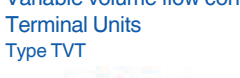
Variable volume flow control VAV Terminal Units

Type 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 flow rates, suitable for low-leakage shut-off

- For volume flow rate ranges up to 28836 m³/h or 8010 l/s
- Suitable for the control of volume flow rate, room pressure or duct pressure
- Electronic control components for different applications (Easy, Compact, Universal, and LABCONTROL)
- High control accuracy
- Closed blade air leakage to EN 1751, class 3
- Casing air leakage to EN 1751, up to class C

Optional equipment and accessories

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

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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 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

Nominal sizes

- 36 Nominal sizes from 200 × 100 mm (8 x 4 in) to 1000 × 600 mm (40 x 24 in)
- 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
- ABCONTROL: 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

Materials and surfaces

Galvanised steel sheet 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 (122 °F)
- 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 mm (16 in), **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

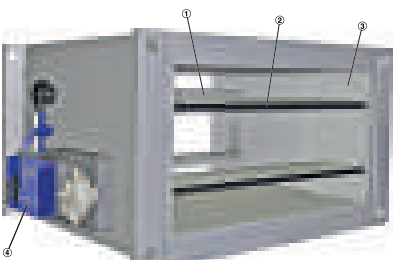
Maintenance

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

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 × 100mm (B x 4") to 1000 × 1000 mm (40 x
Volume flow rate range	45 – 10100 l/s; 162 – 36360 m³ /h or 95 - 21400
Volume flow rate control range (unit with dynamic differential pressure measurement)	Approx. 20 to 100 % of the nominal volume flow rate
Minimum differential pressure	5 - 40 Pa (0,02 - 0,16 in w.g.)
Maximum differential pressure	1000 Pa (4,01 in w.g.)
Operating temperature	10 - 50 °C (50 - 122 °F)

Quick sizing

Quick sizing tables provide a good overview of the minimum differential pressures, the volume flow rate 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 "Basic information and nomenclature".
Precise results and spectral data for all control components can be calculated with our Easy Product Finder design program. The first selection criteria for the nominal size are the actual volume flow rates q_{min} and q_{max}.

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 (Δp_{stmin}) 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

Nominal size [mm]		Nominal size [in]		qv [l/s]	qv [m³/h]	qv [CFM]	Δpstmin [Pa]		Δpstmin [in w.g.]		ΔqV [±%]
B	H	B	H				①	②	①	②	
200	100	8	4	42	149	88	2	10	0,01	0,04	13
200	100	8	4	88	315	185	8	43	0,03	0,17	8
200	100	8	4	133	480	283	17	99	0,07	0,40	6
200	100	8	4	179	646	380	30	180	0,12	0,72	5
300	100	12	4	62	223	131	2	10	0,01	0,04	13
300	100	12	4	131	472	278	7	43	0,03	0,17	8
300	100	12	4	200	720	424	17	99	0,07	0,40	6
300	100	12	4	269	969	570	30	180	0,12	0,72	5
400	100	16	4	83	298	175	2	10	0,01	0,04	13
400	100	16	4	175	629	370	7	43	0,03	0,17	8
400	100	16	4	267	961	566	17	100	0,07	0,40	6
400	100	16	4	358	1292	760	30	180	0,12	0,72	5
500	100	20	4	104	372	219	2	10	0,01	0,04	13
500	100	20	4	218	786	463	7	43	0,03	0,17	8
500	100	20	4	334	1201	707	17	100	0,07	0,40	6
500	100	20	4	448	1615	951	30	180	0,12	0,72	5
600	100	24	4	124	446	263	2	10	0,01	0,04	13
600	100	24	4	262	943	555	7	43	0,03	0,17	8
600	100	24	4	400	1441	848	17	100	0,07	0,40	6
600	100	24	4	538	1938	1141	30	180	0,12	0,72	5
200	200	8	8	83	298	175	2	8	0,01	0,03	13
200	200	8	8	175	629	370	7	36	0,03	0,14	8
200	200	8	8	267	961	566	17	84	0,07	0,34	6

200	200	8	8	358	1292	760	30	151	0,12	0,61	5
300	200	12	8	124	446	263	2	8	0,01	0,03	13
300	200	12	8	262	943	555	7	36	0,03	0,14	8
300	200	12	8	400	1441	848	17	84	0,07	0,34	6
300	200	12	8	538	1938	1141	30	151	0,12	0,61	5
400	200	16	8	166	595	350	2	8	0,01	0,03	13
400	200	16	8	349	1258	740	7	36	0,03	0,14	8
400	200	16	8	534	1921	1131	17	84	0,07	0,34	6
400	200	16	8	717	2584	1521	30	151	0,12	0,61	5
500	200	20	8	207	743	437	2	8	0,01	0,03	13
500	200	20	8	437	1572	925	7	36	0,03	0,14	8
500	200	20	8	667	2401	1413	17	84	0,07	0,34	6
500	200	20	8	897	3230	1901	30	151	0,12	0,61	5
600	200	24	8	248	892	525	2	8	0,01	0,03	13
600	200	24	8	524	1887	1111	7	36	0,03	0,14	8
600	200	24	8	800	2881	1696	17	83	0,07	0,33	6
600	200	24	8	1076	3876	2281	30	151	0,12	0,61	5
700	200	28	8	289	1040	612	2	8	0,01	0,03	13
700	200	28	8	611	2201	1295	7	36	0,03	0,14	8
700	200	28	8	934	3361	1978	17	83	0,07	0,33	6
700	200	28	8	1256	4522	2662	30	151	0,12	0,61	5
800	200	32	8	331	1189	700	2	8	0,01	0,03	13
800	200	32	8	699	2515	1480	7	36	0,03	0,14	8
800	200	32	8	1067	3842	2261	17	84	0,07	0,34	6
800	200	32	8	1435	5168	3042	30	151	0,12	0,61	5
300	300	12	12	203	730	430	2	10	0,01	0,04	12
300	300	12	12	429	1544	909	9	43	0,04	0,17	8
300	300	12	12	655	2359	1388	20	99	0,08	0,40	6
300	300	12	12	881	3173	1868	36	179	0,14	0,72	5
400	300	16	12	271	973	573	2	10	0,01	0,04	12
400	300	16	12	572	2059	1212	9	43	0,04	0,17	8
400	300	16	12	874	3145	1851	20	99	0,08	0,40	6
400	300	16	12	1175	4231	2490	36	179	0,14	0,72	5
500	300	20	12	339	1217	716	2	10	0,01	0,04	12
500	300	20	12	715	2574	1515	9	43	0,04	0,17	8
500	300	20	12	1092	3932	2314	20	99	0,08	0,40	6
500	300	20	12	1469	5289	3113	36	180	0,14	0,72	5
600	300	24	12	406	1460	859	2	10	0,01	0,04	12
600	300	24	12	858	3089	1818	9	43	0,04	0,17	8
600	300	24	12	1311	4719	2777	20	99	0,08	0,40	6
600	300	24	12	1763	6348	3736	36	180	0,14	0,72	5
700	300	28	12	474	1703	1002	2	10	0,01	0,04	12
700	300	28	12	1001	3604	2121	9	43	0,04	0,17	8
700	300	28	12	1529	5504	3240	20	99	0,08	0,40	6
700	300	28	12	2056	7405	4358	36	180	0,14	0,72	5
800	300	32	12	541	1946	1145	2	10	0,01	0,04	12
800	300	32	12	1144	4118	2424	9	43	0,04	0,17	8

800	300	32	12	1748	6291	3703	20	99	0,08	0,40	6
800	300	32	12	2350	8463	4981	36	180	0,14	0,72	5
900	300	36	12	609	2190	1289	2	10	0,01	0,04	12
900	300	36	12	1287	4634	2727	9	43	0,04	0,17	8
900	300	36	12	1966	7077	4165	20	99	0,08	0,40	6
900	300	36	12	2644	9521	5604	36	180	0,14	0,72	5
1000	300	40	12	676	2433	1432	2	10	0,01	0,04	12
1000	300	40	12	1430	5148	3030	9	43	0,04	0,17	8
1000	300	40	12	2184	7864	4629	20	99	0,08	0,40	6
1000	300	40	12	2938	10579	6227	36	180	0,14	0,72	5
400	400	16	16	376	1352	796	3	11	0,01	0,04	12
400	400	16	16	795	2861	1684	10	47	0,04	0,19	7
400	400	16	16	1214	4370	2572	22	108	0,09	0,43	6
400	400	16	16	1633	5879	3460	39	195	0,16	0,78	5
500	400	20	16	470	1690	995	3	11	0,01	0,04	12
500	400	20	16	993	3576	2105	10	47	0,04	0,19	7
500	400	20	16	1518	5463	3215	22	108	0,09	0,43	6
500	400	20	16	2041	7349	4325	39	195	0,16	0,78	5
600	400	24	16	564	2028	1194	3	11	0,01	0,04	12
600	400	24	16	1192	4292	2526	10	47	0,04	0,19	7
600	400	24	16	1821	6555	3858	22	108	0,09	0,43	6
600	400	24	16	2449	8819	5191	39	195	0,16	0,78	5
700	400	28	16	658	2366	1393	3	11	0,01	0,04	12
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700	400	28	16	2858	10289	6056	39	195	0,16	0,78	5
800	400	32	16	752	2704	1592	3	11	0,01	0,04	12
800	400	32	16	1589	5722	3368	10	47	0,04	0,19	7
800	400	32	16	2428	8740	5144	22	108	0,09	0,43	6
800	400	32	16	3266	11758	6920	39	195	0,16	0,78	5
900	400	36	16	845	3042	1790	3	11	0,01	0,04	12
900	400	36	16	1788	6437	3789	10	47	0,04	0,19	7
900	400	36	16	2731	9833	5787	22	108	0,09	0,43	6
900	400	36	16	3674	13228	7786	39	195	0,16	0,78	5
1000	400	40	16	939	3380	1989	3	11	0,01	0,04	12
1000	400	40	16	1987	7153	4210	10	47	0,04	0,19	7
1000	400	40	16	3035	10925	6430	22	108	0,09	0,43	6
1000	400	40	16	4082	14698	8651	39	195	0,16	0,78	5
500	500	20	20	545	1959	1153	2	9	0,01	0,04	13
500	500	20	20	1152	4146	2440	8	40	0,03	0,16	8
500	500	20	20	1759	6333	3727	19	93	0,08	0,37	6
500	500	20	20	2366	8520	5015	33	168	0,13	0,67	5
600	500	24	20	654	2351	1384	2	9	0,01	0,04	13
600	500	24	20	1382	4975	2928	8	40	0,03	0,16	8
600	500	24	20	2111	7600	4473	19	93	0,08	0,37	6
600	500	24	20	2840	10224	6018	33	168	0,13	0,67	5
700	500	28	20	762	2743	1614	2	9	0,01	0,04	13

700	500	28	20	1613	5805	3417	8	40	0,03	0,16	8
700	500	28	20	2463	8866	5218	19	93	0,08	0,37	6
700	500	28	20	3313	11928	7021	33	168	0,13	0,67	5
800	500	32	20	871	3135	1845	2	9	0,01	0,04	13
800	500	32	20	1843	6634	3905	8	40	0,03	0,16	8
800	500	32	20	2815	10133	5964	19	93	0,08	0,37	6
800	500	32	20	3786	13632	8023	33	168	0,13	0,67	5
900	500	36	20	980	3526	2075	2	9	0,01	0,04	13
900	500	36	20	2073	7463	4393	8	40	0,03	0,16	8
900	500	36	20	3166	11399	6709	19	93	0,08	0,37	6
900	500	36	20	4260	15336	9026	33	168	0,13	0,67	5
1000	500	40	20	1089	3918	2306	2	9	0,01	0,04	13
1000	500	40	20	2303	8292	4880	8	40	0,03	0,16	8
1000	500	40	20	3518	12666	7455	19	93	0,08	0,37	6
1000	500	40	20	4733	17040	10029	33	168	0,13	0,67	5
600	600	24	24	811	2919	1718	2	10	0,01	0,04	12
600	600	24	24	1716	6178	3636	9	43	0,04	0,17	8
600	600	24	24	2621	9436	5554	20	99	0,08	0,40	6
600	600	24	24	3526	12695	7472	36	180	0,14	0,72	5
800	600	32	24	1082	3892	2291	2	10	0,01		12
800	600	32	24	2288	8237	4848	9	43	0,04		8
800	600	32	24	3495	12582	7405	20	99	0,08		6
800	600	32	24	4701	16927	9963	36	180	0,14		5
1000	600	40	24	1352	4865	2863	2	10	0,01	0,04	12
1000	600	40	24	2860	10296	6060	9	43	0,04	0,17	8
1000	600	40	24	4369	15728	9257	20	99	0,08	0,40	6
1000	600	40	24	5877	21159	12454	36	180	0,14	0,72	5

① Basic unit
② Basic unit with secondary silencer TX

Volume flow rate ranges and minimum differential pressure values

Control component dynamic measurement principle – q_v with expansion module

Attachments: BC0, BL0, BM0, BM0-J6

Nominal size [mm]		Nominal size [in]		qv [l/s]	qv [m³/h]	qv [CFM]	Δpstmin [Pa]		Δpstmin [in w.g.]		Δqv [±%]
B	H	B	H				①	②	①	②	
200	100	8	4	42	149	88	2	10	0,01	0,04	13
200	100	8	4	126	454	267	15	89	0,06	0,36	6
200	100	8	4	211	759	447	41	248	0,16	1,00	5
200	100	8	4	295	1064	626	80	487	0,32	1,96	4
300	100	12	4	62	223	131	2	10	0,01	0,04	13
300	100	12	4	189	681	401	15	89	0,06	0,36	6
300	100	12	4	316	1138	670	41	248	0,16	1,00	5
300	100	12	4	443	1596	939	80	487	0,32	1,96	4
400	100	16	4	83	298	175	2	10	0,01	0,04	13
400	100	16	4	252	908	534	15	89	0,06	0,36	6
400	100	16	4	422	1519	894	41	248	0,16	1,00	5
400	100	16	4	591	2129	1253	81	487	0,33	1,96	4
500	100	20	4	104	372	219	2	10	0,01	0,04	13

500	100	20	4	315	1135	668	15	89	0,06	0,36	6	
500	100	20	4	527	1898	1117	15	248	0,16	1,00	5	
500	100	20	4	739	2661	1566	80	487	0,32	1,96	4	
600	100	24	4	124	446	263	2	10	0,01	0,04	13	
600	100	24	4	378	1362	802	15	89	0,06	0,36	6	
600	100	24	4	633	2277	1340	41	248	0,16	1,00	5	
600	100	24	4	886	3193	1879	80	487	0,32	1,96	4	
200	200	8	8	83	298	175	2	8	0,01	0,03	13	
200	200	8	8	252	908	534	15	75	0,06	0,30	6	
200	200	8	8	422	1519	894	41	208	0,16	0,84	5	
200	200	8	8	591	2129	1253	81	408	0,33	1,64	4	
300	200	12	8	124	446	263	2	8	0,01	0,03	13	
300	200	12	8	378	1362	802	15	75	0,06	0,30	6	
300	200	12	8	633	2277	1340	41	208	0,16	0,84	5	
300	200	12	8	886	3193	1879	80	408	0,32	1,64	4	
400	200	16	8	166	595	350	2	8	0,01	0,03	13	
400	200	16	8	504	1816	1069	15	75	0,06	0,30	6	
400	200	16	8	843	3036	1787	41	208	0,16	0,84	5	
400	200	16	8	1182	4257	2506	80	408	0,32	1,64	4	
500	200	20	8	207	743	437	2	8	0,01	0,03	13	
500	200	20	8	630	2269	1335	15	75	0,06	0,30	6	
500	200	20	8	1054	3796	2234	41	208	0,16	0,84	5	
500	200	20	8	1478	5322	3132	80	408	0,32	1,64	4	
600	200	24	8	248	892	525	2	8	0,01	0,03	13	
600	200	24	8	756	2723	1603	15	75	0,06	0,30	6	
600	200	24	8	1265	4555	2681	41	208	0,16	0,84	5	
600	200	24	8	1773	6386	3759	80	408	0,32	1,64	4	
700	200	28	8	289	1040	612	2	8	0,01	0,03	13	
700	200	28	8	883	3177	1870	15	75	0,06	0,30	6	
700	200	28	8	1476	5313	3127	41	208	0,16	0,84	5	
700	200	28	8	2069	7450	4385	80	408	0,32	1,64	4	
800	200	31	8	331	1189	700	2	8	0,01	0,03	13	
800	200	31	8	1009	3631	2137	15	75	0,06	0,30	6	
800	200	31	8	1687	6073	3574	41	208	0,16	0,84	5	
800	200	31	8	2365	8515	5012	80	408	0,32	1,64	4	
300	300	12	12	203	730	430	2	10	0,01	0,04	12	
300	300	12	12	619	2229	1312	18	89	0,07	0,36	6	
300	300	12	12	1036	3729	2195	49	248	0,20	1,00	4	
300	300	12	12	1452	5228	3077	96	486	0,39	1,95	3	
400	300	16	12	271	973	573	2	10	0,01	0,04	12	
400	300	16	12	826	2973	1750	18	89	0,07	0,36	6	
400	300	16	12	1381	4972	2926	49	248	0,20	1,00	4	
400	300	16	12	1936	6972	4104	96	487	0,39	1,96	3	
500	300	20	12	339	1217	716	2	10	0,01	0,04	12	
500	300	20	12	1032	3716	2187	18	89	0,07	0,36	6	
500	300	20	12	1727	6216	3659	49	248	0,20	1,00	4	
500	300	20	12	2420	8715	5129	96	487	0,39	1,96	3	

600	300	24	12	406	1460	859	2	10	0,01	0,04	12
600	300	24	12	1239	4459	2624	18	89	0,07	0,36	6
600	300	24	12	2072	7459	4390	49	248	0,20	1,00	4
600	300	24	12	2905	10458	6155	96	487	0,39	1,96	3
700	300	28	12	474	1703	1002	2	10	0,01	0,04	12
700	300	28	12	1445	5202	3062	18	89	0,07	0,36	6
700	300	28	12	2417	8701	5121	49	248	0,20	1,00	4
700	300	28	12	3388	12200	7181	96	486	0,39	1,95	3
800	300	31	12	541	1946	1145	2	10	0,01	0,04	12
800	300	31	12	1651	5945	3499	18	89	0,07	0,36	6
800	300	31	12	2763	9945	5853	49	248	0,20	1,00	4
800	300	31	12	3873	13944	8207	96	487	0,39	1,96	3
900	300	35	12	609	2190	1289	2	10	0,01	0,04	12
900	300	35	12	1858	6689	3937	18	89	0,07	0,36	6
900	300	35	12	3108	11188	6585	49	248	0,20	1,00	4
900	300	35	12	4357	15687	9233	96	487	0,39	1,96	3
1000	300	39	12	676	2433	1432	2	10	0,01	0,04	12
1000	300	39	12	2064	7432	4374	18	89	0,07	0,36	6
1000	300	39	12	3453	12431	7317	49	248	0,20	1,00	4
1000	300	39	12	4841	17430	10259	96	487	0,39	1,96	3
400	400	16	16	376	1352	796	3	11	0,01	0,04	12
400	400	16	16	1147	4130	2431	19	96	0,08	0,39	6
400	400	16	16	1919	6908	4066	53	269	0,21	1,08	4
400	400	16	16	2690	9686	5701	104	528	0,42	2,12	3
500	400	20	16	470	1690	995	3	11	0,01	0,04	12
500	400	20	16	1434	5163	3039	19	96	0,08	0,39	6
500	400	20	16	2399	8635	5082	53	269	0,21	1,08	4
500	400	20	16	3363	12108	7126	104	528	0,42	2,12	3
600	400	24	16	564	2028	1194	3	11	0,01	0,04	12
600	400	24	16	1721	6195	3646	19	96	0,08	0,39	6
600	400	24	16	2879	10363	6099	53	269	0,21	1,08	4
600	400	24	16	4036	14530	8552	104	528	0,42	2,12	3
700	400	28	16	658	2366	1393	3	11	0,01	0,04	12
700	400	28	16	2008	7228	4254	19	96	0,08	0,39	6
700	400	28	16	3358	12089	7115	53	269	0,21	1,08	4
700	400	28	16	4708	16951	9977	104	528	0,42	2,12	3
800	400	32	16	752	2704	1592	3	11	0,01	0,04	12
800	400	32	16	2294	8260	4862	19	96	0,08	0,39	6
800	400	32	16	3838	13817	8132	53	269	0,21	1,08	4
800	400	32	16	5381	19373	11403	104	528	0,42	2,12	3

① Basic unit
② Basic unit with secondary silencer TX

Volume flow rate ranges and minimum differential pressure values
Control component for dynamic pressure measurements - q, standard
Attachments: BUDN, BUDNF, LNO, LKO, X80, X84, (B11 *, B18 *)

Nominal size [mm]		Nominal size [in]		qv [l/s]	qv [m³/h]	qv [CFM]	Δpstmin [Pa]		Δpstmin [in w.g.]		Δq/q [±%]
B	H	B	H				(1)	(2)	(1)	(2)	
200	100	8	4	42	149	88	2	10	0,01	0,04	13
200	100	8	4	109	393	231	11	67	0,04	0,27	7
200	100	8	4	177	636	374	29	174	0,12	0,70	5
200	100	8	4	244	880	518	55	333	0,22	1,34	4
300	100	12	4	62	223	131	2	10	0,01	0,04	13
300	100	12	4	164	589	347	11	67	0,04	0,27	7
300	100	12	4	265	954	562	29	174	0,12	0,70	5
300	100	12	4	366	1320	777	55	333	0,22	1,34	4
400	100	16	4	83	298	175	2	10	0,01	0,04	13
400	100	16	4	218	786	463	11	67	0,04	0,27	7
400	100	16	4	354	1273	749	29	174	0,12	0,70	5
400	100	16	4	489	1761	1036	55	333	0,22	1,34	4
500	100	20	4	104	372	219	2	10	0,01	0,04	13
500	100	20	4	273	982	578	11	67	0,04	0,27	7
500	100	20	4	442	1591	936	29	174	0,12	0,70	5
500	100	20	4	611	2201	1295	55	333	0,22	1,34	4
600	100	24	4	124	446	263	2	10	0,01	0,04	13
600	100	24	4	327	1178	693	11	67	0,04	0,27	7
600	100	24	4	530	1909	1124	29	174	0,12	0,70	5
600	100	24	4	733	2641	1554	55	333	0,22	1,34	4
200	200	8	8	83	298	175	2	8	0,01	0,03	13
200	200	8	8	218	786	463	11	56	0,04	0,22	7
200	200	8	8	354	1273	749	29	146	0,12	0,59	5
200	200	8	8	489	1761	1036	55	280	0,22	1,12	4
300	200	12	8	124	446	263	2	8	0,01	0,03	13
300	200	12	8	327	1178	693	11	56	0,04	0,22	7
300	200	12	8	530	1909	1124	29	146	0,12	0,59	5
300	200	12	8	733	2641	1554	55	279	0,22	1,12	4
400	200	16	8	166	595	350	2	8	0,01	0,03	13
400	200	16	8	436	1570	924	11	56	0,04	0,22	7
400	200	16	8	707	2546	1499	29	146	0,12	0,59	5
400	200	16	8	978	3521	2072	55	279	0,22	1,12	4
500	200	20	8	207	743	437	2	8	0,01	0,03	13
500	200	20	8	545	1963	1155	11	56	0,04	0,22	7
500	200	20	8	884	3182	1873	29	146	0,12	0,59	5
500	200	20	8	1222	4402	2591	55	280	0,22	1,12	4
600	200	24	8	248	892	525	2	8	0,01	0,03	13
600	200	24	8	654	2355	1386	11	56	0,04	0,22	7
600	200	24	8	1061	3819	2248	29	146	0,12	0,59	5
600	200	24	8	1467	5282	3109	55	279	0,22	1,12	4
700	200	28	8	289	1040	612	2	8	0,01	0,03	13
700	200	28	8	763	2747	1617	11	56	0,04	0,22	7
700	200	28	8	1238	4455	2622	29	146	0,12	0,59	5
700	200	28	8	1711	6162	3627	55	279	0,22	1,12	4
800	200	32	8	331	1189	700	2	8	0,01	0,03	13
800	200	32	8	872	3140	1848	11	56	0,04	0,22	7
800	200	32	8	1414	5092	2997	29	146	0,12	0,59	5

800	200	32	8	1956	7043	4145	55	279	0,22	1,12	4
300	300	12	12	203	730	430	2	10	0,01	0,04	12
300	300	12	12	536	1928	1135	13	67	0,05	0,27	7
300	300	12	12	869	3127	1840	35	174	0,14	0,70	5
300	300	12	12	1201	4325	2546	66	333	0,26	1,34	4
400	300	16	12	271	973	573	2	10	0,01	0,04	12
400	300	16	12	714	2571	1513	13	67	0,05	0,27	7
400	300	16	12	1158	4169	2454	35	174	0,14	0,70	5
400	300	16	12	1601	5767	3394	66	333	0,26	1,34	4
500	300	20	12	339	1217	716	2	10	0,01	0,04	12
500	300	20	12	893	3214	1892	13	67	0,05	0,27	7
500	300	20	12	1448	5212	3068	35	174	0,14	0,70	5
500	300	20	12	2002	7209	4243	66	333	0,26	1,34	4
600	300	24	12	406	1460	859	2	10	0,01	0,04	12
600	300	24	12	1071	3857	2270	13	67	0,05	0,27	7
600	300	24	12	1737	6253	3680	35	174	0,14	0,70	5
600	300	24	12	2402	8650	5091	66	333	0,26	1,34	4
700	300	28	12	474	1703	1002	2	10	0,01	0,04	12
700	300	28	12	1250	4499	2648	13	67	0,05	0,27	7
700	300	28	12	2027	7296	4294	35	174	0,14	0,70	5
700	300	28	12	2803	10092	5940	66	333	0,26	1,34	4
800	300	32	12	541	1946	1145	2	10	0,01	0,04	12
800	300	32	12	1428	5142	3026	13	67	0,05	0,27	7
800	300	32	12	2316	8338	4908	35	174	0,14	0,70	5
800	300	32	12	3203	11534	6789	66	333	0,26	1,34	4
900	300	36	12	609	2190	1289	2	10	0,01	0,04	12
900	300	36	12	1607	5785	3405	13	67	0,05	0,27	7
900	300	36	12	2606	9381	5521	35	174	0,14	0,70	5
900	300	36	12	3604	12976	7637	66	333	0,26	1,34	4
1000	300	40	12	676	2433	1432	2	10	0,01	0,04	12
1000	300	40	12	1786	6428	3783	13	67	0,05	0,27	7
1000	300	40	12	2895	10423	6135	35	174	0,14	0,70	5
1000	300	40	12	4005	14418	8486	66	333	0,26	1,34	4
400	400	16	16	376	1352	796	3	11	0,01	0,04	12
400	400	16	16	992	3572	2102	15	72	0,06	0,29	6
400	400	16	16	1609	5792	3409	38	189	0,15	0,76	5
400	400	16	16	2225	8012	4716	71	362	0,29	1,45	4
500	400	20	16	470	1690	995	3	11	0,01	0,04	12
500	400	20	16	1240	4465	2628	15	72	0,06	0,29	6
500	400	20	16	2011	7240	4261	38	189	0,15	0,76	5
500	400	20	16	2781	10015	5895	71	362	0,29	1,45	4
600	400	24	16	564	2028	1194	3	11	0,01	0,04	12
600	400	24	16	1488	5358	3154	15	72	0,06	0,29	6
600	400	24	16	2413	8688	5114	38	189	0,15	0,76	5
600	400	24	16	3338	12018	7074	71	362	0,29	1,45	4
700	400	28	16	658	2366	1393	3	11	0,01	0,04	12
700	400	28	16	1736	6251	3679	15	72	0,06	0,29	6

700	400	28	16	2816	10136	5966	38	189	0,15	0,76	5
700	400	28	16	3894	14021	8252	71	362	0,29	1,45	4
800	400	32	16	752	2704	1592	3	11	0,01	0,04	12
800	400	32	16	1984	7144	4205	15	72	0,06	0,29	6
800	400	32	16	3218	11584	6818	38	189	0,15	0,76	5
800	400	32	16	4451	16024	9431	71	362	0,29	1,45	4
900	400	36	16	845	3042	1790	3	11	0,01	0,04	12
900	400	36	16	2233	8037	4730	15	72	0,06	0,29	6
900	400	36	16	3620	13033	7671	38	189	0,15	0,76	5
900	400	36	16	5007	18028	10611	71	362	0,29	1,45	4
1000	400	40	16	939	3380	1989	3	11	0,01	0,04	12
1000	400	40	16	2481	8930	5256	15	72	0,06	0,29	6
1000	400	40	16	4023	14481	8523	38	189	0,15	0,76	5
1000	400	40	16	5564	20031	11790	71	362	0,29	1,45	4
500	500	20	20	545	1959	1153	2	9	0,01	0,04	13
500	500	20	20	1438	5176	3046	13	62	0,05	0,25	7
500	500	20	20	2332	8394	4941	32	163	0,13	0,65	5
500	500	20	20	3225	11611	6834	61	311	0,24	1,25	4
600	500	24	20	654	2351	1384	2	9	0,01	0,04	13
600	500	24	20	1726	6212	3656	13	62	0,05	0,25	7
600	500	24	20	2798	10072	5928	32	163	0,13	0,65	5
600	500	24	20	3870	13933	8201	61	311	0,24	1,25	4
700	500	28	20	762	2743	1614	2	9	0,01	0,04	13
700	500	28	20	2013	7247	4265	13	62	0,05	0,25	7
700	500	28	20	3264	11751	6916	32	163	0,13	0,65	5
700	500	28	20	4515	16255	9567	61	311	0,24	1,25	4
800	500	32	20	871	3135	1845	2	9	0,01	0,04	13
800	500	32	20	2301	8282	4875	13	62	0,05	0,25	7
800	500	32	20	3731	13430	7905	32	163	0,13	0,65	5
800	500	32	20	5160	18577	10934	61	311	0,24	1,25	4
900	500	36	20	980	3526	2075	2	9	0,01	0,04	13
900	500	36	20	2588	9317	5484	13	62	0,05	0,25	7
900	500	36	20	4197	15109	8893	32	163	0,13	0,65	5
900	500	36	20	5805	20900	12301	61	311	0,24	1,25	4
1000	500	40	20	1089	3918	2306	2	9	0,01	0,04	13
1000	500	40	20	2876	10353	6094	13	62	0,05	0,25	7
1000	500	40	20	4663	16787	9880	32	163	0,13	0,65	5
1000	500	40	20	6450	23222	13668	61	311	0,24	1,25	4
600	600	24	24	811	2919	1718	2	10	0,01	0,04	12
600	600	24	24	2143	7713	4540	13	67	0,05	0,27	7
600	600	24	24	3474	12507	7361	35	174	0,14	0,70	5
600	600	24	24	4805	17301	10183	66	333	0,26	1,34	4
700	600	28	24	947	3406	2005	2		0,01		12
700	600	28	24	2500	8999	5297	13		0,05		7
700	600	28	24	4053	14592	8589	35		0,14		5
700	600	28	24	5606	20185	11880	66		0,26		4
800	600	32	24	1082	3892	2291	2	10	0,01	0,04	12
800	600	32	24	2857	10284	6053	13	67	0,05	0,27	7
800	600	32	24	4632	16676	9815	35	174	0,14	0,70	5
800	600	32	24	6407	23068	13577	66	333	0,26	1,34	4
900	600	36	24	1217	4379	2577	2		0,01		12
900	600	36	24	3214	11570	6810	13		0,05		7
900	600	36	24	5211	18761	11042	35		0,14		5
900	600	36	24	7208	25953	15275	66		0,26		4
1000	600	40	24	1352	4865	2863	2	10	0,01	0,04	12

1000	600	40	24	3571	12855	7566	13	67	0,05	0,27	7
1000	600	40	24	5791	20846	12269	35	174	0,14	0,70	5
1000	600	40	24	8010	28836	16972	66	333	0,26	1,34	4

① Basic unit
② Basic unit with secondary silencer TX
* Control component being phased out

Terminal unit maximum size with some attachments

Type TVT only up to 1000 × 300 mm or 800 × 400 mm with attachment BUDNF, LN0, LK0, XB0 or (B1B *)

Volume flow rate ranges and minimum differential pressure values

Control component for static pressure measurements

Attachments: BUSN, BUSNF, BUSS, XD0, XD4, TUN, TUNF, TUS, TUSD, ELAB (BP3 *, BPG *, BPB *, BB3 *, BBB *)

Nominal size [mm]		Nominal size [in]		qv [l/s]	qv [m³/h]	qv [CFM]	Δptmin [Pa]		Δptmin [in w.g.]		Δqv [±%]
B	H	B	H				①	②	①	②	
200	100	8	4	42	149	88	2	10	0,01	0,04	13
200	100	8	4	109	393	231	11	67	0,04	0,27	7
200	100	8	4	177	636	374	29	174	0,12	0,70	5
200	100	8	4	244	880	518	55	333	0,22	1,34	4
300	100	12	4	62	223	131	2	10	0,01	0,04	13
300	100	12	4	164	589	347	11	67	0,04	0,27	7
300	100	12	4	265	954	562	29	174	0,12	0,70	5
300	100	12	4	366	1320	777	55	333	0,22	1,34	4
400	100	16	4	83	298	175	2	10	0,01	0,04	13
400	100	16	4	218	786	463	11	67	0,04	0,27	7
400	100	16	4	354	1273	749	29	174	0,12	0,70	5
400	100	16	4	489	1761	1036	55	333	0,22	1,34	4
500	100	20	4	104	372	219	2	10	0,01	0,04	13
500	100	20	4	273	982	578	11	67	0,04	0,27	7
500	100	20	4	442	1591	936	29	174	0,12	0,70	5
500	100	20	4	611	2201	1295	55	333	0,22	1,34	4
600	100	24	4	124	446	263	2	10	0,01	0,04	13
600	100	24	4	327	1178	693	11	67	0,04	0,27	7
600	100	24	4	530	1909	1124	29	174	0,12	0,70	5
600	100	24	4	733	2641	1554	55	333	0,22	1,34	4
200	200	8	8	83	298	175	2	8	0,01	0,03	13
200	200	8	8	218	786	463	11	56	0,04	0,22	7
200	200	8	8	354	1273	749	29	146	0,12	0,59	5
200	200	8	8	489	1761	1036	55	280	0,22	1,12	4
300	200	12	8	124	446	263	2	8	0,01	0,03	13
300	200	12	8	327	1178	693	11	56	0,04	0,22	7
300	200	12	8	530	1909	1124	29	146	0,12	0,59	5
300	200	12	8	733	2641	1554	55	279	0,22	1,12	4
400	200	16	8	166	595	350	2	8	0,01	0,03	13
400	200	16	8	436	1570	924	11	56	0,04	0,22	7
400	200	16	8	707	2546	1499	29	146	0,12	0,59	5
400	200	16	8	978	3521	2072	55	279	0,22	1,12	4
500	200	20	8	207	743	437	2	8	0,01	0,03	13
500	200	20	8	545	1963	1155	11	56	0,04	0,22	7

500	200	20	8	884	3182	1873	29	146	0,12	0,59	5
500	200	20	8	1222	4402	2591	55	280	0,22	1,12	4
600	200	24	8	248	892	525	2	8	0,01	0,03	13
600	200	24	8	654	2355	1386	11	56	0,04	0,22	7
600	200	24	8	1061	3819	2248	29	146	0,12	0,59	5
600	200	24	8	1467	5282	3109	55	279	0,22	1,12	4
700	200	28	8	289	1040	612	2	8	0,01	0,03	13
700	200	28	8	763	2747	1617	11	56	0,04	0,22	7
700	200	28	8	1238	4455	2622	29	146	0,12	0,59	5
700	200	28	8	1711	6162	3627	55	279	0,22	1,12	4
800	200	32	8	331	1189	700	2	8	0,01	0,03	13
800	200	32	8	872	3140	1848	11	56	0,04	0,22	7
800	200	32	8	1414	5092	2997	29	146	0,12	0,59	5
800	200	32	8	1956	7043	4145	55	279	0,22	1,12	4
300	300	12	12	203	730	430	2	10	0,01	0,04	12
300	300	12	12	536	1928	1135	13	67	0,05	0,27	7
300	300	12	12	869	3127	1840	35	174	0,14	0,70	5
300	300	12	12	1201	4325	2546	66	333	0,26	1,34	4
400	300	16	12	271	973	573	2	10	0,01	0,04	12
400	300	16	12	714	2571	1513	13	67	0,05	0,27	7
400	300	16	12	1158	4169	2454	35	174	0,14	0,70	5
400	300	16	12	1601	5767	3394	66	333	0,26	1,34	4
500	300	20	12	339	1217	716	2	10	0,01	0,04	12
500	300	20	12	893	3214	1892	13	67	0,05	0,27	7
500	300	20	12	1448	5212	3068	35	174	0,14	0,70	5
500	300	20	12	2002	7209	4243	66	333	0,26	1,34	4
600	300	24	12	406	1460	859	2	10	0,01	0,04	12
600	300	24	12	1071	3857	2270	13	67	0,05	0,27	7
600	300	24	12	1737	6253	3680	35	174	0,14	0,70	5
600	300	24	12	2402	8650	5091	66	333	0,26	1,34	4
700	300	28	12	474	1703	1002	2	10	0,01	0,04	12
700	300	28	12	1250	4499	2648	13	67	0,05	0,27	7
700	300	28	12	2027	7296	4294	35	174	0,14	0,70	5
700	300	28	12	2803	10092	5940	66	333	0,26	1,34	4
800	300	32	12	541	1946	1145	2	10	0,01	0,04	12
800	300	32	12	1428	5142	3026	13	67	0,05	0,27	7
800	300	32	12	2316	8338	4908	35	174	0,14	0,70	5
800	300	32	12	3203	11534	6789	66	333	0,26	1,34	4
900	300	36	12	609	2190	1289	2	10	0,01	0,04	12
900	300	36	12	1607	5785	3405	13	67	0,05	0,27	7
900	300	36	12	2606	9381	5521	35	174	0,14	0,70	5
900	300	36	12	3604	12976	7637	66	333	0,26	1,34	4
1000	300	40	12	676	2433	1432	2	10	0,01	0,04	12
1000	300	40	12	1786	6428	3783	13	67	0,05	0,27	7
1000	300	40	12	2895	10423	6135	35	174	0,14	0,70	5
1000	300	40	12	4005	14418	8486	66	333	0,26	1,34	4
400	400	16	16	376	1352	796	3	11	0,01	0,04	12

400	400	16	16	992	3572	2102	15	72	0,06	0,29	6
400	400	16	16	1609	5792	3409	38	189	0,15	0,76	5
400	400	16	16	2225	8012	4716	71	362	0,29	1,45	4
500	400	20	16	470	1690	995	3	11	0,01	0,04	12
500	400	20	16	1240	4455	2628	15	72	0,06	0,29	6
500	400	20	16	2011	7240	4261	38	189	0,15	0,76	5
500	400	20	16	2781	10015	5895	71	362	0,29	1,45	4
600	400	24	16	564	2028	1194	3	11	0,01	0,04	12
600	400	24	16	1488	5358	3154	15	72	0,06	0,29	6
600	400	24	16	2413	8688	5114	38	189	0,15	0,76	5
600	400	24	16	3338	12018	7074	71	362	0,29	1,45	4
700	400	28	16	658	2366	1393	3	11	0,01	0,04	12
700	400	28	16	1736	6251	3679	15	72	0,06	0,29	6
700	400	28	16	2816	10136	5966	38	189	0,15	0,76	5
700	400	28	16	3894	14021	8252	71	362	0,29	1,45	4
800	400	32	16	752	2704	1592	3	11	0,01	0,04	12
800	400	32	16	1984	7144	4205	15	72	0,06	0,29	6
800	400	32	16	3218	11584	6818	38	189	0,15	0,76	5
800	400	32	16	4451	16024	9431	71	362	0,29	1,45	4
900	400	36	16	845	3042	1790	3	11	0,01	0,04	12
900	400	36	16	2233	8037	4730	15	72	0,06	0,29	6
900	400	36	16	3620	13033	7671	38	189	0,15	0,76	5
900	400	36	16	5007	18028	10611	71	362	0,29	1,45	4
1000	400	40	16	939	3380	1989	3	11	0,01	0,04	12
1000	400	40	16	2481	8930	5256	15	72	0,06	0,29	6
1000	400	40	16	4023	14481	8523	38	189	0,15	0,76	5
1000	400	40	16	5564	20031	11790	71	362	0,29	1,45	4
500	500	20	20	545	1959	1153	2	9	0,01	0,04	13
500	500	20	20	1438	5176	3046	13	62	0,05	0,25	7
500	500	20	20	2332	8394	4941	32	163	0,13	0,65	5
500	500	20	20	3225	11611	6834	61	311	0,24	1,25	4
600	500	24	20	654	2351	1384	2	9	0,01	0,04	13
600	500	24	20	1726	6212	3656	13	62	0,05	0,25	7
600	500	24	20	2798	10072	5928	32	163	0,13	0,65	5
600	500	24	20	3870	13933	8201	61	311	0,24	1,25	4
700	500	28	20	762	2743	1614	2	9	0,01	0,04	13
700	500	28	20	2013	7247	4265	13	62	0,05	0,25	7
700	500	28	20	3264	11751	6916	32	163	0,13	0,65	5
700	500	28	20	4515	16255	9567	61	311	0,24	1,25	4
800	500	32	20	871	3135	1845	2	9	0,01	0,04	13
800	500	32	20	2301	8282	4875	13	62	0,05	0,25	7
800	500	32	20	3731	13430	7905	32	163	0,13	0,65	5
800	500	32	20	5160	18577	10934	61	311	0,24	1,25	4
900	500	36	20	980	3526	2075	2	9	0,01	0,04	13
900	500	36	20	2588	9317	5484	13	62	0,05	0,25	7
900	500	36	20	4197	15109	8893	32	163	0,13	0,65	5
900	500	36	20	5805	20900	12301	61	311	0,24	1,25	4

1000	500	40	20	1089	3918	2306	2	9	0,01	0,04	13
1000	500	40	20	2876	10353	6094	13	62	0,05	0,25	7
1000	500	40	20	4663	16787	9880	32	163	0,13	0,65	5
1000	500	40	20	6450	23222	13668	61	311	0,24	1,25	4
600	600	24	24	811	2919	1718	2	10	0,01	0,04	12
600	600	24	24	2143	7713	4540	13	67	0,05	0,27	7
600	600	24	24	3474	12507	7361	35	174	0,14	0,70	5
600	600	24	24	4805	17301	10183	66	333	0,26	1,34	4
700	600	28	24	947	3406	2005	2		0,01	0,00	12
700	600	28	24	2500	8999	5297	13		0,05	0,00	7
700	600	28	24	4053	14592	8589	35		0,14	0,00	5
700	600	28	24	5606	20185	11880	66		0,26	0,00	4
800	600	32	24	1082	3892	2291	2	10	0,01	0,04	12
800	600	32	24	2857	10284	6053	13	67	0,05	0,27	7
800	600	32	24	4632	16676	9815	35	174	0,14	0,70	5
800	600	32	24	6407	23068	13577	66	333	0,26	1,34	4
900	600	36	24	1217	4379	2577	2		0,01	0,00	12
900	600	36	24	3214	11570	6810	13		0,05	0,00	7
900	600	36	24	5211	18761	11042	35		0,14	0,00	5
900	600	36	24	7208	25952	15275	66		0,26	0,00	4
1000	600	40	24	1352	4865	2863	2	10	0,01	0,04	12
1000	600	40	24	3571	12855	7566	13	67	0,05	0,27	7
1000	600	40	24	5791	20846	12269	35	174	0,14	0,70	5
1000	600	40	24	8010	28836	16972	66	333	0,26	1,34	4

① Basic unit
② Basic unit with secondary silencer TX
* Control component being phased out

Terminal unit maximum size with some attachments

Type TVT only up to 1000 × 500 mm with attachment XD0
Type TVT only up to max. 1000 × 300 mm or 800 × 400 mm with attachment BUSNF, (BPG *, BPB *, BBB *)

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_w

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

Nominal size [mm]		Nominal size [in]		qv [l/s]	qv [m³/h]	qv [CFM]	150 Pa (0,60 in w.g.)		500 Pa (2,00 in w.g.)	
B	H	B	H				①	②	①	②
200	100	8	4	42	149	88	44	20	56	34
200	100	8	4	126	454	267	48	27	60	39
200	100	8	4	211	759	447	48	n.V.	61	40
200	100	8	4	295	1064	626	48	n.V.	60	42
300	100	12	4	62	223	131	45	21	57	35
300	100	12	4	189	681	401	48	28	60	40
300	100	12	4	316	1138	670	48	n.V.	60	40
300	100	12	4	443	1596	939	47	n.V.	60	42
400	100	16	4	83	298	175	46	22	58	36
400	100	16	4	252	908	534	48	28	60	40
400	100	16	4	422	1519	894	47	n.V.	60	40
400	100	16	4	591	2129	1253	47	n.V.	60	42
500	100	20	4	104	372	219	47	23	59	37
500	100	20	4	315	1135	668	48	28	60	40
500	100	20	4	527	1898	1117	47	n.V.	60	41
500	100	20	4	739	2661	1566	47	n.V.	60	42

600	100	24	4	124	446	263	47	24	60	38
600	100	24	4	378	1362	802	47	28	60	40
600	100	24	4	633	2277	1340	47	n.v.	60	41
600	100	24	4	886	3193	1879	47	n.v.	59	42
200	200	8	8	83	298	175	46	22	58	36
200	200	8	8	252	908	534	48	29	60	40
200	200	8	8	422	1519	894	47	n.v.	60	41
200	200	8	8	591	2129	1253	47	n.v.	60	42
300	200	12	8	124	446	263	47	24	60	38
300	200	12	8	378	1362	802	47	29	60	40
300	200	12	8	633	2277	1340	47	n.v.	60	41
300	200	12	8	886	3193	1879	47	n.v.	59	43
400	200	16	8	166	595	350	48	24	60	38
400	200	16	8	504	1816	1069	47	29	60	40
400	200	16	8	843	3036	1787	47	n.v.	59	42
400	200	16	8	1182	4257	2506	46	n.v.	59	43
500	200	20	8	207	743	437	47	24	60	38
500	200	20	8	630	2269	1335	47	29	59	40
500	200	20	8	1054	3796	2234	47	n.v.	59	42
500	200	20	8	1478	5322	3132	46	n.v.	59	43
600	200	24	8	248	892	525	47	24	60	38
600	200	24	8	756	2723	1603	47	29	59	41
600	200	24	8	1265	4555	2681	46	n.v.	59	42
600	200	24	8	1773	6386	3759	46	n.v.	59	43
700	200	28	8	289	1040	612	47	24	59	38
700	200	28	8	883	3177	1870	47	29	59	41
700	200	28	8	1476	5313	3127	46	n.v.	59	42
700	200	28	8	2069	7450	4385	46	n.v.	59	43
800	200	32	8	331	1189	700	47	24	59	37
800	200	32	8	1009	3631	2137	47	29	59	41
800	200	32	8	1687	6073	3574	46	n.v.	59	42
800	200	32	8	2365	8515	5012	46	n.v.	58	43
300	300	12	12	203	730	430	48	25	60	38
300	300	12	12	619	2229	1312	47	29	59	41
300	300	12	12	1036	3729	2195	47	n.v.	59	42
300	300	12	12	1452	5228	3077	46	n.v.	59	43
400	300	16	12	271	973	573	47	25	60	38
400	300	16	12	826	2973	1750	47	30	59	41
400	300	16	12	1381	4972	2926	46	n.v.	59	42
400	300	16	12	1936	6972	4104	46	n.v.	59	43
500	300	20	12	339	1217	716	47	25	59	38
500	300	20	12	1032	3716	2187	47	30	59	41
500	300	20	12	1727	5216	3659	46	n.v.	59	42
500	300	20	12	2420	8715	5129	46	n.v.	58	43
600	300	24	12	406	1460	859	47	25	59	38
600	300	24	12	1239	4459	2624	46	30	59	41
600	300	24	12	2072	7459	4390	46	n.v.	59	42

600	300	24	12	2905	10458	6155	46	n.V.	58	43
700	300	28	12	474	1703	1002	47	25	59	38
700	300	28	12	1445	5202	3062	46	30	59	41
700	300	28	12	2417	8701	5121	46	n.V.	58	42
700	300	28	12	3388	12200	7181	45	n.V.	58	43
800	300	32	12	541	1946	1145	47	25	59	37
800	300	32	12	1651	5945	3499	46	30	59	42
800	300	32	12	2763	9945	5853	46	n.V.	58	42
800	300	32	12	3873	13944	8207	45	n.V.	58	43
900	300	36	12	609	2190	1289	47	25	59	37
900	300	36	12	1858	6689	3937	46	30	58	42
900	300	36	12	3108	11188	6585	46	n.V.	58	43
900	300	36	12	4357	15687	9233	45	n.V.	58	43
1000	300	40	12	676	2433	1432	46	25	59	37
1000	300	40	12	2064	7432	4374	46	30	58	42
1000	300	40	12	3453	12431	7317	45	n.V.	58	43
1000	300	40	12	4841	17430	10259	45	n.V.	58	43
400	400	16	16	376	1352	796	47	25	59	38
400	400	16	16	1147	4130	2431	46	30	59	41
400	400	16	16	1919	6908	4066	46	n.V.	59	42
400	400	16	16	2690	9686	5701	46	n.V.	58	n.V.
500	400	20	16	470	1690	995	47	25	59	38
500	400	20	16	1434	5163	3039	46	30	59	42
500	400	20	16	2399	8635	5082	46	n.V.	58	42
500	400	20	16	3363	12108	7126	45	n.V.	58	n.V.
600	400	24	16	564	2028	1194	47	25	59	38
600	400	24	16	1721	6195	3646	46	30	58	42
600	400	24	16	2879	10363	6099	46	n.V.	58	42
600	400	24	16	4036	14530	8552	45	n.V.	58	n.V.
700	400	28	16	658	2366	1393	46	25	59	38
700	400	28	16	2008	7228	4254	46	30	58	42
700	400	28	16	3358	12089	7115	45	n.V.	58	42
700	400	28	16	4708	16951	9977	45	n.V.	58	n.V.
800	400	32	16	752	2704	1592	46	25	59	38
800	400	32	16	2294	8260	4862	46	30	58	42
800	400	32	16	3838	13817	8132	45	n.V.	58	43
800	400	32	16	5381	19373	11403	45	n.V.	58	n.V.

Air-regenerated noise L_w [dB] at static differential pressure Δ_s 150 or 500 Pa

① Basic unit

② Basic unit with secondary silencer TX

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

Quick sizing table for case-radiated noise L_w

Controller including acoustic cladding
(total volume flow rate range of type)

Nominal size [mm]		Nominal size [in]		qv [l/s]	qv [m³/h]	qv [CFM]	150 Pa (0,60 in w.g.)		500 Pa (2,00 in w.g.)	
B	H	B	H				①	②	①	②
200	100	8	4	42	149	88	30	18	42	30
200	100	8	4	126	454	267	35	22	47	34
200	100	8	4	211	759	447	37	24	49	36
200	100	8	4	295	1064	626	38	25	50	38
300	100	12	4	62	223	131	31	19	44	31
300	100	12	4	189	681	401	36	23	48	36
300	100	12	4	316	1138	670	38	25	50	38
300	100	12	4	443	1596	939	39	27	52	39
400	100	16	4	83	298	175	32	20	45	32
400	100	16	4	252	908	534	37	24	49	37
400	100	16	4	422	1519	894	39	27	51	39
400	100	16	4	591	2129	1253	40	28	53	40
500	100	20	4	104	372	219	33	21	46	33
500	100	20	4	315	1135	668	38	25	50	37
500	100	20	4	527	1898	1117	40	27	52	40
500	100	20	4	739	2661	1566	41	29	53	41
600	100	24	4	124	446	263	34	21	46	34
600	100	24	4	378	1362	802	38	26	51	38
600	100	24	4	633	2277	1340	40	28	53	40
600	100	24	4	886	3193	1879	42	29	54	42
200	200	8	8	83	298	175	32	20	45	32
200	200	8	8	252	908	534	37	24	49	37
200	200	8	8	422	1519	894	39	27	51	39
200	200	8	8	591	2129	1253	40	28	53	40
300	200	12	8	124	446	263	34	21	46	34
300	200	12	8	378	1362	802	38	26	51	38
300	200	12	8	633	2277	1340	40	28	53	40
300	200	12	8	886	3193	1879	42	29	54	42
400	200	16	8	166	595	350	35	22	47	35
400	200	16	8	504	1816	1069	39	27	52	39
400	200	16	8	843	3036	1787	41	29	54	41
400	200	16	8	1182	4257	2506	43	30	55	43
500	200	20	8	207	743	437	36	23	48	35
500	200	20	8	630	2269	1335	40	28	52	40
500	200	20	8	1054	3796	2234	42	30	54	42
500	200	20	8	1478	5322	3132	44	31	56	43
600	200	24	8	248	892	525	36	24	49	36
600	200	24	8	756	2723	1603	41	28	53	41
600	200	24	8	1265	4555	2681	43	30	55	43
600	200	24	8	1773	6386	3759	44	32	56	44
700	200	28	8	289	1040	612	37	24	49	37
700	200	28	8	883	3177	1870	41	29	54	41
700	200	28	8	1476	5313	3127	43	31	56	43
700	200	28	8	2069	7450	4385	45	32	57	45
800	200	32	8	331	1189	700	37	25	50	37
800	200	32	8	1009	3631	2137	42	29	54	42
800	200	32	8	1687	6073	3574	44	31	56	44

800	200	32	8	2365	8515	5012	45	33	57	45
300	300	12	12	203	730	430	36	23	48	35
300	300	12	12	619	2229	1312	40	28	52	40
300	300	12	12	1036	3729	2195	42	30	54	42
300	300	12	12	1452	5228	3077	44	31	56	43
400	300	16	12	271	973	573	37	24	49	36
400	300	16	12	826	2973	1750	41	29	53	41
400	300	16	12	1381	4972	2926	43	31	55	43
400	300	16	12	1936	6972	4104	45	32	57	44
500	300	20	12	339	1217	716	37	25	50	37
500	300	20	12	1032	3716	2187	42	29	54	42
500	300	20	12	1727	6216	3659	44	31	56	44
500	300	20	12	2420	8715	5129	45	33	58	45
600	300	24	12	406	1460	859	38	26	50	38
600	300	24	12	1239	4459	2624	43	30	55	42
600	300	24	12	2072	7459	4390	45	32	57	44
600	300	24	12	2905	10458	6155	46	33	58	46
700	300	28	12	474	1703	1002	39	26	51	38
700	300	28	12	1445	5202	3062	43	31	55	43
700	300	28	12	2417	8701	5121	45	33	57	45
700	300	28	12	3388	12200	7181	47	34	59	46
800	300	32	12	541	1946	1145	39	27	51	39
800	300	32	12	1651	5945	3499	44	31	56	43
800	300	32	12	2763	9945	5853	46	33	58	45
800	300	32	12	3873	13944	8207	47	34	59	47
900	300	36	12	609	2190	1289	40	27	52	39
900	300	36	12	1858	6689	3937	44	31	56	44
900	300	36	12	3108	11188	6585	46	34	58	46
900	300	36	12	4357	15687	9233	47	35	60	47
1000	300	40	12	676	2433	1432	40	27	52	40
1000	300	40	12	2064	7432	4374	44	32	57	44
1000	300	40	12	3453	12431	7317	46	34	59	46
1000	300	40	12	4841	17430	10259	48	35	60	48
400	400	16	16	376	1352	796	38	25	50	38
400	400	16	16	1147	4130	2431	42	30	55	42
400	400	16	16	1919	6908	4066	44	32	57	44
400	400	16	16	2690	9686	5701	46	33	58	45
500	400	20	16	470	1690	995	39	26	51	38
500	400	20	16	1434	5163	3039	43	31	55	43
500	400	20	16	2399	8635	5082	45	33	57	45
500	400	20	16	3363	12108	7126	46	34	59	46
600	400	24	16	564	2028	1194	39	27	52	39
600	400	24	16	1721	6195	3646	44	31	56	43
600	400	24	16	2879	10363	6099	46	33	58	46
600	400	24	16	4036	14530	8552	47	35	59	47
700	400	28	16	658	2366	1393	40	27	52	40
700	400	28	16	2008	7228	4254	44	32	57	44

700	400	28	16	3358	12089	7115	46	34	59	46
700	400	28	16	4708	16951	9977	48	35	60	47
800	400	32	16	752	2704	1592	40	28	53	40
800	400	32	16	2294	8260	4862	45	32	57	45
800	400	32	16	3838	13817	8132	47	34	59	47
800	400	32	16	5381	19373	11403	48	36	60	48

Case-radiated noise L_w [dB] at static differential pressure Δ_s 150 or 500 Pa (0,60 or 2,00 in w.g.)

① Basic unit

② Basic unit with acoustic cladding

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

Note:

Information on case-radiated noise for combinations of basic unit and optional acoustic cladding and secondary silencer ca be found in the Easy Product Finder design program.

Specification text

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

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 volume flow rate control accuracy. Ready-to-commission unit which consists of the mechanical parts and the electronic control components Each unit contains an averaging effective pressure sensor for volume flow rate measurement and damper blades. Factory mounted control components complete with wiring and tubing Effective pressure Sensor with 3 mm (1/8 in) measuring holes, hence resistant to contamination. Position of the damper blades indicated externally at the shaft extension. The damper blade is factory set to open position, which allows a ventilation airflow even without control; this does not apply to variants with defined safe position NC (normally closed).

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 (122 °F)
- Plastic plain bearings

Connection

- Flanges on both ends, suitable for duct connection

Technical data

- Nominal sizes: 200 × 100 (8 x 4 in) to 1000 × 600 mm (40 x 24 in)
- Volume flow rate range: 42 – 5877 l/s or 149 – 21159 m³/h 88 – 12454 CFM
- Minimum differential pressure: up to 104 Pa (0.42 in w.g.)
- Maximum differential pressure: 1000 Pa (4.01 in w.g.)
- Closed blade air leakage to EN 1751, class 3
- Casing air leakage to EN 1751, class C (B + H ≤400, class B) (16 in), class B)

Equivalence criteria

- Declaration of hygiene conformity in accordance with VDI 6022, Sheet 1 (01/2018), ÖNORM H 6020 (02/2007) and ÖNORM H 6021 (09/2003)
- Setting of the volume flow rates without adjustment device using q_{min} and q_{max} potentiometers
- Electrical connections with screw terminals, no junction box required
- Aerodynamic functional testing of each volume flow controller on a test rig at the factory; the test result is given on a sticker on the controller
- Acoustic data to ÖNORM EN ISO 5135:1999

Specification text for 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_{min} and q_{max} without adjustment device
- Potentiometers with percentage scales to set the volume flow rates q_{min} and q_{max} 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 _____ [m³/h]
- Δ_{ps} _____ [Pa]

Air-regenerated noise

- L_{wa} _____ [dB(A)]

Case-radiated noise

- L_{wa} _____ [dB(A)]

Order code

Order code for volume flow control (with Easy attachment)

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][in]
B × H

5 Attachments (control component)
Easy Volume flow controller, dynamic, analogue interface, setting of q_{min} and q_{max} with potentiometers

Order example: TVT-D/500x400/Easy

Acoustic cladding	With
Material	Galvanised sheet steel
Nominal size	500 × 400 mm (20 x 16 in)
Attachments (control component)	Easy controller; volume flow controller, dynamic, analogue interface, setting of q_{min} and q_{max} 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][in]
B × H

5 Attachments (control component)
For example
BC0 Compact controller
XB4 Universal controller (VARYCONTROL)

7 Operating mode
F Constant value (one setpoint value)
V Variable (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 rates [m³/h or l/s]

q_{nom} (with operating mode F)
q_{nom} – q_{max} (with operating mode V)

10 Damper blade position
Only spring return actuators
NO Power off to OPEN
NC Power off to CLOSE

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

Acoustic cladding	Without
Material	Galvanised sheet steel
Nominal size	500 × 300 mm (20 × 12 in)
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_{max} = 2000 m³/h (1177 CFM) q_{min} = 5500 m³/h (3237 CFM)

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

TVT – D – P1 / 600 x 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][in]
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 control (Room Supply)
RE Extract air control (Room Extract)

7 Volume flow rate setting
M Master (RMF)
S Slave
F Constant flow rate controller

8 Signal voltage range
0 0 – 10 V DC
2 2 – 10 V DC

9 Expansion modules
Option 1: Power supply
No entry required; 24 V AC/DC
1 EM-TRF for 230 V AC
U EM-TRF-USV for 230 V AC, provides uninterruptible power supply (UPS)

Option 2: Digital communication interface
No entry: none
B EM-BAC-MOD-01 for BACnet MS/TP
M EM-BAC-MOD-01 for Modbus RTU
I EM-IP for BACnet/IP, Modbus/IP and web server
R EM-IP with real time clock

Option 3: Automatic zero point correction
No entry: none
Z EM-AUTOZERO with solenoid valve

10 Operating values for factory setting
Volume flow rate [m³/h or l/s] [CFM]

Master
$q_{vn,p}$: minimum volume flow rate (room value)
q_{vmax}: maximum volume flow rate (room value)
$q_{v,corr,Supply\ air}$: constant supply air (room value)
$q_{v,corr,Extract\ air}$: constant extract air (room value)
$q_{v,diff}$: supply air/extract air difference (room value)

Constant value
$q_{v,corr}$: Constant volume flow rate

Slave
No entry required

11 Damper blade position
Only spring return actuators
NO Power off to OPEN
NC Power off to CLOSE

Useful additions
Room control panel
BE-LCD 40-character display

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

Acoustic cladding	Without
Material	Powder-coated RAL 7001, silver grey
Nominal size	600 × 400 mm (24 x 16 in)
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	$q_{vn,p}$: 0 m³/h (room value) q_{vmax}: 5200 m³/h (3061 CFM) (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 x 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][in]
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 control, supply air
PDE Duct pressure control, extract air
PRS Room pressure control, supply air
PRE Room pressure control, extract air

7 Operating mode
F Constant value (one setpoint value)
V Variable (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]; [in w.g.]

For duct pressure control, enter the differential pressure [Pa] as an absolute value
Δ_{Normal} (with operating mode F)
$\Delta_{min} - \Delta_{max}$ (with operating mode V)

10 Damper blade position
Only spring return actuators
NO Power off to OPEN
NC Power off to CLOSE

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

Acoustic cladding	With
Material	Galvanised sheet steel
Nominal size	500 × 400 mm (20 x 16 in)
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	Δ_{Normal} = 450 Pa (1,81 in w.g.)
Damper blade position	Power off to CLOSE

Order code for differential pressure control (with TROX UNIVERSAL 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][in]
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
PRS Room pressure control, supply air
PRE Room pressure control, extract air
PDS Duct pressure control, supply air
PDE Duct pressure control, extract air

7 Differential pressure setting
MFP Master, constant pressure control
MVP Master, variable differential pressure control
SFP Slave, constant pressure control
SVP Slave, variable differential pressure control

8 Signal voltage range
0 0 – 10 V DC
2 2 – 10 V DC

9 Expansion modules
Option 1: Power supply
No entry required: 24 V AC/DC
T EM-TRF for 230 V AC
U EM-TRF-USV for 230 V AC, provides uninterruptible power supply (UPS)

Option 2: Digital communication interface
No entry: none

B EM-BAC-MOD-01 for BACnet MS/TP
M EM-BAC-MOD-01 for Modbus RTU
I EM-IP for BACnet/IP, Modbus/IP and web server
R EM-IP with real time clock

Option 3: Volume flow rate measurement
No entry: none
V EM-V Volume flow rate measurement for differential pressure control

Option 4: Automatic zero point correction
No entry required: None
Z EM-AUTOZERO solenoid valve (only with V)

10 Operating values for factory setting
Volume flow rate [m³/h][l/s][CFM], pressure [Pa][in w.g.]

Slave SVP
Δ_{min}: minimum differential pressure
Δ_{max}: maximum differential pressure

Slave SFP
Δ_{const}: Constant differential pressure

Master MFP and MVP – same as slave, but additionally:
q_{vol}: minimum volume flow rate (room value)
q_{vol}: maximum volume flow rate (room value)
$q_{vol(ext.Supply\ air)}$: constant supply air (room value)
$q_{vol(ext.Extract\ air)}$: constant extract air (room value)
q_{vol}: supply air/extract air difference (room value)

11 Damper blade position
Only spring return actuators
NO Power off to OPEN
NC Power off to CLOSE

Useful additions
Room control panel
BE-LCD 40-character display

The differential pressure transducer required for room or duct pressure control has to be ordered separately, e.g.
PT-699 Differential pressure transducer for room pressure control
PT-699-DUCT Differential pressure transducer for duct pressure control, including tube and pressure tap

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 (8 x 4 in)
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	$\Delta_{p_{control}}$ = -20 Pa (-0,08 in w.g.)

Contents . Description

Order code for room control (with EASYLAB attachment)

TVT	– D	– P1	/ 600x400	/ 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][in]
B × H

5 Attachments (control components)
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 control (Room Supply)
RE Extract air control (Room Exhaust)
PC Differential pressure control (Pressure Control)

9 Expansion modules
Option 1: Power supply
No entry required: 24 V AC/DC
T EM-TRF for 230 V AC
U EM-TRF-USV for 230 V AC, provides uninterruptible power supply (UPS)

Option 2: Digital communication interface
No entry: none
B EM-BAC-MOD-01 for BACnet MS/TP
M EM-BAC-MOD-01 for Modbus RTU
I EM-IP for BACnet/IP, Modbus/IP and web server

R EM-IP with real time clock

Option 3: Automatic zero point correction
No entry: none
Z EM-AUTOZERO Solenoid valve for automatic zero point correction

10 Additional functions
Room management function has been deactivated
LAB extract air led system (laboratories)
CLR supply air led system (clean rooms)

Room management function is active
LAB-RMF Extract air led system
CLR-RMF Supply air led system

11 Operating values for factory setting
(only required when room management function is active)

Volume flow rate [m³/h][l/s];[CFM], pressure [Pa];[in w.g.]

Total extract air/supply air of room:
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 devices with RMF)
BE-LCD 40-character display

Differential pressure transducer for room pressure control
equipment function must be ordered separately, e.g.
PT-699 Measuring range ±50 Pa or ±100 Pa (±0,20 in w.g. or ±0,40 in
PT-GB604 Measuring range ±100 Pa (±0,40 in w.g.)

Order example: TVT-D-P1/600x400/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 (24 x 16 in)
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 (1766 CFM)
	reduced operation 1500 m³/h (883 CFM)
	increased operation 5000 m³/h (2943 CFM)
	constant supply air 200 m³/h (118 CFM)
	constant extract air 90 m³/h (53 CFM)
	Supply air/extract air difference 300 m³/h (177 CFM)

Order code for single operation (with EASYLAB attachment)

TVT	–	D	/	P1	/	600x400	/	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][in]
B × H

5 Attachments (control components)
ELAB EASYLAB controler 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 Supply air controller
EC Extract air controller

8 External volume flow rate setting
E0 Voltage signal 0 – 10 V DC
E2 Voltage signal 2 – 10 V DC

2P Switch contacts (provided by others) for 2 switching steps
3P Switch contacts (provided by others) for 3 switching steps
F Constant flow rate value, no signalling required

9 Expansion modules
Option 1: Power supply
No entry: 24 V AC
T EM-TRF for 230 V AC
U EM-TRF-USV for 230 V AC, provides uninterruptible power supply (UPS)

Option 2: Digital communication interface
No entry: none
B EM-BAC-MOD-01 for BACnet MS/TP
M EM-BAC-MOD-01 for Modbus RTU
I EM-IP for BACnet/IP, Modbus/IP and web server
R EM-IP with real time clock

Option 3: Automatic zero point correction
No entry: none
Z EM-AUTOZERO Solenoid valve for automatic zero point correction

11 Operating values [m³/h]; [l/s]; [CFM] and [Pa]; [in w.g.]
Depending on external volume flow rate setting
E0, E2: q_{min}/q_{max}
2P: q_1/q_{s3}
3P: $q_1/q_{s2}/q_{s3}$
F: q_m

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

Acoustic cladding	Without
Nominal size	600 × 400 mm (24 x 16 in)
Attachments (control component)	EASYLAB controler 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_1 = 3000 m³/h (1766 CFM) q_{s3} = 7000 m³/h (4120 CFM)

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

Materials

Standard construction

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

Option acoustic cladding

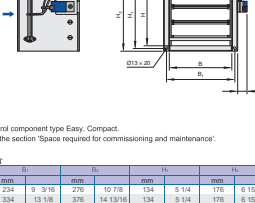
Order code detail	Part	Material
D	Acoustic cladding casing	Galvanised sheet steel
	Insulation of structure-borne noise	Polyethylene, PE
	Lining	Mineral wool to EN 13501, fire rating class A1, non-combustible

Powder-coated construction

Order code detail	Part	Material
P1	Casing	Galvanised sheet steel - powder-coated
	Effective 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'.

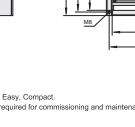
Dimensions/weights of TVT

NS (W × H)		B1		B2		H1		H2		Weight	
mm		mm		mm		mm		mm		kg	lb
200 × 100	8 × 4	234	9 3/16	276	10 7/8	134	5 1/4	176	6 15/16	6	13
300 × 100	12 × 4	334	13 1/8	376	14 13/16	134	5 1/4	176	6 15/16	7	15
400 × 100	16 × 4	434	17 1/16	476	18 3/4	134	5 1/4	176	6 15/16	8	18
500 × 100	20 × 4	534	21	576	22 11/16	134	5 1/4	176	6 15/16	9	20
600 × 100	24 × 4	634	24 15/16	676	26 5/8	134	5 1/4	176	6 15/16	10	22
200 × 200	8 × 8	234	9 3/16	276	10 7/8	234	9 3/16	276	10 7/8	9	20
300 × 200	12 × 8	334	13 1/8	376	14 13/16	234	9 3/16	276	10 7/8	10	22
400 × 200	16 × 8	434	17 1/16	476	18 3/4	234	9 3/16	276	10 7/8	11	24
500 × 200	20 × 8	534	21	576	22 11/16	234	9 3/16	276	10 7/8	12	26
600 × 200	24 × 8	634	24 15/16	676	26 5/8	234	9 3/16	276	10 7/8	13	29
700 × 200	28 × 8	734	28 7/8	776	30 9/16	234	9 3/16	276	10 7/8	14	31
800 × 200	32 × 8	834	32 13/16	876	34 1/2	234	9 3/16	276	10 7/8	15	33
300 × 300	12 × 12	334	13 2/16	376	14 13/16	334	13 1/8	376	14 13/16	10	22
400 × 300	16 × 12	434	17 1/16	476	18 3/4	334	13 1/8	376	14 13/16	11	24
500 × 300	20 × 12	534	21	576	22 11/16	334	13 1/8	376	14 13/16	12	26
600 × 300	24 × 12	634	24 15/16	676	26 5/8	334	13 1/8	376	14 13/16	13	29
700 × 300	28 × 12	734	28 7/8	776	30 9/16	334	13 1/8	376	14 13/16	15	33
800 × 300	32 × 12	834	32 13/16	876	34 1/2	334	13 1/8	376	14 13/16	16	35
900 × 300	36 × 12	934	36 3/4	976	38 7/16	334	13 1/8	376	14 13/16	18	40
1000 × 300	40 × 12	1034	40 11/16	1076	42 3/8	334	13 1/8	376	14 13/16	19	42
400 × 400	16 × 16	434	17 1/16	476	18 3/4	434	17 1/16	476	18 3/4	14	31
500 × 400	20 × 16	534	21	576	22 11/16	434	17 1/16	476	18 3/4	15	33
600 × 400	24 × 16	634	24 15/16	676	26 5/8	434	17 1/16	476	18 3/4	16	35
700 × 400	28 × 16	734	28 7/8	776	30 9/16	434	17 1/16	476	18 3/4	17	37
800 × 400	32 × 16	834	32 13/16	876	34 1/2	434	17 1/16	476	18 3/4	18	40
900 × 400	36 × 16	934	36 3/4	976	38 7/16	434	17 1/16	476	18 3/4	21	46
1000 × 400	40 × 16	1034	40 11/16	1076	42 3/8	434	17 1/16	476	18 3/4	20	44
500 × 500	20 × 20	534	21	576	22 11/16	534	21	576	22 11/16	19	42
600 × 500	24 × 20	634	24 15/16	676	26 5/8	534	21	576	22 11/16	20	44
700 × 500	28 × 20	734	28 7/8	776	30 9/16	534	21	576	22 11/16	22	49

800 × 500	32 x 20	834	32 13/16	876	34 1/2	534	21	576	22 11/16	23	51
900 × 500	36 x 20	934	36 3/4	976	38 7/16	534	21	576	22 11/16	25	55
1000 × 500	40 x 20	1034	40 11/16	1076	42 6/16	534	21	576	22 11/16	26	57
600 × 600	24 x 24	634	24 15/16	676	26 5/8	634	24 15/16	676	26 5/8	19	42
800 × 600	32 x 24	834	32 13/16	876	34 8/16	634	24 15/16	676	26 5/8	23	51
1000 × 600	40 x 24	1034	40 11/16	1076	42 3/8	634	24 15/16	676	26 5/8	27	60

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 (W × H)		D1		D2		H1		H2		Weight	
mm	in	mm	in	mm	in	mm	in	mm	in	kg	lb
200 x 100	8 x 4	234	9 3/16	280	11	134	5 1/4	180	7 1/16	9	20
300 x 100	12 x 4	334	13 1/8	380	14 15/16	134	5 1/4	180	7 1/16	11	24
400 x 100	16 x 4	434	17 1/16	480	18 7/8	134	5 1/4	180	7 1/16	12	26
500 x 100	20 x 4	534	21	580	22 13/16	134	5 1/4	180	7 1/16	14	31
600 x 100	24 x 4	634	24 15/16	680	26 3/4	134	5 1/4	180	7 1/16	15	33
200 x 200	8 x 8	234	9 3/16	280	11	234	9 3/16	280	11	14	31
300 x 200	12 x 8	334	13 1/8	380	14 15/16	234	9 3/16	280	11	15	33
400 x 200	16 x 8	434	17 1/16	480	18 7/8	234	9 3/16	280	11	17	37
500 x 200	20 x 8	534	21	580	22 13/16	234	9 3/16	280	11	18	40
600 x 200	24 x 8	634	24 15/16	680	26 3/4	234	9 3/16	280	11	20	44
700 x 200	28 x 8	734	28 7/8	780	30 11/16	234	9 3/16	280	11	21	46
800 x 200	32 x 8	834	32 13/16	880	34 5/8	234	9 3/16	280	11	23	51
300 x 300	12 x 12	334	13 1/8	380	14 15/16	334	13 1/8	380	14 15/16	15	33
400 x 300	16 x 12	434	17 1/16	480	18 7/8	334	13 1/8	380	14 15/16	17	37
500 x 300	20 x 12	534	21	580	22 13/16	334	13 1/8	380	14 15/16	18	40
600 x 300	24 x 12	634	24 15/16	680	26 3/4	334	13 1/8	380	14 15/16	20	44
700 x 300	28 x 12	734	28 7/8	780	30 11/16	334	13 1/8	380	14 15/16	22	49
800 x 300	32 x 12	834	32 13/16	880	34 5/8	334	13 1/8	380	14 15/16	24	53
900 x 300	36 x 12	934	36 3/4	980	38 9/16	334	13 1/8	380	14 15/16	26	57
1000 x 300	40 x 12	1034	40 11/16	1080	42 1/2	334	13 1/8	380	14 15/16	29	64
400 x 400	16 x 16	434	17 1/16	480	18 7/8	434	17 1/16	480	18 7/8	21	46
500 x 400	20 x 16	534	21	580	22 13/16	434	17 1/16	480	18 7/8	23	51
600 x 400	24 x 16	634	24 15/16	680	26 3/4	434	17 1/16	480	18 7/8	24	53
700 x 400	28 x 16	734	28 7/8	780	30 11/16	434	17 1/16	480	18 7/8	26	57
900 x 400	36 x 16	934	36 3/4	980	38 9/16	434	17 1/16	480	18 7/8	29	64
300 x 400	40 x 16	1034	40 11/16	1080	42 1/2	434	17 1/16	480	18 7/8	32	71

500 x 500	20 x 20	534	21	580	22 13/16	534	21	580	22 13/16	28	62
600 x 500	24 x 20	634	24 15/16	680	26 3/4	534	21	580	22 13/16	30	66
700 x 500	28 x 20	734	28 7/8	780	30 11/16	534	21	580	22 13/16	32	71
800 x 500	32 x 20	834	32 7/8	880	34 5/8	534	21			35	77
900 x 500	36 x 20	934	36 3/4	980	38 9/16	534	21	580	22 13/16	37	82
1000 x 500	40 x 20	1034	40 11/16	1080	42 1/2	534	21	580	22 13/16	39	86
600 x 600	24 x 24	634	24 15/16	680	26 3/4	634	24 15/16	680	26 3/4	29	64
800 x 600	32 x 24	834	32 13/16	880	34 5/8	634	24 15/16	680	26 3/4	35	77
1000 x 600	40 x 24	1034	40 11/16	1080	42 1/2	634	24 15/16	680	26 3/4	41	90
800 x 400	24 x 16	634	24 15/16	680	26 3/4	434	17 1/16	480	18 7/8	24	53

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, e.g. BC0, XD4, BPB, TUNF

Space required

Attachment	①	②	③
Easy controller			
Easy	400 mm (16 in)	H	300 mm (12 in)
Compact controller			
BC0, BL0, BM0, BM0-J6, LN0, LK0, XB0, XD0, XF0	400 mm (16 in)	H	300 mm (12 in)
Universal controller			
BUDN, BUDNF, BUSN, BUSNF, BUSS, BUPN, BUPFN, BURN, BURNF, XB4, XD4, XF4, (B11 *, B1B *, BP1 *, BPB *, BPG *, BB1 *, BBB *, BR1 *, BRB *, BRG *, BS1 *, BSB *, BSG *, BG1 *, BGB *, BH1 *, BHB *)	500 mm (24 in)	H	300 mm (12 in)
TROX UNIVERSAL			
TUN, TUNF, TUS, TUSD	500 mm (24 in)	H, but at least 350(14")	400 mm (16 in)
EASYLAB			
ELAB	500 mm (24 in)	H, but at least 350(14")	400 mm (16 in)

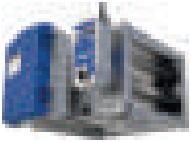
H: Unit height
* Control component being phased out

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

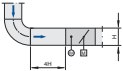
Installation and commissioning

- 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

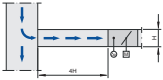
The volume flow rate accuracy Δ_v applies to a straight upstream section of the duct. Bends, junctions or a narrowing or widening of the duct cause turbulence that may affect measurement. Duct connections, e.g. branches off the main duct, must comply with EN 1505. Some installation situations require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

Bend, vertical



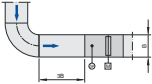
A bend – with a straight duct section of at least 4H upstream of the VAV terminal unit – has only a negligible effect on the volume flow rate accuracy.

Junction, vertical



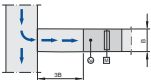
A junction causes strong turbulence. The stated volume flow rate accuracy Δ_v can only be achieved with a straight duct section of at least 4H upstream.

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_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	qv	0 – 10 V	integral	slow-running integral	①
Compact controller, dynamic					
BC0	qv	0 – 10 V or 2 – 10 V or MP bus interface	integral	slow-running integral	②
BL0 **	qv	LonWorks FTT 10 interface	integral	slow-running integral	②
BM0	qv	Modbus RTU/BACnet MS/TP	integral	slow-running integral	②
BM0-J6	qv	Modbus RTU/BACnet MS/TP with RJ12 socket (for X-AIRCONTROL)	integral	slow-running integral	②
XB0	qv	0 – 10 V or 2 – 10 V	integral	slow-running integral	①
LN0	qv	0 – 10 V or 2 – 10 V	integral	slow-running integral	⑤
LK0	qv	KNX interface	integral	slow-running integral	⑤
Compact controller, static					
XD0	qv	0 – 10 V or 2 – 10 V	integral	slow-running integral	③
XF0	Δp	0 – 10 V or 2 – 10 V	integral, control range adjustable 25 - 550 Pa	slow-running integral	③
Universal controller, dynamic					
B11 *	qv	0 – 10 V or 2 – 10 V	integral	slow-running separate	②
B1B *	qv	0 – 10 V or 2 – 10 V	integral	spring return actuator separate	②
BUDN	qv	0 - 10 V or 2 - 10 V or MP bus or Modbus RTU or BACnet MS/TP	integral	slow-running separate	②
BUDNF	qv	0 - 10 V or 2 - 10 V or MP bus or Modbus RTU or BACnet MS/TP	integral	spring return actuator separate	②
XB4	qv	0 – 10 V or 2 – 10 V	integral	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-running 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-running separate	②
BB1 *	qv	2 – 10 V	individual component	slow-running separate	①
BBB *	qv	2 – 10 V	individual component	spring return actuator separate	①
BR1 *	Δp	0 – 10 V or 2 – 10 V or MP bus interface	individual component 100 Pa (0,40 in w.g.)	slow-running separate	②
BRB *	Δp	0 – 10 V or 2 – 10 V or MP bus interface	individual component 100 Pa (0,40 in w.g.)	spring return actuator separate	②
BS1 *	Δp	0 – 10 V or 2 – 10 V or MP bus interface	individual component 600 Pa (2,41 in w.g.)	slow-running separate	②
BSB *	Δp	0 – 10 V or 2 – 10 V or MP bus interface	individual component 600 Pa (2,41 in w.g.)	spring return actuator separate	①
BG1 *	Δp	2 – 10 V	individual component 100 Pa (0,40 in w.g.)	slow-running separate	②
BGB *	Δp	2 – 10 V	individual component 100 Pa (0,40 in w.g.)	spring return actuator separate	②
BH1 *	Δp	2 – 10 V	individual component 600 Pa (2,41 in w.g.)	slow-running separate	②
BHB *	Δp	2 – 10 V	individual component 600 Pa (2,41 in w.g.)	spring return actuator separate	②
BUSN	qv	0 - 10 V or 2 - 10 V or MP bus or Modbus RTU or BACnet MS/TP	integral	slow-running separate	①
BUSNF	qv	0 - 10 V or 2 - 10 V or MP bus or Modbus RTU or BACnet MS/TP	integral	spring return actuator separate	①
BUSS	qv	0 - 10 V or 2 - 10 V or MP bus or Modbus RTU or BACnet MS/TP	integral	fast-running separate	②
BUPN	Δp	0 - 10 V or 2 - 10 V or MP bus or Modbus RTU or BACnet MS/TP	integral Control range adjustable 25 – 450 Pa (0,10 – 1,81 in w.g.)	slow-running separate	②
BUPNF	Δp	0 - 10 V or 2 - 10 V or MP bus or Modbus RTU or BACnet MS/TP	integral Control range adjustable 25 – 450 Pa (0,10 – 1,81 in w.g.)	spring return actuator separate	②
BURN	Δp	0 - 10 V or 2 - 10 V or MP bus or Modbus RTU or BACnet MS/TP	integral Control range adjustable -50 ... +10 Pa (-0,20...-0,04 in w.g.) or 10 ... 50 Pa (0,20...0,04 in w.g.)	slow-running separate	②

Attachment	Controlled variable	Interface	Pressure transducer	Actuator	Manufacturer
BURNF	Δp	0 - 10 V or 2 – 10 V or MP bus or Modbus RTU or BACnet MS/TP	integral Control range adjustable -50 ... -10 Pa (0,20...-0,04 in w.g.) or 10 ... 50 Pa (0,20...0,04 in w.g.)	spring return actuator separate	②
XD4	qv	0 – 10 V or 2 – 10 V	integral	spring return actuator separate	①
XF4	Δp	0 – 10 V or 2 – 10 V	Integral, control range adjustable 25 – 550 Pa (0,10 – 2,21 in w.g.)	spring return actuator separate	③

* Control component being phased out
** Control component to be discontinued - do not include in new projects
q_v Volume flow rate
Δ_p Differential pressure
① TROX, ② TROX/Belimo, ③ TROX/Gruner, ③ Siemens

Dimension limitation

Type TVT up to max. 700 × 200 mm (28 x 8 in) or 400 × 300 mm (16 x 12 in) with attachment BUSS, BPG * (universal controller fast-running actuator)
Type TVT up to max. 1000 × 300 mm (40 x 12 in) or 800 x 400 mm (32 x 16 in) with attachment BC0, BL0, BM0, BM0-J6, LN0, LK0, XB0 (Compact controller)
Type TVT up to max. 1000 × 300 mm (40 x 12 in) or 800 x 400 mm (32 x 16 in) with attachment BUDNF, BUSNF, BUPNF, BURNF B1B* BPB*, BBB* BRB * BSB *, BGB *, BHB * (spring return TROX/Belimo)
Type TVT up to max. 1000 × 500 mm (40 x 20 in) with attachment XD0, XF0

TROX UNIVERSAL control components

Attachment	Controlled variable	Interface	Pressure transducer	Actuator	Manufacturer
VARYCONTROL Universal controller, static					
TUN	qv, Δp	TROX Plug&Play communication system and 0 - 10 V or 2 - 10 V or with optional accessories: Modbus, BACnet, web server	qv = integral Δp = separate	slow-running separate	①
TUNF	qv, Δp	TROX Plug&Play communication system and 0 - 10 V or 2 - 10 V or with optional accessories: Modbus, BACnet, web server	qv = integral Δp = separate	spring return actuator separate	①
TUS	qv, Δp	TROX Plug&Play communication system and 0 - 10 V or 2 - 10 V or with optional accessories: Modbus, BACnet, web server	qv = integral Δp = separate	fast-running separate	①
TUSD	qv, Δp	TROX Plug&Play communication system and 0 - 10 V or 2 - 10 V or with optional accessories: Modbus, BACnet, web server	qv = integral Δp = separate	fast-running with digital communication interface (TROX HPD), separate	①

q_v Volume flow rate
Δ_p Differential pressure
① TROX

Terminal unit maximum size with some attachments

Type TVT only up to 700 × 200 mm (28 x 8 in) or 400 × 300 mm (16 x 12 in) with attachment TUS
TYpe TVT only up to 1000 × 500 mm (40 x 20 in) with attachment TUSD

LABCONTROL EASYLAB control components

Attachment	Controlled variable	Interface	Pressure transducer	Actuator	Manufacturer
EASYLAB					
ELAB	qv, Δp *	TROX plug and play communication system and 0 - 10 V or 2 - 10 V or with optional accessories: Modbus, BACnet, web server	qv = integral Δp = separate	fast-running, separate or fast-running 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 (28 x 8 in) or 400 × 300 mm (16 x 12 in) with actuator type S (fast-running actuator)
TYpe TVT only up to 1000 × 500 mm (40 x 20 in) with actuator type SD (fast-running actuator, TROX HPD

Nomenclature

Dimensions of rectangular units

B [mm] [in]
Duct width

B_F [mm] [in]
Screw hole pitch of flange (horizontal)

B_1 [mm] [in]
Overall dimension of flange (width)

H [mm] [in]
Duct height

H_F [mm] [in]
Screw hole pitch of flange (vertical)

H_1 [mm] [in]
Overall dimension of flange (height)

Dimensions of circular units

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

$ØD_F$ [mm] [in]
Pitch circle diameter of flanges

$ØD_1$ [mm] [in]
Outer diameter of flanges

L [mm] [in]
Length of unit including connecting spigot

L_1 [mm] [in]
Length of casing or acoustic cladding

n [ ]
Number of flange screw holes

T [mm] [in]
Flange thickness

General information

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

NS [mm] [in]
Nominal size

f_m [Hz]
Octave band centre frequency

L_w [dB(A)]
A-weighted sound pressure level of air-regenerated noise of the VAV terminal unit, system attenuation taken into account

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

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

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

L_{wccc} [dB(A)]
A-weighted sound pressure level of case-regenerated noise of the VAV terminal unit with acoustic cladding, 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] [CFM]
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 stored in the Easy Product Finder design program. Reference value for calculating percentages (e.g. q_{vmin}). Upper limit of the setting range and maximum volume flow rate setpoint value for the VAV terminal unit.

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

q_{vmax} [m³/h]; [l/s] [CFM]
Upper limit of the operating range for the VAV terminal unit that can be set by customers: q_{vmax} can be set to less than or equal to q_{vnom}. In case of analogue signalling to volume flow controllers (which are typically used), the set maximum value (q_{vmax}) is allocated to the maximum setpoint signal (10 V) (see characteristic).

q_{vmin} [m³/h]; [l/s] [CFM]
Lower limit of the operating range for the VAV terminal unit that can be set by customers: q_{vmin} should be set to less than or equal to q_{vnom}. Do not set q_{vmin} to less than $q_{vminabs}$ as the control may become unstable or the damper blade may close. q_{vmin} may equal zero. In case of analogue signalling to volume flow controllers (which are typically used), the set minimum value (q_{vmin}) is allocated to the minimum setpoint signal (0 or 2 V) (see characteristic).

q_v [m³/h]; [l/s]; [CFM]
Volume flow rate

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

Δp_s [Pa][in w.g.]
Static differential pressure

Δ_{min} [Pa][in w.g.]
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 differential 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
All lengths are given in millimetres [mm] unless stated otherwise.

Basic unit
Unit for controlling a volume flow without an attached control component. The main components include the casing with sensor(s) to measure the effective 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 types of connection, acoustic characteristics (e.g. acoustic cladding or integral sound attenuator), volume flow rate range.

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 consists basically of a controller with effective pressure transducer (integral or external) and an integral actuator (Easy and Compact controllers) or external actuator (Universal or LABCONTROL controllers). Important distinguishing features: Transducer: dynamic transducer for clean air or static transducer for contaminated air. Actuator: slow-running actuator as standard, spring return actuator for safe position, or fast-running actuator. Interface: analogue interface or digital bus interface for the capturing of signals and data.

VAV terminal unit
Consists of a basic unit with an attached control component.

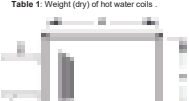
Construction and Dimensions

Hot Water Reheat Coil

- For terminal reheat of primary air ;
- Has flanged connections on both ends of the hot water coil ;
- Hot water coil is made from copper tubes with aluminum fin plates ;
- Available with one to four rows of heating coil;
- Hot water connections on the side of the coil ;
- Refer to the selection data for hot water coil.

Reheat Coil Weight								
TVT Size	1-Row		2-Row		3-Row		4-Row	
	kg	lb	kg	lb	kg	lb	kg	lb
200 × 100	2	6	5	11	7	17	10	22
300 × 100	3	6	5	12	8	18	11	24
400 × 100	3	7	6	14	10	21	13	28
500 × 100	3	8	7	15	10	23	14	30
600 × 100	4	8	7	16	11	24	15	32
200 × 200	3	7	6	14	10	21	13	28
300 × 200	3	8	7	15	10	23	14	30
400 × 200	4	9	8	17	12	26	15	34
500 × 200	4	10	9	19	13	29	17	38
600 × 200	5	11	10	21	14	32	19	42
700 × 200	6	13	11	25	17	38	23	50
800 × 200	6	14	12	27	18	41	24	54
300 × 300	5	10	9	20	14	30	18	40
400 × 300	5	12	11	24	16	36	22	48
500 × 300	6	13	12	26	18	39	24	52
600 × 300	7	15	13	29	20	44	26	58
700 × 300	8	19	17	37	25	56	34	74
800 × 300	9	20	18	39	27	59	35	78
900 × 300	9	21	19	41	28	62	37	82
1000 × 300	10	22	20	44	30	66	40	88
400 × 400	9	19	17	38	26	57	34	76
500 × 400	7	15	14	30	20	45	27	60
600 × 400	6	14	12	27	18	41	24	54
700 × 400	10	21	19	42	29	63	38	84
800 × 400	10	23	20	45	31	68	41	90
900 × 400	12	26	23	51	35	77	46	102
1000 × 400	12	27	24	54	37	81	49	108
500 × 500	9	20	18	40	27	60	36	80
600 × 500	10	22	20	43	29	65	39	86
700 × 500	12	26	23	51	35	77	46	102
800 × 500	12	27	24	54	37	81	49	108
900 × 500	13	29	26	58	39	87	53	116
1000 × 500	14	31	28	61	42	92	55	122
600 × 600	11	24	21	47	32	71	43	94
800 × 600	14	31	28	61	42	92	55	122
1000 × 600	17	38	34	75	51	113	68	150

Table 1: Weight (dry) of hot water coils .



Reheat Coil Fin Dimensions					
TVT Size		W		H	
mm	in	mm	in	mm	in
200 × 100	8 x 4	200	7.87	95	3.75
300 × 100	12 x 4	300	11.81	95	3.75
400 × 100	16 x 4	400	15.75	95	3.75
500 × 100	20 x 4	500	19.69	95	3.75
600 × 100	24 x 4	600	23.62	95	3.75
200 × 200	8 x 8	200	7.87	191	7.5
300 × 200	12 x 8	300	11.81	191	7.5
400 × 200	16 x 8	400	15.75	191	7.5
500 × 200	20 x 8	500	19.69	191	7.5
600 × 200	24 x 8	600	23.62	191	7.5
700 × 200	28 x 8	700	27.56	191	7.5
800 × 200	32 x 8	800	31.5	191	7.5
300 x 300	12 x 12	300	11.81	318	12.5
400 × 300	16 x 12	400	15.75	318	12.5
500 × 300	20 x 12	500	19.69	318	12.5
600 × 300	24 x 12	600	23.62	318	12.5
700 × 300	28 x 12	700	27.56	318	12.5
800 × 300	32 x 12	800	31.5	318	12.5
900 × 300	36 x 12	900	35.43	318	12.5
1000 × 300	40 x 12	1000	39.37	318	12.5
400 × 400	16 x 16	400	15.75	413	16.25
500 × 400	20 x 16	500	19.69	413	16.25
600 × 400	24 x 16	600	23.62	413	16.25
700 × 400	28 x 16	700	27.56	413	16.25
800 × 400	32 x 16	800	31.5	413	16.25
900 × 400	36 x 16	900	35.43	413	16.25
1000 × 400	40 x 16	1000	39.37	413	16.25
500 × 500	20 x 20	500	19.69	508	20
600 × 500	24 x 20	600	23.62	508	20
700 × 500	28 x 20	700	27.56	508	20
800 × 500	32 x 20	800	31.5	508	20
900 × 500	36 x 20	900	35.43	508	20
1000 × 500	40 x 20	1000	39.37	508	20
600 × 600	24 x 24	600	23.62	603	23.75
800 × 600	32 x 24	800	31.5	603	23.75
1000 × 600	40 x 24	1000	39.37	603	23.75

Table 2: Reheat coil fin dimensions.

TVT 51Z		Air Flow		Air DT		Capacity		Air ΔP		Water Flow		Fluid DT		Fluid Press. Drop	
mm	in	m³/h	CFM	°C	°F	kW	MBH	Pa	in.w.g.	L/s	gpm	°C	°F	kPa	ft.w.g.
300 x 100	8 x 4	640	380	15	26.65	3.24	11.05	187	0.75	0.07	1.13	11.1	20	1.52	0.51
300 x 100	12 x 4	968	570	16	29.22	5.33	18.18	187	0.75	0.12	1.86	11.1	20	4.39	1.47
400 x 100	16 x 4	1291	760	17	30.64	7.45	25.41	187	0.75	0.18	2.6	11.1	20	9.18	3.07
500 x 100	20 x 4	1616	951	18	28.15	8.56	29.22	187	0.75	0.19	2.99	11.1	20	7.81	0.94
300 x 200	24 x 4	1939	1141	16	29.21	10.66	36.37	187	0.75	0.23	3.72	11.1	20	4.42	1.48
300 x 200	8 x 8	1261	743	17	30.63	7.44	25.4	187	0.75	0.16	2.6	11.1	20	14.32	4.79
300 x 200	12 x 8	1939	1141	16	29.21	10.66	36.37	187	0.75	0.23	3.72	11.1	20	6.28	2.1
400 x 200	16 x 8	2584	1521	17	30.63	14.9	50.83	187	0.75	0.33	5.2	11.1	20	10.28	3.44
500 x 200	20 x 8	3230	1901	17	29.77	18.1	61.76	187	0.75	0.4	6.32	11.1	20	6.1	2.04
600 x 200	24 x 8	3875	2281	17	30.63	22.34	76.23	187	0.75	0.49	7.8	11.1	20	9.48	3.17
300 x 200	28 x 8	4523	2662	17	31.26	26.61	90.81	187	0.75	0.58	9.3	11.1	20	12.34	4.13
800 x 200	32 x 8	5168	3042	16	28.55	27.77	94.77	187	0.75	0.61	9.7	11.1	20	3.23	1.08
300 x 300	12 x 12	3174	1868	15	26.89	16.07	54.82	179	0.72	0.35	5.61	11.1	20	2.9	0.97
400 x 300	16 x 12	4231	2490	16	28.61	22.94	78.27	179	0.72	0.51	8.01	11.1	20	3.95	1.32
500 x 300	20 x 12	5289	3.113	17	30.03	29.9	102.02	179	0.72	0.66	10.45	11.1	20	6.58	2.2
600 x 300	24 x 12	6348	3.736	17	30.89	36.9	125.92	179	0.72	0.81	12.89	11.1	20	9.48	3.17
700 x 300	28 x 12	7404	4.358	18	31.54	43.55	149.97	179	0.72	0.97	15.36	11.1	20	12.86	4.31
800 x 300	32 x 12	8463	4.981	16	28.8	41.88	156.55	179	0.72	1.01	16.03	11.1	20	3.98	1.33
900 x 300	36 x 12	9521	5.604	16	29.47	52.81	180.21	179	0.72	1.16	18.45	11.1	20	5.14	1.72
1000 x 300	40 x 12	10580	6.227	17	30.02	59.79	204.02	179	0.72	1.32	20.89	11.1	20	6.52	2.18
600 x 400	24 x 16	9020	5.191	14	25.99	43.15	147.23	202	0.81	0.95	15.08	11.1	20	3.26	1.09
500 x 400	20 x 16	7548	4.325	14	24.62	34.06	116.18	202	0.81	0.75	11.9	11.1	20	3.53	1.18
400 x 400	16 x 16	5879	3.460	13	22.67	25.08	85.61	202	0.81	0.55	8.77	11.1	20	2.27	0.76
700 x 400	28 x 16	10389	6.056	15	27.04	52.36	178.67	202	0.81	1.15	18.29	11.1	20	4.42	1.48
800 x 400	32 x 16	11757	6.920	15	27.86	61.65	210.36	202	0.81	1.36	21.54	11.1	20	5.83	1.95
900 x 400	36 x 16	13226	7.785	16	28.51	70.48	240.51	202	0.81	1.56	24.77	11.1	20	7.39	2.47
1000 x 400	40 x 16	14698	8.651	16	29.05	80.37	274.25	202	0.81	1.77	28.08	11.1	20	7.11	2.38
500 x 500	20 x 20	8521	5.015	17	29.93	48.01	163.8	182	0.73	1.06	16.77	11.1	20	7.68	2.57
600 x 500	24 x 20	10225	6.018	17	30.79	59.25	202.17	182	0.73	1.31	20.7	11.1	20	11.48	3.84
700 x 500	28 x 20	11929	7.021	17	31.43	70.57	240.8	182	0.73	1.56	24.66	11.1	20	14.29	4.78
800 x 500	32 x 20	13633	8.023	16	28.73	73.65	251.32	182	0.73	1.62	25.73	11.1	20	5.44	1.82
900 x 500	36 x 20	15338	9.026	16	29.37	84.79	289.3	182	0.73	1.87	29.62	11.1	20	6.9	2.31
1000 x 500	40 x 20	17039	10.029	17	29.93	96.99	327.52	182	0.73	2.12	33.53	11.1	20	8.55	2.86
600 x 600	24 x 24	12095	7.472	15	26.2	62.6	213.6	197	0.79	1.38	21.87	11.1	20	8.07	2.65
700 x 600	28 x 24	14810	8.717	15	27.25	75.66	259.19	197	0.79	1.67	26.54	11.1	20	5.59	1.87
800 x 600	32 x 24	16927	9.963	15	28.07	89.43	305.16	197	0.79	1.97	31.25	11.1	20	7.2	2.41
900 x 600	36 x 24	19043	11.208	16	28.73	102.96	351.33	197	0.79	2.27	35.97	11.1	20	5.83	1.95
1000 x 600	40 x 24	21159	12.454	16	29.27	116.58	397.8	197	0.79	2.57	40.73	11.1	20	7.26	2.43

Table 3: Standard 2-Row coil selection data for maximum air flow (Easy Actuator) for each TVJ size.