

**January - March 2018 Results**  
**Production and Shipments of Manipulators and Robots by Applications**  
**[JARA Member Companies]**

Number of units, ( ) : million yen

|                   | January - March 2017 | January - March 2018 | Change from 2017 |
|-------------------|----------------------|----------------------|------------------|
| <b>Orders</b>     | 49,178<br>(176,220)  | 63,551<br>(218,845)  | 29.2%<br>(24.2%) |
| <b>Production</b> | 47,438<br>(157,974)  | 55,807<br>(183,784)  | 17.6%<br>(16.3%) |

| Shipments<br>Applications               | January - March 2017 |                     |                     | January - March 2018 |                     |                     | Change from 2017   |                  |                  | January - March 2017<br>(percentage distribution) |                    |                    | January - March 2018<br>(percentage distribution) |                    |                    |
|---|----------------------|---------------------|---------------------|----------------------|---------------------|---------------------|--------------------|------------------|------------------|---|--------------------|--------------------|---|--------------------|--------------------|
|   | Domestic shipments   | Exports             | Total               | Domestic shipments   | Exports             | Total               | Domestic shipments | Exports          | Total            | Domestic shipments                                | Exports            | Total              | Domestic shipments                                | Exports            | Total              |
| <b>Plastic moulding</b>                 | 858                  | 1,412               | 2,270               | 976                  | 1,397               | 2,373               | 13.8%              | -1.1%            | 4.5%             | 8.3%  | 3.9%               | 4.8%               | 7.5%  | 3.2%               | 4.2%               |
| Arc welding                             | 1,033                | 4,142               | 5,175               | 1,502                | 4,611               | 6,113               | 45.4%              | 11.3%            | 18.1%            | 10.0%   | 11.3%              | 11.0%              | 11.6%   | 10.5%              | 10.8%              |
| Spot welding                            | 1,179                | 4,663               | 5,842               | 1,614                | 5,016               | 6,630               | 36.9%              | 7.6%             | 13.5%            | 11.5%   | 12.7%              | 12.4%              | 12.5%   | 11.4%              | 11.7%              |
| Laser welding                           | 18                   | 2                   | 20                  | 5                    | 17                  | 22                  | -72.2%             | 750.0%           | 10.0%            | 0.2%  | 0.0%               | 0.0%               | 0.0%  | 0.0%               | 0.0%               |
| Others                                  | 4                    | 159                 | 163                 | 22                   | 11                  | 33                  | 450.0%             | -93.1%           | -79.8%           | 0.0%  | 0.4%               | 0.3%               | 0.2%  | 0.0%               | 0.1%               |
| <b>Welding</b> Units<br>(million yen)   | 2,234<br>(11,117)    | 8,966<br>(22,998)   | 11,200<br>(34,115)  | 3,143<br>(13,566)    | 9,655<br>(24,228)   | 12,798<br>(37,794)  | 40.7%<br>(22.0%)   | 7.7%<br>(5.3%)   | 14.3%<br>(10.8%) | 21.7%<br>(22.9%)                                  | 24.5%<br>(20.5%)   | 23.9%<br>(21.3%)   | 24.3%<br>(24.3%)                                  | 22.0%<br>(18.2%)   | 22.5%<br>(20.0%)   |
| <b>Painting</b>                         | 300                  | 730                 | 1,030               | 167                  | 491                 | 658                 | -44.3%             | -32.7%           | -36.1%           | 2.9%  | 2.0%               | 2.2%               | 1.3%  | 1.1%               | 1.2%               |
| Loading/unloading                       | 446                  | 2,829               | 3,275               | 668                  | 3,067               | 3,735               | 49.8%              | 8.4%             | 14.0%            | 4.3%  | 7.7%               | 7.0%               | 5.2%  | 7.0%               | 6.6%               |
| Mechanical cutting                      | 3                    |                     | 3                   | 6                    |                     | 6                   | 100.0%             |                  | 100.0%           | 0.0%  |                    | 0.0%               | 0.0%  |                    | 0.0%               |
| Grinding/deburring                      | 66                   | 103                 | 169                 | 121                  | 89                  | 210                 | 83.3%              | -13.6%           | 24.3%            | 0.6%  | 0.3%               | 0.4%               | 0.9%  | 0.2%               | 0.4%               |
| Others                                  | 15                   | 3                   | 18                  | 4                    | 2                   | 6                   | -73.3%             | -33.3%           | -66.7%           | 0.1%  | 0.0%               | 0.0%               | 0.0%  | 0.0%               | 0.0%               |
| <b>Machining</b> Units<br>(million yen) | 530<br>(1,744)       | 2,935<br>(3,245)    | 3,465<br>(4,989)    | 799<br>(2,008)       | 3,158<br>(3,354)    | 3,957<br>(5,362)    | 50.8%<br>(15.1%)   | 7.6%<br>(3.4%)   | 14.2%<br>(7.5%)  | 5.2%<br>(3.6%)                                    | 8.0%<br>(2.9%)     | 7.4%<br>(3.1%)     | 6.2%<br>(3.6%)                                    | 7.2%<br>(2.5%)     | 7.0%<br>(2.8%)     |
| <b>Surface Mount Technology</b>         | 291                  | 2,363               | 2,654               | 405                  | 2,881               | 3,286               | 39.2%              | 21.9%            | 23.8%            | 2.8%  | 6.4%               | 5.7%               | 3.1%  | 6.6%               | 5.8%               |
| General Assembly                        | 1,463                | 5,524               | 6,987               | 1,770                | 9,669               | 11,439              | 21.0%              | 75.0%            | 63.7%            | 14.2%   | 15.1%              | 14.9%              | 13.7%   | 22.0%              | 20.1%              |
| Other Assembly                          | 78                   | 145                 | 223                 | 40                   | 336                 | 376                 | -48.7%             | 131.7%           | 68.6%            | 0.8%  | 0.4%               | 0.5%               | 0.3%  | 0.8%               | 0.7%               |
| Bonding                                 |                      |                     |                     | 1                    |                     | 1                   |                    |                  |                  |   |                    |                    | 0.0%  |                    | 0.0%               |
| Soldering                               |                      |                     |                     |                      |                     |                     |                    |                  |                  |   |                    |                    |   |                    |                    |
| Sealing/glueing                         | 59                   | 47                  | 106                 | 22                   | 138                 | 160                 | -62.7%             | 193.6%           | 50.9%            | 0.6%  | 0.1%               | 0.2%               | 0.2%  | 0.3%               | 0.3%               |
| Screwing                                | 4                    | 1                   | 5                   | 8                    | 2                   | 10                  | 100.0%             | 100.0%           | 100.0%           | 0.0%  | 0.0%               | 0.0%               | 0.1%  | 0.0%               | 0.0%               |
| Others                                  | 15                   | 97                  | 112                 | 9                    | 196                 | 205                 | -40.0%             | 102.1%           | 83.0%            | 0.1%  | 0.3%               | 0.2%               | 0.1%  | 0.4%               | 0.4%               |
| <b>Assembly</b> Units<br>(million yen)  | 1,541<br>(3,290)     | 5,669<br>(6,364)    | 7,210<br>(9,654)    | 1,810<br>(3,717)     | 10,005<br>(10,263)  | 11,815<br>(13,980)  | 17.5%<br>(13.0%)   | 76.5%<br>(61.3%) | 63.9%<br>(44.8%) | 15.0%<br>(6.8%)                                   | 15.5%<br>(5.7%)    | 15.4%<br>(6.0%)    | 14.0%<br>(6.7%)                                   | 22.8%<br>(7.7%)    | 20.8%<br>(7.4%)    |
| <b>Palletizing/depalletizing</b>        | 247                  | 689                 | 936                 | 291                  | 471                 | 762                 | 17.8%              | -31.6%           | -18.6%           | 2.4%  | 1.9%               | 2.0%               | 2.2%  | 1.1%               | 1.3%               |
| <b>Material handling</b>                | 2,159                | 10,796              | 12,955              | 2,618                | 11,321              | 13,939              | 21.3%              | 4.9%             | 7.6%             | 21.0%   | 29.4%              | 27.6%              | 20.2%   | 25.8%              | 24.5%              |
| FPD                                     | 58                   | 146                 | 204                 | 26                   | 167                 | 193                 | -55.2%             | 14.4%            | -5.4%            | 0.6%  | 0.4%               | 0.4%               | 0.2%  | 0.4%               | 0.3%               |
| Semiconductor                           | 1,306                | 2,326               | 3,632               | 1,645                | 3,324               | 4,969               | 26.0%              | 42.9%            | 36.8%            | 12.7%   | 6.3%               | 7.7%               | 12.7%   | 7.6%               | 8.7%               |
| Others                                  |                      |                     |                     |                      | 1                   | 1                   |                    |                  |                  |   |                    |                    |   | 0.0%               | 0.0%               |
| <b>Cleanroom</b> Units<br>(million yen) | 1,364<br>(7,370)     | 2,472<br>(7,135)    | 3,836<br>(14,505)   | 1,671<br>(6,219)     | 3,492<br>(8,620)    | 5,163<br>(14,839)   | 22.5%<br>(-15.6%)  | 41.3%<br>(20.8%) | 34.6%<br>(2.3%)  | 13.3%<br>(15.2%)                                  | 6.7%<br>(6.4%)     | 8.2%<br>(9.0%)     | 12.9%<br>(11.1%)                                  | 8.0%<br>(6.5%)     | 9.1%<br>(7.9%)     |
| <b>Other applications</b>               | 765                  | 631                 | 1,396               | 1,065                | 995                 | 2,060               | 39.2%              | 57.7%            | 47.6%            | 7.4%  | 1.7%               | 3.0%               | 8.2%  | 2.3%               | 3.6%               |
| <b>Total</b> Units<br>(million yen)     | 10,289<br>(48,466)   | 36,663<br>(112,058) | 46,952<br>(160,524) | 12,945<br>(55,842)   | 43,866<br>(133,151) | 56,811<br>(188,993) | 25.8%<br>(15.2%)   | 19.6%<br>(18.8%) | 21.0%<br>(17.7%) | 100.0%<br>(100.0%)                                | 100.0%<br>(100.0%) | 100.0%<br>(100.0%) | 100.0%<br>(100.0%)                                | 100.0%<br>(100.0%) | 100.0%<br>(100.0%) |

Note)

Data includes dedicated type (Surface Mount Technology / Bonding).

Data is collected in unit of 10,000 yen. However, the results are shown in unit of million yen by rounding the figures of 100,000 yen.

**January - March 2018 Results**  
**Shipments of Manipulators and Robots by Industries**  
**[JARA Member Companies]**

Number of units, ( ) : million yen

| Industries  | 2017<br>Jan. - Mar. | 2018<br>Jan. - Mar. | Change<br>from 2017 | Percentage distribution |                 |
|---|---------------------|---------------------|---------------------|-------------------------|-----------------|
|   |                     |                     |                     | 2017                    | 2018            |
| <b>Metal products</b>                                 | <b>644</b>          | <b>822</b>          | <b>27.6%</b>        | <b>6.3%</b>             | <b>6.3%</b>     |
| Construction and mining machinery                     | 16                  | 22                  | 37.5%               | 0.2%                    | 0.2%            |
| Metalworking machinery                                | 127                 | 178                 | 40.2%               | 1.2%                    | 1.4%            |
| Other machinery and equipment                         | 548                 | 1,065               | 94.3%               | 5.3%                    | 8.2%            |
| <b>Machinery and equipment</b> Units                  | <b>691</b>          | <b>1,265</b>        | <b>83.1%</b>        | <b>6.7%</b>             | <b>9.8%</b>     |
| (million yen)   | <b>(3,768)</b>      | <b>(5,235)</b>      | <b>(38.9%)</b>      | <b>(7.8%)</b>           | <b>(9.4%)</b>   |
| Electronic computers                                  | 19                  | 1                   | -94.7%              | 0.2%                    | 0.0%            |
| Consumer electrical machinery                         | 489                 | 435                 | -11.0%              | 4.8%                    | 3.4%            |
| Industrial electrical machinery                       | 298                 | 508                 | 70.5%               | 2.9%                    | 3.9%            |
| Communication equipment                               | 145                 | 203                 | 40.0%               | 1.4%                    | 1.6%            |
| Video and audio equipment                             | 4                   | 1                   | -75.0%              | 0.0%                    | 0.0%            |
| Electronic components/devices/circuits                | 1,235               | 1,345               | 8.9%                | 12.0%                   | 10.4%           |
| Other electrical machinery                            | 707                 | 833                 | 17.8%               | 6.9%                    | 6.4%            |
| <b>Electrical machinery</b> Units                     | <b>2,897</b>        | <b>3,326</b>        | <b>14.8%</b>        | <b>28.2%</b>            | <b>25.7%</b>    |
| (million yen)   | <b>(14,011)</b>     | <b>(16,338)</b>     | <b>(16.6%)</b>      | <b>(28.9%)</b>          | <b>(29.3%)</b>  |
| <b>Precision instruments</b>                          | <b>111</b>          | <b>176</b>          | <b>58.6%</b>        | <b>1.1%</b>             | <b>1.4%</b>     |
| Motor vehicles  | 1,662               | 1,937               | 16.5%               | 16.2%                   | 15.0%           |
| Auto parts  | 2,036               | 3,040               | 49.3%               | 19.8%                   | 23.5%           |
| <b>Motor vehicles and auto parts</b> Units            | <b>3,698</b>        | <b>4,977</b>        | <b>34.6%</b>        | <b>35.9%</b>            | <b>38.4%</b>    |
| (million yen)   | <b>(15,949)</b>     | <b>(20,222)</b>     | <b>(26.8%)</b>      | <b>(32.9%)</b>          | <b>(36.2%)</b>  |
| <b>Other transport equipment</b>                      | <b>80</b>           | <b>62</b>           | <b>-22.5%</b>       | <b>0.8%</b>             | <b>0.5%</b>     |
| <b>Food products, beverages, and tobacco products</b> | <b>207</b>          | <b>271</b>          | <b>30.9%</b>        | <b>2.0%</b>             | <b>2.1%</b>     |
| <b>Chemical products</b>                              | <b>95</b>           | <b>114</b>          | <b>20.0%</b>        | <b>0.9%</b>             | <b>0.9%</b>     |
| <b>Plastic products</b>                               | <b>304</b>          | <b>408</b>          | <b>34.2%</b>        | <b>3.0%</b>             | <b>3.2%</b>     |
| <b>Other industries</b>                               | <b>1,467</b>        | <b>1,412</b>        | <b>-3.7%</b>        | <b>14.3%</b>            | <b>10.9%</b>    |
| <b>Non-manufacturing industry</b>                     | <b>95</b>           | <b>112</b>          | <b>17.9%</b>        | <b>0.9%</b>             | <b>0.9%</b>     |
| <b>Total domestic shipments</b> Units                 | <b>10,289</b>       | <b>12,945</b>       | <b>25.8%</b>        | <b>100.0%</b>           | <b>100.0%</b>   |
| (million yen)   | <b>(48,466)</b>     | <b>(55,842)</b>     | <b>(15.2%)</b>      | <b>(21.9%)</b>          | <b>(22.8%)</b>  |
| <b>Export</b> Units                                   | <b>36,663</b>       | <b>43,866</b>       | <b>19.6%</b>        | <b>(78.1%)</b>          | <b>(77.2%)</b>  |
| (million yen)   | <b>(112,058)</b>    | <b>(133,151)</b>    | <b>(18.8%)</b>      | <b>(30.2%)</b>          | <b>(29.5%)</b>  |
| <b>Grand total</b> Units                              | <b>46,952</b>       | <b>56,811</b>       | <b>21.0%</b>        | <b>(100.0%)</b>         | <b>(100.0%)</b> |
| (million yen)   | <b>(160,524)</b>    | <b>(188,993)</b>    | <b>(17.7%)</b>      | <b>(100.0%)</b>         | <b>(100.0%)</b> |

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