A E G I S

APPLICATION ENGINEERING GAS INJECTION SYSTEMS

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SRS-2000 Resin Shutoff Valve

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From: AEGIS Component Engineering.

RE: SRS-2000 Automatic Resin Shutoff Valve for Gas Assisted Injection Molding: Installation and Operation

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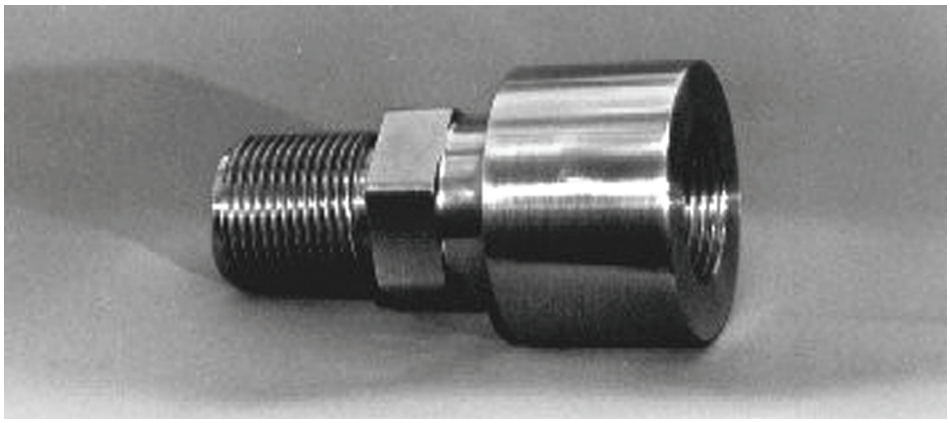
AEGIS' exclusive **SRS-2000** Automatic Resin Shutoff Valve is needed to prevent resin and nitrogen gas from returning to the molding machine injection barrel upon injection of gas, whether injecting gas through the nozzle, or when gas injectors and the gas flow path are close to the resin gate on "in article" applications.

The **SRS-2000** unit is totally automatic, and requires no hydraulics or signals for actuation. Unlike some shutoff valves, there are no springs to wear, break or that require periodic maintenance and repair. The operating principal is simple: Positive pressure on the downstream side of the valve actuates closure of the valve. The valve remains closed as long as the cavity pressure remains *higher* than the opposing barrel pressure.



Installation: The SRS-2000 is assembled into the molding machines barrel end cap in the same manner as a resin injection nozzle. The injection nozzle screws into the female end of the shutoff valve. The hex is 2.00 inches in diameter. Use anti seize compound as with a standard injection nozzle. The major diameter of the shutoff valve is 3.00", and requires a 2.00" wide heater band set at the same temperature as an injection nozzle for the same resin. Note that due to the larger diameter of the shutoff valve, the heater band setting may need to be slightly higher to offset the greater thickness of the valves outside diameter to the through-bore.

Operation: Upon gas injection through either the resin nozzle or injectors in the tool cavity, the cavity pressure becomes higher than the pressure at the resin gate or sprue, causing the internal

mechanism in the SRS-2000 to actuate. It will remain closed as long as the pressure differential is maintained.

NOTE: Due to the mechanical pressure "multiplier" in the barrel, barrel back pressure during screw recovery should be no more than 10% of the gas/cavity pressure to keep the valve closed, i.e., if gas pressure in the cavity is 3,000 PSI, back pressure should be no more than 300 PSI. A higher back pressure can cause the valve to open, allowing resin and/or gas to return to the barrel. This is rarely an issue as few resins require a high pack pressure for resin melt recovery. The SRS-2000 is not a shutoff valve to prevent resin drool.

Whether injecting gas through injectors or through the nozzle, gas pressure should be maintained throughout the cooling cycle until just before the mold opens. During this period there is usually plenty of time for screw recovery, with the elimination of any substantial back pressure prior to depressurization of the gas path. (It is always best to maintain gas pressure throughout the cooling cycle, as this keeps the molded part against the tool cavity, improving cooling efficiency.)

Standard SRS-2000 dimensions are shown below. Standard male and female threads are 1-3/4" – 8. A tapered I.D. on the male end (such as for Van Dorn molding machines) is available as well as threads to fit any molding machine.

SRS-2000 Standard Dimensions