

# TUMBLER

## AUTOMATIC FLASH REMOVER

- TUMBLER 60A Type
- TUMBLER 100A Type
- TUMBLER 150A Type
- AUTOMATIC SELECTING SCREEN (Optional Unit)



TUMBLER

## Specification of the TUMBLER

Principal Specification		60A type	100A type	150A type
Barrel Capacity (l)		60	100	150
Outward dimensions of machine(m)		0.94(L) x1.38(W) x1.27(H)	0.94(L) x1.61(W) x1.27(H)	0.94(L) x1.71(W) x1.31(H)
Weight of machine (kg)		350	400	450
Operation method		Automatic	Automatic	Automatic
Drive motor (kW)		0.75		
Power supply		200 VAC 50/60 Hz 3-phase		
Machine type	L-CO2 exclusive machine	Refrigerant	Liquefied carbon dioxide	
		Temperature adjustment	Room temperature to -78°C	
	L-CO2 and L-N2 machine	Refrigerant	Liquefied carbon dioxide and liquefied nitrogen	
		Temperature adjustment	Room temperature to -196°C	
	L-N2 exclusive machine	Refrigerant	Liquefied nitrogen	
		Temperature adjustment	Room temperature to -196°C	

- ※ The lid of the barrel is made to be light in weight so that it may be handled easily.  
<Materials> The interior of the barrel is made of stainless steel. and the exterior is of mild steel.  
<Revolutions of the barrel> Revolutions can be controlled to 0 to 60 RPM.
- ※ For a tumbler for zinc die cast, use a motor of 1.5 kWh.

Note: Select the most appropriate machine type according to the flash thickness, price of refrigerant, and the like. If flashes of products with a brittle temperature of -50°C are removed with liquefied nitrogen, since cooling speed is too high, products themselves are likely to damage. In this case, use liquefied carbon dioxide.

## Application of the TUMBLER

- Removing flashes of rubber molded products
- Removing flashes of zinc die cast
- Removing flashes of synthetic resin products

## Outline of TUMBLER

This TUMBLER uses the cooling ability of liquefied carbon dioxide and low-temperature brittleness of molded products (rubber molded products and zinc die casting in particular) to remove flashes mechanically.

The refrigeration technique represented by tumblers replaces conventional techniques including a stamping technique. This technique refrigerate molded products to destruct mechanically portions that have become brittle. For example, when temperature is lowered, rubber becomes harder first, then brittle, and finally crystallized, losing elasticity gradually, and the rubber is destroyed by only a little deformation at temperatures below its brittle temperature.

Molded rubber parts (or zinc die-cast molded parts) and a proper amount of a medium are mixed and put into a polygonal barrel, and are cooled quickly by liquefied carbon dioxide (or liquefied nitrogen) and the barrel is rotated. This causes a difference in hardness between the flashes and part bodies of the molded parts. Then, flashes that have been cooled earlier become brittle, to which the medium is blasted by the rotational motion of the barrel to remove flashes in a short period of time.

Even in the conventional refrigeration technique, the method to use liquefied carbon dioxide (or liquefied nitrogen) has been regarded as being more difficult in operation than methods to use dry ice. But the TUMBLER the operation of which has been automated has eliminated such a difficulty completely.

This labor-saving machine raises the efficiency of flashes removing remarkably.

## Strong Points of the TUMBLER

- Automatic operation easy to operate and free from manual processing work
- Easy production control to enhance productivity
- Uniform finish
- Compact design

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## Automatic Separating Unit (Optional Unit)

As an option, automatic separating units are prepared that separate workpieces, flashes, and media automatically. (Manual type units are also available.)

Principal specification	60A type	100A type	150A type
Outward dimensions of unit (m)	0.85(L) x0.5(W) x0.38(H)	0.85(L) x0.73(W) x0.38(H)	0.85(L) x0.83(W) x0.38(H)
Weight of Unit(kg)	20	25	30
Operation Method	Automatic	Automatic	Automatic
Power Supply	200 VAC, 0.4 kWh, and 3-phase	200 VAC, 0.4 kWh, and 3-phase	200 VAC, 0.4 kWh, and 3-phase

## Construction of TUMBLER

### ● Temperature Adjustment

Temperature in the barrel can be adjusted within a range from room temperature to  $-196^{\circ}\text{C}$ . The accuracy of this temperature adjustment is a set value plus  $3^{\circ}\text{C}$ .

### ● Control Panel

Switches, lamps, instruments, and the like are arranged compactly in a panel, and every operation can be made easily.

## Refrigerant

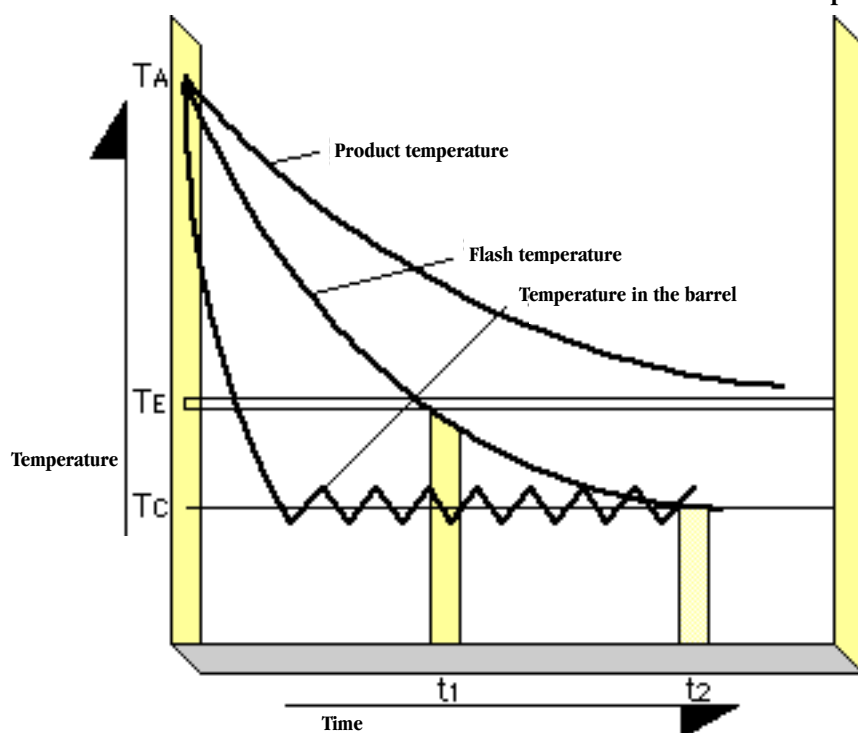
### – Liquefied Carbon Dioxide

Use carbon dioxide gas stored in a high-pressure bottle with a siphon pipe or in a low-temperature vessel.

### – Liquefied Nitrogen

Use nitrogen stored in a low-temperature vessel.

Liquefied carbon dioxide (or liquefied nitrogen) is an odorless, colorless, and tasteless gas. Since liquefied carbon dioxide can cool objects down to  $-78^{\circ}\text{C}$  and liquefied nitrogen down to  $-196^{\circ}\text{C}$ , use an appropriate refrigerant according to the brittle temperature of the molded product.



- Since flash temperature reduces quicker than product temperature, flashes can be removed without damaging products themselves.

TA: Room temperature

TE: Brittle temperature

TC: Set temperature in the barrel

t1: Time when the operation of the barrel is started

t2: Time when the operation of the barrel is stopped

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