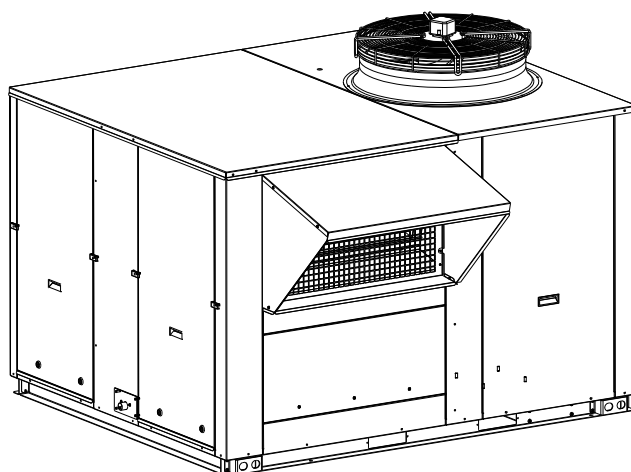




BY JOHNSON CONTROLS

Economiser (Free cooling) for Roof Top ACTIVA 017/040



Options and Accessories, Installation manual

Ref.: N-40392_EN 0911



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**Economiser (Free cooling) for ROOF
TOP ACTIVA 017/040**

1.1 General information

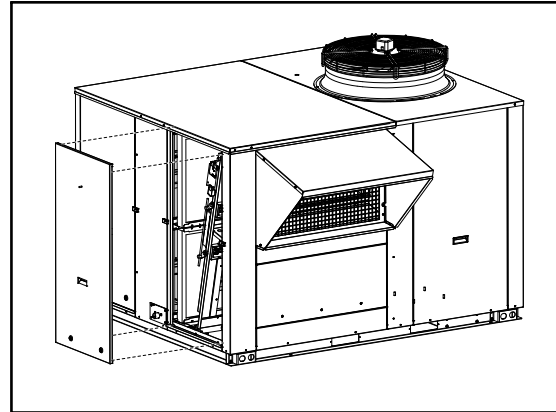
The economiser options is supplied installed inside the return section of the unit.

For transport reasons, the rain protection is supplied pre-installed and loose, for its final installation on site.

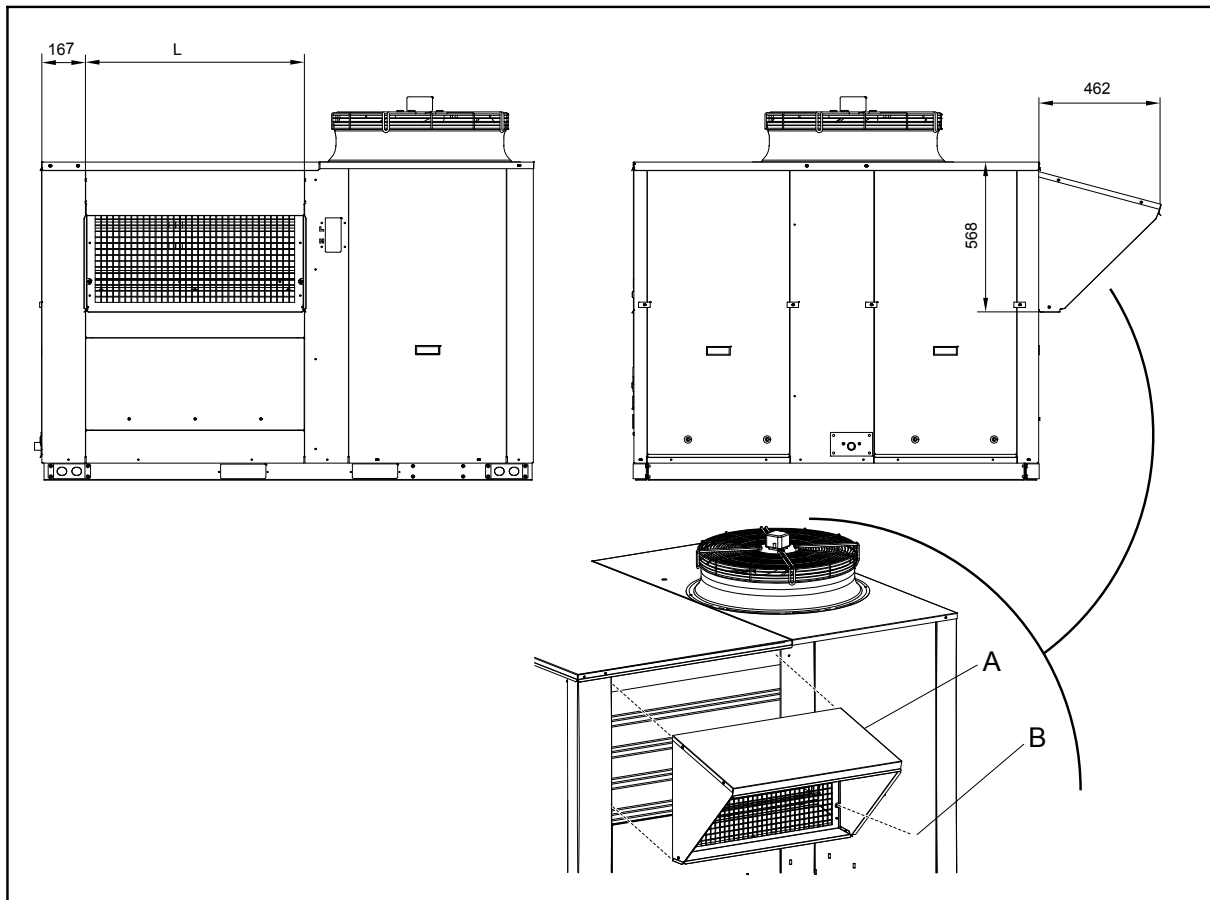
1.2 Technical specifications

The economiser is formed by:

- Return and outdoor air damper assembly.
- Modulating actuator motor with return spring.
- Temperature probes for return and outdoor air.
- Control plate with protective cover.
- Cable assembly, connected to the unit wiring.
- Return and outdoor air zone separator panel (with heat insulation).
- Rain protection assembly, with drip protection filters inside.



1.3 Installation of rain protection (Rain hood)



Model	L
017 / 022	830
032 / 040	1080

The installation of the rain protection is mandatory, to avoid water filtrations from the outdoor air inlet. To do so:

1. Remove and dispose of the original outdoor air side cover of the rooftop.



ATTENTION

Dispose of the components in the appropriate places or take them to an appropriate collection centre. Respect the regulations in force for this type of waste in the country where the unit is being installed.

2. Place the protection assembly -A- in the side opening and fit the top part under the side flange of the roof.
3. Fix the protection assembly with four self-threading screws -B- with a seal washer.



NOTE

The fixing holes in the front flanges of the opening in the unit are hidden under the sealing strip.

4. Check that the aluminium drip protection filter is fitted correctly.

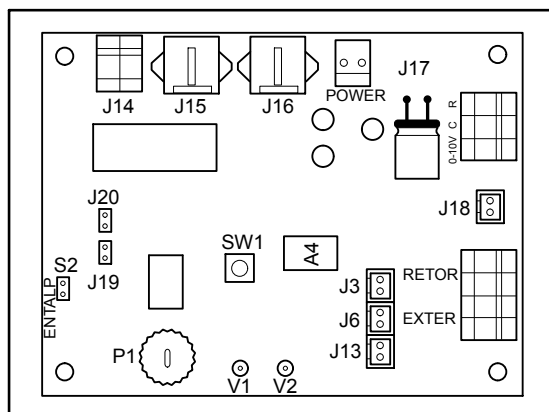
1.4 Installation of options

Enthalpy probes, Ref. C7400A (Optional)

The enthalpy probes are optional. For installing them consult the “*Enthalpy probes (Optional) for Roof Top ACTIVA 017/040*” manual (N-40393).

Bridge position selection

- Bridge J19, open by default: economiser operating. if closed, motorised damper operating.
- Bridge J20, open by default: outside damper closed with high temperature-smoke alarm. If closed, outside damper open with high temperature-smoke alarm.
- ENTALP jumper, S2, open by default: selection of operation with temperature probes. If it is closed, selection of operation with enthalpy probes. Disconnect outside probe B17 (connector J3) and keep return probe B15 connected (connector J13).



Configuration of the economiser control board and minimum opening adjustment

Once the accessory has been fitted together with the necessary parts, connect the electricity supply for the unit through main switch Q3 (See Installation Manual).

Check that the green LED (V1) on the economiser control board (A4) remains lit.

To search and configure accessories, press the test button on the YKN2 Open board (A1) for more than three seconds, until the red LED lights up. When the search and configuration process starts, the red LED on the board will light up and will remain on until the operation is completed. Once it has switched off, check that the green LED (V1) on the economiser board is flashing to indicate that the accessory has been configured.

The potentiometer P1 on the economiser board allows for the damper to be modulated by hand to check its correct working order. The damper will return to its operating position after 30 sec.

Whenever the inside fan is activated, the damper will be open by a certain percentage to renew the air in the room. The factory-set default value is 10%. This minimum percentage can be set using potentiometer P1 or via the communications network. To set it using the potentiometer, set it until the minimum opening required is obtained and then press configuration button SW1 for 3 seconds to save the value.

1.5 Operation

Air quality probe (optional)

The air quality probe has a VOC (volatile organic compounds) sensor that compares their concentrations in the air with the setting selected on the probe. Where the value is higher than the setting, the probe triggers output Y1 using a relay.

The 230 VAC output signal between Y1 and N is connected to the 230 VAC to 5 VDC conversion board. This board is fitted alongside the economiser control board. The 5 VDC signal wire must be connected when J18 is connected on the economiser board.

Where the thermostat setting temperature of the room is met and there is an air quality request signal, the damper is opened to the programmed renewal minimum and the inside fan starts up. The damper then opens further, bearing in mind the maximum (30 °C) and minimum (12 °C) supply temperatures.

In the following cases:

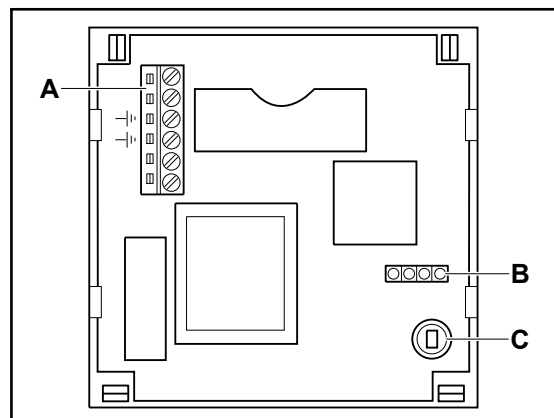
- Disappearance of the air quality request signal,
- the thermostat makes a cold or heat request

The damper returns to the renewal minimum. Where there is no request from the thermostat and the inside fan is in automatic mode, the fan will stop and the dampers will close.

- Connection terminals.
- Air quality level selection.
- VOC sensor.

Three air quality levels can be selected on the probe according to the bridge positions:

- 0: Normal, default position.
- : Acceptable.
- +: Very good.

**Exhaust fan (optional)**

The function of the return exhaust fan is to increase the air extraction capacity of the room. When the outdoor air damper is open more than 30%, the output of relay K1 on the economiser control board, connector J14, cables 582 and 583, is activated.

See the wiring diagram for details on connections and motor trip switch adjustment.

**DANGER**

- *Loose connection terminals produce overheating of cables and terminals.*
- *The unit will work incorrectly and there is a risk of fire. Check that the cables are firmly secured to their connection terminals.*

1.5 Operation

Allows for cold to be generated by modulating the outdoor air inlet damper.

If the conditions are favourable, the yellow LED V2 will be lit up and the damper will be modulated to ensure the supply temperature is 12 °C.

Favourable conditions

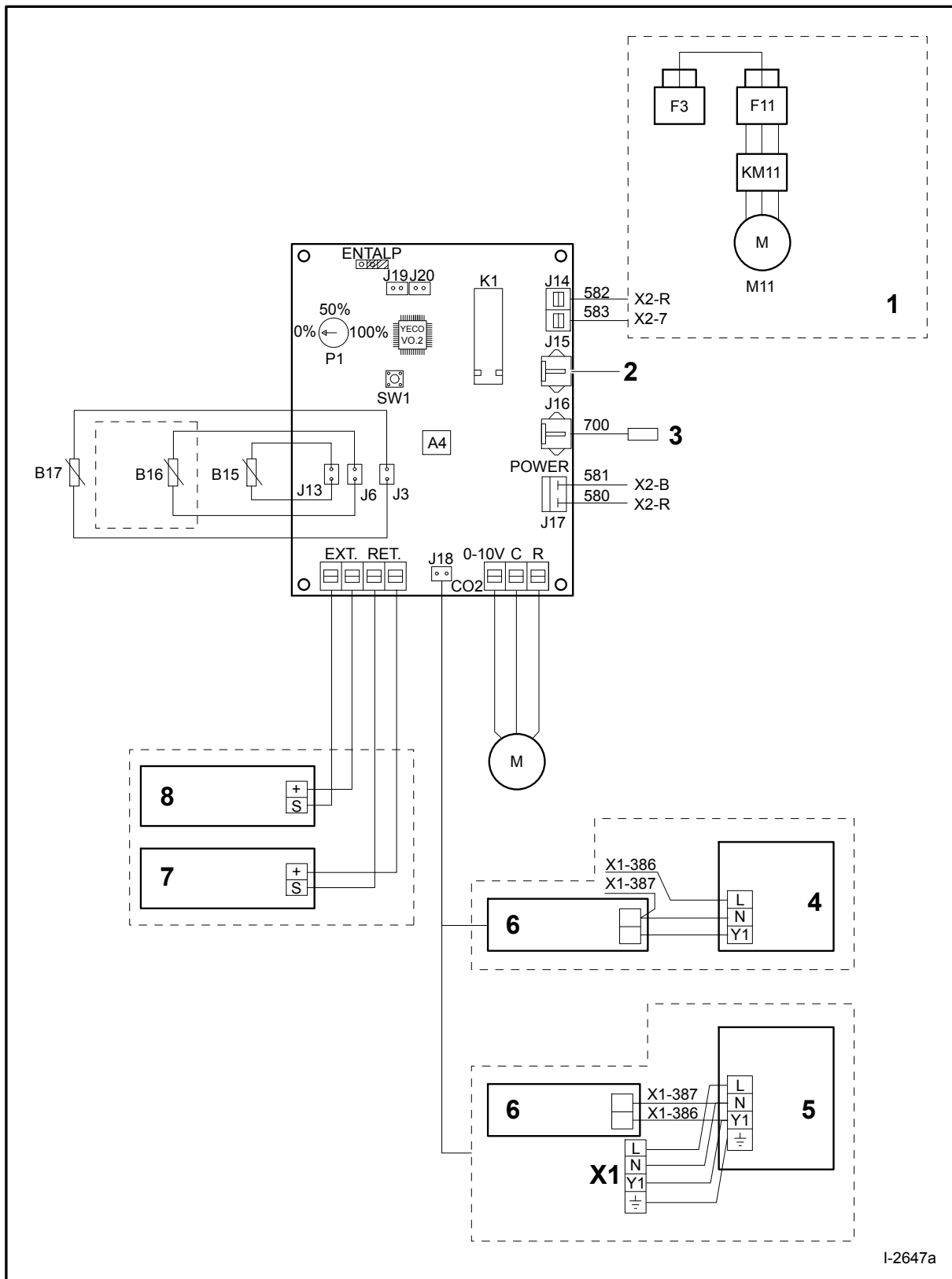
- Temperature mode. Favourable conditions in temperature mode are when the outside temperature is below 20 °C and, in turn, below the return temperature.
- Enthalpy mode. Favourable conditions in enthalpy mode are when the outside enthalpy is 5% below the return enthalpy and the outside temperature is below 20 °C. The probes must be connected and a bridge fitted to S2 for the unit to run in enthalpy mode. Incident 4, 1, 5 is indicated if the enthalpy probes are faulty.

The yellow LED on the board will be switched off when conditions are not favourable. Whenever the inside fan is activated, the outside damper will be open by a certain percentage to renew the air in the room (10% by default, adjustable value).

In the winter cycle, if the thermostat requests heat and no heat stage can be enabled, e.g. due to a fault, the damper will remain closed with the inside fan activated.

Where a fault is detected on the indoor fan by the YKN2 Open board, the outdoor air damper is fully closed.

1.6 Wiring diagram



1.	F11	Optional <ul style="list-style-type: none"> • Reg. 2,5 A (017, 022). • Reg. 5,5 A (032, 040). • Reg. 1,4 A (045, 060). • Reg. 3A (0,75, 090).
	KM11	A1 to X2-7 (Cable 583) A2 to X2-B
	M11	Exhaust fan
	X2-R	24 VAC Phase-R switching
	X2-7	To A1 from KM11
2.	Accessories	
3.	Accessories	
4.	Air quality probe, optional, fitted on return (inside machine)	
	L	Black
	N	Blue
	Y1	Brown
5.	Air quality probe, optional, fitted on ambient (machine exterior)	
	L	Black
	N	Blue
	Y1	Brown
	\perp	Yellow-Green
6.	Air quality board (green)	
7.	Enthalpy probe C7400A return, optional	
	+	Red
	S	White
8.	Enthalpy probe C7400A outside, optional	
	+	Red
	S	White
B15	Return probe (black)	
B16	Supply probe, optional depending on model (yellow)	
B17	Outdoor probe (white)	
M10	Damper	
	0-10 V	Grey
	C	Black
	R	Red
X1	Cables to be installed on site (not supplied)	

Data and measurements subject to changes without prior notice.