## 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