

Motor Comparison Chart for FIRST Robotics

by CK, Team 571-Paragon

Model	Part Number	Output RPM (no load)	Max Power (Watts)	Shaft Diameter	Gear Ratio	Amps at 12VDC		Stall Torque (oz-in)	Stall Trq at 1000RPM	2013 Legal?	Remarks	Notes
						No Load	Full/Stall					
2-1/2" CIM	am-0255	5310	340.00	8mm	none	2.7	133	343.4	1823.5	Y		2
Bane Bots RS-775	M7-RS775-18	13,000	273.03		none	1.8	86.7	112.8	1466.4	Y		2
Bane Bots RS-550	M5-RS550-12	19,300	253.50	1/8 in	none	1.4	85	70.55	1361.6	Y		2
Bane Bots RS-550	M5-RS550-12-B	19,300	253.50	1/8 in	none	1.4	85	70.55	1361.6	Y		2
RS-775-5	am-2161	11,360	270	5mm	none	1.8	86.7	112.8	1281.4	Y		
Mini CIM	VEX 217-3371	6200	230.00	8mm	none	1.5	86	198.4	1230.1	Y		
AndyMark RS-500	am-0912	16,000	180.83	1/8 in	none	1.2	63.8	60.7	971.2	Y		2
BAG motor	VEX 217-3351	14,000	147.00	4mm	none	1.8	41	56	784.0	Y		
Bane Bots RS-775	M7-RS775-12	7,300	83.05	5mm	none	1.1	30	61.1	446.0	Y		2
Bane Bots RS-395	M3-RS395-12	15,500	48.05			0.5	15	16.65	258.1	Y		2
RS-775-125	am-2194	5326		1/8 in	none	0.6	22	44.9	239.1	Y	Motor for PG-27	
PG-71	am-0914	75	48.50	10mm	71	0.6	22	3187.2	239.0	Y		2
PG-188	am-2193	28		10mm	188	0.6	22	6336	177.4	Y		
Snow Blower Motor	am-2235	100	30	flat shaft	?	5 (?)	24	1598	159.8	Y	Motor from 2013 KOP	
Denso Window Mtr (L)	262100-3040 (left)	84	23.48	6hub spline	?	1.8	21	1501	126.1	Y		2
Denso Window Mtr (R)	262100-3030 (right)	84	23.48	6hub spline	?	1.8	18.6	1501	126.1	Y		2
Denso Throttle Motor	FC13-020	5300	18	12T gear	none	0.4 (?)	7	18	95.4	Y	Motor from 2012, 13 KOP	
FTC 393 Motor-std	276-2177	100	4.00	squ shaft	?	0.15	3.6	215	21.5	Y	at 7.2VDC	2
FTC 393 Motor-hi spd	276-2177	160	4.00	squ shaft	?	0.15	3.6	134	21.4	Y	at 7.2VDC	2
Bane Bots RS-390										Y		
Bane Bots RS-540-12										Y		
Bane Bots RS-545-12										Y		
Gardner Compressor	405ADC38/12			N/A	N/A		25			Y	"old" compressor	
Viair Compressor	am-2005			N/A	N/A					Y	"new" compressor	
Fisher Price	00801-0673	20,770	291.59			0.82	108.7	75.4	1566.1			2
Fisher Price	00968-9013	16,700	209.26			2	75	67.3	1123.9		Motor from 2012 KOP	2
Double Doozy	am-0629	8000		15T gear	1.68	uses 2x of 9015 motors		127.4	1019.2		same mount at CIM?	
Fisher Price	00968-9015	15,600	185.02			1.25	70	63.7	993.7		Motor from 2011 KOP	2
Fisher Price	00968-9012	15,600	172.82			1	63.5	59.5	928.2			2
Fisher Price	00968-2719	16,100	172.37			2	63	57.5	925.8		Motor from 2010 KOP	2
Andymark	am-0914	84	48.50			0.6	22	3101	260.5			2
Globe Motor		79.8	47	3/8" + 1/4"	117	0.58	21.6	3194	254.9			4
PG-27	am-0915	198		10mm	26.9	0.6	22	1209.6	239.5			
Keyang Window Mtr	16627960	70	24.55	9T gear		0.5	20	1883	131.8			2
Keyang Window Mtr		70	24	9T gear		0.5	20	1880	131.6			
Nippon Denso	E6DF-14A365BB	92	22.30			2.8	24.8	1302	119.8			2
Nippon Denso	E6DF-14A366BB	92	22.30			2.8	24.8	1302	119.8			2
Denso	AE235100-0160	5,300	18.16	12T gear		1	7	18.4	97.5			2
ARA Window Motor	FC13-093			squ shaft	?							



Notes

- 1. For the RS- series motors, the RS number refers to a frame size, not a specific motor design
Therefore one "RS-xxx" motor from one supplier may not be the same motor as a motor from another supplier with the same "RS-xxx" size
- 2. This data adapted from "motordata4.1" on Chief Delphi, USFIRST
- 3. Stall torque at 1000RPM assumes motor coupled to 100% efficient gearbox. This gives a relative comparison of output torque between different motors
- 4. This motor is not longer available for FIRST competitions

