High-efficiency Cellar Cooling

LITEAIR SYSTEM

HUBBARD

ECA Qualifying Cellar Coolers & Cool Storage Systems

LC/LE INSTALLATION MANUAL

Qualified for Energy Technology List
www.eca.gov.uk
TM
Authorised User No. 00460

Choice of 4 condensing units

- 2.7KW - 6.5KW

Choice of 4 stainless steel evaporators

- Electronic [E] or Mechanical [M]
- Optional factory fitted heater

The Hubbard LITEAIR ECA Qualifying system is designed to energy-efficiently chill cellars and perishable goods storage areas.

Suitable for a wide range of products it is ideal for the storage of barreled beers and bottled beverages.

Designed for quietness the condensing unit (LC) is housed in a self-healing smart steel case for internal or external mounting. The evaporator (LE) can be wall or roof mounted and contains the system's temperature controller.

A heating option is available where conditioning is required for the correct storage of cask conditioned ales.

The Range*
The Hubbard LITEAIR range comprises of four models. R410a refrigerant provides cooling capacities from 2.7 kW to 6.5 kW. These systems are supplied as standard for single phase operation with connection to either internal or external units.

* Cellar temperature from 12.7°C to 5°C DB, ambient 27°C.

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Condensing Unit (LC)
The Hubbard LITEAIR unit is designed for external placement and is finished in a light grey Plastisol 'self-healing' smart steel for long service. It can be floor or wall mounted.

Its slim design makes it ideal for situations where space is limited and this also reduces the visual impact of the installation. The access panels are easily removable for service of the main components. Including the compressor, condenser coil complete with fan for quiet operation, HP and LP safety switch HP fan control switch and compressor starter gear.

Evaporator Unit (LE)
The Hubbard LITEAIR evaporator consists of a stainless steel cased enclosure which can be ceiling mounted as standard, or wall mounted.

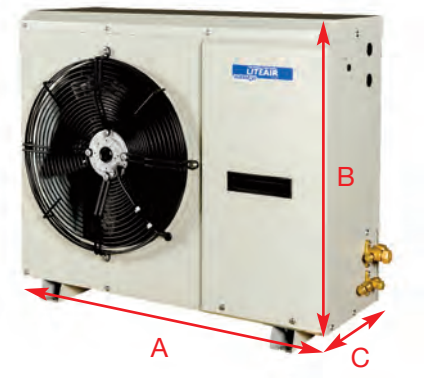
Evaporators are supplied ready assembled with an expansion valve device, and an electric controller (mechanical option) which operates the compressor directly through an interconnecting control loop. The LITEAIR requires a 4 core (including earth) interconnecting cable. The cable size is dependent on whether the supply is bought to the evaporator or condensing unit.

Condensing unit Features:
- Fuse Protection
- Rotary compressor
- Condenser fan
- HP/LP pre-sets
- HP condenser fan control switch

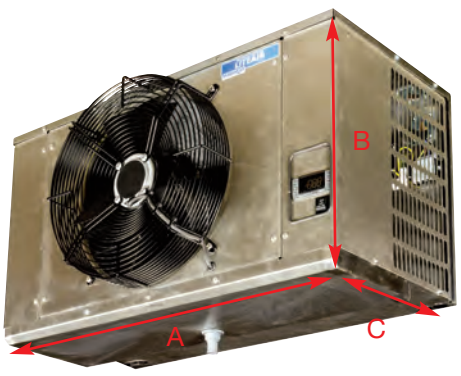
Evaporator Section Features:
- Fused component protection
- Expansion device for refrigerant control
- Mechanical or electronic control

System options:
- Factory fitted electric heater

Condenser model	Dimensions (mm)			
LITEAIR	width (A)	height (B)	depth (C)	weight (kg)
LC75	720	610	250	42
LC100	720	610	250	42
LC150	800	765	320	60
LC200	800	765	320	64



Evaporator	Dimensions (mm)			
LITEAIR	width (A)	height (B)	depth (C)	weight (kg)
LE75	805	450	475	25
LE100	805	450	475	27
LE150	805	450	475	27
LE200	865	525	525	40



INSTALLATION GUIDE

LC LITEAIR Condensing Unit Location
The Hubbard LITEAIR LC unit can either be mounted on a level surface or suspended from a vertical wall.

The unit should always be mounted on a load bearing wall and NOT a partition wall.

The sides should have a minimum clearance from obstruction of 600mm and the minimum clearance for the front of the machine should be 1.0 metres. The minimum clearance for the rear of the machine should be 130mm.

Fixing
Two-off hole fixings and two-off slot fixings suitable for M10 fixings are provided in the base of the unit to secure the unit to a suitable plinth, or to wall mount brackets.

If required, the contractor should install the unit on anti-vibration pads.

Service connections
The refrigerant pipe and electrical connections are located at the right hand end of the unit. Ensure there is adequate air entry at the back of the unit.

NB
ENSURE THE CONDENSER HAS ADEQUATE CLEARANCE AROUND IT AND IS NOT AFFECTED BY NEIGHBOURING CONDENSING UNITS AND OTHER OBSTRUCTIONS.

LE LITEAIR Evaporator Unit Location
The Hubbard LITEAIR LE unit should be mounted level on a load bearing wall or ceiling. The minimum distance from the floor should be 1.8 metres to ensure good air convection.

The sides should have a minimum clearance from obstruction of 100mm and the minimum clearance for the front of the machine should be 1.5 metres.

Fixing
The unit should be fixed to the wall using two-off rear fixings or to the ceiling using the two-off top fixings. 10mm Rawl Bolts with large steel washers are recommended for fixing to a local load bearing wall or ceiling. Locking screw holes to be used to prevent equipment moving once installed.

Service connections
The refrigerant pipe connections are accessed through the left hand side panel.

Cable entry is on the right hand side of the unit. A plastic drain connector is supplied to be site fitted onto the condensate tray.

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Capacities R410a

LITEAIR Model	Supply	Total cooling duty 12.7°C db 10°C wb internal		Total cooling duty 5°C db (1) 3.5°C wb internal		Recommended line sizes for max 20m run*	
		kW	Btu/hr	kW	Btu/hr	Suction	Liquid
LC75 LE75	1PH	2.7	9212	2.1	7165	1/2″	1/4″
LC100 LE100	1PH	3.4	11601	2.7	9212	5/8″	1/4″
LC150 LE150	1PH	5.1	17401	4.0	13648	5/8″	3/8″
LC200 LE200	1PH	6.5	22178	5.1	17401	3/4″	3/8″

(1) For operating temperatures below 8°C use Electronic Controller only (Not Electro mechanical control option).

Technical data LC condensing Units:

LC Model	Refrigerant Connections		Condenser Fans		Size Reference	Weight kg (dry)	Noise Levels Free field @2m - internal @3m -external
	Suction	Liquid	No.	m^3/s			
LC75	1/2″	1/4″	1	0.54	1	42	61
LC100	5/8″	1/4″	1	0.45	1	42	48
LC150	5/8″	3/8″	1	0.45	2	60	47
LC200	3/4″	3/8″	1	0.95	2	64	53

LC Model	Case dimensions mm			Mounting centres mm		Airflow clearance mm		
	Width	Height	Depth	Width	Slot size	Sides	Back	Front
LC75/100	720	610	250	570	240	600	130	1000
LC150/200	800	765	320	620	310	600	130	1000

Technical data LE evaporating Units:

LE Model	Connections		Evaporator fans		Air Throw m	Weight kg (dry)	Drain connection	Heating Cap kW
	Suction	Liquid	No.	Diameter mm				
75	1/2″	1/4″	1	350	7.5m	25	3/4″ BSP	1.5
100	5/8″	1/4″	1	350	12m	27	3/4″ BSP	1.5
150	5/8″	3/8″	1	350	12m	27	3/4″ BSP	1.5
200	3/4″	3/8″	1	400	13.5m	40	3/4″ BSP	1.5

LE Model	Case dimensions mm			Mounting centres mm			Airflow clearance mm		
	Width	Height	Depth	Width	Depth	Slot size	Sides	Floor	Front
75/100/150	805	450	475	618 618	- 210	10 Wall 10 Ceiling	100	1800	1500
200	865	525	525	678	201	10	100	1800	1500

Electrical data:

LITEAIR R410a	Supply required	Compr. FLA	Condenser Fan(s)	Evaporator Fan(s) FLA	Total Cooling FLA	HRE Fuse FLA	Mains supply cores to conduit	Total no. of interconnecting cables
75	1 ph	4.0	0.35	0.52	4.87	10A	3 core	4 core
100	1 ph	5.5	0.35	0.73	6.58	10A	3 core	4 core
150	1 ph	8.6	0.35	0.73	9.68	16A	3 core	4 core
200	1 ph	10.4	0.65	0.73	11.75	20A	3 core	4 core

Table 7 - General service connections

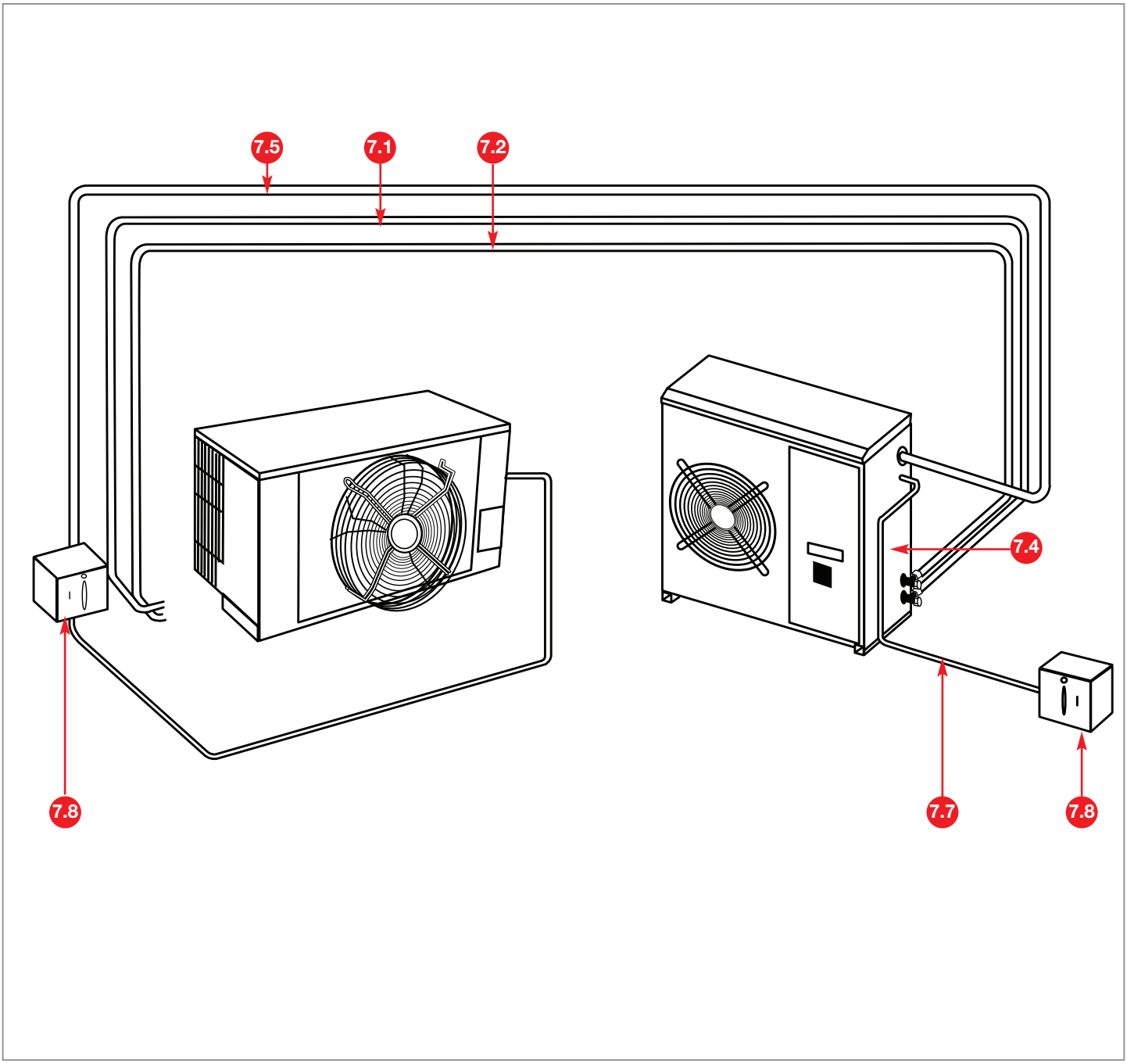


Table 7.1 - Unit connections and interconnections

7.1 - Liquid connections	See tables overleaf
7.2 - Suction connections	
7.4 - Condensing unit	
7.5 - Interconnecting cable	
7.7 - Power cable	
7.8 - Isolator/fuses	Supplied by others

SPECIAL NOTES

CHECK LOCAL REGULATIONS FOR INDOOR/OUTDOOR ELECTRICAL ISOLATION REQUIREMENTS AND REFRIGERATION PIPEWORK STANDARDS

General service connections and interconnections

Table 7.3 - ICC Refrigerant connections

	LC/LE 50	LC/LE100	LC/LE150	LC/LE200
Liquid connections	1/4″	1/4″	3/8″	3/8″
Suction connections	1/2″	5/8″	5/8″	3/4″

Table 7.4 - ICU Refrigerant connections

	LC/LE 50	LC/LE100	LC/LE150	LC/LE200
Liquid connections	1/4″	1/4″	3/8″	3/8″
Suction connections	5/8″	5/8″	5/8″	3/4″

Table 7.5 - Interconnecting cable - No. of cores

	LC/LE 50	LC/LE100	LC/LE150	LC/LE200
A/C Unit	4	4	4	4
A/C Unit + Heaters	4	4	4	4

Table 7.7 - Mains power cable - No. of cores

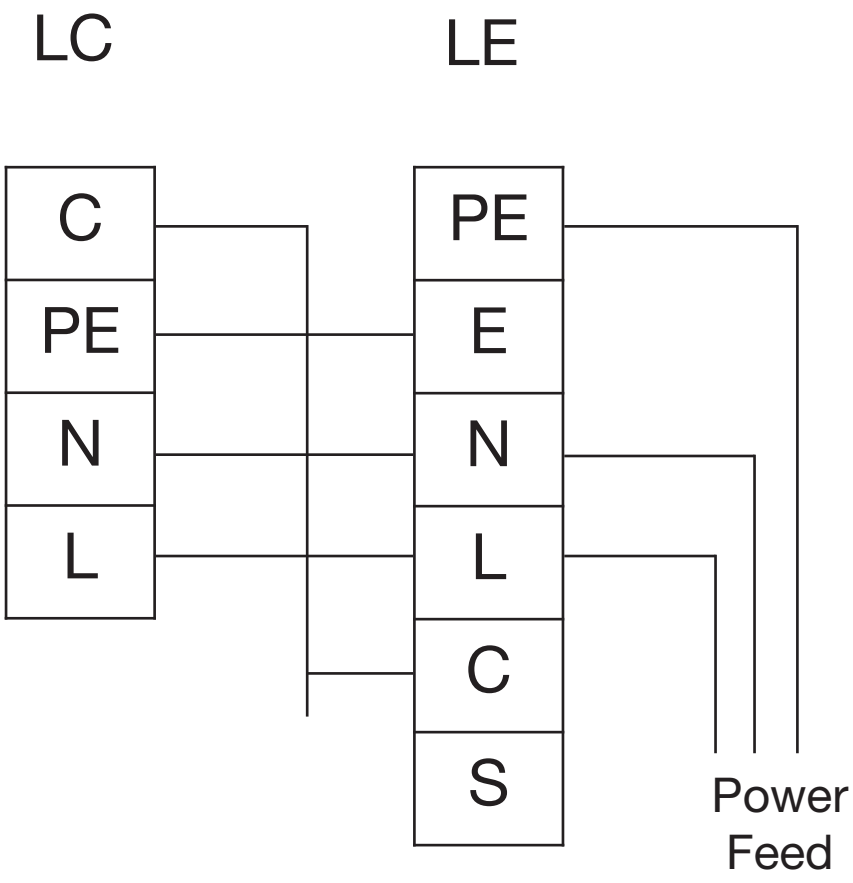
	LC/LE 50	LC/LE100	LC/LE150	LC/LE200
Single phase system 230/240 V 50 Hz	3	3	3	3
Single phase system 230/240 V 50 Hz	N/A	N/A	N/A	N/A

Table 7.8 - System fuse ratings - HRC

	LC/LE 50	LC/LE100	LC/LE150	LC/LE200
A/C Unit	10	10	16	20
A/C Unit + Heaters	16	16	16	20

Table 8 - power and control connections

figure 8.1 - electrical interconnecting diagram



8.1 - Wiring-up the unit

Electrical terminations should be made onto the screw terminal side of the indoor and outdoor unit terminal blocks.

8.2 - Wiring requirements

Power supply - Connection of isolation power supply to the outdoor unit.
Interconnecting wiring - Power and signal cables run between the outdoor and indoor unit.

Details of the fuse ratings and cable requirements are givem in tables 7.5, 7.7 and 7.8 of this manual

8.3 - Terminations

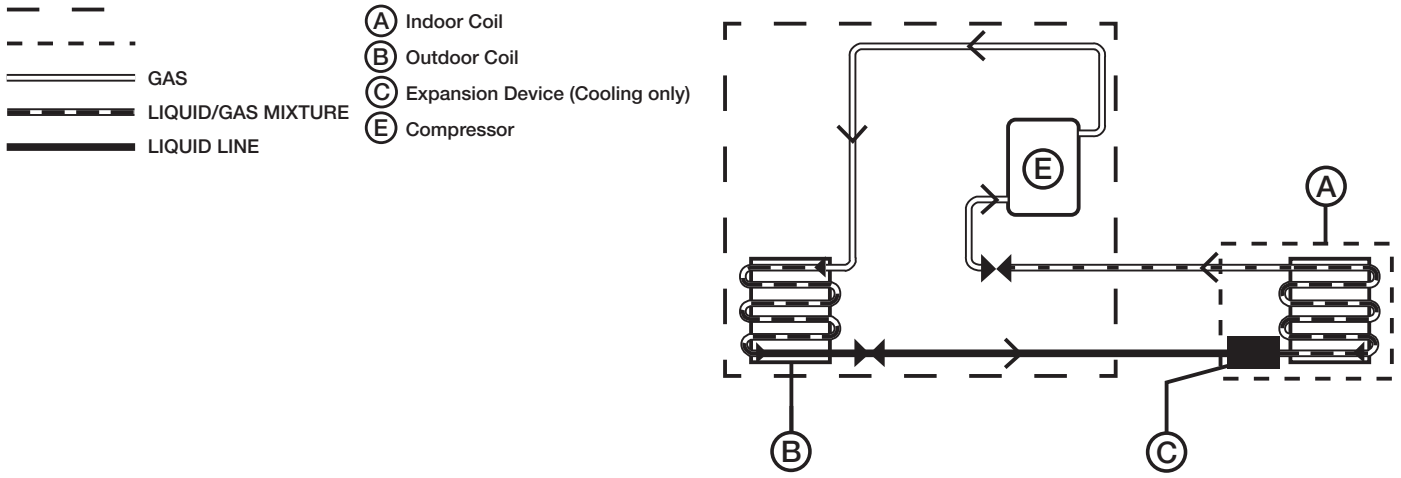
Details of terminations and interconnections are given in figure 8.1

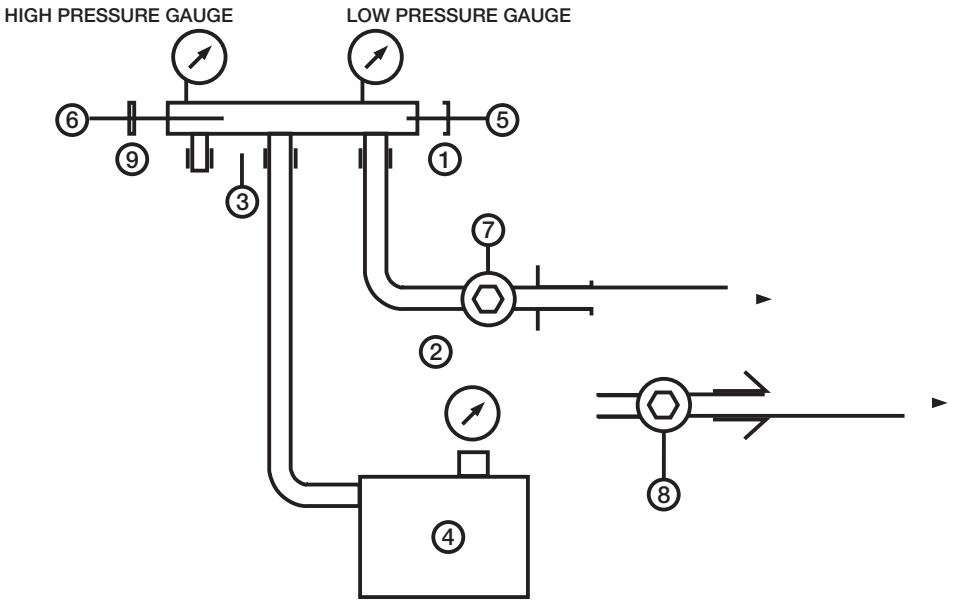
SPECIAL NOTES

DO NOT MEGGER OR FLASH TEST WITH ELECTRIC PCB'S IN CIRCUIT !!

INDOOR AND OUTDOOR UNITS SHOULD HAVE LOCAL ELECTRICAL ISOLATORS

Refrigeration commissioning





Evacuation, Charging and Refrigerant Procedures

After completing the refrigerant connections the following steps should be followed with reference to the above.

1. Service gauges - Connect the low pressure port (1) of a manifold gauge set to the suction line outdoor unit shut-off valve service port (2). Open both the outside unit service shut-off valves (7 & 8).
2. Vacuum pump - Connect the centre line port (3) of the manifold gauge set to the vacuum pump (4) and operate the pump to ensure a vacuum of 200 microns.
   Note: Ensure gauge low-pressure port (5) is open and high-pressure port (6) is closed.
3. System isolation - After achieving the specified system vacuum, close the gauge low-pressure port (5) and switch off the vacuum pump. Leave the system for one hour and check that the vacuum is maintained. If not, check for leaks, rectify and repeat the pumping down to 200 microns.
4. Refrigerant charging - Weigh in the charge using a charging station and any additional extended pipe run charge as detailed below.
5. Disconnect the vacuum pump and connect the gauge high-pressure port (9) to the discharge line of the outdoor unit shut-off valve (10), ensuring the gauge central port (3) is closed. Run the system, allow pressures to stabilise and ensure correct operation. After final commissioning remove the gauge set, fit all the valve caps and carry out the final refrigerant leak test.

Refrigeration commissioning

System charge weights

R410a	LC75	LC100	LC150	LC200
Site Base Charge	1450gms	1850gms	2050gms	2650gms
Top up charge/m>5m	25g	25g	40g	40g

Horizontal or Downflow application (suction line)

Table A		5	10	15	20	25
LC75	Suction	3/8″	1/2″	1/2″	1/2″	1/2″
	Liquid	1/4″	1/4″	1/4″	1/4″	1/4″
LC100	Suction	1/2″	1/2″	1/2″	5/8″	5/8″
	Liquid	1/4″	1/4″	1/4″	1/4″	1/4″
LC150	Suction	1/2″	1/2″	1/2″	5/8″	5/8″
	Liquid	3/8″	3/8″	3/8″	3/8″	3/8″
LC200	Suction	5/8″	5/8″	3/4″	3/4″	3/4″
	Liquid	3/8″	3/8″	3/8″	3/8″	1/2″

Upflow application (suction line)

Table B		Max. Size	Max. Lift	R410Ac - kg additional charge
LC75	Suction	3/8″	5	>5m = 25g/m (1/4″ Liquid)
LC100	Suction	1/2″	5	>5m = 25g/m (1/4″ Liquid)
LC150	Suction	1/2″	5	>5m = 40g/m (3/8″ Liquid)
LC200	Suction	3/4″	5	>5m = 40g/m (3/8″ Liquid)

Technical helpline 01473 892280

We reserve the right to change specifications without notice. Details correct at time of going to press.

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