SmartPower B8X 38 – 400 t

Servo-hydraulic efficiency

world of innovation

EFFICIENT – PRECISE – VERSATILE
The smart basis for your success

The advantages

» Highly compact servo-hydraulic injection molding machine with outstanding stability
» High-precision injection units with extensive equipment options
» Top efficiency with „Drive-on-Demand 2.0“ drive system as standard
» Additional energy saving through patented KERS energy recovery system
» User-friendly thanks to Unilog B8X control system with integrated assistance systems
» Short mold changing time through ergonomically optimized clamping system
» Conversion into a full production cell possible with WITTMANN auxiliaries and the Wittmann 4.0 “Plug & Produce” integration package
» Attractive price/performance ratio

SmartPower B8X

The system highlights

» **Servo drive is standard for the hydraulic system ("Drive-on-Demand 2.0")**
All SmartPower B8X machines are equipped with a combination of fast-responding servo motors with high-performance fixed displacement pumps as standard. The system benefits are extreme dynamism, high speed and precision of the machine movements and minimal energy consumption.

» **Plasticizing unit – compact, maintenance-friendly**
All SmartPower B8X plasticizing/injection units are pivo-table and designed for easy access. This offers optimal conditions for quick access to the screw. As an option, aggregate versions with servo-electric injection and plasticizing drive are available.

» **KERS – the optimal energy utilization system**
The patented KERS (Kinetic Energy Recovery System) for injection molding machines transforms the kinetic energy released by deceleration processes into electrical energy. The resulting electrical power is utilized within the machine, e. g. for barrel heating. KERS enables an additional energy consumption cut of up to 5 %.

» **Well-balanced clamping system protects the molds**
The 4-pillar clamping system, with force transmission via a central pressure pad and two diagonally positioned fast-stroke cylinders, ensures optimal force transmission into the mold and simultaneously a high level of mold protection.

» **Sensitive mold protection**
Without coming into contact with the tie-bars, the moving platen is guided on linear guides and rotating roller bearings via a sturdy moving carriage with a high load capacity for heavy molds. The minimal rolling friction of the moving platen guide system offers ideal conditions for highly sensitive mold protection and cleanness.

CLAMPING UNIT
A perfectly balanced power pack

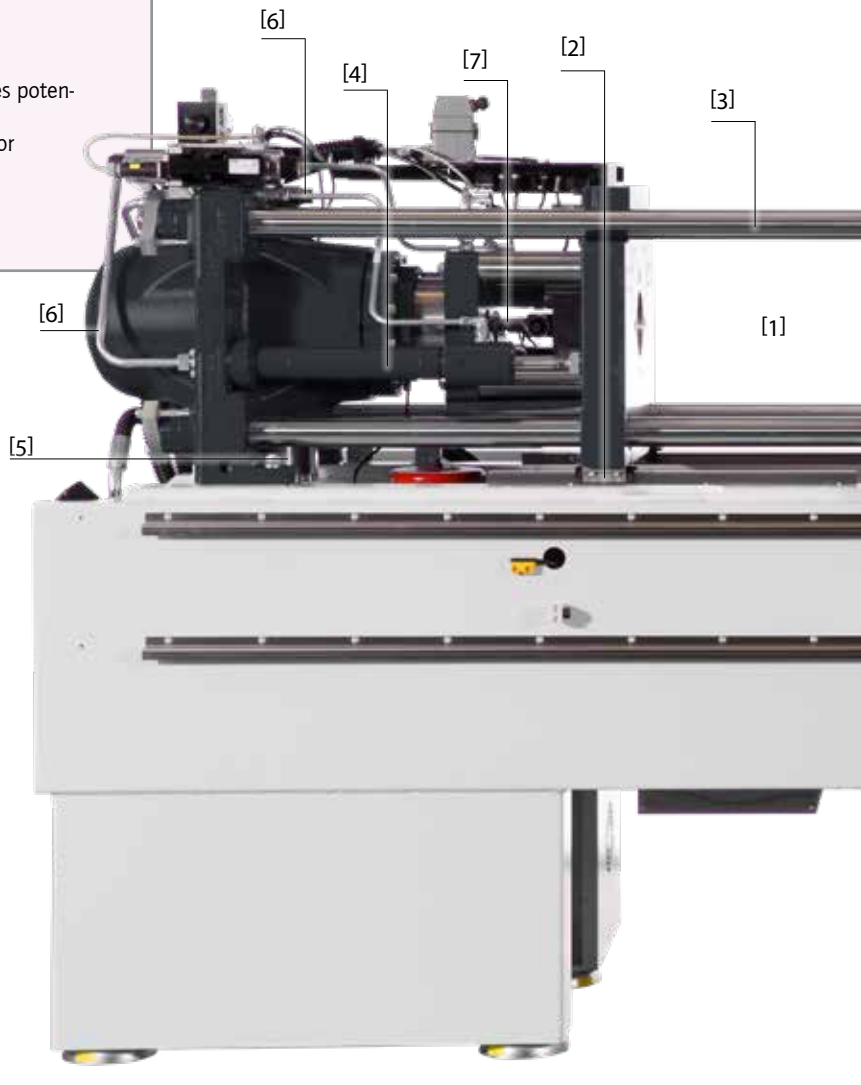
» **Ample space for the mold and for symmetrical force distribution**
Generously dimensioned mold platens and a clamping system with perfect symmetrical force distribution provide an optimal environment for all kinds of injection molding tools, including all types of media connections. [1]

» **Sensitive and precise**
Within the SmartPower B8X clamping system, the exclusive task of the tie bars is force transmission between the external platens. Without tie bar contact, the moving platen travels on the linear bearings virtually free of friction [2]. In very few steps, the tie bars can be optionally retracted and reset. [3]

» **Fast movements**
- The moving platen is driven by two diagonally positioned travel cylinders. [4]
- Combination of the travel cylinders with a hydraulic differential gear system enables quick movements.
- The travel cylinders are dimensioned for high opening forces. [4]

» **Compact design for minimal footprint**
The suction valve placed at the bottom of the pressure cylinder reduces the length of the clamping unit to a minimum. [5]

» **Maintenance-friendly and easy to clean**
- Ample use of rigid hydraulic tubes in lieu of hoses reduces potential maintenance requirements. [6]
- Easy access to the ejector area and platen environment for machine setting [7]



INJECTION UNIT
Versatile precision

» **Everything designed for series stability**
- All screws >= 25 mm come with a 22:1 L/D ratio.
- Ultimate repeatability with an optional controlled servo valve
- Momentum-free nozzle system thanks to axial positioning of the travel cylinders [8]
- Plasticizing barrels can be fitted to different injection units with identical screw diameter
- WITTMANN BATTENFELD HiQ software modules (optional) offer sensitive control strategies to compensate external factors such as temperature, moisture, regrind or masterbatch content variations.

» **Optimal operability and flexibility**
- Free access to the injection unit for easy material feeding, machine setting and servicing
- All injection units up to size 3400 are pivotable (for quick screw replacement)

» **More productivity with electric injection unit (optional)**
- Highly dynamic control for maximum precision
- More powerful injection performance
- Energy-efficient plasticizing parallel to clamping-side movements
- Start of injection process during clamping force buildup
- High-resolution absolute value encoder for high-precision control

Anti-wear options
In addition to the premium-quality standard equipment, an extensive range of options is available to provide extra anti-wear and/or anti-corrosion protection. Predefined option packages and a selection matrix facilitate the selection of the right plasticizing unit.

DRIVE TECHNOLOGY
Energy efficiency with “Drive-on-Demand 2.0”

Fast-response, precise, economical
“Drive-on-Demand 2.0” is the innovative combination of a fast-responding, speed-controlled and air-cooled servo motor with a high-quality constant displacement pump. The fast response speed is further enhanced by a booster unit specially developed in-house, which enables a higher clock frequency. This drive unit is only activated as long as required for movements and pressure generation. During cooling times or cycle breaks for parts handling, the servo drive is switched off and consumes no energy. During operation, “Drive-on- Demand 2.0” provides the basis for highly dynamically controlled machine movements and short cycle times.

The “Drive-on-Demand 2.0” system is standard equipment of the SmartPower B8X machine series.

A brake on operating costs
- The “Drive-on-Demand 2.0” system is standard equipment.
- “Drive-on-Demand 2.0” lowers energy consumption by up to 35 per cent compared to modern variable displacement pump systems.
- Additional energy cost cuts through reduction of idle power
- Lower total expense for cooling, since oil cooling is normally not required
- Lower maintenance expense through longer preservation of the oil quality due to less thermal load
- Lower sound emission levels, consequently less investment in sound protection required
- Easy retrofit of a second servo drive package for parallel movements [1]

INSIDER CONCEPT
“ex works” production cell

The insider concept is an ex-works solution to transform a SmartPower B8X injection molding machine into a fully fledged production cell. In its basic version, the equipment cell integrates a parts handling system, a conveyor belt for parts transport and a protective housing firmly connected with the machine. Additional equipment modules for further processing, quality documentation and packaging are available as options. For the design and configuration of such higher automation levels, the WITTMANN Group places the combined expert know-ledge of the entire group at its customers' disposal.

The advantages of insider automation

» **Material flow systematization**
thanks to a uniform logistics interface for finished parts transfer at the end of the clamping unit, a prerequisite for positioning of several machines in rows

» **Reduction of production space**
by up to 50 % compared to conventional automation solutions

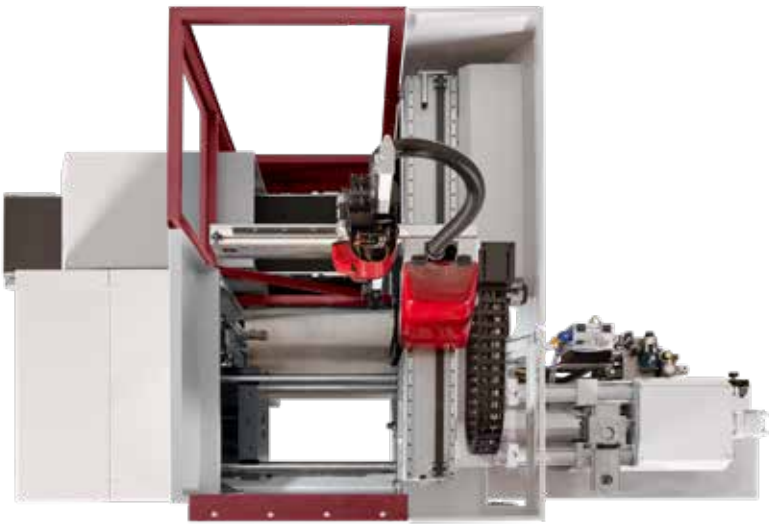
» **Minimization of robot cycle times**
through shorter travel paths and immediate parts depositing on conveyor belt

» **Easy access in spite of integration**
to the mold and the robot thanks to mobility of the conveyor belt integrated in the protective housing

» **Cost benefits,**
since safety features for all danger areas are already in place and certified ex works

» **CE mark included**
for every machine with an insider solution. No more costs for individual approval.

CE certified by type examination CE



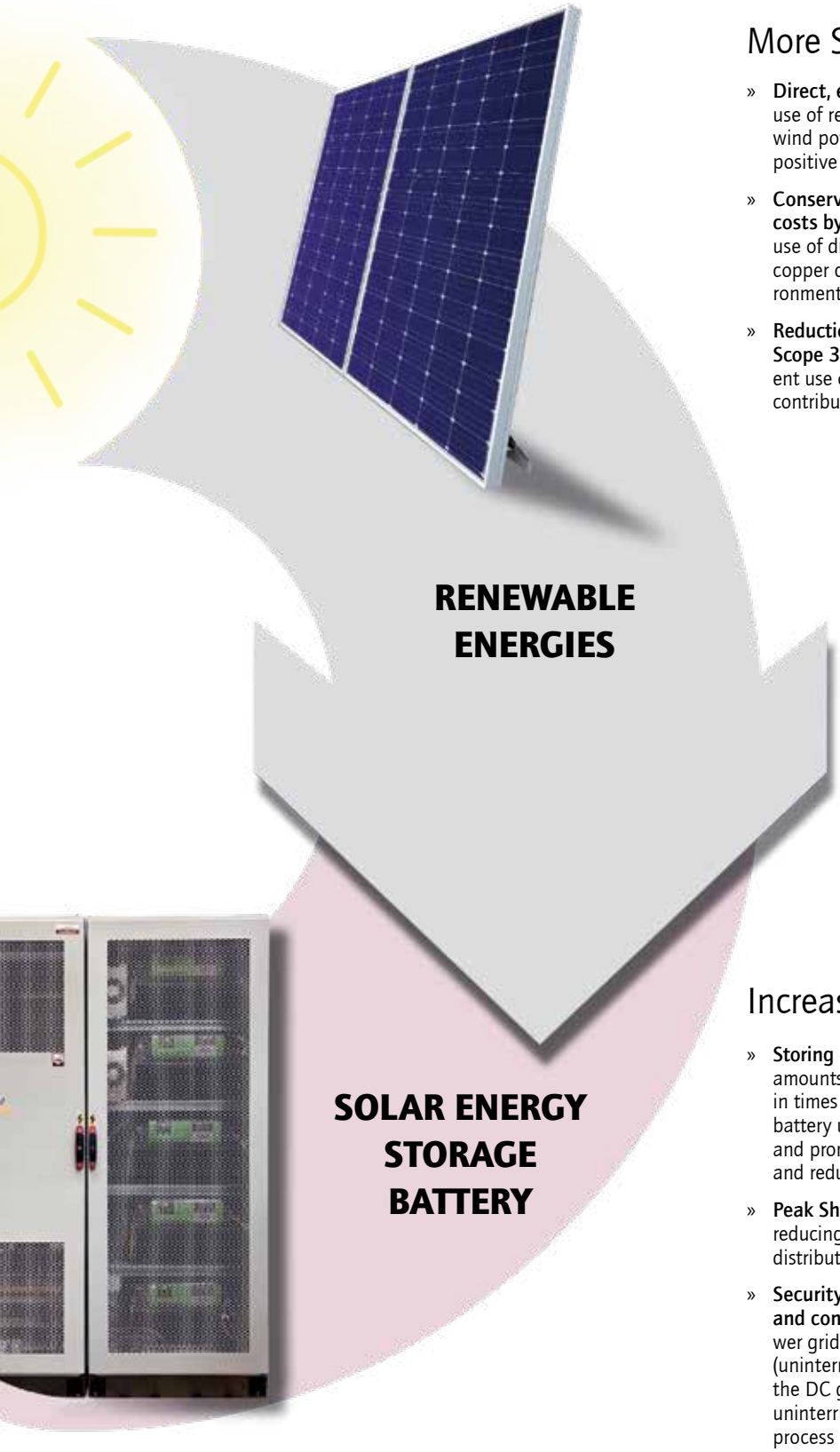
DC TECHNOLOGY
Direct Current as energy source

The WITTMANN Group is the first manufacturer of turnkey systems to offer machines and production cells able to make direct use of energy from renewable sources such as photovoltaics. Using a local DC Microgrid such as supplied by innovenergy AG, the injection molding machine, as well as robots and temperature controllers, are powered directly by solar energy via a DC intermediate circuit. In addition, storage batteries can be used, so that any excess energy, for example solar power, can be stored efficiently for effective use later on.

OPTIMIZED PRODUCTION CELL

Direct use for more efficiency

- **No conversion loss**: Direct use of the DC current generated by the photovoltaic system via a DC microgrid reduces the transformation losses caused in conventional power supply with alternating current by the constant changeover from AC to DC and vice versa. The result is a significantly more efficient energy transfer.
- **Optimal use of the deceleration energy** released by the machine and the WITTMANN robots thanks to KERS (Kinetic Energy Recovery System). The energy recovered from movements can be used not only within the production cell, but also by all consumers integrated in the DC microgrid. A further move to increase efficiency.
- **Elimination of reactive current transmission:** Reactive power losses can be minimized and energy transmission can be improved by using direct current.



More Sustainability

» **Direct, efficient use of renewable energy sources:** Direct use of renewable energy sources, such as solar energy or wind power, not only cuts energy costs, but also makes a positive contribution to protecting the environment.

» **Conservation of resources and reduction of investment costs by up to 50% savings of copper** in a DC grid. The use of direct current enables more efficient utilization of copper cables, thus saving copper and reducing the environmental impact.

» **Reduction of CO_2 emissions (Greenhouse Gas Protocol Scope 3):** By conversion to renewable energies and efficient use of energy, the CO_2 footprint can be reduced, which contributes to climate protection.

Increasing stability and reducing costs

» **Storing energy:** Photovoltaic systems produce fluctuating amounts of electric energy. To continue using solar power in times of no sunshine, it makes sense to use a storage battery unit. This increases the internal consumption rate and promotes independence from external power suppliers, and reduces the electricity costs.

» **Peak Shaving:** Energy storage batteries can contribute to reducing costly load peaks. This leads to more even energy distribution and prevents network overloads.

» **Security of supply through bridging of power failures and controlled production stop** in cases of prolonged power grid failure through integrated power storage batteries (uninterruptible power supply – UPS is already included in the DC grid). The integration of storage batteries offers uninterruptible power supply and protects the production process against unexpected power failures.

UNILOG B8X
Complex matters simplified

The proven Unilog B8X control system logic with the high-performance hardware is the WITTMANN BATTENFELD solution to make the operation of complex processes easy. To this end, the integrated industrial PC has been equipped with an enlarged intuitive touch-screen control surface. The visualization is the interface to the Windows® 10 IoT operating system, which offers extensive capacity for process control. In addition to the swivel-mounted monitor screen unit, a fixed manual operating panel is installed in the central console.

Unilog B8X
Highlights

» **Operating logic**
with a high degree of self-explanation, similar to modern communication devices

» **2 major operating principles**
- Operating/movement functions via tactile keys
- Process functions on touch screen (access via RFID, key card or key ring)

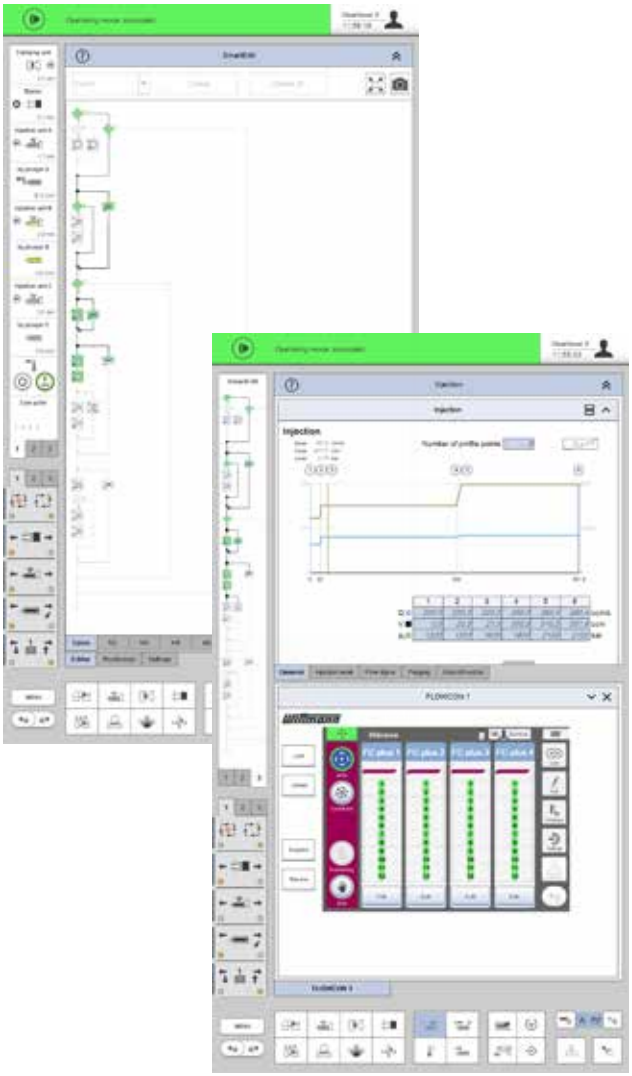
» **Process visualization**
via 21.5" touch screen display (full HD), pivoting laterally

» **New screen functions**
- Uniform layout for all WITTMANN auxiliaries
- Recognition of gestures (wiping and zooming by finger movements)
- Container function – split screen for sub-functions and programs

» **Status visualization**
uniform signaling system across the entire WITTMANN Group
- Headline on the screen with colored status bars and pop-up menus
- AmbiLED display on machine

» **Operator assistance**
- QuickSetup: process parameter setting assistant using an integrated material database and a simple query system to retrieve molded part data with machine settings pre-selection
- Extensive help library integrated

The process in constant view



» **SmartEdit**
SmartEdit is a visual, icon-based cycle sequence programming facility, which enables direct addition of special functions (core pulls, air valves, etc.) based on a standard process via touch operation on the control system's monitor. In this way, a total user-defined sequence can be compiled from a sequence menu. This machine cycle, visualized either horizontally or vertically, can be adjusted simply and flexibly to the process requirements by finger touch with "drag & drop" movements.

The advantages
- Icon visualization ensures clarity.
- Clear events sequence through node diagram
- Alterations without consequences through "dry test runs"
- Theoretical process sequence can be quickly implemented in practice.
- Automatic calculation of the automation sequence based on the actual set-up data set without machine movements

» **SmartScreen**
- Partitioning of screen displays to visualize and operate two different functions simultaneously (e.g. machines and auxiliaries)
- Uniform design of the screen pages within the WITTMANN Group
- Max. 3 containers can be addressed simultaneously for the SmartScreen function.
- Adjustments of set values can be effected directly in the set value profile.

Remote communication

» **QuickLook 4.0**
Production status check via smartphone – simple and comfortable:
- Production data and statuses of all essential auxiliatries in a production cell
- Complete overview of the most important production parameters
- Access to production data, error signals and user-defined data
- The production cell overview offers a clear, simple overview of the production cell's general condition and that of its individual Wittmann 4.0 auxiliatries.

» **Global online service network**
- Web-Service 24/7: direct Internet connection to WITTMANN BATTENFELD service
- Web-Training: efficient staff training by means of the virtual training center

WITTMANN 4.0
Communication in and with production cells

With its communication standard Wittmann 4.0, the WITTMANN Group offers a uniform data transfer platform between injection molding machines and auxiliary equipment from WITTMANN. In case of an auxiliatry change, the corresponding visualizations and settings are loaded automatically via an update function, following the principle of "Plug & Produce".

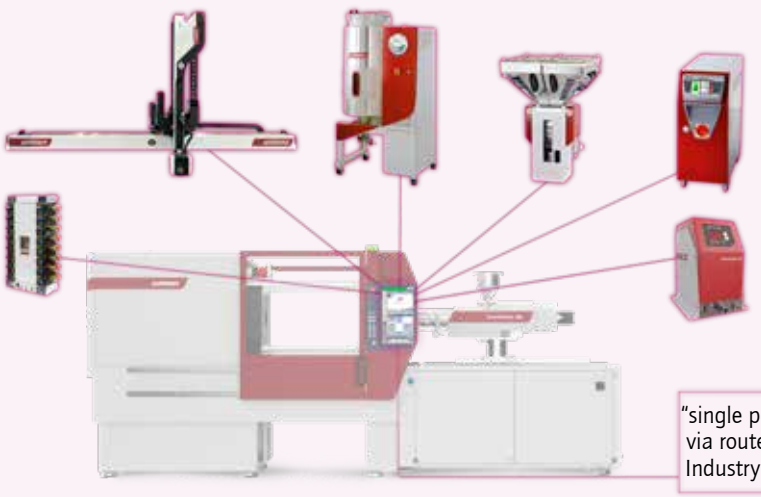
Connection of auxiliaries via Wittmann 4.0

» **WITTMANN water flow regulator WFC 120, Gravimax blenders and Aton & Drymax dryers**
- Units directly addressed and controlled via the machine's control system
- Joint saving of data in the production cell, the machine and in the network via MES

» **WITTMANN robots with R9 control system**
- Operation of robots via the machine's monitor screen
- High-speed communication between machine and robot to synchronize movements
- Important machine movements can be set via the R9 robot control system.

» **WITTMANN Tempro plus D temperature controllers**
- Setting and control of temperatures via the machine's control system possible
- All functions can be operated either on the unit or via the machine's control system.

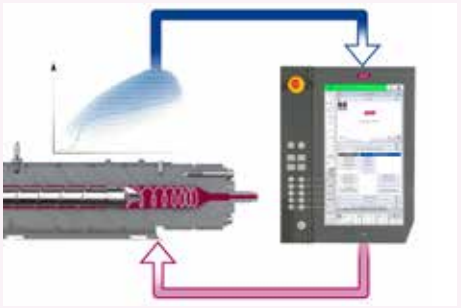
Integration in MES system
The integration of machines and complete production cells in an MES system is a prerequisite for an efficient and transparent production facility according to the Industry 4.0 concept.
Depending on customers' requirements, small and medium-sized companies as well as global players are offered a compact MES solution based on TEMI+. With the Windows® 10 IoT operating system it is also possible to have selected status information from all connected machines on the production floor shown under SmartMonitoring on the display screen of every machine.

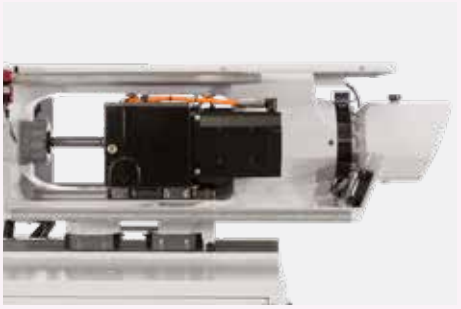


"single point entry" via router into the Industry 4.0 world

Wittmann 4.0 system
With Wittmann 4.0, a machine and its robots and auxiliaries are transformed into a uniform technical organism, which communicates externally via a specific IP address. Such a "Single point entry" with an integrated internal firewall substantially increases cyber security.

OPTIONS
Modular and flexible





SmartPower B8X
The option highlights

» **Parallel movements**
Additional pump modules for parallel movements
– for ejectors and core pulls
– for higher performance (fast injection)
Building-up the nozzle contact pressure during mold closing

» **HiQ packages**
The HiQ packages offer add-ons for the existing Unilog B8X machine control system software. They provide additional features to give the operator more information about the process, and to facilitate operation of the equipment.

» **High-performance electric injection unit fast-responding, precise, economical**
The electric injection unit comes with a dual drive for the injection and dosing functions. A one-piece, torsion-resistant cast frame with linear guides and a central ball screw drive offers the prerequisites for highly dynamic precision in movements. The unit is freely accessible, compact and pivotable.

» **Fast media connection**
For the ergonomically positioned standard connection points for cooling water, air and core-pull hydraulics, fast coupling plates (individual and system plates) are available as options, as well as power plug systems for the hot-runner heating circuits, temperature and pressure sensors, and coding signals.

» **WITTMANN auxiliaries**
The comprehensive range of WITTMANN auxiliaries offers the right solutions for all secondary processes of injection molding, including parts handling, material feeding and drying, sprue recycling and mold cooling. Via the optional Wittmann 4.0 integration package, all additional auxiliatries can be integrated into the production cell according to the "Plug and Produce" principle.

APPLICATION TECHNOLOGY B8/B8X
Competence above standard

Clean-room injection molding
For ultra-clean products

Whenever medical components or electronic parts must be produced in an environment free of particles, the SmartPower B8X concept with its easy-to-clean mold space provides a good starting position, which can be adapted to more stringent requirements by optional equipment modules.

Photo: Greiner Bio-One GmbH

Cellmould
Structured foam technology

The production of structured foam parts by targeted addition of pressurized nitrogen dioxide to the plastic melt prior to injection into the mold has been a core competence of WITTMANN BATTENFELD based on in-house R&D for more than 30 years.

Photo: Kunststoff-Institut Lüdenscheid

Airmould
Gas injection

Airmould is the process for gas-assisted injection molding developed by WITTMANN BATTENFELD. Its two variants are the Airmould internal gas pressure process and the external gas pressure process Airmould Contour.

Combimould

Multi-component technology

When two or more plastic materials in different colors or with different attributes must be combined into one part, the SmartPower B8X machines can be equipped with additional injection units in V, L, S or HH configuration and rotary tables with servo drive.

LIM

Liquid Injection Molding

LIM designates the injection molding process to manufacture elastic parts from 2-component LSR (Liquid Silicon Rubber). For processing LSR products, WITTMANN BATTENFELD uses proven modular machines and automation concepts, as well as special plasticizing systems adapted to the viscosity of LSR.

PIM (CIM/MIM)

Powder Injection Molding

Powder injection molding (PIM) is a manufacturing process for series production of components made of metallic or ceramic materials. PIM is the ideal production process for making complex, functional components in large batches and with stringent demands placed on the materials.

SmartPower COMBIMOULD
Highly versatile multi-component injection molding

SmartPower stands for the WITTMANN BATTENFELD injection molding machines with small to medium clamping force sizes (110 to 400 t), featuring a highly efficient servo-hydraulic drive system combined with a compact hydraulic clamping unit and lean injection units in the international standard sizes of 70 to 1670.

Combimould stands for WITTMANN BATTENFELD's multi-component injection molding technology. In this process, a basic part is produced in the first injection molding station, then plastic components in different colors or made of different materials are added in one or several more injection molding stations, all in one cyclical sequence. In this way, various material attributes are combined with each other to create a composite part of better quality in terms of visual attractiveness and functionality. This material combination technology can be used to produce individual parts as well as integrated components joined together by assembly injection molding. Depending on the parts geometry in each case, this requires different process variants.

The SmartPower Combimould in sizes from 110 to 400 t combines the advantages of the generously dimensioned and flexibly adjustable SmartPower clamping unit with the high performance of the Eco-Power's all-electric injection units. A great variety of combination options with one or several additional plasticizing/injection aggregates in different configurations makes it possible to create a highly flexible and efficient design tailored to fit all conceivable requirements.

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SmartPower Combimould
Applications

» **Back molding**
Simple back molding of two or three plastic layers on a base part or certain areas thereof is the most frequent application. Examples are decorations or anti-wear protection layers.

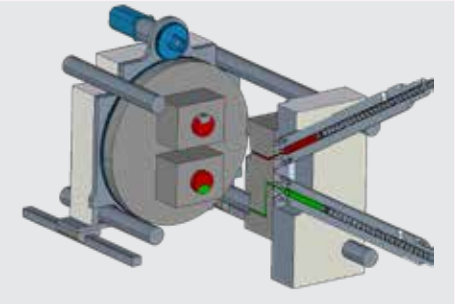
» **Assembly injection molding**
By targeted use of the differences in attributes of the plastic materials combined with each other, assemblies can be produced with individual movable or detachable parts. Examples are flexible toy figures, chain links, switch rockers or spout closures with resealing caps.

» **Hard-soft composites**
An important field of application for assembly injection molding is seal installation. In this process, sealing lips made of silicone or thermoplastic elastomers can be molded directly onto housing bodies or technical parts in a second injection molding step.

» **Overmolding**
"Overmolding" is a special form of hard-soft combination, where soft, skid-resistant surfaces are created on housing parts or appliance handles with elastomer layers.

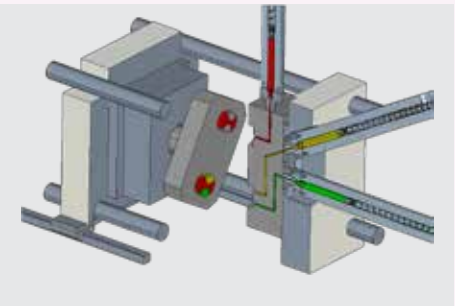
» **Sandwich injection molding – co-injection technology**
This process serves to produce parts with a three-layer structure, consisting of two continuous outer surface layers and a core layer. In terms of process technology, this is achieved by consecutive injection of two materials through the same nozzle into a conventional mold. A foamed or reinforced core component improves the part's mechanical attributes. Costs can be reduced by using regrind and Cellmould foam technology. The surface layers consisting of high-grade materials provide the desired high-quality surface attributes. In the packaging industry, barrier layers can be incorporated in the parts. Reproducible, attractive marbling effects can be achieved by switching several times between two materials of different colors. Depending on the area of application and the requirements to be met by the production equipment, a sandwich adapter plate or a sandwich and interval nozzle is used.

COMBIMOULD PROCESS TECHNOLOGY
Optimally coordinated solution



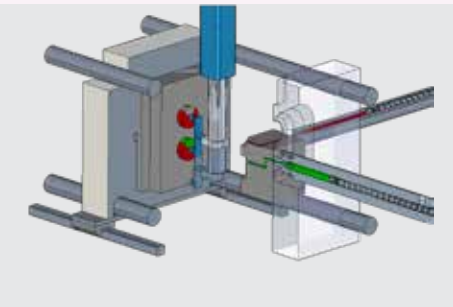
» **Rotary unit process**
The standard process

Rotary unit technology is the most frequently used Combimould variant. It is used both for overmolding and back molding. Here, the ejector half of an X + X-cavity mold is mounted on a rotary unit. The rotary unit can be designed for alternating rotation movements of +/- 180 degrees (2 stations), 120 degrees (3 stations) or 90 degrees (4 stations).
Following the injection molding process in station 1, the base part produced there is transferred to the overmolding station by opening and rotating the mold half on the ejector side. Parallel to molding the additional components in the subsequent stations, the next base part is produced in station 1. The finished part is removed from the last station.



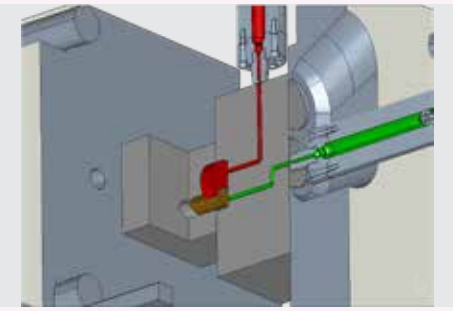
» **Index plate process**
For complex part design

In index plate technology, the rotation and transfer mechanism is an integral part of the mold. This process must be applied if the second component is to be added on both sides of the part. To this end, the preform must be transferred to a station to receive a modified shape on both sides. This is carried out with the help of an intermediate plate inside the mold, also known as index plate, by which the parts are lifted out of station 1, turned and then re-inserted into station 2. The drive system for the index plate is either integrated in the mold or may be connected to the machine with a servo-electric drive. Rotations of +/- 180 degrees (2 stations), 120 degrees (3 stations) or 90 degrees (4 stations) are possible. The index plate system offers the maximum possible flexibility for molded parts engineering.



» **Transfer process**
For special cases and small series projects

This process is used as an alternative to the index plate process where the molded part No. 1, due to its geometry, has an insufficient contact area on the index plate for being transported by the index plate between the injection molding stations. Other types of applications are combinations of bulky inserts (such as screwdrivers or knife blades) with plastic components, or a low-cost production alternative for small series.



» **Valve gate retraction process**
To add flat components without parts transfer

In valve gate technology, the second component is added without prior mold opening and rotation. The different geometry required inside the cavity is produced by a hydraulic valve gate which, when retracted, provides the space for adding the second component.

In spite of a longer cycle time due to serial production steps, the valve gate process may be of interest economically in mold technology for small numbers of units because of the lower cost of mold technology. In some cases, the compact mold design even allows the use of smaller machines. However, a possible use strongly depends on the design of the molded part and on flat geometries of the additions.

COMBIMOULD INJECTION UNIT
The right combination for every application

In addition to their aggregate in the standard H position (horizontal), SmartPower Combimould machines can be fitted with further aggregates in the following configurations: V (vertical), L (horizontal on the machine's rear side), S (slanted or "piggy-back"), or HH (horizontal, parallel, side by side). In the Combimould version of the SmartPower machines, the horizontal aggregate comes as an all-electric injection unit as standard. The first additional aggregate is controlled via the hydraulic main drive module and thus offers a higher performance level.

A third injection unit can be operated easily via an additional hydraulic module integrated in the oil tank. As an option, all three injection units can also be delivered as electric models.

The Combimould machine concept is designed for unrestricted parallel operation of all injection units with each other. If required, operation of the ejector and the core pulls parallel to the clamping movement is also available as an option.

» **V configuration**
Injection from above, also into the mold parting line

- Generously dimensioned adjustment range
- Slide device with linear guides
- Simple horizontal adjustment
- V aggregate completely retractable to the rear to provide an absolutely free mold space
- Nozzle position stroke measurement incl. display in the control system

» **S configuration**
Positioned diagonally above horizontal injection unit

- Compact machine design
- Small footprint
- S and H aggregates movable independently
- Individually adjustable, moment-free nozzle contact force
- Excellent nozzle accessibility

» **L configuration**
Injection from the non-operator side, even into the mold parting line

- Slide device free on the rear of the fixed platen
- Injection unit supported on linear guides
- Large adjustment range
- Access to the nozzles and to the mold from the rear via large operator safety gate
- Fixed platen free for standard linear robot
- Nozzle position stroke measurement incl. display in control system

» **H-H configuration**
Two parallel horizontal aggregates

- Both aggregates movable independently of each other
- Good thermal separation of the aggregates
- Compact configuration
- Easy barrel change
- Brief material testing

H-H combination and other configurations and more than 2 injection units upon request

SERVO-ELECTRIC ROTARY UNIT

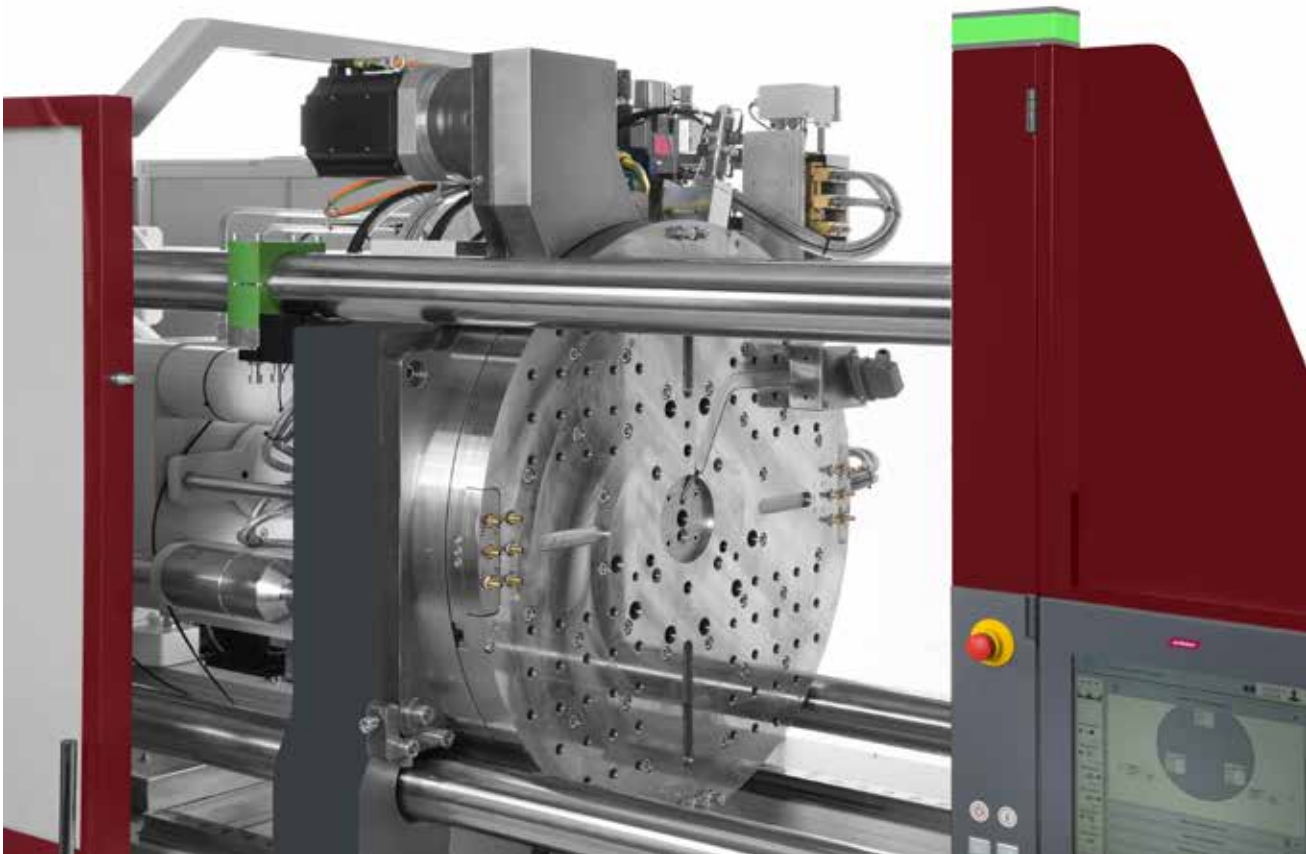
Fast and precise

For SmartPower Combimould machines, rotary units with a servo-electric drive and ranging from 600 to 1090 mm in diameter are available as an option.

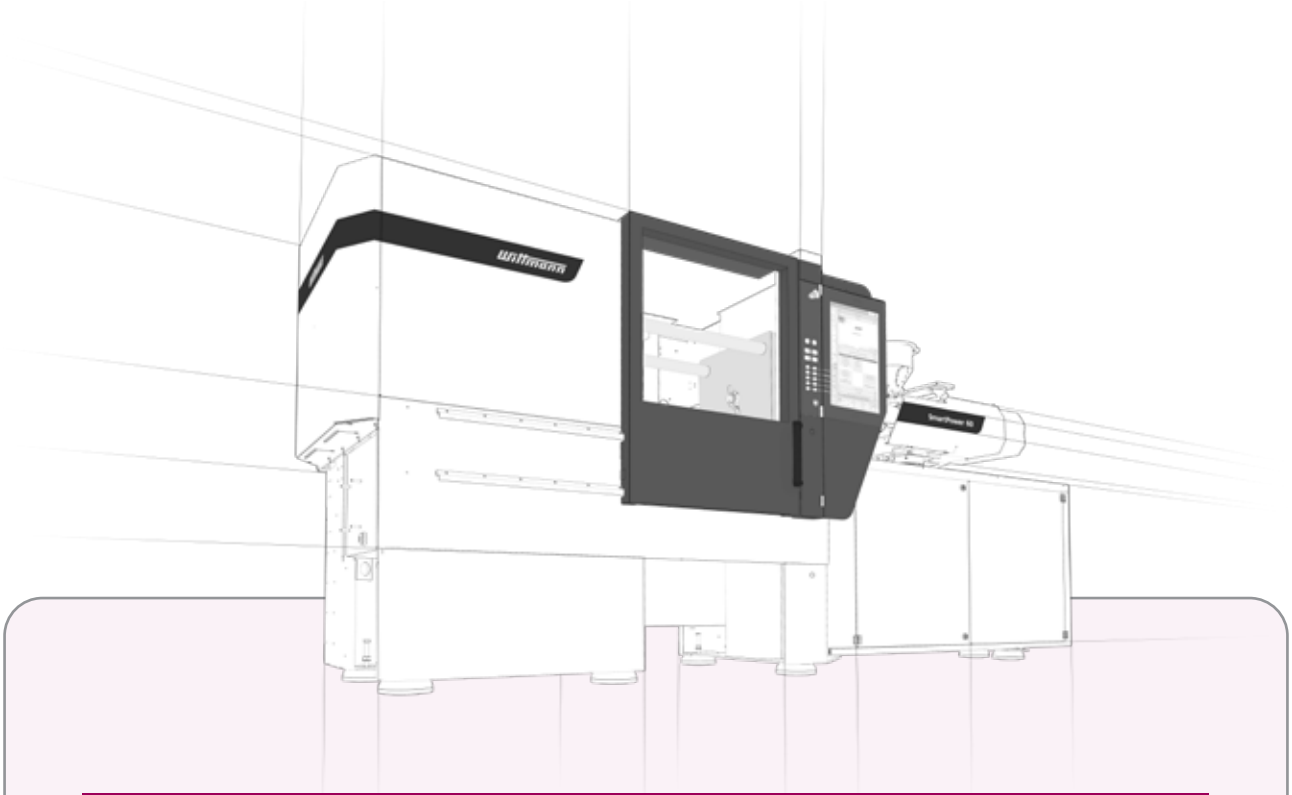
» **Specific technical data**
- Short rotation cycle times thanks to servo-electric drive
- All rotary units are laid out for rotary feed-through of the connected media – for up to 12 media circuits (temperature control, pneumatics, hydraulics) as well as power circuits and sensors.
- All rotary units are available for 2-, 3- and 4-station operation.
- Available for both reversing and round-loop cycles
- Accurate positioning with electronic rotation angle measurement
- End position dampening
- Indexing device
- Rotation parallel to machine and robot movements possible
- Rotation module can be deactivated via control system
- Easy, flexible installation and removal possible

» **Extension options**
- Extended number of media circuits
- Customized ejector positions
- Installation of magnetic mold platens
- Data transfer modules

» **Tie-bar removal device available as standard**
For the insertion of bulky or extra-large molds, one of the tie-bars can be retracted and subsequently returned to its original position in just a few steps.



TECHNICAL DATA SmartPower B8X



COMBINATIONS OF CLAMPING UNITS/INJECTION UNITS											
Clamping unit	Injection unit										
t	70	130	210	350	525	750	1000	1330	1670	2250	3400
38	•○	•○	•○								
50	•○	•○	•○	•							
60	•○	•○	•○	•							
80	•○	•○	•○	•○	•○						
90	•○	•○	•○	•○	•○						
110		•○	•○	•○	•○	•○					
120		•○	•○	•○	•○	•○					
XL 135				•○	•○	•○	•○				
160					•○	•○	•○	•			
180					•○	•○	•○	•			
XL 190						•○	•○	•○	•○		
210						•○	•○	•○	•○		
240						•○	•○	•○	•○		
XL 250						•○	•○	•○	•○	•	
300						•○	•○	•○	•○	•	
350						•○	•○	•○	•○	•	
400							•○	•○	•○	•	•

• SmartPower B8X ○ SmartPower B8X with e-unit (Option)

Material	Factor
ABS	0.88
CA	1.02
CAB	0.97
PA	0.91
PC	0.97
PE	0.71
PMMA	0.94
POM	1.15
PP	0.73

The maximum shotweights (g) are calculated by multiplying the theoretical shot volume (cm^3) by the above factor.

Material	Factor
PP + 20 % Talc	0.85
PP + 40 % Talc	0.98
PP + 20 % GF	0.85
PS	0.91
PVC hard	1.12
PVC soft	1.02
SAN	0.88
SB	0.88

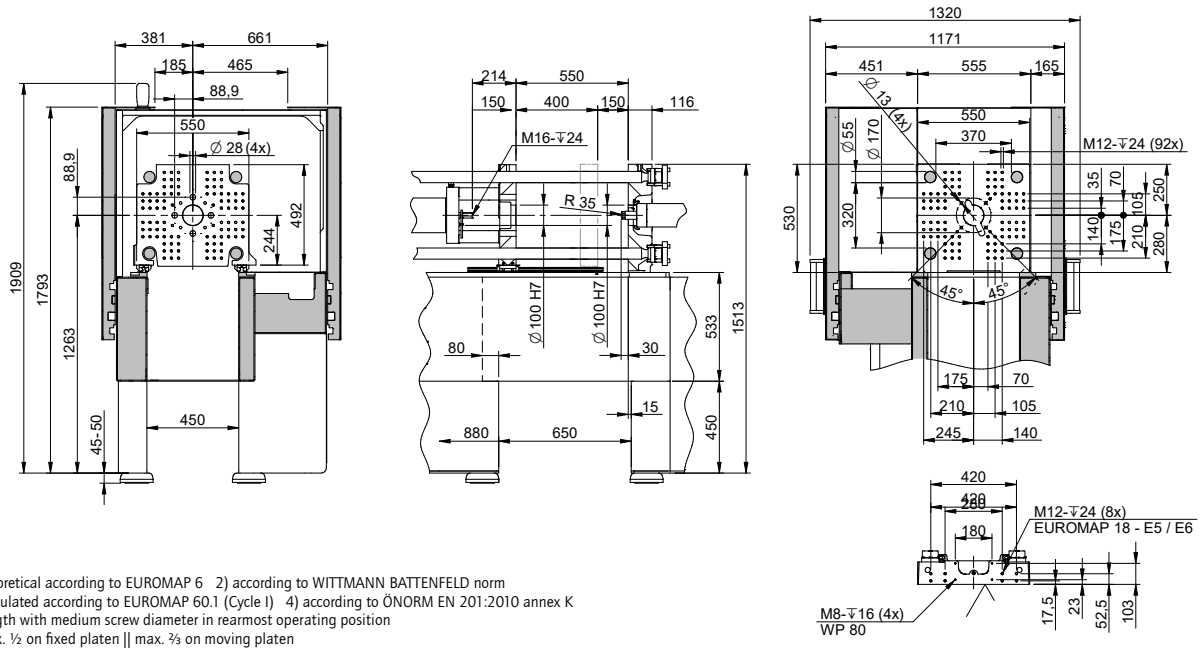
DATA SmartPower B8X 38

Clamping unit		**SmartPower B8X 38**
Clamping force	kN	380
Distance between tie bars	mm x mm	370 x 320
Mold height (min.)	mm	150
Opening stroke/opening force	mm/kN	400/34
Maximum daylight	mm	550
Ejector stroke/ejector force	mm/kN	150/26.4
Dry cycle time[1]	s – mm	1.75 – 224

Injection unit		**70**			**130**				**210**		
Screw diameter	mm	14	18	22	18	22	25	30	25	30	35
Screw stroke	mm	70	90	90	90	110	125	125	125	150	150
Screw L/D ratio			20		20	20	22	22		22	
Theoretical shot volume	cm^3	10.8	22.9	34.2	22.9	41.8	61.4	88.4	61.4	106	144
Specific injection pressure	bar	3000	3000	2056	3000	2864	2218	1540	2940	2042	1500
Max. screw speed Hydraulic | e-unit (Option)	min^{-1}		685 600			438 475				341 400	
Max. plasticizing rate (PS)[2] Hydraulic | e-unit (Option)	g/s	2.4 2.1	6.9 6.1	10.1 8.8	4.4 4.8	6.4 7	12 13	17 18	9 11	13 16	21 24
Max. screw torque Hydraulic | e-unit (Option)	Nm	65 65	120 120	231 150	120 120	238 150	340 250	357 250	340 340	490 400	490 400
Nozzle stroke/contact force	mm/kN		250/47			250/47				250/86	
Injection rate into air Hydraulic | e-unit (Option)	cm^3/s	37.9 61.6	62.7 102	93.6 152	45 50.9	67.2 76	86.8 98	125 141	65.5 98.2	94.3 141	128.3 192
Injection rate into air with additional pump (option)	cm^3/s	65,5	108	162	78	116	150	216	113	163	222
Barrel heating power	kW	2.9	5.7	6.5	5.7	6.5	9.2	9.5	9.2	9.5	10.6
Number of heating zones			4			4				4	
Energy efficiency class[3]			5+		5+	5+	5+	6+	5+	6+	7+

Drive				
Oil tank volume	l	200	200	200
Electrical power supply without/with Europackage Hydraulic | e-unit (Option)	kVA	16/39 20/43	19/42 22/45	22/45 25/48
Emission sound pressure level[4]	dB(A)	64	64	64

Weights, dimensions				
Net weight (exclusive oil) Hydraulic | e-unit (Option)	kg	3000 3300	3000 3300	3100 3400
Length x width x height[5] Hydraulic | e-unit (Option)	m	3.4 x 1.3 x 1.9 3.8 x 1.3 x 1.9	3.5 x 1.3 x 1.9 3.9 x 1.3 x 1.9	3.6 x 1.3 x 1.9 4 x 1.3 x 1.9
Max. mold weight[6]	kg	700		
Min. mold dimension	mm x mm	226 x 226		



1) theoretical according to EUROMAP 6 2) according to WITTMANN BATTENFELD norm
3) calculated according to EUROMAP 60.1 (Cycle I) 4) according to ÖNORM EN 201:2010 annex K
5) length with medium screw diameter in rearmost operating position
6) max. ½ on fixed platen || max. ⅔ on moving platen

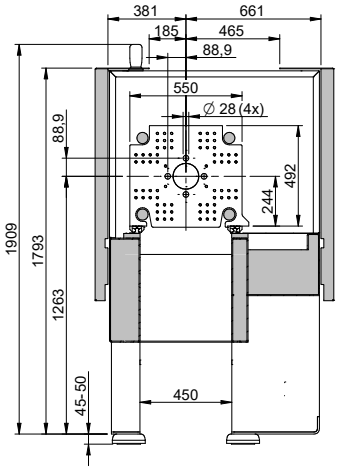
DATA SmartPower B8X 50/60

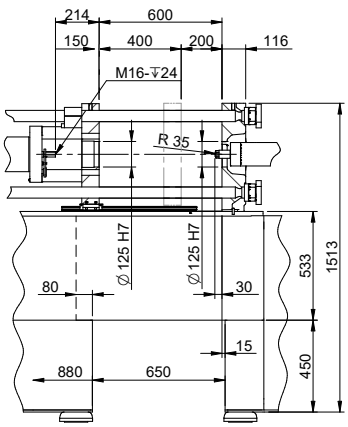
Clamping unit		**SmartPower B8X 50**	**SmartPower B8X 60**
Clamping force	kN	500	600
Distance between tie bars	mm x mm	370 x 320	
Mold height (min.)	mm	200	
Opening stroke/opening force	mm/kN	400/34	
Maximum daylight	mm	600	
Ejector stroke/ejector force	mm/kN	150/26.4	
Dry cycle time[1]	s – mm	1.75 – 224	

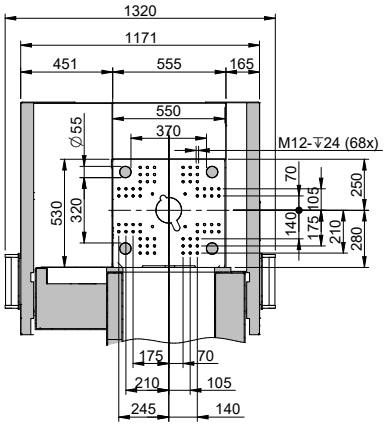
Injection unit		**70**			**130**				**210**			**350**		
Screw diameter	mm	14	18	22	18	22	25	30	25	30	35	30	35	40
Screw stroke	mm	70	90	90	90	110	125	125	125	150	150	150	175	175
Screw L/D ratio			20		20	20	22	22		22			22	
Theoretical shot volume	cm^3	10.8	22.9	34.2	22.9	41.8	61.4	88.4	61.4	106	144	106	168	220
Specific injection pressure	bar	3000	3000	2056	3000	2864	2218	1540	2940	2042	1500	2835	2083	1595
Max. screw speed Hydraulic | e-unit (Option)	min^{-1}		685 600			438 475				341 400			273 –	
Max. plasticizing rate (PS)[2] Hydraulic | e-unit (Option)	g/s	2.4 2.1	6.9 6.1	10 8.8	4.4 4.8	6.4 7	12 13	17 18	9 11	13 16	21 24	11 –	16 –	26 –
Max. screw torque Hydraulic | e-unit (Option)	Nm	65 65	120 120	231 150	120 120	238 150	340 250	357 250	340 340	490 400	490 400	600 500	621 500	621 500
Nozzle stroke/contact force	mm/kN	250/47			250/47				250/86			250/86		
Injection rate into air Hydraulic | e-unit (Option)	cm^3/s	37.9 61.6	62.7 102	93.6 152	45 50.9	67.2 76	86.8 98.2	125 141	65.5 98.2	94.3 141	128.3 192	67.9 141	92.4 192	120.7 251
Injection rate into air with additional pump (option)	cm^3/s	65.5	108	162	78	116	150	216	113	163	222	117	160	209
Barrel heating power	kW	2.9	5.7	6.5	5.7	6.5	9.2	9.5	9.2	9.5	10.6	9.5	10.6	13.7
Number of heating zones			4			4				4			4	
Energy efficiency class[3]		5+	5+	5+	5+	5+	5+	6+	5+	6+	7+	5+	6+	7+

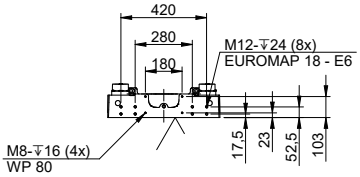
Drive					
Oil tank volume	l	200	200	200	200
Electrical power supply without/with Europackage Hydraulic | e-unit (Option)	kVA	16/39 20/43	19/42 22/45	22/45 25/48	27/50 30/53
Emission sound pressure level[4]	dB(A)	64	64	64	64

Weights, dimensions					
Net weight (exclusive oil) Hydraulic | e-unit (Option)	kg	3000 3300	3000 3300	3100 3300	3100 –
Length x width x height[5] Hydraulic | e-unit (Option)	m	3.4 x 1.3 x 1.9 3.8 x 1.3 x 1.9	3.5 x 1.3 x 1.9 3.9 x 1.3 x 1.9	3.6 x 1.3 x 1.9 4 x 1.3 x 1.9	3.8 x 1.3 x 1.9 –
Max. mold weight[6]	kg	700			
Min. mold dimension	mm x mm	226 x 226			









1) theoretical according to EUROMAP 6 2) according to WITTMANN BATTENFELD norm
3) calculated according to EUROMAP 60.1 (Cycle I) 4) according to ÖNORM EN 201:2010 annex K
5) length with medium screw diameter in rearmost operating position
6) max. ½ on fixed platen || max. ⅔ on moving platen

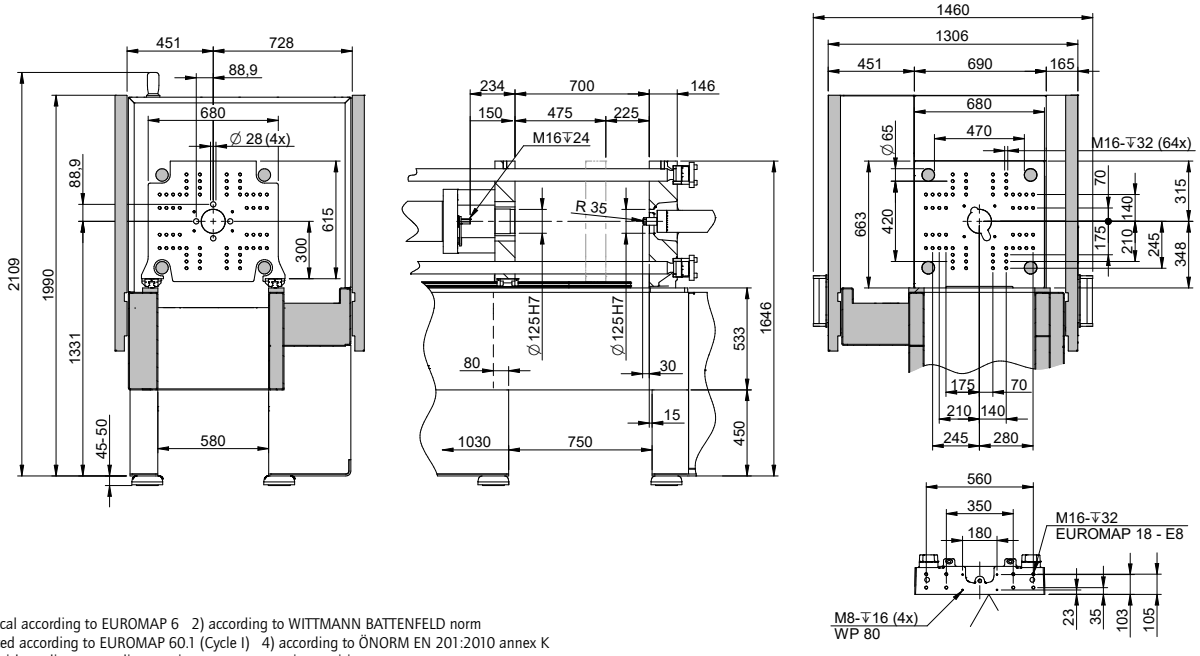
DATA SmartPower B8X 80/90

Clamping unit		**SmartPower B8X 80**	**SmartPower B8X 90**
Clamping force	kN	800	900
Distance between tie bars	mm x mm	470 x 420	
Mold height (min.)	mm	225	
Opening stroke/opening force	mm/kN	475/42	
Maximum daylight	mm	700	
Ejector stroke/ejector force	mm/kN	150/41.2	
Dry cycle time[1]	s – mm	1.9 – 294	

Injection unit		**70**			**130**				**210**			**350**			**525**		
Screw diameter	mm	14	18	22	18	22	25	30	25	30	35	30	35	40	35	40	45
Screw stroke	mm	70	90	90	90	110	125	125	125	150	150	150	175	175	175	200	200
Screw L/D ratio		20			20	20	22	22	22			22			22		
Theoretical shot volume	cm^3	10.8	22.9	34.2	22.9	41.8	61.4	88.4	61.4	106	144	106	168	220	168	251	318
Specific injection pressure	bar	3000	3000	2056	3000	2864	2218	1540	2940	2042	1500	2835	2083	1595	2500	2100	1659
Max. screw speed Hydraulic | e-unit (Option)	min^{-1}	750 600			475 475				435 400			350 350			278 325		
Max. plasticizing rate (PS)[2] Hydraulic | e-unit (Option)	g/s	2.6 2.1	7.6 6.1	11 8.8	4.8 4.8	7 7	13 13	18 18	12 11	17 16	26 24	14 14	21 21	34 34	17 20	27 31	35 41
Max. screw torque Hydraulic | e-unit (Option)	Nm	65 65	120 120	231 150	120 120	238 150	340 250	357 250	340 340	490 400	490 400	600 500	621 500	621 500	770 700		
Nozzle stroke/contact force	mm/kN	250/47			250/47				250/86			250/86			300/86		
Injection rate into air Hydraulic | e-unit (Option)	cm^3/s	48.3 61.6	79.8 102	119,2 152	57.3 50.9	85.6 76	111 98.2	159 141	83.3 98.2	120 141	163 192	86.4 141	118 192	154 251	89 192	117 251	148 318
Injection rate into air with additional pump (option)	cm^3/s	65.5	108	162	78	116	150	216	113	163	222	117	160	209	147	192	243
Barrel heating power	kW	2.9	5.7	6.5	5.7	6.5	9.2	9.5	9.2	9.5	10.6	9.5	10.6	13.7	10.6	13.7	16.7
Number of heating zones		4			4				4			4			4		
Energy efficiency class[3]		4+	4+	4+	4+	4+	4+	5+	4+	5+	6+	5+	6+	7+	6+	7+	8+

Drive					
Oil tank volume	l	280	280	280	280	280
Electrical power supply without/with Europackage Hydraulic | e-unit (Option)	kVA	23/46 27/50	24/47 27/50	26/49 29/52	27/50 30/53	31/54 38/58
Emission sound pressure level[4]	dB(A)	64	64	64	64	64

Weights, dimensions						
Net weight (exclusive oil) Hydraulic | e-unit (Option)	kg	3900 4200	4000 4300	4100 4400	4100 4400	4200 4600
Length x width x height[5] Hydraulic | e-unit (Option)	m	4.1 x 1.45 x 2.1 4.1 x 1.45 x 2.1	4.1 x 1.45 x 2.1 4.2 x 1.45 x 2.1	4.1 x 1.45 x 2.1 4.4 x 1.45 x 2.1	4.1 x 1.45 x 2.1 4.6 x 1.45 x 2.1	4.3 x 1.45 x 2.1 4.8 x 1.45 x 2.1
Max. mold weight[6]	kg	900				
Min. mold dimension	mm x mm	246 x 246				



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3) calculated according to EUROMAP 60.1 (Cycle I) 4) according to ÖNORM EN 201:2010 annex K
5) length with medium screw diameter in rearmost operating position
6) max. ½ on fixed platen || max. ⅔ on moving platen

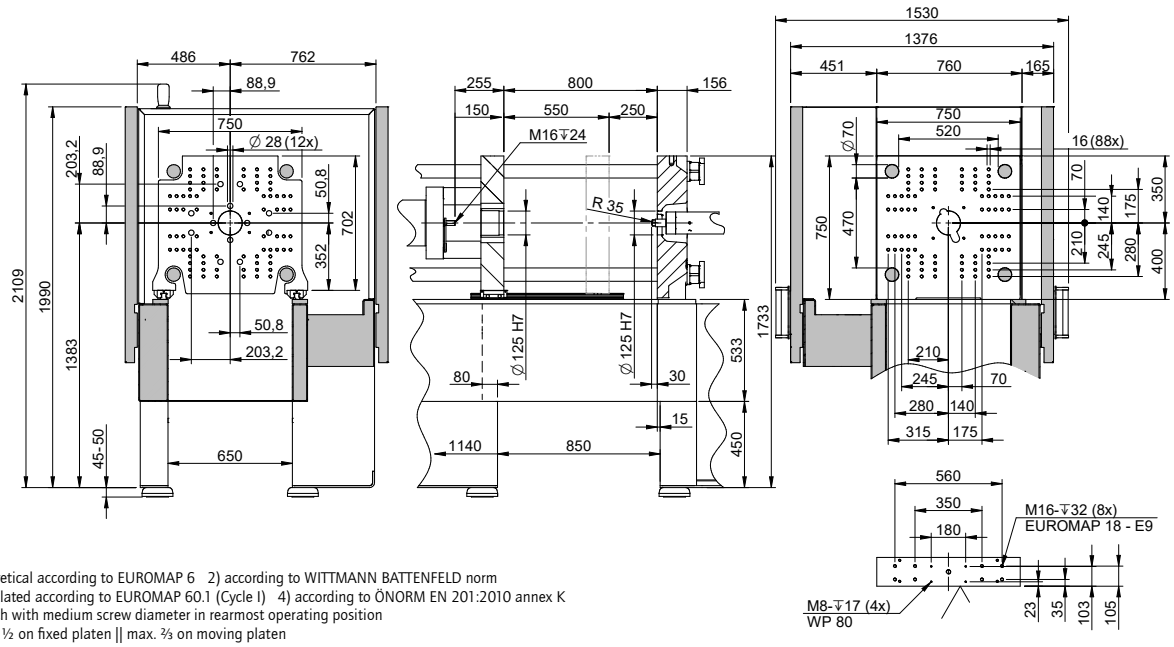
DATA SmartPower B8X 110/120

Clamping unit		**SmartPower B8X 110**	**SmartPower B8X 120**
Clamping force	kN	1100	1200
Distance between tie bars	mm x mm	520 x 470	
Mold height (min.)	mm	250	
Opening stroke/opening force	mm/kN	550/53	
Maximum daylight	mm	800	
Ejector stroke/ejector force	mm/kN	150/41.2	
Dry cycle time[1]	s – mm	2.1 – 329	

Injection unit		**130**				**210**			**350**			**525**			**750**		
Screw diameter	mm	18	22	25	30	25	30	35	30	35	40	35	40	45	40	45	50
Screw stroke	mm	90	110	125	125	125	150	150	150	175	175	175	200	200	200	225	225
Screw L/D ratio		20	20	22	22		22			22			22			22	
Theoretical shot volume	cm^3	22.9	41.8	61.4	88.4	61.4	106	144	106	168	220	168	251	318	251	358	442
Specific injection pressure	bar	3000	2864	2218	1540	2940	2042	1500	2835	2083	1595	2500	2100	1659	2500	2116	1714
Max. screw speed Hydraulic | e-unit (Option)	min^{-1}	475 475				496 400			397 350			325 325			276 325		
Max. plasticizing rate (PS)[2] Hydraulic | e-unit (Option)	g/s	4,8 4,8	7 7	13 13	18 18	13 11	19 16	30 24	15 14	24 21	38 34	20 20	31 31	41 41	26 31	35 41	42 49
Max. screw torque Hydraulic | e-unit (Option)	Nm	120 120	238 150	340 250	357 250	340 340	490 400	490 400	600 500	621 500	621 500	770 700			998 900		
Nozzle stroke/contact force	mm/kN	250/47				250/86			250/86			300/86			350/86		
Injection rate into air Hydraulic | e-unit (Option)	cm^3/s	65 50.9	98 76	126 98.2	182 141	95.2 98.2	137 141	187 192	98.8 141	134 192	176 251	102 192	133 251	169 318	117 251	149 318	184 393
Injection rate into air with additional pump (option)	cm^3/s	78	116	150	216	137	197	268	142	193	252	147	192	243	150	190	235
Barrel heating power	kW	5.7	6.5	9.2	9.5	9.2	9.5	10.6	9.5	10.6	13.7	10.6	13.7	16.7	13.7	16.7	22.1
Number of heating zones		4				4			4			4			4	4	5
Energy efficiency class[3]		3+	3+	3+	3+	3+	5+	6+	5+	6+	7+	6+	7+	8+	6+	7+	8+

Drive					
Oil tank volume	l	340	340	340	340	340
Electrical power supply without/with Europackage Hydraulic | e-unit (Option)	kVA	26/49 29/52	28/51 31/54	30/53 33/56	31/54 35/58	37/60 42/65
Emission sound pressure level[4]	dB(A)	64	64	64	64	64

Weights, dimensions						
Net weight (exclusive oil) Hydraulic | e-unit (Option)	kg	4400 4700	4500 4800	4500 4900	4600 5000	4600 5000
Length x width x height[5] Hydraulic | e-unit (Option)	m	4.3 x 1.5 x 2.1 4.5 x 1.5 x 2.1	4.3 x 1.5 x 2.1 4.7 x 1.5 x 2.1	4.3 x 1.5 x 2.1 4.9 x 1.5 x 2.1	4.4 x 1.5 x 2.1 5 x 1.5 x 2.1	4.7 x 1.5 x 2.1 5.6 x 1.5 x 2.1
Max. mold weight[6]	kg	1400				
Min. mold dimension	mm x mm	296 x 296				



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5) length with medium screw diameter in rearmost operating position
6) max. ½ on fixed platen || max. ⅔ on moving platen

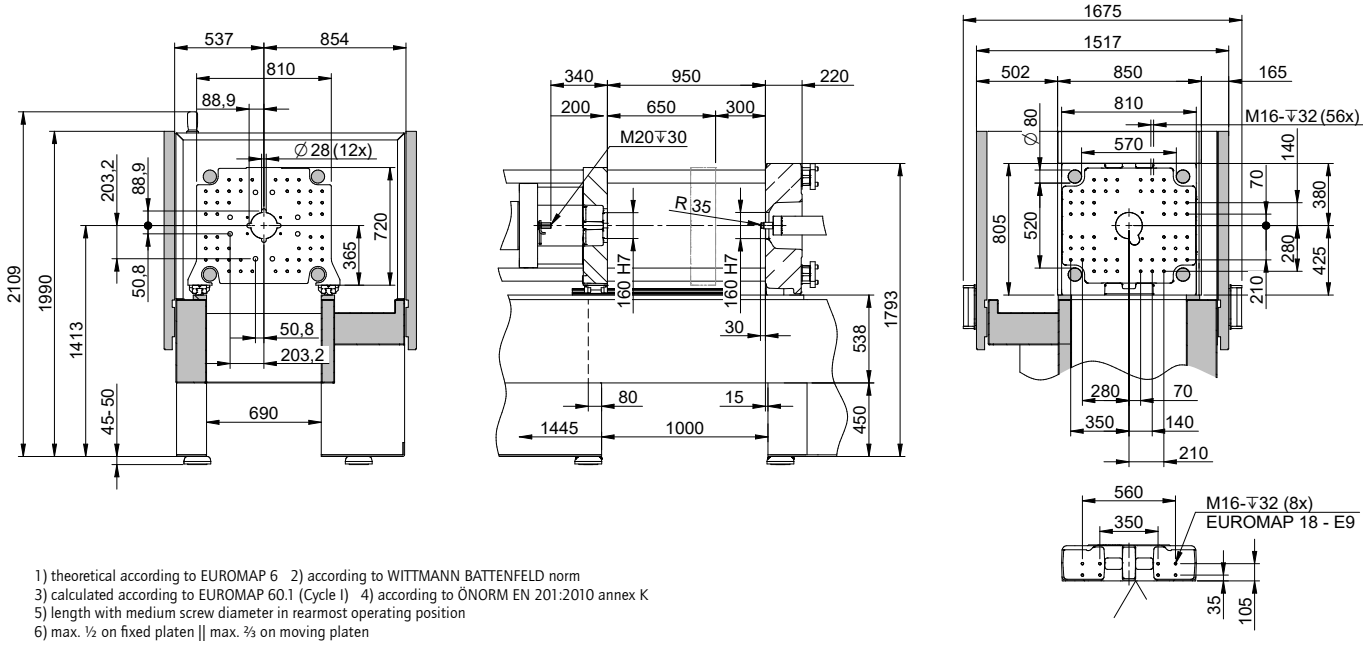
DATA SmartPower B8X XL 135

Clamping unit		**SmartPower B8X XL 135**
Clamping force	kN	1350
Distance between tie bars	mm x mm	570 x 520
Mold height (min.)	mm	300
Opening stroke/opening force	mm/kN	650/81
Maximum daylight	mm	950
Ejector stroke/ejector force	mm/kN	200/65
Dry cycle time[1]	s – mm	2.4 – 364

Injection unit		**350**			**525**			**750**			**1000**		
Screw diameter	mm	30	35	40	35	40	45	40	45	50	45	50	55
Screw stroke	mm	150	175	175	175	200	200	200	225	225	225	250	250
Screw L/D ratio			22			22			22			22	
Theoretical shot volume	cm^3	106	168	220	168	251	318	251	358	442	358	491	594
Specific injection pressure	bar	2835	2083	1595	2500	2100	1659	2500	2116	1714	2490	2016	1666
Max. screw speed Hydraulic | e-unit (Option)	min^{-1}		625 350			500 325			380 325			260 300	
Max. plasticizing rate (PS)[2] Hydraulic | e-unit (Option)	g/s	24 14	38 21	60 34	30 20	48 31	62 41	36 31	47 41	57 49	33 38	40 45	49 56
Max. screw torque Hydraulic | e-unit (Option)	Nm	600 500	621 500	621 500		770 700			998 900			1540 1200	
Nozzle stroke/contact force	mm/kN		300/86			300/86			350/86			400/100	
Injection rate into air Hydraulic | e-unit (Option)	cm^3/s	160 141	218 192	285 251	166 192	217 251	274 318	170 251	215 318	266 393	183 318	226 393	273 475
Injection rate into air with additional pump (option)	cm^3/s	–	–	–	–	–	–	–	–	–	267	330	399
Barrel heating power	kW	9.5	10.6	13.7	10.6	13.7	16.7	13.7	16.7	22.1	16.7	22.1	22.6
Number of heating zones			4			4		4	4	5	4	5	5
Energy efficiency class[3]		5+	6+	7+	5+	6+	7+	6+	7+	8+	6+	7+	8+

Drive					
Oil tank volume	l	450	450	450	450
Electrical power supply without/with Europackage Hydraulic | e-unit (Option)	kVA	39/62 42/65	42/65 46/69	44/67 49/72	46/69 52/75
Emission sound pressure level[4]	dB(A)	65	65	65	65

Weights, dimensions					
Net weight (exclusive oil) Hydraulic | e-unit (Option)	kg	7100 7500	7200 7600	7300 8100	7900 8700
Length x width x height[5] Hydraulic | e-unit (Option)	m	4.9 x 1.65 x 2.1 5.2 x 1.65 x 2.1	4.9 x 1.65 x 2.1 5.6 x 1.65 x 2.1	5 x 1.65 x 2.1 5.8 x 1.65 x 2.1	5.3 x 1.65 x 2.1 6.1 x 1.65 x 2.1
Max. mold weight[6]	kg	2000			
Min. mold dimension	mm x mm	346 x 346			



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5) length with medium screw diameter in rearmost operating position
6) max. ½ on fixed platen || max. ⅔ on moving platen

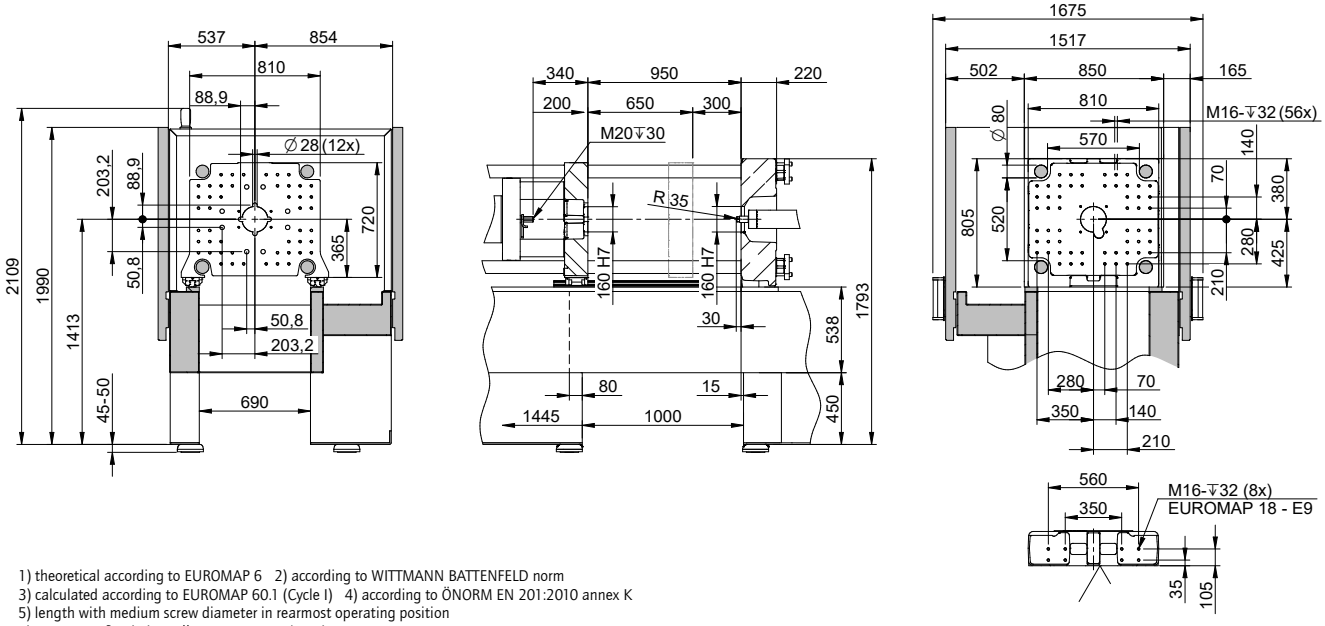
DATA SmartPower B8X 160/180

Clamping unit		**SmartPower B8X 160**	**SmartPower B8X 180**
Clamping force	kN	1600	1800
Distance between tie bars	mm x mm	570 x 520	
Mold height (min.)	mm	300	
Opening stroke/opening force	mm/kN	650/81	
Maximum daylight	mm	950	
Ejector stroke/ejector force	mm/kN	200/65	
Dry cycle time[1]	s – mm	2.4 – 364	

Injection unit		**525**			**750**			**1000**			**1330**		
Screw diameter	mm	35	40	45	40	45	50	45	50	55	50	55	60
Screw stroke	mm	175	200	200	200	225	225	225	250	250	250	275	275
Screw L/D ratio			22			22			22			22	
Theoretical shot volume	cm^3	168	251	318	251	358	442	358	491	594	491	653	778
Specific injection pressure	bar	2500	2100	1659	2500	2116	1714	2490	2016	1666	2470	2041	1715
Max. screw speed Hydraulic | e-unit (Option)	min^{-1}		500 325			380 325			260 300			207 –	
Max. plasticizing rate (PS)[2] Hydraulic | e-unit (Option)	g/s	30 20	48 31	62 41	36 31	47 41	57 49	33 38	39 45	49 56	31 –	39 –	41 –
Max. screw torque Hydraulic | e-unit (Option)	Nm		770 700			998 900			1540 1200			1940 –	
Nozzle stroke/contact force	mm/kN		300/86			350/86			400/100			400/100	
Injection rate into air Hydraulic | e-unit (Option)	cm^3/s	166 192	217 251	274 318	170 251	215 318	266 393	183 318	226 393	273 475	184 –	223 –	265 –
Injection rate into air with additional pump (option)	cm^3/s	–	–	–	–	–	–	267	330	399	269	326	388
Barrel heating power	kW	10.6	13.7	16.7	13.7	16.7	22.1	16.7	22.1	22.6	22.1	22.6	23.6
Number of heating zones			4		4	4	5	4	5	5		5	
Energy efficiency class[3]		5+	6+	7+	6+	7+	8+	6+	7+	8+	7+	7+	8+

Drive					
Oil tank volume	l	450	450	450	450
Electrical power supply without/with Europackage Hydraulic | e-unit (Option)	kVA	42/65 46/69	44/67 49/72	46/69 51/74	54/77 –
Emission sound pressure level[4]	dB(A)	65	65	65	65

Weights, dimensions					
Net weight (exclusive oil) Hydraulic | e-unit (Option)	kg	7200 7600	7300 8100	7900 8700	8000 –
Length x width x height[5] Hydraulic | e-unit (Option)	m	4.9 x 1.65 x 2.1 5.4 x 1.65 x 2.1	5.1 x 1.65 x 2.1 5.8 x 1.65 x 2.1	5.4 x 1.65 x 2.1 6.3 x 1.65 x 2.1	5.6 x 1.65 x 2.1 –
Max. mold weight[6]	kg	2000			
Min. mold dimension	mm x mm	346 x 346			



1) theoretical according to EUROMAP 6 2) according to WITTMANN BATTENFELD norm
3) calculated according to EUROMAP 60.1 (Cycle I) 4) according to ÖNORM EN 201:2010 annex K
5) length with medium screw diameter in rearmost operating position
6) max. ½ on fixed platen || max. ⅔ on moving platen

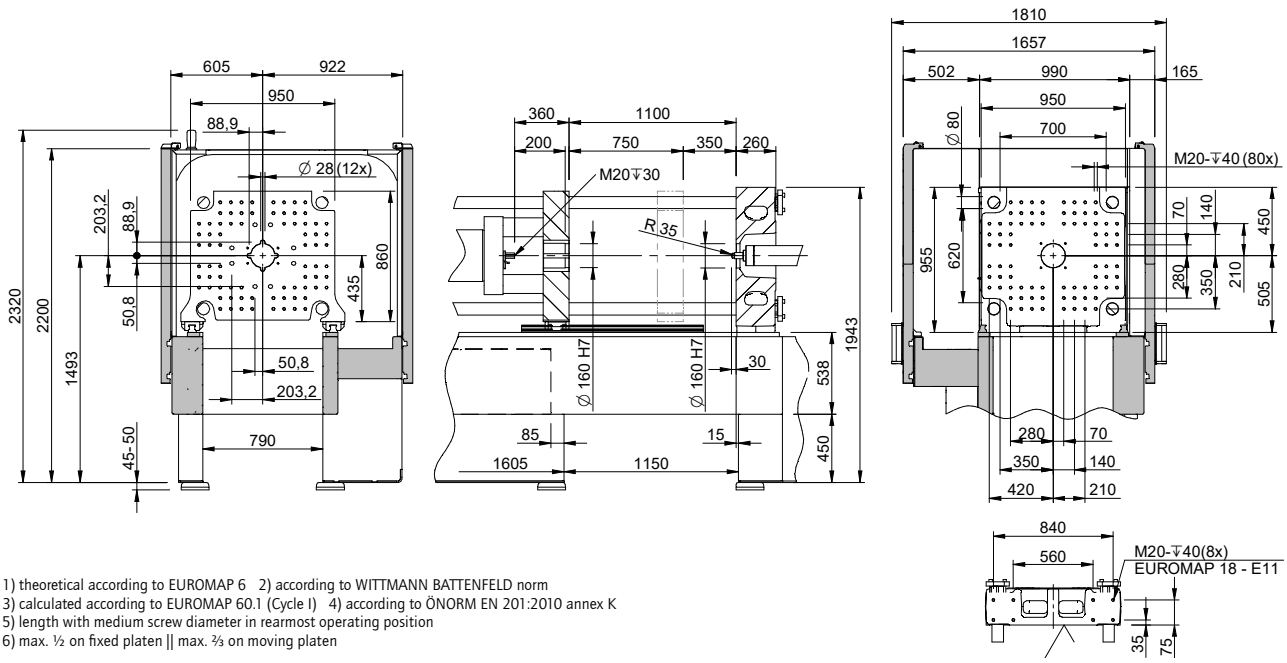
DATA SmartPower B8X XL 190

Clamping unit		**SmartPower B8X XL 190**
Clamping force	kN	1900
Distance between tie bars	mm x mm	700 x 620
Mold height (min.)	mm	350
Opening stroke/opening force	mm/kN	750/100
Maximum daylight	mm	1100
Ejector stroke/ejector force	mm/kN	200/65
Dry cycle time[1]	s – mm	2.6 – 434

Injection unit		**750**			**1000**			**1330**			**1670**		
Screw diameter	mm	40	45	50	45	50	55	50	55	60	55	60	65
Screw stroke	mm	200	225	225	225	250	250	250	275	275	275	300	300
Screw L/D ratio			22			22			22			22	
Theoretical shot volume	cm^3	251	358	442	358	491	594	491	653	778	653	848	995
Specific injection pressure	bar	2500	2116	1714	2490	2016	1666	2470	2041	1715	2343	1969	1678
Max. screw speed Hydraulic | e-unit (Option)	min^{-1}		380 325			350 300			278 300			275 275	
Max. plasticizing rate (PS)[2] Hydraulic | e-unit (Option)	g/s	36 31	47 41	57 49	44 38	53 45	66 56	42 45	52 56	55 59	51 51	54 54	61 61
Max. screw torque Hydraulic | e-unit (Option)	Nm		998 900			1540 1200			1940 1500			1940 1900	
Nozzle stroke/contact force	mm/kN		350/86			400/100			400/100			500/100	
Injection rate into air Hydraulic | e-unit (Option)	cm^3/s	170 251	215 318	266 393	246 318	304 393	368 475	248 344	300 416	357 495	261 357	311 425	365 499
Injection rate into air with additional pump (option)	cm^3/s	–	–	–	330	408	494	333	403	480	351	418	490
Barrel heating power	kW	13.7	16.7	22.1	16.7	22.1	22.6	22.1	22.6	23.6	22.6	23.6	24.2
Number of heating zones		4	4	5	4	5	5		5			5	
Energy efficiency class[3]		5+	6+	7+	6+	7+	8+	7+	7+	8+	7+	7+	8+

Drive					
Oil tank volume	l	600	600	600	600
Electrical power supply without/with Europackage Hydraulic | e-unit (Option)	kVA	50/73 55/78	51/74 57/80	54/77 60/83	57/80 63/86
Emission sound pressure level[4]	dB(A)	65	65	65	65

Weights, dimensions					
Net weight (exclusive oil) Hydraulic | e-unit (Option)	kg	10800 11600	11500 12200	11500 13000	11700 13200
Length x width x height[5] Hydraulic | e-unit (Option)	m	5.7 x 1.8 x 2.3 6.2 x 1.8 x 2.3	5.7 x 1.8 x 2.3 6.4 x 1.8 x 2.3	5.9 x 1.8 x 2.3 6.8 x 1.8 x 2.3	6.2 x 1.8 x 2.3 7 x 1.8 x 2.3
Max. mold weight[6]	kg	3000			
Min. mold dimension	mm x mm	396 x 396			



1) theoretical according to EUROMAP 6 2) according to WITTMANN BATTENFELD norm
3) calculated according to EUROMAP 60.1 (Cycle I) 4) according to ÖNORM EN 201:2010 annex K
5) length with medium screw diameter in rearmost operating position
6) max. ½ on fixed platen || max. ⅔ on moving platen

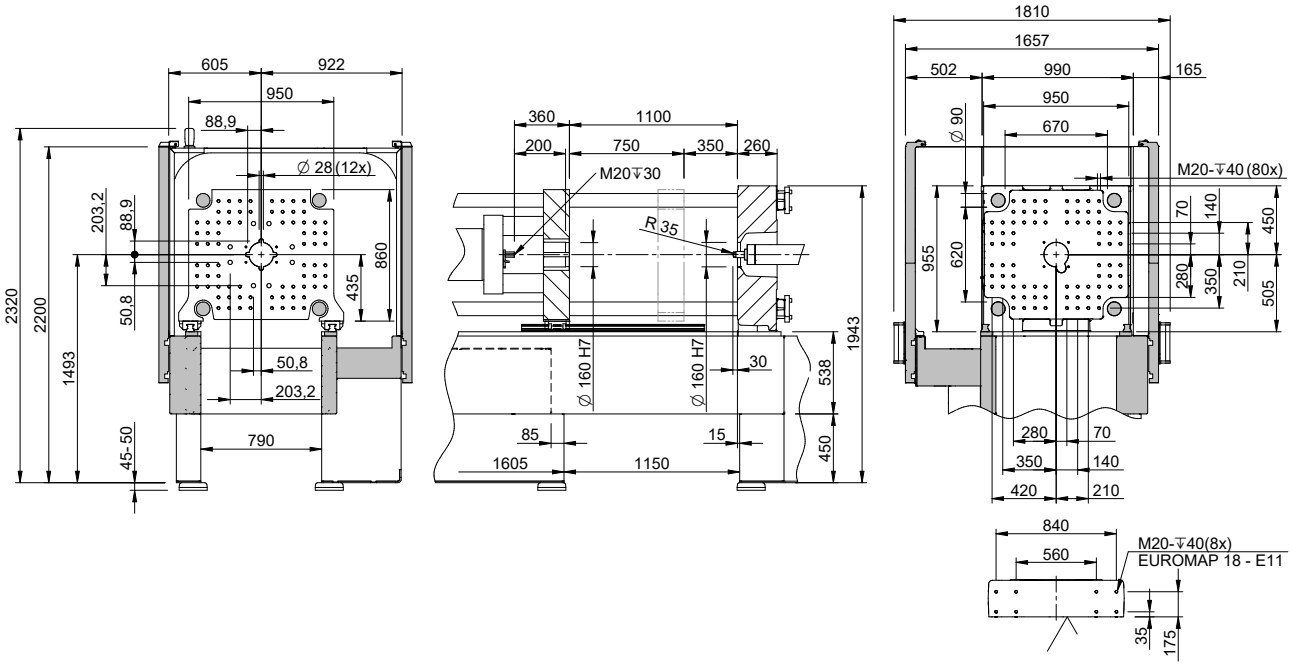
DATA SmartPower B8X 210/240

Clamping unit		**SmartPower B8X 210**	**SmartPower B8X 240**
Clamping force	kN	2100	2400
Distance between tie bars	mm x mm	670 x 620	
Mold height (min.)	mm	350	
Opening stroke/opening force	mm/kN	750/100	
Maximum daylight	mm	1100	
Ejector stroke/ejector force	mm/kN	200/65	
Dry cycle time[1]	s – mm	2.6 – 434	

Injection unit		**750**			**1000**			**1330**			**1670**		
Screw diameter	mm	40	45	50	45	50	55	50	55	60	55	60	65
Screw stroke	mm	200	225	225	225	250	250	250	275	275	275	300	300
Screw L/D ratio			22			22			22			22	
Theoretical shot volume	cm^3	251	358	442	358	491	594	491	653	778	653	848	995
Specific injection pressure	bar	2500	2116	1714	2490	2016	1666	2470	2041	1715	2343	1969	1678
Max. screw speed Hydraulic | e-unit (Option)	min^{-1}		380 325			350 300			278 300			275 275	
Max. plasticizing rate (PS)[2] Hydraulic | e-unit (Option)	g/s	36 31	47 41	57 49	44 38	53 45	66 56	42 45	52 56	55 59	51 51	54 54	61 61
Max. screw torque Hydraulic | e-unit (Option)	Nm		998 900			1540 1200			1940 1500			1940 1900	
Nozzle stroke/contact force	mm/kN		350/86			400/100			400/100			500/100	
Injection rate into air Hydraulic | e-unit (Option)	cm^3/s	170 251	215 318	266 393	246 318	304 393	368 475	248 344	300 416	357 495	261 357	311 425	365 499
Injection rate into air with additional pump (option)	cm^3/s	–	–	–	330	408	494	333	403	480	351	418	490
Barrel heating power	kW	13.7	16.7	22.1	16.7	22.1	22.6	22.1	22.6	23.6	22.6	23.6	24.2
Number of heating zones		4	4	5	4	5	5		5			5	
Energy efficiency class[3]		5+	6+	7+	6+	7+	8+	7+	7+	8+	7+	7+	8+

Drive					
Oil tank volume	l	600	600	600	600
Electrical power supply without/with Europackage Hydraulic | e-unit (Option)	kVA	50/73 55/78	51/74 57/80	54/77 60/83	57/80 63/86
Emission sound pressure level[4]	dB(A)	65	65	65	65

Weights, dimensions					
Net weight (exclusive oil) Hydraulic | e-unit (Option)	kg	10800 11600	11400 12200	11500 13000	11700 13200
Length x width x height[5] Hydraulic | e-unit (Option)	m	5.7 x 1.8 x 2.3 6.2 x 1.8 x 2.3	5.7 x 1.8 x 2.3 6.4 x 1.8 x 2.3	5.9 x 1.8 x 2.3 6.8 x 1.8 x 2.3	6.2 x 1.8 x 2.3 7 x 1.8 x 2.3
Max. mold weight[6]	kg	3000			
Min. mold dimension	mm x mm	396 x 396			



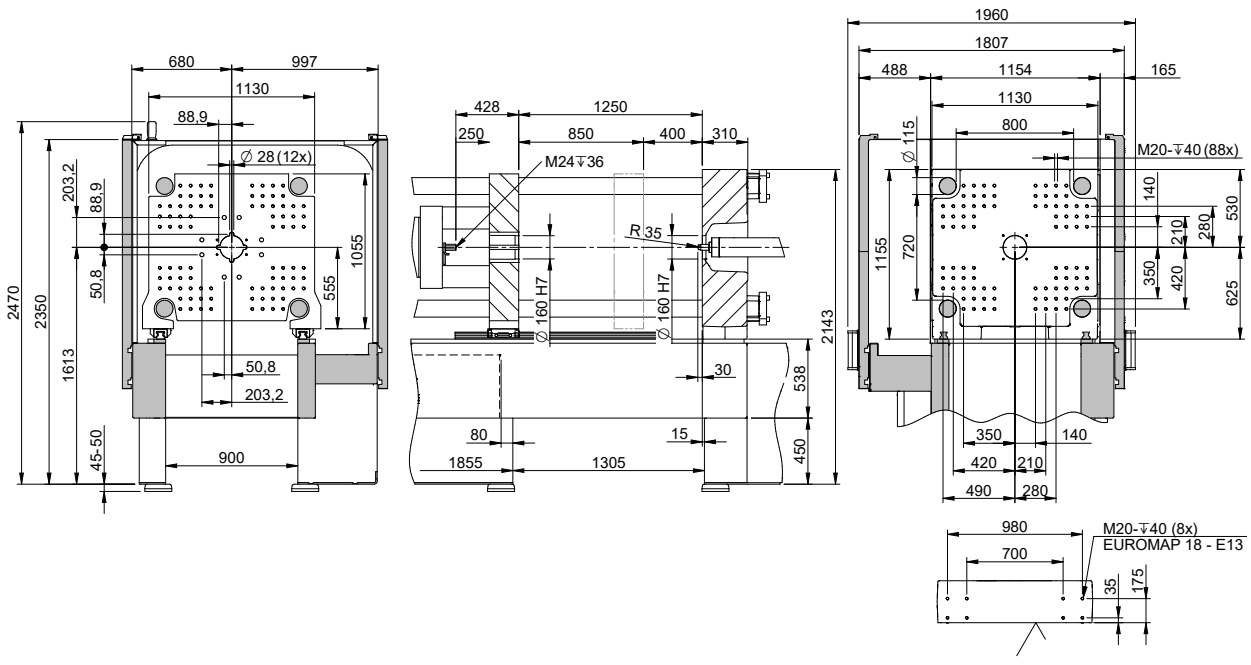
DATA SmartPower B8X XL 250

Clamping unit		**SmartPower B8X XL 250**
Clamping force	kN	2500
Distance between tie bars	mm x mm	800 x 720
Mold height (min.)	mm	400
Opening stroke/opening force	mm/kN	850/136
Maximum daylight	mm	1250
Ejector stroke/ejector force	mm/kN	250/81
Dry cycle time[1]	s – mm	2.8 – 504

Injection unit		**750**			**1000**			**1330**			**1670**			**2250**		
Screw diameter	mm	40	45	50	45	50	55	50	55	60	55	60	65	55	65	75
Screw stroke	mm	200	225	225	225	250	250	250	275	275	275	300	300	275	325	325
Screw L/D ratio			22			22			22			22			22	
Theoretical shot volume	cm^3	251	358	442	358	491	594	491	653	778	653	848	995	653	1078	1436
Specific injection pressure	bar	2500	2116	1714	2490	2016	1666	2470	2041	1715	2343	1969	1678	2500	2070	1555
Max. screw speed Hydraulic | e-unit (Option)	min^{-1}		380 325			400 300			315 300			315 275			255 –	
Max. plasticizing rate (PS)[2] Hydraulic | e-unit (Option)	g/s	36 31	47 41	57 49	50 38	60 45	75 56	48 45	59 56	62 59	59 51	62 54	70 61	48 –	57 –	109 –
Max. screw torque Hydraulic | e-unit (Option)	Nm		998 900			1540 1200			1940 1500			1940 1900		2500 –	2625 –	2625 –
Nozzle stroke/contact force	mm/kN		350/86			400/100			400/100			500/100			650/129	
Injection rate into air Hydraulic | e-unit (Option)	cm^3/s	170 251	215 318	266 393	281 318	347 393	420 475	283 344	343 416	408 495	299 357	357 425	417 499	242 –	338 –	450 –
Injection rate into air with additional pump (option)	cm^3/s	–	–	–	365	451	546	369	446	531	388	462	542	315	440	585
Barrel heating power	kW	13.7	16.7	22.1	16.7	22.1	22.6	22.1	22.6	23.6	22.6	23.6	24.2	20.3	24.7	31.3
Number of heating zones		4	4	5	4	5	5		5			5			6	
Energy efficiency class[3]		5+	6+	7+	6+	7+	7+	7+	7+	8+	7+	7+	8+	7+	8+	8+

Drive						
Oil tank volume	l	750	750	750	750	750
Electrical power supply without/with Europackage Hydraulic | e-unit (Option)	kVA	58/81 63/86	60/83 66/89	63/86 69/92	67/90 73/96	71/94 –
Emission sound pressure level[4]	dB(A)	65	65	65	65	65

Weights, dimensions						
Net weight (exclusive oil) Hydraulic | e-unit (Option)	kg	13800 14600	14400 15200	14500 16000	14700 16200	16500 –
Length x width x height[5] Hydraulic | e-unit (Option)	m	6.1 x 1.95 x 2.5 6.6 x 1.95 x 2.5	6.1 x 1.95 x 2.5 6.8 x 1.95 x 2.5	6.3 x 1.95 x 2.5 7.2 x 1.95 x 2.5	6.6 x 1.95 x 2.5 7.4 x 1.95 x 2.5	7.2 x 1.95 x 2.5 –
Max. mold weight[6]	kg	4000				
Min. mold dimension	mm x mm	446 x 446				



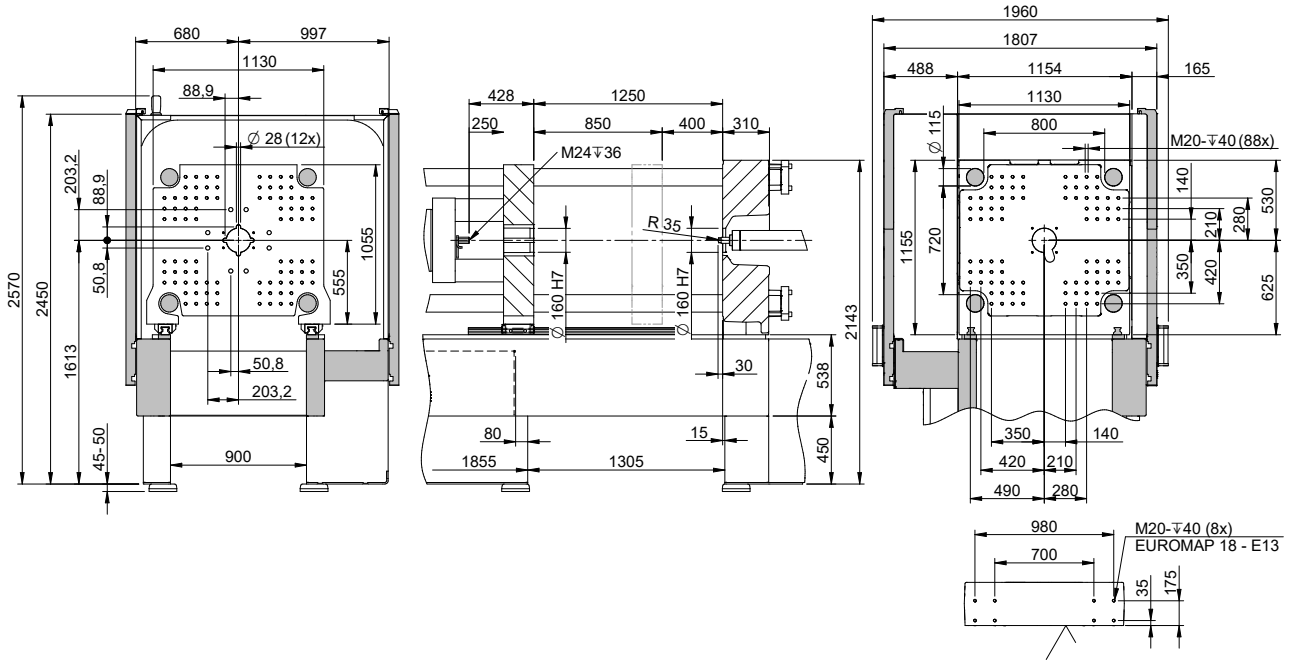
DATA SmartPower B8X 300

Clamping unit		**SmartPower B8X 300**	**SmartPower B8X 350**
Clamping force	kN	3000	3500
Distance between tie bars	mm x mm	800 x 720	
Mold height (min.)	mm	400	
Opening stroke/opening force	mm/kN	850/136	
Maximum daylight	mm	1250	
Ejector stroke/ejector force	mm/kN	250/81	
Dry cycle time[1]	s – mm	2.8 – 504	

Injection unit		**750**			**1000**			**1330**			**1670**			**2250**		
Screw diameter	mm	40	45	50	45	50	55	50	55	60	55	60	65	55	65	75
Screw stroke	mm	200	225	225	225	250	250	250	275	275	275	300	300	275	325	325
Screw L/D ratio		22			22			22			22			22		
Theoretical shot volume	cm^3	251	358	442	358	491	594	491	653	778	653	848	995	653	1078	1436
Specific injection pressure	bar	2500	2116	1714	2490	2016	1666	2470	2041	1715	2343	1969	1678	2500	2070	1555
Max. screw speed Hydraulic | e-unit (Option)	min^{-1}	380 325			400 300			315 300			315 275			255 –		
Max. plasticizing rate (PS)[2] Hydraulic | e-unit (Option)	g/s	36 31	47 41	57 49	50 38	60 45	75 56	48 45	59 56	62 59	59 51	62 54	70 61	48 –	71 –	109 –
Max. screw torque Hydraulic | e-unit (Option)	Nm	998 900			1540 1200			1940 1500			1940 1900			2500 –	2625 –	2625 –
Nozzle stroke/contact force	mm/kN	350/86			400/100			400/100			500/100			650/129		
Injection rate into air Hydraulic | e-unit (Option)	cm^3/s	170 251	215 318	266 393	281 318	347 393	420 475	283 344	343 416	408 495	299 357	357 425	417 499	242 –	338 –	450 –
Injection rate into air with additional pump (option)	cm^3/s	–	–	–	365	451	546	369	446	531	388	462	542	315	440	585
Barrel heating power	kW	13.7	16.7	22.1	16.7	22.1	22.6	22.1	22.6	23.6	22.6	23.6	24.2	20.3	24.7	31.3
Number of heating zones		4	4	5	4	5	5	5			5			6		
Energy efficiency class[3]		5+	6+	7+	6+	7+	7+	6+	7+	8+	7+	7+	8+	7+	8+	8+

Drive																
Oil tank volume	l	750			750			750			750			750		
Electrical power supply without/with Europackage Hydraulic | e-unit (Option)	kVA	58/81 63/86			60/83 66/89			63/86 69/92			67/90 73/96			71/94 –		
Emission sound pressure level[4]	dB(A)	65			65			65			65			65		

Weights, dimensions																
Net weight (exclusive oil) Hydraulic | e-unit (Option)	kg	13800 14600			14400 15200			14500 16000			14700 16200			16500 –		
Length x width x height[5] Hydraulic | e-unit (Option)	m	6.1 x 1.95 x 2.5 6.6 x 1.95 x 2.5			6.1 x 1.95 x 2.5 6.8 x 1.95 x 2.5			6.3 x 1.95 x 2.5 7.2 x 1.95 x 2.5			6.6 x 1.95 x 2.5 7.4 x 1.95 x 2.5			7.2 x 1.95 x 2.5 –		
Max. mold weight[6]	kg	4000														
Min. mold dimension	mm x mm	446 x 446														



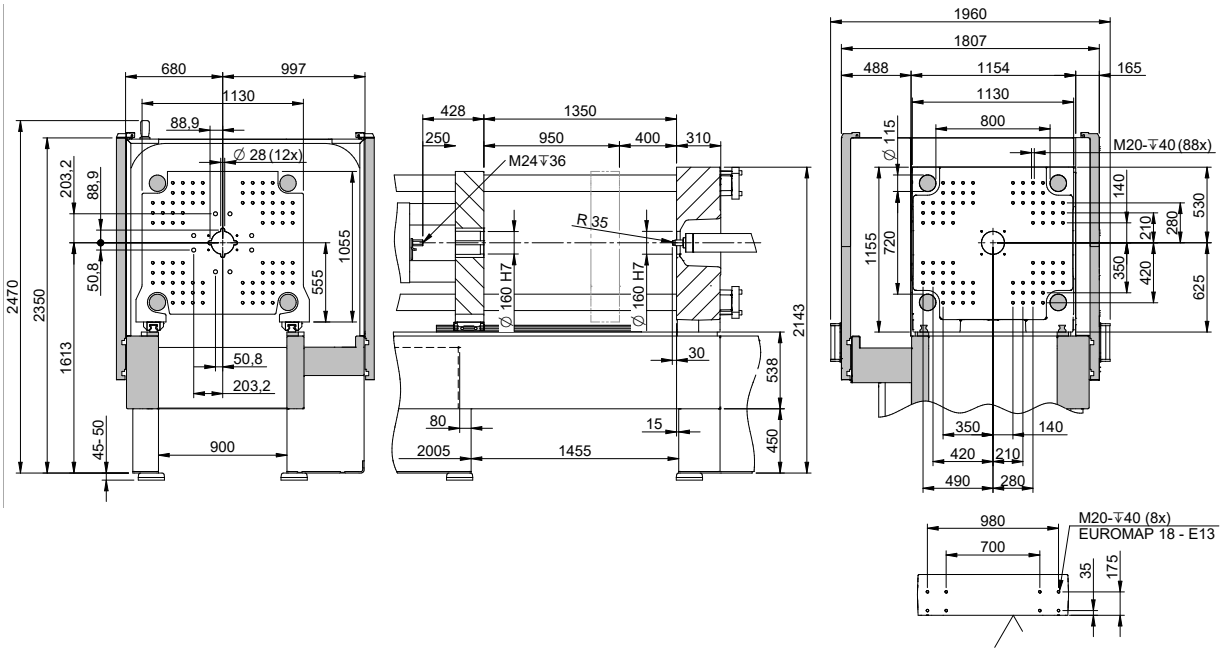
DATA SmartPower B8X 400

Clamping unit		**SmartPower B8X 400**
Clamping force	kN	4000
Distance between tie bars	mm x mm	800 x 720
Mold height (min.)	mm	400
Opening stroke/opening force	mm/kN	950/136
Maximum daylight	mm	1350
Ejector stroke/ejector force	mm/kN	250/81
Dry cycle time[1]	s – mm	3 – 504

Injection unit		**1000**			**1330**			**1670**			**2250**			**3400**		
Screw diameter	mm	45	50	55	50	55	60	55	60	65	55	65	75	65	75	85
Screw stroke	mm	225	250	250	250	275	275	275	300	300	275	325	325	325	375	375
Screw L/D ratio			22			22			22			22			22	
Theoretical shot volume	cm^3	358	491	594	491	653	778	653	848	995	653	1078	1436	1078	1657	2128
Specific injection pressure	bar	2490	2016	1666	2470	2041	1715	2343	1969	1678	2500	2070	1555	2500	2022	1574
Max. screw speed Hydraulic | e-unit (Option)	min^{-1}		400 300			315 300			315 275			255 –			177 –	
Max. plasticizing rate (PS)[2] Hydraulic | e-unit (Option)	g/s	50 38	60 45	75 56	48 45	59 56	62 59	59 51	62 54	70 61	48 –	71 –	109 –	50 –	76 –	106 –
Max. screw torque Hydraulic | e-unit (Option)	Nm		1540 1200			1940 1500			1940 1900		2500 –	2625 –	2625 –	3000 –	3780 –	3780 –
Nozzle stroke/contact force	mm/kN		400/100			400/100			500/100			650/129			650/129	
Injection rate into air Hydraulic | e-unit (Option)	cm^3/s	281 318	347 393	420 475	283 344	343 416	408 495	299 357	357 425	417 499	242 –	338 –	450 –	260 –	346 –	445 –
Injection rate into air with additional pump (option)	cm^3/s	365	451	546	369	446	531	388	462	542	315	440	585	338	450	578
Barrel heating power	kW	16.7	22.1	22.6	22.1	22.6	23.6	22.6	23.6	24.2	20.3	24.7	31.3	24.7	31.3	34.1
Number of heating zones		4	5	5		5			5			6			6	
Energy efficiency class[3]		6+	7+	7+	7+	7+	8+	7+	7+	8+	7+	8+	8+	8+	8+	9+

Drive				
Oil tank volume	l	800	800	800	800	800
Electrical power supply without/with Europackage Hydraulic | e-unit (Option)	kVA	60/83 66/89	63/86 69/92	66/89 73/96	71/94 –	75/98 –
Emission sound pressure level[4]	dB(A)	65	65	65	65	65

Weights, dimensions						
Net weight (exclusive oil) Hydraulic | e-unit (Option)	kg	15400 16200	15500 17000	15700 17200	17500 –	18500 –
Length x width x height[5] Hydraulic | e-unit (Option)	m	6.5 x 1.95 x 2.5 7 x 1.95 x 2.5	6.6 x 1.95 x 2.5 7.4 x 1.95 x 2.5	6.9 x 1.95 x 2.5 7.6 x 1.95 x 2.5	7.4 x 1.95 x 2.5 –	7.6 x 1.95 x 2.5 –
Max. mold weight[6]	kg	4000				
Min. mold dimension	mm x mm	496 x 496				



DATA SmartPower B8X COMBIMOULD

SmartPower B8X Combimould 110 / 120					
Injection unit	**130 H**	**210 H**	**350 H**	**525 H**	**750 H**
70	V - L - S	V - L - S	V - L - S	V - L - S	V - L - S
130	V - L - S	V - L - S	V - L - S	V - L - S	V - L - S
210	V - L - S	V - L - S	V - L - S	V - L - S	V - L - S

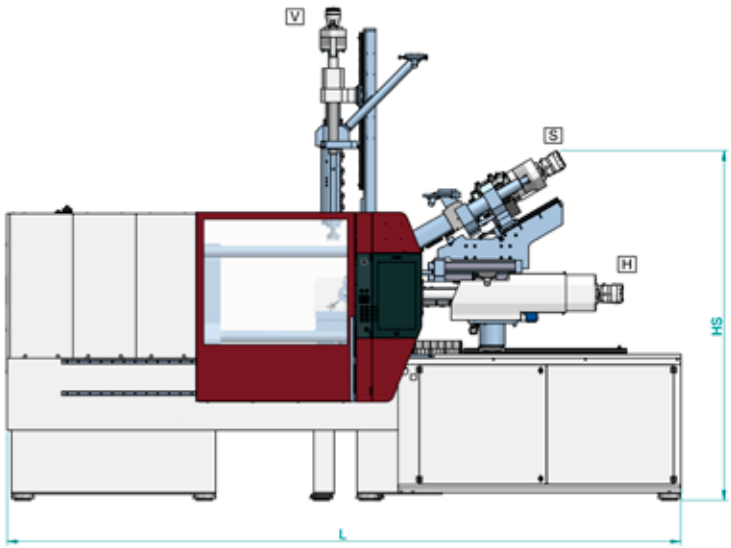
SmartPower B8X Combimould 160 / 180					
Injection unit	**210 H**	**350 H**	**525 H**	**750 H**	**1000 H**
130	V - L - S	V - L - S	V - L - S	V - L - S	V - L - S
210	V - L - S	V - L - S	V - L - S	V - L - S	V - L - S
350	V - L - S	V - L - S	V - L - S	V - L - S	V - L - S

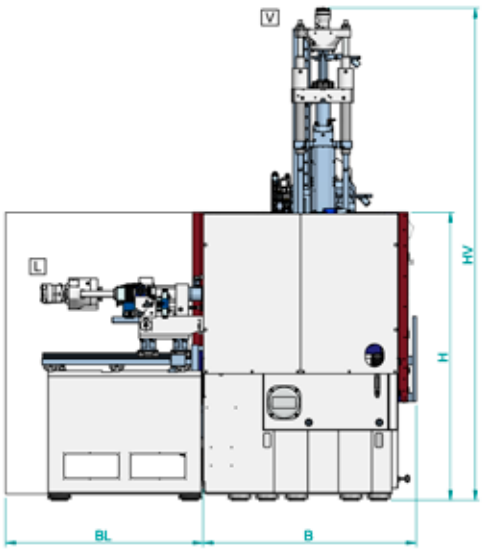
SmartPower B8X Combimould 210 / 240					
Injection unit	**350 H**	**525 H**	**750 H**	**1000 H**	**1330 H**
130	V - L - S	V - L - S	V - L - S	V - L - S	V - L - S
210	V - L - S	V - L - S	V - L - S	V - L - S	V - L - S
350	V - L - S	V - L - S	V - L - S	V - L - S	V - L - S
525	V - L - S	V - L - S	V - L - S	V - L - S	V - L - S

SmartPower B8X Combimould 300 / 350 / 400					
Injection unit	**525 H**	**750 H**	**1000 H**	**1330 H**	**1670 H**
130	V - L - S	V - L - S	V - L - S	V - L - S	V - L - S
210	V - L - S	V - L - S	V - L - S	V - L - S	V - L - S
350	V - L - S	V - L - S	V - L - S	V - L - S	V - L - S
525	V - L - S	V - L - S	V - L - S	V - L - S	V - L - S
750	V - L - S	V - L - S	V - L - S	V - L - S	V - L - S

H	horizontal	V	vertical	S	diagonal	L	horizontal from the non-operator side

Other combinations and B and HH arrangements available on request





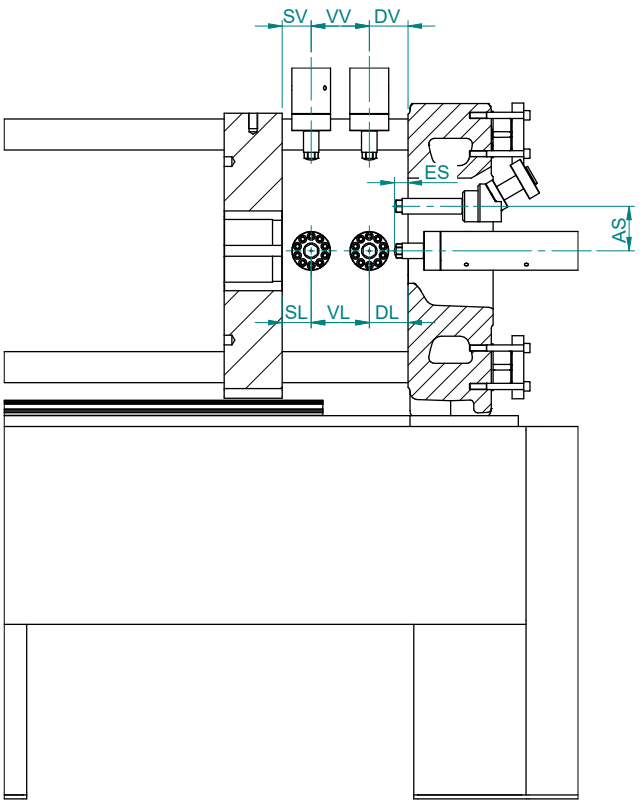
		SmartPower B8X Combimould 110 / 120					SmartPower B8X Combimould 160 / 180					SmartPower B8X Combimould 210 / 240					SmartPower B8X Combimould 300 / 350 / 400				
H-Stellung		**130**	**210**	**350**	**525**	**750**	**210**	**350**	**525**	**750**	**1000**	**350**	**525**	**750**	**1000**	**1330**	**525**	**750**	**1000**	**1330**	**1670**
Gewicht[1)]	kg	6700	6700	6900	7000	8500	9700	9800	10000	10500	11200	13500	13700	14200	14700	14700	16700	16700	17900	17900	18400
L	mm	4500	4700	4900	5000	5600	5000	5200	5600	5800	6300	5800	6000	6200	6400	6800	6400	6600	6800	7200	7400
B	mm			1500					1650					1800					1950		
H	mm			2100					2200					2400					2500		

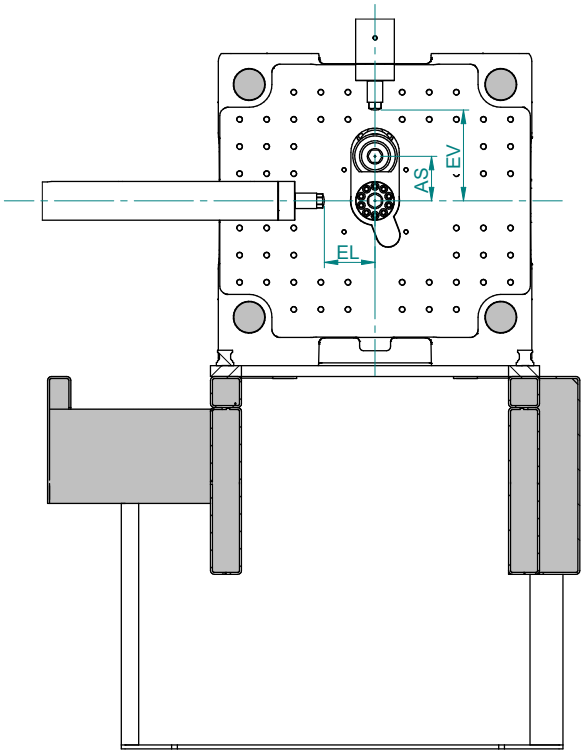
V-Stellung		**70**	**130**	**210**	**130**	**210**	**350**	**130**	**210**	**350**	**525**	**130**	**210**	**350**	**525**	**750**
HV	mm	3500	3500	3700	3600	3800	4000	3800	4000	4200	4400	4000	4200	4400	4600	4800
EV	mm		190			220			245					295		
DV	mm		60			60			75					75		
VV	mm		90			115			150					150		
SV	mm		100			125			125					175		

L-Stellung		**70**	**130**	**210**	**130**	**210**	**350**	**130**	**210**	**350**	**525**	**130**	**210**	**350**	**525**	**750**
BL	mm	1600	1600	1850	1600	1850	1850	1600	1850	1850	2200	1600	1850	1850	2200	2200
EL	mm		215			245			270					325		
DL	mm		60			60			75					75		
VL	mm		90			115			150					150		
SL	mm		100			125			125					175		

S-Stellung		**70**	**130**	**210**	**130**	**210**	**350**	**130**	**210**	**350**	**525**	**130**	**210**	**350**	**525**	**750**
HS	mm	2650	2650	2800	2650	2800	2900	2750	2900	3000	3100	2850	3000	3100	3200	3300
ES	mm		30			30			30					30		
AS	mm		125			150			150					200		

1) with largest additional injection unit





Additional Injection units V - L - S[1)]

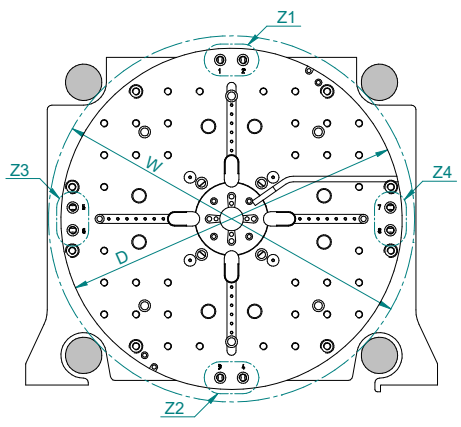
		70			130				210		
Screw diameter	mm	14	18	22	18	22	25	30	25	30	35
Screw stroke	mm	70	90	90	90	110	125	125	125	150	150
Screw L/D ratio	mm		20		20	20	22	22		22	
Theoretical shot volume	cm^3	10.8	22.9	34.2	22.9	41.8	61.4	88.4	61.4	106	144
Specific injection pressure	bar	3000	3000	2056	3000	2864	2218	1540	2940	2042	1500
Max. screw speed	min^{-1}		685			438				341	
Max. plasticizing rate (PS)[2)]	g/s	2.4	6.9	10.1	4.4	6.4	12	17	9	13	21
Screw torque	Nm	65	120	231	120	238	340	357	340	490	490
Nozzle stroke/contact press	mm/kN		250/47			250/47				250/86	
Injection rate into air	cm^3/s	37.9	62.7	93.6	45	67.2	86.8	125	65.5	94.3	128.3
Barrel heating power	kW	2.9	5.7	6.5	5.7	6.3	9.2	9.5	9.2	9.5	10.6
Number of heating zones			4			4				4	

		350			525			750		
Screw diameter	mm	30	35	40	35	40	45	40	45	60
Screw stroke	mm	150	175	175	175	200	200	200	225	225
Screw L/D ratio	mm		22			22			22	
Theoretical shot volume	cm^3	106	168	220	168	251	318	251	358	442
Specific injection pressure	bar	2835	2083	1595	2500	2100	1659	2500	2116	1714
Max. screw speed	min^{-1}		350			325			276	
Max. plasticizing rate (PS)[2)]	g/s	14	21	34	20	31	41	26	35	42
Screw torque	Nm	600	621	621		770			998	
Nozzle stroke/contact press	mm/kN		250/86			300/86			350/86	
Injection rate into air	cm^3/s	86.4	117.6	154	102	133	169	117	149	184
Barrel heating power	kW	9.5	10.6	13.7	10.6	13.7	16.7	13.7	16.7	22.1
Number of heating zones			4			4		4	4	5

1) technical data for standard and additional injection units dependent on combinations
2) according to WITTMANN BATTENFELD standard

Rotary table on the moving platen

		110/120	160/180	210/240	300/350/400
Diameter rotation unit **D**	mm	680	750	910	1090
Height stand./from 6 cooling circ.	mm	120	120/140	180/200	180/200
Weight	kg	550	700	1300	1700
Rotation time 180°	s	1,0	1,2	1,4	1,6
Number of cooling and/ or hydraulic circuits	Z1 – Z4	2 x G 3/8"	2 x G 3/8"	4 x G 3/8"	4 x G 3/8"
Min. mold diameter	mm x mm	296 x 296	346 x 346	396 x 396	446 x 446
Max. mold diameter **W**	mm	720	800	945	1120
Max. total mold weight	kg	1100	2000	3000	3000
Max. mold weight on rotation unit	kg	700	1200	2000	2000
Max. mold torque on rotation unit	kgm	135	230	600	600
Ejector cross SPI/EUROMAP	inch	7" x 7"	7" x 7"		
		16" x 4"	16" x 4"	16" x 4"	16" x 4"



Bonding of hard-soft material combinations

	TPE based on polyamide	TPE-polyester-elastomers	TPE based on polyolefin	TPE based on styrene	TPE thermoplastic plyurethane	TPE types with modified adhesive properties
ABS	■	□	■	■	▲	△
ASA		▲			▲	
CA						▲
PA 6	△		■	■	▲	△
PA 6.6	△			■	▲	△
PA-Blend	△		□	□		△
PBTP	■	□		▲	■	△
PC	■	□	■	□	▲	△
PC/ABS	■	□	■	□	▲	△
PC/PBT	■	□	■	□	▲	△
PC/PET	■	□	■	□	▲	△
PE	■		□	□		▲
PETP	■					▲
PMMA				□	□	▲
POM	■				▲	▲
PP	■	■		▲		△
PPO	■					▲
PS	■	■	■			△
PAN	■				▲	△

Due to the great variety of TPE types, the bonding strength must be checked in each individual case.

The bonding strength also depends on the part geometry, process conditions and processes involved.

Bonding of thermoplastic materials in multi-component injection molding

	ABS	ASA	CA	PA 6	PA 6.6	PA-Blend	PBTP	PC	PC/ABS	PC/PBT	PC/PET	PE	PETP	PMMA	POM	PP	PPO	PS	SAN	TPE/TPU
ABS	△	▲	▲	▲	▲		▲	▲	▲	▲	▲	□	▲	▲	■		■		□	□
ASA	▲	△	▲		▲		▲	▲	▲	▲	▲	■	▲	▲	■	■	■	■	▲	□
CA	▲	▲	△				▲					■			■	■	■			
PA 6	▲			△	△	▲	▲	□	▲	▲	▲	□			■	□	■	■		□
PA 6.6	▲	▲		△	△	▲	□		▲	▲	▲	□			■	□	■	■		□
PA-Blend				▲	▲	△									□	□	■			□
PBTP	▲	▲	▲	▲	□		△	▲	▲	▲	▲	□	▲	□	□	□		□	▲	□
PC	▲	▲			▲		▲	△	▲	▲	▲	■	▲		□	■		■	▲	□
PC/ABS	▲	▲		▲	▲		▲	▲	△	▲		■			□	■		■		□
PC/PBT	▲	▲		▲	▲		▲	▲	▲	△	▲	■	▲	▲	□	■		■		□
PC/PET	▲	▲		▲	▲		▲	▲	▲	▲	△	■	▲	▲	□	■		■		□
PE	□	■	■	□	□		□					△				▲			□	▲
PETP	▲	▲					▲	▲		▲	▲	■	△							□
PMMA	▲	▲					□			▲	▲	■		△		■	■	■	▲	□
POM	□	■	■	■	■	□	□	□	□	□	□	■			△					□
PP		■	■	□	□	□	□	■	■	■	■			■		△	□			
PPO	■	■	■	■	■	■								■		□	△			□
PS	■	■		■	■		□	■	■	■	■			■			▲	△		□
SAN	□	▲	▲				▲	▲	□	□	□	□		▲			■	□	△	▲
TPE/TPU	□	□		□	□	□	□	□	□	□	□	▲	□	□	□	△	□	□	▲	△

In some cases, particularly where modified materials are involved, tests must be carried out to check the bonding strength.

□ limited bonding
■ no bonding
▲ good bonding
△ excellent bonding

STANDARD

Base machine

- Drop – voltage 230/400 V/3p+N-TN/TT, 50 Hz
- Painting RAL 7047 tele grey / RAL 7016 anthracite / RAL 3004 crimson
- Air cooling system for drive unit, water cooling for feeding zone and oil cooler with solenoid valve
- One-piece base frame with 3 disposal directions
- Injection moulding machine according to machinery directive 2006/42/EG incl. declaration of conformity and CE-marking
- Test-run with hydraulic oil HLP32 zinc free according to DIN 51524 T2 / purity level 17/15/12 according to ISO 4406 (Attention: oil is not included in delivery), lubricants according to H2-quality
- Printed operating manual incl. user manual on USB flash drive in any EU language acc. to definition of country
- Injection molding machine according to machinery directive 2006/42/EG
- Levelling pads

Hydraulics

- Drive unit S0 with speed controlled servo motor for hydraulic pump to increase the energy efficiency
- Hydraulics with oil cooler controlled in water inlet of cooling, oil level monitoring, oil filtration with electrical clogging indicator
- Oil preheating of hydraulic drive

Clamping unit

- Clamping force and closing and opening forces adjustable
- Mold safety program
- Moving platen supported by positioned linear guides
- Mold platen according to EUROMAP 2, clamping surface metallic bright, rest painted
- Fixing holes for robot on fixed platen as per EUROMAP 18
- Hydraulic multi stroke ejector
- Clamping cylinder plunger induction hardened & hard chrome-plated, ejector piston hard chrome-plated, position sensor with linear potentiometer

Injection unit

- Hydraulic screw drive
- Injection axis/nozzle carriage – injection, holding and back pressure controlled with defined nozzle contact pressure
- Plasticizing unit AK+ for thermoset processing, 3-zone universal screw, flow-optimized check valve, heater bands up to 350 °C with heat insulation of feed zone grooving
- Thermocouple failure monitor
- Maximum temperature supervision
- Plug-in ceramic heater bands
- Temperature control of feed throat integrated
- Swivelling injection unit
- Linear guides in standard design, position sensor with linear potentiometer
- Selectable barrel stand-by temperature
- Decompression before and/or after metering
- Physical units – bar, ccm, mm/s etc.
- Screw protection
- Auxiliary screw speed indication
- Linear interpolation of holding pressure set values
- Bar chart for barrel temperature with set value and actual value display
- Selectable injection pressure limitation
- Changeover from injection to holding pressure depending on stroke, time and pressure
- Open nozzle R35 split
- Splash guard and barrel covering in standard execution according to EN ISO 20430, L/D 22 protected via limit switch
- Material hopper 6 litres (MH206) for automatical material feed, sliding device with shut-off function for material with sliding guide

Safety gate

- Covering injection side – maintenance door screwed together
- Safety gate in standard execution, acrylic glass clear / frame RAL 3004 crimson
- Safety gate at operator and non-operator side manually operated
- Monitored safety gate electrically controlled according to CE on front and rear side
- Maintenance-free safety gate locked by electromagnet
- Safety gate free for mold change and handling by robot

Electrics

- Control zone for nozzle heater band 230 V
- AmbiLED-status indicator
- Switch cabinet cooling – circulation fan for environment temp. to 30 °C
- Emergency stop switch button
- USB connection on control unit for printer or network
- 1 Ethernet interface (switch cabinet)

Control system

- Control system Unilog B8X – 21,5" multi-touch screen (full HD)
- Control panel with selectable haptic keys
- Software for operating hours counter
- Closing/Opening – 5 profile steps
- Ejection forward/back – 3 profile steps
- Nozzle forward/back – 3 profile steps
- Injection/Holding pressure – 10 profile steps
- Screw speed/Back pressure – 6 profile steps
- Parts counter with good/bad part evaluation
- Purging program through open mold
- Stroke zero offset settings
- Start-up program
- Switchover to holding pressure MASTER/SLAVE by injection time, screw stroke/injection volume and injection pressure
- Self-teaching temperature controller
- Display of temperature inside electrical cabinet
- Seven-day timer
- Access authorization via RFID system (1 x check card IT-level-15, 1 x token customer level-30 and 1 x token customer service level-20 incl. in delivery)
- Freely configurable status bar
- Physical, process-related units
- Automatic dimming
- Logbook with filter function
- User programming system (APS)
- Userpage
- Note pad function
- Cycle time analysis
- Hardcopy function
- Internal data storage via USB connection or network
- Online language selection
- Online selection of imperial or metric units
- Time monitoring
- Basic Quality Monitoring (1 freely configurable network connection, quality table with 1000 storage depth, events protocol (logbook) for 1000 events, actual value graphics with 5 curves, 1 envelope curves monitoring)
- Injection integral supervision, Metering integral supervision
- Alarm message via e-mail
- SmartEdit – sequence editor
- QuickSetup – assistance program for initial parameter setting
- Energy consumption monitoring for motors and heating
- 2 outputs, freely programmable

OPTIONS

Base machine

- Special voltage
- Handling package with open machine safety gate on non operator side
- Parts hopper w/o separation of sprues, good/bad parts or photoelectric ejection check
- Non-standard mold height/opening stroke
- Machine frame increased
- Special paint

Hydraulics/Pneumatics

- Drive unit with speed controlled servo motor for hydraulic pump incl. additional pump for core pull movement, parallel ejection, fast injection and/or hydraulic mold shut-off nozzle
- Injection parallel to clamp force build-up[1)]
- Raw filter in water inlet of cooling incl. adapter with ball valve for oil maintenance on oil tank
- Hydraulic core pull for clamping plate, interface according to EUROMAP 13, incl. or without core pull pressure release
- Pneum. core pull on clamping plate/nozzle plate
- Hydraulic, pneumatic manifolds for one mold shut-off nozzle or more
- Air valves on nozzle plate/clamping plate
- Compressed air pressure maintenance unit incl. 1 or more way pressure regulation incl. directional exhaust valve with blocking function

Clamping unit

- Support for middle plate or heavy molds
- Mold platen according to SPI, JIS, T-slots
- Mold platen incl. cooling channels
- Manuel tie-bar retract device
- Hydraulic ejector in reinforced execution
- Ejector pressure/speed controlled by P/Q servo valve
- Unscrewing device in lieu of ejector
- Double check valve to keep ejector in end-position
- Ejector cross according to EUROMAP/SPI, JIS
- Mechanical or pneumatic ejector coupling
- Ejector platen safety
- Mechanical mold safety mechanism

Injection unit

- Screw drive by A.C. servo-motor for parallel recovery during cycle, Injection axis via servo motor and def. hydraulic nozzle contact pressure[1)]
- Injection, holding and back pressure controlled via servo valve with defined nozzle contact pressure
- Linear guides in standard design, position sensor with non-contact stroke transducer
- Splash guard and barrel covering in standard execution according to EN 201, L/D 22 protected via transponder switch
- High torque hydraulic screw drive
- Check valve to hold screw in position after end of dosing
- Corrosion resistance injection unit
- Plasticizing unit AK++ in high wear and corrosion resistant execution
- Plasticizing unit AKCN in wear and corrosion resistant execution, for processing PMMA and ABS and PC
- Barrier section, screw with mixing section
- Ball type screw tip
- Melt pressure transducer, melt temperature sensor
- Heater bands up to 450 °C
- Plasticizing unit in special execution for LIM, MIM, CIM, PVC, Cellmould
- Open nozzles in special execution
- Needle type shut-off nozzle operated pneumatically
- Pneumatic cross-bolt type shut-off nozzle
- Open Airmould nozzle, pressure controlled
- Barrel covering and splash guard in special execution
- Vacuum package incl. vacuum pump
- Material hopper in special execution
- Hopper magnet

Safety gate

- Safety gate clamping side, rear side and/or operator side elevated, lowered or extended
- Insider package WITTMANN rear side incl. conveyor belt
- Front side gate safety system for manual part removal incl. clearance of ejector

Cooling and conditioning

- Cooling water distributor with/without blow-off valve
- Solenoid valve for cooling water distributor
- Machine cooling by T-piece in inlet pipe
- Filter back flushable/water pressure supervision in inlet pipe
- Distributor block on nozzle plate/clamping plate
- WFC 120 integrated into control system

Electrics

- Emergency stop switch button in control panel and on non operator side
- Temperature control zones for hot runner
- Acustic element integrated in signal lamp
- Socket combination
- Additional fan in electric switch cabinet for increased environment temperature
- Cabinet air conditioner
- Interface for robot, conveyor belt, TCU, dosing unit, Airmould, mold surveillance, production data logging system, RJG eDart, Priamus BlueLine, danger zone boundary, ejection in mold middle plate, brushing device, relay signals, vacuum pump
- Integration package Wittmann 4.0 BASE consisting of: Router for integration respectively protection of injection moulding cell in production network

Control system

- Cavity pressure switchover
- BNC sockets for injection process analysis
- Expert Quality Monitoring (4 freely configurable network connections, quality table with 10000 storage depth, events protocol (logbook) for 10000 events, actual value graphic with 16 curves, 4 envelope curves monitoring, SPC charts, trend diagrams)
- Mold identification
- Special programs on customer request
- HiQ Packages
- Software Tandemmould, multiple data sets
- Energy consumption analysis
- Clamp force supervision
- Injection compression and venting program
- Initiation of next cycle by closing safety gate
- Special program ejector ejection of cold slug
- Additional output card/input card, freely programmable
- Integration package Wittmann 4.0

Additional equipment

- Plinth for robot
- Tool kit
- Lighting in mold space
- Mold clamping systems in mechanical, electrical or hydraulic execution
- Integration package (robot, feeder, dosing unit, TCU, mold integration)
- Wittmann Battenfeld web service during warranty period free of charge
- Remote control package

1) only in combination with the e-injection unit (option)

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SmartPower B8X | Article number: BPK0000077 (English) | 2024/06 | Subject to change. | Printed in Austria.