

The “Second-generation Vent-type Injection Unit”
solves problems of the conventional vent-type machines



Matsuda Seisakusho Co., Ltd.

1. Introduction



Matsuda Seisakusho Co., Ltd.

Considering that venting technology is one of the vital aspects of technologies for injection molding machines for rubber, Matsuda Seisakusho has conducted much basic testing to accumulate technology data that enabled us to improve venting technology.

Our first-generation vent-type injection units have been delivered to and used by many customers, who have then given us various kinds of feedback.

We now offer our Second-generation Vent-type Injection Units, which embodies various customer requests and experiences.

2. Vent-type injection unit

During rubber molding, gas can be entrained inside the rubber material due to various reasons. This gas creates airspace inside the rubber molded products and could cause quality problems. The vent-type injection unit enables operators to remove this gas from the rubber material and improves the quality of the molded product.

Expected impacts of the vent-type injection unit

- (1) You can reduce the defects caused by cavity inside products, impossible to be removed by vacuum in the molds.
- (2) An example of reduction in discharge of the gas component contained in the material after molding
Liquid seal engine mount
→ Little gas penetrates the liquid seal part, enabling liquid sealing to be done right after the molding process.
- (3) Shorter vulcanizing time to lessen the molding cycle time
Thick molded products can be taken out with their interior in unvulcanized condition. The inside airspace is substantially reduced during the second vulcanizing stage.
- (4) Enhanced insulation performance of the molding materials
Removal of the gas enhances the electrical properties.
- (5) High kneadability of a vent screw reduces poor dispersion
At the time of the rubber material passing the dam part of a screw, the kneadability rises and helps material dispersion to be even.

Problems of the vent-type injection unit

- (1) Less plasticization
The cross-section area of a dam part is smaller than that of a conventional screw, roughly halving the level of plasticization compared to the screw of the same diameter. This could cause a decline in the molding cycle.
- (2) Change in the effects by the shape of a dam part
The vent effect and the level of plasticization vary by the size and shape of a dam part.
When the type of rubber is changed, an expensive vent screw had to be replaced in order to have an optimal dam part.
- (3) Change in effects after long-time use
The dam part could become worn after long use. Therefore, its effects by ventilation and plasticization could be changed. But if you return original effects, and need to replace vent-screw.
- (4) Use as a general screw
The vent-type injection unit could only be used as a low-plasticization injection unit in case of molding with no need for the vent effect.

3. Features of the Second-generation Vent-type Injection Unit Matsuda Seisakusho Co., Ltd.

The first-generation machine had diverse problems as stated in the previous slide.

Matsuda Seisakusho has therefore developed the Second-generation Vent-type Injection Unit, which has solved these problems.

Features of the “Second-generation Vent-type Injection Unit”

(1) The cross-section area is larger, as a result of a larger diameter of a vent screw (a dam part), compared to that of the body. This has raised its plasticization to a level equal to the screw of the same diameter.

(2) Almost full degassing is possible (depending on the variety of rubber) due to significant enhancement of the vent effect.

(3) Only the dam part of the vent screw can be replaced. The optimal vent effect, most suitable to the type of rubber material, can be realized.

(4) Even if the dam part is worn after long use, only a dam part of the vent screw needs to be replaced in order to restore and maintain the original vent effect.

(5) Removal of a material feeding flap enables the machine to be used as a general injection unit.

(6) A general injection unit can be simply reformed into a vent-type machine in a more simplified way, compared to the situation earlier.







4. Effects of the Second-generation Vent-type Injection Unit Matsuda Seisakusho Co., Ltd.

The test results of the vent effect are as follows.

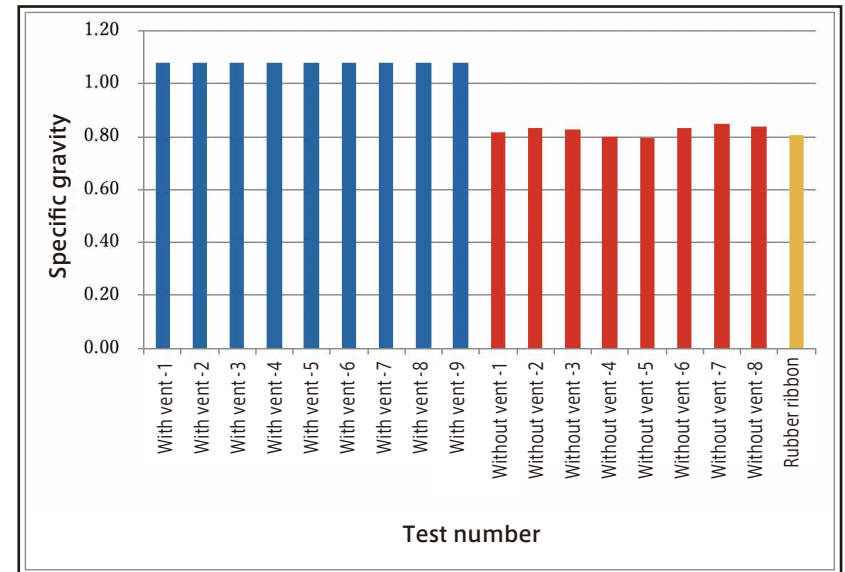
Effects of the vent-type machines

“Without vent” means no vacuuming while “with vent” means that the vacuuming process takes place. The cross section was photographed after the material was injected without a nozzle and vulcanized in the oven.

	Without vent	With vent
First generation		
Second generation		

The following graph shows the results of the specific gravity of the material molded by a machine with the vent, without the vent, and with rubber ribbon.

The material molded by a machine with the vent is higher in specific gravity, which indicates sufficient degassing. The result is also very even.



5. Conclusion



Matsuda Seisakusho Co., Ltd.

The newly-developed Second-generation Vent-type Injection Unit is an excellent machine that has solved conventional problems and responded to many of our customers' requests, using our long-accumulated technology. We are confident that this new machine can contribute to your high-quality manufacturing.

The effects of the vent-type injection unit vary depending on the rubber material. We are therefore ready to do testing according to customers' requests. Contact Matsuda's Sales Department.

For inquiry

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