Furniture Industry Research Association

Electrically actuated furniture for the domestic market - a guide to the UK Regulations

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Prepared by

FIRA International Limited

Maxwell Road, Stevenage, Hertfordshire, SG1 2EW, United Kingdom
Tel: +44(0)1438 777 700, Email: info@fira.co.uk

Foreword

This guide has been prepared by FIRA International Ltd on behalf of the Furniture Industry Research Association.

This document is a guide to the application of the Machinery Directive to motorised furniture. It does not replace any legislative documents that are available and is simply additional information to help achieve compliance. As such, the Regulation and relevant supporting documentation (details of which can be found at the end of this document) must also be understood.

The dates and titles of Standards and Regulations referenced within this document were current at the time of publication. It is advised that advice be sought on the status of these and any other applicable documentation when assessing product conformity.

All efforts have been made to ensure this document is correct at the time of going to press. The opinions and advice expressed are given in good faith. However, the authors cannot be held responsible for any action resulting from the content of this guide as the ultimate interpretation of the Regulations rests with the courts. Where serious doubt occurs professional legal opinion should be sought.

Version Control

Any amendments or revisions made to this document are recorded here:

Version No.	Date	Author	Details of Amendments
1.0	October 2017	B Lovell	
2.0	November 2017	B Lovell	Flow chart amendment – final process – page 21
3.0	March 2018	B Lovell	Amendments to EMC requirements, MD standards to achieve compliance and extension to information section A5 Electrically actuated kitchen furniture

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1. Introduction

In July 2017 a new guide to the EU Machinery Directive was published – Guide to the Application of the Machinery Directive 2006/42/EC, Edition 2.1 along with a revised version of the Directive itself. The revised Machinery Directive does not introduce radical changes when compared with the previous versions but the associated guidance document clarifies and consolidates the provisions of the Directive to provide greater legal certainty. The new guidance is particularly clear in identifying the relationship with furniture products that will have a major impact on all electrically actuated motorised domestic furniture such as recliner chairs, rise-recliner chairs, electrically adjustable beds, height adjustable work-surfaces, TV beds, motorised kitchen furniture and other electrically actuated furniture falling within the scope of the Directive. The current industry practice is that the Machinery Directive did not apply to such products probably due to the interpretation of the below exclusion statement given in the original Directive:-

'excludes household items for domestic use'

This statement has over time being misinterpreted to include domestic furniture products as household appliances, and compliance has been achieved through compliance to the General Product Safety and Low Voltage Directives. The guidance document that has now been published has provided definition and clarity on what is classed as a household appliance.

Taken from the guidance:-

'the expression 'household appliances' designates equipment intended for housekeeping functions such as washing, cleaning, heating, cooling, cooking, etc. Examples of household appliances include washing machines, dish washers, vacuum cleaners and machinery for food preparation and cooking, and machinery for domestic personal care, such as hair dryers, shavers, etc. Electrically operated furniture, such as beds, chairs, tables, storage furniture including kitchen furniture, remain subject to the Machinery Directive as they are not household appliances of the types indicated above.

The European Machinery Directive 2006/42/EC was transposed into domestic legislation in the UK on 29th December 2009 via Statutory Instrument 2008/1597 The Supply of Machinery (Safety) Regulations 2008.

The Regulations contain detailed requirements for the provision of new machinery. It should be noted that there are other UK Regulations which implement other European Directives which may also be applicable to the supply of furniture, including the General Product Safety Directive and the supply of electrical equipment (Low Voltage Directive, EMC Directive).

Furniture manufacturers need to ensure that their furniture products comply with the applicable EU Directives for CE marking. This guide sets out the route to compliance and the processes involved in the final CE marking of products. It offers advice and examples of the essential requirements, Standards and testing regimes for some typical furniture products which fall within the CE marking boundaries.

Please note for the purposes of this document that the term 'manufacturer' also refers to the 'Authorised Representative' which is defined in section 2.

2. Terms and definitions

The following brief list contains some of the key phrases and their definitions associated with the CE marking of product.

Authorised representative: if the manufacturer is not based in the EU then the Directives state that their 'authorised representative' must take responsibility for CE marking. The authorised representative will usually be an importer, distributor or buyer of the furniture products. The definition of an authorised representative is someone who has a formal contract with the manufacturer to represent them within the EU.

CE mark: this is the declaration from the manufacturer or the manufacturer's authorised representative indicating that the product has undergone all necessary evaluation procedures and meets the essential requirements of the applicable CE marking Directives.

Declaration of Conformity: as well as placing the CE mark on the product and producing a Technical File, the manufacturer/manufacturer's authorised representative must also produce and sign a Declaration of Conformity. This is a single-page document summarising the CE marking process that has been followed.

Declaration of Incorporation: this is specifically for products under the Machinery Directive that are sold in a non-complete state, ahead of their incorporation into a complete machine. When the product being sold is part of a larger complete unit, it may not itself have all the required safety features, but will meet the essential safety requirements (ESRs) of the Machinery Directive when finally installed.

Directives: these are legal documents published by the European Commission that lay down requirements for Member State governments to include in their National laws. The CE marking Directives can be rather vague and the legislative structure they set up includes specific provision for Standards to be written to contain the working detail.

Essential requirements/essential safety requirements/ESRs: ESRs are the main points in the Directives that must be met before you can claim you have complied with the Directive. They are generally expanded in detail in Harmonised Standards, although above all you must always meet the ESRs of the Directive.

Harmonisation/Harmonised Standards: Harmonisation is a term commonly used where a European Standard, developed by a recognised EU standards organisation, is deemed sufficient to be used to demonstrate that a product meets the essential requirements of a particular Directive or Regulation. Reference to the harmonised standard may be published in the Directive itself, but it is more commonly found as a published reference in the Official Journal of the European Union (OJEU).

Responsible Person (RP): the responsible person is someone who has the power to make binding commitments on behalf of the manufacturer and sign the EU Declaration of Conformity. The signatory shall be someone who has the authority to commit the resources required to ensure that the CE marking process is properly completed. The effect of signing of the Declaration by the responsible person is to identify an individual in the company who can be held responsible if the CE marking on a product turns out to be invalid.

Technical file: whoever placed the CE mark on the product shall have the necessary documentation to demonstrate that the essential requirements of the applicable Directives have been met. This information, including design specifications, test results and assessment history, is contained within a document referred to as the Technical file.

3. Background

3.1 Introduction

CE marking of a product was introduced in the early 90's and is a key indicator of a product's compliance with EU legislation regarding safety, health and environmental protection. The CE logo on a product ensures the free movement of products within the European Economic Area (EEA). European Directives are the legal basis of CE marking and aim to harmonise requirements and remove barriers for free trade in the European Union. CE marking does not indicate that a product was made in the EU. It states that the product is assessed before being placed on the EU market and thus satisfies the legal requirements to be sold in the EU. Therefore, this means that the CE mark is mandatory for certain products sold within the EEA. By affixing CE marking to a product, a manufacturer is declaring, at its sole responsibility, conformity with the legal requirements which allows free movement and sale of the product throughout the EEA. It is also important to note other legal requirements for consumer products includes compliance with the General Product Safety Directive (GPSD) (2001/95/EC). The GPSD is not a CE marking Directive but the scope of it does not exclude products covered by other CE marking legislation. The GPSD either applies entirely to a product, if no CE marking directives apply, or partially, if CE marking directives are applicable to a product.
Responsibility for CE marking lies with whoever first places the product on the market in the EU – i.e. an EU-based manufacturer, the importer or distributor of a product made outside the EU, or an EU-based office of a non-EU manufacturer. The manufacturer of a product affixes CE marking to it but has to take certain obligatory steps before the product can bear a CE mark. A manufacturer's obligations relating to each of the applicable Directives are detailed in the following pages. Many of the obligations are the same for each Directive and follow a common approach.

There are rules underlying the procedure to affix CE marking and specific routes to compliance for different products. This guide will allow a manufacturer to determine if it has fully covered all the design, technical and testing aspects related to specific products.

3.2 Harmonised Standards and European Directives

The transposition of Directives and Harmonised Standards into National laws makes them legally binding and mandatory within EU Member States. Only products that comply with the essential requirements may be placed on the EU market or put into service and subject to unimpeded movement. Harmonised Standards which have been transposed into National Standards correspond to these required essential requirements. Products manufactured in compliance with Harmonised Standards shall, as such, be recognised as conforming with the corresponding essential requirements.

3.3 Electrically actuated furniture and related CE Marking Directives

CE marking is only required in countries of the European Economic Area formed by the 28 Member States of the European Union. If the product is to be placed or put into service in these markets, CE marking applies if the product is covered by one or more of the European CE marking Directives.

There is no defined category for electrically actuated furniture but many powered motorised furniture products do fall into one or more of these Directives by virtue of their design and functionality.

With respect to electrically actuated furniture a manufacturer must determine which Directives are applicable and note that there may be several Directives that have to be taken into consideration for one product. The product can only be placed on the EU market when it complies with the provisions of all the applicable Directives. Generally, the Directives related to furniture are those described below.

Product manufactured within the EU but destined to be sold outside of the EU does not need to comply with CE Marking Directives and does not need to be CE Marked. It is, however, essential to ensure that product is safe and that it complies with essential safety requirements within the country in which it is being sold.

4. CE Marking Directives

4.1 Low Voltage Directive (LVD) (2014/35/EU)

The LVD 2014/35/EU replaced the previous Directive 2006/95/EC from 20th April 2016. The Low Voltage Directive applies to all electrical products and equipment designed for use with a voltage rating of between 50V and 1000V for alternating current (AC) and between 75V and 1500V for direct current (DC) and whose hazards are primarily of an electrical nature (Consumer goods with a voltage below 50V for AC or 75V for direct current are dealt with by the General Product Safety Directive 2001/95/EC).

This will include the majority of electrically actuated furniture products connected to a domestic power supply. The LVD includes CE marking requirements and has been implemented into UK law as part of the Electrical Equipment (Safety) Regulations 2016.

The essential requirements and obligations for manufacturers outlined by the Directive are that electrical equipment may be placed on the EU market only if it:

- has been constructed in accordance with good engineering practice and does not endanger the safety of persons or property
- is used in applications for which it is intended

4.1.1 Related Harmonised Standards – LVD

Electrically actuated furniture products conform to the safety objectives of LVD where the equipment has been manufactured in accordance with the Harmonised Standard. For electrically actuated domestic furniture the associated standard would be:-

BS EN 60335-1:2012+A13:2017 Household and similar electrical appliances. Safety. General requirements

BS EN 60335-1 gives general requirements to ensure the safety of electrical household appliances – providing the rated voltage is not more than 250 V for single-phase and 480 V for other appliances. These best practice recommendations for electrical safety look at common hazards of household equipment or electrically-operated devices that could cause injury to persons in and around the house. The use of appliances by unsupervised children, or young children playing with electrical household equipment, is not covered in this standard. BS EN 60335-1 looks at general requirements and conditions to test the domestic safety of electric household appliances and similar electrical appliances. It also defines the classification and marking of electrical equipment, and demonstrates how to ensure protection against live parts.

At present there is a draft proposal for a new standard being discussed by the IEC (International Electro-technical Commission) which will relate specifically to furniture. The exact title is still under consideration, but at present the draft version is IEC 60335-2-XXX Ed 1.0: Household and similar appliances - Safety - Part 2-XXX: Particular requirements for furniture incorporating electric parts,

components or appliances. This part 2 would be used in conjunction with BS EN 60335-1 in relation to furniture within the scope of its remit. At present the scope of furniture within the draft includes:-

‘Furniture with built-in or mounted electric parts, components or appliances for all fields of application, including households, offices, hotels, schools, shops etc. the rated voltage being not more than 250 V for single-phase furniture and 480 V for other furniture. The standard applies to electrically operated or electrically adjustable furniture or to furniture with incorporated electrical parts, components or appliances such as heating pads, socket- outlets or luminaries. It applies to stationary as well as movable furniture incorporating electric parts, components or appliances, and furniture intended for permanent connection to fixed wiring as well as furniture with a supply cord fitted with a plug.’

However, when the July 2017 Guide to the Machinery Directive was published, this supplementary standard for furniture electrical safety remained in draft form so the original BS EN 60335-1 still applies. Manufacturers shall look to test electrical elements of their product to this standard and therefore satisfy the LVD requirements.

BS EN 61204-7:2006 Low-voltage power supplies, d.c. output. Safety requirements

If the electrically actuated furniture uses an external power adaptor in its design then the above standard also needs to be addressed. An external power adaptor may be of the type associated with laptops called desktop power supplies or built into a wall plug.

4.1.2 LVD and CE marking requirements

Manufacturers have certain CE marking obligations to meet the requirements of the Low Voltage Directive.

- Produce a Technical File including an adequate analysis and assessment of the risks
- Complete a conformity assessment (often satisfied by testing to the appropriate standards);
- Create and sign an EU Declaration of Conformity
- Affix a CE mark
- Manufacture products with Factory Production Control procedures to ensure products remain in conformity with the Directive, in particular keeping a register of complaints of non-conforming equipment;
- Ensure that product placed on the market bears a type, batch or serial number or other element allowing its identification
- Indicate on the product the name, registered tradename or registered trademark and the postal address of the manufacturer / authorised representative
- Ensure the product is accompanied by instructions and safety information in the language of the country in which the product is sold. Such instructions and safety information, as well as any labelling, shall be clear, understandable and intelligible

In addition, if the manufacturer / authorised representative has reason to believe that equipment which they have placed on the market is not in conformity with the Machinery Directive it shall immediately take the corrective measures necessary to bring that equipment into conformity, including withdrawing it from sale or initiating a product recall if appropriate.

4.2 Electromagnetic Compatibility (EMC) Directive (2014/30/EU)

Electromagnetic compatibility (EMC) is the ability of a product to operate within normal conditions in its electromagnetic energy (emissions) and offer protection (immunity) against electromagnetic energy that occurs in the environment of its intended use. This Directive controls the emissions and immunity characteristics of electrical actuated furniture. All electric devices influence each other when interconnected or close to each other.

The purpose of electromagnetic compatibility (EMC) is to keep all these side effects under reasonable control. The EMC Directive ensures that electrical and electronic equipment does not generate, or is not affected by, electromagnetic disturbance. The Directive limits electromagnetic emissions from equipment in order to ensure that, when used as intended, such equipment does not disturb radio and telecommunication, as well as other equipment. The Directive also governs the immunity of such equipment to interference and seeks to ensure that this equipment is not disturbed by radio emissions when used as intended. The EMC Directive has been transposed into UK domestic legislation as part of the Electromagnetic Compatibility Regulations 2016.

Electrically actuated furniture needs to comply with EMC requirements when it is placed on the market. The objective of the Directive is to harmonise EMC protection requirements (including emissions and immunity) in order to guarantee the operation of the product in its intended EMC environment. The following two statements, relating to emissions of disturbance and immunity to disturbances, cover the essential requirements of the Directive.

The product shall have:

- emission limitation to permit other products to operate as intended;
- immunity requirements to permit the product concerned to operate as intended.

Products, therefore, shall be constructed so that the electromagnetic disturbance generated does not exceed a level allowing radio and telecommunications equipment to operate as intended, and so that the product has an adequate level of immunity to electromagnetic disturbance to enable it to operate as intended.

4.2.1 Related Harmonised Standards – EMC

Electrically actuated furniture products conform to the safety objectives of EMC where the equipment has been manufactured in accordance with the Harmonised Standards. With regards to electrically actuated domestic furniture the associated standards would be:-

- BS EN 55014-1:2017 Electromagnetic compatibility. Requirements for household appliances, electric tools and similar apparatus. Emission

- BS EN 55014-2:2015 Electromagnetic compatibility. Requirements for household appliances, electric tools and similar apparatus. Immunity

EN 55014 is the EMC testing standards for "Household Appliances, electric tools, and similar apparatus" which may cause interference to radio reception, or may be effected by electromagnetic interference such as: office machines, movie projectors, electric toys, blenders, and toasters,

restaurant equipment, and similar devices. Devices not otherwise referenced but are used in the home and are not referenced in other standards fall into this category.

It is also worth noting two other Harmonised Standards used to demonstrate compliance with the EMC Directive.

- BS EN 61000-3-2:2014 Electromagnetic compatibility (EMC). Limits for harmonic current emissions (equipment input current ≤16A per phase).

- BS EN 61000-3-3:2013 Electromagnetic compatibility (EMC). Limits. Limitation of voltage changes, voltage fluctuations and flicker in public low voltage supply systems, for equipment with rated current ≤ 16A per phase and not subject to conditional connection.

These two EMC standards deal with the limitation of harmonic currents and voltage fluctuations injected into public low voltage mains electricity supply systems by EEE. It is applicable for electrical equipment supplied from mains network with voltage not less than 220V and current up to 16A intended for use by both the general public and professionals

Manufacturers shall look to test electrical elements of their product to these standards in order to determine whether or not they meet the essential requirements of the Directive.

If the electrically actuated furniture uses an external power adaptor in its design then the below standard satisfies EMC requirements for such devices.

BS EN 61204-3:2001 Low voltage power supplies, d.c. output. Electromagnetic compatibility (EMC)

EMC Directive and CE marking requirements

- Produce a Technical File including an adequate analysis and assessment of the risks
- Complete a conformity assessment (often satisfied by testing to the appropriate standards);
- Create and sign an EU Declaration of Conformity
- Affix a CE mark
- Manufacture products with Factory Production Control procedures to ensure products remain in conformity with the Directive, in particular keeping a register of complaints of non-conforming equipment
- Ensure that product placed on the market bears a type, batch or serial number or other element allowing its identification
- Indicate on the product the name, registered tradename or registered trademark and the postal address of the manufacturer / authorised representative
- Ensure the product is accompanied by instructions and safety information in the language of the country in which the product is sold. Such instructions and safety information, as well as any labelling, shall be clear, understandable and intelligible

In addition, if the manufacturer / authorised representative has reason to believe that equipment which they have placed on the market is not in conformity with the Machinery Directive it shall immediately take the corrective measures necessary to bring that equipment into conformity, including withdrawing it from sale or initiating a product recall if appropriate.

4.3 Machinery Directive (2006/42/EC) – Amended July 2017

4.3.1 Introduction

As identified in the update to the guidance supplied with revision 2.1 of the Machinery Directive it has been confirmed this Directive shall be applied to electrically actuated furniture, such as beds, chairs, tables, storage furniture including kitchen furniture.

This Directive applies to all machinery and describes the essential health and safety requirements for machinery to comply with the Directive, as well as a number of more specific requirements for certain categories of machinery. There are no specific requirements for electrically actuated furniture classed as machinery in the annexes to the Directive, so the general Directive applies.

In the context of the Machinery Directive the definition of 'machinery' is as follows.

- An assembly of linked parts or components, at least one of which moves, with the appropriate actuators, control and power circuits etc., joined together for a specific application.
- An assembly of machines which, in order to achieve the same end, are arranged and controlled so that they function as an integral whole.

There are also some important points laid out in the recitals of the Directive – the relevant ones to furniture detailed as follows:

- The Machinery Directive applies both to machinery for use by workers at work **and**
- Machinery for use by consumers, so the design and construction of machinery must take account of the intended use. The Directive includes a specific requirement relating to the drafting of instructions for machinery intended for use by non-professional operators.

The CE mark the manufacturer affixes on the product shall be fully recognised as being the only marking which indicates that machinery conforms to the requirements of this Directive. In order to avoid confusion between any CE markings which might appear on certain components and the CE marking corresponding to the machinery, it is important that the latter marking be affixed alongside the name of the person who has taken responsibility for it, namely the manufacturer.

The manufacturer shall also ensure that a risk assessment is carried out on the machinery before it is placed on the market to determine which essential health and safety requirements are applicable. The essential health and safety requirements relating to the design and construction of the product are set out in Annex I of the Directive. The essential health and safety requirements set out in Annex I may be supported by Harmonised European Standards. Most of the essential health and safety requirements concern primarily the protection of the health and safety of persons, including operators and other exposed persons.

4.3.2 Machinery Directive Annex I - Essential health and safety requirements relating to the design and construction of machinery

The general principles that apply using the process of risk assessment and risk reduction by the manufacturer are as follows:

- Determine the limits of the machinery, which include the intended use and any reasonably foreseeable misuse thereof
- Identify the hazards that can be generated by the machinery and the associated hazardous situations
- Estimate the risks, taking into account the severity of the possible injury or damage to health and the probability of its occurrence
- Evaluate the risks, with a view to determining whether risk reduction is required, in accordance with the objective of the Directive
- Eliminate the hazards or reduce the risks associated with these hazards by application of protective measures

The list of essential requirements is organised into several sections. The sections of the essential requirements are wide-ranging, and take into account potential dangers to operators and all other persons who may come into contact with the machinery. They are organised into a series of seven sections as follows:

Section 1 is general and includes a list of definitions and a statement on the 'principles of safety integration' which is fundamental to the interpretation of many of the other essential requirements. There is then a series of sub-sections on:

- Control systems
- Protection against mechanical hazards
- Guards and protective devices
- Risks due to other hazards (including electricity, fire and vibration).

Sections 2, 3, 4, 5 and 6 of the Machinery Directive addresses certain categories of machinery outside the scope of electrically actuated furniture of the type in this document and do not, therefore, need to be considered in an assessment.

4.3.3 Machinery Directive - Related Harmonised Standards

For the Machinery Directive Harmonised Standards are categorised into A, B and C type Standards:

A-type Standards (Basic Standard)

A-type Standards specify basic concepts, terminology and design principles applicable to all categories of machinery. Application of such Standards alone, although providing an essential framework for the correct application of the Machinery Directive, is not sufficient to ensure conformity with the relevant essential health and safety requirements of the Directive and therefore does not give a full presumption of conformity.

BS EN ISO 12100:2010 Safety of machinery. General principles for design. Risk assessment and risk reduction

This is the international standard for machinery safety and outlines the general principles of machinery safety and risk assessment and management. It aids in identifying and eliminating hazards at different stages of the machinery's lifecycle. BS EN ISO 12100 provides the tools to design and develop safe machinery including hazard checklists and machine schematics.

B-type Standards (Generic Standards)

B-type Standards deal with specific aspects of machinery safety or specific types of safeguard that can be used across a wide range of categories of machinery. Application of the specifications of B-type Standards confers a presumption of conformity with the essential health and safety requirements of the Machinery Directive that they cover when a C-type Standard or the manufacturer's risk assessment shows that a technical solution specified by the B-type standard is adequate for the particular category or model of machinery concerned.

BS EN 349:1993+A1:2008 Safety of machinery - Minimum gaps to avoid crushing of parts of the human body

This specifies minimum gaps relative to parts of the human body in machinery and is applicable when adequate safety can be achieved by this method. It aims to enable the user to avoid hazards from crushing zones.

BS EN 894-1:1997+A1:2008 Safety of machinery - Ergonomics requirements for the design of displays and control actuators. General principles for human interactions with displays and control actuators

BS EN 894-2:1997+A1:2008 Safety of machinery. Ergonomics requirements for the design of displays and control actuators. Displays

BS EN 894-3:2000+A1:2008 Safety of machinery. Ergonomics requirements for the design of displays and control actuators. Control actuators

BS EN 894-4:2010 Safety of machinery. Ergonomics requirements for design of displays and control actuators. Location and arrangement of displays and control actuators

BS EN ISO 13849-1:2015 Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design (ISO 13849-1:2015)

This Standard provides safety requirements and guidance on the principles for the design and integration of safety-related parts of control systems, including the design of software. As part of the overall risk reduction strategy of a machine, a manufacturer may choose to achieve some measure of risk reduction through the application of safeguards employing one or more safety functions. Parts of machinery control systems that are assigned to provide safety functions are called safety-related parts of control systems (SRP/CS) and these can consist of hardware and software and can either be separate from the machine control system or an integral part of it.

BS EN 62061:2005+A2:2015 Safety of machinery - Functional safety of safety-related electrical, electronic and programmable electronic control systems. The Standard sets out requirements for safety-related machinery control systems, and describes how to achieve necessary performance. Conformance to this standard gives assurance that safety related control systems have the necessary integrity required for the level of risk.

C-type Standards (Machinery Standards)

C-type Standards provide specifications for a given category of machinery. The different types of machinery belonging to the category covered by a C-type Standard have a similar intended use and present similar hazards. C-type Standards may refer to A or B-type Standards, indicating which of the specifications of these are applicable to the category of machinery concerned.

***NOTE**. There are no C type Standards relating specifically to electrically actuated furniture. Nonetheless there are some specific furniture related Standards that can be used to support the conformity assessment. Such Standards for some of the more common furniture products are in Appendix A of this document.*

4.3.4 Gap Analysis on products relating to the Machinery Directive Annex I clauses

As the Machinery Directive is quite complex it is advised that manufacturers perform a gap analysis on their products. The gap analysis shall be performed against all the clauses of the Machinery Directive Annex I and aid in identifying relevant hazard categories in the risk assessment process.

4.3.5 Machinery Directive Relationship with the Low Voltage Directive

The Machinery Directive is mutually exclusive to the LVD, such that only one Directive will apply to a product, but not both. Annex 1 of the Machinery Directive contains requirements for electrical safety that are identical to those listed in the LVD. As such, it should be noted that a Declaration of Conformity shall refer to the Machinery Directive only, and not to the LVD.

4.3.6 Declaration of Incorporation

The application of a CE mark under the Machinery Directive is a statement which confirms that the machinery fully complies with the requirements of the Directive. Clearly, this is not appropriate for partly completed machines (PCM's) which are intended to be incorporated into another machine or which cannot function unless they are built into a complete production line. For these circumstances, instead of signing a Declaration of Conformity, the manufacturer must demonstrate that it has assessed the product to mitigate any risks to the user, and subsequently sign a Declaration of Incorporation. This states that the machinery is incomplete and must be incorporated as appropriate to fully conform to the requirements of the Directive before it is brought into service. The manufacturer must provide information on the residual risks which the machine contains and on the assessment work which it has completed. The manufacturer must provide information on the residual risks which the machine contains and on the assessment work which they have completed.

The declaration of incorporation contains similar particulars as required on the Declaration of Conformity (manufacturer / authorised person details, description etc, date and signature, etc). In addition though the Declaration of Incorporation must also clearly state:

"that the partly completed machinery must not be put into service until the final machinery into which it is to be incorporated has been declared in conformity with the provisions of the directive, where appropriate"

"an undertaking to transmit, in response to a reasoned request by the national authorities, relevant information on the partly completed machinery."

"which essential health and safety requirements are applied and fulfilled and where appropriate, a sentence declaring the conformity of the partly completed machinery with other relevant Directives."

4.3.7 Machinery Directive and CE marking requirements

In line with standard CE marking practice there are obligations the manufacturer needs to do to satisfy the Directive. These are similar to the EMC and LVD Directives but with reinforcement of the risk assessment requirement, and include:

- Produce a Technical File
- Complete a Risk Assessment
- Complete a conformity assessment (often satisfied by testing to the appropriate standards);
- Create and sign an EU Declaration of Conformity
- Affix a CE mark
- Manufacture products with Factory Production Control procedures to ensure the products remain in conformity with the Directive, in particular keeping a register of complaints of non-conforming equipment
- Ensure that equipment placed on the market bears a type, batch or serial number or other element allowing its identification
- Indicate on the equipment the name, registered tradename or registered trademark and the postal address of the manufacturer/authorised representative
- Ensure the product is accompanied by instructions and safety information in the language of the country in which the product is sold. Such instructions and safety information, as well as any labelling, shall be clear, understandable and intelligible

In addition, if the manufacturer/ authorised representative has reason to believe that equipment which they have placed on the market is not in conformity with this Directive they shall immediately take the corrective measures necessary to bring that equipment into conformity, including to withdraw from sale or initiating a product recall it if appropriate.

4.4 RoHS Directive 2011/65/EU

4.4.1 Introduction

EU Directive 2011/65/EU (Restriction of the Use of Certain Hazardous Substances in Electronic and Electrical Equipment), as indicated by the title, restricts the amount of hazardous substances that can be used in the manufacture of electrical and electronic equipment (EEE). Such hazardous substances can be difficult to manage at the end of the product life cycle, when electrical and electronic products are being disposed of or recycled. Therefore, the Regulations focus on restricting them at the design and production stage in order to keep them out of the waste stream. The new Regulations came into effect on 2nd January 2013 and were transposed into UK domestic law under the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012. The definition of a piece of EEE equipment falling under the scope of the Regulations is as follows:

- with a voltage rating not exceeding 1,000V for AC and 1,500V for DC that requires electric currents or electromagnetic fields to work, or equipment used for the generation, transfer and measurement of electric currents and fields. EEE can be a component or assembly used in a finished product. Cables and spare parts for repairing, reusing, updating or upgrading a

product are all EEE

- All equipment that has at least one intended function which is dependent on electric current or electromagnetic fields is EEE. Even if the electric function is only a minor element of the equipment, the definition still applies

- In EEE furniture products the electric function is an intended and integral part of the product's functionality, and the full functionality of the equipment is at least impaired (i.e. it does not work properly) if that electrical function fails. In order for products to be EEE, their electricity dependent functions must in principle be integrated. With a rise recliner chair, for example, the motion package unit is an integrated part of the product and cannot be separated so the chair and motion package cannot be used as fully functioning separate products.

The Directive bans anyone from placing on the EU market EEE in which any homogeneous material contains more than the tolerated maximum concentration values (MCVs) of six substances:

- lead (Pb)
- mercury (Hg)
- hexavalent chromium (Cr(VI))
- cadmium (Cd)
- polybrominated biphenyls (PBB)
- polybrominated diphenyl ether (PBDE)

Responsibility for compliance is shared by the manufacturer and distributor placing the EEE on the UK market and are obligated to ensure that the design and manufacture of the product complies with RoHS, this includes each homogeneous material within the EEE.

4.4.2 Related Harmonised Standards – RoHS

Electrically actuated furniture conforms with the safety objectives of RoHS where the equipment has been manufactured in accordance with applicable Harmonised Standards. With regards to electrically actuated domestic furniture these Standards would be:-

BS EN 50581:2012 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances.
This standard describes three kinds of documents that may be used to demonstrate conformity with the RoHS requirements:

- Supplier declarations and/or signed contractual agreements
- Materials declarations
- Analytical test results (Requires the use of EN 62321)

EN 62321: 2009 Electro-technical products Determination of levels of six regulated substances (lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls, polybrominated diphenyl ethers).

4.4.3 RoHS Directive and CE marking requirements

In line with standard CE marking practice there are obligations the manufacturer needs to do to satisfy the Directive broadly similar to previous Directives:

- Produce technical documentation demonstrating compliance
- Complete a conformity assessment (often satisfied by testing to the appropriate)
- Create and sign an EU Declaration of Conformity
- Affix CE marking
- Manufacture the product with Factory Production Control procedures to ensure the products remain in conformity with the Directive, in particular keeping a register of complaints of non-conforming equipment
- Ensure that equipment placed on the market bears a type, batch or serial number or other element allowing its identification
- Indicate on the equipment their name, registered tradename or registered trademark and the postal address of the manufacturer / authorised representative

In addition, if the manufacturer/ authorised representative has reason to believe that equipment which they have placed on the market is not in conformity with this Directive they shall immediately take the corrective measures necessary to bring that equipment into conformity, including to withdraw from sale or initiating a product recall it if appropriate.

4.5 Medical Device Directive (MDD) (93/42/EEC)

The Medical Device Directive (MDD) has an extremely broad remit, and includes furniture products and equipment intended by the manufacturer to be used to diagnose, prevent, monitor, treat, alleviate, compensate for and/or control a disease, injury, handicap, physiological process or conception. It is important to understand that the intended purpose and the way a product is marketed can determine whether it is covered or excluded by this Directive. Effectively this means that if a product is marketed (and this would include the way a sales person promotes a product) with health benefits then it would be classed as a medical device. This is an important point when it comes to selling and specifying a product.

If a rise and recline chair or adjustable bed is promoted as helping to reduce the effects of arthritis, for example, it would be classed as a medical device; if however no mention of benefit to health is made, the product would not be classed as a medical device. The medical device Directive is beyond the scope of this guide.

5. Proof of conformity for CE marking

5.1. Introduction

Once the appropriate Directives and Standards relating to a product have been identified then it is time to establish proof of conformity and apply the CE mark.

The various elements to this route are detailed in the following process, including explanations of Technical File requirements, risk management, Factory Production Control, marking and user information requirements; all of which lead to the final Declaration of Conformity.

Process diagram for self-certifying and CE marking domestic electrically actuated furniture

5.2 Identify applicable Directives

The applicable Directives can be derived from the technical description of the product. Manufacturers may need to refer to the exact definition within the Directives to determine if their product falls within the scope of the Directive. Descriptions of each Directive are provided in the previous sections of this document.

See Appendix A for a summary of typical Directives applicable to common types of electrically actuated furniture.

5.3 Identify applicable Standards

Directives do not tend to state how their requirements are to be specifically and quantifiably achieved. This task is left to each individual EU Member State to implement into its own National laws.

This, in turn, is the role of Standards. Various multinational committees meet to produce and update Standards relating to the safety, marking, design etc. of products within their fields. These Standards are implemented at National, European or International level and some are ultimately adopted by the Member State governments to specify the requirements of the Directives.

When a Standard has been referenced by the European Commission (by publication in the Official Journal of the European Union- OJEU), it can be adopted by a Member State to use for product compliance. Manufacturers can use the referenced Harmonised Standard to demonstrate that a product complies with the relevant EU legislation. Harmonised Standards are viewed as compulsory as there isn't often any other method to prove an item is 'safe' or meets a particular Directive. Compliance with a harmonised standard also has the benefit of offering "presumption of conformity" with the Directive under which it is harmonised, a manufacturer not taking this approach would have to prove how their method of compliance meets all of the relevant requirements of the Directive. In effect the burden of proof would be reversed.

See Appendix A for description of typical standards related to some common electrically actuated furniture.

5.4 Self certification

Most of the Directives incorporate a self-certification option, leaving the responsibility for applying the test Standards and certifying that the products comply with the Directives to the manufacturer. Generally, most furniture manufacturers will be able to self-certify their products. Whilst this means there are no mandatory requirements for third party involvement, many manufacturers subcontract aspects of the assessment procedure to an independent testing facility.

5.5 Technical documentation – The Technical File

5.5.1 Introduction

All CE marking Directives require the manufacturer of the product to create a Technical File.

The Technical File is a mandatory document containing technical information supporting the claim of conformity to the requirements of applicable Directives.

The manufacturer has to determine what information is needed to complete the Technical File and must also implement internal measures to ensure the product remains in conformity.

As a general guide, the following items shall be included in the Technical File:

- Description of the furniture and intended use
- Wiring and circuit diagrams
- General arrangement drawings
- Full detailed drawings accompanied by calculations, if applicable
- List of Standards applied
- Records of risk assessments and assessments to Standards
- Description of control philosophy/logic
- Datasheets for critical sub-assemblies
- Parts list
- Copies of any markings and labels
- Copy of instructions (user, maintenance, installation)
- Test reports
- Quality control and commissioning procedures – e.g. Factory Production Control (FPC)
- Declaration of Conformity

There is nothing to stop the file containing a great deal more information than listed. For instance copies of the engineering drawings for any bespoke parts could also be included. These should not, however, be used to fill out the file at the expense of the more relevant information on how the equipment operates and how it meets the safety objectives of the Directives.

If the product has been the subject of third party testing then the test reports confirming compliance to an appropriate Standard shall also be included in the Technical File.

The importance of including a basic general description of the appliance along with its intended use cannot be overstated.

5.5.2 Access to, and Delivery of, the Technical File

It is important to understand that only the authorities given power to enforce the Directives have a right to see the Technical File. It does not need to be published or given to customers.

The purpose of the Technical File is to provide evidence to an enforcement authority that the product has correctly undergone and completed an assessment to comply with the relevant Directives. Enforcement authorities have the right to demand a copy of the file for up to 10 years

after the last date on which the products described in the file were produced. This is a significant, often overlooked, requirement.

Changes in personnel, company administrative and managerial facilities and resources present challenges in ensuring the availability of the required information and this needs to be considered carefully.

The file must be deliverable 'in material form' which is taken to mean a paper copy. In practice, however, enforcement bodies are likely to be satisfied with an electronic version, and in fact may only demand specific sections of the file if their concerns relate to specific aspects of a product's compliance with the Directives.

The file has to be drawn up in a European language, and will normally be requested by the relevant enforcement body for the country and region in which the manufacturer of the product is located. The manufacturer is not obliged to translate the file before delivery to an enforcement authority from outside its home country.

5.6 Internal checks on the manufacturing process to Assess Conformity

5.6.1 Introduction

For electrically actuated furniture that is produced in volume, the manufacturer must ensure that each piece of furniture remains in conformity with the provisions of the Directives. The manufacturer must carry out necessary research and tests on components, fittings and / or the completed product to determine whether, by its design or construction, it is capable of being assembled and put into service safely.

If changes are made to the design, for example where materials or components from different suppliers are incorporated, or where improvements are made to the design, the conformity of the aspects of the design that have been modified must be reassessed and the Technical File updated accordingly.

The internal checks on the manufacture of the product referred to in the Directives refer to the manufacturing process being robust enough to ensure consistency of production so that all product complies with the Technical File and with the applicable essential health and safety requirements (EHSRs).

The Directives also state that there shall be a customer complaints procedure keeping a register of complaints and also a non-conformance management procedure to apply corrective measures to bring the product back into conformity with the Directives.

Employing a Factory Production Control system within the manufacturing environment is one such way to satisfy these requirements.

5.6.2 Factory Production Control (FPC)

The Directives require the Technical File to contain information relating to the internal production control or Factory Production Control (FPC) system which would include any in-process or final quality control and commissioning procedures.

A formal quality management system (QMS) such as ISO 9001 would satisfy such a requirement and a Technical File will reference such a system. Those manufacturers that do not have formal ISO 9001 systems in place will need to implement auditable FPC procedures.

The following elements demonstrate the requirements of a typical FPC:

Scope and policy - Covers the scope of the products covered by the FPC system and includes statements related to the inspection of incoming materials, products and components. A policy statement related to the company's commitment to maintain a proactive FPC system is aimed at ensuring the understanding and ongoing implementation of procedures and ensures compliance with technical and performance characteristics of the product to meet the essential requirements of the Directives.

FPC system review - There shall be a formal procedure for annual review meetings to evaluate the functioning and performance of the FPC system and its associated procedures. The outputs of the meeting, including the minutes, shall be clearly communicated and reference all decisions taken and actions agreed.

Documentation and records - Document issue and control must be in place and must contain appropriate references, including an index, approval and dates of issue. In addition, any revisions or amendments shall be recorded.

Training/awareness - The organisation must be proactive in identifying ongoing training and awareness needs for individuals employed in the management of the system as well as wider quality management aspects.

Purchasing process - The company must have a recorded supplier evaluation and approval process whereby vendors of materials, products, services and components are scrutinised for suitability and performance.

Customer order process - There shall be a documented order entry process following the initial receipt of a customer enquiry. Following receipt of customer order details, these shall be recorded, collated and verified before acceptance to ensure that the specification is within the capabilities of the manufacturer.

Manufacture/assembly, inspection, testing - A procedure shall exist detailing the manufacturing process together with the quality control points and employees responsible for inspection. Any non-conformities shall also be recorded along with details of corrective actions.

Measurement and testing - The FPC shall define which measurement, test equipment and machines used for manufacture, inspection and verification purposes are subject to internal calibration control and ensure records are maintained.

Non-conformity management - The manufacturer must have a process for the identification, and recording, of non-conformities. Details of the non-conformity must be recorded and discussed with concerned parties in order to determine the root causes (which may be internal or external), and for agreed corrective action to be taken in order to resolve the non-conformity or complaint at the earliest opportunity.

5.7 Risk Assessment

5.7.1 Introduction

Directives can cover a wide range of products and risks which both overlap and complement each other. Several Directives might have to be taken into consideration for one product. For example, the Machinery Directive covers mechanical hazards, the Low Voltage Directive covers electrical hazards and the Electromagnetic Compatibility Directive covers electromagnetic disturbance and immunity.

The basis of these Directives is that only products in compliance with legislation and / or applicable Harmonised Standards shall be placed on the EU market. Authorities will take appropriate measures if non-conforming products are identified after the 'conformity assessment'.

Often, conformity assessments are performed using an applicable Harmonised Standard which details safety requirements. The advantage of Standards is that they present very detailed definitions of the requirements given in the Directives. This eases the risk assessment for the manufacturer by changing it from an open and broad analysis to a simple checking of fulfilment of a number of requirements.

Where the Harmonised Standard is exactly related to the product type then it can be assumed that all essential health and safety requirements (EHSRs) are met by applying the test methods in the Standard.

However, as seen in the previous section, for many of the electrically actuated furniture products referred to in this guide the related Standards may only partially cover all the EHSR requirements.

The Machinery Directive states that:

- 'The manufacturer of machinery must perform a risk assessment in order to determine the health and safety requirements which apply to the machinery. The machinery must then be designed and constructed taking into account the results of the risk assessment'
- To carry out this risk assessment on machinery related electrically actuated furniture products manufacturers must ensure that risk assessments are carried out in accordance with BS EN ISO 12100:2010 (Safety of machinery. General principles for design. Risk assessment and risk reduction)

5.7.2 BS EN ISO 12100 Methodology

BS EN ISO 12100:2010 (or ISO 12100) specifies basic terminology, principles, and a methodology for achieving safety in the design of machinery.

It specifies principles of risk assessment and risk reduction to help designers achieve this objective. These principles are based on knowledge and experience of the design, use, incidents, accidents, and risks associated with machinery.

Within the standard, procedures are described for identifying hazards, estimating and evaluating risks during relevant phases of the machine life cycle, and for the elimination of hazards or sufficient risk reduction.

The risk assessment guidelines are presented as a series of logical steps helping designers to systematically determine the limits of the machinery; identify risks of hazards such as crushing, cutting, electric shock, or fatigue; and estimate potential dangers ranging from machine failure to human error. The logical steps laid down by the standard include documenting the following:

- Definition of machine limits along with intended use and foreseeable misuse
- Environment of use – domestic or non-domestic
- User groups – non-professional users, children, elderly, disabled
- Materials – hazardous substances used in construction
- Life cycle – transport, installation, assembly, maintenance and decommissioning hazards have to be identified in each life cycle
- Operating mode – manual or automatic

After documenting the basic machine categories that are applicable then the process of identifying hazards takes place. Typical hazard types for machines defined in the standard include:

- Mechanical
- Electrical
- Thermal
- Noise
- Vibration
- Radiation
- Materials / Substances
- Ergonomic
- Hazards associated with the environment in which the machine is used
- Combination of hazards

An example of mechanical hazards for a machine and the related characterisation of the hazard is shown below, along with potential consequences.

Type or Group of hazard	Origin	Potential consequences
Mechanical hazards	Approach of a moving element to a fixed part	Being run over
		Being thrown
		Crushing
		Cutting or severing
		Drawing-in or trapping
		Entanglement
		Friction or abrasion
		Impact
		Injection
		Shearing
		Slipping, tripping or falling
		Stabbing or puncturing
		Suffocation

After identifying the hazards, risks are estimated from the likelihood of the hazardous situations or harmful events. Risk is a combined measure of the incident probability and the severity.

The risk assessment will identify the hazards taken into consideration and describe how these might harm the user in relation to injury type and severity. The output from the risk assessment is an estimate of the risk level. This risk level leads into further risk management processes and a decision on proportionate and adequate measures.

Relevant product safety Standards can be an important source of guidance. However, sometimes detailed guidance is not available on every aspect of a specific product's design and intended range of use.

Ultimately, the manufacturer will need to make judgements based on risk. It is important that manufacturers use a formal process for evaluating risk, including a risk matrix – a tool that assists with evaluating risk.

The following is a typical example of a risk matrix within ISO 12100:

		Probability of Occurrence		
	Severity of Harm	**A Probable**	**B Possible**	**C Improbable**
4	Death, loss of eye or arm			
3	Broken limbs loss of finger			
2	Reversible – medical treatment required			
1	Reversible – First aid required			

The colour red indicates a high risk. This has to be preferably reduced by means of design measures. The colour yellow indicates a lesser risk than red. Such risk can either be reduced by means of design measures or technical protective measures. The colour green indicates residual risks which do not require any further (design) measures.

5.7.3 After the risk assessment has been performed

Once the assessment has been performed, designers shall analyse the issues identified to determine the level of risk they pose to the consumer. Some issues will need to be addressed because they put the consumer at unacceptable risk, while others may need to be addressed because they cause the product to be out of compliance with the Directives.

With a list of items and their risk levels documented the manufacturer then creates action plans to address the vulnerabilities. BS EN ISO12100 advocates risk reduction according to the 3 – step method.

Step 1 - Elimination of the hazard on the basis of design measures (inherently safe design measures)

- Geometry (e.g. minimum distances between movable parts, no sharp edges, angular parts)
- Physical aspects (e.g. limitation of the actuating force, speed or emission of noise)
- General technical design (e.g. stress, materials)
- Selection of suitable technology
- Stability
- Ergonomics for reduction of stress
- Electrical safety

Step 2: Risk reduction through application of technical and complementary protective measures (guards or protective devices)

- Guards are used as access prevention or for the containment of materials, workpieces,or liquids: Stationary (only removable with tools) or movable versions
- Protective devices permit access and are always used in connection with a control (safety function).

Step 3: Warning against residual risks (information for use)

On the machine (warning signs, warnings, warning devices);

In the handbooks (commissioning handbook, transport handbook, instruction handbook, service and maintenance handbook).

An organisation can demonstrate to an enforcement authority that it has addressed risk by documenting the above as part of its risk assessment. Performing a risk assessment demonstrates to an enforcement authority a good understanding of the risks affecting the consumer.

5.8 Declaration of Conformity

Like the CE logo, the Declaration of Conformity is one of the common aspects throughout all the CE marking Directives. Essentially, the Declaration is a signed document completed by a responsible individual declaring compliance with the relevant requirements of the Directive. It also allows an enforcement authority to identify who is responsible for a product and what that person claims to have done to ensure compliance.

A properly issued Declaration of Conformity is always issued by the product's manufacturer (or by the person responsible for selling the product in the EEA, and never by a test house.)

The Declaration must be signed by someone who has the power to make binding commitments on behalf of the manufacturer, but for the Declaration to be truly meaningful the signatory shall also be someone who has the authority to commit the resources required to ensure that the CE marking process is properly completed. The effect of the Declaration is to identify an individual in the company who can be held responsible if the CE marking on a product turns out to be invalid.

Each Directive has slightly different requirements for the content of its Declaration but some features are common to all:

- name/address of manufacturer (and of responsible person where applicable)
- model and/or serial number of equipment
- list of relevant Directives
- list of Standards used – NOTE – if listing a standard on the declaration you are declaring that you **fully** meet all the requirements of that standard, if only compliant with specific clauses of a standard then this must be identified.
- declaration statement
- name and position of person signing
- signature
- date

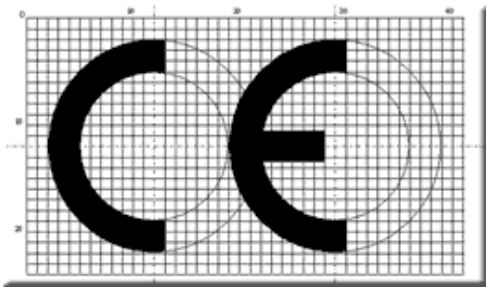
The Declaration shall be translated into the languages of the countries in which the product is placed on the market. One particular requirement in the Machinery Directive Machinery only is worthy of special mention. This is that the Declaration must identify the name and address from where the technical documentation for the product may be obtained and that this must be an address within the European Community.

5.9 CE marking the product

There are a number of criteria that must be conformed to when reproducing the CE marking image on a product. Some will depend on the specifics of the Directive that covers the product. These criteria are:

- CE marking must consist of the initials ‘CE’ in the Standard recognisable form
- If the size of the marking is reduced or enlarged, the letters CE must be in proportion to the Standard version
- CE marking must be at least 5 millimetres – unless a larger minimum dimension is specified in the relevant Directive. The minimum dimension may be waived for small scale machinery
- The CE mark must be affixed to the product, or to its data plate, in the immediate vicinity of the name of the manufacturer. If this is not possible, or not warranted because of the nature of the product, it must be affixed to the packaging and accompanying documents
- CE marking must be easily visible, readable and permanent

The standard version of the CE mark is shown below. CE marking consists only of the letters "CE" with the graphic form shown in the diagram. The grid and dotted lines are only included in the diagram to help to define the shape of the letters and must not be reproduced in the CE marking.



5.10 Traceability marking of electrically actuated furniture

As well as the CE mark being place on the product the applicable Directives also describe traceability requirements allowing identification with a manufacturer's contact details. Electrically actuated furniture must be marked visibly, legibly and indelibly with the following minimum particulars:

- **Business name and full address of the manufacturer**

  The purpose of the requirement is to enable the user or the market surveillance authorities to contact the manufacturer. The term 'business name' refers to the name under which the company concerned is registered. The term 'full address' means a postal address that is sufficient to enable a letter to reach the manufacturer.

- **Designation of the machinery**

  The term 'designation of the machinery' refers to the usual name of the category of machinery to which the specific model of machinery belongs.

- **CE Marking**

  See previous section for rules of CE marking.

- **Designation of series or type**

  The designation of the series or type is the name, code or number given by the manufacturer to the model of machinery concerned that has been subject to the relevant conformity assessment procedure.

- **Serial number, if any**

  There is no requirement for products to bear a serial number, but where a serial number has been attributed by the manufacturer, it must be indicated after the designation of the series or type.

- **The year of construction**

  The year in which the manufacturing process was completed.

NOTE – Standards used in the conformity assessment may also require additional markings e.g. 60335-1 requires markings related to rated voltage, frequency, power etc.

5.11 User Instructions and safety information

5.11.1 Introduction

A manufacturer's instructions must accompany the furniture until it reaches the user. As a general rule, all health and safety related instructions must be supplied in the official EU language or languages of the Member State in which it is placed on the market.

Original instructions must be used; defined as a version of the instructions verified by the manufacturer. As the machinery is intended for general public, non- professional operators, the layout and content of the instructions must be adapted to the layperson and avoid specialist terminology.

5.11.2 Contents of the user instructions required by Machinery Directive

Each instruction manual must contain, where applicable, at least the following information:

- Business name and full address of the manufacturer
- Designation of the product as marked on the product itself
- EC Declaration of Conformity, or a document setting out the contents of the EC Declaration of Conformity, showing the particulars of the product
- General description of the product
- Drawings, diagrams, descriptions and explanations necessary for the use, maintenance and repair of the product and for checking its correct functioning
- Description of the intended use of the product
- Warnings concerning ways in which the product must not be used
- Assembly, installation and connection instructions
- Instructions for the putting into service and use of the product
- Information about the residual risks that remain despite the inherent safe design measures, safeguarding and complementary protective measures adopted
- Instructions on the protective measures to be taken by the user
- Conditions in which the product meets the requirement of stability during use
- Operating method to be followed in the event of accident or breakdown
- Description of the adjustment and maintenance operations that shouldl be carried out by the user and the preventive maintenance measures that should be observed
- Specifications of the spare parts to be used

NOTE – Standards used in the conformity assessment may also require additional specific information to be placed in the instructions for use e.g. 60335-1 refers to including the substance of the following in the instructions for use

‘This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision’

Appendix A

Applicable Directives and Standards for common examples of electrically actuated domestic furniture

Finding applicable Standards can be challenging. If in doubt expert advice should be sought from an organisation such as FIRA International Ltd (FIRA).

Once applicable Standards have been identified, an independent third party test facility, such as FIRA, can provide the necessary testing services.

In this section there are some examples and detailed information relating to applicable Directives and Standards for common electrically actuated domestic furniture products. To assist with determining which Directives apply to a product, it is helpful to understand the product's intended use as well as its construction and technical aspects. It is advisable for a manufacturer to write a brief summary, including:

- Technical description
- Intended use
- Environment in which it is to be used

It is important to note that the examples within this document may not match an organisation's specific product and, as such, care is needed when working towards compliance with the Machinery Directive.

- Common product ranges requiring CE marking
- Electrically operated rise / recliner chairs
- Electrically operated TV Beds
- Electrically operated adjustable beds
- Electrically operated height adjustable work-surfaces
- Electrically operated kitchen furniture

A1 Electrically Operated Recliner and Rise-Recliner Chairs

A1.1 Technical description - An electro-mechanically adjustable recliner chair with a recliner and/or riser function constructed from timber, plywood, foam, fibre and textiles combined with a mechanical frame and motor that provides the adjustable functionality through a non- programmable wired control pendant interface with the user. The product is powered by domestic mains voltage 230V – 240V 50Hz with a UK plug conforming to BS 1363 and pre-approved (CE marked) power supply unit.

A1.2 Intended use - The product is designed for sale in the UK for indoor home, domestic use where rise / recliner chairs are considered suitable for "adults of 12 years and above". The intended use is for resting with no medical claims.

A1.3 Application environment - This product is purely designed for use within a domestic environment (excluding nursing homes, geriatric facilities, hospitals, contract environment). The product is designed to be moved only within the intended room of use, for cleaning and for access.

The related Directives are:

- EMC Directive
- RoHS Directive
- Machinery Directive including Low Voltage Directive requirements via MD clause 1.5.1

A1.4 Standards – These are the typical Standards related to these Directives that require testing for inclusion in the Technical File and ensure compliance for CE marking:

LVD 2014/35/EU via MD clause 1.5.1	BS EN 60335-1 Household and similar electrical appliances. Safety. General requirements
EMC 2014/30/EU	BS EN 55014-1 Electromagnetic compatibility. Requirements for household appliances, electric tools and similar apparatus. Emission BS EN 55014-2 Electromagnetic compatibility. Requirements for household appliances, electric tools and similar apparatus. Immunity BS EN 61000-3-2 Electromagnetic compatibility (EMC). Limits. Limits for harmonic current emissions (equipment input current < 16A per phase) BS EN 61000-3-3 Electromagnetic compatibility (EMC). Limits. Limitation of voltage changes, voltage fluctuations and flicker in public low voltage supply systems, for equipment with rated current < 16A per phase and not subject to conditional connection
RoHS 2011/65/EU	BS EN 50581 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances.
MD 2006/42/EC	BS 8474 Furniture. Chairs with electrically operated support surfaces. Requirements NOTE. BS 8474 is British Standard only – not Harmonised European Standard that fully covers requirements of the Machinery Directive. BS EN ISO 12100 Safety of machinery. General principles for design. Risk assessment and risk reduction. BS EN 12520 Furniture. Strength, durability and safety – Requirements for domestic seating – Clause 5.2 Shear and Squeeze points. BS EN 349 Safety of machinery. Minimum gaps to avoid crushing of parts of the human body It is advised that manufacturers also carry out a gap analysis on their product against all the related clauses in Annex I of the Machinery Directive to verify that their product is fully covered as the related Standard BS 8474 is not fully aligned with the Machinery Directive requirements.
Associated Standards to be noted	The collection of Standards listed in ‘associated Standards’ can also be used to demonstrate conformance to certain clauses within the Machinery Directive and can be referred to in the Technical File to further justify compliance. The Furniture and Furnishings (Fire) (Safety) Regulations 1988 SI 1988/1324 as amended– use compliance to demonstrate reduced risk related to clause 1.5.6 in ANNEX I of the MD

A2 Electrically operated TV beds

A2.1 Technical description - An electro-mechanically operated TV bed with 2 fitted switches to operate the ‘upward’ and ‘downward’ movement of the TV mechanism in the bed base footer. The system consists of a slatted type bed with a mechanical frame and motor in the footer end of the bed base that provides the adjustable functionality through 2 wired non-programmable control switches interfacing with the user. The product does not contain any safety functions built into a control system and is powered by domestic mains voltage 230V – 240V 50Hz with a UK plug conforming to BS 1363 and pre-approved (CE marked) power supply unit. The product is sold without mattress and TV unit.

A2.2 Intended use - The product is designed for indoor home, domestic use where TV beds are considered suitable for "adults of 12 years and above”. The intended use is for sleeping or resting with no medical claims.

A2.3 Application environment - This product is designed for sale in the UK for use within a domestic environment (excluding nursing homes, geriatric facilities, hospitals, contract environment). The product is designed to be moved only within the intended room of use, for cleaning and for access.

The related Directives are:

- EMC Directive
- RoHS Directive
- Machinery Directive including Low Voltage Directive requirements via MD clause 1.5.1

A2.4 Standards - Standards related to these Directives that require testing for inclusion in the Technical File and ensuring compliance for CE marking are:

LVD 2014/35/EU via MD clause 1.5.1	BS EN 60335-1 Household and similar electrical appliances. Safety. General requirements
EMC 2014/30/EU	BS EN 55014-1 Electromagnetic compatibility. Requirements for household appliances, electric tools and similar apparatus. Emission BS EN 55014-2 Electromagnetic compatibility. Requirements for household appliances, electric tools and similar apparatus. Immunity BS EN 61000-3-2 Electromagnetic compatibility (EMC). Limits. Limits for harmonic current emissions (equipment input current < 16A per phase) BS EN 61000-3-3 Electromagnetic compatibility (EMC). Limits. Limitation of voltage changes, voltage fluctuations and flicker in public low voltage supply systems, for equipment with rated current < 16A per phase and not subject to conditional connection
RoHS 2011/65/EU	BS EN 50581 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances.
MD 2006/42/EC	There is no dedicated Standard related to this type of product, therefore within the hierarchy of compliance this product must comply with all the clauses within the Machinery Directive. The following Standards will support compliance with the clauses in Annex I and can be referred to in the Technical File to further justify compliance. BS EN 1725 Domestic furniture. Beds and mattresses. Safety requirements and test methods BS EN ISO 12100 Safety of machinery. General principles for design. Risk assessment and risk reduction

	BS EN 349 Safety of machinery - Minimum gaps to avoid crushing of parts of the human body It is advised that manufacturers carry out a gap analysis on their product against all the related clauses in Annex I of the machine Directive to verify that their product is fully covered.
Associated Standards to be noted	The collection of Standards listed in 'Associated Standards' can also be used to demonstrate conformance to certain clauses within the Machinery Directive and can be referred to in the Technical File to further justify compliance. The Furniture and Furnishings (Fire) (Safety) Regulations 1988 SI 1988/1324 as amended– use compliance to demonstrate reduced risk related to clause 1.5.6 in ANNEX I of the MD. BS EN 894-1 & 3 & 4 Safety of machinery. Ergonomics requirements for the design and location of displays and control actuators.

A3 Electrically operated adjustable beds

A3.1 Technical description - An electro-mechanically adjustable profiling bed with fitted, corded handset sold with applicable mattress. The system consists of an adjustable slatted divan type bed constructed from timber and plywood with a mechanical frame and motor that provides the adjustable functionality through a wired non-programmable control pendant interface with the user. The product does not contain any safety functions built into a control system and is powered by domestic mains voltage 230V – 240V 50Hz with a UK plug conforming to BS 1363 and pre-approved (CE marked) power supply unit. The product is supplied with applicable mattress to match adjusting profile.

A3.2 Intended use - The product is designed for indoor home, domestic use where profiling beds are considered suitable for 'adults of 12 years and above'. The intended use is for sleeping or resting with no medical claims.

A3.3 Application environment - This product is purely designed for sale in the UK to use within a domestic environment (excluding nursing homes, geriatric facilities, hospitals, contract environment). The product is designed to be moved only within the intended room of use, for cleaning and for access.

The related Directives are:

- EMC Directive
- RoHS Directive
- Machinery Directive including Low Voltage Directive requirements via MD clause 1.5.1

A3.4 Typical Standards related to these Directives that require testing for inclusion in the Technical File and ensure compliance for CE marking would be:

LVD 2014/35/EU via MD clause 1.5.1	BS EN 60335-1 Household and similar electrical appliances. Safety. General requirements
EMC 2014/30/EU	BS EN 55014-1 Electromagnetic compatibility. Requirements for household appliances, electric tools and similar apparatus. Emission BS EN 55014-2 Electromagnetic compatibility. Requirements for household appliances, electric tools and similar apparatus. Immunity BS EN 61000-3-2 Electromagnetic compatibility (EMC). Limits. Limits for harmonic current emissions (equipment input current < 16A per phase) BS EN 61000-3-3 Electromagnetic compatibility (EMC). Limits. Limitation of voltage changes, voltage fluctuations and flicker in public low voltage supply systems, for equipment with rated current < 16A per phase and not subject to conditional connection
RoHS 2011/65/EU	BS EN 50581 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances.
MD 2006/42/EC	There is no dedicated Standard related to this type of product, therefore within the hierarchy of compliance this product must comply with all the clauses within the Machinery Directive. The following Standards will support compliance with the clauses in Annex I and can be referred to in the Technical File to further justify compliance. BS EN 1725 Domestic furniture. Beds and mattresses. Safety requirements and test methods BS EN ISO 12100 Safety of machinery. General principles for design. Risk assessment and risk reduction BS EN 349 Safety of machinery. Minimum gaps to avoid crushing of parts of the human body It is advised that manufacturers also carry out a gap analysis on their product against all the related clauses in Annex I of the Machinery Directive to verify that their product is fully covered.
Associated Standards to be noted	The collection of Standards listed in ‘associated Standards’ can also be used to demonstrate conformance to certain clauses within the Machinery Directive and can be referred to in the Technical File to further justify compliance. The Furniture and Furnishings (Fire) (Safety) Regulations 1988 SI 1988/1324 as amended– use compliance to demonstrate reduced risk related to clause 1.5.6 in ANNEX I of the MD. BS 7177 Specification for resistance to ignition of mattresses, mattress pads, divans and bed bases BS EN 1957 Furniture. Beds and mattresses. Test methods for the determination of functional characteristics and assessment criteria BS EN 894-1 & 3 & 4 Safety of machinery. Ergonomics requirements for the design and location of displays and control actuators.

A4 Electrically operated height adjustable work-surface

A4.1 Technical description - An electro-mechanically height adjustable work-surface OR kitchen plastic laminate worktop with control interface to adjust height up and down. The system consists of work-surface and legs containing motors that power a mechanism to raise and lower the legs using a fixed programmable control interface with safety collision function built into the control system. The product is powered by domestic mains voltage 230V – 240V 50Hz with a UK plug conforming to BS 1363 and pre-approved (CE marked) power supply unit.

A4.2 Intended use - The product is designed for indoor home, domestic and kitchen use where adjustable work-surfaces are considered suitable for 'adults of 12 years and above'. The intended use is as platform for performing kitchen or household related tasks with no medical claims.

A4.3 Application environment - This product is designed for sale in the UK for use within a domestic / kitchen environment (excluding nursing homes, geriatric facilities, hospitals, contract environment). The product is designed to be moved only within the intended room of use, for cleaning and for access.

The related Directives are:

- EMC Directive
- RoHS Directive
- Machinery Directive including Low Voltage Directive requirements via MD clause 1.5.1

A4.4 Standards - Standards related to these Directives that require testing for inclusion in the Technical File and ensure compliance for CE marking are:

LVD 2014/35/EU via MD clause 1.5.1	BS EN 60335-1 Household and similar electrical appliances. Safety. General requirements
EMC 2014/30/EU	BS EN 55014-1 Electromagnetic compatibility. Requirements for household appliances, electric tools and similar apparatus. Emission BS EN 55014-2 Electromagnetic compatibility. Requirements for household appliances, electric tools and similar apparatus. Immunity BS EN 61000-3-2 Electromagnetic compatibility (EMC). Limits. Limits for harmonic current emissions (equipment input current < 16A per phase) BS EN 61000-3-3 Electromagnetic compatibility (EMC). Limits. Limitation of voltage changes, voltage fluctuations and flicker in public low voltage supply systems, for equipment with rated current < 16A per phase and not subject to conditional connection
RoHS 2011/65/EU	BS EN 50581 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances.
MD 2006/42/EC	There is no dedicated Standard related to this type of product, therefore within the hierarchy of compliance this product must comply with all the clauses within the Machinery Directive. The following Standards will support compliance with the clauses in Annex I and can be referred to in the Technical File to further justify compliance.

	BS EN 12521 Furniture. Strength, durability and safety. Requirements for domestic tables BS EN 527-2 Office furniture. Work tables. Safety, strength and durability requirements. – Custom Test This standard is primarily for office desking but does contain clauses for durability testing for sit stand office desking which could be used as evidence in the technical file for durability performance compliance BS EN ISO 12100 Safety of machinery. General principles for design. Risk assessment and risk reduction BS EN 349 Safety of machinery. Minimum gaps to avoid crushing of parts of the human body BS EN ISO 13849-1 & 2 Safety of machinery. Safety-related parts of control systems - Part 1: General principles for design BS EN 62061 Safety of machinery. Functional safety of safety-related electrical, electronic and programmable electronic control systems It is advised that manufacturers also carry out a gap analysis on their product against all the related clauses in Annex I of the Machinery Directive to verify that their product is fully covered.
Associated Standards to be noted	The collection of Standards listed in 'associated Standards' can also be used to demonstrate conformance to certain clauses within the Machinery Directive and can be referred to in the Technical File to further justify compliance. BS 6222-2 - Domestic kitchen equipment. Fitted kitchen units, peninsular units, island units and breakfast bars. Performance requirements and test methods. BS EN 894-1 & 2 & 3 & 4 Safety of machinery. Ergonomics requirements for the design and location of displays and control actuators.

A5 Electrically actuated furniture in kitchens

A5.1 Background - As previously mentioned in the foreword to this guide it has been confirmed that electrically actuated kitchen furniture falls under the requirements of the Machinery Directive and potentially other CE marking directives by virtue of design. This section of the guide will look at the implications of CE marking these type of products. It is important to note that all the information in sections 1-5 of this guide are relevant to CE marking electrically actuated kitchen furniture with the additional complexity that there may be a number of companies involved in the supply chain of the kitchen furniture up until its final installation and commissioning with varying degrees of responsibility in the CE marking process.

The responsibility for CE marking the final product belongs to the kitchen installer of the electrically actuated kitchen furniture who is considered to be the 'responsible person' for the purposes of CE marking. The thinking behind this is that the kitchen installer is taking a Partly Completed Machine (PCM) and installing it to make the completed machine (see section 4.3.6 for full explanation of this concept). The linking of the motorised components to the final assembly means that the responsible person (kitchen installer) is taking a partly completed machine and fitting it to corresponding parts (kitchen furniture) to make the whole machine, effectively fitting a machine in situ. They are not placing the product on the market per-se, but putting the overall "machine" into service. The rationale for this is that the motorised component or partly completed machine, would be neither use nor ornament as on its own, it isn't performing a specific application until connected to the corresponding parts.

PCM's are marketed without CE marking under a Declaration of Incorporation (section 4.3.6). The kitchen installer who incorporates the PCM into the final kitchen product is classed as the responsible person with responsibilities for final CE marking duties as they must fit the component according to the component manufacturer's guidelines to conform to H & S requirements inherent in the design and compliant with relevant directives. The challenges with this concept is how to compile and make available the technical file to the furniture manufacturer / kitchen installer in the supply chain as the company who has the information about the original electrical component is the 'original component manufacturer' having access to majority of the technical information.

To achieve this we can define the different responsibilities for the final CE marking shared between the component manufacturer, furniture manufacturer and kitchen installer. By sharing information and carrying out due diligence in each stage of the supply chain of these products it should be possible to ensure a safe product that satisfies the CE marking directives and provide the final installer with information to carry out completed CE marking of these kitchen products and provide correct documentation to the customer.

A5.2 Supply Chain for Electrically Actuated Kitchen Furniture

Each one of these elements of the supply chain have responsibilities toward the final machine being commissioned for use in the consumer's home compliant with the relevant directives.

A5.3 Component Manufacturer

The original component manufacturer will be the only one that has access to the majority of the detailed technical information required for CE marking. Typical products would include drive units and mechanisms sold to kitchen manufacturers to be incorporated onto their cabinets, worktops and drawer units. In the final installation and completed kitchen design for these types of electrically actuated kitchen furniture the component manufacturer cannot know or be responsible for the final product design, and whether it has been incorporated according to the safe design parameters specified by them, by professional trained kitchen installers.

However, as the components would be considered as 'critical components' in the final machine there would be an obligation on the supplier of the component to ensure that in its current state all relevant requirements had been met, such as CE marking in accordance with the LVD, EMC, ROHs directives. The component could be considered as a partly completed machine at this point and a declaration of incorporation supplied with the component and made available to third parties declaring which parts of the essential safety requirements of the Machinery Directive have been met in the conformity assessment. The component manufacturer could even declare that specific essential safety requirements of the MD (Annex I) had been met where appropriate.

Where detailed and specific instructions for fitting and assembly, including reference to corresponding parts and use, are provided to enable the kitchen installer to produce a safe machine themselves, then it may be possible to confer compliance with the EHSR's on condition that all fitting/stipulations are met. The instruction for use for the components are the key source of information to pass down the supply chain and should include the list of items detailed in section 5.11.2 of this guide.

In addition, to help the furniture manufacturer/kitchen installer down the supply chain with their responsibilities for CE marking, the component manufacturer could also add some supplementary information such as :-

A5.3.1 Generic Risk Assessment for the final built in furniture - The component manufacturer may include their own risk assessment (RA) based on a standard kitchen fit which takes into account the product being fitted within the specifications of the installation and instruction for use. If this criteria is met then the standard RA could be used by the furniture manufacturer/kitchen installer and conformity to the risk assessment element of the machinery directive satisfied.

The component manufacturer may supply documentation to help the final furniture manufacturer/kitchen installer to comply with CE marking of the kitchen. For example, they may supply an example of the markings required in template form for the final kitchen installer to complete and fix to the furniture or template of the Declaration of Conformity to complete. See below for examples:-

A5.3.2 Declaration of Conformity Example Template for Kitchen Installer

EC Declaration of Conformity

We **ADD COMPANY NAME** *of* **ADD ADDRESS**

In accordance with the following Directives(s);

2011/65/EU	ROHS
2006/42/EC	The Machinery Directive
2014/30/EU	The Electromagnetic Compatibility Directive

hereby declare that: Product **ADD IDENTIFICATION OF THE FURNITURE**

Is in conformity with the applicable requirements of the following standards to ensure proper implementation of the requirements specified in the EU Directives stated above:

Ref No.	Title
BS EN 60335-1	Household and similar electrical appliances. Safety. General requirements
BS EN 55014-1	Electromagnetic compatibility. Requirements for household appliances, electric tools and similar apparatus. Emission
BS EN 55014-2	Electromagnetic compatibility. Requirements for household appliances, electric tools and similar apparatus. Immunity
BS EN 61000-3-2	Electromagnetic compatibility (EMC). Limits. Limits for harmonic current emissions (equipment input current < 16A per phase)
BS EN 61000-3-3	Electromagnetic compatibility (EMC). Limits. Limitation of voltage changes, voltage fluctuations and flicker in public low voltage supply systems, for equipment with rated current < 16A per phase and not subject to conditional connection
BS EN ISO 12100	Safety of machinery. General principles for design. Risk assessment and risk reduction
BS EN 50581	Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances.

I hereby declare that the product named above has been designed to comply with the relevant sections of the above referenced specifications. The product complies with all the applicable Essential Requirements of the Directives.

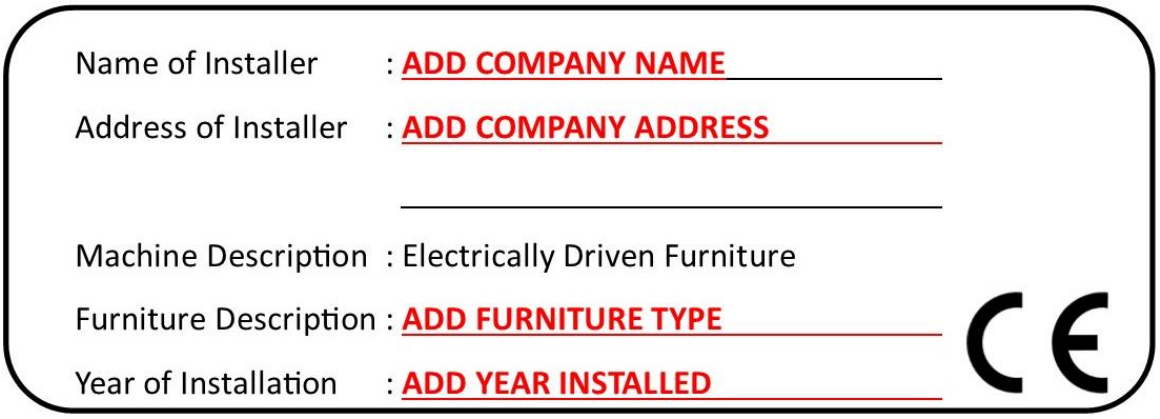
City: **ADD YOUR CITY**
Date: **ADD DATE OF INSTALL**
Name: **ADD YOUR NAME**
Position: **YOUR FUNCTION**
Signature **YOUR SIGNATURE**

CE

Document Ref. No. **IF APPLICABLE**

Name of Contact/Component Supplier for Technical Documentation: **ADD NAME OF COMPONENT SUPPLIER**

A5.3.3 CE Marking Label Template for Kitchen Installer



A5.4 Furniture Manufacturer

The furniture manufacturer needs to have access to the component technical file as it may be requested by an enforcement body. This access may be something that the component manufacturer provided on request when first supplied and or is written into a service level agreement that the technical file is made available on request within a certain timeframe. The furniture manufacturer may also have done some additional conformity assessment on their products using the component supplied and applicable standards. This additional testing could be related to cabinet strength and durability testing (BS 6222-2 for example) which would align with some of the requirements from Annex I of the machinery directive. Positive testing to any of the additional standards should be included in the technical file as additions to the component conformity testing.

The kitchen furniture manufacturer may provide a design function within its services offerings to customers, the drawings outputted from this design function must be included as part of the technical file. The kitchen designer must be aware of the EHSR's of the electrically actuated kitchen furniture specified by the component manufacturer and incorporate this into the design. If the furniture manufacturer steps outside the advised installation boundaries set by the component manufacturer an expanded risk assessment would have to be carried out by the manufacturer based on the final design. This risk assessment would need to demonstrate how the additional risks are managed by the furniture manufacturer and added into the technical file as additional information.

The furniture manufacture may supply only standard cabinets / furniture sizes and electrical components directly to a fitter / installer that has carried out their own design function for the final consumer. In this case the furniture manufacturer that distributes cabinets and components must ensure that the complete instructions for use and declarations of incorporation must be passed down the supply chain to the final kitchen installer.

A5.5 Kitchen Installer

As the final stage in the supply chain the kitchen installer has the final responsibility to fit the completed machine in-situ. The kitchen installer may be part of the furniture manufacturer's company or a subcontractor, but in either case they need to have access to the technical information for correct installation as specified by component manufacturer. As the final person responsible and detailed on the CE marking label and EU declaration of conformity the kitchen installer will be the person that the enforcement body makes contact with in the event of health and safety issues reported to them. If the kitchen installer has an in-house design function then any detailed drawings

must also be archived as part of the requirements of the technical file. As with furniture manufacturer, if the kitchen installer steps outside the advised installation boundaries set by the component manufacturer an expanded risk assessment would have to be carried out by the kitchen installer based on the final design. This risk assessment would need to demonstrate how the additional risks are managed by the kitchen installer and added into the technical file as additional information.

At the point of final install the kitchen installer must complete a declaration of conformity as detailed in A5.3.2 and pass onto the final customer. They must also complete and mark the items with a CE mark on a label with some traceability details as set out in A5.3.3. In addition to this they must also supply the instruction for use in respective language.

A5.6 Technical documentation Requirements and Responsibilities in the Supply chain

The table below defines / summarises responsibilities within the supply chain previously identified.

Description	Responsible
Technical File related to Component	Component Manufacturer – Creates technical file and allows access down the supply chain. Furniture manufacture & Kitchen Installers need to have access to technical file in case of contact by enforcement body.
Conformity Assessment of Component	Component Manufacturer – Carries out conformity assessment to applicable Directives.
Instructions for Use for Component	Component Manufacturer – Creates Instructions for use in line with Directive requirements. May include blank templates for Declaration of Conformity and Labelling of final product. Kitchen Installers must pass on Instruction for use to the customer at the end of the install
Marking Requirements for Component (type, batch)	Component Manufacturer – apply label to component for traceability according to applicable standards.
Declaration of Incorporation for Component to pass down supply chain as Partly Completed Machine (PCM)	Component Manufacturer – Create declaration of incorporation and forward down supply chain
Generic risk assessment for built-in furniture with standard fitting in compliance with all component manufacturer instructions	Component manufacturer – Create Generic Risk assessment and include in documentation to forward down supply chain
Conformity Assessment of Completed Furniture	Furniture Manufacturer – Carries out additional Conformity Assessments to furniture standards where applicable i.e. 6222-2
Expanded Risk Assessment if component fitted in a configuration contrary to the manufacturers specification creating additional risks above the generic risk assessment	Furniture Manufacturer / Kitchen Installer – Create new expanded RA if applicable and add into technical file.

Final Kitchen Design – Detail design drawings of the kitchen installation	Furniture Manufacturer / Kitchen Installer – Liaise with customer to create detailed layout drawings. Archive drawings as part of technical file requirements.
Kitchen Installers Declaration of Conformity	Kitchen Installer – Use template provide or own Declaration, complete, sign and pass to consumer
Kitchen Installers CE Marking Label	Kitchen Installer – Use template provided or own label, attach label on furniture.

A5.7 Conformity Assessment of Electrically Actuated Kitchen Furniture Products

Below information relates to the conformity assessments of electrically actuated kitchen products and details the testing standards related to applicable directives that could be used to demonstrate component and completed product conformity. The applicable directive and standards will, as always, depend on the individual design and this table should be used as a guide only.

A5.7.1 – Technical Description – 4 Different types of Electrically Actuated Kitchen Furniture

Example types of electrically actuated furniture that would fall under the scope of the Machinery Directive may include.

- Drive units in kitchen cabinets to open and close doors by pushing the front of the door or by switch activation
- Drive units in drawers that open and close on runners when activated by pushing the drawer front
- Height adjustable kitchen cabinets that move on a mechanism up and down a wall with switch activation
- Pull up units for kitchen storage that are switch activated and rise up / down in kitchen worktop with storage shelving.

A5.7.2 Intended use - These products are designed for indoor domestic kitchen use considered suitable for ‘adults of 12 years and above’. The intended use is to alleviate manual effort or as lifestyle products for performing kitchen related tasks with no medical claims.

A5.7.3 Application environment - This product is designed for sale in the UK for use within a domestic kitchen environment (excluding nursing homes, geriatric facilities, hospitals, contract environment).

The related Directives are:

- EMC Directive
- RoHS Directive
- Machinery Directive including Low Voltage Directive requirements via MD clause 1.5.1

A5.7.4 Standards - Standards related to these Directives that require testing for inclusion in the Technical File and ensure compliance for CE marking are shown below. Note the indication of conformity testing usually split between component manufacturer and furniture manufacturer.

LVD 2014/35/EU via MD clause 1.5.1 Component Mfr.	BS EN 60335-1 Household and similar electrical appliances. Safety. General requirements
EMC 2014/30/EU Component Mfr.	BS EN 55014-1 Electromagnetic compatibility. Requirements for household appliances, electric tools and similar apparatus. Emission BS EN 55014-2 Electromagnetic compatibility. Requirements for household appliances, electric tools and similar apparatus. Immunity BS EN 61000-3-2 Electromagnetic compatibility (EMC). Limits. Limits for harmonic current emissions (equipment input current < 16A per phase) BS EN 61000-3-3 Electromagnetic compatibility (EMC). Limits. Limitation of voltage changes, voltage fluctuations and flicker in public low voltage supply systems, for equipment with rated current < 16A per phase and not subject to conditional connection
RoHS 2011/65/EU Component Mfr.	BS EN 50581 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances.
MD 2006/42/EC Furniture Mfr.	There is no dedicated Standard related to this type of product, therefore within the hierarchy of compliance this product must comply with all the clauses within the Machinery Directive. The following Standards will support compliance with the clauses in Annex I and can be referred to in the Technical File to further justify compliance. BS EN ISO 12100 Safety of machinery. General principles for design. Risk assessment and risk reduction BS EN 349 Safety of machinery. Minimum gaps to avoid crushing of parts of the human body **ADDITIONAL STANDARDS FOR DRIVE UNITS for CABINET DOOR and DRAWERS** BS EN 14749 Domestic and kitchen storage units and worktops. Safety requirements and test methods. BS 6222-2 Domestic kitchen equipment. Fitted kitchen units, peninsular units, island units and breakfast bars. Performance requirements and test methods **ADDITIONAL STANDARDS FOR ADJUSTABLE WALL CABINETS** BS EN 14749 Domestic and kitchen storage units and worktops. Safety requirements and test methods. BS 6222-2 Domestic kitchen equipment. Fitted kitchen units, peninsular units, island units and breakfast bars. Performance requirements and test methods **ADDITIONAL STANDARDS FOR PULL UP UNITS** BS EN 14749 Furniture. Domestic and kitchen storage units and kitchen-worktops. Safety requirements and test methods BS EN 527-2 Office furniture. Work tables. Safety, strength and durability requirements. – Custom Test

	This standard is primarily for office desking but does contain clauses for durability testing for sit stand office desking which could be used as evidence in the Technical File for durability performance purposes It is advised that manufacturers also carry out a gap analysis on their product against all the related clauses in Annex I of the Machinery Directive to verify that their product is fully covered.
Associated Standards to be noted Furniture Mfr.	The collection of Standards listed in 'associated Standards' can also be used to demonstrate conformance to certain clauses within the Machinery Directive and can be referred to in the Technical File to further justify compliance. BS EN 1116 Kitchen furniture. Co-ordinating sizes for kitchen furniture and kitchen appliances. BS 6222-3 Domestic kitchen equipment. Specification for performance requirements for durability of surface finish and adhesion of surfacing and edging materials.

References

Always ensure you are referring to the latest version of any document in this list, as they are subject to revision. Also check whether documents have been withdrawn and whether additional, or replacement documentation has come into force.

Directives

Electromagnetic Compatibility Directive (EMC) 2014/30/EU

General Product Safety Directive 2001/95/EC

Low Voltage Directive (LVD) 2014/35/EU

Machinery Directive 2006/42/EC

Medical Device Directive (MDD) 93/42/EEC

Reduction of Hazardous Substances Directive (RoHS) 2011/65/EU

National Legislation

The Furniture and Furnishings (Fire) (Safety) Regulations 1988 SI 1988/1324 as amended

Standards

BS 6222-2:2009+A1:2017 Domestic kitchen equipment. Fitted kitchen units, peninsular units, island units and breakfast bars. Performance requirements and test methods

BS 6222-3:2017 Domestic kitchen equipment. Specification for performance requirements for durability of surface finish and adhesion of surfacing and edging materials.

BS 7177:2008+A1:2011 Specification for resistance to ignition of mattresses, mattress pads, divans and bed bases

BS 8474:2013 Furniture. Chairs with electrically operated support surfaces. Requirements

BS EN 349:1993+A1:2008 Safety of machinery - Minimum gaps to avoid crushing of parts of the human body

BS EN 1116: 2018 Kitchen furniture. Co-ordinating sizes for kitchen furniture and kitchen appliances

BS EN 12520:2015 Furniture. Strength durability and safety – Requirements for domestic seating

BS EN 527-2:2016. Office furniture. Work tables and desks. Mechanical safety requirements

BS EN 894-1:1997+A1:2008 Safety of machinery - Ergonomics requirements for the design of displays and control actuators - Part 1: General principles for human interactions with displays and control actuators

BS EN 894-2:1997+A1:2008 Safety of machinery. Ergonomics requirements for the design of displays and control actuators. Displays

BS EN 894-3:2000+A1:2008 Safety of machinery. Ergonomics requirements for the design of displays and control actuators. Control actuators

BS EN 894-4:2010 Safety of machinery. Ergonomics requirements for design of displays and control actuators. Location and arrangement of displays and control actuators

BS EN 1725:1998 Domestic furniture. Beds and mattresses. Safety requirements and test methods

BS EN 1957:2012 Furniture. Beds and mattresses. Test methods for the determination of functional characteristics and assessment criteria

BS EN 50581:2012 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

BS EN ISO 12100:2010 Safety of machinery. General principles for design. Risk assessment and risk reduction

BS EN 12521:2015 Furniture. Strength, durability and safety. Requirements for domestic tables

BS EN 14749: 2016 Furniture. Domestic and kitchen storage units and kitchen-worktops. Safety requirements and test methods

BS EN 55014-1:2017 Electromagnetic compatibility. Requirements for household appliances, electric tools and similar apparatus. Emission

BS EN 55014-2:2015 Electromagnetic compatibility. Requirements for household appliances, electric tools and similar apparatus. Immunity

BS EN 61000-3-2:2014 Electromagnetic compatibility (EMC). Limits. Limits for harmonic current emissions (equipment input current < 16A per phase)

BS EN 61000-3-3:2013 Electromagnetic compatibility (EMC). Limits. Limitation of voltage changes, voltage fluctuations and flicker in public low voltage supply systems, for equipment with rated current < 16A per phase and not subject to conditional connection

BS EN 61000-6-3:2007+A1:2011 Electromagnetic compatibility (EMC). Generic Standards. Emission Standard for residential, commercial and light-industrial environments

BS EN 61204-3:2001 Low voltage power supplies, d.c. output. Electromagnetic compatibility (EMC)

BS EN 61204-7:2006 Low-voltage power supplies, d.c. output. Safety requirements

BS EN 62061:2005+A2:2015 Safety of machinery - Functional safety of safety-related electrical, electronic and programmable electronic control systems

BS EN 62321:2009 Electrotechnical products Determination of levels of six regulated substances (lead, mercury, cadmium, Hexavalent chromium, Polybrominated biphenyls

BS EN ISO 9001:2015 Quality Management systems. Requirements

BS EN ISO 13849-1:2015 Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design (ISO 13849-1:2015)

BS EN ISO 13849-2:2012 Safety of machinery. Safety-related parts of control systems. Validation

BS EN 60335-1:2012+A13:2017 Household and similar electrical appliances. Safety. General requirements

BS 1363-1:2016+A1:2018 13 A plugs, socket-outlets, adaptors and connection units. Specification for rewirable and non-rewirable 13 A fused plugs

How we can help…

This guidance document represents a summary of key issues appertaining to the CE marking of domestic furniture.

Companies can access more detailed information and advice by attending one of FIRA's regular training courses in Stevenage - **www.fira.co.uk/training**

Alternatively organisations may prefer the added benefits of retaining a FIRA expert to provide support throughout the CE marking process.

To find out more, please contact Bruce Lovell - blovell@fira.co.uk