666 | Labo Plastomill Micro

Labo Plastomill Micro is table-top torque rheometer (measuring mixer/extruder system) for evaluating kneading and extrusion properties with small amount of sample.

Note: Labo Plastomill Micro base unit + KF6V Small Segment Mixer

■Base unit

- Torque (current value conversion), resin temperature, and pressure can be measured.
  (Pressure sensor is optional)
- Measurement can be performed by recalling registered conditions on the LCD touch screen.
- The data curve is displayed on the LCD touch screen.
- Safety features including torque, pressure, and temperature limiters and mixer disassembly safety circuit.
- Optional data processing software allow to import measurement data, perform various characteristic value calculations, overlay data display, and convert files for export to spreadsheet software.

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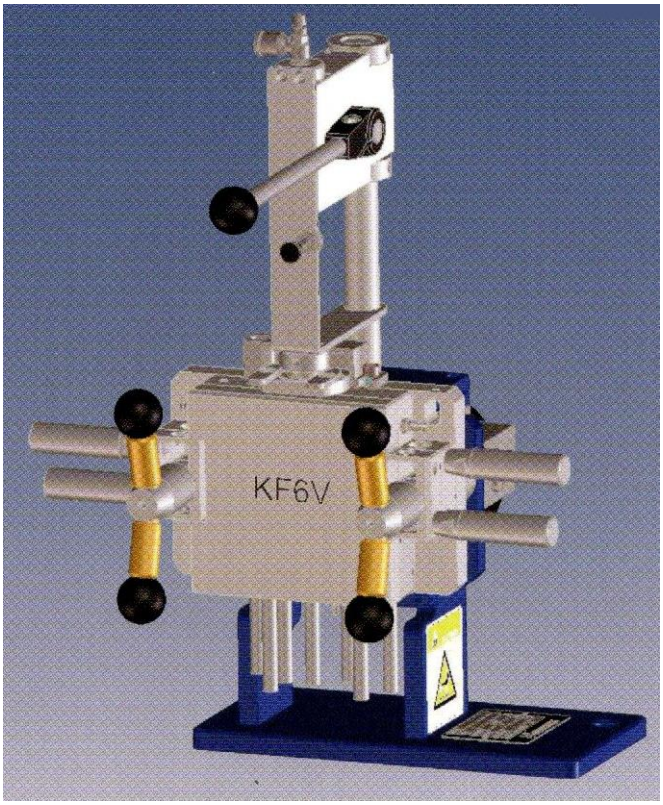
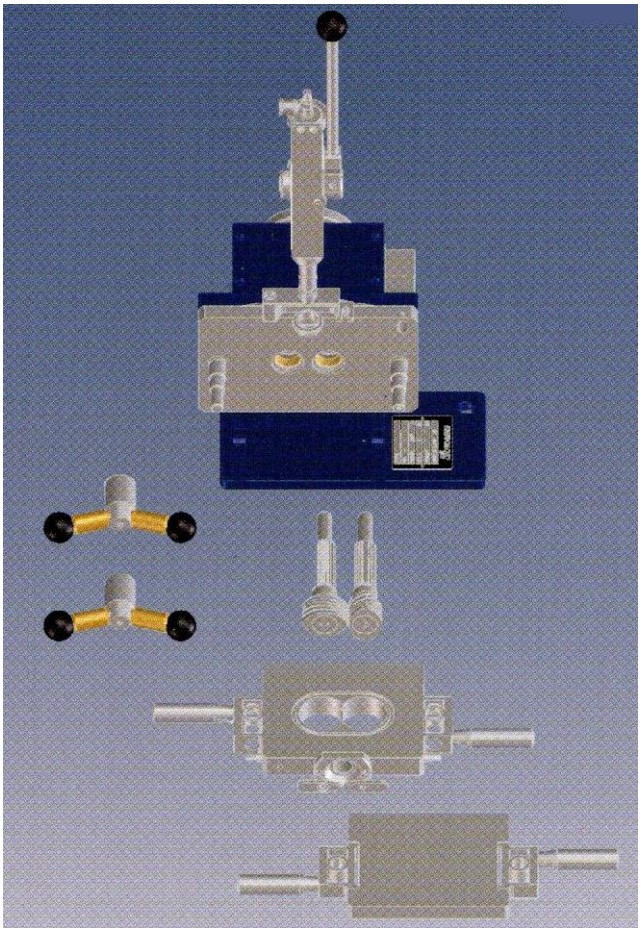
Model	Micro line Base Unit
Rotation	0 to 100rpm
Max. torque	40Nm (current value conversion)
Temperature range	0 to 400ºC (Control range depends on mixer and extruder)
Pressure measurement range	0 to 20MPa
Motor	AC servo motor 400W
Touch-screen	Color LCD touch-screen (W115 x H86mm) Languages: English and Japanese
Safety features	Torque limiter, temperature limiter, Emergency stop switch, mixer disassembly safety circuit, Leakage breaker
Compressed air	0.5MPa, 40L/min.
Power requirements	Single-phase, AC100V, 50Hz, 3kVA
Dimensions	W400 x D600 x H610mm
Net weight	Approx. 50kg

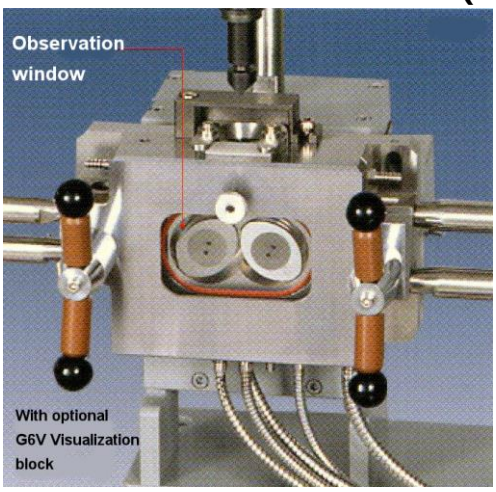
KF6V Small Segment Mixer



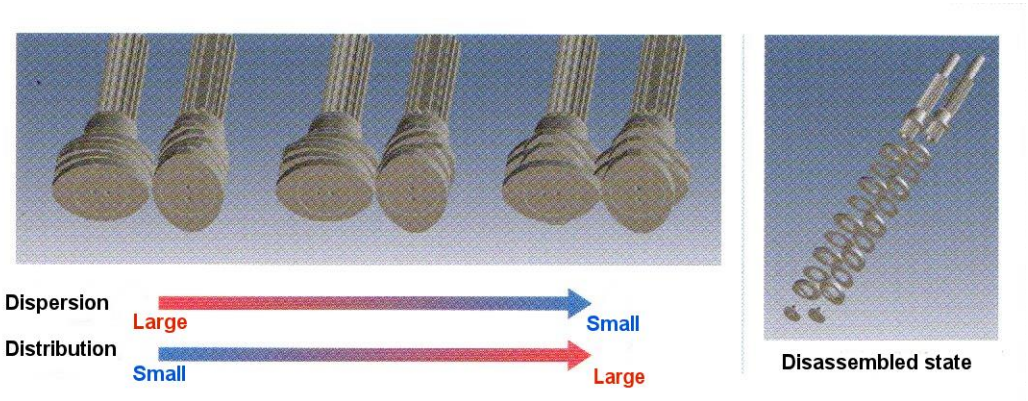


Model	**KF6V Small Segment Mixer**
System	Intermeshing type co-directional rotation
Max. rotation speed	300rpm (3x speed)
Max. torque	40Nm
Temperature range	RT+100ºC to 350ºC (Water cooling is possible under 100 ºC)
Heating zones	Heating: 3 zones (Cartridge heater) Cooling: 1 zone (#2 block) With temperature detector
Blade shape	2 lobe disc, 5-piece combination type ● KF6HB High shear blades (Standard) Max. shear rate: 1.2 x 10^3/s Chamber capacity: Approx. 5cm^3 ● KF6LB Low shear blades (Optional) Max. shear rate: 4.5 x 10^2/s Chamber capacity: Approx. 6cm^3
Sample insertion port	Ø15mm
N2 purge	Nitrogen gas is supplied from the top of the ram
Material	SUS440C
Safety feature	Shear pin
Power requirements	Single-phase, AC100V, 50Hz, 1.5kVA
Dimensions	W290 x D260 x H370mm
Net weight	Approx. 20kg

■G6V Visualization block (Optional)



Model	G6V Visualization Block
Max. temperature	250ºC
Observation window	Hard glass
Accessory	Vacuum and nitrogen switching valve (with mounting bracket)

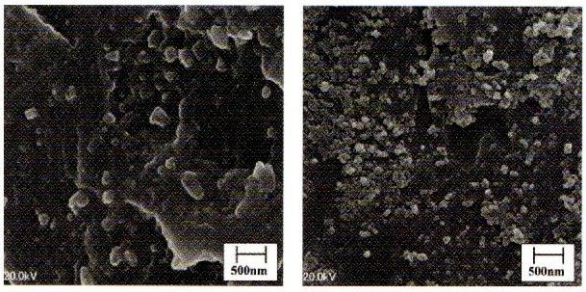


Example of disc phase recombination

The blade disc phase can be reconfigured to adjust the kneading strength to suit the sample.

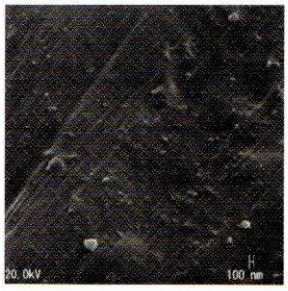
Example of mixer dispersion data (Courtesy of Nagoya University)

[PS+Silica pseudo-porous phase (5wt%) Grain dia. 20nm]

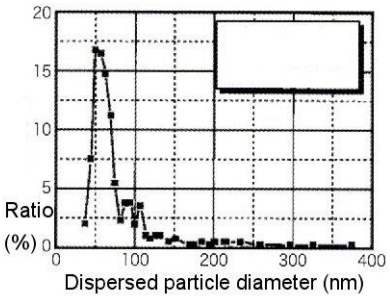


Difference in rotational speed (shear rate)
(Left: 99rpm, Right: 300rpm)

[EVOH+ Silica pseudo-porous phase (5wt%) Grain dia. 20nm]



EVOH/SiO_2 dispersion state



Dispersed particle dia. distribution

As shown above, the segment mixer is capable of high shear mixing and is suitable for evaluation of nanoparticle dispersion.

■Data Processing Software (MSOFT)

Receives data from the Laboplastmill Micro and imports test condition data and torque, pressure, temperature, and rotation speed data to a PC.
The imported data is displayed as waveform graphs of torque, pressure, resin temperature, energy, etc., and is processed for characteristic value calculation, data overlay display, and file exchange for importing into spreadsheet software.
The software comes standard with two test modes: mixer test and extruder test.

Features:

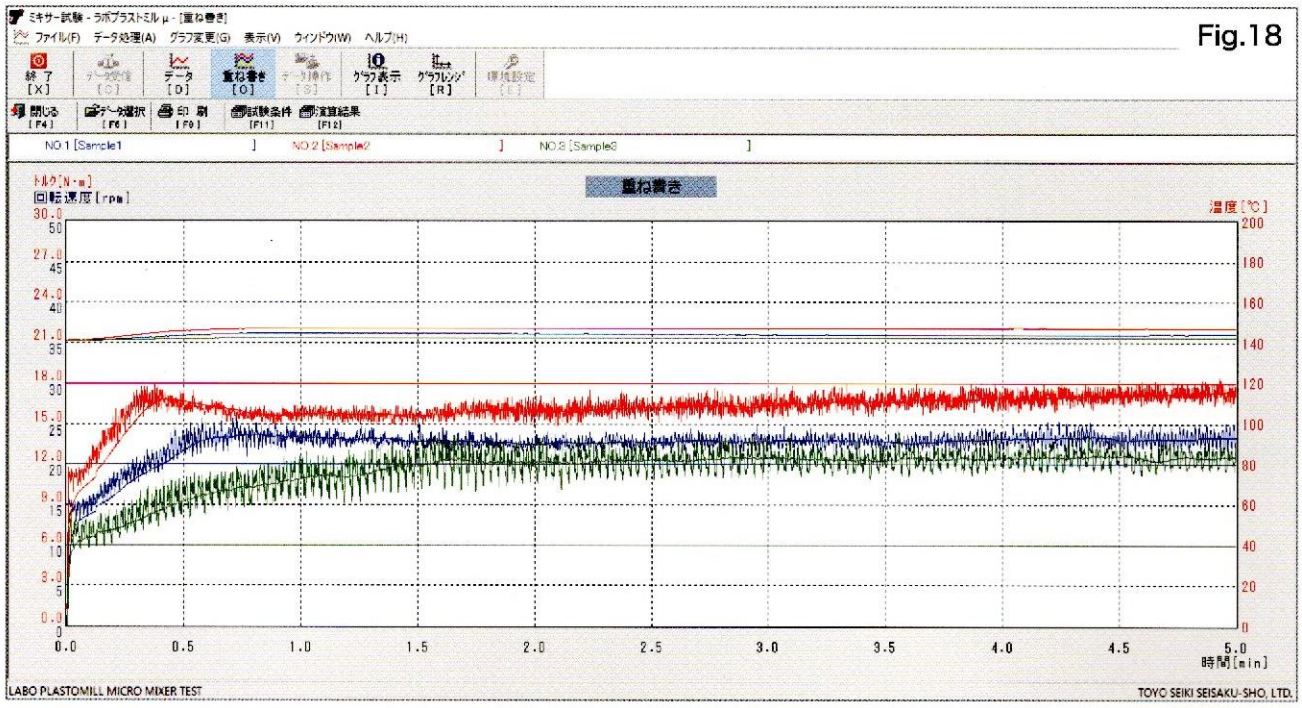
- Receives test data from the Laboplast Mill Micro and imports it into a PC.
- Up to 8 test data can be overlaid.
- Test data can be saved, deleted, and transferred, and can be searched by character or date.
- Waveform graphs can be zoomed in and out, selected for display by waveform data type, and the display color can be changed.
- Test data can be read into spreadsheet software by converting to a file.
- Various printouts of test data (waveform graphs, overlaid graphs, characteristic value calculation results) are available.

Mixer test

- Up to 6 points can be arbitrarily set from the waveform graph using the direct, vertex, tangent, and time methods, and characteristic values can be calculated.
- After data capture, energy consumption values can be calculated by entering sample volume and specific gravity.

Waveform Data Items

- Torque (raw and average data)
- Resin temperature
- Mixer #2 block temperature
- Set rotational speed
- Energy consumption



Model	**MSOFT**
Test modes	Mixer test, Extruder test
Summary	Captures test condition data and torque, pressure, temperature, and rotation speed data and displays them as waveform graphs. Characteristic value calculation processing, data superimposition display processing.
Accessory	Setup CD-ROM

Specifications are subject to change without notice.

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