

YOUR APPLICATION IS OUR FOCUS!

KINEMATICA is a leading manufacturer of dispersing and mixing technology for standard and customized applications in the lab, pilot plant and production areas of pharmaceutical, chemical, food, cosmetic and biotech or life science companies worldwide.

Our POLYTRON® batch and MEGATRON® In-line Homogenizers are suitable for many applications:

- Dispersing of non-soluble liquids or solids into liquids to finest emulsions/multiple emulsions or suspensions
- Induction and dispersion of powders into liquids
- Foaming by gas induction into liquids
- Disintegration of tissue samples for preparation in further analysis
- Dispersing of various samples for quality control

We also deliver POLYMIX® Micro Dry Grinding Mills and a variety of POLYMIX® and MICROTRON® Overhead Stirrers and Mixers.

Whatever your application, we are confident that our team of specialists, with over 60 years of experience, will provide the best solution for you.

YOUR SATISFACTION IS OUR GOAL!



KINEMATICA
DISPERSING AND MIXING TECHNOLOGY



PT_2500E_eng_03/2013, Technical changes and mistakes reserve

BRAND NAMES WITH HISTORY



Batch dispersing/homogenizing units



High turbulent mixing



Inline dispersing/homogenizing units



Dispersing/homogenizing Reactors



Stirrers and dry Mills



Mixer/Blender



Viscometers



POLYTRON® PT 2500 E



Stand Dispersing Device (Ecoline)

DISPERSING DEVICES FOR BUDGET-CONSCIOUS LABS

For a variety of applications

« Process volumes from 0.05 to 2,500 ml »



KINEMATICA
DISPERSING AND MIXING TECHNOLOGY

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POLYTRON® - Efficient and Economical

Users / Application ranges

The sleek, sound-insulated casing conceals enough power to safely and quickly handle a variety of applications. Our broad range of dispersing aggregates cover the range from preparing samples to testing product formulas and recipes.

TECHNICAL INFORMATION

Processing volume (water)
0.05 up to 2,500 ml

Tip speed
Up to max. 26 m/s

Applicable aggregates
ø 3 mm to ø 25 mm

Speed range
500 to 30,000 rpm

Drive coupling
Aggregates with E coupling

Noise level (drive without aggregate)
66 dB(A) at 25,000 rpm
72 dB(A) at 30,000 rpm

Motor
Universal with carbon brushes

Drive power
500W

Connection voltage
90 - 230 V ± 10%, 50Hz / 60Hz

Relative humidity (max.)
80% during storage
80% during operation

Operating temperature
0 - 40 °C

Protection class acc. to DIN
IP 20

Dimensions (L x W x H)
Drive: 157 x 76 x 236 mm

Weight
Drive: 1800 g

EMC standards
IEC/EN 61000-6-2 / EN 61000-6-3

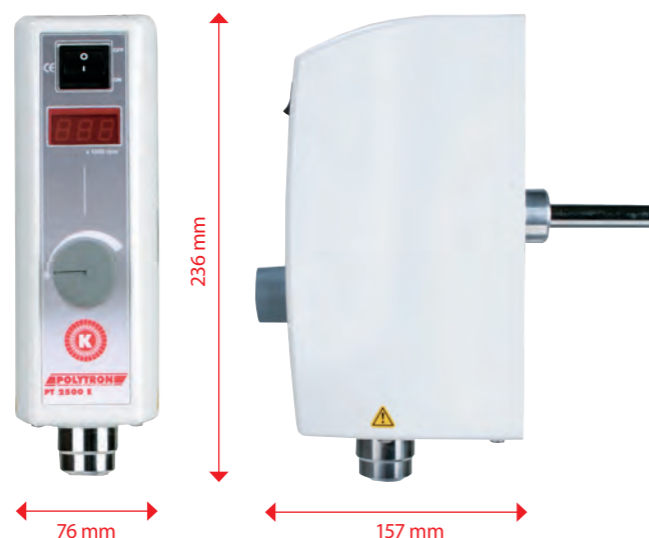
Safety standard
IEC/EN 61010-2-51

THE EXPERT FOR YOUR LABORATORY

For more than 60 years, we have been 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, chemical systems. Depending on the type of sample, they link with liquids, forming the smallest homogeneous emulsions, dispersions or suspensions. This is the best foundation for all subsequent analyses or the implementation of formulation your laboratory can provide to your R&D centre or production facility.

ERGONOMICS:

- Easy operation with an on-off switch and speed control
- Intelligent variable speed control for long equipment life
- Speed stability even with changes in viscosity
- Easy adjustment of motor height
- Switch aggregate quickly with Click & Go coupling
- Easy aggregate clean-up with EasyClean Design



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 a in cooperation with the users

CLEANING AND DISASSEMBLY
EasyClean Design makes it very simple

QUICK ENGAGEMENT 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



General homogenizer applications

Dispersions, suspensions, and emulsions

Dispersing plant, human or animal tissues, resins and pigments

Comminution of animal and human tissue samples in various liquids and volumes

Dissolving solids

Preparation of samples for quality assurance/control

Breakdown of animal and plant cells

Formulation of lotions, creams and foodstuffs

Extraction of active pharmaceutical ingredients (API) in pills and tablets

This list provides a small selection of possible applications.



Kinematic dispersion using the rotor/stator system

Who is the founder 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.

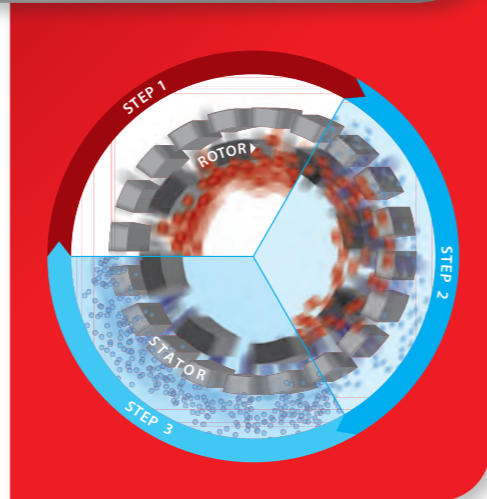
THE PRINCIPLE:

The spinning rotor generates a vacuum. The dispersing 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 homogenized 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 make 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, G, SYN, X DESIGN)

Specializations in the chemical, pharmaceutical, cosmetic, and food industry, as well as the life science branch, 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 constant further development that involves close cooperation with our customers and universities. Thus, it is continuously perfected for daily application.

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 2500 E are equipped with high-quality synthetic plain 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 2500 E

Your applications, our response

KINEMATICA aggregates solve all problems you are faced with during every day at 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

Sales No.:	Description	ø/length mm	Volume ml	max. Tip speed m/s
11030004	PT-DA 03/2EC-E050	3 / 50	0.05 - 2	2
11030012	PT-DA 05/2EC-E085	5 / 85	0.1 - 5	5
11030031	PT-DA 07/2EC-E107	7 / 107	0.3 - 10	8
11030062	PT-DA 12/2EC-E123	12 / 123	2 - 250	14
11030042	PT-DA 12/2EC-E157	12 / 157	2 - 250	14
11030069	PT-DA 20/2EC-E192	12 / 192	100 - 2'000	21
11030273	PT-DA 20/2EC-E192	20 / 192	100 - 2'000	21
11030264	PT-DA 25/2EC-E192	25 / 192	100 - 2'500	26
11030265	PT-DA 25/2FEC-E192*	25 / 192	100 - 2'500	26

* F Model: For medium to fine particle/droplet sizes

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 (ø7 mm) and 10 units per packet (ø12 mm) each

Selection and applications
– Prevention of X contamination
– All standard dispersing applications similar to EC aggregate

Sales No.:	Description	ø/length mm	Volume ml	max. Tip speed m/s
11030030	PT-DA 07/2SYN-E082	7 / 82	0.3 - 10	8
11030287	PT-DA 12/2SYN-E123	12 / 123	2 - 250	14

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.:	Description	ø/length mm	Volume ml	max. Tip speed m/s
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

M «OUTSIDE CUTTING BLADES»

Design
Outside blades pre-crush samples that are larger than the rotor's diameter. Subsequently, they are just dispersed inside the generator

Selection and applications
– Dispersing of large samples made simple
– All standard dispersing applications similar to EC aggregate



Sales No.:	Description	ø/length mm	Volume ml	max. Tip speed m/s
11030266	PT-DA 12/2MEC-E157	12 / 157	2 - 250	14
11030263	PT-DA 20/2MEC-E192	20 / 192	100 - 2'000	21
11030293	PT-DA 25/2MEC-E192	20 / 192	100 - 2'500	26

G «GAS TIGHT»

Design
Integrated mechanical seals

Selection and applications
– Under pressure or vacuum
– Preventing air from being added to emulsions
– Aggressive acid mixtures



Sales No.:	Description	ø/length mm	Volume ml	max. Tip speed m/s
11030273	PT-DA 20/2G-E210	12 / 157	100 - 2'000	21

W «W-DESIGN»

Design
The W design prevents fibrous, stringy or solid samples from clogging the aggregate

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



Sales No.:	Description	ø/length mm	Volume ml	max. Tip speed m/s
11030060	PT-DA 12/2WEC-E157	12 / 157	2 - 250	14
11030258	PT-DA 20/2WEC-E192	20 / 192	100 - 2'000	21
11030290	PT-DA 20/2WG-E210*	20 / 210	100 - 2'000	21
11030260	PT-DA 25/2WEC-E192	25 / 210	100 - 2'500	26

* W-design aggregate in gas-tight model

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.:	Description	ø/length mm	Volume ml	max. Tip speed m/s
11030034	PT-DA 07/BEC-E107	7 / 107	10 - 100	8
11030086	PT-DA 12/BEC-E157	12 / 157	50 - 500	14
11030288	PT-DA 20/BEC-E192	20 / 192	100 - 2'000	21
11030289	PT-DA 20/BG-E210*	20 / 210	100 - 2'000	21
11030291	PT-DA 25/BEC-E192	25 / 192	200 - 2'500	26
11030292	PT-DA 25/BG-E210*	25 / 210	200 - 2'500	26

* BIOTRONA® aggregate in gas-tight model

Dispersing vessels

Choosing the right dispersing aggregate is crucial for good results. The right vessel also helps contribute to achieving the desired results.

THE PROBLEM

For normal cylindrical dispersing jars, the flow creates a vortex. The mixing and dispersing efficiency decreases considerably since the product is no longer being optimally processed through the dispersing generator head. This lengthens processing times and thus requiring more energy input. Depending on the shape of the vortex, this may also lead to additional air being introduced.

THE SOLUTION

Our specially designed GS jars have a cloverleaf-like shape. This effectively interrupts the flow in the radial direction and generates additional counteracting forces. These high turbulences maximize the mixing and dispersion efficiency, thus minimizing processing time and requiring less energy.

THE SELECTION

Our GS-glasses are available in chemical- and temperature-resistant borosilicate glass or in stainless steel. Dimensions from a few milliliters to several liters are available, with or without lid, with or without sealed feedthrough.



GS vessel principle (viewed from above)



THE RIGHT DISPERSING VESSEL



Designation	Sales no.:	Ø / H (mm)	Process volume	Model	
GS 15	11050010	30 / 150	35 ml	Cloverleaf-shaped Borosilicate glass	top open without cover
GS 25	11050011	55 / 150	150 ml		
GS 40	11050012	80 / 200	500 ml		
GS 50	11050013	90 / 250	1000 ml		
GS 60	11050014	100 / 300	1300 ml		
GS 15 K	11050020	30 / 150	35 ml		
GS 25 K	11050021	55 / 150	150 ml		
GS 40 K	11050022	80 / 200	500 ml		
GS 50 K	11050023	90 / 250	1000 ml		
GS 60 K	11050024	100 / 300	1300 ml		
GS 15 KL 7.5	11050030	30 / 150	35 ml	with screw cover and sealed feedthrough 7.5, 12, 20 mm glass inlet (as above)	
GS 25 KL 12	11050031	55 / 150	150 ml		
GS 25 KL 20	11050032	55 / 150	150 ml		
GS 40 KL 25	11050034	80 / 200	500 ml		
GS 50 KL 25	11050036	90 / 250	1000 ml		
GS 60 KL 25	11050038	100 / 300	1300 ml		
GS 100 Z	11050060	100 / 150	900 ml	Cylindrical Stainless steel	open top without lid
GS 130 Z	11050061	125 / 170	2000 ml		

Order information and accessories

Depending on your specific requirements, it is possible to expand the PT 2500 E drive with our functional accessories. Our expert personnel will be happy to assist you and answer all the questions you might have.

ADAPTER

Adapters for use with dispersing aggregate with D coupling

Sales No.:	Designation
1103500	Adapter PT-DA / PT-DA (E/D)

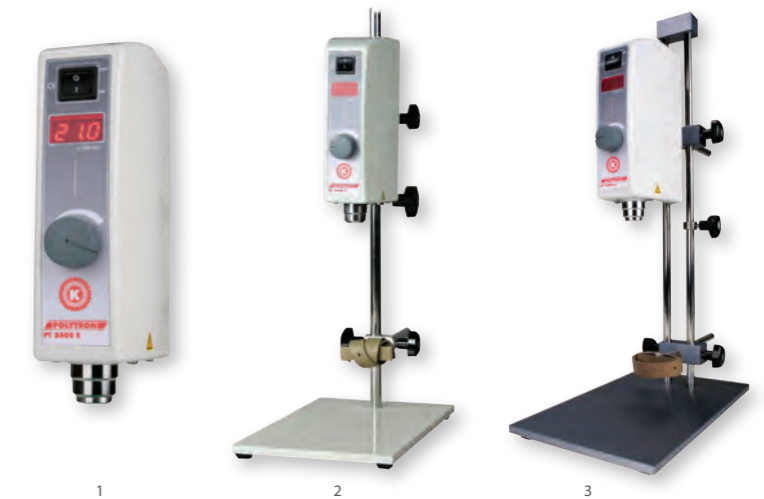
Description

This adapter connects older D-coupling dispersing aggregates such as PT 2100 with this PT 2500 E motor (with E-coupling).



DRIVES / COMPLETE SYSTEMS

Sales No.:	Figure	Designation
Motor		
11010055	1	POLYTRON® PT 2500 E, 230 V / EU unit cable
11010056	1	POLYTRON® PT 2500 E, 230 V / CH unit cable
11010057	1	POLYTRON® PT 2500 E, 230 V / UK unit cable
11010058	1	POLYTRON® PT 2500 E, 100-120 V / unit cable
Motor is sold with stand and accessories		
11090101	2	PT 2500 E, 230 V, EU unit cable, stand ST-P11/600 with vessel holder and safety ring
11090102	2	PT 2500 E, 230 V, CH unit cable, stand ST-P11/600 with vessel holder and safety ring
11090103	2	PT 2500 E, 230 V, GB unit cable, stand ST-P11/600 with vessel holder and safety ring
11090104	2	PT 2500 E, 100-120 V, unit cable, stand ST-P11/600 with vessel holder and safety ring
11090105	3	PT 2500 E, 230 V, EU unit cable, stand ST-P20/600 with vessel holder and safety ring
11090106	3	PT 2500 E, 230 V, CH unit cable, stand ST-P20/600 with vessel holder and safety ring
11090107	3	PT 2500 E, 230 V, GB unit cable, stand ST-P20/600 with vessel holder and safety ring
11090108	3	PT 2500 E, 100-120 V, unit cable, stand ST-P20/600 with vessel holder and safety ring



STANDS

Figure	1	2	3	4	4	4	4
Sales no.:	11040015	11040051	11040020	11040033	11040036	11040037	11040034
Designation	ST-P11/600	ST-P20/600	ST-F20/600	ST-P 14/590+500, 230 V (EU-plug)	ST-P 14/590+500, 230 V (CH-plug)	ST-P 14/590+500, 230 V (UK-plug)	ST-P 14/590+500, 100-120 V
Description	Plate stand with one support rod. The motor's height and horizontal position can be adjusted.	Plate stand with two support rods. The motor's height can be adjusted. For more security, the motor cannot be adjusted horizontally.	H-foot stand with two support rods. Maximum stability. The motor's height can be adjusted. For more security, the motor cannot be adjusted horizontally.	Electric plate stand with lifting telescopic bar for more ease of use. Incl. up/down button and mat to prevent slipping.	The electronics are designed for ambient temperatures of +5°C to +40°C and were tested per EN 60335-1 and UL 962.		



STAND ACCESSORIES

Sales no.:	Designation	Description
11045010	Vessel holder with boss head clamp for ST-P11/600	Vessel holder for fixing any mixing vessels. Fits safety stand incl. boss head
11045030	Safety ring for stand ST-P11/600	The safety ring prevents uncontrolled lowering of the motor. Can also be used to fixing the motor height
11045011	Vessel holder with boss head clamp for ST-P20/600 & ST-F20/600	
11045031	Safety ring for stand ST-P20/600 & ST-F20/600	
11036005	Vessel holder with guide for ST-P 14/590+500	
11036001	Extension rod	Short extension rod for PT 2500 E. Required for use with the ST-P 14/590+500 telescopic stand