

*axis*

**Automatic Entrance Systems**

***flo·motion***<sup>®</sup>  
*Single Sliding*



**WINNER – LAING O'ROURKE CONSTRUCTION NORTH INNOVATION AWARD 2015**  
**WINNER – IHEM PRODUCT INNOVATION AWARD 2015**  
**WINNER – BBH BEST INTERNAL PRODUCT AWARD 2015**  
**WINNER – EUROPEAN HEALTHCARE DESIGN AWARD 2016**

**LOW FRICTION, MANUAL, SLIDING DOOR SYSTEM  
- WITH FINGERTIP CONTROL**

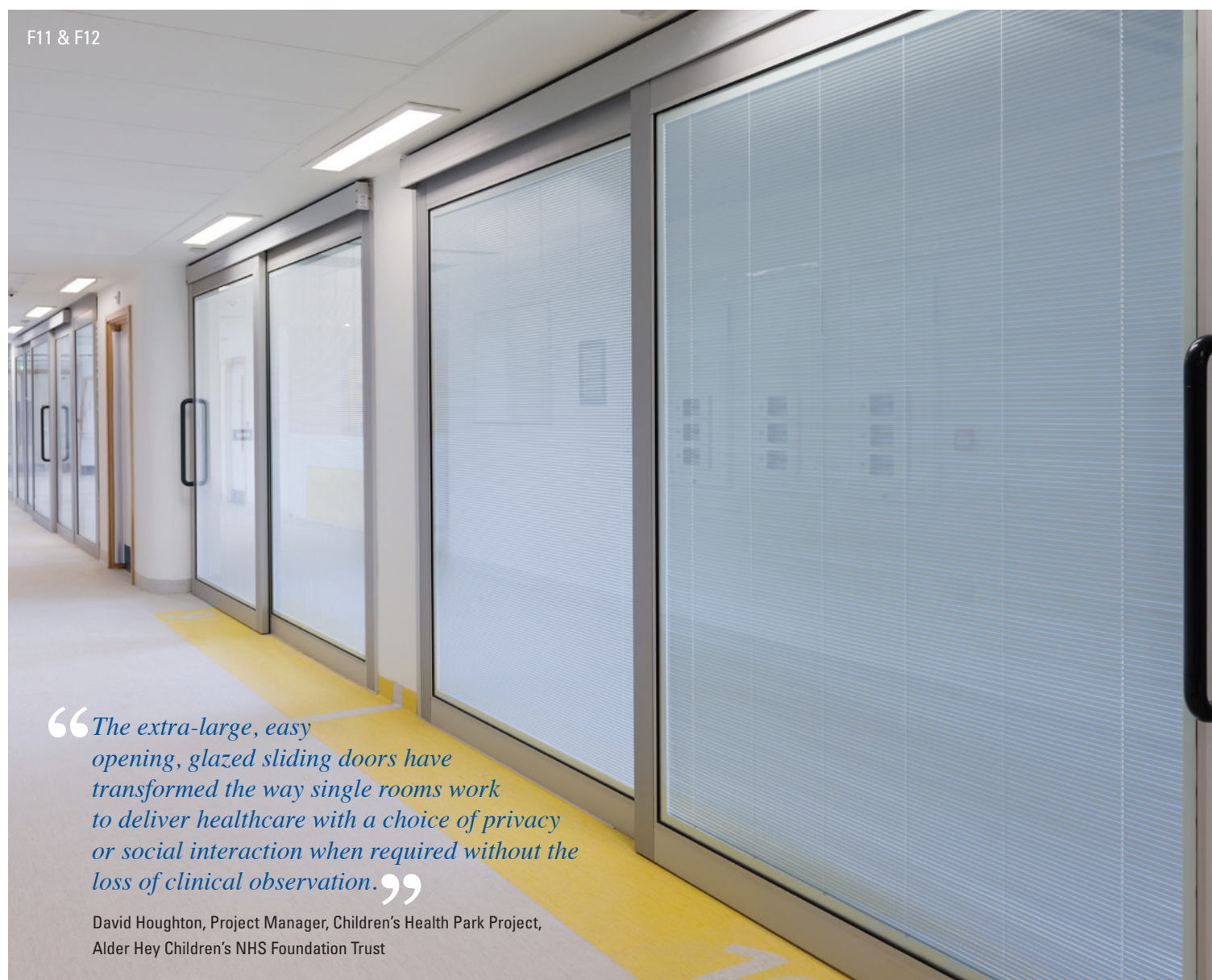
Flo-Motion® is the registered trademark of Axis Automatic Entrance Systems Ltd

## **THE LOW FRICTION MANUAL SLIDING DOOR SYSTEM THAT CAN BE OPERATED BY FINGERTIP CONTROL.**

Specifically designed for the new Alder Hey Children's Hospital to provide child friendly, full width, glazed bedroom and ward doors. The average opening force of the 200+ Flo-Motion® doors installed at Alder Hey was 10N - less than 50% of the original specified force requirement.

Flo-Motion® doors feature re-circulating ball guides on a special low resistance linear track with a damper mechanism. The door sets are fabricated using extruded aluminium profiles and include a self-supporting "goalpost" frame.

- Manual doors weighing up to 180kg
- Standard panel size is 1800mm wide x 2275mm high. Other sizes are available
- Variety of glazing options available including double glazed with integral privacy blinds
- Matching screen panels available
- Hinged pelmet for easy maintenance access



“The extra-large, easy opening, glazed sliding doors have transformed the way single rooms work to deliver healthcare with a choice of privacy or social interaction when required without the loss of clinical observation.”

David Houghton, Project Manager, Children's Health Park Project,  
Alder Hey Children's NHS Foundation Trust



## THE FLO-MOTION® STORY

### DESIGN CONCEPT

The Design Concept of the new Alder Hey Children's "Hospital in the Park" was inspired by children and is unique and instantly recognisable. It has captured the imagination of children, parents, staff and the wider NHS. Axis Flo-Motion® Doors were designed specifically for this hospital to help bring the architect's vision into reality. Three quarters of patients will be in single rooms rather than Nightingale wards and there's an outdoor balcony overlooking the park on each floor. The importance of light and airiness was absolutely vital to the whole design concept and this meant the doors for each of the patient's rooms had to be very special. Each had to be large for ease of access for beds and equipment, glazed for brightness and airiness, have privacy blinds for examinations or just occasional solitude, and finally they had to be easily opened and closed by a child and with no power assistance.

### SUCCESSFUL DEVELOPMENT

Axis Automatic Entrance Systems Ltd were able to develop a new concept and design for a manual door which satisfied all the critical architectural and operational requirements specified by the architects, BDP. The doorsets were originally specified to meet a force of 22.5N or less but the Axis Flo-Motion® doors installed at Alder Hey delivered doorsets with an average opening force of 10N - less than 50% of the original specified force requirement!

### MULTI AWARD WINNING

Flo-Motion® doors have won 4 prestigious awards. Firstly Laing O'Rourke's 2015 Construction North Award for Innovation followed by the IHEEM 2015 Product Innovation Award. This was followed by the Building Better Healthcare Best Internal Building Product 2015 and in 2016 the European Healthcare Design Award for Innovation for Quality Improvement.

### INSTALLATION

Axis manufactured and installed more than 200 Axis Flo-Motion® manual sliding doors at Alder Hey and installations at other hospitals are ongoing.



F01R - Alder Hey Hospital



F11 - Alder Hey Hospital



F12 with extended glazed screens - Alder Hey Hospital

## SLIDING MECHANISM

The Recirculating Ball slides contain precision balls which move in a loop within the cassettes. This means that a high number of balls are continuously in contact with the bearing surfaces, not just a single roller, increasing the contact area which increases the slide load rate capability and decreases the movement force.

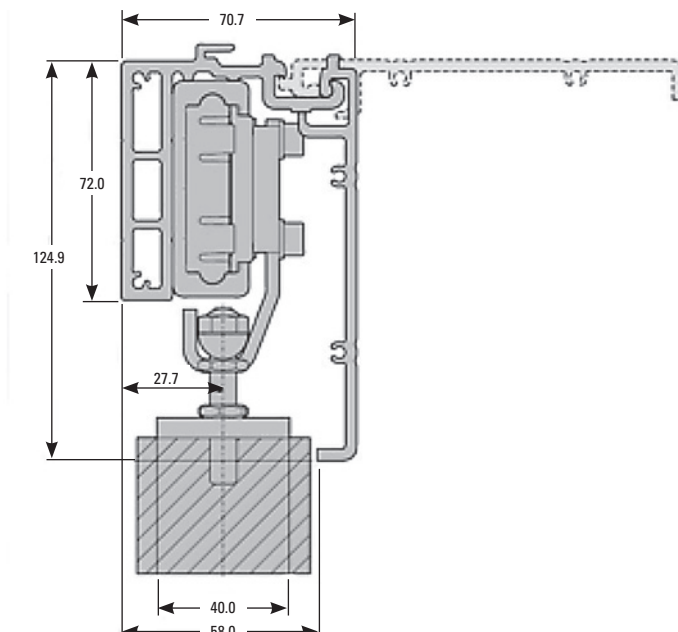
### Weight limits and cassettes required per door leaf

Number of cassettes with steel ball bearings	kg
2	290
3	360
Number of cassettes with Delrin ball bearings	kg
2	180
3	240

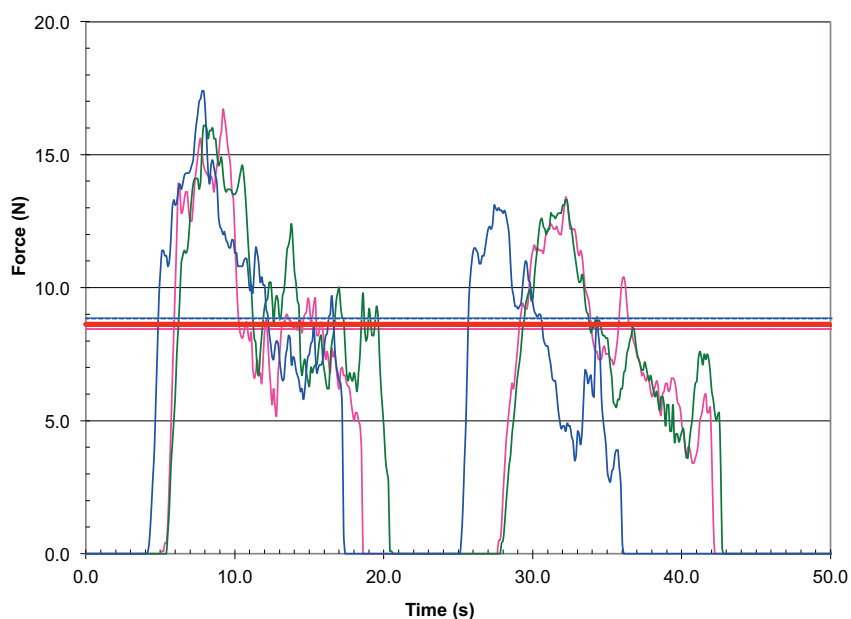
The cassettes used with our standard single sliding door that weighs 135kg, completed a 1 million cycle test (1.2 metres in each direction = 2.4 million metres). The original test produced an average opening and closing force of 9.9N and when re-measured after one million cycles, an average opening and closing force of 8.6N was recorded. The telescopic doorset was force tested producing an average opening and closing force of 11.2N. The forces will vary depending on the door mass and the type of glass fitted. The single door is offered with an anticipated force of 10N (+/-5N).

- Door opening distance: approx. 1000mm.
- Hand-held force gauge used, pushing forward so as to try to maintain a constant speed.
- Gauge tip pushing on the door handle.
- Door opening followed by door closing.

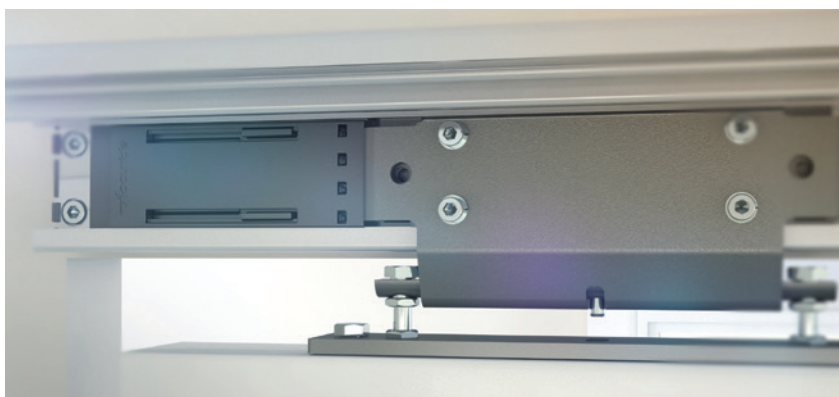
— Sample 1  
— Sample 1 avg  
— Sample 2  
— Sample 2 avg  
— Sample 3  
— Sample 3 avg  
— OVERALL



**AXIS - Door Opening Force : Test Door - after 1,000,000 cycles**



Door Bracket



Damper mechanism & Door bracket





F11 & F12 - Altnagelvin Hospital



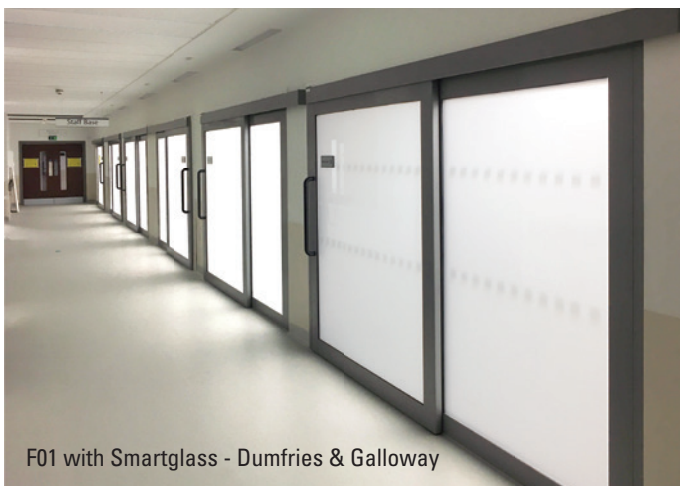
F11 - Enniskillen Hospital



F11 - Omagh Hospital



F12 with screen - Luton & Dunstable Hospital



F01 with Smartglass - Dumfries & Galloway



F01 with integral blinds  
- Birmingham Childrens Hospital



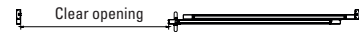
E32L - with integral blinds - Dumfries & Galloway Hospital

## TECHNICAL SPECIFICATION



**F11**

Left Hand



**F12**

Right Hand



**F01**

Right hand  
shown (F01L)



**E32**

Right hand  
shown (E32L)



Handing – when viewed from the pelmet side

- F11 - door opening is on the left
- F12 - door opening is on the right
- For F01 & E32, add L for left hand and R for right hand to code.

Clear Opening Width – Approximate distance between frame and leading edge of door when in the fully open position

Clear Opening Height - Approximate distance between bottom of pelmet & FFL.

Structural Opening Dimensions – Refer to door parameters on page 7.

Suitable reinforcement (structural steels) will be required to accept the load and this will be discussed at the design stage.

## DOOR PARAMETERS

	F11/12		F01		E32	
	Min	Max	Min	Max	Min	Max
Structural Opening Width	2500mm	3800mm	1650mm	3600mm	1100mm	1905mm
Clear Opening Width	995mm	1645mm	995mm	1645mm	845mm	1650mm
Structural Opening Height	2200mm	2700mm	2200mm	2700mm	2200mm	2700mm
Clear Opening Height	2062mm	2562mm	2062mm	2562mm	2062mm	2562mm
Overall Track Length (S/O plus track overhang on wall)			2315mm	3615mm	1960mm	3570mm

## DOORSET WEIGHTS & PANEL TYPES

(depends on overall dimensions & glass type used)

Estimated Door Doorset Weight	250kg	460kg	170kg	450kg	120kg	235kg
Estimated Opening Forces - per sliding leaf (+/-5N)	10N	15N	10N	15N	10N	15N
Top & Bottom Rail Dimensions	100mm x 45mm		100mm x 45mm		100mm x 45mm	
Leading & Rear Edge Stile Dimensions	100mm x 47mm		100mm x 47mm		100mm x 47mm	
Equal Panel Sizes	●					
Variable Fixed Panel Sizes (e.g. Door Sliding Over Wall & Screen)			●			

## GLASS & INFILLS FOR PANELS

(db ratings apply to glass only)

DGU – 28mm clear (35db)	○	○	○
DGU – 32.8mm c/w with integral blind (35db) (magnet operated & lift only)	○	○	○
Single Glazed - 8.8mm clear laminated glass (34db)	○	○	○
Single Glazed - 10.8mm clear laminated glass (35db)	○	○	○
Other Glass Types	○	○	○
Insulated Solid Infill panels	○	○	○
Midrails	○	○	○

## DOOR FRAME

Integral Transom Bar – 125mm x 100mm	●	●	●
Jambs - 100mm x 45mm	●	●	●
Jambs - 152mm x 45mm	○	○	○
Other Jamb Types	○	○	○
Threshold	○	○	○

## DOORSET FINISH

Satin Anodised Aluminium (SAA)	●	●	●
Polyester Powder Coat (PPC)	○	○	○

## Door Handles

600mm Straight (nylon - back to back)	●	●	●
Other handle types	○	○	○

## LOCKS

Manual – cylinder operated euro-profile deadlock	○	○	○
Electro-magnetic Shearlock (12/24vdc) fail unlocked	○	○	○
Other manual & electronic lock types	○	○	○



## STANDARD DOORSET SPECIFICATION

The standard doorset will be fixed to suitable and solid supports or structural steels installed by the Building Contractor. The doorset is fabricated using non-thermally broken aluminium profiles and includes a self-supporting "goal post" frame consisting of two jambs (100 x 152mm and 100 x 45mm) and an integral transom bar (125mm x 100mm) with reinforced fixing points. Material finish is Satin Anodised Aluminium (SAA).

The door to be fabricated using 100mm wide profiles for the rails and stiles. The door to be prepared with a bottom channel to operate with a floor mounted nylon guide. The sliding door to employ a recirculating bearing system & track offering a minimum clear opening width as stated. A "stop" mechanism (Damper not self or soft closing) will be installed when the doors are closing and at their fully open position. A pelmet will conceal the track and is complete with a "hold open" lid for ease of maintenance. One pair of 600mm "back to back" handles are fitted to the primary sliding door leaf.

The fixed screen where included offers additional support to the frame and is secured within the frame structure by two aluminium channels.

All panels will incorporate double glazed units secured using a 3mm bead and appropriate gaskets. Alternative glazing options include clear or obscure, DGU with integral blinds or single glazed clear laminated glass using a bevelled bead profile. Neoprene seals are included for the leading edge of the sliding doors, the rear stile facing the fixed screen and on the transom bar. Midrails can be included.

The sliding door panels should easily be operated by hand. Every sliding door panel will be digitally force tested 3 times as specified and a certificate to be issued showing the mean average opening & closing force with test data in graph format.

The system will work in conjunction with doors of a larger mass and weight – please refer to door parameters on page 7.



F01R - Alder Hey Hospital



E32 - Alder Hey Hospital



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