

Sound Attenuator

No. 774-11



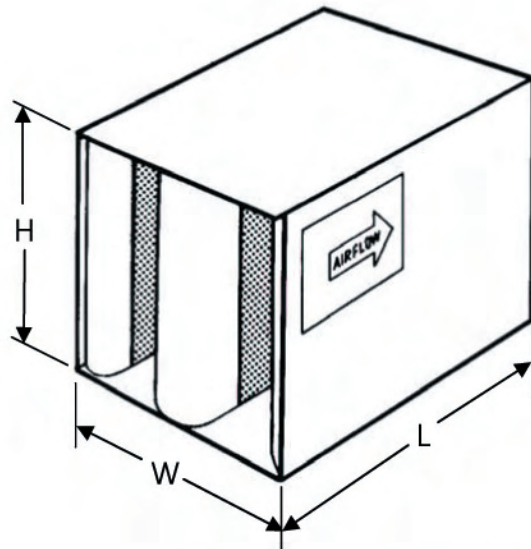
Commercial Acoustics
5960 W. WASHINGTON STREET
PHOENIX, ARIZONA 85043-3523
(602) 233-2322 FAX 233-2033

A DIVISION OF METAL FORM MANUFACTURING

ENGINEERING DATA SHEET

Supersedes No. 774-02

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Oeler Industries, Inc.
1-877-406-6473
sales@oeler.com



MODEL LF43S

RECTANGULAR

NOMENCLATURE EXAMPLE:

| WIDTH | HEIGHT | LENGTH | MODEL |
|-----------|-----------|-----------|--------------|
| 24 | 24 | 36 | LF43S |

Commercial Acoustics sound attenuators are engineered to achieve a maximum insertion loss and a minimum pressure drop. Commercial Acoustics sound attenuators feature airflow design for efficient aerodynamic performance. Galvanized steel construction and an absorbent, inorganic mineral glass fiber acoustical fill; guarantee excellent reliability and performance.

| MODEL NO. | OCTAVE BANDS | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---------------|-----------------------|-----------------------------------------|-----|-----|-----|------|------|------|------|
| | CENTER FREQUENCY (Hz) | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 |
| | FACE VELOCITY, fpm | DYNAMIC INSERTION LOSS IN DECIBELS (dB) | | | | | | | |
| 3LF43S | -1500 | 1 | 8 | 10 | 17 | 22 | 17 | 15 | 13 |
| | -1000 | 2 | 8 | 10 | 16 | 21 | 17 | 15 | 14 |
| | 0 | 1 | 7 | 10 | 15 | 20 | 16 | 14 | 13 |
| | +1000 | 1 | 7 | 9 | 14 | 20 | 16 | 14 | 13 |
| | +1500 | 1 | 7 | 9 | 14 | 20 | 16 | 14 | 13 |
| 5LF43S | -1500 | 6 | 15 | 16 | 25 | 33 | 24 | 21 | 14 |
| | -1000 | 6 | 15 | 16 | 25 | 33 | 24 | 21 | 15 |
| | 0 | 5 | 14 | 15 | 22 | 31 | 22 | 19 | 15 |
| | +1000 | 6 | 13 | 14 | 22 | 30 | 23 | 18 | 14 |
| | +1500 | 6 | 12 | 13 | 22 | 29 | 23 | 18 | 15 |
| 7LF43S | -1500 | 6 | 19 | 22 | 33 | 43 | 27 | 20 | 16 |
| | -1000 | 6 | 19 | 22 | 32 | 42 | 27 | 20 | 17 |
| | 0 | 5 | 18 | 21 | 30 | 40 | 26 | 19 | 16 |
| | +1000 | 4 | 17 | 19 | 28 | 38 | 25 | 17 | 11 |
| | +1500 | 4 | 16 | 18 | 27 | 38 | 25 | 17 | 11 |

THIS TABLE CONTAINS BOTH FORWARD(+) AND REVERSE(-) FLOW ACOUSTIC AND AERODYNAMIC RATINGS BASED ON TEST RESULTS MEASURED IN ACCORDANCE WITH APPLICABLE PORTIONS OF ASTM E477. COPIES OF CERTAIN TEST REPORTS CAN BE FURNISHED UPON REQUEST.

Sound Attenuator

RECTANGULAR MODEL LF43S

ENGINEERING DATA

AIR FLOW RATINGS FOR THE 12 x 12 SIZE, SHADED, REPRESENTS BOTH CFM AND FACE VELOCITY IN fpm. USE THIS TO GET THE RATING FOR SILENCER SIZES NOT SHOWN AND FOR MULTIPLE MODULE SILENCER BANKS.

| MODEL | 3LF43S | 0.026 | 0.044 | 0.062 | 0.081 | 0.096 | 0.108 | 0.125 | 0.162 | 0.198 | 0.276 | 0.368 | 0.459 |
|---------------|--------------|-----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 5LF43S | 0.030 | 0.051 | 0.072 | 0.094 | 0.111 | 0.125 | 0.145 | 0.188 | 0.230 | 0.320 | 0.426 | 0.533 |
| | 7LF43S | 0.033 | 0.056 | 0.080 | 0.103 | 0.123 | 0.138 | 0.160 | 0.207 | 0.254 | 0.353 | 0.471 | 0.588 |
| SIZE W x H | Face Area | AIR FLOW IN CFM | | | | | | | | | | | |
| 6 x 12 | 0.5 | 227 | 297 | 354 | 402 | 438 | 465 | 500 | 569 | 630 | 743 | 858 | 959 |
| 6 x 24 | 1 | 454 | 594 | 707 | 804 | 875 | 930 | 1000 | 1138 | 1260 | 1485 | 1715 | 1917 |
| 6 x 36 | 1.5 | 681 | 891 | 1061 | 1206 | 1313 | 1395 | 1500 | 1707 | 1890 | 2228 | 2573 | 2876 |
| 12 x 12 | 1 | 454 | 594 | 707 | 804 | 875 | 930 | 1000 | 1138 | 1260 | 1485 | 1715 | 1917 |
| 12 x 24 | 2 | 908 | 1188 | 1414 | 1608 | 1750 | 1860 | 2000 | 2276 | 2520 | 2970 | 3430 | 3834 |
| 12 x 36 | 3 | 1362 | 1782 | 2121 | 2412 | 2625 | 2790 | 3000 | 3414 | 3780 | 4455 | 5145 | 5751 |
| 18 x 12 | 1.5 | 681 | 891 | 1061 | 1206 | 1313 | 1395 | 1500 | 1707 | 1890 | 2228 | 2573 | 2876 |
| 18 x 18 | 2.25 | 1022 | 1337 | 1591 | 1809 | 1969 | 2093 | 2250 | 2561 | 2835 | 3341 | 3859 | 4313 |
| 18 x 30 | 3.75 | 1703 | 2228 | 2651 | 3015 | 3281 | 3488 | 3750 | 4268 | 4725 | 5569 | 6431 | 7189 |
| 18 x 36 | 4.5 | 2043 | 2673 | 3182 | 3618 | 3938 | 4185 | 4500 | 5121 | 5670 | 6683 | 7718 | 8627 |
| 18 x 48 | 6 | 2724 | 3564 | 4242 | 4824 | 5250 | 5580 | 6000 | 6828 | 7560 | 8910 | 10290 | 11502 |
| 24 x 24 | 4 | 1816 | 2376 | 2828 | 3216 | 3500 | 3720 | 4000 | 4552 | 5040 | 5940 | 6860 | 7668 |
| 24 x 36 | 6 | 2724 | 3564 | 4242 | 4824 | 5250 | 5580 | 6000 | 6828 | 7560 | 8910 | 10290 | 11502 |
| 24 x 48 | 8 | 3632 | 4752 | 5656 | 6432 | 7000 | 7440 | 8000 | 9104 | 10080 | 11880 | 13720 | 15336 |
| 30 x 24 | 5 | 2270 | 2970 | 3535 | 4020 | 4375 | 4650 | 5000 | 5690 | 6300 | 7425 | 8575 | 9585 |
| 30 x 36 | 7.5 | 3405 | 4455 | 5303 | 6030 | 6563 | 6975 | 7500 | 8535 | 9450 | 11138 | 12863 | 14378 |
| 30 x 48 | 10 | 4540 | 5940 | 7070 | 8040 | 8750 | 9300 | 10000 | 11380 | 12600 | 14850 | 17150 | 19170 |
| 36 x 36 | 9 | 4086 | 5346 | 6363 | 7236 | 7875 | 8370 | 9000 | 10242 | 11340 | 13365 | 15435 | 17253 |
| 36 x 42 | 10.5 | 4767 | 6237 | 7424 | 8442 | 9188 | 9765 | 10500 | 11949 | 13230 | 15593 | 18008 | 20129 |
| 36 x 48 | 12 | 5448 | 7128 | 8484 | 9648 | 10500 | 11160 | 12000 | 13656 | 15120 | 17820 | 20580 | 23004 |

Helpful Equations: Face Area = (Width in inches x Height in inches) ÷ 144

Face Velocity = CFM ÷ Face Area in Sq.Ft.

Silencer S.P. Loss = $\left(\frac{\text{Face Velocity}}{\text{Tabled Velocity}}\right)^2 \times \text{Tabled S.P. Loss}$

STANDARD CONSTRUCTION FEATURES

Outer Casing — Solid 22GA G90 galvanized steel
 Inner Partitions — Perforated 22GA G90 galvanized steel
 Acoustical Fill — Inorganic mineral glass fiber meeting NFPA 90A, UL 723, and ASTM E84 of sufficient density and packed under at least 5% compression to eliminate voids and to obtain cataloged ratings
 Maximum Differential Pressure — 8 in. wc. as tested in accordance with UL 181, Section 17

| Octave Band | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
|---------------|---------------|------------------------------------------------------------------------|-----|-----|----|----|----|----|----|
| Frequency, Hz | 63 | 125 | 250 | 500 | 1k | 2k | 4k | 8k | |
| Length | Face Velocity | Self-Generated Sound Power Ratings (PWL) dB re 10 ⁻¹² WATTS | | | | | | | |
| ALL LENGTHS | +1500 | 60 | 54 | 50 | 46 | 46 | 48 | 44 | 35 |
| | +1000 | 51 | 44 | 39 | 34 | 37 | 36 | 27 | 28 |
| | -1000 | 56 | 54 | 50 | 48 | 49 | 45 | 35 | 27 |
| | -1500 | 62 | 61 | 58 | 55 | 55 | 59 | 49 | 38 |

When adding any two decibel levels together to an accuracy of 1 dB

| Difference between two dB levels | Add to the higher dB level |
|----------------------------------|----------------------------|
| 0 or 1 dB | 3 dB |
| 2 or 3 dB | 2 dB |
| 4 to 9 dB | 1 dB |
| 10 dB or more | 0 dB |

Air flow ratings shown include static regain. Therefore, if silencers are installed immediately before or after elbows, transitions, at the intake or discharge of the system, or without duct, allowance to compensate for such conditions must be included when calculating the operating static pressure loss across the silencer. Failure to make allowances for these conditions can add several velocity heads to the static pressure loss of the system. All acoustic and aerodynamic performance obtained on a 24" x 24" cross section production unit.

Self-Generated Sound Power, Face Area Adjustment Factors

| Face Area | 0.50 | 1 | 2 | 4 | 8 | 16 | 32 | 64 | 128 |
|-----------------------|------|----|----|---|----|----|----|-----|-----|
| Adjustment Factor, dB | -9 | -6 | -3 | 0 | +3 | +6 | +9 | +12 | +15 |