

## Innovative into the Future – BOY-Injectioneering

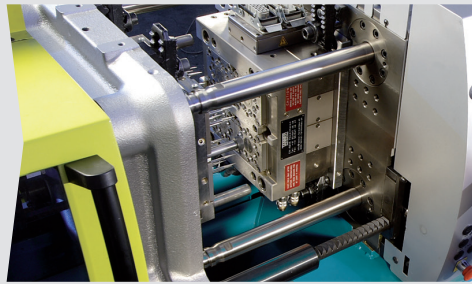


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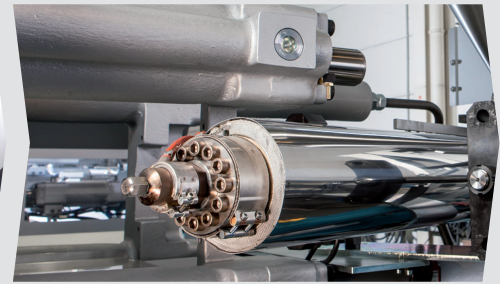
Injection molding machine BOY 50 E



Four-axis industrial robot integrated on top of the clamping unit.



Great distances between tie bars and platens for mounting larger molds



More efficient plasticizing with optional EconPlast-Technology

- **Servo-motor pump drive**
- Four-tie bar, cantilevered **two-platen clamping system**
- Generous tie bar and platen distances
- Most exact positioning of the moving platen via proportional valve and servo drive technology
- Easily accessible ejector at the rear of the moving platen
- Lateral swivel-out injection unit
- Robust machine frame with integrated oil tank
- Optimum L/D ratio of the screw
- Optional with SP 56, SP 69 or SP 170 injection unit
- Different injection units for thermoplastic, thermoset, LSR, and elastomer processing
- **Compact design** with little floor space needed
- Optional with high wear-resistant and energiefficient **EconPlast** unit

As entry-level model with 500 kN clamping force, the BOY 50 E includes a multitude of functions already in standard execution.

Seven different screw diameters, injection units of four different sizes enable multiple possible applications in the

processing of **thermoplastics, elastomers, silicones** and **thermosets**, as well as **metals** and **ceramics** (PIM-Technology).

For all the experience and innovative ideas BOY gained from decades of machine manufacturing went into the development of the BOY 50 E. The patented pressure intensifier with integrated valve function reduces the energy consumption to a minimum. It provides for a secure clamping during injection and cooling without requiring a pressure holding pump resp. energy.

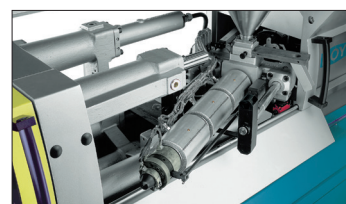
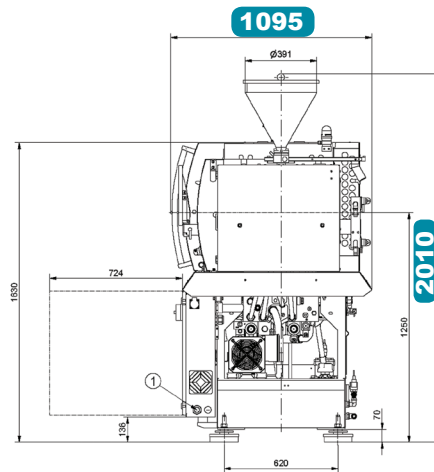
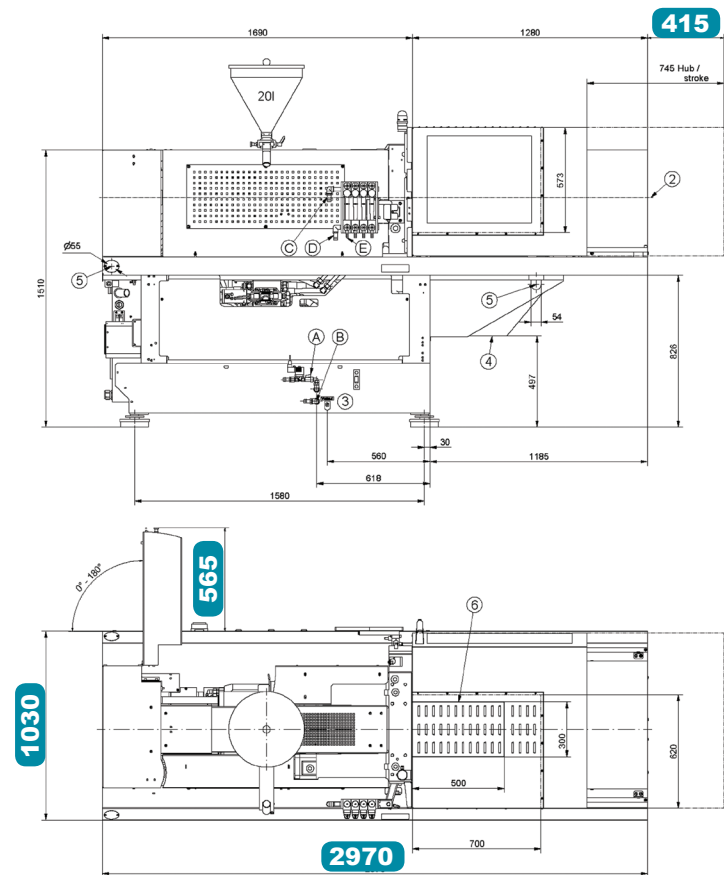
A **servo hydraulic** injection molding machine which is characterized by precision, performance, and compact design. The **servo-motor pump drive** ensures a very effective mode of operation which is smooth and energysaving at the same time. The optionally available **EconPlast** technology makes melting of materials considerably more efficient and more harmonious.

The extremely **compact design** of the BOY 50 E significantly reduces the required floor space, compared to customary machines with a three-platen concept. Due to the cantilevered clamping unit, no additional space is needed for conveying systems or storage containers.

Equipment for the **process automation** can be mounted space saving on the BOY 50 E. Many options for example handling devices, picker as well as brush and unscrewing controls, core pulls and integrated hot runner controls can be chosen.



- 1 The machine design features the best ergonomics and efficient operation.
- 2 The ejector chute, open on three sides, guarantees optimum removal of the molded parts.
- 3 Easy handling and flexibility with regard to additional equipment due to the cantilevered clamping system.
- 4 Optimum control technology with intuitive operation concept.
- 5 Robust machine design with integrated oil tank.



The swivel-out injection unit simplifies the retrofit procedure and maintenance.

## Technical Data – standard version<sup>1)</sup>

Injection unit for processing thermoplastics		SP 82		
Screw diameter	mm / in	24 / 0.94	28 / 1.1	32 / 1.26
Screw- L/D-ratio		22	18.6	16.3
Max. stroke volume (theoretical)	in <sup>3</sup>	2.62	3.57	4.66
Max. shot weight in PS (theoretical)	oz	1.38	1.88	2.45
Injection force	US Tons		9.7	
Injection volume flow	in <sup>3</sup> / sec	7.7	10.5	13.7
Max. spec. injection pressure	psi	27746	20378	15606
Max. screw stroke	mm / in		95 / 3.74	
Nozzle force / contact pressure	US Tons		5.4	
Nozzle retraction stroke	mm / in		205 / 8.07	
Screw torque	ft / lbf	132.8 (6.1 in <sup>3</sup> / 1885 psi) / 213.9 (9.8 in <sup>3</sup> / 1885 psi)		
Screw speed (infinitely variable)	rpm	400 (6.1 in <sup>3</sup> ) / 250 (9.8 in <sup>3</sup> )		
Screw pulback force	US Tons		4.27	
Heating power (nozzle + cylinder)	W		5800	
Hopper capacity	Us gal.		5.28	
Injection speed	in / sec		11.02	

### Clamping unit

Clamping force	US Tons	56.2		
Distance between tie bars	in (h x v)	14.17 x 13.19		
Max. daylight between platen	mm / in	650 / 25.59		
Max. opening stroke (adjustable)	mm / in	400 / 15.75		
Min. mold height	mm / in	250 / 9.84		
Max. mold weight on moveable clamping side	lb (max)	881.85 / >551.16 <sup>2</sup>		
Mold opening force	US Tons	4.27		
Mold closing force	US Tons	2.74		
Ejector stroke (max.)	mm / in	80 / 3.15	130 / 5.12	150 / 5.91
Ejector force pushing / pulling	US Tons	2.29 / 1.52	2.29 / 1.52	4.8 / 3.37

### General

Installed driving power / total power	kW	11 / 16.8 (400 V)		
Duration of the dry cycle (EUROMAP 6)	s (mm)	1.9 (252)		
Hydraulic system pressure	psi	2611		
Oil tank capacity	US gal.	52.83		

### Dimensiones and weights

		BOY 50 E		
Dimensions (LxWxH) / Footprint	in / square in	119.41 x 43.11 x 79.13 / 5148		
Total weight net (without oil)	lb	4960		
Total weight gross (pallet & foil / wooden case)	lb	6900 / 7562		
Transport dimensions / case (LxWxH) approx.	in	135 x 45.3 x 80.7 / 135.8 x 45.3 x 76.8		

1) more injection units see Technical Data and Equipment 2) optional moving platen support recommended



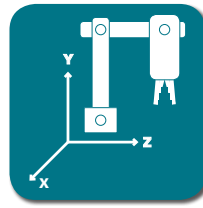
Servo-Drive



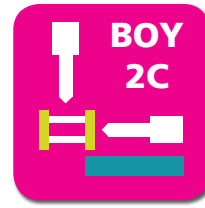
Control



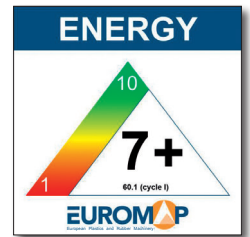
Injection Unit



Automation



Multi Component



The specified efficiency classification is achievable depending on the respective machine equipment.

## Equipment

### Injection unit

Pivoting injection unit	■
Preset screw speed values with ramping transition	■
Cold start protection	■
Number of set points of injection speed	9
Number of set points of injection pressure	9
Start of holding pressure dependent on hydraulic pressure. stroke and time	■
Start of holding pressure, cavity pressure-dependent	□
Number of set points of holding pressure	9
Production monitoring at start of holding pressure	■
Closed loop control for the complete injection profile and back pressure	■
Control for intrusion-injection (not for BOY 2C XS)	■
PID microprocessor-controlled heating zones for cylinder + nozzle set and temp. display	■
Hydraulically actuated needle shut-off nozzle (pneumatic for XS-LSR)	○
Slide-away for quick material change (25 + 35 + 60 VV / 35 HV / 2C M without hopper)	■
Automatic material loader / feeder	□
Adjustable nozzle force	■
Delayed nozzle retraction	■
Servo-electric screw drive (separate feed line required)	○
High wear-resistant plasticizing units	○
High wear-resistant EconPlast unit	○
Speed injection (not for BOY 2C XS)	-
Clamping force build-up can be activated parallel to injection	-
Electromechanical injection movement	-

### Clamping unit

Reduced mold height by 50 mm	□
Moving platen support to improve the precision when using large molds	□(■)
Number of set points of mold closing / opening speed	9
Number of reopening attempts after mold closing	■
Hydr. ejector with adjustable pressure, speed, position + no. of strokes, intermediate stop position	■
Hydraulic ejector with adjustable stroke 80 mm (for XS E = 50 mm)	■
Hydraulic ejector with adjustable stroke 130 mm	○
Hydraulic ejector with adjustable stroke 150 mm and 42.7 kN force	-
Electromechanical ejector 150 mm	○
Hydraulic unscrewing device, one or two directions of rotation with intermediate stop	□
Hydraulic unscrewing device, two directions, proportional valve and pulse generator	□
Core pull control with 4/3 way directional control valve and freely selectable operational programs	□
Injection compression (coining) and breathing with mold degassing control	□
Hydraulic guard safety device	■
Self adjusting mechanical drop bar safety system with electronic monitor	□
Safety gate for handling devices	■
Electronically operated safety gate	○
Selection flap	○
Air ejection	□
Mold lifting crane	□
Simultaneous ejector movement (with double pump/Electric)	□
Integrated sprue picker	□
Mold holder 75 x 75 mm	-

### Electronics

USB interface for access and data exchange	■
Interface kit: Serial/Temperature device, USB and Ethernet	□
OPC interface	□
4 freely programmable inputs/outputs	□
Piece counter	■
Preselect cycle counter with auto shut-off	■
Grounded socket outlet 230 V ~ / 10 A, (alternatively switched)	■(□)
CEE socket outlet 400 V ~ / 16 A (alternatively switched)	-(-)
Socket distributor 400 V ~ switched + 230 V ~ (Standard supply 32 A)	-
Socket distributor 400 V ~ / 230 V ~ switched (separate feed line required)	□
Energy distributor with four fixed connections, up to 5 x 400 V CEE + 3 x 230 V (sockets can be switched off optionally). Standard supply 125 A / 5 x 50 mm <sup>2</sup>	□
Switch cabinet ventilation	■
Standardized interface for handling units EUROMAP 67	□
Separate feeder (heating and motor current)	■
7-day timer	■
Additional temperature control	□
Brush control	□
Connector for safety switch to inhibit mold closing	□
Integrated hot runner control, 8/16-fold (separate feed line required)	□
Air conditioning unit for control cabinet	□
Alarm signal with sound	□

### Hydraulics

Electronically controlled variable pump	-
Servo-motor pump drive (Servo-drive)	■
Oil preheating circuit automatic	■
Oil temperatur gauge / Controlled oil cooling / Oil level indicator	■
Oil level and temperature monitoring	■
Proportional valve with stroke feedback and positioning action for clamp unit	■

### General

Cooling water distributor with electric shut-off valve for injection mold	○
Temperature control for feet throat	□
6- / 8-zone water distributor	○
Tool kit	□
Spare parts package	□
Oil filling	□
Anti-vibration mounts	■

■ standard    ○ alternatively    □ optional    - not available

You would like to learn more about this BOY injection molding machine?



Technical Data and Equipment (complete overview)



Competence brochure



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