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MACHINERY DIRECTIVE 2006/42/EC

General Secretariat: CETOP · Lyoner Straße 18 · D-60528 Frankfurt am Main
Phone: +49 (0) 69 6603-1319 · Fax: +49 (0) 69 6603-1459 · E-Mail: info@cetop.org · Internet: http://www.cetop.org

CETOP Position Paper on the Implementation of the Machinery Directive 2006/42/EC in the Fluid Power Industry

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Foreword

This CETOP Position Paper is addressed to manufacturers of parts or components for fluid power applications. It serves as a guide to the implementation of the Machinery Directive 2006/42/EC, which has to be applied with effect from Dec. 29th 2009.

The statements within this paper are based on the text of the Directive 2006/42/EC and the draft of the guidelines of the European Commission. The conclusions and standpoints stated within this paper are made by CETOP Technical Commission and are based upon the knowledge and facts known at the time of printing this paper.

Direct quotations from the Machinery Directive are underlined.

1 Fluid power components and their classification with regard to the Machinery Directive

This CETOP Position Paper refers to the following products which are covered by the Machinery Directive:

- Machinery
- Partly completed machinery
- Safety components

Insofar as they fall into the above-mentioned categories, fluid power components are to be classified as described in chapters 1.1 – 1.3. Chapter 1.4 describes the fluid power components which are not covered by the Directive.

1.1 Machinery

The fluid power components listed below are to be treated as machinery within the meaning of the Machinery Directive:

- Vacuum pumps
- Modules (e.g. feeder units, rotary indexing tables, hydraulic test benches, pre-assembly machines, hose swaging/crimping machines) if they are placed on the market as ready to use units for a special application
- Ready to use (stand-alone) hydraulic power units for a specific application (e. g. filling or cleaning) designed for temporary coupling to fluid systems.

1.2 Partly completed machinery

The fluid power components listed below are not machinery, because they are not assembled for a special application.
They are, however, partly completed machinery, as they are nearly machinery and fulfil the criteria of the first bullet point in article 2, para. a) except for being assembled for a special application, i.e.:

- They consist of several parts, at least one of which moves
- They are fitted with or intended to be fitted with a drive system
- They cannot in itself perform a specific application
- They are intended only to be incorporated into (partly completed) machinery

1.2.1 Partly completed pneumatic machinery

A partly completed pneumatic machine is an arrangement of several modules or components with frame, actuator and power control valve which is **not** ready to be used, e. g.

- feeder units
- rotary indexing tables

placed on the market without safety devices.

1.2.2 Partly completed hydraulic machinery

In accordance with article 2 g) a drive system is partly completed machinery. Accordingly, a hydraulic power unit, e. g. consisting of tank, motor, pump, hydraulic controls and possibly a hydraulic accumulator, is to be treated as partly completed machinery.

1.3 Safety components

1.3.1 Safety components in accordance with Machinery Directive, article 2 c)

Article 2 "The following definitions shall apply:

…

c) 'Safety component' shall mean a component

- which serves to fulfil a safety function
- which is independently placed on the market
- the failure and/or malfunction of which endangers the safety of persons, and
- which is not necessary in order for the machinery to function, or for which normal components may be substituted in order for the machinery to function."

The safety function is defined by the machine manufacturer as part of the risk assessment.

The manufacturer of a safety component that serves to fulfil a safety function defines the intended usage of the safety component.
The intended usage must be described in the instructions for the safety component.

Fluid power components become safety components and need to be CE marked if they are placed on the market as such.

This concerns components that are capable of fulfilling safety functions but which are also used in applications where they do not fulfil safety functions. These components could be placed on the market as components for general use but also as safety components for defined safety functions.

It is left to the discretion of the machinery manufacturer if he uses a safety component for a defined safety function or if he uses a standard component which he himself has to approve and take responsibility for.

E. g.

- Shock absorbers, braking cylinders
- Sensors and monitoring devices (e. g. cylinder position sensors, electronic pressure switches)

could be placed on the market as safety components.

Remark:
A component that is placed on the market but not as a safety component does not necessarily provide a lower safety level.

1.3.2 Allocation of fluid power components to Annex V of the Machinery Directive

The following points in particular of Annex V of the Machinery Directive (indicative list of safety components within the meaning of article 2c) are relevant for fluid power:

Annex V, 4. Logic units to ensure safety functions

This means an arrangement of several parts or components, placed on the market to fulfil a safety function. E.g.:

- Combinations of valves used to produce a movement at reduced speed for setting-up
- Safety manifold assemblies for presses

Logic units for safety functions are mentioned in Annex IV, point 21. They must therefore be treated in accordance with article 12, para. 3 and 4 of the Machinery Directive!

Single valves placed on the market are not logic units within the meaning of Annex V, point 4.

2-port slip-in cartridge valves are also not logic units.

Annex V, 5. Valves with additional means for failure detection intended for the control of dangerous movements on machinery

Valves with position monitor sensors are not necessarily safety components, because in themselves they cannot detect a malfunction. A separate evaluation unit is necessary (“evaluation unit” means a device that reacts upon the position sensor's information in either way, e.g. a lamp, a relay or even a PLC's input).

Annex V, 8. Monitoring devices for loading and movement control in lifting machinery

Annex V, 10. Emergency stop devices

Annex V, 12. Energy limiters and relief devices referred to in sections 1.5.7, 3.4.7 and 4.1.2.6 of Annex I

Only paragraph 4.1.2.6 (devices for controlling movements to prevent dropping of the loads) is relevant.

Annex V, 13. Systems and devices to reduce the emission of noise and vibrations

Silencers placed on the market individually do not fall in this category.

Annex V, 16. Two-hand control devices

Two-hand safety control devices

Annex V, 17. Components for machinery designed for lifting and/or lowering persons between different landings and included in following list:…

b) devices to prevent the load-carrying unit from falling or unchecked upwards movement

Maximum flow control valves and flow fuse valves, as long as they are placed on the market as safety components.

c) Overspeed limitation devices

E. g. flow control valves, as long as they are placed on the market as safety components for this purpose.

f) Safety devices fitted to jacks of hydraulic power circuits where these are used as devices to prevent falls

see b)

The indicative list in Annex V lists examples of safety components. Components that are not listed there but fulfil the definition in article 2 c) must also be placed on the market as safety components.

1.3.3 Components in accordance with EN ISO 13849-1

Components that fall within the scope of EN ISO 13849-1, *Safety of machinery – Safety related components of controls – part 1 General principles for design* do not necessarily have to be placed on the market as safety components in accordance with the Machinery Directive.

1.4 Components that are not covered by the Machinery Directive

The exclusion of fluid power components from the scope of the Machinery Directive, detailed in chapters 1.4.1-1.4.3 of this paper, is based in particular on the draft guideline of the Machinery Working Group of the European Commission, § 35:

"The Machinery Directive does not apply directly to machinery components, such as, for example, valves, hydraulic cylinders or gear boxes, that do not have a specific application as such but are intended to be incorporated into machinery, although the design and construction of such components must enable the complete machinery to comply with the relevant essential health and safety requirements."

The fluid power components described in chapters 1.4.1-1.4.3 do not fall directly within the scope of the Machinery Directive but, in accordance with the above-mentioned § 35 of the draft guideline, the design and construction of these components must enable the complete machinery to comply with the essential health and safety requirements.

IT SHOULD BE NOTED THAT SOME COMPONENTS FOR SPECIFIC APPLICATIONS CAN BE PLACED ON THE MARKET AS SAFETY COMPONENTS (SEE 1.3.1 AND 1.3.2).

1.4.1 Fluid power (pneumatic or hydraulic) components

The following list includes fluid power (pneumatic and hydraulic) components that are excluded from the scope of the Machinery Directive:

- Actuators (cylinder, motors)
- Valves
- Mechanical pressure switches
- Shock absorbers, braking cylinders
- Pressure transducers/intensifiers
- Control systems
    - Pneumatic or electro pneumatic control systems such as stepper modules or cam controls
    - manifolds, complete electro hydraulic control systems in open or closed loop control circuits
- Sensors and monitoring devices (e. g. limit switches, temperature sensors, electronic pressure switches)
- Sealing devices

1.4.2 Pneumatic components

The following list includes pneumatic components that are excluded from the scope of the Machinery Directive:

- Pneumatic cylinder/valve combinations
- Pneumatic positioning systems
- Compressed air:
    - Filters
    - Lubricators
    - Pressure gauges
- Pressure regulators
- Fittings and piping
- Vacuum devices (ejectors)
- Silencers
- Receivers
- Electronic counters, timers and displays, solenoids

1.4.3 Hydraulic components

The following list includes hydraulic components that are excluded from the scope of the Machinery Directive:

- Hydraulic pumps and motors (constant or adjustable)
- Hand pumps
- Accumulators (these fall within the scope of the Pressure Directive)
- Tube and hose assemblies
- Tube and hose connectors
- Quick couplings
- Filters and filter elements
- Heat exchangers
- Hydrostatic transmissions
- Valve stands
- Hydraulic accumulator stations
- Prime mover/hydraulic pump units
- Circulation unit for filtration and/or cooling
- Training rigs, supplied in parts (for given examples of circuit diagrams risk analysis shall be made and the results have to be indicated in the manuals supplied)

2 Documents

2.1 Declaration of Incorporation and Assembly Instructions

A Declaration of Incorporation in accordance with Annex II 1.B and Assembly Instructions in accordance with Annex VI must be provided for partly completed machinery (see 1.2), but not for components (see 1.4).

This does not affect the provision of documentation required by other laws (e. g. relating to product liability).

The Declaration of Incorporation may be provided together with or on the delivery note.

Assembly Instructions may also be integrated into a name plate.

2.2 Languages

The EC Declaration of Conformity and the Instructions (for machinery) must be provided in the language of the country where the machinery is to be used.

The Assembly Instructions must be provided in an official Community language which is accepted by the customer (to be negotiated).

The Declaration of Incorporation has to be provided in an official language of the country where the partly completed machinery is to be used (as a guide, the country to which the partly completed machinery is to be shipped).

2.3 Relevant technical documentation for partly completed machinery

Relevant technical documentation in accordance with Annex VII B must be produced for partly completed machinery. This documentation must be submitted on demand to the local authorities of the member states concerned. It does not need to accompany the partly completed machinery.

The Machinery Directive 2006/42/EC have to be applied with effect from 29 December 2009. Relevant technical documentation must be available from this date even for products of a series that existed before this date. The crucial factor is the date on which the products are placed on the market, irrespective of whether similar products have already been placed on the market before this date.

2.4 Liability for storage of the documentation

The Machinery Directive defines a liability to store the technical documentation for machinery and the relevant technical documentation for partly completed machinery for ten (10) years.

The time limit for liability for injury to persons or damage to property can be longer than 10 years depending on national laws.
Manufacturers should therefore store documentation taking into account these national laws.

3 CE marking – Allowance for other directives

Machinery (see 1.1) and safety components (see 1.3) must be CE-marked in accordance with the Machinery Directive.

Partly completed machinery (see 1.2) has not to be CE-marked in accordance with the Machinery Directive.

(Partly completed) machinery shall fulfil with the requirements of the Low Voltage Directive 2006/95/EC, if applicable. However, the procedure for the assessment of conformity and placing on the market are governed exclusively by the Machinery Directive i.e. partly completed machinery covered by the Machinery Directive shall not be CE-marked.

Partly completed machinery may, however, include components that fall within the scope of other Directives (e. g. Low Voltage Directive) and that therefore are already CE-marked.

This CE-mark remains on the component.
The casual observer will not be able to identify why the partly completed machinery is CE-marked. This will be shown only by the Declaration of Conformity for the relevant component.

Partly completed machinery that falls within the scope of other Directives (e. g. Electromagnetic Compatibility (EMC) 2004/108/EC or Equipment and protective systems in potentially explosive atmospheres (ATEX) 94/9/EC) must be CE-marked.

4 Placing on the market

“Placing on the market” means making machinery, partly completed machinery or safety components available for the first time in the European Community with a view to distribution or use, whether for payment or free of charge.
With regard to series production, “making available for the first time” relates to each individual example of a series.