Lockout/Tagout – CE Marking Requirements

WHITE PAPER

The CE mark is used to assert that a particular product meets one or more of just over 20 European Directives. (IE: EMC Directive, Machinery Directive, Safety of Toys, etc). Taking into consideration the application of the Lockout/Tagout products, Brady reviewed three of the Directives with regard to requirements and applicability:

1. Machinery Safety Directive (2006/42/EC)
2. Construction Products Directive (89/106/EEC)
3. Pressure Equipment Directive (97/23/EC)

Complete list of Directives can be found at:

http://ec.europa.eu/enterprise/newapproach/standardization/harmstds/reflist.html

Machinery Safety Directive 2006/42/EC (Overview)

The purpose of the Machinery Directive is to integrate safety into the design, production, adjustment, maintenance, assembly and dismantling of machines, and thereby reduce, as far as possible, the chance of accidents and harm to persons at risk. Article I defines machinery as "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, in particular for the processing, treatment, moving or packaging of a material." Also covered by the machinery directive are assemblies of machines that function as an integral whole, interchangeable equipment modifying the function of a machine, and "safety components." A safety component fulfills a safety function when in use, and would endanger the safety or health of exposed persons if it failed or malfunctioned.

Safety components (such as emergency stopping devices or safety belts and restraining devices in the event of overturning) that protect workers from hazards are also covered by the Machinery Directive.

ANNEX V
Indicative list of the safety components referred to in Article 2(c)
1. Guards for removable mechanical transmission devices.
2. Protective devices designed to detect the presence of persons.
3. Power-operated interlocking movable guards designed to be used as safeguards in machinery referred to in items 9,10 and 11 of Annex IV.
4. Logic units to ensure safety functions.
5. Valves with additional means for failure detection intended for the control of dangerous movements on machinery.
6. Extraction systems for machinery emissions.
7. Guards and protective devices designed to protect persons against moving parts involved in the process on the machinery.
8. Monitoring devices for loading and movement control in lifting machinery.
9. Restraint systems to keep persons on their seats.

10. Emergency stop devices.
11. Discharging systems to prevent the build-up of potentially dangerous electrostatic charges.
12. Energy limiters and relief devices referred to in sections 1.5.7, 3.4.7 and 4.1.2.6 of Annex I.
13. Systems and devices to reduce the emission of noise and vibrations.
14. Roll-over protective structures (ROPS).
15. Falling-object protective structures (FOPS).
16. Two-hand control devices.
17. Components for machinery designed for lifting and/or lowering persons between different landings and included in the following list:
(a) devices for locking landing doors;
(b) devices to prevent the load-carrying unit from falling or unchecked upwards movement;
(c) overspeed limitation devices;
(d) energy-accumulating shock absorbers,
— non-linear, or
— with damping of the return movement;
(e) energy-dissipating shock absorbers;
(f) safety devices fitted to jacks of hydraulic power circuits where these are used as devices to prevent falls;

(g) electric safety devices in the form of safety switches containing electronic components.

Construction Products Directive 89/106/EEC (Overview)

The purpose of the directive is to ensure that building and civil engineering works on the territory of member states are designed and executed in a way that does not endanger the safety of persons, domestic animals and property, while respecting other essential requirements of general well-being. Member states also have provisions, including requirements, relating to health, durability, energy economy, and protection of the environment, aspects of economy and other important concerns of the public interest.

Essential requirements for construction works are listed in Annex I of the directive. They include mechanical resistance and stability, safety in case of fire, hygiene/health/environment, safety in use, protection against noise, and energy economy/heat retention.

> ANNEX I
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> ESSENTIAL REQUIREMENTS
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> The products must be suitable for construction works which (as a whole and in their separate parts) are fit for their intended use, account being taken of economy, and in this connection satisfy the following essential requirements where the works are subject to regulations containing such requirements. Such requirements must, subject to normal maintenance, be satisfied for an economically reasonable working life. The requirements generally concern actions which are forseeable.
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> 1. Mechanical resistance and stability

The construction works must be designed and built in such a way that the loadings that are liable to act on it during its constructions and use will not lead to any of the following:

(a) collapse of the whole or part of the work:

(b) major deformations to an inadmissible degree;

(c) damage to other parts of the works or to fittings or installed equipment as a result of major deformation of the load-bearing construction;

(d) damage by an event to an extent disproportionate to the original cause.

2. Safety in case of fire

The construction works must be designed and built in such a way that in the event of an outbreak of fire:

- the load-bearing capacity of the construction can be assumed for a specific period of time,

- the generation and spread of fire and smoke within the works are limited,

- the spread of the fire to neighboring construction works is limited,

- the safety of rescue teams is taken into consideration.

3. Hygiene, health and the environment

The construction work must be designed and built in such a way that it will not be a threat to the hygiene or health of the occupants or neighbours, in particular as a result of any of the following:

- the giving-off of toxic gas,

- the presence of dangerous particles or gases in the air,

- the emission of dangerous radiation,

- pollution or poisoning of the water or soil,

- faulty elimination of waste water, smoke, solid or liquid wastes,

- the Presence of damp in parts of the works or on surfaces within the works

4. Safety in use

The construction work must be designed and built in such a way that it does not present unacceptable risks of accidents in service or in operation such as slipping, falling, collision, burns, electrocution, injury from explosion.

5. Protection against noise

The construction works must be designed and built in such a way that noise perceived by the occupants or people nearby is kept down to a level that will not threaten their health and will allow them to sleep, rest and work in satisfactory conditions.

6. Energy economy and heat retention

The construction works and its heating, cooling and ventilation installations must be designed and built in such a way that the amount of energy required in use shall be low, having regard to the climatic conditions of the location and the occupants.

Pressure Equipment Directive 97/23/EC

This Directive applies to the design, manufacture and conformity assessment of pressure equipment and assemblies with a maximum allowable pressure greater than 0.5 bar gauge including vessels, piping, safety accessories and pressure accessories. Not all pressure equipment is covered by this directive as The Transportable Pressure Equipment Directive and the Simple Pressure Vessels Directive both cover certain equipment and products which present a relatively low hazard from pressurization are covered by the Machinery Directive.

The Directive defines a number of classifications for pressure equipment, based on their hazard level which is determined based on stored energy (pressure-volume product) and the nature of the contained fluid. Assessment and conformity procedures are different for each category, ranging from self-certification for the lowest (category I) hazard up to full ISO9001 quality management and/or notified body type examination for category IV equipment. Aspects of the design, production and testing of the equipment are the subject of a large number of harmonized standards to aid compliance with the essential requirements of the directive.

Manufacturers must also provide adequate instructions with equipment, complete a specified declaration of conformity and maintain a technical file of information about how the equipment was designed and manufactured. Pressure equipment must be marked with the manufacturer, unique identification of model and serial number, the year of manufacture, maximum/minimum allowable pressure limits and the CE logo.

Article 1 Scope and definitions

1. This Directive applies to the design, manufacture and conformity assessment of pressure equipment and assemblies with a maximum allowable pressure PS greater than 0,5 bar.

2. For the purposes of this Directive:

2.1. 'Pressure equipment` means vessels, piping, safety accessories and pressure accessories.

Where applicable, pressure equipment includes elements attached to pressurized parts, such as flanges, nozzles, couplings, supports, lifting lugs, etc.

2.1.1. 'Vessel` means a housing designed and built to contain fluids under pressure including its direct attachments up to the coupling point connecting it to other equipment. A vessel may be composed of more than one chamber.

2.1.2. 'Piping` means piping components intended for the transport of fluids, when connected together for integration into a pressure system. Piping includes in particular a pipe or system of pipes, tubing, fittings, expansion joints, hoses, or other pressure-bearing components as appropriate. Heat exchangers consisting of pipes for the purpose of cooling or heating air shall be considered as piping.

2.1.3. 'Safety accessories` means devices designed to protect pressure equipment against the allowable limits being exceeded. Such devices include:

- devices for direct pressure limitation, such as safety valves, bursting disc safety devices, buckling rods, controlled safety pressure relief systems (CSPRS), and

- limiting devices, which either activate the means for correction or provide for shutdown or shutdown and lockout, such as pressure switches or temperature switches or fluid level switches and 'safety related measurement control and regulation (SRMCR)` devices.

2.1.4. 'Pressure accessories` means devices with an operational function and having pressure-bearing housings.

2.1.5. 'Assemblies` means several pieces of pressure equipment assembled by a manufacturer to constitute an integrated and functional whole.

2.2. 'Pressure` means pressure relative to atmospheric pressure, i.e. gauge pressure. As a consequence, vacuum is designated by a negative value.

2.3. 'Maximum allowable pressure PS` means the maximum pressure for which the equipment is designed, as specified by the manufacturer.

It is defined at a location specified by the manufacturer. This must be the location of connection of protective and/or limiting devices or the top of equipment or if not appropriate any point specified.

2.4. 'Maximum/minimum allowable temperature TS` means the maximum/minimum temperatures for which the equipment is designed, as specified by the manufacturer.

2.5. 'Volume (V)` means the internal volume of a chamber, including the volume of nozzles to the first connection or weld and excluding the volume of permanent internal parts.

2.6. 'Nominal size (DN)` means a numerical designation of size which is common to all components in a piping system other than components indicated by outside diameters or by thread size. It is a convenient round number for reference purposes and is only loosely related to manufacturing dimensions. The nominal size is designated by DN followed by a number.

2.7. 'Fluids` means gases, liquids and vapours in pure phase as well as mixtures thereof. A fluid may contain a suspension of solids.

2.8. 'Permanent joints` means joints which cannot be disconnected except by destructive methods.

2.9. 'European approval for materials` means a technical document defining the characteristics of materials intended for repeated use in the manufacture of pressure equipment which are not covered by any harmonized standard.

Summary:

1. LOTO products are not used to facilitate the safety of machinery, but instead to serve as a means to secure the equipment or machinery while not in use and/or to prevent unauthorized use. LOTO Products are not within scope of the indicative products found in Annex V of the Machinery Directive.
2. LOTO products are not used for mechanical resistance/stability, safety in the event of fire, protection or protection against noice. They are not used to facilitate energy economy, heat retention or to promote health or hygiene. Annex I, Part 4 addresses “Safety in Use” which is applicable only to the design and build of the construction work and should not pertain to devices used for Lockout/Tagout
3. LOTO products are not considered Safety Accessories within the framework of the Pressure Equipment Directive and cannot be considered applicable.
4. A product may not be CE marked, unless it is covered by a Directive provided for its affixing. Note: The General Product Safety Directive cannot be the only applicable Directive.