

TAP/TAPS

RECTANGULAR SILENCER



Characteristics:

TAP/TAPS are rectangular silencers equipped with baffles that attenuate sound transferred by ducts in ventilation systems.

Intended use

The TAP/TAPS silencers are designed for attenuating noise transferred by ducts in ventilation systems. They are usually located between fans and intake or extraction ducts as well as before intake ventilators which supply air to rooms requiring high acoustic comfort.

Design

The silencer housing is made of galvanised sheet. Inside the housing there are galvanised sheet baffles and a sound attenuating insert made of a non-flammable sound absorbing material (Class A1 according to PN-EN 13501-1). The surface of the sound attenuating insert is additionally covered with abrasion-resistant glass fibre tissue. As standard, the TAP silencers are fitted with 20, 30 or 40 mm wide flange connection (depending of the silencer cross-section). The silencers can be ordered in custom sizes. In such a case they are marked as TAPS. In a stainless version, the steel elements mentioned above are made of 1.4301 stainless steel (according to EN 10088).

TAP/TAPS silencer versions

TAP...-AA (-HA) – a silencer with absorptive baffles covered with glass fibre tissue. It is particularly recommended for attenuating medium- and high-frequency sound.

TAP...-AR (-HR) – a silencer with absorbent-resonating baffles covered with glass fibre tissue and with 50% of its surface covered with galvanised sheet. It is particularly recommended for attenuating low- and medium-frequency sound.

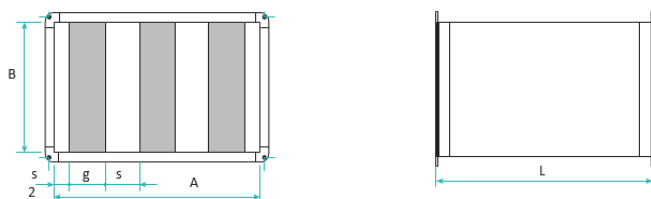


Figure 1. TAP silencer dimensions

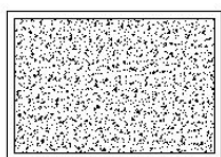


Figure 2. Absorptive baffles

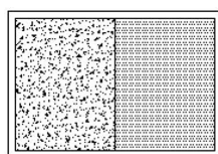


Figure 3. Absorption-resonator baffles

The baffles can be fitted with additional deflectors to ensure lower resistance of air passing through the silencer (HA, HR).

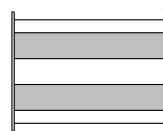


Figure 4. TAP silencer baffles without deflectors

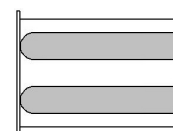


Figure 5. TAP silencer baffles with deflectors (at the inlet)

Application

The tightness of the TAP silencer housing is normally classed as A (according to EN 1507), which allows for using these silencers in ventilation systems with pressure ranging from -500 to 500 Pa. The housing can have a tightness class B (according to EN 1507, with pressure ranging from -750 do 1,000 Pa). The recommended airflow speed for TAP silencers is up to 12 m/s.

Installation

As standard, the TAP/TAPS silencers can be installed inside buildings in both horizontal and vertical ventilation ducts, with baffles set vertically or horizontally. The silencers are installed by means of lifting slings.

Dimensions

The TAP silencers can be delivered with the following dimensions:

- width A = 150–3,000 mm
- height B = 150–2,500 mm
- length L = 500–2,000 mm
- baffle thickness GR = 100, 200 mm
- distance between baffles:
 - SZ = 50–100 mm (for baffles GR = 100 mm)
 - SZ = 50–200 mm (for baffles GR = 200 mm)

The following pages of the specification sheet include standard TAP silencer dimensions.

1. With custom-sized TAPS silencers we recommend keeping the ratio of free cross-section area to the total cross-section area within the range of 30–60%.
2. In silencers weighting up to 320 kg, baffles are factory-installed within the silencer housing. In silencers weighting more than 320 kg, baffles are delivered as follows: separate housing + separate baffles for individual installation on site.
3. Custom-sized silencers are made to order.
4. It is possible to order baffles (TAL) separately.



Technical Data

Attenuation values for individual frequency bands with absorptive baffles AA and HA, D_e [dB]

Table 1. TAP11-...A silencer attenuation

L [mm]	Frequency f _m [Hz]							
	63	125	250	500	1k	2k	4k	8k
500	3	4	5	12	24	22	13	10
1,000	4	4	9	19	33	33	23	15
1500	5	5	14	25	42	44	31	20
2000	6	7	20	34	48	50	40	27

Table 2. TAP15-...A silencer attenuation

L [mm]	Frequency f _m [Hz]							
	63	125	250	500	1k	2k	4k	8k
500	3	5	9	16	33	38	25	20
1,000	4	8	17	26	42	44	33	26
1500	6	10	23	36	48	48	41	34
2000	7	13	30	45	52	50	48	42

Table 3. TAP21-...A silencer attenuation

L [mm]	Frequency f _m [Hz]							
	63	125	250	500	1k	2k	4k	8k
500	3	4	9	20	26	23	16	11
1,000	3	8	15	30	43	38	25	16
1500	5	12	21	47	51	50	32	19
2000	6	15	28	50	52	51	38	24

Table 4. TAP215-...A silencer attenuation

L [mm]	Frequency f _m [Hz]							
	63	125	250	500	1k	2k	4k	8k
500	2	3	8	14	17	15	10	7
1,000	3	6	12	24	30	26	15	10
1500	4	9	18	36	43	36	22	12
2000	5	11	23	46	50	44	25	15

Table 5. TAP22-...A silencer attenuation

L [mm]	Frequency f _m [Hz]							
	63	125	250	500	1k	2k	4k	8k
500	2	2	4	12	13	11	7	6
1,000	2	5	10	21	24	19	12	8
1,500	3	7	16	30	33	25	14	10
2,000	4	10	20	30	43	30	17	12

Attenuation values for individual frequency bands with absorption-resonator baffles AR and HR, D_e [dB]

Table 6. TAP11-...R silencer attenuation

L [mm]	Frequency f _m [Hz]							
	63	125	250	500	1k	2k	4k	8k
500	3	4	5	8	12	15	11	8
1,000	4	8	10	13	21	21	15	10
1500	5	10	15	19	29	29	19	13
2000	7	12	19	25	36	34	22	15

Table 7. TAP15-...R silencer attenuation

L [mm]	Frequency f _m [Hz]							
	63	125	250	500	1k	2k	4k	8k
500	3	10	10	12	19	24	21	16
1,000	5	11	18	21	29	34	28	22
1500	7	15	27	28	37	42	35	29
2000	9	18	34	38	48	49	44	36

Table 8. TAP21-...R silencer attenuation

L [mm]	Frequency f _m [Hz]							
	63	125	250	500	1k	2k	4k	8k
500	2	5	12	13	15	12	10	8
1,000	5	9	22	21	27	21	13	10
1500	6	12	31	30	36	27	17	15
2000	7	16	41	40	47	31	20	17

Table 9. TAP215-...R silencer attenuation

L [mm]	Frequency f _m [Hz]							
	63	125	250	500	1k	2k	4k	8k
500	2	3	8	10	11	8	7	5
1,000	3	6	16	16	16	13	9	8
1500	4	10	22	22	21	17	11	8
2000	5	13	29	29	28	21	14	11

Table 10. TAP22-...R silencer attenuation

L [mm]	Frequency f _m [Hz]							
	63	125	250	500	1k	2k	4k	8k
500	1	3	7	7	7	6	5	3
1,000	1	7	12	12	12	9	8	6
1,500	3	10	18	17	15	12	9	7
2,000	5	13	23	22	18	15	12	9

Table 11. Free clearance area between baffles

Silencer type	Free clearance area
TAP-11	50%
TAP-15	33%
TAP-21	33%
TAP-215	43%
TAP-22	50%

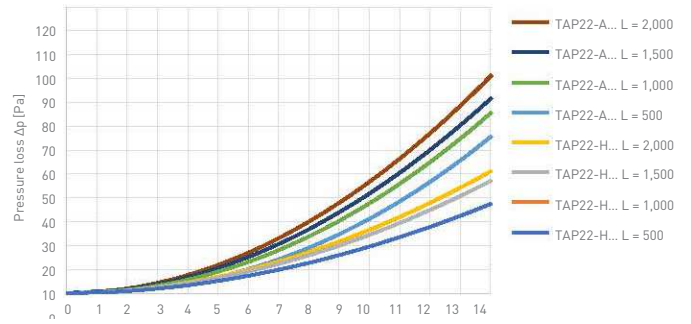


Chart 5. Pressure loss for a TAP-22 silencer

Pressure loss for TAP silencers

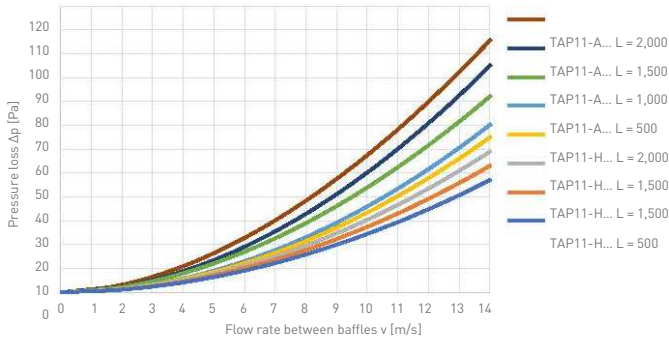


Chart 1. Pressure loss for a TAP-11 silencer

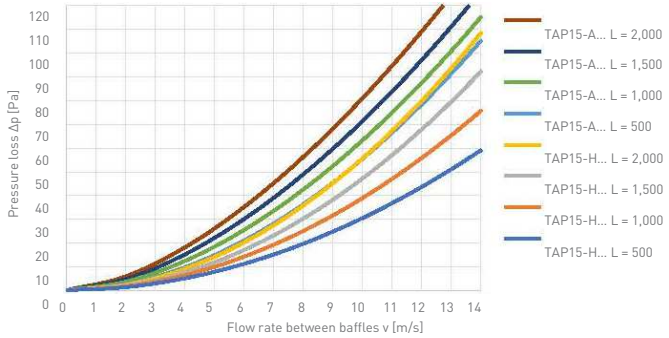


Chart 2. Pressure loss for a TAP-15 silencer

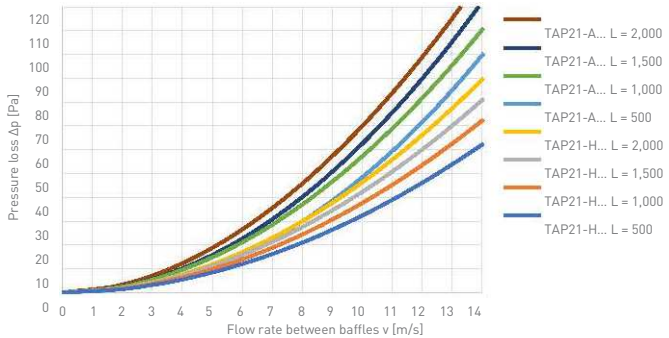


Chart 3. Pressure loss for a TAP-21 silencer

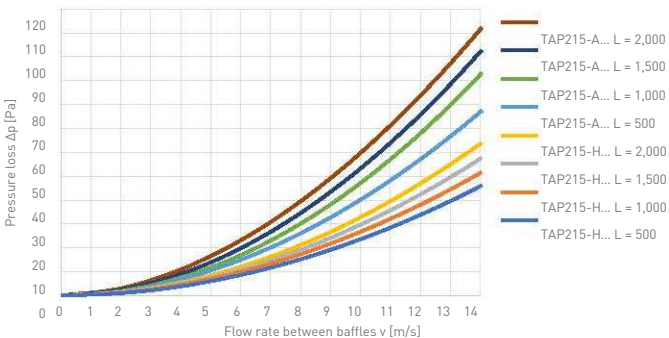


Chart 4. Pressure loss for a TAP-215 silencer

TAP silencer flow noise

Table 12. TAP silencer internal noise, L_{WA}[dB(A)]

Free cross-section area between baffles m ²	Flow rate between baffles v [m/s]					
	4	6	8	10	12	14
0.2	17	27	34	40	44	48
0.4	20	30	37	43	47	51
0.6	22	32	39	45	49	53
0.8	23	33	40	46	50	54
1.0	24	34	41	47	51	55
1.2	25	35	42	48	52	56
1.4	26	36	43	49	53	57
1.6	26	36	43	49	53	57
1.8	27	37	44	50	54	58
2.0	27	37	44	50	54	58

Depending on the distance between baffles and their width, the internal noise of a silencer can vary by up to ±1 dB

The parameters of custom-sized TAPS silencers must be determined by using a selection tool available at <http://tlumiki.smay.pl>

Approximate weight of the TAP silencers, length 1 m, with absorptive baffles, m [kg]

Table 13. TAP11-...A silencer weight

Height H [mm]	Silencer width A [mm]							
	200	400	600	800	1,000	1,200	1,400	1,600
200	10	16	22	28	38	49	56	63
400	14	22	29	36	48	61	69	78
600	19	27	36	45	58	73	83	93
800	23	33	43	53	68	85	97	108
1000	32	43	55	67	79	98	110	123
1200	41	55	69	82	96	110	124	137
1500	50	65	81	97	113	128	144	160
2000	71	91	110	130	149	169	189	208

Table 14. TAP15-...A silencer weight

Height H [mm]	Silencer width A [mm]							
	150	300	450	600	750	900	1,050	1,200
200	9	14	19	25	30	35	48	54
400	13	20	26	33	39	46	62	69
600	18	26	34	41	49	57	75	84
800	22	32	41	50	59	68	89	99
1000	31	41	52	63	74	85	102	114
1200	40	53	65	78	91	103	116	129
1500	49	63	78	92	107	122	136	151
2000	70	88	106	125	143	162	180	198

Table 15. TAP21-...A silencer weight

Height H [mm]	Silencer width A [mm]							
	300	600	900	1,200	1,500	1,800	2,100	2,400
200	14	24	34	53	65	83	96	109
400	20	33	45	68	83	105	120	136
600	26	41	57	84	101	126	145	163
800	32	50	69	99	120	148	169	191
1000	42	64	86	115	138	170	194	218
1200	53	79	105	130	156	192	218	245
1500	64	94	124	154	184	224	255	286
2000	89	127	165	203	240	278	316	354 (*)

Table 16. TAP215-...A silencer weight

Height H [mm]	Silencer width A [mm]							
	350	700	1,050	1,400	1,750	2,100	2,450	2,800
200	15	25	44	57	77	91	105	119
400	21	34	57	73	95	112	129	146
600	26	43	70	88	114	134	154	173
800	32	52	83	104	133	156	178	201
1000	43	66	95	119	152	177	203	228
1200	54	81	108	135	171	199	227	255
1500	65	96	127	158	199	232	264	296
2000	90	129	169	208	247	286	325 (*)	364 (*)

Table 17. TAP22-...A silencer weight

Height H [mm]	Silencer width A [mm]						
	400	800	1,200	1,600	2,000	2,400	2,800
200	15	27	48	62	83	98	114
400	21	36	60	77	102	120	138
600	27	45	73	93	121	142	162
800	33	53	86	108	140	163	187
1000	44	68	99	124	158	185	211
1200	55	83	111	139	177	207	236
1500	66	98	130	162	206	239	273
2000	92	132	172	213	253	293	334 (*)

(*) – silencers weighting more than 320 kg that are intended for individual installation on site (the housing and absorptive baffles are delivered separately)

Approximate weight of the TAP silencers, length 1 m, absorption-resonator baffles, m [kg]

Table 18. TAP11-...R silencer weight

Height H [mm]	Silencer width A [mm]							
	200	400	600	800	1,000	1,200	1,400	1,600
200	12	20	28	36	48	61	71	80
400	17	28	38	48	63	79	91	102
600	23	35	48	61	78	97	111	125
800	28	43	58	73	93	115	131	147
1000	37	55	73	90	108	133	151	169
1200	48	68	89	110	130	151	171	192
1500	58	82	106	130	153	177	201	225
2000	81	112	142	172	202	232	262	293

Table 19. TAP15-...R silencer weight

Height H [mm]	Silencer width A [mm]							
	150	300	450	600	750	900	1,050	1,200
200	11	18	26	33	40	48	63	71
400	16	26	36	45	55	64	83	93
600	22	34	45	57	69	81	103	116
800	27	41	55	69	84	98	123	138
1000	36	53	70	87	103	120	143	161
1200	47	66	86	105	125	144	163	183
1500	57	80	102	125	148	171	194	216
2000	80	109	138	167	196	225	254	282

Table 20. TAP21-...R silencer weight

Height H [mm]	Silencer width A [mm]							
	300	600	900	1,200	1,500	1,800	2,100	2,400
200	16	29	41	63	77	98	113	129
400	23	39	56	82	100	125	144	163
600	30	50	70	101	123	152	175	198
800	37	61	84	120	146	180	206	232
1000	48	76	104	140	169	207	237	267
1200	60	93	126	159	192	234	268	302
1500	72	111	149	187	226	275	314	353 (*)
2000	100	148	197	245	294	343 (*)	391 (*)	440 (*)

Table 21. TAP215-...R silencer weight

Height H [mm]	Silencer width A [mm]							
	350	700	1,050	1,400	1,750	2,100	2,450	2,800
200	17	30	52	67	89	106	122	139
400	24	41	67	86	113	133	153	173
600	31	52	83	106	136	160	184	208
800	38	62	98	125	160	187	215	243
1000	49	78	114	144	183	214	246	277
1200	61	95	129	163	206	241	277	312
1500	73	113	152	192	242	282	323 (*)	363 (*)
2000	101	151	201	251	300	350 (*)	400 (*)	450 (*)

Table 22. TAP22-...R silencer weight

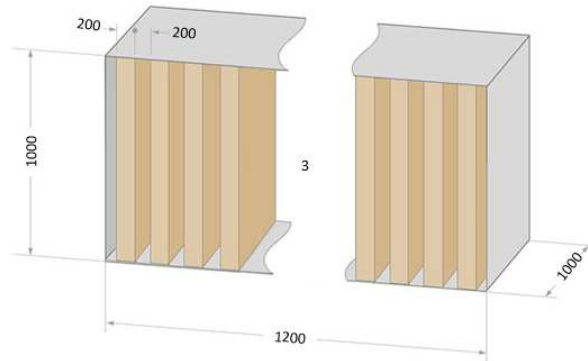
Height H [mm]	Silencer width A [mm]						
	400	800	1,200	1,600	2,000	2,400	2,800
200	18	32	55	72	95	113	131
400	25	43	71	91	119	140	162
600	32	53	86	110	142	168	193
800	39	64	102	129	166	195	224
1000	50	80	117	148	189	222	255
1200	62	97	132	167	213	249	285
1500	75	115	156	196	248	290	332 (*)
2000	102	153	205	256	307	358 (*)	409 (*)

Example of a TAP silencer selection

At <http://tlumiki.smay.pl/> you will find a selection tool to easily and quickly choose the right silencers with different configurations.

Silencer selection:

Silencer width	A=	1,200 mm	
Silencer height	B=	1,000 mm	
Silencer length	L=	1,000 mm	
Baffle thickness	d=	200 mm	
Number of baffles	i=	3 pcs	
Distance between baffles	s=	200 mm	
Baffle type	tk=	A	absorptive
Baffle finishing	zk=	A	no deflector
Housing leakage class	KL=	A	
Material	P=	S0	galvanised steel
Weight	m=	99 kg	



Flow parameters:

Volumetric air flow $V = 14,750 \text{ m}^3/\text{h}$

Air flow rate

$w = 6.8 \text{ m/s}$

Pressure loss

$dp = 17 \text{ Pa}$

Internal noise

$L_w = 35 \text{ dB(A)}$

Attenuation rate:

Frequency

Attenuation rate:

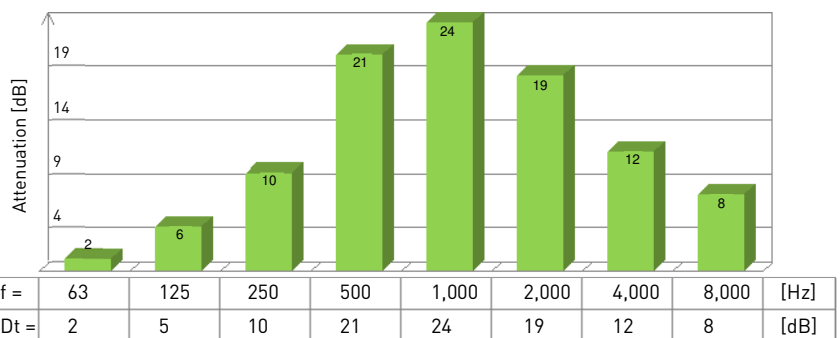


Figure 6. Example of a silencer selection: TAP.22-AA-1,200×1,000×1,000

TAP/TAPS – Rectangular Silencer

When ordering, please provide information according to the following pattern:

(standard silencer)

TAP <X> – <TK> – <A> x x <L> – <P> – <KL> – <MK>

(custom silencer)

TAPS – <TK> – <A> x x <L> – (<GR> x <SZ>) x <IK> – <P> – <KL> – <MK>

Where:

X	silencer type*
	11 – baffle thickness 100 mm, 100 mm distance between baffles 15 – baffle thickness 100 mm, 50 mm distance between baffles 21 – baffle thickness 200 mm, 100 mm distance between baffles 215 – baffle thickness 200 mm, 150 mm distance between baffles 22 – baffle thickness 200 mm, 200 mm distance between baffles
TK	baffle type*
	AA – absorptive baffles without a deflector AR – absorption-resonator baffles without a deflector HA – absorptive baffles with a deflector HR – absorption-resonator baffles with a deflector
A	silencer inner clearance width in mm
B	silencer inner clearance height in mm
L	silencer length in mm
GR	baffle thickness in mm
SZ	distance between baffles in mm*
MK	baffle installation*
	none – baffles factory-installed in silencer housing KO – separate baffles for individual installation in silencer housing
IK	IK – the number of baffles
P	P – material*
	none – galvanised steel SN – stainless steel
KL	Leakage class according to EN 1751:*
	A – housing leakage class A B – housing leakage class B

* optional values – if not specified, default values will be used

Order example:

TAP22-AA-1,200x1,000x1,000-A (standard silencer)

TAPS-AR-1,150x1,000x1,000-(200x87)x4-B-KO (custom silencer)

When only ordering baffles, please provide information according to the following pattern:

TAL-<TK>-<GR>xx<L>-<P>

Order example:

TAL-AA-200x800x1,500