

**Gültig ab**  
**Valid since 26<sup>th</sup> May 2010**  
**Valable depuis**

Positionspapier  
CETOP Position Paper  
Position officielle

**PP07**

**MACHINERY DIRECTIVE 2006/42/EC**

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

26<sup>th</sup> May 2010

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## **Changes compared to the CETOP Position Paper valid since 26th June 2009:**

The foreword is updated.

In 1.2.1 the example is described more clearly.

In 1.3.1 the difference between components which are placed on the market as safety components and those placed on the market purely as operational components is clarified.

In 1.3.2 under the subclause related to Annex V, 4 it is stated more precisely, that “combinations of valves with independent logic operation of the signals relevant for safety“ are “Logic units to ensure safety functions “. The examples are deleted. Related to V, 17 the description “Maximum flow control“ is replaced by “Counterbalance valve“ and “Flow fuse valve“ is deleted.

In 1.4 the differentiation between components, which do not fall within the scope of the machinery directive, and partly completed machinery is made by taking the guidelines of the EU commission into account.

In 2.2 it is more clearly stated in which language the documents to be delivered must be written.

The other minor changes are only editorial.

## **Foreword**

The CETOP Position Paper serves as a guide and gives an overview of the application of the new machinery directive, which came into effect from Dec. 29th 2009, to parts or components for fluid power applications. It makes no claim to be complete or to interpret exactly the statutory provisions. It should not replace a full study of the relevant directives, laws and regulations. Furthermore, the characteristics of the respective products and their different applications may require individual assessments to be made in certain situations

The statements within this paper are based on the text of the Directive 2006/42/EC and the first part of the guidelines of the European Commission which were published in December 2009. The conclusions and standpoints stated within this paper are made by the 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 in 1.2.1 and 1.2.2 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 and rotary indexing tables intended to be incorporated into or assembled with other machinery or other partly completed machinery to build an assembly line.

## 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, prime mover, 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.

This means that a component is a safety component only if all of the four points are fulfilled.

The manufacturer of a safety component that serves to fulfil a safety function defines the intended usage of the safety component under consideration of any reasonably foreseeable misuse.

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

Safety components are capable of fulfilling safety functions but can also be used in applications where they do not fulfil 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:*

*When the machinery manufacturer uses components for a safety function which are not placed on the market as safety components as described above he performs a conformity assessment to ensure that the safety level is not lower than that which would result if a safety component was used.*

### **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 combinations of valves with independent logic operation of the signals relevant for safety.

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 into 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

E.g. counterbalance 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 (see 1.3.1).

### **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**

In chapters 1.4.1-1.4.3 of this paper the fluid power components which are excluded from the scope of the Machinery Directive are detailed. This is based in particular on the guideline of the European Commission, §§ 35 and 46:

§ 35:

*“The Machinery Directive does not apply as such to separate machinery components such as, for example seals, ball-bearings, pulleys, elastic couplings, solenoid valves, hydraulic cylinders, flange-connected gearboxes and the like, that do not have a specific application and that are intended to be incorporated into machinery. The complete machinery incorporating such components must comply with the relevant essential health and safety requirements. The machinery manufacturer must therefore choose components with adequate specifications and characteristics.”*

§ 46:

*“An assembly which is almost machinery’ means that partly completed machinery is a product that is similar to machinery in the strict sense referred in Article 1 (1) (a), that is to say, an assembly consisting of linked parts or components at least one of which moves, but which lacks some elements necessary to perform its specific application. Partly completed machinery must thus undergo further construction in order to become final machinery that can perform its specific application.*

...

*Since partly completed machinery is 'almost machinery', it is to be distinguished from machinery components that are not subject to the Machinery Directive as such – see §35: comments on the first indent of Article 2 (a). Machinery components can usually be integrated into a wide range of categories of machinery with different applications.”*

*It arises clearly from §§ 35 and 46 that the fluid power components described in chapters 1.4.1-1.4.3 are not partly completed machinery.*

They 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 non-exhaustive 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 instructions (for machinery) must be provided as “Original instructions” and be marked as such. If applicable, an additional translation of the original instructions has to be provided in an official Community language or languages of the Member State in which the machinery is placed on the market and/or put into service. This has to be marked as “Translation of the original instructions”

The EC declaration of conformity and translations thereof must be drawn up under the same conditions as the instructions.

The declaration of incorporation has to be provided in the Community language or languages of the country where the partly completed machinery is placed on the market and/or put into service.

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

Also, the requirements of other statutory provisions (e. g. product liability) have to be respected.

### **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 became effective on the 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.