

# Technician training

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## **Brake testing Technology**

### **VS T00000 Technician training**

### **VS T11001 Technician training MBT 2100**

(1.5 days at MAHA premises, without accommodation) per person

Content:

- Structure of the floor groups
- Structure of the advertisements: Function diagram of the electronics
- Functional sequence: Measurement principle
- Technology: Operation of the calibration program, calibrate the brake test bench

Objectives:

- Obtain technical information for the device generation

### **VS T11003 Technician training MBT 2200 LON with PC console**

(2 days at MAHA premises, without accommodation) per person

Content:

- Application: Software in theory and practice, Creating measurements, database maintenance
- Technology: Circuit boards, calibration, installation of the foundation, Loading variables, tools

Objectives:

- Technical knowledge for maintenance, repair and installation

### **VS T11022 Technician training 2250 EUROSYSYSTEM**

(3 days at MAHA premises, without accommodation) per person

Content:

- Application: Software in theory and practice, Creating measurements, database maintenance
- Technology: Circuit boards, calibration, installation of the foundation, Loading variables, tools

Objectives:

- Basic technical knowledge for installation, commissioning, service and maintenance

## **VS T11023     Technician training MBT 4200/7200 LON**

(3 days at MAHA premises, without accommodation) per person

### Theory:

- Function, measuring principle
- Roller set, mechanics and components (Range spring, proximity switch, |)
- control boards
- LON Manager (configuration variables, firmware update, |)

### Practice:

- Installation of the test stand in foundation
- Wiring floor assembly with switch cabinet
- commissioning
- calibration
- Service and maintenance

### Objectives:

- Technical knowledge for maintenance, repair and installation

## **VS T11024     Technician training MBT 4250/7250 EUROSYSYSTEM**

(3 days at MAHA premises, without accommodation) per person

### Theory:

- Function, measuring principle
- Roller set, mechanics and components (Range spring, proximity switch, |)
- control boards
- LON Manager (configuration variables, firmware update, |)

### Practice:

- Installation of the test stand in foundation
- Wiring floor assembly with switch cabinet
- commissioning
- calibration
- Service and maintenance

### Objectives:

- Technical knowledge for maintenance, repair and installation of Eurosystem products

## **VS T11014 Technician training Test engineering update training for experienced technicians**

(2 days at MAHA premises, without accommodation) per person

Content:

- Technical information about new products
- Electrics: Construction, connections, function, necessary settings, important electrical conditions for correct operation, circuit board description
  
- Installation: Foundation, mechanics, hydraulics
- Troubleshooting
- Maintenance plans
- Assembly
- News on additional devices
- Workshop brake technology (Exchange of experiences, troubleshooting, solutions)

Objectives:

- Deepen technical knowledge through basic training. Exchange of experience with other technicians. Getting to know new products.

Requirements:

- Error description / questions by participants in advance upon registration

## **VS T11025 Routine test training BPS (new guidelines 2011)**

(1,5 days at MAHA premises, without accommodation) per person

Content:

Application:

- General guidelines (new directive 2011) according to § 41 German Road Traffic Licensing Regulation
- Legal basis for work safety
- Types
- Structure and function of brake test benches
- Display system
- Metrological properties and records
- Error limits
- Deceleration and braking force
- Physical quantities
- ASA livestream
- Audit

Objectives:

- The participant is "knowledgeable" after successfully completing the course

## **VS T11012      Technical qualification training Brake tester car/truck Analogue/LON generation**

(2 days at MAHA premises, without accommodation) per person

Content:

Application:

- General information about test lane and/or test bench

Technology:

- Calibration of the brake test bench
- Operation of the calibration program

Objectives:

- Basic technical knowledge for maintenance and routine testing

## **VS T11019      Technician training Conversion brake tester according to 2011 guidelines**

(1 day at MAHA premises, without accommodation) per person

Content:

- Installation and wiring
- Installation

## **VS T11020      Competence training Breaks DIN EN ISO/IEC 17025 Certificate renewal**

(1 day at MAHA premises, without accommodation) per person

Certificate renewal, part inspection, brake test bench and ASA livestream

Proof of practical abilities via the routine test

Requirements:

- PC with own access ESZ Calibration-Expert (not testing organisations)
- Dongle technician
- Own test tool (Calibration device car/truck for routine test for MAHA MBT 2xxx and MBT 7xxx)
- Copy of initial certificate upon registration Technical training cars and/or lorries

Content:

- Preparatory measures brake tester
- Handling calibration tool
- Calibration/adjustment brake tester and entries in software and log book
- ASA livestream proof
- Final test theory
- Practical exam (Standard compliant routine testing of a chassis dynamometer)

Objective:

Proof of specialised suitability and extension of the existing routine test guideline certificate for another 2 years of the basic certificate

## **Performance Measurement Technology**

### **VS T21001 Technician training MSR or LPS 3000 for cars/trucks**

(3 days at MAHA premises, without accommodation) per person

Content:

- Measurement principle: Basis of performance measurement
- Application: Software in theory and practice, OBD (onboard diagnostics)
- Technology: Circuit boards, calibration, installation of the foundation, Load variables

Objectives:

- Technical knowledge for maintenance, repair and installation of products

### **VS T22001 On site technician training MSR or LPS 3000 for cars/trucks**

(3 days on site)

Extra charge: 0.89 €/journey kilometre plus VAT  
or flight/train ticket + overnight accommodation

Content:

- Measurement principle: Basis of performance measurement
- Application: Software in theory and practice, OBD (onboard diagnostics)
- Technology: Circuit boards, calibration, installation of the foundation, Load variables

Objectives:

- Technical knowledge for maintenance, repair and installation of products

### **VS T21002 Technician training MSR and LPS or ASM-FPS**

(4.5 days at MAHA premises, without accommodation) per person

Content:

- Measurement principle: Basis of performance measurement
- Application: Software in theory and practice, OBD (onboard diagnostics)
- Technology: Circuit boards, calibration, installation of the foundation, Load variables

Objectives:

- Technical knowledge for maintenance, repair and installation of products

## **VS T22002 On site technician training MSR and LPS or ASM-FPS**

(4.5 days on site)

Extra charge: 0.89 €/journey kilometre plus VAT  
or flight/train ticket + overnight accommodation

Content:

- Measurement principle: Basis of performance measurement
- Application: Software in theory and practice, OBD (onboard diagnostics)
- Technology: Circuit boards, calibration, installation of the foundation, Load variables

Objectives:

- Technical knowledge for maintenance, repair and installation of products

## **VS T21003 Technician training MZW**

(1 day at MAHA premises, without accommodation) per person

Content:

- Measurement principle: Basis of performance measurement
- Application: Software in theory and practice,
- Technology: Circuit boards, calibration, loading variables

Objectives:

- Technical knowledge for maintenance, repair and installation of products

Prerequisite: own test bench

## **VS T22003 On site technician training MZW**

(1 day on site)

Extra charge: 0.89 €/journey kilometre plus VAT  
or flight/train ticket + overnight accommodation

Content:

- Measurement principle: Basis of performance measurement
- Application: Software in theory and practice,
- Technology: Circuit boards, calibration, loading variables

Objectives:

- Technical knowledge for maintenance, repair and installation of products

Prerequisite: own test bench



## Emission Measurement Technology

### VS T31003 Service centre training MET 6.1/6.2/6.3

(1.5 days at MAHA premises, without accommodation) per person

Content:

- Maintenance / Service
- Devices / Calibration / Adjustment
- Performing updates
- Introduction: General information about the exhaust gas tester
- Application: Software in theory and practice, Conducting customer briefings
- Technology: Components (structure, function, etc.) Calibration, commissioning Basics of network technology

Objectives:

- Passing the final exam, the participant can apply for authorisation as a MAHA service centre
- They are hereby authorised to carry out commissioning, service and repairs for the exhaust gas tester MET 6.1/6.2/6.3

- see service information V-LPS-16.06 from 30.09.16

Service support bases for exhaust gas measuring equipment – concept change

### VS T32003 Service centre training on site MET 6.1/6.2/6.3

(1.5 days on site)

Extra charge: 0.89 €/journey kilometre plus VAT  
or flight/train ticket + overnight accommodation

Content:

- Maintenance / Service
- Devices / Calibration / Adjustment
- Performing updates
- Introduction: General to the exhaust gas tester
- Application: Software in theory and practice, Conducting customer briefings
- Technology: Components (structure, function, etc.) Calibration, commissioning Basics of network technology

Objectives:

- Passing the final exam, the participant can apply for authorisation as a MAHA service centre
- They are hereby authorised to carry out commissioning, service and repairs for the exhaust gas tester MET 6.1/6.2/6.3

- see service information V-LPS-16.06 from 30.09.16

Service support bases for exhaust gas measuring equipment – concept change

## **VS T31002 Technician training MGT 5**

(1 day at MAHA premises, without accommodation) per person

Content:

- Introduction: General information about the exhaust gas tester
- Application: Software in theory and practice, Conducting customer briefings
- Technology: Components (structure, function, etc.) Adjustment and calibration, commissioning

Objectives:

- The participant can maintain and repair MAHA test and workshop equipment

## **VS T32002 On site technician training MGT 5**

(1 day on site)

Extra charge: 0.89 €/journey kilometre plus VAT  
or flight/train ticket + overnight accommodation

Content:

- Introduction: General information about the exhaust gas tester
- Application: Software in theory and practice, Conducting customer briefings
- Technology: Components (structure, function, etc.) Adjustment and calibration, commissioning

Objectives:

- The participant can maintain and repair MAHA test and workshop equipment

## **VS T31001 Technician training MDO2 LON**

(1 day at MAHA premises, without accommodation) per person

Content:

- Introduction: General information about the exhaust gas tester
- Application: Software in theory and practice, Conducting customer briefings
- Technology: Components (structure, function, etc.) Calibration, commissioning

Objectives:

- The participant can maintain and repair MAHA test and workshop equipment

## **VS T32001 On site technician training MD02 LON**

(1 day on site)

Extra charge: 0.89 €/journey kilometre plus VAT  
or flight/train ticket + overnight accommodation

Content:

- Introduction: General information about the exhaust gas tester
- Application: Software in theory and practice, Conducting client briefings
- Technology: Components (structure, function, etc.) Calibration, commissioning

Objectives:

- The participant can maintain and repair MAHA test and workshop equipment

## **VS T31004 Service centre training MET 6.1/6.2/6.3/MGT5/MD02 LON**

(3 days at MAHA premises, without accommodation) per person

Content:

- Maintenance / Service
- Devices / Calibration / Adjustment
- Performing updates
- Introduction: General information about the exhaust gas tester
- Application: Software in theory and practice, Conducting customer briefings
- Technology: Components (structure, function, etc.) Calibration, commissioning Basics of network technology

Accessories:

- Replace parts/repairs
- MAHA homepage and spare parts lists

Objectives:

- Passing the final exam, the participant can apply for authorisation as a MAHA service centre
- They are hereby authorised to carry out commissioning, service and repairs for the exhaust gas tester MET 6.1/6.2/6.3/ MGT5/MD02 LON

- see service information V-LPS-16.06 from 30.09.16

Service support bases for exhaust gas measuring equipment – concept change

## **VS T32004     Service centre training on site MET 6.1/6.2/6.3/MGT5/MD02 LON**

(3 days on site)

Extra charge: 0.89 €/journey kilometre plus VAT  
or flight/train ticket + overnight accommodation

Content:

- Maintenance / Service
- Devices / Calibration / Adjustment
- Performing updates
- Introduction: General information about the exhaust gas tester
- Application: Software in theory and practice, Conducting customer briefings
- Technology: Components (structure, function, etc.) Calibration, commissioning Basics of network technology

Objectives:

- Passing the final exam, the participant can apply for authorisation as a MAHA service centre
- They are hereby authorised to carry out commissioning, service and repairs for the exhaust gas tester MET 6.1 / 6.2 / 6.3 / MGT5 / MDO2 LON

- see service information V-LPS-16.06 from 30.09.16

Service support bases for exhaust gas measuring equipment – concept change

## **VS T31005     Technical qualification training Maintenance and calibration with MAHA emission testers (MET series, MGT 5, MDO2 LON)**

(1.5 days at MAHA premises, without accommodation) per person

Content:

- Legal basis
- MAHA emission tester
- Measurement method (OTTO, DIESEL)
- Device construction/maintenance/minor repairs
- Required equipment
- Calibration, adjustment in theory and practice
- Examination/certificate

## **VS T31007      Competence training Maintenance and calibration with MAHA emission testers (MET Serie, MGT 5, MDO2 LON)**

(1 day at MAHA premises, without accommodation) per person

Requirements:

- PC with own access ESZ Calibration-Expert not testing organizations)
- Own test tool (except calibration gas)
- Copy of initial certificate upon registration technical qualification training Maintenance and calibration with MAHA emission testers

Content:

Innovations Directive, Software

Proof of expertise through theoretical and practical test  
(all previously used documents may be used)

Handling calibration tools

Objective:

Proof of specialised suitability and extension of the existing routine test guideline certificate for another 2 years of the basic certificate.

## **Headlight Testing Technology**

### **VS T11009      Hight voltage headlight test guidelines training**

(1.5 days at MAHA premises, without accommodation) per person

Content:

Legal basis:

- Preparatory measures for headlight inspection
- Checking the adjustment of the headlights
- Requirements for test areas
- Setting dimensions and tolerances

Objectives:

- The participant is in accordance with § 29 German Road Traffic Licensing Regulation (Hight voltage headlight test directive) "knowledgeable"

Comment:

- In this training, the technical knowledge is not taught for all MAHA SEP

## **VS T12009     Hight voltage headlight test guidelines training**

(1.5 days on site)

Extra charge: 0.89 €/journey kilometre plus VAT  
or flight/train ticket + overnight accommodation

Content:

Legal basis:

- Preparatory measures for headlight inspection
- Checking the adjustment of the headlights
- Requirements for test areas
- Setting dimensions and tolerances

Objectives:

- The participant is in accordance with § 29 German Road Traffic Licensing Regulation (Hight voltage headlight test directive) "knowledgeable"

Comment:

- In this training, the technical knowledge is not taught for all MAHA SEP

## **VS T11013     Hight voltage headlight test guidelines training, methods and technical part**

(3 days at MAHA premises, without accommodation) per person  
including technical parts e.g. MLT 3000/LITE 3

Content:

Legal basis:

- Preparatory measures for headlight inspection
- Checking the adjustment of the headlights
- Requirements for test areas
- Setting dimensions and tolerances

Objectives:

- The participant is in accordance with § 29 German Road Traffic Licensing Regulation (Hight voltage headlight test directive) "knowledgeable"

Comment:

- In this training, the technical knowledge is not taught for all MAHA SEP

## **VS T12013 Hight voltage headlight test guidelines training, methods and technical part**

(2 days on site)

including technical parts e.g. MLT 3000/LITE 3

Extra charge: 0.89 €/journey kilometre plus VAT  
or flight/train ticket + overnight accommodation

Content:

Legal basis:

- Preparatory measures for headlight inspection
- Checking the adjustment of the headlights
- Requirements for test areas
- Setting dimensions and tolerances

Objectives:

- The participant is in accordance with § 29 German Road Traffic Licensing Regulation (Hight voltage headlight test directive) "knowledgeable"

Comment:

- In this training, the technical knowledge is not taught for all MAHA SEP

## **VS T11018 Hight voltage headlight test guidelines training and methods**

(2 days at MAHA premises, without accommodation) per person  
incl. method of calibration

Content:

Legal basis:

- Preparatory measures for headlight inspection
- Checking the adjustment of the headlights
- Requirements for test areas
- Setting dimensions and tolerances
- Final test theory and practice

Objectives:

- The participant is in accordance with § 29 German Road Traffic Licensing Regulation (Hight voltage headlight test directive) "knowledgeable"

Comment:

- In this training, the technical knowledge is not taught for all MAHA SEP

## **VS T11017 Routine test update training Method of calibration SEP**

(1 day at MAHA premises, without accommodation) per person

## **VS T11008      Technician training MLT 1000/3000**

(1 day at MAHA premises, without accommodation) per person

Content:

- Software update
- Operation
- Changing components

Objectives:

- The participant is hereby authorised to carry out the service and maintenance of the light adjustment unit MLT 1000/3000

## **VS T11026              Technical qualification for MLT 3000**

(1 day at MAHA premises, without accommodation) per person

Requirements:

- Qualified person according to current directive

Content:

- Adjustment according to current directive and manufacturer's specifications
- Inspection book
- Software update
- Operation
- Troubleshooting

Objectives:

- Participants are authorised to carry out calibrations/adjustments for MLT 3000 headlight tester.

## **VS T11027              Technical qualification for MLT 1000/LITE 3**

(1 day at MAHA premises, without accommodation) per person

Requirements:

- Qualified person according to current directive

Content:

- Adjustment according to current directive and manufacturer's specifications
- Inspection book
- Software update LITE 3
- Operation
- Troubleshooting

Target:

- Participants are authorised to carry out calibrations/adjustments for MLT 1000/LITE 3 headlight testers.



## **VS T11021      Competence training Lights DIN EN ISO/IEC 17025 Certificate renewal**

(1 day at MAHA premises, without accommodation) per person

Certificate renewal routine inspection high voltage headlight guidelines

Proof of practical abilities via the routine test High voltage headlight guidelines

Requirements:

- PC with own access ESZ Calibration-Expert/SEPpro (not testing organisations)
- Own testing tool for routine testing for MAHA MLT 3000
- Copy of initial certificate upon registration

Content:

- Preparatory measures
- Requirements for test station
- Dimensions and tolerances
- Measured value recordings and entries in software and log book
- Calibration, adjustment, checks according to manufacturer's specifications
- Final test theory
- Practical exam (Standard compliant routine testing of a test station with MLT 3000)

Objective:

Proof of specialised suitability and extension of the existing high voltage headlight guideline certificate for another 2 years of the basic certificate

## Lifting Technology

### VS T41001 Basic technician training Scissor lift

(1 day at MAHA premises, without accommodation) per person

Content:

Application:

- Functional principle
- Presentation of existing documentation and plans

Technology:

- Electrics/hydraulics (structure, connections, function, Settings, important conditions for correct operation)
- Maintenance plans
- Circuit board description
- Installation (foundation, mechanics, hydraulics)
- Fault diagnosis
- Maintenance plans
- Assembly

Objectives:

- Technical knowledge for maintenance, Repair and installation of the lift
- The training also includes the proof of eligibility for the implementation of the German Accident Prevention Regulations

### VS T41002 Basic technician training Two-post lift

(1 day at MAHA premises, without accommodation) per person

Content:

Application:

- Functional principle
- Presentation of existing documentation and plans

Technology:

- Electrical (structure, connections, function, settings, important conditions for correct operation)
- Maintenance plans
- Circuit board description
- Installation (foundation, mechanics, hydraulics)

Objectives:

- Technical knowledge for maintenance, repair and installation of the lift
- The training also includes the proof of eligibility for the implementation of the German Accident Prevention Regulations

## **VS T41003 Basic technician training In-ground lift**

(1 day at MAHA premises, without accommodation) per person

Content:

Application:

- Functional principle
- Presentation of existing documentation and plans

Technology:

- Electrics/hydraulics (structure, connections, function, Settings, important conditions for correct operation)
- Maintenance plans
- Circuit board description
- Installation (foundation, mechanics, hydraulics)
- Fault diagnosis
- Maintenance plans
- Assembly

Objectives:

- Technical knowledge for maintenance, repair and installation of the lift
- The training also includes the proof of eligibility for the implementation of the German Accident Prevention Regulations

## **VS T41004 Basic technician training Wheel gripper lift**

(1 day at MAHA premises, without accommodation) per person

Content:

Application:

- Functional principle
- Presentation of existing documentation and plans

Technology:

- Electrical (structure, connections, function, settings, important conditions for correct operation)
- Maintenance plans
- Circuit board description

Objectives:

- Technical knowledge for maintenance, repair and installation of the lift
- The training also includes the proof of eligibility for the implementation of the German Accident Prevention Regulations

## **VS T41005 Basic technician training Scissors/Column/In-ground lift**

(3 days at MAHA premises, without accommodation) per person

Content:

Application:

- Functional principle
- Presentation of existing documentation and plans
- Technology:
- Installation (foundation, mechanics, hydraulics)
- Fault diagnosis
- Maintenance plans
- Assembly

Objectives:

- Technical knowledge for maintenance, repair and installation of the lift
- The training also includes the proof of eligibility for the implementation of the German Accident Prevention Regulations

## **VS T41010 Professional technician training Scissors/Column/In-ground lift**

(1 day at MAHA premises, without accommodation) per person

Content:

Application:

- Functional principle
- Presentation of existing documentation and plans

Technology:

- Electrical (structure, connections, function, settings, important conditions for correct operation)
- Circuit board description
- Installation (foundation, mechanics, hydraulics)
- Fault diagnosis
- Maintenance plans
- Assembly
- Workshop lifting technology (Exchange of experiences, troubleshooting, solutions)

Objectives:

- Deepen technical knowledge gained in basic training
- Exchange of experience with other technicians
- Getting to know new products

## **VS T41009 Accident Prevention Regulations training Scissors/Column/In-ground lift**

(1 day at MAHA premises, without accommodation) per person

Content:

Application:

- Functional principle
- Presentation of existing documentation and plans

Technology:

- Installation (structure, connections, function, settings, important conditions for correct operation)
- Maintenance plans
- Circuit board description as far as necessary for APR

Objectives:

- Imparting the technical knowledge to carry out the APR

## **VS T41013 Technician training 2-Post Lift MA STAR**

(1 day at MAHA premises, without accommodation) per person

- Content:

Application:

- Operating principle
- Presentation of available documentation and plans

Technology:

- Electric system (structure, connections, function, settings, important requirements for proper operation)
- Maintenance plans
- New anchoring system
- Installation (foundation, mechanics)

Objectives:

- Basic technical knowledge of maintenance, repair and installation of lift
- Training also includes the credentials for performing the UVV inspection (German Accident Prevention Regulation)

## **VS T41014 Kombi-training Basic technician training Scissors/Column/In-ground lift Basic technician training Electrical engineering, read circuit diagrams**

(4,5 days at MAHA premises, without accommodation) per person

Content:

Application:

- Operating principle
- Presentation of available documentation and plans
- Technology:
  - Installation (foundation, mechanics, hydraulics)
  - Troubleshooting
  - Maintenance plans
  - Assembly
- Basic knowledge of electrical engineering
- The seminar provides a basic introduction into electrical engineering
- The training course helps non-experts develop a better understanding of electrical installations and the ability to roughly dimension them

Content:

- Basics and terminology of electrical engineering
- Definition of current, voltage, resistance
- Inductive and capacitive components, transformers and capacitors
- Direct current, one-phase alternating current and three-phase current
- Simple circuits, circuits with switchgears and protection devices
- Electrical power and work
- Marking of electrical equipment
- Description of electrical installations by using symbols and circuit documentation
- How to read circuit, cable and terminal diagrams
- Electrical troubleshooting
- Professional handling of a multimeter

Objectives:

- Basic technical knowledge for maintenance, repair and installation of lift.
- Structured electrical troubleshooting via circuit diagram.
- Training also includes the credentials for performing the UVV inspection (German Accident Prevention Regulations).

## Electrical

### VS T41012 Basic technician training Electrical engineering, read circuit diagrams

(2 days at MAHA premises, without accommodation) per person  
Min. 2 people/max. 6 people

- Basic knowledge of electrical engineering
- The seminar introduces the basics of electrical engineering
- With the help of continuing education, non-electronic engineers also gain a deeper understanding of electrical systems and learn to roughly size them

#### Content:

- Fundamentals and concepts of electrical engineering
- Definition of current, voltage, resistance
- Inductive and capacitive components, transformers and capacitors
- DC, single-phase AC and three-phase current
- Simple circuits and circuits with switching devices and protective devices
- Electrical power and work
- Labelling of equipment and devices
- Presentation of electrical installations and systems through symbols and circuit documentation
- Read circuit diagrams, cable and terminal diagrams
- Electrical troubleshooting
- Professional handling of a multimeter