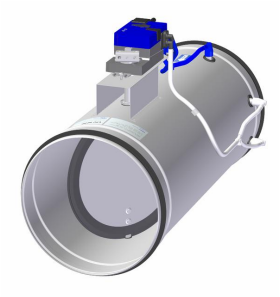
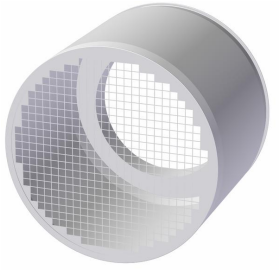
TROX® TECHNIK
Auranor





LEO

- New regulator handles larger working area
- Low noise level
- Pressure independent
- Short overall length
- High measurement accuracy
- Can be installed directly in bend
- Flexible sound attenuator choice

APPLICATION

Leo is a volume flow controller which works independently of the duct pressure. It is the desired air flow rate at choked damper that determines the duct pressure required for the applicable unit/string. The VAV unitis based on dynamic measurement of volume flows, and controls the damper position to maintain the air flow rate required. When a changein duct pressure occurs, such as when other volume flow controllers on the branch open or close, the unit will compensate by adjusting thedamper until the correct volume flow has been restored. The required air flow rate can, for example, be provided as a 0-10V signal from room thermostat / CO^2 sensor in the occupied zone covered by the unit.Minimum and maximum air flow rates can be set at the factory or during installation by using a service tool from Belimo or Siemens.The VAV unit is designed to provide comfort ventilation at temperature conditions of between 0°C and 50°C and a relative humidity between5% and 95% without condensation. A 4-conductor cable connects the controller to various control equipment in the room. Consistent use of acommon reference system for all equipment is important. For the VAV controller, cable no. 1 is system-0. All control and measurement signals are linked up in accordance with this. Wiring diagram for Leo in combination with various room controlequipment is available at our website www.trox.no For energy-efficient operation, VAV systems are equipped with pressuresensors in the ductwork, which transmit control signals to branch dampers or to the fan frequency control. Please see schematic diagramin fig.1.

Design

Leo VAV is a complete measuring and control unit where the air flow rates in ventilation systems can be set as required. At the

measuring station, the differential pressure is measured via measuring rodintegrated in the unit. The unit is installation-friendly in terms of straight ducting, and can thus be mounted in most ductwork sections. It is fullycompliant with air permeability class 4 for damper in closed position, and class C for leakage to the surroundings. Leo is equipped with VAVcontroller from Belimo or Siemens.

Belimo LMV-D3-FK AU is used from dim. 100 to dim.400.
Belimo NMV-D3 AU is used from dim. 500 to 630.
Siemens GDB181.1E is used from dim. 100 to dim.315.
Siemens GLB181.1E is used from dim. 400 to dim. 630.
Controller specifications are provided in table 1. Full technical documentation can be downloaded from our website www.trox.no. Belimo LMV/NMV-D3 is used as analog control or for MP-bus.Belimo MOD/BACnet controller or Siemens BACnet controller is also available. For KNX, Belimo LMV-D3-KNX and NMV-D3-KNX orSiemens GDB181.1E/KN and GLB181.1E/KN is available. If additional protection against structure-borne noise is required, e.g. for open installation, the unit can be delivered with external insulation and casing. This will reduce the level of noise emitted from theactual unit at high choke pressure and high velocity past the damper. However, this should be followed up with additional protection againststructure-borne noise from the duct at both sides of the unit. Please see acoustic datasection. The LEV sound attenuator is designed for VAVsystems, and is available in 500mm and 1000mm lengths. LEV has a full attenuator cross-section, and this ensures a low-level pressure loss. Itis insulated with mineral wool featuring a reinforced top layer to prevent fibres breaking away with the supply air. An extraction unit with mesh grille, ASN, in the same design as LEV is also available. Leo-D, LEV and ASN can be delivered pre-assembledwith ducting clips and are equipped with adjustable brackets from factory.

DESCRIPTION

Materials and surface Coating

Leo comes in a galvanized steel design. The measurement unit is in aluminium. Tubing, nipples and motor casing are in plastic. Leo’s connection collars are fi tted with EPDM rubber gaskets. LEV is made of galvanised steel, and comes with mineral wool and a glass fi bre layer as attenuation material. Connection collars are fi tted with EPDM rubber gaskets. ASN is made of galvanised steel and is equipped with an EPDM rubber gasket on the connection collar.

INSTALLATION

In order to maintain the system’s measurement accuracy, it is important to install units with spacing as shown in fig. 10. For installation of Leo, a service clearance in accordance with fig. 11 is recommended. For extract air with silencer towards romside it is recommended 5xDia. as distance to Leo. (Nb. Use a muffler without center baffle or other restriction.)

TEKNISK INFORMATION

Leo - 0 - 0 - 1 - 160 - 0

Product:

Type:
0 = Not Encased
D = Encased

Controller Option:
0 = Belimo MP-Bus
3 = Belimo MOD-Bus
4 = Belimo BACnet
7 = Belimo KNX
8 = MOD-Bus for XAC
9 = XAC-ZM MOD-Bus
9.1 = XAC-ZM MOD-Bus w/light relay
9.2 = XAC-ZM MOD-Bus w/heating-cooling relay
9.3 = XAC-ZM MOD-Bus w/light, heating-cooling relay
9.4 = XAC-ZM MP-Bus
10 = Siemens KNX
11 = Siemens BACnet

MS = Labeling scheme

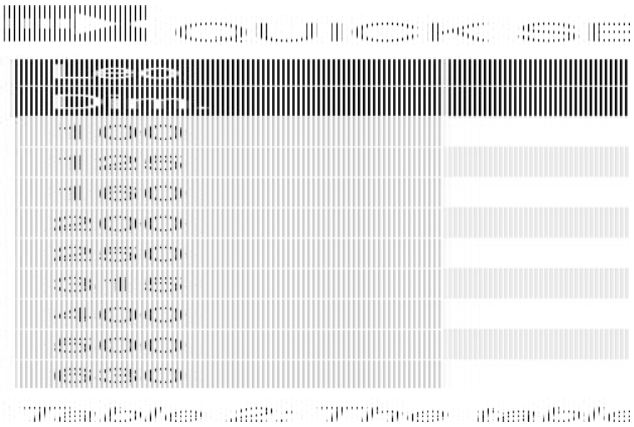
Dimension: Ø100 – Ø630

Plug:
0 = Without plug
1 = Wago 4. Pol Midi, Grey *
2 = Wago 4. Pol Midi, Green **

* Only for controller option 0

** Only for controller option 3, 4, 7, 10, 11

Example:
Leo-0-0-1-160-0
Explanation:
Leo not encased, with Belimo MP-Bus, Wago-plug mounted, dim. Ø160, without labeling scheme.



Leo will always adjust to the air fl ow rate consistent with the signal transmitted from the room control equipment. The VAV unit comprises an adjustable damper and measuring station for air fl ow rate, and the measurement principle is dynamic measurement of the air fl ow. In the damper motor’s control unit, should the admission for the damper is regulated according to the desired should-value. Leo has an adjust- ment range shown in table 2.
Deviation for working range 10 - 20% of Vnom:±25%
20 - 40%: <±10%
40 - 100%: <±4%
If T-pipes are used, a spacing of at least 5 x ØD is recommended in order to maintain the measurement accuracy.