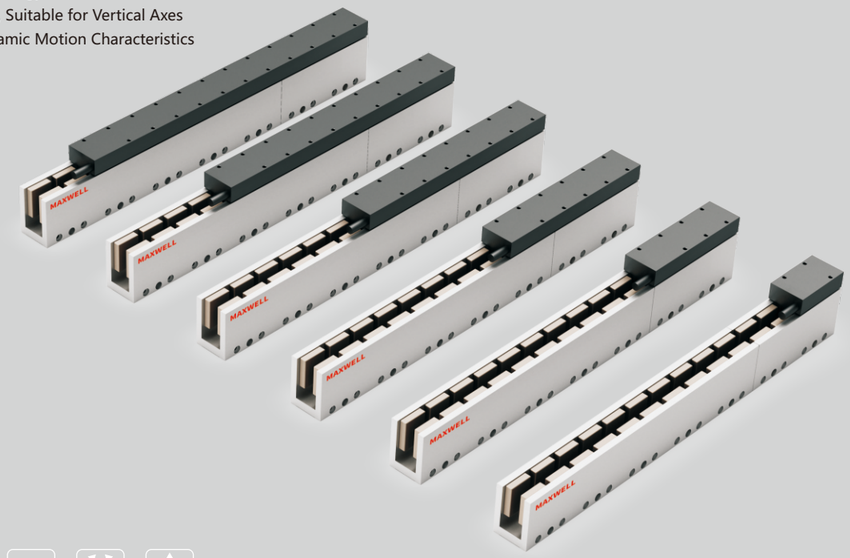
## Ironless Linear Motor

- Ironless Technology
- Compact Size, Suitable for Vertical Axes
- Excellent Dynamic Motion Characteristics




Linear Motion | Horizontal Plane 2 | Angular | Rotary | Vertical & Rotary

## • Model Number Designation System

### Mover Model

JKB3 -□-S-S3-K-HF-0.5-FB-0UA

- Motor Model: AUM3
- Cooling Options: Natural Cooling (Blank) / Air Cooling (A) / Water Cooling (W)
- Winding Connection Type: S = Series / P = Parallel
- Coil Length: S1 / S2 / S3 / S4 / S5/ S6
- Design Control Code: (Blank) [7] / 0UA [8]
- Power Cable: FB [4] / NFB [5] / 9W4M [6]
- Cable Length (m): 0.5 / 3.0
- Sensor Cable: NH [1] / HF [2] / H9D [3]
- Temperature Sensor: J - Thermal switch (Standard) / J12 - Thermal switch (NST 120°) / K - PT100 (RTD)

[1] NH - No integrated Hall sensor, flying leads
[2] HF - Integrated Hall sensor, flying leads
[3] H9D - Integrated Hall sensor, 9-pin D-Sub connector
[4] FB - With ferromagnetic band, flying leads
[5] NFB - Without ferromagnetic band, flying leads
[6] 9W4M = Without ferromagnetic band, 9W4 male connector
[7] (Blank) = Standard model
[8] 0UA = UL certified model, for options with natural cooling and power cable = NFB only

### Stator Model

JKB3 – TL120

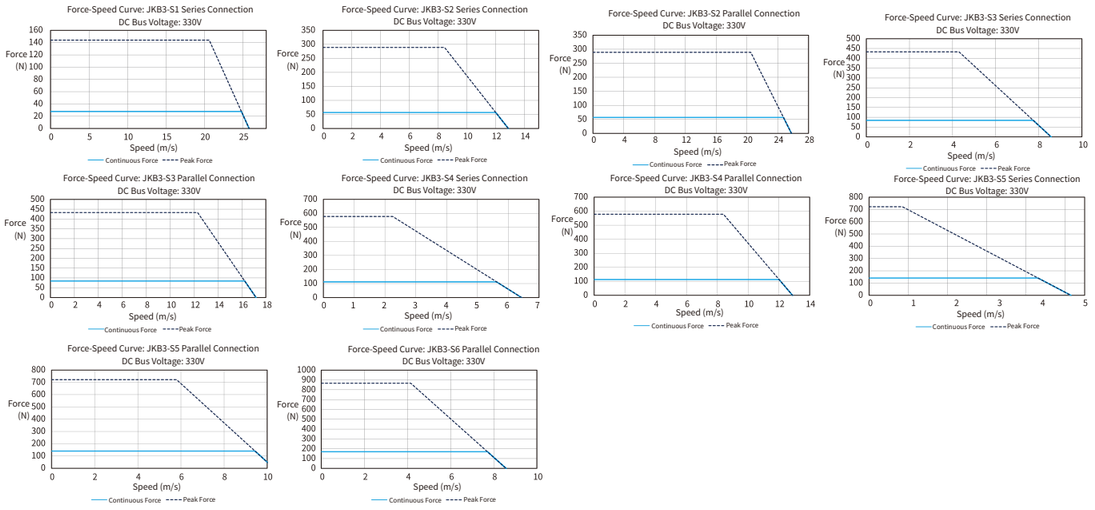
- Model: JKB3
- Magnetic Track Length: TL120 / TL180/TL240/ TL300/TL600







## JKB3 Series: Thrust Graph

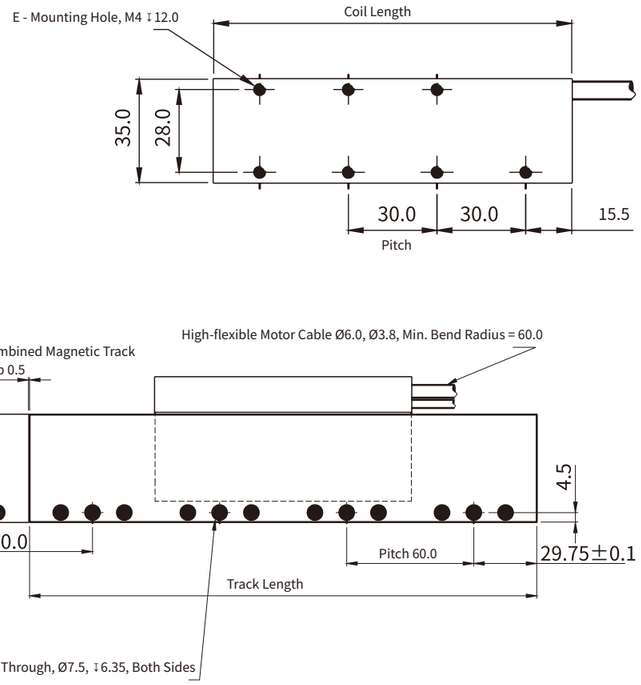


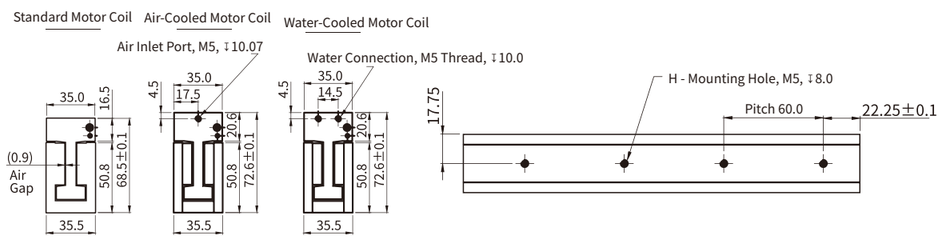

| | | | JKB3-S1 | JKB3-S2 | | JKB3-S3 | | JKB3-S4 | | JKB3-S5 | | JKB3-S6 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Performance Parameters** | **Symbol** | **Unit** | **Series** | **Series** | **Parallel** | **Series** | **Parallel** | **Series** | **Parallel** | **Series** | **Parallel** | **Parallel** |
| Continuous Thrust (Natural Cooling) @100°C[1] | $F_{cn}$ | N | 28 | 57 | 57 | 85 | 85 | 113 | 113 | 141 | 141 | 170 |
| Continuous Thrust (Air Cooling) @100°C[1] | $F_{ca}$ | N | 34 | 68 | 68 | 102 | 102 | 136 | 136 | 170 | 170 | 203 |
| Continuous Thrust (Water Cooling) @100°C[1,4] | $F_{cw}$ | N | 37 | 73 | 73 | 110 | 110 | 147 | 147 | 184 | 184 | 220 |
| Peak Thrust | $F_{pk}$ | N | 144 | 289 | 289 | 433 | 433 | 578 | 578 | 722 | 722 | 867 |
| Force Constant ±10% | $K_f$ | N/Arms | 15.7 | 31.4 | 15.7 | 47.1 | 23.6 | 62.8 | 31.4 | 78.5 | 39.3 | 47.1 |
| Back EMF Constant ±10% | $K_e$ | Vpeak/(m/s) | 12.8 | 25.6 | 12.8 | 38.5 | 19.2 | 51.3 | 25.6 | 64.1 | 32.0 | 38.5 |
| Motor Constant @25°C | $K_m$ | N/Sqrt(W) | 5.8 | 8.4 | 8.2 | 10.3 | 10.0 | 11.9 | 11.8 | 13.0 | 13.0 | 14.2 |
| Phase-to-Phase Resistance @25°C ±10%[2] | $R_{25}$ | Ω | 4.90 | 9.41 | 2.50 | 14.09 | 3.72 | 18.70 | 4.74 | 24.36 | 6.12 | 7.33 |
| Phase-to-Phase Inductance ±40%[3] | L | mH | 3.49 | 6.99 | 1.75 | 10.48 | 2.62 | 13.98 | 3.49 | 17.47 | 4.37 | 5.24 |
| Electrical Time Constant | $\tau_e$ | ms | 0.71 | 0.74 | 0.70 | 0.74 | 0.70 | 0.75 | 0.74 | 0.72 | 0.71 | 0.71 |
| Continuous Current (Natural Cooling) @100°C[1] | $I_{cn}$ | Arms | 1.8 | 1.8 | 3.6 | 1.8 | 3.6 | 1.8 | 3.6 | 1.8 | 3.6 | 3.6 |
| Continuous Current (air cooling) @100°C[1] | $I_{ca}$ | Arms | 2.2 | 2.2 | 4.3 | 2.2 | 4.3 | 2.2 | 4.3 | 2.2 | 4.3 | 4.3 |
| Continuous Current (water cooling) @100°C[1,4] | $I_{cw}$ | Arms | 2.3 | 2.3 | 4.7 | 2.3 | 4.7 | 2.3 | 4.7 | 2.3 | 4.7 | 4.7 |
| Peak Current | $I_{pk}$ | Arms | 9.2 | 9.2 | 18.4 | 9.2 | 18.4 | 9.2 | 18.4 | 9.2 | 18.4 | 18.4 |
| Continuous Thermal Power (Natural Cooling) @ 100°C[1] | $P_{cn}$ | W | 30.7 | 58.9 | 62.6 | 88.3 | 93.2 | 117.1 | 118.8 | 152.6 | 153.2 | 183.7 |
| Continuous Thermal Power (Air Cooling) @ 100°C[1] | $P_{ca}$ | W | 44.2 | 84.9 | 90.2 | 127.1 | 134.2 | 168.7 | 171.0 | 219.7 | 220.7 | 264.5 |
| Continuous Thermal Power (Water Cooling) @ 100°C[1,4] | $P_{cw}$ | W | 51.9 | 99.6 | 105.9 | 149.1 | 157.5 | 197.9 | 200.7 | 257.9 | 259.0 | 310.5 |
| Max. Coil Temperature | $t_{max}$ | °C | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Thermal Dissipation Constant (Natural Cooling)[1] | $K_{thn}$ | W/°C | 0.4 | 0.8 | 0.8 | 1.2 | 1.2 | 1.6 | 1.6 | 2.0 | 2.0 | 2.4 |
| Thermal Dissipation Constant (Air Cooling)[1] | $K_{tha}$ | W/°C | 0.6 | 1.1 | 1.2 | 1.7 | 1.8 | 2.2 | 2.3 | 2.9 | 2.9 | 3.5 |
| Thermal Dissipation Constant (Water Cooling)[1,4] | $K_{thw}$ | W/°C | 0.7 | 1.3 | 1.4 | 2.0 | 2.1 | 2.6 | 2.7 | 3.4 | 3.5 | 4.1 |
| Max. Bus Voltage | $U_{bus}$ | Vdc | 330 | 330 | 330 | 330 | 330 | 330 | 330 | 330 | 330 | 330 |
| Electromagnetic Period | $\tau_{NN}$ | mm | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 |
| Magnetic Attraction Force | $F_a$ | kN | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Mechanical Parameters** | | | | | | | | | | | | |
| Coil Mass (Natural Cooling) | $m_{cn}$ | kg | 0.22 | 0.45 | 0.45 | 0.68 | 0.68 | 0.91 | 0.91 | 1.14 | 1.14 | 1.37 |
| Coil Length (Natural Cooling) | $L_{cn}$ | mm | 61.0 | 121.0 | 121.0 | 181.0 | 181.0 | 241.0 | 241.0 | 301.0 | 301.0 | 361.0 |
| Coil Length (Air Cooling) | $L_{ca}$ | mm | 61.0 | 121.0 | 121.0 | 181.0 | 181.0 | 241.0 | 241.0 | 301.0 | 301.0 | 361.0 |
| Coil Length (Water Cooling) | $L_{cw}$ | mm | 61.0 | 121.0 | 121.0 | 181.0 | 181.0 | 241.0 | 241.0 | 301.0 | 301.0 | 361.0 |
| Magnetic Track Mass (per meter) | $m_{track}$ | kg/m | 8.33 | 8.33 | 8.33 | 8.33 | 8.33 | 8.33 | 8.33 | 8.33 | 8.33 | 8.33 |
| **Other Information** | | | | | | | | | | | | |
| Insulation Level | | | Class B (130°C) | | | | | | | | | |
| Protection Grade | | | Ip00 | | | | | | | | | |
| Compliance Standards | | | RoHS, CE, UL (option) | | | | | | | | | |
| Ambient Temperature | Operating | | 0°C - 40°C (no icing) | | | | | | | | | |
| | Storage | | -15°C to 70°C (no icing) | | | | | | | | | |
| Ambient Humidity | Operating | | 10% to 80% RH (no condensation) | | | | | | | | | |
| | Storage | | 10% to 90% RH (no condensation) | | | | | | | | | |
| Recommended Operating Environment | | | Indoor (no direct sunlight) | | | | | | | | | |
| | | | Free from corrosive gases, flammable gases, oil mist, or dust | | | | | | | | | |

[1] Measured at 25°C room temperature, depending on heat dissipation conditions.
[2] Resistance measured with DC current, including 0.5m standard cable.
[3] Inductance measured at 1kHz. The wide tolerance range (±40%) for JKB series is due to differences in three-phase inductance. The catalog value represents the average of maximum and minimum values, with each phase having ±20% tolerance.
[4] Water cooling test conditions: coolant inlet temperature 20°C, flow rate 1.5L/min. (Detailed test conditions available upon request)
Relevant parameters are subject to change without prior notice.

## • JKB3: Dimensions

In Stock Lead Time: 15-20 Days
- The lead time is subject to change during special periods. Please consult our sales team.




| Motor Coil | | | |
|---|---|---|---|
| Coil Model | Coil Length | G | H |
| JKB3-TL120 | 119.5 | 2 | 2 |
| JKB3-TL180 | 179.5 | 3 | 3 |
| JKB3-TL240 | 239.5 | 4 | 4 |
| JKB3-TL300 | 299.5 | 5 | 5 |
| JKB3-TL600 | 599.5 | 10 | 10 |

| Motor Magnetic Track | | |
|---|---|---|
| Track Model ❶ | Track Length | E |
| JKB3-S1 | 61.0 | 3 |
| JKB3-S2 | 121.0 | 7 |
| JKB3-S3 | 181.0 | 11 |
| JKB3-S4 | 241.0 | 15 |
| JKB3-S5 | 301.0 | 19 |
| JKB3-S6 | 361.0 | 23 |

❶ For the air-cooled or water-cooled models, the coil length and E are the same as those of the standard model.





MEMO