

EU DIRECTIVES COMPLIANCE FOR MTS TEST SYSTEMS

Revised: April 26, 2017

Questions: Contact MTSProductSafety@mts.com

For the purpose of this document, MTS-supplied machinery (Test Systems) falls in the categories below:

1. Standard Product (not exhaustive)
 - a. Servohydraulic Load Frames
 - b. Electromechanical Test Systems
 - c. Series 329 Road Simulator
 - d. MASTs
 - e. Four Posters
 - f. First Road Systems
 - g. Series 860 RoadWheel Tire Test System
2. Engineered to Order, Custom and R&D systems

I. TEST SYSTEMS AS PER EU DIRECTIVE 2006/42/EC on MACHINERY - ARTICLE 2 (a)

A typical Test System consists of controllers, moving parts such as hydraulic actuators or electrical or hydraulic motors that move other linked parts or components, and which are joined together for a specific application(s).

MTS-supplied Test Systems are considered “machinery” as per Article 2(a) of Directive 2006/42/EC when the standard constituent units (products) are assembled correctly, functionally linked and controlled as a whole, which then allows the assemblies of constituent units (products) to perform specific application(s) as stated in the Product Instructions.

Such Test Systems:

- always include MTS Controllers that wholly control MTS-supplied machinery
- are supplied with optional hydraulic power such as a Hydraulic Power Unit (HPU)
- can be supplied with components to connect them to sources of power
- are ready to be installed and able to function as they stand or may need to be installed in a building or structure
- can include other optional equipment (example: grips, fixtures, furnaces, etc.) that can be selected by the customer or systems integrator
- can be installed and commissioned by MTS personnel or by customer or systems integrator
- are supplied with Product Instructions that allow the customer or systems integrator to correctly assemble and operate the Test System and to connect the optional equipment.

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II. EUROPEAN NORM (EN) STANDARDS FOR COMPLIANCE

In general, MTS machinery complies with the applicable sections of the following EN standards:

- EN ISO 4413 Hydraulic fluid power – General rules and safety requirements for systems and their components
- EN ISO 12100 Safety of machinery – General principles for design – Risk Assessment and risk reduction
- EN 60204-1 Safety of machinery - Electrical equipment of machines - Part 1: General requirements
- EN ISO 13849-1 Safety of machinery – Safety-related parts of control systems – Part 1: General principles for design
- EN ISO 13850 Safety of machinery – Emergency stop function – principles for design

Depending on the type of machinery, other EN standards may also be applicable.

III. MTS STANDARD PRODUCTS

Typical standard products include Load Frames, Electromechanical Universal Test Systems, and Hydraulic Power Units. Standard products comply with the applicable requirements of the Annex I Essential Health and Safety Requirements of Directive 2006/42/EC.

For such **Test Systems that are supplied with and wholly controlled by MTS Controllers and meet the definition of “machinery”**, MTS provides the European Union (EU) Declaration of Conformity in accordance with Annex II 1A of Council Directive 2006/42/EC on Machinery.

MTS affixes the CE marking on or adjacent to the machinery nameplate.

Such Test Systems are supplied with safeguarding (fixed, interlocking movable or adjustable guards), and / or protective devices (light curtains, door interlocks, etc.) where applicable. Test Area Enclosures are provided for Load Units and Electromechanical Universal Test Systems. The customer should discuss the options for Test Area Enclosure with MTS representatives. See following section IV related to Test Area Enclosures.

MTS informs the customer or systems integrator about any residual risks that may exist and the safety measures that are needed to control or eliminate such risks.

MTS supplies the signed EU Declaration of Conformity for standard products, where applicable.

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In order to ensure machinery and personnel safety for all Test Systems, MTS will:

- give the technical specifications (example: space, pressure, temperature, flow, load limits, etc.)
- provide lifting instructions and specifies or provides lifting accessories (if special and not commercially available) for handling of machinery
- specifies the electrical mains and / or hydraulic power requirements
- provide the uninterruptible power supply (UPS) or specifies the UPS requirements for undue risks due to loss of electrical power. Details at <http://www.mts.com/en/about/productsafety/index.htm>
- specify or provide connections for connecting to sources of main electrical and / or facility hydraulic power
- provide performance levels such as forces, velocities, displacement and frequencies
- provide machinery weights and specifies mounting means, where applicable
- specify or provide Test Area Enclosures - fixed, interlocking movable or adjustable guards - restricting access to personnel
- specify or provide connections to customer, or systems integrator, facilities or test cell safety systems (example: door interlock switches, acoustic alarms, light trees, fire alarms, video cameras, facility security systems, ventilation systems, fluid leak detection systems, emergency stops, etc.)
- specify or provide connections to customer, or systems integrator, supplied protective devices (example: light curtains, safety mats) that detect the presence of persons in danger zones of the machinery
- specify the system behavior on activation of the customer, or systems integrator, supplied safety systems (example: slow speed control of moving elements, shutdown of moving elements)
- identify customer skill level and provides training of personnel in safe operation and maintenance of the machinery.

IV. MACHINE OR FLOOR MOUNTED Test Area Enclosures – For Servohydraulic Load Frames and Electromechanical Test Systems

These Test Systems are provided with the necessary electrical, electronic, firmware, software and mechanical interfaces to allow integration of a MTS, customer, or systems integrator supplied Test Area Enclosure of the interlocking movable type.

MTS recommends the use of Test Area Enclosures to control the access of personnel to moving parts of the machinery and, where possible, for protection from ejected and pressurized parts of test specimens.

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When customers decline the optional Test Area Enclosure, it is then the responsibility of the customer or systems integrator to safeguard the personnel in the work area.

MTS provides information in the Product Instructions that allows the customer to enable the Test Area Enclosure functionalities (for slow speed, stop motion, etc.).

For a customer or systems integrator supplied Test Area Enclosure, the customer or systems integrator is responsible for ensuring that the Test Area Enclosure is integrated correctly with the Test System.

NOTE: Test Systems provided with Environmental Chambers or Furnaces have a front door that functions as an interlocked movable door to control personnel access to moving parts and other hazards (example: hot surfaces).

V. MTS TEST SYSTEMS (Engineered to Order, Custom, R&D) with MTS Controllers in TEST CELLS with other manufacturer-supplied machinery

For Test Systems, other than Servohydraulic Load Frames and Electromechanical Test Systems, that are placed in Test Cells (enclosed room within a building) or in other large enclosed building structures (such as Wind Tunnels) with customer or systems integrator supplied safety systems and machinery from other suppliers, the customer or systems integrator is responsible for providing the EU Declaration of Conformity for the Test Cell and affixing the CE Marking for the Test Cell that also includes several equipment from different suppliers.

MTS provides an EU Declaration of Conformity for MTS machinery that is located within such Test Cells only if MTS machinery is wholly controlled by MTS Controllers.

If the MTS Controller is a slave to the customer- or other vendor-supplied Controller, then MTS provides an EU Declaration of Incorporation.

VI. MTS TEST SYSTEMS (Engineered to Order, Custom, R&D) without MTS Controllers in TEST CELLS with other customer-supplied machinery

MTS provides a Declaration of Incorporation as per Annex II 1B of Directive 2006/42/EC for any Test System that is supplied without the MTS Controller.

MTS does not affix such **Test Systems without MTS Controller** with the CE Marking.

An example of machinery (not exhaustive) that is provided with a Declaration of Incorporation:

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- MAST without MTS Controller.

The customer or systems integrator is responsible for completing:

- conformity assessment and complying with the relevant clauses of Annex I Essential Health and Safety Requirements of Directive 2006/42/EC
- EU Declaration of Conformity for the System Assembly as a whole
- affixing the CE marking on the machinery.

VII. MTS TESTLINE COMPONENTS

If the customer or systems integrator purchases MTS machinery components, pressure equipment, electrical equipment, and electrical components in order to assemble together for applications that are not known to MTS, then the customer or systems integrator is responsible for completing the conformity assessment, completing the EU Declaration of Conformity and affixing the CE Marking for the System Assembly.

If the customer or systems integrator defines the intended use(s) to MTS and seeks MTS services in building a system to deliver the intended use(s), then such TestLine components (when assembled together with a MTS Controller following MTS-supplied Product Instructions) constitute completed machinery. In such instances, MTS supplies the EU Declaration of Conformity for the completed machinery and affixes the CE marking on the completed machinery.

For TestLine components, MTS supplies the EU Declarations of Conformity or Incorporation, where applicable, for the different equipment and components given below:

Machinery components, such as grips and fixtures, are designed and constructed as per Sound Engineering Practice (SEP) for mechanical design. In general, such machinery components are assembled or incorporated with MTS machinery. When supplied with MTS machinery, the EU Declaration for the MTS machinery also covers the machinery components. Such components are not supplied with a separate EU Declaration. Machinery components are not CE marked.

Pressure equipment is assembled or incorporated with MTS machinery. In general, pressure equipment, such as MTS manufactured hydraulic actuators, manifolds, grip supplies and grips, is below the static pressure (PS) times volume (V) limits of the Pressure Equipment Directive. These are designed and constructed as per Sound Engineering Practice (SEP) Article 4(3) of Pressure Equipment Directive 2014/68/EU.

Pressure equipment that falls within the SEP requirements is not CE marked.

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Pressure equipment that falls in Category 1 of the Pressure Equipment Directive is CE marked.

Pressure equipment in Categories II, III, and IV requires Notified Body assessments and is CE marked.

A separate EU Declaration of Conformity is provided for MTS pressure equipment, including commercially available accumulators and relief valves, that are Categories I and above.

When assembled or integrated with MTS machinery, the EU Declaration for the MTS machinery also covers pressure equipment that falls within Sound Engineering Practice.

Electrical equipment such as MTS Controllers, Environmental Chambers and Furnaces are provided with EU Declaration of Conformity to the Low Voltage Directive 2014/35/EU and EMC Directive 2014/30/EU. Such equipment is CE marked. The equipment is provided with an EU Declaration when supplied with or without MTS machinery.

VIII. EU DECLARATIONS – FOR MTS SUPPLIED MACHINERY

In general, the signed EU Declaration of Conformity and / or Declaration of Incorporation are provided at the time of shipment for applicable machinery, pressure equipment and electrical equipment.

The EU Declaration of Conformity and Declaration of Incorporation are provided in English (original) and the local language (translation of the original).

IX. MACHINERY DIRECTIVE CONFORMITY ASSESSMENT AT CUSTOMER FACILITIES

The safety system functionalities of complex test systems and machinery such as Rolling Roadways cannot be fully checked at the MTS factory. Such test systems and machinery require further construction, assembly, installation or adjustments before being put into service as an integral whole at customer facilities.

Such test systems and machinery may have the Declaration of Conformity, where applicable, provided to the customer only after the Conformity Assessment at site is completed.

The CE Marking is affixed on such machinery only after the Conformity Assessment is completed at the customer facilities.

[Directive 2009/104/EC concerning the minimum safety and health requirements for the use of work equipment by workers at work](#)

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Within the framework of this Directive, the customer must perform a facilities risk assessment to ensure that potential hazards that arise as a result of the completed installation are controlled by the following (not exhaustive) means:

- creating a facilities safety placard or visual display (showing emergency routes, location of isolation devices, safety procedures, use of personal protective equipment, etc) as per local codes or regulations
- providing access ladders to the machinery
- providing hand railings where fall hazards exist
- providing adequate lighting
- providing adequate ventilation in a pit or enclosed space
- providing pit covers
- providing video cameras for parts of machinery that require continuous observation
- providing oxygen sensors if oxygen concentration is compromised
- providing fire protection measures as per local codes or regulations
- conducting a noise level map or survey of completed installation while operating with a test specimen
- installing noise reduction barriers
- providing lifting machinery for test specimen and machinery handling
- providing fluid leak containments or drains
- providing cable entries and trays
- providing vibration isolation systems (example: seismic masses, vibration isolators) to dissipate or absorb vibration from the machinery and from other external sources
- providing machinery mounting means
- ensuring that personnel understand the hazards, and are trained in the safe operation and maintenance of the machinery
- restricting personnel access to the machinery by access doors or barriers that are interlocked or keyed
- using protective devices such as safety mats and light curtains.

X. MTS RISK ASSESSMENTS

MTS performs a risk assessment for test systems and machinery following the MTS Hazards and Risk Assessment procedure which is based on the EN ISO 12100 Risk Assessment standard.

The risk assessments can be provided to the customer by contractual arrangement in English language only.

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XI. NEW, USED, AND REBUILT MTS MACHINERY

The Machinery Directive applies to new MTS machinery that is placed in the European Community for the first time.

The Machinery Directive also applies if a customer transfers the MTS machinery – either used or second-hand – from outside the Community into the Community. The customer or importer responsible for placing on the market or putting into service such used machinery must then fulfill the obligations set out in Article 5 of the Machinery Directive. The customer or importer is then responsible for ensuring that the machinery complies with the current applicable Directives and Standards. The customer is also responsible for drawing up a new EU Declaration of Conformity and affixing the CE Marking.

Used or second-hand MTS Machinery that is transferred by the customer from one State to another State within the Community and put into service by the customer may be subject to the applicable national regulations of the Member State, or to the harmonized *Directive 2009/104/EC concerning the minimum safety and health requirements for the use of work equipment by workers at work*.

MTS machinery that has been substantially rebuilt or transformed with addition of new parts that create new hazards, requiring the integration of new safety systems (interlocks, protective devices, etc.) to control the new hazards, will require a new evaluation to the requirements of the Machinery Directive. The changes may require the machinery to be assessed as new machinery that is subject to the Machinery Directive.

XII. NEW MTS MACHINERY MODIFIED BY CUSTOMER OR IMPORTER

A customer or importer may modify MTS machinery before the machinery is put into service in the Community for the first time. For instance, a customer or importer integrates a Test Area Enclosure or protective device on MTS machinery. In such cases, as long as the additions or changes are agreed upon by MTS and the customer or importer, and addressed in MTS risk assessment, technical documentation, and EU Declaration of Conformity, then the MTS-supplied Declaration of Conformity remains valid.

If the changes are substantial and result in non-compliances to the essential health and safety requirements of the Machinery Directive, then the MTS-supplied EU Declaration becomes invalid. The customer or importer then becomes the manufacturer of the machinery and is obligated to fulfill the requirements of Article 5 of the Directive.

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XIII. INSTRUCTIONS – MACHINERY (including MTS electrical equipment, electrical components, machine components and pressure equipment)

Languages of Instructions – for MTS machinery

MTS Product and Reference Instructions for safe operation are provided in English and in the official language (translation of the original) of the Member State where the machinery is put into service.

The Instructions are available online through an MTS Echo account. Refer to <http://www.mts.com/en/services/Manuals/index.htm>.

Maintenance procedures in the Reference Instructions may be in the English language if the Target Customer is MTS mandated or authorized personnel performing such tasks. In such cases, the Instructions identify the maintenance procedures that are to be performed by such personnel.

OTHER APPLICABLE EU DIRECTIVES

XIV. EU DIRECTIVE 2014/34/EU on equipment and protective systems used in Explosive Atmospheres (ATEX)

MTS Test Systems and other equipment are not designed and constructed for use in explosive atmospheres.

XV. DIRECTIVE 1999/92/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 1999 on minimum requirements for improving the safety and health protection of workers potentially at risk from explosive atmospheres

The customer must conduct an explosion risk assessment if MTS-supplied machinery components, pressure equipment, electrical equipment, and electrical components are placed in a potential explosive atmosphere.

The customer must take technical and / or organizational measures to prevent the formation of explosive atmospheres, to avoid the ignition of explosive atmospheres, and to mitigate the adverse effects of an explosion.

XVI. DIRECTIVE 2002/44/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on the minimum health and safety requirements regarding the exposure of workers to the risks arising from physical agents (vibration)

**SYSTEMS INVOLVING CUSTOMERS WITHIN TEST SPACE –
TIRE -COUPLED ROAD SIMULATION SYSTEMS with vehicles as test specimens**

These systems can subject customer personnel to whole-body vibration when personnel are within the vehicles mounted on such systems.

Within the framework of this Directive, it is the responsibility of the customer to assess and measure the levels of mechanical vibration to which the customer personnel are exposed.

The customer must perform a risk assessment, and based on the outcome of the risk assessment, the customer may need to establish and implement technical and / or procedural measures to reduce exposure of customers to a minimum exposure to mechanical vibration and associated risks.

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MULTIAXIS SIMULATION TABLES with humans as test specimens

MTS applies the technical requirements of the vibration Directive for such systems where humans used as test specimens are deliberately exposed to whole-body vibration as part of the customer's intended use(s) of the machinery.