Acoustic Sealing Systems For Door Assemblies







Company Overview

Lorient Australia is an acknowledged leader in sealing systems for door assemblies, embracing fire protection, smoke control, acoustic insulation, conservation of energy and weather exclusion.

The company also manufactures a complementary range of fire resistant glazing systems for doors, screens and partitions, together with intumescent fire and smoke resistant air transfer grilles and fire dampers for doors, walls, floors, ceilings and ducts.

Lorient products incorporate high standards in design, quality of manufacture, durability and come fully supported with extensive independent testing. The company has a well deserved reputation for innovation, technical ability and product quality through its extensive commitment to research and development.

Lorient Australia currently has operations in Sydney, Melbourne and Brisbane and has an extensive distribution network to cater for your requirements.

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Acoustic Sealing Principles Design Needs

Doors must have gaps between the leaves and the frame, and between the bottom of the door and the floor. These gaps allow doors to be opened and closed easily, and accommodate normal building movement. However, they also allow the leakage of sound, as well as fire, smoke, cold draughts, dust, rain/wind and light.

Sealing the gaps around a door is of prime importance when reducing the amount of sound entering or leaving a room. Wherever noise influences human activity, effective acoustic sealing is essential.

The Solution

Sealing the gaps around a door is paramount when reducing the amount of sound entering or leaving a room or building. Lorient Integrity[™] Architectural Seals provide an excellent and proven barrier to airborne sound and help to ensure acoustic attenuation through the perimeter and bottom of the door is maximized.

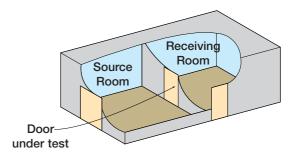
Lorient Integrity™ Architectural Seals also help isolate buildings from external noise, such as the noise generated by roads, railways, aircraft and plant and machinery for example. They also help to isolate rooms from airborne noise generated within a building, such as offices and factory premises, cinemas and theatres, and most essentially on unit entry doors in hotels and multi-occupancy residential buildings, in particular to contain noise in corridors and stairways.

Acoustic Testing

A series of comprehensive test programs to establish the airborne sound insulation performance of Lorient Integrity[™] acoustic seals have been carried out at the Royal Melbourne Institute of Technology (RMIT) acoustic laboratory in Australia and Sound Research Laboratories (SRL) in the United Kingdom. Tests were conducted in accordance with:

AS1191.2002 - Acoustics - 'Method for laboratory measurement of airbourne sound insulation of building elements'

ISO 140-3:1995 'Acoustics - Methods of measurement of sound insulation in buildings and of building elements. Part 3 'Laboratory measurements of airborne sound insulation of building elements '.



AS1276.1:1999 Acoustics- Rating of sound insulation in buildings & building elements, Part 1: 'Airbourne sound Insulation'

ISO 717-1 1997 'Acoustics – Rating of sound insulation in buildings and of building elements', – Part 1: 'Airborne sound insulation'

Test Method

The Australian Standard AS1191.2002 and International Standard, ISO 140-3:1995 test methodology involves installing a door construction within a representative acoustic dividing wall that separates the reverberant source room and reverberent receiving room. Sound waves are generated in the source room and measurements of the sound pressure levels are made in both rooms at one-third octave intervals in the frequency range 100 to 5000 Hertz (Hz). Several microphones are used to obtain an average of the sound pressure level in each room.

From these measurements, the Sound Reduction Index (R) is derived. This is defined as the number of decibels (dB) by which sound energy, randomly incident on the test sample, is reduced in passing through it. The Sound Reduction Index is an expression of the laboratory sound transmission performance of a particular element or construction. It is a function of the mass, thickness, sealing method and installation, and is independent of the overall area of the sample. When a door is installed on site the actual sound insulation performance will depend on surface area: the larger the area the greater the sound energy transmitted, as well as the absorption in the receiving area.

Expression of Results

Perimeter and threshold seals have been tested in conjunction so that a combined performance is established, reflecting the requirements of actual practice. Results in the Lorient acoustic publications and associated system datasheets include both tabulated results and calculated weighted sound reduction indices (Rw) and STC.



Test Doors

In the comprehensive tests programs and subsequent evaluations conducted by RMIT, Sound Research Laboratories (SRL) and PKA Consulting, a wide range of Lorient Integrity™ acoustic seals have been tested and/or evaluated when fitted to various door types, as follows:

- 35mm solid core doors,
- 40mm solid core doors,
- Sound Lock Door systems and,
- 45mm high performance steel acoustic door.

Sound Lock Doors

PKA Acoustic Consulting

"The combination of a double door system to provide a sound lock achieves very high acoustic insulation. The addition of acoustic absorbent linings to the sound locks can also further enhance the sound insulation achieved. Experience has shown that a sound lock arrangement is a preferable way to achieve and maintain high acoustic performance with good trafficability compared to that of a single very high performance acoustic door.

The distance between the two sets of doors influences the performance of a sound lock. Some predictions are included within this brochure for a number of configurations. The assumption is based on the doors being approximately 1 metre apart and that there is no acoustic absorption between the doors. The addition of an acoustic absorbency in the form of carpet and acoustic wall linings can increase the values shown in the results by 6 to 8 dB.

Sometimes a double set of single doors is used to provide an increase in acoustic performance. These are typically used between hotel apartments. Our experience indicates that when the doors are on a common timber frame there is only limited gain in acoustic performance. It appears that the doors should be on separate frames that are not connected across the cavity wall and that the doors are at least 200mm apart. The performance of these doors is very difficult to predict."

Test Conditions

The door leaves were side hung and fitted with standard operational clearances. The door assemblies were tested in three conditions:-

- 1. Un-caulked with no seals present around the door perimeter and threshold,
- Fully caulked all perimeter and threshold gaps completely sealed with a high density putty to determine the maximum possible acoustic performance of the door assembly,
- Un-caulked but with Lorient Integrity ™
 seals fitted to perimeter gaps and threshold.

By comparing the results obtained in the three conditions it is possible to determine the sound insulation contribution achieved by fitting Lorient IntegrityTM seals to the door.

In many cases, the weakest point in the system is in fact the acoustic performance of the door leaf itself. This is highlighted when sealing system performance equals the performance of the fully caulked door.

For higher acoustic ratings a proprietary acoustic door panel construction is necessary. Lorient have conducted testing in partnership with major acoustic door manufacturers and we can assist you with finding a door solution for your specific requirements.

On-site Conditions

Whilst laboratory testing provides standardised performance data for the purposes of comparison, it is recommended that proposed site conditions should be considered also. Such factors as wall, floor and ceiling construction may influence anticipated performance. Furthermore, differences in door construction, materials, quality of workmanship and installation of the components could also affect the final result.

Certainly the expected frequency bands of the sound or noise which is to be controlled should be taken into account as this could diminish or improve performance in some circumstances.

It is commonly accepted in the industry, that on-site test conditions are often 2 to 5 dB lower than laboratory testing. Most of Lorient's test results provide a clear safety factor to the proposed BCA airborne sound insulation requirements which provides confidence in their performance when fitted in the field.



Other Functions

Many doors will have more than one function. For example, they must provide acoustic insulation and fire/smoke protection, whilst at the same time allowing free passage. In specifying door seals there is a need to balance these requirements.

An overriding requirement is obviously that seals should not impede the normal use of the door. For example, the door bottom or threshold seal in a public building should not impede the passage of wheelchairs.

In addition to acoustic insulation, many Lorient Integrity™ acoustic seals provide protection against smoke, fire, weather, draughts, dust, light and even insects. Combinations offering such protection, and those suitable for wheelchair users, are indicated by icons on each page. The seal combinations described in the Lorient literature have been selected to provide a good balance between acoustic performance and other essential functions.



Ambient (Cold) Smoke



Medium Smoke



Fire & Hot Smoke



Proprietary Fire Doors



Smoke Doors



Sound (Acoustics)
Containment



Light



Weather



Draughts & Dust



Vermin



Energy Containment



Disabled Access

Other Factors Affecting Performance Door hardware

Interruption of acoustic seals at hinges, locks and strike plates will reduce acoustic performance significantly and impact on other types of containment, for example: smoke leakage performance where BCA smoke leakage performance will require seals to be continuous, particularly at hinge positions.

Glazing

Glazed panels may be incorporated in doors without a major loss of acoustic performance provided that thick enough glass is used, the size

of the panel is limited and a suitable glazing method is used.

Opening and closing forces

It is crucial that the sealing system fitted to a door assembly should have minimal effect on the opening and closing operation of the assembly. Some interference is unavoidable but this needs to be held to the lowest possible level. All Lorient sealing systems are designed with this consideration in mind. Importantly, they are also acoustically tested in their everyday operational mode.

Under laboratory test conditions, it is very easy to achieve deceptively more impressive results, by resorting to the wedging of a door leaf in its frame with the seals in an extreme, highly compressed state. The operation of such a door in everyday service, however, would be untenable.

All information in this manual has been derived from full size, fully operational door assemblies.

Further Information

Advice in this manual is based on the use of commonly used architectural door assembly designs, not specifically engineered for outstanding acoustic performance.

Where very high sound insulation performance is required, consultation with the door manufacturer is recommended as there is a limit to the extent which seals alone can improve the performance of a given door assembly.

For further information about fire and smoke containment and their acoustic performance, please consult our technical department for advice.

Note: Recommendations as to methods, use of materials and construction details are based on the experience and knowledge of Lorient and are given in good faith as a general guide and a service to designers, contractors and manufacturers.

Tested Systems

You will find on the following pages various systems that have been either tested or assessed to comply with various standards outlined earlier. With special thanks to RMIT testing laboratories and PKA Acoustic Consulting.



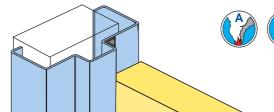




Single Door Systems

LE1212 and IS8010si

Single Leaf / Single Swing















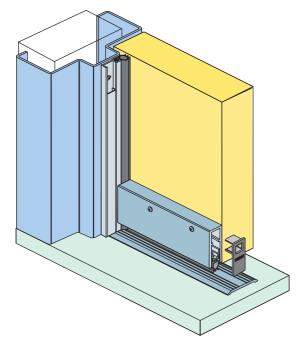
35n	nm	40mm				
STC	Rw	STC	Rw			
20	20	20	21			
31	30	33	32			
	STC 20	20 20	STC Rw STC 20 20 20			

* Fully Morticed					/															
* Fully Mortised						Cen	tre I	Freq	luen	cy (Hz)	/ ST	L (d	B)						
Door Type	100	125	160	200	250	315	400	500	630	800	1k	1.25	1.6	2k	2.5	3.15	4k	5k	STC	Rw
35mm Solid Core	18	24	22	26	23	25	24	24	26	26	28	30	32	33	35	36	38	40	29	29
40mm Solid Core	22	24	27	30	27	26	28	27	27	27	28	32	34	35	36	39	41	41	31	31

Lorient recommend the above and below acoustic systems be used in conjunction with an IS4130 threshold plate to achieve the optimum acoustic performance.

IS7025 and IS8011si

Single Leaf / Single Swing



















	35n	nm	40mm					
Door Type	STC	Rw	STC	Rw				
No Seals	20	20	20	21				
Fully Caulked	31	30	33	32				

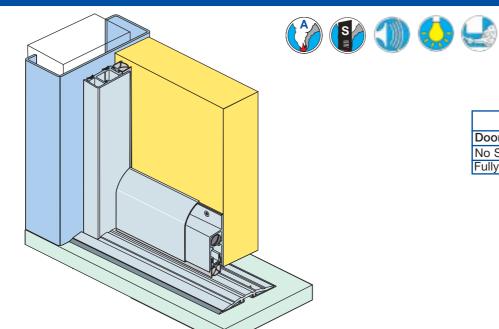
* Faced Fixed																				
raceu rixeu		Centre Frequency (Hz) / STL (dB)																		
Door Type	100	125	160	200	250	315	400	500	630	800	1k	1.25	1.6	2k	2.5	3.15	4k	5k	STC	Rw
35mm Solid Core	19	24	22	26	23	25	24	24	26	27	27	29	31	34	36	39	39	40	29	29
40mm Solid Core	21	28	28	32	33	33	33	33	31	28	27	30	32	34	37	40	40	41	32	32



Single Door Systems

IS7190si and IS8091si or IS8020si

Single Leaf / Single Swing











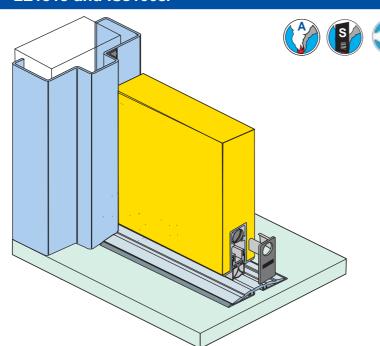
	35n	nm	40ı	mm
Door Type	STC	Rw	STC	Rw
No Seals	20	20	20	21
Fully Caulked	31	30	33	32

* Faced Fixed																				
i aced i ixed		Centre Frequency (Hz) / STL (dB)																		
Door Type	100	125	160	200	250	315	400	500	630	800	1k	1.25	1.6	2k	2.5	3.15	4k	5k	STC	Rw
35mm Solid Core	19	24	22	26	23	25	24	24	26	26	28	29	31	34	37	38	34	36	29	29
40mm Solid Core	20	24	27	30	27	26	28	27	27	27	28	30	32	35	38	39	35	37	31	30

Lorient recommend the above and below acoustic systems be used in conjunction with an IS4010 threshold plate to achieve the optimum acoustic performance.

LE1515 and IS8100si

Single Leaf / Single Swing











Rw	\circ	
	STC	Rw
20	20	21
30	33	32
	20	20 20

* Fully Mortised

Fully Mortised		Centre Frequency (Hz) / STL (dB)																		
Door Type	100	125	160	200	250	315	400	500	630	800	1k	1.25	1.6	2k	2.5	3.15	4k	5k	STC	Rw
35mm Solid Core	18	23	21	25	22	24	23	23	25	26	27	29	32	33	35	36	38	38	29	29
40mm Solid Core	20	24	27	30	27	26	28	27	27	28	30	33	34	35	36	39	39	40	32	32



Single Door Systems

IS7080 and IS8090si

Single Leaf / Single Swing









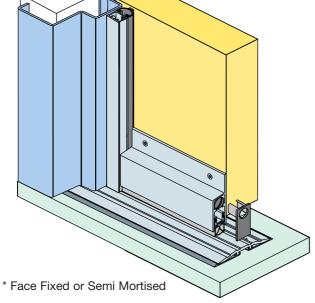








	35n	nm	40mm				
Door Type	STC	Rw	STC	Rw			
No Seals	20	20	20	21			
Fully Caulked	31	30	33	32			

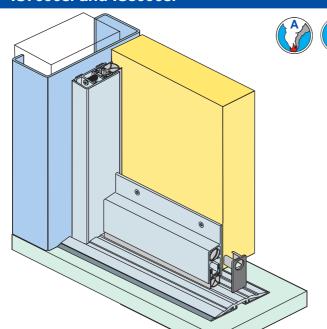


Centre Frequency (Hz) / STL (dB) **Door Type** 315 400 500 1k 1.25 1.6 2k 2.5 3.15 4k 5k **STC** Rw 35mm Solid Core 40mm Solid Core

Lorient recommend the above and below acoustic systems be used in conjunction with an IS4010 threshold plate to achieve the optimum acoustic performance.

IS7090si and IS8090si

Single Leaf / Single Swing



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	35n	nm	40mm					
Door Type	STC	Rw	STC	Rw				
No Seals	20	20	20	21				
Fully Caulked	31	30	33	32				

*	Face	Fixed	or	Semi	Mortised	

	Centre Frequency (Hz) / STL (dB)																			
Door Type	100	125	160	200	250	315	400	500	630	800	1k	1.25	1.6	2k	2.5	3.15	4k	5k	STC	Rw
35mm Solid Core	19	24	22	26	23	25	24	24	26	26	28	29	31	34	37	38	34	36	29	29
40mm Solid Core	20	24	27	30	27	26	28	27	27	27	28	30	32	35	38	39	35	37	31	30



Double Door Systems

LE1212, IS7070si & IS8011si Double Leaf / Single Swing 35mm 40mm **Door Type** STC Rw STC Rw No Seals Fully Caulked * Faced Fixed or Semi Mortised Centre Frequency (Hz) / STL (dB) **Door Type** 1K 1.25 1.6 2K 3.15 4K 5K **STC** Rw 2.5 35mm Solid Core 40mm Solid Core

Lorient recommend the above acoustic systems be used in conjunction with an IS4130 threshold plate and the below acoustic system be used together with an IS4010 threshold plate to achieve the optimum acoustic performance.



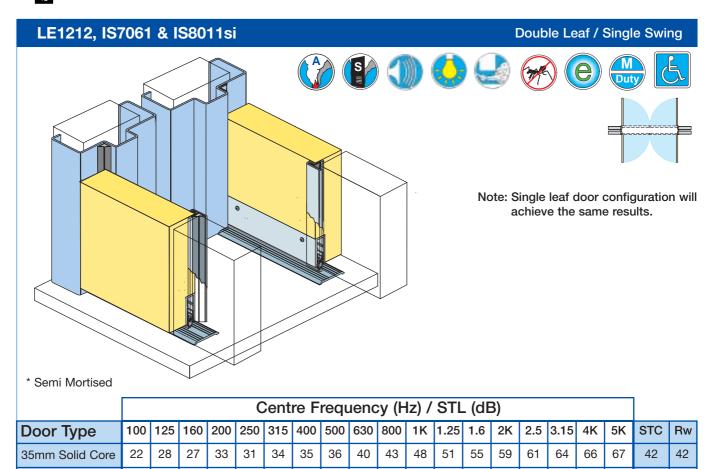
* Faced Fixed or Semi Mortised

		Centre Frequency (Hz) / STL (dB)																		
Door Type	100	125	160	200	250	315	400	500	630	800	1K	1.25	1.6	2K	2.5	3.15	4K	5K	STC	Rw
35mm Solid Core	20	24	22	26	23	25	24	24	26	27	30	32	34	35	37	37	39	39	31	31
40mm Solid Core	22	24	26	29	27	25	28	27	27	28	29	33	34	36	38	39	39	39	31	31

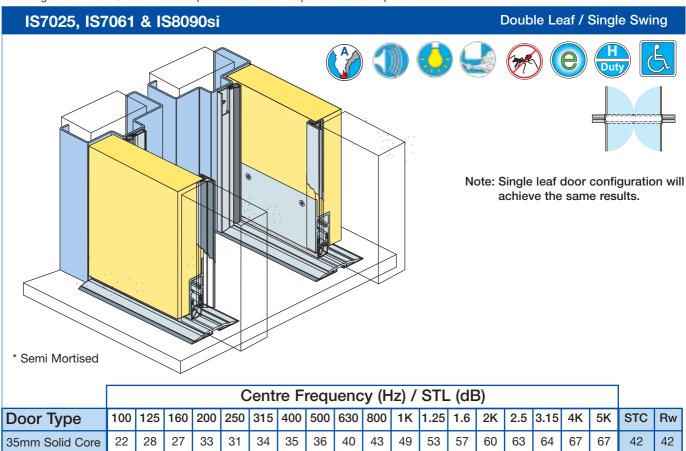


40mm Solid Core

Sound Lock Door Systems

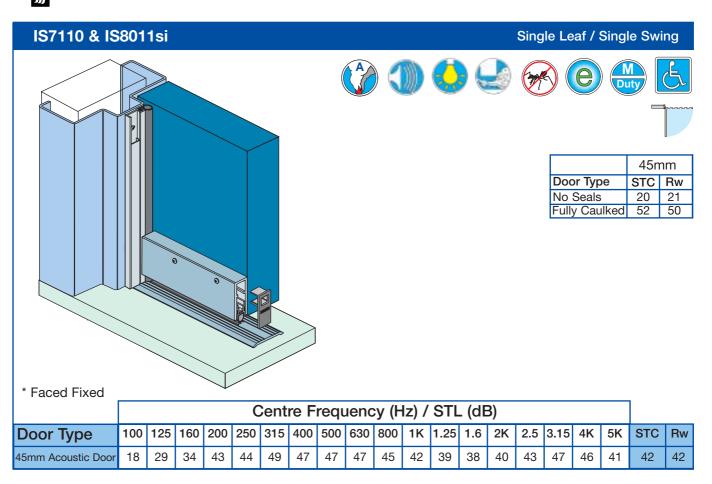


Lorient recommend the above acoustic system be used in conjunction with an IS4130 threshold plate and the below acoustic system be used together with an IS4010 threshold plate to achieve the optimum acoustic performance.

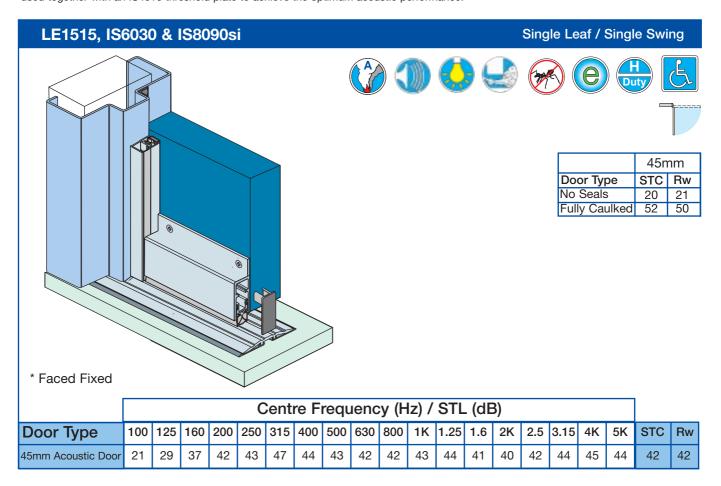


40mm Solid Core

High Performance Steel Acoustic Door Systems



Lorient recommend the above acoustic system be used in conjunction with an IS4130 threshold plate and the below acoustic system be used together with an IS4010 threshold plate to achieve the optimum acoustic performance.





System Selector

Duty	Sealing System	Centre Frequency (Hz) / STL (dB) 100 125 160 200 250 315 400 500 630 800 1k 1.3 1.6 2k 2.5 3.2 4k 5k																L			
	. .	100	125	160	200	250	315	400	500	630	800	1k	1.3	1.6	2k	2.5	3.2	4k	5k	STC	R
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	No Seals	16	17	19	20	22	21	21	21	22	21	22	23	24	20	17	17	19	18	20	Т
	*Fully Caulked (with mastic)	22	24	28	30	27	26	28	27	27	28	31	34	37	38	41	43	44	46	33	Г
																					_
	LE1212 + IS8011si (FF)	21	26	29	31	31	31	32	31	29	27	28	31	34	35	36	39	40	41	32	₽
	IS7025 + IS8011si (FF)	21	28	28	32	33	33	33	33	31	28	27	30	32	34	37	40	40	41	32	ł
_	IS7080 + IS8011si (FF)	23	27	28	31	32	33	33	33	30	27	27	29	32	34	37	38	38	40	32	+
ੂ ਨੂ	LE1212 + IS8011si (SM)	22	24	27	30	27	26	28	27	27	27	28	32	34	35	36	39	41	41	31	1
Medium Duty	IS7025 + IS8011si (SM)	21	24	27	30	27	26	28	27	27	28	27	30	32	35	37	40	40	41	31	╀
ž	IS7080 + IS8011si (SM)	22	24	27	30	27	26	28	27	27	27	28	29	33	35	37	39	38	41	31	ļ
	LE1212 + IS8010 (FM)	22	24	27	30	27	26	28	27	27	27	28	32	34	35	36	39	41	41	31	t
	IS7025 + IS8010si (FM)	21	24	27	30	27	26	28	27	27	28	27	30	32	35	37	40	40	41	31	1
	IS7080 + IS8010si (FM)	22	24	27	30	27	26	28	27	27	27	28	29	33	35	37	39	38	41	31	L
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	LE1515 + IS8090si (FF / SM)	21	24	27	30	27	26	28	27	27	28	30	33	35	35	36	39	40	40	32	L
	IS7080 + IS8090si (FM/SM)	21	23	25	29	27	26	28	27	27	27	29	34	36	38	41	42	44	45	32	╀
	IS7090si + IS8090si (FF / SM)	20	24	27	30	27	26	28	27	27	27	28	30 30	32	35	38	39	35	37	31	╀
> >	IS7190si + IS8090si (FF / SM)	20	24	27	30	27	26	28	27	27	27	28		32	35	38	39	35	37	31	╀
Heavy Duty	LE1515 + IS8091si / IS8020si (FF)	21	24 24	27 27	30 30	27 27	26 26	28 28	27 27	27 27	28 27	30 28	33	35 32	35 35	36 38	39 39	40 35	40 37	32	ł
± □	IS7090si + IS8091si / IS8020si (FF)					_							_				_			31	╀
_	IS7190si + IS8091si / IS8020si (FF)	20	24	27	30 30	27 27	26 26	28 28	27 27	27 27	27 28	28 30	30 33	32 34	35 35	38 36	39 39	35 39	37 40	31	ł
	L E4545 100400-1 (EM)	00				//	20	28	21	21	28	30	33	34	ან	30	39	39	40	32	L
	LE1515 + IS8100si (FM)	20	24	27			00		07	07	0.7	00	20	00	OΕ	00	20	O.F.	0.7	00	
Omm D	LE1515 + IS8100si (FM) IS7090si + IS8100si (FM) IS7190si + IS8100si (FM) Ouble Doors (Pairs)	20 19 19	24 24 24	27 27 27	30	27	26 26	28	27 27	27 27	27 27	28 28	30	32 32	35 35	38	39 39	35 35	37 37	30 30	
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Omm D	IS7090si + IS8100si (FM) IS7190si + IS8100si (FM) ouble Doors (Pairs)	19 19	24	27 27	30	27 27	26	28	27	27	27	28	30	32	35	38	39	35	37	30	
	IS7090si + IS8100si (FM) IS7190si + IS8100si (FM) Ouble Doors (Pairs) No Seals *Fully Caulked (with mastic)	19 19 16 22	24 24 17 24	27 27 19 28	30 30 20 30	27 27 22 22 27	26 21 26	28 28 21 28	27 21 27	27 22 27	27 21 28	22 31	30 23 34	32 24 37	20 38	17 41	39 17 43	35 19 44	37 18 46	30 20 33	-
	IS7090si + IS8100si (FM) IS7190si + IS8100si (FM) Ouble Doors (Pairs) No Seals *Fully Caulked (with mastic) LE1212 + IS8011si + IS7061	19 19 16 22	24 24 17 24	27 27 19 28	30 30 30 20 30	27 27 22 22 27	26 21 26 24	28 28 21 21 28	27 21 27 27	27 22 27 27	27 21 28 28	28 22 31 30	30 23 34 34	32 24 37 35	35 20 38 36	38 17 41 35	39 17 43 34	35 19 44 34	37 18 46 35	30 20 33 31	
	IS7090si + IS8100si (FM) IS7190si + IS8100si (FM) IS7190si + IS8100si (FM) Ouble Doors (Pairs) No Seals *Fully Caulked (with mastic) LE1212 + IS8011si + IS7061 LE1212 + IS8011si + IS7070si	19 19 16 22 21 21	24 24 17 24 24	27 27 19 28 24 26	30 30 30 20 30 27 28	27 27 22 22 27 26 27	26 21 26 24 25	28 28 21 28 27 28	27 21 27 27 27	27 22 27 27 27	27 21 28 28 28	28 22 31 30 29	30 23 34 34 32	32 24 37 35 34	35 20 38 36 36	38 17 41 35 36	39 17 43 34 36	35 19 44 34 36	37 18 46 35 38	30 20 33 31 31	
E	IS7090si + IS8100si (FM) IS7190si + IS8100si (FM) Ouble Doors (Pairs) No Seals *Fully Caulked (with mastic) LE1212 + IS8011si + IS7061	19 19 16 22	24 24 17 24	27 27 19 28	30 30 30 20 30	27 27 22 22 27	26 21 26 24	28 28 21 21 28	27 21 27 27	27 22 27 27	27 21 28 28	28 22 31 30	30 23 34 34	32 24 37 35	35 20 38 36	38 17 41 35	39 17 43 34	35 19 44 34	37 18 46 35	30 20 33 31	
	IS7090si + IS8100si (FM) IS7190si + IS8100si (FM) IS7190si + IS8100si (FM) Ouble Doors (Pairs) No Seals *Fully Caulked (with mastic) LE1212 + IS8011si + IS7061 LE1212 + IS8011si + IS7070si LE1212 + IS8011si + IS7060	19 19 16 22 21 21 22	24 24 17 24 24 24 24	27 27 19 28 24 26 24	30 30 30 20 30 27 28 28	27 27 22 27 26 27 26	26 21 26 24 25 24	28 28 21 28 27 28 27	27 21 27 27 27 27	27 22 27 27 27 27	27 21 28 28 28 28	22 31 30 29 30	30 23 34 34 32 34	32 24 37 35 34 34	35 20 38 36 36 31	38 17 41 35 36 32	39 17 43 34 36 32	35 19 44 34 36 33	37 18 46 35 38 36	30 20 33 31 31 30	
	IS7090si + IS8100si (FM) IS7190si + IS8100si (FM) IS7190si + IS8100si (FM) Ouble Doors (Pairs) No Seals *Fully Caulked (with mastic) LE1212 + IS8011si + IS7061 LE1212 + IS8011si + IS7070si LE1212 + IS8011si + IS7060 LE1515 + IS8090si + IS7061	19 19 16 22 21 21 22 22	24 24 17 24 24 24 24 24	27 27 19 28 24 26 24 26	30 30 30 20 30 27 28 28 28	27 27 22 27 26 27 26	26 21 26 24 25 24 25 24	28 28 21 28 27 28 27 28 27	27 21 27 27 27 27 27	27 22 27 27 27 27 27	27 21 28 28 28 28 28	22 31 30 29 30	30 23 34 34 32 34	32 24 37 35 34 34	35 20 38 36 36 31	38 17 41 35 36 32	39 17 43 34 36 32	35 19 44 34 36 33 39	37 18 46 35 38 36	30 20 33 31 31 30	-
Medium Duty	IS7090si + IS8100si (FM) IS7190si + IS8100si (FM) IS7190si + IS8100si (FM) Ouble Doors (Pairs) No Seals *Fully Caulked (with mastic) LE1212 + IS8011si + IS7061 LE1212 + IS8011si + IS7070si LE1212 + IS8011si + IS7060 LE1515 + IS8090si + IS7061 LE1515 + IS8090si + IS7070si	19 19 16 22 21 21 22 22 22	24 24 17 24 24 24 24 24 24 24	27 27 19 28 24 26 24 26 26 26	30 30 30 20 30 27 28 28 29 29	27 27 22 27 26 27 26 27 27	26 21 26 24 25 24 26 26 25	28 28 21 28 27 28 27 28 28 28	27 21 27 27 27 27 27 27	27 22 27 27 27 27 27 27	27 21 28 28 28 28 28 28	22 31 30 29 30 30 30	30 23 34 34 32 34 34 34	32 24 37 35 34 34 35 35	35 20 38 36 36 31 35 35	38 17 41 35 36 32 37 36	39 17 43 34 36 32 38 36	35 19 44 34 36 33 39 36	37 18 46 35 38 36 39 37	30 20 33 31 31 30 32 32	
Medium Duty	IS7090si + IS8100si (FM) IS7190si + IS8100si (FM) IS7190si + IS8100si (FM) Pouble Doors (Pairs) No Seals *Fully Caulked (with mastic) LE1212 + IS8011si + IS7061 LE1212 + IS8011si + IS7070si LE1212 + IS8011si + IS7060 LE1515 + IS8090si + IS7061 LE1515 + IS8090si + IS7070si LE1515 + IS8090si + IS7070si	19 19 16 22 21 21 22 22 21 22	24 24 17 24 24 24 24 24 24 24 24	27 27 19 28 24 26 24 26 26 26 26	30 30 30 20 30 27 28 28 29 28 30	27 27 22 27 26 27 26 27 27 27	26 21 26 24 25 24 26 25 26	28 28 21 28 27 28 27 28 28 28 28	27 21 27 27 27 27 27 27 27	27 22 27 27 27 27 27 27 27	27 21 28 28 28 28 28 28 28	22 31 30 29 30 30 30 30	30 23 34 32 34 34 34 34 33	32 24 37 35 34 34 35 35 34	35 20 38 36 36 31 35 35 31	38 17 41 35 36 32 37 36 33	39 17 43 34 36 32 38 36 34	35 19 44 36 33 39 36 34	37 18 46 35 38 36 39 37 38	30 20 33 31 31 30 32 32 31	
Medium Duty	IS7090si + IS8100si (FM) IS7190si + IS8100si (FM) IS7190si + IS8100si (FM) Pouble Doors (Pairs) No Seals *Fully Caulked (with mastic) LE1212 + IS8011si + IS7061 LE1212 + IS8011si + IS7070si LE1212 + IS8011si + IS7060 LE1515 + IS8090si + IS7061 LE1515 + IS8090si + IS7070si LE1515 + IS8090si + IS7060 IS7025 + IS8090si + IS7061	19 19 16 22 21 21 22 22 21 22 22	24 24 24 24 24 24 24 24 24 24 24	27 27 19 28 24 26 24 26 26 26 26 26	30 30 30 30 27 28 28 29 28 30 29	27 27 22 27 26 27 26 27 27 27 27	26 21 26 24 25 24 26 25 26 25 26 25	28 28 21 28 27 28 27 28 28 28 28 28	27 21 27 27 27 27 27 27 27 27	27 22 27 27 27 27 27 27 27 27	27 21 28 28 28 28 28 28 28 28 28	28 31 30 29 30 30 30 30 29	30 23 34 32 34 34 34 34 33 33	32 24 37 35 34 34 35 35 34 34	35 38 36 36 31 35 35 31 36	38 17 41 35 36 32 37 36 33 38	39 17 43 34 36 32 38 36 34 39	35 19 44 36 33 39 36 34 39	37 18 46 35 38 36 39 37 38 39	30 33 31 31 30 32 32 31 31	
Medium Duty	IS7090si + IS8100si (FM) IS7190si + IS8100si (FM) IS7190si + IS8100si (FM) Pouble Doors (Pairs) No Seals *Fully Caulked (with mastic) LE1212 + IS8011si + IS7061 LE1212 + IS8011si + IS7070si LE1212 + IS8011si + IS7060 LE1515 + IS8090si + IS7061 LE1515 + IS8090si + IS7070si LE1515 + IS8090si + IS7060 IS7025 + IS8090si + IS7061	19 19 16 22 21 21 22 22 21 22	24 24 24 24 24 24 24 24 24 24 24 24 24	27 27 27 19 28 24 26 24 26 26 26 26 26 26	30 30 30 30 27 28 28 29 28 30 29 28	27 27 22 27 26 27 26 27 27 27 27 27	26 21 26 24 25 24 26 25 26 25 26 25 25	28 28 21 28 27 28 27 28 28 28 28 28 28	27 21 27 27 27 27 27 27 27 27 27	27 22 27 27 27 27 27 27 27 27 27	27 21 28 28 28 28 28 28 28 28 28 28	28 22 31 30 29 30 30 30 30 29 29	30 23 34 32 34 34 34 33 33 33	32 24 37 35 34 34 35 35 34 34 34 34	35 38 36 36 31 35 35 31 36 36	38 17 41 35 36 32 37 36 33 38 38	39 17 43 34 36 32 38 36 34 39 36	35 19 44 34 36 33 39 36 34 39 36 34	37 18 46 35 38 36 39 37 38 39 37	30 33 31 31 30 32 32 31 31 31	
Heavy Medium Duty Duty	IS7090si + IS8100si (FM) IS7190si + IS8100si (FM) IS7190si + IS8100si (FM) No Seals *Fully Caulked (with mastic) LE1212 + IS8011si + IS7061 LE1212 + IS8011si + IS7070si LE1212 + IS8011si + IS7060 LE1515 + IS8090si + IS7061 LE1515 + IS8090si + IS7070si LE1515 + IS8090si + IS7060 IS7025 + IS8090si + IS7061 IS7025 + IS8090si + IS7070si IS7025 + IS8090si + IS7070si	19 19 16 22 21 21 22 22 21 22 22 21 22 22	24 24 24 24 24 24 24 24 24 24 24	27 27 19 28 24 26 24 26 26 26 26 26	30 30 30 30 27 28 28 29 28 30 29	27 27 22 27 26 27 26 27 27 27 27	26 21 26 24 25 24 26 25 26 25 26	28 28 21 28 27 28 27 28 28 28 28 28	27 21 27 27 27 27 27 27 27 27	27 22 27 27 27 27 27 27 27 27	27 21 28 28 28 28 28 28 28 28 28	28 31 30 29 30 30 30 30 29	30 23 34 32 34 34 34 34 33 33	32 24 37 35 34 34 35 35 34 34	35 38 36 36 31 35 35 31 36	38 17 41 35 36 32 37 36 33 38	39 17 43 34 36 32 38 36 34 39	35 19 44 36 33 39 36 34 39	37 18 46 35 38 36 39 37 38 39	30 33 31 31 30 32 32 31 31	
Heavy Medium Duty Duty	IS7090si + IS8100si (FM) IS7190si + IS8100si (FM) IS7190si + IS8100si (FM) Pouble Doors (Pairs) No Seals *Fully Caulked (with mastic) LE1212 + IS8011si + IS7061 LE1212 + IS8011si + IS7070si LE1212 + IS8011si + IS7060 LE1515 + IS8090si + IS7061 LE1515 + IS8090si + IS7070si LE1515 + IS8090si + IS7060 IS7025 + IS8090si + IS7061	19 19 19 22 21 22 22 22 22 22 21 22 22 22	24 24 24 24 24 24 24 24 24 24 24 24 24 2	27 27 28 28 24 26 24 26 26 26 26 26 26 26 26	30 30 30 30 27 28 28 29 28 30 29 28	27 27 27 26 26 27 27 27 27 27 27 27 27	26 21 26 24 25 24 26 25 26 25 25 25 25 25	28 28 21 28 27 28 27 28 28 28 28 28 28 28	27 27 27 27 27 27 27 27 27 27 27 27	27 22 27 27 27 27 27 27 27 27 27 27 27	27 28 28 28 28 28 28 28 28 28 28 28	22 31 30 29 30 30 30 30 29 29 29	30 23 34 32 34 34 34 33 33 33	32 24 37 35 34 34 35 35 34 34 34 34 33	35 20 38 36 36 31 35 35 31 36 36 31	38 17 41 35 36 32 37 36 33 38 38 38 38	39 17 43 34 36 32 38 36 34 39 36	35 19 44 36 33 39 36 34 39 36 34 39 36 34	37 18 46 35 38 36 39 37 38 39 37 37	30 33 31 31 30 32 32 31 31 31	
Heavy Medium Duty Duty	IS7090si + IS8100si (FM) IS7190si + IS8100si (FM) IS7190si + IS8100si (FM) Pouble Doors (Pairs) No Seals *Fully Caulked (with mastic) LE1212 + IS8011si + IS7061 LE1212 + IS8011si + IS7070si LE1212 + IS8011si + IS7060 LE1515 + IS8090si + IS7061 LE1515 + IS8090si + IS7070si LE1515 + IS8090si + IS7060 IS7025 + IS8090si + IS7061 IS7025 + IS8090si + IS7060 IS7025 + IS8090si + IS7060 Ound Lock Doors LE1212 + IS8011si + IS7061	19 19 19 22 21 21 22 22 21 22 22 21 22 22 21 22	24 24 24 24 24 24 24 24 24 24 24 24 24 2	27 27 27 28 28 24 26 26 26 26 26 26 26 26 26	20 30 30 27 28 28 29 28 30 29 28 30	27 27 27 22 27 26 27 27 27 27 27 27 27 27	26 21 26 24 25 24 26 25 26 25 25 25 25 25	28 28 21 28 27 28 27 28 28 28 28 28 28 28 28	27 27 27 27 27 27 27 27 27 27 27 27	27 22 27 27 27 27 27 27 27 27 27 27 27	27 28 28 28 28 28 28 28 28 28 28 28	22 31 30 29 30 30 30 30 29 29 29	30 23 34 34 32 34 34 33 33 33 32	32 24 37 35 34 34 35 35 35 34 34 34 33	35 20 38 36 31 35 35 31 36 31 36 31	38 17 41 35 36 32 37 36 33 38 38 38 38	39 17 43 34 36 32 38 36 34 39 36 34	35 19 44 36 33 39 36 34 39 36 34 39 36 34 39 36 34 35 36 36 37 37 38 38 38 38 38 38 38 38 38 38	37 18 46 35 38 36 39 37 38 39 37 37	30 20 33 31 30 32 32 31 31 31 30	
Heavy Medium Duty Duty	IS7090si + IS8100si (FM) IS7190si + IS8100si (FM) IS7190si + IS8100si (FM) Pouble Doors (Pairs) No Seals *Fully Caulked (with mastic) LE1212 + IS8011si + IS7061 LE1212 + IS8011si + IS7070si LE1212 + IS8011si + IS7060 LE1515 + IS8090si + IS7061 LE1515 + IS8090si + IS7070si LE1515 + IS8090si + IS7070si LE1515 + IS8090si + IS7060 IS7025 + IS8090si + IS7061 IS7025 + IS8090si + IS7060 Ound Lock Doors LE1212 + IS8011si + IS7061 LE1212 + IS8011si + IS7061	19 19 19 22 21 21 22 22 21 22 22 21 22 22 21 22 22	24 24 24 24 24 24 24 24 24 24 24 24 24 2	27 27 27 28 28 24 26 26 26 26 26 26 26 26 26 31 33	20 30 30 27 28 28 28 29 28 30 29 28 30	27 27 27 26 27 26 27 27 27 27 27 27 27 27 27	26 21 26 24 25 24 25 26 25 26 25 25 25 25 25 33 35	28 28 21 28 27 28 27 28 28 28 28 28 28 28 28 28	27 27 27 27 27 27 27 27 27 27 27 27 27 2	27 27 27 27 27 27 27 27 27 27 27 27 27 2	27 28 28 28 28 28 28 28 28 28 28 28 28 28	22 31 30 29 30 30 30 30 29 29 29 29 29	30 23 34 32 34 34 34 33 33 33 32 57 54	32 24 37 35 34 34 35 35 34 34 34 34 33 35 35 35 36 37	35 38 36 36 31 35 35 31 36 36 31 60 60	38 17 41 35 36 32 37 36 33 38 38 38 38 30 60 60 62	39 17 43 34 36 32 38 36 34 39 36 34 57 61	35 19 44 36 33 39 36 34 39 36 34 39 36 34 39 36 36 37 38 38 38 38 38 38 38 38 38 38	37 18 46 35 38 36 39 37 38 39 37 37 37 36 60 64	30 20 33 31 31 30 32 32 31 31 31 30 45 45	
Heavy Medium Duty Duty	IS7090si + IS8100si (FM) IS7190si + IS8100si (FM) IS7190si + IS8100si (FM) Pouble Doors (Pairs) No Seals *Fully Caulked (with mastic) LE1212 + IS8011si + IS7061 LE1212 + IS8011si + IS7070si LE1212 + IS8011si + IS7060 LE1515 + IS8090si + IS7061 LE1515 + IS8090si + IS7070si LE1515 + IS8090si + IS7060 IS7025 + IS8090si + IS7061 IS7025 + IS8090si + IS7060 IS7025 + IS8090si + IS7060 Ound Lock Doors LE1212 + IS8011si + IS7061	19 19 19 22 21 21 22 22 21 22 22 21 22 22 21 22	24 24 24 24 24 24 24 24 24 24 24 24 24 2	27 27 27 28 28 24 26 26 26 26 26 26 26 26 26	20 30 30 27 28 28 29 28 30 29 28 30	27 27 27 22 27 26 27 27 27 27 27 27 27 27	26 21 26 24 25 24 26 25 26 25 25 25 25 25	28 28 21 28 27 28 27 28 28 28 28 28 28 28 28	27 27 27 27 27 27 27 27 27 27 27 27	27 22 27 27 27 27 27 27 27 27 27 27 27	27 28 28 28 28 28 28 28 28 28 28 28	22 31 30 29 30 30 30 30 29 29 29	30 23 34 34 32 34 34 33 33 33 32	32 24 37 35 34 34 35 35 35 34 34 34 33	35 20 38 36 31 35 35 31 36 31 36 31	38 17 41 35 36 32 37 36 33 38 38 38 38	39 17 43 34 36 32 38 36 34 39 36 34	35 19 44 36 33 39 36 34 39 36 34 39 36 34 39 36 34 35 36 36 37 37 38 38 38 38 38 38 38 38 38 38	37 18 46 35 38 36 39 37 38 39 37 37	30 20 33 31 30 32 32 31 31 31 30	
Heavy Medium Duty Duty	IS7090si + IS8100si (FM) IS7190si + IS8100si (FM) IS7190si + IS8100si (FM) No Seals *Fully Caulked (with mastic) LE1212 + IS8011si + IS7061 LE1212 + IS8011si + IS7070si LE1212 + IS8011si + IS7060 LE1515 + IS8090si + IS7061 LE1515 + IS8090si + IS7060 IS7025 + IS8090si + IS7061 IS7025 + IS8090si + IS7061 IS7025 + IS8090si + IS7060 IS7025 + IS8090si + IS7060 Ound Lock Doors LE1212 + IS8011si + IS7061 LE1212 + IS8011si + IS7070si LE1212 + IS8011si + IS7060	19 19 19 22 21 21 22 22 21 22 22 21 22 22 21 22 24 22 24	24 24 24 24 24 24 24 24 24 24 24 24 24 2	27 27 27 28 24 26 24 26 26 26 26 26 26 26 26 31 33 30	30 30 30 30 27 28 28 28 29 28 30 29 28 30	27 27 27 26 27 26 27 27 27 27 27 27 27 27 35 36 35	26 21 26 24 25 24 26 25 26 25 26 25 25 25 25 25 25 25 25 25 25	28 28 28 27 28 27 28 27 28 28 28 28 28 28 28 28 40 40	27 21 27 27 27 27 27 27 27 27 27 27 27 27 27	27 22 27 27 27 27 27 27 27 27 27 27 27 2	27 21 28 28 28 28 28 28 28 28 28 28	28 22 31 30 29 30 30 30 30 29 29 29 48 50	30 23 34 34 32 34 34 33 33 33 32 57 54 56	32 24 37 35 34 34 35 35 34 34 34 33 55 57 56	35 20 38 36 36 31 35 35 36 31 36 36 31 36 36 31 35 36 36 31 35 36 36 31 36 36 37 38 36 36 37 37 38 38 38 38 38 38 38 38 38 38	38 17 41 35 36 32 37 36 33 38 38 38 39 60 62 55	39 17 43 34 36 32 38 36 34 39 36 34 39 36 34 39 36 31 31 32 33 34 35 36 36 37 37 38 38 38 38 38 38 38 38 38 38	35 19 44 36 33 39 36 34 39 36 34 39 36 34 39 36 36 37 38 39 30 30 30 30 30 30 30 30 30 30	37 18 46 35 38 36 37 37 38 39 37 37 37 60 64 60	30 20 33 31 31 30 32 32 31 31 31 30 45 45	
Medium Medium Duty Duty Duty C	IS7090si + IS8100si (FM) IS7190si + IS8100si (FM) IS7190si + IS8100si (FM) No Seals *Fully Caulked (with mastic) LE1212 + IS8011si + IS7061 LE1212 + IS8011si + IS7070si LE1212 + IS8011si + IS7070si LE1212 + IS8090si + IS7060 LE1515 + IS8090si + IS7061 LE1515 + IS8090si + IS7060 IS7025 + IS8090si + IS7061 IS7025 + IS8090si + IS7060 IS7025 + IS8090si + IS7060 Ound Lock Doors LE1212 + IS8011si + IS7061 LE1212 + IS8011si + IS7060 LE1212 + IS8011si + IS7060 LE1212 + IS8011si + IS7060	19 19 19 22 21 21 22 21 22 22 21 22 22 21 22 24	24 24 24 24 24 24 24 24 24 24 24 24 24 2	27 27 27 28 28 24 26 26 26 26 26 26 26 26 31 33 30	30 30 30 30 27 28 28 28 29 28 30 29 28 30 30	27 27 27 26 27 26 27 27 27 27 27 27 27 35 36 35	26 21 26 24 25 24 25 26 25 26 25 25 25 25 25 25 25 25 25 25	28 28 28 27 28 27 28 27 28 28 28 28 28 28 28 28 40 40	27 27 27 27 27 27 27 27 27 27 27 27 27 2	27 22 27 27 27 27 27 27 27 27 27 27 27 2	27 28 28 28 28 28 28 28 28 28 28 45 44 45	28 22 31 30 29 30 30 30 30 29 29 29 50 48 50	30 23 34 32 34 34 33 33 33 32 57 54 56	32 24 37 35 34 34 35 35 34 34 34 33 55 57 56	35 20 38 36 36 31 35 35 36 36 31 36 36 31 36 36 31 36 36 37 36 36 37 36 36 37 36 37 37 38 38 38 38 38 38 38 38 38 38	38 17 41 35 36 32 37 36 33 38 38 38 38 38 55 60 62 55	39 17 43 34 36 32 38 36 34 39 36 34 57 61 55	35 19 44 36 33 39 36 34 39 36 34 58 62 56	37 18 46 35 38 36 37 38 39 37 37 37 60 64 60 66	30 20 33 31 31 30 32 32 31 31 31 30 45 45 46	
Medium Medium Duty Duty Duty C	IS7090si + IS8100si (FM) IS7190si + IS8100si (FM) IS7190si + IS8100si (FM) Ouble Doors (Pairs) No Seals	19 19 19 22 21 21 22 22 21 22 22 22 21 22 22 24 24 24	24 24 24 24 24 24 24 24 24 24 24 24 24 2	27 27 27 28 24 26 24 26 26 26 26 26 26 26 33 33 30	30 30 30 30 27 28 28 28 29 28 30 29 28 30 30 35 37 36	27 27 27 26 27 26 27 27 27 27 27 27 27 27 35 36 36 36	26 21 26 24 25 24 26 25 26 25 25 25 25 25 25 25 25 25 25	28 28 28 27 28 27 28 27 28 28 28 28 28 28 28 40 40 40	27 27 27 27 27 27 27 27 27 27 27 27 27 2	27 22 27 27 27 27 27 27 27 27 27 27 27 2	27 28 28 28 28 28 28 28 28 28 28 45 44 45	28 22 31 30 29 30 30 30 30 29 29 29 50 48 50 49 49	30 23 34 32 34 34 33 33 33 32 57 54 56 56 56	32 24 37 35 34 34 35 35 34 34 34 33 57 56 58	35 20 38 36 36 31 35 35 36 36 31 60 60 60 60 60 60 60 60	38 17 41 35 36 32 37 36 33 38 38 33 38 55 60 62 55 62 62 62	39 17 43 34 36 32 38 36 34 39 36 34 36 34 35 36 36 37 38 39 39 39 39 39 39 39 39 39 39	35 19 44 36 33 39 36 34 39 36 34 58 62 56 67 61	37 18 46 35 38 36 39 37 38 39 37 37 37 60 64 60 66 66 63	30 20 33 31 31 30 32 32 31 31 31 30 45 45 46 46	
Medium Medium Duty Duty Duty C	IS7090si + IS8100si (FM) IS7190si + IS8100si (FM) IS7190si + IS8100si (FM) Pouble Doors (Pairs) No Seals *Fully Caulked (with mastic) LE1212 + IS8011si + IS7061 LE1212 + IS8011si + IS7060 LE1212 + IS8011si + IS7060 LE1515 + IS8090si + IS7061 LE1515 + IS8090si + IS7061 IS7025 + IS8090si + IS7061 IS7025 + IS8090si + IS7061 IS7025 + IS8090si + IS7060 Ound Lock Doors LE1212 + IS8011si + IS7060 LE1215 + IS8090si + IS7060	19 19 19 22 21 21 22 22 22 21 22 22 22 21 22 24 23 24	24 24 24 24 24 24 24 24 24 24 24 24 28 28 28 28 28	27 27 27 28 24 26 26 26 26 26 26 26 26 31 33 30 33 33 33	20 30 27 28 28 28 30 29 28 30 29 28 30 37 36	27 27 27 26 27 26 27 27 27 27 27 27 27 27 35 36 36 36 36	26 21 26 24 25 24 26 25 26 25 25 25 25 25 25 33 35 33 36 36 36 36	28 28 27 28 27 28 28 28 28 28 28 28 28 40 40 40 40	27 27 27 27 27 27 27 27 27 27 27 27 27 40 40 40 40	27 22 27 27 27 27 27 27 27 27 27 27 27 2	27 28 28 28 28 28 28 28 28 28 28 45 44 45 45	28 22 31 30 29 30 30 30 30 29 29 29 29 50 48 50 49 49 49	30 23 34 32 34 34 33 33 33 33 32 57 54 56 56 56 56 56	32 24 37 35 34 34 35 34 34 33 34 35 57 56 58 58 58 58	35 20 38 36 36 31 35 35 36 36 31 36 36 31 36 36 31 36 36 37 36 36 37 37 38 38 38 38 38 38 38 38 38 38	38 17 41 35 36 32 37 36 33 38 38 33 38 60 62 62 62 62 55	39 17 43 34 36 32 38 36 34 39 36 34 39 36 34 39 36 31 36 37 38 38 39 30 30 30 30 30 30 30 30 30 30	35 19 44 36 33 36 34 39 36 34 39 36 34 39 58 62 56 67 61 57	37 18 46 35 38 36 39 37 38 39 37 37 60 64 60 66 63 64 64	30 20 33 31 31 30 32 32 31 31 31 30 45 45 46 46 46	
Heavy Medium Duty Duty	IS7090si + IS8100si (FM) IS7190si + IS8100si (FM) IS7190si + IS8100si (FM) Ouble Doors (Pairs) No Seals	19 19 19 22 21 21 22 22 21 22 22 22 21 22 22 24 24 24	24 24 24 24 24 24 24 24 24 24 24 24 24 2	27 27 27 28 24 26 24 26 26 26 26 26 26 26 33 33 30	30 30 30 30 27 28 28 28 29 28 30 29 28 30 30 35 37 36	27 27 27 26 27 26 27 27 27 27 27 27 27 27 35 36 36 36	26 21 26 24 25 24 26 25 26 25 25 25 25 25 25 25 25 25 25	28 28 28 27 28 27 28 27 28 28 28 28 28 28 28 40 40 40	27 27 27 27 27 27 27 27 27 27 27 27 27 2	27 22 27 27 27 27 27 27 27 27 27 27 27 2	27 28 28 28 28 28 28 28 28 28 28 45 44 45	28 22 31 30 29 30 30 30 30 29 29 29 50 48 50 49 49	30 23 34 32 34 34 33 33 33 32 57 54 56 56 56	32 24 37 35 34 34 35 35 34 34 34 33 57 56 58	35 20 38 36 36 31 35 35 36 36 31 60 60 60 60 60 60 60 60	38 17 41 35 36 32 37 36 33 38 38 33 38 55 60 62 55 62 62 62	39 17 43 34 36 32 38 36 34 39 36 34 36 34 35 36 36 37 38 39 39 39 39 39 39 39 39 39 39	35 19 44 36 33 39 36 34 39 36 34 58 62 56 67 61	37 18 46 35 38 36 39 37 38 39 37 37 37 60 64 60 66 66 63	30 20 33 31 31 30 32 32 31 31 31 30 45 45 46 46	

^{*} A fully caulked door represents the theoretical maximum a door can achieve.

Lorient Australia has carried out an extensive testing program of door panels and door seals at the N.A.T.A. accredited Accoustic Facilities of RMIT University Melbourne. Tests were performed in accordance with Australian Standard AS1191-2002 and ISO 140:3-1995. The door systems tested included standard commercially available 35mm and 40mm (2040mm x 820mm) solid core timber doors, plus a high performance 45mm proprietary steel acoustic door, all fitted in steel frames.

Definitions

FF: Face Fixed SM: Semi-Mortised FM: Fully-Mortised

Medium Duty: seals designed for use in comercial buildings with medium traffic thoroughfare. Heavy Duty: seals designed for use in buildings with heavy traffic thoroughfare.

Silicone Gaskets

Substitution of silicone gaskets (si) where available will not detrimentally affect acoustic performance of the tested systems.

Smoke Sealing

If seals are to be used on smoke doors, the Lorient silicone gaskets will fulfill the current BCA deemed to satisfy requirements of C.3.4 (200°C for 30 minutes). However recent testing to AS1530.7 (Smoke control doors and shutter assemblies: Ambient and medium temperature leakage test procedure) has demonstrated that doors subjected to these conditions are susceptible to significant warpage, it is highly recommended that our technical department is contacted and appropriate sealing systems selected.

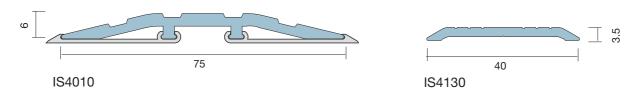


System Selector

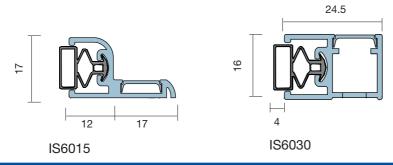
Duty	Sealing System	100	125	160	200	250	315	entre 400	Fred 500		cy (H z	z) / S 1k	TL (d 1.3	B)	2k	2.5	3.2	4k	5k	STC	RW
35mm Si	ingle Door in Single Fram		120	100	200	200	010	400	300	000	000	IIX	1.0	1.0	ZK	2.0	0.2	TIX	ÖK	010	
		40	4.7	47	40	00	00	00	00	00	0.1	0.1	00	00	00	4.0	10	10	10		
	No Seals *Fully Caulked (with mastic)	13 20	17 24	17 22	19 26	20	20 25	20 24	20 24	20 26	21 27	21 30	22 32	22 35	20 37	18 40	19 41	19 43	18 44	20 31	20 30
	Tully Oddined (With Mastic)	20			20	20	20	21	2-1	20	21	00	OL.	00	O1	-10		10		01	
	LE1212 + IS8011si (FF / SM)	19 19	24 24	22	26 26	23	25 25	24 24	24 24	26 26	27 27	29 27	31 29	34 31	35 34	37 36	38 39	40 39	40 40	30	30 29
Medium Duty	IS7025 + IS8011si (FF / SM) IS7080 + IS8011si (FF / SM)	20	24	22	26	23	25	24	24	26	26	27	28	32	34	36	38	37	40	29 29	29
/ediu	LE1212 + IS8010si (FM)	18	24	22	26	23	25	24	24	26	26	28	30	32	33	35	36	38	40	29	29
2	IS7025 + IS8010si (FM)	18 19	24	22 22	26 26	23	25 25	24 24	24 24	26 26	26	28 26	29	30 30	33 33	35 35	38 37	38 35	38 38	29	29
	IS7080 + IS8010si (FM)	19	24	22	20	23	25	24	24	20	25	20	27	30	33	33	31	35	38	29	29
	LE1515 + IS8090si (FF / SM)	19	24	22	26	23	25	24	24	26	27	29	31	34	35	37	38	40	40	30	30
	IS7080 + IS8090si (FF / SM)	19	23	21	26	23	25	24	24	26	26	29	32	35	37	40	31	43	44	30	30
	IS7090si + IS8090si (FF / SM) IS7190si + IS8090si (FF / SM)	19 19	24 24	22 22	26 26	23	25 25	24 24	24 24	26 26	26 26	28 28	29 29	31 31	34 34	37 37	38 38	34 34	36 36	29 29	29 29
₹ ₹	LE1515 + IS8091si / IS8020si (FF)	19	24	22	26	23	25	24	24	26	27	29	31	34	35	37	38	40	40	30	30
Heavy Duty	IS7090si + IS8091si / IS8020si (FF)	19	24	22	26	23	25	24	24	26	26	28	29	31	34	37	38	34	36	29	29
_	IS7190si + IS8091si / IS8020si (FF)	19	24	22	26	23	25	24	24	26	26	28	29	31	34	37	38	34	36	29	29
	LE1515 + IS8100si (FM) IS7090si + IS8100si (FM)	18 18	23	21 21	25 25	22	24	23 23	23	25 25	26 26	27 27	29 28	32 30	33 32	35 35	36 36	38 32	38	29 28	29 28
	IS7190si + IS8100si (FM)	18	23	21	25	22	24	23	23	25	25	27	28	30	32	35	36	32	34	28	28
IS7190si + IS8100si (FM) 18 23 21 25 22 24 23 23 25 25 27 28 30 32 35 36 32 34 28 28 28 25 25 27 28 30 32 35 36 32 34 28 28 28 30 32 35 36 32 34 28 28 30 32 35 36 32 34 28 28 30 32 35 36 32 34 28 28 30 32 35 36 35 36 36																					
	` ,	10	47	47	10	20	20	20	20	20	04	04	00	00	20	10	10	10	10	-00	00
	No Seals *Fully Caulked (with mastic)	13 20	17 24	17 22	19 26	20	20 25	20	20 24	20 26	21	21 30	22 32	22 35	20 37	18 40	19 41	19 43	18 44	20 31	30
	,									20											
ium ty	LE1212 + IS8011si + IS7061	20	24	22	26	23	25	24	24	26	27	29	31	33	35	36	37	39	39	30	30
Medium Duty	LE1212 + IS8011si + IS7070si LE1212 + IS8011si + IS7060	19 20	24 24	22	25 26	23 23	24 25	24	24 24	26 26	27 27	29 29	31 31	33 32	35 31	36 33	35 33	36 34	37 38	30 29	30 29
2	LE1212 + 13001131 + 137000	20	24	22	20	20	20	24	24	20	21	23	J1	02	01	00	00	04	30	23	23
	LE1515 + IS8090si + IS7061	19	23	22	26	23	25	24	24	26	27	29	32	34	35	37	38	39	40	30	30
> >	LE1515 + IS8090si + IS7070si	19	23	22	25	23	24	24	24	26	27	29	32	34	35	37	35	36	37	30	30
Heavy Duty	LE1515 + IS8090si + IS7060 IS7025 + IS8090si + IS7061	19 20	23 24	22 22	26 26	23	25 25	24 24	24 24	26 26	27 27	29 30	32 32	33 34	31 35	33 37	33 37	33 39	38	29 30	29 30
Ι-	IS7025 + IS8090si + IS7070si	19	24	22	25	23	25	24	24	26	27	30	32	34	35	37	35	36	37	30	30
	IS7025 + IS8090si + IS7060	20	24	22	26	23	25	24	24	26	27	30	32	33	31	33	33	34	38	29	29
35mm S	ound Lock Doors																				
Ε.	LE1212 + IS8011si + IS7061	22	28	27	33	31	34	35	36	40	43	48	51	55	59	61	64	66	67	42	42
Medium Duty	LE1212 + IS8011si + IS7070si	21	28	27	33	31	34	35	36	40	43	48	51	55	59	61	60	61	64	42	42
ž	LE1212 + IS8011si + IS7060	22	28	30	36	35	33	40	40	42	45	50	56	56	53	55	55	56	60	45	44
	LE1515 + IS8090si + IS7061	21	26	27	33	31	34	35	36	40	43	48	53	57	60	63	65	66	67	42	42
	LE1515 + IS8090si + IS7070si	21	26	27	33	31	34	35	36	40	43	48	53	57	60	62	60	61	64	42	42
Heavy Duty	LE1515 + IS8090si + IS7060	21	26	27	34	31	34	35	36	40	43	48	53	55	52	56	56	57	65	42	42
교	IS7025 + IS8090si + IS7061	22	28	27	33	31	34	35	36	40	43	49	53	57 57	60	63	64	67	67	42	42
	IS7025 + IS8090si + IS7070si IS7025 + IS8090si + IS7060	21 22	28 28	27 27	33 34	31 31	34 34	35 35	36 36	40 40	43 43	49 49	53 52	57 55	60 53	63 56	60 57	61 58	63 64	42 42	42 42
15mm H	igh Performance Steel Ac				0.	0.	0.	00	00	.0	.0	.0	O.L	00	00	00	0.	00	0.		
	3	17	19	21	22	23	23	22	22	23	23	23	23	21	16	16	18	19	17	20	21
	No Seals *Fully Caulked (with mastic)	22	29	36	42	44	46	47	51	52	53	54	52	52	51	54	57	59	57	52	50
	IS7110 + IS8011si	18	29	34	43	44	49	47	47	47	45	42	39	38	40	43	47	46	41	42	42
	IS7025si + IS8011si	20	29	35	46	47	49	46	50	48	44	39	37	38	41	44	46	43	41	41	41
E E	IS7025si + IS3080	21	29	33	46	47	50	46	50	48	44	41	37	37	40	43	46	44	43	40	41
Medium Duty	IS7020si + IS8011si	19	29	33	42 42	44	46	47 43	49	46	44	39	34	34	37 41	42	43	40 37	38	38	39
2	IS7080si + IS8011si IS7085 + IS8011si	20 19	29 28	32 34	42	43 44	48 49	43	41 45	37 44	36 43	34 41	33 38	37 39	41	43 43	40 43	43	39 41	37 41	38 41
	IS6015 + IS8011si	19	29	33	44	44	45	42	42	40	39	35	32	34	37	39	37	36	35	36	37
	ICC020 - I E1515 - ICC022 -	21	20	27	40	12	17	11	42	40	40	10	11	11	40	40	11	ΛE	11	40	40
	IS6030 + LE1515 + IS8090si IS6030 + IS8090si	21	29 28	37 36	42 43	43 44	47 45	44 43	43 42	42 41	42 40	43 39	44 38	41 39	40 40	42 42	44	45 35	44 36	42 39	42 40
Heavy Duty	LE1515 + IS8090si	21	29	35	42	44	48	44	40	38	38	40	41	39	37	38	40	42	40	39	39
P. P.	IS7025 + LE1515 + IS8090si	21	29	38	42	44	45	41	40	37	36	38	40	40	38	40	43	43	41	39	39
	IS7025 + IS8090si	21	29	35	42	44	44	40	39	36	36	36	36	37	39	42	44	42	40	38	38
	IS7120 + IS8090si	20	29	38	44	43	44	40	38	36	36	37	37	36	37	40	42	40	37	38	38



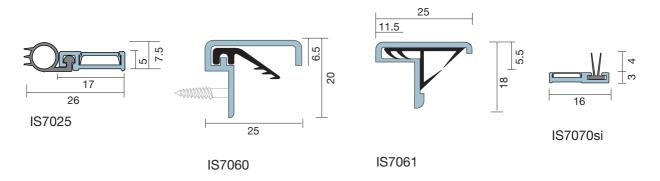
4000 Series Threshold Plates

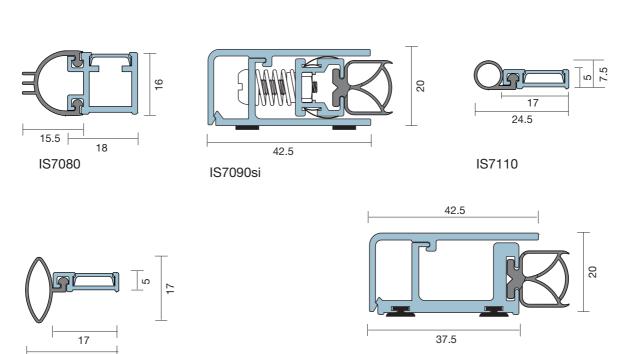


6000 Series Magnetic Seals



7000 Series Perimeter Seals



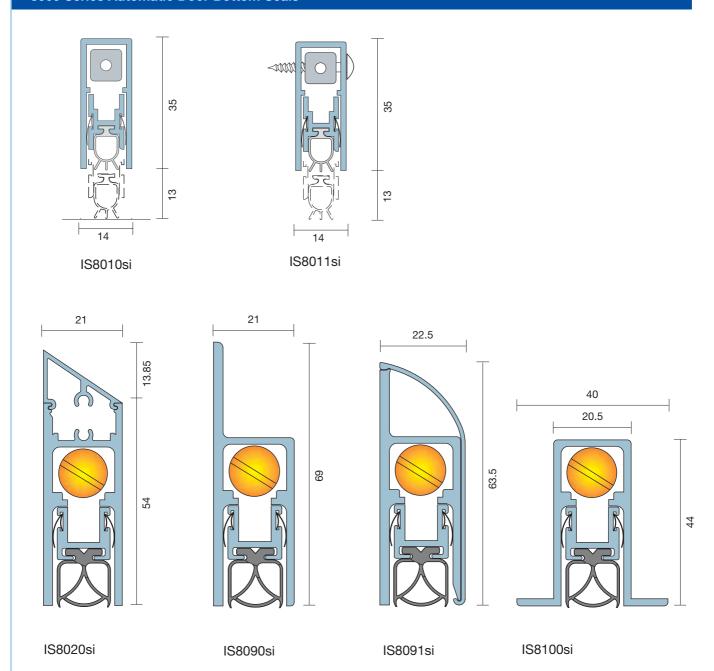


IS7190si

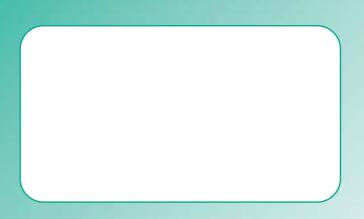
IS7120



8000 Series Automatic Door Bottom Seals



Specialty Seals 3000 Series Door Bottom Seals LE1212 Batwing LE1515 Batwing IS3080





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