



Dimensions: 133x93x37 mm

The control must always be connected with UPM-ECM power unit (fitted on the unit) or with UPS-ECM power unit (not fitted on the unit).

- It allows to control up to 16 units (one power unit for each unit).
- ON-OFF switch.
- Manual or automatic 3 speed switch.
- Summer/Winter switch.
- Electronic room thermostat for fan control (ON-OFF).
- Electronic room thermostat for valve(s) control (ON-OFF) (the fan keeps working).
- Simultaneous thermostatic control of the valves and fan.
- It allows to control the low temperature cut-out thermostat (NTC).
- It allows to control the Summer/Winter switch centralized and remote, or to control it with an automatic change-over fitted on the water pipe (for 2 pipe installations only). The latter case needs the adjustment of the jumper on the control board (see the instruction leaflet supplied with the control).

N.B.: with 4 pipe installations and continuous chilled and hot water supply, it allows the automatic summer winter change-over in accordance to the room temperature (-1°C = Winter, +1°C = Summer, Neutral Zone 2°C).

DESCRIPTION	IDENTIFICATION	CODE
Power unit for CR-T-ECM remote control (fitted on the unit)	UPM-ECM	9066341
Power unit for CR-T-ECM remote control (not fitted on the unit)	UPS-ECM	9066340



Power unit to be installed on the fan coil (fan coil interface). It controls the fan and the valves of the fan coil. The power unit is connected to the electric supply. The power unit receives the information required from the control.

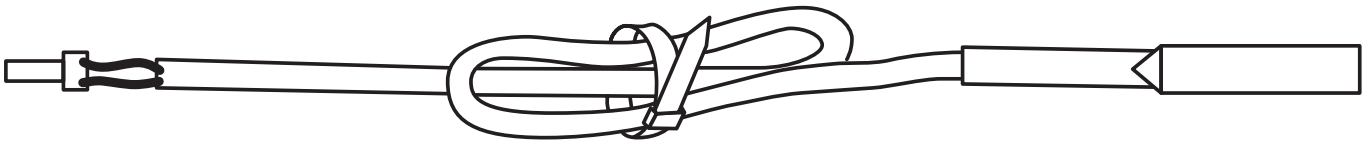
Control power absorption: 1,5 VA

Wall electronic control accessories

NTC low temperature cut-out thermostat

To be fitted between the coil fins;
when connecting the control, the NTC probe cable
must be separated from the power supply wires.
To be used with the CR-T-ECM control.
It stops the fan
when the water temperature is lower than 28°C
and it starts the fan when is higher than 33°C.

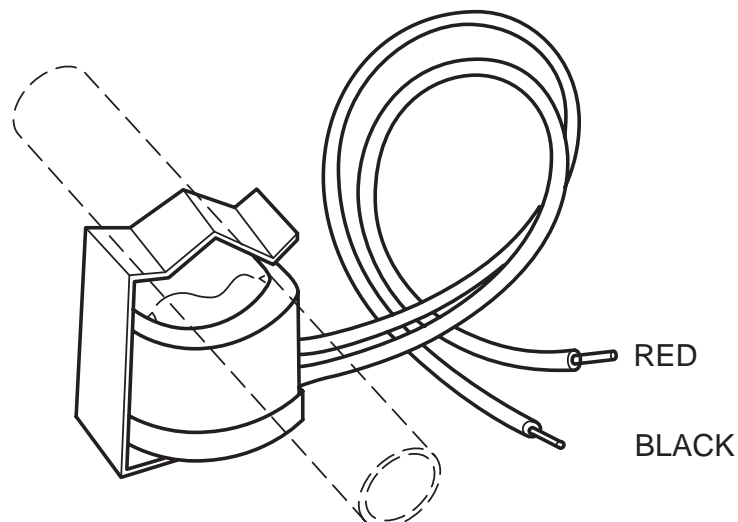
IDENTIFICATION	CODE
NTC	3021090



Change-Over CH 15-25

Automatic summer/winter switch
to be installed in contact with the water circuit.
For 2-tube installations only
(not to be used with 2 way valve).
To be used with the CR-T-ECM control.

IDENTIFICATION	CODE
CH 15-25	9053049



YHKH-ECM configuration

This version is supplied integral with the H-ECM electronic board that supplies the 0-10V signal to the inverter board, in accordance to the instructions received by the wall control (ETN/ECM model) or the infra-red remote control (RT03/ECM model).

The cassettes can be controlled as stand-alone, master/slave or in serial connection.

With the dip switches on the H-ECM board, it is possible to choose the following working modes:

- **2 pipe / 4 pipe system:**
dip switch N.ro 1 = **ON/OFF**
- Continuous ventilation:
dip switch N.ro 4 = **ON**
- Close valve and stop fan in cooling (autofan function):
dip switch N.ro 4 = **OFF** N.ro 5 = **ON** N.ro 6 = **OFF**
- Close valve and stop fan in heating mode (autofan function):
dip switch N.ro 4 = **OFF** N.ro 5 = **OFF** N.ro 6 = **OFF**
- Close valve and stop fan in both cooling and heating mode (autofan function):
dip switch N.ro 4 = **OFF** N.ro 5 = **ON** N.ro 6 = **ON**

The autofan function allows the simultaneous on/off control of the water valve and the fan, while at the same time optimising the operation of the unit. When reaching the set point, the controller closes the water valve (valve off) and only 3 minutes later stops the fan, so as to correctly compensate for the valve closing time. The autofan function can be activated in cooling only mode, in heating only mode or in both operating modes.

In two pipe systems, a water probe can be installed on the supply pipe to the unit upstream of the water valve.

Based on the temperature read in this section of the pipe, the device will select either cooling or heating operation.

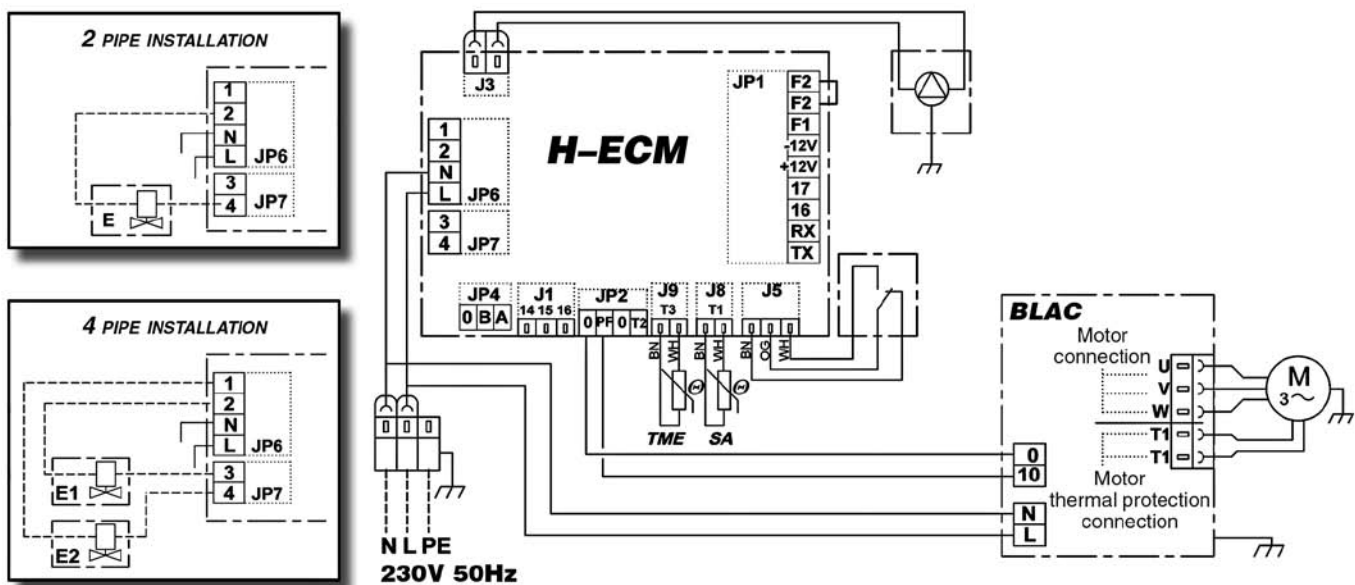
The electronic board also features a contact for connection to a window switch or remote enabling signal. When the contact is closed, the unit can operate, when the contact is open, the unit stops. The same contact can be used for starting and stopping the unit from an external timer or any other remote switching device.

In addition, a series of units can be switched on or off at the same time, by using a flip-flop switch connected to the terminals present on the board (F1 – 12V).

Sensors that require a 12 volt power supply, for example occupancy sensors, can be connected to other terminals on the electronic board and then to the on/off contacts. The board is able to power external sensors with a maximum current of 60mA.

Electric board absorption: 2,5 VA

YHKH-ECM electric diagram



LEGEND	H-ECM = Electronic control board	E = Valve set (2 pipe installation)	TME = Low temperature cut-out thermostat
	BLAC = Inverter circuit board	E1 = Hot water valve	SA = Air intake temp. probe
	M = Electronic motor	E2 = Chilled water valve	

Infra-red remote control with receiver

The infra-red remote control features the following functions:

- Temperature set.
- Fan speed switch with possible automatic speed selection.
- 24 hours ON/OFF program.
- ON/OFF cooling valve control.
- ON/OFF heating valve control.
- Control of the valves only or of the valves and the fan together.
- Valve control of 2 or 4 pipe systems with winter/summer switch on the infra-red control.
- Valve control of 4 pipe systems with automatic heating/cooling mode selection with 2°C dead zone.

IDENTIFICATION	CODE
RT03/ECM	9079220



INSTALLATION EXAMPLE
WITH INFRA-RED REMOTE CONTROL

ETN/ECM control (wall-mounted control)

The **ETN/ECM** control features the following functions:

- Switch the appliance ON and OFF.
- Set the fan speed.
- Set the range of temperature settings (default +/- 3 °C, modifiable on site up to +/- 9°C).
- Modify the set point determined by the MaxiNet system by a value of +/- X°C.

The Maxinet system (see the following pages) can set the operating mode, the set point and all other operating parameters of the unit, as well as display the settings made by the user. The Maxinet system always has priority over the ETN controller. For the correct use of the system, also see the manual for the cassette with remote control and the Maxinet supervision program.

IDENTIFICATION	CODE
ETN/ECM	3021232



Management of more units with one control

A group of YHK cassette units with **EC-IR** electronic board can be connected via a serial link and can consequently be managed at the same time by just one infra-red remote control or **ETN/ECM** wall-mounted control. Using the special jumper present on the board, one unit must be configured as the master, and all the others as slaves. It is clear that the remote control must be pointed at the receiver on the master unit. To avoid problems, it is recommended to install and connect the receiver only on the master unit.

With infra-red remote control

One control for each cassette



**One control for more cassettes
(20 units max.)**

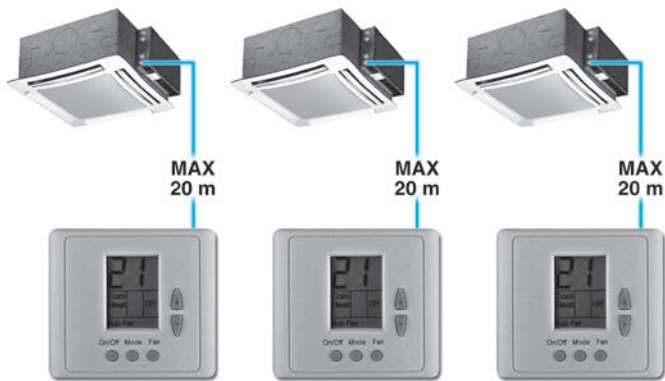
(MAXIMUM TOTAL LENGTH OF THE CONNECTION CABLE = 800 m)



With ETN/ECM

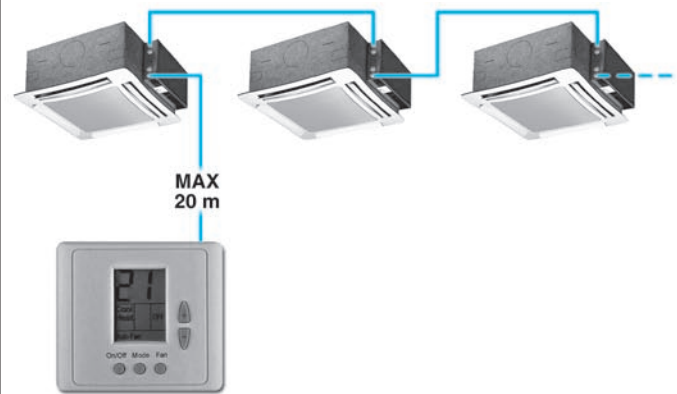
One control for each cassette

(MAXIMUM LENGTH OF THE CONNECTION CABLE = 20 m)



**One control for more cassettes
(20 units max.)**

(MAXIMUM TOTAL LENGTH OF THE CONNECTION CABLE = 800 m)



T2 Change-Over for infra-red remote control (accessory)

IDENTIFICATION	CODE
T2	9079103



Suitable for YHKH-ECM units only.

The NTC sensor, if connected to the T2 contact of the board, works like a change-over: fitted in contact to the supply pipe it controls automatically the winter/summer switch in accordance to the water temperature.

Unit with IR / EC-IR electronic board

Multifunction control

Another option available for the serial communication between the units is the possibility to connect up to 60 **YHK** units in series (the maximum length of the connection cable must not exceed 800 m) and manage them with just one wall-mounted intelligent DRC-DI controller. The wall-mounted controller can be used to set the operating mode for each individual unit connected, display the operating conditions of each individual unit, and set the ON/OFF time sets for each day of the week. If more than 60 units need to be connected, two or more wall-mounted intelligent controllers must be used. Each wall-mounted controller only manages the units it is connected to.

The DRC-DI control is used to manage a series of fan coils, up to a maximum of 60 units, from one single control point. The DRC-DI control communicates via a serial line with all the units connected, with the possibility of controlling them all together or individually. In fact, the unique address of each individual fan coil means that all the units can be called at the same time, or the individual unit called, to perform the following functions:

- display the current operating mode, the fan speed, the set point
- display the room temperature measured on the individual unit
- turn all the units ON and OFF at the same time or alternatively each unit individually
- change the operating mode (fan only, heating, cooling, automatic changeover)
- change the set point

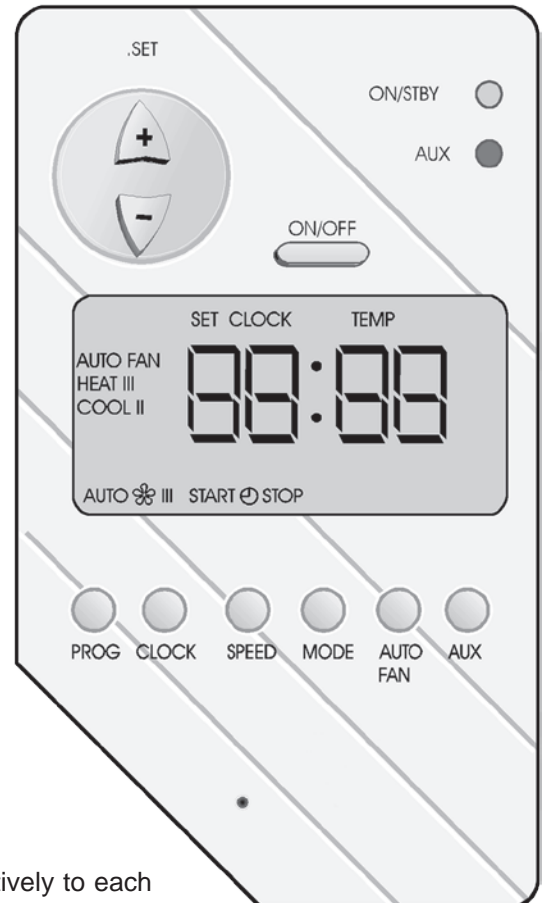
Each function can then be sent to all the units connected, or alternatively to each individual unit.

Different set points or operating modes can be set for each individual unit.

The DRC-DI panel can also be used for the time management of the units over the week. Two on times and two off times can be set on the units for each day of the week.

The weekly programming mode can be stopped at any time, returning to the manual setting and then weekly programming mode can subsequently be started again.

IDENTIFICATION	CODE
DRC-DI	9079102



Maxinet management system for a network of fan coils

Maxinet program for managing a network of IR hydronic terminals

Maxinet is a centralised control system for networks of IR hydronic terminals, based on software that runs on Windows XP professional Service Pack 2.

The Maxinet software offers a practical and economical solution for managing the terminals, with the simple click of the mouse.

The main characteristics include simplicity of use, an extremely complete and functional weekly program, and the possibility to access the historical operating data for each individual appliance connected.

The program exploits all the potential of our appliances with remote controls, representing an addition to the latter.

The Maxinet program is a control tool that can be used as a replacement for the remote control, or in parallel, however with the possibility of setting the priority, that is, the settings made using Maxinet can have priority over those made using the remote control.



The program can be used to:

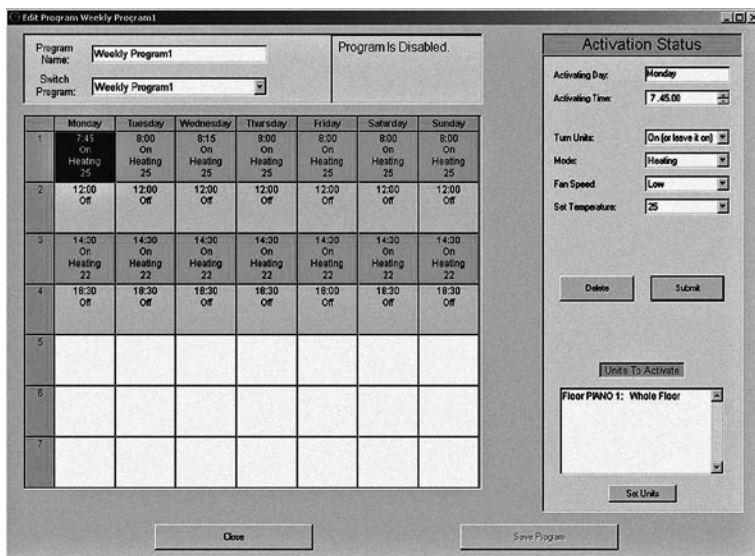
- create uniform logical blocks (groups of units on individual floors, in offices or rooms).
- save weekly programs configured for different types of operation (summer, winter, mid seasons, closing periods etc.); these can then be recalled and activated with a simple click of the mouse. Weekly on/off cycles can be set for individual units or groups of units.
- set the operating conditions for each individual unit or groups of units (operating mode, fan speed, temperature setting).
- set the set point limits for each individual unit or groups of units.
- switch each individual unit or groups of units on or off.

The “Weekly Program” can be used to set the unit operating parameters for each day of the week. Up to 20 different weekly programs can be set.

Time bands are available for each day of the week.

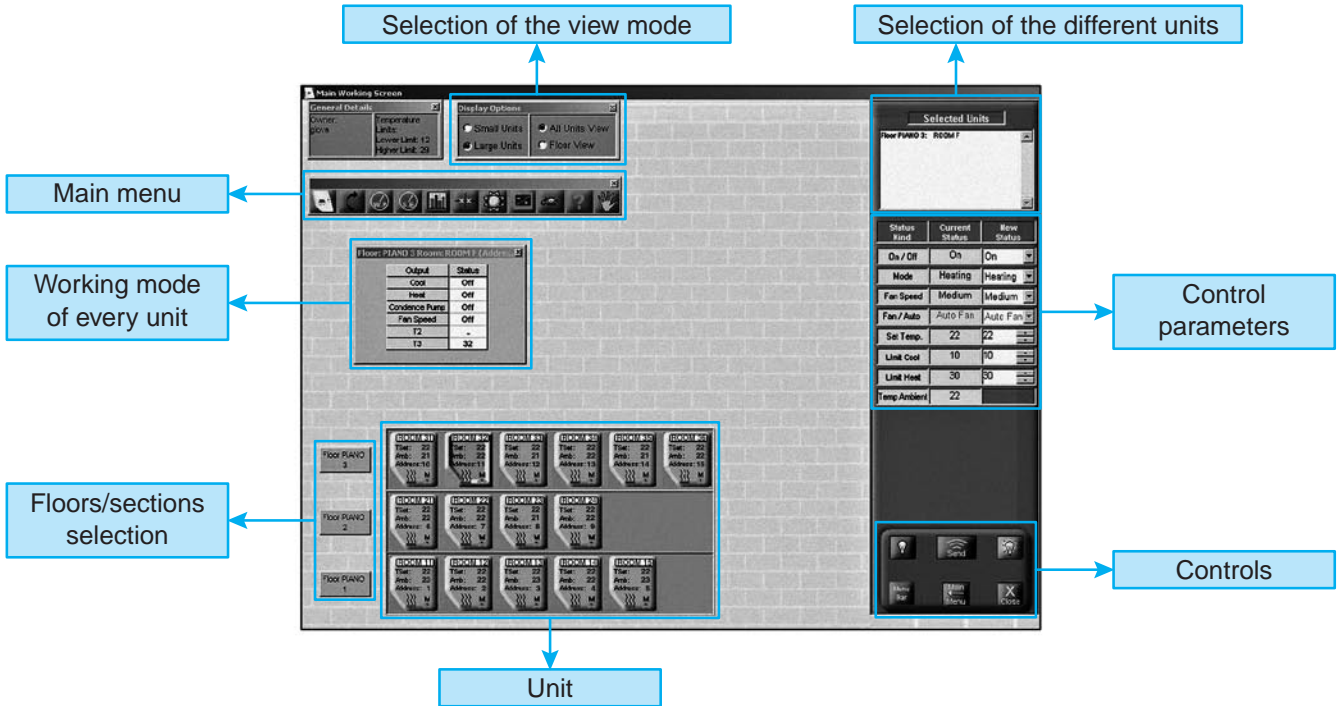
The time and the type of operation to be performed by the unit can be set for each band.

The time and the operating parameters can then be displayed before being sent to the unit and implemented.

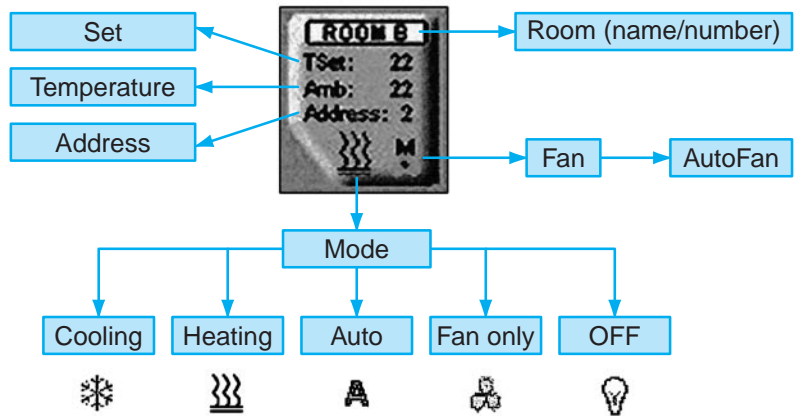


Maxinet management system for a network of fan coils

One especially useful function of the weekly program is to have the program to carry out timed checking routines to identify whether the operating mode or temperature setting have been modified on the terminals, for example using the local remote control. If activated, the routine will reset all the unit operating parameters to the values set in the weekly program.

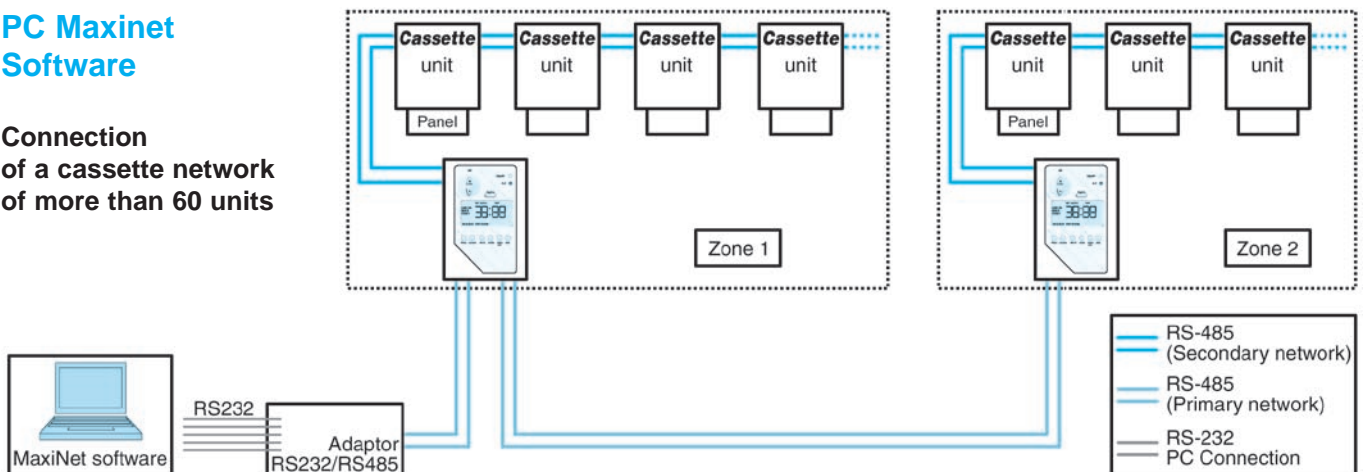


The main program screen can display and interact with the entire network of units. An individual unit, a group of units or the entire network can be called so as to make modifications to the operating mode and the set point. The user can then check the operating status of each individual unit, read the room temperature, the coil temperature and the operating status of the condensate drain pump or any alarms.



PC Maxinet Software

Connection of a cassette network of more than 60 units



Accessories MaxiNet 7

IDENTIFICATION	CODE
S08R	9079105

In addition to the air-conditioning units, MaxiNet can also work with general output cards.

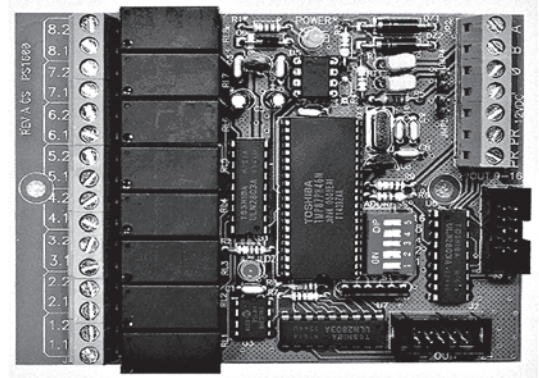
Each card contains 8 outputs which can be connected to “On / Off” devices.

Inserting a new output card can be done through the regular units setting.

Handling the existing output cards is done through the output cards’ menu, which can be loaded from the working screen’s menu bar.

In the menu, choose the “General Outputs Cards” title.

The Out-Put card can be connected in a Maxinet network and controlled by the software. Up to 10 cards can used.



Introduction

The OCA version has been designed for all environments where false ceilings are not featured or cannot be constructed.

The cover cabinet fits perfectly to the air intake and outlet diffuser, maintaining the appealing design that defines the YHK series. The water fittings can be turned to point upwards.

The OCA series includes 7 models, with an installation height of up to 5 m, thanks to the highly flexible adjustment of the air distribution louvers.

All the technical specifications described on the previous pages remain the same, while keeping in mind that:

- the OCA series features one coil only (two pipe systems)
- there is no possibility of fresh air intake
- there is no possibility of additional electric resistance

The OCA version features a special casing delivered in separate packaging; this must only be fitted after having installed the YHK unit and completed the water and electrical connections.

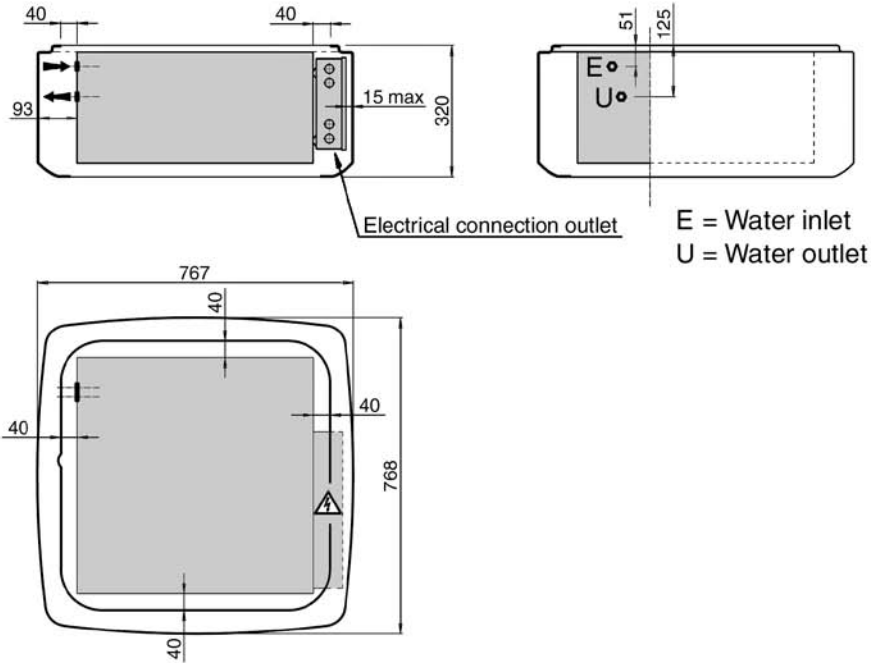


Dimensions and Weights

YHK 20-2-OCA / YHK 25-2-OCA / YHK 40-2-OCA / YHK 50-2-OCA

Casing code: 9079240

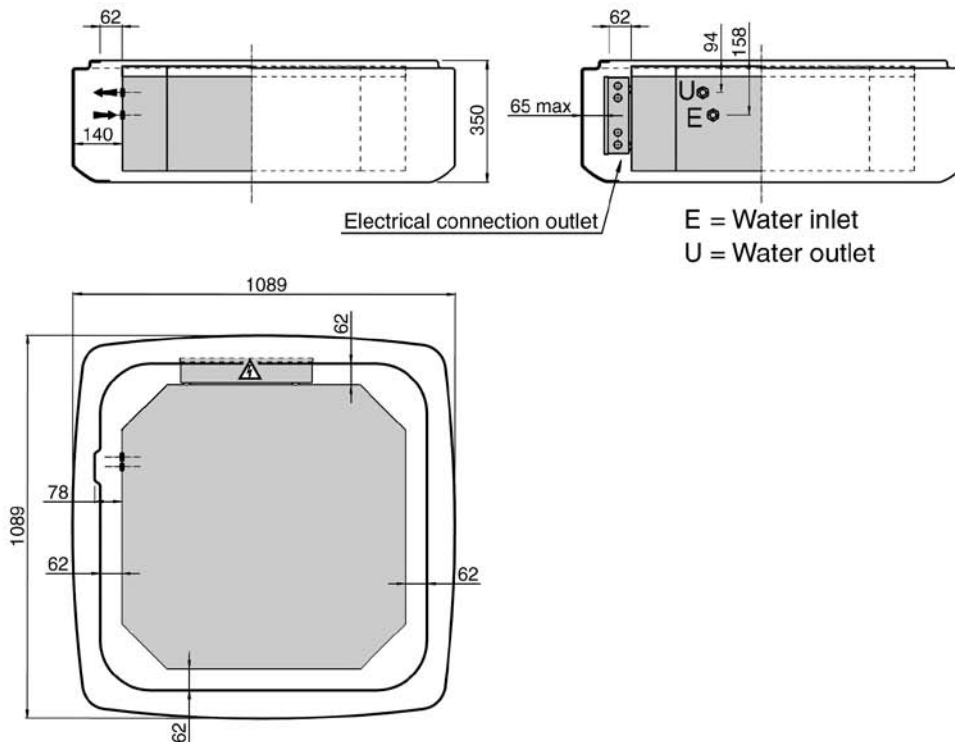
Casing weight: 5 kg (7,5 kg with the packaging)



YHK 65-2-OCA / YHK 95-2-OCA / YHK 110-2-OCA

Casing code: 9079250

Casing weight: 10,5 kg (13,5 kg with the packaging)



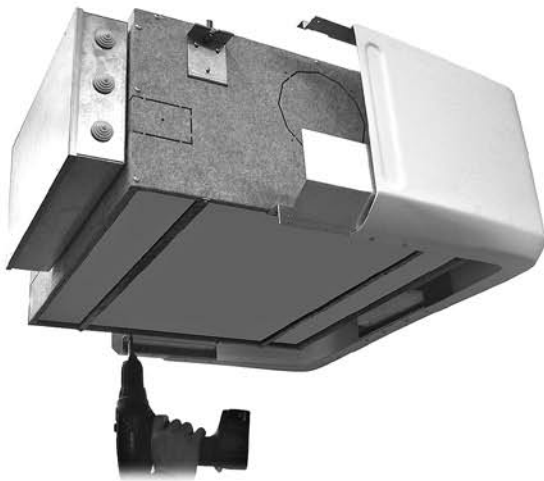
Warning: the electrical and water connections must enter the unit from above and must not interfere with the casing.

Assembly diagram



YHK 20-2-OCA / YHK 25-2-OCA
YHK 40-2-OCA / YHK 50-2-OCA

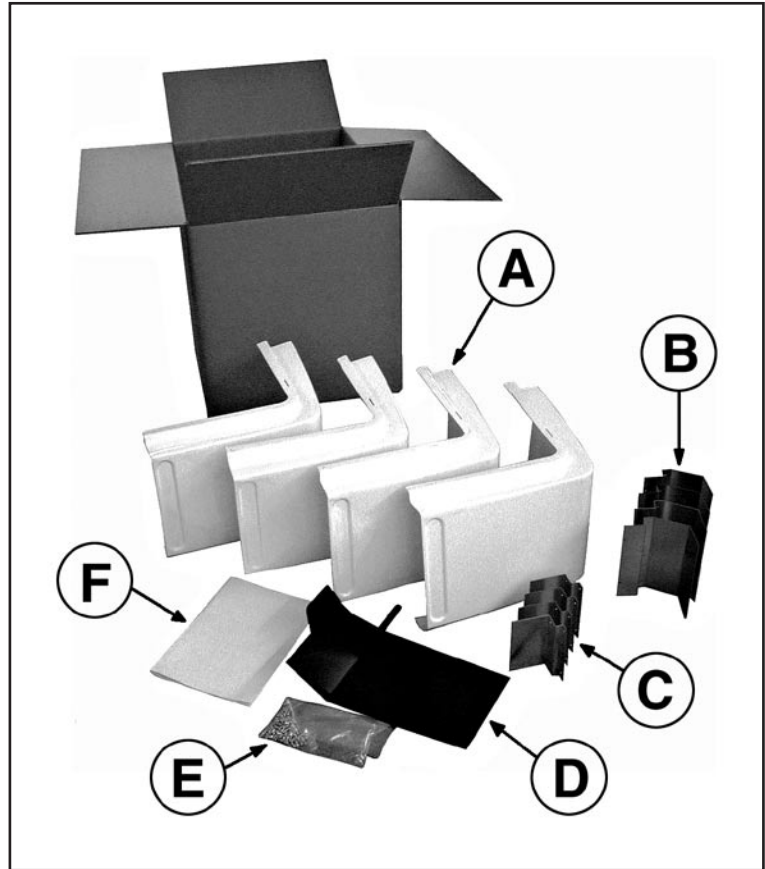
YHK 65-2-OCA
YHK 95-2-OCA / YHK 110-2-OCA



Components of the casing:

The casing includes:

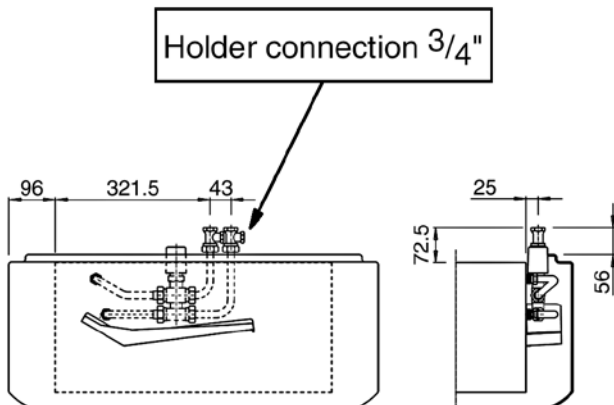
- A – 4 corner covers
- B – 4 bottom brackets
- C – 4 top brackets
- D – Condensate collection tray
- E – Hardware
(45 3.9x9.5mm TCX screws)
- F – Instruction sheet



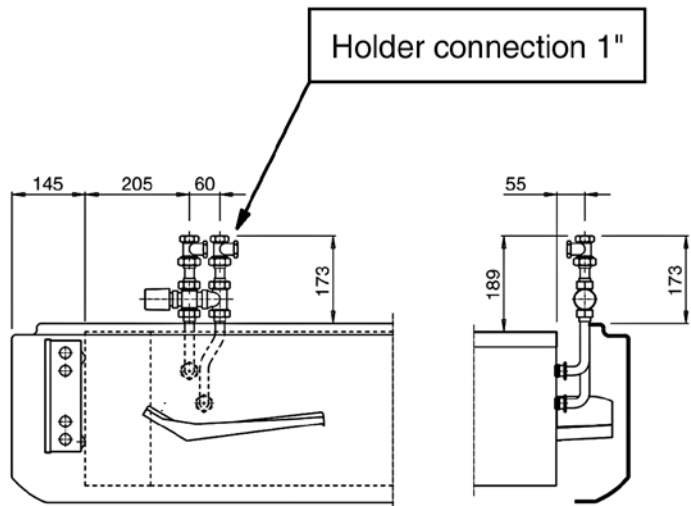
Valve kit

The valve fittings allow the water pipes to be connected from above.

YHK 20-2-OCA / YHK 25-2-OCA
YHK 40-2-OCA / YHK 50-2-OCA
Code 9079155



YHK 65-2-OCA
YHK 95-2-OCA / YHK 110-2-OCA
Code 9079156



For the specifications of the valves, see page 15.

The descriptions and illustrations provided in this publication are not binding: Johnson Controls reserve the right, whilst maintaining the essential characteristics of the types described and illustrated, to make, at any time, without the requirement to promptly update this piece of literature, any changes that it considers useful for the purpose of improvement or for any other manufacturing or commercial requirements.

