SUMMARY
Operable wall shall be series 100F/41/SX2 supplied by Lotus Folding Walls & Doors Pty Ltd, TEL: [03] 9771 8255 FAX: [03] 9771 8260 and shall consist of top retracted, manually operated panels that can be linked together to form a sound retardant closure.

1. PANELS
Panels shall be 100 series with Fineline panel junctions. Panels shall be constructed of a sandwich of board and/or steel separated by acoustic insulation to achieve the specified sound rating. Panel faces shall be contained within a perimeter frame with interlocking stiles. Panel faces shall be replaceable in the field.

2. ACOUSTICS
The manufacturer shall guarantee that the operable walls are like construction to those tested to AS 1191-2002 by a NATA approved independent Australian acoustic laboratory to achieve R 41.

3. STACKING
When the operable wall is opened, panels shall be parked in a side stack configuration. Suspension shall be one or two point according to the requirement of the stacking system and panel type.

4. CLOSURE
The operable wall shall be acoustically opened and closed by an expanding panel located at the stacking end of the track system.

5. SEALS
At the top, panels will seal acoustically to the track by sweep seals. At the bottom, panels will seal acoustically to the floor by retractable seals.

6. FINISHES
6.1 Panel surfaces shall be finished in Innova Flexiclad Aegean Glacier Vinyl.
6.2 Panel frames shall be anodised, Matt Natural.
6.3 Head track shall be powdercoated, Dulux Pearl White Gloss 1114G.

7. ACCESSORIES
The operable wall system shall incorporate the following accessory features:
7.1 Inset boards shall be set from 900mm to 2100mm above floor level. Board type shall be whiteboard. Specification shall be magnetic.
7.2 Aluminium kick plates fitted on both sides of all panels up to a height of 150mm above floor level and anodised to match 6.2 above.

8. CUSTOMER CARE
8.1 The supplier is required to provide a handover to the end user.
8.2 The supplier will provide a 1 year warranty against manufacturing and installation defects.

LOTUS folding walls & doors
Acoustic operable wall systems

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lotusdoors.com.au
OPERABLE WALLS

Acoustic operable wall systems

CONTENTS

introduction 2
customer care 3
panels 4
acoustics 6 – 7
stacking 8 – 9
closures 8 – 9
seals 10 – 11
finishes 12 – 13
accessories 14 – 15
finishes 16 – 17

Design by Morris Bray Martin Ollmann Architects

Front cover: Design by Group GSA
This brochure is designed so you can make the most of our quality acoustic operable wall systems to deliver maximum value to your clients. Whether you are deciding on acoustics, stacking layouts, or finishes, each section of this brochure details your options with the ‘real world’ benefits explained.

We are proud to be ‘Australian owned and made’ and have been the supplier of choice for the Perth Convention and Exhibition Centre (PCEC) and the Melbourne Exhibition and Convention Centre (MECC), two of the largest installations of operable walls in Australia. We are also proud of the quality of service we give from design consultation to final site installation and handover.

We invite you to use this brochure as a specification tool. Using the back cover flap as a guide, just follow the brochure from front to back. Please contact our state sales offices if you require further assistance. We’d love to help you.

Nick Diggens
Managing Director

INTRODUCTION

WARRANTY
Lotus QA system submits every panel to an Inspection and Test Plan. Track and trolley systems give lifetime performance. Lotus offer a 1 year warranty on all walls installed by Lotus staff (or authorised representatives).

MADE TO LAST
Most Lotus walls have Medium Density Fibreboard (MDF) faces which are stronger than plasterboard alone. The frame can be screwed into the board, which results in an immensely strong panel.

MOVING EASILY
Customers are not always strong people, so Lotus provides a tool to make moving panels easier. Footbolts also have handles and don’t rely on nail breaking finger holes. Moving single panels around an omni-directional tracking system is made easier by using programmed diverters wherever possible.

LEAD TIMES
Lotus is well known for its short lead times and reliability on deadlines. Normal lead times are about four weeks from receipt of all dimensions and finish details (and shipping beyond Victoria). Special finishes can take longer.

CUSTOMER CARE

CUSTOMER HANDOVER
Once the project is completed and the tenants have moved in, Lotus’ policy is to call back, demonstrate the use of the wall and leave printed instructions. A quality post-check is done and the architect/builder receives a handover copy.

SERVICING AND MAINTENANCE
Attending to a service call-out matters to us as much as installing a new wall. Lotus has an excellent reputation for a quick response in such situations. A maintenance service is also available for larger, complex installations.

RESEARCH AND DEVELOPMENT
Lotus is continually updating and improving product features so details in this brochure may change over time.

OUR COMMITMENT TO THE ENVIRONMENT
Working with customers, suppliers and staff we have developed an Environmental Management System (EMS) to plan, document and monitor environmental performance. We’re minimising our greenhouse gas emissions, water usage, promoting effective waste management and considering the sustainability of the materials we use (for example recycled aluminium and FSC certified sustainable timber sources).
The Lotus Operable Wall System comes in three models according to the sound rating required (80, 100 and 125 Series). There are three options for the perimeter frame.

**STANDARD**
Stiles wrap smoothly around panel edges. The look is neat and clean, as each stile is only 12mm wide. Board edges are totally protected even in the toughest environment.

**FINELINE**
An innovation giving you the best of both worlds. Panels are almost frameless with just 4mm of visible vertical trim. Panel corners remain protected.

**OVERLAY**
Beautiful looking panels with completely concealed perimeter frames. The eye flows across the wall without interruption. Ideal for prestige locations and where careful handling is more likely.

### PANEL THICKNESS

<table>
<thead>
<tr>
<th>Series</th>
<th>Standard</th>
<th>Fineline</th>
<th>Overlay</th>
<th>Acoustic Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>80</td>
<td>80mm</td>
<td>80mm</td>
<td>93mm</td>
<td>R₉ 37–45</td>
</tr>
<tr>
<td>100</td>
<td>100mm</td>
<td>100mm</td>
<td>112mm</td>
<td>R₉ 41–53</td>
</tr>
<tr>
<td>125</td>
<td>125mm</td>
<td>–</td>
<td>–</td>
<td>R₉ 52–55</td>
</tr>
</tbody>
</table>

Consult Lotus for R₉ 55+.

### PANEL SPECIFICATION CODES

- Standard: 80S: 100S: 125S
- Fineline: 80F
- Overlay: 80V: 100V
A good criterion to work to is ‘to limit transmission to a level that is no longer distracting’.

The key to acoustics is determining what your needs are. A sound rating should be chosen to suit the surrounding structure, the sizes of the partitioned areas and usage of the spaces.

**KEY POINTS**

- Aim for a sound-rating in balance with the acoustics of the surrounding structure. Even with a perfect operable wall, sound will still seep through ceilings, carpets, air conditioning ducts etc.
- Control peripheral leakage around the operable wall. For example, baffling above the ceiling will do a lot to improve the overall performance of the installation.
- Similar activities require less sound isolation than a quiet activity next to a noisy one. Amplified sound is more difficult to suppress. General background noise helps reduce distraction.
- Avoid specifying far higher ratings than needed. High \( R_W \) ratings add cost. See ‘Laboratory vs Real Life’.
- Don’t get hung up over one or two decibels (dB). Some manufacturers play a numbers game. The human ear can’t discern a 2dB difference, and even laboratory results can vary by 1dB depending on the conditions.
- Beware of American results. They can be 10% higher than tougher Australian testing. Also be aware the \( R_W \) is a more stringent measurement than simple speech frequency averages.

- Ensure test results are reasonably recent and are from reputable laboratories like the Royal Melbourne Institute of Technology (RMIT) or CSIRO. Laboratories with non-standard testing protocols do exist both in Australia and overseas.
- Thin light panels are unlikely to be as effective as thicker heavier panels. There is no magic to acoustic performance and weight is a key factor. Check the test reports to be certain.

**OUR TESTING**

It’s very good and it’s been done at RMIT, one of Australia’s leading laboratories, to Australian Standard AS 1191-2002, which makes Lotus walls BCA compliant. In tests up to \( R_W 53 \) we use sweep seals at the top and bottom of the panels, demonstrating that retractable seals are not required for acoustic reasons for anything other than the highest rating. Lotus offer \( R_W 37 \) to \( R_W 55 \), which allows us to meet your acoustic requirements from budget to high performance and everything in between. \( R_W 55 \) is the highest result achieved for an operable wall in an Australian test.

**\( R_W \) EXPLAINED**

The performance of an operable wall is measured in a laboratory and expressed by its Weighted Sound Reduction Index (\( R_W \)). The single \( R_W \) figure is a composite rating of sound reduction at frequencies from 100 Hertz (Hz) to 5000 Hz, when compared to an Australian Standard line. Note that ‘Weighted Sound Reduction’ (\( R_W \)) was known as ‘Sound Transmission Class (STC)’. Numerical values are comparable. Please note that the unit of the Weighted Sound Reduction Index is decibel (dB).

**LABORATORY VS REAL LIFE**

Acousticians measure the performance of an operable wall in laboratories (\( L_{\text{lab}} R_W \)). In real life even a perfectly installed wall is unlikely to perform as well due to deficiencies of the building. Buildings inevitably have peripheral leakage through air conditioning ducts, carpets, ceiling tiles etc. which can reduce the field performance by about 15%.

Be aware of this when specifying. In critical situations the surrounding walls, floor and ceiling should have an \( R_W \) rating of 6 to 10 decibel (dB) higher than the operable wall. Please contact Lotus if you need advice.

**ACOUSTIC PERFORMANCE - \( R_W \)**

<table>
<thead>
<tr>
<th>Series</th>
<th>37</th>
<th>41</th>
<th>44</th>
<th>45</th>
</tr>
</thead>
<tbody>
<tr>
<td>80 Series</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>100 Series</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>125 Series</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concert Lotus for ( R_W 55+ )</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**EFFECT**

Mutes normal conversation 34 – 38 Primary Schools
Normal voices may be intelligible 37 – 41 Church Halls, Quiet Meeting Rooms
Normal voices barely intelligible 40 – 44 Typical Meeting Rooms, Schools
Normal voices unintelligible 43 – 47 Boardrooms, Conference Centres
Raised voices barely unintelligible 46 – 49 Hotel Function Rooms
Major function noise controlled 47 – 55 Convention Centres

* Assumes peripheral leakage is minimised.

It’s impractical for any manufacturer to test every combination of product type, configuration, layout, surface finish etc. Tests are done on benchmark constructions and supplemented by acousticians’ opinions if necessary.

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</tr>
<tr>
<td>125 Series</td>
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<td></td>
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</tr>
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<td>Concert Lotus for ( R_W 55+ )</td>
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It’s impractical for any manufacturer to test every combination of product type, configuration, layout, surface finish etc. Tests are done on benchmark constructions and supplemented by acousticians’ opinions if necessary.
STACKING

Stacking refers to where and how the panels stack to the side of the opening. There are several choices which will suit different wall types and applications. The three most common are summarised opposite.

STACKING SPECIFICATION CODES

<table>
<thead>
<tr>
<th>Stack Type</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Centre Stack</td>
<td>C</td>
</tr>
<tr>
<td>Side Stack</td>
<td>S</td>
</tr>
<tr>
<td>Remote Stack</td>
<td>R</td>
</tr>
</tbody>
</table>

CENTRE STACK

A simple straight track. Each panel is suspended from a central trolley and typically hinged in pairs.

Pros:
- Economical, quick to set up.
- Beam work is straightforward.

Cons:
- Panels have to remain stacked on the main track.

SIDE STACK

Single panels are suspended from two carriers at the top corners of each panel. Panels stack with one carrier remaining on the main track and the other in the side track.

Pros:
- Single panels are easier to move.
- Flexibility to stack to the side of the track and to negotiate junctions.

Cons:
- Beam work is needed over the side track.

REMOTE STACK

Panels have omni-directional carriers to negotiate L or T junctions and panels are stacked completely away from the main track, sometimes in a cupboard or recess.

Pros:
- Panels can be stacked away from the main track, useful in complex layouts.

Cons:
- Extra tracking and beamwork required. Inexperienced users can get panels out of order on large installations.

CLOSURES

An operable wall needs a method of acoustically opening and closing the system. Interlocking panel edges mean that a gap needs to be created along the track to break and stack the panels. This can be achieved using the options opposite.

CLOSURES SPECIFICATION CODES

<table>
<thead>
<tr>
<th>Closure Type</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expanding Panel</td>
<td>X</td>
</tr>
<tr>
<td>Door Full Height</td>
<td>D</td>
</tr>
</tbody>
</table>

EXPANDING PANEL

This panel has an over-sleeve that can be expanded sideways to lock the wall in place. This is operated by a removable handle in the face of the panel. Usually located at the stacking end of the wall.

Pros:
- Physically and acoustically locks the wall into place.

Cons:
- Not useable for access.

DOOR PANEL

Suitable on standard height walls. The last panel is a full height door hinged off the fixed jamb or the prior panel. Doors are normally located at one end of the wall.

Pros:
- Provides convenient access. Lowest cost closure option. Easy to operate.

Cons:
- For centre stacked walls, the door may protrude slightly to the side of the stack.

*Side and Remote tracking systems are available with curved junctions for ultra smooth running.*

*We highly recommend taller panels be stacked at a 30° angle for ease of movement.*
Seals are used at the top and bottom of the panels to ensure an acoustic fit with the overhead track and the floor.

**Seals and Sound Ratings**

Testing done at RMIT, one of Australia’s leading laboratories, to Australian Standard AS/NZS ISO 717-1:2004 has found that sweep seals do not compromise acoustic performance. All tests up to Rw53 have been done using sweep seals at the top and bottom of the panels, demonstrating that it is not necessary to adopt retractable seals to achieve all but the highest sound rating required.

Lotus offer Rw38 to Rw55, which is the highest achieved for an operable wall in Australian tests. The main purpose of retractable seals is for ease of use with certain layouts, site conditions and panel weights. Be sure to consult Lotus for the best seal combination to meet your acoustic performance requirements and budget.

**Sweep Versus Retractable Seals**

Retractable bottom seals’ main benefits are ease of movement, the ability to cope with more out of level floors and overhead beam deflections. Retractable top seals only offer an advantage in ease of movement, so are therefore only recommended when this is very important, and the extra cost can be justified.

---

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---

**Acoustic Specification Codes**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Sweep / Sweep</td>
</tr>
<tr>
<td>2</td>
<td>Sweep / Retractable</td>
</tr>
<tr>
<td>3</td>
<td>Retractable / Retractable XT</td>
</tr>
<tr>
<td>4</td>
<td>Special application – contact Lotus</td>
</tr>
<tr>
<td>5</td>
<td>Rw55 only</td>
</tr>
<tr>
<td>6</td>
<td>Retractable / Sweep and Retractable</td>
</tr>
</tbody>
</table>
FINISHES

1. Timber veneer with vertical inset windows
   (Design by Rob McBride)

2. Two pack satin
   (Design by Foster and Associates)

3. Vinyl and laminate
   (Designed by Cox, Hames Sharley, Walter Brooke)
ACCESSORIES

1. Kick rail
2. Chair rail
3. Vertical inset windows
4. Pass door hung off a panel
5. Inset S pass door
6. Inset A pass door
7. Full height whiteboard
8. Inset pinboards and inset windows
9. Porthole inset windows
### Technical Information

These pages contain selected general information; please consult Lotus for help with specific projects.

#### TRACK TO STEEL
- 6 Bottom Rail Retractable Seals
- 9 Expanding Panel

#### TRACK TO CONCRETE
- 5 Bottom Rail Sweep Seals

#### TRACK TO TIMBER
- 4 Top Rail Sweep Seals
- 7 Panel J ointures

#### TRACK TO TIMBER
- 10 Centre Stack

---

#### Panel Thickness

<table>
<thead>
<tr>
<th>Panel width*</th>
<th>Standard</th>
<th>Fineline</th>
<th>Overlay</th>
</tr>
</thead>
<tbody>
<tr>
<td>80 Series</td>
<td>80mm</td>
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</tr>
<tr>
<td>110 Series</td>
<td>110mm</td>
<td>110mm</td>
<td>110mm</td>
</tr>
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</table>

*Nominal 1200 max [Note these panels have base cost]

#### Wall Weights

<table>
<thead>
<tr>
<th>Series</th>
<th>90</th>
<th>100</th>
<th>US</th>
</tr>
</thead>
<tbody>
<tr>
<td>R5</td>
<td>37</td>
<td>41</td>
<td>44</td>
</tr>
<tr>
<td>R6</td>
<td>45</td>
<td>43</td>
<td>44</td>
</tr>
</tbody>
</table>

#### STRUCTURAL SUPPORT

Ideal structural support will depend on the application and project specific details. The suggested beams below are a guide only and allow for the weight of the wall alone, and up to 100% of deflection. All beams will require job specific calculations from a certifying engineer and this table should not be relied upon for construction purposes.

#### Floor Levels

Floors should be 50–100mm. Greater tolerances can often be accommodated, particularly if the slope is generally downwards towards the stacking end.

#### Cupboards

- Specify seal type 1 or 2. This can affect the acoustic rating of the panel.
- Choose a panel thickness of 65mm.
- Specify how the panels should stack (CENTRE stack, SIDE stack, REMOTE stack).
- Specify a door frame (STANDARD frame, OVERLAY frame).

---

### Specification Guide

#### Step 1: Panels

Specify a Standard, Fineline or Overlay system. See page 4.

#### Step 2: Acoustics

Specify the acoustic rating of each panel. See page 6 for more information.

#### Step 3: Stacking

Specify how the panels should stack. See page 8 for more information.

#### Step 4: Closures

Specify the type of closure. See page 9 for more information.

---

#### Sample Specification Code

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
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</thead>
<tbody>
<tr>
<td>Centres</td>
<td>C</td>
</tr>
<tr>
<td>Stacking</td>
<td>S</td>
</tr>
<tr>
<td>Remote</td>
<td>R</td>
</tr>
</tbody>
</table>

(Lotus Operable Wall System)