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2012 catalogue

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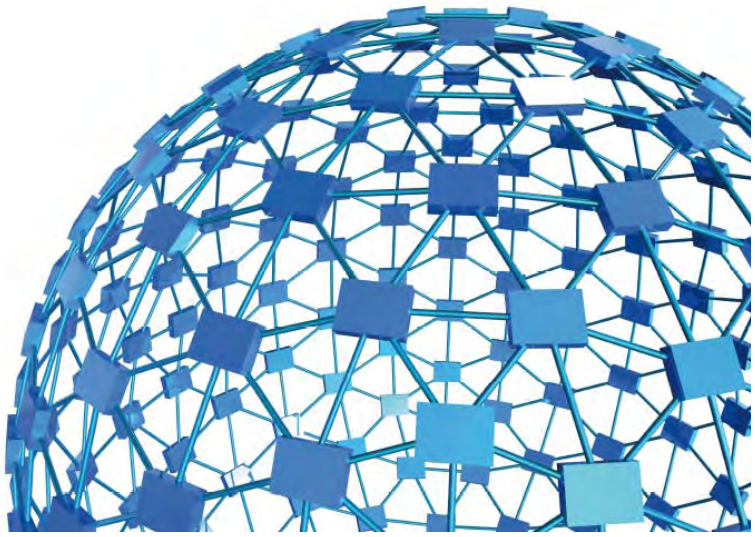

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Plethysmometer

Cat. No. 37140

General

In research on rheumatoid arthritis, the central development of oedema, and its modifications by pharmacological processes, it has proved of great value to measure inflammatory processes in the rat paw.

Our **Plethysmometer 37140** displays the exact paw volume on the graphic LCD read-out. Small differences are detected by a transducer of original design.

The 37140 is provided with a pedal holding-command which freezes the reading, enabling the operator to concentrate its attention to the paw dipping.

The paw volume is shown on the multifunction graphic display in four digits, with 0.01 ml resolution. A zero key is provided to zero the meter before each measurement.

Now supplied with both RAT & MOUSE paw measuring cell !!

FOR ACCURATE MEASUREMENT OF:

- RAT paw oedema
- MOUSE paw oedema

MICROPROCESSOR Controlled Instrument. Main Features:

- Computer compatibility : direct connection to PC (via the **52050 SOFTWARE *INCLUDED***)
- Read-out : multifunction graphic display
- Print-out : by optional thermal MiniPrinters 7145

Ugo Basile: more than 10,000 citations

Volume Measuring Water Cell

The measuring cell consists of two vertical interconnected Perspex tubes; the animal paw is dipped in the larger tube to measure water displacement. A smaller diam. tube is also available for measuring the mouse paw.

The smaller diam. side tube contains the transducer which measures the conductance between two vertical wire electrodes, proportional to the water level and hence to the displaced volume.

Data Acquisition

The 7140 Plethysmometer is microprocessor controlled, featuring direct PC output. Internally-stored data can be routed to the PC serial (RS232) or USB port (via adaptor).

Communication is managed by the dedicated Software Cat. 52050-02, a Windows® based Data Acquisition Software Package.

The 52050-02 enables the data storage into individual files, ready to be easily managed by most statistical analysis packages available on the market.

Ask for details!

Ordering Information

37140	**PLETHYSMOMETER**, package including:-
7141	Electronic Block
7152	Standard Water Cell, diam. 1.8 cm
7186	Mouse paw tube, diam. 1.3 cm
7153	Conductance Transducer
7154	Water Reservoir
7155	Calibration Probes (0.1, 0.2 , 0.5, 1, 2, 4ml)
7160	Wetting Compound, 100ml bottle
7161	Dust Cover for 7152 and 7156 Cells
7165	Connection tube (cell-reservoir & drain vessel)
7166	1.5 mm Allen Wrench
7169	Dust Cover for 7151 Electronic Block
37215-303	"Hold" Pedal Switch
52050-02	CUB Dedicated Software
52010-320	USB to serial port converter
52010-322	Connecting cable 9 to 9 pin
4210	Three Claw Stand, 10mm diam. Upright
4003	Open Side Boss-Head

Optional

57145	Thermal Mini-Printer
37450-305	Thermal Paper Roll for 7145

Also Available

37140-25	**Plethysmometer**, complete with water cell **diam. 2.5 cm** & standard accessories
37140-35	**Plethysmometer**, complete with water cell **diam. 3.5 cm** & standard accessories

Other Available Water Cells

7157	Special Water Cell, diam. 2.5 cm, complete with 7153 and dust cover 7170
7159	Special Water Cell, diam. 3.5 cm, complete with 7153 and dust cover 7170

Physical

Weight	5.4 Kg
Shipping Weight	8.1 Kg approx.
Shipping Dimension	35x55x45 cm
Power:	Universal input 85-264 VAC, 50-60 Hz

Bibliography

- L.H. Santos et alia: "**Anti-Inflammatory, anti-nociceptive and Ulcerogenic Activity of a Zinc-Diclofenac Complex in Rats**" Brazil. J. Med. Biol. Res. 37: 1205-1213, 2004
- D.W. Li et alia: "**Antiinflammatory Activity of a *α*-Hederin methyl Ester from the Alkaline Hydrolysate of the Butanol Fraction of Kalopanax Pictus Bark Extract**" Biol. Pharm. Bull. 26 (4): 429-433, 2003
- A. Rotelli et alia: "**Comparative Study of Flavonoids in Experimental Models of Inflammation**" Pharmacol. Research 48: 601-606, 2003
- H. Machelska et alia: "**Opioid Control of Inflammatory Pain Regulated by Intercellular Adhesion Molecule-1**" J. Neuroscience 22 (13), 5588-5596, 2002
- W. Binder & J. Walker: "**Effect of the Peripherally Selective K-Opioid Agonist, Asimadoline, on Adjuvant Arthritis**" Br. J. Pharmacol. 124: 647-654, 1998
- D. Piomelli *et alia*:" **Anandamide suppresses pain initiation through a peripheral endocannabinoid mechanism**". Nature NSC (2010)

Analgesy-Meter

Cat. No. 37215

General

The 37215 is the up to date version of the classical 7200 which, since 1965, in a number of academic and industrial laboratories, is helping to perform a rapid precise screening of analgesic drugs.

The force is applied to the animal's paw, which is placed on a small plinth under a cone-shaped pusher with a rounded tip.

The 37215 features a low voltage synchronous motor and conforms the CE rules.

The operator depresses a pedal switch to start the mechanism which exerts the force.

When the rat struggles, the operator releases the pedal and reads off the scale the force at which the animal felt pain.

- Randall - Selitto Paw Pressure Test
- Rapid Precise Screening of Analgesic Drugs

Main Features

- Same instrument, three force ranges (from 0 to 250, 500, 750 g)
- Simple and reliable: no calibration needed!
- Classic method since 1960s : hundreds of papers published!

Principle of Operation

The force applied to the paw by the plinth increases at a constant rate, thus enabling perfect reproducible measurements to be made. The motor stops immediately the pedal is released.

After each test the slide should be returned to its starting point by lifting it and pushing it to the left.

The force is measured on the scale calibrated in 10-gram steps, by a pointer riveted to the slide. The scale can be multiplied by 2 or 3, by placing on the slide one or two discs provided with the standard package.

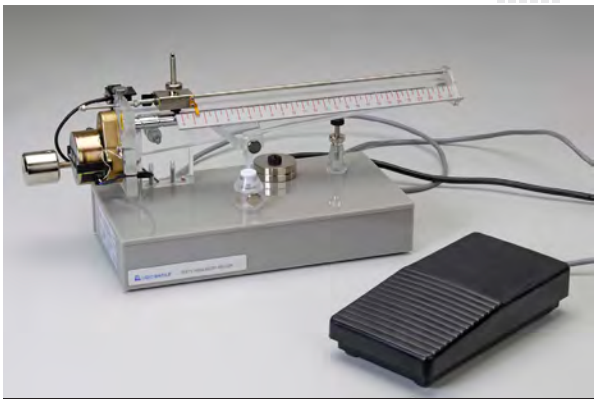
Data Acquisition

The 37215 incorporates an optical switch, to enable the connection to the multifunction printer and/or any other data acquisition system.

The Analgesy-Meter is provided with a cable connection to the Multifunction Printer Cat. 2600.

The Multifunction Printer is a microprocessor controlled device, designed to acquire data from 6 (Cat. 2600) independent channels (each Analgesy-Meter requires 1 channel).

The data, stored in the 2600 internal memory and shown on its graphic display, can be printed out in real time and/or routed to the PC via the 52050 CUB Software Package included with the 2600.
Ask for details!



Physical

Power Requirements:	115 or 230 V, 50/60 Hz 15 W max.	
Dimensions:	cm 40 x 16 x 14	
Shipping Dimensions:	cm 36 x 55 x 45	
Weight :	Kg.	3.30
Shipping Weight :	Kg.	5.40 approx

Ordering Information

37215 ANALGESY-METER
complete with following standard accessories:-

37215-301	Plastic Dust Cover
37215-302	Instruction Manual
37215-303	Pedal Switch, complete with cable
37215-323	Set of discs
37215-324	Counterweight
37215-321	Plinth *
37215-322	Pusher *
E-WP008	Mains Cord

* The pusher & plinth can be ordered in special material and/or shapes, according to customer's requirements.

Bibliography

METHOD PAPER

- L.O. Randall and J.J. Selitto: "**A Method for Measurement of Analgesic Activity on Inflamed Tissue**" Arch. Int. Pharmacodyn. CXI, No. 4: 409-419, 1957.

REFERENCE TO UB ANALGESY-METER (RAT)

- K. Walker et alia: "**The VR1 Antagonist Capsazepine Reverses Mechanical Hyperalgesia in Models of Inflammatory and Neuropathic Pain**" J. Pharmacol. Exper. Therap. 304, No. 1: 56-62, 2003.
- S. Asfaha et alia: "**Proteinase-Activated Receptor-1 Agonists attenuate nociception in Response to Noxious Stimuli**" Br. J. Pharmacol. 135: 1101-1106, 2002.
- K.O. Aley et alia: "**Chronic Hypersensitivity for Inflammatory Nociceptor sensitization Mediated by the ε Isozyme of Protein Kinase C**" J. Neuroscience 20 (12): 4680-4685, 2000.
- O.A. Kochuvelikakam and J.D. Levine: "**Role of Protein Kinase A in the Maintenance of Inflammatory Pain**" J. Neuroscience. 19(6): 2181-2186, 1999.

REFERENCE TO UB ANALGESY-METER (MOUSE)

- H. Saegusa et alia: "**Suppression of Inflammatory and Neuropathic Pain Symptoms in Mice Lacking the N-type Ca2+ Channel**" The EMBO Journal. 20, No. 10: 2349-2356, 2001.
- W. Binder et alia: "**Effect of Gender on AntiInflammatory and Analgesic Actions of Two K-Opioids**" J. Pharmacol. Exper. Therap. 292: 303-309, 2000.

Hot / Cold Plate

Cat. No. 35100

General

This new instrument can be used as:

- A **conventional HOT PLATE**, to carry out a rapid precise screening of narcotic type analgesic drugs according to the well known Hot Plate Test devised by N.B. Eddy and D. Leinbach.

- As a **COLD PLATE**.

The **Cold Plate Test** is useful in studying cold receptors and cold allodynia, a phenomenon very frequently observed in chronic pain on humans.

The **two operating modes** allow for testing at fixed temperature or at increasing/decreasing temperature. The latter experiment scheme is obtained by simply setting on the keypad starting and final temperature.

For Rats

For Mice

IT CAN BE USED AS:

- Hot Plate
- Cold Plate

Main Features

- Operating Temperature: 2°C to 66°C pre settable by function keys
- Two operating modes: fixed or ramping temperature, for dynamic experiments
- PC Interface: USB and serial
- Computer compatibility: direct connection to a PC, via the dedi cated software included as standard
- Data Portability: via the Memory-Key, included as a standard
- Print-out: by optional thermal mini-printer

Ugo Basile: more than 10,000 citations

Instrument Description

The Instrument features:

- a cabinet of original design, incorporating the Plate proper and a Command/Display Module
- a convenient Plexiglas restrainer (suitable to restrain either mice or rats).

The multifunction liquid-crystal graphic display monitors the plate temperature in 0.1°C steps and shows the reaction time in 0.1 s increments on the graphic display.

The graphic display also presents all available commands: the operator sets the experiment configuration via the command keyboard located on the right of the display.

The plate temperature can be set by the operator in the range 2-66°C. The extremes of this ample range can be reached, provided the room temperature remains in the interval 18-23°C.

- an **"auxiliary" conventional Hot Plate**, can be supplied as optional for connection to the 35100.

In fact both the control and the power supply are flexible and powerful enough to enable the researcher to connect an "auxiliary" conventional Hot Plate with the same operational features of a complete Hot Plate.

Data Acquisition

The 35100 is a microprocessor controlled unit. The experimental data, stored in its internal memory can be directly exported to the PC USB or serial ports.
Communication is managed by the dedicated CUB Data Acquisition Software Package, **Cat. 52050–11**, included as standard.
The CUB Windows®-based Software Package enables the user to route to the PC the data originated by UB instruments and store them into individual files, ready to be easily managed by most statistical analysis packages available on the market.
The 35100 is provided with a **memory key**, to record all the experimental data of one or more sessions and to program the experiment layouts from a remote PC.

Ordering Information

35100 HOT / COLD PLATE,
standard package, including:-

35100-001	Cabinet
35100-286	Perspex Animal Restrainer (for Mice and Rats)
35100-302	Instruction Manual
37215-303	Pedal Switch/Cable/Connector Assembly
M-LM 345	Dust Cover for the Plate
E-AU 041	Memory Key
E-WP 008	Mains Cord
52050-11	CUB Data Acquisition Software Package, complete with USB Connection Cable & USB-to-Serial Converter
Set of 2 fuses	

Optional

35100-002	Auxiliary Hot Plate
57145	Thermal Mini Printer including 20-pin connection cable

Physical

Universal input	85-264 VAC, 50-60Hz
Dimensions	cm 25 (w) x 37 (d) x 47 (h) with rat restrainer
Weight	6.2 Kg
Shipping Weight	11.5 Kg approx.
Packing Dimensions	80 x 60 x 44 cm

Bibliography

- M. Sakurai *et alia*:"**Oxaliplatin-induced neuropathy in the rat: involvement of oxalate in cold hyperalgesia but not mechanical allodynia"**. Pain 147 (2009) 165-174
- L.Yu *et alia*:"**Effects of calcitonin gene-related peptide-(8-37) on withdrawal responses in rats with inflammation**" EJP 347 (1998) 275-282
- D. Piomelli *et alia*:" **Anandamide suppresses pain initiation through a peripheral endocannabinoid mechanism**". Nature NSC (2010)

Plantar Test
(Hargreaves's Apparatus)

Cat. No. 37370

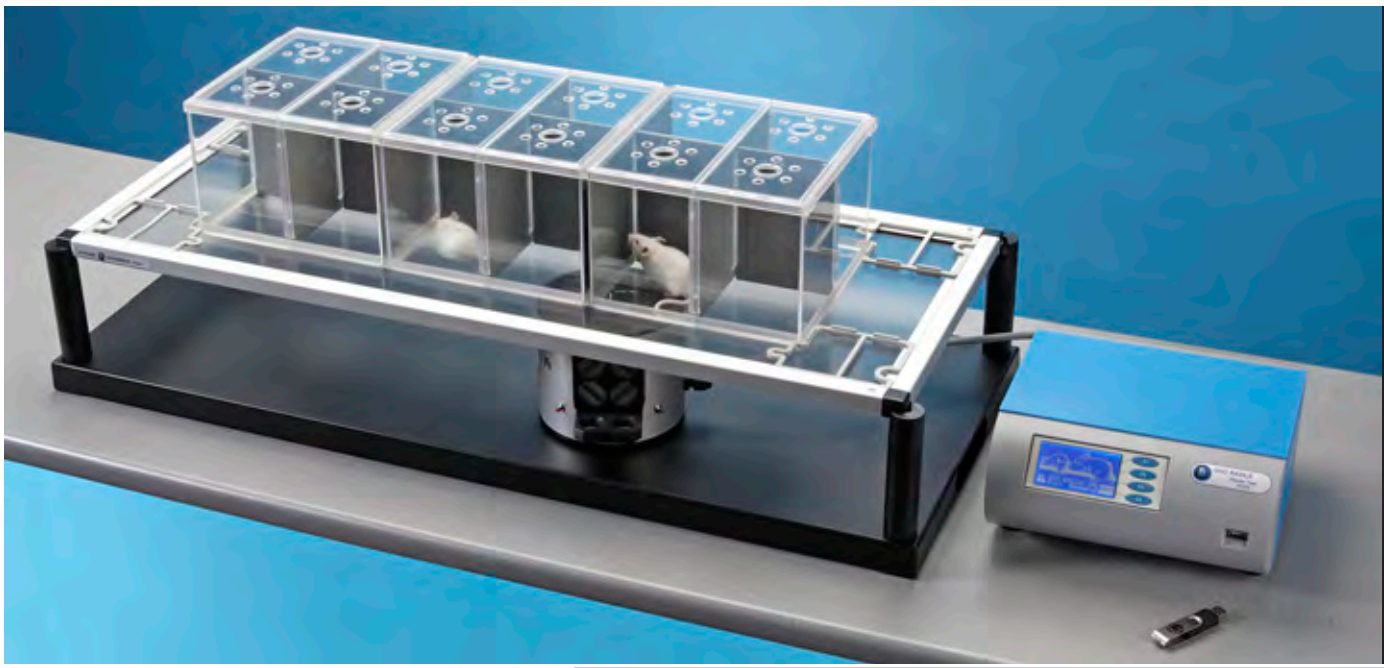
For Rats

For Mice

AUTOMATIC MEASUREMENT OF THE ANIMAL'S RESPONSE

General

Determination of acute nociceptive thermal threshold in laboratory animals has primarily relied upon the tail flick and hot plate methods.
Although both methods are used frequently in pharmacological studies, they are not without limitation. In addition, neither method has been extended to investigating behavioural responses to hyperalgesia.
The Plantar Test represents a remarkable advance in methodology, as it combines the best features of all other methods of measuring pain sensitivity. Unique to the Plantar Test, **the animal is unrestrained and unhandled during experiments.**



Main Features

- Automatic detection of paw with drawal (no visual score needed!)
- I.R. intensity adjustable in the interval 10-99 (in one digit steps)
- Optional 37300 Radiometer for calibration
- Data portable via the included memory key
- Software included

Instrument Description

The Instrument basically consists of:-

- a Movable I.R. (infra-red) Source
- a Glass Pane onto which the animal enclosure is located
- a Controller (the picture below shows the optional printer 37000-145 mounted on the top panel)

- a modular enclosure of new design, in which the 3 spaces can be further divided into 2 or 4 by removable partitions, thus obtaining up to 12 spaces

After the acclimation period, the I.R. source placed under the glass floor (see the picture) is positioned by the operator directly beneath the hind paw. A trial is started by depressing a key.

When the animal feels pain and withdraws its paw, the I.R. source switches off and the reaction time counter stops. The withdrawal latency to the nearest 0.1 s is automatically determined.

Data Acquisition

The 37370 is a microprocessor controlled unit. The experimental data, stored in its internal memory can be directly exported to the PC USB or serial ports.

Communication is managed by the dedicated CUB Data Acquisition Software Package, **Cat. 52050-10**, included as standard or by the 52010 Win-DAS Software.

The CUB Windows®-based Software Package enables the user to route the experimental data to the PC and store them into individual files, to be managed by most statistical analysis packages available on the market.

The 37370 is provided with a **memory key**, to record all the experimental data of one or more sessions and to program the experiment parameters from a remote PC.

Calibration Radiometer

Each Plantar Test Unit is accurately calibrated via an **Heat-Flux I.R. Radiometer Cat. 37300.**
The end user should consider this extremely useful accessory, which enables the experimenter to:

i) Make sure that two or more units deliver thermal nociceptive stimuli (expressed in mW per square cm) of **exactly the same intensity**.
ii) Measure the I.R. energy (1 mW for the duration of 1s corresponds to 1 mJ) **in absolute terms**

Ordering Information

37370	**Plantar Test (Hargreaves' test)**, complete with following standard accessories:
37370-001	Plantar Test Controller
37370-002	Emitter/Detector Vessel, complete with cable
37370-003	Platform, complete with supporting columns
37000-006	Modular Animal Enclosure
37370-005	Framed Glass Pane
37370-302	Instruction manual
E-HR 002	Spare Bulb
E-WP 008	Mains Cord

Physical

Dimensions (assembled)	85 x 40 x 35 cm
Weight	13.00 Kg
Shipping Weight	27.50 Kg approx

Bibliography

Method Paper:

- D.C. Yeomans & H.K. Proudfit: "**Characterization of the Foot Withdrawal Response to Noxious Radiant Heat in the Rat**" Pain 59: 85-97, 1994.
- K.M. Hargreaves, R. Dubner, F. Brown, C. Flores and J. Joris: "**A New and Sensitive Method for Measuring Thermal Nociception in Cutaneous Hyperalgesia**." Pain 32: 77-88, 1988.

Papers mentioning UB model:

- D. Piomelli *et alia*:" **Anandamide suppresses pain initiation through a peripheral endocannabinoid mechanism**". Nature NSC (2010)
- Mark J. Field et alia: "**Detection of Static and Dynamic Components of Mechanical Allodynia in Rat Models of Neuropathic Pain: Are They Signalled by Distinct Primary Sensory Neurones?"** Pain 83: 303-311, 1999
- Hartmut Buerkle et alia: "**Experimental Arthritis in the Rat Does Not Alter the Analgesic Potency of Intrathecal or Intraarticular Morphine**" Anesth. Analg. 89: 403-408, 1999.

Tail-Flick Unit

Cat. No. 37360

Dedicated Software

Memory Key included

RAPID and PRECISE SCREENING OF ANALGESIC DRUGS ON THE RAT TAIL

General

This new style Tail Flick Unit has been designed to perform rapid precise screening of analgesic drugs on the rat tail, **according to D'Amour & Smith**, see bibliography. It basically consists of an I.R. source (50W bulb), whose radiant energy of adjustable intensity is focused by an embodied parabolic mirror on the rat tail.
The rat is held by the operator on the instrument unobstructed upper panel (see picture) in such a way that its tail, placed over a flush mounted window, receives the I.R. energy.
The operator starts the stimulus and the related solid state second counter. When the rat feels pain and **flicks** its tail, a sensor detects it, stops the second counter and switches off the bulb. The **reaction time** of the animal is thus determined.

Main Features

- Automatic detection of the animal response
- Data portable to memory stick or to PC (USB)
- Comfortable, unobstructed working surface (no protruding elements)
- Excellent reproducibility due to: optics lodged into a rigid structure & electronically controlled I.R. flux

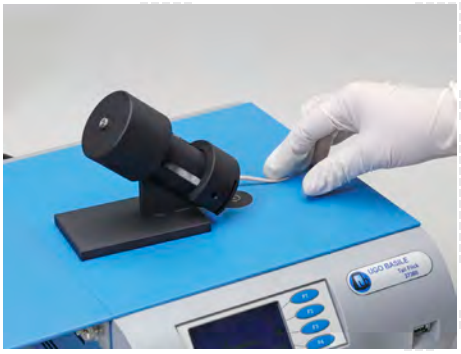
Instrument Description

The instrument components are neatly arranged in a box of new design, which contains the I.R. source, the sensor, the microcontroller and the electronic circuit.

When the counter stops, the **display** remains frozen on the indicated time.

An inclined **Mouse Restrainer** is supplied as **optional,** to be used with the mouse to compensate for its tendency to hold its tail at 45 degrees up and therefore away from the heat source.

In fact, the availability of **mice** with specific gene(s) knock-outs is driving a substantial shift from rats to mice as a research animal of first choice.



Data Acquisition

The 37360 is a microprocessor controlled unit. The experimental data, stored in its internal memory can be directly exported to the PC USB or serial ports.

Communication is managed by the dedicated CUB Data Acquisition Software Package, **Cat. 52050-09**, included as standard or by the 52010 Win-DAS Software.

The CUB Windows®-based Software Package enables the user to route the experimental data to the PC and store them into individual files, to be managed by most statistical analysis packages available on the market.
The 37360 is provided with a **memory key**, to record all the experimental data of one or more sessions and to program the experiment layouts from a remote PC.

Calibration Radiometer

Each Tail Flick Unit is accurately calibrated via an **Heat-Flow I.R. Radiometer Cat. 37300.**
The end user should consider this extremely useful accessory, which enables the experimenter to:

i) Make sure that two or more units deliver thermal nociceptive stimuli (expressed in mW per square cm) of **exactly the same intensity.**

ii) Know the I.R. energy (1 mW for the duration of 1s corresponds to 1 mJ) in **absolute terms**

Basic Specifications

I.R. Intensity	adjustable in the interval 10-99 (in one digit steps)
Reaction Time	three digits, 0.1s steps
Calibration	via appropriate I.R. Radiometer, cat. 37300

Physical

Dimensions	cm 43x22x10
Weight	Kg 5.80
Shipping Weight	Kg 13.00 approx.

Bibliography

Method Paper:

- F.E. D'Amour & D.L. Smith: "**A Method for Determining Loss of Pain Sensation**" J. Pharmacol. Exp. Therap. 72: 74-79, 1941

Papers mentioning UB model:

- C. Dawson et alia: " **Dexmedetomidine Enhances Analgesic Action of Nitrous Oxide"** Anesthesiology 100 (4): 894—904, 2004
- P. Tolu et alia: " **Effects of Long-Term Acetyl-L-carnitine Administation in Rats: I. Increased Dopamine Output in Mesocorticolimbic Areas and Protection Toward Acute Stress Exposure**" Neuropsychopharmacol. 27 (3): 410-420, 2002
- R. Nadeson et alia: " **Potentiation by Ketamine of Fentanyl Antinociception. I. An Experimental Study in Rats Showing that Ketamine Administered by Non-Spinal Routes Targets Spinal Cord Antinociceptive Systems**" Br. J. Anaesthesia 88 (5): 685—691, 2002
- L. Jasmin et alia: " **The NK1 Receptor mediates Both the Hyperalgesia and the Resistance to Morphine in Mice Lacking Noradrenaline**" PNAS 99 (2): 1029—1034, 2002

I.R. Heat-Flux Radiometer

Cat. No. 37300

General

The Heat-Flux I.R. Radiometer Cat. 37300 has been designed to **calibrate** I.R. sources, in particular the classic Tail-Flick Cat. 7360 & Plantar Test Cat 7370 of our make, i.e., to make sure they deliver the same **power flux** (expressed in mW per square cm) and hence a nociceptive stimulus of the **same intensity.**

The standard package of this extremely useful accessory is complete with I.R. Probe, Digital Meter, Adaptors for Tail-Flick and Plantar Test (see picture), all parts of this portable self-sufficient instrument neatly lodged in a sturdy plastic case with punched foam lining.

- For Precise Calibration of Infrared Analgesia Meters
- To calibrate the I.R. emission of Plantar Test & Tail Flick

Main Features

- Provides a measure of stimulus intensity in mW/cm^2
- Assures that all infrared instruments are emitting the same level of stimulus intensity

The 37300 Radiometer enables the experimenter to:

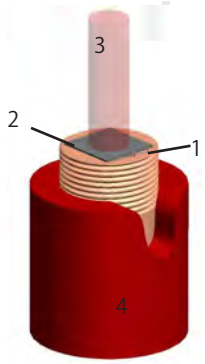
- **Check** (and adjust if necessary) **the I.R. emission.** In fact the I.R. output of the Tail-Flick/Plantar Test may, over the course of one-two years, undergo to 2-3% reduction, due to dust gathered on the optics, darkening of the I.R. bulb, accidental knocks, aging of components due to thermal cycles, etc.
Moreover, if the bulb is replaced or the electronics serviced, output alteration of more significant magnitude, say, 8-10%, may take place.

- **Ensure** that two or more Tail-Flick/Plantar Test Units deliver thermal nociceptive stimuli of exactly the **same intensity**. Balance them, if necessary.

- **Know the I.R. energy** (1 mW for the duration of 1s corresponds to 1 mJ) in absolute terms, a useful datum to compare with any equal or different method/instrument described in the literature.

Principle of Operation

This simple and reliable I.R. Radiometer uses miniature flat "temperature gradient sensors", whose output signal is proportional to the temperature difference between their top and bottom surface.



1 Heat-Sink
2 Temperature Gradient Sensor
3 I.R. Beam
4 Plastic Guard

In fact, the temperature reached by the top surface of the sensor attains few degrees Celsius over the heat-sink temperature and hence involves negligible convection and radiation losses.

At the equilibrium, the I.R. power flux p (mW per square cm) is given by the formula:

$$p = \Delta T / \rho d$$

Where ΔT is the temperature difference between top and bottom surfaces of the sensor, ρ is its thermal resistivity and d its thickness.

It is notable that the determination of p is not affected by the heat-sink temperature. ΔT only comes into play. The time constant of the system ζ (zeta), i.e., the time to reach the equilibrium is given by the formula:

$$\zeta = \rho \, d \, C$$

where C is the thermal capacity * of the sensor.

ρ d and C are very small, which leads to the equilibrium and hence to the exact determination of the I.R. power flux in a matter of 3-4 seconds.

Note : * thermal capacity = mass by specific heat
** the heat propagates by radiation - conduction - convection

Practical Clues

The measure, as previously mentioned, requires only a few seconds. The I.R. probe is positioned on the Tail-Flick/Plantar Test, after the suitable adaptor is fitted on the threaded head of its heat sink.

The reading on the digital display gives the I.R. power output in mW per square centimetre.

The calibration (if necessary) of the I.R. radiation source is carried out by adjusting the supply current of the I.R. bulb, see the instruction manuals of the Tail Flick and, respectively, the Plantar Test.

Ordering Information

37300	**I.R. HEAT-FLUX RADIOMETER**, standard package, including:-
37300-001	Heat-Flux Meter (complete with cable/connector & 9V battery)
37300-002	Heat-Flux Probe
37300-302	Instruction Manual
37300-320	Probe Front Cover
37300-321	Adaptor for Tail-Flick
37300-322	Adaptor for Plantar Test
37300-323	Instrument case

PHYSICAL

37300, complete standard package, lodged in its case:

Dimensions	cm 37 x 32 x 11(h)
Weight	Kg 2.00
Shipping Weight	Kg 3.20

Dynamic Plantar Aesthesiometer

Cat. No. 37450

- Mechanical Stimulation
- Now with larger platform and modular animal cage

ASSESSMENT OF ANIMAL SENSITIVITY TO LIGHT TOUCH OF THE PAW

General

The Dynamic Plantar Aesthesiometer has been designed to assess "**touch sensitivity**" on the plantar surface of the rodents.

Somaesthetic (mechanical) stimulation has a long history of effective clinical use to diagnose pathologies of hyper- or hypo-aesthesia, brought about by drugs, neural pathology or experimental lesions, etc., in model and experimental systems using laboratory animals.

Main Features

- Automatic detection of animal response
- Consistent application of force at an adjustable rate (force ramp)
- Software included as standard
- Data Portability: via the Memory-Key provided with the standard package
- Print-out: by optional panel mount or independent thermal mini-printer

The **new model** encompasses:-

- a movable **touch-stimulator unit**, well proven in previous model, complete with filament actuator and adjustable angle mirror
- a microprocessor controlled **electronic unit,** of new design provided with graphic display, internal memory for data storage, memory stick and optional printer.
- a large **testing surface**
- a new modular **animal enclosure**, offering from 3 to 12 spaces.

Operation

The animal moves about freely in one of the enclosure compartments, positioned on testing surface.
After cessation of exploratory behaviour, the operator places the touch-stimulator below the target area of the animal paw, using the adjustable angle mirror to position the filament.

Pressing **START** key provided at both sides of the handle of the touch-stimulator, invokes the following automatic sequence:

a. an electrodynamic actuator of proprietary design lifts a straight metal (NiTi alloy) filament
b. the small diameter rod touches the plantar surface and begins to exert an upward force below the threshold of feeling
c. the force increases (at the preset application rate), until a stop signal is attained, either when the animal removes its paw or when the preset force is reached

The actuator (0.5mm diameter) transmits force over the entire range of typical aesthesiometers. Paw withdrawal reflex is automatically recorded using two metrics: the latency until withdrawal, in seconds, and the force at which paw was withdrawn, in grams.

Basic Specifications

Starting	via keys on the touch-stimulator vessel
Force range	0 to 50.0 grams, in 0.5 g steps
Force increasing rate	adjustable in the interval 1 to 20 seconds, in 1 s steps
Filament travel	12 mm
Latency time	read-out on graphic display, in 0.1s steps
Connection to PC	through DELTA 9-pin connector

Data Acquisition

The 37450 is a microprocessor controlled unit. The experimental data, stored in its internal memory can be directly exported to the PC USB or serial ports.

Communication is managed by the dedicated CUB Data Acquisition Software Package, **Cat. 52050-12**, included as standard. The CUB Windows®-based Software Package enables the user to route the experimental data to the PC and store them into individual files, to be managed by most statistical analysis packages available on the market.
The 37450 is provided with a **memory key**, to record all the experimental data of one or more sessions and to program the experiment layouts from a remote PC.

Ordering Information

37450	**DYNAMIC PLANTAR AESTHESIOMETER,** complete with following standard accessories:
37450-001	Microprocessor controlled electronic unit
37400-002	Touch stimulator
37450-003	Large platform with supporting columns
37450-005	Framed testing surface (perforated platform)
37000-006	Modular animal enclosure (3 to 12 spaces)
37450-302	Instruction manual
37400-321	Set of two 0.5 mm diam. NiTi alloy filaments and two calibration weights (5 & 50 g)
E-AU 041	Memory Key
E-WP 008	Mains Cord
52050-12	CUB Data Acquisition Software Package, with USB Connection Cable & USB-to-Serial Converter
Set of 2 fuses	
OPTIONAL	
37000-145	Panel-Mount Thermal Printer
57145	Thermal MiniPrinter
PHYSICAL	
Universal Mains	85-264 VAC - 50-60Hz - 20 W max.
Total Weight	Kg 10.20
Shipping Weight	Kg 18.50 approx.

Bibliography

- D. Piomelli *et alia*:" **Anandamide suppresses pain initiation through a peripheral endocannabinoid mechanism**". Nature NSC (2010)
- L. Ramer et alia: "**Rho-Kinase Inhibition Enhances Axonal plasticity and Attenuates Cold Hyperalgesia after Dorsal Rhizotomy**" J. Neuroscience, 24 (48), 10796-10805, 2004
- E. Escribano et alia: "**Rapid Human Skin Permeation and Topical Anaesthetic Activity of a New Amethocaine Microemulsion**" Skin Pharmacol. Physiol., 18, 294-300, 2004
- G. Villetti et alia: "**Antinociceptive Activity of the N-Methyl-D-aspartate Receptor Antagonist N-(2-Indanyl)-glycinamide Hydrochloride (CHF3381) in Experimental Models of Inflammatory and Neuropathic Pain**" J. Pharmacol. Exper. Therap., 306, 804-814, 2003

PAM

PRESSURE APPLICATION MEASUREMENT
Cat. No. 38500

General

The new P.A.M. (Pressure Application Measurement) device from Ugo Basile is a novel, easy-to-use tool for measuring mechanical pain threshold in experimental **joint hypersensitivity models in rodents.**
The PAM device has been designed and validated specifically for the mechanical stimulation and assessment of **joint pain**, and therefore is especially useful in studying **arthritis**.The PAM device applies a quantifiable force for **direct stimulation of the joint** and for automatic readout of the response.

The operator simply wears a special force sensor on his or her thumb and measures the force which elicits the animal response (normally, limb withdrawal).
Each PAM device comes standard with two force sensors, which have been specially designed to apply force to **rat and mouse joints**. The area stimulated using the **small sensor** is useful for mice. The **large sensor** is useful for stimulating either mice or rat joints.

Joint Pain

Arthritis

MECHANICAL PAIN THRESHOLD IN:

- Joint Hypersensitivity
- Chronic Joint Inflammation

Main Features

- Maximum Applicable Force: 1500 g
- Resolution: 0.1 g
- Automatic recording of Limb Withdrawal
- User-controlled application of pressure directly to the joint

Ugo Basile: more than 10,000 citations

Rationale of the Technique

Arthritis is associated with chronic, debilitating pain in the joints. Current metrics of arthritic pain are indirect, by interviewing patients in a clinical setting or, in animal models, by scoring the level of motor activity or the animal's weight distribution (Barton et al. 2007). Current indirect tests, such as the weight distribution (Incapacitance Tester, Linton, UK), correlate well with the level of joint pain, but such a metric is a composite picture of complex pain responses, and provides little discrete information about local stimulation and locally-evoked responses.

The quantification of localized joint hypersensitivity is common in the clinic, but not in animal experiments. In this sense the new PAM device represents a step forward toward a multifactorial measurement of pain-related behavior in animal research.

The PAM device is the first and only instrument **designed specifically to apply force to the joint** and automatically detect the animal's response.

Instrument Configuration

Pressure transducers: the PAM device comes with 2 different transducers. Each has been tested and validated in the mouse and rat knee joints: **small transducer** is flat and round (ideal for mouse knee joint), **large transducer** is also flat and round (ideal for rat knee joint).

Fig. 1: "Joint Transducer"

An optional **paw transducer applicator** is also available which rapidly transforms the PAM into a Digital Randall-Sellitto for pressure application on paws, muscles, tail.

Fig. 2: "Paw Transducer"

Fig. 3: "PAM device standard package (PN 38500), shown with pedal switch, small and large joint transducer and Usb cable".

Electronic Unit: The compact electronic controller connects to the mains power or can be battery-operated. A foot pedal switch is provided for manual score of the peak force applied.

Data Acquisition and Software: the PAM device has an internal memory for data storage and also includes dedicated acquisition software.

Acknowledgements

The PAM device was invented and validated in the University of Edinburgh by the team of Prof. Daniel McQueen, Susan Bond and colleagues and Dr. Harry Brash, who built the first prototypes.

Ordering Information

38500	**PAM**, includes the following parts:
38500-001	Electronic Unit
38500-002	**Large** Joint Transducer
38500-003	**Small** Joint Transducer
38500-010	Software
38500-303	Pedal Switch

Options

38500-006	Paw Transducer

Bibliography

• N. J. Barton et al. *2007* Pressure application measurement (PAM): "**A novel behavioural technique for measuring hypersensitivity in a rat model of joint pain**". *Journal of Neuroscience Methods 163, 67–75.*

e-VF

ELECTRONIC VON FREY
Cat. No. 38450

General

Ugo Basile introduces an electronic apparatus for applying light touch to the rodent foot, the **e-VF, Electronic Von Frey**.

A touch stimulator transducer is mounted on a Perspex bar so that routine procedures may be employed to examine and test the animal skin sensitivity. The completion of each test may be indicated either by the sudden release of the paw or by pressing the external foot-pedal. The display then gives the operator a summary of the results of the test (i.e. force and time corresponding to the animal response) and the operator may choose to reject the results or to accept them, in which case they are recorded in the e-VF's internal memory.

The rate of application of the force is set by the operator and the e-VF includes software tools that help the operator in consistently applying the force at the desired rate. The results of several hundred tests may be stored in the e-VF for transfer them to a PC when convenient.

Sensitivity

Allodynia

ASSESSMENT OF HYPERSENSITIVITY IN RATS AND MICE

Main Features

- Maximum Applicable Force: 1000 g
- Resolution: 0.01 g
- Automatic recording of animal response
- User-controlled application of force rate
- Location of the target via the original prism-design

Rationale of the technique

Impaired cutaneous sensation is usually first make evident to the eye in a loss of light-touch detection. The Electronic Von Frey was developed to quantify light touch in the laboratory animal.

The classic instrument for test of touch sensitivity is the Von Frey hair or, more specifically, the Semmes-Weinstein set of Von Frey Hairs, i.e., 20 monofilaments in a linear scale of physical force. The hair is pressed against the skin, the force applied increases with increasing hand pressure, until the hair bends. Once the hair is bent, increasing hand approach causes further bend, but negligible additional force on the skin. In this way, a given filament always applies the same force, not subject to variation by the energy of the operator. The Semmes-Weinstein set can be used on rodents (which respond to light touch of the paw, if they feel it, by a paw withdrawal reflex). However, the involved procedure is tedious and time-consuming because several stimulations must be performed for a single test (i.e., a different filament for each force level).

Compared to the classic Von Frey Hairs, the **Electronic Von Frey device (e-VF)** has the advantage of ensuring a continuous force application along the whole force range of the sensor (i.e., 0-1000 g), by using a rigid metal tip. Moreover, the metal tip used in the e-VF is the same as the one used in the classic **Ugo Basile Dynamic Plantar Aesthesiometer** (PN 37450), allowing consistent comparison of results among the two instruments.

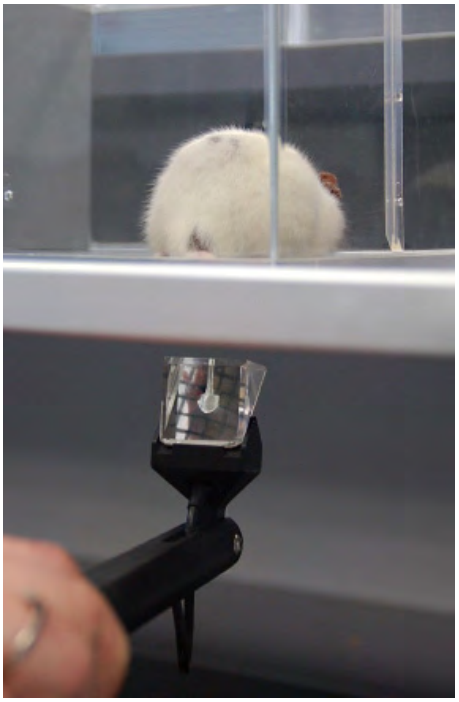


Fig. 1: "touch stimulator" transducer, including prism and protective "umbrella". Grid mesh not included (optional, PN 37450-278)

Instrument configuration

The e-VF device comes as a complete package including the **touch stimulator transducer**, the **electronic unit**, the foot pedal and the **software.** The mesh grid with platform, shown in figure 1, is an accessory.

Fig. 2: electronic unit, usb cable and foot pedal, all included in the the Electronic Von Frey standard package (PN 38450)

Ease of use

The e-VF device has been designed to make sensitivity experiments easy and consistent:

- Effective peak detector for a reliable and automated detection of the animal response
- Ratemeter and its Slope feature (see figure 3) make sure that the desired force is applied at a consistent rate

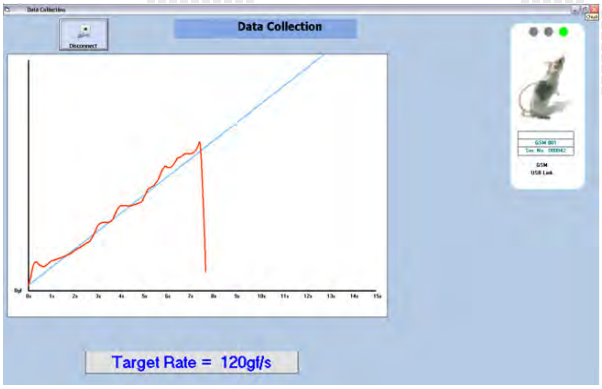


Fig. 3: the software acts as a quality-control tool showing in real time the applied force (red line) and the desired force target rate (blue line)

Ordering Information

38450	e-VF, Electronic Von Frey, complete with touch stimulator transducer, electronic unit, foot pedal and software
Options	
37450-278	Base assembly for plantar stimulation

Von Frey Hairs
(with grid)

Cat. No. 37450-277

Hypersensitivity

Touch Threshold

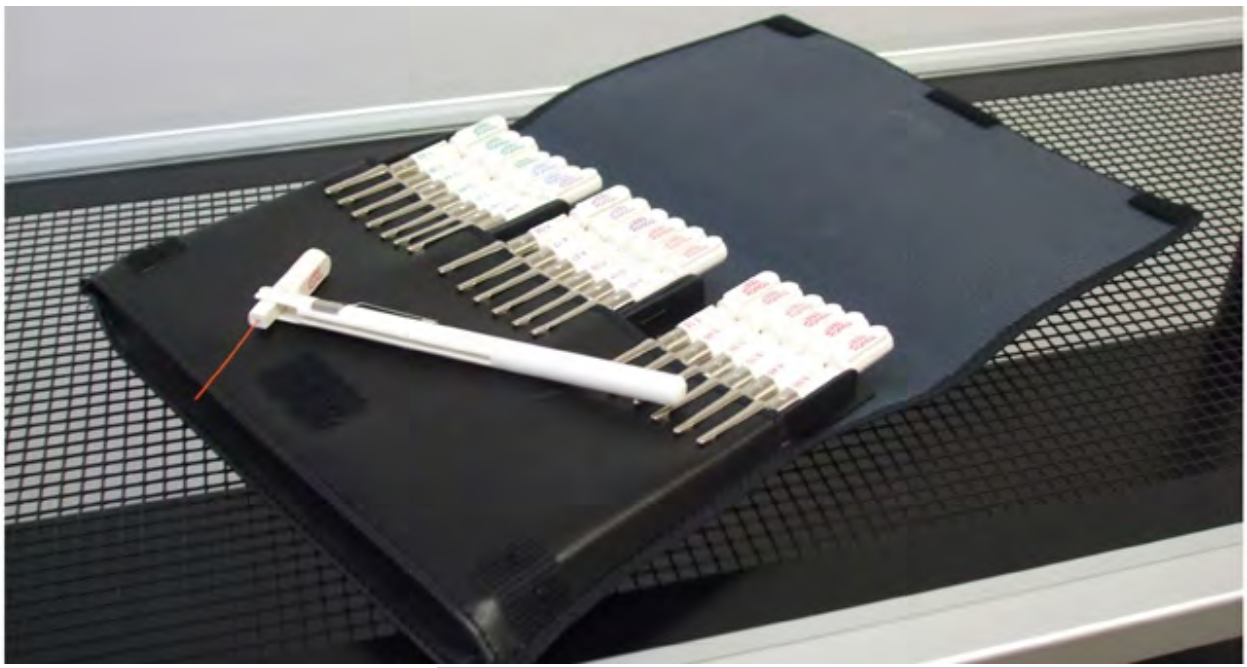
Semmes Weinstein Von Frey Filaments for Touch Assessment

General

This set of 20 monofilaments is based on the Semmes Weinstein monofilament set, **but now features retractable filaments** to protect the filament and allow the evaluator to carry a few around in a pocket.

The Semmes Weinstein set of monofilaments provides an approximately logarithmic scale of actual force, and a linear scale of perceived intensity. They have a long history of effective use in clinical settings, and can be used to diagnose pathologies of hyper- or hypo-aesthesia.

Subsets within the set of 20 probes distinguish pathologies on different parts of the body (foot, hand, lip, cheek, etc.).



Main Features

- 20 Filament Kit
- Graded Series of Nylon Monofilament
- Easy to apply, flip-cap design protects tips

This set of 20 monofilaments is based on the Semmes Weinstein monofilament set, but now features retractable filaments to protect the filament and allow the evaluator to carry a few around in a pocket.

The Semmes Weinstein set of monofilaments provide an approximately logarithmic scale of actual force, and a linear scale of perceived intensity.

They have a long history of effective use in clinical settings, and can be used to diagnose pathologies of hyper- or hypo-aesthesia. Subsets within the set of 20 probes distinguish pathologies on different parts of the body (foot, hand, lip, cheek, etc.).

The operating principle remains the same: when the tip of a fiber of given length and diameter is pressed against the skin at right angles, the force of application increases as long as the researcher continues to advance the probe, until the fiber bends.

After the fiber bends, continued advance creates more bend, but not more force of application.

This principle makes it possible for the researcher using a hand held probe to apply a reproducible force, within a wide tolerance, to the skin surface.

Rodents exhibit a paw withdrawal reflex when the paw is unexpectedly touched. The Touch Test™ Sensory Evaluator can be used on the Plantar surfaces of the foot of a rat or mouse, and the animal will indicate sensation by pulling back its paw.

Replacement filaments available.

Accessories

Perforated metal shelf, a 90 x 38 cm shelf for testing with Von Frey filaments. Laser-cut perforations form a mesh-like open grid of square holes ~5X5 mm.

Intervening metal grid is ~1mm wide, comfortable to the animal and easy to view the target area of the paw.

The shelf is coated with a polymer resin that is easy to clean and which will not be spoiled by fluids or waste materials Mount the shelf on the wall, or use the base & columns as a testing platform.

Ordering Information

1277 **Von Frey Kit,** Touch Test Sensory Evaluator, Kit of 20 filaments

37450-277 Set of 20 VonFrey Filaments (type 1277), with Base assembly for plantar stimulation, including support with columns, perforated metal sheet and multiple-configuration animal-enclosure, from 3 to 12 spaces.

37450-278 Base assembly for plantar stimulation, including support with columns, perforated metal sheet and multiple-configuration animal-enclosure, from 3 to 12 spaces. Suitable for use with Von Frey Filaments Cat. No. 1277

37450-005 Large Perforated Metal Sheet for Dynamic Plantar Aesthesiometer (testing shelf)

Orofacial Stimulation Test

Fehrenbacher, Henry and Hargreaves Method

Cat. No. 31300

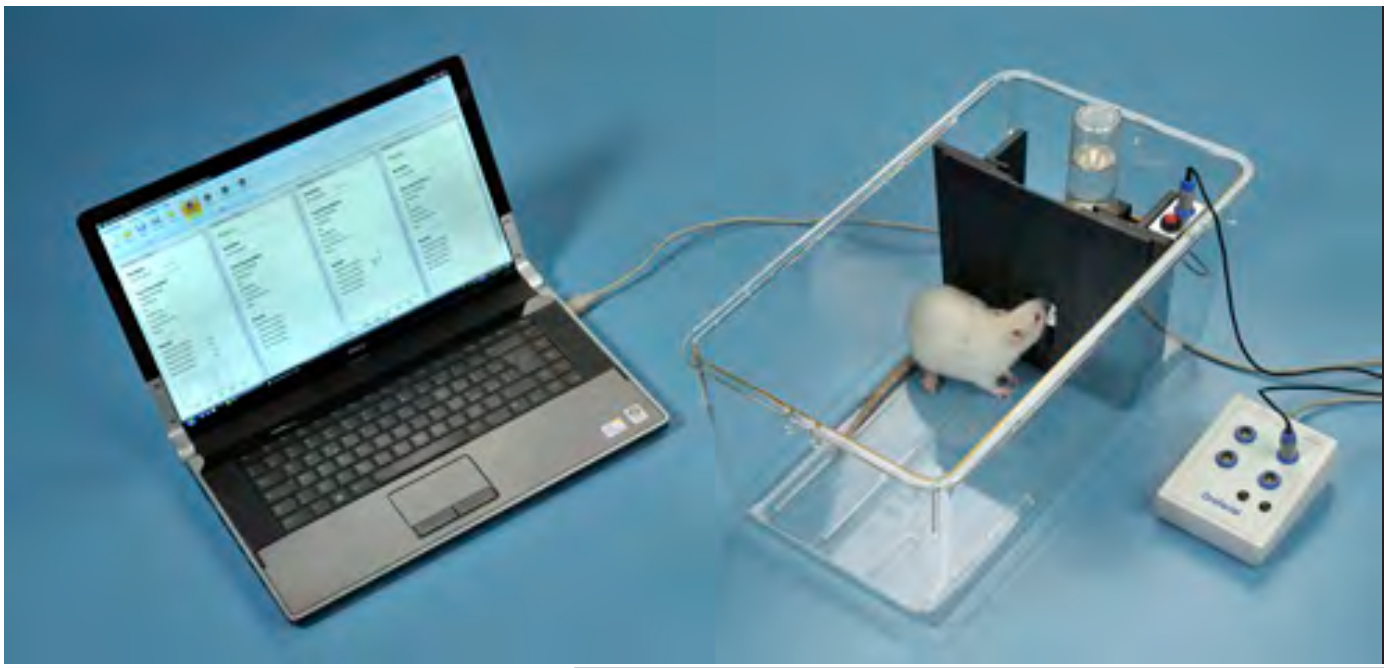
- Mechanical Nociception
- Thermal Nociception

Trigeminal hyperalgesia

General

The **Orofacial Stimulation Test** by **Ugo Basile** measures hypersensitivity to thermal or mechanical stimulation of the trigeminal area.

Rats voluntarily contact a thermal or a mechanical stimulator with their *unshaved vibrissal pad* in order to access a food reward. Metrics obtained are (1) the duration of feeding and (2) the number of feeding attempts, measured by interruption of an infrared beam traversing the opening to the reward.
Feeding duration and number of attempts are strongly dependent on changes in the applied thermal or mechanical stimulus.



Main Features

- Mechanical and thermal nociception assays within the same experiment
- High throughput: up to 16 animals can be tested simultaneously
- Intact vibrissal pad, as the test does not require any vibrissal shaving

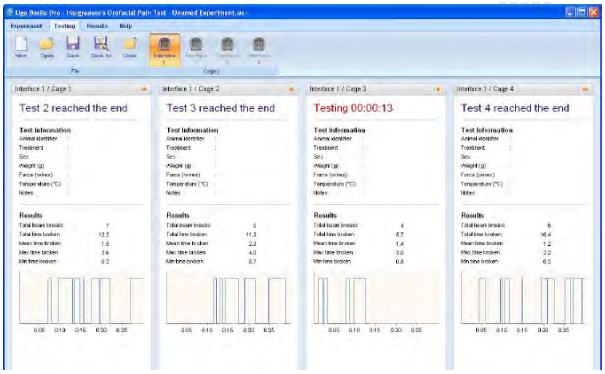
Instrumentation and Methodology

Orofacial pain problems are common and involve structures and mechanisms unique to the trigeminal nerve. Few methods are currently available for orofacial preclinical research, and none incorporates parallel measurement of mechanical or thermal stimulation within the same experiment. Moreover, while most of the current assays measure unlearned behaviors, such as flinching or withdrawal reflexes, the new **Orofacial Stimulation Test**, developed by Hargreaves and colleagues**,** integrates higher-order brain functions into measurements of orofacial nociception.

This innovative approach permits the parallel measurement of highly integrated nociceptive responses to thermal or mechanical stimulation.

Animals are trained & tested in standard home cages. The snout is inserted through an opening to lick the reward bottle. Tests are performed in the presence of thermal and / or mechanical stimuli contacting the vibrissal pad. Following treatment to induce hypersensitivity, (e.g., trigeminal ligation or injection to induce inflammation) trials are repeated to determine the effect of treatment on feeding behavior / reward. Assay sensitivity (inflammation-induced decreases in feeding behavior and reversal of hypersensitivity by local and systemic administration of analgesics) has been proven (Hargreave's et al., ms in prep.)

The **Ugo Basile Orofacial Stimulation Test** quantifies feeding behavior by measuring the beam-break number and duration. The measured feeding behavior is strongly correlated to mechanical or thermal orofacial nociception, as rats must contact a thermal or a mechanical stimulator in order to access the food reward.



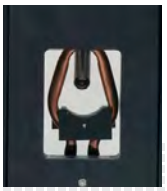
Orofacial Software: testing window

The **Oro Software** collects and records beam-break numbers and duration (including min, max and mean) from up to 16 cages simultaneously.
Data are shown in real-time both as numeric summary results and in a graphic format. Data are automatically analyzed across time according to an adjustable time window, independently viewable for each of the 16 cages. The results of all the tests are available in a spreadsheet format which can easily be copied to other programs for further analysis.

Either the thermal or the mechanical stimulator is mounted onto a **stimulation/detection "wall"**, which also incorporates a drinking bottle and fits inside standard rat home cages (e.g. Tecniplast or Allentown).

Stimulus / detection "walls" mounted into standard home cages

The **thermal stimulator** relies on a copper tubing loop and a circulating water bath, whose temperature can be adjusted from ambient to 70°C, to reach hot nociceptive thresholds.



Thermal Stimulator

The **mechanical stimulator** relies on thin metal wires attached to a mounting plate. The system comes with several plates, each with a different number of wires in order to apply different force levels to the animal vibrissal pad.

Mechanical Stimulator

The "System and Method for Assessing Hypersensitivity to Orofacial, Thermal and Mechanical Stimulation" (U.S. Provisional Patent Application 61/235,590) was invented by ***K. Hargreaves, J. Fehrenbacher and M. Henry*** *in the Laboratory of Dr. Hargreaves at* ***UT San Antonio*** *and developed commercially by* ***Ugo Basile R&D****. Dr. Fehrenbacher is now at IUPUI, Indianapolis.*

Ordering Information

31300	Complete system for one animal
31320	Complete system for two animals
31340	Complete system for four animals
31300-001	Electronic unit (four channels)
31300-002	Additional cage assembly (includes thermal and mechanical stimulators and feeding detector)
31300-003	Circulating water bath
31300-010	ORO-Software, for data acquisition and analysis from up to 16 cages.

Bibliography

Fehrenbacher, J.C. *et al.* 2010. "**Characterization of a novel orofacial behavioral assay to assess hyperalgesia to thermal and mechanical stimulation**". (submitted).

Durham Animal Holders

New animal holders for trigeminal stimulation

Cat. No. 37100

- Orofacial Pain assessment
- Mechanical and Thermal Nociception

Trigeminal hyperalgesia

General

The **Durham Animal Holders** are the newest accessory for use with the **Plantar Test / Hargreaves Test**, manufactured by Ugo Basile.

These animal holders complete the scope of the infrared (IR) thermal stimulus of the Plantar Test, used for assessing hind paw withdrawal. This new invention allows the application of the same IR stimulus to the region innervated by the trigeminal nerve.

Main Features

- Correlation thresholds in submandibular (trigeminal) region and hindpaw plantar surface
- Test orofacial nociception using a standard Plantar Test (Hargreaves) device

Innovative design and material

The Durham Holders are designed to hold an animal comfortably and effectievely. They are made of a proprietary polymer with a deep-red color which appears dark to the animal. The holders are form molded for testing specific size ranges of animals; two sizes have been optimized for young adult rats as well as for bigger rats.

In practice, the animal crawls in happily and becomes snugly nestled within the holder. Normally the animals don't back out, but inserting the vertical back plate ensures that the animal stays in place. The position of the removable back panel insert can be adjusted from slot to slot, which allows the animal to be securely held in place, without being crowded. The animal crawling towards the front helps quite a lot and the subject is almost self-positioning for applying the IR stimulus. Perfectly positioned almost every time, the area of stimulation is to the submandibular region of the rat face.

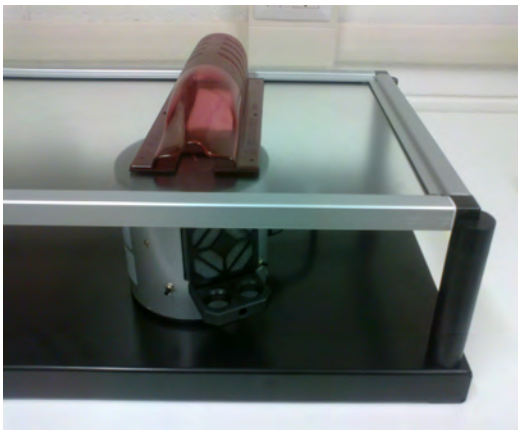
The holder conformation is optimized to two specific animal size ranges; the smaller holder will accommodate animals from 175 grams to 250 grams, and the larger holder will accommodate animals from 225 grams to over 400 grams.

Access panels

There are two different windows through which the stimulus may be presented:

- Submandibular access panel:
The opening under the chin is a perfectly sized rectangular aperture just below the animal's chin. It allows the IR stimulus to be positioned precisely and to stimulate the area innervated by the mandibular branch of the trigeminal nerve. The aperture is large enough that both right and / or left side may be individually stimulated!

- Plantar access panel:
The holder allows the animal to be positioned in such a way to use the classic Plantar Test (Hargreaves) instrument for stimulating the hindpaw, as well as the areas innervated by the trigeminal nerve.



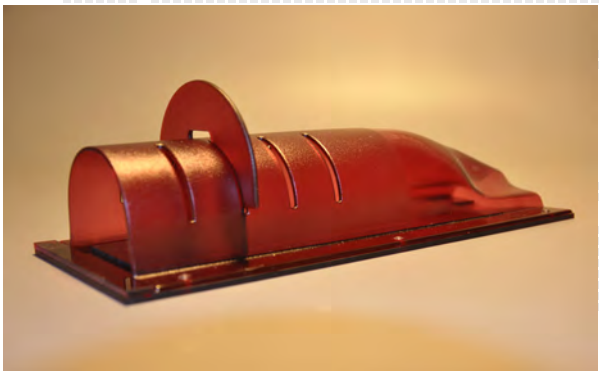
The picture above shows a Durham Holder positioned on a classic Ugo Basile Plantar Test (Hargreaves) device.

Rationale of the technique

The Durham Holders have distinct advantages which make them ideal as accessories to the classical Hargreaves test.
They may appear similar to the classic Broome style animal holder. Those animal restrainers are clunky, and made of clear acrylic, and do not have stimulus apertures. More importantly, those holders could never be used for this stimulation. Quantification of localized hypersensitivity is common in the clinic, but not in animal experiments. The Durham Animal Holders represent a step forward toward a multifactorial measurement of pain-related sensitivity in animal research.

Acknowledgements

These new animal holders were invented at the Center of Biomedical and Life Sciences at Missouri State University. Specifically, the Durham Holders were invented and validated in the laboratory of Dr. Paul Durham, director of the Biomedical and Life Sciences and Professor of Cell Biology at Missouri State University. Filip Garrett and Allison Overmyer performed the validations. Prototypes were put together by Larry Vause.



Durham Holder, rearview.

Ordering Information

37100 Set of two Durham Holders for rats

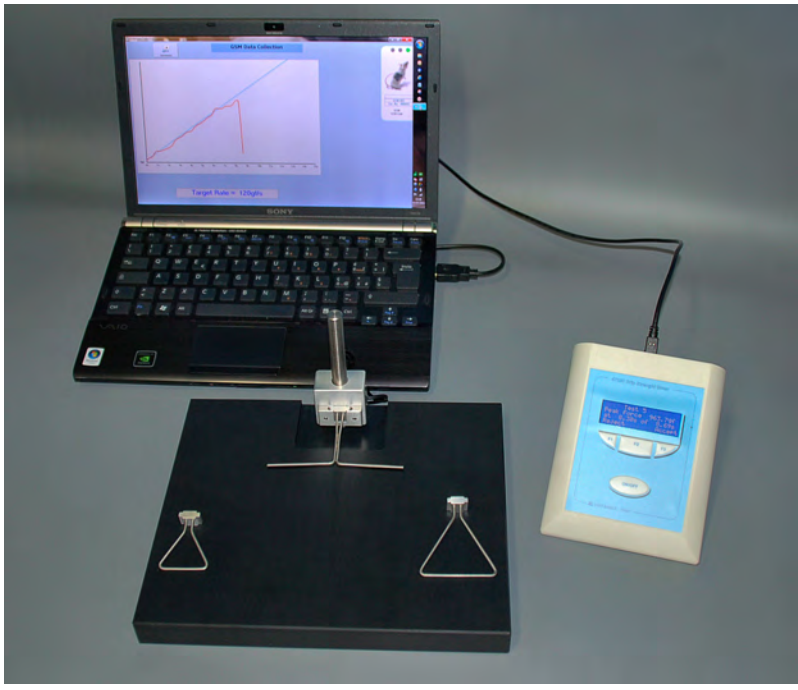
(one medium size, one large size). For use with Plantar Test and Dynamic Plantar Aesthesiometer.

Bibliography

Filip G. Garrett, Allison E. Overmyer, Larry A. Vause, Jordan L. Hawkins, Joshua B. Hayden, and Paul L. Durham (2010) Development of a novel device for measuring withdrawal latency by thermal stimulation in rodent facial pain models using the Hargreaves Plantar Apparatus. *Poster Presented at SFN 2010*

Grip Strength Meter
for rats and mice

Cat. No. 47200



General

The Ugo Basile Grip Strength Meter automatically measures grip-strength (*i.e.* peak force and time resistance) of forelimb or hindlimb in rats and mice.

The Grip Strength test is a perfect complement to the gold standard Ugo Basile Rota-Rod device for motor coordination and motor function experiments. The effects of drugs, toxins, muscle relaxants, disease, ageing or neural damage on muscle strength may be assessed.

The animal is placed over a base plate, in front of a grasping tool (either T-shaped, trapeze-shaped or grid), whose height is adjustable. The bar is fitted to a force transducer connected to the control unit. The control unit can be used as a stand-alone or USB-connected to a PC for software data monitoring.

High Consistency with force-rate monitoring tool

SOFTWARE INCLUDED

Features and Benefits

- Force-rate monitoring tools (via software or LCD display)
- Software included
- No calibration needed
- Grasping-bar and grasping trapeze included (grid, optional)
- Grasping tool positioned at adjustable height
- Base plate of black sand-blasted Perspex

Ugo Basile: more than 10,000 citations

Rationale of the Grip Strength test

When pulled by the tail, the animal grasps at the bar. Rodents instinctively grab anything they can to try to stop this involuntary backward movement, until the pulling force overcomes their grip strength. After the animal loses its grip on the grasping bar, the peak amplifier **automatically stores the peak pull-force achieved by the limbs** and shows it on the display.

The instrument basically consists of a base plate of black sand-blasted Perspex, complete with a force transducer and a grasping device (bar, trapeze or an optional grid), whuich can be posiitoned at an adjustable height.

The force transducer has a resolution of 0.1 g and the maximum applicable force is 1500 g. The force transducer incorporates a proprietary memory chip to store all calibration parameters, so that no further calibration is required for normal use. Moreover, the controller will prompt to auto-zeroing routine at every measurement to automatically adjust any offset .

Data Monitoring and Storage

The device comes standard with both a control unit with internal memory and a software for signal monitoring, data transfer and analysis.

Once saved, data can be browsed both on the control unit or trasferred to a PC in two type of formats: proprietary format or .csv, to be opened with MS Excel.

Ordering Information

47200 **Grip-Strength Meter, new model for rats and mice,** complete with: control unit, software, force sensor, T-shaped grip bar, tra peze grip for mouse, trapeze grip for rat, perspex baseplate.

Optional: 47200-325 Mouse Grid

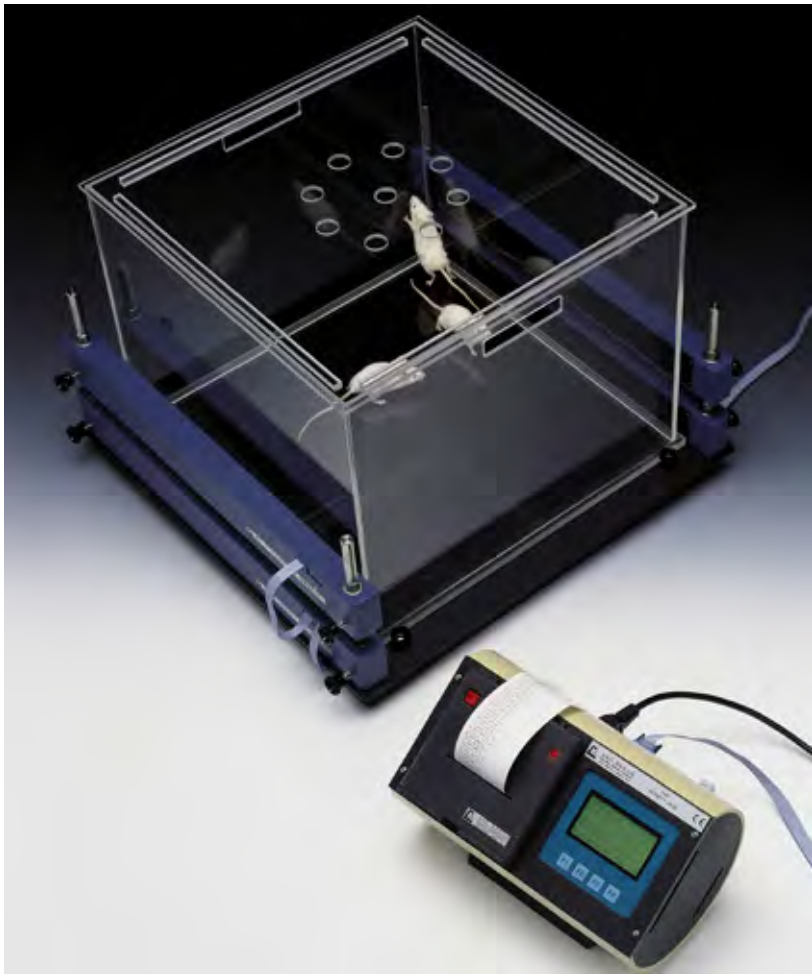
Bibliography

- L. Bach-Rojecky & I. Samarzija: "**Influence of Ethanol on the Myorelaxant Effect of Diazepam in Rats"** Acta Pharm. 55: 115-122, 2005
- D. Gitler et alia "**Different Presynaptic Roles of Synapsins at Excitatory and Inhibitory Synapses**" J. Neuroscience 24(50): 11368-11380, 2004

Screenshot of the Grip Strength meter software *showing the force trace (in red) and the desired target force rate (in blue). The experimenter can consistently apply the force (i.e. pull the animal) at the desired rate, by simply making sure that the red trace lays on the blue line.*

Multiple Activity Cage

Cat. No. 47420



General

The **47420 MULTIPLE ACTIVITY CAGE** package comprises:

- an **Electronic Unit,** Cat. 7441
- an **I.R. Beam Cage,** which consists of an Animal Cage of clear Perspex, Cat. 7433, complete with two sets of emitter/sen sor arrays for horizontal and vertical activity, respectively Cat. 7435 and Cat. 7436.

This set-up can accept up to 5 additional cages, for a total of 6.

NEW !! With dedicated software included!

STAND-ALONE CONTROLLER WITH EMBEDDED PRINTER FOR GLP AND DATA SAFETY

MAIN FEATURES

- Measures horizontal and vertical activity in rats and mice
- Psychopharmacology, in screening drugs which are potentially active on the central nervous system.
- Behavioural Sciences, in evaluating the variations of spontaneous activity after changes in environmental conditions

Electronic Unit

The **7441** is designed to process the data originated by up to 6 **7433 cages**.

The Electronic Unit incorporates a graphic display, a thermal printer and a serial port RS232 for direct connection to the PC via the software Cat. 52050 included. A serial to USB connector is also included.

The graphic display presents all available commands. The operator sets the experiment configuration via the keyboard located below the display.

The activity data are displayed at preset intervals and printed/routed to the computer according to the selected configuration. The data can be customized by adding animal & experiment numbers, gender, etc.

7441 is provided with an internal memory, capable to store the data of several experiments, to be unloaded to the PC later.

Cage

The **7433** Cage consists of a cubicle, dimensioned 41 x 41 x 33 (h) cm, entirely made of clear Perspex. Upper lid and bottom catch pan detachable for cleaning.

The cubicle rests on a sturdy base made of black Perspex, provided with four vertical notched bars of stainless steel to which the horizontal/vertical detecting systems 7435 and/or 7436 can be fastened.

The **7435** consists of two facing blocks containing an I.R. array of emitters and, respectively, sensors. The **7435** records the **horizontal activity**. A similar system, Cat. **7436**, whose height can be adjusted, assesses the **vertical activity (rearing)**.

Data Acquisition

The electronic unit is microprocessor controlled and features direct PC output. Internally-stored data can be routed via a 9-pin D-type connector to the PC serial port (RS232).
Data output is managed by **52050-04** Data Acquisition Software Package (Windows® based), which enables the research worker to store the data into individual files, ready to be easily managed by most statistical analysis packages available on the market.

Ask for details!

Ordering Information

47420 MULTIPLE ACTIVITY CAGE, standard package, including 7441 Electronic Unit (for up to 6 cages) and one 7433 with 7435 & 7436 emitter/sensor kit, cables & manual.

7441	Electronic Unit
7433	Animal Cage complete with I.R. Beam Array
7435	Set of emitter/sensor arrays for horizontal activity
7436	Set of emitter/sensor arrays for vertical activity
37400-305	Package of 10 Heat Sensitive Paper Rolls
7439	Instruction Manual
E-WP008	Mains Cord
52010-320	USB to serial port converter
52010-322	Serial cable 9 to 9 pin
Set of fuses	for either 230 or 115 V operation

Physical (Dimensions & Weight)

7441	27x16x19 cm, Kg 2.70
7433	54x50x37 cm, Kg 11.80 (incl. 7435/7436)

Bibliography

- A. Marazioti et alia: "**Somatostatin Receptors in the Ventral Pallidum/Substantia Innominata Modulate Rat Locomotor Activity"** Psychopharmacol., 181:2, 319-326, 2005
- W. Ponti et alia: "**In vivo Model for the Evaluation of Molecules Active Towards Transmissible Spongiform Encephalopathies"** Veter. Res. Communicat., 28:1, 307-310, 2004
- T. Dolezal et alia: "**Guaifenesin Enhances The Analgesic Potency of Paracetamol in Mice**" Arch. Pharmacol., 366:6, 551-554, 2002
- M. Votava et alia: "**Effects of Alprazolam and Fluoxetine on Morphine Sensitization in Mice**" Physiol. Res., 51, 417-423, 2002

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Rat Rota-Rod

Cat. No. 47700

General

The "Rota-Rod" technique has been originated by a 1957 paper of N.W Dunham and T.S Miya and has proved to be of great value in research involving screening of drugs which are potentially active on motory coordination.

The **Ugo Basile Rota-Rods** are the result of many years of research in cooperation with the latest development in behavioural and pharmacological research.

- THE ORIGINAL ROTA-ROD: THOUSANDS OF CITATIONS SINCE 1960s!
- THREE OPERATION MODES: CONSTANT SPEED, ACCELERATING OR ROCKING

Main Features

- Adjustable speed (2-80 rpm) and acceleration ramp (6" - 600")
- Tiltable graphic display for optimal reading
- PC Interface: serial and USB (via the adaptor provided)
- Computer compatibility: direct connection to a PC (via the dedicated software included as standard)

Ugo Basile: more than 10,000 citations

General

The new Ugo Basile Rota-Rod replaces both previously available constant speed and accelerating models. They basically consist of four 6 cm diam. drums, suitably machined to provide grip. Five flanges divide the drums, enabling four rats to be on the treadmill simultaneously.

When a rat falls off its cylinder section on to the plate below, the plate trips thereby recording the animal's endurance time in seconds.

A large, very readable backlit graphic display shows the actual angular speed (RPM). At the end of a run, the display shows for each animal the running time and the instrument rotation speed at the time that animal fell off.

The panel can be oriented to select the most comfortable angle for the operator, to avoid glare, etc.

The main features, digitally preset by function keys are the following:-

- the angular speed can be preset in the range 2-80 RPM
- in the acceleration mode, the change of speed can be preset in 6 second-10 minute in terval in 6 second steps.
- reverse rotation can be selected, which takes place at minimum speed, at the end of a programmable acceleration-deceleration sequen ce.
- a rocking motion is also presettable, with adju stable angular amplitude, speed and accelera tion.

Data Acquisition

The 47700 is microprocessor controlled and features direct PC output. Internally-stored data can be routed via a 9-pin D-type connector to the PC serial port (RS232).

Data output is managed by 52050-07 Data Acquisition Software Package (Windows® based), which enables the research worker to store the data into individual files, ready to be easily managed by most statistical analysis packages available on the market. **Ask for details!**

Physical

Power Requirement	115 or 230 V, 50/60 Hz
Dimensions	50 (w) x 49 (d) x 63 (h) cm
Shipping dimensions	80 x 60 x 44 cm
Weight	Kg 10.50
Shipping Weight	Kg. 18.00 (approx.)

47800 COMBO-PACKAGE FOR MOUSE & RAT

If you plan to work with both rats and mice, you should consider the Combination Package Mouse Rota-Rod 47600 + Rat Rota-Rod 47700, offered at a special price.

47600 Mouse Rota-Rod

Ordering Information

47700 RAT ROTA-ROD, standard package, including:

47700-301	Dust Cover
47700-320	Trip Plate, complete (4 pieces)
47700-321	Transmission Belt
E-WP008	Mains Cord
52050-07	Dedicated Software Package, with serial cable
52010-320	Serial to USB adaptor
	Set of fuses
47700-302	Instruction Manual

Optional

57145	Thermal Mini-Printer

Bibliography

Method Papers

- N.W. Dunham & T.S. Miya: "**A Note on a Sinple Apparatus for Detecting Neurological Deficit in Rats & Mice**" J. Am. Pharmaceut. Assoc., Scientific Edit., XLVI: No. 3, 1957
- B.J. Jones & D.J. Roberts: "**The Quantitative Measurement of Motor Incoordination in Naive Mice Using an Accelerating Rotarod**" J. Pharm. Pharmac.: 20: 302-304, 1968

Papers Dealing With Rota-Rod Technique

- A.J. Grottick et alia: "**Studies to investigate the role of 5-HT 2C Receptors on Cocaine- and Food-Maintained Behavior**": J. Pharmacol. Exper. Therap., 2000
- L.T. Huang et alia: "**Pentylenetetrazol-Induced Recurrent Seizures in Rat Pups: Time Course on Spatial Learning and Long⋯**": Epilepsia, 2002
- E. Candelario-Jalil et alia: "**Wide Therapeutic Time Win-dow for Nimesulide Neuroprotection in a Model of Transient Focal Cerebral Ischemia in the Rat**": Brain Research: 177: 98-108, 2004

Mouse Rota-Rod

Cat. No. 47600

General

The "Rota-Rod" technique has been originated by a 1957 paper of N.W Dunham and T.S Miya and has proved to be of great value in research involving screening of drugs which are potentially active on motory coordination.

The **Ugo Basile Rota-Rods** are the result of many years of research in cooperation with the latest development in behavioral and pharmacological research.

- THE ORIGINAL ROTA-ROD: THOUSANDS OF CITATIONS SINCE THE 1960s!
- THREE OPERATION MODES: CONSTANT SPEED, ACCELERATING OR ROCKING

Main Features

- Adjustable speed (2-80 rpm) and acceleration ramp (6" - 600")
- Tiltable graphic display for optimal reading
- PC Interface: serial and USB (via the adaptor provided)
- Computer compatibility: direct connection to PC (via the **dedicated software included** as standard)

Ugo Basile: more than 10,000 citations

Basic Features

The new Ugo Basile Rota-Rod replaces both previously available constant speed and accelerating models. It basically consists of five 3 cm diam. drums, suitably machined to provide grip. Six flanges divide the drums, enabling **five** mice to be on the treadmill simultaneously.

When a mouse falls off its cylinder section on to the plate below, the plate trips thereby recording the animal's endurance time in seconds.

A large, very readable backlit graphic display shows the actual angular speed (RPM). At the end of a run, the display shows for each animal the running time and the instrument rotation speed at the time that animal fell off.

The panel can be oriented to select the most comfortable angle for the operator, to avoid glare, etc.

The main features, digitally preset by function keys are the following:-

- the angular speed can be preset in the range 2-80 RPM
- in the acceleration mode, the change of speed can be preset in 6 second-10 minute interval in 6 second steps.
- reverse rotation can be selected, which takes place at minimum speed, at the end of a programmable acceleration-deceleration sequence.
- a rocking motion is also presettable, with adjustable angular amplitude, speed and acceleration.

Data Acquisition

The 47600 is microprocessor controlled and features direct PC output. Internally stored data can be routed via a 9-pin D-type con-nector to the PC serial port (RS232).

Data output is managed by 52050-07 Data Acquisition Software Package (Windows® based), which enables the research worker to store the data into individual files, ready to be easily managed by most statistical analysis packages available on the market.

Ask for details!

Physical

Power Requirement	115 or 230 V, 50/60 Hz
Dimensions	40 (w) x 30 (d) x 38 (h) cm
Shipping dimensions	66 x 50 x 63 cm
Weight	Kg 5.00
Shipping Weight	Kg 12.00 (approx.)

47800 COMBO-PACKAGE FOR MOUSE&RAT

If you plan to work with both rats and mice, you should consider the Combination Package Mouse Rota-Rod 47600 + Rat Rota-Rod 47700, offered at a special price.

47700 Rat Rota-Rod

Ordering Information

47600	**MOUSE ROTA-ROD**, standard package, including
47600-301	Dust Cover
47600-320	Trip Plate, complete (4 pieces)
47600-321	Transmission Belt
47600-302	Instruction Manual
E-WP008	Mains Cord
52050-07	Dedicated Software Package, with serial cable
52010-320	Serial to USB adaptor
	Set of fuses
Optional	
57145	Thermal Mini-Printer

Bibliography

Method Papers

- N.W. Dunham & T.S. Miya: "**A Note on a Simple Apparatus for Detecting Neurological Deficit in Rats & Mice**" J. Am. Pharmaceut. Assoc., Scientific Edit., XLVI: No. 3, 1957
- B.J. Jones & D.J. Roberts: "**The Quantitative Measurement of Motor Inco-ordination in Naive Mice Using an Accelerating Rotarod"** J. Pharm. Pharmac.: 20: 302-304, 1968

Papers Dealing With Rota-Rod Technique

- A.J. Grottick et alia: "**Studies to investigate the role of 5-HT 2C Receptors on Cocaine- and Food-Maintained Behavior**": J. Pharmacol. Exper. Therap., 2000
- L.T. Huang et alia: "**Pentylenetetrazol-Induced Recurrent Seizures in Rat Pups: Time Course on Spatial Learning and Long"**: Epilepsia, 2002
- E. Candelario-Jalil et alia: "**Wide Therapeutic Time Window for Nimesulide Neuroprotection in a Model of Transient Focal Cerebral Ischemia in the Rat**": Brain Re-search: 177: 98-108, 2004

Rotometer

Cat. No. 43000

General

The Rotometer is widely used in research on motor assessment tests. Rotometer is also used in traumatic and acquired brain injury research and spinal cord injury research.
There are several well-characterized causes for animals to exhibit rotational behavior:

- Uneven/unilateral higher expression of levels of neurotransmitters (such as GABA or dopamine). Some brain tumors can cause aberrant expression levels to occur. Injury may also interfere with proper neurotransmitter expression, and/or cause some localized change in neurotransmitter expression.
- Developmental anomalies can also cause rotational behavior.
- Anxiety/stress may cause this aberrant behavior.
- Exposure to some drugs, or drug abuse, or withdrawal from some drugs; all may cause rotational sequences.
- Physical lesions also can cause rotational behavior in an animal

No Tether !

No Jacket !

TRULY
UNRESTRAINED
MICE

Main Features

- No jacket or tether is necessary: the animal is completely free
- Stand-alone, with internal memory
- **Quick and si**mple to use: no training, turn-key system with software included

Freely Moving Animals

To quantify rotational behavior in a freely moving mouse is a significant development. This new Rotometer accomplishes precisely this task, using new and clever technology to count clockwise (CW) and counterclockwise (CCW) rotations in an open field. The animal carries just a small magnet (not much larger than a grain of rice) on its nape or on its tail.

The magnet can be attached on the mouse tail or nape, surgically implanted or injected subcutaneously.

A convenient method is to attach a 2x15mm magnet to the base of the mouse tail by using standard laboratory tape. This easy and efficient method, involves minimal stress for the animal, and has the advantageof not requiring any anesthesia procedure.

Fig. 1: "15 mm magnet, attached to the mouse tail"

The injectable magnets are encapsulated within a proven bio-compatible material,to be implanted or injected subcutaneously.

The magnets fit within syringes normally used for the injection of identification transponders.

Fig. 2:" four Rotometers set up for high throughput screening, for testing several animals at the same time

Principle of Operation

The mouse is placed in the open field (20cm diam. round field, bound by the acrylic cylinder). When the animal circles within this field, or rotates in place, the magnet (carried by the mouse) also rotates. Sensors below the open field pick up these rotations, and the electronics record the rotations over time; discriminating CW from CCW rotation.

The design of this detecting system is very advanced, to enable the arena to be quite large whilst the aboard magnet is very small.

Data Collection

As Clockwise and Counterclockwise rotations accrue, they are displayed on the front panel. Experiments may be qualified with animal data, date, time, and other diagnostic data.

Data may be exported directly to a flash drive (included) or to a PC via USB or serial port. Individual sessions can be stored in internal memory for later output.

Ordering Information

43000 **ROTOMETER**, standard package, including:

35100-286	Perspex Animal Restrainer
E-E 018	Set of 2 Magnets (2x12)
E-E 019	Set of 2 Magnets (2x15)
E-AU 041	Memory Key
52050-13	CUB Data Acquisition Software Package
43000-302	Instruction Manual

Optional:

43000-321	Syringe Kit, incl. implanter, replacement needle & injectable magnets, 2x12 & 2x15 mm, 10 each

SPECIFICATIONS

Read-out	multifunction graphic display
Print-out	by optional thermal mini-printer
Connection to PC	USB /RS232C, via cable provided
Power Requirement	85 to 264 V, 50/60 Hz, 30 W max.
Dimensions	cm 25(w)x37(d)x16(h) without restrainer
Animal Restrainer	cm 20 (diam.) x 25 (h)
Weight	3.5 Kg
Shipping Weight	7.0 Kg approx.
Packing	65 x 34 x 28 cm

Hole Board

Cat. No. 6650

General

The Hole-Board 6650 has been conceived to study the innate **exploratory behavior** of the mouse confronted with a new environment (head plunging stereotype), according to the classic method devised by Boissier-Simon.

The normal mouse of either gender, when confronted with a new environment, will explore holes in the substrate of its environment by **plunging its head** in and out of the hole a few times, then moving on to the next hole.

The initial exploration activity of the animal and its variations brought about by psychotropic drugs are unmistakably assessed.

The test lasts few minutes and does not require any previous training/conditioning of the animal.

- The classical "Planche à Trous" Test by Boissier & Simon
- Quick Test for Exploratory Behaviour in Mice

Main Features

- The Hole-Board Test has been conceived to assess the behaviour of the mouse confronted with a new environment and its variations brought about by psychotropic drugs (or genes effects)
- The recording of the "head plunging" stereotype takes place automatically
- A few minute test is sufficient for most screening tests
- No previous training/conditioning required

Instrument Descriptions

The "Méthode de la Planche à Trous" devised by Boissier & Simon (see bibliography) can be performed under optimum conditions: the **recording** of the **"head plunging" stereotype** takes place automatically, via miniature I.R. emitters/receivers embodied in the "holes".

The instrument consists of a "Board" and a Control Unit.

Board 6652

The 40x40 cm board, 2.2 cm thick, is made of grey Perspex. The matt finishing avoids reflections which may alter the behaviour of the animal.

The board embodies 16 "head-plunging detectors", each comprising an I.R. emitter and a diametrically opposed receiver, flush mounted 1 cm below the upper panel.

The dimensioning of the board and holes has been optimized for mice in the 15-30 g range, to provide negligible false recordings.

Control Unit 6651

The control unit is lodged into a resilient cabinet whose front panel features the ACTIVITY display, the RESET and TEST keys, the LED visual indicators.

At every head plunging, the ACT (activity) LED blinks and the read-out increases by one digit. A time-constant has been provided to inhibit the circuit to record a rapid up & down nose poking as it were a multiple event.

The figure remains frozen until the operator depresses the reset key again, when placing a fresh mouse on the board.

Data Acquisition

The 6650 Hole Board is provided with a connector for branching it to the **MULTIFUNCTION PRINTER Cat. 2600**, a microprocessor controlled device designed to acquire data from 6 independent channels.

The data, stored in the 2600 internal memory and shown on its graphic display, can be printed out in real time and/or routed to the PC, via the **52050-01 DAS Software Pack-age** provided with the 2600 package.

The **52050** is a Windows® based Data Acquisition Software Package, which enables the research worker to store the data into individual files, ready to be easily managed by most statistical analysis packages available on the market.

Ordering Information

6650	**HOLE BOARD, standard package**, including:-
6651	Control Unit
6652	Board
6653	Dust Cover for the Board
6654	Dust Cover for the Control Unit
6655	Instruction Manual
E-WP008	Mains Cable

Set of 2 fuses for either 115 VAC or 230 VAC mains

Basic Specs.

Power	115 or 230 V, 50/60 Hz, 15 W max.
Dimensions	40 x 40 x 2.2 (h) cm (board)
	26 x 15 x 25 (h) cm (controller)
Weight	5.50 Kg
Shipping Weight	8.50 Kg approx.

Bibliography

Method Paper

- J.R. Boissier et P. Simon: "**Dissociation de deux composantes dans le comportement d'investigation de la souris** " Arch Int. Pharmacodyn 147, No. 3-4, 1964.
- J.R. Boissier et P. Simon: "**L'utilisation d'une réaction particulière de la souris (Méthode de la planche à trous) pour l'étude des médicaments psychotropes** " Thérapie XIX, 571-589, 1964.

Papers Mentioning 6650

- N. Meiri et alia: "**Reversible Antisense Inhibition of Shaker-like Kv1.1 Potassium Channel Expression Impairs Associative Memory in Mouse and Rat**" Proc. Natl. Acad. Sci. USA, 94, 4430-4434, 1997.
- L. Jasmin et alia: **"The NK1 Receptor Mediates Both the Hyperalgesia and the Resistance to Morphine in Mice Lacking Noradrenaline"** Proc. Natl. Acad. Sci. USA., 99(2),1029–1034, 2002.
- A. L. da Silva & E. Elisabetsky: "**Interference of Propylene Glycol with the Hole-Board Test**" Brazilian J. Med. Biol. Res., 34(4), 545-547, 2001.
- H. Shaheen et alia: "**Effect of Psidium Guajava Leaves on Some Aspects of the Central Nervous System in Mice**" Phytotherap. Res., 14(2), 107-111, 2001

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Rotating Wheels
for Rodent Activity

Cat. No. 1800

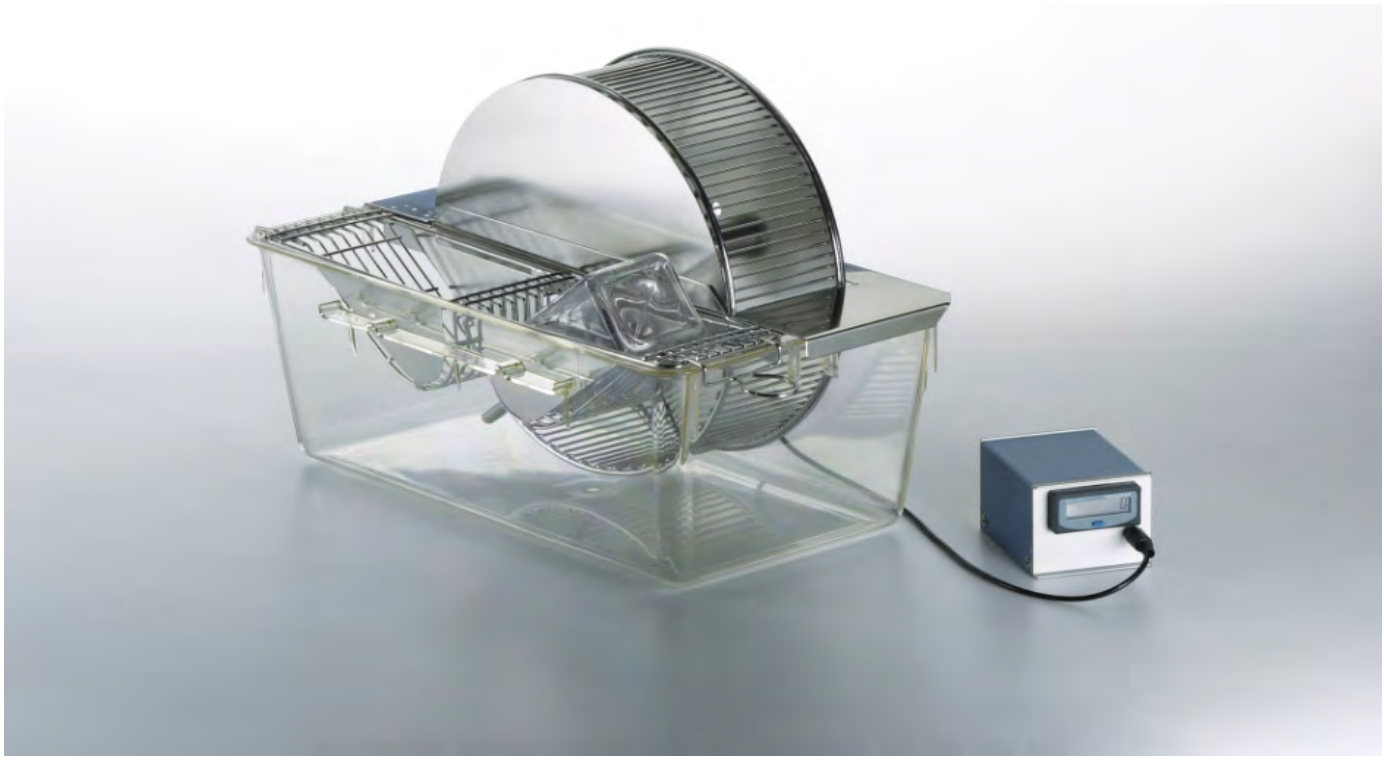
EASY MONITORING OF RODENT MOTOR ACTIVITY

Data Acquisition available as optional (2600 Multifunction Printer)

General

The Activity Wheels are designed to provide an easy and convenient method for measuring laboratory rodents' motor activity over long periods of time.

Especially useful for research on circadian rhythms or motor function, when connected to the 2600 Multifunction Printer or to any other data acquisition systems.



Main Features

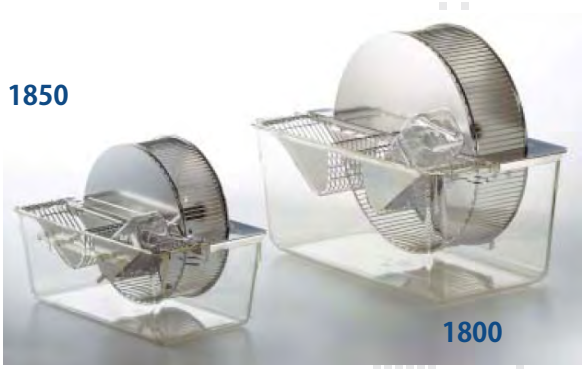
- Easy monitoring (compatible with any Data Acquisition System)
- Flexibility: version for rats or mice
- All stainless-steel wheel construction
- Clear polycarbonate cage for total visibility

1850 Mouse Cage

Classic **25 cm diameter running-wheel** made of stainless steel, provided with low friction Teflon bushing, for quite smooth action. The mouse runs on 2mm bars, placed 7 mm apart.

The wheel is housed in a clear polycarbonate cage. A stainless steel wire lid with exclusive lid locks, incorporates a 500 ml water bottle and a U-shaped food hopper for pellets.

Mouse cage is dimensioned 37(h)x26(w)x358d) cm.



1800 Rat Cage

The Rat Cage is similar to the mouse model; the **running wheel has 35 cm diameter**. The 2 mm bars are placed 8.8 mm apart.
Dimensions of the Rat Cage are 48(h)x32(w)x47(d) cm.

Revolution Counter

Each cage is complete with magnetic switch and LCD counter. The switch counts whole revolution of the activity wheel and operates on an extended-life battery (included).
Cages without counter, models 1800-S and 1850-S, are also available, for data collection via PC, see paragraph below.

Data Acquisition

For data acquisition a Multifunction Printer is required. This is a microprocessor controlled device, designed to acquire data from 6 Cat. **2600**)independent channels (each Activity Wheel requires 1 channel).

The data, stored in the 2600 internal memory and shown on its graphic display, can be printed out in real time and/or routed to the PC, via the CUB software provided as standard

When working with the Multifunction Printer, the counter is not required, so you may consider models **1800-S** or **1850-S**. A cable 2610-F is required.

The picture above features a Multifunction Printer, with the necessary multi-cable 2610-F to connect 6 activity wheels.

Ordering Information

1800 **Rat Activity Wheel**, complete with polycarbonate cage, magnetic switch and LCD revolution counter

1850 **Mouse Activity Wheel**, complete with poly carbonate cage, magnetic switch and LCD revolution counter

1800-S **Rat Activity Wheel**, complete with polycar bonate cage & magnetic switch, without counter

1850-S **Mouse Activity Wheel**, complete with polycarbonate cage & magnetic switch, without counter

Multifunction Printers

2600 **Multifunction Printer, 6 input channels**, with microprocessor for direct connection to the PC. Complete with dedicated softwa re 52050-01, serial cable & USB adaptor

2610-F **Multi-Connection Cable**

Mouse Ventilator

Cat. No. 28025

General

This new Respitrator, which completes the well known Ugo Basile line of Ventilators, features:-

- The **tidal volume**, in the range 0.1-1 ml (or 0.05- 0.5 with the smaller piston installed), can be selected via its knob whether the respirator is on or off.
- The **rate**, selected by a knob, is indicated by a 3-digit solid state display, in the range 60-300 strokes per minute.
- Suitable channels and ports provide the switching of the air flow, with practically **no dead space**.
- A unique **variable stroke linkage** mecha nism operates the piston.

The reciprocating motion is adjusted and transmitted to the piston by rods and articulated joints only, which leads to minimal wear, no backlash, silent operation and exact stroke reproducibility.

Unique Design | **Reliable**

Compact | **Silent**

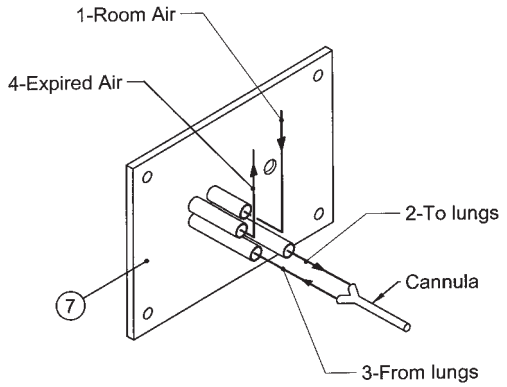
Main Features

- Ideal for use with mice, small birds and perinatal rats
- Optional 0.5 ml cylinder/piston assembly
- Purely mechanical, with impeccable finishing: lifetime lasting
- Quiet operation and negligible electrical noise

Ugo Basile: more than 10,000 citations

The instrument is compact and light, cm 20x13x18.5 and 2.5 Kg, see picture, and it is self-contained: in other words, it embodies its power supply which feeds the geared motor, its feedback controller and the rate display.

The Connection Square



As illustrated in the drawing above, and pictured below, a connection square of four ports include:-
1. intake of air or any other non-explosive gas mixture,
2. delivery of air to the animal lungs,
3. return air from animal,
4. exhaust, for sampling, partial recycling, testing positive expiration pressure, etc.

so closely packed, that the connection tubes are cut in different lengths, to ease the insertion of the tubing.

28015 Back Front

Start / Stop Model

A Mouse Ventilator version is available, Cat. 28125, which embodies a controlled pause feature.
The synchronised START/STOP function gives the operator a means to stop and restart the respirator at "full lungs" point, via an external trigger pulse, when it is beneficial if not essential to minimize any extraneous movement of the anesthetized animal during electrophysiological recording, X-ray and imaging, etc.

Specifications

Rate	60 to 300 strokes for minute
Rate Read-out	on digital display
Stroke Volume	0.1 to 1 ml (with standard 1 ml piston) 0.05 to 0.5 ml (with optional 0.5 ml piston installed)
Stroke Volume Scale	precision engraved, 0.05 ml divisions
Stroke Volume Reproducibility	±2%
Start-Stop (model 28125 only)	by synchronised command
Power Requirements	115 or 230v, 50/60 Hz 10 W max.
Dimensions	20 x 13 x 18.5 cm
Net weight	Kg 2.20
Shipping Weight	Kg 5.00 approx.

Ordering Information

28025 MOUSE VENTILATOR, complete with 0.5 or 1 ml cylinder/piston assembly (according to order) and following standard accessories :-

28025-010	1 ml Cylinder/piston assembly, complete with its base plate
28025-005	0.5 ml, as above
28025-301	Dust Cover
28025-302	Instruction Manual
28025-321	Perspex Vertical Lid
28025-322	Oiler
28025-323	Cannula –Y connection, tubes, etc., in a plastic case
28025-324	Set of wrenches
E-WP008	Mains Cord

Set of 2 fuses for either 230V or 115V operation

Options

28125 Mouse Ventilator, special model with synchronised START/STOP feature, complete with the same set of standard accessories as Ventilator 28025

28025-320 Animal Operating Table

Bibliography

- S. Finotto et alia: "**Asthmatic Changes in Mice lacking T-beta mediated by IL-13**" Intl. Immunology 17, No. 8: 993-1007, 2005

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Dog Ventilator

Cat. No. 5025

General

The 5025 Dog Ventilator is a positive pressure pump (according to Starling's ventilation method), designed for use with dogs.

It basically consists of an asynchronous motor operated by a solid state speed control, coupled to a 700 (or 350) ml cylinder/piston assembly via an original variable stroke linkage (see picture) which features:-

1) The piston almost touches the cylinder bottom with each stroke, regardless of the preset volume. This insures that all air taken into the pump is expelled with each stroke.

2) The stroke volume is adjustable by means of a thumb-wheel while the pump is either running or at standstill.
The volume is clearly indicated on a sta tionary dial and not on a mobile slotted link or by graduation marks on the cylin der, both systems leading to uncomforta ble volume setting, the latter adjustable with the pump in motion only.

3) The mechanism does not incorporate any slotted link as all other ventilators do.

The choice of the critics!

Main Features

- Compact valve block with negligible "dead spaces"
- Attractive trolley which moves swiftly, thanks to its heavy-duty casters
- Original variable stroke linkage, without sliding components
- No protruding elements: recessed controls and hook-up connections to the animal

More than 10,000 publications about us

The reciprocating motion is generated, adjusted and transmitted to the piston by rods and articulated joints only. The lack of sliding friction leads to:-

a) practically no wear
b) no backlash and hence silent operation and exact stroke reproducibility.

A crank-link combination operates a slide valve, located perpendicularly to the cylinder axis, ensuring very short cylinder/valve connections and hence minimum dead space.

Hook-up to Animal

A "Y" connector (not supplied) should be inserted between the connection to the animal (cannula, etc.) and the two tubes coming from the pump. Dead space is minimized if the "Y" is as close to the animal as possible.

Four ports (*Intake, To Animal, From Animal and Exhaust*) allow flexibility in air channelling. The input may be room air or any non-explosive gas mixture. The exhaust air may be partially or totally recycled or collected for analysis.

Ventilator Controls

The speed control knob adjusts the geared motor to the desired speed, which is indicated on the 2-digit LED display labelled STROKES PER MINUTE.

The digital display assures an excellent reproducibility: you adjust the actual speed of the geared motor against a displayed number, in lieu of trying to overlap a pointer and a scale mark.

The stroke volume may be adjusted via the STROKE VOLUME thumb-wheel on the front panel, and read on the scale in the top panel.

SPECIFICATIONS

Rate	10 to 50 strokes for minute
Rate Read-out	digital display
Stroke Volume	0 to 700 or 0 to 350 depending on cylinder/piston installed
Stroke Volume Scale	0-700 ml
Stroke Volume Reproducibility	±2%
Power Requirements	115 or 230V, 50/60 Hz 300 VA max.
Overall Dimensions	45 x 38 x 83 (h) cm
Net weight	Kg 30
Shipping Weight	Kg 55 approx

Ordering Information

5025 Dog Ventilator,
complete with standard accessories and 700 ml cylinder/piston assembly

5025-350 Dog Ventilator,
complete with standard accessories and 350 ml cylinder/piston assembly

5026 700 ml cylinder/piston assembly, complete with gudgeon
5027 350 ml cylinder/piston assembly, complete with gudgeon
5028 Set of lip-seal rings for 350 ml piston
5029 Set of lip-seal rings for 700 ml piston

Standard accessories supplied with the instrument

5030* Valve Block, complete with spindle, gudgeon and 2 open washers
5031* Perspex Hood
5032* Oiler (Oil for Bearings)
5033* Oiler (Oil for Cylinder)
7033* Grease Tube (Lithium Grease for slide valve)
5034* Set of 5 hex. wrenches (2, 2.5, 3, 4, 5)
5035* Instruction Manual
5037* M17 wrench (to tighten the trolley casters)

Set of two fuses for either 115 or 220 V operation

* Standard accessories, supplied with the instrument

Rodent Ventilator

Cat. No. 7025

General

The 7025 Rodent Ventilator is a positive pressure pump (according to Starling's Ventilator method), designed for use with rodents, guinea pigs, mice and small birds.

The 7025 drive consists of a variable speed geared motor linked by a novel variable stroke mechanism to easily interchangeable cylinder/piston assemblies.

In particular, the **7025 can be equipped with 5, 10 or 30 ml** cylinder/piston assembly.

Its precisely regulated geared-motor speed provides the most accurate and reliable stroke rate control of any respirator available.

The operation of the 7025 may be "paused" by an external TTL logic signal.

Best available Starling's Pumps

THE CHOICE OF THE CRITICS!

Main Features

- Interchangeable cylinder/piston assemblies (5, 10, 30 ml)
- Quiet operation, both acustically and electrically (negligible R.F. broadcasting)
- Reliable mechanics and impeccable finishing: lifelong lasting

The operation of Ugo Basile Ventilators may be "paused" by an external TTL logic signal. For more demanding electrophysiological-pharmacological investigations, in particular when the operation of the Ventilator is software controlled, a **synchronised command** is available to START-STOP the Ventilator at completed forced inspiration.
Ask for special models 7125.

The unique linkage mechanism insures that:-

1) The piston almost touches the cylinder end with each stroke, regardless of the pre-set volume, thus insuring all air taken into the pump is expelled with each stroke.
2) The volume, clearly indicated on a **stationary dial**, is adjustable by means of a knob while the pump is either running or at standstill.
3) The reciprocating motion is generated, adjusted and transmitted to the piston by rods and articulated joints only.

The lack of sliding friction leads to:-

a) practically no wear
b) no backlash and hence silent operation and exact stroke reproducibility.

Hook-up to animal

Four ports (Intake, To Animal, From Animal and Exhaust) allow flexibility in air channelling. The input may be room air or any non-explosive gas mixture. The exhaust air may be partially or totally recycled or collected for analysis.

Ventilator Controls

The speed control knob adjusts the geared motor to the desired speed, which is indicated on the 3-digit LED display labelled STROKES P.M.

Specifications

Rate	10 to 180 strokes for minute
Rate Read-out	digital display
Stroke Volume	0.1 to 1; 0.5 to 5; 1 to 10 or 3 to 30 ml, depending on cylinder/piston installed
Stroke Vol. Scale	1-10 ml
Stroke Vol. Reprod.	±2%
Power Requirements	115 or 230V, 50/60 Hz, 40 VA max.
Dimensions	27 x 25.5 x 18.5 cm
Net weight	Kg 10.5
Shipping Weight	Kg 16 approx.

Ordering Information

7025 **RODENT VENTILATOR**, with standard accessories and 10 ml cylinder/piston assembly

7025-1 **RODENT VENTILATOR**, as above, 1 ml
7025-5 **RODENT VENTILATOR**, as above, 5 ml
7025-30 **RODENT VENTILATOR**, as above, 30 ml
7128 5 ml Cylinder/piston assembly, complete
7026 10 ml Cylinder/piston assembly, complete
7027 30 ml Cylinder/piston assembly, complete
7129 Set of 2 "O" Rings for 5 ml piston
7028 Set of 2 "O" Rings for 10 ml piston
7037 Set of 2 "O" Rings for 30 ml piston

Special model for synchronised START/STOP

7125 **Rodent Ventilator**, 10 ml
7125-1 **Rodent Ventilator**, 1 ml
7125-5 **Rodent Ventilator**, 5 ml
7125-30 **Rodent Ventilator**, 30 ml

Standard Accessories & Spares

common to all models, supplied with standard package

7031 Oiler
7032 Perspex Lid
7033 Lithium-Grease Tube
7034 Set of 3 Hex. Wrenches (2, 2.5, 3 mm)
7036 Dust Cover
7038 Set of 2 Miniature Banana Plugs (TTL Start-Stop)
7039 Power Cord
Set of fuses for either 230V or 110V operation

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- E. Cavarra et alia: "**Effects of Cigarette Smoke in Mice with Different Levels of 1 -Proteinase Inhibitor and Sensitivity to Oxidants**" Am J Respir Crit Care Med 164: 886-890, 2001

Cat/Rabbit Ventilator

Cat. No. 6025

General

The 6025 Rodent Ventilator is a volume-controlled mechanical ventilator (according to Starling's ventilation method), designed for use with cats, rabbits and animals of similar size.
The drive of the ventilators consists of a variable speed geared motor linked by a novel variable stroke mechanism to easily interchangeable cylinder/piston assemblies.

In particular, **the 6025 can be equipped with 50 or 100ml cylinder/piston assembly**.
Its precisely regulated geared-motor speed provides the most accurate and reliable stroke rate control of any respirator available

The operation of the 6025 may be "paused" by an external TTL logic signal.
For more demanding electrophysiological-pharmacological investigations, in particular when the operation of the Ventilator is software controlled, a synchronised command is available to START-STOP the Ventilator at completed forced inspiration.

Best available Starling's Pumps

THE CHOICE OF THE CRITICS!

Main Features

- Interchangeable cylinder/piston assemblies (50, 100 ml)
- Quiet operation, both acustically and electrically (negligible R.F. broadcasting)
- Reliable mechanics and impeccable finishing: lifelong lasting

Ugo Basile: more than 10,000 citations

The unique linkage mechanism insures that:-

1) The piston almost touches the cylinder end with each stroke, regardless of the pre-set volume, thus insuring all air taken into the pump is expelled with each stroke.

2) The volume, clearly indicated on a **stationary dial**, is adjustable by means of a knob while the pump is either running or at standstill.

3) The reciprocating motion is generated, adjusted and transmitted to the piston by rods and articulated joints only.

The lack of sliding friction leads to:-

a) practically no wear
b) no backlash and hence silent operation and exact stroke reproducibility.

Hook-up to animal

Four ports (Intake, To Animal, From Animal and Exhaust) allow flexibility in air channelling. The input may be room air or any non-explosive gas mixture. The exhaust air may be partially or totally recycled or collected for analysis.

Ventilator Controls

The speed control knob adjusts the geared motor to the desired speed, which is indicated on the 3-digit LED display labelled STROKES P.M.

Specifications

Rate	10 to 100 strokes for minute
Rate Read-out	digital display
Stroke Volume	10 to 50 or 20 to 100 ml depending on cylinder/piston installed
Stroke Vol. Scale	10-50 ml
Stroke Vol. Reprod.	±2%
Power Requirements	115 or 230V, 50/60 Hz, 40 VA max.
Dimensions	27 x 25.5 x 18.5 cm
Net weight	Kg 10.5
Shipping Weight:	Kg 16 approx.

Ordering Information

6025 CAT/RABBIT VENTILATOR, with standard accessories and 50 ml cylinder/piston assembly

6025-100 CAT/RABBIT VENTILATOR, as above, 100ml

6026 50 ml Cylinder/piston assembly, complete
6027 100 ml Cylinder/piston assembly, complete
6028 Set of 2 Lip-Seal Rings for 50 ml piston
6029 Set of 2 Lip-Seal Rings for 100 ml piston

Special models for synchronised START/STOP

6125 Cat/Rabbit Ventilator, 50 ml
6125-100 Cat/Rabbit Ventilator, 100ml

Standard Accessories & Spares
common to 6025 and 7025 models, supplied with standard package

7031 Oiler
7032 Perspex Lid
7033 Lithium-Grease Tube
7034 Set of 3 Hex. Wrenches (2, 2.5, 3 mm)
7036 Dust Cover
7038 Set of 2 Miniature Banana Plugs (TTL Start-Stop)
7039 Power Cord
Set of fuses for either 230V or 110V operation

Bibliography

- F. Lembeck et alia: "**Effects of Endothelin on the Cardiovascular System and on Smooth Muscle Preparations in Different Species**" Arch. of Pharmacol. 340: 744-751, 1989

- J. Lundgren et alia: "**Ischemia in Normoglycemic and Hyperglycemic Rats: Plasma Energy Substrates and Hormones"** American Physiol. Soc.: E767-E774, 1990

- L. Ballati et alia: "**Effects of Selective Tachykinin Receptor Antagonists of Capsaicin- and Tachykinin-induced Bronchospasm in Anaesthetised Guinea-Pigs**" Eur. J. Pharmacol. 214: 215-221, 1992

Bronchospasm Transducer

Cat. No. 7020

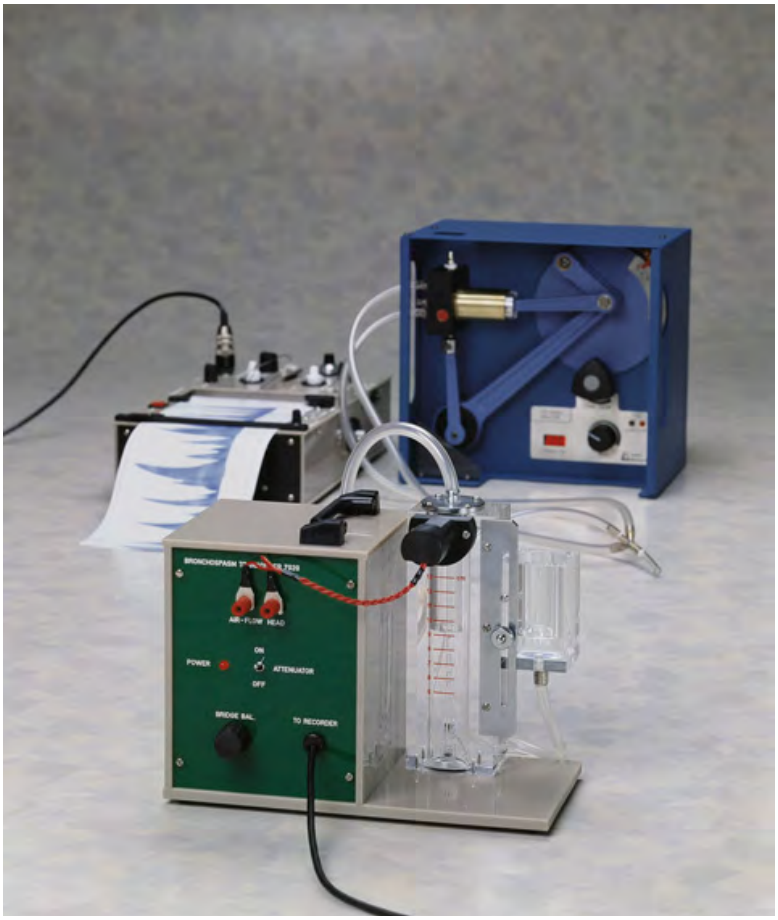
General

This transducer is designed to perform the bronchospasm test on the guinea pig and is particularly suitable for connecting to UGO BASILE DataCapsule to any Recorder.

It enables the research worker to evaluate the spasm-inducing effect of drugs having a very wide range of action, not necessarily intended to act on respiratory dynamics.

The Bronchospasm Transducer 7020 is also a useful research tool for screening substances inducing the opposite effect, both those causing active bronchodilation in basal conditions and those which antagonize test drugs such as histamine, bradykinin, etc.

It is basically an air flow meter provided with a water input valve with adjustable pressure threshold. The whole device is a compact unit made entirely of Perspex, mounted on a base along with its own power supply and controls.



The picture shows a complete set-up for bronchodynamics studies which includes the Rodent ventilator 7025 and a pen recorder

- Evaluates the bronchospasm inducing effect of drugs

Main Features

- Simple and reliable method to assess airflow resistance
- The effect of bronchodilators agents is quickly assessed (by simply connecting to an animal ventilator and to a data acquisition system or chart recorder)

Experimental Layout

The experimental layout follows the well-known Konzett-Roessler arrangement (see BIBLIOGRAPHY) with the anaesthetized guinea pig breathing via a reciprocating pump, according to Starling's mode of operation. See sketch below.

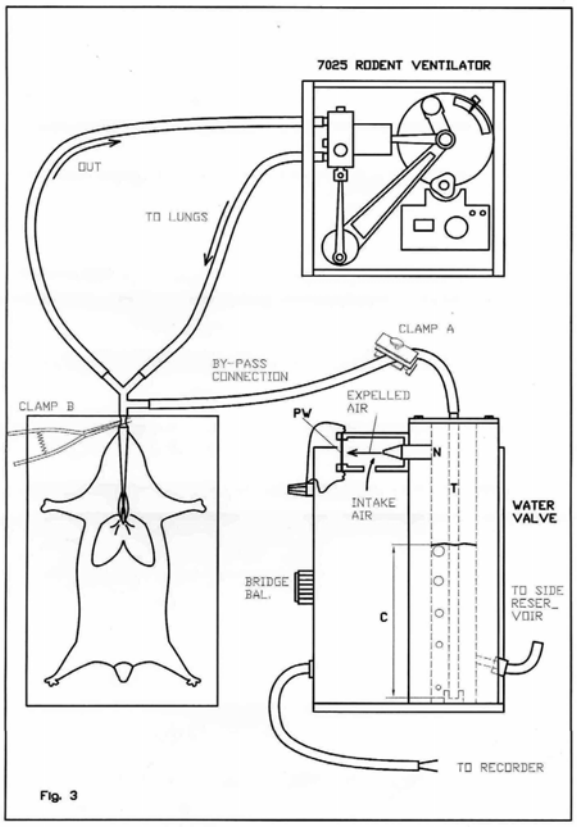


Fig. 3

Sensitivity

The sensitivity of the instrument in comparison with conventional Konzett-Roessler apparatus as illustrated in the table below

Minimum dosage in µg/Kg giving significant readings

	K-R Apparatus	UGO BASILE 7020
Histamine	3 - 6	0.3 - 0.6
Acetylcholine	20 - 40	3 - 10
Serotonin	6 - 15	1 - 3

Air Flow Meter

The recording system monitors respiratory dynamics by providing a tracing appearing as a succession of spikes.

When bronchospasm occurs, overpressure displaces the water column inside the T-tube and air bubbles through the water, escaping through an air flow transducer which are generating an electrical signal.
When Bronchodilators are administered, overpressure is reduced to below normal breathing values, as the bronchi exert less aerodynamic resistance to forced inspiration. The tracing will decrease in amplitude to a marked degree, enabling the action of bronchodilators to be assessed.

Ordering Information

7020	**Bronchospasm Transducer**, complete
7021	Air Flow Head
7022	Set of two Steel Rods
7024	Side Reservoir
7014	Dust Cover
7015	Instruction Manual

Ask for details about:

7023	Aerosol Set-up
7025	Rodent Ventilator

Bibliography

Method Paper

- H.Konzett & R. Roessler: Arch. Exp. Path. Pharmakol.: 195, 171, 1940

Papers which include mention to 7020

- I. Anfelt-Ronne, D. Kirstein & C. Kaergaard-Nielsen: "**A Novel Leukotriene D4/E4-Antagonist, SR2640 (2-[3-(2-quinolylmethoxy)phenylamino] benzoic Acid)**" Eur. J. Pharmacol.: 155: 117-128, 1988
- L. Puglisi et alia: "**Pharmacology of Natural Compounds. I. Smooth Muscle Relaxant Activity Induced by a Ginkgo Biloba L. Extract on Guinea-Pig Trachea**" Pharmacol. Res. Commun.: Vol. 20: No. 7, 1988
- J.S. Franzone, R. Cirillo & P. Biffignandi: "**Doxcofylline Exerts a Prophylactic Effect Against broncho constriction and Pleurisy Induced by PAF**" Eur. J. Pharmacol.: 165: 269-277, 1989
- P. Kimar et alia: "**Non-Specific Cardiovascular Depressant Effect of Methyl Isocyanate (MIC) in Rats"** J. Toxicol. Sc.: 14: 105-114, 1989
- C. Broquet et alia: "**Aminoacylates and Aminocarbamates of 2-substituted 4-hydroxymethyl 1,3-dioxolans as Ammonium Salts. A new Series of PAF Antagonists**" Eur. J. Med. Chem.: 25: 235-240, 1990.

Gas Anesthesia System

Cat. No. 21100

General

The Ugo Basile New Gas Anesthesia is a compact, modular and reasonably-priced system, intended to match the highest technical requirements of animal labs that do not compromise on quality.

A wide range of options and accessories are available, most of which can be added in a scalable manner, making the system modular and with an excellent value for price!

Typical anesthesia procedures involve an induction phase and a maintenance phase, which require at least:

- Flow-meter and anesthetic Vaporizer
- Induction box and mask with breathing circuit
- Scavenger or flow hood (for gas anesthetic removal)

The Ugo Basile New Gas Anesthesia system include all of the above! ... and much more!

Portable

Modular

- Up to six Animals with one Station
- Full range of accessories

Main Features

- Digital Flowmeter with wide range (up to 16 litres per minute) for multiple animal delivery
- Manifold for mask/induction box switch and full range of accessories
- NEW Tec3 Vaporizers (non-refurbished)

Ugo Basile: more than 10,000 citations

Overview

The unique digital flowmeter, coupled to non-refurbished vaporizers for Isoflurane, Halotane or Sevoflurane, result in an innovative yet sturdy and reliable system to anesthetize animals of virtually any size (even horses!) and up to 6 animals simultaneously.

An ample selection of modular components and accessories enables the researcher to customize and expand the anesthesia system upgrading from a basic (flowmeter and vaporizer) to a full system (with induction boxes, breathing circuits with masks of any size, switch valves, delivery systems for multiple animals, active and passive scavengers, etc.).

The blue 4mm thick aluminum rack has a highly resistant paint to protect against stains from aggressive anesthetic liquids & solvents.
Two universal attachment blocks are mounted on the back, to connect the device easily to any rail or mobile floor model anesthesia rigs of sizes 25x8mm up to 35x10mm.

Digital Flowmeter

The Ugo Basile Gas Anesthesia System includes a unique digital flowmeter.
The wide flow range (from 0.3 to 16 LPM) and the fine resolution (0.1 l/min.) of the digital flowmeter guarantees enough gas flow for anesthesia of up to 6 animals simultaneously!
Small and large animals could be anesthetized with the same system (virtually, from mouse to horse!)

Nose-cone/Masks with diaphragm

Unlike many rodent masks available on the market, these masks incorporate a latex diaphragm, which holds the rodent's nose keeping the animal in correct position and ensuring a continuous positive flow of fresh oxygen & anesthetic to the rodent.

The membrane also provides a positive seal reducing the exposure of the investigator to anesthetic gases.
Available in several sizes:
Small/Large Mice
Small/Medium/Large Rats.

The picture shows a mouse nose-cone/mask, connected to an evacuation tubing.

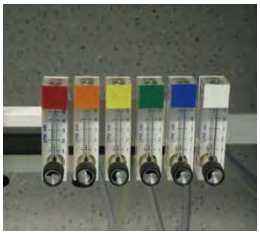
Induction Box

The 7900 Induction Box is a conveniently dimensioned (25x13x13cm), cost-effective solution to confine one guinea pig, one rat or several mice.
It incorporates a sliding lid and tubing connectors (vaporizer input and scavenger output).
Deluxe boxes with fan and power supply are also available.
Other box sizes can be or dered for larger animals, such as rabbits.

Dual Diverter Manifold with Humidifier

All of the Ugo Basile Gas Anesthesia Systems come with a pre-installed mounting bracket to fit the Dual Diverter Manifold (as shown in the picture).
The anesthetic gas flow can be diverted toward 2 independent devices (i.e., an induction chamber and a breathing mask).
A simple and efficient humidifier is included with the manifold. It is especially recommended for long-term anesthesia procedures, when dehydration can become an issue.

Multiple Delivery System



The Multiple Delivery accessory allows the connection of up to six devices to one anesthesia system for simultaneous operation. Each device (for 2, 3, 4, 5 or 6 animals) has independent flow regulation.

F/AIR Scavenger

A solution to handling waste anesthetic gases when active evacuation systems are not available. These activated charcoal canisters remove approx. 50g of halogenated anesthetic agents from the waste gas stream before being discarded. The canisters can be easily connected to any anesthesia machine.

Anesthetizing Box

Cat. No. 7900 (rodents) 7910 (rabbits)

General

Our Induction Boxes are conveniently dimensioned induction boxes, featuring a sliding lid. They are made of Perspex and prove to be particularly useful to con-fine laboratory animals during anesthetizing.

The transparent acrylics permits the animal to be kept under constant observation.

Two tubing connectors of nickel plated brass are fitted into each end, one located at the top of the box and the other at the bottom.

Any (non-explosive!) gas mixture can be used. In case small quantities of liquid, as ether or chloroform are used, soak a cotton wool flock and place it in a small Becker, in-side the box.

Our Induction chambers are ideal to work with our new Anesthesia Systems

TO CONFINE SMALL LABORATORY ANIMALS DURING ANESTHETIZING

Box Dimensions:

- 7900 - induction box for small rodents 25x13x13 (h)
- 7910 - induction box for rabbits 40x22x21 (h)

Orderirng Information

Anesthesia Systems

21050 Basic Single-Output Anesthesia System including Digital Flowmeter (for O_2 or Medical Air) and TEC-3 vaporizer for Isoflurane (vaporizers for other anesthetic agents are available on request).

21100 Single-Output Anesthesia System including 21050 Basic Single-Output Anesthesia System, scavenger (Activated Charcoal Canister), evacuation tubing.

21200 Double-Output Anesthesia System Including 21050, scavengers (Activated Charcoal Canister), evacuation tubing and dual diverter manifold with humidifier, for simultaneous connection of nose-cone/mask and induction box.

21400 Multiple-Animal Anesthesia System including 21050, scavengers (Activated Charcoal Canister), evacuation tubing and Multiple Delivery System for 4 animals.

21600 Multiple-Animal Anesthesia System including 21050, scavengers (Activated Charcoal Canister), evacuation tubing and Multiple Delivery System for 6 animals.

Accessories

Delivery Systems (Masks & Induction Boxes)

PS-0525-A	**Nose-Cone/Mask Circuit for Small Mice**, with diaphragm and Inlet Adaptor
PS-0305-A	**Nose-Cone/Mask for Large Mice**, 3 cm ∅
PS-0306-A	**Nose-Cone/Mask for Small Rats**, 4.5 cm ∅
PS-0307-A	**Nose-Cone/Mask for Medium Rats**, 5 cm ∅
PS-0308-A	**Nose-Cone/Mask for Large Rats**, 5.5 cm ∅
7900	**Induction Box** for **small rodents** (mice and rats), dimensioned 25x13x13 (h) cm
7910	**Induction Box, large** size, 40x22x21 (h) cm
PS-0347-AF	**Deluxe Induction Box** with Fan and Power Supply, 20x34x16 (h) cm

Multiple-Output Delivery Systems

PS-0529-02	**Dual Diverter Manifold** with humidifier
PS 30-456	**Multiple-Animal Delivery System**, 2 Flowmeters
MPS 30-457	**Multiple-Animal Delivery System**, 3 Flowmeters
PS 30-458	**Multiple-Animal Delivery System**, 4 Flowmeters
PS 30-460	**Multiple-Animal Delivery System**, 5 Flowmeters
PS 30-459	**Multiple-Animal Delivery System**, 6 Flowmeters

Anesthetic Scavenger and Evacuation

PS-0581-00	**F/air filter** (activated charcoal canister)
PS-0581-01	**F/air filter** (activated charcoal canister), pkg. of 8
PS-0582	**Evac.Tubing for F/air**, 1.8 m with 19 mm male x 22 mm female adap tor
PS-0833	**Active Scavenger**, to remove the anesthetic agent by negative pressure (can also be connected to an activated charcoal canister)

Heating Pads and Surgical Tables

PS-0491	**Rodent Workstation**, with heated surgical table and outlet for anesthetic removal. Includes connection tubing for GAYMAR water circulator (not included)
PS-0766	**Water Circulating Pump** GAYMAR TP500, adjustable from 30° to 42°C
PS-0811	**Heating Pads** Delta-Phase Isotherm (pkg of 3), 20x20x0.65 cm. Maintains animal body temperature near 37°C up to several hours. Ideal for NMR.

Other Accessories

PS-0950
Fill Device, Isoflurane

PS-0949
Fill Device, Halothane

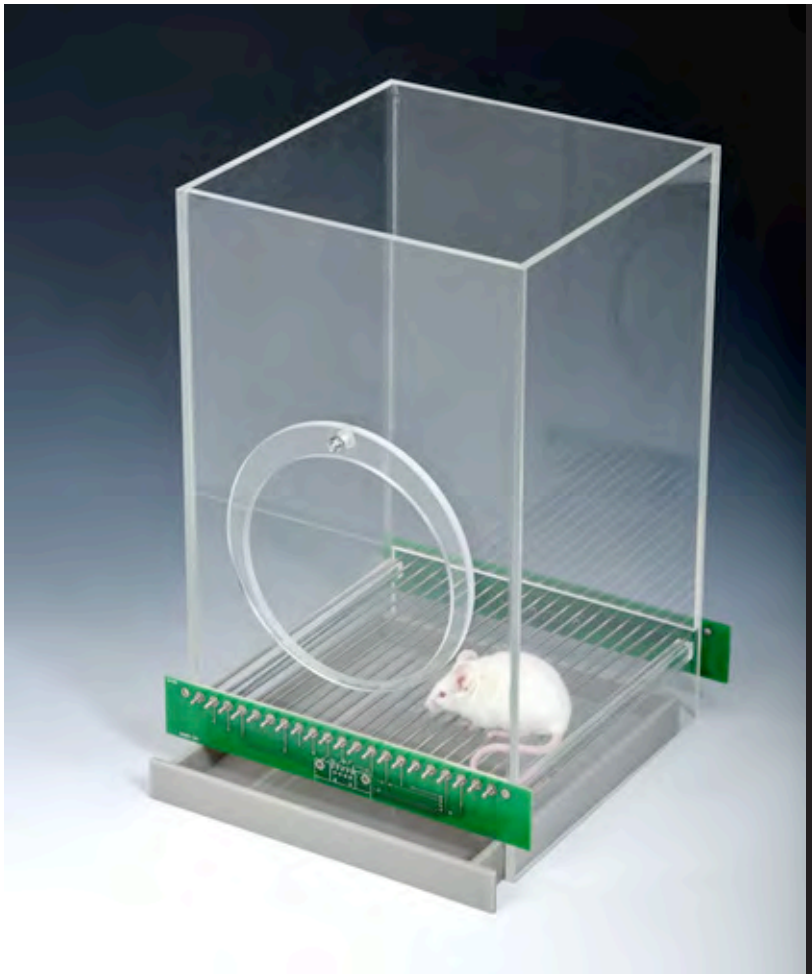
PS-0951
Fill Device, Sevoflurane

Special Systems with N2O

22100 O_2/N_2O Anesthesia System, with 2 Analog Flowmeters, TEC-3 vaporizer for Isoflurane (vaporizers for other anesthetic agents are available on request), scavenger (Activated Charcoal Canister), evac.tubing.

Fear Conditioning System

Cat. No. 46100



General

The Ugo Basile Fear Conditioning System 46000 includes all the components to run experiments on mice or rats, according to the paradigms:

- Contextual Fear Conditioning
- Acoustically-Cued Fear Conditioning

The detection of Freezing is automated and based on video analysis. The shocker and the sound generator can be controlled by software (USB) or manually.

System Configuration

A typical Complete System consists of:

- Software and IR-CCD camera
- Sound Generator and Shocker
- Animal box with electrified floor
- Context Kit (3 floors, 6 walls)
- Isolation Cubicle, lights (IR and visible) and fan
- Preinstalled PC (optional)

Basic systems, without software and CCD camera are available (see ordering information).

Memory

Behaviour

AUTOMATIC Detection of Freezing even in total DARKNESS

Main Features

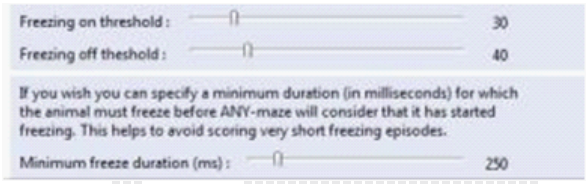
- AUTOMATIC detection of FREEZING, also in Total Darkness
- Specific versions for rats or mice
- Multiple Animals (up to 4)

System Components

Software and IR-CCD camera

The Ugo Basile Fear Conditioning system includes a specific version of the Any-maze software to control the Ugo Basile hardware (i.e., the Sound Generator and the Shocker): the software automatically detects freezing behavior and analyze the results across time.

Measured parameters include:
- Total Freezing time
- No. and duration of freezing episodes across time



The provided CCD camera, is sensitive to IR light and allows for freezing detection even in total darkness. The camera can be positioned on any wall of the isolation cubicle (top, side, door) by provided suction cups.

Wide angle lenses and IR light are also included.

Sound Generator

- Two channels to deliver frequency sounds (100Hz-40KHz; 1-150dB) or white noise (1 speaker included)
- Two TTL output to drive external devices, e.g., two Ugo Basile shockers
- Each channel can be operated via USB (with the provided software), manually or via 5V TTL signals.

Shocker

- Constant current (from 0.1 to 2.9 mA in 0.1 mA steps)
- Manual or external operation (via 5V TTL signals)

Animal Box with Electrified Grid Floor

- Mouse Box inside dimensions: 17x17x25(h) cm
- Rat Box inside dimensions : 26x26x30(h) cm

Context Kit

A complete set of removable contexts is provided to alter the colour and texture of the box walls and floor. Each animal box includes a kit with: 4 striped walls, 4 chessboard walls, 3 plastic floors (white, black, grey). Custom contexts are available on request.

Isolation Cubicle

- Includes visible light, IR light, light controller and fan
- The loudspeaker, the IR CCD camera and the lights can be freely positioned within the cubicle by suction cups (included).

Preinstalled PC (optional)

The Ugo Basile Fear Conditioning systems can be used with both Windows-based laptop or desktop PCs (firewires and USB ports are requried). Desktop PCs are suggested for multiple configurations (2 - 4 animals) and can also be purchased directly from Ugo Basile, with all

Ordering Information

COMPLETE SYSTEMS (with software and CCD-camera)

MOUSE	RAT	
46150	46160	Complete Fear Conditioning system, for 1 animal
46250	46260	Complete Fear Conditioning system, for 2 animals
46450	46460	Complete Fear Conditioning system, for 4 animals

BASIC SYSTEMS (without software and CCD-camera)

MOUSE	RAT	
46100	46110	Basic Fear Conditioning system, for 1 animal
46200	46210	Basic Fear Conditioning system, for 2 animals
46400	46410	Basic Fear Conditioning system, for 4 animals

Single items (e.g. Shocker, Sound Generator, Speakers) parts can be ordered separately on request.

Bibliography

- P. Bianchi *et al.*: "**Early Pharmacotherapy restores neurogenesis and cognitive performance in the Ts-65Dn Mouse Model for Down Syndrome**". *The Journal of Neuroscience* (2010), 30(26):8769-8779

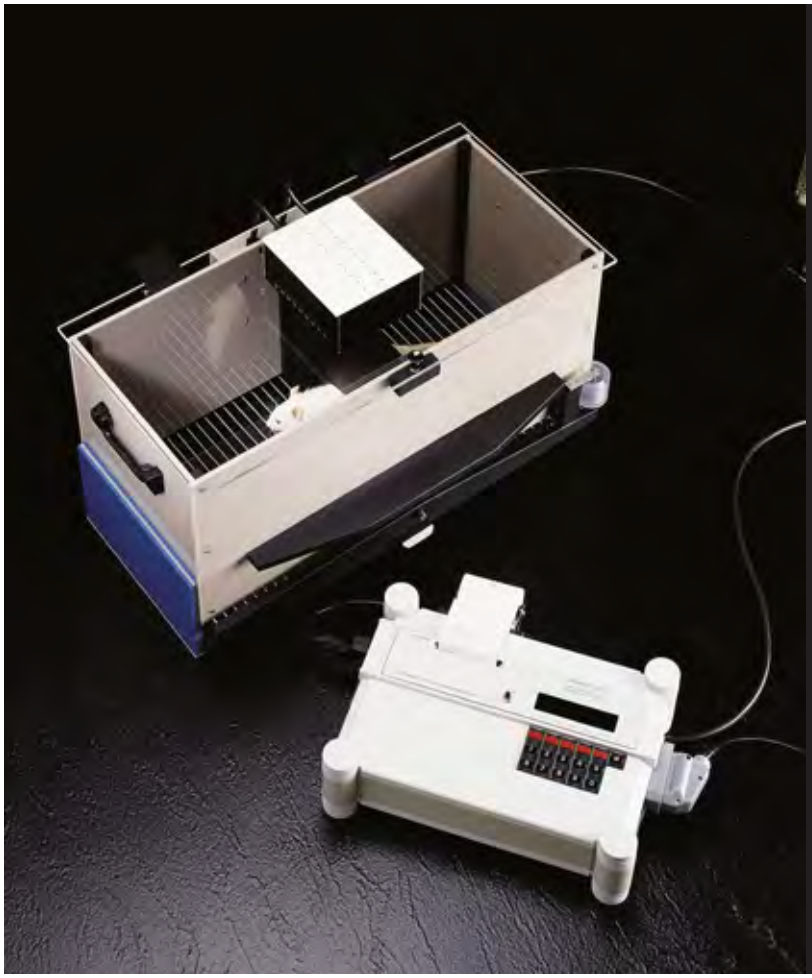
Automatic Reflex Conditioner (Active Avoidance)

Cat. No. 7530 Rats Cat. No. 7530-M Mice

General

The new model of Ugo Basile Automatic Reflex Conditioner Cat. 7530 is a microprocessor controlled unit, designed to enable the researcher to perform a wide range of avoidance experiments, each according to a flexible schedule, namely the shuttle-box classical test in its various modes:

- The classic **Shuttle Box Tes**t with shock delivered with or without the presence of the **Conditioning Stimulus.**
- The **Timing Experiment,** in which the animal always gets the shock until it crosses, one or more time, as pre-set. This is a useful schedule, which allows the operator to condition the animal in a short time, before passing to the classic Shuttle-Box Test.
- The **Crossing Test**, which is in practice a Shuttle-Box experiment, the difference being that the animal has to cross more than once (as pre-set) to stop the trial.
- The **Conflict Test** in which the animal always gets the shock for the preset duration, even if it crosses several times.



Active Avoidance set-up

Main Features

- Flexible Avoidance-Experiment Schedules: Shuttle Box, Timing, Conflict, Crossings Test
- Embedded printer, stand-alone memory and software: all included!
- Reliable and durable tilting-floor detection mechanism

The 7530 consists of a **Programming-Recording Unit** (Cat. 7531) and a Cage Cat. 7532 divided into two sections by a partition with an intercommunicating door at floor level.

Animal Cage

Two types of cages are available:

- **7532** designed for **Rats**, dimensioned 52x30x35 (h) cm, inside dimensions 40x20x22 (h) cm.
- **7533** designed for **Mice**, dimensioned 47x18x26 (h) cm (inside dimensions 39x9.5x16.5 (h) cm.

Both cages are provided with acoustic and visual conditioning stimulators. The reinforcement consists of an electrical stimulus applied to the floor bars of the cage by an incorporated 8-pole "scrambling" circuit.

When the animal passes through the door, the floor of the cage tilts, thus operating a reed contact/magnet arrangement, which cuts out all the stimuli or, if the crossing takes place during the pause, records the "intertrial crossing".

Programming/Recording Unit

The **Programming** circuits of the 7531 supply the stimuli, the magnitude, rate and duration of which can be varied, while the **Recording** section records the animal responses in several selectable analog and digital formats.

The trials can be adjusted on what concerns their number, the acoustic/visual stimulus, delay, shock intensity, intertrial pause duration.

The recording, both analog and digital, discriminates between responses caused by acoustic and/or visual stimuli (**conditioned reflexes**) and those requiring an electrical stimulus as well (**reinforcements**).

The Programming/Recording Unit is is provided with a keyboard and a display window.

Data Acquisition

The 7530 Automatic Reflex Conditioner is a microprocessor controlled unit. The experimental data, stored in its internal memory can be directly exported to the PC USB or serial ports.

Communication is managed by the dedicated CUB Data Acquisition Software Package, Cat. 52050–05, included as standard or by the 52010 Win-DAS Software.
The CUB Windows®-based Software Package enables the user to route to the PC the data originated by UB instruments and store them into individual files, ready to be easily managed by most statistical analysis packages available on the market. Ask for details!

Ordering Information

7530 Automatic Reflex Conditioner, for Rat, standard package, including:-

7531	Programming Recording Unit
7532	Rat Cage, complete
37400-302	Package of 10 Heat Sensitive Paper Rolls
7537	8-Pole Connection Cable
7513	Dust Cover for Cage 7532
7526	Dust Cover for 7531
7538	Instruction Manual
52050-05	CUB Software Package, with serial cable
52010-320	Serial to USB adaptor
	Set of fuses for either 230 V or 115V operation

7530-M Automatic Reflex Conditioner, for Mice, standard package, including same accessories as the rat model, except:

7533	Mouse Cage, complete
7514	Dust Cover for Cage 7533

OPTIONS:

7534	8-Pole Switching Box for 2-cage operation

Bibliography

- M. Peruzovic et alia: "**Effect of Atrazine Ingested Prior to Mating on Rat Females and Their Offspring**" Acta Physiol. Hungarica: 83 (1), 79-89, 1995
- V. Klusa et alia: "**Facilitating Influence of Thymopentin on Learning: Behavioural and Neurochemical Data**" Proc. of Latvian Acad. Sc.: 8 (553): 56-59, 1993
- I. Misane et alia: "**Cyclic Nootropics: Similarity and Differences in Their Memory Improving Action**" Proc. of Latvian Acad. Sc.: 5 (550), 81-85, 1993
- A. Marino et alia: "**Fipexide Improvement of Cognitive Functions in Rat: Behavioural and Neurochemical Studies**" Pharmacol. Res. : 22, No. 2, 179-187, 1990
- G. Bignami et alia: "**Bidirectional Avoidance by Mice as Function of CS, US, and Apparatus Variables"** Animal Learning and Behav.: accepted for publication Oct. 1985

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www.ugobasile.com

Passive Avoidance Step Through

Cat. No. 7550

Step-Through Cage

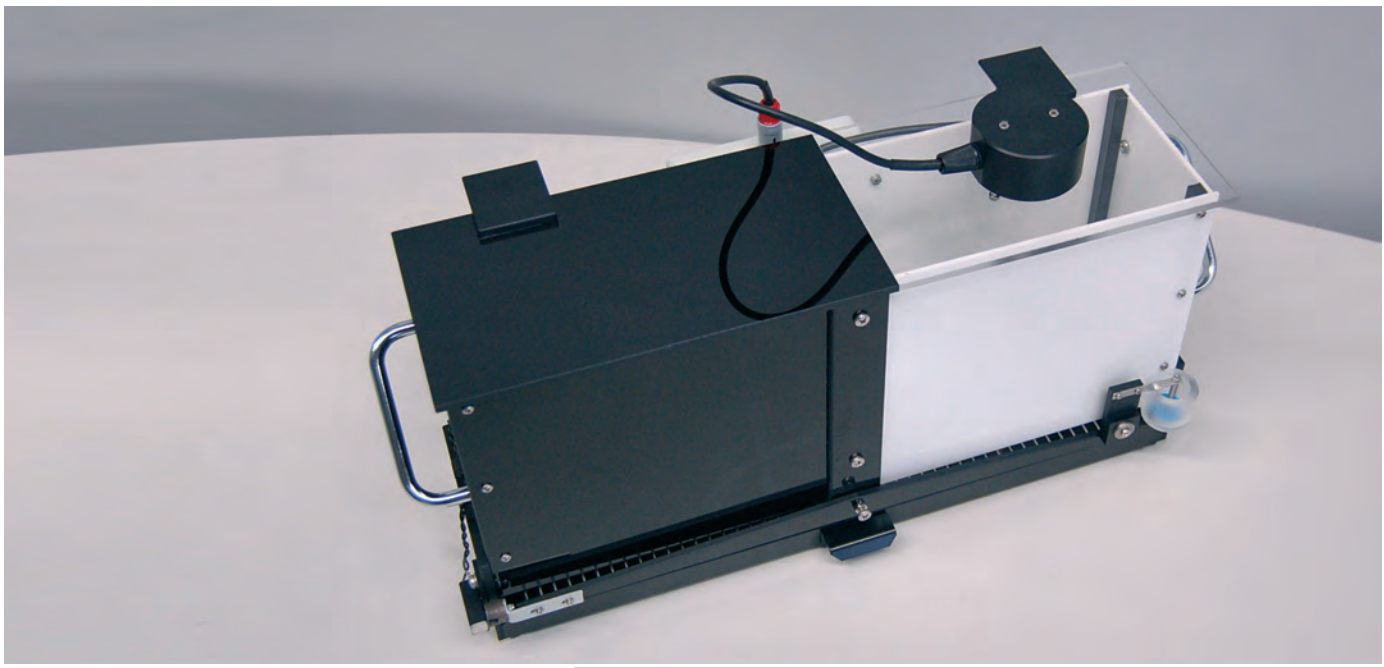
EFFICIENT, RELIABLE INSTRUMENT FOR THE CLASSIC PASSIVE AVOIDANCE TEST

General

The instrument basically consists of a tilting-floor Passive Avoidance Cage divided into two compartments by a partition which embodies a sliding door. The tilting floor ensures a simple and relaible detection mechanism to score the animal's movement across the two compartments.

The Passive Avoidance controller incorporates the controls, latency time display and a constant-current high precision 8-pole shocker, connected to the cage grid floor.

An intense light in the white compartment supplies the necessary aversive stimulus.



Main Features

- Silent and automated sliding door to divide the two compartments (no stepping motor!)
- Reliable tilting-floor detection mechanism
- Foot Pedal for hands-free operation

Passive-Avoidance Cage (step through)

Two types of cages are available:

- **7552** designed for **Rats**, dimensioned 52x30x35 (h) cm, inside dimensions 40x20x22 (h) cm
- **7553**, designed for **Mice**, dimensioned 47x18x26 (h) cm (inside dimensions 39x9.5x16.5 (h) cm)

The cages are divided into two sections, the **START** and **ESCAPE** compartments. The START compartment is white and illuminated by a light fixture; the ESCAPE compartment is dark. The two compartments are divided by a partition which embodies an automatically operated sliding door at floor level.

Principle of Operation

The controls located on the Controller front panel enable the adjustment of the door delay and the shock current according to experience or data suggested by the literature.
With the rodent in the START compartment, the START pedal switch activates the timer DOOR DELAY, providing the opening of the door after a 0-99 s delay presettable by the operator in 1 s steps.

The opening of the door enables the timer which measures the animal latency, to stop at the animal crossing; latency time is displayed in 0.1s steps. The door shuts one second after the crossing, to prevent the animal being upset or hurt by a too close door operation.

Data Acquisition

The 7550 Passive Avoidance Apparatus is provided with a connector for branching it to the **MULTIFUNCTION PRINTER Cat. 2600**, a microprocessor controlled device designed to acquire data from 6 (or 48, Cat. 2650) independent channels.

The data, stored in the 2600 internal memory and shown on its graphic display, can be printed out in real time and/or routed to the PC, via the 52050-01 DAS Software Package provided with the 2600 package.

The **52050** is a Windows® based Data Acquisition Software Package, which enables the research worker to store the data into individual files, ready to be easily managed by most statistical analysis packages available on the market.

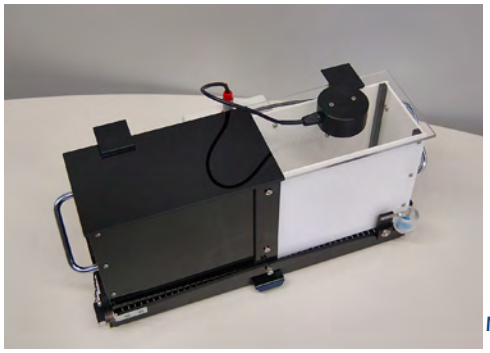


Fig.1: "7533 Mouse Cage"

Ordering Information

7550 PASSIVE AVOIDANCE SET-UP FOR RATS (step-through), standard package, including:-

7551	Passive Avoidance Controller
7552	Passive Avoidance Rat Cage, incorporating an
7555	Automatic Sliding Door (for rat cage)
7537	Connection Cable
7562	Dust Cover (for 7551)
7513	Dust Cover (for 7552)
7560	Instruction Manual
E-WP 008	Mains Cord
	Set of fuses for either 230V or 115V operation

7550-M PASSIVE AVOIDANCE SET-UP FOR MICE (step-through), standard package, including:-

7551	Passive Avoidance Controller
7552	Passive Avoidance Mouse Cage, incorporating an
7556	Automatic Sliding Door (for mouse cage)
7514	Dust Cover (for 7553)

Other parts and accessories as for the Rat Set-up

Bibliography

Papers which quote the P.A. Test (step-through)

- Eriksson TM, Madjid N, Elvander-Tottie E, Stiedl O, Svenningsson P, Ogren SO: "**Blockade of 5-HT 1B receptors facilitates contextual aversive learning in mice by disinhibition of cholinergic and glutamatergic neurotransmission**" Neuropharmacology, 54(7):1041-50, Jun 2008
- M. Baraldi et alia: "**Cognitive Deficits and Changes in gene Expression of NMDA Receptors after Prenatal Methylmercury Exposure**" Environmental Health Perspectives, Vol. 110, 855-858, 2003
- Chandrashekhar S. Patil et alia: "**Protective Effect of Flavonoids against Aging- and Lipopolysaccharide -Induced Cognitive Impairment in Mice**" J. Exper. Clin. Pharmacol. Vol. 69, No. 2: 59-67, 2003
- R. Fornari et alia: "**Effects of the Selective M1 Muscarinic Receptor Antagonist Dicyclomine on Emotional Memory**" Learning Memory 7, No. 5: 287-292, 2000
- K. Wickman et alia: "**Brain Localization and Behavioral Impact of the G-Protein-Gated K+ Channel Subunit GIRK4"** J. Neuroscience 20 (15): 5608-5615, 2000.
- W. Danysz: "**Metaphit Fails to Antagonize PCP-Induced Passive Avoidance Deficit**" Pharmacol. Biochem. & Behavior 38: 231-233, 1991
- R. Zerbib & H. Laborit: "**Chronic Stress and Memory: Implication of the Central Cholinergic System**" Pharmacol. Biochem. & Behavior 36: 897-900, 1990
- J. Sweeny et alia: "**Effects of Different Doses of Galanthamine, a Long-acting Acetylcholinesterase Inhibitor, on Memory in Mice**" Psychopharmacology 102: 191-200, 1990

Passive Avoidance
step down

Cat. No. 7570

General

The Passive Avoidance step-down version, **for mice or immature rats**, Cat. 7570 is based on the step-down scheme in which the animal is dropped on an elevated platform which becomes uncomfortable because of vibrations.
The mouse steps down to an electrified grid.

The instrument basically consists of an **arena**, shaped as a cage (Cat. No. **7573)** and a control unit (Cat. No. **7571**)

for Mice

The vibration intensity can be selected via a thumb switch

Main Features

- Specifically designed for mice or immature rats
- Latency time recorded down to 0.1 seconds

Passive Avoidance Cage

The cage, made of Perspex sheets, is dimensioned 25 cm (width) x 25 cm (depth) x 15 cm (height). It is provided with a hinged top lid of clear Perspex and a suitable catch pan.

The cage floor is made of a set of 40 bars of stainless steel, diam. 0.2 cm, spaced 0.5 cm apart.

The bars are wired to a constant current 8-pole scrambling circuit, located in the control unit.

The detachable circular vibrating platform, Cat. 7577, at the centre of the cage, 0.3 cm over the floor level, fits on a protruding stud, which is fastened to the platform actuator.

Beside the standard platform, whose diameter is 7 cm, a larger platform, Cat. 7578, diam. 11 cm, is supplied with the standard package.

The actuator (the mechanism which energizes the vibrating platform) is located in the actuator block, fastened to the cage base.

Both the grid floor and the actuator block are fastened to the cage structure via large knurled knobs, to ease the dismantling of the whole, indispensable for a thorough cleaning.

Control Unit

The Control unit is lodged into a resilient metal cabinet. Its front panel features durable engraved indications.

The vibration intensity can be selected by a thumb switch.

The SHOCK thumb switch presets shock intensity in the range 0 to 2.9 mA , in steps of 0.1 mA.

Principle of Operation

When the elevated platform onto which the mouse (or immature rat) is dropped, becomes uncomfortable because of vibrations, the animal steps down to an electrified grid.

When the mouse confronts the electrified grid and returns to the platform, depressing the STOP key causes the cut off of the actuator power and hence the immediate stop of the platform vibration.

The STOP command also causes the latency counter to stop; the display located on the front panel of the Control Unit, records the latency time in thenths of seconds The latency figure remains frozen on the display until another "session" is started by depressing again the START key.

Ordering Information

7570 SET-UP FOR PASSIVE AVOIDANCE (step-down), standard package, including:

7571	Passive Avoidance Controller
7573	Passive Avoidance Mouse Cage
7576	Instruction Manual

Specifications

Start	via the key on the control unit
Stop	via the key on the control unit
Shock	0 to 2.9 mA, in steps of 0.1 mA
Latency Time	4-digit LED display, 0.1s steps
Power Requirement	115 / 230V, 50/60 Hz, 18 W max.
Dimensions (7571)	26 (w) x 30 (d) x 12 (h) cm
Dimensions (7573)	28 (w) x 235 (d) x 26 (h) cm
Packing Dimensions	No. 1 Box 80 x 60 x 44 cm
Weight	Kg 6.7
Shipping Weight	Kg 16.5 (approx.)

A set-up for PASSIVE AVOIDANCE STEP THROUGH METHOD, is also available, for either mice or rats. Ask for details!

Bibliography

Papers which quote the P.A. Test (step-through)

- L. Ricceri et alia: "**Postnatal Cocaine Exposure Affects Neonatal Passive Avoidance Performance and Cholinergic Development in Rats**" Pharmacol. Biochem. & Behavior 45: 283-289, 1993

Conditioned Place Preference Box (CPP)

Cat. No. 42502 for Rat
Cat. No. 42503 for Mouse

General

The new **Ugo Basile Conditioned Place Preference (CPP)** is a 2-compartment box to evaluate the abuse potential of substances and the motivational effects of drugs. The box includes the contextual cues required by the experimental paradigm.

The 2 compartments differ for the walls color and patterns and for the floor patterns and texture. The floors are interchangeable so that the tactile difference between the 2 compartments can be easily adjusted by the scientist.

The new CPP box has been designed and optmized for use with any video-tracking software or manual scoring.

Each CPP box includes 4 interchangeble floors with square and circular patterns.

IDEAL TO STUDY

Drug Abuse

Addiction

Interchangeable floors for tactile stimulation

Main Features

- Interchangeable patterned floors
- Striped and dark compartment
- Optimized for Video-tracking
- Specific models for rats or mice
- Designed for multiple-cage systems (up to 16 and more)

Ugo Basile: more than 10,000 citations

Rat and Mouse Box

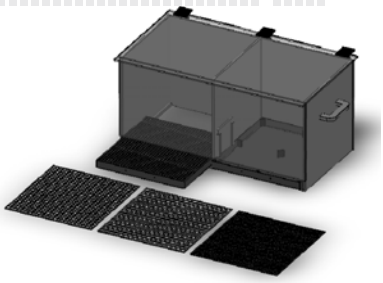
The box **42502** is designed for tests on rats. Its external dimensions are 60(w) x 30(d) x 30(h) cm. The box **42503** is similar to the **42502**, but its dimension (32(w) x 15(d) x 16(h) cm) make it suitable for use with mice.
Both boxes have a patterned door in the central wall; its opening is 7.5x7.5cm in the rat, 4x6(h) cm in the mouse box.

Tactile Stimulation: Patterned Floors

One of the major keys to the success of a **CPP** experiment is due to the design of the visual and tactile differences between the 2 compartments.

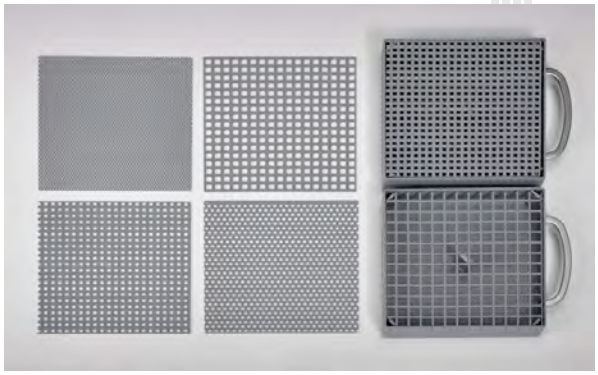
Ideally the 2 compartments should have clearly distinct contextual cues but should not determine any preference in unconditioned animals, while the design of commercially available CPP boxes has traditionally focused only on the wall patterns and colors.

Given the importance of paw tactile sensitivity in rodents, the Ugo Basile CPP box includes 4 interchangeable floors with different shapes.



Four sets of floor grids are supplied with the **rat box**:

42502-011 R4T6 round 2mm holes, 6mm interax., 2 pcs.
42502-012 R12T16 round 12mm holes, 16mm interax., 2 pcs.
42502-014 C6U9 square 6x6mm holes, 9mm interax., 2 pcs.
42502-013 C10U12 square 10x10 holes, 12mm interax., 2 pcs.



Four sets of floor grids are supplied with the **mouse box**:

42503-013 C4U7 square 4x4mm holes, 7mm interax., 2 pcs.
42503-012 R2T3 round 2mm holes, 3mm interax., 2 pcs.
42503-014 C6U9 square 6x6 holes, 9mm interax., 2 pcs.
42503-011 R4T6 round 4mm holes, 6mm interax., 2 pcs.

Rationale and outline of the procedure

The CPP paradigm provides information on the rewarding or aversive effects of visible and tactile contextual cues associated with drugs.

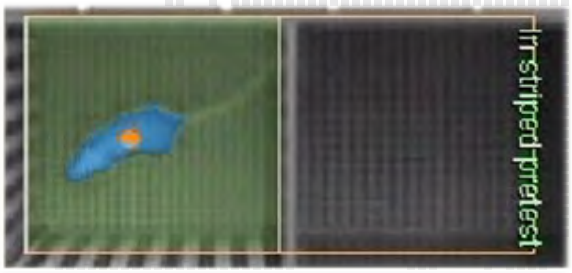
This technique has acquired great popularity in research studies involving addiction, thanks to its ease, especially if compared to drug self-administration procedures.

First, the animal is conditioned to identify one of the two compartments with the drug experience. Then the time spent in each of the two compartments is measured, from which the preference or aversion to the drug-paired compartment, hence the rewarding or aversive properties of drugs, can be easily deducted.

The CPP test only requires that the animals carry out a simple operation (i.e. move from one compartment to the other) to approach or avoid the drug-paired compartment.

The animal is expected to spend more time in the drug-paired compartment, if the drug experience produced a positive effect.

Optimized For Video-Tracking



All floors are grey-colored, to optimize contrast and facilitate tracking of both dark and albino animals

Ordering Information

42502 Place Preference Box for Rat, including 4 interchangeable floors

42503 Place Preference Box for Mouse, including 4 interchangeable floors

Acknowledgements & Bibliography

A special thank to **Prof. Paola Fadda** (Department of Pharmacology, University of Cagliary, Italy) for the initial design of the boxes: her valuble comments and suggestions allowed us to keep the focus on the user needs and opinions.

- L. Fattore et alia: "**Baclofen Prevents Drug-Induced Reinstatement of Extinguished Nicotine-Seeking Behaviour and Nicotine Place Preference in Rodents**" Eur. European Neuropsychopharmacol. (in press 2009)
- M. Scherma et alia: "**Inhibition of Anandamide Hydrolysis by Cyclohexyl Carbamic Acid 3'-Carbamoyl-3-yl Ester (URB597) Reverses Abuse-Related Behavioral and Neuro-chemical Effects of Nicotine in Rats**" J. Pharmacol. and Exper. Therap." 327:482–490, 2008

Learned Helplessness

Cat. No. 47500 Rat - 47550 Mouse

Analgesia

Depression

IDEAL TO STUDY:

- Depression & Stress
- Learning & Memory Impairment
- Stress-Induced Analgesia (S.I.A.)

General

When rodents are exposed to inescapable and unpredictable stress, such as forced swim or inescapable footshock, they often develop deficits in memory and learning tasks (**e.g. Active Avoidance**), and they often show also analgesic reactions (**S.I.A. Stress-Induced Analgesia**).
The **Ugo Basile Set-Up for Learned Helplessness** is based on a sophisticated generator of unpredictable random shocks delivered to the grid floor of a rodent box where no escape is possible.
Electric shocks can be randomized in terms of shock lenght and interval. Complex trains can be programmed.
Up to 4 animals can be treated simultaneously in 4 independent boxes.

Main Features

- Fully randomizable shock patterns
- Up to 4 independent rodent boxes

System Components

The Ugo Basile Helplessness system consists in the parts listed below:

- Mouse or Rat cage with electrified grid floor
- Shocker
- Timer with randomizer
- Report software

The system includes all necessary cables and connectors: ready to use!

Mouse and Rat Cage
(with electrified floor)

Mouse cage dimensions are 17x17x20 (h) cm

Rat cage dimensions are 22x22x20(h) cm

Shocker

- Constant current (from 0.1 to 2.9 mA in 0.1 mA steps)
- Manual or external operation (via 5V TTL signals)

Timer with randomizer

- Connects up to 4 cages
- Fully programmable shock patterns
- Randomized shocks include random lenght, random intervals and shock trains.

Software

The system includes a user-friendly reporting software, to collect, visualize and export into spreadsheets the delivered shocks.

This is especially important to analyze the randomized shocks and have full control on the performed stimulation.

Ordering Information

47500 **Set-up for Rat Learned Helplessness**, including: 47502 Rat Cage, 47510 Timer, 47554 Shocker

47550 **Set-up for Mouse Learned Helplessness,** including: 47503 Mouse Cage, 47510 Timer, 47554 Shocker

Bibliography

- Borsini & Cesana 2001. **Mechanisms of action of flibanserin in the learned helplessness in rats**. European Journal of Pharmacology 433: 81-89.
- Grau et al. 1981. **Long-term analgesia and activation of the opiate system**. Science Vol. 213, pp. 1409 - 1411.
- Guilherme dos Santos et al. 2008. **Antidepressive-like effects of electroacupuncture in rats**. Physiology & Behavior 93:155-159.
- Kademian et al. 2005. **Biphasic effects of adrenal steroid on learned helplessness behavior by inescapable shock**. Neuropsychopharmacology 30:58-66.

Sociability Apparatus

(3 - chambered social test)

Cat. No. 46503

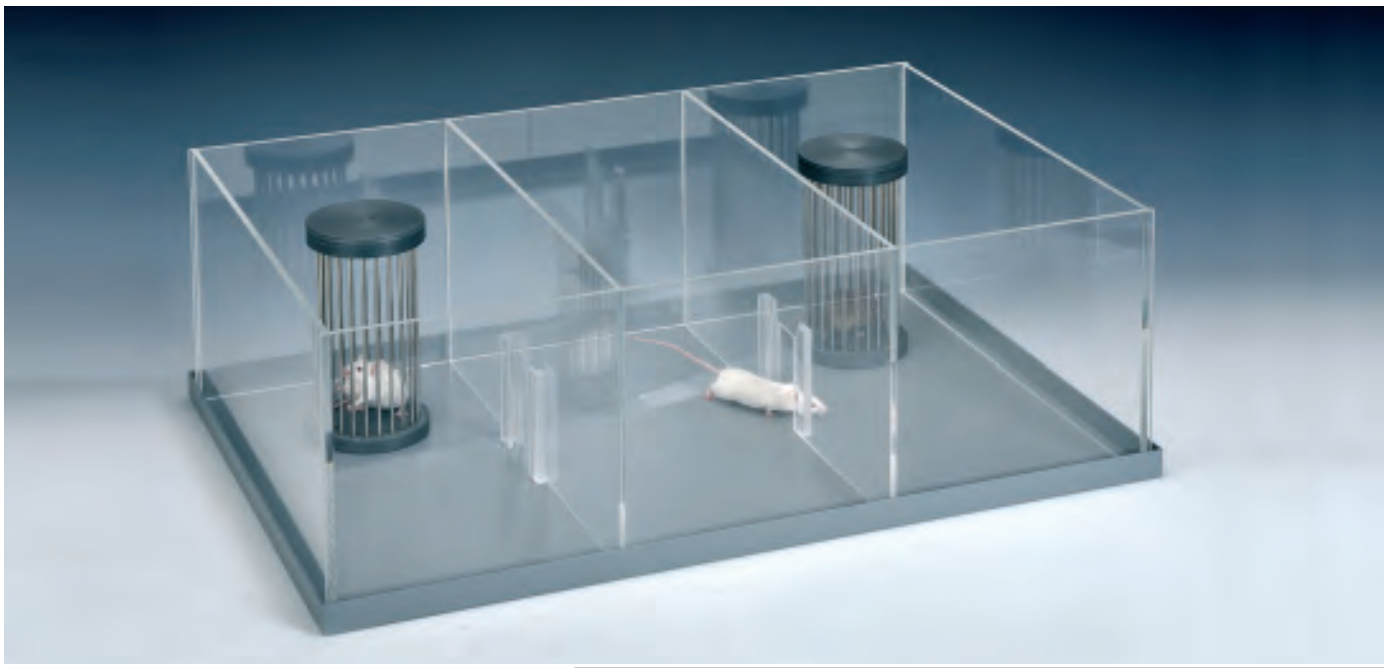
FOR STUDIES OF:

- Autism
- Social Memory & Novelty
- Pair-bonding
- Dominance hierarchies

General

The new Ugo Basile Sociability Apparatus (3-chambered social test) is a valuable tool to study SOCIAL INTERACTION in mice. It consists of a transparent Perspex cage, a special non reflective, grey colored floor and 2 grid enclosures. Many authors (e.g. Moy et al. 2004; Nadler et al. 2004) have shown that a 3-chambered box can be used to test:

- Social Novelty Preference
- Sociability
- Dominance



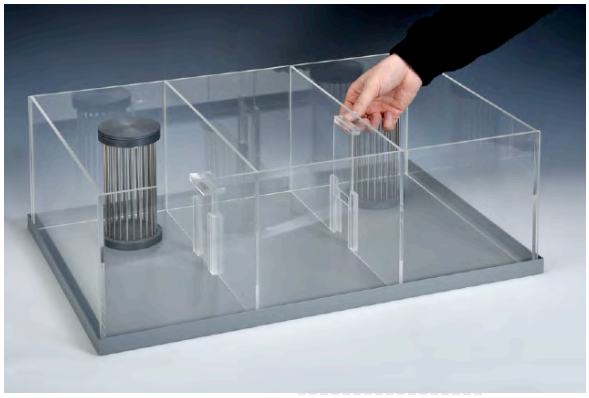
Main Features

- Works even with the most basic video-tracking software
- Grid Enclosures maximize animals interaction
- Different colours and sizes are available on request

Rationale and Outline of the Procedure

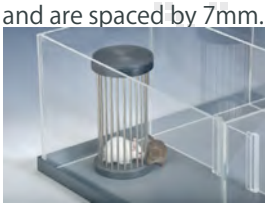
The Ugo Basile 3-Chambered Apparatus can be used with many different procedures.

In their 2004 paper, Moy and coauthors, describe a typical procedure: after a period of habituation a mouse's sociability is determined by measuring the time spent by the freely-moving mouse in the proximity of the grid enclosures containing the first 'stranger' mouse. A second 'stranger' mouse is then introduced in the box and the preference for the new 'stranger' mouse can be easily assessed



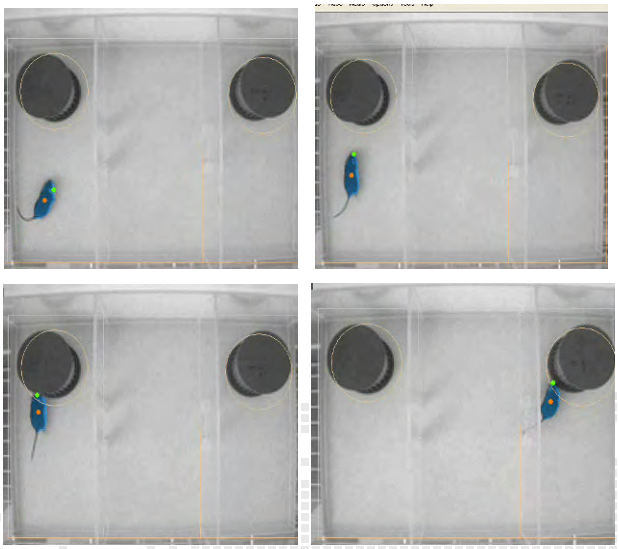
The clear Perspex box gives ideal transparency for visual observation of the experiment or for side positioning of the video-camera.
2 sliding doors (5 x8 cm) in the central compartment can be closed to confine the animal. Dimensions for each of the 3 compartments are 20 x 40 x 22 (h) cm
The grey floor gives high contrast with both light and dark animals, allowing for automated video-tracking of the animals. Its special painting also gives a slightly rough surface, pleasant for the animals to walk on.

The grid enclosures allow mice to closely interact. Grid bars have a diameter of 3 mm and are spaced by 7mm. The enclosures have internal diameter of 7 cm, height of 15 cm. The top and the bottom are made of grey (Cat. No. **46503-003**) or white (**46503-013**) PVC.



Different dimensions can be manufactured on request.

The grey floor gives best contrast to both light and dark animals, which is the most critical factor for *ALL* VIDEO-TRACKING SOFTWARE to work properly.



Images and videos, courtesy of Dr. Patrizia D'Adamo (San Raffaele Institute, Milan, Italy)

Ordering Information

46503 **Mouse Cage for Sociability**, complete with two grid cages (grey, i.d. 7 cm, height 15 cm)

46503-003 Additional Grid Enclosures for Sociability (grey, i.d. 7 cm, height 15 cm)

46503-013 Additional Grid Enclosures for Sociability (white, i.d. 7 cm, height 15 cm)

Bibliography

- S.S. Moy et alia: "**Sociability and Preference for Social Novelty in Five Inbred Strains: an Approach to Assess Autistic-Like Behavior in Mice**" Genes, Brain and Behavior 3(5):287-302, 2004

- J.J. Nadler et alia: "**Automated Apparatus for Quantitation of Social Approach Behaviors in Mice**". Genes, Brain and Behavior 3(5): 303–314, 2004.

HYDRAULIC "ATLANTIS" PLATFORMS

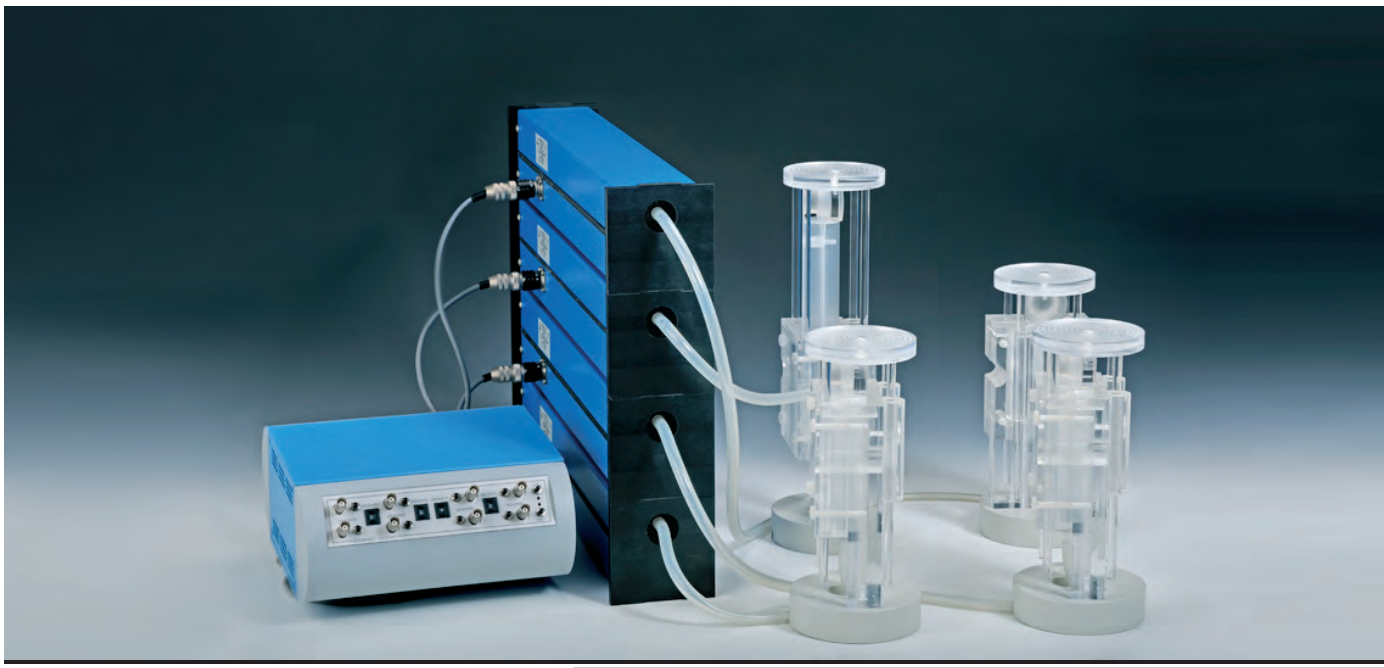
FOR WATER MAZE EXPERIMENTS
Cat. No. 40100

NO ELECTRICITY! NO HANDS IN THE POOL !

WHY AUTOMATED PLATFORMS?

Despite it being very effective, the **Morris Water Maze** task has some limitations, which relate to the fact that the platforms normally used have fixed height and cannot be raised during Probe tests.
Probe tests run with the use of a **lift platform** give more reliable indications on the presence of true spatial learning.

Ugo Basile Atlantis Platforms are made of clear Perspex and are operated by hydraulic pressure.
No electricity is present inside the pool. The electrical parts of the mechanism (i.e. the electro-hydraulic actuators) are safely located outside the pool.



Main Features

- 4-Platforms with one Controller
- Manually or PC-Operated
- Remote lifting/lowering control
- No Electricity in the pool

Ugo Basile: more than 10,000 citations

Consistency of positioning in the four quadrants - no more hands in the pool !

The 4-channel control unit connects up to 4 platforms.

Each platform is driven independently so that the Water Maze experiment can be completely automated by positioning a platform in each of the 4 quadrants of the pool.
Once the set of 4 platfoms has been positioned in the pool, the whole experiment can be run automatically, simply using the control unit or external triggers.

Specifications

- 4 independent channels, with manual or TTL mode
- Platform vertical range: 25-35 cm
- Speed of the platforms: 10 mm/s
- Platform diameter: 10 cm

Manual or automated /Via TTL) operation modes

Different operation modes are possible using the Ugo Basile Atlantis hydraulic platforms.

In the **manual** mode the platform goes up and down in steps of 1 cm by simply depressing a key; in the automated mode the platforms can be operated by external triggers (TTLs), controlled by any videotracking software.

Each platform can be kept submerged, and raised automatically when the animal swims above it. This protocol allows one to exclude from the test "navigation strategies" in which spatial memory is not involved.

Ordering Information

40100 Complete 1-Platform System, consisting of:
1 Platform 40101-002
1 Motor 40101-003
1 4-Channel Controller 40100-001

40400 Complete 4-Platform System, consisting of:
4 Platforms 40101-002
4 Motors 40101-003
1 4-Channel Controller 40100-001

40101 Additional platform and motor

Available Accessories

Pools, Tubing, Parallel Cable with BNC output, PCMCIA- Parallel Port, ANY-maze Software, AMi interface

Bibliography

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ugo basile
TRANSFORMING IDEAS INTO INSTRUMENTS

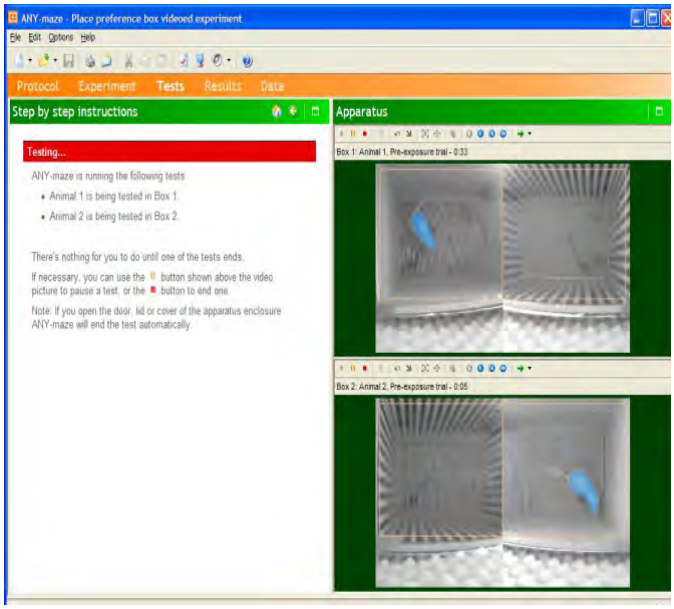
www.ugobasile.com

http://ub.anymaze.com/

ANY - maze

Advanced Videotracking

Cat. No. 60000



General

ANY-maze is a flexible video tracking system designed to automate testing in behavioural experiments.

Packed with advanced features ANY-maze is one of the most comprehensive video tracking systems available today

User-friendly interface and flexibility

Compatible with most cameras and digitizers

Video tracking your animals in a wide range of behavioural apparatus:

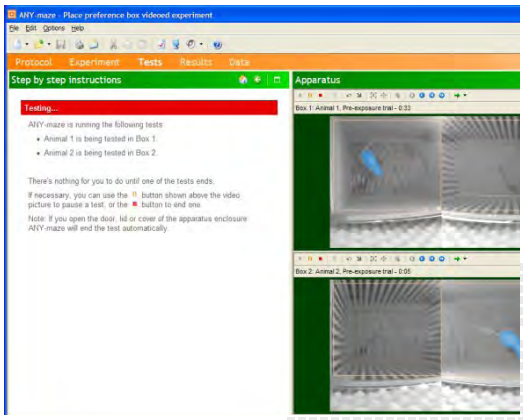
- Morris Water-Mazes
- Elevated Plus Mazes
- O-T- Y-Mazes
- Radial Mazes
- Open Fields
- Home Cages
- Metabolic Cages
- Place Preference Boxes
- Porsolt Forced Swim Tests
- Tail Suspension Tests

Ugo Basile: more than 10,000 citations

Simultaneous Testing

Using ANY-maze you can perform tests in up to sixteen pieces of apparatus simultaneously. This provides a great way to increase throughput and also makes it easier to control for environmental variables.

And ANY-maze's versatile camera management means you can use one camera, or many, to view the apparatus. For example, in these place preference boxes four cameras are being used, one on either side of each box.



Flexibility

With a single ANY-maze system you can easily automate a range of apparatus, for example, a plus maze, a water maze and a set of 6 locomotor activity boxes.

But with such flexibility, how do you determine the computer, cameras etc., that you'll need?

The answer's provided by the ANY-maze equipment wizard which quizzes you about all the apparatus you want to automate and then creates a detailed report of the equipment required.

Ordering Information

47420 MULTIPLE ACTIVITY CAGE, standard package, including 7441 Electronic Unit (for up to 6 cages) and one 7433 with 7435 & 7436 emit-ter/sensor kit, cables & manual.

7441	Electronic Unit,
7433	I.R. Beam Array Animal Cage
7435	Set of emitter/sensor arrays for horizontal ac-tivity
7436	Set of emitter/sensor arrays for vertical activity
37400-305	Package of 10 Heat Sensitive Paper Rolls
7439	Instruction Manual
E-WP008	Mains Cable
52010-320	USB to serial port converter
52010-322	Serial cable 9 to 9 pin

Set of fuses for either 230 or 115 V operation

Physical (Dimensions & Weight)

7441	27x16x19 cm, Kg 2.70
7433	54x50x37 cm, Kg 11.80 (incl. 7435/7436)

Bibliography

- A. Marazioti et alia: "**Somatostatin Receptors in the Ventral Pallidum/Substantia Innominata Modulate Rat Locomotor Activity"** Psychopharmacol., 181:2, 319-326, 2005
- W. Ponti et alia: "**In vivo Model for the Evaluation of Molecules Active Towards Transmissible Spongiform Encephalopathies"** Veter. Res. Communicat., 28:1, 307-310, 2004
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- M. Votava et alia: "**Effects of Alprazolam and Fluoxetine on Morphine Sensitization in Mice**" Physiol. Res., 51, 417-423, 2002

Animal Mazes
for Video-Tracking

FOR STUDIES OF:

- Anxiety and Stress
- Memory and Learning
- Spatial Memory
- Activity and Exploration

General

The Animal Mazes manufactured by Ugo Basile are designed to give optimal results with any Video-Tracking software. This is achieved by:

- *high-contrast colors*: grey, white, black or the NEW Ugo Basile Light-Blue
- *non-reflective colors*: reflections are a common source of error in animal tracking. Let's avoid them!

All maze materials were selected to be *sturdy and easy to clean*, to construct reliable and durable mazes.

Main Features

- High-contrast, non-reflective colors optimized for Video-Tracking
- Quality materials: light, easy to clean and to store
- Surface texture selected for best rodent's comfort (reasonable rough, "warm" surface)

Ugo Basile: more than 10,000 citations

Water Maze Pool

The Ugo Basile Water Mazes are water pools specifically manufactured for Morris Water Maze experiments (*i.e.,* not a cattle drinking trough) and include:

-wheels and drain hose

-built-in connectors for Hydraulic Atlantis Platforms (not included)

-customizable colors and dimension on request

-animal platform (fixed height, 10 or 12 cm diameter)

Pools are 60 cm high and 120, 150 or 180 cm diameter.

Barnes Maze

- Mouse version: 100 cm diameter, 5 cm hole diameter
- Rat version: 130 cm diameter, 10 cm hole diameter

Both versions are 60 cm high and are painted in non-reflective grey or light-blue (white, black or other custom colors are available on request). The animal shelter is included and is magnetically attached to the maze, for quick and easy experiments.

Elevated Plus-Maze and Zero-Maze

Elevated Plus-Maze

Zero - Maze

These mazes are manufactured from high-tech metal alloy and can be painted in different colors. Dimension (cm):

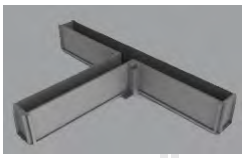
- Elevated Plus-Maze, Mouse: arm lenght 35, arm width 5, closed wall height 15, height from the floor 60
- Elevated Plus-Maze, Rat: arm lenght 50, arm width 10, closed wall height 40, height from the floor 60
- Zero-Maze, Mouse: diameter 55, corridor width 5, wall height 15, height from the floor 60

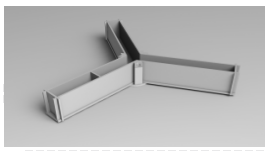
Y-maze, T-maze

These mazes have a metal base painted in non-reflective grey (more colors on request) and plastic arms that can be disassembled and closed with the included doors. Dimension (cm):

Y-maze, Mouse: arms length 35, width 5, wall height 10
Y-maze, Rat: arms length 50, width 10, wall height 20

T-maze, Mouse: stem lenght 35, arm lenght 30, width 5, wall height 10
T-maze, Rat: stem lenght 50, arm lenght 40, width 10, wall height 20





Open-Field

Open Fields are avaiable in non-reflective grey color, for mice (44 cm) or for rats (100 cm); both versions have detachable walls for ease of storage.

NEW Mouse Radial Maze

The new Mouse Radial Maze is manufactured from high-tech metal alloy and durable plastics to be as sturdy as possible.

A new automated model, with retractable doors is also available.

Different colors are available, all non-reflective, and arms can be detached, for easy cleaning.
Dimension (cm):

arms length 35, width 5, wall height 10

Ordering Information

40125	**Water Maze, 120 cm, for mice**
40155	**Water Maze, 150 cm, for mice and rats**
40185	**Water Maze, 180 cm, for rats**
40193	**Barnes Maze, for mice**
40192	**Barnes Maze, for rats**
40142	**Elevated Plus-Maze, for rats**
40143	**Elevated Plus-Maze, for mice**
40163	**Elevated Zero-Maze, for mice**
40173	**Y-maze, for mice**
40172	**Y-maze, for rats**
40133	**T-maze, for mice**
40132	**T-maze, for rats**
47432	**Open-field, 44 cm, dark walls**
47433	**Open-field, 44 cm, transparent walls**
47100	**Open-field, 100 cm, dark walls**
47150	**Open-field, 100 cm, with 4 partitions**

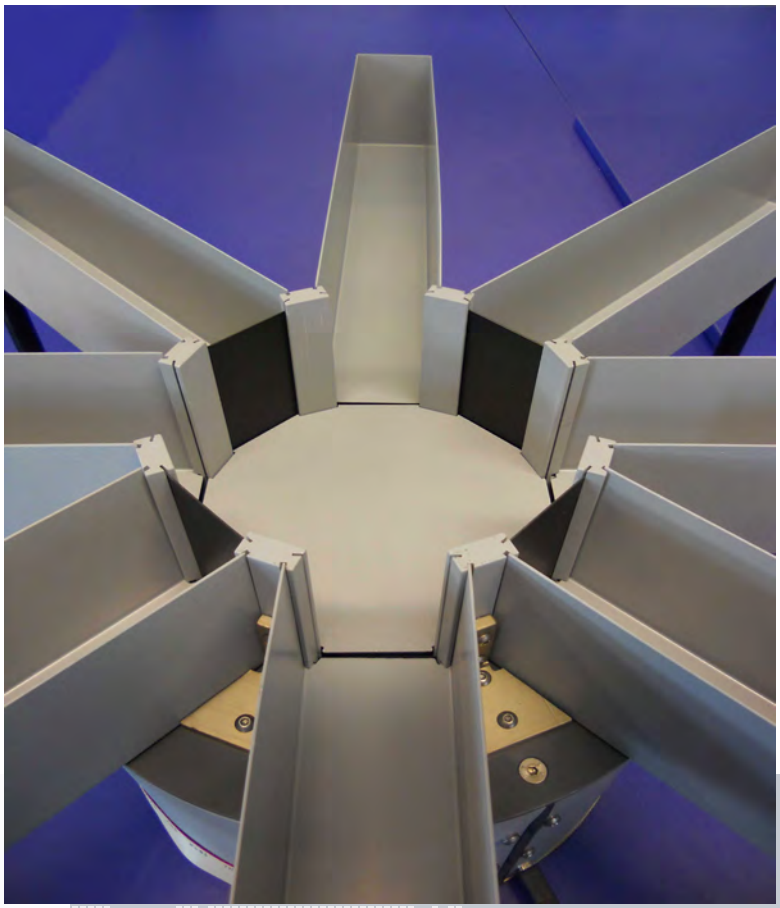
8-ARM RADIAL MAZE

Cat. No. 41153-41154

With automated sliding doors

General

The Ugo Basile 8-ARM RADIAL MAZE will help the researcher to carry out spatial memory experiments in a fully automated manner. The electronic unit features USB interface, 8 independent TTL input and integration with the ANY-maze video-tracking software. The 8 smooth and silent sliding-doors retract in the maze ensuring unobstracted animal tracking.



Main Features

- Optimized for video-tracking (doors slide underneath the floor)
- Manual or PC-driven operation modes (via TTL or USB connection, for Any-maze users)
- Interchangeable arms for egocentric or allocentric spatial memory tests

Principle of Operation

The Ugo Basile 8-Arm Radial Maze uses a fast and silent mechanism to drive its "guillotine-style" doors. Unlike other instruments, which rely on stepping motors to operate the doors, the Ugo Basile original electromechanical design ensures quick operation, very little noise and no visual obstacle to video-tracking from above, thanks to the doors mechanism underneath the floor.

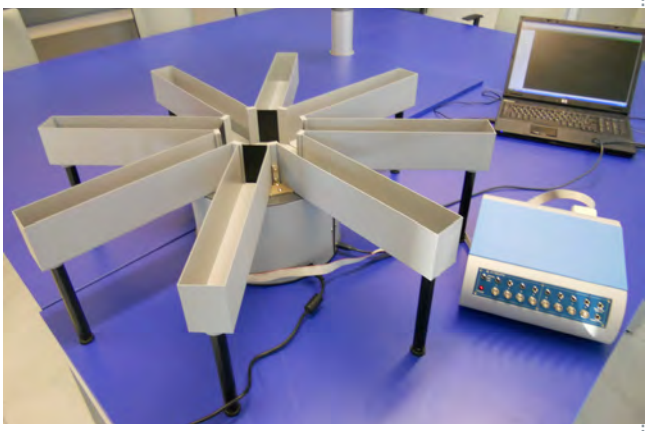
Instrument description

The Instrument basically consists of three elements: the Core, the Set of Arms, the Control Unit.

The **Core** contains the doors mechanisms and the central platform, which is made of steel to ensure stability when in place. It is coated with a non-reflective grey color, without any indentation or protrusion to avoid any unwanted space reference for the animal.

The **Set of Arms**. 8 arms radiate from the central platform at equal angle. Each arm is long 35 cm, 5 cm wide, with 8 cm high side walls (41153).

Arms of different profiles can be supplied on request; model 41154 features **"low profile arms"** (41154), designed to optimize the visibility of extra-maze cues in allocentric spatial memory tests.



The **Control Unit** enables the researcher to open and close the doors manually or via TTL signals using the BNC connectors located on the front panel. The mouse access to any arm can be set so that individual doors or multiple doors open and close simultaneously.

A two meter long cable connects the Control Unit to the Core and enables the operator to run his/her schedule without disturbing the subject.

Operation Modes

Manual Mode: this mode enables to drive the 8-ARM RADIAL MAZE via the front panel switches. Single doors or group of doors can be operated with one toggle.

BNC Mode: the 8-ARM RADIAL MAZE can also be driven remotely via external TTL pulses. The accepted TTL levels are 0V and 5V and are delivered through the 8 BNC connectors ilocated on the front panel.

USB Mode: the 8-ARM RADIAL MAZE can be simply operated via the video-tracking software ANY-maze. It includes specific drivers to control all doors independently on a time-based schedule, or on the basis of the animal position. This ensures that even the most complex protocols can be set and performed easily, taking advantage of the user-friendly ANY-maze interface.

Data acquisition and animal tracking

The Ugo Basile 8-arm Radial Maze has been designed with video-tracking in mind. In fact, the non-smooth, non-reflective grey floor ensures optimal video quality and contrast with animals of any colour.

Ordering Information

41153 8-arm Radial Maze, with standard arms.
Complete with USB control unit and one set of arms with the following internal dimension:
- arm wall height 8 cm
- arm length 35 cm
- arm width 5 cm

41154 8-arm Radial Maze, with low-profile arms.
Complete with USB control unit and one set of arms with the following internal dimension:
- arm wall height 1 cm (initial step: 8 x 7 cm length)
- arm length 35 cm
- arm width 5 cm

The diameter of the central arena is 16 cm.

Isolated Organ Baths

Cat. No. 4000 / 4050 / 4400

General

The Isolated Organ Baths have been designed for accurate recording of isometric or isotonic tissue contraction/release.

Research involving effects of electrical stimuli or drugs on isolated organs, uterus, trachea, vessel strips, auricle, can be performed under optimum conditions.

Wash or test solution enters the chamber after passing through the temperature equilibrating coils and the syringe valve. The tissue in the chamber is washed by flushing the chamber through an overflow drain tube, to avoid exposing the tissue to the air.

Water stirring is accomplished by a water jet delivered by a centrifugal pump.

A 200 W stainless steel heating element is mounted on the Perspex tank floor. A precise solid state "proportional" thermostat maintains the temperature within the excellent limits of ±0.1°C on all models.

Note: the Isometric and Isotonic Transducers featured in the picture are not included.

SAFETY - EFFICIENCY

Cat. 4000 One Muscle Chamber
Cat. 4050 Two Muscle Chambers
Cat. 4400 Four Muscle Chambers

Main Features

- All components visible through the clear Pespex tank: great for teaching!
- Tissue washing without exposure to air
- Water-jet bath stirring provided by a noiseless vibration-free centrifugal pump
- Easy and quick mounting of tissue

Bath 4000

The 4000 water bath consists of a clear Perspex tank, cm 19 x 19 x 17 which contains one tissue chamber, one temperature equilibrating coil, one adjustable support rod on which transducers (Isometric Cat. 7003, 7004, 7005, 7010 or Isotonic Cat. 7006) can be fastened to the tank via the holder provided.

Bath 4050

This is similar to the one-chamber bath 4000 but the tank is dimensioned (cm 34 x 19 x 17) to accomodate two muscle chambers and syringe valves, two coils, two adjustable support rods and holders for transducers.

Bath 4400

The bath 4400 lodges up to 4 preparations; they maintain the features of the 4050 but heating power and dimensions are upgraded accordingly.

Tissue Chamber Configuration

The tissue chambers provided with porous frit, available in 5, 10, 20, 30 or 50 ml are standard. An accurately positioned glass hook is provided in the chamber to which the thread loop can be easily attached, ensuring the organ being well centered in the chamber.

Tissue chambers with porous frit, without hook are available on request.

Tissue chambers are also available provided with an aeration side arm in 20, 30 or 50 ml volume.
Customized chambers, i.e., with non standard shape and/or volume can be provided on request.

Ordering Information

4000 Isolated Organ Bath, One Muscle Chamber, complete with circulation pump, heater, thermostat, set of 2 fuses & instruction manual, and provided with following standard accessories:

- 1 4005 Temperature Equilibrating Coil
- 1 4100 Muscle Chamber, 10ml, provided with porous frit and hook
- 1 14110 Holder
- 1 4004 Supporting Rod (10 mm diam.)

4050 Isolated Organ Bath, Two Muscle Chambers, as above but all standard accessories multiplied by two, i.e., 2 4005, 2 4100, etc.

4400 Isolated Organ Bath, Four Muscle Chambers, as above but all standard accessories multiplied by four, i.e., 4 4005, 4 4100, etc.

Physical:

4000
Dimensions: cm 32x20x22
Weight : Kg 3.75
Shipping Weight : Kg 7.00

4050
Dimensions: cm 47x20x22
Weight : Kg 6.25
Shipping Weight : Kg 9.30

4400
Dimensions: cm47x29x22
Weight : Kg 8.50
Shipping Weight : Kg 11.50

Power Requirement: 115 or 230V, 50-60 Hz
250 VA max. for 4000/4050
400 VA max. for 4400

Multiplexing Pulse Booster

Cat. No. 3165

General

The 3165 Multiplexing Pulse Booster is a useful complement to any stimulator, delivering up to 800 mA of constant current to up to four in-vitro preparations (e.g., smooth muscles) at the same time.

The Multiplexing Pulse Booster has been designed to obviate the inconveniences connected to the use of single-channel stimulators, that lack the independent output connections and the individual adjustment capability to deliver pulses of preset intensity to more than one preparation.

It is especially useful when "field electrodes" and other low impedance stimulation arrangements are used.

Bear in mind that the one-channel stimulator can be conveniently replaced by a data acquisition system

Four in-vitro preparations (e.g., smooth muscles) can be driven by a single one-channel stimulator

Main Features

- High Power (up to 800 mA) constant current
- Independent Isolated Circuits to eliminate interference
- Unipolar or Bipolar Mode
- Adequate Voltage (45V) enabling stimulation by field electrodes of most in-vitro preparations
- Continuous Monitoring of the preset current flowing through each preparation

Instrument Description

The 3165 features:

- High Power (up to 800 mA) digitally adjustable constant current
- Adequate Voltage (45V) which enables stimulation by field electrodes of most in-vitro preparations described in the literature
- Unipolar or Bipolar Mode
- Independent Isolated Circuits to eliminate interference
- Continuous Monitoring of the preset current flowing through each preparation

The current level of each channel is set via its individual 3-digit thumb-wheel switch.

The current output is adjustable in each channel to equal or different levels in the range 0-799 mA in 1 mA steps.

These current levels are independent of the Stimulator output voltage.

The pulse mode, either unipolar or bipolar, can be selected on one or more channels.

Optional Timer

An optional **Timer (Cat. 3175)** can be supplied, housed in its individual mini-box, to enable the Pulse Booster to deliver pulse trains, when the Stimulator lacks this feature.

This timer is provided with both train and pause-between-trains duration adjustments. Both adjustment time-scales span the interval 0-999 seconds in 1 second steps.

A standard field electrode pair (Cat. 3160) can be supplied. Special electrodes can be designed and manufactured on request.

Please ask for details!

Ordering Information

3165	**MULTIPLEXING PULSE BOOSTER**, complete
7562	Dust Cover
3135	Instruction Manual
E-WP 008	Power Cord

Optional

3175	Timer for 3165

PHYSICAL

Power Requirement	115/230 V, 50/60 Hz, 30W
Dimensions	cm 26 (w) x 30 (d) x 12 (h)
Weight	Kg 4.4
Shipping Weight	Kg 6.5 approx.

Bibliography

- M.G. Matera et alia: "**Immune Sensitization of Equine Bronchus: Glutathione, IL-1 β Expression and Tissue Responsiveness**" Respir Res. 6(1): 104, 2005
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- S. Tambaro et alia: "**Evaluation of Tamsulosin and Alfuzosin Activity in the Rat Vas Deferens: Relevance to Ejaculation Delays**" J. Pharmacol. Exper. Therap. 312: 710-717, 2005
- S. Ruiu et alia: "**Synthesis and Characterization of NESS 0327: a Novel Putative Antagonist of the CB1 Cannabinoid Receptor"** J. Pharmacol Exper. Therap., 2003

Superfusion System

Cat. No. 14900

General

Neurotransmitter release is the major step of neurotransmission. Abnormalities in neurotransmitter release have been proposed to be involved in many pathological conditions.

Therefore, understanding the physiological mechanisms of transmitter release and how the process can be modified by pathological states is essential to develop therapeutically useful pharmacological agents.

UGO BASILE 14900 Superfusion System has been especially designed to perform release studies from synaptosomes, although brain slices can be employed as well.
On the other hand, presynaptic nerve terminals are the sites where release specifically occurs; therefore superfusion of synaptosomes is best suited to explore presynaptic events.
Superfused synaptosomes are the preparation of choice to study release-regulating presynaptic receptors and to explore the intimate mechanisms of neurotransmitter release.

RAITERI'S METHOD

Synaptosomes Release Studies

Main Features

- Specifically designed to perform release studies from synaptosomes
- Brain slices can be employed as well
- More than 300 full papers using superfused synaptosomes have been published

Introduction

UGO BASILE **14900 Superfusion System is a semi-automated version of that originally developed in Raiteri's laboratory**, where about 200 papers have been published exploiting the technique.

We have developed this Superfusion System in order to make commercially available an instrument in which the original design of the superfusion chambers has remained intact.

The 14900 Superfusion System consists of 12 parallel open superfusion chambers with 12 upper reservoirs, all thermoregulated by a water-jacket. Prewarmed oxygenated media of the desired composition can be concomitantly delivered from the reservoirs to the superfusion chambers.

Synaptosomes are accomodated as very thin layers on microporous filters placed on glass filter supports. Synaptosome or slice superfusion is provided by a multichannel peristaltic pump and superfusate samples are directly collected into scintillation vials.

Ordering Information

14900 SUPERFUSION SYSTEM, standard package, including:-

14900-001	Electronic Unit
14900-002	Superfusion Bath Complete Assembly
14900-004	Suction Pump
14900-302	Instruction Manual
E-WP008	Mains Cord

Set of fuses for either 230 V or 115V operation

Optional:

14900-003	Water Circulator/Heater
14900-005	Masterflex Multi-Channel Peristaltic Pump

Bibliography

Method Paper:

- M. Raiteri, F. Angelini, G. Levi: "**A simple apparatus for studying the release of neurotransmitters from synaptosomes**" Eur. J. Pharmacol. 25: 411-414, 1974

Additional Papers:

- A. Pittaluga et al.: "**Human brain N-methyl-D-aspartate receptors regulating noradrenaline release are positively modulated by HIV-1 coat protein gp120"** AIDS 10: 463-468, 1996.
- M. Di Luca et al. "**Increased presynaptic protein kinase C activity and glutamate release in rats with a prenatally induced hippocampal lesion"** Eur. J. Neurosci. 9: 472-479, 1997.
- M.V. Clos et al. "**D2 dopamine receptors and modulation of spontaneous acetylcholine (ACh) release from rat striatal synaptosomes**" Br. J. Pharmacol. 122: 286-290, 1997.
- D. Crespi et al. "**Carrier-dependent and Ca2+-dependent 5-HT and dopamine release induced by (+)amphetamine, 3,4-methylendioxymethamphetamine, p-chloroamphetamine and (+)fenfluramine**" Br. J. Pharmacol. 121: 1735-1743, 1997.
- E. Schlicker et al. "**Effects of selective h5-HT1B (SB-216641) and h5-HT1D (BRL-15572) receptor ligands on guinea-pig and human 5-HT auto- and heteroreceptors**" Naunyn-Schmiedeb. Arch. Pharmacol. 356: 321-327, 1997.
- G. Maura et al. "**Glutamate release in human cerebral cortex and its modulation by 5-hydroxytryptamine acting at h 5-HT1D receptors**" Br. J. Pharmacol. 123: 45-50, 1998.
- R. Sala et al. "**Nerve growth factor and brain-derived neurotrophic factor increase neurotransmitter release in the rat visual cortex**" Eur. J. Neurosci. 10: 2185-2191, 1998.
- M. L'Hirondel et al. "**Lack of autoreceptor-mediated inhibitory control of dopamine release in striatal synaptosomes of D2 receptor-deficient mice"** Brain Research 792: 253-262, 1998.

In addition, more than 300 full papers using superfused synaptosomes have been published

Isometric Transducers

Cat. No. 7003 /7004/7005 & 7010

General

The force exerted on a hollow carbon fibre beam is converted into proportional electric signal via strain-gauges conveniently wired in Wheatstone bridge circuit.

The three models 7003-7004-7005 cover the range from 0 to 50 g (see table on the facing page). The high sensitivity 7010 is designed for the mg range.

Model Selection

The transducers are of robust construction and can withstand forces of up to 5-10 times the rated value. It is possible to use 7003 which is generally used for trachea rings or artery strips, where forces of 5-10 grams are involved, by operating at minimum amplifier sensitivity. However, the cantilever will deflect with a load of the mentioned magnitude

Generally speaking, it is advisable to use a stiff transducer, operating at high amplifier sensitivity, and use the most sensitive transducer only when the forces involved are very small.

ISOTONIC TRANSDUCER
see separate leaflet

Main Features

- Ugo Basile transducers have been designed for precise measurement of force in muscular preparations under isometric conditions.
- An Isometric Transducer measures changes in force at constant length whereas an Isotonic Transducer is basically a displacement meter under constant load.

Isometric Transducer Specifications

Model	7010	7003	7004	7005
Electrical				
Excitation Voltage (max.)	6V	6V	6V	6V
Excitation Voltage (typical)	3V	3V	3V	3V
Sensitivity (μV per g per V)	110	70	25	10
Non linearity & Hysteresis	+/-3%	+/-3%	+/-3%	+/-3%
Mechanical				
Force Range	**0-800 mg**	**0-2 mg**	**0-10 mg**	**0-50 mg**
Overload Rating	5g	20g	50g	200g
Moment of Inertia	7gcm^2	7gcm^2	7gcm^2	7gcm^2
Lever Arm Displacement	0,5 mm/g	0,3 mm/g	0,1 mm/g	0,06 mm/g
Weight	270 g	270 g	270 g	270 g
Shipping Weight	900 g	900 g	900 g	900 g

Compatibility

The Isometric & Isotonic Transducers are normally supplied with a connector designed for UGO BASILE Unirecord 7050 & Gemini 7070 (see note below).
If the customer wishes to make use of other recording apparatus, the transducers can be supplied with appropriate connectors on request.
An optional DC Power Supply (single or multiple channel) is available for connecting the Isometric Transducer to amplifier/recording systems where excitation voltage is not available at the input connector. Quotations on request.

IMPORTANT NOTE :
Before ordering, check the connection compatibility of your amplifier/recording system.
The grey plastic connector mounted on the Transducers manufactured before 1990 (RTG 18) has been replaced by a cylindrical, all metal model of ECTA. Adaptors are available.

Bibliography

Isometric Transducers 7003, 7004, 7005

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- L. Natale et alia: **"Interleukins 1 Beta and 6 Induce Functional Alteration of Rat Colonic Motility: An In Vitro Study**" Eur. J. Clin. Investigation 33:8: 704-712, 2003
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High Sensitivity Transducer 7010

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Isotonic Transducer

Cat. No. 7006

General

The 7006 Isotonic Transducer basically consists of a carbonfibre lever arm which pivots on the shaft of a Hall-effect rotary motion transducer of original design. The arm is balanced by an adjustable counterweight of tungsten alloy.

It is possible to carry out experiments on extremely small muscle fibres, which can be held under a tension of as little as 100-200 mg so that minimal force and consequent displacement alterations can be recorded.

The lever arm balancing is provided by a tungsten alloy counterweight which can be shifted by turning its knurled section.

This load is monitored by the counterweight rim moving along a scale calibrated in grams.

ISOMETRIC TRANSDUCERS
(see separate leaflet)

Main Features

- Ugo Basile Isotonic Transducer is specially designed for investigating isotonic contractions in isolated organs, particularly smooth muscle, amphibian hearts, etc.
- An Isotonic Transducer is basically a displacement meter under constant load, whereas an Isometric transducer measures changes in force at constant length

Isotonic Transducer Specifications

Voltage Output	300µV per mm displace ment of lever arm tip
Linearity	± 2% to ± 15 ° rotation
Excitation Voltage	6 ÷ 15 V
Excitation Current	20 mA (constant in the range 6 ÷ 15 V)
Operating Range	± 15° about the centre
Lever Arm Length	10 cm
Lever Arm Travel	6 cm
Breakaway Torque	less than 0.1 g x cm
Moment of Inertia	35 gxcm^2
Overall Dimensions	16.5 x 5.5 x 11 cm (excl. removable handle)
Weight	Kg 0.35
Shipping Weight	Kg 1.60

Compatibility

The Isometric & Isotonic Transducers are normally supplied with a connector designed for UGO BASILE Unirecord 7050 & Gemini 7070 (see note below).

If the customer wishes to make use of other recording apparatus, the transducers can be supplied with appropriate connectors on request.

An optional DC Power Supply (single or multiple channel) is available for connecting the Isometric Transducer to amplifier/recording systems where excitation voltage is not available at the input connector. Quotations on request.

IMPORTANT NOTE :

Before ordering, check the connection compatibility of your amplifier/recording system.

The grey plastic connector mounted on the Transducers manufactured before 1990 (RTG 18) has been replaced by a cylindrical, all metal model of ECTA.

Adaptors are available.

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Digital Stimulators

Cat. No. 3200 / 3300 / 3400

General

The user-friendly digital Stimulators by LETICA are available as single or multiple channel units.

They are compact reliable instruments which offer excellent performances for most physio-pharmacological experiments.

SAFETY - EFFICIENCY

Main Features

- microprocessor controlled pulse management: single pulses, free running or trains
- up to 100 V/100 mA constant voltage/constant current
- continuously variable output; digitally displayed channel by channel in the modular version
- built-in isolated output circuit, non referred to ground

Constant Voltage/Constant Current Stimulation

At constant voltage, i.e., having set the voltage amplitude, we do not know the magnitude (expressed in mA) of the ion flux which crosses the organ. This ion flux which is of paramount physio-pharmacological meaning, is function of the preparation impedance.

The impedance in turn depends on the electrode shape & position, type of solution, etc., and it is difficult to be gauged at first sight.

Moreover, the impedance "drifts" so to speak, due to electrode polarization, physio-pharmacological alterations, etc. in the course of the experiment.

At constant current, we read the actual value of the current when we set it. Admittedly, this does not resolve all problems!

When the organ is embedded in other tissues as in most in-vivo applications or when the field electrodes are used (a popular in-vitro method) a good deal of current flows through contiguous tissue or, respectively, the solution.

To sum up, in the constant current mode, at least one of the two basic parameters, **the current flowing through the preparation in-toto** (altogether) is known with certitude. The second parameter, **the fraction of the current flowing through the organ proper** can not be exactly determined in either modes, we mean constant current & constant voltage.

It is therefore preferable to stimulate at constant current. However, in particular in the "old" literature, the constant voltage stimulation is often described.

Both modes are possible with the LETICA research models (Cat. 3200 and 3400).

Model Selection

A complete range of digital stimulators is available, ranging from the basic model for student use, Cat. 3300, and the single stimulator Cat. 3200, to the multiple stimulator 3400, in modular version, which can lodge up to 4 output modules 3450, for the simultaneous stimlation of up to 4 preparations.

All stimulators, except the 3300 (student model) have the train generating capability.

Options

The **Ugo Basile 3165 Multiplexing Pulse Booster** offers a convenient way to increase the number of channels of your stimulator, without the need of a high power multi-channel model. The 3165 can be a useful complement to any single channel stimulator to energize up to four in-vitro electrode pairs at the same time.

Technical Specifications

Pulse Frequency	1 to 99999 p.p.s.
Pulse Duration	1 µs to 9999 ms
Train Interval	0.1 to 999.9 s
Train Duration	1 to 9999 ms
Constant Voltage/ Current	0 to 100 V/mA (1 V/mA resolution)
Constant Voltage (Student Stimulator)	0 to 100 V (1 V resolution)
Accuracy	< 1% for timing < 1% for output
Sinc out	V TTL signal synchronic w/pulse onset
DC	DC level with the set amplitude
External Trigger	TTL signal allowing for the external control of the pulse onset
Max. Power Output	20 W
Dimensions	3200 = 37 x 15.5 x 29 cm 3400 = 48 x 20 x 29 cm
Weight	3200 = Kg 3.00 3400 = Kg 5.00 (with 4 modules)
Shipping Weight (approx.)	3200 = Kg 7.00 3400 = Kg 9.00 (with 4 modules)
Power	110/220 V, 50/60 Hz, 60 VA max.

Ordering Information

3200	Single Channel Stimulator, 0 to 100 V-100 mA voltage & current output
3300	Single Channel Stimulator, for student use
3400	Modular Stimulator time base and main frame for up to 4 channels
3450	Output Module for 3400, 0 to 100 V - 100 mA constant voltage & current output
3160	Field Stimulation Platinum Electrode
3165	Multiplexing Pulse Booster

DataCapsule-*Evo* Digital Recorder

Cat. No. 17304

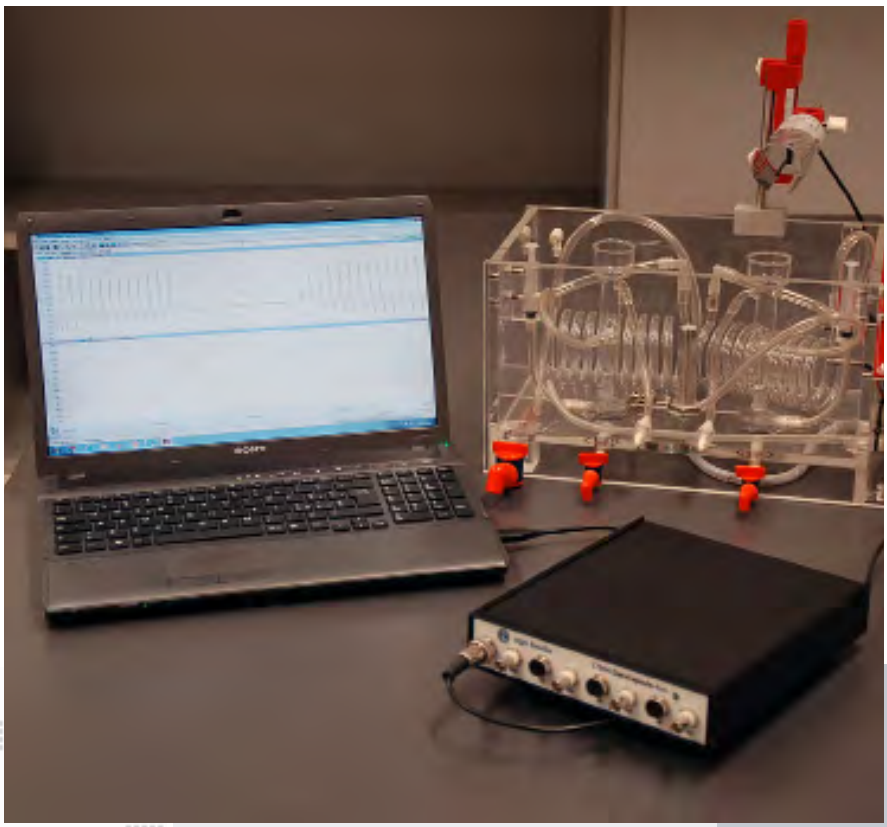
- Connectors available for most transducers
- LabScribe2™ software on-board
- 5 KHz sampling speed

4-CHANNEL DATA ACQUISITION SYSTEM
Each channel is independent

General

The new DataCapsule-*Evo*, powered by iWorx, is a new general purpose, four channel data acquisition system that provides high resolution and sensitivity over conventional recorders. This versatile digital recorder is a unique system, in that each channel is independent, each having its own analog-to-digital converter. In addition, each channel input is equipped with the appropriate filters and amplification required.

Set-up is plug-and play easy, with connection to PC or MAC computers via USB interface: data acquisition is accomplished via the versatile LabScribe Software provided with the system.



Main Features

- USB connection to PC and MAC
- LabScribe Software included
- DIN inputs and BNC outputs
- Input trigger to start recording
- High resolution and sensitivity
- Each channel equipped with programmable stimulator

Connections and Specifications

All four channels have two connectors, an 8-pin DIN (input) and a BNC (output). Cable adaptors allow connection of a variety of sensors and transducers.

Each channel is independent, having its own 24 bit analog-to-digital converter.

The maximum sampling speed is 5KHz on all channels simultaneously.

Analog Outputs

Each channel of the 17304 is equipped with an independently programmable 16bit, +/-10V stimulator. All stimulus parameters may be controlled via the LabScribe Software, from the timulator tool bar.

Eight digital outputs are available to control external devices; programming the output òomes is point-and-click easy.

Resolution and Noise

The 17304 features high resolution, combined with an exceptionally low noise (as low as 32 uV).

Software and Data Management

The DataCapsule-*Evo* setup is plug-and-play easy with connection to PC or MAC computers via the popular USB interface.

Recorded data are managed by the versatile LabScribe2 Software, featuring optimized scaling of displayed data: time base or y-axis scaling can also be zoomed in or out with a single click of the mouse.

Keyboard input from the user may be time locked to the data; annotations may be positioned in the data, just as you would write on chart paper!

Twenty-four off-line calculations are also supported, including Max-Min, Slope at a Point, and Mean.

Any view of the data can be exported to the disk as a text file or graphic. This capability is ideal for post calculation in programs like Excel™ or MatLab™.

Of course data from any window in the program can always be printed.

DataCapsule-*Evo* Specifications

Power Requirements	:	115/230 V – 50/60 Hz, 22W max
Instruments Size	:	22 (w) x 26 (d) x 5 (h) cm
Net/Shipping Weight	:	2.0 Kg / 4.0 Kg
Software	:	LabScribe2
Display	:	Real time, user definable Screen Time independent of Sample Rate, User Definable Units, AutoScale, Full Scale or User Defined Scale

Analog Input

Analog inputs	:	4 independent amplified channels
Input resolutions	:	24 bits differential
Sample Speed	:	1, 2, 5, 10, 20, 50, 100, 200, 500, 1K, 2K, 5K samples/second
Imput range	:	±10 V
Excitation voltage	:	±5 VDC @ 50mA per channel
Input impedance	:	667 GigΩ tup./182 GigΩ Min.
Trigger Mode	:	external trigger /TTL or Contact Closure), Threshold Trigger from Data, User Trigger
System noise	:	32 microvolts

Analog Output

Analog outputs	:	4
Output resolution	:	16 bits
Output range	:	±10 VDC
Stimulator Modes	:	Pulse, Train, Constant, Step, Ramp, Triangle
Time Step	:	0.04 ms, 0.4 ms, 4 ms
Pulse Width (Max.)	:	1.2 s, 12 s, 120 s
Frequency	:	12.5 KHz, 1.25 KHz, 125 KHz

Ordering Information

17304 **DataCapsule-*Evo*, 4-Channel Digital Recorder,** standard package, including LabScribe2™ Software

Transducers

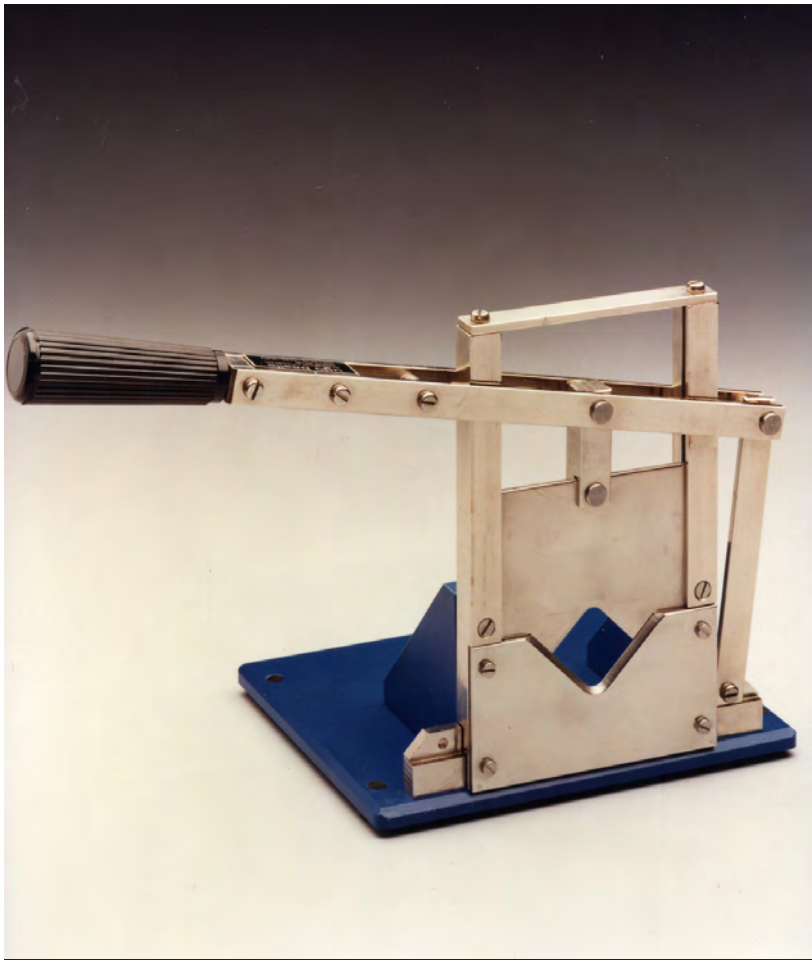
The DataCapsule can be connected to a variety of transducers.

Among the ones offered by Ugo Basile:

7003-F Isometric Force Transducer, type DY1
7004-F Isometric Force Transducer, type DY2
7005-F Isometric Force Transducer, type DY3
7010-F High Sensitivity Transducer, type DY0
7006-F Isotonic Transducer
17844-F Pressure Transducer
7020-F Bronchospasm Transducer

Small Animal Decapitator

Cat. No. 7950



General

This Decapitator is a simple, rugged, hand operated shear for humane, instant decapitation of laboratory animals.

With its 5 cm square maximum blade opening, it is suitable for decapitating guinea pigs, rats, mice and other small animals.

The blades are made of stainless steel, ground and induction hardened to Rockwell 60, to retain a razor sharp edge.

for humane, instant decapitation of small laboratory animals

Main Features

- 5 cm square opening
- Induction-hardened stainless steel blades
- Heavy gauge aluminium base with four mounting holes

General

The 7950 decapitator cuts cleanly and quickly through bone and tissue.

Replacement blades are available and must be installed at the factory.

The heavy gauge aluminum base has four holes for bench mounting.

The base is coated with textured oven-cured epoxy paint; stud bolts, screws and washers are all made of stainless steel; the frame, the lever handle and the linkage of the upper blade are made of nickel plated brass.

A unique feature allows the handle to be relocated for right or left handed use. Please specify your preference when ordering, by adding –R (right) or –L (left) to the catalogue number.

The unit can be totally dipped for cleaning.

Ordering Information

7950	**Small Animal Decapitator**
7951	Spare Blade set, two pieces
NOTE	blades must be installed/replaced at our factory.

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Multifunction Printer
6 channels

Cat. No. 2600

Multi-function, flexible Data Acquisition System designed to acquire counting or timing data from 6 independent channels

General

The 2600 Multifunction Printer is a microprocessor controlled device designed to acquire digital signals from 6 independent channels.
It can count the number of signals received across time intervals of adjustable length. For example it can be used with Activity Wheels to study rodents circadian rhythms.

The data can be printed on thermal paper in real time, stored in the internal memory or routed to the PC via the provided software.

Main Features

- 6 independent channels
- Internal memory
- Embedded printer
- Software included (RS232 to PC)
- Measurements across time (adjustable time bin)

Ugo Basile: more than 10,000 citations

The Multifunction Printer is provided with an internal memory, where the data can be stored to be downloaded later on. This makes the 2600 a truly **flexible multipurpose data-acquisition system.**

Each channel can acquire data from instruments which supply timing TTL signals, such as:-

37215	Analgesy-Meter
7360	Tail Flick Unit (old model)
7370	Plantar Test (old model)
7550/7570	Passive Avoidance Set up
7600/7650	Rota-Rod Treadmills for Mice (old model); (requires 5 channels)
7700/7750	Rota-Rod Treadmills for Rats (old model); (requires 4 channels).

or counting signals, such as:

6650	Hole Board
1800/1850	Activity Wheels

Counting data are printed at preset intervals. Timing data, for instance from Plantar Test, consist of duration of time intervals (latency).

Cumulative recording can also take place: for instance in food and water intake experiments, the researcher is generally interested in assessing the total time spent during a drinking (or eating) session, irrespective of amount and duration of individual gnawing or licking bouts.

Instrument Functions

The 2600 includes a graphic display which presents all available commands. The operator chooses by simply acting on the 4-button keyboard located below the display.

The data string for any activated channel, in order from left to right, shows: the input channel number among the six available, the datum proper in 5 digits (3 integers and 2 decimals for timing mode and 5 integers for counting mode) and the elapsed time expressed in minutes (2 digits) from the start of the trial in progress.

Moreover, the data string may also contain some experiment information (animal number, gender, etc.).

The RS232 connector, besides linking the 2600 to the PC, can accept signals from other instruments with a serial connector, such as the Plethysmometer 7140. The data string supplied by a microprocessor-controlled instrument linked to the 2600 serial connector is directly printed on the chart with indication of the address of the instrument which generated it.

This string does not interfere with any of the six available input channels, which remain fully operative.

Routing the Data to the PC

The data can be directly routed to the PC in real time or downloaded later on. The serial communication between the 2600 and the PC is managed by the CUB Data Acquisition Software Cat. 52050-01 (included in the standard package) for IBM (or compatible) PC.

The data collected by the Win-DAS program from each instru-ment are automatically stored into individual files, ready to be managed by most statistical analysis packages available (Lotus, Excel, etc.).

Ordering Information

2600 6-CHANNEL MULTIFUNCTION PRINTER, complete with following standard accessories:

37400-305	Package of 10 Heat Sensitive Paper Rolls
2606	9-pin Cable, to the PC
52050-01	CUB Data Acquisition Software
52010-320	USB converter to serial port
52010-322	Connecting cable 9 to 9 pin
E-WP 008	Mains Cable

Connections Cables (non included)

2610-A	for 7370 & 7360 (old model)
2610-B	for 7550
2610-C	for 6650
2610-D	for 37215
2610-E	for 7600/50 & 7700-50
2610-F	for 1800 / 1850 (featured in the picture)
2610-H	for 7570

Physical

Power Requirements	115 or 230 V, 50/60 Hz 30 VA max.
Dimensions	cm 26 (w) x 13 (d) x 12 (h)
Weight	Kg. 3.50
Shipping Weight	Kg. 6.50 approx.

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ECT Unit

Cat. No.57800

General

The ECT apparatus is specially designed for neurochemical and neuropharmacological research.

A constant current output is used, which ensures reproducible results and accurate determination of the EC threshold while also pinpointing any variations in the threshold brought about by drugs having a specific action on the cortex and subcortical regions.

The shock parameters have been selected after consulting the most recent literature, to supply the most suitable range when operating with mice and rats.

Consistent reproducible current levels are produced by feedback circuitry that adjust for variance in impedance of the contact from animal to animal.

DESIGNED FOR INDUCING CONVULSIONS IN RESEARCH ANIMALS

FOR NEUROCHEMICAL AND NEUROPHARMACOLOGICAL RESEARCH

Particularly useful for:-

- General screening of potentially neurotropic substances
- Evaluating the depressant or stimulating action of drugs on the CNS
- Endocrinological investigations on the relationship between the nervous system and the hypophysis

General

Consistent reproducible current levels are produced by feedback circuitry that adjust for variance in impedance of the contact from animal to animal.
The impedance of the animal can be previously measured and displayed, and a warning signal flashes if the impedance is too great to deliver the desired current level.

The standard auricular electrodes supplied allow a single operator to deliver shock to a number of animals in a short time.
The special output circuit enables any type of electrode to be used.

The above picture features Corneal Electrodes Cat. 57800-003. Different types of electrodes can be provided on request.

WARNING: due to HIGH VOLTAGE involved, the operator should always wear rubber gloves when handling the electrodes.

Specifications

Rectangular Positive Pulse	by H.V. transformer
Constant Current	controlled by a feedback network
Pulse Rise&Fall Time	20 µs
Pulse Width (ms)	0.1 to 0.9 in 0.1 ms steps ±1%

Frequency (pulses/s)	1-299 in 1 pulse/s steps ±1%
Shock Duration	0.1 to 9.9 in 0.1s steps ±1%
Pulse Voltage	max. 2.5 KV
Current Range	10-99 mA in 1 mA steps ±2%
Output Resistance	min 0 Ohm - max. 25 KOhm (at max. current)
KOhm Display	0-199 KOhm 1KOhm resolution
Power Requirements	115/230 V - 50/60 Hz - 70 VA

Bipolar Inverter 57800-010

An optional Biphasic Unit may be placed between the animal and the Electroconvulsive Device to invert every second pulse. Maximum frequency in this case becomes 100 Hz.

ECT Monitor 57800-015

When connection to an oscilloscope or data acquisition system, this useful accessory is required to guarantyee a simple and safe way to monitor the ECT output.

The risk of damage to the ECT Unit due to accidental wrong connections is avoided when using the ECT Monitor.

Ordering Information

57800 E C T Unit, standard package including:-

57800-001	Pulse Generator
57800-002	Set of Auricular Electrodes
57800-301	Dust Cover
57800-302	Instruction Manual

Set of 2 Fuses for either 230V or 115V operation

E-WP 008 **Mains Cord**

Physical

Instrument Size,	cm 27 (W) x 37 (D) x 13 (H)
Weight	3.4 Kg
Shipping Weight	6.5 Kg

Accessories and Spares

57800-003	Set of Corneal Electrodes
57800-320	Set of 4 Felt Pads for Auricular Electrodes

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Lesion Making Device

Cat. No. 53500

General

This compact, **solid state d.c. Lesion Maker** has been designed for the production of localized lesions in small animal preparations where where d.c. is preferred to RF, to produce the lesion.

If features a regulated power supply combined with a constant d.c. current generator which operates on either continuous or timed mode.

The current generator is protected against short circuit, which prevents the electronics to get damaged due to the electrodes coming accidentally in contact with each other. Particular emphasis has been placed in the design of a good circuit output/ground insulation.

This feature, besides enhancing safe operation, minimizes spurious current field lines across the tissue, outside the pattern the operator has preset.

New Model!

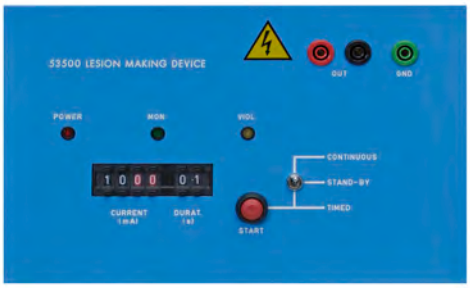
A precision instrument, which provides constant d.c. current in mA

Main Features

- Violation warning circuit
- Current Range : from 10 µA to 99 mA
- Digital setting of constant current and time duration
- Pulse Duration : timed between 1 and 99 seconds

Ugo Basile: more than 10,000 citations

Controls



The instrument controls are all placed on the top panel; the parameter are set by two thumb-wheel switches:-

- **current output adjustment**, in the range 10µA to 99mA
- **pulse duration** from 0.1 to 99 seconds.

The mode of operation can be selected via a 3-position switch:-

- **Continuous**: the current flows through the preparation in a continuous mode
- **Stand-By**: the instrument is ready to operate but the output stage is not energized
- **Pre-set Duration**: the current flow is timed according to the setting

There are three binding posts at the upper right of the Lesion Maker. Either the red (+) and the black (-) can be connected to the lesion making electrode. The other binding post is usually connected to a pad electrode with electrolyte on the preparation. Either red (+) or black (-) may be grounded via the green binding post.

Led Indicators

Three LED indicators are embodied on the top panel:-

- **POWER** (green) which lights when the unit is ON
- **MONIT.** (red) which monitors the presence lesion current
- **VIOL.** (yellow) which indicates when the current does not correspond to the setting

Electrodes

Usual needle electrodes, prepared by the researcher according to his/her experimental needs can be used in conjunction with the 3500 Lesion Making Device.

We have the capability and will to manufacture electrodes based on the customer's request.

Ordering Information

53500 Lesion Making Device, standard package, including:-

53500-310	Set of 3 output plugs
53500-302	Instruction Manual
E-WP 008	Mains Cord

Set of fuses rated for either 230 V or 115V operation

TECHNICAL SPECS.

Current Range	from 10 µA to 99 mA
Pulse Duration	timed between 1 and 99 seconds or manually controlled
Compliance Voltage	200 V DC
Max. Electrode R	20 MΩ (10µA) down to 2 KΩ (100 mA)

Physical

Mains Supply	115 or 230V / 50-60 Hz
Power Consumption	20 W max.
Dimensions	25 x 15 x 11 cm
Weight	1.5 Kg
Shipping Weight	2.8 Kg approx.

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Stereotaxic Instruments
by Stoelting

Cat. No. 51600

General

The Lab Standard™ Stereotaxic Instrument, manufactured by Stoelting, is ideal for researchers in need of a versatile, reliable instrument for stereotaxic procedures with small animals.

Precision alignment when using the Lab Standard™ ensures accurate placement of electrodes, micropipettes, and other devices.

The time-proven 'U'-Frame design concept, sturdy construction, and adaptability to most model species make this the best choice for a stereotaxic instrument.

SLEEK, COMPACT DESIGN

ACCESSORIES AVAILABLE FOR USE WITH A WIDE VARIETY OF SMALL ANIMALS

Classic and Proven U-Frame Design

- Large, easy to read vernier scales. Scales are laser engraved — accurate to 100 microns
- Triple lead screws for fast positioning 80 mm of vertical, lateral and anterior-posterior travel
- Absolute lock at 90 degrees (vertical) Brass bushings in manipulator arm permit electrical grounding

Stoelting's Lab Standard™ offers several advantages over competing instruments:

Easily Read Scales

All scales are oriented to be read easily from the open end of the 'U'. This is the position from which most scientists prefer to work. The numerals on the scales are larger, and therefore more easily read. The scale lines are laser engraved, to allow finest possible permanent marking of scales on all 3 axes. Precise alignment with facing vernier scales gives accurate resolution to 0.1mm.

Smooth Movements

The Lab Standard's™ exclusive, triple lead screws allow the fastest positioning possible, consistent with lining up the scales easily at a given coordinate.

Versatily of Positioning

The manipulator arm controls medio-lateral and vertical positioning via lead screws, and antero-posterior movement via dovetail slide movement, with 80 mm of travel possible in each direction. A Universal Joint allows the investigator to change the angle of the probe up to 90° in either the antero-posterior or medio-lateral planes. The improved locking mechanism on the Lab Standard™ will hold any angle position without slippage. And of course, it also provides an absolute lock at 90° vertical.
In addition, a swing joint allows the investigator to conveniently swing the manipulator arm and probe out of the way for performing a procedure — then reliably return the probe to the same point.

Convenient for Electrophysiology

Integral brass bushings in the manipulator arm allow grounding directly to the closest metal on the manipulator arm — even the probe holder.

Selection of Accessories

Species adaptors are available to fit rat, cat/monkey, dog/monkey, mouse, guinea pig and small bird. Probe holders and species adaptors for 'U' frame stereotaxic instruments from other manufacturers are generally compatible with the Lab Standard™ frame.

Ordering Information

51600	Lab Standard w/18 Degree Earbars
51650	Lab Standard w/45 Earbars
51653	Dual Lab Standard Stereotaxic w/45 deg. Ear Bars
51603	Dual Lab Standard Stereotaxic w/18 deg. Ear Bars
51601	Lab Standard without Manipulator Arms

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TRANSFORMING IDEAS INTO INSTRUMENTS
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INFUSION PUMPS
by KDS

Cat. No.5000

SO ADVANCED THEY'RE SIMPLE !!

General

Ugo Basile presents an entirely new generation of micro-processor controlled syringe pumps. They are designed specifically for applications requiring high metering precision at low, pulse free flow rates.
KDS pumps, manufactured by KD Scientific Inc., U.S.A., provide a unique combination of sophisticated features and advanced microstepping motor-drive technology. The result? KDS pumps routinely perform many of the tasks that other pumps make you do manually. So you have more time for what's really important: your research.
KDS pumps are engineered by the designer of the best selling laboratory syringe pump, to ensure you of years of unsurpassed accuracy and reliability. In addition, you'll find they are extremely simple to set-up and use.
And surprisingly affordable.

Setup is as easy as:

- Select syringe from displayed table
- Enter volume to be dispensed
- Enter flow rate, then press "start" button. It's that fast...and that simple!

Ugo Basile: more than 10,000 citations

Common to all models

- A simple menu-driven set up without printed look-up tables **performs rate and volume control and automatic shut-off**. Just set the volume you want dispensed. Volume is tracked continuously on the LC display. Then, when the preset volume has been dispensed, the pump shuts off automatically.
- **An alphanumeric display helps eliminate reading errors**. Their easy-to-read display provides real-time readings using both parameters and values for clearer, mistake-free readings.
- **You can control KDS pumps in many different ways**. Built-in TTL and RS-232C interfaces permit easy external control.

Operation

1. Find the syringe you use from the displayed table. Enter its code number.
2. Enter the volume to be dispensed
3. Enter the flow rate, then press the "start" button. It's that fast and simple! Your settings are permanently stored in memory – there's no need to re-enter them each day

Ordering Information

Cat. No.	Mode	N. of Syringes	Dim. cm	Weight Kg.
KDS 100	Infusion	1	23x15.3x14	2.00
KDS 101	Infusion	2	23x15x14	2.00
KDS 120	Push/pull	1+1	23x15x14	2.00
KDS 200	Infusion	2	28x23x14	4.00
KDS 210	Infusion/ Witdrawal	2	28x23x14	4.00
KDS 220	Infusion	Multiple	28x30.5x14	4.25
KDS 230	Infusion/ Witdrawal	Multiple	28x30.5x14	4.25
KDS 250	Infusion	4 (different size)	28x23x15.3	4.00
KDS 260	Push/pull	2+2	28x23x14	4.25
KDS 310	Nano Pump	1	2 items	2.00

Flow Rates

Models KDS 100 & KDS 120

Syringe	Minimum	Maximum
10 µl	0.1 µl/h	126.5 µl/h
25 µl	0.1 µl/h	318,8 µl/h
50 µl	0.2 µl/h	625 µl/h
100 µ	1.0 µl/h	1274 µl/h
250 µ	2.0 µl/h	3164 µl/h
500 µ	3.0 µl/h	6359 µl/h
1ml	0.01 ml/h	13,2 ml/h
2,5 ml	0.02 ml/h	31,7 ml/h
3 ml	0.02 ml/h	44.9 ml/h
5 ml	0.03 ml/h	87.0 ml/h
10 ml	0.1 ml/h	125.0 ml/h
20 ml	0.1 ml/h	219.0 ml/h
30 ml	0.1 ml/h	282.0 ml/h
60 ml	0.2 ml/h	426.0 ml/h

Model KDS 101

Syringe	Minimum	Maximum
10 µl	0.001 µl/min	0.350 µl/min
25 µl	0.001 µl/min	0.884 µl/min
50 µl	0.001 µl/min	1.759 µl/min
100 µl	0.001 µl/min	3.526 µl/min
250 µl	0.01 µl/min	8.78 µl/min
500 µl	0.01 µl/min	17.65 µl/min
1 ml	0.1 µl/min	35.2 µl/min
3 ml	0.1 µl/min	122.5 µl/min
5 ml	0.1 µl/min	176.2 µl/min
10 ml	0.001 µl/min	0.351 µl/min
20 ml	0.001 µl/min	0.602 µl/min
30 ml	0.001 µl/min	0.773 µl/min
60 ml	0.001 µl/min	1.175 µl/min

Models KDS 200/220, KDS 210/230, KDS 250/260

Syringe	Minimum	Maximum
10 µl	**0.001 µl/h**	**21.1 µl/min**
25 µl	**0.003µl/h**	**53.15 µl/min**
50 µl	**0.005 µl/h**	**105.8 µl/min**
100 µl	**0.009 µl/h**	**212.6 µl/min**
250 µl	**0.021 µl/h**	**527.6 µl/min**
500µl	**0.042 µl/h**	**1060 µl/min**
1 ml	**0.083 µl/h**	**2119 µl/min**
3 ml	**0.288 µl/h**	**7360 µl/min**
5 ml	**0.414 µl/h**	**634 ml/h**
10 ml	**0.828 µl/h**	**1270 ml/h**
20 ml	**1.414 µl/h**	**2171 ml/h**
30 ml	**1.817 µl/h**	**2789 ml/h**
60 ml	**2.757 µl/h**	**4234 ml/h**
140 ml	**5.746 µl/h**	**8834 ml/h**

Blood Pressure Recorder (non invasive)

Cat. No. 58500

General

The BP RECORDERS series 58000 combine three main systems: a pressure generation-pressure monitoring system, a pulse amplifier and a thermal-array analog & digital recording unit, with **two auxiliary systems,** pulse rate measuring/recording and microprocessor controlled functions to self diagnosis, calibration, signal filtering, signal storage.

Pressure is transmitted to the tail cuff; as soon the cuff pressure exceeds the diastolic pressure and starts to narrow the tail artery, the amplitude of the recorder pulse wave gradually decreases until the artery is completely constricted (ischemic) and the graph becomes a straight line.
This point indicates the maximum internal pressure of the artery (**systolic pressure**) on the paper grid, on which the **actual pressure** of the system is **digitally printed in 10 mm Hg steps.**
At the end of the recording the operator can operate a second pressure measurement, with decreasing pressure. The systolic pressure is indicated, this time, by the return of the pulse tracing.
The animal **pulse rate** can be assessed in real time by a pulse rate counter which picks the signal from the pulse transducer.

INDIRECT MEASURING AND RECORDING OF THE SYSTOLIC AND DIASTOLIC PRESSURE IN UNANAESTHETIZED RATS AND MICE

Main Features

- graphic printer
- analog output for to digital recorders
- graphic display
- pulse transducers of superior performances
- a reliable pressure generator providing very smooth (stepless) pressure build-up
- analogue & digital recording of all experiment phases

Animal Restrainers

Convenient animal restrainers are provided with the standard package. Our models are particularly suitable, being purposefully designed for this task, as they feature:-

- a conical "muzzle" to confine the animal head
- availability in 4 different diameters for rat and one for mouse, to fit various animal sizes
- telescope-adjustable length
- a quick fit/release back lid with an ample U-shaped tail slot
- capability of dissipating the body heat by a con venient ventilation slots, selection of heat conductive materials, etc.

Optional Rat Heater / Scanner

The **58000-850 Rat Scanner** is a compact temperature controlled "cupboard" to lodge 5 rats, each in its individual holder, for pre-warming. The tail cuff and pulse pick-up can be positioned on the animal tail.

An electrical/pneumatical switch enables connection of the holders in sequence, to scan the blood pressure of up to 5 rodents.

When only pre-warming is required, Cat. **58000-845** is also available, without the pneumatic/electrical scanning provision; **58000-840**, designed **for mice**, has the same dimensions, but it accommodates 6 mouse holders.

NOTE: Pressure cuffs & pulse pick-ups are not included

Ordering Information

58500 **BP RECORDER FOR RAT**, with accessories for Rat (8mm pulse pick-up, 13mm pressure cuff, 50 mm rat holder)

58600 **BP RECORDER FOR MOUSE**, with accessories for Mouse (3mm pulse pick-up, 6mm pressure cuff, mouse holder)

58700 **BP RECORDER FOR DOG**, with accessories for Dog (18mm pulse pick-up, 20mm pressure cuff)

AVAILABLE PULSE PICK-UPS

58000-503	Pulse Pick-up for Mouse, diam. 3 mm
58000-504	Pulse Pick-up for Mouse, diam. 4 mm
58000-505	Pulse Pick-up for Rat, diam. 5 mm
58000-506	Pulse Pick-up for Rat, diam. 6 mm
58000-507	Pulse Pick-up for Rat, diam. 7 mm
58000-508	Pulse Pick-up for Rat, diam. 8 mm
58000-509	Pulse Pick-up for Rat, diam. 9 mm
58000-518	Pulse Pick-up for Dog, diam. 18 mm

AVAILABLE TAIL CUFFS

58000-606	Tail Cuff for Mouse, diam. 6 mm
58000-609	Tail Cuff for Rat, diam. 9 mm
58000-613	Tail Cuff for Rat, diam. 13 mm
58000-620	Tail Cuff for Dog, diam. 20 mm
58000-624	Tail Cuff for Dog, diam. 24 mm

AVAILABLE HOLDERS

58000-343	Mouse Holder
58000-344	Rat Holder, 40 mm I.D.
58000-345	Rat Holder, 50 mm I.D.
58000-346	Rat Holder, 60 mm I.D.

OPTIONAL

58000-350	Rat Simulator
58000-840	Mouse Heater, compl. with 6 mouse holders
58000-845	Rat Heater, complete with 5 rat holders of selectable I.D.*
58000-850	Rat Scanner, complete with 5 rat hol ders of selectable I.D.*

* if no other diameter is specified, the 50mm size will be supplied.

SPECIFICATIONS

Pressure Range	50 to 290 mm Hg
Power Requirements	115 or 230 V, 50/60 Hz, 25 W
Operating Temperature	0° to 40° C
Sound Level	< 70 dB
Weight (net)	Kg 10.6
Shipping Weight	Kg 15.0 approx.
Dimensions	35 x 35 x 16.5 (h) cm
Packing dimensions	67 x 42 x 53 cm

Bibliography

- M. Gerold & H. Tschirky "**Measurement of Blood Pressure in Unanaesthetized Rats**" Arzneimittelforschung 18: 1285-287, 1968
- M. Gerold & H. Fünfshilling: "**Abhängigkeit der Indirekten Blutdruckmessung an Ratten von der Grösse der Kompressionmanchetten**" Arzneimittelforschung. 21: 2071-2074, 1971.

PAPERS QUOTING OUR MODEL

- A. Virdis et alia "**Cyclooxygenase-2 Inhibition Improves Vascular Endothelial Dysfunction in a Rat Model of Endotoxic Shock: Role of Inducible Nitric-Oxide Synthase and Oxidative Stress**" J. Pharmacol. Exper. Therap. 312: 945-953, 2005
- V. De Gennaro Colonna et alia "**Angiotensin II type 1 re-ceptor antagonism improves endothelial vasodilator function in L-NAME-induced hypertensive rats by a kinin-dependent mechanism**" J. Hypertension 24(1): 95-102, 2006

Blood Pressure Transducer (invasive)

Cat. No. 17844

Easy to fill

High accurancy

Robust, reusable transducer

Typical Applications

- Arterial or venous blood pressure measurement
- Intensive care unit
- Intracranial pressure measurement
- intrauterine pressure measurement
- Urodynamic measurement
- Catheterization
- Connects to Data Acquisition Systems or to Chart Recorders

Main Features

- MPG Klasse II b, CE 0470
- Gold plated for easier cleaning
- Only wiping cleaning necessary
- Disinfection / Sterilisation with VIRKON (10 to 30 min) possible
- Short adapter cable with transducer + separate monitor cable
- Dome with "Snap-on" coupling
- Very high frequency response
- High overload protection (10.000 mm/Hg)
- Dome dry-coupled to the transducer

Ugo Basile: more than 10,000 citations

Specifications

Pressure range	- 20 ... + 300 mmHg
Overpressure max.	10 000 mmHg
Sensitivity	50 µV / V / cmHg
Resonance frequency	300 Hz typical (Transducer and Dome)
Electrical excitation max.	15 V DC or AC
Input resistance (Input)	700 Ohm
Output resistance (Output)	1000 Ohm
Non-Linearity & Hysteresis	max. 0.5 % FS
Zero balance	max. ± 30 mm/Hg
Thermal sensitivity shift	0.15 % / °C
Thermal zero shift	max. 0.25 mm/Hg / °C
Operating temperature range	+ 10 ... + 50 °C
Storage temperature range	- 20 ... + 70 °C
Insulation resistance	min. 103 MOhm
Leakage current	max. 1,5 µA at 250 V, 50 Hz
High Voltage resistance	10 KV between Dome and Transducer
Weight	24 g (without cable)
Length of adapter cable	ca. 30 cm
Length of monitor cable	ca. 250 cm
Connector	equipment specified

MouseOx
Pulse Oximeter for Mice and Rats

Ask for
MRI-specific sensors

General

The MouseOx is the first and only pulse oxumeter specifically designed for mice. (but can be used on larger rodents too). It is fully controlled by PC with a user-friendly user interface.

The same non-invasive sensor clip allows multiple cardiopulmonary measurements quickly and reliably:

- Arterial Oxygen Saturation
- Pulse Rate and Pulse Distension
- Breath rate and Breath Distension

Main Features

- Simple non-invasive sensor clips for mice and rats
- Monitor data in real time while recording
- USB plug-and-play
- High accuracy at heart rates up to 900 BPM

GENERAL

Use as a Cardiopulmonary Data Recorder:

- Quickly Check Vital Signs
- Record Real-time Changes in Heart Rate, Breath Rate & O2 Saturation
- Output Analog Data
- Record Oxygen Saturation During Hypoxemia

Use as a Surgery Monitor:

- Prevent Hypoxia During Surgery
- Titrate Mechanical Ventilation
- Ensure Proper Depth of Anesthesia
- Titrate Supplemental Oxygen

FEATURES

- Immediate responding, beat-by-beat measurements:
- High accuracy at heart rates up to 900 BPM and breath rates up to 600 BrPM
- Drawing of blood is not required for any reason
- Simple non-invasive sensor clip enables quick and easy attachment to the subject
- USB plug-and-play technology quickly and easily turns your Windows based computer into a low cost physiologic monitor
- Monitor data in real-time, while recording to a file
- Experiment event markers allow the user to mark important events in the data file
- Data Quality Control Software™ tells the user when not to trust data due to subject kicks, hops or other significant movement

Metabolic Cages

Cat. No. 41800 / 1 / 2 / 3

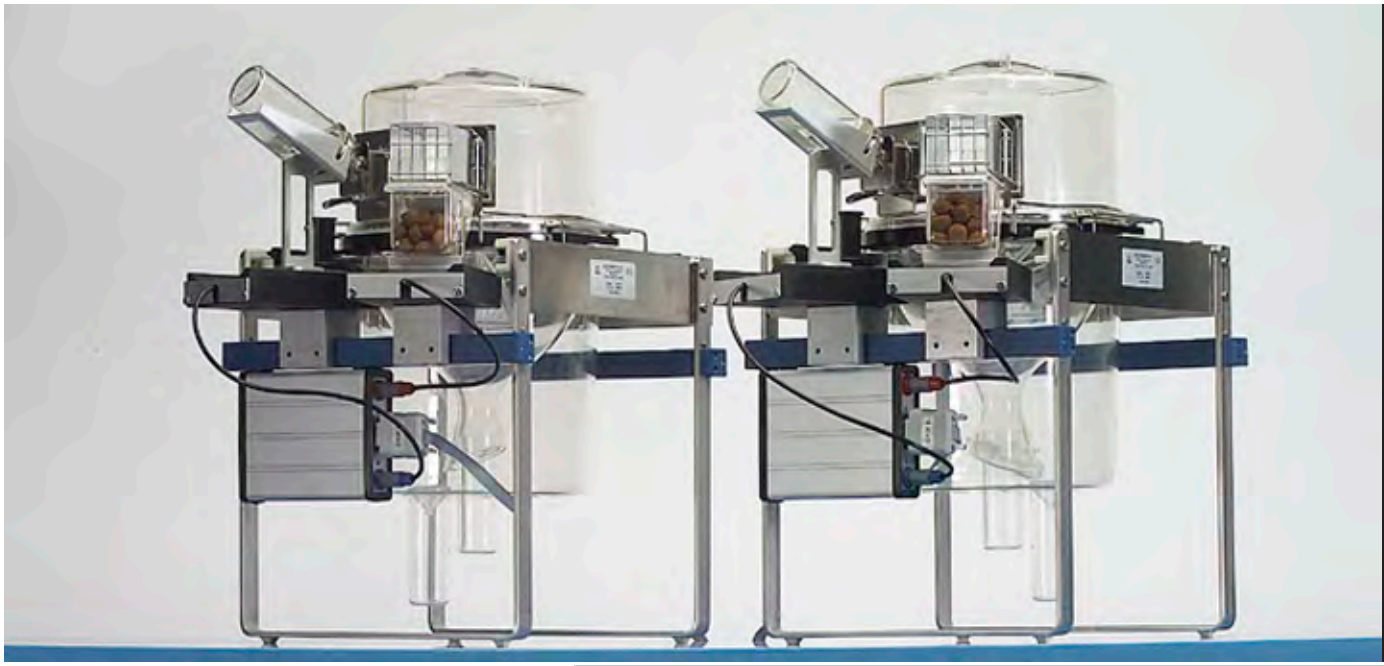
USB Connection

DESIGNED TO MEASURE:
- FEEDING BEHAVIOUR
- ACTIVITY (OPTIONAL)
- EXCRETORY FUNCTIONS

General

The recently available animal models (for example, obese and diabetic mice) exhibit symptoms similar to those in humans.

Model organisms are closely monitored, revealing differences, which can be correlated with those of the human disorders in fundamental parameters, as feeding/drinking (quantity & frequency of food/drink uptake), activity (with optional I.R. motion detectors) and excretion (the latter assessed by volume or weight, see following subheading).



For all types of investigations on METABOLISM, including:

- drugs which produce anorexia
- addiction/aversion to particular substances
- thirst arousing and quenching mechanism
- feeding habits and their modification brought about by environmental conditions

Basic Cage Design

These carefully engineered metabolic cages are manufactured by TECNIPLAST GAZZADA, see separate datasheet.
All components below the cage floor are removable without upsetting the test animal.

Feeding and Drinking Analysis

The basic Metabolic Cages are upgraded with the addition of miniature scales, which accurately record ingestion of food.
The trough, shaped as an open box, is made of smooth gnaw-proof plastics. It glides into a receptacle made of stainless steel, fastened to its scale-pan, which senses the load of the pellet food and hence monitors the quantity and frequency of food uptake. The crumbs the animal produces are collected in the front compartment, for a precise evaluation of the food consumption. The water bottles are provided with a spout and rest on a support stud fastened to the scale pan for monitoring quantity and frequency of water uptake. Provision is made to collect any dripping for a more precise water consumption evaluation.

Activity Detection

The coordinate ambulatory activity and "rearing" of the rodent on test can be measured via the optional motion detector Cat. No. 41700-043, consisting of two facing arrays of emitters and receivers which record beam breaks as the animal moves

Electronics & Data Acquisition

Each feeding and drinking cage comes with feeding and drinking scales and incorporates a preamplifier module (Cat. 41800-010), which directly connects to the PC USB port for computer processing.

The consumed food and liquid and the optional activity can be recorded directly into a computer at preplanned intervals.

The **Cage Monitoring System (CMS) Software 51800** manages up to 8 cages. The software acquires data and provides results related to partial and total food/liquid consumption and to activity.

Please refer to the software manual for additional information.

Ordering Information

BASIC METABOLIC CAGES

41700-002	Metabolic Cage for rats up to 150 grams
41700-003	Metabolic Cage for mice
41700-004	Metabolic Cage for rats 150 to 300 grams
41700-005	Metabolic Cage for rats over 300 grams

METABOLIC CAGES WITH FOOD & DRINK RECORDING PROVISION

41800	Cage for rats up to 150 grams
41801	Cage for mice
41802	Cage for rats 150 to 300 grams
41803	Cage for rats over 300 grams

Each cage is provided with:-

E-WP008	Mains Cable, Europe (or E-WP 008-1 U.K. / E-WP 008-2 U.S.)
52010-323	USB connector
E-AU 042	Individual Power Supply

ACCESSORIES

41700-043	Combination vertical/horizontal sensors for activity detection in metabolic cages
41800-302	Instruction Manual for Hardware

SOFTWARE

51800	Data Acquisition Software for up to 8 cages. For recording of food/liquid consumption and activity in cages series 41800.
51800-302	Instruction Manual for the software

Feeding & Activity Analyser

Cat. No. 47552 / 47553 / 47555

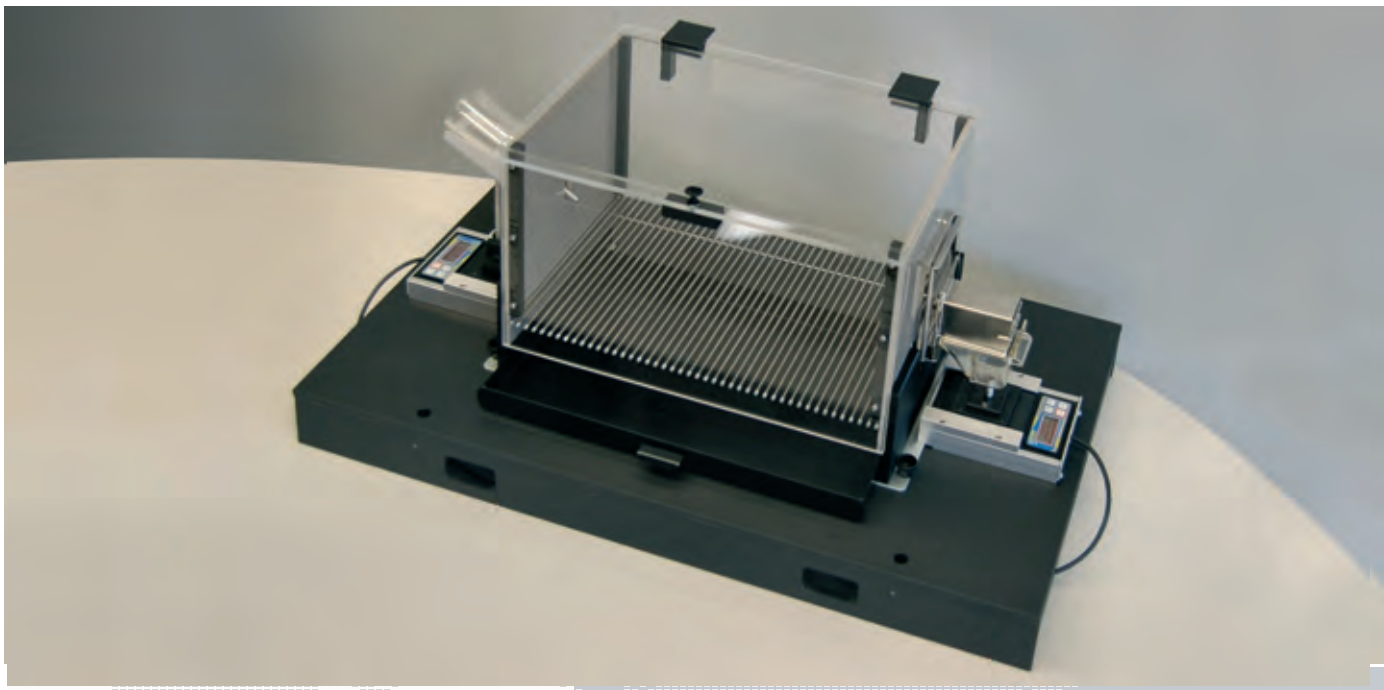
USB Connection

TO RECORD THE FEEDING BEHAVIOUR AND ACTIVITY (OPTIONAL) IN RODENTS AND THEIR ALTERATION BROUGHT ABOUT BY A NUMBER OF FACTORS.

General

The recently available animal models (for example, obese and diabetic mice) exhibit symptoms similar to those in humans. Model organisms are closely monitored, revealing differences, which can be correlated with those of the human disorders in fundamental parameters, as feeding/drinking (quantity & frequency of food/drink uptake), activity (with optional I.R. motion detectors).

The Analyser basically consists of an Animal Cage, which can be provided with optional activity detector and an Electronic Unit.



This system has proved to be of great value to quantify at presettable intervals the solid & liquid intake in investigations about:-

- the drugs which produce anorexia
- the thirst arousing and quenching mechanism
- the addiction/aversion to particular substances
- the feeding habits and its modification brought about by environmental conditions.

Animal Cage

Two types of cages are available: **47552 designed for Rats** and 47453 for Mice. Both cages have transparent walls and lid to allow the animal observation.

The cages, which are provided with a catch pan, can be easily detached from its Base structure for cleaning or servicing.

They incorporate load cells, which sense the load of food and liquid, thus recording their ingestion, with 0.1 g accuracy and monitoring the frequency of food/liquid uptake.

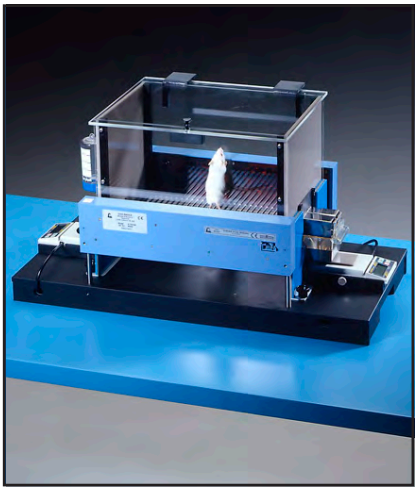
The **trough**, shaped as an open box, is made of smooth gnaw-proof plastics. It glides into a receptacle made of stainless steel, fastened to its scale-pan. The crumbs the animal produces are collected in the front compartment, for a precise evaluation of the food consumption.

The **water bottles** are provided with a spout and rest on a support stud fastened to the scale pan for monitoring quantity and frequency of water uptake. Provision is made to collect any dripping for a more precise water consumption evaluation.

The inside dimensions of the rat cage are 36x23x18(h) cm, of the mouse cage 26x20x17(h) cm.

Activity Detection

The coordinate ambulatory activity and "rearing" of



the rodent on test can be measured via the optional motion detector Cat. No. **7435** (horizontal) and **7436** (vertical-rearing), each consisting of two facing blocks of I.R. arrays of emitters and sensors.

For cage **47453** the two sensors are replaced by Cat. **41700-043**, combining both horizontal and vertical sensors.

FEEDING & DRINKING ANALYSIS

Each cage comes with feeding and drinking scales and incorporates a preamplifier module (Cat. 41800-010), which directly connects to the PC USB port for computer processing.

The consumed food and liquid and the optional activity can be recorded directly into a computer at preplanned intervals.
The Cage Monitoring System (CMS) Software 51800 manages up to 8 cages. The software acquires data and provides results related to partial and total food/liquid consumption and to activity. A PC with USB port is required
Please refer to the software manual for additional information.

Mouse Gas Metabolism Cage

The 47555 Gas Metabolism Cage for Mice is an airtight box which has ports to allow monitoring a mouse's O_2 consumption, CO_2 production, VO_2 and VCO_2 via an external Metabolic Monitor (to be purchased separately).

The cages are complete with scales to record food and liquid intake via the 51800 software. Infrared activity arrays 41700-043 may also be attached to monitor the animal's locomotion. The cage complies with the IACUC space requirements for mice

Ordering Information

47552-00 MONITORING CAGE for Food & Drink for RATS up to 150 grams, complete with food & liquid intake detectors and amplifier module 41800-010.
Dimensions of the cage: cm 35.4 x 23 x 18 cm

47552-002	SAME FOR RATS 150 TO 300 grams
47552-002	SAME FOR RATS OVER 300 grams

475453 MOUSE MONITORING CAGE for Food & Drink, complete with food & liquid intake detectors and preamplifier module 41800-010.
Dimensions cage: cm 28.6 x 20 x 15.5 cm

47555	GAS METABOLISM CAGE FOR MICE

Each cage is provided with:-

E-WP008	Mains Cable, Europe
52010-323	USB connector
E-AU 042	Individual Power Supply

ACCESSORIES

7435	Set of horizontal activity sensors for 47552
7436	Set of vertical (rearing) sensors for 47552
41700-043	Combination vertical/horizontal activiy sensors for 47553/47555
47552-302	Instruction Manual for the Hardware

SOFTWARE

51800	Data Acquisition Software for up to 8 cages. For recording of food/liquid consumption and activity in cages series 41800.
51800-302	Instruction Manual for the software

ugo basile
TRANSFORMING IDEAS INTO INSTRUMENTS

www.ugobasile.com

NEW Microwave Brain Fixation System

Cat. MMW-05 (5kW)

General

In neurochemical studies of the brain, it is of great importance to accurately measure neurochemical events in vivo.

However, it is difficult to perform reproducible measurement of these events because rapid postmortem changes occur in the brain concentrations of metabolites and neurotransmitters.

With the NEW Microwave Brain Fixation System by Muromachi, a living mouse or rat is positioned inside the applicator and, in less than 1 second, the microwave beam stops all brain chemistry at the level present in the living animal.

Measuring brain chemistry *in-vivo* is possible!

BRAIN FIXATION OCCURS IN 1 SECOND

ACTIVITY OF DEGRADING ENZYMES IS BLOCKED

Prior to analysis of:

- Phosphorylated proteins
- Acetylcholine, Serotonin, Endorphins
- Prostaglandins, Catecholamines
- C-AMP, C-GMP, GABA, DOPA

NEW features:

- Improved usability - touch screen
- Air-cooled (no water circulation)
- CE-certified
- Absolute safety - negligible leakage

Ugo Basile: more than 10,000 citations

Various techniques have been developed to **prevent post mortem changes**. One of the more common method is cooling or freezing by immersion of the decapitated head in liquid Nitrogen or cooled Freon to **inactivate enzymes** involved in the metabolism of these compounds. **Cooling is not fully effective in preventing post-mortem changes** as the time required to freeze deep structure of the brain may range from 10 - 90 seconds; post mortem changes will occur during this period.

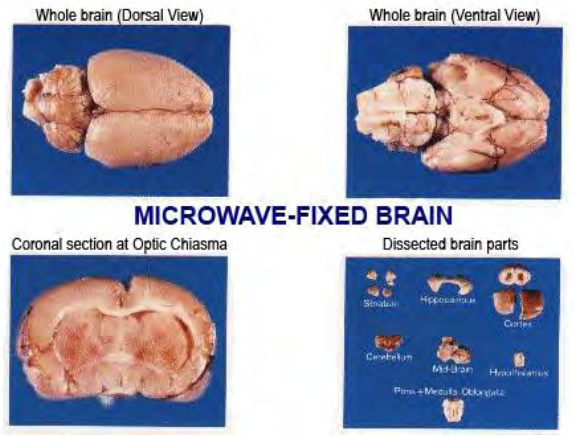
An alternate method is microwave heating to inactivate enzymes.

The microwave method has several advantages over cooling or freezing:

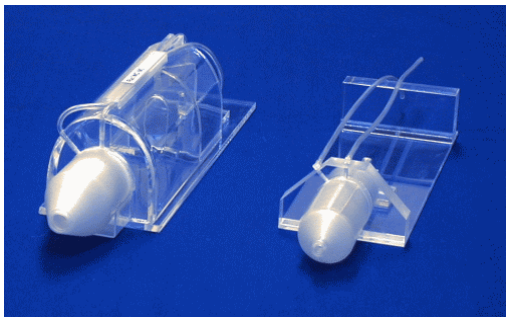
- The enzymes in the whole brain can be completely inactivated in a very short time
- The brain can be dissected easily and reproducibly at room temperature

Microwave fixation system must be such as to satisfy the following criteria:

1. Can elevate the temperature of brain up to 75-90°C as rapidly as possible by effectively focusing microwave energy on the head of an animal
2. Will give the same results from animal to animal
3. The apparatus should be easily and safely used since personnel not experienced in microwave technology will use it.
4. Muromachi Microwave Fixation Systems are safely designed, so that the microwave leakage will not exceed 1 mW/cm2



The Microwave Fixation System comes with specific applicator heads and animal holders (shown below).



Ordering Information

MMW-05 Microwave System 5KW
(including 1 Applicator head and 1 animal holder); PN MMW-05

Applicator heads

for mice (PN TAW-174P), for 150-250 g rats (PN TAW 424SP), for 250-500 g rats (PN TAW 424MP)

Animal holders

for 15-20 g mice (WJLM 24), for 20-40 mice (WJM-28), for 150-250 g rats (WJR-S), for 250-400 g rats (WJR-M), for 400-500 g (WJR-L)

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