



XRAISING

日进



RD系列 **更多组份注塑**
RD SERIES MORE Multicomponent Application Technology
MORE Colors, and Materials



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专注近20年的多组份成型□通过实践和学习，
利用专业的知识，希望能够给予客户提供更
好的解决方案或建议□

Focus on Multi-component about 20 years:
All experience comes from practice,
We hope to provide customers with good
solutions.

我们的理念

稳速前行，精进致远
每天进步一点点

Steady,fast ,and forward;
Make a little progress every day
and reach far.

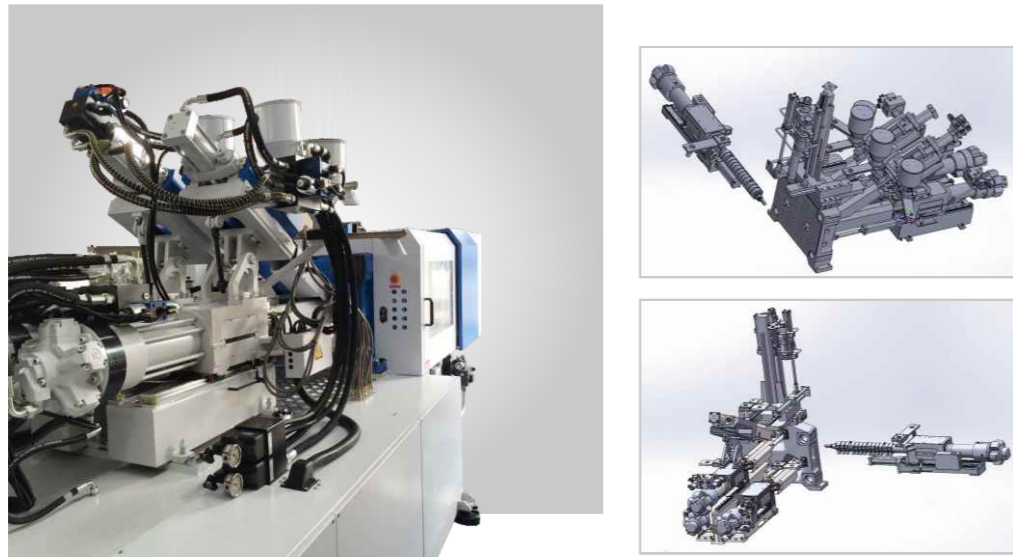


多组份概述：》》

Multi-component overview:

日进机械自2006年成立以来，一直致力于多组份注塑机的生产研发和制造，尤其在混色成型方面我们具有更多的实践和应用。近20年间，我们不断的参与到客户的研发过程之中，根据客人的需求，结合模具和成型工艺，帮助客户量身定制了很多非标多组份注塑机。通过这些专业应用的积累，也让我们具有很多行业的应用经验，这些应用可以让客户尽可能的少走弯路。日进机械会坚持多组份之路，突出个性化应用，用高品质高要求回馈客户。

Since established in 2006, Rijin company has been committed to the production, development and manufacturing of multi-component injection molding machine, especially we are professional in mixing color molding application. During 20 years' development, we have been involved in the research and development process of customers. To meet customized requirement, we make turnkey solution, product design consulting, mold and molding process technical support, delivered many non-standard multi-component injection molding machines worldwide. Our technical support helps to save development cost, shorter lead time of customer product launching to the market. We will continue our effort in the multi-component application development, to deliver high quality injection machine and rich experience to you.



为了方便客户，我们在新工厂成立了试模专属区域，可以提供中小型混色，转盘和转轴机的试模。技术服务和培训，我们对一定的专业市场可以提供交钥匙工程，甚至可以为客户提供短期小批量试生产，待客户确认后，再整体移交客户。针对很多非标定制多组份，我们会提供技术培训和后续开发的技术支持，进一步增进双向粘度。

For a better usage experience, we build mold trial workshop this year, provide mold test and training to customers in sandwich, clear-boundary multi-component application. We always make turnkey solution to customer, also offer trial production in our factory. And we will also follow customer's R&D process to support them from our experience to enhance their capacity in competition in the market.

- ◎ 射出单元的多样化组合，可以进行模块化叠加（目前可最多实现6组注射组合）
- ◎ 锁模单元可实现多种模具多组份方案的需求（转盘，转轴，对射叠模等）
- ◎ 液压电器控制的技术实现（围绕自动化，精度和生产效率）



Diversified combination of injection units can be realized (Up to six injection units on one machine)
The clamping unit can be also adjusted to meet various mold structure design in multi-component (Rotary table, rotary axis, Horizontal rotary table injection, etc.)
Complete options for different multi-component molding situation, one machine can meet more kinds of product production.

多组份-工艺多样化 (来自实战的应用体现)》》



按注塑产品的特点我们简单的划分为混色和非混色(分清色)。

混色,就是两种或多种颜色的混合,混色通过控制系统和专业复合射嘴,可以实现有规则和无规则的花纹,但颜色界限是模糊的,是互融的。混色工艺大部分是同一材质,但也有不同材质的夹层注塑案例,比如汽车杯垫,外面tpr软胶,里面夹层是pp,这样的工艺,增加了杯垫的硬度支撑,且不失软胶的手感。

混色多组份 Mixing color multi-component machine

机型特征 Feature	花纹特性 Stripe	花纹分类 Category	案例图解 Sample	
一个浇口及其延伸应用 (一 转二) One gate runner system	有规则花纹 Regulated	夹层 Sandwich		
		木纹 Wooden grain		
		渐变色 Gradually changing color		
		波纹 Ripple		
		等分 Equant		
	无规则花纹 Random	大理石纹 Marbling		
		混自然纹 Natural color		

分清色(非混色),这样的注塑产品,一般是同种材料或不同材料的组合,此成品注塑件有个突出特点,就是不同颜色或不同材料的界限很清晰,没有相互融合的痕迹。

Clear boundary type: it is for one material with different color or two different material to shape the different area of the product, the boundary is clear and regulated.



分清多组份 Clear boundary multiple components

机型特征 feature	工艺 Process	图示 Example	原理 Principle	可实现第二组份范围 Section of B material	
多个浇口 Multi-gates runner system	转盘 Rotary table		通过动模板转盘系统旋转180度,完成第二工位的第二组份的注塑 Transfer the A shot section to B position by rotary table	局部; 单面; Section; single-sided	
	转轴 Rotary Axis		通过机械手系统将预制件转移到模具内部或第二台机器的第二工位完成第二组份注塑 Transfer the A shot section to B position by rotary Axis	局部; 单面; 双面 Section; single side; double side	
	移穴 Transferring		通过机械手系统将预制件转移到模具内部或第二台机器的第二工位完成第二组份注塑 Transfer the A shot section to B position by robot	局部; 单面; 双面 Section; single side; double side	
	叠模 (对射) Stack mold (Horizontal rotary table)		开模时,通过转塔系统的水平转盘竖直旋转180度,再合模实现第二组份注塑 The horizontal table rotating by 180 degrees to realize A and B material injection	局部; 单面; Section; single-sided	
	退芯 Core back	模内实现 IMM+ Mold design		通过抽芯回退扩张型腔实现第二组份注塑 Core backward to create 2nd color space	局部; Section

多组份-技术多样化 (来自实战的应用体现)》》

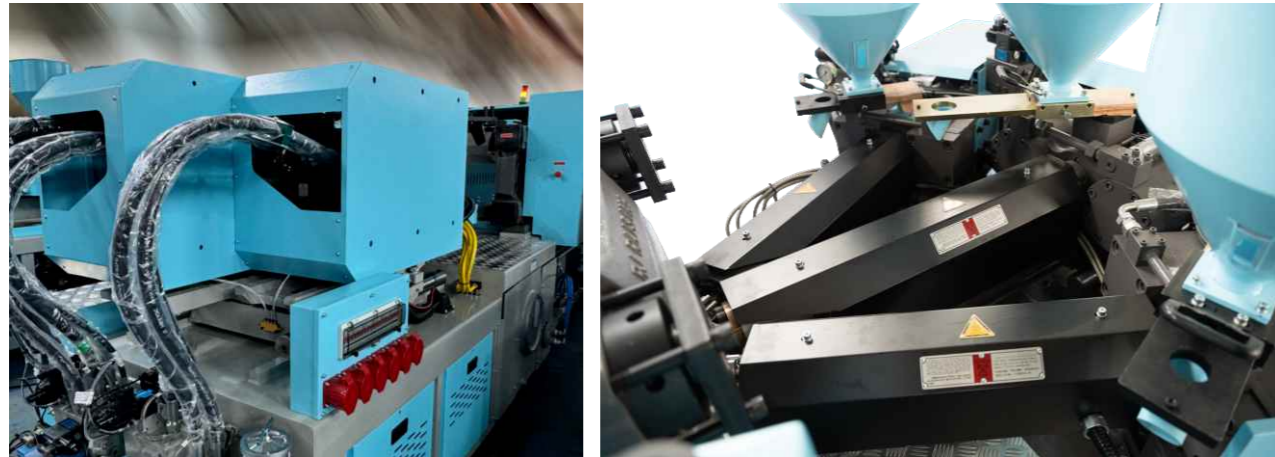
Multi-component: Enrich your production design (idea from customer service)

混色多组份射出排布:

射台结构可选择P, V两种形式

按注射单元布局, 我们目前可以做到混四色□三色和双色较常见。

根据混色市场的需求, 日进混色的技术也在不断革新□我们会凭借多年的工艺经验给予您一定的帮助。



Sandwich type multi-component machine layout:

Injection units layout include P and V shape

2, 3 even 4-component injection unit are available

Depend on the market trend, we will continue to develop our design synchronously, and we also help you to redesign, optimize your production design base on our rich experience.

分清多组份的注射排布:

注射单元的选择可选电动射出, 液压射出(单缸射出, 双缸射出)。

按照注射单元的布局, 我们把机型做了分类细化: P,L,V,M,W型, 我们目前在一台机器上最多做了4个注射工位布局, 三个工位的需求较多。



Clear boundary multi-component machine layout:

All electrical type injection unit, hydraulic type(single and double cylinder driven) injection unit are both available

From injection barrel layout, we define P,L,M,W type machines, maximum 4 injection barrels on one machine till now.

以双射出为标准, P, L, V, W, M的分别描述和图示

clear boundary multi-component machine

类型 Type	代号 Code	图示 Layout	
双射出 injection barrels	平行式 Parallel	P	
	水平直角 type	L	
	天侧直角 Vertical	V	
	背袱式 piggyback	W	
	对射式 Horizontal rotary table	M	

以此为基准, 我们可以延申更多应用, 有三组份, 四组份, 比如LW, VW等。
above layout, we create LW, VW mix designed machine.

电控系统：智能和精度 »

Controller: Intelligent and high accuracy

基于应用层面，从实践中总结经验，开发更适合多组份技术特点和操作的控制系统，做完整方案的控制中心。

亮点：

- 1.内芯强大，运算响应快速，更好兼容周边
- 2.界面简洁清晰（智能人机对话）
- 3.设置简单灵活（触摸屏）
- 4.高精度控制，射转保切换时间31.25微秒



	模数	总周期 [s]	开模终点 [mm]	射出终点 [mm]	射出起点 [mm]	射->保位置 [mm]	射出时间 [s]
1	4101	8.7	250.4	1995	90.16	19.98	0.30
2	4100	8.7	250.4	1996	90.18	19.98	0.31
3	4099	8.7	250.4	1992	90.18	19.98	0.30
4	4098	8.7	250.4	1994	90.17	19.98	0.30
5	4097	8.7	250.5	1996	90.18	19.98	0.30
6	4096	8.7	250.4	1994	90.17	19.98	0.30
7	4095	8.7	250.4	1995	90.17	19.98	0.30
8	4094	8.7	250.4	1996	90.18	19.98	0.31
9	4093	8.7	250.5	1994	90.17	19.98	0.30
10	4092	8.7	250.5	1995	90.17	19.98	0.30
计 14	最大值	8.7	250.5	1996	90.19	19.98	0.31
	最小值	8.7	250.4	1992	90.16	19.98	0.30
	平均值	8.7	250.4	1994	90.17	19.98	0.30

Integrate our customer service experience and multi-component process requirement to the controller program

1. High extendable capacity, high response speed, and good signal communication to auxiliary equipment
2. The interface simple and easy to understand
3. Easy to understand key board
4. High accuracy, dwell time from Injection to holding only 31.25μs

液压控制：高端和精密 »

Hydraulic system

亮点：

节能：标配精密伺服系统，避免功率浪费，较传统注塑机可以节能30%以上。

快速：高响应油路系统，标配射速130-150mm/s。

精密：伺服系统的精密特性，结合高响应阀或伺服阀，以及合理的管路设计，注射重复精度可达3‰。

稳定：日进采用国际大品牌液压元件供应商，确保机器的稳定性和耐用性。

清洁：采用喷塑工艺的可拆卸式油箱，管路100%清洗，封闭式独立油路车间，确保油路清洁干净。



Feature

Energy-saving: Hi-performance servo power system as standard option, high energy efficiency, 30% above energy saving to traditional powder system machine

Hi-response speed: hi-response hydraulic circuit, machine standard injection speed 130-150mm/s

Hi-accuracy: thanks to the servo power system, together with hi-response speed valve, or servo valve, and optimized hydraulic circuit, the repeatability is 3‰

Stability: Adopt famous brand components to ensure the stable performance, and longer work life

Clean: Painted and removable oil tank, oil pipe clean before assemble, closed assemble workshop to make sure there is no dirty to pollute the hydraulic system

混色（夹层）注塑机》 Color mixing (Sandwich) type machine

亮点：

混色，利用原有模具直接生产。

混色，主要体现在色彩和纹理上，实现差异化创新，提升产品附加值。

混色，替代原有的喷漆或者水转印等传统工艺，为企业降低成本。

混色，有我们多年的实战经验积累，我们可以为您提供成套解决方案，少走弯路。

混色，可以做单色，提高利用率。

混色，夹层技术，除了视觉带来的层次感，应用在厚壁产品上，用回料做夹层填充，降本。

混色，应用范围很广，涉及日用品，旅游用品，眼镜，电子，玩具，汽配，化妆品包装，家纺等很多行业。



Feature:

- Share same mold with current product
- Achieve varied stripe or color on product appearance, improving profit.
- Replacing traditional painting process, reduce production steps to decrease production cost
- Turnkey solution consul to improve production efficiency and save production cost
- This type machine can be used as single color product too, high flexibility
- To inject recycle material in the core of thick wall product to save money
- Wide applied in home application, tourist product, glass, electrics, toy, automotive, cosmetic industries

转盘式，转轴式多组份 »

Rotary table/shaft multi-component machine

亮点：

锁模五大特点：

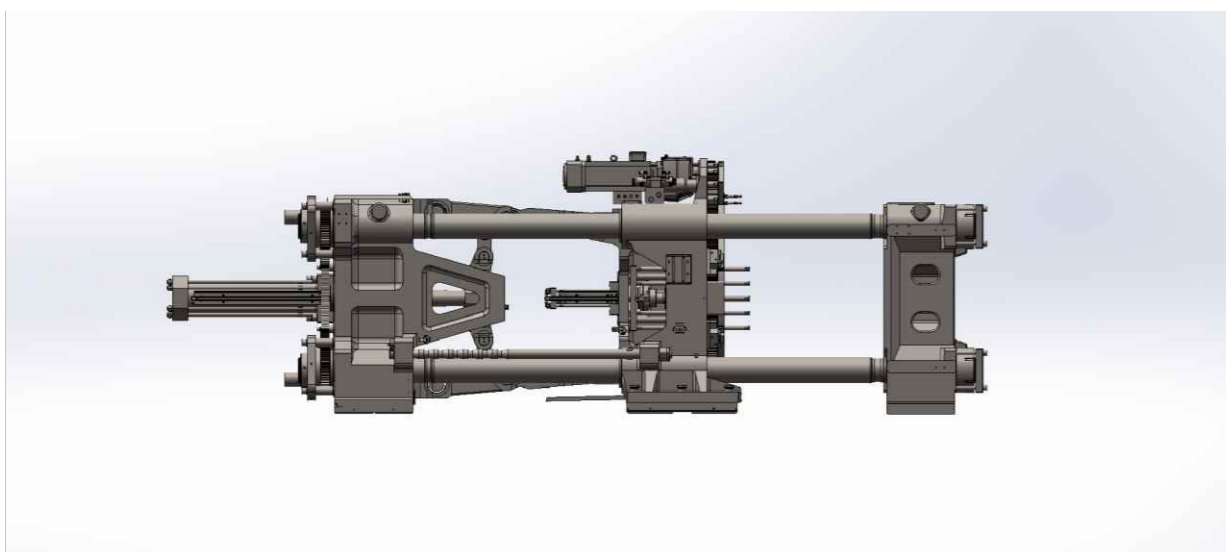
开模行程大，增加行程利于客户自动化取件，并增加机器的适用性。

容量大，适应客户不断提高的模具要求，如热流道等需要增厚的模具。

转盘直径大，增大双色模具的旋转直径。

模板厚，变形小利于生产精密产品。

动板增大运动导向支撑，包括滑脚加长，减少转盘下垂，保护模具。



Feature:

Five advantages:

- Bigger opening stroke, helpful to automation arrangement, and wider ranges of mold adaption
- Wider mold thickness ranges adaptable, as the popular hot runner system increase mold thickness
- Extended rotary table diameter for bigger mold
- Increased platen thickness to have bigger rigidity, less deformation, good for high precision part making
- Extended foot for moving platen, decrease rotary table slant from its weight, decrease mold ware-out in guide bar and precision insert, extend mold life time.

转盘的设计

转盘多组定位，及其到位检测，保障精准，安全有效；

模具冷却系统，多组冷却，通道大，且冷热分开；

转盘配备独立中子管路；

转盘伺服马达控制，快速精准，动作平顺，速度较常规液压马达提高30%；

转盘承载力较以前增大15%；

Rotary table design:

- Multi-positioning device, and in place confirmation, guarantee high accuracy position, protect mold;
- Cooling system, couples of cooling channels, extended size and individual design for cooling and heating circuit
- Individual channel for core
- Servo-driven rotary table is an option, fast and running more smoothly, 30% faster than hydraulic driven type
- Optimized rotary table capacity to mold weight by 15%

伺服转盘和转轴的旋转精度和时间：应用 伺服马达可以最多节约2秒；精度可以到

If using servo driven system to rotary table/Axis machine, the dry circle time save max. 2s, and rotary direction precision reach 0.001 degree.



射出的伺服电动选择

Servo motor



转轴的设计

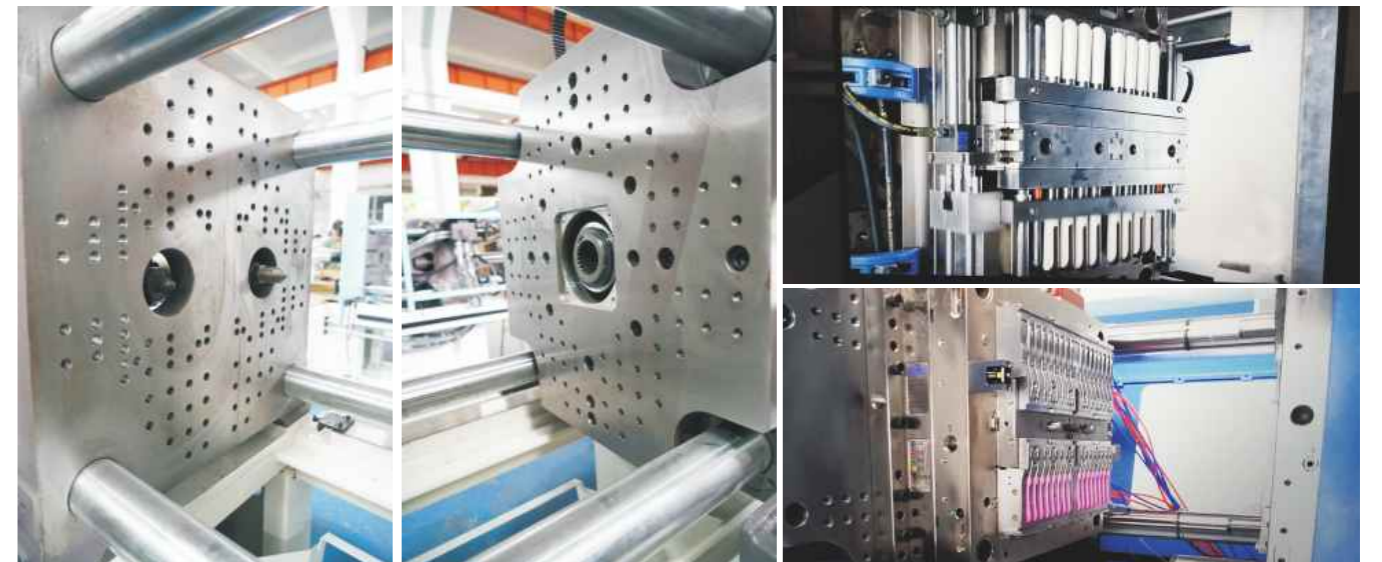
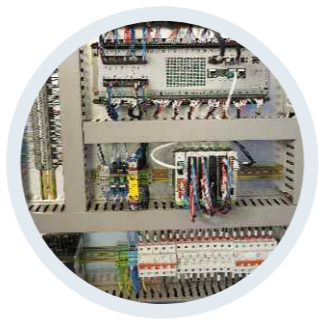
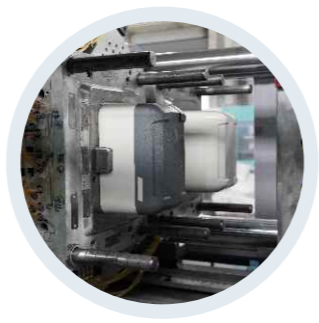
伺服控制的转轴系统，精度高，速度快；

转轴配独立冷却系统，采用耐腐蚀紫铜水套，结构设计方便维护；

增加转轴承载力，较前代增加10%；

Rotary axis machine feature:

- Servo driven axis, higher accuracy and faster rotary speed
- Individual cooling channel to axis, applying high anti-corrosion copper material, easy to maintenance structure;
- Optimized axis capacity to mold by 10%
- extended axis stroke for bigger mold ranges



平行转盘式参数 Multi-Component Injection Machine-Rotary Shaft

注射单元 INJECTION UNIT		RD170				RD220		RD280				RD300		RD400				RD470			RD560		RD800			RD1000								
		I		II		I	II	I		II		I	II	I		II		I	II	I	II	I	II	I		II		I	II					
		300		165		350	350	650		150		700		300		700		700		1360		700		1360	1360	3000		1360		3000		1360		
螺杆直径 Screw diameter	mm	32	36	24	28	32	38	40	45	24	28	40	45	32	36	40	45	40	45	55	50	40	45	50	55	50	70	75	50	70	75	50		
注射容积 Injection volume (theoretical)	cm ³	121	153	64	74	141	170	276	350	50	68	251	318	121	153	251	318	251	318	653	540	251	318	393	653	540	1347	1545	540	1347	1545	540		
注射重量 (PS) Injection weight(PS)	g	110	139	58	67	128	155	252	328	45	62	229	289	110	139	229	289	229	289	595	491	229	289	357	595	491	1226	1407	491	1226	1407	491		
注射压力 Injection pressure	MPa	246	195	258	223	246	174	236	186	308	226	280	221	246	195	280	221	280	221	208	253	280	221	180	208	253	223	195	253	223	195	253		
注射速率 Injection rate (PS)	cm ³ /s	123	156	73	85	123	174	160	203	58	79	171	216	123	156	171	216	171	216	307	254	164	208	256	307	254	460	480	254	460	480	254		
注射线速度 Max.injection speed	mm/s	153.3		137.9		153.3		127.7		143.7		135.8		153.3		135.8		153.3		130		147.4			130		119.5		129		119.5		129	
注射行程 Injection stroke	mm	150		120		175		220		110		200		150		200		150		275		150			275		350		275		350		275	
合模单元 CLAMPING UNIT																																		
锁模力 Clamping force	KN	1700				2200		2800				3000		4000				4700			5600		8000			10000								
转盘容模直径 Diameter of rotary platen	mm	825				745		1080				1120		1240				1340			1400		1530			1730								
模具中心距 Nozzle center distance	mm	420				200(250)		500				500		560				650			650		650			720								
模具数量 Mould sets	set	2				1		2				2		2				2			2		2			2								
移模行程 Clamping stroke	mm	410				490		500				460		600				630			680		800			1150								
拉杆内间距 Dist. between tie bars (H×V)	mm/mm	700×440				530×530		920×570				970×550		1100×620				1180×720			1200×660		1300×800			1280×1150								
模厚 Mold height	mm	200-550				200-550		200-650 (原600)				200-650		200-700				300-720			320-900		500-1050			550-1300								
顶出行程 Ejector stroke	mm	180(凸出转盘面90)				175(凸出转盘面90)		210(凸出转盘面120)				215(凸出转盘面120)		215(凸出转盘面120)				215(凸出转盘面120)			260(凸出转盘面150)		275(凸出转盘面150)			275(凸出转盘面150)								
顶出力 Ejector force	KN	33×2				28×2		33×2				48×2		62×2				77×2			110×2		110×2			110×2								
其他 OTHERS																																		
油泵动力 Max. Pump Pressure	KW	18.5	15	18.5	15	22	13	22	13	22	13	22	13	22	13	22	22	37	22	37	37	37	37	55	37	55	37	55	37					
电热功率 Heater power	KW	9.9	6.9	9.9	9.9	12.5	6.9	12.5	9.9	12.5	9.9	12.5	12.5	15	12.5	12.5	12.5	15	12.5	15	15	15	15	18	21	12.5	18	21	12.5					
机器外形尺寸 Machine dimension (L×W×H)	mm×mm	5.78×1.6×1.95				5.9×1.55×2.0		6.6×2×2				6.9×2.0×2.2		7.8×2.2×2.4				8.2×2.4×2.4			8.6×2.6×2.5		9.5×2.7×2.5			10.5×2.9×2.6								
油箱容积 Oil tank	L	300				300		350				400		450				700			750		850			1100								
机器重量 Machine weight	t	8.3				9		12				15.5		16				24			28		38			48								

转轴式双色机 (窄模板) Rotary shaft (Special Model)

项目 ITEM		UNIT	RD-220-Z		RD-280-Z			
射出单元 INJECTION UNIT	螺杆直径	Screw Diameter	mm	45	35	45	40	
	射出行程	Injection Strokes	mm	225	175	225	175	
	理论射出容积	Theoretical Shot Volume	cm3	358	168	358	198	
	理论射出量	Shot Weight(PS)	g	326	153	326	181	
	射出压力	Injection Pressure	kgf/cm2	1806	1780	1806	1575	
	射出率	Injection Rate	cm3/sec	183	103	183	122	
	熔胶量	Plasticizing Capacity(PS)	g/s	28	15	28	22	
	料管中心距离	Distance Between Barrel Center	mm	300		300		
夹模单元 MOULD CLAMPING UNIT	锁模力	Mould Clamping Force	ton	220		250		
	夹模行程	Mould Clamping Strokes	mm	490		580		
	模厚	Mould Thickness	mm	200-550		200-630		
	大柱内距	Distance Between Tie-Bars(H*V)	mm	530*530		630*580		
	模盘尺寸	Mould Platen(H*V)	mm	835*835		9205*870		
	转轴行程	Ejector Stroke	mm	80		130		
电气单元 ELECTRICAL EQUIPMENT	泵浦驱动最大功率	Max. Pump Driving Motor	Kw	33		11		22
	温度控制器	Temperature Controller	(range)set	2-(0-400°C)*5		(0-400°C)*5		(0-400°C)*5
	电热容量	Heater Capacity	Kw	19.32		9.66		5.47
其他 OTHERS	机器尺寸	Machine Dimensions(L*W*H)	m	6.2*1.6*2.0		6.5*1.7*2.1		
	油箱容量	Oil Tank Capacity	L	400		450		
	机器重量	Machine Weight	ton	9		10		
最大系统压力	Max. System Pressure	kgf/cm2	160		160			

本公司保留修改技术参数的权利, 如有更改, 恕不另行通知。
We reserve the right to make changes as a result of further technical advantages.

转轴式双色机 Rotary shaft

项目 ITEM		UNIT	RD-170-Z				RD-300-Z				RD-400-Z			
射出单元 INJECTION UNIT	螺杆直径	Screw Diameter	mm	25	28	30	35	30	35	40	45	50	40	
	射出行程	Injection Strokes	mm	130				200				300	200	
	理论射出容积	Theoretical Shot Volume	cm3	64	95	106	144	106	144	251	318	501	191	
	理论射出量	Shot Weight(PS)	g	58	86	96	131	146	131	229	289	456	173	
	射出压力	Injection Pressure	kgf/cm2	2981	2256	2027	1489	2027	1489	1619	1279	2744	1887	
	射出率	Injection Rate	cm3/sec	58	76	83	113	83	113	212	269	236	164	
	熔胶量	Plasticizing Capacity(PS)	g/s	6	9	11	15	11	15	23	29	31	19	
	料管中心距离	Distance Between Barrel Center	mm	350				400				400		
	夹模单元 MOULD CLAMPING UNIT	锁模力	Mould Clamping Force	ton	170				300				400	
		夹模行程	Mould Clamping Strokes	mm	420				460				650	
模厚		Mould Thickness	mm	200-580				250-700				250-700		
大柱内距		Distance Between Tie-Bars(H*V)	mm	700*440				970*550				1100*630		
模盘尺寸		Mould Platen(H*V)	mm	930*680				1250*830				1450*950		
转轴行程		Ejector Stroke	mm	120				160				180		
电气单元 ELECTRICAL EQUIPMENT	泵浦驱动最大功率	Max. Pump Driving Motor	Kw	36.4				56.6				36.7		36.7
	温度控制器	Temperature Controller	(range)set	2-(0-400°C)*5				2-(0-400°C)*5				(0-400°C)*6		(0-400°C)*5
	电热容量	Heater Capacity	Kw	10.94				19.32				18.2		9.66
其他 OTHERS	机器尺寸	Machine Dimensions(L*W*H)	m	5.5*1.75*1.95				7*2*2				8.1*2.5*2.2		
	油箱容量	Oil Tank Capacity	L	350				450				700		
	机器重量	Machine Weight	ton	7.5				15.5				19.5		
	最大系统压力	Max. System Pressure	kgf/cm2	160				160				160		

材料适应性和粘结强度

Material adhesion performance to each other

多组份注塑的材料必须满足两个基本条件: 粘合相容和工艺相容。本表列出了主要材料组合的可行性搭配, 如果依旧无法得到满意的粘结强度, 可适当使用添加剂改善相容性。

材 料	热塑性													硬/软复合物														
	ABS	ASA	CA	EVA	PA 6	PA 6.6	PBT	PC	PE	PET	PMMA	POM	PP	PPO mod.	PS	PSU	Plasticised	SAN	TPE-A	TPE-E	TPE-S	TPE-U	TPE-V	EPDM	NR/SBR	SBR	LSR	
ABS																												
ABS/PC																												
ASA																												
CA																												
ENA																												
PA 6																												
PA 6 (mod. +25 % GF)																												
PA 6.6																												
PA 6.6 (mod. +25 % GF)																												
PA 6.12																												
PA 12 (mod. + 25 % GF)																												
PBT																												
PC																												
PC/PBT																												
PE																												
PET																												
PMMA																												
POM																												
PP																												
PPO mod.																												
PPE mod.																												
PS																												
PSU																												
Pigid PVC																												
SAN																												
TPE-E																												
TPE-U																												
BMC																												
EPDM																												
NR																												
SBR																												
LSR																												

■ 粘附性良好 ■ 粘附性较差 ■ 无粘性
M 粘附性改良 S 硫交联 P 过氧化物交联