BOY®

Spritzgiessautomaten

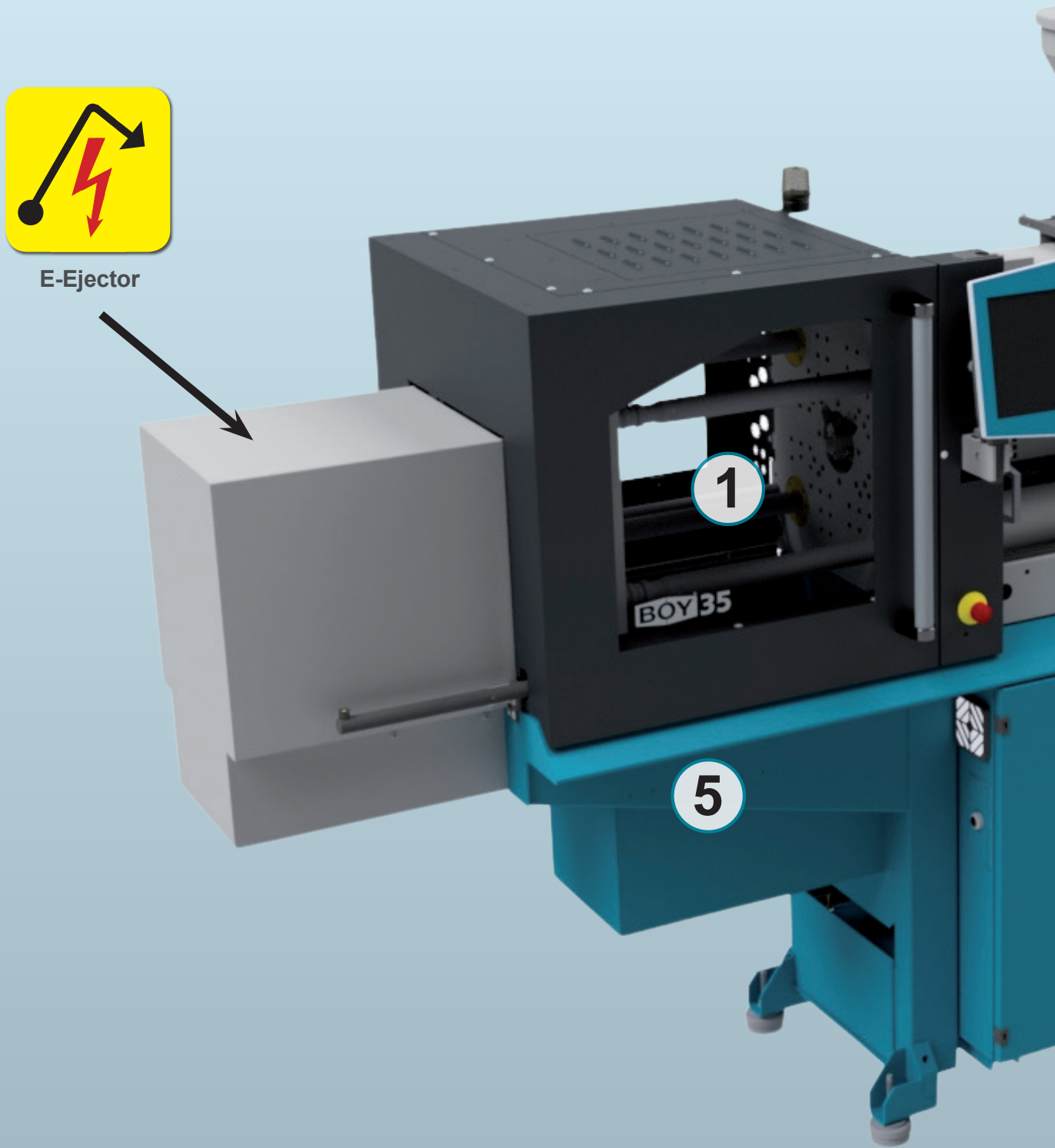
Innovative into the Future – BOY-Injectioneering

BOY *Electric*

Injection moulding machines BOY 35 *Electric*
BOY 50 *Electric*
BOY 80 *Electric*
BOY 100 *Electric*

The new BOY

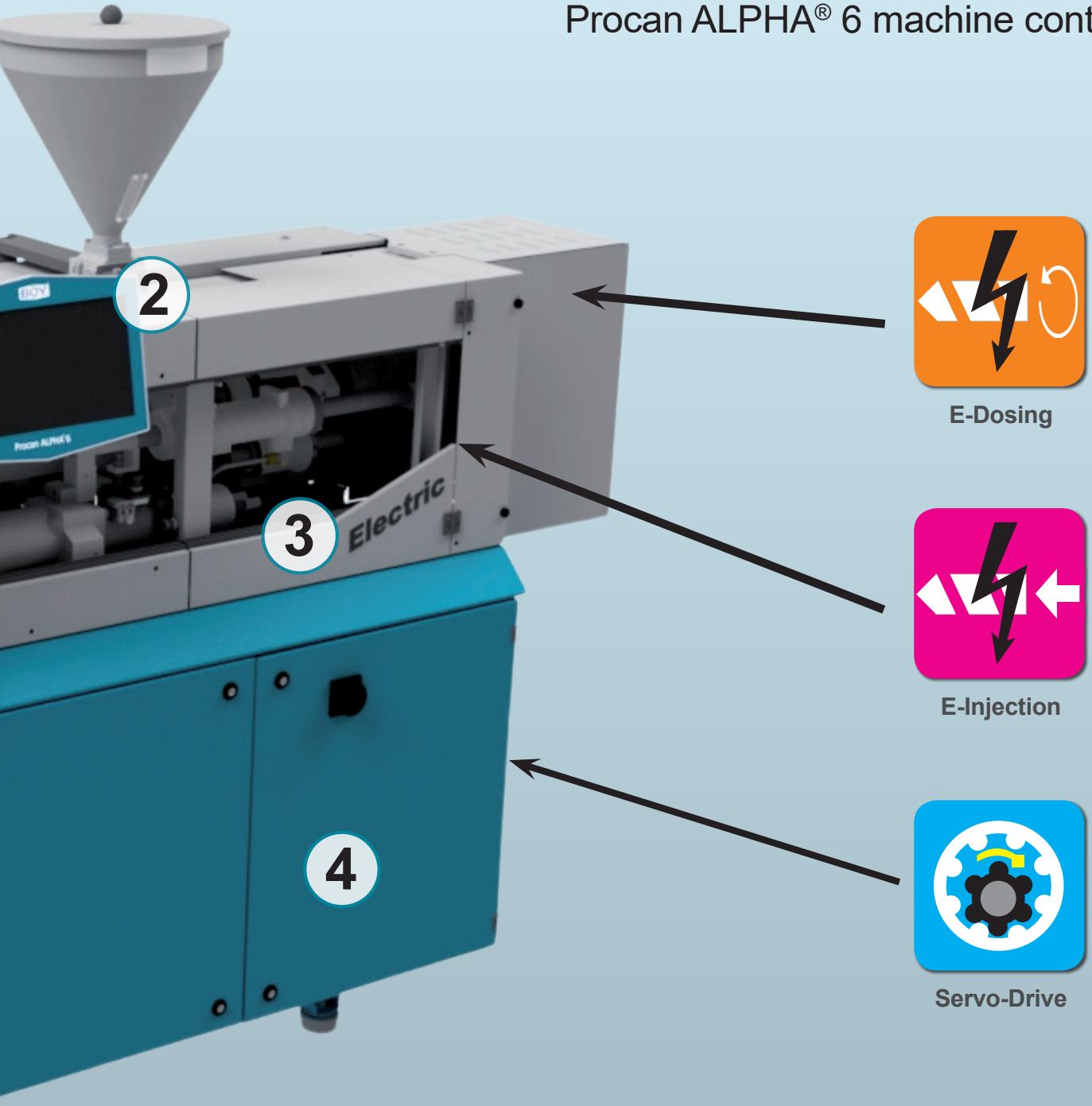
1 Lubricant-free mould installation area.



5 The trip chute, which is accessible from three sides, allows easy removal of the injection moulded parts.

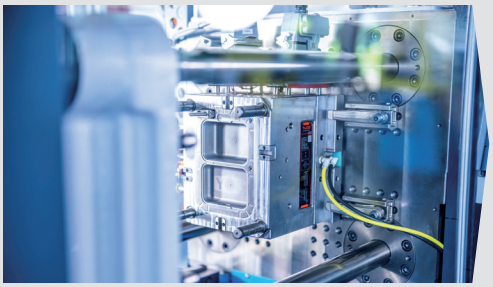
Electric series

2 State-of-the-art and intuitive Procan ALPHA® 6 machine control.



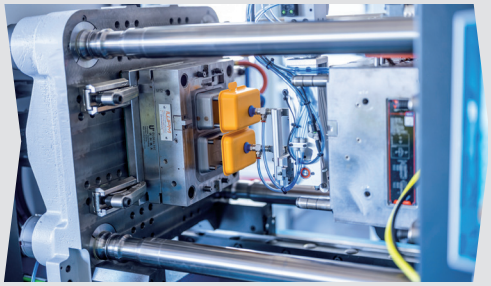
3 Completely redesigned safety enclosure with fully openable safety door.

4 Stable and compact machine construction.



Spacious tool installation space

Easily accessible plasticising unit



Synchronisation of the movements of LR 5 and electric ejector

- **Parallel movement without double pump**
- **Compactness of a two-platen machine**
- **Highly dynamic injection unit**
- **Lubricant-free tool installation area**
- **Synchronised movement during ejection**
- **Parallel clamping force build-up for injection**
- **Highest positioning accuracy**
- **Possibility to actively brake**

BOY *Electric*: Proven rethought

In addition to the proven and energy-saving servo-hydraulic machines of the established E series, our portfolio now also includes the BOY Electric series in the 350-1000 kN clamping force range.

The BOY Electric therefore offers all the advantages of an all-electric injection moulding machine in terms of **high dynamics** and **parallel movements**. For example, the drives for injection, dosing and ejector on a BOY Electric are realised electromechanically.

The **electromechanical universal injection unit** has been redesigned and significantly enhanced for the BOY Electric series. The new type of dynamic pressure measurement is unique in the field of injection moulding machines and a **patent** has already been granted. The force transmitted to the screw is recorded at the injection mechanism by means of a force sensor and analysed in the machine control system.

The electromechanical drive technology offers additional benefits in the form of **precise position detection**, **dynamic movement** sequences and shorter cycle times thanks to **parallel clamping force build-up for injection**.

The proven **two-platen clamping unit** with the **oil and lubricant-free mould installation space** is supplied by the established and energy-saving servo-hydraulics. Together with the pressure intensifier and differential pressure technology, hydraulic pressure is converted dynamically into the clamping platen movement and energy-efficiently into the clamping force.

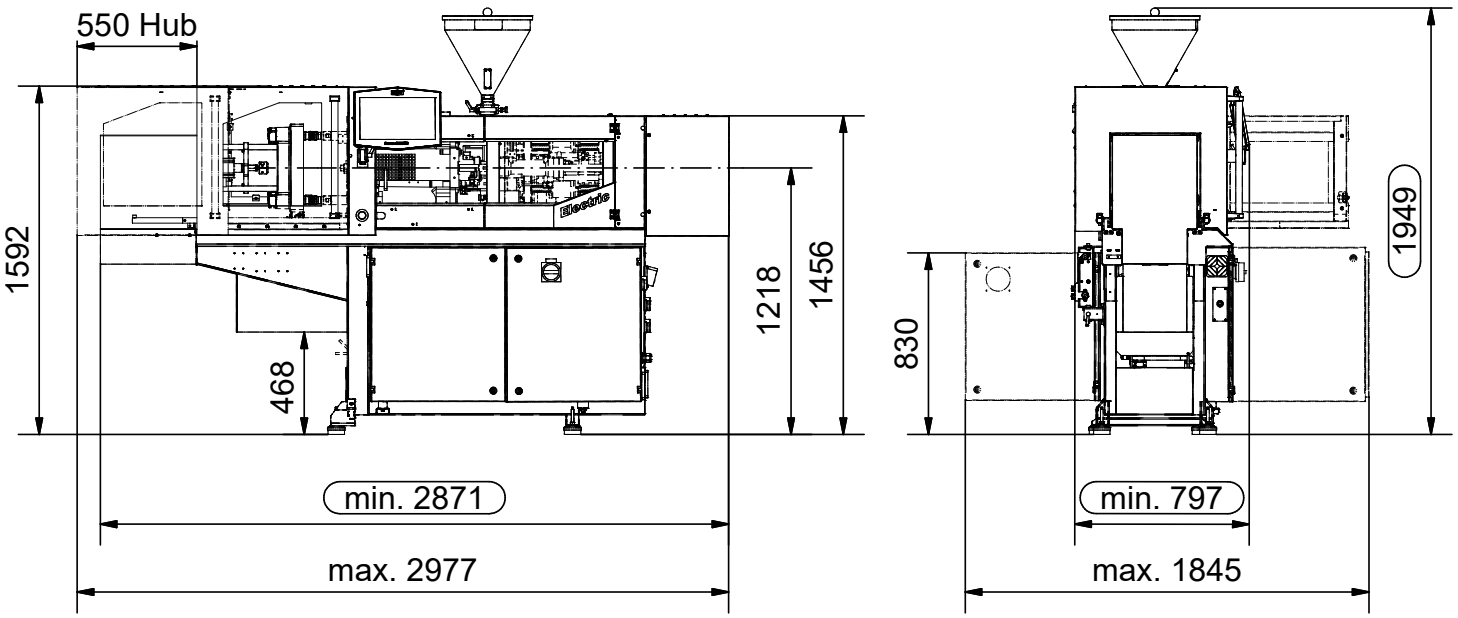
The new **electromechanical ejector** exceeds the dynamics of its hydraulic counterpart: thanks to its accurate position detection and very direct control, **parallel**, **precise and highly dynamic movements** can be realised in conjunction with clamping platen or handling movements. These not only save cycle time in individual cases, but also protect the product as well as the mould, gripper and machine. The electromechanical ejector also has a major advantage with extremely slow movements, as the stick-slip effects that can occur in the hydraulic system are avoided.

The BOY Electric series has also been given a **new machine design**, which is not only characterised by its new look. The drive and inverter technology is integrated in the smallest possible space and still allows for numerous expansion options. A new, **compact and low-maintenance safety technology** is now also finding its way into the BOY injection moulding machines. This OSSD (Output Signal Switching Device) technology enables very user-friendly monitoring at the highest safety level. By systematically integrating the high-performance technology into the BOY Electric, BOY remains true to its philosophy of **minimising the footprint**.

Parallel movements:

- High pressure build-up parallel to injection
- High pressure build-up in stages parallel to injection
- Ejector movement parallel to mould movement
- Dosing and decompression throughout the entire cycle (needle valve required)

BOY 35 *Electric*



Technical Data – standard version

Injection unit for processing thermoplastics		SP 16-96					
Screw diameter	mm	14	18	22	24	28	32
Screw- L/D-ratio		18	20	17.5	22	18.6	16.3
Max. stroke volume (theoretical)	cm^3	6.2	20.4	30.4	43	58.5	76.4
Max. shot weight in PS (theoretical)	g	5.6	18.5	27.7	39.1	53.2	69.5
Injection volume flow (theoretical)	cm^3/s	25.7	42.5	63.5	75.5	102.8	134.3
Injection speed (theoretical)	mm/s	167					
Max. spec. injection pressure	bar	2539	2739	2655	2231	1639	1255
Max. screw stroke	mm	40	80		95		
Nozzle force / contact pressure	kN	48					
Nozzle retraction stroke	mm	205					
Screw torque	Nm	75	130	180	200		
Screw speed (infinitely variable)	U/min.	500		400	400		
Screw pulback force	kN	30			44		
Heating power (nozzle + cylinder)	W	2560	3250	3550	5800		
Hopper capacity	litre	20					

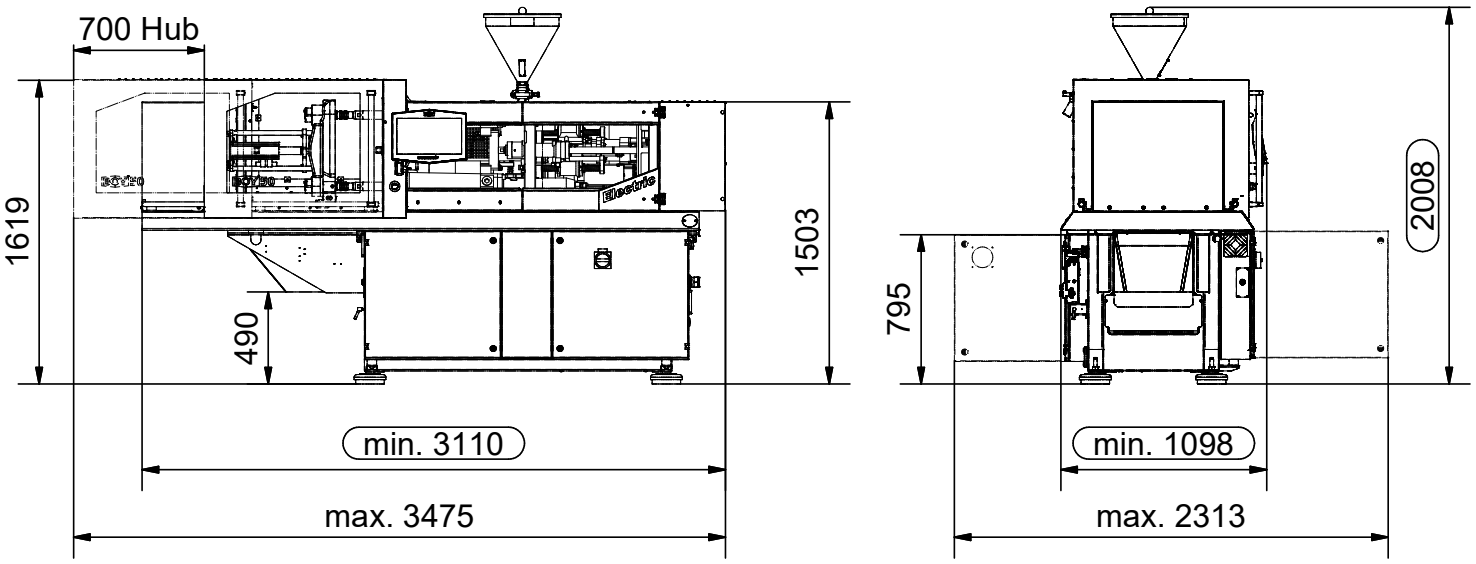
Clamping unit		
Clamping force	kN	350
Distance between tie bars	mm (h x v)	280 x 254
Max. daylight between platen	mm	500
Max. opening stroke (adjustable)	mm	300
Min. mould height	mm	200
Mould weight on moving side	kg	220
Mould opening force	kN	29.5
Mould closing force	kN	21.4
Ejector stroke (max.)	mm	150
Ejector force pushing / pulling	kN	20 / 20

General					
Installed total power	kW	23.66	24.35	24.65	26.9
Duration of the dry cycle (EUROMAP 6)	s – mm	1.5 – 196			
Hydraulic system pressure	bar	210			
Oil tank capacity	litre	35			

Dimensiones and weights		
Dimensions (LxWxH) / Footprint	mm / m^2	2871 x 797 x 1949 / 2.29
Total weight net (without oil)	kg	1400
Total weight gross (pallet & foil / wooden case)	kg	1855 / 2030
Transport dimensions / case (LxWxH) approx.	m	3.0 x 1.06 x 2.1 / 3.0 x 1.05 x 1.8

Subject to technical changes

BOY 50 *Electric*



Technical Data – standard version

Injection unit for processing thermoplastics		SP 16-96					
Screw diameter	mm	14	18	22	24	28	32
Screw- L/D-ratio		18	20	17.5	22	18.6	16.3
Max. stroke volume (theoretical)	cm^3	6.2	20.4	30.4	43	58.5	76.4
Max. shot weight in PS (theoretical)	g	5.6	18.5	27.7	39.1	53.2	69.5
Injection volume flow (theoretical)	cm^3/s	25.7	42.5	63.5	75.5	102.8	134.3
Injection speed (theoretical)	mm/s	167					
Max. spec. injection pressure	bar	2539	2739	2655	2231	1639	1255
Max. screw stroke	mm	40	80		95		
Nozzle force / contact pressure	kN	48					
Nozzle retraction stroke	mm	205					
Screw torque	Nm	75	130	180	200		
Screw speed (infinitely variable)	U/min.	500		400	400		
Screw pulback force	kN	30			44		
Heating power (nozzle + cylinder)	W	2560	3250	3550	5800		
Hopper capacity	litre	20					

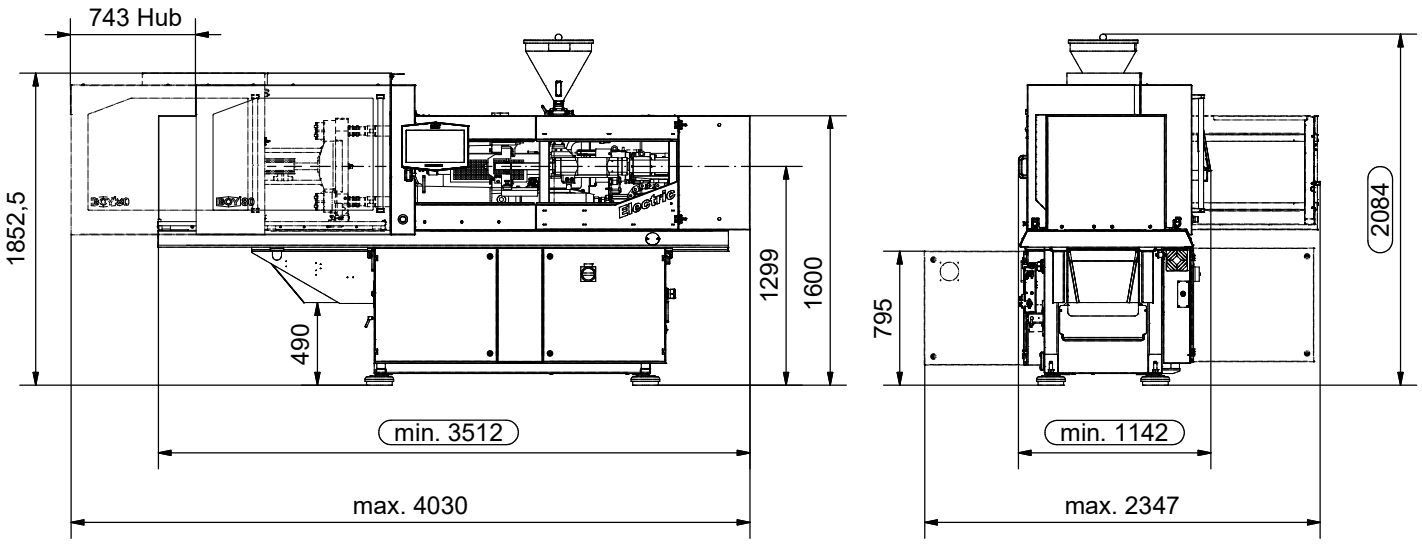
Clamping unit		
Clamping force	kN	500
Distance between tie bars	mm (h x v)	360 x 335
Max. daylight between platen	mm	650
Max. opening stroke (adjustable)	mm	400
Min. mould height	mm	250
Mould weight on moving side	kg	400
Mould opening force	kN	38
Mould closing force	kN	24.4
Ejector stroke (max.)	mm	150
Ejector force pushing / pulling	kN	20 / 20

General					
Installed total power	kW	23.66	24.35	24.65	26.9
Duration of the dry cycle (EUROMAP 6)	s – mm	1.9 – 252			
Hydraulic system pressure	bar	180			
Oil tank capacity	litre	60			

Dimensiones and weights		
Dimensions (LxWxH) / Footprint	mm / m^2	3110 x 1098 x 2008 / 3.41
Total weight net (without oil)	kg	2600
Total weight gross (pallet & foil / wooden case)	kg	3345 / 3645
Transport dimensions / case (LxWxH) approx.	m	3.43 x 1.15 x 2.05 / 3.43 x 1.15 x 1.95

Subject to technical changes

BOY 80 *Electric* / BOY 100 *Electric*



Technical Data – standard version

Injection unit for processing thermoplastics		SP 170 / SP 215 (BOY 100 *Electric*)			
Screw diameter	mm	28	32	38	42
Screw- L/D-ratio		22.7	20	16.7	15
Max. stroke volume (theoretical)	cm^3	77	100.5	141.8	173.2
Max. shot weight in PS (theoretical)	g	70	91.5	129	157.6
Injection volume flow (theoretical)	cm^3/s	92.4 / **147.8**	120.6 / **193**	170.1 / **272.2**	207.8 / **332.5**
Injection speed (theoretical)	mm/s	150 / **240**			
Max. spec. injection pressure	bar	2210 / **2798**	1692 / **2142**	1203 / **1519**	982 / **1244**
Max. screw stroke	mm	125			
Nozzle force / contact pressure	kN	48			
Nozzle retraction stroke	mm	215			
Screw torque	Nm	230			
Screw speed (infinitely variable)	U/min.	500			
Screw pulback force	kN	66			
Heating power (nozzle + cylinder)	W	7700			
Hopper capacity	litre	20			

Clamping unit		
Clamping force	kN	800 / **1000**
Distance between tie bars	mm (h x v)	430 x 360
Max. daylight between platen	mm	725
Max. opening stroke (adjustable)	mm	475
Min. mould height	mm	250
Mould weight on moving side	kg	500
Mould opening force	kN	57.8
Mould closing force	kN	41.2
Ejector stroke (max.)	mm	150
Ejector force pushing / pulling	kN	20

General		
Installed total power	kW	51.7
Duration of the dry cycle (EUROMAP 6)	s – mm	2.1 – 301
Hydraulic system pressure	bar	180
Oil tank capacity	litre	60

Dimensiones and weights		
Dimensions (LxWxH) / Footprint	mm / m^2	3512 x 1142 x 2084 / 4.01
Total weight net (without oil)	kg	3300
Total weight gross (pallet & foil / wooden case)	kg	4265 / 4645
Transport dimensions / case (LxWxH) approx.	m	3.95 x 1.2 x 2.2 / 3.98 x 1.28 x 2.05

Subject to technical changes


E-Injection

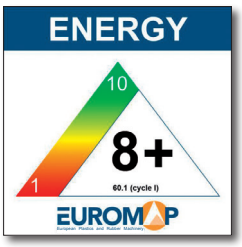

E-Dosing


E-Ejector

Control

Integrated LR 5


Servo-Drive



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	■
Microprocessor-controlled heating zones for cylinder and nozzle (setpoint and actual values)	■
Hydraulically actuated needle shut-off nozzle	○
Hopper quick discharge	■
Automatic material loader / feeder	□
Adjustable nozzle force	■
Delayed nozzle retraction	■
Servo-electric screw drive + injection	■
High wear-resistant plasticizing units	○
High wear-resistant EconPlast unit	○
Simultaneous injection to build up clamping force	■
Clamping force build-up can be activated parallel to injection	■
Electromechanical injection movement	■

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	9
Number of reopening attempts after mould closing	■
Electromechanical ejector: Dig. adjustable force, speed, position + no. of strokes, intermediate stop position	■
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 1-way/2-way and freely selectable alternative 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	■
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 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	□

Hydraulics	
Servo-motor pump drive (Servo-drive)	■
Oil preheating circuit automatic	■
Oil temperatur gauge / Controlled oil cooling / Oil level indicator	■
Proportional valve with stroke feedback and positioning action for clamp unit (only for the BOY 50 *Electric* and BOY 80 *Electric*)	■

General	
Cooling water distributor with electric shut-off valve for injection mould	-
Temperature control for feed throat	□
6/8-zone water distributor with digital flow ratio measurement	□
Tool kit	□
Spare parts package	□
Oil filling	■
Anti-vibration mounts	■

■ standard ○ alternatively □ optinal – 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
Dr. Boy GmbH & Co. KG
Industriegebiet Neustadt / Wied
Neschener Str. 6
53577 Neustadt-Fernthal
Germany
Phone: +49 2683 307-0
E-Mail: info@dr-boy.de
Internet: www.dr-boy.de

BOY-APP
free of charge at
http://app.dr-boy.de