

# analysette 3



## Vibratory Sieve Shaker

- Microprocessor controlled with optical display of all functions
- Digital adjustment and regulation of amplitude: AMPCONTROL
- Up to 9 sieve programmes can be saved and recalled

particle size <sup>quality</sup> control  
analysis  
sieving  
for your lab

**FRITSCH**

# Vibratory Sieve Shaker

## Field of Application

The Vibratory Sieve Shakers analysette 3 PRO and SPARTAN are the ideal instruments for determining quantitative particle size analysis by the well-known tried and trusted method of sieving. Particle size distributions of all kinds of solid samples and suspensions can be measured by dry and wet sieving. The sieving process can be carried out with woven analytical sieves or micro precision sieves. The modular system of the analysette 3 allows for easy conversion to vibratory micro mill pulverisette 0 for milling and homogenizing small amounts of sample material.

The classic process of sieving as a particle size analysis method has been significantly improved during the last few years through technical advancements. Today, FRITSCH sieve shakers are small, "high-tech" instruments with amplitude control, evaluation software, power network adaptation and much more. With this new generation sieving analysis can be conducted and documented much more accurately and reproducibly in research, development or control laboratories than in the past. Maximum precision and ease of use can be guaranteed.

Our top of the range model analysette 3 PRO with automatic amplitude control, programme selection is also ideally suited as a testing instrument for quality management in accordance with ISO 9001:2000, it is used for monitoring of internal quality standards. It is an established component in the laboratory certification process as a calibration and validation inspection instrument (Inspection Certificate 3.1B EN 10204 for instrument calibration as well as the documentation for "Installation-" and "Operational Qualification" are available on request).

The PRO and SPARTAN versions offer the user a choice to best suit the particular application in sieving.



sieving quality control  
**Vibratory Sieve Shaker**



analysette 3 PRO  
with tensiing system TorqueMaster



membrane keyboard

## Method of operation

The analysette 3 is a "shaking sieve" system in the classic sense, with an electromagnetic drive in the base which vibrates the sieves vertically. The material to be sieved is propelled upwards periodically from the woven sieve cloth, as it returns to the mesh of the sieve it is forced through the apertures to the collecting pan located on the base.

The regulated vertical action produces optimum material sizes for sieving and ensures an even distribution of the material over the entire sieve mesh. As there are no centrifugal effects, all forces act directly in the separating process of the sieves, almost regardless of the level of acceleration.

# Vibratory Sieve Shaker

## Advantages

- EASYTWIST sieve stack bracing included in the price
- No additional weight necessary for small samples
- Sieve frequency independent of network frequency for minimal power input (sieve system does not heat up)
- Automatic setting of the optimum operating point on the resonance curve - AMPCONTROL
- Can be integrated into test equipment inspection in accordance with ISO 9001:2000 (Sieve shaker can be calibrated as a testing instrument)
- Reproducible sieving results according to DIN 66165
- Auto-validation of the sieving process via RS232 and AUTOSIEVE for Windows™ through on-line comparison of the desired and actual amplitude
- All functions can be controlled via RS232
- Setup mode can be selected with check function
- Ease of operation, plus ergonomic design
- Up to 10 test sieves and a sieve pan with 50 mm height each can be used in one working cycle
- Silent operation
- Modular system allows for a wide range of applications
- FRITSCH inspection and maintenance service
- 2 year guarantee
- Safety tested (CE mark)

## Design Characteristics

### PRO + SPARTAN Model

- Precise digital timer
- Foil-type keypad IP65 fitted ergonomically, splash-proof
- Optical display of the amplitude
- Recyclable plastic housing
- Quick conversion to Vibratory Micro Mill pulverisette O
- AUTOSIEVE for Windows™ for automatic evaluation of sieve analysis

### Extras with the PRO model

- AMPCONTROL amplitude regulation
  - Stipulation of desired value of amplitude
  - Automatic detection of amplitude
  - Automatic regulation of amplitude
  - Digital display of the actual amplitude
  - Digital display of sieve vibrations per second
  - Evaluation of all sieving parameters by AUTOSIEVE for Windows™
- Up to 9 sieve programmes which can be saved and recalled
- Power-save function (low-current drain mode)
- RS232 interface
- Intermittent and continuous mode
- Micro mode and micro-intermittent mode for micro precision sieving

micro

dry/  
wet

precision sieving



analysette 3 PRO for dry sieving



analysette 3 PRO for wet sieving

## Accessories

### Dry Sieving

Test sieves with diameter/height of 200/50 mm, 200/25 mm, 100/40 mm or 8"/2" in accordance to ISO 3310 and ASTM. Woven sieve cloth and frame made of stainless steel.

### Wet Sieving

For material with a high electrostatic charge or very high content of fine material. The wet clamping lid features 3 nozzles which sprays the entire interior chamber, thus helping to flush the material through the sieve apertures. Interposed sieve rings simultaneously spray the sieves above and below. A wet sieve pan with outlet completes the sieve stack.

# Vibratory Sieve Shaker

## Ordering data for Test Sieves

### Test Sieves

Frame and mesh wire made of stainless steel  
Diameter 100 mm/200 mm/8"

ISO 3310-1 Mesh width mm/μm		ASTM E-11-1995 mesh	
Order no.	200 mm dia. 50 mm height	Order no.	200 mm dia. 50 mm height
30.0000.03	63 • mm		
30.0080.03	45 • mm		
30.0100.03	31.5 • mm		
30.0200.03	25 mm	35.0200.03	1" = 25 mm
30.0300.03	22.4 • mm	35.0300.03	7/8" = 22.4 mm
30.0400.03	20 mm		
30.0600.03	18 mm	35.0600.03	3/4" = 19 mm
30.0800.03	16 • mm	35.0800.03	5/8" = 16 mm
30.0900.03	14 mm	35.0900.03	0.53" = 13.2 mm
30.1000.03	12.5 mm	35.1000.03	1/2" = 12.5 mm
30.1100.03	11.2 • mm	35.1100.03	7/16" = 11.2 mm
30.1200.03	10 mm	35.1200.03	3/8" = 9.5 mm
30.1300.03	9 mm		
30.1400.03	8 • mm	35.1400.03	5/16" = 8 mm
30.1500.03	7.1 mm	35.1500.03	0.265" = 6.7 mm
30.1600.03	6.3 mm	35.1600.03	1/4" = 6.3 mm
30.1700.03	5.6 • mm	35.1700.03	3 1/2" = 5.6 mm
30.1800.03	5 mm	35.1800.03	4" = 4.75 mm
30.1900.03	4.5 mm		
30.2000.03	4 • mm	35.2000.03	5" = 4 mm
30.2100.03	3.55 mm	35.2100.03	6" = 3.35 mm
30.2200.03	3.15 mm		
30.2300.03	2.8 • mm	35.2300.03	7" = 2.8 mm
30.2400.03	2.5 mm	35.2400.03	8" = 2.36 mm
30.2500.03	2.24 mm		
30.2600.03	2 • mm	35.2600.03	10" = 2 mm
30.2700.03	1.8 mm		
30.2800.03	1.6 mm	35.2800.03	12" = 1.7 mm
30.2900.03	1.4 • mm	35.2900.03	14" = 1.4 mm
30.3000.03	1.25 mm	35.3000.03	16" = 1.18 mm
30.3100.03	1.12 mm		
30.3200.03	1 • mm	35.3200.03	18" = 1 mm
30.3300.03	900 μm		
30.3400.03	800 μm	35.3400.03	20" = 850 μm
30.3500.03	710 • μm	35.3500.03	25" = 710 μm
30.3600.03	630 μm	35.3600.03	30" = 600 μm
30.3700.03	560 μm		
30.3800.03	500 • μm	35.3800.03	35" = 500 μm
30.3900.03	450 μm		
30.4000.03	400 μm	35.4000.03	40" = 425 μm
30.4100.03	355 • μm	35.4100.03	45" = 355 μm
30.4200.03	315 μm	35.4200.03	50" = 300 μm
30.4300.03	280 μm		
30.4400.03	250 • μm	35.4400.03	60" = 250 μm
30.4500.03	224 μm		
30.4600.03	200 μm	35.4600.03	70" = 212 μm
30.4700.03	180 • μm	35.4700.03	80" = 180 μm

quality  
test sieves control  
**Sieve Shaker**

ISO 3310-1 Mesh width mm/μm		ASTM E-11-1995 mesh	
Order no.	200 mm dia. 50 mm height	Order no.	200 mm dia. 50 mm height
30.4800.03	160 μm	35.4800.03	100 = 150 μm
30.4900.03	140 μm		
30.5000.03	125 • μm	35.5000.03	120 = 125 μm
30.5100.03	112 μm		
30.5200.03	100 μm	35.5200.03	140 = 106 μm
30.5400.03	90 • μm	35.5400.03	170 = 90 μm
30.5600.03	80 μm		
30.5800.03	71 μm	35.5800.03	200 = 75 μm
30.6000.03	63 • μm	35.6000.03	230 = 63 μm
30.6200.03	56 μm	35.6200.03	270 = 53 μm
30.6400.03	50 μm		
30.6600.03	45 • μm	35.6600.03	325 = 45 μm
30.6800.03	40 μm		
30.7000.03	36 μm	35.7000.03	400 = 38 μm
30.7200.03	32 • μm	35.7200.03	450 = 32 μm
30.7600.03	25 • μm	35.7600.03	500 = 25 μm
30.7800.03	20 • μm	35.7800.03	635 = 20 μm

• ISO 565 R20/3 (Main sizes)

If test sieves are required in other diameters, please note the ordering examples below.



test sieves and sieve pan

## Examples of Orders for Test Sieves in other sizes

	Deviation from standard sieve size	ISO 3310-1 mesh width mm/μm	ASTM E-11-1995 mesh
Test sieve 200 mm dia., height 50 mm = standard size		for example 30.1800.03	for example 35.1800.03
Test sieve 200 mm dia., height 25 mm = half height	replace the 0 in the 5 <sup>th</sup> position of the order no. with a 1	for example 30.1810.03	for example 35.1810.03
Test sieve 8" dia., height 2"	replace the 0 in the 5 <sup>th</sup> position of the order no. with a 2	for example 30.1820.03	for example 35.1820.03
Test sieve 100 mm dia., height 40 mm	replace the 0 in the 5 <sup>th</sup> position of the order no. with a 4	for example 30.1840.03	for example 35.1840.03

**Test sieves and accessories in other diameters and mesh width on request.  
Test sieves and sieving accessories are not subject to exchange!**

# Vibratory Sieve Shaker

## Accessories

### Clamping lid

The standard clamping lid plexiglas allows the operator to observe the sieving process. A clamping lid without window insert is also available for applications where observation is not required.

### Sieve Tensioning System TorqueMaster

The sieve tensioning system TorqueMaster enables an automatic, reproducible tensioning of the sieve stack on the sieve shaker. Although the tensioning has a great influence on the result, it is relatively undefined in conventional systems. The unique properties of the TorqueMaster brings constant, reproducible tensioning on the sieve stack through the use of a high-quality electrical tool which results the calibration of sieve tensioning as part of the monitoring of test equipment according to ISO 9001:2000.

Although you may not have a FRITSCH sieve shaker, the TorqueMaster is the best tensioning system for your sieve stack. TorqueMaster can be attached and used with any sieve shaker.

### Interposed sieve pan

If several sieving operations should be carried out simultaneously, an interposed sieve pan must be used as sieve pan between the sieves.

### Sieving Aids

For dry sieving material with a high proportion of fine particles.

### Certificates

The inspection certificate 3.1B EN 10204 to use the sieve shaker analysette 3 PRO as calibration and validation inspection instrument as well as the documentation for "Installation-" and "Operational-Qualification" are available on request. The inspection certificate 3.1B EN 10204 for calibration of the test sieves according to ISO 3310-1 can also be delivered.

## Micro Precision Sieving with analysette 3 PRO

Micro precision sieves offer the most accurate process in wet sieving of fine material between 5  $\mu\text{m}$  and 100  $\mu\text{m}$ . It is also possible to dry sieve small quantities of easy materials > 25  $\mu\text{m}$ .

The key feature is the available open surface of the sieve. This determines the duration of sieving and the degree of separation. The FRITSCH 5  $\mu\text{m}$  sieve has, for example, an open sieve surface area 6 times as large as comparable micro precision sieves. The apertures of the micro precision sieves are designed so that there is no chance of blockage once a particle passes through the aperture because it is wider at the base than to top. The sieves are manufactured in accordance with ISO 3310-3. The patented quick-release lock together with the large surface area of the sieve lead to efficient operation.



analysette 3 PRO  
with tensioning system TorqueMaster



analysette 3 PRO  
for micro precision sieving

quality  
sieving accessories control  
TorqueMaster

## Ordering data for Micro Precision Sieves

### Micro precision sieves

Frame made of stainless steel; sieve foil and grid made of pure nickel  
100 mm dia. according to ISO 3310-3

Order no.	Aperture size $\mu\text{m}$	open sieve area = %	mesh = Number of holes per linear inch
32.0050.00	Aperture size 5 $\mu\text{m}$	2.8	1016
32.0100.00	Aperture size 10 $\mu\text{m}$	11.2	1016
32.0150.00	Aperture size 15 $\mu\text{m}$	9.8	570
32.0200.00	Aperture size 20 $\mu\text{m}$	17.5	570
32.0250.00	Aperture size 25 $\mu\text{m}$	10.4	403
32.0300.00	Aperture size 30 $\mu\text{m}$	14.9	403
32.0350.00	Aperture size 35 $\mu\text{m}$	12.6	317
32.0400.00	Aperture size 40 $\mu\text{m}$	16.5	317
32.0450.00	Aperture size 45 $\mu\text{m}$	8.5	203
32.0500.00	Aperture size 50 $\mu\text{m}$	10.5	203
32.0600.00	Aperture size 60 $\mu\text{m}$	9.3	159
32.0700.00	Aperture size 70 $\mu\text{m}$	12.6	159
32.0800.00	Aperture size 80 $\mu\text{m}$	16.5	159
32.0900.00	Aperture size 90 $\mu\text{m}$	20.9	159
32.1000.00	Aperture size 100 $\mu\text{m}$	25.7	159

## Example for ordering Micro Precision Sieves

### Example of an order for a sieve stack with 4 micro precision sieves:

1. 4 micro precision sieves of choice
2. 1 clamping lid, aluminium/plexiglas with 1 nozzle (order no. 33.1050.00)
3. 1 funnel (sieve pan) made of aluminium with outlet (order no. 33.1150.00)
4. 5 sieve spacer made of aluminium with 2 seals (order no. 33.1000.00)
5. 6 fast locking clamps made of stainless steel (order no. 33.1100.00)
6. Clamping set for micro precision sieving with micro precision sieves with 100 mm  $\varnothing$

NB order: one sieve spacer and two locking clamps in addition to the no. of sieves

# Vibratory Sieve Shaker

## Special Accessories

### **AUTOSIEVE for Windows™**

Professional software available as standard and extended version for automatic evaluation of sieve analysis and the basis for the online auto-validation of the analysette 3 PRO sieve shaker, enabling the highest quality standards to be guaranteed. Recording and management of sieve tare weights, monitoring of the sieve shaker or balance and automatic computation of particle size distribution from the sieved fractions in conformity with pre-determined standards are basic functions already incorporated in the standard version. The extended version provides additional extensive facilities for further processing. The standard version is delivered together with the sieve shaker for test purposes limited for 180 days, the extended version must be ordered separately.



automatic evaluation of sieve analysis

### **Attachments for Milling**

The analysette 3 can be converted to the Vibratory Micro Mill pulverisette 0 for milling and homogenizing of small amounts of sample (quantities 0.1 to 10 ml with a feed size of < 5 mm). When converted to the milling mode the „Cryobox“ (accessory) for low temperature grinding is another useful option.



Vibratory Micro Mill pulverisette 0

automatic  
milling      sieve analysis  
**Vibratory Sieve Shaker**

## Technical data

	analysette 3 PRO	analysette 3 SPARTAN
method of analysis	sieving	sieving
dry sieving	measuring range: 32 µm - 63 mm max. sample quantity (approx.): for sieves < 100 µm: up to 100 g for sieves < 63 mm: up to 1 kg sieving time (approx.): 3 - 20 min	measuring range: 32 µm - 63 mm max. sample quantity (approx.): 1 kg sieving time (approx.): 3 - 20 min
wet sieving	measuring range: 20 µm - 10 mm max. sample quantity (approx.): 20 - 100 g sieving time (approx.): 3 - 10 min	measuring range: 20 µm - 10 mm max. sample quantity (approx.): 20 - 100 g sieving time (approx.): 3 - 10 min
micro-precision sieving	measuring range: 5 µm - 100 µm max. sample quantity (approx.): 0.2 - 0.5 g sieving time (approx.): 30 - 60 min	
amplitude control	automatic	manual
max. sieve diameter	200 mm/8"	200 mm/8"
max. number of sieves per sieve stack	10 (50 mm height) or 16 (25 mm height)	10 (50 mm height) or 16 (25 mm height)
control and evaluation programme AUTOSIEVE	yes	yes
testing instrument calibration as per ISO 9001:2000	yes	no
convertible to vibratory micro mill pulverisette 0	yes	yes
electrical details	100-240 V/1~, 50-60 Hz, 50 watt	100-240 V/1~, 50-60 Hz, 50 watt
weight	net: 21 kg, gross: 22 kg	net: 21 kg, gross: 22 kg
dimensions w x d x h	table instrument: 37 x 40 x 20 cm	table instrument: 37 x 40 x 20 cm
packing details	carton: 50 x 43 x 30 cm	carton: 50 x 43 x 30 cm

## Special Accessories

	<p><b>Accessories for automatic evaluation of sieve analysis</b> Control and evaluation programme AUTOSIEVE for Windows™ available as standard and extended version. The standard version is delivered together with the sieve shaker model PRO and SPARTAN for test purposes limited for 180 days, the extended version must be ordered separately. Detailed brochure on the Control and evaluation programme AUTOSIEVE available on request.</p>
31.2010.00	<p><b>Accessories for milling and homogenizing small amounts of samples</b> Grinding head for conversion to vibratory micro mill pulverisette 0 Detailed brochure on Vibratory Micro Mill pulverisette 0 with information on mortars and balls available on request.</p>
	<p><b>Accessories for safe cleaning of test sieves and micro precision sieves</b> Ultrasonic Cleaner laborette 17 Detailed brochure available on request.</p>

# analysette 3

## Ordering data

Order no.	Description
	<b>Vibratory Sieve Shaker analysette 3 without clamping lid, test sieves and sieve pan, incl. control and evaluation programme AUTOSIEVE for Windows™ standard version for test purposes limited for 180 days.</b>
03.7020.00	<b>model PRO</b> , for 100-240 V/1~, 50-60 Hz
03.8020.00	<b>model SPARTAN</b> , for 100-240 V/1~, 50-60 Hz
	<b>Accessories for dry sieving</b>
31.2020.00	clamping lid plexiglas for test sieves 200 mm/8" dia.
31.2050.00	clamping lid (without window) for all test sieves up to 200 mm/8" dia.
31.2100.00	sieve tensioning system TorqueMaster (consisting of clamping lid plexiglas for test sieves 200 mm/8" dia. and electrical tool 230 V/1~, 50 Hz)
31.2115.00	sieve tensioning system TorqueMaster (consisting of clamping lid plexiglas for test sieves 200 mm/8" dia. and electrical tool 100 - 120 V/1~, 60 Hz)
31.2010.00	clamping lid plexiglas for test sieves 100 mm dia.
31.1300.03	interposed sieve pan made of stainless steel 200 mm dia., 50 mm height
31.1320.03	interposed sieve pan made of stainless steel 8" dia., 2" height
31.1000.03	sieve pan made of stainless steel 200 mm dia., 50 mm height
31.1020.03	sieve pan made of stainless steel 8" dia., 2" height
31.1040.03	sieve pan made of stainless steel 100 mm dia., 40 mm height
	<b>Accessories for wet sieving</b>
31.2030.00	clamping lid plexiglas with 3 nozzles for test sieves 200 mm/8" dia.
31.1100.03	sieve pan made of stainless steel with outlet 200 mm dia., 50 mm height
31.0240.00	interposed sieving ring with 3 nozzles for test sieves 200 mm dia.
31.1120.03	sieve pan made of stainless steel with outlet 8" dia., 2" height
31.0250.00	interposed sieving ring with 3 nozzles for test sieves 8" dia.
31.2040.00	clamping lid plexiglas with 1 nozzle for test sieves 100 mm dia.
31.1140.00	sieve pan made of stainless steel with outlet 100 mm dia., 40 mm height
	<b>Accessories for micro precision sieving</b> (only possible with analysette 3 PRO)
33.1200.00	clamping set for micro precision sieves 100 mm dia. (= 3 screws + clamps, without clamping lid, sieve pan and micro precision sieves)
33.1050.00	clamping lid, aluminium/plexiglas with 1 nozzle
33.1150.00	funnel (sieve pan) made of aluminium with outlet
33.1000.00	sieve spacer made of aluminium with 2 seal rings
33.1100.00	fast locking clamp, made of stainless steel
	<b>Certification</b>
96.0010.00	inspection certificate 3.1B EN 10204 for calibration of FRITSCH sieve shaker analysette 3 PRO
31.0900.00	inspection certificate 3.1B EN 10204 for FRITSCH test sieves according to ISO 3310-1
96.0200.00	IQ/OQ documentation (questionnaire format)
	<b>Further Accessories</b>
55.0100.05	agate ball 10 mm dia. (10 pcs. per sieve)
31.0180.15	rubber ball 20 mm dia. (5 pcs. per sieve)
31.1200.03	sieve cover made of stainless steel for test sieves 200 mm dia.
31.1220.03	sieve cover made of stainless steel for test sieves 8" dia.
31.1240.03	sieve cover made of stainless steel for test sieves 100 mm dia.
31.0010.16	replacement seal ring NBR for test sieves 200 mm/8" dia., 50 mm/2" height
31.0040.16	replacement seal ring NBR for test sieves 200 mm dia., 25 mm height
31.0520.16	replacement seal ring NBR for test sieves 100 mm dia.
84.0230.15	replacement seal ring NBR (2 each for 33.1000.00)
	Ordering data for test sieves and micro precision sieves, see inside.

