C ELECTRIC INJECTION MOULDING MACHINE

Meeting the Needs of a New Generation and Shaping the Future



1600*em*II

emII Series Specifications

				1050 omT		1200 om∏		1(00 amT		2000 om		2500 om∏	2000 om T 2500 om T
	Item		Unit	1050		1300		1600		2000		25000000	3000emii 3500emii
			1	100	160	160	240	160	240	240	340	340	470
Injection Unit	Screw diameter		mm	90	105	105	120	105	120	120	135	135	150
	Theoretical	injection volume	cm ³	2860	4540	4540	6780	4540	6780	6780	9660	9660	13200
	Injection Polystyrene (PS)		a	2630	4180	4180	6240	4180	6240	6240	8890	8890	12100
	snot mass	Polyethylene (PE)	<u> </u>	2120	3360	3360	5020	3360	5020	5020	7150	7150	9770
	Max. injection pressure		MPa (kgf/cm ²)	177 (1800)									
	Max injection hold pressure (I		MPa (kgf/cm ²)	147 (1500)									
	Injection rate		cm ³ /sec	1015	1385	1385	1415	1385	1415	1415	1790	1790	2030
	Plasticizing	Polystyrene (PS)	ka /bx	470	630	630	785	630	785	785	1010	1010	—
	capacity Polypropylene (Pl		Kg/fir	-	—	-	475	-	475	475	610	610	1000
	Screw speed		rpm	160	152	152	138	152	138	138	132	132	167
	Injection power		kW (PS)	180 (245)	244 (332)	244 (332)	250 (340)	244 (332)	250 (340)	250 (340)	316 (429)	316 (429)	359 (488)
	Injection speed		mm/s	160	160	160	125	160	125	125	125	125	115
	Nozzle touch force		kN (tf)	59 (6.0)	59 (6.0)	59 (6.0)	59 (6.0)	59 (6.0)	59 (6.0)	59 (6.0)	98 (10.0)	98 (10.0)	98(10.0)
	Screw L/D		—	22	22	22	22	22	22	22	22	22	22
	Max. mould clamping force		kN (tf)	10290	(1050)	12749 (1300)		15691 (1600)		19613 (2000)		24517 (2500)	29420 (3000) 34320 (3500)
	Mould opening force		kN (tf)	608	(62)	785 (80)		971 (99)		1549 (158)		1549 (158)	1824 (186)
	Mould opening and closing speed		m/min	5	0	50		60		60		55	50
	Platen size (H×V)		mm	1900:	×1900	2000×2000		2500×2000		2500×2250		2550×2300	3200×2500
Q	Clearance between tie-bar (H×V)		mm	1300:	×1300	1450×1400		1850×1520		1850×1650		2000×1650	2050×1900
amp	Max. clamp stroke		mm	17	50	185		2400		2400		2700	2700
o Unit	Max. daylight		mm	2250		2500		3200		3200		3500	3700
	Mould thickness		mm	500~1100		650~1300		800~1500		800~1500		800~1700	1000~1900
	Ejector	Force	kN (tf)	198 (20.2)		294 (30.0)		294 (30.0)		294 (30.0)		392 (40.0)	392 (40.0)
		Stroke	mm	200		250		250		250		350	350
		Speed	m/min	12.6		15		15		15		12.5	12.5
	Max. mould weight		t	14		20		25		30		30	30
Gene	Heater capacity		kW	33.7	47.5	47.6	53.6	47.6	53.6	53.6	68.4	68.4	84.9
	Overall dimensions (L×W×H)		m	10.3×3.2×2.9	10.3×3.2×2.9	11.2×3.5×3.2	11.9×3.5×3.2	12.3×3.9×3.3	12.5×3.9×3.3	12.7×4.0×3.4	13.3×4.3×3.4	13.7×4.5×3.6	15.2×4.8×4.0
ral	Machine w	veight	t	51	53	68	72	83	88	105	118	136	183

Standard specification

[Injection unit]

- 1. UB screw 2. Screw cylinder
- 3. Nozzle
- 4. Screw cylinder cover 5. Screw unit swivel device
- 6. Auto melt decompress 7. Manual melt decompress
- 8. Sprue break circuit
- 9. Manual injection unit
- 10. Screw back pressure circuit
- 11. Screw cold start prevention circuit
- 12. Automatic color change circuit
- (Jet purge circuit)
- 13. Cylinder jacket cooling circuit
- 14. Safety cover on injection unit
- 15. Auto. lubrication system to injection unit
- 16. Plasticizing mould open/close lap circuit
- 17. Screw position indicator
- 18. Purging cover
- [Clamp unit]
- 1. Mould setting operation circuit
- 2. Mould protection circuit with try again
- 3. Ejector
- 4. Take out robot interface
- 5. Automatic mould thickness adjusting system
- 6. Front safety door 7. Rear door
- 8. Tapping fabrication for take out robot
- 9. Locating ring for mould alignment
- 10. Platen support device
- 11. Ejector retraction waiting circuit
- 12. Auto. lubrication system to clamp unit
- 13. Mechanical safety device
- 14. Hydraulic core pull device (2 systems)
- 15. Safety mat
- 16. Center press platen (3000/3500emII)
- [Hydraulic unit]
- 1. Pump system (Energy saving type) 2. Hydraulic oil filtration device
- 3. Solenoid valve with indicator
- 4. Hyd. oil temperature display
- 5. Hyd. oil level decreasing alarm unit
- 6. Hyd. oil heat up circuit
- 7. Hyd. oil temperature controller

[Electric unit]

- 1. MAC-IX control device
- 2. Presetting circuit for next moulding condition
- 3. Setting value change prevention circuit
- 4. Nozzle heater controller (1 zone)
- 5. Cylinder heater controller (4 zones)
- 6. Pushbutton switch for emergency stop
- 7. Running hour meter
- 8. Alarm buzzer
- 9. Alarm for battery exchange
- 10. Cycle start switch

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[Control unit]

- 1. Auto. memory of moulding conditions (Internal memory type for 480 moulds)
- 2. Injection speed and pressure programed cont (6 stages for speed and 9 stages for pressure
- 3. Holding pressure switch control
- 4. Screw rotation control (3 stages)
- 5. Screw back pressure control
- (3-point folded-line) 6. Injection holding pressure ramp control
- 7. Nozzle/cylinder temperature PID control
- 8. Mould opening/closing speed programed control
- 9. Ejector programed control
- 10. 2-step clamping injection system
- 11. Safety interlock for PL compliant 12. International system of units (SI) display

[Screen]

- 1. Setting value display screen
- 2. Injection support function
- (Easy setting of conditions) 3. Machine operating status display

[General]

- 1. Specifically dedicated tools 2. Spare parts
- (fuses, lamps, grease cartridge)
- 3. Ejector rods
- 4. Instruction manual, drawings

Optional Specifications

[Injection unit]

- 1. MD type UB screw
- 2. MF type UB screw
- 3. Anti-abrasive, anti-corrosive screw
- 4. Anti-abrasive, anti-corrosive screw cylind 5. Extension nozzle
- 6. Cylinder blower cooling unit
- 7. Hopper

8. Hydraulic shut-off nozzle

- 9. Ceramic heater bands
- 10. Flow meter of cylinder jacket
- 11. Temperature control of feed throat wafer jac 12. Screw rotation torque up

4. Air ejector device

6. Air core pull device

8. T-slotted platens

refraction

9. Lifting device inside platens

emI

1600emI

 Rotating core circuit Mould alignment V-block Ejector and core pull motion no-link to clamp motion 				
 11. Hotating core circuit 12. Mould alignment V-block 13. Ejector and core pull motion no-link to clamp motion 14. Interface for mould clamper 15. Mould changer interface 16. Gate valve device 17. Gate cut circuit 18. Magnetic filter (for eco-servo-pump system) 19. Center press platen (2500emII) [Electrical unit] 1. Heater burn-out detector 2. Outlet circuit 3. Printer with interface 4. Patrol light 5. Recording jack 6. Heater subset control 7. Automatic cycle stop circuit 8. Link memory with take-out robot 9. Material feeding stop signal 10. Insert circuit 11. Unmanned operation circuit 12. Case change circuit 13. Automatic heat up circuit 14. Quality judging circuit 				
 I. Holding pressure change over control (mould internal pressure/external signal) 2. External memory (128 moulds, USB memory device) 3. Shot step circuit 4. Auto. momery of temperature (mould, cylinder jacket) 5. Hot runner temperature control 6. Foreign language 7. MOLD24i 8. Web MAC 9. packet MAC 10. SCS circuit 11. Screenshot [General] 1. Machine color option 2. Spare parts for 2 years 3. Tools 4. Spare grease cartridge 				



7. Piping for mould cooling water

10. Confirmation circuit of in-mould-ejector





ELECTRIC INJECTION MOULDING MACHINE

SERIES

The Standard for a New Generation

The two-platen clamping mechanism has become increasingly popular in the large-sized injection moulding market and has gained numerous delivery records and reliability since our company first introduced ahead of competitors The high-end "emII series" meets the goals of carbon neutrality and our valued customers.

Compact, Faster, and Environmentally Conscious

•Two-platen clam	oing mechanism Compact, Faster, and Highly Precise
•Eco-servo-pump	Carbon neutrality
•Direct-drive injection	Ideal for thin-wall moulding
UB Screw	Lower material costs
)-IX	User friendly, Easy to operate

ELECTRIC INJECTION MOULDING MACHINES

OMA



Meeting the Needs of a New Generation and Shaping the Future



High Speed, High Precision, Small Footprint

Two-Platen Clamping Mechanism

- Featuring a short 2-platen clamping mechanism, the machine's dimensions allow for an efficient factory layout.
- Four-point clamping design maintains precision over the long term, extending the life cycle of your moulds. This design works very well even with offset moulds and single moulding.
- Dual controlled ball screws provide synchronously driven, highly responsive mould opening and closing motions.
- •AC servomotor driven tie-bar split nuts operate at high speed. Simultaneous actuation of the four split nuts keeps cycle time to a minimum.
- Mould open/close dry cycle reduced by 20% (compared with our hydraulic models).
- Built-in hydraulic power unit features large-capacity supply and reduces core actuation time.

Carbon neutrality

Eco-Servo-Pump System

- Built-in eco-servo-pump system uses a rotationcontrolled vane pump with AC servomotor drive.
- Designed to achieve energy savings for each set of operating conditions through highly precise and extremely responsive pump rotation control. The pump system can be stopped when hydraulic operation is not needed.

[System Concept]

Vane Pump for Rotation









Power Recycling System

• The motor operates as a generator during deceleration (braking), sending power back to the power source.



[Power Recycling System]



Ideal for Thin-Wall Moulding

Direct-Drive Injection Mechanism

- Direct-drive mechanism uses original high-torque, low-rev AC servomotor. (Synchronous drive through control of 2 or 4 ball screws.)
- Top-class high-speed injection startup. Ideal for thin-wall moulding. (Speed response is on a par with high-speed hydraulic servo valve systems.)

Lower Material Costs

UB Screw

- Our original screw design features long barrier zone and dam configuration for separation of the melted and solid resin. The design offers superlative and energy-efficient kneading and plasticizing performance.
- Solid-free plasticizing enables high-multiple master batch moulding and significantly expands the range of usable colorants—contributing to lower overall material costs.



[Injection Speed Gradient at Startup]





Super Mixing Screw (option)

• Offers even better mixing performance...



MD (multi-dam) UB Screw





Polygonal multi-dam configuration delivers excellent shearing and separation of unmelted resin. Optimally designed Dulmadge-type tip delivers efficient dispersion of melted resin.

The new and improved MAC-IX controller

- Exceptional operability with two screens combined on one large screen
- An upgraded security function that utilizes
- ID card authentication is equipped as standard
- Stable moulding by high-speed control that is six times faster than a conventional system

Upgraded Operability

Swing and tilt mechanism

- Easier operation with control panel swing and tilt.
- Injection waveform memory

An ideal process, waveform can be saved and displayed on-screen for checking shot-to-shot repeatability.

- This feature helps ensure consistent production
- Vertically long screen
- Long, vertical screens can display twice the trend data compared to a conventional system.

High-speed, high-accuracy control

Reduced scan time

Scan time is shortened to 1/6 of a conventional system by using EtherCAT[®] High-speed communication which provides for stable weight of the moulded product. *EtherCAT[®] is a registered trademark of Beckhoff Automation GmbH.





Injection setting can be changed while checking setting records

Control panel with two independent screens Swing and tilt function