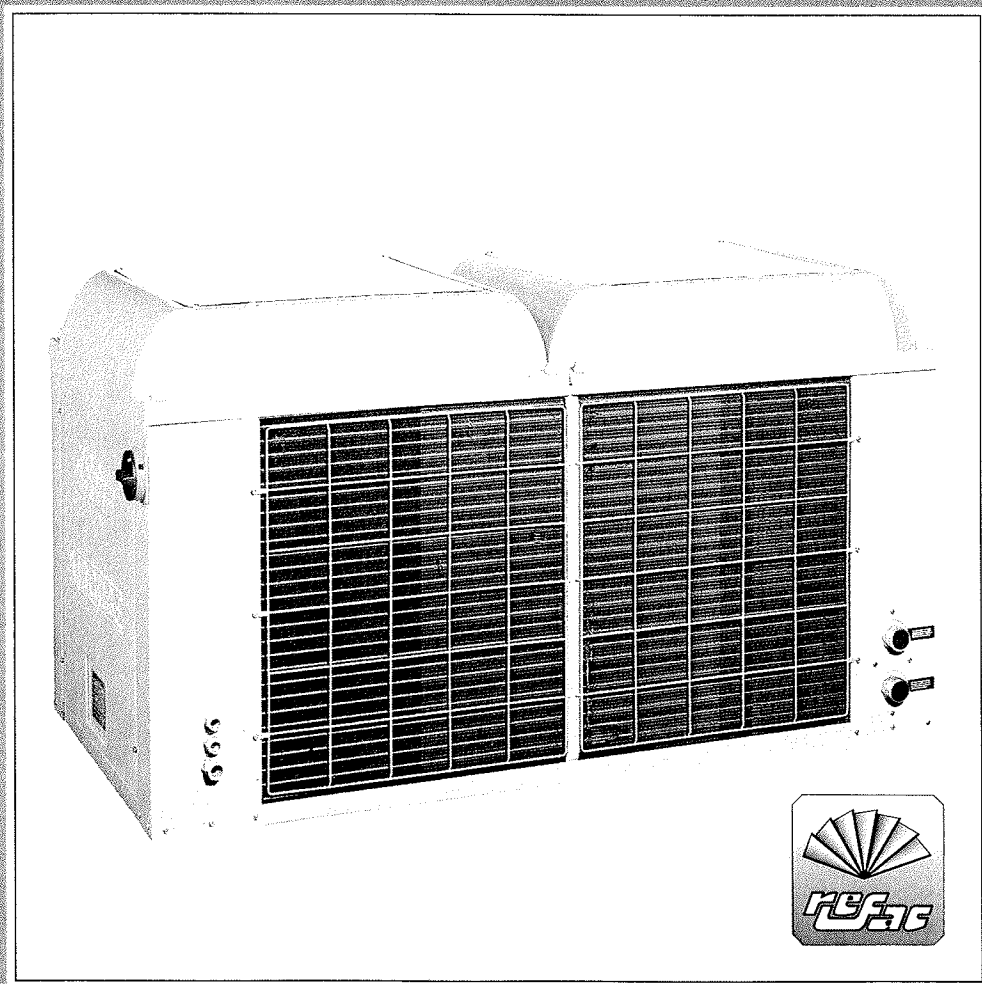


Aircube

Air cooled condensing unit for outdoor installation,
capacity range from 10 kW to 36 kW
low-noise version



THE AIRCUBE OF REFAC

air cooled condensing unit for outdoor installation

capacity range from 10 kW to 36 kW, low-noise version

The Aircube of Refac provides flexible installation solutions together with reliable operation and low noise. The well proven design, the use of durable plastics plus the electronic control ensure quick and efficient solutions for a wide variety of installations both for comfort cooling and industrial process cooling. As standard the Aircube includes:

- a circuit breaker which enables direct connection to the main electrical supply.
- electronic winter control which enables the unit to operate at low ambient temperatures to -20°C .

low-noise version is standard

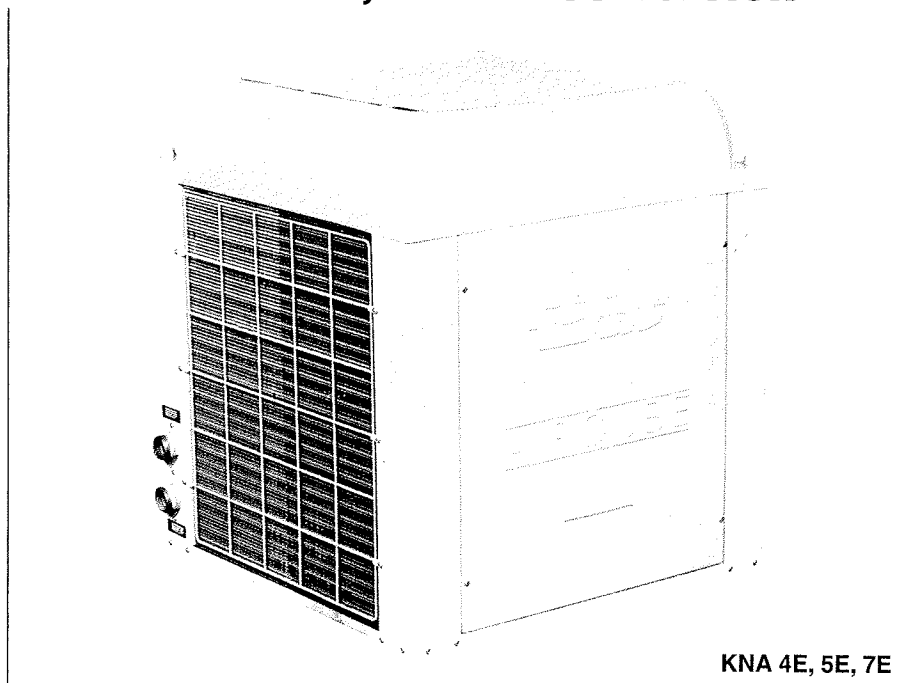
The key element in the Aircube design and construction was minimum noise levels; the final results achieved the low noise levels shown in the table. The already relatively low noise level at standard design conditions (condenser air inlet temperature $+30^{\circ}\text{C}$) will be increasingly less with a lowering ambient temperature because of the standard installed **modulating fan speed control**.

Refac have been able to achieve the standard low noise version through:

- the use of silent reinforced plastic axial fans with a special aerodynamic design, creating an excellent relation between air volume and noise level.
- the use of two oversized air cooled condensers per compressor, resulting in a relatively small air flow to discharge the condenser heat.
- the acoustic insulated compressor enclosure minimising the outgoing compressor sound level.

environment friendly design

During the design and construction of the Aircube a great deal of attention was paid to the environmental



KNA 4E, 5E, 7E

details. In addition to the low noise levels the Aircube also features:

- the possibility to run the unit with the environment friendly refrigerant **R407e, optional**.
- the application of two oversized condensers resulting in a low condensing pressure under all operating conditions and thus a low power consumption.

electronic control and protection

The electronic control provides optimum protection for the installed conditions as well as the modulating control of the fan speed which varies depending upon the condenser air inlet temperature. The printed circuit board contains the following functions:

- the modulating fan speed control (**winter control**) between 70 and 220V with the sensor fitted on the condenser.

- the sensor break or sensor circuit protection with LED display to guarantee a trouble free fan control.
- the thermal protection of the fan motor.
- LED indicated temporary bridging of the low pressure cut-out to ensure a trouble free cold start.
- protection against frequent cycling of the compressor.
- the change-over switch to operate under tropical conditions.
- the various bridging switches to carry out service activities.

The electrical control panel also includes:

- the high and low pressure cut-outs with a high pressure protection with manual resetting mechanical lock-out.
- the compressor magnetic switch with fitted thermal differential and adjustable protection.
- **the circuit breaker** type Optima 25 to protect the compressor

Aircube Type KNA		4E	5E	7E	8E	10E	15E
sound pressure level *) at:							
Condenser air intake temp. $+30^{\circ}\text{C}$	dB(A)	40	40	42	43	43	45
Condenser air intake temp. $+25^{\circ}\text{C}$	dB(A)	38	38	39	41	41	43
Condenser air intake temp. $+20^{\circ}\text{C}$	dB(A)	36	36	38	39	39	41

*) Sound pressure level in dB(A): $2 \times 10^{-5} \text{ N/m}^2$ measured at 10m. distance at free field conditions.

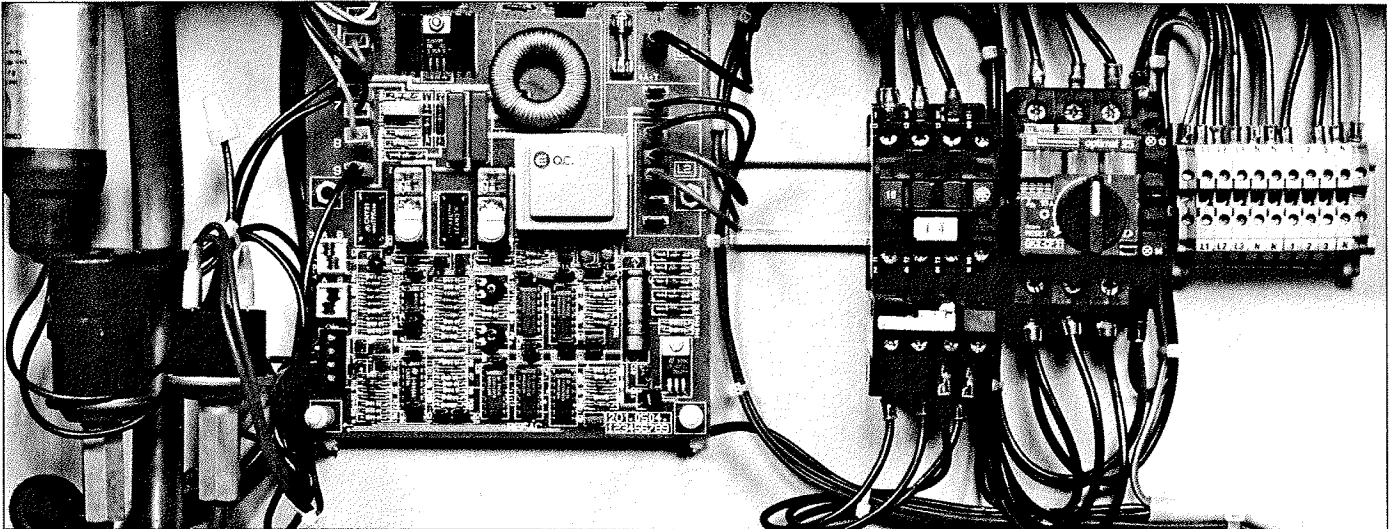
motor and the pilot circuit for the 5E and 7E against short cut. For the types KNA 8E to 30D/E a **main switch** has been provided.

important optionals

- **failure indicating print** (opt) with LED signal per failure (for high and low pressure, compressor and fan motor) as well as a potential free contact for remote signalling.
- **electric resistance** for the types KNA 8E to 30D/E which reduce the starting current by 15 to 30%.
- **corrosion resistant condenser coating** resp. copper/copper condenser coil.
- **manometer control panel** for high and low pressure indication.

other advantages

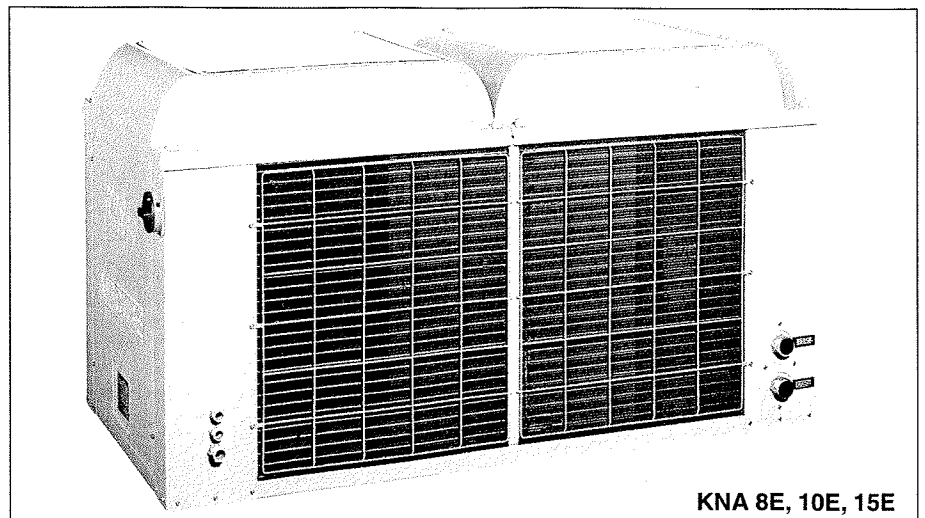
- the excellent weather resistant construction, due to the epoxy paint coated sheet metal, as well as of the galvanized steel frame and the use of high quality plastics for the side panels and the top fan deck.
- the compact size and the low unit weight allow for easy transport and handling.
- the control panel is easy accessible and positioned directly behind the service panels.



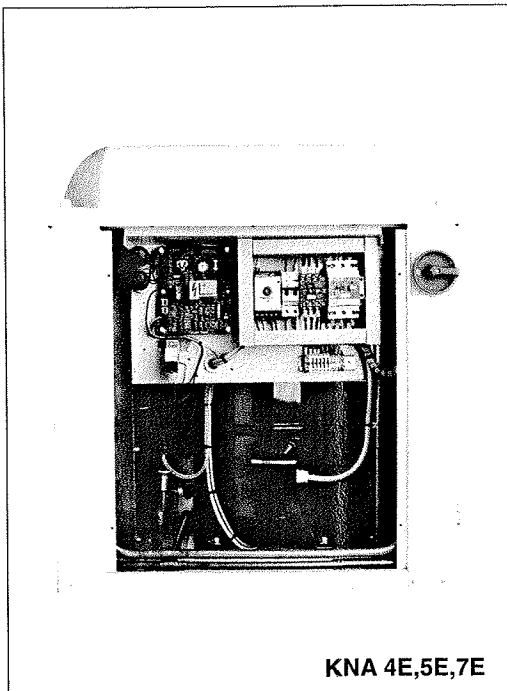
Detail picture of the easily accessible electrical control panel located at high level and showing from right to left:

- terminals for electrical power supply.
- the circuit-breaker protecting the compressor motor and the pilot circuit against short-circuiting.
- the compressor motor contactor with built-on thermal differential relays and adjustable protection.
- electronic print board incorporating the winter control and all required functional protections of the unit.
- low pressure cut-out with automatic reset.
- high pressure cut-out with manual reset.

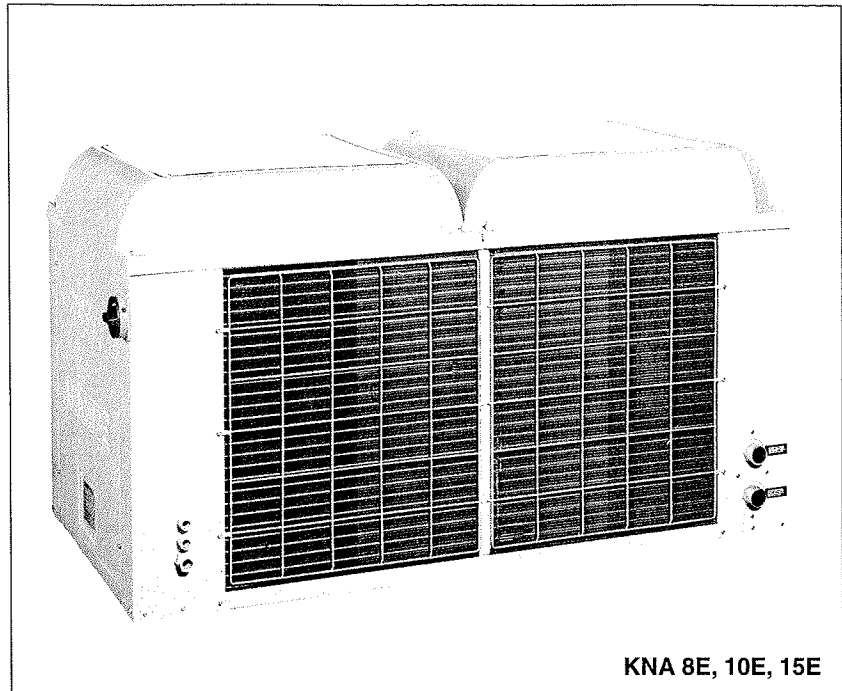
The Aircube allows easy service due to the removable ABS service panels that give ample access from the sides and the rear.



KNA 8E, 10E, 15E



KNA 4E,5E,7E



KNA 8E, 10E, 15E

TECHNICAL DATA

TYPE	KNA	4E	5E	7E	8E	10E	15E
Refrigerant		R-22			R-22		
Cooling capacity ¹⁾	kW	11,30	14,30	18,00	22,60	28,60	36,00
Power consumption compr.	kW	3,60	4,60	6,30	7,20	9,20	12,60
Power consumption each fan	W	260	260	420	2x260	2x260	2x420
Starting current compressor ²⁾	A	31	35	42	68	81	96
Nominal current compressor	A	10,2	10,5	13,4	15,3	19,0	24,0
Nominal current each fan	A	2,40	2,40	3,10	2x2,40	2x2,40	2x3,10
Supply voltage		3~N-400V-50Hz+PE					
Total el. conn. value	kVA	7,2	8,0	9,7	12,1	14,7	17,8
Delayed fuse	A	16	20	25	35	35	63
Number of fans/compr.		1+1	1+1	1+1	2+1	2+1	2+1
Air volume per fan	m ³ /s	1,28	1,26	1,44	2x1,28	2x1,26	2x1,44
Operational weight	kg	110	120	130	220	270	320
Dimensions:	L	805			1610		
	W	805			805		
	H	880			919		
Refrigerant connections:	liquid	1/2"	5/8"	5/8"	5/8"	5/8"	3/4"
	suction	3/4"	3/4"	7/8"	1 1/8"	1 3/8"	1 3/8"
Sound pressure level ³⁾	dB(A)	40	40	42	43	43	45
Charge of refrigerant	kg	2,9	4,0	5,6	Charge de 0,5 bar		

¹⁾ The above data is valid for condenser air inlet temperature of +30°C , evaporating temperature of +5°C and fan(s) at 100% speed. Max. condenser air inlet temperature: +45°C.

²⁾ For the types KNA 8E to 15E there is an option for starting current reduction by 15% to 30% by using an electrical resistance.

³⁾ Sound pressure level in dB(A) 2x10⁻⁵ N/m², measured at 10m distance at free field conditions.

Subject to change without notice

