

PRIVATE & CONFIDENTIAL

IFC FIELD OF APPLICATION REPORT

Field of Application for Astra 3000 and 4000 Series Concealed Door Closers in FD30 Timber Door Assemblies Installed in Timber Frames

Fire Resistance Standard: BS476: Part 22: 1987

IFC Report PAR/19941/01 Revision A

Prepared on behalf of: Astra DC Ltd
Unit 4
Astra Business Centre
Roman Way
Preston
Lancashire
PR2 5AP

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International Fire Consultants Ltd

Head & Registered Office: 20 Park Street, Princes Risborough, Buckinghamshire, England HP27 9AH

Tel: +44(0)1844 275500, Fax: +44(0)1844 274002, E-mail: info@ifcgroup.com

Registered No: 2194010 England

An International Fire Consultants Group Company

ISSUE AND AMENDMENT RECORD

Rev	Date	Author	Review	Section	Amendments
Draft	September 2019	CA/CPH	DJI	-	-
Rev A	December 2019	CPH	DC	All	Additional closer model (3000) added and additional door leaf designs

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1. INTRODUCTION

This report has been prepared by International Fire Consultants Ltd (IFC), on the Instruction of Astra DC Ltd, to define the Field of Application for Astra 3000 and 4000 Series concealed door closers to be fitted in FD30 timber door assemblies installed in timber frames, that are required to provide 30 minutes fire resistance performance, when adjudged against BS476: Part 22: 1987.

This Field of Application assessment has been produced using the principles outlined in the Passive Fire Protection Forum (PFPF): *'Guide to undertaking technical assessments of the fire performance of construction products based on fire test evidence, 2019, Industry Standard Procedure'*.

When establishing the variations in the construction that can achieve the required fire resistance performance, IFC complies with the principles found in the following documents:

- BS ISO/TR 12470-2: 2017 *'Fire resistance tests - Guidance on the application and extension of results from tests conducted on fire containment assemblies and products. Part 2: Non-load bearing elements'*.
- EN 15725: 2010: *'Extended application reports on the fire performance of construction products and building elements'*.

It is proposed that variations to the tested and assessed specifications, as described in the following sections, may be accommodated into timber door assemblies, without reducing their potential to achieve a 30 minute integrity rating, if tested in accordance with the method and criteria of BS476: Part 22: 1987. The omission of information on any components or manufacturing methods does not imply a lack of approval of those details, but these would need to be the subject of a separate analysis. Only variations specifically mentioned are supported by this assessment document, all other aspects must otherwise be as outlined in the test/assessments referenced herein.

2. TEST EVIDENCE

Applicable fire test evidence exists for the inclusion of the Astra 4000 and 3000 Series concealed closers in timber-based door assembly constructions, and this has been used to form the basis of the technical evaluation. The test evidence used to support the use of the closers within timber-based door assemblies for 30 minutes fire resistance is summarised in Appendix A.

3. SCOPE OF APPROVAL

3.1 Door Assembly Configuration

This Field of Application Report only approves FD30 latched, single acting, single leaf door configurations (LSASD).

3.2 Maximum Assessable Door Leaf Sizes

The maximum leaf size for timber door assemblies is as permitted by the relevant Field of Application report for a latched, single acting, single leaf or the relevant fire resistance test report (outlined below) but, regardless of leaf size, the closer must be capable of fully closing the door leaf, against any friction imposed by the latch (and smoke seals, if fitted), from any position of opening.

3.3 Approved Door Types

3.3.1 Door Leaf Specification

The following timber door leaf types have demonstrated that they are capable of achieving 30 minutes fire resistance, when tested to BS476: Part 22: 1987 in a latched, single leaf, single acting configuration. However, the parameters outlined in the current version of the relevant Field of Application Assessment/Fire Test Report for the respective door type must also be read in conjunction with this report and all requirements/limitations, therein, must be adhered to:

Approved FD30 Door Types	Field of Application/ Fire Test Report Reference	Permitted Closer Type	Intumescent protection required
Halspan® Optima	IFC Field of Application Report PAR/10341/01	3000 & 4000	No
Halspan® Prima	IFC Field of Application Report IFCA/06166	3000 & 4000	No
Strebord	IFC Field of Application Report IFCA/08037	3000 & 4000	No
Stredor	WF 391843	4000 Only	No
Vicaima	CFR 1909171 (Solid particleboard cored door with softwood stiles/rails and MDF facings)	4000 Only	No
Premdor	CFR 1905311-1 (Tubular chipboard cored door with softwood/particleboard stiles/rails and MDF facings)	4000 Only	No
Doortec PTY Ltd	CFR 1910311 (Softwood stiles/rails with MDF facings surrounding a 21mm thick Gypsum Firestop/MDF centre panel)	4000 Only	No

Field of Application for Astra 3000 & 4000 Series of Concealed Closers in FD30 Timber Door Assemblies Installed in Timber Frames in Accordance with BS476: Part 22: 1987

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Other timber based 30 minute door leaves may also be considered, providing they have successful fire resistance test evidence/IFC Field of Application Report to either BS476: Part 22: 1987 or BS EN 1634-1: 2014 in a latched, single acting, single leaf configuration.

All door leaves to be fitted with an Astra 3000 or 4000 Series jamb mounted concealed closer must comply with the specifications as defined below:

3000 Series

- Minimum leaf thickness 44mm;
- Minimum 6mm thick hardwood lipping fitted across the full width of the hanging edge of the door leaf (minimum dry density 640kg/m³);
- Leaf construction to comprise a solid three-layered/graduated density particleboard door blank with an average minimum dry density of 540kg/m³.

4000 Series

- Minimum leaf thickness 44mm;
- Minimum 6mm thick hardwood lipping fitted across the full width of the hanging edge of the door leaf (minimum dry density 640kg/m³);
- Leaf construction to comprise a solid particleboard door blank with an average minimum dry density of 540kg/m³.

Or

- Leaf core (central 36-38mm thickness) to comprise a tubular chipboard construction with a minimum dry density of 470kg/m³. Timber based leaf facings (outer 3-4mm thickness) to have a minimum dry density of 510kg/m³.

(Note: the concealed closer must be fitted in the mid-rail/lock-block zone of the door leaf which comprises the smaller 18mm diameter holes within the tubular chipboard core material).

Or

- Leaf core (central 36-38mm thickness) and stiles rails (if part of the leaf design) to have a minimum dry density of 470kg/m³. Leaf facings (outer 3-4mm thickness) to have a minimum dry density of 510kg/m³.

3.3.2 Permitted door configuration

Only, single leaf, single acting door leaves are covered by this Field of Application report. All other elements of the door assemblies shall be as tested or assessed for the door leaf construction.

3.4 Timber Door Frame Construction

The timber door frame specification must be as tested/assessed for the approved door types/specification outlined in Section 3.3, but in no circumstances should the material used in the fabrication of the door frame have a density less than 510kg/m³.

3.5 Intumescent Seal Specification

The intumescent seal specification must be as outlined in the relevant approval document (test report or relevant Field of Application report) for the respective door type, but, must also meet the minimum specification as outlined below:

Minimum intumescent seal specification fitted in the hanging edge of the door assembly, either:

1no 15 x 4mm intumescent seal, centrally fitted in the leaf edge/frame jamb;

Or

2no 10 x 4mm intumescent seals centrally fitted, spaced 8-10mm apart, in the leaf edge/frame jamb.

No additional intumescent protection is required to be fitted under the fixing plates in the door leaf or door frame, or around the body of the closer.

3.6 Astra 3000 and 4000 Series concealed jamb closers

Where required by regulatory guidance, each fire resisting hinged door leaf must be fitted with a self-closing device, unless they are normally kept locked shut and labelled as such with an appropriate sign which complies with the BS5499 series of standards.

The Astra 3000 and 4000 Series concealed jamb closers feature a hydraulic mechanism, housed in a tubular body and capped with a fixing plate, which is morticed into the hanging edge of the door leaf. A corresponding fixing plate is morticed into the frame reveal and is linked to the main body of the closer with a hinged arm.

Element		Specification/Dimensions
Closer Power		The Astra 3000 and 4000 Series concealed closers must be fitted according to the manufacturer's instructions and be adjusted so that it is capable of fully closing the door leaf against any friction imposed by the latch (and smoke seals, if fitted), from any position of opening.
Fixing Plate Size		106-110mm high x 32mm wide (Maximum)
Closer Body Size	3000	273mm deep x 30mm diameter (Maximum)
	4000	221mm deep x 28mm diameter (Maximum)
Intumescent protection		No additional protection required.
Positioning		Fitted from 70mm to 1600 above the base of the door leaf and central to the leaf thickness (See note below regarding fitting into a tubular chipboard based door leaf).

Element	Specification/Dimensions
Limitations	<p>Where glazed apertures or recessed panels are also incorporated in the door leaf design and are positioned adjacent to the Astra concealed closer, care must be taken to ensure that the effective door 'stile' is not weakened by the mortice.</p> <p>It is a condition of this Assessment Report that the margin between the glazed aperture (if included) and the concealed closer body must be no less than 75mm.</p> <p>When fitted into a tubular chipboard cored door, the concealed closer must be fitted into the mid-rail/lock-block zone of the door leaf which comprises the smaller 18mm diameter holes within the tubular core material.</p>

3.7 Installation

All aspects of the installation of the door leaves and frame shall be as stipulated by relevant test evidence or Field of Application Report for the relevant door type.

4. CONCLUSION

Based upon the available test evidence, and subsequent analysis performed by International Fire Consultants Ltd, if the Astra 3000 or 4000 Series concealed door closer was installed into timber door leaves in timber frames, in accordance with the limitations of this Field of Application Report and tested for fire resistance, they would satisfy the integrity criteria of BS476: Part 22: 1987 for 30 minutes.

This Field of Application Report considers that the door assemblies within this scope of approval must be latched, single acting, single doors up to the maximum size stipulated, herein. No other alternative configurations are approved by this Field of Application Assessment.

5. DECLARATION BY THE APPLICANT

Reference: IFC Field of Application Assessment Report **PAR/19941/01**

We, the undersigned, confirm that we have read and complied with the obligations placed on us by the;

Passive Fire Protection Forum (PFPF)
**Guide to undertaking technical assessments of the fire performance
of construction products based on fire test evidence**
2019
Industry Standard Procedure

We confirm that the component or element of structure, which is the subject of this assessment has not to our knowledge been subjected to a fire test to the standard against which this assessment is being made.

We confirm that the change which is the subject of this assessment has not to our knowledge been tested to the standard against which this assessment has been made.

We agree to withdraw this assessment from circulation should the component or element of structure be the subject of a fire test to the standard against which this assessment is being made.

We understand that this assessment is based on test evidence and will be withdrawn should evidence become available that causes the conclusion to be questioned. In that case, we accept that new test evidence may be required.

We are not aware of any information that could affect the conclusions of this assessment.

If we subsequently become aware of any such information, we agree to ask International Fire Consultants Ltd (IFC) to withdraw the assessment.

Signature:

Name:

Position:

Company:

Astra DC Ltd

Date:

6. LIMITATIONS

This Field of Application Assessment Report, which is only valid for the Astra 3000 and 4000 Series concealed door closers, when installed in timber-based fire resisting door assemblies, addresses itself solely to the ability of the proposed assemblies described to satisfy the criteria of the fire resistance test and does not imply any suitability for use with respect to other unspecified criteria.

The timber-based fire resisting door assembly into which the Astra 3000 or 4000 Series concealed closing device is fitted, must be as previously tested or assessed by IFC for 30 minutes fire resistance and satisfy the requirements of this Assessment Report.

This assessment is issued on the basis of test data and information to hand at the time of issue. If contradictory evidence becomes available to International Fire Consultants Ltd (IFC) the assessment will be unconditionally withdrawn and the applicant will be notified in writing. Similarly, the assessment evaluation is invalidated if the assessed construction is subsequently tested since actual test data is deemed to take precedence.

As per the guidance outlined in the Passive Fire Protection Forum (PFPF): *'Guide to undertaking technical assessments of the fire performance of construction products based on fire test evidence, 2019, Industry Standard Procedure'*, appropriate action has been taken to mitigate the risk of a conflict of interest arising during the preparation of this report. All individuals involved in the production, or subsequent review, of this assessment have declared any perceived conflicts of interest, with regards to the sponsor or subject(s) of this report, prior to working on this project.

The assessors and reviewer have been deemed suitable for involvement in the production of this assessment in accordance with the guidance outlined in the Passive Fire Protection Forum (PFPF): *'Guide to undertaking technical assessments of the fire performance of construction products based on fire test evidence, 2019, Industry Standard Procedure'*.

Where the constructional information in this report is taken from details provided to International Fire Consultants Ltd (IFC) and/or from fire resistance test reports referenced, herein, it is, therefore, limited to the information given in those documents. It is necessarily dependent upon the accuracy and completeness of that information. Where constructional or manufacturing details are not specified, or discussed, herein, it should not, therefore, be taken to infer approval of variation in such details from those tested or otherwise approved.

The analysis and conclusions within this report are based upon the likely fire resisting performance of a complete door assembly that is manufactured and installed in accordance with this document, and offered for fire resistance testing in 'perfect' condition. In practice, management procedures must be in place in any building where the door assemblies are installed, to ensure that no parts of the assembly are damaged or faulty. Further, the doors must open and close without the use of undue force. The edge gaps/alignment of door leaves must be in accordance with the assembly test evidence or assessment, when the doors are closed.

Any such shortfalls in respect to the condition of the assemblies will invalidate the approval by IFC, and may seriously affect the ability of the assemblies to provide the required level of fire resistance performance. Determination of what constitutes wear or damage, and any corrective actions in order to return assemblies to the required condition, should only be carried out following consultation with the manufacturer and IFC.

Where the assessed constructions have not been subject to an on-site audit by International Fire Consultants Ltd, it is the responsibility of anyone using this report to confirm that all aspects of the assemblies fully comply with the descriptions and limitations, herein.

Any materials specified in this report have been selected and judged primarily on their fire performance. IFC do not claim expertise in areas other than fire safety. Whilst observing all possible care in the specification of solutions, we would draw the reader's attention to the fact that during the construction and procurement process, the materials used should be subjected to more general examination regarding the wider Health and Safety, and CoSHH Regulations. Designers, manufacturers and installers are reminded of their responsibilities under the CDM Regulations; but particularly with regard to installation and maintenance of heavy or inaccessible items.

This assessment considers the fire resistance performance of the door assemblies when tested with the leaves in the closed position, within the frame reveal; either retained by the latch, or locked shut, as applicable. The door assemblies will only provide the assessed fire performance when in a similar configuration; and it is the responsibility of the building occupants/owner to ensure that this is the case.

This Report is provided to the sponsor on the basis that it is a professional independent engineering evaluation as to what the fire performance of the construction/system would be should it to be tested to the named standard. It is IFC's experience that such an evaluation is normally acceptable in support of an application for building approvals, certainly throughout the UK and in many parts of Europe and the rest of the world.

However, unless IFC have been commissioned to liaise with the Authorities that have jurisdiction for the building in question for the purpose of obtaining the necessary approvals, IFC cannot assure that the document will satisfy the requirements of the particular building regulations for any building being constructed.

It is, therefore, the responsibility of the sponsor to establish whether this evidence is appropriate for the application for which it is being supplied and IFC cannot take responsibility for any costs incurred as a result of any rejection of the document for reasons outside of our control. Early submittal of the Report to the Authorities will minimise any risks in this respect.

7. VALIDITY

This Field of Application Report has been prepared based on International Fire Consultants Ltd.'s present knowledge of the products described, the stated testing regime, and the submitted test evidence.

The Field of Application Assessment is valid, initially, for a period of five years, after which time it is recommended that it be submitted to International Fire Consultants Ltd for re-evaluation. For this reason, anyone using this document after December 2024 should confirm its ongoing validity.

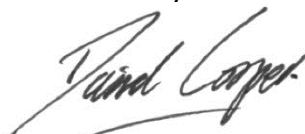
This assessment report is not valid unless it incorporates the declaration, in Section 5, duly signed by the Applicant.

Prepared by:



Chris Houchen
BSc. AIFireE
Associate Director
International Fire Consultants Ltd (IFC)

Reviewed by:



David Cooper
BEng (Hons) AIMMM AIFireE
Associate Director
International Fire Consultants Ltd (IFC)

APPENDIX A

Summary of Fire Test Evidence

Test Report	Configuration and Leaf Size	Description	Test Standard	Integrity
WF 412333 AR3 (Astra)	LSASD 2135mm high x 915mm wide x 44mm thick	The door leaf comprised a blockboard construction with softwood (450kg/m ³) lamels separated by Poplar (510kg/m ³) cross ply's and hardwood lippings on all edges. The door leaf was hung in a softwood frame, supported on 3no steel hinges, fitted with an engaged latch with closing effected by an Astra 4000 series concealed closer. No additional intumescent protection was fitted around the concealed closer.	BS EN 1634-1: 2014 and BS EN 1363-1: 2012	31 minutes
CFR 1909171 (Astra)	LSASD 2040mm high x 924mm wide x 44mm thick	A Vicaima particleboard cored door with softwood stiles/rails, MDF sub-facings and a decorative laminate outer facing. The leaf was hung in a softwood frame, supported on 3no steel hinges, fitted with an engaged latch with closing effected by an Astra 4000 series concealed closer. No additional intumescent protection was fitted around the concealed closer.	BS476: Part 22: 1987	37 minutes
CFR 1905311-1 (Premdor)	LSASD 2040mm high x 923mm wide x 44mm thick	A Premdor tubular particleboard cored door with softwood/particleboard stiles/rails and MDF facings. The leaf was hung in a softwood frame, supported on 3no steel hinges, fitted with an engaged latch with closing effected by an Astra 4000 series concealed closer. No additional intumescent protection was fitted around the concealed closer.	BS476: Part 22: 1987	29* minutes

Test Report	Configuration and Leaf Size	Description	Test Standard	Integrity
WF 391843 (Falcon)	LSASD 2140mm high x 916mm wide x 44mm thick	The door leaf was identified as a Stredor door blank comprising a 2-layered blockboard construction with cross ply facings and a decorative outer veneer with hardwood lippings on all edges. The door leaf was hung in a softwood frame, supported on 3no steel hinges, fitted with an engaged multipoint latch with closing effected by an Astra 4000 series concealed closer. No additional intumescent protection was fitted around the concealed closer.	BS476: Part 22: 1987	47 minutes
CFR 1909171 (Vicaima)	LSASD 2040mm high x 924mm wide x 44mm thick	The Vicaima door leaf comprised a particleboard core with softwood stiles/ rails and MDF/laminate facings. The leaf was hung in a softwood frame, supported on 3no steel hinges, fitted with an engaged latch with closing effected by an Astra 4000 series concealed closer. No additional intumescent protection was fitted around the concealed closer.	BS476: Part 22: 1987	37 minutes
CFR 1910311 (Doortec)	LSASD 2038mm high x 926mm wide x 44mm thick	The door leaf comprised a central MDF faced gypsum panel surrounded by hardwood edged softwood stiles and rails. The door leaf was hung in a softwood frame, supported on 3no steel hinges, fitted with an engaged latch with closing effected by an Astra 4000 series concealed closer fitted through the stile and into the bottom rail. No additional intumescent protection was fitted around the concealed closer.	BS476: Part 22: 1987	41 minutes

* Failure at 29 minutes related to the latch and not related to the concealed closer with no further failure recorded up to the point of test termination at 36 minutes.

LSASD = Latched, Single Acting, Single leaf Door assembly