X-PUMP® EQUIPPED
HYBRID TYPE LARGE-SIZED INJECTION MOLDING MACHINE

FVX-III SERIES
FVX560 III
FVX660 III
FVX860 III
FVX1000 III
FVX1300 III
FVX-Ⅲ Series inherits easy-operability and straight-hydraulic mold clamping advantages of hydraulic injection molding machines while achieving significant energy-savings.

FVX-Ⅲ Series with NISSEI original innovative hybrid "X-Pump®" system offers well-balanced performance with its high-rigidity direct-pressure clamping system, excellent injection performance, long service life, easy maintenance, and electric type level of energy efficiency. It redefines the concept of hydraulic injection molding systems.

**FVX-Ⅲ Series**

<table>
<thead>
<tr>
<th>Model</th>
<th>Clamping ton (t)</th>
<th>Injection unit</th>
<th>Screw diameter (mm)</th>
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</table>
The fusion of hydraulic control and servomotor drive technology

Intelligent Hybrid "X-Pump® System"

About X-Pump® System
It is a revolution speed controlled pump driven by an AC servomotor

- Substantial energy-saving is possible since the motor is at rest during unloading.
- Injection modes changeover permits wide-ranging injection from ultra-low to high speed.
- Injection holding pressure control (pressure controlled state) can be sustained for a long period.

The Ultimate Level of Energy Saving
Since the servomotor in X-Pump® system rotates at required speed only when it is necessary, it is extremely efficient. In comparison with the conventional hydraulic machines, its motor consumes approximately 45% less energy.

New!!

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<thead>
<tr>
<th>CO2 emission amount conversion table</th>
<th>Unit: kg</th>
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FVX1300III-700L
AC400V specification machine
(Equipped with options) [Japanese specification]

FVX860III-400L
AC400V specification machine
(Equipped with options) [Japanese specification]
Fusion of Hydraulic Control and Servomotor Drive Technologies

Intelligent Hybrid "X-Pump® System" with "Direct Pressure Type" Clamping Unit

Advantages of X-Pump® Hybrid Machines

- Molding stability: Linearity materialized in all ranges; from ultra-low to high speed and low to high pressure
- Response: High-response injection similar to that of electric machine
- Injection holding pressure performance: Long-sustained and high injection holding pressure possible by switching to low-flow rate mode
- Wide-ranging injection velocity: High-flow rate mode for high-velocity injection; Low-flow rate mode for stable low velocity & low-pressure control
- Low-cost: Reduction in initial cost and lifetime cost
- Energy-savings: Cooling water amount reduced; relieves cooling device costs; Better energy efficiency than conventional pump drive
- Maintainability: Proven track record of its durability of the mechanical components and excellent maintainability
- Low-noise: Electric machine level of low-noise operation

Easy molding condition setting
Easy-to-use direct pressure type clamping mechanism
High-sensitivity mold protection
Durable Low maintenance
Low cost
In comparison with the conventional hydraulic machines, it achieves faster injection velocity and quicker injection response.

"Excellent stability in ultra-low velocity/pressure range," which is difficult to achieve with the hydraulic machines, has been materialized.

It achieves "high-pressure + long-sustained" injection holding pressure performance, which is difficult to achieve with the electric machines. 100% holding pressure can be sustained for 60 seconds.

In comparison with the conventional hydraulic machines, it offers superior lowest operational velocity and higher resolution in low-velocity range.

In comparison with the conventional hydraulic machines, it offers superior lowest controllable pressure and higher control resolution in low-pressure range.
High-Performance & High-Functioning Controller TACT® IV

**Evolution to a large vertical screen**
- 15-inch LCD (large vertical screen)
- Vertical dual window display
- Touch and slide display

**High-performance controller: man-machine interface**
- 6-language display in Japanese, English, Chinese, Korean, Spanish, and Thai as a standard feature
- Setting entry with high-response and high-resolution touch panel

**Newly added SET-UP mode**
- Molding condition setting consolidated into one screen
- SET-UP mode added to the operation mode

**Newly added Maintenance screen**
Scheduled maintenance and parts replacement period notifications

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**Easier to Use**

**Traceability Support**
Date specified event and monitor data display became possible.
- Molding condition (max. 500 conditions) Saving waveform data and displaying image data are possible. Molding condition and an image of its product can be managed together as a set.
- Event/monitor data (max. 100,000 events) It is helpful for maintenance and quality control (operation mode change, condition change, error, etc.).

**New**

**Enriched Maintenance Functions**
TACT® IV can notify when recommended scheduled maintenance and consumable parts replacement time arrive, and its related notes can be entered. It can notify arbitrary messages, such as for mold, screw, lubrication, maintenance period, etc. on specified dates or shots. Remote control of TACT® screen from a PC via LAN is also possible.

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**SET-UP Mode/SET-UP Screen**
Troublesome screen switching during setup has been eliminated. Setting related to molding setup is consolidated onto one page. When SET-UP mode is selected, it automatically switches the screen.
Materialize molding you desire... the new controller that pursues better operability and workability

**Shutdown Sequence**

A variety of finishing states after completing production is available. Operating power state and shutdown sequence for each driving unit can be freely selected.

- Finish with ON
- Finish with OFF
- Complete with mold open
- Complete with mold close

△ Selection of shutdown sequence after completing production

**Descriptions of Errors**

It displays the error messages and solutions.

△ Error message and its solution (touch Error message) to show details

**Descriptions of Adjusters**

It displays easy-to-understand definitions of the technical terms used for the adjusters.

Description of changeover △

**Screen Lock and Adjuster Masking Functions**

Adjusters that will be password protected can be selected.

△ Password & masking screen △

**External Connections**

- [USB port] It can be connected to an external storage device (USB memory stick).
- [LAN port] Connections to quality & production management software PQ Manager, molding data recorder/analyzer, and PC are possible.

**Flexible Purging Function**

This makes troublesome material and color change more efficient. It materializes flexible purging operations, such as purging with a fixed cycle, purging with added back pressure, and force retreat purging.

△ Auto purging mode

**Reinforced Quality Control Function**

(Product Pass/Fail Judgment Function)

- It can be arbitrarily selected from each molding monitoring category.
- Product pass/fail judgment by full-range monitoring of injection pressure waveform is materialized. It constantly monitors pressure during injection and compares it with a waveform of accepted shot, permitting pre force ejection of short shot and deformed products caused by pressure fluctuation, which could not be detected by injection peak pressure monitoring alone.
- The statistics of mold monitoring data can be applied to the product quality judgment function.
- The automatic scatter diagram analysis and waveform analysis provide the digitalization of molding data.

△ Correlation check/injection pressure monitoring
△ Waveform comparison

**Enriched Programming Function**

Simple interface programs with auxiliary devices can freely be created on the screen. The program can be saved together with the molding data (ladder programming function). Various error input and signal output programming functions can be assigned to the four of input/output terminals (simple programming function).

△ Ladder programming
△ Simple programming

**Setup Support Software “SET-UP Navigation”**

Operations from removing mold to mass production preparation are divided into six steps, and this support function will guide you through each step. It educates inexperienced workers and reduces set-up time.

△ Initial screen
△ Mold installation (step 3)
<table>
<thead>
<tr>
<th>Specification Item</th>
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<th>310L</th>
<th>400L</th>
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<td>30 kW × 3.45 kW</td>
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<td>Machine dimensions [inch (mm)]</td>
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★ The specifications are subject to change without notice due to performance upgrades.

A step up transformer is required if a facility’s voltage is 3-phase 200V (200V 〜 230V).

※Actual plasticizing capacity may vary, depending on the molding conditions and materials used.
※Weight per shot is 95% of theoretical value. (GPPS)
※The maximum injection pressure is the highest value that can be set on a machine. The value may be limited, depending on the molding conditions.
※The injection rate is the estimated value that was derived from a formula, and it is not a guaranteed value at the maximum injection pressure.

³ The specifications are subject to change without notice due to performance upgrades.

★ 1MPa = 10.2 kgf/cm² = 10 kgf/cm², 1kN = 0.102 tf = 0.1tf

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<td>1810</td>
</tr>
<tr>
<td></td>
<td>90</td>
<td>90</td>
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<td>90</td>
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</tr>
<tr>
<td>Injection Screw diameter inch</td>
<td>3-phase AC400V (380 ~ 480)</td>
<td>3-phase AC400V (380 ~ 480)</td>
<td>3-phase AC400V (380 ~ 480)</td>
<td>3-phase AC400V (380 ~ 480)</td>
<td></td>
</tr>
</tbody>
</table>

(1) This is an estimated value for FVX1300II-1100L. Please contact us for more details.
[Standard Specifications]

Clamping unit/mold
1. Locate ring assembly (fixed type)
2. Mold protection (low-pressure clamping time monitor)
3. 4-speed mold closing velocity (three-stage high-velocity mold closing and low-velocity/low-pressure mold closing)
4. 5-speed mold opening velocity (initial mold opening, high-force mold opening, two-stage high-velocity mold opening, and final mold opening)
5. Mold opening/pause
6. Clamping compression molding (CPM)
7. High-pressure clamping force setting unit: kN (display in tonf or % optionally available)
8. Multi-functional ejector (ejection start timer, pause, 2-speed forward velocity, half-way change of forward velocity, and variable forward/backward stroke)
9. Ejector plate return confirmation (circuit only)
10. Process inside mold: MIP0 (sequential operation)
11. Ejection during mold opening (simultaneous motion)(FVX560E ~ 800E)
12. Clamping pressure full-closed control
13. Mold position reading function

Injection unit
1. Injection process control: 6-speed, 3-pressure, and 3-limit pressure
2. 4-mode F-P (crosscommand: position, injection pressure, injection velocity, and external input signals)
3. 3-speed holding pressure response changeover (fast/middle/slow)
4. Over packing prevention circuit
5. Decompression/decompression before metering
6. Injection pressure full-closed control
7. Back pressure and metering velocity: 3-stage
8. Nozzle backward start timer/metering start timer/injection start timer
9. Injection position setting unit: mm (display in inch and cm optionally available)
10. Injection velocity setting unit: mm/s (display in % optionally available)
11. Injection pressure and back pressure setting unit: MPa (display in kgf/cm², ps, and % optionally available)
12. Metering velocity setting unit: rpm (display in % optionally available)
13. Automatic purge circuit
14. Purging cover (with interlock)
15. Screw cold-start prevention (all-zone sequential type)
16. Nozzle/barrel temperature upper limit alarm
17. Nozzle/barrel temperature PID control
18. Nozzle/barrel temperature upper limit alarm
19. Nozzle heater circuit SSR
20. Barrel heat retention circuit (forced and emergency retention)
21. Barrel/retention cycle changeover (control mode: standard and high-velocity)

Molding system control/production control
1. TACT® IV (15-inch vertical display and dual window display)
2. Shot counter/free shot counter
3. Production control counter/production of control counter (signal output option)/defective category counter
4. Monitor display
5. Statistical processing function/scatter diagram/wave data analysis
6. Product pass/fail judgment function/batch entry of acceptance level conditions
7. Air blow (1 circuit)
8. Hydraulic core pull (1 circuit)
9. Product take-out robot interface (8 respective points for input and output)
10. Calendar timer (hydraulic oil and barrel heat-up)
11. Visualized control of molding conditions
12. Molding condition internal memory (up to 300 conditions)
13. Built-in LAN port (10/100BASE-TX/USB output)
14. Saving data to an external memory (USB flash drive)
15. Connection to PC
16. Display of injection velocity/pressure waveform
17. Operation history display: 100,000 items
18. Molding support message
19. 6-language display (English, Japanese, Chinese, Spanish, Korean, and Thai)
20. Hour meter/diagnosis function/calculator
21. Ladder programming function/input output function quota
22. Signal recorder
23. Alarm (informing) function
24. Error display function/emergency power shutdown/cycle alarm
25. Remote maintenance
26. Selection of production complete state (selection of mold, injection, metering, and operation power states when production is completed)
27. Selection of unit setting
28. Descriptions of adjusters
29. Setup mode
30. Idling stop

Cooling/hydraulic oil
1. Cooling water manifold (10 circuits)
2. Cooling water circuit (with return stop valve and flow checker)
3. Hydraulic oil heat-up
4. Oil temperature stabilizer
5. Oil temperature upper/lower limit alarm
6. Low oil level alarm
7. Hydraulic oil purifier

Operation safety
1. Rotating beacon (Pattine)
2. Alarm lamp/alarm bell
3. Emergency stop button (operator side)
4. Mold clamping safety device (mechanical, electric, and hydraulic types)
5. Emergency stop button (non-operator side)
6. Automatic spec/close safety door
7. Password protection of molding data

Power
1. Main power breaker

Maintenance, installation, and miscellaneous
1. Lubrication to clamping slide (oil cup)
2. Manual centralized lubrication unit (to clamping slide and injection)
3. Manual centralized greasing unit (to clamping slide)
4. Tool kit

[Optional Specifications]

Clamping unit/mold
1. Daylight extension (※)
2. Locate ring accessory (non-fixed type) or locate ring diameter change (※)
3. Insulation plate
4. Additional mold mounting bolt hole (※)
5. T-slot machining on a die plate (※)
6. Mold clamping pressure
7. Mold temperature control or screen display of mold temperature
8. Mold temperature upper/lower limit alarm
9. Mold heater disconnection alarm

Injection unit
1. Nozzle/barrel heater disconnection alarm
2. Hopper throat temperature control or screen display of hopper throat temperature
3. 2-point nozzle temperature control
4. Barrel heater circuit SSR
5. High-temperature resistant barrel (consultation required) (※)
6. Wear and corrosion resistant barrel and screw (※)
7. Special-purpose screw and barrel (※)
8. Hydraulic shut-off nozzle or spring shut-off nozzle (※)
9. Extended nozzle (length to be specified)
10. Hopper

Molding system control/production control
1. Unscrewing
2. Calendar timer (additional electrical outlet activation)
3. USB memory
4. Water alarm/air alarm

Cooling/hydraulic oil
1. Cooling water filter
2. Additional cooling water circuit

Operation safety
1. Main power leakage breaker
2. Additional built-in electrical outlet
3. Outlet circuit power shutdown

Maintenance, installation, and miscellaneous
1. Automatic centralized lubricating unit (to clamping slide)
2. Easy clamp
3. Automatic mold clamp (※)
4. Mold positioning pin and block (※)
5. Custom color paint (contact us for the painting area) (※)
6. Mounting pad
7. Installation foundation kit

The delivery time for (※) specifications may take longer. Contact us for more details.
# FVX-III SERIES FVX660III

[Injection type: ①310L  ②400L]

## EXTERNAL VIEW

- Heat exchanger cooling water supply/than part
- Nozzle touch stroke 550 [21.7"]
- Product drop part

## ROBOT FIXATION DIAGRAM

- Mold mounting face
- 90° (35.4")
- 375 [14.8"]
- Nozzle hole diameter φ5 [0.2"]
- 6-M14 Depth 50 [1.97”]

## MOLD ATTACHMENT DIAGRAM

- The minimum mold dimensions of 730 [28.7"] × 730 [28.7”] are required in order to achieve the maximum clamping force.

## HOPPER FIXATION DIAGRAM

- ① M12 Depth 24 [0.94”]
- ② M16 Depth 32 [1.26”]
- ③ Nozzle distance 65 [2.56”]

- Movable platen
- Stationary platen
- 200 [7.87”] Suction stroke 55 [2.17”]
- Depth 35 [1.38”]
- 59 [2.32”] Clamping stroke 60 [2.36”]
- 1/4 UNC Depth 50 [1.97”]
- 800 [31.5”] Clamping stroke 60 [2.36”]
- 310 M24 Depth 50 [1.97”]

- Movable platen
- Stationary platen

- 855 [33.8”] 203.2 [8.01”]
- 127 [5.0"
- 127 [5.0”]
- 88.4 [3.46”]
- 76.2 [3.0”]
- 50.8 [2.0”]

- 855 [33.8”] 203.2 [8.01”]
- 127 [5.0”]
- 127 [5.0”]
- 88.4 [3.46”]
- 76.2 [3.0”]
- 50.8 [2.0”]

- 16 - 70 [2.76”] hole (φ50.5 [1.99”])
- 16 - 50 [1.99”] hole (φ50.5 [1.99”])
- 16 - 50 [1.99”] hole (φ50.5 [1.99”])
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