



## **RotaRod**

**Modular RotaRod for mice and rats**

*– Specifications subject to change without notice –*

# TSE RotaRod Advanced

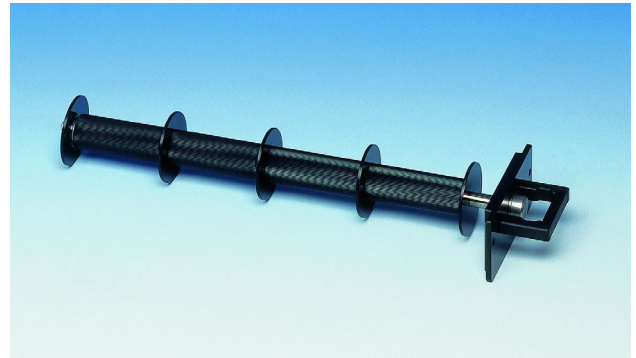
## System description

The **TSE RotaRod System Advanced** is a flexible tool for investigation into various effects on motor coordination of small laboratory animals (mice, rats). The system combines maximal experimental flexibility with constantly reliable measuring data.

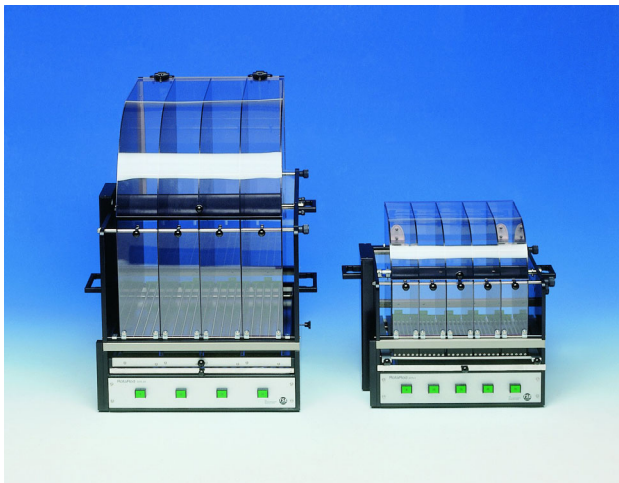
The RotaRod apparatus basically consists of a rotating drum whose surface is manufactured to provide optimal grip for the animal. Separating panels divide the drum into separate exercise lanes each suited for an individual animal.

Three different models of the RotaRod Advanced are available, two models for 3 or 4 rats and a space-saving version for 5 mice.

The RotaRod for 4 rats can be upgraded with a drum suited for mice (diameter: 30 mm) so that it can be run with *up to 4 mice*.



Drum for 4 mice



Four-lane (rats/mice) and five-lane (mice) RotaRods Advanced



Three-lane RotaRod Advanced for 3 rats

## Drum dimensions

### RotaRod Advanced for 3 rats

Diameter: 100 mm, width: 114 mm

### RotaRod Advanced for 4 rats

Diameter: 60 mm, width: 85 mm

### RotaRod Advanced for 4 rats

(equipped with a drum for 4 mice)  
Diameter: 30 mm, width: 85 mm

### RotaRod Advanced for 5 mice

Diameter: 30 mm, width: 60 mm

## Falling distances

### Mouse

Top edge drum – top edge floor grid: 14.7 cm

Top edge drum – top edge PVC floor plate: 15.8 cm

### Rat

Top edge rat drum – top edge floor grid: 29.5 cm

Top edge rat drum – top edge PVC floor plate: 29.5 cm

Top edge mouse drum – top edge floor grid mouse: 27.2 cm

Top edge mouse drum – top edge PVC floor plate mouse: 28.0 cm

RotaRods with increased falling distance are also available:



### Other features

Each lane is controlled by its own timer which can be operated independently from each other.



Timer knobs for operating the individual lanes

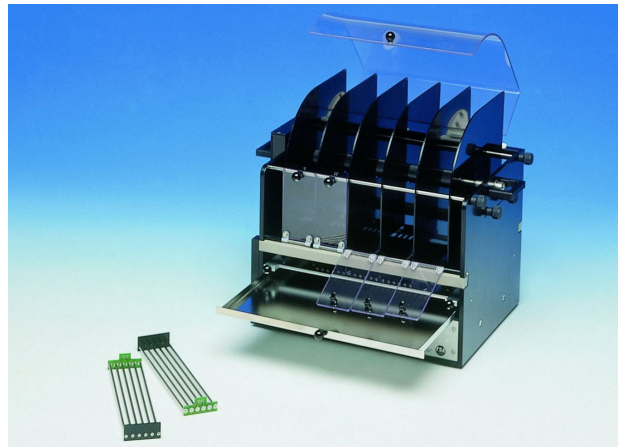
The motor speed is controlled electronically. The RotaRods are equipped with a **reverse rotation** function.

The operator can define individual speed profiles including up to 100 steps per profile. Within each step initial speed, final speed as well as acceleration/deceleration time can be defined.

Animal falls are detected by *light-beam sensors* mounted into each compartment.

Each RotaRod is supplied with a data communication port for transfer of measuring data to a PC.

### Options



RotaRod Advanced (mice model) with floor grids, droppings collector and cover set

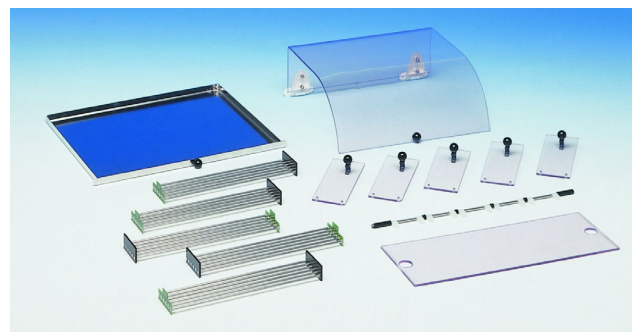
### Cover Set

A cover set can be mounted on the RotaRod apparatus in order to prevent the animals to escape. It consists of hinged front doors for each lane, a folding housing cover and an insertable rear panel.

#### The Cover Set consists of:

- 3/4 (rats) or 5 (mice) separate hinged front doors (clear Perspex)
- 1 hinged top cover (clear Perspex)
- Back wall

Required: 1 set for each RotaRod.



RotaRod Advanced accessoires (for mice): cover set, floor grids, droppings collector

## Floor Grids

The RotaRod Advanced System is basically equipped with a trip plate made of black PVC. It can be upgraded with *individual floor grids* for each lane (instead of a trip plate) and a droppings collector underneath. The droppings collector is made of stainless steel.

## Shocker

On demand the floor grids can be equipped to apply an electric stimulus of variable length and intensity.

Microprocessor-equipped shock modules are available designed to provide constant current stimulation with output adjustable via software up to 3.1 mA (up to 4.5 mA available on request).

We provide 3-channel, 4-channel and 5-channel shock modules. The 4-channel module is suitable for the 4-lane system (rats/mice) whereas the 5-channel module fits to the 5-lane mouse model. The 3-channel module is suitable for the 3-lane rats system.

The shock modules have integrated current flow detectors and all electronics needed for automatically switching polarity of the grid rods. The current chosen is applied independently of the actual cross-over resistance (max. 73 k $\Omega$  at 1.5 mA) and is therefore independent of the animal's location on the grid.

Shock length: 0.1-10 sec.  
Shock intensity: 0 - 3.0 mA  
(up to 4.5 mA on demand)  
Cross-over resistance: (max. 73 k $\Omega$  at 1.5 mA)

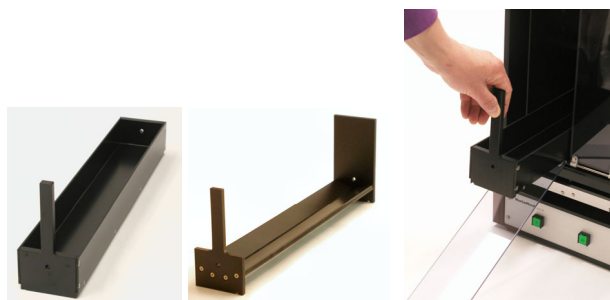


Shocker cables leading to the floor grids (backside)

## Drawers

We can provide drawers which are used to catch any animal that falls off the rotating rod. The drawers can easily be placed in the compartment area and removed from it. After a trial the animals can be removed from the RotaRod together with the drawers,

so that the animal does not have to be grasped within the compartment.



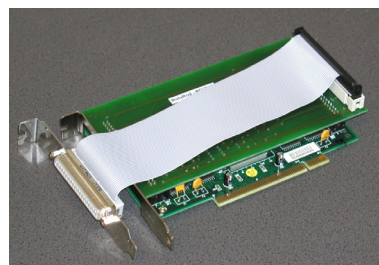
Different models are available

## The Software

The RotaRod Advanced can be run according to a user-defined exercise protocol created with the help of the flexible RotaRod software. It currently runs under the common Windows™ operating systems.

The animal and trial data can be stored in **ASCII format** for import into most of the common statistical or spreadsheet packages (e.g. EXCEL).

Data transfer from the RotaRod to the PC is accomplished by a special PCI interface which is to be inserted into the PC.



PCI interface card

The RotaRod is then connected to the PC via a **process control unit**.



Process control unit

## Experimental Procedure

Prior to each experiment the speed and the intensity and duration of the shock (if shocker is present) as well as the timeout can be programmed.

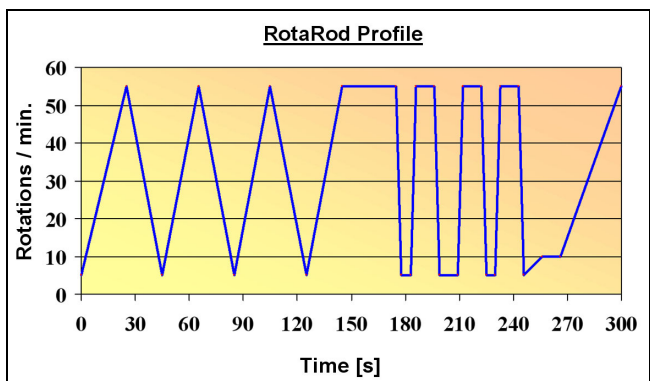
Constant mode:	speed 1- 60 rpm
Accelerating mode:	initial speed 1 - 60 rpm final speed 1 - 60 rpm
Shock intensity*:	0.1 - 3.0 mA
Shock length*:	0.1 - 10.0 sec
Timeout:	0 - 600 sec or continuous

\* if shocker is present

## Entering Animal & Trial Data

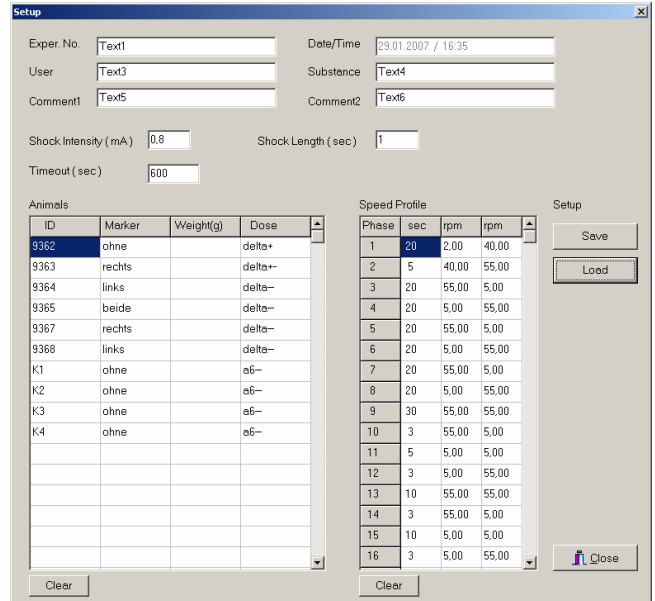
All descriptive parameters which describe the animal and the test can be made before starting the experiment. Alternatively an already existing file can be called up.

- File name
- Experiment no.
- User name
- Substance
- Comments
- Animal table for up to 200 animals
- Speed Profile – initial speed, final speed acceleration/deceleration time. Up to 100 steps programmable



Example of speed profile

- Shock intensity (if shocker is present)
- Shock length (if shocker is present)
- Timeout interval or continuous mode



Setup window

Date and Time are added automatically by the system.

The animal and control parameters as well as the speed profile table can be saved and reloaded for subsequent experiments.

Once all setup parameters have been entered or an existing file has been called up, pressing the menu item Measure will commence the measurement phase where the experiment can be started and where finally some of the animal data for each single animal can be changed if desired.

Animal	1
Marker	A
Weight	20g
Dose	1mg/kg
Delete	

## Experiment Start

After the test preparation has finished the RotaRod drive can be started. Data acquisition can be started for each line independently. The animals are quickly placed one by one onto the central axis and the timers are started by pressing the timer knobs below the corresponding lanes on the rotarod. Alternatively all timers can be started simultaneously by pressing the "Start All" button in the measurement window of the software.

## The Running Experiment

The speed profile can be started by pressing the Start Profile button. The current step of the speed profile along with the current speed is then continuously displayed on the bottom of the trial monitor window.

During an experiment, information about the current phase number, the current speed and the elapsed phase time is displayed in the speed profile table.

Phase	sec	rpm	rpm
1	20	2,00	40,00
2	5	40,00	55,00
3	20	55,00	5,00
4	20	5,00	55,00
5	20	55,00	5,00
6	20	5,00	55,00
7	20	55,00	5,00
8	20	5,00	55,00
9	30	55,00	55,00
10	3	55,00	5,00
11	5	5,00	5,00
12	3	5,00	55,00
13	10	55,00	55,00
14	3	55,00	5,00
15	10	5,00	5,00
16	3	5,00	55,00
17	10	55,00	55,00
18	3	55,00	5,00
19	5	5,00	5,00
20	3	5,00	55,00

Annotations:

- Current phase number: 5
- Elapsed phase time: 4
- Current speed: 52.6

Running experiment

An overview of the *current status* of all lanes can be seen at a glance. On top of each lane the current status of each compartment is reported (status panel: RUN or STOP).

The *time elapsed* can be seen below the status line. If an animal falls off the rod and interrupts the light-beam sensor the corresponding timer is stopped. The time spent on the rod is shown in the table below.

If a suitable entry has been made in the field Shock length and Shock Intensity a shock of the preset length and intensity is delivered through the grid (this requires the optional shocker module). An active shocker is displayed with a red message field ("Shocker").

	-1-	-2-
	RUN	STOP
	42.6	41.8
		Shocker
	16.2 25.2	16.3 27.0 41.8
Animal	1	2
Marker	A	B
Weight	20g	22g
Dose	1mg/kg	2mg/kg
	Delete	Delete

If a maximum time (Timeout) has been defined and the animal is still on the rod then this time is entered into the table. Alternatively, the timers can run in the continuous mode.

The rod can be stopped manually anytime by pressing the Start/Stop switch again.

"Delete" will delete the last value, even while a measurement is running. The corresponding value is displayed as a negative value in the results table then.

## Data Output

### Preview

The measuring values stored in the file can be displayed after the experiment has been finished or after loading an already existing data file.

Animal	Marker	Weight	Dose	Date	Time	Rod	sec	rpm	m Ph	Phs	Tps	
9362	ohne		delta+	29.01.07	16:41	1	6.2	7.5	0.05	1	6.8	-0.5
9362	ohne		delta+	29.01.07	16:43	1	2.5	4.0	0.01	1	3.1	-0.5
9362	ohne		delta+	29.01.07	16:44	1	9.3	10.3	0.09	1	9.8	-0.4
9362	ohne		delta+	29.01.07	16:45	1	0.0	1.0	0.00	1	0.0	0.1
9362	ohne		delta+	29.01.07	16:45	1	0.0	6.2	0.00	1	5.4	-5.4
9362	ohne		delta+	29.01.07	16:45	1	0.1	1.2	0.00	1	0.2	-0.2
9362	ohne		delta+	29.01.07	16:47	1	6.3	7.8	0.05	1	7.1	-0.8
9362	ohne		delta+	29.01.07	16:48	1	0.1	1.8	0.00	1	0.8	-0.8
9368	links		delta--	29.01.07	16:51	1	52.6	12.3	1.08	4	7.8	-0.4
9368	links		delta--	29.01.07	16:53	1	66.3	25.4	1.54	5	1.7	-0.6

Preview window

The preview window provides information about animal ID, marker, weight, dose, date, time, lane number, time the animal spent on the rod (or timeout), rod speed at the time the animal fell off the rod, the distance covered during the time interval, the phase number in which the light barrier interruption occurred, the time from start of phase up to light barrier interruption and the time from start of timer up to start of profile.

### Print

The print function will generate a report which is output to a printer giving details of the file name, date and time, some of the control settings, some

descriptive parameters and the speed profile that was used. The report will list the results of the compartments in use.

Time and date output in the table header correspond to the time when the new file has been initialized.

### Data Files

The activity data as well as some of the animal and trial parameters can be stored as **text** files or as **CSV export files** for import into statistical or spreadsheet packages (e.g. EXCEL).

Information is provided about:

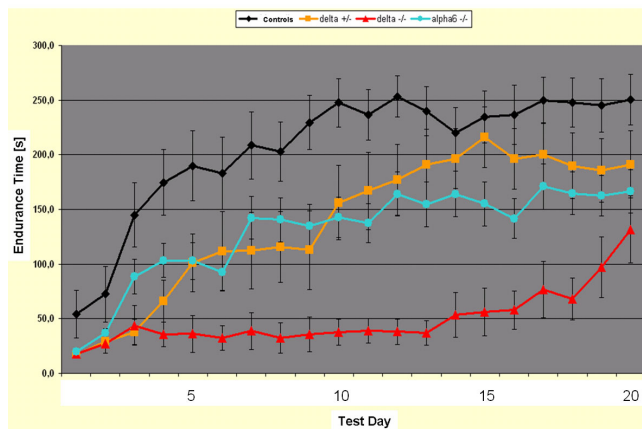
- File name,
- Experiment no.
- Date/time,
- user,
- substance,
- comment-1 and-2,
- shock intensity and shock length (if shocker is present),
- timeout (or "0" if continuous mode has been chosen)
- animal,
- marker,
- weight,
- dose,
- date,
- time,
- lane no.,
- time the animal spent on the rod (or timeout),
- rod speed at the time the animal fell off the rod,
- distance covered during the time interval,
- phase number in which the light barrier interruption occurred,
- time from start of phase up to light barrier interruption,
- time from start of timer up to start of profile,
- mean value (if desired) and
- standard deviation (if desired).

TSE-ROD V4.0		Husgelprogramm2										
Experiment No.	Text1											
Date/Time	29.01.2007 / 16:35											
User	Text3											
Substance	Text4											
Comment-1	Text5											
Comment-2	Text6											
ShockIntensity ( mA )	0.8											
Shocklength ( sec )	1.0											
Timeout ( sec )	600											
Profile												
Phase	sec	rpm	rpm									
1	20 2.00	40.00										
2	5 40.00	55.00										
3	20 55.00	5.00										
4	20 5.00	55.00										
5	20 55.00	5.00										
6	20 5.00	55.00										
7	20 55.00	5.00										
8	20 5.00	55.00										
9	30 55.00	55.00										
10	3 55.00	5.00										
11	5 5.00	5.00										
12	3 5.00	55.00										
13	10 55.00	55.00										
14	3 55.00	5.00										
15	10 5.00	5.00										
16	3 5.00	55.00										
17	10 55.00	55.00										
18	3 55.00	5.00										
19	5 5.00	5.00										
20	3 5.00	55.00										
21	10 55.00	55.00										
22	3 55.00	5.00										
23	10 5.00	10.00										
24	10 10.00	10.00										
25	34 10.00	55.00										
26	0 0.00	0.00										
Animal	Marker	Weight	Dose	Date	Time	Rod	sec	rpm	m	Ph	Phs	Tps
9362	ohne		delta-	1/29/2007	16:41	1	6.2	7.5	0.05	1	6.8	-0.5
9362	ohne		delta+	1/29/2007	16:43	1	2.5	4.0	0.01	1	3.1	-0.5
9362	ohne		delta+	1/29/2007	16:44	1	9.3	10.3	0.09	1	9.8	-0.4
9362	ohne		delta+	1/29/2007	16:45	1	0	1.0	0.00	1	0	0.1
9362	ohne		delta+	1/29/2007	16:45	1	0	6.2	0.00	1	5.4	-5.4
9362	ohne		delta+	1/29/2007	16:45	1	0.1	1.2	0.00	1	0.2	-0.2
9362	ohne		delta+	1/29/2007	16:47	1	6.3	7.8	0.05	1	7.1	-0.6
9362	ohne		delta+	1/29/2007	16:48	1	0.1	1.8	0.00	1	0.8	-0.8
9368	links		delta-	1/29/2007	16:51	1	52.6	12.3	1.08	4	7.8	-0.4
9368	links		delta-	1/29/2007	16:53	1	66.3	25.4	1.54	5	1.7	-0.6
9368	links		delta-	1/29/2007	16:55	1	85	27.2	1.45	4	19.7	0.2
9368	links		delta-	1/29/2007	16:56	1	57.8	17.7	1.19	4	12.1	0.5
9368	links		delta-	1/29/2007	16:59	1	174.2	27.5	4.58	0	0.3	0
9362	ohne		++	1/30/2007	12:33	1	21.7	23.7	0.41	2	2.4	-0.8
9362	ohne		++	1/30/2007	12:35	1	14	14.7	0.18	1	14.4	-0.4
9362	ohne		++	1/30/2007	12:37	1	16.6	17.5	0.25	1	17.3	-0.7
9362	ohne		++	1/30/2007	12:38	1	16	16.9	0.24	1	16.8	-0.7
9362	ohne		++	1/30/2007	12:41	1	20.1	20.9	0.35	2	0.6	-0.6

File structure after import into EXCEL

The name corresponds to the name of the measuring file. It can be changed if desired.

The structure of the export file is in ASCII format which is compatible to most of the common spreadsheet programs.





# Partial list of users

- Abbott GmbH & Co. KG, Ludwigshafen, Germany
- Academy of Sciences, Prague, Czech Republic
- AstraZeneca R&D Montreal, St. Laurent, Montreal, Quebec, Canada
- Aurigon Life Science GmbH, Tutzing, Germany
- Bayer Schering Pharma AG, Berlin, Germany
- Bayerische Julius-Maximilians-Universität Würzburg, Würzburg, Germany
- Boehringer Ingelheim Pharma GmbH & Co. KG, Biberach, Germany
- Cerebricon Ltd., Kuopio, Finland
- Charité - Universitätsmedizin Berlin, Berlin, Germany
- Charles University in Prague, Prague, Czech Republic
- Christian Medical College & Hospital, Vellore, Tamil Nadu, India
- Deutsches Krebsforschungszentrum – DKFZ, Heidelberg, Germany
- Eberhard Karls Universität Tübingen, Tübingen, Germany
- Ecole Nationale Supérieure de Chimie – ENSCPB, Pessac Cedex, France
- elbion AG, Radebeul / Dresden, Germany
- EMBL - European Molecular Biology Laboratory, Heidelberg, Germany
- EMBL - European Molecular Biology Laboratory, Monterotondo - Scalo (RM), Italy
- ETH Zürich, Zürich, Switzerland
- European Neuroscience Institute – ENI, Göttingen, Germany
- F. Hoffmann-La Roche AG, Basel, Switzerland
- FAN - Forschungsinst. f. Angew. Neurowissenschaft, Magdeburg, Germany
- Fondazione Telethon, Roma, Italy
- Fraunhofer Institut, Leipzig, Germany
- Friedrich-Alexander-Universität Erlangen-Nürnberg, Erlangen, Germany
- Friedrich-Schiller-Universität Jena, Jena, Germany
- Georg-August-Universität Göttingen, Göttingen, Germany
- Glenmark Pharmaceuticals Ltd., MIDC, Mahape, New Mumbai, India
- GSF-Forschungszentrum f. Umwelt & Gesundheit, GmbH, Neuherberg, Germany
- Harvard Medical School, Boston, MA , USA
- Heinrich-Heine-Universität, Düsseldorf, Germany
- Ingenium Pharmaceuticals AG, Martinsried, Germany
- Instituto Gulbenkian de Ciencia, Oeiras, Portugal
- Johannes Gutenberg-Universität Mainz, Mainz, Germany
- JSW-Research Forschungslabor GmbH, Graz, Austria
- KEYOBS S.A, Orleans Cedex, France
- King's College London, London, Great Britain
- Leibniz-Institut für Neurobiologie, Magdeburg, Germany

- Leopold-Franzens-Universität Innsbruck, Innsbruck, Austria
- Ludwig Maximilians University – LMU, Munich
- Ludwig-Maximilians-Universität München, München, Germany
- Lund Universitet, Lund, Sweden
- Max-Planck-Institut für Biophysik, Frankfurt am Main, Germany
- Max-Planck-Institut für Experimentelle Medizin, Göttingen, Germany
- Max-Planck-Institut für Hirnforschung, Frankfurt am Main, Germany
- Max-Planck-Institut für Neurobiologie, Martinsried, Germany
- Max-Planck-Institut für Neurologische Forschung, Köln, Germany
- Medizinische Hochschule Hannover – MHH, Hannover, Germany
- Medizinische Universität Innsbruck Kinderklinik, Innsbruck, Austria
- Medizinische Universität Innsbruck, Innsbruck, Austria
- Merck KGaA, Darmstadt, Germany
- Merz Pharmaceuticals GmbH, Frankfurt, Germany
- Mount Sinai School of Medicine – MSSM, New York, NY, USA
- National Institute of Nutrition – NIN, Hyderabad, India
- National Neuroscience Institute – NNI, Singapore, Singapore
- National University of Singapore, Singapore, Singapore
- NEURONAX, Saint-Beauzire, France
- New York University – NYU, New York, NY, USA
- NOVARTIS PHARMA AG, Basel, Switzerland
- Oregon State University – OSU, Corvallis, OR, USA
- Oridis Biomed Forschungs- und Entwicklungs GmbH, Graz, Austria
- Otto-von-Guericke-Universität Magdeburg, Magdeburg, Germany
- Pfizer Global Research & Development – PGRD, Sandwich, Kent, Great Britain
- Philipps-Universität Marburg, Marburg, Germany
- Proneuron Biotechnologies, Ness Ziona, Israel
- Rheinische Friedrich-Wilhelms-Universität, Bonn, Germany
- Rheinisch-Westfälische Technische Hochschule –RWTH, Aachen, Germany
- Robert Koch Institut, Berlin, Germany
- Ruhr-Universität Bochum, Bochum, Germany
- Ruprechts-Karls-Universität Heidelberg – Mannheim, Mannheim, Germany
- Ruprechts-Karls-Universität Heidelberg, Heidelberg, Germany
- Saginaw Valley State University, University Center, MI, USA
- Sanofi Aventis, Bridgewater, NJ, USA
- Sanofi-Aventis Deutschland GmbH, Frankfurt am Main, Germany
- Suven Life Sciences Limited, Hyderabad, India
- Technische Universität Dresden, Dresden, Germany
- Tierärztliche Hochschule Hannover, Hannover, Germany
- Universidad de Leon, Leon, Spain

- Universidade do Porto, Porto, Portugal
- Università di Bari, Bari, Italy
- Universität Bielefeld, Bielefeld, Germany
- Universität des Saarlandes, Homburg/Saar, Germany
- Universität Leipzig, Leipzig, Germany
- Universität zu Köln, Köln, Germany
- Universität Zürich, Zürich, Switzerland
- Universitätsklinik Hamburg-Eppendorf – UKE, Hamburg, Germany
- Universitetet i Oslo, Oslo, Norway
- University of Aberdeen, Aberdeen, Great Britain
- University of California - Los Angeles – UCLA, Los Angeles, CA
- University of California - San Diego – UCSD, San Diego, CA, USA
- University of California, Irvine, Irvine, CA, USA
- University of Copenhagen, Copenhagen, Denmark
- University of Edinburgh, Edinburgh, Great Britain
- University of Fribourg, Fribourg, Switzerland
- University of Medicine & Dentistry of NJ – UMDNJ, Piscataway, NJ, USA
- University of Melbourne, Heidelberg, VIC, Australia
- University of Nottingham, Nottingham, Great Britain
- University of Ottawa, Ottawa, Ontario, Canada
- University of Pennsylvania, Philadelphia, PA , USA
- University of Texas at San Antonio, San Antonio, TX, USA
- University of Texas, Galveston, TX, USA
- University of Tromso, Tromso, Norway
- University of Utrecht, Utrecht, The Netherlands
- Westfälische Wilhelms-Universität Münster, Münster, Germany
- Yale University, New Haven, CT, USA
- Zentralinstitut für Seelische Gesundheit, Mannheim, Germany

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# Ordering Information

Cat. No.	Description
<b>Mice</b>	
337500-M/A	<p><b>RotaRod Advanced for 5 Mice</b>            Constant &amp; accelerating speed model            For investigating the effectiveness of drugs on impaired motor coordination of the skeletal muscles.</p> <p><b>Technical data:</b></p> <ul style="list-style-type: none"> <li>• Diameter drum 30 mm</li> <li>• Width each drum 55 mm</li> <li>• trip plate (plastic, non-shockable)</li> <li>• Interface to PC Communication &amp; Data Acquisition Package</li> </ul> <p>Some of the functions:</p> <ul style="list-style-type: none"> <li>• 5 timers for measuring time the animals spent on the rod</li> <li>• speed preselection in rpm (freely adjustable)</li> <li>• constant speed between 0-60 rpm</li> <li>• accelerating speed               <ul style="list-style-type: none"> <li>• initial speed 0-60 rpm</li> <li>• final speed 0-60 rpm</li> <li>• accelerating time 0-600 sec.</li> </ul> </li> </ul> <p><b>Options (see below):</b></p> <ul style="list-style-type: none"> <li>• 5 trip plates (stainless steel floor grid, non-shockable)</li> <li>• 5 trip plates (stainless steel floor grid, shockable with optional shocker)</li> <li>• Droppings collector</li> <li>• Cover set (escape prevention)               <ul style="list-style-type: none"> <li>consisting of:                   <ul style="list-style-type: none"> <li>- 5 separate hinged front doors (clear perspex)</li> <li>- 1 hinged top cover (clear perspex)</li> <li>- back wall</li> </ul> </li> </ul> </li> <li>• Shocker 5-channel</li> <li>• PC Communication &amp; Data Acquisition Package</li> </ul>

<b>Rats</b>	
337500-R/A	<p><b>RotaRod Advanced for 4 Rats</b>  Constant &amp; accelerating speed model  For investigating the effectiveness of drugs on impaired motor coordination of the skeletal muscles.</p> <p><b>Technical data:</b></p> <ul style="list-style-type: none"> <li>• Diameter drum 60 mm</li> <li>• Width each drum 85 mm</li> <li>• trip plate (plastic, non-shockable)</li> <li>• Interface to PC Communication &amp; Data Acquisition Package</li> </ul> <p>Some of the functions:</p> <ul style="list-style-type: none"> <li>• 4 timers for measuring time the animals spent on the rod</li> <li>• speed preselection in rpm (freely adjustable)</li> <li>• constant speed between 0-60 rpm</li> <li>• accelerating speed <ul style="list-style-type: none"> <li>• initial speed 0-60 rpm</li> <li>• final speed 0-60 rpm</li> <li>• accelerating time 0-600 sec.</li> </ul> </li> </ul> <p><b>Options (see below):</b></p> <ul style="list-style-type: none"> <li>• drum for alternative use with mice</li> <li>• 4 trip plates (stainless steel floor grid, non-shockable)</li> <li>• 4 trip plates (stainless steel floor grid, shockable with optional shocker)</li> <li>• Droppings collector</li> <li>• Cover set (escape prevention) <ul style="list-style-type: none"> <li>consisting of: <ul style="list-style-type: none"> <li>- 4 separate hinged front doors (clear perspex)</li> <li>- 1 hinged top cover (clear perspex)</li> <li>- back wall</li> </ul> </li> </ul> </li> <li>• Shocker 4-channel</li> <li>• PC Communication &amp; Data Acquisition Package</li> </ul>


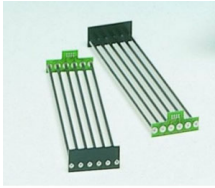


337500-R/A-3	<p><b>RotaRod Advanced for 3 Rats</b>  Constant &amp; accelerating speed model  For investigating the effectiveness of drugs on impaired motor coordination of the skeletal muscles.</p> <p><b>Technical data:</b></p> <ul style="list-style-type: none"> <li>• Diameter drum 100 mm</li> <li>• Width each drum 114 mm</li> <li>• trip plate (plastic, non-shockable)</li> <li>• Interface to PC Communication &amp; Data Acquisition Package</li> </ul> <p>Some of the functions:</p> <ul style="list-style-type: none"> <li>• 3 timers for measuring time the animals spent on the rod</li> <li>• speed preselection in rpm (freely adjustable)</li> <li>• constant speed between 0-60 rpm</li> <li>• accelerating speed <ul style="list-style-type: none"> <li>• initial speed 0-60 rpm</li> <li>• final speed 0-60 rpm</li> <li>• accelerating time 0-600 sec.</li> </ul> </li> </ul> <p><b>Options (see below):</b></p> <ul style="list-style-type: none"> <li>• drum for alternative use with mice</li> <li>• 3 trip plates (stainless steel floor grid, non-shockable)</li> <li>• 3 trip plates (stainless steel floor grid, shockable with optional shocker)</li> <li>• Droppings collector</li> <li>• Cover set (escape prevention) <ul style="list-style-type: none"> <li>consisting of: <ul style="list-style-type: none"> <li>- 3 separate hinged front doors (clear perspex)</li> <li>- 1 hinged top cover (clear perspex)</li> <li>- back wall</li> </ul> </li> </ul> </li> <li>• Shocker 3-channel</li> <li>• PC Communication &amp; Data Acquisition Package</li> </ul>
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<b>PC Control</b>	
337500-PC	<p><b>PC Communication &amp; Data Acquisition Package for RotaRod Advanced</b></p> <p>For connecting to a RotaRod Advanced for</p> <ul style="list-style-type: none"> <li>- 5 Mice</li> <li>- 3 Rats or</li> <li>- 4 Rats.</li> </ul> <p>The experiment will be controlled user-defined via the flexible RotaRod Software.  Programmable speed profile: combination of constant speed and acceleration/deceleration phases of definable duration (0-600s).  For each step of the speed profile definable (100 steps programmable):</p> <ul style="list-style-type: none"> <li>• Initial speed</li> <li>• Final speed</li> <li>• Acceleration/deceleration time</li> </ul> <p>Possible entries in the main menu are:</p> <ul style="list-style-type: none"> <li>• file name, experiment no., marker, substance, weight, user, animal (200 animals definable), dosage, comment (2 lines)</li> <li>• mean/Sd ON/OFF (if desired)</li> <li>• initial speed</li> <li>• final speed</li> <li>• acceleration/deceleration time</li> <li>• shock intensity (only with optional shocker)</li> <li>• shock length (only with optional shocker)</li> <li>• timeout or continuous mode</li> </ul> <p>The system stores all data in ASCII-format for export to standard statistics or graphics software (Excel, etc.).</p> <p>Output for each measuring group:</p> <ul style="list-style-type: none"> <li>• number of measurements</li> <li>• mean value (if desired)</li> <li>• standard deviation (if desired)</li> </ul> <p>Output for each measurement and animal:</p> <ul style="list-style-type: none"> <li>• time spent on rod (or timeout)</li> <li>• current speed when the animal falls down</li> <li>• distance covered during the time interval</li> <li>• phase number in which the light barrier interruption occurred</li> <li>• time from start of phase up to light barrier interruption</li> <li>• time from start of timer up to start of profile</li> </ul> <p>Complete and consisting of (for connecting to PC):</p> <ul style="list-style-type: none"> <li>• special interface RotaRod</li> <li>• software package RotaRod for WINDOWS</li> </ul>

## Options / Spare Parts:

<b>Mouse Set</b>	
337500-R-M	<p><b>RotaRod Mouse Set</b> for RotaRod Rat Advanced (4 Rats) to run a RotaRod Advanced for 4 Rats with 4 Mice complete with:</p> <ul style="list-style-type: none"> <li>• Drum, diameter 30 mm (easily interchangeable)</li> </ul>
<b>Shocker</b>	
337500-S-3	<p><b>Shocker 3-channel</b> for RotaRod Advanced for 3 Rats.</p> <p>Forces the animals to stay on the drum. Reliable electrical sensing of animals fall from the drum. Microprocessor equipped shock modules designed to provide constant current stimulation with output adjustable via software up to 3.1 mA (up to 4.5 mA available on request). Integrated current flow detector and all electronics needed for automatically switching polarity of grid rods. The current chosen is applied independent of the actual cross-over resistance (max. 73 kOhm at 1.5 mA). Perspex covers (optional) which are mounted on the treadmill prevent the animals to escape.</p> <p>Some of the functions:</p> <ul style="list-style-type: none"> <li>• shock intensity 0 -3.1 mA (also available up to 4.5 mA)</li> <li>• shock length 0.1 -10.0 sec</li> </ul> <p>Requires PC Communication &amp; Data Acquisition Package and shockable Trip Plates.</p>
337500-S-4	<p><b>Shocker 4-channel</b> for RotaRod Advanced for 4 Rats.</p> <p>Forces the animals to stay on the drum. Reliable electrical sensing of animals fall from the drum. Microprocessor equipped shock modules designed to provide constant current stimulation with output adjustable via software up to 3.1 mA (up to 4.5 mA available on request). Integrated current flow detector and all electronics needed for automatically switching polarity of grid rods. The current chosen is applied independent of the actual cross-over resistance (max. 73 kOhm at 1.5 mA). Perspex covers (optional) which are mounted on the treadmill prevent the animals to escape.</p> <p>Some of the functions:</p> <ul style="list-style-type: none"> <li>• shock intensity 0 -3.1 mA (also available up to 4.5 mA)</li> <li>• shock length 0.1 -10.0 sec</li> </ul> <p>Requires PC Communication &amp; Data Acquisition Package and shockable Trip Plates.</p>
337500-S-5	<p><b>Shocker 5-channel</b> for RotaRod Advanced for 5 Mice.</p> <p>Forces the animals to stay on the drum. Reliable electrical sensing of animals fall from the drum. Microprocessor-equipped shock modules designed to provide constant current stimulation with output adjustable via software up to 3.1 mA (up to 4.5 mA available on request). Integrated current flow detector and all electronics needed for automatically switching polarity of grid rods. The current chosen is applied independent of the actual cross-over resistance (max. 73 kOhm at 1.5 mA). Perspex covers (optional) which are mounted on the treadmill prevent the animals to escape.</p> <p>Some of the functions:</p> <ul style="list-style-type: none"> <li>• shock intensity 0 -3.1 mA (also available up to 4.5 mA)</li> <li>• shock length 0.1 -10.0 sec</li> </ul> <p>Requires PC Communication &amp; Data Acquisition Package and shockable Trip Plates.</p>

<b>Cover Set</b>	
337500-M/CS	<b>Cover-set</b> (escape prevention) for RotaRod Advanced for 5 Mice, consisting of: <ul style="list-style-type: none"> <li>• 5 separate hinged front doors (clear perspex)</li> <li>• 1 hinged top cover (clear perspex)</li> <li>• back wall</li> </ul> Required: 1 set for each RotaRod.
337500-R/CS	<b>Cover-set</b> (escape prevention) for RotaRod Advanced for 4 Rats, consisting of: <ul style="list-style-type: none"> <li>• 4 separate hinged front doors (clear perspex)</li> <li>• 1 hinged top cover (clear perspex)</li> <li>• back wall</li> </ul> Required: 1 set for each RotaRod.
337500-R/CS-3	<b>Cover-set</b> (escape prevention) for RotaRod Advanced for 3 Rats, consisting of: <ul style="list-style-type: none"> <li>• 3 separate hinged front doors (clear perspex)</li> <li>• 1 hinged top cover (clear perspex)</li> <li>• back wall</li> </ul> Required: 1 set for each RotaRod.
<b>Droppings Collector</b>	
337500-M/DC	<b>Droppings collector</b> for RotaRod Advanced for 5 Mice. Required: 1 pc. for each RotaRod.
337500-R/DC	<b>Droppings collector</b> for RotaRod Advanced for 3 or 4 Rats. Required: 1 pc. for each RotaRod.
<b>Trip plates</b>	  <p>Trip plate plastic, non-shockable</p> <p>Floor grids</p>
337500-M/TP-P	<b>Trip plate</b> Mouse (plastic, non-shockable) for RotaRod Advanced for 5 Mice. Required: 1 pc. for each RotaRod.
337500-R/TP-P	<b>Trip plate</b> Rat (plastic, non-shockable) for RotaRod Advanced for 3 or 4 Rats. Required: 1 pc. for each RotaRod.
337500-M/TP-ST	<b>Trip plate</b> Mouse with floor grid (stainless steel, non-shockable) for RotaRod Advanced for 5 Mice. Required: 1 pc. for each lane.
337500-R/TP-ST	<b>Trip plate</b> Rat with floor grid (stainless steel, non-shockable) for RotaRod Advanced for 4 Rats. Required: 1 pc. for each lane.
337500-R/TP-ST-3	<b>Trip plate</b> Rat with floor grid (stainless steel, non-shockable) for RotaRod Advanced for 3 Rats. Required: 1 pc. for each lane.
337500-R/TP-ST/R	<b>Trip plate</b> Mouse with floor grid (stainless steel, non-shockable) for RotaRod Advanced for 4 Rats. Required: 1 pc. for each lane.

337500-M/TP-ST-S	<b>Trip plate</b> Mouse with floor grid (stainless steel, shockable with optional shocker) for RotaRod Advanced for 5 Mice. Required: 1 pc. for each lane.
337500-M/TP-ST-S/R	<b>Trip plate</b> Mouse with floor grid (stainless steel, shockable with optional shocker) for RotaRod Advanced for 4 Rats. Required: 1 pc. for each lane.
337500-R/TP-ST-S	<b>Trip plate</b> Rat with floor grid (stainless steel, shockable with optional shocker) for RotaRod Advanced for 4 Rats. Required: 1 pc. for each lane.
337500-R/TP-ST-S-3	<b>Trip plate</b> Rat with floor grid (stainless steel, shockable with optional shocker) for RotaRod Advanced for 3 Rats. Required: 1 pc. for each lane.
<b>Computers, Monitors, Printers</b>	
505500-P3000	<b>Pharmacomp Pentium 4</b> <ul style="list-style-type: none"> <li>• 3.0 GHz</li> <li>• 512 MB</li> <li>• 80 GB HD</li> <li>• 3.5" FD</li> <li>• DVD + CD-RW combo drive internal</li> <li>• graphic integrated</li> <li>• sound integrated</li> <li>• LAN 10/100 Mbit onboard</li> <li>• Keyboard</li> <li>• Mouse Microsoft compatible</li> <li>• Windows® XP Professional</li> </ul> Including complete soft- and hardware installation of the system.
505500-M17-TFT	Flat Screen 17" TFT 1280 x 1024
505500-M19-TFT	Flat Screen 19" TFT 1280 x 1024
505500-M20-TFT	Flat Screen 20" TFT 1400 x 1050
505500-M22-TFT	Flat Screen 22" TFT 1680 x 1050
505500-DR-T	Bubble-Jet color (Ink-Printer)
505500-DR-L	Laser Printer, 14 pages/min., 600 x 600 DPI, 4 MB RAM, expandable.

# Other TSE Products

This overview illustrates additional inhalation products which are supplied by TSE Systems, detailed information concerning each of the items listed below can be found on our website, for any additional information please do not hesitate to contact us:

- **LabMaster**  
Multipurpose Screening System: Indirect Calorimetry, Home Cage Activity via Infrared Sensor Frames, Drinking & Feeding Behavior, Wheel Activity, Production of Urine & Feces, Rotameter, etc.
  
- **Behaviour**  
Conditioning, Activity & Exploration, Video Tracking, Mazes, Anxiety & Depression, Motor Function & Performance
  
- **Startle Response**
  
- **Analgesia**  
Hot Plate, Tail Flick, Randall Selitto, Power Meter (Incapacitance Tester)
  
- **Physiology**  
Blood Pressure Monitoring – invasive & non-invasive, Telemetry, Volume Meter, Bronchospasm Measuring
  
- **Inhalation**  
Head Nose Only and Whole Body Exposure Units, Aerosol Generation & Conditioning, Aerosol Analysis, Inhalation Software, etc.
  
- **Stereotaxic Instruments**
  
- **Isolated Organs**  
Organ Bath Systems, Langendorff and Working Heart Systems
  
- **Microtomes**  
Krumdieck Tissue Slicer
  
- **Pumps & Infusion**  
Syringe Pumps, Animal Infusion Systems
  
- **Surgery & Handling**  
Operating Tables, Homeothermic Blankets, Temperature and ECG Pads, etc.



TSE Systems is a leading supplier of sophisticated research instrumentation in the global life science market. Our focus is on providing the total customer solution, with modular designs of integrated hardware and software platforms for neuroscience, metabolic and behavioral phenotyping, drug screening and toxicology. It is our corporate goal to become the number one manufacturer of highly sophisticated products in each market we serve.

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