

# PT 6100 D

*Digital High-End  
Benchtop  
Homogenizer  
with PC interface*

*Homogenizing  
and Mixing Tech-  
nology for  
the Laboratory*

**DISPERSING**

**HOMOGENIZING**

**EMULSIFYING**

**SUSPENDING**

**WET MILLING**

**MIXING**



**KINEMATICA.CH**

Dispensing and Mixing Technology

The new designed **POLYTRON® PT 6100 D** benchtop lab homogenizer is the successor of the well-known PT 6100. The **PT 6100 D** is equipped with a completely new regulation and control system and a new designed user interface with keyboard and informational LCD display. A standard port for PC-connection together with the new free-to-use **KINEMATICA** software for automatic control and a connection port for a temperature probe the new **PT 6100 D** is the most advanced benchtop lab homogenizer and a worthy successor of the PT 6100.

## Further outstanding features:

- 60 % more power with rated power 1700 Watt
- Integrated overheating, overload, blocking protection
- Integrated digital speed controller with closed loop - constant speed independent from load changes
- Variable speed up to 26'500 rpm and tip speeds up to approx. 50 m/s (depending on the chosen dispersing generator and product properties)
- Informational digital display for different process parameters, messages, etc.
- Three different operation modes: standard mode, time mode, automatic mode
- Quiet drive system approx. 82 dB (A) (without load, at 26'500 rpm)
- Quick coupling for low noise operation, existing dispersing aggregates from PT 6100 line applicable
- Great choice of dispersing aggregates for different applications and working volumes from 0.05 ml up to 30'000 ml

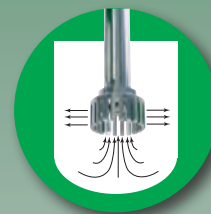
## Principle of process



Rotor / Stator Prinzip



POLYTRON® Batch Prinzip



The Rotor/Stator principle for dispersing and homogenizing equipment, originally invented by KINEMATICA, has become the worldwide accepted standard for homogenizing and dispersing a solid or fluid or gaseous phase into a fluid phase.

The dispersing aggregates of the **POLYTRON®** and **BIOTRONA®** batch dispersing systems are directly immersed into the medium.

The product will be processed by the rotor/stator dispersing generator at the tip of the dispersing aggregate.

**POLYTRON®** Rotor/Stator homogenizers successfully process emulsions, suspensions and foams by reducing the size of solid particles, droplets and gas bubbles to a few microns or less. Small and large amounts of product are being dispersed in a more economical, faster and better way than with any other device.

## Technical Data



Motor power, type	1700 W (input) / 1250 W (output)
Speed control	Integrierte digitale Drehzahlsteuerung integrated digital speed controller with closed loop - constant speed independent from load changes; user interface with LCD and keyboard
Soft Start	Yes
Supply Voltage	230V / 100-120V, 50 / 60 Hz
Speed at Dispersing Rotor max.	26'500 rpm
Noise emission (w/o load)	82 dB (A) at 26'500 rpm
Ambient temperature / Relative humidity	0 - 40°C, 95% max.
Standards	Manufactured acc. to EN / IEC 61010, 61326-1 for EMC & SAFETY
Protection class	IP 20
Dimensions (drive only)	360 x 164 x 313 mm (LxWxH)
Weight (drive only)	7.0 kg



### Power drive unit

- Rated Power: 1700 W
- Speeds up to 26'500 rpm
- Low noise level  $\leq 82$  dB(A) (drive only, at 26'500 rpm)
- Integrated digital speed controller with closed loop – constant speed independent from load changes, accuracy at 1% (FS)

### Safety

- Integrated overheating, overload and blocking protection with message on display and acoustic signal
- Designed and proofed according to safety & EMC standards for laboratory equipment IEC/EN 61010-2-51 / 61326-1

### User Interface

- New user interface with informational LCD display and keyboard for speed adjustment, programming and monitoring
- Start / Stop push buttons
- Push button for viewing drive & process parameters on the display:
  - Set/Target speed [TS, rpm]
  - Actual speed [AS, rpm]
  - Power consumption [Pin, W]
  - Power at the shaft [Pout, W]
  - Torque at the shaft [M, Ncm]
  - Motor current [I, A]
  - Voltage at mains supply [U, V]
  - Product temperature (temperature at plugged in Pt100 probe) [TP, °C]
  - Temperature of internal digital control system [Tc, °C]
  - Counter total operating time [Oh, h]

### Operation Modes

- Three different operation modes can be chosen:
- STANDARD-MODE for manual operation
- TIMER-MODE for automatic speed / time operation and shut down
- AUTO-MODE for remote operation using a Windows® PC with the provided User-Interface Software (see further below) with possibility of data logging into EXCEL®-sheets

### Extended features

- PC Software and PC connecting cable are in the scope of supply
- Possibility to plug in a Pt100 temperature probe (optional) at the backside and using the display as temperature indication
- Memory Function: The last entered speed and time value will be saved after turning off

### Quick Coupling

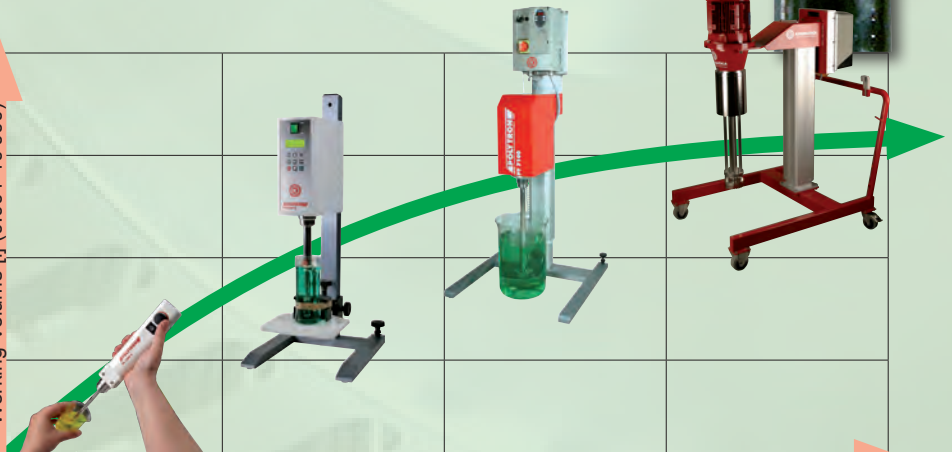
- New quick coupling (type F) for easy, fast and safe coupling of POLYTRON® dispersing aggregates
- The new quick coupling is optimized for low-noise operation
- Existing dispersing aggregates from previous PT 6100 line applicable
- Existing dispersing aggregates from previous line applicable using the PT-DA / PTA adapter



### Scale-Up

- The POLYTRON® PT 6100 D is a medium sized lab benchtop homogenizer suitable for working volumes up to 10 liters .
- KINEMATICA offers a complete series of batch working homogenizers suitable for volumes from 0.05 ml up to 30'000 liters.
- The test results obtained with the laboratory unit PT 6100 D can be used as a reliable data source for a scale-up step to the larger POLYTRON® pilot plant and production machines.

Working Volume [l] (0.001-10'000)



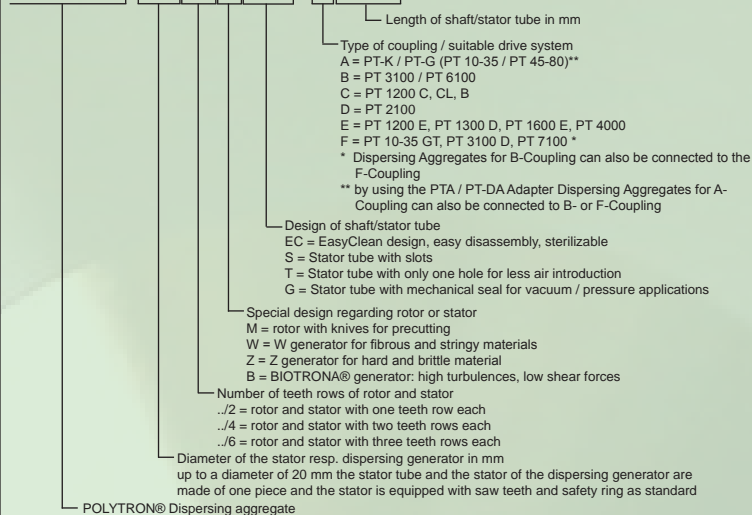
Size of POLYTRON® Batch Homogenizer



# POLYTRON® Dispersing Aggregates

## Nomenclature of Dispersing Aggregates

PT-DA 30/2ZEC-B250



## Simple and safe cleaning

POLYTRON® dispersing aggregates are available as EC (Easy Clean) aggregates as standard. In this design, a combination of two slide bearings made of high quality plastic with excellent mechanical properties and best chemical resistance or a combination of a slide bearing (tungsten carbide/bronze) with a high performance stainless steel ball bearing is used. POLYTRON® dispersing aggregates in the EC version can be disassembled in a few steps, are easily cleaned or can be sterilized / autoclaved by any standard method.

## Dispersing Generator - at the head of a POLYTRON® Dispersing Aggregate

POLYTRON® dispersing generators (consisting of a rotor and a stator) are mounted at the head of a dispersing aggregate and are available in many designs, geometries and sizes. Next to single (./2.. - meaning rotor and stator with one teeth row each) and multiple teeth rows (./4.. - two teeth rows each, ./6.. - three teeth rows each) for different achievable size distributions, a variety of special designs and geometries can be chosen to get the best result for the desired application.

## POLYTRON® Dispersing Aggregates - unrivalled

Up to the present the efficiency of POLYTRON® dispersing aggregates remain unequalled. Thanks to the optimized shear forces and bounce effects (mechanical forces) the processed medium will be treated at **finest level** in **shortest time**. The optimal aggregate for the dispersing application can be chosen from **over 40 different**, interchangeable POLYTRON® dispersing aggregates. POLYTRON® dispersing aggregates for the PT 6100 D have shafts with **double bearings** as standard and are made from **high quality stainless steel** (1.4435, V4A, 316L). Dispersing aggregates up to a diameter of 20 mm have **additional saw teeth** and a **safety ring** to protect the teeth from bending also at highest load like hard samples. For specific applications KINEMATICA offers customer tailored solutions. Elaborated rotor/stator geometries are a **speciality of KINEMATICA**.

## Dispersing Aggregates for system PT 6100 D

For the system POLYTRON® PT 6100 D basically all dispersing aggregates from system POLYTRON® PT 6100 D and Pt 6100 can be adapted. Below please find a choice of the most common used dispersing aggregates. With the optional available PT-DA/PTA-Adapter it is also possible to use all existing dispersing aggregates of the system POLYTRON® PT 10-35 (PT-K) and PT 45-80 (PT-G). Other sizes, geometries, materials, coatings on request.

## Dispersing Aggregates (selection)

Model	PT-DA 30/2ZEC-B250	PT-DA 30/4 TiN EC-B250	PT-DA 36/2WEC-B250	PT-DA 36/4G-B273	PT-DA 45/BEC-B50	PT-DA 45/2EC-B250
	<ul style="list-style-type: none"> <li>special Z-Generator</li> <li>rotor/stator with one teeth row each</li> </ul>	<ul style="list-style-type: none"> <li>special generator titan-nitrated</li> <li>rotor/stator with two teeth rows each</li> </ul>	<ul style="list-style-type: none"> <li>special W-Generator</li> <li>rotor/stator with one teeth row each</li> </ul>	<ul style="list-style-type: none"> <li>special G-Generator with mechanical seal</li> <li>rotor/stator with three teeth rows each</li> </ul>	<ul style="list-style-type: none"> <li>BIOTRONA® Generator</li> <li>blade rotor and stator with inclined slots</li> </ul>	<ul style="list-style-type: none"> <li>standard generator</li> <li>rotor/stator with one teeth row each</li> </ul>
Ident-No.	11030112	auf Anfrage	11030141	11030148	12030031	11030197
Tip Speed (max)	29 m/s	30 m/s	30 m/s	28 m/s	40 m/s	40 m/s
Working Volume (based upon water)	100 - 4000 ml	200 - 4000 ml	200 - 4000 ml	200 - 4500 ml	1000 - 15 000 ml	200 - 6000 ml
Applications	<ul style="list-style-type: none"> <li>breaking open and dispersing of pills, capsules and hard large grains</li> </ul>	<ul style="list-style-type: none"> <li>making fine emulsions and suspensions</li> <li>mixes and reduces highly intensive solids into fluids</li> <li>gasses solutions</li> <li>separates fibres and cellular material into very small particles</li> <li>extraktionen</li> <li>applications with abrasive components</li> </ul>	<ul style="list-style-type: none"> <li>dispersing of fibrous, stringy and brittle samples (e.g. flesh)</li> </ul>	<ul style="list-style-type: none"> <li>working under pressure / vacuum</li> <li>making finest emulsions and suspensions</li> <li>mixes and reduces highly intensive solids into fluids</li> <li>gasses solutions</li> <li>separates fibres and cellular material into very small particle</li> <li>prevents foam built-up</li> </ul>	<ul style="list-style-type: none"> <li>high turbulent mixing with low shear forces</li> <li>fast dissolving and suspending of solids also at higher viscosity</li> </ul>	<ul style="list-style-type: none"> <li>dispersing and mixing of particles up to 22 mm in size</li> <li>sample preparation for extraction and solution of organic material</li> <li>intensives mixing</li> </ul>



30 mm



30 mm



36 mm



36 mm



45 mm



45 mm

# POLYTRON® Dispersing Aggregates

## G-generator - working under vacuum/pressure

These special versions are made for working under pressure and vacuum due to the incorporated mechanical seal inside the generator head. Absolutely gas-tight is the other advantage of a mechanical seal. No additional air or gas phase will be mixed into the product – this is very important regarding e.g. emulsions.



## M-generator - for pre-cutting coarse material

Dispersing aggregates in M-version have a rotor with a pair of knives. They help dispersing larger and / or tougher samples by pre-cutting the material.



## Z-generator - for hard and brittle material

Pills, capsules and hard large grains are broken open and dispersed by the Z-generators in a short time.



The special effect is caused by the unique geometry of the generator teeth.

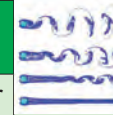
## W-generator - for fibrous and stringy material

The preparation of hard and brittle, partially tough and fibrous samples for analysis is often tedious and time consuming work, creating high demands for the user and the equipment. Frozen kernels of grain for example, or field beans, are extremely hard and abrasive; the connective tissue of meat, on the other hand, is very fibrous and tough. The new geometry of the W-generators has solved these problems.



## BIOTRONA® generator - for High turbulence

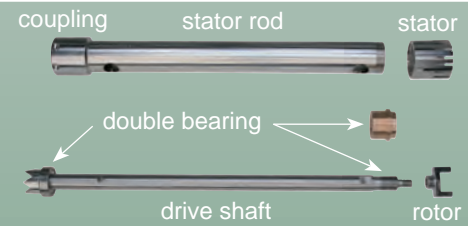
The BIOTRONA® flash blender is designed for special jobs. Thanks to the extremely high turbulence and low shear forces it is excellently suited for fast suspending and dispersing of solids also at higher viscosity.



All POLYTRON® PT-DA dispersing aggregates with coupling type B can be connected to the new quick coupling



All POLYTRON® PTA dispersing aggregates (coupling type A) can be connected by using the optional PT-DA/PTA adapter



Disassembled POLYTRON® Dispersing Aggregate



The optional PT-DA / PTA Adapter allows also to connect PTA dispersing aggregates (coupling type A) to the PT 6100 D

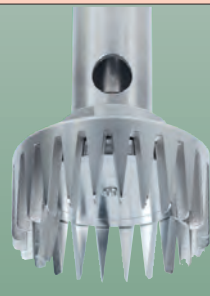
PT-DA 50/2MEC-B250	PT-DA 50/6G-B250	PT-DA 50/2WEC-B250	PT-DA 53/DS-B250	PT-DA 60/2EC-B250	PT-DA 60/2MEC-B250
<ul style="list-style-type: none"> <li>special M-Generator</li> <li>Rotor with knives</li> <li>rotor/stator with one teeth row each</li> </ul>	<ul style="list-style-type: none"> <li>special G-Generator with mechanical seal</li> <li>rotor/stator with three teeth rows each</li> </ul>	<ul style="list-style-type: none"> <li>special W-Generator</li> <li>rotor/stator with one teeth row each</li> </ul>	<ul style="list-style-type: none"> <li>special dissolver disk</li> </ul>	<ul style="list-style-type: none"> <li>standard generator</li> <li>rotor/stator with one teeth row each</li> </ul>	<ul style="list-style-type: none"> <li>special M-Generator</li> <li>Rotor with knives</li> <li>rotor/stator with one teeth row each</li> </ul>
11030214	11030223	11030219	12030100	11030241	11030244
44 m/s	44 m/s	50 m/s	47 m/s	50 m/s	50 m/s
300 - 10 000 ml	300 - 4000 ml	1000 - 30 000 ml	1000 - 30 000 ml	200 - 4000 ml	1000 - 30 000 ml
<ul style="list-style-type: none"> <li>dispersing and mixing of particles up to 25 mm in size</li> <li>sample preparation for extraction and solution of organic material</li> <li>intensives mixing</li> <li>rotor with knives facilitate the processing of larger cell tissue samples or particles</li> </ul>	<ul style="list-style-type: none"> <li>working under pressure / vacuum</li> <li>making finest emulsions and suspensions</li> <li>mixes and reduces highly intensive solids into fluids</li> <li>gasses solutions</li> <li>separates fibres and cellular material into very small particles</li> <li>prevents foam built-up</li> </ul>	<ul style="list-style-type: none"> <li>dispersing of fibrous, stringy and brittle samples (e.g. flesh)</li> </ul>	<ul style="list-style-type: none"> <li>fast mixing and homogenizing of solid material into fluid by means of a dissolving disk</li> <li>Preparing highly viscous products</li> </ul>	<ul style="list-style-type: none"> <li>dispersing and mixing of particles up to 30 mm in size</li> <li>sample preparation for extraction and solution of organic material</li> <li>intensives mixing</li> </ul>	<ul style="list-style-type: none"> <li>dispersing and mixing of particles up to 30 mm in size</li> <li>sample preparation for extraction and solution of organic material</li> <li>intensives mixing</li> <li>rotor with knives facilitate the processing of larger cell tissue samples or particles</li> </ul>



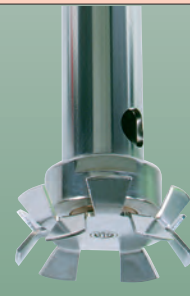
50 mm



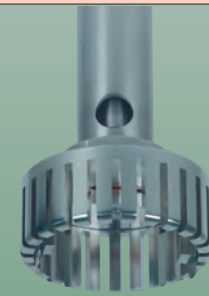
50 mm



50 mm



53 mm



60 mm



60 mm

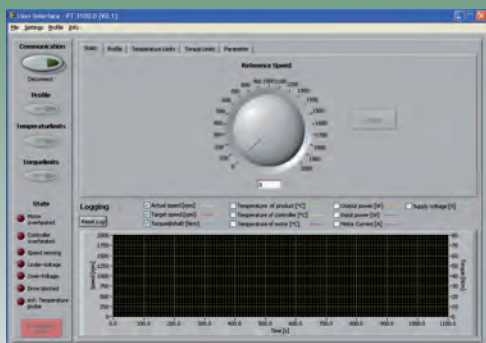
## Connections



On the back of the PT 6100 D there are connecting ports for:

- RS232 interface for remote control with PC
- Included interface cable RS232 up to USB
- The connection of the optional Pt100 temperature probe

## User Interface Software



- Suitable for PC's using MS-Windows 98, ME, 2000, XP, 7
- Possibility of data logging into MS-Excel-sheets for every parameter
- Free programmable Speed-Time-Profiles for automatic operation
- Free programmable temperature limits for use as stopping criteria for avoiding overheating of the product
- Graphical parameter visualization in time-based diagram
- Written parameter visualization in text boxes
- Drive health and status is displayed

## Temp. probe



- Pt 100 temperature probe for temperature range 0 - 120°C
- Temperature is indicated on the display
- If temperature probe is used together with the software, temperature is indicated also on the User Interface, temperature limits can be programmed using the software and temperature will be logged





# Further Equipment & Order information

## Drive Units



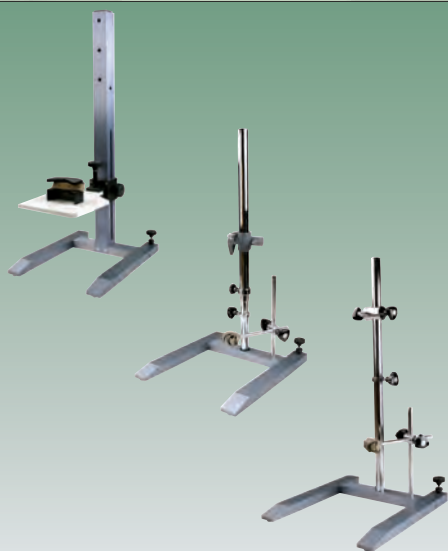
Order No.	Description	
11010100	PT-MR 6100, 230V/EU-plug	Package includes Drive Unit with power supply cable, PC software on CD and RS232/USB connection cable
11010101	PT-MR 6100, 230V/CH-plug	
11010109	PT-MR 6100, 230V/UK-plug	
11010102	PT-MR 6100, 100-120V/US-plug	
11020050	Temperature probe for PT 6100 D	
11035001	PT-DA / PTA Adapter	

## Dispersing Aggregates



Order Code	Description	Order Code	Description
11030101	PT-DA 30/2EC-B250	11030168	PT-DA 40/2WEC-B250
11030104	PT-DA 30/2MEC-B250	11030197	PT-DA 45/2EC-B250
11030110	PT-DA 30/2WEC-B250	12030031	PT-DA 45/BEC-B250
11030102	PT-DA 30/2G-B250	11030182	PT-DA 45/2G-B250
11030112	PT-DA 30/2ZEC-B250	11030198	PT-DA 45/2WEC-B250
11030114	PT-DA 30/4MEC-B250	11030193	PT-DA 45/6EC-B250
11030115	PT-DA 30/4G-B250	11030211	PT-DA 50/2EC-B250
11030105	PT-DA 30/2MG-B250	11030212	PT-DA 50/2G-B250
11030144	PT-DA 36/2EC-B250	11030214	PT-DA 50/2MEC-B250
11030145	PT-DA 36/2MEC-B250	11030215	PT-DA 50/2MG-B250
11030141	PT-DA 36/2WEC-B250	11030219	PT-DA 50/2WEC-B250
11030146	PT-DA 36/2G-B250	11030224	PT-DA 50/4EC-B250
11030147	PT-DA 36/4EC-B250	11030223	PT-DA 50/6G-B250
11030148	PT-DA 36/4G-B250	12030100	PT-DA 53/DS-B250
12030021	PT-DA 36/BEC-B250	11030241	PT-DA 60/2EC-B250
11030161	PT-DA 40/2EC-B250	11030242	PT-DA 60/2G-B250
11030162	PT-DA 40/2G-B250	11030244	PT-DA 60/2MEC-B250
11030169	PT-DA 40/2MEC-B250	11030245	PT-DA 60/2MG-B250
11030164	PT-DA 40/2MG-B250	11030249	PT-DA 60/2WEC-B250

## Stands



Order No.	Description
11040025	<b>ST-F11/855</b> - The practical stand of anodized aluminum with its stable H foot and a PTFE coated work table which can be adjusted in height and swung out. (ill. left)
11040031	<b>ST-F12/600-1000</b> - The user friendly stand, a telescopic stand with pneumatic springs and 300 mm stroke. (ill. middle)
11040033	<b>ST-F13/820</b> - The economical stand with H foot, a column, two cross sleeves and a vessel holder, all made of stainless steel. (ill. right)

## Dispersing Vessels



### The suitable dispersing vessel

The following overview should help you to find the correct working vessel for your application. We will be pleased to provide you with further information on other vessels and about special designs as well.

Description	Order No.	Dim. (mm) Ø / H	Working Vol.	Model	
GS 15	11050010	30 / 150	35 ml	Clover leaf shaped	Borosilicate glass
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 cap tapered fitting 7.5, 12, 20 or 25 mm glas 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	11050050	155 / 200	3000 ml	Cylindrical	V2A stainless steel
GS 100 Z	11050060	100 / 150	900 ml		
GS 130 Z	11050061	125 / 170	2000 ml		
GS 155 Z	11050062	175 / 190	3500 ml		

# HOMOGENIZING AND MIXING TECHNOLOGY

**POLYTRON®**  
DISPERSING AND MIXING TECHNOLOGY BY KINEMATICA

**BIOTRONA®**  
DISPERSING AND MIXING TECHNOLOGY BY KINEMATICA

**POLYMIX®**  
DISPERSING AND MIXING TECHNOLOGY BY KINEMATICA

**MEGATRON®**  
DISPERSING AND MIXING TECHNOLOGY BY KINEMATICA

**REACTRON®**  
DISPERSING AND MIXING TECHNOLOGY BY KINEMATICA

A wide range of products with the finest solution for every application, matched by the superior quality of all components make KINEMATICA a world leader for Dispersing and Mixing technology.

## With Keen Eyes ...

Development knows no rest at KINEMATICA. Our systems are constantly upgraded to reflect the state-of-the-art technology and the needs of the market. KINEMATICA has always had a keen eye for major advances, as proven by various patents.

The rotor/stator principle for dispersing technology was conceived and developed at KINEMATICA and has become the world standard.

## ... For Your Needs

Applications for Dispersing/Homogenizing Technology are always on the increase. KINEMATICA continually creates new areas of processing applications based on innovations. We do not neglect the human factor as it is exemplified by the safe and comfortable operation and noise reduction of our high-speed systems.

Please, get in touch with us, our local appointed agent or your preferred dealer. We will be pleased to supply more details or arrange a personal demonstration of our POLYTRON® and MEGATRON® systems.

**POLYTRON®** Finest Swiss Made Solutions... worldwide! +

**PT 3100 D**

Digital High-End Benchtop Homogenizer with PC interface

Homogenizing and Mixing Technology for the Laboratory

- DISPERSING
- HOMOGENIZING
- EMULSIFYING
- SUSPENDING
- WET MILLING
- MIXING



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Dispersing and Mixing Technology

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**MEGATRON®** Finest Swiss Made solutions... worldwide! +

**MT 5100**

Inline Homogenizer for throughputs up to 65 l/min

Homogenizing and Mixing Technology for Pilot Plant and Small Scale Production

- DISPERSING
- HOMOGENIZING
- EMULSIFYING
- SUSPENDING
- WET MILLING



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- POLYMIX®
- MEGATRON®
- REACTRON®

Homogenizing and Dispersing Technology

for

**Laboratory & Pilot Plant**

- HOMOGENIZING
- EMULSIFYING
- SUSPENDING
- WET MILLING
- MIXING
- DRY MILLING
- FOAM PRODUCTION
- POWDER INTRODUCTION



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Homogenizing and Dispersing Technology

for

**Pilot Plant & Production**

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- WET MILLING
- MIXING
- POWDER INTRODUCTION
- FOAM PRODUCTION



**KINEMATICA.CH**  
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## Subsidiaries

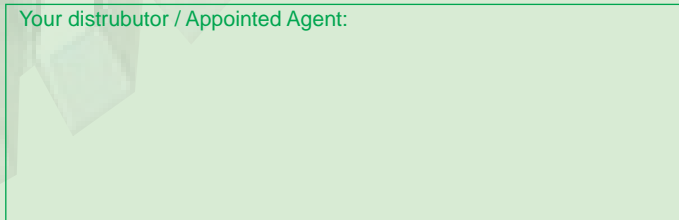


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e-Mail info@kinematika.ch



Your distributor / Appointed Agent:



Finest Swiss Made Solutions... worldwide!

