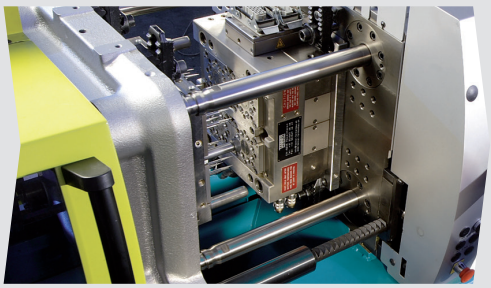
BOY®

Spritzgiessautomaten

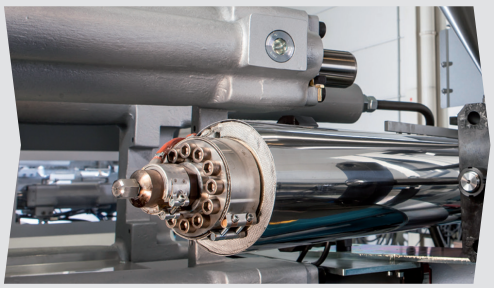
Innovative into the Future – BOY-Injectioneering

Injection moulding 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 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, 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 energie-efficient **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).

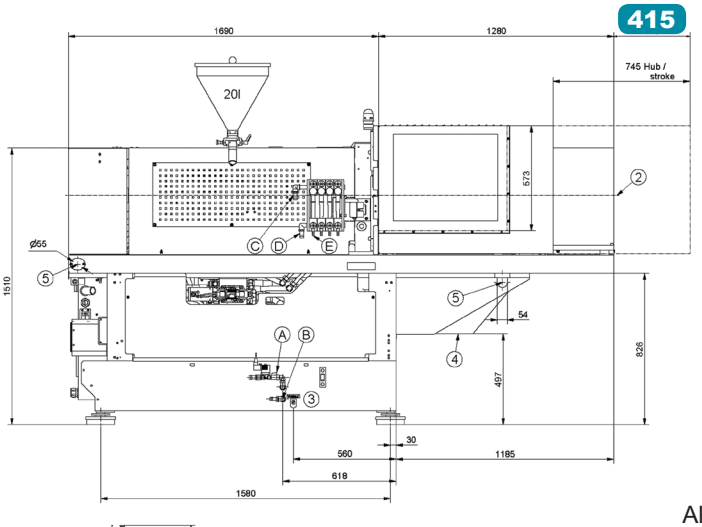
For all the experience and innovative ideas BOY gained from decades of machine manufacturing went into the development of the BOY 50 E. The patented pressure intensifier with integrated valve function reduces the energy consumption to a minimum. It provides for a secure clamping during injection and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

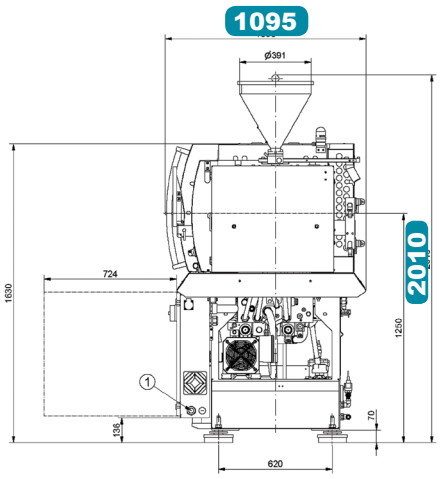
A **servo hydraulic** injection moulding machine which is characterized by precision, performance, and compact design. The **servo-motor pump drive** ensures a very effective mode of operation which is smooth and energysaving at the same time. The optionally available **EconPlast** technology makes melting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

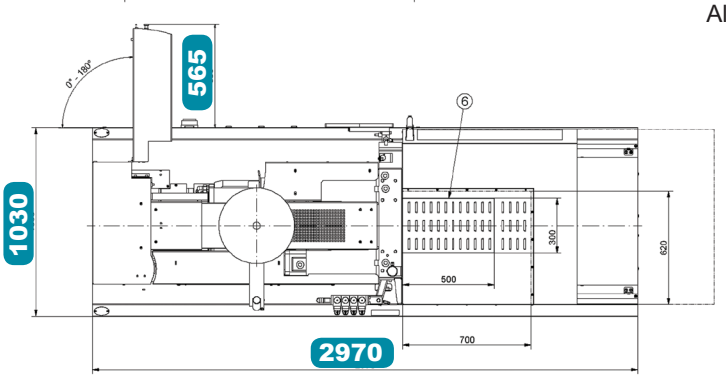
Equipment for the **process automation** can be mounted space saving on the BOY 50 E. Many options for example handling devices, picker as well as brush and unscrewing controls, core pulls and integrated hot runner controls can be chosen.

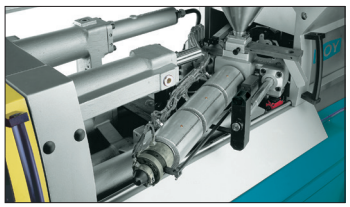
1. The machine design features the best ergonomics and efficient operation.
2. The ejector chute, open on three sides, guarantees optimum removal of the moulded parts.
3. Easy handling and flexibility with regard to additional equipment due to the cantilevered clamping system.
4. Optimum control technology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





All dimensions in mm



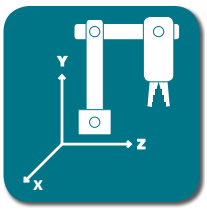


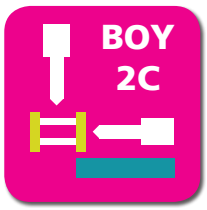
The swivel-out injection unit simplifies the retrofit procedure and maintenance.

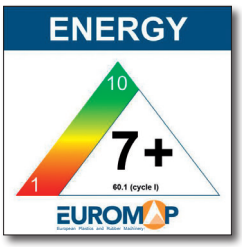
Technical Data – standard version[1)]

Injection unit for processing thermoplastics		SP 82		
Screw diameter	mm / inch	24 / 0.94	28 / 1.10	32 / 1.26
Screw- L/D-ratio		22	18.6	16.3
Max. stroke volume (theoretical)	in^3	2.62	3.57	4.67
Max. shot weight in PS (theoretical)	oz	1.38	1.88	2.45
Injection force	US Tons	9.52	9.52	9.52
Injection flow (theoretical)	oz/s	4.06	5.53	7.22
Max. spec. injection pressure	psi	27,746	20,378	15,606
Max. screw stroke	mm / inch	95 / 3.74	95 / 3.74	95 / 3.74
Nozzle force / contact pressure	US Tons	5.28	5.28	5.28
Nozzle retraction stroke	mm / inch	205 / 8.07	205 / 8.07	205 / 8.07
Screw torque	ft / lbf	132.7[2] / 213.8[3]	132.7[2] / 213.8[3]	132.7[2] / 213.8[3]
Screw speed (infinitely variable)	rpm	250[2] / 400[3]	250[2] / 400[3]	250[2] / 400[3]
Screw pulback force	US Tons	4.18	4.18	4.18
Heating power (nozzle + cylinder)	W	5800	5800	5800
Hopper capacity	US gal.	5.28	5.28	5.28
Clamping unit				
Clamping force	US Tons	55	55	55
Distance between tie bars	inch (h x v)	14.17 x 13.19	14.17 x 13.19	14.17 x 13.19
Max. daylight between platen	mm / inch	650 / 25.59	650 / 25.59	650 / 25.59
Max. opening stroke (adjustable)	mm / inch	400 / 15.75	400 / 15.75	400 / 15.75
Min. mould height	mm / inch	250 / 9.84	250 / 9.84	250 / 9.84
Max. mould weight on moveable clamping side	lb	max. 400 / over 250[4]	max. 400 / over 250[4]	max. 400 / over 250[4]
Mould opening force	US Tons	4.18	4.18	4.18
Mould closing force	US Tons	2.68	2.68	2.68
Ejector stroke (max.)	inch	3.15 (5.12) (5.91)	3.15 (5.12) (5.91)	3.15 (5.12) (5.91)
Ejector force pushing / pulling	US Tons	2.24 / 1.49 (2.24 / 1.49) (4.69 / 3.30)		
General				
Installed driving power / total power	kW	11 / 16.8 (400 V)	11 / 16.8 (400 V)	11 / 16.8 (400 V)
Duration of the dry cycle (EUROMAP 6)	s – mm	1.9 – 252	1.9 – 252	1.9 – 252
Hydraulic system pressure	psi	2610	2610	2610
Oil tank capacity	US gal.	52.8	52.8	52.8
Dimensiones and weights				
Dimensions (LxWxH) / Footprint	inch / in^2	128 x 44.9 x 80.4 / 5747		
Total weight net (without oil)	lb	4960		
Total weight gross (pallet & foil / wooden case)	lb	5180 / 5842		
Transport dimensions / case (LxWxH) approx.	inch	135.8 x 45.3 x 80.7 / 135.8 x 45.3 x 76.8		

1) more injection units see Technical Data and Equipment 2) motor with stroke volume 100 cm^3 / 1885 psi 3) motor with stroke volume 160 cm^3 / 1885 psi 4) optional moving platen support recommended







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 temperatur 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

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

Data and Equipment (complete overview)

Competence brochure

BOY® Spritzgiessautomaten

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