

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

Number of units, ( ) : million yen

	October - December 2017	October - December 2018	Change from 2017
<b>Orders</b>	54,092 (200,050)	45,626 (164,623)	-15.7% (-17.7%)
<b>Production</b>	53,918 (179,551)	49,436 (179,334)	-8.3% (-0.1%)

Shipments Applications	October - December 2017			October - December 2018			Change from 2017			October - December 2017 (percentage distribution)			October - December 2018 (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>	926	1,211	2,137	1,047	953	2,000	13.1%	-21.3%	-6.4%	8.9%	2.9%	4.1%	8.5%	2.5%	4.0%
Arc welding	1,092	4,730	5,822	1,159	3,934	5,093	6.1%	-16.8%	-12.5%	10.5%	11.2%	11.0%	9.4%	10.4%	10.2%
Spot welding	879	6,174	7,053	1,139	4,383	5,522	29.6%	-29.0%	-21.7%	8.4%	14.6%	13.4%	9.2%	11.6%	11.1%
Laser welding	3	33	36	1		1	-66.7%		-97.2%	0.0%	0.1%	0.1%	0.0%		0.0%
Others	13	36	49	25	15	40	92.3%	-58.3%	-18.4%	0.1%	0.1%	0.1%	0.2%	0.0%	0.1%
<b>Welding</b> Units (million yen)	1,987 (9,522)	10,973 (27,455)	12,960 (36,978)	2,324 (10,341)	8,332 (21,992)	10,656 (32,333)	17.0% (8.6%)	-24.1% (-19.9%)	-17.8% (-12.6%)	19.1% (20.4%)	26.0% (20.6%)	24.6% (20.6%)	18.9% (20.5%)	22.1% (16.8%)	21.3% (17.8%)
<b>Painting</b>	78	524	602	95	587	682	21.8%	12.0%	13.3%	0.7%	1.2%	1.1%	0.8%	1.6%	1.4%
Loading/unloading	571	1,550	2,121	579	1,617	2,196	1.4%	4.3%	3.5%	5.5%	3.7%	4.0%	4.7%	4.3%	4.4%
Mechanical cutting	1	8	9	1		1			-88.9%	0.0%	0.0%	0.0%	0.0%		0.0%
Grinding/deburring	70	206	276	67	3	70	-4.3%	-98.5%	-74.6%	0.7%	0.5%	0.5%	0.5%	0.0%	0.1%
Others	20	1	21	22	12	34	10.0%	1100.0%	61.9%	0.2%	0.0%	0.0%	0.2%	0.0%	0.1%
<b>Machining</b> Units (million yen)	662 (1,819)	1,765 (2,533)	2,427 (4,352)	669 (1,813)	1,632 (2,635)	2,301 (4,447)	1.1% (-0.3%)	-7.5% (4.0%)	-5.2% (2.2%)	6.3% (3.9%)	4.2% (1.9%)	4.6% (2.4%)	5.4% (3.6%)	4.3% (2.0%)	4.6% (2.5%)
<b>Surface Mount Technology</b>	404	2,902	3,306	459	3,130	3,589	13.6%	7.9%	8.6%	3.9%	6.9%	6.3%	3.7%	8.3%	7.2%
General Assembly	1,791	7,039	8,830	2,408	7,121	9,529	34.5%	1.2%	7.9%	17.2%	16.7%	16.8%	19.5%	18.9%	19.1%
Other Assembly	9	264	273	43	161	204	377.8%	-39.0%	-25.3%	0.1%	0.6%	0.5%	0.3%	0.4%	0.4%
Bonding															
Soldering															
Sealing/glueing	3	151	154	13	95	108	333.3%	-37.1%	-29.9%	0.0%	0.4%	0.3%	0.1%	0.3%	0.2%
Screwing	2		2	22		22	1000.0%		1000.0%	0.0%		0.0%	0.2%		0.0%
Others	4	113	117	8	66	74	100.0%	-41.6%	-36.8%	0.0%	0.3%	0.2%	0.1%	0.2%	0.1%
<b>Assembly</b> Units (million yen)	1,800 (3,477)	7,303 (8,107)	9,103 (11,584)	2,451 (4,718)	7,282 (9,051)	9,733 (13,769)	36.2% (35.7%)	-0.3% (11.6%)	6.9% (18.9%)	17.3% (7.5%)	17.3% (6.1%)	17.3% (6.4%)	19.9% (9.3%)	19.3% (6.9%)	19.5% (7.6%)
<b>Palletizing/depalletizing</b>	214	370	584	197	626	823	-7.9%	69.2%	40.9%	2.1%	0.9%	1.1%	1.6%	1.7%	1.6%
<b>Material handling</b>	2,186	13,569	15,755	2,987	12,283	15,270	36.6%	-9.5%	-3.1%	21.0%	32.1%	29.9%	24.2%	32.6%	30.6%
FPD	22	429	451	41	110	151	86.4%	-74.4%	-66.5%	0.2%	1.0%	0.9%	0.3%	0.3%	0.3%
Semiconductor	1,439	2,307	3,746	1,215	1,428	2,643	-15.6%	-38.1%	-29.4%	13.8%	5.5%	7.1%	9.9%	3.8%	5.3%
Others	1	2	3		1	1		-50.0%	-66.7%	0.0%	0.0%	0.0%		0.0%	0.0%
<b>Cleanroom</b> Units (million yen)	1,462 (5,831)	2,738 (7,784)	4,200 (13,615)	1,256 (4,451)	1,539 (4,465)	2,795 (8,916)	-14.1% (-23.7%)	-43.8% (-42.6%)	-33.5% (-34.5%)	14.0% (12.5%)	6.5% (5.9%)	8.0% (7.6%)	10.2% (8.8%)	4.1% (3.4%)	5.6% (4.9%)
<b>Other applications</b>	710	908	1,618	833	1,288	2,121	17.3%	41.9%	31.1%	6.8%	2.1%	3.1%	6.8%	3.4%	4.2%
<b>Total</b> Units (million yen)	10,429 (46,600)	42,263 (133,010)	52,692 (179,611)	12,318 (50,559)	37,652 (130,790)	49,970 (181,349)	18.1% (8.5%)	-10.9% (-1.7%)	-5.2% (1.0%)	100.0% (100.0%)	100.0% (100.0%)	100.0% (100.0%)	100.0% (100.0%)	100.0% (100.0%)	100.0% (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.

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

Number of units, ( ) : million yen

Industries	2017 Oct. - Dec.	2018 Oct. - Dec.	Change from 2017	Percentage distribution	
				2017	2018
<b>Metal products</b>	<b>714</b>	<b>1,146</b>	<b>60.5%</b>	<b>6.8%</b>	<b>9.3%</b>
Construction and mining machinery	21	31	47.6%	0.2%	0.3%
Metalworking machinery	202	214	5.9%	1.9%	1.7%
Other machinery and equipment	830	707	-14.8%	8.0%	5.7%
<b>Machinery and equipment</b> Units	<b>1,053</b>	<b>952</b>	<b>-9.6%</b>	<b>10.1%</b>	<b>7.7%</b>
(million yen)	<b>(4,314)</b>	<b>(3,981)</b>	<b>(-7.7%)</b>	<b>(9.3%)</b>	<b>(7.9%)</b>
Electronic computers		5			0.0%
Consumer electrical machinery	337	483	43.3%	3.2%	3.9%
Industrial electrical machinery	300	350	16.7%	2.9%	2.8%
Communication equipment	342	249	-27.2%	3.3%	2.0%
Video and audio equipment	1	15		0.0%	0.1%
Electronic components/devices/circuits	1,283	1,207	-5.9%	12.3%	9.8%
Other electrical machinery	868	920	6.0%	8.3%	7.5%
<b>Electrical machinery</b> Units	<b>3,131</b>	<b>3,229</b>	<b>3.1%</b>	<b>30.0%</b>	<b>26.2%</b>
(million yen)	<b>(16,060)</b>	<b>(15,475)</b>	<b>(-3.6%)</b>	<b>(34.5%)</b>	<b>(30.6%)</b>
<b>Precision instruments</b>	<b>103</b>	<b>104</b>	<b>1.0%</b>	<b>1.0%</b>	<b>0.8%</b>
Motor vehicles	1,133	1,109	-2.1%	10.9%	9.0%
Auto parts	2,345	3,098	32.1%	22.5%	25.2%
<b>Motor vehicles and auto parts</b> Units	<b>3,478</b>	<b>4,207</b>	<b>21.0%</b>	<b>33.3%</b>	<b>34.2%</b>
(million yen)	<b>(13,495)</b>	<b>(16,300)</b>	<b>(20.8%)</b>	<b>(29.0%)</b>	<b>(32.2%)</b>
<b>Other transport equipment</b>	<b>46</b>	<b>82</b>	<b>78.3%</b>	<b>0.4%</b>	<b>0.7%</b>
<b>Food products, beverages, and tobacco products</b>	<b>166</b>	<b>363</b>	<b>118.7%</b>	<b>1.6%</b>	<b>2.9%</b>
<b>Chemical products</b>	<b>73</b>	<b>98</b>	<b>34.2%</b>	<b>0.7%</b>	<b>0.8%</b>
<b>Plastic products</b>	<b>370</b>	<b>408</b>	<b>10.3%</b>	<b>3.5%</b>	<b>3.3%</b>
<b>Other industries</b>	<b>1,210</b>	<b>1,633</b>	<b>35.0%</b>	<b>11.6%</b>	<b>13.3%</b>
<b>Non-manufacturing industry</b>	<b>85</b>	<b>96</b>	<b>12.9%</b>	<b>0.8%</b>	<b>0.8%</b>
<b>Total domestic shipments</b> Units	<b>10,429</b>	<b>12,318</b>	<b>18.1%</b>	<b>100.0%</b>	<b>100.0%</b>
(million yen)	<b>(46,600)</b>	<b>(50,559)</b>	<b>(8.5%)</b>	<b>(19.8%)</b>	<b>(24.7%)</b>
<b>Export</b> Units	<b>42,263</b>	<b>37,652</b>	<b>-10.9%</b>	<b>(80.2%)</b>	<b>(75.3%)</b>
(million yen)	<b>(133,010)</b>	<b>(130,790)</b>	<b>(-1.7%)</b>	<b>(74.1%)</b>	<b>(72.1%)</b>
<b>Grand total</b> Units	<b>52,692</b>	<b>49,970</b>	<b>-5.2%</b>	<b>(100.0%)</b>	<b>(100.0%)</b>
(million yen)	<b>(179,611)</b>	<b>(181,349)</b>	<b>(1.0%)</b>	<b>(100.0%)</b>	<b>(100.0%)</b>

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