



Installation, operating and maintenance **BALTIC**



- Providing indoor climate comfort





IOM MANUAL

Ref. BALTIC-IOM-0704-E

The present manual applies to the following ROOFTOP versions :

BCK 020 - BCK 025- BCK 030- BCK 035- BCK 040- BCK 045- BCK 050 - BCK 060 - BCK 070

BHK 020 - BHK 025- BHK 030- BHK 035- BHK 040- BHK 045- BHK 050 - BHK 060 - BHK 070

BGK 020 - BGK 025- BGK 030- BGK 035- BGK 040- BGK 045- BGK 050 - BGK 060 - BGK 070

BDK 020 - BDK 025- BDK 030- BDK 035- BDK 040- BDK 045- BDK 050 - BDK 060 - BDK 070

NOTES FOR UNIT FITTED WITH GAS BURNER:

THE UNIT MUST BE INSTALLED IN ACCORDANCE WITH LOCAL SAFETY CODES AND REGULATIONS AND CAN ONLY BE USED IN WELL VENTILLATED AREA.

PLEASE READ CAREFULLY THE MANUFACTURER'S INSTRUCTIONS BEFORE STARTING THIS UNIT.

THIS MANUAL IS ONLY VALID FOR UNITS DISPLAYING THE FOLLOWING CODES: **GB** **IR** **GR** **DA** **NO** **FI** **IS**

In case these symbols are not displayed on the unit, please refer to the technical documentation which will eventually detail any modifications required to the installation of the unit in a particular country.

LENNOX have been providing environmental solutions since 1895, our range of Baltic [™] rooftop 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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The technical information and specifications contained in this manual are for reference only. The manufacturer reserves the right to modify these without warning and without obligation to modify equipment already sold.



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All Baltic units are compliant with the PED directive 97-23-CE.

The following note must be followed carefully.

IMPORTANT NOTICE

All work on the unit must be carried out by a qualified and authorised employee.

Non-compliance with the following instructions may result in injury or serious accidents.

Work on the unit:

- The unit shall be isolated from the electrical supply by disconnection and locking using the main isolating switch.
- Workers shall wear the appropriate personal protective equipment (helmet, gloves, glasses, etc.).

Work on the electrical system:

- Work on electric components shall be performed with the power off (see below) by employees having valid electrical qualification and authorisation.

Work on the refrigerating circuit(s):

- Monitoring of the pressures, draining and filling of the system under pressure shall be carried out using connections provided for this purpose and suitable equipment.
- To prevent the risk of explosion due to spraying of coolant and oil, the relevant circuit shall be drained and at zero pressure before any disassembly or unbrazing of the refrigerating parts takes place.
- There is a residual risk of pressure build-up by degassing the oil or by heating the exchangers after the circuit has been drained. Zero pressure shall be maintained by venting the drain connection to the atmosphere on the low pressure side.
- The brazing shall be carried out by a qualified brazer. The brazing shall comply with the standard NF EN1044 (minimum 30% silver).

Replacing components:

- In order to maintain CE marking compliance, replacement of components shall be carried out using spare parts, or using parts approved by Lennox.
- Only the coolant shown on the manufacturer's nameplate shall be used, to the exclusion of all other products (mix of coolants, hydrocarbons, etc.).

CAUTION:

In the event of fire, refrigerating circuits can cause an explosion and spray coolant gas and oil.

Site details / Informations site		Controller/ Contrôleur	
Site / Site	Unit Ref/ N° Affaire	Model/Model	Serial No/ No Série
Installer/ Installateur		Refrigerant / Réfrigérant	

(1) ROOF INSTALLATION / INSTALLATION SUR LE TOIT

Sufficient Access OK / Accès Suffisants Yes/Oui <input type="checkbox"/> No/ Non <input type="checkbox"/>	Condensate drain fitted / Drainage condensats Installé Yes/Oui <input type="checkbox"/> No/ Non <input type="checkbox"/>	Roofcurb / Costière OK <input type="checkbox"/> Not OK/PasOK <input type="checkbox"/>
--	---	--

(2) CONNECTIONS CHECK / VERIFICATIONS DE RACCORDEMENTS

Phase check/ Vérification des Phases Yes / Oui <input type="checkbox"/> No / Non <input type="checkbox"/>	Voltage between Phases Tension entre Phases	1 / 2	2 / 3	1 / 3
--	--	----------------	----------------	----------------

(3) CLIMATIC CONFIGURATION CHECK / VERIFIER LA CONFIGURATION CLIMATIC

CLIMATIC 50 Configured according to the Options and Specifications / CLIMATIC 50 configuré en fonction des options et des spécifications: Yes/Oui <input type="checkbox"/> No/ Non <input type="checkbox"/>
--

(4) SUPPLY BLOWER SECTION / VENTILATION TRAITEMENT

Type / Type:		N°1	N°2
Power displayed on plate / Puissance affichée sur la plaque:	KW	.....	.....
Voltage displayed on plate / Tension affichée sur la plaque:	V	.....	.....
Current displayed on plate / Intensité affichée sur la plaque:	A	.....	.....
Fan Type / Type de Ventilateur:		Forward / Action <input type="checkbox"/> Backward / Réaction <input type="checkbox"/>	Forward / Action <input type="checkbox"/> Backward / Réaction <input type="checkbox"/>
Displayed Belt Length / Longueur Courroie affichée:	mm	.....	.....
Tension Checked/ Tension Vérifiée:		Yes/Oui <input type="checkbox"/> No/ Non <input type="checkbox"/>	Yes/Oui <input type="checkbox"/> No/ Non <input type="checkbox"/>
Alignment Checked / Aligement Vérifié:		Yes/Oui <input type="checkbox"/> No/ Non <input type="checkbox"/>	Yes/Oui <input type="checkbox"/> No/ Non <input type="checkbox"/>
Motor Pulley Dia/ Poulie Moteur Dia: D _M	mm	.....	.....
Fan Pulley Dia/ Poulie Ventilateur Dia: D _P	mm	.....	.....
Fan Speed / Vitesse rotation Ventilateur = Motor rpm x D _M / D _P	rpm	.....	.....
Averaged Measured Amps / Intensité Mesurée moyenne:	A	.....	.....
Shaft Mechanical Power (Refer to airflow balancing) Puissance Mécanique à l'Arbre (Voir section réglage débit)	W	.....	.....
Operating point checked / Vérif. Point de fonctionnement:		Yes/Oui <input type="checkbox"/> No/ Non <input type="checkbox"/>	Yes/Oui <input type="checkbox"/> No/ Non <input type="checkbox"/>
Estimated Airflow / Estimation Débit d'Air	m ³ /h	.....	.....

(5) AIRFLOW PRESS. SENSOR CHECK / VERIF. DES SECURITES PRESSOSTATS D'AIR

Measured pressure drop / Pertes de charge au pressostat mbar	Set Points Adjusted / Changement des consignes: Yes/Oui <input type="checkbox"/> No/ Non <input type="checkbox"/> If Yes enter new values/ Si oui noter les nouvelles consignes: 3410: 3411: 3412:
---	---

(6) EXTERNAL SENSOR CHECKS / VERIFICATION DES CAPTEURS EXTERNES

Check electrical connections / Vérification des connexions électriques: Yes/Oui <input type="checkbox"/> No/ Non <input type="checkbox"/>	Check and record temp. in menu 2110 / Vérifier et mesurer les températures. Dans menu 2110: Yes/Oui <input type="checkbox"/> No/ Non <input type="checkbox"/>	
	100% Fresh Air / 100% Air neuf	100% return Air / 100% Air repris
Supply Temperature / Température Soufflage	.....°C	.....°C
Return Temperature / Température reprise	.....°C	.....°C
Outdoor Temperature / Température extérieure	.....°C	.....°C

(7) MIXING AIR DAMPERS CHECKS / VERIFICATIONS VOILETS DE MELANGE

Dampers open & close freely/ Volets s'ouvrent et se ferment OK Yes/Oui <input type="checkbox"/> No/ Non <input type="checkbox"/>	% Minimum FA: %minimum Air Neuf:%	Power exhaust checked/ Ventilateur extraction Yes/Oui <input type="checkbox"/> No/ Non <input type="checkbox"/>	Enthalpy sensor(s) checked/ Control enthalpie installé Yes/Oui <input type="checkbox"/> No/ Non <input type="checkbox"/>
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(8) REFRIGERATION SECTION / SECTION REFRIGERATION

Outdoor Fan Motor Current / Intensité Moteurs Batterie externe:				Check Rotation		Compressor Voltage/ Tension Compresseur.	
Motor 1 / Moteur 1	L1 .....A	L2 .....A	L3 .....A	Yes/Oui <input type="checkbox"/>	No/ Non <input type="checkbox"/>	Comp1: V Comp2: V Comp3: V Comp4: V	
Motor 2 / Moteur 2	L1 .....A	L2 .....A	L3 .....A	Yes/Oui <input type="checkbox"/>	No/ Non <input type="checkbox"/>		
Motor 3 / Moteur 3	L1 .....A	L2 .....A	L3 .....A	Yes/Oui <input type="checkbox"/>	No/ Non <input type="checkbox"/>		
Motor 4 / Moteur 4	L1 .....A	L2 .....A	L3 .....A	Yes/Oui <input type="checkbox"/>	No/ Non <input type="checkbox"/>		
Motor 5 / Moteur 5	L1 .....A	L2 .....A	L3 .....A	Yes/Oui <input type="checkbox"/>	No/ Non <input type="checkbox"/>		
Motor 6 / Moteur 6	L1 .....A	L2 .....A	L3 .....A	Yes/Oui <input type="checkbox"/>	No/ Non <input type="checkbox"/>		
Compressor Amps COOLING / Intensité Compresseur MODE FROID				Pressures & Temperatures / Pressions & températures			
	Phase 1	Phase 2	Phase 3	Temperatures / Temperatures		Pressures / Pressions	
				Suction/ Asp	Disch / refoul	LP/ BP	HP / HP
Comp 1	..... A	..... A	..... A	..... °C	..... °C	..... Bar	..... Bar
Comp 2	..... A	..... A	..... A	..... °C	..... °C	..... Bar	..... Bar
Comp 3	..... A	..... A	..... A	..... °C	..... °C	..... Bar	..... Bar
Comp 4	..... A	..... A	..... A	..... °C	..... °C	..... Bar	..... Bar
Check Reversing valves./ Vérifier vannes d'inversion:				Valve1/Vanne1: Yes/Oui <input type="checkbox"/> No/ Non <input type="checkbox"/>		Valve3/Vanne3: Yes/Oui <input type="checkbox"/> No/ Non <input type="checkbox"/>	
				Valve2/Vanne2: Yes/Oui <input type="checkbox"/> No/ Non <input type="checkbox"/>		Valve4/Vanne4: Yes/Oui <input type="checkbox"/> No/ Non <input type="checkbox"/>	
Compressor Amps HEATING / Intensité Compresseur en Pompe à Chaleur				Pressures & Temperatures / Pressions & températures			
	Phase 1	Phase 2	Phase 3	Temperatures / Temperatures		Pressures / Pressions	
				Suction/ Asp	Disch / refoul	LP/ BP	HP / HP
Comp 1	..... A	..... A	..... A	..... °C	..... °C	..... Bar	..... Bar
Comp 2	..... A	..... A	..... A	..... °C	..... °C	..... Bar	..... Bar
Comp 3	..... A	..... A	..... A	..... °C	..... °C	..... Bar	..... Bar
Comp 4	..... A	..... A	..... A	..... °C	..... °C	..... Bar	..... Bar
HP cut out / Coupure HP				LP cut out / Coupure sécurité BP			
Refrigerant charge / Charge réfrigérant				C1 :kg	C2 :kg	C3 :kg	C4 :kg

(8)ELECTRIC HEATER SECTION / SECTION RECHAUFFEUR ELECTRIQUE

Type / Type:	Serial No/ No Série:.....
AMPS 1 st stage (Baltic) / Intensité 1 ^{er} étage (Baltic)	AMPS 2 nd stage (Baltic) / Intensité 2 ^e étage (Baltic)
1	2
2	3
3	1
1	2
2	3

(9) HOT WATER COIL SECTION / SECTION BATTERIE EAU CHAUDE

Check Three Way Valve Movement / Vérification Mouvement Vanne trois voies: Yes/Oui No/ Non

(10) GAS HEATING SECTION / RAMPE GAZ

Gas Burner N°1 / Brûleur gaz N°1				Gas Burner N°2 / Brûleur gaz N°2			
Size / Taille:		Valve type / Type vanne:		Size / Taille:		Valve type / Type vanne:	
Pipe size/ tuyauterie:		Gas type / Type gas : G		Pipe size/ tuyauterie		Gas type / Type gas : G	
Line press./ press. ligne :		Drop test / test pression Yes/Oui <input type="checkbox"/> No/ Non <input type="checkbox"/>		line press./ press. ligne :		Drop test / test pression Yes/Oui <input type="checkbox"/> No/ Non <input type="checkbox"/>	
Check manifold pressure/ Pression injection: High fire/Grande allure.....Low fire/Petite allure.....				Check manifold pressure/ Pression injection: High fire/Grande allure..... Low fire/Petite allure.....			
Pressure cut out airflow press switch / Pression coupure pressostat débit d'air :mbar /Pa				Pressure cut out airflow press switch / Pression coupure pressostat débit d'air :mbar /Pa			
Motor amps I moteur:	Flue temp / temp fumées	CO2 %:	CO ppm:	Motor Amps I Moteur:	Flue temp / temp fumées	CO2 %:	CO ppm:
.....A	..... °C	.....%	.....%	.....A	..... °C%%

(11) REMOTE CONTROL BMS CHECK / VERIFICATIONS BMS CONTROL A DISTANCE

Type / Type:	Sensor type / Type Capteur	KP07 KP/17 checked/ vérifiées: Yes/Oui <input type="checkbox"/> No/ Non <input type="checkbox"/>	Interconnect wiring checked: Yes/Oui <input type="checkbox"/> No/ Non <input type="checkbox"/>
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It is recommended that you fill the two tables below before transferring the zone settings to the Climatic controller.
 Il est recommandé de remplir les deux tableaux ci-dessous avant de transférer les consignes de zones vers le contrôleur Climatic50.

Refer to control section page 55 / Se référer à la section régulation page 55

Time Zones / Zones Horaires

Hour	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
<i>Example</i>	UNO							7h15 ZA			11h00 ZB			14h00 ZC			19h00 UNO							
Monday																								
Tuesday																								
Wednesday																								
Thursday																								
Friday																								
Saturday																								
Sunday																								

Variables to adjust for each time zone / Consignes à renseigner pour chaque zone horaire

	Start z.A		Start z.B		Start z.C		Start UNO	
	hour (3211)	min (3212)	hour (3213)	min (3214)	hour (3215)	min (3216)	hour (3217)	min (3218)
Monday								
Tuesday								
Wednesday								
Thursday								
Friday								
Saturday								
Sunday								

Description	Unit	Menu	Min	Max	Zone A	Zone B	Zone C	UNOC
Sp Room	°C	3311	8	35				
Mini.Air	%	3312	0	100				
Sp Dyna	°C	3321	0	99.9				
Sp Cool	°C	3322	8	35				
Sp Heat	°C	3323	8	35				
Swap Heater	On/Off	3324	~	~				
Activation	On/Off	3331	~	~				
Swap Heater	On/Off	3332	~	~				
Sp.Dehu	%	3341	0	100				
Sp.Humi	%	3342	0	100				
Fan On/Off	On/Off	3351	~	~				
Fan Dead	On/Off	3352	~	~				
F.Air	On/Off	3353	~	~				
CO2	On/Off	3354	~	~				
Comp.Cool.	On/Off	3355	~	~				
Comp.Heat.	On/Off	3356	~	~				
AuxHeat	On/Off	3357	~	~				
Humidif.	On/Off	3358	~	~				
Low Noise	On/Off	3359	~	~	N/A	N/A	N/A	



DELIVERY CHECKS

On receipt of a new equipment please check the following points. It is the customer's responsibility to ensure that the products are in good working order:

- The exterior has not been damaged in any way.
- The lifting and handling equipment are suitable for the equipment and comply with the specifications of the handling instructions enclosed here-in.
- Accessories ordered for on site installation have been delivered and are in good working order.
- The equipment supplied corresponds to the order and matches the delivery note.

If the product is damaged, exact details must be confirmed in writing by registered post to the shipping company within 48 hours of delivery (working days). A copy of the letter must be addressed to Lennox and the supplier or distributor for information purposes. Failure to comply will invalidate any claim against the shipping company.

RATING PLATE

The rating plate provides a complete reference for the model and ensures that the unit corresponds to the model ordered. It states the electrical power consumption of the unit on start-up, its rated power and its supply voltage. The supply voltage must not deviate beyond +10/-15 %. The start-up power is the maximum value likely to be achieved for the specified operational voltage. The customer must have a suitable electrical supply. It is therefore important to check whether the supply voltage stated on the unit's rating plate is compatible with that of the mains electrical supply. The rating plate also states the year of manufacture as well as the type of refrigerant used and the required charge for each compressor circuit.

LENNOX		Usine Dijon	
CE 0 0 6 2		Z.I. LONGVIC	
Baltic		21600 LONGVIC	
		FRANCE	
TYPE	BHK050NS2M Usage Climatisation		
UNIT TYPE			
N° SERIE	208770 / 1	ANNEE	2003
SERIAL NUMBER			
ALIMENTATION	400 V	3	~ 50 Hz
ELEC. SUPPLY			
I. MAXI	74.1	I. DEMARR.	223 A
MAX AMP.		START UP AMP.	
REFRIGERANT	R407C	Kg / CIRCUIT	13.4
FLUIDE Groupe 3			13.4
Date d'épreuve	Pression max (PT) déclenchement pressostat HP		29.0 bar
23/05/2003	Maximum working pressure (PT)		
Temp max stockage	50 °C	Temp mini stockage	-35 °C
Maximum storage temp		Minimum storage temp	

STORAGE

When units are delivered on site they are not always required immediately and are sometimes put into storage. In the event of medium to long-term storage, we recommend the following procedures :

- Ensure that there is no water in the hydraulic systems.
- Keep the heat exchanger covers in position (AQUILUX cover).
- Keep protective plastic film in position.
- Ensure the electrical panels are closed.
- Keep all items and options supplied in a dry and clean place for future assembly before using the equipment.

MAINTENANCE KEY

On delivery we recommend that you keep the key which is attached to an eyebolt in a safe and accessible place. This allows you to open the panels for maintenance and installation work.

The locks are ¼ turn + then tighter (figure 1).



Fig. 1

CONDENSATE DRAINS

The condensate drains are not assembled when delivered and are stored in the electrical panel with their clamping collars.

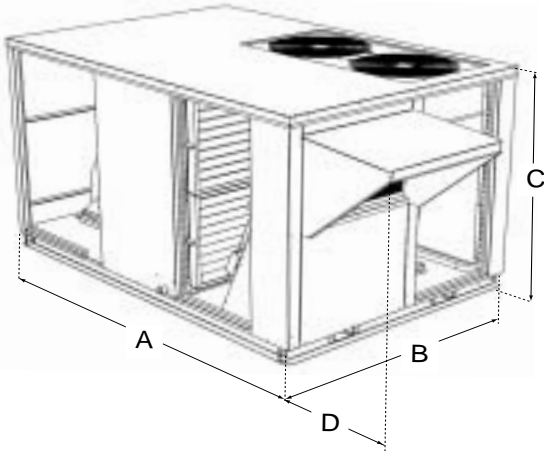
To assemble them, insert them on the condensate tray outlets and use a screwdriver to tighten the collars (Figure 2).



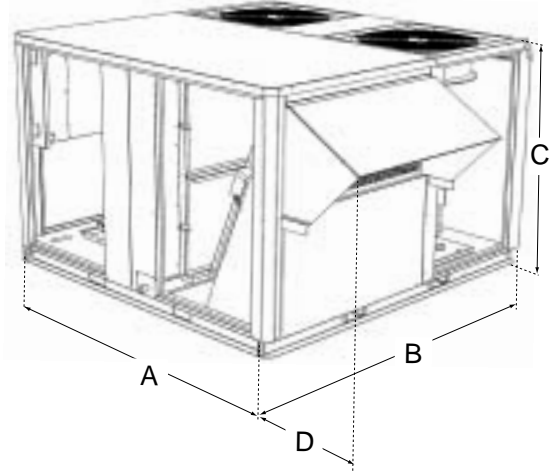
Fig. 2



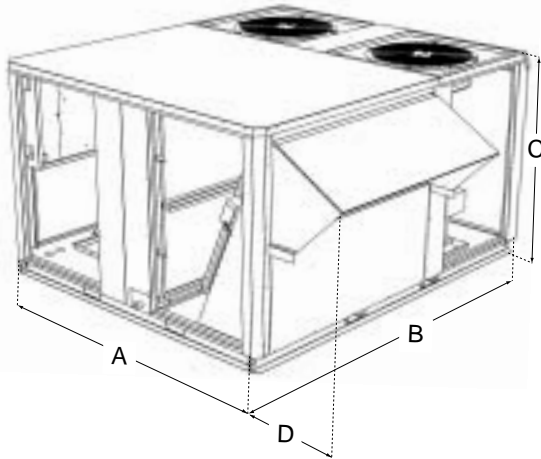
B BOX



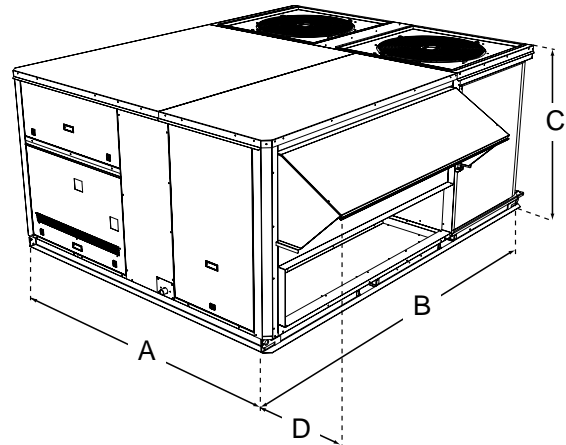
C BOX



D BOX



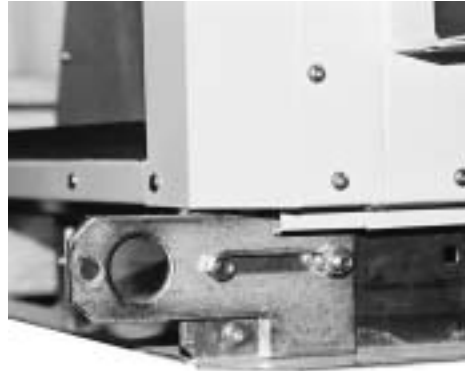
E BOX



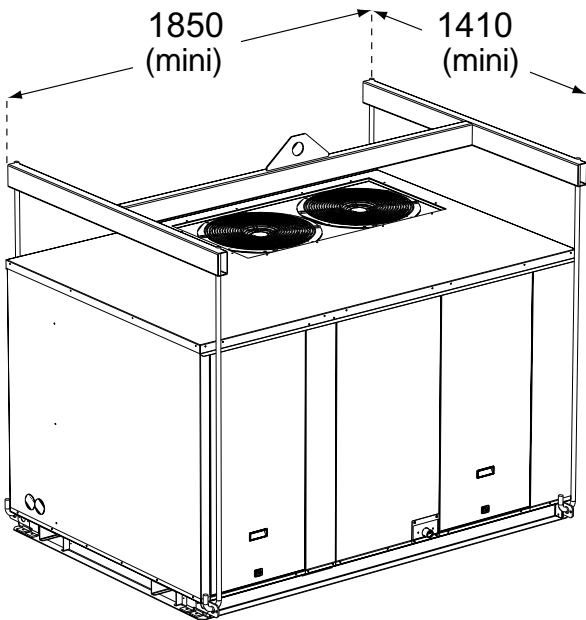
BALTIC	BCK/BHK/BGK/BDK		020	025	030	035	040	045	050	060	070				
<i>View</i>			<i>B BOX</i>	<i>B BOX</i>	<i>C BOX</i>	<i>C BOX</i>	<i>D BOX</i>	<i>D BOX</i>	<i>D BOX</i>	<i>E BOX</i>	<i>E BOX</i>				
A	mm		2017	2017	1890	1890	1910	1910	1910	2260	2260				
B	mm		1418	1418	1915	1915	2235	2235	2235	2873	2873				
C	mm		1220	1220	1221	1221	1221	1221	1221	1225	1225				
D	mm		484	484	414	414	418	418	418	418	418				
<i>Weight of standard units (S: single/D: dual)</i>			<i>S</i>	<i>S</i>	<i>D</i>	<i>S</i>	<i>D</i>	<i>S</i>	<i>D</i>	<i>S</i>	<i>D</i>	<i>D</i>	<i>D</i>		
Without hood	kg		394	414	541	528	547	529	589	591	604	604	619	796	852
With hood	kg		417	437	569	556	575	556	622	624	677	677	652	837	893
<i>Weight of gas units</i>			<i>S</i>	<i>S</i>	<i>D</i>	<i>S</i>	<i>D</i>	<i>S</i>	<i>D</i>	<i>S</i>	<i>D</i>	<i>D</i>	<i>D</i>	<i>D</i>	
Standard heat without hood	kg		445	465	602	589	608	590	663	665	678	678	693	904	960
Standard heat with hood	kg		468	488	630	617	636	618	696	698	711	711	726	945	1001
High heat without hood	kg		454	474	621	608	627	609	685	687	700	700	715	963	1019
High heat with hood	kg		477	497	649	636	655	637	711	713	733	733	748	1004	1060



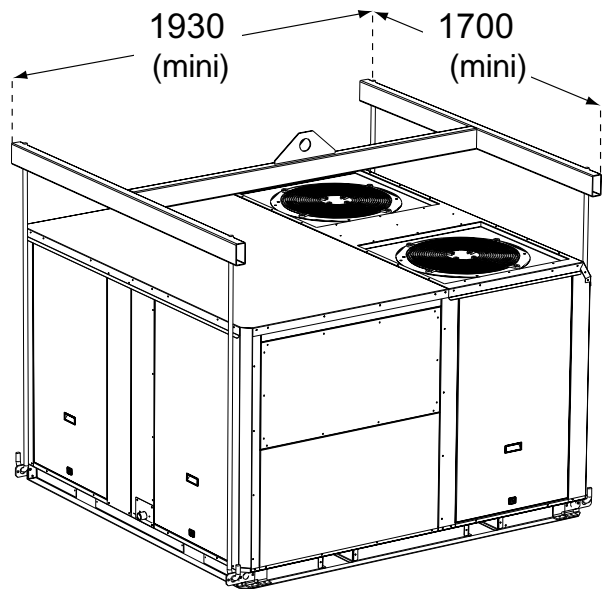
RETRACTABLE LIFTING LUG



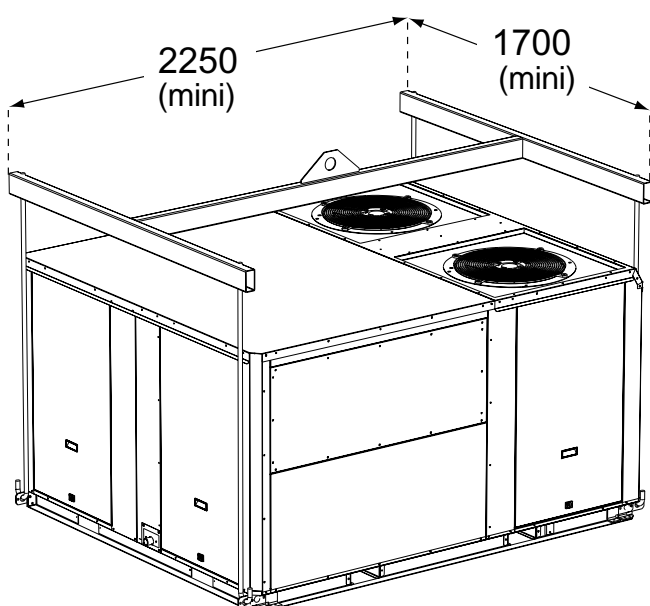
LIFTING B BOX



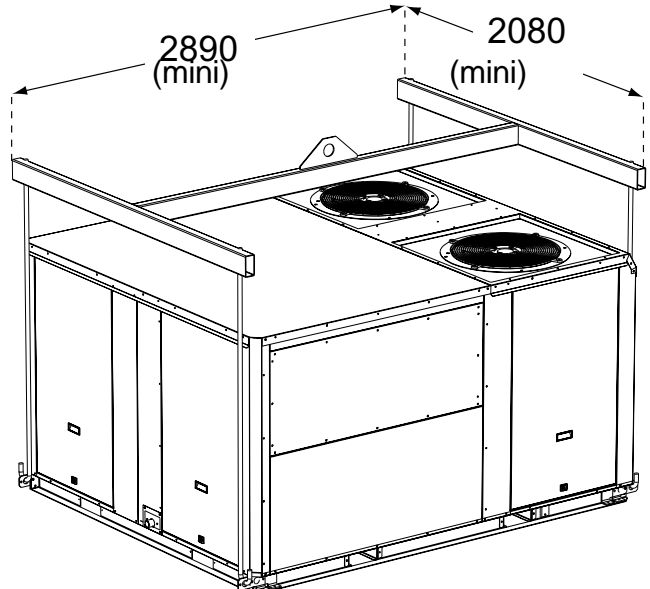
LIFTING C BOX



LIFTING D BOX

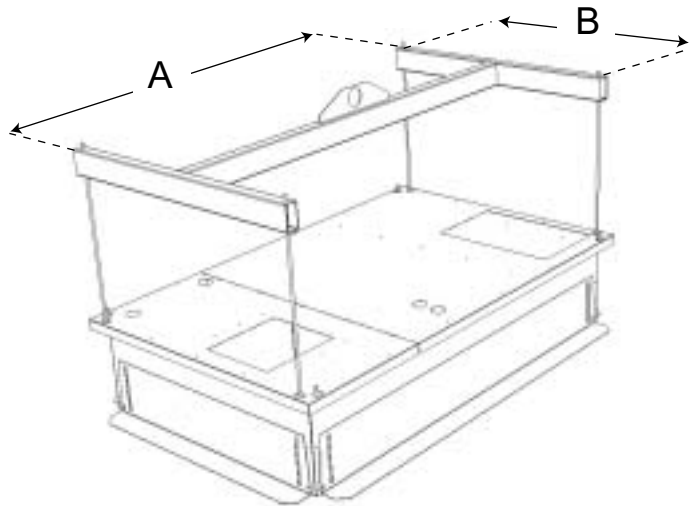


LIFTING E BOX



LIFTING THE ROOFCURBS

Adjustable Roofcurb



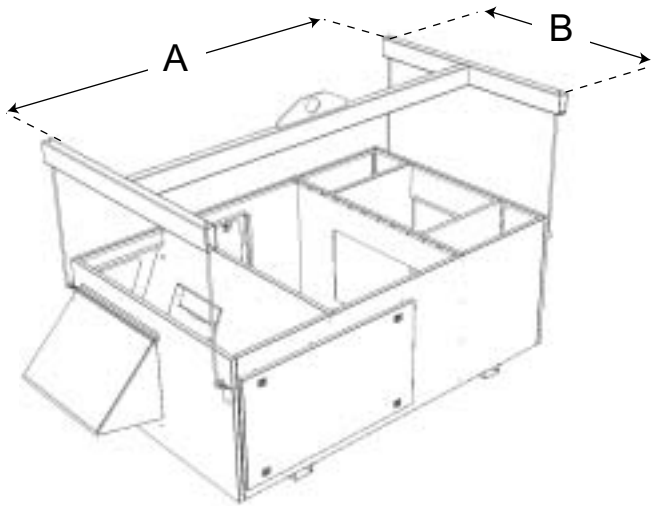
Dimensions (mm)

	B box	C box	D box	E box
A	1890	1735	1735	2085
B	1100	1295	1545	1995

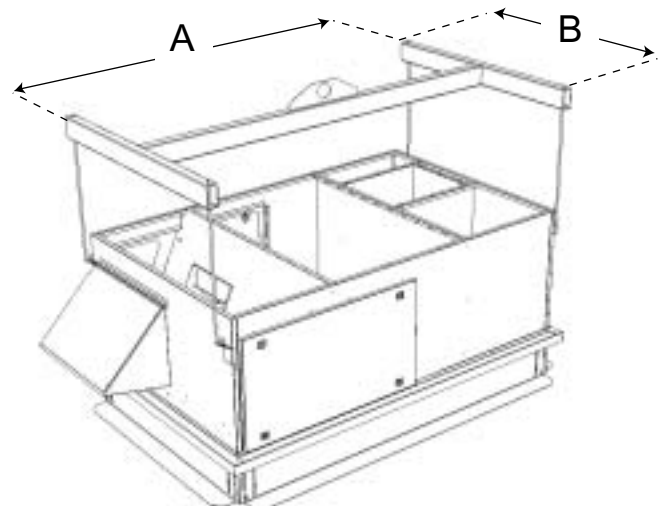
Weights (kg)

	B box	C box	D box	E box
No aux.heating	87	94	104	152
With aux.heating	86	90	100	138.2

Exhaust Horizontal Roofcurb



Exhaust Vertical Roofcurb



Dimensions (mm)

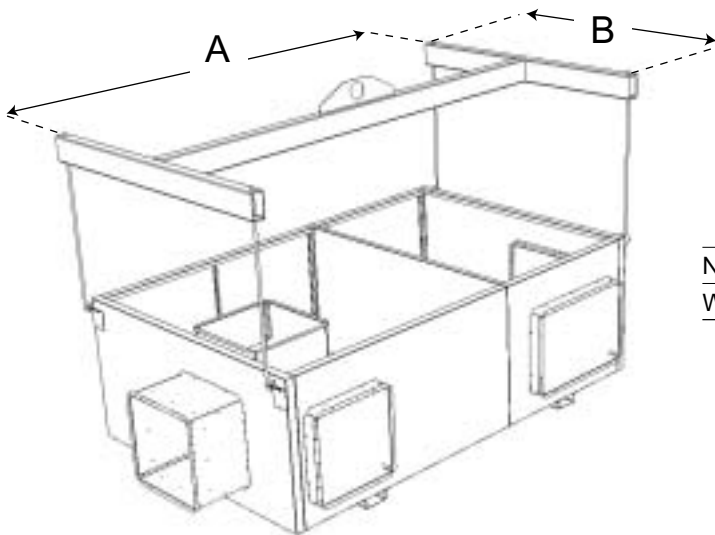
	B box	C box	D box	E box
A	2050	1900	1900	2250
B	1160	1360	1610	2060

Weights (kg)

	B box	C box	D box	E box
Vertical No aux.heating	192	220	240	370
Vertical With aux.heating	194	194	240	365
Horizontal	142	168	185	301



Multidirectional (mm)



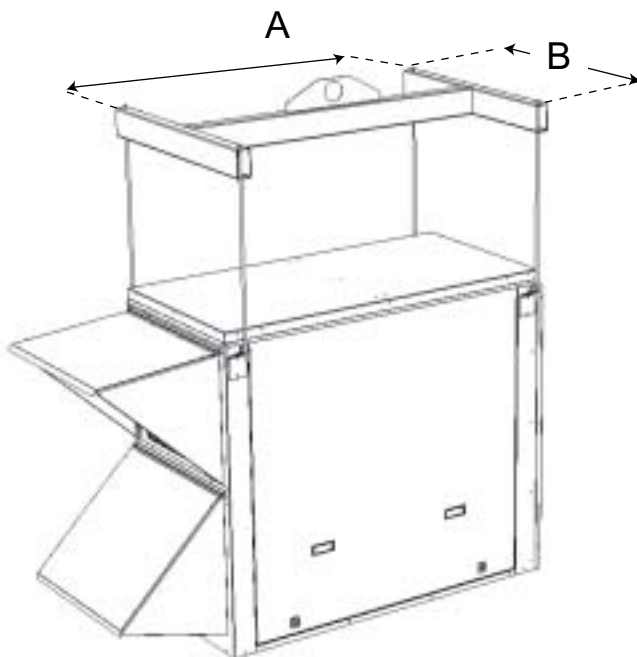
Dimensions (mm)

	B box	C box	D box	E box
A	2050	1900	1900	2250
B	1160	1360	1610	2060

Weights (kg)

	B box	C box	D box	E box
No aux.heating	81	88	100	147
With aux.heating	90	93	103	146.7

Energy Recovery



Dimensions (mm)

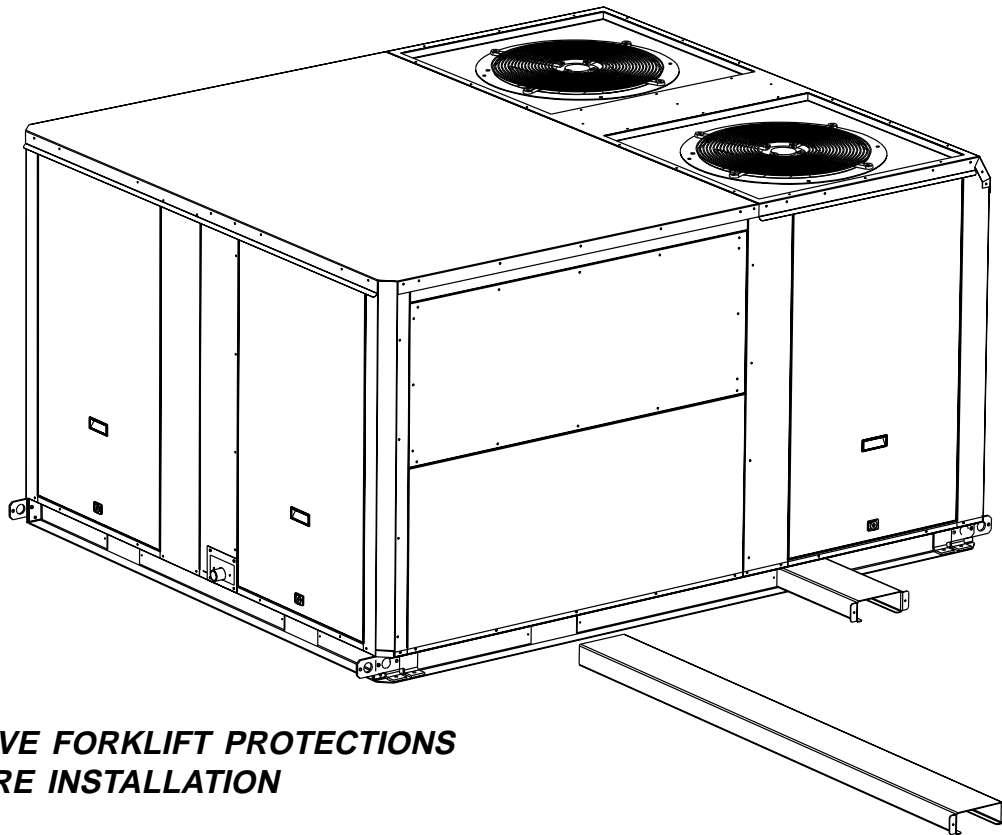
	B box	C box	D box	E box
A	1290	1290	1290	1290
B	820	1170	1547	1895

Weights (kg)

B box	C box	D box	E box
143	172	229	317



FORKLIFT PROTECTIONS **NEVER LIFT THE UNIT WITHOUT FORKLIFT PROTECTIONS**



REMOVE FORKLIFT PROTECTIONS BEFORE INSTALLATION

PRELIMINARY CHECKS

Before installing the equipment, the following points **MUST** be checked :

- Have the forklift protections been removed ?
- Is there sufficient space for the equipment?
- Is the surface on which the equipment is to be installed sufficiently solid to withstand its weight? A detailed study of the frame must be made beforehand.
- Do the supply and return ductwork openings excessively weaken the structure?
- Are there any obstructing items which could hinder the operation of the equipment?
- Does the electrical power available correspond to the equipment's electrical specifications?
- Is drainage provided for the condensate?
- Is there sufficient access for maintenance?
- Installation of the equipment could require different lifting methods which may vary with each installation (helicopter or crane). Have these been evaluated ?
- Ensure that the unit is installed in accordance with the installation instructions and local applicable codes.
- Check to ensure that the refrigerant lines do not rub against the cabinet or against other refrigerant lines.

In general, make sure no obstacles (walls, trees or roof ledges) are obstructing the duct connections or hindering assembly and maintenance access.

INSTALLATION REQUIREMENTS

The surface on which the equipment is to be installed must be clean and free of any obstacles which could hinder the flow of air to the condensers:

- Avoid uneven surfaces
- Avoid installing two units side by side or close to each other as this may restrict the airflow to the condensers.

Before installing a packaged Rooftop unit it is important to understand :

- The direction of prevailing winds.
- The direction and position of air flows.
- The external dimensions of the unit and the dimensions of the supply and return air connections.
- The arrangement of the doors and the space required to open them to access the various components.

CONNECTIONS

- Ensure that all the pipe-work crossing walls or roofs are secured, sealed and insulated.
- To avoid condensation problems, make sure that all pipes are insulated according to the temperatures of fluids and type of rooms.

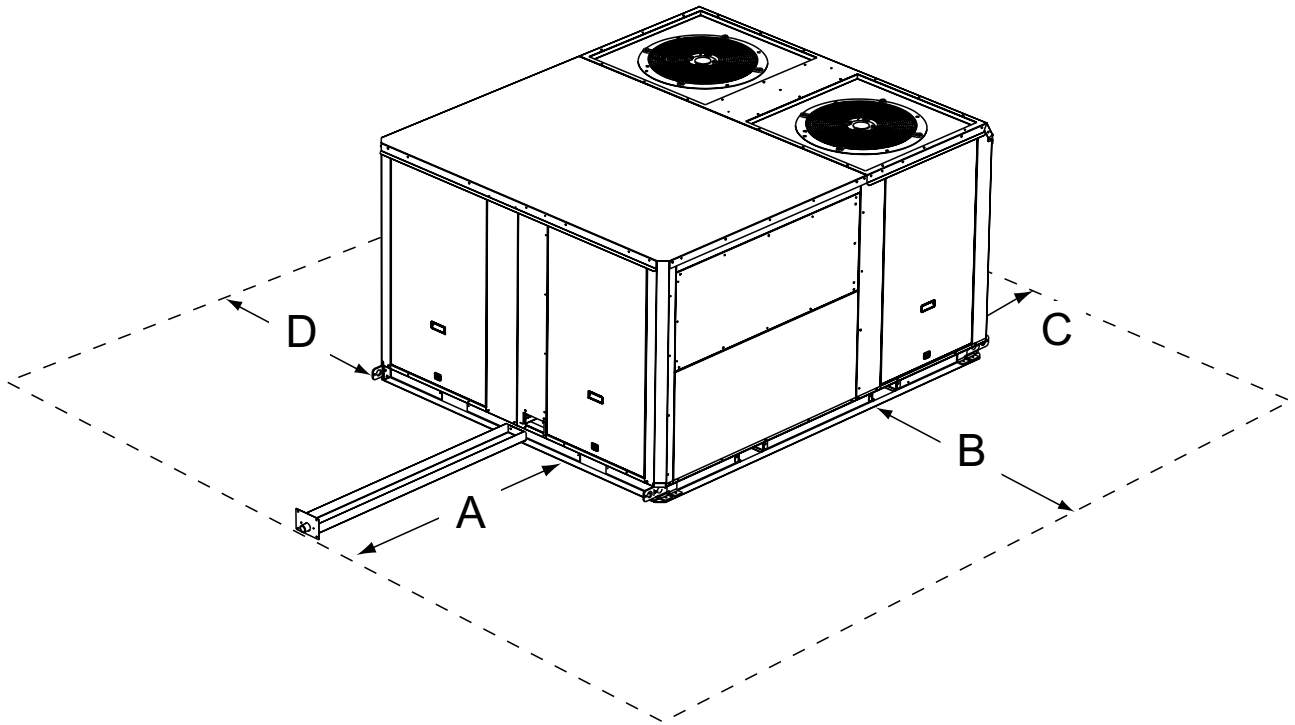
NOTE: The AQUILUX protection sheets fitted to the finned surfaces must be removed prior to start up.



MINIMUM CLEARANCE AROUND THE UNIT

Figure 4 shows the required clearances and service access around the unit.

NOTE : Ensure the fresh air inlet does not face prevailing wind direction.



	A	B	C	D
B Box	1000 (1)	1500 (2)	1500	1000
C Box	1200 (1)	1500 (2)	1500	1000
D Box	1400 (1)	1500 (2)	1500	1000
E Box	1800 (1)	1500 (2)	1500	1100

(1) Add 1 meter if the units are equipped with gas burner

(2) Double this distance if the units are equipped with extraction



NON ADJUSTABLE NON ASSEMBLED ROOFCURB INSTALLATION.. P29
 INSTALLATION ON A ROOF MOUNTING FRAME P41
 CURBING AND FLASHING P41

As levels are adjustable, observe the following recommendations when installing the equipment.

Above all, ensure that all the adjustable returns are facing outward 1 (figure 3). They are usually turned inside-out for transport.

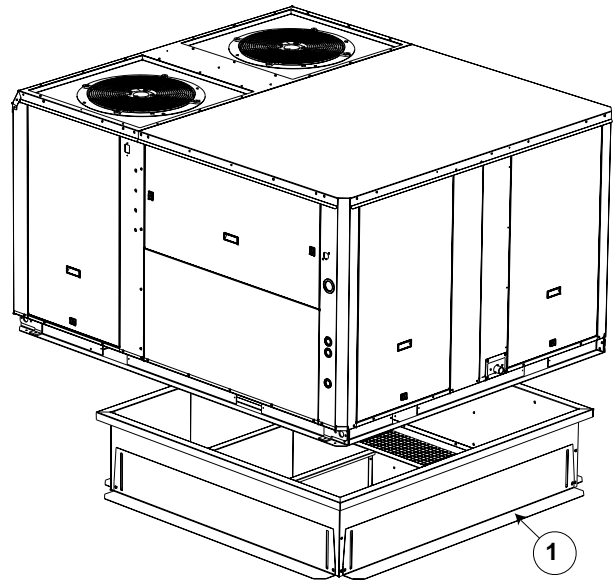


Fig. 3

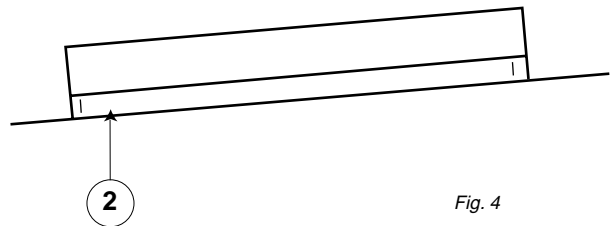


Fig. 4

Place the roof mounting frame on the trimmer beam by first lining up the inlet and the outlet opening. ("2"- figure 4)

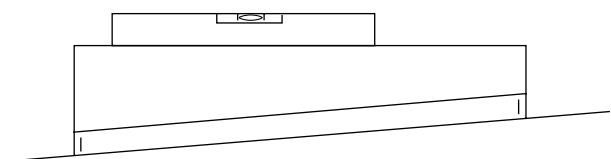


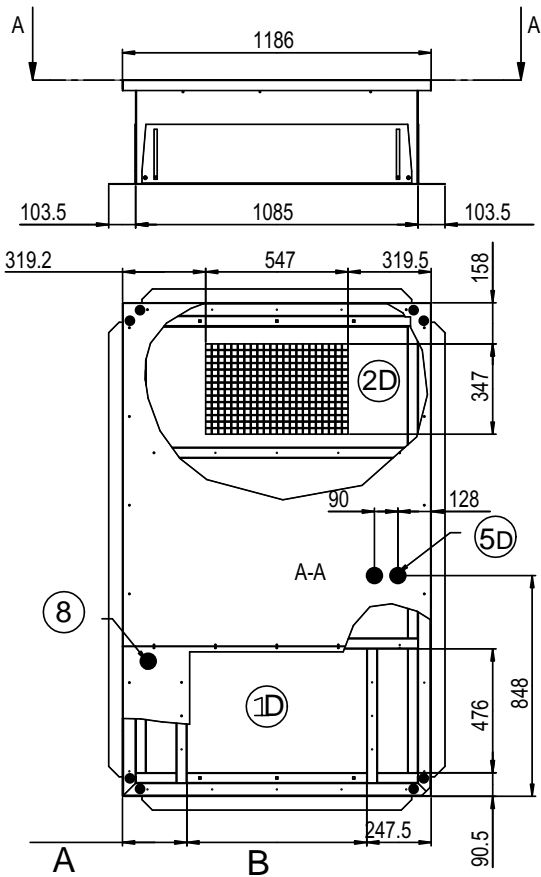
Fig. 5

After levelling the frame, secure the adjustable returns on the trimmer (figure 5).

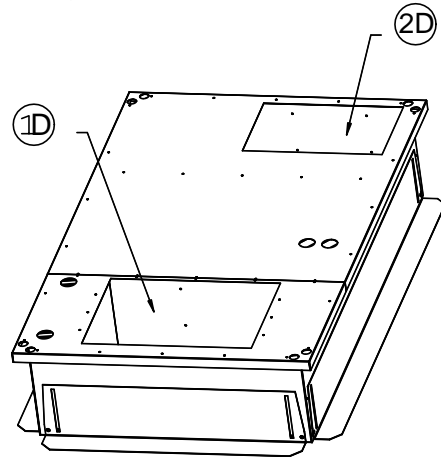
It is important to centre the unit on the roof frame.



020 025



Roof opening 1795 x 1085



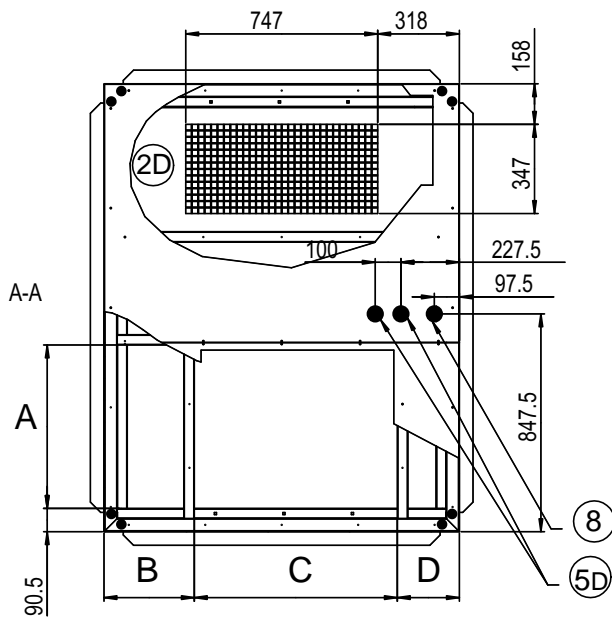
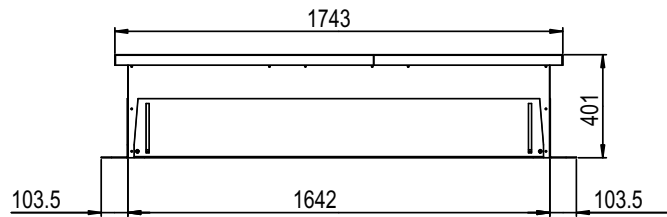
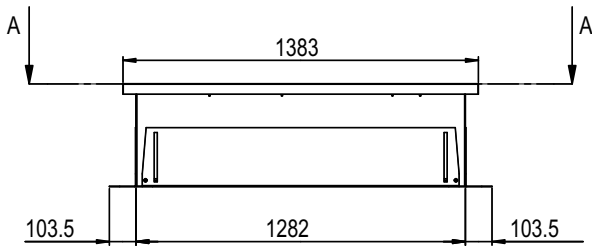
	A	B
BCK / BHK without auxiliary heating	543	395
BGK / BDk or BCK / BHK with auxiliary heating	247	691

- 1D** Down Supply Air
- 2D** DownReturn Air
- 4D** Down main power entry
- 5D** Down hot water Entry
- 8** Main Power Entry

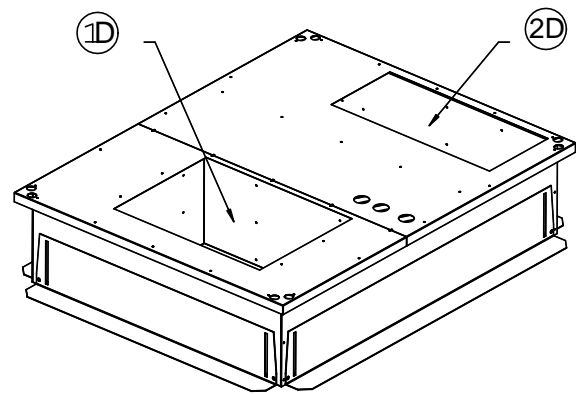


030

035



Roof opening 1642 x 1282



	A	B	C	D
BCK / BHK without auxiliary heating	496	633	400	349
BGK / BDk or BCK / BHK with auxiliary heating	636	351	790	241

①D Down Supply Air

②D DownReturn Air

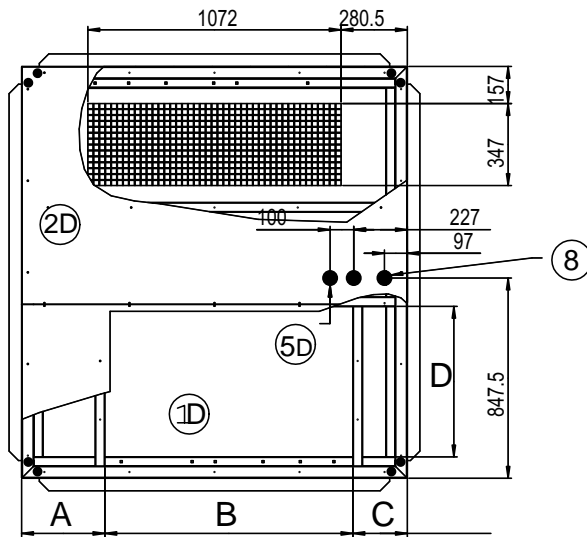
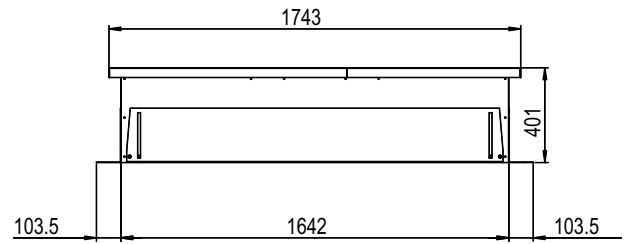
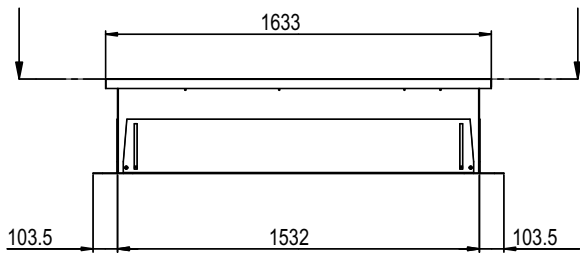
④D Down main power entry

⑤D Down hot water Entry

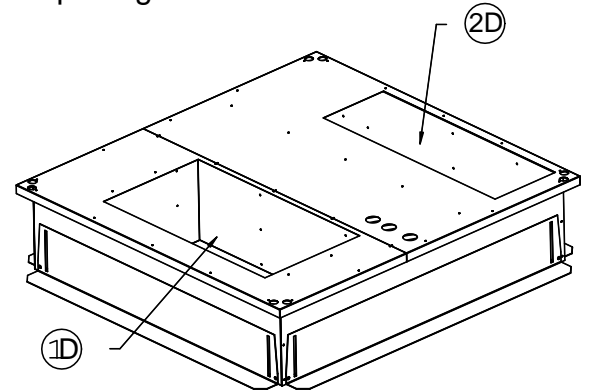
⑧ Main Power Entry



040 045 050



Roof opening 1642 x 1532



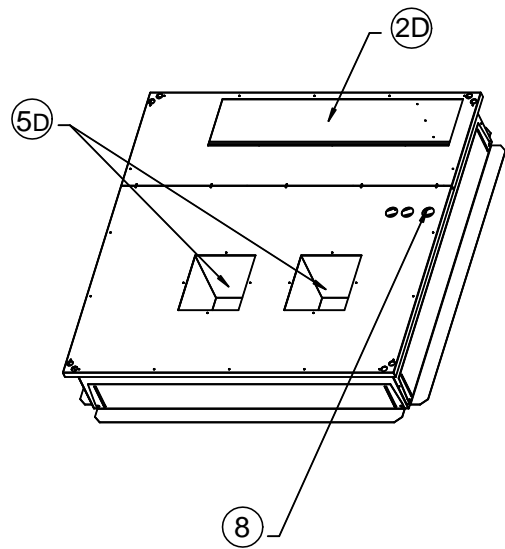
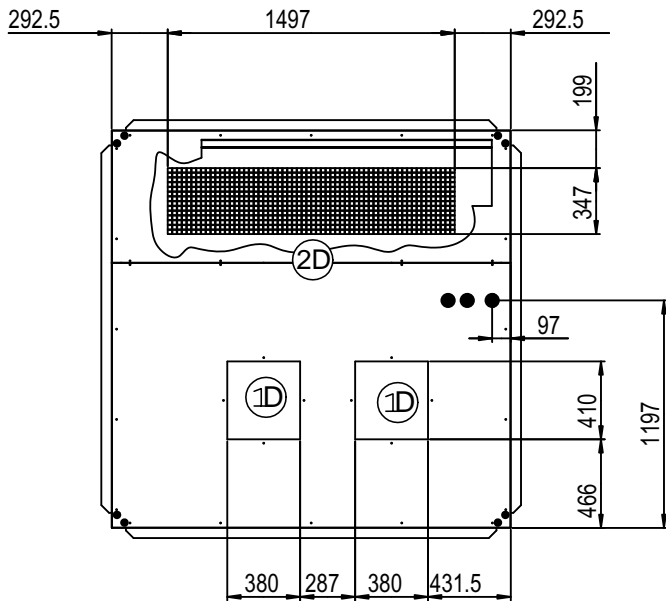
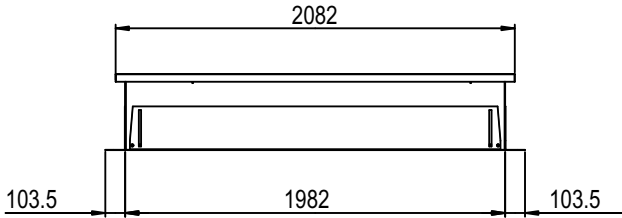
	A	B	C	D
BCK / BHK without auxiliary heating	637	352	1050	230
BGK / BDK or BCK / BHK with auxiliary heating	496	750	500	382

- ①D Down Supply Air
- ②D DownReturn Air
- ④D Down main power entry
- ⑤D Down hot water Entry
- ⑧ Main Power Entry



BCK **BhK** **060** **070**

(*) without auxiliary electric heater
without hot water coil.



- ①D Down Supply Air
- ②D DownReturn Air
- ④D Down main power entry
- ⑤D Down hot water Entry
- ⑧ Main Power Entry

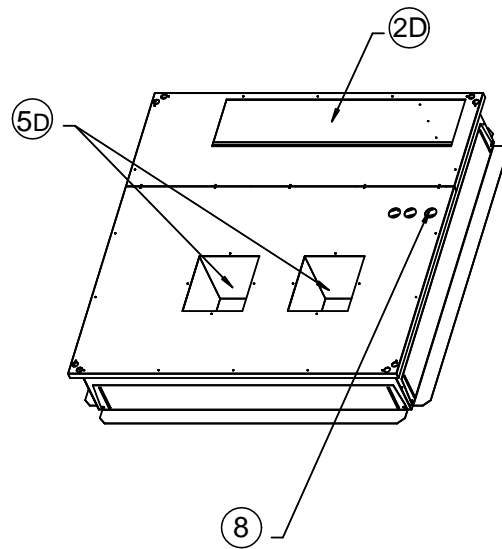
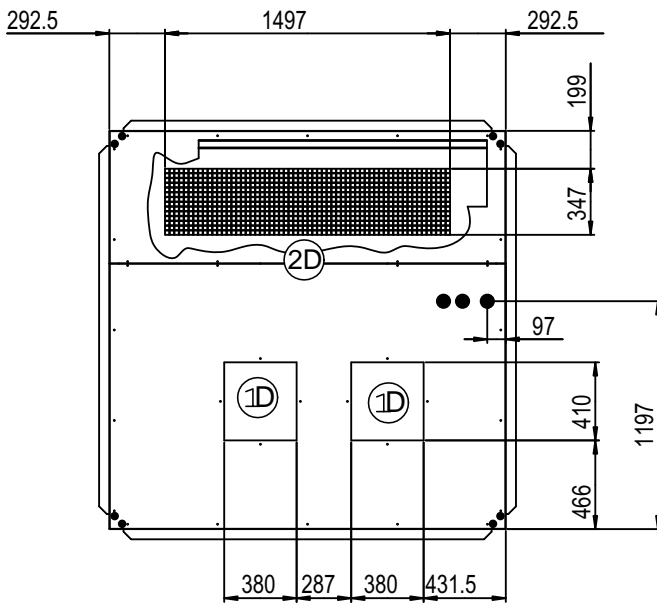
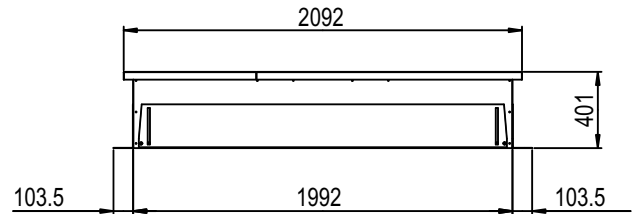
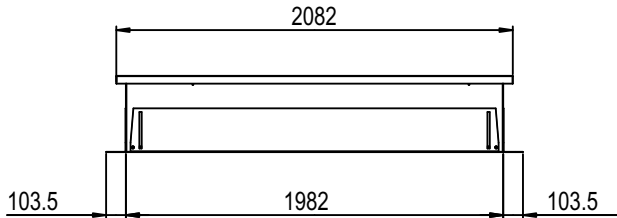


BGK
BDK

060

070

(*) This roofcurb is also necessary for all cooling only or heatpump rooftop with auxiliary electric heater or hot water coil.



- ①D Down Supply Air
- ②D DownReturn Air
- ④D Down main power entry
- ⑤D Down hot water Entry
- ⑧ Main Power Entry

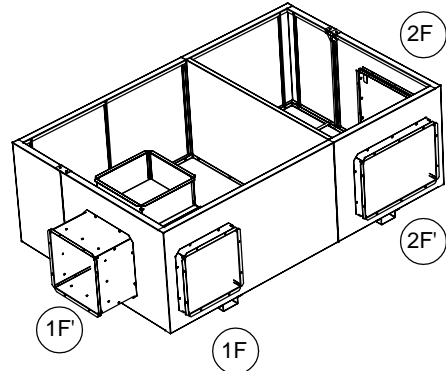
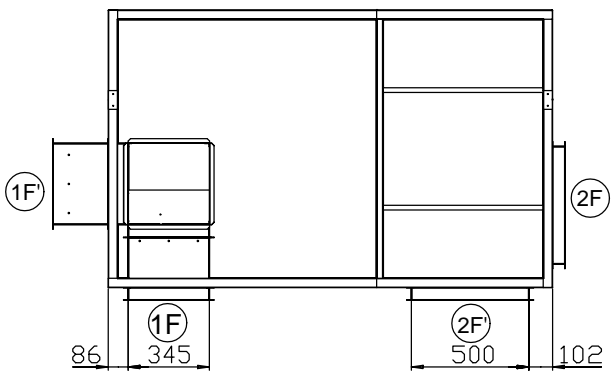
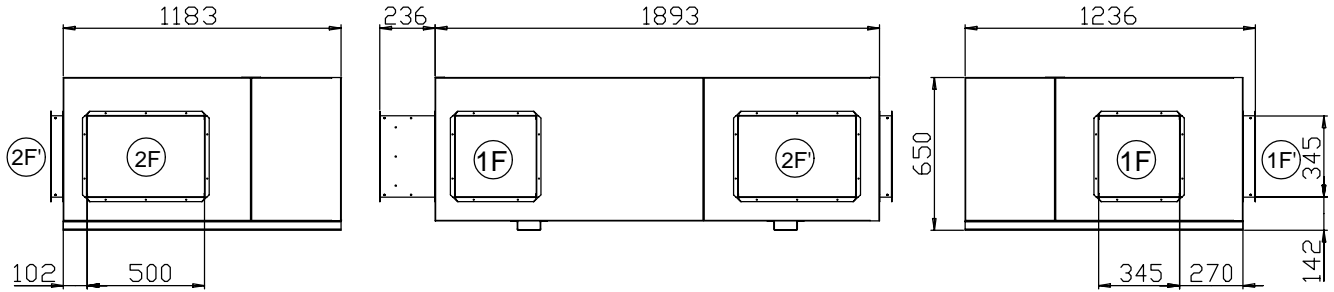


BCK
BHK

020

025

(*) without auxiliary electric heater
without hot water coil.



- 1F** Front supply air
- 1F'** Front supply air
- 2F** Front return air
- 2F'** Front return air

WARNING : ONLY ONE OF THE 4 FOLLOWINGS POSSIBILITIES :
 2F - 1F / 2F - 1F'
 2F' - 1F / 2F' - 1F'

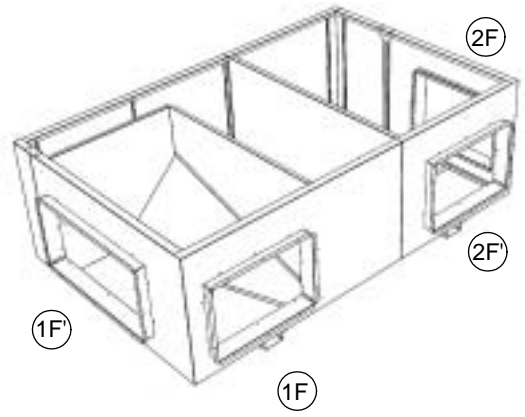
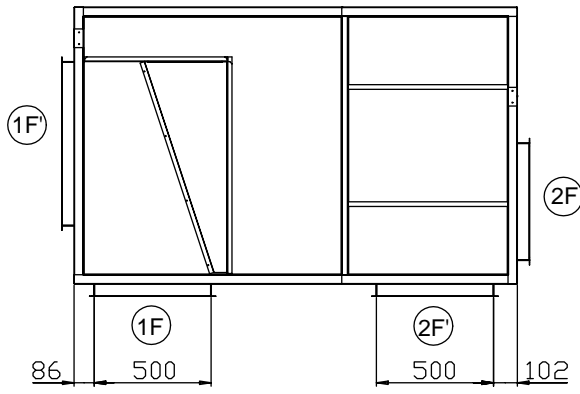
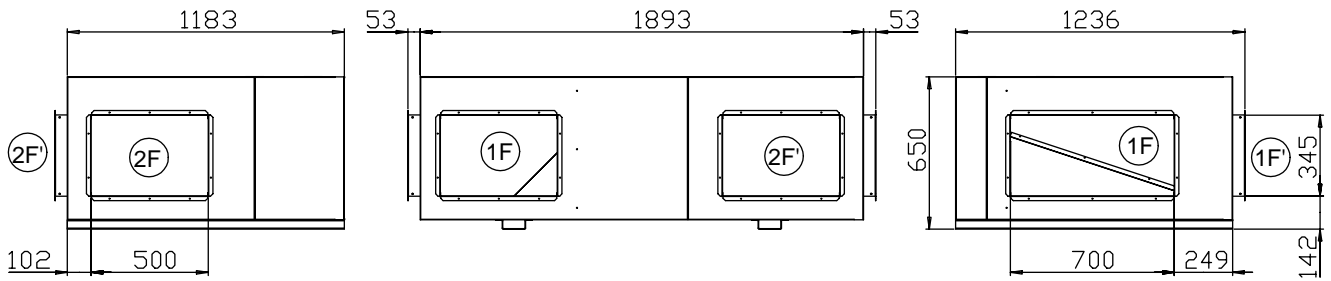


BGK
BDK

O20

O25

(* This roofcurb is also necessary for all cooling only or heatpump rooftop with auxiliary electric heater or hot water coil.



- ①F Front supply air
- ①F' Front supply air
- ②F Front return air
- ②F' Front return air

WARNING : ONLY ONE OF THE 4 FOLLOWINGS POSSIBILITIES :
 2F - 1F / 2F' - 1F'
 2F' - 1F / 2F' - 1F'

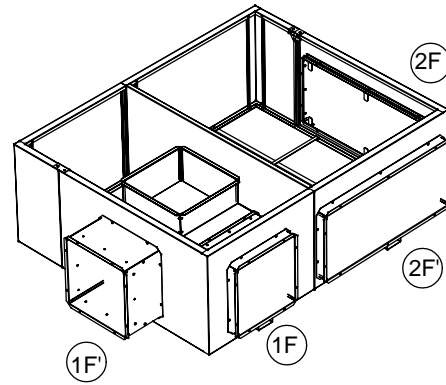
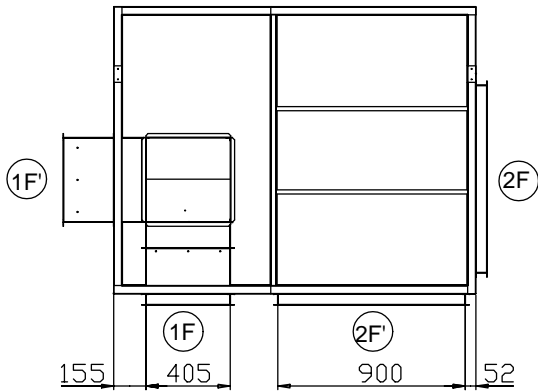
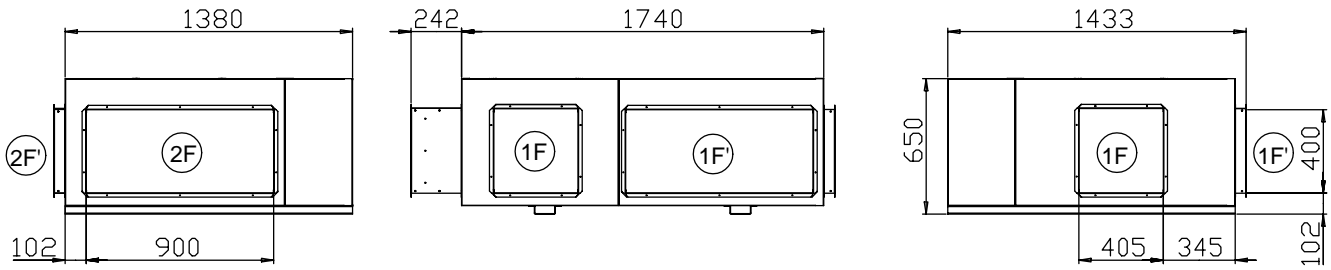


BCK
BHK

030

035

(*) without auxiliary electric heater
without hot water coil.



1F Front supply air

1F' Front supply air

2F Front return air

2F' Front return air

WARNING : ONLY ONE OF THE 4 FOLLOWINGS POSSIBILITIES :

2F - 1F / 2F' - 1F'

2F' - 1F / 2F' - 1F'

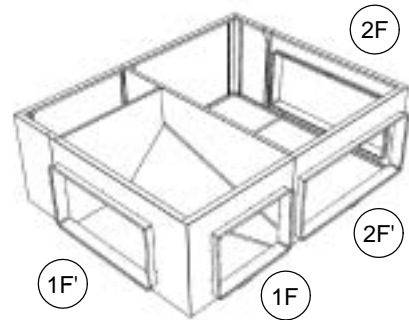
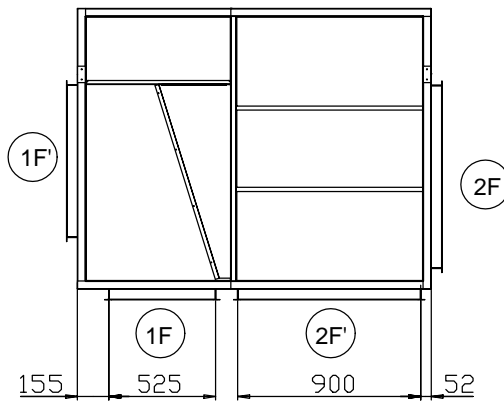
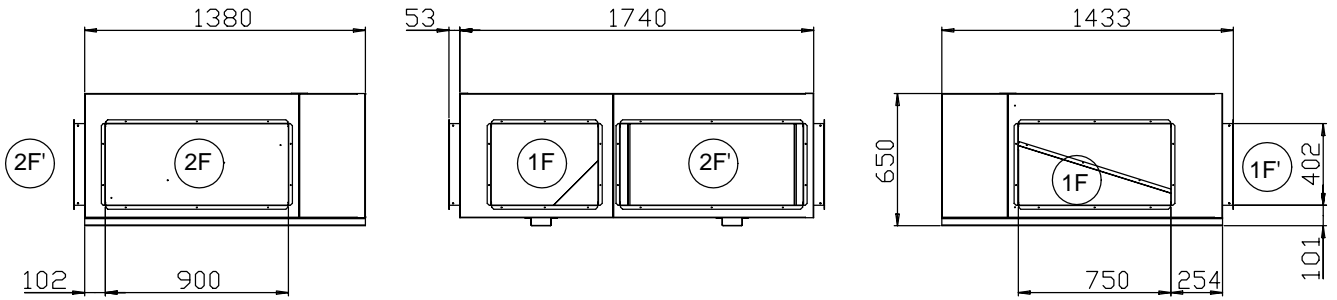


BGK
BDK

030

035

(*) This roofcurb is also necessary for all cooling only or heatpump rooftop with auxiliary electric heater or hot water coil.



1F Front supply air

1F' Front supply air

2F Front return air

2F' Front return air

WARNING : ONLY ONE OF THE 4 FOLLOWINGS POSSIBILITIES :
2F - 1F / 2F - 1F'
2F' - 1F / 2F' - 1F'



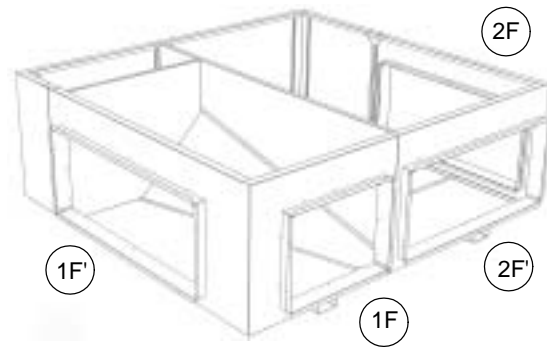
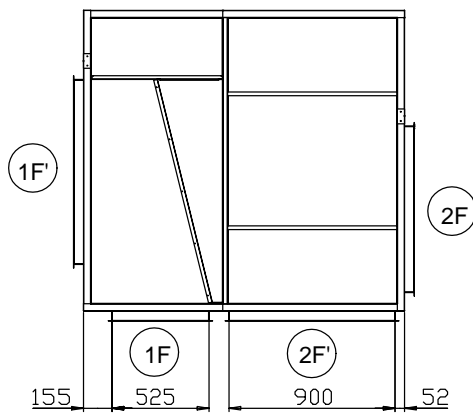
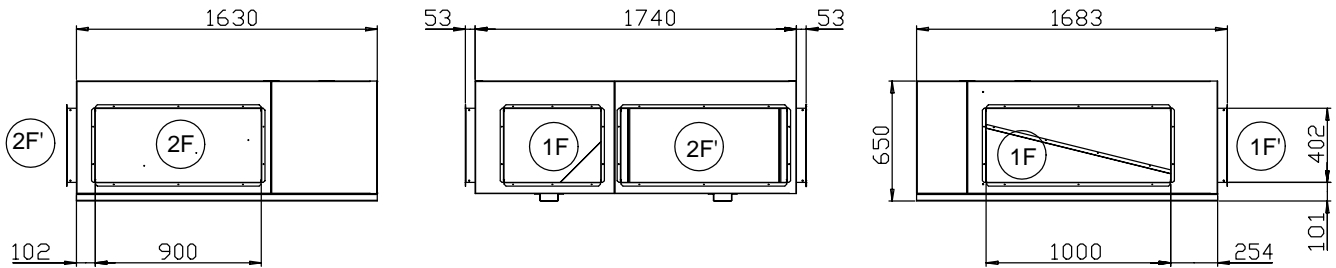
BGK
BDK

040

045

050

(*) This roofcurb is also necessary for all cooling only or heatpump rooftop with auxiliary electric heater or hot water coil.



1F Front supply air

1F' Front supply air

2F Front return air

2F' Front return air

WARNING : ONLY ONE OF THE 4 FOLLOWINGS POSSIBILITIES :

2F - 1F / 2F' - 1F'

2F' - 1F' / 2F' - 1F'

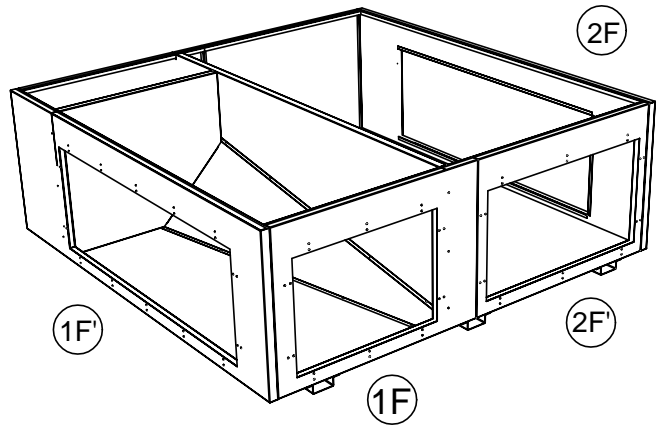
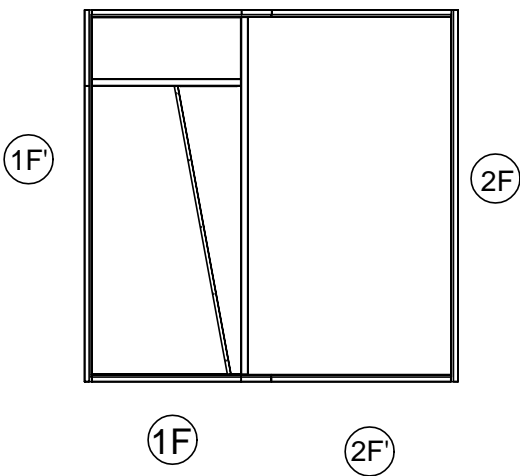
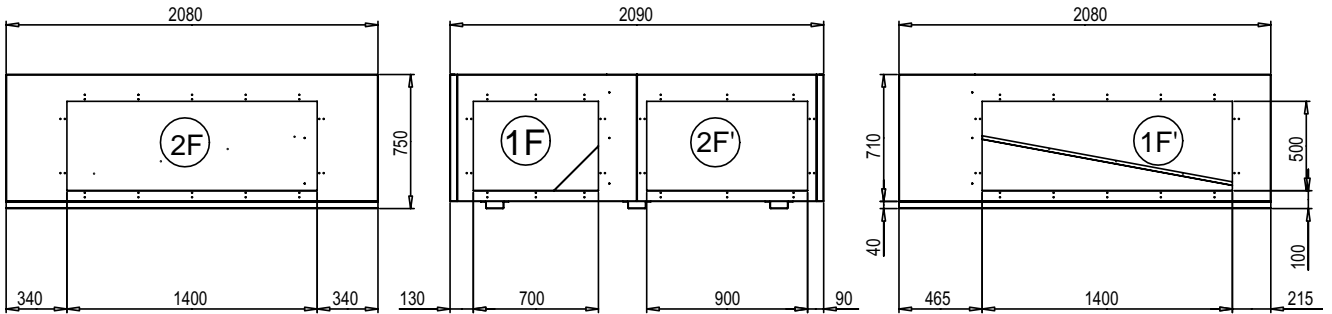


BCK
BHK

BGK
BDK

060

070



①F Front supply air

①F' Front supply air

②F Front return air

②F' Front return air

WARNING : ONLY ONE OF THE 4 FOLLOWINGS POSSIBILITIES :
2F - 1F / 2F - 1F'
2F' - 1F / 2F' - 1F'



NON ADJUSTABLE NON ASSEMBLED ROOFCURB INSTALLATION

FRAME PARTS IDENTIFICATION

Figure 6 shows the different parts for identification

INSTALLATION

The roof mounting frame provides support when the units are installed in down-flow configurations. The non adjustable, non assembled roof mounting frame can be installed directly on decks having adequate structural strength or on roof supports under deck. See page 29 for frame dimensions, location of supply and return air opening

NOTE: frame assembly must be installed flat, levelled within 5mm per linear meter in any direction.

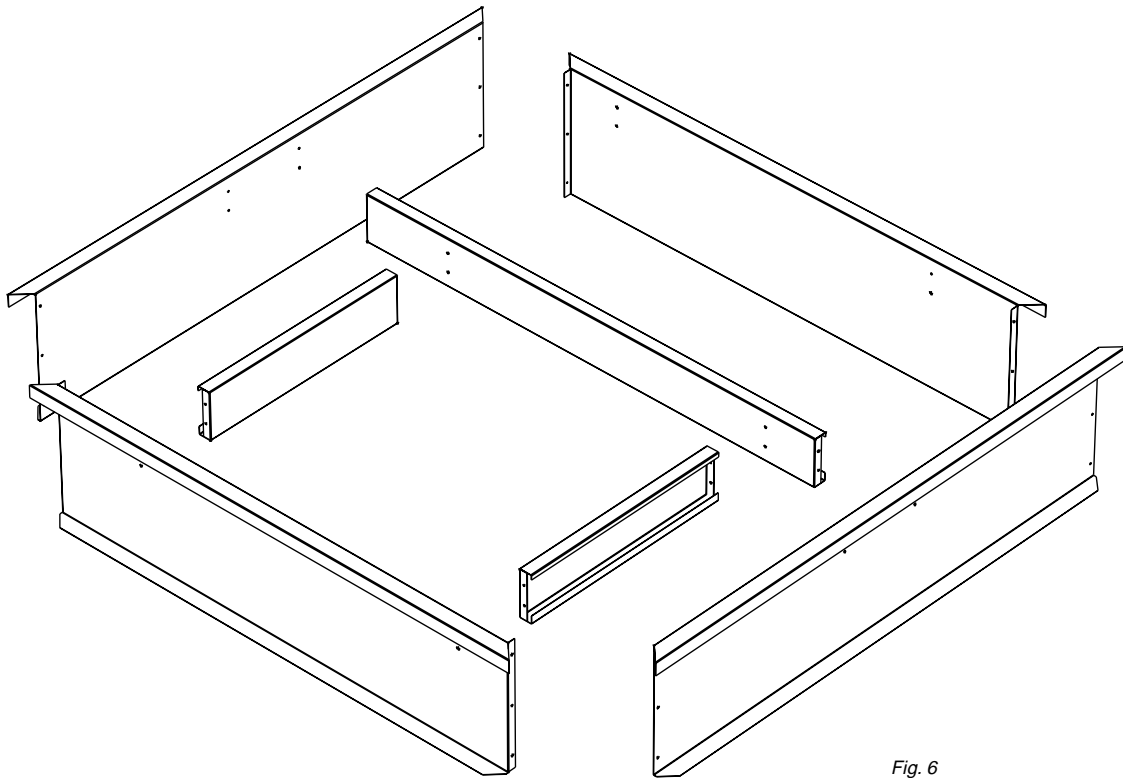
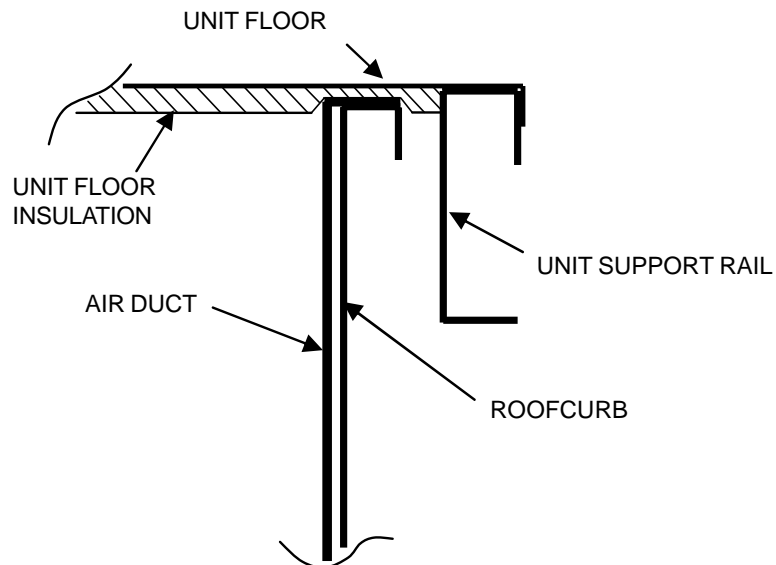


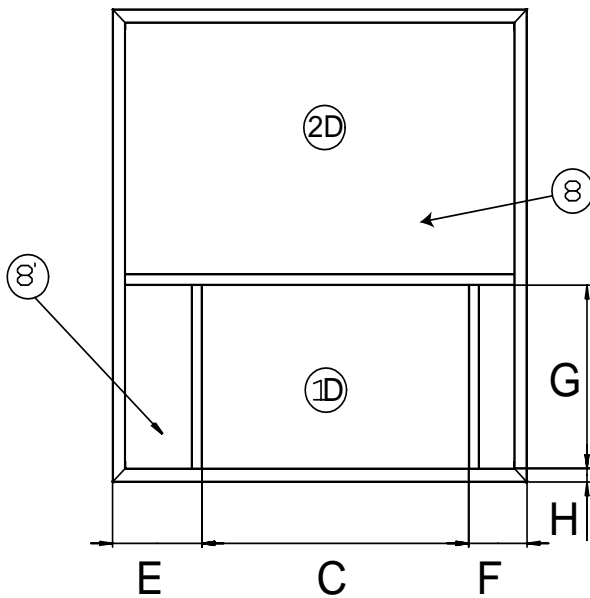
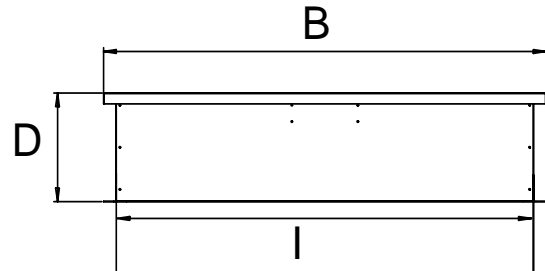
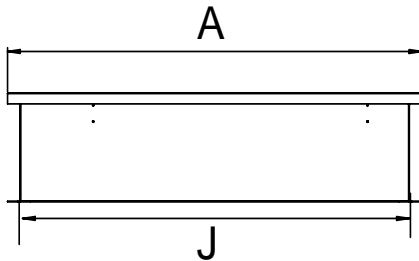
Fig. 6



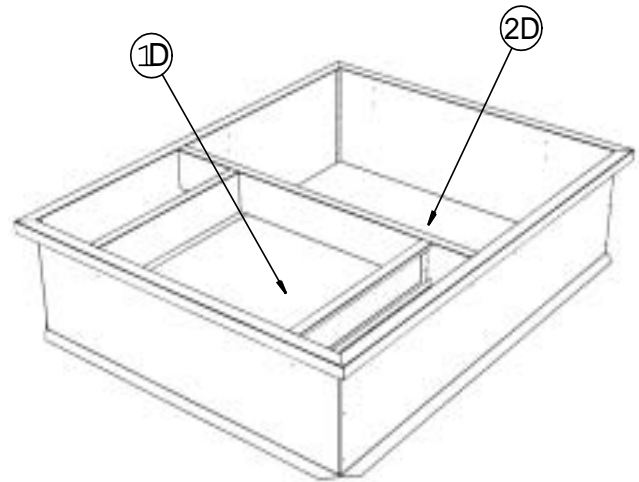


All units

BCK = Cooling only unit
 BHK = Heat pump unit
 BGK = Cooling only unit with gas fired heating
 BDK = Heat pump unit with gas fired heating



Roof opening I x J



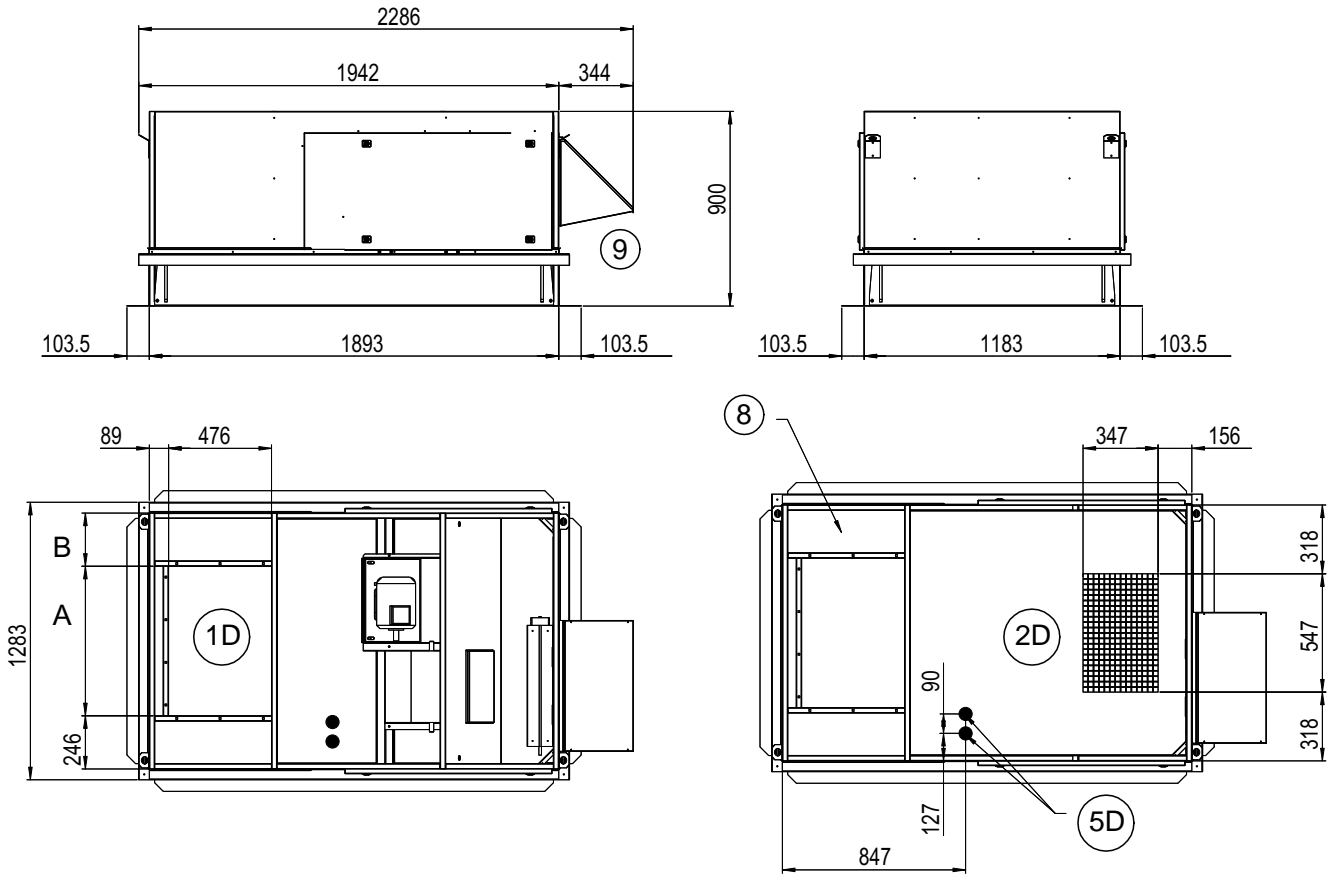
- ①D Down Supply Air
- ②D Return Air
- ⑧ Main Power Entry 030-035-040-045-050
- ⑧' Main Power Entry 020-025

Type	Taille	A	B	C	D	E	F	G	H	I	J
All	020 025	1183	1893	691	400	246	246	515	50	1783	1083
All	030 035	1380	1740	790	400	351	240	675	50	1640	1280
All	040 045 050	1630	1740	1050	400	352	229	675	50	1640	1530
All	060 070	2080	2090	1400	400	425	255	720	156	1990	1980

(*) Non adjustable, non assembled roofcurb.



O20 O25

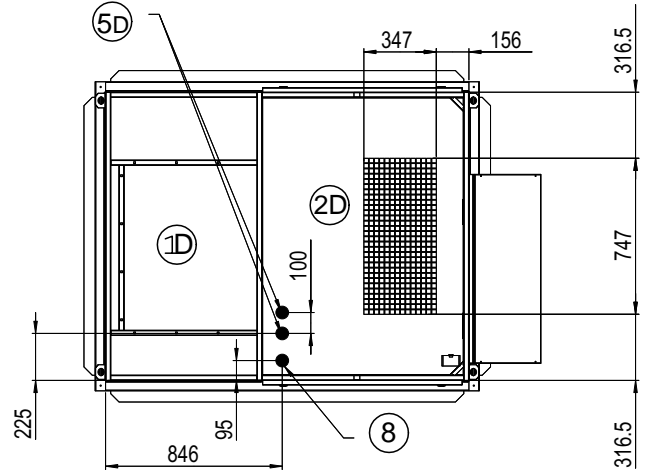
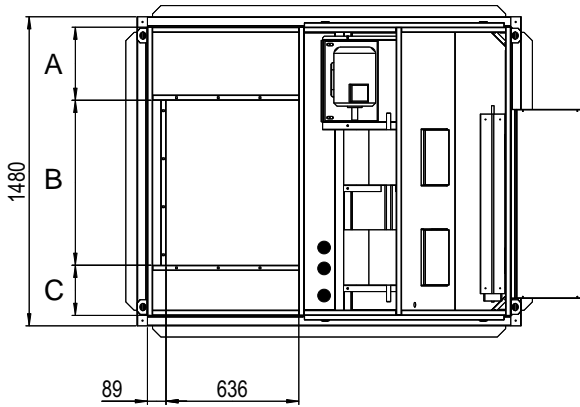
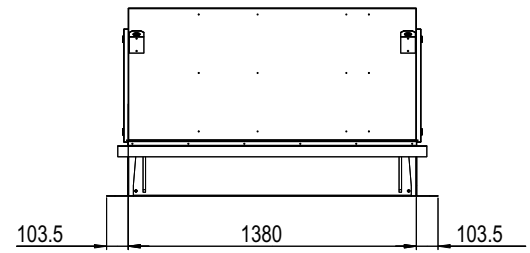
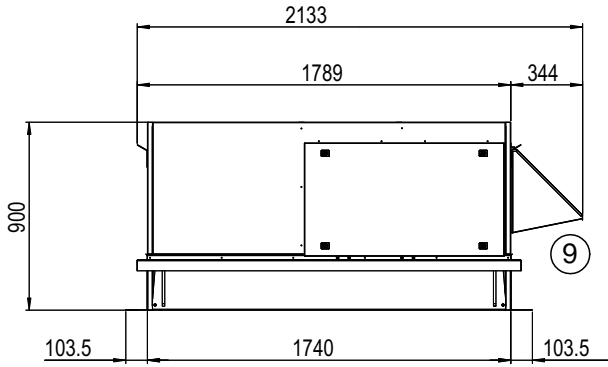


	A	B
BCK / BHK without auxiliary heating	395	542
BGK / BDk or BCK / BHK with auxiliary heating	691	246

- 1D Down Supply Air
- 2D DownReturn Air
- 4D Down main power entry
- 5D Down hot water Entry
- 8 Main Power Entry
- 9 Exhaust



O30 O35

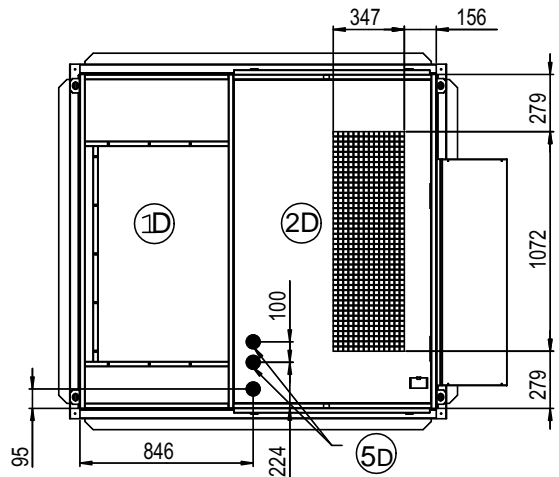
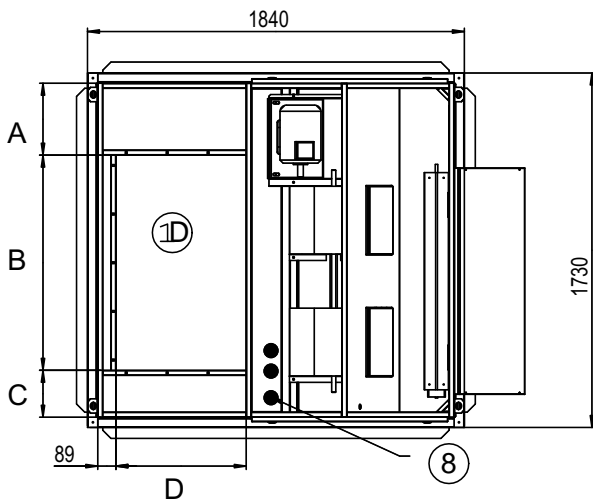
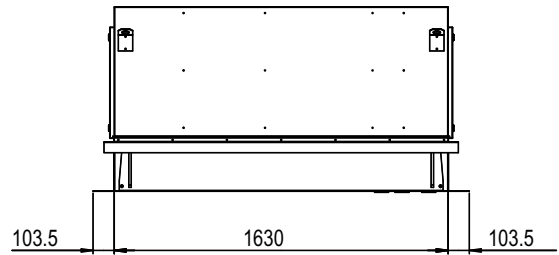
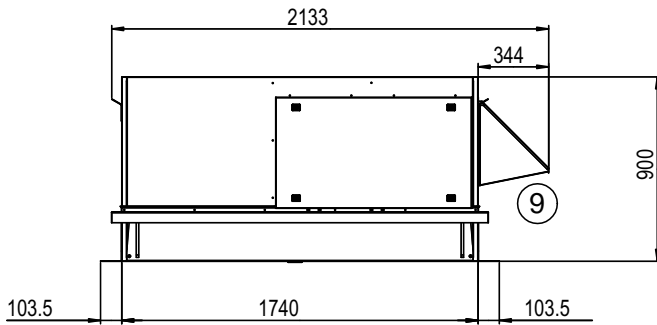


	A	B	C
BCK / BHK without auxiliary heating	632	400	348
BGK / BDK or BCK / BHK with auxiliary heating	350	790	240

- ①D Down Supply Air
- ②D DownReturn Air
- ④D Down main power entry
- ⑤D Down hot water Entry
- ⑧ Main Power Entry
- ⑨ Exhaust



O40 O45 O50



	A	B	C	D
BCK / BHK without auxiliary heating	749	500	382	496
BGK / BDK or BCK / BHK with auxiliary heating	351	1050	229	636

- ①D Down Supply Air
- ②D DownReturn Air
- ④D Down main power entry
- ⑤D Down hot water Entry
- ⑧ Main Power Entry
- ⑨ Exhaust

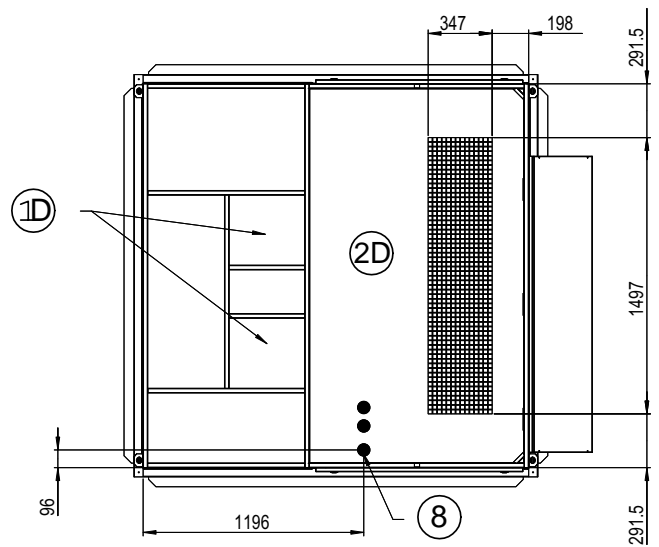
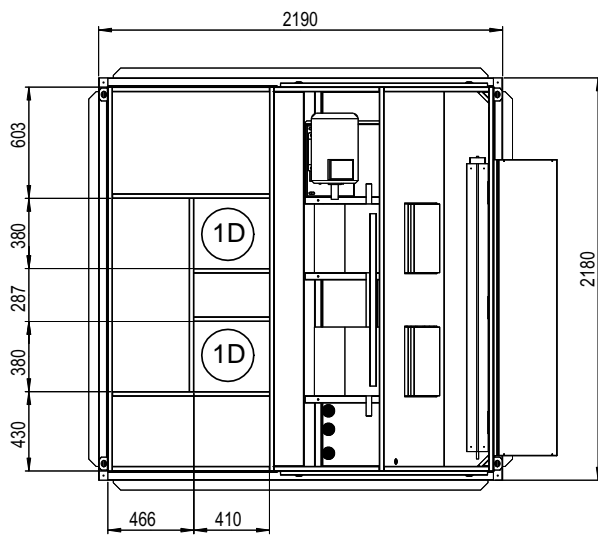
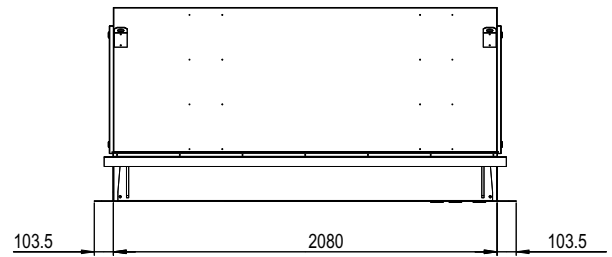
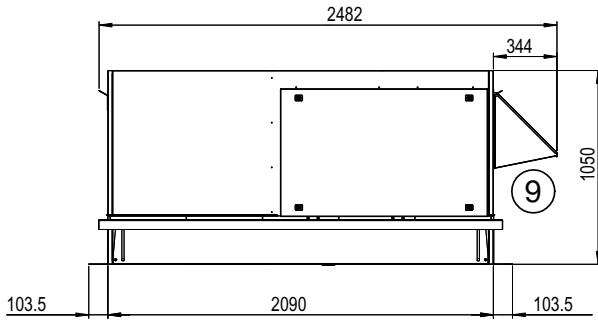


BCK
BHK

060

070

(*) without auxiliary electric heater
without hot water coil.



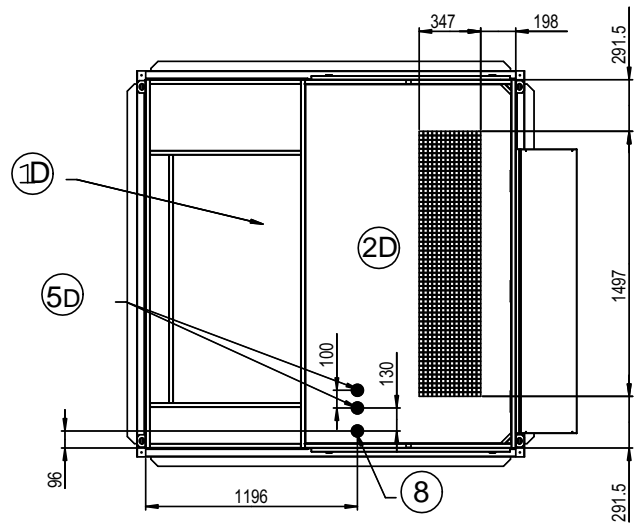
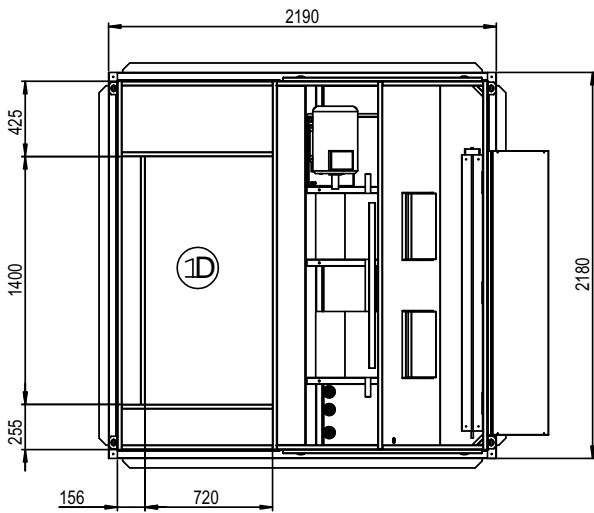
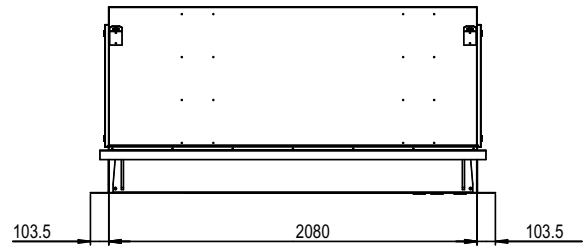
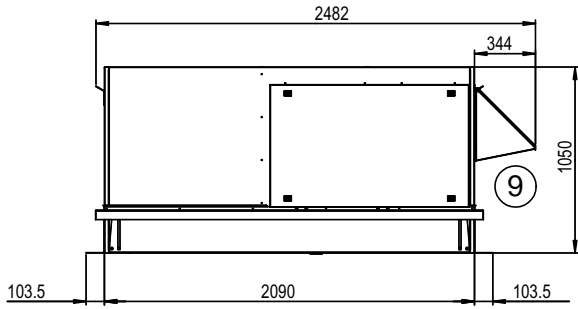
- ①D Down Supply Air
- ②D DownReturn Air
- ④D Down main power entry
- ⑤D Down hot water Entry
- ⑧ Main Power Entry
- ⑨ Exhaust



BGK
BDK

060 **070**

(* This roofcurb is also necessary for all cooling only or heatpump rooftop with auxiliary electric heater or hot water coil.

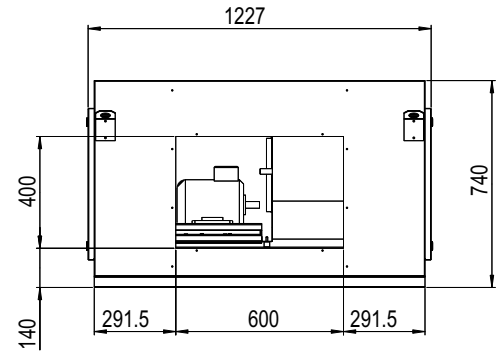
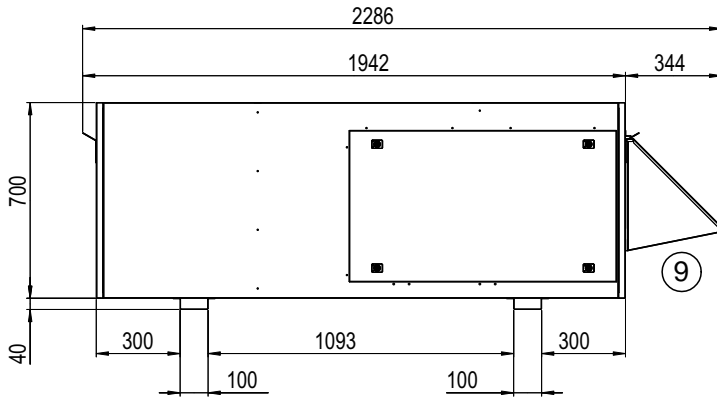


- ①D Down Supply Air
- ②D DownReturn Air
- ④D Down main power entry
- ⑤D Down hot water Entry
- ⑧ Main Power Entry
- ⑨ Exhaust

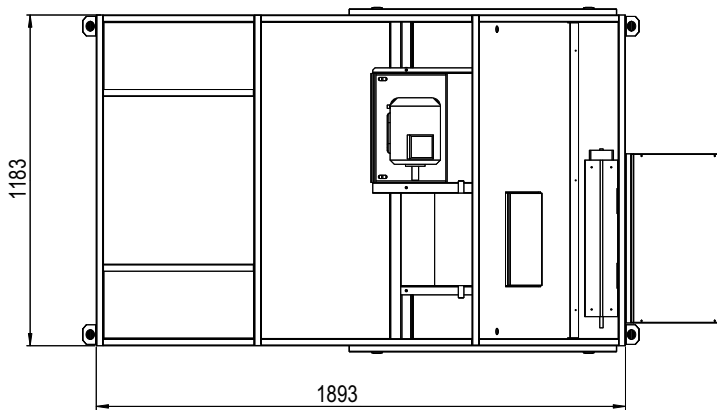


BCK = Cooling only unit
 BHK = Heat pump unit
 BGK = Cooling only unit with gas fired heating
 BDK = Heat pump unit with gas fired heating

020 **025**



2D

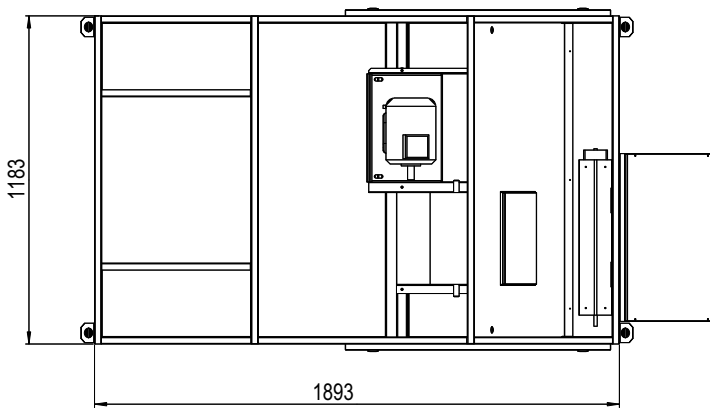
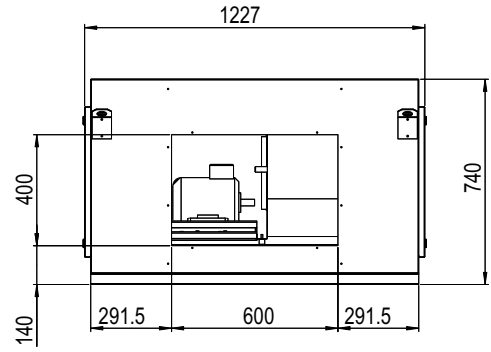
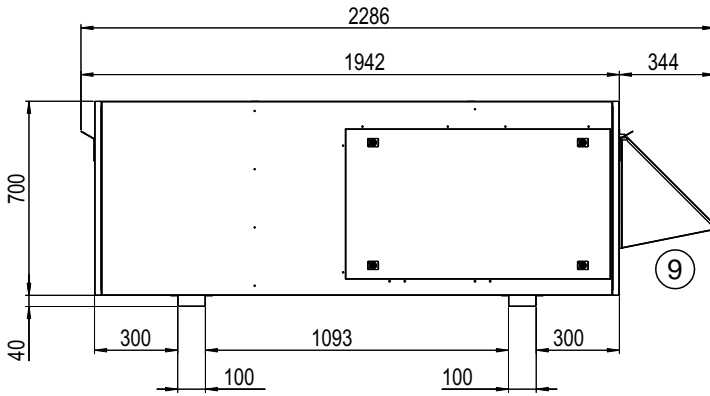


- 1D Down Supply Air
- 2D DownReturn Air
- 4D Down main power entry
- 5D Down hot water Entry
- 8 Main Power Entry
- 9 Exhaust



030 | **035**

BCK = Cooling only unit
 BHK = Heat pump unit
 BGK = Cooling only unit with gas fired heating
 BDK = Heat pump unit with gas fired heating

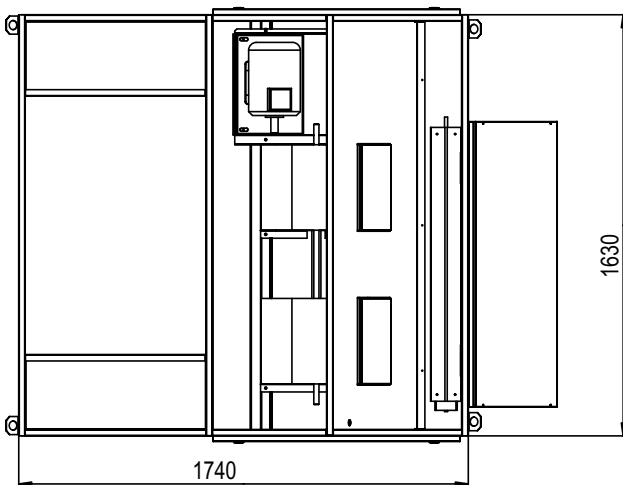
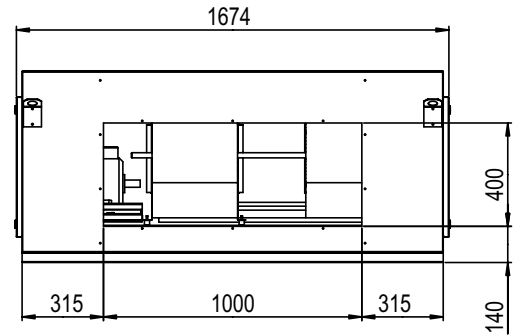
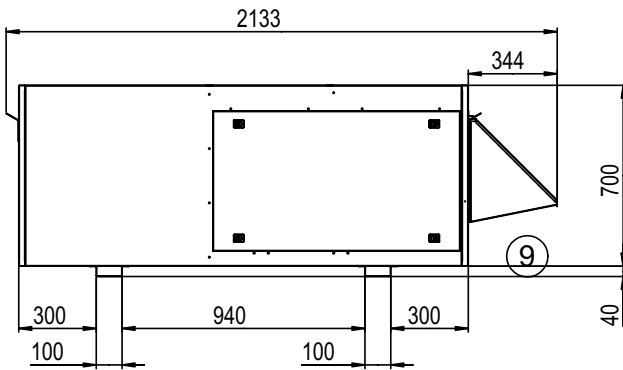


- ①D Down Supply Air
- ②D DownReturn Air
- ④D Down main power entry
- ⑤D Down hot water Entry
- ⑧ Main Power Entry
- ⑨ Exhaust



BCK = Cooling only unit
 BHK = Heat pump unit
 BGK = Cooling only unit with gas fired heating
 BDK = Heat pump unit with gas fired heating

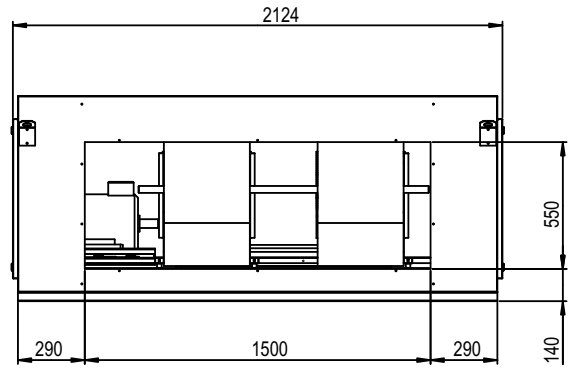
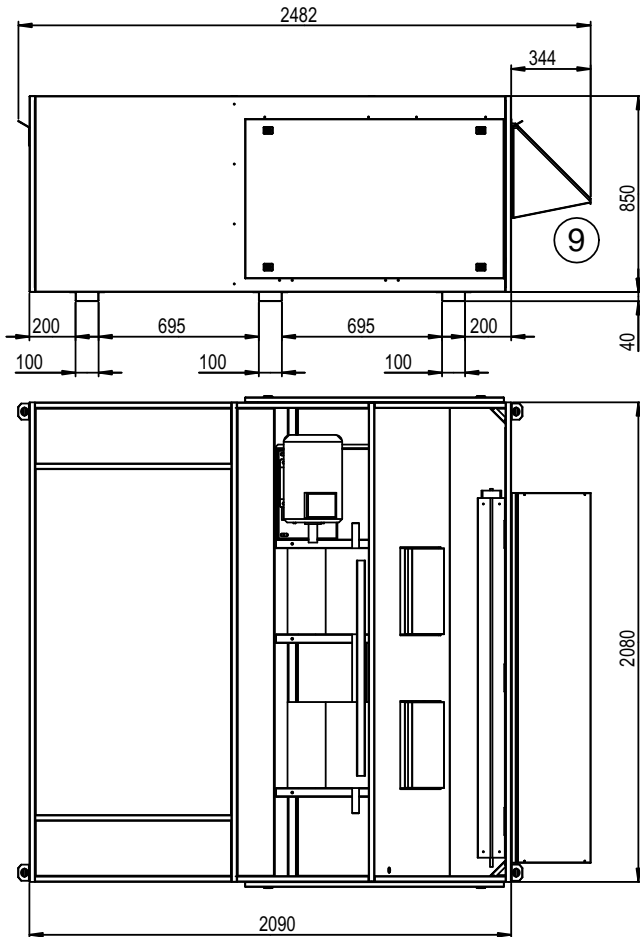
040 **045** **050**



- ①D Down Supply Air
- ②D DownReturn Air
- ④D Down main power entry
- ⑤D Down hot water Entry
- ⑧ Main Power Entry
- ⑨ Exhaust



060 070



2D

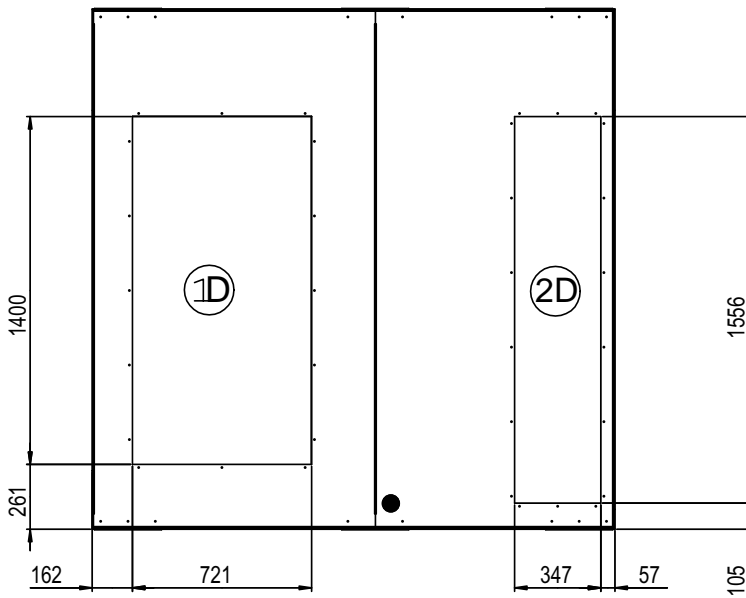
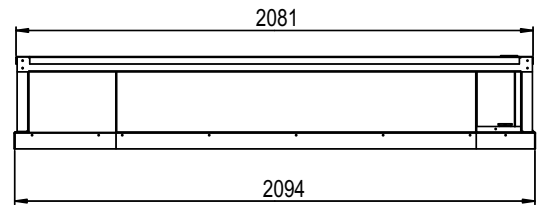
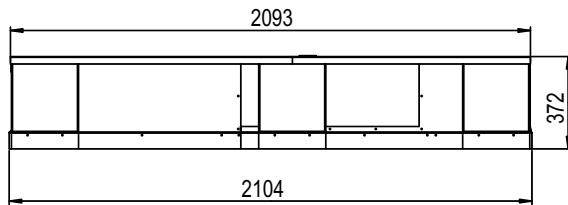
- 1D Down Supply Air
- 2D DownReturn Air
- 4D Down main power entry
- 5D Down hot water Entry
- 8 Main Power Entry
- 9 Exhaust



BGK
BDK

060

070



- ①D Down Supply Air
- ②D DownReturn Air
- ④D Down main power entry
- ⑤D Down hot water Entry
- ⑧ Main Power Entry
- ⑨ Exhaust



ASSEMBLY

The frame is supplied as a single package and shipped folded down for ease of transport and handling. It is easy field assembled as all parts required are supplied with the frame.

SECURING THE FRAME

To ensure proper mating with units (figure 7), it is mandatory that the roof mounting frame be squared to roof structure as follows:

-With frame positioned levelled in the desired location on roof trusses, tack weld corner of frame.

-Measure frame diagonally from corner to corner as shown in figure 7. These Dimensions must be equal in order for the frame to be square.

-It is extremely important to sight frame from all corner to ensure it is not twisted across. Shim frame under any low side. The maximum slope tolerance is 5mm per linear meter in any direction.

-After the frame has been squared, straightened and shimmed, weld or secure the frame to the roof deck.

NOTE : It must be securely fastened to the roof as per local codes and regulations.

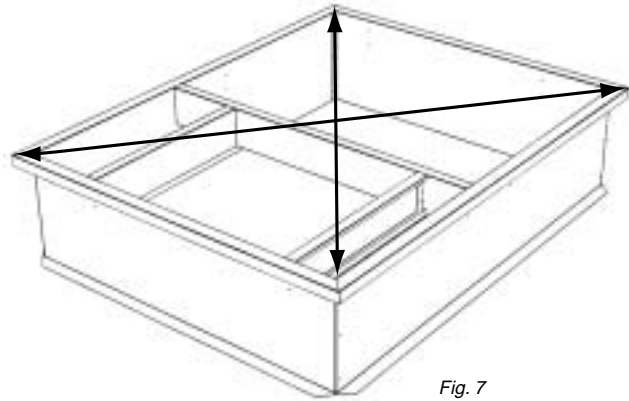

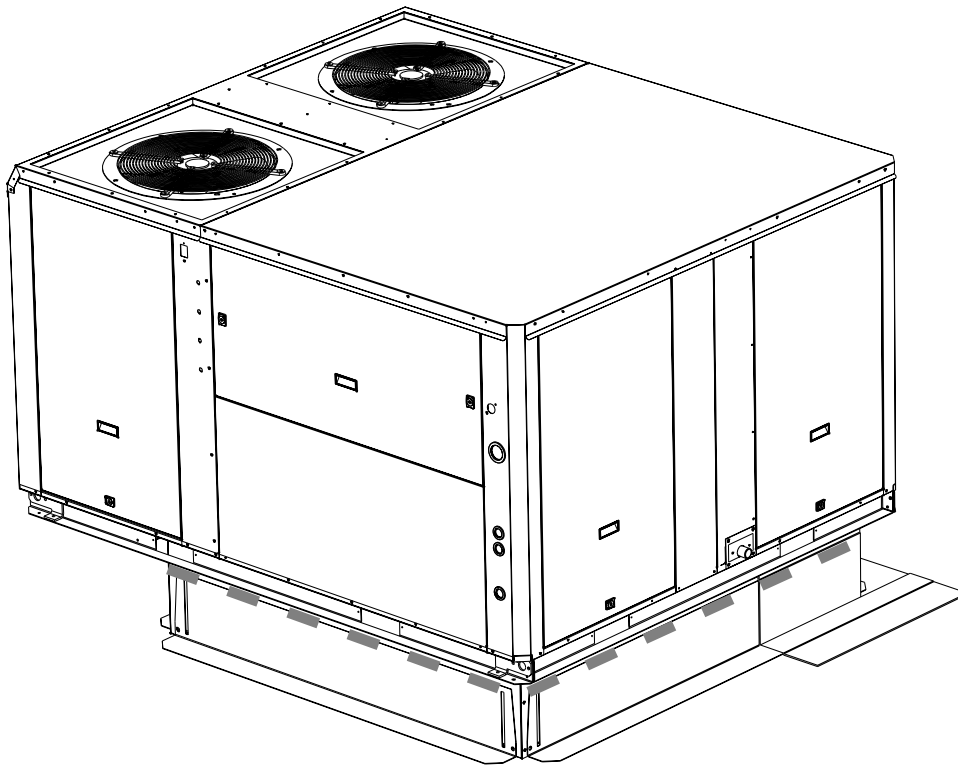


Fig. 7



When the frame is correctly positioned. It is essential to secure the assembly with a disconnected stitched welded seam (20 to 30mm every 200mm ) along the outside or by using an alternative method.



CURBING AND FLASHING

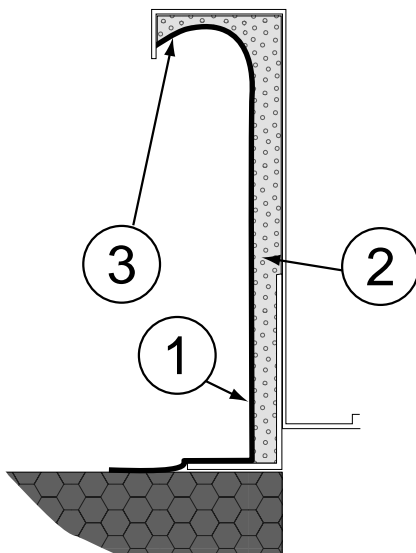


Fig. 8

Outside of frame must be insulated with rigid type insulation; We recommend a minimum of 20 mm thick insulation (2 figure 8).

Check that the insulation is continuous, counter flash and seal around the frame as shown in (1-figure 8).

CAUTION : To be effective, the upstream must end below the drop edge (3 - figure 8).

Where pipes and electrical conduits extend through the roof, flashing must conform to local codes of practice.

Before installing the equipment, make sure that seals are not damaged and check that the unit is secured to the mounting frame. Once in position, the bottom of the equipment must be horizontal.

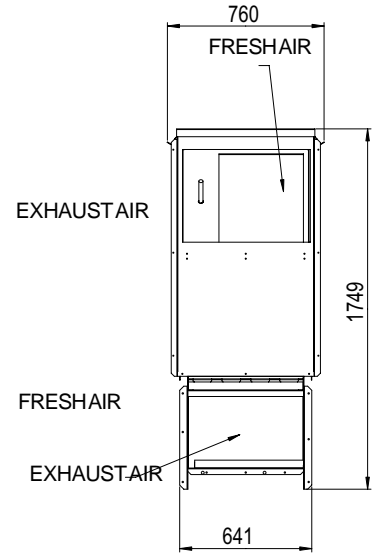
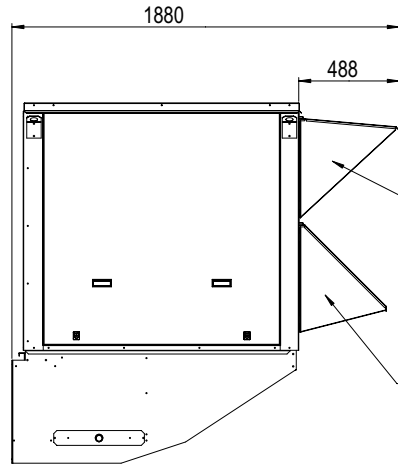
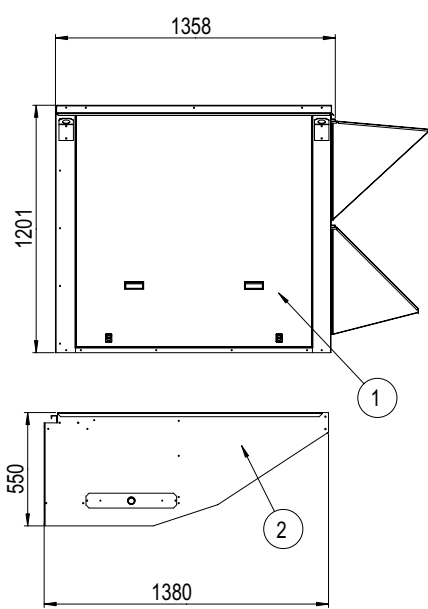
The installer must comply to local authority standards and specifications.



(Under patent INPI May 2004)

O20

O25

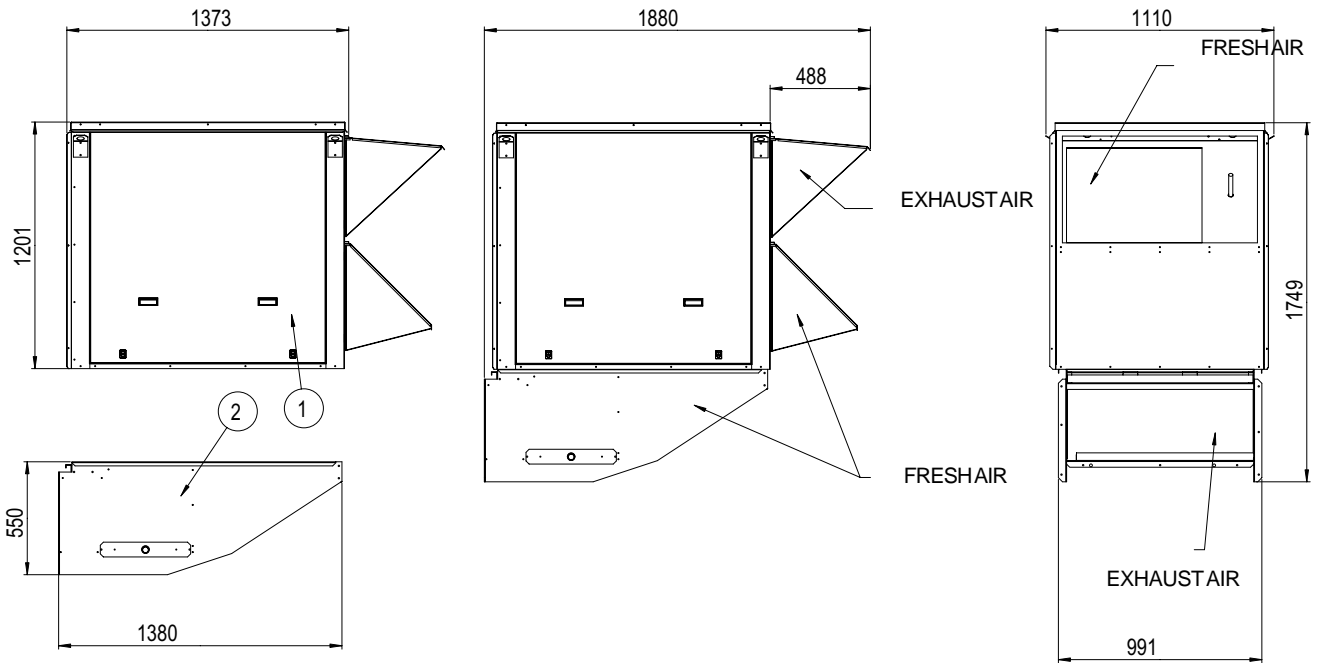


Part 1 and 2 are supplied loose + Fresh air and extracted air hood closed



(Under patent INPI May 2004)

O30 O35



Part 1 and 2 are supplied loose + Fresh air and extracted air hood closed

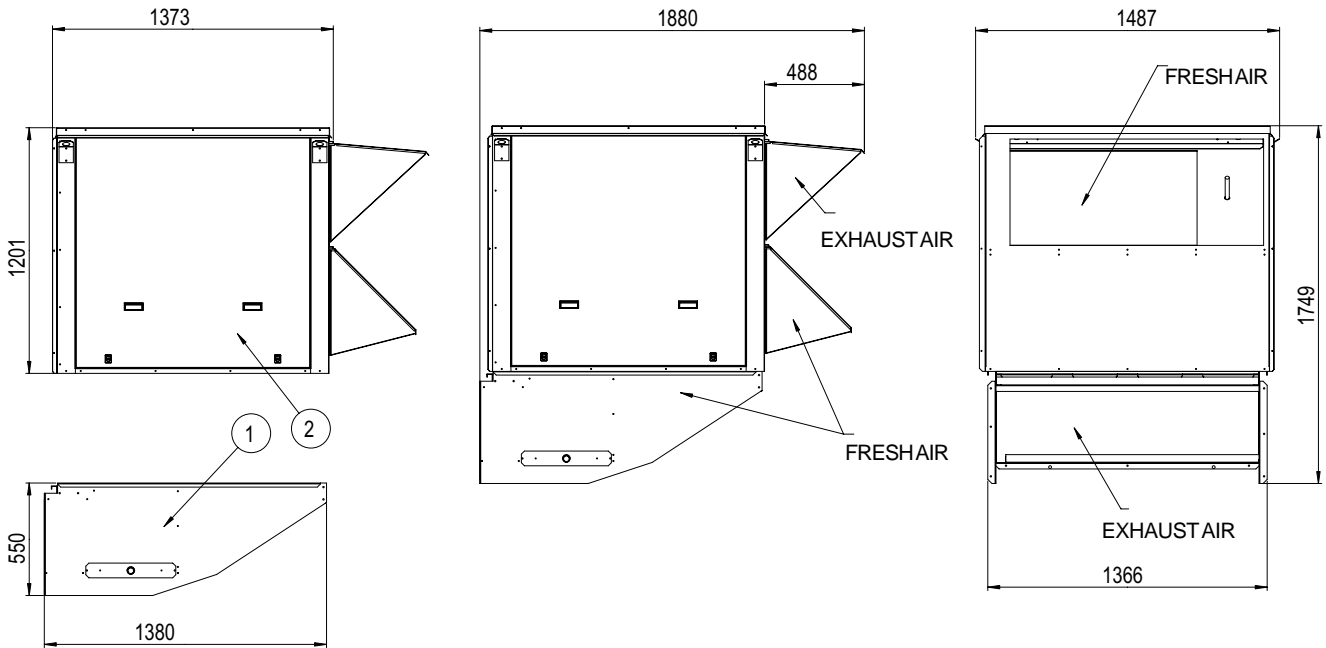


(Under patent INPI May 2004)

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045

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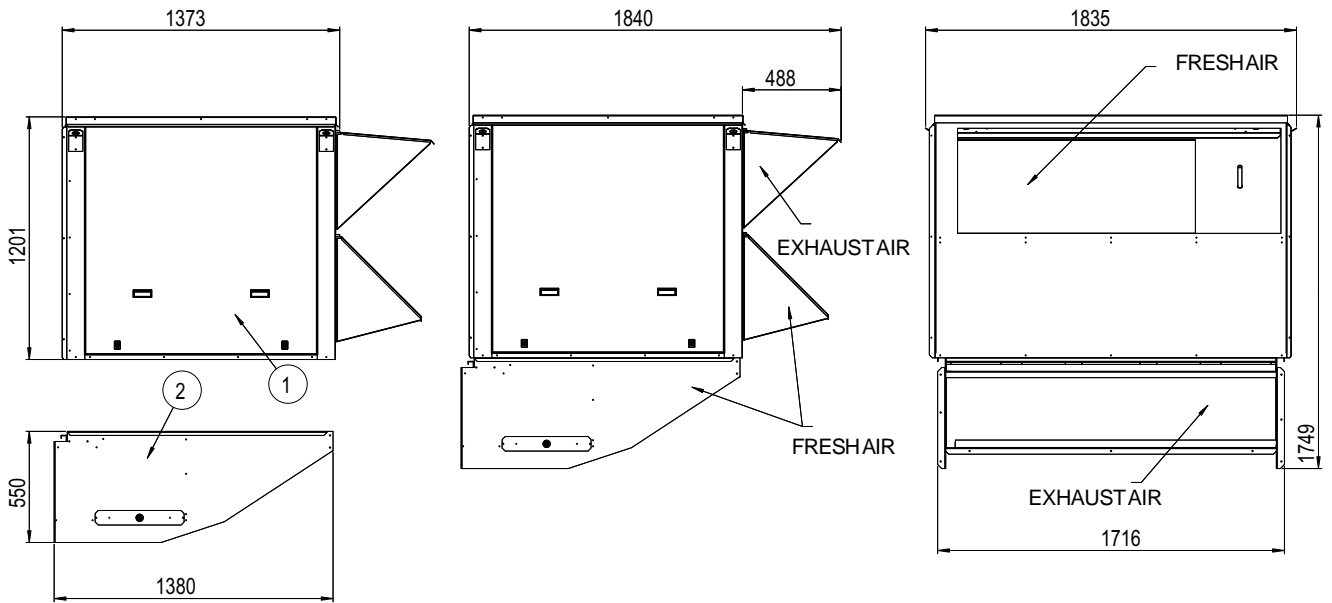


Part 1 and 2 are supplied loose + Fresh air and extracted air hood closed

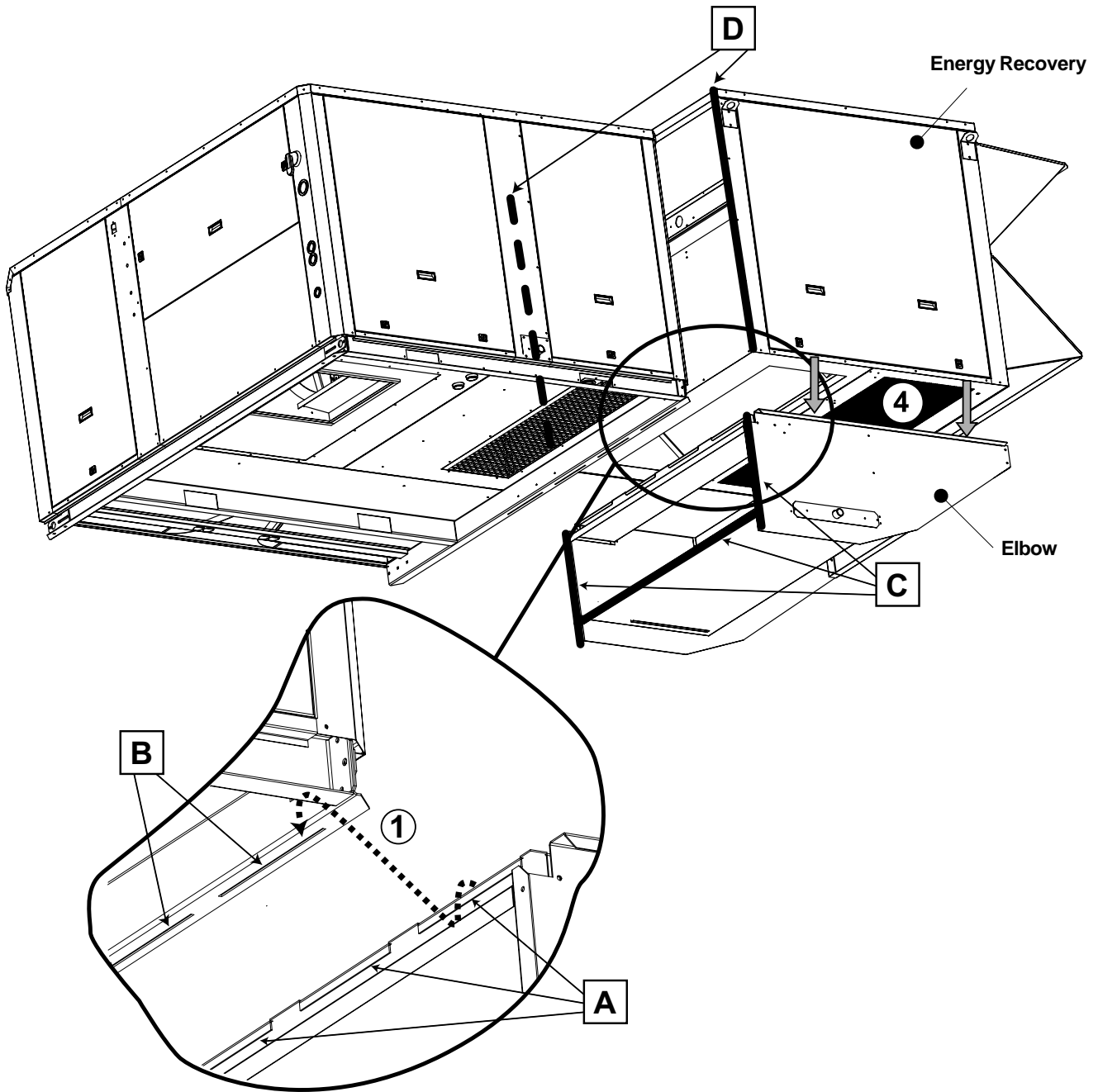


(Under patent INPI May 2004)

060 070



Part 1 and 2 are supplied loose + Fresh air and extracted air hood closed



1) The unit being already erected on the roof curb, position the elbow by plugging the returns (A) in the slits (B) of the framework of the unit: see detail ①

2) Fix the elbow with caged nuts at envisaged places (C)

3) Apply mastic on the two side studs and on the superior stud of the energy recovery box.

4) Pose the energy recovery box on the elbow ④

5) Fix the energy recovery box thanks to the two edges right and left with self-drilling screws (D)



Economiser

Free cooling can be provided through the use of fresh air where appropriate rather than cooling excessive amounts of return air.

The economiser is factory fitted and tested prior to shipment. It includes two dampers operating from a 24V actuator

Rain hood

It also includes a factory fitted rain hood . Hoods is folded during transportation to limit risks of damage and must be unfolded on site as shown below on figure 9 :



Fig. 9

Extraction

Installed with economiser assembly, the gravity exhaust dampers relieve the pressure when outside air is introduced into the system.

When large amount of fresh air is introduced into the system power exhaust fans can be used to equalise the pressures.

The extraction fan runs when return air dampers are being closed and supply air blower is in operation. The extraction fan runs when outdoor air dampers are at least 50% open (adjustable value) It is overload protected.

NOTE : When horizontal flow configuration is required, the multidirectional roofcurb will be installed

0-25% fresh air manual (Fig. 10)

It is enough to loosen the mobile grid's screws and to make it slip.

- 0%** : screw into limit stop on the right
- 25%** : screw into limit stop on the left

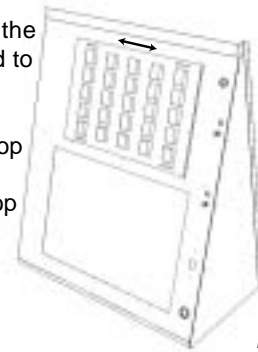
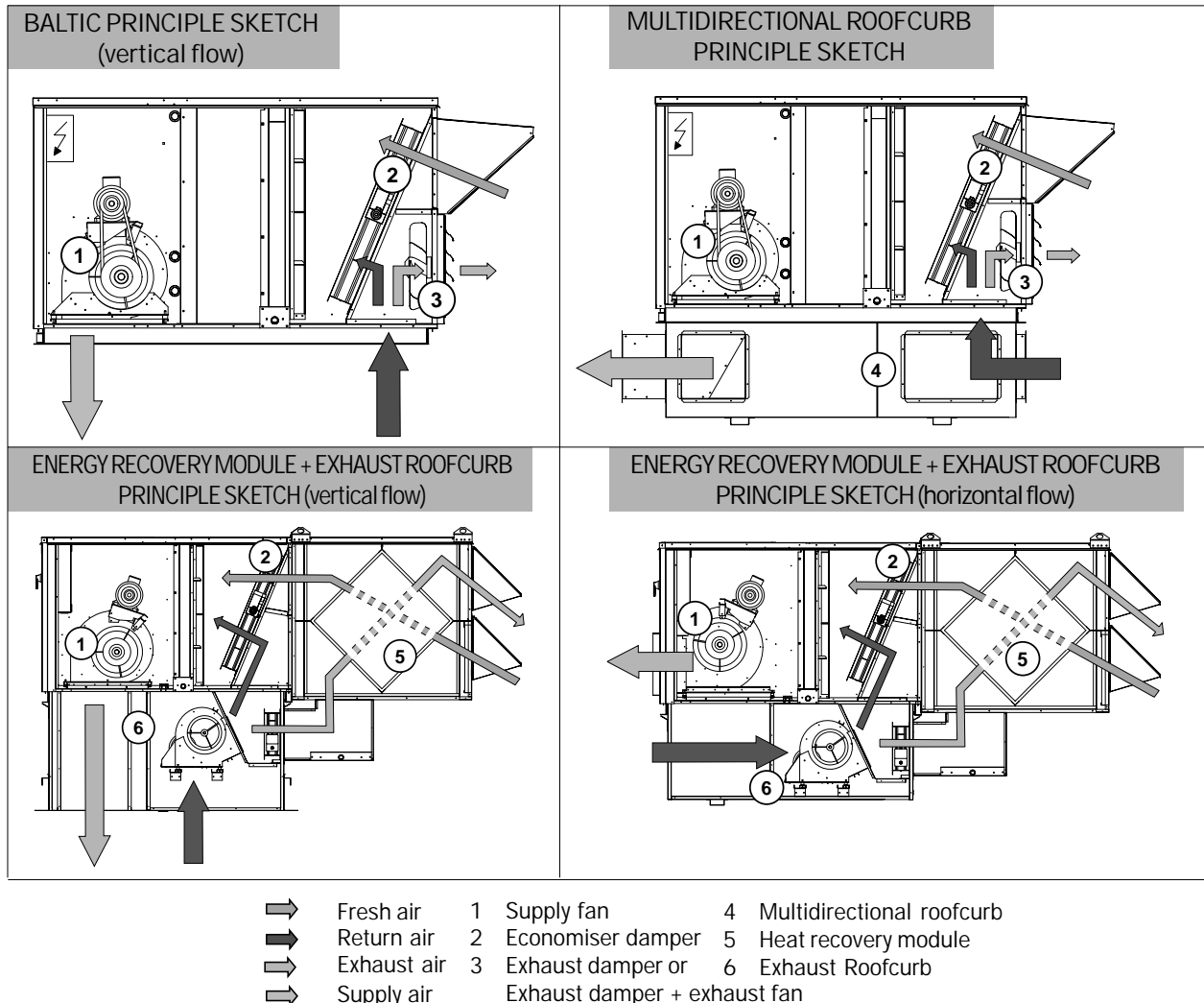


Fig. 10





THIS WORK MUST ONLY BE CARRIED OUT BY TRAINED REFRIGERATION ENGINEERS

FILL THE COMMISSIONING SHEET AS YOU GO ALONG

BEFORE CONNECTING THE POWER:

- Ensure that the power supply between the building and the unit meets local authority standards and that the cable specification satisfies the start-up and operating conditions.

ENSURE THAT THE POWER SUPPLY INCLUDES 3 PHASES + NEUTRAL IF THE UNIT IS EQUIPPED WITH A POWER EXHAUST FAN

- Check the following wire connections for tightness: Main switch connections, mains wires linked to the contactors and circuit breakers and the cables in the 24V control supply circuit.

Cables and their connectors corresponding to the roof curb' motor and actuator and extraction box' ones are already rolled up in these elements; it is enough to bring them through the openings envisaged and to connect them on the sites indicated on the figure 11.

It's the same procedure when you have an energy recovery module, as shown on the figure 12.

PRELIMINARY CHECKS

- Ensure that all drive motors are secure.
- Ensure that the adjustable pulley blocks are secure and that the belt is tensioned with the transmission correctly aligned. Refer to the next section for details.
- Using the electrical wiring diagram, check the conformity of the electrical safety devices (circuit breaker settings, presence and rating of fuses).
- Check the temperature probe connections.

How to connect roof curbs and energy recovery module

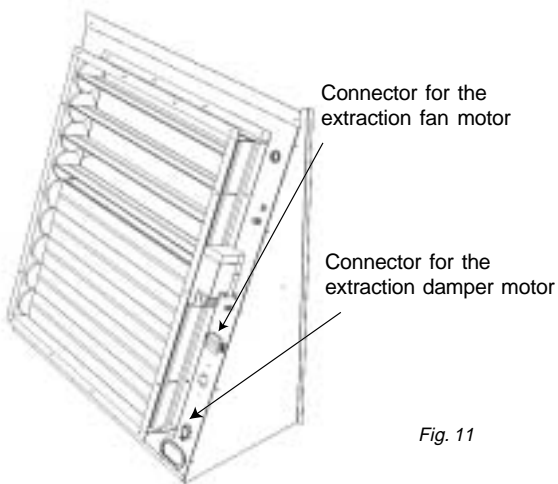


Fig. 11

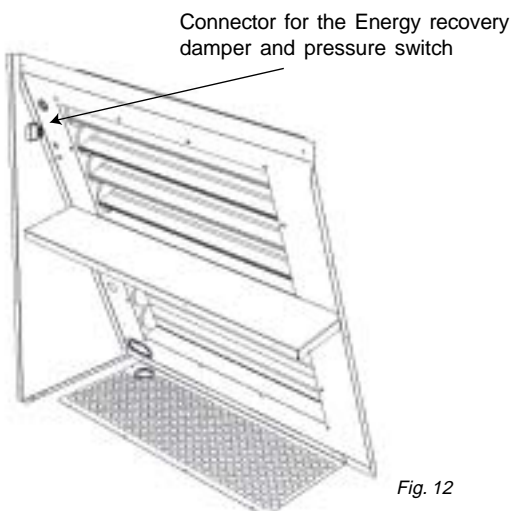


Fig. 12



STARTING THE UNIT

At this point the unit circuit breakers should be open

You will need a **DS50** maintenance controller or Climalook with appropriate Interface.



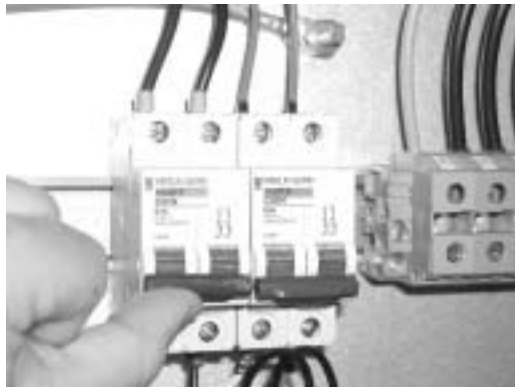
The jumpers are factory set and the configuration switches are adjusted depending on the option the type of unit.

Reset the DAD photo (If fitted)

Connecting the CLIMATIC displays.



Close the 24V Control Circuit breakers.



Check and adjust the control settings.

Refer to the control section in this manual to adjust the different parameters

The CLIMATIC 50 starts after 30s



POWERING THE UNIT

- Power up the unit by closing the isolator switch (if fitted).
- At this point the blower should start unless the climatic does not energise the contactor. In this particular case the blower can be forced by bridging the port NO7 and C7 on connector J14 on the Climatic. Once the fan is running check the rotation direction. Refer to the rotation arrow located on the fan.
- The fans and compressors direction of rotation is checked during the end of line test. They should therefore all turn in either the right or wrong direction.

NOTE : A compressor rotating in the wrong direction will fail.

- If the fan turns in the wrong direction (the right direction is shown on figure n° 13), disconnect the main power supply to the machine at the building's mains switch, reverse two phases and repeat the above procedure.
- Close all circuit breakers and power up the unit, remove the bridge on connector J14 if fitted.
- If now only one of the components rotates in the wrong direction, disconnect the power supply at the machine's isolator switch (if fitted) and reverse two of the component's phases on the terminal within the electrical panel.
- Check the current drawn against the rated values, in particular on the supply fan (ref. page 53).
- If the readings on the fan are outside the specified limits, this usually indicates excessive air flow which will affect the life expectancy and the thermodynamic performances of the unit. This will also increase the risks of water ingress into the unit. Refer to the "Air Flow Balancing" section to correct the problem.

At this point attach the manometers to the refrigerant circuit.

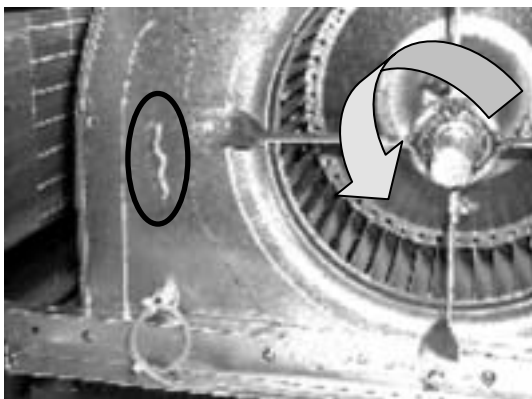
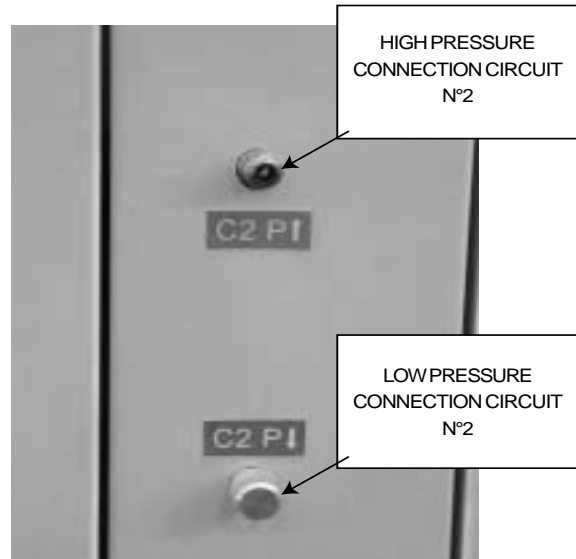


Fig. 13

RUN TEST

Start unit in cooling mode



Thermodynamic readings using manometers and prevailing environmental conditions

No rated values are given here. These depend on the climatic conditions both outside and inside the building during operation. However, an experienced refrigeration engineer will be able to detect any abnormal machine operation.

Safety test

- Check Air pressure switch (if fitted) "Dirty filter" detection test : vary the set-point value (**setpoint 3413 on DS50**) in respect to the air pressure value. Observe the response of the CLIMATIC™.
- Same procedure for detecting "Missing Filter" (**setpoint 3412**) or "Air Flow Detection" (**setpoint 3411**).
- Check the smoke detection function (if fitted).
- Check the Firestat by pressing the test button(if fitted).
- Disconnect the circuit breakers of the capacitor fans and check the high pressure cut-out points on different refrigerant circuits.

Reverse cycle test

This test is designed to check the good operation of the 4-way reversing valves on heat pump reversible systems. Start the reverse cycle by adjusting the cold or hot temperature threshold data according to the indoor and outdoor conditions at the time of test (**setpoint 3320**).



BELT TENSION

On delivery, the drive belts are new and correctly tensioned. After the first 50 operating hours check and adjust the tension. 80% of the total elongation of belts is generally produced during the first 15 hours of operation.

Before adjusting the tension, make sure that the pulleys are correctly aligned.

To tension the belt, set the height of motor support plate by moving the plate adjustment screws.

The recommended deflection is 16 mm per metre from centre to centre.

Check that according to the diagram below (figure 14), the following ratio remains the same.

$$\frac{A(\text{mm})}{P(\text{mm})} = 20$$



The belts should always be replaced when :

- the disk is set to maximum,
- the belt rubber is worn or the wire is visible.

Replacement belts must have the same rated size as the ones they are replacing. If a transmission system has several belts, they must all be from the same manufacturing batch (compare serial numbers).

NOTE :

An under-tensioned belt will slip, heat and wear prematurely. On the other hand, if a belt is over-tensioned, the pressure on the bearings will cause them to over-heat and wear prematurely. Incorrect alignment will also cause the belts to wear prematurely.

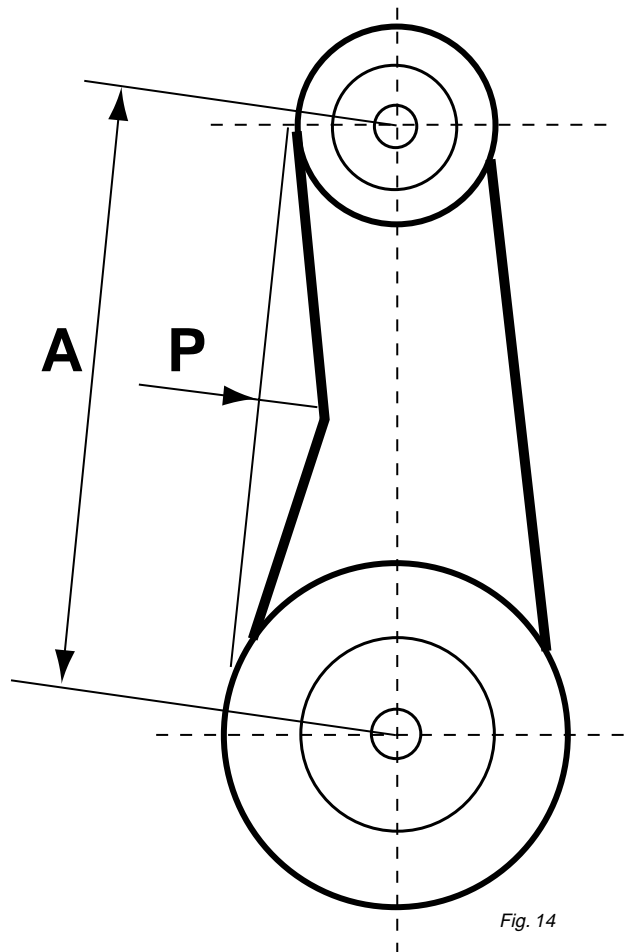


Fig. 14



MOUNTING AND ADJUSTING PULLEYS

Fan pulley removal

Remove the 2 screws and put one of them in the extraction threaded screw.

Screw in fully. The hub and the pulley will separate from each other.



Remove the hub and the pulley by hand without damaging the machine.

Fan pulley installation

Clean and de-grease the shaft, hub and conical bore of the pulley. Lubricate the screws and install the hub and pulley. Position the screws without turning them.

Place the assembly on the shaft and screw in the screws alternatively and evenly. Using a mallet or a hammer with a wooden wedge, tap on the face of the hub to keep the assembly in place. Torque the screws to 30 Nm.

Take the pulley in both hands and shake it vigorously to make sure everything is in place.

Fill the holes with grease for protection.

NOTE : *During installation, the key should never protrude out of its groove.*

After 50 operating hours, check that the screws are still in place.



MOTOR PULLEY INSTALLATION AND REMOVAL

The pulley is held in position by the key and a screw located in the groove. After unlocking, removing this screw by pulling against the shaft spindle (if necessary, use a mallet and tap uniformly on the hub to remove it).

To assemble, proceed in the reverse order after having cleaned and de-greased the motor shaft and the pulley bore.

PULLEYS ALIGNMENT

After adjusting one or both of the pulleys, check the transmission alignment using a ruler placed on the inner face of the two pulleys.

NOTE: The warranty may be affected if any major modification is made to the transmission without obtaining our agreement beforehand.





The actual resistance of ductwork systems is not always identical to the calculated theoretical values. To rectify this, it may be necessary to modify the pulley and belt setting. To this effect, the motors are fitted with variable pulleys.

AIRFLOW BALANCING

Measure the absorbed amps

If the absorbed amps are greater than the rated values, the ventilation system has a lower pressure drop than anticipated. Reduce the flow by reducing the rpm. If the system resistance is significantly lower than design, there is a risk that the motor will overheat resulting in an emergency cut out.

If the absorbed amps are lower than the rated values, your system has a higher pressure drop than anticipated. Increase the flow by increasing the rpm. At the same time you will increase the absorbed power which may result in having to increase the motor size.

To carry out the adjustment and to avoid a time-consuming re-start, stop the machine and if necessary lock the main switch.

First unscrew the 4 Allen screw(s) on the pulley (see figure 15).

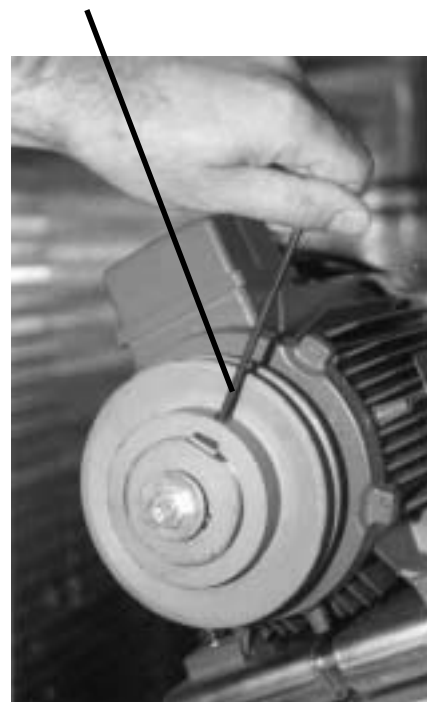
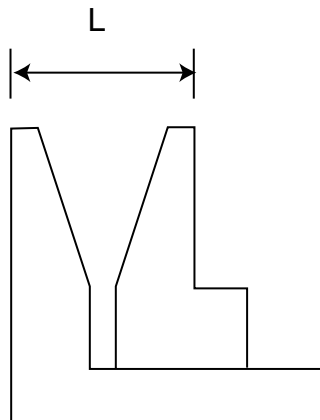
Pulley type	Pulley External Diameter	Min Dia / Min Dist	Max Dia / Max Dist	NB of turns from fully closed to fully open	Actual diameter (DM) or distance between faces for a given number of turns from fully closed with SPA belt in (mm)										
					0,5	1	1,5	2	2,5	3	3,5	4	4,5	5,0	5,5
8450 / D8450	120	95	116	5	113,9	111,8	109,7	107,6	105,5	103,4	101,3	99,2	97,1	95,0	-
		20,2	28	5	21,0	21,8	22,5	23,3	24,1	24,9	25,7	26,4	27,2	28,0	-
8550 / D8550	136	110	131	5	128,9	126,8	124,7	122,6	120,5	118,4	116,3	114,2	112,1	110,0	-
		20,6	31,2	5	21,6	22,7	23,8	24,8	25,9	26,9	28,0	29,1	30,1	31,2	-

Table 1

The easiest way to determine the fan rotation speed is to use a tachometer. If not available the fan rpm can be estimated using the following two methods.

ALLEN WRENCH 4

1st Method with the pulley secured in place:



Measure the distance between the two outside faces of the pulley.

Using table 1 the motor pulley actual diameter can be estimated

Fig. 15

2nd method when adjusting the pulley :

- Close the pulley fully and count the number of turns from fully closed position. Using table 1 determine the motor pulley actual diameter.
- Record the fix fan pulley diameter.(DF)
- Determine the fan speed using the following formula:

$$\text{rpm FAN} = \text{rpm MOTOR} \times D_M / D_F$$

Where : rpm MOTOR :from the motor plate or table 2

D_M : from table 1

D_F : from machine

Once the pulleys are adjusted and the belt checked and tensioned, start the fan motor and record the Amps and Voltage between the phases :

Using the measured data and table 2

- Theoretical mechanical power at the fan shaft :

$$P_{\text{meca fan}} = P_{\text{meca Motor}} \times \eta_{\text{Transmission}}$$

$$P_{\text{meca fan}} = P_{\text{elec}} \times \eta_{\text{meca motor}} \times \eta_{\text{Transmission}}$$

$$P_{\text{meca fan}} = V \times I \times \sqrt{3} \times \cos\phi \times \eta_{\text{meca motor}} \times \eta_{\text{Transmission}}$$

This formula can be approximated in this way

$$P_{\text{meca fan}} = V \times I \times 1.73 \times 0.85 \times 0.76 \times 0.9$$

With the fan "rpm" and the mechanical power at the fan shaft an operating point and the supplied airflow can be estimated using the fan curves.

Table - 3 - Accessories pressure drops

SIZE	Airflow	Economiser (Pa)	EU4 Filters (Pa)	F7 Filters (Pa)	Hot Water Coil (Pa)	Electric heater (Pa)			roofcurb (Pa)	Multi-directional (Pa)	Heat Recovery module fresh air	Heat Recovery module (1)
						S	M	H				
020	2900	18	0	39	31	37	38	40	16	23	108	69
	3600	28	6	66	46	55	57	59	24	35	161	105
	4300	39	12	98	61	76	79	81	35	50	226	151
025	3600	28	6	66	46	55	57	59	24	35	161	105
	4500	43	14	108	66	83	85	88	38	55	247	165
	5400	62	25	160	89	117	120	123	55	79	352	238
030	4300	17	1	43	40	42	45	47	19	18	113	68
	5400	26	8	74	59	63	66	69	29	28	172	123
	6500	38	15	111	80	89	93	96	42	41	244	178
035	5000	22	5	62	51	55	58	61	25	24	149	105
	6300	36	14	104	76	84	88	91	39	38	230	167
	7600	52	24	155	105	119	123	127	58	56	331	243
040	5800	18	0	39	46	50	53	57	16	23	92	63
	7200	28	6	66	67	74	78	82	25	35	136	98
	8600	40	12	98	91	101	106	111	36	51	190	139
045	6500	23	3	52	56	61	65	69	20	29	113	80
	8100	36	10	86	82	91	95	100	32	45	170	124
	9700	51	18	127	113	126	131	137	46	64	239	177
050	7200	28	6	66	67	74	78	82	25	35	136	98
	9000	44	14	108	99	110	115	120	39	55	207	153
	10800	63	25	160	136	154	160	166	56	80	293	220
060	8600	16	3	50	58	42	47	52	19	12	129	91
	10800	25	9	84	86	61	67	73	29	18	198	143
	13000	37	18	125	119	82	89	97	43	26	282	207
070	9 950	22	7	70	75	54	59	65	25	16	171	123
	12600	35	16	117	113	78	85	92	40	25	266	195
	14000	56	31	194	172	116	125	134	65	40	326	240

(1) to be added to extraction fan ESP

CHECKING AIRFLOW AND ESP

Using the fan curves on page 25, 26, 27, the airflow, the total pressure available (P_{TOT}) and the corresponding dynamic pressure (Pd) can now be estimated, for a specific operating point;

The next step consist in estimating the pressure losses across the unit.

This can be achieved using the "dirty filter pressure sensor" and the accessories pressure drop table:

Also the pressure drop due to the duct inlet into the rooftop unit can be taken as 20 to 30 Pa.

$$\Delta P_{INT} = \Delta P_{\text{filter}} + \text{coil} + P_{\text{Inlet}} + \Delta P_{\text{Options}}$$

using the results from above, the external static pressure (ESP) can then be estimated:

$$ESP = P_{TOT} - Pd - \Delta P_{INT}$$

Table 2

MotorSize	Nom. Speed	Cosφ	η meca motor
0.75 kW	1400 rpm	0.77	0.70
1.1kW	1429 rpm	0.84	0.77
1.5kW	1428 rpm	0.82	0.79
2.2kW	1436 rpm	0.81	0.81
3.0kW	1437 rpm	0.81	0.83
4kW	1438 rpm	0.83	0.84
5.5kW	1447 rpm	0.83	0.86
7.5kW	1451 rpm	0.82	0.87



EXAMPLE

The unit used for this example is a BGK035ND1M with Economiser and Electric Heater type H
 It is fitted with a fan which curve is shown on page 57 and a 2.2kW motor.

- Motor rpm: 1430 rpm
- cos φ = 0.81
- Voltage = 400V
- Current = 3.77A (measured)

$$P_{\text{mech fan}} = V \times I \times \sqrt{3} \times \cos\phi \times \eta_{\text{mech motor}} \times \eta_{\text{Transmission}}$$

$$= 400 \times 3.77 \times \sqrt{3} \times 0.81 \times 0.76 \times 0.9 = \underline{1.45\text{kW}}$$

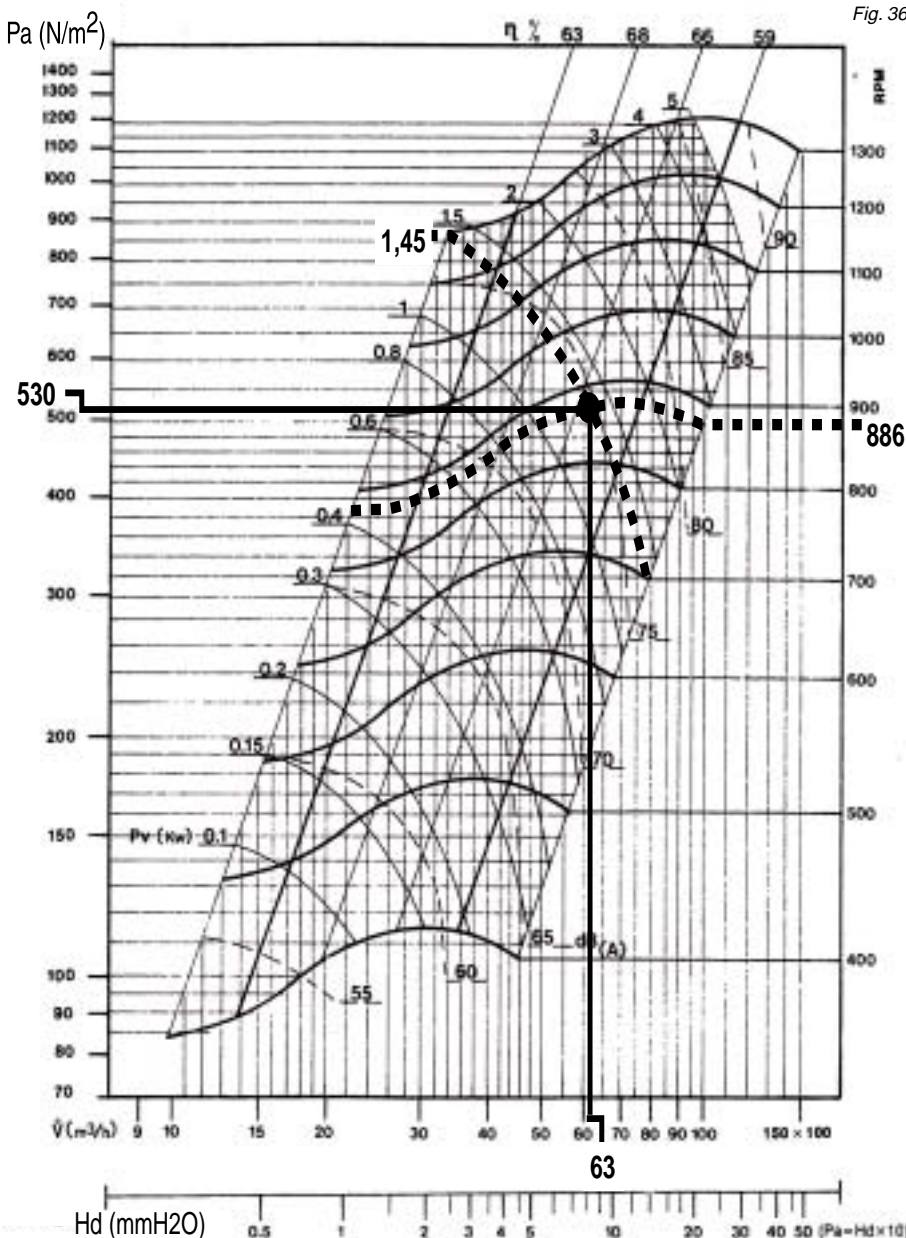
The unit is also fitted with a transmission kit 7

- Fixed Fan pulley : 160mm
- Motor adjustable pulley type "8450" opened 4 turns from fully closed or measured distance between pulley end plates is 26.4mm: from table 1 it can be determined that the motor pulley has a diameter of **99.2mm**

$$\text{rpm}_{\text{FAN}} = \text{rpm}_{\text{MOTOR}} \times D_M / D_F = 1430 \times 99.2 / 160 = \underline{886 \text{ rpm}}$$

Using the fan curve below the operating point can be located.

It can be determined that the fan is providing approximately **6300 m3/h** with a total pressure $P_{\text{TOT}} = \underline{530 \text{ Pa}}$



The pressure losses in the unit are the sum of all pressure drops across the different parts of a unit :

- Coil and filter (measured) = 104 Pa
- Inlet into the unit = 30 Pa
- Options = 23 Pa for economiser and 91 Pa for electric heater H

$$\Delta P = 104 + 30 + 23 + 91 = \underline{248 \text{ Pa}}$$

The dynamic pressure at 6300m3/h is given at the bottom of the fan curve P 57

$$P_d = \underline{81 \text{ Pa}}$$

The external static pressure available is therefore

$$\text{ESP} = P_{\text{TOT}} - P_d - \Delta P_{\text{INT}}$$

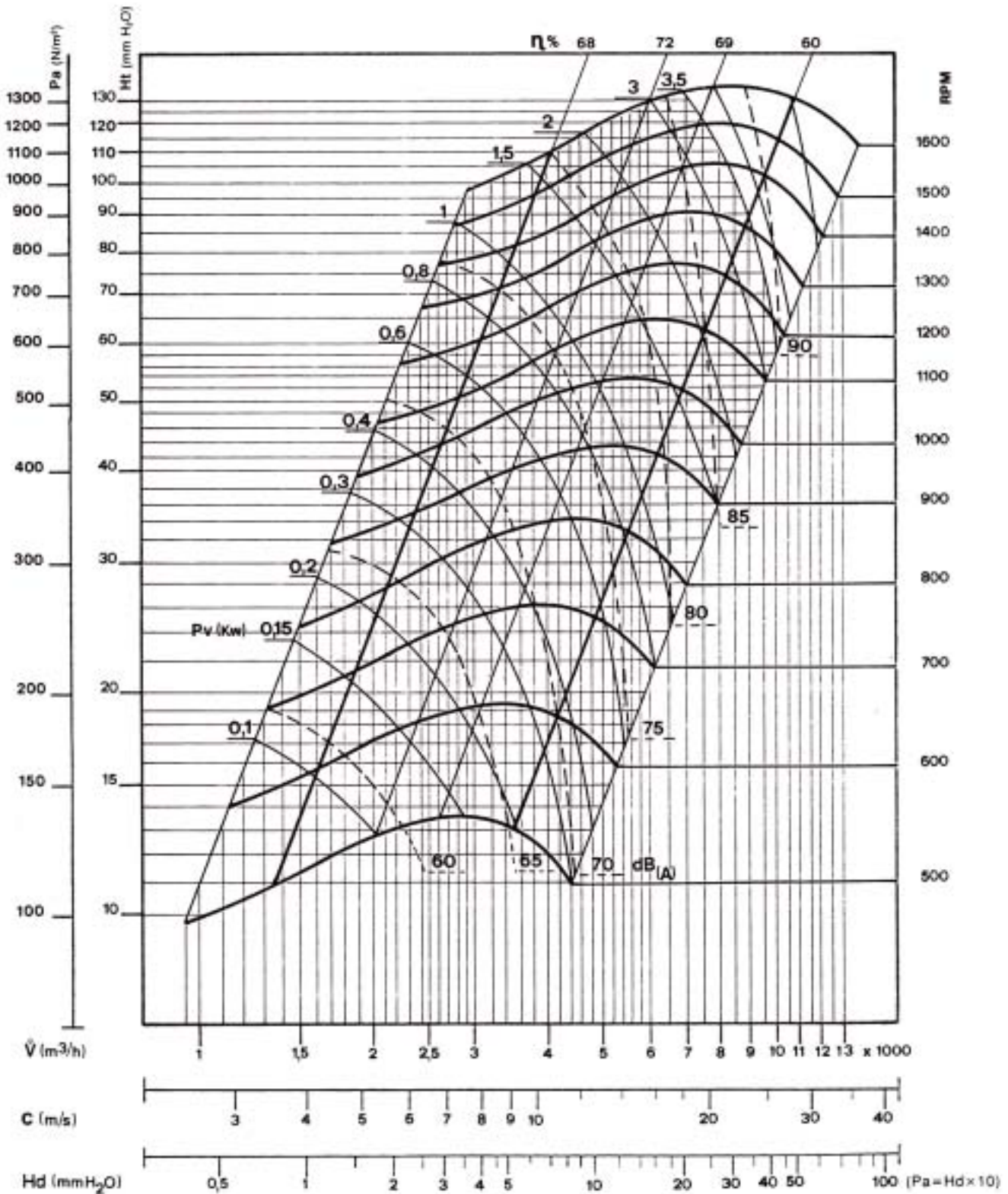
$$= 530 - 81 - 248 = \underline{201 \text{ Pa}}$$



At12-9s

020-025 Rooftop

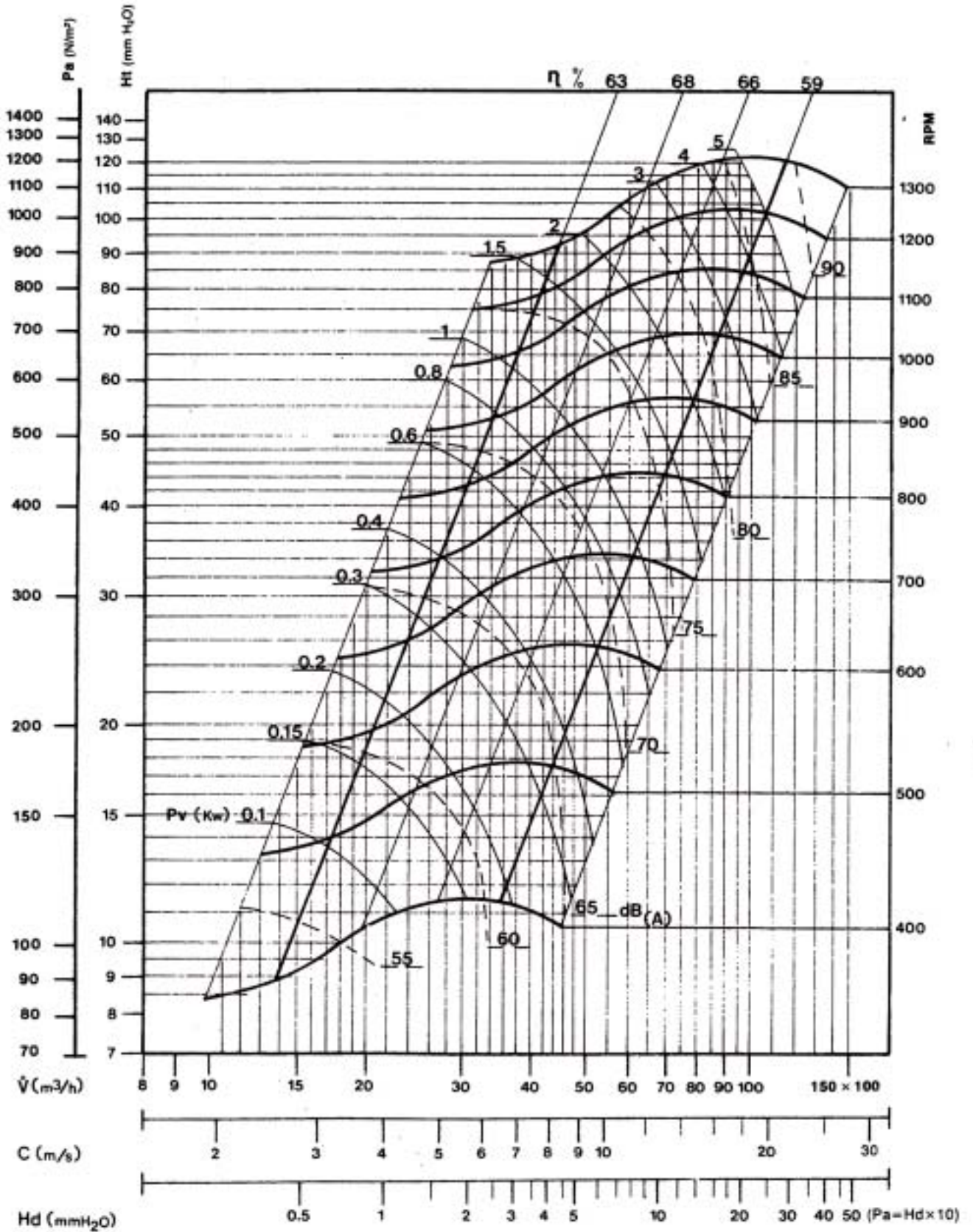
Fig. 37





At15-11s

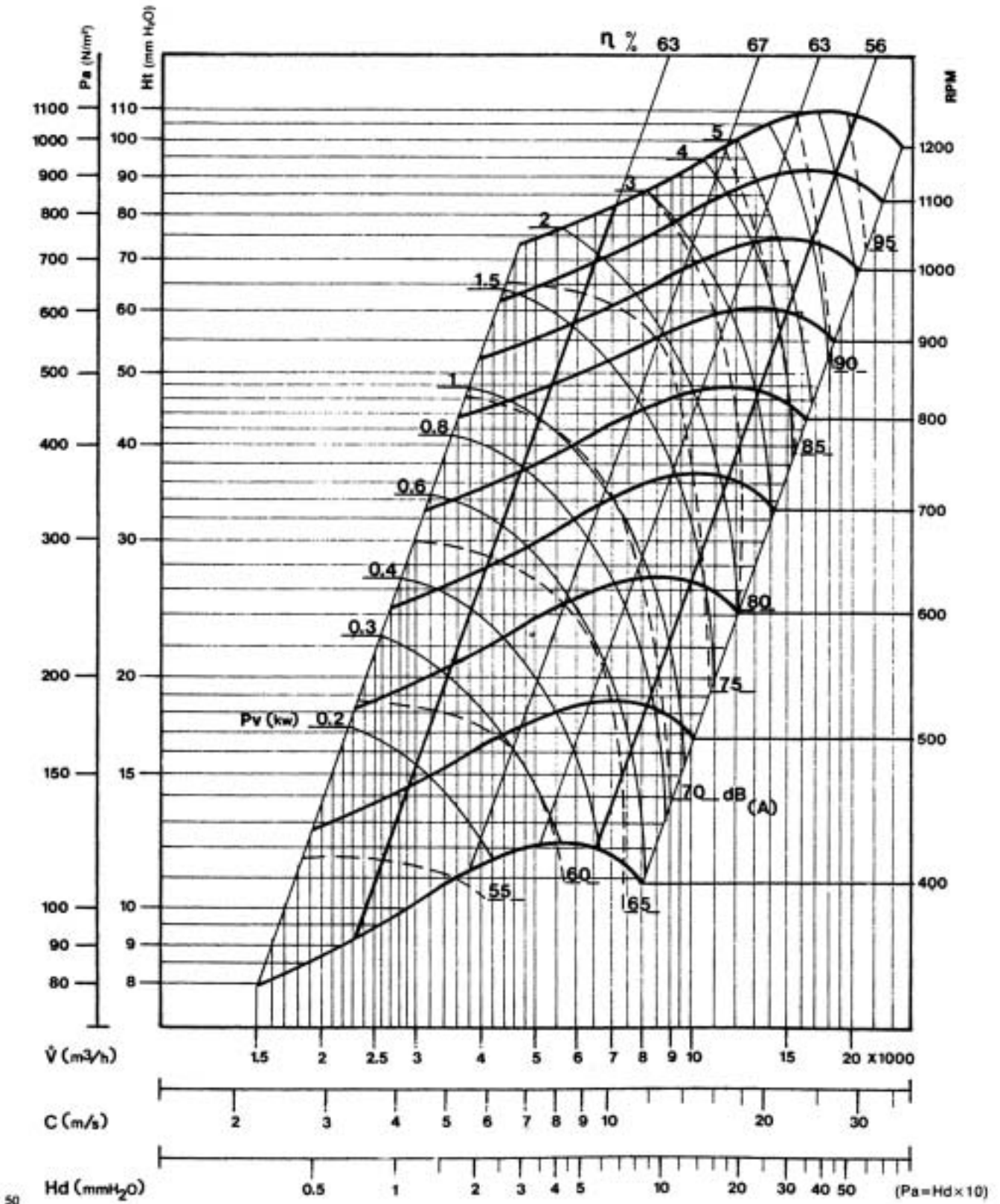
030-035 Rooftop





At15-15s

040-045-050 Rooftop

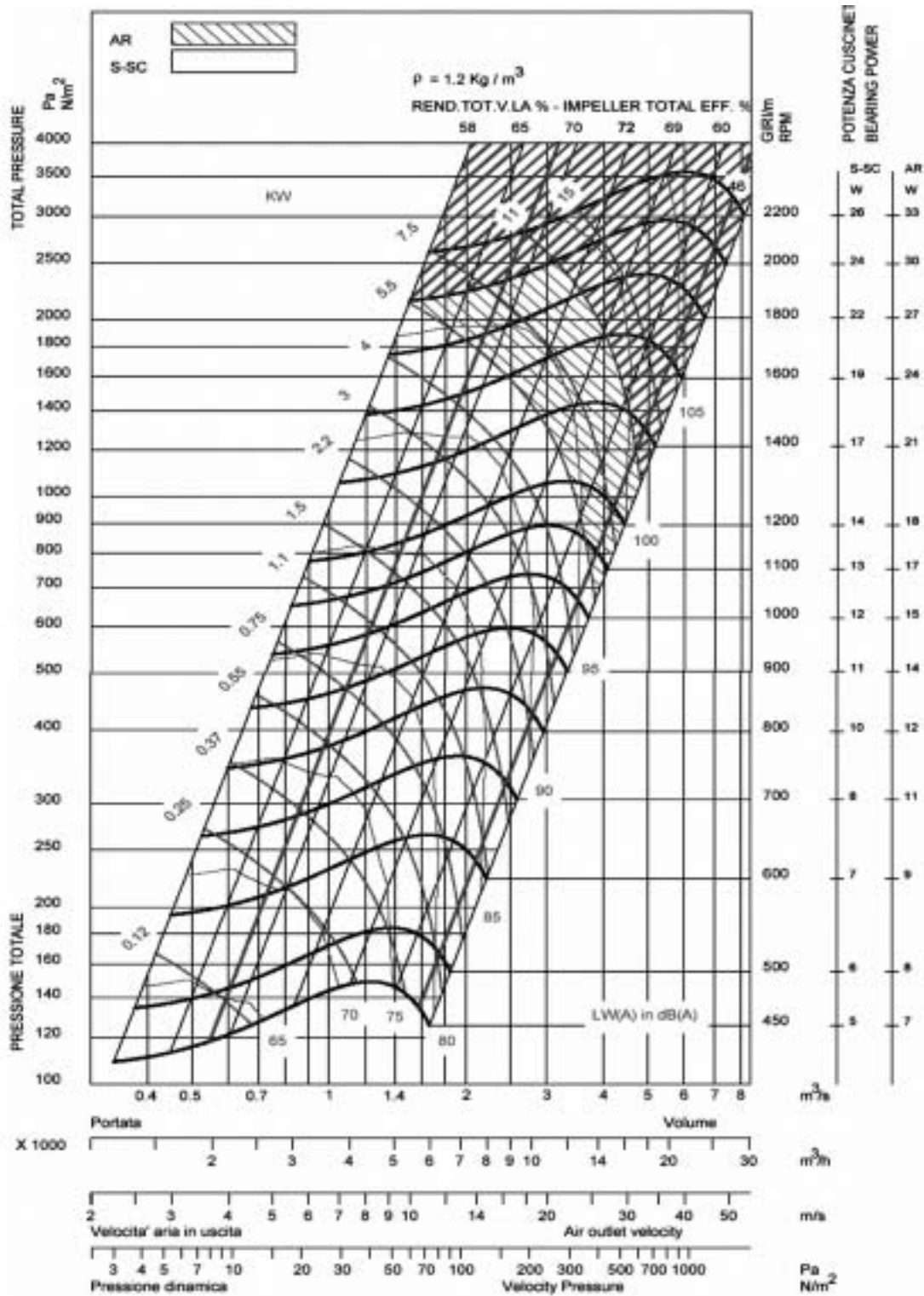




At15-11G2L(*)

060-070

**Rooftop &
EXHAUST ROOFCURB**



(*) The performances of twin fan units can be calculated starting from the corresponding operation point for a single fan (see the figure behind) by applying the formulas below.

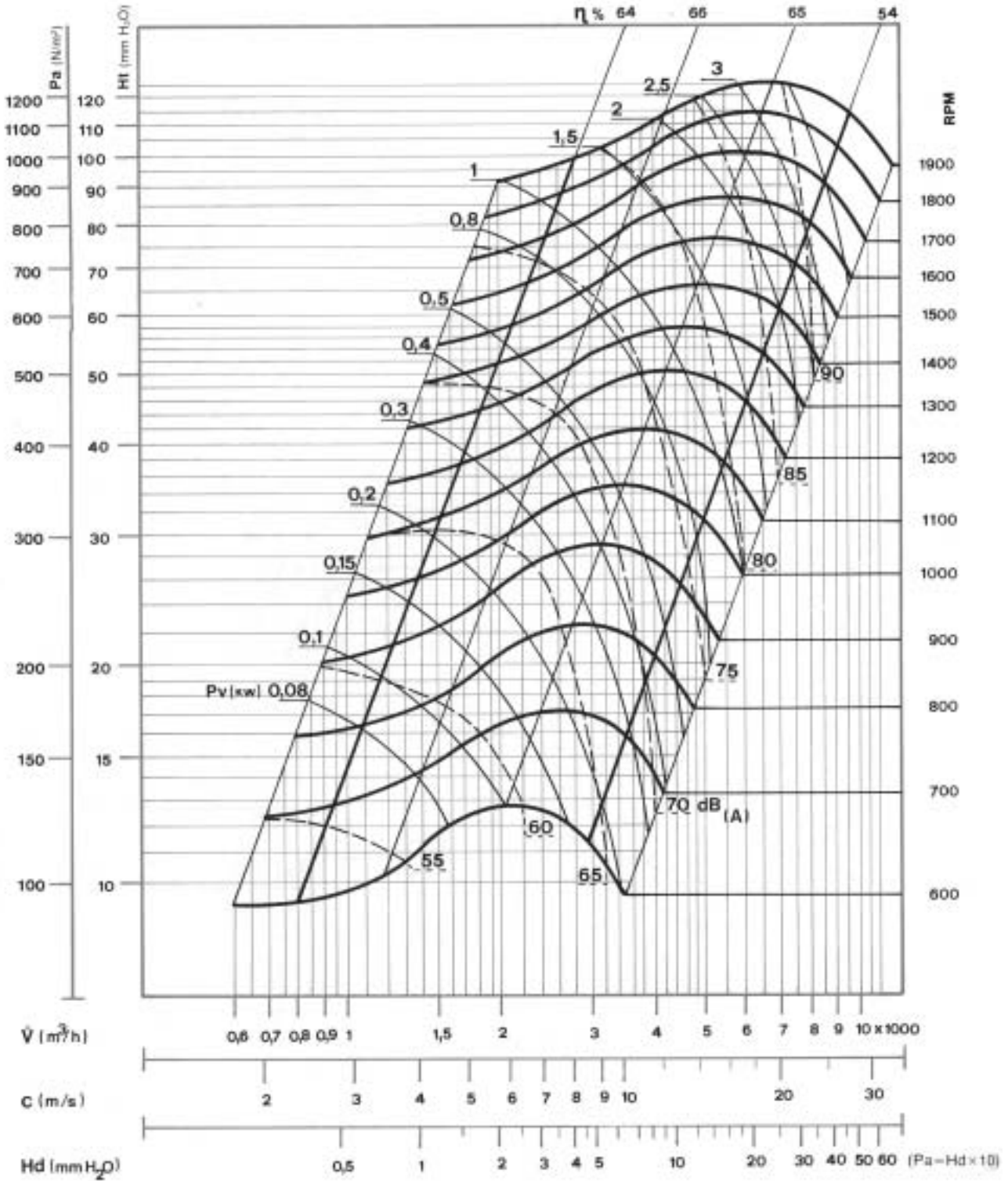
- pressure : $PT_{\text{win}} = P \times 1$
- volume flow rate : $Q_b = Q \times 2$
- impeller power: $W_b = W \times 2,15$
- fan speed : $N_b = N \times 1,05$
- Lws : $L_{\text{wsb}} = L_{\text{ws}} + 3 \text{ dB}$



At10-10S

020-025

EXHAUST ROOFCURB

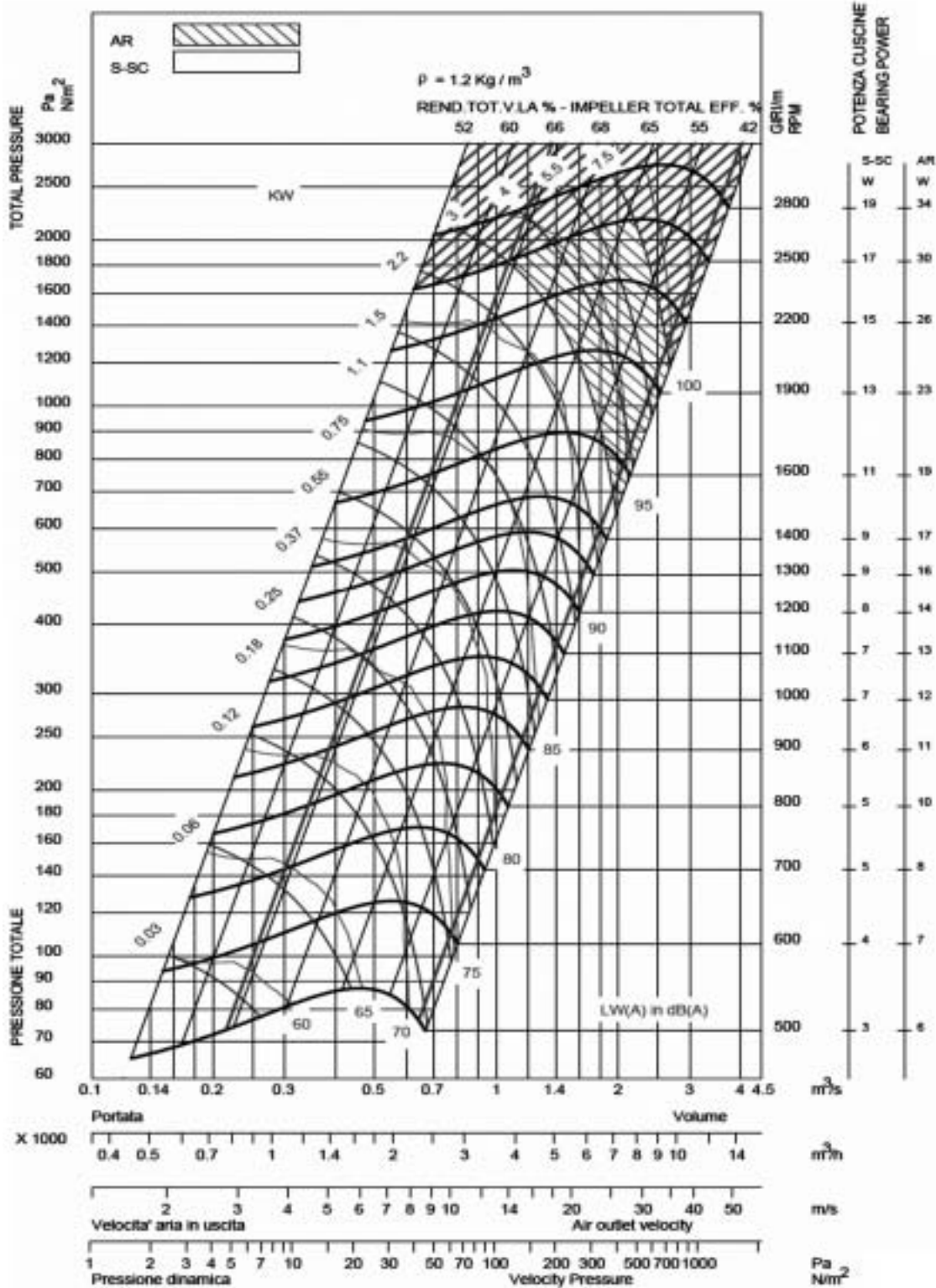




At10-8G2L(*)

O30-O35

EXHAUST ROOFCURB

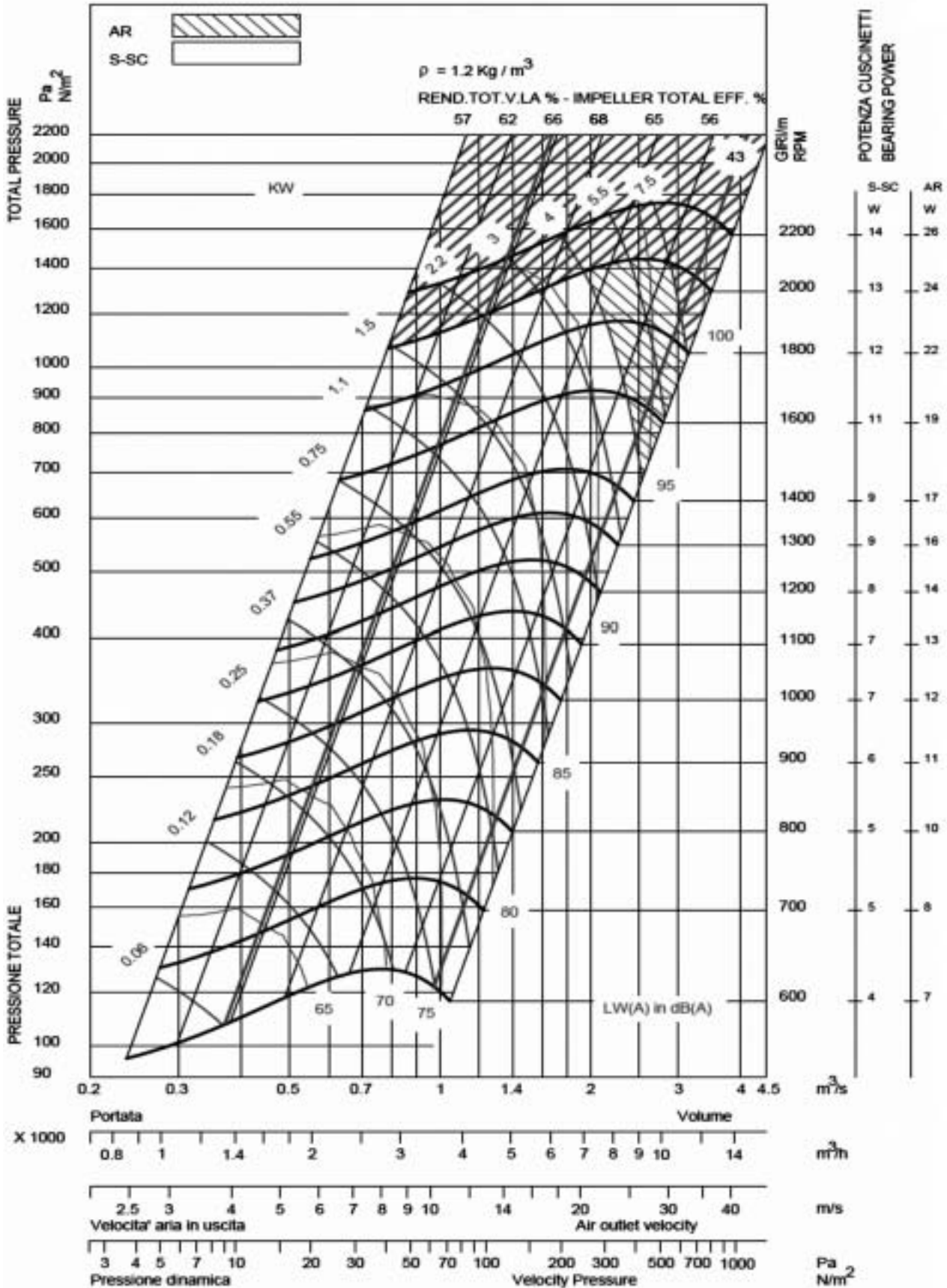


(*) The performances of twin fan units can be calculated starting from the corresponding operation point for a single fan (see the figure behind) by applying the formulas below.

- pressure : $PTwin = P \times 1$
- volume flow rate : $Qb = Q \times 2$
- impeller power: $Wb = W \times 2,15$
- fan speed : $Nb = N \times 1,05$
- $Lws : Lwsb = Lws + 3 \text{ dB}$



At10-10G2L **040-045-050** EXHAUST ROOFCURB





FILTER REPLACEMENT

After opening the filter access panel, lift the filter retaining log.

The filters can then be removed and replaced easily by sliding the dirty filters out and clean ones in.



The CLIMATIC controller can monitor the pressure drop across the filter (If option fitted)

The following set points can be adjusted depending on the installation.

"Airflow" in page 3411 = 25Pa by default

"No filter" in page 3412 = 50Pa by default

"Dirty Filter" in page 3413 = 250Pa by default

The actual pressure drop measured across the coil can be read on the Climatic Display DS50 in menu 2131.

The following faults may be identified

-Fault code 0001 AIRFLOW FAILURE, if measured ΔP across the filter and coil is below the value set in page 3411

-Fault code 0004 DIRTY FILTERS, if measured ΔP across the filter and coil is above the value set in page 3413

-Fault code 0005 MISSING FILTERS, if measured ΔP across the filter and coil is below the value set in page 3412

AIR SOCK CONTROL

FANSTART Operation

The use of air socks for space conditioning allows high air volumes to be distributed at low velocity and is becoming a common feature in many applications. To accommodate this trend, Air-sock control is offered which allows the air socks to be progressively filled with air on start up. BALTIC has been enhanced with an electronic device to soft start the fan. It takes up to 1 minute to go from 0% of air to full air flow.

This time can be divided in several stages:

- The aim of this first voltage input is to overcome the resistance of the transmission (Pulleys and belts): 0.5s and up to 100 rpm
- The second stage is to inflate the air sock: 5 to 30s. and 600 to 900 rpm

Finally the air sock is gradually pressurised during the last 5 to 30 second. The motor reaches nominal speed and the controller is bypassed.

START-UP

Phase rotation check

If the phase rotation is incorrect the FANSTART Control will display a fault (Red LED). Two of the phases must then be inverted and start again the start up cycle.

The FANSTART control can also display a fixed red LED in two cases:

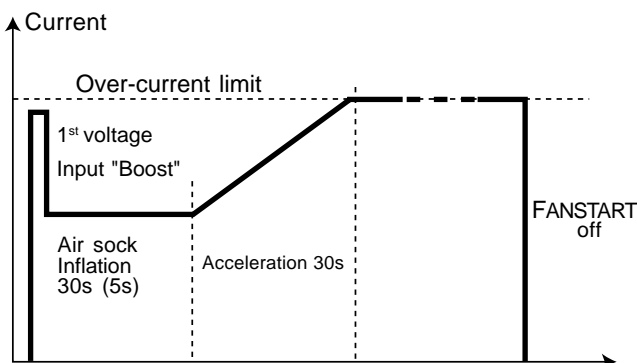


- Motor absent (6s)
- A phase is missing (6s)

Any adjustment of the FANSTART has to be done power stopped.

This time is divided in several stages:

- The aim of this first voltage input is to "take off belts from the pulleys": 0.5s ("BOOST")
- The second stage is to inflate the air sock: during 30s with approximately half nominal speed
- Finally the air sock is gradually pressurised during the last 30s. The motor reaches nominal speed and the controller is shunted, the motor being fed on line by the tension of the electrical network.



The motor speed control is achieved through a variation of the supply voltage of each phase at constant frequency.

The thermal overload limit on the motor imposes a current limitation during the acceleration stage. Hence if the selected slope is too steep, the predefined current limit can be reached: flashing red LED, adjust the potentiometer P3 and the controller will automatically reduce the voltage set-point accordingly. Then once the current is back under the high current limit it carries on with the start up cycle.

The green LED switches off itself at the end of the FANSTART operation.

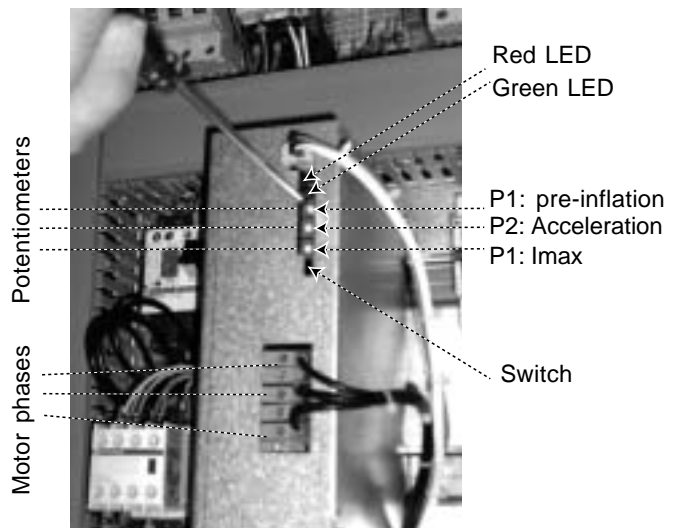


Fig. 16



Safety

Excessive "slow down" limit

In the engine's acceleration phase, the red led flashing; the motor slows down in an excessive way and stops after 80s at fault (led red fixed).

Current protection of the Thyristor

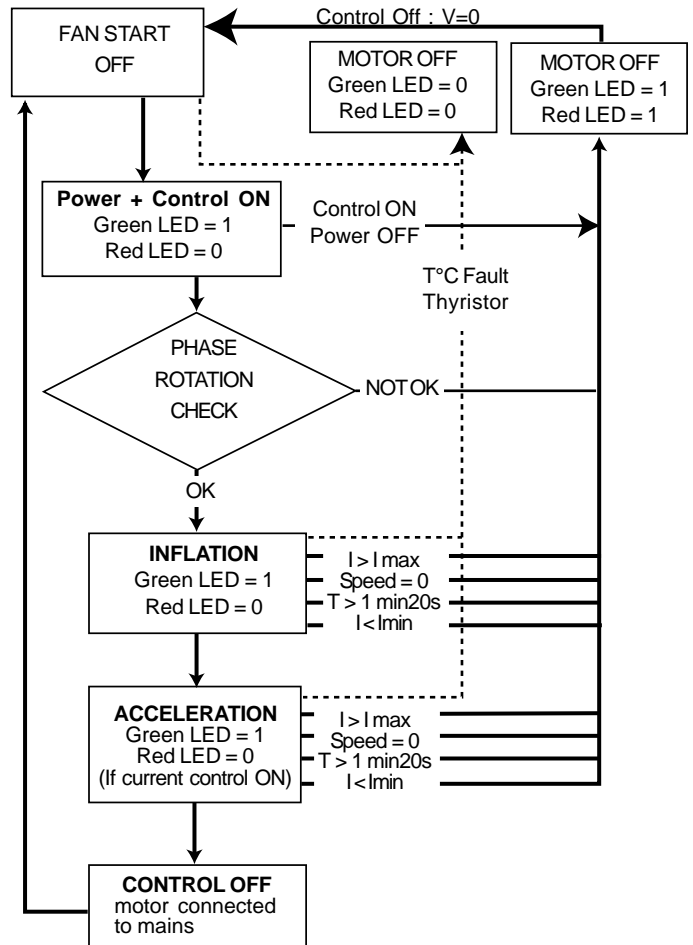
The FANSTART will display a fault (red LED) if the current exceeds the thyristor current limits:

- 125A during 0.4s
- 87.4A during 2s
- 75A during 6s.
- 62.5A during 20s.

Start up sequence too long

If at the end of 80s the fanstart did not commutate the motor on the electrical network, the motor stops: fixed red led.

Nota : In the case of a resistant air sock, one can reduce the phase of pre-inflation to 5 seconds (thanks to the switch, fig. 16)



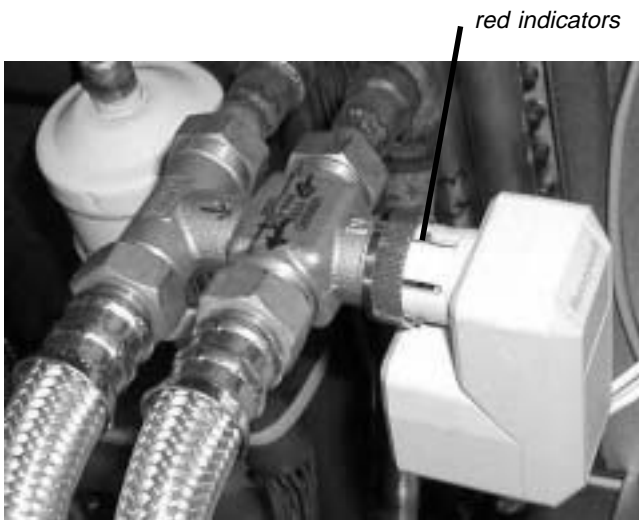


HYDRAULIC CONNECTIONS

The hot water coil is fitted with a three way proportional valve and two isolating shut off valves. Two spanners must be used to tighten the connections. One spanner must maintain the valve body when connecting the pipe-work to the main. Failure to do so may damage the pipes joints and invalidates the warranty.

Filling up and starting the system

- Adjust the control for Heating by reducing the simulated ambient temperature down to 10°C
- Check that the red indicators located under the valve actuator are moving correctly with the signal.



- Fill the hydraulic system and bleed the coil using the air vents. Check incoming hot water.
- Check the various connection for possible leaks

FREEZE PROTECTION

- 1) Glycol for freeze protection.

Check the hydraulic system contains Glycol for protection against freezing.

GLYCOL IS THE ONLY EFFECTIVE PROTECTION AGAINST FREEZING

The antifreeze must protect the unit and avoid icing under winter conditions.

WARNING: Mono-ethylene glycol based fluids may produce corrosive agents when mixed with air.

- 2) Drain the installation.

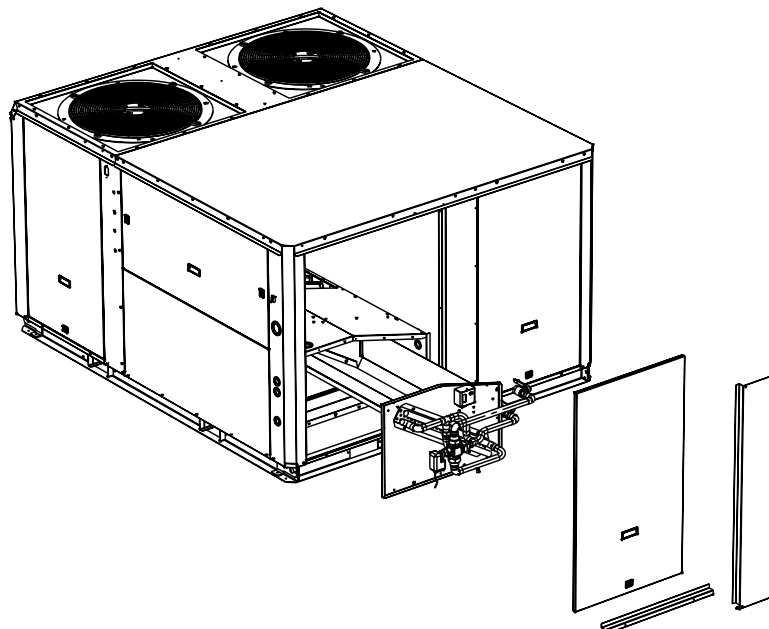
You must ensure that the manual or automatic air bleeders have been installed on all high points in the system. In order to drain the system check that all the drain cocks have been installed on all low points of the system.

HEATING HOT WATER COILS FROZEN DUE TO LOW AMBIENT CONDITIONS ARE NOT COVERED BY THE WARRANTY.

ELECTROLYTIC CORROSION

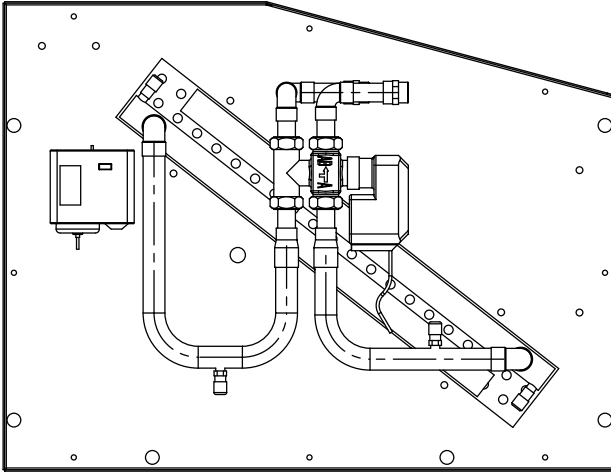
Attention is drawn to the corrosion problems resulting from electrolytic reaction created by unbalanced earth connections.

ANY COIL DAMMAGED BY ELECTROLYTIC CORROSION IS NOT COVERED BY THE WARRANTY

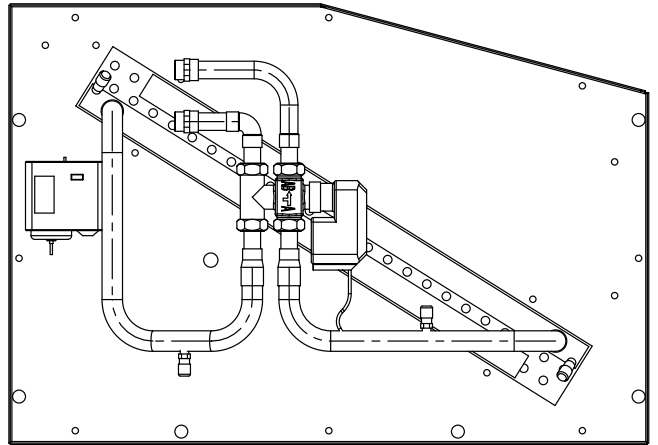




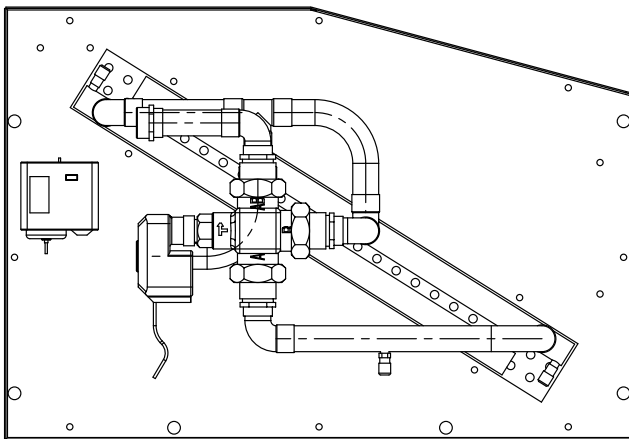
Connection HWC B Box



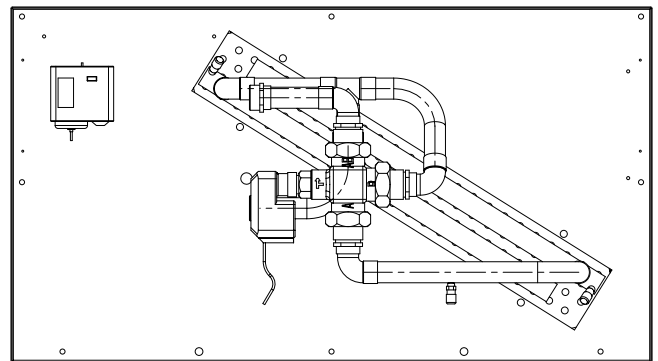
Connection HWC C Box



Connection HWC D Box



Connection HWC E Box



Pipe internal diameters (DN)

	B020	B025	B030	B035	B040	B045	B050	B060	B070
H	20	20	20	20	25	25	25	25	25

MAXIMUM WORKING PRESSURE: 8bar
MAXIMUM WORKING TEMPERATURE: 110°C



GENERAL INFORMATION

The Baltic electric heaters are stand alone options which are fitted in the heating section of the unit. As for the hot water coil or the gas burner this option slides into the heating compartment located under the supply fan.

In order to reduce the pressure drops the airflow is ducted around the shielded resistances. The resistances are made smooth stainless steel tubes with a capacity of 6W/cm².

It is protected as standard, against overheat via a high temperature overload protection set at 90°C and located less than 150mm after the heater itself.

There are three sizes available for each size of unit:

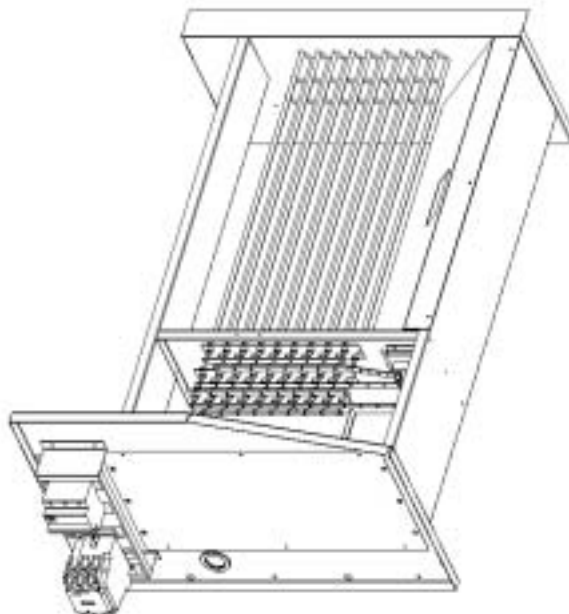
S: Standard heat

M: Medium heat

H: High heat

The standard and Medium heat electric heaters, are staged control with 50% or 100%. The high heat versions is controlled through a fully modulating triac.

Module size (kW)	380V		400V		415V	
	Current (A)	Cap (kW)	Current (A)	Cap (kW)	Current (A)	Cap (kW)
12	16,3	10,8	17,0	11,8	17,8	12,8
24	32,6	21,5	34,0	23,5	35,6	25,6
27	36,7	24,3	38,3	26,6	40,1	28,8
36	48,9	32,3	51,1	35,3	53,3	38,4
45	61,1	40,5	63,8	44,3	66,8	48,0
48	65,2	43,0	68,1	47,0	71,1	51,3
54	73,4	48,4	76,6	52,9	80,0	57,7





PRELIMINARY CHECKS BEFORE START-UP

NOTE:

ANY WORK ON THE GAS SYSTEM MUST BE CARRIED OUT BY QUALIFIED PERSONNEL.

THIS UNIT MUST BE INSTALLED IN ACCORDANCE WITH LOCAL SAFETY CODES AND REGULATIONS AND CAN ONLY BE USED IN WELL VENTILATED AREA.

PLEASE READ CAREFULLY THE MANUFACTURER'S INSTRUCTIONS BEFORE STARTING A UNIT.

BEFORE COMMISSIONING A UNIT WITH GAZ BURNER, IT IS MANDATORY TO ENSURE THAT THE GAZ DISTRIBUTION SYSTEM (type of gas, available pressure...) IS COMPATIBLE WITH THE ADJUSTMENT AND SETTINGS OF THE UNIT.

Check access and clearance around the unit

- Make sure one can move freely around the unit.
- A minimum one-meter clearance must be left in front of the burnt gas exhaust flue.
- Combustion air inlet and burnt gas exhaust(s) must NOT be obstructed in any way.

Supply Network Pipe Sizing

MALE THREADED CONNECTION FOR GAZ BURNER: 3/4"

Check that the gas supply line can provide the burners with the pressure and the gas flow rate necessary to provide the heating nominal output .

Male threaded connection for Gaz Burner: 3/4"

UNIT SIZE	20	25	30	35	40	45	50	60	70
SPOWER	1	1	1	1	1	1	1	1	1
HPOWER	1	1	1	1	1	1	1	2	2

GAS FLOW (for G20 at 20 mbar and 15°C) m³/h

UNIT SIZE	20	25	30	35	40	45	50	60	70
SPOWER	2	2	2	2	3	3	3	5,7	5,7
HPOWER	3	3	5	5	6	6	6	11,5	11,5

For modulating gas we have just H power for C, D & E-box
 - The gas supply to a Rooftop gas unit must be realized according to Sound Engineering Practice and the local safety codes and rules.

- In any case the diameter of pipe-work connected to each Rooftop must not be smaller than the diameter of the connection on the Rooftop unit.

- Make sure that a shut-off isolation valve has been installed before EACH Rooftop.

- Check the supply voltage to the exit of the power supply's transformer T3 of the burner: it must be between 220 and 240V.

STARTING UP THE GAS BURNER



Purge the pipe-work near the connection on the ignition control Valve for a few seconds.

- Check that the unit's treatment "Fan" blower is running.
- Set the control to "ON" This will priorities the gas burner.
- Increase the set temperature (room set point temperature) to a temperature higher than the actual room temperature.

Table 4 - Standard start-up Chronology

Time in seconds	1	2	3	4	5	6	7	8	9	10	11	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	398	399	400	401			
Operations																																				
Control operation sequence	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	
Extraction fan																																				
Smoke extraction fan "ON"																																				
30 to 45 seconds pre-Ventilation																																				
Fire-up spark electrode 4s																																				
Opening of the gas valve "High Heat"																																				
Flame propagation towards the ionisation probe																																				
If Ionisation within 5sec: Normal running																																				
Otherwise fault on gas ignition control block																																				
After 5 minutes, fault reported on the climatic controller																																				

If incorrect sequence refer to the fault analysis table to identify the problem.

**PRESSURE ADJUSTMENTS ON HONEYWELL
PRESSURE REGULATING VALVE TYPE VK 4105**

Pressure regulator adjustment with 300mbar gas supply:



Fig. 17

- The Burner must run in High Heat mode for this check.
- Place the tube of the "accurate" manometer on the **Inlet** pressure port (figure 17) of the Gas Regulating Valve after having loosened the screw by one turn.

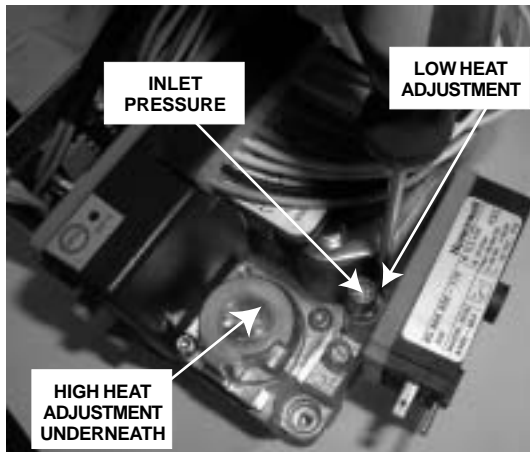


Fig. 18

- Check and adjust if necessary the valve **Inlet** pressure to 20.0 mbar (G20) or 25.0 mbar for Groningue (G25) or 37.0 mbar for propane (G31) after gas burner ignition.(figure 18)



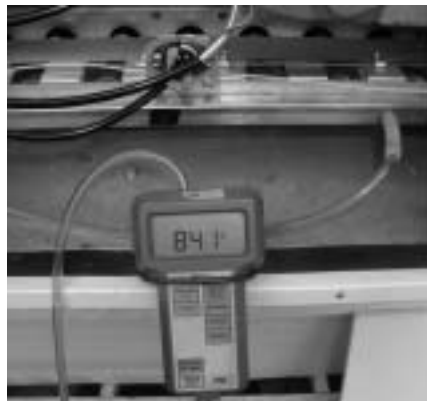
High Heat Injection Pressure Checks

- Place the tube of the "accurate" Manometer to the **OUT** port on the Gas injector support bar after having loosened the screw by one turn.



Fig. 19

- Check and adjust if necessary the valve **OUTLET** pressure to 8.4 mbar (G 20) / 12.3mbar for Groningue (G25) and 31.4 mbar for propane (G31)(figure 19).



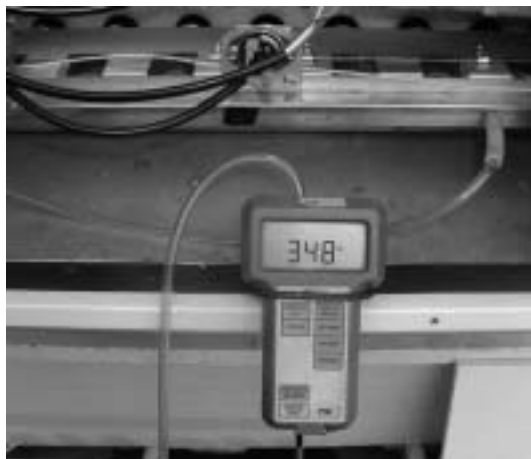


Low Heat Injection Pressure Checks

- Switch the control to Low Heat
- Check and adjust if necessary the **Outlet** pressure to 3.5 mbar (G20) and 5 mbar for Groningue(G25) or 14 mbar for propane (G31) (figure 20).



Fig. 20



- After the adjustment of the low heat, re-verify the high heat
- re-position the stoppers and close the pressure ports.

Pressure adjustments table for each type of gas

Category	Supply pressure	Low Heat injection	High Heat Injection
G20	20.0 +/-1	3.5 +/-0.1	8.4 +/-0.2
G25 (Groningue)	25.0 +/-1.3	5.0 +/-0.1	12.3 +/-0.2
G31 (GPL)	37.0 +/-1.9	14.0 +/-0.3	31.4 +/-0.6

Valve electrical control

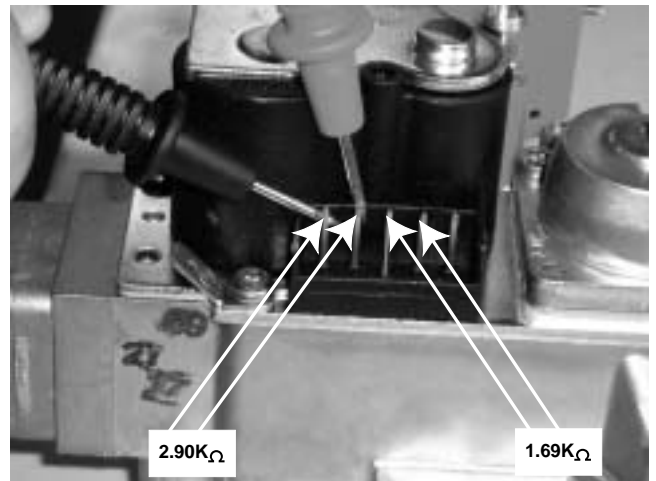


Fig. 21

- Check these values with an Ohmmeter.



BURNER SAFETY CHECKS

Smoke extractor pressure switch Test.

- With the gas burner running, disconnect the flexible tube fitted to the pressure tapping on the pressure switch (fig. 22).
- The Flame must disappear and the extraction fan must carry on running.
- However, NO fault will be displayed (Gas ignition control block or CLIMATIC).



Fig. 22

- After reconnecting the tube, the Burner will restart after a period of 30 to 45 seconds pre-ventilation.

Gas pressure switch test

- With the gas burner running, close the shut off valve located before the rooftop (fig. 23).



Fig. 23

- The burner stops completely.
- However, No fault light will be displayed on the Gas ignition control block.. After 6 Minutes, the CLIMATIC will display a fault.
- Reset the CLIMATIC.

Ionisation Probe test

- With the gas burner running, disconnect the terminal plug coming from the ionisation probe to the gas ignition control box.

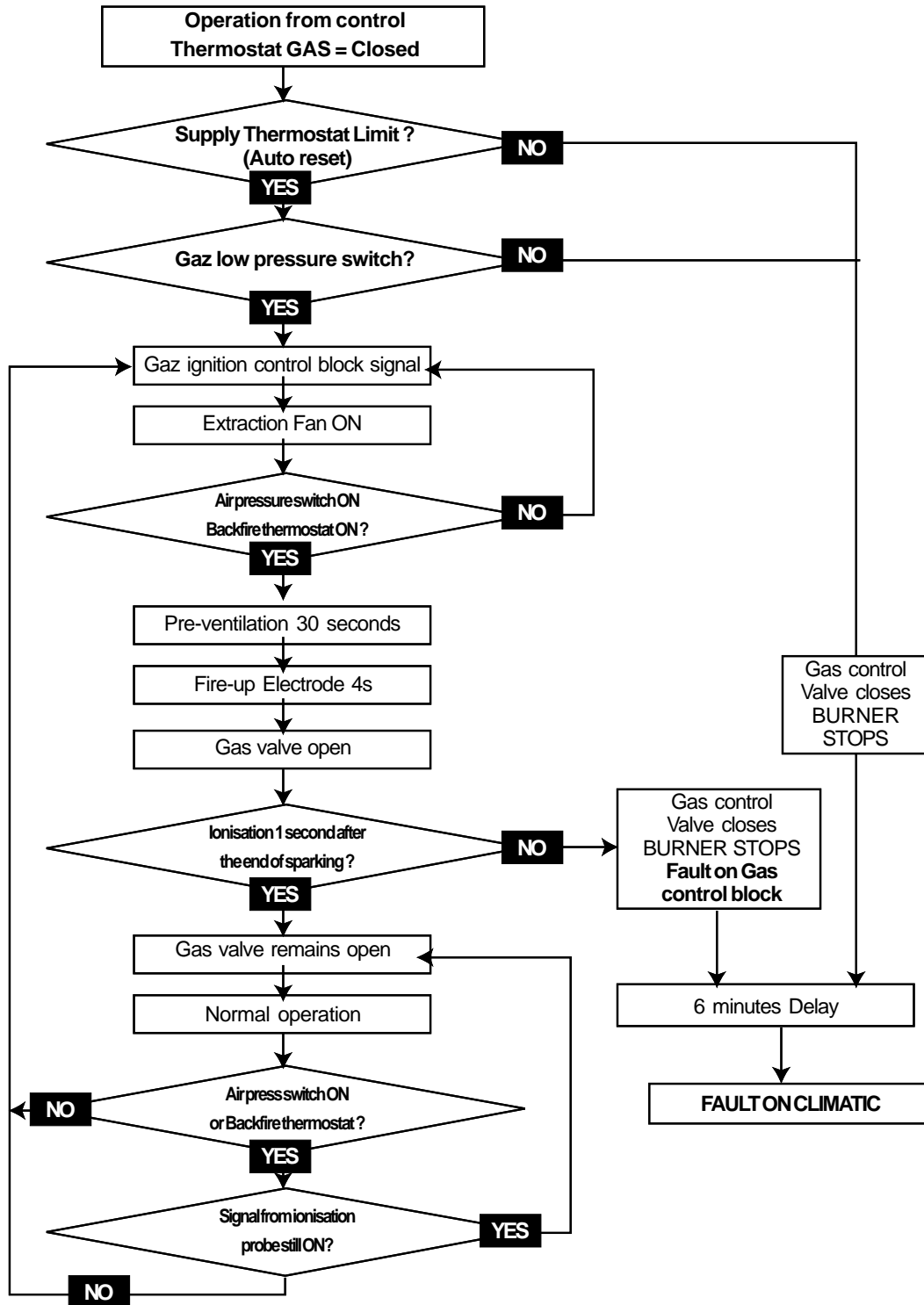


- The flame disappears
- The fan is still running and attempting to restart the burner (restart cycle 30 to 45 seconds).
- if the ignition probe is not reconnected at the end of the ignition sequence the burner will stop completely.
- The fault light on the gas ignition control block is ON.
- Manually reset the gas ignition control block to eliminate the fault.

IN CASE OF PROBLEMS REFER TO THE START UP SEQUENCE FLOWCHART NEXT PAGE



GAS BURNER FIRE-UP SEQUENCE



GAS BURNER TROUBLESHOOTING**If faults reported on CLIMATIC**

- Reset the CLIMATIC.
- Check voltage: 230V after circuit breaker.
- Check GAS isolation shut-off valves are open.
- Check GAS pressure at the inlet of the GAS valves. It must be >20 mbar when the Burners shut down.
- Adjust the set points to priorities the burner. Increase the value of the room temperature set point to a temperature higher than actual room temperature.

STAGE	NORMAL OPERATION	POSSIBLE FAULT	ACTION	POSSIBLE SOLUTION
Heating Requested	Green, yellow & red L.E.D. ON	All L.E.D. OFF = fault on the blower thermostat	+ Check connections on the blower thermostat	+ Replace thermostat
		Yellow & red L.E.D. OFF = lack of gas supply	+ Check valve's opening & supply pressure	+ Restore gas supply
		Red L.E.D. OFF = fault on the superheat thermostat on the gas burner support bar	+ Check thermostat's operation after manual reset	+ Replace thermostat
L.E.D ON	Extraction Fans	After 10 seconds safety shutdown are running by the ignition control block	+ Check connections of the control block on the gas valve + Check impedance of electro valve's coils: (1) = 2.90k Ω ; (2) = 1.69k Ω (fig. n° 21, p 71)	+ Repositioning of the control block on the valve + Replace valve
		Nothing happens	+ Check the free movement of the fan wheel + Check Electrical connection on the Gas Ignition Control Block and on EF connection Board + Check the Fan supply voltage	+ Replace fan + Replace EF connection board if necessary
Extraction Fan is ON	After 30 to 45 seconds : pre-ventilation the fire-up electrode should spark	Continuous Ventilation without sparks from fire-up electrode	+ Check the fire-up electrode + Check the pressure drop at the pressure switch: It must be higher than 165 Pa + Check the good operation of the pressure switch using an Ohmmeter and by artificially creating a depression in the tube	+ Re-position the pressure switch tube + Change the pressure switch
Continuous ventilation and sparks from fire up electrode	After a few seconds the gas burner fires-up	After 4 seconds the GAS Burner still not operating and safety shutdown by the Ignition Control Block	+ Check injection pressure during start-up (Value for High Heat) + Remove the control box from the gas block	+ Remove the air from the Gas pipe-work + Adjust the injection pressure to high heat value + Change the Control Box if the Gas valve is OK
		Within 4 seconds the gas Burner fires-up BUT safety shutdown from the Ignition Control Block	+ Check the Position and connection of the Ionisation Probe. It must not be Earthed (230V) + Check that R.C circuit of the gas burner's transformer is well connected to the neutral polarity + Measure the Ionisation Current : It must be higher than 1.5 microAmps. + Check the Type of GAS	+ Check the whole electrical supply + Adjust the supply and injection pressure if gas is different from natural gas G20 :(G25 Gas of Groningue for example)



DISASSEMBLING THE GAS BURNER FOR MAINTENANCE PURPOSES

Preliminary Safety Recommendations

- Isolate the unit using the main isolator switch.
- Close off the isolating gas valve located before the unit.
- Disconnect the Pipe-work. Do not discard the seals.



Disassembling the gas "burner support bar"

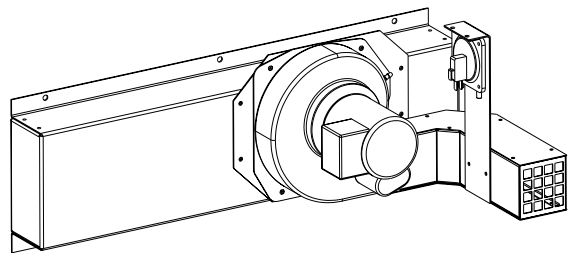
- Disconnect the Electrical Connector on the electric connection board EF 49
- Remove the two screws which hold the gas Bar in Place
- Carefully remove the gas " burner support bar " avoiding any damages to the electrodes.



Disassembling the flue

- Electrically disconnect the fan and remove the screws holding it in place.
- Take care not to loose any cage nuts in the smoke box.

ATTENTION: Check the correct position of the pressure tube used by the extraction pressure switch.

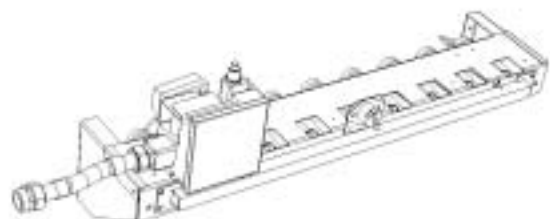


Required Equipment List for maintenance Adjustment and Start-up

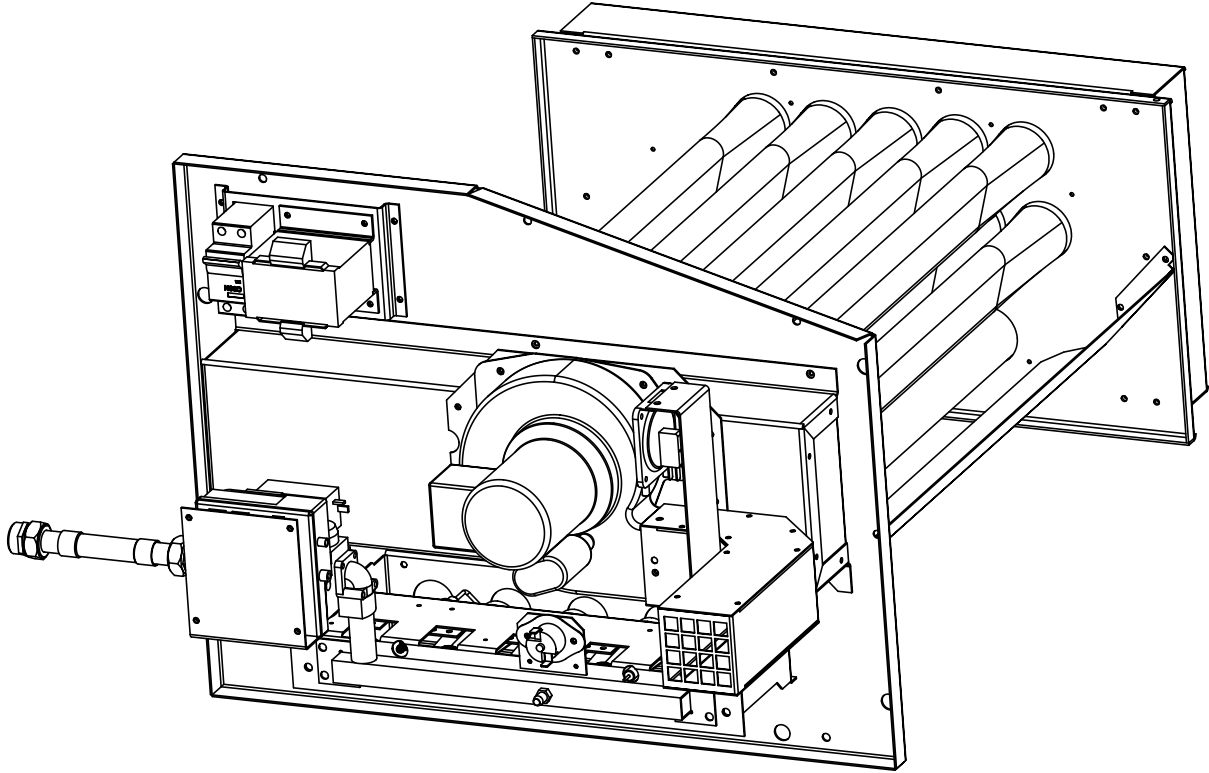
- An accurate manometer from 0 to 3500 Pa (0 to 350 mbar): 0.1% full scale.
- A Multimeter with Ohmmeter and Micro-amps scale
- An Adjustable Spanner
- Tube Spanner Set: 8, 9, 10, and 13.
- Flat Screwdrivers diameter 3 and 4, Fillips n°1
- Vacuum cleaner
- Paint brush



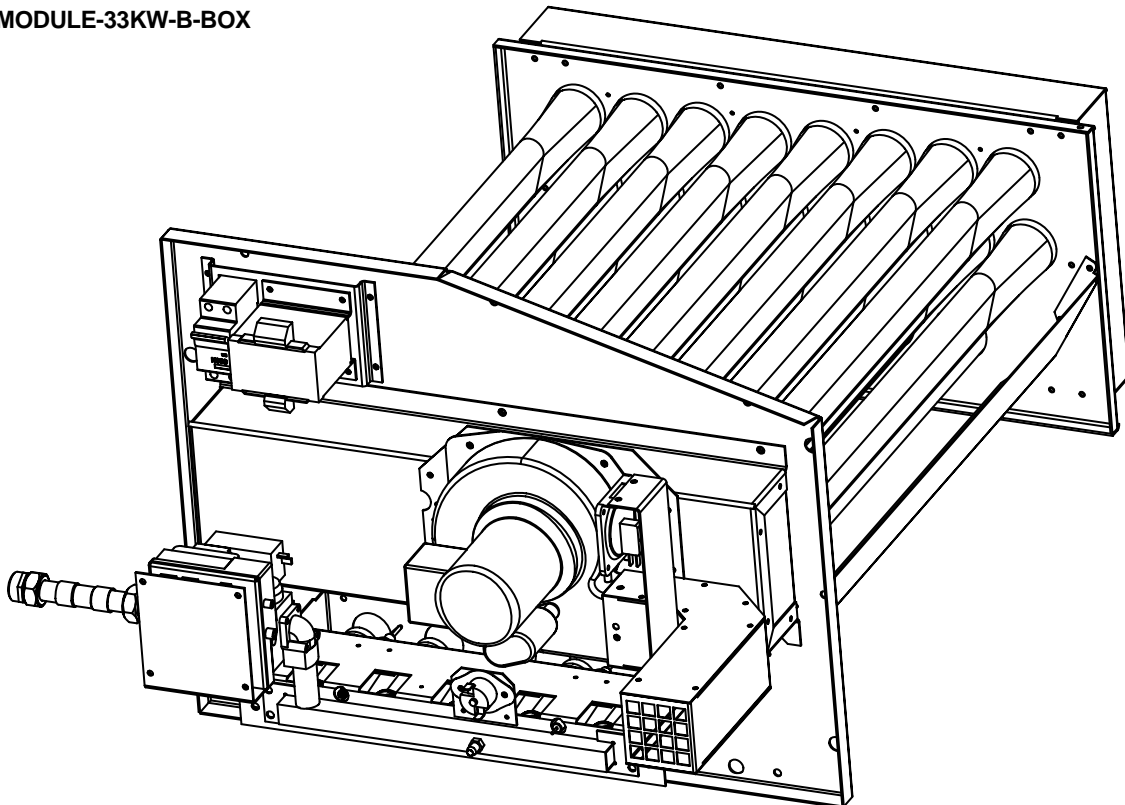
GAS INJECTORS SUPPORT BAR



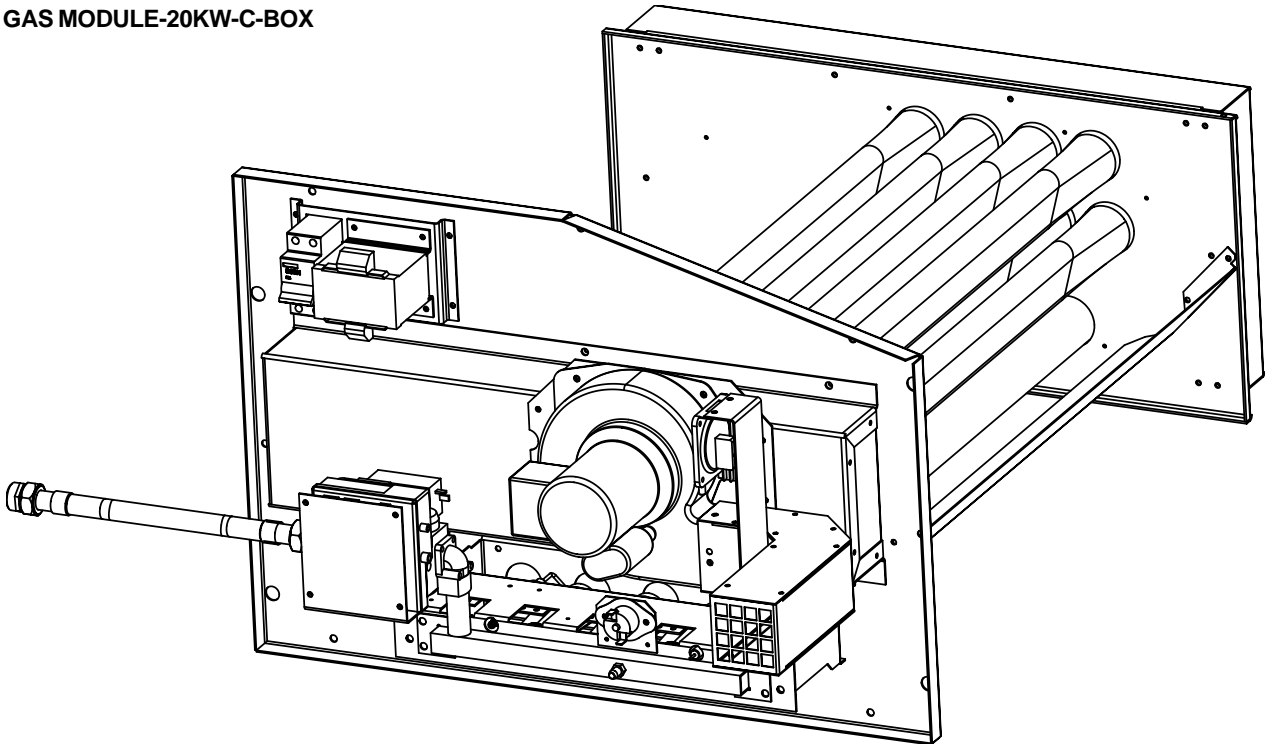
GAS MODULE-20KW-B-BOX



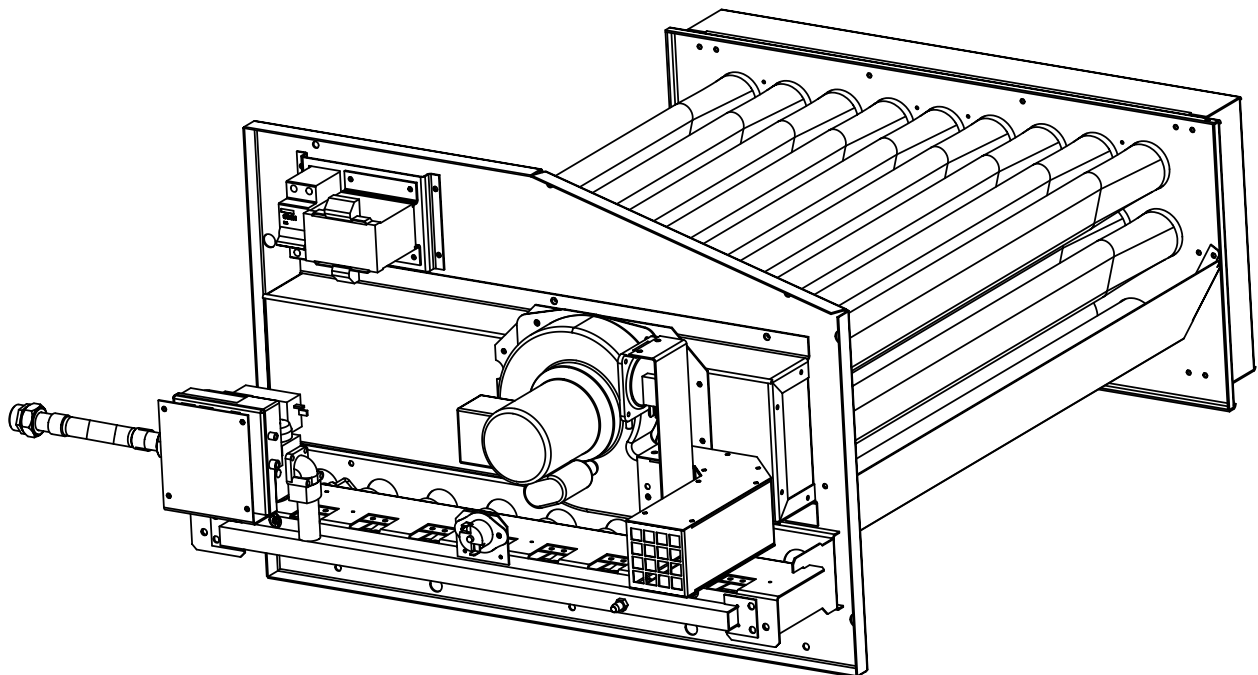
GAS MODULE-33KW-B-BOX



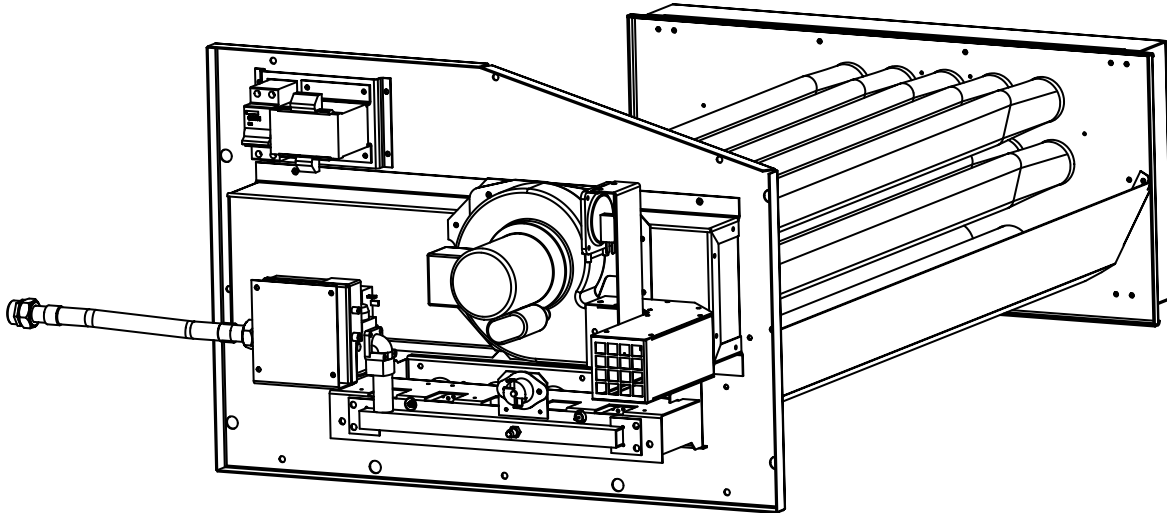
GAS MODULE-20KW-C-BOX



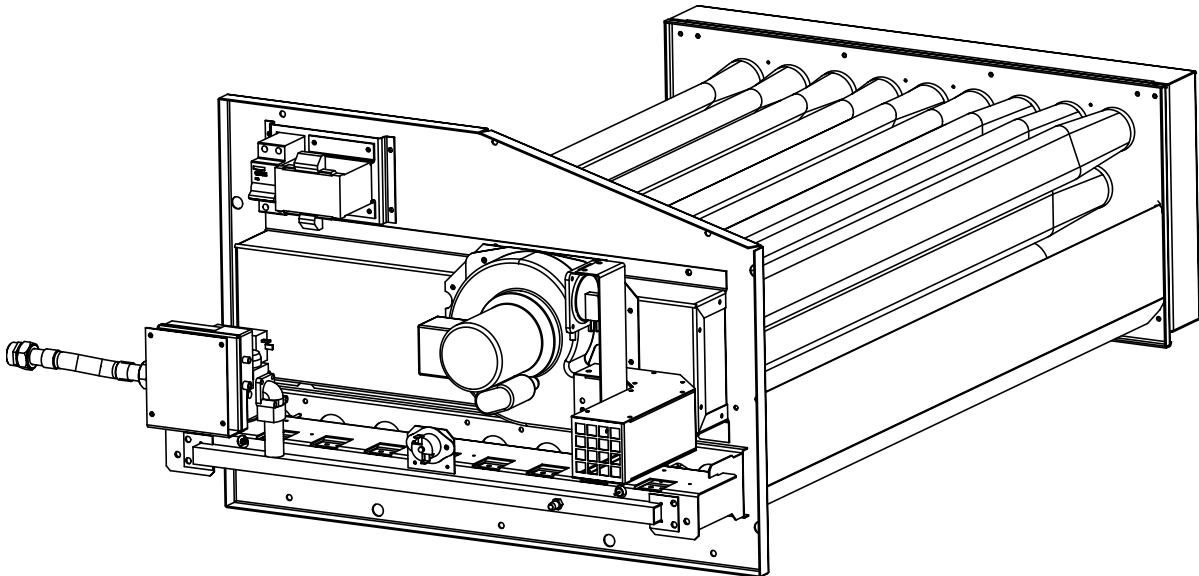
GAS MODULE-46KW-C-BOX



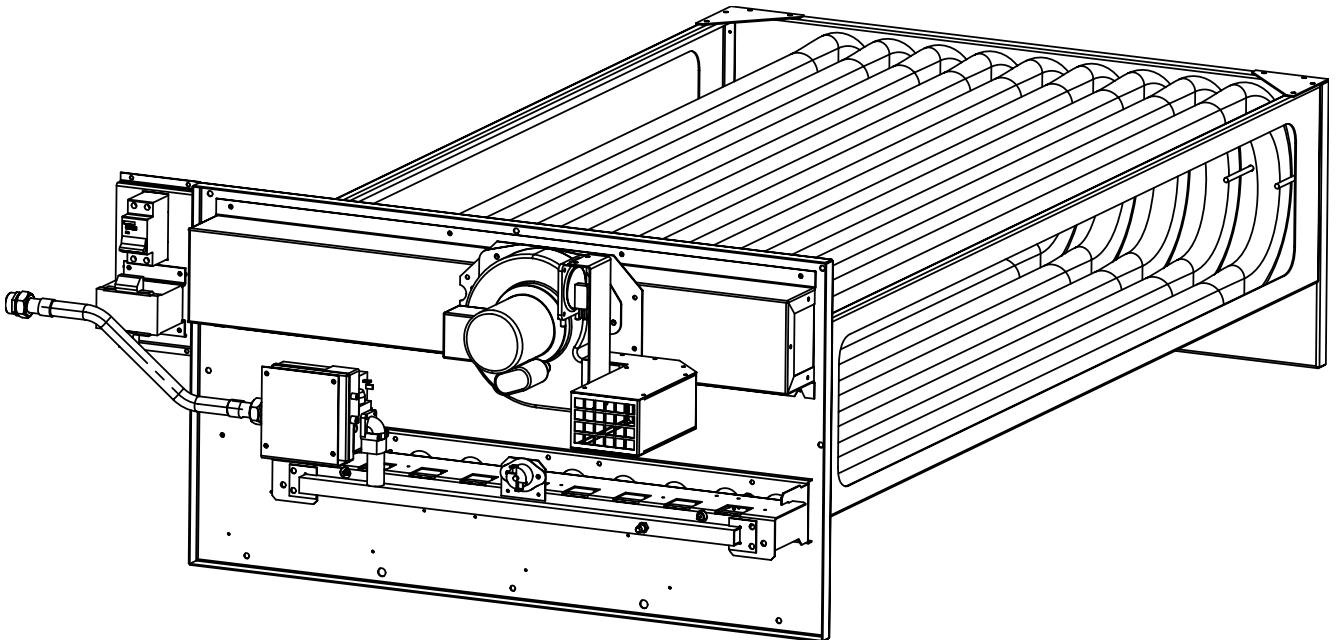
GAS MODULE-33KW-D-BOX



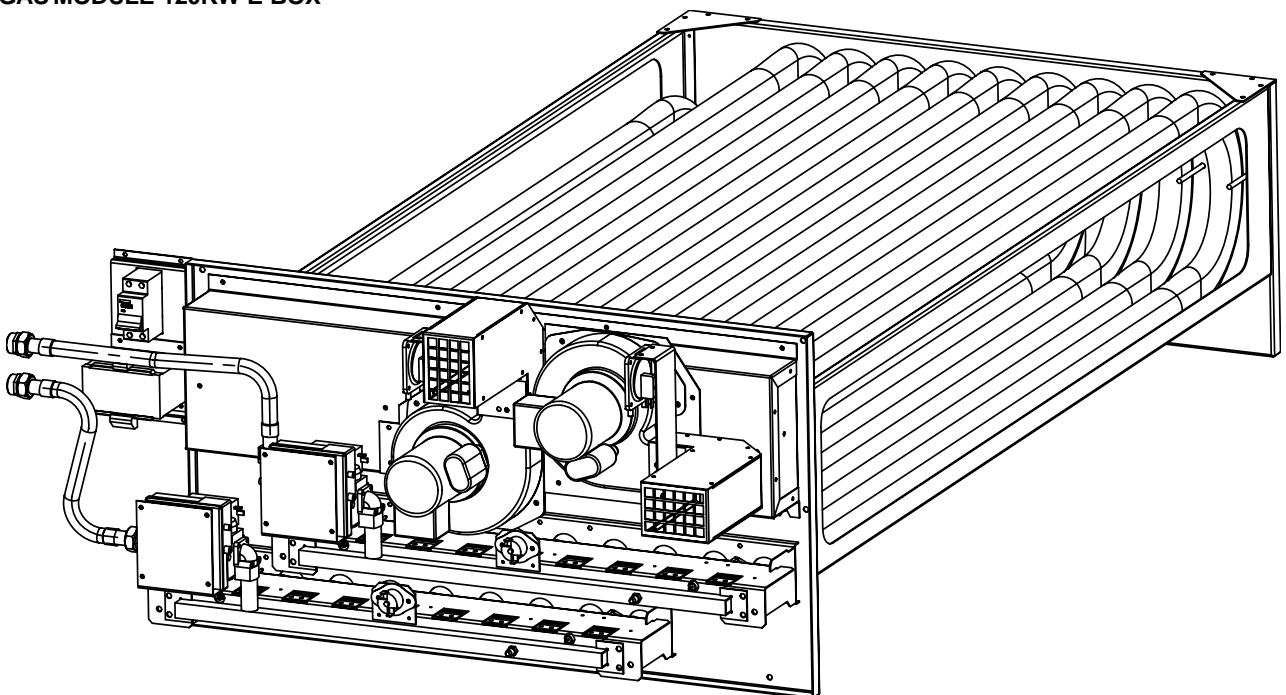
GAS MODULE-60KW-D-BOX



GAS MODULE-60KW-E-BOX



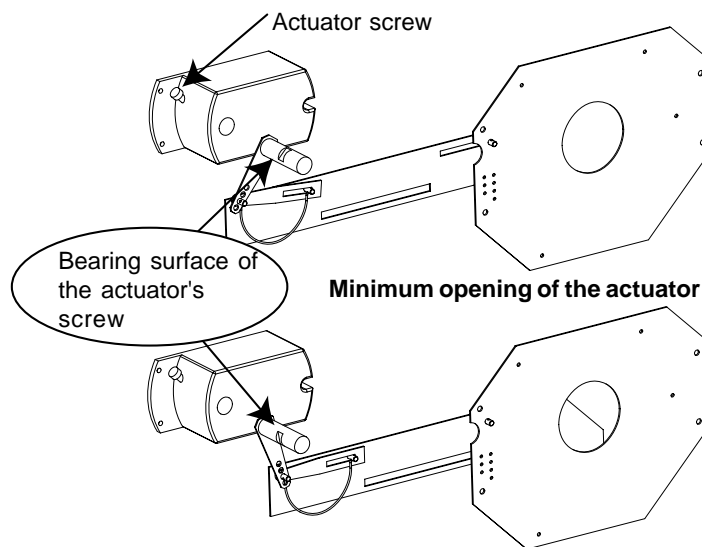
GAS MODULE-120KW-E-BOX



Maximum opening of the actuator

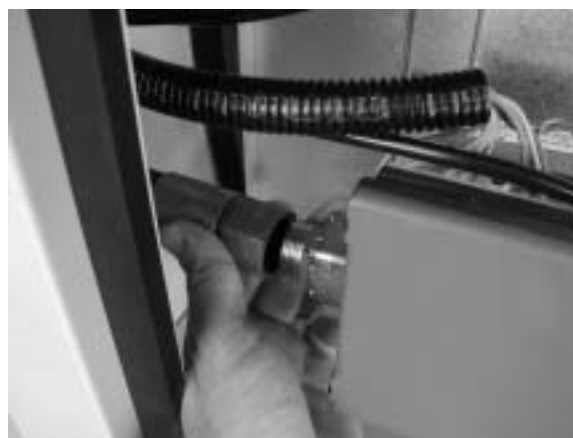
MODULATING GAS (under patent INPI May 2004)

The actuator



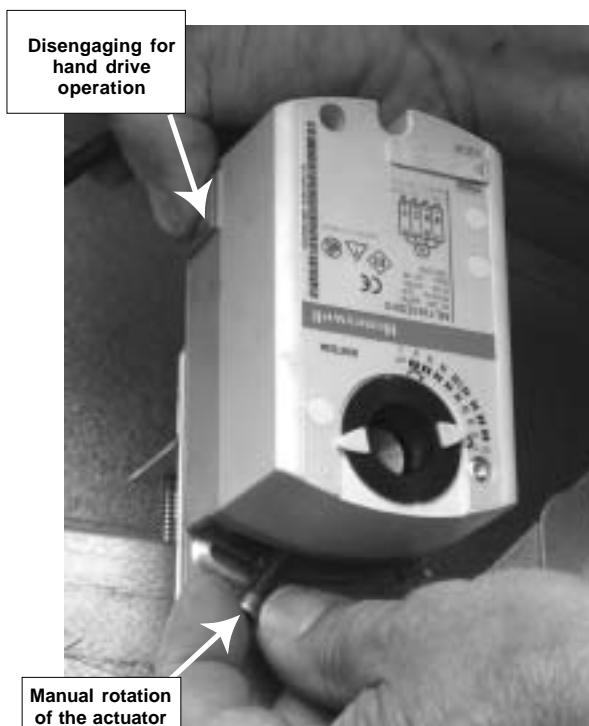
STARTING UP THE GAS BURNER

Purge the pipe-work near the connection on the ignition control Valve for a few seconds.



The actuator receives an information 0-10V from the regulation for the positioning of the air shutter; then the servo-motor transmits its position to the printed-board which will order the valve.

Check position and operation of the actuator



- Check that the unit's Treatment Fan Blower is running.
- Set the control to "ON" This will priorities the gas burner.
- Increase the set temperature (room set point temperature) to a temperature higher than the actual room temperature.

The start of the gas burner must be done at **high heat injection**.

**PRESSURE ADJUSTMENTS ON HONEYWELL
PRESSURE REGULATING VALVE TYPE VK 4105**

Pressure regulator adjustment with 300mbar gas supply:



Fig. 24

- The Burner must run in High Heat mode for this check.
- Place the tube of the "accurate" manometer on the **Inlet** pressure port (figure 24) of the Gas Regulating Valve after having loosened the screw by one turn.

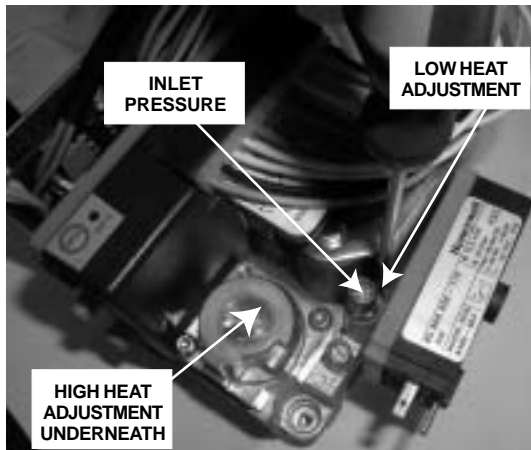


Fig. 25

- Check and adjust if necessary the valve **Inlet** pressure to 20.0 mbar (G20) or 25.0 mbar for Groningue (G25) after gas burner ignition. (figure 25)



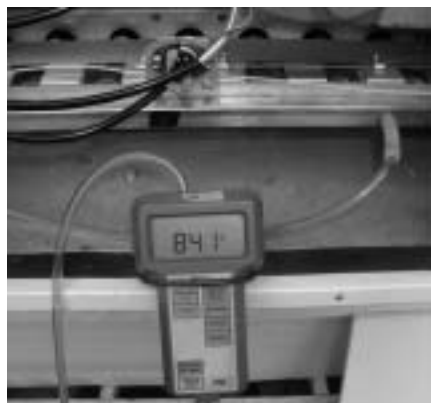
High Heat Injection Pressure Checks

- Place the tube of the "accurate" Manometer to the **OUT** port on the Gas injector support bar after having loosened the screw by one turn.



Fig. 26

- Check and adjust if necessary the valve **OUTLET** pressure to 8.4 mbar (G 20) or 12.3mbar for Groningue (G25) (figure 26).



Low Heat Injection Pressure Checks

- Switch the control to Low Heat
- Check and adjust if necessary the **Outlet** pressure to 1.5 mbar (G20) and 2.25 mbar for Groningue(G25) (figure 27).
- After the adjustment of the low heat, re-verify the high heat
- re-position the stoppers and close the pressure ports.
- After adjustment of the low heat, re-verify the high heat.

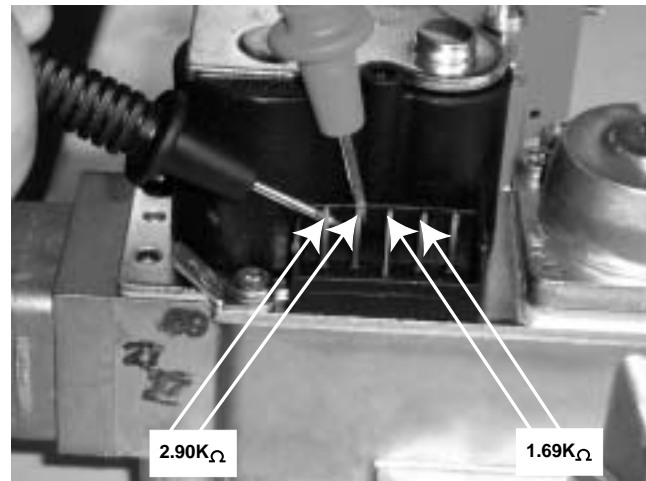


Fig. 27

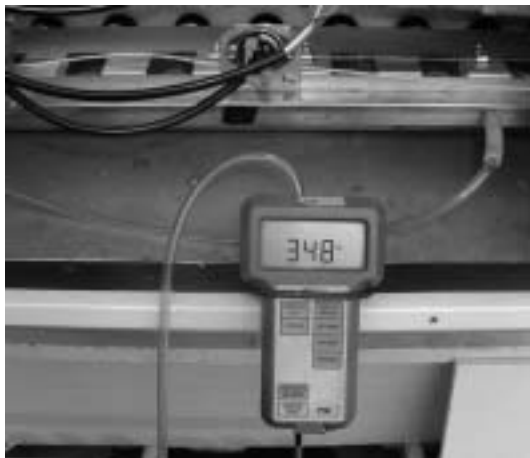
Pressure adjustments table for each type of gas (mbar)

Category	Supply pressure	Low Heat injection	High Heat Injection
G20	20.0 +/-1	3.5 +/-0.03	8.4 +/-0.2
G25 (Groningue)	25.0 +/-1.3	5.0 +/-0.05	12.3 +/-0.2
G31	Non Available	Non Available	Non Available

Valve electrical control



- Check these values with an Ohmmeter.





BURNER SAFETY CHECKS

Idem non-modulating gas burner

If the valve's flow is not correct, check the operation of the actuator and of the mechanical assembly.

= Replace the actuator if necessary

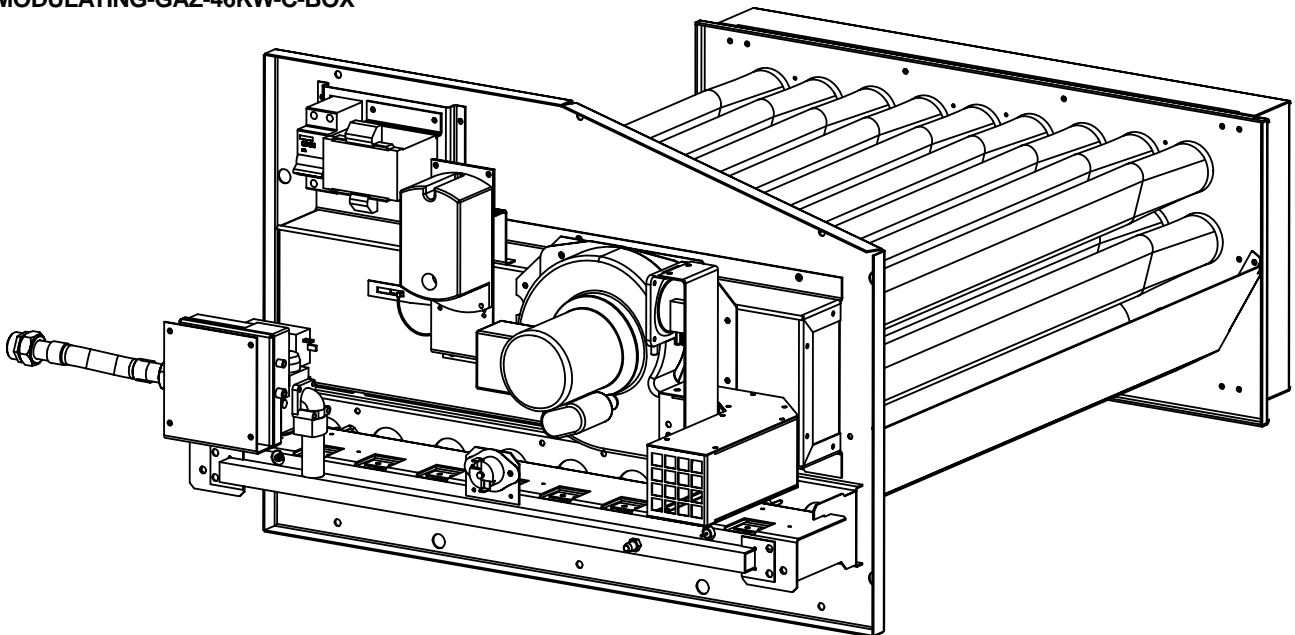
GAS BURNER TROUBLESHOOTING

Idem non-modulating gas burner

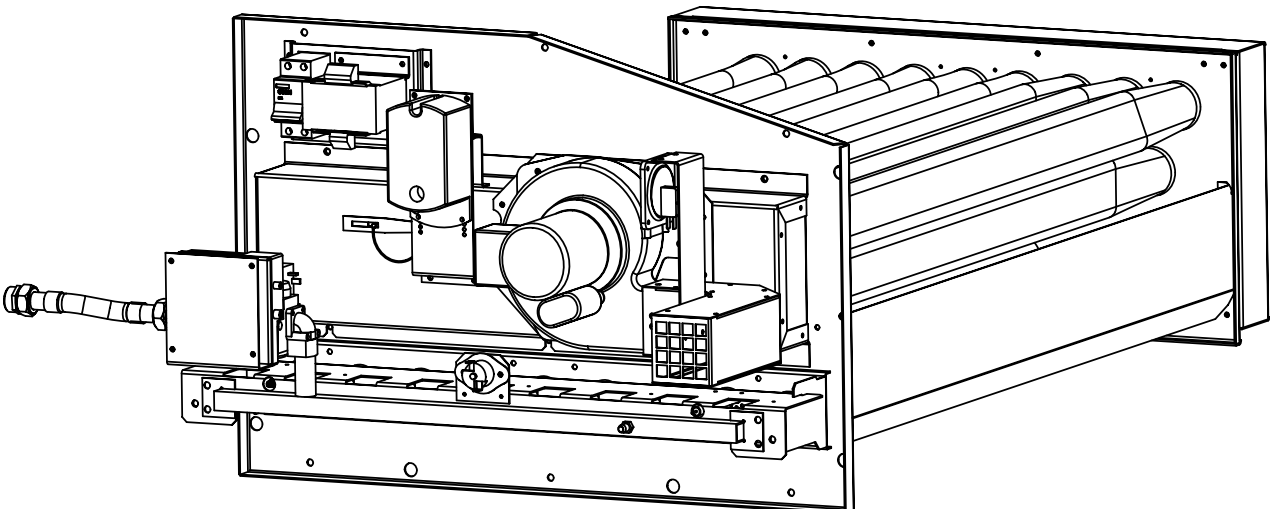
DISASSEMBLING THE GAS BURNER FOR MAINTENANCE PURPOSES

Idem non-modulating gas burner

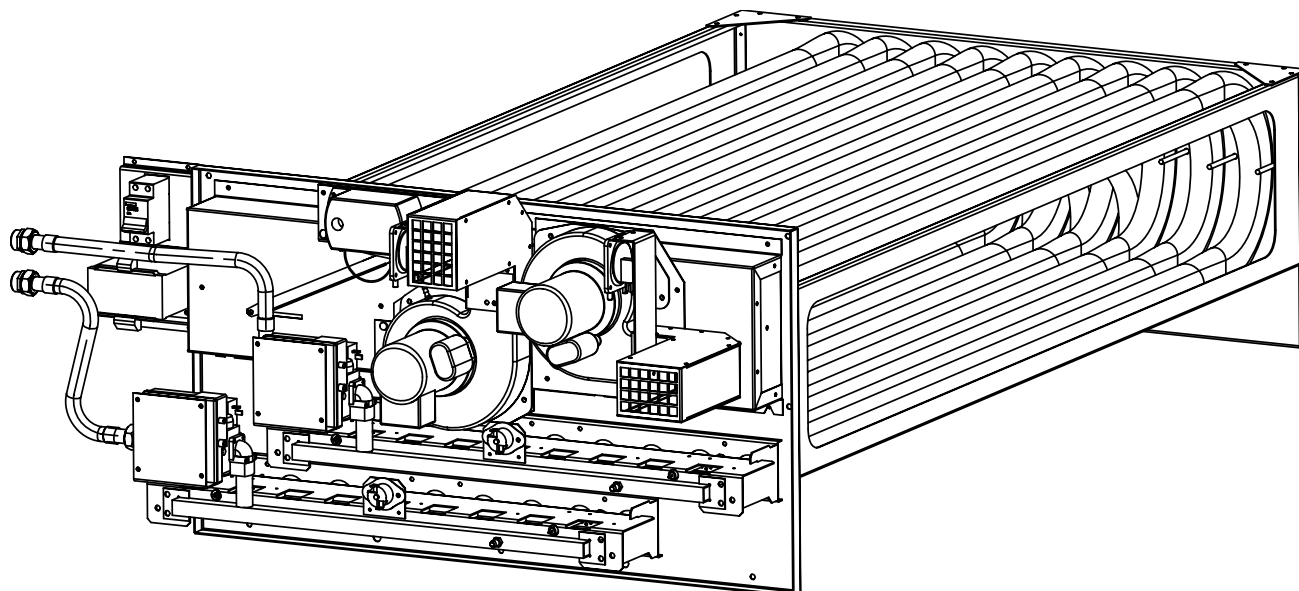
MODULATING-GAZ-46KW-C-BOX



MODULATING-GAZ-60KW-D-BOX



MODULATING-GAZ-120KW-E-BOX





CLIMATIC 50 SOFTWARE FEATURES AND LOGIC

As a standard feature, CLIMATIC™50 provides 4 scheduling time zones per day on 7 days. On each of the 4 time zones, heating set point, cooling set point, minimum fresh air, humidity set point high and up, and even the different authorisations for cooling and heating can be adjusted.

CLIMATIC™ 50 provides a choice of different remote displays depending on customer requirement and application of the system. As a standard feature, it is possible to set alarms (adjustable value low and high) on room temperature and humidity.

CONTROL SOFTWARE LOGIC

With the CLIMATIC™ 50 Lennox is going away from the traditional step control

Capacity factor

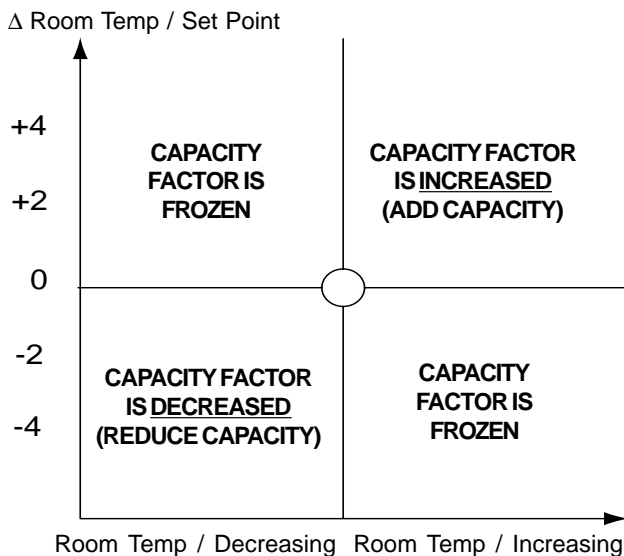
It is used to determine the exact capacity required at any time in order to react quicker and more accurately to any change in demand.

The capacity factor is a percentage of the total cooling or heating capacity.

Example:

On a three circuit rooftop unit with two compressors running out of three has a capacity factor of 66%
 In the same way, a three circuit rooftop with a modulating electric heater running at 20% of its full capacity has a CF: $CF = 25\%+25\%+25\%+5\% = 80\%$

The Capacity factor will increase, decrease, or freeze depending on the temperature difference between the set point and the room temperature but also on the way this room temperature is changing:



Example:

The room set point is 25°C with a 3 compressor unit.

Delta vs room set point	Room Temp.	Cap. factor	COMP 1	COMP 2	COMP 3
+0	Increasing	0%	OFF	OFF	OFF
+1	Increasing	35%	ON	OFF	OFF
+2	Increasing	70%	ON	ON	OFF
+3	Increasing	100%	ON	ON	ON
+2	Decreasing	100%	ON	ON	ON
+1	Decreasing	100%	ON	ON	ON
0	Decreasing	100%	ON	ON	ON
-1	Decreasing	60%	ON	ON	OFF
0	Increasing	60%	ON	ON	OFF

Reactivity.

The reactivity determines how fast the capacity factor should vary.

It is given in: Percentage of capacity / Degree °C (Room Temp. VS Set Point) / minute

Example :

If the reactivity is set to 3 % / °C / min

Then:

Capacity factor can go from 0 to 30% in 10 minutes if **Delta Room Temp. VS Set Point** is 1°C

Or capacity factor will go from 0 to 60 % in 4 minutes if **Delta Room Temp. VS Set Point** is 5°C

The reactivity can be adjusted with the CLIMATIC™ 50 The larger the reactivity the faster the rooftop will react to a change.

The next table shows the effect of a change of the reactivity on the capacity factor: This shows that by increasing the reactivity, the unit reaches the set point quicker but the energy consumption (capacity factor) is larger.

REACTIVITY : 3

DELTA	1MIN	5MIN	10MIN
DELTA +5	15%	75%	100%
DELTA +3	9%	45%	90%
DELTA +1	1%	15%	30%

REACTIVITY : 6

DELTA	1MIN	5MIN	10MIN
DELTA +5	30%	100%	100%
DELTA +3	18%	90%	100%
DELTA +1	2%	30%	60%



OTHER FEATURES

Dynamic Set Point

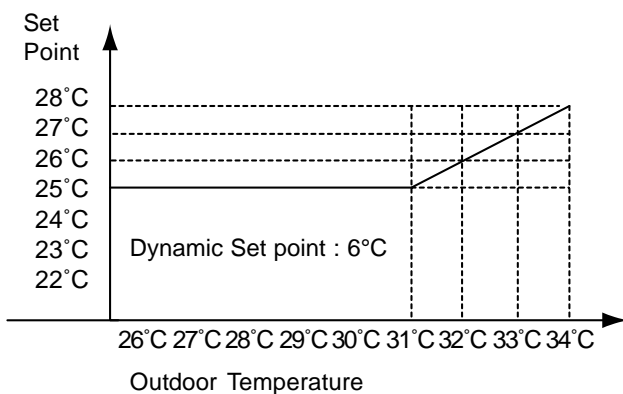
This feature allows the set point to change according to the outside temperature.

Example:

If the set point is 25°C

And the dynamic set point is set to 6°C

Then, when the outdoor temperature reaches: 31°C (25°C + 6°C) the set point will follow the outdoor temperature with a 6°C temperature difference.



If you do not want to use this feature, set the dynamic set point to **99**

Time Zones and scheduling

With the Climatic50 the scheduling has been completely reviewed:

- * The first day of the week is Monday.
- * Automatic switch from winter time to summer time.
- * Unoccupied mode from one to seven days
- * Three occupied and one unoccupied zone per day

For each zone a series of set points and feature can be adjusted or selected, depending on the type of display which is being used.

LIST OF SET POINTS PER ZONE	CODE	CONFORT DISPLAY	SERVICE DISPLAY
AMBIANT TEMPERATURE			
Average set point	3311	Yes	Yes
Dynamic Set Point	3321	Yes	Yes
Cooling Set Point	3322	0	Yes
Heating Set point	3323	0	Yes
Heating Priority	3324	0	Yes
FRESH AIR REHEAT			
activated	3331	0	Yes
Heating priority	3332	0	Yes
HUMIDITY			
Dehumidification	3341	0	Yes
Humidification	3342	0	Yes
AUTHORIZATION			
Free Cooling		0	Yes
Fresh Air by CO2	3354	0	Yes
Mechanical cooling	3355	0	Yes
Mechanical heating	3356	0	Yes
Auxiliary heating	3357	0	Yes
Humidification: ON/OFF	3358	0	Yes
Low Noise	3359	0	Yes
OTHER			
Fan Mode :On / Off	3351	0	Yes
Fan dead	3352	0	Yes
Minimum fresh air (%)	3353	Yes	Yes
SCHEDULING			
Beginning of the zone for each day		Yes	Yes
Start Uno	3211	Yes	Yes
Start.Uno	3212	Yes	Yes
Start.z.A	3213	Yes	Yes
Start.z.A	3214	Yes	Yes
Start.z.B	3215	Yes	Yes
Start.z.B	3216	Yes	Yes
Start.z.C	3217	Yes	Yes
Start.z.C	3218	Yes	Yes

Example of Zone setting :

Table 12	8h00	12h00	14h00	20h00
Monday	ZA	ZB	ZC	
Tuesday				
Wed.				
Thursday				
Friday				
Saturday				
Sunday				

Each zone is determined by its starting time.

Forced modes

3 hours Override

A three hours override period can be forced on the CLIMATIC™50:

With this feature, a new room temperature set point and fresh air requirement can be imposed for a three hour period; It will then revert to the original setting at the end of the override period or earlier by pressing "esc".

Forced unoccupied zone

The unoccupied zone settings can be forced for a period of up to seven days. It will then revert to the original settings at the end of the defined period or earlier by pressing "esc".



Heating priorities

It is possible to set heating priorities depending on the outdoor temperature.

For compressors: refer to the instructions 3611, 3612, 3613.

For electrical heater: refer to the instruction 3721.

Example:

It could be decided based on energy costs, that on a dual fuel unit, it should run in heat pump mode when the temperature is above 0°C and switch to gas burner below that point.

Staggered start

After a power cut, the units can be made to restart one after the other to prevent any current surge.

There is no need for a link between the units, they just have to be given an address during commissioning and they will restart 10 seconds x their "address number" after the power is switched back on.

Example:

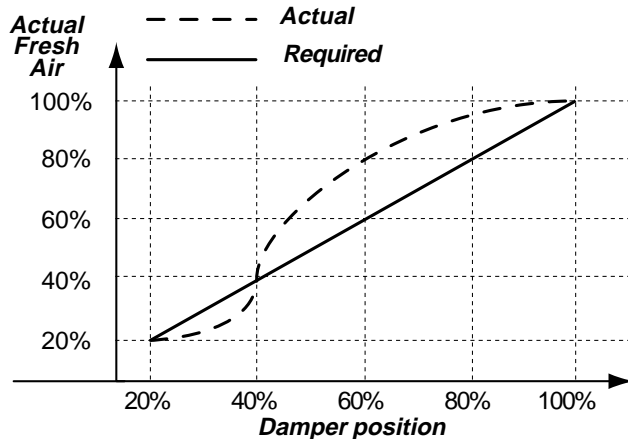
If a unit is given the address N°3 it will be switched-on 30 seconds (3 x 10sec) after the power is switched back on.

Fresh air adjustment and calibration on Economiser

The actual fresh air volume brought into the system is not always proportional to the percentage of opening of the fresh air damper. That is particularly true when the return air duct system has been sized to produce excessive pressure drop.

This often results in bringing into the system an excessive amount of fresh air, hence increasing the running cost of the system.

The control of fresh air is now achieved through the use of three temperature sensors : One in the supply air flow, one in the return air and one for the outdoor temperature.

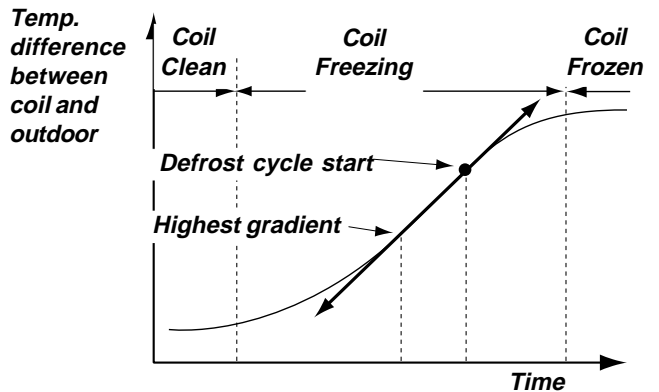


Using these three sensors, the Climatic50 will calculate and memorise the exact percentage of fresh air for each position of the damper.

$$T_{\text{supply air}} = T_{\text{return air}} \times \%_{\text{return air}} + T_{\text{fresh air}} \times \%_{\text{fresh air}}$$

The calibration sequence will take place periodically when all cooling or heating inputs are off. The instruction 3516 permits us to avoid the calibration.

Dynamic Defrost



This new feature patented under INPI 91.033.063 allows the unit to start the defrost cycle only when required. This is achieved through the measurement of the temperature difference between the coil and the outdoor.

The defrost will be initiated shortly after the Climatic50 has located the largest gradient in the curve.

The defrost cycle ends when one of these two condition is completed whichever comes first :

- + Three defrost cycles.
- + 6 minutes.

Alternate defrost

All dual circuits Baltic units have "Alternate Defrost" as a standard feature.

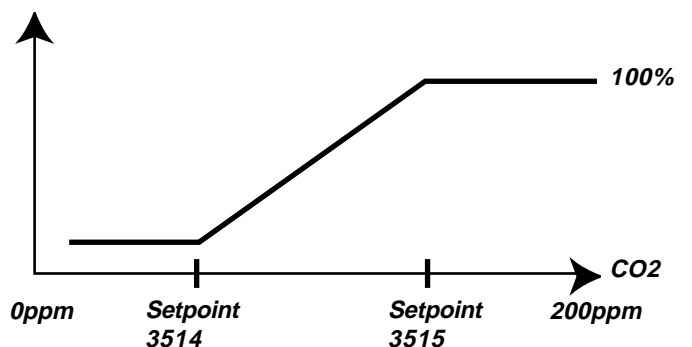
When one circuit is going through a defrost cycle the second circuit is running in heat pump mode. This reduces the need for costly electric heater to maintain the supply air temperature to an acceptable level of comfort during the defrost cycles.

CO² Sensor

Where a CO² sensor is connected to the unit, the value of the fresh air minimum is calculated according to the CO² ratio. The value measured by the sensor can be read in variable 2132.

Setpoint 3514 defines the number of ppm up to which the fresh air minimum is still achieved.

Setpoint 3515 defines the number of ppm from which 100% fresh air is used.



CONTROL INTERFACES AND DISPLAYS

DC50 COMFORT DISPLAY

This is a remote controller for non-technical customer. This display gives information such as running mode status of the fan, set point, % of fresh air and outside air temperature.

It can be used to set or change the scheduling of the different time zones, the temperature set point, and the % of fresh air for each zone. It also has the capacity to set a 3 hours override and to force the unoccupied mode for up to 7 days. It displays the real time clock and different faults signals.

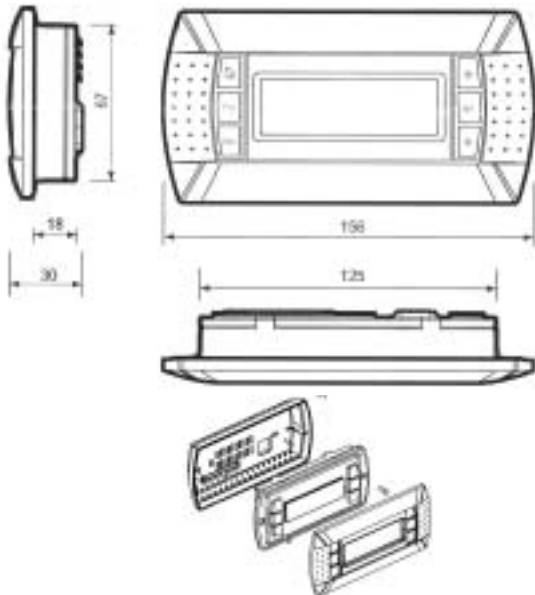
Display

Type FSTN graphic
 Back light: Green LEDs
Resolution 120x32 pixels
Power Supply

Voltage from main Climatic board.
 Max power: 0.8W

Installation

- The DC50 is designed to be mounted on the wall.
- * Fit the cable from the DT50 board through the back piece
 - * Fasten the back piece to the wall using the rounded head screws supplied in the packaging
 - * Connect the cable from the main board on the **RJ12** plug on the back of the DC50 display
 - * Fasten the front panel on the back piece using the flush head screws supplied
- Finally fit the click-on frame



Jumpers:

"Displays" are supplied directly by the Climatic board with 30Vdc. Take particular care at the path this 30V is taking when several boards are being used.

J14 and J15 can switch on or off the direct current from the power supply:

J14 and J15 set between1-2

Connectors A, B, C and screw connector SC are in parallel. Power supply available to all connectors.

J14 and J15 set between2-3

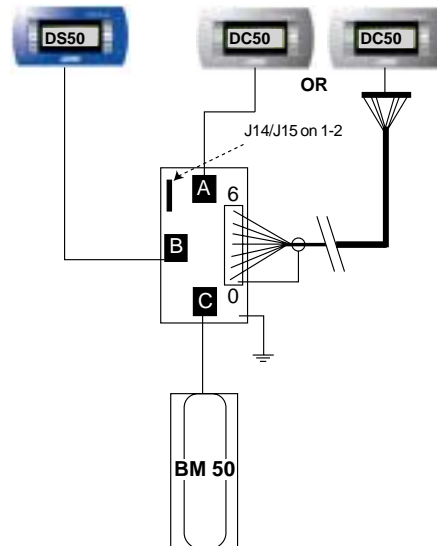
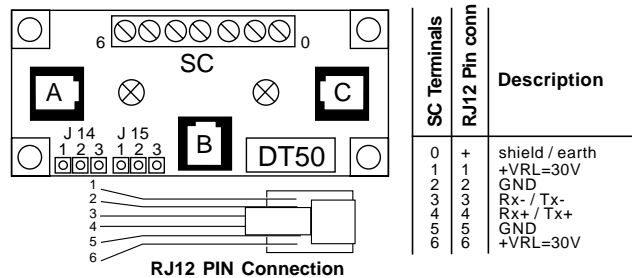
Connectors B and C are in parallel but line 1 and 6 don't reach connector A and screw connector SC.

"Displays" connected to these ports will not be powered.

If J14 and J15 are set in different positions the "terminal connection board" DT50 DOES NOT WORK.

NOTE:

When a shielded wire is used the metallic case of the "Terminal connection box" DT50 must be earthed.



Terminal connection Board installation guide DT50

The board is fitted with three "telephone" RJ12 plugs. Ensure the board is correctly connected.

- Standard connection is:
- * Climatic on connector C
 - * DC50 on connector A
 - * DS50 on connector B



Terminal display address configuration

The address of the terminal must be checked after having powered the board.

- To access the configuration mode, press ↑↓↵ together and hold them for at least 5 seconds.
- The screen shown in **Fig28** will be displayed with the cursor flashing in the top left hand corner.
- To change the address of the terminal display press the ↵ key once.
- Use the ↑↓ keys to select the desired value and confirm by pressing ↵.
- If the address was changed it will display the screen shown in **Fig29**.



Fig. 30



Fig. 28

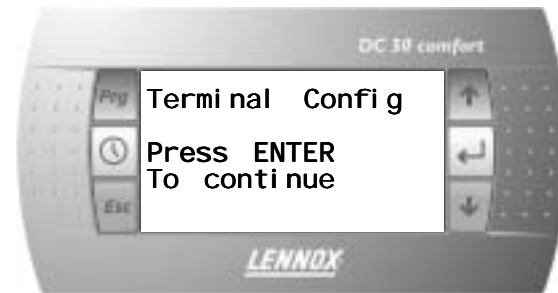


Fig. 31



Fig. 29

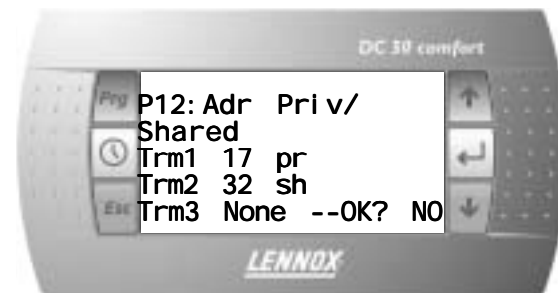


Fig. 32

Assigning Terminal displays to control boards.

- Access the configuration mode by pressing ↑↓↵ for at least 5 seconds.

NOTE : To access the board address menu you must go directly to the bottom of the first screen (shown in **Fig30**) without changing the terminal address as explained above.

- Press the ↵ key until the cursor moves to the field "I/O Board address :XX". **Fig 30**
- Use the ↑↓key to select the correct Climatic board.(N° of Unit)
- Pressing ↵ again will display the screen shown in **Fig 31**.
- Pressing ↵ again will display the screen shown in **Fig 32**.

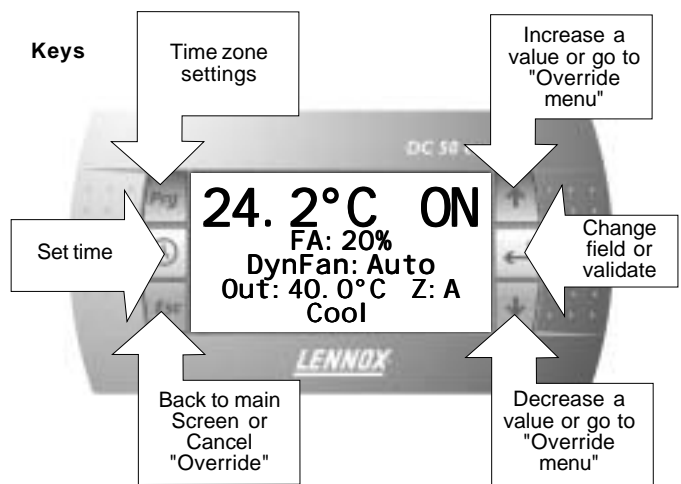
- The field "P:XX " shows the address of the selected board. In the example the value "12" has been selected.

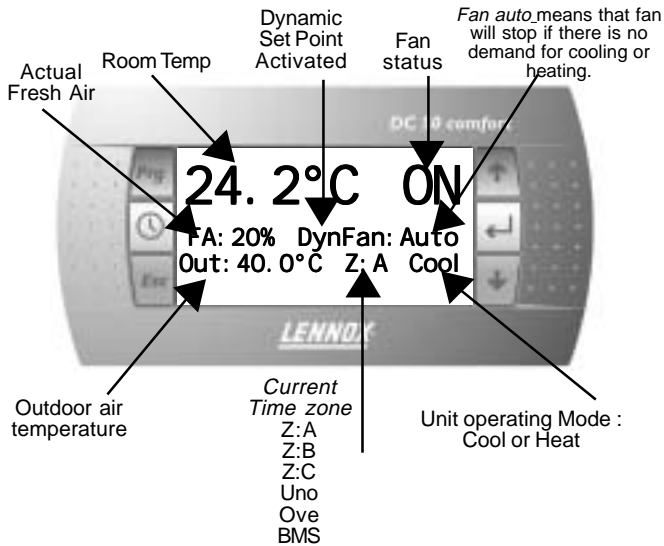
- The field under the "Adr" column represents the addresses of the terminal displays associated with the board that has the address "12", while the column under "Priv/Shared " indicate the type of terminal selected.

- Ph: Private
- Sh :Shared
- Sp : Shared Printer (N/A)

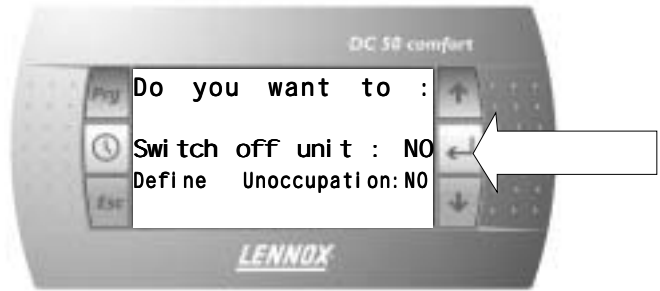
- To exit the configuration procedure and save the data, select the field "OK?NO", choose "Yes" using the ↑↓ keys and confirm by pressing ↵ .

If the terminal remains inactive (no button is pressed) for 30 seconds, the configuration procedure is aborted automatically.





Pressing the return key on the main screen will display the following message:



Pressing the return KEY validates the choice and move to the next field

Up and down arrows gives you the choice between different things

If you choose "YES" to the first question the unit is **SWITCHED OFF** and you can not access the override menu.

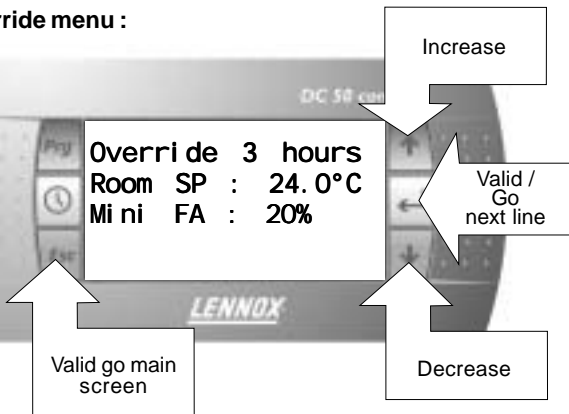
Override 3 hours :

From main screen press any of the two arrow keys as shown bellow:

Main screen :



Override menu :



It will revert back to main screen after 15 seconds, if no activity

Switching ON or OFF the unit or forcing a selected time zone for a period of up to 7 days



WARNING : Switching Off the unit disable all safety Protections

If you choose to stop the Machine number **12** in the previous screen the following screen will then appear.

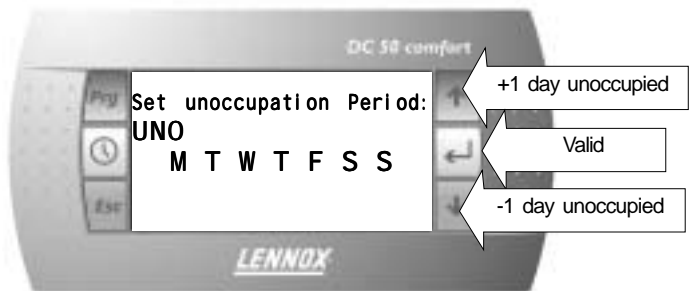


The unit can then be switched back **ON** by pressing the return key once more.

If the first choose is "**NO**" then the override screen can be accessed a particular time zone can be forced for up to 7 days starting from the day "**TODAY**".

In this menu you can choose the number of days you want the selected time zone to override.

Increase the number of days by pressing the Up or Down keys.



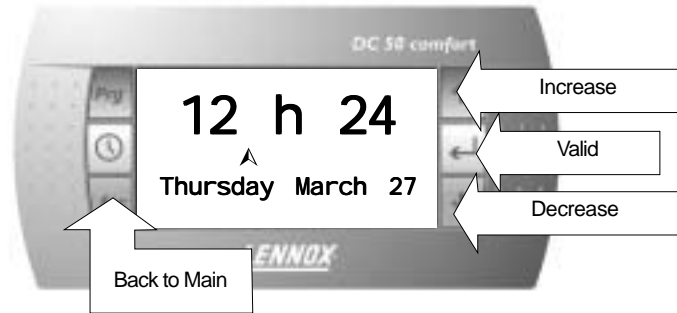
Clock Menu :

From main screen press the clock key, the following menu appears :



Clock Menu :

From main screen press the clock key, the following menu

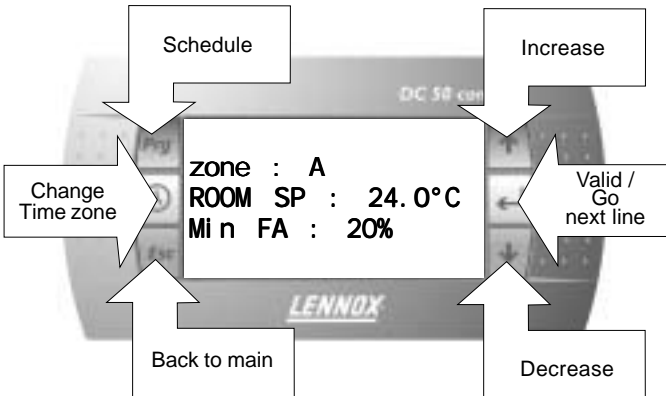


Major Alarm

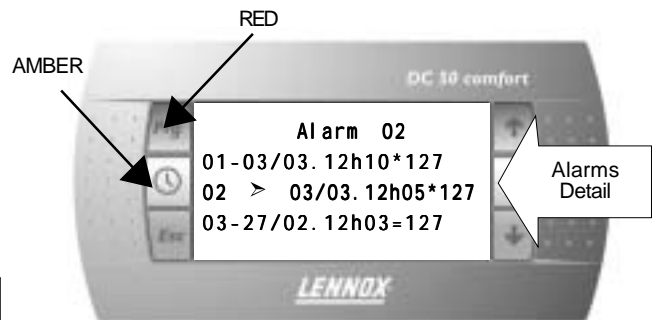


"Time Zone" Menu

From main screen press the "Prg" key, the following menu appears:



Alarm History Menu

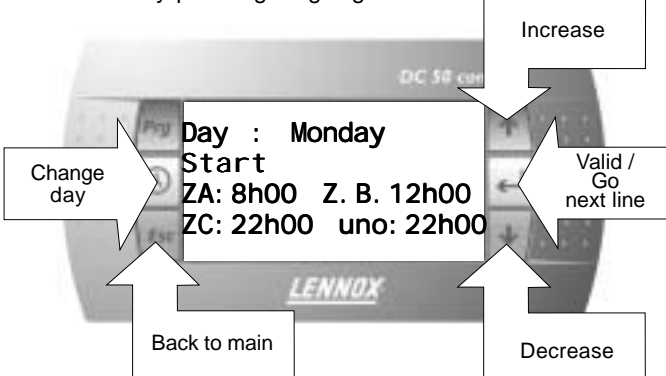


You can scroll down this menu using the arrow keys and select one of the alarm message by pressing the return key.

It will revert back to main screen after 15 seconds if no activity.

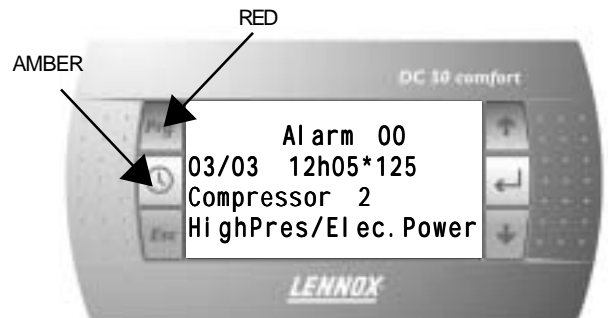
"Scheduling" Menu

The scheduling menu can be accessed from the "time zone" menu by pressing "Prg" again



Alarm details

This menu allows you to view details on the selected fault as shown below:



Alarm screen

Filter Alarm : All keys are locked, the only way to escape this screen is to clean the filter

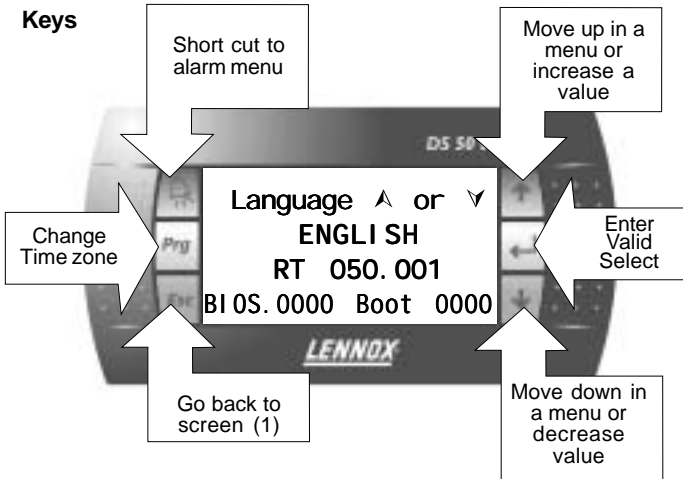




DS50 SERVICE DISPLAY

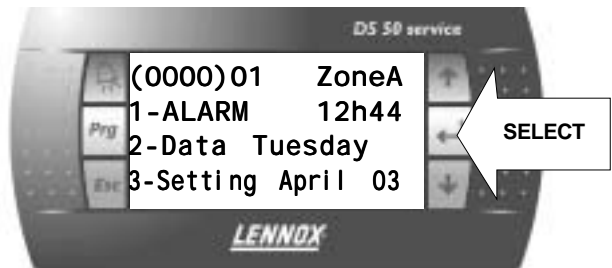
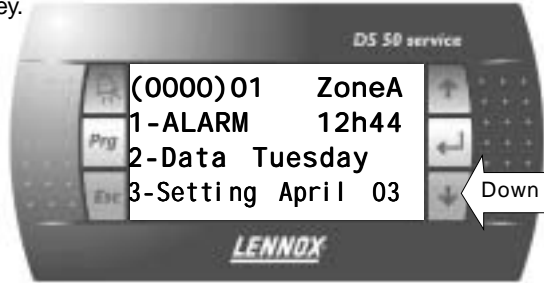
This new service display controller is a plug and play feature but it can also be remotely installed. Plugging the DS50 will freeze a DC50

Keys

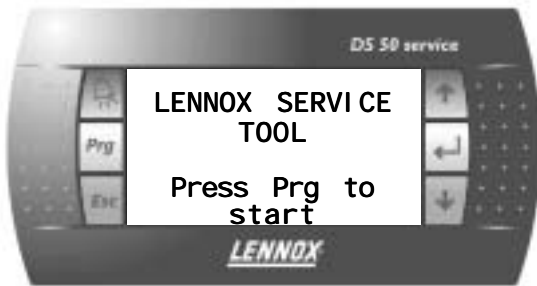


Moving down the menus

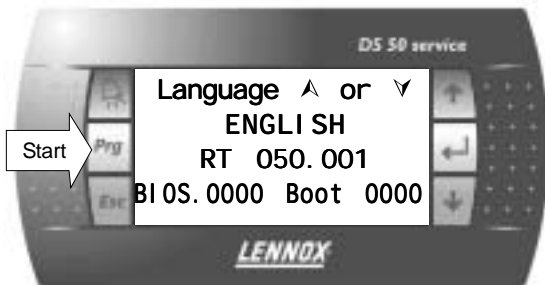
Pressing the arrow keys allows you to move up and down the menu tree. The selected item changes to CAPITAL letter. It can then be selected by pressing the "return" or "select" key.



Start up screen or Screen(1)

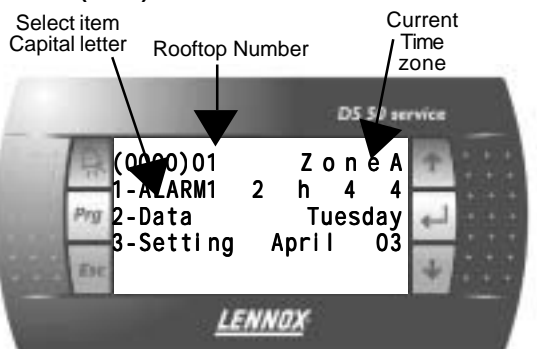


Screen (2) language selection

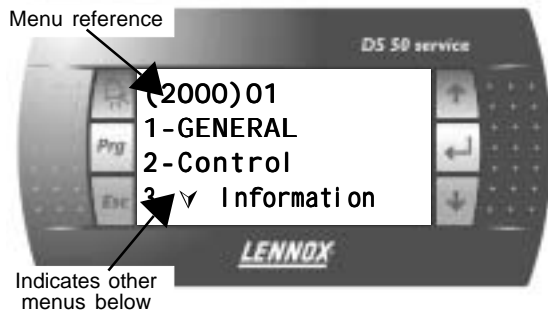


Five languages are available in addition to English. The required language must be specified at the time of order. In this menu the specified language can be selected using the up and down keys. The "prg" key validates the choice and start the controller.

Main menu (0000)

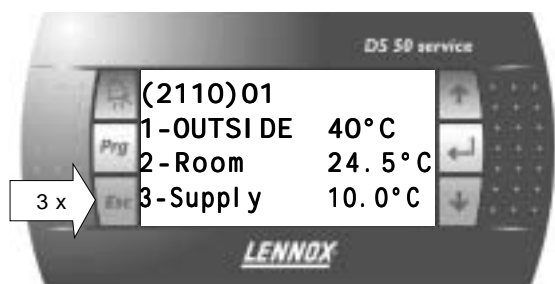
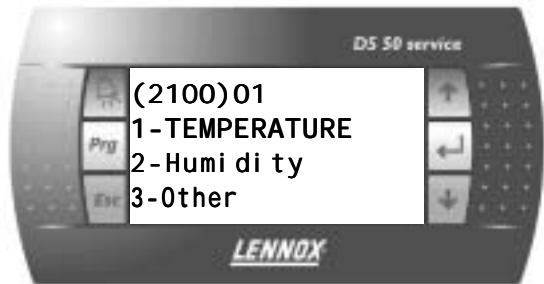


Sub-menu Data (2000)



If the menu GENERAL is selected, the controller then displays a second level sub-menu.

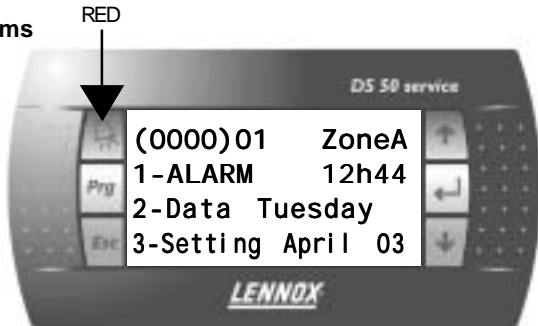
By selecting the item TEMPERATURE and pressing return, a third level page is displayed as shown below:





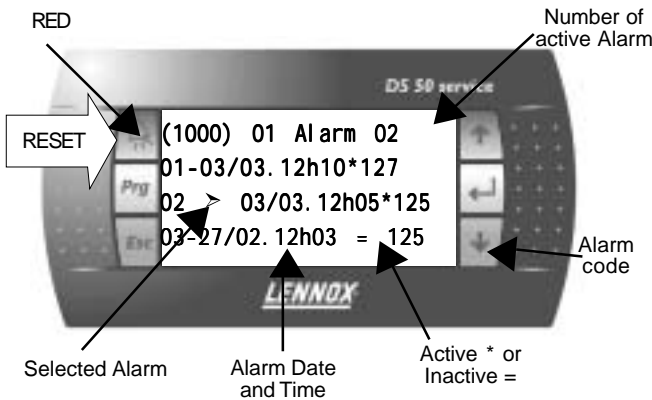
Pressing "ESC" at any time sends you back one level up the menu tree. In the example shown above "ESC" must be pressed 3 times to go back to the main menu (0000) Pressing "ESC" will invalidate any changes made to a value in a setting page.

Alarms

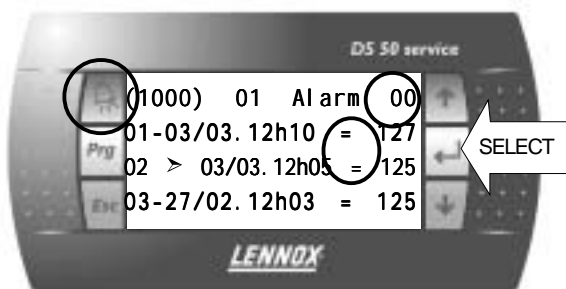


Select the alarm menu using the arrow keys and press return.

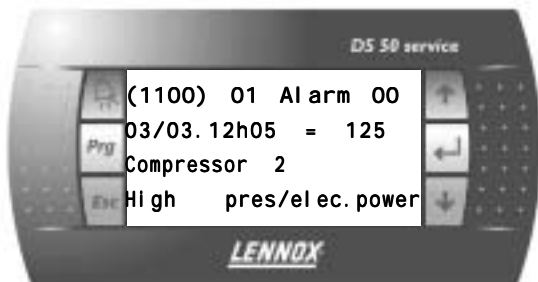
The faults history is then displayed in the page (1000):



Pressing the "ALARM" key resets all the alarms The number of active alarms goes to 0, no active alarm shown in the menu, the "bell" key is switched off.

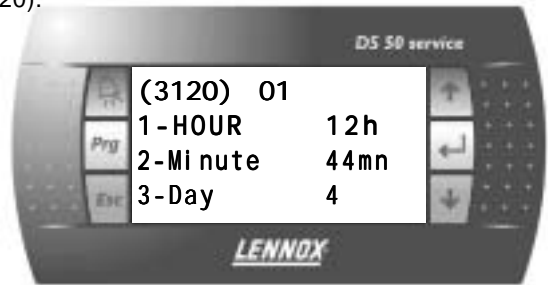


Pressing the "return" key will display details of the selected alarm

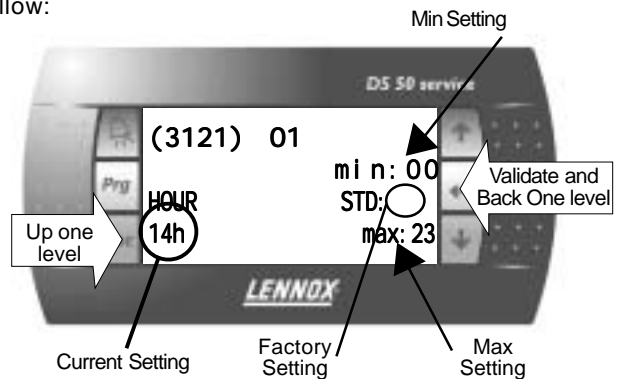


Clock settings

The clock setting menu can be accessed from the main menu by selecting the menu "SETTING" and then navigating down through the sub-menus until page 102 (3120).

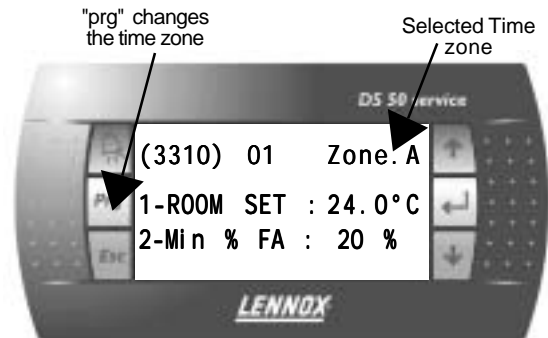


Selecting the HOUR for displays the page 3121 shown below:

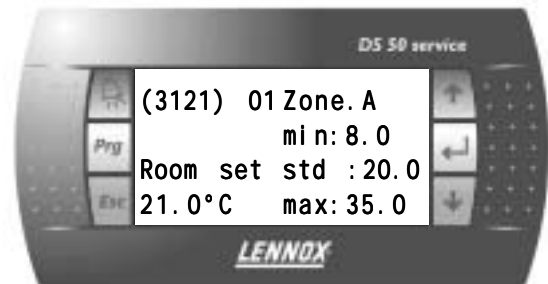


Zone Settings

From Main menu (0000) navigate down to sub-menu "SETTINGS", zone settings (3310).



In this particular page, pressing the "prg" key, changes the time zone. If "ROOM SET" is selected, this displays the room set point for the specific time zone shown in the top

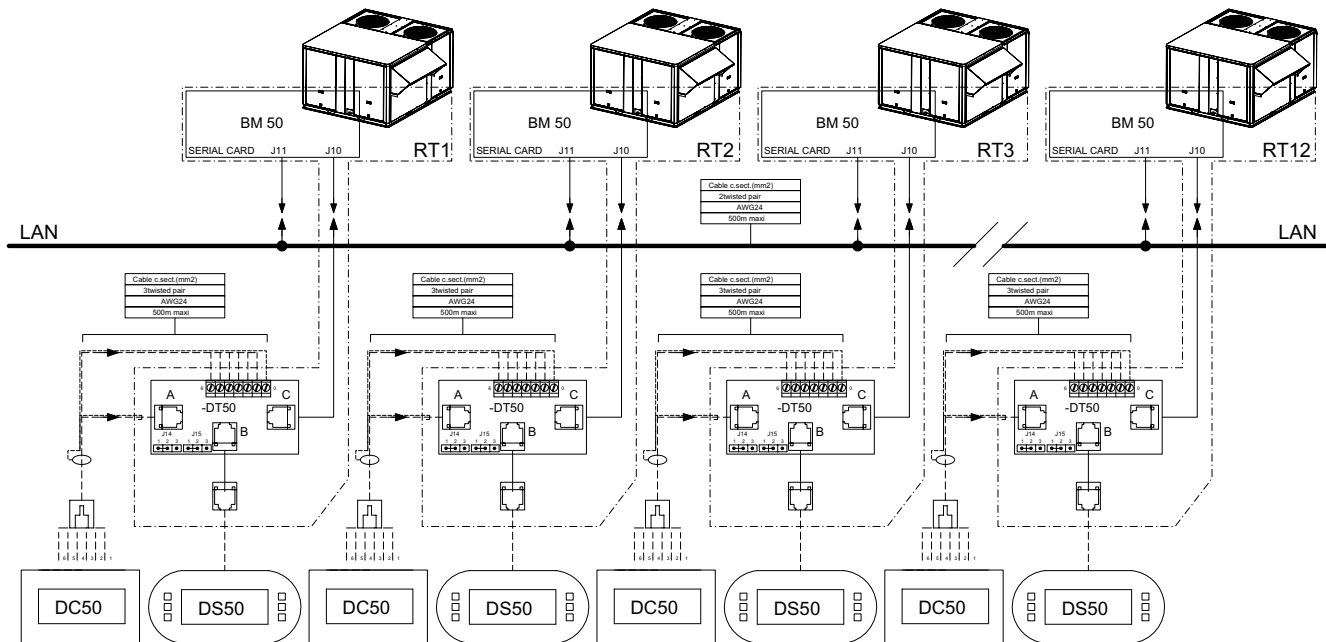


Pressing the "prg" validates any changes made, and move to the next time zone. "ESC" does not validate the changes and move back one step in the menu tree.

COMMUNICATION LINKS

Master / Slave

Rooftop can now be connected together (up to 12) via a double shielded pair of wire (0.75mm² not supplied by Lennox) and use different running modes, as explained below, with no cost increase.



	FAN	SET POINT	ROOM TEMP	COOLING HEAT MODE
1. DC50	MASTER	MASTER	N/A	N/A
2. DC50 Temperature	MASTER	STAND ALONE	MASTER	N/A
3. DC50 Average	MASTER	STAND ALONE	AVERAGE	N/A
4. Master/Slave Temperature	STAND ALONE	STAND ALONE	MASTER	N/A
5. Master/Slave Average.	STAND ALONE	STAND ALONE	AVERAGE	N/A
6. Master/Slave Cooling/Heating	STAND ALONE	STAND ALONE	STAND ALONE	MASTER
7. Back-up	All units are stand alone, one unit is waiting for a failure to start			
8 Rolling Back-up	All units are stand alone; one unit is waiting for a failure to start. This back-up unit changes every Tuesday			

_ 1 : DC50 : Master slave mode "total"

The master gives the ventilation order, and its set point to all other rooftops.

_ 2 : DC50 Temperature : Master slave mode "temperature"

The master gives the ventilation order and its room temperature/humidity to all other rooftops, but they have their own set point.

_ 3 : DC50 Average : Master slave mode "average"

The master gives the ventilation order and the room temperature/humidity used by all rooftop is the average of all rooftop. Each rooftop has its own set point.

_ 4 : Master/Slave Temperature : Master slave mode "temperature"

The master gives its room temperature/humidity to all other rooftops, but they have their own ventilation order & set point.

_ 5 : Master / Slave Average : Master slave mode "average"

The room temperature/humidity used by all rooftop is the average of all rooftop. Each rooftop has its own ventilation order & set point.

_ 6 : Master / Slave Cooling / Heating : Master slave mode "cooling/heating"

All rooftop are stand-alone but the slaves have to have the same running mode as the master (Cooling or heating).

_ 7 : Back-up mode

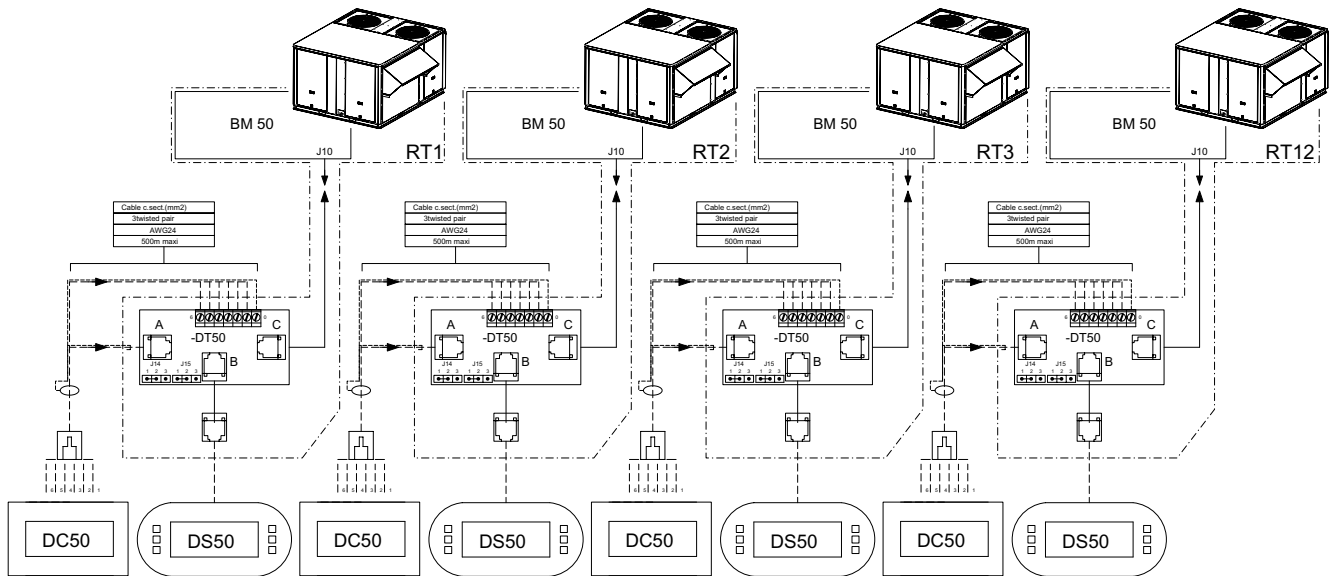
One rooftop is the back-up unit and will operate if any of the other rooftop has a failure.

_ 8 : Rolling Back-up mode

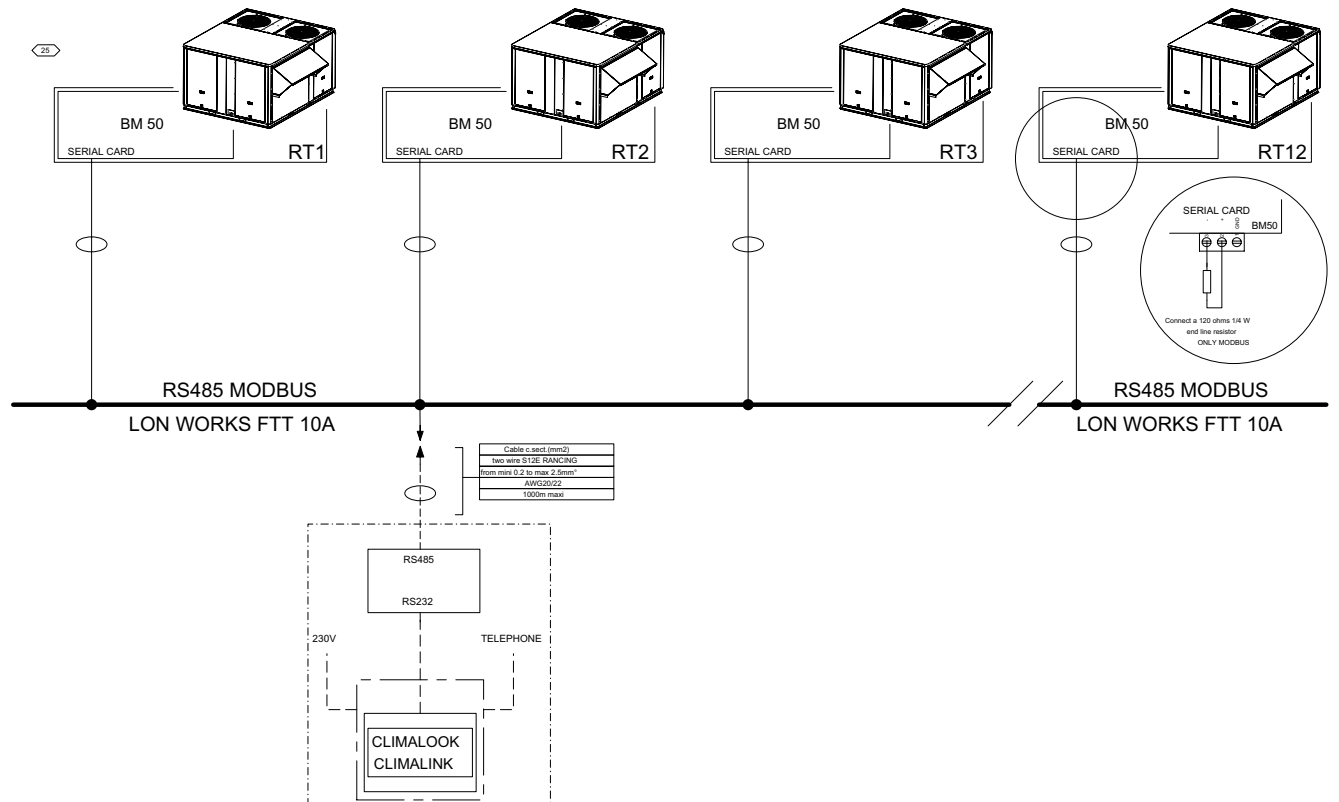
Same as above, except the "back-up" unit will be different each Tuesday. On top of that, the outside temperature/humidity given to all rooftop can either be the average of rooftop or be the external humidity/temperature of the master, making possible the use of a single "weather station" for the whole site. DS50 Comfort Display / DC50 Service Display



DS 50 : SERVICE DISPLAY / DC 50 : COMFORT DISPLAY

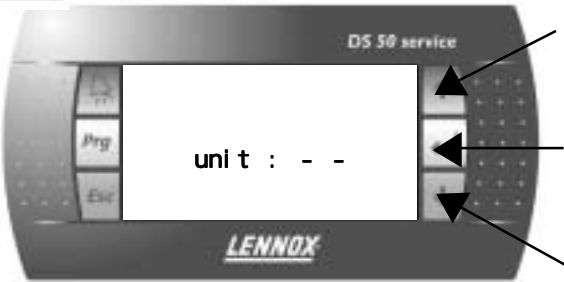


CLIMALINK / CLIMALOOK

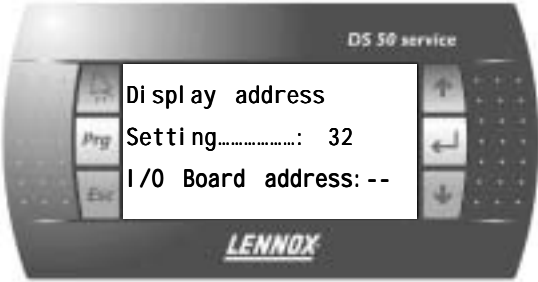




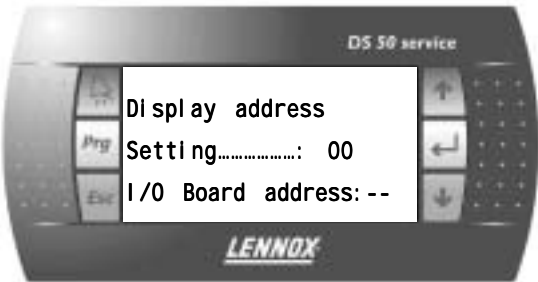
Mandatory operation if the units are connected with each other (Master/Slave link).



Press ↑↓↵ at the same time during a few seconds
Then you will see the screen as below.



Press the ←key until the cursor moves to the field "Display address setting"
Use the ↑↓ key to select the required value (usually "00") and confirm by pressing ↵.



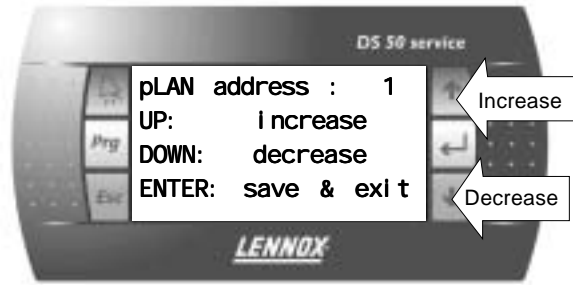
If the address has been changed it will display the screen shown as below.



Switch off the unit and then switch on.
Wait for a few seconds



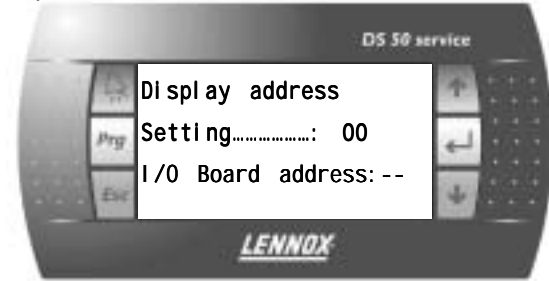
During this message, press ↑ & 🔔 at the same time during a few seconds until the new screen appears.
Use the ↑↓ key to select the required value for pLAN address (for example "2") and confirm by pressing ↵.



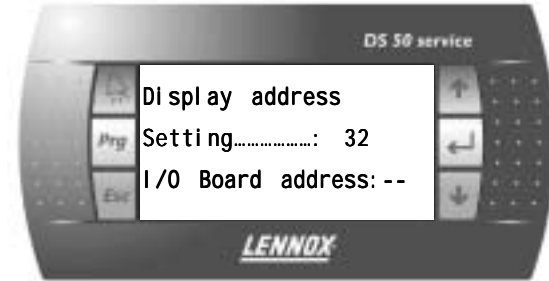
Switch off the unit and then switch on.



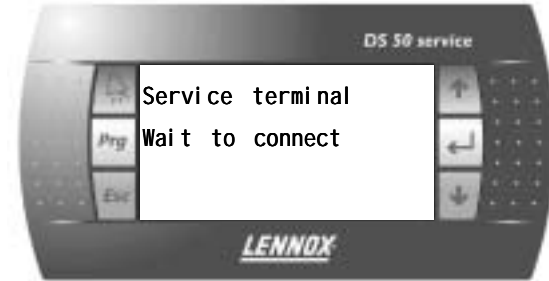
Press ↑↓↵ at the same time during a few seconds
Then you will see the screen as below.



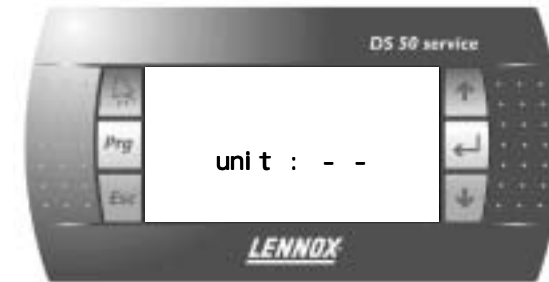
Press the ←key until the cursor moves to the field "Display address setting"
Use the ↑↓ key to select the required value (usually "32") and confirm by pressing ↵.



Disconnect the DS50 from the unit and then reconnect it.



Then you just have to indicate the number of the unit.





Main Screen Code	Description	Code	Description	Code	Description	Code	UNIT	Min	Factory	Max
1-Alarm	1000 #	1100 #		1110 #		1111				
2-Data	2000 1-General	2100 1-Temperature	2110	Outside Room	2111	°c				
				Supply	2112	°c				
				Return	2113	°c				
					2114	°c				
		2-Humidity	2120	Outside Room	2121	%.				
				Outside Room	2122	%.				
				Outside Room	2123	g/Kg				
				Room	2124	g/Kg				
		3-Other	2130	Air Pres.	2131	pa				
				CO2	2132	ppm				
				Sw On/Off	2133	On/Off				
				Sw Reset	2134	On/Off				
				Sw Unoc.	2135	On/Off				
		4-Out. Custom.	2140	BM50.1	2141	On/Off				
				BE50.1	2142	On/Off				
				BE50.2	2143	On/Off				
				BE50.3	2144	On/Off				
				BE50.4	2145	On/Off				
		5-In. Custom.	2150	BM50.1	2151	On/Off				
				BM50.2	2152	On/Off				
				BE50.1	2153	On/Off				
				BE50.2	2154	On/Off				
				BE50.3	2155	On/Off				
				BE50.4	2156	On/Off				
		6-In.% Custom.	2160	BE50.1	2161	°c				
				BE50.2	2162	°c				
				BE50.3	2163	°c				
				BE50.4	2164	°c				
				BE50.1	2165	%.				
				BE50.2	2166	%.				
				BE50.3	2167	%.				
				BE50.4	2168	%.				
	2-Control	2200 1-Room	2210	Sp Cool	2211	°c				
				Sp Heat	2212	°c				
				Capa Cool	2213	%				
				Capa Heat	2214	%				
				Sw Dis.Cool	2215	On/Off				
				Sw Dis.Heat	2216	On/Off				
		2-Reheat	2220	Set Point	2221	°c				
				Capacity	2222	%				
		3-Humidity	2230	Sp Dehu	2231	%				
				Sp Humi	2232	%				
				Capa Dehu	2233	%				
				Capa Humi	2234	%				
		4-TCB	2240	Sw G	2241	On/Off				
				Sw Y1	2242	On/Off				
				Sw Y2	2243	On/Off				
				Sw W1	2244	On/Off				
				Sw W2	2245	On/Off				
				Sw B	2246	On/Off				



Main Screen Code	Description	Code	Description	Code	Description	Code	UNIT	Min	Factory	Max	Description		
3-Fan	2300 1-Ventilation	2310	Config.	2311	List		List				[No / 500pa / 100pa]		
			State	2312	List		List					[Stopped / Schedule / Fault / Start]	
			Sw State	2313	On/Off		On/Off						
			Fire/Smoke	2314	On/Off		On/Off						
			Relay	2315	On/Off		On/Off						
			Low Speed	2316	On/Off		On/Off						
			Sw Speed	2317	On/Off		On/Off						
	2-Extraction		2320	State	2321	List		List				[Stopped / Schedule / Fault / Start]	
				Relay	2322	On/Off		On/Off					
	3-Condenser 1		2330	Config.	2331	List		List				[No / Yes]	
				State	2332	List		List					[Stopped / Schedule / Fault / Start]
				Sw State	2333	On/Off		On/Off					
				Relay	2334	On/Off		On/Off					
	4-Condenser 2		2340	Config.	2341	List		List				[No / Yes]	
				State	2342	List		List					[Stopped / Schedule / Fault / Start]
				Sw State	2343	On/Off		On/Off					
				Relay	2344	On/Off		On/Off					
5-Condenser 3		2350	Config.	2351	List		List				[No / Yes]		
			State	2352	List		List					[Stopped / Schedule / Fault / Start]	
			Sw State	2353	On/Off		On/Off						
			Relay	2354	On/Off		On/Off						
6-Condenser 4		2360	Config.	2361	List		List				[No / Yes]		
			State	2362	List		List					[Stopped / Schedule / Fault / Start]	
			Sw State	2363	On/Off		On/Off						
			Relay	2364	On/Off		On/Off						
4-Cooler	2400 1-Fresh Air	2410	Config.	2411	List		List				[No / 0%-50% / Modulation / 100%]		
			State	2412	List		List					[Stopped / Air Flow / Start / Enthalpy / Outside T. / Schedule / Defrost]	
		Mini.Air	2413	%		%							
		Modulat.	2414	%		%							
		Opening	2415	%		%							
		Calib.	2416	Yes/No		Yes/No							



Main Screen Code	Description	Code	Description	Code	Description	Code	Description	Code	UNIT	Min	Factory Max	Description
	2-Cold W/Coil	2420	Config. State	2421	Config. State	2422	Opening	2423	List			[No / Modulation] [Stopped / Air Flow / Start]
5-Compressor	1-Compressor 1	2510	Config. State	2511	Config. State	2512		2513	List			[No / C. only / H. only] [Stopped / Air Flow / Outside T. / Schedule / Switch / Fault (2) / Fault (1) / Ant-Sho-Cy / Start / Start Heat / Defrost]
			Defrost T	2514	Sw State	2515	Sw Low P.	2516	°C	On/Off		
			Relay	2517	H.Pump	2518	Sw Disable	2519	On/Off	On/Off		
			Run Time	2520	Config. State	2521	Defrost T.	2522	h	On/Off		
	2-Compressor 2	2520	Config. State	2523	Defrost T.	2524	Sw State	2525	List			
			Relay	2526	Sw Low P.	2527	H.Pump	2528	°C	On/Off		
			Sw Disable	2529	Run Time	2531	Config. State	2532	On/Off	On/Off		
			Run Time	2530	Defrost T.	2533	Sw State	2534	h	On/Off		
	3-Compressor 3	2530	Config. State	2535	Sw Low P.	2536	Relay	2537	List			
			H.Pump	2538	Sw Disable	2539	Run Time		°C	On/Off		
			Sw Disable						On/Off	On/Off		
			Run Time						h	On/Off		



Main Screen Code	Description	Code	Description	Code	Description	Code	UNIT	Min	Factory Max	Description
	4-Compressor	4	2540		Config. State	2541	List			
					Defrost T.	2542	List			
					Sw State	2543	°c			
					Sw Low P.	2544	On/Off			
					Relay	2545	On/Off			
					H.Pump	2546	On/Off			
					Sw Disable	2547	On/Off			
					Run Time	2548	On/Off			
						2549	h			
	5-Other		2550		Low Amb.	2551	On/Off			
					W/Cond.1	2552	°c			
					W/Cond.2	2553	°c			
6-Heater	2600	1-Gas	2610		Config. State	2611	List			[No / 2 steps / 4steps / Modulation]
						2612	List			[Stopped / Air Flow / Schedule / Switch / Fault (1) / Fault (2)]
					Sw State 1	2613	On/Off			
					Sw State 2	2614	On/Off			
					Relay 1	2615	On/Off			
					Relay 2	2616	On/Off			
					High	2617	On/Off			
					Modulat.	2618	%			
					Sw Disable	2619	On/Off			
	2-Elec. H.		2620		Config. State	2621	List			[No / Yes / 2 steps / Modulation]
						2622	List			[Stopped / Air Flow / Outside T. / Schedule / Switch / Fault (1) / Start]
					Sw State 1	2623	On/Off			
					Sw State 2	2624	On/Off			
					Relay 1	2625	On/Off			
					Relay 2	2626	On/Off			
					Modulat.	2627	%			
					Sw Disable	2628	On/Off			



Main Screen Code	Description	Code	Description	Code	Description	Code	UNIT	Min	Factory Max	Description
3-Hot W/Coil		2630	Config. State	2631	Config. State	2632	List			[No / Modulation]
					Opening Sw Freeze	2633	%			[Stopped / Air Flow / Start / Schedule / Switch / Fault (1) / Fault (2)]
					Sw Disable	2634	On/Off			
						2635	On/Off			
4-Pump		2640	Config. State	2641	Config. State	2642	List			[No / Yes]
					Sw State Relay	2643	On/Off			[Stopped / Air Flow / Fault (1) / Start]
						2644	On/Off			
7-Humidif.		2710	Config. State	2711	Config. State	2712	List			[No / Modulation]
					Sw State Modulat.	2713	On/Off			[Stopped / Air Flow / Schedule / Fault (1) / Start]
						2714	%			
8-Com. 2800	1-Outside	2810	Value Sensor	2811	Value Sensor	2812	°C			
					Link BMS	2813	°C			
					Value Sensor	2814	°C			
					Link BMS	2815	%			
					Value Sensor	2816	%			
					Link BMS	2817	%			
					Value Sensor	2818	%			
					Link BMS	2821	°C			
					Value Sensor	2822	°C			
					Link BMS	2823	°C			
2-Room					Value Sensor	2824	°C			
					Link BMS	2825	%			
					Value Sensor	2826	%			
					Link BMS	2827	%			
			Value Sensor	2828	%					

ALL CODES SHOWING (1) CAN BE ADJUSTED FOR EACH TIME ZONE



Main Screen Code	Description	Code	Description	Code	Description	Code	UNIT	Min	Factory	Max	Description
3-Setting	3000 1-General	3100	1-Order	3110	On/Off	3111	On/Off	~	No	~	[On/Off] Unit
					Reset Al.	3112	Yes/No	~	No	~	[Reset] Discharges the safety measures of the unit
					Resume	3113	Yes/No	~	No	~	[Override] Cancel any override action set with the DC50
					Test	3114	List	0	0	6	[Quickly / Defrost / Gas 1 Low / Gas 1 High / Gas 2 / 24/24.7 / Lennox] Test Point Lennox
			2-Clock	3120	Hour	3121	h	0	~	23	[Clock] Clock setting "Hour"
					Minute	3122	m	0	~	59	[Clock] Clock setting "Minute"
					Day	3123	~	1	~	31	[Clock] Clock setting "Day"
					Month	3124	~	1	~	12	[Clock] Clock setting "Month"
					Year	3125	~	2	~	99	[Clock] Clock setting "Year"
					Win/Sum	3126	Yes/No	~	Yes	~	Automatic control of Winter & Summer zone or Not
			2-Schedule	3200	1-Time	3211	h	0	22	23	[Zone Setting] Starting time "Hour" for "Unoccupied" zone
					Start.Uno	3212	m	0	0	59	[Zone Setting] Starting time "Minutes" for "Unoccupied" zone
					Start.z.A	3213	h	0	6	23	[Zone Setting] Starting time "Hour" for "Zone A"
					Start.z.A	3214	m	0	0	59	[Zone Setting] Starting time "Minutes" for "Zone A"
					Start.z.B	3215	h	0	22	23	[Zone Setting] Starting time "Hour" for "Zone B"
					Start.z.B	3216	m	0	0	59	[Zone Setting] Starting time "Minutes" for "Zone B"
					Start.z.C	3217	h	0	22	23	[Zone Setting] Starting time "Hour" for "Zone C"
					Start.z.C	3218	m	0	0	59	[Zone Setting] Starting time "Minutes" for "Zone C"
			2-Anticipation	3220	Foot	3221	°C	-10	10	20	[Anticipation Function] bottom of the slope in °C. Limit of activation of the function. This allows an anticipated startup in the morning depending on the outdoor temperature. Only for the "Zone-A"
					Gradient	3222	m/°C	0	0	100	[Anticipation Function] Slope in "Minutes of anticipation per degrees". This allows an anticipated startup in the morning depending on the outdoor temperature. Only for the "Zone-A"



Main Screen Code	Description	Code	Description	Code	UNIT	Min	Factory	Max	Description
3-Control	1-Customer	3310	Sp Room	3311	°c	8	20	35	[Room SP] Required room temperature set point in °C. Middle of the dead zone.
			Mini.Air	3312	%	0	20	100	[Room SP] Required room minimum fresh air rate in % Middle of the dead zone.
	2-Room	3320	Sp Dyna	3321	°c	0	99.9	99.9	[Room SP] Required value for the Dynamic Set Point. Allows the room set point to change according to outdoor temperature
3-Reheat			Sp Cool	3322	°c	8	21	35	[Room SP] Required maximum room emperature in °C. Cooling set point
			Sp Heat	3323	°c	8	19	35	[Room SP] Required minimum room temperature in °C. Heating set point
		Swap Heater	3324	Yes/No	~	No	~	[OFF] Heat Pump and then Heater [ON] Heater and then Heat Pump	
		Activation	3331	Yes/No	~	No	~	[F-Air Reheat] Activate reheating of the fresh air in the dead zone to maintain supply temperature.	
4-Humidity			Swap Heater	3332	Yes/No	~	No	~	[F-Air Reheat] Prioritise the heating mode for fresh air reheat. [OFF] Heat Pump and then Heater [ON] Heater and then Heat Pump
		3340	Sp Dehu	3341	%	0	100	100	[Humidity] Desired Maximum relative humidity in Room (in %). - Dehumidification set point.
5-Enable			Sp Humi	3342	%	0	0	100	[Humidity] Desired Minimum relative humidity in Room (in %). - Humidification set point.
		3350	Fan On/Off	3351	Yes/No	~	Yes	~	[Enable] Stopping and running of the Fan Blower.[OFF] the blower is stopped, [ON] the blower is running.
			Fan Dead	3352	Yes/No	~	Yes	~	[Enable] Stopping and running of the fan in the "Control Dead Zone". [OFF] the blower is stopped, [ON] the blower is running.
			F.Air	3353	Yes/No	~	Yes	~	[Enable] Run eco: [ON] the Economiser is running, [OFF] the Economiser if stopped.
			CO2	3354	Yes/No	~	Yes	~	[Enable] Run CO2 Sensor: [ON] Switch-on the CO2 on a Zone, [OFF] Stop the CO2 sensor on a zone.
			Comp.Cool.	3355	Yes/No	~	Yes	~	[Enable] [OFF] Force the unloading of compressors in cooling mode.
			Comp.Heat.	3356	Yes/No	~	Yes	~	[Enable] [OFF] Force the unloading of compressors in heating mode.
			AuxHeat	3357	Yes/No	~	Yes	~	[Enable] [OFF] Force the unloading of heating module (electric, gas or heat water coil)
			Humidif.	3358	Yes/No	~	Yes	~	[Enable] [OFF] Force the unloading of humidity control.
			Low Noise	3359	Yes/No	~	No	~	[Enable] Force the noise reduction mode. [ON] 50% of the compressors are unloaded in "Unoccupied" zone



Main Screen Code	Description	Code	Description	Code	UNIT	Min	Factory	Max	Description
6-Capacity	Room	3360	Room	3361	~	1	4	50	[Capacity Factor] Reactivity : Refer to "Control Software Features" p ?
	Reheat		Reheat	3362	~	1	4	50	[Capacity Factor] Reactivity: Refer to "Control Software Features" p ?
	Dehu.		Dehu.	3363	~	1	4	50	[Capacity Factor] Reactivity: Refer to "Control Software Features" p ?
	Humi.		Humi.	3364	~	1	4	50	[Capacity Factor] Reactivity: Refer to "Control Software Features" p ?
7-Safety	Room Low	3370	Room Low	3371	°c	5	5	20	[Safety Limit] Room temperature "Low Limit" in °C Threshold of activation of an alarm
	Room High		Room High	3372	°c	20	40	40	[Safety Limit] Room temperature "High Limit" in °C Threshold of activation of an alarm
	Sup.Lo.1		Sup.Lo.1	3373	°c	90r5	100r8	19	[Safety Limit] Supply temperature low Limit(in °c) - Threshold of activation of the 1° level of security: Reduce the Capacity Factor by one stage of compressor and switch to minimum Fresh Air.
	Sup.Lo.2		Sup.Lo.2	3374	°c	7 or 38	0r6	17	[Safety Limit] Supply temperature low Limit (in °c) - Threshold of activation of the 2° level of security: Reduce the Capacity Factor to zero and switch to 0% Fresh Air, open the HWC valve.
	Sup.Lo.3		Sup.Lo.3	3375	°c	5 or 16	0r2	15	[Safety Limit] Supply temperature low Limit (in °c) - Threshold of activation of the 3° level of security. - Alarm threshold, the unit is switched off.
	Sup.Hi.1		Sup.Hi.1	3376	°c	20	40	70	[Safety Limit] Supply temperature high Limit (in °c) Threshold of activation of the 1° level of security: reduce the capacity factor by one stage of compressor. Close the HWC valve.
	Sup.Hi.2		Sup.Hi.2	3377	°c	20	60	70	[Safety Limit] Supply temperature high Limit (in °c) - Threshold of activation of the 2° level of security: Alarm threshold: Reduce the capacity factor to 0
	Room Low		Room Low	3378	%	0	0	1000	[Safety Limit] Room relative humidity low Limit (in %) - Threshold of activation of the alarm
	Room High		Room High	3379	%	0	1000	1000	[Safety Limit] Room humidity high Limit (in %) - Threshold of activation of the alarm
	4-Ventilation	Air Flow	3410	Air Flow	3411	pa	0	25	1000	[Safety Limit] Airflow Detection Threshold of pressure difference in Pa indicating Low Airflow Rate. If the pressure difference across the filter is lower than this threshold the safety is activated.
No Filter			No Filter	3412	pa	0	50	1000	[Safety Limit] Missing Filters. Threshold of pressure difference in Pa indicating absence of filters. If the pressure difference across the filter is lower than this threshold the safety is activated.
Dirty Fil.			Dirty Fil.	3413	pa	0	250	1000	[Safety Limit] Dirty Filters. Threshold of pressure difference in Pa indicating Filters are Dirty. If the pressure difference across the filter is Higher than this threshold the safety is activated.



Main Screen Code	Description	Code	Description	Code	Description	Code	UNIT	Min	Factory	Max	Description
5-Fresh Air	3500	..	3510	Out.Limit	3511	°c	-20	-20	40	[Fresh air Damper] minimum outdoor temperature limit in °C. If the outdoor temperature is lower than this limit the control in free cooling is not allowed. The fresh air damper is then set to the minimum setting.	
		..		Maximum	3512	%	0	100	100	[Fresh air Damper] Maximum allowable opening of the fresh air damper in %	
		..		Start Ext	3513	%	0	30	100	[Extraction] Threshold of activation of the power exhaust fan according to the position of the economiser damper in %.	
		..		Mini.Co2	3514	ppm	0	1000	2000	[CO2] Fresh air damper minimum opening threshold in ppm	
		..		Maxi.Co2	3515	ppm	0	1500	2000	[CO2] Fresh air damper maximum opening limit in ppm	
		..		Calib.	3516	Yes/No	~	Yes	~	Allow the calibration of the minimum fresh air.	
		..		Recovery	3517	Yes/No	~	No	~	[NO/YES]Heat recovery	
6-Compressor	3600	1-Out.Limit	3610	Cool. 50	3611	°c	-10or10	20	40	[Limit of Regulation] * 1° If Option Regulation all seasons - Reduction speed of the fans condenser - Threshold of outside temperature (in °c). - If the outside temperature is lower than this threshold the fans condenser function in low speed * 2° If not - Unloading 50% of the Compressors in Cooling - Threshold of outside temperature (in °c). - If the outside temperature is lower than this threshold 50% of the compressors are used by the Regulation [Limit of Regulation] * 1° If Option Regulation all seasons - Stopping of the fans condenser - threshold of outside temperature (in °c). - If the outside temperature is lower than this threshold the fans condenser are stopped * 2° If not - Unloading 100% of the Compressors in Cold - Threshold of outside temperature (in °c). - If the outside temperature is lower than this threshold the compressors are not used by the Regulation	
				Cool.100	3612	°c	-10or10	12	40	[Limit of Regulation] * 1° If Option Regulation all seasons - Stopping of the fans condenser - threshold of outside temperature (in °c). - If the outside temperature is lower than this threshold the fans condenser are stopped * 2° If not - Unloading 100% of the Compressors in Cold - Threshold of outside temperature (in °c). - If the outside temperature is lower than this threshold the compressors are not used by the Regulation	
				Heat.100	3613	°c	-50	-20	40	[Limit of Regulation] Unloading 100% of the Compressors in Heating - Threshold of outside temperature (in °c). - If the outside temperature is lower than this threshold the compressors are not used by the Regulation.	



Main Screen Code	Description	Code	Description	Code	UNIT	Min	Factory	Max	Description
	2-Defrost	3620	Type	3621	List	0	0	1	[Function Defrost] Choice of defrost: 1 = "cycling" or 0 = dynamic
			Outside	3622	°c	8	10	20	[Function Defrost] Authorization of defrost - Threshold of outside temperature (in °c)
			Coil	3623	°c	-10	-2	10	[Function Defrost] Authorization of defrost - Threshold of coil temperature (in °c)
			Time Limit	3624	m	30	45	90	[Function Defrost] Time limit for icing (in minute) -For the dynamic defrost the unit will run this minimum amount of time. If cycling defrost this is the time delay to start the defrost once the temperature conditions are met.
			Time Fc	3625	~	1	3	5	[Function Defrost] Number of condenser fan start-ups to end defrost. If the number of start-ups can not be achieved within 4min the defrost will end.
	3-Safety	3630	W/Cd Mini	3631	°c	4	5	20	[Safety limit] Low Temperature Limit for water heat exchanger output (in °c) - Threshold of activation of the safety limit.
			W/Cd Maxi	3632	°c	20	45	46	[safety limit] High Temperature Limit for water heat exchanger output (in °c) - Threshold of activation of the safety limit.
7-Heater	3700 1-Gas	3710	.	3711					
	2-Elec. H.	3720	Out.Limit	3721	°c	-20	10	40	[Limit of Regulation] Unloading 100% of heaters - Threshold of outside temperature (in °c). If the outside temperature is higher than this threshold Heaters are switched off.
			Sp Mixing	3722	°c	0	5	10	[Electrical heater] Regulation all seasons of FLEXY FX - Threshold of temperature of mixture (in °c) - If the temperature of mixture is lower than this threshold Electrical Heaters are activated
			Maximum	3723	%	0	100	100	[Electrical heater] For Electric Heater with Triac: Maximum power of use of Electrical heater (in %)
	3-Hot W/Coil	3730	Out.Limit	3731	°c	-20	10	40	Authorise a leak-flow
			Opening	3732	%	0	0	50	
			A.Freeze	3733	List	0	0	?	[0% / 100%] Open or close the V3V
	4-Pump	3740	Mode	3741	List	0	0	?	[No/Frost.AI/Start heat/Start] Choose startup mode for the pump



Main Screen Code	Description	Code	Description	Code	Description	Code	UNIT	Min	Factory	Max	Description
8-Config.	1-Unit	3800	1-Unit	3810	Range	3811	List	0	6	?	Type of unit: BC, BH, BGN, BG, BD, FC, FH, FGN, FG, FD, FX or FW
					Size	3812	List	0	0	?	See table n° 5 Page 110
					Hu. Pack	3813	Yes/No	~	No	~	[Configuration] Activation of the Humidity Management Option
					TCB	3814	Yes/No	~	No	~	[Configuration] Configuration of the Thermostat Control Board.
2-Compressor		3820	LAK	3821	LAK	3821	Yes/No	~	No	~	[Configuration] Low Ambient Kit "all season control"
			Wat/Cond	3822	Wat/Cond	3822	Yes/No	~	No	~	[Configuration] Activation of the "Optimized Defrost" Option. Only for Flexy 85_100 with split airflow.
			085/100 +	3823	085/100 +	3823	Yes/No	~	No	~	[Configuration] Activation of the "Optimized Defrost" Option. Only for Flexy 85_100 with split airflow.
3-Option		3830	AuxHeat	3831	AuxHeat	3831	List	0	0	6	[Configuration] Configuration of the Heating Input: HWC; Electric Heater S/M/H or Gas 2/4/2 pro. /4 pro. For 20kW ' 60kW choose "gas 2"; for 120kW ' 180kW choose "gas 4"; "pro." means modulating gas
			F.Air	3832	F.Air	3832	List	0	0	3	[Configuration] Configuration of the Fresh Air / Economiser: NO, 100% fixed or 0-50% or 0-100% Modulating.
			P.Air	3833	P.Air	3833	List	0	0	2	[Configuration] Configuration of the differential pressure sensor: 0Pa; 500Pa; 1000Pa

Main Screen Code	Description	Code	Description	Code	UNIT	Min	Factory	Max	Description
	4-Out. Custom.	3840	BM50.1	3841	List	0	0	6	[Configuration] Free output to be customised on the BM50
			BE50.1	3842	List	0	0	6	[Configuration] Free output to be customised (first output of the extension board BE50)
			BE50.2	3843	List	0	0	6	[Configuration] Free output to be customised (Second output of the extension board BE50)
			BE50.3	3844	List	0	0	6	[Configuration] Free output to be customised (Third output of the extension board BE50)
			BE50.4	3845	List	0	0	6	[Configuration] Free output to be customised (Fourth output of the extension board BE50)
	5-In. Custom.	3850	BM50.1	3851	List	0	0	8	[Configuration] Free input to be customised on the BM50
			BM50.2	3852	List	0	0	8	[Configuration] Free input to be customised on the BM50
			BE50.1	3853	List	0	0	8	[Configuration] Free input to be customised (input on the extension board BE50)
			BE50.2	3854	List	0	0	8	[Configuration] Free input to be customised (input on the extension board BE50)
			BE50.3	3855	List	0	0	8	[Configuration] Free input to be customised (input on the extension board BE50)
			BE50.4	3856	List	0	0	8	[Configuration] Free input to be customised (input on the extension board BE50)
	6-In.% Custom.	3860	BE50.1	3861	List	0	0	4	[Configuration] Free input to be customised on the BM50
			BE50.2	3862	List	0	0	4	[Configuration] Free input to be customised on the BM50
			BE50.3	3863	List	0	0	4	[Configuration] Free input to be customised (input on the extension board BE50)
			BE50.4	3864	List	0	0	4	[Configuration] Free input to be customised (input on the extension board BE50)



Main Screen Code	Description	Code	Description	Code	Description	Code	UNIT	Min	Factory	Max	Description
9-Cor.	3900 1-Display	3910	Sp Mini.	3911	°C	8	17	21	[Mode] Minimum temperature for the required room temperature set point at the middle of the dead zone.		
			Sp Maxi.	3912	°C	21	27	35	[Mode] Maximum temperature for the required room temperature set point at the middle of the dead zone.		
			Offset	3913	°C	-5	0	5	Offset of the value measured by the ambient temperature sensor		
			Standard Sp	3914	Yes/No	~	No	~	Allows a reset of ALL set point to standard factory settings (when available).No possible for configurations. And clock as there is no factor settings for these.		
<hr/>											
2-Link											
		3920	ID	3921	~	1	1	12	[Configuration] Identification address for the unit from 1 to 12.		
			Number	3922	~	1	1	12	[Configuration] Number of units on the BUS.		
			Type.	3923	List	0	0	6	Unit with address N°1 is always the master. Master / Slave relationship: refer to "Control Communication Links" p?		
			Type	3924	List	0	0	2	Configuration of the sharing of the Outdoor humidity and temperature.		
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3-BMS											
		3930	ID	3931	~	1	1	200	[Configuration] Identification number on the 485 Bus		
			Type	3932	List	0	2		Climatic, ModBus or LonWorks		
			Baud	3933	List	3	4		1200, 2400, 4800, 9600 or 19200		
			Watchdog	3934	~	0	0	1000	[BMS] Activation of the control by a computer or an automat - mode BMS is activated if this value is different from zero, This value is decreased every second		
			BMS Unoc.	3935	On/Off	~	Off	~	[BMS] Cancel the override unoccupied mode		
			Speed	3936	On/Off	~	Off	~	Blower Speed Control in the dead zone: [ON] the unit runs in Low Speed mode [OFF] the unit runs in High Speed mode		

UNIT RANGES

Table 14

BALTIC										FLEXY				
BCK	BHK	BGK	BDK	BGN	FCK	FHK	FGK	FDK	FXK	FGN	FWN			
BCK020NS	BHK020NS	BGK020SS	BDK020SS	BGN001S	FCK085	FHK085	FGK085S	FDK085S	FXK025	FGN002S	FWN002S			
BCK025NS	BHK025NS	BGK025SS	BDK025SS	BGN001H	FCK100	FHK100	FGK100S	FDK100S	FXK030	FGN003S	FWN003S			
BCK030NS	BHK030NS	BGK030SS	BDK030SS		FCK120	FHK120	FGK120S	FDK120S	FXK035	FGN004S	FWN004S			
BCK035NS	BHK035NS	BGK035SS	BDK035SS		FCK140	FHK140	FGK140S	FDK140S	FXK040	FGN005S	FXN005S			
BCK040NS	BHK040NS	BGK040SS	BDK040SS		FCK160	FHK160	FGK160S	FDK160S	FXK055	FGN002H	FWN002H			
BCK045NS	BHK045NS	BGK045SS	BDK045SS		FCK190	FHK190	FGK190S	FDK190S	FXK070	FGN003H	FWN003H			
BCK030ND	BHK030ND	BGK030SD	BDK030SD				FGK085H	FDK085H	FXK085	FGN004H	FWN004H			
BCK035ND	BHK035ND	BGK035SD	BDK035SD				FGK100H	FDK100H	FXK100	FGN005H	FWN005H			
BCK040ND	BHK040ND	BGK040SD	BDK040SD				FGK120H	FDK120H	FXK110					
BCK045ND	BHK045ND	BGK045SD	BDK045SD				FGK140H	FDK140H	FXK140					
BCK050ND	BHK050ND	BGK050SD	BDK050SD				FGK160H	FDK160H	FXK170					
BCK060ND	BHK060ND	BGK060SD	BDK060SD				FGK190H	FDK190H						
BCK070ND	BHK070ND	BGK070SD	BDK070SD											
		BGK020HS	BDK020HS											
		BGK025HS	BDK025HS											
		BGK030HS	BDK030HS											
		BGK035HS	BDK035HS											
		BGK040HS	BDK040HS											
		BGK045HS	BDK045HS											
		BGK030HD	BDK030HD											
		BGK035HD	BDK035HD											
		BGK040HD	BDK040HD											
		BGK045HD	BDK045HD											
		BGK050HD	BDK050HD											
		BGK060HD	BDK060HD											
		BGK070HD	BDK070HD											



MODBUS Settings and Readings

@ (hexa)	@ (deci)				DS50
01H	1	R/W	L	[On / Off] Unit	3111
02H	2	R/W	L	[Reset] Discharges the safety measures of the unit	3112
03H	3	R/W	L	[Enable] Stopping and running of the Fan Blower.[Off] the blower is stopped, [On] the blower is running.	3351 (BMS)
04H	4	R/W	L	[Enable] Stopping and running of the fan in the "Control Dead Zone". [Off] the blower is stopped, [On] the blower is running.	3352 (BMS)
05H	5	R/W	L	[BMS] Activation of the Inoccupation mode [Off] occupation mode - [On] inoccupation mode	3933
06H	6	R/W	L	[Room regulation] Choices of the priority of regulation in Heating - [Off] Heat Pump then Hot water coil or Electric or Gas [On] Hot water coil or Electric or Gas then Heat Pump	3324 (BMS)
07H	7	R/W	L	[F-Air Reheat] Activate reheating of the fresh air in the dead zone to maintain supply temperature.	3331 (BMS)
08H	8	R/W	L	[F-Air Reheat] Choices of the priority of regulation in Heating - [Off] Heat Pump then Hot water coil or Electric or Gas [On] Hot water coil or Electric or Gas then Heat Pump	3332 (BMS)
09H	9	R/W	L	[Enable] Run eco: [On] the Economiser is running, [Off] the Economiser if stopped.	3353 (BMS)
0AH	10	R/W	L	[Enable] Run CO2 Sensor: [On] Switch-on the CO2 control on a Zone, [Off] Stop the CO2 control on a zone.	3354 (BMS)
0BH	11	R/W	L	[Enable] [OFF] Force the unloading of compressors in cooling mode.	3355 (BMS)
0CH	12	R/W	L	[Enable] [OFF] Force the unloading of compressors in heating mode.	3356 (BMS)
0DH	13	R/W	L	[Enable] [OFF] Force the unloading of heating module (electric, gas or heat water coil)	3357 (BMS)
0EH	14	R/W	L	[Enable] [OFF] Force the unloading of humidity control.	3358 (BMS)
0FH	15	R/W	L	not used	
10H	16	R/W	L	[Clock] [OFF] read hour & minute [ON] write hour & minute	...

R = Read
W = Write
L = Logical



MODBUS Settings and Readings

@ (hexa)	@ (deci)				DC50
11H	17	R/W	L	[Dry contact] Digital Output, Free 1, BM50-J17-NO12	2141
12H	18	R/W	L	[Dry contact] Digital Output, Free 2, BE50-J5-NO1	2142
13H	19	R/W	L	[Dry contact] Digital Output, Free 3, BE50-J6-NO2	2143
14H	20	R/W	L	[Dry contact] Digital Output, Free 4, BE50-J7-NO3	2144
15H	21	R/W	L	[Dry contact] Digital Output, Free 5, BE50-J8-NO4	2145
16H	22	R/W	L	not used	
17H	23	R/W	L	not used	
18H	24	R/W	L	not used	
19H	25	R/W	L	not used	
1AH	26	R/W	L	not used	
1BH	27	R/W	L	not used	
1CH	28	R/W	L	not used	
1DH	29	R/W	L	not used	
1EH	30	R/W	L	not used	
1FH	31	R/W	L	not used	
20H	32	R/W	L	not used	
21H	33	R	L	[Alarm] General	1000
22H	34	R	L	[On/Off] Fan, Blower	2315
23H	35	R	L	[On/Off] Fan, Extraction	2321
24H	36	R	L	[On/Off] Compressor, 1	2516
25H	37	R	L	[On/Off] Compressor, Heat pump, 1	2517
26H	38	R	L	[On/Off] Compressor, 2	2526
27H	39	R	L	[On/Off] Compressor, Heat pump, 2	2527
28H	40	R	L	[On/Off] Compressor, 3	2536
29H	41	R	L	[On/Off] Compressor, Heat pump, 3	2537
2AH	42	R	L	[On/Off] Compressor, 4	2546
2BH	43	R	L	[On/Off] Compressor, Heat pump, 4	2547
2CH	44	R	L	[On/Off] Gas, Burner, 1	2615
2DH	45	R	L	[On/Off] Gas, Burner, 2	2616
2EH	46	R	L	[On/Off] Gas, Burner, High power, 1	2617
2FH	47	R	L	[On/Off] Electrical heaters, 1	2625
30H	48	R	L	[On/Off] Electrical heaters, 2	2626
31H	49	R	L	[Dry contact] Digital Input, Free 1, BM50-J8-ID13	2151
32H	50	R	L	[Dry contact] Digital Input, Free 2, BM50-J8-ID14	2152
33H	51	R	L	[Dry contact] Digital Input, Free 3, BE50-J4-ID1	2153
34H	52	R	L	[Dry contact] Digital Input, Free 4, BE50-J4-ID2	2154
35H	53	R	L	[Dry contact] Digital Input, Free 5, BE50-J4-ID3	2155
36H	54	R	L	[Dry contact] Digital Input, Free 6, BE50-J4-ID4	2156
37H	55	R	L	not used	
38H	56	R	L	not used	
39H	57	R	L	not used	
3AH	58	R	L	not used	
3BH	59	R	L	not used	
3CH	60	R	L	not used	
3DH	61	R	L	not used	
3EH	62	R	L	not used	
3FH	63	R	L	not used	
40H	64	R	L	not used	



MODBUS Settings and Readings

@ (hexa)	@ (dec)				DS50
01H	1	R/W	1 = 1 s	[BMS] Activation of the control by a computer or an automat - mode BMS is activated if this value is different from zero, This value is decreased every second	3932
02H	2	R/W	10 = 1.0°C	[Occupation][Room SP] Required maximum room temperature in °C. Cooling set point	3322 (BMS)
03H	3	R/W	10 = 1.0°C	[Occupation][Room SP] Required minimum room temperature in °C. Heating set point	3323 (BMS)
04H	4	R/W	1 = 1%	[Room SP] Required room minimum fresh air rate in % Middle of the dead zone.	3312 (BMS)
05H	5	R/W	10 = 1.0°C	[Inoccupation][Room SP] Required maximum room temperature in °C. Cooling set point	3322 (Uno)
06H	6	R/W	10 = 1.0°C	[Inoccupation][Room SP] Required minimum room temperature in °C. Heating set point	3323 (Uno)
07H	7	R/W	1 = 1%	[Humidity] Desired Maximum relative humidity in Room (in %). – Dehumidification set point.	3341 (BMS)
08H	8	R/W	1 = 1%	[Humidity] Desired Minimum relative humidity in Room (in %). – Humidification set point.	3342 (BMS)
09H	9	R/W		not used	
0AH	10	R/W		not used	
0BH	11	R/W		not used	
0CH	12	R/W	1 = 1h	[Clock] Hour	3121
0DH	13	R/W	1 = 1m	[Clock] Minute	3122
0EH	14	R/W	1 = 1	[Clock] Day of the month	3123
0FH	15	R/W	1 = 1	[Clock] Month	3124
10H	16	R/W	1 = 2001	[Clock] Year	3125
11H	17	R/W	10 = 1.0°C	[BMS] Room temperature coming from the BMS	2824
12H	18	R/W	10 = 1.0%	[BMS] Room humidity coming from the BMS	2828
13H	19	R/W	10 = 1.0°C	[BMS] Outdoor temperature coming from the BMS	2814
14H	20	R/W	10 = 1.0%	[BMS] Outdoor humidity coming from the BMS	2818
15H	21	R/W		not used	
16H	22	R/W		not used	
17H	23	R/W		not used	
18H	24	R/W		not used	
19H	25	R/W		not used	
1AH	26	R/W		not used	
1BH	27	R/W		not used	
1CH	28	R/W		not used	
1DH	29	R/W		not used	
1EH	30	R/W		not used	
1FH	31	R/W		not used	



MODBUS Settings and Readings

@ (hexa)	@ (dec)				DS50
20H	32	R/W		not used	
21H	33	R	1 = 1	[Alarm] Code Error	1000
22H	34	R	10 = 1.0°C	[Temperature] Room	2112
23H	35	R	10 = 1.0°C	[Temperature] Outdoor	2111
24H	36	R	10 = 1.0°C	[Temperature] Supply	2113
25H	37	R	10 = 1.0°C	[Temperature] Return	2114
26H	38	R	10 = 1.0%	[Relative Humidity] Room	2122
27H	39	R	10 = 1.0 g/Kg	[Absolute Humidity] Room	2124
28H	40	R	10 = 1.0%	[Relative Humidity] Outdoor	2121
29H	41	R	10 = 1.0 g/Kg	[Absolute Humidity] Outdoor	2123
2AH	42	R	1 = 1 pa	[Flow] Differential pressure on the air, in pascal	2131
2BH	43	R	1 = 1 ppm	[CO ₂] Level in ppm	2132
2CH	44	R	1 = 1%	[% of opening] Register of fresh air	2413
2DH	45	R	1 = 1%	[% of opening] Valve gas	2618
2EH	46	R	1 = 1%	[% of opening] Electrical heaters (Triac)	2627
2FH	47	R	1 = 1%	[% of opening] Hot water coil	2633
30H	48	R	1 = 1%	[% of opening] Humidifier	2714
31H	49	R	10 = 1.0°C	[Dry contact] Temperature, Free 1, BE50-J9-B1	2161
32H	50	R	10 = 1.0°C	[Dry contact] Temperature, Free 2, BE50-J9-B2	2162
33H	51	R	10 = 1.0°C	[Dry contact] Temperature, Free 3, BE50-J10-B3	2163
34H	52	R	10 = 1.0°C	[Dry contact] Temperature, Free 4, BE50-J10-B4	2164
35H	53	R	10 = 1.0%	[Dry contact] Humidity, Free 1, BE50-J9-B1	2165
36H	54	R	10 = 1.0%	[Dry contact] Humidity, Free 2, BE50-J9-B2	2166
37H	55	R	10 = 1.0%	[Dry contact] Humidity, Free 3, BE50-J10-B3	2167
38H	56	R	10 = 1.0%	[Dry contact] Humidity, Free 4, BE50-J10-B4	2168
39H	57	R		not used	
3AH	58	R		not used	
3BH	59	R		not used	
3CH	60	R		not used	
3DH	61	R		not used	
3EH	62	R		not used	
3FH	63	R		not used	
40H	64	R		not used	



LONWORKS Settings and Readings

			DS50
R/W	L	[On / Off] Unit	3111
R/W	L	[Reset] Discharges the safety measures of the unit	3112
R/W	L	[BMS] Activation of the Inoccupation mode [Off] occupation mode - [On] inoccupation mode	3933
R/W	L	[Clock] [OFF] read hour & minute [ON] write hour & minute	...
R	L	[Alarm] General	1000
R	L	[On/Off] Fan, Blower	2315
R	L	[On/Off] Compressor, 1	2516
R	L	[On/Off] Compressor, Heat pump, 1	2517
R	L	[On/Off] Compressor, 2	2526
R	L	[On/Off] Compressor, Heat pump, 2	2527
R	L	[On/Off] Compressor, 3	2536
R	L	[On/Off] Compressor, Heat pump, 3	2537
R	L	[On/Off] Compressor, 4	2546
R	L	[On/Off] Compressor, Heat pump, 4	2547
R	L	[On/Off] Gas, Burner, 1	2615
R	L	[On/Off] Gas, Burner, 2	2616
R	L	[On/Off] Gas, Burner, High power, 1	2617
R	L	[On/Off] Electrical heaters, 1	2625
R	L	[On/Off] Electrical heaters, 2	2626

			DS50
R/W	1 = 1 s	[BMS] Activation of the control by a computer or an automat - mode BMS is activated if this value is different from zero, This value is decreased every second	3932
R/W	10 = 1.0°C	[Occupation][Room SP] Required maximum room temperature in °C. Cooling set point	3322 (BMS)
R/W	10 = 1.0°C	[Occupation][Room SP] Required minimum room temperature in °C. Heating set point	3323 (BMS)
R/W	1 = 1%	[Room SP] Required room minimum fresh air rate in %. Middle of the dead zone	3312 (BMS)
R/W	10 = 1.0°C	[Inoccupation][Room SP] Required maximum room temperature in °C. Cooling set point	3322 (Uno)
R/W	10 = 1.0°C	[Inoccupation][Room SP] Required minimum room temperature in °C. Heating set point	3323 (Uno)
R/W	1 = 1%	[Humidity] Desired Maximum relative humidity in Room (in %). – Dehumidification set point.	3341 (BMS)
R/W	1 = 1%	[Humidity] Desired Minimum relative humidity in Room (in %). – Humidification set point.	3342 (BMS)
R/W	1 = 1h	[Clock] Hour	3121
R/W	1 = 1m	[Clock] Minute	3122
R/W	1 = 1	[Clock] Day of the month	3123
R/W	1 = 1	[Clock] Month	3124
R	1 = 1	[Alarm] Code Error	1000
R	10 = 1.0°C	[Temperature] Room	2112
R	10 = 1.0°C	[Temperature] Outdoor	2111
R	10 = 1.0°C	[Temperature] Supply	2113
R	10 = 1.0%	[Relative Humidity] Outdoor	2121
R	10 = 1.0 g/Kg	[Absolute Humidity] Outdoor	2123
R	10 = 1.0%	[Relative Humidity] Room	2122
R	10 = 1.0 g/Kg	[Absolute Humidity] Room	2124
R	1 = 1%	[% of opening] Register of fresh air	2413
R	1 = 1%	[% of opening] Valve gas	2618
R	1 = 1%	[% of opening] Electrical heaters (Triac)	2627
R	1 = 1%	[% of opening] Hot water coil	2633



CODE	DESCRIPTION LIGNE1	DESCRIPTION LIGNE2
1	Flow	Failure
4	Filters	Dirty
5	Filters	Missing
11	Electrical Heater	Faulty
12	Outlet or Supply T.	Over Temp.
13	Inlet or Room T.	Temp. Too Low
14	Gas Burner, 1	Faulty
15	Gas Burner, 2	Faulty
22	Outlet or Supply T.	Temp. To Below
23	Inlet or Room T.	Temp. Too High
31	Humidifier	Faulty
32	Room Humidity	Humidity Too Low
33	Room Humidity	Humidity Too High
40	Flow, Pump	Failure
41	Pump, 1	Faulty
42	Pump, 2	Faulty
70	Real Time Clock	Faulty
71	BE50, 1	Faulty
72	BE50, 2	Faulty
73	BE50, 3	Faulty
74	BE50, 4	Faulty
75	BE50, 5	Faulty
80	Remote S.Point	Faulty
81	Inlet or Room T.	Faulty Sensor
82	Room Humidity	Faulty Sensor
83	Outside Temperature	Faulty Sensor
84	Outside Humidity	Faulty Sensor
85	Outlet or Supply T.	Faulty Sensor
86	Inlet, Recovery	Faulty Sensor
87	Outlet, Recovery	Faulty Sensor
88	Return or Mixing T.	Faulty Sensor
90	Air, Condenser	Faulty
91	Blower, Fan	Faulty
92	Air, Condenser	Faulty, System 1
93	Air, Condenser	Faulty, System 2
94	Air, Condenser	Faulty, System 3
95	Air, Condenser	Faulty, System 4
96	Water, Condenser	Temp. To Below
97	Water, Condenser	Temp. Too High
98	Water, Condenser	Faulty, Flow
99	Fire / Smoke	Faulty
111	Condenser	Faulty Sensor, 1
112	Suction	Faulty Sensor, 1
114	Circuit 1	Elec. power
115	Circuit 1	Cut High Pressure
117	Circuit 1	Cut Low Pressure



CODE	DESCRIPTION LIGNE1	DESCRIPTION LIGNE2
118	Circuit 1	Risk of Frosting
121	Condenser	Faulty Sensor, 2
122	Suction	Faulty Sensor, 2
124	Circuit 2	Elec. power
125	Circuit 2	Cut High Pressure
127	Circuit 2	Cut Low Pressure
128	Circuit 2	Risk of Frosting
131	Condenser	Faulty Sensor, 3
134	Circuit 3	Elec. power
135	Circuit 3	Cut High Pressure
137	Circuit 3	Cut Low Pressure
141	Condenser	Faulty Sensor, 4
144	Circuit 4	Elec. power
145	Circuit 4	Cut High Pressure
147	Circuit 4	Cut Low Pressure
210	P.Lan	EEV 1, Error
211	Low Superheat	EEV 1, Error
212	High Suction T.	EEV 1, Error
213	MOP	EEV 1, Error
214	LOP	EEV 1, Error
215	Valve Not Closed	EEV 1, Error
216	Probe	EEV 1, Error
217	Motor	EEV 1, Error
218	EEPROM	EEV 1, Error
219	Battery	EEV 1, Error
220	P.Lan	EEV 2, Error
221	Low Superheat	EEV 2, Error
222	High Suction T.	EEV 2, Error
223	MOP	EEV 2, Error
224	LOP	EEV 2, Error
225	Valve Not Closed	EEV 2, Error
226	Probe	EEV 2, Error
227	Motor	EEV 2, Error
228	EEPROM	EEV 2, Error
229	Battery	EEV 2, Error

It is possible to connect up to 12 CLIMATIC50 with Climalook2 or 8 rooftops equipped with CLIMATIC2 and 12 with CLIMATIC 50 when Climalook 3 or Climalink is installed.

CLIMALINK 2

This product consist in a central unit and a communication interface.
 This unit is designed to be connected to a maximum of 12 rooftops fitted with CLIMATIC 50 controllers via a RS485 interface. A connection diagram is provided in the box.
 The central unit must be installed in a dry, secured location. Once the unit is connected and powered up, it is entirely automatic and does not require a screen a keyboard or a mouse. After a power failure, the central unit must be restarted using the ON/OFF button.
 To avoid this Lennox recommend to connect the central unit to a pulsating current power outlet or "UPS". Lennox cannot be held responsible in the event this recommendation is not acted upon.

CLIMALOOK 2

This product is identical to the CLIMALINK 2 but it is equipped with a 15inch TFT flat screen, a mouse and a

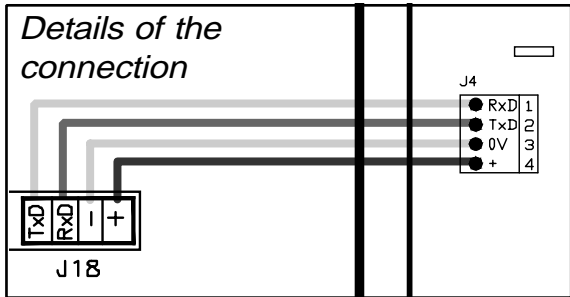
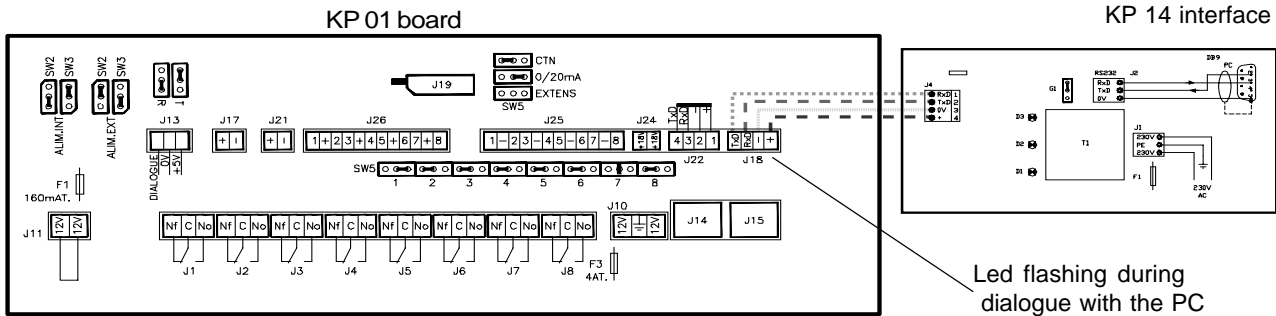
numeric keypad to have a local display of the installation. It can be connected to up to 12 CL50 controller via a RS485 interface.

CLIMALOOK 3

Climalook 3 provides the same features as Climalook 2 as it can be connected to 12 rooftops equipped with CLIMATIC 50 controller but it can also be connected to 8 rooftops fitted with CLIMATIC2 controller and KP01 board (Flexy and Linea already on site).

NOTE: In order to connect a unit fitted with CLIMATIC2 you must ensure that the program version is at least LF20. Otherwise it must be upgraded to LF20 before connection to Climalook 3

Climalook uses the internet explorer interface for local operation. The local operating mode is completely automatic and does not require any configuration. Like Climalink, Climalook can receive remote queries thanks to its internal modem and an analogue telephone line. Climalook and Climalink do not work with ISDN telephone lines.



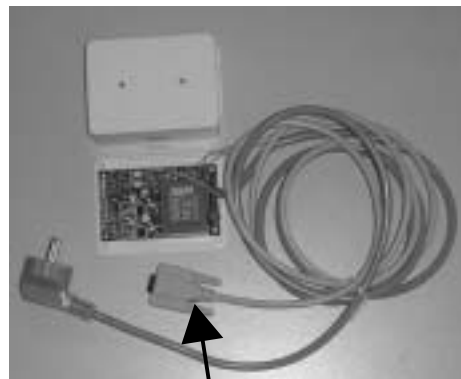
NOTE : To function correctly each RTU requires an address to be set using a KP02 (setpoint 91). To register in the climatic the power to the climatic must be switched off twice after entering the value.

Whenever the power is switched on it is necessary to wait 5 minutes after the welcome page is displayed to allow the software to fully update.

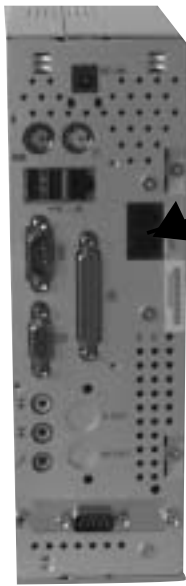
CONNECTION TO CLIMATIC2 and KP01 BOARD

The connections between the units and the Climalink/ Climalook must be done using a double shielded pair of wire (not supplied by Lennox) This cable must have external metal braiding, and its cross-section must be at least 0.5mm² with a maximum of 1mm²

Each cable will be connected to the COM B port on the KP01 Board, and particular attention must be taken to the order of connections. The cable coming out of the KP14 with a BD9 plug at the end will be connected to the SERIAL Port at the back of the central unit.

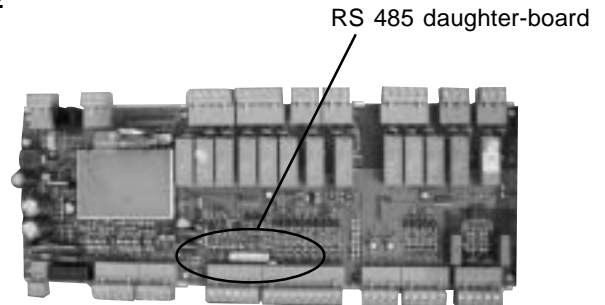


The cable coming out of the KP14 with a BD9 plug at the end will be connected to the SERIAL Port at the back of the central unit.



Plug for telephone link RJ11. Cable supplied with the unit.

CONNECTION TO CLIMATICTM 50 USING INTERFACE 435/232



RS 485 daughter-board

After the starting procedure of the Climalook 3 central unit, the LED next to the B PORT on the CLIMATIC KP01 board will start to flash. The CPU connects to the boards one after the other, and so it is normal for the LED to stop flashing occasionally.

It is possible to connect up to 12 rooftops fitted with CLIMATIC 50 when using a Climalook 3. The connections between the units and the Climalink/ Climalook must be done using a double shielded pair of wire (not supplied by Lennox) This cable must have external metal braiding, and its cross-section must be at least 0.5mm² with a maximum of 1mm²

When all the connections are established, press the on/off button. The programs are launched automatically, and the LED located to the right of the Com B on the CLIMATIC KP01 board should flash. Note the site telephone number in order to make the remote query.

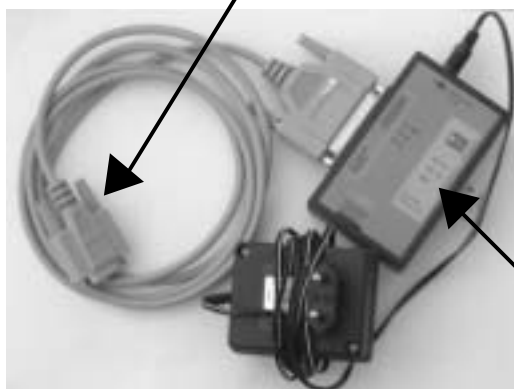
The wires will be connected to each CLIMATIC50 485 ports You must ensure the connection order is correct:
 + on +,
 - on -
 and gnd on gnd.

Note the site telephone number in order to make the remote query

The cable terminated by a DB9 plug, coming out of the 485/232 interface will be connected to the SERIAL port on the Climalook central unit



Plug for telephone link RJ11. Cable supplied with the unit.



After the starting up procedure is completed the LED on the INTER-FACE will start flashing.

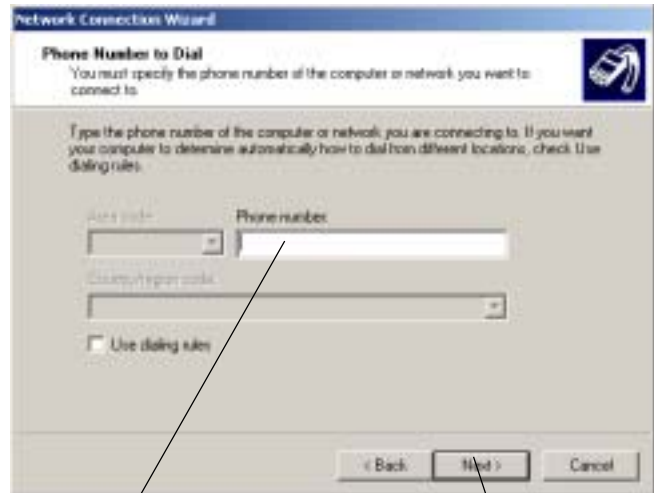


SETTINGS FOR THE CONNECTIONS

Depending on the version of Windows you are running, access the « Make new connection » function.



Click on next



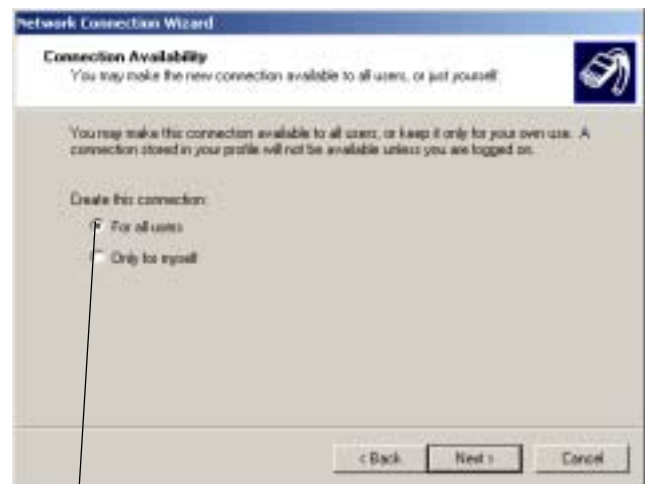
Enter the telephone number to which your ClimaLook's modem is connected.

Click



Click

Click on next



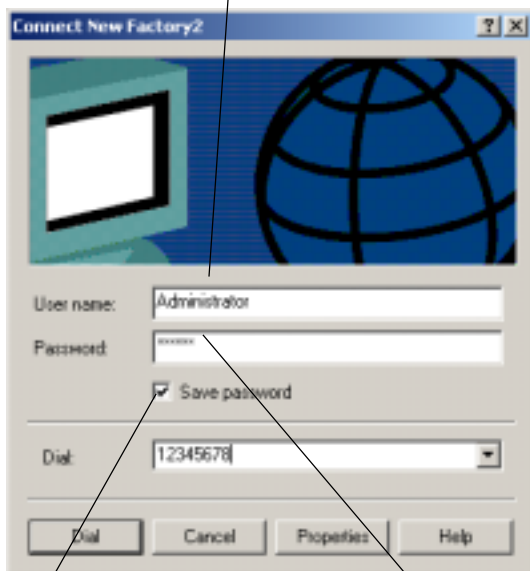
Click



Enter the site name

Click on Finish

Type "Administrateur"



Click

Type "VISION"

The modem dials the number, and then the two modems hook up.

In the task bar next to the time display you should see the symbol indicating connection with the remote computer.



On some versions of Windows, a dialogue box may ask you to enter the password again. In this case:

- for User enter Administrateur
- for password enter VISION
- leave the workgroup field empty.

You can now start Internet Explorer.



Type "http:// Lennox" in the Address field

The first time you log in, Windows asks you to confirm your login identifiers:

- for User enter **Administrateur**
- for password enter **VISION**
- leave the workgroup field **empty**.

After this formality, you gain access to:

THE WELCOME PAGE

First of all you must lower the virtual keyboard window, before choosing the language.

NOTE : To operate the program it is necessary to minimise the virtual keyboard.

Then click on the flag corresponding to the language you want to use.



Enter your access code and confirm. The access code **999** serves as a temporary code until you have configured your own security code.

If your code is valid you will access the next menu. Otherwise you remain on the same page.

There are three access levels:

- 1st level: use of the User, Schedule, Macro and History pages.
- 2nd level: ditto, plus the Service page.
- 3rd level: ditto, plus the Access page.

If the local application is not functioning, it is possible you may remain on the same page, even if your access code is valid. In this case, it is necessary to first restart the local central unit before continuing.

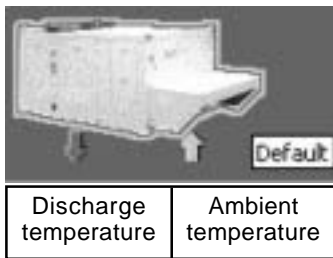
THE MAIN PAGE



The colour outline around the roof-top unit and the operating temperatures indicate the unit's status:

- Green: Operating mode,
- White: Stop mode,
- Orange : Night mode,
- Red: Fault mode,

This page gives you the basic information about how your installation functions. The roof-top unit's number corresponds to its EPROM number.



Position the mouse on one of the units to obtain information indicating this unit's status.

If the unit does not exist, is not powered up, or if communication with it is impossible, its icon disappears from the screen. The program attempts to communicate with absent units every ten minutes.

To access a unit's operating details, just click on it once. 20 seconds automatic refresh on this screen.

THE USER PAGE

This is the page used most frequently. It enables you to display and modify a number of settings on your unit.

Use the refresh function to update the values read.

Some settings are read-only, others can be modified.

Read-only setting:



Modifiable setting:



Unit's day and time

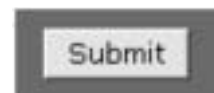


The bottom of the page displays the unit currently being queried, and can also be used to change the unit by clicking. This takes you to the user page for the new machine.

If the unit does not exist, is not powered up, or if communication with it is impossible, its icon disappears from the screen. The program attempts to communicate with absent units every ten minutes.

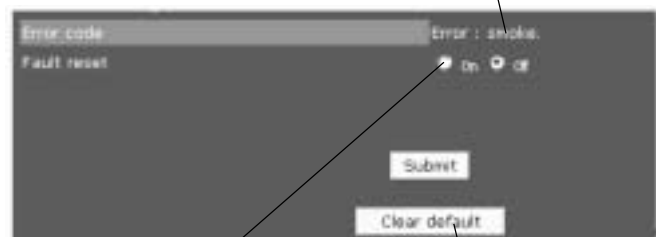
It is possible modify several settings at the same time.

The settings will only be modified if the «submit» function is confirmed.



If your unit has - or had - a fault, it is outlined in red on the main page. You can use the fault module to trouble-shoot:

If the fault is still present, it is displayed here:



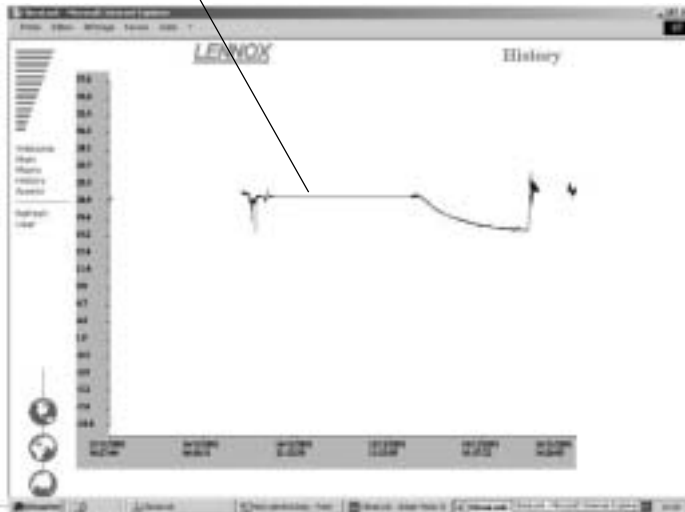
The fault reset function is used to clear the unit's errors if this is possible. If the error persists, the fault returns.

The clear default function is used to reset the software memory of defaults. It does not erase the unit's faults.

For some settings, a small icon is displayed at the end of the line
Click on it to get a history of this setting.



The empty fields correspond to occasions when the CLIMALOOK / CLIMALINK unit has stopped



+ Supply temperature / Room temperature / Outdoor air temperature + Faults (last 10 days)

The menus

- Welcome page
- Main page
- Macro page
- General History page
- Access codes page

To refresh the values
Service page or experienced user
Schedule page which shows all the set points for the different modes.

Welcome
Main
Macro
History
Access

Refresh
Service
Planning

THE SERVICE PAGE

The Service page is for technical users who know exactly how to adjust air-conditioning units. It is protected by a second level password.

The units are presented in groups, and it is possible to display and modify several settings, as in the User page. The settings will only be modified if the «submit» function is confirmed.

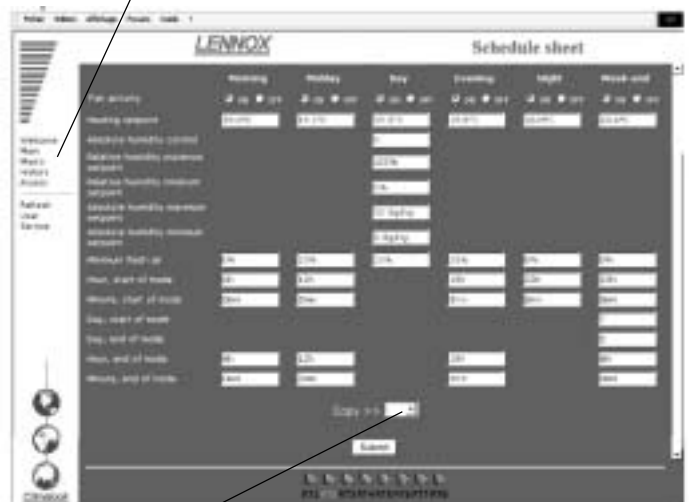
Use the refresh function to update the values read



- To access the Service page for another unit, simply click on this unit.
- To return to the User page, click on the User menu.
- To access the Schedule page, click on the Schedule menu.

THE SCHEDULE PAGE

This page is used to display and modify all the configuration settings for each zone of a unit's operating schedule. Use the refresh function to update the values read.



In addition it is possible to copy all the displayed settings and then paste them in another unit you have chosen.

The settings will only be modified if the «submit» function is confirmed.

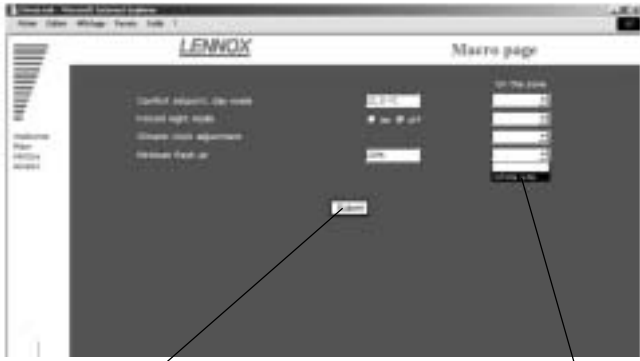


THE MACRO PAGE

This page enables you to modify all the units on your site in one action.

You can choose to perform one or more actions.

Modify the value or values you want to submit.



Click on "Submit"

Select "Entire site"

The standard Macros are: - Adjust the Comfort thermostat

- Set to Night mode
- Set fresh air to the minimum
- Set the time on the Climatic boards.

THE HISTORY PAGE

This page is provided in addition to the individual history you've already seen in the User page. It tells you when local communication starts and stops, and gives you the users' access codes.



This is a read-only page. The history is automatically cleared to ensure refreshment doesn't take too long. This page will also show units faults.

THE ACCESS PAGE

This page enables users who have a third level access code to attribute access codes to other users.

The access code 999 is your first access code. Remember to delete it once you have created your own access codes.



To create a new user:

Click on name



Use the virtual keyboard on the task bar

Use the keyboard to enter the name, password (maximum of 4 digits) and the access level.

- 1 = use of the User, Schedule, Macro and History pages.
- 2 = same level, plus the Service page.
- 3 = same level, plus the Access page.



Reposition the keyboard in the task bar by clicking on the minus sign in the top right-hand part of the keyboard.



Confirm by clicking on «Submit»

PROBLEM SOLVING

Impossible to enter your access code, you remain on the welcome page.

Local communication has been interrupted. You must restart the local unit.

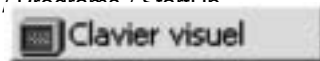
After restarting, you must wait for 5 to 10 minutes until the unit is ready to be queried once more.

The values read do not seem to move.

The values are not in fact refreshed automatically, and for all the pages you must use the Refresh function to be sure you are reading the latest values.

The keyboard has disappeared from the task bar.

Click on Start / Programs / StartUp



The local unit is not answering the phone

The local unit is - or was - powered down, and you must press the On/off button. See recommendations at the beginning of the document.

The unit is not connected to a direct analogue phone line.

How to check the ClimaLink is functioning correctly after installation:

Connect up the unit and the KP14

Connect the cables to the J18 inputs on the Climatic boards.

After a few minutes, the central unit should start its dialogue. The LED on the Climatic board to the right of the J18 input should flash.

If this does not happen, check the wiring.

The only way to examine the problem in more detail is to obtain a monitor and a mouse and contact the Lennox services.

After installing a ClimaLook or ClimaLink central unit, it is vital to perform the telephone communication tests.

Take a test telephone set and make sure you have a connection.

Note the telephone number to which the central unit is connected.

Connect the central unit and ask a person on the remote site to test communication.

Obviously the central unit must be the only device installed on the phone line. It cannot share the line with a fax or another modem.



BCK = Cooling only rooftop

- Fully modulating electric heater (TRIAC)
- Staged electric heater
- Hot water coil
-
- Economiser
- Extraction fan
-
- Firestat
- Smoke detector
-
- DS50
- DC50
- CO2 sensor
- Air sock control
-
-
-
-
-
-
-
-
-
- TCB
-
-
- Main switch
- Air pressostat

BGK = Cooling only rooftop with with gas fired heating

-
-
-
- Gas burner
- Economiser
- Extraction fan
-
- Firestat
- Smoke detector
-
- DS50
- DC50
- CO2 sensor
- Air sock control
-
-
-
-
-
-
-
-
- TCB
-
-
- Main switch
- Air pressostat

BHK = Heat pump rooftop

- Heat pump
- Fully modulating electric heater (TRIAC)
- Staged electric heater
- Hot water coil
-
- Economiser
- Extraction fan
-
- Firestat
- Smoke detector
-
- DS50
- DC50
- CO2 sensor
- Air sock control
-
-
-
-
-
-
-
-
-
- Dynamic defrost
-
-
-
- TCB
-
-
- Main switch
- Air pressostat

BDK = Heat pump rooftop with gas fired heater

- Heat pump
-
-
- Gas burner
- Economiser
- Extraction fan
-
- Firestat
- Smoke detector
-
- DS50
- DC50
- CO2 sensor
- Air sock control
-
-
-
-
-
-
-
-
-
- Dynamic defrost
-
-
-
- TCB
-
-
- Main switch
- Air pressostat

WARNING : ONLY ONE HEATING INPUT CAN BE INSTALLED

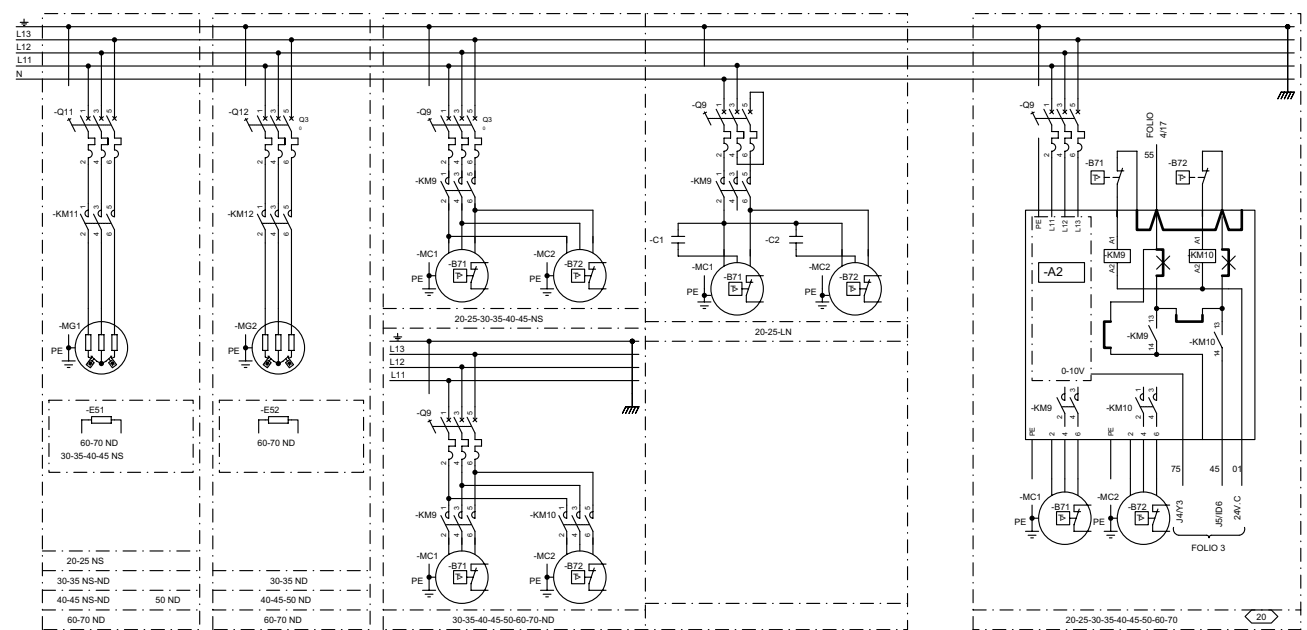
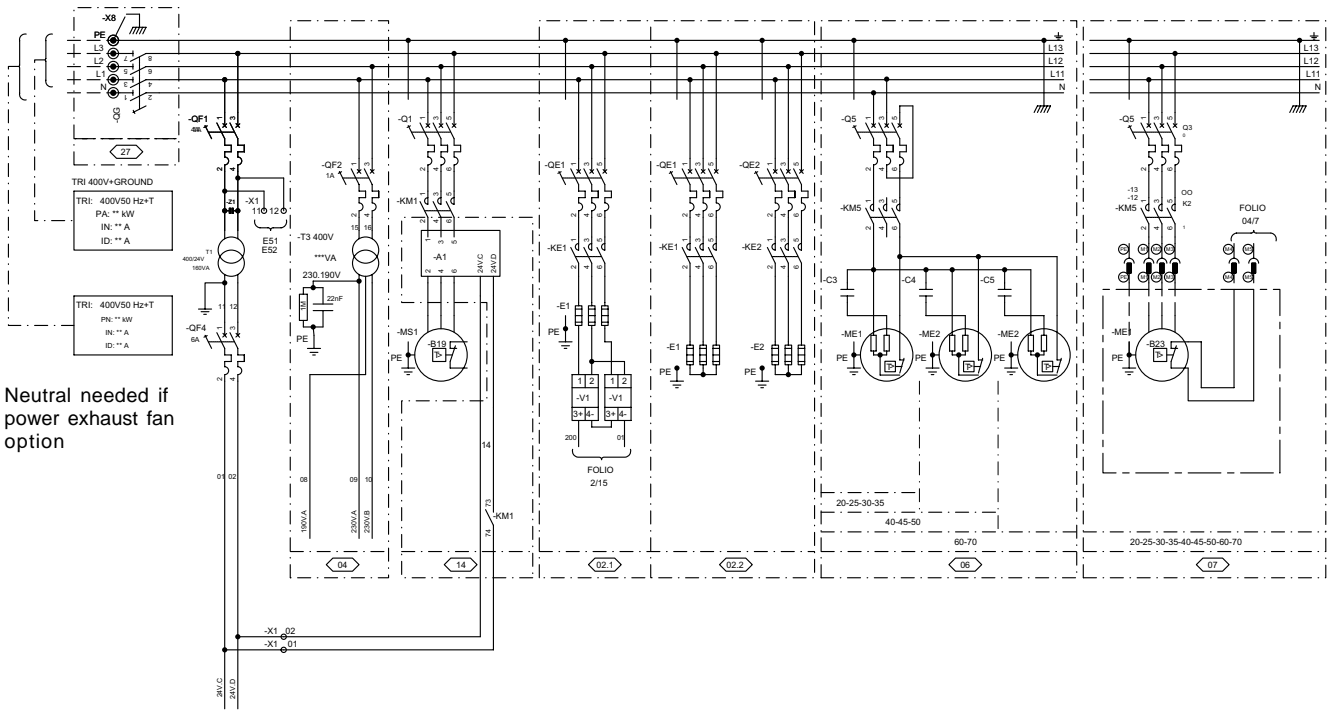


DIAGRAM REFERENCE LEGEND

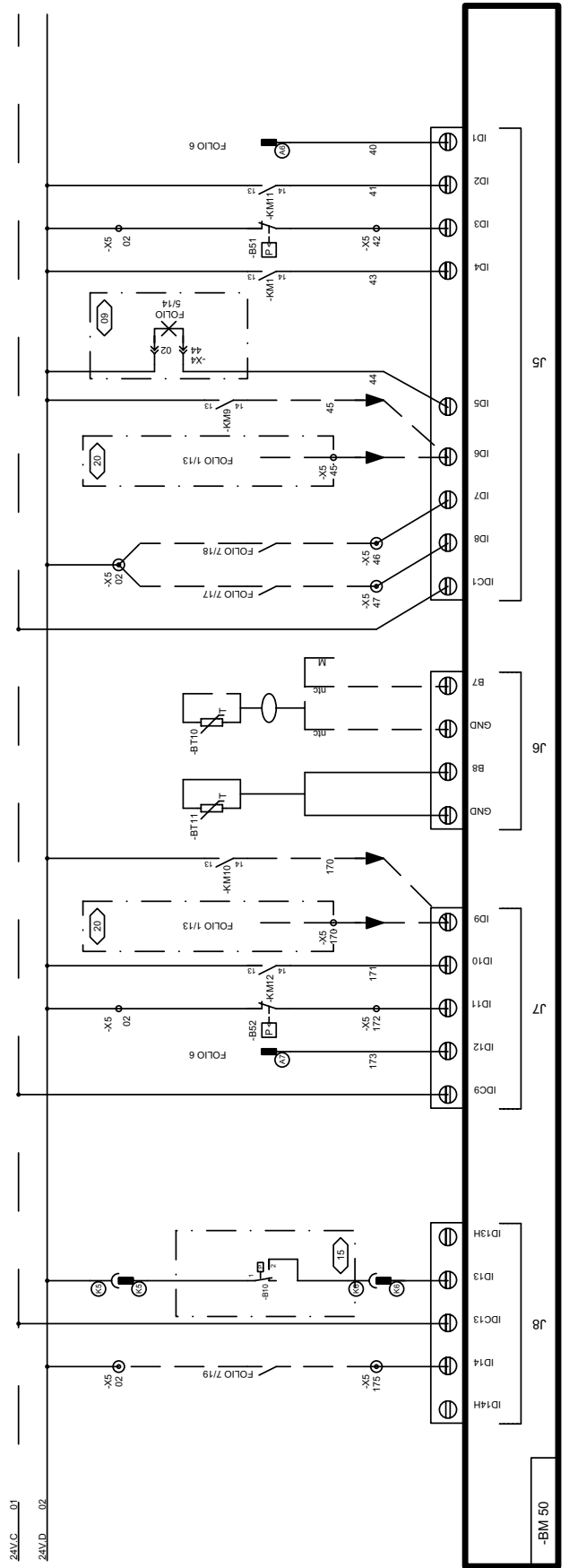
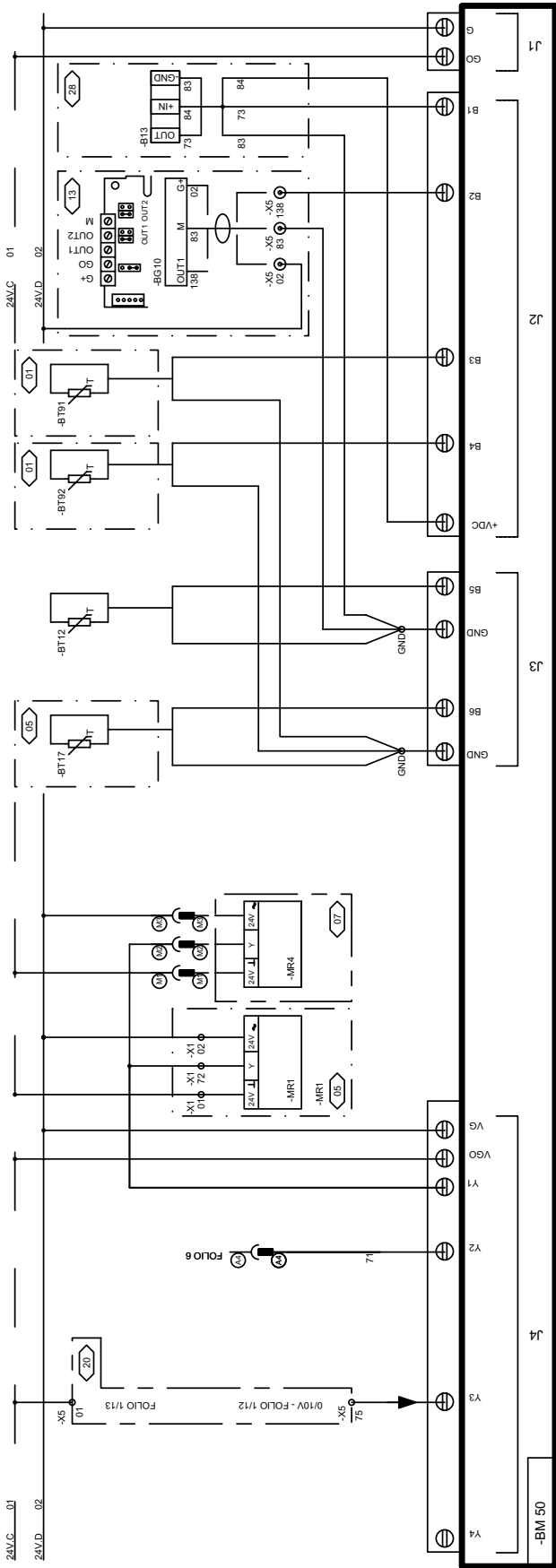
-A1	Soft starter	-KM9-KM10	Condenser 1 / condenser 2 fan motor contactor
-B2	Smoke detection head	-KM11-KM12	Compressor -MG1-MG2 contactor
-B4	Gas manifold ionisation probe	-MC1-MC2	Condenser -MC1-MC2 fan motor
-B6	Gas manifold ignition electrode	-ME1-ME2	Extraction fan motor -ME1-ME2 contactor
-B13	Dirty air filter pressure switch / air flow rate	-MG1-MG2	Compressor -MG1-MG2 contactor
-B14	Hot water battery antifreeze thermostat	-MR1	Economiser damper motor
-B16	Fire thermostat	-MR3	Fresh air damper motor
-B17	Gas manifold smoke minimum gas pressure switch		
-B19	Blower fan motor -MS1-MS2 stoptherme	-MS1	Blower fan motor -MS1-MS2
-B21	Gas manifold extraction air pressure switch	-Q1	Blower fan motor -MS1-MS2 protection
-B23-B24	Extraction fan motor -ME1-ME2 stoptherme	-Q5	Extraction fan motor -ME1-ME2 protection
-B25-B26	Electric battery -E1-E2 safety klixon	-Q9	Condenser -MC1-MC2 fan motor protection
-B29	Gas manifold air flow rate safety klixon	-Q11-Q12	Compressor -MG1-MG2 protection
-B32	Gas manifold flashback safety klixon	-QF1	Primary circuit protection -T1
-B41-B42	Compressor -MG1-MG2 high pressure safety switch	-QF2	Primary circuit protection -T3
-B45	Gas manifold 1 / gas manifold 2 regulation klixon	-QF3	Secondary circuit protection -T3
-B51-B52	Compressor -MG1-MG2 low pressure safety switch	-QG	Main switch
-B61-B62	Compressor -MG1-MG2 high pressure control switch	-QE1-QE2	Heater -E1-E2 protection
-B71-B72	Condenser -MC1-MC2 fan motor stoptherme		
-B81-B82	Scroll compressor -MG1-MG2 protection module	-T1	Control circuit transformer 400v / 24v
-BE50	Climatic 50 extension board	-T3	Burner power supply transformer 400 / 230v
-BG10	CO2 sensor		
-BH10	Regulation hygrometry probe	-TCB	control thermostat
-BH11	External hygrometry probe		
		UF	Cooling unit
		UT	Air treatment unit
-BT10	Regulation temperature probe		
-BT11	External temperature probe		
-BT12	Blower temperature probe	-V1	Electric heater static contactor
-BT17	Return air sensor		
-BT91-BT92	Defrost temperature sensor compressor 1-2	-YV2	Hot water 3-way valve
-BM50	Climatic 50	-YV11-YV12	Compressor -MG1-MG2 cycle reversing valve
BX 50	Multiplexer Climatic 50	-YV31	Burner gas solenoid valve
-C1-C2-C3-C4	Condensator	-YV41	Gas manifold safety solenoid valve
-E1-E2	Heater -E1-E2	-YV51	Gas manifold main solenoid valve
-E11	Smoke detector printed circuit		
-E14	Burner control box		
-EF47	Gaz burner printed circuit		
-F1	Secondary circuit -T1 128VA / 24V protection fuse		
-KA31	Gas burner fault relay		
-KE1-KE2	Heater -E1-E2 contactor		
-KM1	Blower fan motor -MS1-MS2 contactor		
-KM5	Extraction fan motor -ME1-ME2 contactor		
		-Z*	Capacity resistance circuit

- BCK = Cooling only unit
- BHK = Heat pump unit
- BGK = Cooling only unit with gas fired heating
- BDK = Heat pump unit with gas fired heating

MAIN CURRENT DIAGRAM TRI / 400V / 50Hz + T

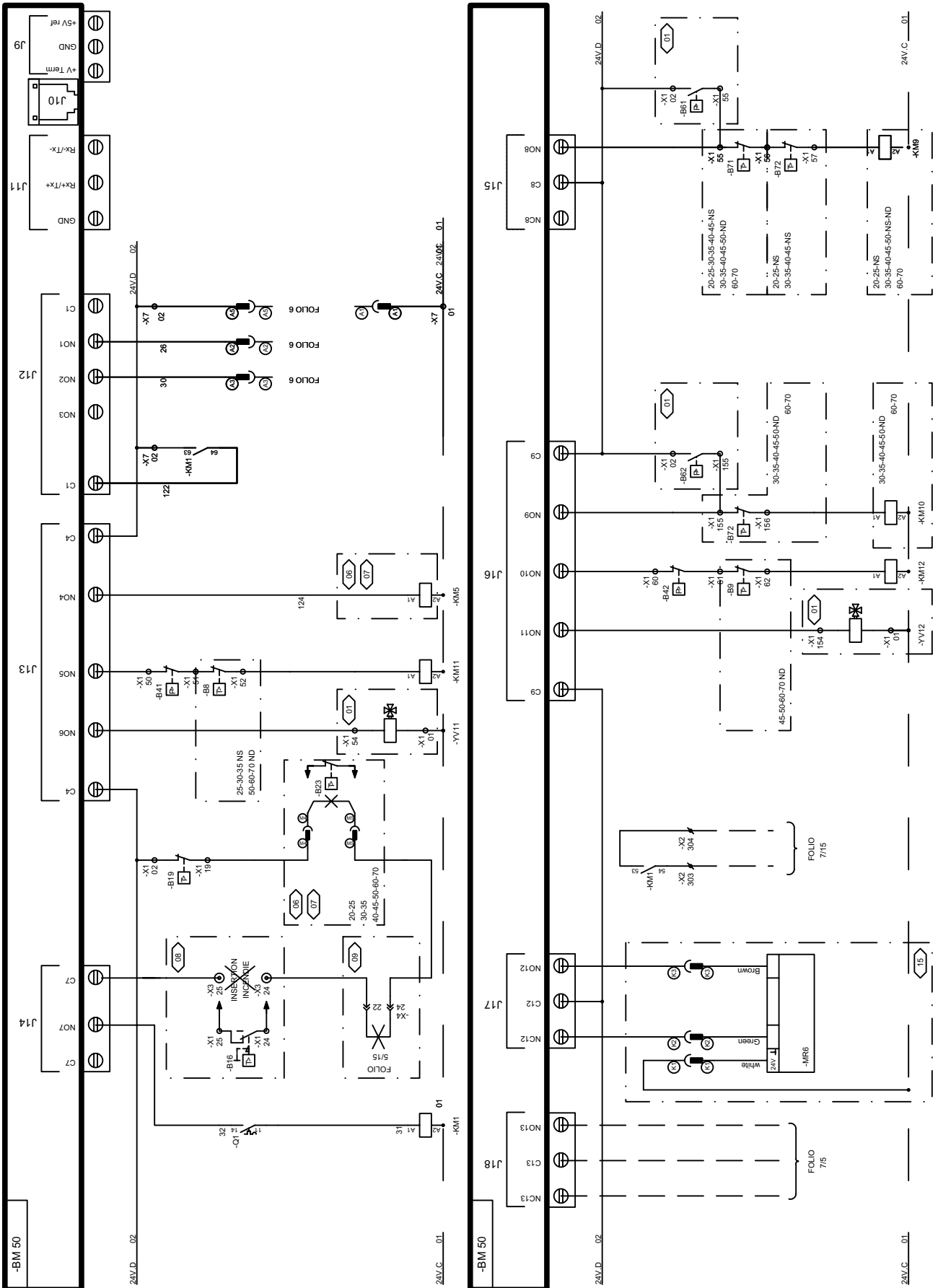


CLIMATIC 50 INPUT BCK / BHK / BGK / BDK



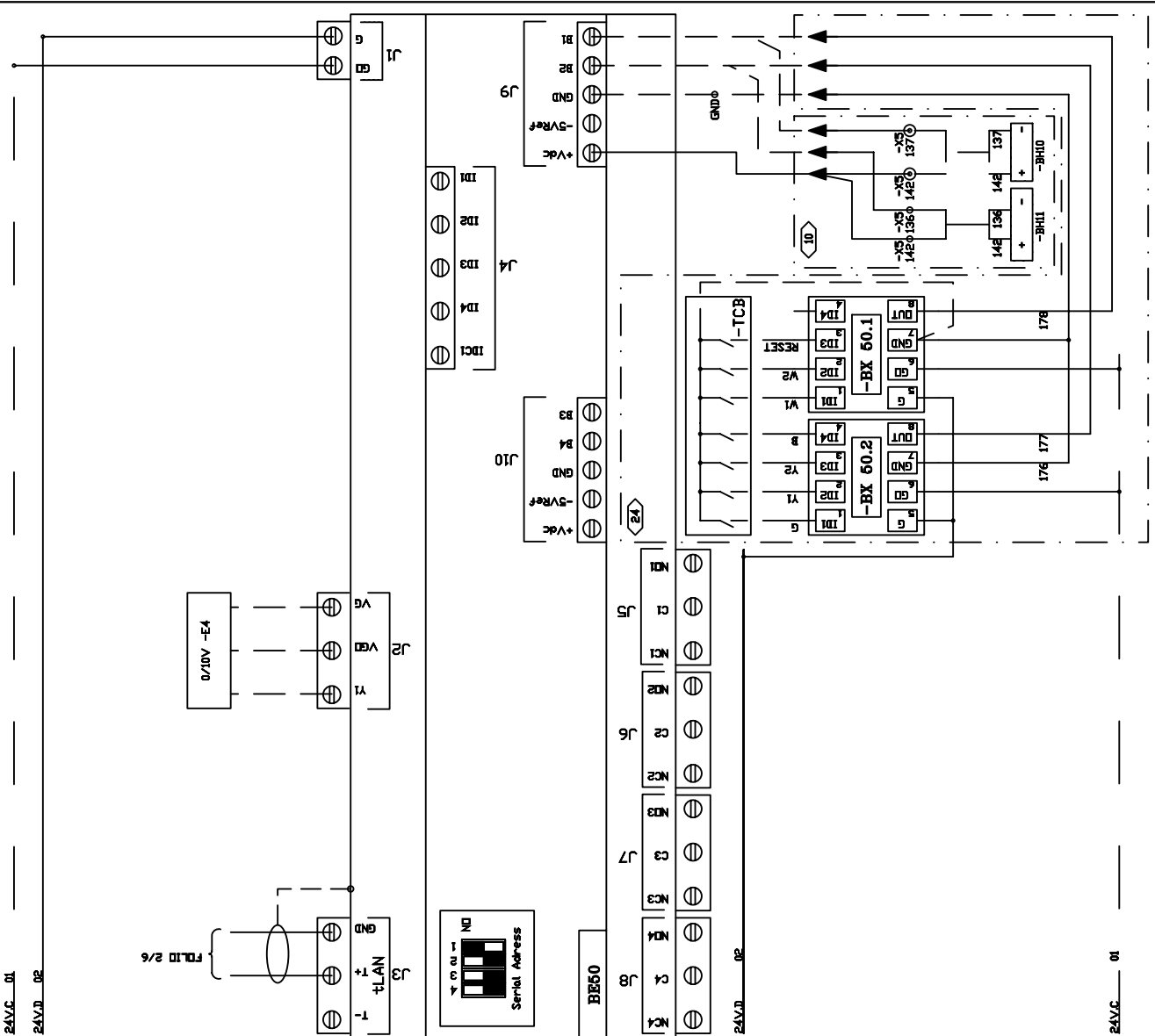
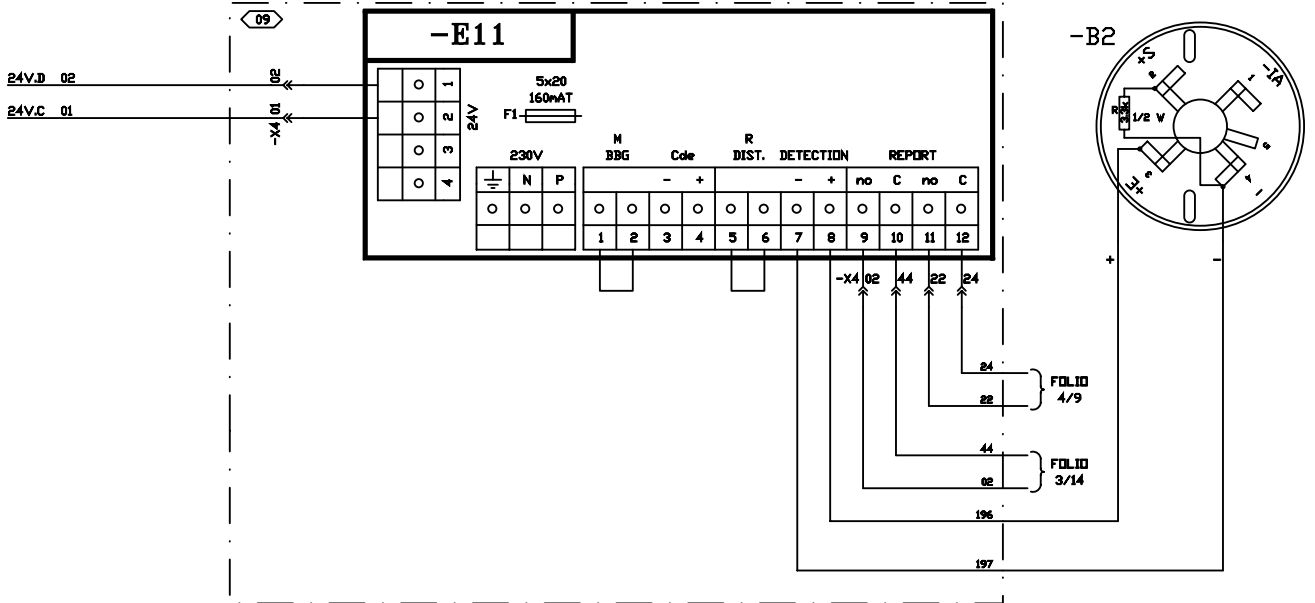


CLIMATIC 50 OUTPUT BCK / BHK / BDK / BGK



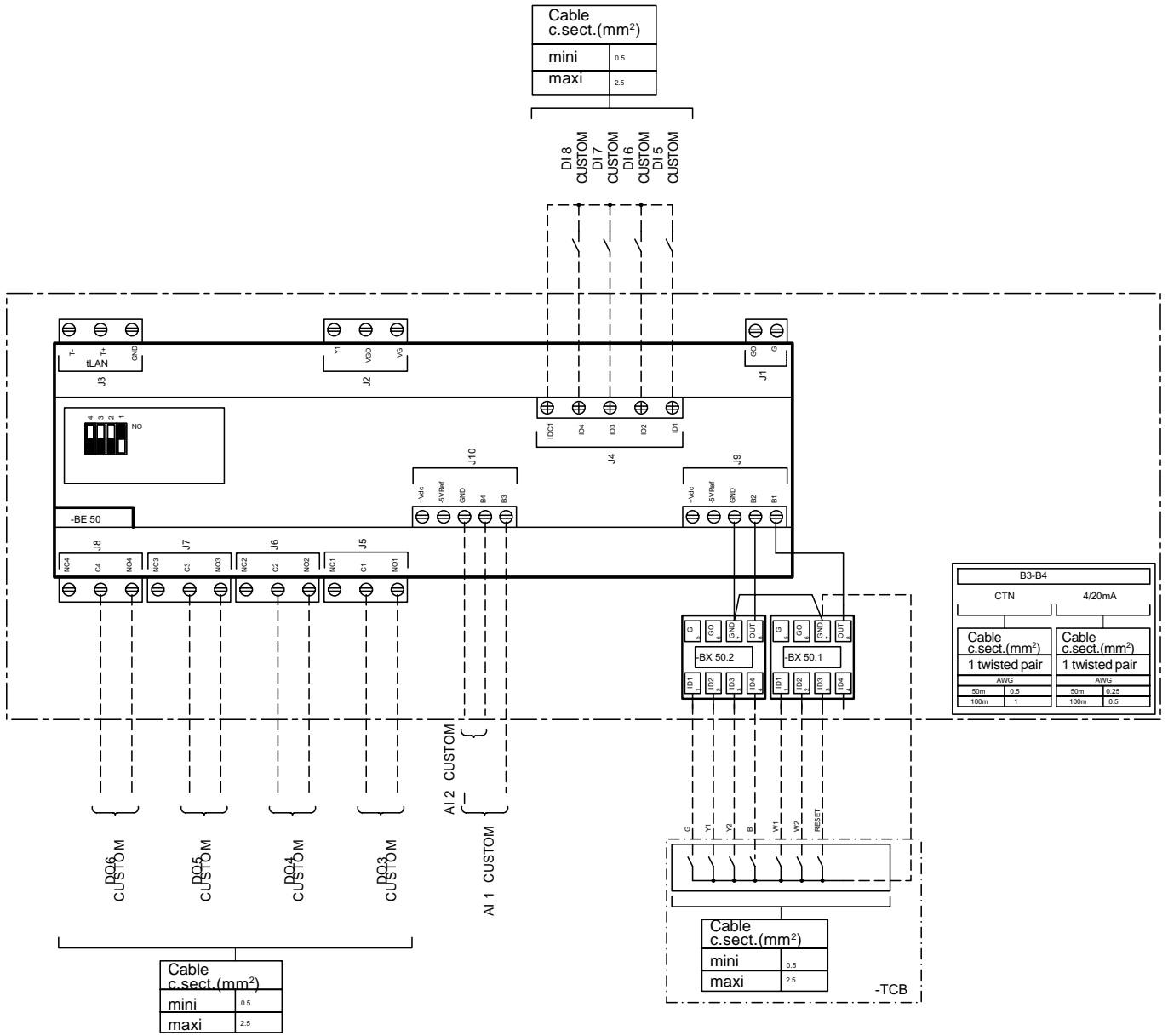


DAD SMOKE DETECTOR

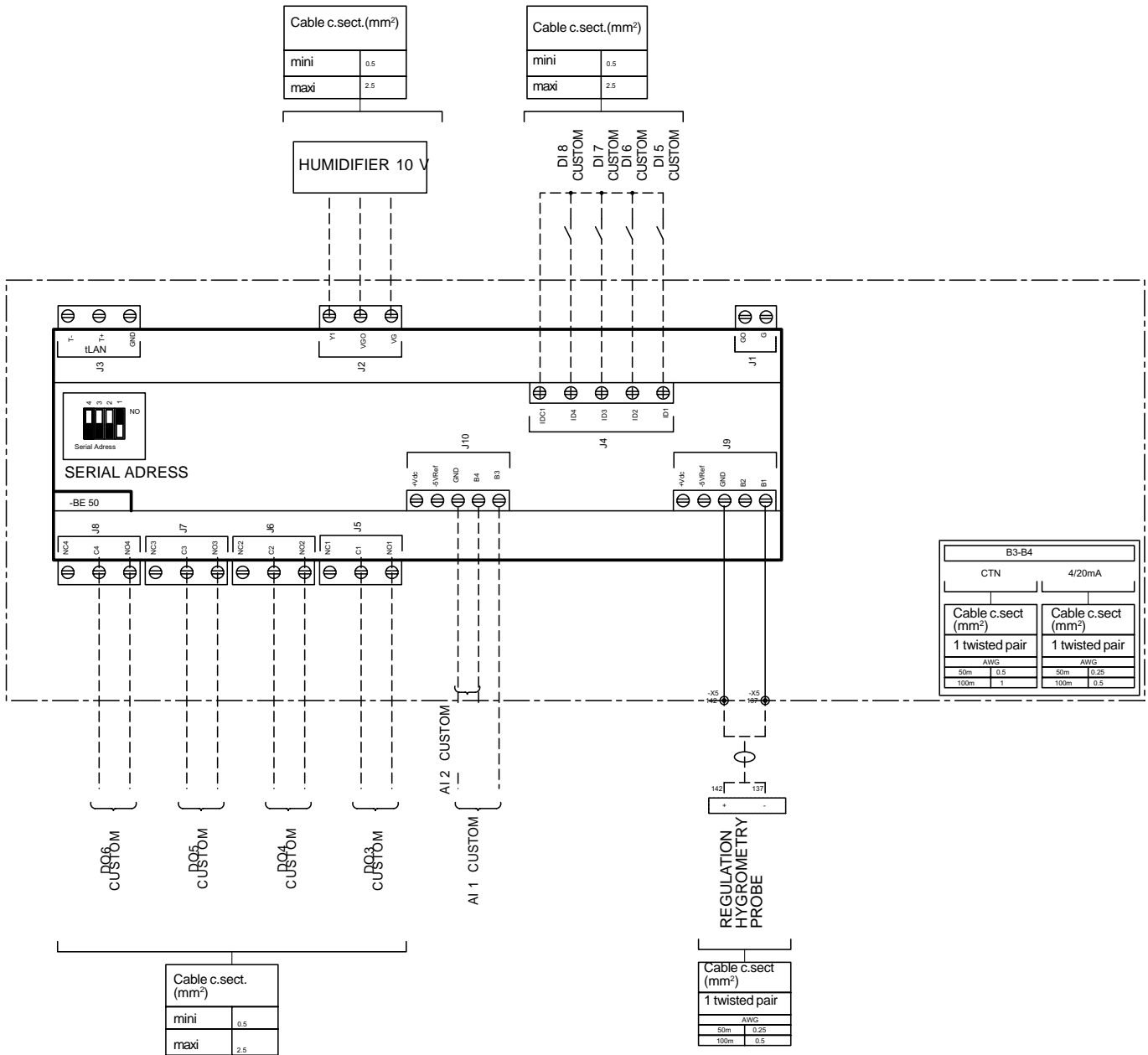




GENERAL CUSTOMER CONNECTION TCB

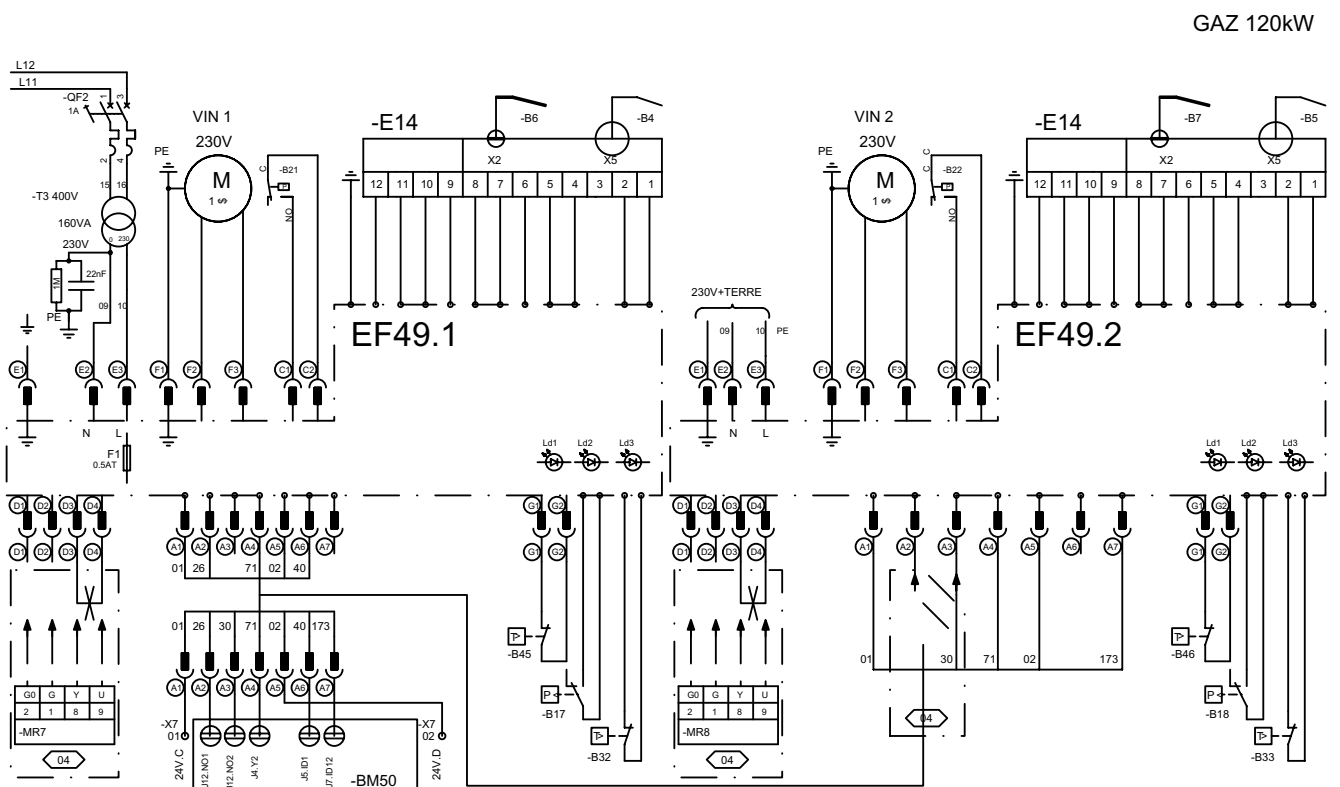
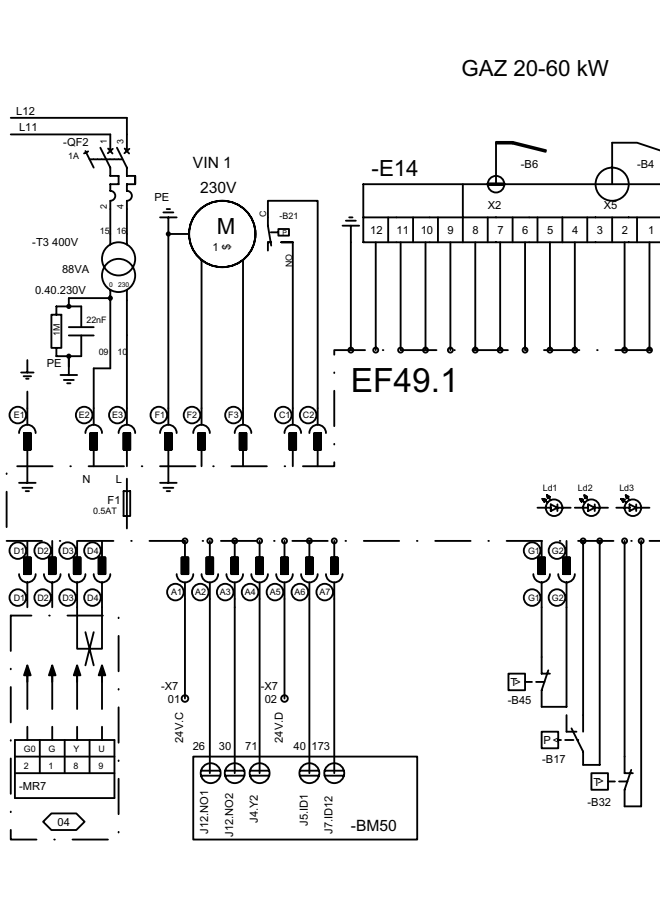


GENERAL CUSTOMER CONNECTION WITH ADVANCED CONTROL PACK (ADC)



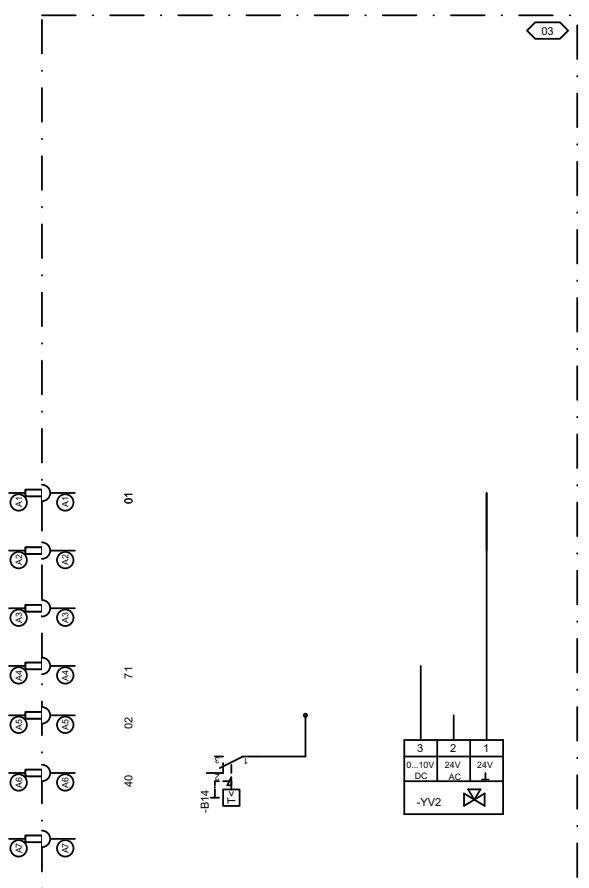


WIRING DIAGRAM GAS BURNER 20 / 33 / 46 / 60 / 120 Kw

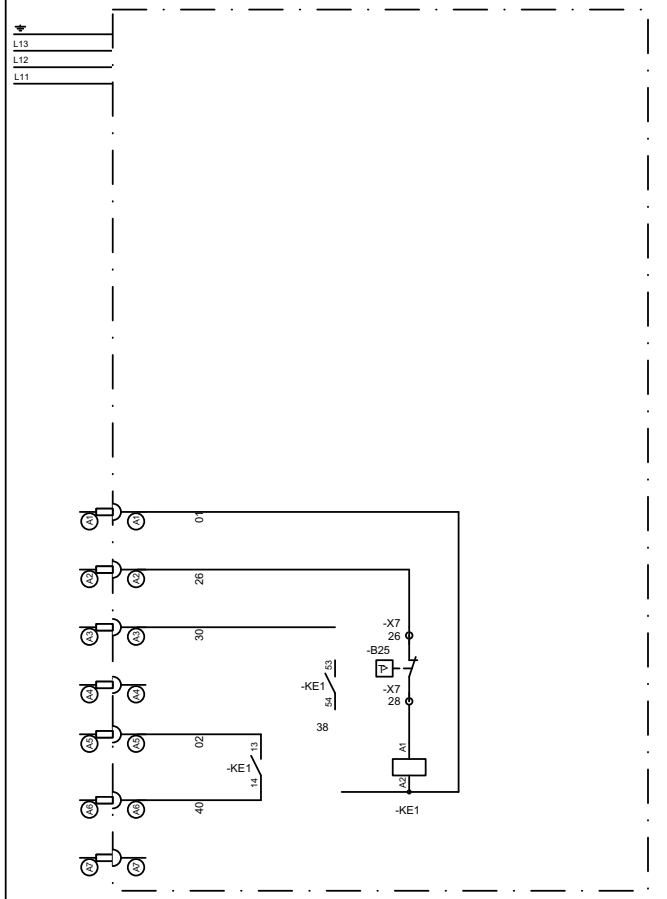
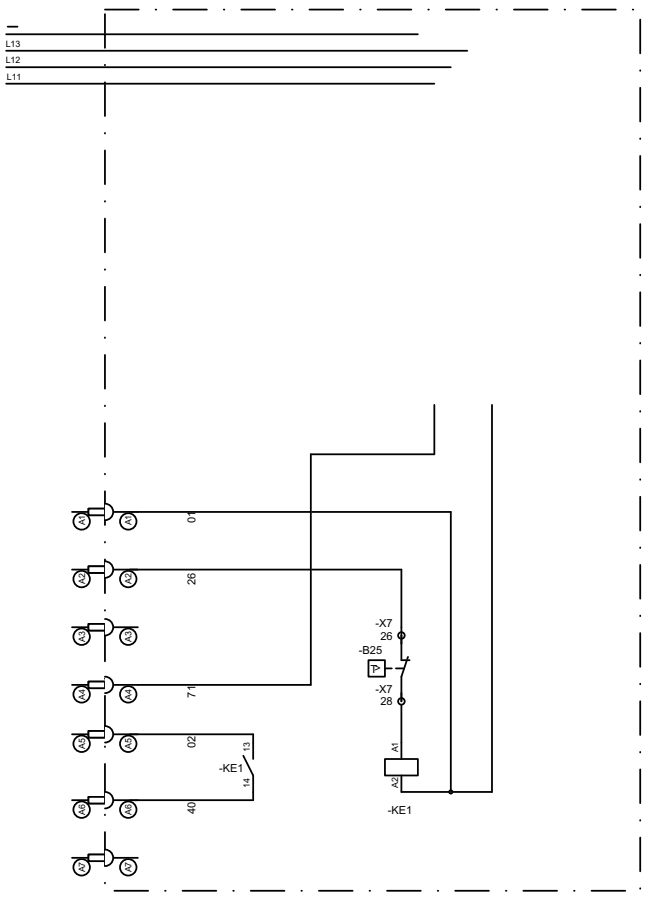




FULLY MODULATING ELECTRIC HEATER

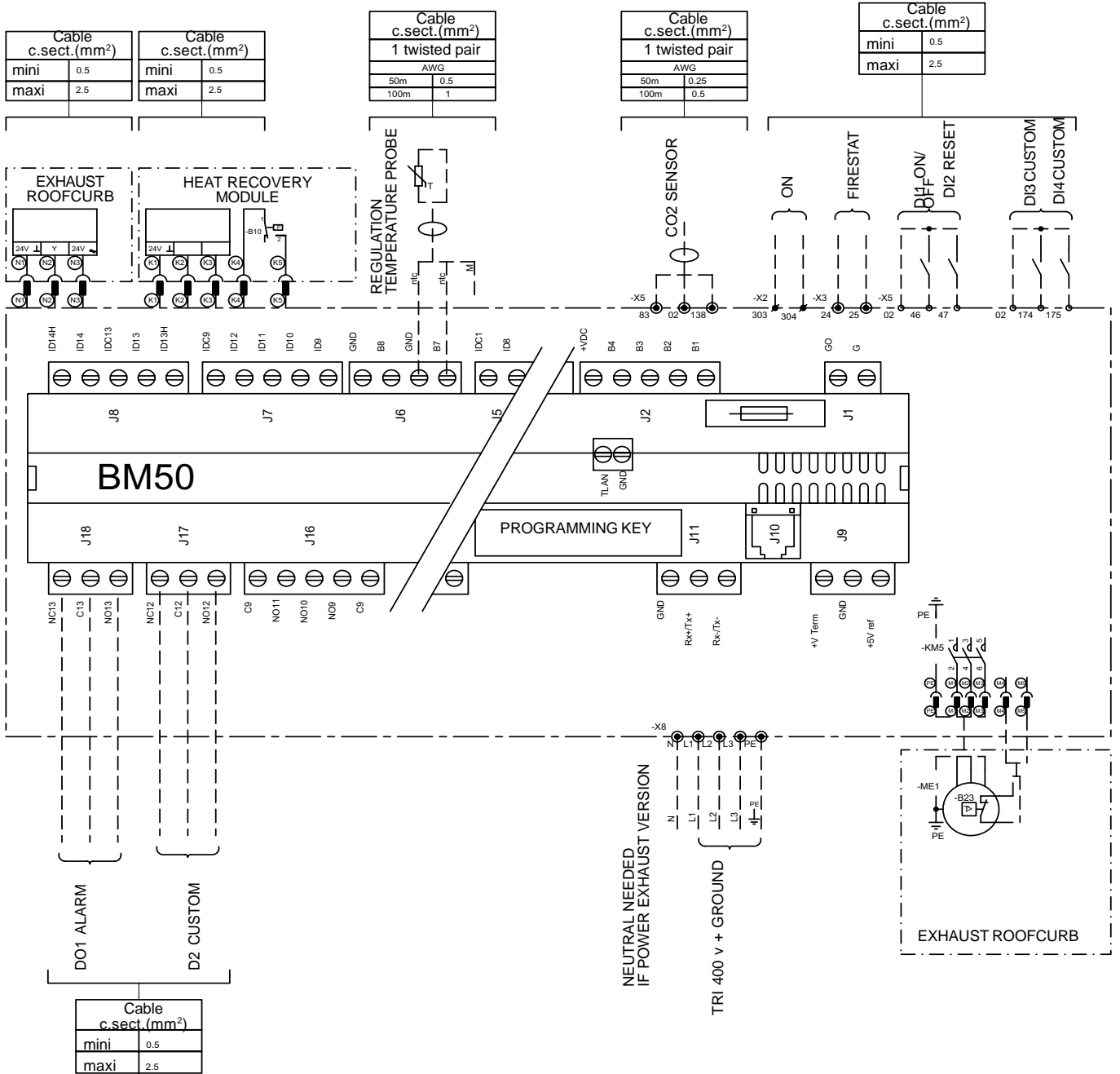


STAGED ELECTRIC HEATER





GENERAL CUSTOMER CONNECTION DIAGRAM



STANDARD

Logical Output Board

(2 outputs : 1 assigned, 1 customized)

- DO 1 - Alarm, General
 DO 2 - Customized (choose 1 output between those 7 possibilities)
- Alarm, Filters
 - Alarm, Blower
 - Alarm, Compressors
 - Alarm, Heaters
 - Heating mode
 - Alarm, Hot Water Coil Freezing
 - Zone A, Activated
 - Zone B, Activated
 - Zone C, Activated
 - Zone Uno., Activated
 - Zone BMS, Activated
 - Free, for BMS

Logical Input Board

(4 inputs : 2 assigned, 2 customized)

- DI 1 - ON/OFF
 DI 2 - Reset alarm
 DI 3 & 4 - Customized (choose, for each input (2) between those 12 possibilities)
- Disable, Compressors & Heaters
 - Disable, Compressors
 - Disable, Heaters
 - Disable, Cooling
 - Disable, Heating
 - Fault contact, Humidifier
 - 10 % Fresh air
 - 20 % Fresh air
 - 30 % Fresh air
 - 40 % Fresh air
 - 50 % Fresh air
 - Free, for BMS
- } Those contacts add up

ADVANCED CONTROL PACK OR TCB

Logical Output Board

(4 outputs : 0 assigned, 4 customized)

- DO 3 to 6 - Customized (choose, for each input (4) between those 7 possibilities)
- Alarm, Filters
 - Alarm, Blower
 - Alarm, Compressors
 - Alarm, Heaters
 - Heating mode
 - Alarm, Hot Water Coil Freezing
 - Zone A, Activated
 - Zone B, Activated
 - Zone C, Activated
 - Zone Uno., Activated
 - Zone BMS, Activated
 - Free, for BMS

Logical Input Board

(4 outputs: 0 assigned, 4 customized)

- DI 5 to 8 - Customized (choose, for each input (4) between those 12 possibilities)
- Disable, Compressors & Heaters
 - Disable, Compressors
 - Disable, Heaters
 - Disable, Cooling
 - Disable, Heating
 - Fault contact, Humidifier
 - 10 % Fresh air
 - 20 % Fresh air
 - 30 % Fresh air
 - 40 % Fresh air
 - 50 % Fresh air
 - Free, for BMS
- } Those contacts add up

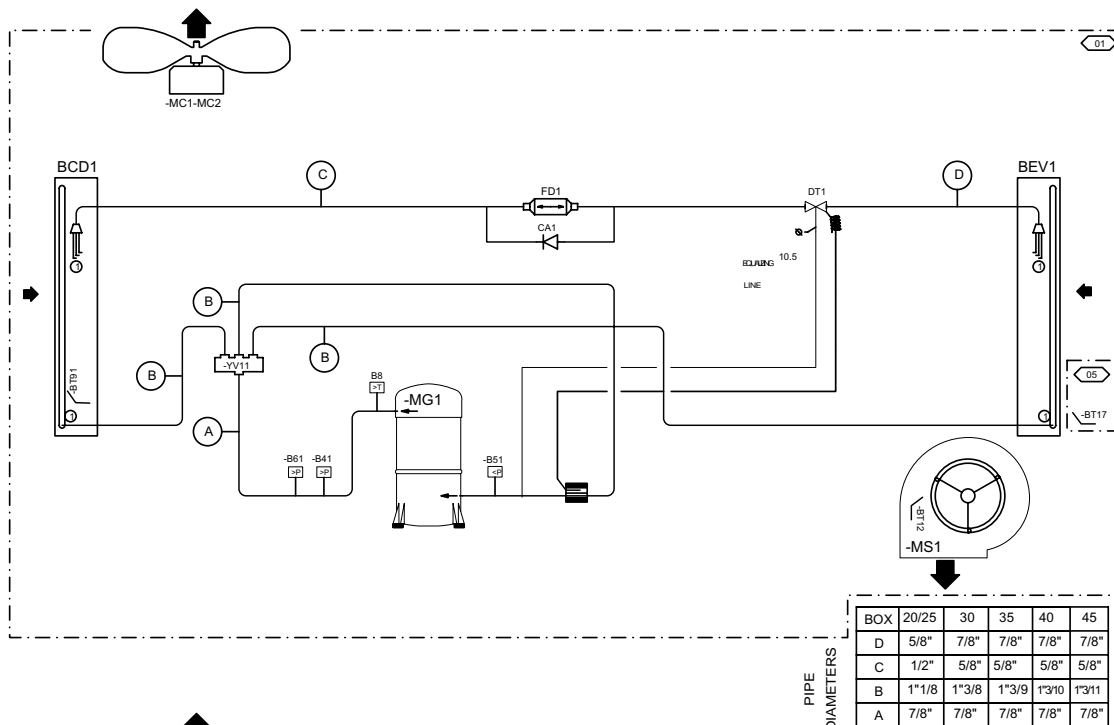
Analogue Input Board

(4 outputs : 0 assigned, 2 customized)

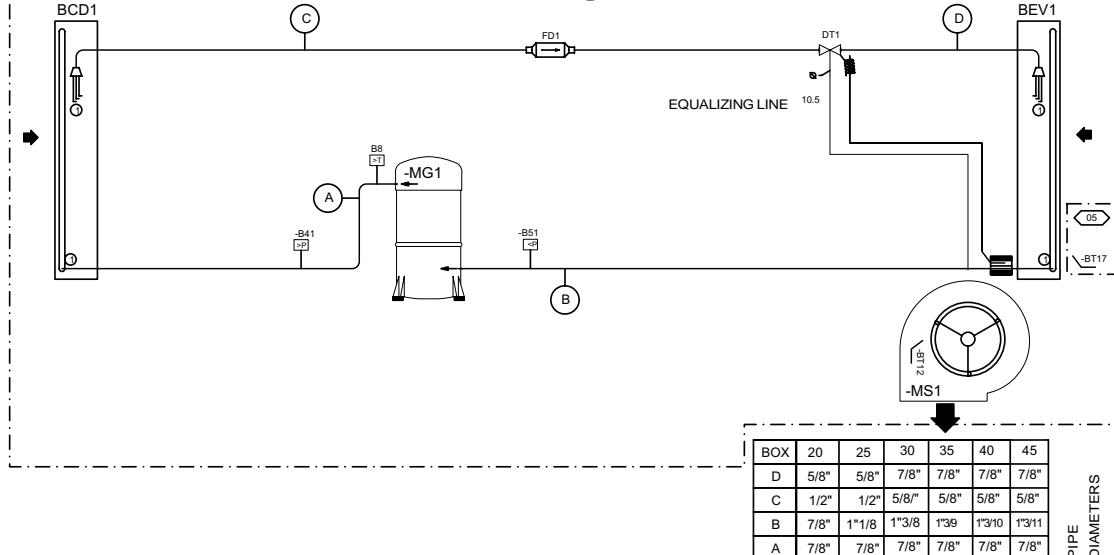
- AI 1 & 2 - Customized (choose, for each input (4) between those 4 possibilities)
- Override room temp set point -5 +5°C (4-20mA)
 - Override fresh air set point 0-100% (4-20mA)
 - Free temperature (NTC probe)
 - Free relative humidity (4-20mA)

<p>BCD : Condenser coil BEC : Hot water coil BEV1 : Evaporator coil BT12 : Blower temperature sensor B14 : Hot water coil antifreeze thermostat B17 : Return Regulation Temperature Sensor B41 : Compressor -MG1 high pressure safety switch B42 : Compressor -MG2 high pressure safety switch</p>	<p>B51 : Compressor -MG1 low pressure safety switch B52 : Compressor -MG2 low pressure safety switch B61 : HP switch control for defrost B62 : HP switch control for defrost CA : Check valve DT : Thermostatic expansion valve FD : Filter drier</p>	<p>MC1 - MC2 : Condenser - MC1 - MC2 fan motor MG1 - MG2 : Compressor MS1 : Blower fan motor MS1 YV2 : Hot water 3-way valve YV11 : Compressor -MG1-MG2 Cycle reversible valve B8 : Discharge Gas thermostat B9 : Discharge Gas thermostat</p>
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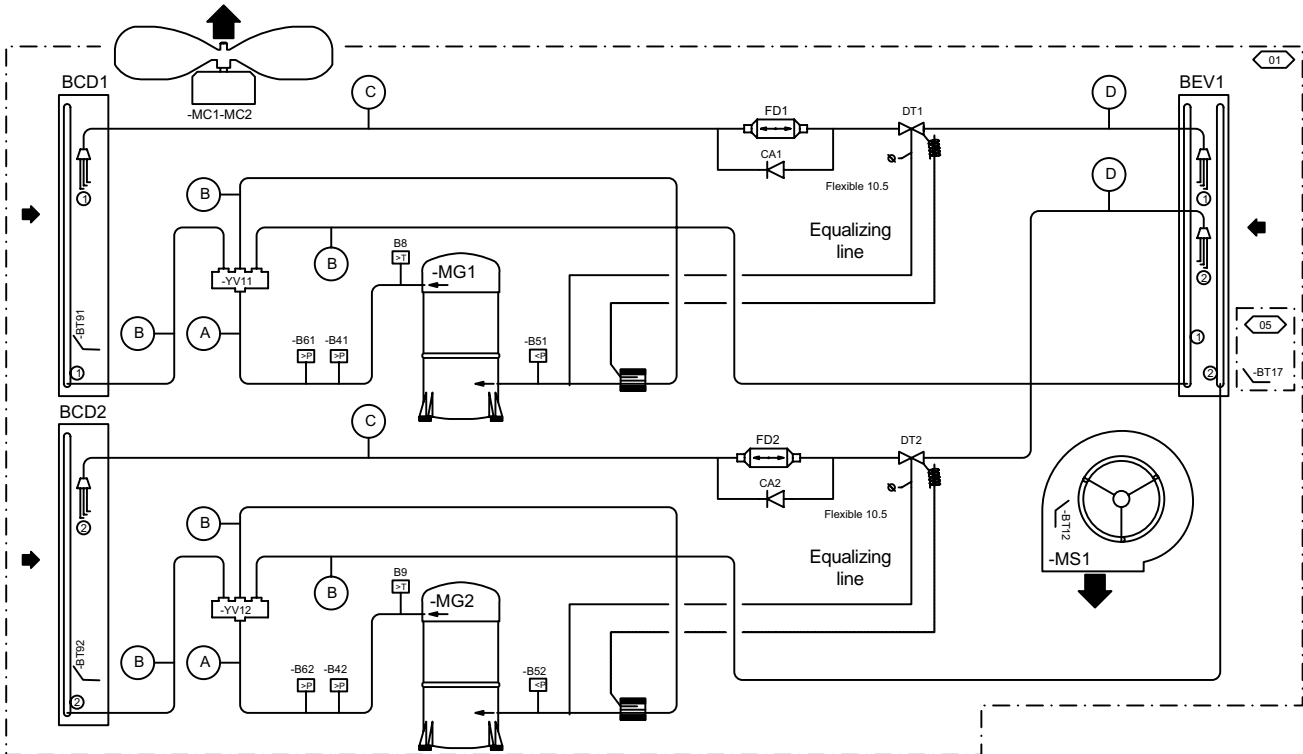
BHK-020 to 045 single circuit



BCK-020 to 045 single circuit



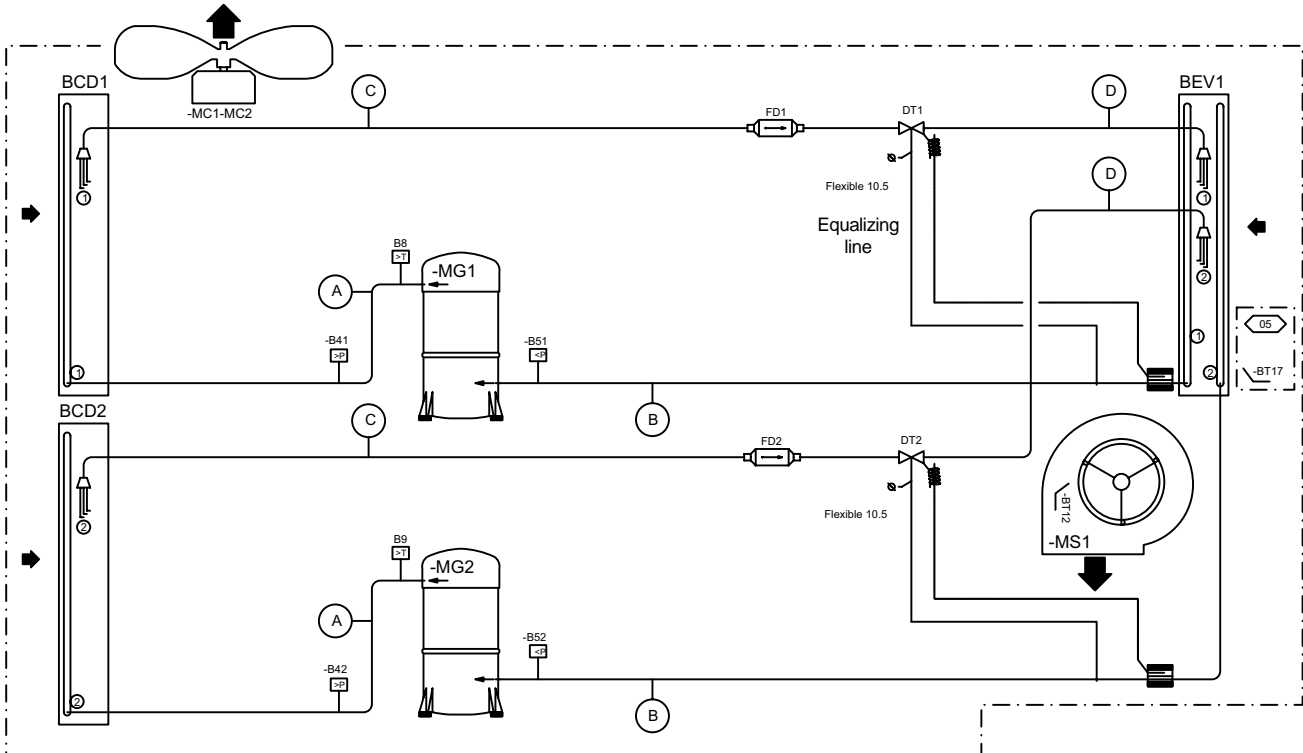
BHK-030 to 070 dual circuit



BCK-030 to 070 dual circuit

Pipe Diameters

BOX	30/35	40	-MG1	45	-MG2	50	60	70
D	5/8"	5/8"	5/8"		7/8"	7/8"	7/8"	7/8"
C	1/2"	1/2"	1/2"		5/8"	5/8"	5/8"	5/8"
B	7/8"	1"1/8"	1"1/8"		1"1/8"	1"1/8"	1"1/8"	1"3/8"
A	5/8"	7/8"	7/8"		7/8"	7/8"	7/8"	7/8"



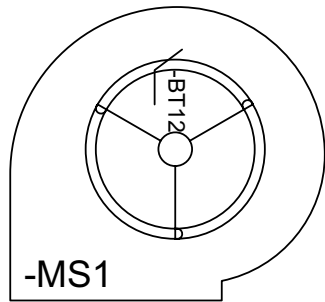
Pipe Diameters

BOX	30/35	40	-MG1	45	-MG2	50	60	70
D	5/8"	5/8"	5/8"		7/8"	7/8"	7/8"	7/8"
C	1/2"	1/2"	1/2"		5/8"	5/8"	5/8"	5/8"
B	7/8"	1"1/8"	1"1/8"		1"1/8"	1"1/8"	1"3/8"	1"3/8"
A	5/8"	7/8"	7/8"		7/8"	7/8"	7/8"	7/8"



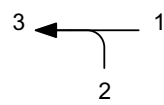
03

NOTA :
MAXIMUM WORKING PRESSURE : 8 bar
MAXIMUM WORKING TEMPERATURE : 110°C

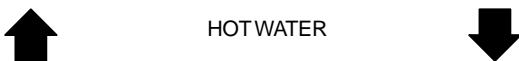
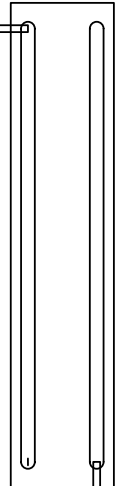


BEC

-B14



-YV2



PIPEDIAMETERS	
	H
20	DN 20
25	DN 20
30	DN 20
35	DN 20
40	DN 25
45	DN 25
50	DN 25
60	DN 25
70	DN 25



REFRIGERATION

Table 15

FAULT	POSSIBLE CAUSE AND SYMPTOMS	SOLUTION
<p>LP PROBLEMS and LP CUT OUTS</p>	<p>Refrigerant charge too low</p>	<p>Measure the superheat and sub-cooling: Good if 5°C<SC<10°C and 5°C<SH<10°C Bad if SC>10°C and SH too Low Check superheat adjustment and charge unit (a leak check must be carried out)</p>
	<p>In Heat Pump Mode the temperature difference between T outdoor and T_{evap.} (Dew) is too high 5°C < Delta T < 10°C excellent 10°C < Delta T < 15°C acceptable 15°C < Delta T < 25°C too high</p>	<p>If too high check the coils are clean or check coil internal pressure drop between the liquid line and the suction line Good if < 3bar Too high if > 3bar (coil blocked)</p>
	<p>Refrigeration circuit blocked in distribution</p>	<p>Stop the fan and create icing of the coil. Check all circuits freeze evenly across the whole surface of the coil If some parts of the coil do not freeze this could indicate a problem with the distribution</p>
	<p>Liquid line drier blocked. High temperature difference between inlet and outlet of the drier</p>	<p>Change filter drier</p>
	<p>Contaminant in the expansion valve</p>	<p>Attempt to free the valve adjusting element by freezing the valve and then heating the thermostatic element. Replace the valve if necessary</p>
	<p>Expansion valve not adjusted properly</p>	<p>Adjust the expansion Valve</p>
	<p>Ice plug in the expansion valve.</p>	<p>Heat the main body of the valve. If the LP increases and then decreases gradually, empty the circuit and replace the drier.</p>
	<p>Incorrect insulation of the thermostatic bulb of the expansion valve</p>	<p>Superheat too low: adjust superheat Move the thermostatic element along the pipe Insulate the Thermostatic element of the valve</p>
	<p>Low Pressure Switch cut out point too high</p>	<p>Check the cut out pressure of the Low Pressure switch: It must be 0.7+/- 0.2bar and must closes at 2.24 +/- 0.2 bar</p>
<p>LP cut out due to not enough defrost on heat pumps</p>	<p>Adjust the CLIMATIC settings to extend the defrost cycles or shorten the time between defrosts</p>	
<p>HP PROBLEMS AND HP CUT OUTS</p>	<p>Incorrect Airflow rates</p>	<p><i>Heat pump mode :</i> Check the filter before the indoor coil measure and estimate the airflow rate increase the speed of the fan <i>Cooling mode :</i> Check the condenser fan (Amps)</p>
	<p>Moisture or contaminants in the system</p>	<p>Summer operation Several hours after the unit has stopped, check the correspondance between the measured pressure and the outdoor temperature</p>



REFRIGERATION

FAULT	POSSIBLE CAUSE AND SYMPTOMS	SOLUTION
HP PROBLEMS AND HP CUT OUTS	Moisture or contaminants in the system	If the circuit pressure is higher (<1bar) than the saturated pressure corresponding to the measured outdoor temperature, there is possibility that some contaminants are present in the system. Reclaim the refrigerant, and vacuum the circuit (Ensure very low and slow vacuum for R407c) Recharge the unit
	Condenser coil is obstructed	Check the condenser coil and clean is necessary
	Recycled Hot Air	Check clearance around the condenser
Strong variations of pressure (2 to 3 bar) Thermostatic Expansion Valve "hunting"	Incorrect adjustment of the expansion valve Low refrigerant charge Filter drier obstructed with gas bubbles at the expansion valve inlet Moisture in the system	Refer to LP problems and LP cut out section
Very high discharge temperature, High amps measured at compressor	Very high superheat, very hot compressor	Open the superheat adjustment on the expansion valve. Check the pressure drop on the filter drier in the suction line
	Four Way reversing valve possibly blocked, abnormal noise from the valve, low LP and increasing HP	Check operation of the valve by going through cycle inversions. Change if necessary. Refer to LP problems

INDOOR FAN BLOWER

FAULT	POSSIBLE CAUSE AND SYMPTOMS	SOLUTION
High amps on action Fan motor	Pressure drop in the ducting installation too low.	Reduce the rotation speed of the fan Measure and estimate the airflow and pressure and compare with the specification from customer.
High amps on reaction Fan motor	Pressure drop in the ducting installation too high.	Reduce the rotation speed of the fan Measure and estimate the airflow and pressure and compare with the specification from customer.
Unstable running and high vibration	Fan jumping from one operating point to the other.	Change rotation speed of the fan.



OUTDOOR AXIAL FAN

FAULT	POSSIBLE CAUSE AND SYMPTOMS	SOLUTION
Heat Pump mode: Circuit breaker open	High Amps due to a low voltage from the main supply	Check the voltage drop when all components are running. Change the circuit breaker for one with a higher rating.
	High amps due to freezing of the coil	Check the adjustable amps on the motor starter. Adjust the defrost cycle set points.
	Flexy: Water ingress in the motor connection box.	Change the component

ELECTRIC HEATER

FAULT	POSSIBLE CAUSE AND SYMPTOMS	SOLUTION
High Temperature trip out on electric heater	Low airflow rate	Measure and estimate the airflow and pressure and compare with the specification from customer.
	Incorrect position of the Klixon	Check that the Klixon, is positioned in the airflow, relocate Klixon if necessary Check that there is no heat transfer from the Klixon support.

WATER LEAKS

FAULT	POSSIBLE CAUSE AND SYMPTOMS	SOLUTION
Water found in the ventilation section	Cooling mode: Water carried away from the coil because of excessive airflow and speed on the coil.	Estimate the airflow rate and check the speed is lower than 2.8 m/s
	Low air pressure in the compartment due to a high airflow rate or a high pressure drop before the fan	Check filter Reduce airflow rate
Water ingress in the filter compartment	Check seals around the ventilation section.	Check the door seal Check for the presence of silicone seals in the corners of the door and at the bottom of the refrigeration section bulkhead.
	Water ingress through a leaking fresh air hood or when running 100% fresh air	Check the seals and flanges in the fresh air hood Reduce the airflow rate if necessary



DC50 & DS50

FAULT	POSSIBLE CAUSE AND SYMPTOMS	SOLUTION
DC50: Nothing is written on the screen but it's enlightened	Problem of addressing PILAN on the DC50	Press on the three right-hand side's buttons at the same time during a few seconds then reconfigure the terminal address
DS50: Nothing is written on the screen but it's enlightened	Idem	Press on the three right-hand side's buttons at the same time during a few seconds then reconfigure display address setting at 32 (confer DC addressing Procedure page ???).
Nothing occurs on the unit or an option disappeared	Possible problem of units' configuration	Check the instructions from 3811 to 3833 and reconfigure options if necessary.
DS50 & DC50: the message "No Link" appears	Problem of addresses' recognition	Disconnect the DS50 from the unit and then reconnect it.
All the units are extinct	Problem BM50 pLAN addressing	Disconnect then re-plug; disconnect each unit from the others then change all the pLAN addresses

Rooftops are generally placed on the roof but can also be installed in technical rooms. These units are very robust but a minimum regular maintenance is required. Some moving parts in the units can suffer from wear and tear and must be checked regularly (belts). Other parts can get clogged by dirt carried in the air (filters) and must be cleaned or replaced.

These units are designed to produce cooled or heated air through the use of a refrigeration vapour compression system, it is therefore imperative to monitor the refrigeration circuit operating pressures and check the pipe-work for leaks.

The table below, details a possible maintenance plan, including the operations to be carried out and the periodicity at which they must be accomplished. It is recommended to follow such a plan to keep a rooftop unit in good working order. Regular maintenance of your rooftop will extend its operating life and reduce operating faults

<i>Symbols and Legend :</i>	
O	Operation which can be carried out by on-site maintenance technicians.
Δ	Operation which must be carried out by qualified personnel, trained to operate on this type of equipment.

NOTE :

- Times are given for information purpose only and may vary depending on the unit size and type of installation.
- Coil cleaning must be carried out by qualified personnel using appropriate methods that won't damage the fins or the tubes.
- It is recommended to keep a minimum stock of common replacement parts in order to be able to carry out regular maintenance operations (i.e. filters). You can contact your local Lennox representative which can assist you in establishing a parts list for each type of equipment.
- The access ports to the refrigeration circuits **MUST** be leak checked every time gauges are connected to the service ports.

TASK	OPERATING MODE	MONTHLY	QUARTERLY	6 MONTHLY	YEARLY B4 WINTER	ESTIMATED TIME (mn)
Clean or replace filters: Disposable, or metal frame.	Replace filters with new ones if disposable. Vacuum clean or blow the dirt. Wash and dry carefully. +Replace media if necessary Blocked filter will reduced the performance of the unit. THE UNIT MUST NOT OPERATE WITHOUT FILTERS	0				20
Visual check of the oil level	Visually check the oil level through the sight glass on the side of the compressor casing	0				2
Position check of the compressor crankcase heater.	Check if the heating resistance (if fitted) is tightened around the compressor body.	0				2
Belt tension check.	Check belt tension (Info in IOM) Replace belt if necessary.	0				10
Centrifugal fan bearings check	Isolate unit from the main power supply; Push the fan wheel manually and check for abnormal noises. Bearings are lubricated for life but may need replacement after 10000 hours	0				10
Check absorbed Amps	Check absorbed Amps on all three phases; compare with the nominal value given in the electrical wiring diagram.		Δ			15
Check Smoke detector	Start the unit. Trigger the smoke detector by moving a magnet around the detector head. Reset unit and control.		Δ			5
Check Climatic control, set-points and variables	Refer to the commissioning sheet; Check all set points are set according to this document.		Δ			15
Check clock settings	Check the time and date of the control		0			5
Check the position and tightness of refrigeration components	Check systematically all connections and fixings on the refrigeration circuit. Check for oil traces, eventually a leak test should be conducted. Check operating pressures correspond to the ones indicated on the commissioning sheet		Δ			30
Check Airflow rate safety switch (if fitted).	Shut down supply fan. The fault must be detected within 5 seconds.			0		
Check freeze protection on HWC				Δ		5
Check three way valve on HWC	Increase room set-point 10°C above the actual room temperature. Check operation of the piston. It must move away from the valve head. Reset the control.			Δ		5
Check economiser actuator operation	Check all fixings and transmission. Stop the unit using the control. The fresh air damper must closes. Start the unit the fresh air damper should open			Δ		5
Check refrigeration 4way valve	With the unit running in cooling mode increase the room set-point temperature by 10°C. The unit should switch to heat pump mode. Reset the control.			Δ		5
Check tightness of all electrical connections	Power down the unit and check and tighten all screws, terminal and electric connections, taking a particular attention to the power lines and low voltage control wires			Δ		30



TASK	OPERATING MODE	MONTHLY	QUARTERLY	6 MONTHLY	YEARLY B4 WINTER	ESTIMATED TIME (mn)
Check HP / LP safety switches	Install manifold gauges on the circuit to be checked. Shut down the axial fans and wait for the HP switch to shut down the compressor; 29bar (+1 / -0) auto-reset 22bar (+ - 0.7) Reconnect fans. Switch off the centrifugal supply fan and wait for the LP switch to cut out: 0.5bar (+ - 0.5) reset 1.5bar (+-0.5).			Δ		15
Check outdoor fans and fan guards	Check the fan blades conditions and all fan guards and protections				0	5
Check position of all sensors	Check the good positioning and operation of all sensors of all sensors. Check the values given in the control system. Replace sensor if necessary				0	5
Check and clean if necessary all fresh air grilles	Check the fresh air grilles (if fitted). If dirty or damaged, remove them from unit and clean with high pressure water cleaner. Refit on unit once clean and dry.				0	5
clean and sanitize the condensate drain pan following local regulations	Visually check the coils for dirt. If not too dirty, cleaning with a light brush may be enough (WARNING: Fins and copper tubes are very fragile! Any damage WILL reduce the performances of the unit). If very dirty, deep industrial cleaning is required using de-greasing agents.(External contractors must be called).				0/Δ	1h if cleaning
Check electric heater element for excessive corrosion	Isolate the unit; Pull the electric heater out of the heater module box and check the resistances fo traces of corrosion; Replace resistance as required;				0	1h if replacement
Check anti-vibration mountings, for wear and tear.	Visually check anti-vibration mountings on compressors and centrifugal fan. Replace if damaged.				0	1h if replacement
Check refrigeration circuit for traces of acid in the oil	Take a sample of oil from the refrigeration circuit.				Δ	
Check Glycol concentration in the HWC circuit	Check the glycol concentration in the pressurised water circuit. (a concentration of 30% gives a protection down to approx. - 15°C) check the circuit pressure				Δ	30
Check defrost cycle with 4-way valve inversion.	Switch the unit to heat pump mode. Change the set point to obtain the standard defrost mode and reduce the cycle time to the min value. Check the operation of the defrost cycle.				Δ	30
Gas burner module check for corrosion	Pull out the burner to access the tubes (refer to Gas burner section in the IOM)				Δ	30
Sweeping and cleaning the gas burner	Clean the in-shot burners and the blower wheel lightly with a brush. Sweep the flue and flue box. Wipe-off the dust from the housing of the motor. Clean combustion air inlet louvers Pull-out baffles from the tubes, sweep the tubes CHECK FLUE BOX GASKET				Δ	30
Gas supply pressures / connections checks	refer to Gas burner section in the IOM for details				Δ	15
Gas regulation valve settings	refer to Gas burner section in the IOM for details				Δ	30
Check gas burner safety switches	refer to Gas burner section in the IOM for details				Δ	30



TERMS AND CONDITIONS

In the absence of any other written agreement, the guarantee shall only apply to design faults which occur within a 12 month period (warranty period).

The warranty period starts on the date of commissioning and at the latest six months after the delivery of the Rooftop.

ANTI-CORROSION WARRANTY

10 year warranty terms and conditions for corrosion to the Rooftop casing:

Lennox shall guarantee the casing of its Rooftop units manufactured since May 1991 against corrosion for 10 years commencing from the date of delivery of the material.

The warranty shall not apply in the following cases:

- 1.If the corrosion of the casing is caused by external damage to the protective layer such as scratches, projections, abrasion, impacts etc...
- 2.If the casing is not kept continually clean in the course of maintenance work or by a specialist company,
- 3.If the casing is not cleaned and maintained in accordance with regulations,
- 4.If the Rooftop units are installed on a site or in an environment which is known to be corrosive, unless a special protective coating has been applied by the owner for these applications, which has been recommended by a competent body not linked to the owner and after carrying out a study of the site.
- 5.Nevertheless the LENNOX coating is highly resistant to corrosion, the warranty will not be applied for rooftop installed at less than 1000m away from the sea

Note : *With the exception of the casing, the rest of the machine is covered by the warranty of our general terms of sale.*

DO NOT CONFUSE THE WARRANTY WITH MAINTENANCE

The warranty will only apply if a maintenance contract has been signed, starting from the date of commissioning, and if the maintenance contract has actually been performed.

The maintenance contract must be made with a specialist, competent company.

The sole effect of any repair, modification or replacement of an item during the warranty period must be to extend the material's warranty period.

Maintenance must be carried out in accordance with regulations.

If a spare part is supplied after the expiry of the warranty period, it shall be guaranteed for a period equal to the initial warranty period and will be subject to the same conditions.

We recommend for a contract four inspections per year (every three months), before the start of each season, in order to check the operation of the equipment in the various operating modes.



CERTIFICATION



N° QUAL/2001/15834b

**LENNOX FRANCE
DIVISION DE LGL FRANCE**

**CONCEPTION, FABRICATION ET CESSION INTERNE DE ROOF TOP
ET CENTRALES DE TRAITEMENT D'AIR.**

**DESIGN, MANUFACTURING AND INTERNAL TRANSFER OF ROOF TOP
AND AIR HANDLING UNITS.**

2, rue Lavoisier ZI de Longvic BP 60 F-21602 LONGVIC CEDEX

AFAQ certifie que pour les activités et les sites référencés ci-dessus toutes les dispositions mises en oeuvre pour répondre aux exigences requises par la norme internationale :
AFAQ certifies that all the arrangements covering the above mentioned activities and locations are established to meet the requirements of the international standard :

ISO 9001 : 2000

ont été examinées et jugées conformes.
have been examined and found conform.

2003-01-24

2006-01-23

(année/mois/jour) Il est valable jusqu'au*
if is valid until*

(year/month/day)

Le Président du Comité de Certification
The President of the Certification Committee

Le Directeur Général d'AFAQ
The Managing Director of AFAQ

Le Représentant de l'Entreprise
On Behalf of the Firm

C. GUERIN

O. PEYRAT

E. MOUTON

*Sauf suspension justifiée entre temps par AFAQ à l'initiative de la société certifiée, le présent document n'a date qu'une valeur indicative. Toute vérification de la base de données des certificats AFAQ accessible à l'adresse Internet : <http://www.afaq.org>
L'organisation AFAQ est conforme aux normes internationales et européennes (ISO 9001 - norme EN 45001). Les accreditations obtenues par AFAQ et ses filiales sont énumérées à l'adresse Internet : <http://www.afaq.org/certifications>
*Unless suspension justified by AFAQ in the above mentioned company or its expansion. This document is for information purposes only. For up-to-date information, the only official source is the AFAQ certification database at <http://www.afaq.org>
The AFAQ organization complies with the international standards in force (AF 200012 Series - EN 45001 standard). Information on the accreditation held by AFAQ and its subsidiaries is available at: <http://www.afaq.org/certifications>



Site Industriel de LONGVIC
ZI de LONGVIC – BP 60
21802 LONGVIC – France

Téléphone : +33 (0)3 80 77 41 41
Fax : +33 (0)3 80 66 66 35

DECLARATION DE CONFORMITE DU CONSTRUCTEUR
Conformément
à la Directive européenne « Equipement sous pression » 97/23/CE,

CE CONFORMITY DECLARATION
As defined by
« Pressure equipment » Directive 97/23/EC,

LGL France SA, ZI Les Meurières – 69780 Mions – France

La société soussignée certifie sous sa seule responsabilité que l'ensemble de nos fabrications de roof top désignés par les types suivants :

The company hereby declare, under its own responsibility, that the entire roof top range which designations are :

FCA FHA FGA FDA FCK FHK FGK FDK
FXA FXK
BCK BHK BGK BDK

Qui contiennent des fluides frigorigènes classés en groupe 2 (R22 et R407C),
Which are containing refrigerating fluids classified in group 2 (R22 et R407C),

Sont conformes aux dispositions de la Directive « Equipements sous pression », 97/23/CE
Is in compliance with the requirements of « Under pressure equipments » directive, 97/23/EC :

Catégorie Category : **II**

Module d'évaluation Evaluation Module : **D1**

Organisme notifié Notified body : **Bureau VERITAS**

17 bis, place des reflets – La DEFENSE 2 – 92400 Courbevoie.

Sont conformes aux dispositions de la Directive - *Are in compliance with the requirements of*

« Machines », 98/37/CE - « Machinery », 98/37/EC

« Basse Tension », 73/23/CEE modifiée - « Low voltage », 73/23/EEC amended

« CEM », 89/336/CEE - « EMC », 89/336/EEC

« Appareils à gaz », 90/396/CEE modifiée - « Gas machines », 90/396/EEC amended

Ces produits sont fournis avec un marquage de conformité .

The products are provided with a marking of conformity.

Date : 10 Mai 2004 / May 10th 2004

E. MOUTON
Directeur du site de Longvic

LENNOX France, Division climatisation de LGL France

Siège social : LGL France – ZI « Les Meurières » – BP71 – 69780 MIONS – France

Société anonyme au capital de 309 815 120F – RCS LYON B 309 528 115 – N° IDENTIFICATION TVA FR 59 309 528 115 – APE 292F



15/08 2003 VEN 14:51 FAX

002/002



Marque NF – Matériels de Détection Incendie



Organisme mandaté
Comité National Maintenance Incendie - Monté 142
C.N.P.I.S. 142 - 16, avenue Foch - 75008 PARIS
☎ : (33) 1.53.09.00.40 • Fax : (33) 1.49.63.46.62
Site Internet : http://www.cnmis.org

**CERTIFICAT DE DROIT D'USAGE DE LA MARQUE NF
(LICENCE)**

N° DROIT D'USAGE
DAD 013 J0 Le 27/05/2003

La Société : **FINSECUR**
Pour son usine de 15, rue du Général Négrier
78800 HOUILLES

Correspondant C.N.M.I.S. SAS
José CAMPO Tél : 01 53 89 00 48
Fax : 01 45 63 40 63

Date de fin de validité :
31/03/2004

N° Dossier C.N.M.I.S. SAS
03 03 18
Conformité aux normes :
NF S 61-961 de Septembre 2000

MODIFICATIONS

Est autorisée à apposer la marque NF sur le matériel désigné ci-après :

- Désignation technique du matériel : Détecteur Autonome Déclencheur
- Désignation commerciale : LOTUS 1 W2C
- Caractéristiques certifiées : Type II
- Élément sensible : 2 TYPE E4
(Les autres caractéristiques sont reprises dans les rapports d'essai)
- Ce matériel fonctionne avec : Voir liste des matériels associés
- Références et date des rapports d'essais : DEH 03 01 76 du 14 Mai 2003 (Fiche Technique N° 1441)
- Fonctions supplémentaires : Voir rapports référencés ci-dessus

N.B : Cette décision dispense le titulaire de la présentation des Procès Verbaux d'essai (incluant les rapports d'essais) de conformité aux normes du matériel ci-dessus.

PARIS, le 11 juin 2003
Par mandat d'AFNOR CERTIFICATION
Le C.N.M.I.S. SAS

Le Directeur Général
Denis CLUZEL



Ce certificat annule et remplace tout certificat antérieur, sa date de validité est confirmée sous réserve des contrôles effectués par AFNOR CERTIFICATION et/ou le C.N.M.I.S. SAS qui peuvent prendre toute sanction conformément aux Règles Générales de la marque NF et au Règlement R075. Ce certificat annule que les produits désignés sont certifiés conformes au référentiel technique du Règlement R075 et que le système qualité de la société a été évalué selon ce même Règlement. Il n'y a pas en aucun cas AFNOR CERTIFICATION et le C.N.M.I.S. SAS quant à la conformité réglementaire de l'installation dans laquelle les produits objets de ce certificat seront utilisés.



ACCREDITATION N° 1-1113



DÉPARTEMENT SÉCURITÉ
STRUCTURES ET FEU
Réaction au feu



PROCÈS-VERBAL DE CLASSEMENT DE RÉACTION AU FEU D'UN MATÉRIAU

Prévu à l'article 88 de l'Arrêté du Ministère de l'Intérieur du 30 juin 1983,
modifié par l'arrêté du 28 août 1991 et l'arrêté du 27 novembre 1991
Laboratoire pilote agréé du Ministère de l'Intérieur (arrêté du 05/02/99, modifié)

N° RA02-0505

Valable 5 ans à compter du 20 décembre 2002

Matériau présenté par : La Société SAINT GOBAIN ISOVER
Les Miroirs
18 avenue d'Alsace
94000 COURBEVOIE

Marque commerciale : CLIMAVER 274 panneau nu ou PRIMITIF 2VM0
CLIMAVER 274 2VVN

Description sommaire :
Feutre rigide en laine de verre (fibres de verre liées par une résine synthétique
thermodurcissable) revêtu sur la face apparente d'un voile de verre noir et sur l'autre
face :

- d'un voile de verre jaune renforcé par des fils de verre pour le produit référencé
CLIMAVER 274 panneau nu ou PRIMITIF 2VM0.
- d'un voile de verre noir identique, pour le produit référencé CLIMAVER 274 2VVN.

Masse surfacique nominale : 1,7 kg/m² environ. Epaisseur nominale : 25 mm.

Nature de l'essai : Essai par rayonnement
Mesure du Pouvoir Calorifique Supérieur

Classement :

M0

Durabilité du classement (Annexe 22) : Non limitée a priori
compte tenu des critères résultant des essais décrits dans le rapport d'essais N° RA02-0505 annexé.

Le classement indiqué ne préjuge pas de la conformité des matériaux commercialisés aux échantillons soumis aux
essais et ne saurait en aucun cas être considéré comme un certificat de qualification tel que défini par la loi. Cette
conformité peut être attestée par les certificats de qualification reconnus par le ministre chargé de l'Industrie, et
notamment par la marque NF - Réaction au Feu.

Champs/Marne le : 20 décembre 2002

Le technicien responsable de l'essai

Le chef du laboratoire Réaction au Feu

Nicolas ROURE

Martial BONHOMME

Sont seules autorisées les reproductions intégrales du présent procès-verbal de classement ou de l'ensemble procès-verbal de
classement et rapport d'essais annexé.

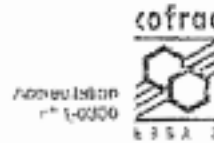
PARIS - MARNE-LA-VALLÉE - GRENOBLE - NANTES - SOPHIA ANTIPOLIS
CENTRE SCIENTIFIQUE ET TECHNIQUE DU BÂTIMENT

84, avenue Jean-Jaures - Charly-sur-Marne - BP 2 - F-77401 Marne-la-Vallée Cedex 2
Tél. : 01 64 68 82 82 - Fax : 01 64 68 84 79 - site web : feu.cstb.fr



SÉCURITÉ FEU
Réaction au feu

PK-10+



PROCÈS-VERBAL DE CLASSEMENT DE RÉACTION AU FEU D'UN MATÉRIAU

Prévu à l'article 88 de l'Arrêté du Ministère de l'Intérieur du 30 juin 1983,
modifié par l'arrêté du 28 août 1981
Laboratoire pilote agréé du Ministère de l'Intérieur (arrêté du 05/02/59, modifié)

N° RA01-1042

Valable 5 ans à compter du 9 novembre 2001

- Matériau présenté par : La Société BELTEX NV
Marinloopelweg 51
6780 MOULERIEKE
BELGIQUE
- Marque commerciale : 1200
- Description sommaire :
Médias filtrants composés de 100% fibres polyester, ignifugés en partie.
Masses surfaciques nominales : 80 - 140 - 200 et 300 g/m².
Épaisseurs nominales : 10 - 14 - 20 et 25 mm. Couleur : Blanc.
- Nature de l'essai : Essai au Brûleur Électrique
Essais Complémentaires

Classement : **M1** : valable pour une gamme d'épaisseurs de 10 à 25 mm

Durabilité du classement (Annexe 22) : Non limitée a priori (Filtre non régénérable)
compte tenu des critères résultant des essais décrits dans le rapport d'essais N° RA01-1042 annexé.

Le classement indiqué ne préjuge pas de la conformité des matériaux commercialisés aux échantillons soumis aux essais et ne saurait en aucun cas être considéré comme un certificat de qualification tel que défini par la loi. Cette conformité peut être attestée par les certificats de qualification reconnus par le ministère chargé de l'Industrie, et notamment par la marque NF - Réaction au Feu.

Champs/Manne le : 9 novembre 2001

Le technicien responsable de l'essai

Nicolas ROURE

Le chef du laboratoire Réaction au Feu

Martial BONHOMME

Sont seules autorisées les reproductions intégrales du présent procès-verbal de classement ou de l'ensemble procès-verbal de classement et rapport d'essais annexé.

PARIS - MARNE-LA-VALLÉE - GRENOBLE - NANTES - BORNEA ANTIPOLIS
CENTRE SCIENTIFIQUE ET TECHNIQUE DU BÂTIMENT

31, avenue Jean-Baptiste Charcot - 93700 La Courneuve Cedex 2


CSTB
Le facteur de construction
SÉCURITÉ FEU
Réaction au feu
cofrac

 Accréditation
 n° 1-0300


PROCÈS-VERBAL DE CLASSEMENT DE RÉACTION AU FEU D'UN MATÉRIAU

Prévu à l'article 88 de l'Arrêté du Ministère de l'Intérieur du 30 juin 1983,
modifié par l'arrêté du 28 août 1991
Laboratoire pilote agréé du Ministère de l'Intérieur (arrêté du 05/02/99, modifié)

N° RA00-461

Valable 5 ans à compter du 17 octobre 2000

Matériau présenté par : La Société SAINT GOBAIN ISOVER FRANCE
Les Miroirs
18 avenue d'Alsace
92400 COURBEVOIE

Marque commerciale : CLIMAVER 202 - FIB-AIR ISOL

Description sommaire :
Feutre en laine de verre (fibres de verre liées par une résine thermodurcissable) revêtu sur une face d'une feuille d'aluminium renforcée d'une grille de verre. Le complexe aluminium est contrecollé à l'aide d'une colle polyéthylène.
Épaisseurs : 25 à 50 mm. Masse volumique nominale de la laine de verre : 30 kg/m³

Nature de l'essai : Essai par rayonnement avec joint simulé suivant avis CECMI en date du 08 avril 1993.
Mesure du Pouvoir Calorifique Supérieur

Classement :
MO

Durabilité du classement (Annexe 22) : Non limitée
compte tenu des critères résultant des essais décrits dans le rapport d'essais N° RA00-461 annexé.

Le classement indiqué ne préjuge pas de la conformité des matériaux commercialisés aux échantillons soumis aux essais et ne saurait en aucun cas être considéré comme un certificat de qualification tel que défini par la loi. Cette conformité peut être attestée par les certificats de qualification reconnus par le ministère chargé de l'Industrie, et notamment par la marque NF - Réaction au Feu.

Champs/Marne le : 17 octobre 2000

Le technicien vérificateur

Bruce LE MADEC

 Le Chef du laboratoire Réaction feu
responsable de l'essai

Martial BONHOMME

Sont seules autorisées les reproductions intégrales du présent procès-verbal de classement ou de l'ensemble procès-verbal de classement et rapport d'essais annexé.

 PARIS - MARNE-LA-VALLÉE - GRENOBLE - NANTES - SOPHIA ANTIPOLIS
 CENTRE SCIENTIFIQUE ET TECHNIQUE DU BÂTIMENT

 84, avenue Jean-Jaures - Champs-sur-Marne - BP 2 - F-77421 Marne-la-Vallée Cedex 2
 Tél. : 01 64 60 84 12 - Fax : 01 64 60 84 73 - E-mail : reaction@csstb.fr - http://www.csstb.fr/feu



Certificat

Certificate

(Directive 90/396/CEE « Appareils à gaz »)
(« Gas appliances » 90/396 EEC Directive)

Numéro : 1312BO3925

CERTIGAZ, après examen et vérifications, certifie que l'appareil :
CERTIGAZ, after examination and verifications, certifies that the appliance :

- **Fabriqué par :**
Manufactured by : **LENNOX FRANCE**
Z.I. LONGVIC
BP 60
F-21602 LONGVIC CEDEX
- **Marque commerciale et modèle(s) :**
Trade mark and model(s) : **LENNOX**
 - > BG-B20 – BG-B33 – BG-C20
 - > BG-C46 – BG-D33 – BG-D60
- **Genre de l'appareil :**
Kind of the appliance : **MODULE DE CHAUFFAGE POUR**
CLIMATISEURS DE TOITURE (B22)
GAS AIR HEATER UNIT FOR ROOF TOP (B22)
- **Désignation du type :**
Type designation : **BG-B20**

Pays de destination <i>Destination countries</i>	Pressions (mbar) <i>Pressures (mbar)</i>	Catégories <i>Categories</i>
DK-SE-IT	20	I2H
SE	37	I3P
DE	20 ; 50	I2E ; I3P
BE	20/25 ; 37	I2ErB ; I3P
GB-ES-PT-CH	20 ; 28-30/37	I12H3P
NL	25 ; 37/50	I12L3P
FR	20/25 ; 37	I12Er3P

est conforme aux exigences essentielles de la directive "Appareils à gaz" 90/396/CEE (29/06/1990).
is in conformity with the essential requirements of the "Gas appliances" directive 90/396/EEC (29/06/1990).

CERTIGAZ
Le Directeur Général



Yannick ONFROY

Paris le : 1^{er} juillet 2003

CERTIGAZ SAS
62 rue de Courcelles - 75008 PARIS
Tél : 01 44 01 87 81 - Fax : 01 44 01 87 90
Certigaz@atgaz.fr

CE 1312



Bureau Veritas S.A. is a Notified



Body under the number 0062



**ATTESTATION D'APPROBATION DE SYSTEME DE QUALITE
CERTIFICATE OF QUALITY SYSTEM APPROVAL**

N° CE-PED-D1-LNX001-02-FRA-Rev.A

BUREAU VERITAS S.A., agissant dans le cadre de sa notification (numéro d'organisme notifié 0062), atteste que le système de qualité appliqué par le fabricant pour la production, l'inspection finale et les essais des équipements sous pression identifiés ci-après, a été examiné selon les prescriptions du module D1 de l'annexe III de la directive "Equipements sous pression" N° 97/23/CE et est conforme aux dispositions correspondantes de la directive.

BUREAU VERITAS S.A., acting within the scope of its notification (notified body number 0062), attests that the quality system operated by the manufacturer for production, final inspection and testing of the pressure equipment identified hereunder has been examined against the provisions of annex III, module D1, of the Pressure Equipment directive n° 97/23/EC, and found to satisfy the provisions of the directive which apply to it.

Fabricant (nom) / Manufacturer (name): **LENNOX France (Division de LGL France)**

Adresse / Address: **Site de LONGVIC
2, rue LAVOISIER BP60
21602 LONGVIC CEDEX**

Marque commerciale / Trade mark: **LENNOX**

Description des équipements: **Climatiseurs autonomes de toitures « ROOFTOP »**
Equipment description:

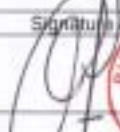

Identification des équipements concernés (liste en annexe le cas échéant) : **Liste en annexe**
Identification of equipment concerned (list attached where necessary):

Cette attestation est valable jusqu'au **14 JUIN 2005**
This certificate is valid until....

Le maintien de l'approbation est soumis à la réalisation par le Bureau Veritas des audits, essais et vérifications selon le contrat signé par le fabricant et le Bureau Veritas.
The approval is conditional upon the surveillance audits, tests and verifications to be carried out by Bureau Veritas as per the provisions stated in the agreement signed by both the manufacturer and Bureau Veritas.

Cette attestation est présumée nulle et le fabricant supportera seul les conséquences de son utilisation, si les assurances - données par le fabricant lors de la demande d'intervention - en matière (a) d'application de son système qualité approuvé, (b) de conformité de son équipement au type et (c) d'inspection et d'essais des produits finis se révèlent inexactes et, de manière générale, si le fabricant ne respecte pas l'une ou l'autre des obligations mises à sa charge par la directive n° 97/23/CE du 29 mai 1997 telle que transposée dans le(s) droit(s) national(aux) applicable(s).

This certificate shall be deemed to be void and the manufacturer shall alone bear any consequences pursuant to its use, where the manufacturer fails to comply with his undertakings as per the agreement in respect of (a) implementation of the approved quality system, (b) conformity of the equipment with the type and (c) inspection and tests on the final product, and generally where the manufacturer fails in particular to comply with any of his obligations under directive nr 97/23/EC of 29 May 1997 as transposed in the applicable law(s).

Etabli à / Made at	Le / On	Signé par / Signed by	Signature / Signatures
LYON/DARDILLY	26 JUIN 2003	A.RELIGIEUX	 
Code d'enregistrement / Registration code: 2003/2905/P			

La présente attestation est soumise aux Conditions Générales de Service de Bureau Veritas jointes à la demande d'intervention signée par le demandeur.
This certificate is subject to the terms of Bureau Veritas General Conditions of Service attached to the agreement signed by the applicant.

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Bureau Veritas S.A. is a Notified



Body under the number 0062



ANNEXE à l'attestation d'approbation de système de qualité
Annex to the certificate of quality system approval

N° CE-PED-D1-LNX001-02-FRA-Rev A

Liste des équipements concernés
List of the concerned equipment

Désignation des familles de produit standard

Gammes	Modèles
Flexy (fluide R22) : FCA, FHA, FGA, FDA Flexy (fluide R407C) : FCK, FHK, FGK, FDK	050-060-070-085-100-120-140-160-190
Flexy à condensation à eau : FCK, FHK, FGK, FDK	060W-070W-085W-100W-120W-140W-160W-190W
Flexy « 4 volets » : FXA, FXK	025-030-035-040-055-070-085-100-110-140-170
Baltic R407C : BCK, BHK, BGK, BDK	020-025-030-035-040-045-050

Désignation des familles de produit spéciaux

Gammes	Modèles
FCA, FHA, FCK, FHK	200-250-300
FXK	200

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Due to Lennox's ongoing commitment to quality, the Specifications, Ratings and Dimensions are subject to change without notice and without incurring liability.

Improper installation, adjustment, alteration, service or maintenance can cause property damage or personal injury.

Installation and service must be performed by a qualified installer and servicing agency.



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