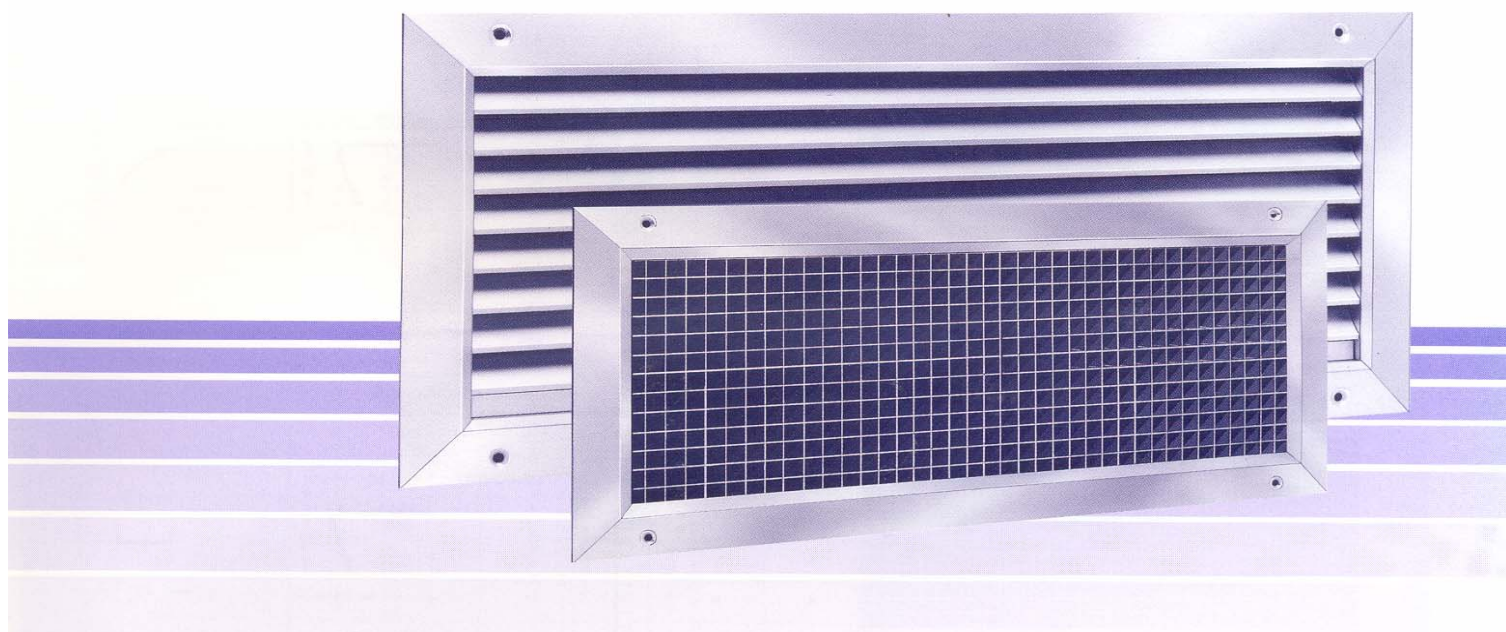


Grilles

Type AR · AE
for return air



TROX® **TECHNIK**

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Description :

The grilles are suitable for wall or duct installation. They may be fitted straight into the duct section or, alternatively a timber surround installation subframe may be used eg : for installation into builders work.

Construction :

Type AR :

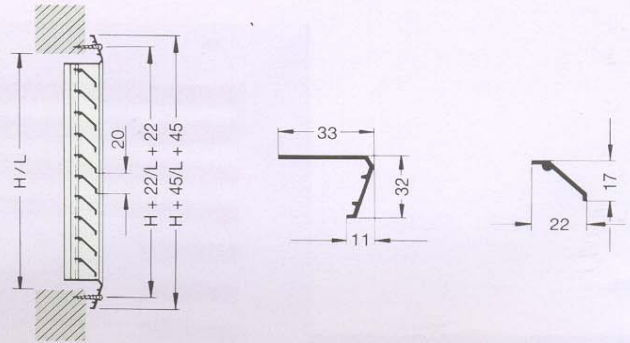
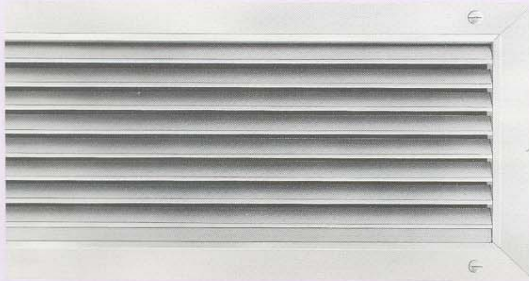
Return air grille with fixed horizontal angled front blades. With visible screw fixing (border counter punched). Available on request with spring clip or concealed fixing.

Type AE :

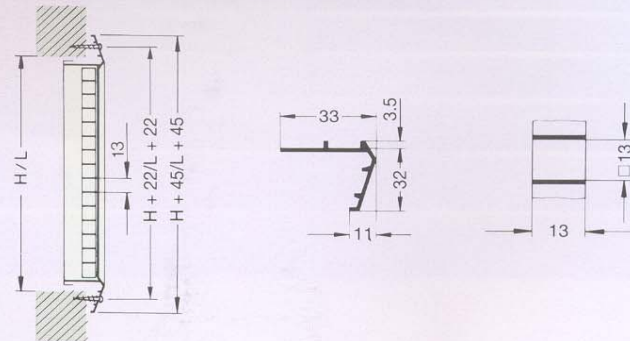
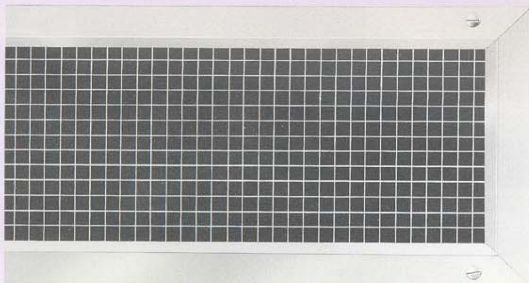
Return air grille with fixed square pattern core. With visible screw fixing. Available on request with spring clip or concealed fixing.

To optimise air distribution, the standard construction ...-A is available with rear assembly - the ...-AG opposed blade action volume control damper adjustable from the front face.

Type AR



Type AE



Rear Assembly



...-AG

Duct opening with Subframe

(spring clip or concealed fixing)

The required duct opening with a subframe type P11 or S11 (page 7) is : $L + 6\text{mm} / H + 6\text{mm}$.

'Refer to page 21 leaflet 1/1/B/1 for sub-frame options'.

Materials · Standard Sizes

Materials :

The grilles are made from extruded aluminium sections, with a natural anodised finish E6-C-0. The grille core in the type AE is made from aluminium eggcrate. The rear assembly is made from formed sheet steel and aluminium. The surfaces are stoved enamelled black (RAL 9005). The installation subframe is made from galvanised sheet steel to BS 2989.

Standard Sizes L x H (mm)

H in mm L in mm	100	150	200	250	300	350	400	450	500	550	600
150	•	•									
200	•	•	•								
250	•	•	•	•							
300	•	•	•	•	•						
350	•	•	•	•	•	•					
400	•	•	•	•	•	•	•				
450	•	•	•	•	•	•	•	•			
500	•	•	•	•	•	•	•	•	•		
550	•	•	•	•	•	•	•	•	•	•	
600	•	•	•	•	•	•	•	•	•	•	•
650	•	•	•	•	•	•	•	•	•	•	•
700	•	•	•	•	•	•	•	•	•	•	•
750	•	•	•	•	•	•	•	•	•	•	•
800	•	•	•	•	•	•	•	•	•	•	•
850	•	•	•	•	•	•	•	•	•	•	•
900	•	•	•	•	•	•	•	•	•	•	•
950	•	•	•	•	•	•	•	•	•	•	•
1000	•	•	•	•	•	•	•	•	•	•	•
1050	•	•	•	•	•	•	•	•	•	•	•
1100	•	•	•	•	•	•	•	•	•	•	•
1150	•	•	•	•	•	•	•	•	•	•	•
1200	•	•	•	•	•	•	•	•	•	•	•
1250	•	•	•	•	•	•	•	•	•	•	•

Technical Data

Effective Inlet Areas

L x H in mm	A _{eff} in m ²	
	AR	AE
150 x 100	0.002	0.006
200	0.003	0.009
300	0.006	0.014
400	0.008	0.019
500	0.010	0.024
600	0.012	0.029
700	0.014	0.034
800	0.016	0.039
900	0.018	0.044
1000	0.020	0.049
1100	0.022	0.054
1200	0.024	0.059
150 x 150	0.004	0.010
200	0.006	0.015
300	0.010	0.023
400	0.014	0.032
500	0.017	0.040
600	0.021	0.049
700	0.025	0.057
800	0.029	0.066
900	0.033	0.074
1000	0.036	0.083
1100	0.040	0.092
1200	0.044	0.100
200 x 200	0.009	0.021
300	0.014	0.033
400	0.019	0.045
500	0.025	0.057
600	0.031	0.069
700	0.035	0.081
800	0.041	0.093
900	0.047	0.105
1000	0.051	0.117
1100	0.057	0.129
1200	0.063	0.141
250 x 250	0.015	0.034
300	0.019	0.042
400	0.025	0.057
500	0.032	0.073
600	0.040	0.088
700	0.046	0.104
800	0.053	0.120
900	0.060	0.135
1000	0.067	0.150
1100	0.074	0.166
1200	0.081	0.181
300 x 300	0.023	0.052
400	0.031	0.071
500	0.040	0.089
600	0.049	0.108
700	0.057	0.128
800	0.066	0.142
900	0.072	0.165
1000	0.083	0.184
1100	0.092	0.203
1200	0.101	0.222
350 x 350	0.031	0.072
400	0.037	0.084
500	0.048	0.106
600	0.058	0.128
700	0.068	0.151
800	0.078	0.173
900	0.089	0.195
1000	0.098	0.217
1100	0.109	0.240
1200	0.119	0.262

L x H in mm	A _{eff} in m ²	
	AR	AE
400 x 400	0.043	0.096
400	0.055	0.122
600	0.067	0.148
700	0.078	0.174
800	0.091	0.200
900	0.103	0.225
1000	0.113	0.251
1100	0.126	0.277
1200	0.142	0.303
450 x 450	0.056	0.124
500	0.063	0.142
600	0.077	0.168
700	0.089	0.197
800	0.103	0.226
900	0.117	0.256
1000	0.130	0.285
1100	0.143	0.314
1200	0.158	0.343
500 x 500	0.070	0.155
600	0.086	0.188
700	0.100	0.229
800	0.115	0.253
900	0.131	0.286
1000	0.145	0.319
1100	0.160	0.351
1200	0.176	0.385
600 x 600	0.104	0.227
700	0.127	0.267
800	0.140	0.306
900	0.159	0.346
1000	0.176	0.386
1100	0.195	0.425
1200	0.214	0.464

Determination of Volume Flow:

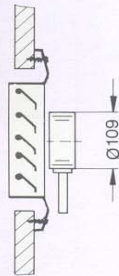
The volume flow can be determined by measuring the air velocity using a rotating vane anemometer.

The measurement instrument should be evenly transversed across the entire grille face to determine a value of v_{mean} .

The volume flow is then:

$$\dot{V} \text{ (l/s)} = v_{\text{mean}} \text{ (m/s)} \times A_{\text{eff}} \text{ (m}^2\text{)} \times f \times 1000$$

$$\dot{V} \text{ (m}^3\text{/h)} = v_{\text{mean}} \text{ (m/s)} \times A_{\text{eff}} \text{ (m}^2\text{)} \times f \times 3600$$



Corrections for A_{eff}

A _{eff} in m ²	0.005	0.01	0.02	0.05	0.1	0.2	0.4
L _{WA} /L _{WNC}	-13	-10	-7	-3	-	+3	+6

Correction factor - f -

Type	f
AR	3,2
AE	1,6

Technical Data · Nomenclature

Type AR

Example :

Data Given :
 AR-AG/800 x 150
 Effective inlet area $A_{\text{eff}} = 0.029 \text{ m}^2$
 Volume flow $\dot{V} = 195 \text{ l/s}$
 Damper setting 100% (fully open)

Diagram 1 : Sound Power Level and Pressure drop

$$v_{\text{eff}} = \frac{\dot{V}}{A_{\text{eff}} \cdot 1000}$$

$$v_{\text{eff}} = \frac{195}{0.029 \cdot 1000} = 6.7 \text{ m/s}$$

$$L_{\text{WA}} = 37 \text{ Pa} \quad (L_{\text{WNC}} = 31 \text{ NC})$$

$$\Delta p_t = 21 \text{ Pa}$$

Correction from table on page 4

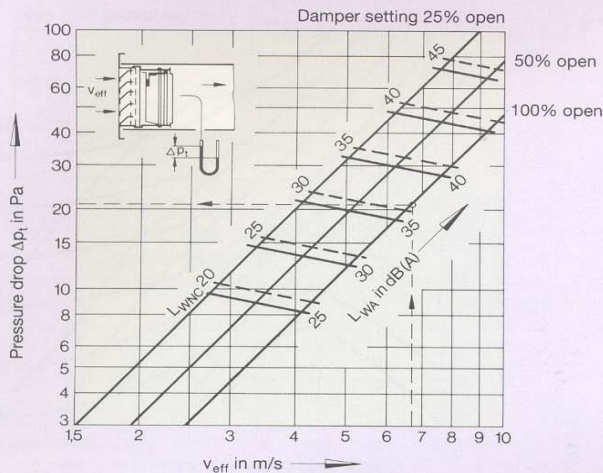
$$L_{\text{WA}} = 37 - 6 = 31 \text{ dB(A)}$$

$$L_{\text{WNC}} = 31 - 6 = 25 \text{ NC}$$

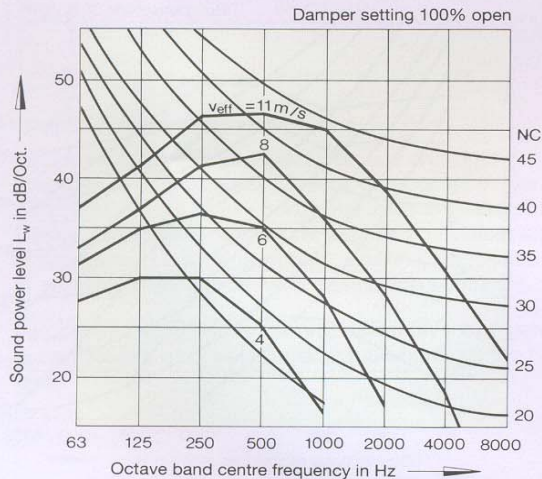
Nomenclature :

\dot{V} in l/s : Volume flow
 \dot{V} in m³/h : Volume flow
 v_{eff} in m/s : Effective jet velocity
 A_{eff} in m² : Effective inlet area
 L_{WA} in dB(A) : A-weighted sound powerlevel, based on $A_{\text{eff}} = 0.1 \text{ m}^2$ (see table for corrections)
 L_{WNC} : NC rating of sound power level
 L_{W} in dB/Oct : Octave sound power level of regenerated noise based on $A_{\text{eff}} = 0.1 \text{ m}^2$ (see table for corrections)
 $L_{\text{PA}}, L_{\text{pNC}}$: A-weighting or NC rating respectively of room sound pressure level
 $L_{\text{PA}} \approx L_{\text{WA}} - 8 \text{ dB}$
 $L_{\text{pNC}} \approx L_{\text{WNC}} - 8 \text{ dB}$

1 Sound power levels and Pressure drop



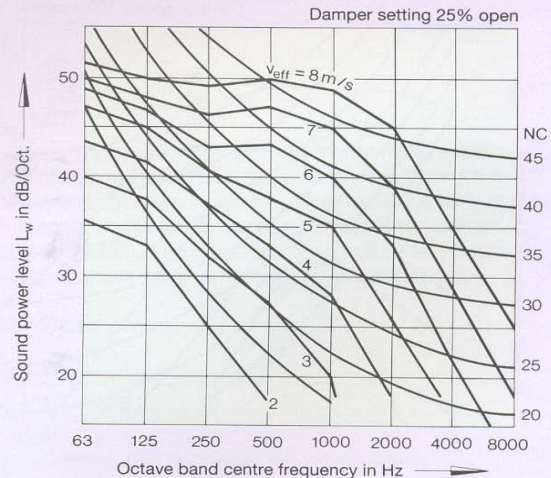
2 Octave band sound power levels



3 Octave band sound power levels



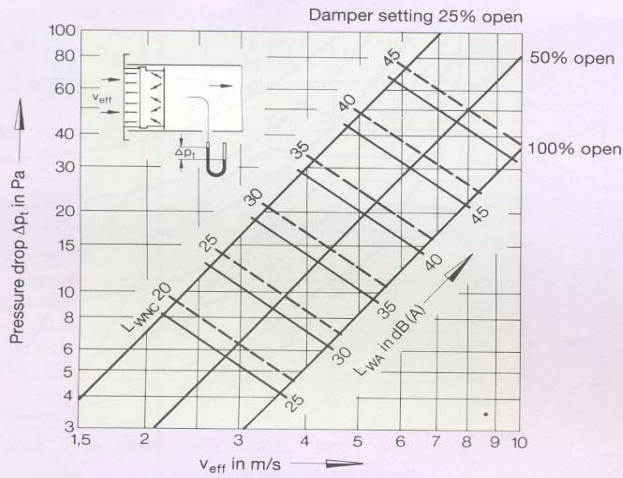
4 Octave band sound power levels



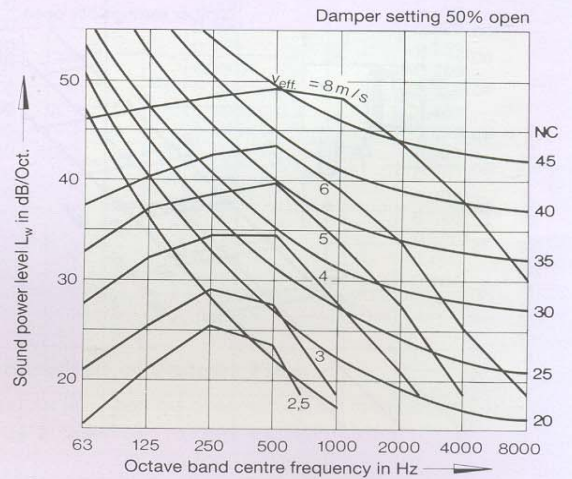
Technical Data

Type AE

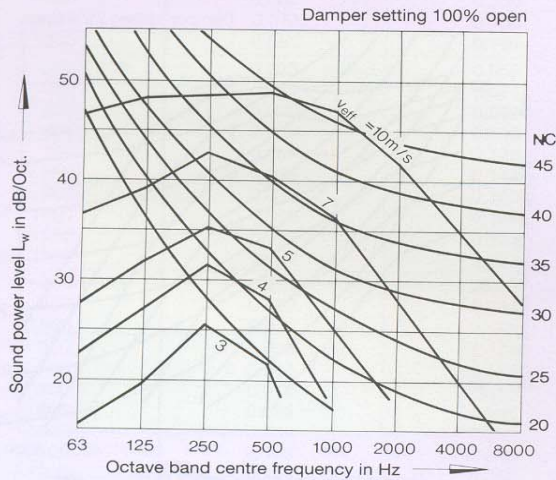
5 Sound Power level and Pressure drop



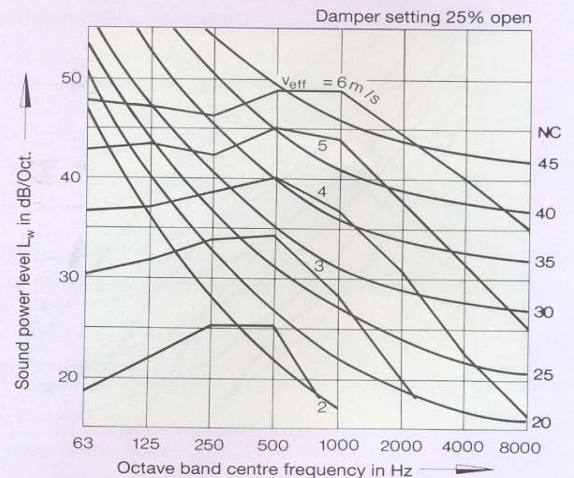
7 Octave band sound power levels



6 Octave band sound power levels

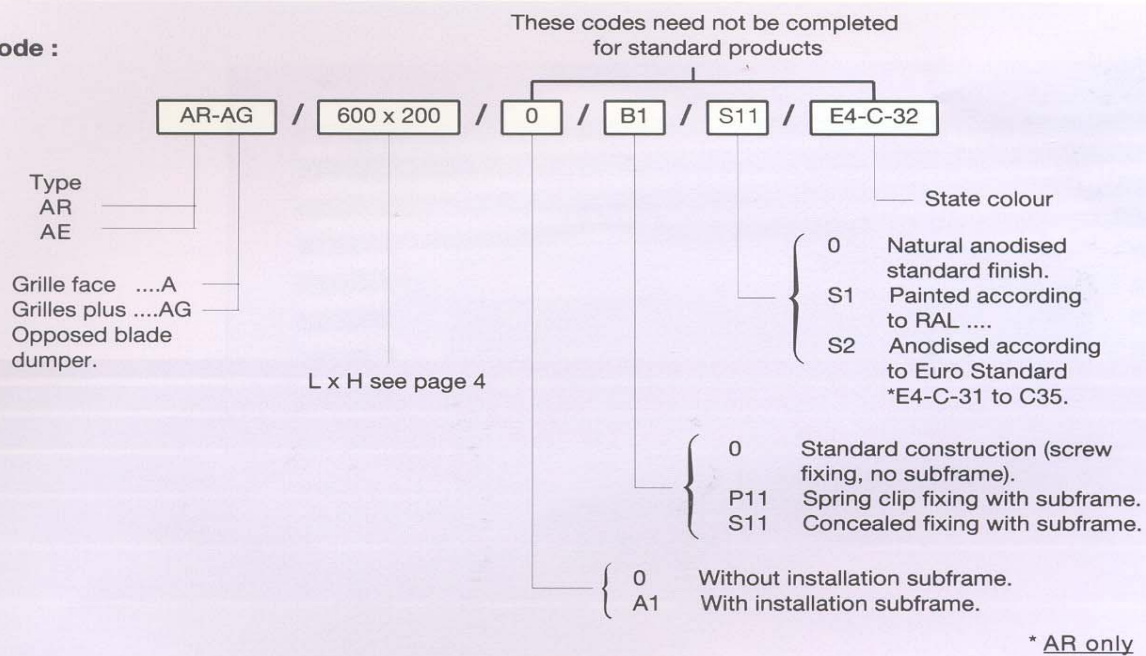


8 Octave band sound power levels



Order Details

Order Code :



Specification Text :

Grilles for return air, preferably for wall and duct installation, consisting of borders with corner mitres and perimeter sealing strip - horizontal fixed angled front blades or square pattern core; installed by visible screw fixing (border counter punched), optional concealed fixing or spring clip fixing both with installation subframe.

To optimise air distribution, rear assembly - opposed blade action volume control damper adjustable from the front face.

Materials :

The grilles are made from extruded aluminium sections, natural anodised finish E6-C-0. The core in type AE is made from aluminium eggcrate. The rear assembly is made from formed sheet steel, the surface is stove enamelled black (RAL 9005). The installation subframe is made from galvanised sheet steel according to BS 2989.

Order Example :

Make : TROX

Type : AR-AG/600 x 200