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

Our products have acquired ISO9001 certification.

www.shi.co.jp/plastics/

B002EN08-2202HG

SE-EV-A

All-electric Small-sized Injection Molding Machine

Sumitomo SHI DEMAG

SE-EV-A

All-electric Small-sized Injection Molding Machine

Lineup

SE30EV-A	(300kN)
SE50EV-A	(500kN)
SE75EV-A	(750kN)
SE100EV-A	(1000kN)
SE130EV-A	(1300kN)
SE180EV-A	(1800kN)

Sumitomo Heavy Industries, Ltd.

Further progress in injection molding. The age of "A" begins.

To "A" lineage of all-electric injection molding machines

Our all-electric injection molding machines have undergone to evolve synergistically both in hardware and software technologies.
The SE-EV series debuted as the leader in the age of innovation and has evolved to the next stage, the SE-EV-A series, which provides overwhelming advances in precision molding.

[Potential of all-electric IMMs]

SE-S
- Direct-drive system built-in the first in the industry
- High performance comparable to hydraulic machines

SE-DU
- Improved machine performance

SE-DUZ
- Added Zero-molding technologies
- Greatly augmented potential

SE-EV
- Zero-molding evolution
- Improved mold clamping and injection precision

SE-EV-A
- Development of Zero-molding applied technologies
- Latest machine performance that fully brings out effects of Zero-molding

Deployment of dedicated machines

Connector
- Connector machines support advanced molding

Lens
- Lens machines specialized for optical needs

SE-EV-A-SHR
- High filling performance machines expended the possibilities of thin-wall molding

SE-EV-A-LGP
- Light guide plate machines produce next-generation devices

[Improvements of molding processes]

'Zero-molding

Increased possibilities by "A"

Productivity

- Defect rate reduction
  - Greater platen rigidity
  - Improved surface pressure distribution
  - Clamp force correction
  - FFC molding
- Lower vibration and lesser cycle time
  - S-MOVE (New type low-vibration control)
  - Greater frame rigidity
- Lesser setup time
  - Purging function for resin replacement
  - Resin viscosity measurements
- Higher efficiency
  - Reduced mold maintenance
  - Mold protection function
  - Core/guide pin breakage prevention
  - Low-inertia direct drive motor

Operability

- Greater display operability
  - Upgraded tab functions
  - Increased touch panel sensitivity
  - Wider viewing angle
- Expanded quality management functions
  - Waveform-based OK/NG judgment
  - Many logging items
- Operation error prevention
  - Wrong setting alarm
  - Redesigned button coloring

Environmental performance

- Energy-saving
  - Linear guide
  - Oil seal-less
  - LED backlight screen
- Clean
  - Bush-less tie bar
  - Grease-maintenance-free

Be Comfortable.
Comfortable Molding and Optimized Production

Support for small volume molding New!

Screws of narrow diameter can be selected for all injection units.
This allows users to mold products with small injection capacity.

● Pairings examples of SE100EV-A (1000 kN) are shown in the table below. New additions added this time are displayed in blue.

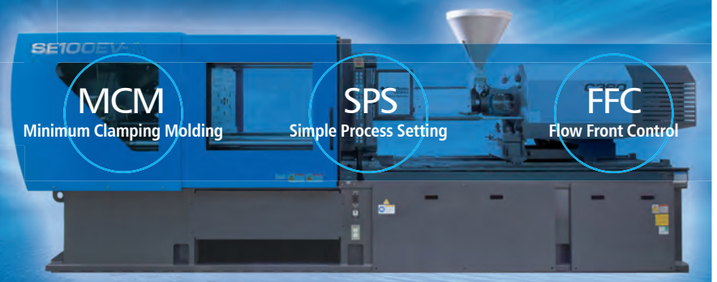
Injection unit	Screw diameter (mm)					
C110	16	18	20	22	25	28
C160	18	20	22	25	28	32
C250	22	25	28	32	36	
C360	25	28	32	36	40	

Reducing defects, loss, and faults to zero whenever possible

'Zero-molding

Zero-molding is a comprehensive application to cut down defects, losses and faults to zero as possible.
It is built with these three technologies:
MCM ,FFC and SPS.

Standard equipment

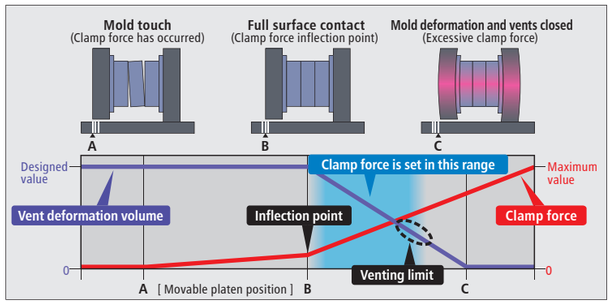


MCM
Minimum Clamping Molding

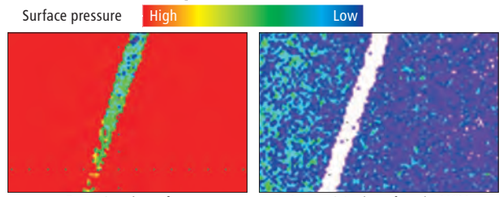
Better vent effects, less maintenance and longer mold life

The clamp force with requisite minimum and best surface pressure balance is realized by optimization of clamping precision and surface pressure.

PAT. pend. in Japan



- Change of the vent deformation -



Excessive clamp force | Appropriate clamp force by MCM

Vent deformation and venting function without working if excessive clamp force.

- An example of mold clamp force set to 0 kN -

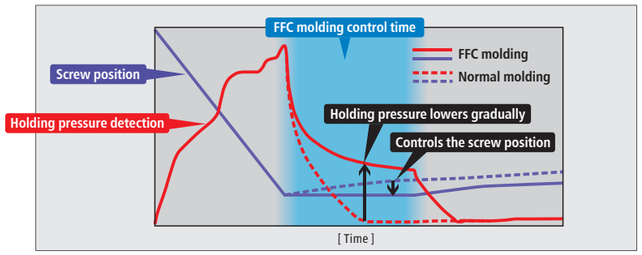
Stable molding is enabled for some products at the mold clamp force set to 0 kN.

FFC
Flow Front Control

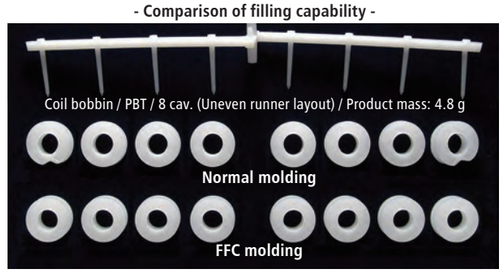
Low-pressure and smooth filling Improves cavity balance and venting

Screw control before and after V-P switch over enables low-pressure, smooth, and complete filling. It improves the cavity balance and eliminates burrs and short shot at the same time.

PAT. pend. in Japan



- Comparison of filling capability -



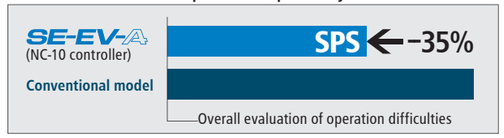
SPS
Simple Process Setting

Error-free and simple setting Reduces operation time

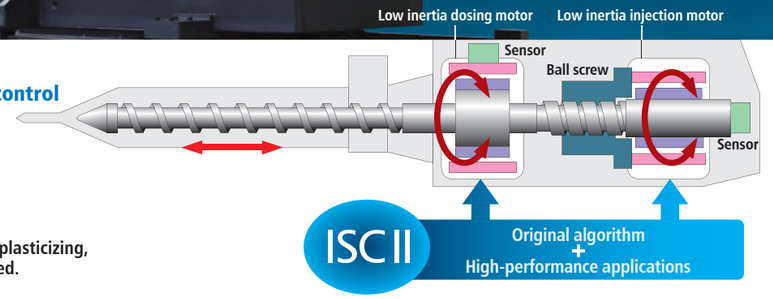
Troublesome settings are not required.
Production engineers and general operators can make full use of the advanced performance.

PAT. pend. in Japan

- Comparison of operability -



The ultimate injection performance



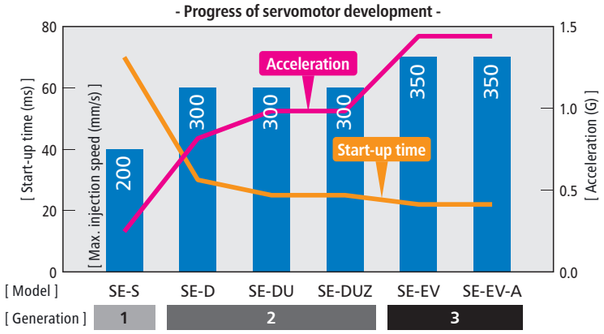
High-precision and high-response screw control

Direct drive system

The originally-developed low-inertia servomotor is controlled by an up-to-date control system ISC II (Intelligent Servo Controller II).
It allows the screw to achieve high-precision and high-response control, so high-precision and stable plasticizing, filling and holding pressure processes can be satisfied.

PAT. pend. in Japan

- Progress of servomotor development -



● The value of each model is based on the C360 injection unit.
● The rise time is calculated by the time from 10% to 90% of the maximum injection speed.

Development to the third generation

Since the first-in-the-industry direct drive machine SE-S released in 1997, our reputation in all-electric technology leaps forward. Development of servomotors exclusive for injection molding machines has advanced to the third generation, and motor performances have been improved remarkably.

New!

Even faster maximum injection speed

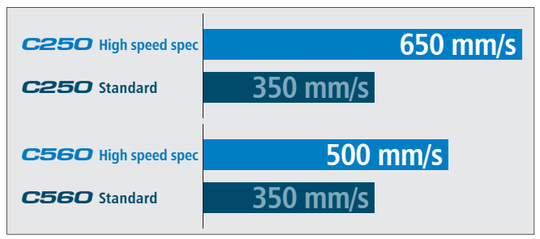
High speed spec injection unit

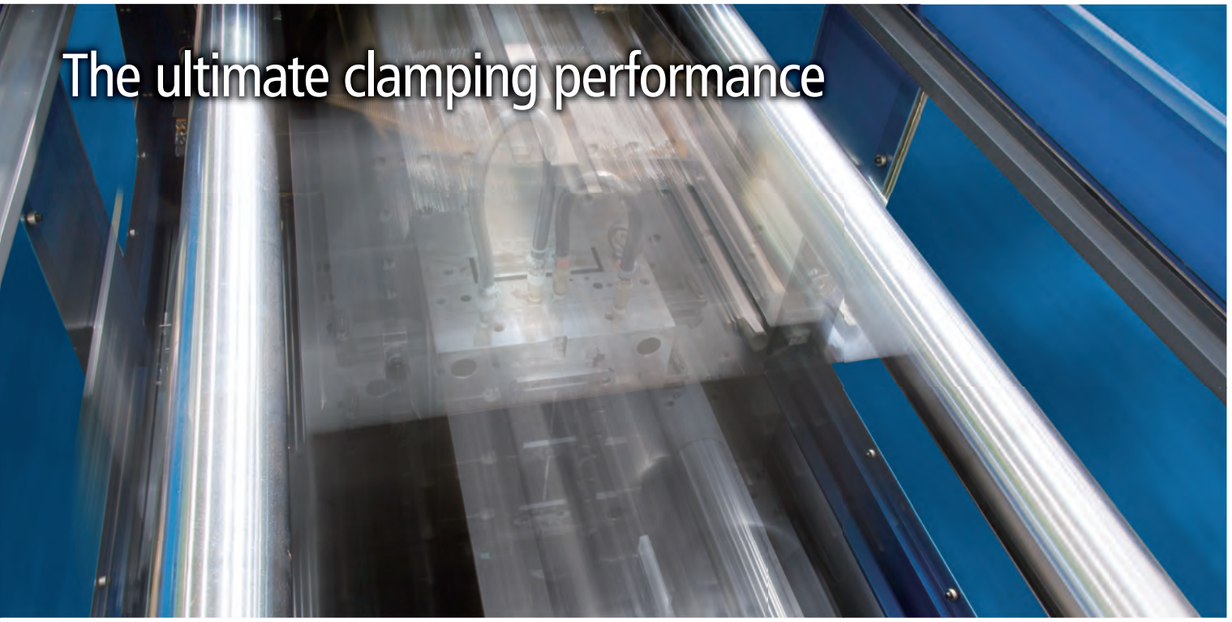
It can achieve molding of more difficult thin-wall products with even faster maximum injection speed.

● Only available for C250 and C560 injection units (SE75EV-A - SE180EV-A)

Optional

- Comparison of maximum injection speed -



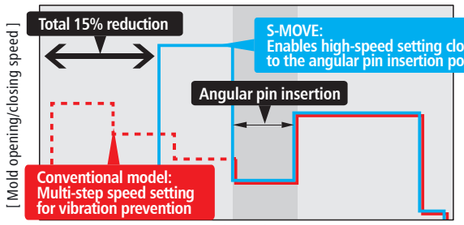


Lesser cycle time

Acceleration/deceleration control with vibration suppression S-MOVE

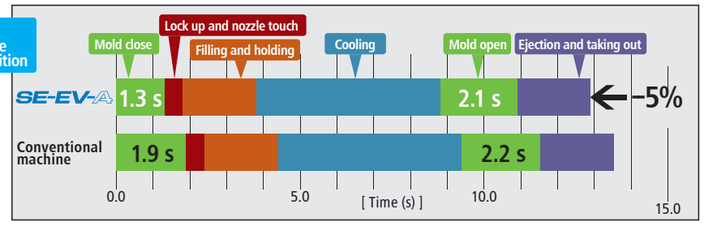
Smooth speed patterns in acceleration/deceleration achieved vibration suppression and faster clamp movement.

- Comparison of mold opening/closing time -



An example of the mold with angular pins

- An example of cycle time comparison -

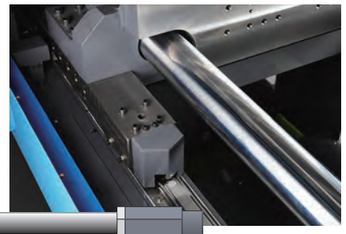


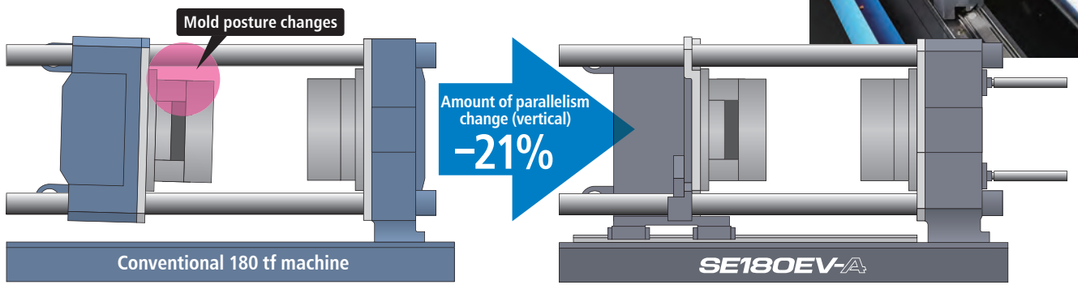
S-MOVE reduces the mold open/close time.

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

Platen support and bush-less tie bar

Even if installed a heavy mold, the mold open/close can be smooth while maintaining high parallel precision.
Provide 100% mold precision and prevent damage to the mold, such as pin stuck, etc.



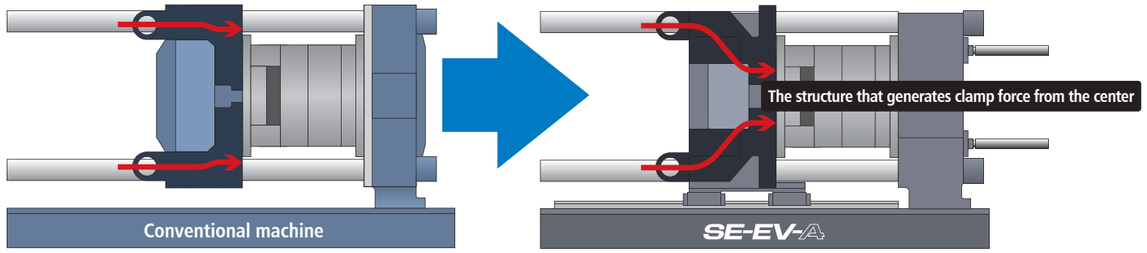


Superior surface pressure distribution offers good gas vent and reduces the mold clamp force

Center Press Platen

Installed Center Press Platens to equalize surface pressure distributions.
New structure design reduces surface pressure unevenness at the center further.

PAT. pend: in Japan



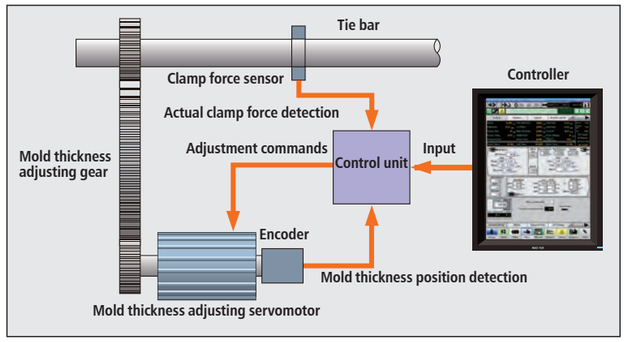
● The optional Double Center Press Platens on the movable and fixed sides offer higher surface pressure evenness.

Staying constant clamp force in mass production

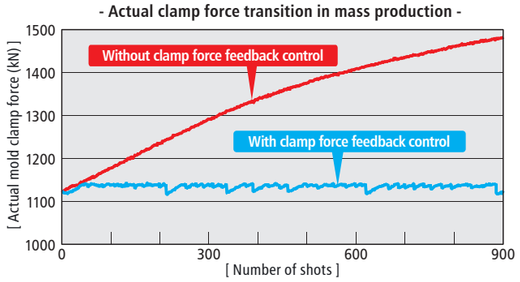
Mold clamp force feedback control

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 actually value.

PAT. pend: in Japan



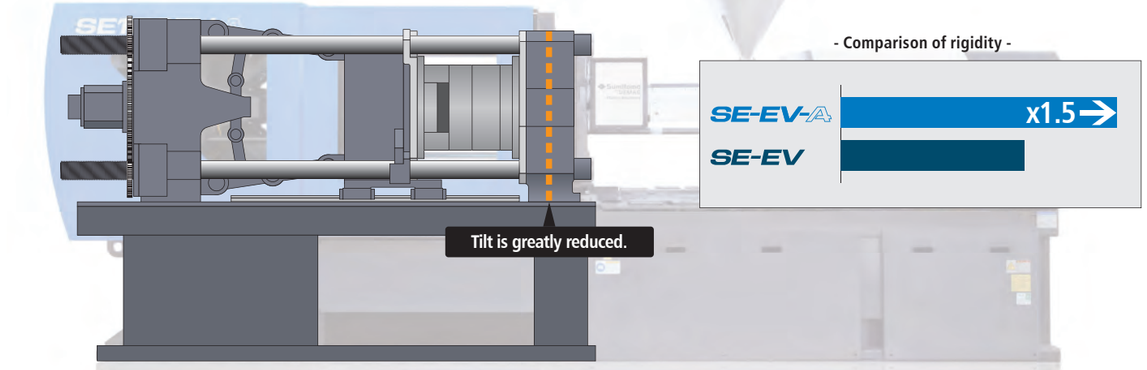
- Actual clamp force transition in mass production -



Greatly reduced deformation

High-rigidity, low-vibration frame

It improves the amount of platen tilt during high-speed mold closing,
and Improves linearity in high-cycle time molding, also prevents wear and damage of guide pins.



Speedy start up to stable mass production

Links humans with machines quickly and simply

NC-10 controller

The new NC-10 controller in a human-centered design (HCD) housing has a large 15-inch color LCD panel that features high sensitivity for light-touch operations and tabs for quick switching of pages. In addition, it equipped various NC-10 controller functions such as waveform display and quality control.

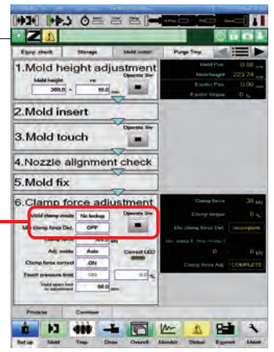
Simple and speedy start up

Mold install screen

Mold installation can be completed quickly and easily by procedures shown on screen.

PAT. pend. in Japan

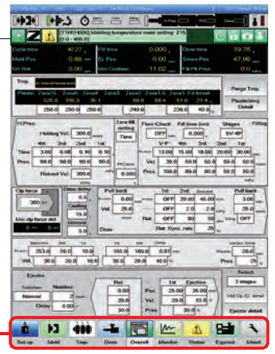
Minimum mold clamp force detection is available.



Overall screen

Setting various basic values on only one screen after mold installation.

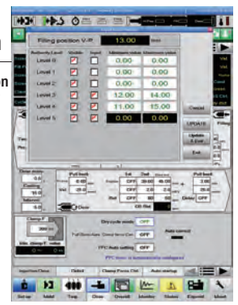
Easy-to-see icons for intuitive operations are used for tabs.



Versatile and advanced mass production management

Molding condition protection function

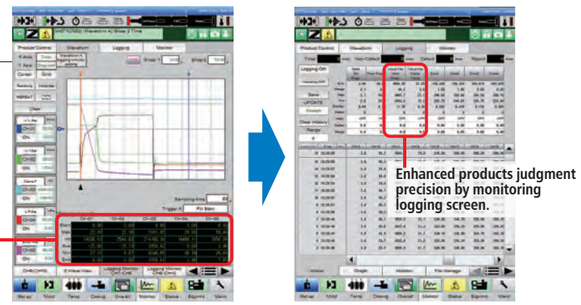
Limits of condition protection can be set according to user levels to prevent incorrect settings.



Waveform displays and quality control

Logging waveform items to improve judgment precision of quality control.

Statistical quantity of each item is calculated on the waveform screen.



Automatic setting for completely filling

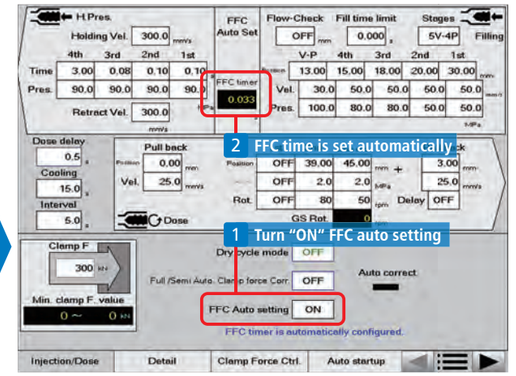
FFC auto setting

FFC solves short and burrs at the same time and improves cavity balance. SE-EV-A set FFC time automatically.

FFC is a part of the Zero-molding functions. See page 04 for details.

Conventional setting procedures

90% filling by short shot → Setting the FFC time temporarily with reference to the filling time → Adjusting the FFC time manually until complete filling is achieved



Finding minimum mold clamp force quickly

Minimum mold clamp force detection

The minimum mold clamp force at mold surfaces contact completely is detected automatically. Based on this value, it's able to judge the necessary clamp force from waveform.

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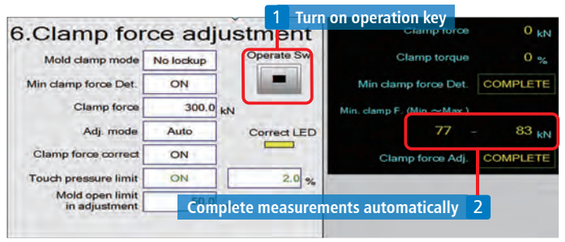
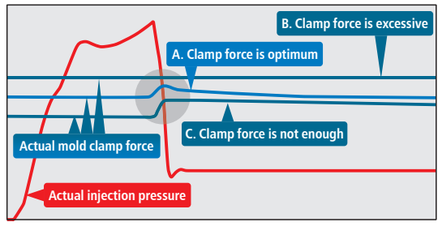
MCM can reduce the clamp forces remarkably. See page 04 for details.



- Judging necessary clamping force based on actual waveform -



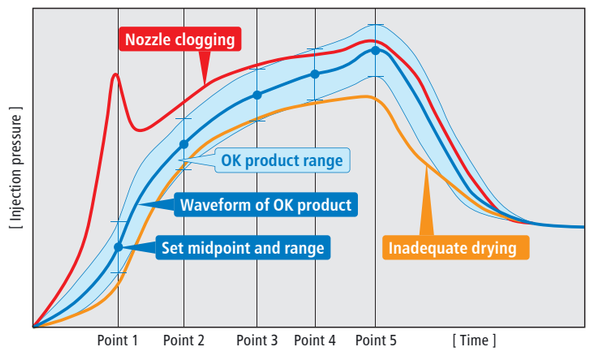
Even though the mold clamp force rises at the peak of the injection pressure, the actual clamp force goes down to setting value during holding pressure process (See waveform A). It can be judged that the set value of the mold clamp force is sufficient.

Defects detected through injection pressure

5-point injection pressure monitoring

Injection pressure is monitored at any 5 moments after filling starts. Molded products for which the pressure exceeds the set high/low limits are judged as defects and can be removed from production.

- An example of injection pressure waveform monitoring -



Cursor L 0.000	Cursor R 5.000			X Axis A 5 s
Overwrite counter A 0 shots			Trigger A (CH1-5)	Fill Start

	Monitor 1	Monitor 2	Monitor 3	Monitor 4	Monitor 5	
Injection pressure detect	0.00	0.00	0.00	0.00	0.00	MPa
Monitor	40.00	90.00	110.00	125.00	150.00	MPa
Range	10.00	10.00	10.00	10.00	10.00	MPa
Time from start to filling	0.800	1.500	2.200	2.700	3.200	s

Waveform monitoring positions (elapsed time from filling starts),midpoints and ranges can be set at any 5 moments. Defects can be detected and identified by logging actual data.

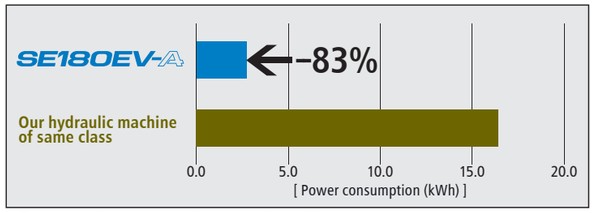
Minimizing the environmental load

act SUSTAINABLY

Significantly reduces power consumption
Thoroughgoing energy saving performances

All-electric machines are much more energy-efficient than hydraulic machines. Excellent energy-saving is gained from Zero-molding which lowers clamp force, and low friction mechanisms such as linear guide platen which improved mechanical efficiency.

- Power consumption comparison -



The power saving effects vary with the molding conditions.

Power consumption reduction at holding pressure process
Energy-saving control

If the initial large holding pressure need not be maintained, the motor load can be reduced by reducing holding pressure gradually. The reduction rate (slope) is set by selecting modes.

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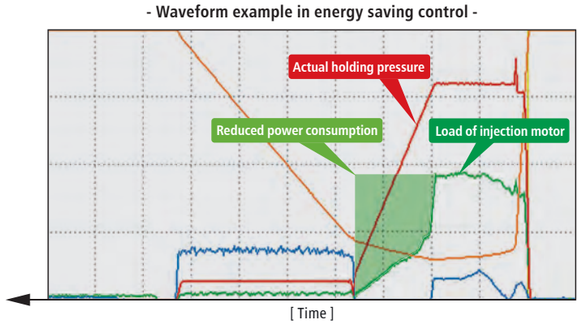
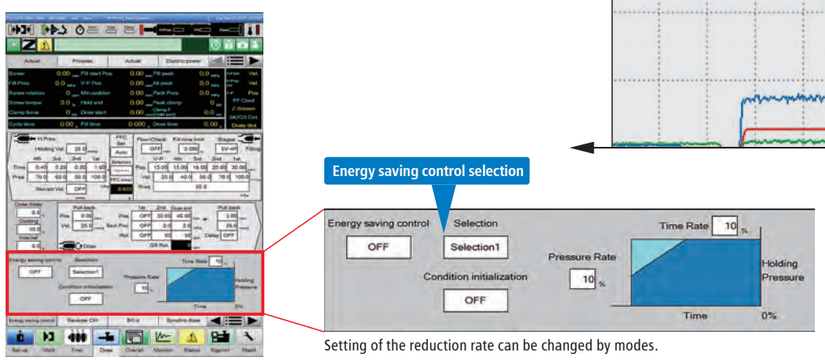
- Waveform example in energy saving control -





Setting of the reduction rate can be changed by modes.

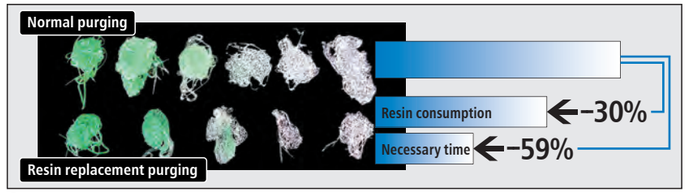
Maximized use of motor energy
Power regeneration system with no conversion loss

Specially designed for molding machines, this power regeneration system stores regenerative electric power in a capacitor.
None of the regenerative power is lost in the conversion process.
Moreover, the power from the capacitor is used to prevent voltage drops
when the voltage is applied for the next shot, so molds are stably opened and closed.

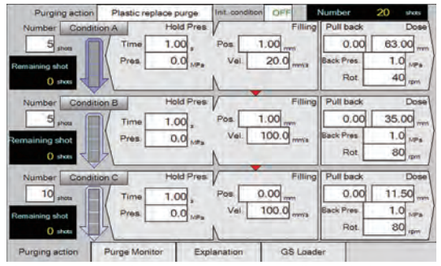
Speedy color and mold change
Purging function for resin replacement

The SE-EV-A has an automatic purging mode for resin color change.
It saves valuable time and resin.

- Comparison of purge resin quantity and time -



The resin consumption and necessary time depend on molding conditions.



The set purging conditions A to C are automatically switched.

Prevents product and environment pollution with tie bar grease
Bush-less tie bar and tie bar plating

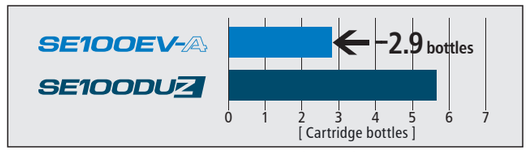
The SE-EV-A prevents cosmetic defect by grease scattering, since mold area is clean by grease free tie bar. Also you will have comfortable work environments.

"Comfortable work without producing defects" is impossible in such environments.

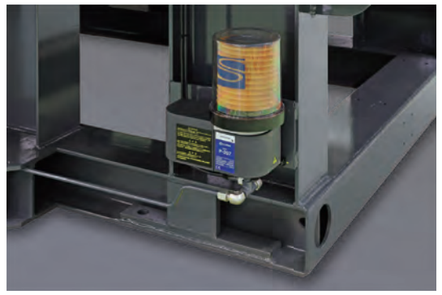
Optimized greasing system
Reduces waste to protect the environment

An optimized grease supply system reduces grease consumption.
It reduces waste grease and realizes environment-friendly operations.
At the same time, the maintainability has improved,
and work efficiency has also improved.

- Comparison of yearly grease cartridge consumption -



Yearly operation time: 6000 hrs. Cycle: 6.0 s



Varied screw assemblies that meet all needs

New theoretical plasticization system

SL Screw

**Melting process in the conventional screws are analyzed with visual, temperature and pressure.
A screw designed based on these results is used as the core of this new plasticization system.**

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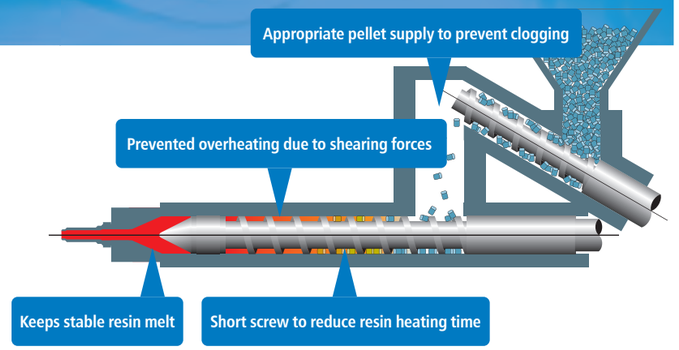
● There are precautions such as the type of resin when install the SL Screw. For details, please see the dedicated catalog or contact us.



Stable molding of super-engineering plastics

PPS Package

**PPS is a kind of resins those are difficult to mold stably because it has a high molding temperature, poor thermal stability, and generates a lot of gas.
By using PPS package and the dedicated screw assembly together, stable molding can be realized not only for PPS but also for other super engineering plastic resins.**

Optional

PPS dedicated screw assembly (Non-rotation type screw tip)

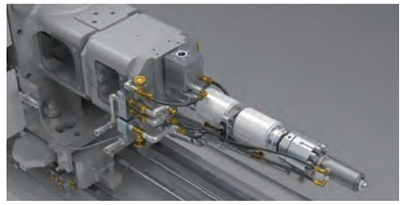
PPS dedicated screw assembly (Zone 1 high-capacity heater)

Stable molding of LSR

LSR Package

**This package enables precision-stable molding of LSR (Liquid Silicone Rubber), which has grown in demand in recent years.
The cylinder is equipped with a cooling circuit that keeps temperature between 15 - 30˚C.**

Optional



LSR dedicated screw assembly

LSR dedicated screw assembly (SK Control)

Screw Assembly

Specifications		Nitride	Plating	Corrosion and wear resistant A	Corrosion and wear resistant B	Corrosion and wear resistant C	High temperature
Material	Screw	Nitride coating	Plating	Corrosion and wear resistant A	Corrosion and wear resistant B	Corrosion and wear resistant B	Corrosion and wear resistant A
	Cylinder	Nitride coating	Nitride coating	Corrosion and wear resistant A	Corrosion and wear resistant B	Corrosion and wear resistant C	Corrosion and wear resistant A
	Screw tip	Rotation type	Rotation type	Corrosion and wear resistant A Non-rotation type	Corrosion and wear resistant B Non-rotation type	Corrosion and wear resistant C Non-rotation type	Corrosion and wear resistant A Non-rotation type
Type	SD Screw	○	○	○	○	○	○
	SM Screw	○	○	○	—	—	—
Wear resistance		★	★	★★	★★★	★★★	★★
Corrosion resistance		★	★	★★	★★	★★★	★★
Suitable resins		Non-wear and non-corrosion resin	Weak burning resin	Resin with GF less than 30%, flame-retardant resin	Resin with 30% - 40% GF, resin with much filer (GB, CF, MR)	Resin with 40% - 60% GF, good corrosive resin	Resin with high molding temperature

★★★Most suitable　★★Suitable　★Usable

All production quality information at hand

High-level, borderless management of production quality

i-Connect production quality control system

**It's able to centrally manage production of your molding machines worldwide; moreover, it grasps detailed quality information from molding machines quickly by operating intuitively via digital devices.
As the quality control system, i-Connect helps you improve production efficiency significantly.**

Optional

Connects the entire factory to a higher management system

New!

A universal communication standard OPC UA

**Our injection molding machines support OPC UA which is a standard data communication protocol for industries that exchanges data across different manufacturers and OSs.
OPC UA which is versatile and flexible that achieves Industry 4.0.**

Optional

M2M, connection between molding machines and peripheral devices

Quicker setups, less mistakes and easier operation

**Performing collective monitoring and control on the molding machine side by connecting various peripheral devices to molding machines.
It is possible to reduce setup time and its efforts and prevent mistakes.
It's possible to strongly support more efficient production.**

● Customers are requested to implement MES (manufacturing execution system).
● Connection with peripheral devices may require molding machine modifications.
● QR Code is a registered trademark of DENSO WAVE INCORPORATED.

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. Standard capacity heater (More than C250)
12. Zone 1 high-capacity heater (Less than C160)
13. Screw cold start prevention function (With variable interlock timer)
14. Remote setting function for sprue break stroke (Reverse timing selection with delay timer, Nozzle contact detection, Movement time setting)
15. Screw rotation speed digital display function
16. Purging cover device (With limit switch)
17. Injection unit swivel device (With nozzle alignment adjustment mechanism)
18. Remaining cooling time display function
19. Dosing start delay timer function
20. Injection speed/Holding pressure rise speed selection function (10 modes)
21. Screw forward speed setting function during holding pressure
22. Screw pull back delay control function
23. Synchro dosing function
24. Screw reverse rotation control function
25. Independent temperature control device of nozzle
26. Standard energy saving heating cylinder cover (Two-layer structure)
27. Water cooling jacket temperature control device
28. Mold open operation function during dosing (Shut off nozzle drive control)
29. Filling pressure multi-stage control function
30. Resin residence prevention function
31. One-touch manual dosing function
32. High-precision, high-pressure nozzle contact device (Nozzle contact force 3-step variable)
33. Stainless steel purge resin saucer
34. SL Screw: Auto-tuning function of synchronization rate (SL Screw is a selection specification)
35. Deceleration pattern of V/P switchover (Slow landing) (Only for SE30EV-A)
36. High-efficiency nozzle control

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 (Only for SE30EV-A)

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 clamp 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 clamp
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. Center Press Platen mechanism
27. Product drop confirmation connection circuit *1
28. Multi-toggle function (Multi-stage clamp force setting)
29. Tie bar plating specification
30. Ejector motor device with brake
31. S-MOVE function (Low vibration control)
32. Ejector standby position function
33. Control device for mold installation space with servo motor
34. Dust-proof cover on top of toggle (Fixed type)
35. Dry cycle mode function

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 zone varies depending on the screw diameter and screw type.
*3 The injection duty is 50%. The maximum injection speed of C35 unit and C160 unit change as follows. C35: 500 mm/s C160: 350 mm/s
*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 ejector stroke will be shortened, and maximum ejector speed slows down.
*7 The overall machine length is larger by 50 mm (SE100EV-A - SE180EV-A: 100 mm), and maximum mold thickness is larger by 50 mm.
*8 The overall machine length and maximum mold thickness are larger by 100 mm.
*9 You cannot choose this option with 100 mm mold thickness extension.
*10 The compression time with listed compression force is less than 20% of cycle time, and the ejector stroke will be shortened.
● Specifications are subject to change without notice for performance improvement.

Standard Equipment

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

Optional Equipment

Plasticizing selection
1. Ion-nitride screw assembly
2. Hard chromium plating screw assembly
3. Wear and corrosion resistant A screw assembly
4. Wear and corrosion resistant B screw assembly
5. Wear and corrosion resistant C screw assembly
6. High-temperature screw assembly (Max. temp. 450 ºC)
7. SD Screw
8. SM Screw
9. SL Screw
10. Screw tip set Rotation type
11. Screw tip set Rotation type TiN coating
12. Screw tip Corrosion and wear resistant A Non-rotation type
13. Screw tip Corrosion and wear resistant B Non-rotation type
14. Screw tip Corrosion and wear resistant C Non-rotation type
15. Open nozzle
16. Needle nozzle (Needle is operated by pneumatic.)
17. FTCII nozzle (Open nozzle: ø18 mm- ø36 mm, Less than SE130EV-A)
18. Cylinder nozzle
19. Zone 1 high capacity heater (More than C250)
20. High capacity heater
21. Extension nozzle
22. High insulated cylinder cover

Plasticizing and injection unit
1. Resin temperature finder (Only for needle nozzle type)
2. Standard type hopper
3. V/P switchover by mold cavity pressure
4. Needle valve nozzle drive circuit
5. FTC nozzle electric control circuit (Built-in)
6. High temperature heater control circuit (Up to 499 ºC)
7. Hopper swivel mounting plate
8. Plating resin inlet of cooling water jacket
9. High efficiency nozzle control (Depression of nozzle contact force)
10. High duty injection *3
11. GS Loader control circuit
12. Nozzle pressing force reduction (Nozzle pressing force: 14 kN) (Only for SE50EV-A C160)

Control and monitor unit
1. Leak circuit breaker (AC200V, 220V 3ø3W+E) (Japan and Asia only)
2. Mold temperature monitor (2 zones on movable platen, Without thermocouple, Type K)
3. Mold temperature monitor (1 zone on movable platen and 1 zone on fixed platen, Without thermocouple, Type K)
4. Mold temperature monitor (2 zones on movable 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 movable platen)
7. Mold temperature controller (K=CA, 1 zone on movable platen and 1 zone on fixed platen)
8. Mold temperature controller (K=CA, 2 zones on movable platen and 2 zones on fixed platen) (Only for SE75EV - SE180EV)
9. Automatic starting system (Heater+Water supply+External output signal) *1
10. Revolving alarm lamp
11. Multi function 3-color LED alarm lamp
12. 4-line closed circuit water connection lines (With flow detector, Stop valve, Cooling water stop valve, Filter)
13. 2-line closed circuit water connection lines (With flow detector, Stop valve, Cooling water stop valve, Filter)
14. Personal computer connection circuit, Ethernet
15. Spare power supply outlet selection

Control and monitor unit
16. Electric power supply receptacles (Operation side)
17. Name plate: Blue
18. Name plate: Black
19. Motion07
20. MotionGB
21. Korea Certification Mark
22. Addition of the motor breaker
23. OPC UA

Clamp unit
1. Core tractor control circuit 1 system (Control circuit+Piping) *4
2. Core tractor drive circuit (No hydraulic pump) (Only for SE50EV-A - SE180EV-A)
3. Core tractor drive circuit (The ie Hydraulic Pump is included.) (Only for SE50EV-A - SE180EV-A)
4. Pneumatic core pull control circuit 1 system (Control circuit+Piping) *4
5. Rotating core control circuit (Motor drive, Less than 1.5 kW)
6. SPI take-out robot connection circuit *1
7. SPI AN-146/EUROMAP67 take-out robot connection circuit
8. Product chute
9. High precision heat insulating plate (5 mm/10 mm, Cross type)
10. Mold clamp control unit *4
11. Valve gate drive circuit (Control circuit+Pneumatic circuit) *4
12. Valve gate drive circuit (The ie Hydraulic Pump is included.)
13. Full metallic toggle cover
14. Ejector compression device (SE50EV-A - SE180EV-A: 49 kN) *6
15. Mold space extension 50 mm *7
16. Mold space extension 100 mm (Only for SE100EV - SE180EV) *8
17. Slide core return signal *1
18. Double center press platens (Only for SE100EV - SE180EV) *9
19. Ejector force power up (SE100EV-A - SE180EV-A: 59 kN) *10
20. Ejector stroke extension (SE50EV-A, SE75EV-A: 100 mm, SE100EV-A - SE180EV-A: 150 mm)
21. Pneumatic control circuit *5
22. Signal for hoop molding (Only for SE30EV-A)
23. High cycle specification (Only for SE30EV-A)

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 (Only for SE30EV-A)
7. Locating ring (Transition fit) Inner diameter: ø100 mm/Outer diameter: ø120 mm (Only for SE180EV-A)
8. Locating ring (Transition fit) Inner diameter: ø110 mm/Outer diameter: ø120 mm (Only for SE180EV-A)
9. Mechanical parts and hooks for hosting machine
10. Tool A
11. Ejector rods
12. Grease gun
13. Grease cartridge for automatic lub (700 cc)
14. Grease cartridge for manual lub (400 cc)
15. High precision heat insulating plate (5 mm/10 mm, Cross type)
16. Mold clamp
17. Box end wrench for open nozzles
18. Offset wrench for shut-off nozzle

Main Specifications

■ Clamp unit

Item	Unit	SE30EV-A	SE50EV-A	SE75EV-A
Clamp system		Double toggle (5 points)	Double toggle (5 points)	Double toggle (5 points)
Clamp force max.	kN	300	500	750
Clearance between tie bars (W x H)	mm	310 x 290	360 x 360	420 x 420
Platen size (W x H)	mm	440 x 420	500 x 500	580 x 580
Daylight	mm	530	600	710
(When mold thickness extension 50 mm is selected)		(580)	(650)	(760)
(When mold thickness extension 100 mm is selected)		—	—	—
Mold opening stroke	mm	230	250	300
Platen speed max.	mm/s	1200	1200	1200
Mold thickness (Min. - Max.)	mm	130 - 300	160 - 350	160 - 410
(When mold thickness extension 50 mm is selected)		(130 - 350)	(160 - 400)	(160 - 460)
(When mold thickness extension 100 mm is selected)		—	—	—
Locating ring diameter	mm	ø60	ø100	ø100
(When the option is selected)		(ø26)	—	—
Ejector system		Motor driven type (1 point)	Motor driven type (5 points)	Motor driven type (5 points)
Ejector force	kN	7.8	21	26
(When ejector compression device is selected)		—	(49)	(49)
(When ejector force power up is selected)		—	—	—
Ejector speed max.	mm/s	333	333	333
(When ejector compression device/ejector force power up is selected)		—	(250)	(250)
Ejector stroke	mm	50	70	80
(When ejector stroke extension is selected)		—	(100)	(100)
(When ejector compression device/ejector force power up is selected)		—	(60)	(70)

■ Injection unit

Plasticizing capacity		C35				C65			
		MN		S		S			
Screw diameter	mm	14 *6,*9	16 *6,*9	18	20	18	20	22	25
Injection pressure max. *1,*2	MPa	223	266	224	181	274	265	220	170
Holding pressure max. *1,*2	MPa	223	266	224	181	274	265	220	170
(When high speed filling specification is selected) *7		—				—			
Theoretical injection capacity	cm^3	6	11	14	18	20	25	30	38
Injection mass (GPPS)	g	5.8	11	13	17	19	24	28	37
Plasticizing rate *3,*4	kg/h	5.1	9.5	11	14	10	13	18	26
Injection rate	cm^3/s	92	120	152	188	140	173	209	270
(When high load filling specification is selected) *7		(76)	(100)	(127)	(157)	(140)	(173)	(209)	(270)
(When high speed filling specification is selected) *7		—				—			
Screw stroke	mm	40		58		78			
Injection speed max.	mm/s	600				550			
(When high load filling specification is selected) *7		(500)				(550)			
(When high speed filling specification is selected) *7		—				—			
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	4.3
Nozzle contact force	kN	7.8				14			
(When low nozzle contact force is selected)		—				—			
Injection unit moving stroke	mm	185				180 - 250			
Protrusion	mm	30				30			
Hopper capacity (When the standard hopper selected)	L	(6)		(15)		(15)			

Plasticizing capacity		C65						C110						C160						C110						C160						C250					
		MN		S				MN		S				S						MN		S				S						S		M			
Screw diameter	mm	(14) *6	(16) *6	18	20	22	25	(16) *6	(18) *6	(20) *6	22	25	28	(18) *6,*8	(20) *6,*8	(22) *6,*8	25	28	32	(16) *6	(18) *6	(20) *6	22	25	28	(18) *6,*8	(20) *6,*8	(22) *6,*8	25	28	32	(22) *6,*8	(25) *6	28	32	36	
Injection pressure max. *1,*2	MPa	223	266	274	265	220	170	266	274	265	274	212	174	274	265	274	274	218	167	266	274	265	274	212	174	274	265	274	274	218	167	274	274	284	217	171	
Holding pressure max. *1,*2	MPa	223	266	274	265	220	170	266	274	265	274	212	174	274	265	274	274	218	167	266	274	265	274	212	174	274	265	274	274	218	167	274	274	284	217	171	
(When high speed filling specification is selected) *7		—						—						—						—						—						(274)	(274)	(284)	(217)	(171)	
Theoretical injection capacity	cm^3	6	11	20	25	30	38	11	19	24	40	51	64	19	24	39	51	64	84	11	19	24	40	51	64	19	24	39	51	64	84	39	51	86	113	143	
Injection mass (GPPS)	g	5.8	11	19	24	28	37	11	18	23	38	49	61	18	23	37	49	61	80	11	18	23	38	49	61	18	23	37	49	61	80	37	49	83	108	137	
Plasticizing rate *3,*4	kg/h	4.4	8.8	10	13	18	26	8.8	10	13	18	26	37	10	13	18	26	37	53	8.8	10	13	18	26	37	10	13	18	26	37	53	18	26	37	53	76	
Injection rate	cm^3/s	84	110	140	173	209	270	100	127	157	190	245	308	101	125	152	196	246	322	100	127	157	190	245	308	101	125	152	196	246	322	133	171	216	281	356	
(When high load filling specification is selected) *7		(84)	(110)	(140)	(173)	(209)	(270)	(100)	(127)	(157)	(190)	(245)	(308)	(89)	(109)	(133)	(171)	(215)	(281)	(100)	(127)	(157)	(190)	(245)	(308)	(89)	(109)	(133)	(171)	(215)	(281)	(133)	(171)	(216)	(281)	(356)	
(When high speed filling specification is selected) *7		—						—						—						—						—						(247)	(319)	(400)	(522)	(661)	
Screw stroke	mm	40	58	78				58	78	104				78	104					58	78	104				78	104					104	140				
Injection speed max.	mm/s	550						500						400						500						400						350					
(When high load filling specification is selected) *7		(550)						(500)						(350)						(500)						(350)						(350)					
(When high speed filling specification is selected) *7		—						—						—						—						—						(650)					
Screw rotating speed max.	min^{-1}	400						400						400						400						400						400					
Number of temperature control zone		5		4		5		5	4	5				4	5					5	4	5				4	5					5					
Heater capacity	kW	2.2	2.6	3.1	3.5	3.8	4.2	2.6	3.1	3.5	3.8	4.2	4.8	3.1	3.5	3.8	4.2	4.8	5.4	2.6	3.1	3.5	3.8	4.2	4.8	3.1	3.5	3.8	4.2	4.8	5.4	3.8	4.2	6.5	7.5	8.4	
Nozzle contact force	kN	14						14						14	43					14						14	43					14	43				
(When low nozzle contact force is selected)		—						—						—	(14)					—						—						—					
Injection unit moving stroke	mm	180 - 250						180 - 250						250						210 - 300						200 - 300						200 - 300					
Protrusion	mm	30						30						30						30						30						30	45				
Hopper capacity (When the standard hopper selected)	L	(15)						(15)						(15)						(15)						(15)						(30)					

■ Machine dimensions and mass

Machine dimensions (L x W x H) *5	mm	3185 x 958 x 1470	3682 x 1113 x 1575	4260 x 1183 x 1575
(When high cycling specification is selected)		(3205 x 1052 x 1470)	—	—
(When mold thickness extension 50 mm is selected)		(3235 x 958 x 1470)	(3732 x 1113 x 1575)	(4310 x 1183 x 1575)
(When mold thickness extension 100 mm is selected)		—	—	—
Machine mass	t	2.0 / 2.2	2.7 / 2.7 / 2.8	3.5 / 3.6 / 3.7

*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 shown for a machine equipped with SD Screw. *4 50% of the value in the table is the threshold value when the SL Screw is selected.
*5 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. *6 SL Screw cannot be selected.
*7 High load specification and high filling specification cannot be selected at the same time. *8 Nozzle contact force control is available only for 14 kN spec. *9 Only available for connector machine.
● Specifications are subject to change without notice for performance improvement.

Main Specifications

■ Clamp unit

Item	Unit	SE100EV-A	SE130EV-A	SE180EV-A
Clamp system		Double toggle (5 points)	Double toggle (5 points)	Double toggle (5 points)
Clamp force max.	kN	1000	1300	1800
Clearance between tie bars (W x H)	mm	460 x 460	510 x 510	560 x 560
Platen size (W x H)	mm	650 x 650	720 x 720	800 x 795
Daylight	mm	800	850	950
(When mold thickness extension 50 mm is selected)	mm	(850)	(900)	(1000)
(When mold thickness extension 100 mm is selected)	mm	(900)	(950)	(1050)
Mold opening stroke	mm	350	400	450
Platen speed max.	mm/s	1200	1200	1200
Mold thickness (Min. - Max.)	mm	180 - 450	180 - 450	200 - 500
(When mold thickness extension 50 mm is selected)	mm	(180 - 500)	(180 - 500)	(200 - 550)
(When mold thickness extension 100 mm is selected)	mm	(180 - 550)	(180 - 550)	(200 - 600)
Locating ring diameter	mm	ø100	ø100	ø120
(When the option is selected)	mm	—	—	(ø100 / ø110)
Ejector system		Motor driven type (5 points)	Motor driven type (5 points)	Motor driven type (5 points)
Ejector force	kN	32	32	45
(When ejector compression device is selected)	kN	(49)	(49)	(49)
(When ejector force power up is selected)	kN	(59)	(59)	(59)
Ejector speed max.	mm/s	333	333	333
(When ejector compression device/ejector force power up is selected)	mm/s	(333)	(333)	(333)
Ejector stroke	mm	100	100	120
(When ejector stroke extension is selected)	mm	(150)	(150)	(150)
(When ejector compression device/ejector force power up is selected)	mm	(80)	(80)	(100)

■ Injection unit

Plasticizing capacity		C110	C160	C250	C360	C160	C250	C360	C450	C250	C360	C450	C560
		MN	S	S	S	M	S	M	S	M	S	M	M	M	M
Screw diameter	mm	(16)*6 (18)*6 (20)*6 22 25 28	(18)*6,*8 (20)*6,*8 (22)*6,*8 25 28 32	(22)*6,*8 (25)*6 28 32 36	(25)*6 (28)*6 32 36 40	(18)*6,*8 (20)*6,*8 (22)*6,*8 25 28 32	(22)*6,*8 (25)*6 28 32 36	(25)*6 (28)*6 32 36 40	(28)*6 (32)*6 36 40 45	(22)*6,*8 (25)*6 28 32 36	(25)*6 (28)*6 32 36 40	(28)*6 (32)*6 36 40 45	(28)*6 (32)*6 36 40 45	(32)*6 (36)*6 40 45 50
Injection pressure max. *1,*2	MPa	266 274 265 274 212 174	274 265 274 274 218 167	274 274 284 217 171	274 284 273 215 175	284 273 259 209 165	274 274 284 217 171	274 284 273 215 175	284 273 259 209 165	273 259 274 216 175				
Holding pressure max. *1,*2	MPa	266 274 265 274 212 174	274 265 274 274 218 167	274 274 284 217 171	274 284 273 215 175	284 273 259 209 165	274 274 284 217 171	274 284 273 215 175	284 273 259 209 165	273 259 274 216 175				
(When high speed filling specification is selected) *7	MPa	—	—	(274) (274) (284) (217) (171)	—		(274) (274) (284) (217) (171)	—		(218) (207) (219) (173) (140)				
Theoretical injection capacity	cm^3	11 19 24 40 51 64	19 24 39 51 64 84	39 51 86 113 143	51 86 129 163 201	86 128 163 201 254	39 51 86 113 143	51 86 129 163 201	86 128 163 201 254	128 162 201 254 314				
Injection mass (GPPS)	g	11 18 23 38 49 61	18 23 37 49 61 80	37 49 83 108 137	49 83 124 156 193	83 123 156 193 244	37 49 83 108 137	49 83 124 156 193	83 123 156 193 244	123 156 193 244 302				
Plasticizing rate *3, *4	kg/h	8.8 10 13 18 26 37	10 13 18 26 37 53	18 26 37 53 76	26 37 53 76 101	37 53 76 101 136	18 26 37 53 76	26 37 53 76 101	37 53 76 101 136	53 76 101 136 196				
Injection rate	cm^3/s	100 127 157 190 245 308	101 125 152 196 246 322	133 171 216 281 356	171 215 281 356 440	215 281 356 440 557	133 171 216 281 356	171 215 281 356 440	215 281 356 440 557	281 356 440 557 687				
(When high load filling specification is selected) *7	cm^3/s	(100) (127) (157) (190) (245) (308)	(89) (109) (133) (171) (215) (281)	(133) (171) (216) (281) (356)	(171) (215) (281) (356) (440)	(133) (171) (216) (281) (356)	(171) (215) (281) (356) (440)	(215) (281) (356) (440) (557)	(133) (171) (216) (281) (356)	(171) (215) (281) (356) (440)	(215) (281) (356) (440) (557)	(215) (281) (356) (440) (557)	(281) (356) (440) (557) (687)	
(When high speed filling specification is selected) *7	cm^3/s	—	—	(247) (319) (400) (522) (661)	—		(247) (196) (400) (522) (661)	—		(402) (508) (628) (795) (981)				
Screw stroke	mm	58 78 104	78 104	104 140	104 140 160		104 140	104 140 160	140 160	160				
Injection speed max.	mm/s	500	400	350	350		350	350	350	350				
(When high load filling specification is selected) *7	mm/s	(500)	(350)	(350)	(350)		(350)	(350)	(350)	(350)				
(When high speed filling specification is selected) *7	mm/s	—	—	(650)	—		—	—	—	(500)				
Screw rotating speed max.	min^{-1}	400	400	400	400		400	400	400	400				
Number of temperature control zone		5 4 5	4 5	5	5		4 5	5	5	5				
Heater capacity	kW	2.6 3.1 3.5 3.8 4.2 4.8	3.1 3.5 3.8 4.2 4.8 5.4	3.8 4.2 6.5 7.5 8.4	4.2 6.5 7.5 8.4 10.3	6.5 7.5 8.5 10.3 11.5	3.8 4.2 6.6 7.6 8.5	4.2 6.5 7.6 8.5 10.3	6.6 7.6 8.5 10.3 11.5	7.6 8.5 10.3 11.5 12.6				
Nozzle contact force	kN	14	14 43	14 43	43		14 43	43	43	43				
(When low nozzle contact force is selected)	kN	—	—	—	—		—	—	—	—				
Injection unit moving stroke	mm	230 - 320	220 - 320	220 - 320	320		250 - 335	240 - 335	300 - 335	335	270 - 380	350 - 380	360 - 380	360 - 380
Protrusion	mm	30	30	30 45	30 45		30	30 45	30 45	45	30 65	30 65	65	65
Hopper capacity (When the standard hopper selected)	L	(15)	(15)	(30)	(30)		(15)	(15) (30)	(15) (30)	(50)	(30)	(15) (30)	(50)	(50)

■ Machine dimensions and mass

Machine dimensions (L x W x H) *5	mm	4568 x 1226 x 1691					4793 x 1326 x 1750				5198 x 1396 x 1831			
(When high cycling specification is selected)	mm	—					—				—			
(When mold thickness extension 50 mm is selected)	mm	(4668 x 1226 x 1691)					(4893 x 1326 x 1750)				(5298 x 1396 x 1831)			
(When mold thickness extension 100 mm is selected)	mm	(4668 x 1226 x 1691)					(4893 x 1326 x 1750)				(5298 x 1396 x 1831)			
Machine mass	t	4.3	4.4	4.5	4.6		5.3	5.4	5.5	5.5	7.0	7.1	7.1	7.4

*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 shown for a machine equipped with SD Screw. *4 50% of the value in the table is the threshold value when the SL screw is selected.
*5 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. *6 SL Screw cannot be selected.
*7 High load specification and high filling specification cannot be selected at the same time. *8 Nozzle contact force control is available only for 14 kN spec.
● Specifications are subject to change without notice for performance improvement.