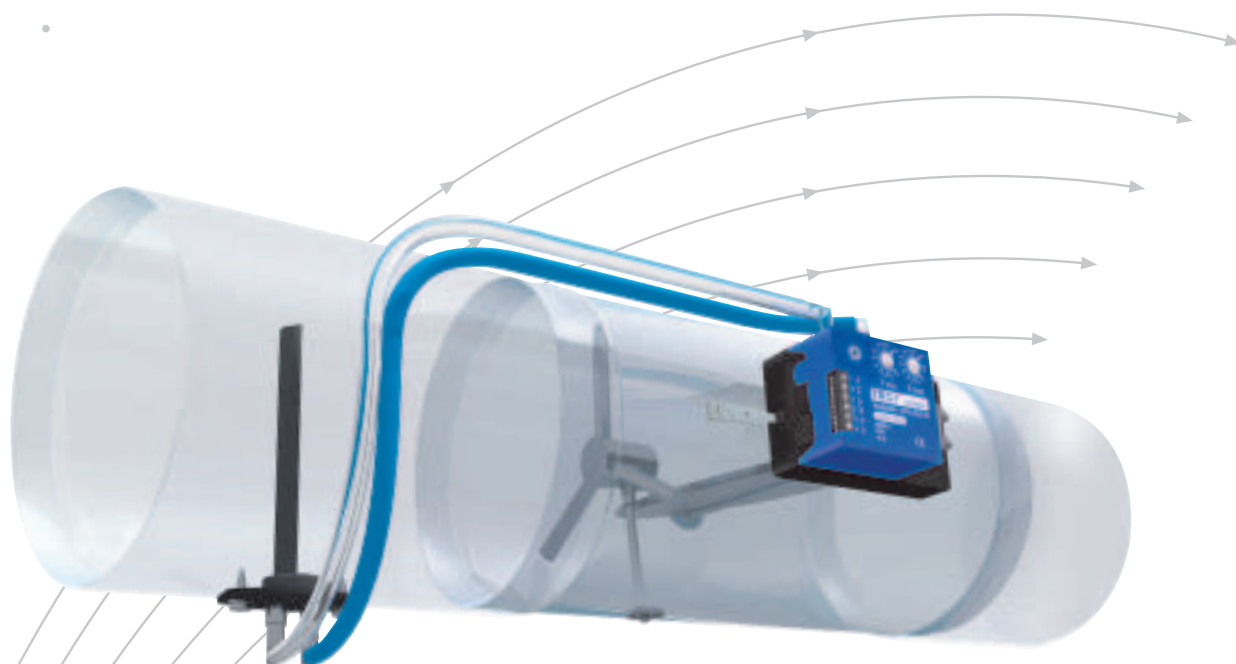


VaryControl[®] VAV-EasySet

For refurbishing VAV terminal units



TROX[®] TECHNIK

Gebrüder Trox GmbH

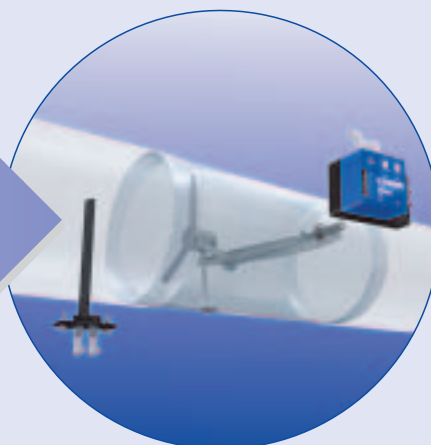
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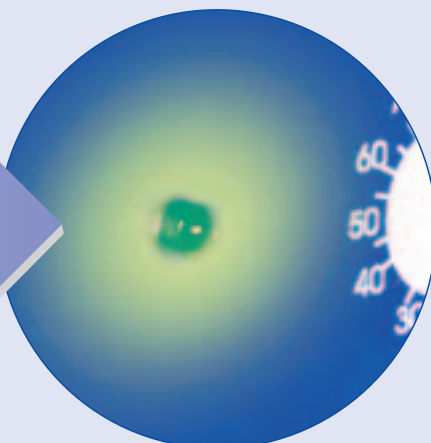
1 Install Trox Compact controller and differential pressure grid



Set volume flow **2**

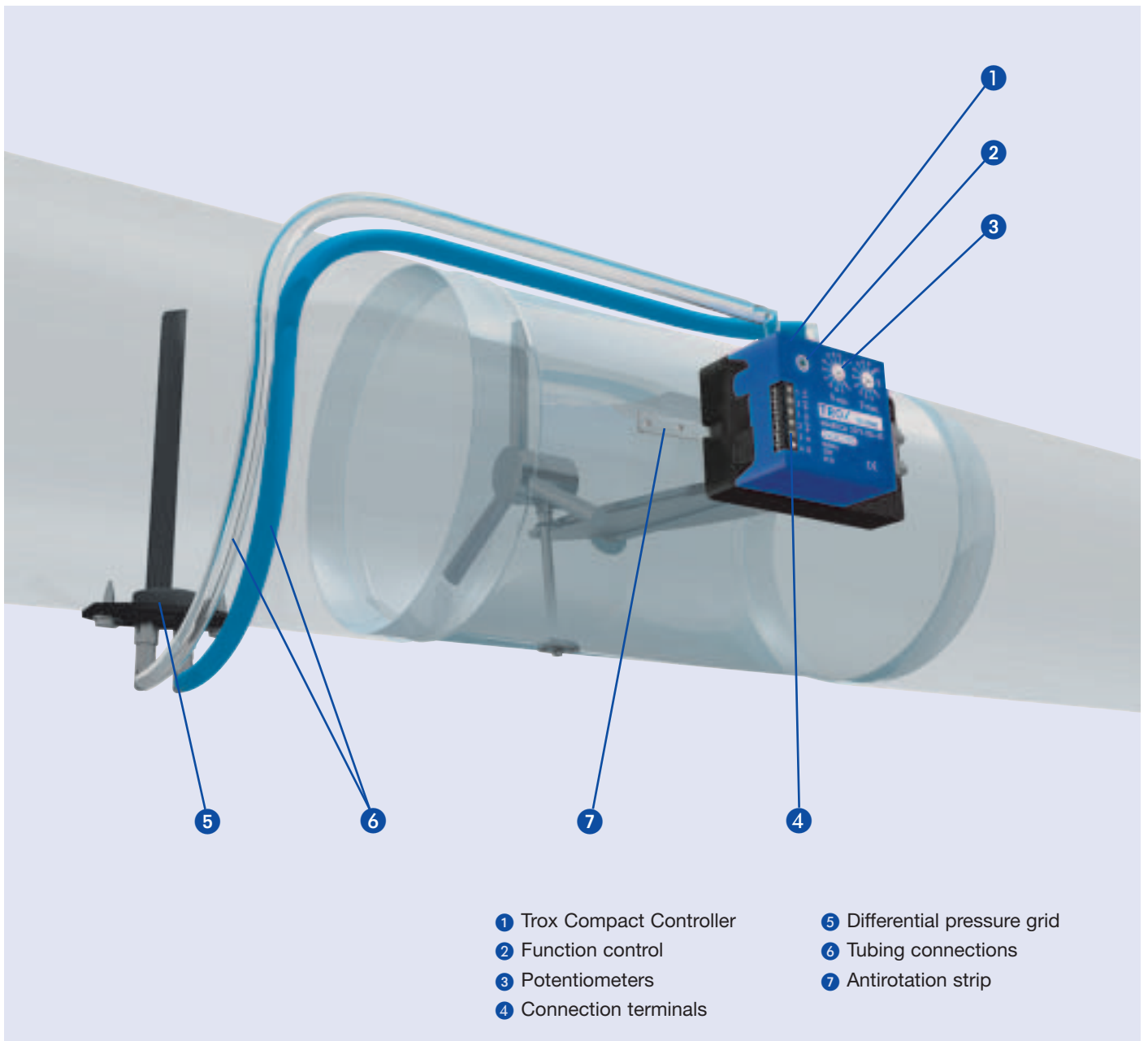


3 Green light: Ready!



Trox VAV-EasySet is an assembly made of control unit components for refurbishing VAV terminal units. VAV-EasySet is suitable for circular duct systems.

- Newly developed differential pressure grid to measure airflow using dynamic pressure drop principles
- Trox Compact Controller and actuator are mounted on the casing of the original flow control unit
- Adjustment of \dot{V}_{\min} and \dot{V}_{\max} volume flow rates by potentiometers with graduated scales. No special tools required
- Function check by LED light



Grid Technology · Installation and commissioning

Differential pressure grid

Up to a duct diameter of 250 mm a single element is used. Starting at 280 mm diameter and above two elements are used. The element supplied is 255 mm long, where necessary for appropriate duct dimensions it must be shortened with the help of the template. For installation into the ductwork it is necessary to drill a 36mm diameter hole. The fixing of the element end plate is by means of self tapping screws.

Selection of the measuring point

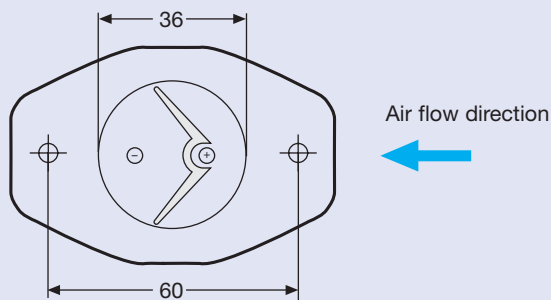
The measuring point must be selected in such a way that the specified maximum permitted tube length does not exceed 3 m for each pressure line. To achieve as uniform flow as possible over the grid there should be a sufficiently long straight duct upstream of the measuring plane.

Installation and commissioning

- Remove the existing control components and fit the Trox Compact Controller on the control damper shaft
- Install the differential pressure grid on a suitable measuring point and connect it with the Trox Compact Controller
- Make and check the electrical connections
- Function test with the help of the green LED:

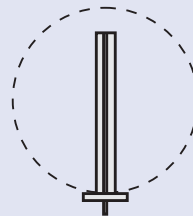
LED blinks:	Volume flow not set or duct pressure too low
LED flashes constantly:	Volume flow set
LED off:	No supply voltage

Differential pressure grid assembly end view

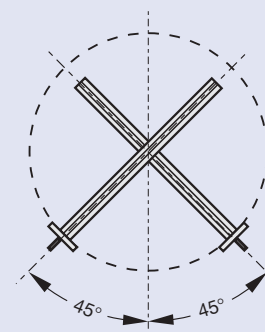


Differential pressure grid

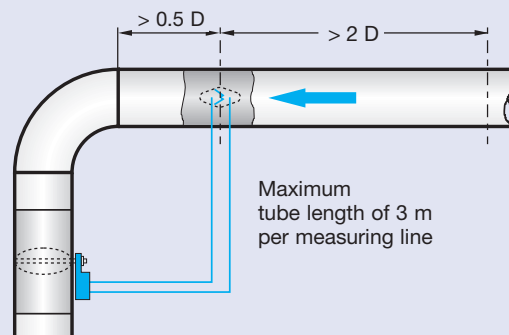
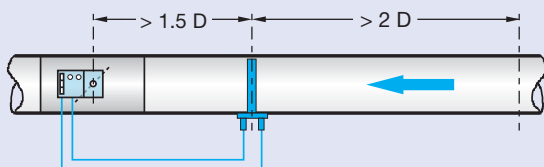
Duct system
D = 100 ... 250



Duct system
D = 280 ... 400

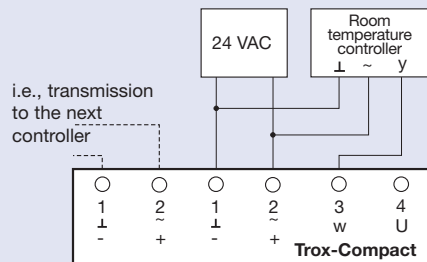


Measuring point



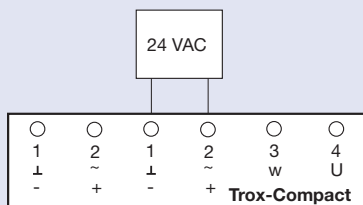
The customer made connections and wiring must comply with the local standards for electrical wiring.

Variable Volume Flow Control



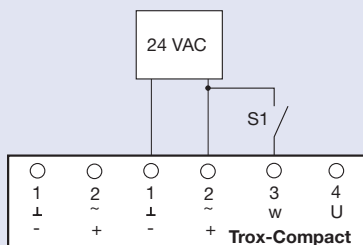
The connection of the power supply and of the external room temperature controller must be carried out as shown in the circuit diagram opposite.

Constant Volume Flow Control



As soon as the 24 VAC supply voltage is applied, the controller runs the adjusted \dot{V}_{\min} -value as a constant volume flow.

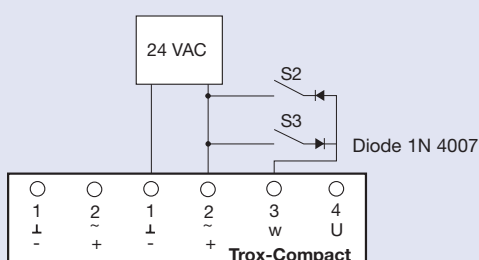
$\dot{V}_{\min} / \dot{V}_{\max}$ Changeover



The switch S1 enables a changeover between the two constant volume flows \dot{V}_{\min} and \dot{V}_{\max} .

Switch S1 open : \dot{V}_{\min}
Switch S1 closed: \dot{V}_{\max}

Override controls OPEN / CLOSED



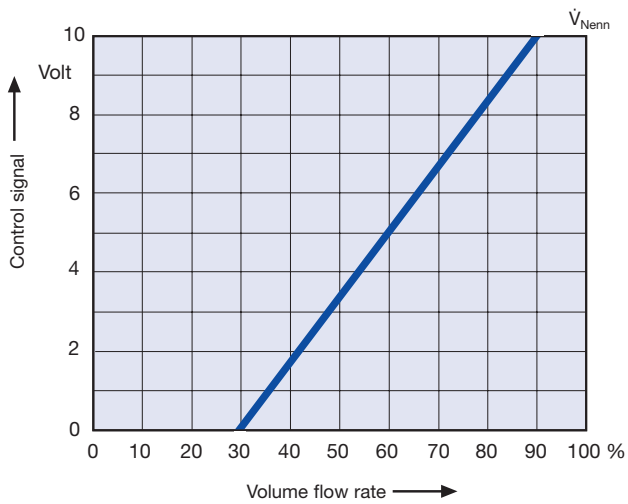
The override controls to provide OPEN and CLOSED can be achieved using external switches (potential-free contacts).

Switch S2 closed: Damper blade CLOSED
Switch S3 closed: Damper blade OPEN

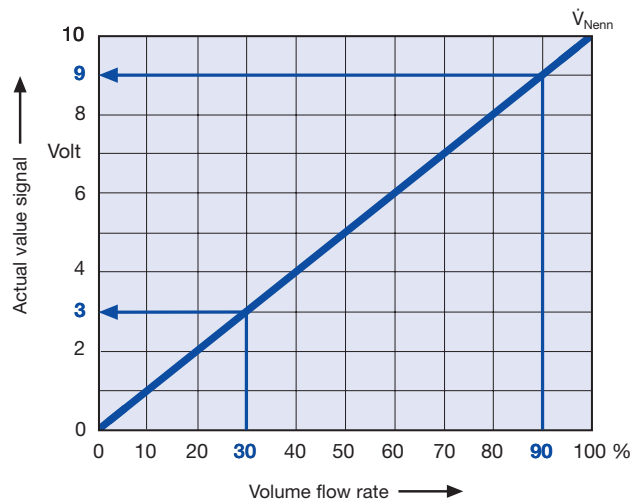
All override controls can be combined among themselves and with the different control switch variants.

Characteristics · Volume flow adjustment

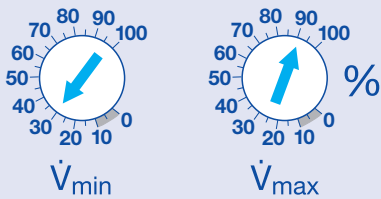
Characteristic of the control signal



Characteristic of actual value signal



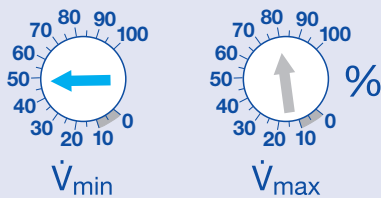
Variable volume flow control



The required volume flow rates have to be adjusted by the customer. If \dot{V}_{min} is set higher than \dot{V}_{max} , then \dot{V}_{min} is provided as a constant volume flow, even if a control signal is transmitted.

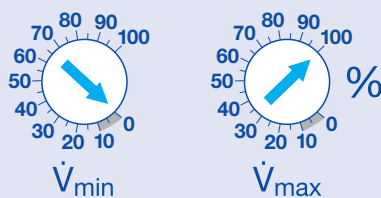
If \dot{V}_{min} is set on 0 %, then control is between shut-off and \dot{V}_{max} . If the control signal falls below 0,1 VDC, the damper blade closes.

Constant Volume Flow Control



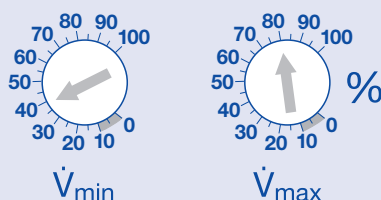
The constant volume flow can be set with the \dot{V}_{min} -potentiometer. The position of the \dot{V}_{max} -potentiometer is unimportant.

BMS Activation



If the volume flow is set by the BMS, the potentiometer \dot{V}_{min} -must be set at 0 % and the potentiometer \dot{V}_{max} -must be set at 100 %. If the control signal falls below 0,1 VDC, the control damper closes.

Factory setting



For delivery, the potentiometer \dot{V}_{min} - and \dot{V}_{max} -are set at 40 and 80 %, respectively.

Technical data · Volume Flow Ranges

Trox-Compact Technical data

Supply voltage:	24 VAC ± 20 %, 50/60 Hz
Power absorption:	max. 3 W
Rating:	max. 5.5 VA
Control signal:	0 to 10 VDC, Ri > 100 kΩ
Volume flow- Actual value signal:	0 to 10 VDC linear, max. 0.5 mA
Measuring sensor:	2 to 300 Pa
Running time:	120 to 300 sec. for 87°
Torque:	8 Nm
Safety class:	III (Safety K voltage)
Protection level:	IP 20
Ambient temperature:	0° C to +50° C
Storage temperature:	-20° C to +80° C

General information

Standard filtration in air-conditioning systems allows the use of Trox compact controllers for the supply air without additional dust protection filters. Since a small volume flow is passed through the transmitter in order to monitor the volume flow, the following must be noted:

- With heavy dust level in the room, suitable extract air filters must be provided.
- If the air is contaminated with fluff or sticky particles or contains aggressive media, the Trox Compact Controller should not be used.

Label for flow volume controller

VAV-EasySet

TROX[®] TECHNIK

D 200 \dot{V}_{Nom} 1450 = 100 %

\dot{V}_{min} 435 = 30 %

\dot{V}_{max} 1160 = 80 %

Marking Room 210

Name Mustermann

Date 203.05

Label for revision documents

VAV-EasySet **TROX[®] TECHNIK**

Project BASF Building 14

D 200 \dot{V}_{Nom} 1450 = 100 %

\dot{V}_{min} 435 = 30 %

\dot{V}_{max} 1160 = 80 %

Marking Room 210

Name Mustermann Date 203.05

For marking the on-site refurbishment, the VAV EasySet assembly contains a label, which can be printed with the appropriate data (see example). A second smaller label can be used for archiving in the revision documents.

Nominal volume flow rate

D	\dot{V}_{Nom}	
	l/s	m³/h
100	97	350
125	153	550
140	195	702
160	250	900
200	403	1450
224	525	1890
250	617	2220
315	1028	3700
400	1676	6035

Example

Given: TVR, D = 200
 $\dot{V}_{\text{max}} = 1160 \text{ m}^3/\text{h}$
 $\dot{V}_{\text{min}} = 435 \text{ m}^3/\text{h}$

Required: Potentiometer settings in %

Calculation

The calculation of the settings according to the formula

$$\dot{V}_{\text{set value in \%}} = \frac{\dot{V}}{\dot{V}_{\text{Nom}}} \cdot 100 \%$$

The result is: \dot{V}_{min} -Set value = 30 %
 \dot{V}_{max} -Set value = 80 %

Order details



Specification text

VAV-EasySet

Assembly to VAV terminal units in circular ductwork systems, for nominal sizes from 100 to 400 mm, for supply or extract air.

Simple setting by the customers of the volume flow using potentiometers with percentage scales on Trox Compact Controller. Adjustments can be undertaken without supply voltage present, no special tools required.

High visibility external control lamp for signalling the functions:

Set, not set and power failure.

Electrical connections are with screw terminals for looping the 24 VAC supply voltage, i.e. for the connection of simple voltage transmission to the next controller.

Voltage range for control and actual value signal from 0 to 10 VDC, possible override controls with external switches using potential-free contacts: CLOSED, OPEN, \dot{V}_{\min} / \dot{V}_{\max} Changeover. Same, linear characteristics for all sizes.

Scope of delivery:

- Trox Compact Controller
- Differential pressure grid
Construction S: 1 element, Construction L: 2 elements
- 2 tubes, inside diameter 6,5 mm, each 2 m long
- Plastic bag with small parts

Order code

