



| Delta Connected Specifications                           | UNITS              | Dash # | 1     | 2     | 4     | 8     | 10     | 12     |
|----------------------------------------------------------|--------------------|--------|-------|-------|-------|-------|--------|--------|
| Force Constant using 0.5mm[.02"] clearance gap           | N/A                |        | 5.7   | 11.5  | 23.0  | 45.9  | 57.4   | 68.9   |
|                                                          | lb <sub>f</sub> /A |        | 1.3   | 2.6   | 5.2   | 10.3  | 12.9   | 15.5   |
| Force Constant using 1mm[.04"] clearance gap             | N/A                |        | 5.3   | 10.6  | 21.1  | 42.3  | 52.8   | 63.4   |
|                                                          | lb <sub>f</sub> /A |        | 1.2   | 2.4   | 4.8   | 9.5   | 11.9   | 14.3   |
| Phase Resistance ( $\Delta$ @ 25°C)                      | $\Omega$           |        | 2.77  | 5.5   | 11.1  | 22.2  | 27.7   | 33.3   |
| Phase Resistance ( $\Delta$ @ Max. °C)                   | $\Omega$           |        | 3.92  | 7.8   | 15.7  | 31.4  | 39.2   | 47.1   |
| Inductance @ 1kHz                                        | mH                 |        | 2.4   | 4.8   | 9.5   | 19.1  | 23.9   | 28.6   |
| Continuous Force using 0.5mm[.02"] clearance gap         | N                  |        | 26.7  | 53.4  | 106.8 | 213.6 | 267.0  | 320.4  |
|                                                          | lb <sub>f</sub>    |        | 6.0   | 12.0  | 24.0  | 48.0  | 60.0   | 72.0   |
| Continuous Force using 1.0mm[.04"] clearance gap         | N                  |        | 24.6  | 49.1  | 98.3  | 196.5 | 245.7  | 294.8  |
|                                                          | lb <sub>f</sub>    |        | 5.5   | 11.0  | 22.1  | 44.2  | 55.2   | 66.3   |
| Continuous Current                                       | A                  |        | 4.65  | 4.65  | 4.65  | 4.65  | 4.65   | 4.65   |
| Peak Force* using 0.5mm[.02"] clearance gap              | N                  |        | 124   | 249   | 498   | 996   | 1245   | 1494   |
|                                                          | lb <sub>f</sub>    |        | 28    | 56    | 112   | 224   | 280    | 336    |
| Peak Force* using 1.0mm[.04"] clearance gap              | N                  |        | 115   | 229   | 458   | 916   | 1145   | 1374   |
|                                                          | lb <sub>f</sub>    |        | 26    | 51    | 103   | 206   | 257    | 309    |
| Peak Current*                                            | A                  |        | 21.67 | 21.67 | 21.67 | 21.67 | 21.67  | 21.67  |
| Continuous Force, aluminum plate heat sink** (see below) | N                  |        | 34.1  | 62.2  | 111.1 | 198.4 | 240.0  | 281.0  |
|                                                          | lbf                |        | 7.7   | 14.0  | 25.0  | 44.6  | 54.0   | 63.2   |
| Back EMF Constant using 0.5mm[.02"] clearance gap        | V/m/s              |        | 5.7   | 11.5  | 23.0  | 45.9  | 57.4   | 68.9   |
|                                                          | V/in/s             |        | 0.1   | 0.3   | 0.6   | 1.2   | 1.5    | 1.7    |
| WYE connected Specifications                             | UNITS              | Dash # | 1     | 2     | 4     | 8     | 10     | 12     |
| Force Constant using 0.5mm[.02"] clearance gap           | N/A                |        | 9.9   | 19.9  | 39.8  | 79.6  | 99.5   | 119.4  |
|                                                          | lb <sub>f</sub> /A |        | 2.2   | 4.5   | 8.9   | 17.9  | 22.4   | 26.8   |
|                                                          | N/A                |        | 9.2   | 18.3  | 36.6  | 73.2  | 91.5   | 109.8  |
| Force Constant using 1.0mm[.04"] clearance gap           | lb <sub>f</sub> /A |        | 2.1   | 4.1   | 8.2   | 16.5  | 20.6   | 24.7   |
| Phase Resistance ( $\Psi$ @ 25°C)                        | $\Omega$           |        | 8.32  | 16.64 | 33.29 | 66.57 | 83.22  | 99.86  |
| Phase Resistance ( $\Psi$ @ Max. °C)                     | $\Omega$           |        | 11.76 | 23.53 | 47.06 | 94.11 | 117.64 | 141.17 |
| Inductance @ 1kHz                                        | mH                 |        | 7.2   | 14.3  | 28.7  | 57.3  | 71.7   | 86.0   |
| Continuous Force using 0.5mm[.02"] clearance gap         | N                  |        | 26.7  | 53.4  | 106.8 | 213.6 | 267.0  | 320.4  |
|                                                          | lb <sub>f</sub>    |        | 6.0   | 12.0  | 24.0  | 48.0  | 60.0   | 72.0   |
| Continuous Force using 0.5mm[.02"] clearance gap         | N                  |        | 24.6  | 49.1  | 98.3  | 196.5 | 245.7  | 294.8  |
|                                                          | lb <sub>f</sub>    |        | 5.5   | 11.0  | 22.1  | 44.2  | 55.2   | 66.3   |
| Continuous Current                                       | A                  |        | 2.68  | 2.68  | 2.68  | 2.68  | 2.68   | 2.68   |
| Peak Force* using 0.5mm[.02"] clearance gap              | N                  |        | 124   | 249   | 498   | 996   | 1245   | 1494   |
|                                                          | lb <sub>f</sub>    |        | 28    | 56    | 112   | 224   | 280    | 336    |
| Peak Force* using 1.0mm[.04"] clearance gap              | N                  |        | 115   | 229   | 458   | 916   | 1145   | 1374   |
|                                                          | lb <sub>f</sub>    |        | 26    | 51    | 103   | 206   | 257    | 309    |
| Peak Current*                                            | A                  |        | 12.51 | 12.51 | 12.51 | 12.51 | 12.51  | 12.51  |
| Continuous Force, aluminum plate heat sink** (see below) | N                  |        | 34.1  | 62.2  | 111.1 | 198.4 | 240.0  | 281.0  |
|                                                          | lbf                |        | 7.7   | 14.0  | 25.0  | 44.6  | 54.0   | 63.2   |
| Back EMF Constant using 0.5mm[.02"] clearance gap        | V/m/s              |        | 9.9   | 19.9  | 39.8  | 79.6  | 99.5   | 119.4  |
|                                                          | V/inch/s           |        | 0.3   | 0.5   | 1.0   | 2.0   | 2.5    | 3.0    |

\* Notes:

Specifications based on heat sink maintained within 10°C of ambient temperature at motor bracket interface.

On time of "Peak Power" (duration) less than 1 second at listed peak current.

Back EMF plus IR drop must not exceed "Maximum Terminal Voltage" listed.

Electrical cycle length is 30.5mm

Resistance Specifications do not include the cable resistance.

Cogging force due to magnet saliency is about 10N

Custom cable required for peak current exceeding 50 ampere.

Magnet track maximum environment temperature is 50 Deg. C.

Cable adds 0.01Ω/m

Shaded columns represent "special" models

\*\* Heat Sink is a 0.5 meter wide, 15mm thick aluminum plate, extending 0.25 meter beyond each end of the coil bracket, suspended in 258C free air using 0.5mm (.02") clearance gap.

Magnet track weight 2KG/m (1.35lb/ft)



| I38 Iron Core Linear Motor Parallel Connection Specification                                                                                                                        |                          |        |      |       |       |       |       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------|------|-------|-------|-------|-------|
| General Motor Specifications                                                                                                                                                        | UNITS                    | Dash # | 2    | 4     | 8     | 10    | 12    |
| Attractive Preload Force using 0.5mm[.02"] clearance gap                                                                                                                            | N                        |        | 299  | 598   | 1196  | 1495  | 1794  |
|                                                                                                                                                                                     | Lbf                      |        | 67   | 134   | 269   | 336   | 403   |
| Attractive Preload Force using 1.0mm[.04"] clearance gap                                                                                                                            | N                        |        | 254  | 508   | 1016  | 1270  | 1524  |
|                                                                                                                                                                                     | Lbf                      |        | 57   | 114   | 228   | 286   | 343   |
| Max Operating Temperature                                                                                                                                                           | °C                       |        | 125  | 125   | 125   | 125   | 125   |
| Maximum Temp. Rise                                                                                                                                                                  | °C                       |        | 105  | 105   | 105   | 105   | 105   |
| Coil Resistance (6 lead @ 25°C)                                                                                                                                                     | Ω                        |        | 2    | 4     | 8     | 10    | 12    |
| Coil Resistance (6 lead @ Max. °C)                                                                                                                                                  | Ω                        |        | 3    | 6     | 12    | 15    | 18    |
| Inductance @ 1kHz                                                                                                                                                                   | mH                       |        | 2    | 4     | 7     | 9     | 11    |
| Thermal Resistance (Bracket Top Mount)                                                                                                                                              | °C/W                     |        | 0.29 | 0.14  | 0.07  | 0.06  | 0.05  |
| Continuous Power Top Mount (Max. °C)                                                                                                                                                | W                        |        | 368  | 737   | 1474  | 1842  | 2211  |
| Continuous Power, top mount to plate**(Max. °C)                                                                                                                                     | W                        |        | 230  | 367   | 585   | 685   | 782   |
| Motor Constant                                                                                                                                                                      | lb <sub>f</sub> /sqrt(W) |        | 0.6  | 0.9   | 1.3   | 1.4   | 1.5   |
|                                                                                                                                                                                     | N/sqrt(W)                |        | 2.8  | 3.9   | 5.6   | 6.2   | 6.8   |
| Peak Power (Max. °C, 10% Duty)                                                                                                                                                      | W                        |        | 3684 | 7368  | 14737 | 18421 | 22105 |
| Electrical Time Constant (@ 25°C)                                                                                                                                                   | ms                       |        | 0.9  | 0.9   | 0.9   | 0.9   | 0.9   |
| Maximum Line to Line Voltage                                                                                                                                                        | Vrms                     |        | 670  | 670   | 670   | 670   | 670   |
| Coil Weight                                                                                                                                                                         | Pounds                   |        | 0.9  | 1.8   | 3.7   | 4.7   | 5.6   |
|                                                                                                                                                                                     | Kilograms                |        | 0.4  | 0.8   | 1.7   | 2.1   | 2.5   |
| Coil length (inside magnet track without HED)                                                                                                                                       | inch                     |        | 4.81 | 9.61  | 19.21 | 24.01 | 28.81 |
| HED increases coil length by 1.48 inch (37.6mm)                                                                                                                                     | mm                       |        | 122  | 244   | 488   | 610   | 732   |
| Delta Connected Specifications                                                                                                                                                      | UNITS                    | Dash # | 2    | 4     | 8     | 10    | 12    |
| Force Constant using 0.5mm[.02"] clearance gap                                                                                                                                      | N/A                      |        | 5.7  | 11.5  | 23.0  | 28.7  | 34.5  |
|                                                                                                                                                                                     | lb <sub>f</sub> /A       |        | 1.3  | 2.6   | 5.2   | 6.5   | 7.7   |
| Force Constant using 1mm[.04"] clearance gap                                                                                                                                        | N/A                      |        | 5.3  | 10.6  | 21.1  | 26.4  | 31.7  |
|                                                                                                                                                                                     | lb <sub>f</sub> /A       |        | 1.2  | 2.4   | 4.8   | 5.9   | 7.1   |
| Phase Resistance (Δ @ 25°C)                                                                                                                                                         | Ω                        |        | 1.4  | 2.8   | 5.5   | 6.9   | 8.3   |
| Phase Resistance (Δ @ Max. °C)                                                                                                                                                      | Ω                        |        | 2.0  | 3.9   | 7.8   | 9.8   | 11.8  |
| Inductance @ 1kHz                                                                                                                                                                   | mH                       |        | 1.2  | 2.4   | 4.8   | 6.0   | 7.2   |
| Continuous Force using 0.5mm[.02"] clearance gap                                                                                                                                    | N                        |        | 53.4 | 106.8 | 213.6 | 267.0 | 320.4 |
|                                                                                                                                                                                     | lb <sub>f</sub>          |        | 12.0 | 24.0  | 48.0  | 60.0  | 72.0  |
| Continuous Force using 1.0mm[.04"] clearance gap                                                                                                                                    | N                        |        | 49.1 | 98.3  | 196.5 | 245.7 | 294.8 |
|                                                                                                                                                                                     | lb <sub>f</sub>          |        | 11.0 | 22.1  | 44.2  | 55.2  | 66.3  |
| Continuous Current                                                                                                                                                                  | A                        |        | 9.30 | 9.30  | 9.30  | 9.30  | 9.30  |
| Peak Force* using 0.5mm[.02"] clearance gap                                                                                                                                         | N                        |        | 249  | 498   | 996   | 1245  | 1494  |
|                                                                                                                                                                                     | lb <sub>f</sub>          |        | 56   | 112   | 224   | 280   | 336   |
| Peak Force* using 1.0mm[.04"] clearance gap                                                                                                                                         | N                        |        | 229  | 458   | 916   | 1145  | 1374  |
|                                                                                                                                                                                     | lb <sub>f</sub>          |        | 51   | 103   | 206   | 257   | 309   |
| Peak Current*                                                                                                                                                                       | A                        |        | 43.3 | 43.3  | 43.3  | 43.3  | 43.3  |
| Continuous Force, aluminum plate heat sink** (see below)                                                                                                                            | N                        |        | 62.2 | 111.1 | 198.4 | 240.0 | 281.0 |
|                                                                                                                                                                                     | lbf                      |        | 14.0 | 25.0  | 44.6  | 54.0  | 63.2  |
| Back EMF Constant using 0.5mm[.02"] clearance gap                                                                                                                                   | V/m/s                    |        | 5.7  | 11.5  | 23.0  | 28.7  | 34.5  |
|                                                                                                                                                                                     | V/in/s                   |        | 0.1  | 0.3   | 0.6   | 0.7   | 0.9   |
| WYE connected Specifications                                                                                                                                                        | UNITS                    | Dash # | 2    | 4     | 8     | 10    | 12    |
| Force Constant using 0.5mm[.02"] clearance gap                                                                                                                                      | N/A                      |        | 9.9  | 19.9  | 39.8  | 49.7  | 59.7  |
|                                                                                                                                                                                     | lb <sub>f</sub> /A       |        | 2.2  | 4.5   | 8.9   | 11.2  | 13.4  |
|                                                                                                                                                                                     | N/A                      |        | 9.2  | 18.3  | 36.6  | 45.8  | 54.9  |
| Force Constant using 1.0mm[.04"] clearance gap                                                                                                                                      | lb <sub>f</sub> /A       |        | 2.1  | 4.1   | 8.2   | 10.3  | 12.3  |
| Phase Resistance (Ψ @ 25°C)                                                                                                                                                         | Ω                        |        | 4.2  | 8.3   | 16.6  | 20.8  | 25.0  |
| Phase Resistance (Ψ @ Max. °C)                                                                                                                                                      | Ω                        |        | 5.9  | 11.8  | 23.5  | 29.4  | 35.3  |
| Inductance @ 1kHz                                                                                                                                                                   | mH                       |        | 3.6  | 7.2   | 14.3  | 17.9  | 21.5  |
| Continuous Force using 0.5mm[.02"] clearance gap                                                                                                                                    | N                        |        | 53.4 | 106.8 | 213.6 | 267.0 | 320.4 |
|                                                                                                                                                                                     | lb <sub>f</sub>          |        | 12.0 | 24.0  | 48.0  | 60.0  | 72.0  |
| Continuous Force using 0.5mm[.02"] clearance gap                                                                                                                                    | N                        |        | 49.1 | 98.3  | 196.5 | 245.7 | 294.8 |
|                                                                                                                                                                                     | lb <sub>f</sub>          |        | 11.0 | 22.1  | 44.2  | 55.2  | 66.3  |
| Continuous Current                                                                                                                                                                  | A                        |        | 5.37 | 5.37  | 5.37  | 5.37  | 5.37  |
| Peak Force* using 0.5mm[.02"] clearance gap                                                                                                                                         | N                        |        | 249  | 498   | 996   | 1245  | 1494  |
|                                                                                                                                                                                     | lb <sub>f</sub>          |        | 56   | 112   | 224   | 280   | 336   |
| Peak Force* using 1.0mm[.04"] clearance gap                                                                                                                                         | N                        |        | 229  | 458   | 916   | 1145  | 1374  |
|                                                                                                                                                                                     | lb <sub>f</sub>          |        | 51   | 103   | 206   | 257   | 309   |
| Peak Current*                                                                                                                                                                       | A                        |        | 25.0 | 25.0  | 25.0  | 25.0  | 25.0  |
| Continuous Force, aluminum plate heat sink** (see below)                                                                                                                            | N                        |        | 62.2 | 111.1 | 198.4 | 240.0 | 281.0 |
|                                                                                                                                                                                     | lbf                      |        | 14.0 | 25.0  | 44.6  | 54.0  | 63.2  |
| Back EMF Constant using 0.5mm[.02"] clearance gap                                                                                                                                   | V/m/s                    |        | 9.9  | 19.9  | 39.8  | 49.7  | 59.7  |
|                                                                                                                                                                                     | V/inch/s                 |        | 0.3  | 0.5   | 1.0   | 1.3   | 1.5   |
| * Notes:                                                                                                                                                                            |                          |        |      |       |       |       |       |
| Specifications based on heat sink maintained within 10°C of ambient temperature at motor bracket interface.                                                                         |                          |        |      |       |       |       |       |
| On time of "Peak Power" (duration) less than 1 second for peak current listed.                                                                                                      |                          |        |      |       |       |       |       |
| Back EMF plus IR drop must not exceed "Maximum Terminal Voltage" listed.                                                                                                            |                          |        |      |       |       |       |       |
| Electrical cycle length is 30.5mm. Skewed Track Cogging force estimated at 45N.                                                                                                     |                          |        |      |       |       |       |       |
| Resistance Specifications do not include the cable resistance.                                                                                                                      |                          |        |      |       |       |       |       |
| Cogging force due to magnet saliency is about 45N                                                                                                                                   |                          |        |      |       |       |       |       |
| Custom cable required for peak current exceeding 50 ampere.                                                                                                                         |                          |        |      |       |       |       |       |
| Magnet track maximum environment temperature is 50 Deg. C.                                                                                                                          |                          |        |      |       |       |       |       |
| Cable adds 0.01Ω/m                                                                                                                                                                  |                          |        |      |       |       |       |       |
| Shaded columns represent "Special" models.                                                                                                                                          |                          |        |      |       |       |       |       |
| ** Heat Sink is a 0.5 meter wide, 15mm thick aluminum plate, extending 0.25 meter beyond each end of the coil bracket, suspended in 25°C free air using 0.5mm (.02") clearance gap. |                          |        |      |       |       |       |       |
| Magnet track weight 2KG/m (1.35lb/ft)                                                                                                                                               |                          |        |      |       |       |       |       |

| I38 Iron Core Linear Motor Double Parallel Connection Specification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                    |        |       |       |       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------|-------|-------|-------|
| General Motor Specifications                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | UNITS              | Dash # | 4     | 8     | 12    |
| Attractive Preload Force using 0.5mm[.02"] clearance gap                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | N                  |        | 598   | 1196  | 1794  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Lbf                |        | 134   | 269   | 403   |
| Attractive Preload Force using 1.0mm[.04"] clearance gap                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | N                  |        | 254   | 508   | 762   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Lbf                |        | 57    | 114   | 171   |
| Max Operating Temperature                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | °C                 |        | 125   | 125   | 125   |
| Maximum Temp. Rise                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | °C                 |        | 105   | 105   | 105   |
| Coil Resistance (6 lead @ 25°C)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Ω                  |        | 1.04  | 2.08  | 3.12  |
| Coil Resistance (6 lead @ Max. °C)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Ω                  |        | 1.47  | 2.94  | 4.41  |
| Inductance @ 1kHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | mH                 |        | 1     | 2     | 3     |
| Thermal Resistance (Bracket Top Mount)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | °C/W               |        | 0.14  | 0.07  | 0.05  |
| Continuous Power Top Mount (Max. °C)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | W                  |        | 737   | 1474  | 2211  |
| Continuous Power, top mount to plate**(Max. °C)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | W                  |        | 367   | 734   | 1101  |
| Motor Constant                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | lb/sqrt(W)         |        | 0.9   | 1.3   | 1.5   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | N/sqrt(W)          |        | 3.9   | 5.6   | 6.8   |
| Peak Power (Max. °C, 10% Duty)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | W                  |        | 7368  | 14737 | 22105 |
| Electrical Time Constant (@ 25°C)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | ms                 |        | 0.9   | 0.9   | 0.9   |
| Maximum Line to Line Voltage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Vrms               |        | 670   | 670   | 670   |
| Coil Weight                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Pounds             |        | 1.8   | 3.7   | 5.6   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Kilograms          |        | 0.8   | 1.7   | 2.5   |
| Coil length (inside magnet track without HED)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | inch               |        | 9.61  | 19.21 | 28.81 |
| HED increases coil length by 1.48 inch (37.6mm)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | mm                 |        | 244   | 488   | 732   |
| Delta Connected Specifications                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | UNITS              | Dash # | 4     | 8     | 12    |
| Force Constant using 0.5mm[.02"] clearance gap                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | N/A                |        | 5.7   | 11.5  | 17.2  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | lb <sub>f</sub> /A |        | 1.3   | 2.6   | 3.9   |
| Force Constant using 1mm[.04"] clearance gap                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | N/A                |        | 5.3   | 10.6  | 15.8  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | lb <sub>f</sub> /A |        | 1.2   | 2.4   | 3.6   |
| Phase Resistance (Δ @ 25°C)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Ω                  |        | 0.7   | 1.4   | 2.1   |
| Phase Resistance (Δ @ Max. °C)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Ω                  |        | 1.0   | 2.0   | 2.9   |
| Inductance @ 1kHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | mH                 |        | 0.6   | 1.2   | 1.8   |
| Continuous Force using 0.5mm[.02"] clearance gap                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | N                  |        | 106.8 | 213.6 | 320.4 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | lb <sub>f</sub>    |        | 24.0  | 48.0  | 72.0  |
| Continuous Force using 1.0mm[.04"] clearance gap                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | N                  |        | 98.3  | 196.5 | 294.8 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | lb <sub>f</sub>    |        | 22.1  | 44.2  | 66.3  |
| Continuous Current                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | A                  |        | 18.6  | 18.6  | 18.6  |
| Peak Force* using 0.5mm[.02"] clearance gap                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | N                  |        | 498   | 996   | 1494  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | lb <sub>f</sub>    |        | 112   | 224   | 336   |
| Peak Force* using 1.0mm[.04"] clearance gap                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | N                  |        | 458   | 916   | 1374  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | lb <sub>f</sub>    |        | 103   | 206   | 309   |
| Peak Current*                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | A                  |        | 86.7  | 86.7  | 86.7  |
| Continuous Force, aluminum plate heat sink** (see below)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | N                  |        | 111.1 | 222.2 | 333.4 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | lbf                |        | 25.0  | 50.0  | 74.9  |
| Back EMF Constant using 0.5mm[.02"] clearance gap                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | V/m/s              |        | 5.7   | 11.5  | 17.2  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | V/in/s             |        | 0.1   | 0.3   | 0.4   |
| WYE connected Specifications                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | UNITS              | Dash # | 4     | 8     | 12    |
| Force Constant using 0.5mm[.02"] clearance gap                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | N/A                |        | 9.9   | 19.9  | 29.8  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | lb <sub>f</sub> /A |        | 2.2   | 4.5   | 6.7   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | N/A                |        | 9.2   | 18.3  | 27.5  |
| Force Constant using 1.0mm[.04"] clearance gap                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | lb <sub>f</sub> /A |        | 2.1   | 4.1   | 6.2   |
| Phase Resistance (Ψ @ 25°C)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Ω                  |        | 2.1   | 4.2   | 6.2   |
| Phase Resistance (Ψ @ Max. °C)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Ω                  |        | 2.9   | 5.9   | 8.8   |
| Inductance @ 1kHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | mH                 |        | 1.8   | 3.6   | 5.4   |
| Continuous Force using 0.5mm[.02"] clearance gap                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | N                  |        | 106.8 | 213.6 | 320.4 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | lb <sub>f</sub>    |        | 24.0  | 48.0  | 72.0  |
| Continuous Force using 0.5mm[.02"] clearance gap                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | N                  |        | 98.3  | 196.5 | 294.8 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | lb <sub>f</sub>    |        | 22.1  | 44.2  | 66.3  |
| Continuous Current                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | A                  |        | 10.74 | 10.74 | 10.74 |
| Peak Force* using 0.5mm[.02"] clearance gap                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | N                  |        | 498   | 996   | 1494  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | lb <sub>f</sub>    |        | 112   | 224   | 336   |
| Peak Force* using 1.0mm[.04"] clearance gap                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | N                  |        | 458   | 916   | 1374  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | lb <sub>f</sub>    |        | 103   | 206   | 309   |
| Peak Current*                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | A                  |        | 50.1  | 50.1  | 50.1  |
| Continuous Force, aluminum plate heat sink** (see below)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | N                  |        | 111.1 | 222.2 | 333.4 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | lbf                |        | 25.0  | 50.0  | 74.9  |
| Back EMF Constant using 0.5mm[.02"] clearance gap                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | V/m/s              |        | 9.9   | 19.9  | 29.8  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | V/inch/s           |        | 0.3   | 0.5   | 0.8   |
| * Notes:<br>Specifications based on heat sink maintained within 10°C of ambient temperature at motor bracket interface.<br>On time of "Peak Power" (duration) less than 1 second at peak current listed.<br>Back EMF plus IR drop must not exceed "Maximum Terminal Voltage" listed.<br>Electrical cycle length is mm. Skewed Track Cogging force estimated at 45N.<br>Resistance Specifications do not include the cable resistance.<br>Cogging force due to magnet saliency is about 45N<br>Custom cable required for peak current exceeding 50 ampere.<br>Magnet track maximum environment temperature is 50 Deg. C.<br>Cable adds 0.01Ω/m<br>Shaded columns represent "Special models."<br>** Heat Sink is a 0.5 meter wide, 15mm thick aluminum plate, extending 0.25 meter beyond each end of the coil bracket, suspended in 25°C free air using 0.5mm (.02") clearance gap.<br>Magnet track weight 2KG/m (1.35lb/ft) |                    |        |       |       |       |