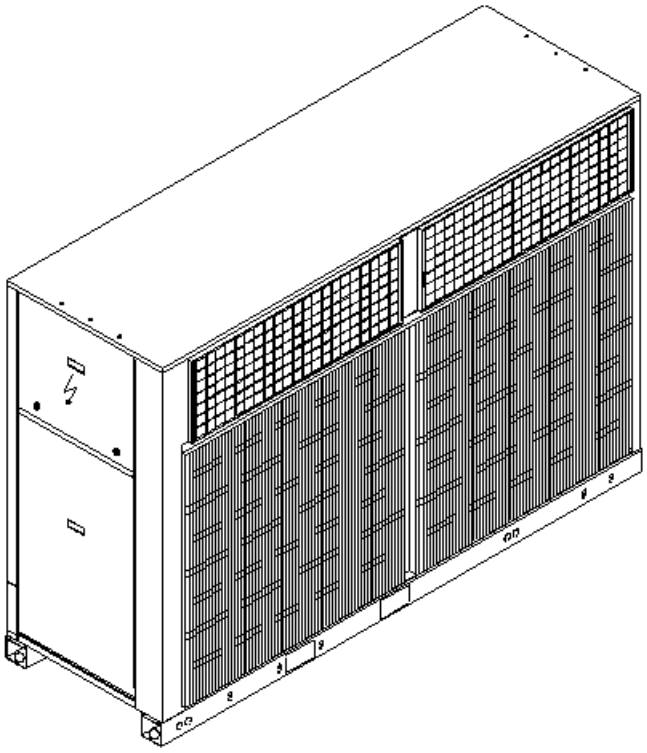
YORK
BY JOHNSON CONTROLS

LAK condensation pressure control



Options and Accessories, Installation manual

Ref.: N-40302_EN 0410

CE

Johnson Controls

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LAK condensation pressure control

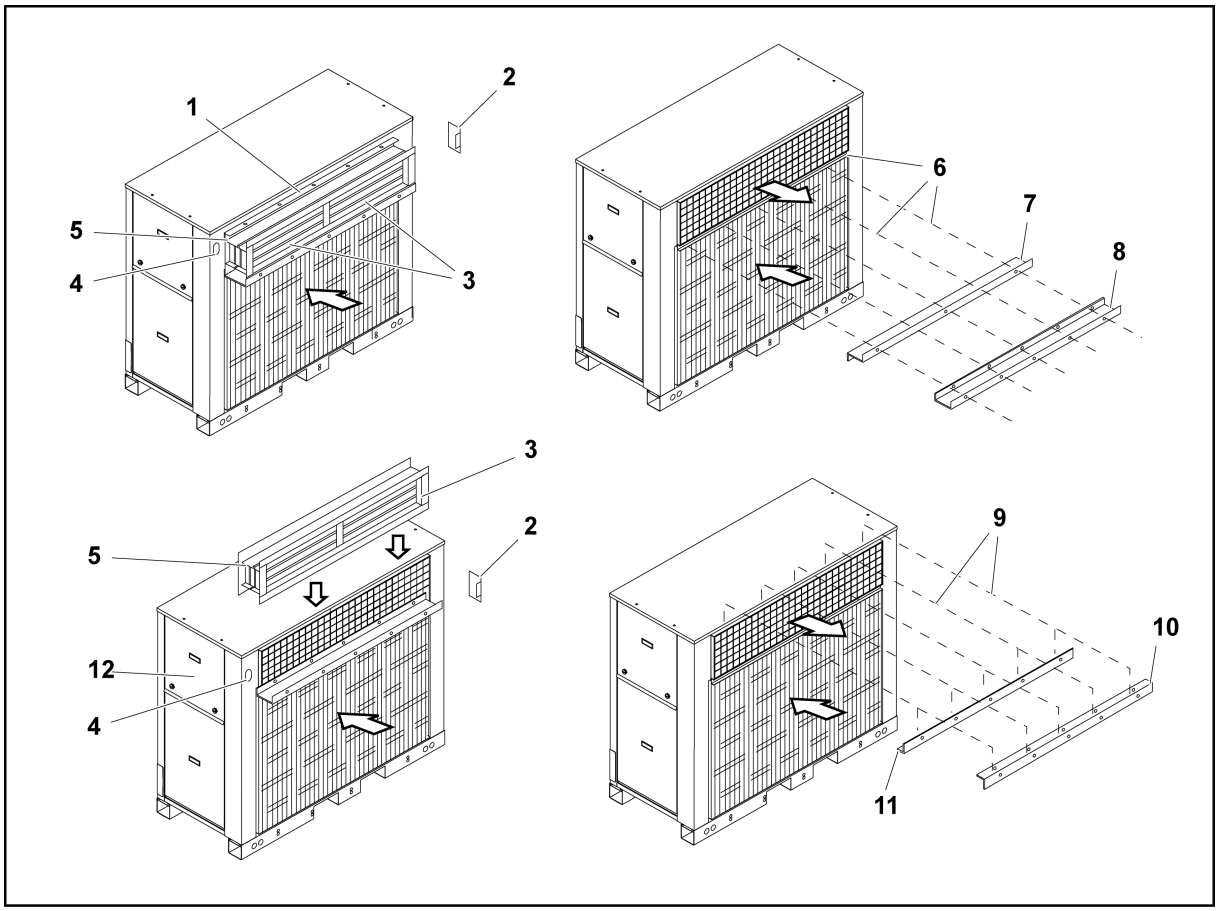
1.1 General Information

This option controls the summer cycle condensation pressure by varying the air flow circulating around the outdoor coils. This flow variation causes the condensation pressure to remain constant when outdoor temperatures are low.

1.2 Assembly

There are two layouts for assembly of the unit's air outlet:
- Horizontal air outlet.
- Vertical air outlet.

1.2.1 Horizontal air outlet

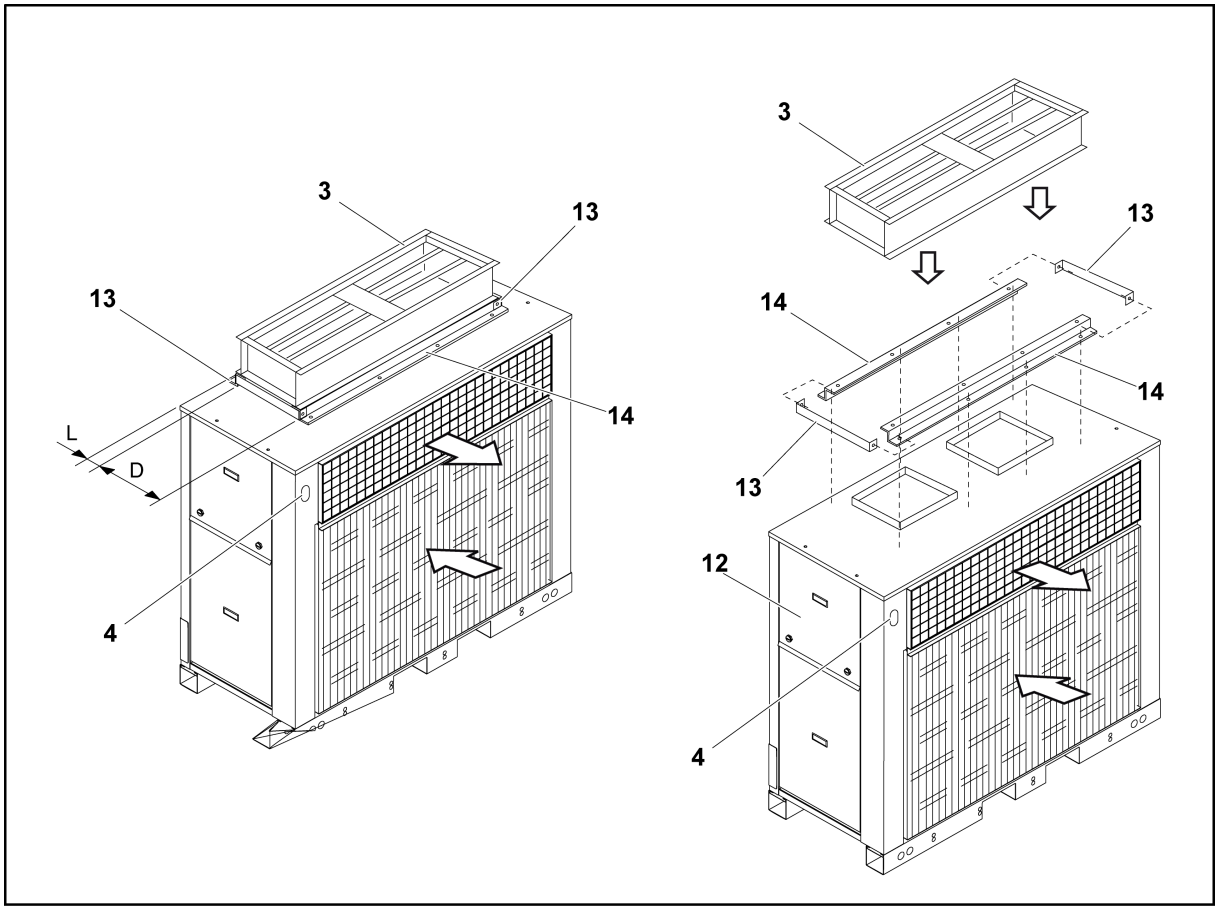


1	Upper unit support	7	Lower supports VCH 20A ÷ 40A VIR 25 ÷ 30A
2	Side shutter (on both sides)	8	Lower supports VCH 45A ÷ 90A VIR 45A ÷ 60A
3	Dampers	9	Upper support attachment
4	Ø22 hole and MC1 motor cable bushing	10	Upper supports VCH 20A ÷ 40A VIR 25 ÷ 30A
5	Motor	11	Upper supports VCH 20A ÷ 90A VIR 25A ÷ 90A
6	Lower support attachment	12	Control box

Unit	A	D
VCH 20 to 25A	115	363
VCH 30 to 40A	60	363
VCH 45 to 60A	20	463
VCH 75 to 90A	20	463

1. Check that the packaging is not damaged or knocked.
2. Unlock the motor **-5-** and check that the louvers open and close correctly when force is applied.
3. Disconnect the power supply to the unit.
4. Dispose of the 2 supports **-14-** and the 2 shutters **-13-** (see figure *Vertical air outlet, see on page 4*) provided for the vertical air outlet version.
5. Fit the lower support **-7-** or **-8-** supplied, according to indication **-6-**.
6. Secure the support using the self-tapping bolts of the accessory.
7. Support the dampers **-3-** on the previously fitted support with the motor on the part closest to the control panel.
8. Fit the upper support **-10-** or **-11-** and secure it to the unit frame **-1-** using the holes and the self-tapping bolts supplied, according to indication **-9-**.
9. Secure the dampers to the lower and upper supports using the self-tapping bolts supplied.
10. Fit the side shutters **-2-** as shown in the figure.
11. Open the panels on the control panel **-12-** and the rear right (compressor area).
12. Fit the electrical components as indicated in *Installation, see on page 6*.
13. Connect the electricity supply and programme the regulator.
14. Close the panels.

1.2.2 Vertical air outlet



1	Upper unit support	8	Lower supports VCH 45A ÷ 90A VIR 45A ÷ 60A
2	Side shutter (on both sides)	9	Upper support attachment
3	Dampers	10	Upper supports VCH 20A ÷ 40A VIR 25 ÷ 30A
4	Ø22 hole and MC1 motor cable bushing	11	Upper supports VCH 20A ÷ 90A VIR 25A ÷ 90A
5	Motor	12	Control box
6	Lower support attachment	13	Vertical outlet shutters
7	Lower supports VCH 20A ÷ 40A VIR 25 ÷ 30A	14	Vertical outlet supports

Unit	A	D
VCH 20 to 25A	115	363
VCH 30 to 40A	60	363
VCH 45 to 60A	20	463
VCH 75 to 90A	20	463

1. Check that the packaging is not damaged or knocked.
2. Unlock the motor and check that the louvers open and close correctly when force is applied.
3. Disconnect the power supply to the unit.
4. Dispose of the upper support **-10-** or **-11-** and the lower support **-7-** or **-8-** (see figure *Horizontal air outlet, see on page 2*), depending on the model, provided for the horizontal air outlet version.
5. Fit the vertical outlet supports **-14-** at the measurements indicated according to the model and according to the vertical outlet assembly diagram, using the self-tapping bolts supplied.
   - Both supports are secured to the ceiling in VCH 20 to 60 models
   - The coil-side support is secured to the ceiling and the panel-side support is secured to the vertical side of the lengthways ceiling reinforcement on VCH 75 to 90 models
6. Support the dampers **-3-** on the previously fitted supports with the motor on the part closest to the control panel **-12-**.
7. Secure the damper to the supports using the self-tapping bolts supplied.
8. Secure the vertical outlet shutters **-13-** to the supports using the self-tapping bolts supplied.
9. Open the panels on the control panel **-7-** and the rear right (compressor area).
10. Fit the electrical components as indicated in *Installation, see on page 6*.
11. Connect the electricity supply and programme the regulator.
12. Close the panels.

1.3 Installation

CAUTION

Loose connection terminals produce overheating of cables and terminals. The unit will work incorrectly and there is a risk of fire.

1. Fit control CP1 and relays RL1 and RL2 (in VCH-45/90A only) **-1-** on the DIN guide of terminal strip X1.

2. Move contactors KM1 and KM2 (compressors) so that the auxiliary side contacts supplied can be connected.

3. Unscrew the caps protecting these threads.

4. Screw the pressure switches onto the free upper inputs **-A-** and **-B-**, of the respective upper cooling circuits.

5. Connect the pressure switch cables and secure them using the ties supplied together with the cables for the existing installation.

6. Pass the pressure switch cables through the hole indicated on the electrical box diagram using a Ø19 mm bushing.

7. Connect the pressure switch cables to the control (on 2-compressor cables only).

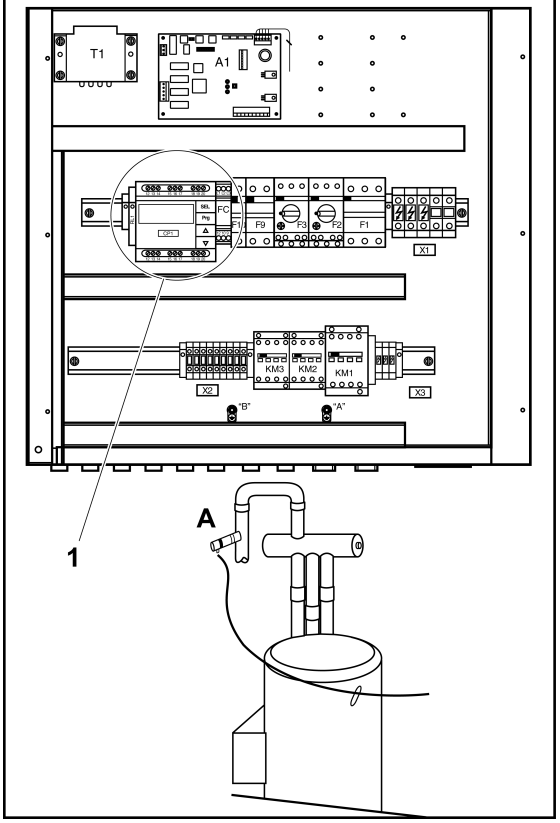
8. Remove the cover from the damper motor, pass the damper cable through and connect it as indicated in the corresponding diagram.

9. Make a 22 mm diameter hole in the front left panel next to the damper motor and fit the packing gland. Pass the motor cable through.

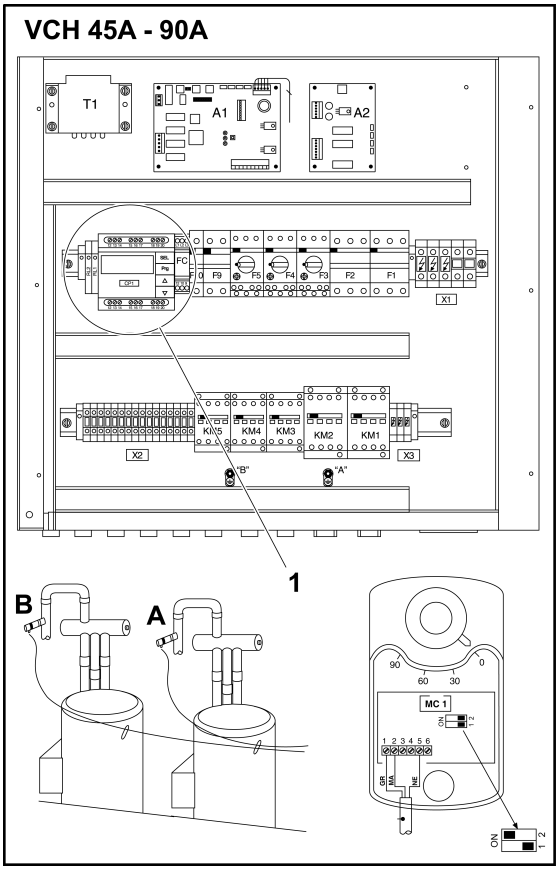
10. Then pass the motor cable through a bushing at the base of the electrical box and connect the cables.

11. Connect all of the cables supplied according to the wiring diagrams in section *Electrical connections, see on page 7*.

VCH 20A - 40A



VCH 45A - 90A

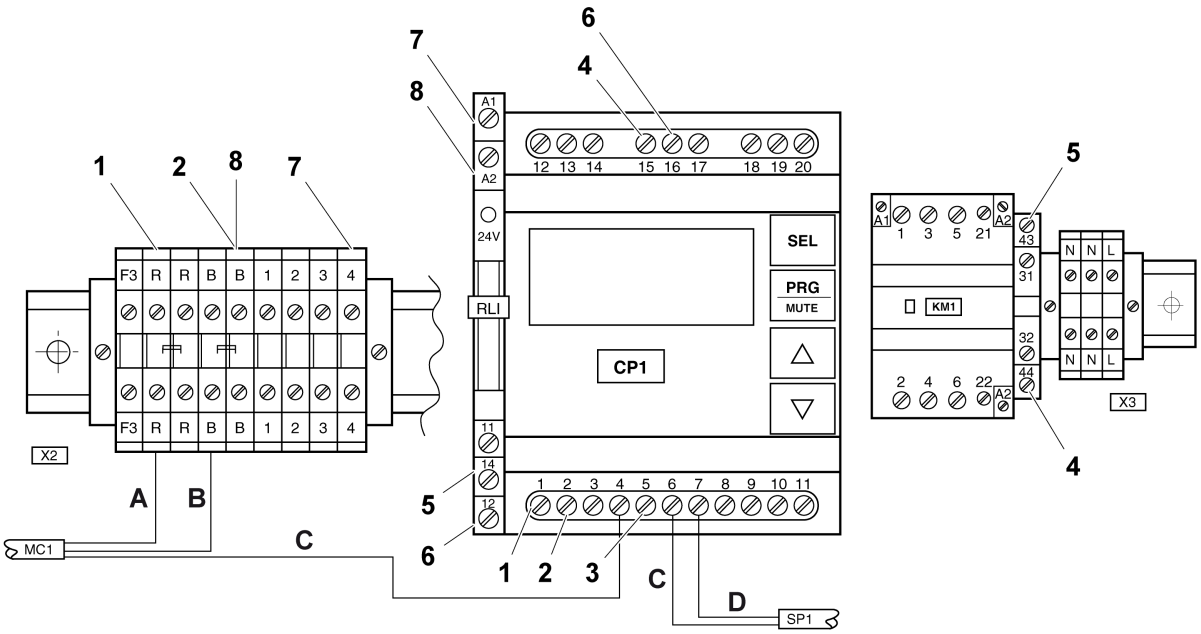


1.3.1 Electrical connections

Make the following electrical connections in the control box, depending on the unit model:

Electrical connections in the control box for VCH 20A-40A units

VCH 20A - 40A

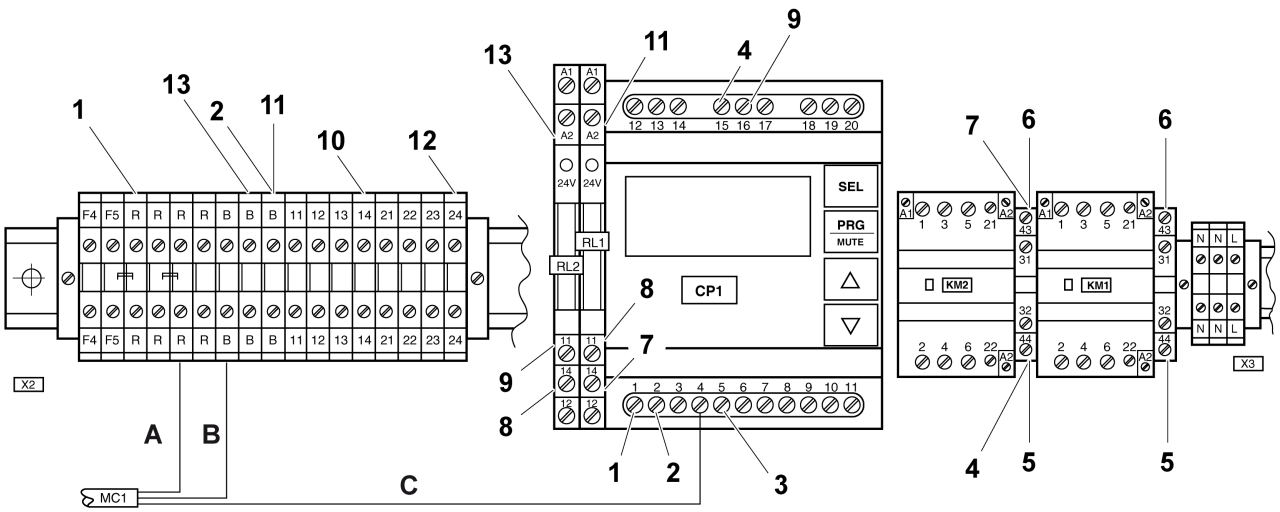


A	Brown	C	Black
B	Grey	D	White

Cable no.	Cable		Layout		Cable length
	Colour	Cross-section	From	To	
1	Red	1	X2–R	CP1-1	200
2	White	1	X2–B	CP1-2	200
3	White	1	CP1-5	—	80
4	Brown	1	CP1-15	KM1-44	600
5	Brown	1	KM1-43	RL1-11	350
6	Brown	1	RL1-14	CP1-16	300
7	Red	1	X2-4	RLI-A1	300
8	White	1	RL1–A2	X2–B	300

Electrical connections in the control box for VCH 45A-90A units

VCH 45A - 90A



A Brown
B Grey
C Black

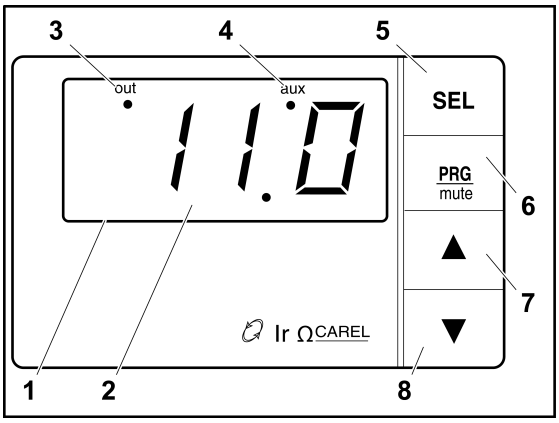
Cable no.	Cable		Layout		Cable length
	Colour	Cross-section	From	To	
1	Red	1	X2–R	CP1-1	250
2	White	1	X2–B	CP1-2	250
3	White	1	CP1-5	—	80
4	Brown	1	CP1-15	KM2-44	900
5	Brown	1	KM2-44	KM1-44	250
6	Brown	1	KM1-43	KM2-43	250
7	Brown	1	KM2-43	RL1-14	900
8	Brown	1	RL1-11	RL2-14	100
9	Brown	1	RL2-11	CP1-16	220
10	Red	1	X2-14	RL1–A1	500
11	White	1	RL1–A2	X2–B	500
12	Red	1	X2-24	RL2-A1	500
13	White	1	RL2–A2	X2–B	500

1.4 Operations

Through the pressure it reads using the analogue pressure switches installed in the cooling circuit and making the appropriate calculations depending on its programming, the control provides an analogue signal that positions the opening of the dampers so that the previously programmed set condensation pressure is maintained.

1.4.1 Programming and setting

Description of the regulator



1. Display:
   - Displays the value of the pressure switches.
   - Displays the code for the alarms triggered.
2. LED decimal:
   - This lights up when the value has a decimal part.
3. LED OUT:
   - This remains lit when the output is different to 0 V.
   - It flickers when the output is at the maximum programmed value.
4. LED AUX:
   - This remains lit or flickers, depending on the operating mode selected.
5. Selection Button:
   - This displays and/or selects the set value.
   - If it is pressed together with button **-6-** for 5 seconds, the number **ØØ** appears. Use buttons **-7-** and **-8-** to select the password to enter the main programming mode, **"Cxx"** parameters.
6. Programming / Alarm Button:
   - Press this button for 5 seconds to enter basic programming mode, **"Pxx"** parameters.
   - If an alarm is triggered, press once to disable the acoustic signal. Press again to reset the alarm.
7. Increase Button:
   - In standby mode, this displays the value of pressure switch 1.
   - In programming mode, it is used to move to the next parameter and to increase their values.
8. Decrease Button:
   - In standby mode, this displays the value of pressure switch 2.
   - In programming mode, it is used to move to the previous parameter and to decrease their values.

Necessary programming

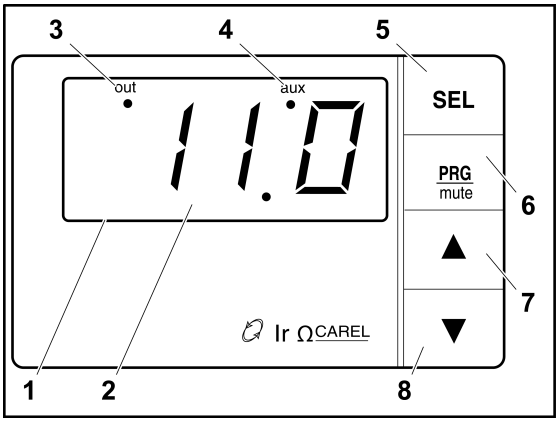
UNIT WITH ONE COMPRESSOR (VCH 20/40)

Parameter	Value
St1	26
C00	3
P01	2
C03	0
C04	0%
C05	100%
C10	0
C13	6
C14	0
C15	0,0
C16	44,8
C19	0
C30	4

UNIT WITH TWO COMPRESSORS (VCH 45/90)

Parameter	Value
St1	26
C00	3
P01	2
C03	0
C04	0%
C05	100%
C10	0
C13	6
C14	0
C15	0,0
C16	44,8
C19	2
C30	4

Programming sequence



1. Press **-5-** for 2 seconds or more until **"St1"** is displayed. After 1 sec., the current value **"St1"** is displayed.
2. Use buttons **-7-** and **-8-** to change the value to that indicated in the tables in section *Necessary programming, see on page 10*.
3. Press **-5-** to confirm the new value. The text **"St2"** is displayed. Press **-5-** again to exit programming.
4. To programme **CØØ**, press **-5-** and **-6-** at the same time for 5 sec. until **"ØØ"** is displayed.
5. Use buttons **-7-** and **-8-** to enter the password **"77"** to access parameters **"Cxx"**. Press **-5-** to confirm.
6. Use **-7-** and **-8-** to move around the different **"Cxx"** parameters, until you reach **"CØØ"**.
7. Press **-5-** to see its current value.
8. Use buttons **-7-** and **-8-** to change the value to that indicated in the tables in section *Necessary programming, see on page 10* as applicable.
9. Press **-5-** to confirm the change.
10. Press **-6-** to record the changes and exit programming mode.
11. To programme **"PØ1"**, press **-6-** for 5 sec. until **"PØ1"** is displayed.
12. Press **-5-** to access its current value.
13. Use buttons **-7-** and **-8-** to change the value as applicable in the tables in section *Necessary programming, see on page 10*.
14. Press **-5-** to confirm the change.
15. Press **-6-** to record the values and exit programming mode.
16. To programme the remaining **"Cxx"** parameters, press **-5-** and **-6-** at the same time for 5 sec. until **"ØØ"** is displayed. Enter the password **"77"** and press **-5-** to confirm.
17. Use buttons **-7-** and **-8-** to move around the different **"Cxx"** parameters and use button **-5-** to access and validate the values and the buttons to modify them, and change the parameters as indicated in the tables in section. *Necessary programming, see on page 10*.

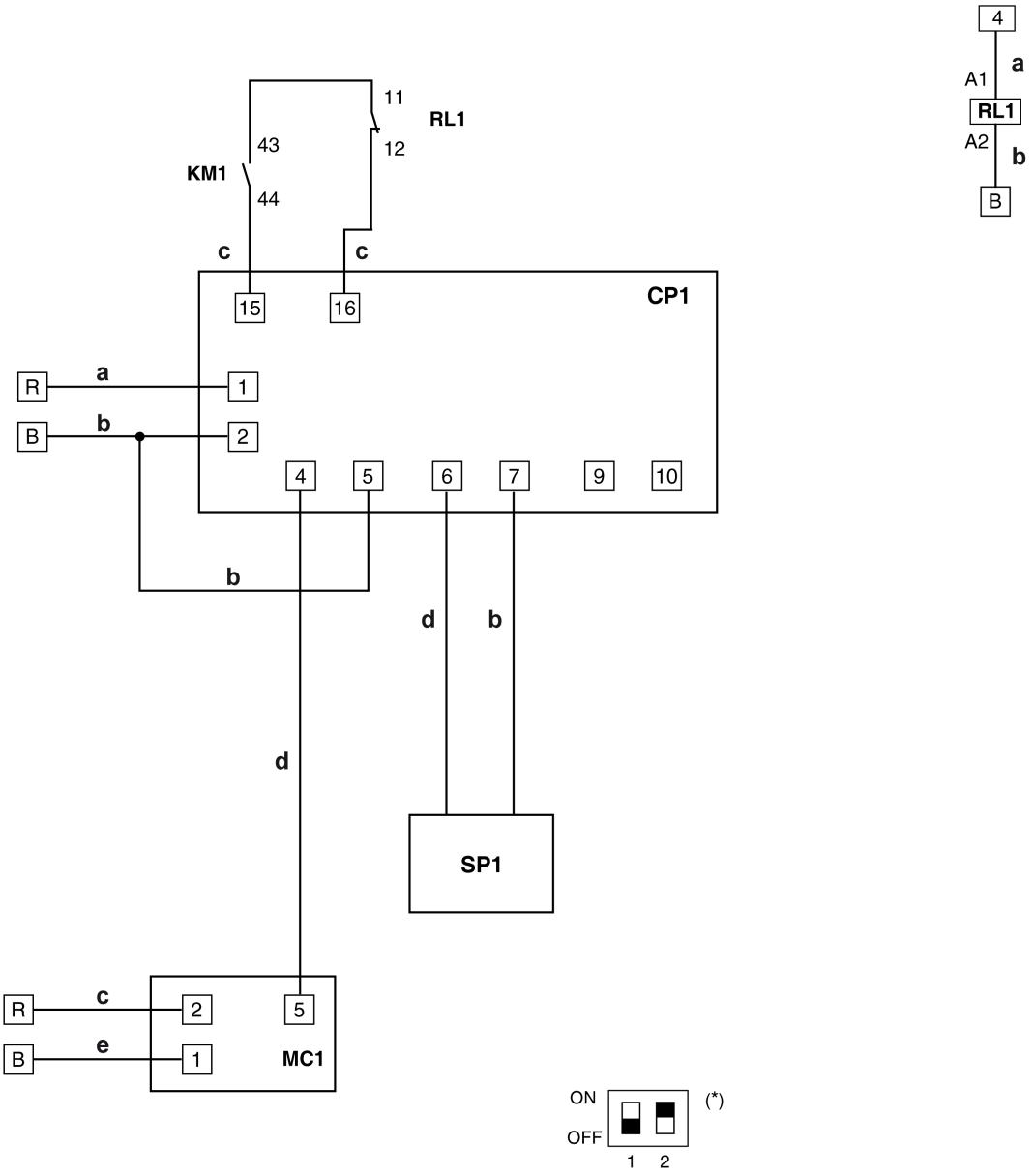
1.4.2 Checklist

1. Programme the thermostat to winter cycle and start the compressors, checking that the dampers open fully.
2. Stop the unit and programme the thermostat to summer cycle.
3. Start the compressors and check the correct working order of the dampers:
   - The dampers start the close while the pressure remains below the programmed value (26 bar).
   - The dampers start to open when the pressure reaches the programmed value and then remain in a specific position, depending on the outdoor temperature.

   NOTE
   The dampers will be tightly closed at very low outdoor temperatures.

1.4.3 Wiring diagrams

VCH 20/40A

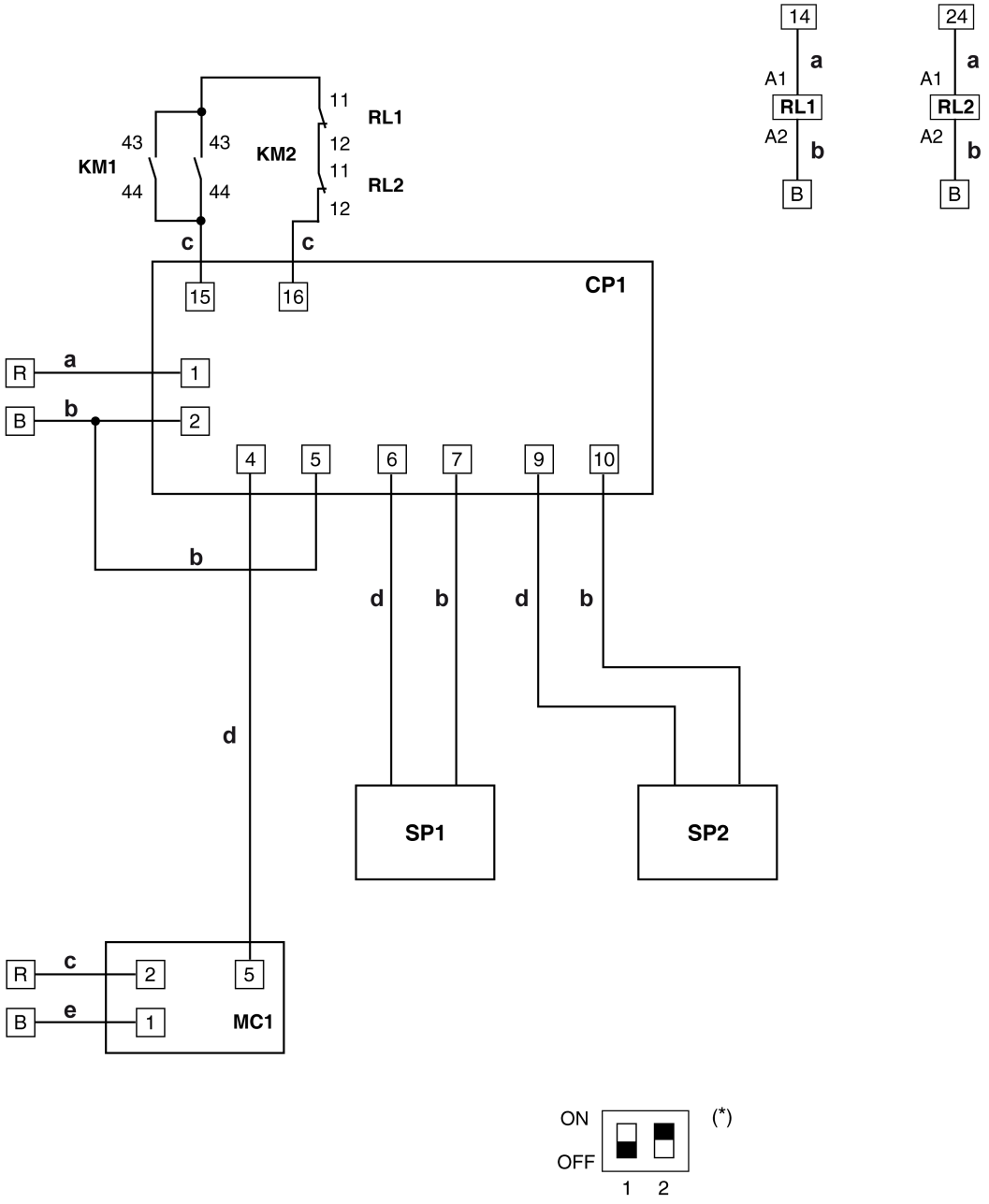


I-2603b
LAK VCH-20A a 40A

CP1	Proportional control	a	Red cable
MC1	Damper motor	b	White cable
RL1	4-way valve relay	c	Brown cable
SP1	Circuit pressure sensor 1	d	Black cable
KM1	Contactor 1	e	Grey cable

(*) Micro-switch configuration on board MC1 to comply with the following logic:
- Damper open, on standby (0 V set between positions 1 and 5 of MC1).
- Damper closed, with signal (10 Vdc).

VCH 45/90A



I-2604b
LAK VCH-45A a 90A

CP1	Proportional control	a	Red cable
MC1	Damper motor	b	White cable
RL1, RL2	4-way valve relay	c	Brown cable
SP1	Circuit pressure sensor 1	d	Black cable
SP2	Circuit pressure sensor 2	e	Grey cable
KM1	Contactor 1		
KM2	Contactor 2		

(*) Micro-switch configuration on board MC1 to comply with the following logic:
- Damper open, on standby (0 V set between positions 1 and 5 of MC1).
- Damper closed, with signal (10 Vdc).