

JEM SERIES

All Electric Servo Drive
Injection Molding Machine



JSW Hiroshima Plant

JSW 株式会社 日本製鋼所
THE JAPAN STEEL WORKS, LTD.



JSW Injection Molding
Machinery Division

J-EM, the All Electric Servo Drive

EM是在重视性价比的同时,又可以稳定成形的中小型电动注塑成形机。由于EM系列产品种类齐全,中小型电动注塑成形机在选择方面就变得丰富多彩,扩大了对应产品要求的最佳机械选择幅度。

由于有惊人的 $62\mu\text{s}$ 高速伺服控制回路实现了超高精度和稳定的质量。

The marvelous 62 micro second high-speed servo control circuit attains a new high in accuracy and stable quality levels

注塑速度在160mm/s时的切换位置的波动情况比较
Comparison of variations in the transfer position at 160 mm/s injection speed



继承了受到高度评价的SYSCOM系列控制器的操作性,升级到SYSCOM控制器。

Upgraded SYSCOM3000

- 将大型15英寸TFT彩色液晶画面纵向设计。
- 语言有中国语、英语和日语标准装备。
- 内存存储器可以储存120个注塑成形参数,外部存储器(USB Flash Memory)能够储存操作1,000个注塑成形参数。



- A vertically arranged large 15 inch TFT color LCD screen.
- Languages are selectable from Chinese, English and Japanese.
- Storage of molding conditions: 120 conditions can be stored in internal memory and 1,000 conditions stored in external USB memory.

由于有坚固的锁模装置,实现了高速循环成形。

The robust clamping unit ensures fast-cycle molding

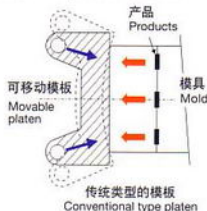
通过采用平压模板构造

Flat Press Platens Mechanism

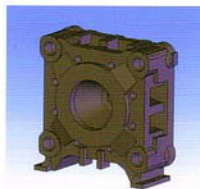
- 通过采用平压模板(Flat Press Platens)构造最大限度地减少成品壁厚不均匀现象。
- The flat press platen structure enables minimizing of wall-thickness fluctuation of molded products.

由于模板中心变形而增加了中心产品的重量
The weight of the product processed in the central section of mold increases due to the deformation of platen in the center.

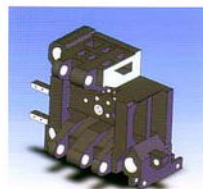
将锁模力向模板整体均一分散
Mold clamp force is uniformly distributed to the entire surface of the platen.



- 考虑到盘面的载重均匀分布,对机盘整体设计为箱体构造,以达到彻底轻量化,高刚性的目的。
- This design has achieved weight savings together with high rigidity characteristics considering well balanced load distribution of the platen surface. This is accomplished by utilizing a box construction of each platen.



固定模板 / Stationary platen

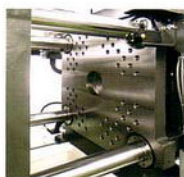


可动模板 / Movable platen

宽幅度的模板

Wide platen

- 横向(H)导杆间隔扩大到本公司旧系列机器的上1个等级的尺寸,因而可以安装宽幅的模具。
- The horizontal tie bar distances are extended further than conventional machines to allow for wider molds.



适应于顶针强制拉回模具

Ejector Tie-down Accessibility to Clamp area has been opened up

- 为了容易进行注塑机的顶针和模具的顶针板连接工作,将顶出装置开口部扩大。
- The opening is made larger to allow the ejector mechanism in the mold to be easily tied to the knockout plate on the machine.



across the border



The EM model is the small and medium size electric servo drive injection molding machine that results in a stable molding operation and efficient cost performance. The wide variety of AD and EM series allows selection of the model most suited to the requirements of the application.

JSW独有的注塑控制

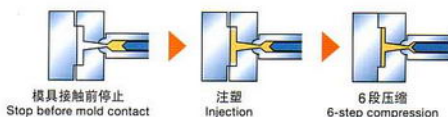
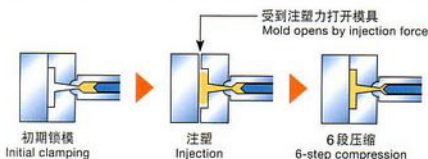
JSW's original injection control

电动肘节方式注塑压缩成形 (专利1744469)

Injection Compression Molding

- JSW电动肘节式注塑压缩成形功能以直压式注塑成形机之10倍以上的精度能够控制模具位置。
- The JSW injection compression molding feature enables the mold position to be controlled to accuracies over 10 times that of direct-pressure molding.

■ A方式(A1~A6、A7<选配件>) / A-mode (A1-A6, A7 <option>) ■ B方式(B1·B3) / B-mode (B1 and B3)



IWCS控制 (Injection Weight and Cushion Stability) (专利3529771)

IWCS Control

为了每次稳定计量密度, 装备有计量后使螺杆先端部贮存的熔化树脂密度再安定的控制机能。能够抑制产品总量与产量的偏差这是JSW独有的控制技术。

A patented control that stabilizes the density of the molten resin stored at the tip of the screw on every shot. This technology can minimize the variance in product weight.

计量完成后, 为了使负载感应器检测出的树脂压力同设定值一样, 通过回转伺服马达的运转, 进行压力反馈控制, 使计量密度再次稳定的控制方式。

This is the control method to re-stabilize the measured density of melted resin of each shot after weighing which is prepared at screw head section. This is the unique control technology of JSW that exerts great effect to correct unbalance between product mass and cushion.

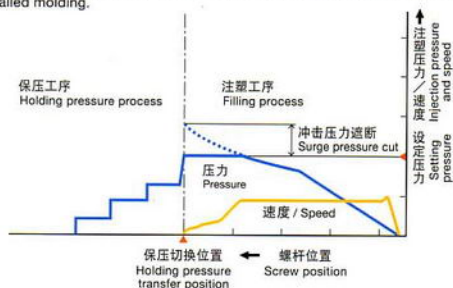


电动式注塑机的柔性高速低压伺服控制 (专利1755568)

Electric-driven Soft Pack Servo Control

抑制在射胶工序中即将保压切换之前的峰值压力, 以最合适的压力来进行充填, 这是JSW独有的控制技术。在薄壁注塑中发挥了其防止过量充填的作用。

The JSW patented control technology enables filling under optimum pressure while suppressing pressure peaks before holding pressure transfer during the injection process. This will prevent over-packing in thin-walled molding.



广范围的注塑组件选择

A wide selection of injection modules and screws

注塑装置的型号 Unit type	螺杆直径 Screw dia. (mm)	最大注塑压力 Max. injection pressure (MPa)	最大注塑速度 Max. injection speed (mm/s)
J55EM	25	197	250
J85EM	28	167	250
J110EM	32	197	180
J110EM	35	164	180
J140EM	35	189	160
J140EM	40	157	160
J180EM	40	216	160
J180EM	46	177	160

装置项目 / Item	
开放式喷嘴(芯型) / SVO open nozzle (Tip type)	
N2000F 缸筒 / N2000F barrel	备注1 (Note 1)
耐腐蚀·耐磨损螺杆(180H以下的注塑装置) Corrosion and abrasion-resistant screw (Injection units up to 180H)	
镀铬螺杆(300H的注塑装置) / Cr-plated screw (Injection unit 300H)	
螺杆倒塑 / Screw pull-back	
清洗护盖(带限位开关) / Purge cover (with a limit switch)	
注塑装置旋转装置(带限位开关) / Injection unit swiveling device (with a limit switch)	
螺杆冷态启动防止功能 / Screw cold start prevention	
成形·保温切换功能 / Molding/ Pause temperature select	
自动清洗缸筒功能 / Auto purging circuit	
喷嘴后退动作选择 / Nozzle retract select	
螺杆后退动作选择 / Pull-back select	
润滑油自动给脂 / Auto grease lubrication	
注塑·计量程序控制 Injection/Metering programmed control	注塑·保压: 1~6段(可变) Injection/Holding pressure: 1 to 6 steps (Variable) 计量·背压: 1~3段(可变) Metering/Back pressure: 1 to 3 steps (Variable)
根据检测的速度进行保压切换(IVS控制) Holding pressure transfer by speed detection (IVS control)	
缸筒温度画面设定 / Barrel temperature remote setting	
缸筒温度控制(SSR) / Barrel temperature control (SSR)	
柔性高速低压伺服控制 / Soft Pack Servo control	
IWCS控制 / IWCS control	
反转密封控制 / Reverse seal control	
保压控制选择 / Holding pressure control select	
同期升温控制 / Synchronous temperature rise control	
无供脂肘节衬套 / Grease-free toggle bushing	
润滑油自动给脂 / Auto grease lubrication	
高性能模板支承 / High-performance platen support	
宽幅的模板 / Wider platens	
平压模板构造 / Flat press platens mechanism	
导杆预张机构 / Tie bar pre-tensioning mechanism	
开模闭模·推顶程序控制 Mold open/close and ejection programmed control	开模闭模: 4段(固定) Mold open/close: 4 steps (Fixed) 推顶: 1~3段(可变) Ejection: 1 to 3 steps (Variable)
电动式模厚控制装置 / Electric-driven mold thickness adjusting device	
模厚画面设定 / Mold thickness remote setting	
自动锁模力设定 / Auto clamping force setting	
肘节式注塑压缩功能 Toggle type injection compression function	A方式 / A-mode B方式 / B-mode 压缩段数: 1~6段 Compression: 1 to 6 steps
模具保护功能 / Mold protection function	
锁模安全装置(电动式、机械式) / Clamping safety device (Electrical/Mechanical)	
取出机安装孔加工 / Robot mounting holes	

注塑 / Injection unit / 厚板 / Thick plate

锁模 / Clamping unit / 厚板 / Thick plate

装置项目 / Item	
触摸屏式TFT彩色液晶控制器 / Touch panel 15" TFT color LCD controller	
注塑条件记忆功能(内部记忆体: 120个) 120 mold conditions storage (Internal memory)	备注2 (Note 2)
注塑自动启动功能 / Soft start molding	
打印机输出端子 / USB printer port	备注3 (Note 3)
自我诊断功能 / Self diagnostics function	
总设定画面 / Overall setting screen	
帮助功能 / Help function	
凸显示功能 / Pop-up display	
预热计时器 / Pre-heat timer	
复合动作 / Compound action	
时间表示功能 / Clock	
有人·无人运转切换功能 / Attended/unattended operation select	
取出机回路 / Product takeout robot circuit	
多言语切换(中、英、日) / Multi-language select (Chinese, English, Japanese)	
注塑压力过冲现象报警 / Injection pressure overshoot alarm	
润滑油给脂异常报警 / Grease lubrication fault alarm	
伺服异常报警 / Servo fault alarm	
异常报警蜂鸣器 / Fault alarm buzzer	
管理图表·统计功能 / Statistical graph	
检测值显示 / Actual value display	
模具温度显示 / Mold temperature display	备注4 (Note 4)
运转时间表示功能 / Cumulative operating hour display	
缸筒温度监视功能 / Barrel temperature monitor	
注塑压力监视功能(IPM) / Injection pressure monitor (IPM)	
注塑·计量波形监视 / Injection/Metering waveform monitor	
示波器波形监视 / Oscilloscope waveform monitor	
生产监视功能 / Production monitor	
动作监视功能 / Cycle monitor	
成形条件上限·下限监视功能 / Molding condition upper/lower limit monitor	备注5 (Note 5)
加热器系统异常 / Heater system fault	
注塑·计量波形记忆 / Injection/Metering waveform storage	
保养检查通知功能 / Inspection and maintenance	备注6 (Note 6)
报警履历 / Alarm history	
设定值履历 / Set value history	
加料斗法兰部冷却水回路 / Cooling water circuit for the hopper flange	备注7 (Note 7)
附属品(保养用工具、推顶杆) / Accessories (Maintenance tools and Ejector rods)	

控制装置 / Controller

监视 / Monitor / 厚板 / Thick plate

其他 / Others

(Note)

1. One set of K or A type is equipped as standard
2. Capable of storing up to 1000 mold conditions. Using commercial USB data storage media. The media is not supplied with the machines.
3. The printer and the printer cables are options.
4. Temperature sensors and electric wiring are not included.
5. A maximum of 8 items and alarms can be selected out of the following monitor items.
① Cycle time ② Injection time ③ Metering time ④ Cushion position
⑤ Holding pressure end position ⑥ Injection pressure
⑦ Holding pressure transfer pressure ⑧ Screw back pressure ⑨ Metering end position
⑩ Injection start position ⑪ Holding pressure transfer position ⑫ Mold open time
⑬ Mold close time ⑭ Metering torque ⑮ Holding pressure transfer speed
⑯ Mold inner pressure <option>
6. Indicates inspection times and items.
7. The cooling water circuit for mold is option.

- 备注1. 注塑组件K或A型式中的一套作为标准装备。
- 备注2. 外部存储器能够储存1,000付模具的成形参数。外部存储器可以使用电脑市场上普及的USB Memory。
- 备注3. 打印机本体以及印刷机连接用电缆是选配件。
- 备注4. 不包括温度传感器以及接线。
- 备注5. 以下监视项目中能够选择最大8个项目的表示以及报警。
①循环时间 ②注塑时间 ③计量时间 ④残余量位置 ⑤保压完成位置
⑥注塑压力 ⑦保压切换压力 ⑧背压力 ⑨计量完成位置 ⑩注塑开始位置
⑪保压切换位置 ⑫开模时间 ⑬闭模时间 ⑭计量转矩 ⑮保压切换速度
⑯模具内压(选配件)
- 备注6. 显示点检的时期与项目。
- 备注7. 用于模具的冷却水回路是标配外选项。

选购件一览表 / Options list

装置项目 / Item	
加长喷嘴 / Long nozzle	
各种闭锁式喷嘴 / Various shut-off nozzles	备注1 (Note 1)
KC喷嘴 / KC nozzle (Keep temperature under control nozzle)	
M7螺杆(高混炼型) / M7screw (High plasticization type)	
HP螺杆(高分散型) / HP screw (High dispersion type)	
耐腐蚀·耐磨损螺杆(300H的注塑装置) Corrosion and abrasion-resistant screw (Injection unit 300H)	
镀铬螺杆(180H以下的注塑装置) / Cr-plated screw (Injection units up to 180H)	
光学品成形用螺杆·缸筒 一套 One set of screws and barrels for molding optical products	
特殊专用螺杆 / Special screw	备注2 (Note 2)
HT螺杆头 / HT screw head	
超工程塑料高温成形用螺杆·缸筒 一套 One set of screws and barrels for high temperature molding of super engineered plastics	
缸筒保温护罩 / Barrel insulation cover	
缸筒吹风机冷却装置 / Barrel blower cooling unit	
加料斗 / Hopper (Option for all the region)	
加料斗旋转装置 / Hopper swiveling device	
加料斗法兰部温度控制 / Hopper flange temperature control	
真空抽气注塑装置 / Ventilated barrel	
模盘最大间隔延长 / Daylight extension	
模板用隔热板 / Thermal insulation plate for platens	备注3 (Note 3)
各种定位环 / Various locating rings	
喷气装置 / Air jet	
型芯装置(气压式·液压式) Core pull devices (Pneumatic type and Hydraulic type)	备注4 (Note 4)
螺钉拔出电机回路 / Unscrewing motor circuit	
顶针浇口切断装置 / Ejector gate cutting device	
模具顶针板后退确认回路 / Ejector plate return confirmation circuit	
浇口阀门装置(气压式·液压式) Valve gate device (Pneumatic type and Hydraulic type)	备注4 (Note 4)
光电式落下确认装置 / Product drop detector (Photoelectric)	
滑槽 / Chute	
成型品良否辨别滑槽 / Reject product detecting chute	
模具安装装置 / Mold setup device	
T沟板 / T-groove plate	备注3 (Note 3)
磁铁模具夹具 / Magnet mold clasper	备注3 (Note 3)
简易模具夹具 / Mold clasper	备注3 (Note 3)

装置项目 / Item	
多语言切换功能(韩国语·西班牙语·法语对应) Other language select (Korean, Spanish and French)	
简易式集中监视系统LINK10 / Simple centralized monitor system LINK10	备注5 (Note 5)
集中管理系统NET100 / Centralized control system NET100	备注6 (Note 6)
加热器断线报警 / Heater burnout alarm	
模具温度表示(带模具温度上下限报警) Mold temperature display (with mold temperature upper/lower limit alarms)	
模具温度调节装置(带模具温度上下限报警) Mold temperature control device (with mold temperature upper/lower limit alarms)	
打印机(带打印线) / Printer (with a printer cable)	
冷却水密闭回路(带流量显示器) / Cooling water closed circuit (with a flow indicator)	
冷却水开放回路装置 / Cooling water open circuit device	
冷却水断水报警 / Cooling water failure warning	
安装用避震脚 / Leveling pad for installation	
报警灯 / Rotary warning light	
输出规格 / Export specification	备注7 (Note 7)
指定色 / Designated color	备注8 (Note 8)

备注1. 关闭式喷嘴能够安装弹簧式SVN喷嘴、气压式喷嘴以及液压式喷嘴。液压式喷嘴还需另外的液压装置。180H以下的注塑组件以气压式喷嘴关闭装置作为标准选项件。液压式喷嘴关闭装置需另外商讨。

备注2. 特殊专用螺杆请另外询问。

备注3. 在装备有隔热板、T沟板、磁铁模具夹具的场合,有必要考虑到隔热板、T沟板、磁铁模具夹具的厚度对喷嘴的进入量。另外,请注意使用模厚范围会发生变化。

备注4. 液压式还需另外液压装置。

备注5. 在LINK10中,有测定值数据收集功能、注塑条件管理功能以及遥控管理功能。

备注6. NTE100中还增加了LINK10功能中的质量管理功能以及生产管理功能。

备注7. 输出规格需要另外与发往地协商。

备注8. 指定色请在颜色样本或Munsell号码中进行指定。

(Note)

1. A spring type SVN shutoff nozzle, a pneumatic shutoff nozzle and a hydraulic shutoff nozzle can be mounted. For the hydraulic type, a separate hydraulic unit is needed. For injection units 180H or smaller, a pneumatic shutoff device is provided as a standard option. Regarding the hydraulic shutoff device, discussion is needed separately.

2. Regarding special screws, contact us separately.

3. In case a thermal insulation plate, a T-groove plate and magnet mold clasper are installed on the machine, extended nozzle stroke equal to the thickness of those plates is required. Note that the usable mold thickness range will change.

4. For the hydraulic type, a separate hydraulic unit is needed.

5. The LINK10 has actual data collection, molding condition control and remote control functions.

6. The NET100 has quality control and production control functions in addition to the functions that the LINK10 has.

7. Regarding the export specifications, separate discussion is needed in some cases, depending upon the export destination.

8. Designate colors, referring to color samples or to specify by Munsell codes.

周边设施参数总览表 / Utilities

■ 总电气容量 / Total Power Capacity

机型 Machine Model	J55EM			J85EM			J110EM			J140EM			J180EM		
	60H	60H	110H	60H	110H	180H	60H	110H	180H	300H	110H	180H	300H		
总电气容量 Total Power Capacity (kVA)	8.4	8.4	11.9	8.6	12.1	15.6	9.0	12.5	16.0	18.5	13.1	15.3	20.0		

(注) 因特殊的非标准配置, 预备用插座容量的不同会有变化。
Note: Total power capacity does not include external outlets.

■ 冷却水容量(概略) / Cooling Water Capacity for Barrel Temperature Control

注塑装置的型号 Injection Unit Type	60H	110H	180H	300H
所需冷却水量 Cooling Water Capacity for Barrel Temperature Control (m ³ /h)		0.3		0.4

(注) 不含模具温度调节器所需的水量。
Note: The left figures do not include the required quantity of water for the mold temperature controller.