VH series
Vertical Type Injection Molding Machine

- Insert Molding
- Automation Optimization
- Minimize the spaced required for installation
## Machine series

<table>
<thead>
<tr>
<th>Type</th>
<th>Descriptions</th>
<th>Capacity Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB</td>
<td>Hydraulic</td>
<td>20 to 880 ton</td>
</tr>
<tr>
<td>TH</td>
<td>Hydraulic</td>
<td>50 to 450 ton</td>
</tr>
<tr>
<td>TN</td>
<td>Hydraulic &amp; All electric</td>
<td>220 to 360 ton / 250 ton</td>
</tr>
<tr>
<td>TE</td>
<td>All electric</td>
<td>20 to 450 ton</td>
</tr>
<tr>
<td>VH</td>
<td>Vertical hydraulic</td>
<td>50 to 150 ton</td>
</tr>
<tr>
<td>DL</td>
<td>Two platen hydraulic</td>
<td>450 to 3500 ton</td>
</tr>
</tbody>
</table>
VH series

- Insert molding solution
  Outstanding performance in integrating metal and film other than plastics
- Automation for optimization
  Came up with flexible structure to enhance productivity adopting adjustment in the structure changes
- Brilliant space utilization
  The vertical type machine structure can help users better utilize the space for installation than horizontal machine

Standard Injection Unit Structure
- Apply various injection units: wide variety of injection units can be applied depending on the features of molded products
- Control for more precise molding and remote control the back pressure
- Basic application of double injection cylinder and in-line screw
- Control auto-tuning of synchronized heating in each barrel zone
  Considering the features of each vertical barrel structure that the temperature goes up at different rate, each zone can be controlled in synchronization.
- Separate temperature control in upper end of the nozzle
  Separately controls the temperature at the upper end of the nozzle for stable molding even for the resins not sensitive to temperature changes.
- Multi-stage control of injection/back pressure

Single Stage Hydraulic Clamping Unit
- Center hydraulic clamping unit helps maintain consistent mold clamping bearing to prevent distortion and high quality injection mold products despite lower clamping force.
- Enhanced user convenience setting the mold clamping force as needed to apply further pressure for clamping
- Light curtains sensor
  Effectively prevent industrial accidents adopting light curtains sensor methods using safety lock module for user safety

VH series _ Clamping / Injection Matrix

<table>
<thead>
<tr>
<th>Model</th>
<th>Clamping force</th>
<th>Tie-bar distance(HxV)</th>
<th>Unit No.</th>
<th>Injection unit (Screw diameter in mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VH50/VH50S</td>
<td>490kN</td>
<td>410x300</td>
<td>IH 1.4V</td>
<td>22 A B 25 A B 28 A B 32 A B 36 A B 40 A B</td>
</tr>
<tr>
<td>VH75/VH75S</td>
<td>735kN</td>
<td>460x340</td>
<td>IH 2.0V</td>
<td>22 A B 25 A B 28 A B 32 A B 36 A B 40 A B</td>
</tr>
<tr>
<td>VH100/VH100S</td>
<td>981kN</td>
<td>520x380</td>
<td>IH 2.8V</td>
<td>22 A B 25 A B 28 A B 32 A B 36 A B 40 A B</td>
</tr>
<tr>
<td>VH50R*/VH50RS</td>
<td>490kN</td>
<td>Ø880</td>
<td>IH 1.4V</td>
<td>22 A B 25 A B 28 A B 32 A B 36 A B 40 A B</td>
</tr>
<tr>
<td>VH75R/VH75RS</td>
<td>735kN</td>
<td>Ø1000</td>
<td>IH 2.0V</td>
<td>22 A B 25 A B 28 A B 32 A B 36 A B 40 A B</td>
</tr>
<tr>
<td>VH100R*/VH100RS</td>
<td>981kN</td>
<td>Ø1100</td>
<td>IH 2.8V</td>
<td>22 A B 25 A B 28 A B 32 A B 36 A B 40 A B</td>
</tr>
<tr>
<td>VH120R*/VH120RS</td>
<td>1173kN</td>
<td>Ø1240</td>
<td>IH 3.9V</td>
<td>22 A B 25 A B 28 A B 32 A B 36 A B 40 A B</td>
</tr>
<tr>
<td>VH150R*/VH150RS</td>
<td>1471kN</td>
<td>Ø1350</td>
<td>IH 4.7V</td>
<td>22 A B 25 A B 28 A B 32 A B 36 A B 40 A B</td>
</tr>
</tbody>
</table>

* R: Rotary table

VH series _ Vertical & Horizontal Type

Insert molding solution
Outstanding performance in integrating metal and film other than plastics
Automation for optimization
Came up with flexible structure to enhance productivity adopting adjustment in the structure changes
Brilliant space utilization
The vertical type machine structure can help users better utilize the space for installation than horizontal machine
**VH-R series**

Application of Basic VH Features

- Use high performance servo motor and precision gear at the revolving table to realize accurate position control and high speed rotation.
- Reduce the cycle time with simultaneous ejector operation during clamping closure.

**Injection Unit**

High Speed Injection Unit (optional)

- It enhances the product precision maintaining the stability adopting structure innovation which is rapid in response during high speed injection operation with in-line type structure in its high rigidity integration structure.
- It minimizes the position variation by adopting single type injection structure and minimizing the weight of injection unit for rapid response and precision control.
- It can control high speed injection with ACC servo valve. (Injection speed at 700mm/sec or above)
- Cylinder at nozzle touch section
- Stable nozzle touch with highly rigid nozzle touch cylinder load
- Better working condition when replacing the upright vertical injection cylinder screw as the injection unit can turn toward the nozzle touch cylinder

**Energy Saving Solution (Optional)**

- Ultra precision safety control
  - Excellent representation of the system with feedback control and servo pump system’s closed-loop control by using AC servo motor (within 0.1%)"autiful representation of the system with feedback control and servo pump system’s closed-loop control by using AC servo motor (within 0.1%)
  - High responsiveness with AC servo motor’s hydraulic drive: 70ms
  - Precise clamping mold protection with low speed precision location control
- Energy saving and low noise level
  - Controlling the number of servo pump system rotation with the AC Servo motor helps save energy and reduces noise (max 60% energy saving comparing to the general hydraulic drive types)
- Saving coolants and oil
  - Prevent the temperature rise of the oil controlling the rotation number by AC Servo Motor
  - Save up to 25% of the coolant consumption
  - Save up to 15% of hydraulic fluid

**Clamping Unit**

2-stage high speed turn table clamping type (RS series)

- Enhance the location precision and high cycle with servo driven electronic signal control using the precision control method which decides the acceleration and deceleration and the position
- Simultaneous operation of ejector (R Series)
- During clamping closure, it helps reduce the cycle time with simultaneous operation of ejector and further to enhance the productivity.
Controller (ES600)
Installs multi-stage speed and pressure controls and precision position sensors for rapid response and designed user friendly monitor to enhance user convenience and practicality.

**Functions**
- Indicate the real time temperature changes on a graph
- Monitor the input and output
- Various core operation
- Production data storage
- Storage of molding condition changes and alert data
- Heater initiated pre-heating
- Indicate injection speed/pressure graph (Optional)
- Robot's interface circuit
- Rotation injection to raise injection capacity
- Molding data's internal storage : 100
- Molding data's external storage : CF memory card (S12MB)use

**Process Management**
Snapshot of process management
- It is designed to monitor the product operation in a single page report.

**Alarm Function**
Wide range of error management
- It provides all the information on possible errors during operation for accurate maintenance.

**System Features**
- Program System: Stored program system
- Memory Device: Flash-Rom
- Scan Time: 1ms
- Program Steps: 5,000
- Analogue Output: 4Channel + 4Channel
- A/D Converter: 4CH(Position) + 2CH(Analogue)
- High Speed Counter: 2CH + RPM
- Input: 48 Point + Possible 32 Expansion (Optional)
- Output: 48 Point + Possible 32 Expansion (Optional)

**Technical Data**
- Stored Program Control
- Internal Process Time Less than 1ms
- RS232 (Molding Resource, Fix Date, Sequence)
- PID Type Cylinder Temperature Control
- Temperature Input: K, J type
- CF Memory : Molding Source (500)
- Display Storage
- Short Data (1,000)
- Multi-Language Support (3 Languages) : Korean, Chinese, English
- 10.4inch TFT Color LCD (640X480)

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- Indicate the real time temperature changes on a graph
- Monitor the input and output
- Various core operation
- Production data storage
- Storage of molding condition changes and alert data
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- Temperature Input: K, J type
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- Display Storage
- Short Data (1,000)
- Multi-Language Support (3 Languages) : Korean, Chinese, English
- 10.4inch TFT Color LCD (640X480)
Multilingual Operation
Foreign languages such as English, Russian, Czech, Polish, Spanish and others are supported for easy manipulation of the machine in other parts of the world.

Setting Log
Users can store the changes they made hourly and print out the log of setting changes.

Central Monitoring System (Optional)
Central Monitoring Computer can have access to maximum 200 injection molding machines at the same time to facilitate the data transmission and management. Such injection related data will be converted into excel files for easier data management and retrieval.

Storing & Printing
Other than an internal storage device, users can easily store the molding and other relevant information and data in USB and print out as they want.

The high performance precision controller enables high speed high precision injection for closed-loop type (option) to guarantee the maximum safety and precision during operation.

System Features
- INTEL Celeron 600MHz 32bit Microprocessor
- 128MB SDRAM 128KB Cache Memory
- 1ms or Less System Internal Procession Time
- 10.4 inch TFT Color LCD (800*600)
- PID type Cylinder Temp Control
- Input output Module Type
- USB Printer Port

Position Transducer
- Digital Sensor
  - Effective positioning capabilities allow it to adjust the position and measure without having to reposition the machine all over again.
  - Can be used semi-permanently for literally unlimited amount of time (over 100 Million Cycle)
  - Excellent analysis of output signal
  - Easy to use and install

Quality Management
Accurate product management

Selective data storage and management for quality assurance under maximum 6 categories and trace back to 1,000 processes conducted in the past.

Graph Display
Convenient data visualization service

Detailed data on measured areas that a user may want are displayed in graph.

Alarms
Wide range of management on errors and glitches

All the information is provided on possible errors and glitches during operation for accurate maintenance and repair.
### Technical Data

#### VH-S series

<table>
<thead>
<tr>
<th>Machine Dimensions</th>
<th>Unit: mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>VH50</td>
<td>D=2100</td>
</tr>
<tr>
<td>VH75</td>
<td>D=2400</td>
</tr>
<tr>
<td>VH100</td>
<td>D=2700</td>
</tr>
</tbody>
</table>

- **Injection Unit**
  - **Screw type**: O A B O A B O A B O A B O A B O A B O A B
  - **Screw diameter (mm)**: 22 25 28 25 28 32 28 32 36 28 32 40 36 40 45
  - **Injection pressure (kg/cm²)**: 3487 2700 2152 2923 2330 1784 2847 2180 1722 2631 2079 1684 2316 1876 1482
  - **Theoretical injection volume (cm³)**: 46 59 74 69 86 113 99 129 163
  - **Injection weight (PS) (g)**: 42 54 68 63 78 104 91 119 150
  - **Injection rate (cm³/s)**: 42 54 67 54 68 88 62 80 102
  - **Screw stroke (mm)**: 120 120 120 140 140 140 160 160 160
  - **Injection speed (mm/s)**: 108 108 108 110 110 110 100 100 100
  - **Plasticizing capacity (PS) (kg/h)**: 14 20 26 20 26 38 26 38 51
  - **Screw rotation (rpm)**: 220 220 220 220 220 220 220 220 220

- **Clamping Unit**
  - **Clamping force (ton)(kN)**: 50 224 490
  - **Tie bar distance (mm)**: 410 x 300 460 x 340 520 x 380
  - **Max daylight (mm)**: 250 280 350
  - **Max mold weight (mm)**: 200 200 300
  - **Ejector force (ton)(kN)**: 2.5 (27) 2.7 (29) 4.3 (42)
  - **Ejector stroke (mm)**: 50 60 60

- **Generals**
  - **Heater capacity (kW)**: 4.5 5.5 6
  - **Motor capacity (kW)**: 11 15
  - **Total electric power capacity (kW)**: 15.5 20.5
  - **Total oil reservoir capacity (L)**: 220 250 350
  - **Machine weight (ton)**: 3.5 4 4.5
  - **Machine dimensions (L x W x H) (mm)**: 2,080 x 1,520 x 1,080
  - **Cooling water requirement (ℓ/min)**: 30

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### Technical Data

#### VH-RS series

<table>
<thead>
<tr>
<th>Machine Dimensions</th>
<th>Unit: mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>VH50RS</td>
<td>D=2100</td>
</tr>
<tr>
<td>VH75RS</td>
<td>D=2400</td>
</tr>
<tr>
<td>VH100RS</td>
<td>D=2700</td>
</tr>
<tr>
<td>VH120RS</td>
<td>D=3000</td>
</tr>
<tr>
<td>VH150RS</td>
<td>D=3300</td>
</tr>
</tbody>
</table>

- **Injection Unit**
  - **Screw type**: O A B O A B O A B O A B O A B O A B O A B O A B O A B
  - **Screw diameter (mm)**: 22 25 28 25 28 32 28 32 36 28 32 40 36 40 45
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  - **Injection weight (PS) (g)**: 42 54 68 63 78 104 91 119 150
  - **Injection rate (cm³/s)**: 42 54 67 54 68 88 62 80 102
  - **Screw stroke (mm)**: 120 120 120 140 140 140 160 160 160
  - **Injection speed (mm/s)**: 108 108 108 110 110 110 100 100 100
  - **Plasticizing capacity (PS) (kg/h)**: 14 20 26 20 26 38 26 38 51
  - **Screw rotation (rpm)**: 220 220 220 220 220 220 220 220 220

- **Clamping Unit**
  - **Clamping force (ton)(kN)**: 50 75 (735) 100 (981)
  - **Table lenth (mm)**: 880 1000 1100 1240 1350
  - **Daylight (mm)**: 250 280 350
  - **Min mold height (mm)**: 200 200 300
  - **Max daylight (mm)**: 450 480 600
  - **Ejector force (ton)(kN)**: 2.7 (27) 2.7 (29) 4.3 (42)
  - **Ejector stroke (mm)**: 60 60 80

- **Generals**
  - **Heater capacity (kW)**: 4.5 5.0 6
  - **Motor capacity (kW)**: 13.9 13.9 19.5
  - **Total electric power capacity (kW)**: 16.4 19.4 25.5
  - **Total oil reservoir capacity (L)**: 220 250 350
  - **Machine weight (ton)**: 3.5 4.2 5.5
  - **Machine dimensions (L x W x H) (mm)**: 3,420 x 1,920 x 2,070
  - **Cooling water requirement (ℓ/min)**: 20 20 40

1. Theoretical Injection Capacity: cross-section of a screw X screw stroke.
2. Min. mold clamp size should be 60% or above the tie bar distance.
3. The specification is based on the standard 60Hz data and specification.
4. Due to continuous improvements, specifications are subject to change without notice.
### Feature List

#### Injection Unit

<table>
<thead>
<tr>
<th>No.</th>
<th>Feature</th>
<th>VH</th>
<th>VH-R</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Injection process control stage (Speed/Pressure)</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>2</td>
<td>Mold open &amp; close speed control stage</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>Changing process control stage (Speed/Pressure)</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>Back pressure control stage</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>Suck-back control (before injection)</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>6</td>
<td>Suck-back control (after injection)</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>7</td>
<td>Injection position display</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>8</td>
<td>Injection speed graphic display</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>9</td>
<td>Injection pressure graphic display</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>10</td>
<td>Cushion amount display &amp; alarm</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>11</td>
<td>Screw RPM display</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>12</td>
<td>Auto purge circuit</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>13</td>
<td>Alarm of interchanging time</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>14</td>
<td>Screw cold start prevention device</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>15</td>
<td>Heater pre-heating (timer/weekly)</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>16</td>
<td>Heater temperature alarm &amp; alarm</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>17</td>
<td>PID heater temperature control</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>18</td>
<td>Cylinder temperature keeping mode</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>19</td>
<td>Shut-off nozzle (hydraulic type)</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>20</td>
<td>Valve gate 1 stage</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>21</td>
<td>Hydraulic torque motor</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>22</td>
<td>Antiwate and anticorrosion screw &amp; barrel</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>23</td>
<td>Double barrier mixing screw (SB screw)</td>
<td>O</td>
<td>O</td>
</tr>
</tbody>
</table>

#### Clamping Unit

<table>
<thead>
<tr>
<th>No.</th>
<th>Feature</th>
<th>VH</th>
<th>VH-R</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mold open &amp; close speed control stage</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>2</td>
<td>Mold open &amp; close pressure control stage</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>3</td>
<td>Clamping position display</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>4</td>
<td>Ejector position display</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>5</td>
<td>Hydraulic core puller (1 stage)</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>6</td>
<td>Cowl moving during mold opening</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>7</td>
<td>Ejecting during mold opening</td>
<td>X</td>
<td>S</td>
</tr>
<tr>
<td>8</td>
<td>Unmolding device</td>
<td>O</td>
<td>X</td>
</tr>
<tr>
<td>9</td>
<td>Air blow off unit</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>10</td>
<td>Safety device (hydraulic)</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>11</td>
<td>Safety device (electricity)</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>12</td>
<td>Working footboard</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>13</td>
<td>Daylight extension</td>
<td>O</td>
<td>O</td>
</tr>
</tbody>
</table>

#### Generals

<table>
<thead>
<tr>
<th>No.</th>
<th>Feature</th>
<th>VH</th>
<th>VH-R</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Molding-data memory capacity (Internal / External)</td>
<td>1000CF</td>
<td>1000CF</td>
</tr>
<tr>
<td>2</td>
<td>Alarm history display &amp; saving</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>3</td>
<td>Record of setting - value changing</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>4</td>
<td>Statistical function</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>5</td>
<td>I/O circuit display</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>6</td>
<td>Multi language display</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>7</td>
<td>Robot interface circuit</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>8</td>
<td>Robot interface entrance (Euramap 1.2.5PE)</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>9</td>
<td>Hydraulic oil alarm</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>10</td>
<td>Hydraulic oil pressure over alarm</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>11</td>
<td>Water-cool valve for oil cooler</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>12</td>
<td>Hydraulic oil temperature control device</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>13</td>
<td>Alarm of the reserved injection molding number</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>14</td>
<td>Hopper throat temperature control device</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>15</td>
<td>Auto grease for clamping unit</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>16</td>
<td>Shot data file saving</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>17</td>
<td>Molding data print &amp; file saving</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>18</td>
<td>Hydraulic oil cleaner</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>19</td>
<td>Auto clamps (Quick Die Change)</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>20</td>
<td>Recycling device for lubricator</td>
<td>O</td>
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</tr>
<tr>
<td>21</td>
<td>Product drop confirmation device</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>22</td>
<td>Leveling pads</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>23</td>
<td>3 stage alarm lamp</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>24</td>
<td>Maintenance tools</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>25</td>
<td>Spare parts</td>
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</tr>
</tbody>
</table>

Specifications can be changed for improved development without prior notice.

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### Global Network

**WOOJIN PLAIMM USA**
- L.A Tel +1-951-734-7890(Ext.102)
- Fax +1-951-734-7891
- E-mail us@wjpim.com
- Chicago Tel +1-951-734-7890(Ext.201)
- E-mail ckkim@wjpim.com

**WOOJIN PLAIMM Korea**
- Tel +82-43-540-9000
- E-mail info@wjpim.com

**WOOJIN PLAIMM China**
- Ningbo Tel +86-574-8680-0208
- Fax +86-574-8680-0277
- E-mail cn@wjpim.com
- Guangdong Tel +86-769-8322-3003
- Fax +86-769-8322-3002
- Shandong Tel +86-535-671-2246
- Fax +86-535-671-7131
- Suzhou Tel +86-512-6555-0531
- Fax +86-512-6555-0530
- Tianjin Tel +86-22-2398-2103
- Fax +86-22-2398-2103

**WOOJIN PLAIMM Japan**
- Tel +81-52-919-7775
- Fax +81-52-919-7276
- E-mail jp@wjpim.com

**WOOJIN PLAIMM Mexico**
- Tel +52-81-1090-8726
- Fax +52-81-1090-8727
- E-mail mx@wjpim.com

**WOOJIN PLAIMM Austria**
- Tel +43-334-7890-Ext.201
- Fax +43-334-7890-Ext.201
- E-mail lokim@wjpim.com