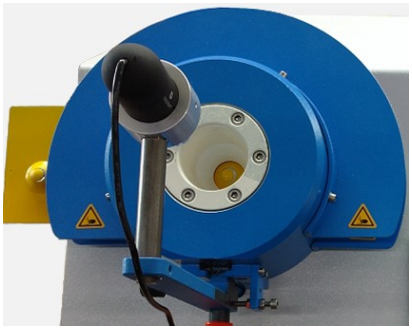
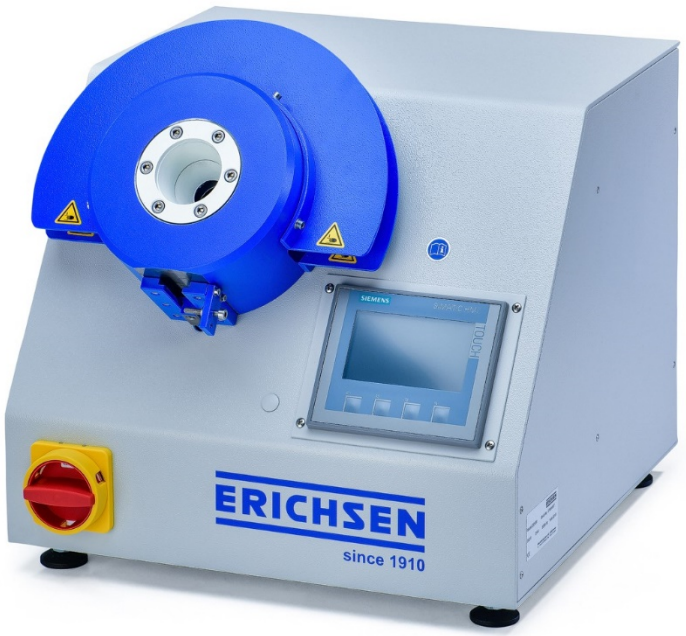
Digital microscope with holder and illumination

Lacquer and Paint Testing Machine Model 202 EM





testing equipment for quality management

ERICHSEN
since 1910

Technical Description

ERICHSEN Cupping Test

DIN EN ISO, BS, NF, SIS

Equipped with electromotive drive and laterally opened cylinder

Product

Lacquer and Paint Testing Machine, Model 202 EM, with electromotive drive, equipped with a laterally opened test head, test tool in accordance with DIN EN ISO 1520, electric installation for connecting the illumination of the microscope as well as a digital display for the acquisition of the ERICHSEN cupping value, with integrated preselection counter for setting the maximum cupping value required. The machine is operated via touch panel.

Application

This simple to operate Lacquer and Paint Testing Machine is used for rapid and accurate measurement of the elongation and adhesion properties of protective paints and other coatings of all types using the

ERICHSEN CUPPING TEST
in accordance with

DIN EN ISO 1520
BS 3900 : Part E4
NF T 30-019
SIS 18 41 77

on sheet metal specimens up to 1.5 mm thick.

The ERICHSEN Cupping Test provides valuable information on the suitability of a coating material for application in practise. Low cupping test values mean that the coated product may not withstand elongation stresses arising, resulting in corrosion of the substrate.

Model 202 EM is versatile and can be further enhanced by the various accessories available. The machine is a valuable tool for the quality control both for producers of paints and coating materials and for users .

Principle of the Test

The **Lacquer and Paint Testing Machine, Model 202 EM,** is a bench mounted unit with a sheet steel housing, test cylinder and operator's control panel.

The coated specimen panel is entered into the opening of the test cylinder with the coated surface facing upwards. Due to the laterally opening of the cylinder also larger sheet metal panels can be accommodated in the test head. On **Model 202 EM** the sheet metal specimen is clamped automatically using a separate clamping piston.

The machine is operated via the touch panel in the front area. The clear and clear menu navigation via the touch panel has password-protected levels that protect against unauthorized access (such as program changes).
Test parameters such as speed (2 - 60 mm /min) or punch stop are entered before the test begins.

The "Start" screen displays all the required parameters, such as the drawing distance and the drawing speed. After pressing the start button, the specimen is clamped and then automatically starts the "forming process". The sample surface is subjected to bilateral bending and stretching during the cupping process. As soon as the first crack is visible on the surface the movement of the ball punch is stopped by pushing the stop function. The ERICHSEN Cupping Depth reached can be seen on the display. On completion of the test both the drawing and the clamping piston return to their starting position, and the specimen panel can be taken out of the test head.

The system of the Lacquer and Paint Testing Machine, **Model 202 EM**, is secured by a limit switch and an overload protection, when reaching the final position.

Accessories

Special Test Tool
For special cases the standard cupping test tool to DIN EN ISO 1520, which has a 20 mm diameter ball punch, can be exchanged against a special test tool (Test Tool No. 11) with an 8 mm diameter ball punch. This tool is used in cases where only narrower sheet metal specimens (30 mm to 55 mm wide) are available for testing.

Microscopes for observing the test procedure (option)

The microscope can not be retrofitted and has to be ordered together with the base unit.

For the purpose of observing the test area and deciding when a crack has formed, the use of a microscope with integrated illumination is recom-mended. Before the forming process has started the microscope is focused on the illuminated surface. It is not necessary to adjust the microscope during the cupping process as the microscope holder moves in synchronisation with the drawing piston.

Fig. Microscope (02350132)

Digital Microscope (option)

The microscope can not be retrofitted and has to be ordered together with the base unit.

The high-resolution **Digital Microscope** with integrated light (8x white LED, adjustable) to be connected with PC/Laptop is a convenient way to digitally assisted visual detection/collection/ documentation of damage profiles.

This digital microscope is equipped with a 2 million pixels CMOS image sensor and scalable precision measurement and is excellently suitable for direct image capture directly from the object, with live-view as well as video function for shooting with microscopic precision.

It is not necessary to adjust the microscope during the cupping process as the microscope holder moves in synchronisation with the drawing piston.

A 10'' tablet and software are included in the scope of supply.

Fig. Modell 202 EM mit Digital-Mikroskop und Tablet (15970132)

Technical Data

(Basic machine Model 202 EM)

Dimensions:	Width: 470 mm Depth: 530 mm Height: 410 mm
Weight, net:	approx. 80 kg
Mains connection:	1L/N/PE AC 230 V 50 Hz, 0.5 kW (other voltages on request)
Depth of draw display: (Preselection counter)	digital (accuracy 0.1 mm)
Drawing speed:	2 mm/min to 60 mm/min (infinitely variable)

Order Information	
Ord.-No.	**Product Description**
26660131	**Lacquer and Paint Testing Machine, Model 202 EM,** with electromotive drive and a laterally opened test head; operation via touch panel
	The scope of supply includes: ♦ Test Tool No. 27 ♦ Operating instructions

Accessories	
Ord.-No.	**Product Description**
00010132	Test Tool No. 11 acc. to EN ISO 20482, for strips 30 - 55 mm wide and 0.1 - 1 mm thick, consisting of ball punch 8 mm Ø, drawing die and sheet holder ring
00040132	Test Tool No. 27 acc. to EN ISO 20482 and DIN EN ISO 1520 (spare part), consisting of ball punch 20 mm Ø, drawing die with 27 mm bore and blank holder
15970132	Digital Microscope with holder and illumination, incl. 10'' tablet; software
02350132	Microscope with holder and Illumination, 10-fold magnification and 17.5 mm field of vision

Subject to technical modifications.
Group 1 - TBE 202 EM – VIII/2020

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ERICHSEN Cupping Test Values specified in the Conditions of Purchase for Surface Coatings by some German Public Authorities

DEUTSCHE BAHN AG, TL 918 300 (Technical conditions of purchase for coating materials)

The Cupping Test is conducted on 1 mm thick sheet metal specimen strip after 3 days drying. The cupping test is repeated after ageing at elevated temperature, on another part of the specimen.

Ageing: The specimen panel is held at 100°C for 3 hours, and is then allowed to cool for 1 hour at room temperature.

Coating Material	Cupping Test values in mm	
	Before Ageing	After Ageing
Phthalate resin coating	6	6
Phthalate resin coating, silk finish	4	4
Quick drying synthetic resin coatings	6	4
Nitro combination coatings and coatings for rail vehicles	6	6
Acid hardened clear lacquers	6	🕘
Nitro combination coatings for road vehicles	4	4
Metal primers	6	🕘
Stoving paints	after stoving	4
Dip coatings	6	4

FEDERAL MINISTRY OF DEFENCE, VTL 7100-002 (Interim Technical Conditions of Purchase)

The treatment of surfaces of accommodation equipment made of steel:
Requirement: The Erichsen Cupping Test Value (DIN ISO 1520) must not be less than 3 mm.

DEUTSCHE TELECOM AG, KPZ (X) 41430/1

Coating materials for equipment for Deutsche Telekom AG (Coating thickness 20 µm, sheet thickness 1 mm):

a) before heat treatment — **Cupping Test Value:**
- Oil and chlorine rubber coatings — 10 mm
- Synthetic resin coatings - air drying — 8 mm
- stove drying — 6 mm
- Nitro coatings and combination coatings depending on specified drying time — 4 - 6 mm

b) after ageing at elevated temperature (72 hours drying, including 3 hours at 100°C)
- Oil and chlorine rubber coatings — 8 mm
- Synthetic resin coatings - air drying — 6 mm

The special coatings used for sheet aluminium must reach the following cupping test values on 1 mm thick sheet metal specimens, as a minimum:

a) before ageing at elevated temperature
- air drying — 4 mm
- stove drying — 3 mm

b) after ageing at elevated temperature
- air drying — 3.5 mm