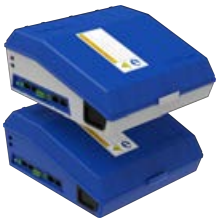


Easy controller, Compact controller



TROX UNIVERSAL controller,
TROX LABCONTROL controller



With sealing elements for low-leakage shut-off



Construction with acoustic cladding

Tested to VDI 6022

VAV terminal units

TVT



For normal and high volume flow rate ranges and low-leakage shut-off

Rectangular air terminal units for standard applications in supply air or extract air systems with variable volume flows and an airtight shut-off function

- For volume flow ranges up to 34861 m³/h or 9683 l/s
- Suitable for the control of volume flows, rooms, or duct pressure
- Electronic control components for different applications (Easy, Compact, Universal, and LABCONTROL)
- High control accuracy
- Leakage airflow with closed damper blade according to EN 1751, Class 3
- Casing air leakage in accordance with EN 1751, up to Class C
- Individual parameterisation, adjustment and testing of each TVT with standard control components on a test rig under air
- Individual report of testing, parameterisation and adjustment available online

Optional equipment and accessories

- Acoustic cladding for the reduction of casing-radiated noise
- Secondary silencer Type TX for the reduction of air-regenerated noise
- Hot water heat exchanger Type WT for reheating

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General information

Application
- Rectangular VAV terminal units for use in ventilation and air conditioning systems
- For controlling, restricting, or shutting off supply and extract air flows
- Closed-loop volume flow control using an external power supply
- For variable or constant volume flow systems
- Shut-off by means of switching (equipment supplied by others)
- Can also be used for duct or room pressure control with suitable control components

Special characteristics
- Integral effective pressure sensor with 3 mm measuring holes (resistant to dust and pollution)
- Factory set-up or programming and aerodynamic function testing
- Parameters can also later be set on the control component. Depending on the control component, an additional adjustment device may be necessary

Nominal sizes
- 36 nominal sizes from 200 × 100 to 1000 × 600
- Not all attachments may be available or suitable for all sizes of terminal units

Variants
- TVT: VAV terminal unit
- TVT-D: VAV terminal unit with acoustic cladding
- Units with acoustic cladding and/or secondary silencer Type TX for demanding acoustic requirements
- Acoustic cladding cannot be retrofitted

Construction
- Galvanised sheet steel
- P1: Powder-coated, silver (RAL 7001)

Parts and characteristics
- Ready-to-commission unit which consists of mechanical parts and control components
- Averaging effective pressure sensor for volume flow rate measurement
- Damper blades
- Factory assembled control components complete with wiring and tubing
- Aerodynamic functional testing on a special test rig before shipping of each unit
- Set-up data is given on a label or volume flow rate scale affixed to the unit
- High volume flow rate control accuracy

Attachments
- EASY controller: compact unit consisting of controller with potentiometers, effective pressure transducer and actuator
- Compact controller: compact unit consisting of controller with potentiometers, effective pressure transducer and actuator
- Universal controller: controller, effective pressure transducer, and actuators for special applications
- LABCONTROL: Control components for air management systems

Useful additions
- Secondary silencer Type TX for demanding acoustic requirements
- Heat exchanger Type WT

Construction features
- Rectangular casing
- Flanges on both ends, suitable for duct connection
- Opposed blade action, blades connected by internal gears (enclosed) at both ends
- Damper blades with replaceable seals
- Position of the damper blade indicated externally at shaft extension
- Bearings with ring seals

Material and surfaces
Galvanised sheet steel construction
- Casing made of galvanised sheet steel
- Shaft and linkage made of galvanised steel
- Damper blades and effective pressure sensor made of aluminium
- Gears made of anti-static plastic (ABS), temperature resistant to 50 °C
- Plastic plain bearings

Powder-coated construction (P1)
- Casing made of galvanised sheet steel, powder-coated

Variant with acoustic cladding (D)
- Acoustic cladding made of galvanised sheet steel
- Rubber seal for the insulation of structure-borne noise
- Lining is mineral wool

Mineral wool
- To EN 13501, fire rating Class A1, non-combustible
- RAL quality mark RAL-GZ 388
- Non-hazardous to health thanks to being highly biosoluble in accordance with the Ordinance on Hazardous Substances and Note Q of the European Directive (EC) No. 1272/2008

Standards and guidelines
Fulfils the hygiene requirements of
- EN 16798, Part 3
- VDI 6022, Sheet 1
- DIN 1946, Part 4
- For other applicable standards and guidelines refer to the hygiene certificate

Casing leakage
- EN 1751, Class C; if B + H ≤ 400, Class B

Closed blade air leakage
- EN 1751, Class 3
- Meets the general requirements of DIN 1946, part 4, with regard to the acceptable closed blade air leakage

Maintenance

- Maintenance-free as construction and materials are not subject to wear

Disclosure of Chemicals

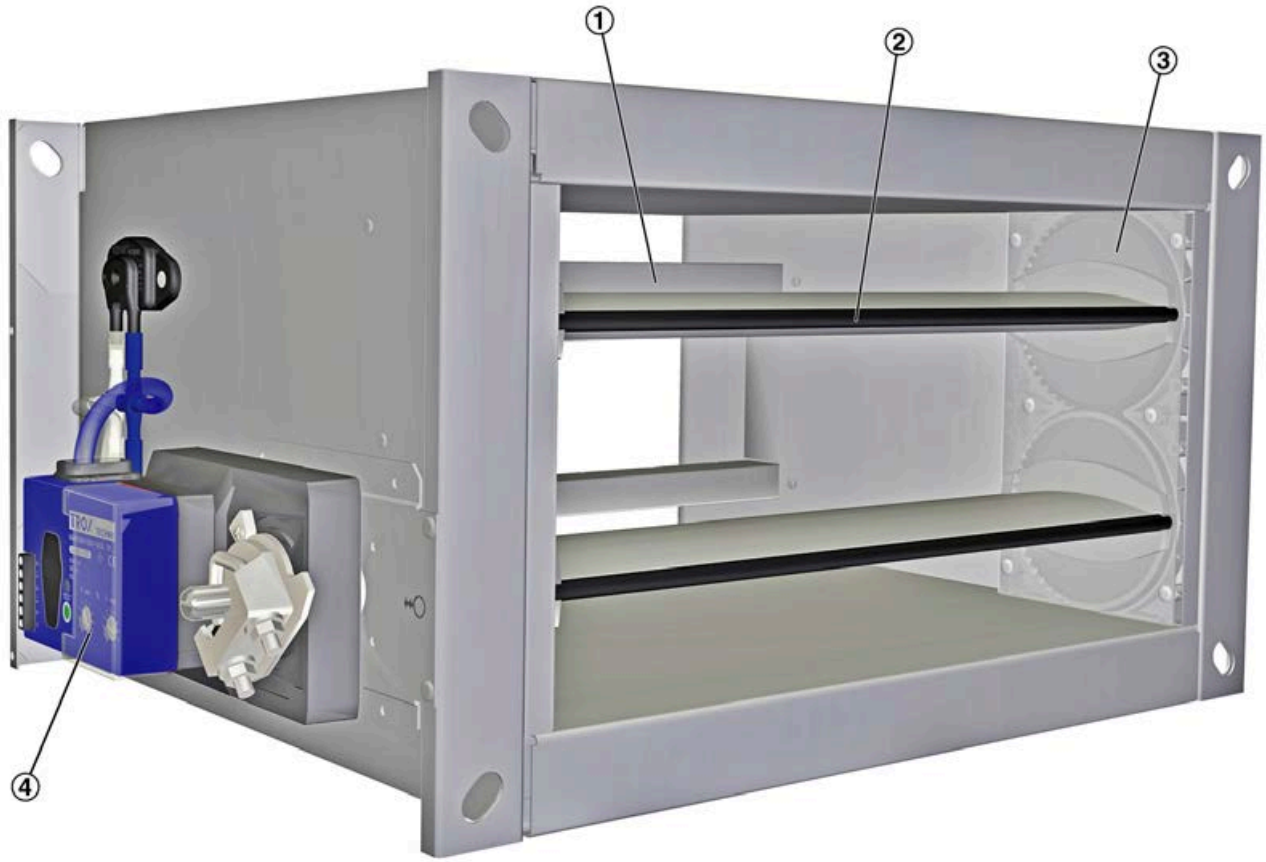
- RoHS EU Directive 2011/65/EU (RoHS)
  - This product or single variants comply with EU Directive 2011/65/EU (RoHS) on the restriction of the use of certain hazardous substances in electrical and electronic equipment. For more information, please refer to our Environmental Product Declarations.
- REACH 1907/2006 (EC Regulation REACH)
  - This product or single variants comply with the provisions of EC Regulation No. 1907/2006, also known as REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals). For more information, please refer to our Environmental Product Declarations.

Function

The VAV terminal unit is fitted with an effective pressure sensor for measuring the volume flow rate.
The control components (attachments) include an effective pressure transducer that transforms the effective pressure into an electric signal, a controller, and an actuator; the control functions can be achieved with an Easy controller or 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.

Schematic illustration of the TVT



① Effective pressure sensor
② Damper blade with seal
③ Gears
④ Control components, e.g. an Easy controller

Technical data

Nominal sizes	200 × 100 – 1000 × 600 mm
Volume flow rate range	42 – 9683 l/s or 149 – 34861 m³/h
Volume flow rate control range (unit with dynamic differential pressure measurement)	approx. 20 to 100 % of the nominal volume flow rate
Minimum differential pressure	up to 104 Pa (without secondary silencer)
Maximum differential pressure	1000 Pa
Operating temperature	10 to 50 °C

Quick sizing

Quick sizing tables provide a good overview of the minimum differential pressures, the volume flow accuracy and the room sound pressure levels that can be expected. Intermediate values may be achieved by interpolation. The sound power levels for calculating the sound pressure levels were measured in the TROX laboratory according to DIN EN ISO 5135 - see "General information and Nomenclature".
Precise results and spectral data for all control components can be obtained by using our Easy Product Finder design programme.
The nominal size is initially selected according to the given volume flow rates q_{vmin} and q_{vmax}.

Volume flow rate ranges and minimum differential pressure values

The minimum differential pressure of VAV terminal units is an important factor in designing the ductwork and in rating the fan including speed control. Sufficient static differential pressure ($\Delta p_{stat,min}$) must be ensured for all operating conditions and for all controllers. The measurement points for fan speed control must be selected accordingly. The volume flow rates given for VAV terminal units depend on the nominal size and on the control component (attachment) that is installed.

Volume flow rate ranges and minimum differential pressure values

Control component for dynamic pressure measurements – Easy (potentiometers)
Attachment: Easy

B	H	qv [l/s]	qv [m³/h]	Δpstmin [Pa]		Δqv [±%]
				①	②	
200	100	42	149	2	10	13
200	100	88	315	8	43	8
200	100	133	480	17	99	6
200	100	179	646	30	180	5
300	100	62	223	2	10	13
300	100	131	472	7	43	8
300	100	200	720	17	99	6
300	100	269	969	30	180	5
400	100	83	298	2	10	13
400	100	175	629	7	43	8
400	100	267	961	17	100	6
400	100	358	1292	30	180	5
500	100	104	372	2	10	13
500	100	218	786	7	43	8
500	100	334	1201	17	100	6
500	100	448	1615	30	180	5
600	100	124	446	2	10	13
600	100	262	943	7	43	8
600	100	400	1441	17	100	6
600	100	538	1938	30	180	5
200	200	83	298	2	8	13
200	200	175	629	7	36	8
200	200	267	961	17	84	6
200	200	358	1292	30	151	5

B	H	qv [l/s]	qv [m³/h]	Δpstmin [Pa]		Δqv [±%]
				①	②	
300	200	124	446	2	8	13
300	200	262	943	7	36	8
300	200	400	1441	17	84	6
300	200	538	1938	30	151	5
400	200	166	595	2	8	13
400	200	349	1258	7	36	8
400	200	534	1921	17	84	6
400	200	717	2584	30	151	5
500	200	207	743	2	8	13
500	200	437	1572	7	36	8
500	200	667	2401	17	84	6
500	200	897	3230	30	151	5
600	200	248	892	2	8	13
600	200	524	1887	7	36	8
600	200	800	2881	17	83	6
600	200	1076	3876	30	151	5
700	200	289	1040	2	8	13
700	200	611	2201	7	36	8
700	200	934	3361	17	83	6
700	200	1256	4522	30	151	5
800	200	331	1189	2	8	13
800	200	699	2515	7	36	8
800	200	1067	3842	17	84	6
800	200	1435	5168	30	151	5
300	300	203	730	2	10	12
300	300	429	1544	9	43	8
300	300	655	2359	20	99	6
300	300	881	3173	36	179	5
400	300	271	973	2	10	12
400	300	572	2059	9	43	8
400	300	874	3145	20	99	6
400	300	1175	4231	36	179	5
500	300	339	1217	2	10	12
500	300	715	2574	9	43	8
500	300	1092	3932	20	99	6
500	300	1469	5289	36	180	5
600	300	406	1460	2	10	12
600	300	858	3089	9	43	8
600	300	1311	4719	20	99	6
600	300	1763	6348	36	180	5
700	300	474	1703	2	10	12
700	300	1001	3604	9	43	8
700	300	1529	5504	20	99	6
700	300	2056	7405	36	180	5
800	300	541	1946	2	10	12
800	300	1144	4118	9	43	8
800	300	1748	6291	20	99	6
800	300	2350	8463	36	180	5

B	H	qv [l/s]	qv [m³/h]	Δpstmin [Pa]		Δqv [±%]
				①	②	
900	300	609	2190	2	10	12
900	300	1287	4634	9	43	8
900	300	1966	7077	20	99	6
900	300	2644	9521	36	180	5
1000	300	676	2433	2	10	12
1000	300	1430	5148	9	43	8
1000	300	2184	7864	20	99	6
1000	300	2938	10579	36	180	5
400	400	376	1352	3	11	12
400	400	795	2861	10	47	7
400	400	1214	4370	22	108	6
400	400	1633	5879	39	195	5
500	400	470	1690	3	11	12
500	400	993	3576	10	47	7
500	400	1518	5463	22	108	6
500	400	2041	7349	39	195	5
600	400	564	2028	3	11	12
600	400	1192	4292	10	47	7
600	400	1821	6555	22	108	6
600	400	2449	8819	39	195	5
700	400	658	2366	3	11	12
700	400	1391	5007	10	47	7
700	400	2124	7648	22	108	6
700	400	2858	10289	39	195	5
800	400	752	2704	3	11	12
800	400	1589	5722	10	47	7
800	400	2428	8740	22	108	6
800	400	3266	11758	39	195	5
900	400	845	3042	3	11	12
900	400	1788	6437	10	47	7
900	400	2731	9833	22	108	6
900	400	3674	13228	39	195	5
1000	400	939	3380	3	11	12
1000	400	1987	7153	10	47	7
1000	400	3035	10925	22	108	6
1000	400	4082	14698	39	195	5
500	500	545	1959	2	9	13
500	500	1152	4146	8	40	8
500	500	1759	6333	19	93	6
500	500	2366	8520	33	168	5
600	500	654	2351	2	9	13
600	500	1382	4975	8	40	8
600	500	2111	7600	19	93	6
600	500	2840	10224	33	168	5
700	500	762	2743	2	9	13
700	500	1613	5805	8	40	8
700	500	2463	8866	19	93	6
700	500	3313	11928	33	168	5

B	H	qv [l/s]	qv [m³/h]	Δpstmin [Pa]		Δqv [±%]
				①	②	
800	500	871	3135	2	9	13
800	500	1843	6634	8	40	8
800	500	2815	10133	19	93	6
800	500	3786	13632	33	168	5
900	500	980	3526	2	9	13
900	500	2073	7463	8	40	8
900	500	3166	11399	19	93	6
900	500	4260	15336	33	168	5
1000	500	1089	3918	2	9	13
1000	500	2303	8292	8	40	8
1000	500	3518	12666	19	93	6
1000	500	4733	17040	33	168	5
600	600	811	2919	2	10	12
600	600	1716	6178	9	43	8
600	600	2621	9436	20	99	6
600	600	3526	12695	36	180	5
800	600	1082	3892	2	10	12
800	600	2288	8237	9	43	8
800	600	3495	12582	20	99	6
800	600	4701	16927	36	180	5
1000	600	1352	4865	2	10	12
1000	600	2860	10296	9	43	8
1000	600	4369	15728	20	99	6
1000	600	5877	21159	36	180	5

1 Basic unit
2 Basic unit with secondary silencer TX

Volume flow ranges and minimum differential pressures
Control component dynamic measuring principle – q_v expanded
Attachments: BC0, BM0, BM0-J6*, BM0-D8*
1 Basic unit
2 Basic unit with secondary silencer TX
* Control components BM0-J6 and BM0-D8 only up to 800 x 400
</p>

Volume flow ranges and minimum differential pressures
Control component dynamic measuring principle – q_v Standard
Attachments: BUDN, BUDNF, LN0, LK0, XB0, XB4

B	H	qv [l/s]	qv [m³/h]	Δpstmin [Pa]		Δqv [±%]
				①	②	
200	100	42	149	2	10	13
200	100	109	393	11	67	7
200	100	177	636	29	174	5
200	100	244	880	55	333	4
300	100	62	223	2	10	13
300	100	164	589	11	67	7
300	100	265	954	29	174	5
300	100	366	1320	55	333	4
400	100	83	298	2	10	13
400	100	218	786	11	67	7
400	100	354	1273	29	174	5

B	H	qv [l/s]	qv [m³/h]	Δpstmin [Pa]		Δqv [±%]
				①	②	
400	100	489	1761	55	333	4
500	100	104	372	2	10	13
500	100	273	982	11	67	7
500	100	442	1591	29	174	5
500	100	611	2201	55	333	4
600	100	124	446	2	10	13
600	100	327	1178	11	67	7
600	100	530	1909	29	174	5
600	100	733	2641	55	333	4
200	200	83	298	2	8	13
200	200	218	786	11	56	7
200	200	354	1273	29	146	5
200	200	489	1761	55	280	4
300	200	124	446	2	8	13
300	200	327	1178	11	56	7
300	200	530	1909	29	146	5
300	200	733	2641	55	279	4
400	200	166	595	2	8	13
400	200	436	1570	11	56	7
400	200	707	2546	29	146	5
400	200	978	3521	55	279	4
500	200	207	743	2	8	13
500	200	545	1963	11	56	7
500	200	884	3182	29	146	5
500	200	1222	4402	55	280	4
600	200	248	892	2	8	13
600	200	654	2355	11	56	7
600	200	1061	3819	29	146	5
600	200	1467	5282	55	279	4
700	200	289	1040	2	8	13
700	200	763	2747	11	56	7
700	200	1238	4455	29	146	5
700	200	1711	6162	55	279	4
800	200	331	1189	2	8	13
800	200	872	3140	11	56	7
800	200	1414	5092	29	146	5
800	200	1956	7043	55	279	4
300	300	203	730	2	10	12
300	300	536	1928	13	67	7
300	300	869	3127	35	174	5
300	300	1201	4325	66	333	4
400	300	271	973	2	10	12
400	300	714	2571	13	67	7
400	300	1158	4169	35	174	5
400	300	1601	5767	66	333	4
500	300	339	1217	2	10	12
500	300	893	3214	13	67	7
500	300	1448	5212	35	174	5

B	H	qv [l/s]	qv [m³/h]	Δpstmin [Pa]		Δqv [±%]
				①	②	
500	300	2002	7209	66	333	4
600	300	406	1460	2	10	12
600	300	1071	3857	13	67	7
600	300	1737	6253	35	174	5
600	300	2402	8650	66	333	4
700	300	474	1703	2	10	12
700	300	1250	4499	13	67	7
700	300	2027	7296	35	174	5
700	300	2803	10092	66	333	4
800	300	541	1946	2	10	12
800	300	1428	5142	13	67	7
800	300	2316	8338	35	174	5
800	300	3203	11534	66	333	4
900	300	609	2190	2	10	12
900	300	1607	5785	13	67	7
900	300	2606	9381	35	174	5
900	300	3604	12976	66	333	4
1000	300	676	2433	2	10	12
1000	300	1786	6428	13	67	7
1000	300	2895	10423	35	174	5
1000	300	4005	14418	66	333	4
400	400	376	1352	3	11	12
400	400	992	3572	15	72	6
400	400	1609	5792	38	189	5
400	400	2225	8012	71	362	4
500	400	470	1690	3	11	12
500	400	1240	4465	15	72	6
500	400	2011	7240	38	189	5
500	400	2781	10015	71	362	4
600	400	564	2028	3	11	12
600	400	1488	5358	15	72	6
600	400	2413	8688	38	189	5
600	400	3338	12018	71	362	4
700	400	658	2366	3	11	12
700	400	1736	6251	15	72	6
700	400	2816	10136	38	189	5
700	400	3894	14021	71	362	4
800	400	752	2704	3	11	12
800	400	1984	7144	15	72	6
800	400	3218	11584	38	189	5
800	400	4451	16024	71	362	4
900	400	845	3042	3	11	12
900	400	2233	8037	15	72	6
900	400	3620	13033	38	189	5
900	400	5007	18028	71	362	4
1000	400	939	3380	3	11	12
1000	400	2481	8930	15	72	6
1000	400	4023	14481	38	189	5

B	H	qv [l/s]	qv [m³/h]	Δpstmin [Pa]		Δqv [±%]
				①	②	
1000	400	5564	20031	71	362	4
500	500	545	1959	2	9	13
500	500	1438	5176	13	62	7
500	500	2332	8394	32	163	5
500	500	3225	11611	61	311	4
600	500	654	2351	2	9	13
600	500	1726	6212	13	62	7
600	500	2798	10072	32	163	5
600	500	3870	13933	61	311	4
700	500	762	2743	2	9	13
700	500	2013	7247	13	62	7
700	500	3264	11751	32	163	5
700	500	4515	16255	61	311	4
800	500	871	3135	2	9	13
800	500	2301	8282	13	62	7
800	500	3731	13430	32	163	5
800	500	5160	18577	61	311	4
900	500	980	3526	2	9	13
900	500	2588	9317	13	62	7
900	500	4197	15109	32	163	5
900	500	5805	20900	61	311	4
1000	500	1089	3918	2	9	13
1000	500	2876	10353	13	62	7
1000	500	4663	16787	32	163	5
1000	500	6450	23222	61	311	4
600	600	811	2919	2	10	12
600	600	2143	7713	13	67	7
600	600	3474	12507	35	174	5
600	600	4805	17301	66	333	4
800	600	1082	3892	2	10	12
800	600	2857	10284	13	67	7
800	600	4632	16676	35	174	5
800	600	6407	23068	66	333	4
1000	600	1352	4865	2	10	12
1000	600	3571	12855	13	67	7
1000	600	5791	20846	35	174	5
1000	600	8010	28836	66	333	4

1 Basic unit

2 Basic unit with secondary silencer TX

Dimensional constraint

Type TVT up to a maximum of 1000 × 300 mm or 800 × 400 mm with attachment BUDNF, LN0, LK0, XB0

Volume flow ranges and minimum differential pressures

Control component static measuring principle

Attachments: BUSN, BUSNF, BUSS, XD0, XD4, TUN, TUNF, TUS, TUSD, ELAB

B	H	qv [l/s]	qv [m³/h]	Δpstmin [Pa]		Δqv [±%]
				①	②	
200	100	42	149	2	10	13
200	100	109	393	11	67	7
200	100	177	636	29	174	5

B	H	qv [l/s]	qv [m³/h]	Δpstmin [Pa]		Δqv [±%]
				①	②	
200	100	244	880	55	333	4
300	100	62	223	2	10	13
300	100	164	589	11	67	7
300	100	265	954	29	174	5
300	100	366	1320	55	333	4
400	100	83	298	2	10	13
400	100	218	786	11	67	7
400	100	354	1273	29	174	5
400	100	489	1761	55	333	4
500	100	104	372	2	10	13
500	100	273	982	11	67	7
500	100	442	1591	29	174	5
500	100	611	2201	55	333	4
600	100	124	446	2	10	13
600	100	327	1178	11	67	7
600	100	530	1909	29	174	5
600	100	733	2641	55	333	4
200	200	83	298	2	8	13
200	200	218	786	11	56	7
200	200	354	1273	29	146	5
200	200	489	1761	55	280	4
300	200	124	446	2	8	13
300	200	327	1178	11	56	7
300	200	530	1909	29	146	5
300	200	733	2641	55	279	4
400	200	166	595	2	8	13
400	200	436	1570	11	56	7
400	200	707	2546	29	146	5
400	200	978	3521	55	279	4
500	200	207	743	2	8	13
500	200	545	1963	11	56	7
500	200	884	3182	29	146	5
500	200	1222	4402	55	280	4
600	200	248	892	2	8	13
600	200	654	2355	11	56	7
600	200	1061	3819	29	146	5
600	200	1467	5282	55	279	4
700	200	289	1040	2	8	13
700	200	763	2747	11	56	7
700	200	1238	4455	29	146	5
700	200	1711	6162	55	279	4
800	200	331	1189	2	8	13
800	200	872	3140	11	56	7
800	200	1414	5092	29	146	5
800	200	1956	7043	55	279	4
300	300	203	730	2	10	12
300	300	536	1928	13	67	7
300	300	869	3127	35	174	5

B	H	qv [l/s]	qv [m³/h]	Δpstmin [Pa]		Δqv [±%]
				①	②	
300	300	1201	4325	66	333	4
400	300	271	973	2	10	12
400	300	714	2571	13	67	7
400	300	1158	4169	35	174	5
400	300	1601	5767	66	333	4
500	300	339	1217	2	10	12
500	300	893	3214	13	67	7
500	300	1448	5212	35	174	5
500	300	2002	7209	66	333	4
600	300	406	1460	2	10	12
600	300	1071	3857	13	67	7
600	300	1737	6253	35	174	5
600	300	2402	8650	66	333	4
700	300	474	1703	2	10	12
700	300	1250	4499	13	67	7
700	300	2027	7296	35	174	5
700	300	2803	10092	66	333	4
800	300	541	1946	2	10	12
800	300	1428	5142	13	67	7
800	300	2316	8338	35	174	5
800	300	3203	11534	66	333	4
900	300	609	2190	2	10	12
900	300	1607	5785	13	67	7
900	300	2606	9381	35	174	5
900	300	3604	12976	66	333	4
1000	300	676	2433	2	10	12
1000	300	1786	6428	13	67	7
1000	300	2895	10423	35	174	5
1000	300	4005	14418	66	333	4
400	400	376	1352	3	11	12
400	400	992	3572	15	72	6
400	400	1609	5792	38	189	5
400	400	2225	8012	71	362	4
500	400	470	1690	3	11	12
500	400	1240	4465	15	72	6
500	400	2011	7240	38	189	5
500	400	2781	10015	71	362	4
600	400	564	2028	3	11	12
600	400	1488	5358	15	72	6
600	400	2413	8688	38	189	5
600	400	3338	12018	71	362	4
700	400	658	2366	3	11	12
700	400	1736	6251	15	72	6
700	400	2816	10136	38	189	5
700	400	3894	14021	71	362	4
800	400	752	2704	3	11	12
800	400	1984	7144	15	72	6
800	400	3218	11584	38	189	5

B	H	qv [l/s]	qv [m³/h]	Δpstmin [Pa]		Δqv [±%]
				①	②	
800	400	4451	16024	71	362	4
900	400	845	3042	3	11	12
900	400	2233	8037	15	72	6
900	400	3620	13033	38	189	5
900	400	5007	18028	71	362	4
1000	400	939	3380	3	11	12
1000	400	2481	8930	15	72	6
1000	400	4023	14481	38	189	5
1000	400	5564	20031	71	362	4
500	500	545	1959	2	9	13
500	500	1438	5176	13	62	7
500	500	2332	8394	32	163	5
500	500	3225	11611	61	311	4
600	500	654	2351	2	9	13
600	500	1726	6212	13	62	7
600	500	2798	10072	32	163	5
600	500	3870	13933	61	311	4
700	500	762	2743	2	9	13
700	500	2013	7247	13	62	7
700	500	3264	11751	32	163	5
700	500	4515	16255	61	311	4
800	500	871	3135	2	9	13
800	500	2301	8282	13	62	7
800	500	3731	13430	32	163	5
800	500	5160	18577	61	311	4
900	500	980	3526	2	9	13
900	500	2588	9317	13	62	7
900	500	4197	15109	32	163	5
900	500	5805	20900	61	311	4
1000	500	1089	3918	2	9	13
1000	500	2876	10353	13	62	7
1000	500	4663	16787	32	163	5
1000	500	6450	23222	61	311	4
600	600	811	2919	2	10	12
600	600	2143	7713	13	67	7
600	600	3474	12507	35	174	5
600	600	4805	17301	66	333	4
800	600	1082	3892	2	10	12
800	600	2857	10284	13	67	7
800	600	4632	16676	35	174	5
800	600	6407	23068	66	333	4
1000	600	1352	4865	2	10	12
1000	600	3571	12855	13	67	7
1000	600	5791	20846	35	174	5
1000	600	8010	28836	66	333	4

1 Basic unit

2 Basic unit with secondary silencer TX

Dimensional constraint

Type TVT only up to 1000 × 500 mm with attachment XD0

Type TVT up to a maximum of 1000 × 300 mm or 800 × 400 mm with attachment BUSNF

Quick sizing table for sound pressure levels

The quick sizing tables are based on generally accepted attenuation levels. If the sound pressure level exceeds the required level, a larger air terminal unit and/or a silencer or acoustic cladding is required. For more information on the acoustic data, see basic information and nomenclature.

Quick sizing table for air-regenerated noise L_{PA}

Controller including silencer
(total volume flow rate range of type)

B	H	qv [l/s]	qv [m³/h]	150 Pa		500 Pa	
				①	②	①	②
200	100	42	149	44	20	56	34
200	100	126	454	48	30	60	39
200	100	211	759	48	n.V.	61	39
200	100	295	1064	48	n.V.	60	n.V.
300	100	62	223	45	21	57	35
300	100	189	681	48	31	60	39
300	100	316	1138	48	n.V.	60	42
300	100	443	1596	47	n.V.	60	n.V.
400	100	83	298	46	22	58	36
400	100	252	908	48	31	60	39
400	100	422	1519	47	n.V.	60	42
400	100	591	2129	47	n.V.	60	42
500	100	104	372	47	23	59	37
500	100	315	1135	48	31	60	39
500	100	527	1898	47	n.V.	60	42
500	100	739	2661	47	n.V.	60	n.V.
600	100	124	446	47	24	60	38
600	100	378	1362	47	31	60	40
600	100	633	2277	47	n.V.	60	42
600	100	886	3193	47	n.V.	59	n.V.
200	200	83	298	46	22	58	36
200	200	252	908	48	29	60	40
200	200	422	1519	47	n.V.	60	41
200	200	591	2129	47	n.V.	60	42
300	200	124	446	47	24	60	38
300	200	378	1362	47	29	60	40
300	200	633	2277	47	n.V.	60	41
300	200	886	3193	47	n.V.	59	43
400	200	166	595	48	24	60	38
400	200	504	1816	47	29	60	40
400	200	843	3036	47	n.V.	59	42
400	200	1182	4257	46	n.V.	59	43
500	200	207	743	47	24	60	38
500	200	630	2269	47	29	59	40
500	200	1054	3796	47	n.V.	59	42
500	200	1478	5322	46	n.V.	59	43
600	200	248	892	47	24	60	38
600	200	756	2723	47	29	59	41
600	200	1265	4555	46	n.V.	59	42
600	200	1773	6386	46	n.V.	59	43

B	H	qv [l/s]	qv [m³/h]	150 Pa		500 Pa	
				①	②	①	②
700	200	289	1040	47	24	59	38
700	200	883	3177	47	29	59	41
700	200	1476	5313	46	n.V.	59	42
700	200	2069	7450	46	n.V.	59	43
800	200	331	1189	47	24	59	37
800	200	1009	3631	47	29	59	41
800	200	1687	6073	46	n.V.	59	42
800	200	2365	8515	46	n.V.	58	43
300	300	203	730	48	25	60	38
300	300	619	2229	47	29	59	41
300	300	1036	3729	47	n.V.	59	42
300	300	1452	5228	46	n.V.	59	43
400	300	271	973	47	25	60	38
400	300	826	2973	47	30	59	41
400	300	1381	4972	46	n.V.	59	42
400	300	1936	6972	46	n.V.	59	43
500	300	339	1217	47	25	59	38
500	300	1032	3716	47	30	59	41
500	300	1727	6216	46	n.V.	59	42
500	300	2420	8715	46	n.V.	58	43
600	300	406	1460	47	25	59	38
600	300	1239	4459	46	30	59	41
600	300	2072	7459	46	n.V.	59	42
600	300	2905	10458	46	n.V.	58	43
700	300	474	1703	47	25	59	38
700	300	1445	5202	46	30	59	41
700	300	2417	8701	46	n.V.	58	42
700	300	3388	12200	45	n.V.	58	43
800	300	541	1946	47	25	59	37
800	300	1651	5945	46	30	59	42
800	300	2763	9945	46	n.V.	58	42
800	300	3873	13944	45	n.V.	58	43
900	300	609	2190	47	25	59	37
900	300	1858	6689	46	30	58	42
900	300	3108	11188	46	n.V.	58	43
900	300	4357	15687	45	n.V.	58	43
1000	300	676	2433	46	25	59	37
1000	300	2064	7432	46	30	58	42
1000	300	3453	12431	45	n.V.	58	43
1000	300	4841	17430	45	n.V.	58	43
400	400	376	1352	47	25	59	38
400	400	1147	4130	46	30	59	41
400	400	1919	6908	46	n.V.	59	42
400	400	2690	9686	46	n.V.	58	n.V.
500	400	470	1690	47	25	59	38
500	400	1434	5163	46	30	59	42
500	400	2399	8635	46	n.V.	58	42
500	400	3363	12108	45	n.V.	58	n.V.

B	H	qv [l/s]	qv [m³/h]	150 Pa		500 Pa	
				①	②	①	②
600	400	564	2028	47	25	59	38
600	400	1721	6195	46	30	58	42
600	400	2879	10363	46	n.V.	58	42
600	400	4036	14530	45	n.V.	58	n.V.
700	400	658	2366	46	25	59	38
700	400	2008	7228	46	30	58	42
700	400	3358	12089	45	n.V.	58	42
700	400	4708	16951	45	n.V.	58	n.V.
800	400	752	2704	46	25	59	38
800	400	2294	8260	46	30	58	42
800	400	3838	13817	45	n.V.	58	43
800	400	5381	19373	45	n.V.	58	n.V.

Air-regenerated noise L_{PA} [dB(A)] at static differential pressure Δ_{pst} of 150 or 500 Pa
1 Basic unit
2 Basic unit with secondary silencer TX
n.a.: The specified static differential pressure Δ_{pst} is lower than the minimum differential pressure $\Delta_{pst,min}$.

Quick sizing table for case-radiated noise L_{PA}
Controller including acoustic cladding
(total volume flow rate range of type)

B	H	qv [l/s]	qv [m³/h]	150 Pa		500 Pa	
				①	②	①	②
200	100	42	149	30	18	42	30
200	100	126	454	35	22	47	34
200	100	211	759	37	24	49	36
200	100	295	1064	38	25	50	38
300	100	62	223	31	19	44	31
300	100	189	681	36	23	48	36
300	100	316	1138	38	25	50	38
300	100	443	1596	39	27	52	39
400	100	83	298	32	20	45	32
400	100	252	908	37	24	49	37
400	100	422	1519	39	27	51	39
400	100	591	2129	40	28	53	40
500	100	104	372	33	21	46	33
500	100	315	1135	38	25	50	37
500	100	527	1898	40	27	52	40
500	100	739	2661	41	29	53	41
600	100	124	446	34	21	46	34
600	100	378	1362	38	26	51	38
600	100	633	2277	40	28	53	40
600	100	886	3193	42	29	54	42
200	200	83	298	32	20	45	32
200	200	252	908	37	24	49	37
200	200	422	1519	39	27	51	39
200	200	591	2129	40	28	53	40
300	200	124	446	34	21	46	34
300	200	378	1362	38	26	51	38
300	200	633	2277	40	28	53	40

B	H	qv [l/s]	qv [m³/h]	150 Pa		500 Pa	
				①	②	①	②
300	200	886	3193	42	29	54	42
400	200	166	595	35	22	47	35
400	200	504	1816	39	27	52	39
400	200	843	3036	41	29	54	41
400	200	1182	4257	43	30	55	43
500	200	207	743	36	23	48	35
500	200	630	2269	40	28	52	40
500	200	1054	3796	42	30	54	42
500	200	1478	5322	44	31	56	43
600	200	248	892	36	24	49	36
600	200	756	2723	41	28	53	41
600	200	1265	4555	43	30	55	43
600	200	1773	6386	44	32	56	44
700	200	289	1040	37	24	49	37
700	200	883	3177	41	29	54	41
700	200	1476	5313	43	31	56	43
700	200	2069	7450	45	32	57	45
800	200	331	1189	37	25	50	37
800	200	1009	3631	42	29	54	42
800	200	1687	6073	44	31	56	44
800	200	2365	8515	45	33	57	45
300	300	203	730	36	23	48	35
300	300	619	2229	40	28	52	40
300	300	1036	3729	42	30	54	42
300	300	1452	5228	44	31	56	43
400	300	271	973	37	24	49	36
400	300	826	2973	41	29	53	41
400	300	1381	4972	43	31	55	43
400	300	1936	6972	45	32	57	44
500	300	339	1217	37	25	50	37
500	300	1032	3716	42	29	54	42
500	300	1727	6216	44	31	56	44
500	300	2420	8715	45	33	58	45
600	300	406	1460	38	26	50	38
600	300	1239	4459	43	30	55	42
600	300	2072	7459	45	32	57	44
600	300	2905	10458	46	33	58	46
700	300	474	1703	39	26	51	38
700	300	1445	5202	43	31	55	43
700	300	2417	8701	45	33	57	45
700	300	3388	12200	47	34	59	46
800	300	541	1946	39	27	51	39
800	300	1651	5945	44	31	56	43
800	300	2763	9945	46	33	58	45
800	300	3873	13944	47	34	59	47
900	300	609	2190	40	27	52	39
900	300	1858	6689	44	31	56	44
900	300	3108	11188	46	34	58	46

B	H	qv [l/s]	qv [m³/h]	150 Pa		500 Pa	
				①	②	①	②
900	300	4357	15687	47	35	60	47
1000	300	676	2433	40	27	52	40
1000	300	2064	7432	44	32	57	44
1000	300	3453	12431	46	34	59	46
1000	300	4841	17430	48	35	60	48
400	400	376	1352	38	25	50	38
400	400	1147	4130	42	30	55	42
400	400	1919	6908	44	32	57	44
400	400	2690	9686	46	33	58	45
500	400	470	1690	39	26	51	38
500	400	1434	5163	43	31	55	43
500	400	2399	8635	45	33	57	45
500	400	3363	12108	46	34	59	46
600	400	564	2028	39	27	52	39
600	400	1721	6195	44	31	56	43
600	400	2879	10363	46	33	58	46
600	400	4036	14530	47	35	59	47
700	400	658	2366	40	27	52	40
700	400	2008	7228	44	32	57	44
700	400	3358	12089	46	34	59	46
700	400	4708	16951	48	35	60	47
800	400	752	2704	40	28	53	40
800	400	2294	8260	45	32	57	45
800	400	3838	13817	47	34	59	47
800	400	5381	19373	48	36	60	48

Casing-radiated noise L_{PA} [dB(A)] at static differential pressure Δ_{pst} of 150 or 500 Pa

1 Basic unit

2 Basic unit with acoustic cladding

n.a.: The specified static differential pressure Δ_{pst} is lower than the required minimum differential pressure $\Delta_{pst,min}$.

Note:

Information on casing-radiated noise for combinations of basic unit and optional acoustic cladding and secondary silencer can be determined using the Easy Product Finder design programme.

Specification text

This specification text describes one variant of the product and applies to many applications. 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 or extract air, available in 36 nominal sizes. High control accuracy of the set volume flows. Ready-to-commission unit, consisting of mechanical parts and electronic control components. Units contain an averaging effective pressure sensor for volume flow measurement, and damper blades. Control components are factory-mounted, piped and wired. Differential pressure sensor with 3 mm measuring holes, making it resistant to contamination. Damper blade position is externally indicated at the shaft extension. The damper blade is factory-set to open position, allowing airflow even without control function; except for variants with a defined fail-safe position NC (normally closed). Complies with the hygiene requirements set out in EN 16798 Part 3, VDI 6022 Sheet 1 and DIN 1946 Part 4.

Special features

- Integral effective pressure sensor with 3 mm measuring holes (resistant to dust and pollution)
- Factory set-up or programming and aerodynamic function testing
- Parameters can also later be set on the control component. Depending on the control component, an additional adjustment device may be necessary

Materials and surfaces

- Casing made of galvanised sheet steel
- Shaft and linkage made of galvanised steel
- Damper blades and differential pressure sensor made of aluminium
- Gears made of anti-static plastic (ABS), resistant to temperatures up to 50 °C
- Plastic plain bearings

Connection type

- Flanges on both ends, suitable for duct connection

Technical data

- Nominal sizes: 200 × 100 – 1000 × 600 mm
- Volume flow range: 42 – 5877 l/s or 149 – 21159 m³/h
- Minimum differential pressure: up to 104 Pa
- Maximum permissible pressure differential: 1000 Pa
- Leakage airflow with closed damper blade according to EN 1751, Class 3
- Casing air leakage in accordance with EN 1751, Class C (B + H ≤ 400, Class B).

Equivalence criteria

- Declaration of Hygiene Conformity in accordance with VDI 6022, Part 1 (01/2018), ÖNORM H 6020 (02/2007) and ÖNORM H 6021 (09/2003)
- Meets the hygiene requirements of EN 16798, Part 3, of VDI 6022, Sheet 1, and of DIN 1946, Part 4.
- Acoustic data determined in accordance with ÖNORM EN ISO 5135:1999
- Setting the volume flows without adjustment device via a qvmin and qvmax potentiometer
- Electrical connections with screw terminals; no additional terminal boxes required
- A test report documenting factory parameterisation, functional testing and adjustment under airflow, based on reference measurements carried out on a regularly validated test rig in accordance with DIN EN ISO 9001, is available

Specification text attachment

Variable volume flow control with electronic Easy controller for applying a reference value and capturing an actual value to be integrated with the central BMS.

- Supply voltage 24 V AC/DC
- Signal voltages 0 – 10 V DC
- Possible override controls with external switches using volt-free contacts: CLOSE, OPEN, $q_{v,min}$ and $q_{v,max}$ without adjustment device
- Potentiometers with percentage scales to set the volume flow rates q_{Vmin} and q_{Vmax} without adjustment device
- The actual value signal relates to the nominal volume flow rate so that commissioning and subsequent adjustment are simplified
- Volume flow rate control range: approx. 20 – 100 % of the nominal volume flow rate
- Clearly visible external indicator light for signalling the functions: Set, not set, and power failure
- Electrical connections with screw terminals
- Double terminals for looping the supply voltage, i.e. for the simple connection of voltage transmission to the next controller

Sizing data

- q_v [m³ /h]
- Δ_{pst} [Pa]

Air-regenerated noise

- L_{PA} [dB(A)]

Casing-radiated noise

- L_{PA} [dB(A)]

Life cycle assessment

A life cycle assessment is available for the product type in the form of an environmental product declaration (EPD), which has been checked and published by a programme holder.

Order code

Order code for volume flow control (with Easy controller)

TVT – D / 600 × 400 / Easy
1 2 4 5

1 Type
TVT VAV terminal unit
2 Acoustic cladding
No entry: none
D with acoustic cladding

4 Nominal size [mm]
B × H
5 Attachments (control component)
Easy Volume flow controller, dynamic, analogue interface, setting of $q_{v_{min}}$ and $q_{v_{max}}$ with potentiometers (provided on site)

Order example: TVT-D/500x400/Easy

Acoustic cladding	With
Material	Galvanised sheet steel
Nominal size	500 × 400 mm
Attachments (control component)	Easy controller; volume flow controller, dynamic, analogue interface, setting of q_{vmin} and q_{vmax} with potentiometers

Order code for volume flow control (with VARYCONTROL attachment)

TVT – D – P1 / 600 × 400 / XB4 / V 0 / 200 – 900 [m³/h] / NO
1 2 3 4 5 7 8 9 10

1 Type
TVT VAV terminal unit
2 Acoustic cladding
No entry: none
D with acoustic cladding
3 Material
No entry: galvanised sheet steel
P1 Powder-coated RAL 7001 (silver grey)
4 Nominal size [mm]
B × H
5 Attachments (control component)
For example
BC0 Compact controller
XB4 Universal controller (VARYCONTROL)
7 Operating mode
F Constant value mode, one setpoint value (no external switch contact)
V Variable operation (adjustable setpoint value range)
8 Signal voltage range
For the actual and setpoint value signals
0 0 – 10 V DC
2 2 – 10 V DC
9 Operating values for factory setting
Volume flow rate [m³/h or l/s]
q_{vconst} (with operating mode F)
q_{vmin} – q_{vmax} (with operating mode V)
10 Damper blade position
Only with spring return actuators
NO power off to open (Normally Open)
NC power off to close (Normally Closed)

Order example: TVT/500×300/BC0/V0/2000–5500 m³/h

Acoustic cladding	Without
Material	Galvanised sheet steel
Nominal size	500 × 300 mm
Attachment (control component)	Compact controller, dynamic transducer, analogue or MP bus interface
Operating mode	Variable operation
Signal voltage range	0 – 10 V DC
Operating values	$q_{v,min}$ = 2000 m³/h $q_{v,max}$ = 5500 m³/h

Order code for volume flow control (with TROX UNIVERSAL attachment)

TVT – D – P1 / 600 × 400 / TUNF / RS / M / 0 / UMZ / … / NC
1 2 3 4 5 6 7 8 9 10 11

1 Type
TVT VAV terminal unit
2 Acoustic cladding
No entry: none
D with acoustic cladding
3 Material
No entry: galvanised sheet steel
P1 Powder-coated RAL 7001 (silver grey)
4 Nominal size [mm]
B × H
5 Attachments (control component)
TROX UNIVERSAL controller with
TUN Actuator (150 s)
TUNF Spring return actuator (150 s)
TUS Fast-running actuator (3 s)
TUSD Fast-running actuator (3 s), with digital communication interface (TROX HPD)
6 Equipment function
Room control
RS Supply air controller (Room Supply)
RE Extract air controller (Room Extract)
7 Operating mode
F Single controller, fixed set value
M Single controller or room master, variable setpoint value
S Slave controller (only with room solutions)
8 Signal voltage range
0 0 – 10 V DC
2 2 – 10 V DC
9 Expansion modules
Option 1: Power supply
No entry: 24 V AC/DC supply
T with EM-TRF for 230 V AC mains supply
U with EM-TRF-USV (including battery pack) for uninterruptible 230 V AC power supply (UPS)
Option 2: Digital communication interface
No entry: none
B with EM-BAC-MOD for BACnet MS/TP
M with EM-BAC-MOD for Modbus RTU
I with EM-IP for BACnet IP, Modbus IP and web server
R with EM-IP (including real time clock, RTC) for BACnet IP, Modbus IP and web server
Option 3: Automatic zero point correction
No entry: none
Z with EM-AUTOZERO, solenoid valve for automatic zero point correction
10 Operating values for factory setting
Volume flow rate [m³/h or l/s]

For operating mode F
$q_{v_{const}}$: constant volume flow rate[1]

For operating mode M
$q_{v_{min}}$: minimum volume flow rate[1, 2]
$q_{v_{max}}$: maximum volume flow rate[1, 2]

Other parameters are only relevant for the room master as part of a room solution[3]; for single controllers enter 0
$q_{v_{const_Supply}}$: constant supply air (room value)
$q_{v_{const_Extract}}$: constant extract air (room value)
$q_{v_{Diff}}$: supply air/extract air difference (room value)

For operating mode S
No parameters are required for the slave controller; all entries have to be made on the room master

For volume flow rate operating values please note:
[1] Single controller: $q_{v_{min}}$, $q_{v_{max}}$ or $q_{v_{const}}$ apply to the controller
[2] Room solutions: $q_{v_{min}}$, $q_{v_{max}}$, $q_{v_{const_Supply/Extract}}$ apply to the room
[3] For more information on room solutions with several directly connected TROX UNIVERSAL controllers (Plug&Play) and for order examples, please refer to the product data sheet
11 Damper blade position
Only with spring return actuators
NO de-energised OPEN (Normally Open)
NC de-energised CLOSED (Normally Closed)
Useful additions
Optional room control panel
CP-TOUCH with Touch display

Order example: TVT-P1/600x400/TUN/RS/M/0/Z/0/5200/0/0/0 m³/h

Acoustic cladding	Without
Material	Powder-coated RAL 7001, silver grey
Nominal size	600 × 400 mm
Attachments (control component)	TROX UNIVERSAL controller, actuator run time 150 s
Equipment function	Room control, supply air
Volume flow rate setting	Master
Signal voltage range	0 – 10 V DC
Expansion modules	with expansion module EM-AUTOZERO with solenoid valve for automatic zero point correction
Operating values	$q_{„min}$: 0 m³/h (room value) $q_{„max}$: 5200 m³/h (room value) No constant supply/extract air No supply air/extract air difference

Order code for differential pressure control (with VARYCONTROL attachment)

TVT – D – P1 / 600 × 400 / XF4 / PDS / V 0 / 300 – 500 [Pa] / NO
1 2 3 4 5 6 7 8 9 10

1 Type
TVT VAV terminal unit
2 Acoustic cladding
No entry: none
D with acoustic cladding
3 Material
No entry: galvanised sheet steel
P1 Powder-coated RAL 7001 (silver grey)
4 Nominal size [mm]
B × H
5 Attachments (control component)
For example
XF0 Compact controller for duct pressure
XF4 Universal controller for duct pressure (VARYCONTROL)
6 Equipment function/Installation location
PDS Duct pressure controller – supply air (Pressure Duct Supply)
PDE Duct pressure controller – extract air (Pressure Duct Extract)
PRS Room pressure controller – supply air (Pressure Room Supply)
PRE Room pressure controller – extract air (Pressure Room Extract)
7 Operating mode
F Constant value mode (one setpoint value, no external switch contact)
V Variable operation (adjustable setpoint value range)
8 Signal voltage range
For the actual and setpoint value signals
0 0 – 10 V DC
2 2 – 10 V DC
9 Operating values for factory setting
Differential pressure [Pa]
For duct pressure control, enter the differential pressure [Pa] as an absolute value
Δp_{const} (with operating mode F)
Δp_{min} – Δp_{max} (with operating mode V)
10 Damper blade position
Only with spring return actuators
NO power off to open (Normally Open)
NC power off to close (Normally Closed)

Order example: TVT-D/500x400/XF4/PDS/F0/450 Pa/NC

Acoustic cladding	With
Material	Galvanised sheet steel
Nominal size	500 × 400 mm
Attachments (control component)	VARYCONTROL Universal controller duct pressure, spring return actuator
Equipment function	Duct pressure control, supply air
Operating mode	Constant value (one setpoint value)
Signal voltage range	0 – 10 V DC
Operating values	$\Delta_{pconst.}$ = 450 Pa
Damper blade position	Power off to CLOSE

Order code for differential pressure control (with TROX UNIVERSAL controller as attachment)

TVT – D – P1 / 600 × 400 / TUNF / PRS / MFP / 0 / UMZ / … / NC
1 2 3 4 5 6 7 8 9 10 11

1 Type
TVT VAV terminal unit
2 Acoustic cladding
No entry: none
D with acoustic cladding
3 Material
No entry: galvanised sheet steel
P1 Powder-coated RAL 7001 (silver grey)
4 Nominal size [mm]
B × H
5 Attachments (control component)
TROX UNIVERSAL controller with
TUN Actuator (150 s)
TUNF Spring return actuator (150 s)
TUS Fast-running actuator (3 s)
TUSD Fast-running actuator (3 s), with digital communication interface (TROX HPD)
6 Equipment function
Pressure control
PDS Duct pressure controller – supply air (Pressure Duct Supply)
PDE Duct pressure controller – extract air (Pressure Duct Extract)
PRS Room pressure controller – supply air (Pressure Room Supply)
PRE Room pressure controller – extract air (Pressure Room Extract)
7 Operating mode
MFP Single controller or room master, constant pressure setpoint
MVP Single controller or room master, variable pressure setpoint With room solutions
SFP Slave, constant pressure setpoint
SVP Slave, variable pressure setpoint
8 Signal voltage range
0 0 – 10 V DC
2 2 – 10 V DC
9 Expansion modules
Option 1: Power supply
No entry: 24 V AC/DC
T with EM-TRF for 230 V AC mains supply
U with EM-TRF-USV (including battery pack) for uninterruptible 230 V AC power supply (UPS)
Option 2: Digital communication interface
No entry: none
B with EM-BAC-MOD for BACnet MS/TP
M with EM-BAC-MOD for Modbus RTU
I with EM-IP for BACnet IP, Modbus IP and web server
R with EM-IP (including real time clock, RTC) for BACnet IP, Modbus IP and web server
Option 3: Volume flow rate measurement
No entry: none
V with EM-V for volume flow rate measurement at the differential pressure controller
Option 4: Automatic zero point correction
No entry: none
Z with EM-AUTOZERO solenoid valve for automatic zero point correction (only in combination with EM-V)
10 Operating values for factory setting
Volume flow rate [m³/h or l/s], pressure [Pa]
For operating mode MFP and SFP
Δp_{const}: constant differential pressure

For operating mode MVP and SVP
Δp_{min}: minimum differential pressure
Δp_{max}: maximum differential pressure

Other parameters for operating modes MFP and MVP
Only relevant for the room master as part of a room solution[1]; for single controller enter 0
$q_{v_{min}}$: minimum volume flow rate (room value)
$q_{v_{max}}$: maximum volume flow rate (room value)
$q_{v_{const_Supply}}$: constant supply air (room value)
$q_{v_{const_Extract}}$: constant extract air (room value)
$q_{v_{Diff}}$: supply air/extract air difference (room value)
Please note
[1] For more information on room solutions with several directly connected TROX UNIVERSAL controllers (Plug&Play) and for order examples, please refer to the product data sheet
11 Damper blade position
Only with spring return actuators
NO Power off to open (Normally Open)
NC Power off to close (Normally Closed)
Useful additions
Differential pressure transducers required for room or duct pressure control have to be ordered separately or provided by others, e.g.
PT-699 Differential pressure transducer for room pressure control
PT-699-DUCT Differential pressure transducers for duct pressure control, including duct pressure measurement kit
Optional room control panel
CP-TOUCH with Touch display

Order example: TVT-D-P1/200x100/TUSD/PRE/SFP/2/-20Pa

Acoustic cladding	With
Material	Powder-coated RAL 7001, silver grey
Nominal size	200 × 100 mm
Attachments (control component)	Controller TROX UNIVERSAL, fast-running actuator (3 s) with digital communication interface (TROX HPD)
Equipment function	Room pressure control, extract air
Differential pressure setting	Slave, constant pressure control
Signal voltage range	2 – 10 V DC

Operating values	Δ_{pconst} = -20 Pa

Order code for room control (with EASYLAB attachment)

TVT – D – P1 / 600×400 / ELAB / S / RS / UMZ / LAB / …
1 2 3 4 5 6 7 9 10 11

1 Type
TVT VAV terminal unit
2 Acoustic cladding
No entry: none
D with acoustic cladding
3 Material
No entry: Galvanised sheet steel
P1 Powder-coated RAL 7001 (silver grey)
4 Nominal size [mm]
B × H
5 Attachments (control component)
ELAB EASYLAB controller TCU3
6 Actuators
S Fast-running actuator (3 s)
SD Fast-running actuator (3 s), with digital communication interface (TROX HPD)
7 Equipment function
Room control
RS Supply air controller (Room Supply)
RE Extract air controller (Room Extract)
PC Room pressure controller (Pressure Control)
9 Expansion modules
Option 1: Power supply
No entry: 24 V AC/DC supply
T with EM-TRF for 230 V AC mains supply
U with EM-TRF-USV (including battery pack) for uninterruptible 230 V AC power supply (UPS)
Option 2: Digital communication interface
No entry: none
B With EM-BAC-MOD for BACnet MS/TP
M with EM-BAC-MOD for Modbus RTU
I with EM-IP for BACnet IP, Modbus IP and web server
R with EM-IP (including real time clock, RTC) for BACnet IP, Modbus IP and web server
Option 3: Automatic zero-point adjustment
No entry: none
Z with EM-AUTOZERO, solenoid valve for automatic zero point correction
10 Additional functions
Without room management function
LAB extract air led system (Laboratory)
CLR supply air led system (Clean Room)
Room management function is active
LAB-RMF extract air led system (Laboratory) - with room management function (RMF)
CLR-RMF Supply air led system (Clean Room) with room management function
11 Operating values for factory setting
Volume flow rate [m³/h or l/s], pressure [Pa]

Only required when room management function is active; total room extract air/supply air
q_{v1}: standard mode
q_{v2}: reduced operation
q_{v3}: increased operation
q_{v4}: constant supply air
q_{v5}: constant extract air
q_{v6}: Supply air/extract air difference
Δp_{set}: setpoint pressure (only with differential pressure control)
Useful additions
Room control panel (only for units with RMF)
CP-TOUCH-4.3 Touch control panel with 4.3"
Differential pressure transducers required for room pressure control have to be ordered separately or provided by the client, e.g.
PT-699 Measuring range ±50 Pa or ±100 Pa
PT-GB604 Measuring range ±100 Pa

Order example: TVT-D-P1/600×400/ELAB/S/RS/CLR-RMF/3000/1500/5000/200/90/300 m³/h

Acoustic cladding	With
Material	Powder-coated RAL 7001, silver grey
Nominal size	600 × 400 mm
Attachments (control component)	EASYLAB controller TCU3
Actuator	fast-running actuator (3 s)
Equipment function	Supply air control
Additional function	supply air led system - room management function is active
Operating values	Standard mode 3000 m³/h
	reduced operation 1500 m³/h
	increased operation 5000 m³/h
	constant supply air 200 m³/h
	constant extract air 90 m³/h
	Supply air/extract air difference 300 m³/h

Order code for single operation (with EASYLAB attachment)

TVT – D / P1 / 600×400 / ELAB / S / EC – E0 / UMZ / …
1 2 3 4 5 6 7 8 9 11

1 Type
TVT VAV terminal unit
2 Acoustic cladding
No entry: none
D with acoustic cladding
3 Material
No entry: galvanised sheet steel
P1 Powder-coated RAL 7001 (silver grey)
4 Nominal size [mm]
B × H
5 Attachments (control component)
ELAB EASYLAB controller TCU3
6 Actuators
S Fast-running actuator (3 s)
SD Fast-running actuator (3 s), with digital communication interface (TROX HPD)
7 Equipment function
Single operation
SC Single controller – supply air (Supply Controller)
EC Single controller – extract air (Extract Controller)
8 External volume flow rate setting
E0 Variable, signal voltage range 0 – 10 V DC
E2 Variable, signal voltage range 2 – 10 V DC
2P 2 switching steps (for one switch contact, by others)
3P 3 switching steps (for two switch contacts, by others)
F Constant value mode, one setpoint value (no external switch contact)
9 Expansion modules
Option 1: Power supply
No entry: 24 V AC/DC
T with EM-TRF for 230 V AC mains supply
U with EM-TRF-USV (including battery pack) for uninterruptible 230 V AC power supply (UPS)
Option 2: Digital communication interface
No entry: none
B with EM-BAC-MOD for BACnet MS/TP
M with EM-BAC-MOD for Modbus RTU
I with EM-IP for BACnet IP, Modbus IP and web server
R with EM-IP (including real time clock, RTC) for BACnet IP, Modbus IP and web server
Option 3: Automatic zero point correction
No entry: none
Z with EM-AUTOZERO solenoid valve for automatic zero point correction
11 Operating values for factory setting
Volume flow rate [m³/h or l/s]
Depends on external volume flow rate setting
E0: $q_{v_{min}}$ – $q_{v_{max}}$
E2: $q_{v_{min}}$ – $q_{v_{max}}$
2P: q_{v_1}/q_{v_2}
3P: q_{v_1}/q_{v_2}/q_{v_3}
F: q_{v_1}

Order example: TVT/600×400/ELAB/S/SC/2P/3000/7000

Acoustic cladding	Without
Nominal size	600 × 400 mm
Attachments (control component)	EASYLAB controller TCU3
Actuator	fast-running actuator (3 s)
Equipment function	Supply air controller
External volume flow rate setting	Switch contacts (provided by others) for 2 switching steps
Operating values	q_{v1} =3000 m³/h q_{v2} = 7000 m³/h

Variants

VAV terminal unit, variant TVT



- VAV terminal unit for variable volume flow control

VAV terminal unit, variant TVT-D



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

Material

Standard construction

Order code detail	Part	Material
–	Casing	Galvanised sheet steel
	Differential pressure sensor	Aluminium
	Damper blade	
	Damper blade seal	Polyethylene, PE
	Shaft and linkage	Galvanised steel
	Plain bearings	Plastic, ABS
	Gears	

Option acoustic cladding

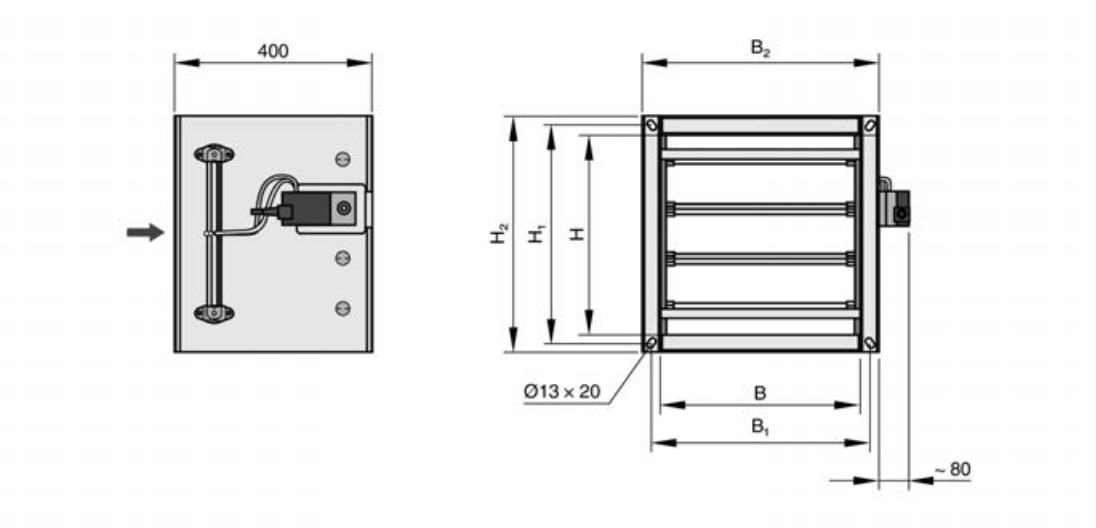
Order code detail	Part	Material
D	Acoustic cladding casing	Galvanised sheet steel
	Insulation of structure-borne noise	Polyethylene, PE
	Lining	Mineral wool to EN 13501, fire rating class A1, non-combustible

Powder-coated construction

Order code detail	Part	Material
P1	Casing	Galvanised sheet steel - powder-coated
	Differential pressure sensor	Aluminium - powder coated, RAL 7001, silver grey
	Damper blade	
	Damper blade seal	Polyethylene, PE
	Shaft and linkage	Galvanised steel
	Plain bearings	Plastic, ABS
	Gears	

Dimensions and weight

Terminal unit without acoustic cladding (TVT)



Note:
The illustration shows control component type Easy, Compact.
For exact dimensions see the section 'Space required for commissioning and maintenance'.

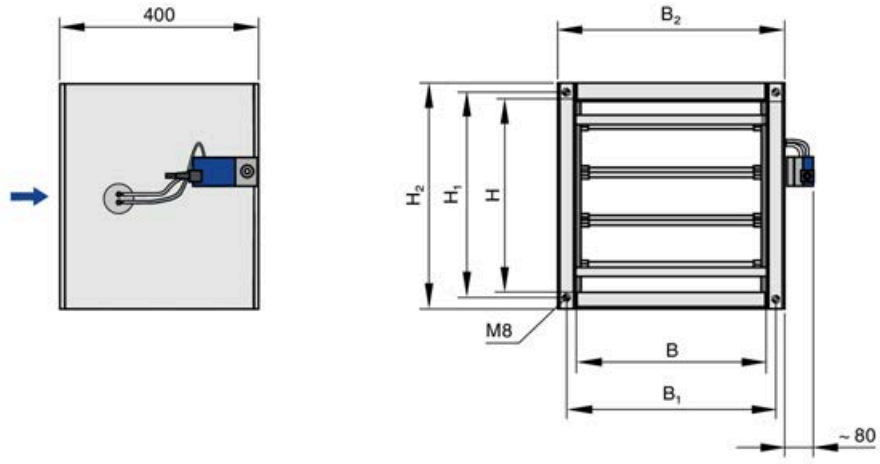
Dimensions/weights of TVT

NS (B × H)	B₁	B₂	H₁	Hydrogen	Kg
200 × 100	234	276	134	176	6
300 × 100	334	376	134	176	7
400 × 100	434	476	134	176	8
500 × 100	534	576	134	176	9
600 × 100	634	676	134	176	10
200 × 200	234	276	234	276	9
300 × 200	334	376	234	276	10
400 × 200	434	476	234	276	11
500 × 200	534	576	234	276	12
600 × 200	634	676	234	276	13
700 × 200	734	776	234	276	14
800 × 200	834	876	234	276	15
300 × 300	334	376	334	376	10
400 × 300	434	476	334	376	11
500 × 300	534	576	334	376	12
600 × 300	634	676	334	376	13
700 × 300	734	776	334	376	15
800 × 300	834	876	334	376	16
900 × 300	934	976	334	376	18
1000 × 300	1034	1076	334	376	19
400 × 400	434	476	434	476	14
500 × 400	534	576	434	476	15
600 × 400	634	676	434	476	16
700 × 400	734	776	434	476	17
800 × 400	834	876	434	476	18
900 × 400	934	976	434	476	21
1000 × 400	1034	1076	434	476	20
500 × 500	534	576	534	576	19
600 × 500	634	676	534	576	20
700 × 500	734	776	534	576	22
800 × 500	834	876	534	576	23

NS (B × H)	B_1	B_2	H_1	Hydrogen	Kg
900 × 500	934	976	534	576	25
1000 × 500	1034	1076	534	576	26
600 × 600	634	676	634	676	19
800 × 600	834	876	634	676	23
1000 × 600	1034	1076	634	676	27

Note:
Not all attachments (control components) may be available or suitable for all sizes of terminal units – see the control component product data sheet or the Easy Product Finder design program.

Terminal unit with acoustic cladding (TVT-D)



Note:
The illustration shows control component type Easy, Compact.
For exact dimensions see the section 'Space required for commissioning and maintenance'.

Dimensions/weights (TVT-D)

NS (B × H)	B_1	B_2	H_1	Hydrogen	Kg
200 × 100	234	280	134	180	9
300 × 100	334	380	134	180	11
400 × 100	434	480	134	180	12
500 × 100	534	580	134	180	14
600 × 100	634	680	134	180	15
200 × 200	234	280	234	280	14
300 × 200	334	380	234	280	15
400 × 200	434	480	234	280	17
500 × 200	534	580	234	280	18
600 × 200	634	680	234	280	20
700 × 200	734	780	234	280	21
800 × 200	834	880	234	280	23
300 × 300	334	380	334	380	15
400 × 300	434	480	334	380	17
500 × 300	534	580	334	380	18
600 × 300	634	680	334	380	20
700 × 300	734	780	334	380	22
800 × 300	834	880	334	380	24
900 × 300	934	980	334	380	26
1000 × 300	1034	1080	334	380	29
400 × 400	434	480	434	480	21
500 × 400	534	580	434	480	23
600 × 400	634	680	434	480	24

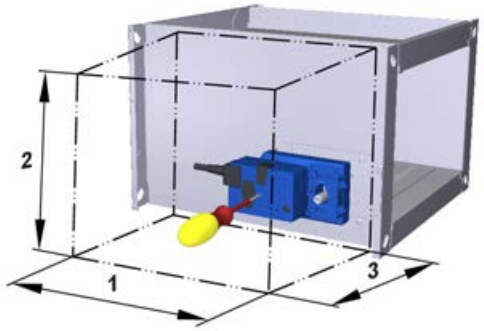
NS (B × H)	B_1	B_2	H_1	Hydrogen	Kg
700 × 400	734	780	434	480	26
900 × 400	934	980	434	480	29
1000 × 400	1034	1080	434	480	32
500 × 500	534	580	534	580	28
600 × 500	634	680	534	580	30
700 × 500	734	780	534	580	32
800 × 500	834	880	534	580	35
900 × 500	934	980	534	580	37
1000 × 500	1034	1080	534	580	39
600 × 600	634	680	634	680	29
800 × 600	834	880	634	680	35
1000 × 600	1034	1080	634	680	41

Note:
Not all attachments (control components) may be available or suitable for all sizes of terminal units – see the control component product data sheet or the Easy Product Finder design program.

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.
Product illustrations do not show any installation situation details. If an attachment requires a certain installation orientation, this is specified on a sticker on the product.

Access to attachments



Schematic illustration of required installation space

Product example



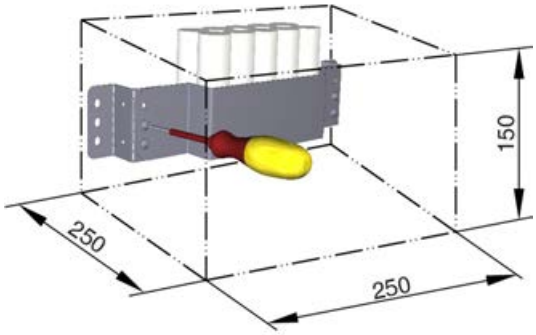
Attachments, including BC0, XD4, TUNF

Space required

Attachment	1	2	3
Easy controller			
Easy	400	H	300
Compact controller			
BC0, BM0, BM0-J6, BM0-D8, LN0, LK0, XB0, XD0, XF0	400	H	300
Universal controller			
BUDN, BUDNF, BUSN, BUSNF, BUSS, BUPN, BUPFN, BURN, BURNF, XB4, XD4, XF4	500	H	300
TROX UNIVERSAL			
TUN, TUNF, TUS, TUSD	500	H, but at least 350	400
EASYLAB			
ELAB	500	H, but at least 350	400

H: Unit height

Accessibility to the battery pack



Schematic illustration of required installation space

Note: Separate installation space for fixing and accessing the battery pack (optional accessories for TROX UNIVERSAL or LABCONTROL EASYLAB control components).

Product example



Attachment TUNF / ... / U

Product details

Installation and commissioning

- Any installation orientation (except units with static effective pressure transducer)
- With flanges on both ends to make connections to the ducting
- TVT-D: For constructions with acoustic cladding, ducts on the room side should have cladding up to the acoustic cladding of the controller

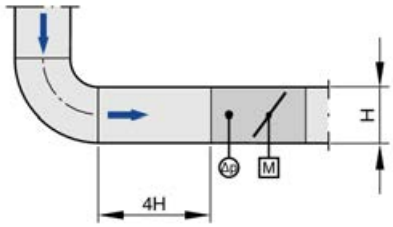
Upstream conditions

The volume flow accuracy Δ_{q_v} applies to a straight upstream section of the duct. Bends, junctions or a narrowing or widening of the duct cause turbulences that may affect measurement. Air duct connections, e.g. junctions off the main duct, must comply with EN 1505. Some installation situations require straight upstream lengths.

Note on airflow entering via an open air duct (extract air mode)

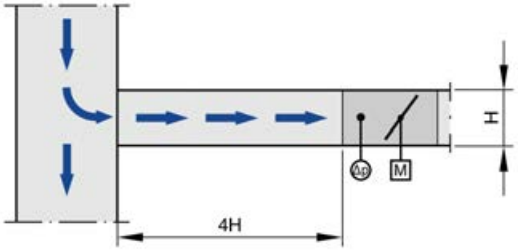
Airflow entering at the open end of an air duct causes strong turbulence and also affects the volume flow accuracy.
In this case, a straight upstream section or a flow straightener is required.
For further information on this specific installation situation, see the installation and operating manual.

Bend, vertical



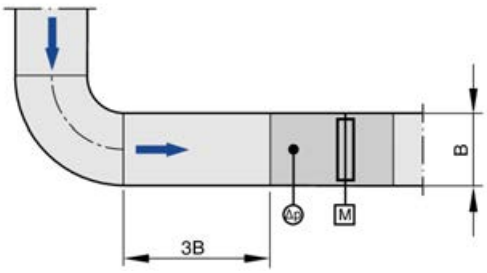
A bend – with a straight duct section of at least 4H upstream of the VAV terminal unit – has only a negligible effect on the volume flow rate accuracy.

Junction, vertical



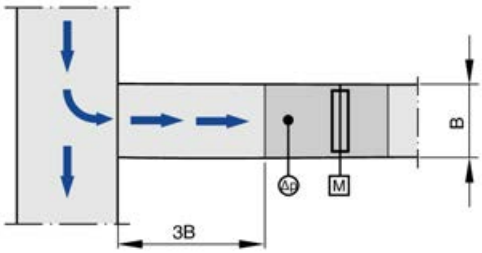
A junction causes strong turbulence. The stated volume flow rate accuracy Δ_{q_v} can only be achieved with a straight duct section of at least 4H upstream.

Bend, horizontal



A bend – with a straight duct section of at least 3B upstream of the VAV terminal unit – has only a negligible effect on the volume flow rate accuracy.

Junction, horizontal



A junction causes strong turbulence. The stated volume flow rate accuracy Δ_{q_v} can only be achieved with a straight duct section of at least 3B upstream.

VARYCONTROL control components

Attachment	Controlled variable	Interface	Pressure transducer	Actuator	Manufacturer
Easy controller, dynamic					
Easy	q_v	0 – 10 V	integrated	slow-acting integrated	(1)
Compact controller, dynamic					
BC0	q_v	0 – 10 V or 2 – 10 V or MP bus interface	integrated	slow-acting integrated	2
BL0 **	qv	LonWorks FTT 10 interface	integrated	slow-acting integrated	2
BM0	q_v	Modbus RTU/BACnet MS/TP	integrated	slow-acting integrated	2
BM0-J6	q_v	Modbus RTU/BACnet MS/TP with RJ12 socket (for X-AIRCONTROL)	integrated	slow-acting integrated	2
BM0-D8	q_v	Modbus RTU or BACnet MS/TP with dual RJ45 jack (daisy chain for TROX Ox)	integrated	slow-acting, integrated	2
XB0	q_v	0 – 10 V or 2 – 10 V	integrated	slow-acting integrated	(1)
LN0	q_v	0 – 10 V or 2 – 10 V	integrated	slow-acting integrated	⑤
LK0	q_v	KNX interface	integrated	slow-acting integrated	⑤
Compact controller, static					
XD0	q_v	0 – 10 V or 2 – 10 V	integrated	slow-acting integrated	3
XF0	Δp	0 – 10 V or 2 – 10 V	integral, control range adjustable 25 - 550 Pa or 0.1 – 2.2 inWg	slow-acting integrated	3
Universal controller, dynamic					
B11 *	qv	0 – 10 V or 2 – 10 V	integrated	slow-acting separate	2
B1B *	qv	0 – 10 V or 2 – 10 V	integrated	Spring return actuator separate	2
BUDN	q_v	0 - 10 V or 2 - 10 V or MP-Bus or Modbus RTU or BACnet MS/TP	integrated	slow-acting separate	2
BUDNF	qv	0 - 10 V or 2 - 10 V or MP-Bus or Modbus RTU or BACnet MS/TP	integrated	Spring return actuator separate	
XB4	q_v	0 – 10 V or 2 – 10 V	integrated	Spring return actuator separate	3
VARYCONTROL Universal controller, static					
BP1 *	qv	0 – 10 V or 2 – 10 V or MP bus interface	individual component	slow-acting separate	2

Attachment	Controlled variable	Interface	Pressure transducer	Actuator	Manufacturer
BPB *	qv	0 – 10 V or 2 – 10 V or MP bus interface	individual component	Spring return actuator separate	2
BPG *	qv	0 – 10 V or 2 – 10 V or MP bus interface	individual component	fast-acting separate	2
BB1 *	qv	2 – 10 V	individual component	slow-acting separate	2
BBB *	qv	2 – 10 V	individual component	Spring return actuator separate	2
BR1 *	Δp	0 – 10 V or 2 – 10 V or MP bus interface	individual component 100 Pa or 2.4 inWg	slow-acting separate	2
BRB *	Δp	0 – 10 V or 2 – 10 V or MP bus interface	individual component 100 Pa or 2.4 inWg	Spring return actuator separate	2
BS1 *	Δp	0 – 10 V or 2 – 10 V or MP bus interface	individual component 600 Pa or 2.4 inWg	slow-acting separate	2
BSB *	Δp	0 – 10 V or 2 – 10 V or MP bus interface	individual component 600 Pa or 2.4 inWg	Spring return actuator separate	2
BG1 *	Δp	2 – 10 V	individual component 100 Pa or 2.4 inWg	slow-acting separate	2
BGB *	Δp	2 – 10 V	individual component 100 Pa or 2.4 inWg	Spring return actuator separate	2
BH1 *	Δp	2 – 10 V	individual component 600 Pa or 2.4 inWg	slow-acting separate	2
BHB *	Δp	2 – 10 V	individual component 600 Pa or 2.4 inWg	Spring return actuator separate	2
BUSN	q_v	0 - 10 V or 2 - 10 V or MP-Bus or Modbus RTU or BACnet MS/TP	integrated	slow-acting separate	2
BUSNF	qv	0 - 10 V or 2 - 10 V or MP-Bus or Modbus RTU or BACnet MS/TP	integrated	Spring return actuator separate	2
BUSS	q_v	0 - 10 V or 2 - 10 V or MP-Bus or Modbus RTU or BACnet MS/TP	integrated	fast-acting separate	2
BUPN	Δp	0 - 10 V or 2 - 10 V or MP-Bus or Modbus RTU or BACnet MS/TP	integrated Control range adjustable 25 - 450 Pa or 0.1 – 1.8 inWg	slow-acting separate	2
BUPNF	Δp	0 - 10 V or 2 - 10 V or MP-Bus or Modbus RTU or BACnet MS/TP	integrated Control range adjustable 25 - 450 Pa or 0.1 – 1.8 inWg	Spring return actuator separate	2
BURN	Δp	0 - 10 V or 2 - 10 V or MP-Bus or Modbus RTU or BACnet MS/TP	integrated Control range adjustable -50 – -10 Pa or 10 – 50 Pa/ -0.2	slow-acting separate	2

Attachment	Controlled variable	Interface	Pressure transducer	Actuator	Manufacturer
			– -0.04 inWg or 0.2 – 0.04 inWg		
BURNF	Δp	0 - 10 V or 2 - 10 V or MP-Bus or Modbus RTU or BACnet MS/TP	integrated Control range adjustable -50 – -10 Pa or 10 – 50 Pa/ -0.2 – -0.04 inWg or 0.2 – 0.04 inWg	Spring return actuator separate	2
XD4	q_v	0 – 10 V or 2 – 10 V	integrated	Spring return actuator separate	3
XF4	Δp	0 – 10 V or 2 – 10 V	integral, control range adjustable 25 - 550 Pa or 0.1 – 2.2 inWg	Spring return actuator separate	3

q_v Volume flow
Δp pressure differential
1 TROX, 2 TROX/Belimo, 3 TROX/Gruner, 4 Sauter, 5 Siemens

Dimensional constraint

Type TVT only up to 700 × 200 mm or 400 × 300 mm with attachment BUSS (universal controller, fast-acting actuator)
Type TVT only up to 1000 × 300 mm or 800 × 400 mm with attachment BM0-J6, BM0-D8, LN0, LK0, XB0 (compact controller)
Type TVT only up to 1000 × 300 mm or 800 × 400 mm with attachment BUDNF, BUSNF, BUPNF, BURNF (spring return TROX/ Belimo)
Type TVT only up to 1000 × 500 mm with attachment XD0, XF0

TROX UNIVERSAL control components

Attachment	Controlled variable	Interface	Pressure transducer	Actuator	Manufacturer
TROX UNIVERSAL controller – static					
TUN	q_v, Δp	TROX Plug&Play communication system and 0 – 10 V or 2 – 10 V or with optional accessories: Modbus, BACnet, web server	q_v = integrated,, Δp = separated	slow-acting separate	1
TUNF	q_v, Δp	TROX Plug&Play communication system and 0 – 10 V or 2 – 10 V or with optional accessories: Modbus, BACnet, web server	q_v = integrated, Δp = separated	Spring return actuator separate	1
TUS	q_v, Δp	TROX Plug&Play communication system and 0 – 10 V or 2 – 10 V or with optional accessories: Modbus, BACnet, web server	q_v = integrated, Δp = separated	fast-acting separate	1
TUSD	q_v, Δp	TROX Plug&Play communication system and 0 – 10 V or 2 – 10 V or with optional accessories: Modbus, BACnet, web server	q_v = integrated, Δp = separated	fast-acting with digital communication interface (TROX HPD), separate	1

q_v Volume flow
Δp pressure differential
1 TROX

Dimensional constraint

Type TVT only up to 700 × 200 mm or 400 × 300 mm with attachment TUS
Type TVT only up to 1000 × 500 mm with attachment TUSD

LABCONTROL EASYLAB control components

Attachment	Controlled variable	Interface	Pressure transducer	Actuator	Manufacturer
EASYLAB Regler – statisch					
ELAB	q_v, Δp *	TROX plug and play communication system and 0 – 10 V or 2 – 10 V or with optional accessories: Modbus, BACnet, web server	q_v = integrated, Δp = separated	fast-acting, separate or fast-acting with digital communication interface (TROX HPD), separate	1

1 TROX

*** The controlled variable depends on the type of VAV terminal unit**

- TVR, TVRK: Fume cupboard, room supply air, room extract air, room pressure, single controller
- TVLK: Fume cupboard, single controller
- TVJ, TVT: Room supply air, room extract air, room pressure, single controller
- TVZ, TZ-Silenzio: Room supply air, room pressure, single controller
- TVA, TA-Silenzio: Room extract air, room pressure, single controller

Terminal unit maximum size with some attachments

Type TVT only up to 700 × 200 mm or 400 × 300 mm with actuator type S (fast-running actuator)
Type TVT only up to 1000 × 500 mm with actuator type SD (fast-running actuator, TROX HPD)

Nomenclature

Dimensions of rectangular units

B [mm]
Duct width

B_1 [mm]
Screw hole pitch of air duct profile (horizontal)

B_2 [mm]
Overall dimension of air duct profile (width)

H [mm]
Duct height

H_1 [mm]
Screw hole pitch of air duct profile (vertical)

H_2 [mm]
Overall dimension of air duct profile (height)

Dimensions of circular units

ØD [mm]
Basic units made of sheet steel: Outer diameter of the spigot; basic units made of plastic: Inside diameter of the spigot

$ØD_1$ [mm]
Pitch circle diameter of flanges

$ØD_2$ [mm]
Outer diameter of flanges

L [mm]
Length of unit including connecting spigot

L_1 [mm]
Length of casing or acoustic cladding

n [ ]
Number of flange screw holes

T [mm]
Flange thickness

General information

m [kg]
Unit weight including the minimum required attachments (control component)

NS [mm]
Nominal size

f_m [Hz]
Octave band centre frequency

L_{PA} [dB(A)]
Sound pressure level of air-regenerated noise of the VAV terminal unit, A-weighted system attenuation taken into account

L_{PA1} [dB(A)]
Sound pressure level of air-regenerated noise of the VAV terminal unit with secondary silencer, A-weighted system attenuation taken into account

L_{PA2} [dB(A)]
Sound pressure level of case-radiated noise of the VAV terminal unit, A-weighted system attenuation taken into account

L_{PA3} [dB(A)]
Sound pressure level of case-radiated noise of the VAV terminal unit with acoustic cladding, A-weighted system attenuation taken into account

Note on acoustic data: All sound pressure levels are based on a reference value of 20 µPa.

q_{vNom} [m³/h]; [l/s]
Nominal flow rate (100 %): The value depends on product type, nominal size and control component (attachment). Values are published on the internet and in technical leaflets and defined in the Easy Product Finder design programme. Reference value for calculating percentages (e.g. $q_{vmax.}$). Upper limit of the setting range and maximum volume flow rate setpoint value for the VAV terminal unit.

$q_{vmin\ Unit}$ [m³/h]; [l/s]
Technical minimum volume flow: The value depends on product type, nominal size and control component (attachment). Values are defined in the Easy Product Finder design programme. Lower limit of the setting range and minimum volume flow rate setpoint value for the VAV terminal unit. Setpoint values below $q_{vmin\ unit,}$ (if q_{vmin} equals zero) may result in unstable control or shut-off.

q_{vmax} [m³/h]; [l/s]
Adjustable by others at upper limit of the operating range for the VAV terminal unit: $q_{vmax.}$ can be set to less than or equal to q_{vnom} on the terminal unit. In case of analogue control of volume flow controllers (typically used), the maximum value of the setpoint signal (10 V) is assigned to the set maximum value ($q_{vmax.}$) (see characteristics).

q_{vmin} [m³/h]; [l/s]
Adjustable by others at lower limit of the operating range for the VAV terminal unit: q_{vmin} should be set to less than or equal to $q_{vmax.}$ q_{vmin} to less than $q_{vmin\ unit,}$ as the control may become unstable or the damper blade may close. q_{vmin} may equal zero. In case of analogue control of volume flow controllers (typically used), the minimum value of the setpoint signal (0 or 2 V) is assigned to the set minimum value (q_{vmin}) (see characteristics).

q_v [m³/h]; [l/s]
Volume flow rate

Δ_{qv} [%]
Volume flow rate accuracy in relation to the setpoint (tolerance)

Δp_{st} [Pa]
Static differential pressure

Δp_{stmin} [Pa]

Static minimum differential pressure: The static minimum differential pressure is equal to the pressure loss of the VAV terminal unit when the damper blade is open, caused by flow resistance (damper blade). If the pressure on the VAV terminal unit 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 static 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.

Lengths [mm]
All lengths are given in millimetres [mm] unless stated otherwise.

Basic unit
Unit for controlling volume flow rates without an attached control component. The main components include the casing with sensor(s) to measure the differential pressure and the damper blade to restrict the volume flow. The basic unit is also referred to as a VAV terminal unit. Important distinguishing features: Geometry or unit shape, material and connection variants, acoustic characteristics (e.g. optional acoustic cladding or integrated silencers), range of volume flow.

Control component
Electronic unit(s) mounted on the basic unit to control the volume flow rate, or the duct pressure, or the room pressure by adjusting the damper blade position. The electronic unit essentially consists of a controller with differential pressure transmitter (integrated or external) and an integrated actuator (Easy and Compact controller).
Important distinguishing features:

- Transmitter: dynamic transmitter for clean air or static transmitter for contaminated air
- Actuator: Standard actuator, slow-acting
- Interface technology: analogue interface or digital bus interface for connecting and recording signals and data

Volume flow controller
Consists of a basic unit with an attached control component.