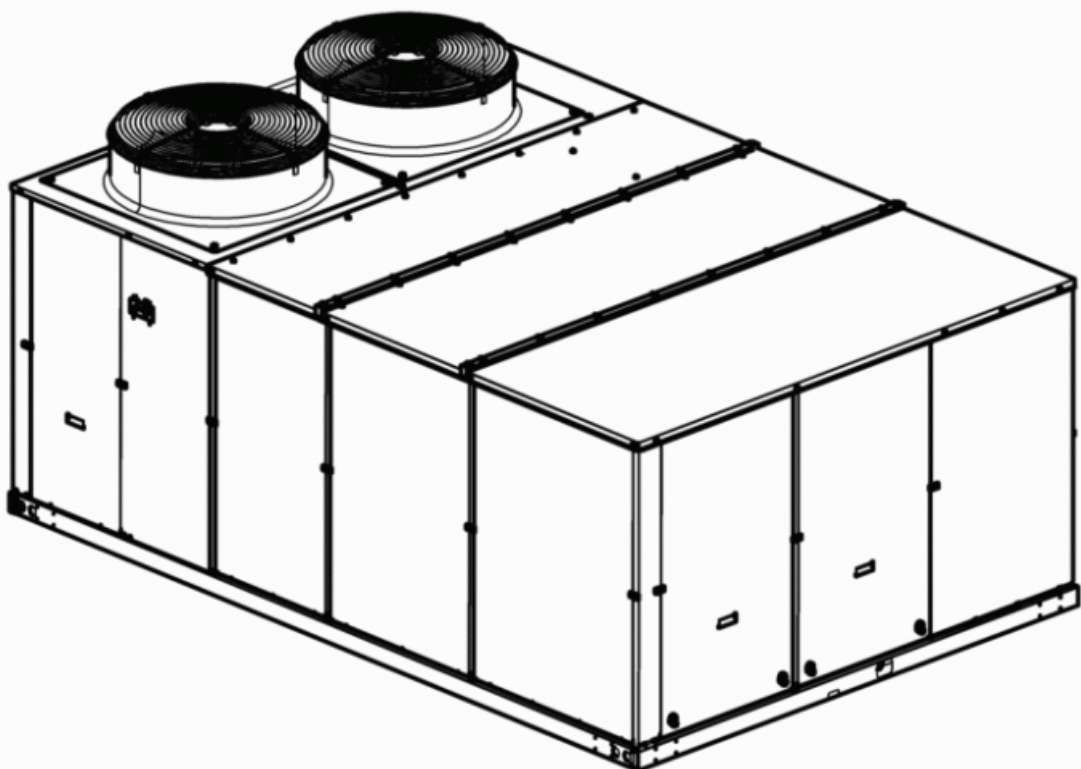




BY JOHNSON CONTROLS

## Hot water coil accessory for Roof Top ACTIVA 045-090



**Options and Accessories, Installation manual**

Ref.: N-40320\_EN 0809



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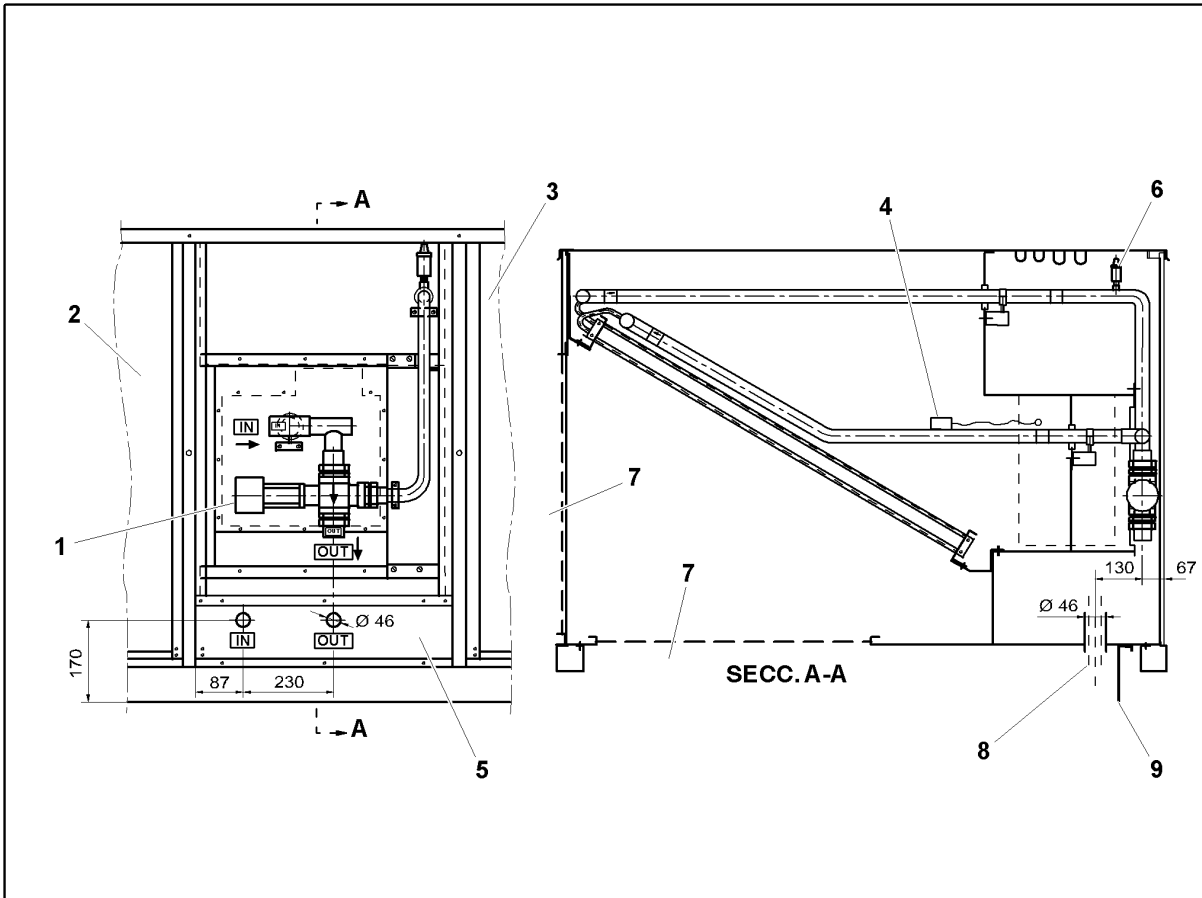
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**Hot water coil accessory for Roof Top AC-  
TIVA**

## 1.1 General measurements

General measurements (mm)



- |                                                                    |                                                                     |
|--------------------------------------------------------------------|---------------------------------------------------------------------|
| 1. 3-way valve + actuator                                          | 6. Automatic air bleeder                                            |
| 2. Evaporator side                                                 | 7. Connection for side or downwards supply duct                     |
| 3. Condenser side                                                  | 8. Passing of water connection pipes (fit bushing for lower option) |
| 4. Water inlet sensor, B17                                         | 9. Mounting base (Roof Curb) (accessory)                            |
| 5. Passing of water connection pipes (fit bushing for side option) |                                                                     |

### Physical data

Pipe depth	2
Pipe height	16
Pipe diameter	1/2"
Finned length	1550
Front area	0.787 m <sup>2</sup>
Input/output connections	Ø 1-3/8" (35 mm) female
Water volume	10 L

## 1.2 General Information

The hot water coil accessory is factory-fitted as optional.

These installation instructions provide all the necessary information for correct on-site installation [General measurements](#) , see on page 2 .

The accessory is located in the air supply section where it is better protected from any problems with frost. Furthermore, this means that the unit can be installed for connection of the side or downwards supply duct, even on a Roof Curb mounting base (standard accessory) with the need for any additional modifications.

The control board, the cables and all the material for the installation are supplied with this accessory.

## 1.3 Technical specifications

The accessory includes the following components:

- Coil: with steep plate frame, copper pipes and aluminium fins.
- 3-way valve: bronze body.
- Electric actuator: 0-10V proportional control, 24 V AC power.
- Control board and plastic separators.
- B17 temperature sensor for the water inlet.
- Automatic air bleeder.

## 1.4 Installation

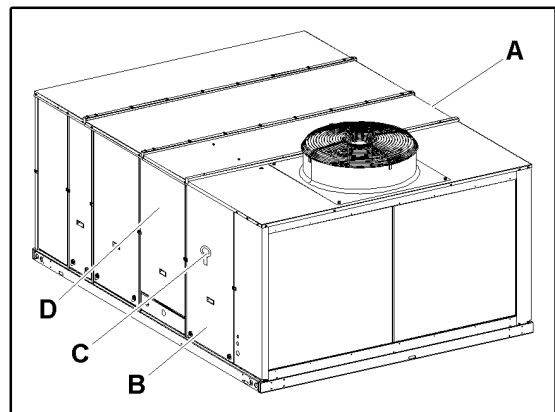
Given that all of the components are factory-fitted, all that is required on site is for the 3-way valve inlet and outlet to be connected to the hot water line.



### NOTE

- *Bear in mind the current regulations on electrical installation in the country where the unit is to be installed.*
- *Also see [General measurements](#) , see on page 2 and [Wiring diagram](#) , see on page 8 for coil connection details.*

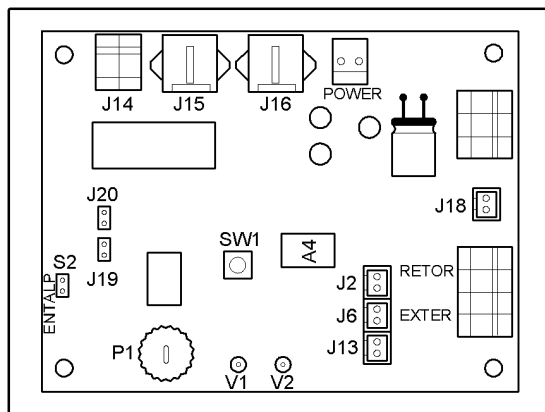
- A. Supply air zone access.
- B. Electrical board access.
- C. Main switch.
- D. Access to the water coil valve.



## 1.4 Installation

**Hot water coil control board**

- 1 Disconnect the main switch on the unit.
- 2 Remove the access panel to the 3-way valve, the access panel to the supply air zone and the access panel to the electrical board.
  - On units with lower supply air ducts: remove and dispose of the cover fitted to the base.
  - On units with side supply air ducts: keep the existing cover on the base.
- 3 Make the water inlet and outlet connections either at the front, through the access panel or through the base at the bottom of the unit. There are two bushings on the front access panel and on the base to protect the pipes. In the case of the base, the holes and their bushings are below the insulation.

**CAUTION**

- *Manual valves should be installed on the inlet and outlet lines to be able to insulate the unit from the general installation if required.*
- *When passing pipes through the base of the unit, seal with silicone or some other sealant.*

**NOTE**

*The hot water coil control board and the water inlet sensor are factory-fitted. The electrical connections of the valve actuator have also be made according to the wiring diagram.*

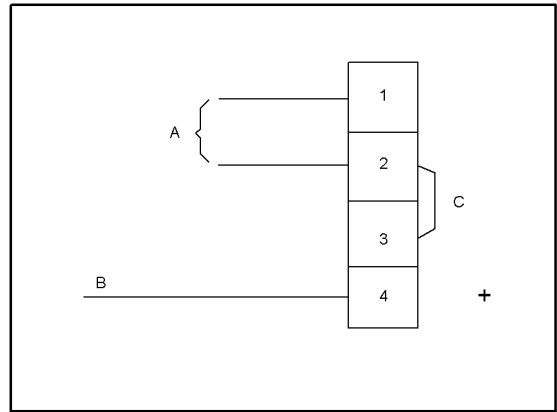
- 4 Once all of the water inlet and outlet connections are made, reconnect the unit main switch.
- 5 Check that the green LED on board A6 remains lit. Then search for and configure accessories by pressing the test button on the YKN2Open board (A1) for more than three seconds until the red LED switches on. 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 switched off, check that the green LED (V1) on board A6 is flashing to indicate that the accessory has been configured.
- 6 Check the correct working order of the valve actuator: the potentiometer P1 on the hot water coil control board allows for the 3-way valve to be modulated by hand to check its correct working order. The actuator will return to its operating position after 30 sec.
- 7 Selection of jumper S2 (ENTALP) position:
  - Jumper S2 open (factory-configured by default): priority selection of compressors on models with heat pump
  - Jumper S2 closed: selection of hot water coil operating priority on compressors. This is recommended for installations where very cheap hot water is available.
- 8 Heat pump switching relay output: the control board is fitted with a relay (K1) that, via connector J14, provides an output with a non-live contact for the switching of a water pump in the installation.

**CAUTION**

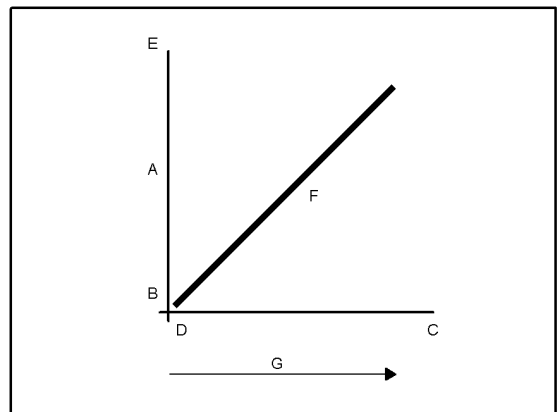
*Loose connection terminals produce overheating of cables and terminals. The unit is working incorrectly and there is a risk of fire.*

## 1.5 VA-7152-1001-type proportional control electric actuator

- A. 24 V AC power.
- B. Control signal.
- C. Common.
- 1. Red.
- 2. White
- 4. Brown.



- A. Shaft up.
- B. Shaft down.
- C. High Vcc.
- D. Low Vcc.
- E. Direct action mode (DA).
- F. Reverse action mode (RA).
- G. Signal increase.



## 1.6 Operations

Heat can be generated under favourable conditions through valve modulation according to the discharge sensor, seeking to reach a maximum temperature of 50 °C.

Up to four hot water coil stages can be controlled. These are started as indicated by the demand control unit and are limited by the supply temperature (30, 40, 45 and 50 °C).

Favourable conditions are deemed when the water temperature is above 30 °C 5 minutes after opening the valve. Once the system is operating, a check is constantly made to ensure the conditions remain favourable.

Where unfavourable conditions are detected and where there is demand, a timed 20-minute period is set before a check is made to ensure the conditions have returned to favourable.

Relay K1 on the water pump is enabled where the opening is greater than 20%. Relay K1 is disabled where the opening is less than 5%.

Where conditions are favourable, the yellow LED (V2) remains lit, otherwise it switches off.

Where the water temperature is below 3 °C, the pump is enabled and the valve is opened to 100% to protect the hot water coil from freezing until the water temperature rises to above 6 °C. This protection remains active while the fan is stopped, despite the machine being at a standstill or in lockout. When the frost protection is enabled, the yellow LED (V2) flashes.

Whenever the hot water coil heating is running, the indoor fan will also be working.

There is a 15 °C minimum supply air temperature trip switch when this accessory is fitted. Hence, the drop in comfort that may be created in the event of a very high percentage of air renewal at low outdoor temperatures is avoided and the indoor fan runs continuously. In the event of a demand for cold, the water coil valve closes.

The valve actuator is powered at 24 V AC at terminals 1 and 2. The control signal is within a range of 0 and 10 V AC at terminals 3 and 4. At 0 V AC, the valve is closed (Bypass) and at 10 V DC, the valve is 100% open.

### 1.6.1 Actuator selection jumper

The actuator has four input selection jumpers that coincide with the required operating range.

**1 Jumper 1. Input voltage selection.**

Upper jumper (0 to 10 V DC), central jumper (0 to 5 V DC) and lower jumper (5 to 10 V DC). Upper position factory-configured by default (0 to 10 V DC).

**2 Jumper 2. Run length selection.**

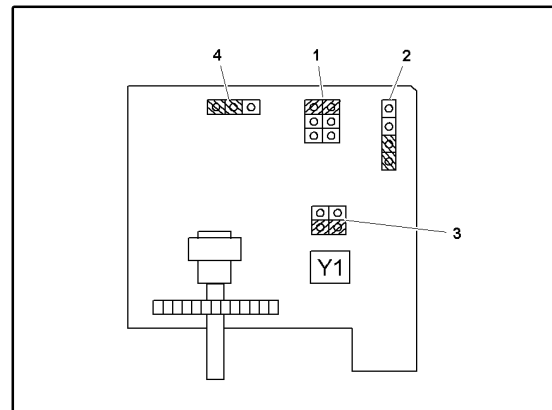
Configures the length of the run: short (run lengths of 1/2 inch or less) or long (L) (length over 1/2 inch, factory-configured by default).

**3 Jumper 3. Configuration of direct/reverse action of the jumper.**

Configures the action (direct/reverse) of the valve shaft movement. Factory-configured by default to lower position, reverse action (RA).

**4 Jumper 4. Configures the jumper to fault position.**

Where the signal on the actuator is lost (connection open), the actuator will switch to the pre-set position by default. Factory-configured by default to open position.





## 1.7 Hot water coil, optional in ARC/ARH

ARC/ARH		Data with water, without glycol									
							090				
					060		075				
		045									
Water temperature	°C	90 + 70									
Air flow	m <sup>3</sup>	7000	8500	10000	11500	13500	15000	16000	17000	18000	
Heat capacity	kW	71,1	79,5	87,0	93,7	101,7	107,3	111	114,2	117,4	
Water flow	m <sup>3</sup> /h	3	3,3	3,7	4	4,3	4,5	4,7	4,8	5	
Pressure drop	kPa	9,5	11	14	16	19	21	22	23	25	
Air temperature rise	K	30	27	25	24	22	21	20	19	18	
Water temperature	°C	80 + 60									
Air flow	m <sup>3</sup>	7000	8500	10000	11500	13500	15000	16000	17000	18000	
Heat capacity	kW	58,6	65,4	71,5	77	83,5	88,1	90,8	93,7	96,3	
Water flow	m <sup>3</sup> /h	2,5	2,8	3	3,3	3,5	3,7	3,9	4	4,1	
Pressure drop	kPa	7,5	9	9,5	11	13	14	16	16	18	
Air temperature rise	K	24	22	21	20	18	17	17	16	15	
Water temperature	°C	70 + 50									
Air flow	m <sup>3</sup>	7000	8500	10000	11500	13500	15000	16000	17000	18000	
Heat capacity	kW	46,0	51,2	55,8	61,1	65,1	68,7	71	73	75	
Water flow	m <sup>3</sup> /h	1,9	2,2	2,4	2,6	2,8	2,9	3	3,1	3,2	
Pressure drop	kPa	4,5	6	6,5	7,5	9	9,5	10,5	11	11	
Air temperature rise	K	19	18	16	15	14	13	13	12	12	

- Pressure drop of coil + 3-way valve.

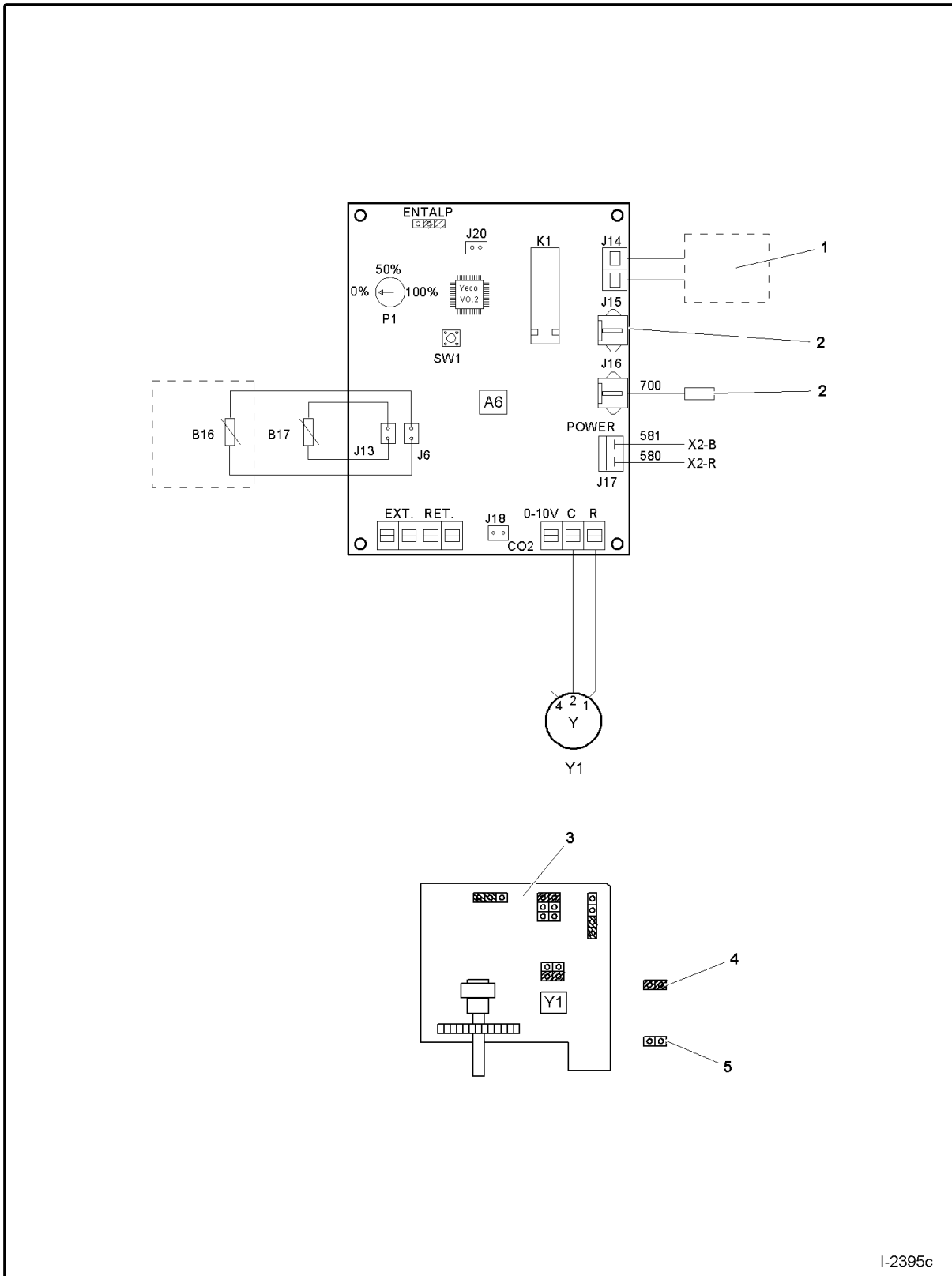
- Coil input air: 18 °C.

ARC/ARH		Data with a mix of water and 35% glycol									
							090				
					060		075				
		045									
Water temperature	°C	90 + 70									
Air flow	m <sup>3</sup>	7000	8500	10000	11500	13500	15000	16000	17000	18000	
Heat capacity	kW	68,5	76,3	83,6	89,8	97,5	102,8	106,3	109,4	112,4	
Water flow	m <sup>3</sup> /h	3,2	3,6	4	4,2	4,6	4,8	5	5,1	5,3	
Pressure drop	kPa	12	15	17	20	23	25	27	28	30	
Air temperature rise	K	28	26	24	22	21	20	19	18	17	
Water temperature	°C	80 + 60									
Air flow	m <sup>3</sup>	7000	8500	10000	11500	13500	15000	16000	17000	18000	
Heat capacity	kW	55,6	62	67,7	72,8	79	83,3	85,9	88,5	91	
Water flow	m <sup>3</sup> /h	2,6	2,9	3,2	3,5	3,7	4	4,1	4,2	4,3	
Pressure drop	kPa	9	10	12	14	16	18	19	20	21	
Air temperature rise	K	23	21	20	18	17	16	16	15	14	
Water temperature	°C	70 + 50									
Air flow	m <sup>3</sup>	7000	8500	10000	11500	13500	15000	16000	17000	18000	
Heat capacity	kW	41,4	46	50,7	54,8	59,6	63,1	65,3	67,3	69,2	
Water flow	m <sup>3</sup> /h	2	2,2	2,4	2,6	2,8	3	3,1	3,2	3,3	
Pressure drop	kPa	6	6,5	7	8,5	10	11	12	13	14	
Air temperature rise	K	17	16	15	14	13	12	12	11	11	

- Pressure drop of coil + 3-way valve.

- Coil input air: 18 °C.

## 1.8 Wiring diagram



I-2395c

1.	Optional: <ul style="list-style-type: none"> <li>• 24 V AC Phase-R switching</li> <li>• Water pump</li> </ul>
2.	Accessories
3.	Valve actuator
4.	Jumper connected: jumper activated
5.	Jumper disconnected: jumper deactivated
Y.	Motor <ul style="list-style-type: none"> <li>• R: Red</li> <li>• C: White</li> <li>• 0-10 V: Brown</li> </ul>
Y1.	3-way valve
B16	Discharge sensor, optional depending on model (yellow)
B17	Water inlet sensor (black)

Data and measurements subject to changes without prior notice.