

Global Network



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● Photographs of machines and details may differ from actual products.
● Specifications subject to change without notice for performance improvement.

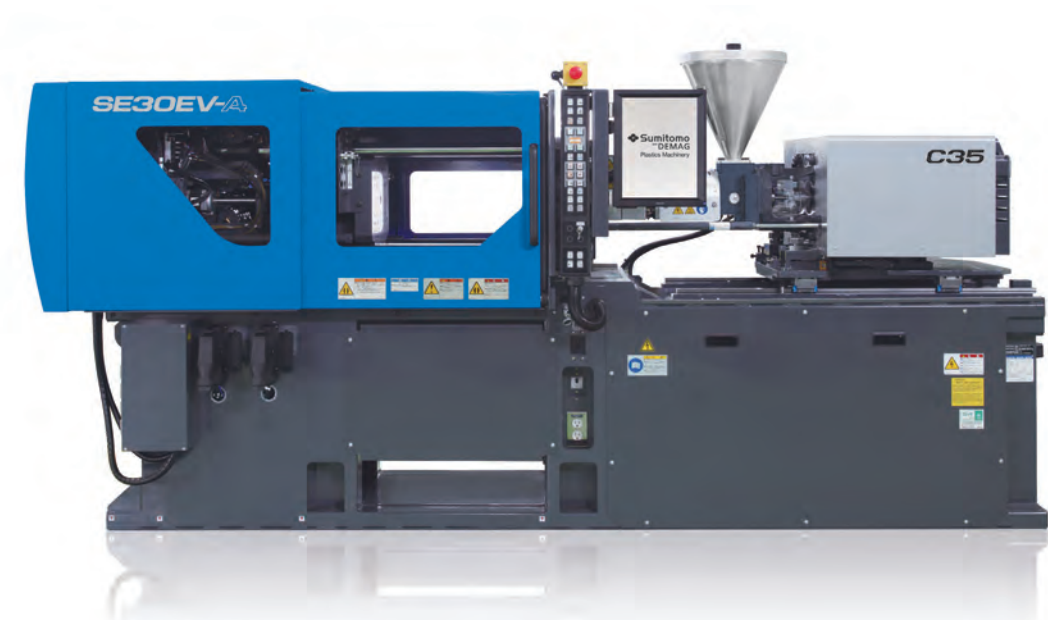
SE-EV-A

All-electric Injection Molding Machine for Connector



SE-EV-A

All-electric Injection Molding Machine for Connector



Lineup

SE30EV-A (300kN)

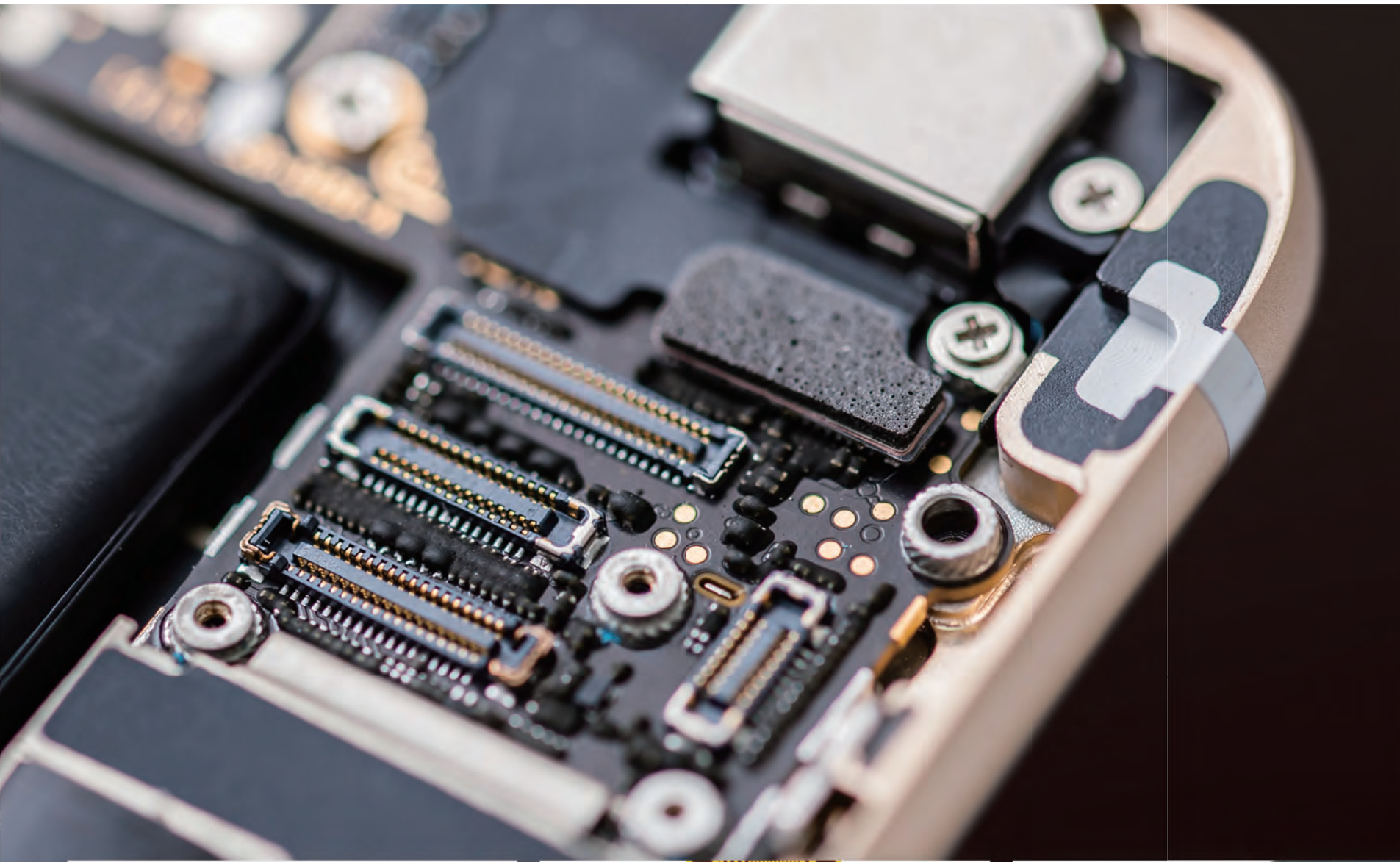


Our products have acquired ISO9001 certification.

www.shi.co.jp/plastics/

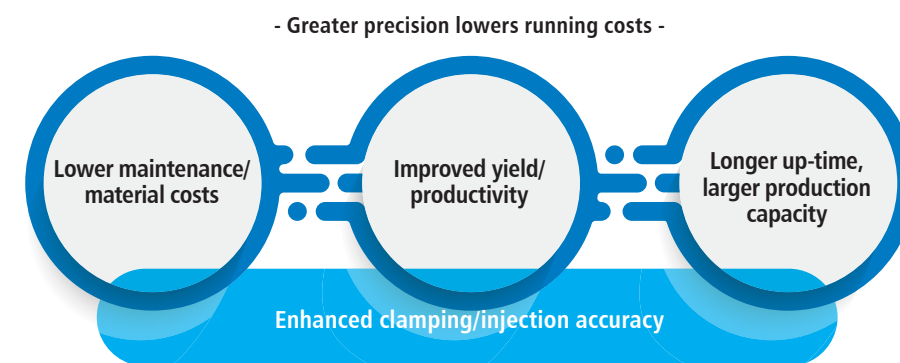


Sumitomo Heavy Industries, Ltd.

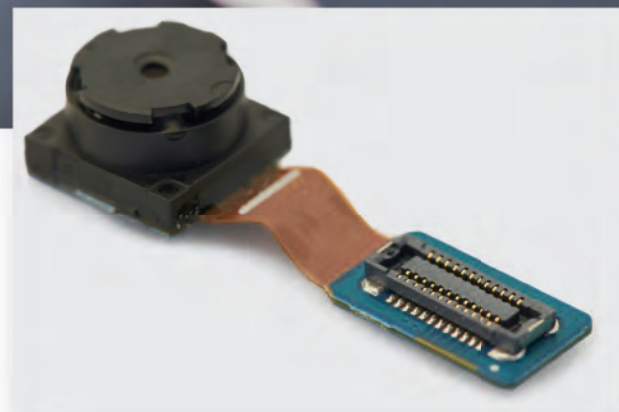
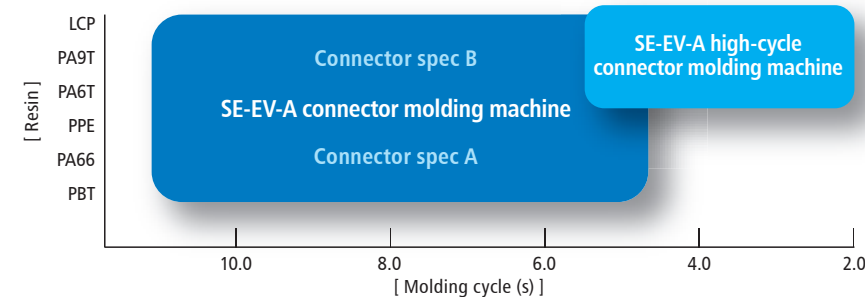


High-cycle and small size molding brings better cost-effective

The connector molding machine supports the ever-evolving high-cycle & small size molding easily. Its advanced mechanical performance brings better cost-effective.

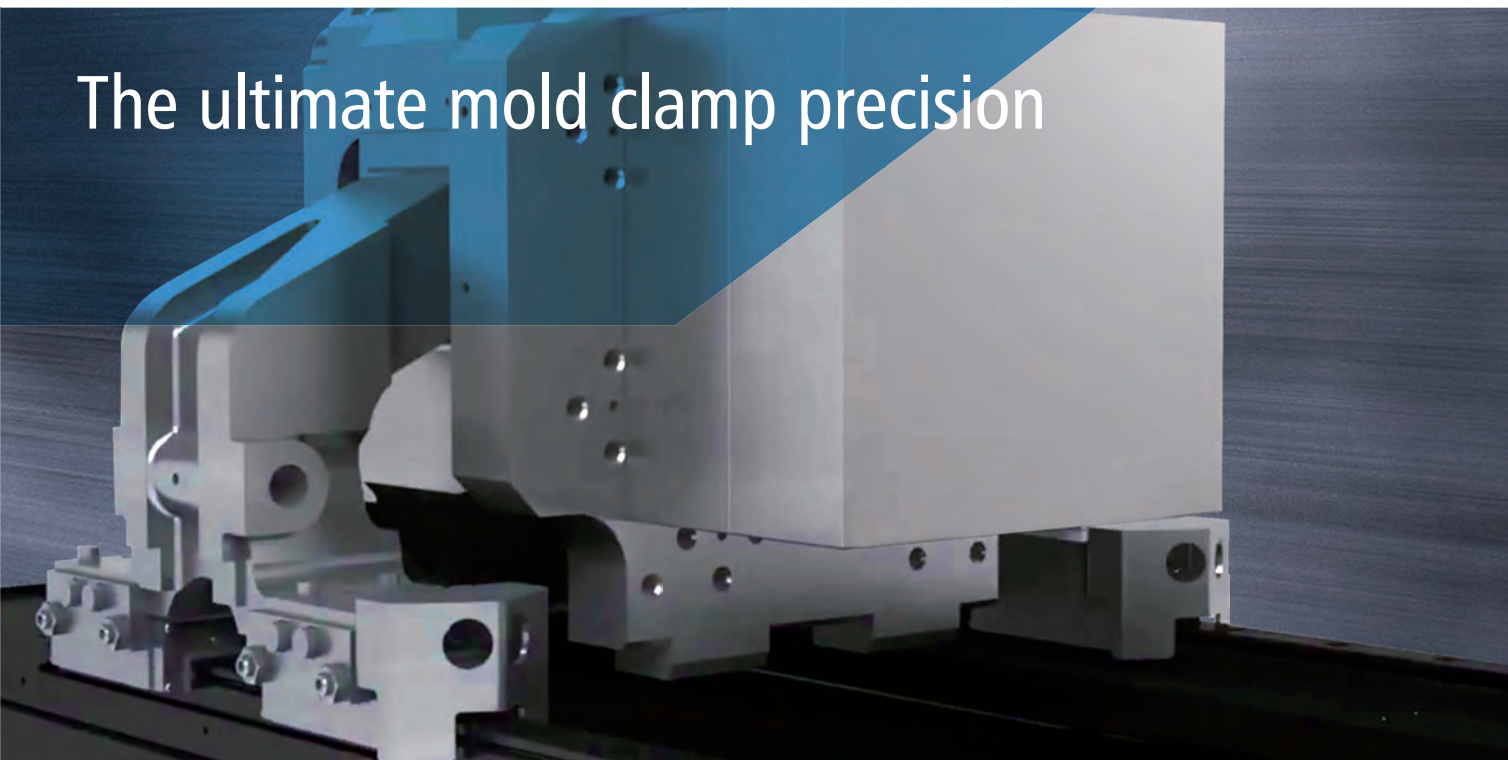


- Connector molding trends and compatible machines -



●All product photos are for reference purposes only. Pictured products were not made with components produced on our molding machines.

The ultimate mold clamp precision

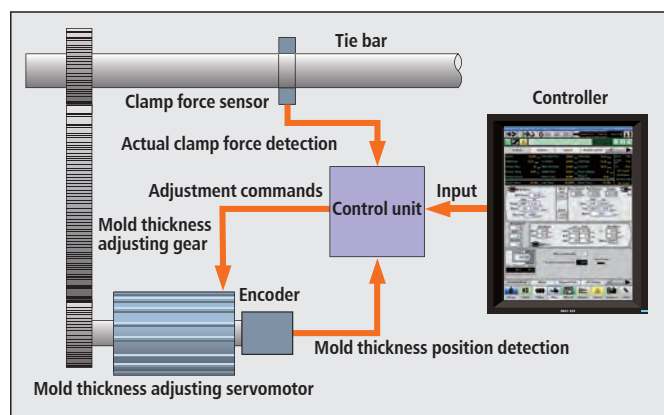
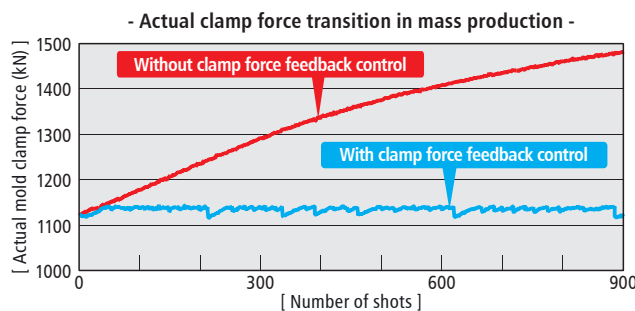


Staying constant clamp force in mass production

Mold clamp force feedback control

The mold clamp force tends to increase due to thermal expansion of molds in mass production. SE-EV-A provides constant mold clamp force by correcting the mold thickness based on the actual value.

PAT. pend. in Japan

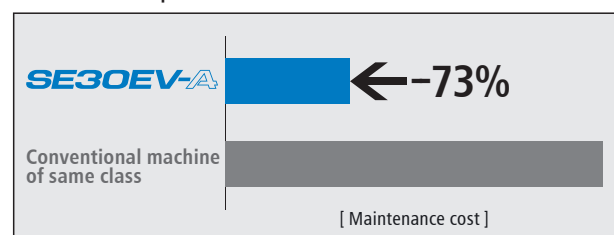


Lesser cycle time and vibration suppression

Acceleration/deceleration control with vibration suppression S-MOVE

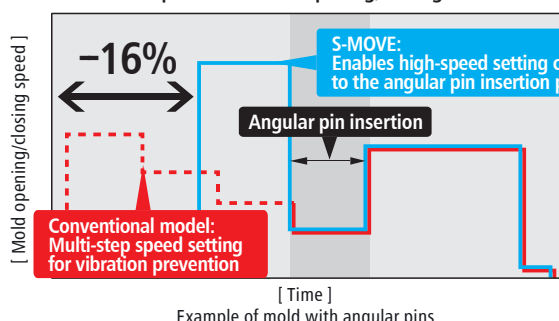
Smooth speed patterns in acceleration/deceleration achieved vibration suppression and faster clamp movement. S-MOVE improves products precision; moreover, it lowers running costs by decreasing wear in molded parts and reducing mistakes during take-out products, and extending maintenance cycle.

- Comparison of mold maintenance costs -

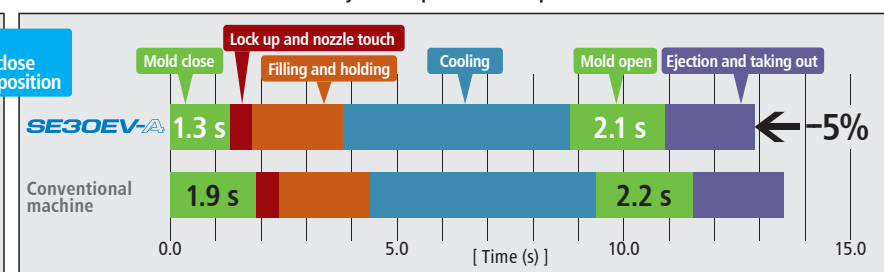


Dampens vibrations during mold opening and closing to reduce wear in parts inside the mold.

- Comparison of mold opening/closing time -



- Cycle comparison example -



S-MOVE reduces the mold open/close time.

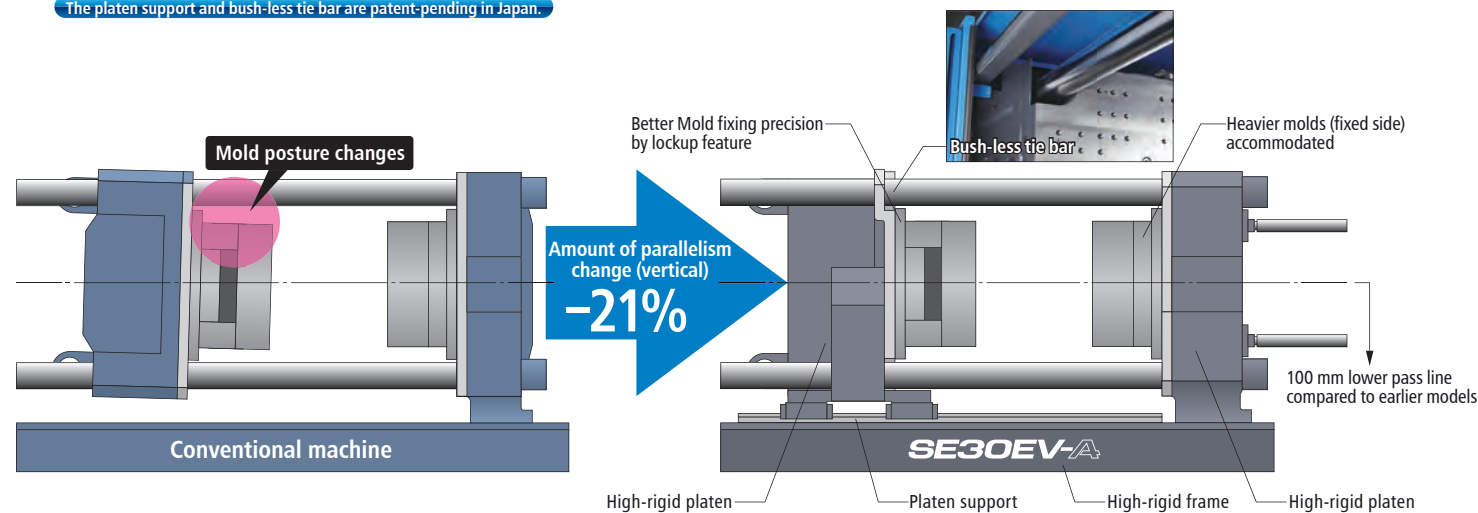
Keeps linearity and parallelism of molds and prevents damages to the molds

Platen support, bush-less tie bar, high-rigid platen and frame, and lower pass line

The platen support and bush-less tie bar structure provide high parallel precision and smooth mold opening/closing even if installed a heavy mold. Also, its vibrations can be reduced by greatly increased rigidity in the platen and frame and lowered pass line (low center of gravity). Furthermore, the lockup feature improves mold fixing precision during setup.

These features provide 100% mold precision and prevent damage to the mold such as pin stuck, etc.

The platen support and bush-less tie bar are patent-pending in Japan.



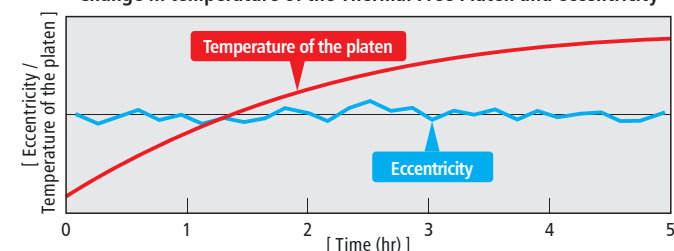
Keeps parallelism of platens

Thermal Free Platen

The lens machines employ specially structured Thermal Free Platen that minimize any irregular deformation due to heat, and improve parallelism and linearity.

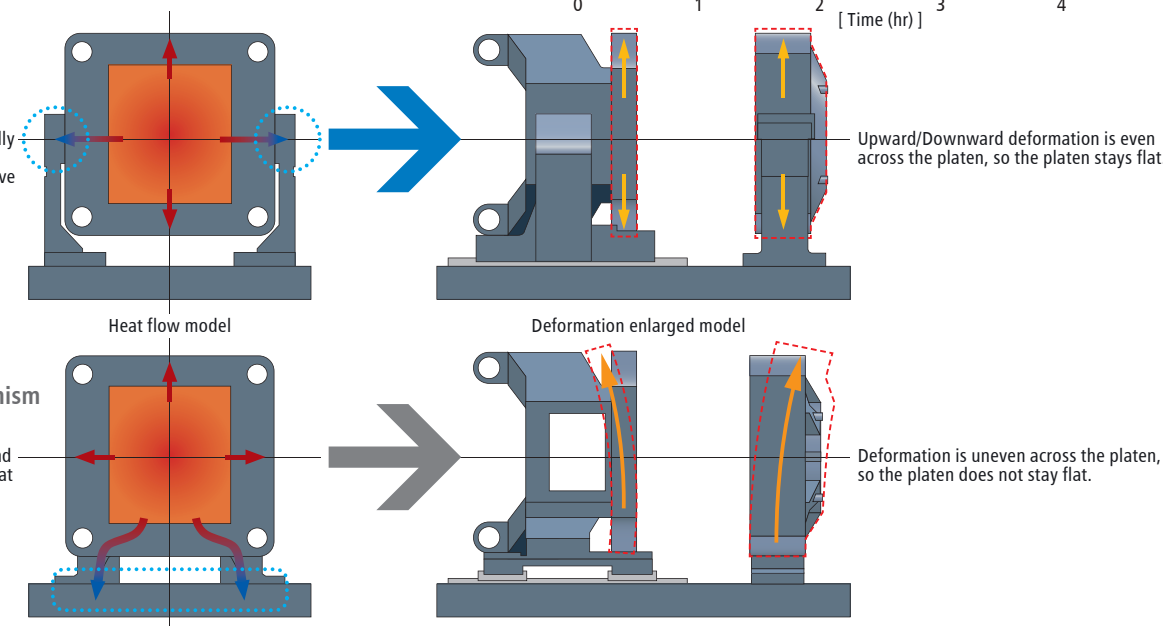
PAT. pend. in Japan

- Change in temperature of the Thermal Free Platen and eccentricity -



Thermal Free Platen

Heat propagates symmetrically upwards/downwards. Temperature is the same above and below the platen.

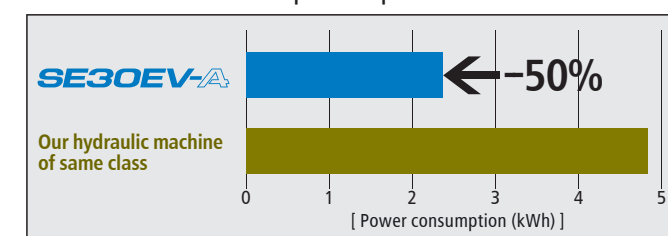


Excellent energy-efficient

Reduces power consumption

All-electric machines are capable of more precise and more stable molding, which are much more energy-efficient than hydraulic machines.

- Power consumption comparison -



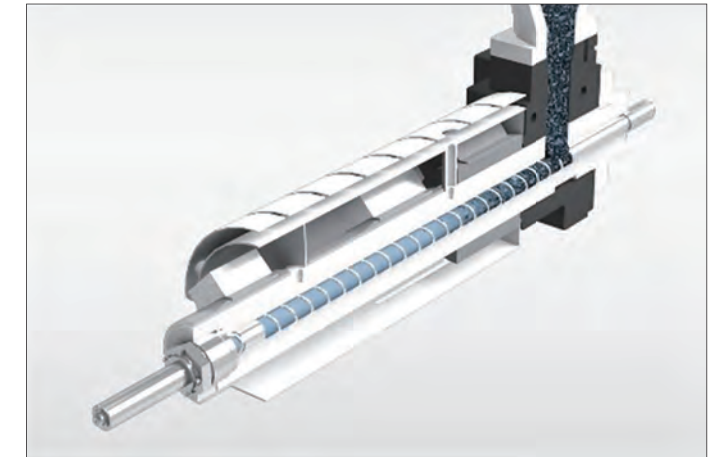
The ultimate mold injection stability



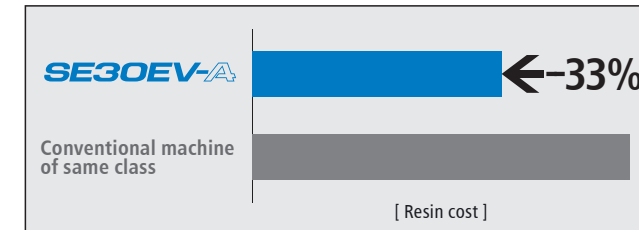
Dedicated to connector molding

Dedicated screw assembly for connector

It stabilizes resin dosing and shot consistency, which greatly reduces the fluctuations in dosing time. The dosing movement keeps to be stable even if crushed materials rate rises, which improves yield and reduces the material cost. Connector spec B supports molding of environment-friendly resins such as halogen-free resin.



- Comparison of resin costs -



The stable molding is kept even if crushed materials rate is increased by 10%, so the usage rate of virgin materials can be decreased.

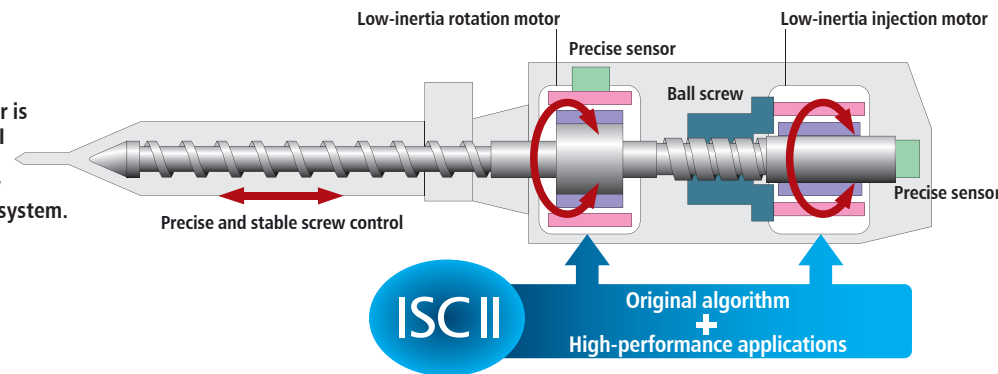
Specifications	Connector spec A	Connector spec B
Material		
Screw	Corrosion and wear resistant B	Advanced corrosion and wear resistant B
Cylinder	Corrosion and wear resistant C	Corrosion and wear resistant C
Screw tip	Corrosion and wear resistant B / Non-rotation type	Corrosion and wear resistant C / Non-rotation type
Type	Dedicated connector screw	
Wear resistance	★ ★ ★	★ ★ ★
Corrosion resistance	★ ★	★ ★ ★
Suitable resins	Fire-retardant resin (Excluding strong anti-corrosive grades)	Strong anti-corrosive, halogen-free fire-retardant resin

High-precision and stability

Direct drive system

The originally-developed low-inertia servomotor is controlled by an up-to-date control system ISC II (Intelligent Servo Controller II). Precision stability has been further improved by improving both the mechanism and the control system.

PAT. pend. in Japan

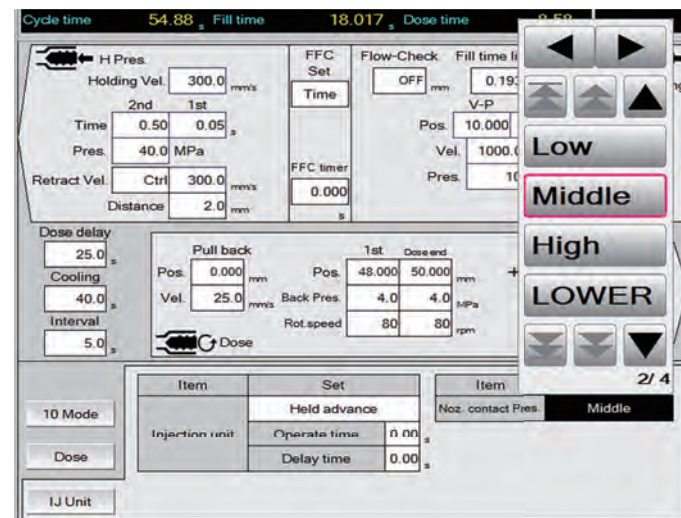
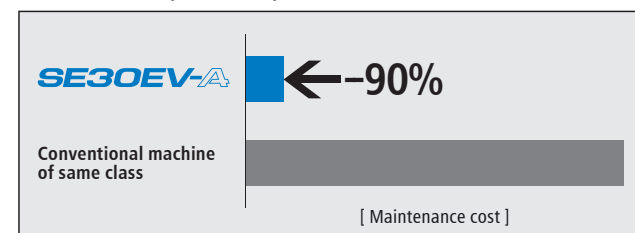


Adjustable nozzle touch force

Nozzle touch force setting mechanism

By setting the nozzle touch force to the required pressure level, molding problems with small size molds, such as sprue bush crashing, and fixed side plate deforming can be avoided.

- Comparison of sprue bush maintenance costs -

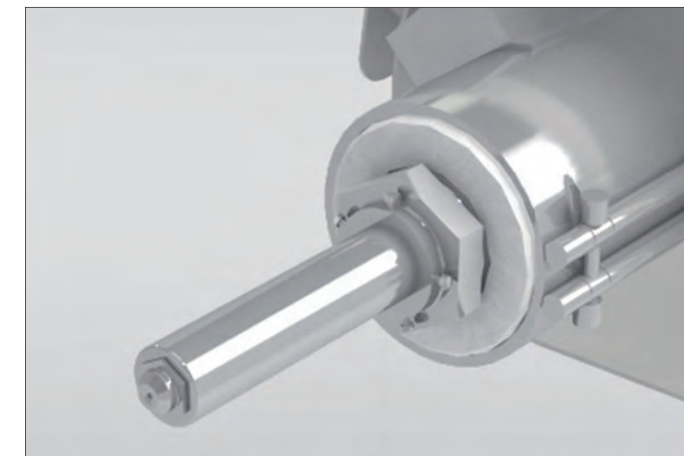


Cost-down and better productivity

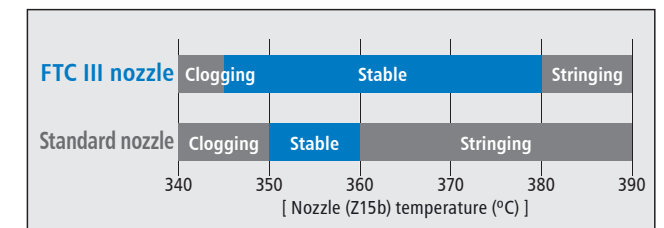
FTC III nozzle

It prevents stringing and clogging by evenly distributing temperature using 2-zone temperature control. In addition, its long protrusions reduce the resin consumption of the sprue and shorten the mold opening stroke, which shortens cycle time. Moreover, 2-zone heaters can be detached or attached simultaneously, which facilitates maintenance and shortens machine downtime.

Optional

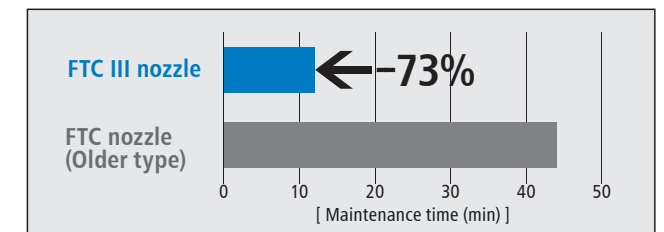


- Comparison of applicable molding conditions -

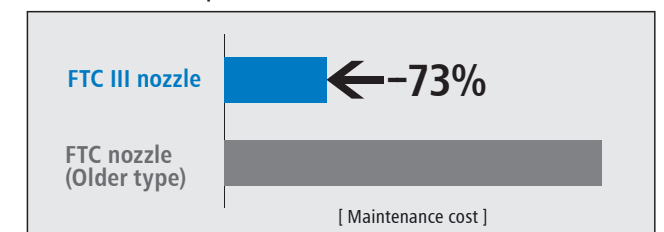


The FTC III nozzle works with a wider scope of molding conditions that do not cause stringing or clogging, so molding conditions can be set more easily.

- Comparison of maintenance (detaching and reattaching) time -



- Comparison of nozzle maintenance costs -



Quicker and easier heater attaching and detaching lessen the risk of damage to the nozzle heater and greatly reduce maintenance costs.

Standard Equipment

Plasticizing and injection unit
1. Injection program control function (Multi-stage control)
2. Holding pressure program control function (Multi-stage control)
3. Screw pull back function (Before starting dosing/After dosing is completed)
4. Digital display function of screw position (0.01 mm setting)
5. Holding time 0.01 seconds setting function
6. V-P switchover function (Pressure/Position)
7. Filling delay timer function
8. Pursing device with interlock (Select the position where the interlock function is unused or the injection device is retracted)
9. Heating cylinder temperature control max. 5 zones *2
10. Heating cylinder temperature switching function (Molding/Lowered temperature/Pursing)
11. Zone 1 high-capacity heater (More than ø18 mm)
12. Screw cold start prevention function (With variable interlock timer)
13. Remote setting function for sprue break stroke (Reverse timing selection with delay timer, Nozzle contact detection, Movement time setting)
14. Screw rotation speed digital display function
15. Purging cover device (With limit switch)
16. Injection unit swivel device (With nozzle alignment adjustment mechanism)
17. Remaining cooling time display function
18. Dosing start delay timer function
19. Injection speed/Holding pressure rise speed selection function (10 modes)
20. Screw forward speed setting function during holding pressure
21. Screw pull back delay control function
22. Synchro dosing function
23. Screw reverse rotation control function
24. Independent temperature control device of nozzle
25. Standard energy saving heating cylinder cover (Two-layer structure)
26. Water cooling jacket temperature control device
27. Mold open operation function during dosing (Shut off nozzle drive control)
28. Filling pressure multi-stage control function
29. Resin residence prevention function
30. One-touch manual dosing function
31. High-precision, high-pressure nozzle contact device (Nozzle contact force 3-step variable)
32. Stainless steel purge resin saucer
33. Speed deceleration pattern of V/P switchover (Slow landing)
34. Nozzle surface coating (Except for standard connector-use open exclusive type)
35. Zone 0 high-capacity heater (Less than ø16 mm)

Control unit
1. 15-inch TFT color LCD screen
2. Touch panel type setting input device
3. Molding condition storage function
4. Operation support function
5. Molding support function
6. Waveform display function (Waveform memory function, Display value reading function, Data storage by trigger, etc.)
7. Screen hard copy function
8. Take-out robot connection circuit device *1
9. Screen switching function in up to 15 languages
10. Maintenance management function (Inspection time, Grease greasing time, Item, Operation method display)
11. Automatic start/stop function (Lowered temperature/Heater start/Molding machine stop) *1
12. Process display function
13. SSR heater drive circuit device
14. Industrial unit input function (Speed, Position, Pressure and rotation speed)
15. Molding machine status output signal (5 CH) *1
16. USB connection circuit device (Memory)
17. Protection function of saved conditions
18. Abnormal processing selection function
19. Initial reject / Short stop reject function
20. Screen color change function
21. Numerical and character input keypad layout change function (Select from 2 types)
22. Take-out robot entry permission signal
23. Clean control cabinet

Monitor unit
1. Actual value display function
2. Heater breakage monitoring device
3. Auxiliary equipment abnormality monitoring function (3 ch) *1
4. Abnormality monitoring function (Maximum cushion, Minimum cushion, Filling pressure, Mold protection, Cycle time, Dosing time)
5. Abnormality monitoring condition automatic setting function
6. Abnormal history display function (Abnormal item/Occurrence time display)
7. Quality control function (Statistical function of actual values, various graph functions, 100,000 shot storage and data confirmation function)
8. Production number management function (Molded product discrimination function, Automatic production completion, Stocker feed signal, Data logging, Production counter with reset)
9. Auto start function (Heater, External output signal)
10. Heating cylinder temperature monitoring function (All zones)
11. Self diagnosis function
12. Abnormal alarm buzzer
13. Shot counter
14. Processing function when cycle monitoring is abnormal (Heater processing mode change)
15. All process display screen function
16. Monitoring function to prevent forgetting to set monitoring
17. Ejector protrusion torque monitoring function
18. Maintenance time notification function (Maintenance time notification based on the number of shots / Elapsed time)
19. Injection pressure monitoring function (5 points)
20. Cycle analysis function

Clamp unit
1. Mold opening/closing position and speed program control function (5-stage/3-stage switching)
2. Mold protection function
3. Low pressure mold clamping function
4. Mold opening/closing pause function
5. Remote control function of clamp force
6. Remote control function of mold space
7. Ejector remote setting function (2 speed control, Pressure, Stroke, Delay timer, Multiple time protrusions)
8. Current value input function (Ejector protrusion position)
9. Current value input function (Mold open limit position)
10. Clamp mode selection function (Lockup)
11. Ejector protrusion interlock function (Ejector can be operated only at the mold opening completion position in manual mode)
12. Ejector protrusion function during mold opening
13. Ejector protrusion function during mold clamping
14. Mold plate return confirmation device (Input signal to molding machine) (Metal outlet connection) *1
15. Mold opening/closing signal (Spear control signal) *1
16. Valve gate drive circuit device (Control circuit only) *1
17. Stand by mode function for mold installation (Low mold opening/closing speed)
18. Toggle cover with polycarbonate window
19. Emergency stop push button switch (Operation side/Non-operation side)
20. Safety door with polycarbonate window
21. Screw holes for mounting the take-out robot
22. Grease centralized greasing device for mold clamp/injection unit
23. Mold clamp safety device (Electric/Mechanical)
24. Mold opening/closing low vibration or high speed mode selection function
25. Movable platen support device (Linear guide type)
26. Product drop confirmation connection circuit *1
27. Multi-toggle function (Multi-stage clamp force setting)
28. Tie bar plating specification
29. Ejector motor device with brake
30. S-MOVE function (Low vibration control)
31. Ejector standby position function
32. Control device for mold installation space with servo motor
33. Dust-proof cover on top of toggle (Fixed type)
34. Dry cycle mode function
35. High rigidity platen
36. Ultra-high precision mold clamp device (Center support type)

Others
1. Auto grease supply unit (Cartridge grease type)
2. 3-way take-out frame
3. Mold cooling water block device (2 systems) (Flow indicator and valve are options)
4. Standard spare parts (Fuses, Air filters)

- *1 All input and output signals are no-voltage contact signals. (Power is not supplied with output signals.)
 *2 The number of zones varies depending on the screw diameter and screw type.
 *3 The injection duty is 50%.
 *4 All input signals are no-voltage contact signals. All output signals are 24 V DC signals.
 *5 All input and output signals are 24 V DC signals.
 *6 The overall machine length and maximum mold thickness are larger by 50 mm.
 ● Specifications are subject to change without notice for performance improvement.

Standard Equipment

Zero-molding features
1. Zero-molding main screen: Simple process setting
2. Zero-molding main screen : Production monitor (Production number/Process/Abnormality/Actual results)
3. Specifications/Function confirmation screen (Standard functions/Optional functions/Abnormality handling/Specification list/Monitoring device)
4. Minimum mold clamp force detection function (Automatic measurement)
5. Setup support: Mold installation screen (Mold height, Mold contact, Clamp force, Mold open/close in preparations, Ejector setting)
6. Setup support: Mold condition setting screen (Open/close, Ejector multi-stage setting)
7. Setup support: Mold opening limit/Ejector protrusion position teaching function (Current value input)
8. Setup support: Protection setting screen (Mold protection, Ejector protection)
9. Setup support: Multi-purging function (Gate purging, Resin replacement purging, Slight time stop purging, Low-viscosity resin purging, Resin viscosity measurement)
10. Setup support: Temperature condition reference/Calling function
11. Setup support: Resin residence alarm/Monitoring function
12. Setup support: Nozzle/Heating cylinder temperature rise mode function (Step/Nozzle delay/Process temperature control)
13. Zero-molding Molding condition setting screen: Z-Screen (Filling, Holding pressure, Dosing, time, Temperature, Mold clamp force)
14. Zero-molding: FFC control function
15. Zero-molding: FFC control, mode setting function
16. Zero-molding: Function to check the filling position and short shot position by flow front check
17. Screw reversal decompression control function
18. Zero-molding: Clamp force feed back function
19. Clamp force multi-stage control function (Cross-head position control)
20. Multi-toggle function (Gas vent function/Deformation prevention function)
21. Zero-molding: Molding condition support monitor function (Peak clamp force, Pack pressure, Status display)
22. Actual value monitor switching function (Actual/Process/Power/Waveform/Temperature graph)
23. Monitoring setting: Function to automatically set all at once
24. Molding condition access restriction function (Condition range, Screen display, Password function)
25. Automatic condition change function for molding start (By short shot method)
26. Protection: Screw protection function
27. Energy saving mode function of holding pressure
28. Waveform display function: Simple display by process (Injection, Holding pressure, Dosing, Mold opening, Mold closing, Ejector, Mold height)
29. Waveform display function: Waveform save completion message
30. Waveform display function: Automatic waveform save function (Always/Trigger/Abnormal)
31. Quality control function: Waveform monitoring function
32. Quality control function: Molding process monitor logging function (Temperature, Temperature control output, Peak clamp force, Pack pressure)
33. Production control function: Function to set the number of cavities and manage the number of products
34. Production control function: Operation status management function (Operating time, Motor load factor, Power consumption display)

Control unit 23

Clean control cabinet

The control cabinet is equipped with IP54-equivalent dust lockout capabilities. The console is kept internally pressurized to prevent dust infiltration, which can extend the life of instrumentation components.



Optional Equipment

Plasticizing selection
1. Connector-use grade A screw assembly
2. Connector-use grade B screw assembly
3. Connector-use screw
4. Screw tip set - connector-use A
5. Screw tip set - connector-use B
6. Screw tip set - SK + MK
7. Open type nozzle (Connector-use)
8. Open exclusive type nozzle (Standard connector-use)
9. Open exclusive type nozzle (Connector-use)
10. LCP nozzle II
11. FTC III nozzle (Open type, Connector-use)
12. FTC III nozzle (Open exclusive type, Connector-use)
13. FTC III nozzle (Open exclusive type, Connector-use, LCP resin use)
14. High insulated cylinder cover
15. High capacity heater (Except for ø14 mm, ø16 mm)

Plasticizing and injection unit
1. Standard type hopper
2. V/P switchover by mold cavity pressure
3. FTC nozzle electric control circuit (Built-in)
4. High temperature heater control circuit (Up to 499°C)
5. Hopper swivel mounting plate
6. Plating resin inlet of cooling water jacket
7. High efficiency nozzle control (Depression of nozzle contact force)
8. Heavy duty injection *3
9. GS Loader control circuit

Control and monitor unit
1. Leak circuit breaker (AC200V, 220V 3ø3W+E) (Japan and Asia only)
2. Mold temperature monitor (2 zones on moving platen, Without thermocouple, Type K)
3. Mold temperature monitor (1 zone on moving platen and 1 zone on fixed platen, Without thermocouple, Type K)
4. Mold temperature monitor (2 zones on moving platen and 2 zones on fixed platen, Without thermocouple, Type K)
5. Production control (2-directional rejection chute)
6. Mold temperature controller (K=CA, 2 zones on moving platen)
7. Mold temperature controller (K=CA, 1 zone on moving platen and 1 zone on fixed platen)
8. Automatic starting system (Heater+Water supply+External output signal) *1
9. Revolving alarm lamp
10. Multi function 3-color LED alarm lamp
11. 4-line closed circuit water connection lines (With flow detector, Stop valve, Cooling water stop valve, Filter)
12. 2-line closed circuit water connection lines (With flow detector, Stop valve, Cooling water stop valve, Filter)
13. Personal computer connection circuit, Ethernet
14. Spare power supply outlet selection
15. Electric power supply receptacles (Operation side)
16. Name plate: Blue
17. Name plate: Black
18. Motion07
19. MotionGB
20. Korea Certification Mark
21. Addition of the motor breaker
22. OPC UA

Clamp unit
1. Core tractor control circuit 1 system (Control circuit+Piping) *4
2. Pneumatic core pull control circuit 1 system (Control circuit+Piping) *4
3. Rotating core control circuit (Motor drive, Less than 1.5 kW)
4. SPI take-out robot connection circuit *1
5. SPI AN-146/Euromap67 take-out robot connection circuit
6. Product chute
7. High precision heat insulating plate (5 mm/10 mm, Cross type)
8. Mold clamp control unit *4
9. Valve gate drive circuit (Control circuit+Pneumatic circuit) *4
10. Full metallic toggle cover
11. Mold space extension 50 mm *6
12. Slide core return signal *1
13. Pneumatic control circuit *5
14. Signal for hoop molding
15. High cycle specification

Spare parts and accessories
1. Spare parts A (Mechanical parts: Lub. parts)
2. Spare parts A (Electrical parts: Thermocouple)
3. Spare parts for export (Encoder, Limit switch, Inductive proximity sensors)
4. Leveling pads (For one machine)
5. Anchor bolts (For one machine)
6. Locating ring (Transition fit) Inner diameter: ø26 mm/Outer diameter: ø60 mm
7. Mechanical parts and hook for hosting machine
8. Tool A
9. Ejector rods
10. Grease gun
11. Grease cartridge for automatic lub (700 cc)
12. Grease cartridge for manual lub (400 cc)
13. High precision heat insulating plate (5 mm/10 mm, Cross type)
14. Mold clamp
15. Box end wrench for open nozzle

Main Specifications

Item	Unit	SE30EV-A
Clamp unit		
Clamp system		Double toggle (5 points)
Clamp force max.	kN	300
Clearance between tie bars (W x H)	mm	310 x 290
Platen size (W x H)	mm	440 x 420
Daylight	mm	530
(When mold thickness extension 50 mm is selected)	mm	(580)
Mold opening stroke	mm	230
Platen speed	mm/s	1200
Mold thickness (Min. - Max.)	mm	130 - 300
(When mold thickness extension 50 mm is selected)	mm	(130 - 350)
Locating ring diameter	mm	ø60
(When the option is selected)	mm	(ø26)
Ejector system		
Motor driven type (1 point)		
Ejector force	kN	7.8
(When ejector compression device is selected)	kN	(29.4)
Ejector speed max.	mm/s	333
(When ejector compression device is selected)	mm/s	(200)
Ejector stroke	mm	50
(When ejector compression device is selected)	mm	(30)

Injection unit

Plasticizing capacity		C35				C65		
		MN	S	S	S	S	S	S
Screw diameter	mm	14	16	18	20	18	20	22
Injection pressure max. *1,*2	MPa	223	266	224	181	274	265	220
Holding pressure max. *1,*2	MPa	223	266	224	181	274	265	220
Theoretical injection capacity	cm ³	6	11	14	18	20	25	30
Injection mass (GPPS)	g	5.8	11	13	17	19	24	28
Plasticizing rate *3	kg/h	5.1	9.5	11	14	10	13	18
Injection rate	cm ³ /s	92	120	152	188	140	173	209
Screw stroke	mm	40	58			78		
Injection speed max.	mm/s	600				550		
(When high load filling spec. is selected)	mm/s	(500)				(550)		
Screw rotating speed max.	min ⁻¹	460	430			400		
Number of temperature control zone		5		4		4		5
Heater capacity	kW	2.2	2.6	3.2	3.6	3.2	3.6	3.9
Nozzle contact force	kN	7.8				14		
Injection unit moving stroke	mm	185				210		
Protrusion	mm	65		30		30		
Hopper capacity (When the standard hopper selected)	L	6		15		15		

Machine dimensions and mass

Machine dimensions (L x W x H) *4	mm	3128 x 958 x 1470
(When mold thickness extension 50 mm is selected)	mm	(3178 x 958 x 1470)
Machine mass	t	2.0
	t	2.2

*1 The max. injection pressure and max. hold pressure are calculated values and represent machine output, not resin pressure.
 *2 The max. injection pressure and max. hold pressure are not sustained pressure levels.
 *3 The plasticizing rate is given for a machine mounted with the SD Screw.
 *4 The total length of the machine is to the front end of the injection unit when mounting the screw of the smallest diameter.
 The total height of the machine does not include the dimensions of leveling pads and hopper.
 ● Specifications are subject to change without notice for performance improvement.

