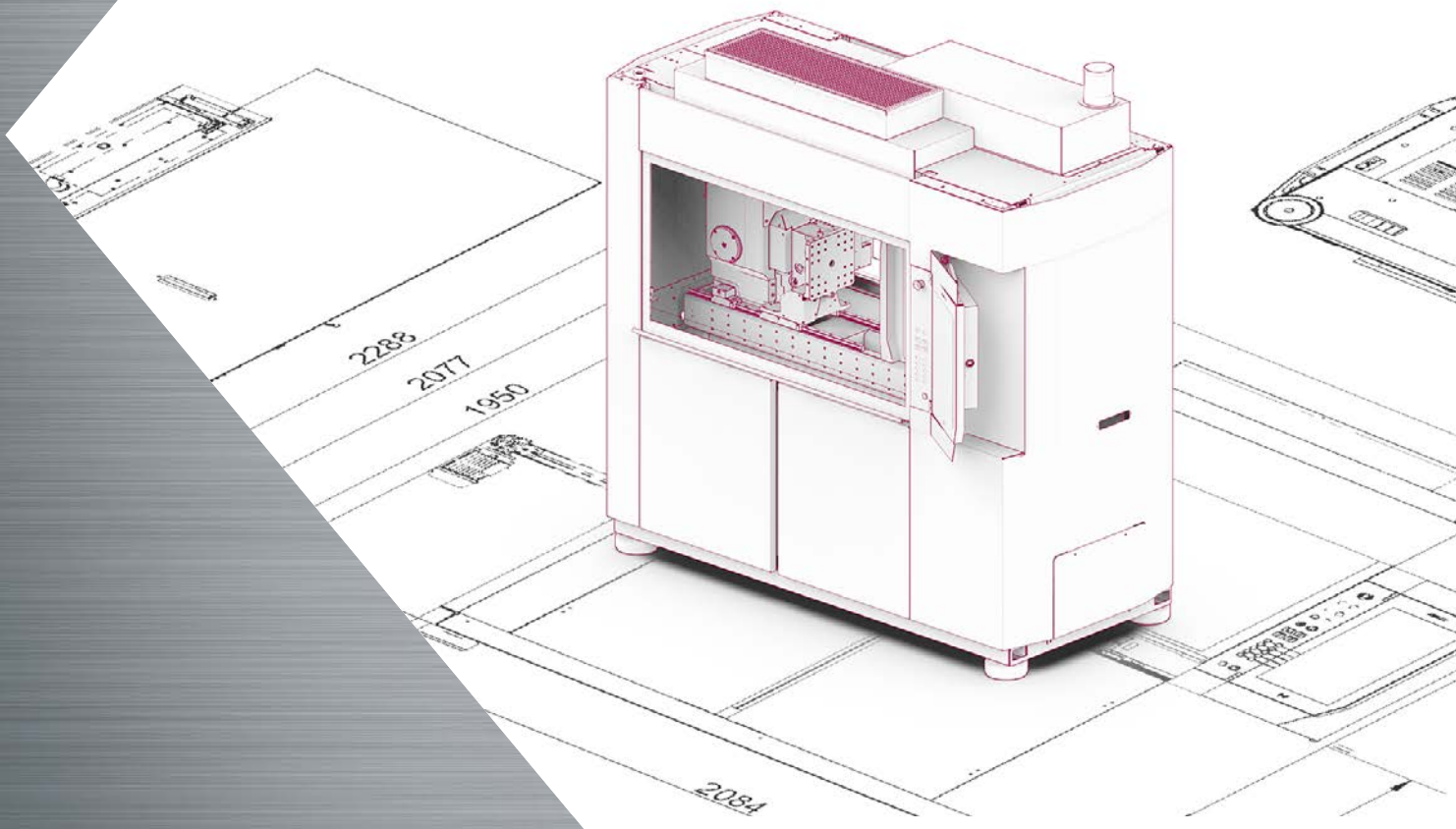
MicroPower 15 t

Compact precision

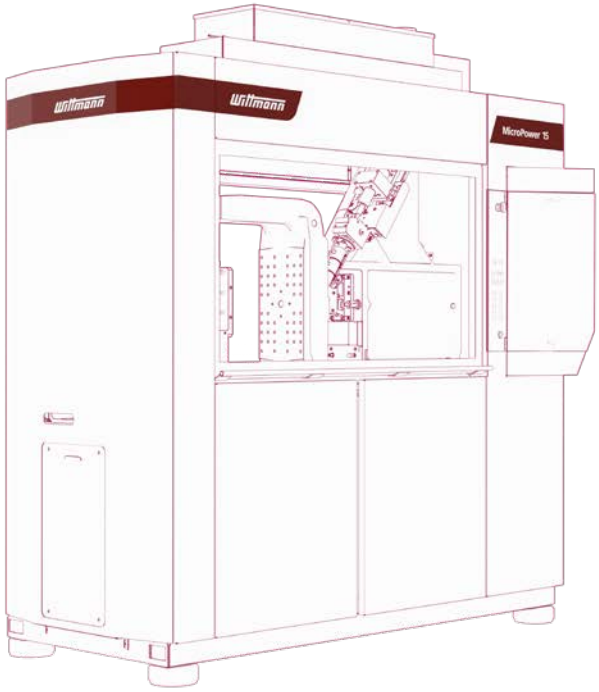


world of innovation

MicroPower
Technical data

Specially designed for the production of small and micro parts with structures down to nanometer size, the all-electric MicroPower offers ultimate precision, safety and efficiency for shot weights from 0.05 to 6 grams.

The MicroPower is more than just an injection molding machine. On just 2 m² floor space, the machine concept integrates a rotary table, auxiliaries, automation, temperature control, quality assurance and additional process devices. Flexibility is its great strength – right up to the integration of a laminar flow box for sensitive clean-room applications.



COMBINATIONS

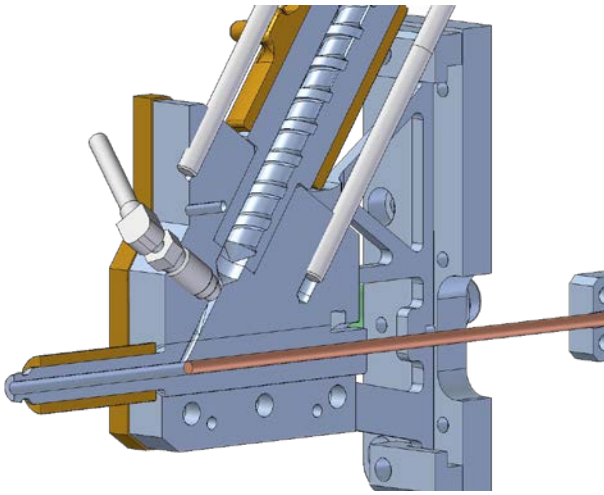
Clamping unit	Injection unit Screw ⌀ mm			
Clamping force	3	7.5	10	12
t	14	14	14 | 18	18
15	◆	◆	◆	◆

COMBINATIONS COMBIMOULD

Clamping unit	Injection unit Screw ⌀ mm			
Clamping force	3	7.5	10	12
t	14	14	14 | 18	18
15	◆	◆	◆	◆

Suitable injection units for small and micro parts

Four injection aggregate sizes are available with stroke volumes ranging from 1.2 to 6 cm³, as well as two 3-zone screws either 14 or 18 mm in diameter, as required. The range of injection plungers is also flexible, with diameters of 5, 8 and 9 mm to choose from. Injection pressures of up to 3,000 bar and injection speeds of up to 750 mm/s enable minimal injection times and extremely accurate injection pressure regulation with constant dynamic switchover to holding pressure.



Reduced **MATERIAL INPUT**

through minimal sprue size
for up to 90 % cost savings

Unique **PART QUALITY**

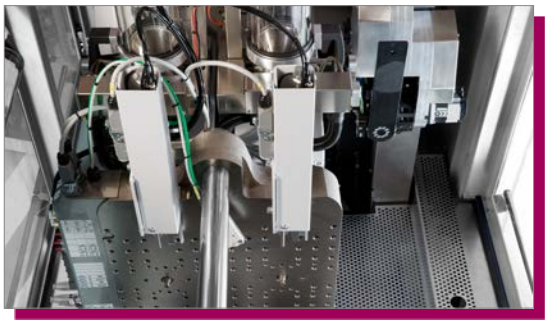
thanks to patented, high-precision
2-step injection system

Outstanding **FLEXIBILITY**

with processing of all standard granulates – no micro granulate required! One grain of granulate yields several 100 parts.

Combimould for 2-component injection molding

By combining two injection aggregates positioned side by side with a rotary table, the MicroPower is transformed into an efficient 2-component machine to produce complex functional parts in micro dimensions.



Parallel movements for short cycle times
In the Combimould version, both injection aggregates operate simultaneously. Ejector, core pulls and air valves can also be run parallel to the closing movement.

H-H positioning
The two injection aggregates placed side by side can be moved independently of each other and possess a good thermal insulation.

Flexible – modular – compact

- Fast exchange of injection units and barrels – also with LIM and PIM
- All standard granulates can be processed
- Suitable for part weights below 50 mg
- 2-step screw-and-plunger system
- Minimal injection times
- Optimal injection pressure regulation combined with highly dynamic holding pressure switchover

MicroPower 15

Clamping unit		MicroPower 15
Clamping force	kN	150
Platen size (h x v)	mm x mm	240 x 400 (248)
Min. mold height	mm	100
Max. mold height	mm	300
Opening stroke/opening force	mm/kN	100/15
Max. daylight	mm	400
Ejector stroke/ejector force	mm/kN	40/3.5
Dry cycle time[1]	s – mm	1.2 – 100

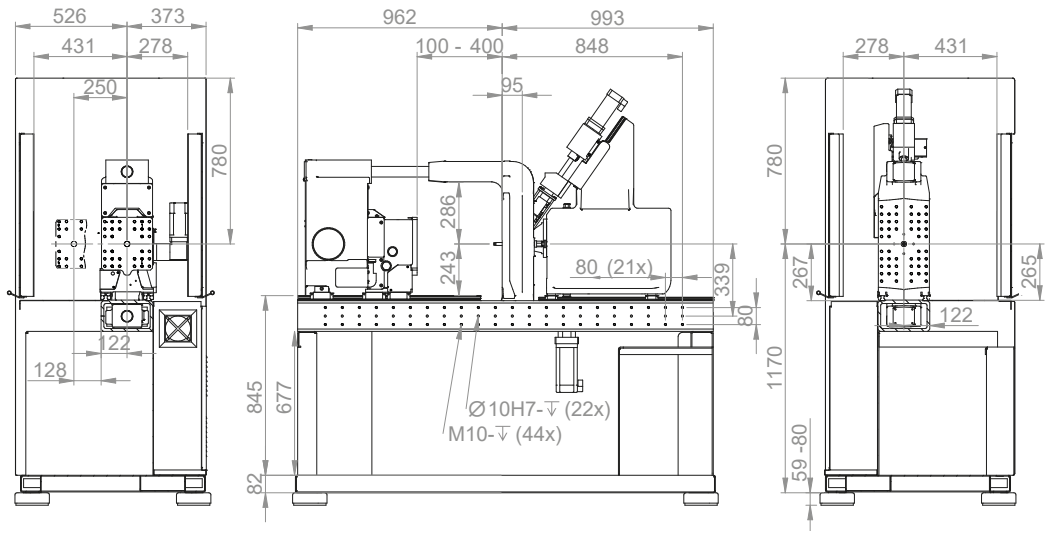
Injection unit		3	7.5	10		12
Screw diameter	mm	14	14	14	18	18
Screw stroke	mm	8	20	26	16	23.6
Screw L/D ratio		20	20	20		18.6
Injection plunger diameter	mm	5	8	8		9
Theoretical shot volume	cm^3	1.2	3	4		6
Specific injection pressure	bar	3000	2500	2500		2000
Max. screw speed	min^{-1}	200	200	200		200
Max. plasticizing rate (PS)[2]	g/s	1.2	1.2	1.2	3.1	3.1
Screw torque	Nm	90	90	90		90
Nozzle insertion depth | stroke | force[3]	mm | mm | kN	40 | 230 | 40	40 | 230 | 40	60 | 230 | 40		60 | 230 | 40
Injection rate into air	cm^3/s	15	38	38		38
Barrel heating power	kW	2.45	2.45	2.45		2.45
Heating zones barrel + nozzle		4 + 1	4 + 1	4 + 1		4 + 1

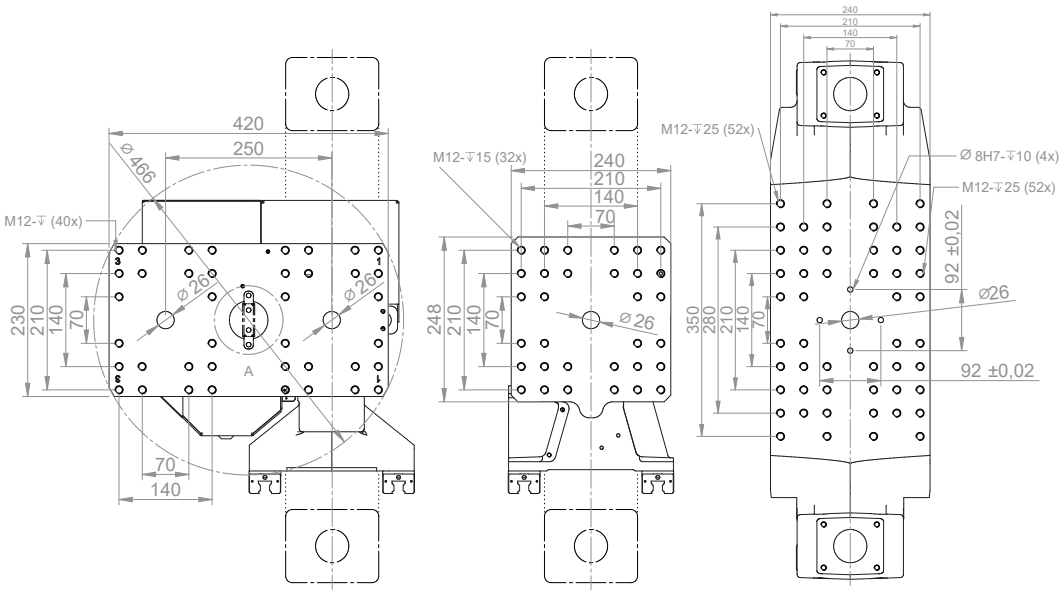
Drive, connection data		
Electrical power supply	kVA	9
Cooling water connection ⌀[4]	mm	13
Cooling water flow rate max. 35 °C[4]	l/h	60
Emission sound pressure level[5]	dB(A)	65

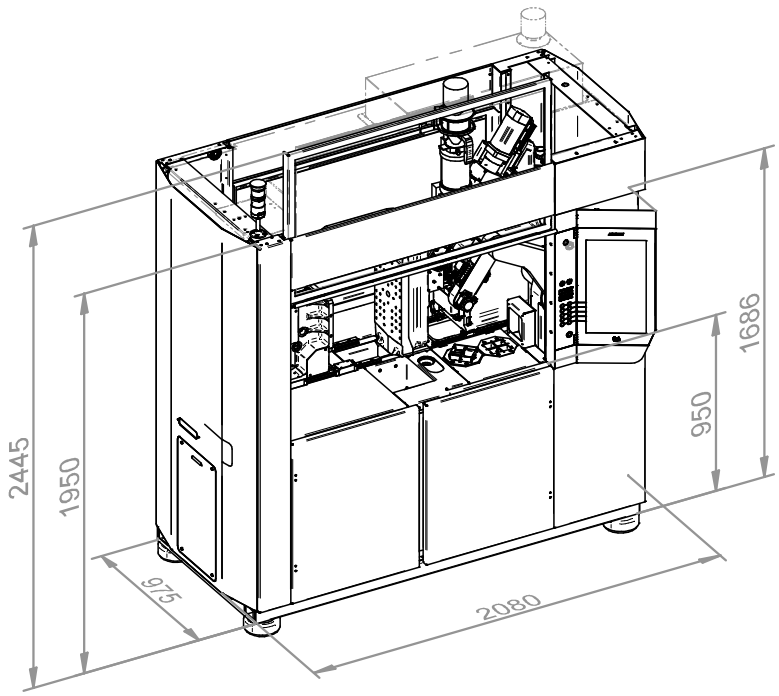
Weights, dimensions		
Net weight	kg	1420
Length x width x height	m	2.1 x 0.98 x 2.1 (2.6)
Max. mold weight	kg	60
Min. mold diameter	mm	120
Max. mold weight on rotary table[6]	kg	35

Control unit		
Unilog		B8

1) according to EUROMAP 6 2) according to WITTMANN Norm 3) manual 4) cooling water for machine cooling and feeding (23 °C air, 25 °C water, HLP32, EM60, ⌀)
5) according to EN ISO 20430:2020 annex I 6) no asymmetrical load/or unbalance at rotary table permissible


526
373
431
278
250
780
122
128
962
993
100 - 400
848
95
286
243
80 (21x)
339
80
845
677
82
Ø10H7-↧ (22x)
M10-↧ (44x)
278
431
780
267
265
122
1170
59 -80


420
250
⌀ 466
M12-↧ (40x)
230
210
140
70
⌀26
⌀26
A
70
140
M12-↧15 (32x)
240
210
140
70
248
210
140
70
⌀26
240
210
140
70
M12-↧25 (52x)
Ø 8H7-↧10 (4x)
M12-↧25 (52x)
92 ±0,02
⌀26
92 ±0,02
350
280
210
140
70


2445
1950
975
2080
950
1686

MicroPower 15 Combimould

Clamping unit		MicroPower 15
Clamping force	kN	150
Platen size (h x v)	mm x mm	485 x 400 (248)
Min. mold height	mm	100
Max. mold height	mm	300
Opening stroke/opening force	mm/kN	100/15
Max. daylight	mm	400
Ejector stroke/ejector force	mm/kN	40/3.5
Dry cycle time[1]	s – mm	1.2 – 100

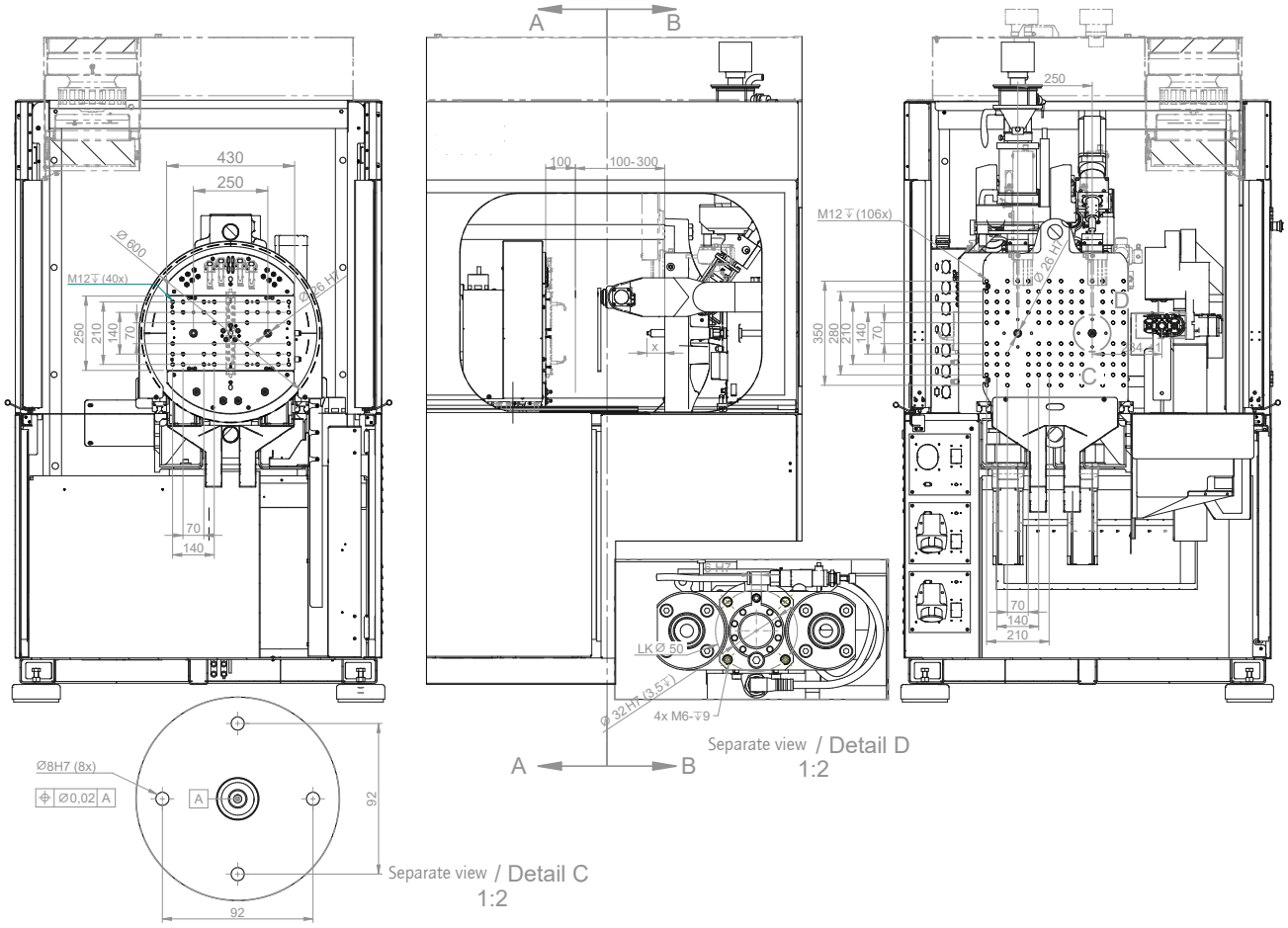
Injection unit		3	7.5	10		12
Screw diameter	mm	14	14	14	18	18
Screw stroke	mm	8	20	26	16	23.6
Screw L/D ratio		20	20	20		18.6
Injection plunger diameter	mm	5	8	8		9
Theoretical shot volume	cm^3	1.2	3	4		6
Specific injection pressure	bar	3000	2500	2500		2000
Max. screw speed	min^{-1}	200	200	200		200
Max. plasticizing rate (PS)[2]	g/s	1.2	1.2	1.2	3.1	3.1
Screw torque	Nm	90	90	90		90
Nozzle insertion depth | stroke | force[3]	mm | mm | kN	40 | 230 | 40	40 | 230 | 40	60 | 230 | 40		60 | 230 | 40
Injection rate into air	cm^3/s	15	38	38		38
Barrel heating power	kW	2.45	2.45	2.45		2.45
Heating zones barrel + nozzle		4 + 1	4 + 1	4 + 1		4 + 1

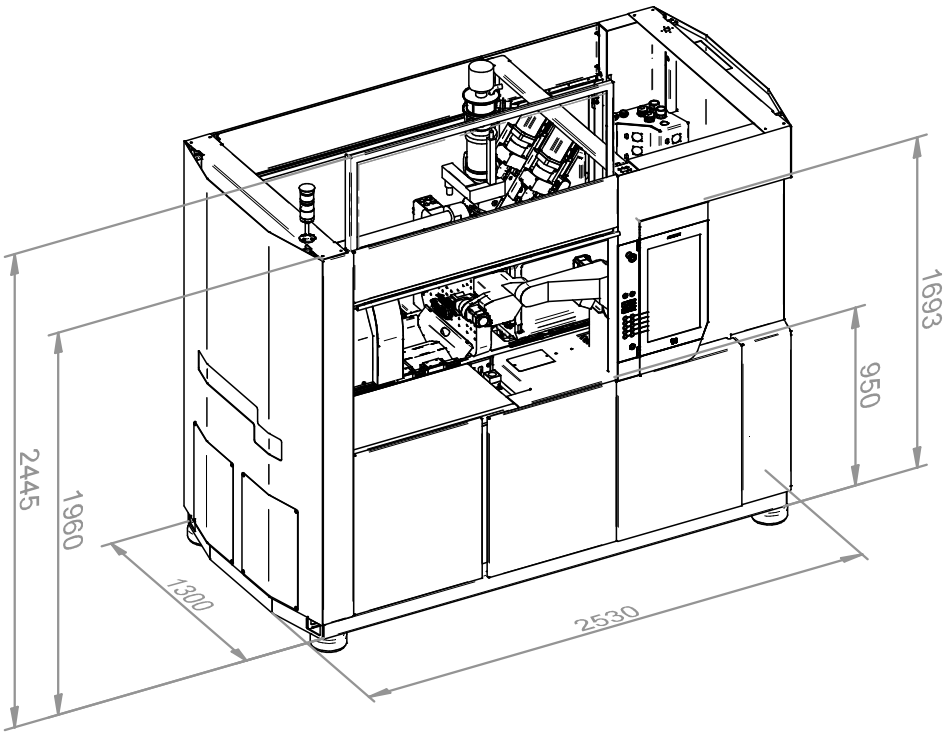
Drive, connection data		
Electrical power supply	kVA	9
Cooling water connection ⌀[4]	mm	13
Cooling water flow rate max. 35 °C[4]	l/h	85
Emission sound pressure level[5]	dB(A)	65

Weights, dimensions		
Net weight	kg	2400
Length x width x height	m	2.6 x 1.3 x 2.1 (2.6)
Max. mold weight	kg	80
Min. mold diameter	mm	120
Max. mold weight on rotary table[6]	kg	50

Control unit		
Unilog		B8

1) according to EUROMAP 6 2) according to WITTMANN Norm 3) manual 4) cooling water for machine cooling and feeding (23 °C air, 25 °C water, HLP32, EM60, ⌀)
5) according to EN ISO 20430:2020 annex I 6) no asymmetrical load/or unbalance at rotary table permissible


A
B
430
250
Ø 600
M12↧(40x)
Ø 28 H7
250
210
140
70
70
140
100
100-300
x
250
M12↧(106x)
Ø 28 H7
350
280
210
140
70
C
70
140
210
Ø 32 H7
LK Ø 50
4x M6-↧9
Separate view / Detail D
1:2
Ø8H7 (8x)
Ø 0,02 A
A
92
92
Separate view / Detail C
1:2


2445
1960
1300
2530
950
1693

MicroPower
Standard and Options

Base machine	
Standard paint finish	◆
Basic frame in one piece	◆
Declaration of conformity and CE marking	◆

Pneumatics	
Pneumatic core pulls	◇
Pneumatic manifolds for mold shut-off nozzles	◇
Air valves	◇
Compressed air maintenance unit	◇
Additional compressed air pressure regulator	◇

Clamping unit	
Mold height / opening stroke according to customer specification	◇
Automatic mold height adjustment	◆
Clamping plates with standard hole pattern (EUROMAP 2)	◆
Clamping plates with special hole pattern (SPI, microsystem)	◇
Nickel-plated clamping plates	◇
Servo-electric rotary table	◇
Clamping plates with cooling channels	◆
Servo-electric ejector	◆
Unscrewing device with servomotor mounted on ejector plate	◇
Part chute	◆
Discharge chute good / bad part separation	◇
Ejector plate safety device	◇
Mechanical approach safety device	◇

Injection unit	
Screw drive servo-electric, parallel	◆
Servo-electric injection, parallel to high-pressure build-up	◆
AK++ plasticizing unit	◇
Plasticizing unit for bioresorbable material	◇
LIM, MIM, CIM plasticizing unit	◇
Conversion kit for reducing the injection unit to size 3	◇
Feeding block with additional connection for nitrogen supply	◇
Heater bands up to max. 350 °C	◆
Heater bands up to max. 450 °C	◇
Screw cylinder insulation	◇
Vacuum package including vacuum pump	◇
2.1-liter material hopper including sliding unit	◇

Safety gate	
Safety gate in standard execution	◆
Operator protection door with electrical monitoring in accordance with CE on front and rear	◆
Maintenance-free protective safety gate locking via electromagnet	◆
Safety gate on operating and non-operating side manually operated	◆
Pneumatically operated protective door on the operator side	◇
Pre-configuration for insider conveyor belt	◇

Cooling and conditioning	
Temperature-controlled feed zone	◆

Electrics / Control system	
Voltage 230/400 V/3p+N-TN/TT, 50 Hz	◆
Special voltage	◇
Interface for vacuum pump	◇
Mold cavity pressure switch-over	◇
BNC sockets for injection molding process analysis	◇
Interface for robot	◇
Interface for conveyor belt	◇
Interface for TCU	◇
Interface for dryer	◇
Interface for dosing unit	◇
Interface for mold monitoring	◇
Interface for production data acquisition (PDA)	◇
Interface for RJG eDart	◇
Temperature control zones for hot runner and mold heating	◇
Interface for hazard area demarcation	◇
Signal lamp with/without acoustic element	◇
Interface for potential-free contacts	◇
Wittmann 4.0 BASIS integration package	◇
Start-up reject program	◆
Application programming system (APS)	◆
Display of screw circumferential speed	◆
Ejection program with open mold	◆
Ejection 3 profile points	◆
Automatic screen dimming	◆
Basic packages	◆
Expert packages	◇
Monitoring packages	◆
HiQ packages	◇
Internal data storage, via USB connection or network	◆
Dosing and injection integral monitoring	◆
Screw speed / back pressure 6 profile points	◆
Input of physical units – bar, ccm, mm/s, etc.	◆
Injection / holding pressure 10 profile points	◆
Energy consumption display for drives and screw cylinder heating	◆
Energy consumption analysis	◇
Freely configurable status bars	◆
Sensor breakage monitoring	◆
Hardcopy function	◆
Actual time monitoring	◆

Compression relief before and/or after dosing	◆
Linear interpolation of holding pressure setpoints	◆
Logbook with filter option	◆
Maximum temperature monitoring	◆
Holding pressure switchover (distance-, time-, and pressure-dependent)	◆
MASTER / SLAVE holding pressure switchover	◆
Notepad function	◆
Online unit switching	◆
Online language switching	◆
Physical product-related units	◆
Closing / opening 5 profile points	◆
Closing force adjustable for closing and opening movements	◆
Closing force monitoring including screen display	◆
Screw start-up protection	◆
Self-learning temperature controller	◆
SmartEdit – sequence editor	◆
Software operating hours / shot counter	◆
Adjustable injection pressure limitation	◆
Injection stamping and ventilation programs	◇
Fault notification via e-mail	◆
Piece counter with good / bad part evaluation	◆
User page	◆
Zeroing of positions	◆
Mold protection program	◆
Weekly timer	◆
Cycle start with safety gate closure	◇
Cylinder temperature – bar chart, temperature reduction	◆
Special programs according to customer specifications	◇
Control cabinet air conditioner	◇
Emergency stop switch button in control console	◆
Emergency stop switch button on rear of machine	◇
Ethernet interface in the control cabinet	◆
USB port on control unit	◆
Unilog B8 control	◆
Control panel with selectable haptic buttons, RFID access authorization system	◆
Input output cards	◇
2 outputs, freely programmable	◆

Additional equipment	
Special paint finish	◇
Tool kit	◇
Spare parts package	◇
Food-grade lubricant	◇
Leveling elements	◇
Machine body elevation	◇
Mold area light	◇
Printed operating instructions, digital user manual	◆
Documentation for cleanroom applications	◇

Clean room / Quality control	
Clean room box	◇
Optical quality control	◇
Ionization	◇
Clean air	◇
Parts storage standard / special execution	◇

Country packages	
Regional package, country-specific	◇

Start up	
Web service	◇
Remote control	◇
Integration packages auxiliaries & mold	◇

Granulat / Dryer / Feeder	
Integrated WITTMANN dryer / dew point sensor	◇
Integrated WITTMANN conveyor	◇

Robot / Handling unit	
W9VS2 WITTMANN Vertical SCARA	◇
W9VS4 WITTMANN Vertical SCARA	◇
Gripper circuits / vacuum circuits	◇
Camera interface	◇
Gripper adapter	◇

◆ Standard ◇ Option

Notes

» We develop **technologies that meet the demands of today and tomorrow,** saving materials and energy while protecting the climate. Across the entire injection molding process, from material handling to inline recycling.
We live molding. «

(Dr. Werner Wittmann)

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