



**HIGH PRECISION**  
INJECTION MOLDING MACHINE  
高效精密注塑机

宁波广德机械有限公司  
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寧波廣德機械有限公司  
Ningbo GUANGDE Machinery Co., Ltd.

# 您的高精度节能方案

Your high-precision energy-saving solution



精密稳定  
Precision stability



应用广泛  
Widely used



可靠耐用  
Reliable and durable



节能环保  
Saving



人性化设计  
humanity design



## MA 系列 应用领域

MA series Industry applications

01/ 医疗  
Medical



02/ 汽车配件  
Auto Parts



03/ 3C 电子  
3C Electronic



04/ 家电  
Household Appliance



05/ 塑料包装  
Packaging



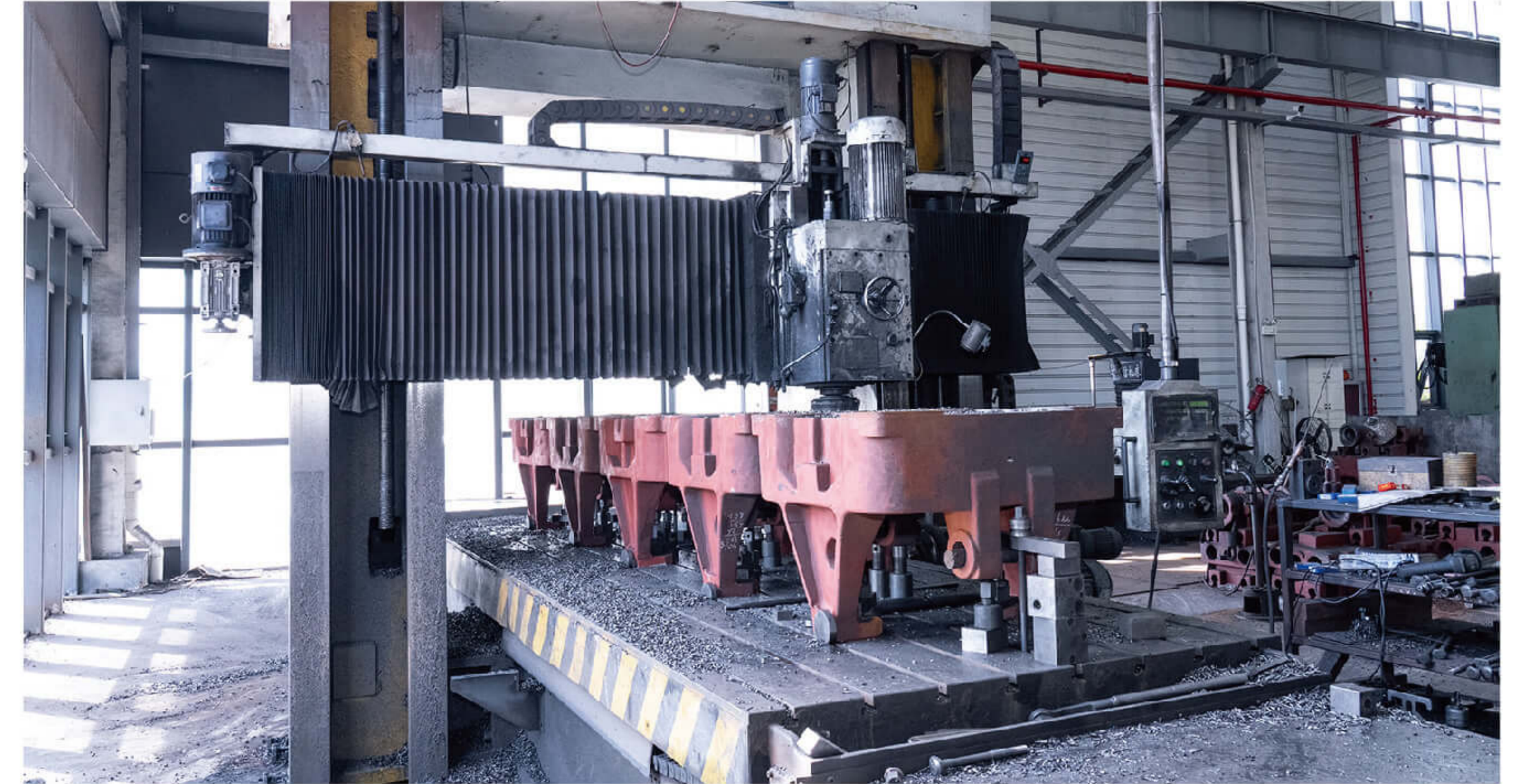
06/ 日用品  
Homeware





宁波广德机械有限公司位于东海之滨,有国际塑机都市之称的宁波,是高品质注塑机的专业制造商,ISO9001:2000认证公司,公司生产的锁模力120T-1800T,射胶量由45克至10000克之系列注塑机,符合欧洲塑料与橡胶机械制造商联合会之规格设计,制造和装配。具有高刚性,强锁模力,高注塑压力,精密耐用之特点。

Ningbo Guangde Machinery Co., Ltd. is located on the coast of the East China Sea and is known as the International Plastic Machinery City in Ningbo. It is a professional manufacturer of high-quality injection molding machines and an ISO9001:2000 certified company. The company produces a series of injection molding machines with a locking force of 120T-1800T and a injection volume of 45g to 10000g, which comply with the specifications of the European Association of Plastic and Rubber Machinery Manufacturers for design, manufacturing, and assembly. Featuring high rigidity, strong locking force, high injection pressure, and precision durability.



引进高端的生产设备,精湛的工艺,专业的生产团队成为广德看的见的实力确保每一台机器更高精度、高可靠性。

Introducing high-end production equipment, exquisite craftsmanship, and a professional production team have become visible strengths in Guangde, ensuring higher precision and reliability for each machine.



# MA 系列精密机型

## MA SERIES PRECISION MODELS

● 高钢性的五肘连杆机构及箱形连体结构,提高了锁模刚性和精度。  
High rigidity of five - elbow linkage mechanism and box - shaped connected structure, improve the rigidity and accuracy of locking.

● 含油关节衬套有效提高锁模部件寿命、节约润滑油。  
Oil-bearing joint bushing can effectively improve the life of mold locking parts and save lubricating oil.

● 双缸平衡注射结构使注射可靠、压力强劲。  
Double-cylinder balanced injection structure allows a reliable injection and a high pressure.

● 专用性和通用性螺杆料筒设计满足不同用户的需求。  
Variety kinds of specific and general screws and barrels can meet the different needs of different users.

● 集中润滑系统,使每个润滑点得到均匀、持续的润滑。  
Centralized lubrication system, so that each lubrication point to get uniform, continuous lubrication.

● 高强度哥林柱,使锁模力更稳定。  
High - strength GL plunger, can provide a more stable clamping force.

● 采用灵活多点顶出适合不同模具需求。  
A flexible multi -point ejector can meet the different requirements of different moulds.

● 全数字CAN控制模式使系统压力,流量控制更准确  
Digital CAN controller provide the system with a more precious control for pressure, and flow

# 合模单元

## CLAMPING SYSTEM

规格加大、容模范围更广泛、模板刚性强化、保护哥林柱及模具，免润材料使用、洁净环保且美观、内藏式安全杆、免调整安全性高。

Specifications, increase capacity of mold more widely, strengthen the protection of large, rigid template columns and die, free use of material, environmental protection and clean and smooth appearance, built-in safety bar, free high security adjustment.



- 低压模具保护装置
- 自动调模功能
- 特快锁模功能, 提升生产效率
- 高压自动集中润滑系统
- 强化处理动模板移动耐磨轨道
- 多种液压顶出模式
- Low-pressure mold protection device
- Auto mode function
- Express clamping function, improve production efficiency
- High pressure automatic centralized lubrication system
- Enhanced treatment movable platen moves wearable track
- Multiple hydraulic ejector mode

## 模板刚性强、运行平稳

Template just woke up, running smoothly

### 直线或滑动式导轨

移动模板的支承采用斜铁支承结构, 提高模具品行度, 模具运行高效。

### 不接触移动模板的拉杆

提高拉杆的使用寿命和模具的使用寿命。

### 刚性铸铁模板

刚性优良, 空循环周期短, 具有高速动作的所需的型腔油缸结构, 可缓和冲击。

### 同步锁定

快速且精确, 锁定时间较短。

### Straight or sliding guide rails

The support of the moving template is supported by the oblique iron structure, which can improve the mold character, and the mould operation is high efficient.

### Tie rods that do not touch the moving template

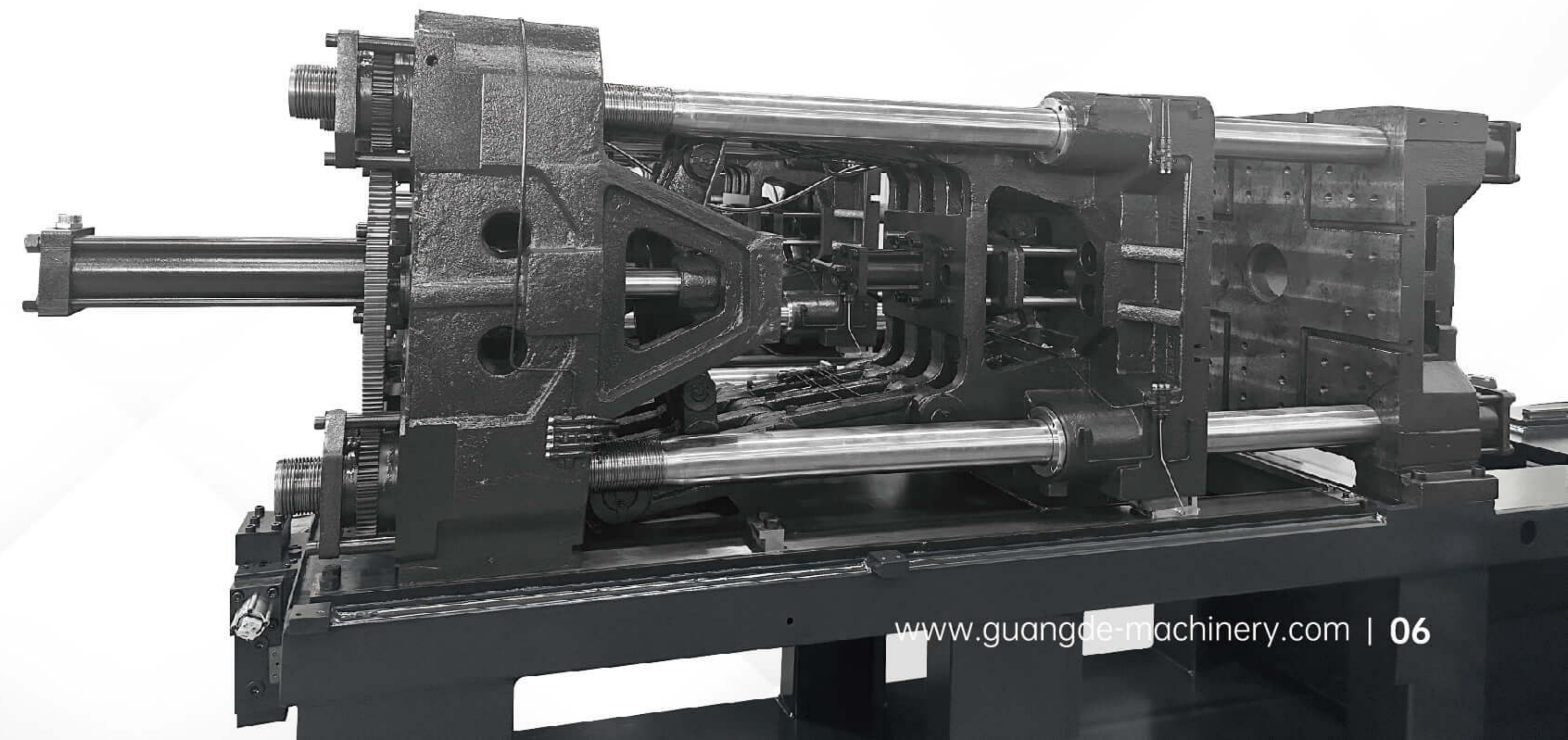
Improve the service life of the draw rod and the service life of the die.

### Rigid cast iron formwork

Good rigidity, short cycle and high speed the required cavity cylinder structure can mitigate the impact.

### Synchronous locking

Strange book and accurate, lock time is short.

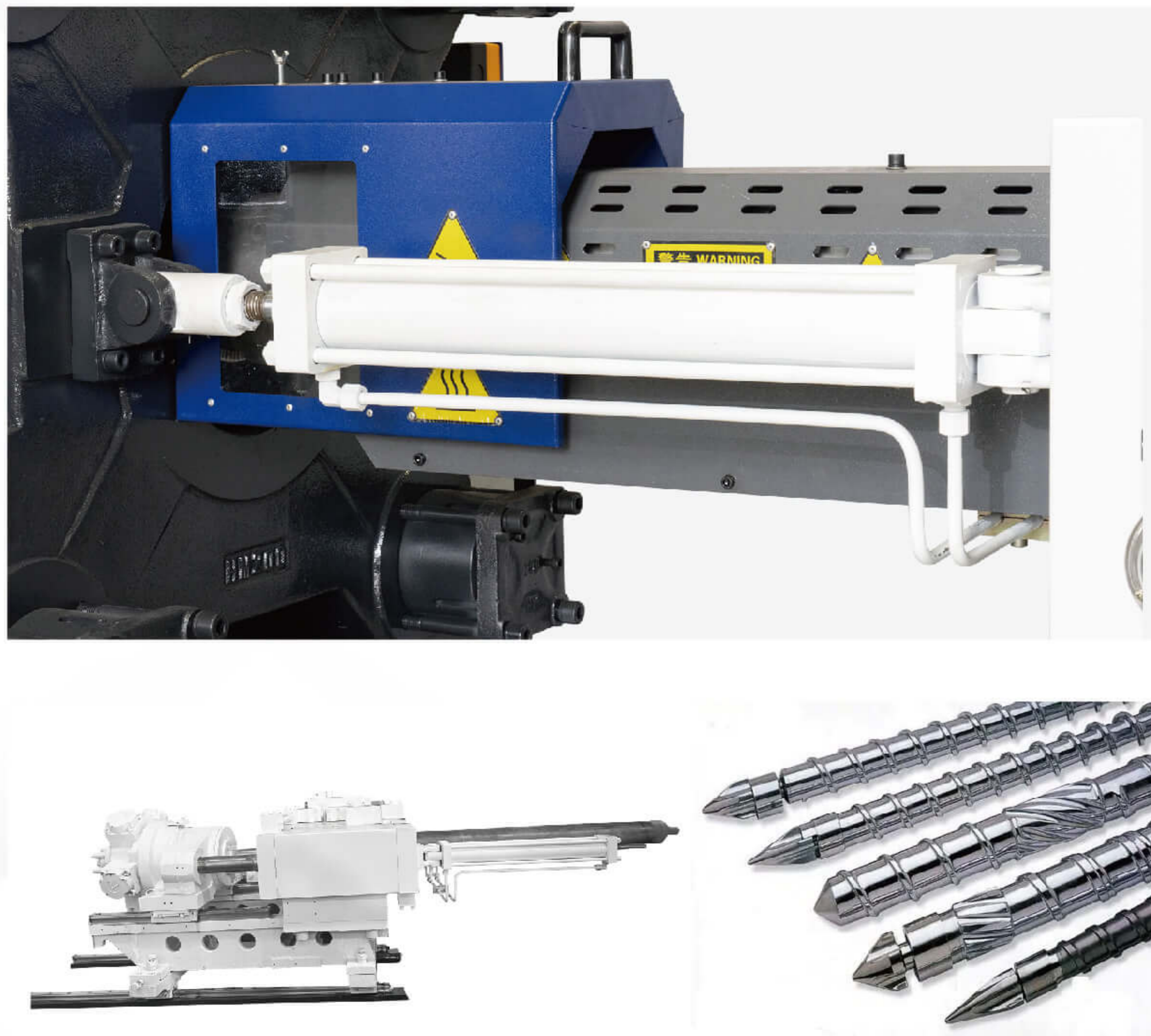


# 注射单元

## INJECTION SYSTEM

采用短捷有力的双缸射出系统和高精度线性导轨，配合低惯量高响应射出机构，确保射出动作平稳及定模板无变形，优化设计螺杆组件，达到更好的塑化效果。自动清料，防流涎、防冷启动延时等功能，确保工作的高效、简便、安全。

A short powerful double cylinder injection system and high precision linear guide rail, with low inertia and high response mechanism to ensure smooth injection, injection and template deformation, optimization design of screw assembly, achieve better plasticizing effect. Automatic cleaning bucket, anti salivation, anti cold start delay function, ensure the efficient, convenient and safe.

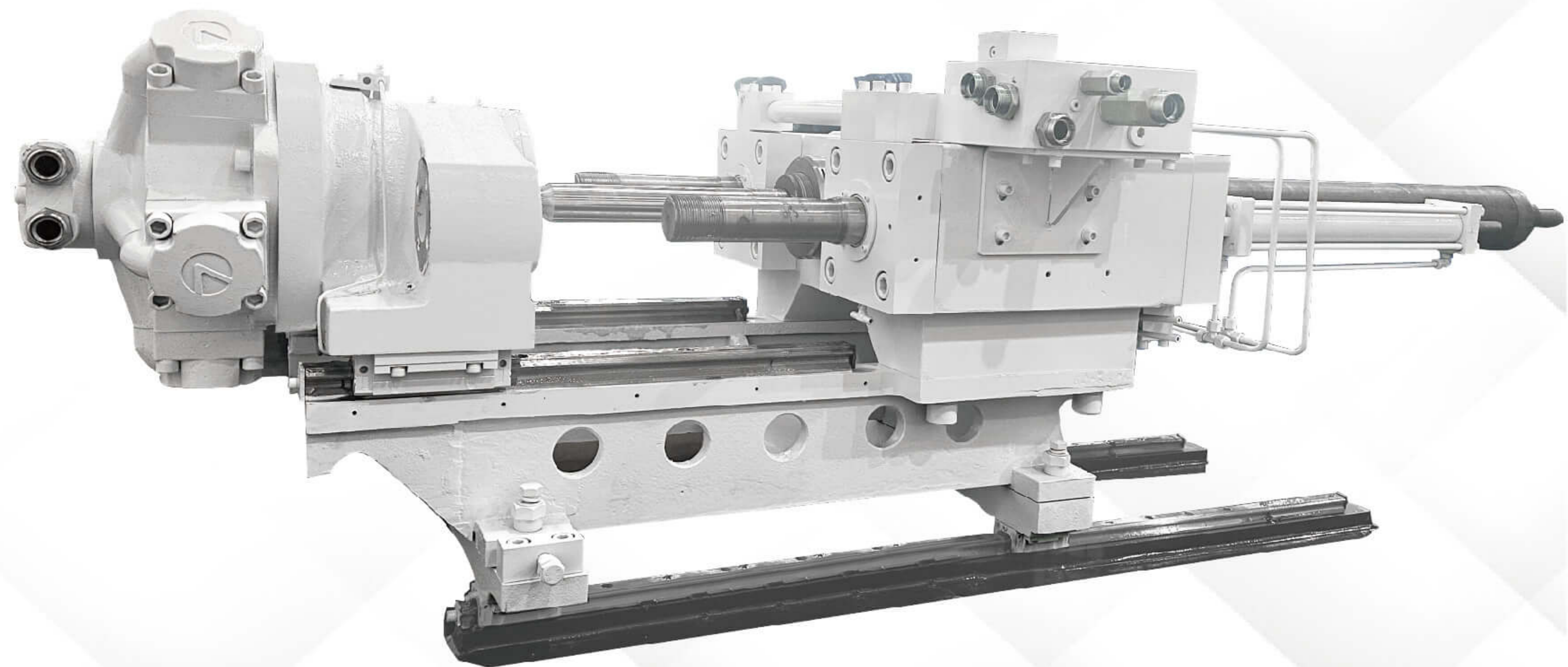


# 注射精准、运行平稳

## Precise injection, stable operation

- 低压模具保护装置
- 双缸平衡注射系统
- 配置多种直径螺杆
- 超宽的射速调整范围, 可以适应更多的产品成型加工
- 注塑和塑化过程始终低机械摩擦阻力, 并均匀, 注塑和熔胶过程更稳定, 重复性精度高
- 具备位置、压力、时间随意选择的保压切换功能, 调试工艺更轻松便捷
- 通过特别的控制原理, 可以实现精密计量控制, 注塑重量偏差可达5%
- 注射机构紧凑, 进一步提高稳定度
- 保压及背压设定
- 精密PID温度控制, 温度控制精度可达 $\pm 0.5^{\circ}\text{C}$

- Holding pressure and back pressure settings
- Dual cylinder balanced injection system
- Configure multiple diameter screws
- The ultra wide range of firing rate adjustment can adapt to more product forming and processing
- The injection molding and plasticization processes always have low mechanical friction resistance and are uniform. The injection molding and melting processes are more stable, with high repeatability and accuracy
- Equipped with pressure maintaining and switching function that allows for easy and convenient adjustment of position, pressure, and time selection
- Through special control principles, precise measurement control can be achieved, and the weight deviation of injection molding can reach 5%
- The injection mechanism is compact, further improving stability
- Pressure holding and back pressure setting
- Precision PID temperature control, with a temperature control accuracy of  $\pm 0.5^{\circ}\text{C}$



# 液压单元

## HYDRAULIC SYSTEM

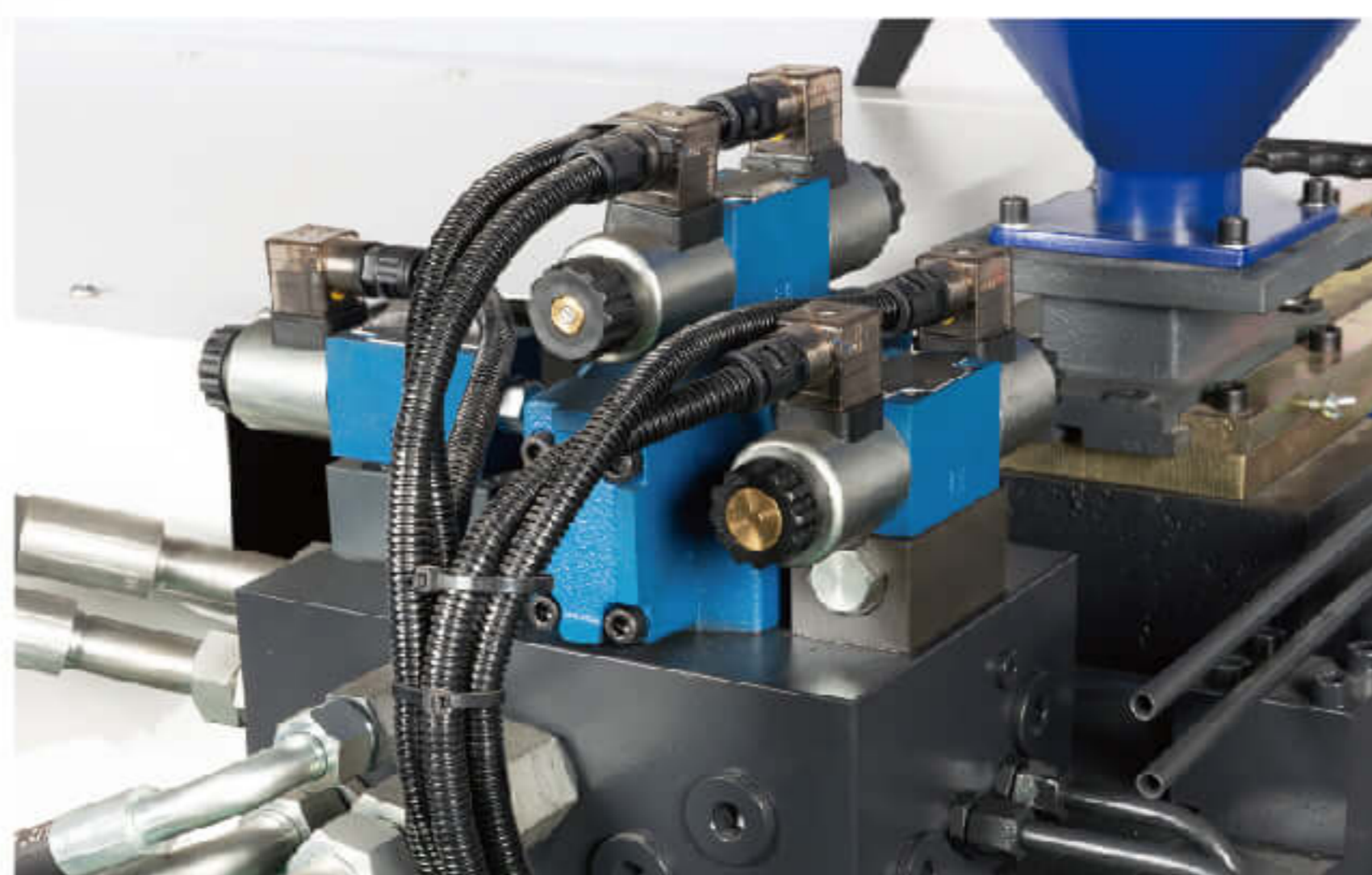
液压系统设计先进,通过压力、流量比例控制实现快速多级压力、速度切换、系统配置合理,先进、工作稳定可靠,噪声低于75dB,中大型机采用二-通插装阀系统,提高了系统的通流量及响应速度,使得整机性能达到最佳。

The hydraulic system is advanced by pressure and flow proportional control to achieve fast multi-stage pressure and speed switching, system configuration is reasonable, advanced, stable and reliable operation, the noise is lower than 75dB, in a large machine using two cartridge valve system, improve the system flow and response speed, which makes the best performance.

- 高精度电脑控制器和高美结合,省电22%~55%,经济效率高。整体速度提升20%以上,行机效率高,令多模穴成型更稳定。
- 高精度进油过滤器全流量过滤油路,有效地防止液压油的污染和劣化,从而使油泵、油阀等液压元件运行更平稳,液压密封件寿命更长。



- High precision computer controller combined with high quality, power saving 22%~55%, high economic efficiency. The overall speed of more than 20%, the high efficiency of the machine, so that the formation of multi hole more stable.
- High precision oil filter full flow filter oil circuit, effectively prevent the pollution and deterioration of hydraulic oil, so that the oil pump, oil valves and other hydraulic components to run more smoothly, hydraulic seals longer life.



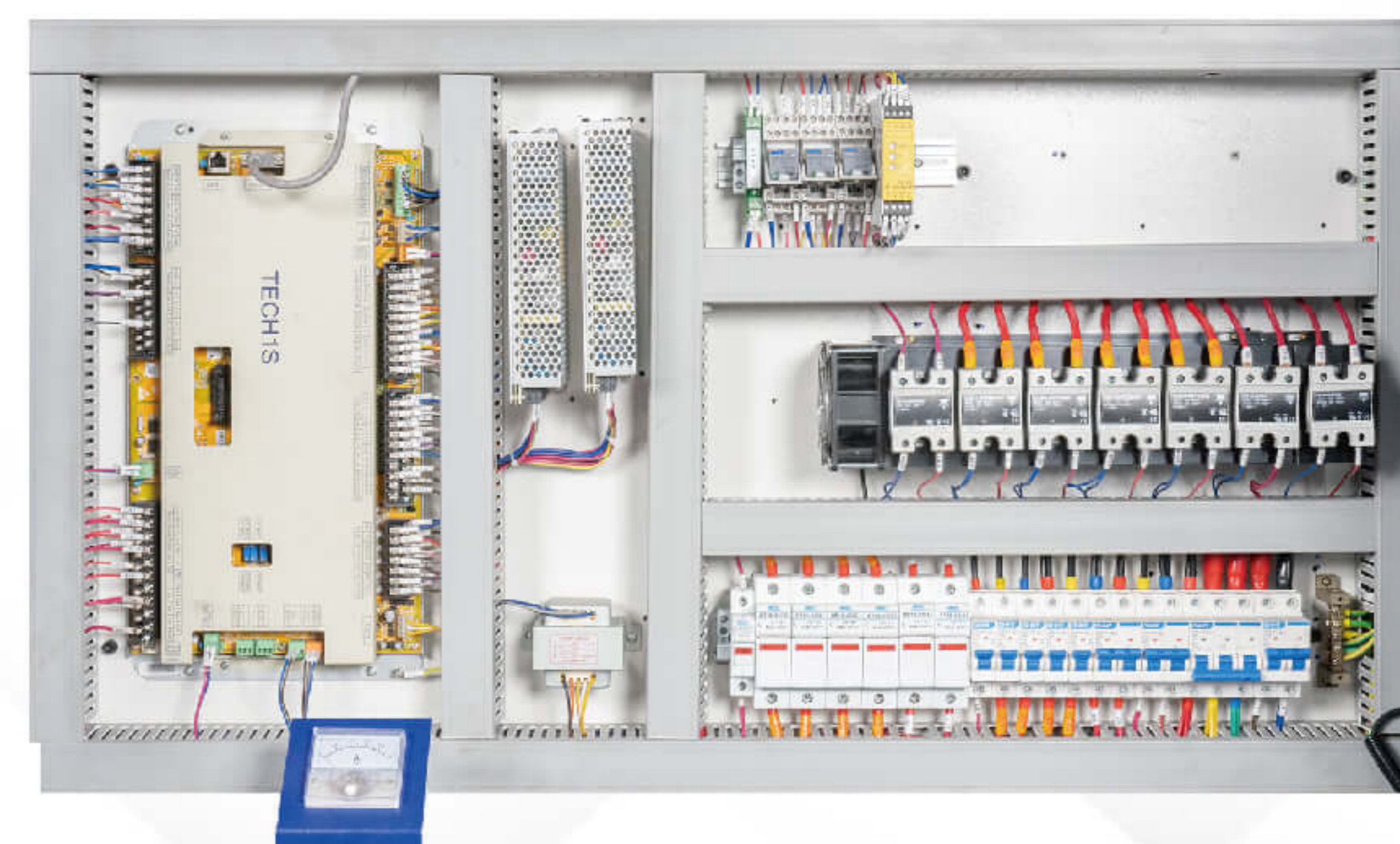
# 电器单元

## ELECTRIC UNIT

更卓越的操作性能,人性化操作界面,提升机器灵敏度及稳定性,线上曲线检测功能及中央连线管理,丰富的SPC品质管理界面,绝对是您创造利润的最佳利器。

Operation excellence performance, user-friendly interface, enhance the sensitivity and stability of the machine, line curve detection function and central connection management, rich SPC quality management interface, is absolutely the best weapon of your profit.

- TFT液晶彩色显示屏,色彩饱满,画面细腻
- 嵌入式LINUX系统,视窗风格界面
- 机器操作实时动画显示
- 成品参数记录,方便成品品质检查
- 高精度位移传感器系统,控制精度为 $\pm 0.2\text{mm}$
- 采用模糊预测技术,温度控制精度为 $\pm 1^\circ\text{C}$
- 多路输入/输出端口,端口功能可随意配置
- 具备输出可编程功能
- 支持USB和网络接口(选配)
- 参数资料保护锁,并带有断电自动保存功能
- 超容量的数据存储功能
- TFT LCD color display, full color, delicate screen
- Embedded LINUX system, windows style interface
- Real time animation of machine operation
- Record of finished product parameters to facilitate inspection of finished products
- High precision displacement sensor system, control accuracy of  $\pm 0.2\text{mm}$
- The fuzzy control technology is adopted, and the precision of temperature control is  $1^\circ\text{C}$
- Multi input / output port, port function can be configured
- With output programmable function
- Support USB and network interface (optional)
- Parameter data protection lock with power save function
- Super capacity data storage



# MA 系列伺服节能注塑机

## MA SERIES PRECISION MODELS

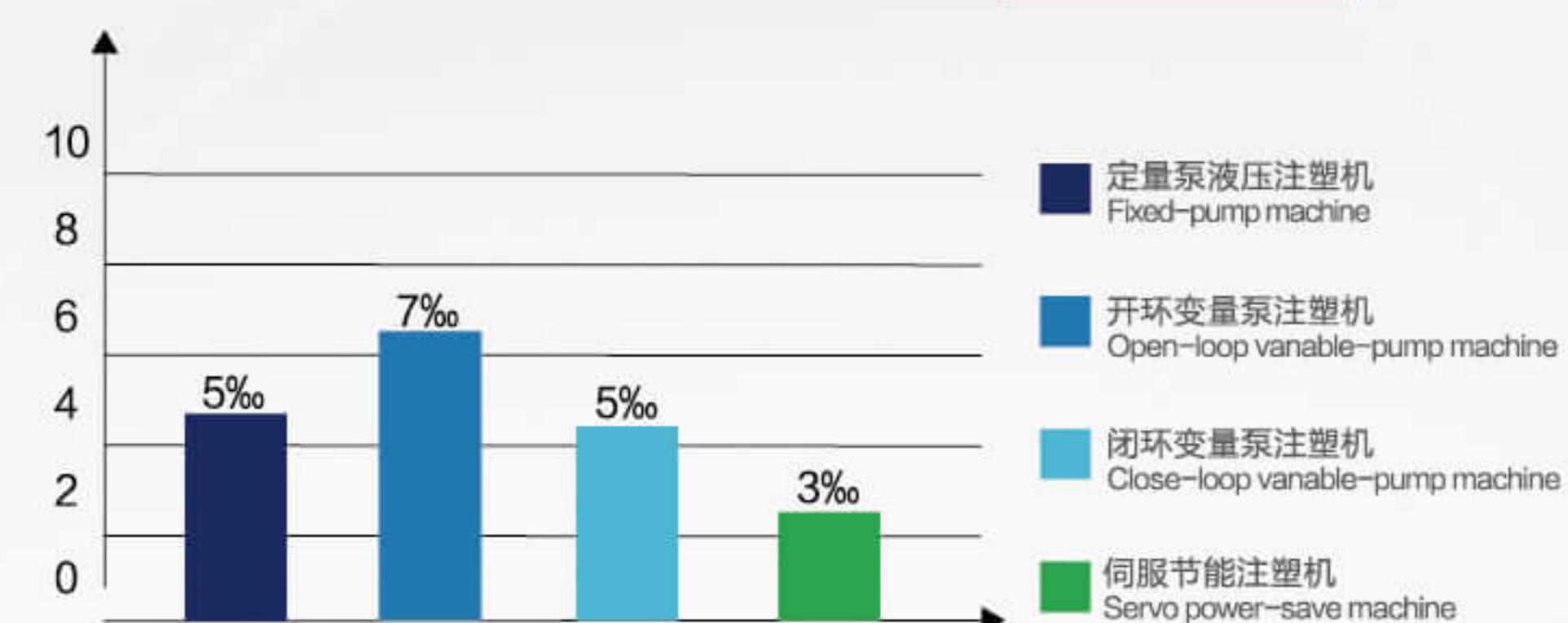
### 伺服节能型注塑机的优点

#### ADVANTAGES OF THE SERVO ENERGY SAVING INJECTION MOLDING MACHINE

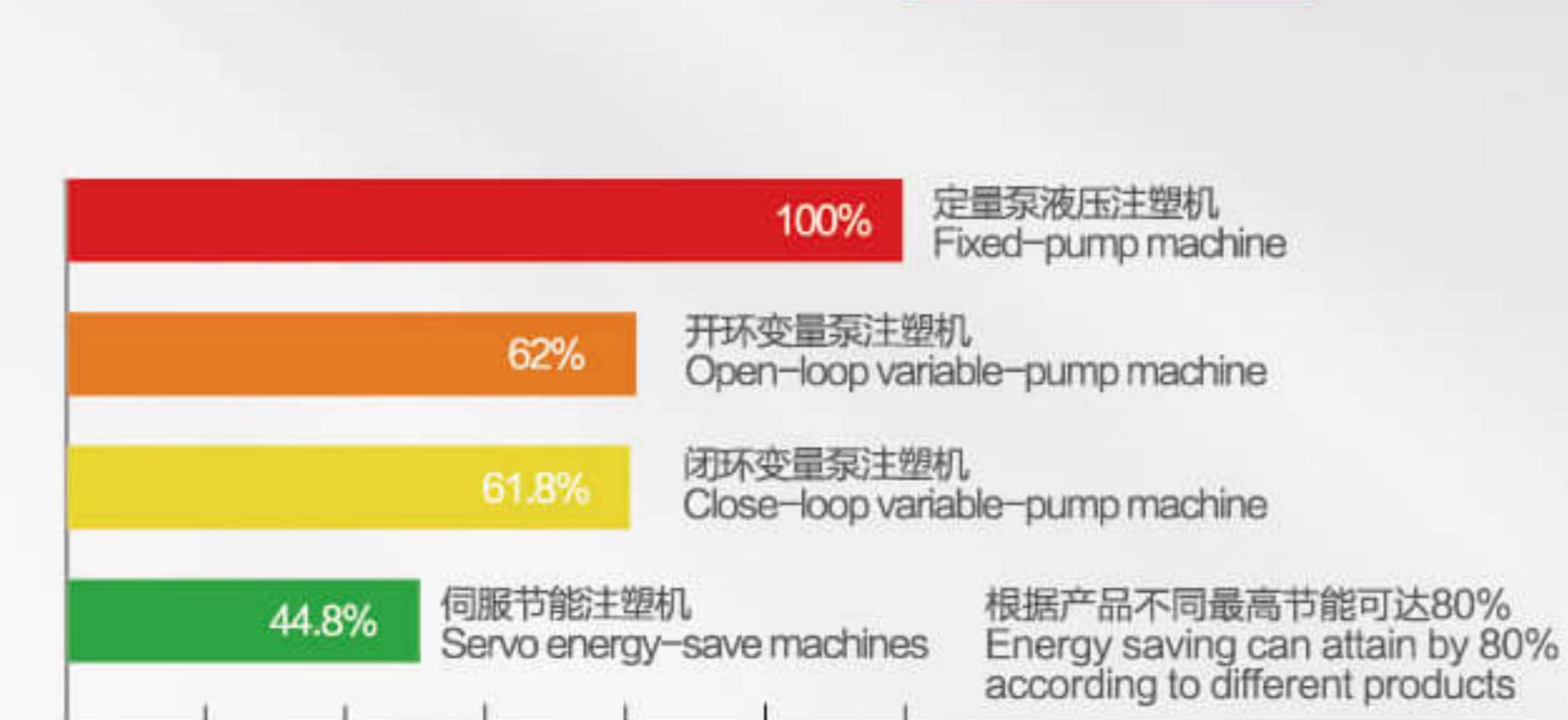
- 伺服控制,彻底消除高压节流,比异步电机+定量泵节电50%-80%,比异步电机+变量泵节电30%-50%。
- 响应迅捷,0-100%升、降速时间<0.1秒,0-100%压力变化最快可达30ms,提高生产效率。
- 控制精确,重复精度误差是0.1%,制品精密。
- 高过载能力强,伺服的力矩过载倍数≥200%。
- 状态转换灵活:速度、力矩控制灵活切换,平滑。
- 降低液压油温,减少冷却水的用量30%以上,某些场合甚至完全不需水冷。
- 减轻开、锁模冲击,延长液压油泵,机械和模具使用寿命。降低噪音、改善工作环境。
- Servo control, eliminate high pressure throttle, power saving 50%-80% than asynchronous motor + quantitative pump.
- Power saving 30% -50% compared to asynchronous motor + variable pump. Quick response, 0-100% liter, speed of <0.1 sec, 0-100% pressure change The fastest up to 30ms, improve production efficiency.
- The precision of control is accurate, the error of repetition precision is 0.1%, and the product is precise.
- High overload capacity, servo torque overload is greater than or equal to 200%. State conversion is flexible: speed, torque control flexible switching, smooth.
- Reduce the temperature of hydraulic oil and reduce the amount of cooling water by more than 30%.
- Some occasions do not even need water cooling.
- Reduce the impact of open and lock mold, prolong hydraulic oil pump, mechanical and mold service life.
- Reduce noise and improve working environment.



### Comparison of injection precision 注射精度比较



### Power consumption/hour 耗电量/小时

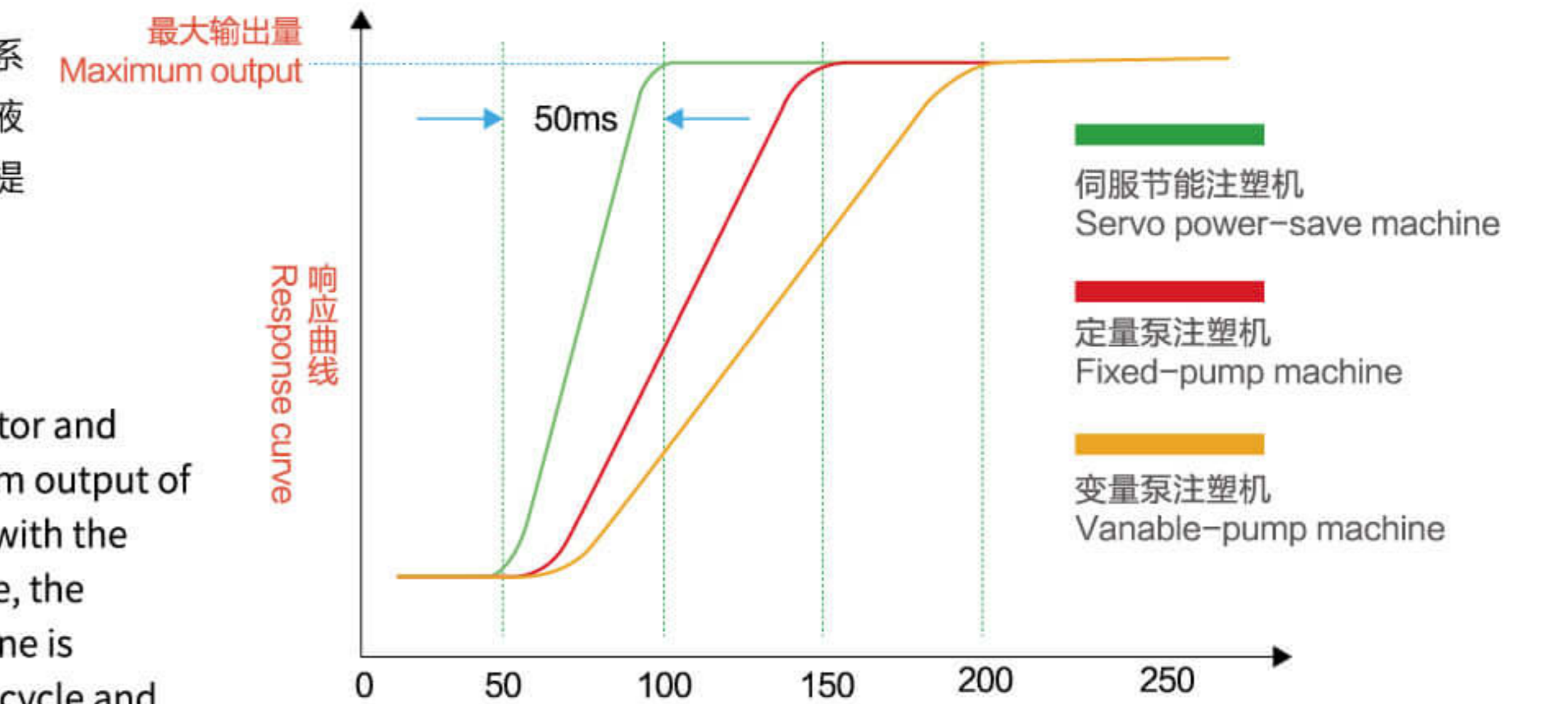


### 伺服电机驱动系统

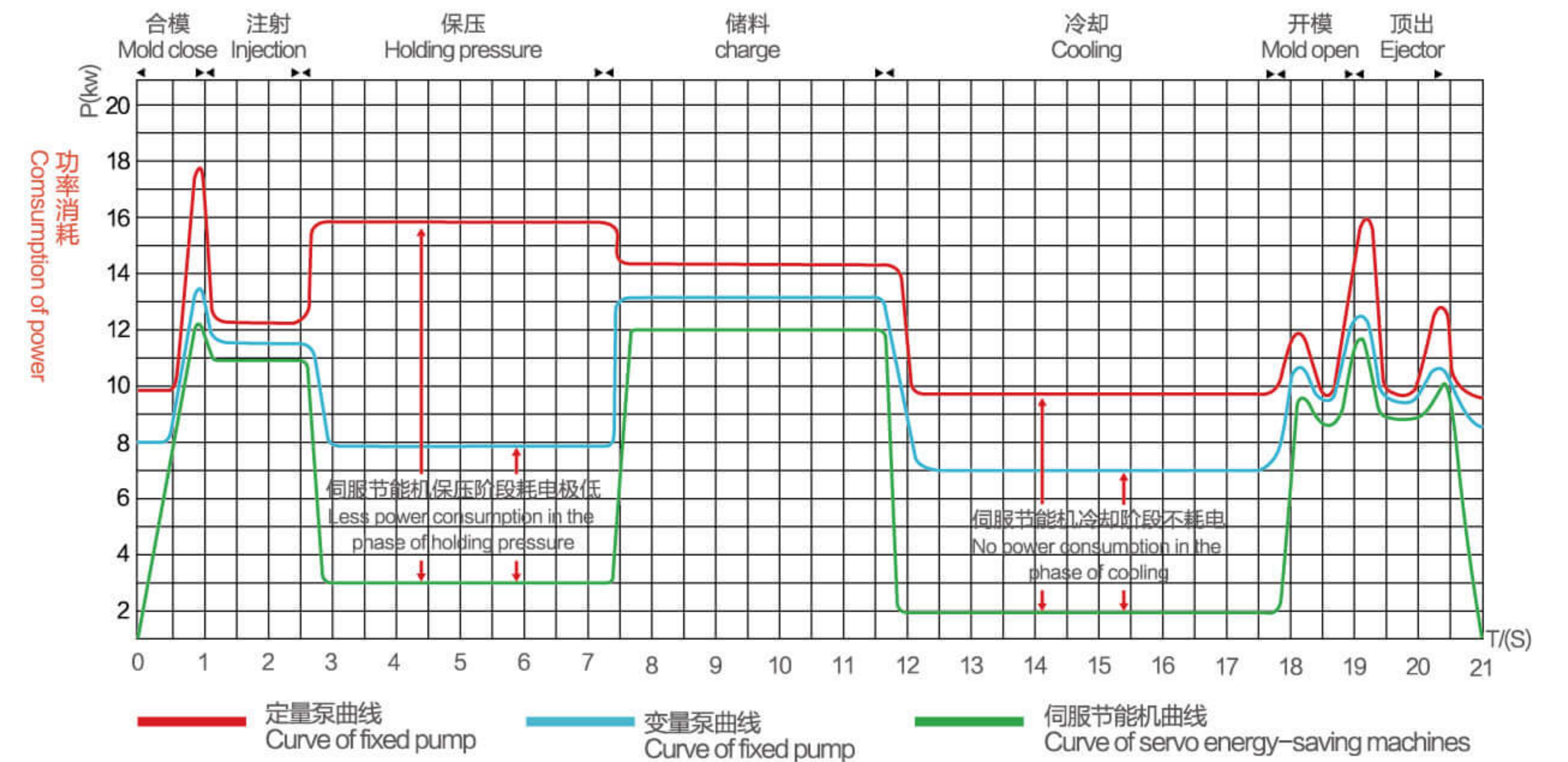
由于采用高响应伺服电机与内啮合齿轮泵动力系统,注塑机达到最大输出量仅需0.05s,相比传统液压注塑机响应速度明显加快,有效缩短周期,提高生产效率。

### Servo motor drive system

Due to the adoption of high response servo motor and internal gear pump power system, the maximum output of the injection machine is only 0.05s. Compared with the traditional hydraulic injection molding machine, the response speed of the injection molding machine is obviously faster, which effectively shortens the cycle and improves the production efficiency.



### 伺服机曲线 CURVE OF ENERGY-SAVING MACHINES



从上图可以看出输出功率随负载变化而时刻调整,避免了对能量的浪费,保压阶段伺服电机降低转速,耗能极低,尤其是在冷却阶段,电机不需工作,耗电为0。根据产品成型工艺不同,伺服节能注塑机相比传统注塑机可节省用电20-80%,根据上面的数据,在空闲时间只占了总周期四分之一的情况下,其节能效果已经非常明显。让您能真正体验到节电带来的效益。

From the above picture, we can see that the output power is adjusted at any time with the load changing, avoiding the waste of energy. In the stage of holding pressure, the servo motor reduces the rotational speed and the energy consumption is very low. Especially in the cooling stage, the motor does not need to work, and the power consumption is 0. According to the different molding process, servo energy saving injection molding machine can save energy and power 20-80% compared with the traditional injection molding machine. According to the above data, when idle time occupies only 1/4 of the total cycle, the energy saving effect is very obvious. Let you really experience the benefits of electricity saving.

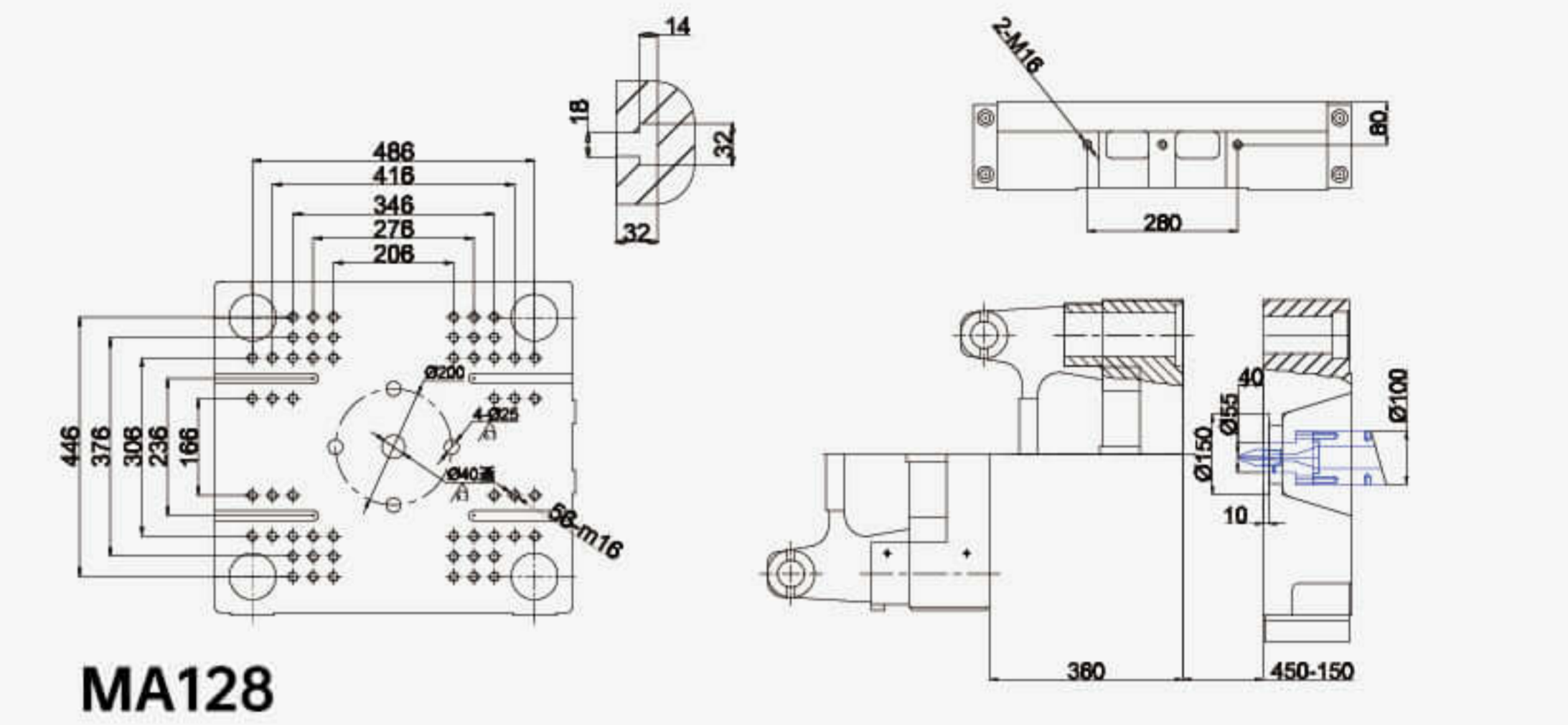


# 技术参数表 SPECIFICATIONS

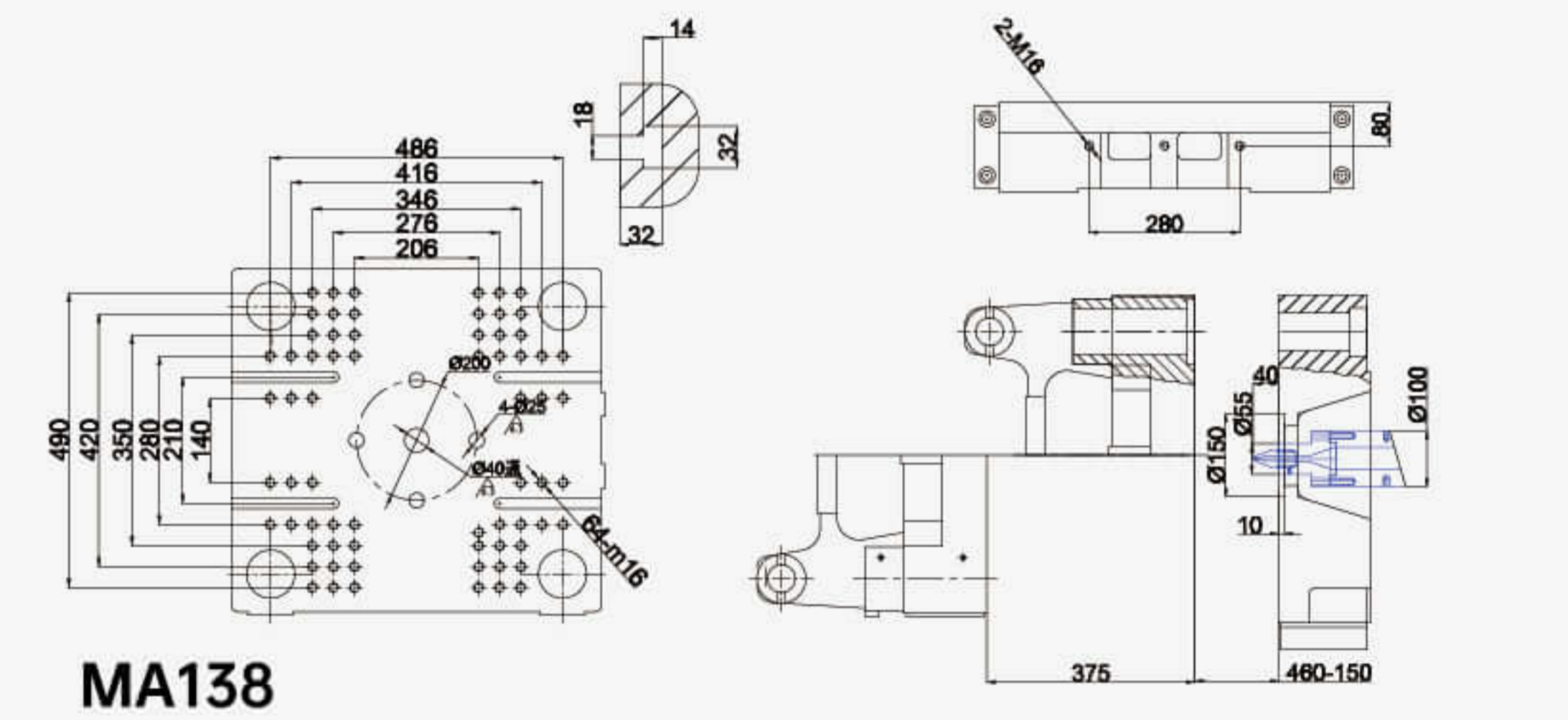
# 模板尺寸 PLATEN DIMENSION

规格	SPECIFICATION	UNIT	MA128			MA138			MA158			MA178		
注射装置	Injection unit		A	B	C	A	B	C	A	B	C	A	B	C
螺杆直径	Screw Diameter	mm	40	42	45	40	42	45	40	42	45	40	45	50
螺杆长径比	Lenath / Diameter Ratio	L/D	21	19	18.7	21	19	18.7	23.1	22	20.5	22.5	20	18
理论注射容积	Theoretical Shot volume	cm <sup>3</sup>	211	229	258	211	229	258	288.4	318	365.1	305	389	480
注射重量 (PS)	Injection Weight ( PS )	g	180	195	220	180	195	220	262	289	332	283	350	407
注射速率 (PS)	Injection Rate ( PS )	g/s	19.8	23	27	19.8	23	27				101	128	158
理论注射压力	Theoretical Iniection Pressure	Mpa	218	188	160	218	188	160	191.8	174	151.6	215	169	137
理论最高转速	Maximum Screw Speed	rpm	0-250			0-250			0-250			0-243		
锁模装置	Clamping unit													
锁模力	Clamp Tonnage	KN	1280			1380			1580			1700		
移模行程	Toggle Stroke	mm	375			390			400			430		
拉杆内间距	Space Between Tie Bars(HxV)	mm	415×375			420×420			430×430			490×470		
最大模厚	Max. Mold Height	mm	420			420			490			520		
最小模厚	Min. Mold Height	mm	150			150			150			150		
顶出力	Ejector Tonnage	kN	42			45			50			50		
顶出行程	Ejector Stroke	mm	120			120			138			138		
顶出杆根数	Ejector Number	piece	5			5			5			5		
其他	Others													
油压系统压力	Hydraulic system pressure	Mpa	17.5			17.5			17.5			17.5		
油泵马达功率	Pume Motor Power	KW	15			15			18.5			22		
电热功率	Heate Power	KW	9.75			9.75			15.2			15		
外形尺寸 (长×宽×高)	Machine Dimension(LxWxH)	m	4.4×1.2×1.8			4.4×1.2×1.8			4.70×1.35×2.02			5.04×1.35×2.15		
机器重量	Machine Weight	T	3.5			3.7			4.4			4.5		

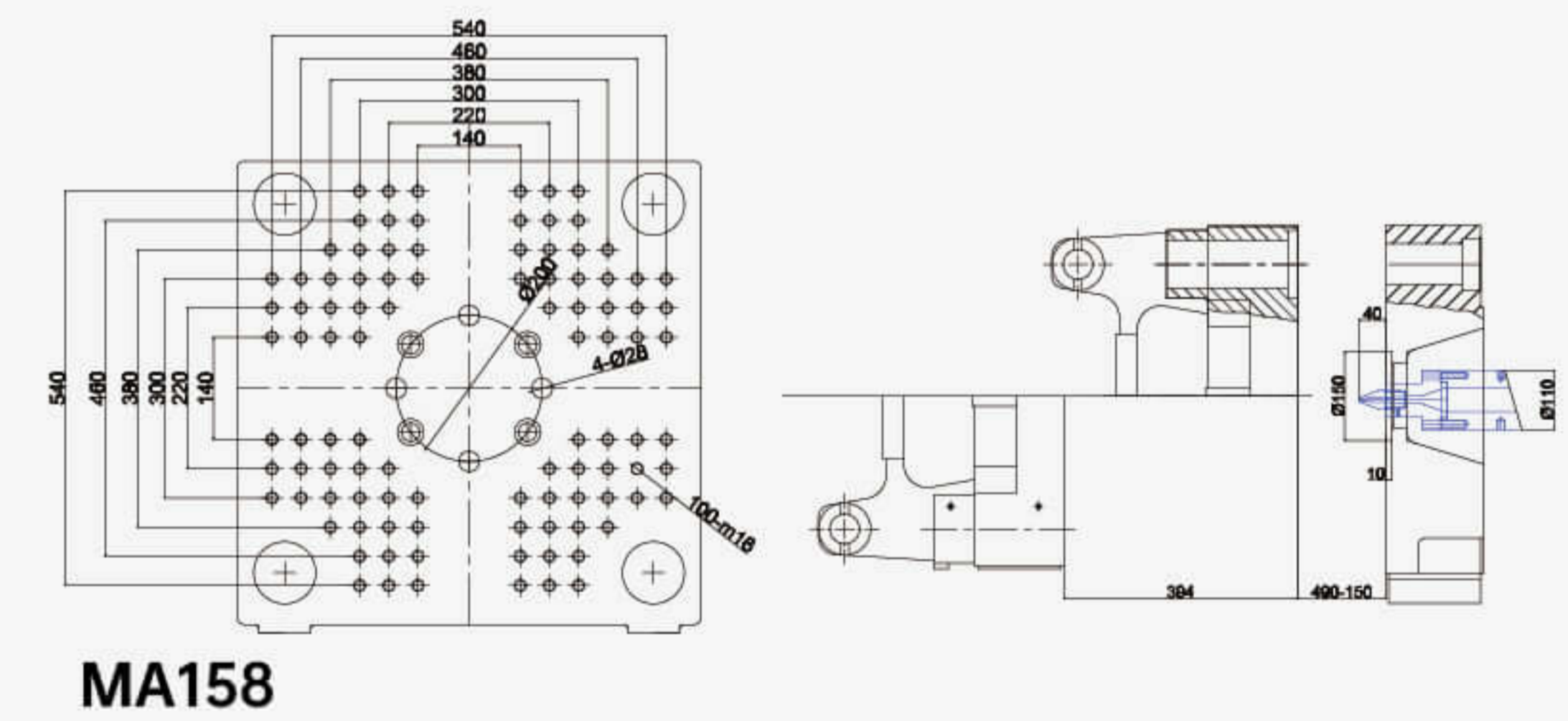
由于设计更新，上述规格如有更改，恕不另行通知。  
Due to design updates, the above specifications are subject to change without notice.



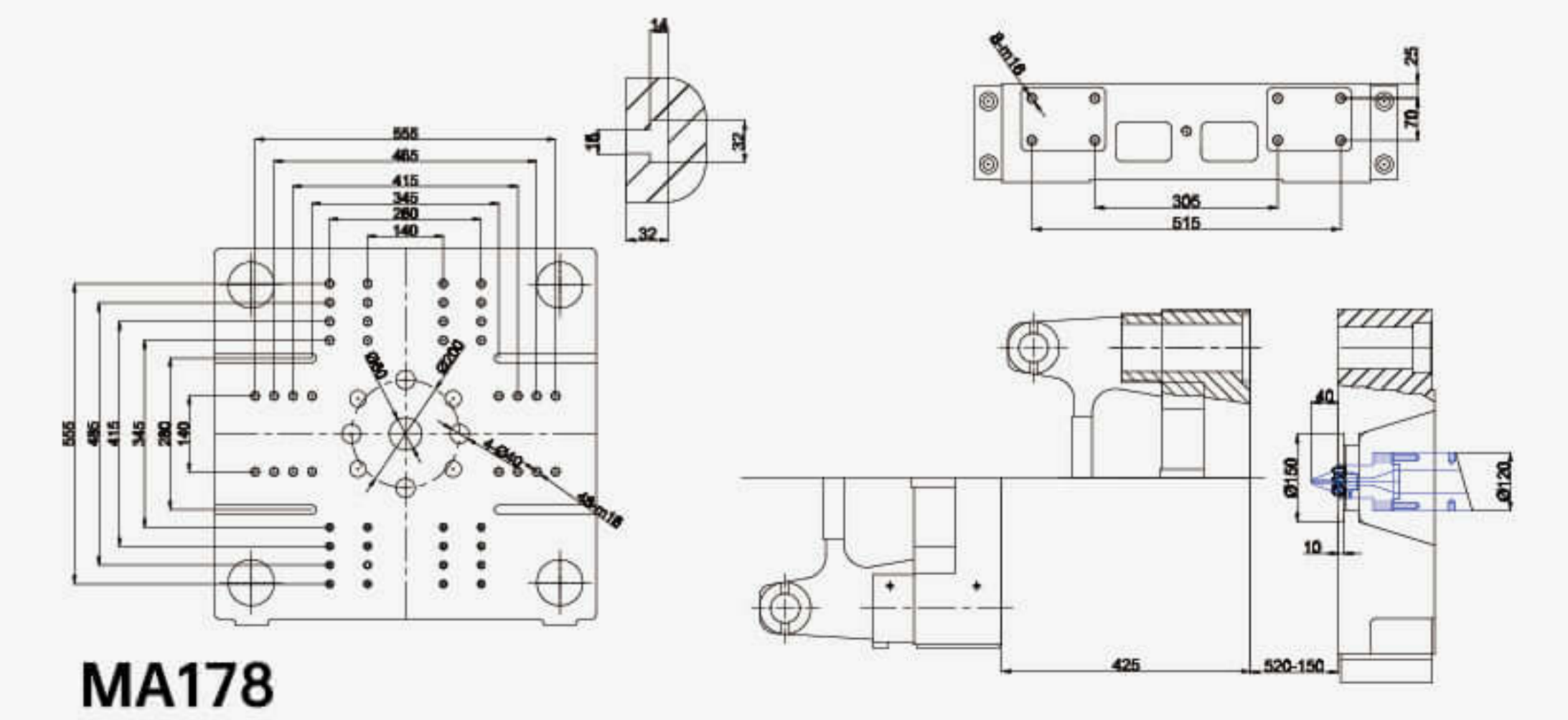
MA128



MA138



MA158

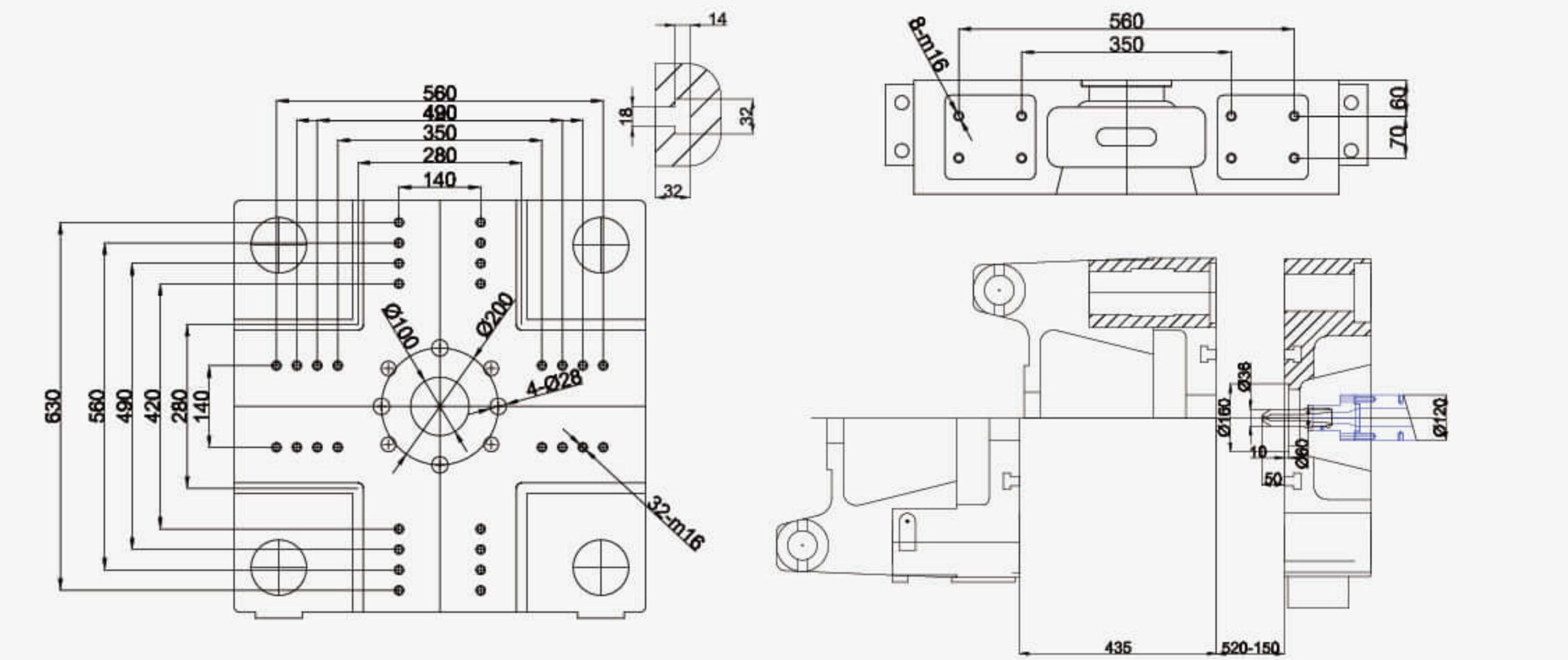


MA178

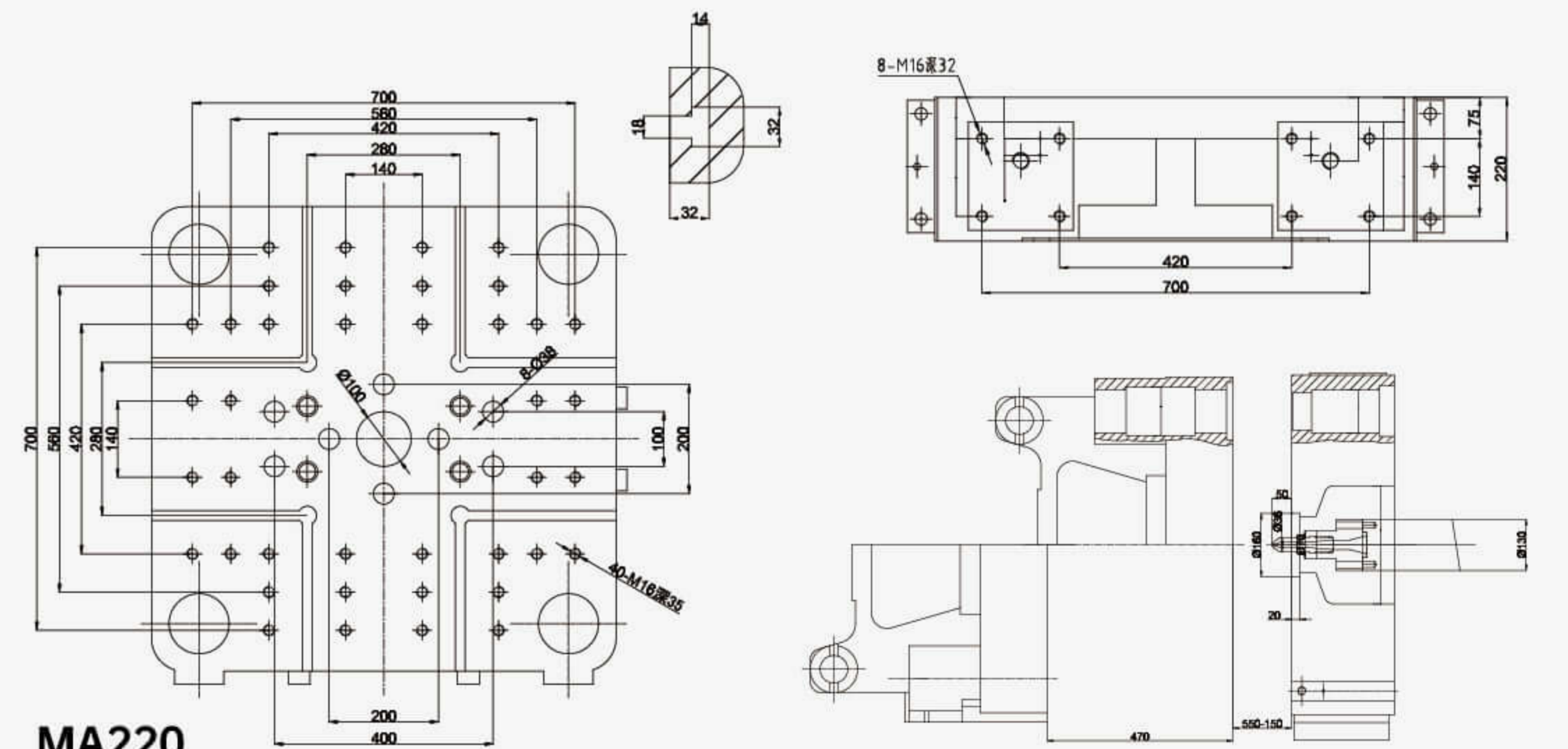
规格	SPECIFICATION	UNIT	MA180			MA220			MA250		
注射装置	Injection unit		A	B	C	A	B	C	A	B	C
螺杆直径	Screw Diameter	mm	40	45	50	45	50	55	50	55	60
螺杆长径比	Lenath / Diameter Ratio	L/D	22.0	19.5	17.6	22.3	20.1	18.3	22.0	20.0	18.3
理论注射压力	Theoretical Iniection Pressure	Mpa	215	169	137	190	154	127	215	178	149
理论注射容积	Theoretical Shot volume	cm <sup>3</sup>	282.6	357.7	441.6	389.5	480.8	581.8	588.8	712.4	847.8
注射重量 (PS)	Injection Weight ( PS )	g	265.6	336.2	415.1	366.1	452.0	546.9	553.4	669.6	796.9
注射速率 (PS)	Injection Rate ( PS )	g/s	112.2	142	175.3	138.5	171.0	206.9	157.4	190.4	226.6
塑化能力	Plasticzing Capacity	g/s	17.8	25.0	33.8	23.0	31.2	38.8	30.4	37.9	46.4
理论最高转速	Maximum Screw Speed	rpm	0-243			0-240			0-217		
锁模装置	Clamping unit										
锁模力	Clamp Tonnage	KN	1800			2200			2500		
移模行程	Toggle Stroke	mm	430			490			540		
拉杆内间距	Space Between Tie Bars(HxV)	mm	472 x 472			532 x 532			581 x 581		
最大模厚	Max. Mold Height	mm	520			550			580		
最小模厚	Min. Mold Height	mm	150			150			220		
顶出力	Elector Tonnage	kN	45.2			70.7			70.7		
顶出行程	Ejector Stroke	mm	142			142			150		
顶出杆根数	Ejector Number	piece	5			9			9		
其他	Others										
油压系统压力	Hydraulic system pressure	Mpa	17.5			17.5			17.5		
油泵马达功率	Pume Motor Power	KW	22			22			30		
电热功率	Heate Power	KW	9.6			14			16.5		
料斗容积 (PS)	Hopper Capacity	Kg	25			50			50		
外形尺寸 (长×宽×高)	Machine Dimension(LxWxH)	m	5.4 x 1.31 x 2.08			5.9 x 1.32 x 2.1			6.42 x 1.48 x 2.18		
油箱容积	Oil Tank Capacity	L	248			280			359		
机器重量	Machine Weight	T	5.3			6.9			8.3		

由于设计更新，上述规格如有更改，恕不另行通知。

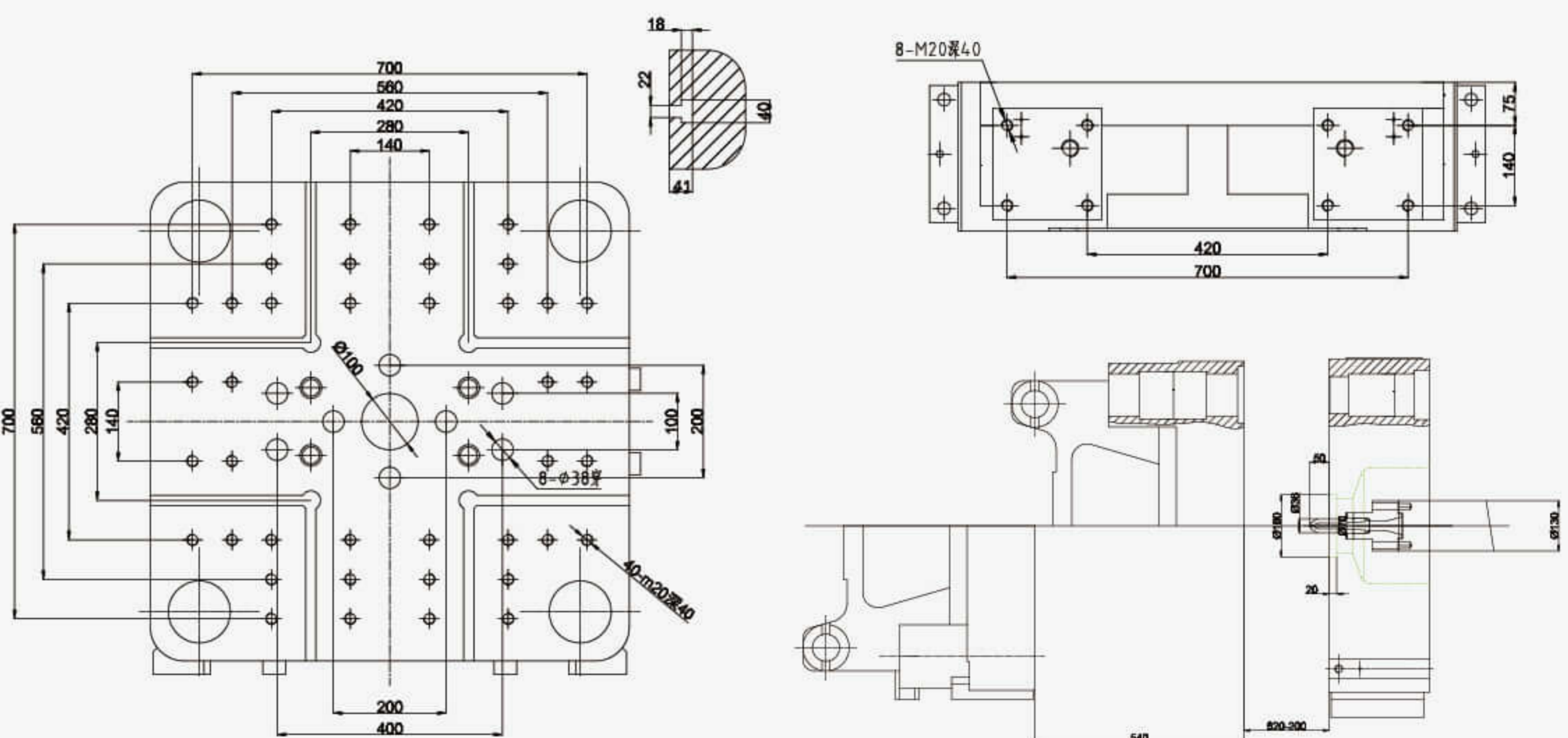
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MA180



MA220



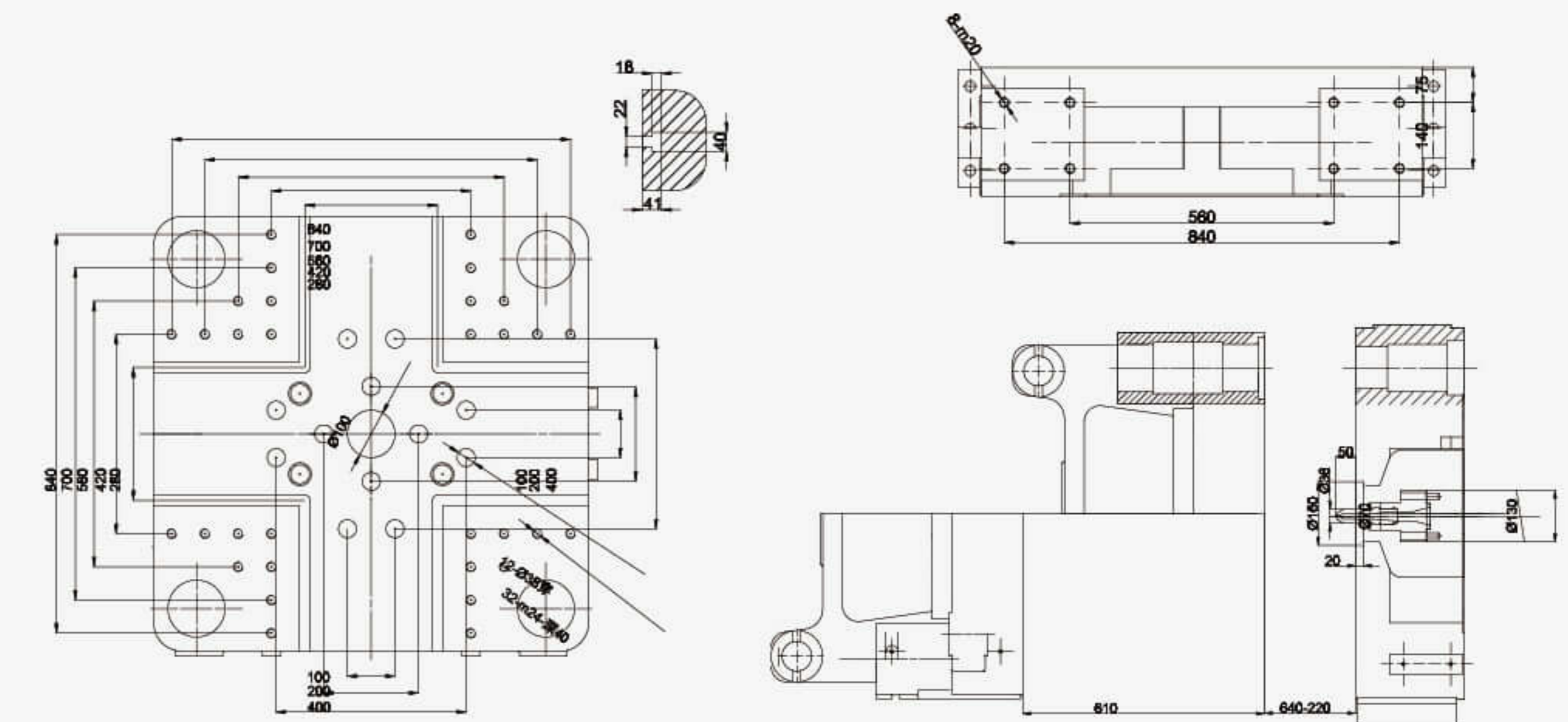
MA250

# 技术参数表 SPECIFICATIONS

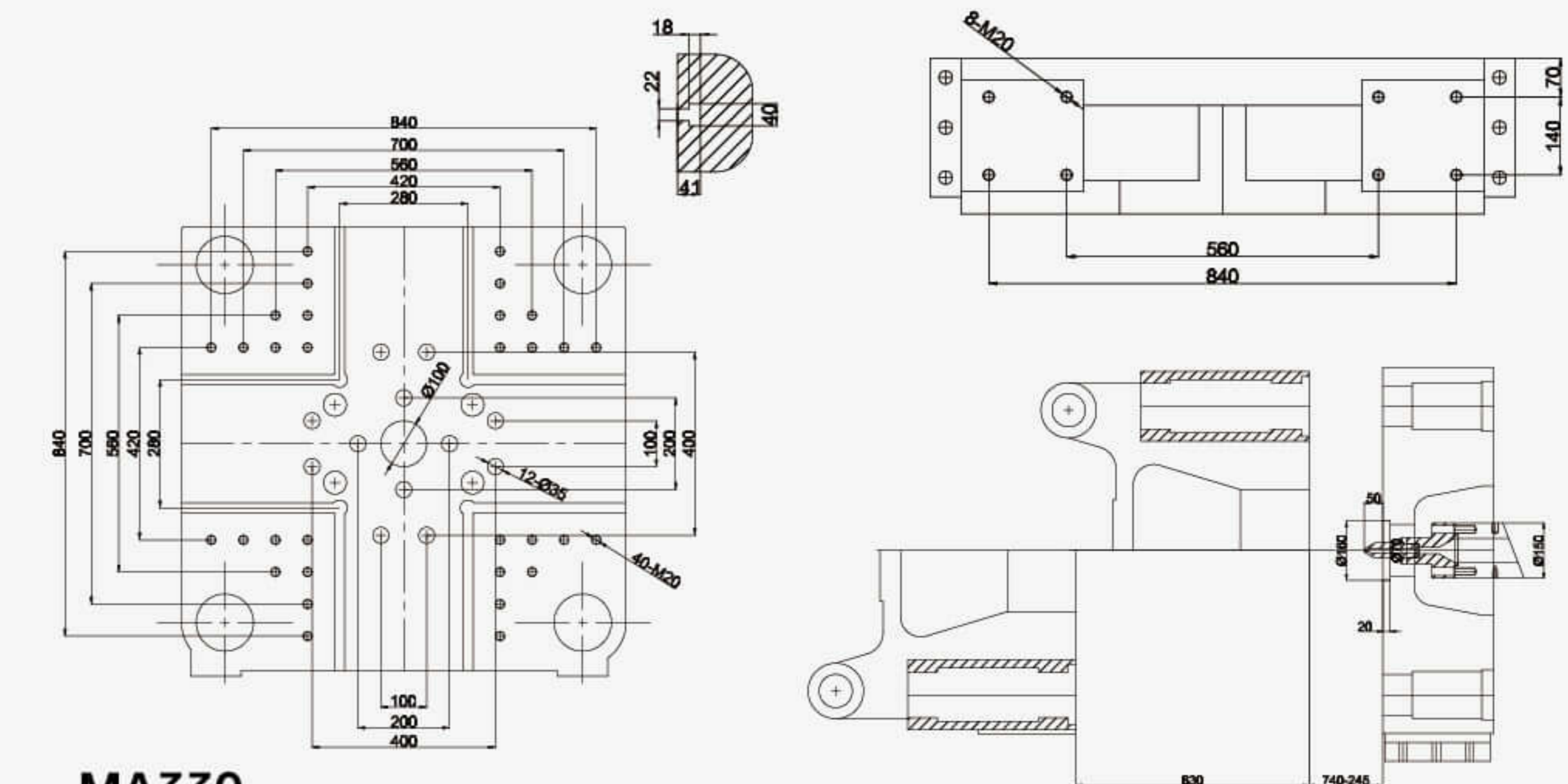
规格	SPECIFICATION	UNIT	MA300			MA330			MA420			
注射装置	Injection unit		A	B	C	A	B	C	A	B	C	D
螺杆直径	Screw Diameter	mm	55	60	65	60	65	70	65	70	75	80
螺杆长径比	Lenath / Diameter Ratio	L/D	21.7	19.9	18.4	21.7	20.0	18.6	21.5	20.0	18.7	17.5
理论注射压力	Theoretical Iniection Pressure	Mpa	219	184	157	213	182	157	211	182	158	139
理论注射容积	Theoretical Shot volume	cm <sup>3</sup>	712.4	847.8	995.0	990.5	1162.5	1348.2	1328.3	1540.5	1768.5	2012.1
注射重量 (PS)	Injection Weight ( PS )	g	669.6	796.9	935.3	931.1	1092.7	1267.3	11248.6	1448.1	1662.4	1891.4
注射速率 (PS)	Injection Rate ( PS )	g/s	206.1	245.2	287.8	211.5	248.2	287.9	258.7	300.0	344.4	391.9
塑化能力	Plasticizing Capacity	g/s	46.5	56.9	68.6	53.7	64.8	81.3	54.4	68.2	84.2	100.2
理论最高转速	Maximum Screw Speed	rpm	230			225			190			
锁模装置	Clamping unit											
锁模力	Clamp Tonnage	KN	3000			3300			4200			
移模行程	Toggle Stroke	mm	590			640			740			
拉杆内间距	Space Between Tie Bars(HxV)	mm	631 x 631			681 x 681			741 x 741			
最大模厚	Max. Mold Height	mm	640			750			730			
最小模厚	Min. Mold Height	mm	230			250			280			
顶出力	Elector Tonnage	kN	70.7			70.7			125.6			
顶出行程	Ejector Stroke	mm	152			165			183			
顶出杆根数	Ejector Number	piece	13			13			13			
其他	Others											
油压系统压力	Hydraulic system pressure	Mpa	17.5			17.5			17.5			
油泵马达功率	Pume Motor Power	KW	37			37			45			
电热功率	Heate Power	KW	17.8			20.8			24.8			
料斗容积 (PS)	Hopper Capacity	Kg	50			50			50			
外形尺寸 (长×宽×高)	Machine Dimension(LxWxH)	m	6.53 x 1.64 x 2.15			7.01 x 1.7 x 2.15			7.46 x 1.85 x 2.20			
油箱容积	Oil Tank Capacity	L	368			409			547			
机器重量	Machine Weight	T	11			13			15			

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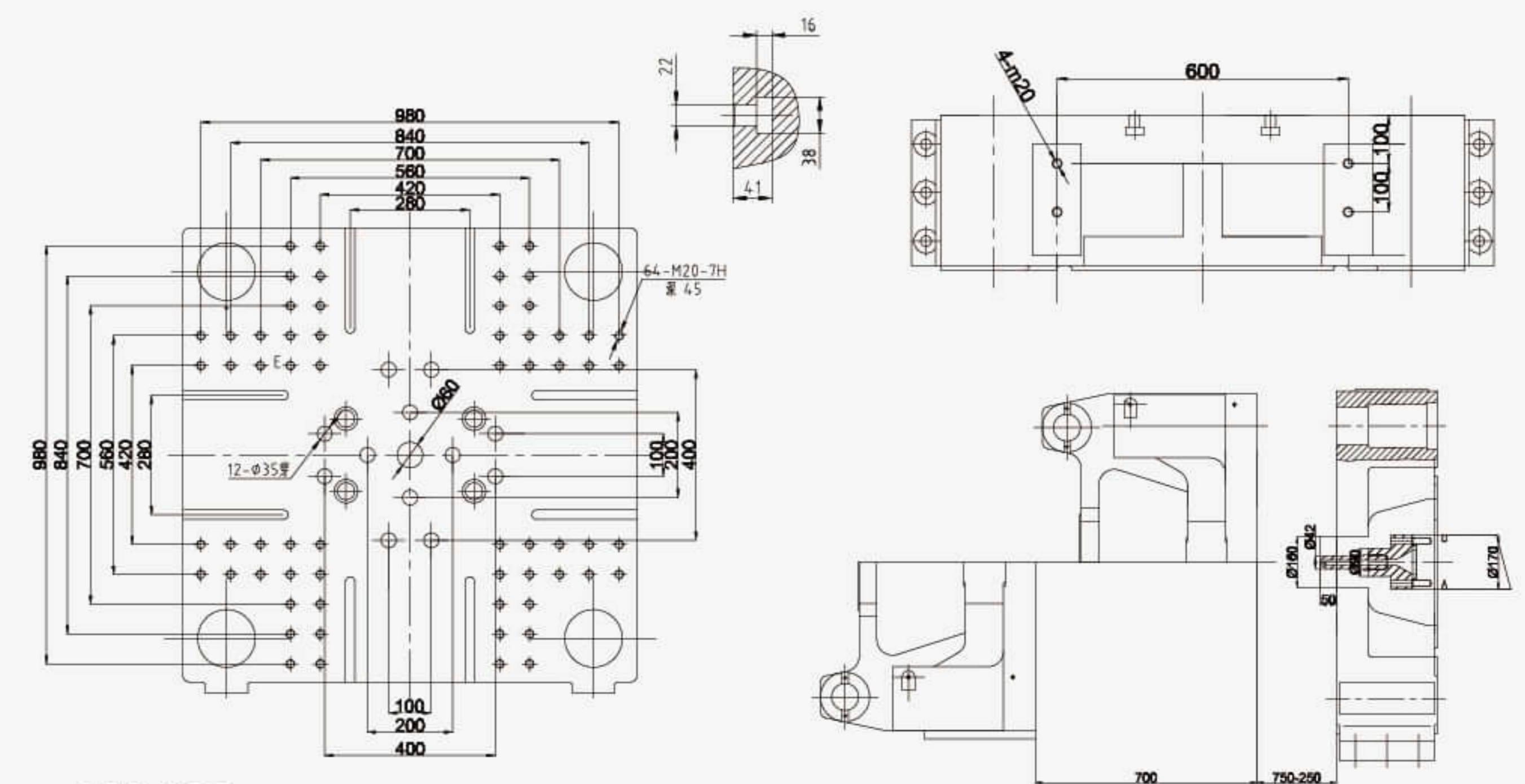
# 模板尺寸 PLATEN DIMENSION



MA300



MA330



MA420

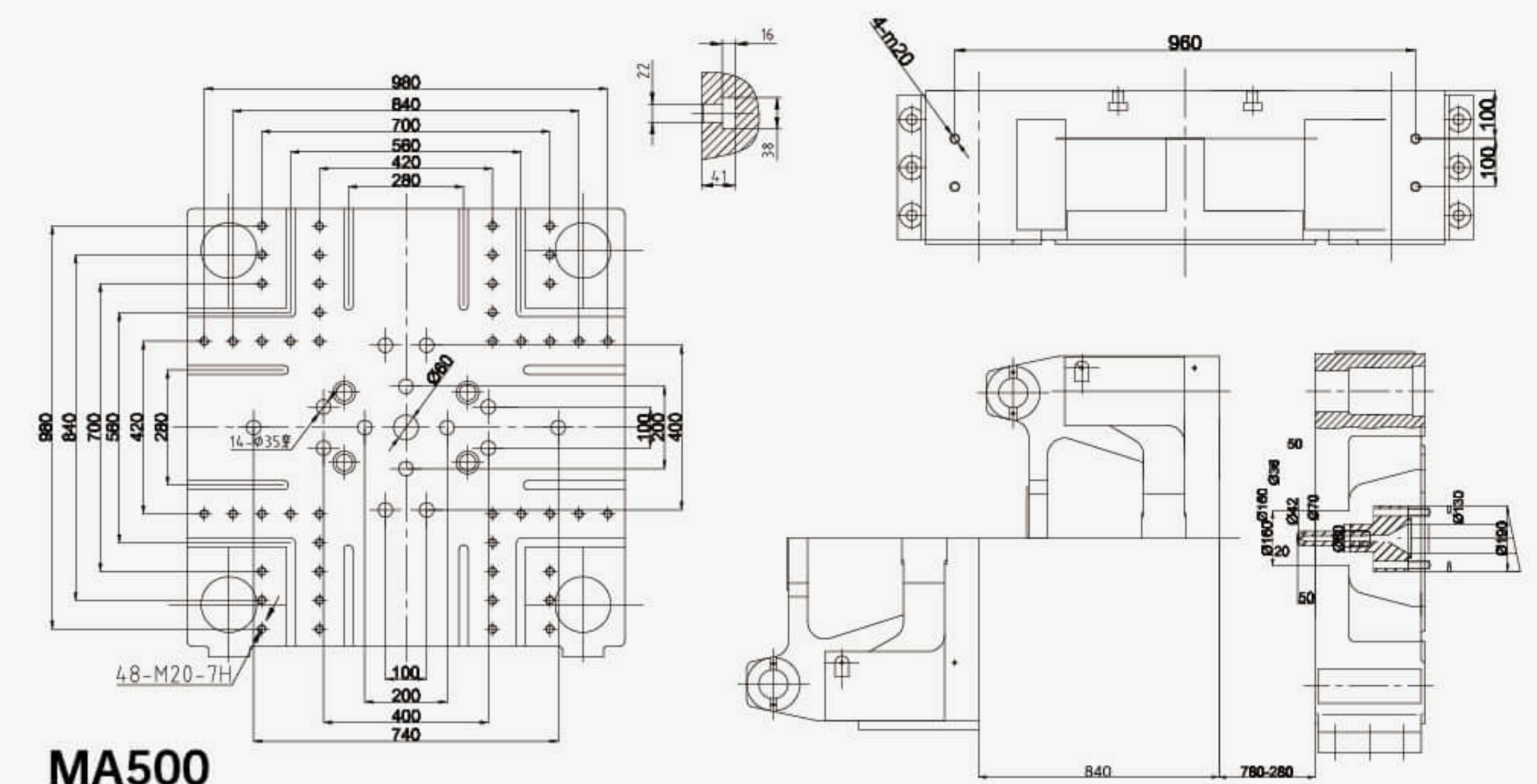
# 技术参数表 SPECIFICATIONS

规格	SPECIFICATION	UNIT	MA500				MA650				MA800			
			A	B	C	D	A	B	C	D	A	B	C	D
<b>注射装置</b>	<b>Injection unit</b>													
螺杆直径	Screw Diameter	mm	70	80	85	90	80	85	90	100	90	100	110	120
螺杆长径比	Length / Diameter Ratio	L/D	22.6	19.8	18.6	17.6	22.0	20.7	19.6	17.6	24.4	22.0	20.0	18.3
理论注射压力	Theoretical Injection Pressure	Mpa	194	149	132	117	184	163	146	118	211	171	141	119
理论注射容积	Theoretical Shot volume	cm <sup>3</sup>	1692.5	2210.6	2495.5	2797.7	2361.3	2665.7	2988.5	3689.5	3179.3	3925.0	4749.3	5652.0
注射重量 (PS)	Injection Weight ( PS )	g	1590.9	2077.9	2345.8	2629.9	2219.6	2505.7	2809.2	3468.1	2988.5	3689.5	4749.3	5312.9
注射速率 (PS)	Injection Rate ( PS )	g/s	358.6	468.4	528.8	592.8	448.7	506.5	567.8	701.0	516.1	637.2	771.0	917.6
塑化能力	Plasticizing Capacity	g/s	68.4	100.5	118.6	141.4	81.7	96.3	114.9	141.8	106.8	131.9	159.6	189.9
理论最高转速	Maximum Screw Speed	rpm		190				140				127		
<b>锁模装置</b>	<b>Clamping unit</b>													
锁模力	Clamp Tonnage	KN		4800				6500				8800		
移模行程	Toggle Stroke	mm		840				900				1040		
拉杆内间距	Space Between Tie Bars(HxV)	mm		820 x 800				880 x 880				1000 x 1000		
最大模厚	Max. Mold Height	mm		780				880				1000		
最小模厚	Min. Mold Height	mm		280				380				420		
顶出力	Ejector Tonnage	kN		125.6				180.9				212.3		
顶出行程	Ejector Stroke	mm		203				243				283		
顶出杆根数	Ejector Number	piece		17				21				21		
<b>其他</b>	<b>Others</b>													
油压系统压力	Hydraulic system pressure	Mpa		17.5				17.5				17.5		
油泵马达功率	Pume Motor Power	KW		55				55				37+37		
电热功率	Heate Power	KW		31				44				61		
料斗容积 (PS)	Hopper Capacity	Kg		50				100				100		
外形尺寸 (长×宽×高)	Machine Dimension(LxWxH)	m		8.15 x 1.99 x 2.36				9.57 x 2.2 x 2.7				10.9 x 2.5 x 2.8		
油箱容积	Oil Tank Capacity	L		615				668				949		
机器重量	Machine Weight	T		19				29				38		

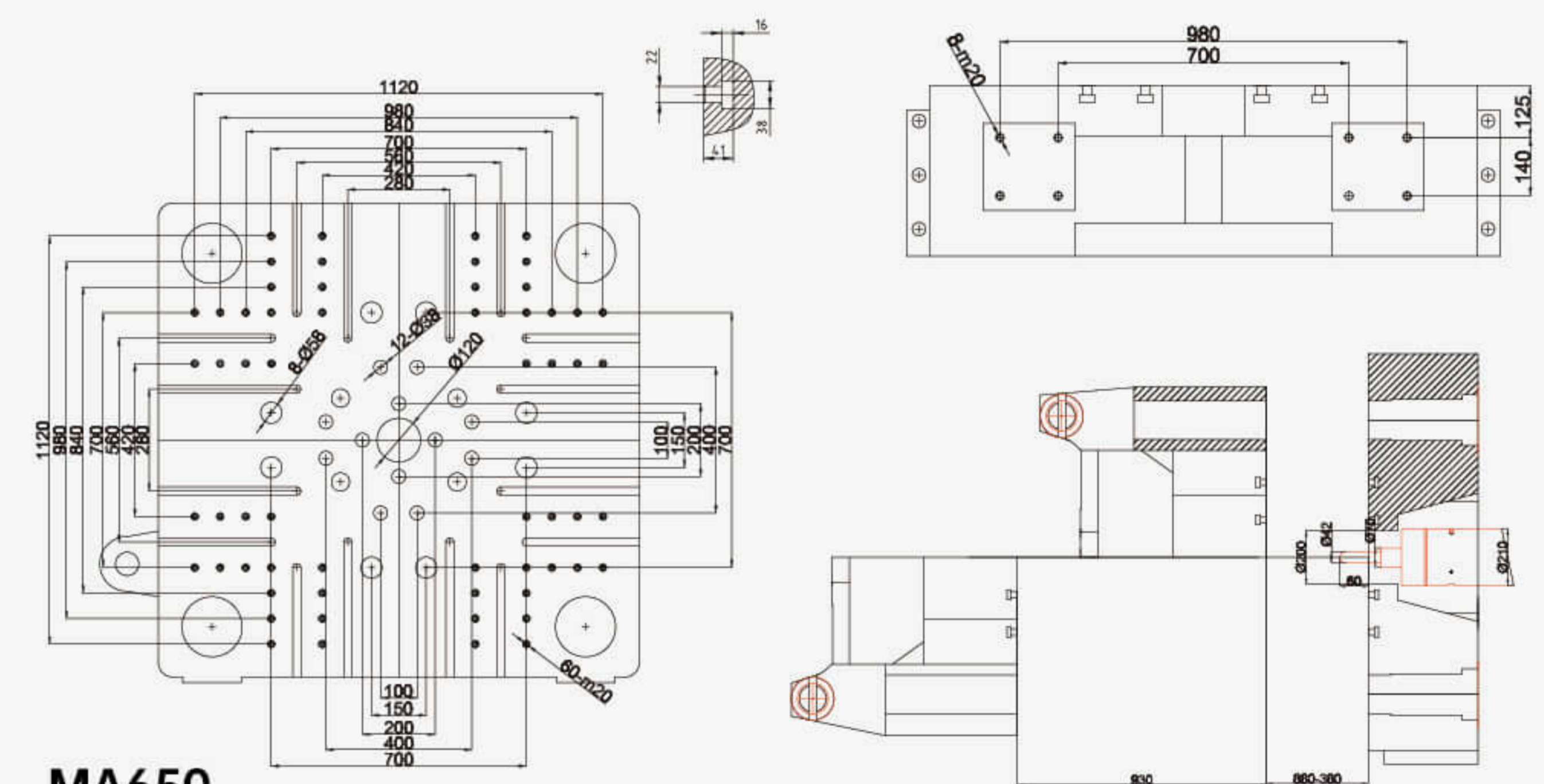
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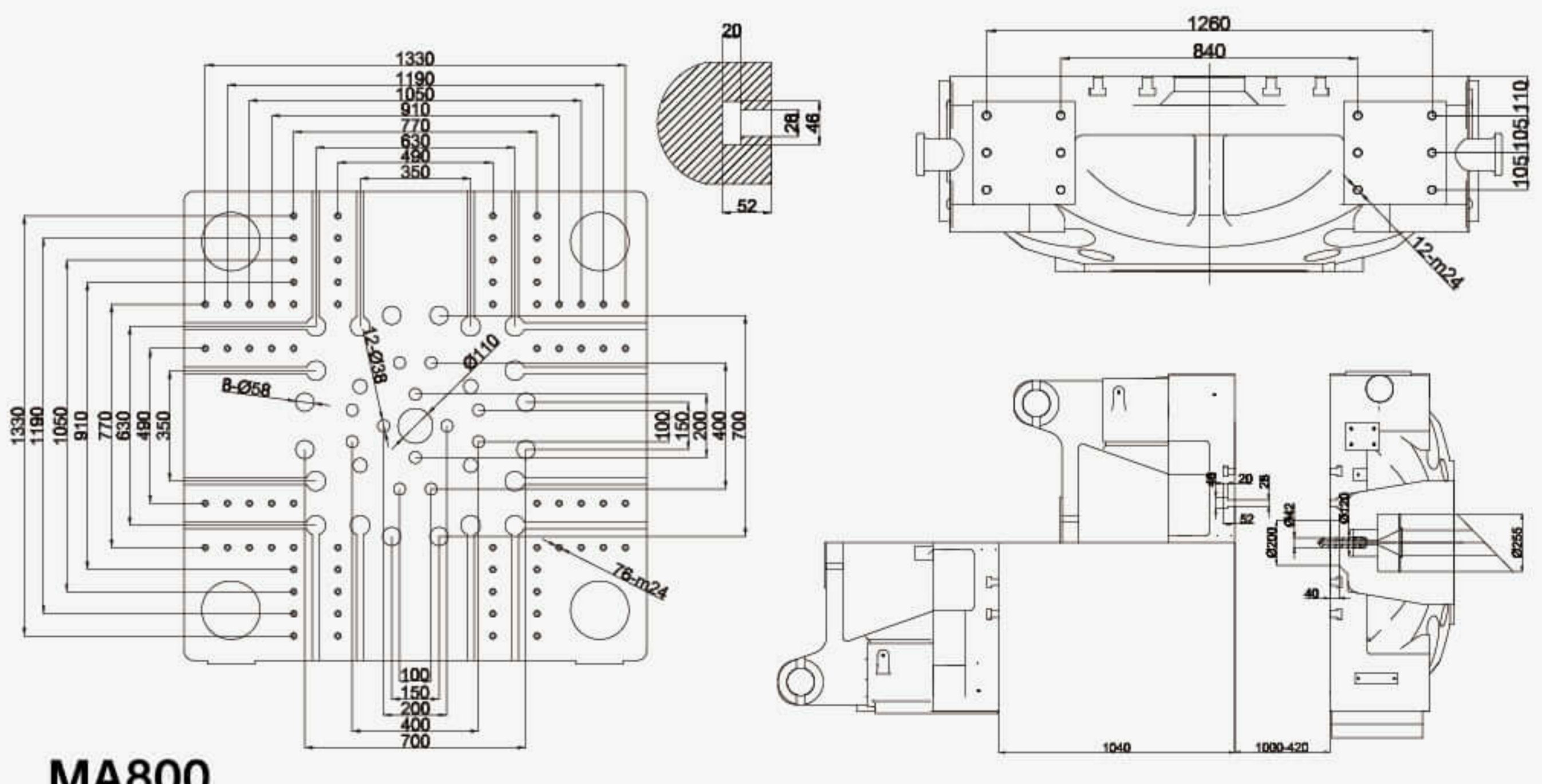
# 模板尺寸 PLATEN DIMENSION



MA500



MA650



MA800