Ace is a precision, high quality injection moulding machine made by TOSHIBA MACHINE. “Ace” connotes to accomplish a task with complete success.

Modularity with a high-performance profile:

**Ace GenXt 400 to 10,000 kN**

The Ace GenXt machine series is perfectly matched to user needs in the clamp force range up to 10,000 kN: With extensive standard equipment for a broad spectrum of tasks. With modular options for injection unit, screw, pump rating and drive. With powerful 5-point double toggle, rugged machine construction, and an ergonomic operator interface. And with competitively priced application packages permitting solutions to be tailored for special jobs.

The modular and ergonomical design enhances economy, reduces maintenance costs, set-up time, and spare parts stock requirements, and makes operation more efficient and safer. And it is a proactive concept capable of coping with upcoming new challenges.
**Ace GenXt advantage**

- Extensive standard equipment
- Modular options for tie-bar distance (specific models), injection unit, screw and drive
- Competitively priced expansion packages for flexibility and quality
- High-strength, compact machine construction
- Efficient, operator-friendly layout of components
- icon-control system with touch sensitive operator interface
- Freely programmable inputs/outputs
- Finely graded modular injection units
- Appropriate L/D ratio of screws for flexible use and optimal melt quality
- Energy-saving drive through electronic variable volume pump

**Moulders’ benefits**

- Higher productivity
- Quality Mouldings
- Mould Safety
- Low Power consumption
- Reliable machines
The high-precision Ace GenXt clamping unit with 5-point double toggle and integrated, short-length clamping cylinders in conjunction with varying tie-bar distances provide ample daylight to accommodate large moulds. The powerful kinematics of the double toggle make for short locking times and high opening forces. In the end positions, in particular, the large movement of the toggle is translated into a relatively small movement of the platen permitting very sensitive control of closing and opening with minimal stressing of the mould.

Secured locking (with no extra energy consumption) and a generous margin in locking force provide added advantage.

Computer optimised braking and acceleration profiles complement the rapid harmonic movements of the toggle, protects the mould and reduces the cycle time.

The rigidity of the platens and support of the mould carriage on the machine bed ensure particularly smooth mould operation. The clamping platens and equipment housing are ready for handling equipment. The core pullers and ejectors can be freely programmed by means of sequence matrix on the icon control.
The open and modular design of the injection unit affords ready accessibility, high flexibility and excellent plasticising results. For each clamp size, the Ace GenXt modular system provides a choice of multiple injection units, each available with three screw cylinders and with different pump sizes. Different screw geometries, including double-flighted and barrier screws, can be supplied for special plasticising tasks. And the quick-connect screw coupling enables plasticising units to be conveniently and quickly exchanged.

Specially designed screws and barrels are offered for PET preforms, CPVC, Thermoset and a whole lot of other special applications.
The hydraulic variable volume pump system is the powerful heart of the Ace GenXt machines. Modular for each clamp capacity, the pump system is available with appropriate power ratings. The performance profile is characterised by high-precision pressure control, high responsiveness of flow control, a high degree of reproducibility and harmonious motions—it is possible for the user to select any desired pressure/flow characteristic.

Economics strong points: Energy and cooling water consumptions are very low because pressure and flow are supplied at the level actually required; in addition, the choice of power ratings available reduces initial cost and operating expense.

- Hydraulic variable-pump system for harmonious movements with a high degree of reproducibility
- Low investment and operating costs through correct choice of power rating
- Low energy and cooling water consumptions through matching pressure and flow to actual current demand
- A second variable pump is available for simultaneous ejector and core movements to reduce cycle time (optional)
- Pump system individually configurable for every injection-moulding job
Intelligent Control

User friendly, self-explanatory operating panel is the best part of iCon. With this control, Ace GenXt has set new standards. This user-friendly operator/machine interface, which forms the central monitoring and control element is based on the proven Sigmatek system. Its additional operating elements make it even more simple and convenient to use.

With iCon, one can set machine at the touch of a button. The touch sensitive display allows easy navigation through the clearly laid out menus and graphics. All functional units are distinctly structured and called up via hot-keys and international symbol keys. The USB interface integrated into the terminal allows easy loading or saving of software, machine setting data and quality data.
Ace GenXt Hybrid is a concept born out of your desire for fast cycling, energy efficient & versatile machines, that would bring about a world of difference in the way you mould. The Electronic pump, Electrical screw drives, Servo motor controlled / proportional valve based ejection etc, are all the building blocks of Ace that would make this a perfect solution for all your moulding needs. Ace GenXt known for its simplicity, can be also taken in its basic model with the building blocks as optional attachments.

- High Productivity
- Energy Efficient
- Precise & Consistent
### FEATURES AND OPTIONS

#### CLAMP UNIT
- Computer optimised 5-point twin toggle system, for fast, smooth platen movement and even distribution of clamp force
- Moving platen supported on the machine bed by anti-friction roller bearings
- Mould opening and ejector forward with safety guard open/closed position
- Mould mounting dimensions as per Euromap
  - Threaded holes upto 300T and integral from T-slot from 350T
- Add-on T-slot plates upto 160T
- Mould Mounting dimensions as per DIN/SPI standards
- Drill hole pattern for robot/sprue picker
- Rear safety guard suitable for robot/sprue picker
- Hard chrome plated tie bars
- Toggle bearings oil/grease lubricated: lubrication signals computer optimised under adaptive control
- Motorised mould height adjustment through sun & planetary gear mechanism
- Closed loop clamp force control on control panel with indication and correction every cycle, settable
- Closing and opening speeds independently set: each programmable in 3 stages
- Regenerative circuit in mould closing for higher speeds
- Low pressure mould safety, settable
- Mould protection with stroke dependent change over with time monitoring and repeat of a clamping cycle aborted in the protected range
- Central hydraulic ejector with multiple stroke features and fast coupling; pressure and speed independently set in both directions, ejector speed programmable in 2 stages
- Mould cooling water switch off in case of interruption of cycle, with settable timer
- Water battery - 4 fold upto 250T, 6 fold above 250T
- Hydraulic ejector parallel to mould movement with speed and pressure manually adjustable
- Short and long stroke ejector, freely programmable
- Multi point ejector plate as per Euromap
- Multi point ejector plate as per JIS
- Water battery - 6 / 12 fold
- 1,2,3 or 4 pneumatic valves (5/2 type) freely programmable
- Core pulling control for 1,2,3 or 4 hydraulic/pneumatic cores independently programmable for sequential operation or parallel operation
- Hydraulic ejector/core parallel to mould opening with independent control of speed and pressure through proportional valve; ejector and core with serial movement to each other
- Automatic mould height adjustment through proximity switch (upto 350T)

#### INJECTION UNIT
- Injection unit with torque-free nozzle contact with 2 cylinder
- Injection unit speed of nozzle advance and retraction programmable in 2 stages
- Nozzle contact pressure programmable
- Injection speed, follow up pressure and screw speed controlled by fast response DFE pump
- Direct screw drive by hydraulic motor I for high speeds
- Hydraulic motor II high torque
- Screw cylinder fitted with universal thermoplastics nitrided screw and nitrided cylinder: non-return valve and cylinder closure assembly with SVO open nozzle
- Screw cylinder suitable for upto 3 injection units: L/D ratio 20:1 for all diameters
- Fast cylinder change with central connectors for heating system and thermocouples and with automatic cylinder identification (from 430IU)
- Ceramic cylinder heating bands
- PID controlled barrel heater bands
- 5 self-optimising temperature control circuits for the cylinder and nozzle heating system with adjustable tolerance monitoring of deviation from set point and thermocouple break resistance; operating range of up to 400°C
- 4/5 temperature circuits for cylinder heating with monitoring of deviation and thermocouple status
- Temperature of the screw cylinder feed zone adjustable
- Injection speed profile programmable in 10 position dependent interpolation stages
- Follow up pressure profile programmable in 10 time dependent interpolation stages
- Follow up pressure switching activated as a function of position, time or hydraulic pressure
- Screw speed and back pressure control, profile programmable in 6 position dependent interpolation steps
- Screw speed input in RPM
- Injection speed input in mm/s

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**Standard** | **Option** | **Alternative equipment**
## FEATURES AND OPTIONS

<table>
<thead>
<tr>
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- Monitoring of melt cushion during the follow up pressure phase
- Hydraulic screw retraction after follow up pressure phase and or after plasticising process programmable dependent on position, to prevent melt drooling
- Delay feature for commencement of plasticising and nozzle retraction
- Screw rotation lock engaged until cylinder reaches set temperature
- Reduction in cylinder temperatures to a preset value during machine idle time
- Nozzle guard with electrical interlock for operator safety
- Intrusion and cold slug removal
- Stainless steel hopper
- Extended nozzle with heater band
- Hydraulically operated shut off nozzle (SVH)
- Electrical screw drive for parallel plasticizing (from IU 840 - 10500)
- Sprue bush temperature control
- Special Barrier screws for better homogenization and plasticising rates from screw dia 30
- Wear resistant through hardened screw and bimetallic barrel for abrasive materials
- Proven screw Geometry for high plasticising capacities with excellent melt homogeneity
- Thermostet package and sequences dia 30 to 50
- CPVC/RPVC/PET package
- 25 L/D screw (for A and B)
- Hard chrome plated screw
- Melt filter nozzle from screw dia 30
- Dosing delay timer
- Cold start protection for screw
- Nozzle contact force setting through control panel with residual nozzle contact force
- Fast injection with accumulator, programmable (from 160T onwards)
- Melt temperature measuring (SVO)
- Injection closed loop with servo valve

## HYDRAULICS

- Pump unit 1 with energy saving SYDFEE regulated pump
- Low noise drive with quiet pumps sound insulating enclosures for hydraulics
- Pressures and flow rates, closed loop, controlled by fast responding DFE regulated pump
- All manifold blocks & valves mounted close to the actuators for faster response
- Oil tank with large opening for cleaning
- Pre heating circuit for hydraulic oil
- Oil temperature regulated with temperature indication

## CONTROLS

- Intelligent operator terminal – with large multi colour display and alpha numeric key board (12”)
- Easy setting of parameters through graphics using Touch screen
- USB drive for loading software and also for storing / retrieving machine setting data
- VARAN bus as field bus linking machine controller & machine interfaces
- Position measuring system for moving platen, ejector, and screw travel
- Setpoint input on the iCon in physical values (bar, mm/sec, screw rpm) or speeds for mould, ejector, core puller and nozzle as a percentage of maximum value
- Graphics supported input of set point profiles for injection speed, follow up pressure, back pressure and screw speed as an alternative to entry of numerical values
- Continuous Process control via monitoring of important process parameters with selectable tolerance band
- Moulding counter preselection with automatic switch off feature
- Fault diagnostics in the event of machine malfunction or operator error with plain text messages and recording of source of error
- Automatic switch off mould cooling in the event of fault in the cycle
- Printer interface through USB port
- PDS Process data acquisition PDE with statistics and graphics - 6000 cycles 40 parameters
- Measurement of cycle, injection, plasticising and mould protection times
- Regulated power supply 24V DC for controls and actuators
- Set of electrical outlet- Single Ø (1x 10 A) & 3 Ø (1x16 A)
- Socket for printer
- Multi level password for preventing tampering of parameters
- Flash lamp /Acoustics alarm
## FEATURES AND OPTIONS

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<tr>
<td>&gt; Hot runner controlled integrated (upto 16 zones)</td>
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<td>&gt; Flexible motion sequences for cores and ejectors</td>
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<tr>
<td>&gt; Digital setting of all times, setting range in seconds - 0.01 to 999</td>
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<tr>
<td>&gt; Function wise layout of pages (screens) and ergonomical display of various process parameters/data in clear text</td>
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<tr>
<td>&gt; Self Optimising PID control loops and semiconductor relays for cylinder heating system</td>
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<tr>
<td>&gt; Main voltage 415V/3ph/50Hz, control voltage 24VDC/220V</td>
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<td>&gt; Internal storage of upto 100 mould set programmers &amp; unlimited through USB</td>
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<td>&gt; Injection speed settable in mm/sec and pressure settable in bar</td>
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<tr>
<td>&gt; Switch on programme for oil preheating and cylinder heating</td>
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<td>&gt; Energy indication on operator panel</td>
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<tr>
<td>&gt; SPC and CPk with graphical display</td>
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<td>&gt; Machine troubleshooting module indicating clear direction to resolve problems</td>
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<tr>
<td>&gt; Hot runner shut off device (pneumatic/hydraulic)</td>
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<td>&gt; Remote access of control pages</td>
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<td>&gt; Down time log</td>
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<tr>
<td>&gt; Strat up module for automatic selection of process parameters</td>
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<tr>
<td>&gt; Insulated heater bands</td>
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<tr>
<td>&gt; Auto switch off programme - purging w/o hopper shutoff</td>
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<tr>
<td>&gt; Language options</td>
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<tr>
<td>&gt; Programmable automatic switch-off matrix</td>
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<tr>
<td>&gt; Networking of machines</td>
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### GENERAL

| > Guarded machine enclosure with space for protruding moulds and peripheral connections | | |
| > One piece machine bed (upto 350) | | |
| > Safety equipment as per EN 201 | | |
| > Flexible machine support with anti vibration mounts | | |
| > Total preventive maintenance | | |
| > Three way access for easy part removal | | |
| > Complete cover on the injection unit front side - upto 350T | | |
| > Mould clamps - 8 numbers | | |
| > Separate oil filter for fine straining (Bypass filtration); integrated in the machine | | |

### FUNCTIONS/INTERFACES

| > Single phase preventor | | |
| > Connection for additional heater band - only plug will be with the machine | | |
| > 32 pole signal interface in accordance with VDMA for robots/sprue picker (E12) | | |
| > Euromap 67 interface | | |
| > Rotating core interface | | |
| > Mould protection by monitoring ejector back sensing using limit switch (1 no.) in mould | | |
| > Interface for ejector limit switch (2 nos) in the mould | | |
| > Sensor interface for monitoring drop of mountings with photo cell option | | |
| > Freely programmable I/O’s (Max. 6) | | |
| > 3 Stage start up programme | | |
| > Thermal printer | | |
| > Interface for indexing conveyor/ floating contact | | |
| > Blending unit interface | | |
| > Chiller/peripheral fault interface | | |
| > Amendment report log | | |
| > Interface with gas assisted moulding | | |
| > Interface for quick mould change | | |
| > Interface for cavity pressure sensor - upto 2 channels | | |
| > Interface for add. nozzle heater band (plug only) | | |
| > Interface for slide core safety control | | |
| > TPM program | | |
| > Help Menu | | |
| > Process data storage (Thru USB) | | |
| > Flexible motion sequence - CU-IU (core and ejector movement, IU) | | |
| > Insert loading sequence | | |
| > Process trouble shooting | | |
| > Injection compression sequence | | |
| > Breathing sequence | | |

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### Standard Option

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### Alternative equipment

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