

FE Series

Electrical Injection Molding Machine



Advantage Of Full Electrical Injection Molding Machine

Compared to the traditional hydraulic injection molding machine



Energy Saving

Efficient energy conversion,
Reduce power consumption.
No need water for hydraulic
oil cooling.



Efficient

Synchronous machine
movement is possible to
achieve a short cycle time



Precise

Up to 0.01mm high position
control accuracy, ensure
product quality



Clean

No pressure hydraulic oil, keep
a clean production environment



High Speed

High-speed & smart movement
control for mold and injection,
fulfill different application



Quiet

Low noise level, create
comfortable environment

EOLE

Injection Molding Machine

BOLE Electrical Injection Molding Machine

Precise High-speed Common Reliable



Fast & close loop control system excellent repeatability performance

Patented central clamping toggle system create uniform clamping force. reduces platen deflection

Platen drive by servo motor and ball screw.

No-touch Tie bar structure, constant accuracy

German design of plasticizing system increase efficiency of plasticizing over 20%

Nozzle contact force protecting mould avoiding leakage

The stable temperature of the feeding throat prevents the instability of the feed due to the change of the temperature, affects the screw plasticization and injection accuracy, and improves the stability of the whole machine.

Patented encapsulated ball screw

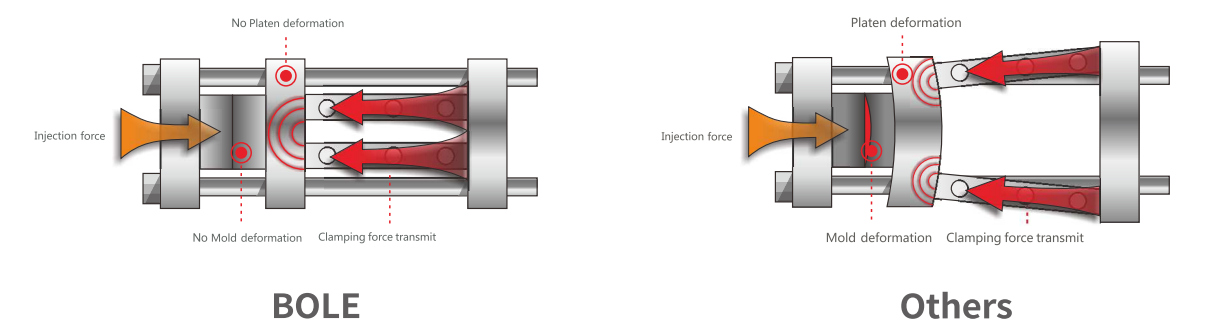
E-version Of Central Clamping Toggle System

Central clamping toggle, inventional patent in China
(Patent No.: ZL2011 10250342.5)



- **Saving**
 - Save material
 - Save electricity
 - Save nr. Of machine
 - Save maintenance
- **Precise**
 - Precise position
 - Precise speed
 - Reliable mold protection
 - Precise parallelism
- **Large**
 - Large space between tie-bars
 - Large open stroke
- **Clean**
 - The product area is free of oil

Toggle System Comparison



BOLE centre clamping structure

- **100%**
Clamping force efficiency
- **2-5%**
Material saving
- Reduces mold wear, platen deflection
- Less possibility of flash, save flash trim work

Tradition Toggle system

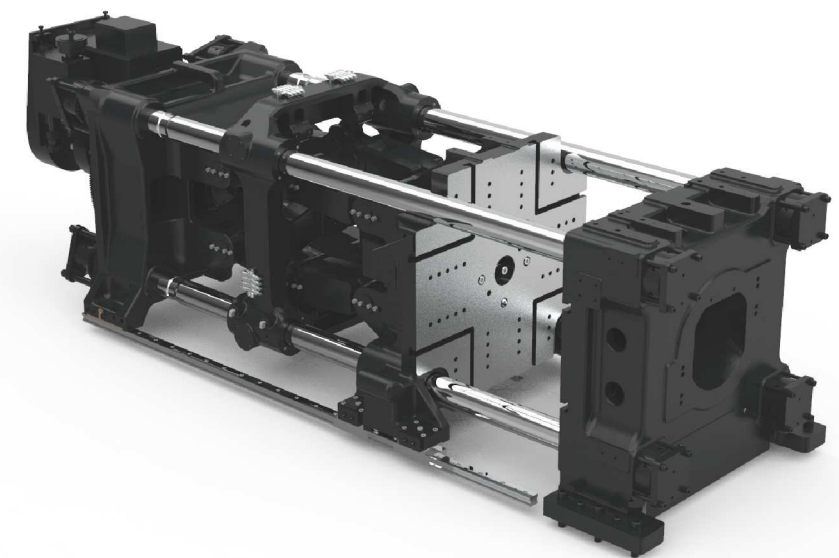
- **80-85%**
Clamping force efficiency
- Moving platen with obvious deformation, cause flashes, waste of material and labor of trim the flashes.

Central Clamping Toggle System Driven By Servo Motor & Ball Screw



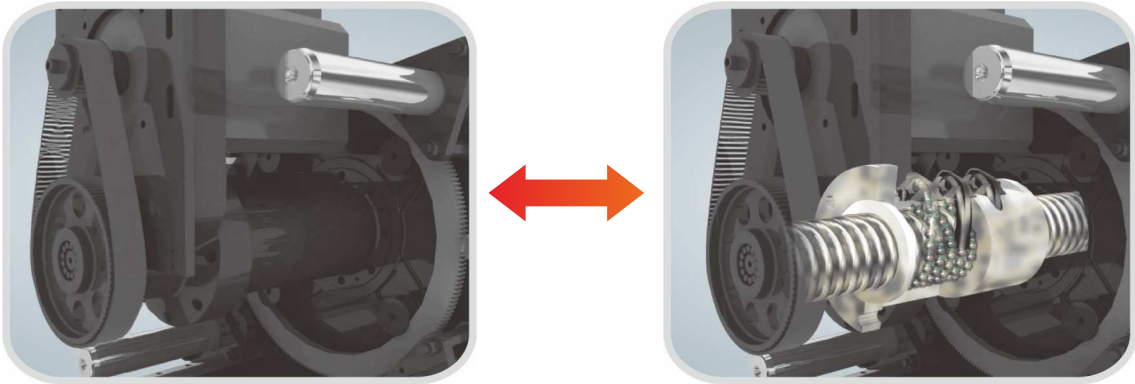
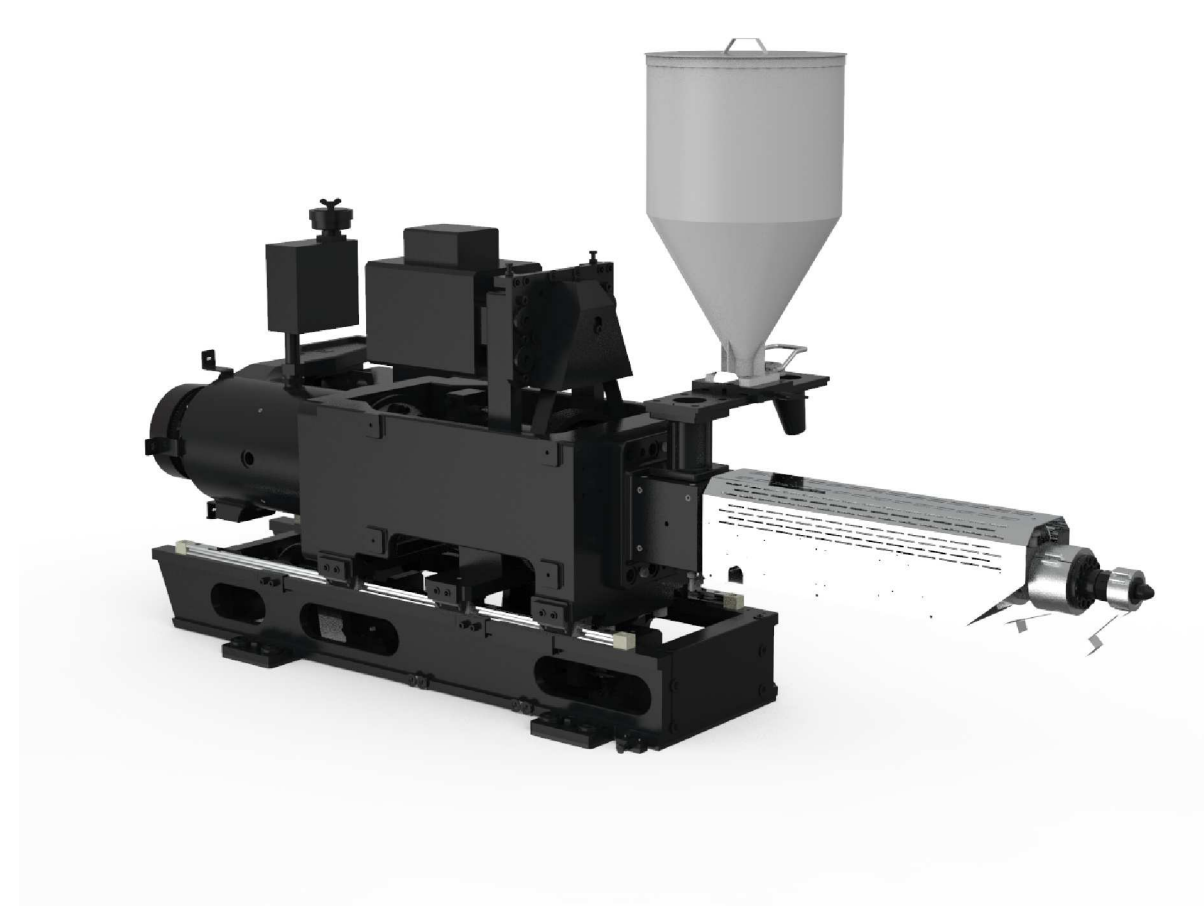
- Precise control for mold movement, repeatability up to 0.01 mm, fit for IML or automation.
- Flexible control curve, fast and smooth mold movement
- Sensitive mold pretention function
- Tie bar no touch with moving platen, no lubrication, ensure the mold area clean.

Platen Supported By Linear Guide



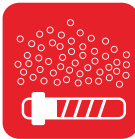
- High platen parallelism
- No lubrication on movable platen
- Keep clean around Part-drop-area

Patented Encapsulated Ball Screw Structure



- Take away friction heat rapidly, reduce ball screw temperature and abrasion.
- Obstruct dust pollution,request of using environment is low.
- Expensive and imported ball screw lubrication grease is unnecessary.
- More easy for maintenance,no need to clean fatlute.
- Special design of enclosed electric clamping cylinder which is anti-dust immersion type good lubrication. It will improve the ball screw lifetime.

Tradition



Traditional design of ball screw structure is open to the air; dust will stick on the ball screw surface



Friction will increase ball screw temperature



Lubrication condition become worse

Breakthrough



Encapsulated ballscrew, reduce the requirement of workshop environment



The heat created by friction is taken by oil bath, Ballscrew is well kept cool.



Lubrication is kept on the friction surface by oil bath

Control System

12
Inches

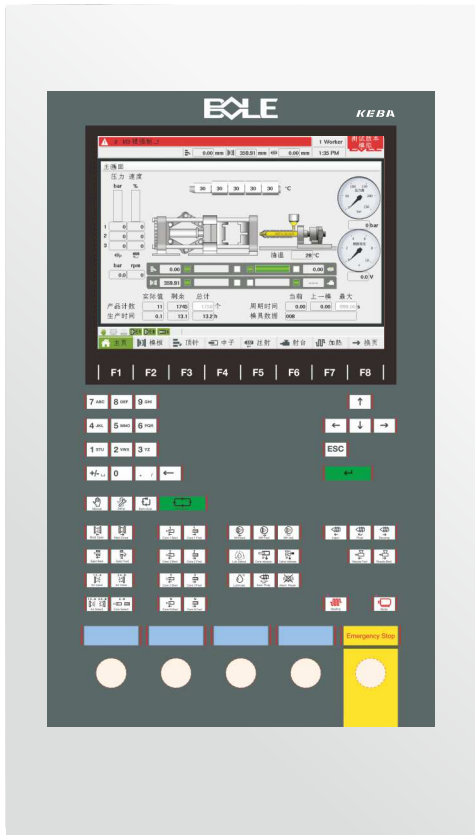
I/O
Module

PC
Port

4.0
Germany

XFC
Control

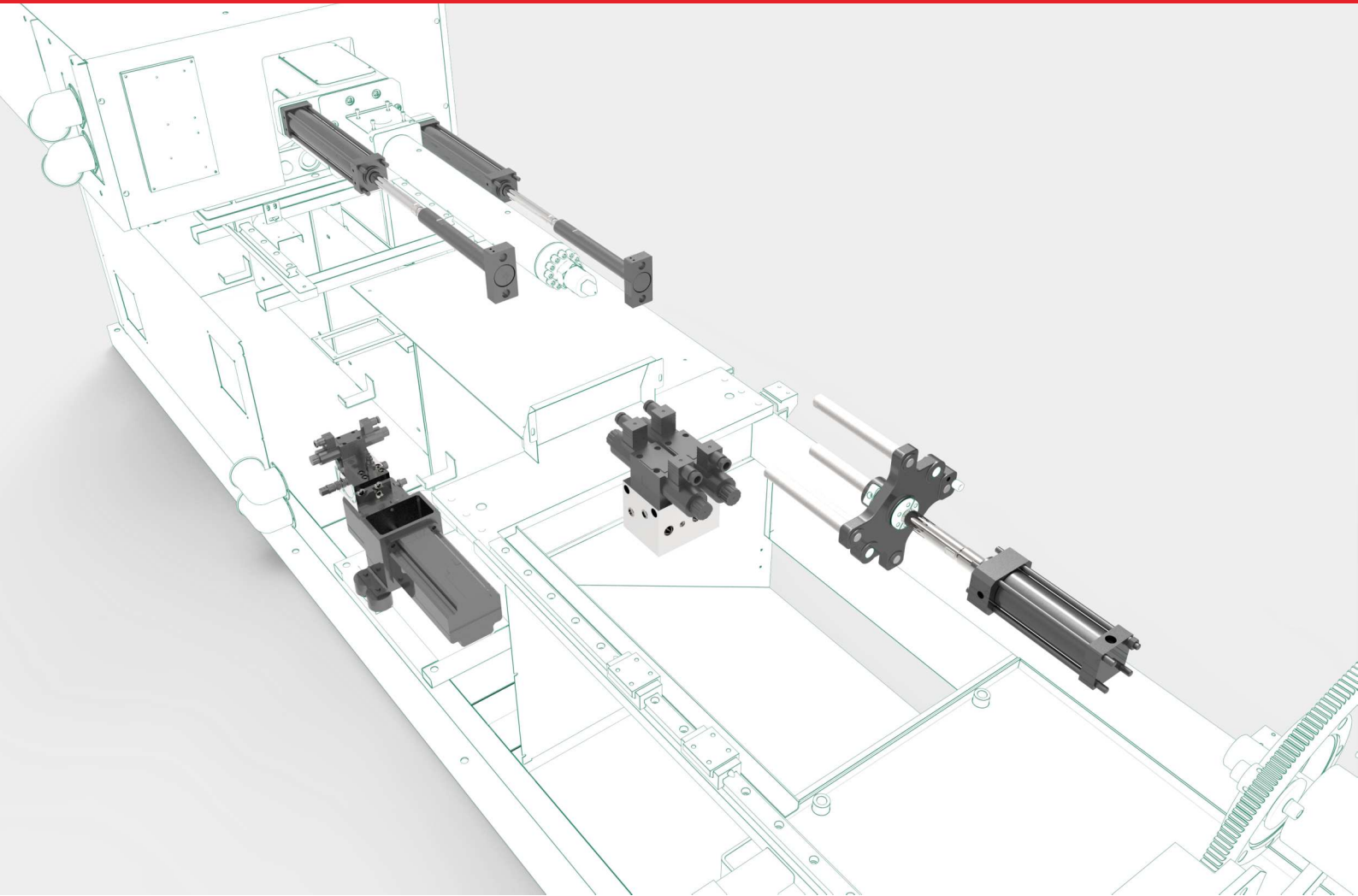
0.01
Precision



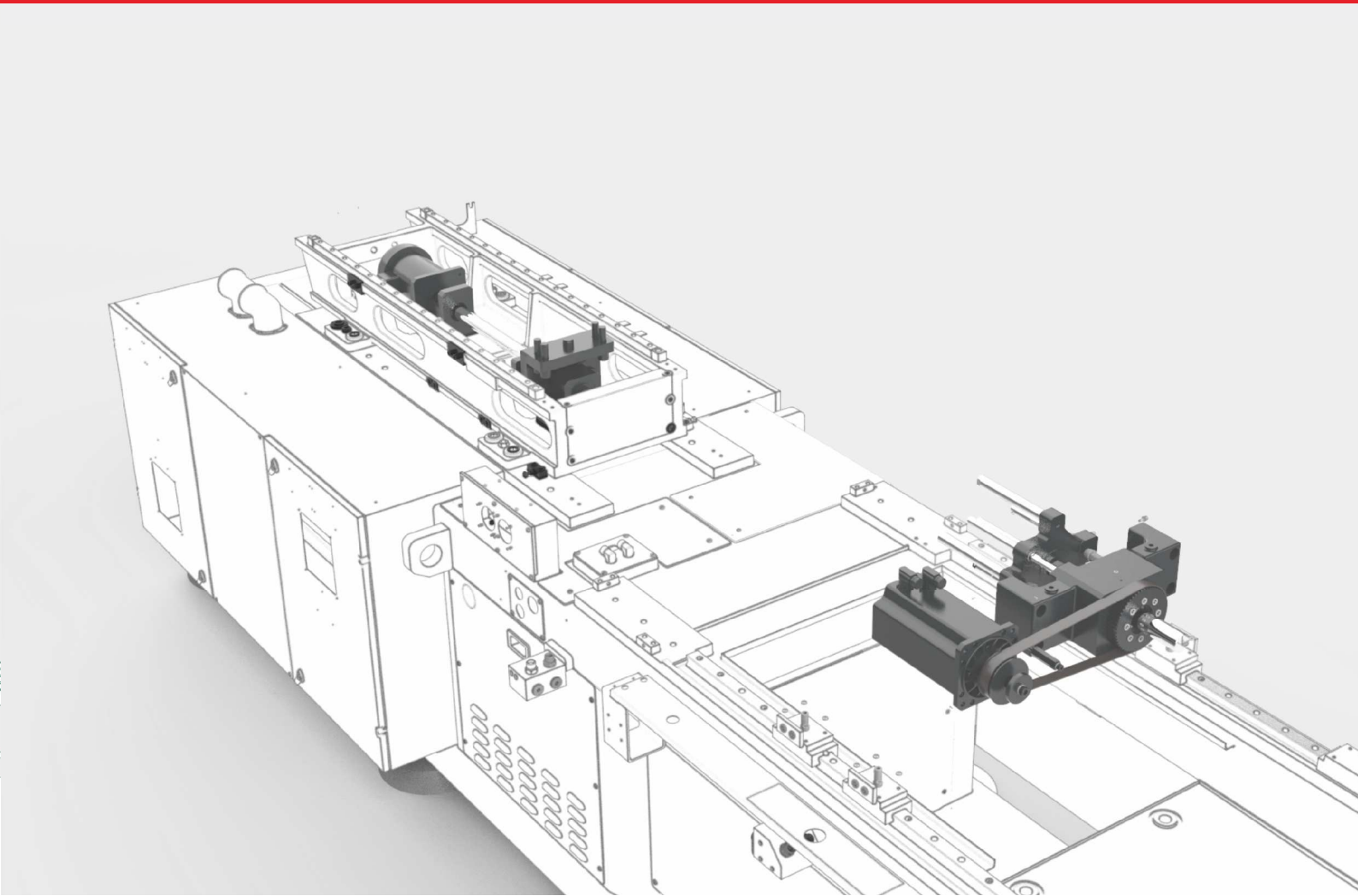
- KEBA controller as standard with 12 inch touchscreen, user friendly interface
- EtherCAT fieldbus control system, utilize superspeed I/O module with real time function.
- PC-based control platform, windows® system, easy operation, easy to be extended.
- Germany industry 4.0 standard, intelligent manufacturing technology which is easy to implement.

- Unique XFC topspeed control technology, can reduce the materials consumption properly, improve the product quality.

Embedded Servo Hydraulic Pump System (FE hydraulic-Electrical series)



Standard FE series Configuration (FE-A series)



- Symmetrical cylinder arrangement for injection carrier, offer reliable and balance nozzle contact
- Hydraulic ejector and core puller flexiable to meet different mold requirement
- Servo drive hydraulic pump station, power saving and effetely

- Option for Full-electrical version: without hydraulic pump station and corepull, electrical drive for carrier movement and ejector.



German Designed Plasticizing System

- Excellent plasticizing efficiency
- Options for different application

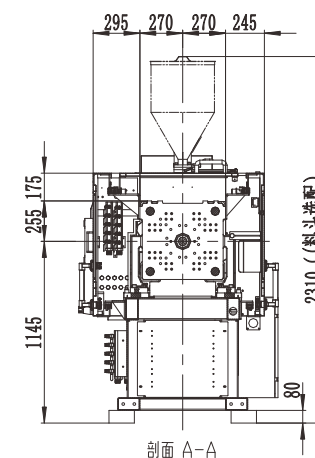
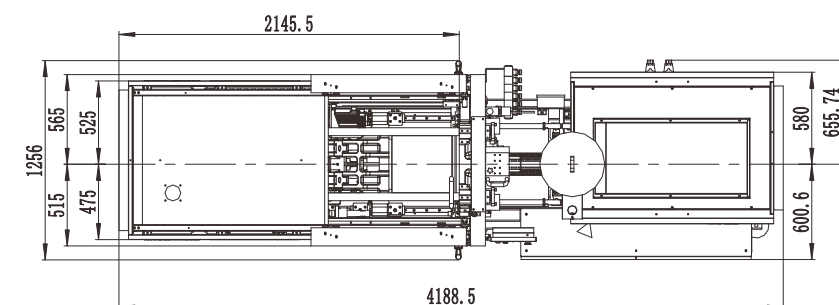
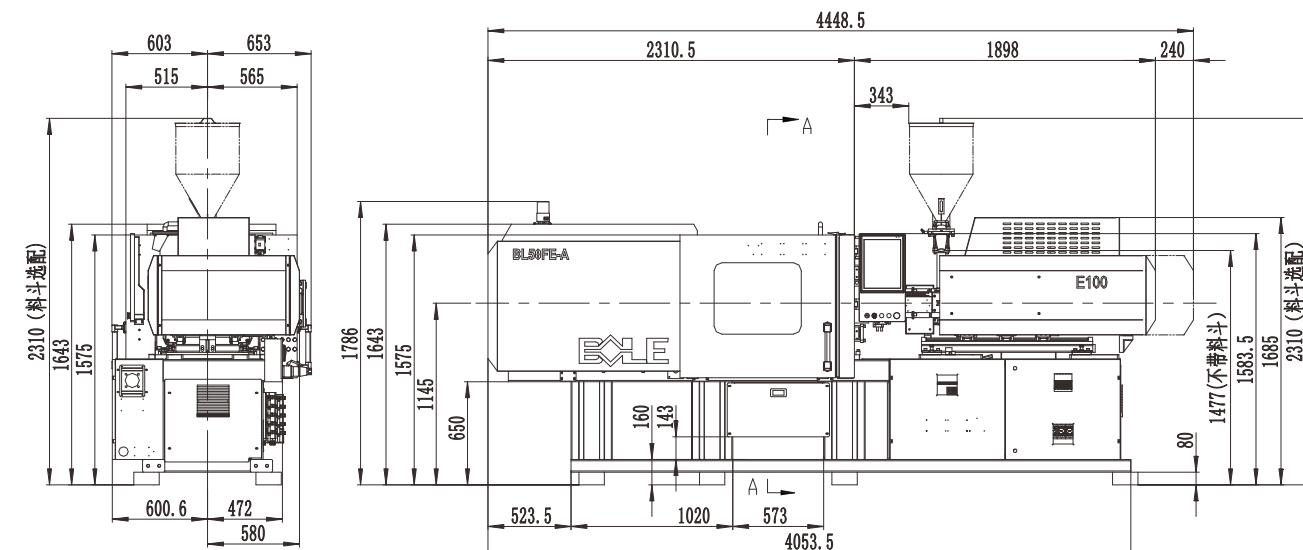
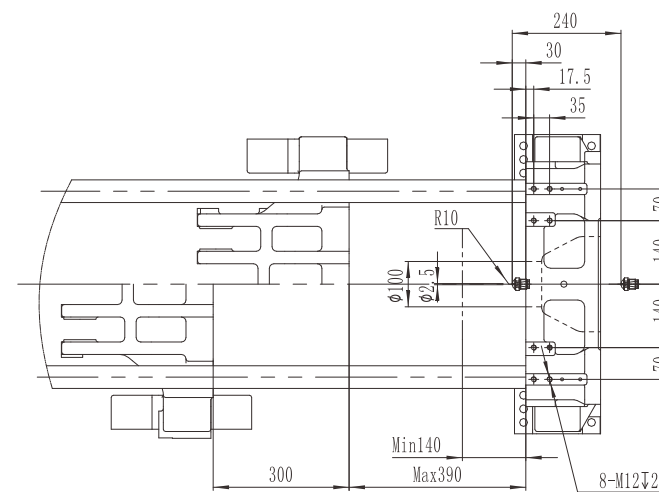
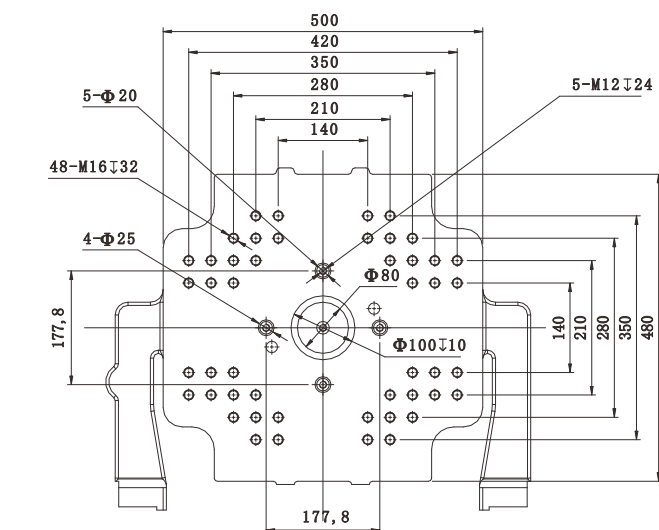
Various Application

- Adopt low inertia&high response structure for injection, quiet conveyor, meet various condition
- Higher injection precision repeatability, stabilize in product
- Meet various condition, thin wall packing and wall thick lens can be applied
- Injection position repeatability ± 0.01 mm

BL 50FE

Technical Data

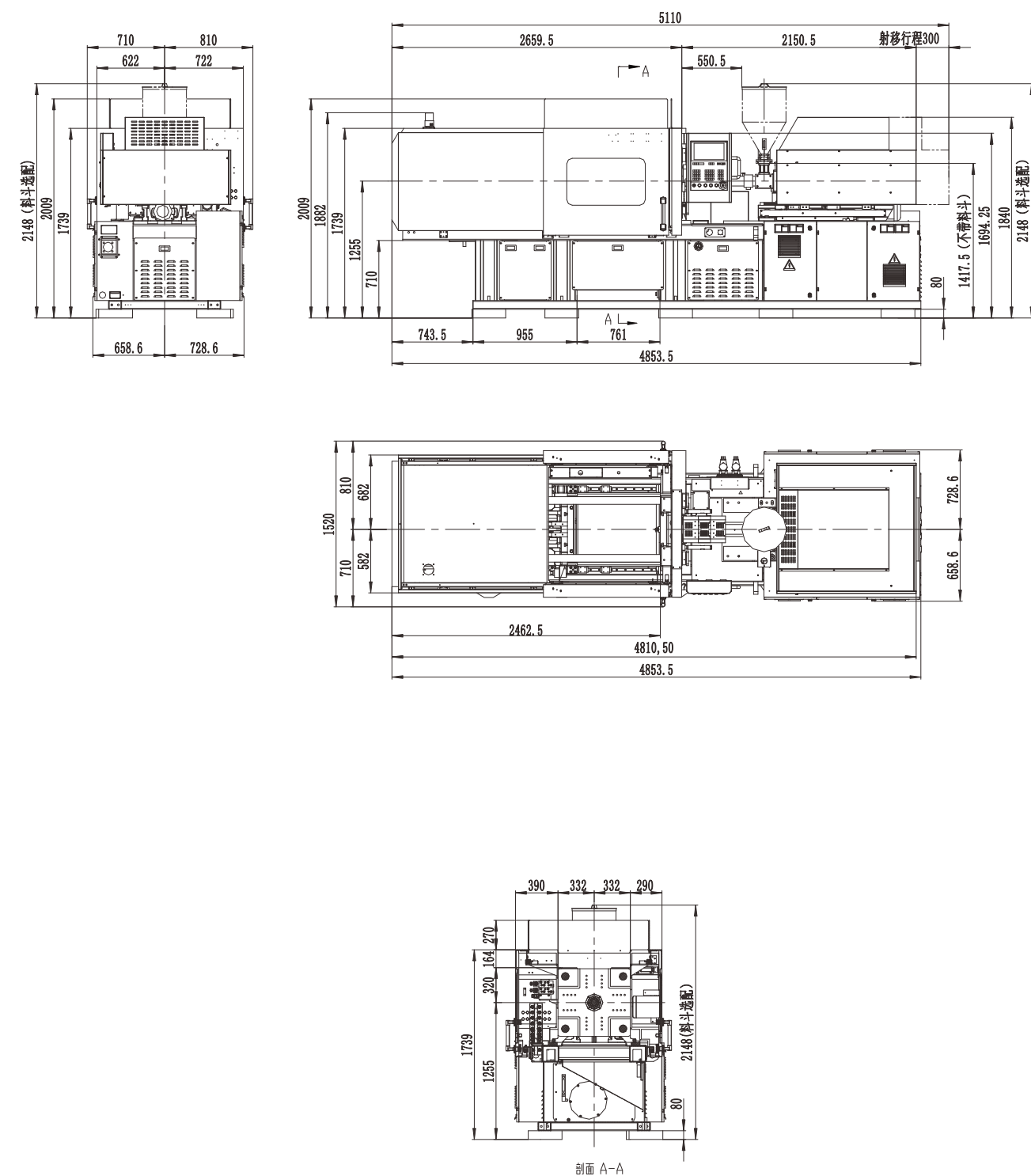
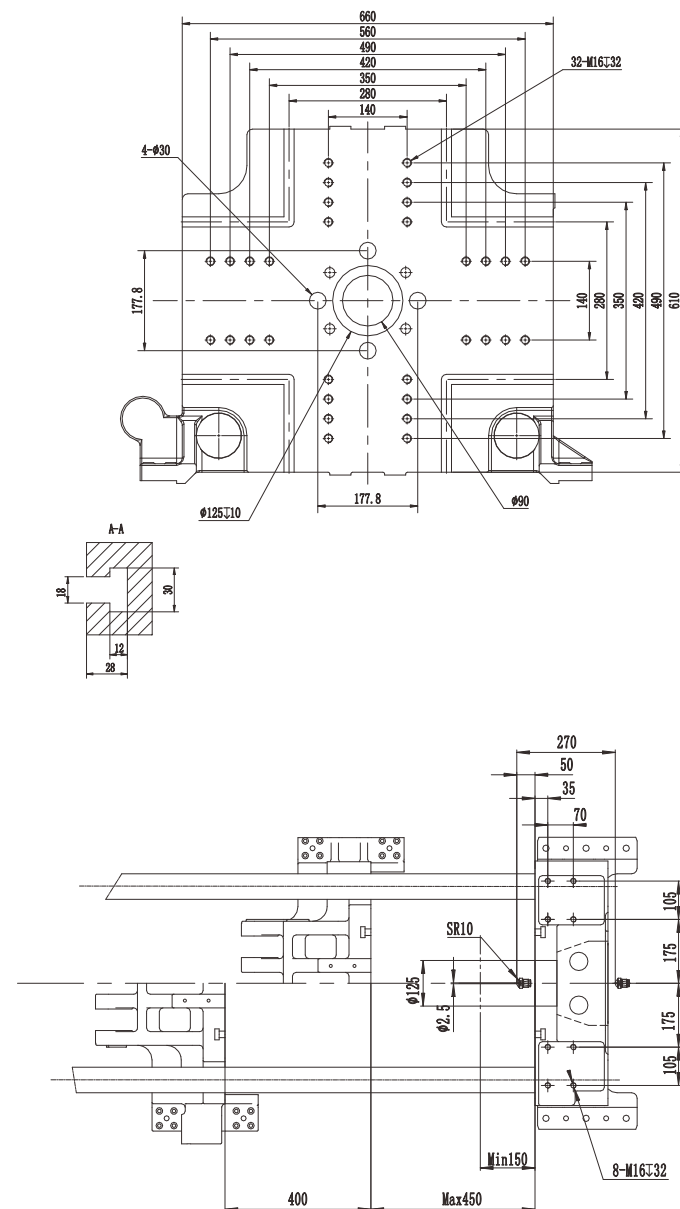
DESCRIPTION	UNIT	Parameter		
International specification				
Screw Specification		A	B	C
Screw Diameter	mm	22	25	28
Screw L/D Ratio		23	23	23
Plasticizing ability	g/s	9	12	18
Screw Stroke	mm	100		
Injection Capacity	cm ³	38	49	62
Shot Weight Ps	g	35	45	56
Nozzle contact pressure	kN	20		
standard injection unit		E100		
Injection Speed	mm/s	200	200	200
Injection Pressure	MPa	284	220	175
Holding Pressure	MPa	232	180	143
high speed injection unit		E100H		
Injection Speed	mm/s	330	330	330
Injection Pressure	MPa	284	220	175
Holding Pressure	MPa	232	180	143
Screw Speed	rpm	400		
Clamping Force	kN	500		
Tie-bar Distance (h×v)	mm	360×330		
Opening Stroke Max	mm	300		
Mold Height Min	mm	140		
Mold Height Max	mm	390		
Max Daylight	mm	690		
Ejector Stroke	mm	70		
Ejector Force	kN	20		
Number of ejector rods	PCS	5		
Dry cycle time	S	1.2		
Total electrical capacity(High speed)	KW	25.4 (36.8)		
Heater power	KW	5.4	6.2	7.2
Number of temp. control zones		3+1		
Hopper capacity	L	25		
Min. platen size(L×W)	mm	250×250		
Platen size(L×W)	mm	530×500		
Stationary platen load	kg	153		
Moving platen load	kg	247		
Machine dimensions(LXWXH)	m			
Net weight(appro.)	ton	3.5		



BL 110FE

Technical Data

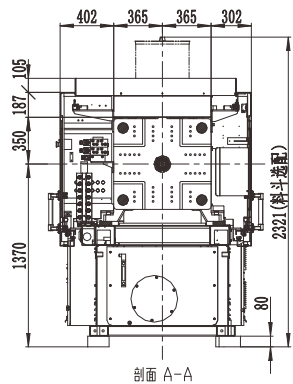
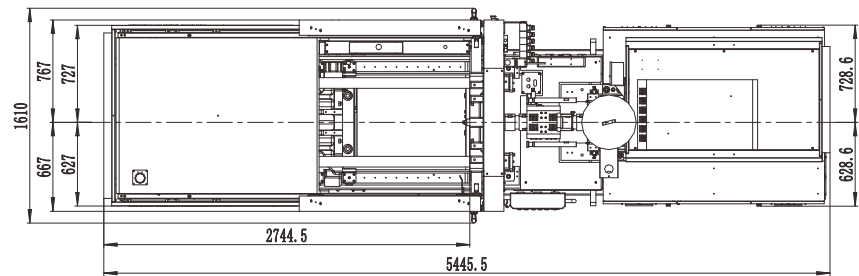
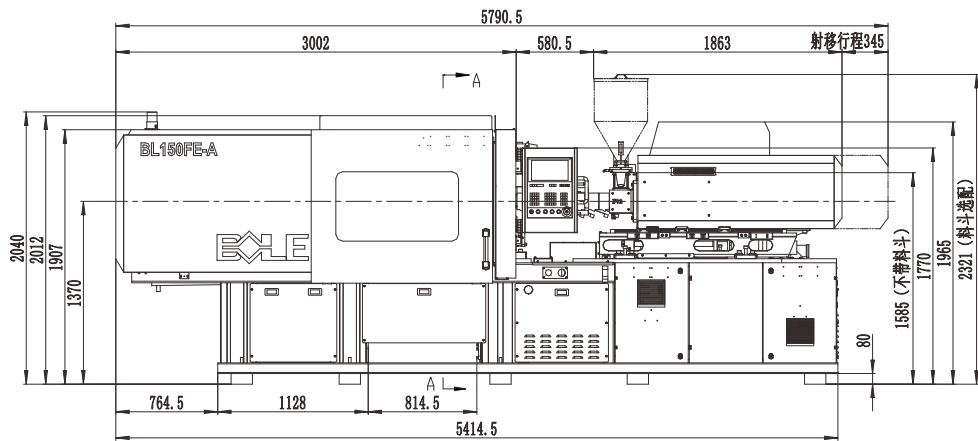
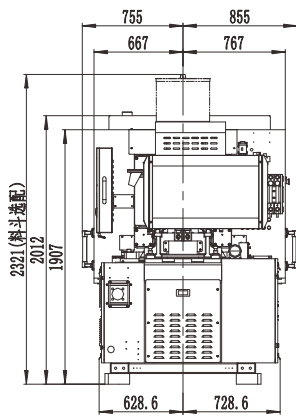
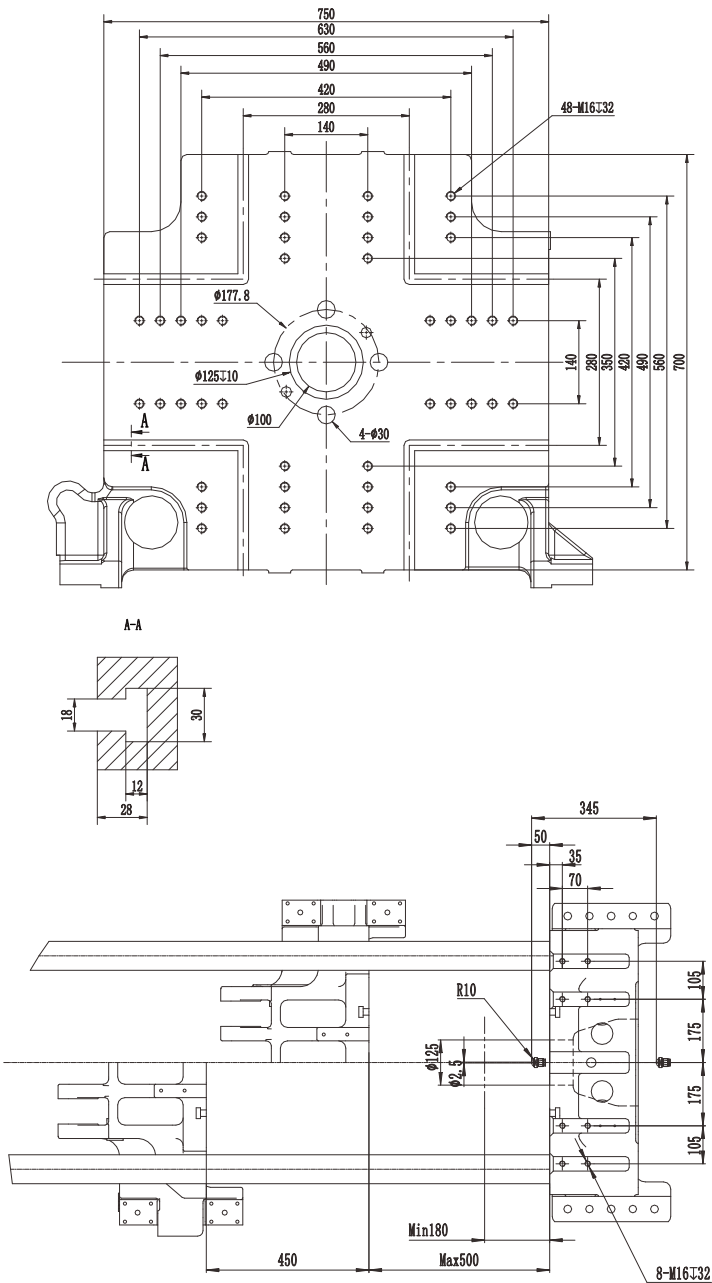
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International specification					
Screw Specification		AA	A	B	C
Screw Diameter	mm	25	28	32	36
Screw L/D Ratio		23	23	23	23
Plasticizing ability	g/s	9	12	18	24
Screw Stroke	mm	140			
Injection Capacity	cm ³	69	86	113	143
Shot Weight Ps	g	63	78	102	130
Nozzle contact pressure	kN	25			
standard injection unit		E225			
Injection Speed	mm/s	200	200	200	200
Injection Pressure	MPa	328	261	200	158
Holding Pressure	MPa	262	209	160	126
high speed injection unit		E225H			
Injection Speed	mm/s	330	330	330	330
Injection Pressure	MPa	328	261	200	158
Holding Pressure	MPa	262	209	160	126
Screw Speed	rpm	400			
Clamping Force	kN	1100			
Tie-bar Distance (h×v)	mm	460×410			
Opening Stroke Max	mm	400			
Mold Height Min	mm	150			
Mold Height Max	mm	450			
Max Daylight	mm	850			
Ejector Stroke	mm	100			
Ejector Force	kN	30			
Number of ejector rods	PCS	5			
Dry cycle time	S	1.3			
Total electrical capacity(High speed)	KW	52.6 (69.6)			
Heater power	KW	5.6	6.4	7.4	8.4
Number of temp. control zones		3+1			
Hopper capacity	L	25			
Min. platen size(L×W)	mm	320×320			
Platen size(L×W)	mm	660×610			
Stationary platen load	kg	323			
Moving platen load	kg	527			
Machine dimensions(LXWXH)	m	5.085×1.37×2.14			
Net weight(appro.)	ton	4.2			



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Technical Data

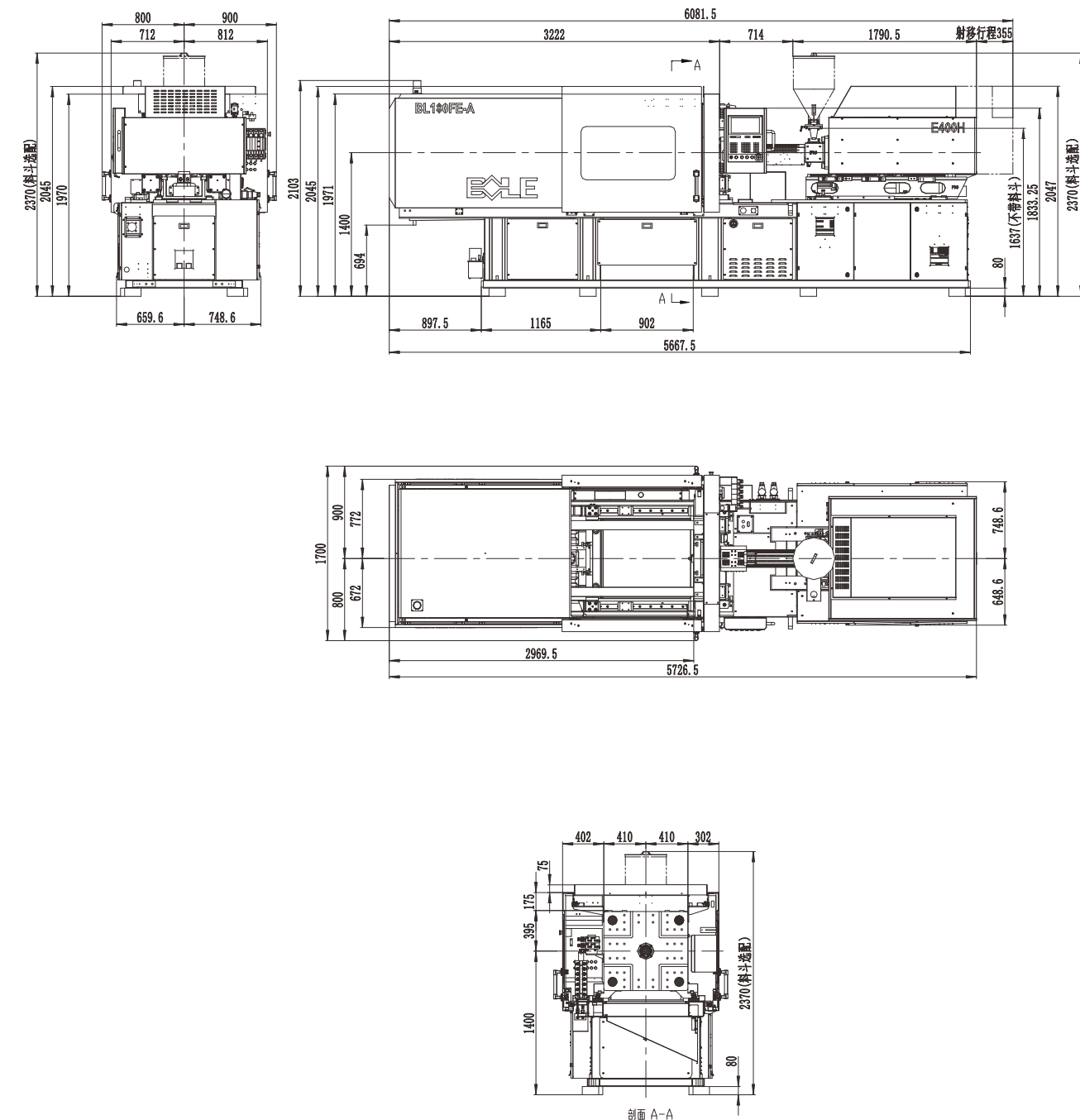
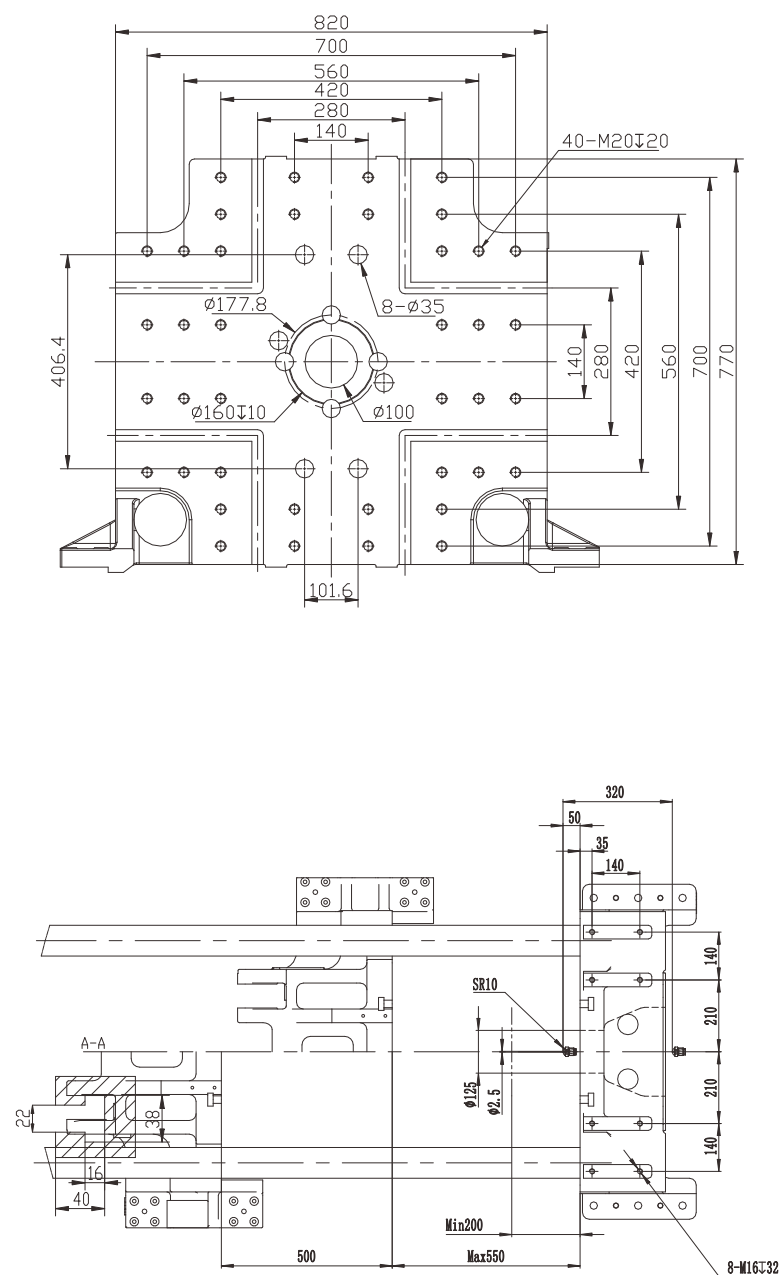
DESCRIPTION	UNIT	Parameter			
International specification					
Screw Specification		AA	A	B	C
Screw Diameter	mm	28	32	36	40
Screw L/D Ratio		23	23	23	23
Plasticizing ability	g/s	11	15	21	25
Screw Stroke	mm	160			
Injection Capacity	cm ³	99	129	163	201
Shot Weight Ps	g	90	117	148	183
Nozzle contact pressure	kN	30			
standard injection unit		E325			
Injection Speed	mm/s	200	200	200	200
Injection Pressure	MPa	331	253	200	162
Holding Pressure	MPa	264	203	160	130
high speed injection unit		E325H			
Injection Speed	mm/s	330	330	330	330
Injection Pressure	MPa	331	253	200	162
Holding Pressure	MPa	264	203	160	130
Screw Speed	rpm	350			
Clamping Force	kN	1500			
Tie-bar Distance (h×v)	mm	510×460			
Opening Stroke Max	mm	450			
Mold Height Min	mm	180			
Mold Height Max	mm	500			
Max Daylight	mm	950			
Ejector Stroke	mm	120			
Ejector Force	kN	35			
Number of ejector rods	PCS	5			
Dry cycle time	S	1.4			
Total electrical capacity(High speed)	KW	59.6 (71.6)			
Heater power	KW	7	7.9	8.85	9.8
Number of temp. control zones		3+1			
Hopper capacity	L	25			
Min. platen size(L×W)	mm	360×360			
Platen size(L×W)	mm	730×680			
Stationary platen load	kg	459			
Moving platen load	kg	711			
Machine dimensions(LXWXH)	m	5.809×1.48×2.3			
Net weight(appro.)	ton	5.7			



BL 180FE

Technical Data

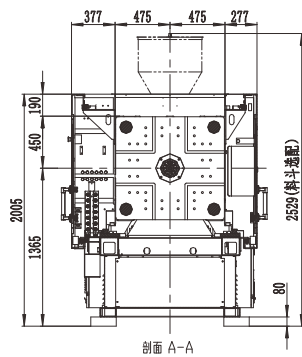
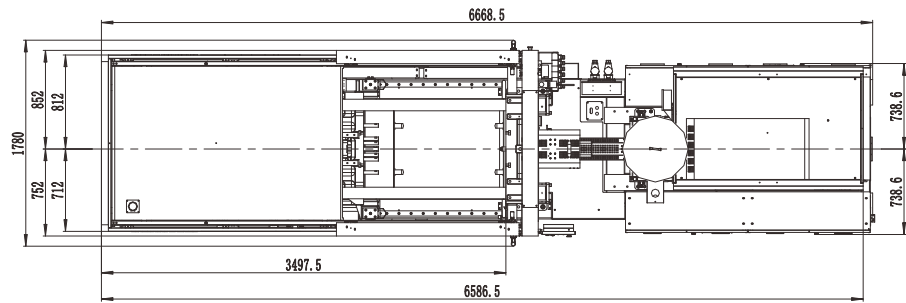
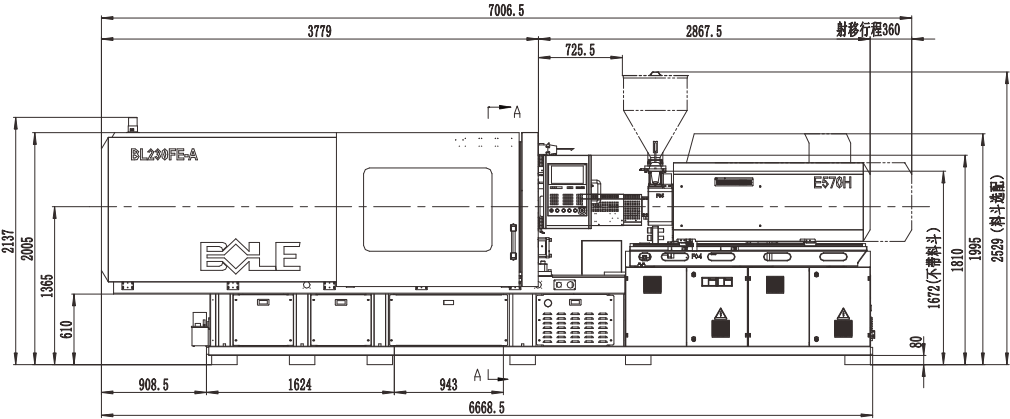
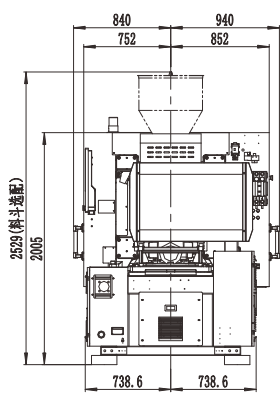
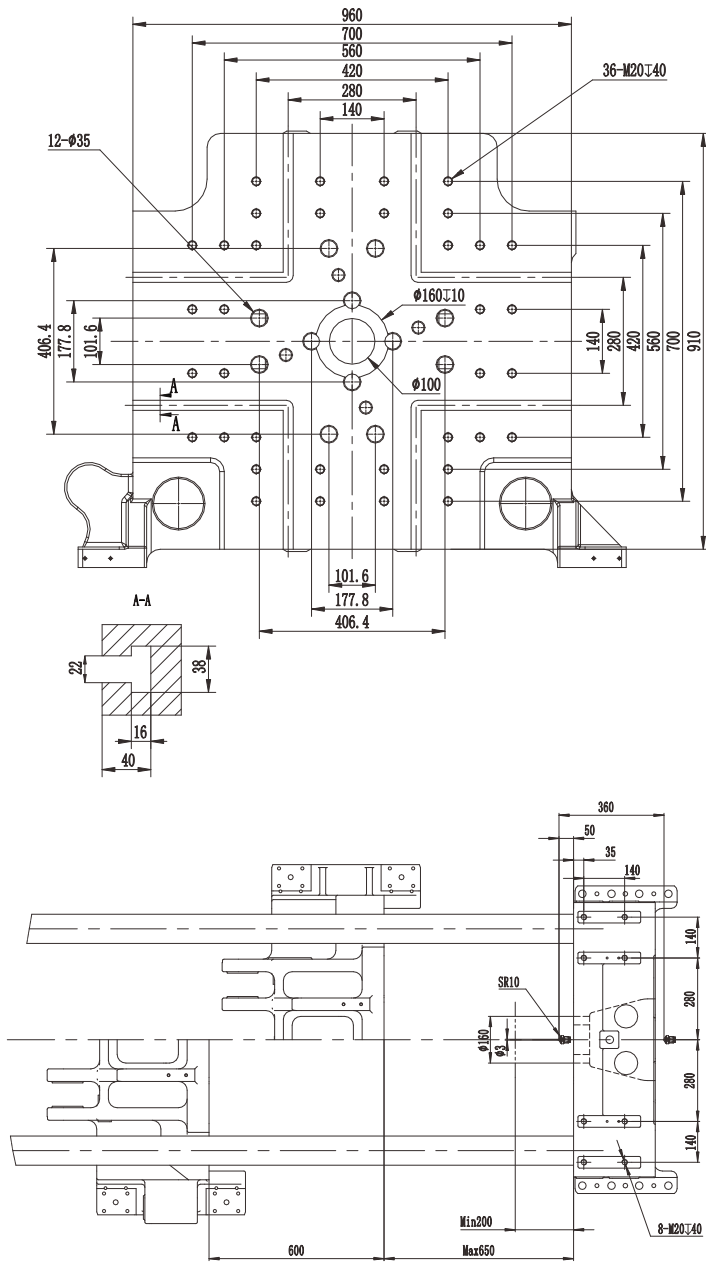
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International specification					
Screw Specification		AA	A	B	C
Screw Diameter	mm	32	36	40	45
Screw L/D Ratio		23	23	23	23
Plasticizing ability	g/s	15	21	25	40
Screw Stroke	mm	180			
Injection Capacity	cm ³	145	183	226	286
Shot Weight Ps	g	132	167	206	261
Nozzle contact pressure	kN	40			
standard injection unit		E400			
Injection Speed	mm/s	200	200	200	200
Injection Pressure	MPa	313	247	200	158
Holding Pressure	MPa	250	198	160	126
high speed injection unit		E400H			
Injection Speed	mm/s	330	330	330	330
Injection Pressure	MPa	313	247	200	158
Holding Pressure	MPa	250	198	160	126
Screw Speed	rpm	350			
Clamping Force	kN	1800			
Tie-bar Distance (h×v)	mm	560×510			
Opening Stroke Max	mm	500			
Mold Height Min	mm	200			
Mold Height Max	mm	550			
Max Daylight	mm	1050			
Ejector Stroke	mm	130			
Ejector Force	kN	45			
Number of ejector rods	PCS	5			
Dry cycle time	S	1.6			
Total electrical capacity(High speed)	KW	60.5 (76.5)			
Heater power	KW	7.8	8.65	9.6	10.7
Number of temp. control zones		3+1			
Hopper capacity	L	25			
Min. platen size(L×W)	mm	390×390			
Platen size(L×W)	mm	820×770			
Stationary platen load	kg	612			
Moving platen load	kg	948			
Machine dimensions(LXWXH)	m	6.064×1.48×2.33			
Net weight(appro.)	ton	6.9			



BL 230FE

Technical Data

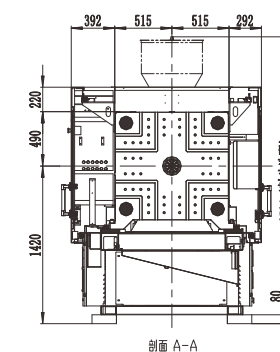
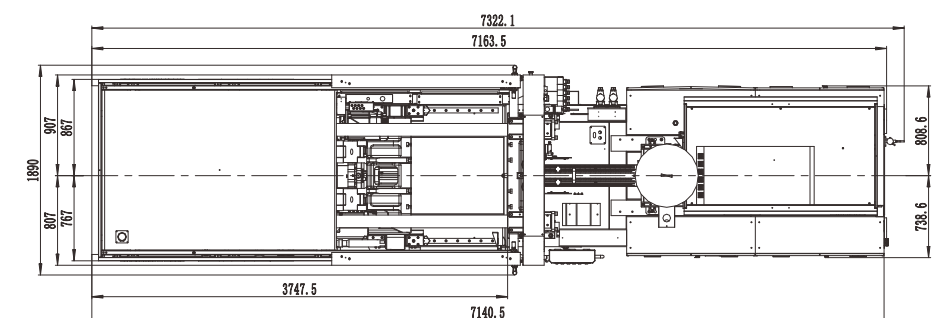
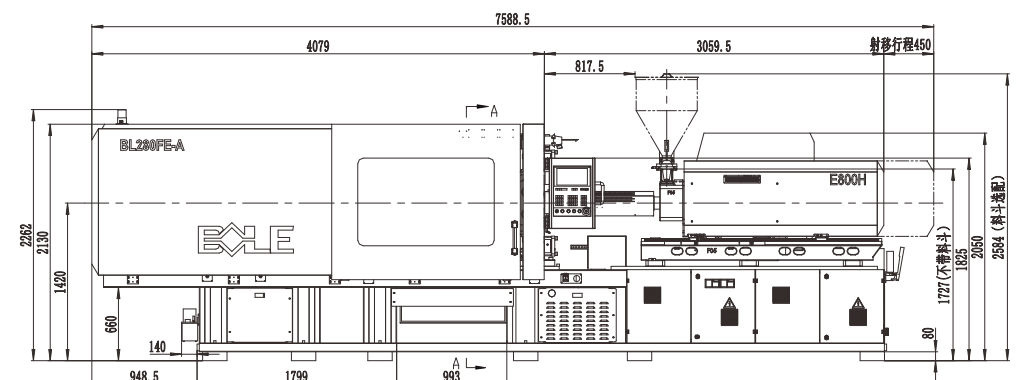
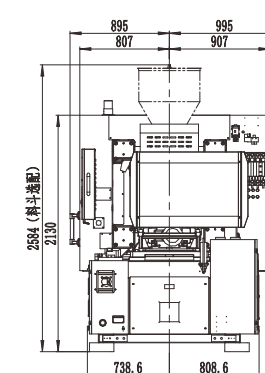
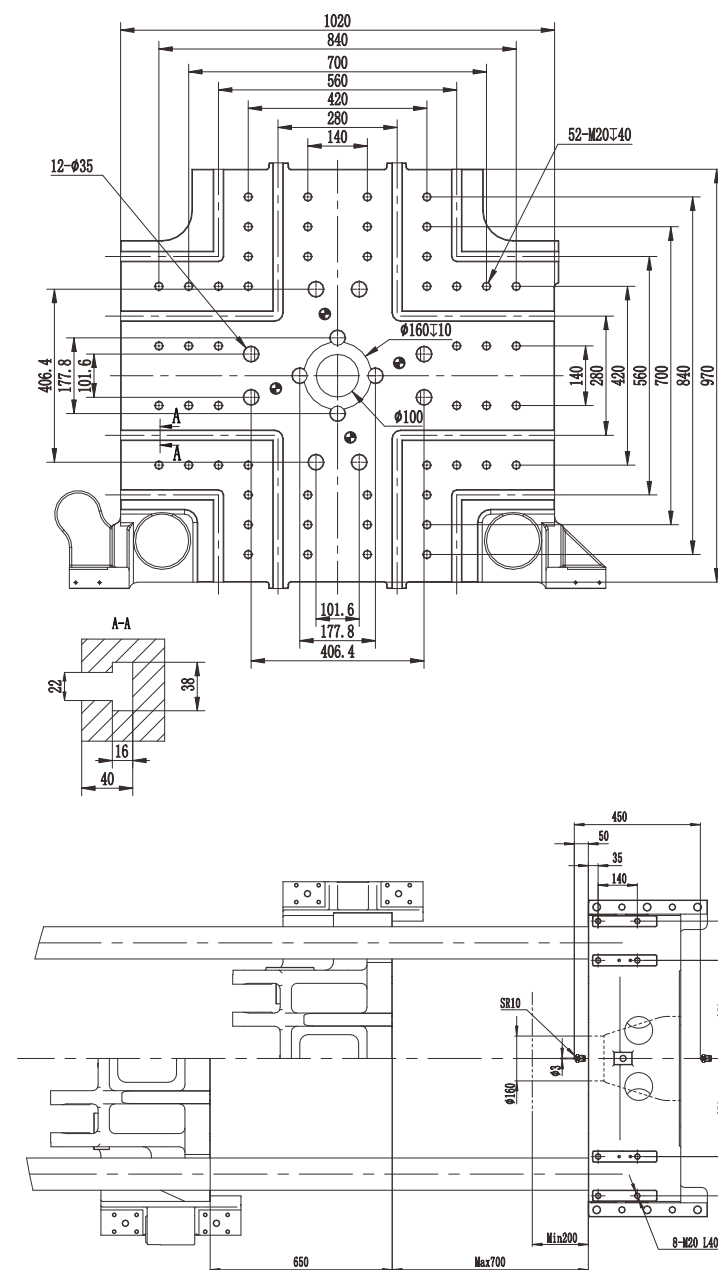
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International specification					
Screw Specification		AA	A	B	C
Screw Diameter	mm	36	40	45	50
Screw L/D Ratio		23	23	23	23
Plasticizing ability	g/s	18	24	34	45
Screw Stroke	mm	200			
Injection Capacity	cm ³	204	251	318	393
Shot Weight Ps	g	185	229	289	357
Nozzle contact pressure	kN	50			
standard injection unit		E570			
Injection Speed	mm/s	190	190	190	190
Injection Pressure	MPa	313	253	200	162
Holding Pressure	MPa	250	203	160	130
high speed injection unit		E570H			
Injection Speed	mm/s	250	250	250	250
Injection Pressure	MPa	313	253	200	162
Holding Pressure	MPa	250	203	160	130
Screw Speed	rpm	300			
Clamping Force	kN	2300			
Tie-bar Distance (h×v)	mm	660×610			
Opening Stroke Max	mm	600			
Mold Height Min	mm	200			
Mold Height Max	mm	650			
Max Daylight	mm	1250			
Ejector Stroke	mm	130			
Ejector Force	kN	45			
Number of ejector rods	PCS	13			
Dry cycle time	S	1.8			
Total electrical capacity(High speed)	KW	70.2 (82.2)			
Heater power	KW	9.7	11.7	13.6	15.5
Number of temp. control zones		3+1			
Hopper capacity	L	25			
Min. platen size(L×W)	mm	460×460			
Platen size(L×W)	mm	940×890			
Stationary platen load	kg	935			
Moving platen load	kg	1455			
Machine dimensions(LXWXH)	m	6.829×1.792×2.478			
Net weight(appro.)	ton	8.5			



BL 280FE

Technical Data

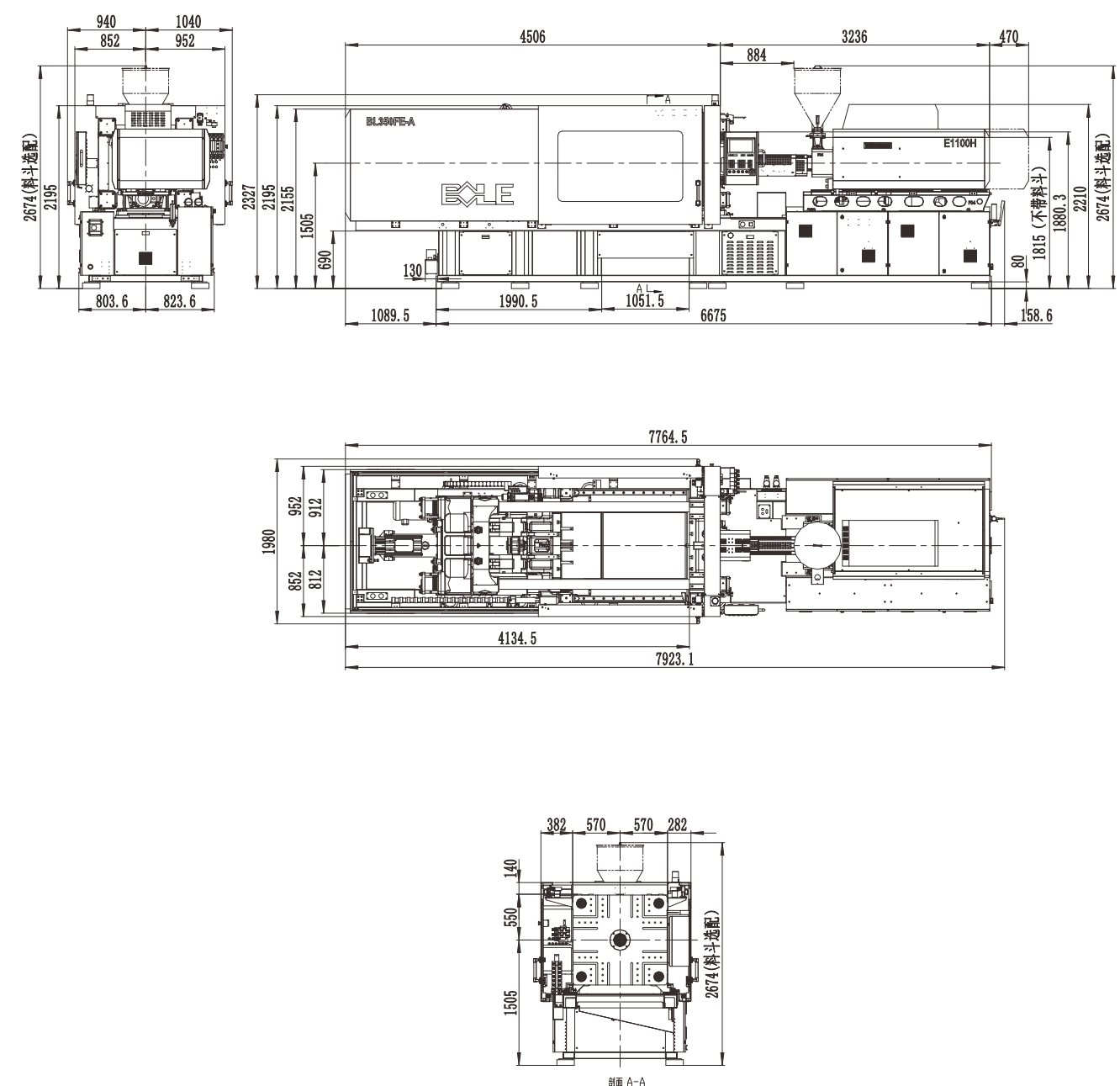
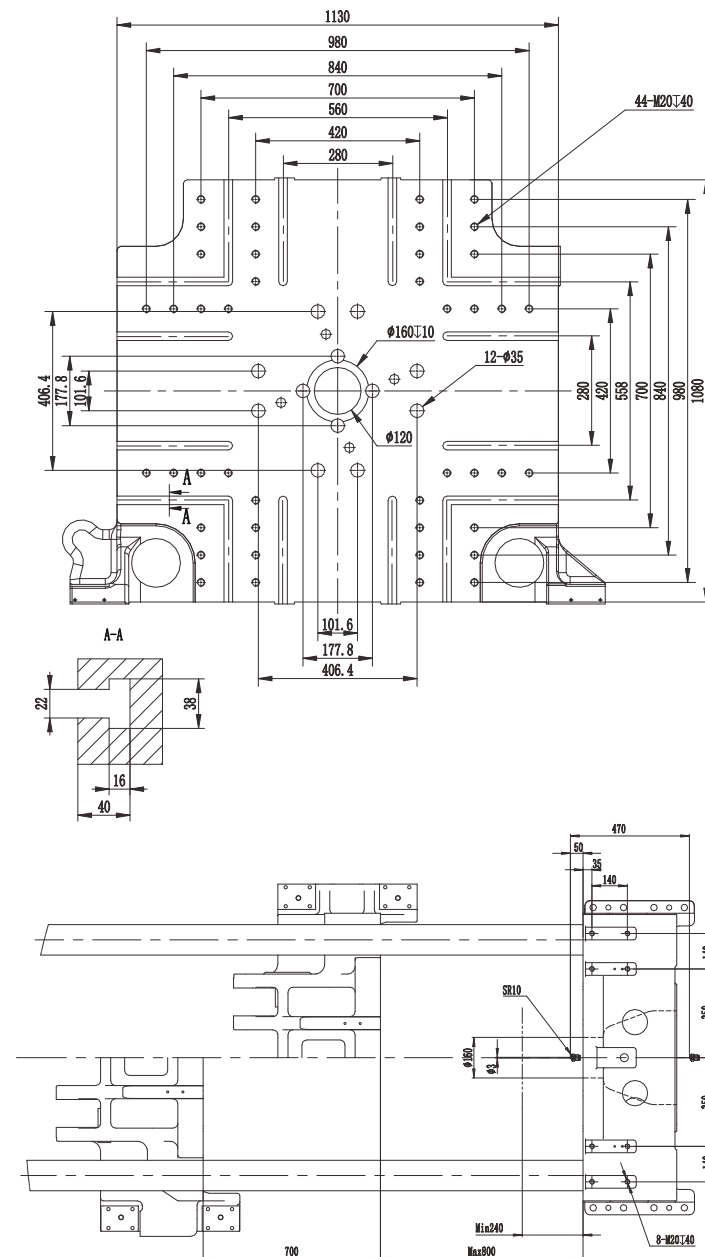
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International specification					
Screw Specification		AA	A	B	C
Screw Diameter	mm	40	45	50	55
Screw L/D Ratio		23	23	23	23
Plasticizing ability	g/s	24	34	45	59
Screw Stroke	mm	230			
Injection Capacity	cm ³	289	366	452	546
Shot Weight Ps	g	263	333	411	497
Nozzle contact pressure	kN	55			
standard injection unit		E800			
Injection Speed	mm/s	190	190	190	190
Injection Pressure	MPa	313	247	200	165
Holding Pressure	MPa	250	198	160	132
high speed injection unit		E800H			
Injection Speed	mm/s	250	250	250	250
Injection Pressure	MPa	313	247	200	165
Holding Pressure	MPa	250	198	160	132
Screw Speed	rpm	300			
Clamping Force	kN	2800			
Tie-bar Distance (h×v)	mm	710×660			
Opening Stroke Max	mm	650			
Mold Height Min	mm	220			
Mold Height Max	mm	700			
Max Daylight	mm	1350			
Ejector Stroke	mm	150			
Ejector Force	kN	50			
Number of ejector rods	PCS	13			
Dry cycle time	S	2.1			
Total electrical capacity(High speed)	KW	110.3 (132.3)			
Heater power	KW	13.3	15	16.9	18.8
Number of temp. control zones		3+1			
Hopper capacity	L	50			
Min. platen size(L×W)	mm	500×500			
Platen size(L×W)	mm	1020×970			
Stationary platen load	kg	1173			
Moving platen load	kg	1827			
Machine dimensions(LXWXH)	m	7.376×1.865×2.684			
Net weight(appro.)	ton	11.5			



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Technical Data

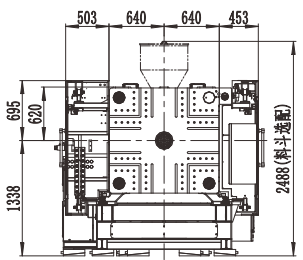
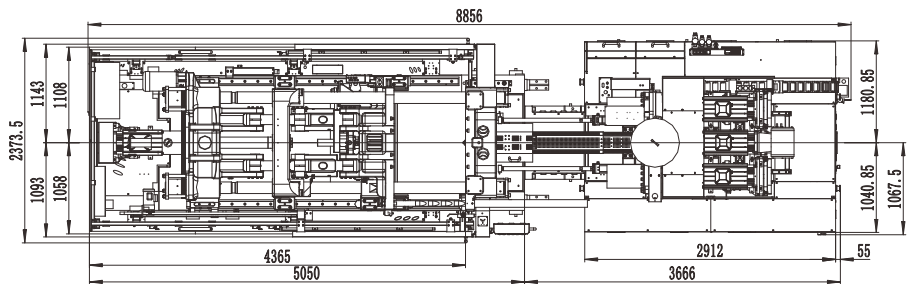
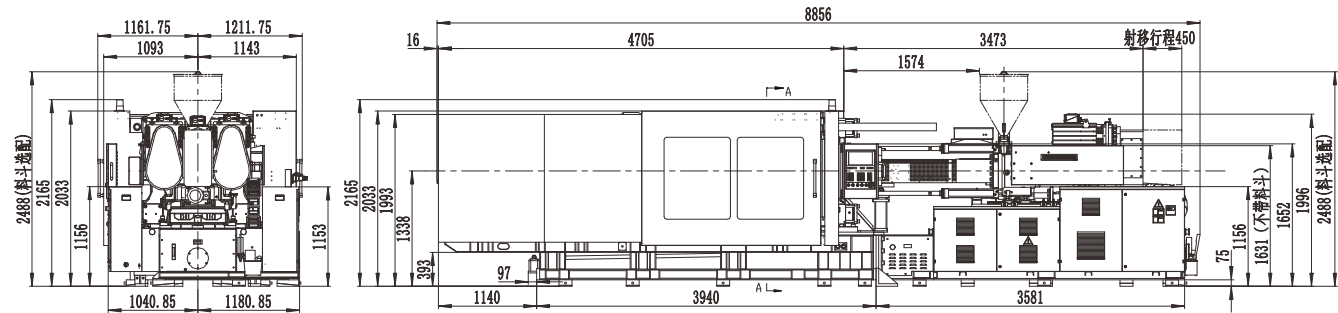
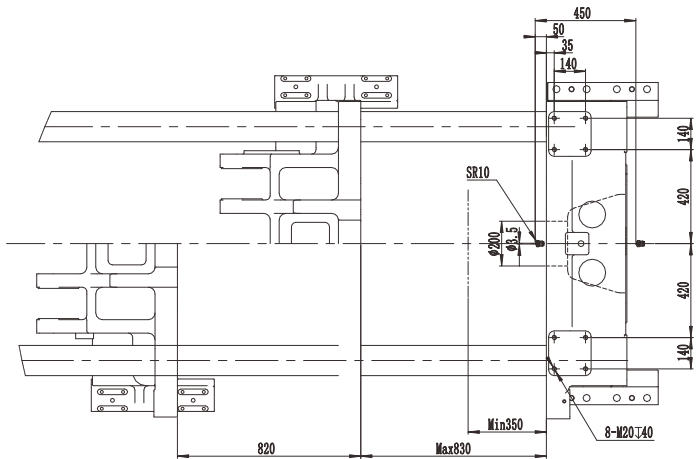
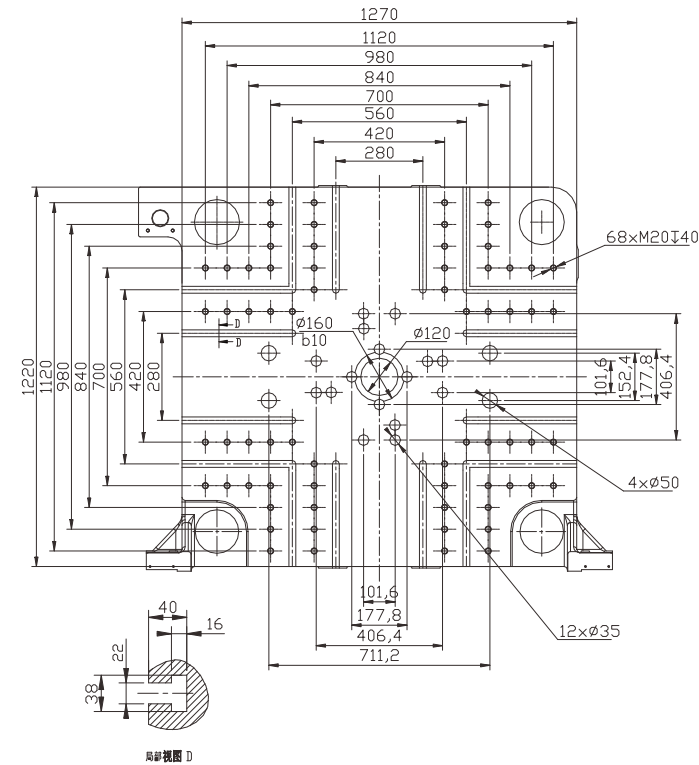
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International specification					
Screw Specification		AA	A	B	C
Screw Diameter	mm	45	50	55	60
Screw L/D Ratio		23	23	23	23
Plasticizing ability	g/s	34	45	59	74
Screw Stroke	mm	260			
Injection Capacity	cm ³	414	511	618	735
Shot Weight Ps	g	376	465	562	669
Nozzle contact pressure	kN	55			
standard injection unit		E1100			
Injection Speed	mm/s	165	165	165	165
Injection Pressure	MPa	269	218	180	151
Holding Pressure	MPa	239	194	160	134
high speed injection unit		E1100H			
Injection Speed	mm/s	250	250	250	250
Injection Pressure	MPa	269	218	180	151
Holding Pressure	MPa	239	194	160	134
Screw Speed	rpm	300			
Clamping Force	kN	3500			
Tie-bar Distance (h×v)	mm	810×760			
Opening Stroke Max	mm	750			
Mold Height Min	mm	240			
Mold Height Max	mm	800			
Max Daylight	mm	1550			
Ejector Stroke	mm	150			
Ejector Force	kN	60			
Number of ejector rods	PCS	13			
Dry cycle time	S	2.3			
Total electrical capacity(High speed)	KW	156 (178)			
Heater power	KW	17.2	19.1	21.9	24.5
Number of temp. control zones		3+1			
Hopper capacity	L	50			
Min. platen size(L×W)	mm	570×570			
Platen size(L×W)	mm	1130×1080			
Stationary platen load	kg	1700			
Moving platen load	kg	2640			
Machine dimensions(LXWXH)	m	7.922×1.952×2.544			
Net weight(appro.)	ton	15			



BL 450FE

Technical Data

DESCRIPTION	UNIT	Parameter							
International specification									
Screw Specification		A	B	C	D	A	B	C	D
Screw Diameter	mm	60	65	70	75	70	75	80	85
Screw L/D Ratio		23	23	23	23	23	23	23	21.3
Plasticizing ability	g/s	49	62	76	91	76	91	110	126
Screw Stroke	mm	325				370			
Injection Capacity	cm ³	919	1078	1251	1436	1424	1635	1860	2100
Shot Weight Ps	g	836	981	1138	1307	1296	1487	1692	1911
Nozzle contact pressure	kN	60				60			
standard injection unit		E2150				E3250			
Injection Speed	mm/s	165	165	165	165	165	165	165	165
Injection Pressure	MPa	235	200	172	150	230	200	176	156
Holding Pressure	MPa	188	160	138	120	184	160	141	125
high speed injection unit		E2150H				E3250H			
Injection Speed	mm/s	250	250	250	250	250	250	250	250
Injection Pressure	MPa	234.7	200	172.4	150.2	230	200	176	156
Holding Pressure	MPa	187.8	160	138	120.2	184	160	141	125
Screw Speed	rpm	200				200			
Clamping Force	kN	4500							
Tie-bar Distance (h×v)	mm	910×860							
Opening Stroke Max	mm	820							
Mold Height Min	mm	350							
Mold Height Max	mm	830							
Max Daylight	mm	1650							
Ejector Stroke	mm	180							
Ejector Force	kN	98							
Number of ejector rods	PCS	17							
Dry cycle time	S	3							
Total electrical capacity(High speed)	KW	220.9 (244.9)				233.1 (277.7)			
Heater power	KW	21.8	24	26.2	26.2	29	33	37	37
Number of temp. control zones		4+1				4+1			
Hopper capacity	L	50				50			
Min. platen size(L×W)	mm	640×640							
Platen size(L×W)	mm	1270×1220							
Stationary platen load	kg	2170							
Moving platen load	kg	3360							
Machine dimensions(LXWXH)	m	8.84×2.374×2.033				8.84×2.374×2.033			
Net weight(appro.)	ton	20				21			



侧面 A-A

Configuration List

Standard Configuration Menu of BL50-450FE		
Injection Unit	Low pressure&velocity mold open	International unit switch
Anti-resistant screw set (straight nozzle)	Injection compress function	I/O display
Nozzle safety cover(with limit switch)	High pressure release during cooling time function	Printer interface(USB)
Injection 5 stage control	Injection during mold close	Cycle monitor
Holding 5 stage control	Twice mold close function	Production management
Charge 3 stage control	Mold inside cut function	Product data record(5000 cycle display,100 thousands cycle saving)
Back pressure 5 stage control	Safety device for clamping(mechanical&electrical)	Product data graph
Suck back optional	Adjustable support for moving platen	Product quality judgment
Time delay for suck back	Clamping force set	Product quality fail alarm
Time delay before injection	Ejection device(compulsory rest optional)	Cycle counter
Time delay before charging	Ejection detail function	Machine main status display
Flow increase injection	Ejection 3 stage control	Parameter fast set
V/P switch(position,time,presure,velocity)	Ejection time delay	Maintenance management
Injection speed response model selection	Ejection shake mode	Clamping force curve monitor
Injection pressure multi control	Variable ejection position mode	Barrel heat monitor
Holding speed control	Synchronized ejection	Action cycle sequence display
Auto purge function	Eject back check	Three color alarm light (red/yellow/green)
Charge speed control	Water flow5 sets	Buzzer
Anti-cold start screw	Locating ring	Over injection protection(HPM pressure abnormal protection)
Mold open while charge	Mold ejector protect interface	Real value display
Close loop temp control for barrel(K&J type)	Low speed mold movement	Trouble shooting selection
Barrel keep warm	Air blow (2 sets)	
Barrel temp optimization	Emergency stop(operate&non operate side)	Other
Barrel temp preheat	Mounting Holes of robot installation	Bole standard color
Barrel temp synchronous warming	Central lubrication system	Enclosed safety door
Carriage move set(limit switch,moving time)	Mold open&close flexible control	Adjustable level pad
Suck back mode(3 mode)		Socket 4 sets (380V 16A 2 set, 220V 10A 2 set)
High contact force nozzle device	Operation&Monitor	Standard hopper
Nozzle centre adjustment equipment	12 inch color touch screen	Hopper sliding block
Hopper temp control close loop	Mold data saving(max200)	Tool box
Injection base rotation	Alarm history	Spare parts,machine shield
Nozzle temp control	Modifying records	
	3 set USB interface	
	Injection pressure /speed curve display	
Clamp Unit	EUmap I 2	
Mold 5 stage control	Multi-language	
Low pressure protection		

Configuration List

Optional Configuration Menu of BL50-450FE		
Charge,Injection	Hydraulic core (programmable)	Quality pick device
Chrome plated screw&barrel set	Pneumatic core(programmable)	Product falling sensor
Anti-wear and corrosion screw&barrel set	ValveGate control device	Operation&Monitor
High power heating band for nozzle	Water flow meter	Mold temp control
Extending nozzle	Special platen(T slot,screw hole)	Quality pick electrical interface
Mold pressure V/P switch function	Electrical circuits for gear driving	Heating break detector
Air shut off nozzle	Enlarged max mold height	Add cooling water line
Spring shut off nozzle	Mold slider protection function	External transformer
Special head nozzle	Ejector compression function	Eu67 robot interface
Standard hopper	Mold auto clampdevice(pneumatic/hydraulic)	Gas assisted injection
Stainless hopper	Ejector with brake	Magnetic template interface
Clamp Unit	Inner hot runner	Mold inner pressure detector interface
Air blast for fix and moving platen	Product fall plate	Other
Air ejector	Electrical door	Infrared heating for barrel
Hydraulic station(for core and valve gate)	Close loop clamping force	Energy saving cover for barrel