JT AD SERIES
All Electric Servo Drive Vertical Type Injection Molding Machine

JSW
High Quality Compact Design.

JSW has produced a super-advanced all-electric vertical type injection molding machine - it is faster, more precise, and more compact. The JT-AD series machines have been evolving to match the needs of today and beyond: They display high productivity on in-line assembly. Using the advanced technologies that have been fostered for many years and are unique to JSW, we have achieved high-precision injection molding.

Productivity
- Faster table rotation and mold open/close.

Compact body
- Low table height and smaller foot print.

Faster Cycles
- Algorithm Technology
- Molding quality 62 micro second high-speed servo control circuit that is among the fastest in the industry.

Operability and visibility
- Large 15-inch LCD color display.

Handling a variety of products
- Wide selection range of injection modules and injection capability, with flexible control.

Wide Range of Injection Units Performance
- Innovative & Friendly Operation
Low-Profile and Compact Design

This compact machine is easy to operate and suitable for in-line configuration.

Space saving

The machine width and installation space have been greatly reduced, to make possible inclusion of the machine on the assembly line. JT40RAD has reduced machine width by 150 mm and installation space by 16%, when compared with conventional models.

(Comparison between our JT-ELII & AD Series machines)

Larger molds

Although the machine width is more compact, the outer diameter of the table is the same as that of conventional models. Optimizing the nozzle position makes it possible to mount larger molds, and the machine can also handle larger, more complex dies, such as sliding cores.

(Comparison between our JT-ELII & AD Series machines)

Compact table

The mold securing height has been reduced to allow the assembly line to be lowered, making it easier for the operator. With a JT40RAD-55V, the table height is 894 mm (35.2 inch), 146 mm (5.75 inch) lower than on conventional machines; the machine height of 2850 mm (112.2 inch) is the most compact in the industry (including mounting pads).

(Comparison between our JT-ELII & AD Series machines)

Mold accessible in three directions

A three-piece safety door is used. The door open/close area is smaller. This improves operability and ease of machine installation. A mold can be accessed from three directions - both sides of the machine and the operation side - and an open space is left on the opposite side from operation, so that a runner can be easily removed.
High-speed mold open/close and fast table rotation, improve productivity.

Faster cycles for mold open/close and rotary table rotation have been achieved.

Fast, smooth mold open/close operation is ensured

A clamping mechanism exclusively for vertical machine with high-capacitance servo motor shortens the mold open/close dry cycle by 21% (JT40RAD).

High-performance servo motor & timing belt

Silent, high-speed table rotation - the best in the industry - has been achieved by using a high-performance servo motor and timing belt. A mechanical stopper is provided at the rotation stop end to improve the stop accuracy during repetitive operation. This enables stable molding without any displacement of the inserted product. (The table rotates 180° for reciprocated turning.)

Injection compression makes a wide variety of molding possible.

The injection compression molding function, unique to JSW, is equipped as standard. The injection compression controls the position of mold with accuracy more than 10 times that of direct-pressure molding machines, making possible a wide variety of molding.
62 micro second high-speed servo control circuit, the fastest in the industry, improves the product quality.

The marvelous 62 micro second high-speed servo control circuit results in both high precision and stable quality.

Use of 62 micro second high-speed servo control circuit in the "JT-AD Series" reduces scanning time to 1/16th of conventional controls. It promotes product quality through a reduction in performance variation, such as holding transfer pressures.

Molding machines: JT40RELE (conventional machine) vs JT40RAD-5V
Molded product: Electronic parts
Resin: PA 6

The resolution of injection pressure detector has been greatly improved.

The resolution of the load cell amplifier for the injection pressure has been intensified five times for more accurate injection, holding and back pressure control which helps ensure stabilized precision molding.

Large 15 inch LCD color monitor
Remarkably improved operability and visibility

Upgraded SYSCOM3000T.

- A vertically arranged large 15 inch TFT color LCD screen. The controller rotates to provide the operator with a clear view of molding parameters.
- An illustration of the machine and a touch screen insures easy operation.
- The independent injection conditions can be set to conform the delicate difference between two lower molds. (Rotary type specification)
- Languages are selectable from English, Chinese and Japanese even during running. Other languages (Korean and Spanish) are optional.
- Up to 120 molding conditions can be stored in internal memory; up to 1,000 conditions can be stored in external memory (USB memory).

SYSCOM3000T screens

A controller consists of the condition setting screen, mode keys screen and operation switches.

- Condition setting screen
- Touch panel screen
- Selector switches

1. Cycle monitor screen
2. Convenient monitoring screens
3. Condition setting screens
A wide selection of injection units with versatile control modes promotes the product quality.

The low inertial injection (HR) specifications (*optional) and high-speed, high response injection (HS) specifications (*optional) have been added on the module system that is highly accepted in the industry. The module system enables selection of appropriate injection unit and covers diversified products including micro and thin-walled molding.

**Module system**

<table>
<thead>
<tr>
<th>Single acting type</th>
<th>M40</th>
<th>M70</th>
<th>M100</th>
<th>Clamping nozzle</th>
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</thead>
<tbody>
<tr>
<td>22V</td>
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<td>44V</td>
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</table>

**Injection acceleration performance**

(Comparison between old EL & AD series)

- Electric-driven soft-pack servo control
  - This JSW unique control technology suppresses peak pressure immediately before switching the holding pressure in the injection process, keeping the machine pack at optimum pressure. It results in over-pack prevention in thin-wall molding. (PAT. # 1755568)

- Effects of soft-pack servo
  - Molding distortion reduced
  - Burrs cleared
  - Dispersion in weight of molded products reduced
  - Clamping force reduced
  - (low-pressure molding)
  - Mold-friendly

**APC (Advanced Pressure Control)**

This JSW unique control technology suppresses overshoots or undershoots of resin pressure during the filling/holding pressure process, a dramatic upgrade of the tracking and responsibility for setting pressure. (PAT. # 3166289)

**IWCS (Injection Weight and Cushion Stability) control**

This control keeps the pressure of the molten resin in the screw head section at a set value to re-stabilize the measured density each shot after plasticizing. This is the unique control technology of JSW that exerts great effect to minimize cushion and product weight variation.

**Effect of reduced cushion variation**

- **Ordinary control**
- **IWCS control**

**Predicted control of metering**

To ensure smooth stops with optimum screw rotation and back pressure load at the screw rotation completion position, estimate control is located in the front of the screw rotation completion position. The screw rotation number can be reduced to the optimum without any loss in time, and back pressure can be decreased.

**Before-holding pressure deceleration control**

This control uses the estimate control to reduce the speed to the optimum holding pressure speed, from its position before the holding pressure transfer position. This decreases the inertia that is peculiar to electric injection molding machines and improves stability in holding pressure transfer pressure, which is essential for precision molding.
This efficient energy saving performance greatly reduces power consumption.

- Power consumption is 1/3 to 1/4 that of a hydraulic machine.
- Cooling water amount is less than 1/5 that of a hydraulic machine.

Power Consumption Comparison Graph:
- Hydraulic series
- Electric series JT46RAD

Power consumption is reduced by 1/3 to 1/4 when compared with hydraulic machines.

Promotion of maintainability.

- Polycarbonate safety door
  A large polycarbonate (steel is also available) safety door that allows operators to clearly view the inside of the platen when used. The status of both mold and molded product is easily visible, facilitating maintenance.

- Automatic lubricating device
  This automatically lubricates the injection and clamping devices to prevent any problem due to inadequate lubrication.

- Highly endurable ball screw
  Using a ball screw that maintains high accuracy improves endurance.

- Air pressure inspection window
  The window allows operators to easily check the supply status of factory air that is necessary for the safety device of the machine.

NET100 system and LINK10 system

This system performs both quality control and production control of injection molding machines. When the system is connected to the factory LAN, it will be possible to communicate data with the injection molding machines connected to the network. Depending on the number of machines connected to the network, the NET100 system can control up to 100 machines, and the LINK10 system can control up to 10 machines. *Optional

Remote management system

Connecting the NET100 system or LINK10 system to the Internet will allow operators to monitor the molding status, display the controller screens, and change settings from anywhere in the world. This will greatly increase the efficiency of molding work. *Optional
Specifications

Maintaining the standard of high quality and reliable production

List of standard accessories

<table>
<thead>
<tr>
<th>Item</th>
<th>Controller</th>
<th>Monitor</th>
<th>Service</th>
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<tbody>
<tr>
<td>Touch panel TFT color LCD controller</td>
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<tr>
<td>Island position display (Height 120mm)</td>
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<td>USB port</td>
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<td>Drive setting (2 steps)</td>
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<td>External operation button</td>
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<td>General function</td>
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<td>Offline setting</td>
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<td>Offline setting</td>
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<td>Diagnostics</td>
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<td>Help function</td>
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<td>Pre-run timer</td>
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<tr>
<td>Compound action</td>
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<tr>
<td>AT/Standar (English/Chinese/kanji)</td>
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<tr>
<td>Manual temperature monitor</td>
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<td>High temperature monitor</td>
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<td>Low temperature monitor</td>
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<tr>
<td>Thermal system fault</td>
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<tr>
<td>Injection pressure monitor (IPM)</td>
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<td>Injection/Reset waveform monitor</td>
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<td>Injection/Reset waveform storage</td>
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<tr>
<td>Oscilloscope waveform monitor</td>
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<td>Injection pressure overheat alarm</td>
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<td>Statistical graph</td>
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<td>Measurement value display</td>
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<td>Milipor temperature display</td>
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<td>Grease lubrication fault alarm</td>
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<tr>
<td>Fault alarm</td>
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<td>Production monitor</td>
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<td>Cumulative operating hour display</td>
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<tr>
<td>Cycle monitor</td>
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<tr>
<td>Mold condition upper/lower limit monitor</td>
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<tr>
<td>Inspection and maintenance</td>
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<tr>
<td>Alarm history</td>
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<td>Set value history</td>
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<td>Stop fault alarm</td>
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<tr>
<td>Cooling water closed circuit</td>
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<tr>
<td>Accessories are designed for robots</td>
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</table>

Other items:

- Injection
  - Long nozzle
  - Shut-off nozzle (pneumatic type)
  - H-4-Male M5 screw
  - Ultra compression/high resistance screw barrel
  - B size screw barrel
  - Hopper
  - Hopper attachment tube
  - Ceramic screw head
  - PCO screw head
  - Module 2: 20 mm downsized barrel
  - Residual heat alarm
  - Low-thermal injection (LHI)
  - High-speed/high-response injection (HRS)
  - Vent-type injection device
- Clamping
  - Thermal insulation plate for clamps
  - Air jet
  - Core pull stroke (hydraulic type, hydraulic type)
  - Unclamping motor
- Electric installation
  - Other language select (English/Spanish)
  - Simple centralized monitoring system LINK-10
  - Centralized management system NET-100
  - Heater disconnection alarm
  - Mold temperature display (with mold temperature sensor/warning display)
  - Mold temperature control device (heater type)
  - Printer (with printer cable)
  - Robot interface
  - Cooling water flow indicator
  - Cooling water failure warning
  - Loading pads for installation
  - Rotary injection light
  - Support specifications
  - Designated color

Examples of attaching optional devices:

- Upper clamping (hydraulic type)
- Screw clamp (hydraulic type)
- Electrode 3-point injection (rotary type only)
- Electrode 3-point injection (hydraulic type)
- Electrode 3-point injection (multiple type only)
- Mold control device (incubation, .)
- Mold clamping

Note 1: Applied for screw diameters of 25 mm or more.
Note 2: Screw clamps are available for diameters of 25 mm or more.
Note 4: On an injection unit, the screw clamp is limited to the size of the nozzle.
Note 5: In the case of a screw clamp, the size of the nozzle and the screw clamp size will be limited.
Note 6: Depending on the nozzle size, the size of the screw clamp will be limited to the size of the screw clamp.
Note 7: When using the mold design, the mold design size and the mold design size must be specified.

All Electric Servo Drive
Virtual Type Injection Molding Machine