

## Innovative into the Future – BOY-Injectioneering

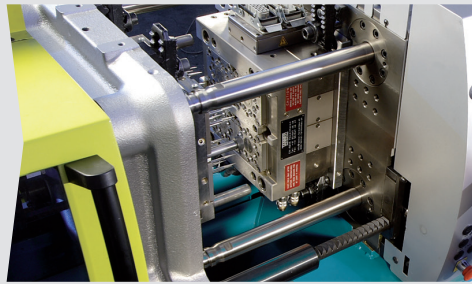


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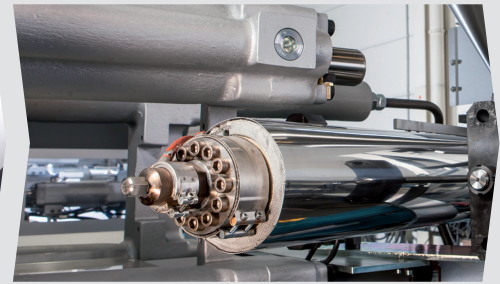
Injection moulding machine BOY 50 E (SP 170)



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



Great distances between tie bars and platens for mounting larger moulds



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 or SP 69 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

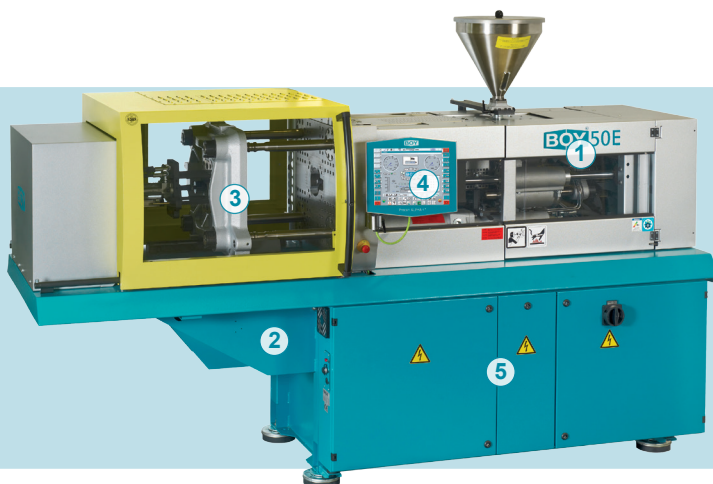
processing of **thermoplastics, elastomers, silicones** and **thermosets**, as well as **metals** and **ceramics** (PIM-Technology).

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.

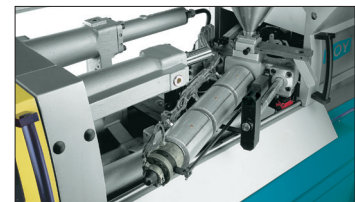
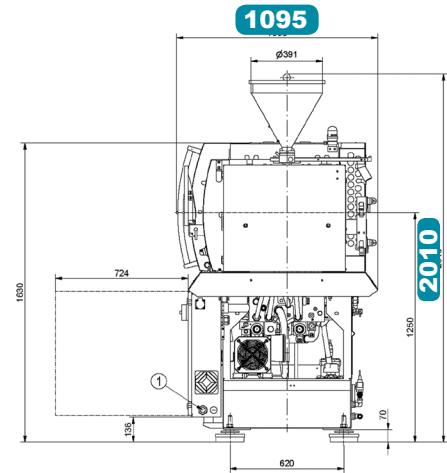
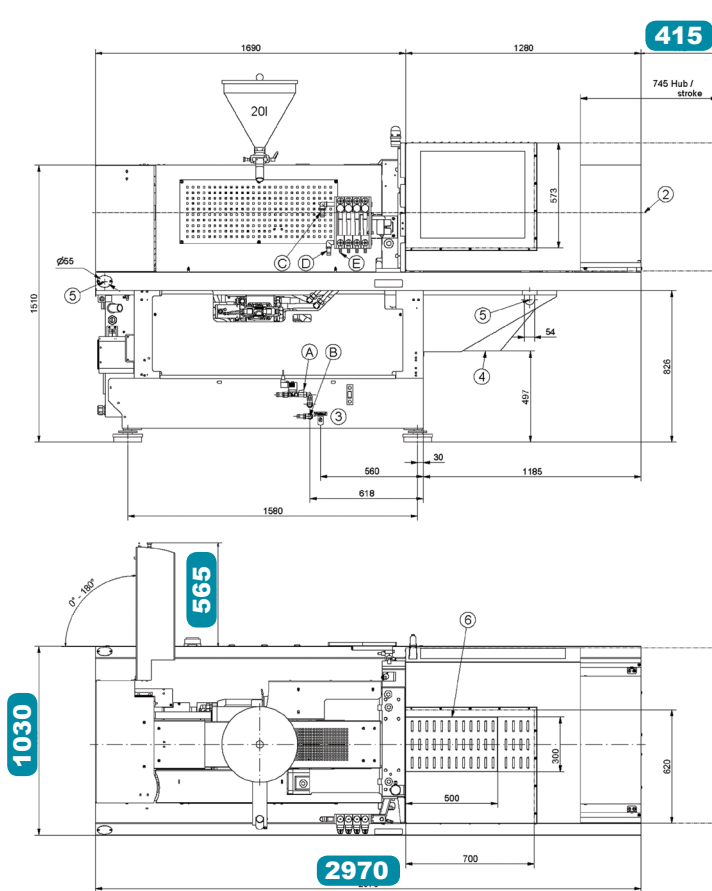
A **servo hydraulic** injection moulding machine which is characterized by precision, performance, and compact design. The **servo-motor pump drive** ensures a very effective mode of operation which is smooth and energysaving at the same time. The optionally available **EconPlast** technology makes melting 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 moulded 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 170

Screw diameter	mm	28	32	38	42
Screw- L/D-ratio		22.7	20	16.7	15
Max. stroke volume (theoretical)	cm <sup>3</sup>	76.9	100.5	141.8	173.2
Max. shot weight in PS (theoretical)	g	70.0	91.4	129.0	157.6
Injection force	kN	136	136	136	136
Injection flow (theoretical)	g/s	84	110	155	189
Max. spec. injection pressure	bar	2210	1692	1203	982
Max. screw stroke	mm	125	125	125	125
Nozzle force / contact pressure	kN	48	48	48	48
Nozzle retraction stroke	mm	215	215	215	215
Screw torque	Nm	280 <sup>2</sup> / 350 <sup>3</sup>	280 <sup>2</sup> / 350 <sup>3</sup>	280 <sup>2</sup> / 350 <sup>3</sup>	280 <sup>2</sup> / 350 <sup>3</sup>
Screw speed (infinitely variable)	U / min.	410 <sup>2</sup> / 325 <sup>3</sup>	410 <sup>2</sup> / 325 <sup>3</sup>	410 <sup>2</sup> / 325 <sup>3</sup>	410 <sup>2</sup> / 325 <sup>3</sup>
Screw pulback force	kN	66	66	66	66
Heating power (nozzle + cylinder)	W	7700	7700	7700	7700
Hopper capacity	litre	20	20	20	20

### Clamping unit

Clamping force	kN	500	500	500	500
Distance between tie bars	mm (h x v)	360 x 335	360 x 335	360 x 335	360 x 335
Max. daylight between platen	mm	650	650	650	650
Max. opening stroke (adjustable)	mm	400	400	400	400
Min. mould height	mm	250	250	250	250
Mould weight on moveable clamping side	kg	max. 400 / > 250 <sup>4</sup>	max. 400 / > 250 <sup>4</sup>	max. 400 / > 250 <sup>4</sup>	max. 400 / > 250 <sup>4</sup>
Mould opening force	kN	34	34	34	34
Mould closing force	kN	22	22	22	22
Ejector stroke (max.)	mm	80 (130) (150)	80 (130) (150)	80 (130) (150)	80 (130) (150)
Ejector force pushing / pulling	kN	20.4 / 13.5 (20.4 / 13.5) (42.7 / 30)			

### General

Installed driving power / total power	kW	11 / 18.7 (400 V)	11 / 18.7 (400 V)	11 / 18.7 (400 V)	11 / 18.7 (400 V)
Duration of the dry cycle (EUROMAP 6)	s – mm	1.9 – 252	1.9 – 252	1.9 – 252	1.9 – 252
Hydraulic system pressure	bar	180	180	180	180
Oil tank capacity	litre	200	200	200	200

### Dimensiones and weights

Dimensions (LxWxH) / Footprint	mm / m <sup>2</sup>	2970 x 1095 x 2010 / 3.25			
Total weight net (without oil)	kg	2250			
Total weight gross (pallet & foil / wooden case)	kg	2350 / 2650			
Transport dimensions / case (LxWxH) approx.	m	3.43 x 1.15 x 2.05 / 3.45 x 1.15 x 1.95			

1) more injection units see Technical Data and Equipment 2) stroke volume 100 cm<sup>3</sup> / 130 bar 3) stroke volume 160 cm<sup>3</sup> / 130 bar 4) optional moving platen support recommended



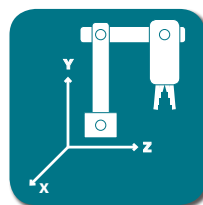
Servo-Drive



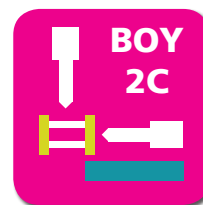
Procan ALPHA®



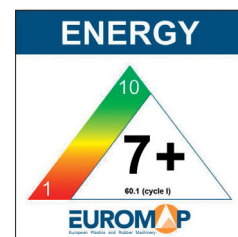
Technology



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	8
Number of set points of injection pressure	2
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	8
Production monitoring at start of holding pressure	■
Closed loop control for the complete injection profile and back pressure	■
Control for intrusion-injection	■
PID microprocessor-controlled heating zones for cylinder + nozzle set and temp. display	5
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	–

### Clamping unit

Reduced mould height by 50 mm	□
Moving platen support to improve the precision when using large moulds	□
Number of set points of mould closing speed / opening speed	8/8
Number of reopening attempts after mould closing	■
Hydr. ejector with dig. adjustable pressure, speed, position + no. of strokes, intermediate stop position	■
Hydraulic ejector with adjustable stroke 80 mm	■
Hydraulic ejector with adjustable stroke 130 mm	○
Hydraulic ejector with adjustable stroke 150 mm and 42,7 kN force	○
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 programmes	□
Injection compression (coining) and breathing with mould 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	□
Mould lifting crane	□
Simultaneous ejector movement (with double pump)	□
Integrated sprue picker	□

### Electronics

USB interface for access and data exchange	■
Interface kit: Serial/Temperature device, USB/Printer 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 can be switched off)	■(□)
CEE socket outlet 400 V ~ / 16 A (alternatively can be switched off)	– (–)
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 mm²	□
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 mould 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 temperature gauge / Controlled oil cooling / Oil level indicator	■
Oil level and temperature monitoring	■
Optical oil filter contamination indicator	–
Proportional action valve for the clamping unit	–
Proportional valve with stroke feedback and positioning action for clamp unit	■

### General

Cooling water distributor with electric shut-off valve for injection mould	○
Temperature control for feed 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 moulding machine?



Data and Equipment (complete overview)



Competence brochure



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