Professional
Powder Equipment
Manufacturer

Powder Equipment
Milling Technology
Powder Materials

TENCAN

Product Brochure




PLANETARY BALL MILL SERIES

# Semi-Circular Vertical Planetary Ball Mill

## XQM-0.4A to XQM-16A

TENCAN
TENCAN POWDER

# Product Overview

High-efficiency, precision powder preparation for laboratory R&D







# Product Overview

Four-view product presentation and operating concept









The XQM-A series is a compact vertical planetary ball mill designed for fine grinding, mixing, homogenization, sample preparation, and small-batch process development. Four grinding jars are mounted on a planetary disc. During operation, the disc revolves while each jar rotates about its own axis, generating high-energy impact, friction, and shear between the grinding media and the sample.

The semi-circular housing provides convenient access to the grinding chamber and supports stable, low-noise laboratory operation. The system supports dry or wet grinding and, when equipped with compatible vacuum jars, vacuum or inert-atmosphere processing.

# Key Components

Functional details that support efficient and repeatable grinding



01

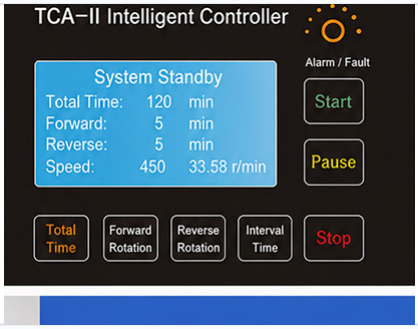
## Four-Jar Grinding

Processes up to four samples in parallel for higher throughput and repeatable comparative testing.

02

## Programmable Controller

Variable-frequency speed control with total-time and forward/reverse interval settings.






03

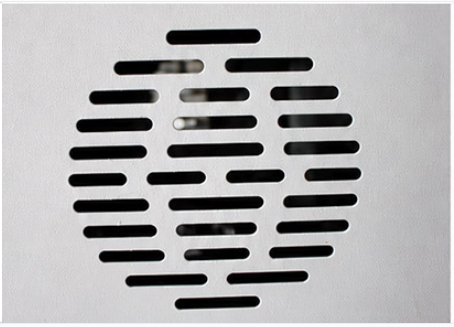
## Viewing Window

Allows the operator to observe the grinding chamber without opening the safety cover.

04

## Forced-Air Ventilation

Supports heat dissipation and stable operation during extended grinding cycles.



# Applications

Laboratory powder processing across research and quality-control workflows

The XQM-A series is designed for laboratory mixing, fine grinding, sample preparation, formulation development, and small-batch process trials. Four samples can be processed in one run, while compatible vacuum jars enable atmosphere-controlled grinding for oxygen-sensitive materials.

### 01 Materials Science

Nanomaterials, composites, catalysts, and ultrafine metal or non-metal powders.

### 02 Batteries & Electronics

Electrode powders, ferrites, dielectric ceramics, MLCC materials, and related functional powders.

### 03 Ceramics & Glass

Alumina, zirconia, electronic ceramics, glaze materials, and ceramic slurry preparation.

### 04 Geology & Mining

Ores, minerals, soil, and geological samples for analytical preparation and process testing.

### 05 Chemicals & Pharmaceuticals

Fine chemicals, pigments, formulation blending, and selected pharmaceutical sample preparation.

### 06 Environmental & Agricultural

Soil, plant, and agricultural samples prior to laboratory analysis and quality testing.

# Basic Configuration

Standard XQM-A series capacities, jar options, weights, and dimensions

| Model | Nominal capacity | Compatible jar volume | Qty. | Compatible vacuum jar volume | Net weight (kg) | Dimensions (W × D × H, mm) |
|---|---|---|---|---|---|---|
| XQM-0.4A | 0.4 L | 25-100 mL | 4 | 50 mL | 29 | 500 × 300 × 340 |
| XQM-1A | 1 L | 50-250 mL | 4 | 50-100 mL | 85 | 760 × 470 × 600 |
| XQM-2A | 2 L | 50-500 mL | 4 | 50-250 mL | 85 | 760 × 470 × 600 |
| XQM-4A | 4 L | 250-1000 mL | 4 | 50-500 mL | 85 | 760 × 470 × 600 |
| XQM-6A | 6 L | 1-1.5 L | 4 | 50-1000 mL | 85 | 760 × 470 × 600 |
| XQM-8A | 8 L | 1-2 L | 4 | 50-1500 mL | 150 | 880 × 560 × 642 |
| XQM-10A | 10 L | 1-2.5 L | 4 | 1-2 L | 150 | 880 × 560 × 642 |
| XQM-12A | 12 L | 1-3 L | 4 | 1-2 L | 150 | 880 × 560 × 642 |
| XQM-16A | 16 L | 2-4 L | 4 | 1-3 L | 205 | 950 × 600 × 710 |

### Configuration notes

- Nominal capacity is the combined capacity of the four matched grinding jars.
- Vacuum-jar availability depends on jar material, seal design, and selected volume.
- Dimensions are shown as width × depth × height; customized electrical configurations may vary.

# Performance Parameters

Drive, control, speed, and noise specifications

## Drive & Control

| Model | Power supply | Phase | Motor power | Speed control | Total time (min) | F/R interval (min) |
|---|---|---|---|---|---|---|
| XQM-0.4A | 220 V / 50 Hz | Single | 0.25 kW | Variable frequency | 1-9999 | 1-999 |
| XQM-1A | 220 V / 50 Hz | Single | 0.75 kW | Variable frequency | 1-9999 | 1-999 |
| XQM-2A | 220 V / 50 Hz | Single | 0.75 kW | Variable frequency | 1-9999 | 1-999 |
| XQM-4A | 220 V / 50 Hz | Single | 0.75 kW | Variable frequency | 1-9999 | 1-999 |
| XQM-6A | 220 V / 50 Hz | Single | 0.75 kW | Variable frequency | 1-9999 | 1-999 |
| XQM-8A | 220 V / 50 Hz | Single | 1.5 kW | Variable frequency | 1-9999 | 1-999 |
| XQM-10A | 220 V / 50 Hz | Single | 1.5 kW | Variable frequency | 1-9999 | 1-999 |
| XQM-12A | 220 V / 50 Hz | Single | 1.5 kW | Variable frequency | 1-9999 | 1-999 |
| XQM-16A | 380 V / 50 Hz | Three-phase | 3 kW | Variable frequency | 1-9999 | 1-999 |

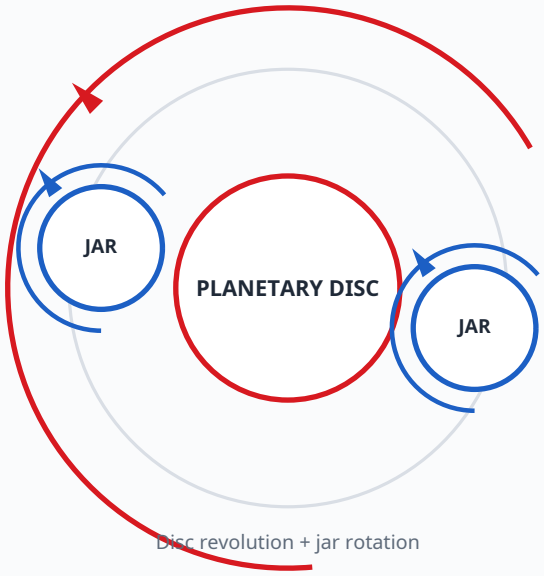
## Speed & Noise

| Model | Planetary disc speed (rpm) | Grinding jar speed (rpm) | Speed ratio | Noise (dB) |
|---|---|---|---|---|
| XQM-0.4A | 0-435 | 0-870 | 1:2 | 58 ± 5 |
| XQM-1A | 0-405 | 0-810 | 1:2 | 60 ± 5 |
| XQM-2A | 0-405 | 0-810 | 1:2 | 60 ± 5 |
| XQM-4A | 0-405 | 0-810 | 1:2 | 60 ± 5 |
| XQM-6A | 0-335 | 0-670 | 1:2 | 60 ± 5 |
| XQM-8A | 0-290 | 0-580 | 1:2 | 60 ± 5 |
| XQM-10A | 0-290 | 0-580 | 1:2 | 60 ± 5 |
| XQM-12A | 0-290 | 0-580 | 1:2 | 60 ± 5 |
| XQM-16A | 0-255 | 0-510 | 1:2 | 65 ± 5 |

Note: Achievable fineness and grinding efficiency depend on jar size, grinding-media material and size, sample properties, filling ratio, rotational speed, and process time.

# Working Principle

Planetary revolution and jar rotation create high-energy impact, friction, and shear




Disc revolution + jar rotation

## Three-stage grinding action

**1 Revolution**

The planetary disc rotates around the central drive axis.

**2 Rotation**

Each grinding jar simultaneously rotates about its own axis.

**3 Size Reduction**

Grinding media repeatedly impact and shear the sample, promoting fine grinding and homogenization.

## Key Features

### Dry & Wet Grinding

Flexible processing for powders, slurries, and formulation trials.

### Atmosphere Control

Vacuum or inert-gas grinding with compatible vacuum jars.

### Programmable Operation

Variable-frequency speed control and timed forward/reverse cycles.

### Four-Jar Processing

Parallel preparation of up to four samples in one grinding run.

### Safety Protection

Safety interlock, overload protection, and emergency stop.

### Jar Material Options

Stainless steel, zirconia, alumina, agate, nylon, PU, PTFE, and tungsten carbide.

# Product Display

Front-open view of the XQM-A semi-circular vertical planetary ball mill



## XQM-A SERIES

Four-jar laboratory planetary grinding platform

# Structural Design & Technical Advantages

Stable construction, convenient jar access, and programmable operation



## Structural Design

- Semi-circular steel housing provides convenient access to the grinding chamber.
- CNC-machined components and an integrally cast planetary disc support stable operation.
- Precision transmission components help reduce vibration and operating noise.
- Quick-lock jar clamping simplifies loading, unloading, and routine cleaning.

## Control & Repeatability

- Stepless variable-frequency speed adjustment across the model range.
- Programmable forward/reverse cycling promotes more uniform grinding.
- Total operating time can be set from 1 to 9999 minutes.
- A 1:2 disc-to-jar speed ratio provides consistent planetary motion.

# Safety, Accessories & Customization

Configure the system around your sample, contamination limits, and process conditions

## 01 Safety Features

- Safety-cover interlock prevents operation when the cover is open.
- Motor overload protection and emergency-stop function.
- Enclosed low-noise design with forced-air ventilation for stable operation.

## 02 Accessories

- Grinding jars and media in 304/316L stainless steel, zirconia, alumina, agate, nylon, PU, PTFE, and tungsten carbide.
- Vacuum jars for oxygen-sensitive, volatile, or atmosphere-controlled processing.
- Matched seals, clamps, jar fixtures, and spare wear parts.

## 03 Customization

- Voltage, frequency, and plug configuration for the destination market.
- Jar material, capacity, grinding-media package, and process-specific accessories.
- Application testing and model-selection support for target fineness and batch size.

## Application Support & Model Selection

Contact TENCAN for jar/material compatibility, sample testing, and process recommendations.

**https://www.planetaryballmills.com | WhatsApp: 15802613356 | Email: 1956944928@qq.com**