

# Automated Tapped Density Analyzers

**Autotap Series**



## Autotap



### PERFORMANCE

Stations	Autotap: 1 Dual Autotap: 2
Cylinder sizes	250 mL standard; 10 mL, 25 mL, 50 mL, 100 mL, 500 mL, 1000 mL optional 1000 mL requires auxillary Plate quick-change assembly (Material number: 193228)
Nominal tapping rate	260 min <sup>-1</sup>
Tapping (drop) height	3 mm (0.125 in)
Tap counter	1-999999
Display	LCD, automatic countdown
Platform rotation	Automatic
Sample weight limits	900 g (2 lb) with no effect on tapping rate 1800 g (4 lb) with 5 % reduction in tapping rate 2275 g (5 lb) with 15 % reduction in tapping rate
Controls	On/off, start, stop, counter reset
Lock	Keyed lock for digital counter

### ELECTRIC

Voltage	110 V to 120 V or 220 V to 240 V
Frequency	50 Hz/60 Hz
Power (max.)	150 VA
Connection	Grounded, single-phase outlet

### PHYSICAL

Height	175 mm (7 in) excluding cylinders
Width	540 mm (21 in)
Depth	280 mm (11 in)
Weight	Autotap: 11 kg (24 lb) Dual Autotap: 14 kg (31 lb)

# Tapped Density

The apparent bulk densities of powdered, granular, or flaked materials are dependent on how the particles are packed together due to cohesion and shape effects. Furthermore, handling or vibration of particulate material causes the smaller particles to work their way into the spaces between the larger particles.

The geometric space occupied by the powder decreases and its density increases. Ultimately, no further natural particle packing takes place without the addition of pressure and maximum particle packing is achieved. Under controlled conditions of tapping rate, tap force drop, and cylinder diameter, maximum packing efficiency is highly reproducible.

## **Measure apparent bulk density in a two-step process**

- Place a sample in a standard graduated cylinder and mount this on the universal tap platform (designed to accommodate cylinders from 10 mL to 500 mL).
- Note the initial volume and weight of the material and enter the number of taps. Tapping starts, and when the specified number of taps is completed, tapping stops automatically.

The Autotap rotates the cylinder during tapping, promoting a flat powder interface, which makes reading the powder surface clear and easy. If you do not know the material characteristics, you can specify step-wise tapping, while noting or graphing the results until the volume becomes constant.

This process lets you discover the proper number of taps (typically thousands, including a significant excess to account for future variability between samples) for the sample. Then, you can preset the number of taps on subsequent runs and go about your other work. Tapped density measurement is formalized in a number of international standards. Autotap and Dual Autotap conform to these standards.

1 Power switch

2 Graduated cylinder holder

3 Lock

4 Digital counter

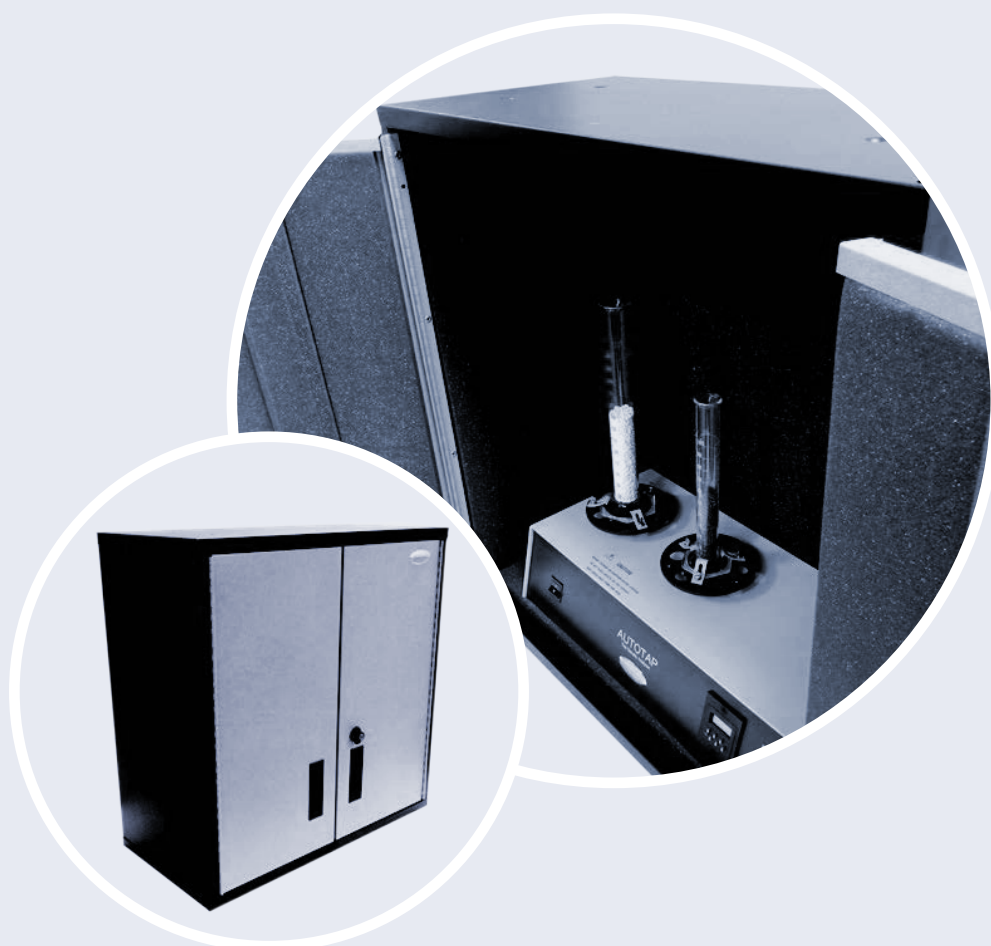
5 Stop button

6 Start button



### Noise reduction cabinet

A sound-insulated enclosure is available that accommodates either Autotap model. The noise from tapping can be reduced by up to 15 dBA (actual improvement depends on local factors such as bench material and ceiling height). The doors can be locked for added safety and security.



### Standards Suitability



ASTM B527	Metallic Powders	ISO 9161	Uranium Dioxide Powder
ASTM D4164	Formed Catalysts	JIS K5101-12-2	Pigments
ASTM D4781	Fine Catalysts	JIS Z 2512	Metallic Powders
IDF 134	Dried Milk	MPIF 46	Metal Powders
ISO 787-11	Pigments	USP < 616 > Method II	Pharmaceutical Powders
ISO 3953	Metallic Powders	USP < 616 > Method I	Pharmaceutical Powders
ISO 8460	Instant Coffee	JP 3.01 Part 2 Method 1	Pharmaceutical Powders
ISO 8967	Dried Milk	Ph. Eur. 6.8 Method 1	Pharmaceutical Powders

