



INTERNATIONAL FIRE
CONSULTANTS LIMITED

PRIVATE & CONFIDENTIAL

IFC FIELD OF APPLICATION REPORT

Field of Application of CCE Dropseals to be Installed in FD60 Timber Door Assemblies

Fire Resistance Standard: BS EN 1634-1: 2014 or BS476: Part 22: 1987

IFC Report PAR/16930/01

Prepared on behalf of:

Costruzioni Chiusure Ermetiche srl
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Report issued – May 2016
Valid until – May 2022

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ISSUE AND AMENDMENT RECORD

Revision	Issue Date	Author	Reviewer	Amendments
PAR/16930/01	May 2017	WL/RA	DC	-

CONTENTS

1. INTRODUCTION.....	4
2. PROPOSAL	4
2.1 ASDROMIN 13 x 30 AUTOMATIC DROPSEAL.....	4
2.2 ASDROMAX 15 x 30 AUTOMATIC DROPSEAL	5
2.3 TREND 12 x 20 AUTOMATIC DROPSEAL	5
2.4 CHRONOSEAL 15 x 30 AUTOMATIC DROPSEAL.....	5
2.5 SUPERIOR 14 x 35 AUTOMATIC DROPSEAL	5
2.6 DOOR LEAF CONSTRUCTIONS.....	6
3. TEST EVIDENCE	6
3.1 CFR1604211	6
3.2 CFR1605191	7
3.3 CFR1608251	8
3.4 CFR1608261	8
4. ANALYSIS	9
4.1 DROPSEAL SPECIFICATIONS.....	10
4.2 DOOR LEAF CONSTRUCTION	10
4.3 INSTALLATION OF DROPSEAL	11
5. CONCLUSION	12
6. LIMITATIONS	12
7. VALIDITY	14
APPENDIX A	15
DETAILS OF THE ASDROMIN 13 x 30 AUTOMATIC DROPSEAL	
APPENDIX B	16
DETAILS OF THE ASDROMAX 15 x 30 AUTOMATIC DROPSEAL	
APPENDIX C	17
DETAILS OF THE TREND 12 x 20 AUTOMATIC DROPSEAL	
APPENDIX D	18
DETAILS OF THE CHRONOSEAL 15 x 30 AUTOMATIC DROPSEAL	
APPENDIX E.....	19
DETAILS OF THE SUPERIOR 14 x 35 AUTOMATIC DROPSEAL	

1. INTRODUCTION

This report has been prepared by International Fire Consultants Ltd (IFC) at the request of Costruzioni Chiusure Ermetiche Srl (CCE), to assess the dropseal models as stated in Section 2, when fitted into timber based fire resistant door leaves, that are required to provide 60 minutes fire resistance performance, when adjudged against BS EN 1634-1: 2014 or BS476: Part 22: 1987.

Fire resisting assemblies are rarely supplied in an identical form to that which was tested. The specification will invariably require the construction to be supplied at a size, in a mode, frames, building hardware, etc. which are different from that tested. The result of a fire resistance test can apply to variations in configuration/construction, as long as they do not reduce the performance to one which is below that specified. The influence of those variations is covered by a judgement, sometimes made by the approving authority.

Where the approving authority does not feel technically able to make such judgements, or, does not wish to take responsibility for them, then a third party expert opinion is often sought. Such an opinion is often expressed in the form of an assessment of the performance, which may be supported by numerical/quantifiable methods or may be purely an expert judgement.

When establishing the variations in the construction that can achieve the required fire resistance performance, IFC follow the guidance in BS ISO/TR 12470: 1998; *'Fire resistance tests - Guidance on the application and extension of results'*.

The assessment is based upon the constructional information supplied to IFC (detailed in Section 2) and upon the fire resistance test evidence for parts of the constructions (detailed in Section 3). The analysis of the fire resistance performance of these assemblies is summarised in Section 4.

2. PROPOSAL

The construction details of the dropseals are as follows:

2.1 ASDROMIN 13 x 30 Automatic Dropseal

The ASDROMIN automatic dropseal measures 13mm wide x 30mm high and comprises an aluminium U-channel with an aluminium internal profile which provides support to the main silicone gasket. Upon closure of the door leaf, a spring-loaded mechanism, comprising a steel slide, connecting rod, spacer block, fixed block, and steel spring, activates the gasket in a downward motion, via a steel and nylon button fitted to one end of the dropseal. Full details of the ASDROMIN 13 x 30 dropseal assembly are shown on the Figure in Appendix A of this report.

2.2 ASDROMAX 15 x 30 Automatic Dropseal

The ASDROMAX 15 x 30 automatic dropseal measures 15mm wide x 28mm high and comprises an aluminium U-channel with an aluminium internal profile which provides support to the main silicone gasket. The dropseal operates using a similar spring mechanism as described above. Full details of the ASDROMAX 15 x 30 dropseal assembly are shown on the Figure in Appendix B of this report.

2.3 TREND 12 x 20 Automatic Dropseal

The TREND 12 X 20 automatic dropseal measures 12mm wide x 20mm high and comprises an aluminium U-channel with an aluminium internal profile which provides support to the main silicone gasket. The dropseal operates using a similar spring mechanism as described above. Full details of the ASDROMAX 15 x 30 dropseal assembly are shown on the Figure in Appendix C of this report.

2.4 CHRONOSEAL 15 x 30 Automatic Dropseal

The CHRONOSEAL 15 x 30 automatic dropseal measures 15mm wide x 30mm high and comprises an aluminium U-channel with an aluminium internal profile which provides support to the main silicone gasket, as well as the internal spring mechanism, as described above, and a hydraulic cylinder. Full details of the CHRONOSEAL 15 x 30 dropseal assembly are shown on the Figure in Appendix D of this report.

2.5 SUPERIOR 14 x 35 Automatic Dropseal

The SUPERIOR 14 x 35 automatic dropseal contains an aluminium U-channel with an aluminium internal profile which provides support to the main silicone gasket, measuring 14mm wide x 35mm high. Upon closure of the door leaf, a spring-loaded mechanism, similar to as described above, activates the gasket in a downward motion. The dropseal is held in position by stainless steel brackets, overall dimensions 22mm wide x 60mm high, which are screwed to the door edge and engage with the underside of the aluminium channel. Full details of the SUPERIOR 14 x 35 dropseal assembly are shown on the Figure in Appendix E of this report.

2.6 Door Leaf Constructions

The scope of this Field of Application Report considers the use of the above CCE dropseals when fitted to the following minimum 54mm thick door leaf constructions.

Manufacturer	Product Reference	General Construction
Halspan Ltd	Optima	54mm thick particleboard core with 10mm thick hardwood lippings on the vertical edges
Falcon Panel Products Ltd	Strebord	54mm thick particleboard core with 10mm thick hardwood lippings on the vertical edges

Note 1 All doors must include lippings to perimeter edges as required but the test evidence or assessment of the specific door blank construction. Lippings may be required on other edges, as tested/assessed for the selected door design. Lippings shall be hardwood, minimum density 650kg/m³, or as tested/assessed for the selected door design, whichever is the greater.

3. TEST EVIDENCE

Specimens of the automatic dropseal models, manufactured by Costruzioni Chiusure Ermetiche Srl (CCE), have been fitted into the bottom edge of timber based 60 minute flush door leaves, and subjected to fire resistance tests in accordance with BS EN 1634-1: 2014. The test evidence is summarised in Sections 3.1 to 3.4, below.

3.1 CFR1604211

A fire resistance test was carried out to the general principles of BS EN 1634-1: 2014 at Cambridge Fire Research on 21 April 2016.

The test specimen comprised of a single acting partially glazed timber based door assembly, each leaf measured nominally 2400mm high x 1000mm wide x 54mm thick, using a Strebord core manufactured by Falcon Panel Products Ltd.

The specimen comprised a 54mm thick particleboard core fitted with a 10mm hardwood lipping on the vertical edges. The leaves were fixed into a hardwood door frame. Intumescent seals were incorporated in the frame reveal, at both the head and jambs, and at the meeting stiles of the leaves.

In the left hand leaf a 20mm high x 12mm wide x 980mm long automatic dropseal referenced TREND was centrally fitted in the bottom edge of the door leaf. The dropseal had an aluminium body with brass and steel components and was complete with a polymeric seal.

In the right hand leaf a 30mm high x 13mm wide x 1000mm long automatic dropseal referenced ASDROMIN was centrally fitted in the bottom edge of the door leaf. The dropseal had an aluminium body with brass and steel components and was complete with a polymeric seal.

When tested to the general conditions of BS EN 1634-1: 2014, the specimen achieved the following performance:

Integrity – 33 minutes

After 33 minutes and 41 seconds a cotton pad failure occurred at a hot spot in the glazing pane at mid height adjacent to the bead.

Until the test was terminated at 60 minutes, no failures occurred at the base of the door leaves.

3.2 CFR1605191

A fire resistance test was carried out to the general principles of BS EN 1634-1: 2014 at Cambridge Fire Research on 19 May 2016.

The test specimen comprised of an unlatched, single acting partially glazed timber based door assembly, each leaf measured nominally 2397mm high x 1000mm wide x 54mm thick, using a Strebord core manufactured by Falcon Panel Products Ltd.

The specimen comprised a 54mm thick particleboard core fitted with a 10mm hardwood lipping on the vertical edges. The leaves were fixed into a hardwood door frame. Intumescent seals were incorporated in the frame reveal, at both the head and jambs, and at the meeting stiles of the leaves.

In the left hand leaf a 30mm high x 15mm wide x 1000mm long automatic dropseal referenced ASDROMAX was centrally fitted in the bottom edge of the door leaf. The dropseal had an aluminium body with brass and steel components and was complete with a polymeric seal.

In the right hand leaf a 30mm high x 15mm wide x 1000mm long automatic dropseal referenced CHRONOSEAL, complete with end caps, was centrally fitted in the bottom edge of the door leaf. The drop seal had an aluminium body with brass and steel components and was complete with a polymeric seal. The dropseal is vertically screwed at the meeting stile 55mm from the door edge.

When tested to the general conditions of BS EN 1634-1: 2014, the specimen achieved the following performance:

Integrity – 47 minutes

After 47 minutes and 28 seconds a cotton pad failure occurred at the glazing 400mm up and 100mm from the right hand bead.

Until the test was terminated at 60 minutes, no failures occurred at the base of the door leaves.

3.3 CFR1608251

A fire resistance test was carried out to the general principles of BS EN 1634-1: 2014 at Cambridge Fire Research on 25 August 2016.

The test specimen comprised of an unlatched, single acting timber based door assembly, each leaf measured nominally 2100mm high x 1000mm wide x 54mm thick, using a Strebord core manufactured by Falcon Panel Products Ltd.

The specimen comprised a 54mm thick particleboard core fitted with a 10mm hardwood lipping on the vertical edges. The leaves were fixed into a hardwood door frame. Intumescent seals were incorporated in the frame reveal, at both the head and jambs, and at the meeting stiles of the leaves.

In the left hand leaf a 20mm high x 12.3mm wide x 1000mm long automatic dropseal referenced TREND, was centrally fitted in the bottom edge of the door leaf. The dropseal has an aluminium body with brass and steel components and a polymeric seal. Fixed into position using 1No. 3.4 x 20mm long countersunk woodscrew, set 150mm from the hanging edge and 190mm from the meeting stile.

In the right hand leaf a 35mm high x 14mm wide x 998mm long automatic dropseal referenced SUPERIOR, complete with stainless steel end caps, 60mm high x 22mm wide x 1.2mm thick, was centrally fitted in the bottom edge of the door leaf. The end caps are fitted to the hanging and meeting stiles and screw fixed into position.

When tested to the general conditions of BS EN 1634-1: 2014, the specimen achieved the following performance:

Integrity – 57 minutes

After 57 minutes and 26 seconds sustained flaming occurred at the meeting stiles gap between the core and the lipping.

Until the test was terminated at 62 minutes, no failures occurred at the base of the door leaves.

3.4 CFR1608261

A fire resistance test was carried out to the general principles of BS EN 1634-1: 2014 at Cambridge Fire Research on 26 August 2016.

The test specimen comprised of an unlatched, single acting timber based door assembly, each leaf measured nominally 2100mm high x 1000mm wide x 54mm thick, using a Halspan Optima GDC core manufactured by Halspan Ltd.

The specimen comprised a 54mm thick particleboard core fitted with a 10mm hardwood lipping on the vertical edges. The leaves were fixed into a hardwood door frame. Intumescent seals were incorporated in the frame reveal, at both the head and jambs, and at the meeting stiles of the leaves.

In the left hand leaf a 20mm high x 12mm wide x 1000mm long automatic dropseal referenced TREND, was centrally fitted in the bottom edge of the door leaf. The dropseal has an aluminium body with brass and steel components and a polymeric seal. The dropseal is fixed into position using 1No. 3.4 x 20mm long countersunk woodscrew, set 150mm from the hanging edge and 190mm from the meeting stile.

In the right hand leaf a 35mm high x 14mm wide x 998mm long automatic dropseal referenced SUPERIOR, complete with stainless steel end caps, was centrally fitted in the bottom edge of the door leaf. The dropseal has an aluminium body with brass and steel components and a polymeric seal. The end caps are screw fixed to the hanging stile and meeting stiles.

When tested to the general conditions of BS EN 1634-1: 2014, the specimen achieved the following performance:

Integrity – 57 minutes

After 57 minutes and 26 seconds sustained flaming occurred at the meeting stiles.

Until the test was terminated at 65 minutes, no failures occurred at the base of the door leaves.

4. ANALYSIS

This report evaluates the influence of fitting threshold dropseals upon the overall fire performance of a door assembly incorporating a Strebord or Halspan Optima core, that has been proven to provide 60 minute fire resistance, under fire test conditions of either BS EN 1634-1: 2014, or BS476: Part 22: 1987. The evaluation will include consideration of the following factors:

- Dropseal specifications
- Door leaf construction
- Intumescent protection
- Door configuration/installation

All assemblies will be assessed in respect of the integrity criteria of BS EN 1634-1: 2014, or BS476: Part 22: 1987, for 60 minutes.

4.1 Dropseal Specifications

The range of dropseals, described in Section 2, have been included in fire resistance tests described in Section 3.

The tests referenced each have an integrity failure prior to 60 minutes. The locations of the failures in each test can be isolated from the presence of the dropseal in the base of the door leaf. The various failures that occurred during the set of tests, referenced in Section 3, were primarily at the areas of glazing, at the vertical edges or head of the doors. None of the tests experienced an integrity failure, at the location of the dropseal, before 60 minutes or the remainder of the tests.

It is considered that the presence of the dropseal in the base of the door leaf will not cause premature integrity failure before 60 minutes, if the dropseals were fitted in a door assembly, of a type which had been previously tested or assessed to BS EN 1634-1: 2008, or BS476: Part 22: 1987, and tested to the conditions of either BS EN 1634-1: 2008, or, BS476: Part 22: 1987, respectively.

4.2 Door Leaf Construction

The main concern with fitting a dropseal into the bottom edge of a fire resisting door leaf is the effect it may have on the burn-through of the leaf, and the leaf stability, due to the removal of material in this potentially onerous location.

During a fire resistance test, the leaf perimeter intumescent seals (which are typically only fitted in the vertical edges and across the head of a door assembly) will react after approximately 6-10 minutes of test exposure. Due to the negative pressure regime that exists over the lower 500-1000mm of a door leaf (depending upon which test standard is being utilised), ambient temperature air will be drawn into the furnace between the bottom edge of the leaf and the threshold. Where this occurs, the oxygen penetrating under the bottom edge of the leaf tends to produce an oxygen rich flame which can sometimes induce accelerated erosion in this vicinity. Therefore, any removal of the leaf construction/substrate, due to the fitting of a dropseal, may result in premature failure.

It is the opinion of IFC that the dropseals may be fitted in door types, both referenced in Section 2, and of a type which had been previously tested or assessed to BS EN 1634-1: 2008, or BS476: Part 22: 1987.

4.3 Installation of Dropseal

4.3.1 General

All dropseals, as per Section 2, must be fitted into a tightly fitting groove machined into the bottom edge of the door leaf. If resultant gaps greater than 1mm (but not exceeding a maximum of 2mm) exist between the dropseal and the leaf core/substrate, then these gaps must be filled with either intumescent mastic, or, a low pressure ammonium phosphate type intumescent gasket e.g. Interdens, Therm-A-Strip or MM300. See also Section 4.3.2, below.

The test evidence referenced in Section 3 supports a maximum threshold gap of 7.5mm. Therefore, it is a recommendation of this assessment report that the gap under the door does not exceed this dimension. Gaps between door and frame at head and jambs shall be as otherwise defined for the relevant door type.

All door leaves, of construction types specified in Section 2.6, must have been tested or assessed to BS EN 1634-1: 2000/2008, or, BS476: Part 22: 1987, as appropriate, for 60 minutes fire resistance. Based upon the evidence and analysis herein, this approval only applies to doors constructed in accordance with Section 2.6. The dropseal must be fitted centrally in the leaf thickness. The approval only applies to doors with 'square' edges, and does not cover doors with rebated edges.

4.3.2 Intumescent seals

The analysis in Section 4.3, herein, has considered the intumescent protection in the dropseal, which is necessary to prevent integrity failure at the bottom edge of the door. This analysis refers to the tests summarised in Section 3, herein, which include double leaf specimens, and where the intumescent seal of the door assembly was installed in the frame.

In practice, it is possible that the automatic dropseals considered herein will be specified in single and double leaf door assemblies where the intumescent seal is installed in the door edge. In both cases, it is likely that the dropseal will interrupt the intumescent seal in the door edge; an aspect not directly proven by the test evidence generated to date.

To allow approval of the aforementioned dropseals in door assemblies where intumescent seals are in the door edge, the following conditions must be adopted;

- a) In the meeting stiles of 60 minute door assemblies, the size and position of the intumescent seal(s) must be such that at least 15mm total width of intumescent seal is continuous past the dropseal (or 7.5mm width of intumescent seal past each side of the dropseal). It is assumed that this continuity of intumescent seals will be achieved by the seals fitted in one leaf edge at meeting stiles, but if intumescent seals are fitted in both meeting stiles, this will also be acceptable.
- b) At both stiles of single leaf 60 minute door assemblies, and in hanging stiles of double leaf 60 minute door assemblies, the size and position of the intumescent seal(s) must be such that at least 10mm total width of intumescent seal is continuous past the dropseal (or 5mm width of intumescent seal past each side of the dropseal).

- c) Alternatively, in both stiles of single leaf 60 minute door assemblies, and in hanging stiles of double leaf 60 minute door assemblies, a double layer of 2mm thick intumescent sheet must be included in the groove for the dropseal; i.e. 4mm thick on each side of the dropseal. The intumescent sheet should be 25mm x 2mm thick ammonium phosphate type (e.g. Interdens or Therm-A-Strip or MM300).

Note 2 References, in the above paragraphs, to the degree of continuity of intumescent seal at door edges, do not imply that the size and position of intumescent seals in door edges should be modified from those specified in test reports and/or assessments for the selected door type. If the standard details conflict with the parameters above, then IFC should be consulted for a further appraisal.

It is considered that the levels of intumescent protection, and/or continuity of seals, described above, would be sufficient to maintain integrity at the door stiles (in the vicinity of the dropseal) for the proposed period of fire resistance.

5. CONCLUSION

It is the opinion of International Fire Consultants Ltd that if an ASDROMIN 13 x 30, ASDROMAX 15 x 30, TREND 12 x 20, SUPERIOR 14 x 35 or CHRONOSEAL 15 x 30 automatic dropseal was fitted into the bottom edge of a timber based fire rated door leaf of a type as specified herein, and installed in accordance with the requirements of this Assessment Report, the dropseal would not be a cause of integrity failure, if the door assembly was tested for 60 minutes to the relevant test standard.

6. LIMITATIONS

This Assessment Report, which is only valid for ASDROMIN 13 x 30, ASDROMAX 15 x 30, TREND 12 x 20, SUPERIOR 14 x 35 and CHRONOSEAL 15 x 30 automatic dropseals when fitted into timber door assemblies, addresses itself solely to considering whether the inclusion of such dropseals would adversely affect the ability of the assemblies described, but otherwise as tested or assessed, to satisfy the criteria of the fire resistance test. It does not imply any suitability for use with respect to other unspecified criteria.

Where the constructional information in this report is taken from details provided to IFC and/or 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.

Where the assessed constructions have not been subject to an on-site audit by IFC, 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.

This Report is provided to the sponsor on the basis that it is a professional independent engineering opinion 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 opinion 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.

The analysis and conclusions within this report are based upon the likely fire resisting performance of a complete 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 doorsets are installed, to ensure that no parts of the assembly are damaged or faulty. Further, the doorsets must open and close without the use of undue force. The edge gaps/alignment of door leaves must be in accordance with the tolerances defined, herein, when the doors are closed. Any such shortfalls in respect to the condition of the doorsets will invalidate the approval by IFC, and may seriously affect the ability of the assembly to provide the required level of fire resistance performance. Determination of what constitutes wear or damage, and any corrective actions in order to return doorsets to the required condition, should only be carried out following consultation with the manufacturer and IFC.

7. VALIDITY

This assessment 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. For this reason anyone using this document after May 2022 should confirm its ongoing validity.

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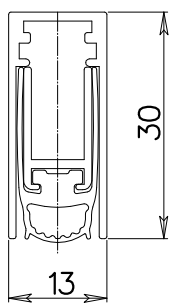
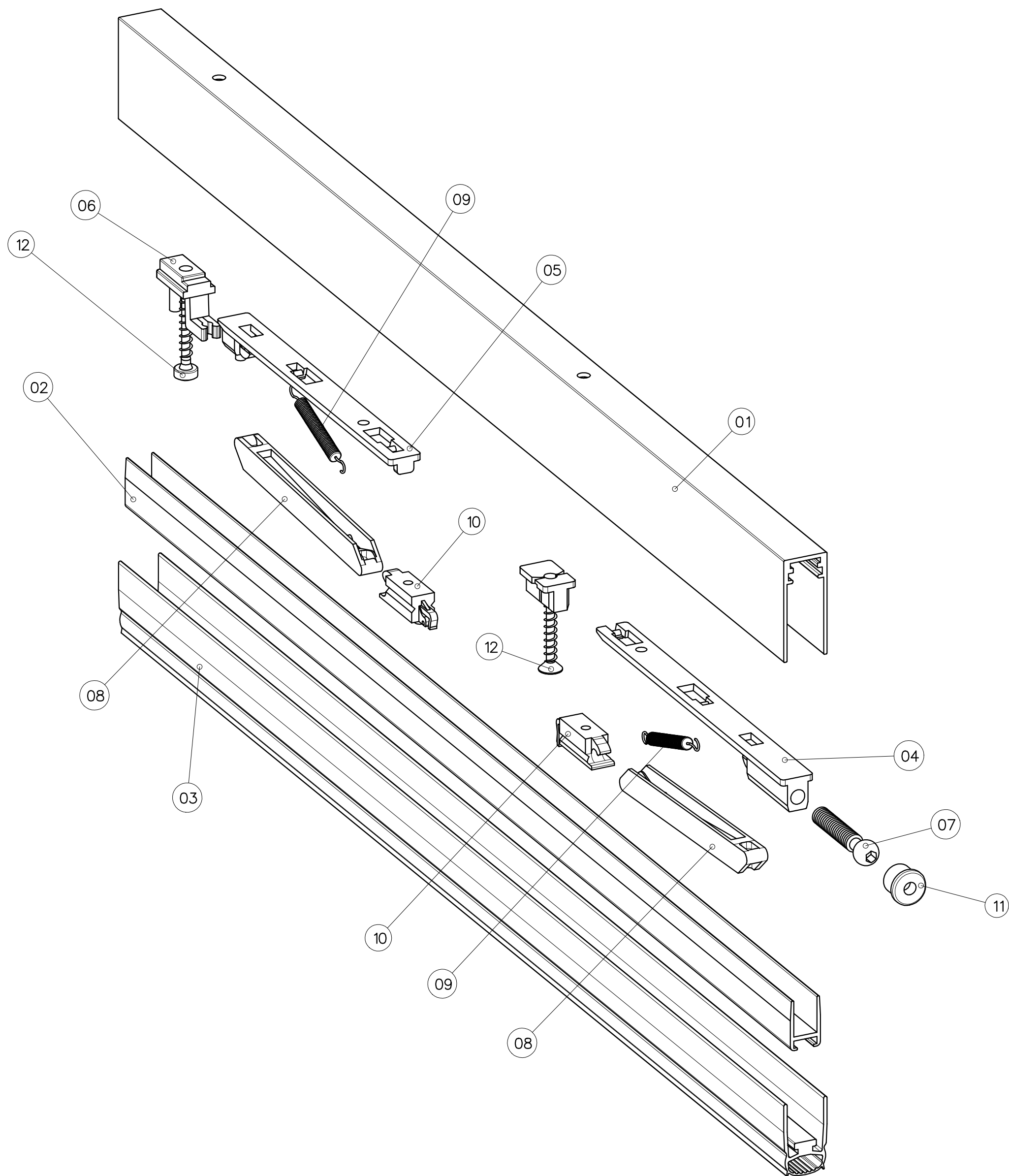
APPENDIX A

Details of the ASDROMIN 13 x 30 automatic dropseal

Drawing reference - 'ESPL DROP 20 MINI'

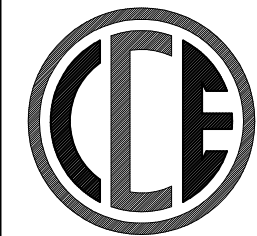
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versions of drawings held on IFC file.*



ASDROMINI

13			
12	SELF-TAPPING SCREW UNI 6954	2	steel C15
11	CAP	1	Nylon PA6 + 20 fv-V0
10	SPACER BLOCK	2	Nylon PA6 + 20 fv-V0
09	SPRING	3	steel C60
08	CONNECTING ROD	2	Nylon PA6 + 20 fv-V0
07	ADJUST PIVOT	1	steel Fe 37
06	FIXED BLOC	1	Nylon PA6 + 20 fv-V0
05	FIXED SLIDE	1	Nylon PA6 + 20 fv-V0
04	SLIDE	1	Nylon PA6 + 20 fv-V0
03	MAIN GASKET	1	silicone compound 75sh. black, flame resistant CM. 4914798. (company: Silital s.p.a.)
02	INTERNAL PROFILE	1	aluminium Lega 60-60
01	EXTERNAL PROFILE	1	aluminium Lega 60-60
POS.	PART NAME	Q.TY	DETAIL



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35010 VILLA DEL CONTE (Padova)
<http://www.cce.it> e-mail: info@cce.it
Partita I V A 02000310280

MODEL DROP 20 MINI

CODE ASDROMINI

DRAWIN-CODE ESPL DROP 20 MINI

DATA 08-09-16 SCALA 1:1

DISEGNATO BARATTO D.

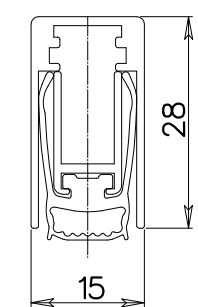
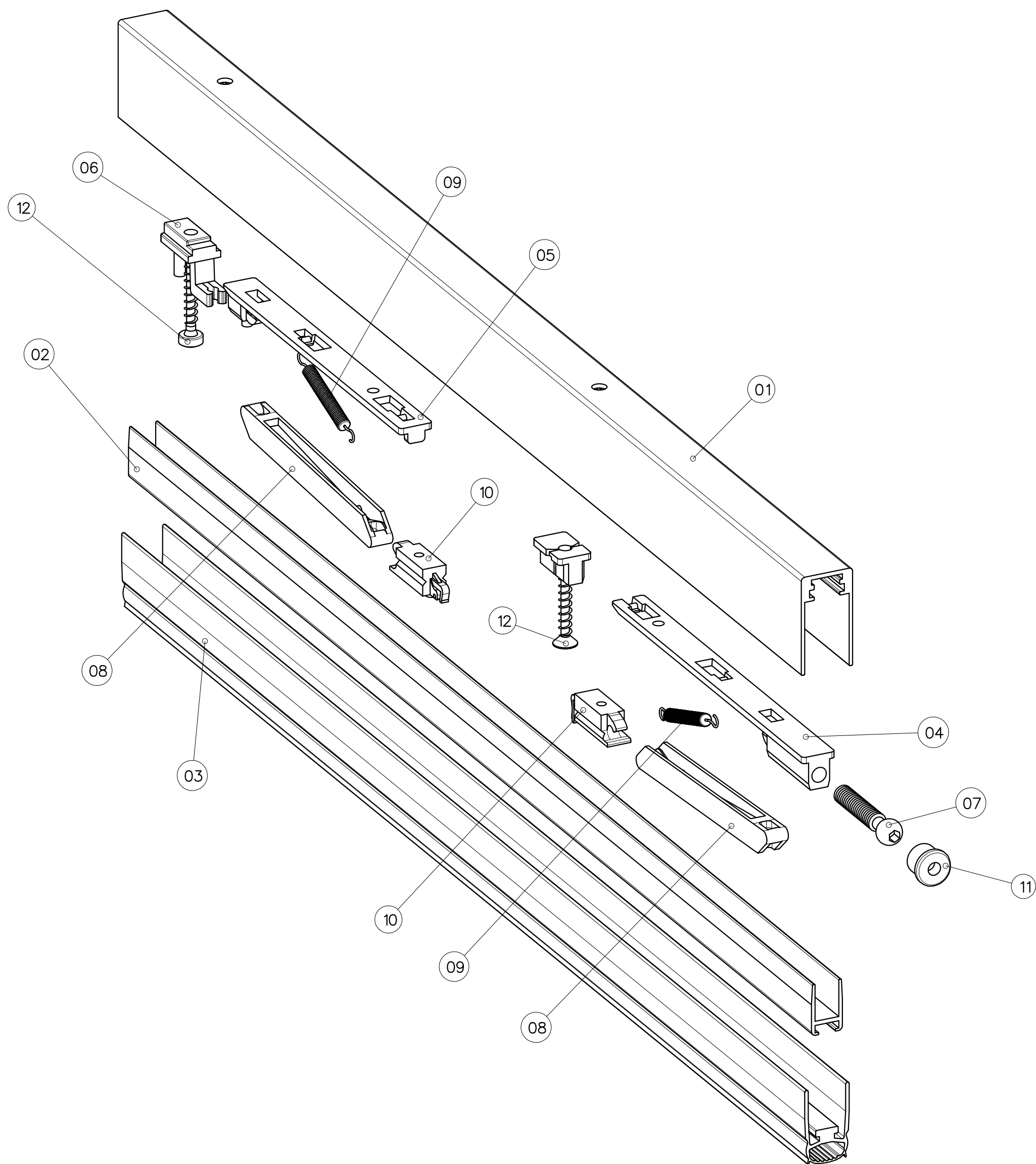
APPENDIX B

Details of the ASDROMAX 15 x 30 automatic dropseal

Drawing reference - 'ESPL DROP 20 MAX'

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ASDROMAX28

13			
12	SELF-TAPPING SCREW UNI 6954	2	steel C15
11	CAP	1	Nylon PA6 + 20 fv-V0
10	SPACER BLOCK	2	Nylon PA6 + 20 fv-V0
09	SPRING	3	steel C60
08	CONNECTING ROD	2	Nylon PA6 + 20 fv-V0
07	ADJUST PIVOT	1	steel Fe 37
06	FIXED BLOC	1	Nylon PA6 + 20 fv-V0
05	FIXED SLIDE	1	Nylon PA6 + 20 fv-V0
04	SLIDE	1	Nylon PA6 + 20 fv-V0
03	MAIN GASKET	1	silicone compound 75sh. black, flame resistant CM. 4914798. (company: Silital s.p.a.)
02	INTERNAL PROFILE	1	aluminium Lega 60-60
01	EXTERNAL PROFILE	1	aluminium Lega 60-60
POS.	PART NAME	Q.TY	DETAIL



C.C.E.
COSTRUZIONI CHIUSURE ERMETICHE S.R.L.
Via dell' Artigianato 16
Tel. 049.9325073 - Fax. 049.9325384
35010 VILLA DEL CONTE (Padova)
<http://www.cce.it> e-mail: info@cce.it
Partita I V A 02000310280

MODEL		DROP 20 MAXI	
CODE		ASDROMAX	
DRAWIN-CODE		ESPL DROP 20 MAX	
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DISEGNATO		BARATTO D.	

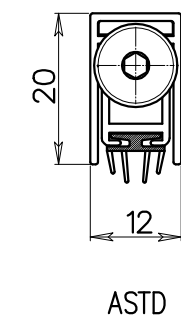
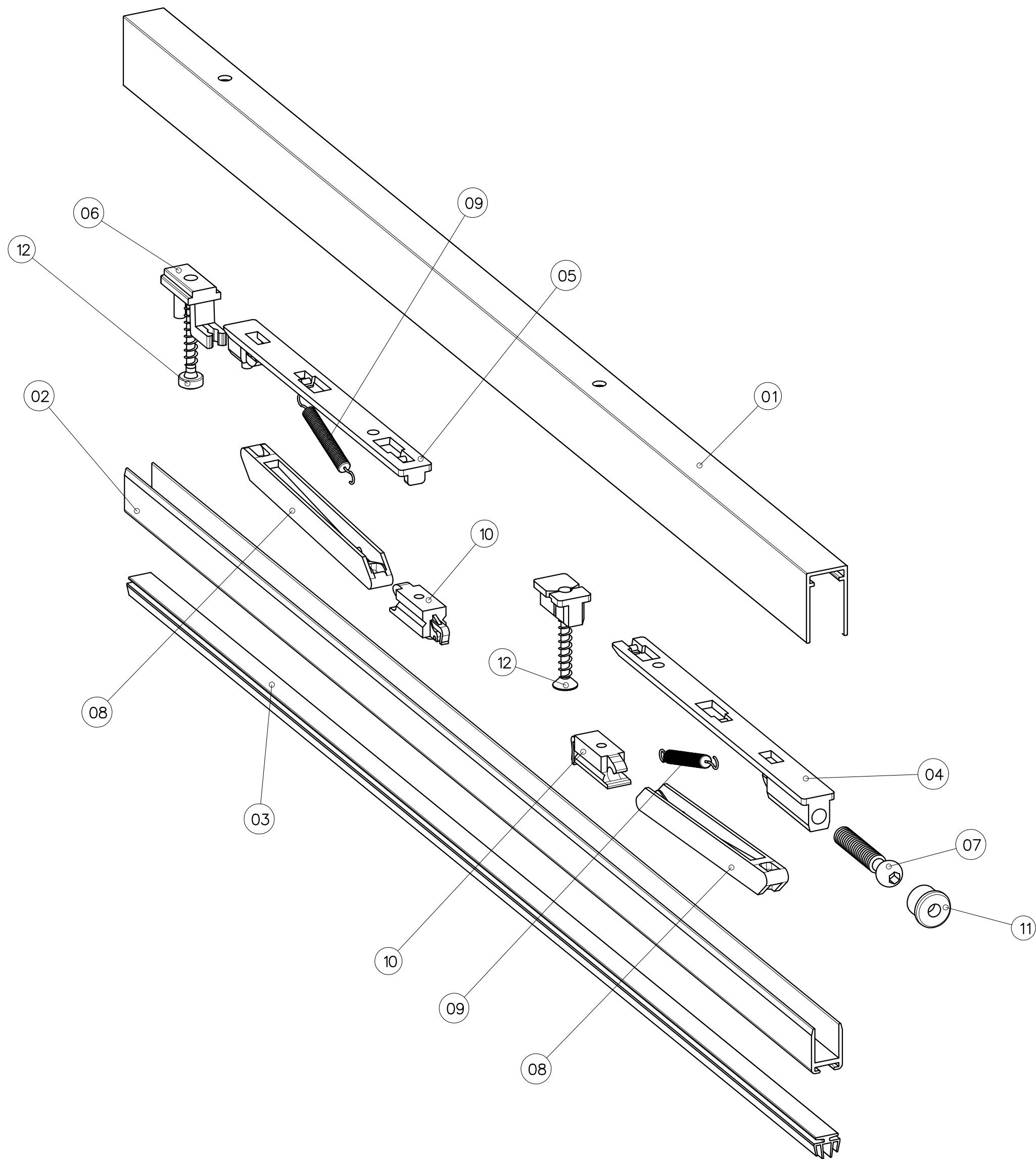
APPENDIX C

Details of the TREND 12 x 20 automatic dropseal

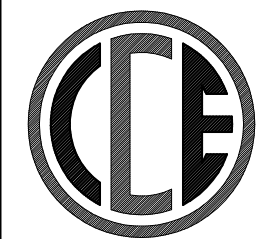
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13			
12	SELF-TAPPING SCREW UNI 6954	2	steel C15
11	CAP	1	Nylon PA6 + 20 fv-V0
10	SPACER BLOCK	2	Nylon PA6 + 20 fv-V0
09	SPRING	3	steel C60
08	CONNECTING ROD	2	Nylon PA6 + 20 fv-V0
07	ADJUST PIVOT	1	steel Fe 37
06	FIXED BLOC	1	Nylon PA6 + 20 fv-V0
05	FIXED SLIDE	1	Nylon PA6 + 20 fv-V0
04	SLIDE	1	Nylon PA6 + 20 fv-V0
03	MAIN GASKET	1	silicone compound 75sh. black, flame resistant CM. 4914798. (company: Silital s.p.a.)
02	INTERNAL PROFILE	1	aluminium Lega 60-60
01	EXTERNAL PROFILE	1	aluminium Lega 60-60
POS.	PART NAME	Q.TY	DETAIL



C.C.E.
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CODE	ASTD
DRAWIN-CODE	ESPL TREND
DATA	08-09-16
SCALE	1:1
DISEGNATO	BARATTO D.

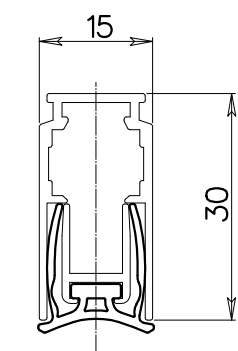
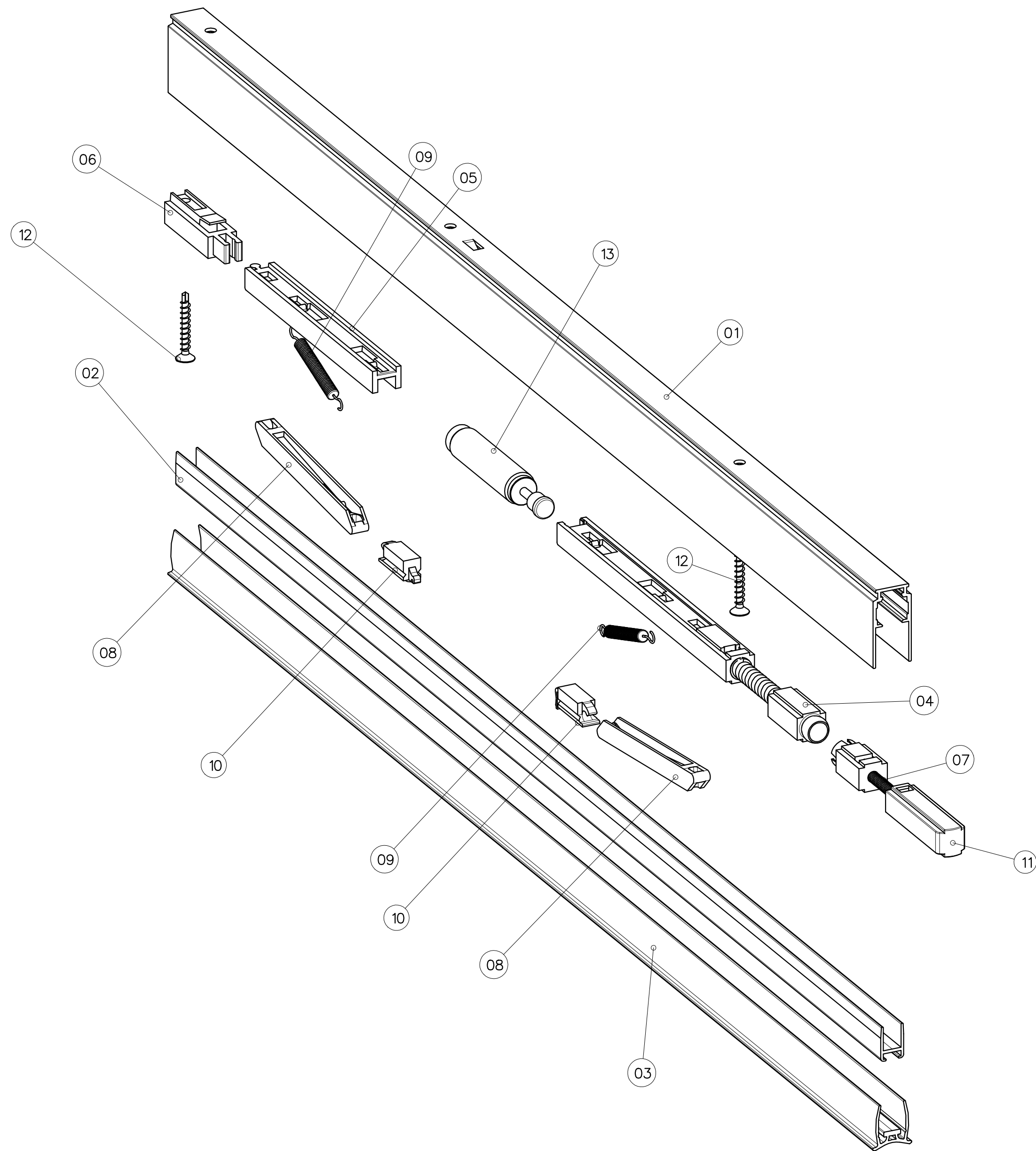
APPENDIX D

Details of the CHRONOSEAL 15 x 30 automatic dropseal

Drawing reference - 'ESPL-AS1530CHR'

***The figure in this Appendix is not included
in the sequential page numbering of this report***

*The drawing has been supplied by Costruzioni Chiusure Ermetiche Srl
for appraisal by IFC, and it is the responsibility of anyone using this
report to confirm that drawings issued to them correspond with the
versions of drawings held on IFC file.*



AS1530CHR

13	HYDRAULIC CYLINDER	1	
12	SELF-TAPPING SCREW <i>UNI 6954</i>	2	<i>steel C15</i>
11	CAP	1	<i>Nylon PA6 + 20 fv-V0</i>
10	SPACER BLOCK	2	<i>Nylon PA6 + 20 fv-V0</i>
09	SPRING	3	<i>steel C60</i>
08	CONNECTING ROD	2	<i>Nylon PA6 + 20 fv-V0</i>
07	ADJUST PIVOT	1	<i>steel Fe 37</i>
06	FIXED BLOC	1	<i>Nylon PA6 + 20 fv-V0</i>
05	FIXED SLIDE	1	<i>Nylon PA6 + 20 fv-V0</i>
04	SLIDE	1	<i>Nylon PA6 + 20 fv-V0</i>
03	MAIN GASKET	1	<i>silicone compound 75sh. black, flame resistant CM. 4914798. (company: Silital s.p.a.)</i>
02	INTERNAL PROFILE	1	<i>aluminium Lega 60-60</i>
01	EXTERNAL PROFILE	1	<i>aluminium Lega 60-60</i>
POS.	PART NAME	Q.TY	DETAIL



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MODEL	CHRONOSEAL 15x30	
CODE	AS1530CHR	
DRAWIN-CODE	ESPL-AS1530CHR	
DATA	20-04-17	SCALA 1:1
DISEGNATO	BARATTO D.	

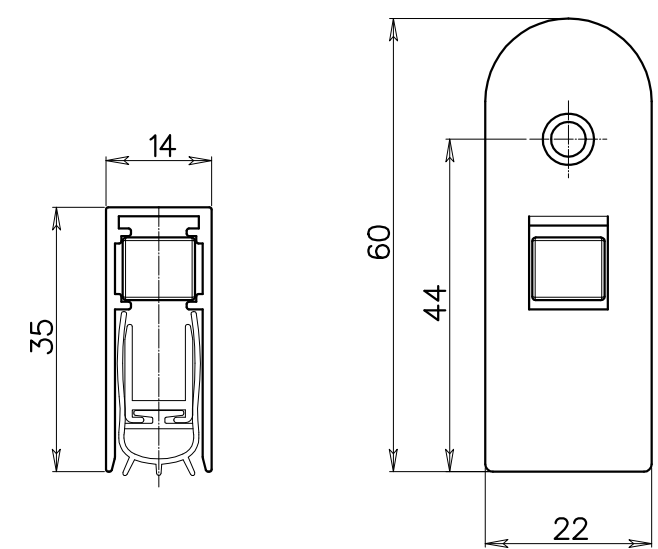
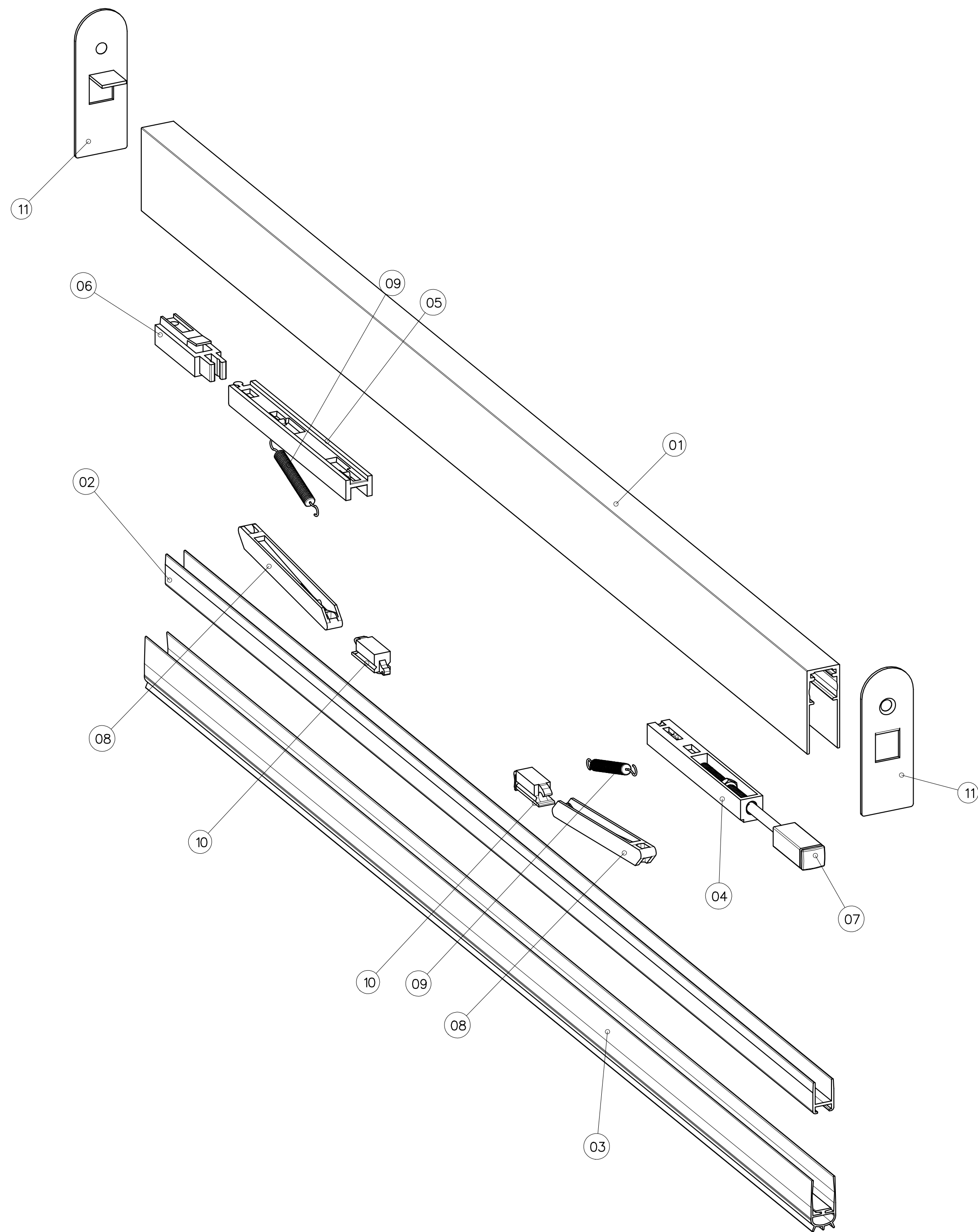
APPENDIX E

Details of the SUPERIOR 14 x 35 automatic dropseal

Drawing reference - 'ESPL-ASSUP'

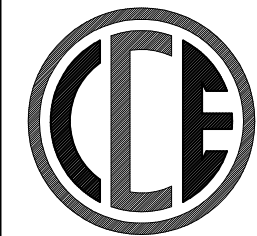
***The figure in this Appendix is not included
in the sequential page numbering of this report***

*The drawing has been supplied by Costruzioni Chiusure Ermetiche Srl
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report to confirm that drawings issued to them correspond with the
versions of drawings held on IFC file.*



ASSUP

11	BRACKET	2	inox AISI 304
10	SPACER BLOCK	2	Nylon PA6 + 20 fv-V0
09	SPRING	3	steel C60
08	CONNECTING ROD	2	Nylon PA6 + 20 fv-V0
07	ADJUST PIVOT	1	steel Fe 37
06	FIXED BLOC	1	Nylon PA6 + 20 fv-V0
05	FIXED SLIDE	1	Nylon PA6 + 20 fv-V0
04	SLIDE	1	Nylon PA6 + 20 fv-V0
03	MAIN GASKET	1	silicone compound 75sh. black, flame resistant CM. 4914798. (company: Silital s.p.a.)
02	INTERNAL PROFILE	1	aluminium Lega 60-60
01	EXTERNAL PROFILE	1	aluminium Lega 60-60
POS.	PART NAME	Q.TY	DETAIL



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MODEL SUPERIOR 14x35

CODE ASSUP

DRAWIN-CODE ESPL-ASSUP

DATA 20-04-17

SCALA 1:1

DISEGNATO BARATTO D.