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 ... 4s
- 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
- Bends 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

Benefits
- Minimization of pressure drops and pressure surges \( \rightarrow e) \)
- 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 \( \rightarrow f) \)
- Information about the valve pin position \( \rightarrow g) \)
- Process documentation possible
- Improved operational reliability
- Precise and reliable process control without additional controllers

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