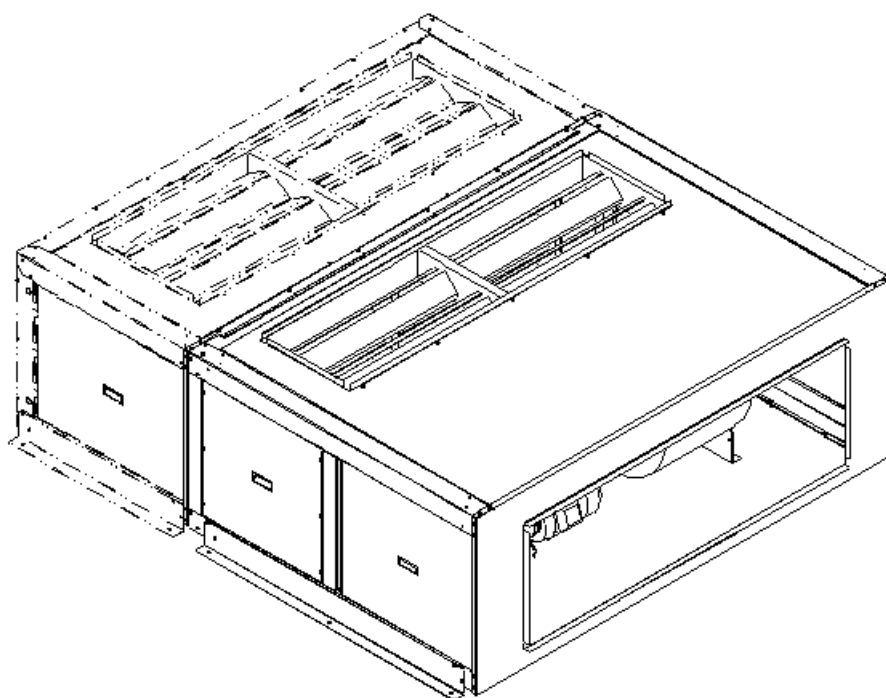




BY JOHNSON CONTROLS

Return fan for VITALITY VIR 045/090A



Options and Accessories, Installation manual

Ref.: N-40335_EN 0410



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Return fan for VITALITY VIR 045-090A

1.1 General Description

These instructions provide all the necessary information for correct on-site installation of this accessory.

The return fan is located on the return section of the economiser accessory.

All the material required for the installation is supplied with this accessory.

1.2 Technical specifications

The accessory is formed by:

- Damper assembly, with motor with modulating return spring for extraction air.
- Ventilation assembly, with two centrifugal fans with a joint shaft and belt transmission, driven by one motor and connected to a single plenum.
- Electrical box assembly, with motor trip switch and thermal magnetic circuit breaker.
- Cable and sleeve assembly prepared to connect the unit wiring.
- Panel and support assembly.
- Nuts and bolts and bushing for assembly.

1.2.1 Features of VIR 045/060 model return fans



ATTENTION

Do not use the return fan accessory with static pressure drops below 150 Pa in the return duct

RETURN FAN FOR VIR 45/60 WITH VIR 45 UNIT

With return duct with 200 Pa static pressure drop			
Flow [m ³ /h]	VIR unit supply static pressure available [Pa]	Absorbed power of VIR 90 motor [W]	Absorbed power of RETURN FAN motor [W]

With return duct with 250 Pa static pressure drop			
Flow [m ³ /h]	VIR unit supply static pressure available [Pa]	Absorbed power of VIR 90 motor [W]	Absorbed power of RETURN FAN motor [W]

With return duct with 300 Pa static pressure drop			
Flow [m ³ /h]	VIR unit supply static pressure available [Pa]	Absorbed power of VIR 90 motor [W]	Absorbed power of RETURN FAN motor [W]

RETURN FAN FOR VIR 45/60 WITH VIR 60 UNIT

With return duct with 200 Pa static pressure drop			
Flow [m ³ /h]	VIR unit supply static pressure available [Pa]	Absorbed power of VIR 90 motor [W]	Absorbed power of RETURN FAN motor [W]

1.2 Technical specifications

With return duct with 250 Pa static pressure drop			
Flow [m ³ /h]	VIR unit supply static pressure available [Pa]	Absorbed power of VIR 90 motor [W]	Absorbed power of RE-TURN FAN motor [W]

With return duct with 300 Pa static pressure drop			
Flow [m ³ /h]	VIR unit supply static pressure available [Pa]	Absorbed power of VIR 90 motor [W]	Absorbed power of RE-TURN FAN motor [W]

1.2.2 Features of VIR 075/090 model return fans

**ATTENTION**

Do not use the return fan accessory with static pressure drops below 150 Pa in the return duct

RETURN FAN FOR VIR 75/90 WITH VIR 75 UNIT

With return duct with 200 Pa static pressure drop			
Flow [m ³ /h]	VIR unit supply static pressure available [Pa]	Absorbed power of VIR 90 motor [W]	Absorbed power of RE-TURN FAN motor [W]
15300	77	2530	3900
15000	89	2484	3860
13600	127	2300	3700
13000	148	2200	3600
11500	178	2020	3500

With return duct with 200 Pa static pressure drop			
Flow [m ³ /h]	VIR unit supply static pressure available [Pa]	Absorbed power of VIR 90 motor [W]	Absorbed power of RETURN FAN motor [W]
11150	200	1890	3400
10800	207	1830	3340

With return duct with 250 Pa static pressure drop			
Flow [m ³ /h]	VIR unit supply static pressure available [Pa]	Absorbed power of VIR 90 motor [W]	Absorbed power of RETURN FAN motor [W]
15300	32	2450	3820
15000	54	2370	3720
13600	102	2200	3540
13000	126	2000	3350
11500	161	1790	3230
11150	170	1710	3160
10800	199	1630	3130

With return duct with 300 Pa static pressure drop			
Flow [m ³ /h]	VIR unit supply static pressure available [Pa]	Absorbed power of VIR 90 motor [W]	Absorbed power of RETURN FAN motor [W]
15300	—	—	—
15000	—	—	—
13600	42	2050	3300
13000	58	1970	3090
11500	100	1730	2870
11150	118	1580	2800
10800	140	1440	2720

RETURN FAN FOR VIR 75/90 WITH VIR 90 UNIT

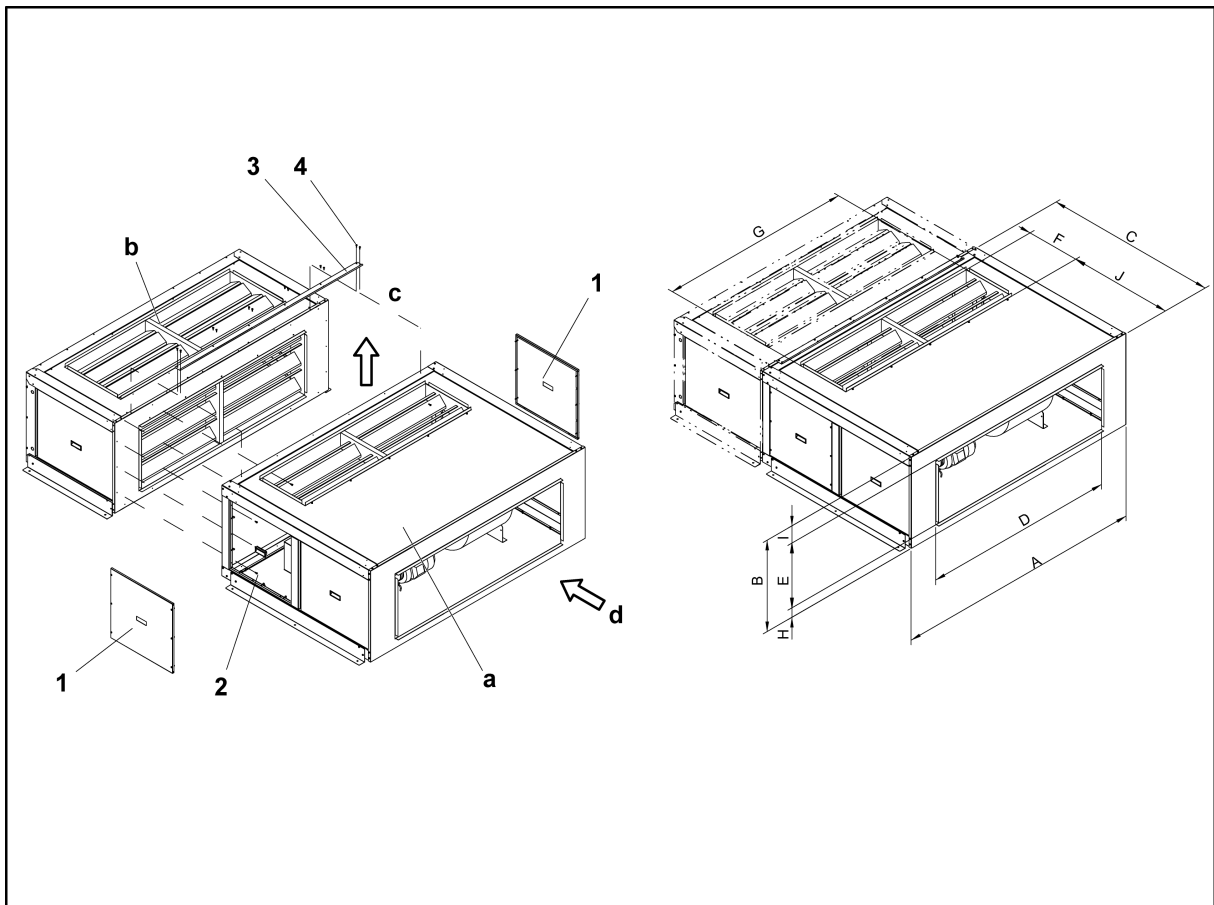
With return duct with 200 Pa static pressure drop			
Flow [m ³ /h]	VIR unit supply static pressure available [Pa]	Absorbed power of VIR 90 motor [W]	Absorbed power of RETURN FAN motor [W]
17000	50	3895	4317
16600	75	3783	4185
15900	113	3570	4010
15300	146	3366	3855
14600	175	3142	3718
13700	212	2910	3605
13100	231	2770	3538

1.2 Technical specifications

With return duct with 250 Pa static pressure drop			
Flow [m ³ /h]	VIR unit supply static pressure available [Pa]	Absorbed power of VIR 90 motor [W]	Absorbed power of RETURN FAN motor [W]
17000	—	—	—
16600	48	3590	4040
15900	87	3350	3870
15300	113	3185	3735
14600	144	2970	3585
13700	172	2750	3420
13100	182	2590	3330

With return duct with 300 Pa static pressure drop			
Flow [m ³ /h]	VIR unit supply static pressure available [Pa]	Absorbed power of VIR 90 motor [W]	Absorbed power of RETURN FAN motor [W]
17000	—	—	—
16600	—	—	—
15900	—	—	—
15300	45	3025	3600
14600	88	2815	3433
13700	129	2600	3250
13100	148	2485	3133

1.3 Assembly



- | | | | |
|---|---------------------------------|---|-------------------------------|
| 1 | Side panels | a | Return fan unit |
| 2 | Connection bolts (metric) | b | Economiser Unit |
| 3 | Economiser connection part | c | Air extraction (overpressure) |
| 4 | Connection bolts (self-tapping) | d | Return air |

Model	A	B	C	D	E	F	G	H	I	J
045/060	1943	716	1349	1497	507	412	1502	74	134	812
075/090	2219	789	1349	1747	507	412	1752	111	171	812

Install the return fan as indicated below:

- 1 Remove the two side panels.
- 2 Place opposite the economiser unit and attach from the inside using the screws supplied.



ATTENTION

The extraction air damper is at the top

- 3 Fit the connection part to the top of both units and secure with screws.
- 4 Check the position of the damper on standby. The correct position is closed.

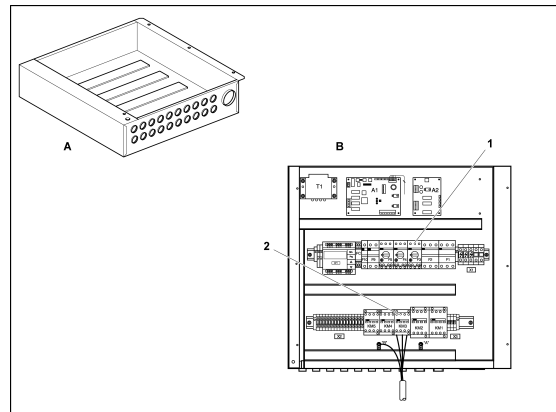
1.4 Installation

Disconnect the power supply to the unit using the switch Q1.

1. Replace the indoor fan motor trip switch F3 in the outdoor unit electrical box -1- with the thermal magnetic circuit breaker supplied (10A or 20A, depending on model).

2. Eliminate the auxiliary contact of motor trip switch F3, connecting the cable from terminal X2-11 to terminal X2-R. See label on the wiring diagram for the outdoor unit.

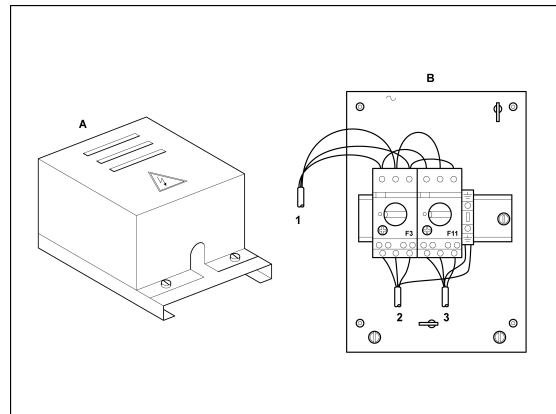
- A Outer view of the outdoor unit connection box
- B Inner view of the electrical connections



3. Check that the cross-section of the cable connecting the outdoor and indoor units is suitable. Consult the illustrative values given in the electric specifications table.

4. Fit the motor trip switch F3 to the return fan electrical box on the F11 side and connect the cables supplied, the indoor fan cable and the connection cable between contactor KM3 -2- (See [outdoor unit connection box](#), see on page 8) and motor trip switch F3.

5. Connect the electrics for the two damper motors in parallel using the cable supplied.



- 1 Connection cable A Return fan connection box
- 2 VIR motor cable B Inner view of the electrical connections
- 3 Return fan motor cable

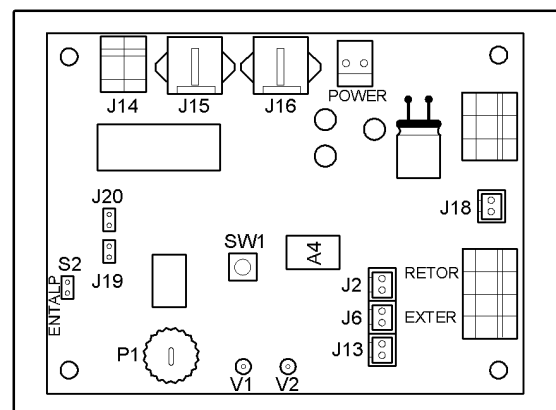
6. Check the direction of rotation and consumption of the indoor and return fan motors.

7. Check the correct working order of the economiser and return fan dampers using the potentiometer P1 on the economiser control board.



ATTENTION

The outer damper on the economiser and the extraction damper must rotate in the same direction



1.5 Operations

This accessory extracts the overpressure air from the indoor installation when the outdoor air damper on the economiser is opened and maintains the air flow of the installation when the return duct has a high pressure drop.



CAUTION

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

1.6 Electrical specifications table for motors



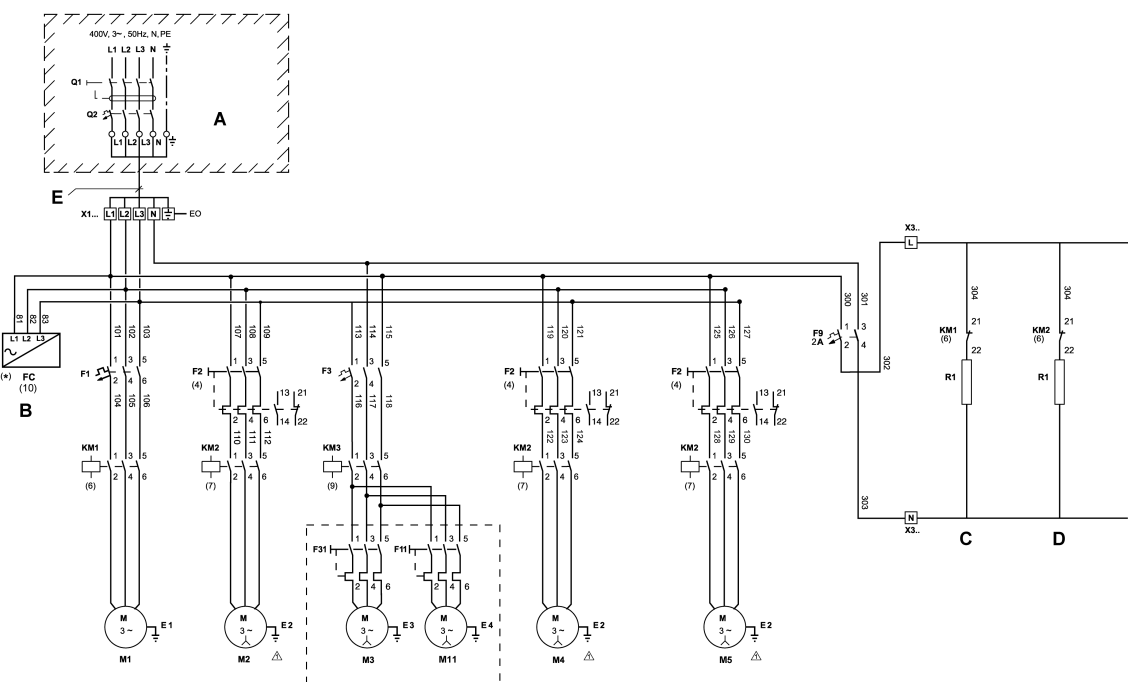
NOTE

The size of the power lines is illustrative and must be corrected based on site conditions, length between units and current regulations

Indoor units with return fan

Model	Power supply [V / ph (Hz)]	Standard rating [kW]		Rated current [A]		Power cable cross-section [mm ²]
		VIR	Return Fan	VIR	Return Fan	
VIR 45A	400/3 (50)	1,5	1,5	3,1	3,5	4 x 1.5
VIR 60A	400/3 (50)	2,2	1,5	4,6	3,5	4 x 2.5
VIR 75A	400/3 (50)	3	2,2	4,7	5,1	4 x 2.5
VIR 90A	400/3 (50)	4	2,2	7	5,1	4 x 4

1.7 Wiring diagram



I-2632-1a
VCH-45, 60, 75, 90A
490.3.50

Model	Q2	E	F1 [A]	F2 [A]	F3 [A]	F4 [A] REG.	F5 [A] REG.	F31 [A] REG.	F11 [A] REG.
VCH 45A	50	5 x 10	16	16	10	4,2	4,2	3,6	3,5
VCH 60A	63	5 x 16	25	25	10	5,1	5,1	5,1	3,5
VCH 75A	80	5 x 25	32	32	20	9,4	9,4	6	5,1
VCH 90A	100	5 x 35	32	32	20	9,4	9,4	8,7	5,1

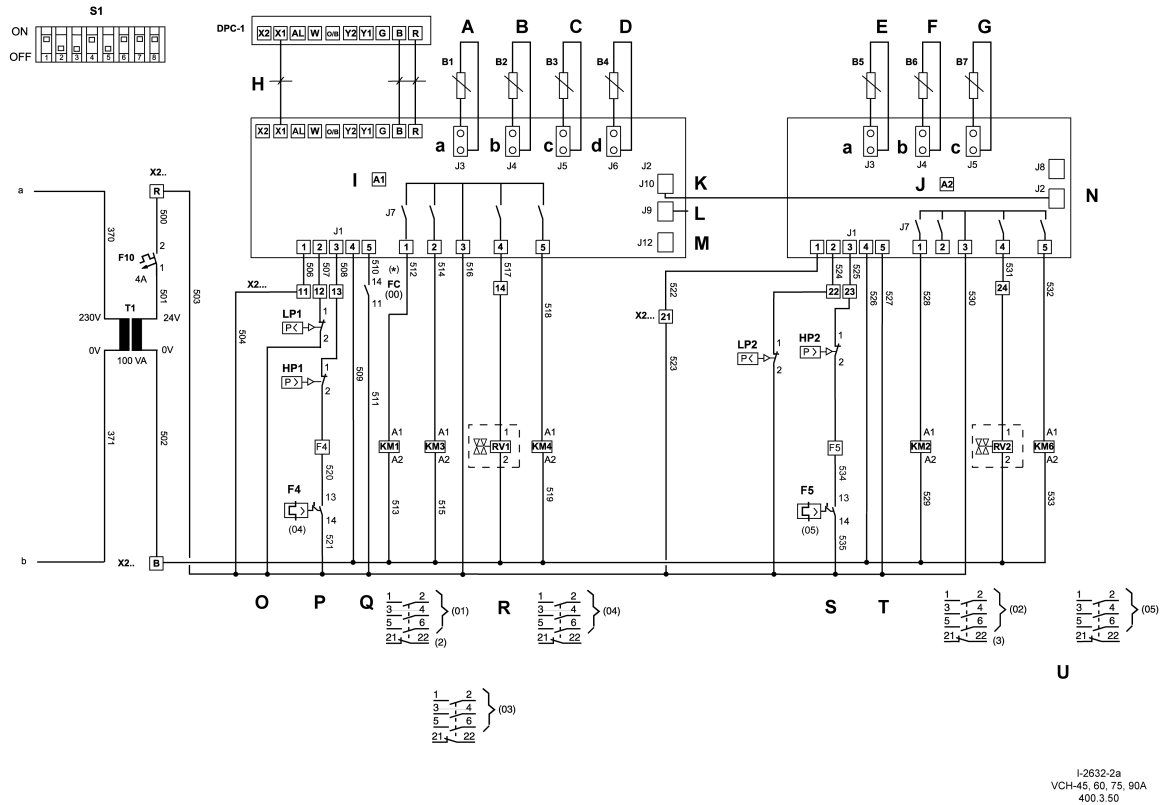
A	On-site installation. These components are not supplied by the manufacturer	M1	Compressor 1
B	Phase control (FC)	M2	Compressor 2
C	Crankcase heater 1	M3	Indoor fan
D	Crankcase heater 2	M4	Outdoor fan 1
E	Cross-section B mm ² Cu	M5	Outdoor fan 2
		M11	Return fan

(*) If the unit has power and the green LED **V2** on board **A1** is off, check that the sequence of phases **L1, L2, L3** is correct



NOTE

The M3 indoor fan and the M11 return fan are connected on site. See electrical specifications table.



A, E	Intake sensor (B1, B5)	P	High and low pressure switch 1
B, F	Liquid sensor (B2, B6)	Q	Outdoor fan motor trip switch 1
C, G	Discharge sensor (B3, B7)	R	4-way valve 1
D	Outdoor sensor (B4)	S	High and low pressure switch 2
H	Shielded cable, 10 x 0.22 mm ²	T	Outdoor fan motor trip switch 2
I	Electronic board A1	U	4-way valve 2
J	Electronic board A2	a	Black connector
K	Compressor connection 2	b	Green connector
L	YKTOOL connection	c	White connector
M	RS-485 connection	d	Yellow connector
N	Accessory connection	S1	Configuration of board A1
O	Indoor fan motor trip switch	DPC-1	Thermostat

Data and measurements subject to changes without prior notice.