

# Planetary Ball Mills

## Introduction

ND series planetary ball mills could grind or mix solid particles of different granularities and materials, suspensions, and pastes with both dry and wet methods. If a vacuum ball milling tank is used, it will be possible to grind and mix samples in vacuum or inert gases. This lab model provides efficient grinding for superior results up to the nano level, more specifically 30 nm (0.03  $\mu\text{m}$ ) according to feedback of users. They are widely used in such fields as geology, metallurgy, soil, building materials, chemical industry, light industry, medicine, electronics, porcelain, battery, environmental protection, and so on.

The planetary Ball Mill performs mixing by continually revolving the sun wheel and rotating the grinding jars concurrently. Both the wheel revolution (centrifugal) speed and jar rotation (planetary) speed are independently

adjustable. This unique mixing capability allows the operator to design precise solutions for various mixing situations. To further improve mixing efficiency, grinding media are added into the grinding jars. Our machines are built in such a way that the strict weight balancing is not required.

## Advantages

- Efficient grinding for superior results up to 0.1 $\mu\text{m}$
- Adjustable speed ratios
- Operation at regular intervals: To prevent the property and quality of the milling materials being affected by overheating, this machine could automatically work in the mode of "operation-shutdown-reoperation"
- Reliable for continuous use
- No strict weight balancing required

## TECHNICAL PARAMETERS

Standard Grinding Jars	50ml, 100ml, 250ml, 300ml, 400ml, 500ml, 1L, 2L, 3L, 4L, 5L
Jar Material	Stainless Steel, Stainless Steel-Vacuum Insulated, Agate, Alumina 99.95%, Nylon, Teflon, Tungsten Carbide, Zirconia
Maximum Charge of Ball Milling Tank	Three-fourths of the cubage of the tank (including milling balls)
Feed Size	<10mm (depending on feed material and instrument configuration/settings)
Final Fineness	<1 $\mu\text{m}$ ; for colloidal grinding <0.1 $\mu\text{m}$
Speed Ratio	1:-2 (the grinding jar rotates twice for each sun wheel rotation)
Operation Model	Mill is controlled by frequency converter and has a total of five operation modes 1) Uni-direction operation with shutdown at non-fixed time; 2) Uni-direction operation with shutdown at fixed time; 3) Automatic direction reversal operation with shutdown at fixed time; 4) Operation at regular intervals with shutdown at fixed time; 5) Direction reversal operation and operation at intervals with shutdown at fixed time.
Noise Level	$\leq 70\text{dB}$

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## MODELS

Models	ND 0.4L	ND 2L	ND 4L	ND 12L	ND 20L
Capacity	4x0.1 Liters	4x0.5 Liters	4x1.0 Liters	4x3.0 Liters	4x5.0 Liters
Centrifugal Speed (rpm)	0-300	0-285	0-260	0-215	0-135
Planetary Speed (rpm)	0-600	0-575	0-525	0-430	0-275
Motor Power (kW)	0.55	0.75	1.5	4	5.5

## GRINDING JARS AND MEDIA

Grinding Jar Material/Jar Volume	50ml	100ml	150ml	250ml	300ml	400ml	500ml	1L	2L	3L	4L	5L
Stainless Steel	√	√	√	√	√	√	√	√	√	√	√	√
Stainless Steel - Vacuum Insulated	√	√	√	√	√		√	√	√		√	
Agate	√	√	√	√	√	√	√	√	√	√	√	√
Alumina 99.95%	√	√		√			√	√	√	√	√	√
Nylon	√	√	√	√	√	√	√	√	√	√	√	√
Teflon	√	√	√	√			√	√		√	√	√
Tungsten Carbide		√		√								
Zirconia	√	√		√			√					

Grinding balls are available 6mm, 10mm, and 20mm in diameter.

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