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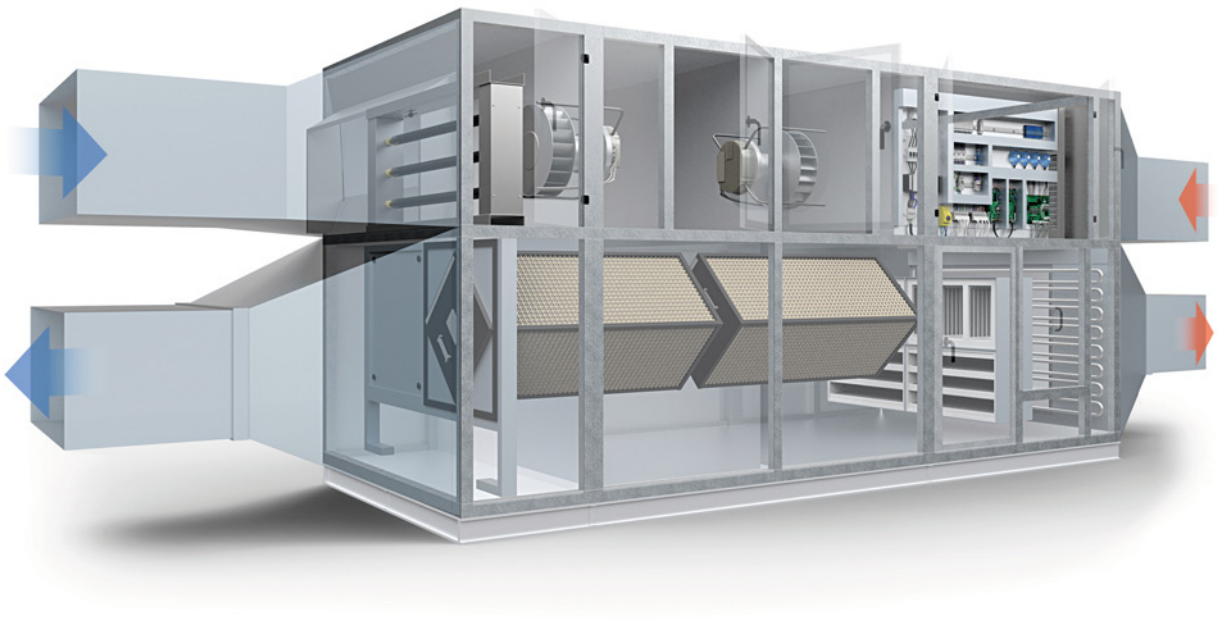
Mitsubishi Electric Lossnay Kanzen

Installation, Operation and Maintenance Manual

LK-500 / 750 / 1000 / 1250 / 1500



MITSUBISHI ELECTRIC
LIVING ENVIRONMENTAL SYSTEMS

Air Conditioning | Heating
Ventilation | Controls

Lossnay
Kanzen

Contents

1 Safety Precautions and Instructions

1. Safety precautions and instructions

1.1. Before installation and making electrical connections

- Read all the 'Safety guidelines' before installing the unit.
- The 'Safety precautions and instructions' section contains very important information regarding safety. These precautions and instructions must be observed.

Symbols used in text

⚠ **Warning:** Describes precautions which must be taken to prevent the risk of accidents for the user, resulting in injury or death.

⚠ **Caution:** Describes precautions to be taken to prevent damage to the unit. Symbols used in illustrations

⃠ indicates a prohibited action.

❗ indicates important instructions which must be followed with care.

⏚ indicates a component which must be connected to earth.

⚠ risk of electric shock (this symbol is included on the label of the main unit). <Colour: yellow>

⚠ **Warning:** Read the labels on the main unit thoroughly.

⚠ **DANGER - HIGH VOLTAGE:**
The control box contains high voltage components. Take care not to touch any internal components when opening or closing the front panel of the control box. Before inspecting the interior of the control box, switch off both the Lossnay Kanzen and the condenser unit. Wait for at least 10 minutes after switching off the condenser unit and check that the voltage between FT-P and FT-N on the INV board has dropped to 20 V DC or less.

⚠ **Warning:**
The Lossnay Kanzen may only be installed by the dealer or an authorised technician.
- Incorrect installation by the user may result in water leakage, electric shock or fire.

Install the unit in a location capable of sustaining the weight of the unit itself.
- If the installation location is not suitable for the weight of the unit, the unit may fall, causing injury or damage to the unit itself.

Use the specific cables for all wiring. Electrical connections must be made safely. The cables must not be excessively taut as this may strain the terminals.
- Incorrectly made electrical connections and incorrect installation may lead to overheating and cause a risk of fire.
- There may be a risk of contact with dangerous voltages when connecting to the mains electricity supply. Ensure that the electric power supply is safe before installation by disconnecting the powerline upstream of the connection.

Install the unit in a designated safe location to minimise risks in the event of earthquakes or high winds.
- If the unit is installed incorrectly, it may tip over and cause injury or damage. Always use the filters and other accessories specified by Mitsubishi Electric.

1 Safety Precautions and Instructions

- Accessories must only be installed by an authorised technician. Incorrect installation by the user may result in water leakage, electric shock or fire.

Do not attempt to repair the unit yourself. Contact the dealer if any repairs are necessary to the Lossnay Kanzen.
- Incorrectly performed repairs to the unit may result in water leakage, electric shock or fire.

Do not touch the heat exchanger fins.
- Handling incorrectly may result in injury.

In the event of refrigerant gas leakage during installation, ventilate the room adequately.
- Contact between the refrigerant gas and a naked flame produces toxic gas.

Install the Lossnay Kanzen as indicated in the installation manual.
- Incorrectly installing the unit may result in water leakage, electric shock or fire.

All electrical work must only be performed by an authorised electrician in compliance with local legislation concerning electric installations and indoor electric circuits, and as indicated by the instructions given in this manual. Each unit must be powered by a dedicated electric power line.
- Where no local legislation exists, use the dimensions of the cables installed in the unit and the rated capacity of the main power switch as reference for the minimum requisites of the mains power line.
- Connecting the unit to a mains power line of inadequate capacity or incorrectly made electrical connections may result in electric shock or fire.

When reinstalling or moving the Lossnay Kanzen to a new location, do not charge with any refrigerant gas other than the type specified on the unit itself.
- Mixing the original refrigerant with a different refrigerant or air may cause the refrigerant circuit to malfunction and damage the connected unit.

If the Lossnay Kanzen is installed in a small room, take adequate measures to prevent refrigerant gas concentrations from exceeding safe limits in the event of leakage.
- Contact the dealer for information on the appropriate measures to prevent exceeding safe gas concentration limits. In the event of refrigerant leakage causing concentration levels to exceed safe limits, there is a high risk of accident and injury due to oxygen deficiency in the room.

Before moving or reinstalling the Lossnay Kanzen, consult the dealer or an authorised technician.
- Incorrectly installing the Lossnay Kanzen may result in water leakage, electric shock or fire.
- Heavy loads (≥20 kg.) Handle only with suitable mechanical equipment.
- Due to the heavy loads and substantial mass involved, when manoeuvring and handling the Lossnay Kanzen, take particular care to keep out of the way of the unit in consideration of its overall dimensions, to prevent the risk of crushing or other injury.
- Certain parts or panels, especially those near joints between different sections of the unit or with sharp edges or corners, may cause cuts or lacerations if incorrectly handled.
- Always use appropriate safety equipment when handling, assembling, wiring and commissioning the Lossnay Kanzen.

Once installation is complete, check that there are no refrigerant gas leaks.
- Leaking refrigerant coming into contact with fan heaters, heater stoves, ovens or other heat sources may produce toxic gas.

Consult the dealer when it is necessary to scrap the product after use. The installing and plant technicians must certify the safety of the installation against leakage in compliance with local legislation and ordinances. When choosing the installation location, bear in mind that refrigerant gas is heavier than air and that any leaks may therefore accumulate in areas such as around the base, for example. For outdoor units allowing fresh air into the internal unit, choose the installation location with particular care as outdoor air may enter the interior space directly when the thermostat is switched off.
- Direct exposure to outdoor air may be detrimental to the health of occupants or to foodstuffs.

1 Safety Precautions and Instructions

1.2. Precautions for units using R410A refrigerant

⚠ **Caution:** Do not use existing refrigerant pipes.

- Old refrigerant fluids and refrigeration unit oils remaining in old lines contain high levels of chlorine, which may cause deterioration in the refrigerant oil used in the new unit.
- R410A is a high pressure refrigerant, which may cause the existing pipes to burst explosively.

Use only refrigerant pipes in phosphorus-deoxidized copper and unbrazed copper tubing and pipes.
Also check that the inner and outer surfaces of the pipes are clean and free of sulphur, corrosion, dust/dirt, flash, oil, moisture or other contaminants.
- Any contamination on the inner surface of the refrigerant pipe may cause deterioration in the residual refrigerant oil.

Store all pipes in a closed area until used for installation, keeping both ends of the pipe sealed as far as the brazing (keep elbow joints and other joints in a plastic bag).
- Dust, dirt or water contaminating the refrigeration circuit may cause deterioration in the refrigerant oil and damage to the compressor of the unit connected to the circuit.

Recharge the system only with liquid refrigerant.
- Using a gaseous refrigerant will change the composition of the refrigerant contained in the bottle, causing a loss of performance.

Do not use any refrigerant other than R410A.
- If other refrigerant types (e.g. R22) are mixed with R410A, the chlorine content of these products may cause deterioration in the refrigerant oil.

Use a vacuum pump equipped with a check valve to prevent backflow.
- A check valve is necessary as otherwise the oil in the vacuum pump may return into the refrigeration circuit and cause deterioration in the refrigeration unit oil.

Do not use any of the following equipment for use with conventional refrigerants: pressure gauge unit, filler pipe, gas leak detector, check valve, refrigerant charging station, refrigerant recovery equipment.
- R410A may deteriorate if mixed with conventional refrigerant or refrigerant oil.
- If mixed with water, R410A may cause deterioration in the refrigerant oil.
- As R410A does not contain chlorine, it is undetectable by leak detectors for conventional refrigerant gases. Do not use a bottle for charging as this may cause the refrigerant to deteriorate.

Handle equipment with the utmost care.
- Dust, dirt or water contaminating the refrigeration circuit may cause deterioration in the refrigerant.

1.3. Before installation

⚠ **Caution:** Do not install the unit in areas where there is a risk of flammable gas leakage.
- Flammable gas accumulating around the unit may result in explosion.

Do not use the air treatment unit in environments where foodstuffs, animals, plants, precision instruments or artwork are handled or kept.
- Using the unit in the aforementioned environments may result in deteriorated food quality or other adverse effects.

Do not use the Lossnay Kanzen in special environments.
- Oil, vapours, sulphurous fumes etc. may significantly compromise the performance of the Lossnay Kanzen or cause damage to its components.

If the unit is installed in hospitals, telecommunication stations or other similar facilities, ensure that all adequate measures are taken to prevent interference.
- Inverters, generators for domestic use, high frequency medical equipment and radio devices may compromise or impede the function of the Lossnay Kanzen. Conversely, the Lossnay Kanzen may compromise the functionality of the aforementioned devices, interfering with medical therapy or the transmission of images.

1 Safety Precautions and Instructions

1.4. Before reinstalling (in a new location) - Electrical connections

⚠ **Caution:**

⏚ The unit must be connected to earth.

-Do not connect the earth line to gas or water pipes, lightning conductors or telephone earth lines. Incorrectly earthing the unit may result in electric shock.

Do not invert phases.

Do not connect the phase lines L1, L2 and L3 to the N pole.
- Powering the unit with incorrectly made electrical connections may cause damage to the electrical components of the unit itself.

The main power cable must not be strained.
- Strain on the cable may cause breakage of the wires within the cable itself, producing heat and causing a risk of fire.

Install an earth leakage circuit breaker as necessary.
- Failure to install an earth leakage circuit breaker may result in the risk of electric shock. Use electric cables of suitable capacity and size.
- Using cables with an excessively small cross section may cause current leakage, producing heat and causing a risk of fire.

Use a circuit breaker and fuse of the specified capacity.
- Using a fuse or circuit breaker with a higher rated current capacity than specified, or substituting these components with steel or copper wires, may cause a general unit failure or a risk of fire.

Install drainage pipes as indicated in the installation manual, to ensure adequate drainage capacity. Wind heat insulation around the pipes to prevent the formation of condensation.
- Installing inadequate drainage pipes may cause water leakage.

Transport and handle the unit with care.
- The unit cannot be carried by a single person. The weight of the unit exceeds 20 kg.
- Certain units are packed with polypropylene strips. Do not use these strips as handles to carry or move the unit. This is extremely dangerous.
- Do not touch the heat exchanger fins, as they are sharp and may cause cuts.
- When transporting the outdoor unit, support the weight of the unit itself at the specific points on its base. The outdoor unit must be supported from four different points at all times when handling, to prevent the risk of it slipping sideways.

Dispose of packaging material correctly.
- The packaging material (e.g. nails and metal or wooden parts) may cause injury or accidents.
- Tear up all plastic bags and dispose of carefully to prevent the risk of children playing with them. A child finding and playing with a whole plastic bag may accidentally suffocate.

1.5. Before starting the functional test

⚠ **Caution:** The outdoor unit must be connected and powered (by turning on the main switch) for at least 12 hours before starting for the first time.
- Starting the unit immediately after turning on the main switch may cause irreparable damage to the internal components of the unit itself. Keep the main power switch turned on at all times during the season of usage. Check that the phases are connected in the correct order and measure the voltage between each phase.

Never touch switches with wet hands.
-This may result in electric shock.

Do not touch the refrigerant pipes during and immediately after operation.
- Depending on the state of the refrigerant flowing through the pipes, in the compressor and in other components of the refrigeration circuit, the refrigerant pipes may be very hot or very cold during and immediately after operation. Touching the refrigerant pipes may result in burning or freezing injury.

Never operate the Lossnay Kanzen with the panels or protective covers removed.
- Rotating, hot or high voltage parts may cause injury.

Do not switch the unit off immediately after stopping operation.
- Wait at least 5 minutes before switching the unit off. Switching off too soon may result in leakage from the drainage circuits or mechanical malfunction.

2 Product Information

2. Product information

This unit uses R410A refrigerant.

The pipes in circuits using R410A may be different from the pipes in circuits using conventional refrigerant, as systems using R410A operate at higher pressures. See the service handbook for more information.

Certain instruments and equipment used for systems using other types of refrigerant cannot be used for systems using R410A. See the service handbook for more information.

Do not use existing refrigerant pipes, as they are contaminated with chlorine, which is contained in the refrigeration oil of the machine and in the refrigerant. Chlorine will cause deterioration in the refrigerant oil of the new units. Do not use existing pipes, as systems using R410A are designed to operate at higher pressures than systems using other refrigerants. This may cause the existing pipes to burst explosively.

⚠ **Caution:** Do not discharge R410A gas into the atmosphere.
R410A is a fluorinated greenhouse gas, with a Global Warming Potential (GWP) of 1975
(in accordance with Kyoto Protocol).

2.1 Composition

The Lossnay Kanzen consists of:
Return section (electric return fan)
Filter section (supply, return)
Heat recovery section
Section with direct expansion heating/cooling heat exchanger
Supply section (electric supply fan)
Utility compartment containing main power and regulation panels
Section with Free Cooling shutter

The following sections are also available as optional accessories:
Post-heating battery section
Humidification section
External bypass section
Consult the dealer to determine which configuration options should be requested for the specific case.

2.2 Intended usage

Usage:

- Using the Lossnay Kanzen for any purpose other than the usage for which it has been specifically designed and constructed will render the operations described as follows dangerous. Mitsubishi Electric cannot be held responsible for any damage or injury caused by improper or inappropriate usage of the Lossnay Kanzen.
Lossnay Kanzen Air Handling Units are designed and constructed exclusively for the **treatment of air in civil and industrial applications.**

Units should not be used in CORROSIVE and/or EXPLOSIVE atmospheres. Lossnay Kanzen must always be used in compliance with the original conditions stipulated for the installation in the contract defined between the supplier and the client.

Any other usage is improper and dangerous. Mitsubishi Electric cannot be held responsible for any damage or injury caused by using the material supplied for any purposes other than those expressly specified.

3 System Configuration

Lossnay Kanzen

POWER INVERTER

Outdoor Units	LK-500	LK-750	LK-1000	LK-1250	LK-1500
PUHZ-RP YKA	No.	No.	No.	No.	No.
Size RP200 (8HP)	1	-	2	1	-
Size RP250 (10HP)	-	1	-	1	2

3.1 Control and Supervision

The Lossnay Kanzen Air Handling Units (AHU's) are compatible with AG-150, EB-50 and AT-50A centralised controllers via a PAC-YG66DCA interface which allows time-clock scheduling only.

Centralised Control Units

EB-50

AT-50A

AG-150

PAC-YG66DCA*

* Required for connection of Lossnay Kanzen to Centralised Controller

4 Specifications

Lossnay Kanzen

The Lossnay Kanzen range of Air Handling Units consists of the following models:

MODEL			LK-500	LK-750	LK-1000	LK-1250	LK-1500
Rated Airflow		m^3/h	5,000	7,500	10,000	12,500	15,000
		m^3/s	1.39	2.08	2.78	3.47	4.17
Airflow Range		m^3/h	3,500 - 5,000	5,500 - 7,500	8,000 - 10,000	10,500 - 12,500	13,000 - 15,000
		m^3/s	0.97 - 1.39	1.53 - 2.08	2.22 - 2.78	2.92 - 3.47	3.61 - 4.17
Max. Static Pressure (factory settings)		Pa	250				
Max. Static Pressure (configuration option) *1		Pa	400				
Cooling	Coil Capacity	kW	21.3	26.6	42.3	46.0	51.5
	Recovery Module Capacity	kW	15.3	22.9	30.6	38.2	45.9
	Total Capacity	kW	36.6	49.5	72.9	84.2	97.4
Heating	Coil Capacity	kW	25.0	31.5	47.5	50.7	57.0
	Recovery Module Capacity	kW	36.3	54.4	72.6	90.7	108.9
	Total Capacity	kW	61.3	85.9	120.1	141.4	165.9
Sensible Heat Recovery Efficiency		%	72				
Total Heat Recovery Efficiency	Cooling	%	62				
Total Heat Recovery Efficiency	Heating	%	67				
Number of Lossnay Heat Recovery Modules			4	6	8	10	12
Power Input (Rated/Max)	Supply Fan(s) (250Pa)	kW	2.1 / 2.7	2.9 / 3.1	3.7 / 4.7	4.5 / 4.7	5.8 / 6.2
	Return Fan(s) (250Pa)	kW	1.6 / 2.7	1.6 / 2.7	2.9 / 3.1	3.6 / 4.7	4.6 / 5.4
	Auxillary Transformer	kW	0.15	0.15	0.2	0.2	0.3
	Total for Lossnay Kanzen	kW	3.85 / 5.55	4.65 / 5.95	6.8 / 8.0	8.3 / 9.6	10.4 / 11.9
EER			4.23	4.63	4.44	4.40	4.10
COP			7.01	7.88	7.23	7.27	6.86
Filter Section			Rigid pocket, Class F7 (EU7)				
Outdoor Unit	Mr Slim Heat Pump		PUHZ-RP200YKA	PUHZ-RP250YKA	2 x PUHZ-RP200YKA	PUHZ-RP200YKA + PUHZ-RP250YKA	2 x PUHZ-RP250YKA
Unit Dimensions	Monobloc *2 (WxDxH)	mm	4450 x 1200 x 2300	4450 x 1870 x 2300	4550 x 1870 x 2300	5150 x 2000 x 2300	5090 x 2780 x 2300
	6 Sections (WxDxH)	mm	4870 x 1200 x 2430	4450 x 1870 x 2430	4950 x 1870 x 2430	5500 x 2000 x 2430	5090 x 2780 x 2430
Unit Weight	Monobloc *2	kg	1950	2380	2540	2760	3190
	6 Sections	kg	2150	2650	2800	2960	3210
Outdoor Unit Dimensions	(WxDxH)	mm	1050 x 330 + 30 x 1338	1050 x 330 + 30 x 1338	2 x (1050 x 330 + 30 x 1338)	2 x (1050 x 330 + 30 x 1338)	2 x (1050 x 330 + 30 x 1338)
Outdoor Unit Weight		kg	135	141	135 + 135	135 + 141	141 + 141

CONFIGURATION OPTIONS			LK-500	LK-750	LK-1000	LK-1250	LK-1500
Supply Fan (400Pa) Power Input *1	Rated/Max	kW	2.9 / 5.5	3.7 / 5.5	5.7 / 11.0	6.4 / 11.0	7.3 / 11.0
Return Fan (400Pa) Power Input *1	Rated/Max	kW	1.9 / 2.7	2.9 / 3.0	3.5 / 4.7	4.4 / 4.7	5.8 / 6.0
Auxillary Transformer		kW	0.15	0.15	0.20	0.20	0.30
Total for Lossnay Kanzen	Rated/Max	kW	4.95/8.35	6.75/8.65	9.30/15.90	11.00/15.90	13.40/17.30

ACCESSORIES			LK-500	LK-750	LK-1000	LK-1250	LK-1500
Vapour Humidification Section		kg/h	15	18	25	35	45
	Power Input	kW	11.2	13.5	18.7	26.2	33.7
Electric Pre-heating Coil	Power Input	kW	8	12	16	20	24
Electric Post-heating Coil	Power Input	kW	8	12	16	20	24

RATED CONDITIONS	Summer			Winter		
	Indoor	21°C DB	50% RH	Indoor	21°C DB	50% RH
	Outdoor	27°C DB	50% RH	Outdoor	2.5°C DB	50% RH

Rated flow capacity for Lossnay Kanzen - Effective static pressure for Lossnay Kanzen: 250Pa

*1 At rated conditions
*2 The LK-1500 unit is not available as a Monobloc version and comes in 3 sections as standard.

Note: The Lossnay Kanzen units operate to target a supply air temperature of 20ºC +/- 2ºC.
At extremely cold conditions the system will go into defrost for up to 2 to 3 minutes up to twice in one hour. During this time the fans in the Lossnay Kanzen unit will continue to run and the supply air temperature will reduce during this time.

5 Electrical Details

Components	Unit of Measurement	3500 - 5000m³h (LK-500)
Supply fan motor	No. / Size (diam.)	1 / 500
	V / kW/ A / Mains Power	400 / 2.7 / 4 / 3ph+PE
	Fan Mod. / Motor Mod. / kg	R3G500RA 25-04 /M3G150-FF / 20
Return fan motor	No./ Diameter	1 / 500
	V / kW/ A / Mains Power	400 / 2.7 / 4 / 3ph+PE
	Fan Mod. / Motor Mod. / kg	R3G500 RA 25-04 / M3G150-FF / 20
HP (High Pressure) supply fan motors	No. / Diameter	1 / 500
	V / kW/ A / Mains Power	400 / 5.5 / 8.4 / 3ph+PE
	Fan Mod. / Motor Mod. / kg	R3G500AQ 12-03 /M3G150-I FF / 26
HP (High Pressure) return fan motor	No. / Diameter	1 / 500
	V / kW/ A / Mains Power	400 / 2.7 / 4.2 / 3ph+PE
	Fan Mod. / Motor Mod. / kg	R3G500RA 25-04 / M3G150-IF / 20
PAC Boards	No.	1
Main switch for main electrical panel	A / AC Class	25 / 23
	V / kA	400 / 100
Power cable (electrical panel with provision for HP)	mm^2	6
Total values for Lossnay Kanzen (without accessories)	kW / A	6 / 15
Total values for Lossnay Kanzen (without accessories) HP (High Pressure)	kW / A	8.7 / 20
Humidification unit (separate power line must be installed by installing technician)	kg/h g/kg	15 / 2.5
	V / kW/ A / Mains Power	400 / 11.2 / 16.2 / 3ph+PE
	Model / Weight (kg)	Carel UE X Plus 015 / 17
Electrical pre-heating battery (separate power line must be installed by installing technician)	No. of stages / Regul.	1 / SSR PWM
	V / kW/ A / Mains Power	400 / 8 / 11.6 / 3ph+PE
	Battery weight (kg) / Kit weight (kg)	8 / 26.5
Electrical post-heating battery (separate power line must be installed by installing technician)	No. of stages / Regul.	1 / SSR PWM
	V / kW/ A / Mains Power	400 / 8 / 11.6 / 3ph+PE
	Battery weight (kg) / Kit weight (kg)	10 / 26.5

Components	Unit of Measurement	5000 - 7500m³h (LK-750)
Supply fan motor	No. / Size (diam.)	1 / 560
	V / kW/ A / Mains Power	400 / 3.10 / 4.90 / 3ph+PE
	Fan Mod. / Motor Mod. / kg	R3G560AH 23-01 /M3G150-FF / 24
Return fan motor	No./ Diameter	1 / 500
	V / kW/ A / Mains Power	400 / 2.7 / 4.20 / 3ph+PE
	Fan Mod. / Motor Mod. / kg	R3G500RA 25-04 / M3G150-NA / 24
HP (High Pressure) supply fan motors	No. / Diameter	1 / 500
	V / kW/ A / Mains Power	400 / 5.5 / 8.4 / 3ph+PE
	Fan Mod. / Motor Mod. / kg	R3G500AQ 33-01 /M3G150-NA / 26
HP (High Pressure) return fan motor	No. / Diameter	1 / 500
	V / kW/ A / Mains Power	400 / 3.0 / 4.60 / 3ph+PE
	Fan Mod. / Motor Mod. / kg	R3G500AH 23-01 / M3G150-NA / 26
PAC Boards	No.	1
Main switch for main electrical panel	A / AC Class	25 / 23
	V / kA	400 / 100
Power cable (electrical panel with provision for HP)	mm^2	6
Total values for Lossnay Kanzen (without accessories)	kW / A	6.5 / 16
Total values for Lossnay Kanzen (without accessories) HP (High Pressure)	kW / A	9.0 / 21
Humidification unit (separate power line must be installed by installing technician)	kg/h g/kg	18 / 2.0
	V / kW/ A / Mains Power	13.5 / 19.5 / 3ph+PE
	Model / Weight (kg)	Carel UE X Plus 018 / 20
Electrical pre-heating battery (separate power line must be installed by installing technician)	No. of stages / Regul.	1 / SSR PWM
	V / kW/ A / Mains Power	12 / 17 / 3ph+PE
	Battery weight (kg) / Kit weight (kg)	10 / 26.5
Electrical post-heating battery (separate power line must be installed by installing technician)	No. of stages / Regul.	1 / SSR PWM
	V / kW/ A / Mains Power	12 / 17 / 3ph+PE
	Battery weight (kg) / Kit weight (kg)	12 / 28.5

5 Electrical Details

Components	Unit of Measurement	8000 -10000m³h (LK-1000)
Supply fan motor	No. / Size (diam.)	1 / 560
	V / kW/ A / Mains Power	400 / 4.70 / 7.30 / 3ph+PE
	Fan Mod. / Motor Mod. / kg	R3G560AQ 04-01 / M3G150-FF / 26
Return fan motor	No./ Diameter	1 / 560
	V / kW/ A / Mains Power	400 / 3.10 / 4.90 / 3ph+PE
	Fan Mod. / Motor Mod. / kg	R3G560AH 23-01 / M3G150-IF / 24
HP (High Pressure) supply fan motors	No. / Diameter	2 / 500
	V / kW/ A / Mains Power	400 / 5.5 / 8.4 / 3ph+PE
	Fan Mod. / Motor Mod. / kg	R3G500AQ 33-01 / M3G150-IF / 26
HP (High Pressure) return fan motor	No. / Diameter	1 / 560
	V / kW/ A / Mains Power	400 / 4.7 / 7.30 / 3ph+PE
	Fan Mod. / Motor Mod. / kg	R3G560AQ 04-01 / M3G150-NA / 26
PAC Boards	No.	2
Main switch for main electrical panel	A / AC Class	32 / 23
	V / kA	400 / 100
Power cable (electrical panel with provision for HP)	mm^2	10
Total values for Lossnay Kanzen (without accessories)	kW / A	8.5 / 20
Total values for Lossnay Kanzen (without accessories) HP (High Pressure)	kW / A	16.5 / 30
Humidification unit (separate power line must be installed by installing technician)	kg/h g/kg	25 / 2.08
	V / kW/ A / Mains Power	400 / 18.7 / 27.1 / 3ph+PE
	Model / Weight (kg)	Carel UE X Plus 025 / 34
Electrical pre-heating battery (separate power line must be installed by installing technician)	No. of stages / Regul.	1 / SSR PWM
	V / kW/ A / Mains Power	400 / 16 / 23 / 3ph+PE
	Battery weight (kg) / Kit weight (kg)	10 / 28.5
Electrical post-heating battery (separate power line must be installed by installing technician)	No. of stages / Regul.	1 / SSR PWM
	V / kW/ A / Mains Power	400 / 16 / 23 / 3ph+PE
	Battery weight (kg) / Kit weight (kg)	14 / 30.5

Components	Unit of Measurement	10500 - 12500m³h (LK-1250)
Supply fan motor	No. / Size (diam.)	1 / 560
	V / kW/ A / Mains Power	4.70 / 7.30 / 3ph+PE
	Fan Mod. / Motor Mod. / kg	R3G560AQ 04-01 / M3G150-IF / 26
Return fan motor	No./ Diameter	1 / 560
	V / kW/ A / Mains Power	4.70 / 7.30 / 3ph+PE
	Fan Mod. / Motor Mod. / kg	R3G560AQ 04-01 / M3G150-FF / 26
HP (High Pressure) supply fan motors	No. / Diameter	2 / 500
	V / kW/ A / Mains Power	5.50 / 8.40 / 3ph+PE
	Fan Mod. / Motor Mod. / kg	R3G500AQ 33-01 / M3G150-NA / 24
HP (High Pressure) return fan motor	No. / Diameter	1 / 560
	V / kW/ A / Mains Power	4.70 / 7.30 / 3ph+PE
	Fan Mod. / Motor Mod. / kg	R3G560AQ 04-01 / M3G150-IF / 26
PAC Boards	No.	2
Main switch for main electrical panel	A / AC Class	32 / 23
	V / kA	400 / 100
Power cable (electrical panel with provision for HP)	mm^2	10
Total values for Lossnay Kanzen (without accessories)	kW / A	10 / 23
Total values for Lossnay Kanzen (without accessories) HP (High Pressure)	kW / A	16.50 / 30
Humidification unit (separate power line must be installed by installing technician)	kg/h g/kg	35 / 2.33
	V / kW/ A / Mains Power	400 / 26.2 / 37.9 / 3ph+PE
	Model / Weight (kg)	Carel UE X Plus 035 / 34
Electrical pre-heating battery (separate power line must be installed by installing technician)	No. of stages / Regul.	1 / SSR PWM
	V / kW/ A / Mains Power	20 / 29 / 3ph+PE
	Battery weight (kg) / Kit weight (kg)	12 / 30.5
Electrical post-heating battery (separate power line must be installed by installing technician)	No. of stages / Regul.	1 / SSR PWM
	V / kW/ A / Mains Power	20 / 29 / 3ph+PE
	Battery weight (kg) / Kit weight (kg)	16 / 32.5

5 Electrical Details

Components	Unit of Measurement	13000 -15000m³h (LK-1500)
Supply fan motor	No. / Size (diam.)	2 / 560
	V / kW/ A / Mains Power	400 / 3.10 / 4.80 / 3ph+PE
	Fan Mod. / Motor Mod. / kg	R3G560AH 23-01 / M3G150-IF / 24
Return fan motor	No./ Diameter	2 / 500
	V / kW/ A / Mains Power	400 / 2.70 / 4.20 / 3ph+PE
	Fan Mod. / Motor Mod. / kg	R3G500RA 25-04 / M3G150-FF / 22
HP (High Pressure) supply fan motors	No. / Diameter	2 / 500
	V / kW/ A / Mains Power	400 / 5.50 / 8.40 / 3ph+PE
	Fan Mod. / Motor Mod. / kg	R3G500AQ 33-01 / M3G150-NA / 24
HP (High Pressure) return fan motor	No. / Diameter	2 / 500
	V / kW/ A / Mains Power	400 / 3.0 / 4.70 / 3ph+PE
	Fan Mod. / Motor Mod. / kg	R3G500AH 23-01 / M3G150-IF / 24
PAC Boards	No.	2
Main switch for main electrical panel	A / AC Class	150 / 23
	V / kA	400 / 100
Power cable (electrical panel with provision for HP)	mm^2	10
Total values for Lossnay Kanzen (without accessories)	kW / A	12.2 / 28
Total values for Lossnay Kanzen (without accessories) HP (High Pressure)	kW / A	17.5 / 32
Humidification unit (separate power line must be installed by installing technician)	kg/h g/kg	45 / 2.5
	V / kW/ A / Mains Power	400 / 33.7 / 48.7 / 3ph+PE
	Model / Weight (kg)	Carel UE X Plus 045 / 44
Electrical pre-heating battery (separate power line must be installed by installing technician)	No. of stages / Regul.	1 / SSR PWM
	V / kW/ A / Mains Power	24 / 35 / 3ph+PE
	Battery weight (kg) / Kit weight (kg)	14 / 33
Electrical post-heating battery (separate power line must be installed by installing technician)	No. of stages / Regul.	1 / SSR PWM
	V / kW/ A / Mains Power	24 / 35 / 3ph+PE
	Battery weight (kg) / Kit weight (kg)	19 / 38

6 List of Standard Components and Optional Accessories

6. List of standard components and optional accessories
The basic configuration of the unit includes the following components.
Check that all the components listed are effectively included on delivery.

- Pre-filter and Class G4 filter for protecting heat recovery module.
- High efficiency Class F7 rigid pocket filter (incinerable and not requiring treatment as special waste after replacement) upstream of the DX coil.
- Pre-heating battery
- Aluminium roof for weather protection.
- Recovery module bypass shutter.
- Anti-bird mesh and louver rain guards on outdoor air intake.
- Material necessary for assembly (in case of units delivered in sections), situated behind an inspection cover.

Accessories are delivered separately in their own packaging, and are accompanied by a specific manual for installation in situ. Certain accessories are structural configuration options and must be specified in the order.

6.1 Preparations for and installation of accessories
Before installing an accessory, switch of the mains power for both the Lossnay Kanzen and for any outdoor units connected to the Lossnay Kanzen.

: turn the main power switch off before installation.
: take particular care when accessing areas with moving parts.
: take particular care when accessing areas with electrical parts.
: take particular care when accessing areas with hot parts.
: indicates important instructions which must be followed with care.

The main electrical panel of the Lossnay Kanzen already has the necessary provisions for connecting the aforementioned accessories relative to operation and control (relative enable/check/error signals). The installing technician must install a separate dedicated power line for these accessories, with the necessary protection measures required by current legislation in the country of installation.

⚠ Caution:
When installing accessories, observe all the safety instructions and precautions indicated for the installation of the Lossnay Kanzen. All electrical work must only be performed by an authorised electrician in compliance with local legislation concerning electric installations and indoor electric circuits, and as indicated by the instructions given in this manual. Each unit must be powered by a dedicated electric power line.

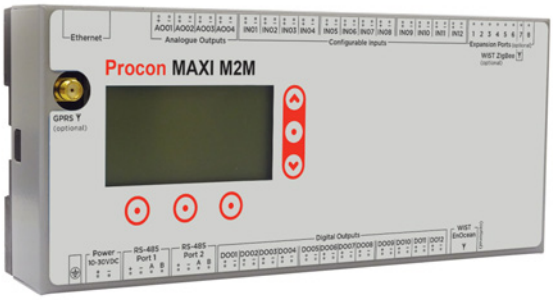
Use electric cables of suitable capacity and size.
- Using cables with an excessively small cross section may cause current leakage, producing heat and causing a risk of fire.

: take particular care during the connection, installation, testing and maintenance of accessories which may have hot surfaces, such as the pre- and post-heating batteries and vapour humidification sections.

Dispose of packaging material correctly.
- The packaging material (e.g. nails and metal or wooden parts) may cause injury or accidents.
- Tear up all plastic bags and dispose of carefully to prevent the risk of children playing with them. A child finding and playing with a whole plastic bag may accidentally suffocate.

6 List of Standard Components and Optional Accessories

Procon Maxi G2 M2M



The Maxi G2 M2M controller comes as standard with the units and controls the outdoor units during operation. BEMS control via Modbus is also available via RS485 for the Lossnay Kanzen and up to 49 City Multi indoor units (On/Off, Mode, Set Point, Return Air Temperature, Fault.

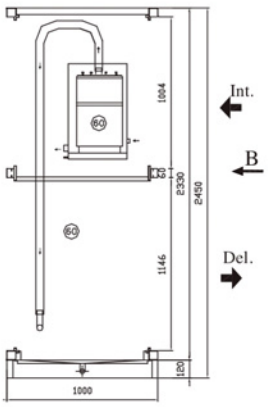
6.3 Vapour humidification section

⚠ **Caution:**

Installing the vapour humidification section increases the overall dimensions of the Lossnay Kanzen as indicated in chapter 7, 'Minimum space requisites for installation'.

The VH section consists of a supplementary section built within the same structure as the base unit and comprising a condensate collector tray and a vapour distributor. At the top of the supplementary section is a vapour generator and the connection for the vapour feed pipe leading to the respective section. Located inside the section are the electrical connections for the independent power lines (installed by the installing technician) and the control connections, which must be linked to the main terminal board. The ambient humidity and target humidity sensors are an integral part of this accessory. These sensors may be pre-installed on the module, or supplied ready for installation in the case of a humidification section installed on the supply and return sections. See the respective chapter for installation.

When ordering the Lossnay Kanzen disassembled into six sections, the humidification section must be ordered disassembled into two sections.



6 List of Standard Components and Optional Accessories

6.4 Electric Pre-heating and Post-heating Battery

Electric battery with armoured elements and modulated control with SSR relay.

See relevant chapter for installation.

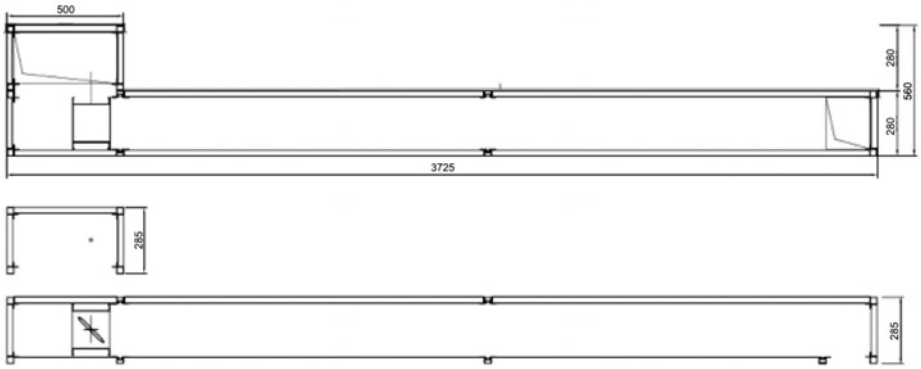
When installing the electric pre and post-heating batteries a separate dedicated power line must be installed in situ, and specific signs warning that there are two separate live power lines must be affixed in the electrical panel. Please see specification page for details.

The power lines for these accessories must not be derived from the main electrical panel, they must be separate. Mitsubishi Electric cannot be held responsible for any personal injury or damage to property caused by incorrect wiring. In all cases, local electrical regulations must be adhered to.

6.5 Antifreeze Bypass System

This structural configuration option, which must be specified in the order, consists of an external duct, installed by the installing technician and compliant with the same material specifications as the structure of the Lossnay Kanzen.

This accessory requires additional access space behind the unit, as indicated in the drawings included in chapter 7.



If installed in conjunction with a pre-heating kit, the electric antifreeze battery activation set point must also be modified appropriately.

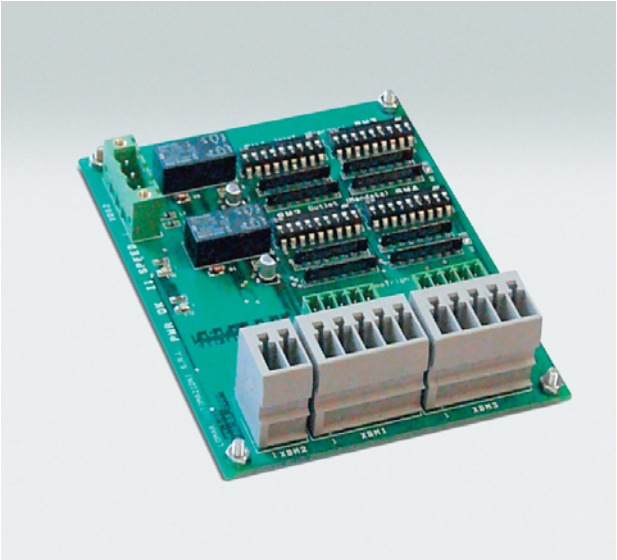
6 List of Standard Components and Optional Accessories

6.6 Two-speed board

The unit may be equipped with a circuit board which, upon receipt of an external signal from an NO-NC volt-free contact, switches the fan speed to change both the supply and return flow rate of the unit itself.

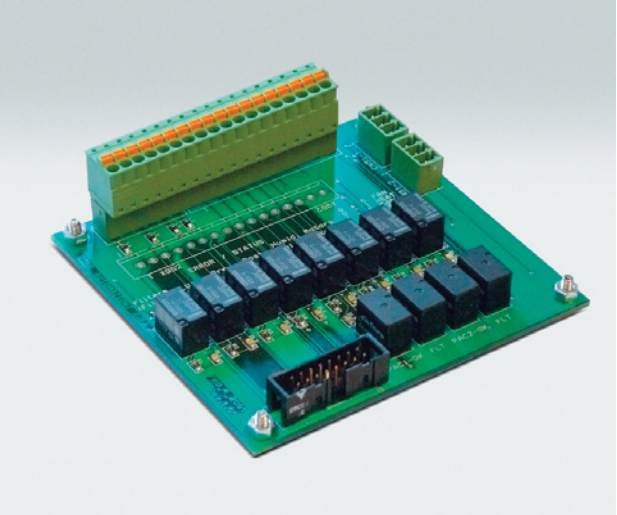
The fan speed and flow rate must, however, remain within the permitted range indicated in the settings tables.

Mitsubishi Electric cannot be held responsible, and will not accept any warranty claims, for any malfunction caused by an inadequate flow rate to the DX coil. The return and supply fan speeds/flow rates may be adjusted to maintain high pressure or low pressure conditions in the indoor space in accordance with the needs of the client. Switching between fan speeds/flow rates may produce acoustic phenomena in the ducts as a result of changing pressure within the ducts themselves.



6.7 External BMS signal board (supplied as standard)

The unit is equipped with a board enabling remote management of signals such as alarms and machine operating states via volt-free contacts.

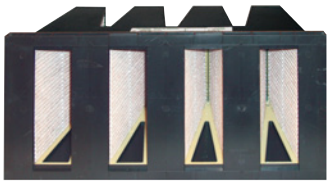


6 List of Standard Components and Optional Accessories

6.8 High pressure configuration
This is a structural configuration option and must be specified prior to the order.

The unit is supplied with high pressure fan motors as indicated in the attached tables. When selecting this structural configuration option, check that the power supply requirements and noise levels are not exceeded.

6.9 Combined high efficiency/active carbon filter section
A filter combining a high efficiency Class F7 or F9 filter with the chemical and physical properties of active carbon, which neutralises gaseous contaminants and reduces perceptible odour.



Note that using non-standard filters may reduce external static pressure. The combined filter replaces the standard pocket filters and is secured on the filter guide with specific clips.

6.10 Left hand connection configuration
This is a structural configuration option and must be requested in the order. On the standard version of the unit, the refrigerant connections are on the right hand side of the unit itself (with respect to supply air flow). Request this version should it be necessary to have the refrigerant connections on the opposite side of the unit. Contact the dealer for information concerning dimensions and other differences.

6.11 Unit subdivided into 6 sections
This is a structural configuration option and must be requested in the order.
All models are supplied as monoblock units. If necessary for installation or handling reasons, however, a configuration with the unit subdivided and disassembled into six separate sections may be ordered. This is an option that needs to be specified prior to order. The Lossnay Kanzen LK-1500 is normally delivered subdivided and disassembled into three sections. However, this size unit is also orderable subdivided into six sections.

⚠ Caution:
The sections may only be reassembled in situ by the installing technician. The six-section configuration is slightly larger in size than the standard configuration. Refer to the drawings in chapter 7. All versions with a humidification section consist of an additional section. When ordering the configuration disassembled into six sections, the humidification section must be ordered disassembled into two sections.

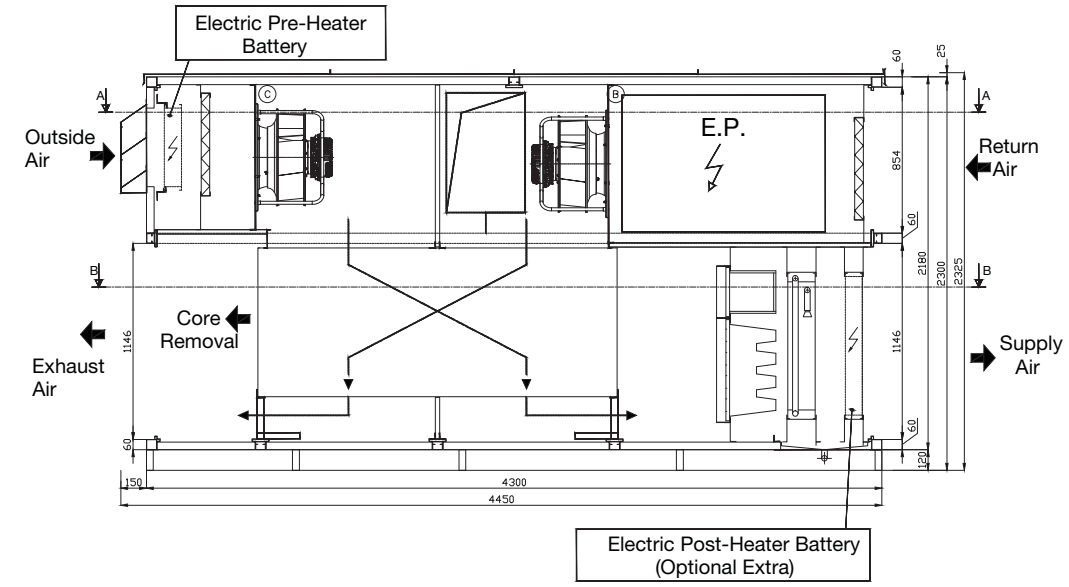
6.12 Flat-pack unit
This is a structural configuration option and must be requested in the order. Contact Mitsubishi Electric for costs and times of delivery.

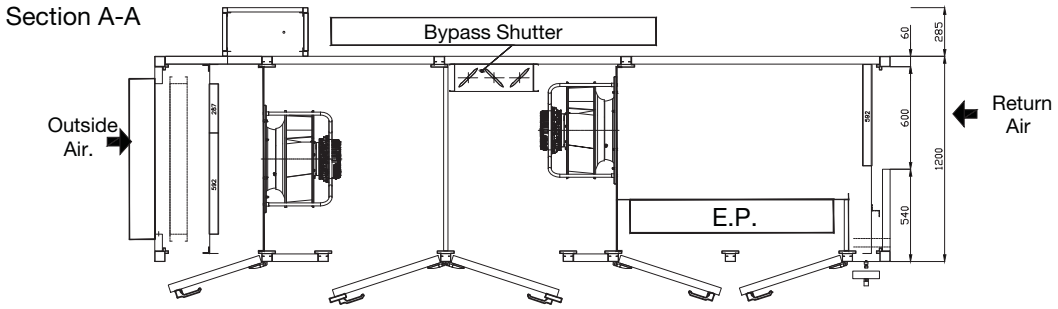
6.13 Accessory specifications
See the relevant chapters for accessory specifications.

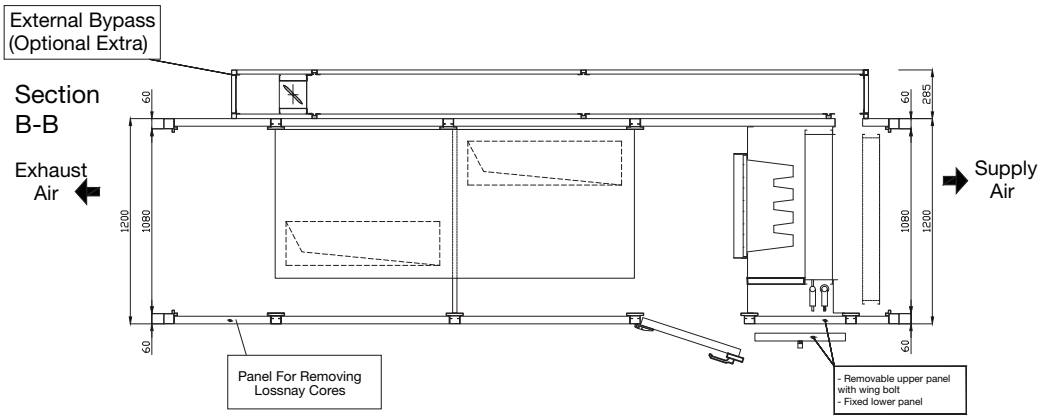
Accessory	Section - Page
Vapour Humidification Section	Section 6.3 - Page 15
Two-speed board kit	Section 6.6 - Page 17
Electric pre- and post-heating battery	Section 19 - Page 91

7 Dimensions, Weights & Minimum Space Requirements for Installation

LK-500 - Monobloc

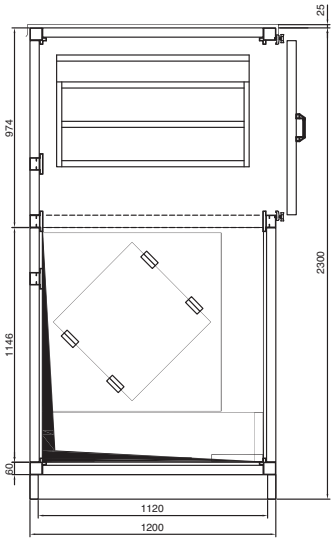




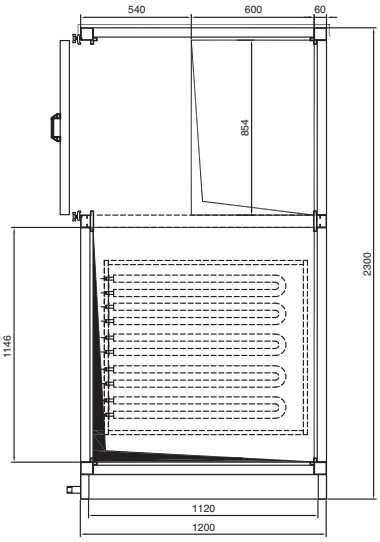


7 Dimensions, Weights & Minimum Space Requirements for Installation

View A



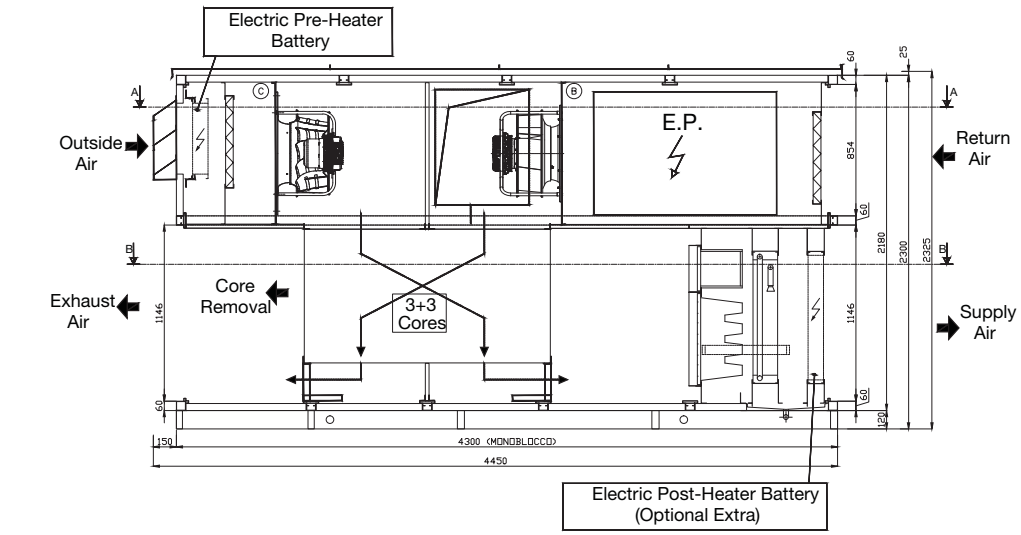
View B

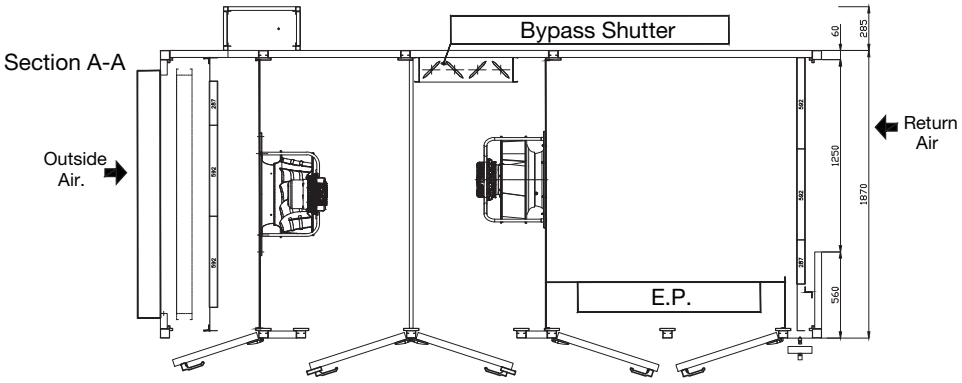


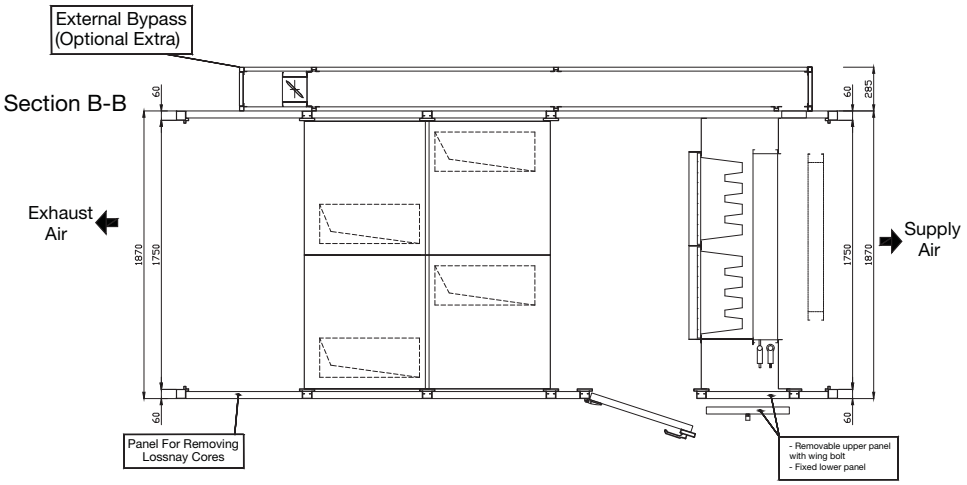
Weight of LK-500 - Monobloc = 1900kg
Weight of LK-500 - High Pressure Fans = 1950kg

7 Dimensions, Weights & Minimum Space Requirements for Installation

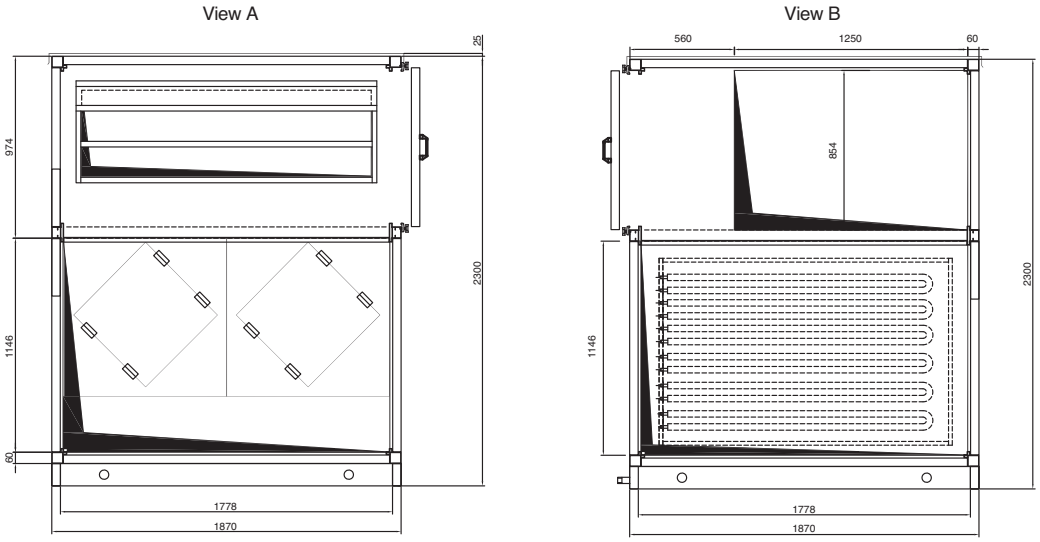
LK-750 - Monobloc







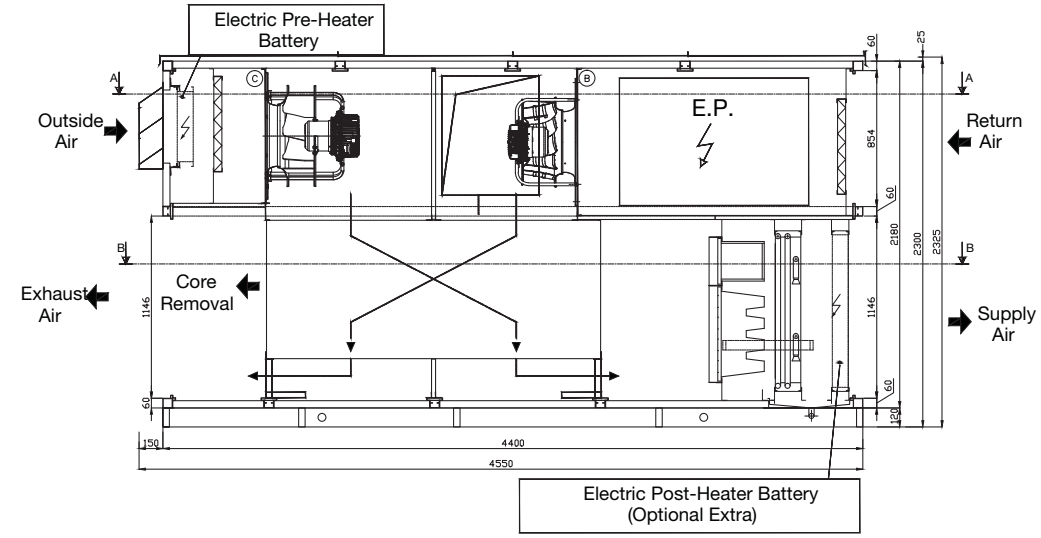
7 Dimensions, Weights & Minimum Space Requirements for Installation

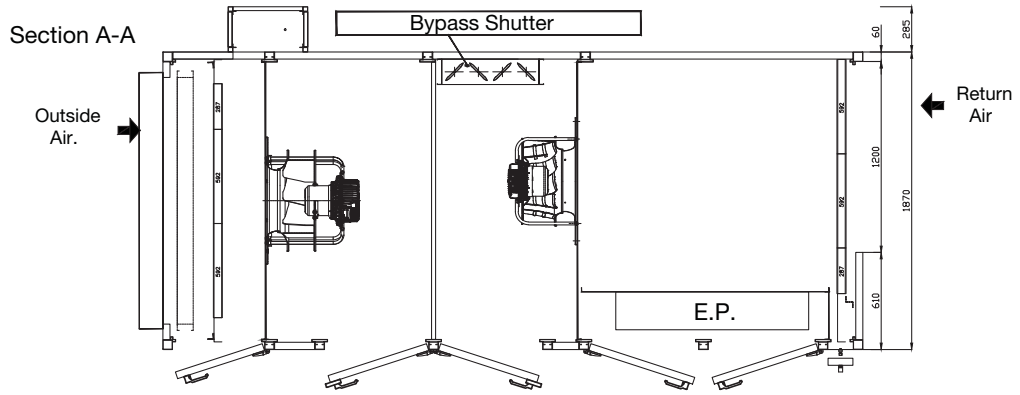


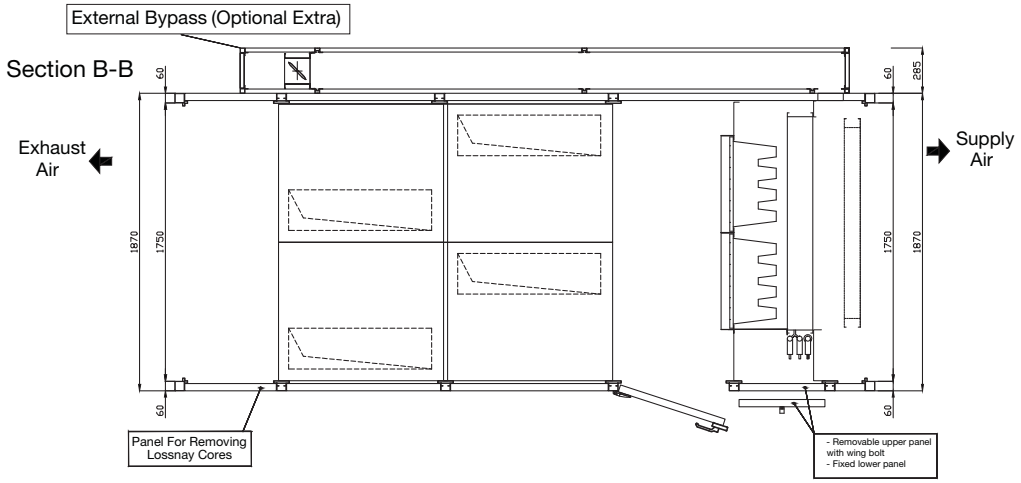
Weight of LK-750 - Monobloc = 2300kg
Weight of LK-750 - High Pressure Fans = 2350kg

7 Dimensions, Weights & Minimum Space Requirements for Installation

LK-1000 - Monobloc

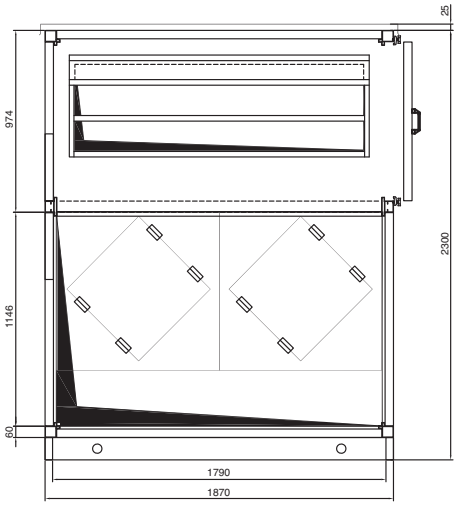




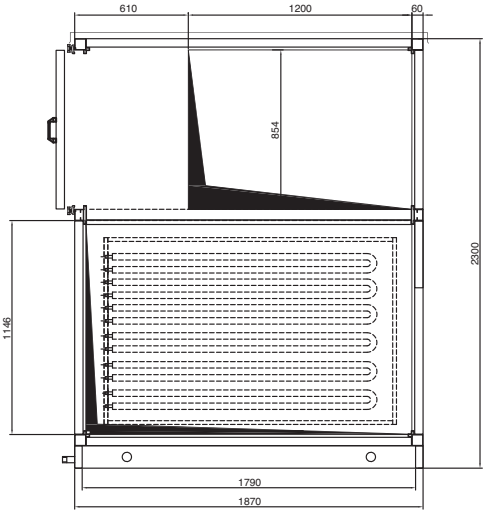


7 Dimensions, Weights & Minimum Space Requirements for Installation

View A



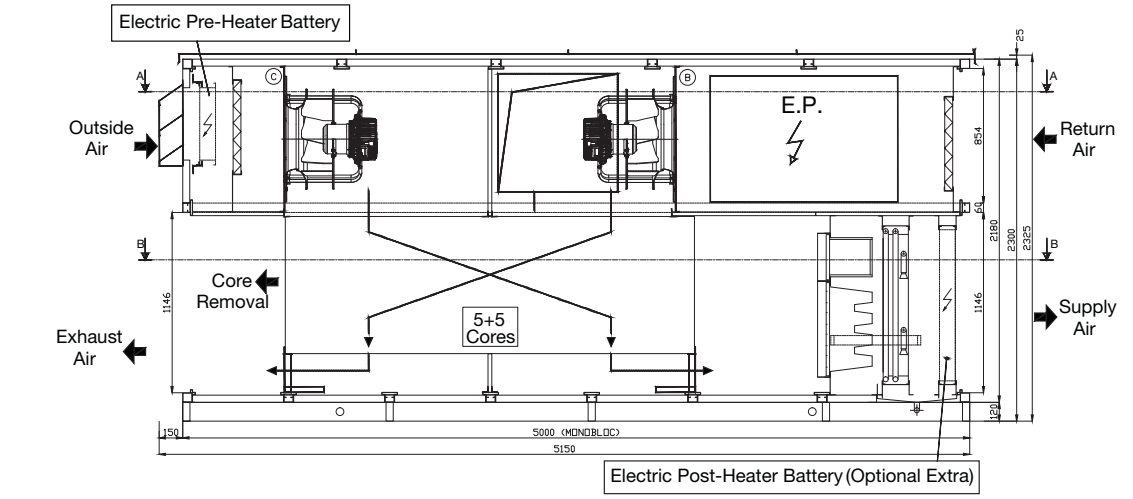
View B

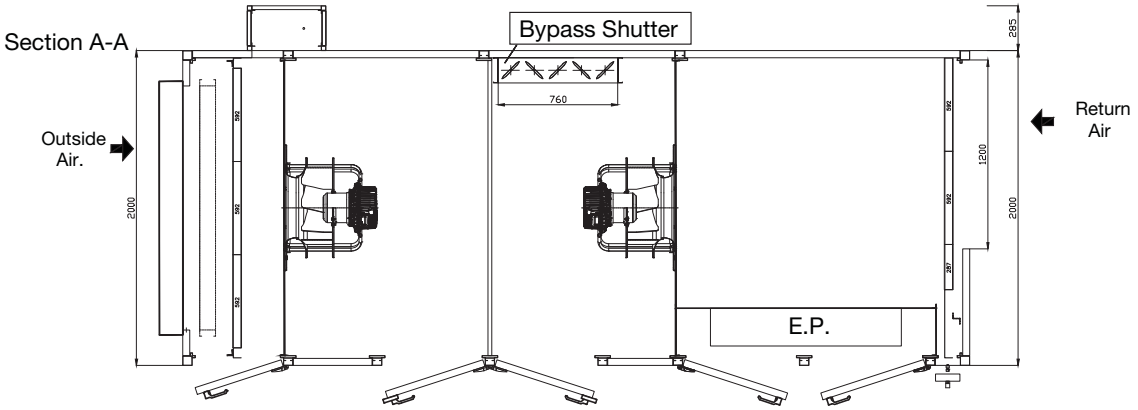


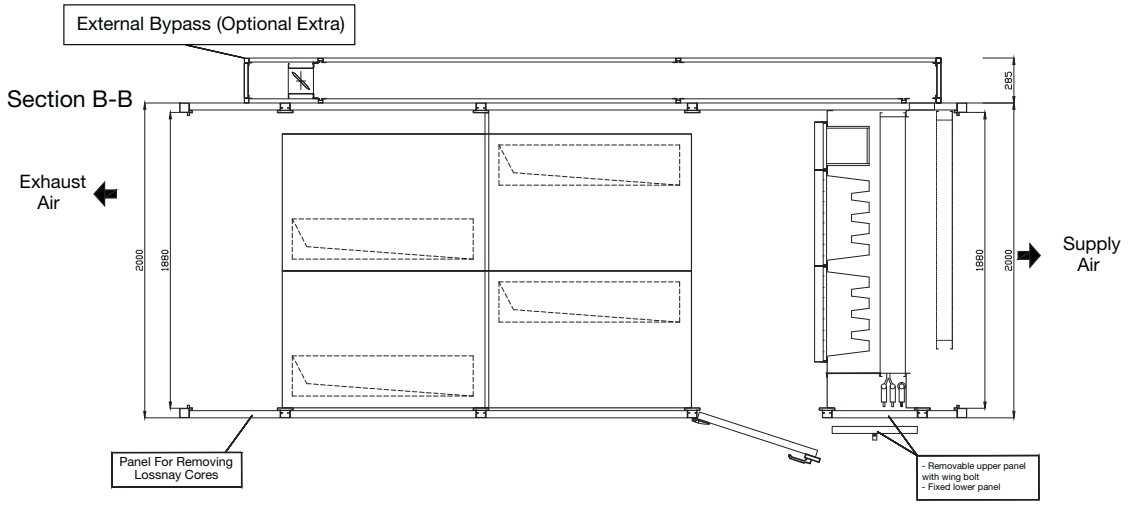
Weight of LK-1000 - Monobloc = 2500kg
Weight of LK-1000 - High Pressure Fans = 2590kg

7 Dimensions, Weights & Minimum Space Requirements for Installation

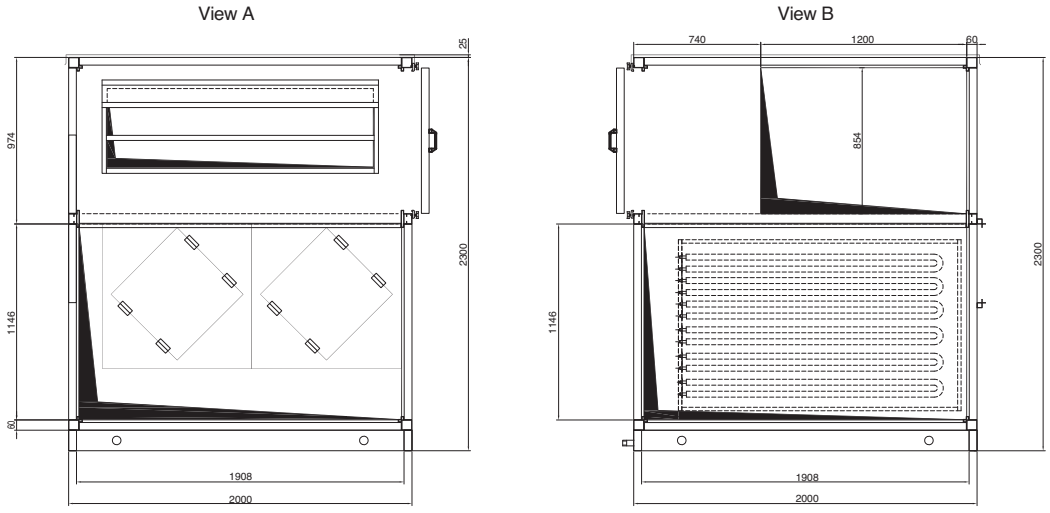
LK-1250 - Monobloc







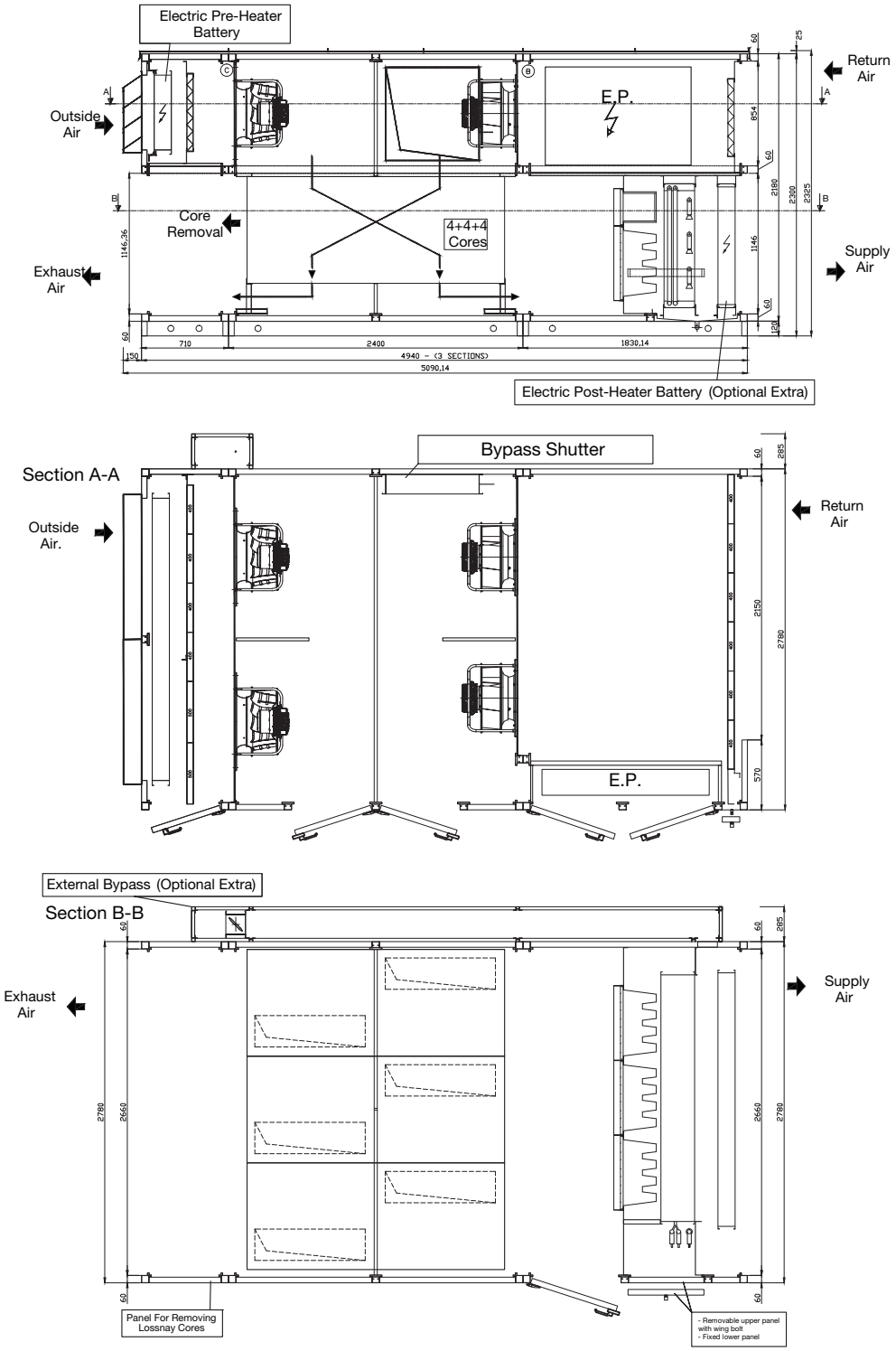
7 Dimensions, Weights & Minimum Space Requirements for Installation



Weight of LK-1250 - Monobloc = 2700kg
Weight of LK-1250 - High Pressure Fans = 2820kg

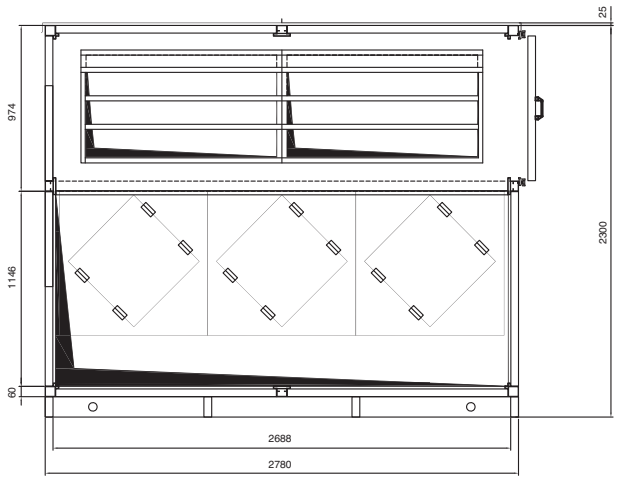
7 Dimensions, Weights & Minimum Space Requirements for Installation

LK-1500 - 3 Sections

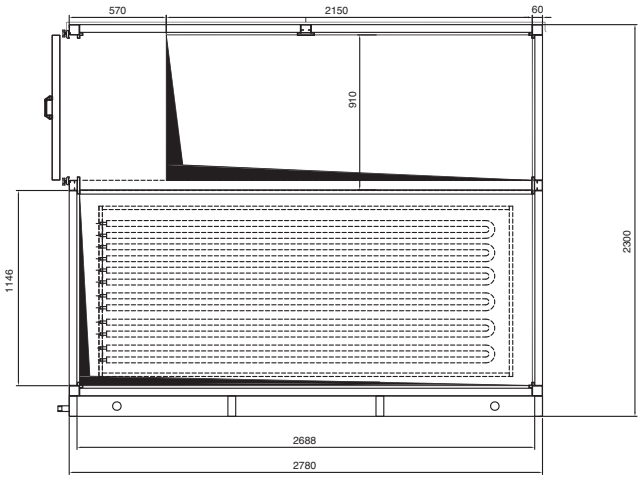


7 Dimensions, Weights & Minimum Space Requirements for Installation

View A



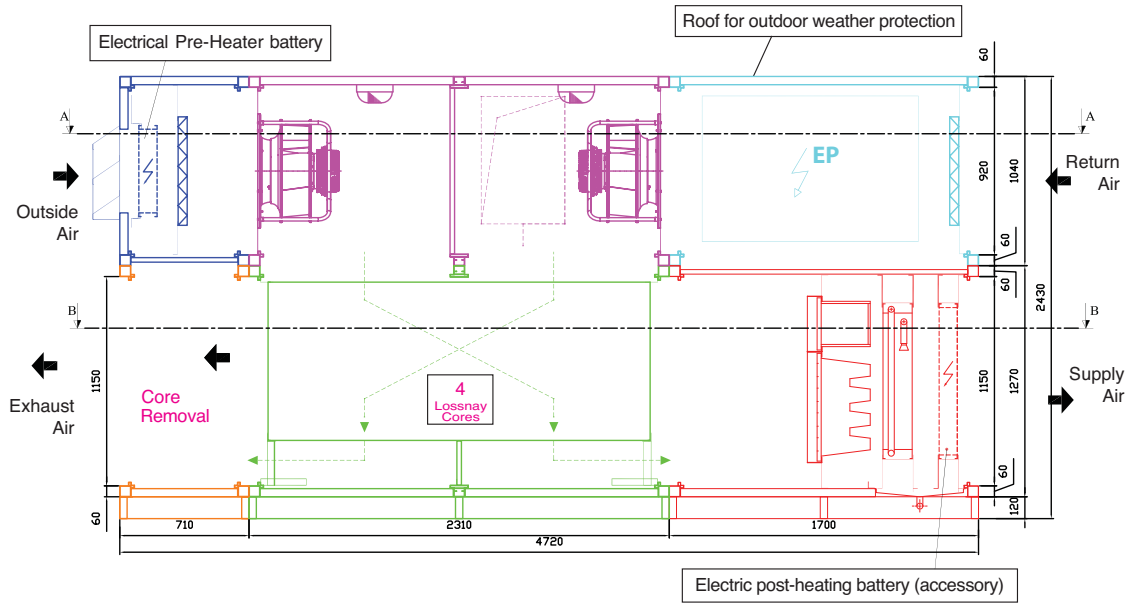
View B

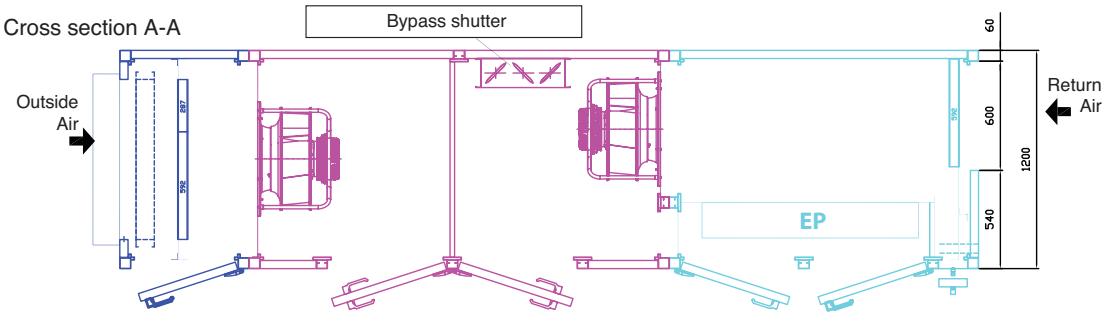


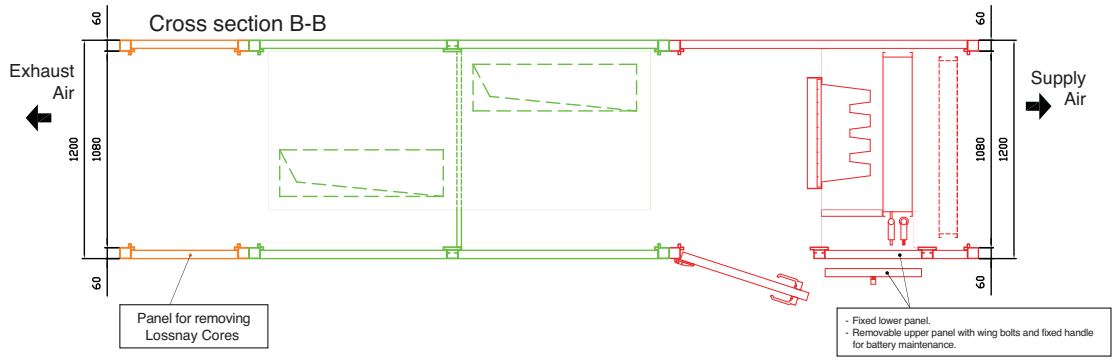
Weight of LK-1500 - 3 Sections = 3180kg
Weight of LK-1500 - High Pressure Fans = 3360kg

7 Dimensions, Weights & Minimum Space Requirements for Installation

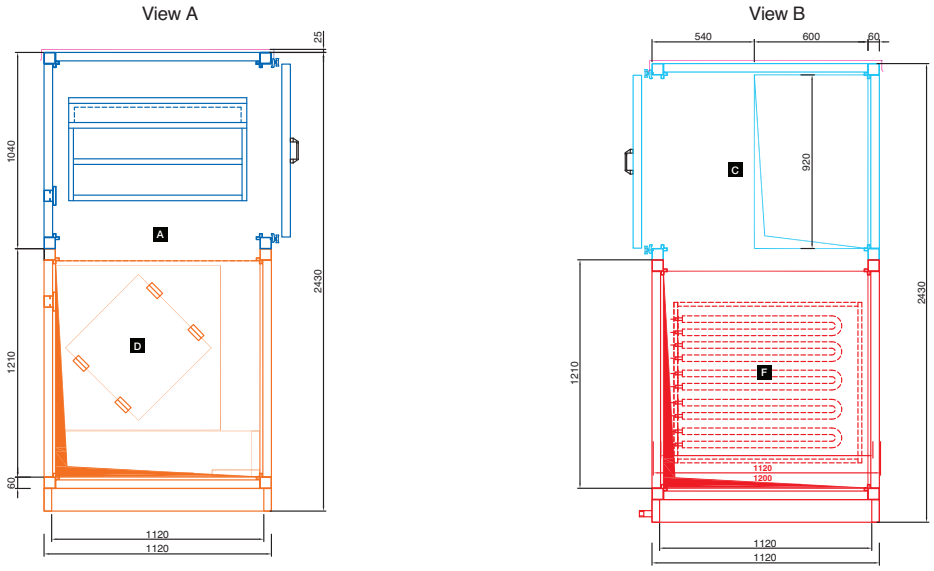
LK-500 - 6 Sections







7 Dimensions, Weights & Minimum Space Requirements for Installation

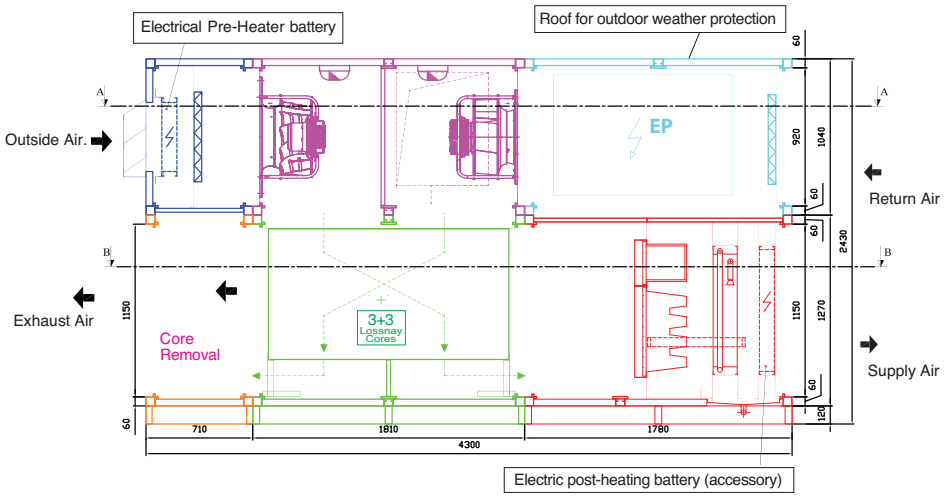


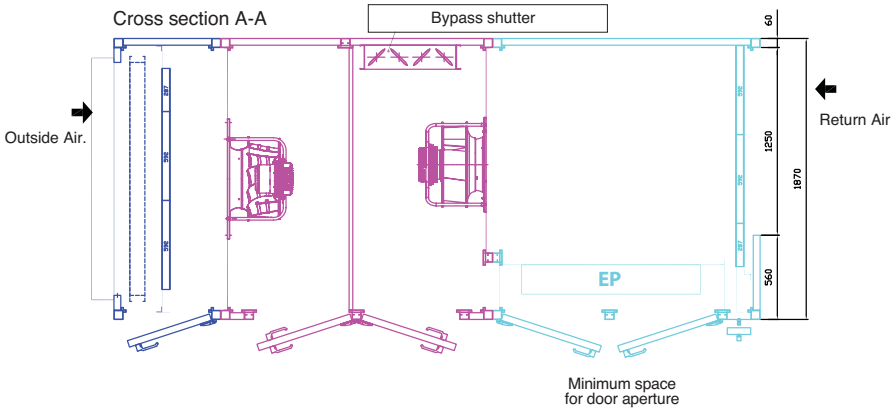
Section A Weight = 130kg
Section B Weight = 380kg (430kg for HP)
Section C Weight = 270kg
Section D Weight = 140kg
Section E Weight = 680kg
Section F Weight = 560kg

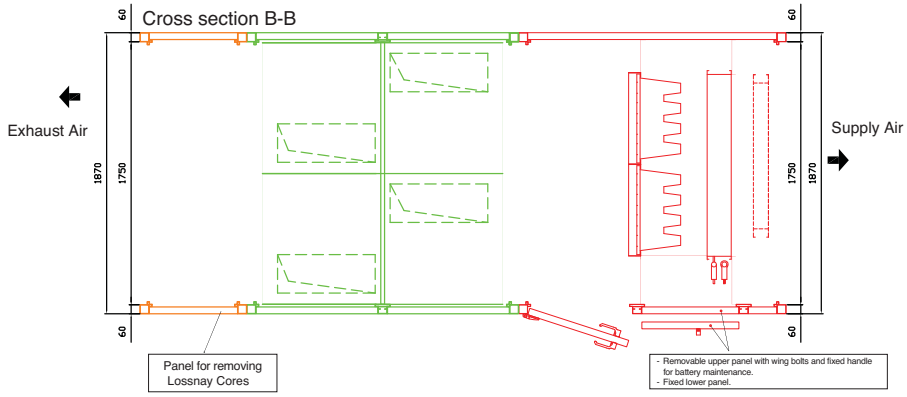
Weight of LK-500 - 6 Sections (Total) = 2160kg
Weight of LK-500 - High Pressure Fans = 2210kg

7 Dimensions, Weights & Minimum Space Requirements for Installation

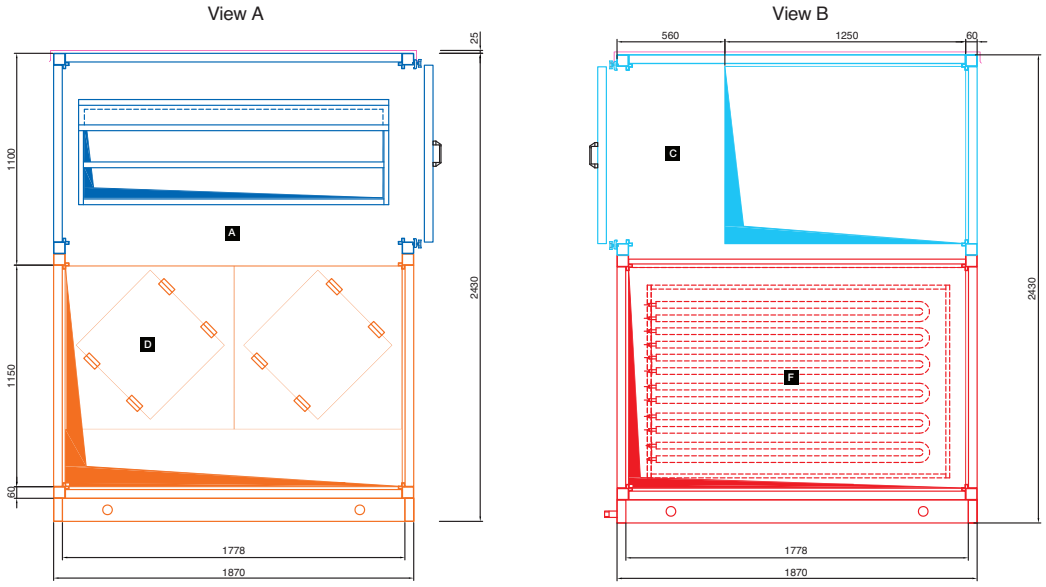
LK-750 - 6 Sections







7 Dimensions, Weights & Minimum Space Requirements for Installation

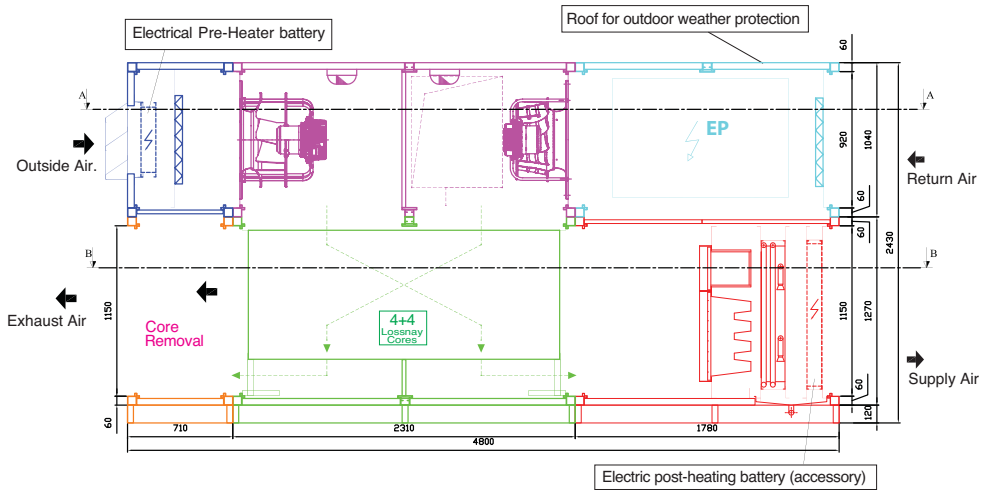


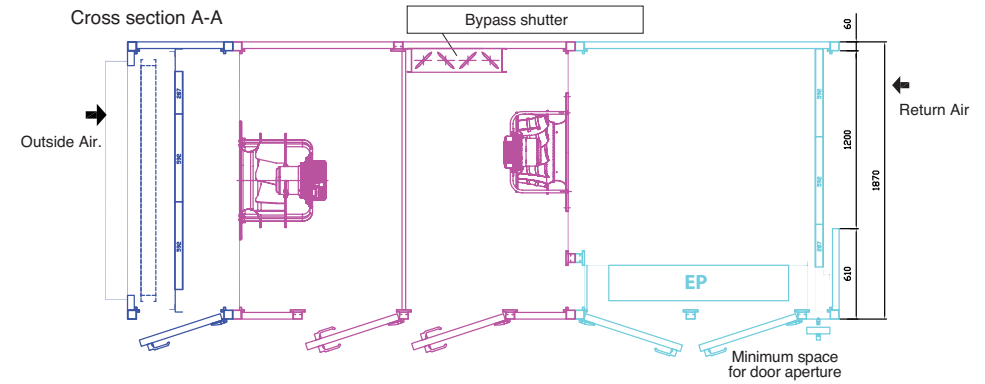
Section A Weight = 170kg
Section B Weight = 490kg (540kg for HP)
Section C Weight = 290kg
Section D Weight = 190kg
Section E Weight = 840kg
Section F Weight = 680kg

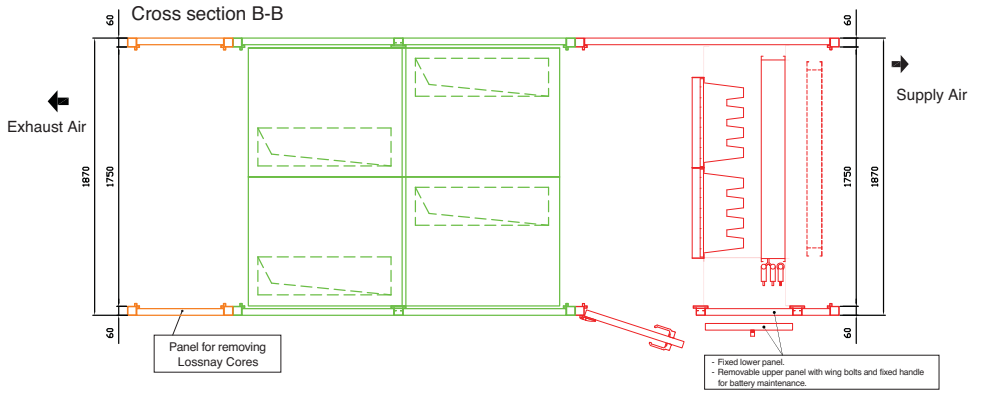
Weight of LK-750 - 6 Sections (Total) = 2660kg
Weight of LK-750 - High Pressure Fans = 2710kg

7 Dimensions, Weights & Minimum Space Requirements for Installation

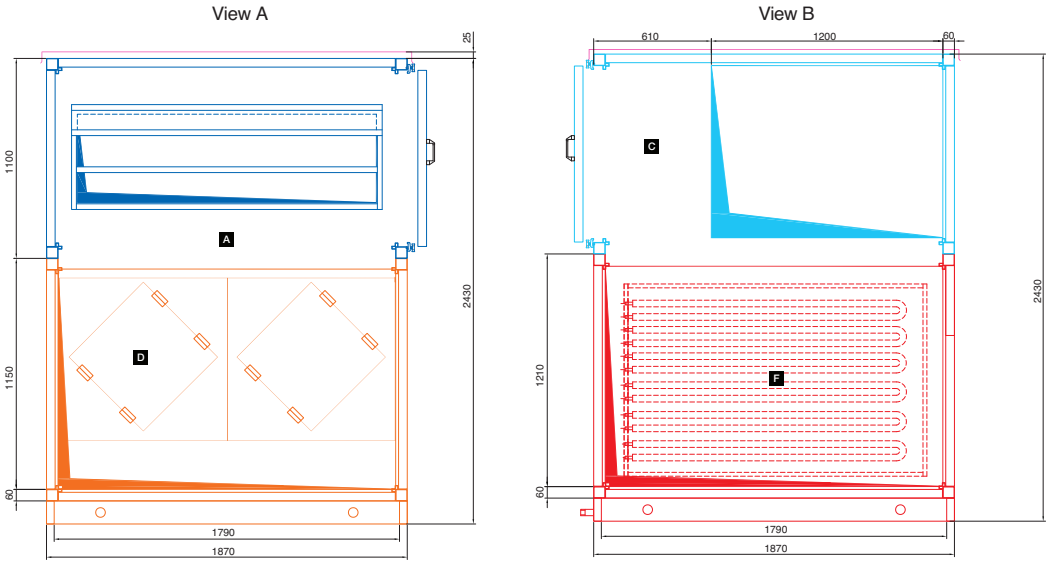
LK-1000 - 6 Sections







7 Dimensions, Weights & Minimum Space Requirements for Installation

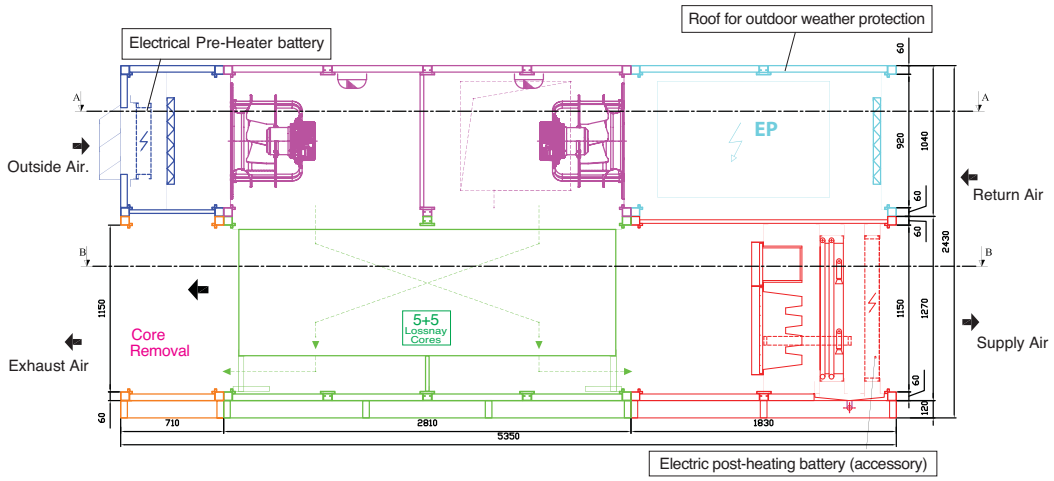


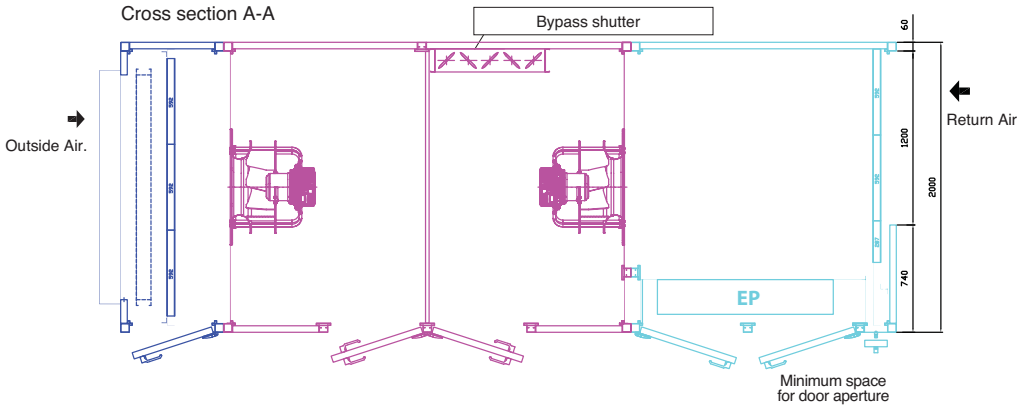
Section A Weight = 170kg
Section B Weight = 530kg (620kg for HP)
Section C Weight = 290kg
Section D Weight = 190kg
Section E Weight = 1100kg
Section F Weight = 720kg

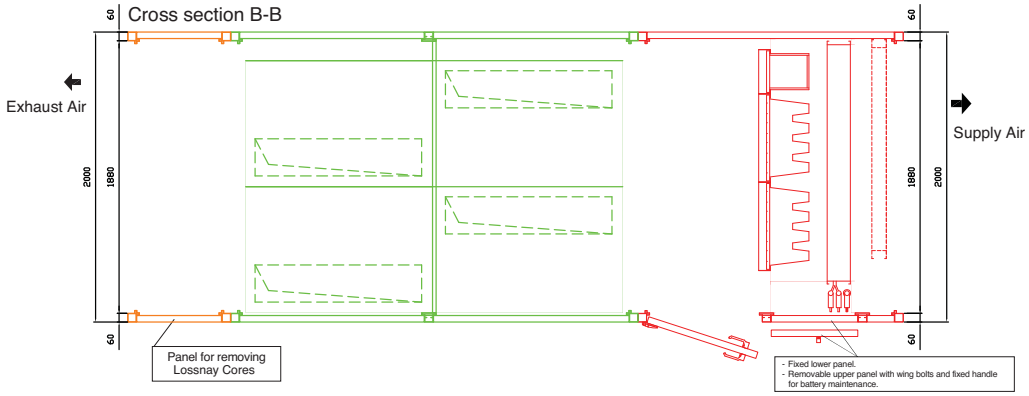
Weight of LK-1000 - 6 Sections (Total) = 3000kg
Weight of LK-1000 - High Pressure Fans = 3090kg

7 Dimensions, Weights & Minimum Space Requirements for Installation

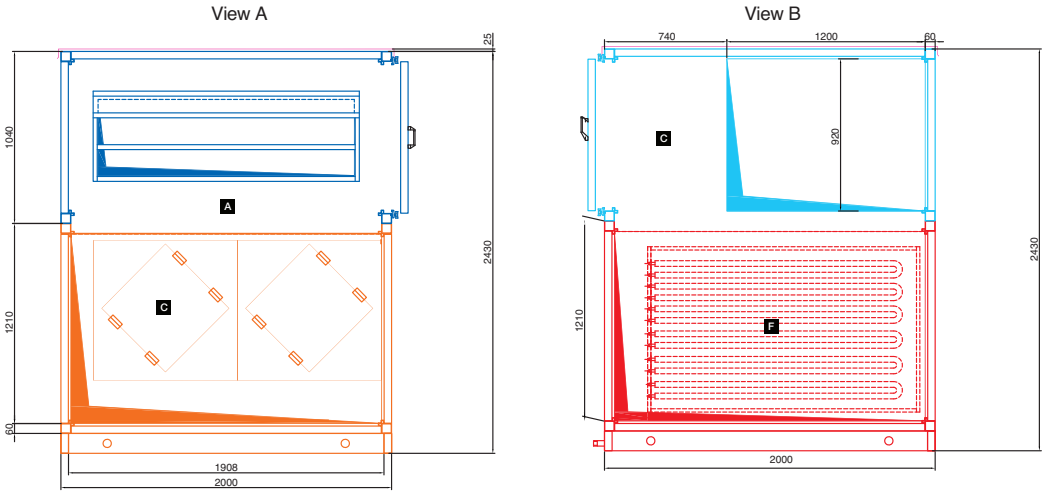
LK-1250 - 6 Sections







7 Dimensions, Weights & Minimum Space Requirements for Installation

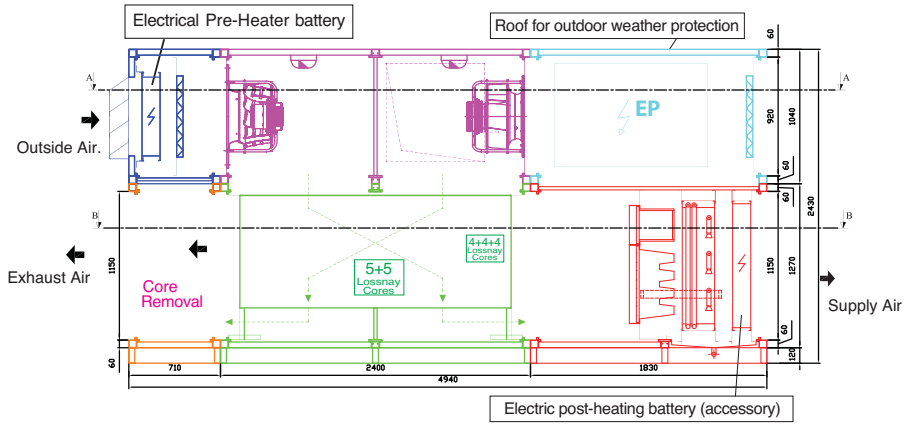


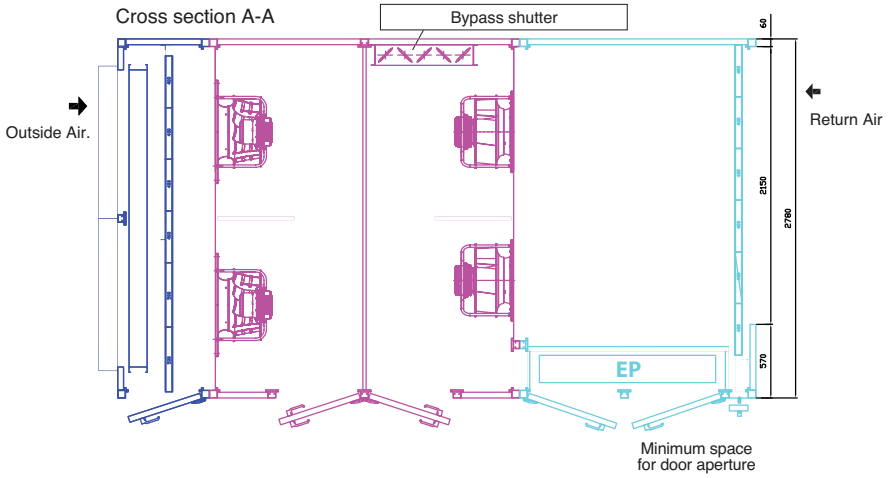
Section A Weight = 200kg
Section B Weight = 600kg (720kg for HP)
Section C Weight = 330kg
Section D Weight = 230kg
Section E Weight = 1400kg
Section F Weight = 830kg

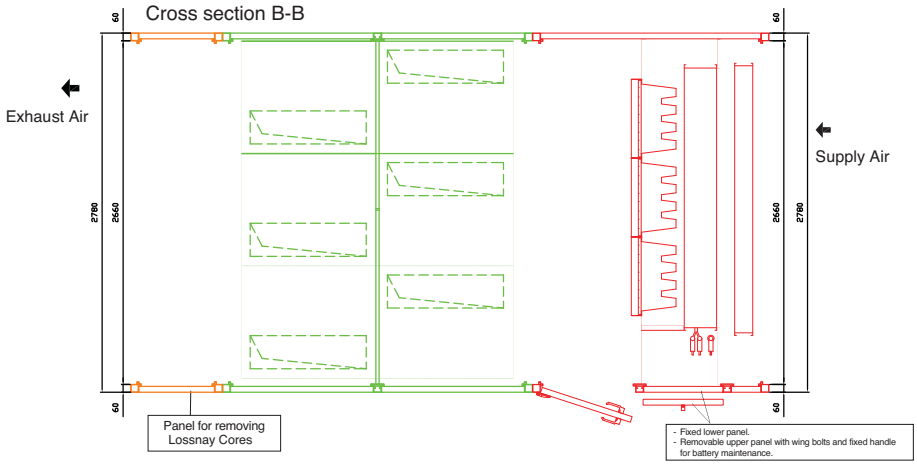
Weight of LK-1250 - 6 Sections (Total) = 3590kg
Weight of LK-1250 - High Pressure Fans = 3710kg

7 Dimensions, Weights & Minimum Space Requirements for Installation

LK-1500 - 6 Sections

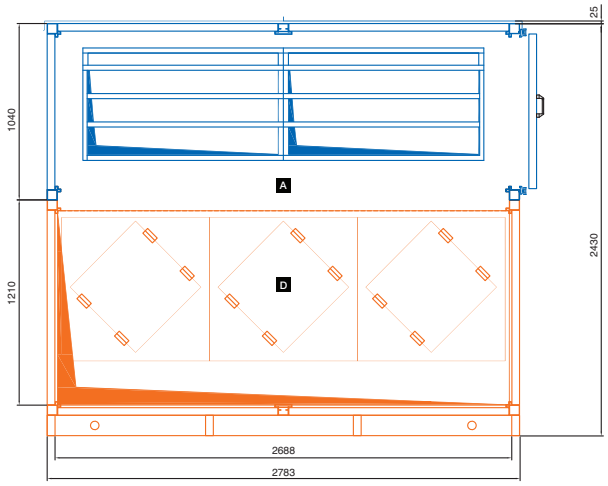




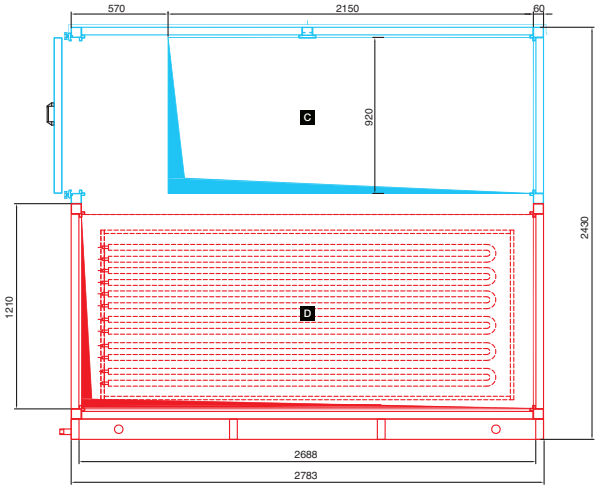


7 Dimensions, Weights & Minimum Space Requirements for Installation

View A



View B

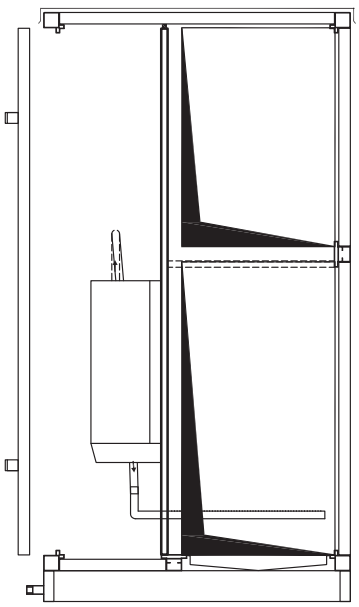


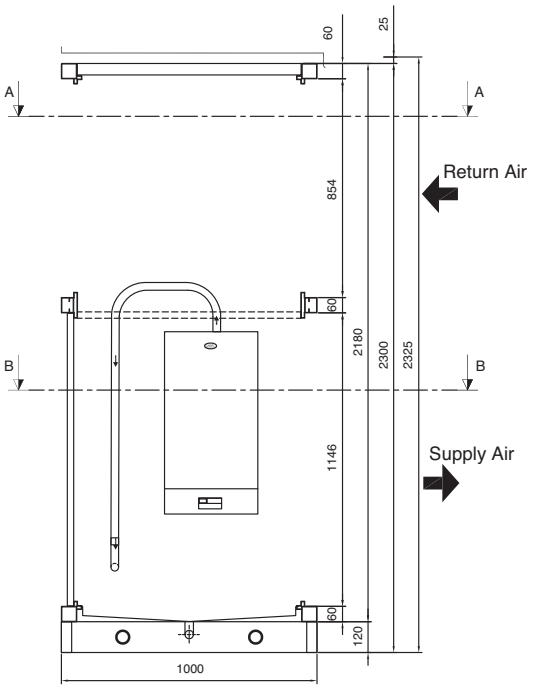
Section A Weight = 290kg
Section B Weight = 650kg (830kg for HP)
Section C Weight = 390kg
Section D Weight = 270kg
Section E Weight = 1600kg
Section F Weight = 900kg

Weight of LK-1500 - 6 Sections (Total) = 3590kg
Weight of LK-1500 - High Pressure Fans = 3710kg

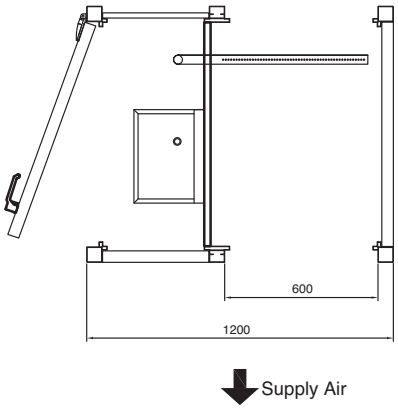
7 Dimensions, Weights & Minimum Space Requirements for Installation

LK-500 - Humidification Section

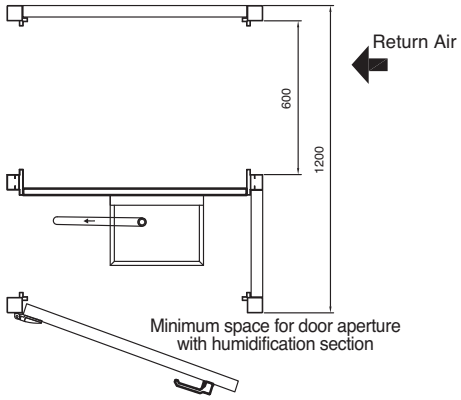




Cross section B-B



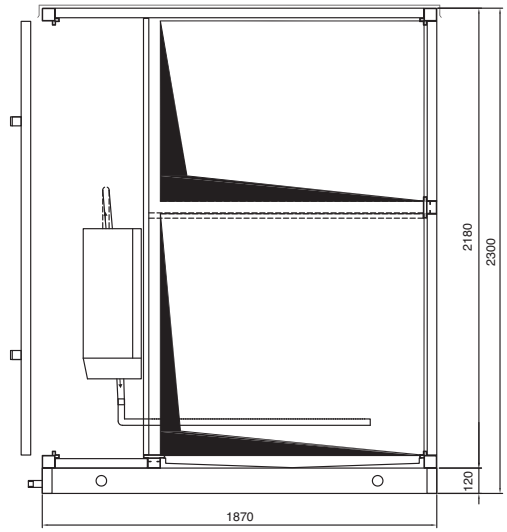
Cross section A-A

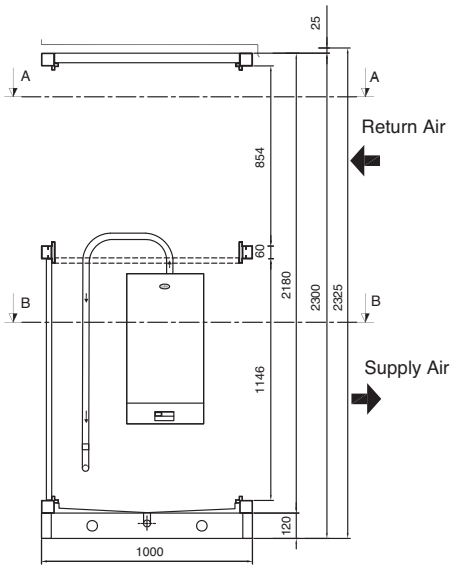


Weight of Humidification Section for LK-500 Monobloc = 200kg

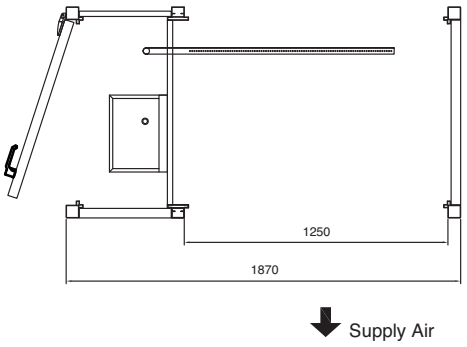
7 Dimensions, Weights & Minimum Space Requirements for Installation

LK-750 - Humidification Section

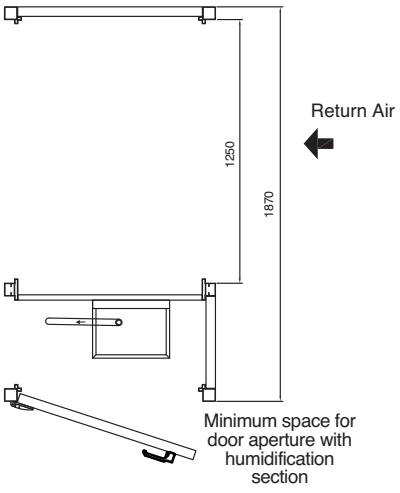




Cross section B-B



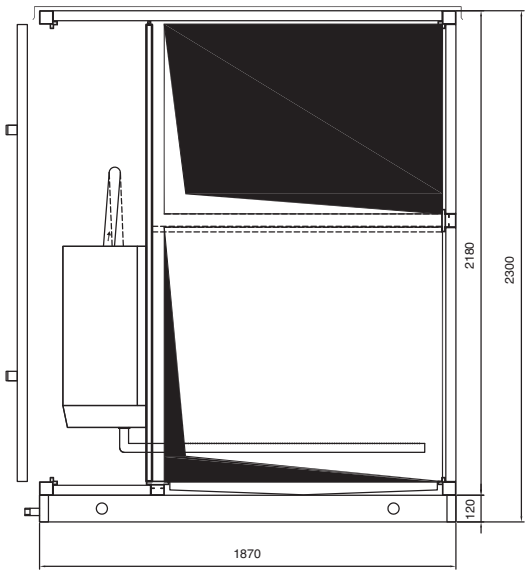
Cross section A-A

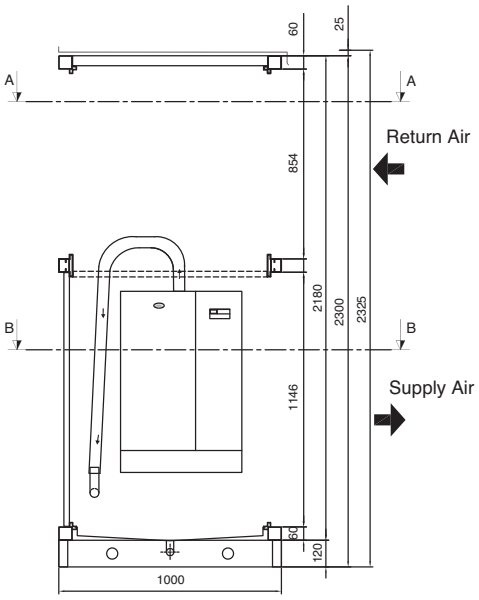


Weight of Humidification Section for LK-750 Monobloc = 300kg

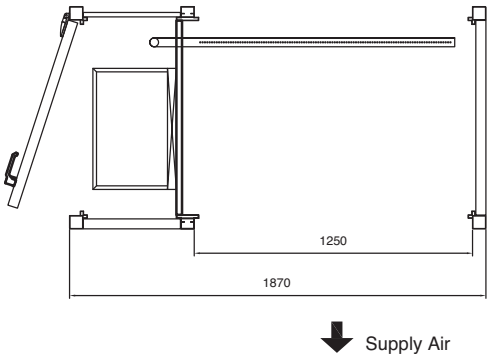
7 Dimensions, Weights & Minimum Space Requirements for Installation

LK-1000 - Humidification Section

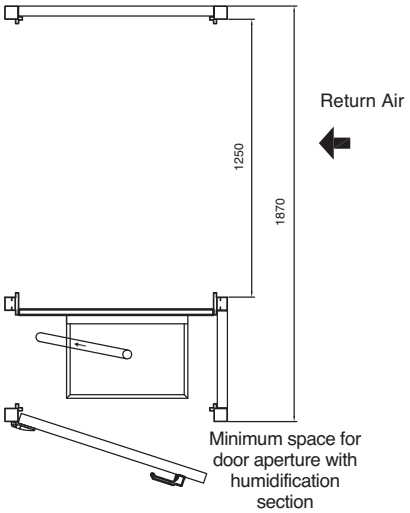




Cross section B-B



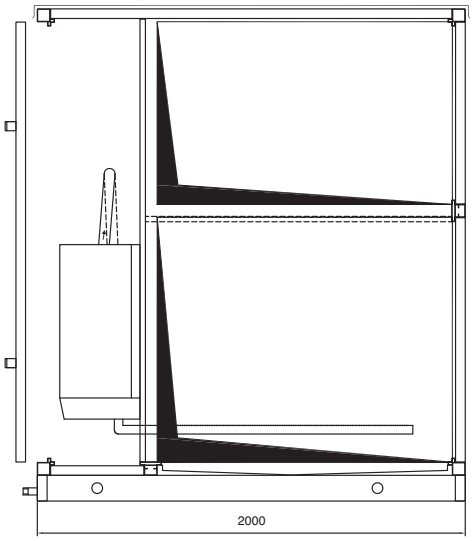
Cross section A-A

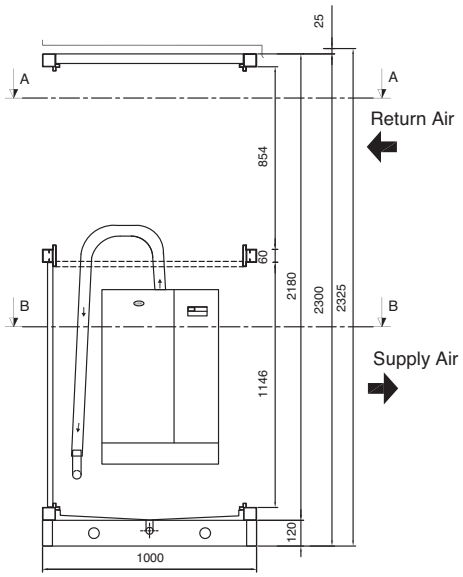


Weight of Humidification Section for LK-1000 Monobloc = 330kg

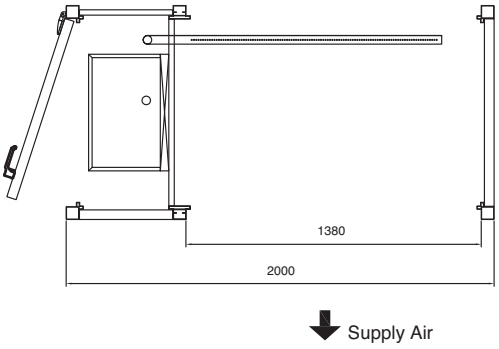
7 Dimensions, Weights & Minimum Space Requirements for Installation

LK-1250 - Humidification Section

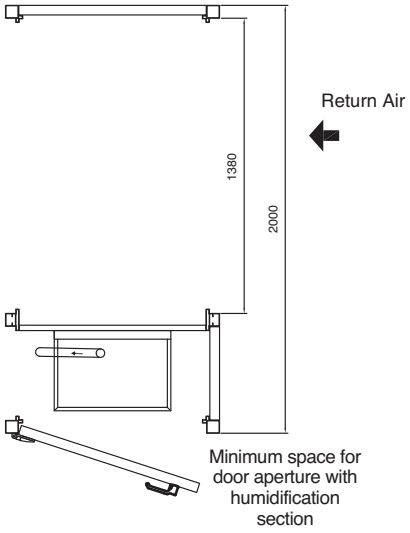




Cross section B-B



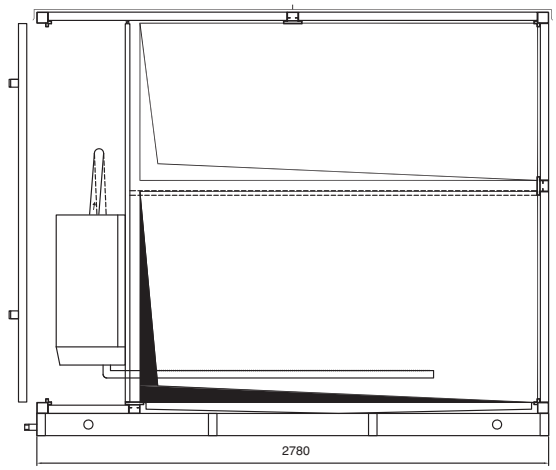
Cross section A-A

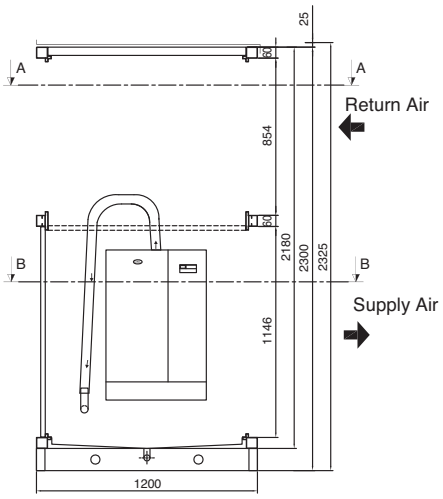


Weight of Humidification Section for LK-1250 Monobloc = 340kg

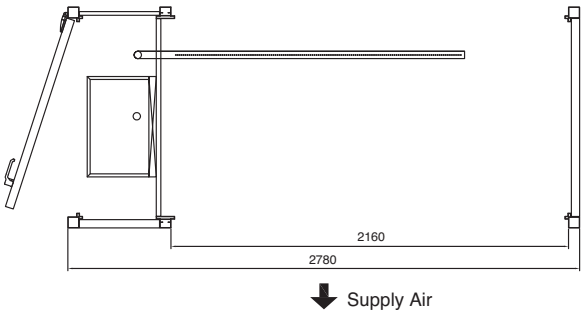
7 Dimensions, Weights & Minimum Space Requirements for Installation

LK-1500 - Humidification Section

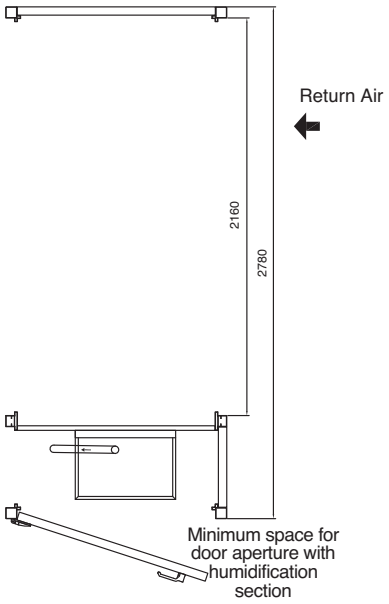




Cross section B-B



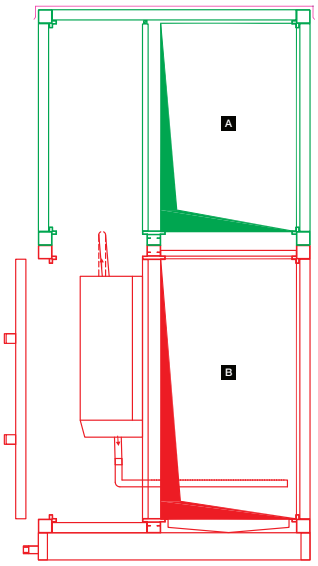
Cross section A-A

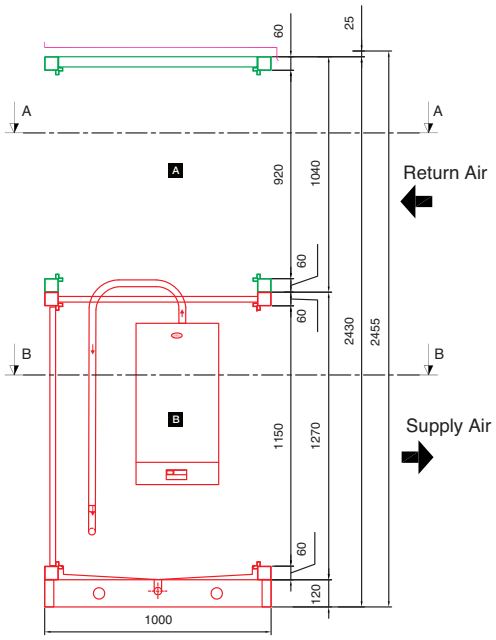


Weight of Humidification Section for LK-1500 Monobloc = 460kg

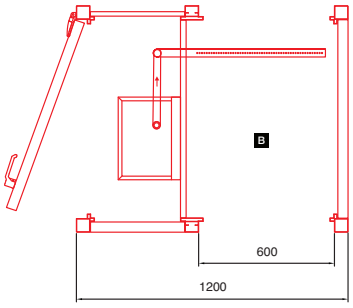
7 Dimensions, Weights & Minimum Space Requirements for Installation

LK-500 6 Sections - Humidification Section



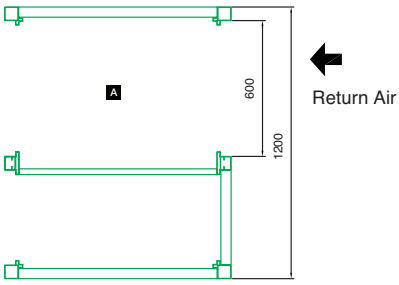


Cross section B-B



Supply Air

Cross section A-A



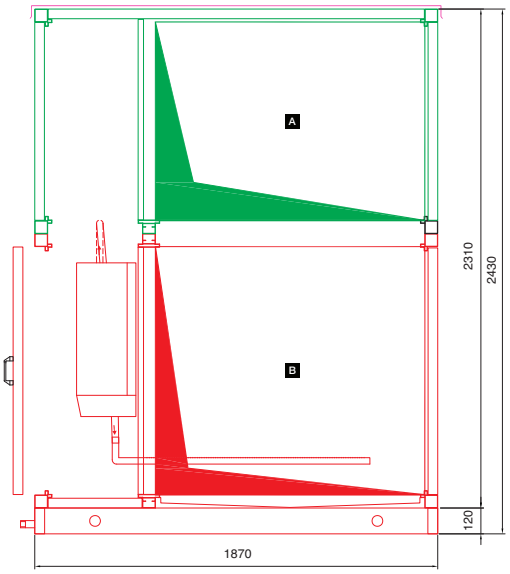
Return Air

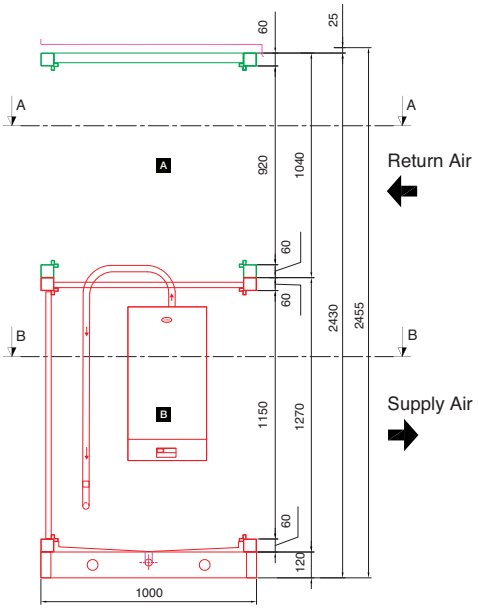
Section A Weight = 90kg
Section B Weight = 170kg

Weight of Humidification Section for LK-500 6 sections (Total) = 260kg

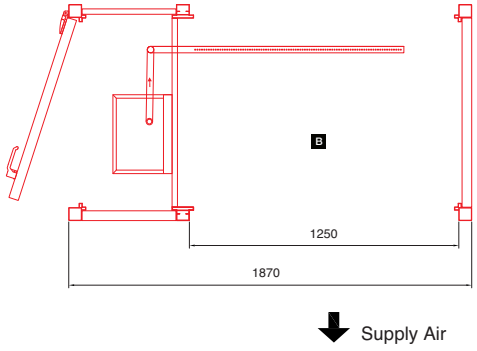
7 Dimensions, Weights & Minimum Space Requirements for Installation

LK-750 6 Sections - Humidification Section

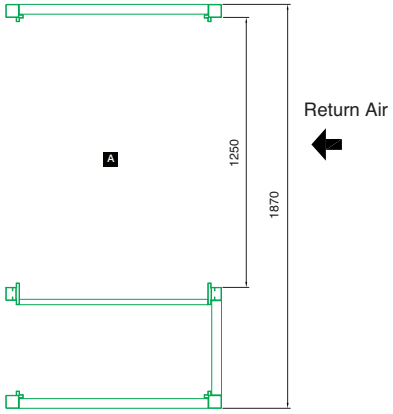




Cross section B-B



Cross section A-A

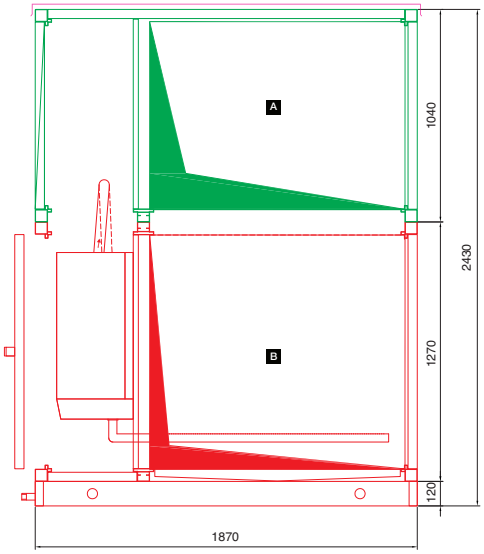


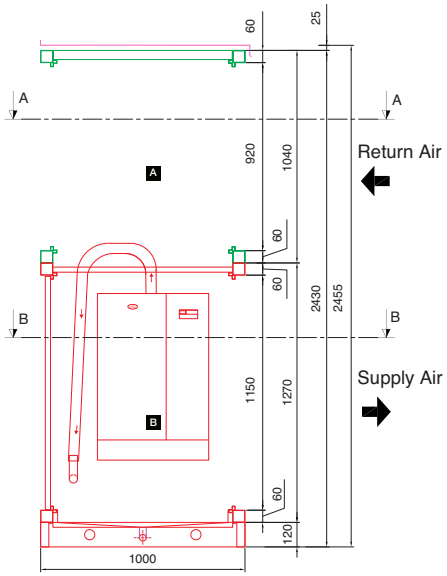
Section A Weight = 120kg
Section B Weight = 230kg

Weight of Humidification Section for LK-750 6 sections (Total) = 350kg

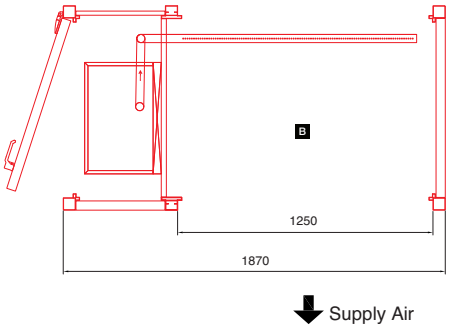
7 Dimensions, Weights & Minimum Space Requirements for Installation

LK-1000 6 Sections - Humidification Section

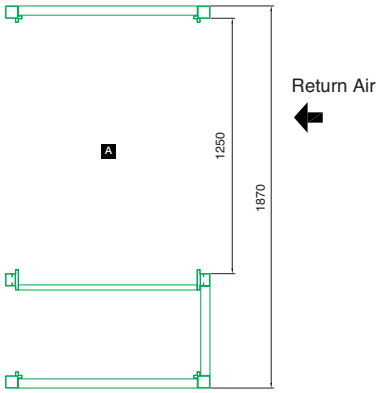




Cross section B-B



Cross section A-A

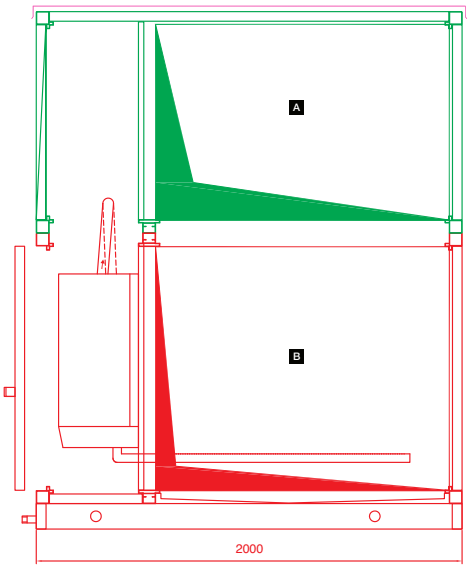


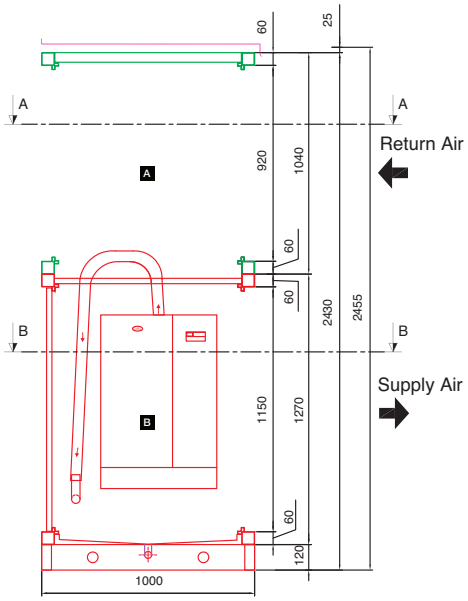
Section A Weight = 120kg
Section B Weight = 270kg

Weight of Humidification Section for LK-1000 6 sections (Total) = 390kg

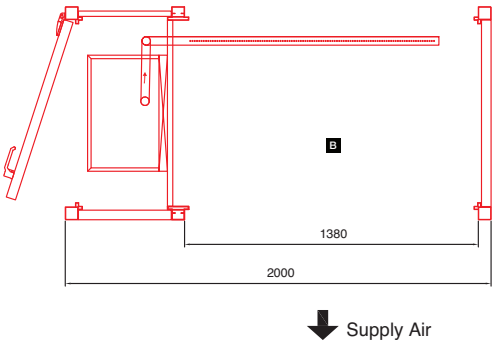
7 Dimensions, Weights & Minimum Space Requirements for Installation

LK-1250 6 Sections - Humidification Section

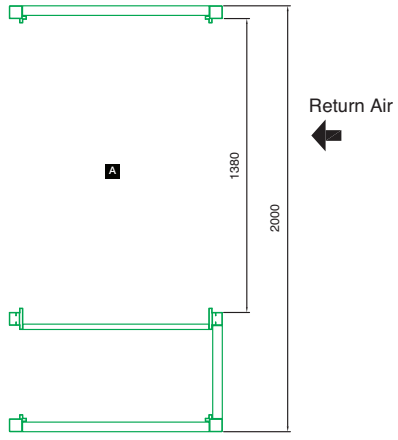




Cross section B-B



Cross section A-A

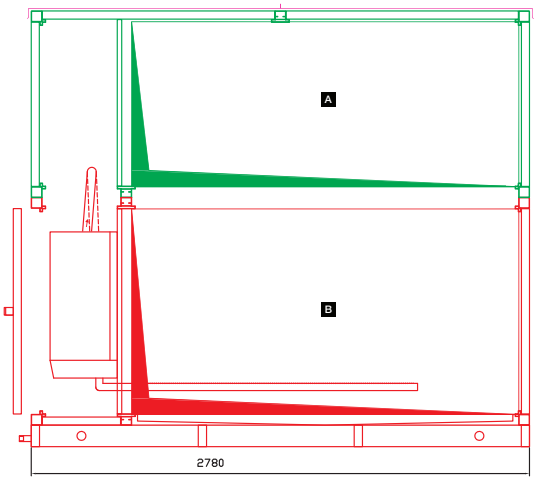


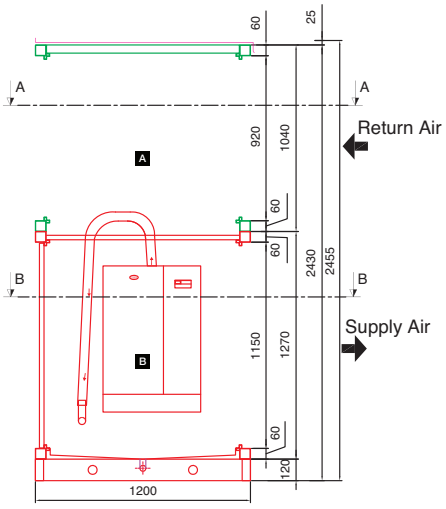
Section A Weight = 130kg
Section B Weight = 300kg

Weight of Humidification Section for LK-1250 6 sections (Total) = 430kg

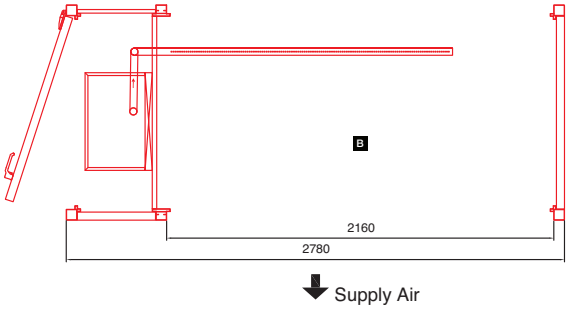
7 Dimensions, Weights & Minimum Space Requirements for Installation

LK-1500 6 Sections - Humidification Section

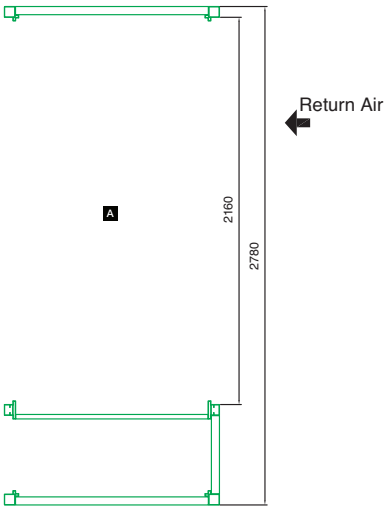




Cross section B-B



Cross section A-A



Section A Weight = 180kg
Section B Weight = 380kg

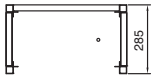
Weight of Humidification Section for LK-1500 6 sections (Total) = 560kg

7 Dimensions, Weights & Minimum Space Requirements for Installation

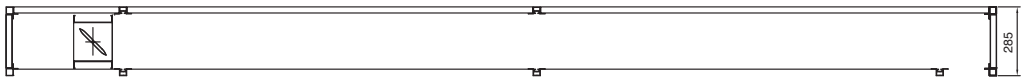
LK-500 - External Bypass (configuration option)

Cross section

top plan view



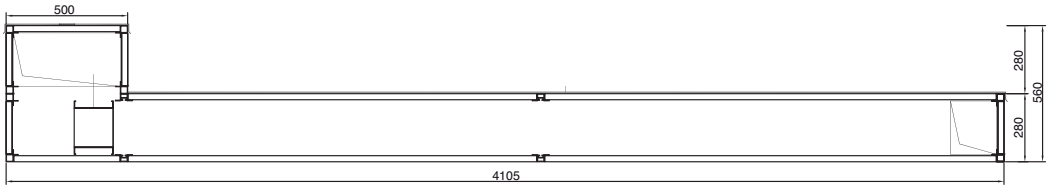
bottom plan view



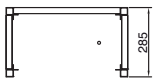
Weight of External Bypass for LK-500 = 83kg

LK-750 - External Bypass (configuration option)

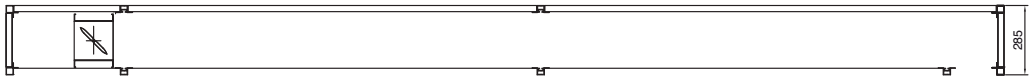
Cross section



top plan view



bottom plan view

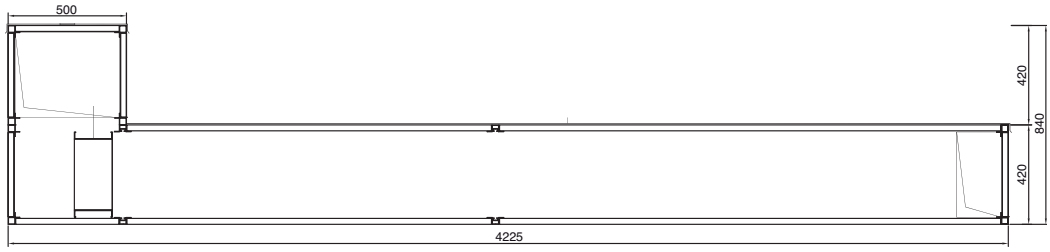


Weight of External Bypass for LK-750 = 95kg

7 Dimensions, Weights & Minimum Space Requirements for Installation

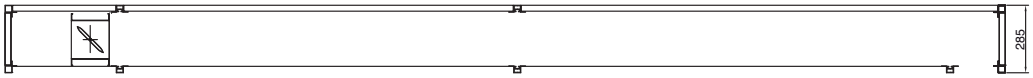
LK-1000 - External Bypass (configuration option)

Cross section



top plan view

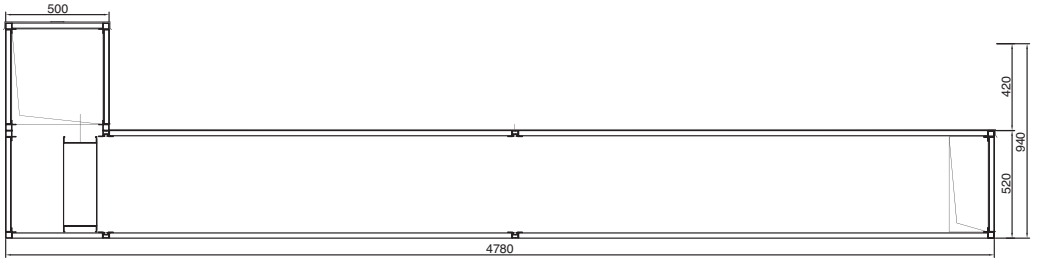
bottom plan view



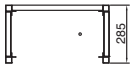
Weight of External Bypass for LK-1000 = 100kg

LK-1250 - External Bypass (configuration option)

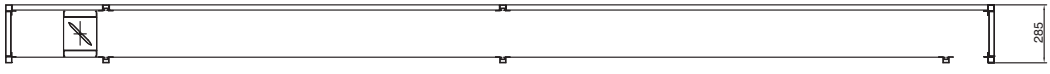
Cross section



top plan view



bottom plan view

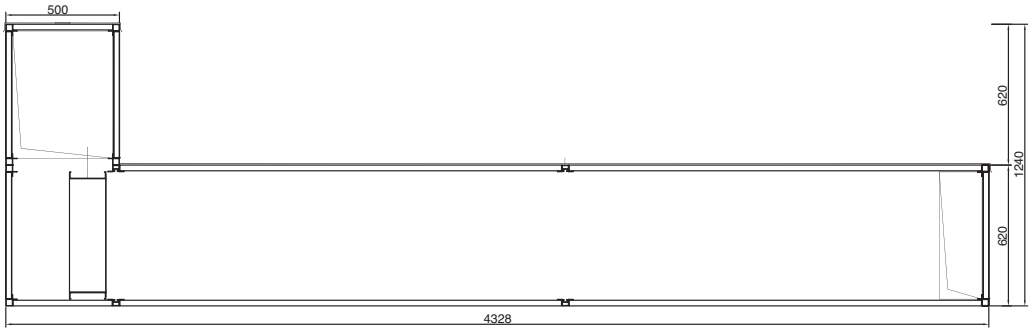


Weight of External Bypass for LK-1250 = 125kg

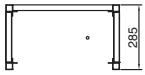
7 Dimensions, Weights & Minimum Space Requirements for Installation

LK-1500 - External Bypass (configuration option)

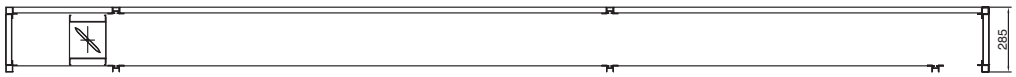
Cross section



top plan view



bottom plan view



Weight of External Bypass for LK-1500 = 145kg

7 Dimensions, Weights & Minimum Space Requirements for Installation

Summarised tables of dimensions and minimum space requirements for inspection for all models. These tables are with reference to the Lossnay Kanzen unit alone, and do not consider the position and space requirements of the outdoor unit (for this information, see the relevant installation manual).

MODEL		LK-500*1	LK-750*1	LK-1000*1	LK-1250*1	LK-1500*6
Length	mm	4450	4450	4550	5150	5090
Width *2	mm	1200	1870	1870	2000	2780
Height	mm	2325	2325	2325	2325	2325
Humidification section *3	mm	1000	1000	1000	1000	1200
Bypass *4	mm	285	285	285	285	285
Free cooling *5	mm	550	650	650	650	650
Weight *6	kg	1900	2300	2500	2700	2700
Weight with Vapour Humidification Section	kg	1950	2350	2590	2820	2820

*1 These are the dimensions for monobloc configurations
*2 Value excludes external bypass kit and dimensions of handles.
*3 Value must be added to total length of machine.
*4 Minimum installation space for external antifreeze bypass duct.
*5 Minimum space for aperture of free cooling shutter and for any ducting necessary.
*6 Version in 3 sections.

The space requisites in the table below indicate the minimum space necessary to ensure that it is possible to open the inspection door and the bypass shutter.

MODEL		LK-500	LK-750	LK-1000	LK-1250	LK-1500
Inspection door aperture	mm	800	800	800	800	800
Minimum space for bypass shutter	mm	550	650	650	650	650
MODEL WITH VAPOUR HUMIDIFICATION SECTION						
Inspection door aperture	mm	1000	1000	1000	1000	1000
Minimum space for bypass shutter	mm	550	650	650	650	650

While no specific instructions are given for the connections of the return air and indoor space air supply ducts, note that installing a straight section of connecting duct leading to the Lossnay Kanzen will create laminar flow within the duct itself and reduce noise.

Any sudden narrowing in the supply/return ducts near the connection to the Lossnay Kanzen will cause a significant increase in air flow speed within the duct itself, resulting in a loss of pressure differential.

Recommended Maintenance Spaces

Note: To facilitate the maintenance and replacement of any accessories installed, it is recommended that a free space of at least the width of unit in question is left accessible. This space is also necessary for the installation of accessories after the installation of the Lossnay Kanzen.

8 Unit Installation Site

8. Unit Installation Site

⚠ Warning, Caution:

Install the unit in a location capable of sustaining the weight of the unit itself.
- If the installation location is not suitable for the weight of the unit, the unit may fall, causing injury or damage to the unit itself.

Install the unit in a designated safe location to minimise risks in the event of earthquakes or high winds.
- If the unit is installed incorrectly, it may tip over and cause injury or damage.

If the Lossnay Kanzen is installed in a small room, take adequate measures to prevent refrigerant gas concentrations from exceeding safe limits in the event of leakage. The installing and plant technicians must certify the safety of the installation against leakage in compliance with local legislation and regulation.

When choosing the installation location, bear in mind that refrigerant gas is heavier than air and that any leaks may accumulate in areas such as around the base, for example. For outdoor units allowing fresh air into the internal unit, choose the installation location with particular care as outdoor air may enter the interior space directly when the thermostat is switched off.
- Direct exposure to outdoor air may be detrimental to the health of occupants or to foodstuffs.

The installing technician and plant technician must install suitable soundproofing barriers in relation to the nature of the installation site.

9 Lifting

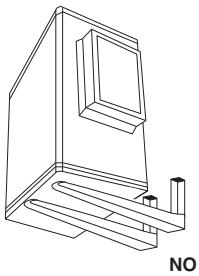
9. Lifting

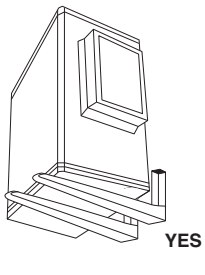
⚠ Note: Transport and handle the unit with care

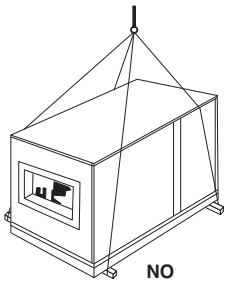
- The Lossnay Kanzen is supplied wrapped in protective polyethylene film to keep water and animals out of the unit during transport and storage. This protective film has an effective lifespan of approximately 4 months.
- Fasten the load securely to prevent damage during transport.
- During installation of the outdoor unit, suspend it over the designated position for the base of the unit. Stabilise the unit as necessary so that it cannot move laterally, supporting it in 4 different positions simultaneously. If only 3 support points are used to install or suspend the unit, the unit may become unstable and fall.
- If the Lossnay Kanzen is equipped with an attached base, it is possible to handle and manoeuvre the unit with a crane, using ties fastened securely to tubes (of suitable load capacity) inserted through the relative holes in the base.
- To suspend the unit, use cables of suitable load capacity.
- To move the unit, use a 4-point harness and proceed with caution to prevent impact with surrounding structures and objects (do not use a 2-point harness).
- Protect all contact surfaces between the cables and the unit with spacers to prevent scratching.
- The inclination of the harness straps must not cause a risk of damage to the Lossnay Kanzen or injury to the personnel handling and manoeuvring the unit.
- Use cables of suitable length for the specific model.
- Do not use any protruding accessories (such as hydraulic connections, handles, hinges, shutters or the outdoor weather protection roof) to move the unit.
- Do not overturn sections as this may damage internal mounts, components and vibration dampers.
- When loading, unloading and moving with a fork lift truck, to ensure stability, the lift forks must not be shorter than the relevant dimension of the Lossnay Kanzen.
- To prevent damage to the unit do not subject it to violent impact.
- Please note that some unit configurations (eg monobloc units) will require a crane to be lifted; a fork lift will not be sufficient.

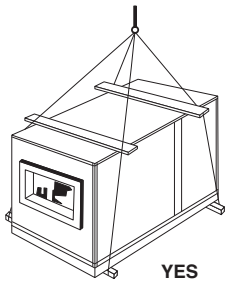
Mitsubishi Electric cannot be held responsible for any damage sustained by the Lossnay Kanzen during loading, unloading and transporting.

Observe the same instructions and precautions for units supplied in multiple sections and for addition modules such as the Vapour Humidification section.









10 Installing the Unit

10. Installing the unit

⚠ **Warning:**

Install the unit on a sufficiently hard surface capable of withstanding the weight of the unit itself.
If the surface is not suitable for the weight of the unit, the unit may fall and cause injury.
Check that the installation site affords adequate protection against earthquakes and high winds.
If the location does not offer adequate protection, the unit may fall and cause injury.

When constructing the support base, ensure that the floor is capable of withstanding the weight involved,that water can drain correctly away from the unit during operation and that all lines and cables are routed correctly.

Fasten the unit securely to prevent the unit itself from falling in the event of an earthquake or high winds. Construct the base for the unit using concrete or structural steel bar elements. Depending on the conditions of the individual installation, vibration and noise may be transmitted through the floor and walls. In these cases, it is recommended to support the unit on vibration damping devices (anti-vibration mounts, damped frame etc.).

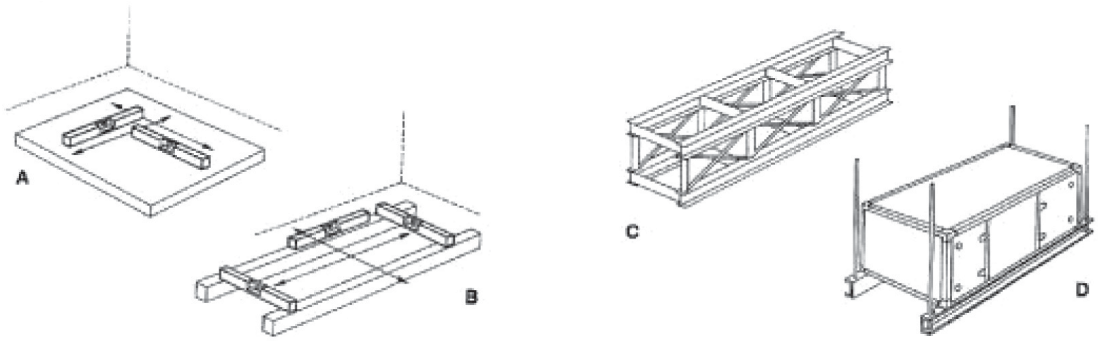
10.1 Base (also see 10.2)

The Lossnay Kanzen may be installed:
1) Directly on the floor (A)
2) On a concrete base (B)
3) On a base constructed from structural steel bar elements (C)
4) On a suspended base (D).

The load bearing capacity of the floor and the base must be sufficient for supporting the mass of the machine with an adequate safety factor. It is extremely important that the Lossnay Kanzen is installed on a flat and level surface to prevent the risk of:

- damage to the fan units caused by imbalanced weight on the vibration dampers
- condensate drain faults caused by impeded aperture and closure of the inspection covers.

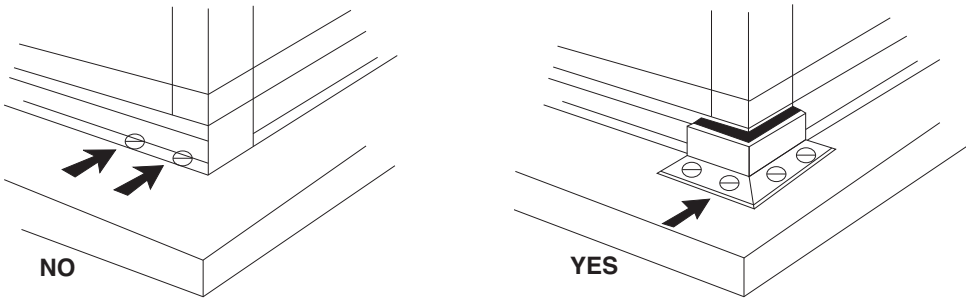
Check the installation surface with a spirit level to ensure that it is level, and make any corrections necessary with metal shims.



10 Installing the Unit

10.2 Vibration isolation

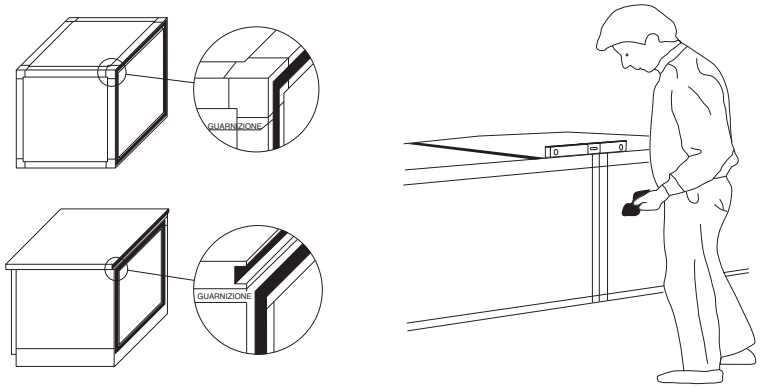
- To isolate the Lossnay Kanzen effectively from vibration, vibration isolators must be installed between the machine and the installation surface. These must be made from a suitable material for the loads involved, and the machine must be fastened to them with specific retainers and not directly secured with screws.
- If spring type or rigid rubber anti-vibration mounts must be installed between the base of the unit and the installation surface to achieve a greater degree of isolation, suitable joints must be fitted to all fluid connections.



10.3 Assembling sections

In the case of a Lossnay Kanzen unit supplied disassembled in sections, proceed as follows:

- Determine the correct installation order of the modules by referring to the installation drawing.
- Retrieve the material necessary for assembly from the compartment behind the relevant inspection cover.
- Clean the profiled structural elements in contact areas between the modules being assembled, and apply the self-adhesive seal.
- This seal must also be applied to the duct connector flanges.
- Bring the individual sections together, ensuring perfect alignment and planarity between attached elements with a spirit level.

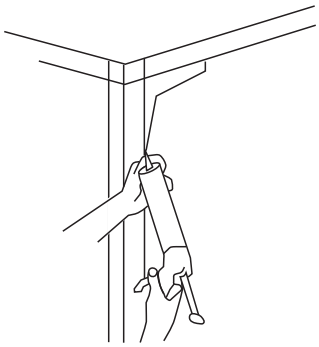


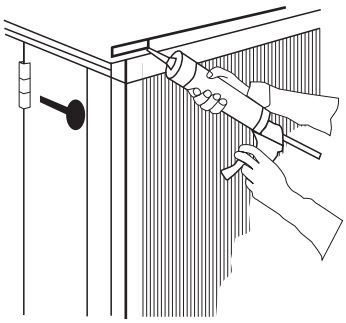
10 Installing the Unit

- Fasten with screws at the appropriate fastener points on the inner sides of each corners (and in intermediate positions along the profile if the profile itself exceeds 1.3 metres in length). The fastening points may be accessed via the inspection hatches. If this is not possible, remove the panels next to the respective area.

  Reconnecting the section electrically consists of re-routing the cables along the relevant channel already present on the section, and reconnecting each plug connector in the corresponding terminal socket inside the electrical panel, matching the plugs and sockets correctly referring to the relevant markings and the shape of the plugs and sockets themselves.

  When installing the outdoor version of the Lossnay Kanzen, in addition to the aforementioned general instructions, the connections between the individual modules must be waterproofed with silicone sealant.





Assemble the roof for protection against the weather with particular care: the two leaves of the roof are joined with a bayonet connection system, and silicone sealant or a specific seal that ensures water tightness.

For units in three or six sections, see the relevant chapter.

11 Installing Refrigerant Pipes

11. Installing refrigerant pipes

The refrigerant pipes are connected with brazed joints.

⚠ **Warning:**
Take all precautions necessary to prevent gas leakage when using a naked flame. Contact between the refrigerant gas and a naked flame of any type (e.g. a gas boiler pilot light) causes the refrigerant to break down and produce poisonous gas. Never braze in an area with inadequate ventilation. After installing the refrigerant pipes, always inspect the installation to check for gas leaks.

⚠ **Note:**
Do not discharge R410A gas into the atmosphere. R410A is a fluorinated greenhouse gas, with a Global Warming Potential (GWP) of 1975 (in accordance with Kyoto Protocol).

⚠ **Note:**
This unit uses R410A refrigerant. When choosing pipes, refer to local legislation for materials and thickness (see table). Use only refrigerant pipes made from the following materials:

Material: Unbrazed copper tubing (phosphorus-deoxidized copper). Check that the inner and outer surfaces of the pipes are clean and free of sulphur, corrosion, dust/dirt, flash, oil, moisture or other contaminants.
Sizes: See table

- Commercially available pipes often contain dust and residue of other materials. Always blow pipes with dry, inert gas before using.
- Take all measures necessary to prevent contamination with dust, water or other materials when installing the pipes.
- Minimise the number of bends, and make bends with as large a radius as possible.

Dimensions of copper pipe for R410A

Unit	LK-500	LK-750	LK-1000	LK-1250	LK-1500
Outdoor	PUHZ-RP200YKA	PUHZ-RP250YKA	PUHZ-RP200YKA PUHZ-RP200YKA	PUHZ-RP200YKA PUHZ-RP250YKA	PUHZ-RP250YKA PUHZ-RP250YKA

Model	Gas Pipe mm (inches)	Liquid Pipe mm (inches)
PUHZ-RP200YKA	Φ28.58 (1⅛)	Φ9.52 (⅜)
PUHZ-RP250YKA	Φ28.58 (1⅛)	Φ12.7 (½)

12 Installing Drainage Pipes

12. Installing drainage pipes

⚠ **Note:**

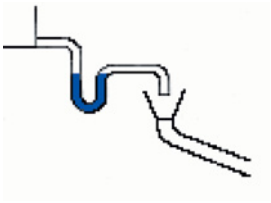
The drainage pipes must lead to the mains sewage system.

To prevent the backflow of air or sewage into the pipe, and to permit visible inspection of the flow of drain water, the drain pipe must not be connected directly to the drain siphon.

To ensure correct drainage, the drain pipe must be larger in diameter than the drain outlet of the Lossnay Kanzen and be inclined at a gradient of at least 25%.

⚠ **Note:**

The drainage pipe must be capable of resisting temperatures above 100°C. Note that high drainwater temperatures may be reached with models with the vapour humidification modules.



13 Charging with Additional Refrigerant

13. Adding refrigerant to PUHZ outdoor units ONLY

Additional refrigerant is not necessary if the length of the pipe does not exceed 30m. If the pipe length exceeds 30m, charge the unit with additional R410A refrigerant as indicated by the table of permitted pipe lengths below.

- With the unit off, charge with additional refrigerant via the fluid cut off valve after generating a vacuum in the extension pipes and the indoor unit. While the unit is running, add refrigerant via the gas inspection valve using a backup charger. Do not add liquid refrigerant directly via the inspection valve.

- After charging the unit with refrigerant, note the quantity of additional refrigerant on the service label (on the outdoor unit).

Model	Permitted Pipe Length	Initial Charge (kg)	Amount Of Additional Refrigerant Charge (kg)					
			30m and less	31-40m and less	41-50m and less	51-60m and less	61-70m and less	71-120m and less
PUHZ-RP200YKA	120m or less	7.1	No additional charge necessary	0.9kg	1.8kg	2.7kg	3.6kg	The additional charge amount is obtained by the following formula
PUHZ-RP250YKA		7.1		1.2kg	2.4kg	3.6kg	4.8kg	

Calculate the additional charge amount based on the following procedure.
If the calculation results in an amount that is smaller than the "Additional charge amount for 70m," perform the additional charge using the amount shown in "Additional charge amount for 70m."

Amount of additional charge [kg]	=	Main Piping: Liquid line size Φ12.7 overall length [m] x 0.11 [kg/m]	+	Main Piping: Liquid line size Φ9.52 overall length [m] x 0.09 [kg/m]	+	Branch Piping: Liquid line size Φ9.52 overall length [m] x 0.06 [kg/m]	+	Branch Piping: Liquid line size Φ6.35 overall length [m] x 0.02 [kg/m]	-	3.6 [kg]

Additional charge amount for 70m	RP200	3.6kg
	RP250	4.8kg

14 Wiring

14. Wiring

⚠ **Note: Ensure that the outdoor unit and the Lossnay Kanzen are correctly connected to earth.**

⚠ **Note: All electrical work must only be performed by an authorised electrician in compliance with local regulations concerning electric installations and indoor electric circuits, and as indicated by the instructions given in this manual. Each unit must be powered by a dedicated electrical power line.**

- Where no local legislation exists, use the dimensions of the cables installed in the unit and the rated capacity of the main power switch as reference for the minimum requisites of the mains power line.
- Connecting the unit to a mains power line of inadequate capacity or incorrectly made electrical connections may result in electrical shock or fire.
- Observe national regulations concerning electrical equipment standards and the regulations concerning wiring and technical specifications indicated by the electrical power provider. Use electrical cables of suitable capacity and size.
- Using cables with an excessively small cross section may cause current leakage, producing heat and causing a risk of fire.

⚠ **Note: The installing and plant technicians must certify the safety of the installation in compliance with local legislation and regulation.**

- Provide adequate earth leakage protection by installing an appropriately sized Residual Current Device (RCD).
- Install a buried earthing conductor if necessary.
- The control wiring transmission line must be situated at a suitable distance (at least 5cm) from the power cables to prevent electrical interference caused by the power lines themselves. Do not route transmission lines and power cables in the same channels.
- The electrical cables of the unit electrical box must be slightly longer than necessary to permit the removal of the electrical box in future for maintenance.
- Do not connect the main power line to the transmission line terminal board as this will cause the electrical components to short-circuit.
- Connect only the specific transmission line to the transmission terminal board of the outdoor unit. Incorrect connection will result in system malfunction.

14 Wiring

14.1 Lossnay Kanzen main electrical panel, power line.

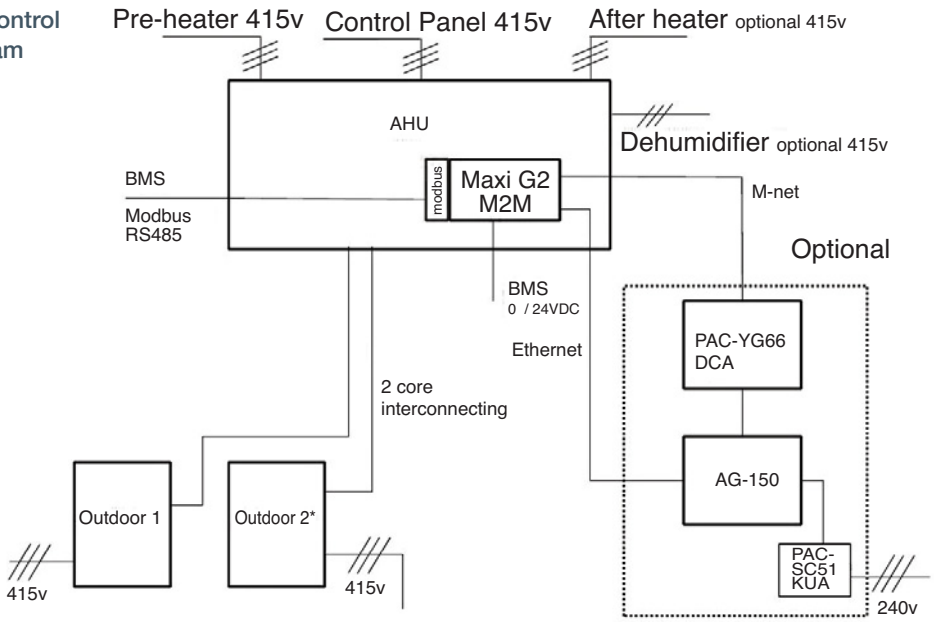
- Connect the power line (three phases + neutral + earth) to the relevant terminal blocks of the main isolator switch on the main electrical panel, and:

- Reconnect the orange power cables for the low voltage coils to phase and neutral
- Connect the ground cable to a specific terminal
- Use the specific cable channels already fitted on the unit
- Ensure that the power cable is not strained.

- **Components such as the vapour humidification modules and pre- and post-heating electric batteries must be powered by separate dedicated lines. Install a specific power line in situ, with the relevant protection devices and disconnector switches, and affix the specific sign provided in the post-heating battery kit in the electrical panel to warn that there are two separate live power lines.**

- Refer to the rated power tables at the front of this manual to determine the correct cross-section of the power cables used. Do not use power cables or switches of a smaller size or capacity than indicated.

Power and Control Wiring Diagram



*2nd outdoor unit for model, LK-1000, LK-1250, LK-1500

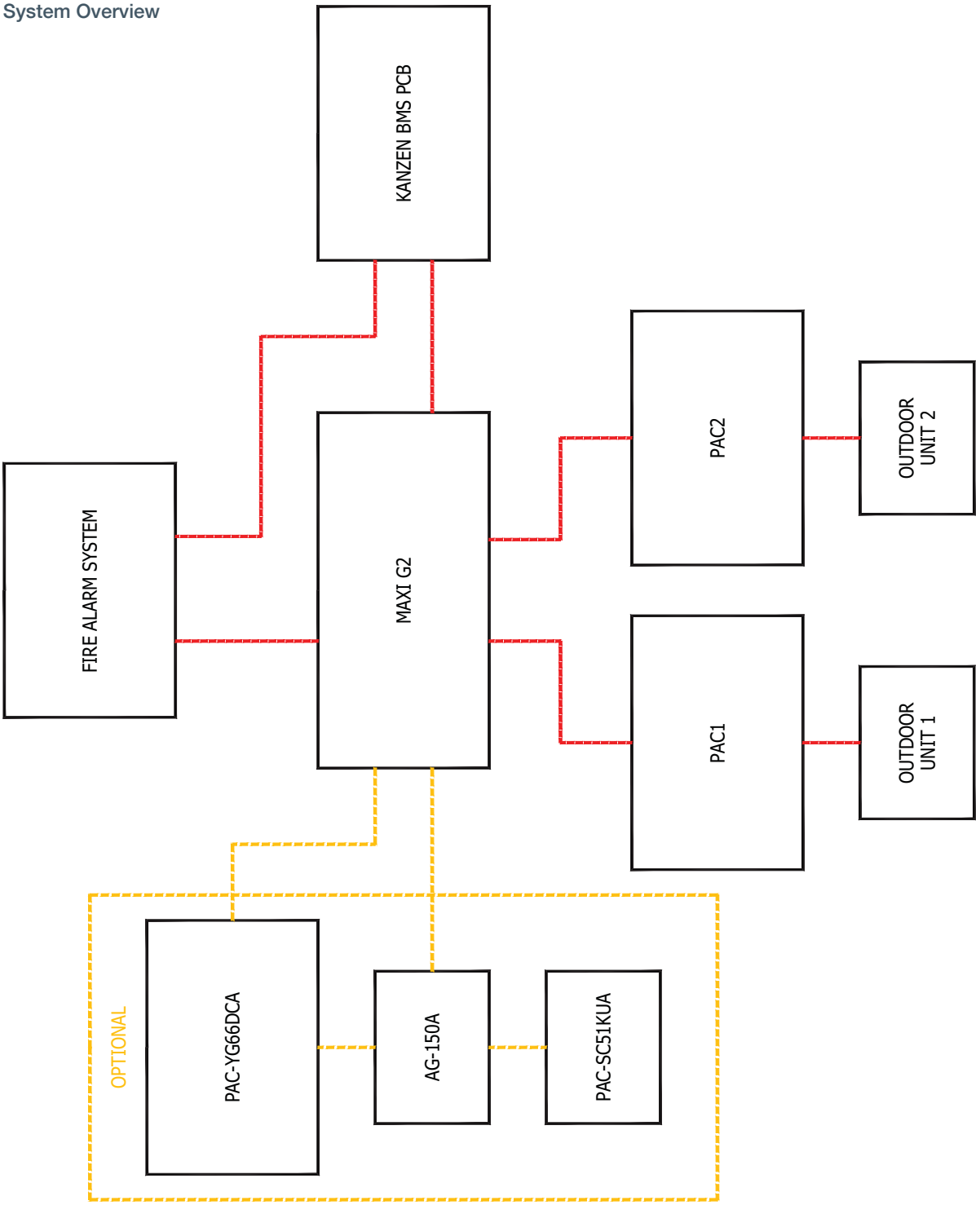
14.2 Centralised controllers transmission cable (MNET) wiring and interconnecting cable.

- Transmission cable type: Shielded CVVS, CPEVS or MVVS cable.
- Cable cross-sectional area 1.5mm$^{2.}$
- Maximum length of transmission lines for centralised control and of indoor-indoor unit LK AHU transmission lines 500m (max).
- Interconnecting cable 2-core 1.5mm^2 between outdoor unit and AHU (S2, S3 only) 75m (max)

14 Wiring Diagrams

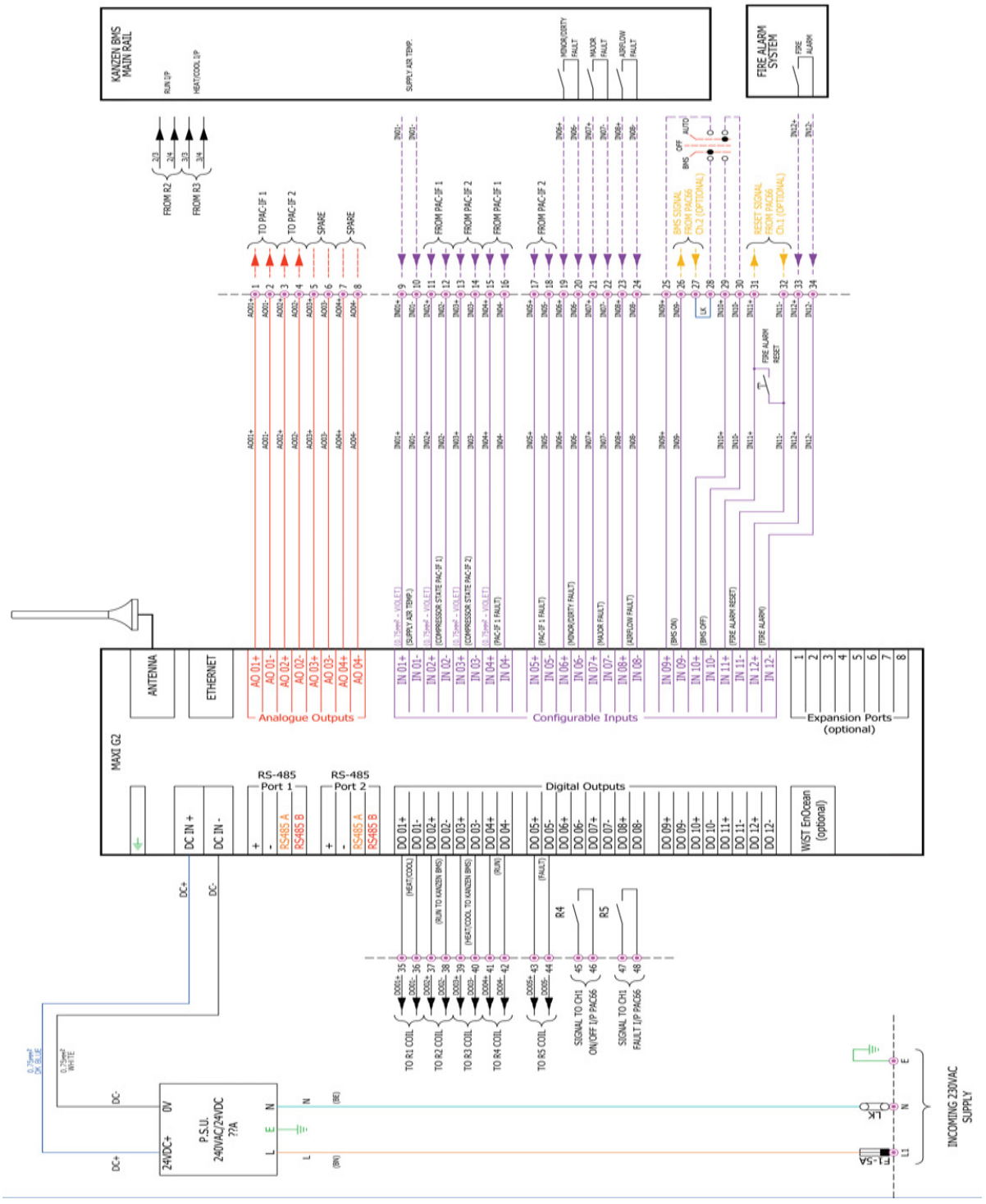
14.3 Wiring Diagrams

System Overview



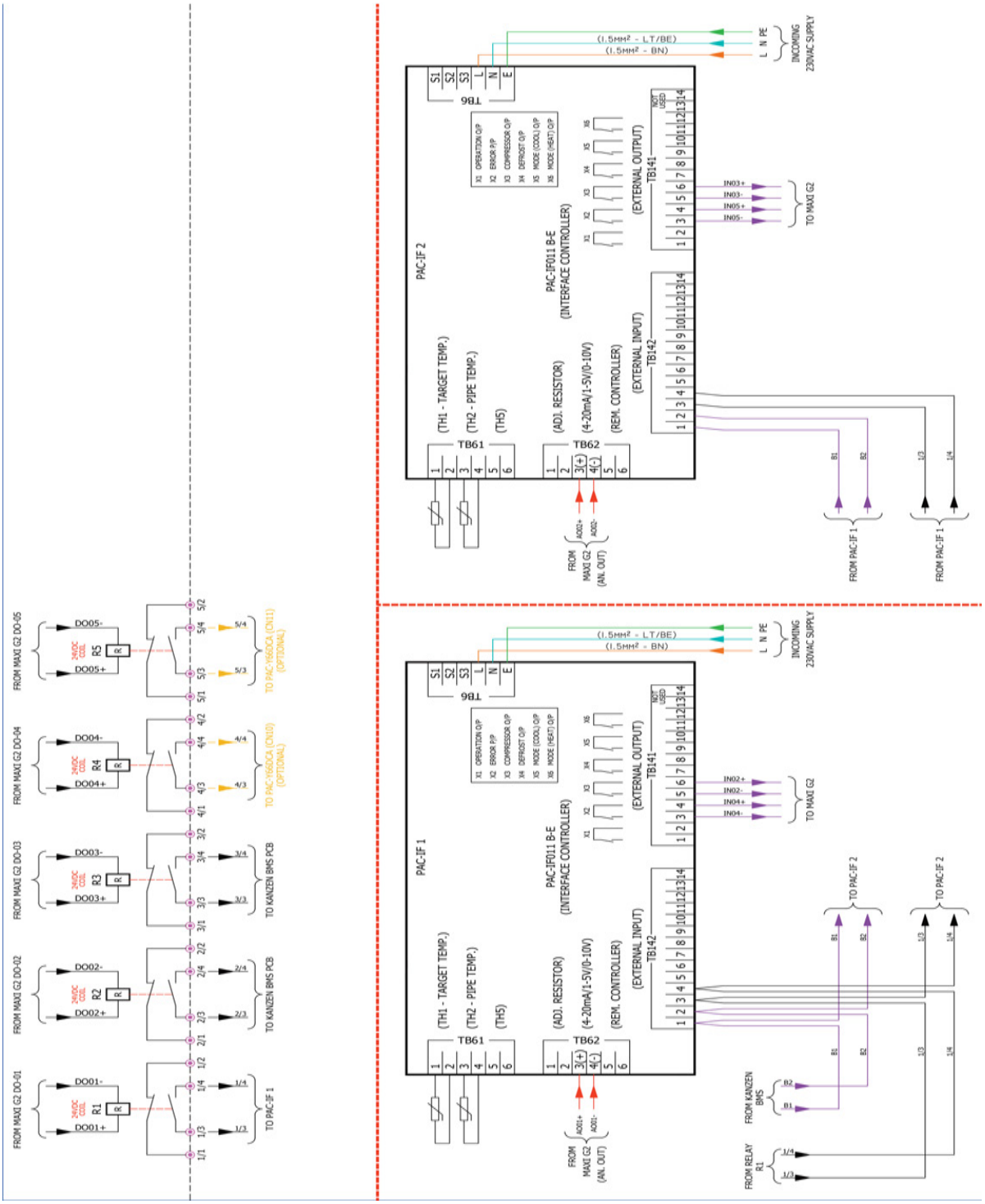
14 Wiring Diagrams

14.3 Wiring Diagrams



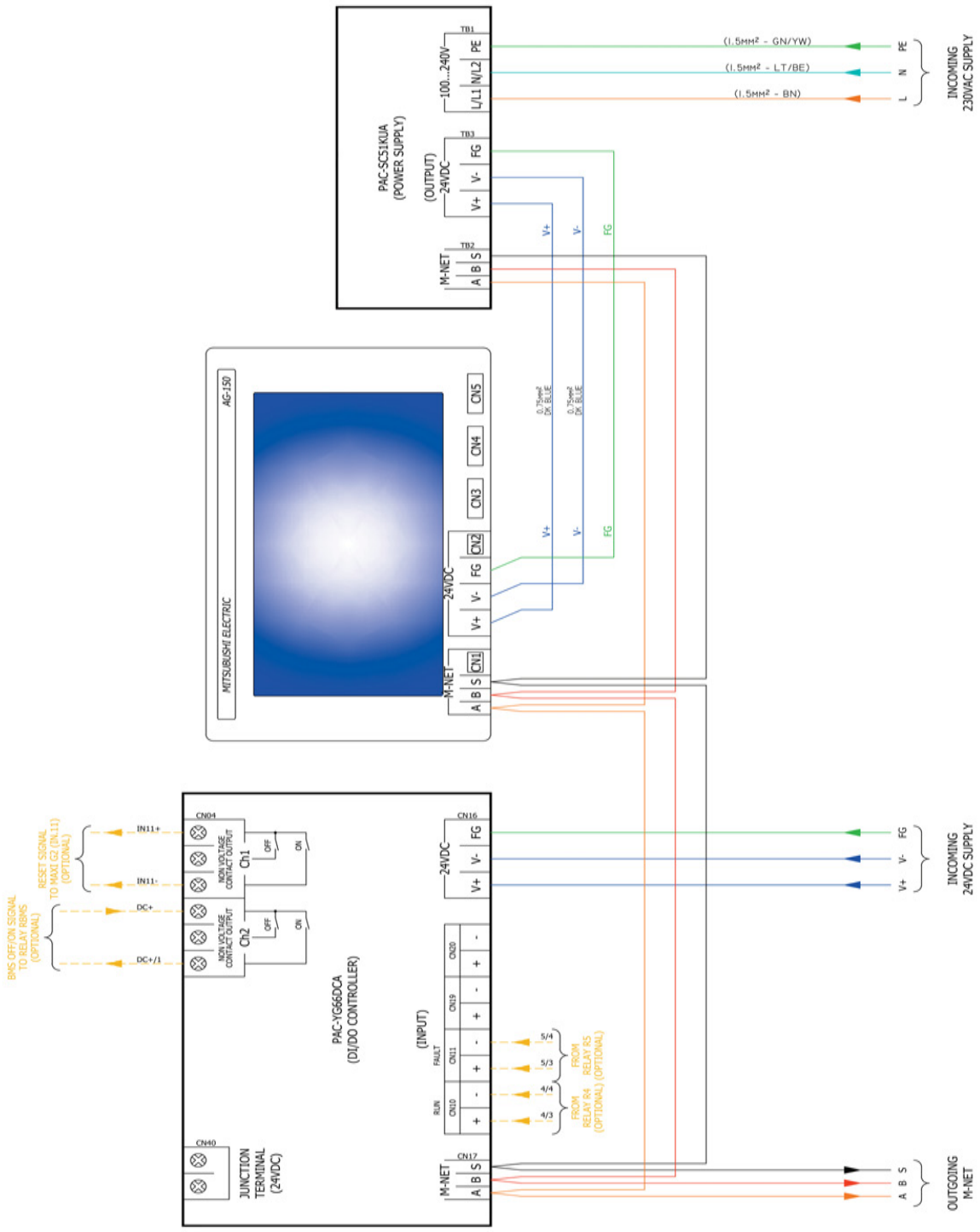
14 Wiring Diagrams

14.3 Wiring Diagrams



14 Wiring Diagrams

14.3 Wiring Diagrams



15 Connections to Ducts

15. Connections to ducts

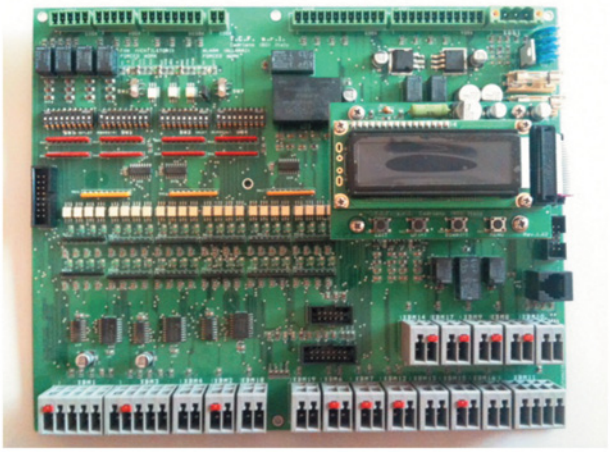
The connection points of the Lossnay Kanzen units for air ducts have flat or flanged surfaces.
To ensure optimum connection to ducts:

- Clean the connecting tabs between the duct and the unit.
- Apply sealant to the flanges to prevent air infiltration.
- Tighten the connection fastener screws securely and apply silicone sealant to the joints to ensure seal tightness.
- In the case of connections made with rubberised fabric joints, to prevent damage or the transmission of vibration, these joints must not be taut once installed.
- To ensure the seal tightness of the connections and the integrity of the structure of the unit, the weight of the ducts must not be sustained by the Lossnay Kanzen unit itself.
- Use appropriate supports and mounts for the ducts.
- The ducts must also be insulated to prevent the formation of condensation on their outer surfaces and water leakage.

16 Air Volume Commissioning

Setting Flow Rate With Dip-Switch Type Potentiometer
The fan speed setting potentiometer is specifically designed to adjust the speed of the electronically switched electric fans installed in Mitsubishi Electric Lossnay Kanzen units, which have an analogue input with a voltage variable from 0 to 10V DC specifically for speed adjustment.

The unit is equipped with one double bank potentiometer for the supply section (the first two banks from the left) and one potentiometer for the return section. The potentiometers are situated at the top left of the Lossnay Kanzen control board.



In relation to the configuration of the dip switches (Fig.1), this potentiometer delivers an output voltage varying from 3.9 to 10V DC, and, when enabled, forces the motor to run at a lower speed (down to approximately 39% of its maximum speed rating) to prevent overheating, which could cause both mechanical and electronic damage. The potentiometer receives the unmodified drive voltage of 10V DC from the Lossnay Kanzen electronic board, and delivers the modified voltage, configured with the dip switches, to the motor. Regulation of the output voltage to the motor is enabled by setting the switch corresponding to the desired speed percentage to 'ON', as indicated in the table below.

Never set more than one switch to 'ON' simultaneously.
If all the dip switches are set to '0', no output voltage is delivered and the motor will not run.

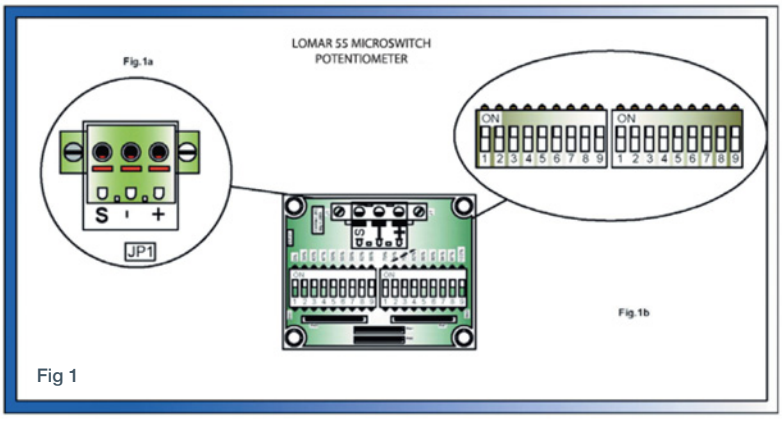


Fig 1

16 Air Volume Commissioning

The percentage power signal values delivered by the double bank of dip switches are indicated as follows (values for bank SW3 are in the top half of table and values for bank SW1are in the bottom half of the table).

POSITION ON SW3	% SPEED	OUTPUT VOLTAGE (V DC)
Microswitch 9	off	0.0 VDC
Microswitch 8	39%	3.9 V DC
Microswitch 7	43%	4.3 V DC
Microswitch 6	47%	4.7 V DC
Microswitch 5	50%	5.0 V DC
Microswitch 4	55%	5.5 V DC
Microswitch 3	58%	5.8 V DC
Microswitch 2	62%	6.2 V DC
Microswitch 1	66%	6.6 V DC
POSITION ON SW1		
Microswitch 9	74%	7.4 V DC
Microswitch 8	70%	7.0 V DC
Microswitch 7	78%	7.8 V DC
Microswitch 6	82%	8.2 V DC
Microswitch 5	86%	8.6 V DC
Microswitch 4	90%	9.0 V DC
Microswitch 3	94%	9.4 V DC
Microswitch 2	97%	9.7 V DC
Microswitch 1	100%	10 V DC

With the pressure gauge supplied connected, the technician responsible for commissioning the Lossnay Kanzen increases or decreases the speed of the motors while simultaneously reading the pressure from the respective pressure measurement points indicated in Fig. 2 and 3 until the pressure reading corresponds with the desired flow rate as determined in the attached tables.

Fig. 2

Fig. 3

16 Air Volume Commissioning

LK-500			
Supply		Return	
m^3/h	PA	m^3/h	PA
3500	181	3500	181
3700	202	3700	202
3900	225	3900	225
4100	248	4100	248
4300	273	4300	273
4500	299	4500	299
4700	326	4700	326
5000	369	5000	369
5200	400	5200	400

LK-500 High Pressure (400Pa)			
Supply		Return	
m^3/h	PA	m^3/h	PA
3500	155	3500	181
3700	173	3700	202
3900	192	3900	225
4100	212	4100	248
4300	234	4300	273
4500	256	4500	299
4700	279	4700	326
5000	316	5000	369
5200	342	5200	400

LK-750			
Supply		Return	
m^3/h	PA	m^3/h	PA
5500	249	5500	447
5700	268	5700	480
5900	287	5900	514
6100	307	6100	550
6300	327	6300	587
6500	348	6500	625
6700	370	6700	664
7000	404	7000	724
7250	434	7250	777
7500	434	7500	832
7700	489	7700	877

LK-750 High Pressure (400Pa)			
Supply		Return	
m^3/h	PA	m^3/h	PA
5500	383	5500	383
5700	411	5700	411
5900	440	5900	440
6100	471	6100	471
6300	502	6300	502
6500	535	6500	535
6700	568	6700	568
7000	620	7000	620
7250	665	7250	665
7500	712	7500	712
7700	750	7700	750

LK-1000			
Supply		Return	
m^3/h	PA	m^3/h	PA
7700	489	7700	489
7900	515	7900	515
8200	555	8200	555
8500	596	8500	596
8700	625	8700	625
8900	654	8900	654
9200	698	9200	698
9500	745	9500	745
9800	793	9800	793
10000	825	10000	825
10200	859	10200	859

LK-1000 High Pressure (400Pa)			
Supply		Return	
m^3/h	PA	m^3/h	PA
7700	375	7700	489
7900	395	7900	515
8200	425.5	8200	555
8500	457.5	8500	596
8700	479	8700	625
8900	501.5	8900	654
9200	535.5	9200	698
9500	571	9500	745
9800	608	9800	793
10000	633	10000	825
10200	658.5	10200	859

16 Air Volume Commissioning

LK-1250			
Supply		Return	
m^3/h	PA	m^3/h	PA
10500	910	10500	910
10700	945	10700	945
10900	981	10900	981
11100	1017	11100	1017
11400	1073	11400	1073
11700	1130	11700	1130
11900	1169	11900	1169
12100	1208	12100	1208
12300	1249	12300	1249
12500	1290	12500	1290
12700	1331	12700	1331

LK-1250 High Pressure (400Pa)			
Supply		Return	
m^3/h	PA	m^3/h	PA
10500	688	10500	910
10700	714.5	10700	945
10900	741.5	10900	981
11100	769	11100	1017
11400	811	11400	1073
11700	854.5	11700	1130
11900	884	11900	1169
12100	914	12100	1208
12300	944.5	12300	1249
12500	975	12500	1290
12700	1006.5	12700	1331

LK-1500			
Supply		Return	
m^3/h	PA	m^3/h	PA
13200	719	13200	1288.5
13400	741	13400	1328
13600	763.5	13600	1368
13800	786	13800	1408.5
14000	809	14000	1449.5
14200	832.5	14200	1491
14400	856	14400	1533.5
14600	880	14600	1576.5
14800	904	14800	1620
15000	928.5	15000	1664
15200	953.5	15200	1708.5

LK-150 0 High Pressure (400Pa)			
Supply		Return	
m^3/h	PA	m^3/h	PA
13200	1103	13200	1103
13400	1137	13400	1137
13600	1171	13600	1171
13800	1205.5	13800	1205.5
14000	1241	14000	1241
14200	1276.5	14200	1276.5
14400	1313	14400	1313
14600	1349.5	14600	1349.5
14800	1387	14800	1387
15000	1424.5	15000	1424.5
15200	1463	15200	1463

16 Air Volume Commissioning

			SUPPLY				RETURN			
LK (airflow)			SUPPLY	SFP (kW/(m³/s))			SUPPLY	SFP (kW/(m³/s))		
Max	Med	Min	FAN	Max	Med	Min	FAN	Max	Med	Min
5000	4250	3500	R3G500-RA25-01 RADICAL	1.31	1.1	0.938	R3G500-RA25-01 RADICAL	1.03	0.895	0.791
7500	6500	5500	R3G 560 AH 2301	1.37	1.16	0.983	R3G500-RA25-01 RADICAL	1.02	0.875	0.752
10000	9000	8000	R3G 560 AQ 0401	1.17	1.03	0.915	R3G 560 AH 2301	1.09	0.99	0.87
12500	11500	10500	R3G 560 AQ 0401	1.2	1.07	0.957	R3G 560 AQ 0401	1.01	0.909	0.817
15000	14000	13000	2 x R3G 560 AH 2301	1.37	1.26	1.16	2 x R3G 500-RA25-01 RADICAL	1.02	0.945	0.875

TOTAL					
LK (airflow)			System SFP (kW/(m³/s))		
Max	Med	Min	Max	Med	Min
5000	4250	3500	2.34	1.995	1.729
7500	6500	5500	2.39	2.035	1.735
10000	9000	8000	2.26	2.02	1.785
12500	11500	10500	2.21	1.979	1.774
15000	14000	13000	2.39	2.205	2.035

			SUPPLY				RETURN			
LK (airflow)			SUPPLY	SFP (kW/(m³/s))			SUPPLY	SFP (kW/(m³/s))		
Max	Med	Min	FAN	Max	Med	Min	FAN	Max	Med	Min
5000	4250	3500	R3G 500-AQ33-01	1.71	1.52	1.39	R3G500-RA25-01 RADICAL	1.31	1.18	1.10
7500	6500	5500	R3G 560 AQ 0401	1.50	1.34	1.21	R3G 560 AH 2301	1.37	1.23	1.12
10000	9000	8000	2 X R3G500-AQ33-01	1.71	1.58	1.47	R3G 560 AQ 0401	1.17	1.08	1.00
12500	11500	10500	2 X R3G500-AQ33-01	1.56	1.46	1.37	R3G 560 AQ 0401	1.20	1.10	1.02
15000	14000	13000	2 x R3G 560 AQ04	1.50	1.41	1.34	2 x R3G 560 AH 2301	1.37	1.30	1.23

TOTAL					
LK (airflow)			System SFP (kW/(m³/s))		
Max	Med	Min	Max	Med	Min
5000	4250	3500	3.02	2.70	2.49
7500	6500	5500	2.87	2.57	2.33
10000	9000	8000	2.88	2.66	2.47
12500	11500	10500	2.76	2.56	2.39
15000	14000	13000	2.87	2.71	2.57

17 Commissioning

17. Commissioning

The Lossnay Kanzen may ONLY be purchased together with the COMMISSIONING service.
All the necessary procedures for assisted commissioning will be performed by the Mitsubishi Electric.
Please refer to the pre-commissioning document.

18 Maintenance

18. Maintenance

Before starting any regular or unscheduled maintenance work, ensure that all safety instructions and precautions relative to access to areas with electrical or moving parts are observed. Take particular care when accessing areas with hot surfaces. All maintenance work must only be performed by qualified and authorised personnel in compliance with local safety regulation and as indicated by the instructions given in this manual.

Dispose of waste products and materials resulting from the maintenance or replacement of filters as indicated by applicable legislation.

ELV : Before starting any maintenance work, switch off the main power supply to the Lossnay Kanzen and to all outdoor units connected to the Lossnay Kanzen.

: Turn the main power switch off before maintenance.

: Take particular care when accessing areas with moving parts.

: Take particular care when accessing areas with electrical parts.

: Take particular care when accessing areas with hot parts.

: Indicates important instructions which must be followed with care.

- Before starting any maintenance work, check that the electrical power lines to the main electrical panel are disconnected.
- Press the emergency stop button inside the main electrical panel, then remove the relevant rearm key and put it in a safe place.
- Only open inspection hatches once the fans have stopped completely.
- Before beginning any maintenance work on the electric fan unit, make sure that the motor cannot be started accidentally.
- Ensure that the motor itself has cooled completely before starting any work on the motor.
- Immobilise the fan rotor before starting any work on the fan, as the chimney effect of the duct may cause the fan to rotate and put the operator at risk.

18 Maintenance

Regular Maintenance
Regular maintenance consists of periodically replacing and cleaning the filters and the heat recovery core. The intervals at which maintenance is performed varies in relation to the environmental conditions in which the product is used and to levels of fine particles or other contaminants which may reduce the lifespan of the filtration elements.

Cleaning the Heat Recovery Cores
Remove the panel for removing the cores, then remove the cover panel of the recovery element to allow access to the cores. Pull out the cores (4 per recovery module) as indicated. Clean the cores, then perform the above procedure in reverse order to refit, fastening the cores to one another with the relevant hook. Once the operation is complete, refit the recovery module panels and the inspection panel.

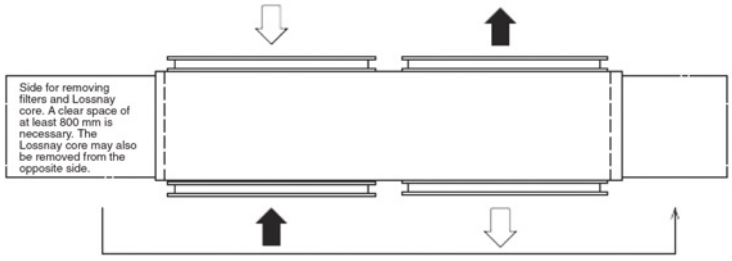
Replacing - Cleaning Filters
Open the inspection hatch allowing access to the filters, remove the retainers then remove the filters. Clean or replace as necessary. Refit the filters, ensuring that they are fastened securely with the retainers before switching the Lossnay Kanzen back on.

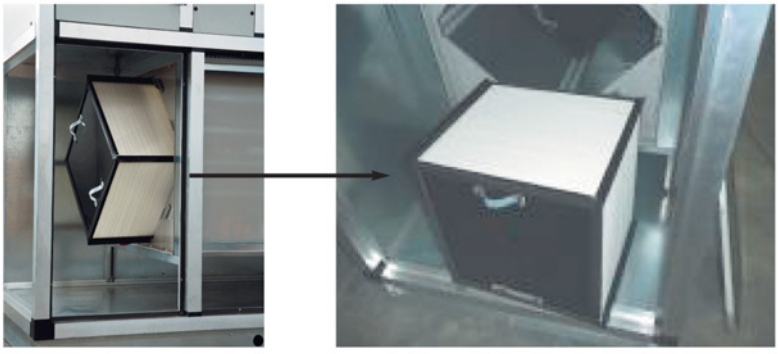
Pre-filter

F7 Bag Filters

RA Filter

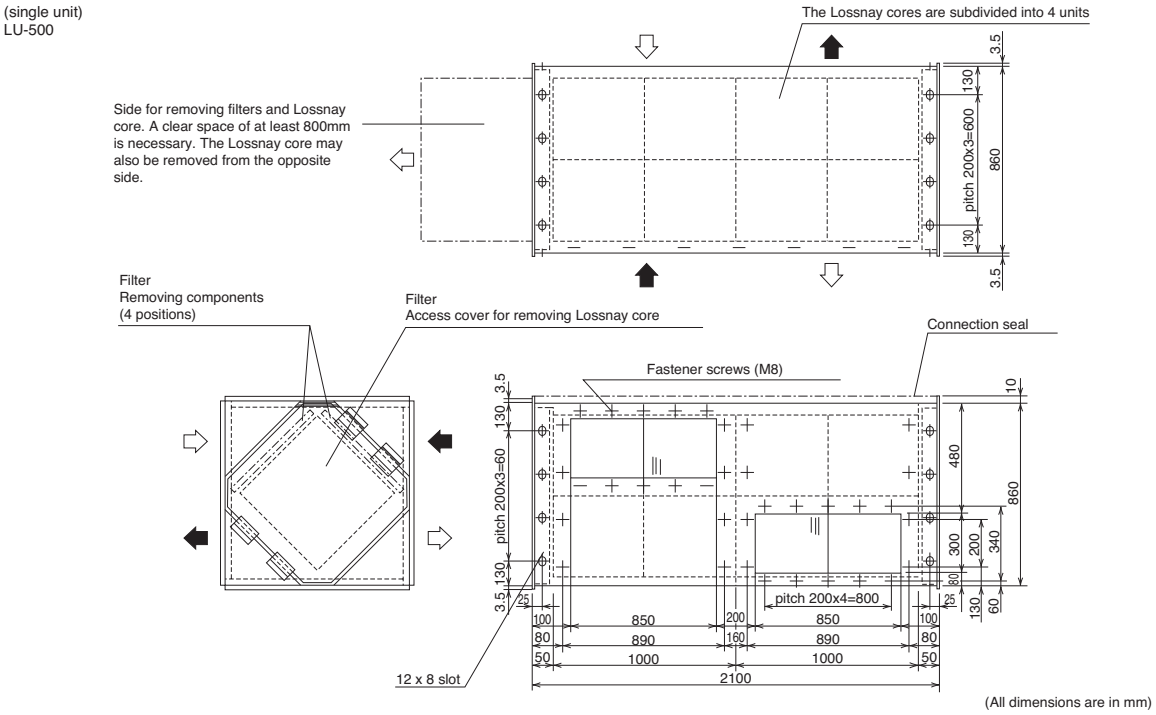
18 Maintenance





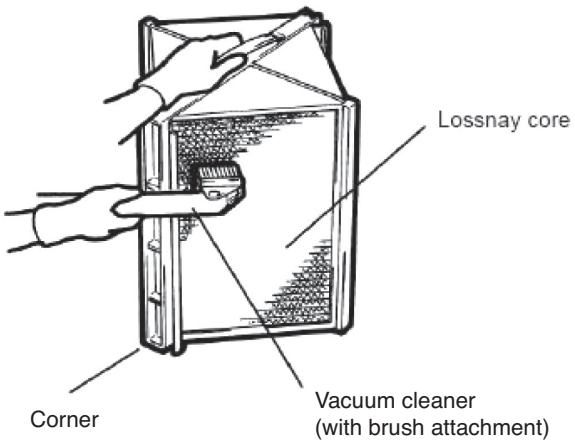
Note: Image pictured may differ slightly to unit delivered on site

18 Maintenance

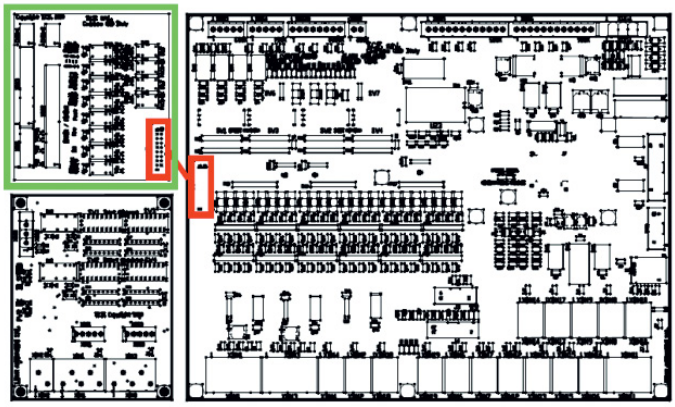


⚠ Caution!
A vacuum cleaner may be used to remove accumulated dust from the Lossnay core.
Never use water to clean the recovery module pack!

DO NOT wash with water



19 Installation, Operation and Maintenance of Accessories



Description - BMS Board (Remote Control)
When connected to the main board of the Lossnay Kanzen, the BMS enables remote control functionality via the volt-free contacts of the unit.

The following signals are produced:

1-2	Filters clogged	DL1
3-4	Lossnay Core clogged	DL2
5-6	Pre-heating battery overheat	DL3
7-8	Post-heating battery overheat	DL4
9-10	Humidification module fault	DL7
11-12	Motor fault	DL8
13-14	High state	DL11
15-16	Low state	DL12

The high/low state signals identify the current operating mode with the binary combinations indicated in the attached table:

0	0	Fan mode
0	1	Heating
1	0	Cooling
1	1	Alarm active

The signals are provided as normally open volt-free contacts which close in the event of the alarm state, and with a maximum current capacity of 1A at 30V DC 0.5A at 125V AC and 0.3A at 60V DC.

Installation, Operation and Maintenance of Accessories

Electrical characteristics

The connections CN51/1-2 signal the alarm and current operating states of the PAC boards.
This information is provided as change-over contacts on the XQG3 connector and may be combined as desired to obtain the state of a single unit or the state of two units in the case of larger machines.

1-2	PAC 1 inactive	green DL5 OFF
1-3	PAC 1 active	green DL5 ON
4-5	PAC 1 not in alarm state	red DL6 OFF
4-6	PAC 1 in alarm state	red DL6 ON
7-8	PAC 1 off	green DL9 OFF
7-9	PAC 1 active	green DL9 ON
10-11	PAC 1 not in alarm state	red DL10 OFF
10-12	PAC 1 in alarm state	red DL10 ON

Connector XQG1 is reserved for future applications.

If unshielded, the FLAT connector cable between connector J1 on the BMS board and connector J5 on the Lossnay Kanzen board must not exceed 60cm in length.

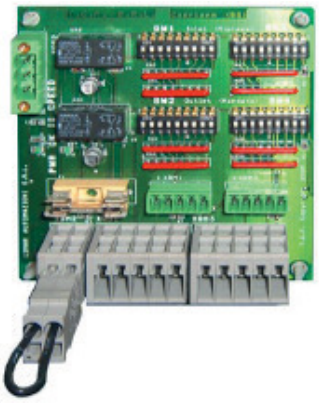
19.2 Manual for Two-Speed Board -Accessory kit (Qty 1)

- Spacers for fastening to electrical panel (Qty 4).
- Installation, Operation and Maintenance manual (Qty1).
- Box in corrugated cardboard for board and components (Qty 1).

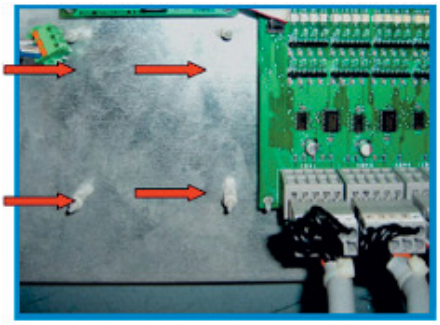
19 Installation, Operation and Maintenance of Accessories

Installation

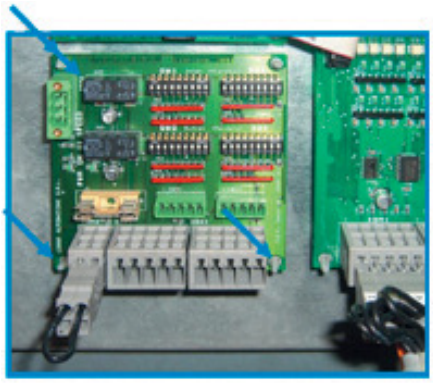
Remove the electronic board from the packaging (fig.1).



Fit the white PVC spacers in the holes in the positions indicated in (fig. 2).



Fasten the board to the spacers (fig.3).



19 Installation, Operation and Maintenance of Accessories

Identify the power connector (fig. 4) in the left hand cable channel and connect to the relevant socket as shown in (fig. 5).

Fig. 4

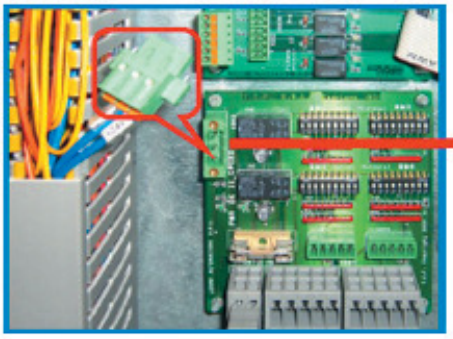
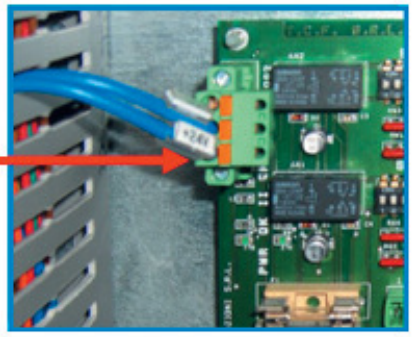
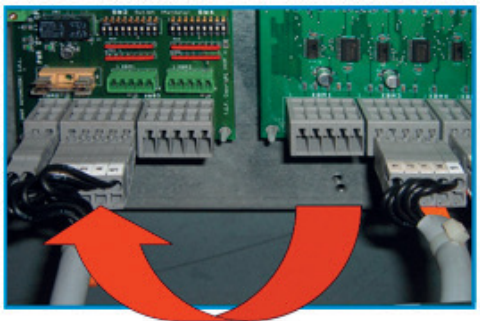


Fig. 5



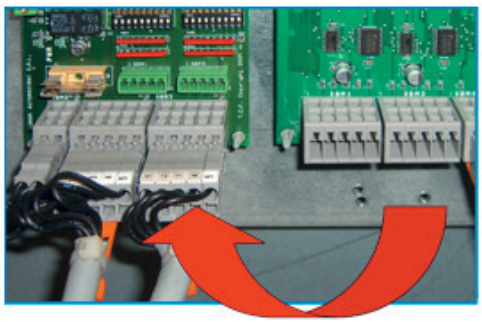
Disconnect the auxiliary motor cable connector XBM1 from the main board and reconnect to the socket marked XBM1 on the Two-Speed Board (see fig. 6).

Fig. 6



Repeat the procedure with the auxiliary motor cable connected to XBM3 (fig.7).

Fig. 7



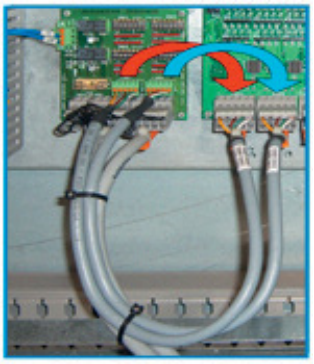
19 Installation, Operation and Maintenance of Accessories

Using the pair of cables supplied (fig. 8), connect the main board to the Two-Speed Board.

Fig. 8

Match the markings on the cables and terminal boards correctly, connect as shown in fig. 9.

Fig. 9



Connect the two-speed request command (NO volt-free contact) to the terminal indicated in the fig. 10.

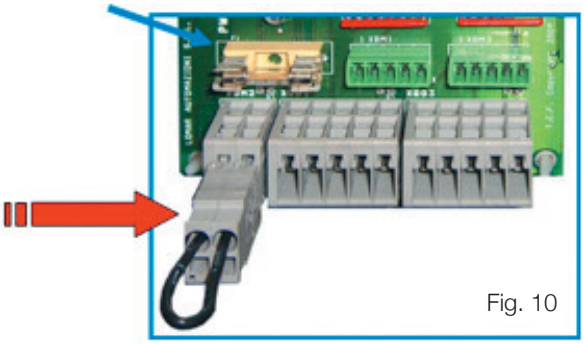


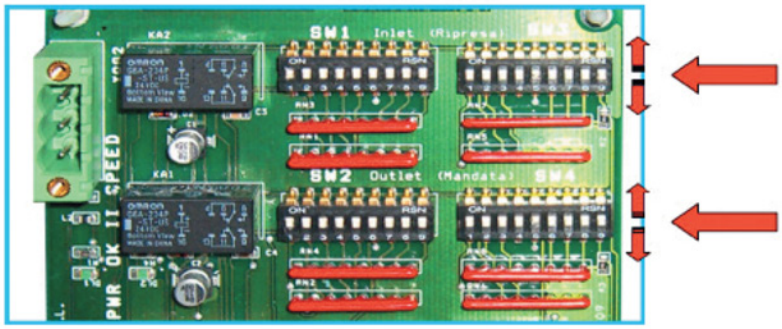
Fig. 10

19 Installation, Operation and Maintenance of Accessories

Description
The board is installed in the control line for the motors of the Lossnay Kanzen units, and permits the selection of a second speed setting in addition to the speed setting configured on the main board of the Lossnay Kanzen via a volt-free output contact. Separate speed settings are implemented for the supply and return motors. The motor signals are independent and are isolated from each other. The speed selection system has the same characteristics as the speed control system on the electromechanical logic control board of the Lossnay Kanzen. Speed settings are implemented in increments of 2-3%.

Usage Instructions
After making the connections described above, set the second speed with the bank of switches on the accessory board (fig. 11), referring to the setting instructions provided for the main board.

Fig. 11



On receipt of the external signal, the Lossnay Kanzen applies the speed set via the accessory board.
If there is no signal received, the accessory board restores the speed set via the switches on the main board.

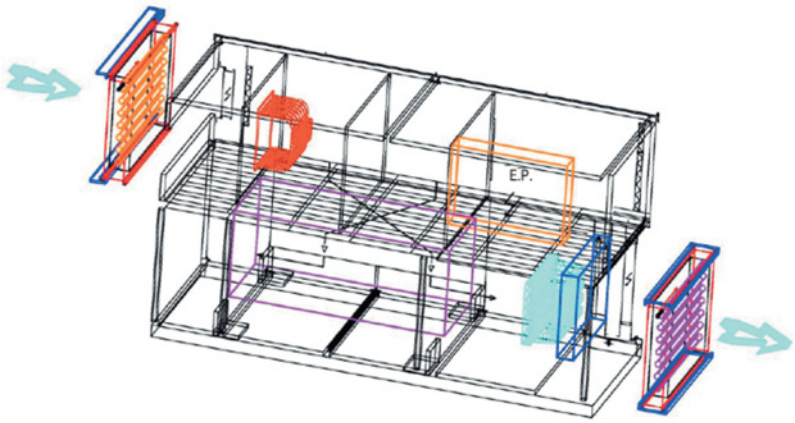
⚠ Caution!
Ensure that the power cables and the signal cables to and from the motors are connected with the correct polarity. If powered incorrectly, the filters installed in the system may block the system itself, causing irreparable damage to the electronic components. The board must be wired correctly before it is powered. The XQG2 power connector is already included in the cable channel of the main panel, next to the installation position of the accessory board. (fig. 4 and fig. 5).

General Information
The fuse is only intended to protect the wiring and circuit tracks, but does not provide adequately rapid protection for the components installed on the board. When replacing this fuse, use a 1A rapid fuse. LED DL2 indicates 24V DC power, while LED DL1 indicates that the second speed setting is active (external contact closed on XBM2).

N.B. Before setting the desired switch to ON, set all the other switches to OFF to prevent the risk of short circuiting or undesirable system behaviour.

Installation, Operation and Maintenance of Accessories

19.3 Manual for Electric Pre-heating Battery and Electric Post-heating Battery kits



Composition of Kit

- Pre-heating or post-heating electrical board (Qty 1).
- Electric battery with armoured elements (Qty 1).
- Auxiliary wiring connected to electrical battery and with connector plug on main panel end (Qty 1).
- Wired temperature sensor with connector plug on main panel end of cable (Qty 1) - Pre-heating only.
- Wing bolts + washers for fastening in utility compartment (Qty 2).
- Operating manual including excerpt from main electrical wiring diagram.
- Adhesive label with safety information.
- Installation, Operation and Maintenance manual.
- Box in corrugated cardboard for board and components.
- Pallet for electrical heating body.

Technical and constructional characteristics of kit components

Pre-heating electrical board or post-heating electrical board

- Electric control circuit built on hot zinc plated steel plate (dim. L x H x W 160 or 120 x 580 x 160mm)
- Holes for fastening control circuit (fig. 1) with 2 wing bolts (fig. 2), tightened into the corresponding seats with M8 threaded bushes on the main board of the main electrical panel (fig. 3).
- Magnetothermal automatic circuit breaker with low voltage cut-off coil.
- Power circuit with SSR relay and modulated regulation with signal received from main electrical panel electronics (Siemens Sirius 3RF23).
- Plug-socket connection system (aux) on SSR, temperature sensor, control board (fig. 5).
- Equipotential earthing conductor (fig. 6).
- Interlocked overheat safety circuit with air-break disconnector thermal circuit breaker calibrated to 55°C (fig. 7).
- Wiring with cables and wires insulated with high temperature silicone.

Electric battery with armoured elements (fig. 8).

- Power in kW (see attached power table).
- Single stage.
- Integrated safety thermostat (calibrated to 100°C) with bulb temperature sensor installed on upper part of chassis and with manual rearm button.

19 Installation, Operation and Maintenance of Accessories

Auxiliary Wiring

- FROR type cable with 1.5 mm² cross sectional area for connecting post-heating temperature sensor to kit board (3 metres). Supplied as standard.

Temperature Sensor

- Carel DPDT0110000 temperature sensor with NTC 10KQ sensing element. Measurement range 0-100°C. (fig. 9). Supplied as standard.

Electrical Wiring Diagram

- Please refer to attachments 1, 2 and 3 on pages 91, 92 and 93 of this manual for details of installation and wiring of the pre-heating and post-heating batteries.

Table of Weights (kg)

COMPONENTS	LK-500	LK-750	LK-1000	LK-1250	LK-1500
Electrical panel	7	8	9	10	10
Electric battery	12	15	20	25	28
Wiring	3	3	3	3	3
Temperature sensor	0.3	0.3	0.3	0.3	0.3
Diagrams and manuals	0.2	0.2	0.2	0.2	0.2
Fasteners and other hardware	0.5	0.5	0.5	0.5	0.5
Total	**23**	**27**	**33**	**39**	**42**

Table of Cable Types

COMPONENTS	LK-500	LK-750	LK-1000	LK-1250	LK-1500
Power cable types for battery wiring	Tecniflex FROR	Tecniflex FROR	Tecniflex FROR	Tecniflex FROR	Tecniflex FROR
Cross sectional area of aux cables	1	1	1	1	1
Aux cable types	Fror	Fror	Fror	Fror	Fror

19 Installation, Operation and Maintenance of Accessories

Table of Electrical Characteristics

Power Table LK-500

COMPONENTS	Unit of measurement	Description 500
Electric battery	Type	Armoured elements
Regulation	Signal	SSR + Pwm
Power/Current absorption	kW / A	8/12
Power supply	Volts	400 AC
Cross sectional area of power cables	mm^2	2.5

Power Table LK-750

COMPONENTS	Unit of measurement	Description 750
Electric battery	Type	Armoured elements
Regulation	Signal	SSR + Pwm
Power/Current absorption	kW / A	12/18
Power supply	Volts	400 AC
Cross sectional area of power cables	mm^2	4

Power Table LK-1000

COMPONENTS	Unit of measurement	Description 1000
Electric battery	Type	Armoured elements
Regulation	Signal	SSR + Pwm
Power/Current absorption	kW / A	16/24
Power supply	Volts	400 AC
Cross sectional area of power cables	mm^2	6

Power Table LK-1250

COMPONENTS	Unit of measurement	Description 1250
Electric battery	Type	Armoured elements
Regulation	Signal	SSR + Pwm
Power/Current absorption	kW / A	20/30
Power supply	Volts	400 AC
Cross sectional area of power cables	mm^2	6

Power Table LK-1500

COMPONENTS	Unit of measurement	Descrizione 1500
Electric battery	Type	Armoured elements
Regulation	Signal	SSR + Pwm
Power/Current absorption	kW / A	24/37
Power supply	Volts	400 AC
Cross sectional area of power cables	mm^2	10

19 Installation, Operation and Maintenance of Accessories

Installation, Operation and Maintenance

Safety instructions and precautions

All operations must be performed by specifically instructed personnel and in compliance with applicable safety regulation for the type of installation.

- Before starting any procedure, ensure that the unit is electrically and mechanically safe as follows: switch off and then disconnect the mains power line ahead of the Lossnay Kanzen, press the emergency stop button, remove the relevant rearm keys, then disconnect the power line of the Lossnay Kanzen by turning off the main disconnector switch of the unit itself.
- Ensure that all moving parts have come to a complete stop and cannot be restarted, and that all thermal treatment components are at a safe temperature to touch.

Installation instructions

- Remove the components from the packaging, checking that all the parts indicated in the list at the beginning of this manual are present.
- Install the pre-wired electric battery (referring to the complete construction drawings) in the correct position, taking care not to damage the cable insulation or any of the more exposed components.
- A- Insert the electric pre-heating battery from the door side into the section indicated in the drawing of the Lossnay Kanzen on page 91, fitting the L-shaped shoulder profiles on the left hand side of the battery into the corresponding ‘inverted F’ guides fastened to the internal structure of the Lossnay Kanzen (fig. 10). Align the inner profile of the battery with the profile of the orifice for the flow of air from the exterior to the interior on the Lossnay Kanzen itself. Once the battery is correctly positioned, fasten the frame of the battery to the upper and lower F shaped guides with 2 self-tapping screws.
- B- Insert the electric post-heating battery from the panel side into the section indicated in the drawing of the Lossnay Kanzen on page 91, sliding the entire body of the battery into the corresponding ‘inverted C’ guides fastened to the inner structure of the Lossnay Kanzen (fig. 11). Align the inner profile of the battery with the profile of the orifice for the flow of air from the interior to the delivery duct on the Lossnay Kanzen itself. Once the battery is correctly positioned, fasten the frame of the battery to the two C shaped guides with 2 self-tapping screws.
- When installing both batteries, ensure that the copper bulb of the safety thermostat is fixed correctly to the upper part of the chassis (fig. 12) and that the power and auxiliary cables are positioned correctly on the side facing the inspectable part of the machine.
- Route the cables from the battery to the utility compartment via the cable channels already installed in the machine, closing all the air seal partitions between the different sections of the Lossnay Kanzen correctly.
- Using the wing bolts and washers supplied, fasten the electrical panel to the main electrical panel plate in the correct position indicated by the relevant identification label (fig. 13). To ensure correct identification, the labels are different in colour and are printed with the name of the corresponding board.
- The green label on the outer left hand side of the board is for the “Pre-heating Kit”, while the magenta label on the inner right hand side of the board is for the “Post-heating Kit”.

Installation and electrical connections

- Connect the power cables directly to the terminals on the main magnetothermal circuit breaker, ensuring that the cables are not strained, which could cause accidental disconnection, as indicated by the electrical diagram on pages 92 and 93.

In particular:

- 1) Strip the insulation from the end of the power cable leading from the electrical battery and connect to the spring fastener terminal board on the kit panel (fig. 14).
- 2) Insert the connector pin on the safety thermostat cable (also leading from the battery) into the relevant female terminal on the 10E1 electronic board (terminal XBM13 for pre-heating kit or terminal XBM16 for post-heating kit).
- 3) Connect the SSR relay control cable leading from the kit panel to the relative terminal on the 10E1board (terminal XBM12 for pre-heating kit or terminal XBM15 for post-heating kit).

Installation, Operation and Maintenance of Accessories

- 4) When installing the post-heating kit, install the relevant temperature sensor (fig.9) after the battery itself. Ideally, install the sensor on the supply duct or, if a humidification section is also installed, after the battery itself and before the vapour distributor.
- Apply the relevant label with safety and warning information regarding the operation of the battery itself (fig.15) on the cover panel of the compartment of the electric post-heating battery, or on the door of the pre-heating battery compartment.
- Also remember to apply the specific label warning of two separate live power lines, supplied with the kit, in the main electrical panel compartment.
- After installation and connection, arm the main panel switch, then turn and hold the 7SA1 spring return selector while simultaneously lifting the magnetothermal circuit breakers of the electric batteries installed to rearm.

N.B. For safety, this step must be performed each time power to the main electrical panel is interrupted and whenever power has been disconnected for maintenance.

Monitor the functions of the electric heating systems installed from the electronic board display to check and/or modify the set point, view the reading of the relevant sensor and check for alarms. Refer to the general manual supplied with the Lossnay Kanzen and use the double entry table below to verify setting logic configurations.

Table of operating modes of the electric pre-heating and post-heating batteries

	Pre-heating Ext. Ref. Temp. Sensor	**Pre-heating + Bypass syst. Installed** Ext. Ref. Temp. Sensor	**Post-heating** Post-heating Ref. Temp. Sensor
Outdoor unit in “Heating” mode	From 5°C=(100%) to 0°C=(0%)	From -10°C=(100%) to -5°C=(0%)	From 10°C=(100%) to 15°C=(0%)
Outdoor unit in “Cooling” mode	OFF		From 10°C=(100%) to 15°C=(0%)
Outdoor unit in “Stop” mode	OFF		

Figures

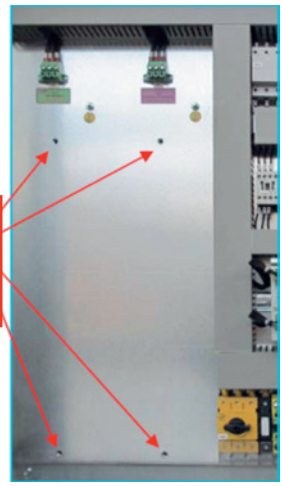


fig. 1

fig. 2

fig. 3

19 Installation, Operation and Maintenance of Accessories

fig. 5

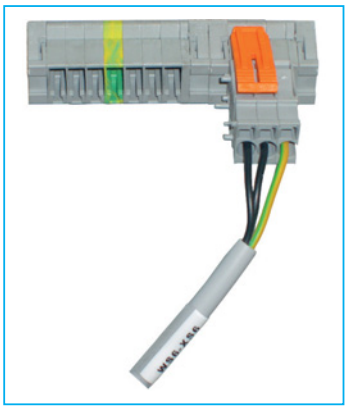


fig. 6

Safety thermostat circuit breaker

fig. 7

Bonding conductor between QEG and electrical pre/post-heating kits

fig. 8

fig. 9

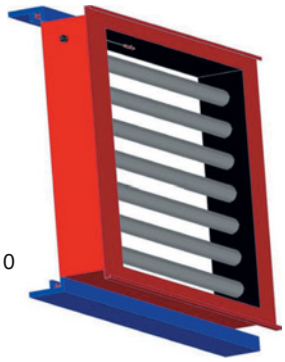
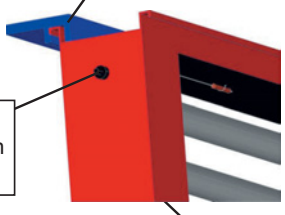


fig. 10

fig. 11
Inverted C guides

fig. 12
Thermostat in upper part



Safety thermostat rearm button
Wait a few minutes to allow the contact state to reset, then unscrew the guard and press the button fully.

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fig. 13

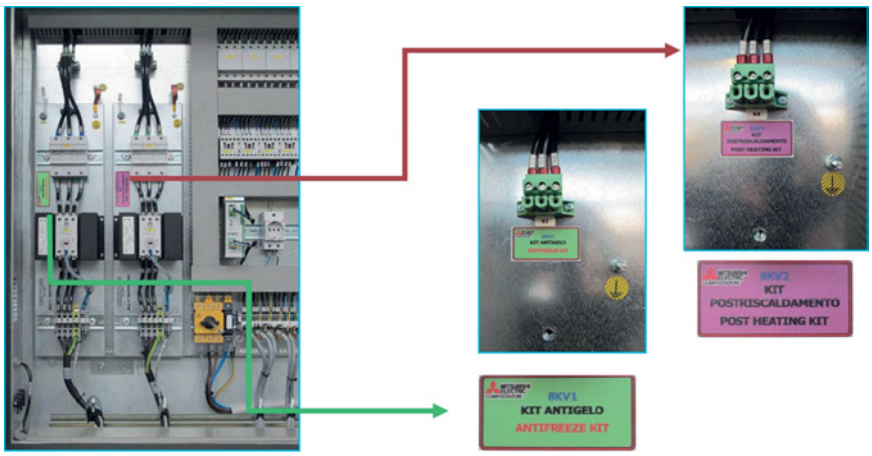


fig. 14

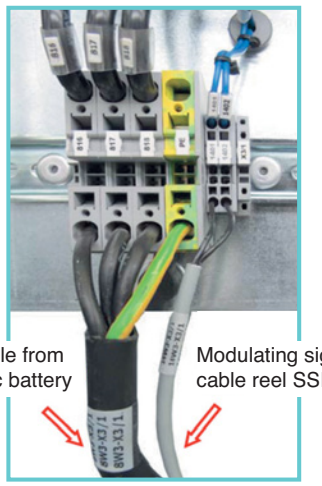


fig. 15

19 Installation, Operation and Maintenance of Accessories

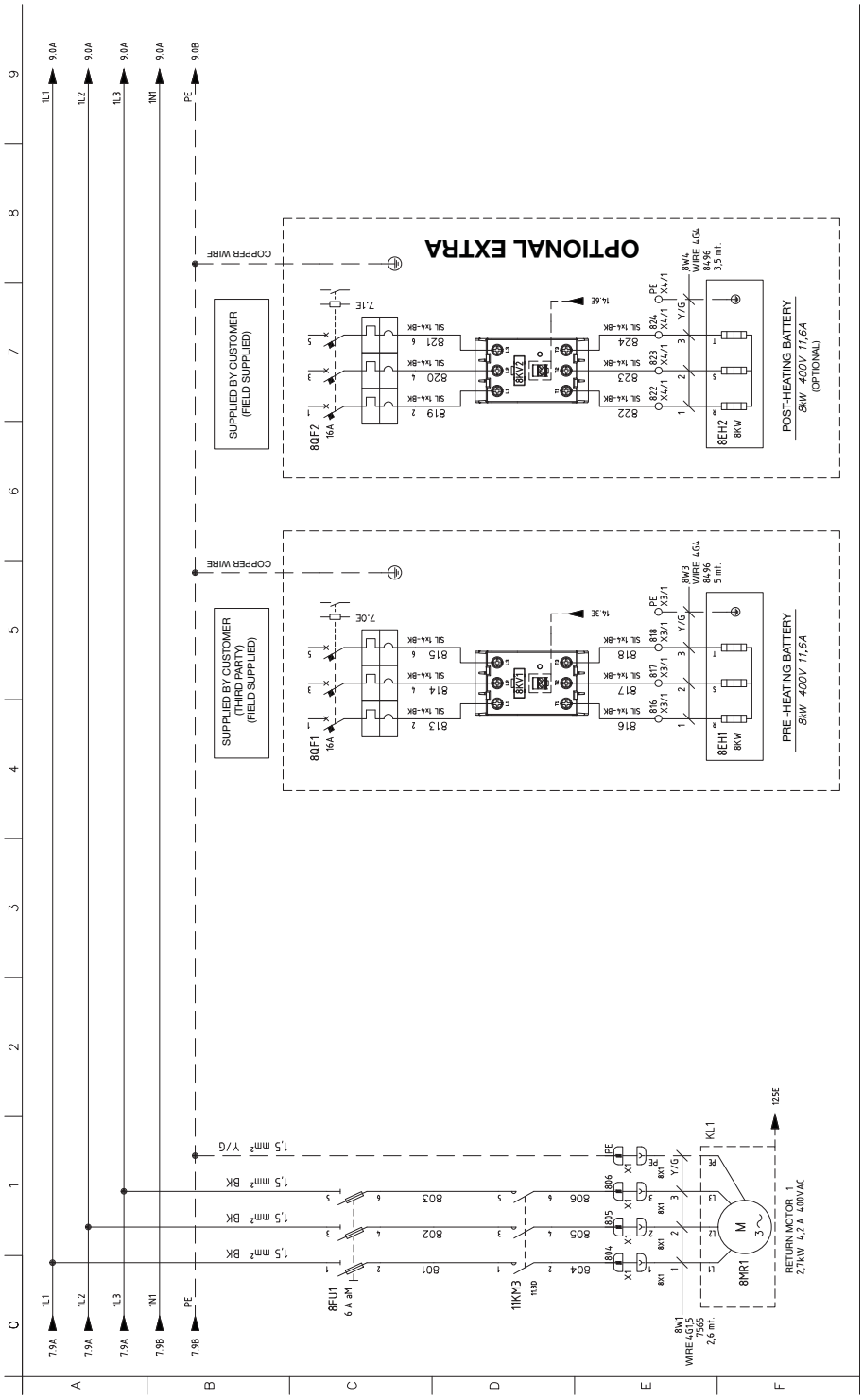
Attachments:

- Explanatory image identifying battery installation areas.
- Electrical wiring diagrams of Pre-heating Kit.
- Electrical wiring diagrams of Post-heating Kit.

Attachment 1 - Lossnay Kanzen and electrical battery installation areas.

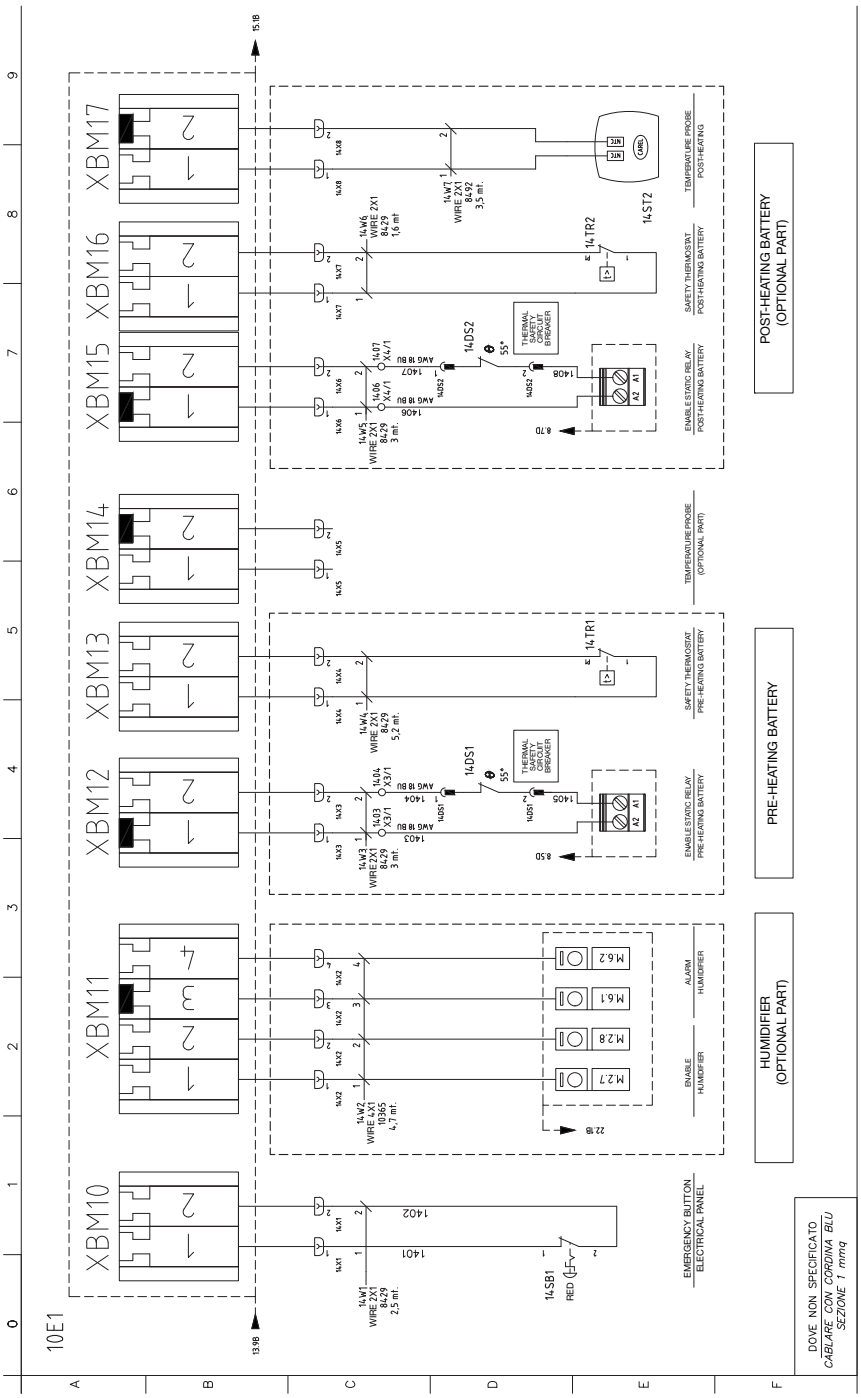
Installation, Operation and Maintenance of Accessories

Electrical Wiring Diagram for Pre/Post-heating Kit



19 Installation, Operation and Maintenance of Accessories

Electrical Wiring Diagram for Pre/Post-heating Kit



Installation, Operation and Maintenance of Accessories

19.4 Humidification Section Kit for the Lossnay Kanzen

The kit consists of the following:
- Mechanical humidification section containing vapour production and vapour distributor units (Fig. 1).
- Carel UE015HLX plus vapour production unit (Qty 1) (Fig. 2).
- Stainless steel vapour distributor (Qty 1).
- Auxiliary cable connected to production unit and with connector plug on panel side (Qty 1).
- Return relative humidity sensor with connector pins (Qty 1).
- Supply relative humidity sensor with connector pins (Qty 1).
- Installation, Operation and Maintenance manual (Qty1) (Fig. 4).

The technical and construction characteristics of the components listed above are described as follows:

Vapour Production Unit
- Immersed electrode type
- Requires connection to mains water supply (Fig. 3).
- Requires connection to drainage system with pipes (Fig. 3) resistant to temperatures of at least 100°C.
- Must be connected electrically to the separate, dedicated electrical panel with adequate protection systems, via the power cable installed in situ (Fig. 5).
- Must be connected electrically to the main electrical panel with the auxiliary cable already connected to the humidification section and with a quick connector plug on the electrical board end (Fig. 5)
- The sensors, supplied together with the unit ready-wired and located on the inner section, must be connected to the electronic board inside the vapour production unit electrical cabinet, in accordance with the diagram included in the Operation and Maintenance manual.

Vapour Distributor Unit
- The distributor is already assembled with and connected to the production unit, and requires no additional procedures for installation.

Power And Auxiliary Wiring
- For the power connection cable, use a cable of adequate cross section for the power delivered and in relation to the distance from the power board, and observe the requisites of applicable legislation in the country of installation.
- 4m x 1 mm^2 FROR cable for auxiliary connections.

Humidity Sensor
- Carel ASDH/SPDC return humidity sensor. Range 10-90%, Voltage 24V DC (Fig 6).
- Carel ASDH/SPDC supply humidity sensor. Range 0-100%, Voltage 24V DC.
- Connect directly to the production unit board (Fig. 7) as indicated in the diagram provided in the Carel manual.

Electrical Wiring Diagram
- Wiring diagrams for power and auxiliary circuits derived from main electrical wiring diagram, which are normally supplied with each Lossnay Kanzen. These diagrams provide the complete list of parts used in the execution of the circuits and indicate the conformation of the aforementioned external cables and the power and voltage values involved.

Operating Manual
- The original Installation, Operation and Maintenance manual provided by Carel. This must be referred to in order to ensure that the humidification section is commissioned and operated correctly.

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Table of Humidification Section Power Ratings

LOSSNAY KANZEN m³/h	PRODUCTION kg/h	TYPE Imm. electrodes	REGULATION Signal	ELECTRICAL POWER ABSORPTION kW/A	POWER SUPPLY Volts AC
5000	15	“ “	Internal 0-1 V	11.2/16.2	400
7500	18	“ “	Internal 0-1 V	13.5/19.5	400
1000	25	“ “	Internal 0-1 V	18.7/27.1	400
12500	35	“ “	Internal 0-1 V	26.2/37.9	400
15000	45	“ “	Internal 0-1 V	33.7/48.7	400

Table of Weights

COMPONENTS	Weight in kg LK-500	Weight in kg LK-750	Weight in kg LK-1000	Weight in kg LK-1250	Weight in kg LK-1500
Cabinet (production unit)	15	20	25	30	35
Additional machine section	80	90	100	110	120
Wiring	3	4	5	6	7
Temperature sensor	0.3x2	0.3x2	0.3x2	0.3x2	0.3x2
Diagrams and manuals	0.2	0.2	0.2	0.2	0.2
Fasteners and other hardware	0.5	0.5	0.5	0.5	0.5
Total	**100**	**115**	**130**	**150**	**160**

The following attachments are included:

- Electrical connection diagrams, attached in manual, which must be kept on board the machine.
- Operation and maintenance manual, inside the humidification section compartment.

Figures

fig. 1

fig. 2

19 Installation, Operation and Maintenance of Accessories

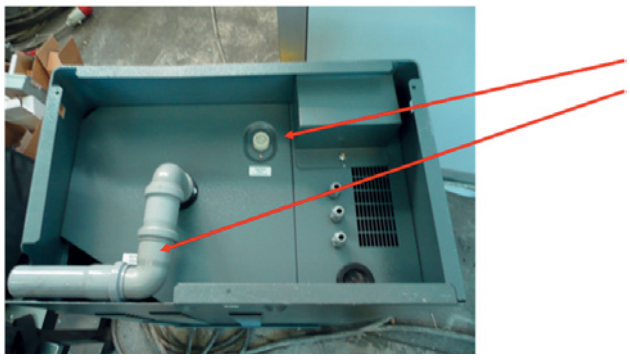


fig. 3

fig. 4

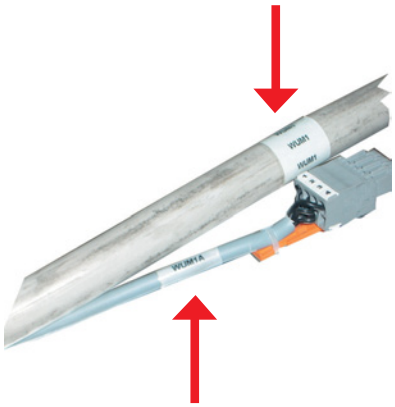


fig. 5

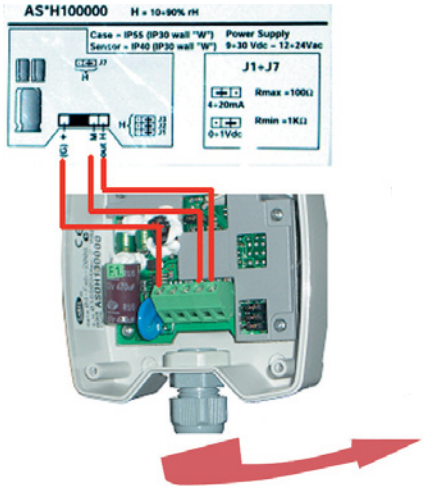


fig. 6

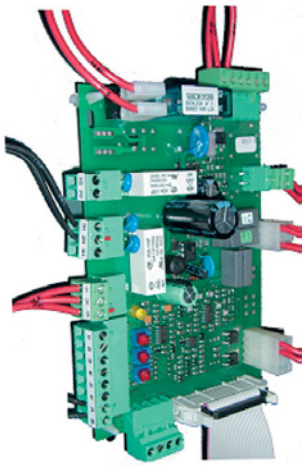
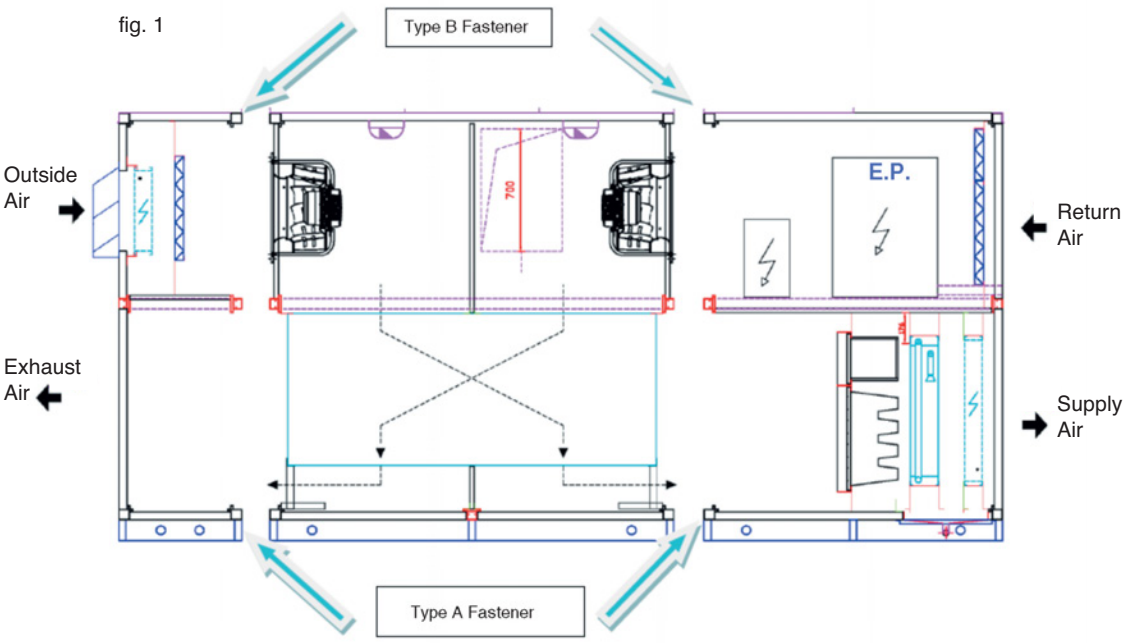


fig. 7

20 Assembley of Units in Multiple Sections

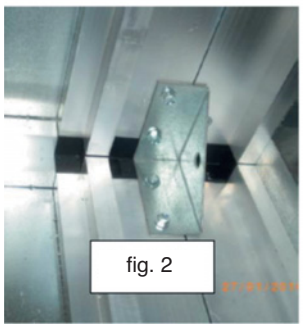
20. Manual for the assembly in situ of Lossnay Kanzen units shipped in multiple sections
Referring to the drawing in fig. 1, place the three elements of the Lossnay Kanzen alongside one another, aligning the inner corner braces with the joints of the machine (fig. 2), and aligning the elements for fastening the base (fig. 3) and the upper portion (fig. 4).

fig. 1



The fastener point zones are indicated in fig. 1. These must be connected together with nuts, washers and M8 screws, which are usually supplied with the UTA.

Inside view



Type B Fastener

Type A Fastener

Refer to fig. 4 for fasteners at the base of the unit (Type A) and to fig. 3 for fasteners for the upper portion of the unit (Type B).

20 Assembley of Units in Multiple Sections

Before assembling the sections, apply the adhesive seal strip supplied with the UTA to one or both of the joint surfaces. (fig. 5)

fig. 5

After assembly, re-route and reconnect the electrical wiring. Beginning from the section farthest from the compartment containing the electrical panel, identify the cables disconnected from the electrical panel terminal board after initial testing and stored coiled at the joint near the cable channel.

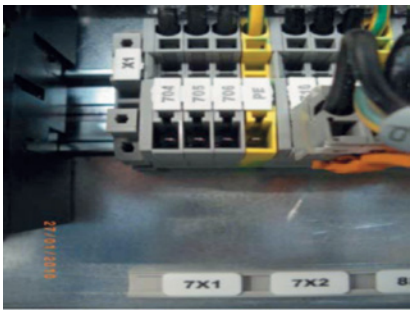
Start from the outdoor air section. Identify the cable for the external air sensor and the air tubes of the differential pressure switch for the outdoor air filters and route correctly through the plastic channel into the electrical panel compartment.

Move on to the motor section and identify the cables for the supply and return motors at the air passage orifice and at the recovery unit bypass shutter, and the tubes related to the recovery unit pressure switch and the motor pressure inlet points (these cables and tubes are all identified with specific symbols), and route them into the electric panel compartment.

As all the cables are already equipped with connector plugs (fig. 6) and marked clearly, simply connect each plug into the respective terminal connector (fig. 7), referring to the electrical wiring diagram supplied.

fig. 6

fig. 7



Example of cable-terminal board connection: the cable marked WMM1 is connected to the XMM1 terminal set.

20 Assembley of Units in Multiple Sections

Now connect the air tubes, taking care not to crush the tubes between the cables or between the partitions applied between the passages of the different sections of the Lossnay Kanzen (fig. 8).

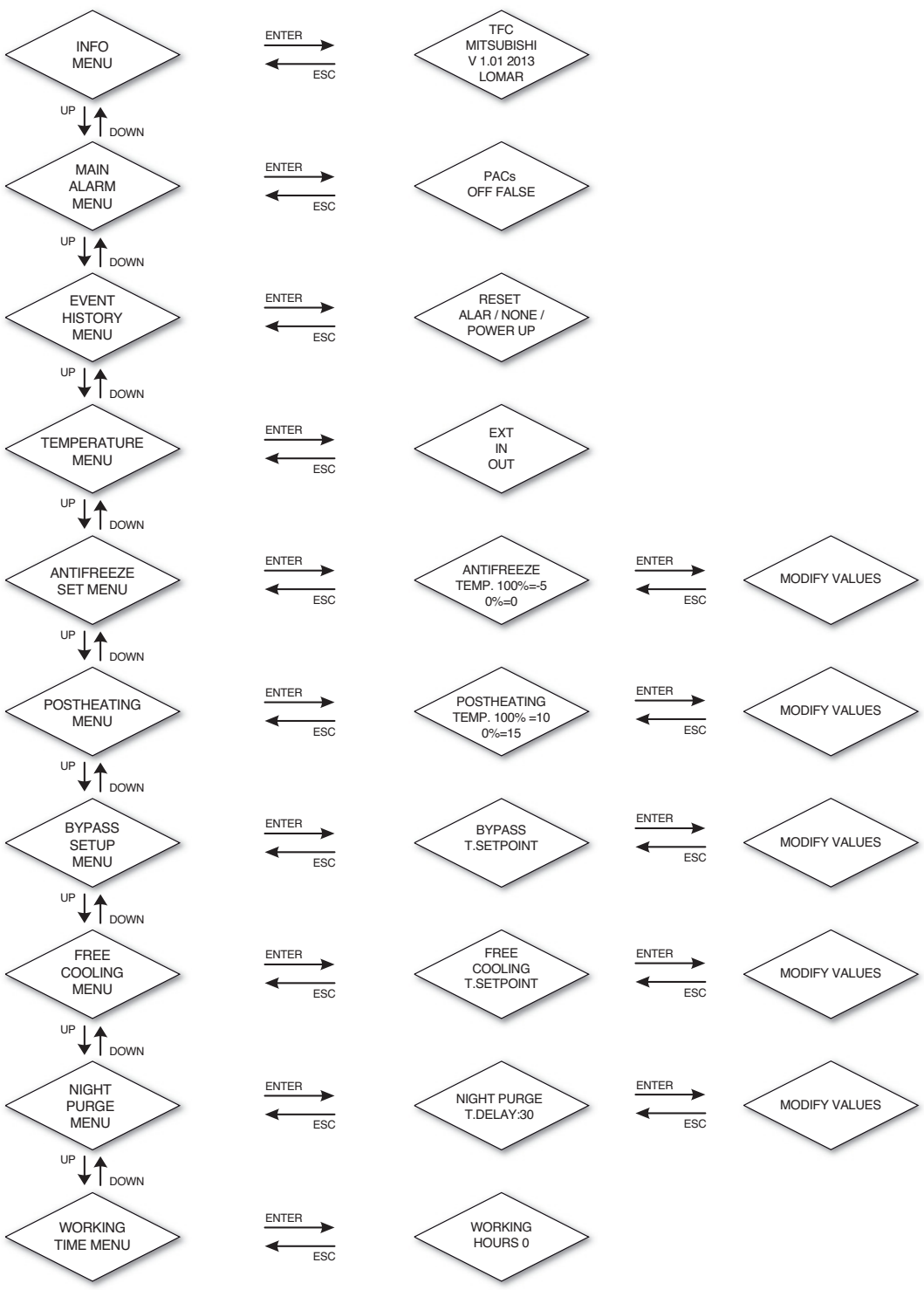
fig. 8

Example of tube – pressure switch connection
The pipe marked "– PD3 " is connected to the pressure inlet at the bottom of pressure switch PD3 and marked with the symbol "–" (fig. 9).

fig. 9

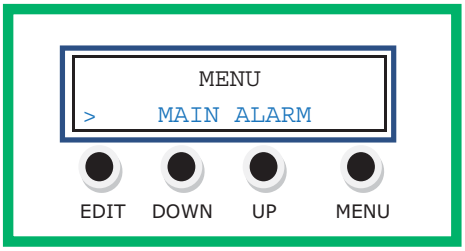
In the case of a unit supplied in six sections, perform the operations described previously for the lower section (base) first and then for the upper section.

21 Flow Chart of Main Board



22 Adjusting a Pre-heater Set Point

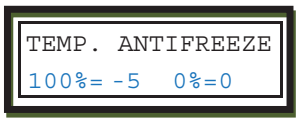
Refer to the control board display and the buttons illustrated in the following drawing:



When the machine is switched on, the display automatically shows the following screen:

Press the DOWN button repeatedly until the following screen is displayed to access the main menu, with options for accessing subsequent submenu screens:

Press EDIT to enter the Antifreeze Pre-heater menu. The following screen is displayed:
The cursor flashes on the last figure of the value set as the active set point.



Press EDIT to enter edit mode, then press UP or DOWN to set the new temperature desired.
Press EDIT to confirm the value, then, if necessary, press UP or DOWN to return to the desired display screen.

23 Spare Parts List

SAP CODE	MODEL	DESCRIPTION
274070	LK-500 EC	LK-500 ELECTRICAL CABINET
274108	LK-750 EC	LK-750 ELECTRICAL CABINET
274110	LK-1000 EC	LK-1000 ELECTRICAL CABINET
274111	LK-1250 EC	LK-1250 ELECTRICAL CABINET
274113	LK-1500 EC	LK-1500 ELECTRICAL CABINET
274114	LK-HPS	HEXAPOLAR SWITCH WITH ACCESSORIES
274116	LK-4P-PDB	4 POLES POWER DIST BLOCK 80/100 A
274117	LK-FH-1P	FUSE HOLDER 1 POLE+NEUTRAL 10.3X38
274118	LK-FH-3P	FUSE HOLDER 3 POLES 10.3X38
274119	LK-LVR	LOW VOLTAGE RELEASE 230VAC
274120	LK-PCB	LOSSNAY KANZEN MAIN PCB
274121	LK-FDP	FILTERS DIFFERENTIAL PRESSOSTAT
274122	LK-ECSC	ELECTRICAL COIL STATIC CONTACTOR
274123	LK-PHTS	POST HEATING TEMPERATURE SENSOR
274135	LK-HS	HUMIDIFIER - HUMIDITY SENSOR
274136	LK-DM	DAMPER MOTOR
274137	LK-PS-1PH	POWER SUPPLY -1PH 2.5A 230VAC-24VDC
274138	LK-R-4C	RELAY 4 CONTACTS 5A 24VAC
274139	LK-R-2C	RELAY 2 CONTACTS 5A 24VAC
274140	LK-LED	LED LIGHT
274141	LK-PT	PRESSURE/AIR FLOW TRANSDUCER
274142	LK-UTB-6	UNIV.TERMINAL BLOCK SPRING TYPE 6mm ST6
274143	LK-UTB-6PE	UNIV.TERMINAL BLOCK SPRING TYPE 6mm ST6P
274144	LK-REB	RED EMERGENCY BUTTON WITH KEY LOCK
274145	LK-LEDBL	LED LIGHT 24V BLUE
274146	LK-500-SFS	SUPPLY FAN LK-500 STD
274147	LK-500-RFS	RETURN FAN LK-500 STD
274148	LK-500-SFHP	SUPPLY FAN LK-500 HP
274149	LK-500-RFHP	RETURN FAN LK-500 HP
274150	LK-7500-SFS	SUPPLY FAN LK-750 STD
274151	LK-7500-RFS	REUTRN FAN LK-750 STD
274152	LK-7500-SFHP	SUPPLY FAN LK-750 HP
274153	LK-7500-RFHP	RETURN FAN LK-750 HP
274154	LK-1000-SFS	SUPPLY FAN LK-1000 STD
274155	LK-1000-RFS	RETURN FAN LK-1000 STD
274156	LK-1000-SFHP	SUPPLY FAN LK-1000 HP
274157	LK-1000-RFHP	RETURN FAN LK-1000 HP
274158	LK-1250-SFS	SUPPLY FAN FAU 12500 STD
274159	LK-1250-RFS	RETURN FAN FAU 12500 STD
274160	LK-1250-SFHP	SUPPLY FAN FAU 12500 HP
274161	LK-1250-RFHP	RETURN FAN FAU 12500 HP
274162	LK-1500-SFS	SUPPLY FAN FAU 15000 STD
274163	LK-1500-RFS	RETURN FAN FAU 15000 STD
274164	LK-1500-SFHP	SUPPLY FAN FAU 15000 HP
274165	LK-1500-RFHP	RETURN FAN FAU 15000 HP
274166	LK-DH	DOOR HANDLE
274167	LK-HD	HINGE DOOR
274168	LK-WN	WING NUT

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Printed in June 2014 SAP No. 271924

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