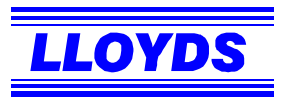
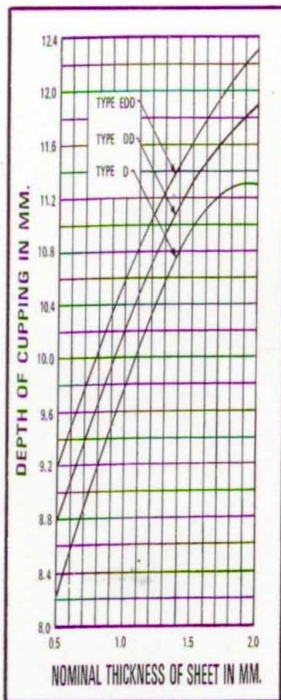
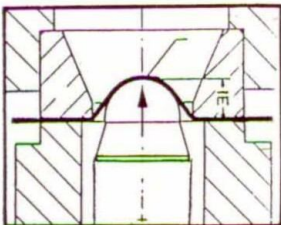


CUPPING TESTER

Model- 92NM



WITH PC SOFTWARE FOR ADVANCE ANALYSIS AND DATABASE CREATION FOR COMPARISON



Cupping Test



Deep Draw Cup Test



Bore Expansion Test



Features

- Electro-hydraulic driven
- Automatic Test Sequence
- High accuracy precision upto 0.1 / 0.01 (optional)
- Conforms to international standards.

Automatic Sheet & Strip Metal Testing Machine with Digital readout for Cupping, Deep Drawing and Deep Draw Bore Expanding Tests in accordance with International Standard (Din 50s 101, Din 50 102, BS 38 55, EN 14-58 & 67, ISO 8490)

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The Product

Lloyds Sheet and Strip Metal Testing Machine – Model 92N

The test in accordance to DIN 50 101 and DIN 50 102, and corresponding national and international standards)

The Application

Electro-hydraulically driven sheet metal testing machine (cupping tester). Suitable for the medium thickness range (0.1 mm to 4 mm approx.) of sheet metal and preferred particularly by sheet metal producers and users for quick quality control and monitoring.

Model 92NM is suitable for **The Cupping Test** all on ferrous and non-ferrous metals in accordance to following national and international standards.

ISO 8490	JIS Z-7729
EN 14-58	UNI 3037
EN 14-67	UNE 7080
DIN 50 101/50 102	GOST 10 510
BS 38 55	ICONTEC 21
NF A 03-602	SIS 11 26 35
NF A 03-652	SABS 0132-197
ASTM 643-84	

The **Deep Drawing Cup** Test for determination of the ear forming tendency and maximum drawing ratio according to
DIN EN 1669
DIN 50 155
UNI 6124-67
MSZ 5731-68

The Bore Expanding Test (KWI) in accordance with Siebel and Pomp

The Purpose

Qualitative test of sheet by means of Lloyds Cupping Test provides a basis of communication between the sheet metal producers and users.

The results of cupping test provide information on quality and sheet suitability for drawing, giving valuable information to users and producers of sheet metals.

The few important reasons for using Lloyds Cupping Tester – Model 92N for quality assurance are:

- ◆ Determining the appropriate balance between price and thickness for particular drawn work piece.
- ◆ Sorting of material at inward, to ensure prescribed specification without need for special test.
- ◆ Spot check for reducing manufacturing cost of drawing quality at various stages of production/process.
- ◆ The formation of crack and the surface roughness grain size) also provide information on the quality of the sheet metal and its suitability for drawing, giving valuable information especially to metal producers.

The construction

The testing machine consists of a sturdy design sheet metal housing into which the test cylinders, test tools, electrical, electronics and hydraulics systems are integrated.

The excellent functional layout of all the system functions makes the system user friendly. Operators without any previous knowledge and experience can be trained in few minutes for system operations.

Setting up of different tools in the test cylinder can be done quickly and easily to meet timing demands of today's high speed production cycle.

The sturdy system design and hydraulic system employed ensures minimum wear and repeatable results over long period of time

The Description

The sheet metal strip to be tested is placed in the opening of Test Head of hydraulic compound cylinder, and centralized by locating it diagonally. The specimen is held and released rapidly by turning the coarse threaded die holder capstan screw. The driving motor is switched on by a push button, and hydraulic power pack circuit comes into action and immediately effects the specimen to be clamped at pre-selected (adjustable up to 12 kN in accordance to the standard) sheet holder force, which can be read on a clamping force dial gauge calibrated in Kilo Newton (kN) on the front panel. The sheet holder pressure remains constant during the entire draw.

The start and control of the draw up to the point of failure at the desired drawing speed is variable during the entire operation by a speed control lever, which controls the speed of the drawing tool from 5 mm/min. to 20 mm/min. in accordance to the International standards. The retract, i.e., return of drawing tool to the starting position, clamping and cupping action is controlled by a single lever of radial action gear electro hydraulic switches.

On formation of initial crack on the specimen the load indicator stops moving and for thicker material it is necessary continuing with the drawing operation for a number of seconds to form a hairline crack and then to be switched off or after instant falling-off the pressure on the cupping force dial indicator, calibrated in Kilo-Newton (kN) located on the panel with a maximum indicator pointer, indicating the load at which the failure of specimen takes place. The (Erichsen) Cupping Value (ECV) in mm are directly indicated on the highly sensitive and accurate Electronic Digital depth gauge readout with an accuracy of 0.1 mm. An extra Electro-mechanical depth digital counter is also provided in the same panel for added working safety of the machine.

The machine is provided with sturdy folding table on the left side of the machine to accommodate continuous specimen test during mass production testing.

The machine can also be provided with a Blanking system (optional) whereby 40 Kg/Sq. mm and up to 75 mm diameter can be blanked. Thicker sheets of lower tensile strength of smaller diameter can also be blanked. Blanking tools for other diameter can also be supplied on request.

High precision Electro -hydraulic and electronic controlled gear and overload protection valves for the hydraulic system makes the internal installation for correct, reliable and continuous functioning of the Testing Machine and as the working medium is hydraulic oil, the Testing Machine Model 92N suffers almost no wear. The accuracy which is essential to achieve consistent results is therefore maintained for a very long working life.

Specification

- Drawing force:
 - max. 30 kN (Model 92NML, sheets thickness up to 1.5mm)
 - max. 60 kN (Model 92NM, sheets thickness up to 3.5mm)
- Blank Holder Force: max. 12 kN
- Sheet holder force: 0 to 5 kN
- Drawing speed: max. 150 mm/min
- Punch stroke, max.: approx. 45 mm
- Indication of punch stroke: digital (Accuracy 0.1 mm, standard supply)
- Hydraulic tank capacity and HY. Oil: 5 Liters, ENCL - 57
- Dimensions: W 1066 mm X D 585 mm X H 1250 mm
- Net weight: approx. 300 kg
- Power supply: 400 V 3~, 50 Hz
- Power consumption: 0.50 kW

The Accessories

The Lloyds Testing Machine can be supplied with various tools and advancement to increase the spectrum of the test results and analysis to meet today's industrial demand.

Test Tools for the Cupping Test

Test tools for the ERICHSEN Cupping Test in accordance with DIN 50 101 and 50 102, on narrow strips and thicker sheet metal specimens

- ◆ Test Dies Set No. 40 according to DIN 510101 For sheets more than 90mm wide and from 2.0mm to 4.0 mm thick set comprises of clamping die and drawing die set.
- ◆ Capstan test die holder unit with magnifying glass for 40mm Ø
- ◆ Spare test dies set no : 27 according to DIN 510101 For sheet 90 mm wide and up to 2.0 mm thick. The set comprises of clamping die and drawing die.
- ◆ Test Dies Set & Drawing Tool No. 21 According To DIN510102 For Strips 55 mm – 90 mm Wide & 0.2 - 2.0 mm Thick, Ball Punch Dia 15 mm and Die Set Comprising Clamping Die and Drawing Die.
- ◆ Test Die Set and Drawing Tool No. 11 According to DIN 510102 For Strips 30 – 55 mm Wide & 0.2 – 1.0 mm Thick. Ball Punch Dia 8mm and Clamping Die and Drawing Die Set.
- ◆ Test Tools for the Deep Drawing Cup Test (available on request)
- ◆ Test Tools for the Deep Draw Bore Expanding Test (available on request)

Digital Microscope

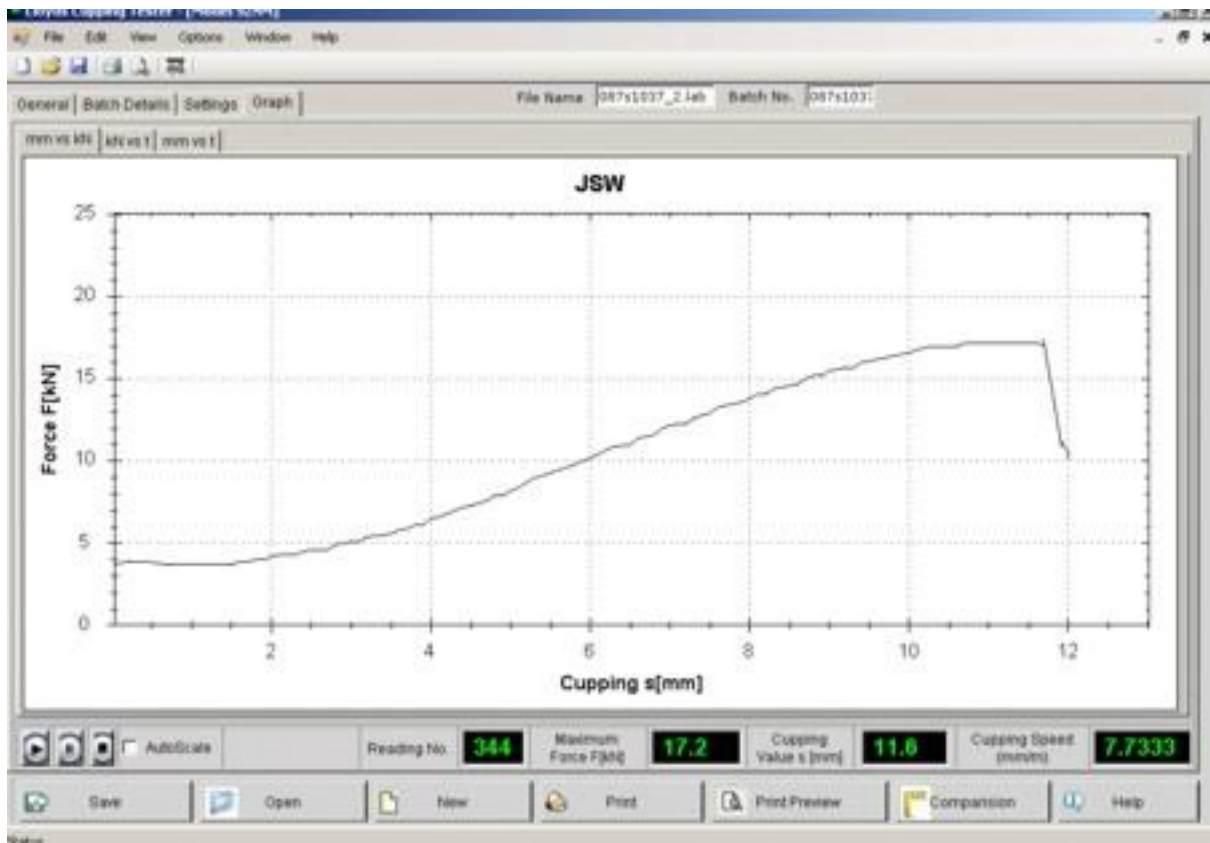
Special digital microscope up to 100X with holder and illumination for optical observation of the test procedure on PC. Additional special software for data storing facility on computer.

Data Acquisition System

Includes,

- ◆ Special Transducer for drawing force.
- ◆ Special Software for stroke movement and drawing force.
- ◆ Software under Windows (95 and above)

Data Acquisition Software



The Lloyds Cupping Test (in accordance with DIN 50 101 and DIN 50 102, and corresponding to national and international standards) is a test providing simple and quick means of assessing the multi-axis ductility of sheet and strip using a procedure that relates closely to practical processes. The depth range reached at failure is, however, only an initial guide to the valuation of the forming properties of the sheet metal.

The sheet metal testing machine Model 92 NM unlike all modern testing equipment of next generations can as an option be equipped with digital measuring outputs for drawing punch movement and Cupping force

These digital measuring signals are transmitted to a PC via an integrated amplifier and an A/D converter along with the latest generation microprocessor based electronics and a force/displacement diagram appears on the computer screen for further analysis.

The software enables the continuous acquisition of measured values with simultaneous display of the force vs. displacement diagram throughout the forming process.

Once the maximum force has been reached, the movement of the drawing punch is stopped automatically and Simultaneously during the measurement the peak cupping force, Speed and the cupping value up to the point of formation of neck for breaking is measured and evaluated in the software during the test operations.

This data is presented immediately on the computer screen on completion of the test alongside the graph of the force against displacement.

Advance features of the software enables the user to create and maintain database of the test result and also compare unlimited test results for future comparisons.