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VWR™ INTERNATIONAL

Instruction Manual



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Package Contents

Orbital Shaker
Instruction manual
Non-skid rubber mat
Power Cord

Care and Handling

Upon receiving your Orbital Shaker, check the outside packaging to ensure that no damage has occurred in shipment. If damage is noticed, notify the carrier immediately and file a shipping claim.

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Maintenance & Servicing

Your Orbital Shaker is built for long, trouble-free, dependable service. No lubrication or other technical user-maintenance is required. However, at least every three months you should:

- UNPLUG THE UNIT
- Remove any accumulated dirt from the base and platform
- Check all controls and accessible items to make sure they are properly tightened
- Tighten any item that is loose

Environmental Conditions

Non-Operating Storage:

Temperature:	-20 to 65°C (-4 to 149°F)
Humidity:	20% to 85% RH, non-condensing

Operating Conditions: Indoor use only

Temperature:	10 to 40°C (50 to 104°F)
Humidity:	20% to 85% RH, non-condensing
Altitude:	0 to 6,562 ft. (2000M) above sea level

Installation Category II and pollution degree 2 in accordance with IEC 664

Safety Instructions



Warning
Do not use Orbital Shaker in a hazardous atmosphere or with hazardous materials for which the unit was not designed. Also, the user should be aware that the protection provided by the equipment might be impaired if used with accessories not provided or recommended by manufacturer, or used in a manner not specified by the manufacturer.



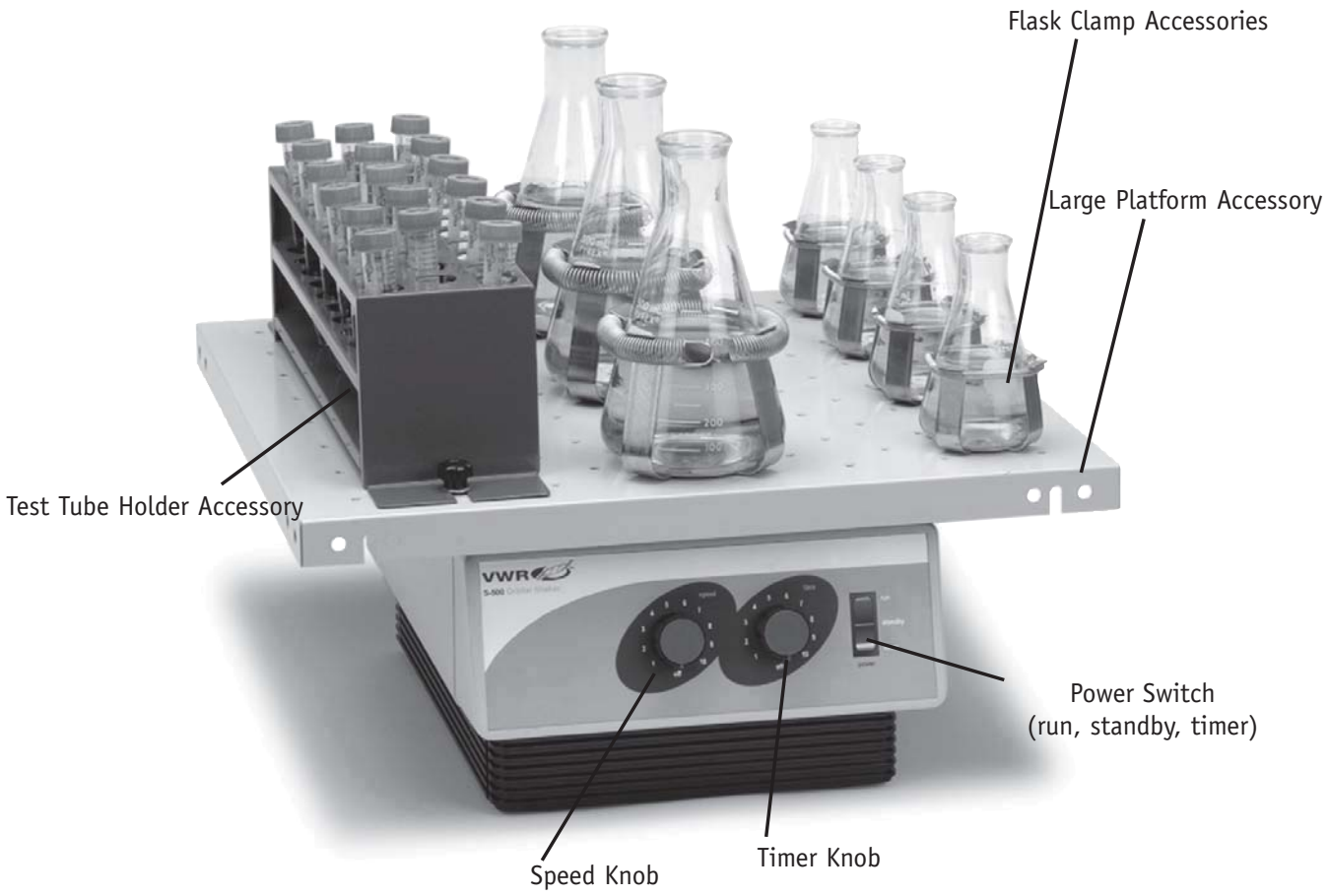
Warning
Wipe up spills immediately to prevent electrical shock. Unplug from power before cleaning and do not operate until clean up is complete. DO NOT immerse.



Warning
Do not operate the unit if it shows signs of electrical or mechanical damage.

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OS-500
Orbital Shaker



Weight Capacity:	approx. 35 lbs (16kg) at 75 rpm approx. 5 lbs (2.3kg) at 500 rpm
Orbit:	.75" (1.9cm)
Speed Range:	25 to 500 rpm
Operating Temp:	4°C to 40°C
Voltage:	120 volts AC, 50/60 hertz 230 volts AC, 50/60 hertz
Current:	Less than 1 amp
Fuses:	120v - 2 - 5 amp 5 x 20mm quick acting 230v - 2 - 5 amp 5 x 20mm quick acting
Power:	120 watts
Controls:	On/Off Switch Speed Knob, variable 1 to 10 markings Timer Knob, variable 1 to 10 markings
Timer:	Timer runs from 1 to 120 minutes
Dimensions:	7¼"H x 10"W x 15"D (18.0cmH x 27.3cmW x 38cmD)
Ship weight:	50 lbs (23kg)

Pictured with optional accessories shown on page 13-15

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Introduction

The 120v and 230v units are supplied with a 3-prong power cord that should be plugged into a standard 3-prong grounded outlet. If the cord supplied does not meet your needs, please use an approved power cord that suits local codes and electrical supply.

Operating Instructions

1. Please familiarize yourself with the features and operation completely before operating the unit.
2. Be sure the power switch is in the standby position. On the 230v shaker, an additional "Power Switch" is located on the back of the unit. This switch should be in the off position.
3. Plug the cord into a properly grounded three pronged outlet.
4. Your Orbital Shaker is ready for use.
5. If this is the first time use for this unit, be sure the speed knob and timer knob are set to the off position.
6. To run in continuous mode, push rocker switch to the run position. Slowly turn speed control knob to desired speed. Unit will run until you move rocker switch to the standby position. When the test is complete, press the rocker switch to the standby position. To start the next test, begin by turning the speed knob to the 1 position.
7. To run in timed mode, set timer to desired time. Turn the speed knob to the 1 position. Press the rocker to the timed position and release. Slowly turn speed knob to desired speed, the shaker will run for the set time.

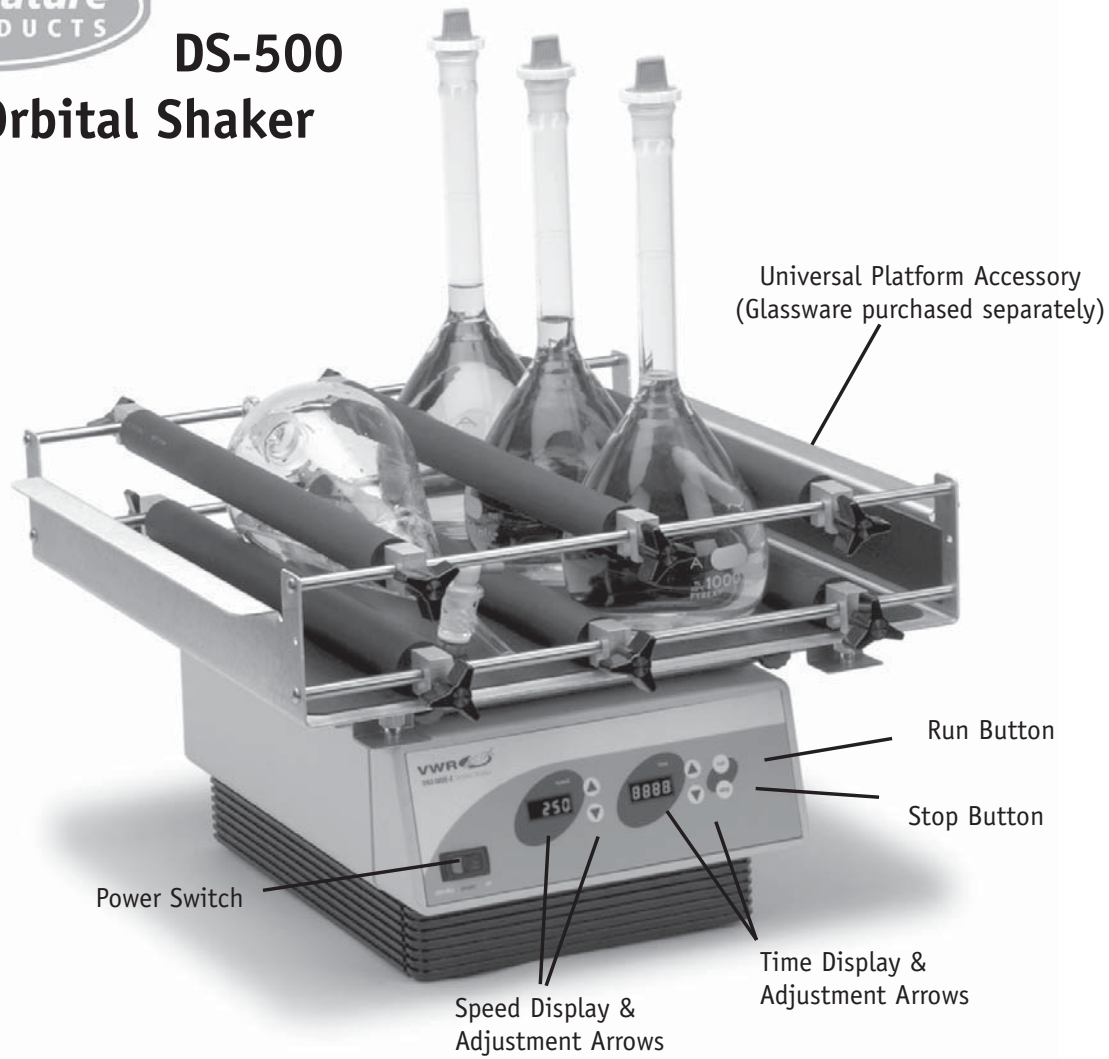
Operation Notes:

Two 5 amp fuses prevent damage to the motor or electronics.

The Orbital Shaker is designed to be balanced with the standard platform attached (platform weight is 3 lbs). At higher speeds, 200rpm and above, the shaker should be run with this weight as a minimum, on stable surface, for maximum stability.

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DS-500
Digital Orbital Shaker



pictured with optional accessories shown on page 13-15

Weight Capacity:	approx. 35 lbs. (16kg) at 75 rpm approx. 5 lbs. (2.3kg) at 500 rpm
Orbit:	.75" (1.9cm)
Speed Range:	25 to 500 rpm
Operating Temp:	4°C to 40°C
Voltage:	120 volts AC, 50/60 hertz 230 volts AC, 50/60 hertz
Current:	Less than 1 amp
Fuses:	120v - 2 - 5 amp 5 x 20mm quick acting 230v - 2 - 5 amp 5 x 20mm quick acting
Power:	120 watts
Controls:	On/Off switch LED display for Time/Speed, Up/Down Keypad for setpoint control Run/Stop keypad
Timer:	Digital, 1 second to 9999 minutes (increased in 1 second increments)
Dimensions:	7¼"H x 10"W x 15"D (18.0cmH x 27.3cmW x 38.0cmD)
Ship weight:	50 lbs. (23kg)

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Introduction

The 120v and 230v units are supplied with a 3-prong power cord that should be plugged into a standard 3-prong grounded outlet. If the cord supplied does not meet your needs, please use an approved power cord that suits local codes and electrical supply.

Operating Instruction

1. Please familiarize yourself with the features and operation completely before operating the unit.
2. Be sure the power switch is in the off position.
3. Plug the cord into a properly grounded three pronged outlet.
4. Your Orbital Shaker is ready for use.
5. Turn the Power on by depressing the left side of the rocker switch on the bottom left side of the control panel. LED displays for speed and timer will light.
6. Set speed by pressing the Up/Down arrows to the right of the speed display until you reach the desired speed. Adjust time using the Up/Down arrows to the right of the timer display. Press the run button. Timer LED will display time remaining.
7. To run in the un-timed mode, set the time to zero (0) using the Up/Down arrows to the right of the timer display. Press the run button and the unit will run until you press the stop button. Timer LED will display accumulated time.

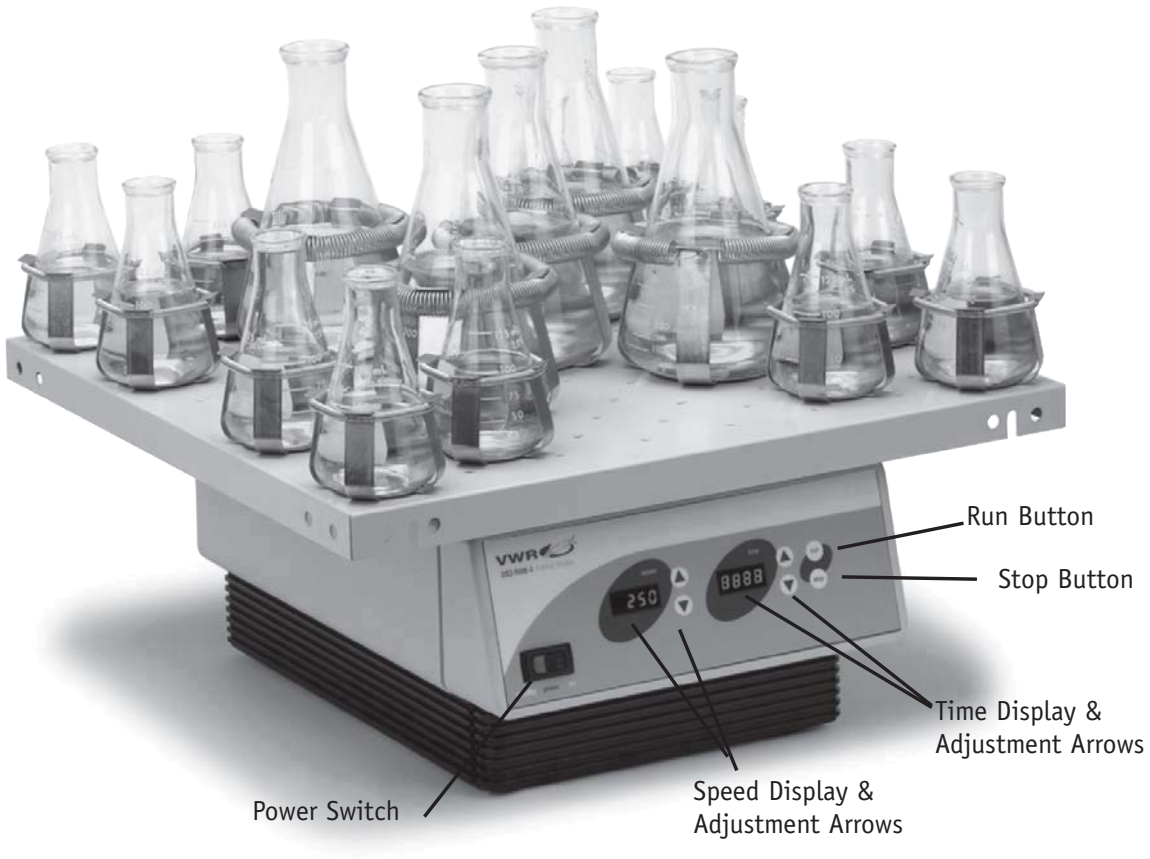
Operation Notes

Your Orbital Shaker automatically restarts after a power interruption. Built-in memory maintains time and speed settings during a power interruption.

The Orbital Shaker is designed to be balanced with the large platform attached (platform weight is 3 lbs). At the higher speeds, 200 rpm and above, the shaker should be run with this weight as a minimum, on a stable surface for maximum stability.

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DS-500E
Heavy-Duty Orbital Shaker



Pictured with optional accessories shown on page 13-15

Weight Capacity:	Approx. 50 lbs (22kg) at 200 rpm Approx. 10 lbs (4.5kg) at 500 rpm
Orbit:	.75" (1.9cm)
Speed Range:	25 to 500 rpm
Operating Temp:	4°C to 40°C
Voltage:	120 volts AC, 50/60 hertz 230 volts AC, 50/60 hertz
Current:	Less than 1 amp
Fuses:	120v - 2 - 5 amp 5 x 20mm quick acting 230v - 2 - 5 amp 5 x 20mm quick acting
Power:	120 watts
Controls:	On/Off switch LED display for Time/Speed, up/down Keypad for setpoint control Run/Stop keypad
Timer:	Digital, 1 second to 9999 minutes (increased in 1 second increments)
Dimensions:	10 3/4" x 15" x 7 1/4" (27.3W x 38D x 18.8H cm)
Ship Weight:	75 lbs (34kg)

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Introduction

The 120v and 230v units are supplied with a 3-prong power cord that should be plugged into a standard 3-prong grounded outlet. If the cord supplied does not meet your needs, please use an approved power cord that suits local codes and electrical supply.

The orbital shaker is equipped with an RS232 serial interface, which is used to monitor and/or control the shaker. Please contact your VWR International representative for more information.

Operating Instructions

1. Please familiarize yourself with the features and operation completely before operating the unit.
2. Be sure the power switch is in the off position.
3. Plug the cord into a properly grounded three pronged outlet.
4. Your Orbital Shaker is ready for use.
5. Turn the Power on by depressing the left side of the rocker switch on the bottom left side of the control panel. LED displays for speed and timer will light.
6. Set speed by pressing the Up/Down arrows to the right of the speed display until you reach the desired speed. Adjust time using the Up/Down arrows to the right of the timer display. Press the run button. Timer LED will display time remaining.
7. To run in the un-timed mode, set the time to zero (0) using the Up/Down arrows to the right of the timer display. Press the run button and the unit will run until you press the stop button. Timer LED will display accumulated time.

Operation Notes:

Your Orbital Shaker automatically restarts after a power interruption. Built-in memory maintains time & speed settings during a power interruption.

The Orbital Shaker is designed to be balanced with the large platform attached. At the higher speeds, 200 rpm and above, the shaker should be run with this weight as a minimum, on stable surface, for maximum stability.

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DS2-500-1
DS2-500-2
Large Heavy-Duty Digital Orbital Shaker


shown as purchased

Weight Capacity:
DS2-500-1:
110 lbs (49kg) at 25 rpm
40 lbs (18kg) at 400 rpm
DS2-500-2:
110 lbs (49kg) at 25 rpm
40 lbs (18kg) at 200 rpm

Orbit: DS2-500-1: 1" (25.4mm)
DS2-500-2: 2" (51.0mm)

Speed Range:
DS2-500-1: 25 to 500 rpm
DS2-500-2: 25 to 300 rpm

Operating Temp: 4°C to 40°C

Voltage: 120 volts AC, 50/60 hertz
230 volts AC, 50/60 hertz

Current: Less than 1 amp

Fuses: 120v - 2 - 5 amp 5 x 20mm quick acting
230v - 2 - 5 amp 5 x 20mm quick acting

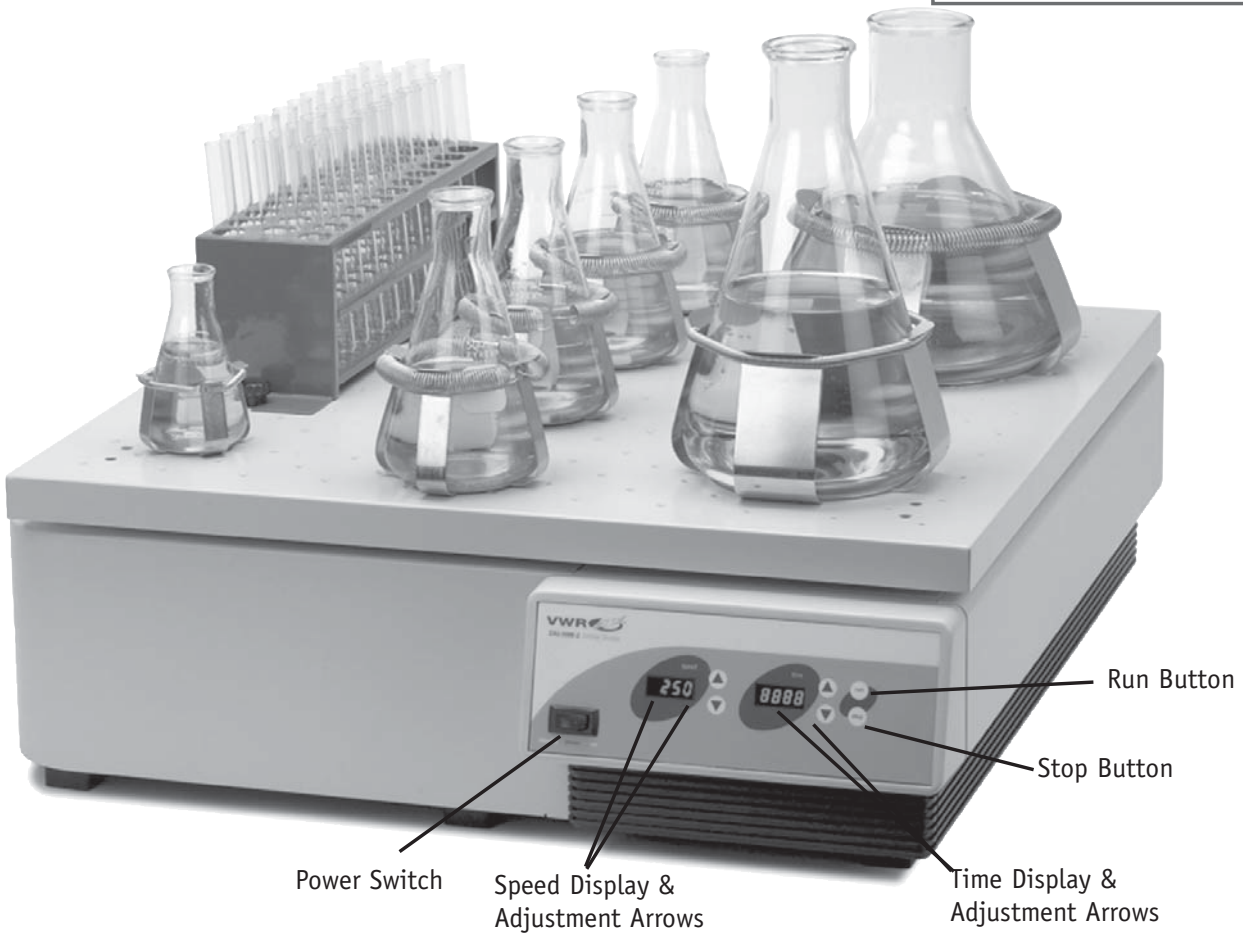
Power: 120 watts

Controls: On/Off switch
LED display for Time/Speed, Up/Down
Keypad for setpoint control
Run/Stop keypad

Timer: Digital, 1 second to 9999 minutes
(increased in 1 second increments)

Dimensions: 25" x 28" x 8"
(63.5W x 71.1D x 20.3H cm)

Ship weight: 200 lbs (90kg)



Pictured with optional accessories shown on page 13-15

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Introduction

The 120v and 230v units are supplied with a 3-prong power cord that should be plugged into a standard 3-prong grounded outlet. If the cord supplied does not meet your needs, please use an approved power cord that suits local codes and electrical supply.

The orbital shaker is equipped with an RS232 serial interface, which is used to monitor and/or control the shaker. Please contact your VWR International representative for more information.

Operating Instructions

1. Please familiarize yourself with the features and operation completely before operating the unit.
2. Be sure the power switch is in the off position.
3. Plug the cord into a properly grounded three pronged outlet.
4. Your Orbital Shaker is ready for use.
5. Turn the Power on by depressing the left side of the rocker switch on the bottom left side of the control panel. LED displays for speed and timer will light.
6. Set speed by pressing the Up/Down arrows to the right of the speed display until you reach the desired speed. Adjust Time using the Up/Down arrows to the right of the timer display. Press the run button. Timer LED will display time remaining.
7. To run in the un-timed mode, set the time to zero (0) using the Up/Down arrows to the right of the timer display. Press the run button and the unit will run until you press the stop button. Timer LED will display accumulated time.

Operation Notes:

A built-in program will shut power off to the motor if the table top is prevented from rotating, or the unit is overloaded.

Your Orbital Shaker automatically restarts after a power interruption. Built-in memory maintains time & speed settings during a power interruption.

This Orbital Shaker is optimally balanced with the 24" x 24" platform attached and 40 lbs of accessories. At higher speeds, the shaker should be run with this weight as a minimum, on stable surface for maximum stability.

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DS2-500E-1
DS2-500E-2
Large High Performance Digital Orbital Shaker



shown as purchased

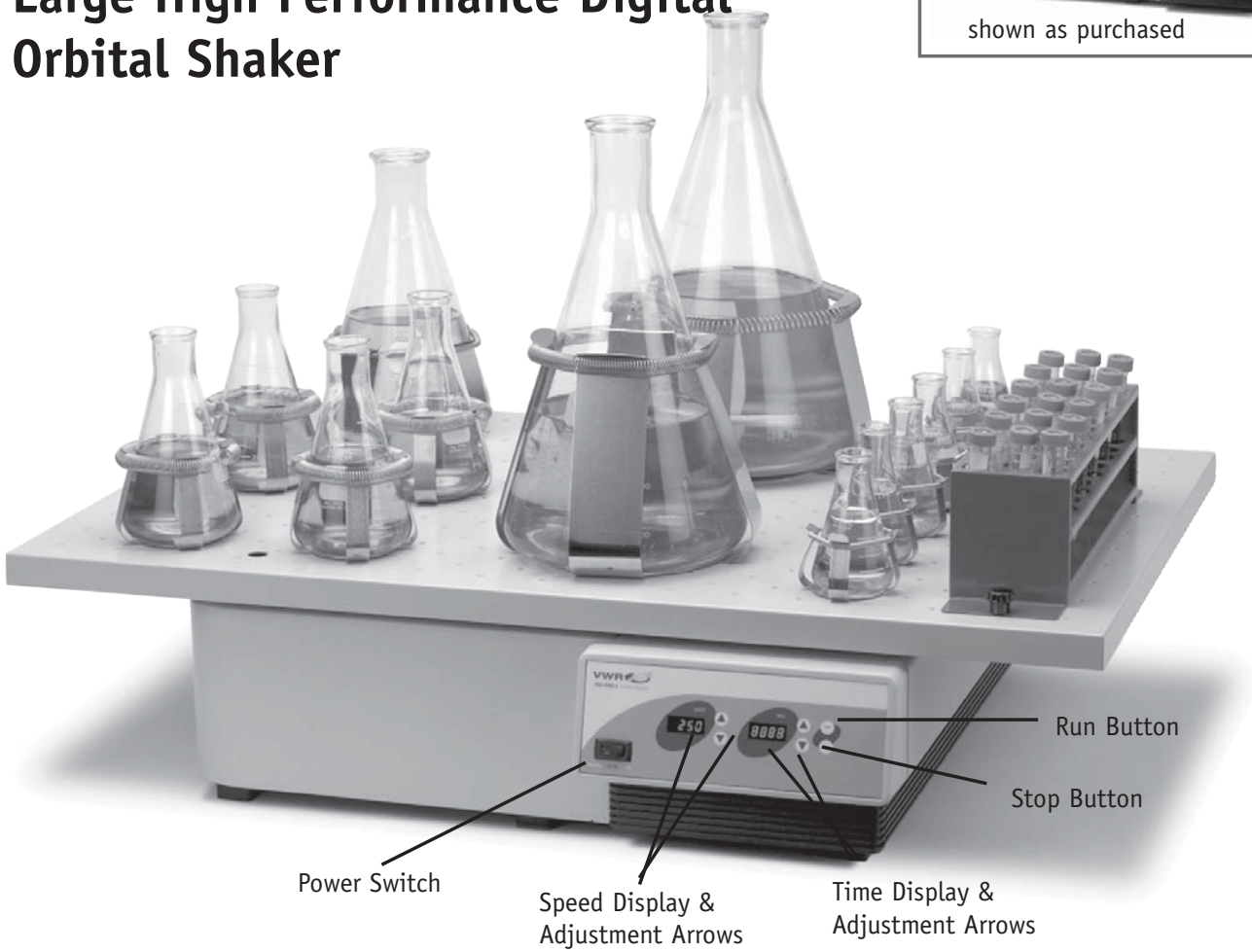
Weight capacity:
DS2-500E-1: 160 lbs (72kg) at 25 rpm
60 lbs (27kg) at 250 rpm
DS2-500E-2: 160 lbs (29kg) at 25 rpm
60 lbs (27kg) at 175 rpm

Orbit:
DS2-500E-1: 1" (25.4mm)
DS2-500E-2: 2" (51.0mm)

Speed Range:
DS2-500E-1: 25 to 500 rpm
DS2-500E-2: 25 to 300 rpm

Operating Temp: 4°C to 40°C

Voltage:	120 volts AC, 50/60 hertz
Current:	Less than 1 amp
Fuses:	120v - 2 - 5 amp 5 x 20mm quick acting 220v - 2 - 5 amp 5 x 20mm quick acting
Power:	120 watts
Controls:	On/Off switch LED display for Time/Speed, Up/Down Keypad for setpoint control Run/Stop keypad
Timer:	Digital, 1 second to 9999 minutes (increased in 1 second increments)
Dimensions:	25" x 28" x 8" (63.5W x 71.1D x 20.3H cm)
Ship Weight:	230 lbs (104 kg)



Pictured with optional accessories shown on page 13-15

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Introduction

The 120v and 230v units are supplied with a 3-prong power cord that should be plugged into a standard 3-prong grounded outlet. If the cord supplied does not meet your needs, please use an approved power cord that suits local codes and electrical supply.

The orbital shaker is equipped with an RS232 serial interface, which is used to monitor and/or control the shaker. Please contact your VWR International representative for more information.

Operating Instructions

1. Please familiarize yourself with the features and operation completely before operating the unit.
2. Be sure the power switch is in the off position.
3. Plug the cord into a properly grounded three pronged outlet.
4. Your Orbital Shaker is ready for use.
5. Turn the power on by depressing the left side of the rocker switch on the bottom left side of the control panel. LED displays for speed and timer will light.
6. Set speed by pressing the Up/Down arrows to the right of the speed display until you reach the desired speed. Adjust time using the Up/Down arrows to the right of the timer display. Press the run button. Timer LED will display time remaining.
7. To run in the un-timed mode, set the time to zero (0) using the Up/Down arrows to the right of the timer display. Press the run button and the unit will run until you press the stop button. Timer LED will display accumulated time.

Operation Notes:

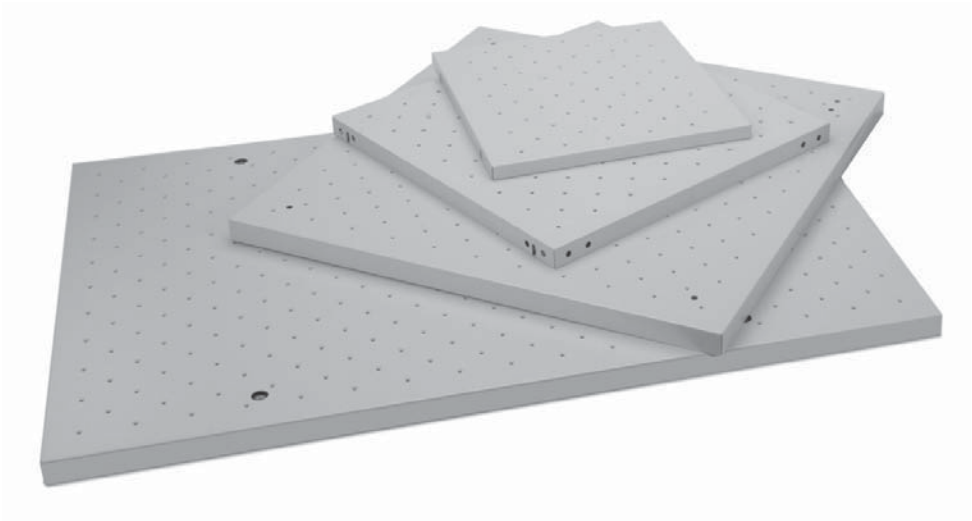
A Built-in program will shut power off to the motor if the table top is prevented from rotating, or the unit is overloaded.

Your Orbital Shaker automatically restarts after a power interruption. Built-in memory maintains time & speed settings during a power interruption.

This Orbital Shaker is optimally balanced with the 24" x 36" platform and 60 lbs of accessories attached. At higher speeds, the shaker should be run with this weight as a minimum, on stable surface, for maximum stability.

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ACCESSORIES



PLATFORMS

Description	Description
Small Platform (13" x 13")	X-Large Platform (24" x 24")
Large Platform (18" x 18")	Jumbo Platform (24" x 36")
Double Tier Braces (for stacking 18"x18" platform)	Universal Platform (13" x 14")

Caution - Install platforms on shakers before adding flask clamps tube racks or other accessories. 2 people may be needed for installation of X-large and Jumbo platforms.

Caution - When using platform accessories, tighten mounting screws periodically. **IF EXCESSIVE NOISE OCCURS WHILE RUNNING UNIT**, stop immediately and check mounting screw tightness.

Installation for Small and Large Platforms

The black pad does not have to be removed. Loosen the four knobs on the shaker approximately 1/4". Place platform on shaker by aligning the slots on the bottom (underside) of the platform to the knobs, slide the platform over the knobs on the shaker. When aligned, hand-tighten the four knobs. DO NOT OVER-TIGHTEN.

Installation for X-Large and Jumbo Platforms

Remove black pad before mounting platforms on trays. Line up platform to installation holes on tray. Carefully place platform on tray. (hold platform with palms on outside of tray). Tighten screws into mounting holes.

Platform Usage Chart

	OS-500	DS-500	DS-500E	DS2-500	DS2-500E
Standard Platform (13" x 13")	X	X	X		
Large Platform (18" x 18")	X	X	X		
X-Large Platform (24" x 24")				X	
Jumbo Platform (24" x 36")					X
Universal Platform (13" x 14")	X	X	X	X	X

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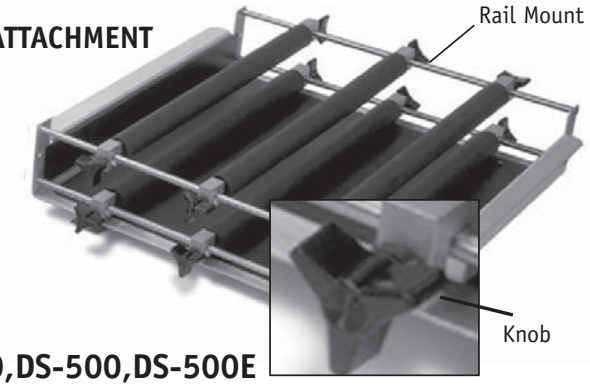
Double Tier Braces

Package Contents:
4 - Tier braces
21 - Hex head screws
32 - Hex head nuts
32 - Lock washers

Using 7/16" socket wrench, hex head nuts, lock washers and hex head screws, attach brackets to each of the four corners of the first (bottom) platform by aligning mounting holes on bracket to mounting holes on platform. Hold second (top) platform in place and align the mounting holes on the bracket already attached to first platform to the second platform. Tighten all screws.

Follow instruction for installing large platforms on page 13.

Universal Platform Attachment



Package Contents:

6 - Foam support rods
12 - Rail mounts
12 - Knobs
1 - Platform

Installation for OS-500,DS-500,DS-500E

Loosen the four knobs on the shaker approximately 1/4". Place platform on shaker by aligning the slots on the bottom of the platform to slide over the knobs on the shaker. When aligned, hand-tighten the four knobs. DO NOT OVER-TIGHTEN (Mounting screws are not needed for this installation).

Installation for DS2-500, DS2-500E

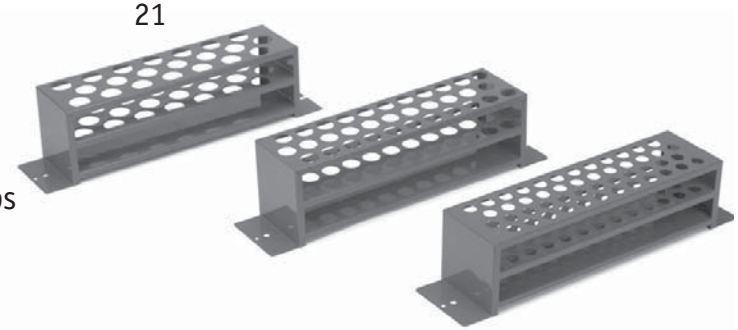
Remove black mat from the shaker. There are four mounting holes in the middle of the tray, place the platform on the tray, align the mounting screws in the platform to the mounting holes in the tray, tighten with a #2 phillips head screwdriver. DO NOT OVER-TIGHTEN

Installation of foam rollers

Insert knobs in the rail mounts. Insert rail mounts with knobs into support rods. Place rods with knobs and mounts added onto the platform rails. Adjust to the desired width and tighten knobs. Your platform is now ready to use.

Test Tube Racks

Description	Tube Capacity
10-14mm tubes	48
16-20mm tubes	33
21-25mm tubes	21



Package Contents:

1 - Test Tube rack
2 - Mounting knobs
2 - Washers

Installation:

Align mounting hole on test tube rack to mounting holes on platform, place washer between test tube rack and mounting knob. Hand-tighten mounting knobs. DO NOT OVER-TIGHTEN.

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Flask Clamps

Description	Description
10ml	1 liter
25ml	2 liter
50ml	2.8 liter
125ml	4 liter
250ml	6 liter
500ml	

Media Bottle Clamps

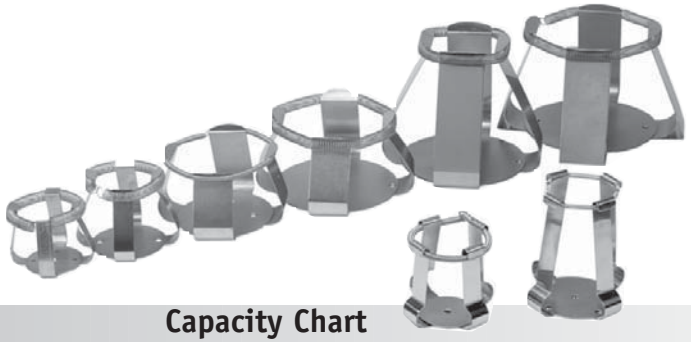
Description .
500ml
1000ml

Package contents:

Clamp, installation screw(s), extension spring
(10ml and 25ml flask clamps do not require an extension spring)

Installation - Line up the hole(s) in the clamp to the hole(s) in the platform you will be using, hand-tighten into place with a flat-head screwdriver. Insert the flask/media bottle into clamp and wrap the supplied spring around the neck of the clamp to hold secure.

10ml - 500ml clamps are provided with 1 screw for installing on platform.
1 liter - 6 liter and media clamps are provided with 5 screws for installing on platform.



Capacity Chart

Accessory	(13 "x 13") 33cm x 34cm Platform	(18" x 18") 45cm x 45cm Platform	(24" x 24") 61cm x 61cm Platform	(24" x 36") 61cm x 91cm Platform
10ml	60	113	221	336
25ml	30	64	121	176
50ml	30	64	121	176
125ml	18	32	61	88
250ml	13	23	42	63
500ml	6	16	25	40
1 liter	4	9	16	24
2 liter	4	5	14	22
2.8 liter	1	4	8	12
4 liter	1	4	8	12
6 liter	1	1	4	6
Media Clamp 500ml	9	16	36	48
Media Clamp 1000ml	8	13	24	32
Test Tube Holder	1	4	7	12

Manufactured by:

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