



# KINEMATICA

Homogenizing perfected.



## POLYTRON®

**LABORATORY LINE**

### POLYTRON® PT 1300 D

High-end handheld disperser, state-of-the-art digital technology

# POLYTRON® PT 1300 D

## Efficient sample preparation.

Research, development or quality control, all work towards a common goal: Sample analysis. The basic requirements for an impending sample preparation is the efficient disruption of systems, reproducibility of the results, and simple procedures.

### THE EXPERT FOR YOUR LABORATORY

Since more than 60 years we are perfecting the rotor / stator technology, working in close cooperation with users and universities. When using our technology, your test samples will be dispersed into homogeneous systems. Depending on the type of samples you will get homogeneous emulsions, dispersions or suspensions. This is the best foundation for all subsequent analyses or formulations.

### ERGONOMICS: IT IS RIGHT AT YOUR FINGERTIPS

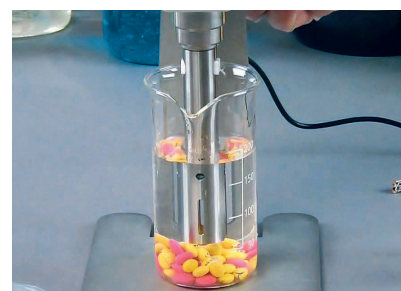
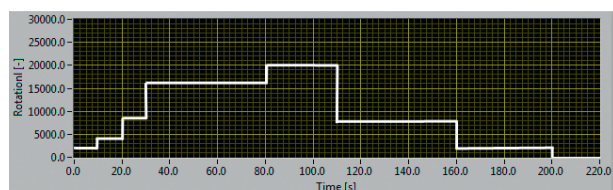
- ON & OFF and speed control by simply pressing a button
- The drive rests comfortably in the palm of your hand
- The membrane keyboard is easy to operate and to clean
- Changing the aggregate is easy with the Click & Go quick release
- The EasyClean Design makes cleaning the aggregates simple
- Low noise level

### INTELLIGENT CONTROL SYSTEM

- Intelligent speed controls ensure a long service life
- Stable motor speeds even during changes of viscosity
- Using the MEMO button lets you save engine speeds and provides you with the option to recall and reproduce the setting later in order to process larger numbers of samples
- The supplied PC software offers a remote control option or the recording of specific application parameters

### RESULTS ARE CONVINCING

- Smallest sizes of particles / droplets because precise analysis require homogeneous samples
- Efficient sample preparation because fast dispersion saves time
- Standard or custom-made aggregates perfected for and in cooperation with the users
- Cleaning and disassembly: EasyClean Design makes it very simple
- Quick coupling of the aggregates by using Click & Go
- Best materials available because without them, we could not call it Swiss Made
- Durability is a Swiss virtue





#### TECHNICAL INFORMATION

Processing volume (water)	0.05 up to 250 ml
Tip speed	Up to max. 14 m/s Up to max. 21 m/s (X-Aggregate)
Applicable aggregates	ø 3, 5, 7, 12 mm ø 20 mm X-Design
Speed range	2000 to 30 000 rpm
Drive coupling	Aggregates with E coupling
Noise level (drive without aggregate)	65 dB(A) at 30 000 rpm
Motor	Brushless, maintenance-free
Drive power	100W
Connection voltage	90 – 230 V ± 10%, 50Hz / 60Hz
Relative humidity (max.)	80 % during storage 80 % during operation
Operating temperature	0 – 40 °C
PC interfaces	RS-232 (D SUB 9) USB socket B
Protection class acc. to DIN	IP 20
Dimensions (LxWxH)	Drive: 210x40x45 mm Control module: 230x205x95 mm
Weight	Drive: 620 g Control module: 1040 g
EMC standards	IEC / EN 61000-6-2 / EN 61000-6-3
Safety standard	IEC / EN 61010-2-51



#### USERS / APPLICATION RANGES

- General homogenizer applications, dispersions, suspensions and emulsions
- Homogenization of animal and human tissue samples in a variety of fluids and volumes
- Extractions of active pharmaceutical ingredients (APIs) contained in pills and tablets
- Sample preparation for medical diagnostic procedures as well as RNA / DNA analysis

- Disruption of animal and human cells
- Emulsions and suspensions in the smallest volumes
- Cell disruption for enzyme studies
- Sample preparation for gene technological research
- Deagglomeration of united cell structures

This list provides a small selection of possible applications.



# Kinematic dispersion.

Using the rotor / stator system.

Who is the inventor of it?

The roots of today's Kinematica began in the former chemical / physical research institute of Prof. P. Willems in Lucerne, Switzerland, the inventor of the modern rotor / stator dispersion technology.

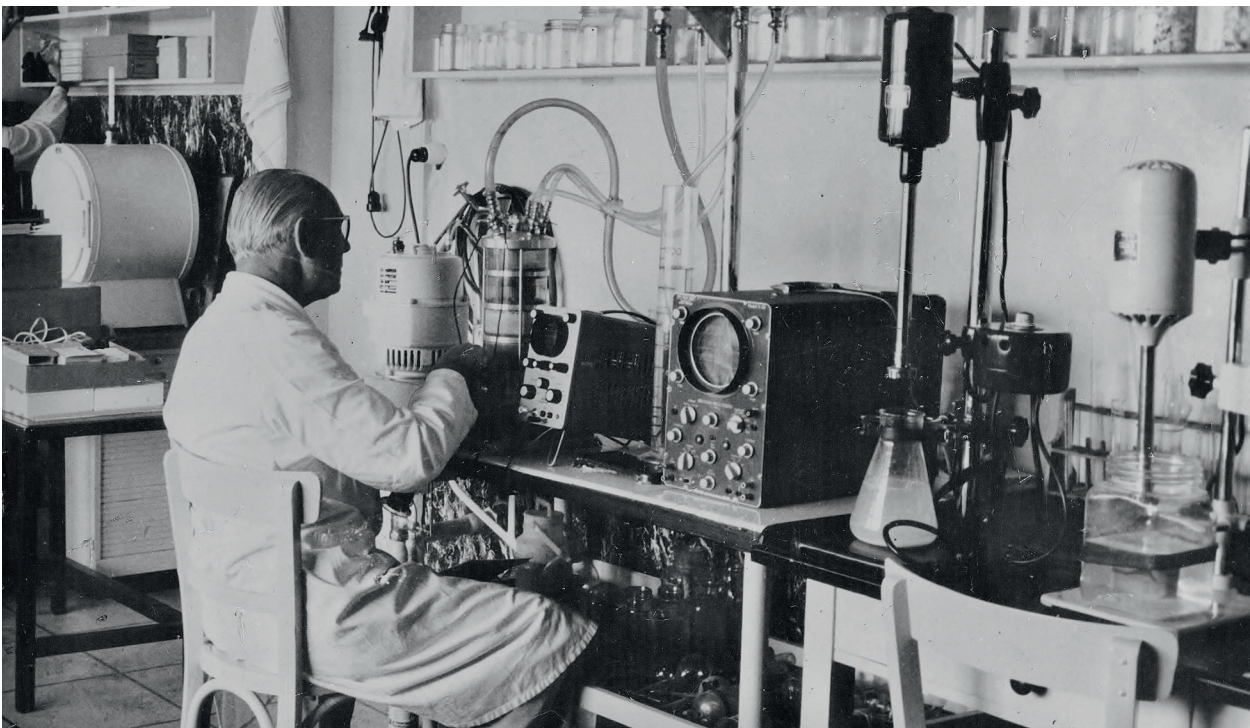
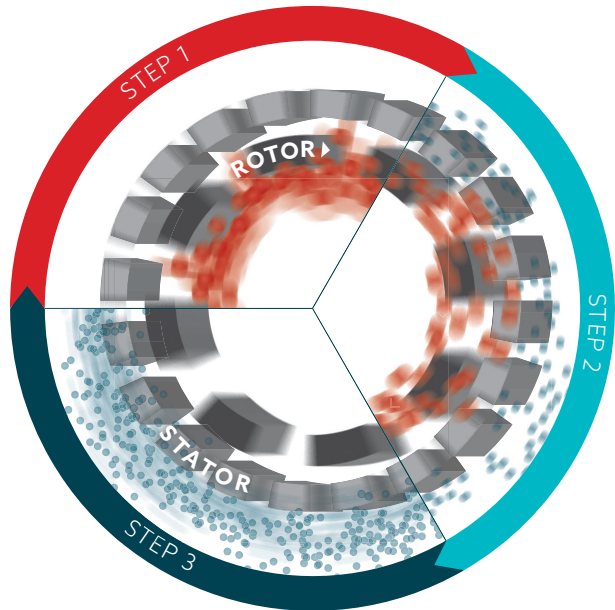
## THE PRINCIPLE

The spinning rotor generates a vacuum. The sample is drawn in and discharged to the outside through the stator's slots. Between the rotor / stator (shear gap), the product is subject to high deceleration-tangential and radial acceleration forces. The individual particles / droplets are torn apart and thus reduced in size; they are reduced several micrometers in size through additional cutting and crashing effects.

## THE RESULT

Microscopic dispersions, emulsions, suspensions, and foams are generated. Droplets, particles, and gas bubbles are reduced to several micrometers or smaller. Small and large substances are dispersed more economically, faster, and better than with any other system.

Your samples are efficiently «**POLYTRONIZED**».





# Aggregate Technology.

Unrivaled.

The high efficiency and the uniqueness of our POLYTRON® dispersing aggregate can only be achieved through superior manufacturing precision and the sophisticated Kinematica design method. This is 100 % Swiss Made.

## **STANDARD AGGREGATES (EC DESIGN WITH TWO GEAR RINGS)**

This is all you need for popular applications in the preparation of samples and formulation development. The cutting teeth embedded in the head of the tool optimize the pre-crushing of the sample. An enclosed ring design provides optimum protection for those teeth and prevents them from bending.

## **SPECIAL AGGREGATES (W, M, B, SYN, Z & X DESIGN)**

Specializations in the chemical, pharmaceutical, cosmetic, and food industry, as well as the life sciences, makes new designs inevitable. These aggregates are based on state-of-the-art technology and only available from Kinematica.

The highly specialized tool is subject to further development that involves close cooperation with our customers and universities. Thus, it is continuously perfected for specific applications.

## **MATERIALS**

Whether you need a tool with standard or special geometry, all aggregates are manufactured from high-alloy stainless steel 316L, electrolytically polished and made in Switzerland. Our synthetic aggregates (SYN) are manufactured from the highest quality materials available. This guarantees their application at a motor speed up to 30 000 rpm.

## **BEARINGS**

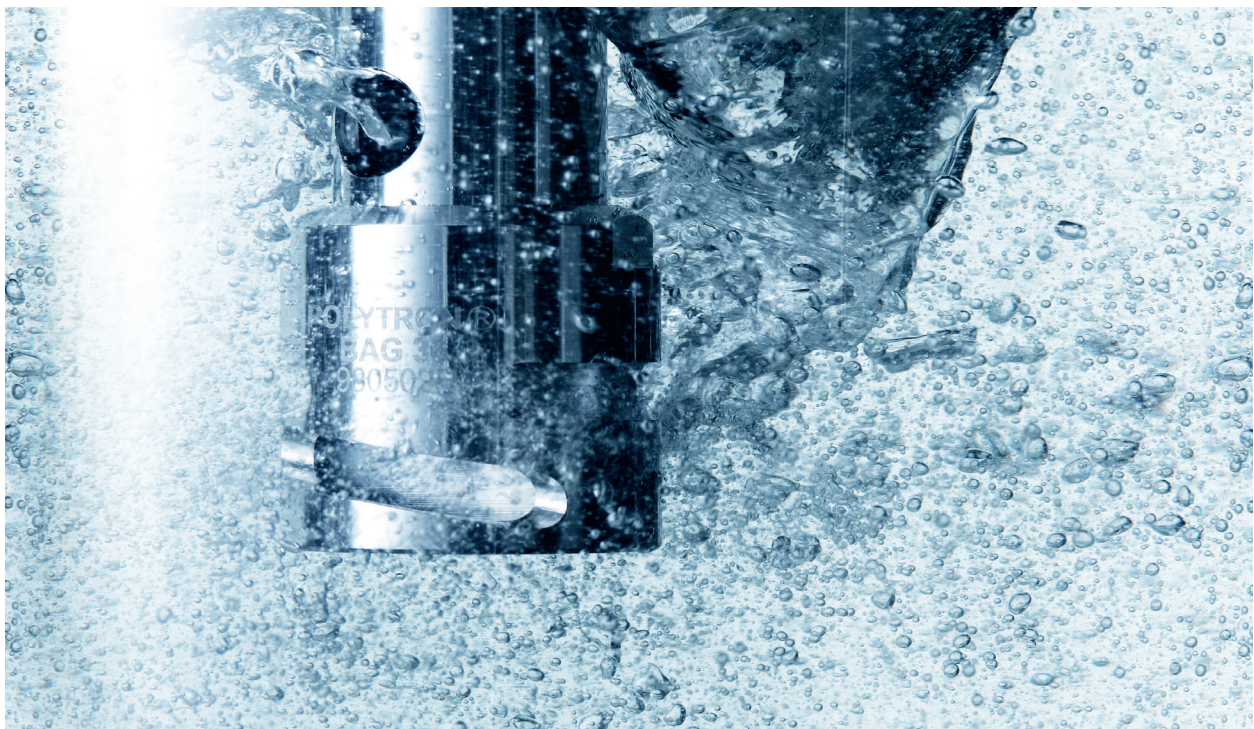
All dispersing aggregates for the PT 1300 D are equipped with high-quality synthetic bearings. They exhibit excellent mechanical properties and chemical resistance. They are all FDA approved.

## **CLEANING AND DISASSEMBLY**

EasyClean: Our technology ensures the simplest removal and fast cleaning, either by hand, dishwasher, or autoclave. Disassembling the precisely fitting components is simple and fast.

## **LOCKING SYSTEM**

All our POLYTRON® aggregates are fitted with a high-precision quick-release system: The Click & Go.



# Dispersing aggregates for PT 1300 D.

Your applications, our solution.

Kinematica aggregates solve all problems you are faced with every day in the laboratory. Using our Click & Go quick release makes the changing of aggregates very easy.



## EC «STANDARD DISPERSING AGGREGATE»

### Design

The universal geometry uses two rows of teeth, is suitable for a large spectrum of laboratory applications, and it is reliable and efficient.

### Selection and applications

- All standard dispersing tasks
- Grinding of animal and human tissue samples in a variety of fluids and volumes
- Sample preparation for the extraction and dissolution of organic materials
- Sample preparation for medical diagnostic procedures as well as DNA analysis
- Extractions of systems/substances from vegetable-derived samples
- Disruption of animal and human cells
- Deagglomeration of united cell structures
- Intensive mixing



## SYN «SYNTHETICS»

### Design

Disposable aggregates for the processing of multiple samples per day, where the required sterilization of stainless steel aggregates represents a significant time limitation. Available in PES/Special POM. Sterile packaging in packet sizes of 25 units each (ø 7 mm) and 10 units per packet (ø 12 mm) each.

### Selection and applications

- Prevention of X contamination
- All standard dispersing applications similar to EC aggregate



## B «BIOTRONA® HIGH-TURBULENCE MIXER»

### Design

High-turbulence mixing head with the least possible shear forces and energy inputs.

### Selection and applications

- Quick removal and suspension of solid particles; also suitable for high viscosity applications

Sales No.	Product	ø/length mm	Volume ml	max. Tip speed m/s
<b>EC «STANDARD DISPERSING AGGREGATE»</b>				
11030004	PT-DA 03 / 2EC-E050	3 / 50	0.05 – 2	3
11030012	PT-DA 05 / 2EC-E085	5 / 85	0.1 – 5	5
11030031	PT-DA 07 / 2EC-E107	7 / 107	0.3 – 10	7
11030062	PT-DA 12 / 2EC-E123	12 / 123	2 – 250	12
11030042	PT-DA 12 / 2EC-E157	12 / 157	2 – 250	12
<b>SYN «SYNTHETICS»</b>				
11030030	25 x PT-DA 07 / 2SYN-E082*	7 / 82	0.3 – 10	7
11030037	25 x PT-DA 07 / 2SYN-E082**	7 / 82	0.3 – 10	7
11030038	12 x PT-DA 07 / 2SYN-E082**	7 / 82	0.3 – 10	7
11030035	10 x PT-DA 12 / 2SYN-E126*	12 / 126	2 – 250	12
11030036	10 x PT-DA 12 / 2SYN-E126**	12 / 126	2 – 250	12
*Sterile pack / **Non-sterile pack				
<b>B «BIOTRONA® HIGH-TURBULENCE MIXER»</b>				
11030034	PT-DA 07 / BEC-E107	7 / 107	10 – 100	7
11030286	PT-DA 12 / BEC-E157	12 / 157	50 – 500	12

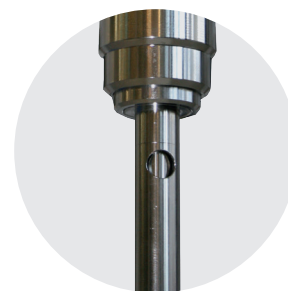




Step 1



Step 2



Step 3



#### M «OUTSIDE CUTTING BLADES»

##### Design

Outside blades pre-cut samples that are larger than the rotors diameter. Subsequently, they can be dispersed inside the generator.

##### Selection and applications

- Dispersing of large samples made simple
- All standard dispersing applications similar to EC aggregate



#### Z «Z-DESIGN»

##### Design

Breaking up of hard probes, with integrated V-notch technology. Additional, integrated holes for cleaning.

##### Selection and applications

- Hard and brittle material
- Sweet corn and grain
- Breaking, opening and dispersing of pills
- Breaking, hard grains



#### W «W-DESIGN»

##### Design

The W-design prevents fibrous, stringy or solid samples from clogging the rotor / stator.

##### Selection and applications

- Dispersing fibrous, stringy or solid samples (e.g., pieces of meat)
- All standard dispersing applications similar to EC aggregate



#### X «X-DESIGN»

##### Design

A special geometry designed for dispersing tablets and pills or for preventing suppositories from clogging or agglutinating.

##### Selection and applications

- Ultrafast crushing of tablets, coated pills, and suppositories
- Basis for the analysis of active pharmaceutical ingredients (APIs)
- Used in the substance analysis or for the quality control during the production of tablets

Sales No.	Product	ø / length mm	Volume ml	max. Tip speed m/s
<b>M «OUTSIDE CUTTING BLADES»</b>				
11030266	PT-DA 12 / 2MEC-E157	12 / 157	2 – 250	14
<b>Z «Z-DESIGN»</b>				
11030067	PT-DA 12 / 2ZMEC-E157*	12 / 157	2 – 250	12
* Z-Design aggregate with knives				
<b>W «W-DESIGN»</b>				
11030060	PT-DA 12 / 2WEC-E157	12 / 157	2 – 250	14
<b>X «X-DESIGN»</b>				
11030255	PT-DA 20 / 2XEC-E116	20 / 116	min. 10*	21
*When using a vessel ø 22 mm / volume is always dependent on the diameter of the vessel				

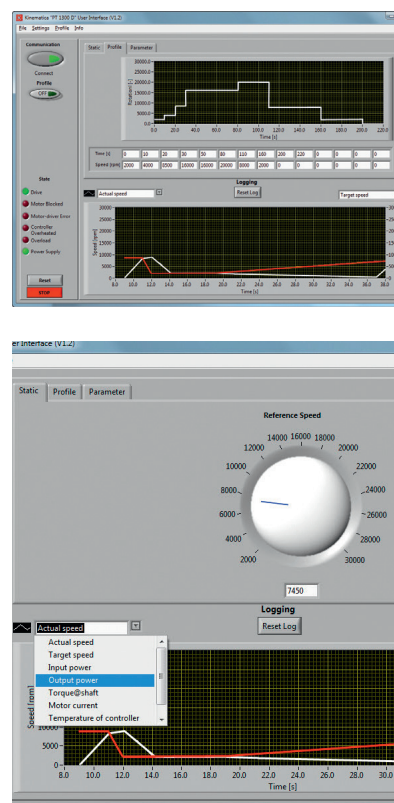
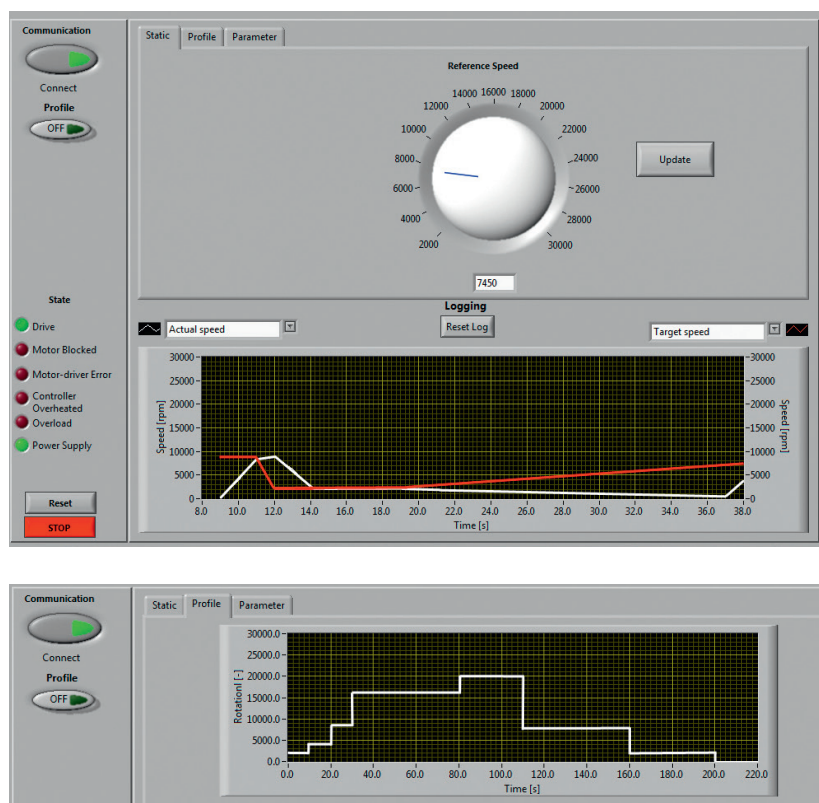




# PC control software.

«User Interface» for the PT 1300 D.

The free-of-charge software «User Interface PT 1300 D» was developed for the operation and control of the laboratory dispersing system POLYTRON® PT 1300 D. A USB or RS232 interface provides the communication with the computer. The data transmission protocol complies with the Modbus specifications.



- By using a virtual rotary knob, the motor speed can be varied manually (remote control)
- Randomly programmable rotational speed / time profile
- Graphic display of the parameter in the time diagram
- Option to record data in MS Excel
- Status information about the condition of the device

## SYSTEM REQUIREMENTS:

Operating system: Windows® XP / 7 / 8 / 10  
 Required interfaces: 1 x USB or 1 x RS-232



# Order information and accessories

Authorized extension of your system.

Depending on your specific requirements, it is possible to expand the PT 1300 D drive with our functional accessories. Our expert personnel will be happy to assist you and answer all the questions you might have.

## DRIVES

Sales No.	Product	Description
<b>Drive Unit and control module</b>		
11010030	PT 1300 D, 230 V	EU-power cable, PC software, USB connection cable and aggregate bracket
11010031	PT 1300 D, 230 V	CH-power cable, PC software, USB connection cable and aggregate bracket
11010039	PT 1300 D, 230 V	UK-power cable, PC software, USB connection cable and aggregate bracket
11010032	PT 1300 D, 100 – 120 V	Power cable, PC software, USB connection cable and aggregate bracket
<b>Drive Unit and control module as sales unit with support bracket and accessories</b>		
11090064	PT 1300 D, 230 V, Package	EU, complete package with drive unit, EU-power cable, aggregate bracket, Stand with base ST-P 15/320 and PC software with USB connection cable
11090065	PT 1300 D, 230 V, Package	CH, complete package with drive unit, CH-power cable, aggregate bracket, Stand with base ST-P 15/320 and PC software with USB connection cable
11090066	PT 1300 D, 230 V, Package	UK, complete package with drive unit, UK-power cable, aggregate bracket, Stand with base ST-P 15/320 and PC software with USB connection cable
11090067	PT 1300 D, 100 – 120 V, Package	complete package with drive unit, network cable, aggregate bracket, Stand with base ST-P 15/320 and PC software with USB connection cable
11090060	PT 1300 D, 230 V, Package	EU, complete with drive, network cable, and aggregate bracket, Stand with base ST-P 01/200 and PC software with USB connection cable
11090061	PT 1300 D, 230 V, Package	CH, complete with drive, network cable, and aggregate bracket, Stand with base ST-P 01/200 and PC software with USB connection cable
11090063	PT 1300 D, 230 V, Package	UK, complete with drive, network cable, and aggregate bracket, Stand with base ST-P 01/200 and PC software with USB connection cable
11090062	PT 1300 D, 100 – 120 V, Package	complete with drive, network cable, and aggregate bracket, Stand with base ST-P 01/200 and PC software with USB connection cable



## STANDS

Sales No.	Product	Description
11040013	ST-P 15 / 320	Stainless steel stand with base, height-adjustable bracket for supporting the drive and base mounting. Weight: 1.00 kg
11040012	ST-P 01 / 200	Stainless steel hinge stand (gas spring) and base mounting. The drive support can be rotated in any direction. It can be raised or lowered. Weight: 3.60 kg
11040011	ST-P 22 / 600	Plate stand with two support rods. Optional: Vessel holder with boss head clamp (11045011), Safety ring (11045031), Weight: 4.00 kg



## USING THE RIGHT DISPERSING VESSEL

The proper selection of the dispersing aggregate is crucial for the result of your application. Choosing the right process vessel makes all the difference how quickly and effective results can be produced. Our specially developed GD glasses in their typical cloverleaf shape break the flow of the product. This increases the turbulences inside the vessel, thus reducing the processing time significantly.

You may select from a variety of vessels made of borosilicate glass; with or without lid, with sealed feedthrough or with different processing volumes. Our borosilicate glass dispersing vessels are made of highly chemical- and temperature-resistant and resilient glass. It is mainly used in laboratories and where ever chemical processes are applied.

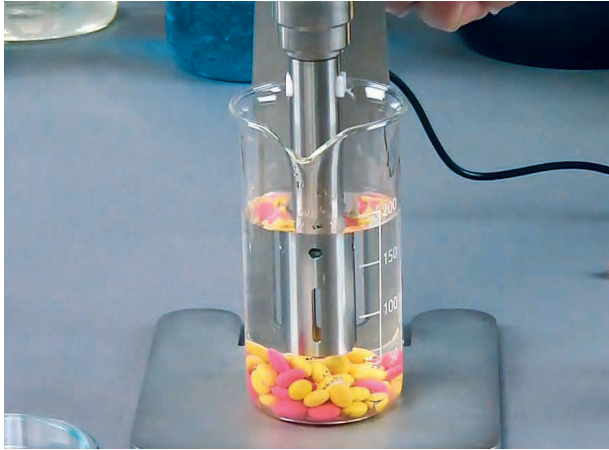
Sales No.	Product	Ø/H (mm)	Process volume	Thickness	Thread	Description
Open on top						
11051010	GS 15	30/100	35ml	2.8mm	-	-
11051011	GS 25	54/150	150ml	3.5mm	-	-
With screw cap and sealing						
11051020	GS 15K	30/100	35ml	2.8mm	GL25	-
11051021	GS 25K	54/150	150ml	3.5mm	GL45	-
Incl. cover with sealing and hole						
11051030	GS 15KL08	30/100	35ml	2.8mm	GL25	8mm hole
11051031	GS 15KL12	30/100	35ml	2.8mm	GL25	12mm hole
11051040	GS 25KL12	54/150	150ml	3.5mm	GL45	12mm hole
11051041	GS 25KL20	54/150	150ml	3.5mm	GL45	20mm hole



# Users / application ranges.

Best solution for every application.

Since 1962 we are a leading supplier of dispersing solutions for applications in the chemical, biotechnology, pharmaceutical, cosmetics and food industries. Due to our close relationships with our customers we detect new trends early and we always look for ways to find an ideal solution for you.





# Our mission. Your solution.

Homogenizing perfected: for every industry.

Kinematica's broad portfolio of solutions can address almost every dispersing application for the pharmaceutical, cosmetic, chemical, food and life science industry. Innovative powder-induction systems, solutions for completely sterile environments, or fully-compliant ATEX architecture are just some examples of the broad portfolio that Kinematica can offer with true scalability from pilot-plant to large plant configurations.

Our state-of-the-art technology, in addition to a professional consulting and engineering suite of services, can address a variety of processes such as blending / mixing / stirring, emulsifying, deagglomerating, foaming, crushing and homogenizing with particle size reduction from a few micrometers down to nanometers in size: the proprietary design and innovative geometry of our aggregates / generators can downsize and provide perfect statistical particle distribution for the finest emulsions / suspensions and foam dispersions.



## HEADQUARTERS

### Kinematica AG

Luzernerstrasse 147a  
CH-6014 Luzern  
Switzerland

Phone +41 41 259 65 65

Fax +41 41 259 65 75

[info@kinematica.ch](mailto:info@kinematica.ch)

[kinematica.ch](http://kinematica.ch)

## EUROPE

**Kinematica GmbH** / Germany / Phone +49 7634 504 800 0 / [info@kinematica.de](mailto:info@kinematica.de)

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## NORTH AND SOUTH AMERICA

**Kinematica, Inc.** / USA / Phone +1 631 750 6653 / [info@kinematica-inc.com](mailto:info@kinematica-inc.com)

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## RUSSIA AND CIS

**Kinematica AG** / Switzerland / Phone +41 41 259 65 65 / [info@kinematica.ch](mailto:info@kinematica.ch)

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## GREATER CHINA

**Kinematica Asia Limited** / Hong Kong / Phone +852 249 769 65 / [info@kinematica.ch](mailto:info@kinematica.ch)



**PHARMA**



**CHEMICAL**



**COSMETICS**



**FOOD**



**LIFE SCIENCE**