

Advantages of Using Herzog® Shut-Off Nozzles

Productivity

- Material saving by eliminating drooling, stringing, leakage
- Increase reliability, reduction in waste parts
- Reduction in cycle times
- Process, environmental and safety aspects
- Preventing process breakdowns while using filters
- Homogenization improvement with increased back pressure and/or static mixers

Methods

- Dosing with retracted injection units
- High-speed machines, very short cycle times
- Multi-component injection
- Vertical injection process
- Special applications (gas assisted injection molding, physical foaming, chemical foaming, melt pre-compression)
- Filter and mixer applications



Shut-Off Nozzles

Bolt Shut-Off Nozzle - Type BHP



The BHP type shut-off nozzle is ideally suitable for processing at injection rates of up to 5'000 cm³ per second thanks to the straight-through, single channel design which provides optimal rheological conditions. Shearing of the material is also reduced due to direct melt flow and with the traditional, secure shut-off provided by herzog® nozzles you can reduce cycle times by dosing the next shot sooner while at the same time preventing drooling. Controlled by either pneumatic or hydraulic actuators, its carefully developed design allows for the easiest of installations and it can be adapted to any injection molding machine.

Max. injection rate: 5,000 cm³/s
Max. injection pressure: 3,000 bar at 400°C

Needle Shut-Off Nozzle - Type HP



The pneumatically or hydraulically controlled nozzle type HP (High Performance) has a precise needle shut-off mechanism which separates the melt stream directly at the mold interface. The HP nozzle is ideally suitable for closing against high pressures and remaining closed regardless of back pressure. Therefore it is adaptable with several different technologies such as; MuCell® and other physical or chemical foaming procedures as well as melt pre-compression.

Max. injection rate: 3,500 cm³/s
Max. injection pressure: 3,000 bar at 400°C

Herzog® Shut-Off Nozzles



Needle Shut-Off Nozzle - Type A

The original needle shut-off nozzle from herzog® which has over the years enabled processors increase productivity. Strong, reliable and above all economical, it can be adapted to any machine type with the simplest of installations. The nozzle operation is melt pressure dependent. The axial aligned needle is held in the closed position by spring force. Once the injection pressure rises above 200 bar, it will overcome the spring force and open the nozzle.

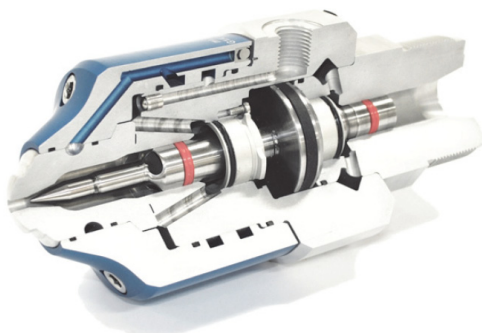
Max. injection rate: 1,600 cm³/s
Max. injection pressure: 2,000 bar at 350°C



Needle Shut-Off Nozzle - Type SHP

The needle shut-off nozzle type SHP (Spring High Performance) is specially designed for processors who require an uncomplicated shut-off while operating at high temperatures and high pressures. This is enabled by placing the spring system outside of the melt stream. This compact design is effortless to install and can be expanded with a low pressure drop screen type filter.

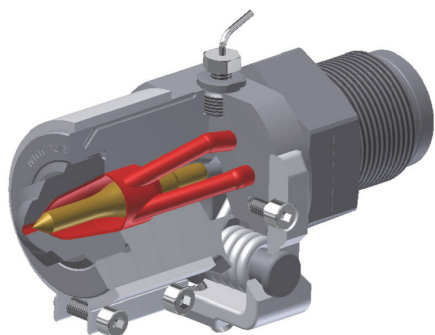
Max. injection rate: 500 cm³/s
Max. injection pressure: 3,000 bar at 400°C



Needle Shut-Off Nozzle - Type NE

The NE type nozzle is specifically designed for use in elastomer processing. Rubber, liquid silicone rubber and other elastomers can be processed without fear of vulcanization due to the nozzle's integrated cooling system which uniquely regulates temperature throughout the entire nozzle. It is manufactured from corrosion resistant materials. The pneumatically controlled nozzle has a needle shut-off which stops the melt stream directly at the mold interface.

Max. injection rate: 500 cm³/s
Max. injection pressure: 3,000 bar at temperature range -20°C to 110°C



Needle Shut-Off Nozzle - Type TSN

The spring actuated machine needle shut-off nozzles type TSN are used in the processing of thermoplastics, principally with low viscosity materials such as: PA, PPS, PE, POM, PP. A shut-off needle is positioned axially inside the nozzle. This is held in the closed position (default position) by spring force. The nozzle opens with injection pressure. Once the melt pressure which is exerted on the needle surface area rises above 200 bar, it overcomes the spring force and opens the nozzle. Once the pressure drops to below 80 bar, the spring force closes the nozzle at the orifice / mold interface.

Max. injection rate: 500 cm³/s
Max. injection pressure: 3,000 bar at temperature range -20°C to 110°C

Shut-Off Nozzle Options

All nozzles are available with a range of options. Each option not only provides extra functionality but it is completely integrated into the shut-off nozzle. Existing nozzles may also be retro-fitted with any option. Please check the specific nozzle's technical documentation for compatibility. Each nozzle comes with a choice of heating and thermal measuring options.



Piston Position Monitoring Sensor - Type SHE

Today's moulding processes require thorough monitoring systems for fully automated production. Disruptions must be automatically detected and transferred to the machine control. The functionality of our shut-off nozzles is monitored by the type SHE sensor. The sensor is integrated in the hydraulic or pneumatic actuator and detects the end position of the piston. The shutoff signal "open" or "closed" is passed on to the machine control through the signal amplifier.



Filtering Systems - Screen and Gap Types

Clean melts, free of foreign particles are necessary for a trouble-free and economical process. herzog® has developed a melt filter which is characterised by its compact design. The melt is fed through the filter gaps and any foreign particles which are larger than the filter gaps are retained in the guide duct. For all shut-off nozzles except type A, a low pressure drop screen filter is installed directly in the nozzle tip. For the shut-off type A; the internal spring chamber is replaced with a specially designed gap filter chamber.



Gas Injection Valve - Type GM

The GM gas tip is one of the easiest ways of achieving gas delivery into the mass core of the injected part. The injector sits in the shut-off nozzle's tip extension and the gas inlet is completely sealed by a specific valve. After the shot, the gas is injected via the tip, forces its way through the sprue bush into the soft core and displaces the mass until the cavity is filled out. Any openings on the injected part caused by the gas can be closed by post injection.



Flexible Actuator Supply

Our pneumatic and hydraulic actuators rotate slightly and system dependently around the suspension axle during the piston stroke. If this pivotal movement is restricted, the piston rod may wear over a short period of time. Therefore, it is very important that any kind of rigid piping is not used when connecting air, water or hydraulic oil. Our high temperature and pressure resistant flexible actuator feed solves this problem and is available with various push-in connectors.



Corrosion and Abrasion Protection

The constantly changing composition of processed materials place increasing demands on machine parts. To ensure the functionality of each mechanical component, options for both abrasion protection and corrosion protection are available. Key parts of the shut-off mechanism can be supplied with harder and more durable metal grades.