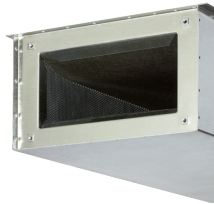




Circular connection on the fan end



Rectangular connection on the room end

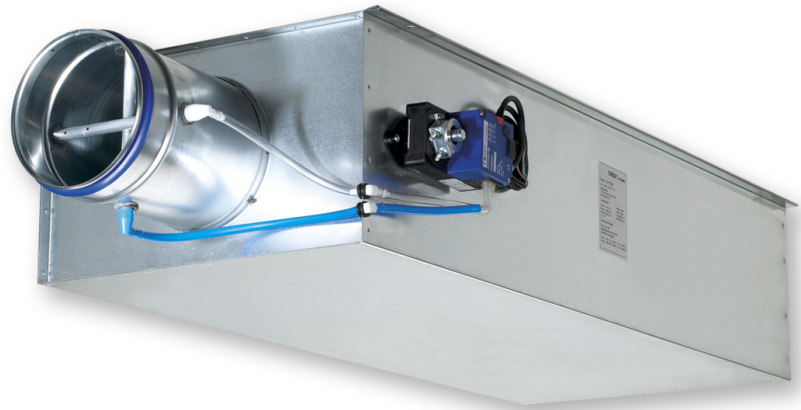


Compact controller



Easy controller

Variable volume flow control VAV terminal units TVZ



For supply air systems with demanding acoustic requirements

VAV terminal units for the supply air control in buildings with variable air volume systems and demanding acoustic requirements

- Highly effective integral attenuator
- Box style construction for the reduction of the airflow velocity
- Electronic control components for different applications (Easy, Compact, Universal, and LABCONTROL)
- Suitable for airflow velocities up to 13 m/s
- Closed blade air leakage to EN 1751, up to class 4
- Casing air leakage to EN 1751, class C

Optional equipment and accessories

- Acoustic cladding for the reduction of case-radiated noise
- Secondary silencer Type TS for the reduction of air-regenerated noise
- Hot water heat exchanger of Type WT for reheating the airflow
- Electric heater for reheating the airflow

General information	2	Order code	8
Function	3	Variants	10
Technical data	4	Dimensions and weight	14
Quick sizing	4	Product details	19
Specification text	7	Explanation	20

General information

Application

- VARYCONTROL VAV terminal units of Type TVZ for the supply air control in variable air volume systems
- Closed-loop volume flow control using an external power supply
- Integral attenuator for demanding acoustic requirements
- Shut-off by means of switching (equipment supplied by others)

Special characteristics

- Integral attenuator with at least 26 dB insertion loss at 250 Hz
- Hygiene tested and certified
- Factory set-up or programming and aerodynamic function testing
- Volume flow rate can later be measured and adjusted on site; additional adjustment device may be necessary
- Inspection access for cleaning to VDI 6022

Nominal sizes

- 125, 160, 200, 250, 315, 400

Variants

- TVZ: Supply air unit
- TVZ-D: Supply air unit with acoustic cladding
- Units with acoustic cladding and/or secondary silencer Type TS for very demanding acoustic requirements
- Acoustic cladding cannot be retrofitted

Parts and characteristics

- Ready-to-commission unit which consists of mechanical parts and control components.
- Averaging differential pressure sensor for volume flow rate measurement
- Damper blade
- Integral attenuator
- Inspection access
- Factory assembled control components complete with wiring and tubing
- Aerodynamic functional testing on a special test rig prior to shipping of each unit
- Set-up data is given on a label or volume flow rate scale affixed to the unit
- High control accuracy (even with upstream bend $R = 1D$)

Attachments

- Easy controller: Compact unit consisting of controller with potentiometers, differential pressure transducer and actuator
- Compact controller: Compact unit consisting of controller, differential pressure transducer and actuator
- Universal controller: Controller, differential pressure transducer and actuators for special applications
- LABCONTROL: Control components for air management systems

Accessories

- Lip seal (factory fitted)

Technical data

- Nominal sizes: 125 to 400 mm
- Volume flow rate range: 15 to 1680 l/s or 54 to 6048 m³ /h
- Volume flow rate control range (unit with dynamic differential pressure measurement): approx. 10 to 100 % of the nominal volume flow rate
- Minimum differential pressure: 5 – 80 Pa
- Maximum differential pressure: 1000 Pa

Useful additions

- Secondary silencer Type TS
- Heat exchanger Type WT

Function

Functional description

The VAV terminal unit is fitted with a differential pressure sensor for measuring the volume flow rate.

The control components (attachments) include a differential pressure transducer that transforms the differential pressure (effective pressure) into an electric signal, a controller, and an actuator; the control functions can be achieved with an Easy controller, with a Compact controller, or with individual components (Universal or LABCONTROL).

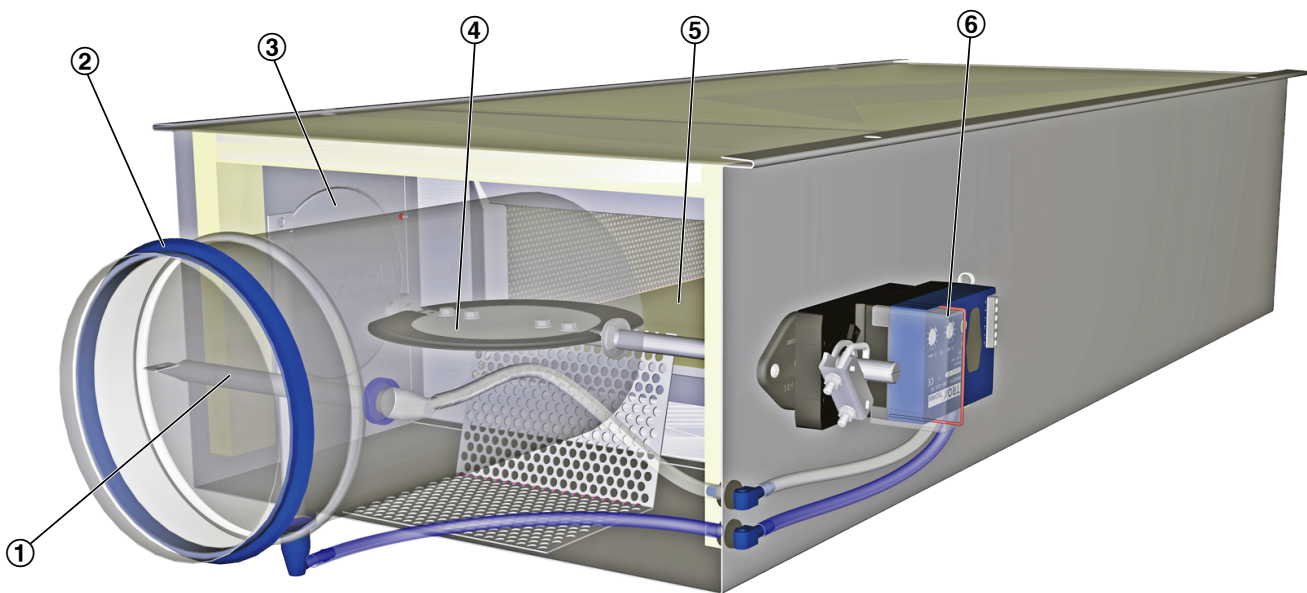
For most applications, the setpoint value comes from a room temperature controller.

The controller compares the actual value with the setpoint value and alters the control signal of the actuator if there is a difference between the two values.

An integral attenuator reduces the noise that is created by the restriction of the airflow.

The airflow velocity at the room end is, due to the larger rectangular cross section, about half the velocity in the circular duct.

Schematic illustration of the TVZ



- ① Effective pressure sensor
- ② Double lip seal
- ③ Inspection access

- ④ Damper blade
- ⑤ Integral attenuator
- ⑥ Control components, e.g. an Easy controller

Technical data

Nominal sizes	125 - 400
Volume flow rate range	15 - 1680 l/s or 54 – 6048 m ³ /h
Volume flow rate control range (unit with dynamic differential pressure measurement)	Approx. 10 – 100 % of the nominal volume flow rate
Minimum differential pressure	5 – 80 Pa
Maximum differential pressure	1000 Pa
Operating temperature	10 – 50 °C

Nominal size	Supply voltage		Minimum flow rate l/s
	Single phase	Three phase	
	Heater capacity [Q kW]	Heater capacity [Q kW]	
125	0.5, 1, 1.5, 2, 3		50
160	1, 1.5, 2, 3, 4		85
200	1, 1.5, 2, 3, 4, 5	6	140
250	1, 1.5, 2, 3, 4, 5	6, 7.5	210
315	2, 3, 4, 5	6, 7.5	375
400	5	6, 7.5, 9	580

Quick sizing

Quick selection data

Sound pressure level, static pressure difference 150 pa

Nominal size	qv [l/s]	qv [m ³ /h]	Air-regenerated noise			
			①	②	①	③
			LPA	LPA1	LPA3	LPA2
125	15	54	17	16	21	<15
	60	216	24	20	24	16
	105	378	29	24	27	19
	150	540	34	29	32	23
160	25	90	18	16	20	<15
	100	360	28	24	25	18
	175	630	35	29	29	21
	250	900	36	30	35	27
200	40	144	16	<15	22	15
	160	576	21	17	27	20
	280	1008	23	17	31	23
	405	1458	31	24	39	31
250	60	216	16	15	22	16
	250	900	17	<15	26	19
	430	1548	22	15	29	22
	615	2214	31	21	37	28
315	105	378	18	15	21	15
	410	1476	21	16	27	19
	720	2592	24	18	33	24
	1030	3708	29	22	38	29
400	170	612	17	<15	25	17
	670	2412	19	15	29	20
	1175	4230	26	20	33	25

	1680	6048	32	27	43	35
--	------	------	----	----	----	----

- ① TVZ
- ② TVZ with secondary attenuator TS
- ③ TVZ-D

Quick selection data electric heater

Nominal size	Volume flow rate l/s	Heater capacity [Q kW]									
		Single phase							Three phase		
		0.5	1	1.5	2	3	4	5	6	7.5	9
125	50	26	34	42	50	67					
	60	24	31	38	45	58					
	105	21	25	29	33	41					
	150	20	23	26	28	34					
160	85		27	32	37	46	56				
	100		26	30	34	42	50				
	175		22	25	27	32	36				
	250		21	22	24	27	31				
200	140		23	26	29	35					
	160		23	25	28	33	38				
	280		20	22	23	26	29	32	35		
	405		20	21	22	24	26	28	30		
250	210		21	23	25	29	33	37			
	250		21	22	24	27	31	34	37	42	
	430		19	20	21	23	25	27	29	32	
	615		19	19	20	21	23	24	25	27	
315	375				22	24	26	28	31	34	
	410				21	23	25	27	29	32	
	720				20	21	22	23	24	26	
	1030				19	20	21	21	22	23	
400	670							24	25	27	29
	1175							21	22	23	24
	1680							20	20	21	22

Supply air temperature based on air entering temperature of 18 degrees C.

Quick selection data LPHW heating coil

Nominal size	qv [l/s]	qv [m³/h]	Δpst	PWW 50/40, te = 16 °C				PWW 70/55, te = 16 °C			
				Q	ta	wM	ΔPv	Q	ta	wM	ΔPv
125	15	54	1	0.4	39.8	0.01	0.5	0.7	55.7	0.012	0.6
	35	126	13	0.7	33.1	0.017	1.3	1.2	44.5	0.019	1.5
	60	216	32	1.1	30.6	0.025	2.4	1.8	40.3	0.028	2.9
	95	342	69	1.5	28.8	0.035	4.2	2.5	37.3	0.039	5
	150	540	150	2	26.9	0.048	7	3.4	34.2	0.053	8.4
160	25	90	2	0.6	36	0.019	0.4	1.1	50.2	0.017	0.3
	65	234	18	1.2	30.8	0.028	0.9	2	41.3	0.032	1.1
	100	360	36	1.6	29.3	0.039	1.5	2.8	38.7	0.044	1.9
	170	612	88	2.4	27.5	0.057	3	4.1	35.6	0.065	3.8
	250	900	169	3	25.9	0.072	4.6	5.2	32.9	0.082	5.9
200	40	144	1	1.1	37.5	0.037	1	1.8	52.8	0.03	0.6
	110	396	13	2.1	31.2	0.049	1.6	3.5	42.2	0.056	2
	180	648	31	3	29.5	0.071	3.1	5.1	39.1	0.081	4
	280	1008	64	4.1	28	0.098	5.7	7.1	36.6	0.112	7.3
	405	1458	119	5.3	26.7	0.126	9.1	9.1	34.3	0.144	11.8
250	60	216	1	1.8	39.7	0.041	1.2	2.9	55.6	0.046	1.5
	170	612	18	3.3	31.9	0.079	4	5.6	42.7	0.088	4.9
	280	1008	41	4.8	29.8	0.113	7.6	8	39.1	0.126	9.4
	470	1692	98	6.8	27.8	0.162	14.9	11.4	35.8	0.181	18.4
	615	2214	154	8.1	26.7	0.191	20.5	13.5	33.9	0.214	25.2
315	105	378	2	3.2	40.4	0.075	3.7	5.2	56.3	0.082	4.4
	265	954	16	5.6	33.1	0.132	10.7	9.2	44.3	0.146	12.8
	420	1512	35	7.7	31	0.183	19.8	12.8	40.7	0.202	23.7
	720	2592	85	11.3	28.8	0.268	40.9	18.7	37.1	0.295	49.2
	1025	3690	154	14.1	27.2	0.336	63.1	23.4	34.5	0.369	76
400	170	612	2	5.1	40.5	0.121	9.5	8.4	56.3	0.133	11.2
	445	1602	18	9.3	33.1	0.221	29	15.4	44.1	0.243	34.6
	710	2556	39	13	30.9	0.309	54.5	21.4	40.5	0.338	65.1
	1250	4500	100	19.3	28.6	0.458	116.5	31.8	36.7	0.502	139.3
	1680	6048	165	23.2	27.2	0.55	166.1	38.1	34.5	0.603	198.7

Specification text

This specification text describes the general properties of the product. Texts for variants can be generated with our Easy Product Finder design programme.

Specification text

Rectangular VAV terminal units for variable and constant air volume systems, suitable for supply air, available in 6 nominal sizes. High control accuracy (even with upstream bend $R = 1D$). Ready-to-commission unit which consists of the mechanical parts and the electronic control components. Each unit contains an averaging differential pressure sensor for volume flow rate measurement, a damper blade, and an integral attenuator. Factory-assembled control components complete with wiring and tubing. Differential pressure sensor with 3 mm measuring holes (resistant to dust and pollution)

On the fan end, spigot with groove for lip seal, suitable for connecting ducts according to EN 1506 or EN 13180. Room end suitable for the connection of air duct profiles. Baffle plate is fitted after the damper blade for optimum acoustic and aerodynamic performance. Casing with acoustic and thermal insulation. Position of the damper blade indicated externally at shaft extension. Closed blade air leakage to EN 1751, class 4 (nominal sizes 125 and 160, class 3). Casing air leakage to EN 1751, class B. Complies with VDI 2083, clean room class 3, and US standard 209E, class 100. Hygiene complies with VDI 6022, DIN 1946, part 4, as well as EN 13779 and VDI 3803.

Special characteristics

- Integral attenuator with at least 26 dB insertion loss at 250 Hz
- Hygiene tested and certified
- Factory set-up or programming and aerodynamic function testing
- Volume flow rate can later be measured and adjusted on site; additional adjustment device may be necessary
- Inspection access for cleaning to VDI 6022

Technical data

- Nominal sizes: 125 to 400 mm
- Volume flow rate range: 15 to 1680 l/s or 54 to 6048 m³ /h

- Volume flow rate control range (unit with dynamic differential pressure measurement): approx. 10 to 100 % of the nominal volume flow rate
- Minimum differential pressure: 5 – 80 Pa
- Maximum differential pressure: 1000 Pa

Specification text attachment

Variable volume flow control with electronic easy controller for connecting a reference variable and an actual value signal for integration in building management systems.

- 24 V AC / DC supply voltage
- Signal voltages 0 - 10 V DC
- Possible with external, potential-free switches Forced controls: CLOSE, OPEN, V_{min} and V_{max}
- Potentiometer with percentage scales for setting the Volume flows V_{min} and V_{max}
- Actual value signal related to nominal volume flow, thereby simplified commissioning and subsequent adjustment
- Volume flow control range approx. 10 - 100% from Nominal volume flow
- Control light for signaling that is clearly visible from the outside of the functions: controlling, not controlling and Power failure
- Electrical connections with screw terminals. Double terminal for supply voltage for easy further wiring of up to 3 controllers

Sizing data

- V _____ [l/s]
- Δp_{st} _____ [Pa]

Air-regenerated noise

- LPA _____ [dB(A)]

Case-radiated noise

- LPA _____ [dB(A)]

Order code

TVZ

TVZ - D - E1/4 - V / 315 / D1 / BCO / E 0 / 200 - 900 [l/s] / ** / NO**
 | | | | | | | | | | | |
 1 2 3 4 5 6 7 8 9 10 11 12

1 Type

TVZ VAV terminal unit, supply air

No entry: none

D1 Lip seal

2 Acoustic cladding

No entry: none

D With acoustic cladding

7 Attachments (control component)

For example

BC0 Compact controller

BMO Compact controller

3 Reheat

No entry: none

1 1 row LPHW water coil

2 2 row LPHW water coil

E1/0.5 Electric reheat 1 ph 0.5 kW

E1/1 Electric reheat 1 ph 1 kW

E1/1.5 Electric reheat 1 ph 1.5 kW

E1/2 Electric reheat 1 ph 2 kW

E1/3 Electric reheat 1 ph 3 kW

E1/4 Electric reheat 1 ph 4 kW

E1/5 Electric reheat 1 ph 5 kW

E3/6 Electric reheat 3 ph 6 kW

E3/7.5 Electric reheat 3 ph 7.5 kW

E3/9 Electric reheat 3 ph 9 kW

8 Operating mode

E Single

9 Signal voltage range

For the actual and setpoint value signals

0 0 – 10 V DC

2 2 – 10 V DC

10 Operating values for factory setting

Volume flow rates [l/s]

q_{vmin} – q_{vmax}

4 Electric reheat control signal

No entry: none

V Control by 0-10 Vdc signal

C Control by 4-20 mA signal

11 Wiring diagram

for internal use only

5 Nominal size [mm]

125, 160, 200, 250, 315, 400

12 Damper blade position

Only with spring return actuators

NO Power off to OPEN

NC Power off to CLOSE

6 Accessories

Order example: TVZ-D-E1/4-V/315/D1/BCO/EO/200-900/**/**

Acoustic cladding	With
Heater	Electric 1 ph 4kW
Nominal size	315
Accessories	Lip seal
Attachment	Compact controller
Operating mode	Single
Volume flow rate	200 - 900 l/s
Wiring diagram	For internal use only

TVZ ... EASY

TVZ – D / 160 / D1 / Easy
| | | | |
1 2 3 4 5

1 Type

TVZ VAV terminal unit, supply air

2 Acoustic cladding

No entry: none

D With acoustic cladding**3 Nominal size [mm]**

125, 160, 200, 250, 315, 400

4 Accessories

No entry: none

D1 Lip seal**5 Attachments (control components)****Easy** Volume flow controller, dynamic, interface analog, setting q_{vmin} and q_{vmax} with potentiometers**Order example: TVZ-D/160/D1/EASY**

Acoustic cladding

With

Nominal size

160

Accessories

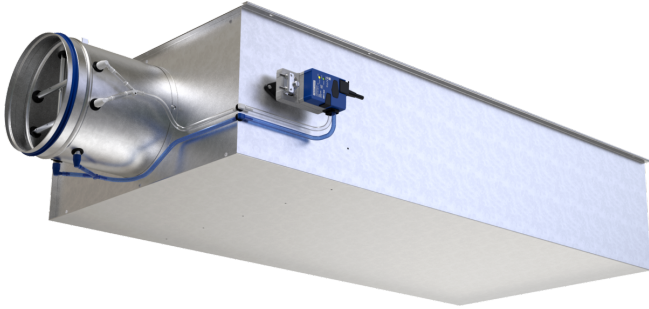
Lip seal

Attachment

EASY Controller

Variants

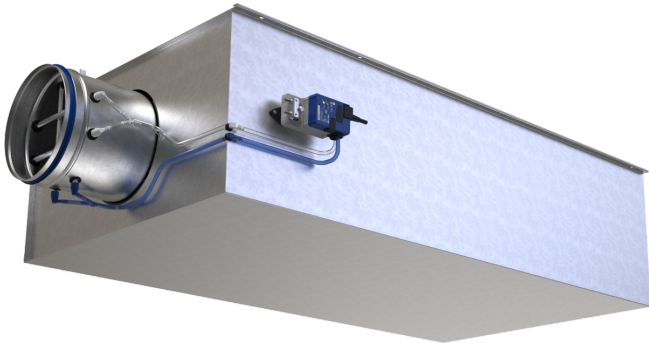
TVZ Supply air VAV terminal unit



Application

- VAV terminal unit for the control of variable supply air volume flows

TVZ-D Supply air VAV terminal unit with acoustic cladding



Application

- VAV terminal unit with acoustic cladding for the control of variable supply air volume flows
- For rooms where the case-radiated noise of the unit is not sufficiently reduced by a false ceiling
- The circular ducts for the room under consideration must have adequate acoustic insulation (provided by others) on the fan end
- Acoustic cladding cannot be retrofitted

TVZ-1 or 2 Supply air VAV terminal unit with LPHW reheat coil



Application

- VAV terminal unit for the control of variable supply air volume flows for cooling, demand controlled ventilation and heating

Special characteristics

- Factory fitted 1 row or 2 row LPHW reheat coil

Materials and surfaces

Hot Water Coils

- Hot water heating coil is manufactured from 3/8 inch diameter copper tube with aluminium fins spaced at 1.8mm (14 fpi)
- Tubes are formed into circuits to limit water velocity and mounted in a galvanised sheet steel flanged frame with copper headers
- Heating coils meet the requirements of British Standards/Codes as applicable
- Coil connections are 1/2 inch BSPT as standard.
- Plugged air vent and drain points are provided

TVZ-E* Supply air VAV terminal unit with electric heater



Application

- VAV terminal unit for the control of variable supply air volume flows for cooling, demand controlled ventilation and electric heating

Special characteristics

- Factory fitted electric heater with integrated heater controls

Materials and surfaces

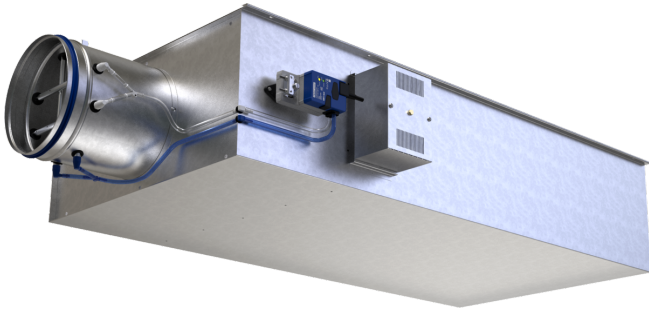
Electric Heaters

- The electric heater is available as an integral unit complete with controls including fuses and interlocks
- Integral air heater has elements designed for black heat operation and consists of 80/20 nickel chrome wire in a stainless steel tube (grade 312) filled with magnesium oxide
- Automatic-reset HTCO (high temperature cut out) with additional failsafe protection is fitted, factory set to 40C +/-5C air temperature.
- For additional safety, airflow proving for the heating cycle is provided by a DP switch connected to the primary flow grid, factory calibrated for the box minimum airflow.
- A fully manual reset HTCO is only available by special order.
- Manufactured to British Standards/Codes as applicable and fully factory tested.
- Heater elements are wired back into the control enclosure, including the earth, brass earth stud included and heater fuses are supplied.
- Control of the heater for stepless control is by solid state relay.

Technical data

- When heating is required it is recommended that the primary air should be at V_{min} .
- **!** For safety reasons, it is recommended that the heater status signal provided is monitored by the BMS in order to allow the BMS to stop the heating cycle and prevent further heating cycles until any fault with the airflow or heater element temperature has been identified and made safe. If the HTCO operates due to temperature over limit, it is recommended that HTCO be replaced before making heater battery operational again.
- **!** For safety reasons, if the HTCO failsafe manual reset operates due to temperature over limit, the HTCO must be replaced before making heater battery operational again.
- **!** Run-on Time: The control strategy for the heater must allow a minimum of 10 minutes fan run-on time to allow the heater to cool safely. During this time the V_{min} heating cycle air volume must be maintained for the 10 minute duration after the heater control signal is switched off.
- It is recommended that the heater output is limited by a supply air temperature sensor to prevent overheating and room supply air stratification.

TVZ Supply air terminal unit fitted with mains transformer



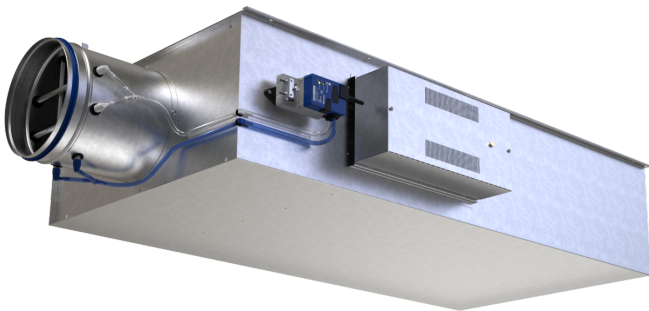
Application

- VAV terminal unit for the control of variable supply air volume flows with factory fitted mains transformer

Materials and surfaces

- Standard galvanised steel controls enclosure with fused 25VA transformer wired to TROX VAV controller

TVZ-SP Supply air VAV terminal unit with with provision for site fitted BMS controls



Application

- VAV terminal unit for the control of variable supply air volume flows with provision for site fitted BMS controller

Special characteristics

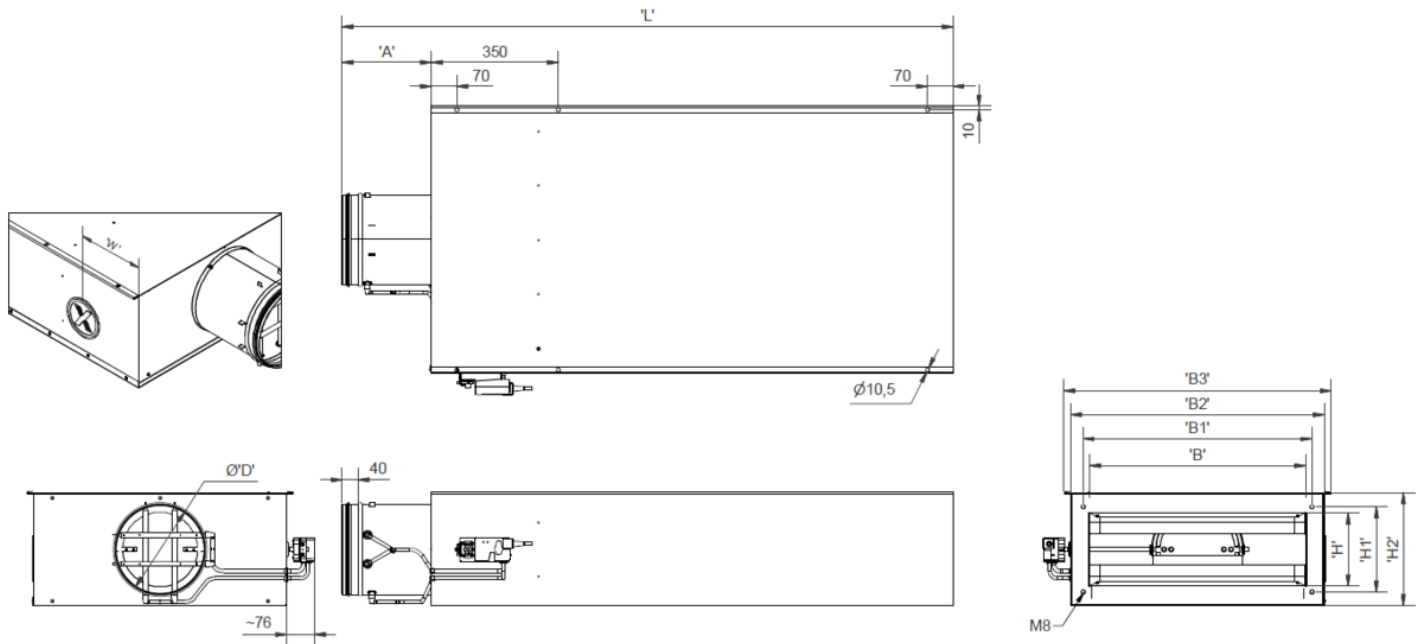
- Factory fitted controls enclosure with fused 25VA transformer wired to TROX VAV controller with space for a site fitted BMS controller

Materials and surfaces

- TROX VAV controller factory wired to a fused 25VA transformer in galvanised steel enclosure
- TROX VAV controller calibrated on an air flow test rig

Dimensions and weight

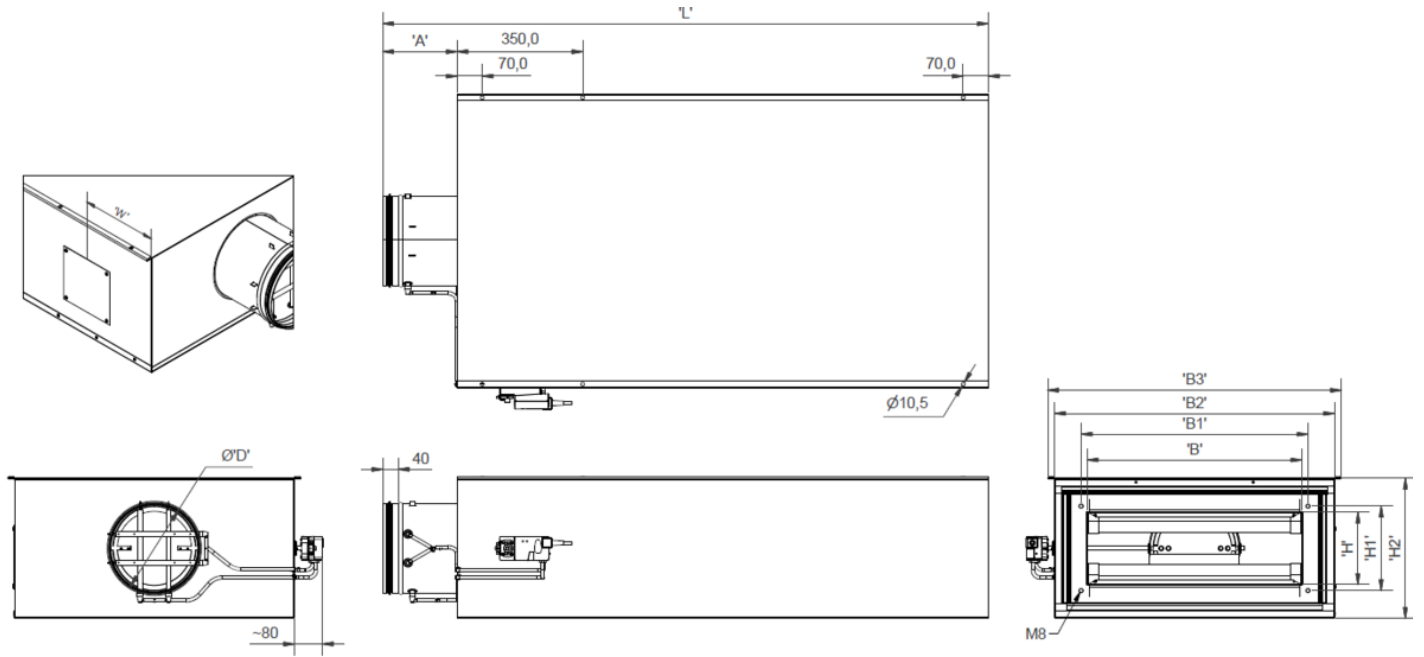
TVZ



Product specific data TVZ

Nominal size	D [mm]	L [mm]	B [mm]	B1 [mm]	B2 [mm]	B3 [mm]	H [mm]	H1 [mm]	H2 [mm]	A [mm]	W [mm]	weight [kg]
125	124	1185	198	232	300	340	152	186	236	150	115	21
160	159	1235	308	342	410	450	152	186	236	200	115	25
200	199	1520	458	492	560	600	210	244	281	200	115	33
250	249	1690	598	632	700	740	201	235	311	250	215	55
315	314	1690	798	832	900	940	252	286	361	250	215	73
400	399	2070	898	932	1000	1040	354	388	446	250	215	118

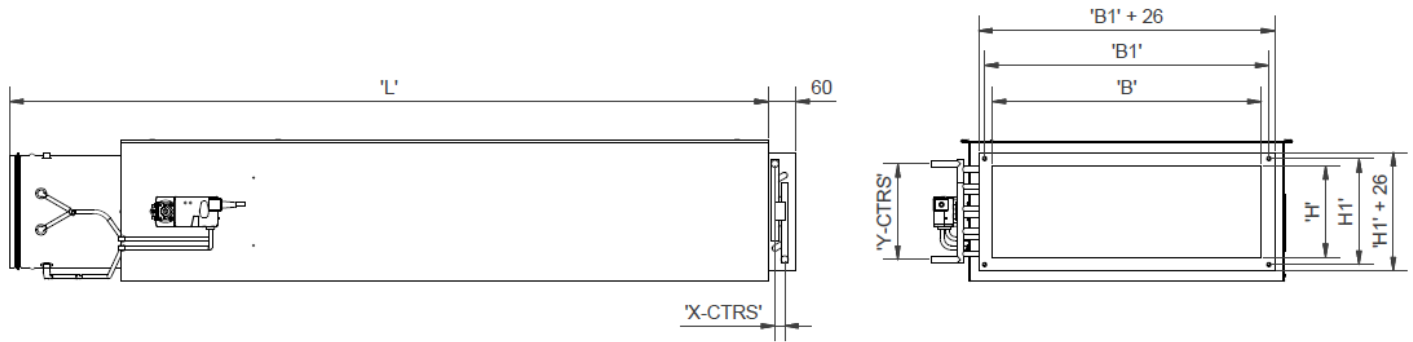
TVZ-D



Product specific data TVZ-D

Nominal size	D [mm]	L [mm]	B [mm]	B1 [mm]	B2 [mm]	B3 [mm]	H [mm]	H1 [mm]	H2 [mm]	A [mm]	W [mm]	weight [kg]
125	124	1185	198	232	380	420	152	186	316	110	155	41
160	159	1235	308	342	490	530	152	186	316	160	155	50
200	199	1520	458	492	640	680	210	244	361	160	155	63
250	249	1690	598	632	780	820	201	235	391	210	255	95
315	314	1690	798	832	980	1020	252	286	441	210	255	133
400	399	2070	898	932	1080	1120	354	388	526	210	255	193

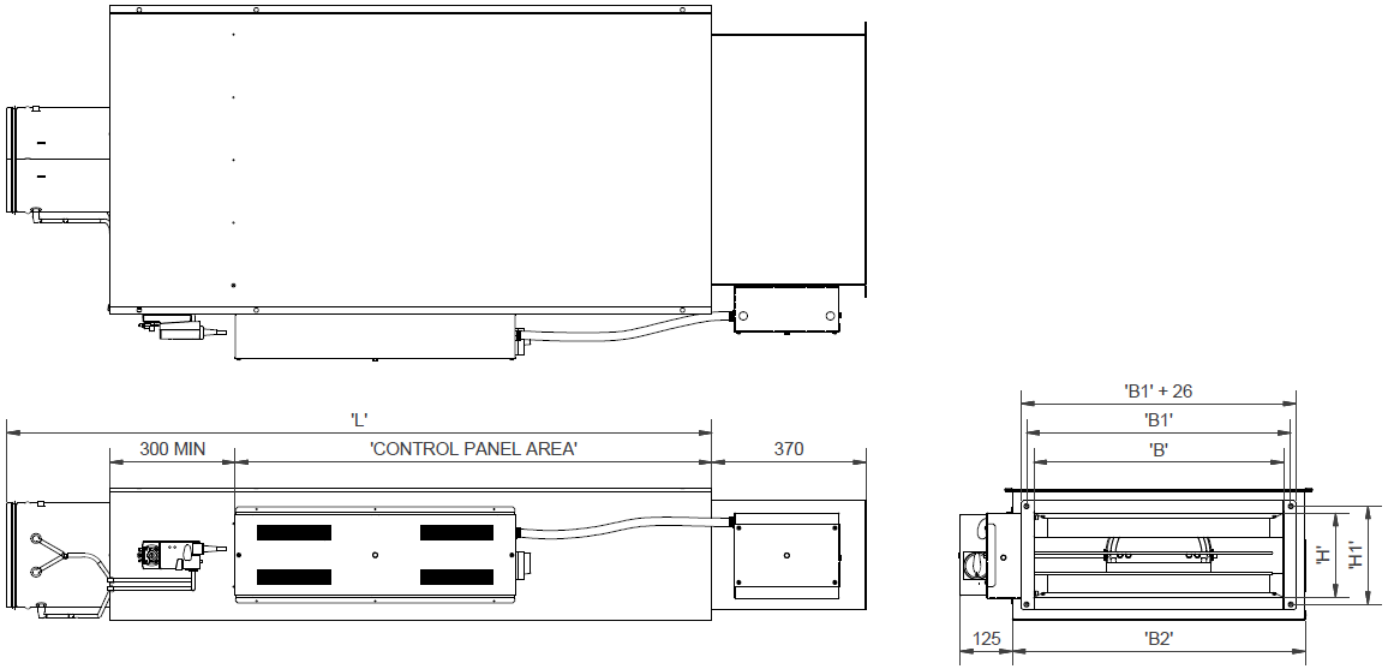
TVZ-1, TVZ-2



Product specific data TVZ-1 or 2

Nominal size	D [mm]	L [mm]	B [mm]	B1 [mm]	H [mm]	H1 [mm]	H2 [mm]	X 1 Row [mm]	Y 1 Row [mm]	X 2 Row [mm]	Y 2 Row [mm]
125	124	1185	198	232	152	186	236	0	125	0	137.5
160	159	1235	308	342	152	186	236	0	125	34	162
200	199	1520	458	492	210	244	281	22	178	34	213
250	249	1690	598	632	201	235	311	30	213	32	220.5
315	314	1690	798	832	252	286	361	30	263.5	34	268.5
400	399	2070	898	932	354	388	446	30	365	34	370.5

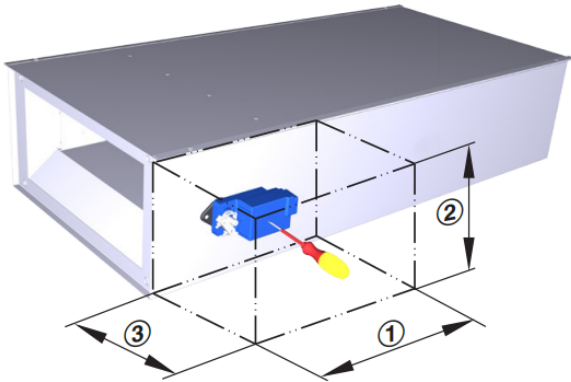
TVZ-E...



Product specific data TVZ-E..

Nominal size	D [mm]	L [mm]	B [mm]	B1 [mm]	B2 [mm]	B3 [mm]	H [mm]	H1 [mm]
125	124	1185	198	232	300	340	152	186
160	159	1235	308	342	410	450	152	186
200	199	1520	458	492	560	600	210	244
250	249	1690	598	632	700	740	201	235
315	314	1690	798	832	900	940	252	286
400	399	2070	898	932	1000	1040	354	388

Access to attachments



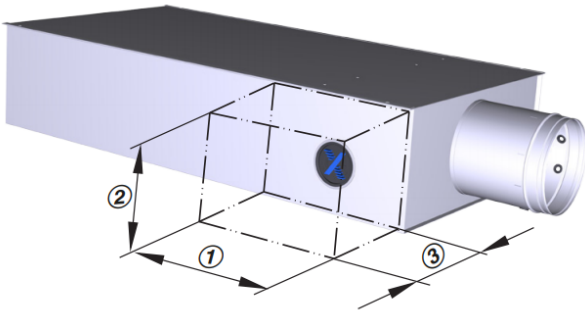
Space required

Attachments	①	②	③
Attachments	mm	mm	mm
VARYCONTROL			
Easy controller	400	300	300
Compact controller	400	300	300
Universal controller	700	300	300
LABCONTROL			
EASYPAC	900	350	400

Space required for commissioning and maintenance

Sufficient space must be kept clear near any attachments to allow for commissioning and maintenance. It may be necessary to provide sufficiently sized inspection access openings

Inspection access



Space required for inspection access

Part	①	②	③
Part	mm	mm	mm
Inspection access	400	300	300

Product details

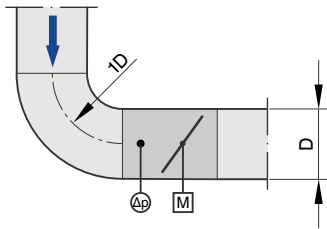
Installation and commissioning

- Any installation orientation (except units with static differential pressure transducer)
- Return edges of the casing with drilled holes suitable for M10 threaded rods
- TVZ-D: For constructions with acoustic cladding, ducts on the room side should have cladding up to the acoustic cladding of the controller

Upstream conditions

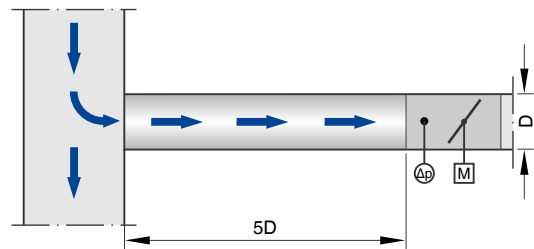
The volume flow rate accuracy Δq_v applies to a straight upstream section of the duct. Bends, junctions or a narrowing or widening of the duct cause turbulence that may affect measurement. Duct connections, e.g. branches off the main duct, must comply with EN 1505. Some installation situations require straight duct sections upstream.

Bend



A bend with a centre line curvature radius of at least $1D$ – without an additional straight duct section upstream of the VAV terminal unit – has only a negligible effect on the volume flow rate accuracy.

Junction



A junction causes strong turbulence. The stated volume flow rate accuracy Δ can only be achieved with a straight duct section of at least $5D$ upstream.

Explanation

NG [mm]

Nominal size

L [mm]

Length of unit including connecting spigot

B [mm]

Duct width

B₁ [mm]

Screw hole pitch of flange (horizontal)

B₂ [mm]

Outside dimension of flange (width)

B₃ [mm]

Width of device

H [mm]

Duct height

H₁ [mm]

Screw hole pitch of flange (vertical)

H₂ [mm]

Outside dimension of flange (height)

A [mm]

Spigot length

W [mm]

Distance from centre of inspection hatch to inlet end of unit

X [mm]

Horizontal dimension between coil pipe connections

Y [mm]

Vertical dimension between coil pipe connections

m [kg]

Unit weight including the minimum required attachments (control component)

L_{PA} [dB(A)]

A-weighted sound pressure level of air-regenerated noise of the VAV terminal unit, system attenuation taken into account

L_{PA1} [dB(A)]

A-weighted sound pressure level of air-regenerated noise of the VAV terminal unit with secondary silencer, system attenuation taken into account

L_{PA2} [dB(A)]

A-weighted sound pressure level of case-regenerated noise of the VAV terminal unit, system attenuation taken into account

L_{PA3} [dB(A)]

A-weighted sound pressure level of case-regenerated noise of the VAV terminal unit with acoustic cladding, system attenuation taken into account

q_v [m³/h]; [l/s]

Volume flow rate

Δ_{pst} [Pa]

Static differential pressure

Δ_{pst min} [Pa]

Static minimum differential pressure: The static minimum differential pressure is equal to the pressure loss of the VAV controller when the damper blade is open, caused by flow resistance (damper blade). If the differential pressure on the VAV controller is too low, the setpoint volume flow rate may not be achieved, not even when the damper blade is open. Important factor in designing the ductwork and in rating the fan including speed control. Sufficient differential pressure must be ensured for all operating conditions and for all controllers, and the measurement point or points for speed control must have been selected accordingly to achieve this.

Δ_{qv} [%]

Volume flow rate tolerance from setpoint value

Basic unit

Device for controlling a volume flow rate without an attached control component. The main components are the casing with sensor element(s) to measure the effective pressure and the damper blade to throttle the volume flow rate. The basic unit is also referred to as a VAV terminal unit. Important distinguishing features: Geometry or unit shape, material and types of connection, acoustic characteristics (e.g. acoustic cladding option or integrated sound attenuator), volume flow rate range

Control component

Electronic unit(s) mounted on the basic device to control the volume flow rate or the duct pressure or the room pressure by adjusting the control damper position. The electronic unit essentially consists of a controller with differential pressure transducer (integrated or external) and an integrated actuator (Easy and Compact controller) or separate actuator (Universal or LABCONTROL controller). Important differences: Transducer: dynamic transducer for clean air or static transducer for polluted air. Actuator: standard actuator slow-running, spring return actuator for safe position or fast-running actuator. Interface technology: analogue interface or digital bus interface for connection and tapping of signals and information

Volume flow controller

Consisting of a basic device and an attached control component.