

New Gas Assist System

射出成形の

革命

Innovation—New Gas Assisted Injection System
NSK is proud of our production device
because it is Cost-efficient, Time-efficient,
and Quality-guaranteed!
It makes workers, customers,
and global economy continuously innovated!

Universal Gas Assist Unit

- Type : NSKA2113M
- Specification
Pressure : 37.0MPa
Accumulator Volume : 30L
Stroke Volume : 190m³/day

Operation System : Touch Panel

External Dimension : 550W X 800D X 1150H

<http://www.nagoya-sk.co.jp>



 NAGOYA PRECISION MOLD CO., LTD.

■ Head Office & Plant

66-5, Kitatsurune, Ogawa, Higashiura-cho, Chite-gun, Aichi, Japan 470-2102
TEL: (0562) 84-7600 FAX: (0562) 84-7644

■ Kumamoto Plant

926-1, Mukobara, Haramizu, Kikyo-cho, Kikuchi-gun, Kumamoto, Japan 869-1102
TEL: (096) 232-4451 FAX: (096) 232-4437

■ Miyazaki Plant

1350, Oda, Ebino-city, Miyazaki, Japan 889-4222
TEL: (0984) 35-2931 FAX: (0984) 35-2936

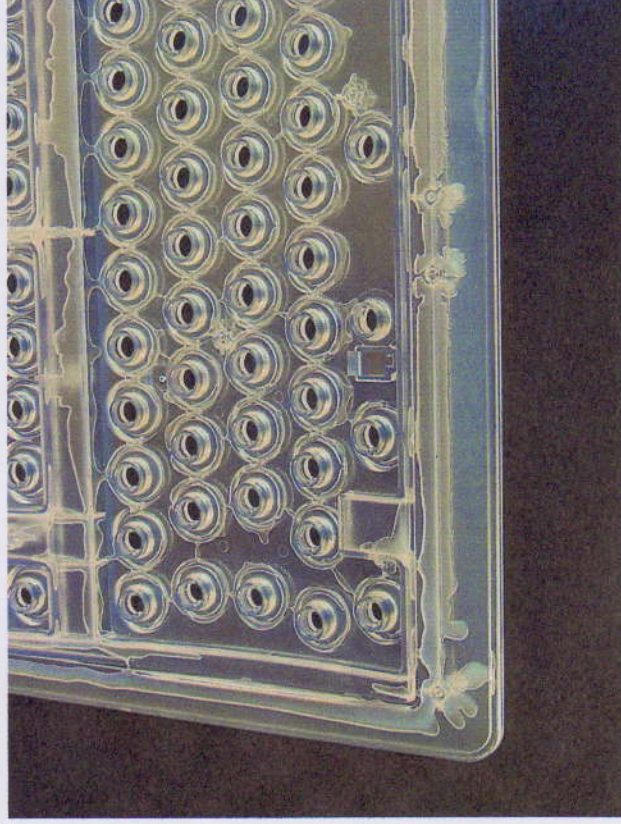
■ MEISEI VIETNAM CO., LTD.

Plot 7, CN18, Khai Quang Industrial Zone, Vinh Yen Town, Vinh Phuc Province, Vietnam
TEL: (84) 211-843-546 FAX: (84) 211-845-115

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GAS ASSISTED INJECTION MOLDING

produced by  NSK



MAKE A REVOLUTION

射出成形の革命

7 benefits 《 Gas-Assisted Injection 》

—through sustainable innovation -

Cost-effectiveness

- 30-50% smaller molding machine
After the resin injection, high pressure gas air can sustain the resin volume level enough, so that 30-50% smaller molding machine is sufficient
- 30-50% shorter cycle time for gas-assisted molding process
Gas-assisted Injection can make momentary high-pressing possible, which shorten cycle time for molding process due to shorter cooling time
- 5-10% less resin injection
5-10% less volume of resin due to occupied gas air within the shot gun
- Smaller Mold
Low-pressing injection enables downsizing Molding Machine as well as Mold itself. Mold can easily transform to gas-assisted one and also work with or without gas-assist. This new styled mold can be produced less expensive than conventional gas injection mold.

Flexibility and reduced working stress

- Less defect—less sink mark, less waving in the product
Balanced injection with gas air inside of the plastic part can reduce the number of defect such as sink mark on the surface and product quality can be better with even shortened cycle time.
- Stable dimension of Parts
Parts dimension is vulnerable due to temperature of mold, temperature of resin, cooling time, and pressure balance etc. Yet gas air inside of the plastic injection parts can absorb internal stress —waving defect factor—, so stable dimension is guaranteed with gas-assisted injection.

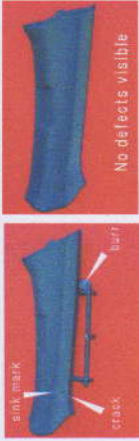
7. Flexible design

Past gas-assisted system required a long gas channel device embedded in the mold, which can be eliminated in the new gas assisted injection system by setting small boss shape for gas loading pin to replace the gas channel. It allows flexible product design and wider application for various plastic materials.

REVOLUTION

molding part example (1)

Product: REAR TRIM
Material: P.P. talc 20%
Resin temperature: 230 °C



overfilling plastic part

gas-assisted injection plastic part

Solid molding: long and high pressure injection, longer cycle time for molding, high volume of defects: burr, crack due to overfilling
Gas-assisted molding: no overfilling, just supplement gas air from inside of the part, very low-pressing molding, less sink mark, less burr on the surface

molding part example (2)

Product: KEYBOARD
Material: ABS
Resin temperature: 230 °C

■ current problems in molding process

- Sinkmark, burr even in case of high pressing injection
- Waving, deforms in case of high pressing injection
- Longer cycle time (longer sustaining pressure, longer maintenance)
- Burr appeared by overinjection, key board pressing dysfunction

Test Result Table Standard Injection molding & gas assisted injection molding

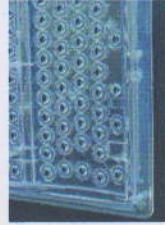
	Comparison	Standard	gas assisted	Effect
1	Required closing pressure (ton)	450	180	▼60%
2	Molding cycle (sec)	65	30	▼55%
3	Part weight	422	382	▼≈10%
4	Sink mark	Visible	Not visible	Reduced
5	Waving	≈3.5mm	≈1.5mm	Reduced
6	Burr	0.13mm	0.01mm	Reduced
7	Range of shrinkage (Dimension gap)	0.76mm (485.86—458.10)	0.04mm (485.54—458.58)	Shrink no show (0.32mm smaller in total)



standard injection molding plastic part



gas assisted injection transparent plastic part



section of product part