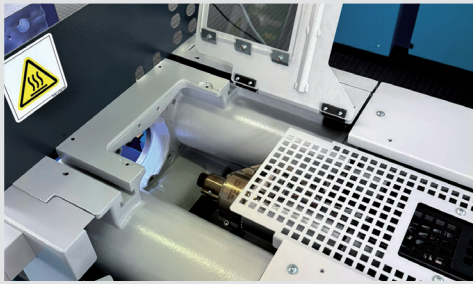


# Innovative into the Future – BOY - Injectioneering



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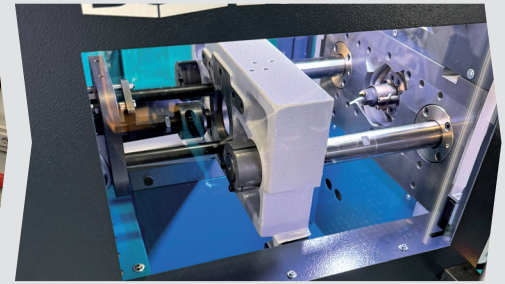
Injection molding machine BOY 20 E PRO



Good accessibility of the cylinder



Intuitive Procan ALPHA® 4 control system



Easily accessible tool installation area

- High technology - Low price
- State of the art control
- Entry into energy-efficient servo motor pump drives
- New Design
- Attractive price/performance ratio
- Robust, well thought-out design
- High efficiency through low machine hour rates
- Generous mold mounting dimensions with additional mounting possibilities  
(Pitch circle diameter of 170 mm; hole Ø 12.5 mm)

The BOY 20 E **PRO** is a ruggedly designed injection molding machine constructed for industrial continuous operation and longevity.

The very compact injection molding machine (merely 1.8 m<sup>2</sup>) features a cantilevered clamping unit which offers optimal accessibility and parts removal.

Equipped with 200 kN clamping force and an energy-saving, electronically controlled variable displacement pump as well as the multipatented Procan ALPHA screen control, the BOY 20 E **PRO** delivers efficient production in a compact space.

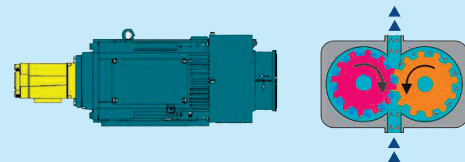
Even in comparison to older machine generations, the BOY 20 E **PRO** is impressive in its low energy consumption and faster cycle times.

In addition to the injection units 11 and 15, the injection unit SP 52 with a total of seven screw diameters offers a wide range of possible applications.

Additionally, there is a large range of options that complete the BOY 20 E **PRO** package.

In particular, an optional integrated handling interface and picker are available that can be positioned under the safety gate. The optional EUROMAP 12 handling interface is also available.

### Servo-Drive



Constant flow volume per revolution. The control is performed via change in speed. In less than 70 ms, the maximum flow rate is achieved from standstill.

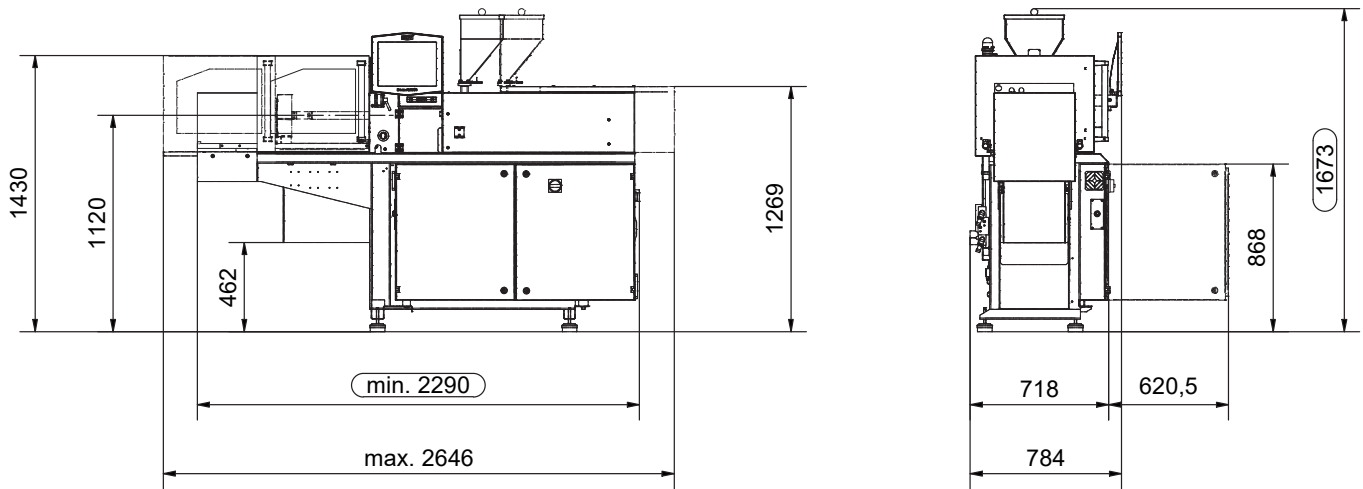
Higher dynamics of the servo drive without startup losses for optimal positioning accuracy.

When no pump capacity is required, the servo motor switches itself off and consumes no energy.

Energy savings up to 50 % are possible with the servo drive. Less energy supply means less heat generation. Oil cooling is mostly not needed.



- 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.



## Technical Data – standard version

Injection unit for processing thermoplastics		SP 11	SP 15	SP 52				
Screw diameter	mm / in	12 / 0.47	14 / 0.55	18 / 0.71	22 / 0.87	24 / 0.94	28 / 1.1	32 / 1.26
Screw- L/D-ratio		18	18	20	17.5	22	18.6	16.3
Max. stroke volume (theoretical)	in <sup>3</sup>	0.28	0.38	1.24	1.86	2.21	3.01	3.93
Max. shot weight in PS (theoretical)	oz	0.15	0.2	0.65	0.98	1.16	1.58	2.07
Injection force	US Tons	3.11	4.17	7.4				
Injection volume flow	in <sup>3</sup> / sec	1	1.3	2.2	3.3	3.9	5.3	7
Max. spec. injection pressure	psi	35534	34998	37521	25121	21103	15505	11864
Max. screw stroke	mm / in	40 / 1.57			80 / 3.15			
Nozzle force / contact pressure	US Tons	4.05						
Nozzle retraction stroke	mm / in	205 / 8.07						
Screw torque	ft / lbf	36.88 (1088 psi)	55.32 (986 psi)	95.88 (1740 psi)	132.76 (6.1 in <sup>3</sup> / 1885 psi) / 213.89 (9.8 in <sup>3</sup> / 1885 psi)			
Screw speed (infinitely variable)	rpm	500 (3.1 in <sup>3</sup> )	500 (4.9 in <sup>3</sup> )		400 (6.1 in <sup>3</sup> ) / 250 (9.8 in <sup>3</sup> )			
Screw pulback force	US Tons	22.2	3.44					
Heating power (nozzle + cylinder)	W	2200	2560	3250	3550	5800		
Hopper capacity	Us gal.	3.43						
Injection speed	in / sec	5.59						

### Clamping unit

Clamping force	US Tons	22.48
Distance between tie bars	in (h x v)	10
Max. daylight between platen	mm / in	400 / 15.75
Max. opening stroke (adjustable)	mm / in	200 / 7.87
Min. mold height	mm / in	200 / 7.87
Max. mold weight on moveable clamping side	lb (max)	330.69
Mold opening force	US Tons	4.5
Mold closing force	US Tons	1.98
Ejector stroke (max.)	mm / in	80 / 3.15
Ejector force pushing / pulling	US Tons	2.03 / 1.35

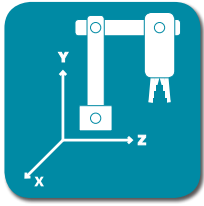
### General

Installed driving power / total power	kW	5.5 / 7.7	5.5 / 8.1	5.5 / 8.8	5.5 / 9.1	5.5 / 11.3
Duration of the dry cycle (EUROMAP 6)	s (mm)	1.6 (178)				
Hydraulic system pressure	psi	2321				
Oil tank capacity	US gal.	17.17				

### Dimensiones and weights

#### BOY 20 E PRO

Dimensions (LxWxH) / Footprint	in / square in	90.16 x 30.87 x 65.87 / 2783
Total weight net (without oil)	lb	1698
Total weight gross (pallet & foil / wooden case)	lb	2612 / 2965
Transport dimensions / case (LxWxH) approx.	in	90.6 x 41.7 x 86.6 / 90.6 x 37.8 x 64.6



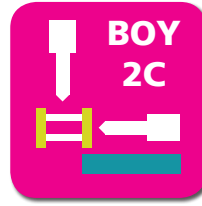
Automation



Made in Germany



Control



Multi Component

## 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 temperature 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<sup>1</sup>    □ optional<sup>1</sup>    - not available

1) only with BOY 25 E equipment

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



Data and Equipment (complete overview)



Competence brochure



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