



TM 200 / MDU 2 Cap Torque Tester

Precise measurement of torque
Suited for child-resistant closures
Universal bottle holder
Professional reporting including statistics

 **pharmatron**
Dr. Schleuniger®

TM 200 – Cap Torque Tester

The TM 200 is a torque measuring device specifically designed to precisely measure the opening torque and closing torque of bottle caps. Even child-resistant caps requiring downward force during the opening operation can be tested. For reporting and documentation, the measured data is sent to a printer or connected PC.



→ Motorized operation for highest precision:
TM 200 with optional MDU 2

Manual operation

The TM 200 can be operated stand-alone or in combination with the motorized drive unit MDU 2. Without the optional MDU 2, the operator manually turns the bottle cap and the torque is monitored throughout the procedure.



→ TM 200, Cap torque tester (without MDU 2)

Precision and Repeatability

The motorized drive unit MDU 2 ensures repeatable test conditions and eliminates inconsistencies that would otherwise occur with manual twisting of bottle caps. The MDU 2 is directly controlled by the TM 200. Caps can be automatically opened and closed with constant and repeatable velocity. For testing child-resistant caps, the MDU 2 exerts a defined downward force on the cap under test. This force can be precisely set and adjusted by the operator, once again ensuring repeatable test conditions.



→ MDU 2: Setting of downward force
for child-resistant bottle caps

Flexibility

The TM 200 is equipped with a universal bottle holder that accommodates anything from miniature sample bottles to large jugs. When using the MDU 2, a variety of quick-change cap adapters is available for different dimensions and shapes. Change-over is performed within seconds and without requiring any tools.

Molded cap adapters

Due to the fact that any additional pressure applied to the bottle cap may influence the torque reading, molded cap adapters are recommended whenever highest precision and repeatability is required. The adapter is custom-made to the specific shape of a cap and completely eliminates additional pressure typically caused by clamping or other cap fixtures.



→ Custom-made molded cap adapters

Universal cap adapters

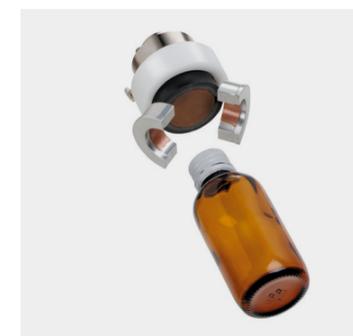
A universal membrane cap adapter can be utilized for caps with a flat top – minimizing the necessary number of adapters. Using 3 different standard sizes allows testing a wide range of different bottle caps.



→ Universal membrane cap adapters

Special cap adapters

In cases where tolerances of bottle caps prohibit using a molded cap adapter or universal cap adapter, a special cap adapter can be designed for your individual application and according to your testing requirements.



→ Special cap adapter

Simple Operation

The TM 200 allows programming of up to ten different products. For each test, up to 100 measurements can be stored. Using the optional TabStat™ Torque PC software not only makes the TM 200 easier to program, but also allows electronic data storage according to 21 CFR, Part 11 and batch evaluation. Test reports are automatically generated and can be exported as PDF or in Excel® compatible format.

Technical Specifications

TM 200, Cap torque tester		
Torque range		0 – 452 Ncm (0 – 40 lbin)
Unit of measure		Ncm, Nm, Kgcm, lbin, lboz
Bottle diameter range		20 – 220 mm (0.8 – 8.66 inch)
Test modes		Open/Close/Open & Close
Program capacity		10
Interfaces		RS 232
Housing		painted (standard) stainless steel (optional)
Power supply	EU-Standard	12VDC adapter, 230 V/50 Hz
	US-Standard	12VDC adapter, 115 V/60 Hz
Weight	(without packaging)	approx. 11.4 kg (25 lbs)
Dimensions	Width	285 mm (11.2 inch)
	Height	190 mm (7.5 inch)
	Depth	295 mm (11.6 inch)

MDU 2, Motorized drive unit		
Max. bottle height		330 mm (13 inch)
Test modes		Open / Close / Open & Close
Downward force	(for child-resistant bottle caps)	adjustable
Housing		painted (standard) stainless steel (optional)
Power supply		100 – 230 V, 50 – 60 Hz
Weight	(without packaging) (without packaging)	approx. 20.5 kg (45 lbs)
Dimensions	Width	260 mm (10.2 inch)
	Height	795 mm (31.3 inch)
	Depth	395 mm (15.6 inch)
CE Conformity		The TM 200 cap torque tester and MDU 2 motorized drive unit fully comply with all CE and EMC equipment guidelines relative to mechanical and electrical safety and electromagnetic compatibility.

Technical specifications are subject to change without prior notice. Products illustrated in this brochure may include options or modifications not fitted as standard. No liability for errors and omissions.

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