



Application guide Installation, operating and maintenance manual

DUCTAIR - NJCK/NJHK - NCCK/NCHK



- Providing indoor climate comfort



**Congratulations you have made a wise choice with the purchase of your Lennox
air conditioning set.**

**This product has been designed, assembled and supplied in one of our world class manufacturing
facilities and we feel sure that it will meet your expectations.**

**Lennox an international organization with world wide distribution takes pride in supplying you with
this product.**

WARNING: Read this manual before installation, reparation o maintenance works.

1.- UNIT SELECTION

1.1.- PRODUCT RANGE	2
1.2.- GENERAL DESCRIPTION	3
1.3.- SPECIFICATIONS	4-5
1.4.- TECHNICAL DATA	6-7
1.5.- ELECTRICAL DATA	6-7
1.6.- MOTOR FAN CHARACTERISTICS	8
1.7.- CAPACITY TABLES	9-12
1.8.- UNIT DIMENSIONS	13-14
1.9.- UNIT DESCRIPTION	15
1.10.- OPERATING LIMITS	16
1.11.- STANDARD/ OPTIONAL ENTRANCES	16-17
1.12.- OPTIONS	18-19

2.- INSTALLATION

2.1.- POINTS TO KEEP IN MIND	20
2.2.- INSTALLATION GUIDELINES	21
2.3.- UNIT RECEPTION	21
2.4.- INSTALLATION CLEARANCES	21
2.5.- OPTIONAL OPERATIONS PRIOR TO UNIT INSTALLATION: CHANGING THE POSITION OF BLOWERS AND AIR INTAKE	22
2.6.- DUCT INSTALLATION	22
2.7.- DRAINS	23
2.8.- SETTING UP TEMPLATES OF UNITS	24
2.9.- OPTIONAL OPERATIONS PRIOR TO UNIT INSTALLATION: CHANGING THE POSITION OF AIR INLET PANEL FOR INDOOR UNITS LN XO	25
2.10.- UNIT LOCATION OF INDOOR UNIT LN XO	25
2.11.- ELECTRICAL CONNECTIONS	26-27
2.12.- REFRIGERANT CONNECTIONS	28-29

3.- COMMISSIONING AND OPERATION

3.1.- DATA PAGE FOR UNIT COMMISSIONING	30
3.2.- PRECAUTIONS TO BE TAKEN ON INSTALLATION	31
3.3.- PRELIMINARY CHECKS	31
3.4.- STEPS TO FOLLOW FOR COMMISSIONING THE UNIT	32

4.- MAINTENANCE

4.1.- PREVENTIVE MAINTENANCE	33
4.2.- CORRECTIVE MAINTENANCE	34
4.3.- FAILURE DIAGNOSIS	34

Lennox have been providing environmental solutions since 1895, our range of DUCTAIR continues to meet the standards that have made LENNOX a household name. Flexible design solutions to meet YOUR needs and uncompromising attention to detail. Engineered to last, simple to maintain and Quality that comes as standard.
Information on local contacts at www.lennox europe.com.

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1.- UNIT SELECTION

R-407C

1.1.- PRODUCT RANGE

COOLING ONLY

LN XO INDOOR UNIT IN COMBINATION WITH AXIAL FAN OUTDOOR UNIT



MODEL	OUTDOOR UNIT	INDOOR UNIT	V / Ph / 50 Hz	NOMINAL CAPACITY W		POWER INPUT kW	
				COOLING		COOLING	
NJCK 018	KJCK 018	LN XO 018	230V-1Ph	5000		1,95	
NJCK 024	KJCK 024	LN XO 024	230V-1Ph	6500		2,5	
NJCK 030	KJCK 030	LN XO 030	230V-1Ph	7600		3,0	
NJCK 030	KJCK 030		400V-3Ph				
NJCK 036	KJCK 036	LN XO 036	230V -1Ph	9100		3,6	
NJCK 036	KJCK 036		230 V - 3Ph				
NJCK 036	KJCK 036		400 V - 3Ph				
NJCK 048	KJCK 048	LN XO 048	230 V - 3Ph	11300		4,2	
NJCK 048	KJCK 048		400 V - 3Ph				
NJCK 060	KJCK 060	LN XO 060	230 V - 3Ph	13300		5,3	
NJCK 060	KJCK 060		400 V - 3Ph				
NJCK 070	KJCK 070	LN XO 070	230 V - 3Ph	16300		6,2	
NJCK 070	KJCK 070		400 V - 3Ph				
NJCK 080	KJCK 080	LN XO 080	230 V - 3Ph	18000		7,2	
NJCK 080	KJCK 080		400 V - 3Ph				

LN XO INDOOR UNIT IN COMBINATION WITH CENTRIFUGAL FAN OUTDOOR UNIT



MODEL	OUTDOOR UNIT	INDOOR UNIT	V / Ph / 50 Hz	NOMINAL CAPACITY W		POWER INPUT kW	
				COOLING		COOLING	
NCCK 018	KCCK 018	LN XO 018	230V-1Ph	5100		2,02	
NCCK 024	KCCK 024	LN XO 024	230V-1Ph	6600		2,60	
NCCK 030	KCCK 030	LN XO 030	230V-1Ph	7700		3,30	
NCCK 036	KCCK 036	LN XO 036	230V -1Ph	9000		3,86	
NCCK 036	KCCK 036		230 V - 3Ph				
NCCK 036	KCCK 036		400 V - 3Ph				
NCCK 048	KCCK 048	LN XO 048	230 V - 3Ph	11000		4,70	
NCCK 048	KCCK 048		400 V - 3Ph				
NCCK 060	KCCK 060	LN XO 060	230 V - 3Ph	13500		5,79	
NCCK 060	KCCK 060		400 V - 3Ph				
NCCK 070	KCCK 070	LN XO 070	230 V - 3Ph	16100		6,71	
NCCK 070	KCCK 070		400 V - 3Ph				
NCCK 080	KCCK 080	LN XO 080	230 V - 3Ph	18300		7,85	
NCCK 080	KCCK 080		400 V - 3Ph				

HEAT PUMP

LN XO INDOOR UNIT IN COMBINATION WITH AXIAL FAN OUTDOOR UNIT



MODEL	OUTDOOR UNIT	INDOOR UNIT	V / Ph / 50 Hz	NOMINAL CAPACITY W		POWER INPUT kW	
				COOLING	HEATING	COOLING	HEATING
NJHK 018	KJHK 018	LN XO 018	230V-1Ph	5000	5150	1,95	1,85
NJHK 024	KJHK 024	LN XO 024	230V-1Ph	6500	6500	2,5	2,38
NJHK 030	KJHK 030	LN XO 030	230V-1Ph	7600	8000	3,0	2,90
NJHK 036	KJHK 036	LN XO 036	230V -1Ph	9100		3,6	
NJHK 036	KJHK 036		230 V - 3Ph				
NJHK 036	KJHK 036		400 V - 3Ph				
NJHK 048	KJHK 048	LN XO 048	230 V - 3Ph	11300		4,2	
NJHK 048	KJHK 048		400 V - 3Ph				
NJHK 060	KJHK 060	LN XO 060	230 V - 3Ph	13300		5,3	
NJHK 060	KJHK 060		400 V - 3Ph				
NJHK 070	KJHK 070	LN XO 070	230 V - 3Ph	16300		6,2	
NJHK 070	KJHK 070		400 V - 3Ph				
NJHK 080	KJHK 080	LN XO 080	230 V - 3Ph	18000		7,2	
NJHK 080	KJHK 080		400 V - 3Ph				

LN XO INDOOR UNIT IN COMBINATION WITH CENTRIFUGAL FAN OUTDOOR UNIT

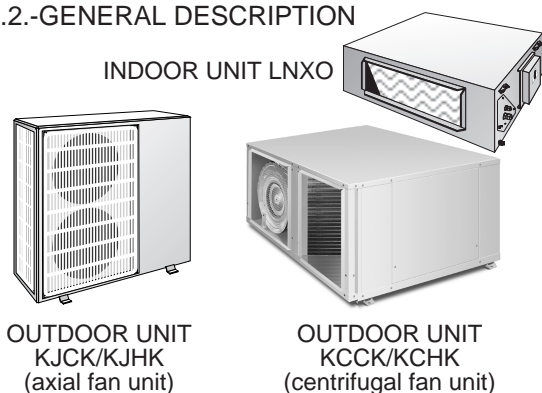


MODEL	OUTDOOR UNIT	INDOOR UNIT	V / Ph / 50 Hz	NOMINAL CAPACITY W		POWER INPUT kW	
				COOLING	HEATING	COOLING	HEATING
NCHK 018	KCHK 018	LN XO 018	230V-1Ph	5100	5400	2,02	2,06
NCHK 024	KCHK 024	LN XO 024	230V-1Ph	6600	6850	2,60	2,54
NCHK 030	KCHK 030	LN XO 030	230V-1Ph	7700	8400	3,30	3,23
NCHK 036	KCHK 036	LN XO 036	230V -1Ph	9000		3,86	
NCHK 036	KCHK 036		230 V - 3Ph				
NCHK 036	KCHK 036		400 V - 3Ph				
NCHK 048	KCHK 048	LN XO 048	230 V - 3Ph	11000		4,70	
NCHK 048	KCHK 048		400 V - 3Ph				
NCHK 060	KCHK 060	LN XO 060	230 V - 3Ph	13500		5,79	
NCHK 060	KCHK 060		400 V - 3Ph				
NCHK 070	KCHK 070	LN XO 070	230 V - 3Ph	16100		6,71	
NCHK 070	KCHK 070		400 V - 3Ph				
NCHK 080	KCHK 080	LN XO 080	230 V - 3Ph	18300		7,85	
NCHK 080	KCHK 080		400 V - 3Ph				

NOTE: The units at 230V-3Ph power supply are special. Ask for availability.

1.- UNIT SELECTION

1.2.-GENERAL DESCRIPTION



The duct air conditioner split on version cooling only and heat pump, are units condensed by air, designed for small shopping center and housing.

The indoor unit with direct air supply, cools, heats, dehumidifies, and cleans air of the sites.

The indoor unit can be combined with condensing units provided with axial fan (KJCK/KJHK) for outside installation, or with condensing units provided with centrifugal fan (KCCK/KCHK) for installation inside buildings. A wide range of options, completed-factory assembled are also available, for easier installation.

CABINET

The indoor unit chassis is made of galvanized steel and is fully insulated inside. The cabinet includes brackets for holding the unit.

The outdoor unit chassis is made of electrozinc steel with epoxy painted finished, able to work with outdoors under the worst conditions. The unit is completed with handles, which assist easy installation. Its compact dimensions and features allow the unit to be positioned in almost any location.

HEAT EXCHANGERS

Made-up with copper pipes and aluminium wings, designed to get a high heating transfer. Their dimensions and design of the circuits have been specially worked to obtain the maximum performance of the exchanger increasing the power of the unit and reducing the consumption.

COMPRESSOR

All units are provided with scroll compressor, cooling by a suction gas with thermic protection inside the engine, so no other additional protection is required. It is mounted on anti-vibration devices both external and internal. The 400V-III units are supplied with a three phase detector which avoids the unit starts, unless the phase connections are right.

In heat pump units, the compressors are provided with a crankcase heater to heat the oil in the compressor so that a suitable lubrication can take place; this is an option for cooling only units.

FANS

The indoor units include centrifugal motor fan of two / three speed, with high static pressure, to adapt the fan features to installation requirements.

Depending on outdoor unit type, it includes one or two axial motor fan (units KJCK/KJHK), or one centrifugal fan (units KCCK/KCHK), with exceptional features in noise level and flow.

AIR FILTER

A polypropylene air filter is incorporated on models from 018 to 060. And a polyester extinguishable material air filter is incorporated for models 070-080.

Both high efficiency filtrate, washable and easy to install.

COOLING CIRCUIT

Made of welded dehydrated copper pipe with service port on the suction and liquid lines.

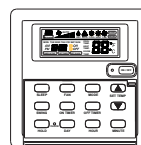
Coupling valves on outdoor unit (all models) and flare connection on indoor unit (except models 070-080, with welded connections) to make easier the refrigerant connections. The expansion system for cooling and heating takes place on outdoor unit, except for models 070-080 which cooling expansion system is located on indoor unit. Heat pump units are equipped as well with unidirectional and four way reversing valves.

ELECTRIC CIRCUIT

The electrical panel includes a printed board, which controls the operating of the unit, defrosting timer thermostat and system of reversing on heat pump cycle. The heat pump outdoor unit includes a printed board with a defrosting timer, for safety device.

CONTROL

The indoor unit is supplied with a digital wired thermostat with 3 speed and ON TIMER/OFF TIMER function (see manual supplied with the thermostat for details).



Control OLT-1X

OPTIONS

INDOOR UNIT

- Kit return sensor.
- One step electrical heater.
- Hot water coils.
- Kit discharge plenum and Kit air inlet plenum.
- Condensate pump.

OUTDOOR UNIT TYPE KJCK/KJHK

- ON/OFF Condensation pressure control.
- Proportional condensing pressure control.
- Kit compressor isolation.
- Supporting unit brackets (depends on models).
- Long distance unit version (50m of refrigerant connection).



OUTDOOR UNIT TYPE KCCK/KCHK

- ON/OFF Condensation pressure control.
- Proportional condensing pressure control.
- Main switch (depends on models).
- Kit compressor isolation.

1.- UNIT SELECTION

1.3.- SPECIFICATIONS

SET WITH AXIAL FAN OUTDOOR UNIT

MODEL			NJCK / NJHK 018	NJCK / NJHK 024	NJCK / NJHK 030	NJCK / NJHK 036	NJCK / NJHK 048	NJCK / NJHK 060	NJCK / NJHK 070	NJCK / NJHK 080	
Nominal cooling capacity (*)	W		5000	6500	7600	9100	11300	13300	16300	18000	
Nominal heating capacity NJHK (**)	W		5150	6500	8000	9300	11900	13600	16700	18200	
OUTDOOR UNIT 			KJCK / KJHK 018	KJCK / KJHK 024	KJCK / KJHK 030	KJCK / KJHK 036	KJCK / KJHK 048	KJCK / KJHK 060	KJCK / KJHK 070	KJCK / KJHK 080	
COMPRESSOR Nr / Type			1 / Scroll	1 / Scroll	1 / Scroll	1 / Scroll	1 / Scroll	1 / Scroll	1 / Scroll	1 / Scroll	
FAN Air flow		m³/h	1800	2800	3100	3200	5500	5500	5200	5200	
EXPANSION (cooling only / heat pump)			Capillary	Capillary	Capillary	Restrictor	Restrictor	Restrictor	--/Restrictor	--/Restrictor	
WEIGHT	Cooling only units	Kg	53	57	70	73	99	109	130	131	
	Heat pump units	Kg	55	60	72	76	102	112	135	136	
DIMENSIONS											
Height	(H)	mm	629	629	781	931	1239	1239	1230	1230	
Width	(W)	mm	773	773	973	973	973	973	998	998	
Depth	(D)	mm	333	333	333	333	333	333	386	386	
PACKING DIMENSIONS (HxWxD)			mm		679x860x385	970x1072x395	1120x1072x395	1390x1072x395	1385x1102x452		
REFRIGERANT COUPLING											
Liquid pipe			1/4"	1/4"	3/8"	3/8"	3/8"	3/8"	1/2"	1/2"	
Gas pipe			1/2"	5/8"	5/8"	3/4"	3/4"	3/4"	7/8"	7/8"	
INDOOR UNIT 			LN XO 018	LN XO 024	LN XO 030	LN XO 036	LN XO 048	LN XO 060	LN XO 070	LN XO 080	
FAN	Air flow	m³/h	Max	915	1200	1350	1725	2150	2450	3450	4450
			Min	600	740	920	1000	1630	2060	2250	3050
Available pressure	max (2)	Pa	60	60	100	120	120	100	140	160	
EXPANSION			--	--	--	--	--	--	Restrictor	Restrictor	
WEIGHT			Kg	35	35	43	44	57	58	85	86
DIMENSIONS											
Height	(H)	mm	235	235	287	287	315	315	415	415	
Width	(W)	mm	1076	1076	1076	1076	1271	1271	1380	1380	
Depth	(D)	mm	535	535	700	700	750	750	850	850	
PACKING DIMENSIONS (HxWxD)			mm		235x1170x665	290x1170x830	320x1365x875	555x1460x975			
REFRIGERANT COUPLING											
Liquid pipe			1/4"	1/4"	3/8"	3/8"	3/8"	3/8"	1/2"	1/2"	
Gas pipe			1/2"	5/8"	5/8"	3/4"	3/4"	3/4"	7/8"	7/8"	

(*) Air intake temperature indoor interchange: 27°C DB / 19°C WB.

(*) Air intake temperature outdoor interchange: 35°C DB.

(**) Air intake temperature indoor interchange: 20°C DB / 12°C WB.

(**) Air intake temperature outdoor interchange: 7°C DB / 6°C WB.


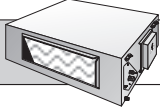
(2) With admissible minimum air flow and high speed fan.

DB.- Dry bulb
WB.- Wet bulb

1.- UNIT SELECTION

1.3.- SPECIFICATIONS

SET WITH CENTRIFUGAL FAN OUTDOOR UNIT

MODEL			NCCK / NCHK 018	NCCK / NCHK 024	NCCK / NCHK 030	NCCK / NCHK 036	NCCK / NCHK 048	NCCK / NCHK 060	NCCK / NCHK 070	NCCK / NCHK 080	
Nominal cooling capacity (*)	W		5100	6600	7700	9000	11000	13500	16100	18300	
Nominal heating capacity NCHK (**)	W		5400	6850	8400	9200	11400	14400	16500	19000	
OUTDOOR UNIT			KCCK / KCHK 018	KCCK / KCHK 024	KCCK / KCHK 030	KCCK / KCHK 036	KCCK / KCHK 048	KCCK / KCHK 060	KCCK / KCHK 070	KCCK / KCHK 080	
											
COMPRESSOR Nr / Type			1 / Scroll	1 / Scroll	1 / Scroll	1 / Scroll	1 / Scroll	1 / Scroll	1 / Scroll	1 / Scroll	
FAN	Air flow	m³/h.									
		Max	2600	2500	3150	3100	3400	4950	4950	5900	
	Min	1800	1750	2000	2000	2400	3750	3750	4350		
	Available static pressure	Pa (2)	70	90	100	100	90	120	120	150	
EXPANSION (cooling only / heat pump)			Capillary	Capillary	Capillary	Restrictor	Restrictor	Restrictor	--/Restrictor	--/Restrictor	
WEIGHT	Cooling only units		Kg	73	76	87	87	135	180	185	195
	Heat pump units		Kg	78	81	92	92	140	185	190	200
DIMENSIONS											
	Height	(H)	mm	485	485	505	505	495	595	595	595
	Width	(W)	mm	975	975	1050	1050	1250	1300	1300	1450
	Depth	(D)	mm	625	625	750	750	820	830	830	900
PACKING DIMENSIONS (HxWxD)			mm	655x1059x725		675x1140x870		625x1350x919	720x1400x929		720x1550x1000
REFRIGERANT COUPLING											
	Liquid pipe			1/4"	1/4"	3/8"	3/8"	3/8"	3/8"	1/2"	1/2"
	Gas pipe			1/2"	5/8"	5/8"	3/4"	3/4"	3/4"	7/8"	7/8"
INDOOR UNIT			LN XO 018	LN XO 024	LN XO 030	LN XO 036	LN XO 048	LN XO 060	LN XO 070	LN XO 080	
											
FAN	Air flow	m³/h.									
		Max	915	1200	1350	1725	2150	2450	3450	4450	
	Min	600	740	920	1000	1630	2060	2250	3050		
	Available pressure	max (2)	Pa	60	60	100	120	120	100	140	160
EXPANSION			--	--	--	--	--	--	Restrictor	Restrictor	
WEIGHT			Kg	35	35	43	44	57	58	85	86
DIMENSIONS											
	Height		mm	235	235	287	287	315	315	415	415
	Width		mm	1076	1076	1076	1076	1271	1271	1380	1380
	Depth		mm	535	535	700	700	750	750	850	850
PACKING DIMENSIONS (HxWxD)			mm	235x1170x665		290x1170x830		320x1365x875		555x1460x975	
REFRIGERANT COUPLING											
	Liquid pipe			1/4"	1/4"	3/8"	3/8"	3/8"	3/8"	1/2"	1/2"
	Gas pipe			1/2"	5/8"	5/8"	3/4"	3/4"	3/4"	7/8"	7/8"

(*) Air intake temperature indoor interchange: 27°C DB / 19°C WB.

(*) Air intake temperature outdoor interchange: 35°C DB.

(**) Air intake temperature indoor interchange: 20°C DB / 12°C WB.

(**) Air intake temperature outdoor interchange: 7°C DB / 6°C WB.

(2) With admissible minimum air flow and high speed fan.

DB.- Dry bulb
WB.- Wet bulb

1.- UNIT SELECTION

SET WITH AXIAL FAN OUTDOOR UNIT

1.4.- TECHNICAL DATA

SOUND LEVELS			NJCK NJHK 018	NJCK NJHK 024	NJCK NJHK 030	NJCK NJHK 036	NJCK NJHK 048	NJCK NJHK 060	NJCK NJHK 070	NJCK NJHK 080
Sound pressure level	Indoor unit (1)	High dBA	34	37	37	38	37	40	44	47
		Low dBA	38	40	40	42	40	43	47	50
	Outdoor unit (2)	dBA	36	42	43	43	46	46	47	47

(1) Sound pressure level measured to a distance of 2,5m from the unit, free space.

(2) Sound pressure level measured to a distance of 10m from the unit, free space, directibility ± 3 db.

1.5.- ELECTRICAL DATA

			NJCK NJHK 018	NJCK NJHK 024	NJCK NJHK 030	NJCK NJHK 036	NJCK NJHK 048	NJCK NJHK 060	NJCK NJHK 070	NJCK NJHK 080
Voltage	V/f (50 Hz)		230V / 1 Ph							
					400V/3Ph (3)	230V-400V / 3 Ph				
Nominal total input power cooling capacity	kW		1,95	2,50	3,00	3,60	4,20	5,30	6,20	7,20
Nominal total input power heat pump NJHK	kW		1,85	2,38	2,90	3,35	4,20	4,89	5,90	6,69
Max. current	A	230V-1Ph	12,31	16,25	19,39	21,11				
		230V-3Ph				19,21	23,08	23,77	29,15	33,60
		400V-3Ph			8,29	9,71	12,48	15,37	19,35	22,30
Starting current	A		47	61	76	95				
					40	91 / 46	98 / 50	133 / 66	172 / 74	178 / 101
OUTDOOR UNIT	V/f (50 Hz)		230V / 1 Ph							
					400V/3Ph (3)	230V-400V / 3 Ph				
Nominal total input power cooling capacity	kW		1,83	2,33	2,68	3,22	3,69	4,77	5,57	6,50
Nominal total input power heat pump KJHK	kW		1,73	2,21	2,58	2,97	3,69	4,36	5,27	5,99
Max. current	A	230V-1Ph	11,79	15,52	18,02	19,44				
		230V-3Ph				17,54	20,85	21,45	25,45	28,95
		400V-3Ph			6,92	8,04	10,25	13,05	15,65	17,65
Starting current	A		47	61	76	95				
					40	91 / 46	98 / 50	133 / 66	172 / 74	178 / 101
INDOOR UNIT	V/f (50 Hz)		230V / 1 Ph							
Nominal total input power cooling capacity	kW		0,12	0,17	0,32	0,38	0,51	0,53	0,63	0,70
Nominal total input power heat pump	kW		0,12	0,17	0,32	0,38	0,51	0,53	0,63	0,70
Max. current	A		0,52	0,73	1,37	1,67	2,23	2,32	2,24	3,04
Starting current	A		2,08	2,92	5,48	6,68	8,92	9,28	10,96	12,16

(3) Voltage only for cooling only unit NJCK

1.- UNIT SELECTION

SET WITH CENTRIFUGAL FAN OUTDOOR UNIT


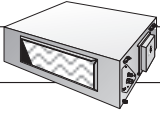
1.4.- TECHNICAL DATA

SOUND LEVELS			NCKK NCHK 018	NCKK NCHK 024	NCKK NCHK 030	NCKK NCHK 036	NCKK NCHK 048	NCKK NCHK 060	NCKK NCHK 070	NCKK NCHK 080
Sound pressure level	Indoor unit (1)	High dBA	34	37	37	38	37	40	44	47
		Low dBA	38	40	40	42	40	43	47	50
	Outdoor unit (2)	dBA	40	40	41	41	43	45	45	49

(1) Sound pressure level measured to a distance of 2.5m from the unit.

(2) Sound pressure level measured to a distance of 10m from the unit, free space, with discharge and inlet duct installed.

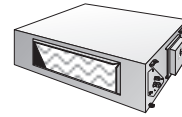
1.5.- ELECTRICAL DATA

			NCKK NCHK 018	NCKK NCHK 024	NCKK NCHK 030	NCKK NCHK 036	NCKK NCHK 048	NCKK NCHK 060	NCKK NCHK 070	NCKK NCHK 080	
Voltage	V/f (50 Hz)		230V / 1 Ph				230V-400V / 3 Ph				
Nominal total input power cooling capacity	kW		2,02	2,60	3,30	3,86	4,70	5,79	6,71	7,85	
Nominal total input power heat pump NCHK	kW		2,06	2,54	3,23	3,50	4,21	5,65	6,02	7,31	
Max. current	A	230V-1Ph	13,62	17,23	21,77	23,37					
		230V-3Ph				21,47	24,63	27,02	31,80	38,85	
		400V-3Ph				11,97	14,03	16,62	20	24,45	
Starting current	A		47	61	76	95					
						91 / 46	98 / 50	133 / 66	172 / 74	178 / 101	
OUTDOOR UNIT			KCKK KCHK 018	KCKK KCHK 024	KCKK KCHK 030	KCKK KCHK 036	KCKK KCHK 048	KCKK KCHK 060	KCKK KCHK 070	KCKK KCHK 080	
Voltage	V/f (50 Hz)		230V / 1 Ph				230V-400V / 3 Ph				
Nominal total input power cooling capacity	kW		1,90	2,43	2,98	3,48	4,19	5,26	6,08	7,15	
Nominal total input power heat pump KCHK	kW		1,94	2,37	2,91	3,12	3,70	5,12	5,39	6,61	
Max. current	A	230V-1Ph	13,10	16,50	20,40	21,70					
		230V-3Ph				19,80	22,40	24,70	28,10	34,20	
		400V-3Ph				10,30	11,80	14,30	16,30	19,80	
Starting current	A		47	61	76	95					
						91 / 46	98 / 50	133 / 66	172 / 74	178 / 101	
INDOOR UNIT			LN XO 018	LN XO 024	LN XO 030	LN XO 036	LN XO 048	LN XO 060	LN XO 070	LN XO 080	
Voltage	V/f (50 Hz)		230V / 1 Ph								
Nominal total input power cooling capacity	kW		0,12	0,17	0,32	0,38	0,51	0,53	0,63	0,70	
Nominal total input power heat pump	kW		0,12	0,17	0,32	0,38	0,51	0,53	0,63	0,70	
Max. current	A		0,52	0,73	1,37	1,67	2,23	2,32	2,74	3,04	
Starting current	A		2,08	2,92	5,48	6,68	8,92	9,28	10,96	12,16	

1.- UNIT SELECTION

1.6.- MOTOR-FAN CHARACTERISTICS

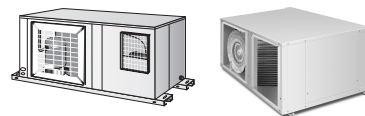
INDOOR UNIT MOTOR-FAN



			AVAILABLE STATIC PRESSURE Pa								
			0	20	40	60	80	100	120	140	160
AIR FLOW	m ³ /h	HIGH SPEED	---	915	760	600	---	---	---	---	---
		MEDIUM SPEED	---	820	680	---	---	---	---	---	---
		LOW SPEED	750	680	600	---	---	---	---	---	---
LN XO 018			0	20	40	60	80	100	120	140	160
AIR FLOW	m ³ /h	HIGH SPEED	---	1200	1050	890	---	---	---	---	---
		MEDIUM SPEED	---	1050	890	740	---	---	---	---	---
		LOW SPEED	915	830	740	---	---	---	---	---	---
LN XO 024			0	20	40	60	80	100	120	140	160
AIR FLOW	m ³ /h	HIGH SPEED	---	---	1300	1200	1100	920	---	---	---
		MEDIUM SPEED	---	1215	1100	1000	---	---	---	---	---
		LOW SPEED	1180	1130	1000	---	---	---	---	---	---
LN XO 030			0	20	40	60	80	100	120	140	160
AIR FLOW	m ³ /h	HIGH SPEED	---	---	1700	1625	1530	1370	1150	---	---
		MEDIUM SPEED	---	1350	1270	1180	1070	---	---	---	---
		LOW SPEED	1155	1120	1050	---	---	---	---	---	---
LN XO 036			0	20	40	60	80	100	120	140	160
AIR FLOW	m ³ /h	HIGH SPEED	---	---	2150	2050	1950	1800	1630	---	---
		LOW SPEED	---	1765	1700	1630	---	---	---	---	---
		LN XO 048			0	20	40	60	80	100	120
AIR FLOW	m ³ /h	HIGH SPEED	---	---	2450	2400	2300	2160	---	---	---
		LOW SPEED	---	2155	2115	2060	---	---	---	---	---
		LN XO 060			0	20	40	60	80	100	120
AIR FLOW	m ³ /h	HIGH SPEED	---	---	3450	3250	3050	2800	2550	2250	---
		LOW SPEED	---	2875	2670	2465	2250	---	---	---	---
		LN XO 070			0	20	40	60	80	100	120
AIR FLOW	m ³ /h	HIGH SPEED	---	---	4450	4300	4100	3850	3600	3350	3050
		LOW SPEED	---	3575	3400	3250	3050	---	---	---	---
		LN XO 080			0	20	40	60	80	100	120
AIR FLOW	m ³ /h	HIGH SPEED	---	---	4450	4300	4100	3850	3600	3350	3050
		LOW SPEED	---	3575	3400	3250	3050	---	---	---	---

--- Out of fan working limits

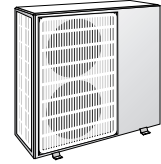
OUTDOOR UNIT CENTRIFUGAL FAN



		AIR FLOW m ³ /h						
MODELS		KCCK 018 KCHK 018	KCCK 024 KCHK 024	KCCK 030 KCHK 030	KCCK 036 KCHK 036	KCCK 048 KCHK 048	KCCK 060/070 KCHK 060/070	KCCK 080 KCHK 080
AVAILABLE STATIC PRESSURE Pa	0	2600	2500	3150	3100	3400	4950	5900
	10	2500	2400	3000	2900	3325	4850	5800
	20	2400	2350	2825	2800	3160	4750	5700
	30	2350	2300	2700	2700	3075	4625	5600
	40	2300	2200	2600	2600	2980	4525	5495
	50	2200	2150	2525	2500	2890	4425	5390
	60	2150	2050	2450	2400	2790	4325	5280
	70	1800	1950	2350	2300	2690	4225	5180
	80	---	1870	2250	2200	2580	4125	5075
	90	---	1750	2125	2100	2400	4040	4975
	100	---	---	2000	2000	---	3940	4875
	110	---	---	---	---	---	3840	4775
	120	---	---	---	---	---	3750	4675
	130	---	---	---	---	---	---	4575
	140	---	---	---	---	---	---	4460
	150	---	---	---	---	---	---	4350
160	---	---	---	---	---	---	---	

■ NOMINAL FLOW

1.- UNIT SELECTION



1.7.- COOLING CAPACITIES

SET WITH AXIAL FAN OUTDOOR UNIT

			NJCK / NJHK 018					NJCK / NJHK 024					NJCK / NJHK 030				
AIR INLET TEMPERATURE INDOOR UNIT	CAPACITY POWER INPUT IN kW		AIR INLET TEMPERATURE OUTDOOR UNIT °C DRY BULB														
			25°C	30°C	35°C	40°C	45°C	25°C	30°C	35°C	40°C	45°C	25°C	30°C	35°C	40°C	45°C
21°C	DB	TOTAL CAPACITY	4,67	4,51	4,33	4,13	3,92	6,08	5,87	5,64	5,39	5,10	7,11	6,86	6,59	6,29	5,97
15°C	WB	SENSIBLE CAP.	3,39	3,31	3,22	3,12	3,01	4,46	4,35	4,24	4,11	3,98	5,18	5,05	4,92	4,77	4,61
		POWER INPUT	1,52	1,69	1,87	2,09	2,35	2,00	2,21	2,45	2,73	3,06	2,41	2,65	2,93	3,25	3,64
24°C	DB	TOTAL CAPACITY	5,01	4,83	4,64	4,43	4,20	6,52	6,30	6,05	5,78	5,48	7,63	7,36	7,08	6,76	6,41
17°C	WB	SENSIBLE CAP.	3,61	3,52	3,43	3,34	3,23	4,75	4,65	4,53	4,40	4,27	5,52	5,39	5,26	5,11	4,95
		POWER INPUT	1,54	1,71	1,90	2,12	2,39	2,02	2,23	2,48	2,76	3,10	2,43	2,68	2,96	3,29	3,68
27°C	DB	TOTAL CAPACITY	5,37	5,18	5,00	4,76	4,51	7,00	6,75	6,50	6,20	5,88	8,19	7,91	7,60	7,26	6,89
19°C	WB	SENSIBLE CAP.	3,82	3,73	3,65	3,54	3,44	5,04	4,93	4,80	4,68	4,54	5,85	5,72	5,60	5,43	5,27
		POWER INPUT	1,57	1,73	1,95	2,15	2,42	2,05	2,26	2,50	2,80	3,15	2,46	2,71	3,00	3,33	3,73
29°C	DB	TOTAL CAPACITY	5,76	5,56	5,34	5,10	---	7,50	7,24	6,96	6,65	6,30	8,80	8,49	8,16	7,80	7,40
21°C	WB	SENSIBLE CAP.	3,82	3,73	3,64	3,54	---	5,03	4,92	4,80	4,68	4,53	5,85	5,72	5,58	5,43	5,27
		POWER INPUT	1,59	1,76	1,96	2,19	---	2,08	2,30	2,55	2,85	3,19	2,50	2,75	3,04	3,38	3,78
32°C	DB	TOTAL CAPACITY	6,17	5,96	5,72	5,47	---	8,04	7,76	7,46	7,12	---	9,44	9,11	8,76	8,37	---
23°C	WB	SENSIBLE CAP.	4,01	3,93	3,84	3,74	---	5,30	5,19	5,07	4,94	---	6,16	6,03	5,89	5,74	---
		POWER INPUT	1,61	1,79	1,99	2,23	---	2,11	2,33	2,59	2,89	---	2,53	2,79	3,09	3,43	---

			NJCK / NJHK 036					NJCK / NJHK 048					NJCK / NJHK 060				
AIR INLET TEMPERATURE INDOOR UNIT	CAPACITY POWER INPUT IN kW		AIR INLET TEMPERATURE OUTDOOR UNIT °C DRY BULB														
			25°C	30°C	35°C	40°C	45°C	25°C	30°C	35°C	40°C	45°C	25°C	30°C	35°C	40°C	45°C
21°C	DB	TOTAL CAPACITY	8,43	8,15	7,84	7,50	7,11	10,46	10,12	9,76	9,36	8,92	12,33	11,91	11,46	10,99	10,48
15°C	WB	SENSIBLE CAP.	6,32	6,18	6,02	5,86	5,68	7,81	7,64	7,46	7,27	7,06	9,18	8,97	8,75	8,52	8,28
		POWER INPUT	2,82	3,12	3,46	3,83	4,24	3,49	3,80	4,14	4,53	4,98	4,29	4,69	5,14	5,63	6,17
24°C	DB	TOTAL CAPACITY	9,06	8,76	8,43	8,06	7,64	11,23	10,88	10,49	10,07	9,60	13,27	12,82	12,34	11,83	11,29
17°C	WB	SENSIBLE CAP.	6,76	6,62	6,46	6,30	6,11	8,35	8,18	8,00	7,81	7,59	9,82	9,61	9,39	9,16	8,91
		POWER INPUT	2,86	3,16	3,50	3,88	4,30	3,51	3,83	4,18	4,57	5,03	4,36	4,77	5,23	5,73	6,27
27°C	DB	TOTAL CAPACITY	9,73	9,41	9,10	8,66	8,21	12,07	11,69	11,30	10,83	10,32	14,27	13,79	13,30	12,73	12,14
19°C	WB	SENSIBLE CAP.	7,18	7,04	6,90	6,72	6,52	8,87	8,70	8,50	8,33	8,11	10,44	10,23	10,00	9,77	9,52
		POWER INPUT	2,90	3,21	3,60	3,94	4,36	3,53	3,85	4,20	4,61	5,08	4,45	4,86	5,30	5,83	6,39
29°C	DB	TOTAL CAPACITY	10,45	10,11	9,72	9,30	8,80	12,97	12,56	12,13	11,64	11,10	15,34	14,83	14,29	13,70	13,06
21°C	WB	SENSIBLE CAP.	7,18	7,03	6,88	6,70	6,51	8,86	8,70	8,52	8,32	8,10	10,44	10,23	10,01	9,77	9,51
		POWER INPUT	2,95	3,26	3,61	4,00	4,42	3,55	3,88	4,24	4,65	5,13	4,53	4,95	5,42	5,94	6,51
32°C	DB	TOTAL CAPACITY	11,21	10,84	10,43	9,97	---	13,93	13,50	13,03	12,51	11,92	16,48	15,94	15,36	14,73	---
23°C	WB	SENSIBLE CAP.	7,57	7,43	7,27	7,10	---	9,36	9,19	9,01	8,82	8,60	11,03	10,82	10,59	10,35	---
		POWER INPUT	3,00	3,32	3,67	4,06	---	3,58	3,91	4,28	4,70	5,18	4,63	5,05	5,53	6,06	---

			NJCK / NJHK 070					NJCK / NJHK 080				
AIR INLET TEMPERATURE INDOOR UNIT	CAPACITY POWER INPUT IN kW		AIR INLET TEMPERATURE OUTDOOR UNIT °C DRY BULB									
			25°C	30°C	35°C	40°C	45°C	25°C	30°C	35°C	40°C	45°C
21°C	DB	TOTAL CAPACITY	15,24	14,71	14,16	13,59	12,98	16,77	16,19	15,57	14,88	14,11
15°C	WB	SENSIBLE CAP.	11,23	10,97	10,69	10,41	10,12	12,45	12,16	11,85	11,52	11,15
		POWER INPUT	5,00	5,47	6,00	6,59	7,24	5,70	6,27	6,92	7,65	8,47
24°C	DB	TOTAL CAPACITY	16,35	15,79	15,20	14,59	13,94	18,03	17,41	16,74	16,01	15,18
17°C	WB	SENSIBLE CAP.	11,98	11,72	11,44	11,16	10,86	13,31	13,02	12,71	12,37	12,00
		POWER INPUT	5,08	5,56	6,09	6,68	7,35	5,82	6,40	7,05	7,78	8,61
27°C	DB	TOTAL CAPACITY	17,54	16,93	16,30	15,65	14,97	19,38	18,72	18,00	17,21	16,33
19°C	WB	SENSIBLE CAP.	12,70	12,44	12,20	11,87	11,58	14,14	13,85	13,50	13,19	12,81
		POWER INPUT	5,17	5,65	6,20	6,79	7,46	5,95	6,54	7,20	7,94	8,76
29°C	DB	TOTAL CAPACITY	18,81	18,17	17,50	16,79	16,06	20,83	20,12	19,36	18,51	---
21°C	WB	SENSIBLE CAP.	12,69	12,42	12,14	11,85	11,56	14,14	13,85	13,53	13,18	---
		POWER INPUT	5,26	5,75	6,30	6,91	7,59	6,10	6,69	7,36	8,10	---
32°C	DB	TOTAL CAPACITY	20,17	19,48	18,76	18,01	17,22	22,38	21,62	20,79	19,88	---
23°C	WB	SENSIBLE CAP.	13,37	13,10	12,82	12,53	12,24	14,93	14,63	14,31	13,96	---
		POWER INPUT	5,37	5,86	6,41	7,03	7,72	6,26	6,87	7,54	8,29	---

CALCULATION OF COOLING CAPACITY DEPENDING ON AIR FLOW

Data based on the following nominal indoor fan air flow:

MODELS	018	024	030	036	048	060	070	080
INDOOR AIR FLOW M ³ /H	800	1100	1250	1650	2050	2400	3400	3750

CORRECTION COEFFICIENT TO FIX TO THE CAPACITY OF DIFFERENT INDOOR AIR FLOW:

	% NOMINAL AIR FLOW			
	70%	80%	90%	100%
Total capacity	0,96	0,97	0,98	1
Sensible capacity	0,9	0,93	0,96	1
Power input	0,98	0,99	1	1

Data based on the following nominal outdoor fan air flow:

MODELS	018	024	030	036	048	060	070	080
OUTDOOR AIR FLOW M ³ /H	1800	2800	3100	3200	5500	5500	5200	5200

Nominal capacities

DB - Dry bulb
WB - Wet bulb



1.- UNIT SELECTION

1.7.- COOLING CAPACITIES

SET WITH CENTRIFUGAL FAN OUTDOOR UNIT

		NCCK / NCHK 018					NCCK / NCHK 024					NCCK / NCHK 030				
AIR INLET TEMPERATURE INDOOR UNIT	CAPACITY POWER INPUT IN KW	AIR INLET TEMPERATURE OUTDOOR UNIT °C DRY BULB														
		25°C	30°C	35°C	40°C	45°C	25°C	30°C	35°C	40°C	45°C	25°C	30°C	35°C	40°C	45°C
21°C DB	TOTAL CAPACITY	4,75	4,59	4,42	4,24	4,03	6,17	5,96	5,73	5,48	5,21	7,15	6,90	6,64	6,35	6,02
15°C WB	SENSIBLE CAP.	3,43	3,35	3,26	3,17	3,07	4,50	4,40	4,28	4,16	4,03	5,20	5,07	4,94	4,80	4,64
	POWER INPUT	1,67	1,81	1,98	2,18	2,41	2,12	2,32	2,54	2,81	3,13	2,72	2,95	3,22	3,53	3,90
24°C DB	TOTAL CAPACITY	5,10	4,93	4,75	4,55	4,34	6,62	6,39	6,15	5,89	5,59	7,68	7,41	7,13	6,82	6,48
17°C WB	SENSIBLE CAP.	3,65	3,57	3,48	3,39	3,29	4,80	4,69	4,58	4,45	4,32	5,54	5,42	5,28	5,14	4,98
	POWER INPUT	1,68	1,83	2,00	2,20	2,43	2,14	2,34	2,57	2,84	3,16	2,75	2,98	3,25	3,57	3,94
27°C DB	TOTAL CAPACITY	5,47	5,29	5,10	4,89	4,66	7,10	6,86	6,60	6,32	6,01	8,25	7,97	7,70	7,33	6,96
19°C WB	SENSIBLE CAP.	3,87	3,78	3,70	3,60	3,50	5,08	4,98	4,85	4,74	4,60	5,87	5,75	5,60	5,46	5,30
	POWER INPUT	1,69	1,84	2,02	2,22	2,45	2,16	2,36	2,60	2,87	3,19	2,77	3,01	3,30	3,60	3,98
29°C DB	TOTAL CAPACITY	5,88	5,69	5,48	5,25	---	7,62	7,36	7,08	6,78	6,45	8,86	8,56	8,23	7,88	7,49
21°C WB	SENSIBLE CAP.	3,87	3,78	3,70	3,60	---	5,08	4,97	4,86	4,73	4,59	5,87	5,74	5,61	5,46	5,30
	POWER INPUT	1,71	1,86	2,04	2,24	---	2,19	2,39	2,63	2,91	3,23	2,80	3,04	3,32	3,64	4,03
32°C DB	TOTAL CAPACITY	6,31	6,10	5,88	5,64	---	8,17	7,90	7,60	7,28	---	9,51	9,19	8,84	8,46	---
23°C WB	SENSIBLE CAP.	4,07	3,99	3,90	3,80	---	5,35	5,24	5,12	5,00	---	6,19	6,06	5,92	5,77	---
	POWER INPUT	1,72	1,88	2,06	2,26	---	2,21	2,42	2,66	2,95	---	2,83	3,08	3,36	3,69	---

		NCCK / NCHK 036					NCCK / NCHK 048					NCCK / NCHK 060				
AIR INLET TEMPERATURE INDOOR UNIT	CAPACITY POWER INPUT IN KW	AIR INLET TEMPERATURE OUTDOOR UNIT °C DRY BULB														
		25°C	30°C	35°C	40°C	45°C	25°C	30°C	35°C	40°C	45°C	25°C	30°C	35°C	40°C	45°C
21°C DB	TOTAL CAPACITY	8,40	8,11	7,80	7,45	7,06	10,29	9,93	9,54	9,11	8,62	12,50	12,08	11,63	11,17	10,67
15°C WB	SENSIBLE CAP.	6,30	6,16	6,00	5,84	5,65	7,72	7,55	7,36	7,15	6,91	9,27	9,06	8,84	8,61	8,37
	POWER INPUT	3,15	3,44	3,77	4,14	4,54	3,88	4,21	4,58	5,00	5,50	4,83	5,21	5,64	6,11	6,63
24°C DB	TOTAL CAPACITY	9,02	8,71	8,38	8,01	7,58	11,04	10,66	10,24	9,78	9,25	13,45	13,01	12,53	12,03	11,49
17°C WB	SENSIBLE CAP.	6,74	6,60	6,44	6,27	6,08	8,26	8,08	7,89	7,67	7,44	9,91	9,70	9,48	9,25	9,01
	POWER INPUT	3,19	3,49	3,82	4,19	4,60	3,92	4,25	4,63	5,07	5,57	4,89	5,28	5,72	6,20	6,72
27°C DB	TOTAL CAPACITY	9,69	9,36	9,00	8,60	8,14	11,84	11,43	11,00	10,49	9,91	14,47	14,00	13,50	12,96	12,38
19°C WB	SENSIBLE CAP.	7,16	7,02	6,85	6,69	6,49	8,77	8,59	8,40	8,18	7,94	10,54	10,32	10,10	9,87	9,62
	POWER INPUT	3,24	3,54	3,86	4,25	4,66	3,96	4,30	4,70	5,14	5,65	4,97	5,36	5,79	6,29	6,82
29°C DB	TOTAL CAPACITY	10,40	10,05	9,66	9,23	8,72	12,70	12,27	11,79	11,25	10,62	15,57	15,07	14,53	13,95	13,33
21°C WB	SENSIBLE CAP.	7,15	7,01	6,85	6,68	6,47	8,76	8,58	8,38	8,16	7,91	10,54	10,33	10,11	9,87	9,62
	POWER INPUT	3,28	3,59	3,93	4,31	4,72	4,01	4,36	4,75	5,21	5,73	5,04	5,44	5,89	6,38	6,93
32°C DB	TOTAL CAPACITY	11,15	10,78	10,36	9,88	---	13,62	13,15	12,64	12,05	11,36	16,74	16,20	15,63	15,01	---
23°C WB	SENSIBLE CAP.	7,55	7,41	7,25	7,07	---	9,24	9,06	8,86	8,64	8,39	11,13	10,92	10,70	10,46	---
	POWER INPUT	3,34	3,65	3,99	4,37	---	4,05	4,41	4,82	5,29	5,82	5,12	5,53	5,98	6,48	---

		NCCK / NCHK 070					NCCK / NCHK 080				
AIR INLET TEMPERATURE INDOOR UNIT	CAPACITY POWER INPUT IN KW	AIR INLET TEMPERATURE OUTDOOR UNIT °C DRY BULB									
		25°C	30°C	35°C	40°C	45°C	25°C	30°C	35°C	40°C	45°C
21°C DB	TOTAL CAPACITY	15,09	14,56	14,00	13,42	12,80	16,97	16,40	15,79	15,12	14,38
15°C WB	SENSIBLE CAP.	11,16	10,89	10,61	10,33	10,03	12,55	12,27	11,96	11,64	11,28
	POWER INPUT	5,52	5,99	6,51	7,10	7,76	6,47	7,00	7,60	8,29	9,06
24°C DB	TOTAL CAPACITY	16,18	15,61	15,02	14,40	13,74	18,25	17,64	16,99	16,28	15,49
17°C WB	SENSIBLE CAP.	11,90	11,63	11,36	11,07	10,77	13,42	13,13	12,83	12,50	12,14
	POWER INPUT	5,60	6,08	6,61	7,21	7,88	6,57	7,11	7,72	8,41	9,18
27°C DB	TOTAL CAPACITY	17,34	16,73	16,10	15,44	14,74	19,62	18,98	18,30	17,53	16,68
19°C WB	SENSIBLE CAP.	12,62	12,35	12,10	11,78	11,48	14,25	13,97	13,65	13,33	12,96
	POWER INPUT	5,70	6,18	6,71	7,33	8,00	6,68	7,23	7,85	8,54	9,31
29°C DB	TOTAL CAPACITY	18,59	17,94	17,26	16,55	15,81	21,11	20,42	19,68	18,87	---
21°C WB	SENSIBLE CAP.	12,60	12,32	12,04	11,75	11,46	14,26	13,97	13,66	13,33	---
	POWER INPUT	5,80	6,29	6,84	7,46	8,14	6,81	7,36	7,98	8,68	---
32°C DB	TOTAL CAPACITY	19,92	19,22	18,49	17,73	16,94	22,70	21,96	21,17	20,29	---
23°C WB	SENSIBLE CAP.	13,27	13,00	12,72	12,43	12,13	15,05	14,76	14,45	14,12	---
	POWER INPUT	5,92	6,41	6,97	7,60	8,29	6,95	7,51	8,14	8,84	---

CALCULATION OF COOLING CAPACITY DEPENDING ON AIR FLOW

Data based on the following nominal indoor fan air flow:

MODELS	018	024	030	036	048	060	070	080
INDOOR AIR FLOW M ³ /H	800	1100	1250	1650	2050	2400	3400	3750

CORRECTION COEFFICIENT TO FIX TO THE CAPACITY OF DIFFERENT INDOOR AIR FLOW:

% NOMINAL AIR FLOW				
70% 80% 90% 100%				
Total capacity	0,96	0,97	0,98	1
Sensible capacity	0,9	0,93	0,96	1
Power input	0,98	0,99	1	1

Data based on the following nominal outdoor fan air flow:

MODELS	018	024	030	036	048	060	070	080
OUTDOOR AIR FLOW M ³ /H	2200	2150	2525	2500	2890	4425	4425	5390

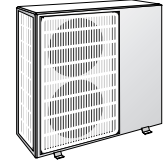
% NOMINAL AIR FLOW			
80% 90% 100%			
Total capacity	0,97	0,98	1
Sensible capacity	0,93	0,96	1
Power input	0,99	1	1

Nominal capacities

DB - Dry bulb
WB - Wet bulb

CORRECTION COEFFICIENT TO FIX TO THE CAPACITY OF DIFFERENT OUTDOOR AIR FLOW:

1.- UNIT SELECTION



1.7.- HEATING CAPACITIES

SET WITH AXIAL FAN OUTDOOR UNIT

		NJHK 018							NJHK 024							NJHK 030						
AIR INLET TEMPERATURE INDOOR UNIT		AIR INLET TEMPERATURE OUTDOOR UNIT °C WET BULB																				
kW		-10°C	-5°C	0°C	6°C	10°C	14°C	18°C	-10°C	-5°C	0°C	6°C	10°C	14°C	18°C	-10°C	-5°C	0°C	6°C	10°C	14°C	18°C
15°C DB	Total capacity	3,39	3,86	4,39	5,15	5,72	6,37	7,07	4,29	4,88	5,56	6,51	7,25	8,07	8,98	5,34	6,06	6,89	8,06	8,95	9,94	11,02
	Power input	1,39	1,46	1,54	1,67	1,77	1,90	2,05	1,82	1,90	2,00	2,15	2,27	2,42	2,61	2,24	2,34	2,47	2,65	2,81	3,00	3,23
18°C DB	Total capacity	3,39	3,86	4,39	5,13	5,70	6,33	7,02	4,30	4,89	5,56	6,50	7,22	8,03	8,92	5,35	6,07	6,89	8,03	8,91	9,88	10,94
	Power input	1,47	1,55	1,64	1,77	1,88	2,02	2,18	1,93	2,02	2,12	2,28	2,41	2,58	2,77	2,36	2,47	2,61	2,81	2,98	3,18	3,43
20°C DB	Total capacity	3,40	3,86	4,39	5,15	5,69	6,31	6,99	4,31	4,89	5,56	6,50	7,21	8,01	8,88	5,36	6,07	6,89	8,00	8,89	9,85	10,89
	Power input	1,53	1,61	1,71	1,85	1,97	2,11	2,28	2,00	2,10	2,21	2,38	2,52	2,69	2,89	2,45	2,57	2,71	2,90	3,10	3,32	3,57
24°C DB	Total capacity	3,42	3,88	4,40	5,12	5,67	6,27	---	4,35	4,92	5,57	6,49	7,19	7,96	8,81	5,39	6,09	6,89	8,01	8,85	9,78	---
	Power input	1,67	1,75	1,86	2,02	2,15	2,30	---	2,17	2,27	2,40	2,59	2,74	2,93	3,15	2,65	2,78	2,94	3,18	3,37	3,61	---
27°C DB	Total capacity	3,45	3,90	4,41	5,12	---	---	---	4,38	4,94	5,59	6,49	7,18	7,94	---	5,42	6,12	6,91	8,00	8,83	---	---
	Power input	1,78	1,88	1,99	2,16	---	---	---	2,32	2,43	2,56	2,76	2,93	3,13	---	2,82	2,96	3,13	3,39	3,60	---	---

		NJHK 036							NJHK 048							NJHK 060						
AIR INLET TEMPERATURE INDOOR UNIT		AIR INLET TEMPERATURE OUTDOOR UNIT °C WET BULB																				
kW		-10°C	-5°C	0°C	6°C	10°C	14°C	18°C	-10°C	-5°C	0°C	6°C	10°C	14°C	18°C	-10°C	-5°C	0°C	6°C	10°C	14°C	18°C
15°C DB	Total capacity	6,08	6,91	7,90	9,32	10,42	11,63	12,95	7,91	9,03	10,28	12,02	13,34	14,80	16,40	8,78	10,08	11,59	13,72	15,35	17,17	19,17
	Power input	2,53	2,65	2,80	3,02	3,21	3,43	3,68	3,32	3,48	3,65	3,90	4,09	4,31	4,57	3,68	3,89	4,14	4,51	4,82	5,18	5,60
18°C DB	Total capacity	6,08	6,92	7,90	9,30	10,38	11,57	12,85	7,91	9,01	10,25	11,96	13,26	14,69	16,26	8,77	10,07	11,57	13,67	15,28	17,07	19,02
	Power input	2,68	2,81	2,97	3,21	3,40	3,63	3,89	3,49	3,65	3,84	4,09	4,30	4,54	4,82	3,87	4,09	4,36	4,75	5,07	5,45	5,88
20°C DB	Total capacity	6,09	6,92	7,90	9,30	10,35	11,52	12,78	7,91	9,00	10,23	11,90	13,21	14,62	16,15	8,77	10,07	11,56	13,60	15,24	17,00	18,93
	Power input	2,79	2,92	3,09	3,35	3,54	3,77	4,04	3,61	3,77	3,96	4,20	4,45	4,70	4,99	4,00	4,24	4,51	4,89	5,25	5,64	6,08
24°C DB	Total capacity	6,12	6,94	7,91	9,27	10,30	11,43	12,63	7,91	8,99	10,20	11,86	13,10	14,47	15,94	8,80	10,08	11,55	13,59	15,15	16,87	---
	Power input	3,02	3,17	3,35	3,61	3,83	4,07	4,35	3,85	4,03	4,24	4,53	4,77	5,04	5,36	4,28	4,53	4,83	5,27	5,62	6,03	---
27°C DB	Total capacity	6,16	6,97	7,92	9,26	10,26	11,35	---	7,92	8,99	10,18	11,81	13,03	14,35	---	8,85	10,11	11,55	13,56	15,09	16,76	---
	Power input	3,21	3,37	3,56	3,84	4,06	4,31	---	4,05	4,24	4,46	4,78	5,03	5,32	---	3,65	3,92	4,24	4,70	5,07	5,49	---

		NJHK 070							NJHK 080						
AIR INLET TEMPERATURE INDOOR UNIT		AIR INLET TEMPERATURE OUTDOOR UNIT °C WET BULB													
kW		-10°C	-5°C	0°C	6°C	10°C	14°C	18°C	-10°C	-5°C	0°C	6°C	10°C	14°C	18°C
15°C DB	Total capacity	10,98	12,54	14,33	16,83	18,74	20,86	23,20	11,57	13,37	15,42	18,30	20,52	23,00	25,77
	Power input	4,49	4,72	5,00	5,41	5,75	6,14	6,60	4,96	5,24	5,58	6,07	6,49	6,98	7,58
18°C DB	Total capacity	10,93	12,50	14,27	16,75	18,63	20,72	23,01	11,56	13,36	15,39	18,24	20,43	22,87	25,57
	Power input	4,72	4,98	5,27	5,71	6,05	6,46	6,94	5,25	5,55	5,91	6,43	6,87	7,38	8,00
20°C DB	Total capacity	10,90	12,47	14,24	16,70	18,56	20,62	22,89	11,56	13,36	15,38	18,20	20,37	22,78	25,44
	Power input	4,89	5,15	5,46	5,90	6,27	6,69	7,18	5,46	5,78	6,15	6,69	7,14	7,67	8,29
24°C DB	Total capacity	10,85	12,42	14,17	16,60	18,43	20,45	22,66	11,59	13,37	15,37	18,15	20,26	22,59	25,15
	Power input	5,24	5,53	5,87	6,35	6,73	7,18	7,70	5,93	6,27	6,67	7,25	7,72	8,27	8,91
27°C DB	Total capacity	10,82	12,39	14,14	16,54	18,35	20,33	---	11,63	13,40	15,39	18,11	20,18	22,45	---
	Power input	5,52	5,83	6,19	6,70	7,11	7,58	---	6,32	6,68	7,10	7,70	8,19	8,76	---

Nominal capacities

DB - Dry bulb
WB - Wet bulb

CALCULATION OF HEATING CAPACITY DEPENDING ON AIR FLOW

Data based on the following nominal indoor fan air flow:

MODELS	018	024	030	036	048	060	070	080
INDOOR AIR FLOW M ³ /H	800	1100	1250	1650	2050	2400	3400	3750

Data based on the following nominal outdoor fan air flow:

MODELS	018	024	030	036	048	060	070	080
OUTDOOR AIR FLOW M ³ /H	1800	2800	3100	3200	5500	5500	5200	5200

CORRECTION COEFFICIENT TO FIX TO THE CAPACITY OF DIFFERENT INDOOR AIR FLOW:

% NOMINAL AIR FLOW				
	70%	80%	90%	100%
Total capacity	0,96	0,97	0,98	1
Sensible capacity	0,9	0,93	0,96	1
Power input	0,98	0,99	1	1



1.- UNIT SELECTION

1.7.- HEATING CAPACITIES

SET WITH CENTRIFUGAL FAN OUTDOOR UNIT

AIR INLET TEMPERATURE INDOOR UNIT		kW		AIR INLET TEMPERATURE OUTDOOR UNIT °C WET BULB																				
				NCHK 018				NCHK 024				NCHK 030												
				-10°C	-5°C	0°C	6°C	10°C	14°C	18°C	-10°C	-5°C	0°C	6°C	10°C	14°C	18°C	-10°C	-5°C	0°C	6°C	10°C	14°C	18°C
15°C DB	Total capacity			3,56	4,06	4,63	5,43	6,03	6,70	7,42	4,52	5,16	5,88	6,89	7,66	8,51	9,45	5,59	6,35	7,23	8,45	9,38	10,40	11,52
	Power input			1,61	1,68	1,76	1,89	1,99	2,12	2,27	1,97	2,06	2,16	2,32	2,45	2,60	2,79	2,61	2,72	2,85	3,04	3,20	3,39	3,62
18°C DB	Total capacity			3,57	4,06	4,62	5,41	6,00	6,65	7,36	4,53	5,15	5,87	6,86	7,62	8,46	9,37	5,59	6,35	7,21	8,42	9,33	10,33	11,43
	Power input			1,69	1,76	1,85	1,99	2,10	2,24	2,40	2,08	2,17	2,28	2,45	2,59	2,75	2,95	2,74	2,85	2,99	3,19	3,37	3,57	3,82
20°C DB	Total capacity			3,57	4,06	4,62	5,40	5,98	6,62	7,32	4,53	5,15	5,86	6,85	7,60	8,42	9,32	5,60	6,35	7,21	8,40	9,30	10,29	11,37
	Power input			1,75	1,82	1,92	2,06	2,18	2,33	2,50	2,15	2,25	2,36	2,54	2,69	2,86	3,07	2,83	2,94	3,09	3,23	3,49	3,70	3,96
24°C DB	Total capacity			3,59	4,07	4,62	5,37	5,94	6,57	---	4,55	5,17	5,86	6,83	7,56	8,36	9,22	5,62	6,36	7,20	8,37	9,25	10,21	---
	Power input			1,87	1,96	2,07	2,23	2,36	2,52	---	2,31	2,42	2,55	2,75	2,91	3,10	3,32	3,02	3,15	3,31	3,55	3,75	3,99	---
27°C DB	Total capacity			3,60	4,08	4,62	5,37	---	---	---	4,58	5,18	5,87	6,82	7,53	8,31	---	5,65	6,38	7,21	8,35	9,21	---	---
	Power input			1,98	2,08	2,19	2,37	---	---	---	2,45	2,57	2,71	2,92	3,09	3,30	---	3,19	3,33	3,51	3,77	3,98	---	---

AIR INLET TEMPERATURE INDOOR UNIT		kW		AIR INLET TEMPERATURE OUTDOOR UNIT °C WET BULB																				
				NCHK 036				NCHK 048				NCHK 060												
				-10°C	-5°C	0°C	6°C	10°C	14°C	18°C	-10°C	-5°C	0°C	6°C	10°C	14°C	18°C	-10°C	-5°C	0°C	6°C	10°C	14°C	18°C
15°C DB	Total capacity			6,05	6,87	7,85	9,26	10,35	11,56	12,88	7,57	8,63	9,82	11,48	12,75	14,17	15,73	9,26	10,65	12,26	14,50	16,22	18,11	20,17
	Power input			2,75	2,86	2,99	3,20	3,36	3,56	3,79	3,38	3,52	3,68	3,91	4,08	4,28	4,52	4,41	4,62	4,88	5,26	5,56	5,92	6,34
18°C DB	Total capacity			6,06	6,88	7,85	9,24	10,32	11,50	12,80	7,58	8,62	9,80	11,44	12,69	14,08	15,62	9,24	10,63	12,22	14,44	16,12	17,98	20,00
	Power input			2,89	3,01	3,15	3,36	3,54	3,75	3,99	3,54	3,69	3,86	4,09	4,28	4,49	4,75	4,60	4,82	5,09	5,49	5,81	6,19	6,62
20°C DB	Total capacity			6,07	6,89	7,85	9,20	10,29	11,47	12,73	7,59	8,62	9,79	11,40	12,65	14,03	15,54	9,24	10,62	12,20	14,40	16,06	17,90	19,88
	Power input			2,99	3,11	3,26	3,50	3,67	3,88	4,13	3,65	3,81	3,98	4,21	4,42	4,64	4,91	4,73	4,96	5,24	5,65	5,98	6,37	6,81
24°C DB	Total capacity			6,11	6,91	7,87	9,22	10,25	11,38	12,59	7,61	8,63	9,78	11,37	12,58	13,91	15,37	9,26	10,62	12,17	14,32	15,95	17,73	---
	Power input			3,20	3,34	3,50	3,74	3,94	4,16	4,41	3,89	4,05	4,24	4,50	4,72	4,97	5,26	5,00	5,25	5,55	6,00	6,35	6,75	---
27°C DB	Total capacity			6,14	6,94	7,88	9,21	10,22	11,32	---	7,63	8,64	9,78	11,34	12,53	13,83	---	9,30	10,63	12,16	14,27	15,86	17,59	---
	Power input			3,38	3,52	3,69	3,95	4,15	4,38	---	4,08	4,25	4,45	4,74	4,97	5,24	---	5,21	5,48	5,80	6,27	6,63	7,05	---

AIR INLET TEMPERATURE INDOOR UNIT		kW		AIR INLET TEMPERATURE OUTDOOR UNIT °C WET BULB													
				NCHK 070				NCHK 080									
				-10°C	-5°C	0°C	6°C	10°C	14°C	18°C	-10°C	-5°C	0°C	6°C	10°C	14°C	18°C
15°C DB	Total capacity			10,83	12,35	14,10	16,56	18,45	20,56	22,89	12,09	13,98	16,13	19,14	21,45	24,04	26,89
	Power input			4,74	4,96	5,21	5,57	5,87	6,22	6,63	5,72	5,98	6,29	6,75	7,13	7,59	8,14
18°C DB	Total capacity			10,78	12,31	14,05	16,49	18,36	20,43	22,72	12,07	13,96	16,09	19,07	21,34	23,88	26,67
	Power input			4,96	5,19	5,45	5,84	6,15	6,52	6,95	5,98	6,26	6,59	7,07	7,47	7,95	8,51
20°C DB	Total capacity			10,76	12,29	14,02	16,50	18,30	20,35	22,61	12,07	13,95	16,07	19,00	21,27	23,77	26,51
	Power input			5,11	5,35	5,63	6,02	6,35	6,73	7,17	6,17	6,46	6,80	7,31	7,71	8,20	8,77
24°C DB	Total capacity			10,71	12,25	13,98	16,37	18,19	20,20	22,40	12,08	13,95	16,05	18,94	21,13	23,55	26,18
	Power input			5,43	5,70	6,00	6,43	6,78	7,18	7,65	6,59	6,90	7,27	7,80	8,23	8,73	9,32
27°C DB	Total capacity			10,69	12,22	13,95	16,32	18,11	20,09	---	12,12	13,97	16,04	18,88	21,02	23,37	---
	Power input			5,69	5,98	6,30	6,76	7,12	7,55	---	6,93	7,27	7,65	8,21	8,65	9,17	---

Nominal capacities

DB - Dry bulb
WB - Wet bulb

CALCULATION OF HEATING CAPACITY DEPENDING ON AIR FLOW

Data based on the following nominal indoor fan air flow:

MODELS	018	024	030	036	048	060	070	080
INDOOR AIR FLOW M ³ /H	800	1100	1250	1650	2050	2400	3400	3750

Data based on the following nominal outdoor fan air flow:

MODELS	018	024	030	036	048	060	070	080
OUTDOOR AIR FLOW M ³ /H	2200	2150	2525	2500	2890	4425	4425	5390

CORRECTION COEFFICIENT TO FIX TO THE CAPACITY OF DIFFERENT INDOOR AIR FLOW:

	% NOMINAL AIR FLOW			
	70%	80%	90%	100%
Total capacity	0,96	0,97	0,98	1
Sensible capacity	0,9	0,93	0,96	1
Power input	0,98	0,99	1	1

CORRECTION COEFFICIENT TO FIX TO THE CAPACITY OF DIFFERENT OUTDOOR AIR FLOW:

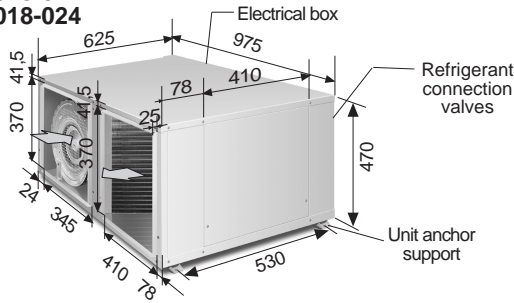
	% NOMINAL AIR FLOW		
	80%	90%	100%
Total capacity	0,97	0,98	1
Sensible capacity	0,93	0,96	1
Power input	0,99	1	1

1.- UNIT SELECTION

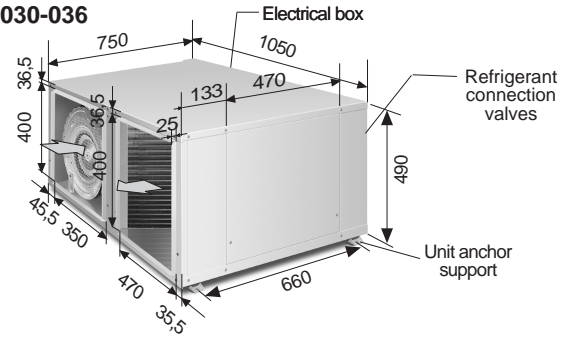
1.8.- UNIT DIMENSIONS (mm)

OUTDOOR UNIT WITH CENTRIFUGAL FAN

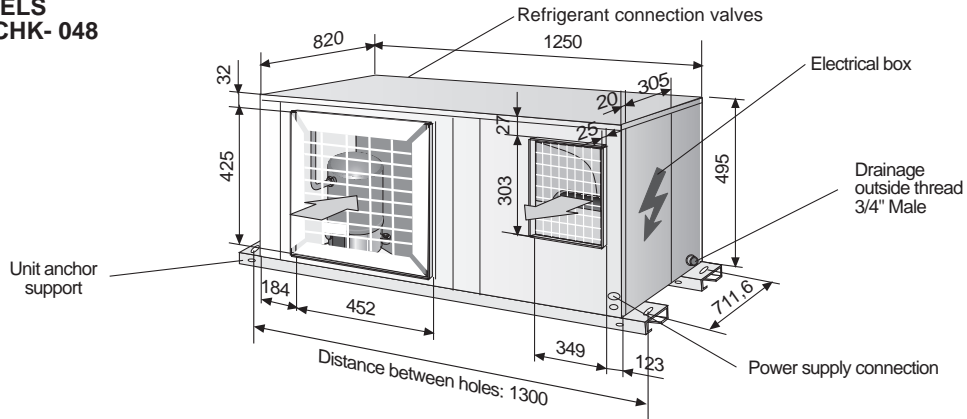
MODELS
KCCK- 018-024
KCHK- 018-024



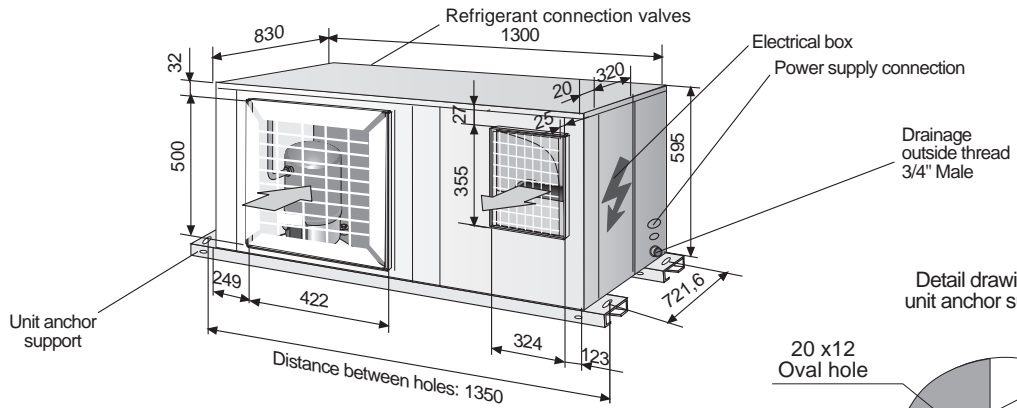
MODELS
KCCK- 030-036
KCHK- 030-036



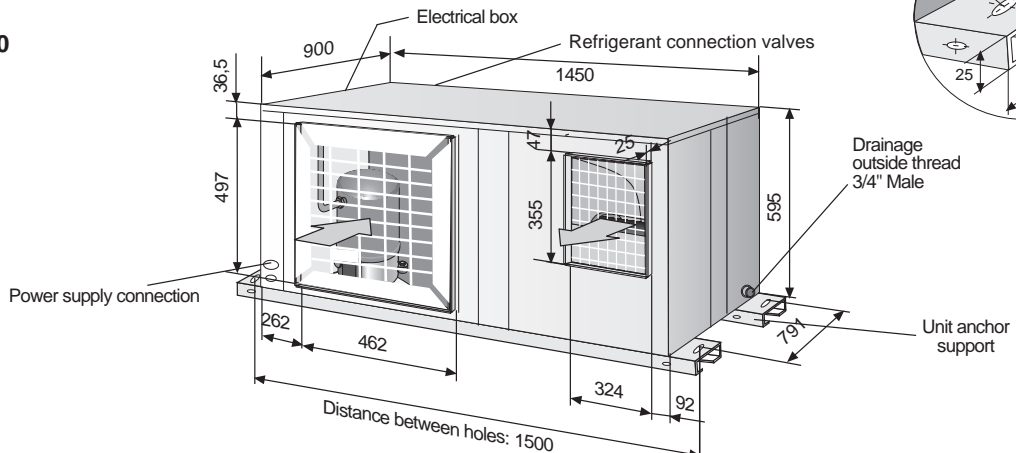
MODELS
KCCK/ KCHK- 048



MODELS
KCCK- 060-070
KCHK- 060-070



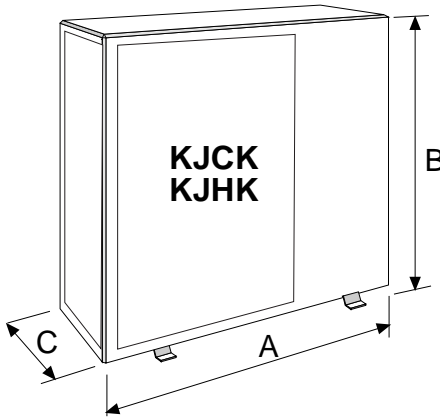
MODELS
KCCK/ KCHK- 080



1.- UNIT SELECTION

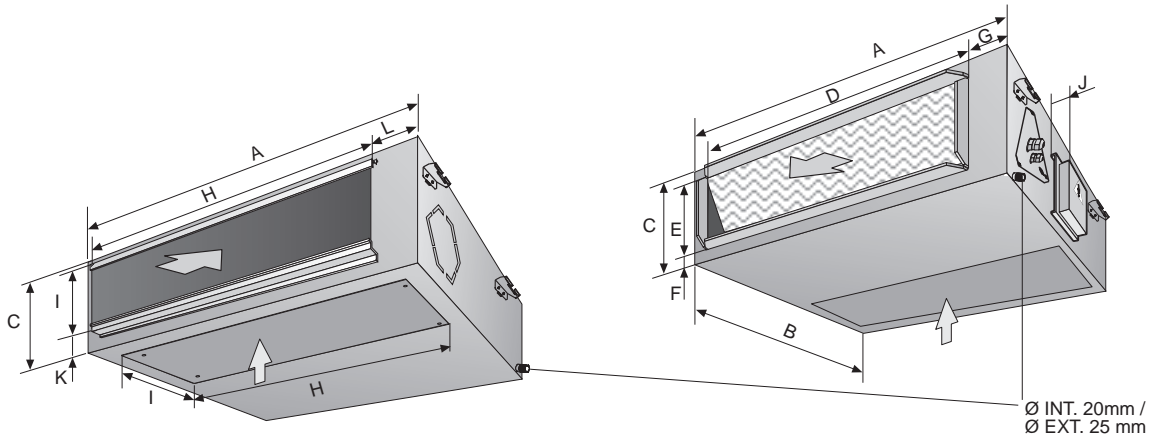
1.8.- UNIT DIMENSIONS (mm)

OUTDOOR UNIT WITH AXIAL FAN

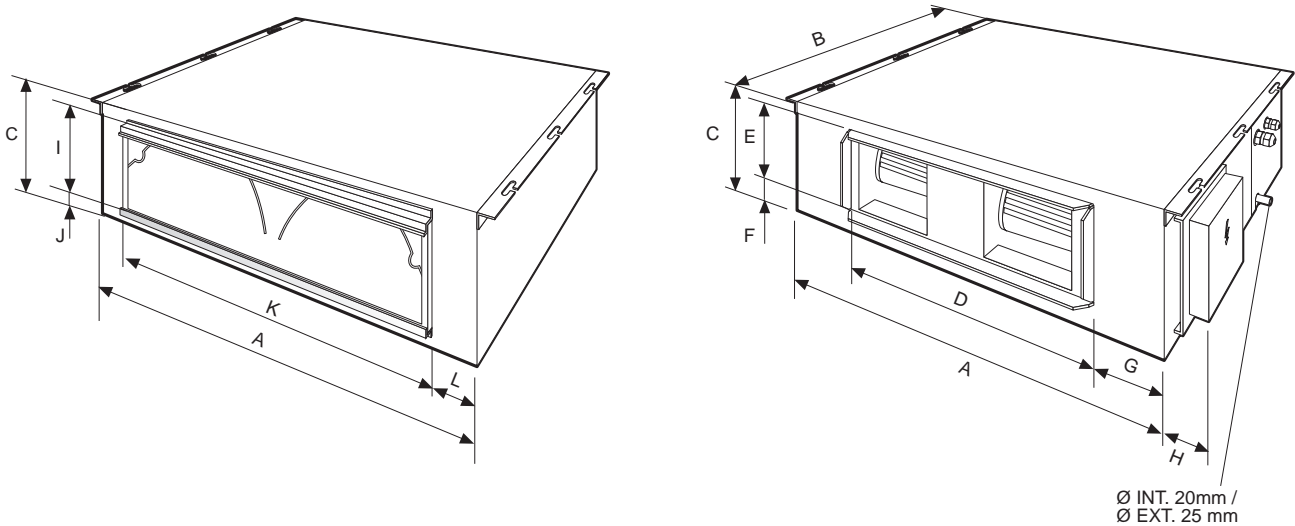


	KJCK KJHK 018	KJCK KJHK 024	KJCK KJHK 030	KJCK KJHK 036	KJCK KJHK 048	KJCK KJHK 060	KJCK KJHK 070	KJCK KJHK 080
A	773	773	973	973	973	973	998	998
B	629	629	781	931	1239	1239	1230	1230
C	333	333	333	333	333	333	386	386

INDOOR UNIT LN XO 018-024-030-036-048-060



INDOOR UNIT LN XO 070-080

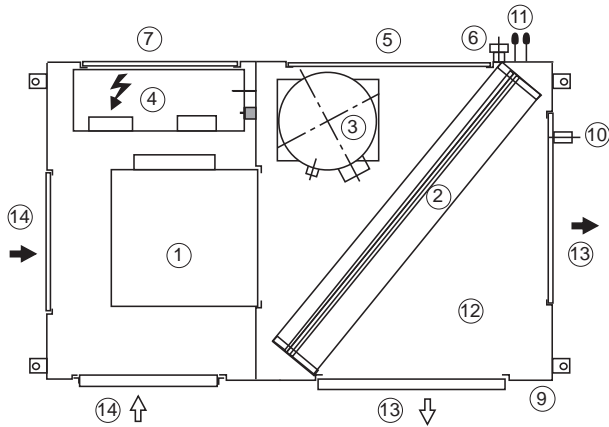


	A	B	C	D	E	F	G	H	I	J	K	L
LN XO 018-024 mm.	1000	535	235	880	153	40	60	885	175	76	27	58
LN XO 030-036 mm.	1000	700	287	880	203	40	60	885	225	76	28	58
LN XO 048-060 mm.	1195	750	315	1050	228	40	72	1055	255	76	26	70
LN XO 070-080 mm.	1300	850	415	1060	275	121	120	80	356	34	1240	30

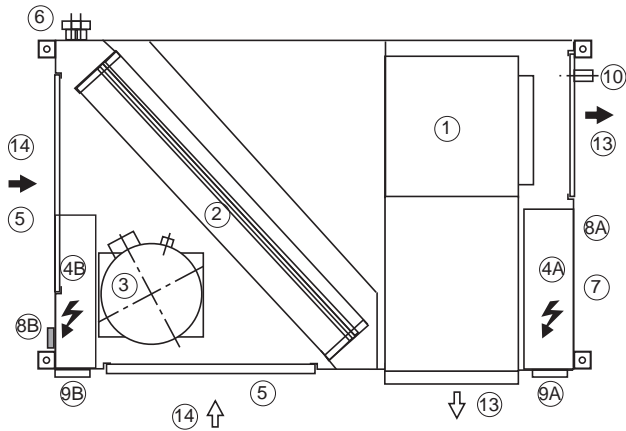
1.- UNIT SELECTION

1.9.- UNIT DESCRIPTION

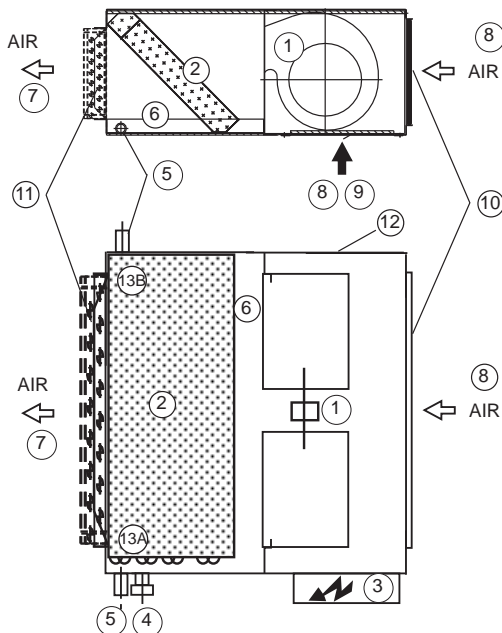
OUTDOOR UNIT KCCK/ KCHK 018-024-030-036



OUTDOOR UNIT KCCK/ KCHK 048-060-070-080

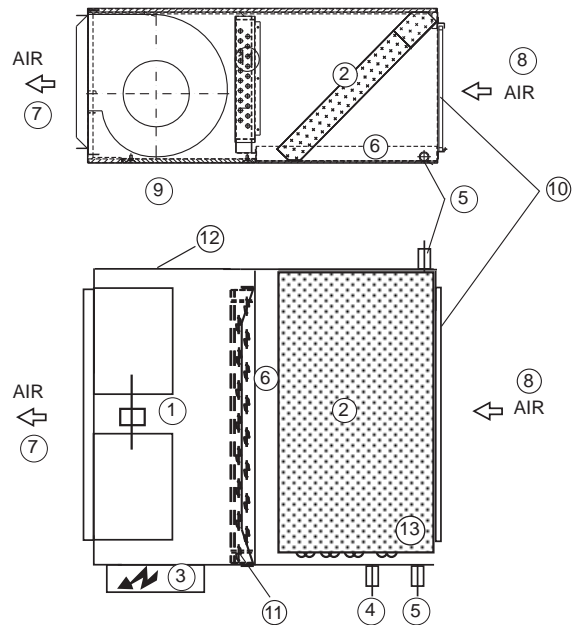


INDOOR UNIT LNXO 018-024-030-036-048-060



- ① FAN-MOTOR
- ② EXCHANGER
- ③ ELECTRICAL BOX
- ④ CONNECTION PIPE
- ⑤ DRAIN WITH ADAPTOR Ø20 mm INSIDE
Ø25 mm OUTSIDE
- ⑥ DRIP TRAY
- ⑦ DISCHARGE AIR
- ⑧ INLET AIR
- ➔ STANDARD POSITION
- ➔ OPTIONAL POSITION (Mod. 018 to 060)

INDOOR UNIT LNXO 070-080



- ⑨ ACCESS PANEL TO FAN-MOTOR
- ⑩ AIR FILTER
- ⑪ ELECTRICAL HEATERS OR HOT WATER COILS (OPTIONS)
- ⑫ OUTDOOR AIR INTAKE
- ⑬ CONDENSATE PUMP (OPTIONAL)
- ⑬A Mod. 018-024
- ⑬B Mod. 030-036-048-060

- ① FAN
- ② EXCHANGER
- ③ COMPRESSOR
- ④ ELECTRICAL BOX
 - ④A Mod. 048-060-070
 - ④B Mod. 080
- ⑤ ACCESS PANEL TO COMPRESSOR AND PIPE COMPONENTS
- ⑥ CONNECTION PIPE
- ⑦ ACCESS PANEL TO ELECTRICAL BOX
- ⑧ MAIN SWITCH (OPTIONAL, depending on model)
 - ⑧A Mod. 048-060-070
 - ⑧B Mod. 080
- ⑨ POWER SUPPLY ENTRY
 - ⑨A Mod. 048-060-070
 - ⑨B Mod. 080
- ⑩ DRAINAGE Models 018 to 036: Ø 16 EXTERIOR
Models 048 to 080: OUTSIDE THREAD 3/4" MALE
- ⑪ INTAKE PRESSURE (Mod. 030-036)
- ⑫ CONDENSATE PUMP
- ⑬ DISCHARGE AIR
 - ➔ STANDARD POSITION
 - ➔ OPTIONAL POSITION
- ⑭ INLET AIR
 - ➔ STANDARD POSITION
 - ➔ OPTIONAL POSITION

1.- UNIT SELECTION

1.10.- OPERATING LIMITS

OPERATING LIMITS FOR (COOLING ONLY) UNITS

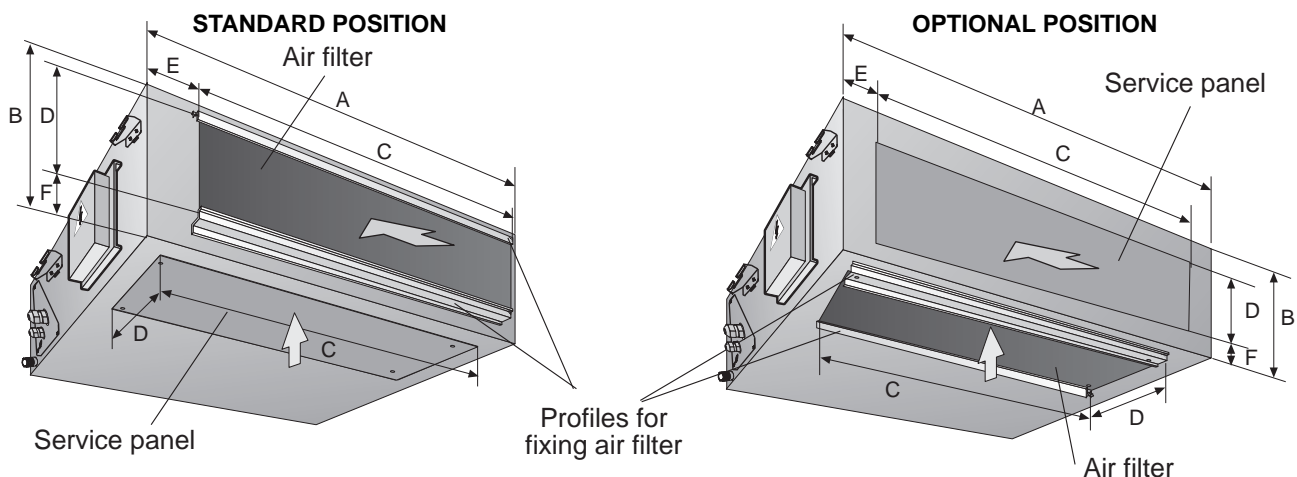
		MAXIMUM TEMPERATURES	MINIMUM TEMPERATURES
COOLING CYCLE OPERATION	INDOOR TEMPERATURE	32° C DB / 23° C WB	21° C DB / 15° C WB
	OUTDOOR TEMPERATURE	DEPENDING ON MODEL (see Tables for cooling capacities)	+ 19° C STANDARD UNIT +15° C WITH MINIMUM INDOOR TEMPERATURES 24° C DB/ 18° C WB 0° C WITH OPTIONAL ON/OFF CPC -10° C WITH OPTIONAL PROPORT. CPC

OPERATING LIMITS FOR (HEATING PUMP) UNITS

		MAXIMUM TEMPERATURES	MINIMUM TEMPERATURES
COOLING CYCLE OPERATION	INDOOR TEMPERATURE	32° C DB / 23° C WB	21° C DB / 15° C WB
	OUTDOOR TEMPERATURE	DEPENDING ON MODEL (see Tables for cooling capacities)	+ 19° C STANDARD UNIT +15° C WITH MINIMUM INDOOR TEMPERATURES 24° C DB/ 18° C WB 0° C WITH OPTIONAL ON/OFF CPC -10° C WITH OPTIONAL PROPORT. CPC
HEATING CYCLE OPERATION	INDOOR TEMPERATURE	27° C DB	15° C DB
	OUTDOOR TEMPERATURE	DEPENDING ON MODEL (See Tables for heating capacities)	-10° C DB / -11° C WB

DB.- Dry Bulb Temperature
WB.- Wet Bulb Temperature

1.11.- STANDARD/ OPTIONAL INLET AIR PANEL OF INDOOR UNIT LNXO 018-024-030-036-048-060 (to be made by the installer)



	A	B	C	D	E	F
LNXO 018-024 mm.	1000	235	885	175	58	27
LNXO 030-036 mm.	1000	287	885	225	58	28
LNXO 048-060 mm.	1195	315	1055	255	70	26

1.- UNIT SELECTION

1.12.- OUTDOOR UNIT OPTIONS

ON/OFF CONDENSATION PRESSURE CONTROL (outdoor unit)

The condensation pressure control consists of one pressure switch, which starts and stops the outdoor fan, regulating the condensation temperature; thus the unit will be able to operate in the cooling cycle when the outdoor temperature is below 19°C (until 0°C).

It includes crankcase heater for cooling only units. The purpose of the heater is to keep the oil in the compressor at the correct temperature while the compressor is stopped, so that it can be properly lubricated when starts again. When the unit is operating at low outdoor temperatures (below 19°C), it is advisable to fit a crankcase heater.



For long distances applications, proportional winter control must be installed.

PROPORTIONAL CONDENSING PRESSURE CONTROL (outdoor unit. Not available for MODELS 060-070-080 with centrifugal fan)

It is an element that regulates outdoor fan speed, in order to control condensation temperature. Thus, the unit will be able to operate in the cooling cycles when the outdoor temperature is below 19°C. This kit includes crankcase heater for cooling only units.

MAIN SWITCH (only MODELS 048-060-070-080 with centrifugal fan)

The main switch is located on the access panel to the electrical box, in such a way that the unit is disconnected when the panel is opened, for the models KCCK / KCHK.

COMPRESSOR ACOUSTIC JACKET (outdoor unit)

Each compressor is fitted with a compressor acoustic jacket this provides attenuation of the compressor noise that radiates from the unit when in operation.

1.12.- INDOOR UNIT OPTIONS

KIT RETURN SENSOR

It may be used when the remote control is installed in a room away from the conditioned space, where the real temperature is not detected. It will be located in the return air duct, detecting the air temperature of the air being air conditioned.

KIT CONDENSATE PUMP

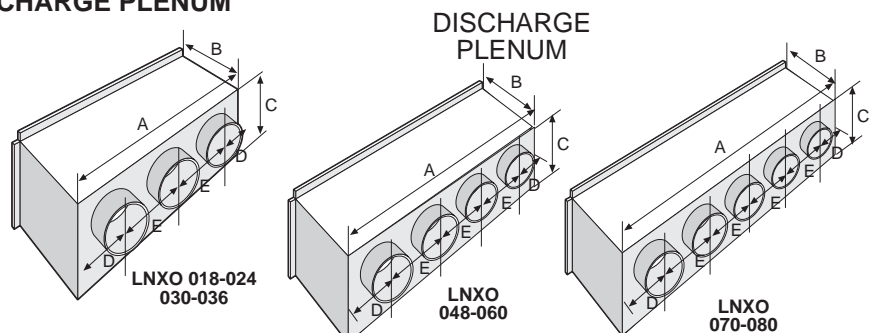
As an option, a condensate pump is available to ensure condensate removal; also the kit is supplied with a float switch which makes the unit stops in case the pump is broken or the drain is choking (see unit description of page 15, for condensate pump position).

To ensure that the condensate flows, the drain tube must be installed with a fall of 2% without obstructions, or without rising sections. To avoid any unpleasant odours from the drainage system, a trap must be fitted with a trap depth of no less than 50mm. The condensate pump has a maximum lift of 200mm. The rising tube must always be vertical.

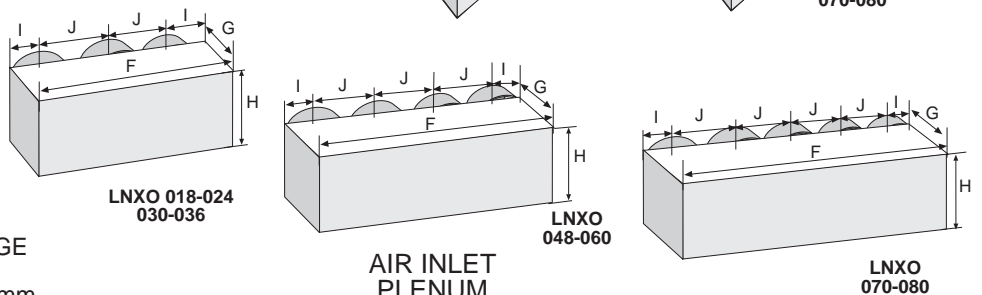
On completion the drain line must be insulated. The condensate pump is supplied with a cover panel which can be removed from the unit in case could be necessary.

KIT AIR INLET PLENUM AND KIT DISCHARGE PLENUM

DISCHARGE PLENUM					
mm.	A	B	C	D	E
LN XO 018-024	890	102	235	152	293
LN XO 030-036	890	102	242	152	293
LN XO 048-060	1060	102	267	137	262
LN XO 070-080	1248	300	320	114	255



AIR INLET PLENUM					
mm.	F	G	H	I	J
LN XO 018-024	892	100	237	151	295
LN XO 030-036	892	100	260	151	295
LN XO 048-060	1062	100	288	135	264
LN XO 070-080	1246	88,5	350	113	255



Ø DUCT FLANGE
EXTERNAL
DIAMETER 195 mm

1.- UNIT SELECTION

1.12.- INDOOR UNIT OPTIONS

ELECTRICAL HEATER AND HOT WATER COIL INSTALLATION INSTRUCTIONS

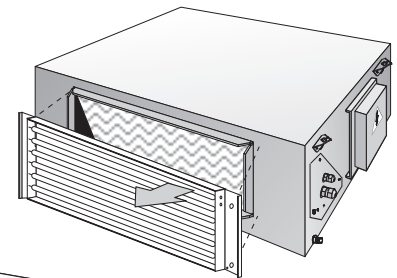


NOTE: Electrical heater and water coil are supplied mounted on the unit. Also, it is possible to install them on site, always before the unit is installed on the ceiling.

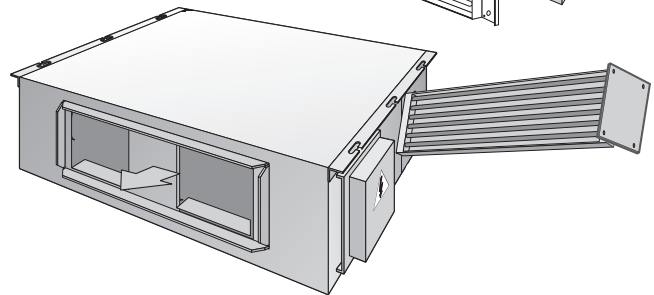
BEFORE ATTEMPTING TO PERFORM ANY SERVICE OR MAINTENANCE, TURN OFF THE ELECTRICAL POWER, AND CHECK THAT THE FAN HAS STOPPED

- The electrical heater or hot water coil should be installed into the impulsion fan of the unit.
 - Fit them on the unit using the screws supplied as the drawing shows.
 - Remove on side cover (disposable), then slide the electrical heater or hot water coil to the backstop through the provided rail.
 - Fit them on the unit side using two screws.
- Make the electrical connection between the electrical heater and the electrical box of the unit following the wiring diagram supplied, or make the water connections if a hot water coil is being installed.
- Finally, place the end cover.

LNXX 018-024-030-036-048-060



LNXX 070-080



ELECTRICAL HEATER TECHNICAL DATA

SET/ INDOOR UNIT	Only Cooling / Heat Pump	LNXX 018	LNXX 024	LNXX 030	LNXX 036	LNXX 048	LNXX 060	LNXX 070	LNXX 080
		C/H.Pump	C/H.Pump	C/H.Pump	C/H.Pump	C/H.Pump	C/H.Pump	C/H.Pump	C/H.Pump
230V 1Ph-50Hz	Power (kW)	5 / 2,5	5 / 2,5	7,5 / 3,75	7,5 / 3,75	---	---	---	---
400V 3Ph-50Hz	Power (kW)	---	---		7,5 / 3,75	12 / 6	12 / 6	15 / 7,5	15 / 7,5

HOT WATER COIL (2 ROWS) TECHNICAL DATA

	DIFFERENCE IN TEMPERATURES BETWEEN HOT WATER INTAKE AND THE AIR THAT ENTERS THE COIL			WATER FLOW L/h	WATER COIL PRESSURE DROP kPa	AIR FLOW m ³ /h	AIR PRESSURE DROP (*) Pa
	50 °C	60 °C	70 °C				
LNXX 018-024	5250	6300	7350	452	13	800	13
	CAPACITY IN W						
LNXX 030-036	7850	9420	10990	675	36	1250	17
	CAPACITY IN W						
LNXX 048-060	11900	14280	16660	1023	33	2050	24
	CAPACITY IN W						
LNXX 070-080	21400	25680	29960	1840	13	3400	16

(*) NOMINAL AIR FLOW VOLUME

For different air flow volumes from the table above, apply the following coefficients:

Relation between air flow from the table	Capacity	Water flow	Water pressure drop	Air pressure drop
x 0,75	x 0,84	x 0,84	x 0,73	x 0,63
x 0,85	x 0,92	x 0,92	x 0,83	x 0,73
x 1	x 1	x 1	x 1	x 1
x 1,15	x 1,08	x 1,08	x 1,13	x 1,30
x 1,35	x 1,20	x 1,20	x 1,42	x 1,70

2.- INSTALLATION

2.1.- POINTS TO KEEP IN MIND

DANGER AND WARNING SIGNS



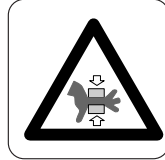
Abrasive surfaces



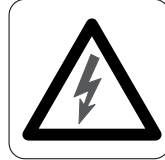
Low temperatures



High temperatures



Risk of injury with moving objects



Electrical voltage



Risk of injury with rotating objects

ELECTRICAL CONNECTIONS



Make sure to open the power off switch before to install, repair or make maintenance works in the unit, in order to prevent serious electrical injuries.

To install the unit, keep in mind local and national legislation.

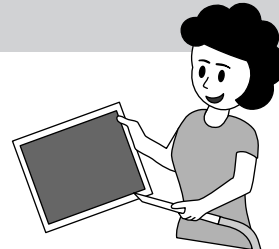
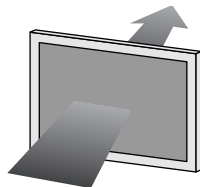
ATTENTION - WARNING

Electric shock hazard can cause injury or death. Before attempting to perform any service or maintenance on the unit, turn OFF the electrical power, and check that the fan has stopped.

The air filter cleaning operations do not require technical service; however when an electrical or mechanical operation is required call an Engineer.

FILTER CLEANING

Check the air filter and make sure it is not blocked with dust or dirt.



If the filter is dirty, wash it in a bowl with neutral soap and water, drying it in the shade before inserting it in the unit.

Standard Guidelines to Lennox equipment

All technical data contained in these operating instructions including the diagrams and technical description remains the property of Lennox and may not be used (except for the purpose of familiarizing the user with the equipment), reproduced, photocopied, transferred or transmitted to third parties without prior written authorization from Lennox .

The data published in the operating instructions is based on the latest information available. We reserve the right to make modifications without notice.

We reserve the right to modify our products without notice without obligation to modify previously supplied goods.

These operating instructions contain useful and important information for the smooth operation and maintenance of your equipment.

The instructions also include guidelines on how to avoid accidents and serious damage before commissioning the equipment and during its operation and how to ensure smooth and fault-free operation. Read the operating instructions carefully before starting the equipment, familiarize yourself with the equipment and handling of the installation and carefully follow the instructions. It is very important to be properly trained in handling the equipment. These operating instructions must be kept in a safe place near the equipment.

Like most equipment, the unit requires regular maintenance. This section concerns the maintenance personnel and management. If you have any queries or would like to receive further information on any aspect relating to your equipment, do not hesitate to contact us.

2.- INSTALLATION

2.2.- INSTALLATION GUIDELINES



All INSTALLATION, SERVICE and MAINTENANCE operations must be carried out by QUALIFIED PERSONNEL.

The unit must be transported in a HORIZONTAL POSITION; any other position may cause serious damage to the machine. When the unit is received, it should be checked to assure that there are no bumps or other damage, following the instructions on the packaging. If there is damage, the unit may be rejected by notifying the LENNOX Distribution Department and reporting why the machine is unacceptable on the transport agent's delivery notice. Any later complaint or claim made to the LENNOX Distribution Department, for this type of anomaly, cannot be considered under the Guarantee.

Sufficient space must be allowed to facilitate placement of the unit.



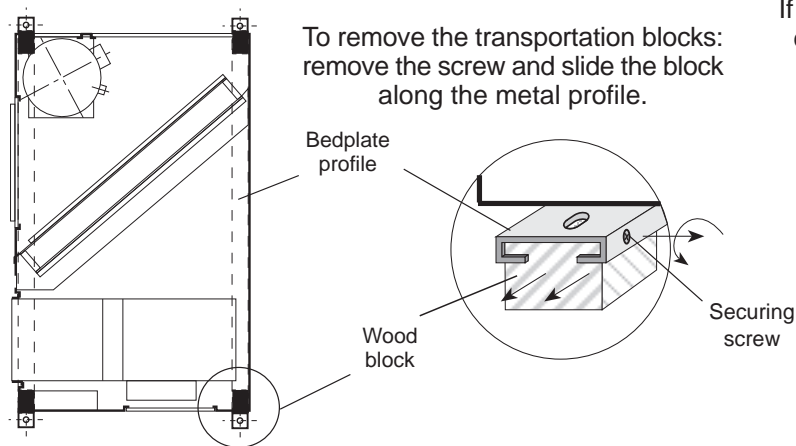
When positioning the unit, be sure that the Rating Plate will always be visible since this data will be necessary to assure proper maintenance.

The KCKK-KCHK indoor and outdoor unit are designed to be installed with ducts, calculated by qualified technical staff. The joints to be used between ducts and the openings to the unit should be Elastic Joints. Avoid the use of BYPASS joints between the extraction air and input air in both the outdoor and indoor sections. The structure where the unit is placed must be able to support the weight of the unit during operation.

2.3.- UNIT RECEPTION

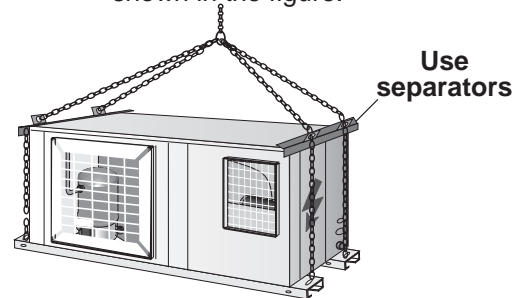
The KCKK-KCHK 048-060-070-080 units have Metal Bedplate Profiles and Wooden Blocks for transportation. These wooden blocks must be removed when positioning the unit in its final position.

PLACEMENT OF THE BEDPLATE AND TRANSPORTATION BLOCKS



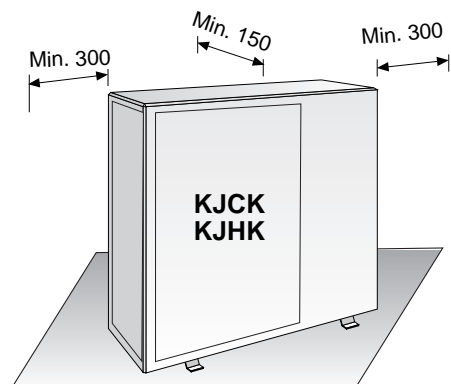
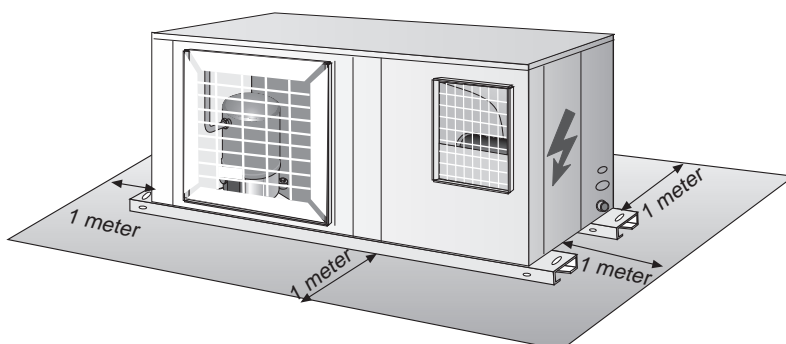
How to hoist the unit

If unloading and placement require the use of a crane, then secure the suspension cables as shown in the figure.



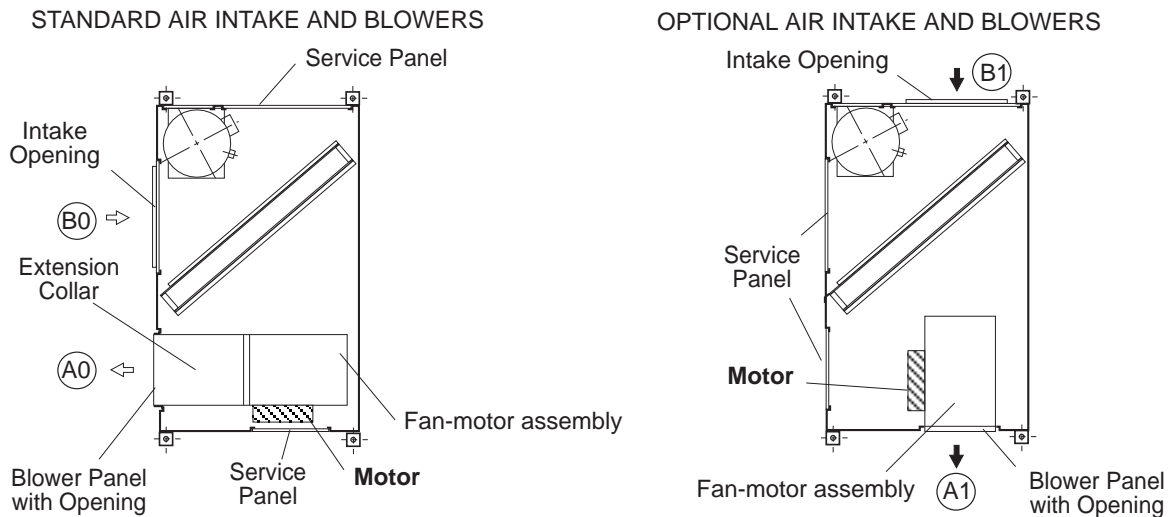
2.4.- INSTALLATION CLEARANCES

Clearance around the unit for service and maintenance.



2.- INSTALLATION

2.5.- OPTIONAL OPERATIONS PRIOR TO UNIT INSTALLATION: CHANGING THE POSITION OF BLOWERS AND AIR INTAKE FOR OUTDOOR UNITS **KCCK-KCHK 048-060-070-080**



BLOWER:

From the position (A0) to the position (A1)

- 1) Remove the ceiling of the unit, the Blower Panel with Opening and the Service Panel.
- 2) Remove the motor-fan assembly from the unit unscrewing the supports from the base, and throwing away the extension collar, if there is one.
- 3) Unscrew the supports that have been left on the fan-motor assembly.
- 4) Turn the fan-motor assembly to its new position 90° horizontally and 180° on its shaft. The motor should now be accessible from the Service Panel in this new position.
- 5) Screw down the fan-motor assembly in its new position using the supports.
- 6) Assemble the Blower Panel with Opening and the Service Panel in its new position, taking special care with the weather striping.

INLET:

From the position (B0) to the position (B1)

- 1) Remove the Intake Opening and the Service Panel.
- 2) Switch the position of the Opening and Service Panels.



SEE LOCATIONS AND SIZES FOR THE OPENINGS IN THEIR STANDARD AND OPTIONAL POSITIONS ON THE GENERAL MEASUREMENT DRAWINGS.

2.6.- DUCT INSTALLATION



Duct calculation and design must be effected by a qualified technician.

The ductwork dimensions should be determined in accordance with the air flow circulating through it and with the available static pressure of the unit. This data appears in the corresponding Technical Documentation.

Various suggestions are made here below, regarding the layout and design of the said ductwork:

- 1- Whatever type of duct is used, it should not be made of materials which are flammable, or which give off toxic gases in the event of a fire. The internal surfaces should be smooth, and not contaminate the air which passes through. It is advisable to use isolated sheet metal duct in order to avoid condensations and thermic charges.
- 2- At the points where the duct joins with the unit, it is advisable to use a flexible connection which absorbs vibration and prevents the transmission of noise inside the ductwork and allows the unit access.
- 3- Bends should be avoided as much as possible near the unit outlet. If unavoidable, they should be as slight as possible, and internal deflectors should be used when the duct is of large dimensions.
- 4- For heat pump indoor unit, room height has to be taken on account because for long heights the hot air should go on to the top, and this makes difficult conditioning the room. In this case, the return and discharge grilles should be positioned adequately and have the suitable dimensions.

2.- INSTALLATION

2.7.- DRAINS

GENERAL RECOMMENDATIONS:

For drain piping, it is advisable to use PVC copper and steel tube.

For drain tube, use a sealing material. Do not make any drill on the unit base: the drip tray could be damage.

Slightly tip the unit toward the drainage side as the picture shows.



If heat pump outdoor unit is going to be installed for working with outdoor temperatures below 0°C, an electrical heater must be installed around the drain pipe in order to avoid ice formed and not get obstructed.

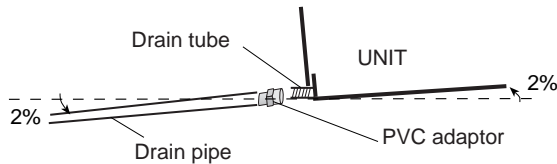
INDOOR UNITS LNXO:

They are provided with two 1/2" male steel threaded drain pipe welded to the drip tray located at both sides of the unit, which can be used faintly to adapt the installation requirements.

The units are also provided with a PVC 20mm inside diameter / 25mm outside diameter tamper and adaptor to connect the drain pipe as the picture shows.

NOTE: it is necessary that at least one of the two drain tubes must be blind.

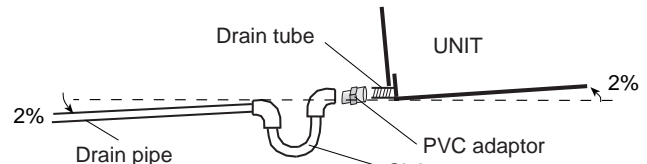
UNITS LNXO 018-024-030-036-048-060



It is not necessary to install a siphon to evacuate water from the unit, but it is advisable to install it to avoid offensive odor.

Slightly tip the units (2%) toward the drainage tube and check that the drip tray is clean and free from dirt and other debris from the works, and that the water drains correctly.

UNITS LNXO 070-080



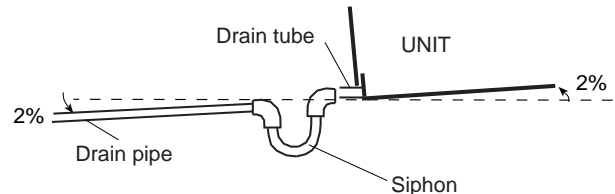
Install siphon to avoid suction from fans.

HEAT PUMP OUTDOOR UNITS WITH AXIAL FAN KJHK:

Unit models 018-024-030-036-048-060-070-080 are provided with a steel 16mm outdoor diameter drain tube welded to the unit base; for this application a siphon must be installed.

Connect the siphon to the drain pipe of the unit, and mount the drain pipe with at least a 2% incline from the siphon.

Slightly tip the unit (2%) toward the drainage tube and check that the drip tray is clean and free from dirt and other debris from the works, and that the water drains correctly.



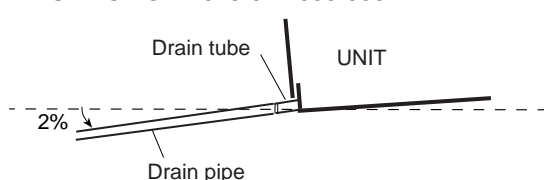
HEAT PUMP OUTDOOR UNITS WITH CENTRIFUGAL FAN KCHK:

Unit models 018-024-030-036 are provided with a steel 16mm outdoor diameter drain tube welded to the unit base; for this application a siphon is not necessary.

Unit models 048-060-070-080 are provided with a 3/4" male steel threaded welded to the drip tray; for this application a siphon must be installed. Connect the siphon to the drain pipe of the unit, and mount the drain pipe with at least a 2% incline from the siphon.

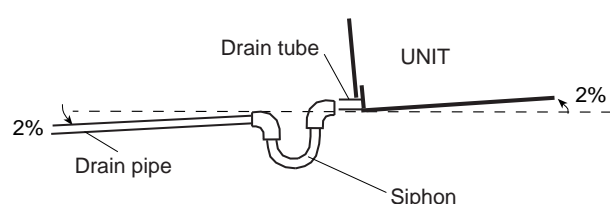
Slightly tip the unit (2%) toward the drainage tube and check that the drip tray is clean and free from dirt and other debris from the works, and that the water drains correctly.

UNITS KCHK 018-024-030-036



It is not necessary to install siphon to evacuate water from the unit, but it is advisable to install it to avoid offensive odor.

UNITS KCHK 048-060-070-080

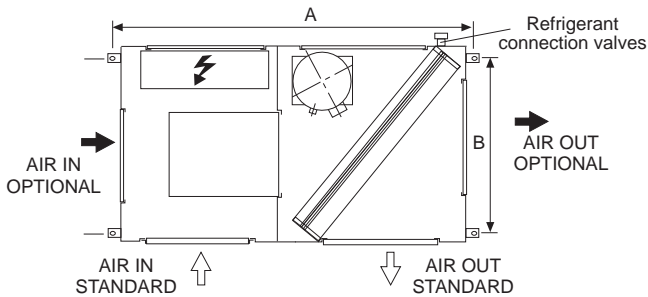


2.- INSTALLATION

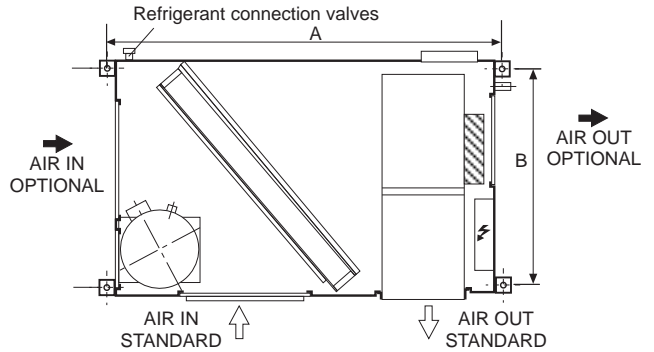
2.8.- SETTING UP TEMPLATES OF OUTDOOR UNIT

OUTDOOR UNIT WITH CENTRIFUGAL FAN (mm)

SETTING UP TEMPLATE UNITS 018-024-030-036

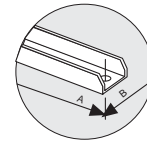
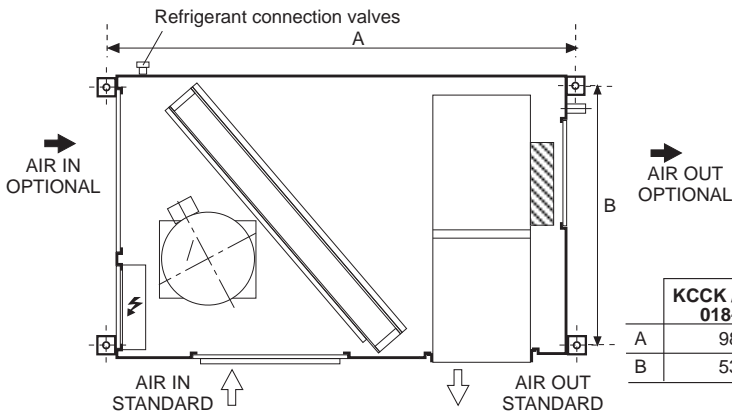


SETTING UP TEMPLATE UNITS 048-060-070



Use 4 rod of a diameter of 10mm if the unit is fixed in the roof, or screw M.10 if the unit is fixed on the ground.

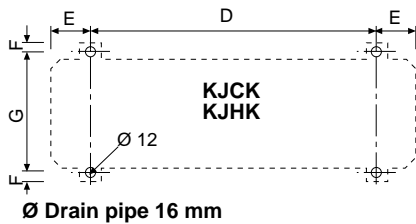
SETTING UP TEMPLATE UNITS 080



Dimensions recommended on point A and B are referred to the hole of support of the unit.

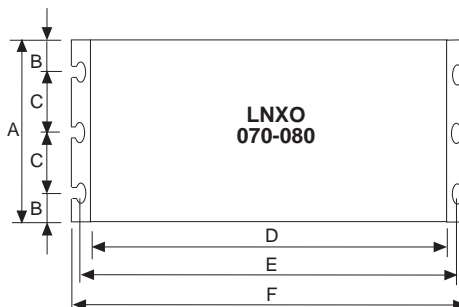
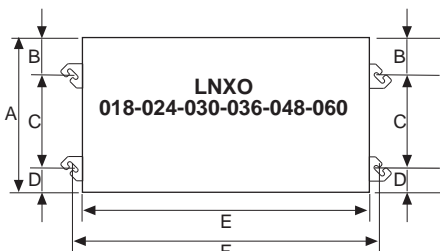
	KCCK / KCHK 018-024	KCCK / KCHK 030-036	KCCK / KCHK 048	KCCK / KCHK 060-070	KCCK / KCHK 080
A	983	1064	1300	1350	1500
B	530	660	711,6	721,6	791

OUTDOOR UNIT WITH AXIAL FAN (mm)



	KJCK KJHK 018	KJCK KJHK 024	KJCK KJHK 030	KJCK KJHK 036	KJCK KJHK 048	KJCK KJHK 060	KJCK KJHK 070	KJCK KJHK 080
D	520	520	620	620	620	620	602	602
E	126,4	126,4	176,4	176,4	176,4	176,4	198	198
F	10	10	10	10	10	10	12	12
G	343,5	343,5	343,5	343,5	343,5	343,5	386	386

2.8.- SETTING UP TEMPLATES OF INDOOR UNIT

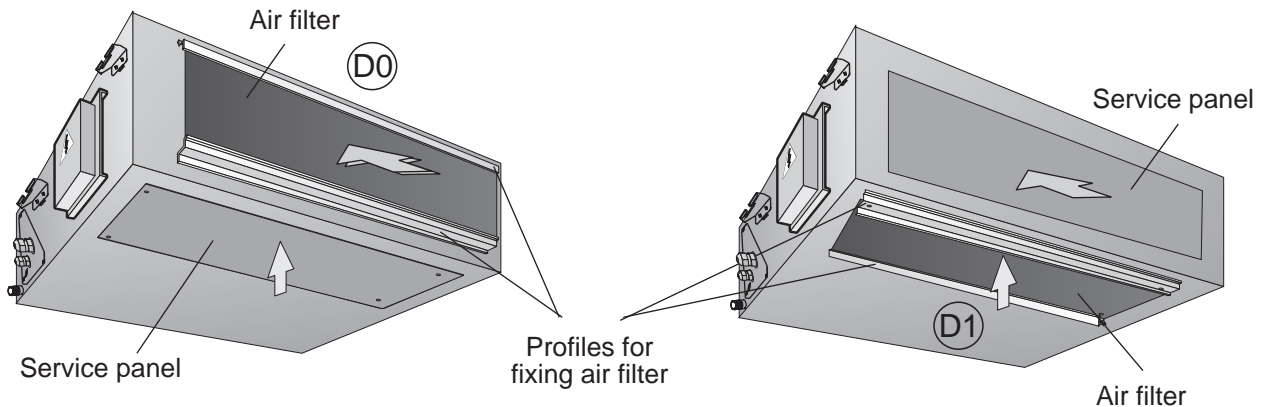


	LN XO 018-024	LN XO 030-036	LN XO 048-060	LN XO 070-080
A	535	700	750	850
B	49	55	62	30
C	354	472	515	395
D	132	173	173	1300
E	1000	1000	1195	1331
F	1038	1038	1233	1361

2.- INSTALLATION

2.9.- OPTIONAL OPERATIONS PRIOR TO UNIT INSTALLATION:

CHANGING THE POSITION OF INLET AIR PANEL FOR UNITS LNXO 018-024-030-036-048-060



From the position (D0) to the position (D1)

- 1) Detach air filter profiles.
- 2) Detach service panel.
- 3) Interchange the position of air filter and service panel, and secure them with the screw supplied.



SEE LOCATIONS AND SIZES FOR THE OPENINGS IN THEIR STANDARD AND OPTIONAL POSITIONS ON THE GENERAL MEASUREMENT DRAWINGS.

2.10.- UNIT LOCATION OF INDOOR UNIT LNXO (mm)

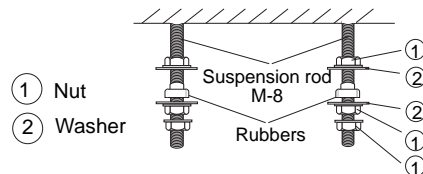
INSTALL THE UNIT IN POSITION WHERE:

1. Where there is enough security to support weight of the indoor unit.
2. Where you can remove filters for maintenance purposes. Install always the filter. If the unit works without filter you will find problem on the unit because of dust.
3. Where connection pipes of the outdoor unit can have easily access.
4. Where drain pan can evacuate easily.
5. Assure that there is enough space around the unit for manipulation.
6. Where you can access easily the electrical box.
7. Where the coil cannot get dirty and obstructed because of dust.



These units can work in normal radio electric conditions. Certain ambiental conditions may cause high electromagnetic emissions; for this kind of installation, please consult.

Install the unit with rod M-8 with nuts and washers, as drawing shows.
Install also rubbers to avoid noise transmissions.



When lifting the unit into position, care should be taken not to lift the unit by the drip tray, refrigerant connections or drain tube; this could damage the unit. The unit should be lifted by the hanging brackets. Make sure all the panels are fitted and secured.

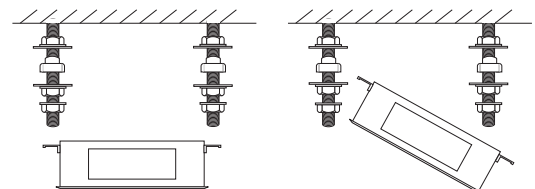
The unit brackets hook over the washers. Tighten the unit with the lower nuts.

Check to ensure the unit is level. Tighten the nuts on the suspended rods.

Ensure there is sufficient space around the unit to service it.

Where there is a false ceiling ensure that there is enough space to provide access. Where there is a false panelled ceiling, ensure that there is enough adjacent space to remove the panels.

If there is enough space between unit and the ceiling, it is advisable to install a rubber sheet. In addition, an access panel under the unit should be left in order to carry out further maintenance operations.

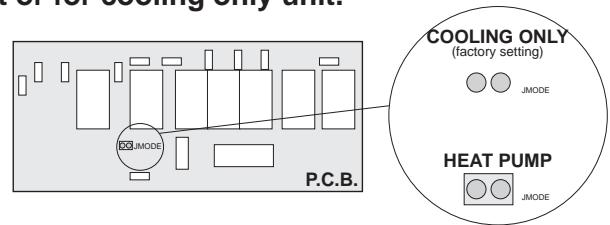


2.- INSTALLATION

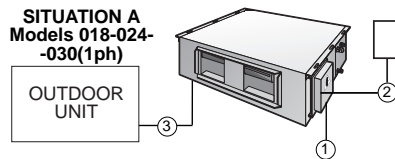
2.11.- ELECTRICAL CONNECTIONS

IMPORTANT
Prior of making the electrical connections,
set the switch for heat pump unit or for cooling only unit.

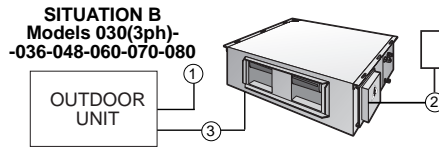
This unit is valid for operating as a cooling only or heat pump application. It should be configured prior to making the electrical connections, by setting the configuration switch located on the (P.C.B) at indoor unit as follows:



SITUATION A
Models 018-024-030(1ph)



SITUATION B
Models 030(3ph)-036-048-060-070-080



- ① Power supply
- ② Remote control connection (max. length 15m.)
- ③ Indoor unit/Outdoor unit connection

VOLTAGE	MODELS	NUMBER OF WIRES X SECTION					
		ONLY COOLING			HEAT PUMP		
		①	②	③	①	②	③
POWER SUPPLY 230V SINGLE PHASE UNITS 1N ~ 230V - 50 Hz + PE	018 024 030	3x2,5mm ²	4x1mm ² shielded cable (supplied with the unit)	4x2,5mm ²	3x2,5mm ²	4x1mm ² (supplied with the unit)	6x2,5mm ²
	036	3x2,5mm ²	4x1mm ² shielded cable (supplied with the unit)	4x1,5mm ²	3x2,5mm ²	4x1mm ² (supplied with the unit)	6x1,5mm ²
POWER SUPPLY 230V THREE-PHASE UNITS 3 ~ 230V - 50 Hz + PE	036	4x2,5mm ²	4x1mm ² shielded cable (supplied with the unit)	4x1,5mm ²	4x2,5mm ²	4x1mm ² (supplied with the unit)	6x1,5mm ²
	048 060	4x4mm ²			4x4mm ²		
	070	4x4mm ²	4x1mm ² shielded cable (supplied with the unit)	4x1,5mm ²	4x4mm ²	4x1mm ² (supplied with the unit)	6x1,5mm ²
	080	4x6mm ²			4x6mm ²		
POWER SUPPLY 400V THREE-PHASE UNITS 3N ~ 400V - 50 Hz + PE	030 036	5x1,5mm ²	4x1mm ² shielded cable (supplied with the unit)	4x1,5mm ²	5x1,5mm ²	4x1mm ² (supplied with the unit)	6x1,5mm ²
	048	5x2,5mm ²			5x2,5mm ²		
	060 070	5x2,5mm ²	4x1mm ² shielded cable (supplied with the unit)	4x1,5mm ²	5x2,5mm ²	4x1mm ² (supplied with the unit)	6x1,5mm ²
	080	5x4mm ²			5x4mm ²		

NOTE: The sections have been calculated for a distance no longer than 35m, and a voltage drop of 10V. The wiring must comply with the regulations in force. Make sure the earth cable connection is correct.



IN ORDER TO CARRY OUT THE ELECTRICAL CONNECTIONS, FOLLOW THE ELECTRICAL DIAGRAM SUPPLIED WITH THE UNIT



REMEMBER THAT THE COMPRESSOR IS A SCROLL TYPE COMPRESSOR

Scroll type compressors only compress in one direction of the rotation. Single phase models are always started up in the proper direction; however, the three phase models, turn in either direction depending on the order of the power supply phases. Therefore, it is essential that the phase connection for scroll-type three-phase compressors be carried out correctly, that is why these three-phase compressors are supplied as standard with a three-phase detector, which avoids the unit starts unless the connections are made on the right way. The direction of the rotation is right when an indicator-light turns ON. If the connection is wrong, this indicator will not light and the rotation will be reversed. If this occurs, the solution is to disconnect, switch the wires between two of the phases and connect again.

VOLTAGE OPERATING LIMITS

MODEL	VOLTAGE	LIMIT
018-024-030-036	230 V-1Ph-50Hz	198-264 V -1Ph- 50Hz
030-036-048-060	230 V-3Ph-50Hz	180-242 V -3Ph- 50Hz
	400 V-3Ph-50Hz	342-462 V -3Ph- 50Hz
070-080	230 V-3Ph-50Hz	180-242 V -3Ph- 50Hz
	400 V-3Ph-50Hz	342-462 V -3Ph- 50Hz

2.- INSTALLATION

2.11.- ELECTRICAL CONNECTIONS

ACCESS TO ELECTRICAL COMPONENTS OF INDOOR UNIT

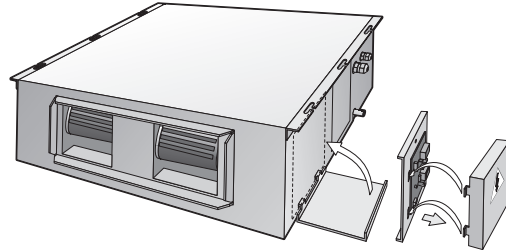
The electric board, located outside of the unit, allows easy access to electrical components.

To carry out wiring: power supply of the unit, connection to remote control, and connection with outdoor unit, get access to electrical panel removing electric board cover. For electrical connection refer to wiring diagram in the unit.

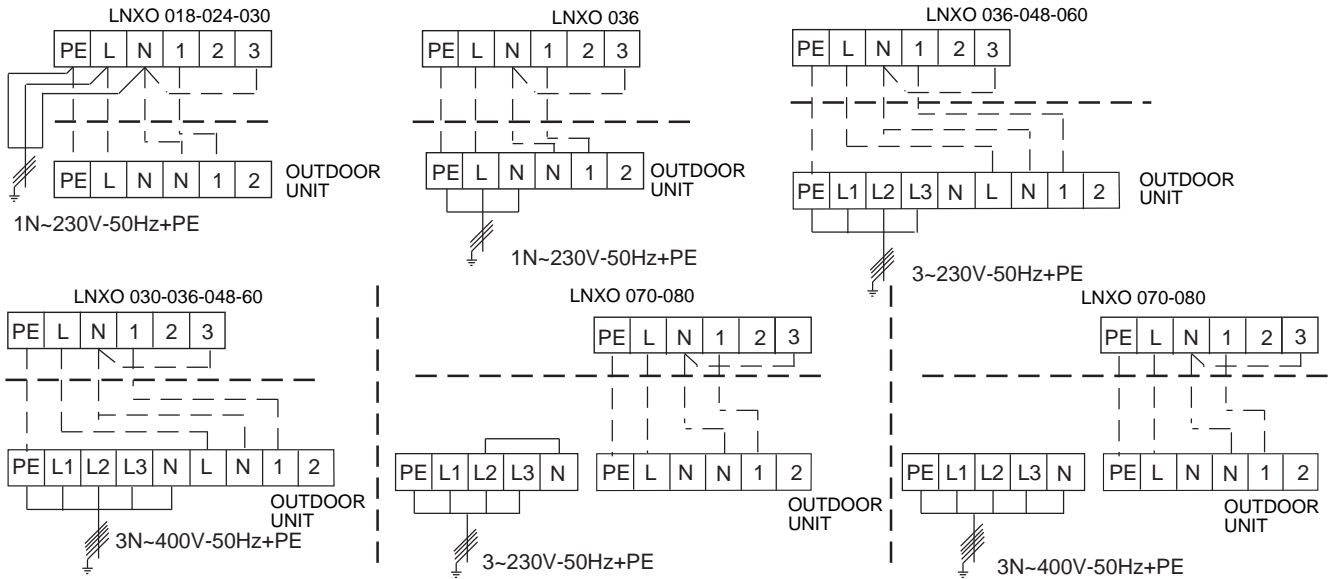
For easier installation:

The electrical panel can be folded 90°, so terminals will be easily accessed, and also can be removed from the unit 30cm. In case it is necessary to place the electric board away from the unit, the temperature sensor wire and fan wire may be extended up to a maximum of 25m using screened wire.

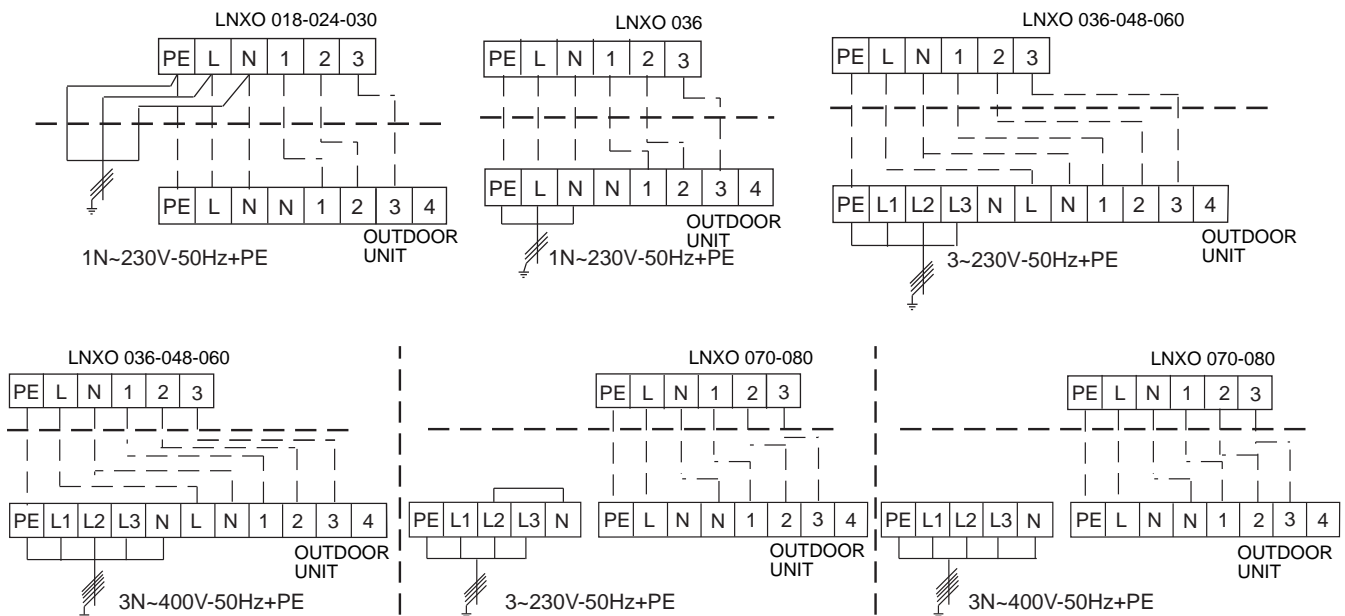
The remote control terminal housing may be detached to ease its connection.



COOLING ONLY UNITS



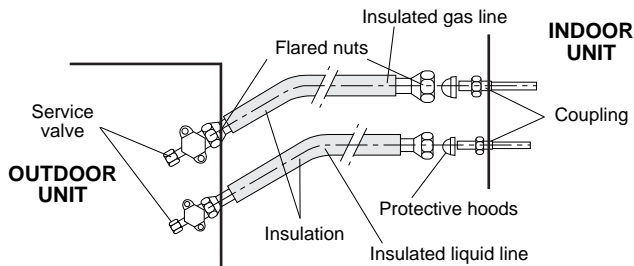
HEAT PUMP UNITS



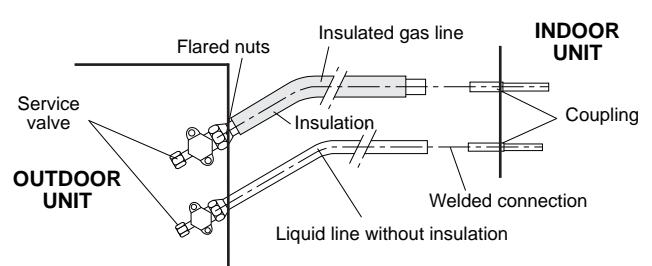
2.- INSTALLATION

2.12.- REFRIGERANT CONNECTIONS

UNIT CONNECTION MODELS 018 to 060



UNIT CONNECTION MODELS 070 / 080

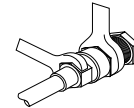


REFRIGERANT CONNECTION INSTRUCTIONS FOR UNITS WITH COUPLINGS AND SERVICE VALVES

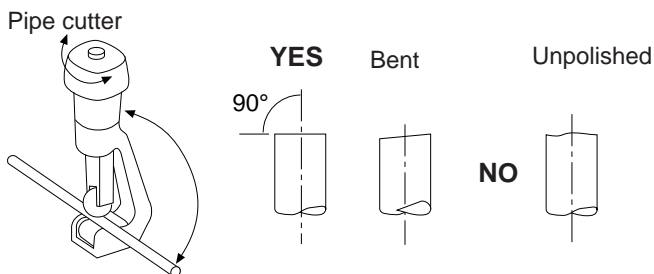
NOTE: THE REFRIGERANT GAS AND LIQUID LINES MUST BE INSULATED FOR MODELS 018 TO 060. FOR MODELS 070 / 080 THE LIQUID LINE IS NOT NECESSARY TO BE INSULATED.

Make the refrigerant connections between the outdoor and indoor unit, as follows:

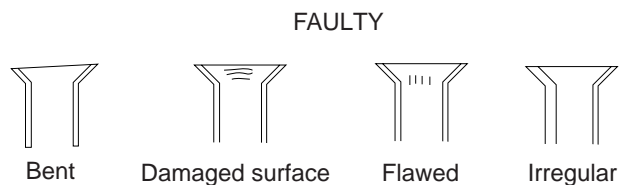
- With the valves closed on outdoor unit, unscrew the flare nuts, removing all the protective hoods.
- Unscrew the flare nuts and the coupling on indoor unit (mod. 018 to 060), removing the protecting hoods.
- Introduce the flare nuts in the corresponding union tubes, previously isolated.
- Make the thread union of the tubes in valves and coupling using the keys, as shown in the picture. And welded on indoor unit for models 070 / 080.
- To do vacuum, first close the valves on outdoor unit, second connect the plug of the vacuum pump to the suction valves service port 1/4", do vacuum to get an absolute pressure of 0,5 mm Hg. This way the vacuum will be created in indoor unit and union pipes.
- Remove the plugs and open the valves of outdoor unit.
- Verify leakage in couplings.
- Insulate pipes and service ports.



CUT THE PIPE PROPERLY

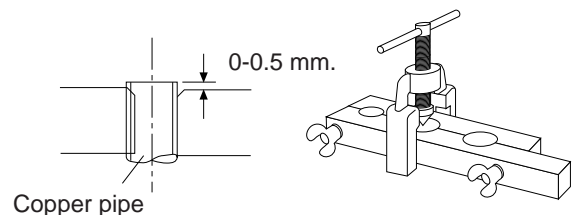


MAKE A CORRECT FLARE



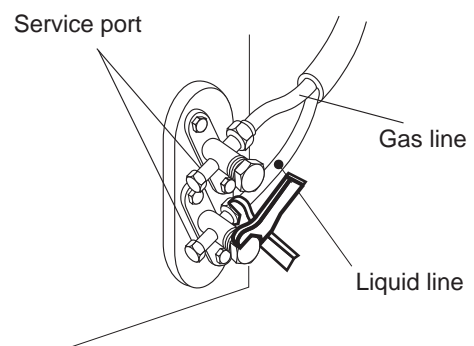
AVOID FROM METALLIC DUST ENTERING INTO THE PIPE

CLEAN THE BURRS



TIGHTENING TORQUE
Apply the tightening torque shown in the table. Insufficient tightening torque could cause refrigerant leak, excessive tightening torque will damage pipe flare.

PIPE DIAMETER	TIGHTENING TORQUE
1/4"	15-20 Nm
3/8"	31-35 Nm
5/8"	50-55 Nm
3/4"	65-70 Nm



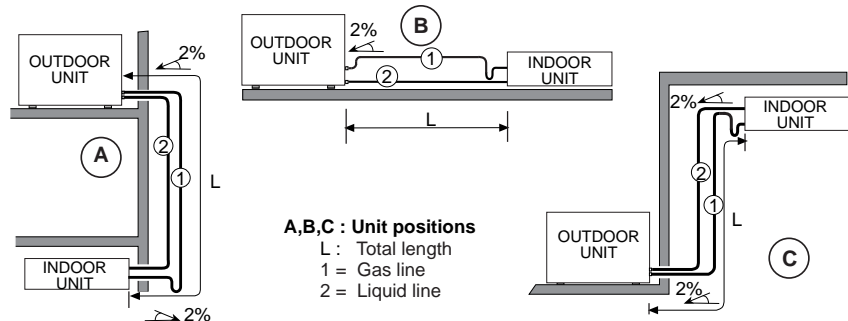
2.- INSTALLATION

2.12.- REFRIGERANT CONNECTIONS

DISTANCES BETWEEN UNITS

To locate the outdoor and the indoor units, refer to the following information:

SYPHONS: Install syphons on the installation as the picture shows, on the upper and lower position of the suction line. No other syphons are necessary. The indoor units LNKO 070-080 are supplied with welded connections.



REFRIGERANT LINES SELECTION

REFRIGERANT LINES		UNIT - MODEL							
		018	024	030	036	048	060	070	080
Unit connections	Ø Liquid	1/4"	1/4"	3/8"	3/8"	3/8"	3/8"	1/2"	1/2"
	Ø Gas	1/2"	5/8"	5/8"	3/4"	3/4"	3/4"	7/8"	7/8"
Maximum vertical line length (m)		15	15	15	15	15	15	15	15
Max. vertical line length + horizontal (m)		25	25	25	25	25	25	25	25
Min. vertical line length + horizontal (m)		5	5	5	5	5	5	5	5
Maximum number of curves		12	12	12	12	12	12	12	12

REFRIGERANT LINES SELECTION FOR LONG DISTANCES UNITS

(only for applications as pictures (A) and (B) show; only cooling sets NJCK 018 to 060 standard units, and heat pump NJHK 018 to 060 with a special outdoor unit LD).

REFRIGERANT LINES		UNIT - MODEL					
		018	024	030	036	048	060
Unit connections	Ø Liquid	1/4"	1/4"	3/8"	3/8"	3/8"	3/8"
	Ø Gas	1/2"	5/8"	5/8"	3/4"	3/4"	3/4"
Maximum vertical line length (m)		30	30	30	30	30	30
Max. vertical line length + horizontal (m)		55	55	55	55	55	55
Min. vertical line length + horizontal (m) NJHK-LD		25	25	25	25	25	25
Maximum number of curves		12	12	12	12	12	12

NOTE: THE REFRIGERANT GAS AND LIQUID LINES MUST BE INSULATED FOR MODELS 018 TO 060. FOR MODELS 070 / 080 THE LIQUID LINE IS NOT NECESSARY TO BE INSULATED.



For other positions and longer distances, consult the Lennox Technical Support Department for application assistance. The following data will be obtained from that estimation: pipe dimensions, suction traps, isolation, refrigerant charge.

REFRIGERANT CHARGE:

The outdoor unit is supplied with refrigerant R-407C factory precharged, for the set indoor+outdoor unit and for a line of 5 meter long. When the line length exceeds 5m, add the following amount of refrigerant per meter line:

COOLING ONLY UNIT MODELS	018	024	030	036	048	060	070	080
Refrigerant charge R-407C per meter (gr.)	10	10	20	20	20	20	85	85
HEAT PUMP UNIT MODELS	018	024	030	036	048	060	070	080
Refrigerant charge R-407C per meter (gr.)	20	20	45	45	45	45	85	85

3.- COMMISSIONING AND OPERATION

3.1.- DATA PAGE FOR UNIT COMMISSIONING

UNIT: _____ SERIAL No: _____

CONTROL PANEL IDENTIFICATION CODE _____

INSTALLATION ADDRESS: _____

INSTALLER: _____ INSTALLER TEL.: _____

INSTALLER ADDRESS: _____

DATE OF COMMISSIONING: _____

CHECKS:

SUPPLY VOLTAGE: _____ RATED VOLTAGE OF THE UNIT: _____

	YES	NO
UNIT ON SHOCK ABSORBERS	<input type="checkbox"/>	<input type="checkbox"/>
DRAINAGE WITH TRAP	<input type="checkbox"/>	<input type="checkbox"/>
GENERAL POWER SUPPLY CONNECTION	<input type="checkbox"/>	<input type="checkbox"/>
CONTROL PANEL CONNECTION	<input type="checkbox"/>	<input type="checkbox"/>
COMPRESSOR OIL LEVEL INDICATOR	<input type="checkbox"/>	<input type="checkbox"/>

DATA INPUT:

COOLING CYCLE

Air Intake Temperature to the coil: _____ °C

Air Output Temperature to the Coil: _____ °C

High Pressure: _____

Low Pressure: _____

HEATING CYCLE

Air Intake Temperature to the coil: _____ °C

Air Output Temperature to the Coil: _____ °C

High Pressure: _____

Low Pressure: _____

ELECTRIC POWER CONSUMPTION (Amps)

Compressor _____ / _____ / _____

Fan _____ / _____ / _____

Compressor _____ / _____ / _____

Fan _____ / _____ / _____

Options Installed: _____

Comments: _____

3.- COMMISSIONING AND OPERATION

3.2.- PRECAUTIONS TO BE TAKEN ON INSTALLATION

The refrigerant R407-C is a mixture of other three refrigerants that behave as pure compounds. This fact makes that the operations of installation, service and maintenance must be special, for the next operations:

SYSTEM EVACUATION

Vacuum must be done until the absolute pressure does rise -750mm Hg during an hour, since the compressor oil high hygroscopic degree can cause corrosion in some metallic materials.

REFRIGERANT CHARGING

To maintain the mixture composition, the refrigerant must be charged always in liquid phase. For what it is necessary to have special caution when it is little quantity of refrigerant in the bottle.

LEAKS

If a leak takes place in the system that has produced an important evacuation of the refrigerant charge, instead of recharging the system, it is convenient to eliminate the whole charge completely, the system must be evacuated and charged again or to introduce the charge according to an specified value.

OPERATION

On a system operated with refrigerant R407-C, during the evaporation phase at constant pressure the temperature increases; and during the condensation phase at constant pressure the temperature decreases a certain value. Consequently, the terms "evaporation temperature" and "condensation temperature" should be redefined.



PRECAUTIONS TO BE TAKEN IN THE USE OF R-407C Refrigerant:

R-407C Refrigerant is used in the unit; therefore, the following precautions characteristic of this gas should be taken:

- The Vacuum Pump must have a Check Valve or Solenoid Valve.
- Pressure Gauges and Hoses for the exclusive use with R-407C Refrigerant should be used.
- The charge should be carried out in the Liquid Phase.
- Always use scales to weight-in charge - Use the Leak Detector exclusive for R-407C Refrigerant.
- Do not use mineral oil, only synthetic oil to ream, expand or make connections.
- Keep pipes closed before using them and be very thorough about any possible dirt (dust, filings, burrs, etc.).
- When there is a leak, gather what is left of the charge, create a vacuum in the unit and completely recharge with new R-407C Refrigerant.
- Brazing should always be carried out in a nitrogen atmosphere.
- Reamers should always be well sharpened.



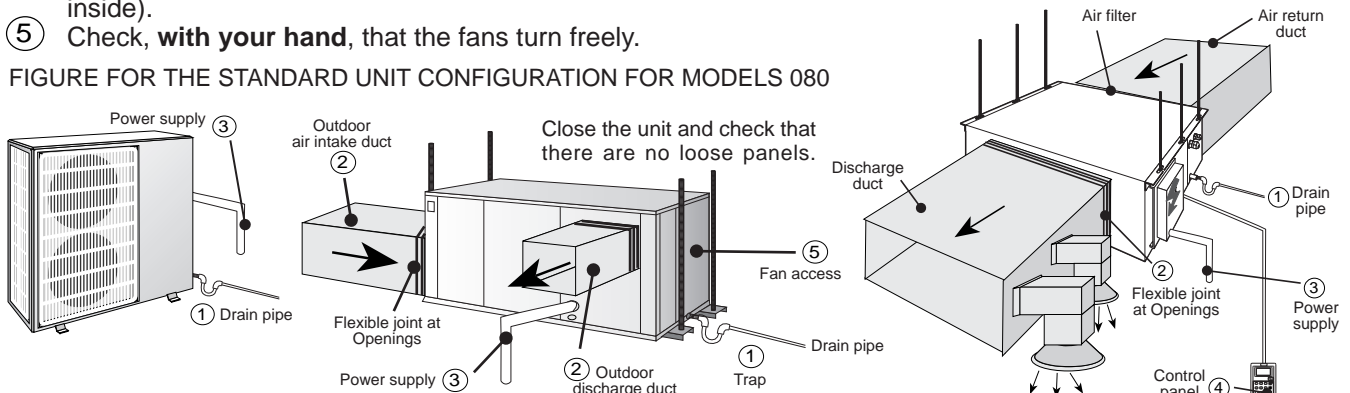
REMEMBER THAT THE COMPRESSOR IS A SCROLL TYPE COMPRESSOR:

Scroll type compressors only compress in one direction of the rotation. Single phase models are always started up in the proper direction; however, the three phase models, turn in either direction depending on the order of the power supply phases. Therefore, it is essential that the phase connection for scroll-type three-phase compressors be carried out correctly, that is why these three-phase compressors are supplied as standard with a three-phase detector, which avoids the unit starts unless the connections are made on the right way. The direction of the rotation is right when an indicator-light turns ON. If the connection is wrong, this indicator will not light and the rotation will be reversed. If this occurs, the solution is to disconnect, switch the wires between two of the phases and connect again.

3.3.- PRELIMINARY CHECKS

- ① Check that drain pipe connections, syphon installation, and their fixtures are secure and that the level of the unit is tipped toward the drain.
- ② Inspect the state of the ducts and grilles (clean and open grilles, no breaks in the duct, etc.).
- ③ Check that the power supply is the same as stated on the Rating Plate which is in agreement with the electrical diagram for the unit and that cable sizes are correct.
Check that tightness of the electrical connections to their terminals and to ground.
- ④ Check the control panel connections.
(If the connection is wrong, the unit will not operate and the control panel display will not light).
Inspect the Air Filter, which should be in its housing and correctly positioned (the metal grille should be toward inside).
- ⑤ Check, **with your hand**, that the fans turn freely.

FIGURE FOR THE STANDARD UNIT CONFIGURATION FOR MODELS 080



3.- COMMISSIONING AND OPERATION

3.4.- STEPS TO FOLLOW FOR COMMISSIONING THE UNITS

- On heat pump units, the compressor has a single phase electric heating element to assure a separation between the refrigerant and the oil in the housing. This heater is activated when the compressor is off and stops working when the compressor is on. About eight hours before start up or after a long shutdown period, voltage should be supplied to the unit so that this heater will be activated.
- To start the unit, follow the instructions given in the Control Panel Manual supplied with the unit (requesting operation in any of the modes, cooling, heating, or automatic). After a time lapse, the unit will start.
- With unit operating, check that the fans are turning freely and in the proper direction.



REMEMBER THAT THE COMPRESSOR IS A SCROLL TYPE COMPRESSOR

Scroll type compressors only compress in one direction of the rotation. Single phase models are always started up in the proper direction; however, the three phase models, turn in either direction depending on the order of the power supply phases. Therefore, it is essential that the phase connection for scroll-type three-phase compressors be carried out correctly, that is why these three-phase compressors are supplied as standard with a three-phase detector, which avoids the unit starts unless the connections are made on the right way. The direction of the rotation is right when an indicator-light turns ON. If the connection is wrong, this indicator will not light and the rotation will be reversed. If this occurs, the solution is to disconnect, switch the wires between two of the phases and connect again.

- Connect high and low pressure gauges and check that operating pressure values are normal.
- Measure electrical consumption for the unit and check that it is near what is indicated on the Rating Plate.
- Check the electrical consumption of the compressor and the fans with what is specified in the physical data sheets.
- In the case of a Heat Pump unit, make a cycle change on the Control Panel checking that the 4-way valves make the change correctly. Check the pressure values in the new cycle.

- UNIT PROTECTIONS:

1.- Electrical protections:

- ◇ Compressor start temporize 3 minutes. Avoid continued compressor starts.
- ◇ Thermal compressor protection (three phase models). Protects from a high compressor absorbed power. To reset this protection, push the thermal protection button (located at the outdoor unit electrical box).
- ◇ Three phase detector (three phase models). Explained before.
- ◇ Protection fuses outdoor-indoor unit connection.

2.- Refrigerant protections:

- ◇ Pressure switches:

DESCRIPTION	UNITS	RATED (kg/cm ²)		EFFECT	RESET
		OFF	ON		
Low pressure (LP)	030 to 080	0,5	1,5	Unit stops	Automatic/ Manual (electric) (1)
High pressure (HP)	030 to 080	27,5	22	Unit stops on cooling mode	Manual (electric)
Low ambient control (HPC)	Heat pump units	26,5	22	Outdoor fan stops on heating mode	Automatic

(1) For heat pump units, when the unit is working during an hour, the 2 first resets are automatic, the third one is manual (electric). For cooling only units, the reset is always manual (electric). For electrical resets, disconnect power supply from the unit.

Indication for pressure switch alarms:

For heat pump units, the PCB (located at the outdoor unit electrical box) has 2 indicators, HP and LP, which are low pressure and high pressure indicators. If any of those are lighted, indicates that the protection is activated; if any indicator is flashed, indicates that the protection has been reset, and it is waiting for disconnecting power supply.

◇ Probes:

- Anti-freeze protection: it comes on through the indoor unit coil probe (ID), avoids ice forms on cooling mode when temperature measures 0°C, the unit stops. This protection has an automatic reset.
- Overload heating mode protection: it comes on through the indoor unit coil probe (ID), avoids the unit works on heating mode with high condenser temperatures, when temperature measures 63°C, the unit stops. This protection has an automatic reset at the first time, and manual (electric) for the second one.

3.- Defrost cycle:

For heat pump units during the heating mode, it is possible the unit goes on to the defrost cycle. During this cycle, it is necessary to melt the ice on the outdoor coil, for that the unit will start working on cooling mode, and outdoor and indoor fans will stop.

Function: the defrost cycle is controlled through the PCB (outdoor unit) and the temperature probe (TS) located on the outdoor coil. The defrost cycle begins when TS < -2°C during 45 min. (not necessary on and on). This period can be changed through jumpers JMP5 and JMP6 from PCB. The defrost cycle ends when TS > +18°C or because the defrost cycle has exceeded 12 min.

Time needed for defrost	JMP5	JMP6
30 min	○○	○○
45 min (2)	○○	⊗⊗
60 min	⊗⊗	○○
75 min	⊗⊗	⊗⊗

(2) Factory setting

4.- MAINTENANCE



IMPORTANT: MAKE SURE THE UNIT IS COMPLETELY DISCONNECTED FROM THE POWER SUPPLY WHEN CARRYING OUT ANY TYPE OF WORK ON THE MACHINE. ALL MAINTENANCE SERVICE ON THE UNIT MUST BE CARRIED OUT BY QUALIFIED PEOPLE. ONLY COIL CLEANING AND FILTER REPLACEMENT CAN BE DONE BY NON-QUALIFIED PEOPLE.

4.1.- PREVENTIVE MAINTENANCE

PREVENTIVE MAINTENANCE PREVENTS COSTLY REPAIRS. BECAUSE OF THIS, PERIODIC INSPECTIONS ARE REQUIRED:

- GENERAL STATE OF THE CASING:

Furniture, paint, deterioration due to bumps, rust spots, leveling and supporting, state of the shock absorbers, if installed, screwed panels, etc.

- ELECTRICAL CONNECTIONS:

State of hoses, tightness of screws, grounding, current draw of the compressor and fans and checking that the unit is receiving the correct voltage.

- COOLING CIRCUIT:

Check that pressure values are correct and that there are no leaks. Check that there is no damage to the pipe insulation, that the state of the coils is correct and that there are no chips or clogs retained by the air flow, etc.

- COMPRESSOR:

Inspect the oil level, if sight glass is present.

Inspect the state of the silent block fixtures.

- DRAINS:

Check that water drains correctly and that the drain trays are clean.

- FANS:

Check that fans turn freely and in the correct direction without excessive noises.

- CONTROL:

Check Set Points and normal operation.

- AIR FILTER:

Detachable for cleaning by sliding front and down side.

A) ONE SIDE: filter can be removed sliding it out, from left or right side, as picture shows.

B) FRONT SIDE: push air filter up and pull it out, as shown in the picture.

The filter should be cleaned with a vacuum cleaner or washed in soapy water.

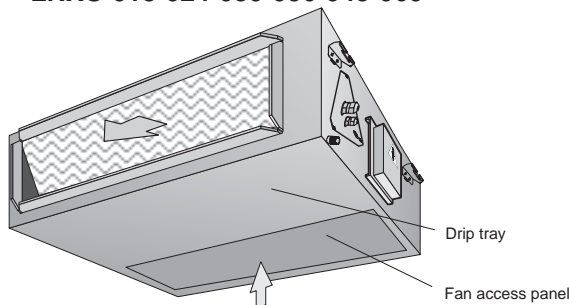
The frequency for cleaning or changing the air filters will depend on the quality air in the area (fumes, vapors, suspended dust particles, etc.).

- ACCESS TO INSIDE COMPONENTS:

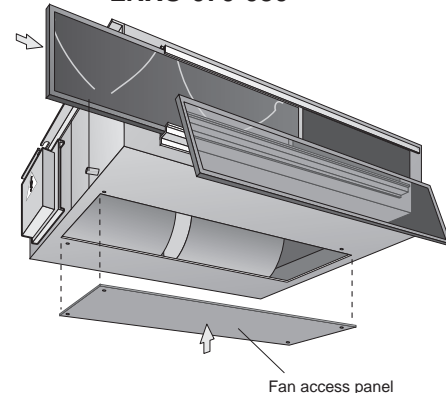
The whole unit will be accessed, without disassembling the ducts, through the cover located at the bottom of the unit.

This allows: - To carry out an inspection, checking or replacing any internal component of the unit (motor-fan).
- Cleaning the coil and drip tray.

LN XO 018-024-030-036-048-060



LN XO 070-080



It is very important cleaning the coil and the drip tray periodically.

- For models 018 to 060 it is necessary to detach the drip tray to get the coil. This can be easily done by removing the screws which join the drip tray with unit sides.

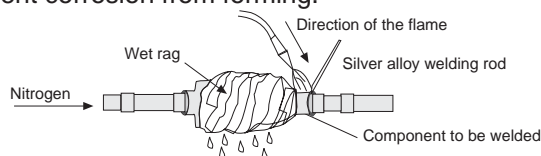
- For models 070 to 080, to get the coil, only have to detach fan access panel.

4.- MAINTENANCE

4.2.- CORRECTIVE MAINTENANCE

If some component in the cooling circuit must be replaced, follow these recommendations:

- Always use original replacement parts.
- Remove the entire refrigerant charge from the unit. Create a slight vacuum as a safety measure.
- Regulation prohibits the release on the refrigerant into the atmosphere.
- If cuts must be made in the pipework, use pipe cutters. Do not use saws or any other tools that produce filings.
- All brazing must be carried out in a nitrogen atmosphere to prevent corrosion from forming.
- Use silver alloy brazing rod.
- Take special care that the flame from the torch is aimed in the opposite direction from the component to be welded and is covered with a wet rag in order to avoid overheating.
- If a compressor must be replaced, disconnect it electrically and un-braze the suction and discharge lines. Remove the securing screws and replace the old compressor with the new one. Check that the new compressor has the correct oil charge, screw it to the base and connect the lines and electrical connections.
- Carry out the vacuum above and below until -750 mm Hg is reached. Once this level of vacuum has been reached, keep the pump in operation for at least one hour.



DO NOT USE THE COMPRESSOR AS A VACUUM PUMP.

- Charge the unit with refrigerant according to the data on the Rating Plate for the unit and **check that there are no leaks.**

4.3.- FAILURE DIAGNOSIS

PROBLEM	SOLUTION
1.- Unit does not work.	<ul style="list-style-type: none"> • Check electrical supply of the unit. • Check electrical connection. • Check that remote controller and its parameters work correctly.
2.- The fan of the unit works too fast without any change on speed.	<ul style="list-style-type: none"> • Check that the filter of the unit is clean. • Check electrical connection. • If the problem persists, check the function of the motor.
3.- Noise on pipe system. NOTE: Some noises are normal when unit stops and starts.	<ul style="list-style-type: none"> • Check refrigerant charge is correct. • ¿was the vacuum made correctly? • Check internal temperature; it could be quite low.
4.- Excess of condensation in indoor unit.	<ul style="list-style-type: none"> • Check possible obstructions in the condensate pan, and also out of the pan. • Check correct level of the unit. • Check drainage pipe.
5.- The indoor coil freezes continuously.	<ul style="list-style-type: none"> • Check the air filter of the indoor unit. • Check the level of refrigerant. • Check strangulation air flow or recirculation. • If the freeze persists the expansion can be obstructed. • ¿Is the temperature below 21 °C? • Check indoor temperature sensor.
6.- Unit works perfectly on cooling mode, but does not produce heat on heat pump mode.	<ul style="list-style-type: none"> • Check if you have configured correctly the function mode of the unit. • Check inverter valve of the outdoor unit. • Check the plate PCB to the solenoid inverted valve.
7.-External fan stops.	<ul style="list-style-type: none"> • Check that terminal connections are slack. • Check the motor. • Check the condenser situation. • Check that the unit is not on defrost cycle (heat pump units).
8.-Excessive pressure of condensation (working on cooling mode).	<ul style="list-style-type: none"> • Check that the external exchanger is not dirty and obstructed. • Check that there is no condensable gas and air in the refrigerant circuit. • Check that the external fan works correctly. • Check that the refrigerant charge is correct.
9.-Low pressure condensation (working on cooling mode).	<ul style="list-style-type: none"> • Check that the refrigerant charge is correct. • Check possible obstruction on the expansion system, liquid pipe or exchanger. • Check that air filter is not dirty or wrong function of indoor fan.
10.-Excessive pressure on return air (working on heat pump mode).	<ul style="list-style-type: none"> • Check that the refrigerant charge is correct. • Check the situation of inverter valve. • Check retention valve situation (if incorporated).
11.-Low pressure on return air (working on heat pump mode).	<ul style="list-style-type: none"> • Check that the refrigerant charge is correct. • Check possible obstruction on the expansion system of the outdoor unit. • Check that the external fan works correctly. • Check the correct function of the defrost control.



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