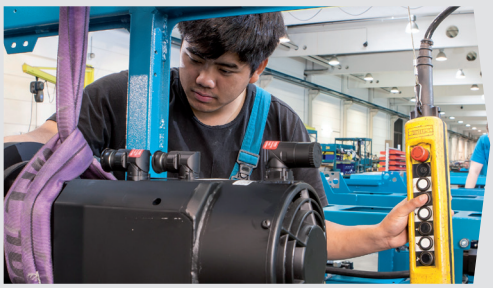
BOY®
Spritzgiessautomaten

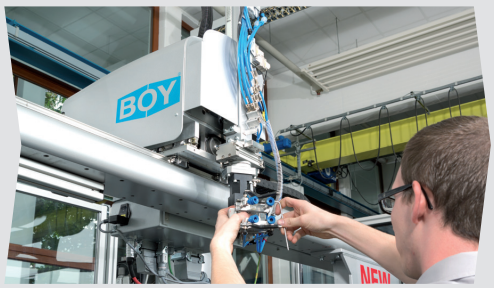
Innovative into the Future – BOY-Injectioneering

Injection moulding machine **BOY 60 E**



Most efficient technology with servo-motor pump drive

Production cell with CE-compliant safety housing



Simplest possibilities to integrate a four-axis industrial robot

- **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 82 injection unit
- Different injection units for thermoplastic, thermoset, LSR, and elastomer processing
- **Compact design** with little floor space needed
- Optional with energy-efficient and high wear-resistant **EconPlast** unit

With its appealing design, the BOY 60 E is an optical highlight. But it is more than just optics which convinces the experts, namely its technical and operational values and its orientation towards cost-saving. Which is no surprise, for all the experience and innovative ideas BOY gained from decades of machine manufacturing went into the development of the BOY 60 E.

The result is a **servo hydraulic** injection moulding machine which is characterized by precision, performance, and compact design, simultaneously meeting the highest technical demands. The BOY 60 E fulfills highest technical requirements. The servo-motor pump drive for example ensures a very effective mode of operation which is smooth and energysaving at the same time.

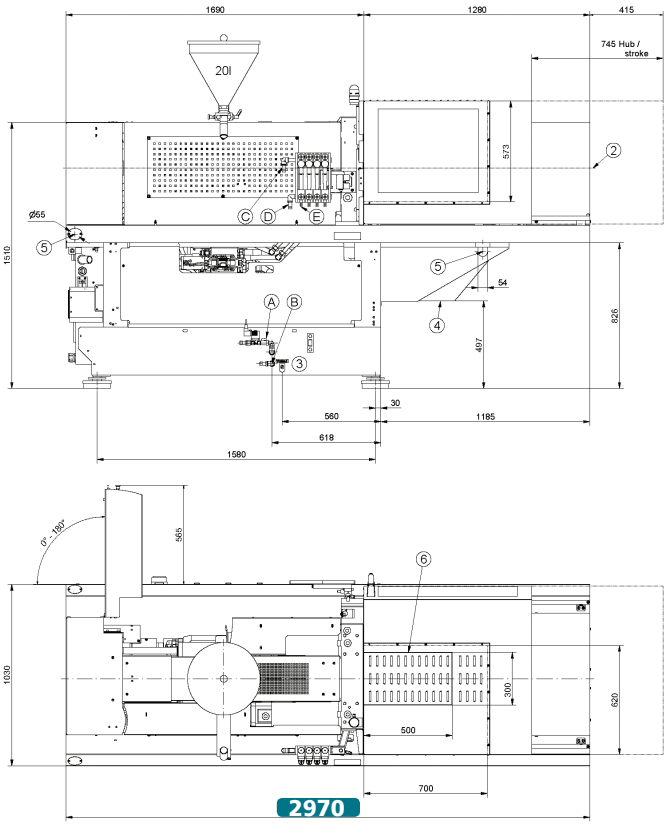
The patented pressure intensifier with integrated valve function reduces energy consumption to a minimum and guarantees secure clamping during the injection and cooling phases, without the need for a pressure sustaining pump.

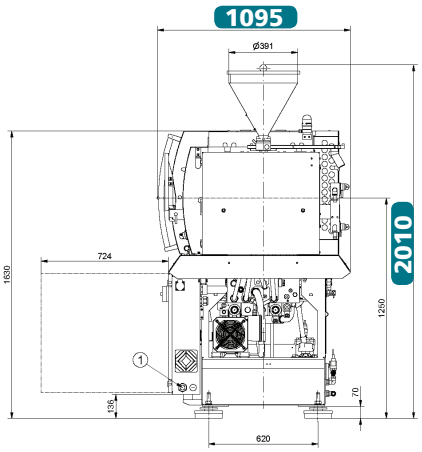
The extremely **compact design** of the BOY 60 E significantly reduces the required floor space, compared to customary machines with a three-platen concept. Due to the cantilevered clamping unit, no additional space is needed for conveying systems or storage containers. Equipment for process automation or special assemblies for clean room applications, for example, can be mounted atop the BOY 60 E in a space-saving manner.

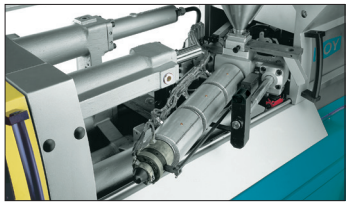
With seven different screw diameters and four different sized injection units, the BOY 60 E is a flexible to use **all-rounder** for various injection moulding processes for example processing of **thermoplastics**, **elastomers**, **silicones** and **thermosets** as well as **metals** and **ceramics** (PIM-Technology).

Available options include controls for handling devices, picker as well as brush units, unscrewing devices, core pulls, and integrated hot runner controls.

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[1)]

Injection unit for processing thermoplastics		SP 110 (speed injection)		SP 215 (Standard)			
Screw diameter	mm	28	32	28	32	38	42
Screw- L/D-ratio		22.7	20	22.7	20	16.7	15
Max. stroke volume (theoretical)	cm^3	76.9	100.5	76.9	100.5	141.8	173.2
Max. shot weight in PS (theoretical)	g	70.0	91.4	70.0	91.4	129.0	157.6
Injection force	kN	88.5	88.5	172	172	172	172
Injection flow (theoretical)	g/s	180.9	236.3	84.0	110.0	155.0	189.0
Max. spec. injection pressure	bar	1437	1100	2798	2142	1519	1244
Max. screw stroke	mm	125	125	125	125	125	125
Nozzle force / contact pressure	kN	48	48	48	48	48	48
Nozzle retraction stroke	mm	218	218	218	218	218	218
Screw torque	Nm	280^2 / 350^3	280^2 / 350^3	280^2 / 350^3	280^2 / 350^3	280^2 / 350^3	280^2 / 350^3
Screw speed (infinitely variable)	U / min.	410^2 / 325^3	410^2 / 325^3	410^2 / 325^3	410^2 / 325^3	410^2 / 325^3	410^2 / 325^3
Screw pulback force	kN	83	83	83	83	83	83
Heating power (nozzle + cylinder)	W	7700	7700	7700	7700	7700	7700
Hopper capacity	litre	20	20	20	20	20	20
Clamping unit							
Clamping force	kN	600	600	600	600	600	600
Distance between tie bars	mm (h x v)	360 x 335	360 x 335	360 x 335	360 x 335	360 x 335	360 x 335
Max. daylight between platen	mm	650	650	650	650	650	650
Max. opening stroke (adjustable)	mm	400	400	400	400	400	400
Min. mould height	mm	250	250	250	250	250	250
Max. mould weight on moveable clamping side	kg	400	400	400	400	400	400
Mould opening force	kN	38	38	38	38	38	38
Mould closing force	kN	24.4	24.4	24.4	24.4	24.4	24.4
Ejector stroke (max.)	mm	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)	
Duration of the dry cycle (EUROMAP 6)	s – mm	1.9 – 252	1.9 – 252	1.9 – 252	1.9 – 252	1.9 – 252	1.9 – 252
Hydraulic system pressure	bar	195	195	195	195	195	195
Oil tank capacity	litre	200	200	200	200	200	200
Dimensiones and weights							
Dimensions (LxWxH) / Footprint	mm / m^2	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) hydraulic motor with stroke volume 162 cm^3 3) hydraulic motor with stroke volume 204 cm^3

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 / 55 VV / 35 HV / 2C M / L 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	–

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 3 x 400 V ~ / 3 x 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	□

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 (for XS = 50 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	□

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

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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