

Global Network

Sumitomo Heavy Industries, Ltd.
Industrial Machinery Segment, Plastics Machinery Div.

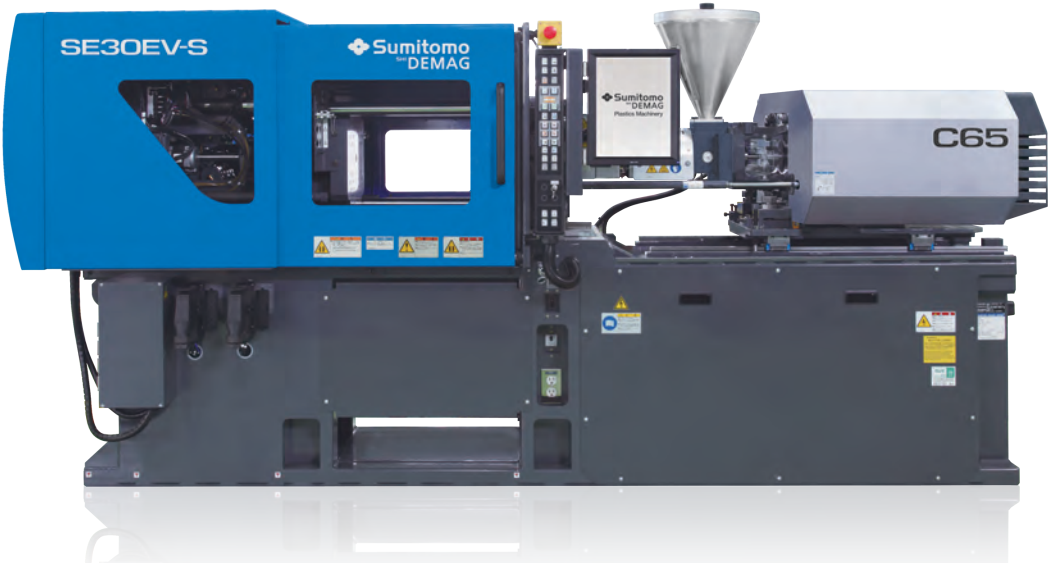
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SE-EV-S
Connector



SE-EV-S
Connector

All-electric Injection Molding Machine for Connector



Lineup

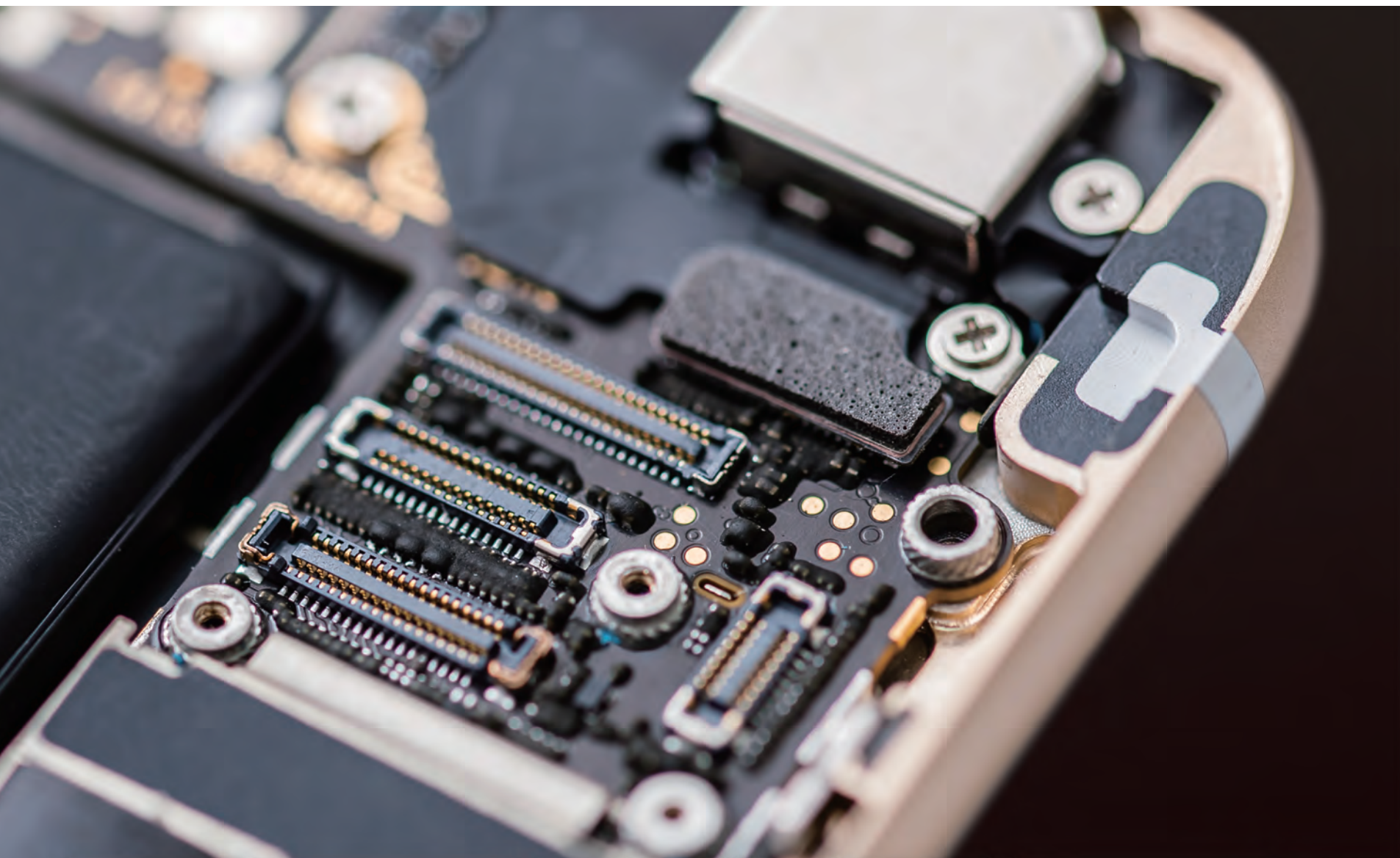
SE30EV-S (300kN)

The machines in this series have acquired
JIS B 6711:2021 (equivalent to ISO 20430:2020)
certification.

We support the enhancement of our customers'
corporate value through providing high performance,
high quality, and safe injection molding machines.

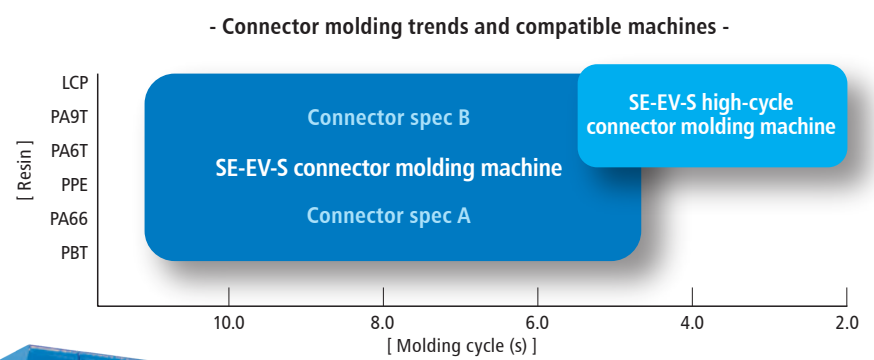
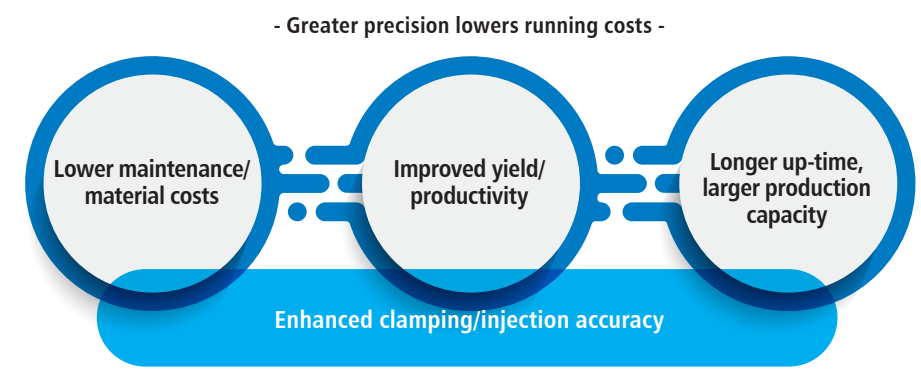
www.shi.co.jp/plastics/





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.



●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

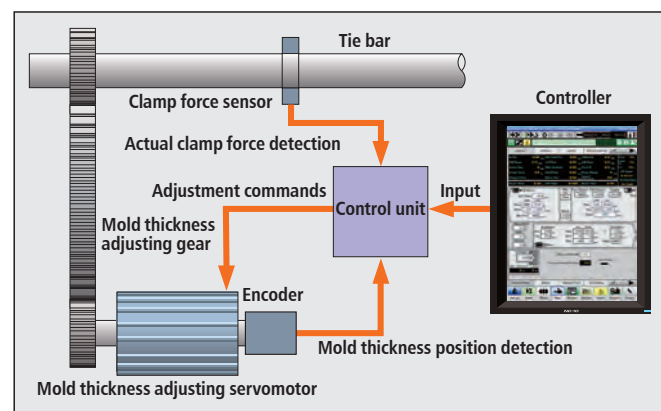
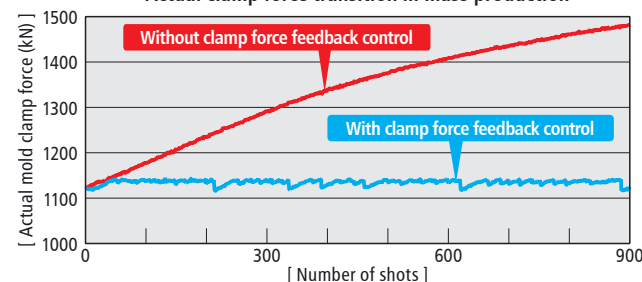
Staying constant clamp force in mass production

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

- Actual clamp force transition in mass production -

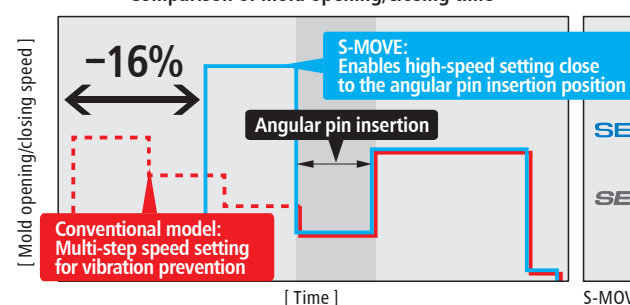


Lesser cycle time and vibration suppression

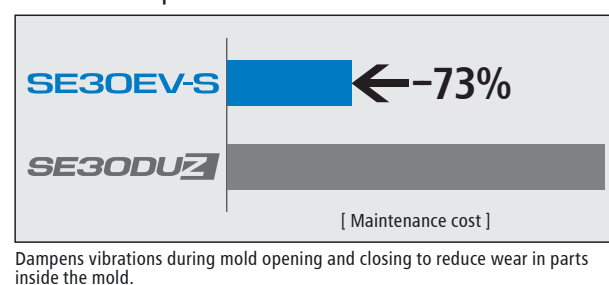
Acceleration/deceleration control with vibration suppression S-MOVE

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 opening/closing time -

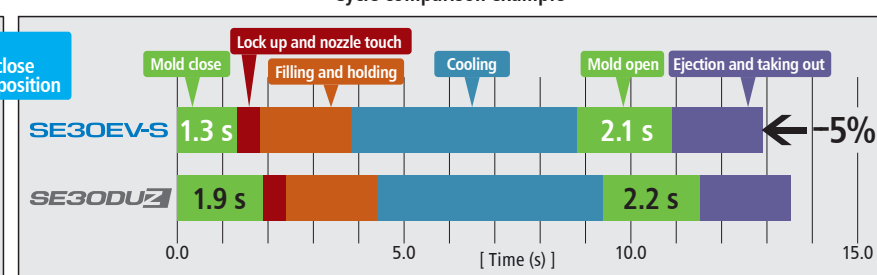


- Comparison of mold maintenance costs -



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

- Cycle comparison example -



S-MOVE reduces the mold open/close time.

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

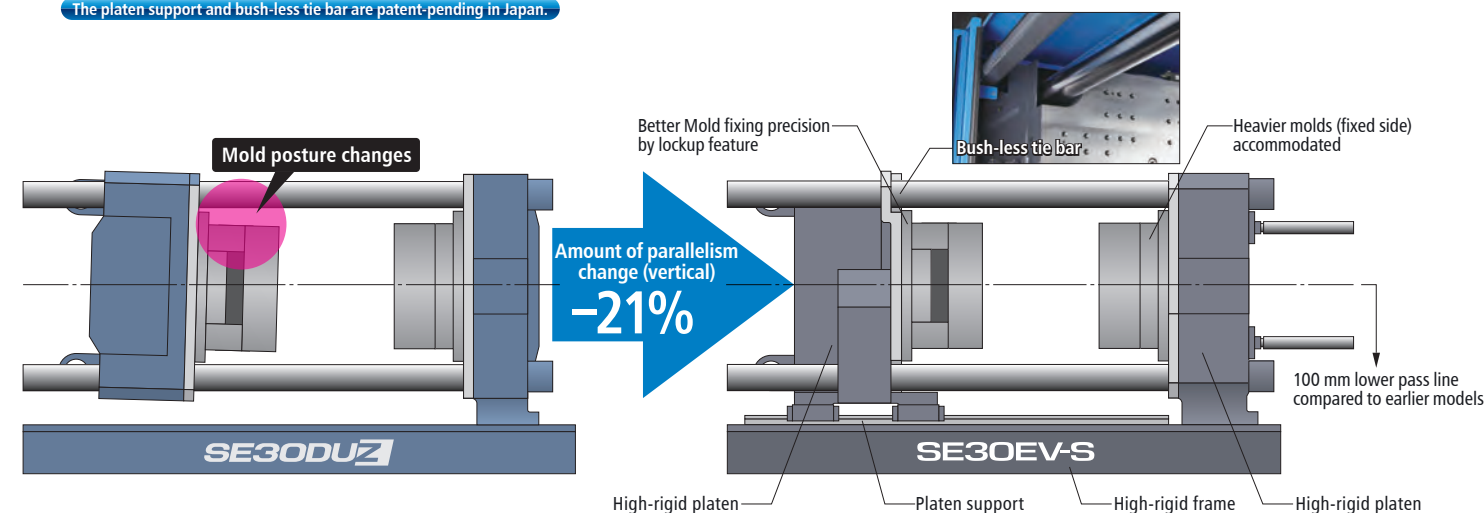
Platen support, bush-less tie bar, high-rigid platen and frame, and lower pass line

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.



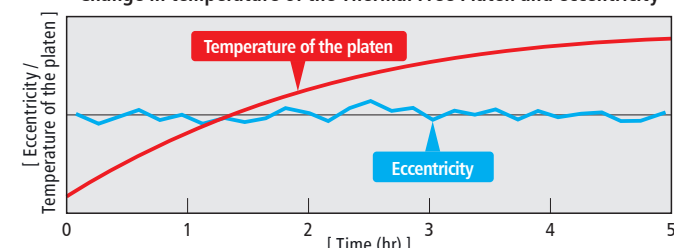
Keeps parallelism of platens

Thermal Free Platen

The connector molding machine employs specially structured Thermal Free Platen that minimizes any irregular deformation due to heat, and improves parallelism and linearity.

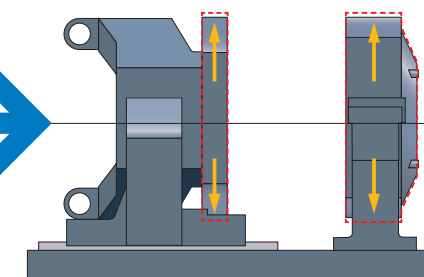
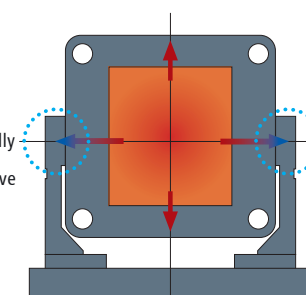
PAT. pend. in Japan

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



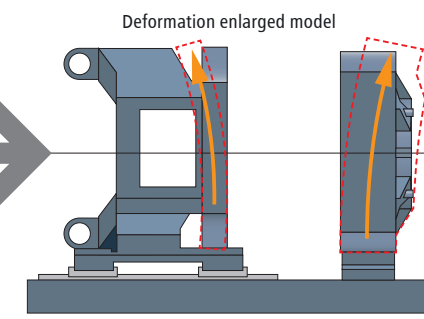
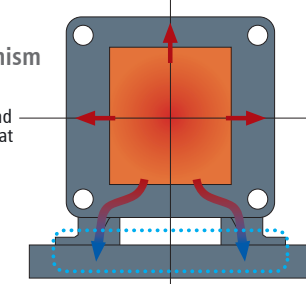
Thermal Free Platen

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



Conventional mechanism

Temperatures differ above and below the platen because heat propagated to the frame.

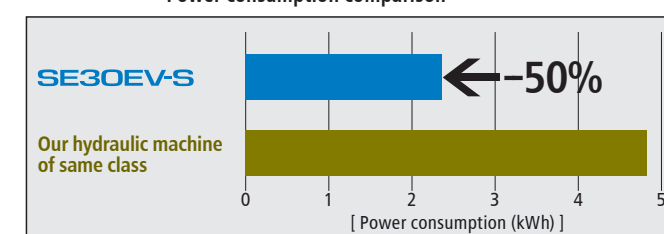


Excellent energy-efficient

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

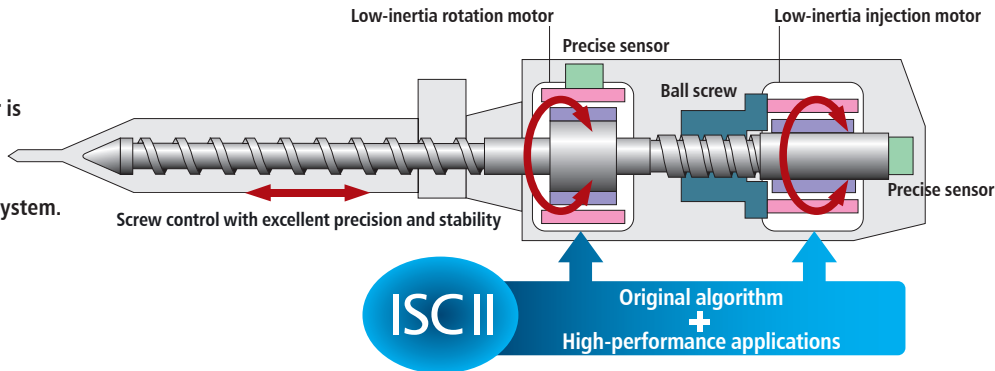


High-precision and stability

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

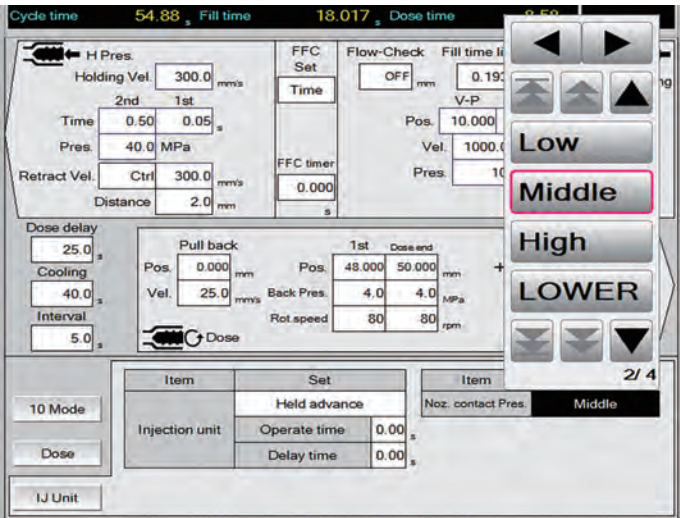
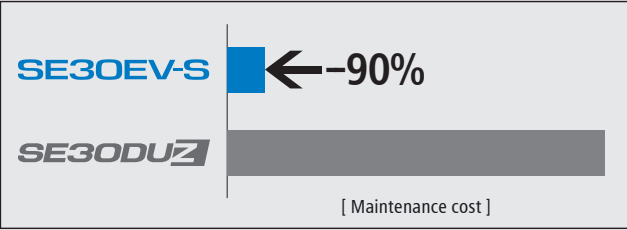


Adjustable nozzle touch force

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 -

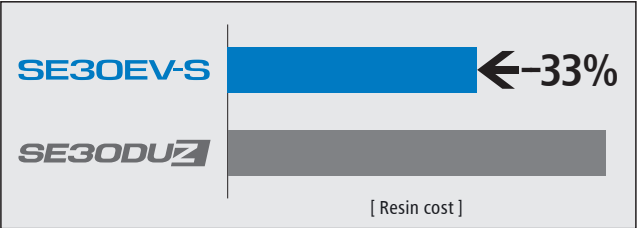


Dedicated to connector molding

Dedicated screw assembly for connector

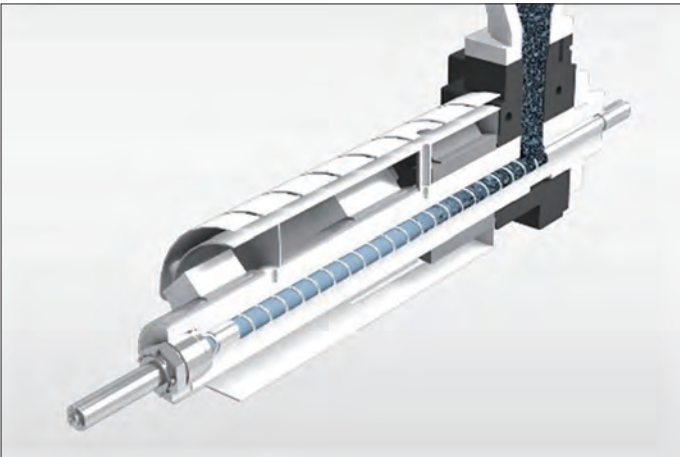
It stabilizes resin dosing and shot consistency, which greatly reduces the fluctuations in dosing time. The dosing movement keeps to be stable even if crushed materials rate rises, which improves yield and reduces the material cost. Connector spec B supports molding of environment-friendly resins such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

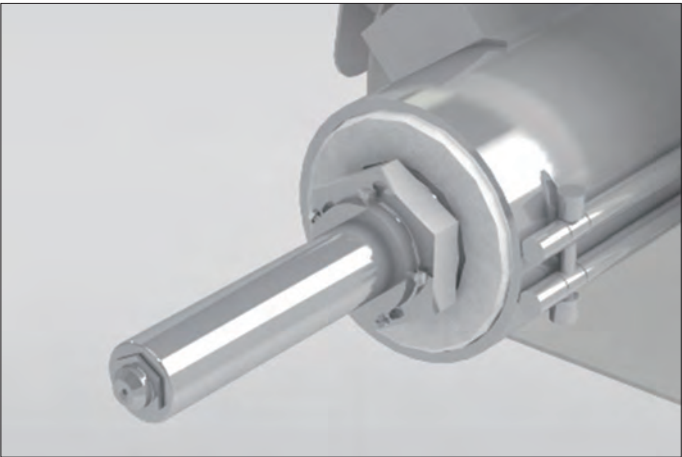


Cost-down and better productivity

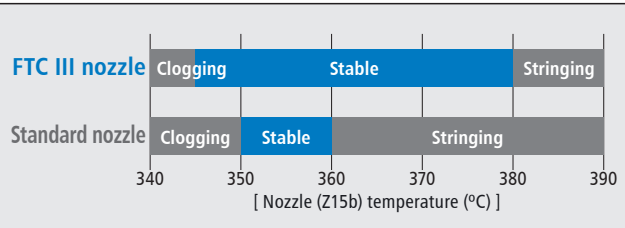
FTC III nozzle

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 shorten cycle time. Moreover, 2-zone heaters can be detached or attached simultaneously, which facilitates maintenance and shortens machine downtime.

Optional

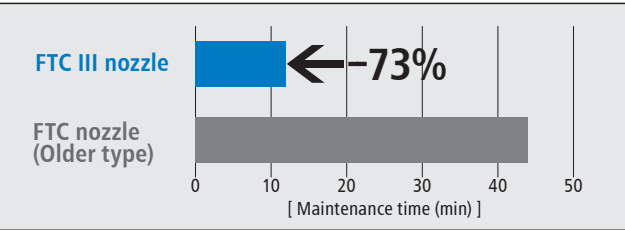


- Comparison of applicable molding conditions -

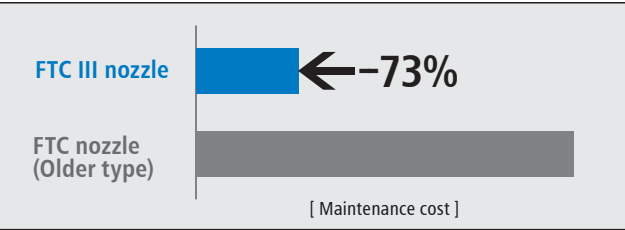


The FTC III nozzle works with a wider scope of molding conditions that do not cause stringing or clogging, so molding conditions can be set more easily.

- 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 (multi-stage control)
2. Holding pressure program control (multi-stage control)
3. Screw pull back (after holding/after dosing)
4. Digital display of screw position (0.01 mm setting)
5. Holding time 0.01 seconds setting
6. V/P switchover function (pressure/position)
7. Filling delay timer
8. Automatic pursing device with interlock (when the interlock function is unused/when the injection unit backward end)
9. Heating cylinder temperature control 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 interlock variable timer and minimum melting time display)
13. Remote setting function for sprue break stroke (reverse timing selection with delay timer, nozzle contact detection, movement time setting)
14. Digital display of screw rotation speed
15. Purging cover device (with limit switch)
16. Injection unit swivel device (with nozzle alignment adjustment mechanism)
17. Remaining cooling time display
18. Dosing start delay timer
19. Speed rise time selection during injection/holding pressure (10 modes)
20. Speed setting 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 retention prevention function
30. One-touch manual dosing
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 *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
14. Industrial unit input function (speed, Position, pressure and rotation speed)
15. Molding machine status output signal (5 CH) *1
16. USB connection circuit (memory)
17. Molding conditions protection
18. Abnormal processing selection function
19. Initial reject/short stop reject function
20. Change screen color scheme 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
24. OPC UA server

*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 height are increased by 50 mm.

● Specifications are subject to change without notice for performance improvement.

● Standard specification model of the SE-EV-S connector machine complies with the safety standards of Japan, China and the nations of Southeast Asia.
It can also be modified to comply with the safety standards of Korea (KCs Mark), USA, Brazil, the nations of Oceania and Canada. For more information, contact us.

Monitor unit
1. Actual value display function
2. Heater breakage monitoring device
3. Peripheral equipment 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 (actual value statistics, various graphs, 100,000 shots saved data confirmation)
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. Overall Screen
16. 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

Mold clamping 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. Clamping force setting
6. Mold height setting
7. Ejector setting (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. Clamping mode selection function (lock up)
11. Ejector ejection interlock (only possible at mold opening end position in manual mode)
12. Ejector ejection during mold opening
13. Ejector ejection during mold closing
14. Ejector plate return signal (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. Mold installation standby mode (low-speed mold opening/closing)
18. Safety door with polycarbonate window
19. Emergency stop button (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 clamping/injection unit
23. Clamping safety system (electrical/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 clamping force setting)
28. Tie bar plating specification
29. Ejector unit 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 clamping 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 meter and valve are options.)
4. Standard spare parts (fuses, air filters)

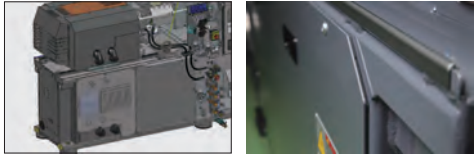
Standard Equipment

Zero-molding features	
1. Zero-molding main screen: Simple process setting	18. Zero-molding: Clamping force feed back function
2. Zero-molding main screen : Production monitor (production number/process/abnormality/actual results)	19. Clamping 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 clamping force detection function (automatic measurement)	21. Zero-molding: Molding condition support monitor function (peak clamping force, pack pressure, status display)
5. Setup support: Mold installation screen (mold height, mold contact, clamping 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 (with automatic power-saving control function)
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 clamping force)	30. Waveform display function: Automatic waveform save function (always/trigger/abnormal)
14. Zero-molding: FFC control (with guidance 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 clamping 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 monitor)

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 (AC 200 V/220 V 3ø3W+E) (Asian countries 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. Automatic starting system (heater, water supply, external output signal) *1
9. Revolving alarm lamp
10. Multi function 3-color LED signal tower
11. 4-line closed circuit water connection lines (with flow meter, stop valve, cooling water stop valve, filter)
12. 2-line closed circuit water connection lines (With flow meter, stop valve, cooling water stop valve, filter)
13. Personal computer connection circuit (ethernet)
14. Spare power receptacles selection
15. Power 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

Mold clamping 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 product unloader connection circuit
6. Product chute
7. High precision heat insulating plate (t5 mm/t10 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 height 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 (t5 mm/t10 mm, cross type)
14. Mold clamp
15. Box end wrench for open nozzle

Main Specifications

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

Injection unit

		C35				C65		
		MN		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	cm³	6	11	14	18	20	25	30
Injection weight (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	cm³/s	92	120	152	188	140	173	209
Screw stroke	mm	40	58			78		
Injection speed (max.) (When high load filling specification is selected)	mm/s	600				550		
		(500)				(550)		
Screw 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	145 - 185				210		
Nozzle protrusion	mm	65		30		30		
Hopper capacity (When the standard hopper selected)	L	6		15		15		

Machine dimensions and weight

Machine dimensions (L x W x H) *4	mm	3185 x 1005 x 1491
(Mold height extension 50 mm)		(3235 x 1005 x 1491)
Machine weight	t	2.0
		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.

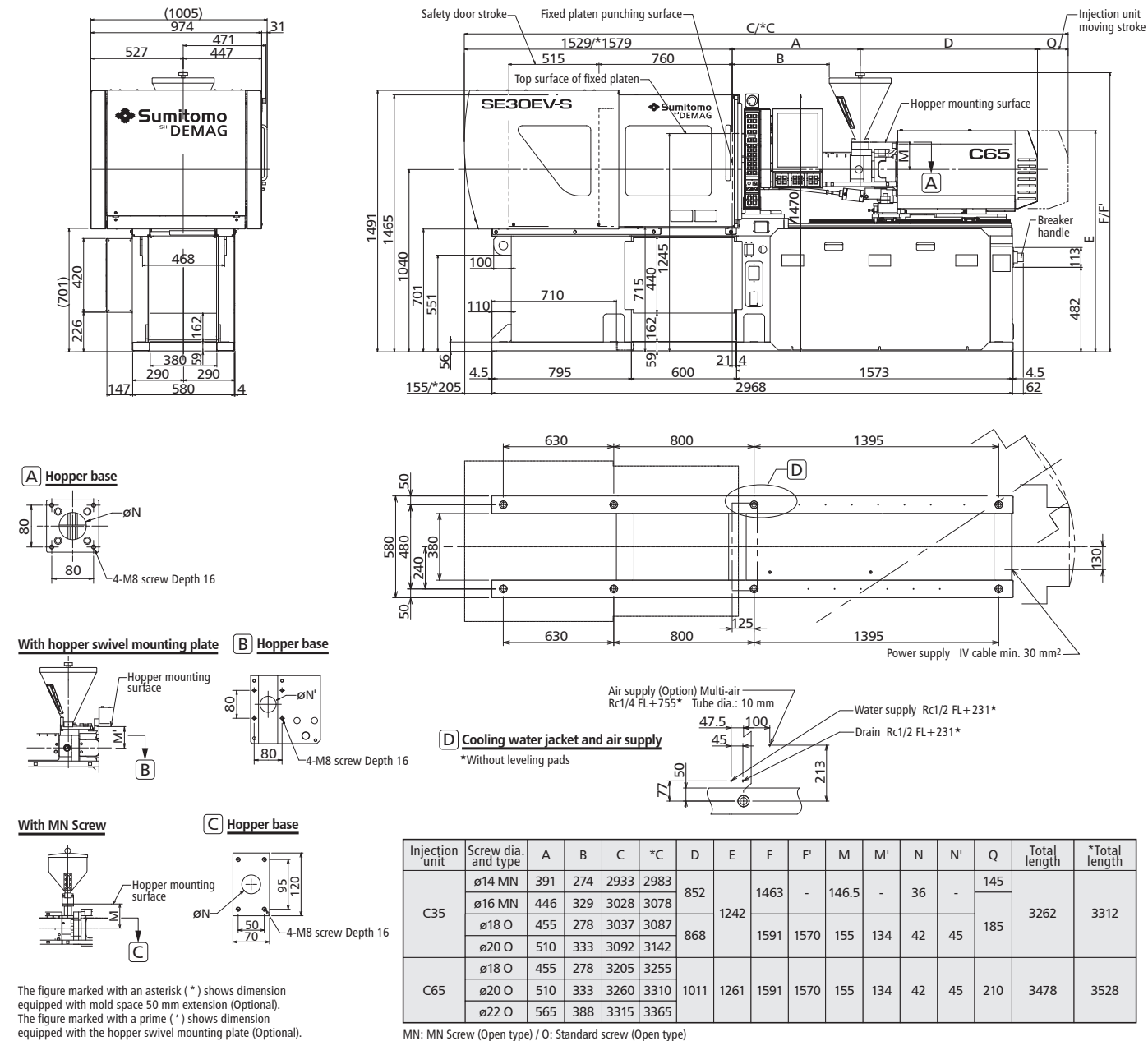
*4 The total length of the machine is to the front end of the injection unit when mounting the screw of the smallest diameter.

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.

SE30EV-S Dimensions and Foundation Plan

● The dimensions of each part are for Japan.



SE30EV-S Dimensions of Platens

● This drawing complies with JIS B 6701.

