

No. 5 2 2

# Melt Indexer model **G**



**TOYOSEIKI**

# Melt Indexer



- ① Basic model
- ② Basic model + Automatic Cutter
- ③ Basic model + Flow Rate Measuring Device
- ④ Basic model + Flow Rate Measuring Device + Weight Lifter

## OVERVIEW

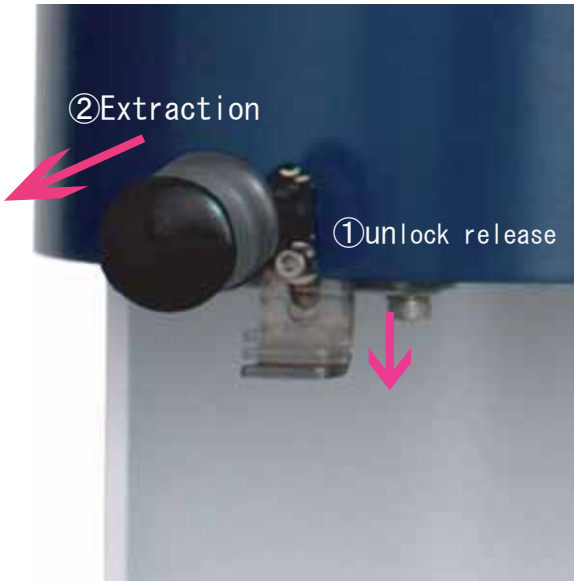
This equipment is designed conforming to JIS K 7210, ASTM D 1238 and ISO 1133 to measure the melt mass flow rate (MFR) (g/10 min.) and melt volume flow rate (MVR) (cm<sup>3</sup>/min.) of plastics.

The melt viscosity value of thermo-plastics is deeply linked with the technological property in molding, spinning, etc. Therefore, the measurement of melt viscosity plays a very important role in product development, quality control, and other fields. For this purpose, various types of measuring systems are provided. Among them, this "Melt Indexer" is easy to operate and makes measurements with the currently most popular methods. It measures the mass (MFR) and volume (MVR) of melt polymer passing the standard die (orifice) under constant temperature and constant pressure.

The testing methods include Method A (Manual Operation → Cutoff method) and Method B (Automatically Timed Flow Measurement → Method to measure the piston descending speed with a counter). The Method A applies to the materials of which the MFR is in the range between 0.1 and 25g/10 min. (50g/10 min. in ASTM method); the Method B to the materials of which the MFR or MVR is in the range between 0.1 and 50g/10 min. (standard value). When the measurement is made at a temperature of 190°C with a load of 2.16 kg for 10 minutes, the mass and volume flown out through the die are respectively referred to as "melt mass flow rate (MFR)" and "melt volume flow rate (MVR)". Conventionally, they are also referred to as "melt index (MI value)" or "flow rate and flow index".

The melt flowability of plastics depends on the shear velocity. However, it must be known that the shear velocity in the molding process is very high, and the results of measurement are not always in good agreement with the flow behavior in real use. Nevertheless, it is still an effective index for quality control and is therefore widely used.

- The orifice can be taken out from the bottom of the furnace. An orifice release mechanism allows you to take out the orifice easily by operating the lever in front of the furnace.



**Orifice release mechanism**

You can take out the orifice easily from the bottom of the furnace in two steps:

- ① Lower the unlock plate.
- ② Pull the orifice release lever toward.

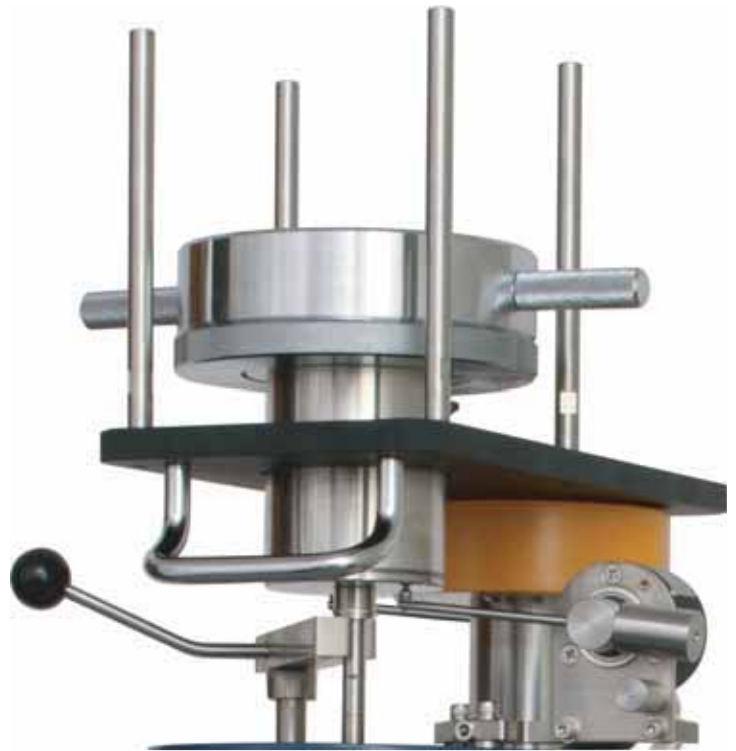
- Power voltage supported:  
100 – 115 Vac or 200 – 230 Vac



Automatic Cutter



Flow Rate Measuring Device



Weight Lifter

TYPES

**①Basic model**

- Tests can be conducted using Method A.  
(Method A: Measures the mass of the sample cut off in a specified collecting time and calculates the MFR.)
- Sample cutting and time measurement are conducted by the operator.
- The piston stopper included as standard allows you to start always from the fixed position.

**②Basic model + Automatic Cutter**

- Time is automatically measured and the sample is automatically cut in a specified time. This lightens the work of the operator in a test using Method A.

**③Basic model + Flow Rate Measuring Device**

- Tests can be conducted using not only Method A but also Method B.  
(Method B: Measures the moving distance and time of the piston and automatically calculates the MFR and MVR.)

**④Basic model + Flow Rate Measuring Device + Weight Lifter**

- The motor-driven weight lifter lightens the work of the operator ensuring safety.

## Specification of Melt Indexer G-01

1. Temperature range	100 to 350°C (Up to 400°C available in the optional high-temperature specifications) *1
2. Temperature controller	Built-in temperature controller, PID control <input type="radio"/> Least digit of temperature indication: 0.1°C (Switchable to 0.01°C by changing the environmental settings) <input type="radio"/> Temperature accuracy: ±0.2°C <input type="radio"/> Temperature sensor: Pt100 Ω
3. Test load	0.325 to 21.6 kg Standard accessory weights: 0.325 kg, 2.16 kg (Other weights are optional) *2
4. Display / input device	Liquid crystal touch panel <input type="radio"/> Registerable of test conditions: 100 <input type="radio"/> Measurement data storage: Latest 100 data items
5. Piston material	S50C or hastelloy *3
6. Piston stopper	Piston holder while preheating the sample (5, 10, 15mm)
7. Orifice release mechanism	Taking out of the orifice available from the bottom of the cylinder
8. Serial port	RS-232C, 1 port
The followings are optional.	
9. Data output	Compact printer, PC
10. Data processing software	Output of results data and real-time data *4
11. Flow rate measuring device	Accuracy: ±0.02mm, automatic calculation of MFR and MVR 5
12. Automatic cutter	Motor-driven <input type="radio"/> Interlocking with the flow rate measuring device (Entering the cutting time and count) <input type="radio"/> Operable from the cut switch on the touch panel when the flow rate measuring device is not equipped (Entering the cutting time)
13. Manual cutter	With a rotary handle
14. Sample outflow prevention clamp	Cannot be used together with the cutter.
15. Weight lifter	Motor-driven, autonomous-operation type <input type="radio"/> Maximum lifting load: 21.6 kg <input type="radio"/> Stroke: 125mm <input type="radio"/> Weight holder rotary mechanism Safety mechanism <input type="radio"/> Operation by both hands <input type="radio"/> Up/down movement disabled while the weight holder is in the waiting position
16. Acrylic safety cover	Protection from the rotary blade of the automatic cutter, etc.
17. Power supply	Single-phase, 100 - 115 Vac or 200 - 230 Vac, 50/60Hz, 6 A (100 - 115 V), 3 A (200 - 230 V)
18. Dimensions and mass of main unit	Approx. 400 (W) x 370 (D) x 560mm (H), approx. 40 kg Approx. 400 (W) x 370 (D) x 820 - 945mm (H), approx. 55 kg (with the weight lifter equipped)

\*1: Shipping inspection range of temperature is up to 300°C unless otherwise requested.

\*2: Optional weights: 1 kg, 1.05 kg, 1.2 kg, 3.8 kg, 5 kg, 10 kg, 12.5 kg, 21.6 kg

\*3: In a hastelloy specifications, the following parts are of hastelloy: Cylinder, piston, orifice.

\*4: The followings are indicated: Time, moving distance, MFR, MVR.

\*5: Measurements can be made continuously up to three times, and the average value is indicated.



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