

**October - December 2016 Results**  
**Production and Shipments of Manipulators and Robots by Applications**  
**[JARA Member Companies]**

Number of units, ( ): million yen

Production	October - December 2015	October - December 2016	Change from 2015
		32,999 (124,621)	40,139 (137,542)

Shipments	October - December 2015			October - December 2016			Change from 2015			October - December 2015 (percentage distribution)			October - December 2016 (percentage distribution)			
	Applications	Domestic shipments	Exports	Total	Domestic shipments	Exports	Total	Domestic shipments	Exports	Total	Domestic shipments	Exports	Total	Domestic shipments	Exports	Total
<b>Plastic moulding</b>		809	1,016	1,825	808	934	1,742	-0.1%	-8.1%	-4.5%	9.9%	3.9%	5.3%	9.4%	2.8%	4.2%
Arc welding		769	3,365	4,134	955	3,484	4,439	+24.2%	+3.5%	+7.4%	9.4%	12.9%	12.1%	11.2%	10.6%	10.7%
Spot welding		667	5,356	6,023	966	4,728	5,694	+44.8%	-11.7%	-5.5%	8.1%	20.6%	17.6%	11.3%	14.4%	13.8%
Laser welding		7	7	7	11	6	17									
Others		13	2	15	12	4	16									
<b>Welding</b>	Units	1,456	8,723	10,179	1,944	8,222	10,166	+33.5%	-5.7%	-0.1%	17.7%	33.5%	29.7%	22.7%	25.1%	24.6%
	(million yen)	(7,874)	(23,959)	(31,833)	(10,213)	(21,677)	(31,890)	(+29.7%)	(-9.5%)	(+0.2%)	(20.7%)	(26.4%)	(24.7%)	(25.6%)	(20.8%)	(22.2%)
<b>Painting</b>		135	466	601	55	324	379	-59.3%	-30.5%	-36.9%	1.6%	1.8%	1.8%	0.6%	1.0%	0.9%
Loading/unloading		475	1,360	1,835	309	970	1,279	-34.9%	-28.7%	-30.3%	5.8%	5.2%	5.4%	3.6%	3.0%	3.1%
Mechanical cutting		1	1	1	1	1	1									
Grinding/deburring		58	9	67	92	253	345									
Others		23	23	23	11	1	12									
<b>Machining</b>	Units	557	1,369	1,926	413	1,224	1,637	-25.9%	-10.6%	-15.0%	6.8%	5.3%	5.6%	4.8%	3.7%	4.0%
	(million yen)	(1,575)	(3,061)	(4,636)	(1,156)	(1,957)	(3,113)	(-26.6%)	(-36.1%)	(-32.8%)	(4.1%)	(3.4%)	(3.6%)	(2.9%)	(1.9%)	(2.2%)
<b>Surface Mount Technology</b>		292	1,597	1,889	285	2,092	2,377	-2.4%	+31.0%	+25.8%	3.6%	6.1%	5.5%	3.3%	6.4%	5.7%
General Assembly		1,806	3,494	5,300	1,386	4,550	5,936	-23.3%	+30.2%	+12.0%	22.0%	13.4%	15.5%	16.2%	13.9%	14.4%
Other Assembly		14	151	165	52	172	224	+271.4%	+13.9%	+35.8%	0.2%	0.6%	0.5%	0.6%	0.5%	0.5%
Bonding																
Soldering		2	2	2	2	2	2									
Sealing/glueing		9	53	62	7	118	125									
Screwing			2	2												
Others		3	96	99	43	54	97									
<b>Assembly</b>	Units	1,820	3,645	5,465	1,438	4,722	6,160	-21.0%	+29.5%	+12.7%	22.2%	14.0%	16.0%	16.8%	14.4%	14.9%
	(million yen)	(4,393)	(5,267)	(9,660)	(2,941)	(5,512)	(8,453)	(-33.1%)	(+4.6%)	(-12.5%)	(11.5%)	(5.8%)	(7.5%)	(7.4%)	(5.3%)	(5.9%)
<b>Palletizing/depalletizing</b>		164	588	752	231	716	947	+40.9%	+21.8%	+25.9%	2.0%	2.3%	2.2%	2.7%	2.2%	2.3%
<b>Material handling</b>		1,669	6,300	7,969	1,641	11,549	13,190	-1.7%	+83.3%	+65.5%	20.3%	24.2%	23.3%	19.2%	35.2%	31.9%
FPD		78	105	183	60	326	386	-23.1%	+210.5%	+110.9%	0.9%	0.4%	0.5%	0.7%	1.0%	0.9%
Semiconductor		800	1,384	2,184	1,145	2,112	3,257	+43.1%	+52.6%	+49.1%	9.7%	5.3%	6.4%	13.4%	6.4%	7.9%
Others																
<b>Cleanroom</b>	Units	878	1,489	2,367	1,205	2,438	3,643	+37.2%	+63.7%	+53.9%	10.7%	5.7%	6.9%	14.1%	7.4%	8.8%
	(million yen)	(5,051)	(4,892)	(9,942)	(6,164)	(8,049)	(14,213)	(+22.0%)	(+64.5%)	(+43.0%)	(13.3%)	(5.4%)	(7.7%)	(15.5%)	(7.7%)	(9.9%)
<b>Other applications</b>		432	832	1,264	545	571	1,116	+26.2%	-31.4%	-11.7%	5.3%	3.2%	3.7%	6.4%	1.7%	2.7%
<b>Total</b>	Units	8,212	26,025	34,237	8,565	32,792	41,357	+4.3%	+26.0%	+20.8%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	(million yen)	(38,112)	(90,748)	(128,861)	(39,878)	(103,974)	(143,852)	(+4.6%)	(+14.6%)	(+11.6%)	(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 2016 Results**  
**Shipments of Manipulators and Robots by Industries**  
**[JARA Member Companies]**

Number of units, ( ): million yen

Industries	2015 Oct. -Dec.	2016 Oct. -Dec.	Change from 2015	Percentage distribution	
				2015	2016
<b>Metal products</b>	<b>469</b>	<b>540</b>	<b>+15.1%</b>	<b>5.7%</b>	<b>6.3%</b>
Construction and mining machinery	22	33	+50.0%	0.3%	0.4%
Metalworking machinery	153	119	-22.2%	1.9%	1.4%
Other machinery and equipment	412	515	+25.0%	5.0%	6.0%
<b>Machinery and equipment</b>	<b>587</b>	<b>667</b>	<b>+13.6%</b>	<b>7.1%</b>	<b>7.8%</b>
Units					
(million yen)	<b>(3,194)</b>	<b>(3,251)</b>	<b>(+1.8%)</b>	<b>(8.4%)</b>	<b>(8.2%)</b>
Electronic computers	48	19	-60.4%	0.6%	0.2%
Consumer electrical machinery	514	431	-16.1%	6.3%	5.0%
Industrial electrical machinery	88	134	+52.3%	1.1%	1.6%
Communication equipment	171	134	-21.6%	2.1%	1.6%
Video and audio equipment	0	0		0.0%	0.0%
Electronic components/devices/circuits	735	965	+31.3%	9.0%	11.3%
Other electrical machinery	960	747	-22.2%	11.7%	8.7%
<b>Electrical machinery</b>	<b>2,516</b>	<b>2,430</b>	<b>-3.4%</b>	<b>30.6%</b>	<b>28.4%</b>
Units					
(million yen)	<b>(12,441)</b>	<b>(12,067)</b>	<b>(-3.0%)</b>	<b>(32.6%)</b>	<b>(30.3%)</b>
<b>Precision instruments</b>	<b>109</b>	<b>134</b>	<b>+22.9%</b>	<b>1.3%</b>	<b>1.6%</b>
Motor vehicles	886	1,314	+48.3%	10.8%	15.3%
Auto parts	1,871	1,769	-5.5%	22.8%	20.7%
<b>Motor vehicles and auto parts</b>	<b>2,757</b>	<b>3,083</b>	<b>+11.8%</b>	<b>33.6%</b>	<b>36.0%</b>
Units					
(million yen)	<b>(12,132)</b>	<b>(13,394)</b>	<b>(+10.4%)</b>	<b>(31.8%)</b>	<b>(33.6%)</b>
<b>Other transport equipment</b>	<b>(67)</b>	<b>(71)</b>	<b>(+6.0%)</b>	<b>(0.8%)</b>	<b>(0.8%)</b>
<b>Food products, beverages, and tobacco products</b>	<b>124</b>	<b>201</b>	<b>+62.1%</b>	<b>1.5%</b>	<b>2.3%</b>
<b>Chemical products</b>	<b>65</b>	<b>91</b>	<b>+40.0%</b>	<b>0.8%</b>	<b>1.1%</b>
<b>Plastic products</b>	<b>294</b>	<b>321</b>	<b>+9.2%</b>	<b>3.6%</b>	<b>3.7%</b>
<b>Other industries</b>	<b>1,177</b>	<b>960</b>	<b>-18.4%</b>	<b>14.3%</b>	<b>11.2%</b>
<b>Non-manufacturing industry</b>	<b>47</b>	<b>67</b>	<b>+42.6%</b>	<b>0.6%</b>	<b>0.8%</b>
<b>Total domestic shipments</b>	<b>8,212</b>	<b>8,565</b>	<b>+4.3%</b>	<b>100.0%</b>	<b>100.0%</b>
Units					
(million yen)	<b>(38,112)</b>	<b>(39,878)</b>	<b>(+4.6%)</b>	<b>24.0%</b>	<b>20.7%</b>
				<b>(100.0%)</b>	<b>(100.0%)</b>
				<b>(29.6%)</b>	<b>(27.7%)</b>
<b>Export</b>	<b>26,025</b>	<b>32,792</b>	<b>+26.0%</b>	<b>76.0%</b>	<b>79.3%</b>
Units					
(million yen)	<b>(90,748)</b>	<b>(103,974)</b>	<b>(+14.6%)</b>	<b>(70.4%)</b>	<b>(72.3%)</b>
<b>Grand total</b>	<b>34,237</b>	<b>41,357</b>	<b>+20.8%</b>	<b>100.0%</b>	<b>100.0%</b>
Units					
(million yen)	<b>(128,861)</b>	<b>(143,852)</b>	<b>(+11.6%)</b>	<b>(100.0%)</b>	<b>(100.0%)</b>

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