



Easy controller, Compact controller



Universal controller (VARYCONTROL)



TROX UNIVERSAL controller, TROX LABCONTROL controller



Construction with acoustic cladding

VAV terminal units

TVJ



For normal and high volume flow rate ranges

Rectangular air terminal units for standard applications in supply air or extract air systems with variable volume flows

- Suitable for volume flow ranges up to approx. 62,000 m³/h or 17,000 l/s
- Suitable for the control of volume flows, rooms, or duct pressure
- Electronic control components for different applications (Easy, Compact, Universal, and LABCONTROL)
- High control accuracy
- Leakage airflow with closed damper blade according to EN 1751, Class 1 (B + H ≥ 600 mm)
- Casing air leakage according to EN 1751, class B
- Individual parameterisation, adjustment and testing of each TVJ with standard control components on a test rig under air
- Individual report of testing, parameterisation and adjustment available online

Optional equipment and accessories

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

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General information

Application

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

Special characteristics

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

Nominal sizes

- 39 nominal sizes from 200 × 100 to 1000 × 1000
- Not all attachments with fast-running actuators may be available or suitable for all sizes of terminal units.

Variants

- TVJ: VAV terminal unit
- TVJ-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 grey (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 mounted control components complete with wiring and tubing
- Aerodynamic functional testing on a special test rig before shipping of each unit
- Set-up data is given on a label or volume flow rate scale affixed to the unit
- High volume flow rate control accuracy

Attachments

- EASY controller: compact unit consisting of controller with potentiometers, effective pressure transducer and actuator
- Compact controller: compact unit consisting of controller with potentiometers, effective pressure transducer and actuator

- Universal controller: controller, effective pressure transducer, and actuators for special applications
- LABCONTROL: Control components for air management systems

Useful additions

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

Construction features

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

Material and surfaces

Galvanised sheet steel construction

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

Powder-coated construction (P1)

- Casing made of galvanised sheet steel, powder-coated

Variant with acoustic cladding (-D)

- Acoustic cladding made of galvanised sheet steel
- Rubber seal for the insulation of structure-borne noise
- Lining is mineral wool

Mineral wool

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

Standards and guidelines

Casing leakage

- EN 1751, Class B

Closed blade air leakage

- EN 1751, Class 1 (B + H ≥ 600 mm)

Maintenance

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

Function

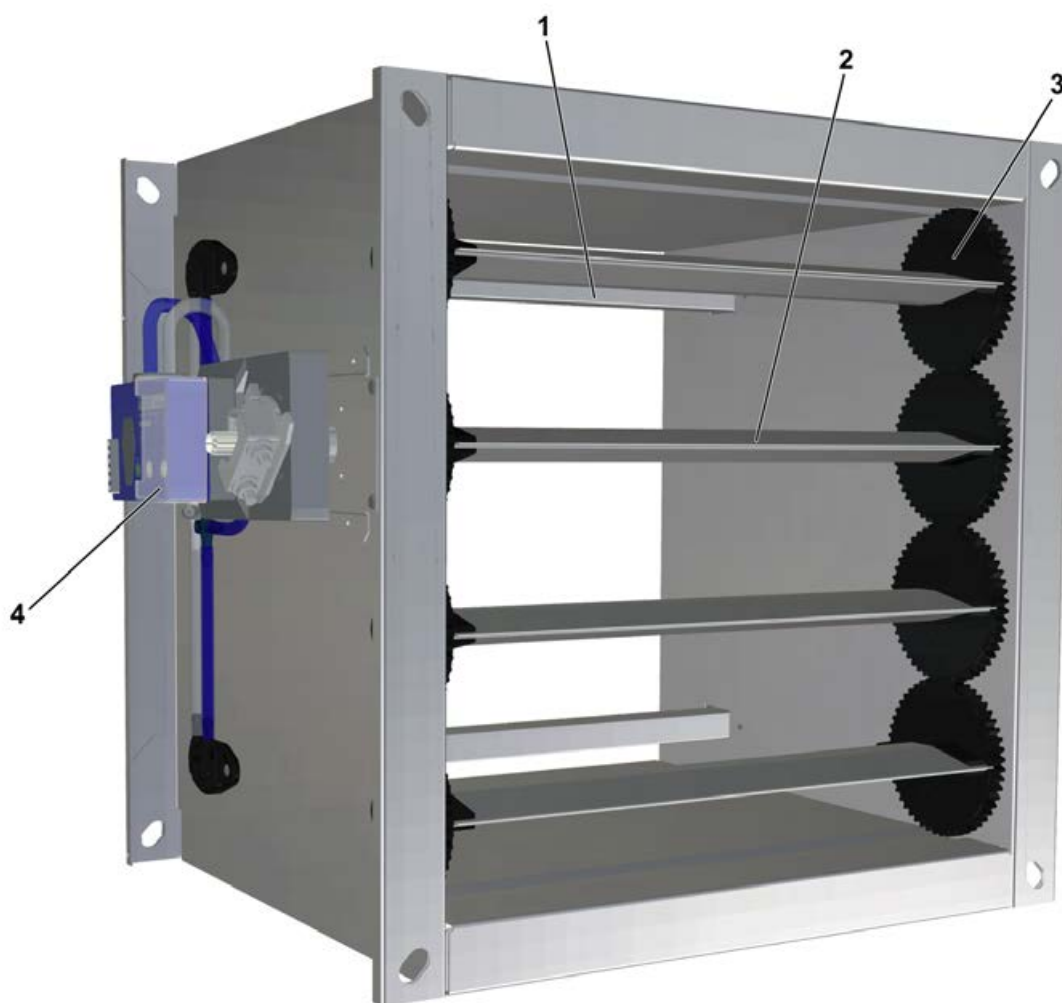
The VAV terminal unit is fitted with an effective pressure sensor for measuring the volume flow rate.

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 TVJ



1 Differential pressure sensor

2 Damper blade

3 Gear

4 Control components, e.g. Easy controller

Technical data

Nominal sizes	200 × 100 – 1000 × 1000 mm
Volume flow rate range	42 – 17,223 l/s or 149 – 62,005 m³/h
Volume flow rate control range (unit with dynamic differential pressure measurement)	approx. 20 to 100 % of the nominal volume flow rate
Minimum differential pressure	Up to 109 Pa (without secondary silencer)
Maximum differential pressure	1000 Pa
Operating temperature	10 to 50 °C

Quick sizing

Quick sizing tables provide a good overview of the minimum differential pressures, the volume flow accuracy and the room sound pressure levels that can be expected. Intermediate values may be achieved by interpolation. The sound power levels for calculating the sound pressure levels were measured in the TROX laboratory according to DIN EN ISO 5135 - see "General information and Nomenclature".

Precise results and spectral data for all control components can be obtained by using our Easy Product Finder design programme. The nominal size is initially selected according to the given volume flow rates q_{vmin} and q_{vmax} .

Volume flow rate ranges and minimum differential pressure values

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

Volume flow rate ranges and minimum differential pressure values

Control component for dynamic pressure measurements – Easy (potentiometers)

Attachment: Easy

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



B	H	qv [l/s]	qv [m³/h]	Δpstmin [Pa]		Δqv [±%]
				①	②	
300	200	262	943	7	36	8
300	200	400	1441	17	84	6
300	200	538	1938	30	151	5
400	200	166	595	2	8	13
400	200	349	1258	7	36	8
400	200	534	1921	17	84	6
400	200	717	2584	30	151	5
500	200	207	743	2	8	13
500	200	437	1572	7	36	8
500	200	667	2401	17	84	6
500	200	897	3230	30	151	5
600	200	248	892	2	8	13
600	200	524	1887	7	36	8
600	200	800	2881	17	83	6
600	200	1076	3876	30	151	5
700	200	289	1040	2	8	13
700	200	611	2201	7	36	8
700	200	934	3361	17	83	6
700	200	1256	4522	30	151	5
800	200	331	1189	2	8	13
800	200	699	2515	7	36	8
800	200	1067	3842	17	84	6
800	200	1435	5168	30	151	5
300	300	203	730	2	10	12
300	300	429	1544	9	43	8
300	300	655	2359	20	99	6
300	300	881	3173	36	179	5
400	300	271	973	2	10	12
400	300	572	2059	9	43	8
400	300	874	3145	20	99	6
400	300	1175	4231	36	179	5
500	300	339	1217	2	10	12
500	300	715	2574	9	43	8
500	300	1092	3932	20	99	6
500	300	1469	5289	36	180	5
600	300	406	1460	2	10	12
600	300	858	3089	9	43	8
600	300	1311	4719	20	99	6
600	300	1763	6348	36	180	5
700	300	474	1703	2	10	12
700	300	1001	3604	9	43	8
700	300	1529	5504	20	99	6
700	300	2056	7405	36	180	5
800	300	541	1946	2	10	12
800	300	1144	4118	9	43	8
800	300	1748	6291	20	99	6
800	300	2350	8463	36	180	5
900	300	609	2190	2	10	12
900	300	1287	4634	9	43	8
900	300	1966	7077	20	99	6
900	300	2644	9521	36	180	5



B	H	qv [l/s]	qv [m³/h]	Δpstmin [Pa]		Δqv [±%]
				①	②	
1000	300	676	2433	2	10	12
1000	300	1430	5148	9	43	8
1000	300	2184	7864	20	99	6
1000	300	2938	10579	36	180	5
400	400	376	1352	3	11	12
400	400	795	2861	10	47	7
400	400	1214	4370	22	108	6
400	400	1633	5879	39	195	5
500	400	470	1690	3	11	12
500	400	993	3576	10	47	7
500	400	1518	5463	22	108	6
500	400	2041	7349	39	195	5
600	400	564	2028	3	11	12
600	400	1192	4292	10	47	7
600	400	1821	6555	22	108	6
600	400	2449	8819	39	195	5
700	400	658	2366	3	11	12
700	400	1391	5007	10	47	7
700	400	2124	7648	22	108	6
700	400	2858	10289	39	195	5
800	400	752	2704	3	11	12
800	400	1589	5722	10	47	7
800	400	2428	8740	22	108	6
800	400	3266	11758	39	195	5
900	400	845	3042	3	11	12
900	400	1788	6437	10	47	7
900	400	2731	9833	22	108	6
900	400	3674	13228	39	195	5
1000	400	939	3380	3	11	12
1000	400	1987	7153	10	47	7
1000	400	3035	10925	22	108	6
1000	400	4082	14698	39	195	5
500	500	545	1959	2	9	13
500	500	1152	4146	8	40	8
500	500	1759	6333	19	93	6
500	500	2366	8520	33	168	5
600	500	654	2351	2	9	13
600	500	1382	4975	8	40	8
600	500	2111	7600	19	93	6
600	500	2840	10224	33	168	5
700	500	762	2743	2	9	13
700	500	1613	5805	8	40	8
700	500	2463	8866	19	93	6
700	500	3313	11928	33	168	5
800	500	871	3135	2	9	13
800	500	1843	6634	8	40	8
800	500	2815	10133	19	93	6
800	500	3786	13632	33	168	5
900	500	980	3526	2	9	13
900	500	2073	7463	8	40	8
900	500	3166	11399	19	93	6



B	H	qv [l/s]	qv [m³/h]	Δpstmin [Pa]		Δqv [±%]
				①	②	
900	500	4260	15336	33	168	5
1000	500	1089	3918	2	9	13
1000	500	2303	8292	8	40	8
1000	500	3518	12666	19	93	6
1000	500	4733	17040	33	168	5
600	600	811	2919	2	10	12
600	600	1716	6178	9	43	8
600	600	2621	9436	20	99	6
600	600	3526	12695	36	180	5
700	600	947	3406	2		12
700	600	2002	7208	9		8
700	600	3058	11009	20		6
700	600	4114	14811	36		5
800	600	1082	3892	2	10	12
800	600	2288	8237	9	43	8
800	600	3495	12582	20	99	6
800	600	4701	16927	36	180	5
900	600	1217	4379	2		12
900	600	2574	9267	9		8
900	600	3932	14155	20		6
900	600	5289	19043	36		5
1000	600	1352	4865	2	10	12
1000	600	2860	10296	9	43	8
1000	600	4369	15728	20	99	6
1000	600	5877	21159	36	180	5
800	800	1502	5407	3	11	12
800	800	3179	11444	10	47	7
800	800	4856	17480	22	108	6
800	800	6532	23517	39	195	5
900	800	1690	6083	3		12
900	800	3576	12874	10		7
900	800	5463	19666	22		6
900	800	7349	26457	39		5
1000	800	1878	6759	3	11	12
1000	800	3974	14305	10	47	7
1000	800	6070	21851	22	108	6
1000	800	8165	29397	39	195	5
1000	1000	2404	8653	3	11	12
1000	1000	5087	18314	10	49	7
1000	1000	7771	27974	23	113	6
1000	1000	10454	37635	40	204	5

1 Basic unit

2 Base unit with secondary silencer TX

Volume flow ranges and minimum differential pressuresControl component dynamic measuring principle – q_v expanded**Attachments: BC0, BM0, BM0-J6, BM0-D8**

B	H	qv [l/s]	qv [m³/h]	Δpstmin [Pa]		Δqv [±%]
				①	②	
200	100	42	149	2	10	13
200	100	126	454	15	89	6



B	H	qv [l/s]	qv [m³/h]	Δpstmin [Pa]		Δqv [±%]
				①	②	
200	100	211	759	41	248	5
200	100	295	1064	80	487	4
300	100	62	223	2	10	13
300	100	189	681	15	89	6
300	100	316	1138	41	248	5
300	100	443	1596	80	487	4
400	100	83	298	2	10	13
400	100	252	908	15	89	6
400	100	422	1519	41	248	5
400	100	591	2129	81	487	4
500	100	104	372	2	10	13
500	100	315	1135	15	89	6
500	100	527	1898	41	248	5
500	100	739	2661	80	487	4
600	100	124	446	2	10	13
600	100	378	1362	15	89	6
600	100	633	2277	41	248	5
600	100	886	3193	80	487	4
200	200	83	298	2	8	13
200	200	252	908	15	75	6
200	200	422	1519	41	208	5
200	200	591	2129	81	408	4
300	200	124	446	2	8	13
300	200	378	1362	15	75	6
300	200	633	2277	41	208	5
300	200	886	3193	80	408	4
400	200	166	595	2	8	13
400	200	504	1816	15	75	6
400	200	843	3036	41	208	5
400	200	1182	4257	80	408	4
500	200	207	743	2	8	13
500	200	630	2269	15	75	6
500	200	1054	3796	41	208	5
500	200	1478	5322	80	408	4
600	200	248	892	2	8	13
600	200	756	2723	15	75	6
600	200	1265	4555	41	208	5
600	200	1773	6386	80	408	4
700	200	289	1040	2	8	13
700	200	883	3177	15	75	6
700	200	1476	5313	41	208	5
700	200	2069	7450	80	408	4
800	200	331	1189	2	8	13
800	200	1009	3631	15	75	6
800	200	1687	6073	41	208	5
800	200	2365	8515	80	408	4
300	300	203	730	2	10	12
300	300	619	2229	18	89	6
300	300	1036	3729	49	248	4
300	300	1452	5228	96	486	3
400	300	271	973	2	10	12



B	H	qv [l/s]	qv [m³/h]	Δpstmin [Pa]		Δqv [±%]
				①	②	
400	300	826	2973	18	89	6
400	300	1381	4972	49	248	4
400	300	1936	6972	96	487	3
500	300	339	1217	2	10	12
500	300	1032	3716	18	89	6
500	300	1727	6216	49	248	4
500	300	2420	8715	96	487	3
600	300	406	1460	2	10	12
600	300	1239	4459	18	89	6
600	300	2072	7459	49	248	4
600	300	2905	10458	96	487	3
700	300	474	1703	2	10	12
700	300	1445	5202	18	89	6
700	300	2417	8701	49	248	4
700	300	3388	12200	96	486	3
800	300	541	1946	2	10	12
800	300	1651	5945	18	89	6
800	300	2763	9945	49	248	4
800	300	3873	13944	96	487	3
900	300	609	2190	2	10	12
900	300	1858	6689	18	89	6
900	300	3108	11188	49	248	4
900	300	4357	15687	96	487	3
1000	300	676	2433	2	10	12
1000	300	2064	7432	18	89	6
1000	300	3453	12431	49	248	4
1000	300	4841	17430	96	487	3
400	400	376	1352	3	11	12
400	400	1147	4130	19	96	6
400	400	1919	6908	53	269	4
400	400	2690	9686	104	528	3
500	400	470	1690	3	11	12
500	400	1434	5163	19	96	6
500	400	2399	8635	53	269	4
500	400	3363	12108	104	528	3
600	400	564	2028	3	11	12
600	400	1721	6195	19	96	6
600	400	2879	10363	53	269	4
600	400	4036	14530	104	528	3
700	400	658	2366	3	11	12
700	400	2008	7228	19	96	6
700	400	3358	12089	53	269	4
700	400	4708	16951	104	528	3
800	400	752	2704	3	11	12
800	400	2294	8260	19	96	6
800	400	3838	13817	53	269	4
800	400	5381	19373	104	528	3
900	400	845	3042	3	11	12
900	400	2581	9293	19	96	6
900	400	4318	15543	53	269	4
900	400	6053	21794	104	528	3



B	H	qv [l/s]	qv [m³/h]	Δpstmin [Pa]		Δqv [±%]
				①	②	
1000	400	939	3380	3	11	12
1000	400	2868	10325	19	96	6
1000	400	4798	17271	53	269	4
1000	400	6726	24216	104	528	3
500	500	545	1959	2	9	13
500	500	1663	5985	17	83	6
500	500	2781	10011	46	231	4
500	500	3899	14037	90	454	4
600	500	654	2351	2	9	13
600	500	1995	7182	17	83	6
600	500	3337	12013	46	231	4
600	500	4678	16844	90	454	4
700	500	762	2743	2	9	13
700	500	2328	8379	17	83	6
700	500	3893	14016	46	231	4
700	500	5458	19652	90	454	4
800	500	871	3135	2	9	13
800	500	2660	9576	17	83	6
800	500	4449	16018	46	231	4
800	500	6238	22459	90	454	4
900	500	980	3526	2	9	13
900	500	2993	10773	17	83	6
900	500	5006	18020	46	231	4
900	500	7018	25267	90	454	4
1000	500	1089	3918	2	9	13
1000	500	3325	11970	17	83	6
1000	500	5562	20022	46	231	4
1000	500	7798	28074	90	454	4
600	600	811	2919	2	10	12
600	600	2477	8918	18	89	6
600	600	4144	14917	49	248	4
600	600	5810	20916	96	487	3
700	600	947	3406	2		12
700	600	2890	10405	18		6
700	600	4834	17403	49		4
700	600	6778	24402	96		3
800	600	1082	3892	2	10	12
800	600	3303	11891	18	89	6
800	600	5525	19889	49	248	4
800	600	7746	27888	96	487	3
900	600	1217	4379	2		12
900	600	3716	13377	18		6
900	600	6216	22376	49		4
900	600	8715	31374	96		3
1000	600	1352	4865	2	10	12
1000	600	4129	14864	18	89	6
1000	600	6906	24862	49	248	4
1000	600	9683	34861	96	487	3
800	800	1502	5407	3	11	12
800	800	4589	16520	19	96	6
800	800	7676	27633	53	269	4

B	H	qv [l/s]	qv [m³/h]	Δpstmin [Pa]		Δqv [±%]
				①	②	
800	800	10762	38746	104	528	3
900	800	1690	6083	3		12
900	800	5163	18585	19		6
900	800	8635	31087	53		4
900	800	12108	43589	104		3
1000	800	1878	6759	3	11	12
1000	800	5736	20650	19	96	6
1000	800	9595	34542	53	269	4
1000	800	13453	48433	104	528	3
1000	1000	2404	8653	3	11	12
1000	1000	7344	26437	20	101	6
1000	1000	12284	44221	56	282	4
1000	1000	17223	62005	109	554	3

1 Basic unit

2 Basic unit with secondary silencer TX

Volume flow ranges and minimum differential pressures

Control component dynamic measuring principle – q_v Standard

Attachments: BUDN, BUDNF, LN0, LK0, XB0, XB4

B	H	qv [l/s]	qv [m³/h]	Δpstmin [Pa]		Δqv [±%]
				①	②	
200	100	42	149	2	10	13
200	100	109	393	11	67	7
200	100	177	636	29	174	5
200	100	244	880	55	333	4
300	100	62	223	2	10	13
300	100	164	589	11	67	7
300	100	265	954	29	174	5
300	100	366	1320	55	333	4
400	100	83	298	2	10	13
400	100	218	786	11	67	7
400	100	354	1273	29	174	5
400	100	489	1761	55	333	4
500	100	104	372	2	10	13
500	100	273	982	11	67	7
500	100	442	1591	29	174	5
500	100	611	2201	55	333	4
600	100	124	446	2	10	13
600	100	327	1178	11	67	7
600	100	530	1909	29	174	5
600	100	733	2641	55	333	4
200	200	83	298	2	8	13
200	200	218	786	11	56	7
200	200	354	1273	29	146	5
200	200	489	1761	55	280	4
300	200	124	446	2	8	13
300	200	327	1178	11	56	7
300	200	530	1909	29	146	5
300	200	733	2641	55	279	4
400	200	166	595	2	8	13
400	200	436	1570	11	56	7



B	H	qv [l/s]	qv [m³/h]	Δpstmin [Pa]		Δqv [±%]
				①	②	
400	200	707	2546	29	146	5
400	200	978	3521	55	279	4
500	200	207	743	2	8	13
500	200	545	1963	11	56	7
500	200	884	3182	29	146	5
500	200	1222	4402	55	280	4
600	200	248	892	2	8	13
600	200	654	2355	11	56	7
600	200	1061	3819	29	146	5
600	200	1467	5282	55	279	4
700	200	289	1040	2	8	13
700	200	763	2747	11	56	7
700	200	1238	4455	29	146	5
700	200	1711	6162	55	279	4
800	200	331	1189	2	8	13
800	200	872	3140	11	56	7
800	200	1414	5092	29	146	5
800	200	1956	7043	55	279	4
300	300	203	730	2	10	12
300	300	536	1928	13	67	7
300	300	869	3127	35	174	5
300	300	1201	4325	66	333	4
400	300	271	973	2	10	12
400	300	714	2571	13	67	7
400	300	1158	4169	35	174	5
400	300	1601	5767	66	333	4
500	300	339	1217	2	10	12
500	300	893	3214	13	67	7
500	300	1448	5212	35	174	5
500	300	2002	7209	66	333	4
600	300	406	1460	2	10	12
600	300	1071	3857	13	67	7
600	300	1737	6253	35	174	5
600	300	2402	8650	66	333	4
700	300	474	1703	2	10	12
700	300	1250	4499	13	67	7
700	300	2027	7296	35	174	5
700	300	2803	10092	66	333	4
800	300	541	1946	2	10	12
800	300	1428	5142	13	67	7
800	300	2316	8338	35	174	5
800	300	3203	11534	66	333	4
900	300	609	2190	2	10	12
900	300	1607	5785	13	67	7
900	300	2606	9381	35	174	5
900	300	3604	12976	66	333	4
1000	300	676	2433	2	10	12
1000	300	1786	6428	13	67	7
1000	300	2895	10423	35	174	5
1000	300	4005	14418	66	333	4
400	400	376	1352	3	11	12



B	H	qv [l/s]	qv [m³/h]	Δpstmin [Pa]		Δqv [±%]
				①	②	
400	400	992	3572	15	72	6
400	400	1609	5792	38	189	5
400	400	2225	8012	71	362	4
500	400	470	1690	3	11	12
500	400	1240	4465	15	72	6
500	400	2011	7240	38	189	5
500	400	2781	10015	71	362	4
600	400	564	2028	3	11	12
600	400	1488	5358	15	72	6
600	400	2413	8688	38	189	5
600	400	3338	12018	71	362	4
700	400	658	2366	3	11	12
700	400	1736	6251	15	72	6
700	400	2816	10136	38	189	5
700	400	3894	14021	71	362	4
800	400	752	2704	3	11	12
800	400	1984	7144	15	72	6
800	400	3218	11584	38	189	5
800	400	4451	16024	71	362	4
900	400	845	3042	3	11	12
900	400	2233	8037	15	72	6
900	400	3620	13033	38	189	5
900	400	5007	18028	71	362	4
1000	400	939	3380	3	11	12
1000	400	2481	8930	15	72	6
1000	400	4023	14481	38	189	5
1000	400	5564	20031	71	362	4
500	500	545	1959	2	9	13
500	500	1438	5176	13	62	7
500	500	2332	8394	32	163	5
500	500	3225	11611	61	311	4
600	500	654	2351	2	9	13
600	500	1726	6212	13	62	7
600	500	2798	10072	32	163	5
600	500	3870	13933	61	311	4
700	500	762	2743	2	9	13
700	500	2013	7247	13	62	7
700	500	3264	11751	32	163	5
700	500	4515	16255	61	311	4
800	500	871	3135	2	9	13
800	500	2301	8282	13	62	7
800	500	3731	13430	32	163	5
800	500	5160	18577	61	311	4
900	500	980	3526	2	9	13
900	500	2588	9317	13	62	7
900	500	4197	15109	32	163	5
900	500	5805	20900	61	311	4
1000	500	1089	3918	2	9	13
1000	500	2876	10353	13	62	7
1000	500	4663	16787	32	163	5
1000	500	6450	23222	61	311	4

B	H	qv [l/s]	qv [m³/h]	Δpstmin [Pa]		Δqv [±%]
				①	②	
600	600	811	2919	2	10	12
600	600	2143	7713	13	67	7
600	600	3474	12507	35	174	5
600	600	4805	17301	66	333	4
700	600	947	3406	2		12
700	600	2500	8999	13		7
700	600	4053	14592	35		5
700	600	5606	20185	66		4
800	600	1082	3892	2	10	12
800	600	2857	10284	13	67	7
800	600	4632	16676	35	174	5
800	600	6407	23068	66	333	4
900	600	1217	4379	2		12
900	600	3214	11570	13		7
900	600	5211	18761	35		5
900	600	7208	25952	66		4
1000	600	1352	4865	2	10	12
1000	600	3571	12855	13	67	7
1000	600	5791	20846	35	174	5
1000	600	8010	28836	66	333	4
800	800	1502	5407	3	11	12
800	800	3969	14288	15	72	6
800	800	6436	23168	38	189	5
800	800	8902	32049	71	362	4
900	800	1690	6083	3		12
900	800	4465	16074	15		6
900	800	7240	26065	38		5
900	800	10015	36056	71		4
1000	800	1878	6759	3	11	12
1000	800	4961	17860	15	72	6
1000	800	8045	28961	38	189	5
1000	800	11128	40062	71	362	4
1000	1000	2404	8653	3	11	12
1000	1000	6351	22865	15	76	6
1000	1000	10299	37077	39	198	5
1000	1000	14246	51289	75	379	4

1 Basic unit

2 Basic unit with secondary silencer TX

Volume flow ranges and minimum differential pressures

Control component static measuring principle

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

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



B	H	qv [l/s]	qv [m³/h]	Δpstmin [Pa]		Δqv [±%]
				①	②	
300	100	366	1320	55	333	4
400	100	83	298	2	10	13
400	100	218	786	11	67	7
400	100	354	1273	29	174	5
400	100	489	1761	55	333	4
500	100	104	372	2	10	13
500	100	273	982	11	67	7
500	100	442	1591	29	174	5
500	100	611	2201	55	333	4
600	100	124	446	2	10	13
600	100	327	1178	11	67	7
600	100	530	1909	29	174	5
600	100	733	2641	55	333	4
200	200	83	298	2	8	13
200	200	218	786	11	56	7
200	200	354	1273	29	146	5
200	200	489	1761	55	280	4
300	200	124	446	2	8	13
300	200	327	1178	11	56	7
300	200	530	1909	29	146	5
300	200	733	2641	55	279	4
400	200	166	595	2	8	13
400	200	436	1570	11	56	7
400	200	707	2546	29	146	5
400	200	978	3521	55	279	4
500	200	207	743	2	8	13
500	200	545	1963	11	56	7
500	200	884	3182	29	146	5
500	200	1222	4402	55	280	4
600	200	248	892	2	8	13
600	200	654	2355	11	56	7
600	200	1061	3819	29	146	5
600	200	1467	5282	55	279	4
700	200	289	1040	2	8	13
700	200	763	2747	11	56	7
700	200	1238	4455	29	146	5
700	200	1711	6162	55	279	4
800	200	331	1189	2	8	13
800	200	872	3140	11	56	7
800	200	1414	5092	29	146	5
800	200	1956	7043	55	279	4
300	300	203	730	2	10	12
300	300	536	1928	13	67	7
300	300	869	3127	35	174	5
300	300	1201	4325	66	333	4
400	300	271	973	2	10	12
400	300	714	2571	13	67	7
400	300	1158	4169	35	174	5
400	300	1601	5767	66	333	4
500	300	339	1217	2	10	12
500	300	893	3214	13	67	7



B	H	qv [l/s]	qv [m³/h]	Δpstmin [Pa]		Δqv [±%]
				①	②	
500	300	1448	5212	35	174	5
500	300	2002	7209	66	333	4
600	300	406	1460	2	10	12
600	300	1071	3857	13	67	7
600	300	1737	6253	35	174	5
600	300	2402	8650	66	333	4
700	300	474	1703	2	10	12
700	300	1250	4499	13	67	7
700	300	2027	7296	35	174	5
700	300	2803	10092	66	333	4
800	300	541	1946	2	10	12
800	300	1428	5142	13	67	7
800	300	2316	8338	35	174	5
800	300	3203	11534	66	333	4
900	300	609	2190	2	10	12
900	300	1607	5785	13	67	7
900	300	2606	9381	35	174	5
900	300	3604	12976	66	333	4
1000	300	676	2433	2	10	12
1000	300	1786	6428	13	67	7
1000	300	2895	10423	35	174	5
1000	300	4005	14418	66	333	4
400	400	376	1352	3	11	12
400	400	992	3572	15	72	6
400	400	1609	5792	38	189	5
400	400	2225	8012	71	362	4
500	400	470	1690	3	11	12
500	400	1240	4465	15	72	6
500	400	2011	7240	38	189	5
500	400	2781	10015	71	362	4
600	400	564	2028	3	11	12
600	400	1488	5358	15	72	6
600	400	2413	8688	38	189	5
600	400	3338	12018	71	362	4
700	400	658	2366	3	11	12
700	400	1736	6251	15	72	6
700	400	2816	10136	38	189	5
700	400	3894	14021	71	362	4
800	400	752	2704	3	11	12
800	400	1984	7144	15	72	6
800	400	3218	11584	38	189	5
800	400	4451	16024	71	362	4
900	400	845	3042	3	11	12
900	400	2233	8037	15	72	6
900	400	3620	13033	38	189	5
900	400	5007	18028	71	362	4
1000	400	939	3380	3	11	12
1000	400	2481	8930	15	72	6
1000	400	4023	14481	38	189	5
1000	400	5564	20031	71	362	4
500	500	545	1959	2	9	13



B	H	qv [l/s]	qv [m³/h]	Δpstmin [Pa]		Δqv [±%]
				①	②	
500	500	1438	5176	13	62	7
500	500	2332	8394	32	163	5
500	500	3225	11611	61	311	4
600	500	654	2351	2	9	13
600	500	1726	6212	13	62	7
600	500	2798	10072	32	163	5
600	500	3870	13933	61	311	4
700	500	762	2743	2	9	13
700	500	2013	7247	13	62	7
700	500	3264	11751	32	163	5
700	500	4515	16255	61	311	4
800	500	871	3135	2	9	13
800	500	2301	8282	13	62	7
800	500	3731	13430	32	163	5
800	500	5160	18577	61	311	4
900	500	980	3526	2	9	13
900	500	2588	9317	13	62	7
900	500	4197	15109	32	163	5
900	500	5805	20900	61	311	4
1000	500	1089	3918	2	9	13
1000	500	2876	10353	13	62	7
1000	500	4663	16787	32	163	5
1000	500	6450	23222	61	311	4
600	600	811	2919	2	10	12
600	600	2143	7713	13	67	7
600	600	3474	12507	35	174	5
600	600	4805	17301	66	333	4
700	600	947	3406	2		12
700	600	2500	8999	13		7
700	600	4053	14592	35		5
700	600	5606	20185	66		4
800	600	1082	3892	2	10	12
800	600	2857	10284	13	67	7
800	600	4632	16676	35	174	5
800	600	6407	23068	66	333	4
900	600	1217	4379	2		12
900	600	3214	11570	13		7
900	600	5211	18761	35		5
900	600	7208	25952	66		4
1000	600	1352	4865	2	10	12
1000	600	3571	12855	13	67	7
1000	600	5791	20846	35	174	5
1000	600	8010	28836	66	333	4
800	800	1502	5407	3	11	12
800	800	3969	14288	15	72	6
800	800	6436	23168	38	189	5
800	800	8902	32049	71	362	4
900	800	1690	6083	3		12
900	800	4465	16074	15		6
900	800	7240	26065	38		5
900	800	10015	36056	71		4

B	H	qv [l/s]	qv [m³/h]	Δp _{stmin} [Pa]		Δqv [±%]
				①	②	
1000	800	1878	6759	3	11	12
1000	800	4961	17860	15	72	6
1000	800	8045	28961	38	189	5
1000	800	11128	40062	71	362	4
1000	1000	2404	8653	3	11	12
1000	1000	6351	22865	15	76	6
1000	1000	10299	37077	39	198	5
1000	1000	14246	51289	75	379	4

1 Basic unit

2 Basic unit with secondary silencer TX

Quick sizing table for sound pressure levels

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

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

Air terminal unit including silencer variants

(total volume flow range of this type)

B	H	qv [l/s]	qv [m³/h]	150 Pa		500 Pa	
				1	2	1	2
200	100	42	149	44	20	56	34
200	100	126	454	48	30	60	39
200	100	211	759	48	n.v.	61	42
200	100	295	1064	48	n.v.	60	n.v.
300	100	62	223	45	21	57	35
300	100	189	681	48	31	60	39
300	100	316	1138	48	n.v.	60	42
300	100	443	1596	47	n.v.	60	n.v.
400	100	83	298	46	22	58	36
400	100	252	908	48	31	60	39
400	100	422	1519	47	n.v.	60	42
400	100	591	2129	47	n.v.	60	n.v.
500	100	104	372	47	23	59	37
500	100	315	1135	48	31	60	40
500	100	527	1898	47	n.v.	60	42
500	100	739	2661	47	n.v.	60	n.v.
600	100	124	446	47	24	60	38
600	100	378	1362	47	31	60	40
600	100	633	2277	47	n.v.	60	42
600	100	886	3193	47	n.v.	59	n.v.
200	200	83	298	46	22	58	45
200	200	252	908	48	29	60	48
200	200	422	1519	47	n.v.	60	47
200	200	591	2129	47	n.v.	60	42
300	200	124	446	47	24	60	46
300	200	378	1362	47	29	60	49
300	200	633	2277	47	n.v.	60	49
300	200	886	3193	47	n.v.	59	43
400	200	166	595	48	24	60	47



B	H	qv [l/s]	qv [m³/h]	150 Pa		500 Pa	
				1	2	1	2
400	200	504	1816	47	29	60	50
400	200	843	3036	47	n.v.	59	50
400	200	1182	4257	46	n.v.	59	44
500	200	207	743	47	24	60	48
500	200	630	2269	47	29	59	51
500	200	1054	3796	47	n.v.	59	50
500	200	1478	5322	46	n.v.	59	45
600	200	248	892	47	24	60	48
600	200	756	2723	47	29	59	52
600	200	1265	4555	46	n.v.	59	51
600	200	1773	6386	46	n.v.	59	46
700	200	289	1040	47	24	59	38
700	200	883	3177	47	29	59	41
700	200	1476	5313	46	n.v.	59	42
700	200	2069	7450	46	n.v.	59	43
800	200	331	1189	47	24	59	49
800	200	1009	3631	47	29	59	53
800	200	1687	6073	46	n.v.	59	52
800	200	2365	8515	46	n.v.	58	47
300	300	203	730	48	25	60	48
300	300	619	2229	47	29	59	51
300	300	1036	3729	47	n.v.	59	49
300	300	1452	5228	46	n.v.	59	40
400	300	271	973	47	25	60	49
400	300	826	2973	47	30	59	52
400	300	1381	4972	46	n.v.	59	50
400	300	1936	6972	46	n.v.	59	41
500	300	339	1217	47	25	59	50
500	300	1032	3716	47	30	59	53
500	300	1727	6216	46	n.v.	59	51
500	300	2420	8715	46	n.v.	58	42
600	300	406	1460	47	25	59	50
600	300	1239	4459	46	30	59	53
600	300	2072	7459	46	n.v.	59	52
600	300	2905	10458	46	n.v.	58	43
700	300	474	1703	47	25	59	51
700	300	1445	5202	46	30	59	54
700	300	2417	8701	46	n.v.	58	52
700	300	3388	12200	45	n.v.	58	43
800	300	541	1946	47	25	59	51
800	300	1651	5945	46	30	59	54
800	300	2763	9945	46	n.v.	58	53
800	300	3873	13944	45	n.v.	58	44
900	300	609	2190	47	25	59	52
900	300	1858	6689	46	30	58	55
900	300	3108	11188	46	n.v.	58	53
900	300	4357	15687	45	n.v.	58	44
1000	300	676	2433	46	25	59	52



B	H	qv [l/s]	qv [m³/h]	150 Pa		500 Pa	
				1	2	1	2
1000	300	2064	7432	46	30	58	55
1000	300	3453	12431	45	n.v.	58	54
1000	300	4841	17430	45	n.v.	58	45
400	400	376	1352	47	25	59	50
400	400	1147	4130	46	30	59	53
400	400	1919	6908	46	n.v.	59	51
400	400	2690	9686	46	n.v.	58	n.v.
500	400	470	1690	47	25	59	51
500	400	1434	5163	46	30	59	54
500	400	2399	8635	46	n.v.	58	52
500	400	3363	12108	45	n.v.	58	n.v.
600	400	564	2028	47	25	59	51
600	400	1721	6195	46	30	58	54
600	400	2879	10363	46	n.v.	58	52
600	400	4036	14530	45	n.v.	58	n.v.
700	400	658	2366	46	25	59	52
700	400	2008	7228	46	30	58	55
700	400	3358	12089	45	n.v.	58	53
700	400	4708	16951	45	n.v.	58	n.v.
800	400	752	2704	46	25	59	52
800	400	2294	8260	46	30	58	55
800	400	3838	13817	45	n.v.	58	53
800	400	5381	19373	45	n.v.	58	n.v.
900	400	845	3042	46	25	59	53
900	400	2581	9293	46	30	58	56
900	400	4318	15543	45	n.v.	58	54
900	400	6053	21794	45	n.v.	58	n.v.
1000	400	939	3380	46	25	58	53
1000	400	2868	10325	46	30	58	56
1000	400	4798	17271	45	n.v.	58	54
1000	400	6726	24216	45	n.v.	58	n.v.
500	500	545	1959	47	25	59	51
500	500	1663	5985	46	30	58	54
500	500	2781	10011	46	n.v.	58	53
500	500	3899	14037	45	n.v.	58	46
600	500	654	2351	46	25	59	52
600	500	1995	7182	46	30	58	55
600	500	3337	12013	45	n.v.	58	54
600	500	4678	16844	45	n.v.	58	47
700	500	762	2743	46	25	59	52
700	500	2328	8379	46	30	58	56
700	500	3893	14016	45	n.v.	58	54
700	500	5458	19652	45	n.v.	58	47
800	500	871	3135	46	25	58	53
800	500	2660	9576	46	30	58	56
800	500	4449	16018	45	n.v.	58	55
800	500	6238	22459	45	n.v.	58	48
900	500	980	3526	46	25	58	53



B	H	qv [l/s]	qv [m³/h]	150 Pa		500 Pa	
				1	2	1	2
900	500	2993	10773	46	30	58	56
900	500	5006	18020	45	n.v.	58	55
900	500	7018	25267	45	n.v.	57	48
1000	500	1089	3918	46	25	58	54
1000	500	3325	11970	45	30	58	57
1000	500	5562	20022	45	n.v.	58	56
1000	500	7798	28074	45	n.v.	57	48
600	600	811	2919	46	25	59	53
600	600	2477	8918	46	30	58	56
600	600	4144	14917	45	n.v.	58	54
600	600	5810	20916	45	n.v.	58	45
700	600	947	3406	46	58		
700	600	2890	10405	46	58		
700	600	4834	17403	45	58		
700	600	6778	24402	45	58		
800	600	1082	3892	46	25	58	54
800	600	3303	11891	45	30	58	57
800	600	5525	19889	45	n.v.	58	55
800	600	7746	27888	45	n.v.	57	46
900	600	1217	4379	46	58		
900	600	3716	13377	45	58		
900	600	6216	22376	45	58		
900	600	8715	31374	45	57		
1000	600	1352	4865	46	26	58	54
1000	600	4129	14864	45	30	58	57
1000	600	6906	24862	45	n.v.	57	56
1000	600	9683	34861	45	n.v.	57	47
800	800	1502	5407	46	26	58	55
800	800	4589	16520	45	30	58	58
800	800	7676	27633	45	n.v.	57	56
800	800	10762	38746	44	n.v.	57	n.v.
900	800	1690	6083	46	58		
900	800	5163	18585	45	58		
900	800	8635	31087	45	57		
900	800	12108	43589	44	57		
1000	800	1878	6759	46	26	58	56
1000	800	5736	20650	45	30	57	58
1000	800	9595	34542	45	n.v.	57	57
1000	800	13453	48433	44	n.v.	57	n.v.
1000	1000	2404	8653	45	27	58	56
1000	1000	7344	26437	45	30	57	59
1000	1000	12284	44221	44	n.v.	57	57
1000	1000	17223	62005	44	n.v.	57	n.v.

Air-regenerated noise L_{PA} [dB] at static differential pressure Δ_{pst} of 150 or 500 Pa

1 Basic unit

2 Basic unit with secondary silencer TX

n.v.: Specified static pressure differential Δ_{pst} is lower than the required minimum pressure differential Δ_{pstmin} .

**Quick sizing table for case-radiated noise L_{PA}**

Controller including acoustic cladding

(total flow rate range of type)

B	H	qv [l/s]	qv [m³/h]	150 Pa		500 Pa	
				①	②	①	②
200	100	42	149	30	18	42	30
200	100	126	454	35	22	47	34
200	100	211	759	37	24	49	36
200	100	295	1064	38	25	50	38
300	100	62	223	31	19	44	31
300	100	189	681	36	23	48	36
300	100	316	1138	38	25	50	38
300	100	443	1596	39	27	52	39
400	100	83	298	32	20	45	32
400	100	252	908	37	24	49	37
400	100	422	1519	39	27	51	39
400	100	591	2129	40	28	53	40
500	100	104	372	33	21	46	33
500	100	315	1135	38	25	50	37
500	100	527	1898	40	27	52	40
500	100	739	2661	41	29	53	41
600	100	124	446	34	21	46	34
600	100	378	1362	38	26	51	38
600	100	633	2277	40	28	53	40
600	100	886	3193	42	29	54	42
200	200	83	298	32	20	45	32
200	200	252	908	37	24	49	37
200	200	422	1519	39	27	51	39
200	200	591	2129	40	28	53	40
300	200	124	446	34	21	46	34
300	200	378	1362	38	26	51	38
300	200	633	2277	40	28	53	40
300	200	886	3193	42	29	54	42
400	200	166	595	35	22	47	35
400	200	504	1816	39	27	52	39
400	200	843	3036	41	29	54	41
400	200	1182	4257	43	30	55	43
500	200	207	743	36	23	48	35
500	200	630	2269	40	28	52	40
500	200	1054	3796	42	30	54	42
500	200	1478	5322	44	31	56	43
600	200	248	892	36	24	49	36
600	200	756	2723	41	28	53	41
600	200	1265	4555	43	30	55	43
600	200	1773	6386	44	32	56	44
700	200	289	1040	37	24	49	37
700	200	883	3177	41	29	54	41
700	200	1476	5313	43	31	56	43
700	200	2069	7450	45	32	57	45
800	200	331	1189	37	25	50	37
800	200	1009	3631	42	29	54	42
800	200	1687	6073	44	31	56	44
800	200	2365	8515	45	33	57	45



B	H	qv [l/s]	qv [m³/h]	150 Pa		500 Pa	
				①	②	①	②
300	300	203	730	36	23	48	35
300	300	619	2229	40	28	52	40
300	300	1036	3729	42	30	54	42
300	300	1452	5228	44	31	56	43
400	300	271	973	37	24	49	36
400	300	826	2973	41	29	53	41
400	300	1381	4972	43	31	55	43
400	300	1936	6972	45	32	57	44
500	300	339	1217	37	25	50	37
500	300	1032	3716	42	29	54	42
500	300	1727	6216	44	31	56	44
500	300	2420	8715	45	33	58	45
600	300	406	1460	38	26	50	38
600	300	1239	4459	43	30	55	42
600	300	2072	7459	45	32	57	44
600	300	2905	10458	46	33	58	46
700	300	474	1703	39	26	51	38
700	300	1445	5202	43	31	55	43
700	300	2417	8701	45	33	57	45
700	300	3388	12200	47	34	59	46
800	300	541	1946	39	27	51	39
800	300	1651	5945	44	31	56	43
800	300	2763	9945	46	33	58	45
800	300	3873	13944	47	34	59	47
900	300	609	2190	40	27	52	39
900	300	1858	6689	44	31	56	44
900	300	3108	11188	46	34	58	46
900	300	4357	15687	47	35	60	47
1000	300	676	2433	40	27	52	40
1000	300	2064	7432	44	32	57	44
1000	300	3453	12431	46	34	59	46
1000	300	4841	17430	48	35	60	48
400	400	376	1352	38	25	50	38
400	400	1147	4130	42	30	55	42
400	400	1919	6908	44	32	57	44
400	400	2690	9686	46	33	58	45
500	400	470	1690	39	26	51	38
500	400	1434	5163	43	31	55	43
500	400	2399	8635	45	33	57	45
500	400	3363	12108	46	34	59	46
600	400	564	2028	39	27	52	39
600	400	1721	6195	44	31	56	43
600	400	2879	10363	46	33	58	46
600	400	4036	14530	47	35	59	47
700	400	658	2366	40	27	52	40
700	400	2008	7228	44	32	57	44
700	400	3358	12089	46	34	59	46
700	400	4708	16951	48	35	60	47
800	400	752	2704	40	28	53	40
800	400	2294	8260	45	32	57	45
800	400	3838	13817	47	34	59	47



B	H	qv [l/s]	qv [m³/h]	150 Pa		500 Pa	
				①	②	①	②
800	400	5381	19373	48	36	60	48
900	400	845	3042	41	28	53	40
900	400	2581	9293	45	33	57	45
900	400	4318	15543	47	35	59	47
900	400	6053	21794	49	36	61	48
1000	400	939	3380	41	29	53	41
1000	400	2868	10325	46	33	58	45
1000	400	4798	17271	48	35	60	47
1000	400	6726	24216	49	36	61	49
500	500	545	1959	39	27	51	39
500	500	1663	5985	44	31	56	43
500	500	2781	10011	46	33	58	45
500	500	3899	14037	47	34	59	47
600	500	654	2351	40	27	52	40
600	500	1995	7182	44	32	56	44
600	500	3337	12013	46	34	59	46
600	500	4678	16844	48	35	60	47
700	500	762	2743	40	28	53	40
700	500	2328	8379	45	32	57	45
700	500	3893	14016	47	34	59	47
700	500	5458	19652	48	36	60	48
800	500	871	3135	41	28	53	41
800	500	2660	9576	45	33	57	45
800	500	4449	16018	47	35	60	47
800	500	6238	22459	49	36	61	48
900	500	980	3526	41	29	53	41
900	500	2993	10773	46	33	58	45
900	500	5006	18020	48	35	60	47
900	500	7018	25267	49	37	61	49
1000	500	1089	3918	42	29	54	41
1000	500	3325	11970	46	33	58	46
1000	500	5562	20022	48	36	60	48
1000	500	7798	28074	49	37	62	49
600	600	811	2919	41	28	53	40
600	600	2477	8918	45	32	57	45
600	600	4144	14917	47	35	59	47
600	600	5810	20916	48	36	61	48
700	600	947	3406	41	29	53	41
700	600	2890	10405	46	33	58	45
700	600	4834	17403	48	35	60	47
700	600	6778	24402	49	36	61	49
800	600	1082	3892	42	29	54	41
800	600	3303	11891	46	33	58	46
800	600	5525	19889	48	36	60	48
800	600	7746	27888	49	37	62	49
900	600	1217	4379	42	29	54	42
900	600	3716	13377	46	34	59	46
900	600	6216	22376	48	36	61	48
900	600	8715	31374	50	37	62	50
1000	600	1352	4865	42	30	55	42
1000	600	4129	14864	47	34	59	47

B	H	qv [l/s]	qv [m³/h]	150 Pa		500 Pa	
				①	②	①	②
1000	600	6906	24862	49	36	61	49
1000	600	9683	34861	50	38	62	50
800	800	1502	5407	43	30	55	42
800	800	4589	16520	47	35	59	47
800	800	7676	27633	49	37	61	49
800	800	10762	38746	51	38	63	50
900	800	1690	6083	43	31	55	43
900	800	5163	18585	48	35	60	47
900	800	8635	31087	50	37	62	49
900	800	12108	43589	51	38	63	51
1000	800	1878	6759	43	31	56	43
1000	800	5736	20650	48	35	60	48
1000	800	9595	34542	50	37	62	50
1000	800	13453	48433	51	39	64	51
1000	1000	2404	8653	44	32	57	44
1000	1000	7344	26437	49	36	61	49
1000	1000	12284	44221	51	38	63	51
1000	1000	17223	62005	52	40	64	52

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

1 Basic unit

2 Basic unit with acoustic cladding

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

Note:

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

Specification text

This specification text describes one variant of the product and applies to many applications. Texts for variants can be generated with our Easy Product Finder design programme.

Specification text

Rectangular VAV terminal units for variable and constant air volume systems, suitable for supply or extract air, available in 39 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. 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
- Shafts made of galvanised steel
- Damper blades and differential pressure sensor made of aluminium
- Gears made of anti-static plastic (ABS), resistant to temperatures up to 50 °C
- Plastic plain bearings

Connection type

- Flanges on both ends, suitable for duct connection

Technical data

- Nominal sizes: 200 × 100 to 1000 × 1000 mm
- Volume flow rate range: 42 – 10454 l/s or 149 – 37635 m³/h
- Minimum differential pressure: up to 109 Pa (without secondary silencer)
- Maximum differential pressure: 1000 Pa
- Casing air leakage to EN 1751, class B
- Closed blade air leakage to EN 1751, Class 1 (B + H ≥ 600 mm)

Equivalence criteria

- Declaration of Hygiene Conformity in accordance with VDI 6022, Part 1 (01/2018), ÖNORM H 6020 (02/2007) and ÖNORM H 6021 (09/2003)

- Complies with the hygiene requirements of EN 16798 Part 3, VDI 6022 Sheet 1 and DIN 1946 Part 4.
- Acoustic data determined in accordance with ÖNORM EN ISO 5135:1999
- Setting the volume flows without adjustment device via a qvmin and qvmax potentiometer
- Electrical connections with screw terminals; no additional terminal blocks required
- A test report documenting factory parameterisation, functional testing and adjustment under airflow, based on reference measurements carried out on a regularly validated test rig in accordance with DIN EN ISO 9001, is available

Specification text attachment

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

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

Sizing data

- q_v [m³/h]
- Δ_{pst} [Pa]

Air-regenerated noise

- L_{PA} [dB(A)]

Casing-radiated noise

- L_{PA} [dB(A)]

Life cycle assessment

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



Order code

Order code for volume flow control (with Easy controller)

TVJ – D / 900 × 300 / Easy

1 2 4 5

1 Type

TVJ VAV terminal unit

2 Acoustic cladding

No entry: none

D with acoustic cladding

4 Nominal size [mm]

B × H

5 Attachments (control component)

Easy Volume flow controller, dynamic, analogue interface, setting of q_{vmin} and q_{vmax} with potentiometers (provided on site)

Order example: TVJ-D/500×400/Easy

Acoustic cladding

With

Material

Galvanised sheet steel

Nominal size

500 × 400 mm

Attachments (control components)

Easy controller; volume flow controller, dynamic, analogue interface, setting of q_{vmin} and q_{vmax} with potentiometers

Order code for volume flow control (with VARYCONTROL attachment)

TVJ – D – P1 / 600 × 400 / XD4 / V 0 / 200 – 900 [m³/h] / NO

1 2 3 4 5 7 8 9 10

1 Type

TVJ VAV terminal unit

2 Acoustic cladding

No entry: none

D with acoustic cladding

3 Material

No entry: galvanised sheet steel

P1 Powder-coated RAL 7001 (silver grey)

4 Nominal size [mm]

B × H

5 Attachments (control component)

For example

BC0 Compact controller

XD4 Universal controller (VARYCONTROL)

7 Operating mode

F Constant value mode, one setpoint value (no external switch contact)

V Variable operation (adjustable setpoint value range)

8 Signal voltage range

For the actual and setpoint value signals

0 0 – 10 V DC

2 2 – 10 V DC

9 Operating values for factory setting

Volume flow rate [m³/h or l/s]

q_{Vconst} (with operating mode F)

$q_{Vmin} - q_{Vmax}$ (with operating mode V)

10 Damper blade position

Only with spring return actuators

NO power off to open (Normally Open)

NC power off to close (Normally Closed)

Order example: TVJ/400×200/BC0/V0/800–2000 m³/h

Acoustic cladding

Without

Material

Galvanised sheet steel

Nominal size

400 × 200 mm

Attachments (control components)

Compact controller, dynamic transducer, analogue or MP bus interface

Operating mode

Variable operation with setpoint value range $q_{Vmin} - q_{Vmax}$

Signal voltage range

0 – 10 V DC

Operating values

$q_{Vmin} = 800 \text{ m}^3/\text{h}$

$q_{Vmax} = 2000 \text{ m}^3/\text{h}$

Order code volume flow controller (with TROX UNIVERSAL attachment)

TVJ – D – P1 / 600 × 400 / TUNF / RS / M / 0 / UMZ / ... / NC

1 2 3 4 5 6 7 8 9 10 11

1 Type

TVJ VAV terminal unit

2 Acoustic cladding

No entry: none

D with acoustic cladding

3 Material

No entry: galvanised sheet steel

P1 Powder-coated RAL 7001 (silver grey)

4 Nominal size [mm]

B × H

5 Attachments (control component)

TROX UNIVERSAL controller with

TUN Actuator (150 s)

TUNF Spring return actuator (150 s)

TUS Fast-running actuator (3 s)

TUSD Fast-running actuator (3 s), with digital communication interface (TROX HPD)

6 Equipment function

Room control

RS Supply air controller (Room Supply)

RE Extract air controller (Room Extract)

7 Operating mode

F Single controller, fixed set value

M Single controller or room master, variable setpoint value

S Slave controller (only with room solutions)

8 Signal voltage range

0 0 – 10 V DC

2 2 – 10 V DC

9 Expansion modules

Option 1: Power supply

No entry: 24 V AC/DC supply

T with EM-TRF for 230 V AC mains supply

U with EM-TRF-USV (including battery pack) for uninterruptible 230 V AC power supply (UPS)

Option 2: Digital communication interface

No entry: none

B with EM-BAC-MOD for BACnet MS/TP

M with EM-BAC-MOD for Modbus RTU

I with EM-IP for BACnet IP, Modbus IP and web server

R with EM-IP (including real time clock, RTC) for BACnet IP, Modbus IP and web server

Option 3: Automatic zero point correction

No entry: none

Z with EM-AUTOZERO, solenoid valve for automatic zero point correction

10 Operating values for factory setting

Volume flow rate [m³/h or l/s]

For operating mode F

q_{vconst} : constant volume flow rate¹

For operating mode M

q_{vmin} : minimum volume flow rate^{1, 2}

q_{vmax} : maximum volume flow rate^{1, 2}

Other parameters are only relevant for the room master as part of a room solution³; for single controllers enter 0

q_{vconst_Supply} : constant supply air (room value)

$q_{vconst_Extract}$: constant extract air (room value)

q_{vDiff} : supply air/extract air difference (room value)

For operating mode S

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

For volume flow rate operating values please note:

¹ Single controller: q_{vmin} , q_{vmax} or q_{vconst} apply to the controller

² Room solutions: q_{vmin} , q_{vmax} , $q_{vconst_Supply/Extract}$ apply to the room

³ For more information on room solutions with several directly connected TROX UNIVERSAL controllers (Plug&Play) and for order examples, please refer to the product data sheet

11 Damper blade position

Only with spring return actuators

NO De-energised OPEN (Normally Open)

NC De-energised CLOSED (Normally Closed)

Useful additions

Optional room control panel

CP-TOUCH with Touch display

Order example: TVJ-P1/600×400/TUN/RS/M/0/Z/0/5200/0/0/0 m³/h

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

Order code for differential pressure control (with VARYCONTROL attachment)

TVJ – D – P1 / 600 × 400 / XF4 / PDS / V 0 / 300 – 500 [Pa] / NO

1 2 3 4 5 6 7 8 9 10

1 Type

TVJ VAV terminal unit

2 Acoustic cladding

No entry: none

D with acoustic cladding

3 Material

No entry: galvanised sheet steel

P1 Powder-coated RAL 7001 (silver grey)

4 Nominal size [mm]

B × H

5 Attachments (control component)

For example

XF0 Compact controller for duct pressure

XF4 Universal controller for duct pressure control

(VARYCONTROL)

6 Equipment function/Installation location

PDS Duct pressure controller – supply air (Pressure Duct Supply)

PDE Duct pressure controller – extract air (Pressure Duct Extract)

PRS Room pressure controller – supply air (Pressure Room Supply)

PRE Room pressure controller – extract air (Pressure Room Extract)

7 Operating mode

F Constant value mode, one setpoint value (no external switch contact)

V Variable operation (adjustable setpoint value range)

8 Signal voltage range

For the actual and setpoint value signals

0 0 – 10 V DC

2 2 – 10 V DC

9 Operating values for factory setting

Differential pressure [Pa]

For duct pressure control, enter the differential pressure [Pa] as an absolute value.

Δp_{const} (with operating mode F)

$\Delta p_{\text{min}} - \Delta p_{\text{max}}$ (with operating mode V)

10 Damper blade position

Only with spring return actuators

NO power off to open (Normally Open)

NC power off to close (Normally Closed)

Order example: TVJ-D/500×400/XF4/PDS/F0/450 Pa/NC

Acoustic cladding

Material

Nominal size

Attachments (control components)

Equipment function

Operating mode

Signal voltage range

Operating values

Damper blade position

With

Galvanised sheet steel

500 × 400 mm

VARYCONTROL Universal controller for duct pressure; analogue interface, spring return actuator

Duct pressure control, supply air

Constant value (one setpoint value)

0 – 10 V DC

$\Delta p_{\text{const}} = 450 \text{ Pa}$

Power off to CLOSE

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

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

1 Type

TVJ VAV terminal unit

2 Acoustic cladding

No entry: none

D with acoustic cladding

3 Material

No entry: galvanised sheet steel

P1 Powder-coated RAL 7001 (silver grey)

4 Nominal size [mm]

B × H

5 Attachments (control component)

TROX UNIVERSAL controller with

TUN Actuator (150 s)

TUNF Spring return actuator (150 s)

TUS Fast-running actuator (3 s)

TUSD Fast-running actuator (3 s), with digital communication interface (TROX HPD)

6 Equipment function

Pressure control

PDS Duct pressure controller – supply air (Pressure Duct Supply)

PDE Duct pressure controller – extract air (Pressure Duct Extract)

PRS Room pressure controller – supply air (Pressure Room Supply)

PRE Room pressure controller – extract air (Pressure Room Extract)

7 Operating mode

MFP Single controller or room master, constant pressure setpoint

MVP Single controller or room master, variable pressure setpoint with room solutions only:

SFP Slave, constant pressure setpoint

SVP Slave, variable pressure setpoint

8 Signal voltage range

0 0 – 10 V DC

2 2 – 10 V DC

9 Expansion modules

Option 1: Power supply

No entry: 24 V AC/DC

T with EM-TRF for 230 V AC mains supply

U with EM-TRF-USV (including battery pack) for uninterruptible 230 V AC power supply (UPS)

Option 2: Digital communication interface

No entry: none

B with EM-BAC-MOD for BACnet MS/TP

M with EM-BAC-MOD for Modbus RTU

Order example: TVJ-D-P1/200×100/TUSD/PRE/SFP/2/-20Pa

Acoustic cladding

Material

Nominal size

Attachments (control component)

Equipment function

Effective pressure setting

Signal voltage range

I with EM-IP for BACnet IP, Modbus IP and web server

R With EM-IP (including real time clock, RTC) for BACnet IP, Modbus IP and web server

Option 3: Volume flow rate measurement

No entry: none

V with EM-V for volume flow rate measurement at the differential pressure controller

Option 4: Automatic zero point correction

No entry: none

Z with EM-AUTOZERO solenoid valve for automatic zero point correction (only in combination with EM-V)

10 Operating values for factory setting

Volume flow rate [m³/h or l/s], pressure [Pa]

For operating mode MFP and SFP

Δp_{const} : constant differential pressure

For operating mode MVP and SVP

Δp_{min} : minimum differential pressure

Δp_{max} : maximum differential pressure

Other parameters for operating modes MFP and MVP

Only relevant for the room master as part of a room solution¹; for single controllers enter 0

q_{vmin} : minimum volume flow rate (room value)

q_{vmax} : maximum volume flow rate (room value)

q_{vconst_Supply} : constant supply air (room value)

$q_{vconst_Extract}$: constant extract air (room value)

q_{vDiff} : supply air/extract air difference (room value)

Please note

¹ For more information on room solutions with several directly connected TROX UNIVERSAL controllers (Plug&Play) and for order examples, please refer to the product data sheet

11 Damper blade position

Only with spring return actuators

NO Power off to open (Normally Open)

NC Power off to close (Normally Closed)

Useful additions

Differential pressure transducers required for room or duct pressure control have to be ordered separately or provided by others, e.g.

PT-699 Differential pressure transducer for room pressure control

PT-699-DUCT Differential pressure transducers for duct pressure control, including duct pressure measurement kit Optional room control panel

CP-TOUCH with Touch display

With

Powder-coated RAL 7001, silver grey

200 × 100 mm

TROX UNIVERSAL controller, fast-running actuator (3 s) with digital communication interface (TROX HPD)

Room pressure control, extract air

Slave, constant pressure control

2 – 10 V DC



Operating values

$\Delta_{pconst} = -20 \text{ Pa}$

Order code for room control (with EASYLAB attachment)

TVJ – D – P1 / 600×400 / ELAB / S / RS / UMZ / LAB / ...

1	2	3	4	5	6	7	9	10	11
---	---	---	---	---	---	---	---	----	----

1 Type

TVJ VAV terminal unit

2 Acoustic cladding

No entry: none

D with acoustic cladding

3 Material

No entry: Galvanised sheet steel

P1 Powder-coated RAL 7001 (silver grey)

4 Nominal size [mm]

B × H

5 Attachments (control component)

ELAB EASYLAB controller TCU3

6 Actuators

S Fast-running actuator (3 s)

SD Fast-running actuator (3 s), with digital communication interface (TROX HPD)

7 Equipment function

Room control

RS Supply air controller (Room Supply)

RE Extract air controller (Room Extract)

PC Room pressure controller (Pressure Control)

9 Expansion modules

Option 1: Power supply

No entry: 24 V AC/DC supply

T with EM-TRF for 230 V AC mains supply

U with EM-TRF-USV (including battery pack) for uninterruptible 230 V AC power supply (UPS)

Option 2: Digital communication interface

No entry: none

B with EM-BAC-MOD for BACnet MS/TP

M with EM-BAC-MOD for Modbus RTU

I with EM-IP for BACnet IP, Modbus IP and web server

R with EM-IP (including real time clock, RTC) for BACnet IP, Modbus IP and web server

Option 3: Automatic zero-point adjustment

No entry: none

Z with EM-AUTOZERO, solenoid valve for automatic zero point correction

10 Additional functions

Without room management function

LAB extract air led system (Laboratory)

CLR supply air led system (Clean Room)

Room management function is active

LAB-RMF extract air led system (Laboratory) - with room management function (RMF)

CLR-RMF supply air led system (Clean Room) with room management function (RMF)

11 Operating values for factory setting

Volume flow rate [m³/h or l/s], pressure [Pa]

Only required when room management function is active; total room extract air/supply air

q_{v1}: standard mode

q_{v2}: reduced operation

q_{v3}: increased operation

q_{v4}: constant supply air

q_{v5}: constant extract air

q_{v6}: Supply air/extract air difference

Δp_{set}: setpoint pressure (only with differential pressure control)

Useful additions

Room control panel (only for units with RMF)

CP-TOUCH-4.3 Touch control panel with 4.3"

Differential pressure transducers required for room pressure control have to be ordered separately or provided by the client, e.g.

PT-699 Measuring range ±50 Pa or ±100 Pa

PT-GB604 Measuring range ±100 Pa

Order example: TVJ/900×300/ELAB/SD/Z/LAB

Acoustic cladding

Without

Nominal size

900 × 300 mm

Attachments (control components)

EASYLAB controller TCU3

Actuator

Fast-running actuator (3 s) with digital communication interface (TROX HPD)

Equipment function

Supply air control (Room Supply)

Expansion modules

With expansion module EM-AUTOZERO with solenoid valve for automatic zero point correction

Additional functions

Extract air led system (laboratories)

Order code for single operation (with EASYLAB attachment)

TVJ – D / P1 / 600×400 / ELAB / S / EC – E0 / UMZ / ...

1 2 3 4 5 6 7 8 9 11

1 Type

TVJ VAV terminal unit

2 Acoustic cladding

No entry: none

D with acoustic cladding

3 Material

No entry: galvanised sheet steel

P1 Powder-coated RAL 7001 (silver grey)

4 Nominal size [mm]

B × H

5 Attachments (control component)

ELAB EASYLAB controller TCU3

6 Actuators

S Fast-running actuator (3 s)

SD Fast-running actuator (3 s), with digital communication interface (TROX HPD)

7 Equipment function

Single operation

SC Single controller – supply air (Supply Controller)

EC Single controller – extract air (Extract Controller)

8 External volume flow rate setting

E0 Variable, signal voltage range 0 – 10 V DC

E2 Variable, signal voltage range 2 – 10 V DC

2P 2 switching steps (for one switch contact, by others)

3P 3 switching steps (for two switch contacts, by others)

F Constant value mode, one setpoint value (no external switch contact)

9 Expansion modules

Option 1: Power supply

No entry: 24 V AC/DC

T with EM-TRF for 230 V AC mains supply

U with EM-TRF-USV (including battery pack) for uninterruptible 230 V AC power supply (UPS)

Option 2: Digital communication interface

No entry: none

B with EM-BAC-MOD for BACnet MS/TP

M with EM-BAC-MOD for Modbus RTU

I with EM-IP for BACnet IP, Modbus IP and web server

R with EM-IP (including real time clock, RTC) for BACnet IP, Modbus IP and web server

Option 3: Automatic zero point correction

No entry: none

Z with EM-AUTOZERO solenoid valve for automatic zero point correction

11 Operating values for factory setting

Volume flow rate [m³/h or l/s]

Depends on external volume flow rate default setting

E0: $q_{vmin} - q_{vmax}$

E2: $q_{vmin} - q_{vmax}$

2P: q_{v1}/q_{v2}

3P: $q_{v1}/q_{v2}/q_{v3}$

F: q_{v1}

Order example: TVJ-P1/200 x 100/ELAB/S/EC/F/500 m³/h

Acoustic cladding

Without

Material

Galvanised steel, powder-coated RAL 7001

Nominal size

200 × 100 mm

Attachments (control components)

EASYLAB controller TCU3

Actuator

Fast-running actuator (3 s)

Equipment function

Single controller, extract air

Volume flow rate setting

Constant flow rate value, no signalling required

Operating value

$q_{v1} = 500 \text{ m}^3/\text{h}$

Variants

VAV terminal unit, variant TVJ



- VAV terminal unit for variable volume flow control

VAV terminal unit, variant TVJ-D



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

Material

Standard construction

Order code detail	Part	Material
-	Casing	Galvanised sheet steel
	Differential pressure sensor	Aluminium
	Plain bearings	Plastic, ABS
	Damper blade	Aluminium
	Shaft	Galvanised steel
	Gears	Plastic, ABS

Powder-coated construction

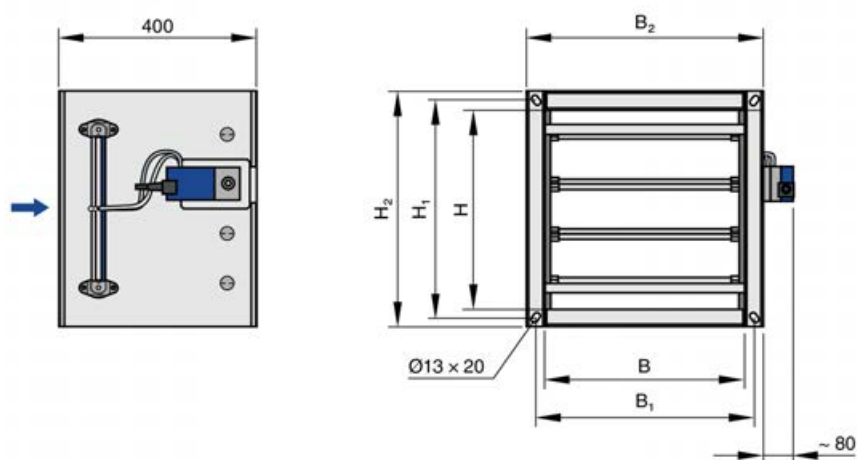
Order code detail	Part	Material
P1	Casing	Galvanised sheet steel - powder coated, RAL 7001, silver grey
	Differential pressure sensor	Aluminium - powder coated, RAL 7001, silver grey
	Plain bearings	Plastic, ABS
	Damper blade	Aluminium - powder coated, RAL 7001, silver grey
	Shaft	Galvanised steel
	Gears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

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

Dimensions and weight

Terminal unit without acoustic cladding (TVJ)



Note:

The illustration shows control component type Easy, Compact.

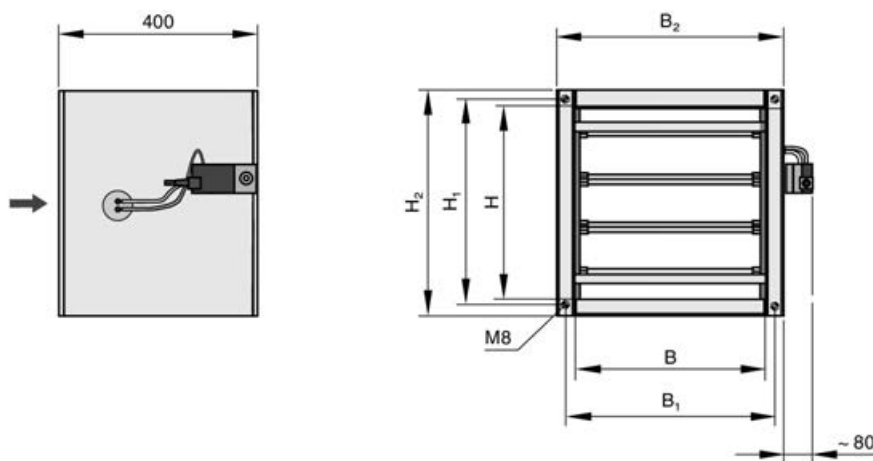
For exact dimensions see section 'Space required for commissioning and maintenance'.

Dimensions/weights of TVJ

NS (B × H)	B ₁	B ₂	H ₁	Hydrogen	Kg
200 × 100	234	276	134	176	6
300 × 100	334	376	134	176	7
400 × 100	434	476	134	176	8
500 × 100	534	576	134	176	9
600 × 100	634	676	134	176	10
200 × 200	234	276	234	276	9
300 × 200	334	376	234	276	10
400 × 200	434	476	234	276	11
500 × 200	534	576	234	276	12
600 × 200	634	676	234	276	13
700 × 200	734	776	234	276	14
800 × 200	834	876	234	276	15
300 × 300	334	376	334	376	10
400 × 300	434	476	334	376	11
500 × 300	534	576	334	376	12
600 × 300	634	676	334	376	13
700 × 300	734	776	334	376	15
800 × 300	834	876	334	376	16
900 × 300	934	976	334	376	18
1000 × 300	1034	1076	334	376	19
400 × 400	434	476	434	476	14
500 × 400	534	576	434	476	15
600 × 400	634	676	434	476	16
700 × 400	734	776	434	476	17
800 × 400	834	876	434	476	18
900 × 400	934	976	434	476	21
1000 × 400	1034	1076	434	476	20
500 × 500	534	576	534	576	19
600 × 500	634	676	534	576	20
700 × 500	734	776	534	576	22
800 × 500	834	876	534	576	23

NS (B × H)	B ₁	B ₂	H ₁	Hydrogen	Kg
900 × 500	934	976	534	576	25
1000 × 500	1034	1076	534	576	26
600 × 600	634	676	634	676	19
800 × 600	834	876	634	676	23
1000 × 600	1034	1076	634	676	27
800 × 800	834	876	834	876	28
1000 × 800	1034	1076	834	876	32
1000 × 1000	1034	1076	1034	1076	38

VAV terminal unit with acoustic cladding (TVJ-D)



Note:

The illustration shows control component type Easy, Compact.

For exact dimensions see section 'Space required for commissioning and maintenance'.

Dimensions/weights (TVJ-D)

NS (B × H)	B ₁	B ₂	H ₁	Hydrogen	Kg
200 × 100	234	280	134	180	9
300 × 100	334	376	134	176	7
400 × 100	434	476	134	176	8
500 × 100	534	576	134	176	9
600 × 100	634	676	134	176	10
200 × 200	234	280	234	280	14
500 × 200	534	576	234	276	12
700 × 200	734	776	234	276	14
300 × 300	334	380	334	380	15
400 × 300	434	480	334	380	17
500 × 300	534	580	334	380	18
600 × 300	634	680	334	380	20
700 × 300	734	780	334	380	22
800 × 300	834	880	334	380	24
900 × 300	934	980	334	380	26
1000 × 300	1034	1080	334	380	29
400 × 400	434	480	434	480	21
500 × 400	534	580	434	480	23
600 × 400	634	680	434	480	24
700 × 400	734	780	434	480	26
800 × 400	834	880	434	480	27
900 × 400	934	980	434	480	29
1000 × 400	1034	1080	434	480	32

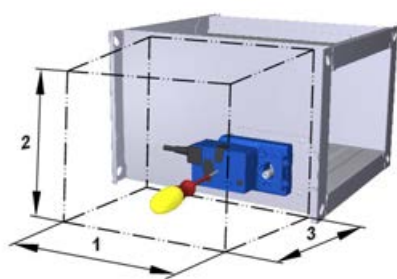
NS (B × H)	B ₁	B ₂	H ₁	Hydrogen	Kg
500 × 500	534	580	534	580	28
600 × 500	634	680	534	580	30
700 × 500	734	780	534	580	32
800 × 500	834	880	534	580	35
900 × 500	934	980	534	580	37
1000 × 500	1034	1080	534	580	39
600 × 600	634	680	634	680	29
800 × 600	834	880	634	680	35
1000 × 600	1034	1080	634	680	41
800 × 800	834	880	834	880	42
1000 × 800	1034	1080	834	880	48
1000 × 1000	1034	1080	1034	1080	57

Space required for commissioning and maintenance

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

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

Access to attachments



Schematic illustration of required installation space

Product example



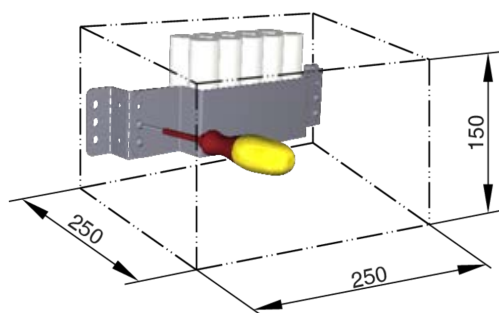
Attachments, including BC0, XD4, TUNF

Space required

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

H: Unit height

Accessibility to the battery pack



Schematic illustration of required installation space

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

Product example



Attachment TUNF / .. / U

Product details

Installation and commissioning

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

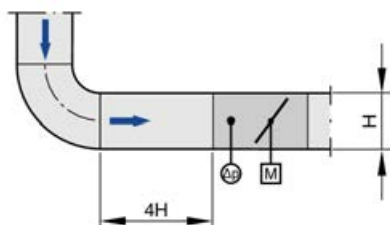
Upstream conditions

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

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

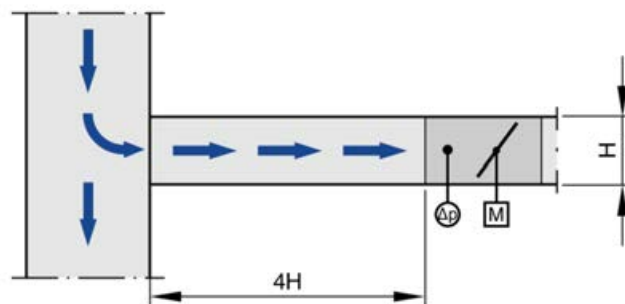
Airflow entering at the open end of an air duct causes strong turbulence and also affects the volume flow accuracy. In this case, a straight upstream section or a flow straightener is required. For further information on this specific installation situation, see the installation and operating manual.

Bend, vertical



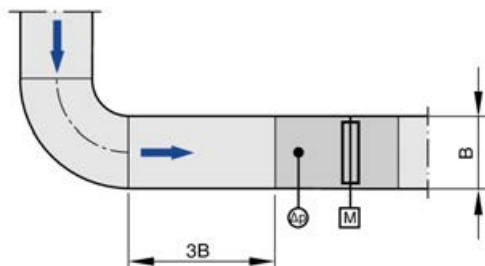
A bend – with a straight duct section of at least 4H upstream of the VAV terminal unit – has only a negligible effect on the volume flow rate accuracy.

Junction, vertical



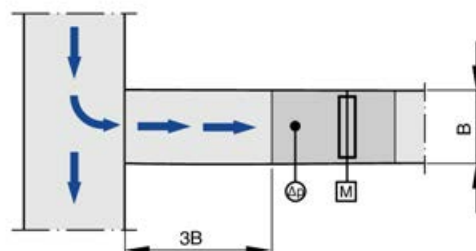
A junction causes strong turbulence. The stated volume flow rate accuracy Δq_v can only be achieved with a straight duct section of at least 4H upstream.

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 Δq_v can only be achieved with a straight duct section of at least 3B upstream.

VARYCONTROL control components

Not all sizes of attachments may be available or suitable, see the note below the table

Attachment	Controlled variable	Interface	Pressure transducer	Actuator	Manufacturer
Easy controller, dynamic					
Easy	q_v	0 – 10 V	integrated	slow-acting integrated	(1)
Compact controller, dynamic					
BC0	q_v	0 – 10 V or 2 – 10 V or MP bus interface	integrated	slow-acting integrated	2
BL0 **	q_v	LonWorks FTT 10 interface	integrated	slow-acting integrated	2
LN0	q_v	0 – 10 V or 2 – 10 V	integrated	slow-acting integrated	⑤
LK0	q_v	KNX interface	integrated	slow-acting integrated	⑤
XB0	q_v	0 – 10 V or 2 – 10 V	integrated	slow-acting integrated	(1)
BM0	q_v	Modbus RTU/BACnet MS/TP	integrated	slow-acting integrated	2
BM0-J6	q_v	Modbus RTU/BACnet MS/TP with RJ12 socket (for X-AIRCONTROL)	integrated	slow-acting integrated	2
BM0-D8	q_v	Modbus RTU or BACnet MS/TP with dual RJ45 jack (daisy chain for TROX Ox)	integrated	slow-acting, integrated	2
Compact controller, static					
XD0	q_v	0 – 10 V or 2 – 10 V	integrated	slow-acting integrated	3
XF0	Δp	0 – 10 V or 2 – 10 V	integral, control range adjustable 25 - 550 Pa or 0.1 – 2.2 inWg	slow-acting integrated	3
Universal controller, dynamic					
B13 *	q_v	0 – 10 V or 2 – 10 V	integrated	slow-acting separate	2
B1B *	q_v	0 – 10 V or 2 – 10 V	integrated	Spring return actuator separate	2
BUDN	q_v	0 - 10 V or 2 - 10 V or MP-Bus or Modbus RTU or BACnet MS/TP	integrated	slow-acting separate	2
BUDNF	q_v	0 - 10 V or 2 - 10 V or MP-Bus or Modbus RTU or BACnet MS/TP	integrated	Spring return actuator separate	
XB4	q_v	0 – 10 V or 2 – 10 V	integrated	Spring return actuator separate	3
VARYCONTROL Universal controller, static					
BP3 *	q_v	0 – 10 V or 2 – 10 V or MP bus interface	individual component	slow-acting separate	2

Attachment	Controlled variable	Interface	Pressure transducer	Actuator	Manufacturer
BPB *	qv	0 – 10 V or 2 – 10 V or MP bus interface	individual component	Spring return actuator separate	2
BPG *	qv	0 – 10 V or 2 – 10 V or MP bus interface	individual component	fast-acting separate	2
BB3 *	qv	2 – 10 V	individual component	slow-acting separate	2
BBB *	qv	2 – 10 V	individual component	Spring return actuator separate	2
BR3 *	Δp	0 – 10 V or 2 – 10 V or MP bus interface	individual component 100 Pa or 2.4 inWg	slow-acting separate	2
BRB *	Δp	0 – 10 V or 2 – 10 V or MP bus interface	individual component 100 Pa or 2.4 inWg	Spring return actuator separate	2
BRG *	Δp	0 – 10 V or 2 – 10 V or MP bus interface	individual component 100 Pa or 2.4 inWg	fast-acting separate	2
BS3 *	Δp	0 – 10 V or 2 – 10 V or MP bus interface	individual component 600 Pa or 2.4 inWg	slow-acting separate	2
BSB *	Δp	0 – 10 V or 2 – 10 V or MP bus interface	individual component 600 Pa or 2.4 inWg	Spring return actuator separate	2
BSG *	Δp	0 – 10 V or 2 – 10 V or MP bus interface	individual component 600 Pa or 2.4 inWg	fast-acting separate	2
BG3 *	Δp	2 – 10 V	individual component 100 Pa or 2.4 inWg	slow-acting separate	2
BGB *	Δp	2 – 10 V	individual component 100 Pa or 2.4 inWg	Spring return actuator separate	2
BH3 *	Δp	2 – 10 V	individual component 600 Pa or 2.4 inWg	slow-acting separate	2
BHB *	Δp	2 – 10 V	individual component 600 Pa or 2.4 inWg	Spring return actuator separate	2
BUSN	q _v	0 - 10 V or 2 - 10 V or MP-Bus or Modbus RTU or BACnet MS/TP	integrated	slow-acting separate	2
BUSNF	qv	0 - 10 V or 2 - 10 V or MP-Bus or Modbus RTU or BACnet MS/TP	integrated	Spring return actuator separate	2
BUSS	q _v	0 - 10 V or 2 - 10 V or MP-Bus or Modbus RTU or BACnet MS/TP	integrated	fast-acting separate	2
BUPN	Δp	0 - 10 V or 2 - 10 V or MP-Bus or Modbus RTU or BACnet MS/TP	integrated Control range adjustable 25 - 450 Pa or 0.1 – 1.8 inWg	slow-acting separate	2
BUPNF	Δp	0 - 10 V or 2 - 10 V or MP-Bus or Modbus RTU or BACnet MS/TP	integrated	Spring return actuator separate	2

Attachment	Controlled variable	Interface	Pressure transducer	Actuator	Manufacturer
			Control range adjustable 25 - 450 Pa or 0.1 – 1.8 inWg		
BURN	Δp	0 - 10 V or 2 - 10 V or MP-Bus or Modbus RTU or BACnet MS/TP	integrated Control range adjustable -50 – -10 Pa or 10 – 50 Pa/ -0.2 – -0.04 inWg or 0.2 – 0.04 inWg	slow-acting separate	2
BURNF	Δp	0 - 10 V or 2 - 10 V or MP-Bus or Modbus RTU or BACnet MS/TP	integrated Control range adjustable -50 – -10 Pa or 10 – 50 Pa/ -0.2 – -0.04 inWg or 0.2 – 0.04 inWg	Spring return actuator separate	2
XD4	q_v	0 – 10 V or 2 – 10 V	integrated	Spring return actuator separate	3
XF4	Δp	0 – 10 V or 2 – 10 V	integral, control range adjustable 25 - 550 Pa or 0.1 – 2.2 inWg	Spring return actuator separate	3

q_v Volume flow

Δp pressure differential

1 TROX, 2 TROX/Belimo, 3 TROX/Gruner, 4 Sauter, 5 Siemens

Dimensional constraint

Type TVJ only up to 1000 × 600 mm with BUSS attachment

TROX UNIVERSAL control components

Not all sizes of attachments may be available or suitable, see the note below the table

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

q_v Volume flow rate
 Δp Differential pressure
1 TROX

Terminal unit maximum size with some attachments

Attachment TUS must not be larger than 1000 x 600 mm to be used with TVJ.

LABCONTROL EASYLAB control components

Not all sizes of attachments may be available or suitable, see the note below the table

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

1 TROX

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

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

Terminal unit maximum size with some attachments

Type TVJ only up to 1000 × 600 mm with ELAB and actuator option S (fast-running actuator)

Nomenclature

Dimensions of rectangular units

B [mm]

Duct width

B₁ [mm]

Screw hole pitch of air duct profile (horizontal)

B₂ [mm]

Overall dimension of air duct profile (width)

H [mm]

Duct height

H₁ [mm]

Screw hole pitch of air duct profile (vertical)

H₂ [mm]

Overall dimension of air duct profile (height)

Dimensions of circular units

ØD [mm]

Basic units made of sheet steel: Outer diameter of the spigot; basic units made of plastic: Inside diameter of the spigot

ØD₁ [mm]

Pitch circle diameter of flanges

ØD₂ [mm]

Outer diameter of flanges

L [mm]

Length of unit including connecting spigot

L₁ [mm]

Length of casing or acoustic cladding

n []

Number of flange screw holes

T [mm]

Flange thickness

General information

m [kg]

Unit weight including the minimum required attachments (control component)

NS [mm]

Nominal size

f_m [Hz]

Octave band centre frequency

L_{PA} [dB(A)]

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

L_{PA1} [dB(A)]

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

L_{PA2} [dB(A)]

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

L_{PA3} [dB(A)]

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

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

q_{VNom} [m³/h]; [l/s]

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

q_{Vmin Unit} [m³/h]; [l/s]

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

q_{Vmax} [m³/h]; [l/s]

Adjustable by others at upper limit of the operating range for the VAV terminal unit: q_{Vmax} can be set to less than or equal to q_{Vnom} on the terminal unit. In case of analogue control of volume flow controllers (typically used), the maximum value of the setpoint signal (10 V) is assigned to the set maximum value (q_{Vmax}) (see characteristics).

q_{Vmin} [m³/h]; [l/s]

Adjustable by others at lower limit of the operating range for the VAV terminal unit: q_{Vmin} should be set to less than or equal to q_{Vmax}. q_{Vmin} to less than q_{Vmin Unit}, as the control may become unstable or the damper blade may close. q_{Vmin} may equal zero. In case of analogue control of volume flow controllers (typically used), the minimum value of the setpoint signal (0 or 2 V) is assigned to the set minimum value (q_{Vmin}) (see characteristics).

q_V [m³/h]; [l/s]

Volume flow rate

Δ_{qv} [%]

Volume flow rate accuracy in relation to the setpoint (tolerance)

Δp_{st} [Pa]

Static differential pressure

Δp_{stmin} [Pa]

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

Lengths [mm]

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

Basic unit

Unit for controlling volume flow rates without an attached control component. The main components include the casing with sensor(s) to measure the differential pressure and the damper blade to restrict the volume flow. The basic unit is also referred

to as a VAV terminal unit. Important distinguishing features: Geometry or unit shape, material and connection variants, acoustic characteristics (e.g. optional acoustic cladding or integrated silencers), range of volume flow.

Control component

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

Important distinguishing features:

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

Volume flow controller

Consists of a basic unit with an attached control component.