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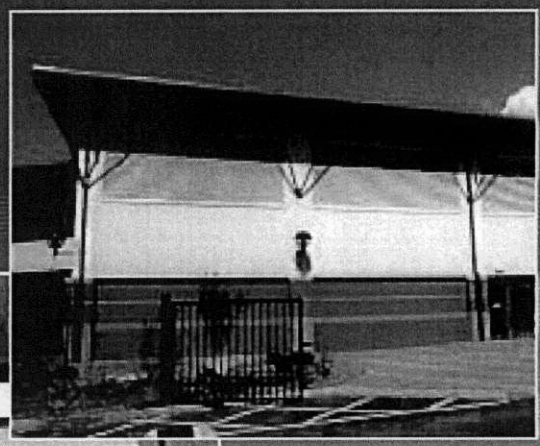
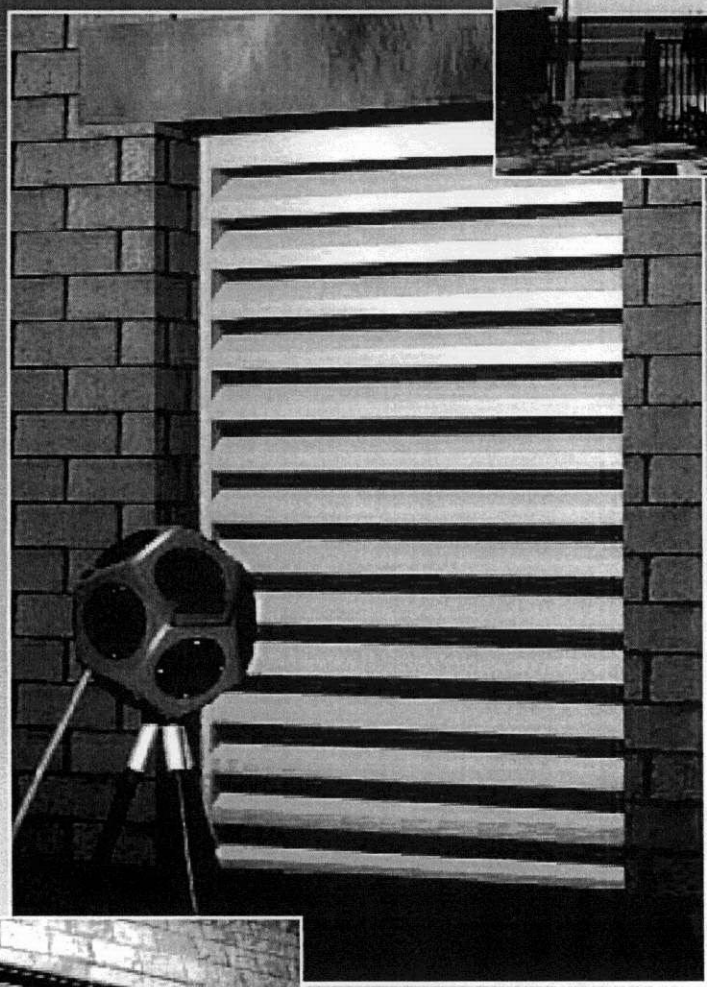
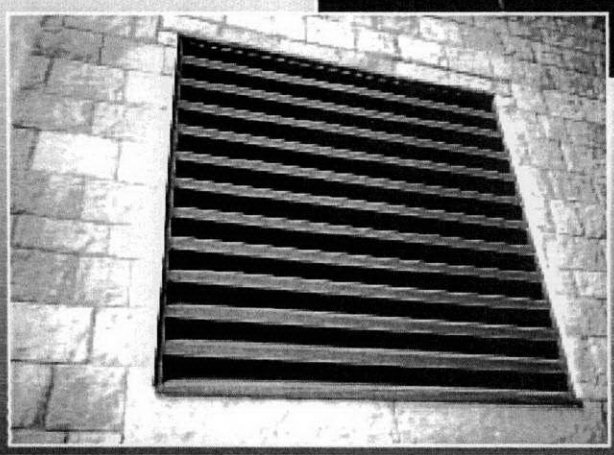
AUGUST 2002

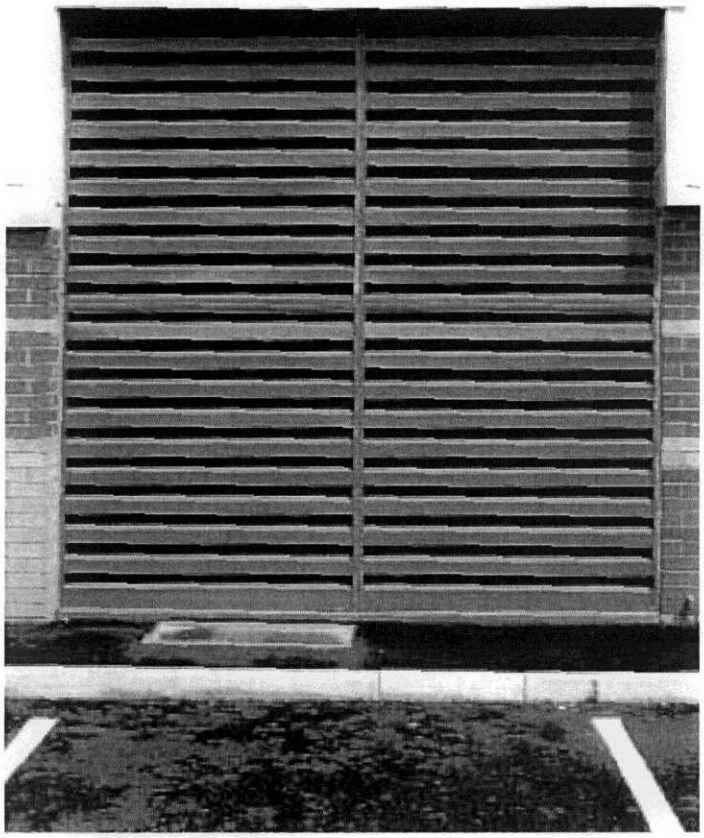
GALLOWAY ACOUSTICS







ACOUSTIC & NON-ACOUSTIC LOUVRES



Introduction

Creating apertures in a building's external fabric to allow air to enter whether by natural or forced ventilation has always caused the design team a dilemma.

Louvres have become an accepted aesthetic solution to solving this functional problem while at the same time effectively disguising the fact that an aperture exists.

Though effective in disguise to the human eye at normal angles that an aperture does exist, due consideration must be taken to the ingress of both rain water and unwanted visitors in the form of birds and insects, while at the same time not having too large a resistance to ventilation air entry or exit.

Galloway Acoustics have designed their range of acoustic and non-acoustic louvres with these perimeters in mind and can accommodate all potential applications that may require the use of louvres. All the acoustic options have been tested at Salford University to a UKAS accredited standard.

The details shown within this catalogue are our standard designs. Customised louvres, whether by blade pitch, shape; size or material can be accommodated within our flexible production facilities located at Dundee, Dewsbury and Haverhill.

For further details please contact Galloway Acoustics Technical Sales Staff who are on hand to assist you with all your enquiries.

Contents

Standard Construction Specifications and Models available

Acoustic and complimentary non-acoustic louvres

There are four types of acoustic louvres, these are: -

L-AS-150 *Single Bank 150mm deep, 150mm pitch*

L-AD-150 *High performance Double Bank 2 no 150mm deep (304mm overall), 150mm pitch*

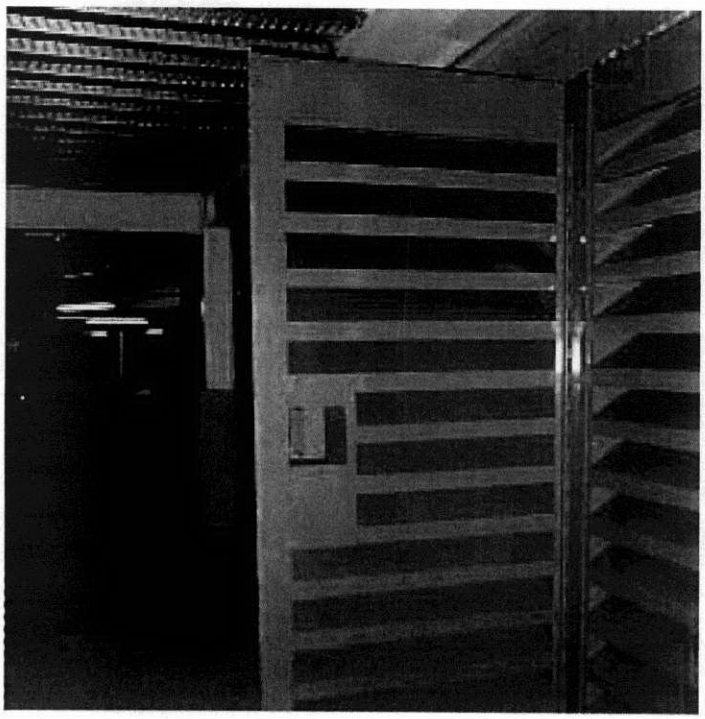
L-AS-300 *Single Bank 300mm deep, 150mm pitch*

L-AD-300 *High performance Double Bank 2 no 300mm deep (604mm overall), 150mm pitch*

A complimentary non-acoustic louvre based on a 150mm pitch is available to match areas of acoustic louvres and is specifically used on large louvre banks to create an active (requires airflow without any acoustic performance being required) or non-active area (that can be blanked off) to economically match other areas where active acoustic louvres are being installed. This louvre is coded **L-NA-150-150** and can be used with any of the above combinations.

Acoustic single leaf or double leaf louvred doors can be manufactured from either the 150mm or 300mm deep design but in both cases due to practical space and weight restrictions are only offered as a single bank option. Alternatively a non-acoustic louvred door can be offered with a back blanking plate to match areas of louvre banks that require the acoustic performance of a double bank design.

For further details please contact Galloway Acoustics Technical Sales Staff who are on hand to assist you with all your enquiries.



Louvre standard construction specification, is as follows: -

The outer casing would be constructed from 1.2mm gauge pre-galvanised mild steel with the front edge folded back to give additional strength.

The semi-aerofoil blades would be fabricated from 1.2mm gauge pre-galvanised mild steel and incorporate a 10mm double return rainlip.

Enclosed within the louvre and retained by 0.7mm perforated pre-galvanised Sheet Steel would be Rockwool LR45 (45kg/m^3) acoustic infill protected by a layer of glass fibre tissue with a fibre diameter some 12.5 microns thick.

Construction Options

M Acoustic infill encapsulated in a hermetically sealed Melinex bag (no glass fibre tissue is used in this case).

GLW Glass fibre tissue to all surfaces of acoustic media.

BG Bird guard fitted to rear of louvre manufactured from 12.5 x 12.5 x 1.6mm diameter galvanised weld mesh.

IS Insect screen fitted to rear of louvre.

MF Mounting frame fitted to position on louvre as directed by client or supplied loose for fitting on site. Manufactured from 50 x 50 x 5mm pre-galvanised RSA (rolled steel angle).

PF Picture frame normally supplied loose manufactured from 1.6mm formed pre-galvanised sheet-steel.

PP Polyester powder paint to any standard BS or RAL colour, with standard definition of gloss level being: -

Gloss	80%
Semi-gloss	60%
Matt	30%

Variations to the above levels to BS standards could be +/- 10% i.e. 70-90% for gloss.

Unless otherwise advised Galloway Acoustics will use a standard 60% or semi-gloss finish.

Where a paint finish is not specified we will assume that the louvre is to be supplied as a plain self-finish item, i.e. pre-galvanised sheet steel, aluminium or stainless steel. Other variations can be offered such as anodised aluminium and polished stainless steel. Any such requirements should be clearly detailed in a specification and coded NS (Non standard - see coding list).

Construction specifications for grille and weather louvres are varied and given upon application.

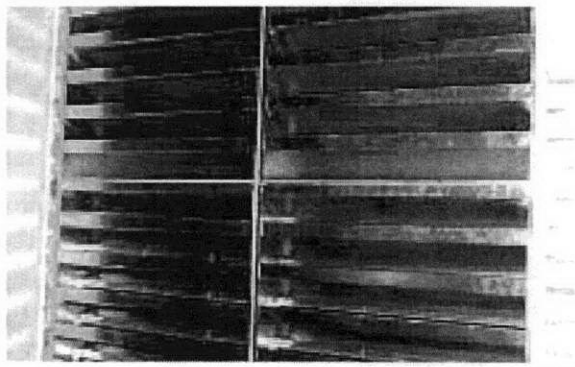
Refer to page 4 for standard codings for use in communicating the acoustic or non-acoustic louvre design required. Certain codes not mentioned above, i.e. MSW are covered later in this catalogue.

L	Denotes Louvre
AS	Acoustic Single Bank
AD	Acoustic Double Bank
NA	Non-Acoustic
150	Louvre Depth
300	Louvre Depth
50	Louvre Pitch – Non-Acoustic Grille Louvre
75	Louvre Pitch – Non-Acoustic Weather Louvre
150	Louvre Pitch – Acoustic Louvre / Complementary Non-Acoustic Louvre
PG	Pre-Galvanised Sheet Steel construction
ALI	Aluminium Sheet construction
ALIEX	Extruded Aluminium construction (non-acoustic grille and weather louvre options only)
ST/ST	Stainless Steel construction (steel type i.e. 304 or 316 to be determined)
M	Melinex Hermetically sealed bag over acoustic media
GLW	Glass Cloth Wrap to all faces of acoustic media
BG	Bird-guard to rear of Louvre
IS	Insect screen to rear of Louvre
BP	Blanking plate to rear of Louvre for non-active areas
MF	Mounting Frame 50x50x5 RSA
PF	Picture Frame 1.6mm formed sheet-steel
WF	Bottom weather flashing (customised for each project)
MSW	Multi-Section Construction in the width – Specify No of sections i.e. MSW2 = 2 sections
MSH	Multi-Section Construction in the height – Specify No of sections i.e. MSH2 = 2 sections Combinations can be given by W/H, i.e. MSW4/MSH2 4 sections in width and 2 sections in height.
PP	Polyester Powder painted to required BS/RAL colour
SPF	Other paint finishes to be specified
SD	Single leaf door – acoustic option available only in single bank design either 150mm or 300mm
DD	Double leaf door – acoustic option available only in single bank design either 150mm or 300mm
PEHO	Penthouse design
FLD	Fine Line Design
NS	Non standard – refer to drawing, specification and schedule descriptions

An example of how the coding system works is as follows: -

A single bank acoustic louvre manufactured from pre-galvanised sheet-steel with a 300mm depth, 150mm pitch complete with a bird guard, mounting frame, picture frame and polyester powder paint finish would be –

L-AS-300-150-PG-BG-MF-PF-PP



Louvres tested at Salford University

Acoustic Design

To select an acoustic louvre the required acoustic performance must be determined. If assistance is required to establish this information Galloway Acoustics can carryout full acoustic calculations which are ultimately (subject to a contract being placed by the contractor with Galloway Acoustics for the specified louvres) backed by our Professional Indemnity Insurance cover.

The acoustic performance figures for our standard range of acoustic louvres are shown opposite. These are based upon sound insulation (Sound Reduction Index) tests carried out by Salford University in a UKAS accredited test facility and procedure in accordance with BS EN ISO 140-3 1995.

Sound Reduction Index - Defined as 'A set of values measured by a specific test method to establish the actual amount of sound that will be stopped by the material, partition or panel when located between two rooms.'

Model	Fr	63	125	250	500	1k	2k	4k	8k
L-AS-150	dB	5	5	6	7	13	13	13	12
L-AD-150	dB	6	7	9	14	22	19	19	18
L-AS-300	dB	6	6	7	12	19	19	17	16
L-AD-300	dB	8	10	11	20	27	27	26	25

Noise Reduction - defined as 'used to define the performance of a noise barrier. Established by measuring the difference in sound pressure levels adjacent to each surface.'

Model	Fr	63	125	250	500	1k	2k	4k	8k
L-AS-150	dB	11	11	12	13	19	19	19	18
L-AD-150	dB	12	13	15	20	28	25	25	24
L-AS-300	dB	12	12	13	18	25	25	23	22
L-AD-300	dB	14	16	17	26	33	33	29	28

Selection Procedure

Having established the required acoustic performance the louvre model can be selected. The next stage would be to size the dimensions of the louvre required. Normally the height is the limiting factor, this is set and the width calculated using the air volume to be handled subject to a maximum pressure loss required. The expected pressure losses can be seen below and due note should be taken of the i.e Plenum to Duct, Duct to Plenum etc.

Example 1

A L-AS-150 louvre handling $20m^3/s$ in a duct to plenum situation, with a limiting height of 1200mm and permitted maximum resistance of 50 Pa would require, as can be seen from the pressure loss graph, a maximum face velocity of 2.25m/s (50 Pa less 10% = 45 Pa, i.e. duct to plenum is +10%, so use 45 Pa as 45 Pa +10% = 50 Pa).

Hence width required is:- $\frac{(20m^3/s)}{(2.25m/s)} \Big/ 1.2m = 7.41m$

We would suggest width of 8.0m split into 4 no sections each 2000mm wide and 1200mm high.

Example 2

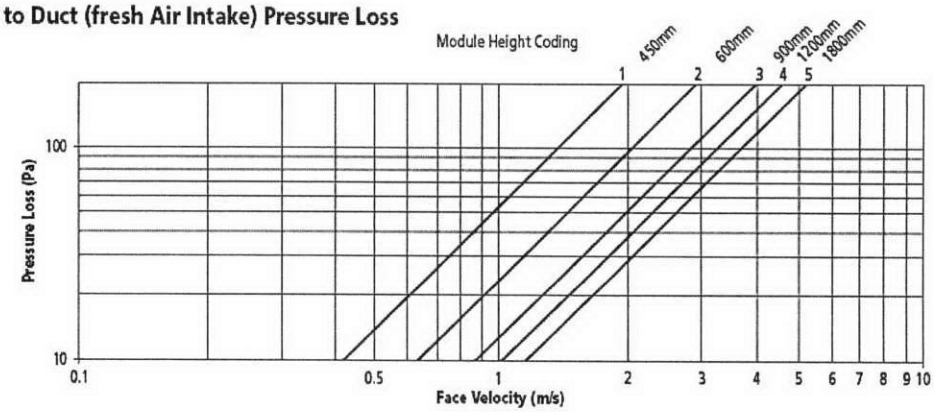
An L-AD-300 louvre handling $6m^3/s$ in a plenum to plenum situation, with a limiting height of 1800mm and permitted maximum resistance of 35 Pa Would require a maximum face velocity of 0.8m/s (35 Pa less 10% = 30 Pa, i.e. plenum to plenum is +10%.
So use 30 Pa as 30 Pa + 10% = 35 Pa).

Hence width required is:- $\frac{(6m^3/s)}{(0.8m/s)} \Big/ 1.8m = 4.166m$

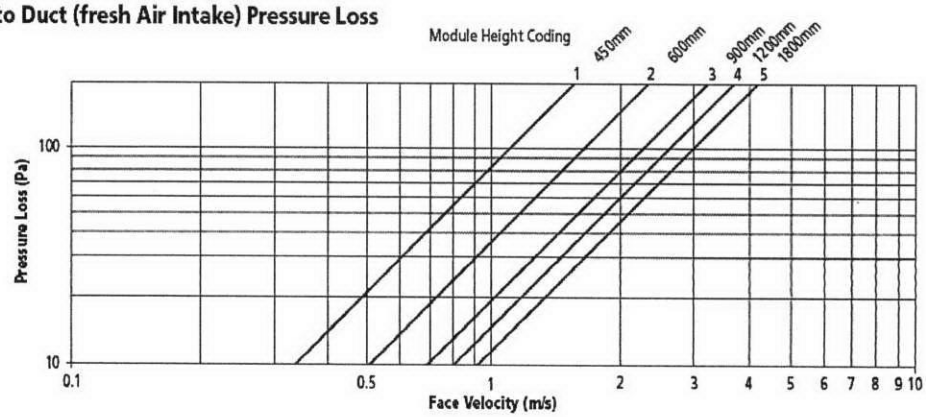
We would suggest a width of 4.2m split into two sections each 2100mm wide x 1800mm high.

Louvre application situation	Pressure Loss Increase (%) Louvre Type				
	L-AS-150	L-AD-150	L-AS-300	L-AD-300	L-NA-150
Plenum to Duct (Fresh Air Intake)	As graph	As graph	As graph	As graph	As L-AS-150 graph
Duct to Plenum (Exhaust Air)	+10%	+5%	+10%	+5%	+10%
Plenum to Plenum (Fresh Air Intake)	+50%	+10%	+50%	+10%	+40%
Plenum to Plenum (Exhaust Air)	+60%	+10%	+60%	+10%	+40%

L-AS-150 & L-AS-300 Plenum to Duct (fresh Air Intake) Pressure Loss



L-AD-150 & L-AD-300 Plenum to Duct (fresh Air Intake) Pressure Loss



150 Deep Acoustic Louvre

height \ width	450	600	750	900	1050	1200	1350	1500	1650	1800	1950	2100	2250	2400
450	13	17	20	15	26	29	32	36	39	42	45	49	52	55
600	17	21	26	29	34	38	42	46	50	54	59	62	67	71
750	21	26	31	36	41	46	51	56	62	66	71	77	82	86
900	25	31	37	43	49	55	61	67	73	79	85	91	97	103
1050	29	35	42	50	56	63	70	77	84	91	98	104	111	119
1200	32	41	48	56	64	71	80	87	95	103	110	119	126	134
1350	36	45	54	62	71	80	89	98	107	115	124	133	141	150
1500	40	50	59	69	79	89	98	108	118	127	137	146	156	166
1650	44	55	65	76	86	97	107	118	129	140	150	161	171	182
1800	48	59	71	83	94	105	117	128	140	152	163	175	186	197

300 Deep Acoustic Louvre

height \ width	450	600	750	900	1050	1200	1350	1500	1650	1800	1950	2100	2250	2400
450	17	22	26	20	35	39	43	48	52	56	60	65	69	73
600	23	28	34	39	45	50	56	61	67	72	78	83	89	94
750	28	35	41	48	55	61	68	75	82	88	95	102	109	115
900	33	41	49	57	65	73	81	89	97	105	113	121	129	137
1050	38	47	56	66	75	84	93	102	112	121	130	139	148	158
1200	43	54	64	74	85	95	106	116	127	137	147	158	168	179
1350	48	60	72	83	95	107	118	130	142	153	165	177	188	200
1500	53	66	79	92	105	118	131	144	157	169	182	195	208	221
1650	59	73	87	101	115	129	143	157	172	186	200	214	228	242
1800	64	79	94	110	125	140	156	171	186	202	217	233	248	263

Dimensions in millimetres, Weights in kilograms

Notes

1 For double bank options AD-150 and AD-300, multiply the above figures by a factor of 2

2 The above table gives weight for individual module sizes. For dimensions above 2400mm wide x 1800mm high please use multi-section arrangement.

3 The above weights are based on a standard pre-galvanised sheet steel construction. For weights of other material usage such as aluminium and stainless steel, please refer to Galloway Acoustics Technical Sales Staff for assistance.

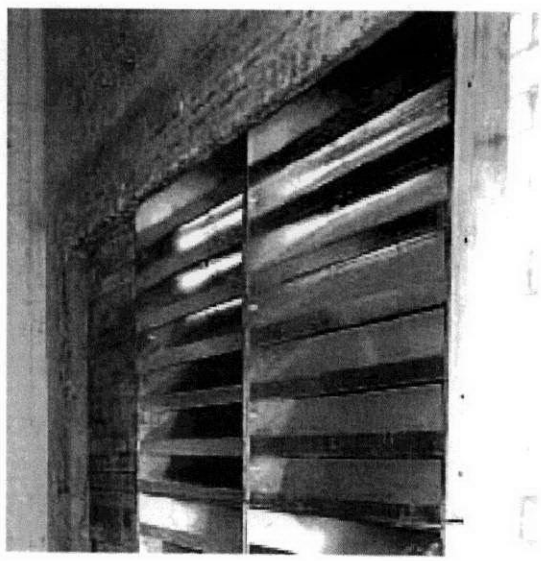
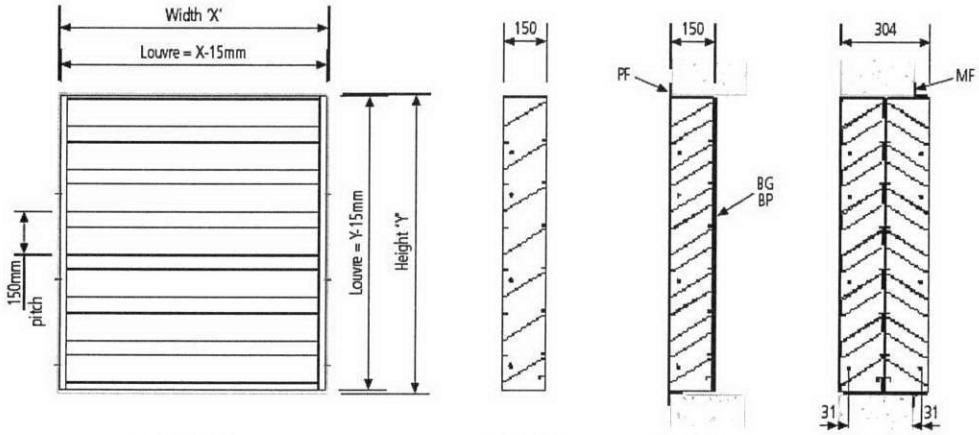
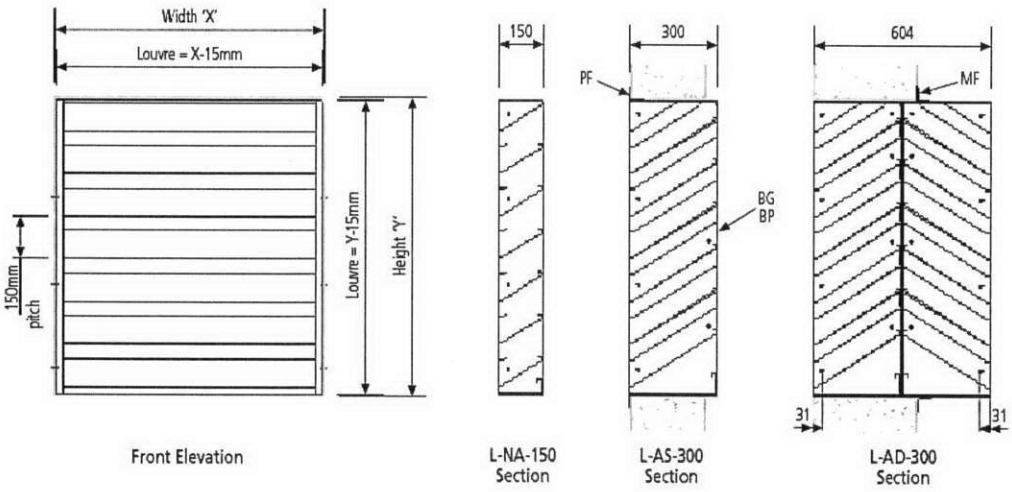


FIG 1 – Standard 150 Deep Acoustic Louvre
(and complementary non-acoustic louvre)

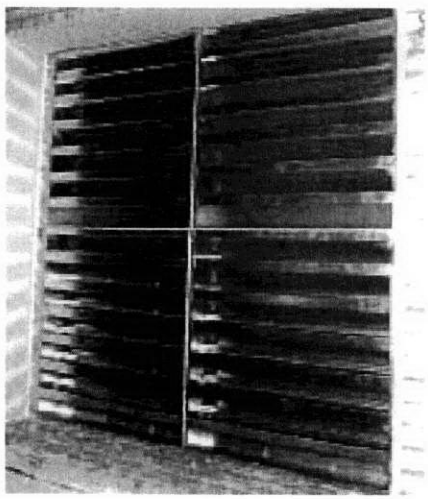


Front Elevation | L-NA-150 Section | L-AS-150 Section | L-AD-150 Section

FIG 2 – Standard 300 Deep Acoustic Louvre
(and complementary non-acoustic louvre)



Front Elevation | L-NA-150 Section | L-AS-300 Section | L-AD-300 Section



Dimension X = Actual structural opening width (300mm minimum)
Dimension Y = Actual structural opening width (450mm minimum)

BG - Optional birdguard to rear of louvre (can be supplied loose if required)
BP - Optional blanking plate fitted to rear for non-acoustic areas
MF - Optional rolled steel angle mounted frame (supplied loose)
PF - Optional formed 1.6mm thick picture frame (supplied loose)

Guidance for the Installation of Acoustic and Non-Acoustic Louvres

1. Ensure any installed or existing associated plant is shut down and isolated prior to commencement of work.
2. Firstly offload the delivery vehicle as close to the lifting zone as possible and place on a protected ground surface avoiding mud, water and other contaminants.
3. When lifting louvres into position do not lift via louvre blades but support from underneath the units.
4. Prior to lifting ensure the route of the lift is clear of all obstructions and unauthorised personnel.
5. Fit any weather flashings required prior to offering louvre up to opening.
6. Offer acoustic louvre into structural opening ensuring the assembly is true and square. Fit mounting frame if provided loose.
7. Where required wedge and pack between the louvre and the structure.
8. Fix to surrounding structure and/or structural sub-frame through pre-drilled holes along sides of louvre casing as detailed on drawing 03-SK1 or using mounting frame provided.
9. Fit picture frame (where provided).
10. Fix birdguard to rear of louvre (if supplied loose).
11. Seal louvre to structure using appropriate sealant (supplied by others or available from Galloway Acoustics).

The steps opposite are for guidance only and being project dependant this list is by no means exhaustive. If in doubt please contact Galloway Acoustics Technical Sales Staff for further advice.

Alternatively a professional and skilled installation service is offered by Galloway Acoustics. This is backed by a comprehensive Public and Employers Liability Insurances and working practices compliant with all relevant and current COSHH and Health at Work Safety Standards. Specific method statements are provided for each project undertaken by Galloway Acoustics.

All contracts both supply only and those involving an element of installation are project managed by an experienced engineer who will co-ordinate the design for approval, manufacture, despatch and 'on site' installation programme.

Figure 3 which shows some typical installation details that can be utilised for project specification drawings.

FIG 3

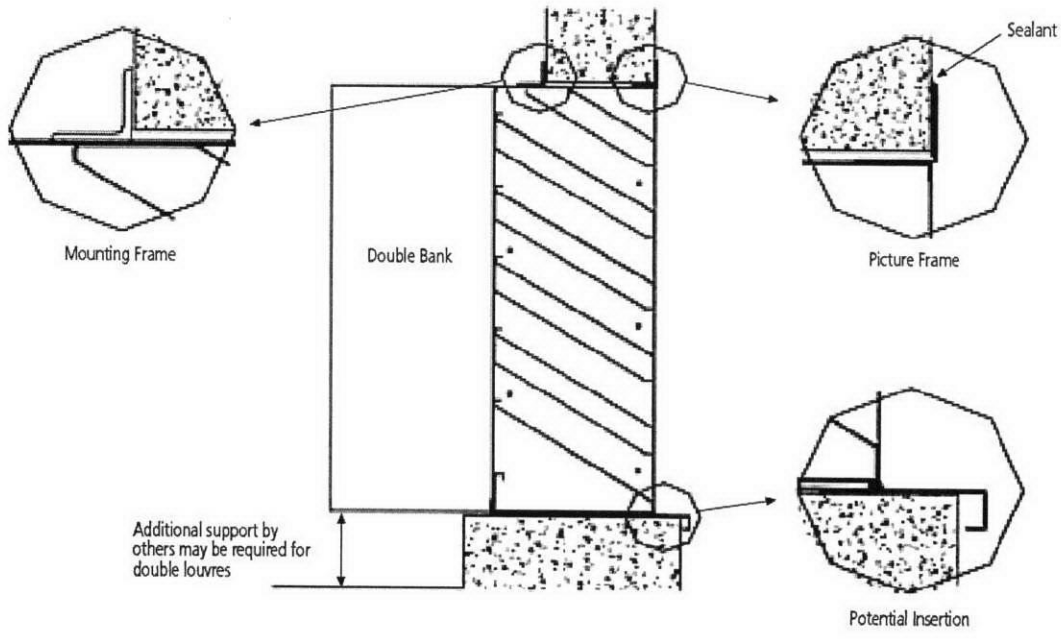


FIG 4 – Alternative Structural Fixing Methods
(showing suggested duct connection)

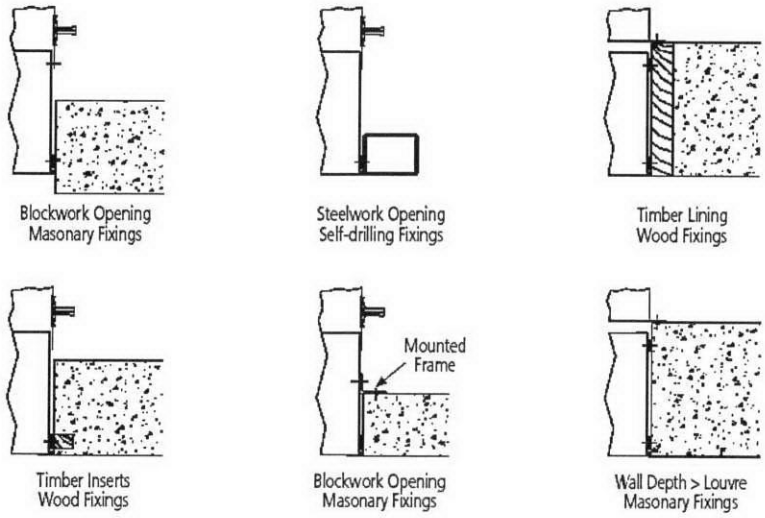


FIG 5 – Multi Section Louvre Assembly
MSW / MSH

The standard maximum single unit dimensions are 2400mm wide x 1800mm high for either the 150 or 300 depth design.

Units above these dimensions will be manufactured as multi sections on the width (MSW) or height (MSH).

For larger louvre banks, units can be both MSW and MSH.

Individual louvre sections are bolted together, through the side panels, using M8 fixings and secured to the structure, also via the side panels, using fixings suitable to the structural surround.

Where required bottom sections are strengthened to support the weight of the top units.

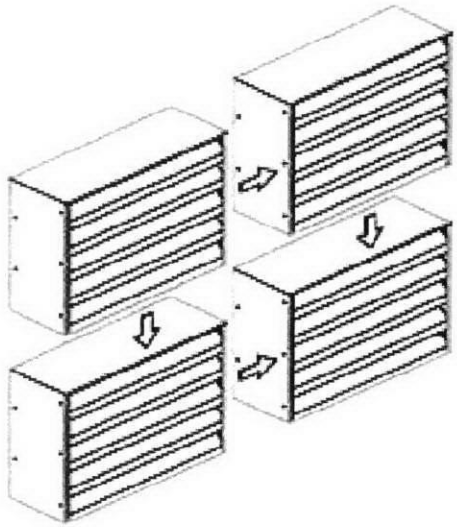
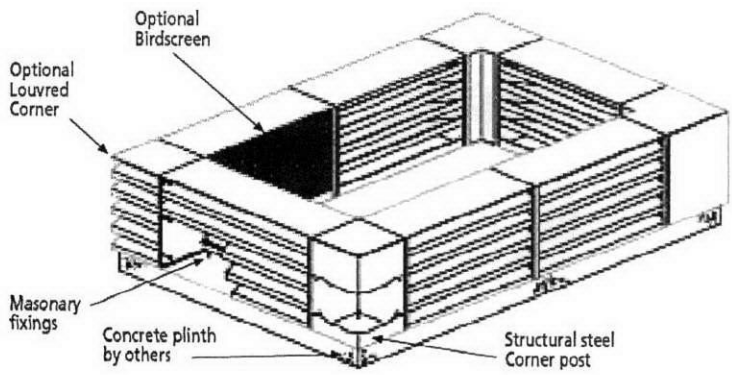
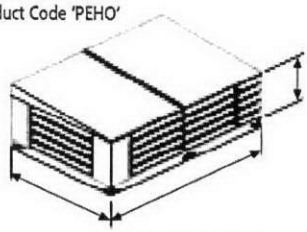


FIG 6 – Louvre Screen/Enclosure
Product code 'NS'. Please consult Technical Sales Staff to assist in the design.



Optional roof to create Penthouse louvre construction.
Product Code 'PEHO'



For Penthouse louvre designs please specify overall outside dimensions, active louvres and louvre type required

FIG 7 – Fine Line Design

Product Code 'FLD'. Provides continuous louvre blade appearance by elimination of front casing returns. See design opposite:

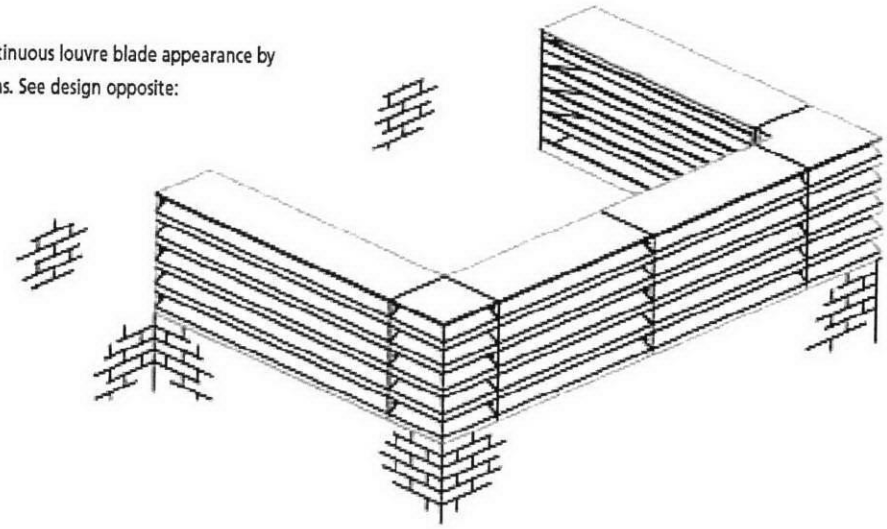
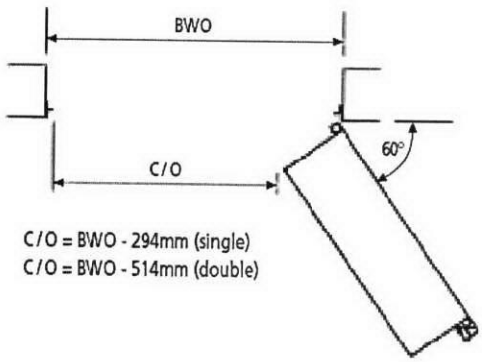
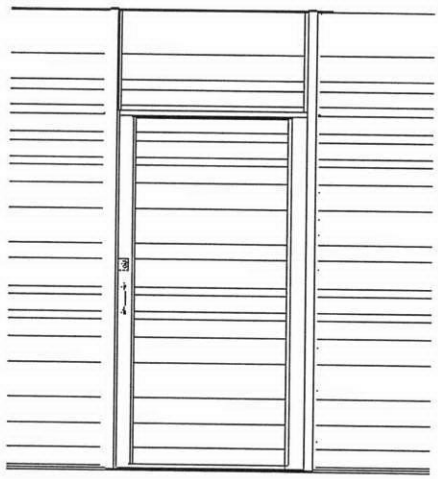
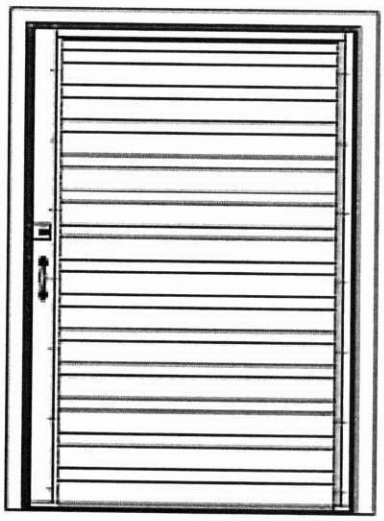


FIG 8 – Acoustic and Non-Acoustic Louvre Doors

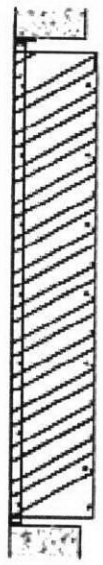


C/O = BWO - 294mm (single)
C/O = BWO - 514mm (double)

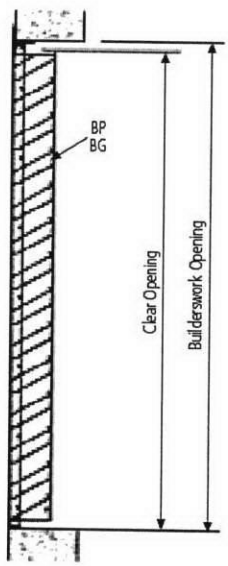




Front Elevation



LD-AS-300

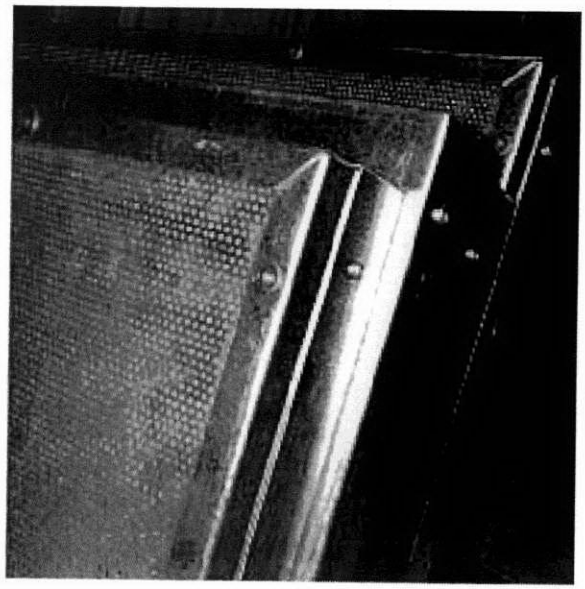


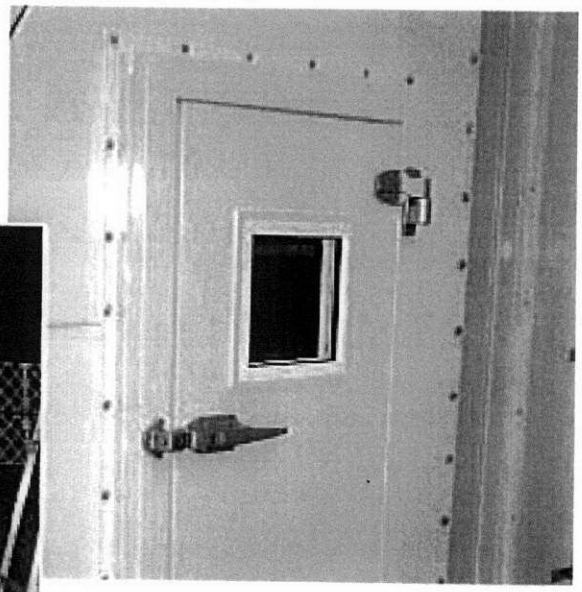
LD-AS-150
LD-NA-150

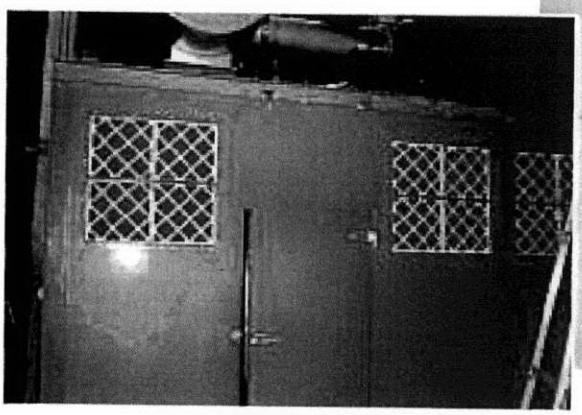
Louvre doors available in Single or Double leaf
BG - Optional birdguard to rear of door
BP - Optional blanking plate fitted to rear of door

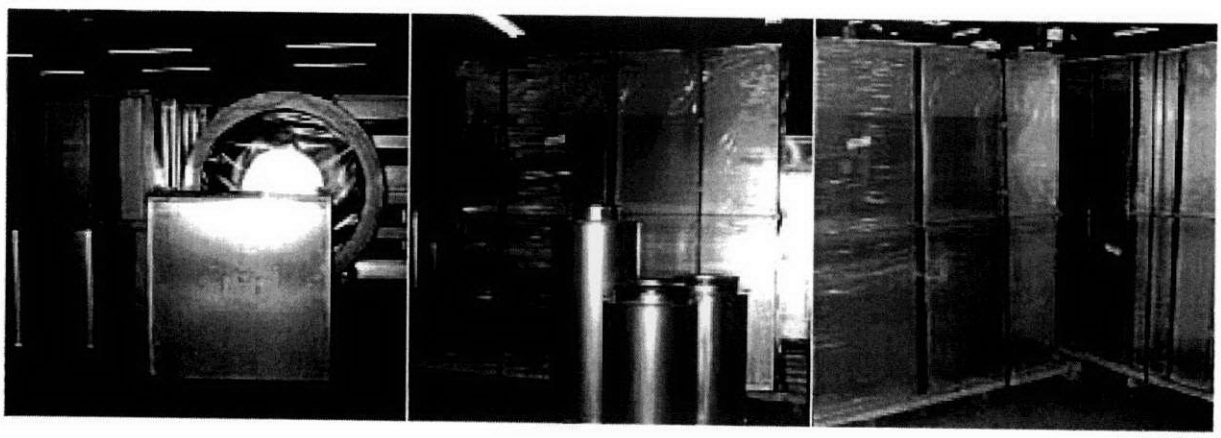
Other product ranges available from Galloway Acoustics are:

- Rectangular Silencers
- Cylindrical Silencers
- Special Ducting Components
- Metal Acoustic/Fire Doors
- Acoustic Enclosures and Screens
- Acoustic Materials
- Vibration Isolators
- Inertia Bases
- Floating Floors
- Acoustic Consultancy/Design
- On Site Technical Services









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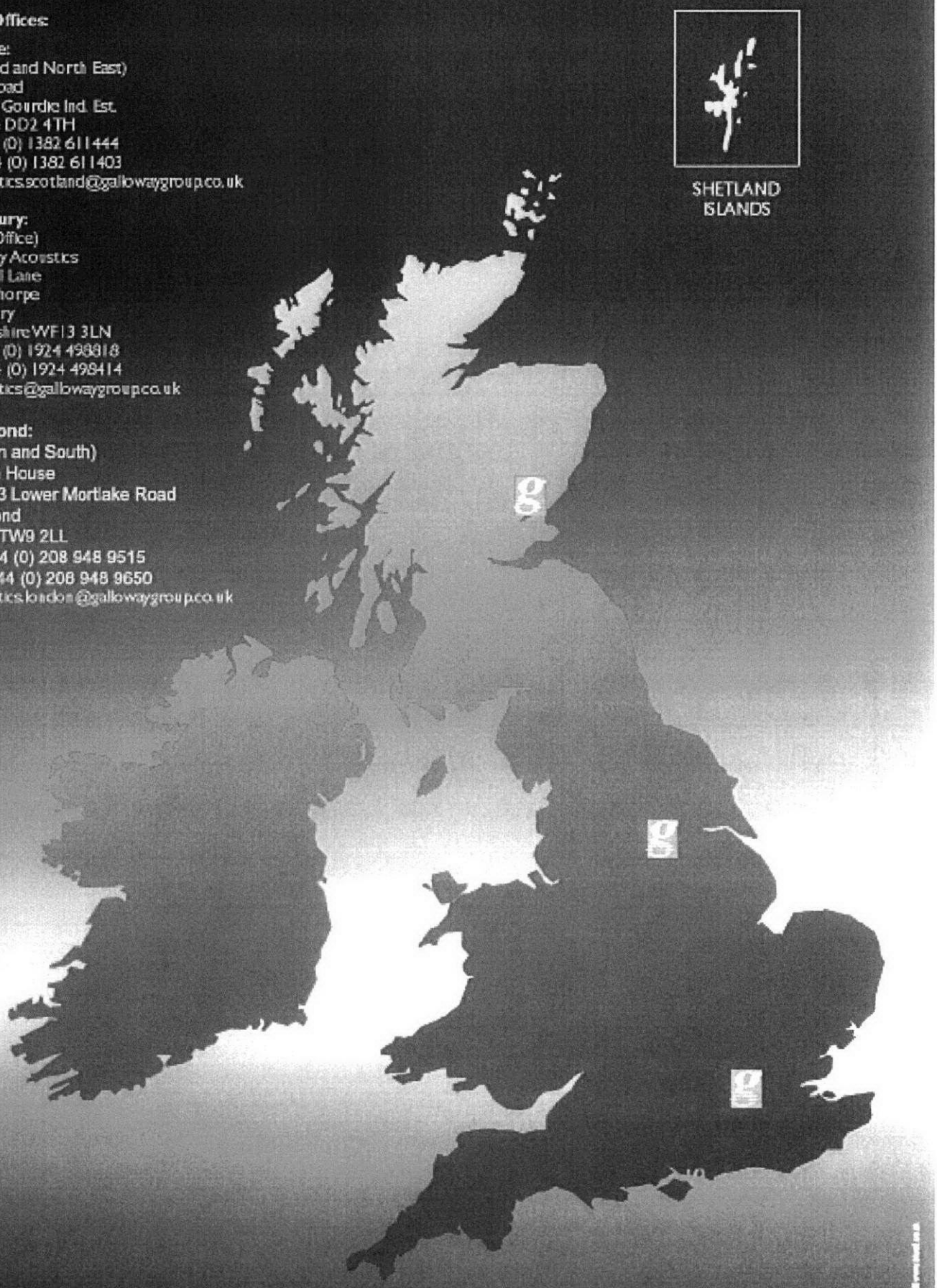

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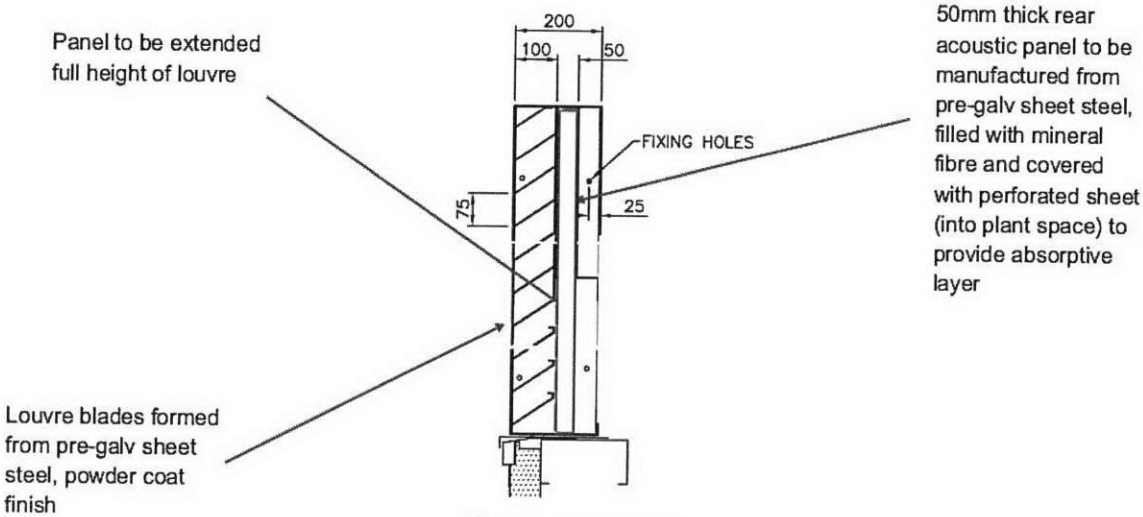
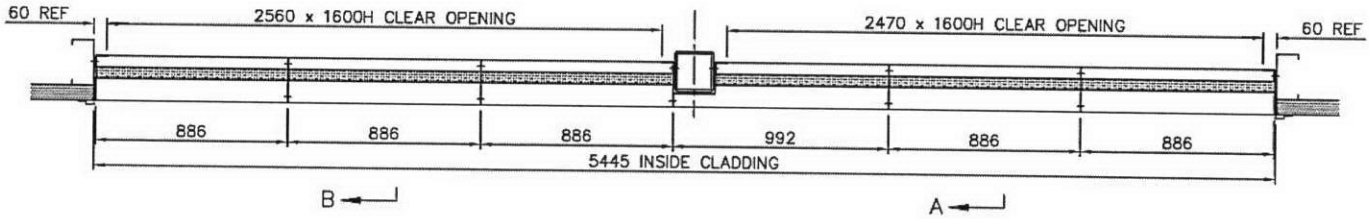
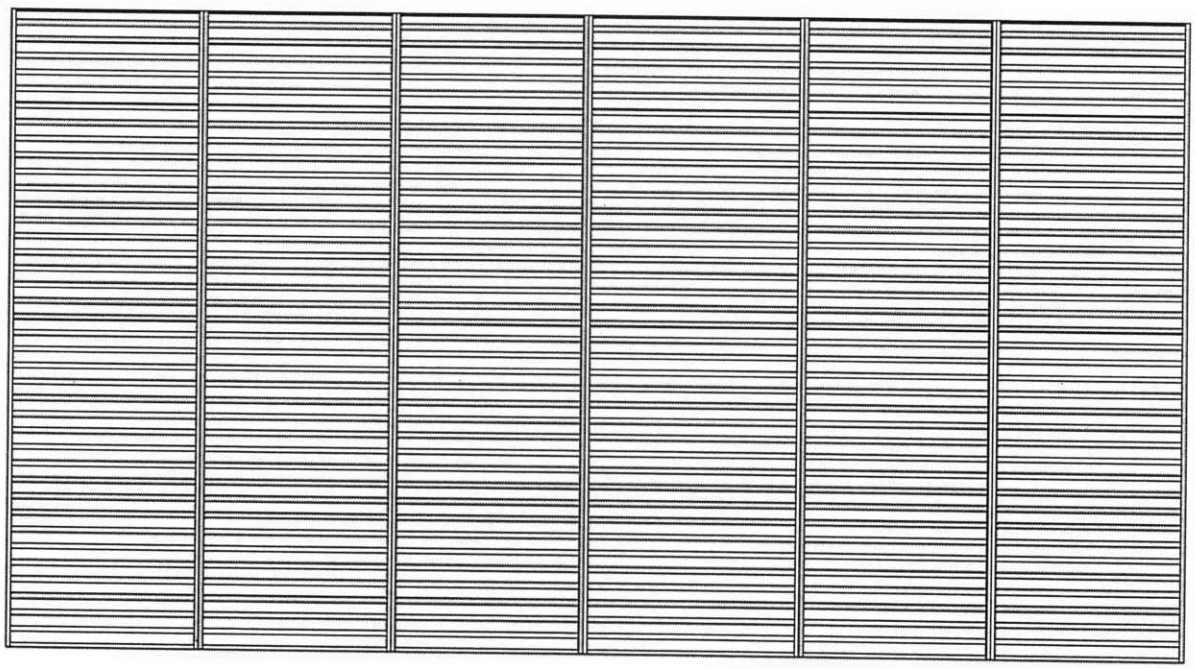


TYPICAL LOUVRE SECTION





FRONT ELEVATION