VAV-Retrofit Complete overview

This document describes the product scopes of the Belimo VAV-Retrofit product range.

... exchanged in a few simple steps.

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Decision matrix

For round VAV units up to 400mm diameter

Set solution
- NMV-D3-RE2-SET
- VRD3-RE2-SET
- ZPD-RE2-SET

Individual components
- NMV-D3-RE2.1
- ZPD-RE2

For rectangular and round VAV units

Individual components
- NMV-D3-RE
- L/N/SMVA-D3-MP (RE)
- VRD3-RE
- ZDMS-xxx

Accessories
- ZTH-GEN (Service-Tool)
- MFT-P (PC-Tool)
- CR24-xx (Room temp. contr.)
- COU24-A-MP (Fan Optimiser)

1) e.g. different spindel driver, cable length, ...
2) e.g. with spring-return actuator, other torques, ...

- Suitable
- Suitable to only a limited extent
Set solutions
Suitable for round VAV units up to a diameter of 400 mm

Individual VAV actuators and control devices in older systems may sometimes cease functioning. It is for precisely such cases that Belimo is making available its VAV-Retrofit-Set. They contain all of the components necessary for the conversion.

The set solutions are ideal for small to medium-sized conversion projects. Thanks to their simple handling, the replacement can be carried out directly by the installer, service professional or building services technician.

NMV-D3-RE2-SET
for round VAV units with air velocity of up to 12 m/s
- VAV-Compact with integrated actuator (10 Nm), controller and D3 pressure sensor
- Pick-up device with seal (can be altered to suit the VAV unit with the aid of the template on the box)
- Complete installation set, comprised of 8 x 8 mm form-fit insert, hose connections, hoses (2 x 1 m), together with screws and washers
- Type List for Belimo pick-up device ZPD-RE2, different box sizes and air velocities (see page 4)
- Detail installation instructions (see page 8)

VRD3-RE2-SET
for round VAV units with air velocity of up to 12 m/s
- VAV-Universal controller VRD3-RE2 with integrated D3 pressure sensor
- Damper actuator NM24A-V (10 Nm)
- Pick-up device with seal (can be altered to suit the VAV unit with the aid of the template on the box)
- Complete installation set, comprised of 8 x 8 mm form-fit insert, hose connections, hoses (2 x 1 m), together with screws and washers
- Detail installation instructions (see page 8)

ZPD-RE2-SET
Pick-up device set for round VAV units from 280 to 400 mm
A second pick-up device is to be installed with VAV units 280 mm in size and larger.
- Pick-up device with seal (can be fitted on the VAV unit)
- Complete mounting kit, comprised of hose connections, screws, washers
- Detail installation instructions (see page 8)
Individual Components
Suitable for round VAV units up to a diameter of 400 mm

Existing VAV control devices should also be incorporated into when buildings are undergoing energy renovations. Individual components are intended for medium-sized to large conversions in order to ensure that the replacement can be carried out efficiently. Depending on the selected components, only a limited amount of specific VAV knowledge is required.

**NMV-D3-RE2.1**
- for round VAV units with ZPD-RE2 and air velocity of up to 12 m/s
  - Predefined for the use with ZPD-RE2 Belimo pick-up devices
  - VAV-Compact with integrated actuator (10 Nm), controller and D3 pressure sensor
  - **TypeList** for ZPD-RE2, different box sizes and air velocities (see page 4)
  - AC / DC 24V, modulating, MP
  - Control signal DC 0...10V, DC 2...10V adjustable
  - Spindle driver clamp
  - Plug for connecting the service tool
  - Multipack 18 pieces
  - Available documentation (see page 8)

**Programming of VAV-Compacts with ZTH-GEN TypeList feature**
The basic data (V'nom, Δp@V'nom, direction of rotation) of different pick-up devices, air velocities and unit dimensions are stored in the VAV-Compact in the so-called TypeList table. The requested VAV unit can be selected with the ZTH-GEN and its parameter activated in the VAV-Compact.

In addition V'max, V'min and if required the Mode can be adjusted very easy with the ZTH-GEN

The VAV unit is finally programmed

**ZPD-RE2**
- Pick-up devices for round VAV units up to 400 mm
  - Pick-up device with seal (can be fitted on the VAV unit)
  - Multipack 18 pieces
  - Available documentation (see page 8)
Single components
for rectangular and round VAV units

Note: Active calibration is necessary in the cases of L/N/SMVAX-D3-MP and VRD3-RE in order to achieve the control accuracy required.

**NMV-D3-RE**
for VAV units with ZDMS and various air velocities but also for Retrofit in general
- Predefined for the use with ZDMS Belimo pick-up devices
- Retrofit with existing pick-up device
- VAV-Compact with integrated actuator (10 Nm), controller and D3 pressure sensor
- TypeList for all ZDMS and various air velocities (see page 4)
- AC / DC 24V, modulating, MP
- Control signal DC 0...10V, DC 2...10V adjustable
- Spindle driver clamp
- Plug for connecting the service tool
- Available documentation (see page 8)

**L/N/SMVA-D3-MP**
can be ordered through the variant configurator
for rectangular and round VAV units
- Project-specific versions possible
- RE: Basic set-up for retrofit
- VAV-Compact with integrated actuator (5/10/20 Nm), controller and D3 pressure sensor
- AC / DC 24V, modulating, MP
- Control signal DC 0...10V, DC 2...10V adjustable
- Spindle driver clamp or form-fit
- Plug for connecting the service tool
- TypeList is not available
- Available documentation (see page 8)

**VRD3-RE**
for rectangular and round VAV units
- For all differential pressure sensors except ZPD-RE2
- VAV-Universal controller VRD3-RE with integrated D3 pressure sensor
- AC/DC 24V
- Control signal DC 0...10V, 2...10V, contacts
- Connection for external V-actuator
- Plug for connection of service tool
- Available documentation (see page 8)
ZDMS-xxx
Pick-up devices for rectangular and round VAV units
ZDMS-100: Installation length 100 mm
ZDMS-125: Installation length 125 mm
ZDMS-160: Installation length 160 mm
ZDMS-200: Installation length 200 mm
ZDMS-250: Installation length 250 mm
− Pick-up device with seal
− Available documentation (see page 8)
Accessories

When replacing the VAV components, it is important that the V\textsuperscript{min}/V\textsuperscript{max} settings be adjusted to existing circumstances. A number of different adjustment tools, e.g. the ZTH-GEN, are available for this purpose.

System components such as directors or temperature controllers should also be checked for correct functioning as part of renovation efforts. In the event that the functional reliability of these devices is uncertain, the possible need for replacing them should be taken into consideration.

**ZTH-GEN**
Service-Tool for all Belimo VAV controllers with PP interface
including connection cable RJ12 6/4, 6-pin plug
Displays/settings: Volume actual and setpoint values, pressure value, damper position, CAV stages, V\textsuperscript{min}/max, TypeList functionality

**PC-Tool (MFT-P)**
For the simple adjustment and diagnostics of a VAV unit, particularly at the time of commissioning or when carrying out inspections during ongoing operation.

**Graphic presentation:** active setpoint, volume flow, damper position and V\textsuperscript{min}/V\textsuperscript{max} adjustment can be displayed graphically in the form of trends and saved.

**CR24-xx**
Room temperature controllers
Various versions for utilisation in purely VAV systems and in combined systems with radiators, air heaters and coolers, heated and chilled ceilings
- AC 24V
- Select mode, display: AUTO / ECO / MAX
- Setpoint: 16...36\textdegree}C, rotary button: +/-3K
- Temperature sensor: NTC internal, external: 10...45\textdegree}C

**COU24-A-MP (Fan Optimiser)**
Optimisation function for fans in VAV application
Actuation by analogue or MP controllers
Output frequency converter 0...10 V
MP data bus interface for up to 8 VAV controllers
Connection for PC-Tool and adjustment tools
Terminal connection for control cabinet installation
Variable Air Volume – Retrofit Overview

Documentation

A wide selection of documentation and instruction manuals is available on the subject of VAV-Retrofit. These describe in detail the individual products, illustrate the conversion or replacement of devices or are for the purpose of general information on the subjects of VAV or VAV Retrofit.

All the actual documents can be found under www.belimo.eu/vav-retrofit-docu.

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