

The fans of the VRE...-EC-VR series were developed on the basis of the proven VRE series as a supplement to the variable-speed drives predominantly used for plastic radial fans in the combination of asynchronous motor and frequency converter (version with pressure control). All specifications and notes in the operating instructions "Radial fans VRE" also apply to the use and operation.

1. Mains connection and controls

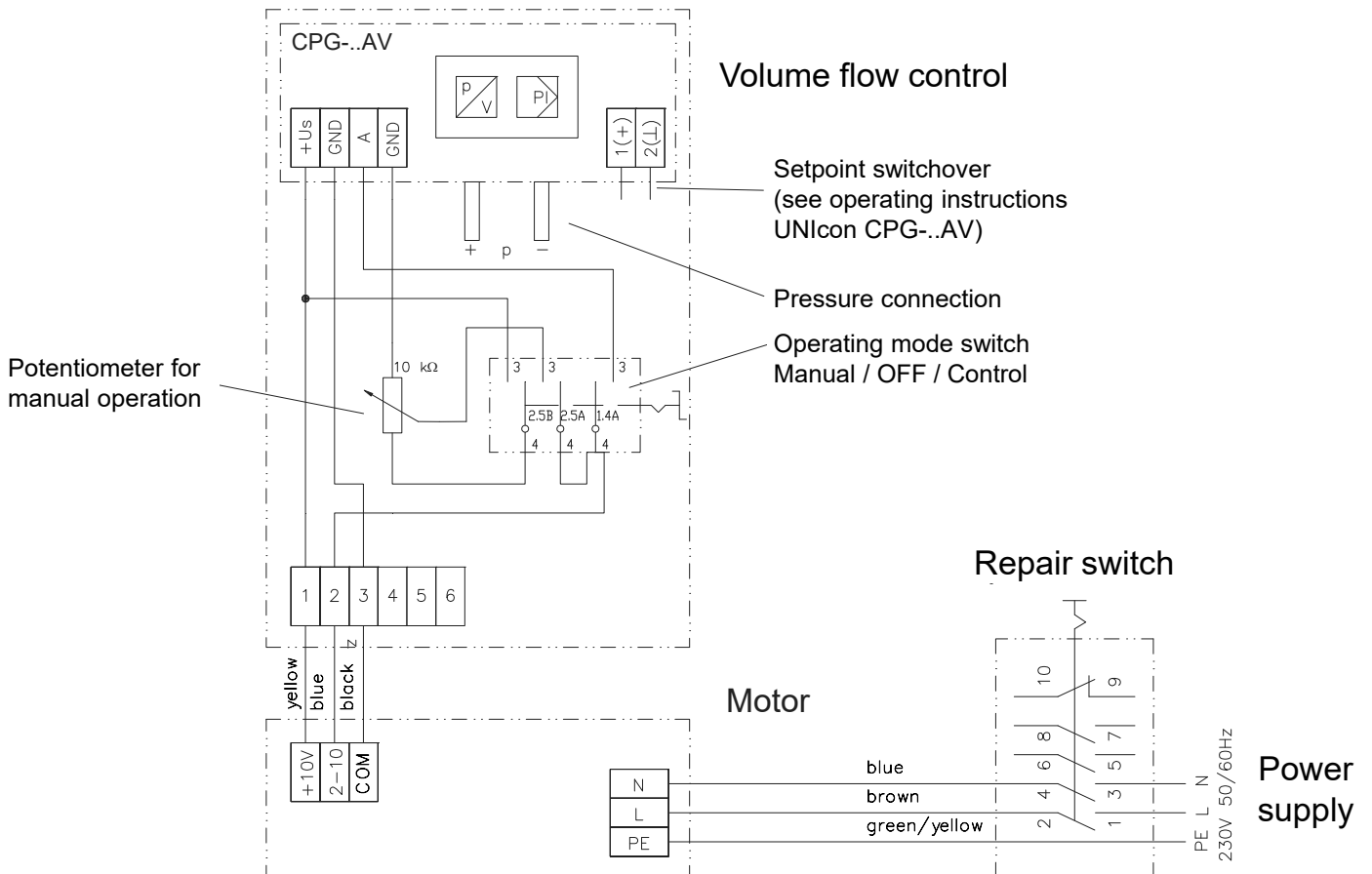
The entire control system, consisting of EC controller, regulator and motor protection, is integrated into the fan.

When using the fan, it is essential to protect the control unit from the effects of the weather, such as rain, snow, etc.

The power supply is connected in the repair switch. For cleaning and maintenance work, the fan is disconnected from the mains via the repair switch.

The operating mode switch and a potentiometer for manual operation are located on the controller. Further operating elements and the electrical connections are accessible after opening the controller housing.

Warning notices for assembly: The unit may only be connected and opened by qualified personnel. When programming, note that the unit is under voltage.



Mains connection: terminals L, N and PE on the repair switch

Instructions for commissioning

2. Volume flow setpoint, preliminary remarks

The volume flow setpoint must be determined according to ventilation aspects. The value is limited by the pressure measuring range of the controller and the K-Factor of the volume flow measuring device, the maximum value of which depends on the measuring range of the pressure sensor. The largest measurable volume flow rate for the CPG-..AV controller used is 65000 m³/h.

In order to ensure an accurate and stable function of the controller, a suitable differential pressure measuring device (e.g. measuring orifice plate or measuring cross) must be mounted at a suitable flow-related position in the system, so that fluctuations of the measured value and thus the speed of the fan due to turbulence and uneven incoming flow are avoided. The set volume flow must be coordinated with the components of the system.

Consequences of too high a value would be, for example:

- unstable control behaviour,
- higher fan speed and thus increased sound level and also increased power requirement,
- exhaust air valves must be throttled back more (this can cause disturbing noises).

3. Manual operation

In **Manual** mode, any speed between 0 and the nominal speed of the motor can be set via the potentiometer. Programming the controller is not necessary for this.

Manual mode is mainly used as an aid for commissioning and adjusting the system. In the event of technical problems with the pressure control, it can be used as an emergency mode.

4. Volume flow control, menu structure, programming

Programming is done in three main menus (INFO, SETTING, BASESETUP). With the help of the three keys ▼ ▲ and P all parameters can be selected and changed/adjusted after pressing the P key (Escape = ▼+▲).

All controller functions are already pre-programmed at the factory according to the nominal volume flow (Setpoint 1), the measuring range (Range) and the K-Factor of the measuring device (K-Factor)and commissioning is very simple:

Start/stop switch in position "Auto" and the fan adjusts its speed automatically according to the measured volume flow and regulates it to the programmed setpoint. When the housing of the volume flow controller is open, the actual value can be read on the controller display. Pressure calibration is recommended during initial commissioning (BASE SETUP / Autozero = ON; see section 5).

For commissioning, trial operation and uncontrolled operation, it is possible to control the fan speed via the integrated potentiometer when the start/stop switch is in the "Manual" position. Continuous operation is also possible without restrictions in this case.

Possible changes may be required with regard to the target volume flow (INFO / Setpoint 1 and SETTING / Setpoint1) and, associated with this, also with the measuring range (BASE SETUP / Range). In this case, the start/stop switch on the pressure regulator housing must be set to the "0" position and the regulator housing opened. Then, as described above, the settings can be made in the corresponding menus using the three buttons ▼ ▲ and P. All other settings should be retained, as these are specially adapted to the motor and pressure measuring system used.

If the system tends to vibrate in automatic mode or reacts too sluggishly, the reaction can be made more sluggish (higher values) or more sensitive (lower values) by changing the SETTING / Pband setting.

Table 1

INFO		SETTING		BASE SETUP	
Parameter	default	Parameter	default	Parameter	default
qV / m ³ /h	= Act. value	Setpoint 1 / m ³ /h	250	Mode	5.01
Setpoint 1 / m ³ /h	= Setpoint 1	Setpoint 2 / m ³ /h	125	Units	metric
Uout / V	= 0 .. 10 V	Pband / m ³ /h	200	Range / Pa	0 ... 500
UNIcon	= Mode	Min. Uout / V	2.1	K-Factor	see characteristic curve measuring device
Δp / Pa	= Act. value	Max. Uout / V	10.0	Autozero Offset / Pa	ON 0

Navigation: INFO ← SETTING → BASE SETUP; SETTING ← BASE SETUP →; INFO → SETTING →; SETTING ← INFO ←; SETTING ↑ ↓ BASE SETUP; BASE SETUP ↑ ↓ SETTING; SETTING ↑ ↓ INFO; BASE SETUP ↑ ↓ INFO.

If it is necessary to switch to a second setpoint in certain operating conditions of the system, this can be set with the parameter Setpoint 2 in the SETTING menu. Switching is done by applying a voltage to terminals 1 and 2 of the controller CPG-..AV (10 ... 24 V DC, observe polarity, see connection diagram).

5. Function test

The function test of the pressure control is carried out by interrupting the pressure measuring lines (pull off the hose connector at the controller). If the fan runs up slowly to its maximum speed, the control is functioning.

Otherwise, check the settings or the pressure sensor.

If the setpoint is not reached, there may be defects in the ventilation system (fan too small for the system, exhaust air elements poorly adjusted, duct system leaking or similar).

6. Pressure adjustment

The measured differential pressure depends on the installation position of the pressure transmitter (effect of gravity on the measuring diaphragm). For the standard installation position of the fan, the adjustment is already carried out at the factory. If required, the adjustment is carried out as follows:

- Apply differential pressure "0" to the load cell (interruption of the pressure measuring lines).
- Check actual pressure (should be between +2 and -2 Pa)
- If necessary, adjust via menu (BASE SETUP / Autozero = ON)