Proposal of upgrading dispensing system

Solutions to "Common Problems" in dispensing process

5 Answers

Complete alignment of pallet/work tilt

NEW

Desk-top dispensing robot with PC control image recognition

IMAGE MASTER®
350pc Smart

MUSASHI ENGINEERING, INC.
Our 350PC Smart provides a smart dispensing environment for dispensing process in R & D.

1. **Solution**

### 3-D alignment/profiling functions

Dispensing to works with random displacements or deformations cannot be successfully performed.

The 3-D alignment/profiling function allows for the XY correction of the tilt and deformation of a pallet and a work and "Profiling (the Z correction)" that maintains a constant clearance along the warpage and distortion of them.

Stable dispensing can be achieved.

![Diagram of Dispensing Shape and Profiling](image)

- Pallet's tilt
- Individual works' tilts or displacements
- Individual works' and pallets' tilts

**Applications**

This machine is best suited for processes in which dispensing is performed on works with distortion or warpage and in which works have the dispensing prohibited areas. Smart phone cover adhesion, ECU sealing.

**Smart Spec**

- **TACT**
  - Our conventional machine
  - **350PC Smart**
  - Alignment completion time for fixed quantity
  - Our original 3-dimensional technology equipped. Tact time reduced.

- **30% shortened (compared with conventional types)**

**350PC Smart**

- Three roles by just one machine!

- Dispensing + Measuring + Observing

- Dimension measuring screen

**Common problem**

It takes a while to check the dispensing results (line width, dispensing shape, etc.) after dispensing.

**Solution**

### Length measurement/dispensing pattern trace functions

Using different machines for each operation has resulted in time loss. No work movement accelerates the operation speed.

**Smart specifications**

- Ready for Japanese, English, Chinese, and Korean
- Windows7 compatible
- All strokes of the DSS series supported

**System configuration example**

- Control box
- Robot
- Touchscreen PC
D and production 5 Answers

3. **Solution**

**Common problem**
Difficult to image visually the dispensing track and the revised contents of dispensing conditions.

**Touchscreen PC**
- Dispensing track camera image
- Revision/confirmation of dispensing conditions
- Creation of dispensing program, etc.

All information required for conditioning can be displayed and grasped.

Recipe screen

4. **Solution**

**Common problem**
Adjustment after liquid replacement needs some time.

**Z-axis zero point function/nozzle position offset function**
A slight “Positioning Deviation” of the nozzle occurring at liquid replacement may lead to collision between the nozzle and a work or faulty dispensing.

Our original operation functions simply correct the positioning deviation of the nozzle.

5. **Solution**

**Common problem**
It takes much time to optimize the dispensing operation while visually inspecting a work and

**Camera teaching/map functions**

Grasping of the whole work with the mapping function

- Coordinate registration
- Program completed

Program creation time shortened!

More serviceable functions for R & D and production are equipped!!

- Individual alignment function
- Multiple dispensing patterns concurrent function
- Production log function
- Z-axis easy profiling function
- Mask area visual setting function
- Anywhere-Start function
- Simple recipe import/export function

---

**350PC Smart and MuCAD perfectly operating together.**
Dispensing program can be edited via PC operation. Programming is smartly supported; for example, programs can be created on the basis of work images.

Compact footprint achieved by smart design

30% reduced (compared with conventional type)
The fusion of dispensing “Core” technologies
MUSASHI’s desktop robot

Unrivaled “Precision” and “Rigidity”

High levels of dispensing quality for enhanced yield

High-speed, stable operations of heavy-duty tools and work pieces

Equipped with SynchroSpeed® PAT.P

Achieve a constant drawing width, regardless of robot speed. Reduce takt time to a minimum for ultimate production efficiency

Aiming for higher dispensing quality

Improved linkage with the dispenser

• Reconfigurable dispense conditions from robots
  • Simple test shot for improved dispensing quality
  • 3D/Spline interpolation
  • Nozzle adjuster

Improved usability

New teaching pendant

• Interactive navigation
• Easy-to-view, large backlight screen
  • Dual screen for easier programming
• Inter-robot program copy
• Embedded Stopwatch
• Japanese, English and Chinese support

Multi-skill support

Enhanced hardware configuration

• No misalignment and no loss in synchronization
• Built-in Brake
  • To prevent robot head from falling during emergency stops
• External input/output: 26 ports
• High-speed USB communication

Image Recognition

350PC Smart mountable
## Specifications

### Product Name

<table>
<thead>
<tr>
<th>Product Name</th>
<th>SHOTMINI 200 OMEGAX</th>
<th>SHOTMASTER 300 OMEGAX</th>
<th>SHOTMASTER 400 OMEGAX</th>
<th>SHOTMASTER 500 OMEGAX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>SM200OMEGAX-3A-SS</td>
<td>SM300OMEGAX-3A-SS</td>
<td>SM400OMEGAX-3A-SS</td>
<td>SM500OMEGAX-3A-SS</td>
</tr>
<tr>
<td>Number of controlled axes</td>
<td>3 axes</td>
<td>3 axes</td>
<td>3 axes</td>
<td>3 axes</td>
</tr>
<tr>
<td>Control method (1)</td>
<td>PTP control, interpolation control</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Travel range</td>
<td>X axis, Y axis</td>
<td>200mm</td>
<td>300mm</td>
<td>400mm</td>
</tr>
<tr>
<td></td>
<td>Z axis</td>
<td>80mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PTP operation speed setting range (1)</td>
<td>X axis, Y axis</td>
<td>1 ~ 500mm/s</td>
<td>1 ~ 400mm/s</td>
<td>0.1 ~ 500mm/s</td>
</tr>
<tr>
<td></td>
<td>Z axis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interpolation operation speed setting range (1)</td>
<td>X axis, Y axis</td>
<td>0.1 ~ 500mm/s</td>
<td>0.1 ~ 400mm/s</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Z axis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interpolation</td>
<td>3D line, 3D circular arc / circular, 3D elliptical arc / ellipse, spline</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repetitive positioning accuracy (2)</td>
<td>X axis, Y axis</td>
<td>±0.005mm</td>
<td>±0.005mm</td>
<td>±0.005mm</td>
</tr>
<tr>
<td></td>
<td>Z axis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transportable weight (3)</td>
<td>Y axis</td>
<td>20kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Z axis</td>
<td>15kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of I/O signal points</td>
<td>General purpose</td>
<td>input</td>
<td>output</td>
<td>26 points</td>
</tr>
<tr>
<td>Program entry method</td>
<td>Teaching pendant and PC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Display language</td>
<td>Japanese, English, Chinese</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Program capacity (4)</td>
<td>40,000 steps (999 channels)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Program storage system</td>
<td>Internal memory</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Program editing software</td>
<td>MuCAD V (option)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated power supply and frequency</td>
<td>100 to 240VAC 50/60Hz</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power consumption</td>
<td>130W</td>
<td>180W</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adaptive fuse</td>
<td>250V 50/60Hz</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>External dimensions (6)</td>
<td>W380xD460xH590mm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>W510xD570xH590mm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>W610xD670xH590mm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>W710xD770xH590mm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>30kg</td>
<td>40kg</td>
<td>55kg</td>
<td>66kg</td>
</tr>
<tr>
<td>Other functions</td>
<td>Test shot, eject condition CH switching, SynchroSpeed®, data transfer with teaching pendant</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other options</td>
<td>Leakage protection box, teaching pendant set, external operation box (horizontal / vertical), work bases, suction box for work bases, holder units, nozzle adjuster, nozzle cleaner, protection cover (door type / optical axis type)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compatible standards</td>
<td>CE marking (soon-to-be-released), EU RoHS</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. PTP control: Each of the specified axes moves to the end coordinate at a set speed.
2. Interpolation control: Each of the specified axes moves to the end coordinate at an interpolated composite speed.
3. This value is measured using MUSAshi's prescribed method (measurement method consistent with JIS).
4. When options are not mounted. Varies according to the set speed, set acceleration / deceleration time, and operation mode.
5. Main routine: 1 to 99CH, Sub routine: 100 to 999CH.
6. W and D are the dimensions of the lower section of the case.

### External dimensions

![Diagram of external dimensions](image)

#### Dispensing pattern editing software **MuCAD V**

**Fusion of unrivaled dispensing know-how!**

- Intuitive program drawing
- Easy editing for beginners
- Support for transferring programs from previous models (Ω / DS series, etc.)

---

**World Leading Dispenser**

**MUSASHI ENGINEERING, INC.**


**HEAD OFFICE**

8-7-4, Shimomarunouchi, Mitaka, Tokyo, 181-0013, Japan

**TELEPHONE:** TEL: (81)422-76-7111 / FAX: (81)422-76-7122

**BRANCH**

TOKYO, OSAKA, NAQUYA, SENDAI, FUKUOKA, SATAMA, NAGANO, EAST-KANTO, AKEA, KANAZAWA

---

**SHOTMINI 200 OMEGAX**

**SHOTMASTER 300 OMEGAX**

**SHOTMASTER 400 OMEGAX**

**SHOTMASTER 500 OMEGAX**

---

**SINGAPORE BRANCH**

20 Benvenue Road, #06-13 CyberHub Singapore 339914

TEL: (65)6226-2422 / FAX: (65)6226-4844

**THAILAND CO., LTD.**

No.12 Soi Bangna-Trat 25, Bangna, Bangna, Bangkoku 10260 Thailand

TEL: (66)2-769-5708 / FAX: (66)2-769-5450

**INDONESIA BRANCH**

Jl. MH. Thamrin, Robinson Square, Stock A-15, Lippo Cikarang, Bekasi 11510, Jawa Barat, Indonesia

TEL: (021) 8900 5005 / FAX: (021) 8900 5004

**EUROPE GMBH**

Leopoldstrasse 244, 1.Stock 80807 Munich Germany

TEL: (4998) 2088339 470 / FAX: (4998) 2088339 478

**KOREA, LTD.**

902 No. 9, F.C, Korea Bio Park, 69-41 Sampoeng-dong, Bundang-gu, Seongnam-si, Gyeonggi-do 463-400, Korea

TEL: (82)31-702-9811 / FAX: (82)31-702-9881

**TAIWAN BRANCH**

8F-2, No. 158, Sec. 2, Gongdaoy Shih Road, Hsinchu, Taiwan 30070

TEL: (8863)-572-9200 / FAX: (8863)-572-9300

---

**SHOTMINI 200 OMEGAX**

**SHOTMASTER 300 OMEGAX**

**SHOTMASTER 400 OMEGAX**

**SHOTMASTER 500 OMEGAX**

---

**SHOTMINI 200 OMEGAX**

**SHOTMASTER 300 OMEGAX**

**SHOTMASTER 400 OMEGAX**

---
## Concentration of dispensing "Core" technologies

**MUSASHI's desktop robot**

### Ultimate high cost performance

<table>
<thead>
<tr>
<th>Newly Developed</th>
<th>Synchronized speed function equipped</th>
<th><strong>800mm/sec. top level operation speed in desktop class.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Repetitive positioning accuracy ± 0.01mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Newly developed</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Stable line width, no line thickness on the corners. Available minimized tact time, and achieve the ultimate production efficiency.

## For higher dispensing quality

### Secure and useful functions

- **Dispensing condition switching function**<br>Changeable dispensing pressure, dispensing time etc. (at ML-806GX used)
- **Test shot function**<br>Dispensing stability improved
- **Brake function**<br>Prevention of head drop at emergency stop
- **Nozzle adjuster (option)**<br>The nozzle position adjustment after syringe replacement is automated.

## Enhanced operability

### Evolved teaching pendant

- **Interactive navigation function equipped**
- **Highly visible large screen with backlight**
- **Stopwatch function**<br>Enable to measure operation time
- **Data Copy Function to/from other robots**
- **Available in Japanese, English, and Chinese**

Easy status checking & fixing at program editing with dual screen.

## Multifunctional machine

### Substantial hardware configuration

- **External input/output: 26/26**
- **USB port**<br>High-speed communication achieved
- **"START" button**
- **"STOP" button**
- **"RETURN TO ORIGIN" button**
- **"DISPENSE" button** equipped as standard

Stable line width, no line thickness on the corners. Available minimized tact time, and achieve the ultimate production efficiency.
### Specifications

<table>
<thead>
<tr>
<th>Item name</th>
<th>Desktop robot SHOTmini 200Sx</th>
<th>Desktop robot SHOTMASTER 300Sx</th>
<th>Desktop robot SHOTMASTER 400Sx</th>
<th>Desktop robot SHOTMASTER 500Sx</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>SM200SX-3A-SS</td>
<td>SM200SX-3A-Z-SS</td>
<td>SM300SX-3A-SS</td>
<td>SM400SX-3A-SS</td>
</tr>
<tr>
<td>Number of axes controlled</td>
<td>3-axis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control method (*)</td>
<td>PTP / CP control</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Travel ranges</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X-axis, Y-axis</td>
<td>200mm</td>
<td>300mm</td>
<td>400mm</td>
<td>500mm</td>
</tr>
<tr>
<td>Z-axis</td>
<td>50mm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Setting range of PTP operation speed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X-axis, Y-axis</td>
<td>1 to 800mm/sec.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Z-axis</td>
<td>1 to 250mm/sec.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Setting range of CP operation speed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X-axis, Y-axis</td>
<td>0.1 to 800mm/sec.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Z-axis</td>
<td>0.1 to 250mm/sec.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interpretation</td>
<td>3-D line, 3-D circular arc/circle, 3-D elliptic arc/ellipse, spline</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repetitive positioning accuracy (*)</td>
<td>±0.01mm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transportable weight</td>
<td>8kg</td>
<td>15kg</td>
<td>7kg</td>
<td></td>
</tr>
<tr>
<td>Number of input/output signal points</td>
<td>General-purpose input</td>
<td>26 points</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>General-purpose output</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Program entry method</td>
<td>Teaching pendant and PC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Language</td>
<td>Japanese, English, Chinese</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Program Capacity (*)</td>
<td>40000 steps (999 channels)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Program storage system</td>
<td>Internal memory</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Backup on PC with dispensing pattern editing software</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Program editing software</td>
<td>MuCAD V (option)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated power supply and frequency</td>
<td>100W</td>
<td>200W</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power consumption</td>
<td>250V 4.0A (di. 5x20mm), time-lag fuse</td>
<td>250V 6.3A (di. 5x20mm), time-lag fuse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>External dimensions (*)</td>
<td>W300xO300xH440mm</td>
<td>W300xO300xH455mm</td>
<td>W510xO570xH950mm</td>
<td>W610xO670xH950mm</td>
</tr>
<tr>
<td>Weight</td>
<td>13.3kg</td>
<td>14.9kg</td>
<td>37kg</td>
<td>55kg</td>
</tr>
<tr>
<td>Other functions</td>
<td>Synchronized speed function</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other options</td>
<td>Leakage protection box, teaching pendant set, external operation box (horizontal/vertical), work bases, suction box for work bases, holder units, nozzle adjuster, nozzle cleaner, protection cover (door type, optical axis type)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compatible standards</td>
<td>CE-marking, EU RoHS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CE-marking (soon-to-be-released), EU RoHS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concentration of No.1 dispensing know-how!</td>
<td>Intuitive drawing of program</td>
<td>Easy editing for beginners</td>
<td>Program transfer from former models (SSI, DS series etc.) supported</td>
<td></td>
</tr>
<tr>
<td>World Leading Dispenser</td>
<td>MUSASHI ENGINEERING, INC.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HEAD OFFICE</td>
<td>8-7-4, Shimorenjuku, Mita, Tokyo, 181-0013, Japan TEL: (81)422-76-7111 / FAX: (81)422-76-7122</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BRANCH</td>
<td>TOKYO, OSAKA, NAGOYA, SENDAI FUKUZA, SATAMA, NAGANO, EAST-KANTO, AKITA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SINGAPORE BRANCH</td>
<td>20 Bendemeer Road, #06-13 CyberHub Singapore 339914 TEL: (65)6528-2422 / FAX: (65)6528-8444</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MUSASHI ENGINEERING (THAILAND) LTD.</td>
<td>No.12 Soi Bangna-Trad 25, Bangna, Bangna, Bangkok 10260 Thailand TEL: (66)2-769-5708 / FAX: (66)2-769-5450</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>INDONESIA BRANCH</td>
<td>Jl. Mh. Tanjung, Blok B, Kebon Jeruk, Jakarta 11410 Indonesia TEL: (62)21-8990-5005 / FAX: (62)21-8990-5004</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MUSASHI ENGINEERING (EUROPE) GMBH</td>
<td>Leostraße 244, 1-Stock 80897 Munich Germany TEL: (49)89 208039 470 / FAX: (49)89 208039 478</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KOREA, LTD.</td>
<td>920 No. 9 F, #4, Korea Bio Park, 694-1 sampyeongdong, Bundang-gu, Seongnam-si, Gyeonggi-do 463-400, Korea TEL: (82)31-702-3811 / FAX: (82)31-702-3881</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TAIWAN BRANCH</td>
<td>6F-2, No. 158, Sec. 2, Gong-daik 5th Road, Hunchu, Taiwan 30070 TEL: (886)3-573-9200 / FAX: (886)3-573-9300</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MUSASHI ENGINEERING</td>
<td>Unit 1706, 17F., Greenbelt Tower(39th)Corridor Plaza, No.1 Science Museum Road, T.S.7.East, Kowloon, K.H. TEL: (852)2503 6199 / FAX: (852)2503 5771</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MUSASHI ENGINEERING</td>
<td>ROOM 101, 1F, NO.626 Xian Feng Street, MINHANG, SHANGHAI, CHINA 201103 TEL: (86)21 6144 7881 / FAX: (86)21 6144 7882</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MUSASHI ENGINEERING</td>
<td>Room 102, 3rd floor Unit4, Building 2, Tianfan Cyberpark, Fufan District, Shenzhen City, Guangdong Province, PR China 510842 TEL: (86)755 8346 6622 / FAX: (86)755 8346 8866</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MUSASHI ENGINEERING</td>
<td>Room 106, No.12 Tian-Ji Hu Ding Li, Tuan-Jie Mansion Office Building, Chao Yang, Beijing, China 100202 TEL: (86)10 8599 3317 / FAX: (86)10 8599 3327</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. PTP control: This is control for each specified axis to move to the end coordinates at each speed.
2. CP control: This is control for each specified axis to move to the end coordinates at each speed that is synthesized by interpolation.
3. These values vary depending on the operations, the weight and gravity center of the loaded object, or other factors.
4. These values are measured by the method prescribed by Musashi (measuring method in conformity with JIS).
5. Main routine: 1 to 99 CH, Sub routine: 100 to 999 CH
6. W and D are the dimensions of the lower section of the case.

---

**Dispensing pattern editing software MuCAD V**
- Intuitive drawing of program
- Easy editing for beginners
- Program transfer from former models (SSI, DS series etc.) supported

---

**Concentration of know-how!**
- Intuitive drawing of program
- Easy editing for beginners
- Program transfer from former models (SSI, DS series etc.) supported
- MuCAD V (option)
Concentration of No.1 dispensing know-how

- Less edit time
- Intuitive drawing of program
- Easy editing for beginners

Rectangular pattern input

A dispense pattern can be entered into a captured work photo.

Plane dispense pattern input

A plane dispense pattern can be also automatically created just by clicking.

Handwriting input, **Mu-Sketch**

A program can be created with the feeling of a sketch on the touch panel.

Deviation correction

A coating edge can be evened just by clicking.

Demonstration in action! Please try our neo-sensory dispensing pattern edit.
3 major functions

1. Pattern generator  automatically forms chip pattern on wafer
2. Masking mode  automatically excludes dispensing prohibited areas
3. Replication/rotation/inversion function  forms staggered arrangement and performs multiple workpieces automatically

4 new operations

1. Object editing function with a simple and useful right-click
2. Thread cut editing function eliminating puddles at dispensing start and stop points
3. Addition of frequently used functions on the toolbar
4. Windows 7 compatible (Japanese/English/Chinese)

System requirements

- **OS**: Windows®7, Windows®Vista, Windows®XP, Windows®2000
- **CPU**: Pentium® 2 GHz equivalent or higher
- **MEMORY**: 512MB or higher (1GB or higher recommended)
- **DISPLAY**: XGA (1024x768) or higher resolution
- **Hard disk**: Free space of 10MB or more
- **USB port**: Required for communication with Sx series
- **Serial port**: Required for communication with O / DS series and MINI100S-3A-01 (USB serial converter acceptable)
- **Applicable robot**: Sx series / O series / DS series / MINI100S-3A-01

System configuration example

- **Desktop robot**: MuCAD’
- **PC**:
- **Dispenser**

Safety precaution

Make sure to read the instruction manual before you use the unit, for your safety.

* This software is protected by the Copyright Law, and it is prohibited to reproduce or modify the software without the permission of Musashi Engineering, Inc.
* Windows is a registered trademark of Microsoft Corporation in the USA and other countries.

http://www.musashi-engineering.co.jp/english/

World Leading Dispenser
MUSASHI ENGINEERING, INC.

HEAD OFFICE
8-7-4, Shimorenjaku, Mitaka, Tokyo, 181-0013, Japan TEL: (81)422-76-7111 / FAX: (81)422-76-7122

SINGAPORE BRANCH
20 Bendemeer Road, #06-13 CyberHub Singapore 339914
TEL: (65)6528-2442 / FAX: (65)6528-4844

MUSASHI ENGINEERING (THAILAND) CO., LTD.
No.12 Soi Bangna-Trat 25, Bangna, Bangna, Bangkok 10260 Thailand
TEL: (66)2-7906-5708 / FAX: (66)2-796-5460

INDONESIA BRANCH
Jl. MH, Thamrin, Robson Square, Blok A-15, Lippo Cikarang, Rasai 17550, Jawa Barat, Indonesia
TEL: (62)21 8960 5050 / FAX: (62)21 8960 5004

MUSASHI ENGINEERING EUROPE GMBH
Leopoldstrasse 244, 1,2600 Munich Germany
TEL: (49)989 20639 470 / FAX: (49)989 20639 478

KOREA., LTD.
902 No. 5 F. PC, Korea Bio Park, 694-1 Samgyeong-dong, Bundang-gu, Seongnam-si, Gyeonggi-do 463-030, Korea
TEL: (82)31-702-3811 / FAX: (82)31-702-3881

TAIWAN BRANCH
8F-2, No. 186, Sec. 2, Gongda 5th Road, Hsinchu, Taiwan 30370
TEL: (886)3-572-9200 / FAX: (886)3-572-9200

MUSASHI ENGINEERING HONG KONG LTD.
Unit 1706, 17/F., Greenfield Tower(South)Concordia Plaza, No.1 Science Museum Road, T.S.,T.East, Kowloon, Hong Kong
TEL: (852)2620 5799 / FAX: (852)2620 5771

MUSASHI ENGINEERING SHANG HAI LTD.
ROOM 1203, 1F. NO.525 KEQING STREET, MINHANG, SHANGHAI, CHINA 201103
TEL: (862) 6446 7881 / FAX: (862) 6446 7882

ZHONGSHAN BRANCH
Room202 3rd Floor Unit3, Building 2, Taian Xinyi Park, Futian District, Shenzhen City, Guangdong Province, PR China 518042
TEL: (86)755 834 6622 / FAX: (86)755 834 6666

BEI JING BRANCH
Room 106, No.12 Tuan-Jie Hu Dong Lu, Tuan-Jie Mansion Office Building, Chao Yang District, Bei JIng, China 100026
TEL: (86)10 8586 3317 / FAX: (86)10 8586 3327

CAT.NO.MUCADS-01142-E-COPY
Great Evolution of SuperΣCMI®

**Quest for dispensing stability**

**Merit 1**

**Excellence in continuous dispensing stability**

- **New feature. Fine adjustment in correction (Σ) mode corrections fully controlled from device.**

**Merit 2**

**Unified Control** of devices from outside

- **New feature.**

**Merit 3**

**Visualization of initial dispensing conditions**

- **Dispensing conditions editable on your PC thanks to dedicated software, MuCOM® ΣCMI.**
- **Capability of remaining volume detection in real time on your PC.**
改善した圧力と操作性の安定性で既存の超音波機能を保持

• Super ΣCMの機能がそのままに、圧力安定性及び動作安定性アップを実現
• メンブレンSWの採用により操作性アップ
• PC上でのアップデートが可能
• フリー電源化
• CEマーク適合（EMC、低電圧指令）

特長 FEATURES

• Improved stability in pressure and operation without compromising the existing Super ΣCM functions
• Improved operability by membrane switches
• Updatable through your PC
• Adoption of universal power supply
• CE mark compliance (EMC, Low Voltage Directive)

仕様 SPECIFICATIONS

<table>
<thead>
<tr>
<th>型式/Model</th>
<th>Super ΣCMⅡ-V5</th>
<th>Super ΣCMⅡ-V2</th>
</tr>
</thead>
<tbody>
<tr>
<td>制御方式/Control system</td>
<td>マイコン制御電気ロード/ニューマジック方式</td>
<td>Micro-computer controlled electronic-pneumatic system</td>
</tr>
<tr>
<td>吹出圧設定/圧力制御圧力設定</td>
<td>エアバルス圧力設定（PAT）</td>
<td>Air pulse pressure (PAT)</td>
</tr>
<tr>
<td>出圧設定/dispensing pressure</td>
<td>30.0 〜 500.0 kPa</td>
<td>5.0 〜 200.0 kPa</td>
</tr>
<tr>
<td>通圧時間設定/Dispensing duration range</td>
<td>最大9999 sec./Up to 9999 seconds</td>
<td></td>
</tr>
<tr>
<td>パルス圧設定/Vacuum pressure range</td>
<td>0〜20.0 kPa</td>
<td></td>
</tr>
<tr>
<td>メモリモード/Memory Function</td>
<td>100CH</td>
<td></td>
</tr>
</tbody>
</table>
| 入出力信号/input/output signals | 入力: 無接触または有接触
出力: 無接触
Input: Non-contact or contact
Output: Non-contact |
| 供給空気圧/Pneumatic supply source | 最大80Pa (排出圧100Pa以上） |
Max. 供給Dispensing pressure: 80 Pa or more |
| 電源/消費電力/Power supply/Power consumption | AC100V〜240V 50/60 Hz ±40 W |
| 外形寸法/External dimensions-weight | W300×D300×H100（mm）・6.6 kg |

安全に関するご注意 Safety precaution
本社：〒181-0013 東京都三鷹市下落書8-7-4 TEL:0422-76-7111 / FAX:0422-76-7122

MUSASHI ENGINEERING, INC.
HEAD OFFICE：8-7-4, Shinmieru-cho, Mitaka-shi, Tokyo, 181-0013, Japan
TEL: (81)422-76-7111 / FAX: (81)422-76-7122

http://www.musashi-engineering.co.jp/
Vehicle body/ECU

Progressive cavity type dispenser

MOHNO MASTER

Debut of New Mechanism Dispenser
Realizes high-speed and high-precision sealant dispensing

Dispensing of liquid gasket to engine parts
ECU sealing

Examples of desktop robot system

<table>
<thead>
<tr>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>◆Dispensing method: progressive cavity method</td>
</tr>
<tr>
<td>◆Dispensing flow rate: 0.001 to 15mL/sec.</td>
</tr>
<tr>
<td>◆Number of channels: 400CH</td>
</tr>
<tr>
<td>◆Dispensing duration range: 0.01 to 99.99sec.</td>
</tr>
<tr>
<td>◆Suck-back function: Equipped as standard</td>
</tr>
</tbody>
</table>

Door lock parts/Instrument panels

Miss shot detection function equipped | Grease dispensing system

As for the miss shot detection function, dispensing and faulty dispensing are detected, and the I/O output of the decision result is provided via the special-purpose unit installed in the lower portion of the head of the nozzle jet dispenser, AEROJET (and GREASE JET). As a result, the decision of "OK" or "NG" concerning all shots are immediately made.

Miss shot detection unit

Examples of desktop robot system
**IGBT module/ECU**

**Thermal grease dispensing specifications** High performance screw dispenser

**Screw Master**

**Dispensing high-viscosity thermal grease**

Dispensing shapes of "Point, Line, and Film" controllable at will!

Examples of applicable works
Inverter, PCU, ECU, Car navigation system, Air conditioner, DC-DC converter, and more

<Specifications>
- Dispensing method: screw type
- Applicable viscosity: up to 1,000 Pa·s
- Dispensing volume: 0.5 g or more
- Dispensing flow rate: 1 g or more/sec. (depending on liquid)
- Temperature controller system: option

Best suited for takt time reduction

Examples of desktop robot system

**Motor for HEV, EV**

**Two-part adhesive dispensing system** Volume measuring type digital dispenser

**Measuring Master**

**Dispensing shapes of "Point, Line, and Film" controllable at will!**

Examples of applicable works
Inverter, PCU, ECU, Car navigation system, Air conditioner, DC-DC converter, and more

<Specifications>
- Dispensing method: Volume measuring type
- Pump capacity: 0.65mL
- Dispensing volume range: from 0.00001mL
- Fluid supply pressure range: 0.001 to 0.500MPa
- Number of channels: 400CH
- Fluid supply: from syringe, barrel or tank
Controller's performance enhanced

- Upgraded to Quadruple Accuracy of Response Time to Dispensing Signal
- I/O control additional function
  Controllable from PLC at will, RS-232C communication also available

New Functions of software

- Conditioning mode for 2-part Adhesive newly developed
  Automatically setup dispensing condition on the basis of test conditions
- Recipe management of dispensing conditions new idea
  Dispensing conditions changing in accordance with time passage stored on an item by item basis

Applications

- Sealant dispensing of PUR for smartphone’s cover
- Dispensing of 2-part epoxy adhesive to motors
- Line width variable in an instant
**Specifications**

<table>
<thead>
<tr>
<th>Item name</th>
<th>High precision dispenser flexible with viscosity change</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model</strong></td>
<td>ML-808GX</td>
</tr>
<tr>
<td><strong>Control system</strong></td>
<td>Micro-computer controlled electro-pneumatic system</td>
</tr>
<tr>
<td><strong>Pneumatic control circuit</strong></td>
<td>Air pulse stable circuit (PAT.)</td>
</tr>
<tr>
<td><strong>Pressure setting range</strong></td>
<td>20 to 800kPa (in steps of 0.1kPa)</td>
</tr>
<tr>
<td><strong>Dispensing duration range</strong></td>
<td>0.01 to 999.9sec. (in steps of 0.001sec.)</td>
</tr>
<tr>
<td><strong>Dispensing mode</strong></td>
<td>Timed mode/manual mode</td>
</tr>
<tr>
<td><strong>Vacuum pressure range</strong></td>
<td>0 to –20kPa</td>
</tr>
<tr>
<td><strong>Vacuum time range</strong></td>
<td>0.001 to 4.000sec. (in steps of 0.001sec.)</td>
</tr>
<tr>
<td><strong>Number of memory</strong></td>
<td>400 channels</td>
</tr>
<tr>
<td><strong>Main functions</strong></td>
<td>Auto increment function</td>
</tr>
<tr>
<td></td>
<td>Auto slope function</td>
</tr>
<tr>
<td></td>
<td>Express shot function</td>
</tr>
<tr>
<td></td>
<td>RS-232C communication function</td>
</tr>
<tr>
<td></td>
<td>I/O communication function</td>
</tr>
<tr>
<td><strong>Input/output signal</strong></td>
<td>Input: Contact input or open collector input</td>
</tr>
<tr>
<td></td>
<td>Output: Open collector output</td>
</tr>
<tr>
<td><strong>Dispensing conditions edit software</strong></td>
<td>MuCOM for ML-808GX (option)</td>
</tr>
<tr>
<td><strong>Supply air pressure</strong></td>
<td>Dispensing pressure + 100kPa or more, and max. 900kPa</td>
</tr>
<tr>
<td><strong>Rated power source and frequency</strong></td>
<td>100 to 240V AC, 50/60Hz</td>
</tr>
<tr>
<td><strong>Input voltage and frequency</strong></td>
<td>90 to 264V AC, 47 to 63Hz</td>
</tr>
<tr>
<td><strong>Power consumption</strong></td>
<td>40W</td>
</tr>
<tr>
<td><strong>Applicable fuse</strong></td>
<td>250V T2.0A (time-lag fuse ø5 type)</td>
</tr>
<tr>
<td><strong>Operating environment</strong></td>
<td>Temperature range: 15 to 35°C</td>
</tr>
<tr>
<td></td>
<td>Humidity range: 25 to 75%, non-condensing</td>
</tr>
<tr>
<td></td>
<td>Elevation: below 2000m</td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td>W255×D325×H102mm</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>5kg</td>
</tr>
<tr>
<td><strong>Safety standard</strong></td>
<td>Compliant with EU RoHS</td>
</tr>
<tr>
<td></td>
<td>Compliant with CE mark (EMC LCD)</td>
</tr>
</tbody>
</table>

**Dimensions**

![Dimensions Diagram](image)

*We reserve the right to change the specifications without notice.*

*All copyrights are retained by MUSASHI ENGINEERING. Reproducing, reprinting, and/or transmitting as electronic data in whole or in part these material without prior written permission is strictly prohibited.*

---

**World Leading Dispenser**

**MUSASHI ENGINEERING, INC.**

**HEAD OFFICE**

8-7-4, Shimoventa, Mitaka, Tokyo, 181-0013, Japan   TEL : (81)422-76-7111 / FAX : (81)422-76-7122

**BRANCH**

- **TOKYO, OSAKA, NAGOSHI, FUKUOKA, SATAMA, NAGANO, EAST-KANTO, AKITA**
- **HK HQ**
  - **MUSASHI ENGINEERING** (HONG KONG LTD.)
  - **MUSASHI ENGINEERING** (THAILAND) CO., LTD.
- **INDONESIA BRANCH**
  - Jl. MH. Thamrin, Robson Square, Block A-15, Lippo Cikarang, Bekasi 17500, Java Barat, Indonesia
- **MUSASHI ENGINEERING** (EUROPE GMBH)
- **MUSASHI ENGINEERING** (KOREA., LTD.)
- **TAIWAN BRANCH**
  - 8F-2, No. 158, Sec. 2, Gongdaoy 5th Road, Hsinchu, Taiwan 30070
  - TEL : (886)3-572-9300 / FAX : (886)3-572-9300

---

**MUSASHI ENGINEERING, INC.** is certified and registered according to ISO14001 ENVIRONMENTAL MANAGEMENT.

**http://www.musashi-engineering.co.jp/english/**
Non-contact jet dispenser for high viscous materials.

**AeroJet**

**Underfill dispensing**

Dramatically evolving into 333 shot/sec.*
Drastically reducing tact time of production

- **Super-high speed dispensing.** Find how fast it is.
- **MUSASHT’s own jet mechanism makes super micro dots.**
- **Four more times durable compared with our conventional jet dispenser.**
- **Achieved steady and reproducible dispensing.**
- **Nozzle heater controller comes as the standard.**

**Application**

- JET-dispense Ag paste on lead frame
- JET-coat PCB to prevent moisture for automotive industry
- JET-dispense UV resin
- JET-bond various electronic parts
- Able to make any kind of dispensing. Dotting, lining, coating and more.

* option
### Specification

<table>
<thead>
<tr>
<th>Product name</th>
<th>NON-CONTACT JET DISPENSER AERO JET</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>[Head]</strong></td>
<td></td>
</tr>
<tr>
<td>Dispense method</td>
<td>Jet type</td>
</tr>
<tr>
<td>Drive method</td>
<td>Air type</td>
</tr>
<tr>
<td>Temperature controller</td>
<td>With heater controller</td>
</tr>
<tr>
<td>Connectable syringe</td>
<td>Various syringe sizes are applicable (5 to 70ml)</td>
</tr>
<tr>
<td>Dispensable liquid material</td>
<td>Underfill materials, Ag paste, moisture proof materials and UV resin, etc.</td>
</tr>
<tr>
<td><strong>[Controller]</strong></td>
<td></td>
</tr>
<tr>
<td>Control method</td>
<td>Electronic-pneumatic method</td>
</tr>
<tr>
<td>Pressure setting</td>
<td>0.055 to 0.700MPa</td>
</tr>
<tr>
<td>Control circuit of dispensing time</td>
<td>Digital timer circuit</td>
</tr>
<tr>
<td>Setting dispensing time</td>
<td>Dot mode</td>
</tr>
<tr>
<td></td>
<td>Line mode</td>
</tr>
<tr>
<td>Dispensing frequency setting function</td>
<td>1 to 9999 times (At the line mode)</td>
</tr>
<tr>
<td>Display part</td>
<td>LED digital display</td>
</tr>
<tr>
<td>I/O signal</td>
<td></td>
</tr>
<tr>
<td>Input</td>
<td>APIN connector. No point of contact or having point of contact (terminal, O. No point of contact)</td>
</tr>
<tr>
<td></td>
<td>Dispensing signal</td>
</tr>
<tr>
<td></td>
<td>Mode switching signal</td>
</tr>
<tr>
<td>Output</td>
<td>Dispensing completion signal</td>
</tr>
<tr>
<td></td>
<td>Power supply ON signal</td>
</tr>
<tr>
<td></td>
<td>The main mode state signal</td>
</tr>
<tr>
<td></td>
<td>Submode state signal</td>
</tr>
<tr>
<td></td>
<td>Low pressure signal</td>
</tr>
<tr>
<td>Air pressure supply</td>
<td>Max. 0.800MPa</td>
</tr>
<tr>
<td>Power supply and power consumption</td>
<td>AC100 to 240V 50/60Hz/62W</td>
</tr>
<tr>
<td>Weight (gross weight, net weight)</td>
<td>560g</td>
</tr>
</tbody>
</table>

*selective that depends on dispensing volume.

### Dimensional outline drawing

**Controller**

**Head**

- Connected to temperature control cable
- Syringe joint

**Syringe holder**

<table>
<thead>
<tr>
<th>Size (mm)</th>
<th>5</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>50</th>
</tr>
</thead>
<tbody>
<tr>
<td>5mm</td>
<td>50</td>
<td>100</td>
<td>100</td>
<td>150</td>
<td>200</td>
</tr>
<tr>
<td>10mm</td>
<td>50</td>
<td>100</td>
<td>150</td>
<td>200</td>
<td>250</td>
</tr>
<tr>
<td>20mm</td>
<td>50</td>
<td>100</td>
<td>150</td>
<td>200</td>
<td>250</td>
</tr>
<tr>
<td>30mm</td>
<td>50</td>
<td>100</td>
<td>150</td>
<td>200</td>
<td>250</td>
</tr>
<tr>
<td>50mm</td>
<td>50</td>
<td>100</td>
<td>150</td>
<td>200</td>
<td>250</td>
</tr>
</tbody>
</table>

**Dispensed amount chart**

- Tolerance of underfill material dispensed by AeroJet
- Measurement frequency (times)
  - Dispersed amount (ml): 0.001 to 0.034
  - One cycle: 6 msec
  - AVE: 0.02 mg
  - Dispensing tolerance: ±3.53%

### Example: Equipped with FAD5100

[Image of equipment setup]

![http://www.musashi-engineering.co.jp/](http://www.musashi-engineering.co.jp/)

**MUSASHI ENGINEERING, INC.**

HEAD OFFICE
B-7-4, Shimorenjaku, Mitaka-shi, Tokyo, 181-0013, Japan
TEL: (81)42-76-7711 / FAX: (81)42-76-7122

BRANCH
TOKYO, OSAKA, NAGOYA, SENDAI, FUKUOKA, SATAMA, NAGANO, EAST-KANTO, AKITA, KANAGAWA

**MUSASHI ENGINEERING (THAILAND) CO., LTD.**
No.12 Soi Bangna-Trad 26, Bangna, Bangna, Bangkok 10260 Thailand
TEL: (66)2-769-5708 / FAX: (66)2-769-5450

**MUSASHI ENGINEERING EUROPE GMBH**
Leopoldstrasse 24A, 1 Stock 80807 Munich Germany
TEL: (49)89 208099 470 / FAX: (49)89 208099 478

CATNO.AEROJET2113130-E-COPY
Volume measuring—Outstanding “Dispensing Accuracy”!

Significant reduction in fraction defective achieved by our unique plunger method.

Dispensing applications

- Resin potting for lighting LEDs
- Gel filling in sensor parts
- Optical bonding on LCDs
- ECU sealing
- Secondary underfilling
# Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>MPP-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dispensing method</td>
<td>Volume measuring type</td>
</tr>
<tr>
<td>Control method</td>
<td>Digital control type</td>
</tr>
<tr>
<td>Dispensing volume range</td>
<td>Standard type: 0.0001 to 5 ml, Select any one of them, B1 type: 0.0001 to 5 ml, 0.0001 to 7 ml</td>
</tr>
<tr>
<td>Fluid supply pressure range</td>
<td>0.001 to 0.500 MPa</td>
</tr>
<tr>
<td>Compatible balls</td>
<td>MUSASHI’s ball (170 to 340ml), Fluid can be supplied from a cartridge or a tank</td>
</tr>
<tr>
<td>Number of channels</td>
<td>400 channels</td>
</tr>
<tr>
<td>Power supply</td>
<td>AC 100 to 240 V</td>
</tr>
<tr>
<td>Power consumption</td>
<td>53 W</td>
</tr>
<tr>
<td>External dimensions</td>
<td>Controller part: W300 x D90 x H111 mm (excluding protrusion), Head part: W46 x D83 x H144 mm (excluding protrusion not included)</td>
</tr>
<tr>
<td>Weight</td>
<td>Controller part: approx. 5.2 kg, Head part: approx. 2.8 kg (excluding ball and fluid not included)</td>
</tr>
</tbody>
</table>

## Outside drawings

![Outside drawings](image)

---

*We reserve the right to change the specifications without notice.

*All copyrights are retained by MUSASHI ENGINEERING. Reprinting, reproducing, and/or transmitting these materials as electronic data in whole or part is strictly prohibited without prior written permission.

---

**Sister machine**

**MEASURING MASTER MPP-1**

Volume measuring type digital controlled dispenser

---

**MEASURING MASTER MPP-3**

Large volume plunger type digital controlled dispenser

---

MUSASHI ENGINEERING INC. is certified and registered according to ISO 9001.
No clogging of nozzle, high-speed and Stable dispensing of high viscosity particle-filled paste

Significant reduction in running cost!
- “Using up” materials → Material cost reduction
- Easy syringe replacement → Downtime reduction
- Remarkably longer-lived consumables
  → Maintenance cost reduction
- Newly Developed Synchro Speed® function equipped
  → Adjustment time loss reduction

Min. diameter $\Phi 0.15 \text{mm}$

Dispensing speed $4 \times$ faster*

* compared to our air pulse types

Applicable fluid materials

Solder paste, Ag paste, and so on.
### Specifications

<table>
<thead>
<tr>
<th>Item name</th>
<th>High performance screw dispenser SCREW MASTER3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>SCREW MASTER3 [For 5-70mL syringes]</td>
</tr>
<tr>
<td></td>
<td>SCREW MASTER3 [For 5-50mL syringes]</td>
</tr>
<tr>
<td></td>
<td>SCREW MASTER3 [For barrel/cartridge]</td>
</tr>
<tr>
<td>Model</td>
<td>MSD-3-SET1</td>
</tr>
<tr>
<td></td>
<td>MSD-3-SET2</td>
</tr>
<tr>
<td></td>
<td>MSD-3-SET3</td>
</tr>
<tr>
<td>Dispensing method</td>
<td>Screw type</td>
</tr>
<tr>
<td>Main functions</td>
<td>High-speed dispensing of high viscosity pastes, particle-filled pastes, and so on.</td>
</tr>
<tr>
<td>Applicable fluid materials</td>
<td>Solder paste, Ag paste, epoxy resin, grease, and more</td>
</tr>
<tr>
<td>Liquid feeding method</td>
<td>Syringe (for 5 - 70mL), tank</td>
</tr>
<tr>
<td></td>
<td>Syringe (for 5 - 50mL)</td>
</tr>
<tr>
<td></td>
<td>Sealant cartridge, barrel cartridge, tube cartridge</td>
</tr>
<tr>
<td>Dispensing mode</td>
<td>Timed, manual</td>
</tr>
<tr>
<td>Dispensing time setting range</td>
<td>0.01 to 999.999s</td>
</tr>
<tr>
<td>Quantity of channels</td>
<td>400 channels</td>
</tr>
<tr>
<td>External input signal</td>
<td>Dispensing signal, Setup signal, Dispense mode switching signal, Error reset signal, Channel switching signal,</td>
</tr>
<tr>
<td>External output signal*</td>
<td>Dispensing signal, Completed dispensing signal, Busy signal, Setup signal, Completed auto-increment signal, Error signal and Power-on signal,</td>
</tr>
<tr>
<td>Other functions</td>
<td>Suck back, motor-reset, auto increment, synchro speed*,</td>
</tr>
<tr>
<td>Rated power supply and frequency</td>
<td>100 to 240 VAC (50/60 Hz)</td>
</tr>
<tr>
<td>Power consumption</td>
<td>45 W</td>
</tr>
<tr>
<td>External dimensions</td>
<td>W37×D86×H230,5mm (excluding protrusion)</td>
</tr>
<tr>
<td></td>
<td>W37×D100×H230,5mm (excluding protrusion)</td>
</tr>
<tr>
<td>Controller section</td>
<td>W300×D250×H1100mm (excluding protrusion)</td>
</tr>
<tr>
<td>Weight</td>
<td>1 kg (liquid and liquid container excluded)</td>
</tr>
<tr>
<td>Controller section</td>
<td>5.2 kg</td>
</tr>
<tr>
<td>Compatible standards</td>
<td>CE-marking (LVD, EMC), EU RoHS</td>
</tr>
</tbody>
</table>

*Usable one of two signals, the in-dispensing output or the dispensing complete output.

### Dimensions

#### Controller section

![Controller section diagram](image)

Unit: mm

Note: We reserve the right to change the specifications and appearance without notice.

---

**World Leading Dispenser**

**MUSASHI ENGINEERING INC.**

**HEAD OFFICE**

8-7-4, Shimoroyaku, Mitaka, Tokyo, 181-0013, Japan

TEL: (81)422-76-7111 / FAX: (81)422-76-7122

**BRANCH**

TOKYO, OKAYAMA, NAGOSHI, FUKUOKA, SATAKI, NAGOSHI, NAGOSHI, AKITA, KANAZAWA

---

**MUSASHI ENGINEERING INC.**

http://www.musashi-engineering.co.jp/english/
High-quality dispensing with excellence in fluid control performance

Powerful measures to reduce fraction defective at production sites

NCV-17
NEW

Overwhelmingly proven standard machine
Valve structure: needle valve
Applicable viscosity: max. 50 Pa·s
Minimum dispensing volume: 10 mg

PCV-12
NEW

Stable continuous dispensing achieved thanks to suckback mechanism
Valve structure: poppet valve
Applicable viscosity: max. 100 Pa·s
Minimum dispensing volume: 50 mg

Features

1. Stable continuous dispensing with excellence in fluid control performance
2. Elimination of fluid filtration into sliding section provided by diaphragm structure
3. Best suited for automatic machinery due to rectangular shape, compact size, and lightweight
### Specifications

<table>
<thead>
<tr>
<th>Item number</th>
<th>NCV-17-1P-1N / NCV-17-1P-SS</th>
<th>NCV-12s</th>
<th>PCV-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive system</td>
<td>Pneumatic driven system 1 port control (spring return system)</td>
<td>Pneumatic driven system 2 port control (reciprocating piston system)</td>
<td>Pneumatic driven system 2 port control (reciprocating piston system - spring return system)</td>
</tr>
<tr>
<td>Operating air pressure</td>
<td>0.3 to 0.5 MPa</td>
<td>0.3 to 0.5 MPa</td>
<td>0.35 to 0.6 MPa</td>
</tr>
<tr>
<td>Maximum fluid charge pressure</td>
<td>0.5 MPa</td>
<td>0.5 MPa</td>
<td>0.5 MPa</td>
</tr>
<tr>
<td>Maximum number of cycles</td>
<td>150 times/min.</td>
<td>150 times/min.</td>
<td>100 times/min.</td>
</tr>
<tr>
<td>Fluid feed port</td>
<td>SUS, Teflon, Polyacetal</td>
<td>Aluminum, SUS, Teflon</td>
<td>SUS, Teflon, Brass (Nickel plated)</td>
</tr>
<tr>
<td>Fluid dispensing port</td>
<td>6 x 4 fluid feed fitting (NCV-17-1P-1N)</td>
<td>6 x 4 fluid feed fitting (NCV-17-1P-1S)</td>
<td>6 x 4 fluid feed fitting</td>
</tr>
<tr>
<td>Connecting link</td>
<td>Lure lock type</td>
<td>Lure lock type</td>
<td>Lure lock type</td>
</tr>
<tr>
<td>Air operating port</td>
<td>External diameter 4 quick-connects (with a speed controller)</td>
<td>External diameter 4 quick-connects (with a speed controller)</td>
<td>External diameter 6 quick-connects (with a speed controller)</td>
</tr>
<tr>
<td>Operating temperature range</td>
<td>5 to 60°C</td>
<td>5 to 60°C</td>
<td>5 to 60°C</td>
</tr>
<tr>
<td>Weight</td>
<td>220g</td>
<td>150g</td>
<td>220g</td>
</tr>
</tbody>
</table>

### External Dimension Drawings

#### NCV-17
![NCV-17 Drawing]

#### NCV-12s
![NCV-12s Drawing]

#### PCV-12
![PCV-12 Drawing]

### Configuration of the valve/tank system

![Configuration Diagram]

*We reserve the right to change the specifications without notice.

*All copyrights are retained by MUSASHI ENGINEERING. Reprinting, reproducing, and/or transmitting as electronic data in whole or in part these material without prior written permission is strictly prohibited.

---

![Safety Precaution]

**Safety precaution**

Make sure to read the instruction manual before you use the unit for your safety.

---

**World-Leading Dispenser**

MUSASHI ENGINEERING INC.

HEAD OFFICE

8-2-4, Shinhana-cho, Mitaka-shi, Tokyo, 181-0013, Japan

TEL: (81) 425-76-7111 / FAX: (81) 425-76-7122

BRANCH

TOKYO, TOKYO, NAGYOKO, SENDAI, FUKUOKA, SATAMA, NAGANO, EAST-KANTO

MUSASHI ENGINEERING HONG KONG LTD.

Unit 1915 on 19/F, Seacon Plaza, No.1 Science Museum Road, T.S.East, Kowloon, Hong Kong

TEL: (852) 2606-5799 / FAX: (852) 2606-5777

SHANGHAI BRANCH

3-1503, He-Shanghai, No.950 Dalian Road, Yangpu, Shanghai, China

TEL: (86) 21-5128-7880 / FAX: (86) 21-5126-7870

MUSASHI ENGINEERING KOREA LTD.

150-1, An-dong, Bundang Techno-Park, 150 Yuseong-gu, Daejeon, South Korea

TEL: (82) 31-7-03-4911 / FAX: (82) 31-7-03-3891

TOKYO BRANCH

No.113, No-Sue-Yuan Road, Hsinchu, Taiwan, 300, R.O.C.

TEL: (886) 3-579-6060 / FAX: (886) 3-578-6161

SINGAPORE BRANCH

101 Thomson Road #07-04 United Square Singapore 307591

TEL: (65) 6334-2422 / FAX: (65) 6334-484
High Speed Multiple Dot Dispensing

Parallel JET™

Dispense Smoothly even on Difficult Spots

Tilted JET Dispensing
You would like to apply substances more easily on side-surfaces or under cavings? By letting the liquid “fly” you may apply your substances smoothly even on those spots, which are currently requiring substantial planning on the use of nozzles or on the use of materials.

Save Time by Eliminating Maintenance

High Speed Dispensing with 1 Head
You may apply 10 dots per second. Save time by adjusting multiple-pin nozzles and spare yourself maintenance time by using only one head.

Avoid Nozzle Height-Adjustments

JET-Dispensing makes Height-Adjustments Unnecessary
Using our JET-dispensing technique the precision of your application is independent of height-variations of the work piece or the conditions of its surface, an even and continuous application is ensured.

10/point sec.