

**2019 Results**  
**Production and Shipments of Manipulators and Robots by Applications**  
**[JARA Member Companies]**

Number of units, ( ) : million yen

	2018	2019	Change from 2018
<b>Orders</b>	<b>220,934</b> <b>(780,835)</b>	<b>180,012</b> <b>(668,254)</b>	<b>-18.5%</b> <b>(-14.4%)</b>
<b>Production</b>	<b>215,513</b> <b>(733,055)</b>	<b>173,477</b> <b>(649,644)</b>	<b>-19.5%</b> <b>(-11.4%)</b>

Shipments Applications	2018			2019			Change from 2018			2018 (percentage distribution)			2019 (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>	<b>3,661</b>	<b>5,258</b>	<b>8,919</b>	<b>3,430</b>	<b>3,813</b>	<b>7,243</b>	<b>-6.3%</b>	<b>-27.5%</b>	<b>-18.8%</b>	<b>7.8%</b>	<b>3.1%</b>	<b>4.1%</b>	<b>7.7%</b>	<b>2.9%</b>	<b>4.1%</b>
Arc welding	4,934	18,566	23,500	4,445	14,275	18,720	-9.9%	-23.1%	-20.3%	10.5%	11.0%	10.9%	10.0%	10.9%	10.7%
Spot welding	4,495	17,788	22,283	4,321	11,631	15,952	-3.9%	-34.6%	-28.4%	9.6%	10.6%	10.4%	9.7%	8.9%	9.1%
Laser welding	7	21	28	8	182	190	14.3%	766.7%	578.6%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%
Others	70	47	117	112	75	187	60.0%	59.6%	59.8%	0.1%	0.0%	0.1%	0.3%	0.1%	0.1%
<b>Welding</b> Units	<b>9,506</b>	<b>36,422</b>	<b>45,928</b>	<b>8,886</b>	<b>26,163</b>	<b>35,049</b>	<b>-6.5%</b>	<b>-28.2%</b>	<b>-23.7%</b>	<b>20.3%</b>	<b>21.6%</b>	<b>21.3%</b>	<b>20.0%</b>	<b>19.9%</b>	<b>19.9%</b>
(million yen)	<b>(42,630)</b>	<b>(92,957)</b>	<b>(135,587)</b>	<b>(41,932)</b>	<b>(59,832)</b>	<b>(101,764)</b>	<b>(-1.6%)</b>	<b>(-35.6%)</b>	<b>(-24.9%)</b>	<b>(21.6%)</b>	<b>(17.0%)</b>	<b>(18.2%)</b>	<b>(20.5%)</b>	<b>(13.1%)</b>	<b>(15.4%)</b>
<b>Painting</b>	<b>546</b>	<b>2,252</b>	<b>2,798</b>	<b>625</b>	<b>1,491</b>	<b>2,116</b>	<b>14.5%</b>	<b>-33.8%</b>	<b>-24.4%</b>	<b>1.2%</b>	<b>1.3%</b>	<b>1.3%</b>	<b>1.4%</b>	<b>1.1%</b>	<b>1.2%</b>
Loading/unloading	2,382	8,370	10,752	2,208	7,389	9,596	-7.3%	-11.7%	-10.7%	5.1%	5.0%	5.0%	5.0%	5.6%	5.5%
Mechanical cutting	9		9	13	47	60	44.4%		566.7%	0.0%		0.0%	0.0%	0.0%	0.0%
Grinding/deburring	311	114	425	225	156	381	-27.7%	36.8%	-10.4%	0.7%	0.1%	0.2%	0.5%	0.1%	0.2%
Others	41	26	67	43	57	100	4.9%	119.2%	49.3%	0.1%	0.0%	0.0%	0.1%	0.0%	0.1%
<b>Machining</b> Units	<b>2,743</b>	<b>8,510</b>	<b>11,253</b>	<b>2,489</b>	<b>7,649</b>	<b>10,137</b>	<b>-9.3%</b>	<b>-10.1%</b>	<b>-9.9%</b>	<b>5.9%</b>	<b>5.1%</b>	<b>5.2%</b>	<b>5.6%</b>	<b>5.8%</b>	<b>5.8%</b>
(million yen)	<b>(7,141)</b>	<b>(10,966)</b>	<b>(18,107)</b>	<b>(7,095)</b>	<b>(15,861)</b>	<b>(22,956)</b>	<b>(-0.7%)</b>	<b>(44.6%)</b>	<b>(26.8%)</b>	<b>(3.6%)</b>	<b>(2.0%)</b>	<b>(2.4%)</b>	<b>(3.5%)</b>	<b>(3.5%)</b>	<b>(3.5%)</b>
<b>Surface Mount Technology</b>	<b>1,620</b>	<b>13,501</b>	<b>15,121</b>	<b>1,296</b>	<b>11,493</b>	<b>12,789</b>	<b>-20.0%</b>	<b>-14.9%</b>	<b>-15.4%</b>	<b>3.5%</b>	<b>8.0%</b>	<b>7.0%</b>	<b>2.9%</b>	<b>8.8%</b>	<b>7.3%</b>
General Assembly	7,909	37,344	45,253	7,357	30,146	37,503	-7.0%	-19.3%	-17.1%	16.9%	22.2%	21.0%	16.5%	23.0%	21.3%
Other Assembly	144	838	982	486	621	1,107	237.2%	-25.9%	12.7%	0.3%	0.5%	0.5%	1.1%	0.5%	0.6%
Bonding	1		1				-100.0%		-100.0%	0.0%		0.0%			
Soldering	3		3	8		8	166.7%		166.7%	0.0%		0.0%	0.0%		0.0%
Sealing/glueing	57	405	462	89	363	452	56.1%	-10.4%	-2.2%	0.1%	0.2%	0.2%	0.2%	0.3%	0.3%
Screwing	58	4	62	6	21	27	-89.7%	425.0%	-56.5%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Others	25	429	454	383	237	620	1430.1%	-44.8%	36.5%	0.1%	0.3%	0.2%	0.9%	0.2%	0.4%
<b>Assembly</b> Units	<b>8,053</b>	<b>38,182</b>	<b>46,235</b>	<b>7,842</b>	<b>30,767</b>	<b>38,609</b>	<b>-2.6%</b>	<b>-19.4%</b>	<b>-16.5%</b>	<b>17.2%</b>	<b>22.7%</b>	<b>21.5%</b>	<b>17.6%</b>	<b>23.5%</b>	<b>22.0%</b>
(million yen)	<b>(15,925)</b>	<b>(40,395)</b>	<b>(56,320)</b>	<b>(20,279)</b>	<b>(33,721)</b>	<b>(54,000)</b>	<b>(27.3%)</b>	<b>(-16.5%)</b>	<b>(-4.1%)</b>	<b>(8.1%)</b>	<b>(7.4%)</b>	<b>(7.6%)</b>	<b>(9.9%)</b>	<b>(7.4%)</b>	<b>(8.2%)</b>
<b>Palletizing/depalletizing</b>	<b>942</b>	<b>2,228</b>	<b>3,170</b>	<b>1,623</b>	<b>1,988</b>	<b>3,611</b>	<b>72.3%</b>	<b>-10.8%</b>	<b>13.9%</b>	<b>2.0%</b>	<b>1.3%</b>	<b>1.5%</b>	<b>3.6%</b>	<b>1.5%</b>	<b>2.1%</b>
<b>Material handling</b>	<b>9,924</b>	<b>46,820</b>	<b>56,744</b>	<b>10,259</b>	<b>30,524</b>	<b>40,783</b>	<b>3.4%</b>	<b>-34.8%</b>	<b>-28.1%</b>	<b>21.2%</b>	<b>27.8%</b>	<b>26.4%</b>	<b>23.1%</b>	<b>23.3%</b>	<b>23.2%</b>
FPD	167	622	789	113	394	507	-32.3%	-36.7%	-35.7%	0.4%	0.4%	0.4%	0.3%	0.3%	0.3%
Semiconductor	5,892	9,495	15,387	5,103	5,129	10,232	-13.4%	-46.0%	-33.5%	12.6%	5.6%	7.2%	11.5%	3.9%	5.8%
Others	2	2	4		123	123	-100.0%	6050.0%	2975.0%	0.0%	0.0%	0.0%		0.1%	0.1%
<b>Cleanroom</b> Units	<b>6,061</b>	<b>10,119</b>	<b>16,180</b>	<b>5,216</b>	<b>5,646</b>	<b>10,862</b>	<b>-13.9%</b>	<b>-44.2%</b>	<b>-32.9%</b>	<b>12.9%</b>	<b>6.0%</b>	<b>7.5%</b>	<b>11.7%</b>	<b>4.3%</b>	<b>6.2%</b>
(million yen)	<b>(21,929)</b>	<b>(25,963)</b>	<b>(47,891)</b>	<b>(18,904)</b>	<b>(16,997)</b>	<b>(35,901)</b>	<b>(-13.8%)</b>	<b>(-34.5%)</b>	<b>(-25.0%)</b>	<b>(11.1%)</b>	<b>(4.7%)</b>	<b>(6.4%)</b>	<b>(9.3%)</b>	<b>(3.7%)</b>	<b>(5.4%)</b>
<b>Other applications</b>	<b>3,780</b>	<b>5,050</b>	<b>8,830</b>	<b>2,340</b>	<b>3,580</b>	<b>5,921</b>	<b>-38.1%</b>	<b>-29.1%</b>	<b>-32.9%</b>	<b>8.1%</b>	<b>3.0%</b>	<b>4.1%</b>	<b>5.3%</b>	<b>2.7%</b>	<b>3.4%</b>
<b>Unspecified</b>				<b>499</b>	<b>8,082</b>	<b>8,581</b>							<b>1.1%</b>	<b>6.2%</b>	<b>4.9%</b>
<b>Total</b> Units	<b>46,836</b>	<b>168,342</b>	<b>215,178</b>	<b>44,506</b>	<b>131,196</b>	<b>175,702</b>	<b>-5.0%</b>	<b>-22.1%</b>	<b>-18.3%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>
(million yen)	<b>(197,746)</b>	<b>(546,698)</b>	<b>(744,444)</b>	<b>(204,178)</b>	<b>(457,841)</b>	<b>(662,019)</b>	<b>(3.3%)</b>	<b>(-16.3%)</b>	<b>(-11.1%)</b>	<b>(100.0%)</b>	<b>(100.0%)</b>	<b>(100.0%)</b>	<b>(100.0%)</b>	<b>(100.0%)</b>	<b>(100.0%)</b>

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.

