

TauroX[®]

TAPPING TORQUE TEST SYSTEM from MICROTAP USA, INC.

Rapid and Relevant Lubricant Testing

Machining performance is the main goal of all metalworking fluids but one of the most persistent challenges is how to measure product performance in the laboratory. Tribology equipment often uses time-consuming procedures and costly test pieces which depend on simulations rather than actual metalworking operations. The LT-120, utilizing an instrumented tapping machine from **Tauro**, provides researchers with test procedures that are economical to use, rapid to perform, and easy to analyze. The net result is that product modifications, manufacturing quality and comparative product performance can be quickly measured.



Advanced Reporting Capabilities

TauroLink software on an external PC controls LT-120 tap speed and torque limit while collecting, analyzing, and displaying torque and tap displacement data for each run. Repeat runs are automatically displayed and averaged after a specific number of runs. Results can be exported as image files for presentations or Excel compatible csv files for further analysis.

In compliance with and used exclusively in the development of ASTM D8288 Standard Test Method for Comparison of Metalworking Fluids Using a Tapping Torque Test Machine

State the Art Technology

In addition to PC control of critical variables, the Tauro tapping machine has a large color display with clear menus and prompts for rapid setup including separate procedures optimized for cutting or form tapping. Torque, tap depth and speed are continuously monitored. The LT-120 has multiple processors for improved control and data collection. One processor controls table positioning while a second controls the depth and a third controls tap speed and torque. Control is very fast with the torque measured constantly to stop the drive before a tap is broken or a work-piece is damaged due to high torque values.

Precise Measurement

MICROTAP's LT-120 features many improvements compared other tapping torque testers and to our previous models. The synchronous servo motor delivers high power with extremely smooth running performance at both high and low speeds. Torque is measured every millisecond giving rapid response and control. Vertical displacement of the tap is measured directly rather than estimated and is repeatable to 0.1 mm. Speed is regulated precisely at values as low as 50 rpm compared to 300 rpm in competitive machines. This insures the ability to perform in difficult test situations such as form tapping of stainless or tool steels. The X-Y autotable indexes with an accuracy of 30 microns to avoid misalignment from hole to hole. Test pieces have up to 120 holes to avoid sample variability during testing.

Tauro LT-120

Tribometer Tapping Unit

Description	Torque monitored tapping machine with continuous feedback to avoid tap or work-piece damage
Tap sizes	M2 – M12 (aluminum), M2 – M10 (stainless steel)
Torque range	0.30 – 12 Nm (continuously adjustable)
RPM range	50 – 2,400 rpm (continuously adjustable)
Spindle travel/thread depth	90/80 mm (3.54/3.15 in)
Depth accuracy	0.1 mm (0.004 in)
Spindle height adjust	Base to tool holder adjustable from 70 – 415 mm (2.8x16.3")
Automatic Spindle Feed	Pneumatic cylinder, 60-80 psig
Operation	Menu driven or PC controlled
Color LCD Unit	4.3" TFT
Digital I/O	3 inputs, 10 outputs
Built-in Languages	English, German, Spanish (others available upon request)
Units	Thread depth: mm/inch; Torque: N-m
Control programs	Thread cutting, thread forming, rethreading
Rotation	Right or left hand switchable
Reversal program	Variable speed
Other	Triggered relays for external control
Modular construction	Cable connection for tapping unit, controller, and display
Dimensions	Machine: 411 x 469 x 1085 mm (16.2"x 18.5"x 42.7") 65.5kg (144lbs) Controller: 220 x 400 x 400 mm (8.7"x 15.7"x 15.7") 17.2kg (38lbs)
Power requirements	230 V \pm 10%, 1.1kW, 1 phase, 48-62 Hz

X-Y autotable

Description	Two axis, point-point linear table with automatic position control for efficient multi-test evaluations; includes table, fixtures, stepper motor & drives, program controller.
Graphic Unit Interface	Onscreen graphic unit for operator control
Positioning accuracy	30 microns
Table dimensions	18" x 8"
Table range	12" x 4"
Fixtures	14" x 2" test bars
External control module	12" x 8" x 3"
Power requirements	100 – 240 VAC, 2 amp, single phase



Tauro Link Software

Description	Program for tapping unit control, data acquisition, analysis, presentation and export
Tapping unit control	Remote control of tapping unit including torque limits and rpm
Data acquisition	Torque and tap travel data with 1 ms sampling rate
Data analysis	Maximum, standard deviation and mean torque for each run or multiple runs calculated; mean torque curves plotted and analyzed against each other for comparative evaluations; bar graph comparisons of different groups of runs
Data presentation	Torque curve vs. tap depth curve automatically plotted for each run; mean curves from multiple test runs compared on a separate graph
Data storage	Data stored in Tauro tdg files which can be exported to bmp, jpg, png, and Excel CSV files
System requirements	Intel Pentium 3 or equal with 1 GHz - 1 GB RAM - 100 MB hard disk - Windows 7, 8, 10, 11

Supplies

Test bars	Standard bars are 14"x 2"x 1/2" with 72 to 120 through holes for M6 cutting or forming tap. Standard bars include aluminum (6061, 319, 356, 380), steel (1018, 1045, 4140), stainless (303, 304, 316), plus 6AL4V Titanium, Inconel, copper, CGI, and cast iron. Special orders are accommodated.
Taps and holders	Microtap USA, Inc. is an authorized distributor for YMW, Emuge and others.



MICROTAP USA
THREAD TAPPING TECHNOLOGY

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