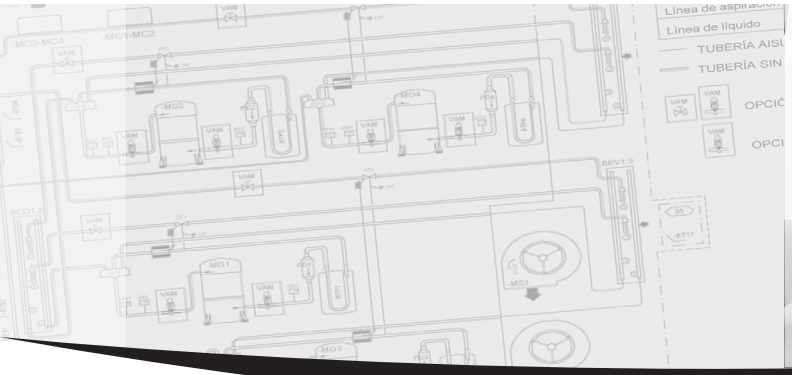
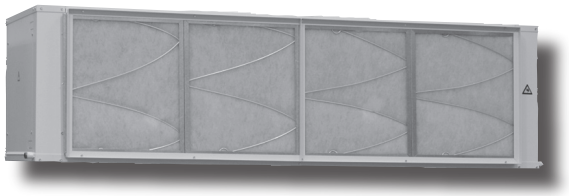
Installation, operating and maintenance

AIRCOOLAIR - LECM/LEHM



• • • Providing indoor climate comfort



MIL82E-0607 08-2008

WARNING: Read this manual before carrying out installation, repair or maintenance work.

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Lennox have been providing environmental solutions since 1895. Our AIRCOOLAIR range 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. For information on local contacts go to www.lennoxeurope.com.

All the technical and technological information contained in this manual, including any drawings and technical descriptions provided by us, remain the property of Lennox and must not be utilised (except in the operation of this product), reproduced, issued to or made available to third parties without the prior written agreement of Lennox.

POINTS TO BEAR IN MIND

DANGER AND WARNING SIGNS

Abrasive surfaces | Low temperatures | High temperatures | Risk of injury from moving objects | Electrical voltage | Risk of injury from rotating objects

ELECTRICAL CONNECTIONS

To prevent serious electrical injuries, make sure to switch off the power before doing any installation, repair or maintenance work on the unit.
To install the unit, bear in mind local and national legislation.

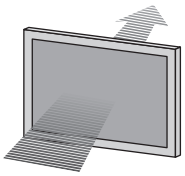
ATTENTION - WARNING

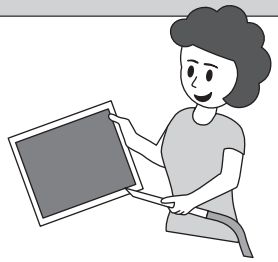
Electric shock can cause injury or death. Before attempting to perform any service or maintenance on the unit, turn OFF the electrical power, and check that the fan has stopped.

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

CLEANING THE FILTER

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 re-inserting it in the unit.

Standard Guidelines for Lennox equipment.

All technical data contained in these operating instructions, including diagrams and technical descriptions, remain 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.

Data published in the operating instructions are 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 and with no obligation to modify goods previously supplied.

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 with handling 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 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.

DATA PAGE FOR UNIT COMMISSIONING

UNIT: _____ SERIAL Nr.: _____

CONTROL PANEL IDENTIFICATION CODE _____

INSTALLATION ADDRESS: _____

INSTALLER: _____ INSTALLER TEL: _____

INSTALLER ADDRESS: _____

DATE COMMISSIONING: _____

CHECKS:

SUPPLY VOLTAGE: _____ RATED VOLTAGE OF THE UNIT: _____

	YES	**NO**
DRAINAGE WITH TRAP.	☐	☐
CLEAN INTERIOR AIR FILTER.	☐	☐
GENERAL POWER SUPPLY CONNECTION.	☐	☐

DATA INPUT:

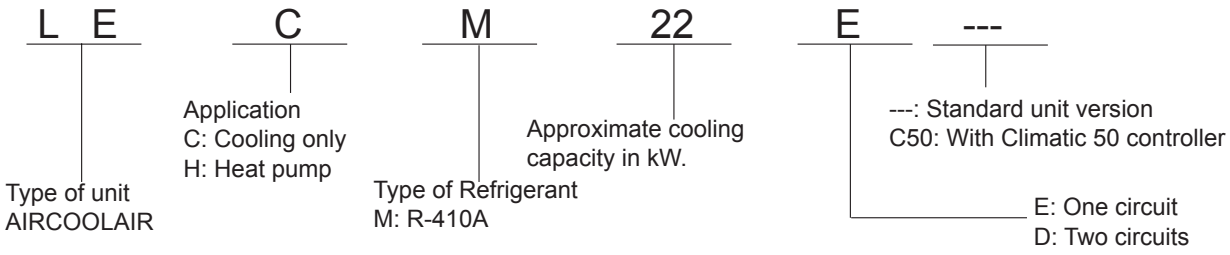
COLD CYCLE	HEATING CYCLE
Air flow data: _____	Air flow data: _____
Air Intake Temperature, Indoor Coil: _____ **ºC**	Air Intake Temperature, Indoor Coil: _____ **ºC**
High Pressure: _____	High Pressure: _____
Low Pressure: _____	Low Pressure: _____
ELECTRIC POWER CONSUMPTION (Amps)	
Fan indoor section: ____ / ____ / ____	Fan indoor section: ____ / ____ / ____

Options Installed: _____

Comments: _____

1.- GENERAL CHARACTERISTICS

1.1.- PHYSICAL DATA



LECM: Cooling only unit R-410A.
LEHM: Heat pump unit R-410A.

WEIGHT FOR STANDARD UNITS

UNIT MODELS	22E	26E	32E	38E	43E-44E	52D	64D-68E	76D-76E	86D	112D	128D	152D
NET WEIGHT	108	111	115	150	160	170	242	259	276	470	480	490

ADDITIONAL WEIGHT FOR OPTIONS

ELECTRICAL HEATER

MODELS LECM/LEHM	22E-26E-32E-38E-43E-44E	52D	64D-76D-86D	112D-128D-152D
WEIGHTS kg	10	20	64D Y 76D=20; 86D=30	45

HOT WATER COIL

MODELS LECM/LEHM	22E-26E-32E	38E	43E-44E	52D-64D/68E	76D/76E	86D	112D-128D-152D
WEIGHTS kg	10	12	16	20	24	30	40

KIT MORE STATIC PRESSURE OF AIR DISCHARGE

MODELS LECM/LEHM	22E	26E	32E	38E	43E-44E	52D	64D-68E	76D-76E	86D	112D	128D	152D
WEIGHTS kg	6.50	3.00	3.00	5.00	0	3.00	3.00	3.00	13.00	13.00	8.00	8.00

FREE-COOLING, MIXING SECTION

MODELS LECM/LEHM	22E	26E	32E	38E	43E-44E	52D	64D-68E	76D-76E	86D	112D	128D	152D
WEIGHTS kg	50	50	50	75	75	75	165	165	165	190	190	190

RETURN FAN

MODELS LECM/LEHM	22E	26E	32E	38E	43E-44E	52D	64D-68E	76D-76E	86D	112D	128D	152D
WEIGHTS kg	n/a	n/a	n/a	n/a	n/a	n/a	145	145	145	230	230	230

EXHAUST FAN

LECM/LEHM	22E	26E	32E	38E	43E-44E	52D	64D-68E	76D-76E	86D	112D	128D	152D
WEIGTHTS Kg	25	25	25	28	28	28	37	37	37	65	65	65

1.2.- ELECTRICAL DATA

ELECTRICAL CONSUMPTION FOR STANDARD UNITS

UNIT MODELS		LECM 22E LEHM 22E	LECM 26E LEHM 26E	LECM 32E LEHM 32E	LECM 38E LEHM 38E	LECM 43E LEHM 43E-44E	LECM 52D LEHM 52D
Voltage	Ph/V/Hz	3N~400V 50Hz					
Maximum absorbed power	kW	0.74	1.45	1.45	1.89	2.69	2.69
Maximum current	A	1.40	2.59	2.59	3.45	4.80	4.80
Start up current	A	6.44	13.0	13.0	17.3	26.4	26.4

UNIT MODELS		LECM 64D LEHM 64D	LECM 76D LEHM 76D	LECM 86D LEHM 86D	LECM 112D LEHM 112D	LECM 128D LEHM 128D	LECM 152D LEHM 152D
Voltage	Ph/V/Hz	3N~400V 50Hz					
Maximum absorbed power	kW	2.69	3.63	5.06	5.06	6.38	6.38
Maximum current	A	4.80	6.48	8.60	8.60	11.1	11.1
Start up current	A	26.4	35.6	60.2	60.2	81.0	81.0

ADDITIONAL ELECTRICAL CONSUMPTION FOR THE OPTIONS

ELECTRICAL HEATER		LECM-LEHM 22E-26E-32E-38E-43E-44E		
Voltage	Ph/V/Hz	3~400V 50Hz		
Maximum absorbed power	kW	7.50	11.0	15.0
Maximum current	A	10.8	15.9	21.7

ELECTRICAL HEATER			LECM 52D				LECM 64D-76D-86D				LECM 112D-128D-152D			
COOLING ONLY	Voltage	Ph/V/Hz	3~400V 50Hz											
			1 STAGE			2 STAGES	1 STAGE		2 STAGES		1 STAGES		2 STAGES	
	Max. absorbed power	kW	7.50	11.0	15.0	20.0	11.0	15.0	20.0	30.0	30.0	40.0	40.0	60.0
	Maximum current	A	10.8	15.9	21.7	28.9	15.9	21.7	28.9	30.0	43.3	57.7	57.7	86.6

ELECTRICAL HEATER			LEHM 52D			LEHM 64D-76D-86D			LEHM 112D-128D -152D	
HEATING PUMP	Voltage		3~400V 50Hz							
			1 STAGE			1 STAGE			1 STAGE	
	Maximum absorbed power	kW	7.50	11.0	15.0	11.0	15.0	20.0	30.0	40.0
	Maximum current	A	10.8	15.9	21.7	15.9	21.7	28.9	43.3	57.7

EXHAUST FAN			LECM 22E LEHM 22E	LECM 26E LEHM 26E	LECM 32E LEHM 32E	LECM 38E LEHM 38E	LECM 43E LEHM 43E-44E	LECM 52D LEHM 52D
Voltage		Ph/V/Hz	1N~230V 50Hz					
Maximum absorbed power		kW	0.51	0.51	0.51	1.33	1.33	1.33
Maximum current	230V	A	2.60	2.60	2.60	6.80	6.80	6.80

EXHAUST FAN			LECM 64D LEHM 64D	LECM 76D LEHM 76D	LECM 86D LEHM 86D	LECM 112D LEHM 112D	LECM 128D LEHM 128D	LECM 152D LEHM 152D
Voltage		Ph/V/Hz	3~400V 50Hz					
Maximum absorbed power		kW	2.65	2.65	2.65	5.30	5.30	5.30
Maximum current	400V	A	4.50	4.50	4.50	9.00	9.00	9.00

HIGH PRESSURE FAN		LECM 22E LEHM 22E	LECM 26E LEHM 26E	LECM 32E LEHM 32E	LECM 38E LEHM 38E	LECM 43E LEHM 43E-44E	LECM 52D LEHM 52D
Voltage	Ph/V/Hz	3~400V 50Hz					
Maximum absorbed power	kW	0.72	0.43	0.43	0.80	0.00	0.94
Maximum current	A	1.19	0.86	0.86	1.35	0.00	1.68
Start up current	A	6.51	4.30	4.30	9.15	0.00	9.24

HIGH PRESSURE FAN		LECM 64D LEHM 64D	LECM 76D LEHM 76D	LECM 86D LEHM 86D	LECM 112D LEHM 112D	LECM 128D LEHM 128D	LECM 152D LEHM 152D
Voltage	Ph/V/Hz	3~400V 50Hz					
Maximum absorbed power	kW	0.94	1.43	1.32	1.32	2.41	2.41
Maximum current	A	1.68	2.12	2.50	2.50	4.20	4.20
Start up current	A	9.24	24.6	20.8	20.8	27.6	27.6

RETURN FAN		LECM 64D LEHM 64D	LECM 76D LEHM 76D	LECM 86D LEHM 86D	LECM 112D LEHM 112D	LECM 128D LEHM 128D	LECM 152D LEHM 152D
Voltage	Ph/V/Hz	3~400V 50Hz					
Maximum absorbed power	kW	2.69	3.63	3.63	5.06	6.38	6.38
Maximum current	A	4.80	6.48	6.48	8.60	11.1	11.1

1.3.- FAN PERFORMANCES

1.3.1.- STANDARD FAN PERFORMANCES

Check if you have standard high static pressure, frecooling option with return fan or with exhaust fan.

22E

AIR FLOW		m³/h	3150	3425	3700	4100
		r.p.m	Available static pressure Pa.			
PULLEY MOTOR POSITION	CLOSED PULLEY	806	162	156	145	●
	1 TURN	771	147	136	130	112
	2 TURNS	737	127	121	110	97
	3 TURNS	702	112	106	95	77
	4 TURNS	667	97	86	75	57

26E

AIR FLOW		m³/h	4250	4625	5000	5500
		r.p.m	Available static pressure Pa.			
PULLEY MOTOR POSITION	CLOSED PULLEY	818	148	137	115	85
	1 TURN	783	133	117	95	65
	2 TURNS	747	113	92	70	40
	3 TURNS	712	93	77	55	20
	4 TURNS	677	73	57	30	n/a

32E

AIR FLOW		m³/h	4650	5050	5450	6000
		r.p.m	Available static pressure Pa.			
PULLEY MOTOR POSITION	CLOSED PULLEY	818	153	134	113	80
	1 TURN	783	130	113	90	52
	2 TURNS	747	110	90	65	27
	3 TURNS	712	90	69	45	2
	4 TURNS	677	70	47	20	n/a

38E

AIR FLOW		r.p.m	6200	6650	7100	8050
		m³/h	Available static pressure Pa.			
PULLEY MOTOR POSITION	CLOSED PULLEY	735	161	140	122	72
	1 TURN	704	136	118	97	44
	2 TURNS	672	116	95	75	17
	3 TURNS	640	91	71	48	n/a
	4 TURNS	609	71	48	26	n/a

43E-44E

AIR FLOW		m³/h	6950	7550	8150	9050
		r.p.m	Available static pressure Pa.			
PULLEY MOTOR POSITION	CLOSED PULLEY	829	231	210	185	138
	1 TURN	794	201	180	154	103
	2 TURNS	758	174	150	122	70
	3 TURNS	722	147	121	90	36
	4 TURNS	686	119	93	60	3

52D

AIR FLOW		m³/h	7950	8675	9400	9750
		r.p.m	Available static pressure Pa.			
PULLEY MOTOR POSITION	CLOSED PULLEY	829	216	187	150	129
	1 TURN	794	186	155	115	93
	2 TURNS	758	156	122	80	56
	3 TURNS	722	124	88	45	21
	4 TURNS	686	223	57	10	n/a

64D

AIR FLOW		m³/h	9950	10825	11700	12850
		r.p.m	Available static pressure Pa.			
PULLEY MOTOR POSITION	CLOSED PULLEY	755	175	163	150	127
	1 TURN	715	150	138	124	100
	2 TURNS	675	127	114	100	74
	3 TURNS	635	104	184	74	47
	4 TURNS	595	82	68	50	22

76D

AIR FLOW		m³/h	12450	13550	14650	15090
		r.p.m	Available static pressure Pa.			
PULLEY MOTOR POSITION	CLOSED PULLEY	843	197	175	150	●
	1 TURN	798	164	142	115	104
	2 TURNS	753	134	109	80	69
	3 TURNS	709	104	78	47	34
	4 TURNS	664	95	47	15	0

86D

AIR FLOW		m³/h	14000	15125	16250	16725
		r.p.m	Available static pressure Pa.			
PULLEY MOTOR POSITION	CLOSED PULLEY	941	237	214	185	●
	1 TURN	891	200	172	140	127
	2 TURNS	841	162	132	105	84
	3 TURNS	791	287	92	58	42
	4 TURNS	741	250	54	18	1

112D

AIR FLOW		m³/h	17350	18875	20400	22450
		r.p.m	Available static pressure Pa.			
PULLEY MOTOR POSITION	CLOSED PULLEY	672	187	167	144	●
	1 TURN	636	157	135	111	73
	2 TURNS	601	128	106	80	40
	3 TURNS	565	99	76	49	7
	4 TURNS	529	72	47	19	n/a

128D

AIR FLOW		m³/h	19300	21000	22700	24950
		r.p.m	Available static pressure Pa.			
PULLEY MOTOR POSITION	CLOSED PULLEY	766	269	247	225	●
	1 TURN	725	231	207	182	●
	2 TURNS	684	193	167	142	98
	3 TURNS	644	156	130	102	58
	4 TURNS	603	120	94	65	17

152D

AIR FLOW		r.p.m	21000	22250	23500	24750
		m³/h	Available static pressure Pa.			
PULLEY MOTOR POSITION	CLOSED PULLEY	766	276	263	246	●
	1 TURN	725	236	221	204	●
	2 TURNS	684	196	181	162	142
	3 TURNS	644	159	142	123	100
	4 TURNS	603	123	104	83	60

(●) WRONG STATUS ON ACCOUNT OF MOTOR POWER LIMIT.

☐ NOMINAL FACTORY SETTING.

NOTE: Additional pressure drop with the option high efficiency air filter G4 is 50Pa.

NOTE: With low distance option it is not suitable unit working below nominal air flow.

1.3.2.- FAN PERFORMANCES WITH KIT HIGH STATIC PRESSURE (OPTIONAL TRANSMISSION)

22E

AIR FLOW	m³/h	3150	3425	[3700]	4100
PULLEY MOTOR POSITION	r.p.m	Available static pressure Pa.			
CLOSED PULLEY	1090	322	316	310	300
1 TURN	1043	292	286	280	270
2 TURNS	996	265	258	[252]	240
3 TURNS	949	237	231	224	212
4 TURNS	902	211	204	198	185

26E

m³/h	4250	4625	[5000]	5500
r.p.m	Available static pressure Pa.			
1098	320	310	298	279
1051	288	279	267	245
1003	258	247	[235]	212
956	230	217	203	179
909	201	189	173	146

32E

AIR FLOW	m³/h	4650	5050	[5450]	6000
PULLEY MOTOR POSITION	r.p.m	Available static pressure Pa.			
CLOSED PULLEY	1098	326	317	305	●
1 TURN	1051	295	284	270	248
2 TURNS	1003	263	252	[237]	212
3 TURNS	956	234	222	205	178
4 TURNS	909	205	190	173	143

38E

m³/h	6200	6650	[7100]	8050
r.p.m	Available static pressure Pa.			
944	327	315	301	267
894	285	272	258	220
844	247	232	[218]	175
794	207	192	176	131
744	170	155	136	87

43E-44E

AIR FLOW	m³/h	6950	7550	[8150]	9050
PULLEY MOTOR POSITION	r.p.m	Available static pressure Pa.			
CLOSED PULLEY	944	327	312	291	●
1 TURN	894	284	267	244	204
2 TURNS	844	243	224	[200]	154
3 TURNS	794	202	181	154	107
4 TURNS	744	163	140	111	59

52D

m³/h	7950	8675	[9400]	9750
r.p.m	Available static pressure Pa.			
944	320	295	264	247
894	274	247	213	194
844	228	200	[163]	142
794	185	153	113	91
744	142	262	63	41

64D-68E

AIR FLOW	m³/h	9950	10825	[11700]	12850
PULLEY MOTOR POSITION	r.p.m	Available static pressure Pa.			
CLOSED PULLEY	1049	386	376	367	●
1 TURN	993	341	331	323	●
2 TURNS	937	298	383	[278]	262
3 TURNS	882	259	249	238	220
4 TURNS	826	221	211	197	179

76D-76E

m³/h	12450	13550	[14650]	15090
r.p.m	Available static pressure Pa.			
1045	354	336	318	●
990	308	290	270	261
934	264	245	[223]	214
879	222	203	180	169
823	182	160	135	123

86D

AIR FLOW	m³/h	14000	15125	[16250]	16725
PULLEY MOTOR POSITION	r.p.m	Available static pressure Pa.			
CLOSED PULLEY	1063	346	324	301	288
1 TURN	1007	298	274	249	238
2 TURNS	951	251	227	[201]	186
3 TURNS	894	206	179	151	136
4 TURNS	838	163	134	103	88

112D

m³/h	17350	18875	[20400]	22450
r.p.m	Available static pressure Pa.			
854	358	343	326	●
809	314	297	278	247
764	269	252	[233]	202
719	229	210	188	157
673	189	169	146	115

128D

AIR FLOW	m³/h	19300	21000	[22700]	24950
PULLEY MOTOR POSITION	r.p.m	Available static pressure Pa.			
CLOSED PULLEY	852	356	337	318	283
1 TURN	806	310	290	268	231
2 TURNS	761	263	242	[220]	181
3 TURNS	716	221	200	172	133
4 TURNS	671	181	155	128	86

152D

m³/h	21000	22250	23500	[24750]
r.p.m	Available static pressure Pa.			
852	346	354	341	324
806	299	305	290	272
761	251	257	241	[223]
716	209	212	195	176
671	164	167	149	124

(●) WRONG STATUS ON ACCOUNT OF MOTOR POWER LIMIT.

[ ] NOMINAL FACTORY SETTING.

NOTE: Additional pressure drop with the option high efficiency air filter G4 is 50Pa.

NOTE: With low distance option it is not suitable unit working below nominal air flow.

1.3.3.- FAN PERFORMANCES WITH FREE-COOLING

Return fan performances for each models are:

64D-68E

AIR FLOW		m³/h	9950	10825	11700	12850
		r.p.m	Available static pressure Pa.			
PULLEY MOTOR POSITION	CLOSED PULLEY	755	255	257	260	260
	1 TURN	715	230	232	234	233
	2 TURNS	675	207	208	**210**	207
	3 TURNS	635	184	184	184	180
	4 TURNS	595	162	162	160	155

76D-76E

m³/h	12450	13550	14650	15090
r.p.m	Available static pressure Pa.			
755	260	260	258	255
715	235	233	228	225
675	208	205	**198**	195
635	182	176	168	165
595	157	150	140	135

86D

AIR FLOW		m³/h	14000	15125	16250	16725
		r.p.m	Available static pressure Pa.			
PULLEY MOTOR POSITION	CLOSED PULLEY	755	260	255	250	●
	1 TURN	715	230	225	215	212
	2 TURNS	675	202	195	**183**	178
	3 TURNS	635	173	165	153	145
	4 TURNS	595	145	135	120	115

112D

m³/h	17350	18875	20400	22450
r.p.m	Available static pressure Pa.			
672	293	293	291	●
636	263	261	258	251
601	234	232	**227**	218
565	205	202	196	185
529	178	173	166	153

128D

AIR FLOW		m³/h	19300	21000	22700	24750
		r.p.m	Available static pressure Pa.			
PULLEY MOTOR POSITION	CLOSED PULLEY	766	381	380	380	373
	1 TURN	725	343	340	337	330
	2 TURNS	684	305	300	**297**	287
	3 TURNS	644	268	263	257	245
	4 TURNS	603	232	227	220	205

152D

m³/h	21000	22700	24750
r.p.m	Available static pressure Pa.		
766	380	380	373
725	340	337	330
684	300	297	**287**
644	263	257	245
603	227	220	205

(●) WRONG STATUS ON ACCOUNT OF MOTOR POWER LIMIT.

[ ] NOMINAL FACTORY SETTING.

NOTE: Additional pressure drop with the option high efficiency air filter G4 is 50Pa.

NOTE: With low distance option it is not suitable unit working below nominal air flow.

Air flows with exhaust fan for option "free-cooling without return fan"

22E-26E-32E

AIR FLOW	m³/h	2000	2500	2750
AVAILABLE STATIC PRESSURE Pa.		160	105	75

38E-43E-44E-52D

m³/h	3000	3500	4000
	210	180	130

64D-76D-86D / 68E-76E

AIR FLOW	m³/h	6000	7000	8000
AVAILABLE STATIC PRESSURE Pa.		260	200	90

112D

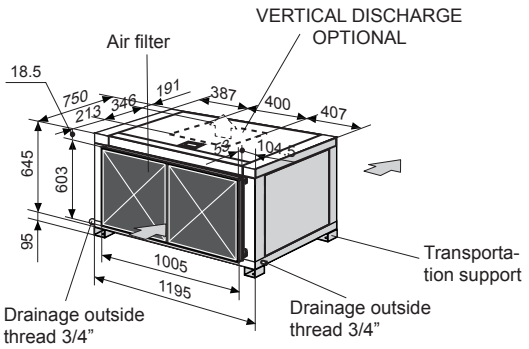
m³/h	13200	14300	15400	16500
	230	200	150	50

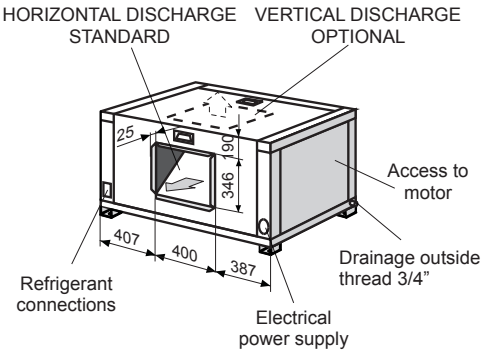
128D-152D

AIR FLOW	m³/h	13200	14300	15400	16500
AVAILABLE STATIC PRESSURE Pa.		230	200	150	50

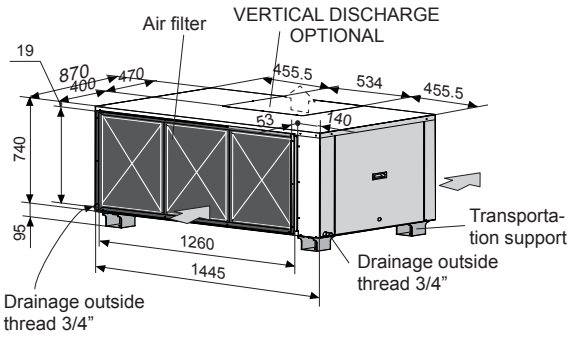
1.5.- UNIT DIMENSIONS

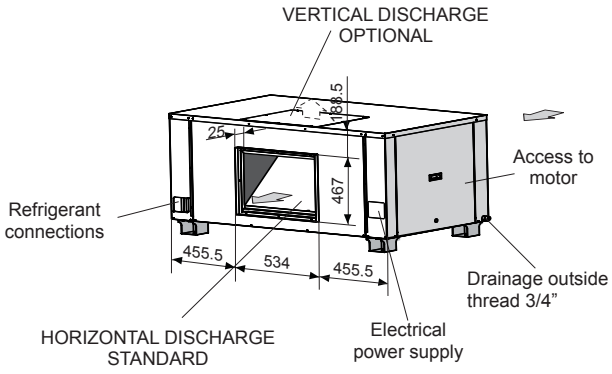
MODELS 22E - 26E - 32E



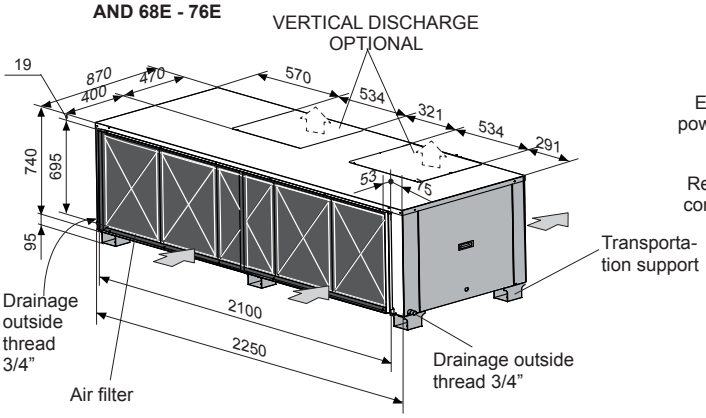


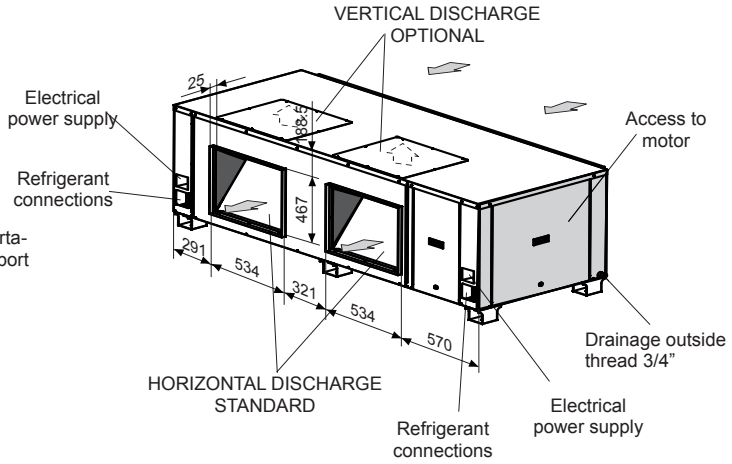
MODELS 38E - 43E - 44E - 52D



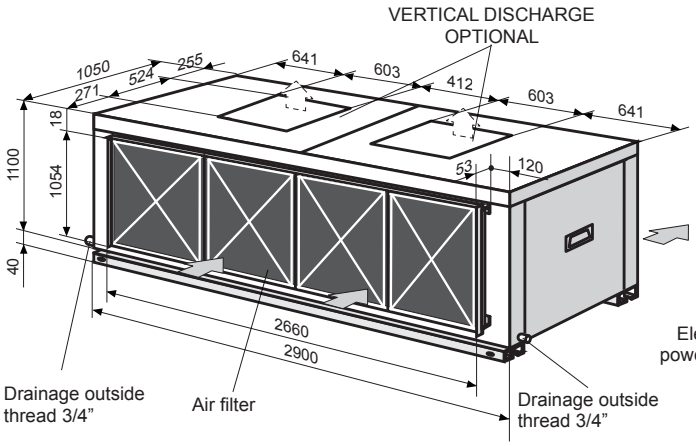


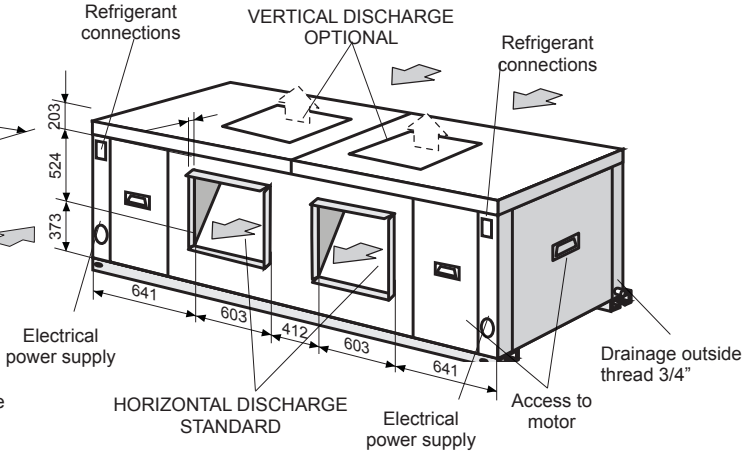
MODELS 64D - 76D - 86D
AND 68E - 76E





MODELS 112D-128D-152D





2.- INSTALLATION

2.1.- INSTALLATION GUIDELINES

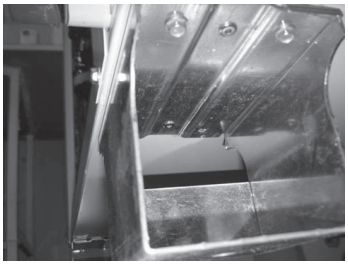
ALL INSTALLATION, SERVICE and MAINTENANCE operations must be carried out by QUALIFIED PERSONNEL.

The unit must be transported in a HORIZONTAL POSITION on its metal legs. Any other position may cause serious damage to the machine. When the unit is received, it should be checked to ensure that there are no knocks 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 explaining on the transport agent's delivery notice why the machine is unacceptable. Any complaint or claim made subsequently 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 units 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.

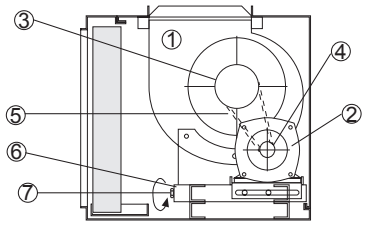
If there are problems of height, the transport supports can be removed by unscrewing them from the base. (Units 22E to 86E).



2.2.- OPTIONAL OPERATIONS PRIOR TO UNIT INSTALLATION:

VENTILATION FOR LECM-LEHM UNITS IS PROVIDED BY:

1.- Centrifugal fan (single or double).
2.- Drive motor.
3.- Pulley fixed to the fan.
4.- Adjustable pulley on the fan motor.
5.- Pulley belt.
6.- Base of the motor with displacement system for tensioning belts.
7.- Tensioning screw.



REGULATING AIRFLOW AT THE FANS

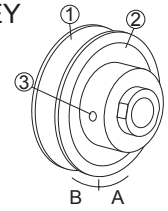
The unit fan has an adjustable pulley on the drive motor so that, when the fan is switched off, the pulley diameter can be adjusted to modify the unit's air flow, as required.

1. Fixed part. 2. Moving part. 3. Fixing screw.

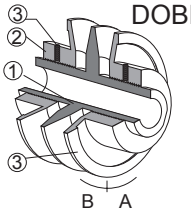
CLOSE PULLEY:
To increase the air flow from the fan, turn the moving part in direction "B". (Clockwise).
OPEN PULLEY:
To reduce airflow, turn in direction "A". (Anticlockwise).

ADJUSTABLE PULLEYS

SIMPLE PULLEY

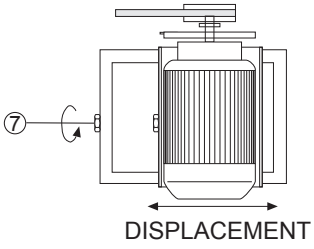


DOBLE PULLEY



TENSION OF BELTS

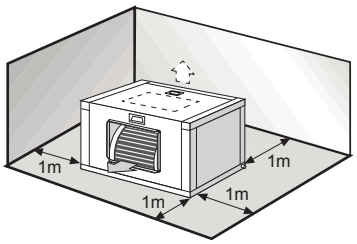
The belts can be easily tensioned by means of the tensioning screw incorporated into the base of the motor in the transmission unit, which also makes it easy to carry out servicing properly.
When the tensioning screw is turned, the fan motor is moved sideways in order to tension the pulley.



2.- INSTALLATION

2.3.- SERVICE SPACE

Free space should be left to enable access for servicing, in order to check the installation of the cables, drainage connections, electrical installation and cleaning filters, as well as to give easy access to the unit.

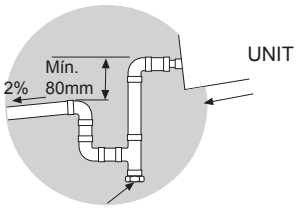


2.4.- DRAINS

All units have a 3/4” steel threaded drainage pipe welded to the condensation tray.

Drainage pipes will be fitted for each tray through a siphon with a height difference of 80 mm. to avoid drainage problems from the depression formed by the fans. The pipes should have a 2% slope to enable condensation to be drained easily.

Also tip the unit slightly (2%) toward the drainage side. Check that the condensation trays are clean and free of dirt and other debris from the installation work and that water drains correctly.



Inspection and cleaning cap.

2.5.- REFRIGERANT CONNECTIONS

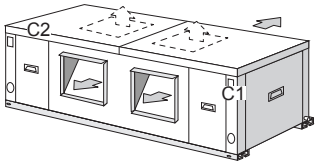
The unit is supplied with gas and liquid lines, sealed with copper caps.

THE UNITS ARE SUPPLIED WITH NITROGEN GAS. THIS MUST BE REMOVED BEFORE PROCEEDING AS FOLLOWS:

1 Remove the nitrogen gas through the top and bottom 5/16” service ports, leaving a vacuum as a safety measure.
2 Remove the caps from the connecting pipes.
3 Braze the connecting pipes.
(When brazing refrigerant pipes, nitrogen gas must be supplied through the service ports into the pipes to remove any air).

DURING INSTALLATION OPERATIONS, KEEP GAS AND LIQUID PIPES COVERED, IN ORDER TO PREVENT HUMIDITY AND DIRT FROM GETTING INTO THEM.
TAKE SPECIAL CARE TO ENSURE THAT REFRIGERANT PIPES ARE INSULATED.
AVOID COLLAPSE ON PIPE LINES INSTALLATION.

- 112D and 128D unit models uses different sizes of pipe connections: big size for circuit 1 and small size for circuit 2.



Please be sure to connect indoor unit circuits C1 and C2 to the corresponding C1 and C2 circuits of the outdoor unit.

2.- INSTALLATION

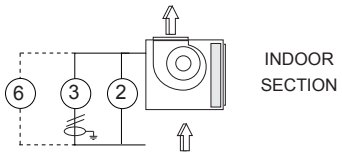
2.6.- ELECTRICAL CONNECTIONS

- BEFORE MAKING ANY ELECTRICAL CONNECTIONS, BE SURE THAT ALL CIRCUIT BREAKERS ARE OPEN.
- IN ORDER TO CARRY OUT THE ELECTRICAL CONNECTIONS, FOLLOW THE ELECTRICAL DIAGRAM SUPPIED WITH THE UNIT.

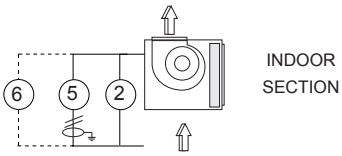
UNITS WITHOUT FREE-COOLING OPTTION

② Power supply (indoor fan).
③ Liquid-gas pipe sensor. (STD only).
⑤ Discharge sensor (C50 only).
⑥ BE connection (option).

STANDAR VERSION



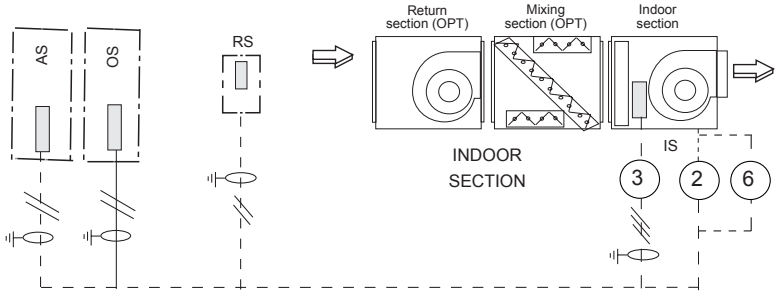
C50 VERSION

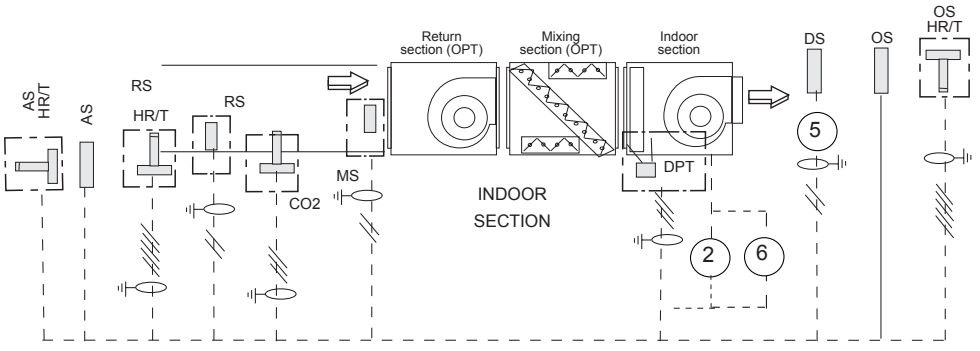


VERSIONS: STANDARD + C50					
	Supply FM	Liquid-gas pipe sensor	Discharge sensor C50	Supply BE (mm²)	
	2	3	5	1 STAGE 6	2 STAGES
22E 26E 32E 38E 43E-44E 52D 64D-68E 76D-76E 86D 112D 128D 152D	4 x 1.5 mm²	2 x 1 mm² shielded	2 x 1 mm² shielded	4 x 4 + 3 x 1.5 mm²	4 x 6 + 4 x 1.5 mm²
		4 x 1 mm² shielded		4 x 6 + 3 x 1.5 mm²	4 x 10 + 4 x 1.5 mm²
	4 x 2.5 mm²			4 x 16 + 3 x 1.5 mm²	**40kw**: 2x(4x6)mm²+4x1.5m² **60kw**: 2x(4x10)mm²+4x1.5mm²

UNITS WITH FREE-COOLING OPTION

STANDARD VERSION





C50 VERSION

Option
To connect by installer

CONNECTION OF CONTROL ELEMENTS:

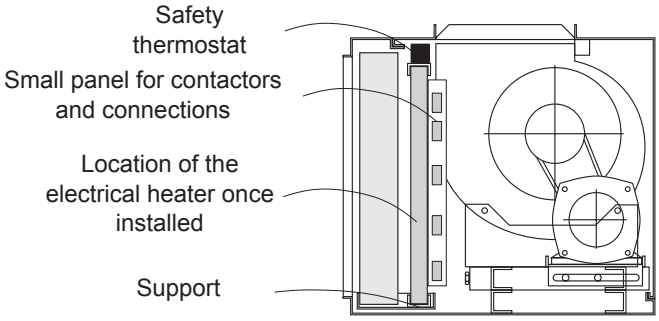
COMPONENTS VERSIONS	STANDARD	C50	Nr OF CABLES X SECTION
DS (Discharge sensor).		STANDARD	2 x 1 mm² (abgeschirmt)
OS (Outdoor sensor).	OPTION	STANDARD	2 x 1 mm² (abgeschirmt)
AS (Remote ambient sensor).	OPTION	STANDARD	2 x 1 mm² (abgeschirmt)
RS (Duct sensor). It replaces AS.	OPTION	OPTION	2 x 1 mm² (abgeschirmt)
IS (Liquid-gas pipe sensor)	STANDARD		2 x 1 mm² (abgeschirmt)
MS (Duct sensor for thermostatic and enthalpic free cooling).		OPTION	2 x 1 mm² (abgeschirmt)
RS HR/T (Duct remote sensor) for enthalpic free-cooling.		OPTION	5 x 1 mm² (abgeschirmt)
CO_2 (CO_2 Air quality probe) available only with enthalpic free-cooling.		OPTION	3 x 1 mm² (abgeschirmt)
DP (Air differential pressure transducer).		OPTION	3 x 1 mm² (abgeschirmt)
OS HR/T (Outdoor sensor) for enthalpic free-cooling.		OPTION	5 x 1 mm² (abgeschirmt)
AS HR/T (Remote ambient sensor) for enthalpic free-cooling.		OPTION	5 x 1 mm² (abgeschirmt)

VOLTAGE OPERATING LIMITS: 342-462V

2.7.- OPTIONS INSTALLATION

ELECTRICAL HEATER

The electrical heater must be supplied from the unit's electrical box.



HOT WATER COIL

PROTECTION AGAINST FREEZING:

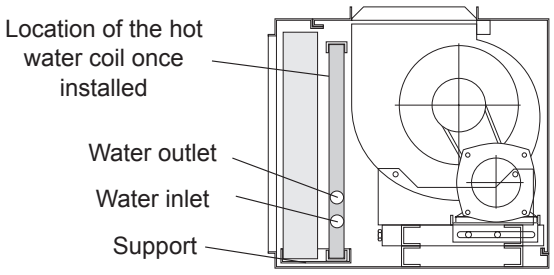
• Use glycol water. GLYCOL IS THE ONLY EFFECTIVE PROTECTION AGAINST FREEZING.

This kit includes a safety thermostat with a probe located inside the hot water coil. When the temperature drops below 4ºC, the unit will stop in order to protect the hot water coil and to prevent the unit from working with very low evaporating temperatures.

Five wires must be added between indoor and outdoor unit with this option.

Hot water coil includes regulating valve:

- ON/OFF for standard and D2 version.
- Proportional (0-10V), for C50 version.



You must ensure that manual or automatic air vents have been installed on all high points in the system. In order to drain the system, check that drain valves have been installed at all low points of the system.

A HEATING COIL FROZEN DUE TO LOW AMBIENT CONDITIONS IS NOT COVERED BY THE WARRANTY.

FREE COOLING

1.- OPERATION

The control compares the values of temperature/enthalpy between outside air and room air by means of the probes; if there is a negative difference and the safety elements allow (discharge temperature probes) then the control acts on the servomotor, which opens the outside damper and closes the return damper, allowing cool outside air to enter the room.

The damper is proportionally regulated.

If there is not a great demand for air indoors, it may be enough just to have free cooling to condition the room. If there is a greater demand for air, the free cooling and the unit may need to be working in different cooling mode stages.

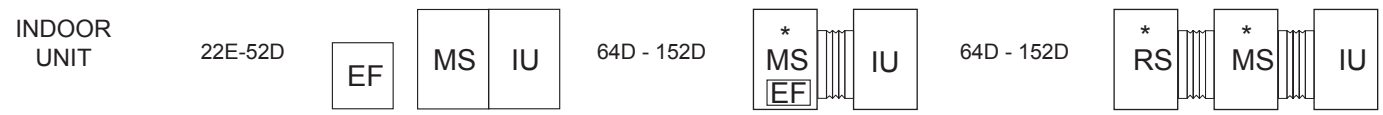
2.- SUPPLY AND INSTALLATION

The free cooling option can be delivered as a packaged system or as a split system.

The mixing section will be delivered with the unit for models 22E to 52D and as a split system for the remaining models.

Return fan section will be delivered with the unit.

Configuration of free cooling supply:



EF: Exhaust fan.
MS: Mixing section.
RS: Return fan section.

IU: Indoor unit.

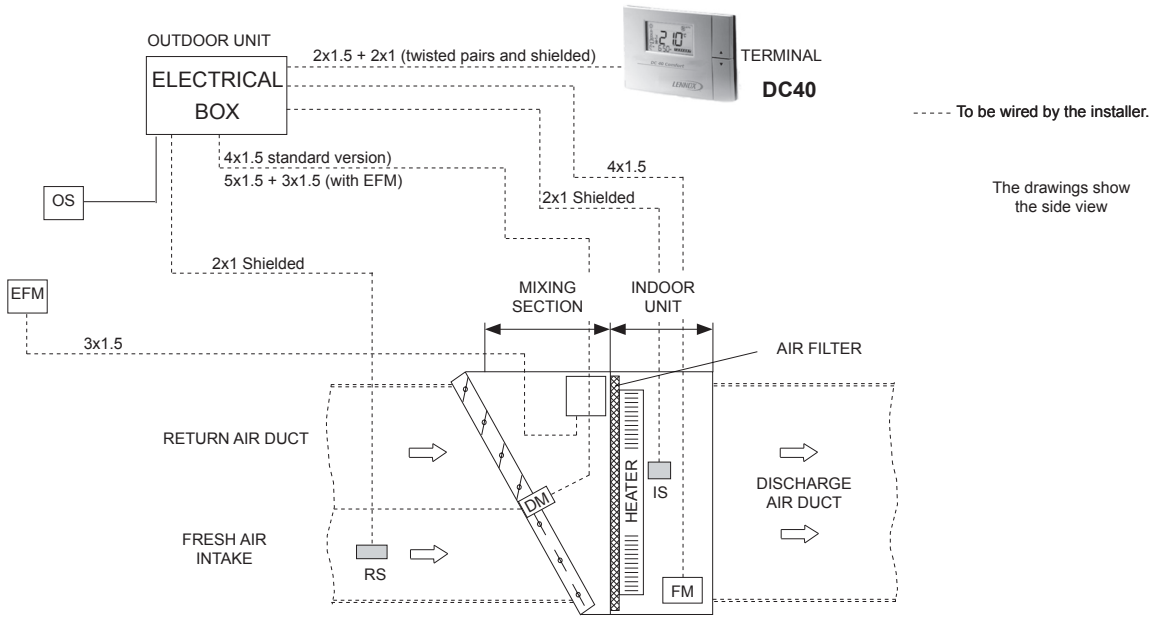
Flexible duct to be installed by the customer.

* Mixing and return fan sections can be together or not.

FREE-COOLING

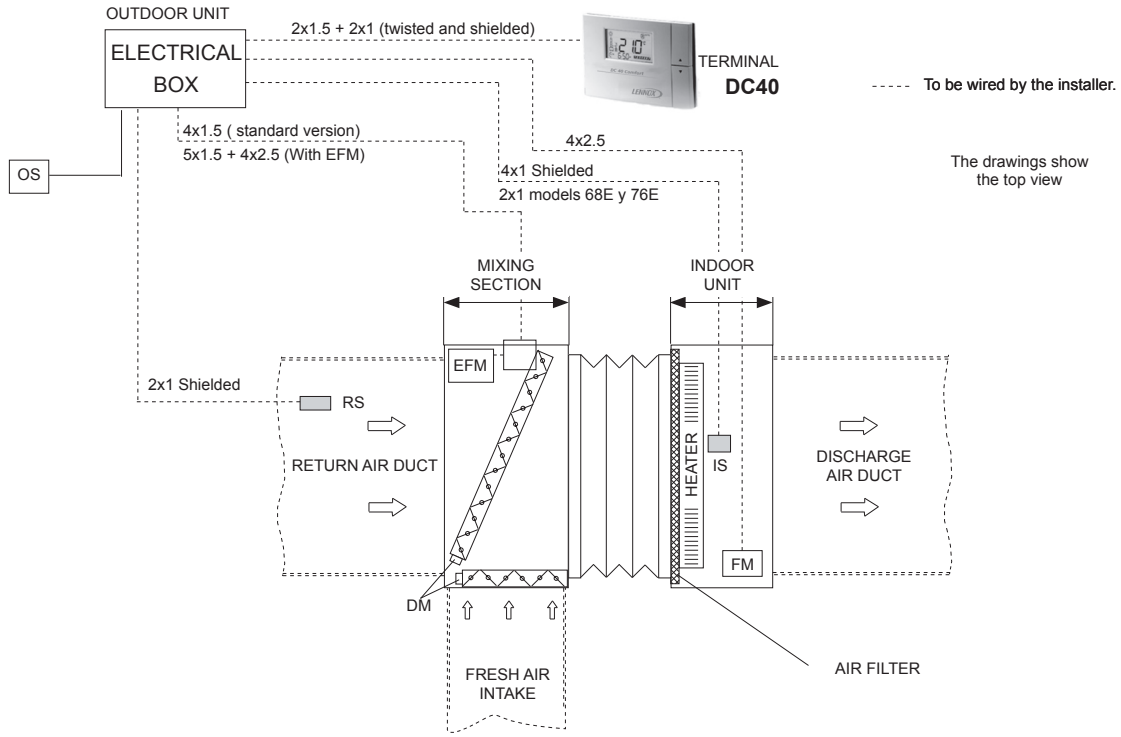
THERMOSTATIC FREE COOLING WITHOUT RETURN FAN LECM/LEHM 22E TO 52D.

STANDARD VERSION



THERMOSTATIC FREE COOLING WITHOUT RETURN FAN LECM/LEHM 64D TO 152D AND 68E TO 76E.

STANDARD VERSION



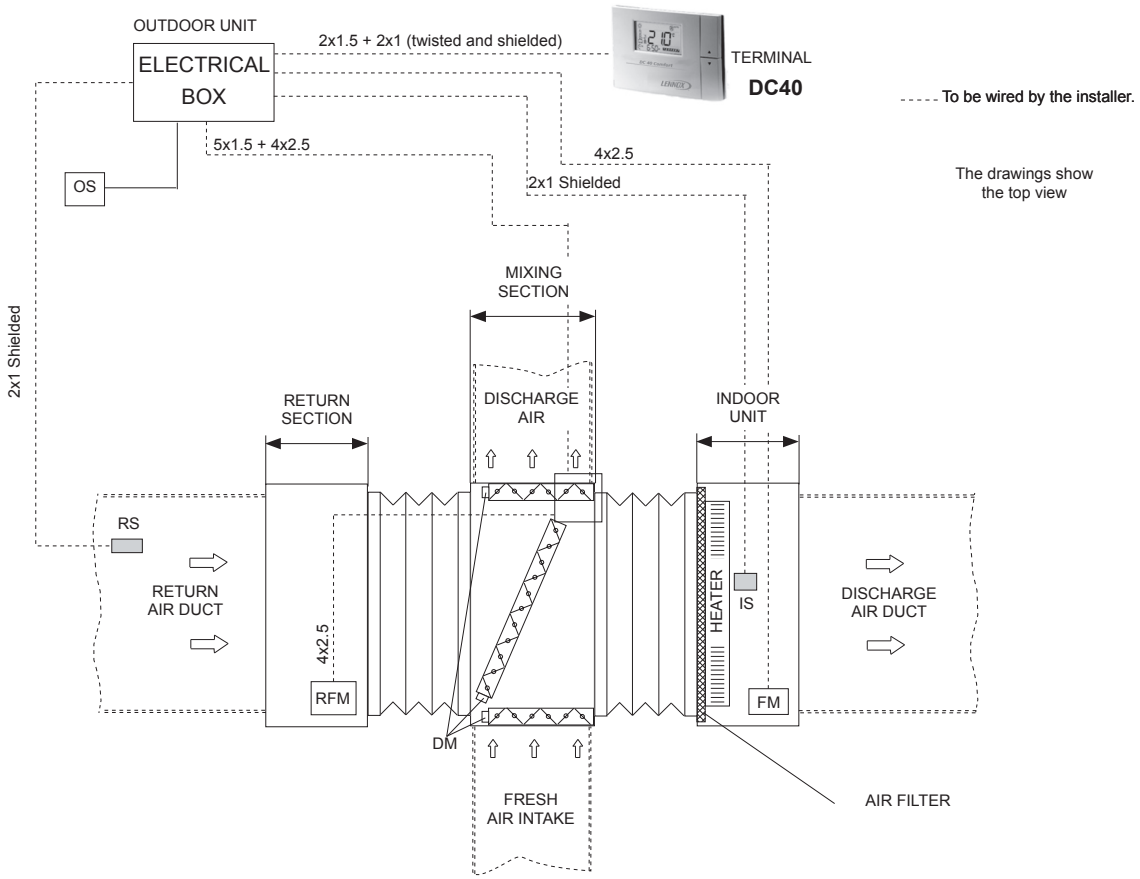
OS: Outdoor temperature sensor.
EMF: Exhaust fan motor.
IS: Liquid-gas pipe sensor.
FM: Indoor fan motor.
DM: Damper actuator.
RS: Return sensor (option).

2.- INSTALLATION

FREE-COOLING

THERMOSTATIC FREE COOLING WITH RETURN FAN LECM/LEHM 64D TO 152D AND 68E-76E.

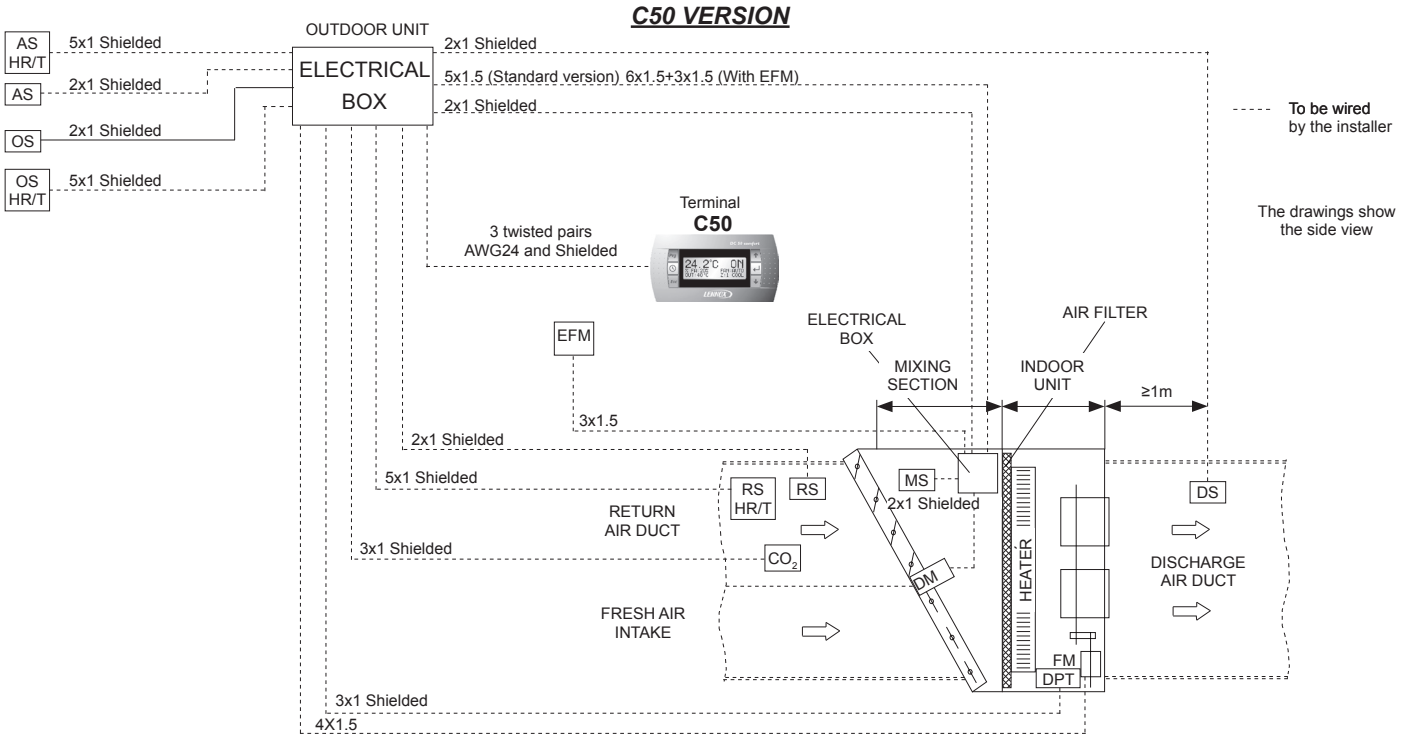
STANDARD VERSION



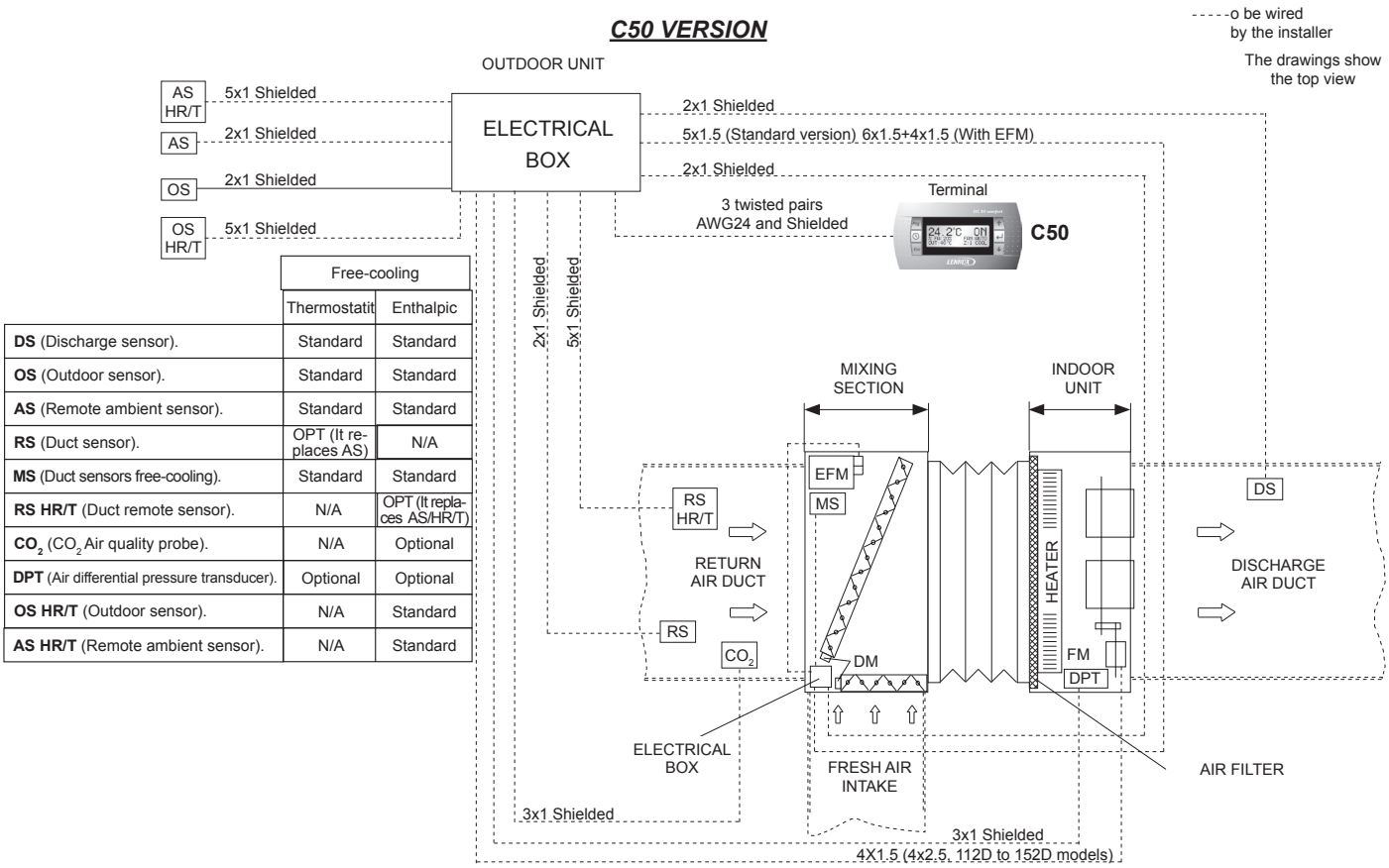
OS: Outdoor temperature sensor.
RFM: Return fan motor.
DM: Damper actuator.
IS: Liquid-gas pipe sensor.
FM: Indoor fan motor.
RS: Return sensor (option).

FREE-COOLING

THERMOSTATIC AND ENTHALPIC FREE-COOLING WITHOUT RETURN FAN LECM/LEHM 22E TO 52D.



THERMOSTATIC AND ENTHALPIC FREE-COOLING WITHOUT RETURN FAN LECM/LEHM 64D TO 152D AND 68E-76E.



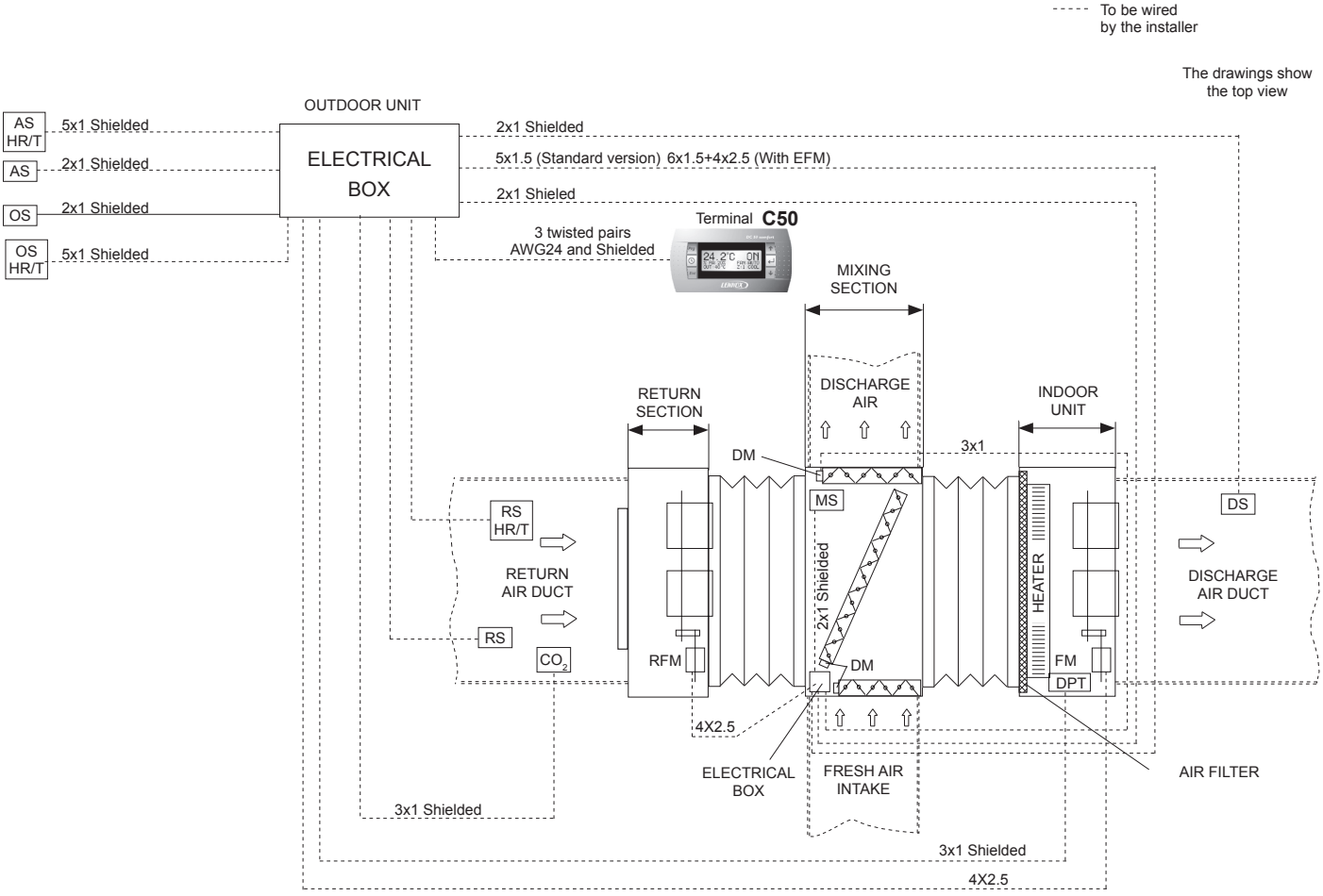
Free-cooling	Thermostatit	Enthalpic
DS (Discharge sensor).	Standard	Standard
OS (Outdoor sensor).	Standard	Standard
AS (Remote ambient sensor).	Standard	Standard
RS (Duct sensor).	OPT (It replaces AS)	N/A
MS (Duct sensors free-cooling).	Standard	Standard
RS HR/T (Duct remote sensor).	N/A	OPT (It replaces AS/HR/T)
CO_2 (CO_2 Air quality probe).	N/A	Optional
DPT (Air differential pressure transducer).	Optional	Optional
OS HR/T (Outdoor sensor).	N/A	Standard
AS HR/T (Remote ambient sensor).	N/A	Standard

DM: Damper actuator. EFM: Exhaust fan motor. FM: Indoor fan motor.

FREE-COOLING

THERMOSTATIC AND ENTHALPIC FREE-COOLING WITH RETURN FAN LECM/LEHM 64D TO 152D AND 68E-76E.

C50 VERSION

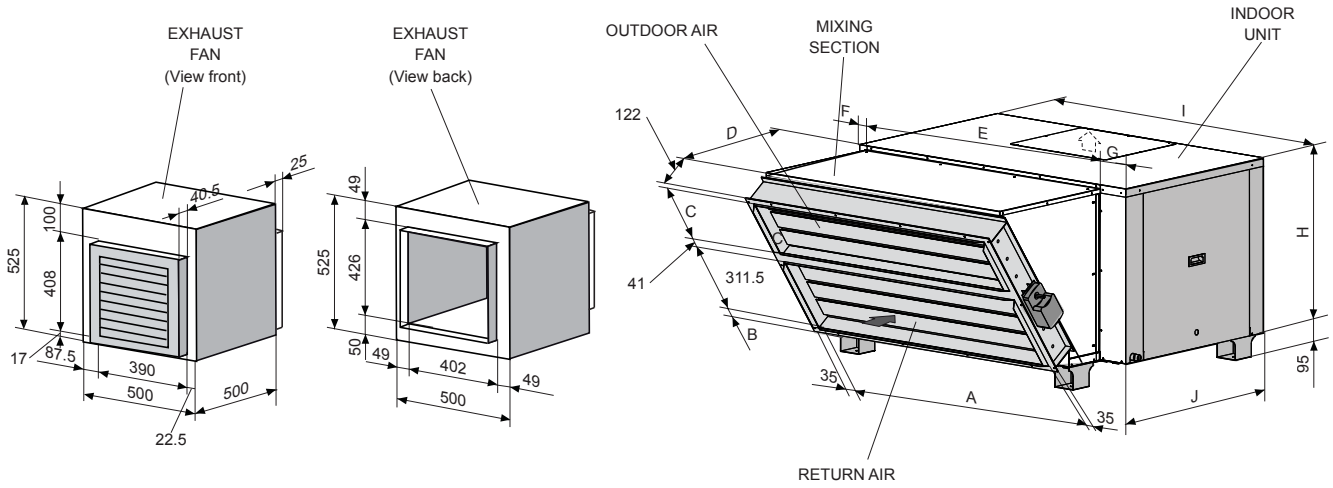


DM: Damper actuator. RFM: Return fan motor. FM: Indoor fan motor.

FREE-COOLING

DIMENSIONS FREE-COOLING WITHOUT RETURN FAN

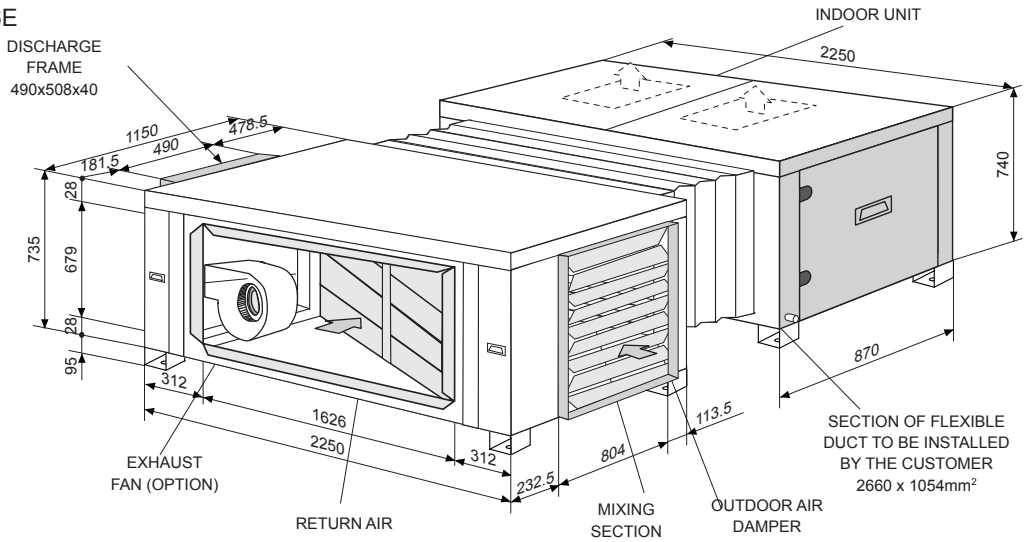
MODELS 22E-26E-32E-43E-52D



The position of the damper may be different from the one shown in the picture. See drawings.

MODELS	22E-32E	38E-52D
A	1000	1250
B	25	19.5
C	147.5	229.5
D	648	642
E	1013	1268
F	80.5	41
G	100.5	136
H	645	740
I	1195	1445
J	750	870

MODELS 64D-76D-86D
68E-76E

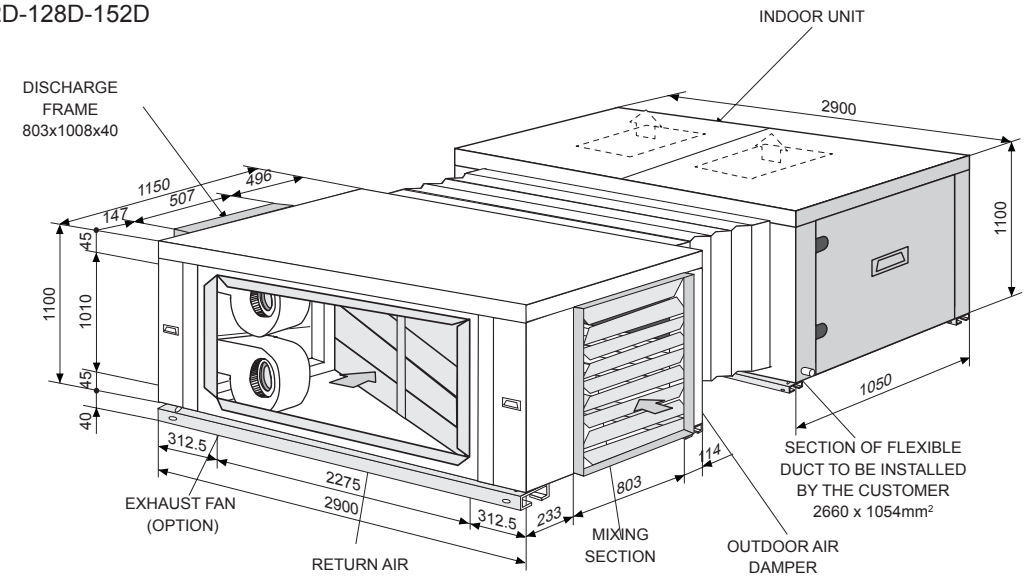


An exhaust fan may be included with free cooling without return fan.

FREE-COOLING

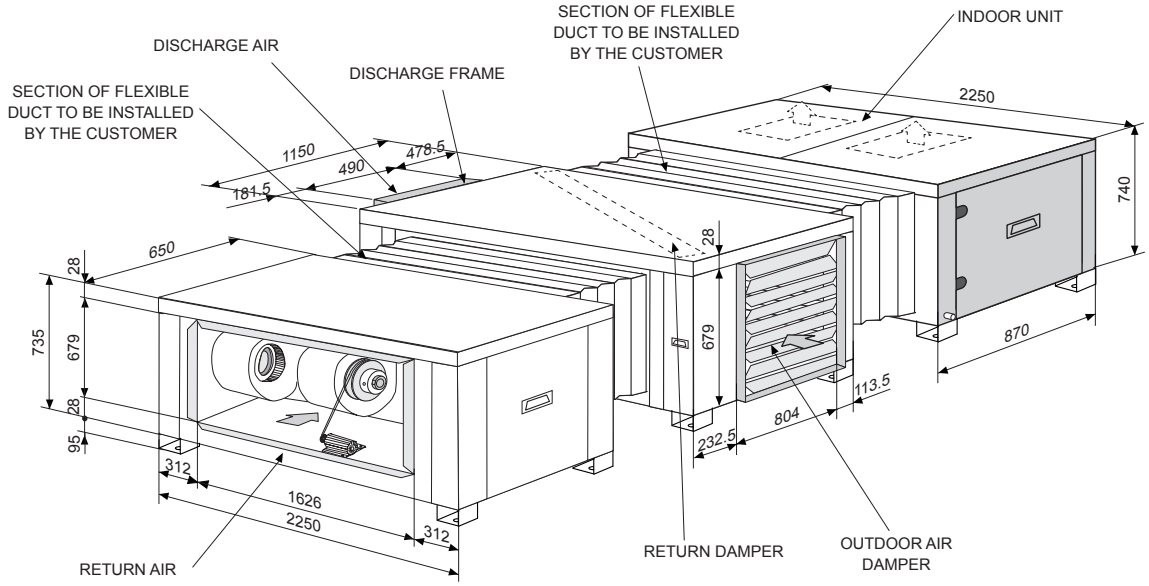
DIMENSIONS FREE-COOLING WITHOUT RETURN FAN

MODELS 112D-128D-152D



DIMENSIONS FREE-COOLING WITH RETURN FAN

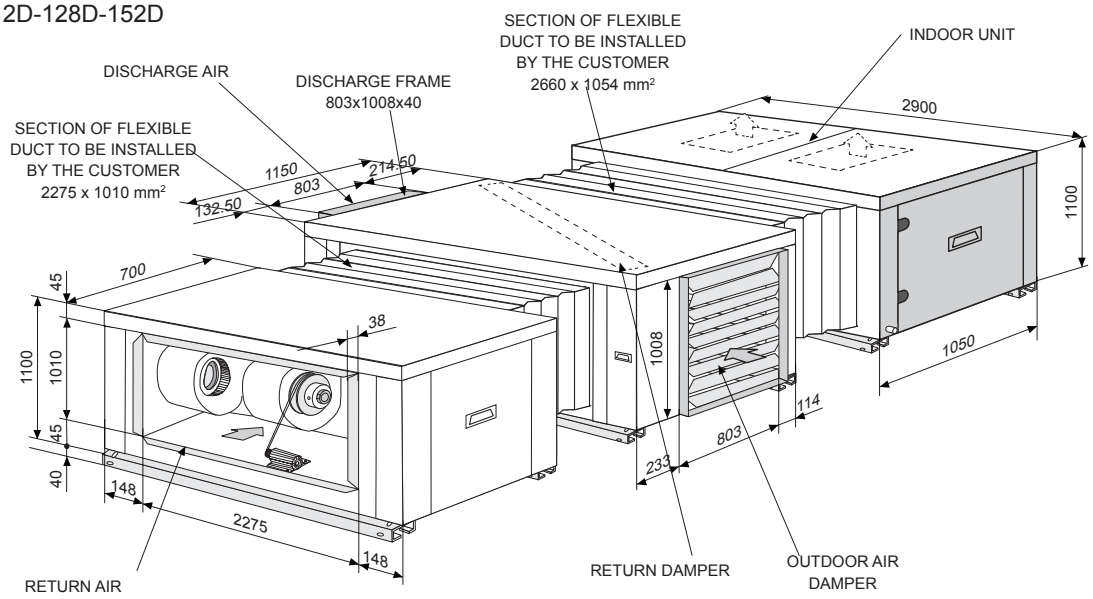
MODELS 64D-76D-86D
68E-76E



FREE-COOLING

DIMENSIONS FREE-COOLING WITH RETURN FAN

MODELS 112D-128D-152D



3.- COMMISSIONING AND OPERATION

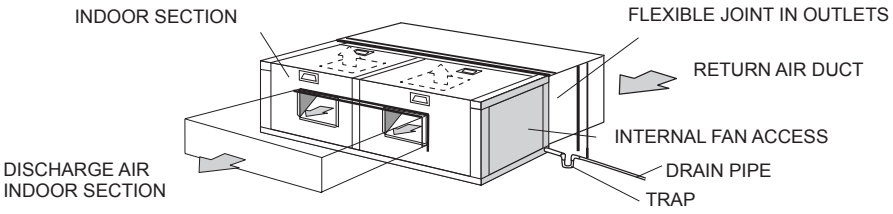
3.1.- PRELIMINARY CHECKS BEFORE FIRST OPERATION

① Check that drainage connections and their fixtures are secure and that the **level of the unit is tipped toward the drain**.
② **Inspect the condition of the ducts and grilles** (grilles are clean and clear of obstructions, no breaks in the duct, etc.).
③ **Check that the power supply is the same as stated on the Rating Plate** and is in accordance with the electrical diagram for the unit and that cable sizes are correct.
④ **Check that the electrical connections are tightened onto their terminals and to earth.**
Inspect the Air Filter, which should be in its housing and correctly positioned (the metal grille should be facing inwards).
⑤ **Check** with your hand **that the fan turns freely.**

SKETCH FOR THE STANDARD UNIT CONFIGURATION IN DOUBLE CIRCUIT UNITS
LOCATION
The unit can be installed outside (if an outdoor kit installation has been ordered). If this is installed, air entry and exit ducts should be fitted. The indoor unit should be assembled on bases that have been prepared beforehand. It should stand on absorbent and anti-vibration material to avoid vibrations being transmitted to the structure of the building.

DISCHARGE IN THE UNIT MODELS 52D TO 152D

Always to be done through a common duct or plenum.



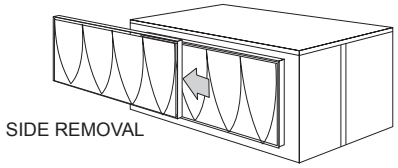
4.- MAINTENANCE

4.1.- PREVENTIVE MAINTENANCE

PREVENTIVE MAINTENANCE HELPS TO AVOID COSTLY REPAIRS, SO PERIODIC INSPECTIONS ARE REQUIRED:

GENERAL CONDITION OF THE HOUSING:
Fittings, paintwork, damage from knocks, rust spots, levelling and supporting, condition of the shock absorbers, if installed, bolted on panels, etc.
- ELECTRICAL CONNECTIONS:
Condition of hoses, tightness of screws, earthing, 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 batteries is correct and that there are no material clogging the duct and obstructing the air flow, etc.
- DRAINS:
Check that water drains correctly and that the drain trays are clean.
- FAN:
Check that fans turn freely and in the correct direction without excessive noises.

- AIR FILTER :
The air filter can be removed through the side by sliding it over the rail or downwards. (See figure).
For downwards removal, remove the two profiles that support it (depending on the model) which are under the filter guide rail and screwed onto the unit.
In 112D/128D/152D models, the filters must be extracted by the two sides (2 filters per side).



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.).
Remember that the metal grille should always be toward the inside of the unit.

Remember that the Control Panel may program a notification parameter, for cleaning or replacement of air filters depending on the number of hours of fan operation in the indoor section.

4.2.- FAULT DIAGNOSIS

DIRTY FILTER INDICATION
If the filters are dirty, the detector activates an alarm, but only if the fan is ON.

SMOKE DETECTOR
In this case it would initiate shutdown sequence the unit, fully close the return air damper and open the fresh air damper up to 100% and send an alarm signal to the unit.

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