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Controlled Environment Equipment Solutions for the Lab



Forma® Tabletop and Console Orbital Shakers

Built to Last — Easy to Use

Analyze • Detect • Measure • Control™

Thermo
ELECTRON CORPORATION

Built to Last – Easy to Use

Tabletop & Console Shakers to Meet Every Need

We have the solution when you are searching for an orbital shaker that will run 24/7 and for years without problems or are culturing sensitive cells that need protection from contamination. These sturdy units also will provide a good "hard shake" for bacteria. Forma Orbital Shakers are both easy to use and program, including a function that restricts unauthorized or inadvertent changes to key functions. And our platforms and clips are compatible with other shakers.*

Researchers already familiar with our Forma cell culture incubators, ULT freezers, and biosafety cabinets know that Thermo Electron Corporation's specialists design and build top quality controlled environment equipment that withstands rigorous use. Forma Orbital Shakers are also a testament to that commitment to quality, performance, and support.

Model 416 and 430 tabletop orbital shakers provide the largest platforms for maximum capacity and a better value, a superior balancing mechanism for vibration-free shaking, and durable components for long life.

Model 420 incubator tabletop shaker includes class-leading temperature uniformity for optimum growth, the highest large-flask capacity for the best value, and durable components for long life.

Console Model 435 (436) incubator shaker and Model 480 (481) incubator/refrigerator shaker provide HEPA filtration for maximum protection from contamination, a directed airflow system for optimum temperature uniformity and ideal growth conditions—even when the units are full, and an ergonomic design for easy access to your product.

PROGRAMMABLE 400 SERIES SHAKERS

You can easily program and monitor shaker performance via the icons/buttons and backlit information center.

- Control all parameters with the touch of a button
- See results immediately
- View runpoints and setpoints simultaneously...all the time



Time, Speed, Temp C: Time displays operating hours and minutes for the run (counts up); speed displays actual platform speed (RPM); and temp C displays actual temp inside the cabinet (optional on Models 416 and 430).

*Contact us for details.

Models 416 & 430—Steady Tabletop Performers

These two tabletops are used for a variety of applications and are designed to operate in reach-in incubators, environmental rooms, or on lab benches. They perform continuously, even in temperatures from 4C to 40C (39.2F to 104F) and in the following humidity conditions: 80% RH at or below 31C (87.8F), decreasing linearly to 50% RH at 40C (104F).

Largest Platforms for Maximum Capacity and a Better Value

Our optional platforms are constructed of 5/16", heavy-duty, brushed anodized aluminum for durability and easy cleaning. They are the largest on the market to **meet your highest capacity requirements.**

- Model 416 accommodates an 18.0" x 18.0" (45.7cm x 45.7cm) or 24.0" x 18.0" (61.0cm x 45.7cm) platform.



- Model 430 accommodates a 29.5" x 18.0" (74.9cm x 45.7cm) or 36.0" x 24.0" (91.4cm x 61.0cm) platform for increased capacities.



Superior Balancing Mechanism for Vibration-Free Shaking

- Triple counterbalanced mechanism provides optimum handling of full or unbalanced loads, regardless of flask placement, and completely **eliminates "walking."**
- Over-sized, adjustable, suction cup style, rubber feet minimize vibration. The rubber feet also provide **maximum stability,** even with heavy or unbalanced loads.

Durable Components for Long Life

- Triple counterbalanced mechanism (U.S. Patent 5,558,437) includes a **unit production lifetime warranty** (parts only).
- Heavy-duty, triple counterbalanced eccentric drive allows extended speed ranges of 25 to 525 RPM.
- Low-heat 24V DC motor with moisture-resistant electronics provides continuous **maintenance-free** shaker operation on the benchtop or in a chamber.
- Heavy-duty, permanently lubricated bearings ensure long life, **minimizing the risk of downtime.**

Model 420—Incubated Tabletop

This model performs over a temperature range of 5C above ambient to 80C (176F) with control of ±0.1C, providing the widest temperature range in the industry and ensuring **flexibility for a broad range of applications.**



Class-Leading Temperature Uniformity for Optimum Growth

- Double-wall, insulated chamber contributes to optimum, controlled uniformity.
- Twin blowers ensure temperature uniformity of ±0.3C (in the flask), creating an **ideal environment for temperature-sensitive cultures** and heavy product loads.
- Microprocessor functions are calibrated easily through the keypad. Audible/visual over and undertemperature tracking alarms ensure product protection.

Highest Large-Flask Capacity for the Best Value

The 18.0" x 18.0" (45.7cm x 45.7cm) platform easily accommodates six 2 liter flasks—the **highest capacity on the market—**or four 2800ml Fernbach flasks. Greater capacity equals a better value!

Durable Components for Long Life

- Triple counterbalanced mechanism (U.S. Patent 5,558,437) includes a **unit production lifetime warranty** (parts only).
- Durable, molded, clear acrylic lid with triple-point reinforced hinges withstands years of use without cracking or discoloring.
- Spill tray, sealed mechanism and control panel, and outside-the-chamber location of electronics ensure that shaker components are not damaged by spills, contributing to long unit life.

Maximum Capacity with Dedicated Platforms

Model	Platform Size	Flask Capacity 25ml	50ml	125ml	250/300ml	500ml	1l	2l	4l	5l	6l	2800ml
416	18.0" x 18.0"	49	49	36	25	16	8	6	4	4	2	4
416	24.0" x 18.0"	80	80	40	35	20	12	8	5	4	4	5
420	18.0" x 18.0"	49	49	36	25	16	8	6	-	-	-	4
430	29.5" x 18.0"	91	91	61	40	24	15	12	6	6	4	6
430	36.0" x 24.0"	150	150	96	70	30	24	15	11	8	8	11

Universal platforms, clips, etc. are described in this brochure. All platforms and clips are sold separately.

Tabletop Specifications

Tabletop Models
Shaker . . . . . 416 and 430
Incubator Shaker. 420

RPM
Speed Range . . . . . 25-525 RPM*
Accuracy . . . . . ±1 RPM
Orbital Motion . . . . . 1.0" (2.5cm)
LCD Indicator . . . . . Readable in 1 RPM increments
Setability . . . . . 1 RPM increments

Time
Range. . . . . Continuous operation (hold) or timed operation from 1 minute up to 199 hours and 59 minutes
LCD Indicator . . . . . Readable in 1 minute increments, counts up for continuous operation (hold) or counts down for timed operation

Temperature
Range. . . . . 416/430: Optional Temperature Monitoring Kit allows flask or ambient temperature to be read on shaker's LCD readout in 0.1C increments
420: 5C above ambient to 80C (176F)
Setability . . . . . 0.1C increments
Control (420). . . . . ±0.1C
Uniformity (420) . . . . . ±0.3C at 37C (in flask)
±0.6C at 60C (in flask)
±1.0C at 80C (in flask)
LCD Indicator (420). . . . Readable in 0.1C increments

Platform Sizes
416/420 . . . . . 18.0" x 18.0" (45.7cm x 45.7cm)
416. . . . . 24.0" x 18.0" (61.0cm x 45.7cm)
430. . . . . 29.5" x 18.0" (74.9cm x 45.7cm)
36.0" x 24.0"** (91.4cm x 61.0cm)

Exterior Dimensions***
Width (416/420) . . . . . 24.3" (61.7cm)
Width (430). . . . . 30.5" (77.5cm)
Height (416/430). . . . . 7.8" (19.8cm)
Height (420) . . . . . 20.9" (53.1cm), 35.7" 90.7cm) with lid open
F-B (416/430) . . . . . 26.0" (66.0cm)
F-B (420). . . . . 29.0" (73.7cm)

Interior Dimensions (Model 420)
Width . . . . . 21.4" (54.4cm)
Height . . . . . 12.6" (32.0cm)
F-B . . . . . 21.2" (53.8cm)

Electrical (Selector Switch)
416/430 . . . . . 115V, 50/60 Hz, 1.0 FLA (Operating range 90-126V)
or
230V, 50/60 Hz, 0.5 FLA (Operating range 180-253V)
420. . . . . 115V, 50/60 Hz, 6.5 FLA (Operating range 90-126V)
or
230V, 50/60 Hz, 3.2 FLA (Operating range 207-253V)
Plug . . . . . 115V: NEMA 5-15P Plug
230V: CEE 7/7 Plug

Ambient Operating Conditions
Temperature (416/430) . 4C to 40C (39F to 104F)
Temperature (420) . . . . 10C to 40C (50F to 104F)
RH . . . . . 80% RH at or below 31C (87.8F), decreasing linearly to 50% RH at 40C (104F)

Weight
Net
416/430. . . . . 138 lbs. (62.7 kg)
420 . . . . . 185 lbs. (83.9 kg)
Shipping (Motor)
416/430. . . . . 234 lbs. (106.0 kg)
420 . . . . . 250 lbs. (113.4 kg)

Specifications are based on nominal voltages of 115V or 230V in ambients of 22C to 25C (71.6F to 77F). Performance is plus or minus the least significant digit unless specified otherwise. All units are UL Listed to United States and Canadian requirements and bear the CE Mark.

**Maximum 400 RPM for 24.0" x 18.0" (61.0cm x 45.7cm) and 36.0" x 24.0" (91.4cm x 61.0cm) platforms*

***Must purchase Counterbalance Assembly No. 194012 for first time installation*

****Dimensions are for Model 416 with the 18.0" x 18.0" (45.7cm x 45.7cm) platform and Model 430 with the 29.5" x 18.0" (74.9cm x 45.7cm) platform.*

Models 435 (436) & 480 (481)—High Capacity Consoles

- Model 435 (436) Incubator Shaker
- Model 480 (481) Incubator/Refrigerator Shaker

HEPA Filtration for Maximum Protection from Contamination

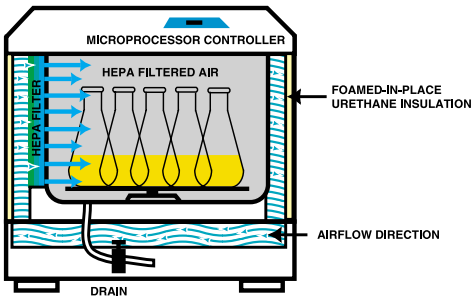
- HEPA filter rated a minimum 95% efficient at 0.3 microns for entrapment of extraneous airborne particulates provides continuous contamination control, protecting your slower growing cultures from airborne contamination.
- Patented horizontal HEPA Filter Airflow design (U.S. Patent 5,577,837) **reduces the risk of cross contamination.**
- Crevice-free, stainless steel interior has coved corners for **easy cleaning, saving time** and minimizing contamination risk.



- Convenient front location of drain system with valve makes it easy to eliminate liquid, reducing the risk of waterborne contamination.

Directed Airflow System for Optimum Temperature Uniformity and Ideal Growth Conditions

Unlike some designs, Forma Incubator and Incubator/Refrigerator Orbital Shakers feature directed laminar airflow across the chamber, aiding temperature uniformity and contributing to a quality culture environment.



Low-end temperature is achieved efficiently and effectively by the filtered, front-to-back refrigeration system airflow. This design outperforms side-to-back and back-to-back airflow designs in high ambients.

These consoles meet the specified performance of 4C to 60C (39.2F to 140F) in 0.1C increments with control of ±0.1C, even in challenging environments.

Ergonomic Design for Easy Access to Your Product



- Lid can be opened by hand or by depressing the convenient foot pedal. It's **easy to open** the shaker, even when carrying a full load of flasks.
- Angled sides, lower front, and convenient platform height ensure a **comfortable reach** into the chamber. You experience less bending and stretching.
- Thermal pane window provides a large 2.75 sq. ft. (0.3 sq. m) viewing area. You can check your product without opening the lid.
- Microprocessor Control/Monitoring System is positioned at an angle on the lid for convenient programming and **at-a-glance monitoring** of time, speed, and temperature.
- Access port (back of cabinet wall) allows you to insert probes, a CO_2 gassing manifold, or other equipment into the shaker.
- Optional shelf provides additional storage and convenience when switching flasks.



NO ROOM FOR MULTIPLE CONSOLES?

Want high capacity but lack the floor space for multiple consoles? Consider our stackable shaker models in incubated and refrigerated styles.

These shakers may be stacked up to three units high for three times the capacity of a console shaker in nearly the same footprint.

Maximum Capacity with Dedicated Platforms

Model	Platform Size	Flask Capacity 25ml	50ml	125ml	250/300ml	500ml	1l	2l	4l	5l	6l	2800ml
435 (436)	29.5" x 18.0"	91	91	61	40	24	15	12	6	6	4	6
480 (481)	29.5" x 18.0"	91	91	61	40	24	15	12	6	6	4	6

Universal platforms, clips, etc. are described in this brochure. All platforms and clips are sold separately.

Console Specifications

Console Models
Incubator Shaker 435 (436)
Incubator/Refrigerator Shaker . . 480 (481)

RPM
Speed Range . . . . . 25-525 RPM*
Accuracy . . . . . ±1 RPM
Orbital Motion . . . . . 1.0" (2.5cm)
LCD Indicator . . . . . Readable in 1 RPM increments
Setability . . . . . 1 RPM increments

Time
Range . . . . . Continuous operation (hold) or timed operation from 1 minute up to 199 hours and 59 minutes
LCD Indicator . . . . . Readable in 1 minute increments, counts up for continuous operation (hold) or counts down for timed operation

Temperature
Range . . . . . 435 (436): 5C above ambient to 60C (140F)
480 (481): 4C to 60C (39.2F to 140F)
Setability . . . . . 0.1C increments
Control . . . . . ±0.1C
Uniformity . . . . . ±0.2C at 37C (in flask)
LCD Indicator . . . . . Readable in 0.1C increments

Platform
Size . . . . . 29.5" x 18.0" (74.9cm x 45.7cm)

Exterior Dimensions
Width . . . . . 45.0" (114.3cm)
Height . . . . . 40.4" (102.6cm), 62.0" (157.5cm) with lid open
F-B . . . . . 30.0" (76.2cm), 31.8" (80.8cm) with lid open

Interior Dimensions
Width . . . . . 34.3" (87.1cm)
Height . . . . . 18.5" (47.0cm)
F-B . . . . . 21.1" (53.6cm)

Electrical
435 . . . . . 120V, 60 Hz, 8.6 FLA (Operating range 108-132V)
480 . . . . . 120V, 60 Hz, 15.6 FLA (Operating range 108-132V)
436 . . . . . 230V, 50/60 Hz, 3.5 FLA (Operating range 207-253V)
481 . . . . . 230V, 50 Hz, 8.0 FLA (Operating range 207-253V)
Plug . . . . . 115V: NEMA 5-15P Plug
230V: CEE 7/7 Plug

Ambient Operating Conditions
Temperature . . . . . 15C to 32C (59F to 89.6F)
RH . . . . . 80% RH at or below 31C (87.8F), decreasing linearly to 50% RH at 40C (104F)

Weight
Net
435 (436) . . . . . 580 lbs. (263.1 kg)
480 (481) . . . . . 635 lbs. (288.0 kg)
Shipping (Motor)
435 (436) . . . . . 610 lbs. (277.0 kg)
480 (481) . . . . . 665 lbs. (302.0 kg)

Specifications are based on nominal voltages of 115V or 230V in ambients of 22C to 25C (71.6F to 77F).
Performance is plus or minus the least significant digit unless specified otherwise.
All models are UL Listed to Canadian requirements. Models 435 and 480 are UL Listed to United States and Canadian requirements. Models 436 and 481 bear the CE Mark.
**Maximum 400 RPM for 24.0" x 18.0" (61.0cm x 45.7cm) and 36.0" x 24.0" (91.4cm x 61.0cm) platforms*

Accessories

We offer a wide variety of accessories to increase your shakers' versatility and usefulness. Tailor equipment to your needs by taking advantage of accessories, such as the wide range of platforms, dual stack tabletop shaker kit, quick change platform adapters, gassing manifolds, console shelves, and chart recorders. Custom accessories are available; contact us for details. Accessories are **customer installed unless indicated otherwise.**

Universal Platforms (without clips)



No. 238001



Universal platform shown with optional adhesive flask mat, flasks, and flask clips

Model	Platform Size	Stock No.	Maximum Flask Capacity											
			25ml	50ml	125ml	250/300ml	500ml	1l	2l	4l	5l	6l	2800ml	Microplates*
416	18.0" x 18.0"	238000	49	49	25	18	16	8	6	4	4	2	4	10
416	24.0" x 18.0"	238008	80	80	40	25	20	12	8	5	4	4	5	16
420	18.0" x 18.0"	238000	49	49	25	18	16	8	6	-	-	-	4	10
430**	36.0" x 24.0"	238002	150	150	75	55	30	24	15	11	8	8	11	31
430	29.5" x 18.0"	238001	91	91	39	30	24	12	11	6	6	4	6	18
435 (436)	29.5" x 18.0"	238001	91	91	39	30	24	12	11	6	5	4	6	18
480 (481)	29.5" x 18.0"	238001	91	91	39	30	24	12	11	6	5	4	6	18

The platforms also accommodate clips and accessories manufactured by other companies.
**Microplates can be stacked for greater capacity.*
***36.0" x 24.0" (91.4cm x 61.0cm) platform requires purchase of Counterbalance Assembly No. 194012 for first time installation.*

Clips for Platforms



Erlenmeyer flask clips and a microplate clip for orbital shaker platforms

Stock No.	Description
236010	25ml Erlenmeyer Flask Clip
236011	50ml Erlenmeyer Flask Clip
236012	125ml Erlenmeyer Flask Clip
236013	250/300ml Erlenmeyer Flask Clip
236014	500ml Erlenmeyer Flask Clip
236015	1l Erlenmeyer Flask Clip
236016	2l Erlenmeyer Flask Clip
236017	4l Erlenmeyer Flask Clip
236028	5l Erlenmeyer Flask Clip
236099	Flask Clip Starter Kit, includes (2) 236010, (2) 236011, (2) 236012, (4) 236013, (4) 236014, (2) 236015, (2) 236016, and (1) 194046

Stock No.	Description
236018	6l Erlenmeyer Flask Clip
236019	2800ml Fernbach Flask Clip
236025	Microplate Clip
300349	Cleanable Adhesive Flask Mat, one 1.5" x 16.5' (500cm) roll***
194046	Replacement Screws, (50) #10-24 x 5/16" Countersink Phillips Head Screws for Clips and (12) 1/4-20 x 3/4" Countersink Flat Head Socket Screws for Platforms

****Roll will cover one 29.5" x 18.0" (74.9cm x 45.7cm) platform or two 18.0" x 18.0" (45.7cm x 45.7cm) platforms.*

Dedicated Platforms (complete with clips)



No. 238024 and No. 238014

DEDICATED PLATFORMS: 18.0" x 18.0" (45.7cm x 45.7cm)

For Models 420 and 416		
Stock No.	No. of Clips	Size of Glassware
238010	49	25ml Erlenmeyer Flask
238011	49	50ml Erlenmeyer Flask
238012	25	125ml Erlenmeyer Flask
238049	36	125ml Erlenmeyer Flask*
238013	18	250/300ml Erlenmeyer Flask
238050	25	250/300ml Erlenmeyer Flask*
238014	16	500ml Erlenmeyer Flask
238015	8	1l Erlenmeyer Flask
238016	6	2l Erlenmeyer Flask
238046	4	4l Erlenmeyer Flask**
238053	4	5l Erlenmeyer Flask**
238047	2	6l Erlenmeyer Flask**
238048	4	2800ml Fernbach Flask

DEDICATED PLATFORMS: 29.5" x 18.0" (74.9cm x 45.7cm)

For Models 430, 435 (436), and 480 (481)		
Stock No.	No. of Clips	Size of Glassware
238017	91	25ml Erlenmeyer Flask
238018	91	50ml Erlenmeyer Flask
238019	61	125ml Erlenmeyer Flask
238051	30	250/300ml Erlenmeyer Flask
238020	40	250/300ml Erlenmeyer Flask*
238021	24	500ml Erlenmeyer Flask*
238022	15	1l Erlenmeyer Flask
238023	12	2l Erlenmeyer Flask
238024	6	4l Erlenmeyer Flask
238054	6	5l Erlenmeyer Flask
238025	4	6l Erlenmeyer Flask
238026	6	2800ml Fernbach Flask

DEDICATED PLATFORMS: 24.0" x 18.0" (61.0cm x 45.7cm) MAXIMUM 400 RPM

For Model 416		
Stock No.	No. of Clips	Size of Glassware
238036	80	25ml Erlenmeyer Flask
238037	80	50ml Erlenmeyer Flask
238038	40	125ml Erlenmeyer Flask
238052	25	250/300ml Erlenmeyer Flask
238039	35	250/300ml Erlenmeyer Flask*
238040	20	500ml Erlenmeyer Flask
238041	12	1l Erlenmeyer Flask
238042	8	2l Erlenmeyer Flask
238043	5	4l Erlenmeyer Flask
238055	4	5l Erlenmeyer Flask
238044	4	6l Erlenmeyer Flask
238045	5	2800ml Fernbach Flask

DEDICATED PLATFORMS: 36.0" x 24.0" (91.4cm x 61.0cm)*** MAXIMUM 400 RPM

For Model 430		
Stock No.	No. of Clips	Size of Glassware
238057	150	25ml Erlenmeyer Flask
238058	150	50ml Erlenmeyer Flask
238027	96	125ml Erlenmeyer Flask
238028	70	250/300ml Erlenmeyer Flask*
238029	30	500ml Erlenmeyer Flask
238030	24	1l Erlenmeyer Flask
238031	15	2l Erlenmeyer Flask
238032	11	4l Erlenmeyer Flask
238056	8	5l Erlenmeyer Flask
238033	8	6l Erlenmeyer Flask
238034	11	2800ml Fernbach Flask

**Increased capacity design does not allow the use of flasks greater than 500ml.*
***Except Model 420*
****36.0" x 24.0" (91.4cm x 61.0cm) platform requires purchase of Counterbalance Assembly No. 194012 for first time installation.*

Test Tube Rack Holders and Test Tube Racks for Platforms

SAVE TIME!
Unique holders tilt & release entire rack for easy transport in and out of the shaker.

Two styles of test tube rack holders are available: universal and dedicated. Both styles can be adjusted to six different angles.

Universal Test Tube Rack Holder and Test Tube Racks

The universal test tube rack holder can be adjusted to fit any of the four available test tube rack sizes. Universal design requires the separate purchase of a test tube rack.



Universal adjustable angle test tube rack holder (U.S. Patent 5,632,388) shown with optional test tube racks and tubes

Stock No.	Description
600088	Universal Adjustable Angle Test Tube Rack Holder
950040	Test Tube Rack*, for 10-13mm (3-7ml) Tubes
950060	Test Tube Rack*, for 16-20mm (10-20ml) Tubes
600074	Test Tube Rack*, for 21-25mm (30ml) Tubes
600075	Test Tube Rack*, for 26-30mm (50ml) Tubes
194024	Replacement Screws. (50) #10-24 x 3/8" Pan Head Phillips Screws for Mounting Tube Holders to Platforms

**Requires the universal test tube rack holder or a dedicated adjustable angle test tube rack holder of the corresponding size.*

Dedicated Test Tube Rack Holders and Test Tube Racks

Dedicated test tube rack holders can be used only with their corresponding rack size. This design includes one test tube rack each.



Dedicated adjustable angle test tube rack holders (U.S. Patent 5,632,388) shown with corresponding test tube racks and optional tubes

Stock No.	Description
600076	Adjustable Angle Test Tube Rack Holder with Test Tube Rack, 72 Place, 10-13mm (3-7ml)
600077	Adjustable Angle Test Tube Rack Holder with Test Tube Rack, 40 Place, 16-20mm (10-20ml)
600078	Adjustable Angle Test Tube Rack Holder with Test Tube Rack, 40 Place, 21-25mm (30ml)
600079	Adjustable Angle Test Tube Rack Holder with Test Tube Rack, 24 Place, 26-30mm (50ml)
194024	Replacement Screws, (50) #10-24 x 3/8" Pan Head Phillips Screws for Mounting Tube Holders to Platforms

Microplate Rack Inserts

Microplate Rack Inserts are available for the Dedicated Adjustable Angle Test Tube Rack Holder (50ml)—No. 600079—and the Universal Adjustable Angle Test Tube Rack Holder—No. 600088. You can **increase your microplate shaking capacity**, shake deepwell format plates at an angle, and remove many plates from the shaker at once for **quick and easy transport** to your benchtop.



Shaker microplate racks shown with optional test tube rack holder and microplates

Stock No.	Description	Platform Size and Maximum Capacity 18.0" x 18.0"	29.5" x 18.0"	36.0" x 24.0"
236025	Fixed Angle Microplate Clip (holds 1 plate)	10 clips, 10 plates*	18 clips, 18 plates*	31 clips, 31 plates*
600090	Microplate Rack Insert for Standard Plates, includes 3 shelves	4 racks, 36 plates	7 racks, 63 plates	8 racks, 72 plates
600089	Microplate Rack Insert for Deepwell Plates, includes 2 shelves	3 racks, 18 plates**	5 racks, 30 plates**	7 racks, 42 plates**

**Shaken upright*
***Shaken at a 15 degree angle*

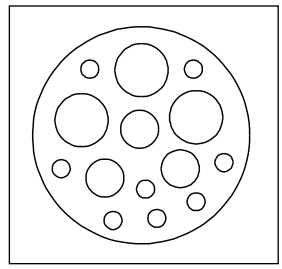
Vial/Tube Inserts for 1 Liter Flask Clips

Flexible, reusable, closed-cell foam Vial/Tube Inserts are **ideal for shaking a mix of tube and vial sizes** in temperature ranges up to 70C (158F). The insert fits snugly into a 1 liter flask clip, repels spills, and is easy to clean.

Stock No.	Description
161033	Pack of 5 Inserts, perforated for three 50ml tubes, three 20ml tubes, and eight 1.5-2.0ml vials



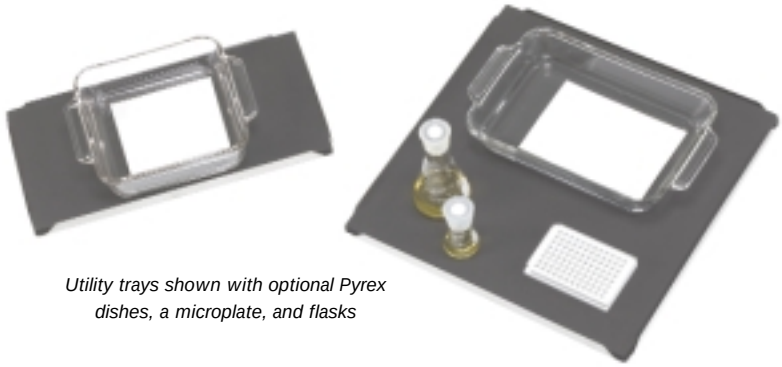
Insert with optional clip and vials/tubes



Insert layout

Utility Trays for Platforms

Utility Trays attach to all of our platforms and provide a non-slip surface to hold petri dishes, Pyrex® dishes, microplates, and smaller flasks at low RPMs.



Utility trays shown with optional Pyrex dishes, a microplate, and flasks

Stock No.	Description
236026	9.0" x 18.0" (22.9cm x 45.7cm) Utility Tray with 0.5" (1.3cm) Thick Rubber Pad
236027	18.0" x 18.0" (45.7cm x 45.7cm) Utility Tray with 0.5" (1.3cm) Thick Rubber Pad

Dual Stack Tabletop Shaker Kit, Kneewell Slide Mount, and Shaker Stand

Customer installed **space saving accessories** let you conserve valuable laboratory space and create convenient access to your shaker product. Previously wasted laboratory floor space becomes useful and productive.

The Dual Stack Tabletop Shaker Kit and Kneewell Slide Mount were designed for our tabletop orbital shakers. The Dual Stack Tabletop Shaker Kit provides console capacity within a tabletop-sized footprint. With the Kneewell Slide Mount, previously wasted laboratory floor space becomes useful and benchtop space is saved.

When minimal floor space is available, the heavy-duty Orbital Shaker Stand creates a new "benchtop" area to hold shakers, freeing up countertop space and moving shakers from the floor to a more ergonomic position.

Stock No.	Description
452000	Dual Stack Tabletop Shaker Kit, includes Kneewell Slide Mount and Orbital Shaker Stand
452002	Kneewell Slide Mount, shaker slides out on rails for easy access to your product in kneewells or other cramped areas, exterior dimensions of the Model 420 Orbital Shaker on the Kneewell Slide Mount: 26.6"W x 22.2"H x 33.0"F-B (67.6cm x 56.4cm x 83.8cm)
452001	Orbital Shaker Stand, welded tubular frame with rubber isolator feet and a powder coat paint finish, accommodates even the extra large platform of the Model 430 Tabletop Orbital Shaker (on the top shelf), stand uses 33.5"W x 37.3"H x 35.3"F-B (85.1cm x 94.7cm x 89.7cm) of floor space
191494	Four Drawer Assembly, dimensions: 9.0"W x 18.0"H x 21.5"F-B (22.9cm x 45.7cm x 54.6cm)
191591	Roller Base for Drawer Assembly, base adds 3.0" (7.6cm) to the height, dimensions: 9.4"W x 3.6"H x 21.9"F-B (23.9cm x 9.1cm x 55.6cm)



Dual stack tabletop shaker kit shown with optional shakers



Kneewell slide mount shown extended with the optional Model 420 Incubator Shaker

Miscellaneous Accessories

For Models 416 and 430 Stock No.	Description
194041	Platform Adapter for NBS 30.0" x 18.0" (76.2cm x 45.7cm) Platform
194044	Temperature Monitoring Kit, factory installed

For Model 420 Stock No.	Description
194045	Gassing Manifold (one gas)
201126	Freestanding, 0-100C, 6", 7 Day Chart Recorder, 115V, 60 Hz
201127	Freestanding, 0-100C, 6", 7 Day Chart Recorder, 220V, 50 Hz
197075	Replacement Chart Paper, 50 per box

(continued)



Heavy-duty orbital shaker stand shown with optional drawers and roller base, and the Model 420 Incubator Shaker

Miscellaneous Accessories (continued) & Warranty

For Models 435 (436) and 480 (481) Stock No.	Description
194033	Console Shelf



194041	Platform Adapter for NBS 30.0" x 18.0" (76.2cm x 45.7cm) Platform
194045	Gassing Manifold (one gas)



201113	0-60C, 6", 7 Day Chart Recorder,115V, 50/60 Hz
180006	Replacement Chart Paper, 50 per box
760164	HEPA Filter Replacement

For All Shakers Stock No.	Description
194040	Quick Change Platform Adapter
194139	MagNote Wipe-Off Magnet and Pen Kit (for console models only)
194140	MagNote Wipe-Off Magnet and Pen Kit (for tabletop models only)
400047	4 Channel Sensaphone® Telephone Dialing System
400134	8 Channel Sensaphone Telephone Dialing System
1535	Model 1535 Monitor/Alarm System, interfaces with as many as 24 products/channels, monitoring conditions up to 2,000 ft. (609.6 m) away

Sealed Mini Orbital Shaker (Stock No. 194134)

Shaker is **convenient for use in cell culture incubators, biosafety cabinets, and lab refrigerators.** Cool-operating motor does not cause temperature deviations in your equipment. Rubber feet eliminate unwanted movement and vibration.



Adjustable tilt platform (via a brass wheel) and smooth motion are ideal for applications such as gel staining; western blotting; rinsing membranes; or mixing small tubes, vials, and blood samples. Mat (No. 194135) to hold small test tubes/vials is available.

RPM Speed Range/Motion	0-60 RPM/0.8" (2.0cm)
Platform	
Size	7.0" x 7.0" (17.8cm x 17.8cm)
Construction	Solid 0.25" (0.6cm) clear acrylic with non-skid rubber mat
Exterior Dimensions	8.0"W x 4.8"H x 8.0"F-B (20.3cm x 12.2cm x 20.3cm)
Electrical	90-240V, 50/60 Hz, 0.1 FLA or less on 115V and 0.05 FLA or less on 230V
Ambient Operating Conditions	0C to 60C (32F to 140F)
Net/Shipping Weight	5.0 lbs. (2.3 kg)/6.5 lbs. (3.0 kg)
Warranty	1 year parts and labor

Warranty—Best in the Industry!

We back our tabletop and console orbital shakers with a **2 year or 12,000 hour use warranty, whichever comes later,** on the entire unit, including parts and labor. Shaker mechanism, parts only, has a Unit Production Lifetime Warranty. Customers outside the United States should contact their distributor for warranty details.

About Thermo

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