The smart melt flow
Best surface quality thanks to gentle gating
SoftGate® valve pin speed control
Key data
- Valve pin speed control for hydraulic valve gate systems
- For DF 12, DF 18 and DF 22 Series
- Can be retrofitted to existing systems
- Available in the following versions
  - SoftGate 3.2, full version
  - SoftGate 3.1, flow restrictor only

Function
- Precise control of valve pin opening time \( t_1 \)
- Settings adjustable for each individual valve
- Possible SR range: 0.1 ... 4 s
- Automatic operation, no controller needed

SoftGate® 3.2

Design
a) Control module
- High-quality control valve that works regardless of variations in oil pressure
- Controls the velocity of the valve pin movement when opening
- Valve settings using a scale
- Valves secured via lock

b) Valve pin and tip insert
- Additional valve effect through appropriate flow geometry
- Continuous release of the flow cross-section

c) Valve pin position control
- Limit switch on the hydraulic piston
- Sends signals: “Nozzle Open” and “Nozzle Closed”

d) Calibration unit
- Tool only for displaying during set-up
  - Set-up multiple molds with a single unit
  - No controller - SoftGate runs automatically
- Measures the time “Nozzle Open” and “Nozzle Closed” for up to 8 nozzles
- Shows opening time in the display field
- Needle position displayed using 2 LEDs:
  - Green: Nozzle Open; Red: Nozzle Closed
  - No LED lit: Valve pin is in-between limit switches

SoftGate® 3.1
- Consists of components a) and b) mentioned above

Benefits
- Minimization of pressure drops and pressure surges \( e) \)
- Minimization of fluctuations in flow velocity
- Prevention of surface defects
- Expanded processing window

- Improved reproducibility and process control through setting and display of specific values \( f) \)
- Information about the valve pin position \( g) \)
- Process documentation possible
- Improved operational reliability
- Precise and reliable process control without additional controllers
Mode of operation

SoftGate makes it possible to control the opening speed of the valve pin (a) in hydraulic valve gate nozzles. Instead of an abrupt, sudden opening, the flow cross-section (A) is continuously moved up and released. By adjusting the opening time (t1), the correct valve pin opening speed for optimum gating into the area concerned can be set.

Benefits

Operation

- Improved reproducibility and process monitoring by displaying specific values → b)
- Clear information about the position of the valve pin is available:
  - c) open
  - d) closed
  - e) in motion
- Option for process documentation
- Increased operational confidence with additional data
- Expanded process window
- Precise, highly reliable process technology without control devices

Sequential injection molding → f)

- Minimizes pressure drops and pressure shocks when individual nozzles are opened
- Minimizes flow rate fluctuations in the melt flow
- Avoids hesitation marks → g)
- High surface quality and straightforward after-treatment

Back molding → h)

- Gentle injection on carrier material
- Allows direct gating into decorative foil without sub runner or sprue
- Avoids damage and flaw on the back molded decorative material

Adjusting cavity filling

- Move weld lines to non-critical areas
- Adjust the flow rate, taking into account optimal mold cavity filling

Direct gating on visible surfaces

- Gentle inflow to the cavity wall
- Minimizes flow-induced blush around the gate