



EUROPEAN COMMISSION  
ENTERPRISE DIRECTORATE-GENERAL

Conformity and standardisation, new approach, industries under new approach  
**Mechanical and electrical equipment (including telecom terminal equipment)**

## **LVD UPDATE.2**

### **Working Document**

The present working document contains the results of previous discussions in the meetings of the Working Group LVD Update. The attention of the reader is drawn to the fact that this document will be reviewed following consultation with interested parties and Member States.

On the internet sites of the European Commission:

***[http://europa.eu.int/comm/enterprise/electr\\_equipment/lv/direct/review.htm](http://europa.eu.int/comm/enterprise/electr_equipment/lv/direct/review.htm)***

the following documents are available:

LVD UPDATE.0	Results of the discussion during the meeting of the WP LVD update in May 2001
LVD UPDATE.1	Results of the discussion during the meeting of the WP LVD update in October 2001
LVD UPDATE.2	Results of the discussion during the meeting of the WP LVD update in September 2002

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1.		- Whereas the essential health and safety requirements must be observed in order to ensure that electrical equipment is safe; these requirements must be applied taking account of the general acknowledged state of the art based on technical, economic, social and environmental factors, experience and scientific knowledge at the time of design and manufacturing;	
2.		- Whereas electrical equipment must be designed and manufactured in such a way that electric, magnetic, and electromagnetic fields generated by the equipment are reduced as far as reasonably possible, at least to a non-hazardous level in compliance with the generally acknowledged state of the art taking due account of Council Recommendation "on the limitation of exposure for the general public to electromagnetic fields (0 Hz to 300 GHz)" (1999/519/EC);	
3.		<b>Title of the directive</b>	
4.	<b>Directive</b> on the harmonization of the laws of Member States relating to electrical equipment designed for use within certain voltage limits	<b>Directive</b> xx/xx/EC of the European Parliament and of the Council relating to electrical equipment	
5.	<b>Article 1</b>	<b>Article 1: Scope and definitions</b>	
6.	For the purposes of this Directive "electrical equipment" means any equipment designed for use with a	1. This Directive regulates the health and safety requirements for electrical equipment. It aims at ensuring the proper functioning of the internal	

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	voltage rating of between 50 and 1000 V for alternating current and between 75 and 1 500 V for direct current, other than the equipment and phenomena listed in Annex II.	market of the European community by imposing a high level of health and safety.	
7.	<b>ANNEX II EQUIPMENT AND PHENOMENA OUTSIDE THE SCOPE OF THE DIRECTIVE</b>	2. This directive shall not apply to the following equipment:	
8.		(a) Electrical equipment specially designed for military or police purposes	
9.	Electrical equipment for use in an explosive atmosphere	(b) Electrical equipment and protective systems intended for use in potentially explosive atmospheres	Leave it as it is, unless there are legal concerns regarding equipment used outside explosive atmosphere but has impact on equipment used inside explosive atmosphere (e.g. switches). These appliances are then covered by both directives. This will be discussed in the next ATEX standing committee meeting.
10.	Electrical equipment for radiology and medical purposes	(c) Electrical equipment intended for human and veterinary medical purposes	
11.	Electrical parts for goods and passenger lifts	(d) Electrical parts specifically designed for incorporation into goods and passenger lifts	
12.	Electricity meters		
13.	Plugs and socket outlets for domestic use	(e) Plugs and socket outlets for domestic use	
14.	Electric fence controllers	deleted	France: Objection because the intended use of these products is not inline with the aims of the directive.
15.	Radio-electrical interference		
16.	Specialized electrical equipment, for use on ships, aircraft or railways, which complies with the safety	(f) Specialised electrical equipment, for use on ships, aircraft or railways, which complies with the safety provisions drawn up by international	It was agreed to provide further details of the impact of this exclusion, and all members were asked to provide examples of such equipment and

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	provisions drawn up by international bodies in which the Member States participate.	bodies in which the Member States participate.	agreements.
17.		<del>(g) Electrical equipment specially designed for incorporation into motor vehicles</del>	<p>This exclusion was subject to discussion given the uncertainty of interface between the LVD and the Automotive directives, in particular for hand-held items.</p> <p>Austria suggested that it might be better not to mention this exclusion so that if more specific requirements are available they would automatically apply whereas if not the LVD could be appropriate.</p>
18.		(h) Equipment covered by the Directive 98/37/EC on the approximation of the laws of the Member States relating to machinery	
19.		(i) High Voltage Step-down transformer with input voltage above 1000 Volt	
20.		(j) Electrical equipment, which owing to their technical characteristics, to the energy applied or stored within and to their intended use, cannot pose any hazard covered by this directive;	
21.		3. This Directive does not apply to electrical equipment covered by more specific Community legislation designed to achieve the same objectives as this Directive with regard to placing on the market, free movement of goods and to the protection of health and safety.	Inclusion of a specificity clause Reason: special Community regulation on e.g. ships, railways, aircraft, automotive, toys, cableways
22.		4. For the purpose of this directive, the following definitions shall apply:	

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23.		<b>Electrical equipment</b>	
24.		Any appliance designed for use with a voltage rating not exceeding 1000 Volt for alternating current and 1500 Volt for direct current and intended for the purposes of generation, conversion, transmission, distribution or utilisation of electrical energy.	
25.		Electrical components intended to be incorporated into electrical equipment and designed to fulfil a function in such a way that their compliance with the Principal Elements of the essential health and safety requirements can be assessed independently, are deemed to be electrical equipment for the purpose of this Directive.	
26.		Accessories intended to be used in conjunction with electrical equipment and designed to contribute to its safety functioning are deemed to be electrical equipment for the purpose of this Directive.	
27.		<b>Intended purpose</b>	
28.		The use for which the equipment is intended according to the information supplied by the manufacturer on the labelling, in the instruction for use and/or promotion material.	
29.	<i>Article 2</i>	<i>Article 2</i>	<b>To be discussed</b>
30.	1. The Member States shall take all appropriate measures to ensure that electrical equipment may be placed	1. The Member States shall take all appropriate measures to ensure that electrical equipment may be placed on the market only if, having been constructed	

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	on the market only if, having been constructed in accordance with good engineering practice in safety matters in force in the Community, it does not endanger the safety of persons, domestic animals or property when properly installed and maintained and used in applications for which it was made.	in accordance with the generally acknowledged state of the art in the Community, it does not endanger the health and safety of persons and, where appropriate, domestic animals or property when properly installed and maintained and used in applications for which it was made.	
31.	2. The principal elements of the safety objectives referred to in paragraph 1 are listed in Annex I.	2. The essential health and safety requirements referred to in paragraph 1 are listed in Annex I.	
32.	<i>Article 3</i>		<b>To be discussed</b>
33.	<i>Article 4</i>		<b>To be discussed</b>
34.			
35.	<i>Article 5</i>	<i>Article 5</i>	<b>To be discussed</b>
36.	The Member States shall take all appropriate measures to ensure that, in particular, electrical equipment which complies with the safety provisions of harmonized standards shall be regarded by their competent administrative authorities as complying with the provisions of Article 2, for the purposes of placing on the market and free movement as referred to in Article 2 and 3 respectively.	1. Where equipment complies with the relevant harmonised standards whose references have been published in the Official Journal of the European Communities, Member States shall presume compliance with the essential requirements referred to in Annex I.	
37.	Standards shall be regarded as harmonized once they are drawn up		

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	by common agreement between the bodies notified by the Member States in accordance with the procedure laid down in Article 11, and published under national procedures. The standards shall be kept up to date in the light of technological progress and the developments in good engineering practice in safety matters.		
38.	For purposes of information the list of harmonized standards and their references shall be published in the Official Journal of the European Communities.		
39.		2. Where a Member State or the Commission considers that a harmonised standard referred to in Article 5 does not entirely satisfy the essential health and safety requirements which it covers and which are set out in Annex I, the Commission or the Member State shall bring the matter before the committee instituted by Directive 98/34/EC hereinafter referred to as "the Committee" giving the reasons thereof. The Committee shall deliver an opinion without delay. In the light of the Committee's "opinion", the Commission shall decide to maintain the listing, or to maintain the listing but note restrictions on the presumption of conformity offered by a harmonised standard, or to withdraw the references to the harmonised standard concerned in the Official Journal of the European Communities.	

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40.	<i>Article 6</i>		To be discussed
41.	1. Where harmonized standards as defined in Article 5 have not yet been drawn up and published, the Member States shall take all appropriate measures to ensure that, for the purposes of placing on the market or free movement as referred to in Articles 2 and 3 respectively, their competent administrative authorities shall also regard, as complying with the provisions of Article 2, electrical equipment which complies with the safety provisions of the International Commission on the Rules for the Approval of Electrical Equipment (CEE) or of the International Electrotechnical Commission (IEC) in respect of which the publication procedure laid down in paragraphs 2 and 3 has been applied.		
42.	2. The safety provisions referred to in paragraph 1 shall be notified to the Member States by the Commission as from the entry into force of this Directive, and thereafter as and when they are published. The Commission, after consulting the Member States, shall state the provisions and in particular the variants which it recommends to		

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	be published.		
43.	<p>3. The Member States shall inform the Commission within a period of three months of such objections as they may have to the provisions thus notified, stating the safety grounds on account of which the provisions should not be recognized.</p> <p>For purposes of information those safety provisions against which no objection has been raised shall be published in the Official Journal of the European Communities.</p>		
44.			
45.	<i>Article 7</i>		<b>To be deleted</b>
46.	<p>Where harmonized standards within the meaning of Article 5 or safety provisions published in accordance with Article 6 are not yet in existence, the Member States shall take all appropriate measures to ensure that, for the purpose of placing on the market or free movement as referred to in Articles 2 and 3 respectively, their competent administrative authorities shall also regard as complying with the provisions of Article 2, electrical equipment manufactured in accordance with the safety provisions of the standards in force in the Member State of manufacture,</p>		

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	if it ensures a safety level equivalent to that required in their own territory.		
47.	<i>Article 8</i>		<b>To be discussed</b>
48.	<i>Article 9</i>		<b>To be discussed</b>
49.	<i>Article 10</i>		<b>To be discussed</b>
50.	<i>Article 11</i>	<i>Article 11: Notified bodies</i>	<b>To be discussed</b>
51.	<p>Each Member State shall inform the other Member States and the Commission of the following:</p> <ul style="list-style-type: none"> <li>• the bodies referred to in Article 5;</li> <li>• the bodies which may make a report in accordance with the provisions of Article 8 or give an opinion in accordance with the provisions of Article 9;</li> <li>• the place of publication referred to in Article 5 (2);</li> </ul> <p>Any amendment to the above shall be notified by each Member State to the other Member States and to the Commission.</p>	<ol style="list-style-type: none"> <li>1. Member States shall notify the bodies referred to in Article 5 to the Commission and to the other Member States. Such notification shall state whether those bodies are competent for all electrical equipment covered by this Directive or whether their responsibility is limited to certain specific areas.</li> <li>2. Member States shall apply the criteria listed in Annex VI for the assessment of the bodies to be notified. Bodies, which comply with the assessment criteria fixed by the relevant harmonised standards, shall be presumed to comply with the aforementioned criteria as covered by the relevant standards. The Commission shall publish in the Official Journal of the European Communities the reference of those standards.</li> <li>3. The Commission shall publish in the Official Journal of the European Communities a list of notified bodies. The Commission shall ensure that this list is kept up to date.</li> <li>4. If a Member State finds that a notified body no</li> </ol>	

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		longer meets the criteria listed in Annex VI, it shall inform the Commission and the other Member States thereof. The reference to this notified body shall be withdrawn from the list referred to in paragraph 3.	
52.		<i>Annex VI Criteria for the assessment of the bodies to be notified</i>	
53.		<p>1. The bodies notified by the Member States shall fulfil the following minimum conditions:</p> <ul style="list-style-type: none"> <li>(a) availability of personnel and of the necessary means and equipment;</li> <li>(b) technical competence and professional integrity of personnel;</li> <li>(c) independence in preparing the reports and performing the verification function provided for in this Directive</li> <li>(d) independence of staff and technical personnel in relation to all circles, groups or persons directly or indirectly concerned with the product in question;</li> <li>(e) maintenance of professional secrecy by personnel;</li> <li>(f) possession of civil liability insurance unless such liability is covered by the State under national law.</li> </ul> <p>2. Fulfilment of the conditions under paragraph 1 shall be verified at intervals by the competent authorities of the Member States.</p>	

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## Annex I

### Essential health and safety requirements

54.	<b>Annex I</b>	
55.	<b>ESSENTIAL HEALTH AND SAFETY REQUIREMENTS</b>	
56.	<b>Section I General requirements</b>	
57.	1. The manufacturer of electrical equipment is under the obligation to perform a risk assessment referring to the essential health and safety requirements; the electrical equipment must be designed and manufactured taking into account this assessment.	
58.	Applying harmonized standards covering all relevant essential health and safety requirements is considered to fulfil the obligation to perform a risk assessment.	
59.	2. The obligations laid down by the essential health and safety requirements apply to electrical equipment in its intended purpose and in conditions which can be reasonably foreseen by the manufacturer throughout its anticipated lifetime.	
60.	<b>I .1 Principals of safety integration</b>	
61.	a) Electrical equipment must be designed and manufactured so that, when used for its intended purpose and properly installed and maintained according to the manufacturer's instructions, it provides adequate protection for persons and, where appropriate, domestic animals and property.	
62.	This protection must be against all health and safety hazards arising from the use of the electrical equipment, or such hazards caused by reasonably foreseeable external influences on the electrical equipment itself taking account of its functionality.	

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63.	b) The solutions adopted by the manufacturer for the design and construction of the electrical equipment must conform to safety principles, taking account of the generally acknowledged state of the art.	
64.	In selecting the most appropriate solution, the manufacturer must apply as far as reasonably possible the following principles in the order given below:	
65.	– eliminate or reduce risks (inherently safe equipment design and construction);	
66.	– take the necessary protective measures in relation to risks that cannot be eliminated;	
67.	– inform users and where appropriate other persons of the residual risks, indicate whether any particular training is required and specify any need to use personal protective equipment.	
68.	<p>Electrical Equipment shall be</p> <ul style="list-style-type: none"> <li>– designed and manufactured so that it can be safely and properly assembled, connected and maintained;</li> <li>– supplied with necessary special devices and accessories where it would otherwise not meet the ERs of the directive taking into account the intended use of the equipment.</li> </ul>	
69.	<p><b>Section II</b>  <b>Requirements regarding design and construction</b></p>	
70.	<p><b>II.1 Protection against electric shock and other electrical hazards</b></p>	
71.	Electrical equipment must be designed and manufactured in such a way that persons and/or domestic animals shall be protected against danger of electrical shock	
72.	The choice of insulation shall be based on electrical, mechanical, chemical and physical stresses on the insulation.	
73.	Electrical equipment must provide, where appropriate, adequate protection against electrical hazards arising from:	<p><i>“Electrical equipment must provide, where appropriate, adequate protection against electrical hazards resulting from excessive current passing through the human body and livestock (such as</i></p>

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		<p><i>leakage current, transients from energy supply and electro-static charges) and overload.” Delete then items 58, 59 and 60.</i></p> <p>This should be further discussed.</p>
74.	- leakage current;	
75.	- energy supply;	
76.	- electro-static charges;	
77.	- arcs.	
78.	<b>II.2 Protection against fire hazards</b>	
79.	Electrical equipment must provide, where appropriate, adequate protection against fire hazards posed by the electrical equipment itself or by substances produced, emitted or used by electrical equipment.	
80.	<b>II.3 Protection against mechanical hazards</b>	
81.	Where applicable, electrical equipment must provide adequate protection against mechanical hazards, in particular, arising from:	
82.	- instability;	
83.	- ejected objects;	
84.	- rough surfaces, sharp edges or corners;	
85.	- moving parts;	
86.	- vibration;	
87.	<b>II.4 Protection against other hazards</b>	
88.	Where applicable, electrical equipment must provide adequate protection against the hazards arising from:	
89.	- explosion caused by the equipment itself or by substances which may be produced, emitted or used by the equipment;	
90.	- implosion;	
91.	- acoustic noise;	

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92.	- burn due to excessive temperature of materials ejected or surfaces;	
93.	- biological and/ or chemical phenomena;	
94.	- hygiene conditions for electrical equipment intended to come into contact with the human body or with products or substances to be ingested by or administered to human beings;	
95.	- emissions, production and/or use of hazardous substances (e.g. gases, liquids, dusts, mists, vapour);	
96.	- ageing of materials;	
97.	- unattended operation;	
98.	- connection to and interruption from power supply;	
99.	- combination of equipment; If electrical equipment is intended for use in combination with other equipment, the intended combinations, including the connection system, must be safe when the connection is made according to the manufacturers instructions and specifications.	
100.	- Energy supply other than electricity;	
101.	<b>II.5 Protection against hazards arising from incorrect functioning</b>	
102.	Electrical equipment shall be designed and manufactured so as to provide adequate protection against hazards arising from malfunctioning, due to:	
103.	- expected environmental conditions, such as the safety implications due to electric, magnetic and electromagnetic disturbances;	
104.	- errors in logic;	
105.	- interruptions or normally expected fluctuations in the power supply;	
106.	- unexpected starting or stopping operation;	
107.	- failure to stop.	
108.	<b>II.6 Protection against hazards arising from electric, magnetic, and electromagnetic fields</b>	
109.	Electrical equipment must be designed and manufactured in such a way that electric, magnetic, and electromagnetic fields generated by the equipment are reduced as far as reasonably possible, at least to a non-hazardous level in compliance with the generally	

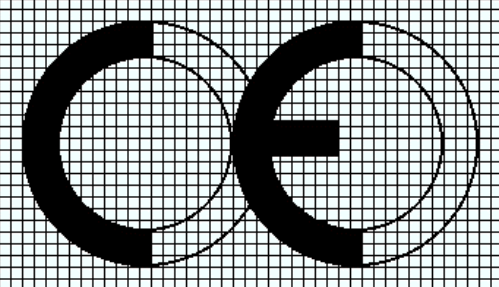
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	acknowledged state of the art.	
110.	Electrical equipment intended to emit electric, magnetic, and electromagnetic fields which due to its intended purpose may present a hazard must be designed and manufactured in such a way the mode of operation can be easily controlled.	
111.	Where electrical equipment presents a residual risk with regard to electric, magnetic, and electromagnetic fields and where the exposure requires particular precautions, appropriate information shall be provided together with the electrical equipment.	
112.	<b>II.7 Ergonomics</b>	
113.	Where appropriate, electrical equipment shall be designed and manufactured:	
114.	- in accordance with ergonomic principles relevant for safety;	
115.	- in such a way that under the intended conditions of use the discomfort, fatigue and psychological stress faced by the operator is reduced to the minimum possible taking into account ergonomic principles and the generally acknowledged state of the art.	
116.	<b>Section III Information Requirements</b>	
117.	<b>III .1 General</b>	
118.	Electrical equipment shall be identified by means of type, batch, serial number or any other information allowing for the identification of the product. This shall be marked legibly and indelibly on the equipment or, if this is not possible, on an accompanying notice.	
119.	Electrical equipment shall be accompanied by the name and address of the manufacturer, and, if he is not established within the Community, the name and address of his authorised representative or of the person established within the Community responsible for placing the equipment on the Community market.	
120.	Information provided with the equipment shall also take into account safe maintenance, cleaning, operation etc.	
121.	Warning of residual risks	

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	Where risks remain despite all the measures adopted or in the case of potential risks, which are not evident, appropriate warnings must be provided.	
122.	The essential characteristics, the recognition and observance of which will ensure that electrical equipment will be used safely and in applications for which it was intended and for which it can reasonably be foreseen, shall be marked legibly and indelibly on the equipment or, if this is not possible, on an accompanying notice.	

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123.	<b><u>ANNEX III</u></b>		To be discussed
124.	<b>CE CONFORMITY MARKING AND EC DECLARATION OF CONFORMITY</b>		
125.	A. CE conformity marking		
126.	The CE conformity marking shall consist of the initials "CE" taking the following form:		
127.			
128.	<ul style="list-style-type: none"> <li>If the CE marking is reduced or enlarged the proportions given in the above graduated drawing must be respected.</li> </ul>		
129.	<ul style="list-style-type: none"> <li>The various components of the CE marking must have substantially the same vertical dimension, which may not be less than 5 mm.</li> </ul>		
130.	B. EC declaration of conformity		
131.	The EC declaration of conformity must contain the following elements:		
132.	<ul style="list-style-type: none"> <li>name and address of the manufacturer or his authorized representative established within the Community,</li> </ul>	UK proposal: - name and address of the manufacturer or his authorized representative, established within	

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		<p>the Community;  - <u>where the manufacturer is established outside the Community, and where no authorised representative has been appointed within the Community, the name and address of the person within the Community holding the Technical Documentation or who can assemble the Technical Documentation;</u>  General support given.</p>	
133.	<ul style="list-style-type: none"> <li>• a description of the electrical equipment,</li> </ul>	<p>UK proposal:  - a description of the electrical equipment, <u>including model number, etc.;</u>  General support given</p>	
134.	<ul style="list-style-type: none"> <li>• reference to the harmonized standards,</li> </ul>	<p>UK proposal:  - reference to the harmonised standards, <u>where these have been applied;</u>  General support given.</p>	
135.	<ul style="list-style-type: none"> <li>• where appropriate, references to the specifications with which conformity is declared,</li> </ul>		
136.	<ul style="list-style-type: none"> <li>• identification of the signatory who has been empowered to enter into commitments on behalf of the manufacturer or his authorized representative established within the Community,</li> </ul>		
137.	<ul style="list-style-type: none"> <li>• the last two digits of the year in which the CE marking was affixed.</li> </ul>	<p>UK proposal:  - <del>the last two digits of the year in which the CE marking was affixed.</del>  General support given.</p>	

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138.			
139.	<u>ANNEX IV</u>		To be discussed
140.	<b>INTERNAL PRODUCTION CONTROL</b>		
141.	1. Internal production control is the procedure whereby the manufacturer or his authorized representative established within the Community, who carries out the obligations laid down in point 2, ensures and declares that the electrical equipment satisfies the requirements of this Directive that apply to it. The manufacturer or his authorized representative established within the Community must affix the CE marking to each product and draw up a written declaration of conformity.		
142.	2. The manufacturer must establish the technical documentation described in point 3 and he or his authorized representative established within the Community must keep it on Community territory at the disposal of the relevant national authorities for inspection purposes for a period ending at least 10 years after the last product has been manufactured.  Where neither the manufacturer nor his authorized representative is established within the Community, this obligation is the responsibility of the person who places	UK proposal: The manufacturer must establish the technical documentation described in point 3 and he or his authorized representative established within the Community must keep it on Community territory at the disposal of the relevant national authorities for inspection purposes for a period ending at least 10 years after the last product has been manufactured.  Where neither the manufacturer nor his authorized representative is established within the Community, <del>this obligation is the responsibility of the</del> <u>each importer/person who</u>	

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	the electrical equipment on the Community market.	places the electrical equipment on the Community market <u>must hold a copy of the declaration of conformity, which will contain the name and address of the person within the Community holding the Technical Documentation or who can assemble the Technical Documentation as laid down in Annex III.</u> General support given.	
143.	3. Technical documentation must enable the conformity of the electrical equipment to the requirements of this Directive to be assessed. It must, as far as relevant for such assessment, cover the design, manufacture and operation of the electrical equipment. It must include:		
144.	<ul style="list-style-type: none"> <li>• a general description of the electrical equipment,</li> </ul>		
145.	<ul style="list-style-type: none"> <li>• conceptual design and manufacturing drawings and schemes of components, sub-assemblies, circuits, etc.,</li> </ul>		
146.	<ul style="list-style-type: none"> <li>• descriptions and explanations necessary for the understanding of said drawings and schemes and the operation of the electrical equipment,</li> </ul>		
147.	<ul style="list-style-type: none"> <li>• a list of the standards applied in full or in part, and descriptions of the solutions adopted to satisfy the safety aspects of this Directive where standards have not been applied,</li> </ul>		
148.	<ul style="list-style-type: none"> <li>• results of design calculations made,</li> </ul>		

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	examinations carried out, etc.,		
149.	<ul style="list-style-type: none"> <li>• test reports.</li> </ul>		
150.	4. The manufacturer or his authorized representative must keep a copy of the declaration of conformity with the technical documentation.		
151.	5. The manufacturer must take all measures necessary in order that the manufacturing process shall ensure compliance of the manufactured products with the technical documentation referred to in point 2 and with the requirements of this Directive that apply to them.	UK proposal: 5. The manufacturer <u>or his authorised representative</u> must take all measures necessary in order that the manufacturing process shall ensure compliance of the manufactured products with the technical documentation referred to in point 2 and with the requirements of this Directive that apply to them. General support given.	
152.			