Machine Nozzles

HMM SOLUTIONS INC

Molding 2014
Newport Beach

Machine Nozzles

H. Müller Mekaniska AB

In 1970 H. Müller Mekaniska AB started with the design & manufacture of molds.

Hans Müller's basic idea was to develop dependable and more efficient molds to reduce maintenance as well as minimize shutdowns. Thus, Hans Müller invented a 'Return Device'.

Today our products include: 2-Stage Ejectors, Ejector Couplings, Positive Locking Cylinders, Nozzle Filters, Automatic Shut-Off Nozzles, Triple-Action Mixing Nozzles, and speciality or custom Hot Nozzles & Machine Nozzles.

H.MÜLLER MEKANISKA

HMM Solutions Inc

Machine Nozzles

H. Müller Mekaniska AB

In 1970 H. Müller Mekaniska AB started with designing & manufacture of molds.

During the 80's mold components have taken over completely. After over 40 years later, H. Müller Mekaniska has a strong offering of highly-engineered mold components, as well as standard and custom Machine Nozzles and Hot Runner Nozzles.

H. Müller Mekaniska and HMM Solutions Inc is very pleased to be working with HASCO, DME, Meusburger, DMS, and others to improve sales of our existing products, while also working to develop new products and solutions for our customers.

H.MÜLLER MEKANISKA

HMM Solutions Inc

Machine Nozzles

HMM Solutions Inc

In 2011 HM Müller Mekaniska started a venture to improve product sales & support and new product development in the Americas – HMM Solutions Inc

The mission of HMM Solutions Inc is to provide value-added **SOLUTIONS** for molders and mold-builders in the Americas.

We believe that challenging problems can benefit from engineered products and solutions.

We also believe that many end-users are not even aware of “problems” that they may be encountering everyday.

H.MÜLLER MEKANISKA

HMM Solutions Inc

Machine Nozzles

Most common functions of Machine Nozzles

1. Filtering of melt
2. Mixing of melt (and additives)
3. Shut-Off of melt

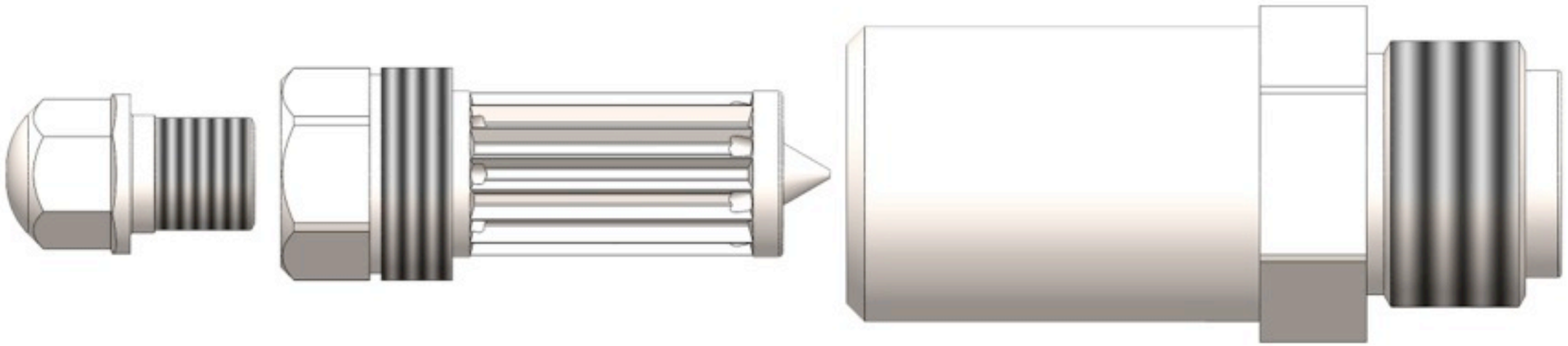
Machine Nozzles

Front-end of Machine Nozzle
mates with Sprue Bushing of Mold
– radii must match

Back-end of Machine Nozzle threads
onto Injection Molding Barrel
– thread specs must match

Machine Nozzles

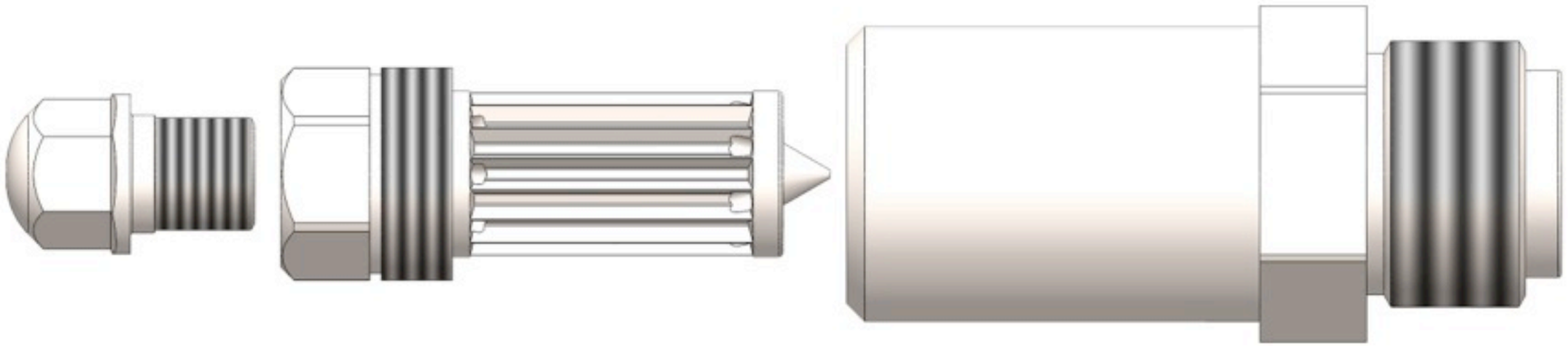
Modular Design/Construction



with modular design & construction, the center body is standardized and the back-end and front-end are adapted to fit individual Injection Molding Barrels and Sprue Bushings in the Mold

Machine Nozzles

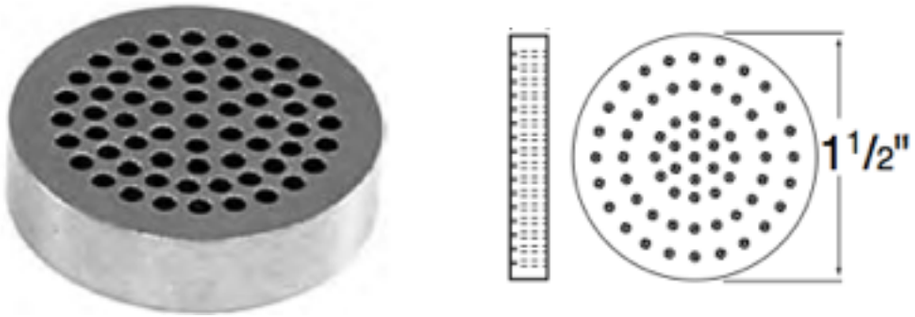
Nozzle Filter



Nozzle Filters are used to filter contamination – preventing contamination from plugging and/or damaging Hot Runner Tips and Cold Runner Gates

Machine Nozzles

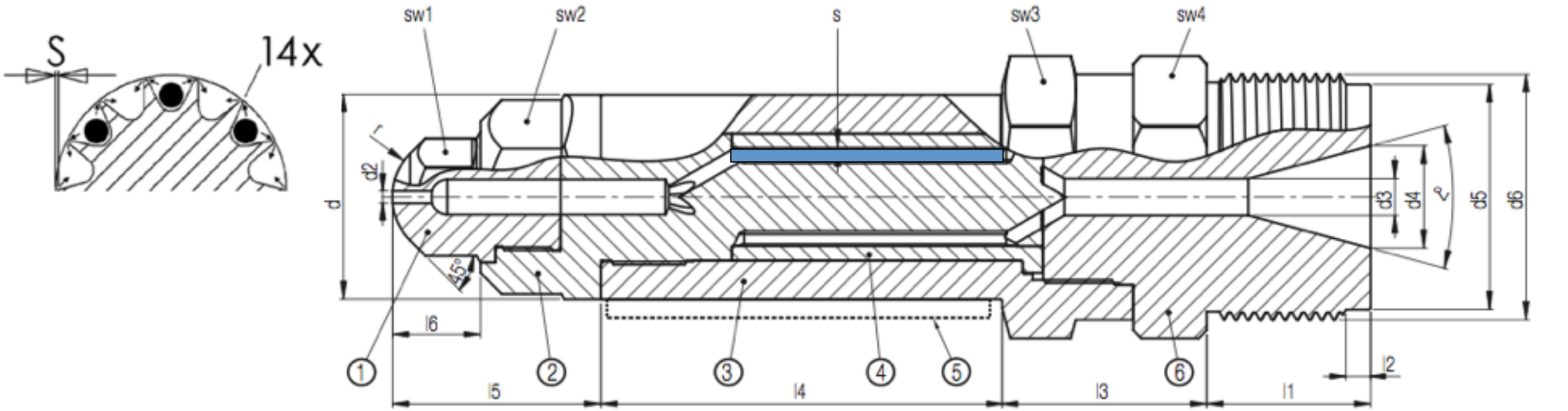
typical Screen-Pack Nozzle Filter



- have high-pressure loss (~15-20% +) when installed
- as filter holes collect debris, pressure spikes very quickly
- take some time to clean – as molder must let nozzle cool; pull nozzle; disassemble nozzle; clean filter; re-assemble nozzle; re-install nozzle; and then wait for heat to return

Machine Nozzles

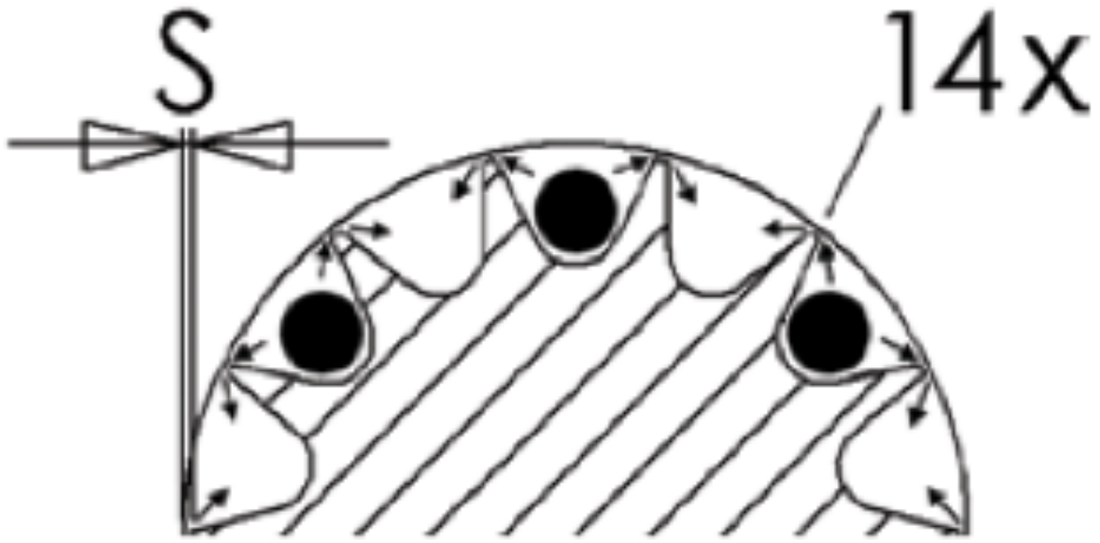
Gap or Edge Filter Design



- (14) slots or “gaps” provide large area filtration
  - results in minimal pressure loss (~5-7%) initially
  - as debris is captured, only a small portion of filtration area is lost – minimizing pressure losses

Machine Nozzles

Gap or Edge Filter Design



- large area of Gap-Filter, relative to other filter styles, results in **low-pressure drop** & minimal stress on melt
- Gap size is determined by height of ribs
  - Gap size is set to molder's specifications
  - Gap size may be increased by grinding filters' ribs

Machine Nozzles

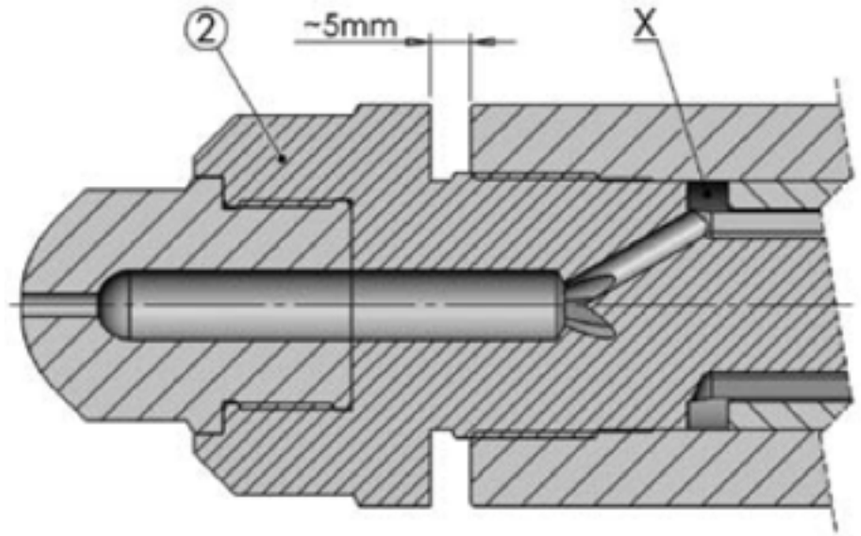
Gap or Edge Filter Design

- Gap Filter design is engineered to ensure **low-pressure loss**, minimal melt stresses
- Gap size is set to molder's specifications
- can be used with glass-fiber reinforced materials (CVD Coating recommended)
- easy to install, clean, maintain

primary advantage of Gap Filter design and engineering is low-pressure loss due to large cross-sectional flow area

Machine Nozzles

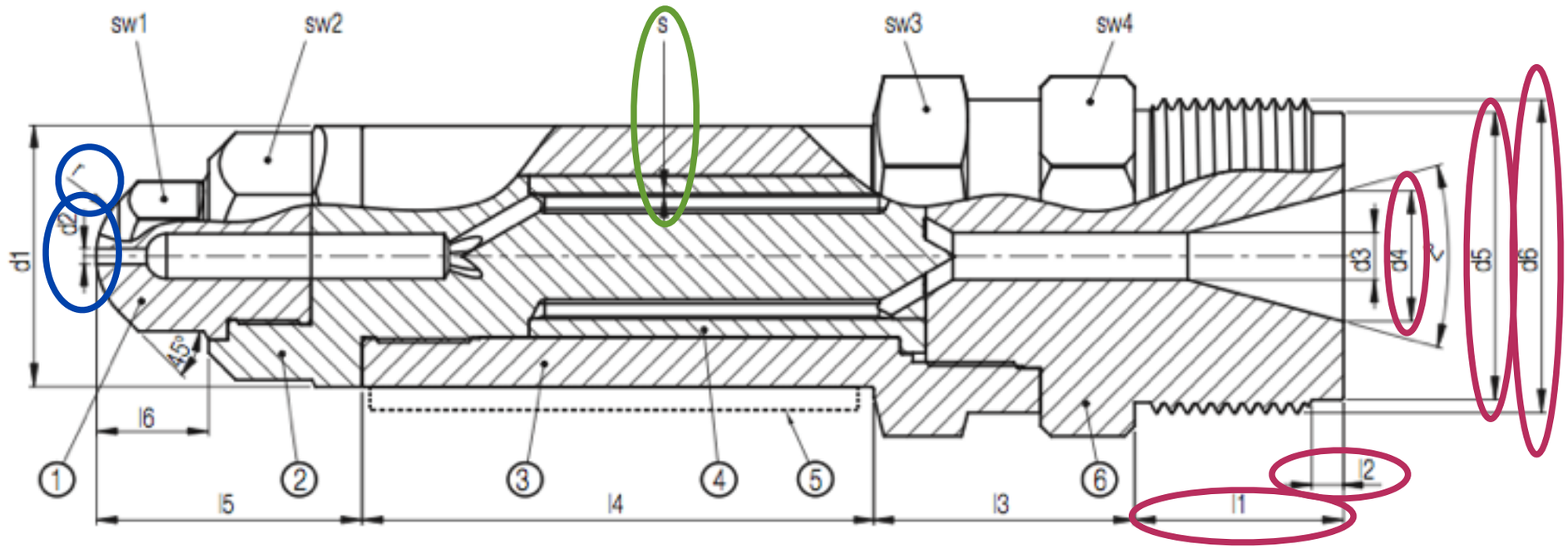
ES-2 Purgeable Nozzle Filter



- **easily purged clean** while on the barrel; between shots
  1. thread Nozzle Tip forward about 5mm (see above)
  2. perform a slow purge or two
  3. contamination caught in Nozzle Filter will be purged from the Nozzle Filter and into the purge piles
  4. tighten up Nozzle Tip; re-start-up production molding

Machine Nozzles

Gap or Edge Filter Dimensioning

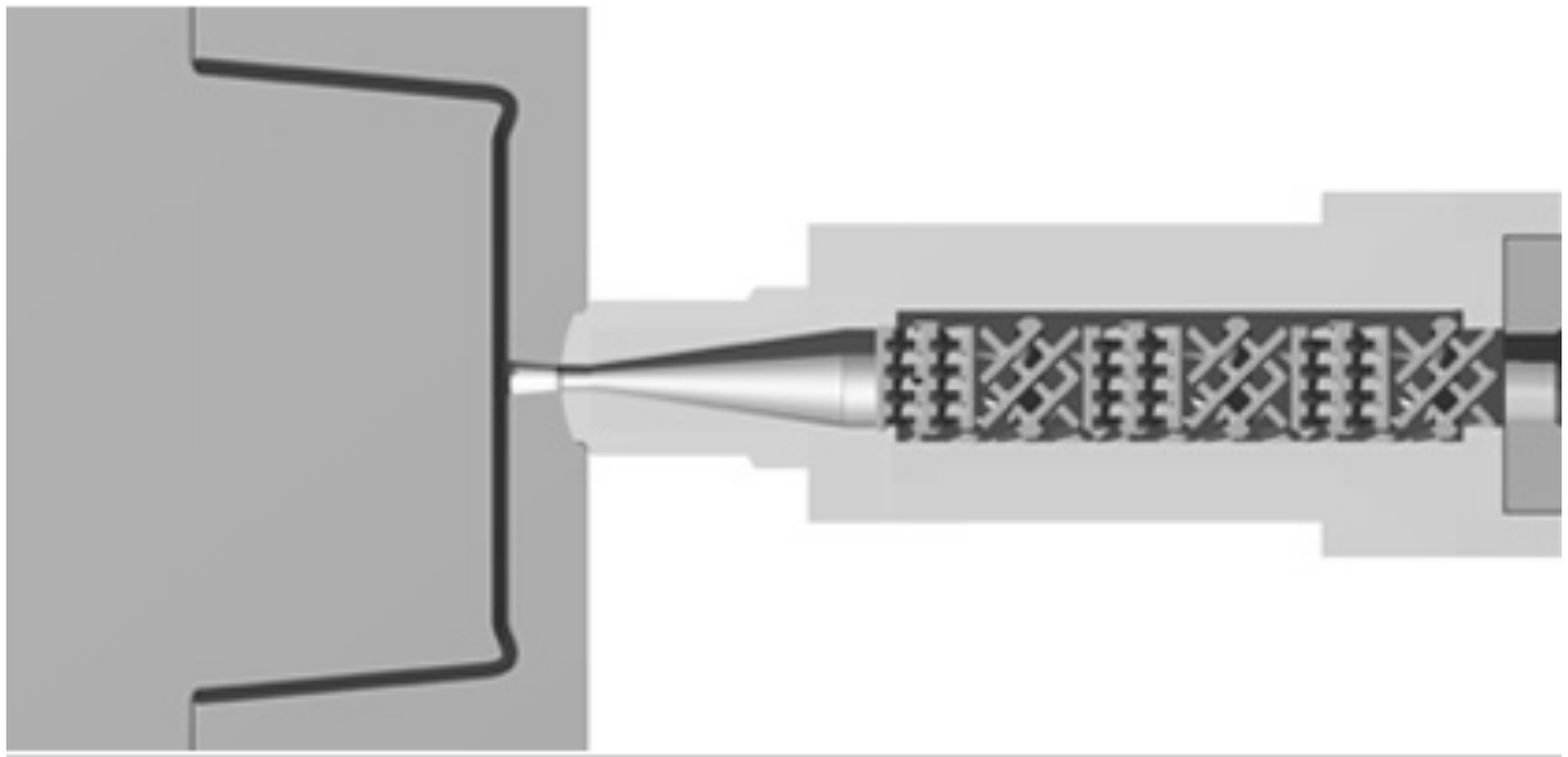


Front-end of Machine Nozzle mates with Sprue Bushing of Mold – radii must match

Back-end of Machine Nozzle threads onto Injection Molding Barrel – thread specs must match

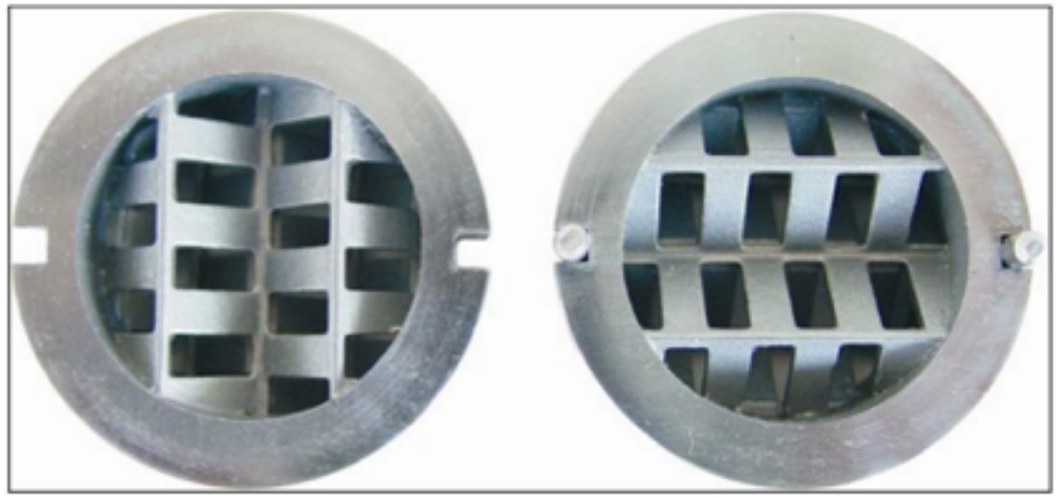
Machine Nozzles

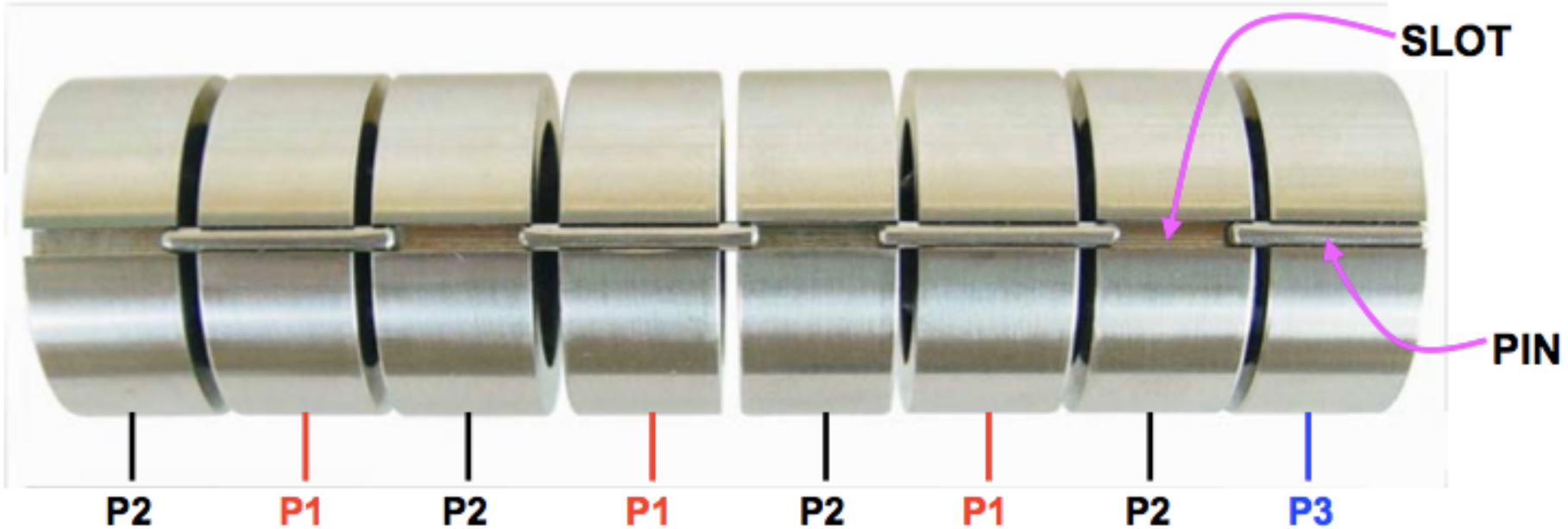
Static Mixing Nozzles



Machine Nozzles

Static Mixing Nozzles





Machine Nozzles

Static Mixing Nozzles

- Mixing Nozzles provide better dispersion of additives, such as colorants
- Mixing Nozzles also provide a more homogeneous melt and melt temperature
- improvements in molded part dimensions and more uniform part weight may be realized
- higher percentage of regrind may be possible

primary advantages are better dispersion of additives &more homogeneous melt, resulting in higher consistency of molded parts

Machine Nozzles

Triple-Action Mixing Nozzle Filter

Machine Nozzles

Triple-Action Mixing Nozzle Filter

•thermoplastic melt enters at outer diameter and is gently rotated inward

•melt then filters through the Inner Bushing and is gently rotated in the **opposite** direction

•then happens once more

•ensuring **gentle, yet through mixing** of melt

Triple-Action Mixing

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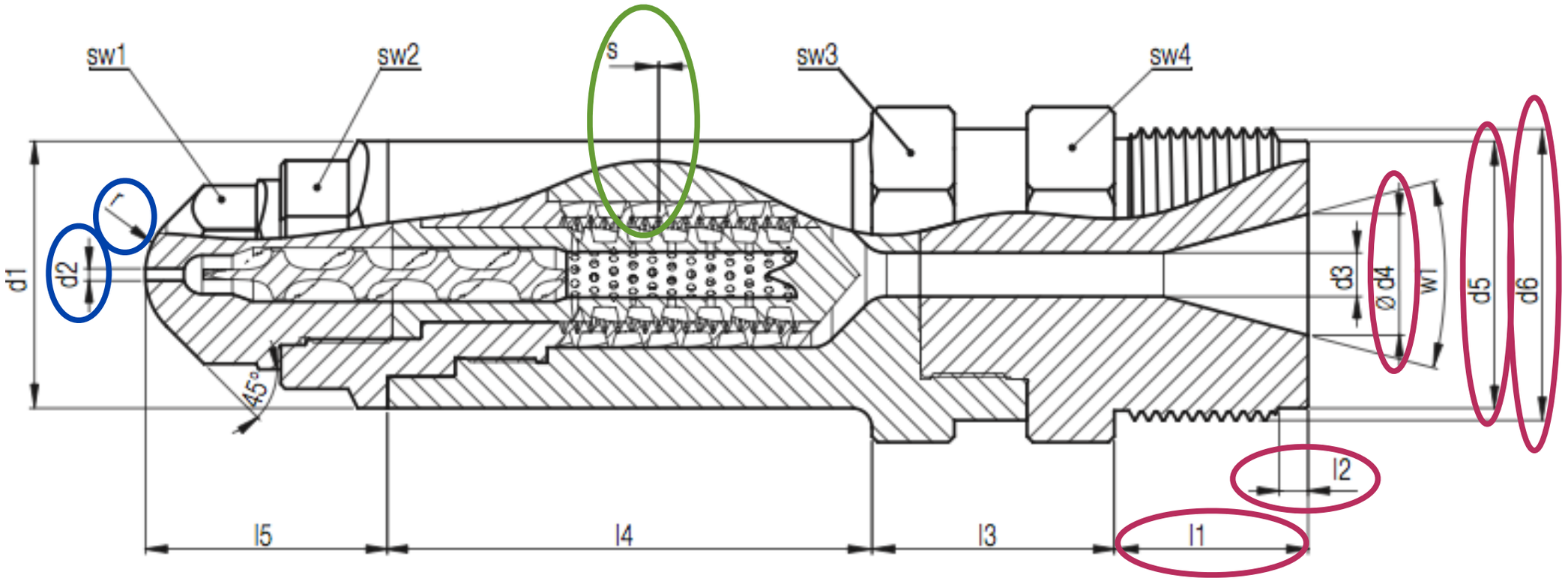
Triple-Action Mixing Nozzle Filter

- **Triple-Action Mixing** ensures gentle, yet through mixing of thermoplastic melt
- **reliable and thorough, yet gentle mixing** of thermoplastic melt
- easy to install, clean, maintain
- must be removed & disassembled for cleaning
- it is recommended that (2) Mixing Nozzle Filters be utilized if there will be frequent color changes

Machine Nozzles

Mixing Nozzle Filter Dimensioning



Front-end of Machine Nozzle mates with Sprue Bushing of Mold – radii must match

Back-end of Machine Nozzle threads onto Injection Molding Barrel – thread specs must match

Machine Nozzles

Shut-Off Nozzles

Machine Nozzles

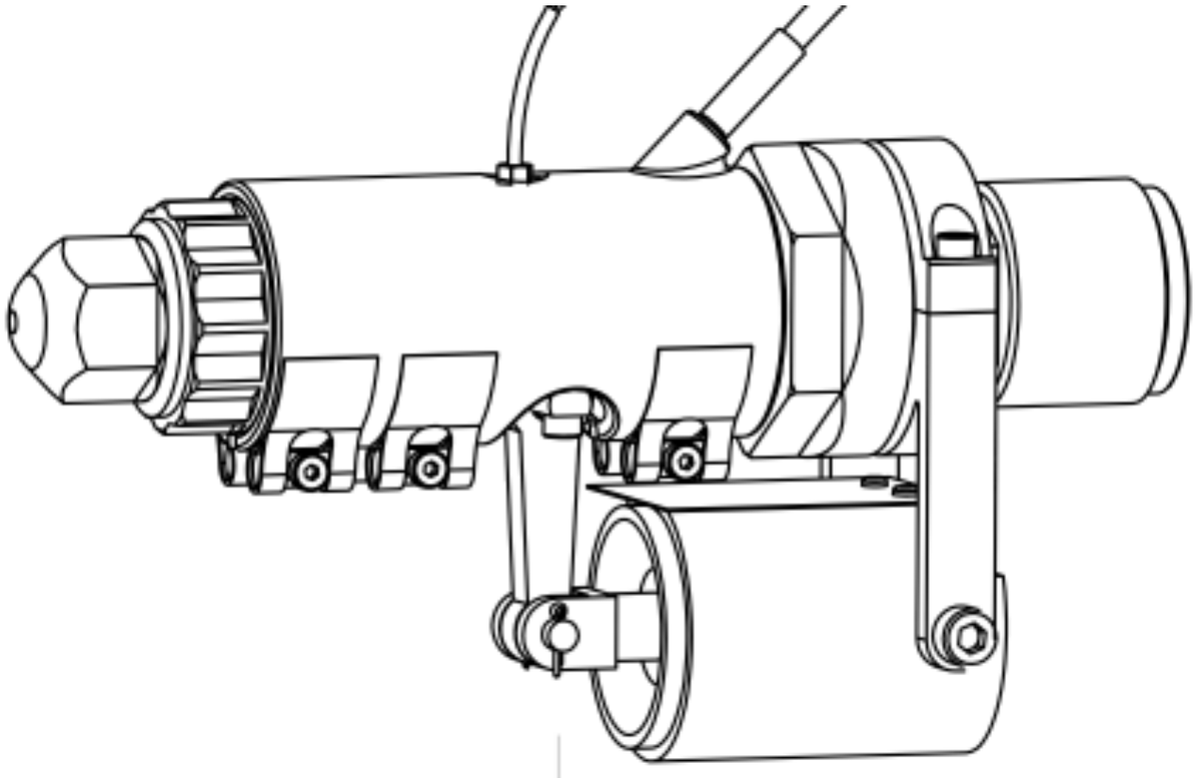
Shut-Off Nozzles

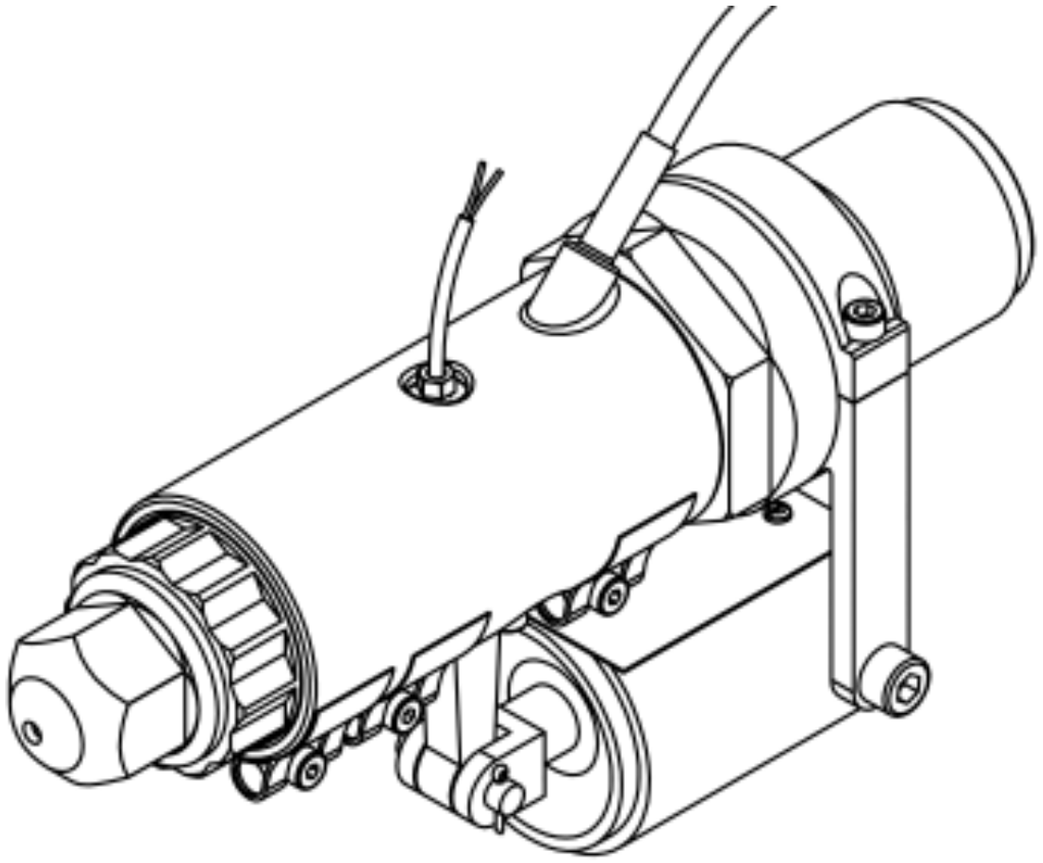
- **minimizes drool & stringing**- saving material & maintenance
- permits separation of Injection Molding Barrel from Mold between shots - commonly occurs in Multi-Shot Applications
- minimizes introduction of air into Barrel when Injection Molding Barrel is disengaged from the Mold
- may be used in Vertical Injection Molding Presses, commonly used in Insert Molding Applications

primary advantage is minimization of drool & stringing when Injection Molding Barrel disengages from Mold between shots

Machine Nozzles

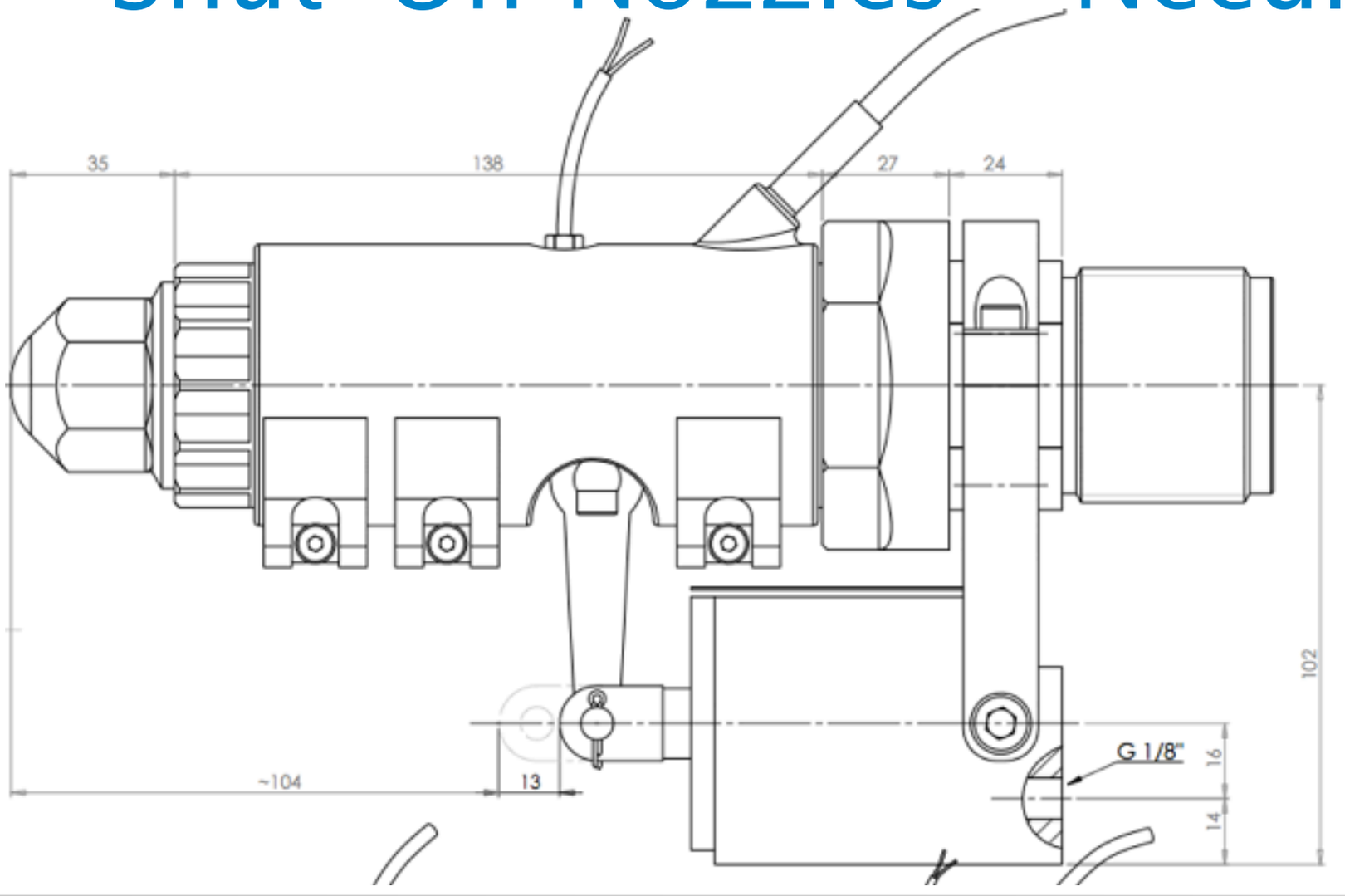
Hydraulic or Pneumatic Actuated Shut-Off Nozzles





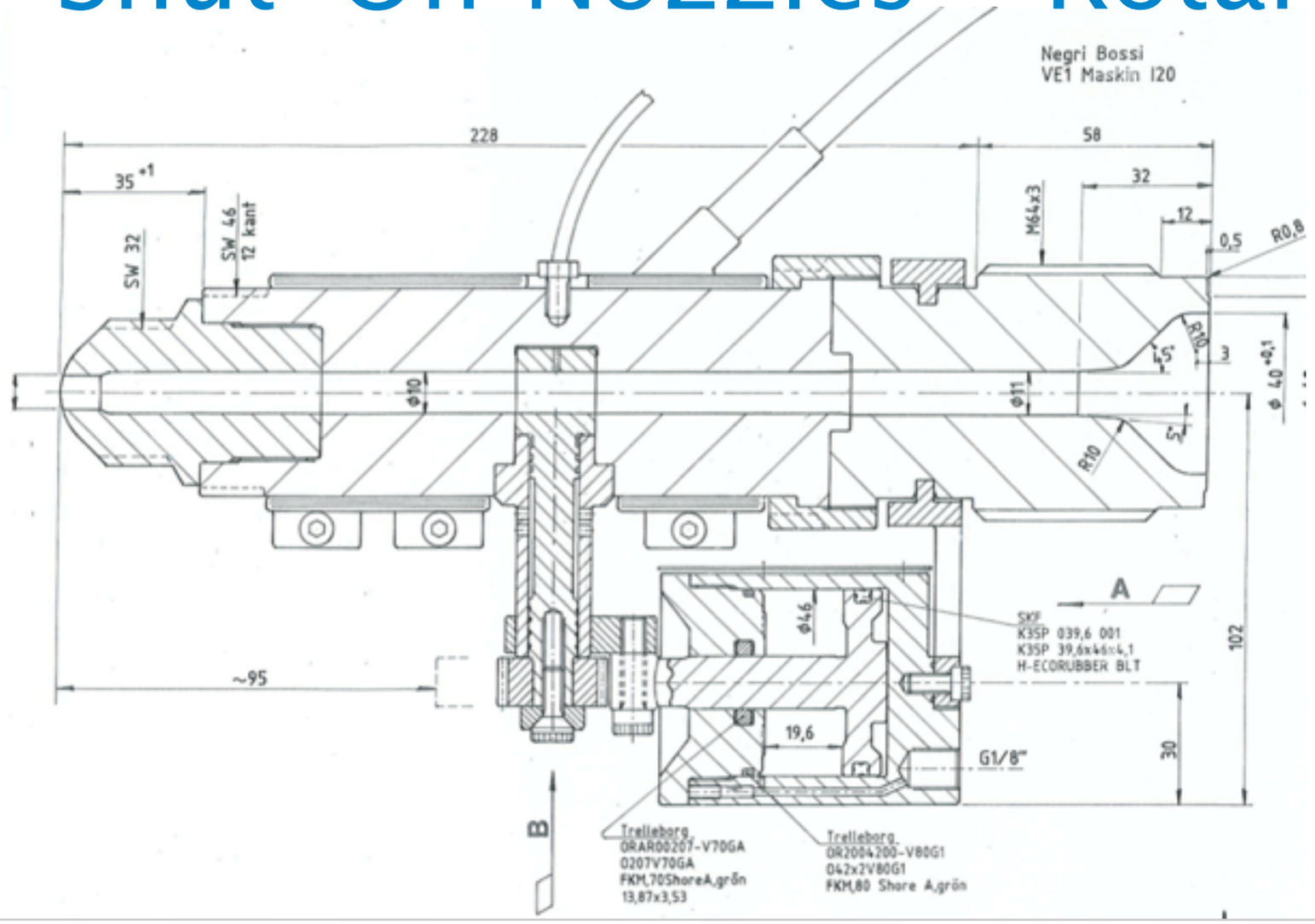
Machine Nozzles

Hydraulic or Pneumatic Actuated Shut-Off Nozzles – Needle



Machine Nozzles

Hydraulic or Pneumatic Actuated Shut-Off Nozzles – Rotary



Machine Nozzles

Automatic Shut-Off Nozzles

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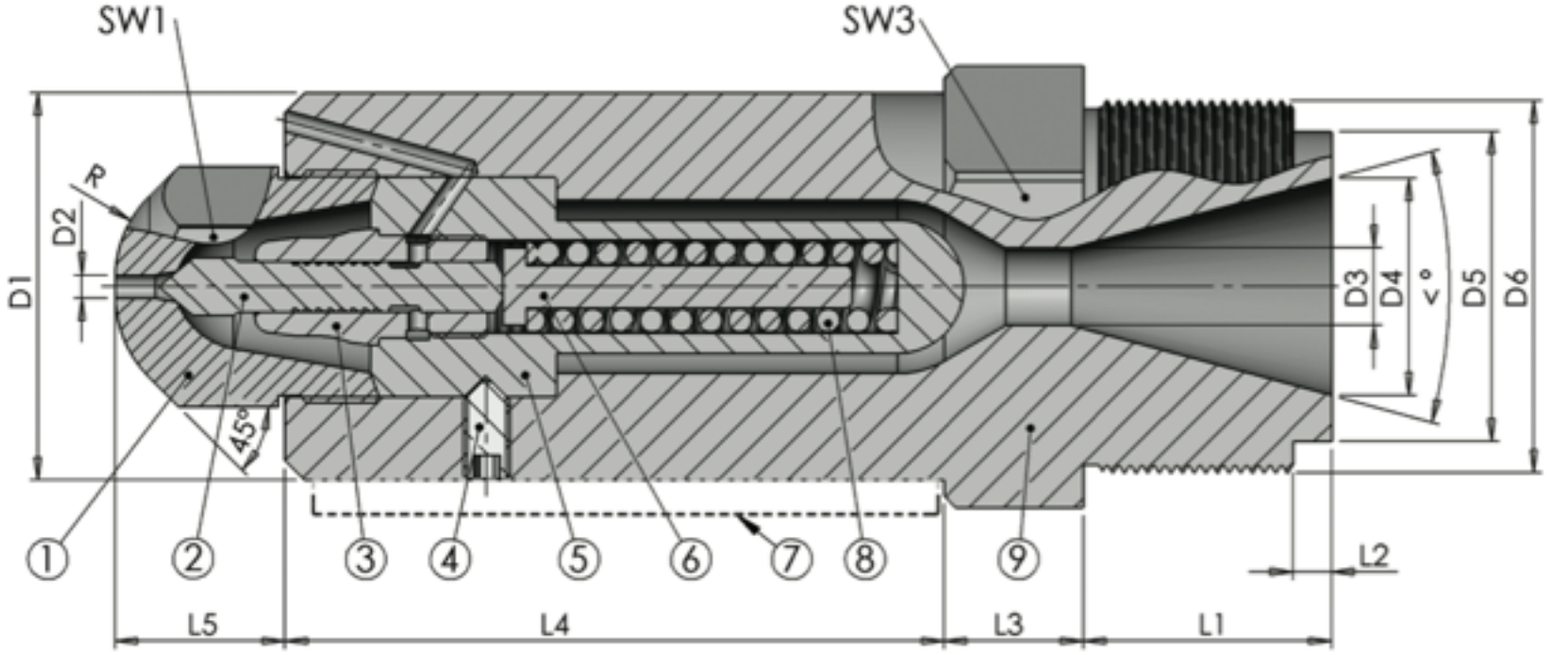
Automatic Shut-Off Nozzles



- high-temp spring pushes Needle forward, automatically shutting off melt flow
- injection pressure overcomes spring pressure, pushes Needle back, and allows melt to flow
- as injection pressure drops, Needle moves forward

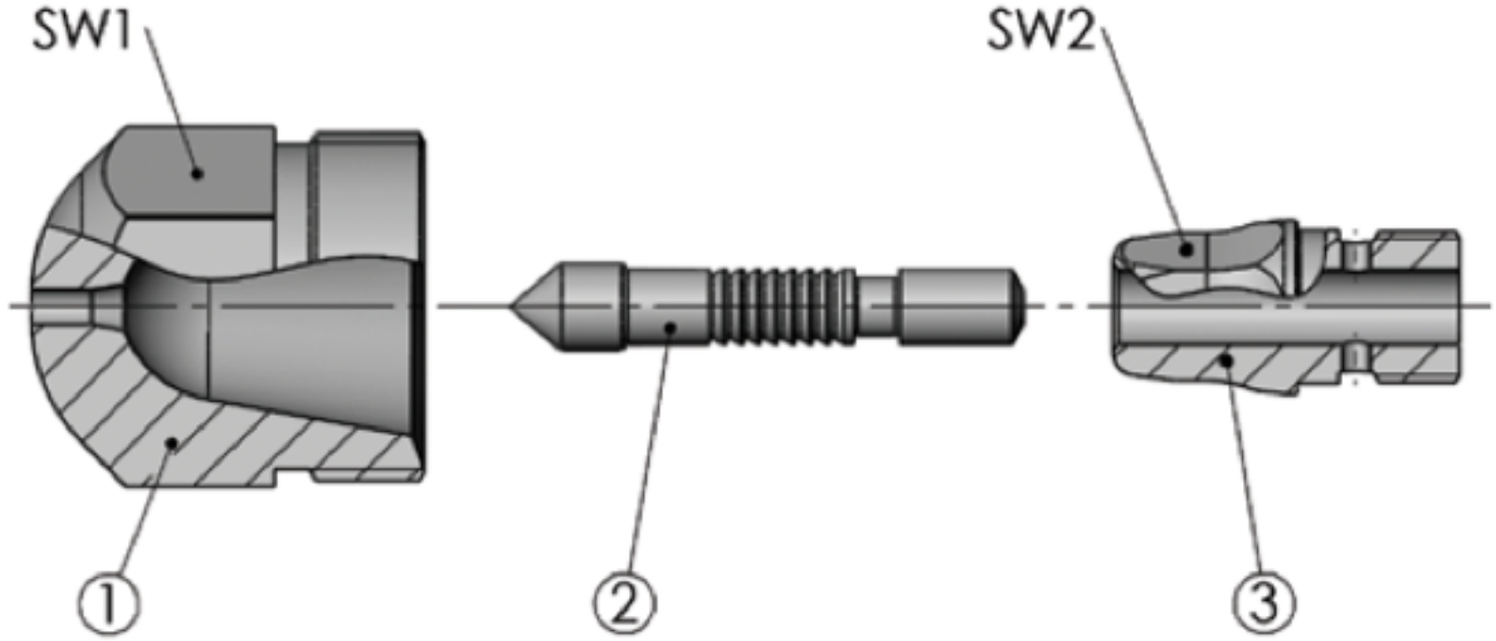
Machine Nozzles

Automatic Shut-Off Nozzle

- **minimizes drool** – saving material & maintenance
- valve opening & shut-off is **completely automated**
  - injection pressure causes shut-off needle to open, letting thermoplastic melt flow freely
  - as injection pressure drops below specified pressure, shut-off needle automatically moves to closed position, shutting-off resin flow and minimizing drooling
- spring pressure can be customized to your specifications, to match your injection pressure

Machine Nozzles

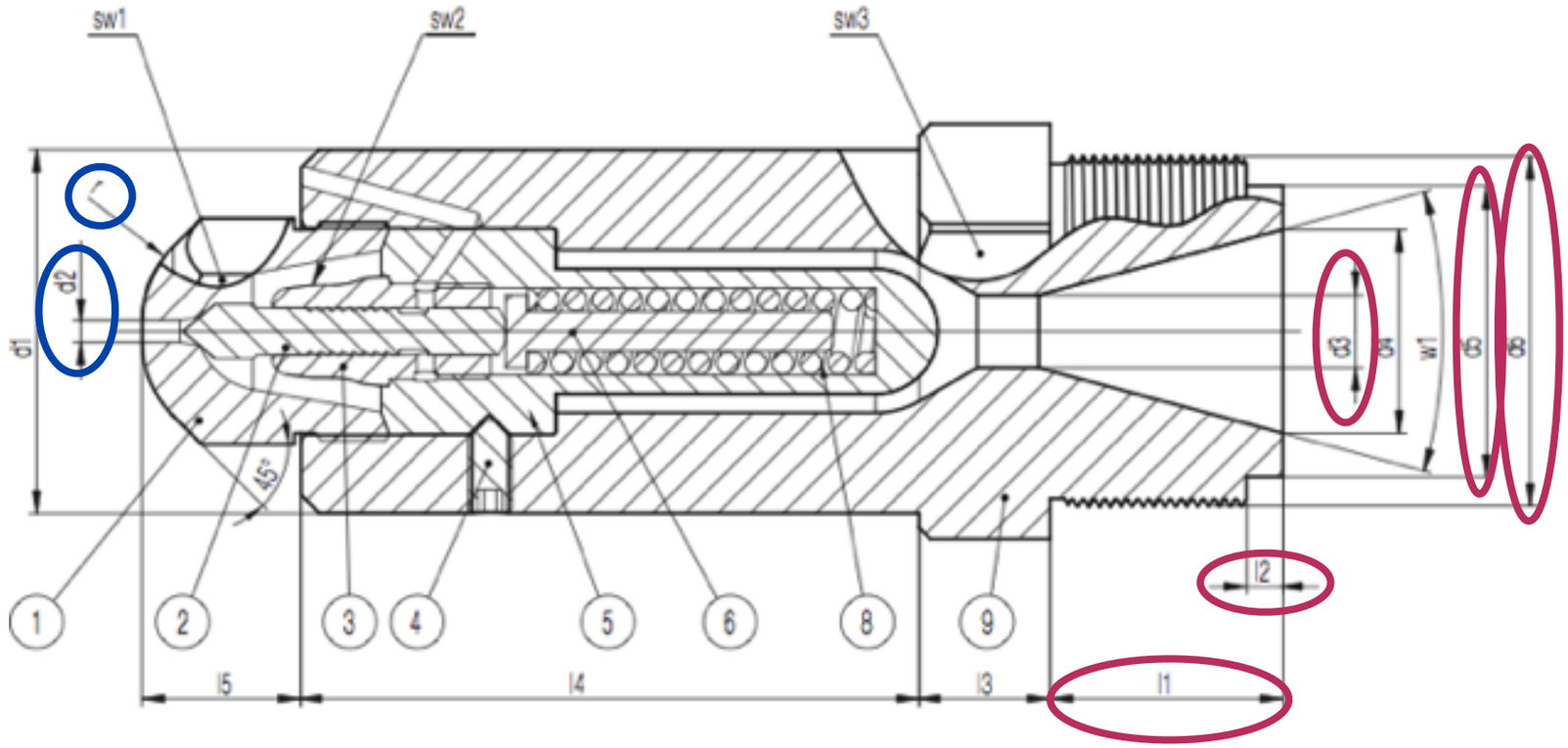
Automatic Shut-Off Nozzle



- high-temperature, high-performance Spring provides **reliable, long-lasting operation**
- relief opening flushes plastic melt away from Spring
- sub-components may be easily replaced individually

Machine Nozzles

Shut-Off Nozzle Dimensioning



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Contact Info

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