

CRB: THE REVOLUTION OF ELECTRIC VALVE GATES

Advanced Tool Solution

The "Cold Runner Block" systems, also called "CRB", are used in injection molding processes to feed the compound as close as possible to the cavity by limiting so far the formation of runners or sprues. During the past 10 years, small nozzle shut-off was more and more developed, first using pneumatic and then hydraulic control systems.

But these systems do not always allow for the full control of the valve gates.

Continuously focusing on higher technical performances and process improvement, REP has been offering the so-called ServoBloc tooling solution since 2010: the electric valve gated Cold-Runner-Block.



A Unique System Throughout the World

The ServoBloc is an electric valve gated Cold-Runner-Block for elastomers and liquid silicone (LSR). Until now unrivalled in the market place, this exceptionally highly flexible system in use allows for unparalleled precision in the injection process of compounds largely varying in both hardness and viscosity.

The ServoBloc system is equipped with needle-type valve-gated nozzles controlled by an electric cylinder.

The valve gate control is fully integrated in the control system of the REP press. The speed or position parameters of the valve gates can be changed directly from the touchscreen of the press!

The screenshot displays the control interface for the REP press. At the top, it shows the date and time (27/09/10, 15:10:43) and the current mode (Remplissage). A red error message reads: "7000 Le parametre obligatoire 00 n'est pas programme". Below this, there are several control elements:

- A central diagram of the injection molding machine with a nozzle assembly.
- Control buttons for "0 5R", "0 63", and "0 64".
- A grid of control buttons for various parameters:

0 3E1	0 901	0 7L1	0 3F1	0 911	0 7M1	0 5T1
0 3E2	0 902	0 7L2	0 3F2	0 912	0 7M2	0 5T2
0 3E3	0 903	0 7L3	0 3F3	0 913	0 7M3	0 5T3
0 3E4	0 904	0 7L4	0 3F4	0 914	0 7M4	0 5T4
- Bottom navigation buttons: "Profil injection", "Dégazages", "Bloc à canaux régulés [1/2]", "Plaquage unité injection après injection", "Tirage de vide", "Recul auto unité injection après injection", and "Pression matière".

The Disadvantages of Traditional Systems

Regardless of whether talking about pneumatic or hydraulic cylinders, in both cases the nozzle opening/closing speeds and times are not controlled, thus leading to a loss of precision. Moreover, pneumatically shut-off CRBs are compatible with soft rubber types only. As the opening and closing strokes are fixed, it is impossible to adjust the compound flow and it is necessary to use the times between the different nozzles for compensation. Finally, there is a risk of hydraulic leakage and compound pollution due to the hydraulic cylinders, pipes and couplings.



The Benefits of the ServoBloc

In comparison to other systems, this needle-type electric valve-gated nozzle system has a lot of advantages.

A sensor indicates the precise position of the needle at any time, thus allowing for full control.

The valve gate opening and closing speed can be set and changed depending on the needle position. Therefore the speed trend is under closed loop control for each nozzle valve gate.

Contrary to cylinder-driven systems, shut-off is not reversible if the motor stops: the needle position remains fixed.

The opening position can be set using different values for each small nozzle, in order to adjust the compound flow at the part infeed and consequently control the compound throughput and heating.

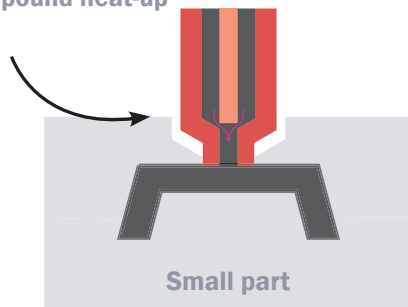


The resolutely modern, clean and economic technology of the ServoBloc is matched to a broad range of soft or hard rubber types, from silicone to FKM. Adaptable to a wide range of applications, it is fully integrated in the injection molding press, thus resulting in a particularly flexible use and allowing for the sequential control and closed loop speed and position control of the needles, which in turn translates into a perfect quality of the injection point, higher reliability of the injection process and compound savings.

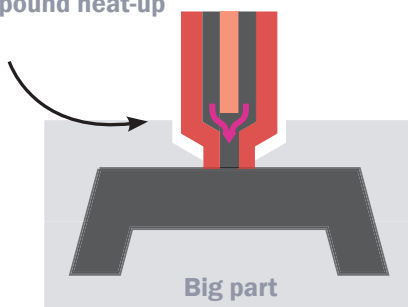
Like in many fields where fully electrical options stood the test of time, the electric valve-gated CRB should set the standards in the field of shut-off type CRBs. Introducing the ServoBloc, REP offers its customers the opportunity to keep one step ahead! ■

VALVE GATE OPENING DURING INJECTION

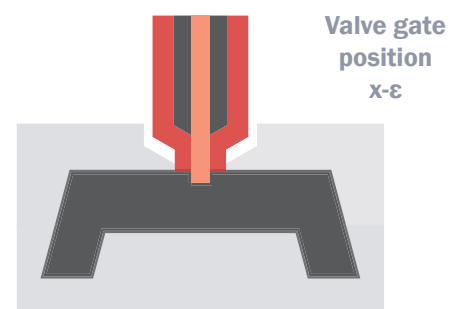
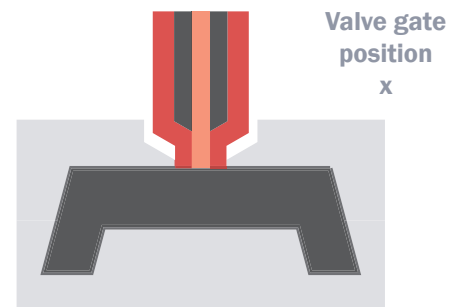
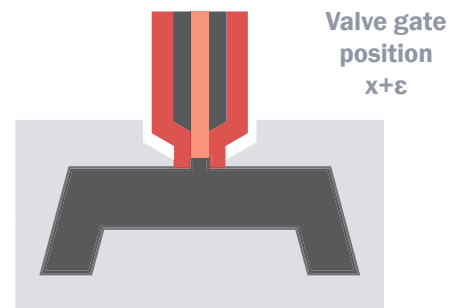
Small opening =
Low flow rate =
High compound heat-up



Large opening =
high flow rate =
Low compound heat-up



VALVE GATE CLOSING AT THE END OF INJECTION



The valve gate position is adjustable with a precision of 0.01 mm directly from the interface