Automatic Doors

Code	DES2134	Brand	Tesco
Colour	RAL 9010	GTIN	2134
Range	Tesco Design Standards	Size	Not available
Created	05 Oct 2017	Style	Not available
Description	Automatic Doors	Status	active
Dimension	Varies per store	Type	Store Standard (DES)
Volume	Not available	Weight	Not available
Categories	[empty]	Business Groups	Design Standards

Automatic Door Standard

For All format types

GES-E006

September 2018

Revision 1

Document date: Sept 18

TESCO

Contents

Revision Control

Revision Number	Issue Date	Author	Revision Details
0	06.09.18	R Redfern	Issued as a Design Standard
1	12.09.18	R Redfern	Updated following feedback from Maintenance colleagues

Background

The following specification provides details of the automatic (auto) doors, which should be installed to Entrances of Tesco stores and lobbies where noted on the planning drawings.

It aims to ensure the doors are designed and installed to the agreed national standards and to ensure the highest levels of safety provision and security for customers, colleagues and visitors.

The objectives are to implement all current applicable Regulations, standards and good practice with the outcome providing equipment, which is safe in use and maintainable.

We must ensure all persons cannot be exposed to hazards associated with impact, trapping, crushing or shearing during the opening or closing cycles. This does not just include the automatic door, but also their surrounding structure and environment, including POS.

If POS is to be installed near to auto doors, then the Engineering Manager needs to be consulted.

All automatic door installations must be supplied and installed by the approved Tesco supplier.

Associated Standards

All doors should be installed in accordance with BS EN 16005: 2012 Power operated pedestrian doorsets Safety in use- Requirements and Test methods -. This European standard is supplemented with BS 7036-0 2014 Power operated pedestrian doorsets-Safety in use Part 0: Code of practice for risk assessment and risk reduction

BS EN 7671 – Requirements for Electrical Installations – IEE Wiring Regulations

Current National Building Regulations in accordance with Escape and Emergency Exit in Fire and Emergency conditions.

Equipment manufactured to ISO 9001:2000 quality standards

The design shall be based around achieving the maximum effective clear doorway width within the opening.

Primary Drive system

The drive shall be an electro-mechanical system tested and verified where requirements specify to minimum 1 million cycles. In addition, all current certification and accreditation is evident to support all Type CE approvals and Technical File inclusions.

They shall be;

- Capable of providing a cycle speed in both opening and closing cycle within permissible dynamic impact values as defined within BS EN 16005 2012.
- Be housed within the door header.
- To drive a door weight up to
    - 150Kgs per leaf for a Linear single door (1 Leaf)
    - 120kgs per leaf for a linear bi-parting (2 Leaves)
    - 80Kgs per leaf for a telescopic bi-parting (4 Leaves)
    - 90Kgs per leaf for a telescopic single (2 Leaves)

The drive shall be securely fixed by mechanical means to the door header and associated rail within the header.

The linear Drive belt shall be a toothed belt comprising of a wear resistant polyurethane tooth form, encasing parallel high strength tension cords of steel or kevlar.
The track running surface alone should be replaceable and fully interchangeable in the case of damage, with an expected durability of ten years in the retail environment.

The track shall have an acoustic and shock absorbent dampening system, which will reduce noise transfer from the Carriage wheels through the transom.

The Carriage wheels shall be constructed from an Acetal Homopolymer material to provide a concave interface with the interchangeable track system. The standard roller bearing to provide excellent wear resistance with very low friction

The Anti-riser of similar construction to the carriage wheels shall be fitted to ensure the door is secured within the track and that door lift is eliminated.

Door Types

Doors shall be either

- Telescopic bi-parting (4 leaves)
- Telescopic single (2 leaves)
- Linear bi-parting (2 leaves)
- Linear single (1 leaf)

Door Set

All Automatic door sets shall be surface fixed and provided with the following;

1 no. Hinged access cover complete with retaining bolts
1 no. Monitored battery Emergency opening system.
1 no. Multi-function switch
Side screen safety sensors or safety pocket screens
Activation/Threshold safety sensors to suit clear opening width
1 no. First entry key switch (as applicable for store entry / exit)

Door leaves

Automatic sliding doors supplied complete with;

- Square cut components mechanically joined
- Minimum of 47mm non-thermal aluminium profile
- Additional top reinforcing bar to support the weight of the door (minimum 6mm)
- Bottom door rail prepared to accept full width guide channel
- Hook lock (*refer to Ironmongery & Locks section),
- Wool pile to door stiles,
- Flush-pull handles
- Pre-glazed with minimum 10.8mm clear laminated safety glass.

Colour

All visible surfaces of the aluminium door-sections and automatic hinged access cover will be power coated in RAL 7016 unless otherwise advised or to match existing where replacing doors.

Ironmongery & Locks

All stores doors shall be supplied with 1 no. high security manual hook lock.
Type of lock – Hook bolt (1850-451 Adams Rite Maximum Security)
Lock back set – 28.6mm
Type of cylinders – 35/35mm x 28.6mm euro profile cylinder
Cylinder heights – 1300mm from FFL.
No. of keys - 3
Armoured strike – Yes
All Express stores shall be supplied with 2no. high security hook locks.
Lock bolt heights – 600mm and 1300mm from FFL. Lock hooks shall be installed in opposing directions.
The cylinder Hook locks to be in accordance with BS 3621

Safety protection door opening and closing

Combined Activation / Threshold sensor

Dual function sensor (Motion: Radar and Presence: Active Infrared AIR) shall be installed in the correct locations in accordance with BS EN 16005. The sensor(s) communicates with and is monitored directly with the door control (primary drive) system to fail safely to a predetermined mode of operation or door position. Sensors to be connected via Can-Bus terminal connection system.

Photo Electric Cells

These are fitted supplementary to the Dual function Sensors to project a precise narrow beam across the automatic opening in close proximity to the travelling door leaves. Two sets of photocells fitted across threshold.:

- Hold a door in the open position if the signals are obstructed
- Re-open a closing door to the open position if the signals are obstructed.

These shall be installed no higher than 600mm from the floor level and no lower than 300mm

Side Screen Presence Detection

Monitored side screen presence detection shall be installed on all telescopic doors and linear doors to offer protection during the door opening cycle travel area. Telescopic designs cannot be realised with physical or structural means of protection via pocket screen.

Side-screen safety sensors shall utilise active infra-red (AIR) safety technology and installed to comply with **BS EN 16005:2012** Opening of power operated sliding door sets. The side-screen safety sensors are designed to detect stationary persons or objects in the path of the opening door-leaf in front of the fixed side-panels and upon detection of an object within this area, slow the door-leaf to limit the Dynamic kinetic energy/force of impact on opening cycles, thus fulfilling the low energy safety provisions as per BS EN 16005. AIR type sensor connected via a Can-Bus connection system.

Hinged access cover

A hinged access cover shall be provided to cover and protect all electrical and mechanical components.

It shall be provided with;

- A method of securing in the open position for maintenance purposes
- Secured with metal hinges
- Have a minimum of two hinges for access covers up to 3.5m length.
- Have a minimum of three hinges for access covers over 3.5m length.
- Additional machine screws to be fitted to secure covers in the closed position.
- Should be openable to a minimum of 90 degrees.
- A minimum of one securing catch per hinge to lock the cover in place when closed and supplemented with final securing bolts so that tools must be used to gain authorised access to the equipment.

Signage

All applicable signage will be applied in accordance with BS EN 16005 and BS 7036 0 2014**,** This can include '**Automatic Door'** and '**Keep Clear'** signage which is applied to give all users information and also warn of any residual risks. Escape Signage is manadatory.

This should include signage or labels for fixed side glazing.

Controls

Controls shall be provided by a 4-position program selector with anti-tamper facilities to lock the preselected program function. The unit shall be provided with a self-diagnostic display, which can display fault and error messages and recover historic fault and error messages.

Functions:

- Automatic with the options of full or partial opening,
- Continuously open
- One-way traffic,
- Locked/off and

The preferred and most suitable location of the multi-function switch is on the fixed end wall or mullion of the entrance screen at 1600mm AFFL. Any deviation from this should be agreed with Engineering.

The multi-function switch shall have the facility to trigger a reset the primary drive system.

First entry key switch

Where applicable for the store access requirements, a separate key switch shall be installed.

The key switch shall be located externally on the door frame at 1640mm AFFL.

The key switch shall be of the spring return, momentary action type.

3no. keys shall be provided.

Power Supply

Provision of a 240 V 13A switched fused spur within 1 metre of each primary drive system. The fused spur should be terminated / positioned at high level and clearly marked “Automatic Door”, to the left hand side of the header unit. All power supplies to be provided via Residual Current Circuit Breaker (RCCB) rated at 30 Milliamps.

Battery Back-up

The doors shall be provided with 24V-DC emergency Stored Energy (battery) power unit (integrated with the primary drive system)

The system shall provide temporary power in the event of power-failure. During which time the emergency power supply-unit shall be capable for opening and closing the door at least 100 times, subject to current Building Regulations and Technical Guidance.

The emergency power supply-unit provides the safe opening or secure closing, and the battery retains a reserve for a final predetermined emergency or safe position. The battery is monitored by the safety related parts of the control system and in accordance with EN ISO 13849-1. Safety of Machinery- Safety related Parts of the Control System. Part 1 General Principles of Design.

In standard configuration, the monitored battery system provides failsafe opening of the sliding doors in emergency escape conditions.

The battery shall be a sealed lead-acid battery

Current Building Regulations and Approved Documents covering all Countries within the UK have specific requirements to satisfy in relation to the provision of escape at automatic doors. The requirements for EN 16005 2012 methods are not incorporated as of May 2018 and this remains current for all UK National coverage.

Emergency Escape / Fire Exit function

Automatic sliding door systems will fail to the fully open position on any interruption of the main power supply. The system will also be directly connected with the building fire alarm system and the doors will fail to the open position on signal from the fire alarm. Connection to the Fire Alarm is a mandatory provision to satisfy in Scotland.

The Fire Alarm or M&E contractor shall provide volt-free, normally closed cable pairs 3m in length within 2m of the automatic door primary drive system. The automatic door installer will then make the final connections within our drive system to finalise connections. All signals must be available, operational and be verified for any automatic door system fitted across an escape route of final fire exit to be put in to first use.

Structural and Physical Entrapment hazards

Historically it has been evident that other physical features and shop fit-out and display items can create potentially serious crushing and entrapment hazards, which were not evident when the automatic doors were commissioned. Wall boards and floor mounted guards can add physical hazards which can lead to the potential for injury and harm if persons are within these hazards areas. We recommend that on all occasions where any further works near any automatic doors is planned areas are comprehensively risk assessed with the objective to identify and control potential hazards. Telescopic sliding door systems can present the most challenge for effective safeguarding during the door opening cycle as physical barriers and safety pocket doors cannot be realised on these designs.

For further details regarding crushing safety, please consult with Engineering, however, as a guide, please use the relevant chapters and specific Annex pages from BS EN 16005:2012 and BS 7036 part 0 2014.

It is important to safeguard all persons who might be within the hazard zones. The anatomy of young children, especially fingers, limbs and endangered parts of the body might not be fully satisfied when compared with adult proportions. It is also essential to safeguard where possible all vulnerable persons, persons with protected characteristics and those who may suffer consequential secondary injuries because of impact or contact with the automatic door leave(s).

4.6 Avoidance of danger points and protection at danger points

4.6.1 General

Power operated pedestrian doorsets shall be designed so that hazards due to crushing, shearing, impact and drawing-in during the opening and closing cycles are avoided or so that safeguards against such hazards are provided.

Danger points shall be safeguarded up to a height of 2,5 m above the floor with the following exception:

4.6.11 Safety distances

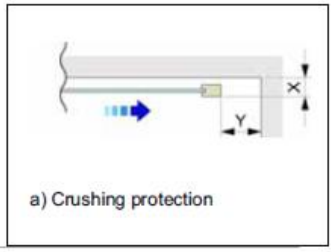
Sufficiently dimensioned safety distances to prevent crushing or drawing in are:

— ≤ 8 mm or ≥ 25 mm for fingers,

— ≥ 200 mm for the head,

— ≥ 500 mm for the body.

a) there is a safety distance (Y) ≥ 200 mm between the secondary closing edge and adjacent parts of the surroundings with regard to the endangered parts of the human body and the leaves move along a plain part and the distance (X) between the front surface of the leave and the fixed side screen is not more than 100 mm (see Figure 2 a)). In this case, the impact hazard and the hazard concerning crushing of the body are considered to be not relevant. For telescopic doorsets, the reference leaf for the measurement is considered to be the one nearest to the adjacent part of the surroundings; or



a) Crushing protection

Pocket Screens

Should entrapment and crushing hazards exist or safe distances not be achieved then pocket screens are the most effective method to eliminate the risks during the door opening cycle of standard linear automatic sliding doors.

They shall be;

- Openable to permit access for cleaning and service
- Square cut components mechanically joined
- Minimum of 47mm non-thermal aluminium profile
- Wool pile to door stiles,

Pre-glazed with minimum 6.4mm clear laminated safety glass

- supplied complete with face-fix hinges
- Secured using means which require a tool to open.

Commissioning

A commissioning certificate and checklist shall be provided in accordance with regulations for all doors and as a minimum as what is detailed in appendix 1.

This shall be supplied within the O&M manual.

The mass of the door determines the maximum dynamic force and this is set by the final commissioning engineer and tested with force instrumentation. This should be set to meet the maximum force requirements within the British Standard.

Maintenance

Mechanical Maintenance

A service visit shall be undertaken every six months by a qualified / trained engineer.

A service certificate shall be provided as per Appendix 2

SOP's are in place for checks by the IST as per Tesco Maintenance procedures.

Cleaning Maintenance

Non-alkaline detergent and warm water may be applied using a soft cloth to the aluminium and glass surfaces. The build-up of atmospheric grime makes it necessary to clean these surfaces regularly to maintain its appearance and protect the finished surface.

In industrial, marine or city environments, it is recommended that cleaning be carried out at least every three months, and every six months in other locations. Provided the above recommendations are adhered to, it should not be necessary to use a cleaning agent, which is more aggressive than non-alkaline detergent diluted with warm water. After application, these products should be removed with clean water and the area wiped dry. *NOTE steel wool, strong acids, Alkalis and abrasive cleaning agents must never be used.

Installation details, and drawings

Doors should be installed to the following criteria:

True and square to opening.

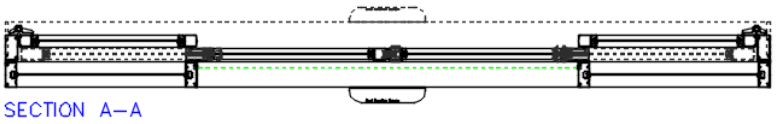
Free from scratches and imperfections.

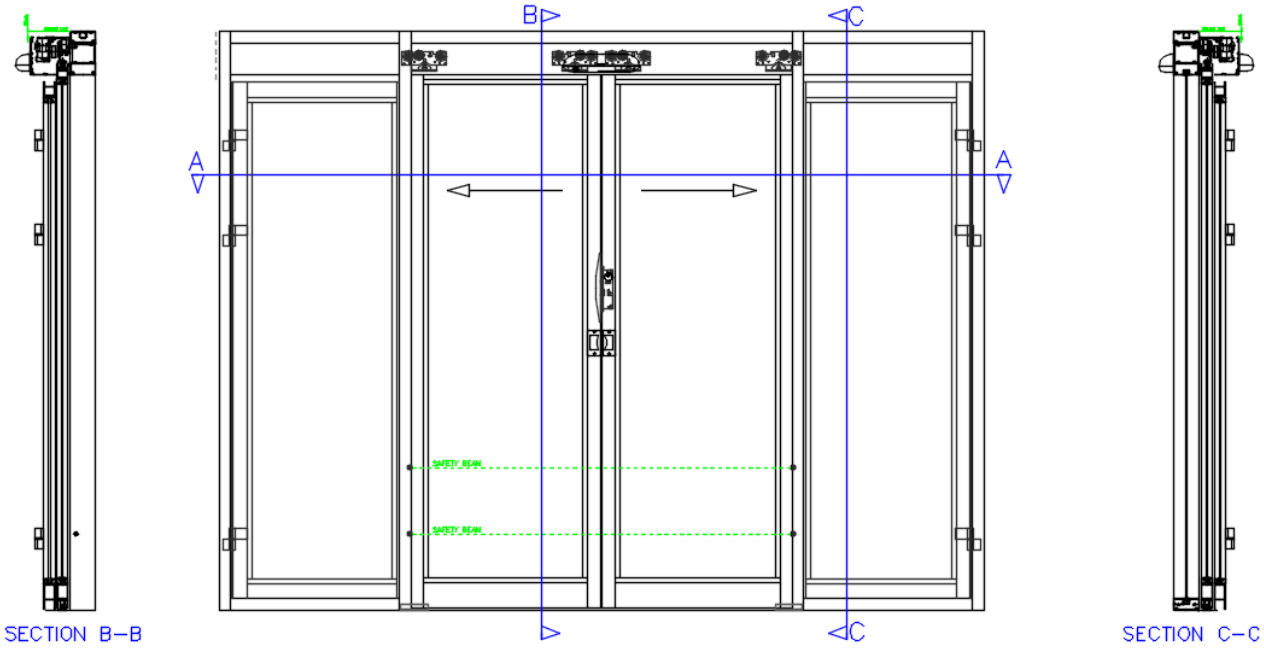
Sensors set up correctly in line with Standards.

Door seals are present and cover the full area of the profile.

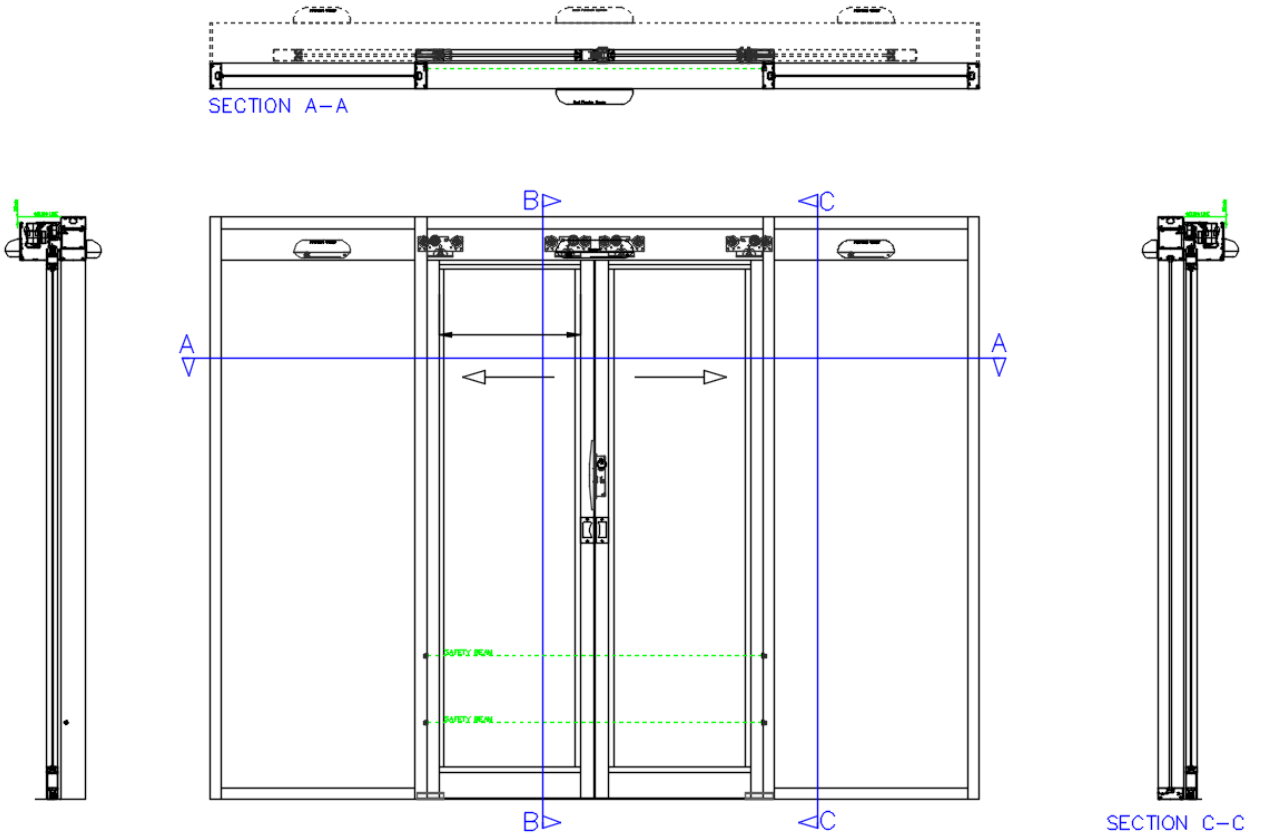
Suitable signage and manifestations/ graphics applied to ensure compliance.

Linear Bi-Part Slide Pocketed

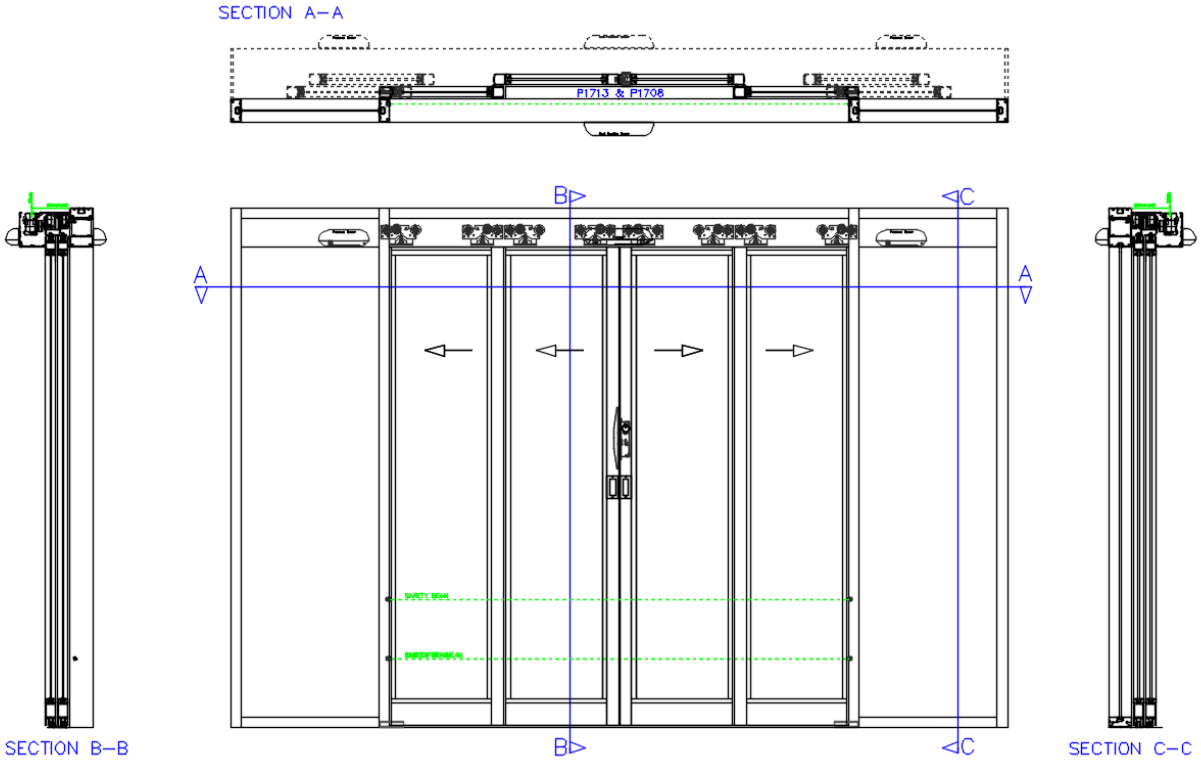




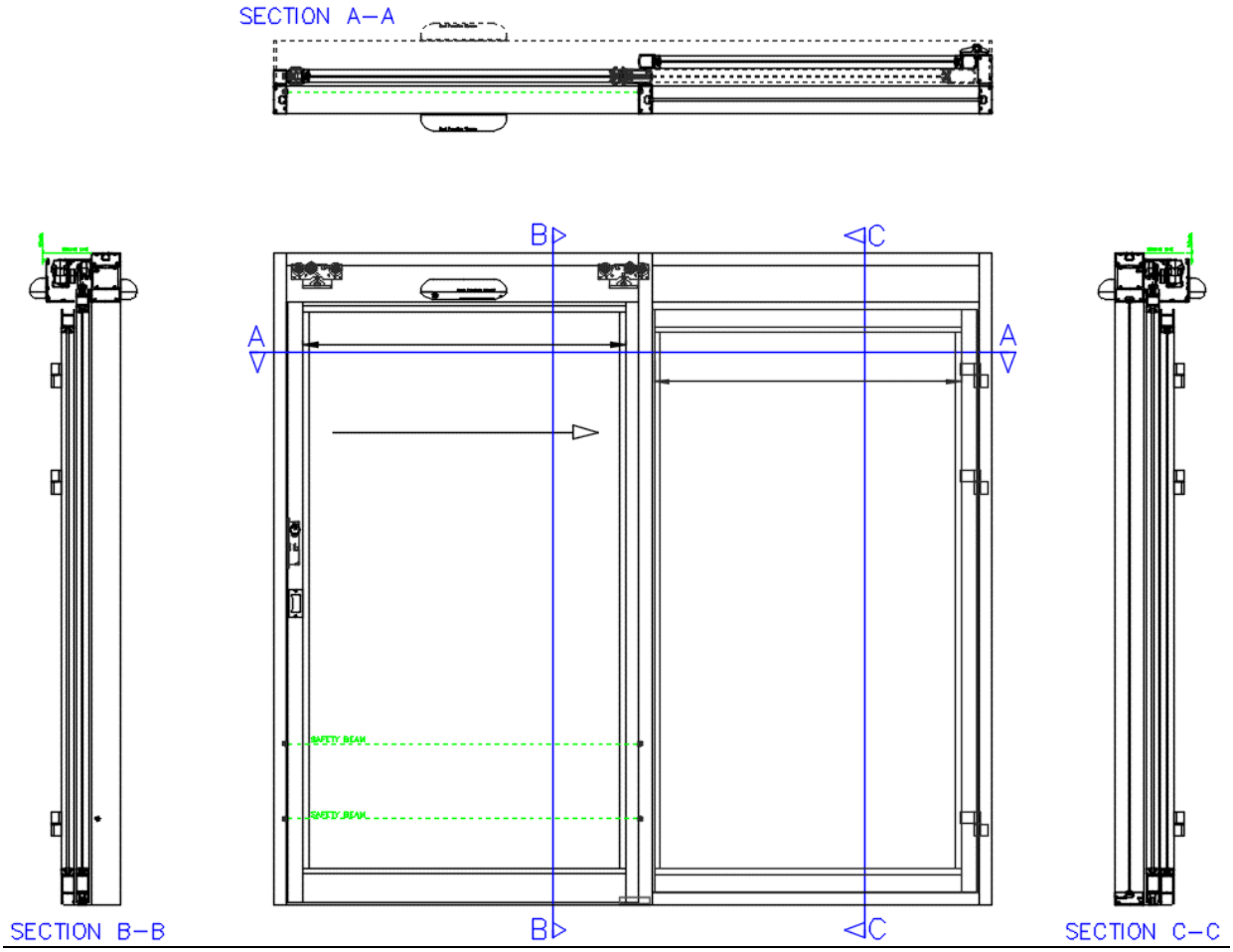
Linear Bi-Part Slide



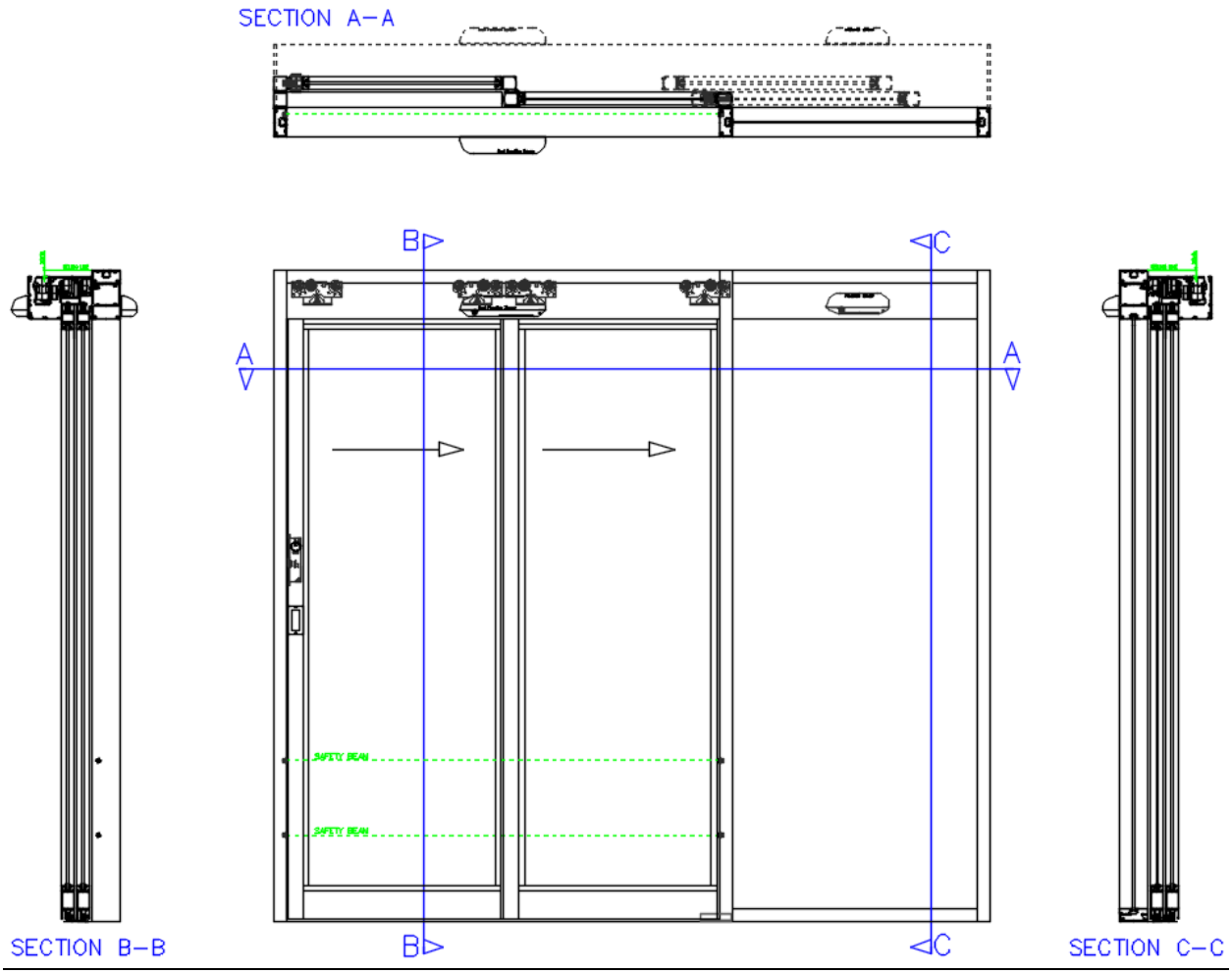
Telescopic Bi-Part



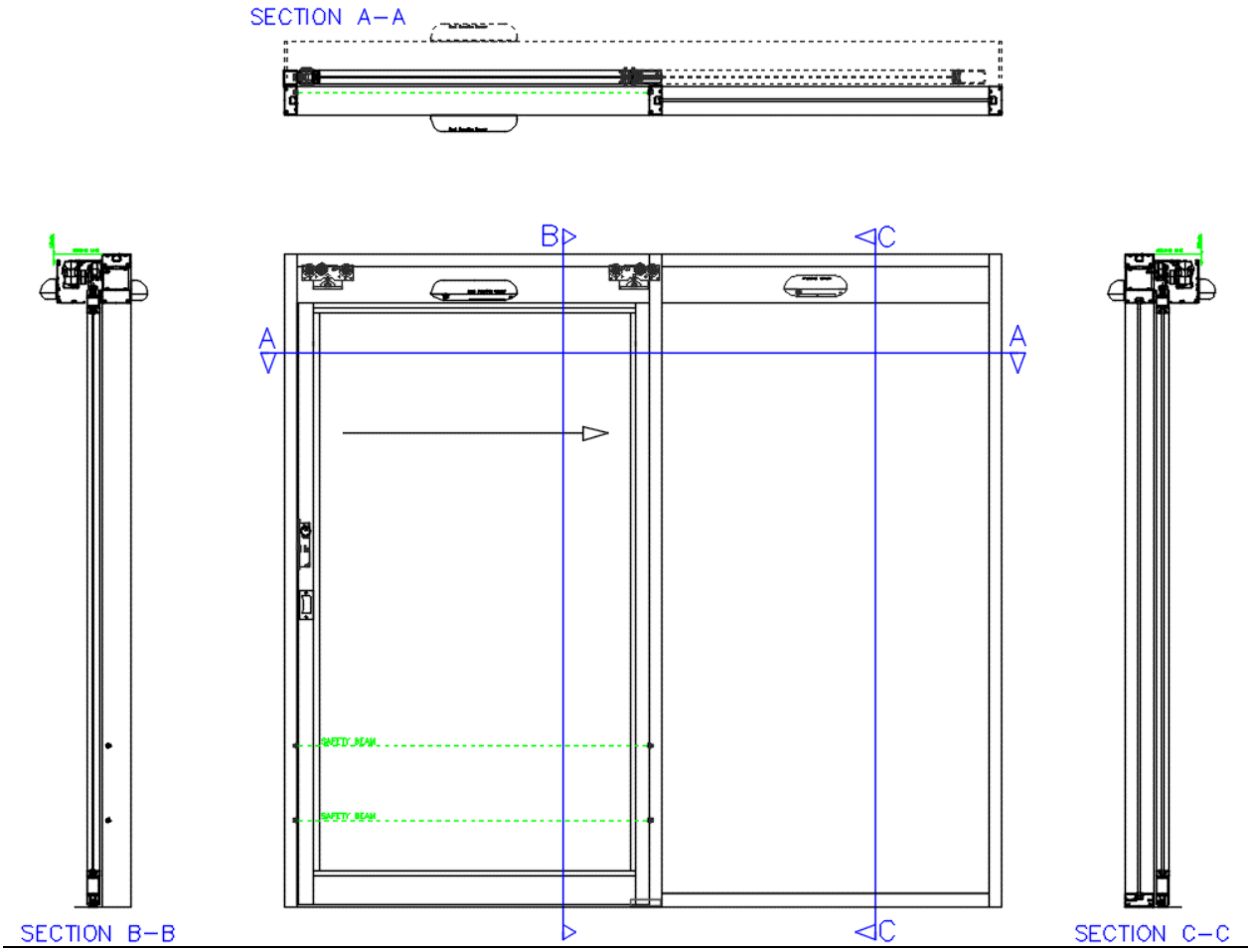
Linear Single Slide Pocketed



Telescopic Single



Linear Single Slide Pocketed



Appendix 1 – Safety Inspection Certificate

AUTOMATIC DOOR SAFETY INSPECTION CERTIFICATE

BS 7036:1996 / BS EN 16005:2012

Circle the standard used for testing

Job No	Inspection Date/Time	Engineer

Customer	Site

Asset Information		Times		
Asset Type:		Opening Time:		
Product:		Closing Time:		
		Hold Open Time:		
Location:		**Closing Energies**		
		Dynamic Force ≤ 200mm:		
		Static Entrapment Force:		
Asset Tag/Barcode:		**Threshold/Side Screen √**		**Sensor Times**
RUK ID:		Outside Threshold:		
Approximate Age:		Inside Threshold:		
Door Cycle Count:		RH Screen:		
Door Hours:		LH Screen:		
Activation		**Safety Opening**		
Radar fitted?		Rear Style to Mullion:		
Push pads fitted?		Leading style to jamb/ Finger Entrapment:		
Access Control Fitted?		Barriers Fitted?		
Other Activation?		Pocket Screens Fitted?		
Emergency Operation		**Safety Closing**		
Power failure:		Reverse Test:		
Battery failure:		**Sensors (Inside)**		
Fire Alarm Activation:		Type:		
UPS Fitted:		Straight Approach:		
Log Book		Side Approach:		
Log Book Available?		**Sensors (Outside)**		
Door Information		Type:		
Opening Width:		Straight Approach:		
Opening Height:		Side Approach:		
Break-Out Fitted?		**Signs Fitted**		
Newton Force to Break Out?		Automatic Door:		
		Keep Clear:		
Top rail Safety Sensors Fitted?		No Entry:		
		Directional Arrows:		
Finger Guard Fitted?		Emergency Push to Open:		
Photo Cell Light Beams		Disabled (Logo):		
1:	3: 5:	Other:		
2:	4: 6:			

Engineer recommendations	Engineer Signature	Safety Check Outcome
		Pass / Fail / Pass with Recommendations

Appendix 2 – Safety Commissioning Certificate

AUTOMATIC SLIDE DOOR SAFETY COMMISSION CERTIFICATE

BS EN 16005:2012

Job No	Commission Date/Time	Engineer

Customer	Site Name
Site Address	**Post Code**
Project Manager	

Door Details	
Header No:	
Door location:	
Door Type:	
Clear Auto Opening Width mm	
Speeds (Speeds & Check Speeds Set to Suit site Conditions)	
Opening Time from Closed to Open (secs)	
Closing Time from Open to Closed (secs)	
Time in Open Position (secs)	
Activation Distance	
Straight Approach Inside from Leading Edge mm	
Side Approach Inside from Centre line mm	
Straight Approach Outside from Leading Edge mm	
Side Approach Outside from Centre Line mm	
Speed and Activation Comments (If appropriate)	
Safety Devices Fitted (Internal)	
Sensor (Type, Area covered)	
Qty fitted & position i.e. 1 = LH 2 = RH	
Record field width and depth of safety area -1	
Record field width and depth of safety area - 2	
Sensor (Type, Area covered)	
Qty fitted & position i.e. 1 = LH 2 = RH	
Record field width and depth of safety area -1	
Record field width and depth of safety area - 2	
Safety Devices Fitted (External)	
Sensor (Type, Area covered)	
Qty fitted & position i.e. 1 = LH 2 = RH	
Record field width and depth of safety area -1	
Record field width and depth of safety area - 2	
Safety Devices General	
Safety Sensor's Monitored	
Safety and Protected Zones Verified with CA Test Box	
Safety and Protected Zones Passed CA Box test	
Safety sensor's Comments	
Traps	
Leading Stile Finger Trap (Door Open) mm	
Leading Stile Finger Trap (Door Closed) mm	
Barrier rails (fitted), Comments if applicable	
Pocket Screens (Fitted), Comments if applicable	
Traps in General Comments if applicable	

AUTOMATIC SLIDE DOOR SAFETY COMMISSION CERTIFICATE

BS EN 16005:2012

Escape	
Break to Open	
Fail open	
Fail Close	
Power fail – Door reaction	
Fire Alarm – Door reaction	
Other	
Commission Status	
Protective Film/Tape removed & Glass Cleaned	
Signage Fitted	
Keys Handed to Site	
Instructions Given to Client on Operation	

Engineer recommendations	Engineers Name Print	Engineer Signature
	Customer Name Print	Customer Signature