**Technical Data**

Original Instructions

Allen-Bradley by ROCKWELL AUTOMATION

# Kinetix Rotary Motion Specifications

Kinetix VPL, VPC, VPF, VPH, VPS, MPL, MPM, MPF, MPS, TLP, TL, TLY, RDB, HPK


| Topic | Page |
|---|---|
| Summary of Changes | 2 |
| Servo Drive Compatibility | 2 |
| Kinetix VPL Low-inertia Servo Motors | 3 |
| Kinetix VPC Continuous-duty Servo Motors | 26 |
| Kinetix VPF Food-grade Servo Motors | 51 |
| Kinetix VPH Hygienic Stainless-steel Servo Motors | 70 |
| Kinetix VPS Stainless-steel Servo Motors | 82 |
| Kinetix MPL Low-inertia Servo Motors | 88 |
| Kinetix MPM Medium-inertia Servo Motors | 105 |
| Kinetix MPF Food-grade Servo Motors | 116 |
| Kinetix MPS Stainless-steel Servo Motors | 124 |
| Kinetix TLP Multi-purpose Servo Motors | 130 |
| Kinetix TL and TLY Compact Servo Motors | 145 |
| Kinetix RDB Direct-drive Servo Motors | 158 |
| Kinetix HPK Asynchronous Servo Motors | 166 |
| Common Rotary Motor Specifications | 178 |
| Additional Resources | 181 |


This publication provides catalog numbers and product specifications, including performance, environmental, certifications, load force, and dimension drawings for Allen-Bradley® rotary motors.

Use this publication in conjunction with the Kinetix® Motion Control Selection Guide, publication KNX-SG001, to help make decisions on the motion control products best suited for your system requirements.

# Summary of Changes

This publication contains the following new or updated information. This list includes substantive updates only and is not intended to reflect all changes.

| Topic | Page |
|---|---|
| Added Kinetix 5300 servo drives as compatible with Kinetix TLP multi-purpose servo motors. | 2 |
| Added Kinetix 5100 and Kinetix 5300 servo drives as compatible with Kinetix TL and TLY compact servo motors. | |
| Corrected Kinetix VPC motor weights in theKinetix VPC Servo Motor Performance Specifications table. | 30 |
| Added Kinetix TLP (400V-class) servo motor specifications. | 130...144 |
| Updated thermal and environmental ratings with Kinetix TLP (400V) servo motor specifications. | 179 |

# Servo Drive Compatibility

| Servo Drive Family | Kinetix VPL | Kinetix VPC | Kinetix VPF | Kinetix VPH | Kinetix VPS | Kinetix MPL | Kinetix MPM | Kinetix MPF | Kinetix MPS | Kinetix TLP | Kinetix TL | Kinetix TLY | Kinetix RDB | Kinetix HPK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Kinetix 5700 | X | X | X | X | X | X | X | X | X | – | – | – | X | X |
| Kinetix 5500 | X | – | X | X | X | X | X | X | X | – | – | – | – | – |
| Kinetix 5100 | – | – | – | – | – | X | X | X | X | X | X | X | – | – |
| Kinetix 5300 | – | – | – | – | – | X | X | X | X | X | X | X | – | – |
| Kinetix 6500 | – | – | – | – | – | X | X | X | X | – | – | – | X | – |
| Kinetix 6200 | – | – | – | – | – | X | X | X | X | – | – | – | X | – |
| Kinetix 6000 | – | – | – | – | – | X | X | X | X | – | – | X (TLY-A*xx*-H) | X | – |
| Kinetix 300/350 | – | – | – | – | – | X | X | X | X | – | – | X | – | – |
| Kinetix 3 | – | – | – | – | – | – | – | – | – | – | X (TL-A*xx*-B) | X | – | – |
| Kinetix 2000 | – | – | – | – | – | X | X | X | X | – | – | X | – | – |
| Kinetix 7000 | – | – | – | – | – | X | X | – | – | – | – | – | X | X |

# Kinetix VPL Low-inertia Servo Motors

Kinetix VPL servo motors are available with winding options matched to the ratings of Kinetix 5500 drives and Kinetix 5700 dual-axis inverters. Optimized system sizing lowers system cost and improves energy efficiency. The digital feedback device provides real-time motor performance information to the control system and the 2090-Series single cable design between motor and drive simplifies installation. Kinetix VPL servo motors are based on proven Kinetix MPL servo motor technology for dynamic performance, increased reliability, and leverages high volume production.

## Kinetix VPL Servo Motor Features

| Attribute | Value |
|---|---|
| Main characteristics | • Developed to match the ratings of Kinetix 5500 drives and Kinetix 5700 dual-axis inverters<br>• 2090-Series single cable technology<br>• Hiperface DSL encoder protocol<br>• High torque to size ratio<br>• Low rotor inertia |
| Features | • 200V and 400V-class windings<br>• Single-turn and multi-turn absolute feedback<br>• SIL 2 (PLd) rated encoder options<br>• High-energy rare-earth magnets<br>• Shaft-end threaded hole<br>• SpeedTec DIN connector, rotates 325°<br>• Standard IEC 72-1 mounting dimensions |
| Motor type | Brushless AC synchronous servo motors |
| Environmental rating | • IP50 minimum, without shaft seal (standard)<br>• IP66 with optional shaft seal and use of environmentally sealed cable connectors |
| Certifications | Kinetix VPL rotary motors are UL Recognized components to applicable UL and CSA standards. CE marked for all applicable directives. Refer to rok.auto/certifications for the Product Certifications website. |
| Continuous stall torque | 0.46…33 N•m (4…292 lb•in) |
| Peak stall torque | 1.33…79 N•m (12…702 lb•in) |
| Rated speed | Up to 8000 rpm |
| Motor rated output | 0.19…7.16 kW (0.25…9.60 Hp) |
| Compatible servo drives | • Kinetix 5700<br>• Kinetix 5500 |
| Compatible servo cables | • 2090-CSxM1*xx*-*xx*AA/AF*xx* (TPE) cables<br>• 2090-CSxM1*xx*-*xx*VA/LF*xx* (PVC and PUR) cables |
| Typical applications | • Packaging<br>• Converting<br>• Material handling<br>• Electronic assembly<br>• Automotive |

# Catalog Numbers - Kinetix VPL Servo Motors

Catalog numbers consist of various characters, each of which identifies a specific option for that component. Use the catalog numbering table chart below to understand the configuration of your motor. For questions regarding product availability, contact your Allen-Bradley distributor.

**VP L - x xxx x x - x x 1 x A x**

**Factory Options**
A = Standard
S = Shaft seal

**Mounting Flange**
A = IEC metric, free mounting holes (type FF)

**Brake**
2 = No brake
4 = 24V DC holding brake

**Connector**
1 = Single SpeedTec DIN connector, right angle, 325° rotatable

**Shaft Key**
J = Shaft key
K = Smooth shaft

**Feedback**
C = 18-bit absolute single-turn digital encoder (Hiperface DSL protocol)
P = 18-bit absolute multi-turn digital encoder (Hiperface DSL protocol)
W = 18-bit absolute multi-turn digital encoder (Hiperface DSL protocol) SIL 2 (PLd) rated, 9-bit secondary safety channel (1)
Q = 23-bit absolute multi-turn digital encoder (Hiperface DSL protocol) SIL 2 (PLd) rated, 12-bit secondary safety channel (2)

**Rated Speed (3) (4)**

| | | |
|---|---|---|
| A = 1500 rpm | D = 3000 rpm | M= 6000 rpm |
| B = 2000 rpm | E = 3500 rpm | T = 6750 rpm |
| C = 2500 rpm | F = 4500 rpm | U = 8000 rpm |

**Magnet Stack Length (1, 2, 3, 4, 6 stacks) (4)**

**Frame Size - Bolt Circle Diameter (BCD)**

| | |
|---|---|
| 063 = 63 mm | 115 = 115 mm |
| 075 = 75 mm | 130 = 130 mm |
| 100 = 100 mm | 165 = 165 mm |

**Voltage Class**
A = 200V
B = 400V

**Series Type**
L = Low inertia

**Series**
VP = Permanent magnet rotary servo motors that are optimized to Kinetix 5500 and Kinetix 5700 drive ratings

(1) This encoder option is available with only VPL-B063*xx* and VPL-B075*xx* motor frame sizes.
(2) This encoder option is available with only VPL-A/B100*xx*, VPL-A/B115*xx*, VPL-A/B130*xx*, and VPL-B165*xx* motor frame sizes.
(3) Rated speed hierarchy is only for comparative purposes. Use Motion Analyzer software to size and select motors for your application, and/or the torque/speed curves in the Kinetix 5500 Drive System Design Guide, publication KNX-RM009, and the Kinetix 5700 Drive System Design Guide, publication KNX-RM010.
(4) Not all combinations are available. Only the configurations for rated speed and magnet stack length, as listed in Kinetix VPL Servo Motor (200V-class) Performance Specifications on page 7 and Kinetix VPL Servo Motor (400V-class) Performance Specifications on page 8, are available. Use Motion Analyzer software to size and select motors for your application.

## Kinetix VPL Servo Motor High-resolution Encoders

Kinetix VPL servo motors are available with high-performance encoders with a choice of single-turn (-C), multi-turn (-P), and SIL 2 rated (-Q and -W) multi-turn high-resolution feedback:

- 18-bit resolution for 262,144 counts per revolution (choice of single-turn or multi-turn)
  - Single-turn encoder (-C) provides absolute position feedback within one turn
  - Multi-turn encoder (-P) provides absolute position feedback within 4096 turns
  - Electromechanical design does not require a battery.
- SIL 2 rated absolute multi-turn digital encoder (Hiperface DSL protocol)
  - 23-bit resolution for 8,388,608 counts per revolution, multi-turn absolute position feedback within 4096 turns (-Q) option has 12-bit secondary safety channel
  - 18-bit resolution for 262,144 multi-turn absolute position feedback within 4096 turns (-W) option has 9-bit secondary safety channel

## Kinetix 2090-Series Single Cable Technology

Motor connectivity reduced to a single connector and cable.

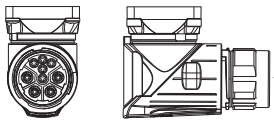
- Single cable eliminates hardware and wire terminations
- Purely digital two-wire communication integrated into the motor power cable
- TPE cable material for standard (non-flex) and continuous-flex cable
- PVC cable material for standard (non-flex) and Halogen-free PUR continuous-flex cable
- 2090-CSxM1D*x* cables are available in 1.0 m (3.2 ft) increments up to 50 m (164 ft) for Kinetix 5500 drives, 90 m (295 ft) for Kinetix 5700 drives

**IMPORTANT** Due to the unique characteristics of 2090-series single cable technology, designed for and tested with Kinetix 5500 drives, Kinetix 5700 dual-axis inverters, and Kinetix VP servo motors, building your own cables or using third-party cable is not an option.

## Motor Connector/Cable Compatibility

Kinetix VPL servo motors are equipped with SpeedTec DIN connectors.

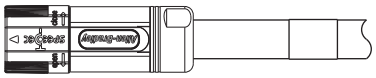
**Single SpeedTec Connector**



- VPL-A/B063*xxx*...VPL-B165*xxx* motors
- Receives only single cable plugs
- Attach cable plug with one-quarter turn

- 2090-CSxM1DF cables apply to Kinetix 5500 drives
- 2090-CSxM1DE cables apply to Kinetix 5700 drives
- 2090-CSxM1DG cables apply to Kinetix 5500 or Kinetix 5700 drives

**SpeedTec DIN (M1) Single Cable Plug**



- 2090-CSBM1DF-*xx*AA*xx* (standard, non-flex) power/feedback/brake cables
- 2090-CSWM1DF-*xx*AA*xx* (standard, non-flex) power/feedback cables
- 2090-CSBM1DF-*xx*AF*xx* (continuous-flex) power/feedback/brake cables
- 2090-CSBM1DE-*xxx*A*xx* (standard, non-flex) power/feedback/brake cables
- 2090-CSWM1DE-*xxx*A*xx* (standard, non-flex) power/feedback cables
- 2090-CSBM1DE-*xxx*F*xx* (continuous-flex) power/feedback/brake cables
- 2090-CSBM1DG-*xxx*A*xx* (standard, non-flex) power/feedback/brake cables
- 2090-CSWM1DG-*xxx*A*xx* (standard, non-flex) power/feedback cables
- 2090-CSBM1DG-*xxx*F*xx* (continuous-flex) power/feedback/brake cables

For 2090-Series single motor cable specifications, refer to Kinetix Motion Accessories Specifications Technical Data, publication KNX-TD004.

# Kinetix VPL Servo Motor Options

Kinetix VPL servo motors are available with these configurable options:

- Single-turn or multi-turn encoder.
- 24V DC holding brake.
- Choice of keyed or keyless shaft.
- Shaft seal kits are available, as are replacement kits for field installation. Shaft seals are made of nitrile and kits include a lubricant to reduce wear.

**IMPORTANT** Shaft seals are subject to wear and require periodic inspection and replacement. Replacement is recommended every 3 months, not to exceed 12 months, depending on use.

**Shaft Seal Kit Catalog Numbers**

| Motor Cat. No. | Shaft Seal Kit Cat. No. |
|---|---|
| VPL-A063*xx* and VPL-B063*xx* | VPL-SSN-F063075 |
| VPL-A075*xx* and VPL-B075*xx* | |
| VPL-A100*xx* and VPL-B100*xx* | MPL-SSN-A3B3 |
| VPL-A115*xx* and VPL-B115*xx* | MPL-SSN-A4B4 |
| VPL-A130*xx* and VPL-B130*xx* | MPL-SSN-A5B5 |
| VPL-B165*xx* | MPL-SSN-F165 |

Refer to the Kinetix VPL Low-inertia Servo Motors Installation Instructions, publication VPL-IN001, for more information on motor accessories.

# Technical Specifications - Kinetix VPL Servo Motors

### Kinetix VPL Servo Motor (200V-class) Performance Specifications

| Motor Cat. No. | Rated Speed rpm | Maximum Speed rpm | Continuous Stall Torque N•m (lb•in) | Peak Stall Torque N•m (lb•in) | Motor Rated Output kW (Hp) | Rotor Inertia (1) kg-m$^2$ (lb•in•s$^2$) | Motor Weight, (1) approx kg (lb) |
|---|---|---|---|---|---|---|---|
| VPL-A0631E | 4500 | 4500 | 0.46 (4.0) | 1.33 (12.0) | 0.19 (0.25) | 0.0000094 (0.000083) | 1.04 (2.30) |
| VPL-A0631M | 7200 | 7200 | 0.46 (4.0) | 1.33 (12.0) | 0.28 (0.38) | | |
| VPL-A0632F | 4800 | 4800 | 0.93 (8.0) | 2.69 (24.0) | 0.39 (0.52) | 0.000017 (0.00015) | 1.36 (3.0) |
| VPL-A0633C | 3000 | 3000 | 1.27 (11.0) | 4.09 (36.0) | 0.37 (0.50) | 0.0000247 (0.00022) | 1.68 (3.70) |
| VPL-A0633F | 4500 | 4500 | 1.27 (11.0) | 4.09 (36.0) | 0.50 (0.67) | | |
| VPL-A0751E | 4800 | 4800 | 1.01 (9.0) | 2.27 (20.0) | 0.44 (0.59) | 0.0000136 (0.00012) | 1.48 (3.26) |
| VPL-A0752C | 3300 | 3300 | 1.61 (14.0) | 4.39 (39.0) | 0.49 (0.66) | 0.000025 (0.00022) | 2.03 (4.47) |
| VPL-A0752E | 4800 | 4800 | 1.61 (14.0) | 4.39 (39.0) | 0.66 (0.88) | | |
| VPL-A0753C | 3300 | 3300 | 2.16 (19.0) | 7.02 (62.0) | 0.59 (0.79) | 0.0000365 (0.00032) | 2.59 (5.70) |
| VPL-A0753E | 4600 | 4600 | 2.28 (20.0) | 7.35 (65.0) | 0.80 (1.07) | | |
| VPL-A1001C | 2800 | 2800 | 1.93 (17.0) | 3.78 (33.0) | 0.56 (0.75) | 0.000044 (0.00039) | 2.63 (5.80) |
| VPL-A1001M | 6500 | 6500 | 1.95 (17.0) | 3.78 (33.0) | 1.29 (1.73) | | |
| VPL-A1002C | 3000 | 3000 | 3.39 (30.0) | 7.82 (69.0) | 1.03 (1.38) | 0.000078 (0.00069) | 4.52 (9.95) |
| VPL-A1002F | 5000 | 5000 | 3.26 (29.0) | 7.82 (69.0) | 1.60 (2.14) | | |
| VPL-A1003C | 2250 | 2250 | 4.18 (37.0) | 11.15 (99.0) | 0.87 (1.17) | 0.00012 (0.0010) | 4.45 (9.80) |
| VPL-A1003E | 3750 | 3750 | 4.18 (37.0) | 11.15 (99.0) | 1.31 (1.76) | | |
| VPL-A1003F | 5500 | 5500 | 4.18 (37.0) | 11.15 (99.0) | 1.90 (2.55) | | |
| VPL-A1152B | 2150 | 2150 | 5.10 (45.0) | 13.12 (116) | 1.02 (1.37) | 0.00026 (0.0023) | 4.43 (9.75) |
| VPL-A1152E | 3300 | 3300 | 5.08 (45.0) | 13.12 (116) | 1.47 (1.97) | | |
| VPL-A1152F | 5000 | 5000 | 4.70 (42.0) | 13.12 (116) | 2.16 (2.90) | | |
| VPL-A1153C | 2300 | 2300 | 6.55 (58.0) | 20.33 (180) | 1.35 (1.81) | 0.00038 (0.0033) | 6.01 (13.23) |
| VPL-A1303B | 1950 | 1950 | 8.80 (78.0) | 20.72 (183) | 1.61 (2.16) | 0.00040 (0.0035) | 7.54 (16.60) |
| VPL-A1303F | 4000 | 4000 | 7.75 (69.0) | 20.72 (183) | 2.50 (3.35) | | |
| VPL-A1304A | 1600 | 1600 | 10.29 (91.0) | 28.45 (252) | 1.55 (2.08) | 0.00052 (0.0046) | 9.10 (20.05) |
| VPL-A1304D | 3000 | 3000 | 10.20 (90.0) | 27.10 (240) | 2.60 (3.50) | | |
| VPL-A1306C | 2000 | 2000 | 13.38 (118) | 34.62 (306) | 2.13 (2.86) | 0.00078 (0.0069) | 12.21 (26.90) |

(1) Refer to Kinetix VPL Servo Motor Brake Specifications on page 9 for brake rotor inertia and brake motor weight.

## Kinetix VPL Servo Motor (400V-class) Performance Specifications

| Motor Cat. No. | Rated Speed rpm | Maximum Speed rpm | Continuous Stall Torque N•m (lb•in) | Peak Stall Torque N•m (lb•in) | Motor Rated Output kW (Hp) | Rotor Inertia (1) kg-m$^2$ (lb•in•s$^2$) | Motor Weight, (1) approx kg (lb) |
|---|---|---|---|---|---|---|---|
| VPL-B0631T | 8000 | 8000 | 0.46 (4.0) | 1.33 (12.0) | 0.31 (0.42) | 0.0000094 (0.000083) | 1.04 (2.30) |
| VPL-B0631U | 8000 | 8000 | 0.46 (4.0) | 1.33 (12.0) | 0.31 (0.42) | | |
| VPL-B0632F | 4600 | 4600 | 0.93 (8.0) | 2.69 (24.0) | 0.37 (0.50) | 0.000017 (0.00015) | 1.36 (3.00) |
| VPL-B0632T | 8000 | 8000 | 0.93 (8.0) | 2.69 (24.0) | 0.54 (0.72) | | |
| VPL-B0633M | 6500 | 6700 | 1.27 (11.0) | 4.09 (36.0) | 0.57 (0.76) | 0.0000247 (0.00022) | 1.68 (3.70) |
| VPL-B0633T | 6500 | 8000 | 1.27 (11.0) | 4.09 (36.0) | 0.57 (0.76) | | |
| VPL-B0751M | 8000 | 8000 | 1.01 (9.0) | 2.27 (20.0) | 0.54 (0.72) | 0.0000136 (0.00012) | 1.48 (3.26) |
| VPL-B0752E | 4900 | 4900 | 1.61 (14.0) | 4.39 (39.0) | 0.67 (0.90) | 0.0000250 (0.00022) | 2.03 (4.47) |
| VPL-B0752F | 7000 | 7000 | 1.61 (14.0) | 4.39 (39.0) | 0.80 (1.07) | | |
| VPL-B0752M | 8000 | 8000 | 1.61 (14.0) | 4.39 (39.0) | 0.81 (1.09) | | |
| VPL-B0753E | 4500 | 4500 | 2.28 (20.0) | 7.35 (65.0) | 0.81 (1.09) | 0.0000365 (0.00032) | 2.59 (5.70) |
| VPL-B0753F | 4500 | 6600 | 2.16 (19.0) | 7.02 (62.0) | 0.65 (0.87) | | |
| VPL-B0753M | 6000 | 8000 | 2.28 (20.0) | 7.35 (65.0) | 0.82 (1.10) | | |
| VPL-B1001M | 6000 | 6000 | 1.93 (17.0) | 3.78 (33.0) | 1.14 (1.53) | 0.000044 (0.00039) | 2.63 (5.80) |
| VPL-B1002E | 3300 | 3300 | 3.39 (30.0) | 7.82 (69.0) | 1.12 (1.50) | 0.000078 (0.00069) | 3.56 (7.85) |
| VPL-B1002M | 6000 | 6000 | 3.39 (30.0) | 7.82 (69.0) | 1.86 (2.49) | | |
| VPL-B1003C | 2500 | 2500 | 4.18 (37.0) | 11.15 (99.0) | 0.96 (1.29) | 0.00012 (0.0010) | 4.45 (9.80) |
| VPL-B1003F | 4750 | 4750 | 4.18 (37.0) | 11.15 (99.0) | 1.65 (2.21) | | |
| VPL-B1003T | 7000 | 7000 | 4.18 (37.0) | 11.15 (99.0) | 1.77 (2.37) | | |
| VPL-B1152C | 2250 | 2250 | 5.10 (45.0) | 13.12 (116) | 1.06 (1.42) | 0.00026 (0.0023) | 5.30 (11.67) |
| VPL-B1152F | 4000 | 4500 | 5.10 (45.0) | 13.12 (116) | 1.40 (1.88) | | |
| VPL-B1152T | 6500 | 6500 | 5.08 (45.0) | 13.12 (116) | 2.29 (3.07) | | |
| VPL-B1153E | 3200 | 3200 | 6.55 (58.0) | 20.33 (180) | 1.75 (2.35) | 0.00038 (0.0033) | 6.01 (13.23) |
| VPL-B1153F | 5000 | 5000 | 6.55 (58.0) | 20.33 (180) | 2.30 (3.08) | | |
| VPL-B1303C | 2250 | 2250 | 8.80 (78.0) | 20.72 (183) | 1.83 (2.45) | 0.00040 (0.0035) | 7.54 (16.60) |
| VPL-B1303F | 4000 | 4000 | 8.80 (78.0) | 20.72 (183) | 2.82 (3.78) | | |
| VPL-B1304C | 2150 | 2150 | 10.29 (91.0) | 28.45 (252) | 1.75 (2.35) | 0.00052 (0.0046) | 9.10 (20.05) |
| VPL-B1304E | 3500 | 3500 | 10.29 (91.0) | 28.45 (252) | 2.82 (3.78) | | |
| VPL-B1306C | 2500 | 2500 | 13.38 (118) | 34.62 (306) | 2.46 (3.30) | 0.00078 (0.0069) | 12.21 (26.9) |
| VPL-B1306F | 4250 | 4250 | 13.38 (118) | 34.62 (306) | 2.95 (3.95) | | |
| VPL-B1651C | 2750 | 2750 | 11.50 (102) | 22.45 (199) | 2.32 (3.11) | 0.000783 (0.0069) | 15.30 (33.70) |
| VPL-B1651F | 4750 | 4750 | 11.43 (101) | 22.45 (199) | 4.38 (5.87) | | |
| VPL-B1652C | 2700 | 2700 | 19.40 (172) | 48.60 (430) | 4.18 (5.60) | 0.00147 (0.013) | 17.80 (39.24) |
| VPL-B1652F | 4000 | 4000 | 17.60 (156) | 48.60 (430) | 4.77 (6.40) | | |
| VPL-B1653C | 2300 | 2300 | 25.76 (228) | 66.70 (590) | 4.38 (5.87) | 0.00213 (0.019) | 20.66 (45.50) |
| VPL-B1653D | 3000 | 3000 | 24.20 (214) | 67.80 (600) | 5.50 (7.30) | | |
| VPL-B1654B | 1850 | 1850 | 32.97 (292) | 79.30 (702) | 5.55 (7.44) | 0.00289 (0.025) | 25.65 (56.55) |
| VPL-B1654D | 3000 | 3000 | 32.0 (283) | 75.30 (666) | 7.16 (9.60) | | |

(1) Refer to Kinetix VPL Servo Motor Brake Specifications on page 9 for brake rotor inertia and brake motor weight.

**Kinetix VPL Servo Motor Brake Specifications**

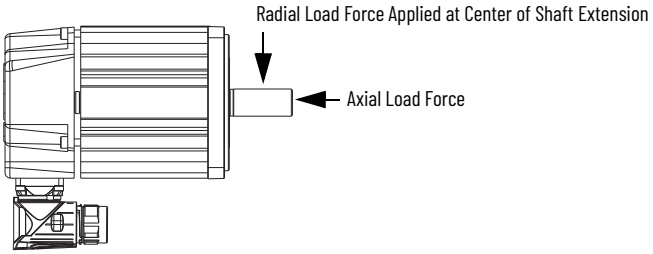
| Motor Cat. No. | Backlash, max (brake engaged) arc minutes | Holding Torque N•m (lb•in) | Coil Current at 24V DC A | Brake Response Time | | Brake Rotor Inertia kg-m$^2$ (lb•in•s$^2$) | Brake Motor Weight, approx kg (lb) |
|---|---|---|---|---|---|---|---|
| | | | | Release ms | Engage (1) ms | | |
| VPL-A/B0631 | 30 | 1.50 (13) | 0.297...0.363 | 38 | 25 | 0.0000118 (0.00010) | 1.36 (3.0) |
| VPL-A/B0632 | | | | | | 0.0000194 (0.00017) | 1.70 (3.74) |
| VPL-A/B0633 | | | | | | 0.0000271 (0.00024) | 2.02 (4.45) |
| VPL-A/B0751 | | 3.0 (27) | 0.567...0.693 | 66 | 42 | 0.0000182 (0.00016) | 2.06 (4.54) |
| VPL-A/B0752 | | | | | | 0.0000297 (0.00026) | 2.62 (5.77) |
| VPL-A/B0753 | | | | | | 0.0000412 (0.00036) | 3.18 (7.0) |
| VPL-A/B1001 | 30 | 4.18 (37) | 0.45...0.55 | 90 | 65 | 0.000059 (0.00052) | 3.26 (7.19) |
| VPL-A/B1002 | | | | | | 0.000093 (0.00082) | 4.20 (9.24) |
| VPL-A/B1003 | | | | | | 0.000135(0.0012) | 5.08 (11.19) |
| VPL-A/B1152 | | 6.55 (58) | 0.621...0.759 | 90 | 95 | 0.000289 (0.0025) | 5.43 (11.95) |
| VPL-A/B1153 | | | | | | 0.000409 (0.0036) | 6.88 (15.15) |
| VPL-A/B1303 | | 14.10 (125) | 0.738...0.902 | 125 | 120 | 0.000433 (0.0038) | 8.64 (19.03) |
| VPL-A/B1304 | | | | | | 0.000553 (0.0049) | 10.21 (22.48) |
| VPL-A/B1306 | | | | | | 0.000813 (0.0072) | 13.32 (29.33) |
| VPL-B1651 | | 32.0 (283) | 1.053...1.287 | 140 | 120 | 0.000845 (0.0075) | 17.15 (37.78) |
| VPL-B1652 | | | | | | 0.00153 (0.013) | 19.65 (43.32) |
| VPL-B1653 | | | | | | 0.00219 (0.019) | 22.51 (49.58) |
| VPL-B1654 | | | | | | 0.00295 (0.026) | 27.50 (60.63) |

(1) By using diode and zener diode as arc suppression device in external control circuit.

# Kinetix VPL Servo Motor Load Force Ratings

Kinetix VPL servo motors are capable of operating with the maximum radial or maximum axial shaft loads listed in the following tables. Radial loads listed are applied in the middle of the shaft extension. The tables starting below represent an $L_{10}$ bearing fatigue life of 20,000 hours. This 20,000-hour life does not account for possible application-specific life reduction that can occur due to bearing grease contamination from external sources. Maximum operating speed is limited by motor winding.

**Load Forces on Shaft**



# Kinetix VPL Servo Motors (063...075 frame size)

### Radial Load Force Ratings (maximum) for Non-brake Motors

| Motor Cat. No. (1) | Maximum Speed rpm | Load (kgf) at Speed (rpm) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 kgf | 1000 kgf | 1500 kgf | 2000 kgf | 2500 kgf | 3000 kgf | 3500 kgf | 4000 kgf | 4500 kgf | 5000 kgf | 6000 kgf | 6500 kgf | 7000 kgf | 7500 kgf | 8000 kgf |
| VPL-A0631E | 4500 | – | 26.7 | – | – | 20.8 * | 18.5 | – | – | 16.2 | – | – | – | – | – | – |
| VPL-A0631M | 7200 | – | – | 23.3 | – | 19.7 | – | – | – | 16.7 * | – | – | – | – | 13.8 | – |
| VPL-A0632F | 4800 | – | 28.9 | 25.2 | – | – | 21.0 * | – | – | – | 17.1 * | – | – | – | – | – |
| VPL-A0633C | 3000 | 38.1 | 30.3 | 27.4 * | – | – | 21.0 | – | – | – | – | – | – | – | – | – |
| VPL-A0633F | 4500 | 38.1 | – | 26.4 | – | – | 21.0 | – | – | 18.3 | – | – | – | – | – | – |
| VPL-A0751E | 4800 | 33.3 | 26.4 | – | – | 20.6 * | – | – | – | – | 15.7 * | – | – | – | – | – |
| VPL-A0752C | 3300 | 36.1 | 28.6 | 25.9 * | – | – | – | 19.2 * | – | – | – | – | – | – | – | – |
| VPL-A0752E | 4800 | 36.1 | 28.6 | – | – | 21.8 * | – | – | – | – | 17.0 * | – | – | – | – | – |
| VPL-A0753C | 3300 | 37.8 | 30.0 | 27.5 * | – | – | – | 20.2 * | – | – | – | – | – | – | – | – |
| VPL-A0753E | 4600 | 37.8 | 30.0 | – | – | 23.3 * | – | – | – | – | 18.0 * | – | – | – | – | – |
| VPL-B0631T | 8000 | – | – | 23.3 | – | – | 18.5 | – | – | – | – | 14.9 * | – | – | – | 13.3 |
| VPL-B0631U | 8000 | – | – | 23.3 | – | – | 18.5 | – | – | – | 15.6 | – | – | – | – | 13.3 |
| VPL-B0632F | 4600 | – | 28.9 | 25.2 | – | – | 21.0 * | – | – | – | 17.1 * | – | – | – | – | – |
| VPL-B0632T | 8000 | – | – | – | 22.9 | – | – | – | 18.2 | – | – | – | 15.6 * | – | – | 14.4 |
| VPL-B0633M | 6700 | – | 30.3 | – | 24.0 | – | – | – | 19.2 * | – | – | – | – | 15.9 * | – | – |
| VPL-B0633T | 8000 | – | – | 26.4 | – | – | 21.0 | – | – | – | – | 16.8 * | – | – | – | 15.1 |
| VPL-B0751M | 8000 | – | – | 23.1 | – | – | 18.3 | – | – | – | 15.7 * | – | – | – | – | 13.2 |
| VPL-B0752E | 4900 | 36.1 | 28.6 | – | – | 22.0 * | – | – | – | – | 17.0 * | – | – | – | – | – |
| VPL-B0752F | 7000 | – | 28.6 | – | 22.7 | – | – | 19.3 * | – | – | – | – | – | 15.0 | – | – |
| VPL-B0752M | 8000 | – | – | 25.0 | – | – | 20.8 | – | – | – | 16.8 * | – | – | – | – | 14.3 |
| VPL-B0753E | 4500 | 37.8 | 30.0 | – | 23.8 | – | – | – | – | 18.2 | – | – | – | – | – | – |
| VPL-B0753F | 6600 | – | 30.0 | – | 23.8 | – | | 20.6 * | – | – | – | – | 16.1 | – | – | – |
| VPL-B0753M | 8000 | – | – | 26.2 | – | – | 19.8 | – | – | – | 18.0 * | – | – | – | – | 15.0 |

(1) 1.0 kgf = 2.2 lbf or 9.8 N. An asterisk (*) indicates a load rating measured at an rpm value that is less than the value listed for that column.

## Axial Load Force Ratings (maximum radial load) for Non-brake Motors

| Motor Cat. No. (1) | Maximum Speed rpm | Load (kgf) at Speed (rpm) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 kgf | 1000 kgf | 1500 kgf | 2000 kgf | 2500 kgf | 3000 kgf | 3500 kgf | 4000 kgf | 4500 kgf | 5000 kgf | 6000 kgf | 6500 kgf | 7000 kgf | 7500 kgf | 8000 kgf |
| VPL-A0631E | 4500 | – | 22.3 | – | – | 16.1 * | 13.8 | – | – | 11.6 | – | – | – | – | – | – |
| VPL-A0631M | 7200 | – | – | 18.7 | – | 15.0 | – | – | – | 12.1 * | – | – | – | – | 9.5 * | – |
| VPL-A0632F | 4800 | – | 23.5 | 19.7 | – | – | 15.5 * | – | – | – | 11.9 * | – | – | – | – | – |
| VPL-A0633C | 3000 | 32.7 | 24.2 | 21.3 * | – | – | 15.0 | – | – | – | – | – | – | – | – | – |
| VPL-A0633F | 4500 | 32.7 | – | 20.3 | – | – | 15.0 | – | – | 12.6 | – | – | – | – | – | – |
| VPL-A0751E | 4800 | 30.0 | 22.2 | – | – | 16.1 * | – | – | – | – | 11.2 * | – | – | – | – | – |
| VPL-A0752C | 3300 | 31.5 | 23.3 | 20.5 * | – | – | – | 13.9 * | – | – | – | – | – | – | – | – |
| VPL-A0752E | 4800 | 31.5 | 23.3 | – | – | 16.4 * | – | – | – | – | 11.8 * | – | – | – | – | – |
| VPL-A0753C | 3300 | 32.5 | 24.1 | 21.5 * | – | – | – | 14.3 * | – | – | – | – | – | – | – | – |
| VPL-A0753E | 4600 | 32.5 | 24.1 | – | – | 17.3 * | – | – | – | – | 12.4 * | – | – | – | – | – |
| VPL-B0631T | 8000 | – | – | 18.7 | – | – | 13.8 | – | – | – | – | 10.5 * | – | – | – | 9.0 |
| VPL-B0631U | 8000 | – | – | 18.7 | – | – | 13.8 | – | – | – | 11.1 | – | – | – | – | 9.0 |
| VPL-B0632F | 4600 | – | 23.5 | 19.7 | – | – | 15.5 * | – | – | – | 11.9 * | – | – | – | – | – |
| VPL-B0632T | 8000 | – | – | – | 17.4 | – | – | – | 12.9 | – | – | – | 10.6 | – | – | 9.5 |
| VPL-B0633M | 6700 | – | 24.2 | – | 17.9 | – | – | – | 13.4 * | – | – | – | – | 10.5 * | – | – |
| VPL-B0633T | 8000 | – | – | 20.3 | – | – | 15.0 | – | – | – | – | 11.3 * | – | – | – | 9.8 |
| VPL-B0751M | 8000 | – | – | 18.6 | – | – | 13.8 | – | – | – | 11.2 * | – | – | – | – | 9.0 |
| VPL-B0752E | 4900 | 31.5 | 23.3 | – | – | 16.6 * | – | – | – | – | 11.8 * | – | – | – | – | – |
| VPL-B0752F | 7000 | – | 23.3 | – | 17.3 | – | – | 14.0 * | – | – | – | – | – | 10.0 | – | – |
| VPL-B0752M | 8000 | – | – | 19.6 | – | – | 14.5 | – | – | – | 11.7 * | – | – | – | – | 9.5 |
| VPL-B0753E | 4500 | 32.5 | 24.1 | – | 17.8 | – | – | – | – | 12.5 | – | – | – | – | – | – |
| VPL-B0753F | 6600 | – | 24.1 | – | 17.8 | – | – | 14.7 * | – | – | – | – | 10.7 | – | – | – |
| VPL-B0753M | 8000 | – | – | 20.2 | – | – | 14.9 | – | – | – | 12.4 * | – | – | – | – | 9.8 |

(1) 1.0 kgf = 2.2 lbf or 9.8 N. An asterisk (*) indicates a load rating measured at an rpm value that is less than the value listed for that column.

## Axial Load Force Ratings (zero radial load) for Non-brake Motors

| Motor Cat. No. (1) | Maximum Speed rpm | Load (kgf) at Speed (rpm) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 kgf | 1000 kgf | 1500 kgf | 2000 kgf | 2500 kgf | 3000 kgf | 3500 kgf | 4000 kgf | 4500 kgf | 5000 kgf | 6000 kgf | 6500 kgf | 7000 kgf | 7500 kgf | 8000 kgf |
| VPL-A0631E | 4500 | – | 27.5 | – | – | 19.9 * | 17.1 | – | – | 14.3 | – | – | – | – | – | – |
| VPL-A0631M | 7200 | – | – | 23.0 | – | 18.5 | – | – | – | 14.9 * | – | – | – | – | 11.7 * | – |
| VPL-A0632F | 4800 | – | 27.5 | 23.0 | – | – | 18.1 * | – | – | – | 13.9 * | – | – | – | – | – |
| VPL-A0633C | 3000 | 37.1 | 27.5 | 24.1 * | – | – | 17.1 | – | – | – | – | – | – | – | – | – |
| VPL-A0633F | 4500 | 37.1 | – | 23.0 | – | – | 17.1 | – | – | 14.3 | – | – | – | – | – | – |
| VPL-A0751E | 4800 | 37.1 | 27.5 | – | – | 19.9 * | – | – | – | – | 13.9 * | – | – | – | – | – |
| VPL-A0752C | 3300 | 37.1 | 27.5 | 24.1 * | – | – | – | 16.4 * | – | – | – | – | – | – | – | – |
| VPL-A0752E | 4800 | 37.1 | 27.5 | – | – | 19.3 * | – | – | – | – | 13.9 * | – | – | – | – | – |
| VPL-A0753C | 3300 | 37.1 | 27.5 | 24.5 * | – | – | – | 16.4 * | – | – | – | – | – | – | – | – |
| VPL-A0753E | 4600 | 37.1 | 27.5 | – | – | 19.7 * | – | – | – | – | 14.2 * | – | – | – | – | – |
| VPL-B0631T | 8000 | – | – | 23.0 | – | – | 17.1 | – | – | – | – | 12.9 * | – | – | – | 11.1 |
| VPL-B0631U | 8000 | – | – | 23.0 | – | – | 17.1 | – | – | – | 13.7 | – | – | – | – | 11.1 |
| VPL-B0632F | 4600 | – | 27.5 | 23.0 | – | – | 18.1 * | – | – | – | 13.9 * | – | – | – | – | – |
| VPL-B0632T | 8000 | – | – | – | 20.3 | – | – | – | 15.1 | – | – | – | 12.4 * | – | – | 11.1 |
| VPL-B0633M | 6700 | – | 27.5 | – | 20.3 | – | – | – | 15.2 * | – | – | – | – | 11.9 * | – | – |
| VPL-B0633T | 8000 | – | – | 23.0 | – | – | 17.1 | – | – | – | – | 12.8 * | – | – | – | 11.1 |
| VPL-B0751M | 8000 | – | – | 23.0 | – | – | 17.1 | – | – | – | 13.9 * | – | – | – | – | 11.1 |
| VPL-B0752E | 4900 | 37.1 | 27.5 | – | – | 19.5 * | – | – | – | – | 13.9 * | – | – | – | – | – |
| VPL-B0752F | 7000 | – | 27.5 | – | 20.3 | – | – | 16.5 * | – | – | – | – | – | 11.8 | – | – |
| VPL-B0752M | 8000 | – | – | 23.0 | – | – | 17.1 | – | – | – | 13.8 * | – | – | – | – | 11.1 |
| VPL-B0753E | 4500 | 37.1 | 27.5 | – | 20.3 | – | – | – | – | 14.3 | – | – | – | – | – | – |
| VPL-B0753F | 6600 | – | 27.5 | – | 20.3 | – | – | 16.8 * | – | – | – | – | 12.2 | – | – | – |
| VPL-B0753M | 8000 | – | – | 23.0 | – | – | 17.1 | – | – | – | 14.2 * | – | – | – | – | 11.1 |

(1) 1.0 kgf = 2.2 lbf or 9.8 N. An asterisk (*) indicates a load rating measured at an rpm value that is less than the value listed for that column.

## Radial Load Force Ratings (maximum) for Brake Motors

| Motor Cat. No. (1) | Maximum Speed rpm | Load (kgf) at Speed (rpm) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 kgf | 1000 kgf | 1500 kgf | 2000 kgf | 2500 kgf | 3000 kgf | 3500 kgf | 4000 kgf | 4500 kgf | 5000 kgf | 6000 kgf | 6500 kgf | 7000 kgf | 7500 kgf | 8000 kgf |
| VPL-A0631E | 4500 | – | 29.2 | – | – | 22.8 * | 20.3 | – | – | 17.7 | – | – | – | – | – | – |
| VPL-A0631M | 7200 | – | – | 25.5 | – | 21.5 | – | – | – | 18.3 * | – | – | – | – | 15.1 * | – |
| VPL-A0632F | 4800 | – | 30.5 | 26.6 | – | – | 22.2 * | – | – | – | 18.1 * | – | – | – | – | – |
| VPL-A0633C | 3000 | 39.5 | 31.4 | 28.4 * | – | – | 21.8 | – | – | – | – | – | – | – | – | – |
| VPL-A0633F | 4500 | 39.5 | – | 27.4 | – | – | 21.8 | – | – | 19.0 | – | – | – | – | – | – |
| VPL-A0751E | 4800 | 36.5 | 29.0 | – | – | 22.6 * | – | – | – | – | 17.2 * | – | – | – | – | – |
| VPL-A0752C | 3300 | 38.1 | 30.3 | 27.4 | – | – | – | 20.3 * | – | – | – | – | – | – | – | – |
| VPL-A0752E | 4800 | 38.1 | 30.3 | – | – | 23.1 * | – | – | – | – | 17.9 * | – | – | – | – | – |
| VPL-A0753C | 3300 | 39.2 | 31.2 | 28.5 * | – | – | – | 20.9 * | – | – | – | – | – | – | – | – |
| VPL-A0753E | 4600 | 39.2 | 31.2 | – | – | 24.1 * | – | – | – | – | 18.7 * | – | – | – | – | – |
| VPL-B0631T | 8000 | – | – | 25.5 | – | – | 20.3 | – | – | – | – | 16.4 * | – | – | – | 14.6 |
| VPL-B0631U | 8000 | – | – | 25.5 | – | – | 20.3 | – | – | – | 17.1 | – | – | – | – | 14.6 |
| VPL-B0632F | 4600 | – | 30.5 | 26.6 | – | – | 22.2 * | – | – | – | 18.1 * | – | – | – | – | – |
| VPL-B0632T | 8000 | – | – | – | 24.2 | – | – | – | 19.2 | – | – | – | 16.5 * | – | – | 15.3 |
| VPL-B0633M | 6700 | – | 31.4 | – | 24.9 | – | – | – | 19.9 * | – | – | – | – | 16.5 * | – | – |
| VPL-B0633T | 8000 | – | – | 27.4 | – | – | 21.8 | – | – | – | – | 17.5 * | – | – | – | 15.7 |
| VPL-B0751M | 8000 | – | – | 25.3 | – | – | 20.1 | – | – | – | 17.2 * | – | – | – | – | 14.5 |
| VPL-B0752E | 4900 | 38.1 | 30.3 | – | – | 23.3 * | – | – | – | – | 17.9 * | – | – | – | – | – |
| VPL-B0752F | 7000 | – | 30.3 | – | 24.0 | – | – | 20.4 * | – | – | – | – | – | 15.8 | – | – |
| VPL-B0752M | 8000 | – | – | 26.4 | – | – | 21.0 | – | – | – | 17.8 * | – | – | – | – | 15.1 |
| VPL-B0753E | 4500 | 39.2 | 31.2 | – | 24.7 | – | – | – | – | 18.9 | – | – | – | – | – | – |
| VPL-B0753F | 6600 | – | 31.2 | – | 24.7 | – | – | 21.4 * | – | – | – | – | 16.7 | – | – | – |
| VPL-B0753M | 8000 | – | – | 27.2 | – | – | 21.6 | – | – | – | 18.7 * | – | – | – | – | 15.6 |

(1) 1.0 kgf = 2.2 lbf or 9.8 N. An asterisk (*) indicates a load rating measured at an rpm value that is less than the value listed for that column.

## Axial Load Force Ratings (maximum radial load) for Brake Motors

| Motor Cat. No. (1) | Maximum Speed rpm | Load (kgf) at Speed (rpm) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 kgf | 1000 kgf | 1500 kgf | 2000 kgf | 2500 kgf | 3000 kgf | 3500 kgf | 4000 kgf | 4500 kgf | 5000 kgf | 6000 kgf | 6500 kgf | 7000 kgf | 7500 kgf | 8000 kgf |
| VPL-A0631E | 4500 | – | 23.7 | – | – | 17.2 * | 14.7 | – | – | 12.3 | – | – | – | – | – | – |
| VPL-A0631M | 7200 | – | – | 19.9 | – | 15.9 | – | – | – | 12.8 | – | – | – | – | 10.0 * | – |
| VPL-A0632F | 4800 | – | 24.3 | 20.4 | – | – | 16.1 * | – | – | – | 12.3 * | – | – | – | – | – |
| VPL-A0633C | 3000 | 33.5 | 24.8 | 21.8 * | – | – | 15.4 | – | – | – | – | – | – | – | – | – |
| VPL-A0633F | 4500 | 33.5 | – | 20.8 | – | – | 15.4 | – | – | 12.9 | – | – | – | – | – | – |
| VPL-A0751E | 4800 | 31.8 | 23.5 | – | – | 17.1 * | – | – | – | – | 11.9 * | – | – | – | – | – |
| VPL-A0752C | 3300 | 32.7 | 24.2 | 21.3 * | – | | – | 14.4 * | – | – | – | – | – | – | – | – |
| VPL-A0752E | 4800 | 32.7 | 24.2 | – | – | 17.0 * | – | – | – | – | 12.3 * | – | – | – | – | – |
| VPL-A0753C | 3300 | 33.4 | 24.7 | 22.0 * | – | | – | 14.7 * | – | – | – | – | – | – | – | – |
| VPL-A0753E | 4600 | 33.4 | 24.7 | – | – | 17.7 * | – | – | – | – | 12.7 * | – | – | – | – | – |
| VPL-B0631T | 8000 | – | – | 19.9 | – | – | 14.7 | – | – | – | – | 11.1 * | – | – | – | 9.6 |
| VPL-B0631U | 8000 | – | – | 19.9 | – | – | 14.7 | – | – | – | 11.8 | – | – | – | – | 9.6 |
| VPL-B0632F | 4600 | – | 24.3 | 20.4 | – | – | 16.1 * | – | – | – | 12.3 * | – | – | – | – | – |
| VPL-B0632T | 8000 | – | – | – | 18.0 | – | – | – | 13.3 | – | – | – | 11.0 * | – | – | 9.9 |
| VPL-B0633M | 6700 | – | 24.8 | – | 18.4 | – | – | – | 13.7 * | – | – | – | – | 10.7 * | – | – |
| VPL-B0633T | 8000 | – | – | 20.8 | – | – | 15.4 | – | – | – | – | 11.6 * | – | – | – | 10.1 |
| VPL-B0751M | 8000 | – | – | 19.7 | – | – | 14.6 | – | – | – | 11.9 * | – | – | – | – | 9.5 |
| VPL-B0752E | 4900 | 32.7 | 24.2 | – | – | 17.2 * | – | – | – | – | 12.3 * | – | – | – | – | – |
| VPL-B0752F | 7000 | – | 24.2 | – | 17.9 | – | – | 14.5 * | – | – | – | – | – | 10.4 | – | – |
| VPL-B0752M | 8000 | – | – | 20.3 | – | – | 15.0 | – | – | – | 12.1 * | – | – | – | – | 9.8 |
| VPL-B0753E | 4500 | 33.4 | 24.7 | – | 18.3 | – | – | – | – | 12.9 | – | – | – | – | – | – |
| VPL-B0753F | 6600 | – | 24.7 | – | 18.3 | – | – | 15.1 * | – | – | – | – | 11.0 | – | – | – |
| VPL-B0753M | 8000 | – | – | 20.7 | – | – | 15.3 | – | – | – | 12.7 * | – | – | – | – | 10.0 |

(1) 1.0 kgf = 2.2 lbf or 9.8 N. An asterisk (*) indicates a load rating measured at an rpm value that is less than the value listed for that column.

## Axial Load Force Ratings (zero radial load) for Brake Motors

| Motor Cat. No. (1) | Maximum Speed rpm | Load (kgf) at Speed (rpm) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 kgf | 1000 kgf | 1500 kgf | 2000 kgf | 2500 kgf | 3000 kgf | 3500 kgf | 4000 kgf | 4500 kgf | 5000 kgf | 6000 kgf | 6500 kgf | 7000 kgf | 7500 kgf | 8000 kgf |
| VPL-A0631E | 4500 | – | 27.5 | – | – | 19.9 * | 17.1 | – | – | 14.3 | – | – | – | – | – | – |
| VPL-A0631M | 7200 | – | – | 23.0 | – | 18.5 | – | – | – | 14.9 * | – | – | – | – | 11.7 * | – |
| VPL-A0632F | 4800 | – | 27.5 | 23.0 | – | – | 18.1 * | – | – | – | 13.9 * | – | – | – | – | – |
| VPL-A0633C | 3000 | 37.1 | 27.5 | 24.1 * | – | – | 17.1 | – | – | – | – | – | – | – | – | – |
| VPL-A0633F | 4500 | 37.1 | – | 23.0 | – | – | 17.1 | – | – | 14.3 | – | – | – | – | – | – |
| VPL-A0751E | 4800 | 37.1 | 27.5 | – | – | 19.9 * | – | – | – | – | 13.9 * | – | – | – | – | – |
| VPL-A0752C | 3300 | 37.1 | 27.5 | 24.1 * | – | – | – | 16.4 * | – | – | – | – | – | – | – | – |
| VPL-A0752E | 4800 | 37.1 | 27.5 | – | – | 19.3 * | – | – | – | – | 13.9 * | – | – | – | – | – |
| VPL-A0753C | 3300 | 37.1 | 27.5 | 24.5 * | – | – | – | 16.4 * | – | – | – | – | – | – | – | – |
| VPL-A0753E | 4600 | 37.1 | 27.5 | – | – | 19.7 * | – | – | – | – | 14.2 * | – | – | – | – | – |
| VPL-B0631T | 8000 | – | – | 23.0 | – | – | 17.1 | – | – | – | – | 12.9 * | – | – | – | 11.1 |
| VPL-B0631U | 8000 | – | – | 23.0 | – | – | 17.1 | – | – | – | 13.7 | – | – | – | – | 11.1 |
| VPL-B0632F | 4600 | – | 27.5 | 23.0 | – | – | 18.1 * | – | – | – | 13.9 * | – | – | – | – | – |
| VPL-B0632T | 8000 | – | – | – | 20.3 | – | – | – | 15.1 | – | – | – | 12.4 * | – | – | 11.1 |
| VPL-B0633M | 6700 | – | 27.5 | – | 20.3 | – | – | – | 15.2 * | – | – | – | – | 11.9 * | – | – |
| VPL-B0633T | 8000 | – | – | 23.0 | – | – | 17.1 | – | – | – | – | 12.8 * | – | – | – | 11.1 |
| VPL-B0751M | 8000 | – | – | 23.0 | – | – | 17.1 | – | – | – | 13.9 * | – | – | – | – | 11.1 |
| VPL-B0752E | 4900 | 37.1 | 27.5 | – | – | 19.5 * | – | – | – | – | 13.9 * | – | – | – | – | – |
| VPL-B0752F | 7000 | – | 27.5 | – | 20.3 | – | – | 16.5 * | – | – | – | – | – | 11.8 | – | – |
| VPL-B0752M | 8000 | – | – | 23.0 | – | – | 17.1 | – | – | – | 13.8 * | – | – | – | – | 11.1 |
| VPL-B0753E | 4500 | 37.1 | 27.5 | – | 20.3 | – | – | – | – | 14.3 | – | – | – | – | – | – |
| VPL-B0753F | 6600 | – | 27.5 | – | 20.3 | – | – | 16.8 * | – | – | – | – | 12.2 | – | – | – |
| VPL-B0753M | 8000 | – | – | 23.0 | – | – | 17.1 | – | – | – | 14.2 * | – | – | – | – | 11.1 |

(1) 1.0 kgf = 2.2 lbf or 9.8 N. An asterisk (*) indicates a load rating measured at an rpm value that is less than the value listed for that column.

# Kinetix VPL Servo Motors (100...165 frame size)

## Radial Load Force Ratings (maximum) for Non-brake Motors

| Motor Cat. No. (1) | Maximum Speed rpm | Load (kgf) at Speed (rpm) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 kgf | 750 kgf | 1000 kgf | 1500 kgf | 2000 kgf | 2500 kgf | 3000 kgf | 3500 kgf | 4000 kgf | 4500 kgf | 5000 kgf | 5500 kgf | 6000 kgf | 6500 kgf | 7000 kgf |
| VPL-A1001C | 2800 | 79.1 | – | 62.8 | – | 49.8 | – | 44.6 * | – | – | – | – | – | – | – | – |
| VPL-A1001M | 6500 | – | – | – | 54.9 | – | 46.3 | – | – | – | 38.0 | – | – | – | 33.6 | – |
| VPL-A1002C | 3000 | 87.9 | – | 69.7 | – | 55.4 | – | 48.4 | – | – | – | – | – | – | – | – |
| VPL-A1002F | 5000 | – | – | 69.7 | 60.9 | – | – | 48.4 | – | – | – | 40.8 | – | – | – | – |
| VPL-A1003C | 2250 | 93.6 | – | 74.3 | 64.9 | – | 56.7 * | – | – | – | – | – | – | – | – | – |
| VPL-A1003E | 3750 | 93.6 | – | 74.3 | – | 59.0 | – | – | – | 47.8 * | – | – | – | – | – | – |
| VPL-A1003F | 5500 | – | – | – | 64.9 | – | 54.8 | – | – | 46.8 | – | – | 42.1 | – | – | – |
| VPL-A1152B | 2150 | 98.8 | – | 78.4 | 68.5 | – | 60.8 * | – | – | – | – | – | – | – | – | – |
| VPL-A1152E | 3300 | 98.8 | – | 78.4 | – | 62.2 | – | – | 52.7 * | – | – | – | – | – | – | – |
| VPL-A1152F | 5000 | – | – | 78.4 | – | 62.2 | – | 54.4 | – | – | – | 45.9 | – | – | – | – |
| VPL-A1153C | 2300 | 106.4 | – | 84.5 | 73.8 | – | 64.0 * | – | – | – | – | – | – | – | – | – |
| VPL-A1303B | 1950 | 132.9 | – | 105.5 | 92.2 | 84.4 * | – | – | – | – | – | – | – | – | – | – |
| VPL-A1303F | 4000 | – | – | 105.5 | – | 83.7 | – | 73.1 | – | 66.5 | | – | – | – | – | – |
| VPL-A1304A | 1600 | 140.2 | 122.5 | 112.2 * | – | 95.2 * | – | – | – | – | – | – | – | – | – | – |
| VPL-A1304D | 3000 | 140.2 | – | 111.3 | – | 88.3 | – | 77.2 | – | – | – | – | – | – | – | – |
| VPL-A1306C | 2000 | 150.0 | – | 128.3 * | 107.7 * | 94.5 | – | – | – | – | – | – | – | – | – | – |
| VPL-B1001M | 6000 | – | – | – | – | 49.8 | – | 43.5 | – | 39.6 | – | – | – | 34.6 | – | – |
| VPL-B1002E | 3300 | 87.9 | – | 69.7 | – | 55.4 | – | – | 46.8 * | – | – | – | – | – | – | – |
| VPL-B1002M | 6000 | – | – | – | 60.9 | – | – | 48.4 | – | – | 42.2 | – | – | 38.4 | – | – |
| VPL-B1003C | 2500 | 93.6 | – | 74.3 | 64.9 | – | 54.8 | – | – | – | – | – | – | – | – | – |
| VPL-B1003F | 4750 | – | – | 74.3 | 64.9 | – | – | 51.5 | – | – | – | 44.2 * | – | – | – | – |
| VPL-B1003T | 7000 | – | – | – | 64.9 | – | 54.8 | – | – | – | 45.0 | – | – | – | – | 38.9 |
| VPL-B1152C | 2250 | 98.8 | – | 78.4 | 68.5 | – | 59.8 * | – | – | – | – | – | – | – | – | – |
| VPL-B1152F | 4000 | – | – | 78.4 | – | 62.2 | | 54.4 | – | – | 47.5 | – | – | – | – | – |
| VPL-B1152T | 6500 | – | – | – | 68.5 | – | 57.8 | – | – | 49.4 | – | – | – | – | 42.0 | – |
| VPL-B1153E | 3200 | 106.4 | – | 84.5 | – | 67.0 | – | – | 57.3 * | – | – | – | – | – | – | – |
| VPL-B1153F | 5000 | – | – | 84.5 | – | 67.0 | – | 58.6 | – | – | – | 49.4 | – | – | – | – |
| VPL-B1303C | 2250 | 132.9 | – | 105.5 | 92.2 | – | 80.5 * | – | – | – | – | – | – | – | – | – |
| VPL-B1303F | 4000 | – | – | 105.5 | – | 83.7 | – | 74.0 * | – | 66.5 | – | – | – | – | – | – |
| VPL-B1304C | 2150 | 140.2 | – | 111.3 | 99.5 * | – | 86.2 * | – | – | – | – | – | – | – | – | – |
| VPL-B1304E | 3500 | – | – | 111.3 | 97.2 | – | 84.3 * | – | 73.3 | – | – | – | – | – | – | – |
| VPL-B1306C | 2500 | 150.0 | – | 119.1 | – | 100.8 * | 87.7 | – | – | – | – | – | – | – | – | – |
| VPL-B1306F | 4250 | – | – | 119.0 | – | 94.5 | – | 82.6 | – | – | 73.5 * | – | – | – | – | – |
| VPL-B1651C | 2750 | 161.3 | – | 128.0 | – | 108.3 * | – | 91.4 * | – | – | – | – | – | – | – | – |
| VPL-B1651F | 4750 | – | – | 128.0 | – | 101.6 | – | 88.7 | – | – | – | 76.1 * | – | – | – | – |
| VPL-B1652C | 2700 | 180.7 | – | 143.4 | 125.3 | – | – | 103.0 * | – | – | – | – | – | – | – | – |
| VPL-B1652F | 4000 | – | – | 143.4 | 125.3 | | 105.7 | – | – | 90.4 | – | – | – | – | – | – |
| VPL-B1653C | 2300 | 192.4 | – | 152.7 | 136.5 * | – | 115.7 * | – | – | – | – | – | – | – | – | – |
| VPL-B1653D | 3000 | – | – | 152.7 | 139.9 * | 125.5 * | – | 105.9 | – | – | – | – | – | – | – | – |
| VPL-B1654B | 1850 | 200.1 | 174.8 | – | 152.5 * | 129.4 * | – | – | – | – | – | – | – | – | – | – |
| VPL-B1654D | 3000 | – | – | 158.8 | 138.8 | 126.1 | – | 110.1 | – | – | – | – | – | – | – | – |

(1) 1.0 kgf = 2.2 lbf or 9.8 N. An asterisk (*) indicates a load rating measured at an rpm value that is less than the value listed for that column.

## Axial Load Force Ratings (maximum radial load) for Non-brake Motors

| Motor Cat. No. (1) | Maximum Speed rpm | Load (kgf) at Speed (rpm) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 kgf | 750 kgf | 1000 kgf | 1500 kgf | 2000 kgf | 2500 kgf | 3000 kgf | 3500 kgf | 4000 kgf | 4500 kgf | 5000 kgf | 5500 kgf | 6000 kgf | 6500 kgf | 7000 kgf |
| VPL-A1001C | 2800 | 25.0 | – | 19.0 | – | 10.0 | – | 10.0 * | – | – | – | – | – | – | – | – |
| VPL-A1001M | 6500 | – | – | – | 15.0 | – | 12.0 | – | – | – | 9.0 | – | – | – | 8.0 | – |
| VPL-A1002C | 3000 | 30.0 | – | 22.0 | – | 16.0 | – | 13.0 | – | – | – | – | – | – | – | – |
| VPL-A1002F | 5000 | – | – | 22.0 | 18.0 | – | – | 13.0 | – | – | – | 11.0 | – | – | – | – |
| VPL-A1003C | 2250 | 33.0 | – | 24.0 | 20.0 | – | 17.0 * | – | – | – | – | – | – | – | – | – |
| VPL-A1003E | 3750 | 33.0 | – | 24.0 | – | 18.0 | – | – | – | 13.0 * | – | – | – | – | – | – |
| VPL-A1003F | 5500 | – | – | – | 20.0 | – | 16.0 | – | – | 13.0 | – | – | 11.0 | – | – | – |
| VPL-A1152B | 2150 | 44.0 | – | 32.0 | 27.0 | – | 23.0 * | – | – | – | – | – | – | – | – | – |
| VPL-A1152E | 3300 | 44.0 | – | 32.0 | – | 24.0 | – | – | 15.0 * | – | – | – | – | – | – | – |
| VPL-A1152F | 5000 | – | – | 32.0 | – | 24.0 | – | 20.0 | – | – | – | 16.0 | – | – | – | – |
| VPL-A1153C | 2300 | 48.0 | – | 35.0 | 29.0 | – | 24.0 * | – | – | – | – | – | – | – | – | – |
| VPL-A1303B | 1950 | 39.0 | – | 29.0 | 24.0 | 22.0 * | – | – | – | – | – | – | – | – | – | – |
| VPL-A1303F | 4000 | – | – | 29.0 | – | 21.0 | – | 18.0 | – | 16.0 | – | – | – | – | – | – |
| VPL-A1304A | 1600 | 43.0 | 36.0 | 32.0 * | – | 26.0 * | – | – | – | – | – | – | – | – | – | – |
| VPL-A1304D | 3000 | 43.0 | – | 32.0 | – | 23.0 | – | 20.0 | – | – | – | – | – | – | – | – |
| VPL-A1306C | 2000 | 48.0 | – | 39.0 * | 31.0 * | 26.0 | – | – | – | – | – | – | – | – | – | – |
| VPL-B1001M | 6000 | – | – | – | – | 14.0 | – | 11.0 | – | 10.0 | – | – | – | 8.0 | – | – |
| VPL-B1002E | 3300 | 30.0 | – | 22.0 | – | 16.0 | – | – | 13.0 * | – | – | – | – | – | – | – |
| VPL-B1002M | 6000 | – | – | – | 18.0 | – | – | 13.0 | – | – | 11.0 | – | – | 10.0 | – | – |
| VPL-B1003C | 2500 | 33.0 | – | 24.0 | 20.0 | – | 16.0 | – | – | – | – | – | – | – | – | – |
| VPL-B1003F | 4750 | – | – | 24.0 | 20.0 | – | – | 15.0 | – | – | – | 12.0 * | – | – | – | – |
| VPL-B1003T | 7000 | – | – | – | 20.0 | – | 16.0 | – | – | – | 12.0 | – | – | – | – | 10.0 |
| VPL-B1152C | 2250 | 44.0 | – | 32.0 | 27.0 | – | 22.0 * | – | – | – | – | – | – | – | – | – |
| VPL-B1152F | 4000 | – | – | 32.0 | – | 24.0 | – | 20.0 | – | – | 17.0 | – | – | – | – | – |
| VPL-B1152T | 6500 | – | – | – | 27.0 | – | 21.0 | – | – | 17.0 | – | – | – | – | 14.0 | – |
| VPL-B1153E | 3200 | 48.0 | – | 35.0 | – | 26.0 | – | – | 21.0 * | – | – | – | – | – | – | – |
| VPL-B1153F | 5000 | – | – | 35.0 | – | 26.0 | – | 22.0 | – | – | – | 17.0 | – | – | – | – |
| VPL-B1303C | 2250 | 39.0 | – | 29.0 | – | 24.0 | 20.0 * | – | – | – | – | – | – | – | – | – |
| VPL-B1303F | 4000 | – | – | 29.0 | – | 21.0 | – | 18.0 * | – | 16.0 | – | – | – | – | – | – |
| VPL-B1304C | 2150 | 43.0 | – | 32.0 | 27.0 * | – | 23.0 * | – | – | – | – | – | – | – | – | – |
| VPL-B1304E | 3500 | – | – | 32.0 | 27.0 | – | 22.0 * | – | 18.0 | – | – | – | – | – | – | – |
| VPL-B1306C | 2500 | 48.0 | – | 36.0 | – | 29.0 * | 24.0 | – | – | – | – | – | – | – | – | – |
| VPL-B1306F | 4250 | – | – | 36.0 | – | 26.0 | – | 22.0 | – | – | 19.0 * | – | – | – | – | – |
| VPL-B1651C | 2750 | 48.0 | – | 35.0 | – | 28.0 * | – | 23.0 * | – | – | – | – | – | – | – | – |
| VPL-B1651F | 4750 | – | – | 35.0 | – | 26.0 | – | 22.0 | – | – | – | 18.0 * | – | – | – | – |
| VPL-B1652C | 2700 | 58.0 | – | 43.0 | 36.0 | – | – | 27.0 * | – | – | – | – | – | – | – | – |
| VPL-B1652F | 4000 | – | – | 43.1 | 36.1 | – | 28.9 | – | – | 23.6 | – | – | – | – | – | – |
| VPL-B1653C | 2300 | 64.0 | – | 47.0 | 41.0 * | – | 33.0 * | – | – | – | – | – | – | – | – | – |
| VPL-B1653D | 3000 | – | – | 47.6 | 42.5 * | 36.9 * | – | 29.5 | – | – | – | – | – | – | – | – |
| VPL-B1654B | 1850 | 68.0 | – | 57.0 | 48.0 * | 38.0 * | – | – | – | – | – | – | – | – | – | – |
| VPL-B1654D | 3000 | – | – | 50.7 | 42.5 | 37.5 | – | 31.5 | – | – | – | – | – | – | – | – |

(1) 1.0 kgf = 2.2 lbf or 9.8 N. An asterisk (*) indicates a load rating measured at an rpm value that is less than the value listed for that column.

## Axial Load Force Ratings (zero radial load) for Non-brake Motors

| Motor Cat. No. (1) | Maximum Speed rpm | Load (kgf) at Speed (rpm) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 kgf | 750 kgf | 1000 kgf | 1500 kgf | 2000 kgf | 2500 kgf | 3000 kgf | 3500 kgf | 4000 kgf | 4500 kgf | 5000 kgf | 5500 kgf | 6000 kgf | 6500 kgf | 7000 kgf |
| VPL-A1001C | 2800 | 49.4 | – | 36.5 | – | 27.0 | – | 23.4 * | – | – | – | – | – | – | – | – |
| VPL-A1001M | 6500 | – | – | – | 30.6 | – | 24.5 | – | – | – | 19.0 | – | – | – | 16.2 | – |
| VPL-A1002C | 3000 | 49.4 | – | 36.5 | – | 27.0 | – | 22.7 | – | – | – | – | – | – | – | – |
| VPL-A1002F | 5000 | – | – | 36.5 | 30.6 | – | – | 22.7 | – | – | – | 18.2 | – | – | – | – |
| VPL-A1003C | 2250 | 49.4 | – | 36.5 | 30.6 | – | 25.7 * | – | – | – | – | – | – | – | – | – |
| VPL-A1003E | 3750 | 49.4 | – | 36.5 | – | 27.0 | – | – | – | 20.6 * | – | – | – | – | – | – |
| VPL-A1003F | 5500 | – | – | – | 30.6 | – | 24.5 | – | – | 20.0 | – | – | 17.4 | – | – | – |
| VPL-A1152B | 2150 | 68.3 | – | 50.5 | 42.4 | – | 36.0 * | – | – | – | – | – | – | – | – | – |
| VPL-A1152E | 3300 | 68.3 | – | 50.5 | – | 37.4 | – | – | 30.1 * | – | – | – | – | – | – | – |
| VPL-A1152F | 5000 | – | – | 50.5 | – | 37.4 | – | 31.4 | – | – | – | 25.1 | – | – | – | – |
| VPL-A1153C | 2300 | 68.3 | – | 50.5 | 42.4 | | 35.2 * | – | – | – | – | – | – | – | – | – |
| VPL-A1303B | 1950 | 68.3 | – | 50.5 | 42.4 | 37.8 * | – | – | – | – | – | – | – | – | – | – |
| VPL-A1303F | 4000 | – | – | 50.5 | – | 37.4 | – | 31.4 | – | 27.7 | – | – | – | – | – | – |
| VPL-A1304A | 1600 | 68.3 | 57.2 | 51.1 * | – | 41.2 * | – | – | – | – | – | – | – | – | – | – |
| VPL-A1304D | 3000 | 68.3 | – | 50.5 | – | 37.4 | – | 31.4 | – | – | – | – | – | – | – | – |
| VPL-A1306C | 2000 | 68.3 | – | 55.7 * | 44.3 * | 37.4 | – | – | – | – | – | – | – | – | – | – |
| VPL-B1001M | 6000 | – | – | – | – | 27.0 | – | 22.7 | – | 20.0 | – | – | – | 16.8 | – | – |
| VPL-B1002E | 3300 | 49.4 | – | 36.5 | – | 27.0 | – | – | 21.8 * | – | – | – | – | | – | – |
| VPL-B1002M | 6000 | – | – | – | 30.6 | – | – | 22.7 | – | – | 19.0 | – | – | 16.8 | – | – |
| VPL-B1003C | 2500 | 49.4 | – | 36.5 | 30.6 | – | 24.5 | – | – | – | – | – | – | – | – | – |
| VPL-B1003F | 4750 | – | – | 36.5 | 30.6 | – | – | 22.7 | – | – | – | 18.6 * | – | – | – | – |
| VPL-B1003T | 7000 | – | – | – | 30.6 | – | 24.5 | – | – | – | 19.0 | – | – | – | – | 15.7 |
| VPL-B1152C | 2250 | 68.3 | – | 50.5 | 42.4 | – | 35.5 * | – | – | – | – | – | – | – | – | – |
| VPL-B1152F | 4000 | – | – | 50.5 | – | 37.4 | – | 31.4 | – | – | 26.3 | – | – | – | – | – |
| VPL-B1152T | 6500 | – | – | – | 42.4 | – | 33.9 | – | – | 27.7 | – | – | – | – | 22.4 | – |
| VPL-B1153E | 3200 | 68.3 | – | 50.5 | – | 37.4 | – | – | 30.5 * | – | – | – | – | – | – | – |
| VPL-B1153F | 5000 | – | – | 50.5 | – | 37.4 | – | 31.4 | – | – | – | 25.1 | – | – | – | – |
| VPL-B1303C | 2250 | 68.3 | – | 50.5 | 42.3 | – | 35.5 * | – | – | – | – | – | – | – | – | – |
| VPL-B1303F | 4000 | – | – | 50.5 | – | 37.4 | – | 31.8 * | – | 27.7 | – | – | – | – | – | – |
| VPL-B1304C | 2150 | 68.3 | – | 50.5 | 43.6 * | – | 36.2 * | – | – | – | – | – | – | – | – | – |
| VPL-B1304E | 3500 | – | – | 50.5 | 42.4 | – | 35.2 * | – | 29.3 | – | – | – | – | – | – | – |
| VPL-B1306C | 2500 | 68.3 | – | 50.5 | – | 40.6 * | 33.9 | – | – | – | – | – | – | – | – | – |
| VPL-B1306F | 4250 | – | – | 50.5 | – | 37.4 | – | 31.4 | – | – | 27.0 * | – | – | – | – | – |
| VPL-B1651C | 2750 | 90.1 | – | 66.7 | – | 53.7 * | – | 43.0 * | – | – | – | – | – | – | – | – |
| VPL-B1651F | 4750 | – | – | 66.7 | – | 49.4 | – | 41.4 | – | – | – | 33.9 * | – | – | – | – |
| VPL-B1652C | 2700 | 90.1 | – | 66.7 | 55.9 | – | – | 43.3 * | – | – | – | – | – | – | – | – |
| VPL-B1652F | 4000 | – | – | 66.7 | 55.9 | – | 44.8 | – | – | 36.5 | – | – | – | – | – | – |
| VPL-B1653C | 2300 | 90.1 | – | 66.7 | 57.6 * | – | 46.4 * | – | – | – | – | – | – | – | – | – |
| VPL-B1653D | 3000 | – | – | 66.7 | 59.5 * | 51.7 * | – | 41.4 | – | – | – | – | – | – | – | – |
| VPL-B1654B | 1850 | 90.1 | 75.6 | – | 63.2 * | 51.1 * | – | – | – | – | – | – | – | – | – | – |
| VPL-B1654D | 3000 | – | – | 66.7 | 55.9 | 49.4 | – | 41.4 | – | – | – | – | – | – | – | – |

(1) 1.0 kgf = 2.2 lbf or 9.8 N. An asterisk (*) indicates a load rating measured at an rpm value that is less than the value listed for that column.

## Radial Load Force Ratings (maximum) for Brake Motors

| Motor Cat. No. (1) | Maximum Speed rpm | Load (kgf) at Speed (rpm) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 kgf | 750 kgf | 1000 kgf | 1500 kgf | 2000 kgf | 2500 kgf | 3000 kgf | 3500 kgf | 4000 kgf | 4500 kgf | 5000 kgf | 5500 kgf | 6000 kgf | 6500 kgf | 7000 kgf |
| VPL-A1001C | 2800 | 90.2 | – | 71.6 | – | 56.8 | – | 50.8 * | – | – | – | – | – | – | – | – |
| VPL-A1001M | 6500 | – | – | – | 62.5 | – | 52.7 | – | – | – | 43.4 | – | – | – | 38.4 | – |
| VPL-A1002C | 3000 | 95.3 | – | 75.6 | – | 60.0 | – | 52.4 | – | – | – | – | – | – | – | – |
| VPL-A1002F | 5000 | – | – | 75.6 | 66.1 | – | – | 52.4 | – | – | – | 44.2 | – | – | – | – |
| VPL-A1003C | 2250 | 99.0 | – | 78.5 | 68.6 | – | 59.9 * | – | – | – | – | – | – | – | – | – |
| VPL-A1003E | 3750 | 99.0 | – | 78.5 | – | 62.3 | – | – | – | 50.6 * | – | – | – | – | – | – |
| VPL-A1003F | 5500 | – | – | – | 68.6 | – | 57.9 | – | – | 49.5 | – | – | 44.5 | – | – | – |
| VPL-A1152B | 2150 | 111.3 | – | 88.4 | 77.2 | – | 68.5 * | – | – | – | – | – | – | – | – | – |
| VPL-A1152E | 3300 | 111.3 | – | 88.4 | – | 70.1 | – | – | 59.4 * | – | – | – | – | – | – | – |
| VPL-A1152F | 5000 | – | – | 88.4 | – | 70.1 | – | 61.3 | – | – | – | 51.7 | – | – | – | – |
| VPL-A1153C | 2300 | 115.4 | – | 91.6 | 80.0 | – | 69.4 * | – | – | – | – | – | – | – | – | – |
| VPL-A1303B | 1950 | 145.3 | – | 115.3 | 100.7 | 92.3 * | – | – | – | – | – | – | – | – | – | – |
| VPL-A1303F | 4000 | – | – | 115.3 | – | 91.5 | – | 80.0 | – | 72.7 | – | – | – | – | – | – |
| VPL-A1304A | 1600 | 149.7 | 130.8 | 119.8 * | – | 101.6 * | – | – | – | – | – | – | – | – | – | – |
| VPL-A1304D | 3000 | 149.5 | – | 118.6 | – | 94.2 | – | 82.3 | – | – | – | – | – | – | – | – |
| VPL-A1306C | 2000 | 156.0 | – | 133.4 * | 112.1 * | 98.3 | – | – | – | – | – | – | – | – | – | – |
| VPL-B1001M | 6000 | – | – | – | – | 56.8 | – | 49.6 | – | 45.1 | – | – | – | 39.4 | – | – |
| VPL-B1002E | 3300 | 95.3 | – | 75.6 | – | 60.0 | – | – | 50.8 * | – | – | – | – | – | – | – |
| VPL-B1002M | 6000 | – | – | – | 66.1 | – | – | 52.4 | – | – | 45.8 | – | – | 41.6 | – | – |
| VPL-B1003C | 2500 | 99.0 | – | 78.5 | 68.6 | – | 57.9 | – | – | – | – | – | – | – | – | – |
| VPL-B1003F | 4750 | – | – | 78.5 | 68.6 | – | | 54.5 | – | – | – | 46.7 * | – | – | – | – |
| VPL-B1003T | 7000 | – | – | – | 68.6 | – | 57.9 | – | – | – | 47.6 | – | – | – | – | 41.1 |
| VPL-B1152C | 2250 | 111.3 | – | 88.4 | 77.2 | – | 67.4 * | – | – | – | – | – | – | – | – | – |
| VPL-B1152F | 4000 | – | – | 88.4 | – | 70.1 | – | 61.3 | – | – | 53.5 | – | – | – | – | – |
| VPL-B1152T | 6500 | – | – | – | 77.2 | – | 65.1 | – | – | 55.7 | – | – | – | – | 47.4 | – |
| VPL-B1153E | 3200 | 115.4 | – | 91.6 | – | 72.7 | – | – | 62.2 * | – | – | – | – | – | – | – |
| VPL-B1153F | 5000 | – | – | 91.6 | – | 72.7 | – | 63.5 | – | – | – | 53.6 | – | – | – | – |
| VPL-B1303C | 2250 | 145.3 | – | 115.3 | 100.7 | – | 88.0 * | – | – | – | – | – | – | – | – | – |
| VPL-B1303F | 4000 | – | – | 115.3 | – | 91.5 | – | 80.9 * | – | 72.7 | – | – | – | – | – | – |
| VPL-B1304C | 2150 | 149.7 | – | 118.8 | 106.2 * | – | 92.0 * | – | – | – | – | – | – | – | – | – |
| VPL-B1304E | 3500 | – | – | 118.8 | 103.8 | – | 90.0 * | – | 78.2 | – | – | – | – | – | – | – |
| VPL-B1306C | 2500 | 156.0 | – | 123.8 | – | 104.8 * | 91.2 | – | – | – | – | – | – | – | – | – |
| VPL-B1306F | 4250 | – | – | 123.8 | – | 98.3 | – | 85.9 | – | – | 76.5 * | – | – | – | – | – |
| VPL-B1651C | 2750 | 180.9 | – | 143.6 | – | 121.5 * | – | 102.5 * | – | – | – | – | – | – | – | – |
| VPL-B1651F | 4750 | – | – | 143.6 | – | 114.0 | – | 99.6 | – | – | – | 85.4 * | – | – | – | – |
| VPL-B1652C | 2700 | 192.5 | – | 152.8 | 133.5 | – | – | 109.7 * | – | – | – | – | – | – | – | – |
| VPL-B1652F | 4000 | – | – | 152.8 | 133.5 | – | 112.6 | – | – | 96.3 | – | – | – | – | – | – |
| VPL-B1653C | 2300 | 200.2 | – | 158.9 | 142.1 * | – | 120.4 * | – | – | – | – | – | – | – | – | – |
| VPL-B1653D | 3000 | – | – | 158.9 | 145.6 * | 130.6 * | – | 110.2 | – | – | – | – | – | – | – | – |
| VPL-B1654B | 1850 | 205.7 | 179.7 | – | 156.8 * | 133.0 * | – | – | – | – | – | – | – | – | – | – |
| VPL-B1654D | 3000 | – | – | 163.3 | 142.7 | 129.6 | – | 113.2 | – | – | – | – | – | – | – | – |

(1) 1.0 kgf = 2.2 lbf or 9.8 N. An asterisk (*) indicates a load rating measured at an rpm value that is less than the value listed for that column.

## Axial Load Force Ratings (maximum radial load) for Brake Motors

| Motor Cat. No. (1) | Maximum Speed rpm | Load (kgf) at Speed (rpm) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 kgf | 750 kgf | 1000 kgf | 1500 kgf | 2000 kgf | 2500 kgf | 3000 kgf | 3500 kgf | 4000 kgf | 4500 kgf | 5000 kgf | 5500 kgf | 6000 kgf | 6500 kgf | 7000 kgf |
| VPL-A1001C | 2800 | 31.0 | – | 23.0 | – | 17.0 | – | 14.0 * | – | – | – | – | – | – | – | – |
| VPL-A1001M | 6500 | – | – | – | 19.0 | – | 15.0 | – | – | – | 12.0 | – | – | – | 10.0 | – |
| VPL-A1002C | 3000 | 34.0 | – | 25.0 | – | 18.0 | – | 15.0 | – | – | – | – | – | – | – | – |
| VPL-A1002F | 5000 | – | – | 25.0 | 21.0 | – | – | 15.0 | – | – | – | 12.0 | – | – | – | – |
| VPL-A1003C | 2250 | 36.0 | – | 26.0 | 22.0 | – | 18.0 * | – | – | – | – | – | – | – | – | – |
| VPL-A1003E | 3750 | 36.0 | – | 26.0 | – | 19.0 | – | – | – | 15.0 * | – | – | – | – | – | – |
| VPL-A1003F | 5500 | – | – | – | 22.0 | – | 18.0 | – | – | 14.0 | – | – | 12.0 | – | – | – |
| VPL-A1152B | 2150 | 50.0 | – | 37.0 | 31.0 | – | 26.0 * | – | – | – | – | – | – | – | – | – |
| VPL-A1152E | 3300 | 51.0 | – | 37.0 | – | 27.0 | – | – | 22.0 * | – | – | – | – | – | – | – |
| VPL-A1152F | 5000 | – | – | 37.0 | – | 27.0 | – | 23.0 | – | – | – | 18.0 | – | – | – | – |
| VPL-A1153C | 2300 | 53.0 | – | 39.0 | 32.0 | – | 27.0 * | – | – | – | – | – | – | – | – | – |
| VPL-A1303B | 1950 | 46.0 | – | 34.0 | 28.0 | 25.0 * | – | – | – | – | – | – | – | – | – | – |
| VPL-A1303F | 4000 | – | – | 34.0 | – | 25.0 | – | 21.0 | – | 18.0 | – | – | – | – | – | – |
| VPL-A1304A | 1600 | 48.0 | 40.0 | 36.0 * | – | 29.0 * | – | – | – | – | – | – | – | – | – | – |
| VPL-A1304D | 3000 | 48.0 | – | 36.0 | – | 26.0 | – | 22.0 | – | – | – | – | – | – | – | – |
| VPL-A1306C | 2000 | 52.0 | – | 42.0 * | 33.3 * | 28.0 | – | – | – | – | – | – | – | – | – | – |
| VPL-B1001M | 6000 | – | – | – | – | 17.0 | – | 14.0 | – | 12.0 | – | – | – | 10.0 | – | – |
| VPL-B1002E | 3300 | 34.0 | – | 25.0 | – | 18.0 | – | – | 15.0 * | – | – | – | – | – | – | – |
| VPL-B1002M | 6000 | – | – | – | 21.0 | – | – | 15.0 | – | – | 13.0 | – | – | 11.0 | – | – |
| VPL-B1003C | 2500 | 36.0 | – | 26.0 | 22.0 | – | 18.0 | – | – | – | – | – | – | – | – | – |
| VPL-B1003F | 4750 | – | – | 26.0 | 22.0 | – | – | 16.0 | – | – | – | 13.0 * | – | – | – | – |
| VPL-B1003T | 7000 | – | – | – | 22.0 | – | 18.0 | – | – | – | 13.0 | – | – | – | – | 11.0 |
| VPL-B1152C | 2250 | 51.0 | – | 37.0 | 31.0 | – | 26.0 * | – | – | – | – | – | – | – | – | – |
| VPL-B1152F | 4000 | – | – | 37.0 | – | 27.0 | – | 23.0 | – | – | 19.0 | – | – | – | – | – |
| VPL-B1152T | 6500 | – | – | – | 31.0 | – | 25.0 | – | – | 20.0 | – | – | – | – | 16.0 | – |
| VPL-B1153E | 3200 | 53.0 | – | 39.0 | – | 29.0 | – | – | 23.0* | – | – | – | – | – | – | – |
| VPL-B1153F | 5000 | – | – | 39.0 | – | 29.0 | – | 24.0 | – | – | – | 19.0 | – | – | – | – |
| VPL-B1303C | 2250 | 46.0 | – | 34.0 | 28.0 | – | 24.0 * | – | – | – | – | – | – | – | – | – |
| VPL-B1303F | 4000 | – | – | 34.0 | – | 25.0 | – | 21.0 * | – | 18.0 | – | – | – | – | – | – |
| VPL-B1304C | 2150 | 48.0 | – | 36.0 | 31.0 * | – | 25.0 * | – | – | – | – | – | – | – | – | – |
| VPL-B1304E | 3500 | – | – | 36.0 | 30.0 | – | 25.0 * | – | 20.0 | – | – | – | – | – | – | – |
| VPL-B1306C | 2500 | 52.0 | – | 38.0 | – | 31.0 * | 25.0 | – | – | – | – | – | – | – | – | – |
| VPL-B1306F | 4250 | – | – | 38.0 | – | 28.0 | – | 24.0 | – | – | 20.0 * | – | – | – | – | – |
| VPL-B1651C | 2750 | 58.0 | – | 43.0 | – | 34.0 * | – | 27.0 * | – | – | – | – | – | – | – | – |
| VPL-B1651F | 4750 | – | – | 43.0 | – | 31.0 | – | 26.0 | – | – | – | 21.0 * | – | – | – | – |
| VPL-B1652C | 2700 | 64.0 | – | 47.0 | 39.0 | – | – | 30.0 * | – | – | – | – | – | – | – | – |
| VPL-B1652F | 4000 | – | – | 47.6 | 40.0 | – | 32.0 | – | – | 26.1 | – | – | – | – | – | – |
| VPL-B1653C | 2300 | 68.0 | – | 50.0 | 43.0 * | – | 35.0 * | – | – | – | – | – | – | – | – | – |
| VPL-B1653D | 3000 | – | – | 50.7 | 45.3 * | 39.3 * | – | 31.5 | – | – | – | – | – | – | – | – |
| VPL-B1654B | 1850 | 71.0 | 59.0 | – | 50.0 * | 40.0 * | – | – | – | – | – | – | – | – | – | – |
| VPL-B1654D | 3000 | – | – | 52.9 | 44.4 | 39.2 | – | 32.9 | – | – | – | – | – | – | – | – |

(1) 1.0 kgf = 2.2 lbf or 9.8 N. An asterisk (*) indicates a load rating measured at an rpm value that is less than the value listed for that column.

## Axial Load Force Ratings (zero radial load) for Brake Motors

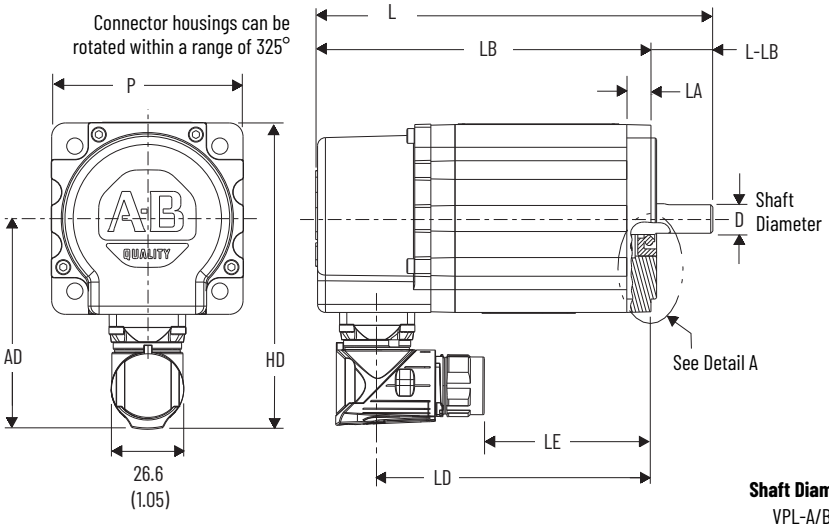
| Motor Cat. No. (1) | Maximum Speed rpm | Load (kgf) at Speed (rpm) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 kgf | 750 kgf | 1000 kgf | 1500 kgf | 2000 kgf | 2500 kgf | 3000 kgf | 3500 kgf | 4000 kgf | 4500 kgf | 5000 kgf | 5500 kgf | 6000 kgf | 6500 kgf | 7000 kgf |
| VPL-A1001C | 2800 | 49.4 | – | 36.5 | – | 27.0 | – | 23.4 * | – | – | – | – | – | – | – | – |
| VPL-A1001M | 6500 | – | – | – | 30.6 | – | 24.5 | – | – | – | 19.0 | – | – | – | 16.2 | – |
| VPL-A1002C | 3000 | 49.4 | – | 36.5 | – | 27.0 | – | 22.7 | – | – | – | – | – | – | – | – |
| VPL-A1002F | 5000 | – | – | 36.5 | 30.6 | – | – | 22.7 | – | – | – | 18.2 | – | – | – | – |
| VPL-A1003C | 2250 | 49.4 | – | 36.5 | 30.6 | – | 25.7 * | – | – | – | – | – | – | – | – | – |
| VPL-A1003E | 3750 | 49.4 | – | 36.5 | – | 27.0 | – | – | – | 20.6 * | – | – | – | – | – | – |
| VPL-A1003F | 5500 | – | – | | 30.6 | – | 24.5 | – | – | 20.0 | – | – | 17.4 | – | – | – |
| VPL-A1152B | 2150 | 68.3 | – | 50.5 | 42.4 | – | 36.2 * | – | – | – | – | – | – | – | – | – |
| VPL-A1152E | 3300 | 68.3 | – | 50.5 | – | 37.4 | – | – | 30.1 * | – | – | – | – | – | – | – |
| VPL-A1152F | 5000 | – | – | 50.5 | – | 37.4 | – | 31.4 | – | – | – | 25.1 | – | – | – | – |
| VPL-A1153C | 2300 | 68.3 | – | 50.5 | 42.4 | – | 35.2 * | – | – | – | – | – | – | – | – | – |
| VPL-A1303B | 1950 | 68.3 | – | 50.5 | 42.4 | 37.8 * | – | – | – | – | – | – | – | – | – | – |
| VPL-A1303F | 4000 | – | – | 50.5 | – | 37.4 | – | 31.4 | – | 27.7 | – | – | – | – | – | – |
| VPL-A1304A | 1600 | 68.3 | 57.2 | 51.1 * | – | 41.2 * | – | – | – | – | – | – | – | – | – | – |
| VPL-A1304D | 3000 | 68.3 | – | 50.5 | – | 37.4 | – | 31.4 | – | – | – | – | – | – | – | – |
| VPL-A1306C | 2000 | 68.3 | – | 55.7 * | 44.3 | 37.4 | – | – | – | – | – | – | – | – | – | – |
| VPL-B1001M | 6000 | – | – | – | – | 27.0 | – | 22.7 | – | 20.0 | – | – | – | 16.8 | – | – |
| VPL-B1002E | 3300 | 49.4 | – | 36.5 | – | 27.0 | – | – | 21.8 * | – | – | – | – | – | – | – |
| VPL-B1002M | 6000 | – | – | – | 30.6 | – | – | 22.7 | – | – | 19.0 | – | – | 16.8 | – | – |
| VPL-B1003C | 2500 | 49.4 | – | 36.5 | 30.6 | – | 24.5 | – | – | – | – | – | – | – | – | – |
| VPL-B1003F | 4750 | – | – | 36.5 | 30.6 | – | – | 22.7 | – | – | – | 18.6 * | – | – | – | – |
| VPL-B1003T | 7000 | – | – | – | 30.6 | – | 24.5 | – | – | – | 19.0 | – | – | – | – | 15.7 |
| VPL-B1152C | 2250 | 68.3 | – | 50.5 | 42.4 | – | 35.5 * | – | – | – | | – | – | – | – | – |
| VPL-B1152F | 4000 | – | – | 50.5 | – | 37.4 | – | 31.4 | – | – | 26.3 | – | – | – | – | – |
| VPL-B1152T | 6500 | – | – | – | 42.4 | – | 33.9 | – | – | 27.7 | – | – | – | – | 22.4 | – |
| VPL-B1153E | 3200 | 68.3 | – | 50.5 | – | 37.4 | – | – | 30.5 * | – | – | – | – | – | – | – |
| VPL-B1153F | 5000 | – | – | 50.5 | – | 37.4 | – | 31.4 | – | – | – | 25.1 | – | – | – | – |
| VPL-B1303C | 2250 | 68.3 | – | 50.5 | 42.4 | – | 35.5 * | – | – | – | – | – | – | – | – | – |
| VPL-B1303F | 4000 | – | – | 50.5 | – | 37.4 | – | 31.8 * | – | 27.7 | – | – | – | – | – | – |
| VPL-B1304C | 2150 | 68.3 | – | 50.5 | 43.6 * | – | 36.2 * | – | – | – | – | – | – | – | – | – |
| VPL-B1304E | 3500 | – | – | 50.5 | 42.4 | – | 35.2 * | – | 29.3 | – | – | – | – | – | – | – |
| VPL-B1306C | 2500 | 68.3 | – | 50.5 | – | 40.6 * | 33.9 | – | – | – | – | – | – | – | – | – |
| VPL-B1306F | 4250 | – | – | 50.5 | – | 37.4 | – | 31.4 | – | – | 27.0 * | – | – | – | – | – |
| VPL-B1651C | 2750 | 90.1 | – | 66.7 | – | 53.7 | – | 43.0 * | – | – | – | – | – | – | – | – |
| VPL-B1651F | 4750 | – | – | 66.7 | – | 49.4 | – | 41.4 | – | – | – | 33.9 * | – | – | – | – |
| VPL-B1652C | 2700 | 90.1 | – | 66.7 | 55.9 | – | – | 43.3 * | – | – | – | – | – | – | – | – |
| VPL-B1652F | 4000 | – | – | 66.7 | 55.9 | – | 44.8 | – | – | 36.5 | – | – | – | – | – | – |
| VPL-B1653C | 2300 | 90.1 | – | 66.7 | 57.6 * | – | 46.4 * | – | – | – | – | – | – | – | – | – |
| VPL-B1653D | 3000 | – | – | 66.7 | 59.5 * | 51.7 * | – | 41.4 | – | – | – | – | – | – | – | – |
| VPL-B1654B | 1850 | 90.1 | 75.6 | – | 63.2 * | 51.1 * | – | – | – | – | – | – | – | – | – | – |
| VPL-B1654D | 3000 | – | – | 66.7 | 55.9 | 49.4 | – | 41.4 | – | – | – | – | – | – | – | – |

(1) 1.0 kgf = 2.2 lbf or 9.8 N. An asterisk (*) indicates a load rating measured at an rpm value that is less than the value listed for that column.

# Dimensions - Kinetix VPL Servo Motors

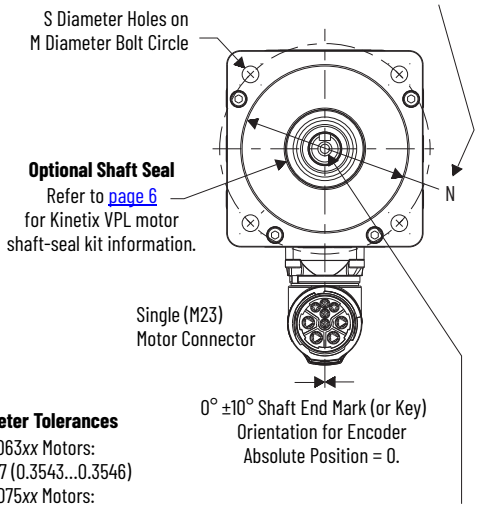
## VPL-A/B063xx and VPL-A/B075xx Motor Dimensions

**Dimensions are in mm (in.)**




**Pilot Diameter Tolerances**

VPL-A/B063xx Motors:
Ø 39.995...40.011 (1.5746...1.5752)
VPL-A/B075xx Motors:
Ø 59.993...60.012 (2.3619...2.3627)




**Optional Shaft Seal**

Refer to page 6 for Kinetix VPL motor shaft-seal kit information.

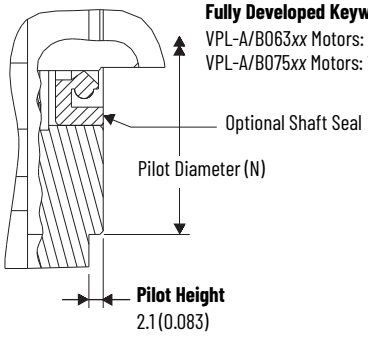
**Shaft Diameter Tolerances**

VPL-A/B063xx Motors:
Ø 8.998...9.007 (0.3543...0.3546)
VPL-A/B075xx Motors:
Ø 10,997...11.008 (0.4330...0.4334)

**Shaft-end Threaded Hole**

VPL-A/B063xx Motors:
Thread - M3 x 0.5-6H
Thread Depth - 9.0 (0.354)
VPL-A/B075xx Motors:
Thread - M4 x 0.7-6H
Thread Depth - 10.0 (0.393)

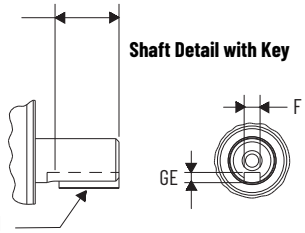
**Detail A**




**Fully Developed Keyway Length**

VPL-A/B063xx Motors: 14.0 (0.551)
VPL-A/B075xx Motors: 16.0 (0.630)

**Shaft Detail with Key**




**Key Supplied**

VPL-A/B063xx = $3_{(+0, -0.025)}$ x $3_{(+0, -0.025)}$ x 13 Key
VPL-A/B075xx = $4_{(+0, -0.030)}$ x $4_{(+0, -0.030)}$ x 15 Key

| Shaft, Pilot, and Keyway Tolerances | VPL-A/B063xx | VPL-A/B075xx |
|---|---|---|
| Shaft Runout (T.I.R.) | 0.030 (0.0012) | 0.035 (0.0014) |
| Pilot Eccentricity (T.I.R.) | 0.08 (0.0031) | 0.08 (0.0031) |
| Max Face Runout (T.I.R.) | 0.08 (0.0031) | 0.08 (0.0031) |
| Keyway Depth (GE) | 1.80...1.90 (0.071...0.075) | 2.50...2.60 (0.098...0.102) |
| Keyway Width (F) | 2.971...2.996 (0.117...0.118) | 3.970...4.000 (0.156...0.158) |

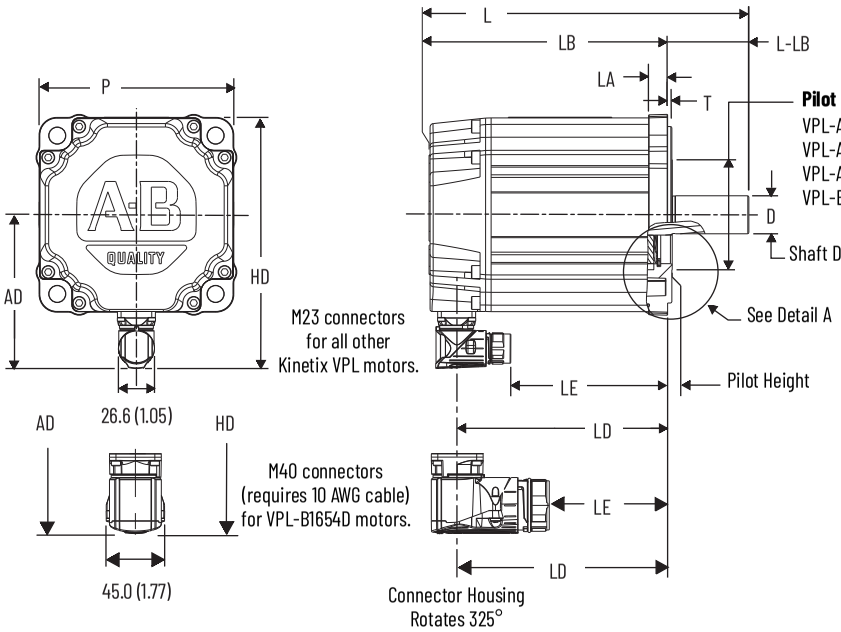
### VPL-A/B063*xx* and VPL-A/B075*xx* Motor Dimensions

| Motor Cat. No. | AD mm (in.) | HD mm (in.) | LA mm (in.) | LD (1) mm (in.) | LE (1) mm (in.) | L (1) mm (in.) | LB (1) mm (in.) | L-LB (2) mm (in.) | D (4) mm (in.) | M mm (in.) | S (3) mm (in.) | N (4) mm (in.) | P mm (in.) | GE (4) mm (in.) | F (4) mm (in.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VPL-A/B0631 | 69.5 (2.74) | 97.0 (3.82) | 9.0 (0.35) | 100.2 (3.94) | 60.3 (2.37) | 143.1 (5.63) | 123.1 (4.85) | 20.0 (0.787) | 9.0 (0.354) | 63.0 (2.480) | 5.80 (0.234) | 40.0 (1.575) | 55.0 (2.17) | 1.90 (0.075) | 3.0 (0.118) |
| VPL-A/B0632 | | | | 125.2 (4.93) | 85.3 (3.36) | 168.1 (6.61) | 148.1 (5.83) | | | | | | | | |
| VPL-A/B0633 | | | | 150.2 (5.91) | 110.3 (4.34) | 193.1 (7.59) | 173.1 (6.81) | | | | | | | | |
| VPL-A/B0751 | 77.0 (3.03) | 112.0 (4.41) | 9.0 (0.35) | 102.0 (4.02) | 62.1 (2.44) | 147.9 (5.82) | 124.9 (4.92) | 23.0 (0.906) | 11.0 (0.433) | 75.0 (2.953) | 5.80 (0.234) | 60.0 (2.362) | 70.0 (2.76) | 2.60 (0.102) | 4.0 (0.157) |
| VPL-A/B0752 | | | | 127.0 (5.00) | 87.1 (3.43) | 172.9 (6.80) | 149.9 (5.90) | | | | | | | | |
| VPL-A/B0753 | | | | 152.0 (5.98) | 112.1 (4.41) | 197.9 (7.79) | 174.9 (6.89) | | | | | | | | |

(1) If ordering an VPL-A/B063*xx* or VPL-A/B075*xx* motor with brake, add 30.6 mm (1.20 in.) to dimension L, LB, LE, and LD.
(2) Tolerance for this dimension is ±0.7 mm (±0.028 in.).
(3) Tolerance for this dimension is +0.3, -0.0 mm (±0.006 in.).
(4) For keyway, shaft diameter, and pilot diameter tolerances, refer to page 22.

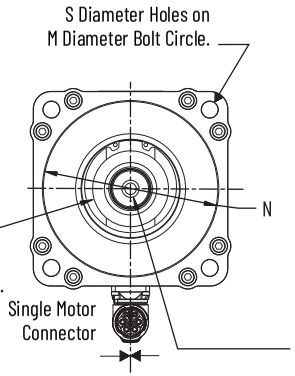
Motors are designed to metric dimensions. Inch dimensions are approximate conversions from millimeters. Dimensions without tolerances are for reference.

**Dimensions are in mm (in.)**




**Pilot Relief Diameter**
VPL-A/B100*xx* Motors = Ø 53.3 (2.10)
VPL-A/B115*xx* Motors = Ø 59.7 (2.35)
VPL-A/B130*xx* Motors = Ø 71.1 (2.80)
VPL-B165*xx* Motors = Ø 81.0 (3.19)

**Optional Shaft Seal**
Refer to page 6 for Kinetix VPL motor shaft-seal kit information.

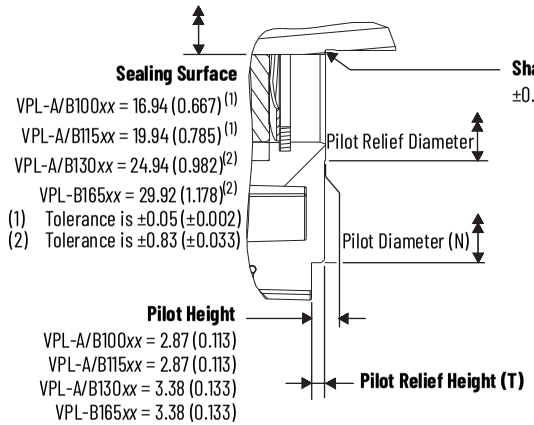



**Pilot Diameter Tolerances**
VPL-A/B100*xx* Motors:
Ø 79.993...80.012 (3.1493...3.1501)
VPL-A/B115*xx* Motors:
Ø 94.991...95.013 (3.7398...3.7407)
VPL-A/B130*xx* Motors:
Ø 109.991...110.013 (4.3303...4.3312)
VPL-B165*xx* Motors:
Ø 129.991...130.014 (5.1178...5.1187)

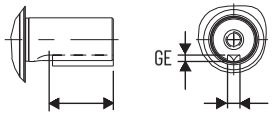
**Shaft-end Threaded Hole**
VPL-A/B100*xx* Motors:
Thread - M5 x 0.8-6H
Thread Depth - 12.5 (0.49)
VPL-A/B115*xx* Motors:
Thread - M6 x 1.0-6H
Thread Depth - 16.0 (0.63)
VPL-A/B130*xx* Motors:
Thread - M8 x 1.25-6H
Thread Depth - 19.1 (0.75)
VPL-B165*xx* Motors:
Thread - M10 x 1.5-6H
Thread Depth - 22.1 (0.87)

**Shaft Diameter Tolerances**
VPL-A/B100*xx* = Ø 15.997...16.008 (0.6298...0.6301)
VPL-A/B115*xx* = Ø 18.996...19.009 (0.7479...0.7483)
VPL-A/B130*xx* = Ø 23.996...24.009 (0.9448...0.9451)
VPL-B165*xx* = Ø 27.996...28.009 (1.1022...1.1027)

**Detail A**

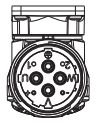



**Shaft Detail with Key**




**Keyway Length**
VPL-A/B100*xx* = 25.4 (1.00)
VPL-A/B115*xx* = 25.4 (1.00)
VPL-A/B130*xx* = 32.3 (1.27)
VPL-B165*xx* = 41.1 (1.62)

**Key Supplied**
VPL-A/B100*xx* = $5_{(+0,\ -0.030)}$ x $5_{(+0,\ -0.030)}$ x 24 Key
VPL-A/B115*xx* = $6_{(+0,\ -0.030)}$ x $6_{(+0,\ -0.030)}$ x 24 Key
VPL-A/B130*xx* = $8_{(+0,\ -0.036)}$ x $7_{(+0,\ -0.090)}$ x 31 Key
VPL-B165*xx* = $8_{(+0,\ -0.036)}$ x $7_{(+0,\ -0.090)}$ x 39 Key

| Motor Connectors on VPL-B165*xx* Motors | | Motor Cat. No. |
|---|---|---|
| M23 Connector | | VPL-B1651*x*<br>VPL-B1652*x*<br>VPL-B1653*x*<br>VPL-B1654B |
| M40 Connector |  | VPL-B1654D |

| Shaft, Pilot, and Keyway Tolerances | VPL-A/B100*xx* | VPL-A/B115*xx* | VPL-A/B130*xx*<br>VPL-B165*xx* |
|---|---|---|---|
| Shaft Runout (T.I.R.) | 0.04 (0.0016) | | |
| Pilot Eccentricity (T.I.R.) | 0.078 (0.0031) | | |
| Max Face Runout (T.I.R.) | 0.078 (0.0031) | | |
| Keyway Depth (GE) | 3.00...3.10<br>(0.118...0.122) | 3.50...3.60<br>(0.138...0.142) | 4.00...4.20<br>(0.158...0.165) |
| Keyway Width (F) | 4.97...5.00<br>(0.196...0.197) | 5.97...6.00<br>(0.235...0.236) | 7.96...8.00<br>(0.314...0.315) |

### VPL-A/B100*xx*, VPL-A/B115*xx*, VPL-A/B130*xx*, and VPL-B165*xx* Motor Dimensions (SpeedTec DIN connectors)

| Motor Cat. No. | AD mm (in.) | HD mm (in.) | T mm (in.) | LA mm (in.) | LD (1) mm (in.) | LE (1) mm (in.) | L (1) mm (in.) | LB (1) mm (in.) | L-LB (2) mm (in.) | D (3) mm (in.) | M mm (in.) | S mm (in.) | N (3) mm (in.) | P mm (in.) | GE (3) mm (in.) | F (3) mm (in.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VPL-A/B1001 | 86.5 (3.40) | 131.2 (5.17) | 2.74 (0.108) | 9.90 (0.39) | 108.7 (4.28) | 68.9 (2.71) | 169.8 (6.68) | 129.8 (5.11) | 40.0 (1.575) | 16.0 (0.630) | 100.0 (3.937) | 7.00 (4) (0.283) | 80.0 (3.15) | 89.4 (3.52) | 3.0 (0.118) | 5.0 (0.197) |
| VPL-A/B1002 | | | | | 134.1 (5.28) | 94.3 (3.71) | 195.2 (7.68) | 155.2 (6.11) | | | | | | | | |
| VPL-A/B1003 | | | | | 159.5 (6.28) | 119.7 (4.71) | 220.6 (8.68) | 180.6 (7.11) | | | | | | | | |
| VPL-A/B1152 | 90.8 (3.58) | 140.0 (5.51) | 2.74 (0.108) | 10.16 (0.40) | 130.6 (5.14) | 90.7 (3.57) | 191.6 (7.54) | 151.6 (5.97) | 40.0 (1.575) | 19.0 (0.748) | 115.0 (4.528) | 10.00 (4) (0.401) | 95.0 (3.74) | 98.3 (3.87) | 3.5 (0.138) | 6.0 (0.236) |
| VPL-A/B1153 | | | | | 156.0 (6.14) | 116.1 (4.57) | 217.0 (8.54) | 177.0 (6.97) | | | | | | | | |
| VPL-A/B1303 | 98.6 (3.88) | 155.4 (6.12) | 2.74 (0.108) | 12.19 (0.48) | 159.3 (6.27) | 119.4 (4.70) | 230.3 (9.06) | 180.3 (7.10) | 50.0 (1.969) | 24.0 (0.945) | 130.0 (5.118) | 10.00 (4) (0.401) | 110.0 (4.331) | 113.7 (4.48) | 4.0 (0.158) | 8.0 (0.315) |
| VPL-A/B1304 | | | | | 184.7 (7.27) | 144.8 (5.70) | 255.7 (10.06) | 205.7 (8.10) | | | | | | | | |
| VPL-A/B1306 | | | | | 235.5 (9.27) | 195.6 (7.70) | 306.5 (12.06) | 256.5 (10.10) | | | | | | | | |
| VPL-B1651 | 113.3 (4.46) | 185.0 (7.28) | 3.12 (0.123) | 14.0 (0.55) | 155.4 (6.12) | 115.6 (4.55) | 235.6 (9.27) | 175.6 (6.92) | 60.0 (2.362) | 28.0 (1.102) | 165.0 (6.496) | 12.00 (5) (0.481) | 130.0 (5.118) | 143.5 (5.65) | 4.0 (0.158) | 8.0 (0.315) |
| VPL-B1652 | | | | | 206.2 (8.12) | 166.4 (6.55) | 286.4 (11.27) | 226.4 (8.92) | | | | | | | | |
| VPL-B1653 | | | | | 257.0 (10.12) | 217.2 (8.55) | 337.2 (13.27) | 277.2 (10.92) | | | | | | | | |
| VPL-B1654B | | | | | 307.8 (12.12) | 268.0 (10.55) | 388.0 (15.28) | 328.0 (12.92) | | | | | | | | |
| VPL-B1654D | 132.9 (5.23) | 204.6 (8.06) | | | 306.8 (12.08) | 235.8 (9.28) | | | | | | | | | | |

(1) If ordering a VPL-A/B100*xx*-*xxx*4*xx* motor with brake, add 34.5 mm (1.36 in.) to dimensions L, LB, LE, and LD.
If ordering a VPL-A/B115*xx*-*xxx*4*xx* motor with brake, add 48.5 mm (1.91 in.) to dimensions L, LB, LE, and LD.
If ordering a VPL-A/B130*xx*-*xxx*4*xx* motor with brake, add 48.5 mm (1.91 in.) to dimensions L, LB, LE, and LD.
If ordering a VPL-B165*xx*-*xxx*4*xx* motor with brake, add 51.5 mm (2.03 in.) to dimensions L, LB, LE, and LD.
(2) Tolerance for this dimension is ±0.7 mm (±0.028 in.).
(3) For keyway, shaft diameter, and pilot diameter tolerances, refer to page 24.
(4) Tolerance for this dimension is +0.36, -0.0 mm (±0.007 in.).
(5) Tolerance for this dimension is +0.43 -0.0 mm (±0.008 in.).

Motors are designed to metric dimensions. Inch dimensions are approximate conversions from millimeters. Dimensions without tolerances are for reference.

# Kinetix VPC Continuous-duty Servo Motors

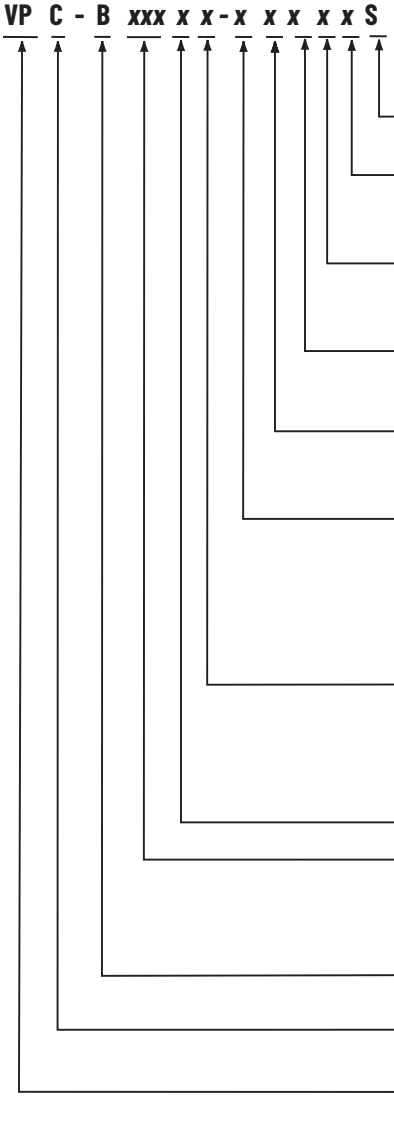
The Kinetix VPC servo motors are available with optimized performance ratings and features aligned to the Kinetix 5700 drive system for applications with high-torque and high-speed demands. With improved encoder offerings, 2090-Series single cable capability, and a field-replaceable fan, this motor provides a significant boost in functionality and power. Kinetix VPC servo motors employ cutting-edge interior permanent-magnet technology that enables increased maximum speeds, low-torque ripple, and IE4/IE5 energy efficiency to improve and extend machine performance while maintaining a competitive system cost.

## Kinetix VPC Servo Motor Features

| Attribute | Value |
|---|---|
| Main characteristics | • Developed to match Kinetix 5700 drives for optimized system sizing and performance<br>• 2090-Series single cable technology<br>• Cooling fan (F option) or fanless (without cooling fan) motor (A option)<br>– Fan for increased torque/power output<br>– Fanless for reduced wiring and less air disturbance<br>• Larger bearings for higher radial loads and longer life<br>• Integrated foot mount for expanded application space<br>• IE4 and IE5 energy efficiency rated |
| Features | • 400V-class windings<br>• Single-turn and multi-turn high-resolution absolute encoders<br>• SIL 2 (PLd) rated encoder options<br>• High-accuracy EnDat digital encoder option<br>• Interior permanent-magnet design<br>• Shaft-end threaded hole<br>• SpeedTec DIN connector<br>• Standard IEC 72-1 mounting dimensions |
| Motor type | Brushless AC synchronous servo motors |
| Environmental rating | IP65 with shaft seal and use of environmentally sealed cable connectors |
| Certifications | Kinetix VPC rotary motors are UL Recognized components to applicable UL and CSA standards. CE marked for all applicable directives. Refer to rok.auto/certifications for the Product Certifications website. |
| Continuous stall torque | 17.6…191.1 N•m (156…1691 lb•in) |
| Peak stall torque | 40.3…327.8 N•m (357…2901 lb•in) |
| Rated speed | 1000, 1500, 2000, and 3000 rpm |
| Motor rated output | 3.4…30 kW (4.6…40.2 Hp) |
| Compatible servo drives | Kinetix 5700 |
| Compatible servo cables | • 2090-CSxM1*xx*-*xx*AA/AF*xx* (TPE) cables<br>• 2090-CSxM1*xx*-*xx*VA/LF*xx* (PVC and PUR) cables<br>• 2090-C*xx*M7*xx* cables |
| Typical applications | • Converting<br>• Printing<br>• Web handling<br>• Material handling |

# Catalog Numbers - Kinetix VPC Servo Motors

Catalog numbers consist of various characters, each of which identifies a specific option for that component. Use the catalog numbering table chart below to understand the configuration of your motor. For questions regarding product availability, contact your Allen-Bradley distributor.




**Factory Options**
S = Shaft seal, standard (IP65)

**Cooling**
A = Natural convection
F = Forced ventilation

**Brake**
2 = No brake
4 = 24V DC holding brake

**Connectors**
1 = Single SpeedTec DIN connector, right angle, 325° rotatable
7 = SpeedTec DIN connector, right angle, 180° rotatable

**Shaft Key**
J = Shaft key
K = Smooth shaft

**Feedback**
S = 1024 sin/cos, absolute single-turn encoder (Hiperface protocol)
M = 1024 sin/cos, absolute multi-turn encoder (Hiperface protocol) (1)
Q = 23-bit absolute multi-turn digital encoder, SIL2/PLd rated, 12-bit secondary safety channel (Hiperface DSL protocol)
Y = 25-bit absolute multi-turn digital encoder (EnDat digital protocol)

**Rated Speed (2) (3)**
9 = 1000 rpm
A = 1500 rpm
B = 2000 rpm
D = 3000 rpm

**Magnet Stack Length (2, 3, 4, 5, 6 stacks) (3)**

**Frame Size - Bolt Circle Diameter (BCD / Shaft Height (SH)**
165 = IEC 165 mm BCD / SH 80 mm
215 = IEC 215 mm BCD / SH 100 mm
300 = IEC 300 mm BCD / SH 132 mm

**Voltage Class**
B = 400V

**Series Type**
C = Continuous Duty

**Series**
VP = Permanent magnet rotary servo motors that are optimized to Kinetix 5700 drive ratings

(1) M encoder option is available on only VPC-B3004*x* servo motors.
(2) Rated speed hierarchy is only for comparative purposes. Use Motion Analyzer software to size and select motors for your application, and/or the torque/speed curves in the Kinetix 5700 Drive System Design Guide, publication KNX-RM010.
(3) Not all combinations are available. Only the configurations for rated speed and magnet stack length, as listed in on page 30 are available. Use Motion Analyzer software to size and select motors for your application.

## Kinetix VPC Servo Motor High-resolution Encoders

Kinetix VPC servo motors are available with high-performance encoders with a choice of single-turn (-S) or multi-turn (-M, -Q, or -Y) high-resolution feedback:

- VPC-B*xxxxx*-S motors with Hiperface protocol
  - 1024 sin/cos cycles per revolution for up to 21-bit resolution (2,097,152 counts per revolution), absolute single-turn encoder
- VPC-B3004*x*-M motors with Hiperface protocol
  - 1024 sin/cos cycles per revolution for up to 21-bit resolution (2,097,152 counts per revolution), absolute multi-turn encoder
- VPC-B*xxxxx*-Q motor with Hiperface DSL protocol
  - 23-bit resolution for up to 8,388,608 counts per revolution, absolute multi-turn digital encoder, 4096 turns
  - SIL2/PLd rated, 12-bit secondary safety channel
  - Digital two-wire communication integrated into the 2090-Series single motor cable
- VPC-B*xxxxx*-Y motors with EnDat Digital protocol
  - 25-bit resolution for up to 33,554,432 counts per revolution, absolute multi-turn digital encoder, 4096 turns

## Kinetix 2090-Series Single Cable Technology

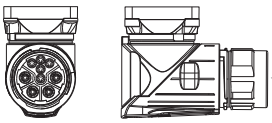
Motor connectivity reduced to a single connector and cable with VPC-B*xxxxx*-Q motors

- Single cable eliminates hardware and wire terminations
- Purely digital two-wire communication integrated into the motor power cable
- TPE cable material for standard (non-flex) and continuous-flex cable
- PVC cable material for standard (non-flex) and Halogen-free PUR continuous-flex cable
- 2090-CS*x*M1D*x* cables are available in 1.0 m (3.2 ft) increments up to 90 m (295 ft) for Kinetix 5700 drives

# Motor Connector/Cable Compatibility

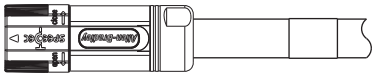
VPC-B*xxxxx*-Q motors are equipped with DSL encoders.

**Single SpeedTec DIN Connector**



- VPC-B165*xx*...VPC-B300*xx* motors
- Receives only single cable plugs
- Attach cable plug with one-quarter turn

**SpeedTec DIN (M1) Single Cable Plug**

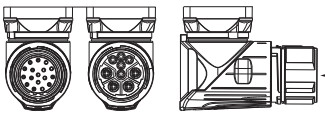


- 2090-CSBM1DE-*xxx*A*xx* (standard, non-flex) power/feedback/brake cables
- 2090-CSWM1DE-*xxx*A*xx* (standard, non-flex) power/feedback cables
- 2090-CSBM1DE-*xxx*F*xx* (continuous-flex) power/feedback/brake cables
- 2090-CSBM1DG-*xxx*A*xx* (standard, non-flex) power/feedback/brake cables
- 2090-CSWM1DG-*xxx*A*xx* (standard, non-flex) power/feedback cables
- 2090-CSBM1DG-*xxx*F*xx* (continuous-flex) power/feedback/brake cables

**IMPORTANT** Due to the unique characteristics of 2090-series single cable technology, designed for and tested with Kinetix 5700 drives and Kinetix VPC-B*xxxxx*-Q motors, building your own cables or using third-party cable is not an option.

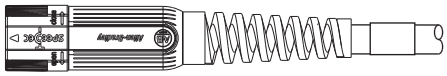
VPC-B*xxxxx*-S and VPC-B3004*x*-M motors are equipped with Hiperface encoders and VPC-B*xxxxx*-Y motors are equipped with EnDat encoders.

**SpeedTec DIN Connectors**



- VPC-B165*xx*...VPC-B300*xx* motors
- Motor power/brake and feedback connectors
- Attach M7 cable plug with one-quarter turn

**SpeedTec DIN (M7) Cable Plug**



- 2090-CFBM7DF-CEAA*xx* (standard, non-flex) flying-lead, feedback cables
- 2090-CFBM7DD-CEAA*xx* (standard, non-flex) drive-end connector, feedback cables
- 2090-CFBM7DF-CEAF*xx* (continuous-flex) flying-lead, feedback cables
- 2090-CFBM7DD-CEAF*xx* (continuous-flex) drive-end connector, feedback cables
- 2090-CFBM7DF-CDAF*xx* (continuous-flex) flying-lead, feedback cables
- 2090-CPWM7DF-*xx*AA*xx* (standard, non-flex) power-only cables
- 2090-CPBM7DF-*xx*AA*xx* (standard, non-flex) power/brake cables
- 2090-CPWM7DF-*xx*AF*xx* (continuous-flex) power-only cables
- 2090-CPBM7DF-*xx*AF*xx* (continuous-flex) power/brake cables

For 2090-Series motor cable specifications, refer to Kinetix Motion Accessories Specifications Technical Data, publication KNX-TD004.

# Kinetix VPC Servo Motor Options

Kinetix VPC servo motors are available with these configurable options:

- 24V DC holding brake.
- Choice of forced ventilation (fan) or natural convection (without fan) motor.
- Choice of keyed or smooth shaft.
- Shaft seal kits are standard and are also available as replacement kits for field installation. Shaft seals are made of nitrile and kits include a lubricant to reduce wear.

**IMPORTANT** Shaft seals are subject to wear and require periodic inspection and replacement. Replacement is recommended every 3 months, not to exceed 12 months, depending on use.

**Shaft Seal Kit Catalog Numbers**

| Motor Cat. No. | Shaft Seal Kit Cat. No. |
|---|---|
| VPC-B165*xx* | MPL-SSN-A6B6 |
| VPC-B215*xx* | VPL-SS-X256 |
| VPC-B300*xx* | VPC-SSN-F300 |

Refer to the Kinetix VPC Continuous-duty Servo Motors Installation Instructions, publication VPC-IN001, for more information on motor accessories.

# Technical Specifications - Kinetix VPC Servo Motors

Kinetix VPC servo motors are available with (-*xxxx*FS) and without (-*xxxx*AS) a cooling fan. The Continuous Rated Torque column lets you compare torque values for both options at the corresponding rated speed.

**Kinetix VPC Servo Motor Performance Specifications**

| Motor Cat. No. | Rated Speed rpm | Maximum (1) Speed rpm | Continuous Stall Torque N•m (lb•in) | Continuous Rated Torque N•m (lb•in) | Peak Stall Torque N•m (lb•in) | Motor Rated Output kW (Hp) | Motor Rated (2) Efficiency % | Rotor Inertia (3) kg-m$^2$ (lb•in•s$^2$) | Motor Weight, (3) approx kg (lb) |
|---|---|---|---|---|---|---|---|---|---|
| VPC-B1652A-*xxxx*AS | 1500 | 2300 | 25.2 (223) | 21.9 (194) | 40.3 (357) | 3.4 (4.6) | 91.2 (IE4) | 0.00286 (0.025) | 18.5 (40.8) |
| VPC-B1652A-*xxxx*FS | | 4500 (2347) | 25.5 (226) | 25.5 (226) | | 4.0 (5.4) | 91.1 (IE4) | | 20.1 (44.3) |
| VPC-B1653A-*xxxx*AS | 1500 | 2300 | 31.8 (281) | 28.1 (249) | 60.6 (536) | 4.4 (5.9) | 93.1 (IE5) | 0.00410 (0.036) | 25.7 (56.7) |
| VPC-B1653A-*xxxx*FS | | 4500 (2310) | 35.1 (311) | 35.1 (311) | | 5.5 (7.4) | 92.6 (IE5) | | 24.0 (52.8) |
| VPC-B1652D-*xxxx*AS | 3000 | 4400 | 17.6 (156) | 15.3 (135) | 40.7 (360) | 4.8 (6.4) | 94.0 (IE5) | 0.00286 (0.025) | 18.5 (40.8) |
| VPC-B1652D-*xxxx*FS | | 5000 (4452) | | 17.6 (156) | | 5.5 (7.4) | 93.0 (IE5) | | 20.1 (44.3) |
| VPC-B1653D-*xxxx*AS | 3000 | 4200 | 24.0 (212) | 18.5 (164) | 61.4 (543) | 5.8 (7.8) | 94.1 (IE5) | 0.00410 (0.036) | 24.0 (52.8) |
| VPC-B1653D-*xxxx*FS | | 5000 (4294) | | 24.0 (212) | | 7.5 (10.1) | 93.8 (IE5) | | 25.7 (56.7) |
| VPC-B1654D-*xxxx*AS | 3000 | 4200 | 35.1 (311) | 22.3 (197) | 76.6 (678) | 7.0 (9.4) | 95.3 (IE5) | 0.00532 (0.047) | 29.5 (65.1) |
| VPC-B1654D-*xxxx*FS | | 5000 (4494) | | 35.1 (311) | | 11.0 (14.7) | 93.5 (IE5) | | 31.3 (69.1) |
| VPC-B21539-*xxxx*AS | 1000 | 1500 | 52.5 (465) | 51.1 (452) | 118.8 (1051) | 5.3 (7.2) | 92.8 (IE5) | 0.0106 (0.09) | 38.7 (85.4) |
| VPC-B21539-*xxxx*FS | | 3000 (1573) | | 52.5 (465) | | 5.5 (7.4) | 92.7 (IE5) | | 41.8 (92.1) |
| VPC-B21549-*xxxx*AS | 1000 | 1500 | 72.0 (637) | 64.4 (570) | 158.4 (1402) | 6.7 (9.0) | 93.1 (IE5) | 0.0138 (0.12) | 46.8 (103.2) |
| VPC-B21549-*xxxx*FS | | 3000 (1573) | | 72.0 (637) | | 7.5 (10.1) | 92.9 (IE5) | | 50.2 (110.6) |
| VPC-B2153A-*xxxx*AS | 1500 | 2300 | 48.0 (425) | 46.2 (409) | 111.8 (990) | 7.3 (9.7) | 93.3 (IE5) | 0.0106 (0.09) | 38.4 (85.4) |
| VPC-B2153A-*xxxx*FS | | 4500 (2325) | | 48.0 (425) | | 7.5 (10.1) | 93.9 (IE5) | | 41.8 (92.1) |
| VPC-B2154A-*xxxx*AS | 1500 | 2300 | 70.1 (620) | 58.7 (520) | 140.1 (1240) | 9.2 (12.3) | 94.4 (IE5) | 0.0138 (0.12) | 46.8 (103.2) |
| VPC-B2154A-*xxxx*FS | | 4500 (2333) | | 70.1 (620) | | 11.0 (14.7) | 94.5 (IE5) | | 50.2 (110.6) |
| VPC-B2154B-*xxxx*AS | 2000 | 3200 | 48.0 (425) | 45.1 (399) | 131.4 (1163) | 9.4 (12.6) | 95.7 (IE5) | | 46.8 (103.2) |
| VPC-B2154D-*xxxx*FS | 3000 | 5000 (4294) | | 48.0 (425) | | 15.0 (20.1) | 94.5 (IE5) | | 50.2 (110.6) |
| VPC-B2155B-*xxxx*AS | 2000 | 3200 | 59.0 (522) | 51.7 (458) | 156.7 (1387) | 10.8 (14.5) | 94.4 (IE5) | 0.0170 (0.15) | 55.6 (122.5) |
| VPC-B2155D-*xxxx*FS | 3000 | 5000 (4172) | 59.0 (522) | 59.0 (522) | 156.7 (1387) | 18.5 (24.8) | 94.0 (IE4) | | 58.9 (129.9) |

## Kinetix VPC Servo Motor Performance Specifications (continued)

| Motor Cat. No. | Rated Speed rpm | Maximum (1) Speed rpm | Continuous Stall Torque N•m (lb•in) | Continuous Rated Torque N•m (lb•in) | Peak Stall Torque N•m (lb•in) | Motor Rated Output kW (Hp) | Motor Rated (2) Efficiency % | Rotor Inertia (3) kg-m$^2$ (lb•in•s$^2$) | Motor Weight, (3) approx kg (lb) |
|---|---|---|---|---|---|---|---|---|---|
| VPC-B2156A-*xxxx*AS | 1500 | 2800 | 70.1 (620) | 56.1 (497) | 185.5 (1642) | 8.8 (11.8) | 93.9 (IE5) | 0.0203 (0.17) | 63.3 (139.6) |
| VPC-B2156D-*xxxx*FS | 3000 | 5000 (4101) | 70.1 (620) | 70.1 (620) | 185.5 (1642) | 22.0 (29.5) | 94.0 (IE4) | | 66.8 (147.3) |
| VPC-B30029-*xxxx*AS | 1000 | 1400 | 103.4 (915) | 100.2 (887) | 183.7 (1626) | 10.5 (14.1) | 94.8 (IE5) | 0.0285 (0.25) | 75.0 (165.2) |
| VPC-B30029-*xxxx*FS | | 3000 (1493) | 105.1 (930) | 105.1 (930) | | 11.0 (14.7) | 94.9 (IE5) | | 81.4 (179.5) |
| VPC-B30039-*xxxx*AS | 1000 | 1400 | 142.4 (1260) | 135.7 (1201) | 237.9 (2106) | 14.2 (19.1) | 96.4 (IE5) | 0.0399 (0.35) | 89.3 (196.8) |
| VPC-B30039-*xxxx*FS | | 3000 (1472) | 143.3 (1268) | 143.3 (1268) | | 15.0 (20.1) | 96.3 (IE5) | | 95.7 (210.9) |
| VPC-B30049-*xxxx*AS | 1000 | 1400 | 176.1 (1558) | 167.7 (1484) | 327.8 (2901) | 17.6 (23.6) | 95.6 (IE5) | 0.0520 (0.46) | 109.8 (242.2) |
| VPC-B30049-*xxxx*FS | | 3000 (1429) | 176.7 (1564) | 176.7 (1564) | | 18.5 (24.8) | 96.5 (IE5) | | 116.7 (257.2) |
| VPC-B3002A-*xxxx*AS | 1500 | 2200 | 95.5 (845) | 90.6 (802) | 170.4 (1508) | 14.2 (19.1) | 94.6 (IE5) | 0.0285 (0.25) | 75.0 (165.2) |
| VPC-B3002A-*xxxx*FS | | 4000 (2212) | | 95.5 (845) | | 15.0 (20.1) | 95.2 (IE5) | | 81.4 (179.5) |
| VPC-B3003A-*xxxx*AS | 1500 | 2100 | 140.3 (1242) | 111.3 (985) | 244.8 (2167) | 17.5 (23.4) | 96.7 (IE5) | 0.0399 (0.35) | 89.3 (196.8) |
| VPC-B3003A-*xxxx*FS | | 3500 (2166) | | 140.3 (1242) | | 22.0 (29.5) | 96.3 (IE5) | | 95.7 (210.9) |
| VPC-B3004A-*xxxx*AS | 1500 | 2100 | 191.1 (1691) | 155.1 (1373) | 319.0 (2823) | 24.4 (34.1) | 95.9 (IE5) | 0.0520 (0.46) | 109.8 (242.2) |
| VPC-B3004A-*xxxx*FS | | 3500 (2128) | | 191.1 (1691) | | 30.0 (40.2) | 96.0 (IE5) | | 116.7 (257.2) |
| VPC-B3004B-*xxxx*AS | 2000 | 2800 | 95.5 (845) | 78.1 (691) | 257.7 (2281) | 16.4 (22.0) | 94.0 (IE5) | 0.0520 (0.46) | 109.8 (242.2) |
| VPC-B3004D-*xxxx*FS | 3000 | 4000 (4054) | 95.5 (845) | 95.5 (845) | 257.7 (2281) | 30.0 (40.2) | 94.7 (IE4) | | 116.7 (257.2) |

(1) Operation beyond maximum speed requires DC-bus protection. Bus overvoltage speed is shown in parentheses. See the Kinetix 5700 Servo Drives User Manual, publication 2198-UM002, for more information on bus overvoltage speed, field-weakening mode, and the extended speed feature.
(2) Kinetix VPC motor is rated at or above IE4 efficiency for rated torque, speed, and temperature, with power supplied by a Kinetix 5700 drive, and switching at 4.0 kHz PWM frequency.
(3) Refer to Kinetix VPC Servo Motor Brake Specifications for brake rotor inertia and brake motor weight.

## Kinetix VPC Servo Motor Brake Specifications

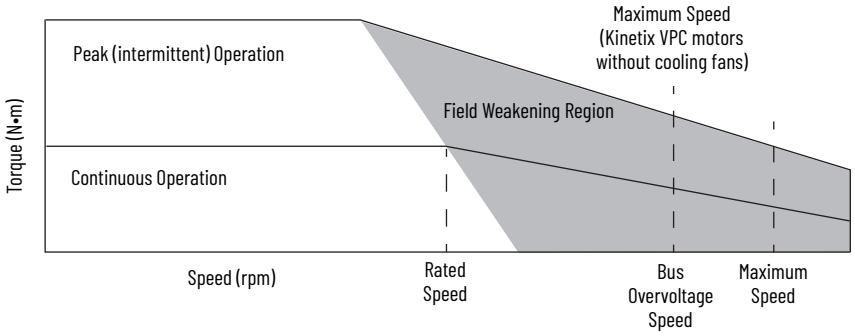
| Motor Cat. No. | Backlash, max (brake engaged) arc minutes | Holding Torque N•m (lb•in) | Coil Current at 24V DC A | Brake Response Time | | Brake Rotor Inertia kg-m$^2$ (lb•in•s$^2$) | Brake Motor (1) Weight, approx kg (lb) | Brake Motor (2) Weight, approx kg (lb) |
|---|---|---|---|---|---|---|---|---|
| | | | | Release ms | Engage (3) ms | | | |
| VPC-B1652 | 30 | 35.0 (310) | 1.01…1.70 | 50 | 200 | 0.00299 (0.026) | 23.3 (51.4) | 21.6 (47.6) |
| VPC-B1653 | | | | | | 0.00421 (0.037) | 28.9 (63.7) | 27.1 (59.7) |
| VPC-B1654 | | | | | | 0.00543 (0.048) | 34.3 (75.7) | 32.4 (71.4) |
| VPC-B2153 | | 72 (637) | 1.73…3.00 | 200 | 300 | 0.0108 (0.09) | 52.7 (116.1) | 49.4 (108.9) |
| VPC-B2154 | | | | | | 0.0141 (0.12) | 60.7 (133.7) | 57.2 (126.2) |
| VPC-B2155 | | | | | | 0.0174 (0.15) | 69.8 (153.8) | 66.3 (146.2) |
| VPC-B2156 | | | | | | 0.0205 (0.18) | 77.7 (171.3) | 74.2 (163.6) |
| VPC-B3002 | | 200 (1770) | 2.35…3.90 | 300 | 1000 | 0.0290 (0.25) | 102.9 (226.8) | 96.0 (211.7) |
| VPC-B3003 | | | | | | 0.0412 (0.36) | 117.1 (258.1) | 110.1 (242.7) |
| VPC-B3004 | | | | | | 0.0539 (0.47) | 138.1 (304.5) | 130.7 (288.2) |

(1) Brake motor weight with cooling fan, catalog number VPC-B*xxxxx*-*xxxx*FS.
(2) Brake motor weight without cooling fan, catalog number VPC-B*xxxxx*-*xxxx*AS.
(3) By using diode and zener diode as arc suppression device in external control circuit.

# Field Weakening Mode

Kinetix VPC interior permanent magnet (IPM) motors are designed to operate in Field Weakening mode to widen the speed range. Operation in Field Weakening mode can result in Back EMF voltage increasing to a level that exceeds the DC-bus voltage if a loss of control occurs. When this loss of control occurs, the Back EMF voltage can charge the DC-bus to a level that can overvoltage the DC-bus caps and result in a failure of the common DC-bus.

**Field Weakening Region**




**ATTENTION:** Operation at speeds exceeding the Bus Overvoltage Speed requires the use of an active shunt, configured in the Studio 5000 Logix Designer® application, to protect the DC bus system from an overvoltage condition. DC-bus failure can cause damage to all drive modules in the bus group, not just the inverter connected to the Kinetix VPC servo motor. See the Kinetix 5700 Servo Drives User Manual, publication 2198-UM002, for information on active shunt selection and configuration.

## Extended Speed Feature

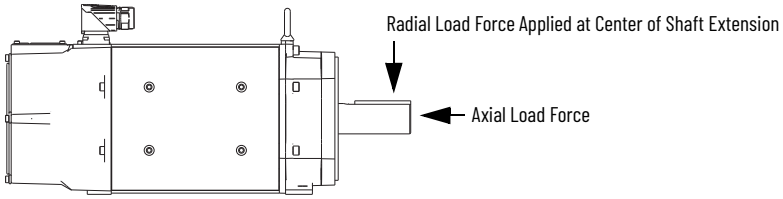
The Extended Speed feature is implemented in the Studio 5000 Logix Designer application to help prevent accidental operation at unsafe speeds. With this feature, the Logix 5000™ controller calculates a Bus Overvoltage Speed based on the drive's maximum bus-voltage and the Back EMF of the motor. This is the maximum speed that does not risk damaging the drive modules in the bus group. By default, the Extended Speed feature limits motor velocity to the Bus Overvoltage Speed.

**IMPORTANT** Bus Overvoltage Speed, identified in the Field Weakening Region figure, is maximum speed for Kinetix VPC motors without cooling fans.

# Kinetix VPC Servo Motor Load Force Ratings

Kinetix VPC servo motors are capable of operating with the maximum radial or maximum axial shaft loads listed in the following tables. Radial loads listed are applied in the middle of the shaft extension. There are two sets of tables starting below that represent an $L_{10}$ bearing fatigue life of 20,000 and 40,000 hours. Bearing fatigue life does not account for possible application-specific life reduction that can occur due to bearing grease contamination from external sources. Maximum operating speed is limited by motor winding.

**Load Forces on Shaft**



# Kinetix VPC Servo Motors (20,000 hours bearing-fatigue life)

## Radial Load Force Ratings (maximum) for Non-brake Motors

| Motor Cat. No. (1) | Maximum (2) Speed rpm | RPM | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 N (lb) | 1000 N (lb) | 1500 N (lb) | 2000 N (lb) | 2500 N (lb) | 3000 N (lb) | 3500 N (lb) | 4000 N (lb) | 4500 N (lb) | 5000 N (lb) |
| VPC-B1652A | 4500 | 2719 (611.3) | 2158 (485.2) | 1885 (423.8) | 1713 (385.1) | 1590 (357.5) | 1496 (336.4) | 1421 (319.5) | 1359 (305.6) | 1307 (293.9) | – |
| VPC-B1653A | 4500 | 2871 (645.5) | 2279 (512.3) | 1991 (447.6) | 1809 (406.6) | 1679 (377.5) | 1580 (355.2) | 1501 (337.4) | 1436 (322.7) | 1380 (310.3) | – |
| VPC-B1652D | 5000 | 2719 (611.3) | 2158 (485.2) | 1885 (423.8) | 1713 (385.1) | 1590 (357.5) | 1496 (336.4) | 1421 (319.5) | 1359 (305.6) | 1307 (293.9) | 1262 (283.7) |
| VPC-B1653D | 5000 | 2871 (645.5) | 2279 (512.3) | 1991 (447.6) | 1809 (406.6) | 1679 (377.5) | 1580 (355.2) | 1501 (337.4) | 1436 (322.7) | 1380 (310.3) | 1333 (299.6) |
| VPC-B1654D | 5000 | 2952 (663.7) | 2343 (526.7) | 2047 (460.2) | 1860 (418.1) | 1726 (388.1) | 1625 (365.2) | 1543 (346.9) | 1476 (331.8) | 1419 (319.1) | 1370 (308.0) |
| VPC-B21539 | 3000 | 3763 (846.1) | 2987 (671.5) | 2609 (586.6) | 2371 (533.0) | 2201 (494.8) | 2071 (465.6) | – | – | – | – |
| VPC-B21549 | 3000 | 3862 (868.3) | 3066 (689.2) | 2678 (602.0) | 2433 (547.0) | 2259 (507.8) | 2126 (477.8) | – | – | – | – |
| VPC-B2153A | 4500 | 3763 (846.1) | 2987 (671.5) | 2609 (586.6) | 2371 (533.0) | 2201 (494.8) | 2071 (465.6) | 1967 (442.3) | 1882 (423.0) | 1809 (406.7) | – |
| VPC-B2154A | 4500 | 3862 (868.3) | 3066 (689.2) | 2678 (602.0) | 2433 (547.0) | 2259 (507.8) | 2126 (477.8) | 2019 (453.9) | 1931 (434.1) | 1857 (417.4) | – |
| VPC-B2154B | 3200 | 3862 (868.3) | 3066 (689.2) | 2678 (602.0) | 2433 (547.0) | 2259 (507.8) | 2126 (477.8) | – | – | – | – |
| VPC-B2154D | 5000 | 3862 (868.3) | 3066 (689.2) | 2678 (602.0) | 2433 (547.0) | 2259 (507.8) | 2126 (477.8) | 2019 (453.9) | 1931 (434.1) | 1857 (417.4) | 1793 (403.0) |
| VPC-B2155B | 3200 | 3941 (886.1) | 3128 (703.3) | 2733 (614.4) | 2483 (558.2) | 2305 (518.2) | 2169 (487.6) | – | – | – | – |
| VPC-B2155D | 5000 | 3941 (886.1) | 3128 (703.3) | 2733 (614.4) | 2483 (558.2) | 2305 (518.2) | 2169 (487.6) | 2060 (463.2) | 1971 (443.0) | 1895 (426.0) | 1829 (411.3) |
| VPC-B2156A | 2800 | 4006 (900.6) | 3180 (714.8) | 2778 (624.4) | 2524 (567.3) | 2343 (526.7) | – | – | – | – | – |
| VPC-B2156D | 5000 | 4006 (900.6) | 3180 (714.8) | 2778 (624.4) | 2524 (567.3) | 2343 (526.7) | 2205 (495.6) | 2094 (470.8) | 2003 (450.3) | 1926 (433.0) | 1859 (418.0) |
| VPC-B30029 | 3000 | 5702 (1282.0) | 4526 (1017.5) | 3954 (888.9) | 3592 (807.6) | 3335 (749.7) | 3138 (705.5) | – | – | – | – |
| VPC-B30039 | 3000 | 5702 (1282.0) | 4526 (1017.5) | 3954 (888.9) | 3592 (807.6) | 3335 (749.7) | 3138 (705.5) | – | – | – | – |
| VPC-B30049 | 3000 | 5861 (1317.7) | 4652 (1045.9) | 4064 (913.6) | 3692 (830.1) | 3428 (770.6) | 3226 (725.2) | – | – | – | – |
| VPC-B3002A | 4000 | 5702 (1282.0) | 4526 (1017.5) | 3954 (888.9) | 3592 (807.6) | 3335 (749.7) | 3138 (705.5) | 2981 (670.2) | 2851 (641.0) | – | – |
| VPC-B3003A | 3500 | 5702 (1282.0) | 4526 (1017.5) | 3954 (888.9) | 3592 (807.6) | 3335 (749.7) | 3138 (705.5) | 2981 (670.2) | – | – | – |
| VPC-B3004A | 3500 | 5861 (1317.7) | 4652 (1045.9) | 4064 (913.6) | 3692 (830.1) | 3428 (770.6) | 3226 (725.2) | 3064 (688.8) | – | – | – |
| VPC-B3004B | 2800 | 5861 (1317.7) | 4652 (1045.9) | 4064 (913.6) | 3692 (830.1) | 3428 (770.6) | – | – | – | – | – |
| VPC-B3004D | 4000 | 5861 (1317.7) | 4652 (1045.9) | 4064 (913.6) | 3692 (830.1) | 3428 (770.6) | 3226 (725.2) | 3064 (688.8) | 2931 (658.8) | – | – |

(1) 1.0 N = 0.225 lb
(2) For Kinetix VPC bus overvoltage speed with and without a cooling fan, see Technical Specifications - Kinetix VPC Servo Motors on page 30.

## Axial Load Force Ratings (maximum radial load) for Non-brake Motors

| Motor Cat. No. (1) | Maximum (2) Speed rpm | RPM | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 N (lb) | 1000 N (lb) | 1500 N (lb) | 2000 N (lb) | 2500 N (lb) | 3000 N (lb) | 3500 N (lb) | 4000 N (lb) | 4500 N (lb) | 5000 N (lb) |
| VPC-B1652A | 4500 | 927 (208.4) | 686 (154.2) | 575 (129.3) | 508 (114.1) | 461 (103.6) | 426 (95.7) | 398 (89.5) | 376 (84.4) | 357 (80.2) | – |
| VPC-B1653A | 4500 | 927 (208.4) | 686 (154.2) | 575 (129.3) | 508 (114.1) | 461 (103.6) | 426 (95.7) | 398 (89.5) | 376 (84.4) | 357 (80.2) | – |
| VPC-B1652D | 5000 | 927 (208.4) | 686 (154.2) | 575 (129.3) | 508 (114.1) | 461 (103.6) | 426 (95.7) | 398 (89.5) | 376 (84.4) | 357 (80.2) | 341 (76.6) |
| VPC-B1653D | 5000 | 927 (208.4) | 686 (154.2) | 575 (129.3) | 508 (114.1) | 461 (103.6) | 426 (95.7) | 398 (89.5) | 376 (84.4) | 357 (80.2) | 341 (76.6) |
| VPC-B1654D | 5000 | 927 (208.4) | 686 (154.2) | 575 (129.3) | 508 (114.1) | 461 (103.6) | 426 (95.7) | 398 (89.5) | 376 (84.4) | 357 (80.2) | 341 (76.6) |
| VPC-B21539 | 3000 | 1196 (269.0) | 885 (199.0) | 742 (166.9) | 655 (147.3) | 594 (133.6) | 549 (123.5) | – | – | – | – |
| VPC-B21549 | 3000 | 1196 (269.0) | 885 (199.0) | 742 (166.9) | 655 (147.3) | 594 (133.6) | 549 (123.5) | – | – | – | – |
| VPC-B2153A | 4500 | 1196 (269.0) | 885 (199.0) | 742 (166.9) | 655 (147.3) | 594 (133.6) | 549 (123.5) | 514 (115.5) | 485 (109.0) | 460 (103.5) | – |
| VPC-B2154A | 4500 | 1196 (269.0) | 885 (199.0) | 742 (166.9) | 655 (147.3) | 594 (133.6) | 549 (123.5) | 514 (115.5) | 485 (109.0) | 460 (103.5) | – |
| VPC-B2154B | 3200 | 1196 (269.0) | 885 (199.0) | 742 (166.9) | 655 (147.3) | 594 (133.6) | 549 (123.5) | – | – | – | – |
| VPC-B2154D | 5000 | 1196 (269.0) | 885 (199.0) | 742 (166.9) | 655 (147.3) | 594 (133.6) | 549 (123.5) | 514 (115.5) | 485 (109.0) | 460 (103.5) | 440 (98.9) |
| VPC-B2155B | 3200 | 1196 (269.0) | 885 (199.0) | 742 (166.9) | 655 (147.3) | 594 (133.6) | 549 (123.5) | – | – | – | – |
| VPC-B2155D | 5000 | 1196 (269.0) | 885 (199.0) | 742 (166.9) | 655 (147.3) | 594 (133.6) | 549 (123.5) | 514 (115.5) | 485 (109.0) | 460 (103.5) | 440 (98.9) |
| VPC-B2156A | 2800 | 1196 (269.0) | 885 (199.0) | 742 (166.9) | 655 (147.3) | 594 (133.6) | – | – | – | – | – |
| VPC-B2156D | 5000 | 1196 (269.0) | 885 (199.0) | 742 (166.9) | 655 (147.3) | 594 (133.6) | 549 (123.5) | 514 (115.5) | 485 (109.0) | 460 (103.5) | 440 (98.9) |
| VPC-B30029 | 3000 | 1820 (409.2) | 1347 (302.8) | 1129 (253.9) | 997 (224.1) | 905 (203.3) | 836 (187.9) | – | – | – | – |
| VPC-B30039 | 3000 | 1820 (409.2) | 1347 (302.8) | 1129 (253.9) | 997 (224.1) | 905 (203.3) | 836 (187.9) | – | – | – | – |
| VPC-B30049 | 3000 | 1820 (409.2) | 1347 (302.8) | 1129 (253.9) | 997 (224.1) | 905 (203.3) | 836 (187.9) | – | – | – | – |
| VPC-B3002A | 4000 | 1820 (409.2) | 1347 (302.8) | 1129 (253.9) | 997 (224.1) | 905 (203.3) | 836 (187.9) | 782 (175.7) | 737 (165.8) | – | – |
| VPC-B3003A | 3500 | 1820 (409.2) | 1347 (302.8) | 1129 (253.9) | 997 (224.1) | 905 (203.3) | 836 (187.9) | 782 (175.7) | – | – | – |
| VPC-B3004A | 3500 | 1820 (409.2) | 1347 (302.8) | 1129 (253.9) | 997 (224.1) | 905 (203.3) | 836 (187.9) | 782 (175.7) | – | – | – |
| VPC-B3004B | 2800 | 1820 (409.2) | 1347 (302.8) | 1129 (253.9) | 997 (224.1) | 905 (203.3) | – | – | – | – | – |
| VPC-B3004D | 4000 | 1820 (409.2) | 1347 (302.8) | 1129 (253.9) | 997 (224.1) | 905 (203.3) | 836 (187.9) | 782 (175.7) | 737 (165.8) | – | – |

(1) 1.0 N = 0.225 lb
(2) For Kinetix VPC bus overvoltage speed with and without a cooling fan, see Technical Specifications - Kinetix VPC Servo Motors on page 30.

## Axial Load Force Ratings (zero radial load) for Non-brake Motors

| Motor Cat. No. (1) | Maximum (2) Speed rpm | RPM | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 N (lb) | 1000 N (lb) | 1500 N (lb) | 2000 N (lb) | 2500 N (lb) | 3000 N (lb) | 3500 N (lb) | 4000 N (lb) | 4500 N (lb) | 5000 N (lb) |
| VPC-B1652A | 4500 | 2713 (610.0) | 2008 (451.5) | 1684 (378.6) | 1486 (334.1) | 1349 (303.3) | 1246 (280.2) | 1166 (262.1) | 1100 (247.3) | 1045 (235.0) | – |
| VPC-B1653A | 4500 | 2713 (610.0) | 2008 (451.5) | 1684 (378.6) | 1486 (334.1) | 1349 (303.3) | 1246 (280.2) | 1166 (262.1) | 1100 (247.3) | 1045 (235.0) | – |
| VPC-B1652D | 5000 | 2713 (610.0) | 2008 (451.5) | 1684 (378.6) | 1486 (334.1) | 1349 (303.3) | 1246 (280.2) | 1166 (262.1) | 1100 (247.3) | 1045 (235.0) | 998 (224.5) |
| VPC-B1653D | 5000 | 2713 (610.0) | 2008 (451.5) | 1684 (378.6) | 1486 (334.1) | 1349 (303.3) | 1246 (280.2) | 1166 (262.1) | 1100 (247.3) | 1045 (235.0) | 998 (224.5) |
| VPC-B1654D | 5000 | 2713 (610.0) | 2008 (451.5) | 1684 (378.6) | 1486 (334.1) | 1349 (303.3) | 1246 (280.2) | 1166 (262.1) | 1100 (247.3) | 1045 (235.0) | 998 (224.5) |
| VPC-B21539 | 3000 | 3502 (787.3) | 2592 (582.7) | 2174 (488.6) | 1918 (431.3) | 1741 (391.4) | 1609 (361.6) | – | – | – | – |
| VPC-B21549 | 3000 | 3502 (787.3) | 2592 (582.7) | 2174 (488.6) | 1918 (431.3) | 1741 (391.4) | 1609 (361.6) | – | – | – | – |
| VPC-B2153A | 4500 | 3502 (787.3) | 2592 (582.7) | 2174 (488.6) | 1918 (431.3) | 1741 (391.4) | 1609 (361.6) | 1505 (338.2) | 1420 (319.2) | 1349 (303.3) | – |
| VPC-B2154A | 4500 | 3502 (787.3) | 2592 (582.7) | 2174 (488.6) | 1918 (431.3) | 1741 (391.4) | 1609 (361.6) | 1505 (338.2) | 1420 (319.2) | 1349 (303.3) | – |
| VPC-B2154B | 3200 | 3502 (787.3) | 2592 (582.7) | 2174 (488.6) | 1918 (431.3) | 1741 (391.4) | 1609 (361.6) | – | – | – | – |
| VPC-B2154D | 5000 | 3502 (787.3) | 2592 (582.7) | 2174 (488.6) | 1918 (431.3) | 1741 (391.4) | 1609 (361.6) | 1505 (338.2) | 1420 (319.2) | 1349 (303.3) | 1289 (289.7) |
| VPC-B2155B | 3200 | 3502 (787.3) | 2592 (582.7) | 2174 (488.6) | 1918 (431.3) | 1741 (391.4) | 1609 (361.6) | – | – | – | – |
| VPC-B2155D | 5000 | 3502 (787.3) | 2592 (582.7) | 2174 (488.6) | 1918 (431.3) | 1741 (391.4) | 1609 (361.6) | 1505 (338.2) | 1420 (319.2) | 1349 (303.3) | 1289 (289.7) |
| VPC-B2156A | 2800 | 3502 (787.3) | 2592 (582.7) | 2174 (488.6) | 1918 (431.3) | 1741 (391.4) | – | – | – | – | – |
| VPC-B2156D | 5000 | 3502 (787.3) | 2592 (582.7) | 2174 (488.6) | 1918 (431.3) | 1741 (391.4) | 1609 (361.6) | 1505 (338.2) | 1420 (319.2) | 1349 (303.3) | 1289 (289.7) |
| VPC-B30029 | 3000 | 5329 (1198.0) | 3944 (886.6) | 3307 (743.5) | 2919 (656.2) | 2649 (595.6) | 2448 (550.3) | – | – | – | – |
| VPC-B30039 | 3000 | 5329 (1198.0) | 3944 (886.6) | 3307 (743.5) | 2919 (656.2) | 2649 (595.6) | 2448 (550.3) | – | – | – | – |
| VPC-B30049 | 3000 | 5329 (1198.0) | 3944 (886.6) | 3307 (743.5) | 2919 (656.2) | 2649 (595.6) | 2448 (550.3) | – | – | – | – |
| VPC-B3002A | 4000 | 5329 (1198.0) | 3944 (886.6) | 3307 (743.5) | 2919 (656.2) | 2649 (595.6) | 2448 (550.3) | 2289 (514.7) | 2160 (485.7) | – | – |
| VPC-B3003A | 3500 | 5329 (1198.0) | 3944 (886.6) | 3307 (743.5) | 2919 (656.2) | 2649 (595.6) | 2448 (550.3) | 2289 (514.7) | – | – | – |
| VPC-B3004A | 3500 | 5329 (1198.0) | 3944 (886.6) | 3307 (743.5) | 2919 (656.2) | 2649 (595.6) | 2448 (550.3) | 2289 (514.7) | – | – | – |
| VPC-B3004B | 2800 | 5329 (1198.0) | 3944 (886.6) | 3307 (743.5) | 2919 (656.2) | 2649 (595.6) | – | – | – | – | – |
| VPC-B3004D | 4000 | 5329 (1198.0) | 3944 (886.6) | 3307 (743.5) | 2919 (656.2) | 2649 (595.6) | 2448 (550.3) | 2289 (514.7) | 2160 (485.7) | – | – |

(1) 1.0 N = 0.225 lb
(2) For Kinetix VPC bus overvoltage speed with and without a cooling fan, see Technical Specifications - Kinetix VPC Servo Motors on page 30.

## Radial Load Force Ratings (maximum) for Brake Motors

| Motor Cat. No. (1) | Maximum (2) Speed rpm | RPM | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 N (lb) | 1000 N (lb) | 1500 N (lb) | 2000 N (lb) | 2500 N (lb) | 3000 N (lb) | 3500 N (lb) | 4000 N (lb) | 4500 N (lb) | 5000 N (lb) |
| VPC-B1652A | 4500 | 2871 (645.5) | 2279 (512.3) | 1991 (447.6) | 1809 (406.6) | 1679 (377.5) | 1580 (355.2) | 1501 (337.4) | 1436 (322.7) | 1380 (310.3) | – |
| VPC-B1653A | 4500 | 2952 (663.7) | 2343 (526.7) | 2047 (460.2) | 1860 (418.1) | 1726 (388.1) | 1625 (365.2) | 1543 (346.9) | 1476 (331.8) | 1419 (319.1) | – |
| VPC-B1652D | 5000 | 2871 (645.5) | 2279 (512.3) | 1991 (447.6) | 1809 (406.6) | 1679 (377.5) | 1580 (355.2) | 1501 (337.4) | 1436 (322.7) | 1380 (310.3) | 1333 (299.6) |
| VPC-B1653D | 5000 | 2952 (663.7) | 2343 (526.7) | 2047 (460.2) | 1860 (418.1) | 1726 (388.1) | 1625 (365.2) | 1543 (346.9) | 1476 (331.8) | 1419 (319.1) | 1370 (308.0) |
| VPC-B1654D | 5000 | 3016 (678.1) | 2394 (538.2) | 2091 (470.2) | 1900 (427.2) | 1764 (396.5) | 1660 (373.2) | 1577 (354.5) | 1508 (339.0) | 1450 (326.0) | 1400 (314.7) |
| VPC-B21539 | 3000 | 3941 (886.1) | 3128 (703.3) | 2733 (614.4) | 2483 (558.2) | 2305 (518.2) | 2169 (487.6) | – | – | – | – |
| VPC-B21549 | 3000 | 4006 (900.6) | 3180 (714.8) | 2778 (624.4) | 2524 (567.3) | 2343 (526.7) | 2205 (495.6) | – | – | – | – |
| VPC-B2153A | 4500 | 3941 (886.1) | 3128 (703.3) | 2733 (614.4) | 2483 (558.2) | 2305 (518.2) | 2169 (487.6) | 2060 (463.2) | 1971 (443.0) | 1895 (426.0) | – |
| VPC-B2154A | 4500 | 4006 (900.6) | 3180 (714.8) | 2778 (624.4) | 2524 (567.3) | 2343 (526.7) | 2205 (495.6) | 2094 (470.8) | 2003 (450.3) | 1926 (433.0) | – |
| VPC-B2154B | 3200 | 4006 (900.6) | 3180 (714.8) | 2778 (624.4) | 2524 (567.3) | 2343 (526.7) | 2205 (495.6) | – | – | – | – |
| VPC-B2154D | 5000 | 4006 (900.6) | 3180 (714.8) | 2778 (624.4) | 2524 (567.3) | 2343 (526.7) | 2205 (495.6) | 2094 (470.8) | 2003 (450.3) | 1926 (433.0) | 1859 (418.0) |
| VPC-B2155B | 3200 | 4106 (923.0) | 3259 (732.5) | 2847 (639.9) | 2586 (581.4) | 2401 (539.7) | 2259 (507.9) | – | – | – | – |
| VPC-B2155D | 5000 | 4106 (923.0) | 3259 (732.5) | 2847 (639.9) | 2586 (581.4) | 2401 (539.7) | 2259 (507.9) | 2146 (482.5) | 2053 (461.5) | 1974 (443.7) | 1906 (428.4) |
| VPC-B2156A | 2800 | 4106 (923.0) | 3259 (732.5) | 2847 (639.9) | 2586 (581.4) | 2401 (539.7) | – | – | – | – | – |
| VPC-B2156D | 5000 | 4106 (923.0) | 3259 (732.5) | 2847 (639.9) | 2586 (581.4) | 2401 (539.7) | 2259 (507.9) | 2146 (482.5) | 2053 (461.5) | 1974 (443.7) | 1906 (428.4) |
| VPC-B30029 | 3000 | 5861 (1317.7) | 4652 (1045.9) | 4064 (913.6) | 3692 (830.1) | 3428 (770.6) | 3226 (725.2) | – | – | – | – |
| VPC-B30039 | 3000 | 5990 (1346.5) | 4754 (1068.7) | 4153 (933.6) | 3773 (848.3) | 3503 (787.5) | 3296 (741.0) | – | – | – | – |
| VPC-B30049 | 3000 | 6184 (1390.2) | 4908 (1103.4) | 4288 (963.9) | 3896 (875.8) | 3616 (813.0) | 3403 (765.1) | – | – | – | – |
| VPC-B3002A | 4000 | 5861 (1317.7) | 4652 (1045.9) | 4064 (913.6) | 3692 (830.1) | 3428 (770.6) | 3226 (725.2) | 3064 (688.8) | 2931 (658.8) | – | – |
| VPC-B3003A | 3500 | 5990 (1346.5) | 4754 (1068.7) | 4153 (933.6) | 3773 (848.3) | 3503 (787.5) | 3296 (741.0) | 3131 (703.9) | – | – | – |
| VPC-B3004A | 3500 | 6184 (1390.2) | 4908 (1103.4) | 4288 (963.9) | 3896 (875.8) | 3616 (813.0) | 3403 (765.1) | 3233 (726.8) | – | – | – |
| VPC-B3004B | 2800 | 6184 (1390.2) | 4908 (1103.4) | 4288 (963.9) | 3896 (875.8) | 3616 (813.0) | – | – | – | – | – |
| VPC-B3004D | 4000 | 6184 (1390.2) | 4908 (1103.4) | 4288 (963.9) | 3896 (875.8) | 3616 (813.0) | 3403 (765.1) | 3233 (726.8) | 3092 (695.1) | – | – |

(1) 1.0 N = 0.225 lb
(2) For Kinetix VPC bus overvoltage speed with and without a cooling fan, see Technical Specifications - Kinetix VPC Servo Motors on page 30.

## Axial Load Force Ratings (maximum radial load) for Brake Motors

| Motor Cat. No. (1) | Maximum (2) Speed rpm | RPM | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 N (lb) | 1000 N (lb) | 1500 N (lb) | 2000 N (lb) | 2500 N (lb) | 3000 N (lb) | 3500 N (lb) | 4000 N (lb) | 4500 N (lb) | 5000 N (lb) |
| VPC-B1652A | 4500 | 927 (208.4) | 686 (154.2) | 575 (129.3) | 508 (114.1) | 461 (103.6) | 426 (95.7) | 398 (89.5) | 376 (84.4) | 357 (80.2) | – |
| VPC-B1653A | 4500 | 927 (208.4) | 686 (154.2) | 575 (129.3) | 508 (114.1) | 461 (103.6) | 426 (95.7) | 398 (89.5) | 376 (84.4) | 357 (80.2) | – |
| VPC-B1652D | 5000 | 927 (208.4) | 686 (154.2) | 575 (129.3) | 508 (114.1) | 461 (103.6) | 426 (95.7) | 398 (89.5) | 376 (84.4) | 357 (80.2) | 341 (76.6) |
| VPC-B1653D | 5000 | 927 (208.4) | 686 (154.2) | 575 (129.3) | 508 (114.1) | 461 (103.6) | 426 (95.7) | 398 (89.5) | 376 (84.4) | 357 (80.2) | 341 (76.6) |
| VPC-B1654D | 5000 | 927 (208.4) | 686 (154.2) | 575 (129.3) | 508 (114.1) | 461 (103.6) | 426 (95.7) | 398 (89.5) | 376 (84.4) | 357 (80.2) | 341 (76.6) |
| VPC-B21539 | 3000 | 1196 (269.0) | 885 (199.0) | 742 (166.9) | 655 (147.3) | 594 (133.6) | 549 (123.5) | – | – | – | – |
| VPC-B21549 | 3000 | 1196 (269.0) | 885 (199.0) | 742 (166.9) | 655 (147.3) | 594 (133.6) | 549 (123.5) | – | – | – | – |
| VPC-B2153A | 4500 | 1196 (269.0) | 885 (199.0) | 742 (166.9) | 655 (147.3) | 594 (133.6) | 549 (123.5) | 514 (115.5) | 485 (109.0) | 460 (103.5) | – |
| VPC-B2154A | 4500 | 1196 (269.0) | 885 (199.0) | 742 (166.9) | 655 (147.3) | 594 (133.6) | 549 (123.5) | 514 (115.5) | 485 (109.0) | 460 (103.5) | – |
| VPC-B2154B | 3200 | 1196 (269.0) | 885 (199.0) | 742 (166.9) | 655 (147.3) | 594 (133.6) | 549 (123.5) | – | – | – | – |
| VPC-B2154D | 5000 | 1196 (269.0) | 885 (199.0) | 742 (166.9) | 655 (147.3) | 594 (133.6) | 549 (123.5) | 514 (115.5) | 485 (109.0) | 460 (103.5) | 440 (98.9) |
| VPC-B2155B | 3200 | 1196 (269.0) | 885 (199.0) | 742 (166.9) | 655 (147.3) | 594 (133.6) | 549 (123.5) | – | – | – | – |
| VPC-B2155D | 5000 | 1196 (269.0) | 885 (199.0) | 742 (166.9) | 655 (147.3) | 594 (133.6) | 549 (123.5) | 514 (115.5) | 485 (109.0) | 460 (103.5) | 440 (98.9) |
| VPC-B2156A | 2800 | 1196 (269.0) | 885 (199.0) | 742 (166.9) | 655 (147.3) | 594 (133.6) | – | – | – | – | – |
| VPC-B2156D | 5000 | 1196 (269.0) | 885 (199.0) | 742 (166.9) | 655 (147.3) | 594 (133.6) | 549 (123.5) | 514 (115.5) | 485 (109.0) | 460 (103.5) | 440 (98.9) |
| VPC-B30029 | 3000 | 1820 (409.2) | 1347 (302.8) | 1129 (253.9) | 997 (224.1) | 905 (203.3) | 836 (187.9) | – | – | – | – |
| VPC-B30039 | 3000 | 1820 (409.2) | 1347 (302.8) | 1129 (253.9) | 997 (224.1) | 905 (203.3) | 836 (187.9) | – | – | – | – |
| VPC-B30049 | 3000 | 1820 (409.2) | 1347 (302.8) | 1129 (253.9) | 997 (224.1) | 905 (203.3) | 836 (187.9) | – | – | – | – |
| VPC-B3002A | 4000 | 1820 (409.2) | 1347 (302.8) | 1129 (253.9) | 997 (224.1) | 905 (203.3) | 836 (187.9) | 782 (175.7) | 737 (165.8) | – | – |
| VPC-B3003A | 3500 | 1820 (409.2) | 1347 (302.8) | 1129 (253.9) | 997 (224.1) | 905 (203.3) | 836 (187.9) | 782 (175.7) | – | – | – |
| VPC-B3004A | 3500 | 1820 (409.2) | 1347 (302.8) | 1129 (253.9) | 997 (224.1) | 905 (203.3) | 836 (187.9) | 782 (175.7) | – | – | – |
| VPC-B3004B | 2800 | 1820 (409.2) | 1347 (302.8) | 1129 (253.9) | 997 (224.1) | 905 (203.3) | – | – | – | – | – |
| VPC-B3004D | 4000 | 1820 (409.2) | 1347 (302.8) | 1129 (253.9) | 997 (224.1) | 905 (203.3) | 836 (187.9) | 782 (175.7) | 737 (165.8) | – | – |

(1) 1.0 N = 0.225 lb
(2) For Kinetix VPC bus overvoltage speed with and without a cooling fan, see Technical Specifications - Kinetix VPC Servo Motors on page 30.

## Axial Load Force Ratings (zero radial load) for Brake Motors

| Motor Cat. No. (1) | Maximum (2) Speed rpm | RPM | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 N (lb) | 1000 N (lb) | 1500 N (lb) | 2000 N (lb) | 2500 N (lb) | 3000 N (lb) | 3500 N (lb) | 4000 N (lb) | 4500 N (lb) | 5000 N (lb) |
| VPC-B1652A | 4500 | 2713 (610.0) | 2008 (451.5) | 1684 (378.6) | 1486 (334.1) | 1349 (303.3) | 1246 (280.2) | 1166 (262.1) | 1100 (247.3) | 1045 (235.0) | – |
| VPC-B1653A | 4500 | 2713 (610.0) | 2008 (451.5) | 1684 (378.6) | 1486 (334.1) | 1349 (303.3) | 1246 (280.2) | 1166 (262.1) | 1100 (247.3) | 1045 (235.0) | – |
| VPC-B1652D | 5000 | 2713 (610.0) | 2008 (451.5) | 1684 (378.6) | 1486 (334.1) | 1349 (303.3) | 1246 (280.2) | 1166 (262.1) | 1100 (247.3) | 1045 (235.0) | 998 (224.5) |
| VPC-B1653D | 5000 | 2713 (610.0) | 2008 (451.5) | 1684 (378.6) | 1486 (334.1) | 1349 (303.3) | 1246 (280.2) | 1166 (262.1) | 1100 (247.3) | 1045 (235.0) | 998 (224.5) |
| VPC-B1654D | 5000 | 2713 (610.0) | 2008 (451.5) | 1684 (378.6) | 1486 (334.1) | 1349 (303.3) | 1246 (280.2) | 1166 (262.1) | 1100 (247.3) | 1045 (235.0) | 998 (224.5) |
| VPC-B21539 | 3000 | 3502 (787.3) | 2592 (582.7) | 2174 (488.6) | 1918 (431.3) | 1741 (391.4) | 1609 (361.6) | – | – | – | – |
| VPC-B21549 | 3000 | 3502 (787.3) | 2592 (582.7) | 2174 (488.6) | 1918 (431.3) | 1741 (391.4) | 1609 (361.6) | – | – | – | – |
| VPC-B2153A | 4500 | 3502 (787.3) | 2592 (582.7) | 2174 (488.6) | 1918 (431.3) | 1741 (391.4) | 1609 (361.6) | 1505 (338.2) | 1420 (319.2) | 1349 (303.3) | – |
| VPC-B2154A | 4500 | 3502 (787.3) | 2592 (582.7) | 2174 (488.6) | 1918 (431.3) | 1741 (391.4) | 1609 (361.6) | 1505 (338.2) | 1420 (319.2) | 1349 (303.3) | – |
| VPC-B2154B | 3200 | 3502 (787.3) | 2592 (582.7) | 2174 (488.6) | 1918 (431.3) | 1741 (391.4) | 1609 (361.6) | – | – | – | – |
| VPC-B2154D | 5000 | 3502 (787.3) | 2592 (582.7) | 2174 (488.6) | 1918 (431.3) | 1741 (391.4) | 1609 (361.6) | 1505 (338.2) | 1420 (319.2) | 1349 (303.3) | 1289 (289.7) |
| VPC-B2155B | 3200 | 3502 (787.3) | 2592 (582.7) | 2174 (488.6) | 1918 (431.3) | 1741 (391.4) | 1609 (361.6) | – | – | – | – |
| VPC-B2155D | 5000 | 3502 (787.3) | 2592 (582.7) | 2174 (488.6) | 1918 (431.3) | 1741 (391.4) | 1609 (361.6) | 1505 (338.2) | 1420 (319.2) | 1349 (303.3) | 1289 (289.7) |
| VPC-B2156A | 2800 | 3502 (787.3) | 2592 (582.7) | 2174 (488.6) | 1918 (431.3) | 1741 (391.4) | – | – | – | – | – |
| VPC-B2156D | 5000 | 3502 (787.3) | 2592 (582.7) | 2174 (488.6) | 1918 (431.3) | 1741 (391.4) | 1609 (361.6) | 1505 (338.2) | 1420 (319.2) | 1349 (303.3) | 1289 (289.7) |
| VPC-B30029 | 3000 | 5329 (1198.0) | 3944 (886.6) | 3307 (743.5) | 2919 (656.2) | 2649 (595.6) | 2448 (550.3) | – | – | – | – |
| VPC-B30039 | 3000 | 5329 (1198.0) | 3944 (886.6) | 3307 (743.5) | 2919 (656.2) | 2649 (595.6) | 2448 (550.3) | – | – | – | – |
| VPC-B30049 | 3000 | 5329 (1198.0) | 3944 (886.6) | 3307 (743.5) | 2919 (656.2) | 2649 (595.6) | 2448 (550.3) | – | – | – | – |
| VPC-B3002A | 4000 | 5329 (1198.0) | 3944 (886.6) | 3307 (743.5) | 2919 (656.2) | 2649 (595.6) | 2448 (550.3) | 2289 (514.7) | 2160 (485.7) | – | – |
| VPC-B3003A | 3500 | 5329 (1198.0) | 3944 (886.6) | 3307 (743.5) | 2919 (656.2) | 2649 (595.6) | 2448 (550.3) | 2289 (514.7) | – | – | – |
| VPC-B3004A | 3500 | 5329 (1198.0) | 3944 (886.6) | 3307 (743.5) | 2919 (656.2) | 2649 (595.6) | 2448 (550.3) | 2289 (514.7) | – | – | – |
| VPC-B3004B | 2800 | 5329 (1198.0) | 3944 (886.6) | 3307 (743.5) | 2919 (656.2) | 2649 (595.6) | – | – | – | – | – |
| VPC-B3004D | 4000 | 5329 (1198.0) | 3944 (886.6) | 3307 (743.5) | 2919 (656.2) | 2649 (595.6) | 2448 (550.3) | 2289 (514.7) | 2160 (485.7) | – | – |

(1) 1.0 N = 0.225 lb
(2) For Kinetix VPC bus overvoltage speed with and without a cooling fan, see Technical Specifications - Kinetix VPC Servo Motors on page 30.

# Kinetix VPC Servo Motors (40,000 hours bearing-fatigue life)

## Radial Load Force Ratings (maximum) for Non-brake Motors

| Motor Cat. No. (1) | Maximum (2) Speed rpm | RPM | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 N (lb) | 1000 N (lb) | 1500 N (lb) | 2000 N (lb) | 2500 N (lb) | 3000 N (lb) | 3500 N (lb) | 4000 N (lb) | 4500 N (lb) | 5000 N (lb) |
| VPC-B1652A | 4500 | 2158 (485.2) | 1713 (385.1) | 1496 (336.4) | 1359 (305.6) | 1262 (283.7) | 1188 (267.0) | 1128 (253.6) | 1079 (242.6) | 1037 (233.2) | – |
| VPC-B1653A | 4500 | 2279 (512.3) | 1809 (406.6) | 1580 (355.2) | 1436 (322.7) | 1333 (299.6) | 1254 (281.9) | 1191 (267.8) | 1139 (256.2) | 1096 (246.3) | – |
| VPC-B1652D | 5000 | 2158 (485.2) | 1713 (385.1) | 1496 (336.4) | 1359 (305.6) | 1262 (283.7) | 1188 (267.0) | 1128 (253.6) | 1079 (242.6) | 1037 (233.2) | 1002 (225.2) |
| VPC-B1653D | 5000 | 2279 (512.3) | 1809 (406.6) | 1580 (355.2) | 1436 (322.7) | 1333 (299.6) | 1254 (281.9) | 1191 (267.8) | 1139 (256.2) | 1096 (246.3) | 1058 (237.8) |
| VPC-B1654D | 5000 | 2343 (526.7) | 1860 (418.1) | 1625 (365.2) | 1476 (331.8) | 1370 (308.0) | 1289 (289.9) | 1225 (275.4) | 1172 (263.4) | 1126 (253.2) | 1088 (244.5) |
| VPC-B21539 | 3000 | 2987 (671.5) | 2371 (533.0) | 2071 (465.6) | 1882 (423.0) | 1747 (392.7) | 1644 (369.6) | – | – | – | – |
| VPC-B21549 | 3000 | 3066 (689.2) | 2433 (547.0) | 2126 (477.8) | 1931 (434.1) | 1793 (403.0) | 1687 (379.3) | – | – | – | – |
| VPC-B2153A | 4500 | 2987 (671.5) | 2371 (533.0) | 2071 (465.6) | 1882 (423.0) | 1747 (392.7) | 1644 (369.6) | 1562 (351.0) | 1494 (335.8) | 1436 (322.8) | – |
| VPC-B2154A | 4500 | 3066 (689.2) | 2433 (547.0) | 2126 (477.8) | 1931 (434.1) | 1793 (403.0) | 1687 (379.3) | 1603 (360.3) | 1533 (344.6) | 1474 (331.3) | – |
| VPC-B2154B | 3200 | 3066 (689.2) | 2433 (547.0) | 2126 (477.8) | 1931 (434.1) | 1793 (403.0) | 1687 (379.3) | – | – | – | – |
| VPC-B2154D | 5000 | 3066 (689.2) | 2433 (547.0) | 2126 (477.8) | 1931 (434.1) | 1793 (403.0) | 1687 (379.3) | 1603 (360.3) | 1533 (344.6) | 1474 (331.3) | 1423 (319.9) |
| VPC-B2155B | 3200 | 3128 (703.3) | 2483 (558.2) | 2169 (487.6) | 1971 (443.0) | 1829 (411.3) | 1722 (387.0) | – | – | – | – |
| VPC-B2155D | 5000 | 3128 (703.3) | 2483 (558.2) | 2169 (487.6) | 1971 (443.0) | 1829 (411.3) | 1722 (387.0) | 1635 (367.6) | 1564 (351.6) | 1504 (338.1) | 1452 (326.4) |
| VPC-B2156A | 2800 | 3180 (714.8) | 2524 (567.3) | 2205 (495.6) | 2003 (450.3) | 1859 (418.0) | – | – | – | – | – |
| VPC-B2156D | 5000 | 3180 (714.8) | 2524 (567.3) | 2205 (495.6) | 2003 (450.3) | 1859 (418.0) | 1750 (393.4) | 1662 (373.7) | 1590 (357.4) | 1529 (343.6) | 1476 (331.8) |
| VPC-B30029 | 3000 | 4526 (1017.5) | 3592 (807.6) | 3138 (705.5) | 2851 (641.0) | 2647 (595.0) | 2491 (559.9) | – | – | – | – |
| VPC-B30039 | 3000 | 4526 (1017.5) | 3592 (807.6) | 3138 (705.5) | 2851 (641.0) | 2647 (595.0) | 2491 (559.9) | – | – | – | – |
| VPC-B30049 | 3000 | 4652 (1045.9) | 3692 (830.1) | 3226 (725.2) | 2931 (658.8) | 2721 (611.6) | 2560 (575.6) | – | – | – | – |
| VPC-B3002A | 4000 | 4526 (1017.5) | 3592 (807.6) | 3138 (705.5) | 2851 (641.0) | 2647 (595.0) | 2491 (559.9) | 2366 (531.9) | 2263 (508.7) | – | – |
| VPC-B3003A | 3500 | 4526 (1017.5) | 3592 (807.6) | 3138 (705.5) | 2851 (641.0) | 2647 (595.0) | 2491 (559.9) | 2366 (531.9) | – | – | – |
| VPC-B3004A | 3500 | 4652 (1045.9) | 3692 (830.1) | 3226 (725.2) | 2931 (658.8) | 2721 (611.6) | 2560 (575.6) | 2432 (546.7) | – | – | – |
| VPC-B3004B | 2800 | 4652 (1045.9) | 3692 (830.1) | 3226 (725.2) | 2931 (658.8) | 2721 (611.6) | – | – | – | – | – |
| VPC-B3004D | 4000 | 4652 (1045.9) | 3692 (830.1) | 3226 (725.2) | 2931 (658.8) | 2721 (611.6) | 2560 (575.6) | 2432 (546.7) | 2326 (522.9) | – | – |

(1) 1.0 N = 0.225 lb
(2) For Kinetix VPC bus overvoltage speed with and without a cooling fan, see Technical Specifications - Kinetix VPC Servo Motors on page 30.

## Axial Load Force Ratings (maximum radial load) for Non-brake Motors

| Motor Cat. No. (1) | Maximum (2) Speed rpm | RPM | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 N (lb) | 1000 N (lb) | 1500 N (lb) | 2000 N (lb) | 2500 N (lb) | 3000 N (lb) | 3500 N (lb) | 4000 N (lb) | 4500 N (lb) | 5000 N (lb) |
| VPC-B1652A | 4500 | 686 (154.2) | 508 (114.1) | 426 (95.7) | 376 (84.4) | 341 (76.6) | 315 (70.8) | 294 (66.2) | 278 (62.5) | 264 (59.4) | – |
| VPC-B1653A | 4500 | 686 (154.2) | 508 (114.1) | 426 (95.7) | 376 (84.4) | 341 (76.6) | 315 (70.8) | 294 (66.2) | 278 (62.5) | 264 (59.4) | – |
| VPC-B1652D | 5000 | 686 (154.2) | 508 (114.1) | 426 (95.7) | 376 (84.4) | 341 (76.6) | 315 (70.8) | 294 (66.2) | 278 (62.5) | 264 (59.4) | 252 (56.7) |
| VPC-B1653D | 5000 | 686 (154.2) | 508 (114.1) | 426 (95.7) | 376 (84.4) | 341 (76.6) | 315 (70.8) | 294 (66.2) | 278 (62.5) | 264 (59.4) | 252 (56.7) |
| VPC-B1654D | 5000 | 686 (154.2) | 508 (114.1) | 426 (95.7) | 376 (84.4) | 341 (76.6) | 315 (70.8) | 294 (66.2) | 278 (62.5) | 264 (59.4) | 252 (56.7) |
| VPC-B21539 | 3000 | 885 (199.0) | 655 (147.3) | 549 (123.5) | 485 (109.0) | 440 (98.9) | 406 (91.4) | – | – | – | – |
| VPC-B21549 | 3000 | 885 (199.0) | 655 (147.3) | 549 (123.5) | 485 (109.0) | 440 (98.9) | 406 (91.4) | – | – | – | – |
| VPC-B2153A | 4500 | 885 (199.0) | 655 (147.3) | 549 (123.5) | 485 (109.0) | 440 (98.9) | 406 (91.4) | 380 (85.4) | 359 (80.6) | 341 (76.6) | – |
| VPC-B2154A | 4500 | 885 (199.0) | 655 (147.3) | 549 (123.5) | 485 (109.0) | 440 (98.9) | 406 (91.4) | 380 (85.4) | 359 (80.6) | 341 (76.6) | – |
| VPC-B2154B | 3200 | 885 (199.0) | 655 (147.3) | 549 (123.5) | 485 (109.0) | 440 (98.9) | 406 (91.4) | – | – | – | – |
| VPC-B2154D | 5000 | 885 (199.0) | 655 (147.3) | 549 (123.5) | 485 (109.0) | 440 (98.9) | 406 (91.4) | 380 (85.4) | 359 (80.6) | 341 (76.6) | 325 (73.2) |
| VPC-B2155B | 3200 | 885 (199.0) | 655 (147.3) | 549 (123.5) | 485 (109.0) | 440 (98.9) | 406 (91.4) | – | – | – | – |
| VPC-B2155D | 5000 | 885 (199.0) | 655 (147.3) | 549 (123.5) | 485 (109.0) | 440 (98.9) | 406 (91.4) | 380 (85.4) | 359 (80.6) | 341 (76.6) | 325 (73.2) |
| VPC-B2156A | 2800 | 885 (199.0) | 655 (147.3) | 549 (123.5) | 485 (109.0) | 440 (98.9) | – | – | – | – | – |
| VPC-B2156D | 5000 | 885 (199.0) | 655 (147.3) | 549 (123.5) | 485 (109.0) | 440 (98.9) | 406 (91.4) | 380 (85.4) | 359 (80.6) | 341 (76.6) | 325 (73.2) |
| VPC-B30029 | 3000 | 1347 (302.8) | 997 (224.1) | 836 (187.9) | 737 (165.8) | 669 (150.5) | 618 (139.0) | – | – | – | – |
| VPC-B30039 | 3000 | 1347 (302.8) | 997 (224.1) | 836 (187.9) | 737 (165.8) | 669 (150.5) | 618 (139.0) | – | – | – | – |
| VPC-B30049 | 3000 | 1347 (302.8) | 997 (224.1) | 836 (187.9) | 737 (165.8) | 669 (150.5) | 618 (139.0) | – | – | – | – |
| VPC-B3002A | 4000 | 1347 (302.8) | 997 (224.1) | 836 (187.9) | 737 (165.8) | 669 (150.5) | 618 (139.0) | 578 (130.0) | 546 (122.7) | – | – |
| VPC-B3003A | 3500 | 1347 (302.8) | 997 (224.1) | 836 (187.9) | 737 (165.8) | 669 (150.5) | 618 (139.0) | 578 (130.0) | – | – | – |
| VPC-B3004A | 3500 | 1347 (302.8) | 997 (224.1) | 836 (187.9) | 737 (165.8) | 669 (150.5) | 618 (139.0) | 578 (130.0) | – | – | – |
| VPC-B3004B | 2800 | 1347 (302.8) | 997 (224.1) | 836 (187.9) | 737 (165.8) | 669 (150.5) | – | – | – | – | – |
| VPC-B3004D | 4000 | 1347 (302.8) | 997 (224.1) | 836 (187.9) | 737 (165.8) | 669 (150.5) | 618 (139.0) | 578 (130.0) | 546 (122.7) | – | – |

(1) 1.0 N = 0.225 lb
(2) For Kinetix VPC bus overvoltage speed with and without a cooling fan, see Technical Specifications - Kinetix VPC Servo Motors on page 30.

## Axial Load Force Ratings (zero radial load) for Non-brake Motors

| Motor Cat. No. (1) | Maximum (2) Speed rpm | RPM | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 N (lb) | 1000 N (lb) | 1500 N (lb) | 2000 N (lb) | 2500 N (lb) | 3000 N (lb) | 3500 N (lb) | 4000 N (lb) | 4500 N (lb) | 5000 N (lb) |
| VPC-B1652A | 4500 | 2008 (451.5) | 1486 (334.1) | 1246 (280.2) | 1100 (247.3) | 998 (224.5) | 922 (207.4) | 863 (194.0) | 814 (183.0) | 774 (173.9) | – |
| VPC-B1653A | 4500 | 2008 (451.5) | 1486 (334.1) | 1246 (280.2) | 1100 (247.3) | 998 (224.5) | 922 (207.4) | 863 (194.0) | 814 (183.0) | 774 (173.9) | – |
| VPC-B1652D | 5000 | 2008 (451.5) | 1486 (334.1) | 1246 (280.2) | 1100 (247.3) | 998 (224.5) | 922 (207.4) | 863 (194.0) | 814 (183.0) | 774 (173.9) | 739 (166.1) |
| VPC-B1653D | 5000 | 2008 (451.5) | 1486 (334.1) | 1246 (280.2) | 1100 (247.3) | 998 (224.5) | 922 (207.4) | 863 (194.0) | 814 (183.0) | 774 (173.9) | 739 (166.1) |
| VPC-B1654D | 5000 | 2008 (451.5) | 1486 (334.1) | 1246 (280.2) | 1100 (247.3) | 998 (224.5) | 922 (207.4) | 863 (194.0) | 814 (183.0) | 774 (173.9) | 739 (166.1) |
| VPC-B21539 | 3000 | 2592 (582.7) | 1918 (431.3) | 1609 (361.6) | 1420 (319.2) | 1289 (289.7) | 1191 (267.7) | – | – | – | – |
| VPC-B21549 | 3000 | 2592 (582.7) | 1918 (431.3) | 1609 (361.6) | 1420 (319.2) | 1289 (289.7) | 1191 (267.7) | – | – | – | – |
| VPC-B2153A | 4500 | 2592 (582.7) | 1918 (431.3) | 1609 (361.6) | 1420 (319.2) | 1289 (289.7) | 1191 (267.7) | 1114 (250.3) | 1051 (236.2) | 998 (224.4) | – |
| VPC-B2154A | 4500 | 2592 (582.7) | 1918 (431.3) | 1609 (361.6) | 1420 (319.2) | 1289 (289.7) | 1191 (267.7) | 1114 (250.3) | 1051 (236.2) | 998 (224.4) | – |
| VPC-B2154B | 3200 | 2592 (582.7) | 1918 (431.3) | 1609 (361.6) | 1420 (319.2) | 1289 (289.7) | 1191 (267.7) | – | – | – | – |
| VPC-B2154D | 5000 | 2592 (582.7) | 1918 (431.3) | 1609 (361.6) | 1420 (319.2) | 1289 (289.7) | 1191 (267.7) | 1114 (250.3) | 1051 (236.2) | 998 (224.4) | 954 (214.4) |
| VPC-B2155B | 3200 | 2592 (582.7) | 1918 (431.3) | 1609 (361.6) | 1420 (319.2) | 1289 (289.7) | 1191 (267.7) | – | – | – | – |
| VPC-B2155D | 5000 | 2592 (582.7) | 1918 (431.3) | 1609 (361.6) | 1420 (319.2) | 1289 (289.7) | 1191 (267.7) | 1114 (250.3) | 1051 (236.2) | 998 (224.4) | 954 (214.4) |
| VPC-B2156A | 2800 | 2592 (582.7) | 1918 (431.3) | 1609 (361.6) | 1420 (319.2) | 1289 (289.7) | – | – | – | – | – |
| VPC-B2156D | 5000 | 2592 (582.7) | 1918 (431.3) | 1609 (361.6) | 1420 (319.2) | 1289 (289.7) | 1191 (267.7) | 1114 (250.3) | 1051 (236.2) | 998 (224.4) | 954 (214.4) |
| VPC-B30029 | 3000 | 3944 (886.6) | 2919 (656.2) | 2448 (550.3) | 2160 (485.7) | 1961 (440.8) | 1812 (407.3) | – | – | – | – |
| VPC-B30039 | 3000 | 3944 (886.6) | 2919 (656.2) | 2448 (550.3) | 2160 (485.7) | 1961 (440.8) | 1812 (407.3) | – | – | – | – |
| VPC-B30049 | 3000 | 3944 (886.6) | 2919 (656.2) | 2448 (550.3) | 2160 (485.7) | 1961 (440.8) | 1812 (407.3) | – | – | – | – |
| VPC-B3002A | 4000 | 3944 (886.6) | 2919 (656.2) | 2448 (550.3) | 2160 (485.7) | 1961 (440.8) | 1812 (407.3) | 1694 (380.9) | 1599 (359.4) | – | – |
| VPC-B3003A | 3500 | 3944 (886.6) | 2919 (656.2) | 2448 (550.3) | 2160 (485.7) | 1961 (440.8) | 1812 (407.3) | 1694 (380.9) | – | – | – |
| VPC-B3004A | 3500 | 3944 (886.6) | 2919 (656.2) | 2448 (550.3) | 2160 (485.7) | 1961 (440.8) | 1812 (407.3) | 1694 (380.9) | – | – | – |
| VPC-B3004B | 2800 | 3944 (886.6) | 2919 (656.2) | 2448 (550.3) | 2160 (485.7) | 1961 (440.8) | – | – | – | – | – |
| VPC-B3004D | 4000 | 3944 (886.6) | 2919 (656.2) | 2448 (550.3) | 2160 (485.7) | 1961 (440.8) | 1812 (407.3) | 1694 (380.9) | 1599 (359.4) | – | – |

(1) 1.0 N = 0.225 lb
(2) For Kinetix VPC bus overvoltage speed with and without a cooling fan, see Technical Specifications - Kinetix VPC Servo Motors on page 30.

## Radial Load Force Ratings (maximum) for Brake Motors

| Motor Cat. No. (1) | Maximum (2) Speed rpm | RPM | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 N (lb) | 1000 N (lb) | 1500 N (lb) | 2000 N (lb) | 2500 N (lb) | 3000 N (lb) | 3500 N (lb) | 4000 N (lb) | 4500 N (lb) | 5000 N (lb) |
| VPC-B1652A | 4500 | 2279 (512.3) | 1809 (406.6) | 1580 (355.2) | 1436 (322.7) | 1333 (299.6) | 1254 (281.9) | 1191 (267.8) | 1139 (256.2) | 1096 (246.3) | – |
| VPC-B1653A | 4500 | 2343 (526.7) | 1860 (418.1) | 1625 (365.2) | 1476 (331.8) | 1370 (308.0) | 1289 (289.9) | 1225 (275.4) | 1172 (263.4) | 1126 (253.2) | – |
| VPC-B1652D | 5000 | 2279 (512.3) | 1809 (406.6) | 1580 (355.2) | 1436 (322.7) | 1333 (299.6) | 1254 (281.9) | 1191 (267.8) | 1139 (256.2) | 1096 (246.3) | 1058 (237.8) |
| VPC-B1653D | 5000 | 2343 (526.7) | 1860 (418.1) | 1625 (365.2) | 1476 (331.8) | 1370 (308.0) | 1289 (289.9) | 1225 (275.4) | 1172 (263.4) | 1126 (253.2) | 1088 (244.5) |
| VPC-B1654D | 5000 | 2394 (538.2) | 1900 (427.2) | 1660 (373.2) | 1508 (339.0) | 1400 (314.7) | 1317 (296.2) | 1251 (281.3) | 1197 (269.1) | 1151 (258.7) | 1111 (249.8) |
| VPC-B21539 | 3000 | 3128 (703.3) | 2483 (558.2) | 2169 (487.6) | 1971 (443.0) | 1829 (411.3) | 1722 (387.0) | – | – | – | – |
| VPC-B21549 | 3000 | 3180 (714.8) | 2524 (567.3) | 2205 (495.6) | 2003 (450.3) | 1859 (418.0) | 1750 (393.4) | – | – | – | – |
| VPC-B2153A | 4500 | 3128 (703.3) | 2483 (558.2) | 2169 (487.6) | 1971 (443.0) | 1829 (411.3) | 1722 (387.0) | 1635 (367.6) | 1564 (351.6) | 1504 (338.1) | – |
| VPC-B2154A | 4500 | 3180 (714.8) | 2524 (567.3) | 2205 (495.6) | 2003 (450.3) | 1859 (418.0) | 1750 (393.4) | 1662 (373.7) | 1590 (357.4) | 1529 (343.6) | – |
| VPC-B2154B | 3200 | 3180 (714.8) | 2524 (567.3) | 2205 (495.6) | 2003 (450.3) | 1859 (418.0) | 1750 (393.4) | – | – | – | – |
| VPC-B2154D | 5000 | 3180 (714.8) | 2524 (567.3) | 2205 (495.6) | 2003 (450.3) | 1859 (418.0) | 1750 (393.4) | 1662 (373.7) | 1590 (357.4) | 1529 (343.6) | 1476 (331.8) |
| VPC-B2155B | 3200 | 3259 (732.5) | 2586 (581.4) | 2259 (507.9) | 2053 (461.5) | 1906 (428.4) | 1793 (403.1) | – | – | – | – |
| VPC-B2155D | 5000 | 3259 (732.5) | 2586 (581.4) | 2259 (507.9) | 2053 (461.5) | 1906 (428.4) | 1793 (403.1) | 1703 (382.9) | 1629 (366.3) | 1567 (352.2) | 1512 (340.0) |
| VPC-B2156A | 2800 | 3259 (732.5) | 2586 (581.4) | 2259 (507.9) | 2053 (461.5) | 1906 (428.4) | – | – | – | – | – |
| VPC-B2156D | 5000 | 3259 (732.5) | 2586 (581.4) | 2259 (507.9) | 2053 (461.5) | 1906 (428.4) | 1793 (403.1) | 1703 (382.9) | 1629 (366.3) | 1567 (352.2) | 1512 (340.0) |
| VPC-B30029 | 3000 | 4652 (1045.9) | 3692 (830.1) | 3226 (725.2) | 2931 (658.8) | 2721 (611.6) | 2560 (575.6) | – | – | – | – |
| VPC-B30039 | 3000 | 4754 (1068.7) | 3773 (848.3) | 3296 (741.0) | 2995 (673.3) | 2780 (625.0) | 2616 (588.2) | – | – | – | – |
| VPC-B30049 | 3000 | 4908 (1103.4) | 3896 (875.8) | 3403 (765.1) | 3092 (695.1) | 2870 (645.3) | 2701 (607.2) | – | – | – | – |
| VPC-B3002A | 4000 | 4652 (1045.9) | 3692 (830.1) | 3226 (725.2) | 2931 (658.8) | 2721 (611.6) | 2560 (575.6) | 2432 (546.7) | 2326 (522.9) | – | – |
| VPC-B3003A | 3500 | 4754 (1068.7) | 3773 (848.3) | 3296 (741.0) | 2995 (673.3) | 2780 (625.0) | 2616 (588.2) | 2485 (558.7) | – | – | – |
| VPC-B3004A | 3500 | 4908 (1103.4) | 3896 (875.8) | 3403 (765.1) | 3092 (695.1) | 2870 (645.3) | 2701 (607.2) | 2566 (576.8) | – | – | – |
| VPC-B3004B | 2800 | 4908 (1103.4) | 3896 (875.8) | 3403 (765.1) | 3092 (695.1) | 2870 (645.3) | – | – | – | – | – |
| VPC-B3004D | 4000 | 4908 (1103.4) | 3896 (875.8) | 3403 (765.1) | 3092 (695.1) | 2870 (645.3) | 2701 (607.2) | 2566 (576.8) | 2454 (551.7) | – | – |

(1) 1.0 N = 0.225 lb
(2) For Kinetix VPC bus overvoltage speed with and without a cooling fan, see Technical Specifications - Kinetix VPC Servo Motors on page 30.

## Axial Load Force Ratings (maximum radial load) for Brake Motors

| Motor Cat. No. (1) | Maximum (2) Speed rpm | RPM | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 N (lb) | 1000 N (lb) | 1500 N (lb) | 2000 N (lb) | 2500 N (lb) | 3000 N (lb) | 3500 N (lb) | 4000 N (lb) | 4500 N (lb) | 5000 N (lb) |
| VPC-B1652A | 4500 | 686 (154.2) | 508 (114.1) | 426 (95.7) | 376 (84.4) | 341 (76.6) | 315 (70.8) | 294 (66.2) | 278 (62.5) | 264 (59.4) | – |
| VPC-B1653A | 4500 | 686 (154.2) | 508 (114.1) | 426 (95.7) | 376 (84.4) | 341 (76.6) | 315 (70.8) | 294 (66.2) | 278 (62.5) | 264 (59.4) | – |
| VPC-B1652D | 5000 | 686 (154.2) | 508 (114.1) | 426 (95.7) | 376 (84.4) | 341 (76.6) | 315 (70.8) | 294 (66.2) | 278 (62.5) | 264 (59.4) | 252 (56.7) |
| VPC-B1653D | 5000 | 686 (154.2) | 508 (114.1) | 426 (95.7) | 376 (84.4) | 341 (76.6) | 315 (70.8) | 294 (66.2) | 278 (62.5) | 264 (59.4) | 252 (56.7) |
| VPC-B1654D | 5000 | 686 (154.2) | 508 (114.1) | 426 (95.7) | 376 (84.4) | 341 (76.6) | 315 (70.8) | 294 (66.2) | 278 (62.5) | 264 (59.4) | 252 (56.7) |
| VPC-B21539 | 3000 | 885 (199.0) | 655 (147.3) | 549 (123.5) | 485 (109.0) | 440 (98.9) | 406 (91.4) | – | – | – | – |
| VPC-B21549 | 3000 | 885 (199.0) | 655 (147.3) | 549 (123.5) | 485 (109.0) | 440 (98.9) | 406 (91.4) | – | – | – | – |
| VPC-B2153A | 4500 | 885 (199.0) | 655 (147.3) | 549 (123.5) | 485 (109.0) | 440 (98.9) | 406 (91.4) | 380 (85.4) | 359 (80.6) | 341 (76.6) | – |
| VPC-B2154A | 4500 | 885 (199.0) | 655 (147.3) | 549 (123.5) | 485 (109.0) | 440 (98.9) | 406 (91.4) | 380 (85.4) | 359 (80.6) | 341 (76.6) | – |
| VPC-B2154B | 3200 | 885 (199.0) | 655 (147.3) | 549 (123.5) | 485 (109.0) | 440 (98.9) | 406 (91.4) | – | – | – | – |
| VPC-B2154D | 5000 | 885 (199.0) | 655 (147.3) | 549 (123.5) | 485 (109.0) | 440 (98.9) | 406 (91.4) | 380 (85.4) | 359 (80.6) | 341 (76.6) | 325 (73.2) |
| VPC-B2155B | 3200 | 885 (199.0) | 655 (147.3) | 549 (123.5) | 485 (109.0) | 440 (98.9) | 406 (91.4) | – | – | – | – |
| VPC-B2155D | 5000 | 885 (199.0) | 655 (147.3) | 549 (123.5) | 485 (109.0) | 440 (98.9) | 406 (91.4) | 380 (85.4) | 359 (80.6) | 341 (76.6) | 325 (73.2) |
| VPC-B2156A | 2800 | 885 (199.0) | 655 (147.3) | 549 (123.5) | 485 (109.0) | 440 (98.9) | – | – | – | – | – |
| VPC-B2156D | 5000 | 885 (199.0) | 655 (147.3) | 549 (123.5) | 485 (109.0) | 440 (98.9) | 406 (91.4) | 380 (85.4) | 359 (80.6) | 341 (76.6) | 325 (73.2) |
| VPC-B30029 | 3000 | 1347 (302.8) | 997 (224.1) | 836 (187.9) | 737 (165.8) | 669 (150.5) | 618 (139.0) | – | – | – | – |
| VPC-B30039 | 3000 | 1347 (302.8) | 997 (224.1) | 836 (187.9) | 737 (165.8) | 669 (150.5) | 618 (139.0) | – | – | – | – |
| VPC-B30049 | 3000 | 1347 (302.8) | 997 (224.1) | 836 (187.9) | 737 (165.8) | 669 (150.5) | 618 (139.0) | – | – | – | – |
| VPC-B3002A | 4000 | 1347 (302.8) | 997 (224.1) | 836 (187.9) | 737 (165.8) | 669 (150.5) | 618 (139.0) | 578 (130.0) | 546 (122.7) | – | – |
| VPC-B3003A | 3500 | 1347 (302.8) | 997 (224.1) | 836 (187.9) | 737 (165.8) | 669 (150.5) | 618 (139.0) | 578 (130.0) | – | – | – |
| VPC-B3004A | 3500 | 1347 (302.8) | 997 (224.1) | 836 (187.9) | 737 (165.8) | 669 (150.5) | 618 (139.0) | 578 (130.0) | – | – | – |
| VPC-B3004B | 2800 | 1347 (302.8) | 997 (224.1) | 836 (187.9) | 737 (165.8) | 669 (150.5) | – | – | – | – | – |
| VPC-B3004D | 4000 | 1347 (302.8) | 997 (224.1) | 836 (187.9) | 737 (165.8) | 669 (150.5) | 618 (139.0) | 578 (130.0) | 546 (122.7) | – | – |

(1) 1.0 N = 0.225 lb
(2) For Kinetix VPC bus overvoltage speed with and without a cooling fan, see Technical Specifications - Kinetix VPC Servo Motors on page 30.

## Axial Load Force Ratings (zero radial load) for Brake Motors

| Motor Cat. No.[1] | Maximum[2] Speed rpm | RPM | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 N (lb) | 1000 N (lb) | 1500 N (lb) | 2000 N (lb) | 2500 N (lb) | 3000 N (lb) | 3500 N (lb) | 4000 N (lb) | 4500 N (lb) | 5000 N (lb) |
| VPC-B1652A | 4500 | 2008 (451.5) | 1486 (334.1) | 1246 (280.2) | 1100 (247.3) | 998 (224.5) | 922 (207.4) | 863 (194.0) | 814 (183.0) | 774 (173.9) | – |
| VPC-B1653A | 4500 | 2008 (451.5) | 1486 (334.1) | 1246 (280.2) | 1100 (247.3) | 998 (224.5) | 922 (207.4) | 863 (194.0) | 814 (183.0) | 774 (173.9) | – |
| VPC-B1652D | 5000 | 2008 (451.5) | 1486 (334.1) | 1246 (280.2) | 1100 (247.3) | 998 (224.5) | 922 (207.4) | 863 (194.0) | 814 (183.0) | 774 (173.9) | 739 (166.1) |
| VPC-B1653D | 5000 | 2008 (451.5) | 1486 (334.1) | 1246 (280.2) | 1100 (247.3) | 998 (224.5) | 922 (207.4) | 863 (194.0) | 814 (183.0) | 774 (173.9) | 739 (166.1) |
| VPC-B1654D | 5000 | 2008 (451.5) | 1486 (334.1) | 1246 (280.2) | 1100 (247.3) | 998 (224.5) | 922 (207.4) | 863 (194.0) | 814 (183.0) | 774 (173.9) | 739 (166.1) |
| VPC-B21539 | 3000 | 2592 (582.7) | 1918 (431.3) | 1609 (361.6) | 1420 (319.2) | 1289 (289.7) | 1191 (267.7) | – | – | – | – |
| VPC-B21549 | 3000 | 2592 (582.7) | 1918 (431.3) | 1609 (361.6) | 1420 (319.2) | 1289 (289.7) | 1191 (267.7) | – | – | – | – |
| VPC-B2153A | 4500 | 2592 (582.7) | 1918 (431.3) | 1609 (361.6) | 1420 (319.2) | 1289 (289.7) | 1191 (267.7) | 1114 (250.3) | 1051 (236.2) | 998 (224.4) | – |
| VPC-B2154A | 4500 | 2592 (582.7) | 1918 (431.3) | 1609 (361.6) | 1420 (319.2) | 1289 (289.7) | 1191 (267.7) | 1114 (250.3) | 1051 (236.2) | 998 (224.4) | – |
| VPC-B2154B | 3200 | 2592 (582.7) | 1918 (431.3) | 1609 (361.6) | 1420 (319.2) | 1289 (289.7) | 1191 (267.7) | – | – | – | – |
| VPC-B2154D | 5000 | 2592 (582.7) | 1918 (431.3) | 1609 (361.6) | 1420 (319.2) | 1289 (289.7) | 1191 (267.7) | 1114 (250.3) | 1051 (236.2) | 998 (224.4) | 954 (214.4) |
| VPC-B2155B | 3200 | 2592 (582.7) | 1918 (431.3) | 1609 (361.6) | 1420 (319.2) | 1289 (289.7) | 1191 (267.7) | – | – | – | – |
| VPC-B2155D | 5000 | 2592 (582.7) | 1918 (431.3) | 1609 (361.6) | 1420 (319.2) | 1289 (289.7) | 1191 (267.7) | 1114 (250.3) | 1051 (236.2) | 998 (224.4) | 954 (214.4) |
| VPC-B2156A | 2800 | 2592 (582.7) | 1918 (431.3) | 1609 (361.6) | 1420 (319.2) | 1289 (289.7) | – | – | – | – | – |
| VPC-B2156D | 5000 | 2592 (582.7) | 1918 (431.3) | 1609 (361.6) | 1420 (319.2) | 1289 (289.7) | 1191 (267.7) | 1114 (250.3) | 1051 (236.2) | 998 (224.4) | 954 (214.4) |
| VPC-B30029 | 3000 | 3944 (886.6) | 2919 (656.2) | 2448 (550.3) | 2160 (485.7) | 1961 (440.8) | 1812 (407.3) | – | – | – | – |
| VPC-B30039 | 3000 | 3944 (886.6) | 2919 (656.2) | 2448 (550.3) | 2160 (485.7) | 1961 (440.8) | 1812 (407.3) | – | – | – | – |
| VPC-B30049 | 3000 | 3944 (886.6) | 2919 (656.2) | 2448 (550.3) | 2160 (485.7) | 1961 (440.8) | 1812 (407.3) | – | – | – | – |
| VPC-B3002A | 4000 | 3944 (886.6) | 2919 (656.2) | 2448 (550.3) | 2160 (485.7) | 1961 (440.8) | 1812 (407.3) | 1694 (380.9) | 1599 (359.4) | – | – |
| VPC-B3003A | 3500 | 3944 (886.6) | 2919 (656.2) | 2448 (550.3) | 2160 (485.7) | 1961 (440.8) | 1812 (407.3) | 1694 (380.9) | – | – | – |
| VPC-B3004A | 3500 | 3944 (886.6) | 2919 (656.2) | 2448 (550.3) | 2160 (485.7) | 1961 (440.8) | 1812 (407.3) | 1694 (380.9) | – | – | – |
| VPC-B3004B | 2800 | 3944 (886.6) | 2919 (656.2) | 2448 (550.3) | 2160 (485.7) | 1961 (440.8) | – | – | – | – | – |
| VPC-B3004D | 4000 | 3944 (886.6) | 2919 (656.2) | 2448 (550.3) | 2160 (485.7) | 1961 (440.8) | 1812 (407.3) | 1694 (380.9) | 1599 (359.4) | – | – |

(1) 1.0 N = 0.225 lb
(2) For Kinetix VPC bus overvoltage speed with and without a cooling fan, see Technical Specifications - Kinetix VPC Servo Motors on page 30.

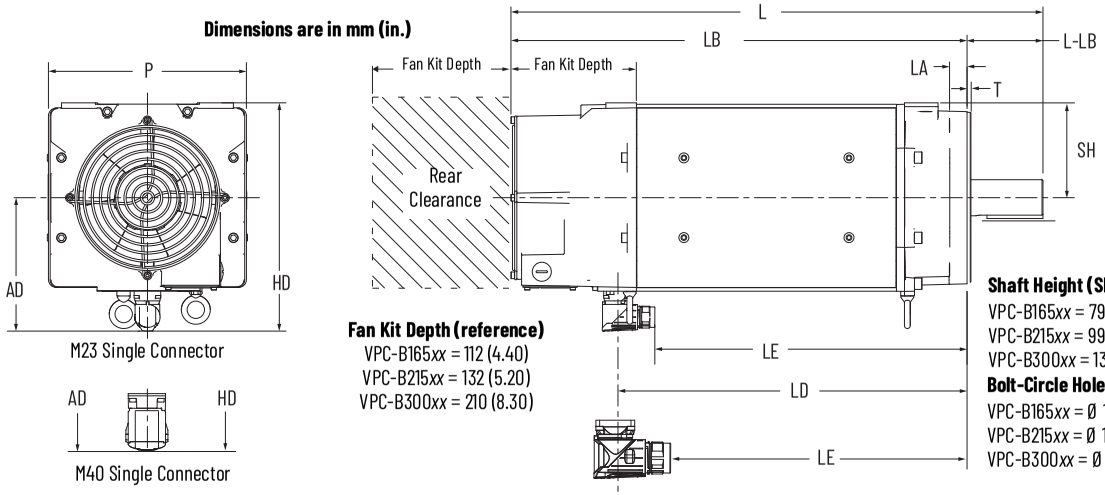
## Notes:

# Dimensions - Kinetix VPC Servo Motors



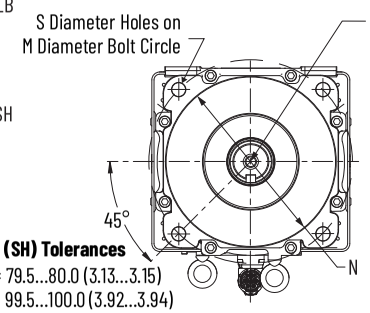
## VPC-B165*xx*, VPC-B215*xx*, and VPC-B300*xx* Motor Dimensions (single motor connector, with fan)

**Dimensions are in mm (in.)**




M23 connector housings rotate 325°
M40 connector housings rotate 330°

**Fan Kit Depth (reference)**
VPC-B165*xx* = 112 (4.40)
VPC-B215*xx* = 132 (5.20)
VPC-B300*xx* = 210 (8.30)



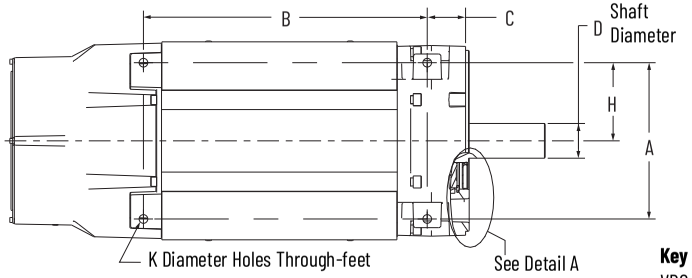

**Shaft-end Threaded Hole**
VPC-B165*xx* Motors:
Thread - M10 x 1.5-6H
Thread Depth - 22 (0.86)
VPC-B215*xx* Motors:
Thread - M12 x 1.75-6H
Thread Depth - 28 (1.10)
VPC-B300*xx* Motors:
Thread - M16 x 2-6H
Thread Depth - 36 (1.42)

**Shaft Height (SH) Tolerances**
VPC-B165*xx* = 79.5...80.0 (3.13...3.15)
VPC-B215*xx* = 99.5...100.0 (3.92...3.94)
VPC-B300*xx* = 131.5...1.32.0 (5.18...5.20)

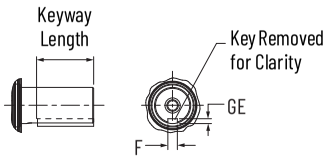
**Pilot Diameter (N) Tolerances**
VPC-B165*xx* Motors:
Ø 129.898...130.014 (5.1177...5.1187)
VPC-B215*xx* Motors:
Ø 179.989...180.014 (7.0862...7.0871)
VPC-B300*xx* Motors:
Ø 249.987...250.016 (9.8420...9.8431)

**Bolt-Circle Hole Diameter (S) Tolerances**
VPC-B165*xx* = Ø 12.00...12.43 (Ø 0.472...0.489)
VPC-B215*xx* = Ø 14.50...14.93 (Ø 0.571...0.588)
VPC-B300*xx* = Ø 18.50...19.02 (Ø 0.728...0.749)

**Shaft Diameter (D) Tolerances**
VPC-B165*xx* = Ø 32.002...32.018 (1.2599...1.2605)
VPC-B215*xx* = Ø 38.002...38.015 (1.4961...1.4968)
VPC-B300*xx* = Ø 48.002...48.018 (1.8898...1.8905)



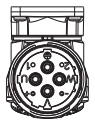

**Shaft Detail with Key**




**Foot-mounting Hole Diameter (K) Tolerances**
VPC-B165*xx* = Ø 10.00...10.36 (Ø 0.394...0.408)
VPC-B215*xx* = Ø 12.00...12.43 (Ø 0.472...0.489)
VPC-B300*xx* = Ø 12.00...12.43 (Ø 0.472...0.489)

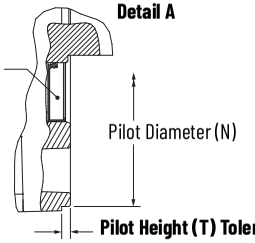
**Key Supplied**
VPC-B165*xx* = $10_{(+0,\ -0.036)}$ x $8_{(+0,\ -0.090)}$ x 59 Key
VPC-B215*xx* = $10_{(+0,\ -0.036)}$ x $8_{(+0,\ -0.090)}$ x 59 Key
VPC-B300*xx* = $14_{(+0,\ -0.043)}$ x $9_{(+0,\ -0.090)}$ x 79 Key

**Keyway Length**
VPC-B165*xx* = 60 (2.36)
VPC-B215*xx* = 60 (2.36)
VPC-B300*xx* = 81 (3.19)

| Motor Connector on Kinetix VPC Servo motors | | Motor Cat. No. (1) |
|---|---|---|
| M23 Connector | | VPC-B1652*x*<br>VPC-B1653*x*<br>VPC-B2153*x*<br>VPC-B21549 |
| M40 Connector |  | VPC-B1654D<br>VPC-B2154A<br>VPC-B2154B/D<br>VPC-B2155B/D<br>VPC-B2156A/D<br>VPC-B30029<br>VPC-B3002A<br>VPC-B30039<br>VPC-B3003A<br>VPC-B30049 |

(1) Catalog numbers B/ and A/ represent rated speed for the fanless motor. /D represents rated speed for the fan motor.

| Shaft, Pilot, and Keyway Tolerances | VPC-B165xx | VPC-B215xx | VPC-B300xx |
|---|---|---|---|
| Shaft Runout (T.I.R.) | 0.05 (0.002) | | |
| Pilot Eccentricity (T.I.R.) | 0.10 (0.0039) | | |
| Max Face Runout (T.I.R.) | 0.10 (0.0039) | | 0.125 (0.0049) |
| Keyway Depth (GE) | 5.0...5.2<br>(0.197...0.205) | | 5.5...5.7<br>(0.216...0.224) |
| Keyway Width (F) | 9.964...10.000<br>(0.3923...0.3937 | | 13.957...14.000<br>(0.5495...0.5512) |




**Pilot Height (T) Tolerances**
VPC-B165*xx* = 2.5...3.5 (0.098...0.138)
VPC-B215*xx* = 3.0...4.0 (0.118...0.157)
VPC-B300*xx* = 3.5...5.0 (0.138...0.197)

### VPC-B165*xx*, VPC-B215*xx*, and VPC-B300*xx* Motor Dimensions (single motor connector)

| Motor Cat. No. (1) | AD mm (in.) | HD mm (in.) | T (4) mm (in.) | LA mm (in.) | LD (2) mm (in.) | LE (2) mm (in.) | L (2) mm (in.) | LB (2) mm (in.) | L-LB (3) mm (in.) | A mm (in.) | B (2) mm (in.) | C mm (in.) | H mm (in.) | D (4) mm (in.) | M (4) mm (in.) | SH (4) mm (in.) | S (4) mm (in.) | K (4) mm (in.) | N (4) mm (in.) | P mm (in.) | GE (4) mm (in.) | F (4) mm (in.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VPC-B1652*x* | 120.5 (4.75) | 200.3 (7.89) | 3.5 (0.14) | 14.3 (0.56) | 251.9 (9.92) | 211.9 (8.34) | 427.6 (16.83) | 347.6 (13.69) | 80.0 (3.15) | 125.0 (4.92) | 216.9 (8.54) | 34.0 (1.34) | 62.5 (2.46) | 32.00 (1.260) | 165.00 (6.496) | 80.00 (3.15) | 12.00 (0.472) | 10.00 (0.394) | 130.00 (5.118) | 168.9 (6.65) | 5.00 (0.198) | 10.00 (0.394) |
| VPC-B1653*x* | | | | | 307.4 (12.10) | 267.4 (10.53) | 483.1 (19.02) | 403.1 (15.87) | | | 272.4 (10.72) | | | | | | | | | | | |
| VPC-B1654D | 140.0 (5.51) | 219.8 (8.65) | | | 352.1 (13.86) | 281.1 (11.07) | 523.6 (20.61) | 443.6 (17.46) | | | 312.9 (12.32) | | | | | | | | | | | |
| VPC-B2153*x* | 140.5 (5.53) | 240.5 (9.47) | 4.0 (0.16) | 18.4 (0.72) | 328.4 (12.93) | 288.5 (11.36) | 520.1 (20.48) | 440.1 (17.33) | 80.0 (3.15) | 160.0 (6.30) | 284.9 (11.22) | 43.0 (1.69) | 80.0 (3.15) | 38.00 (1.496) | 215.00 (8.465) | 100.00 (3.94) | 14.50 (0.571) | 12.00 (0.472) | 180.00 (7.087) | 210.9 (8.30) | 5.00 (0.198) | 10.00 (0.394) |
| VPC-B21549 | | | | | 368.9 (14.52) | 329.0 (12.95) | 560.6 (22.07) | 480.6 (18.92) | | | 325.4 (12.81) | | | | | | | | | | | |
| VPC-B2154A | 160.5 (6.32) | 260.5 (10.25) | | | | 297.9 (11.73) | | | | | | | | | | | | | | | | |
| VPC-B2154B/D | | | | | | | | | | | | | | | | | | | | | | |
| VPC-B2155B/D | | | | | 409.4 (16.12) | 338.4 (13.32) | 601.1 (23.67) | 521.1 (20.52) | | | 365.9 (14.41) | | | | | | | | | | | |
| VPC-B2156A/D | | | | | 449.9 (17.71) | 378.9 (14.92) | 641.6 (25.26) | 561.6 (22.11) | | | 406.4 (16.00) | | | | | | | | | | | |
| VPC-B3002*x* | 192.0 (7.56) | 324.0 (12.75) | 5.0 (0.20) | 22.9 (0.90) | 400.7 (15.78) | 329.7 (12.98) | 692.1 (27.23) | 582.1 (22.92) | 110.0 (4.33) | 216.0 (8.50) | 344.7 (13.57) | 53.0 (2.09) | 108.0 (4.25) | 48.00 (1.890) | 300.00 (11.811) | 132.00 (5.20) | 18.50 (0.728) | 12.00 (0.472) | 250.00 (9.843) | 275.9 (10.86) | 5.50 (0.217) | 14.00 (0.551) |
| VPC-B3003*x* | | | | | | | | | | | | | | | | | | | | | | |
| VPC-B30049 | | | | | 448.2 (17.65) | 377.2 (14.85) | 739.6 (29.12) | 629.6 (24.79) | | | 392.2 (15.44) | | | | | | | | | | | |

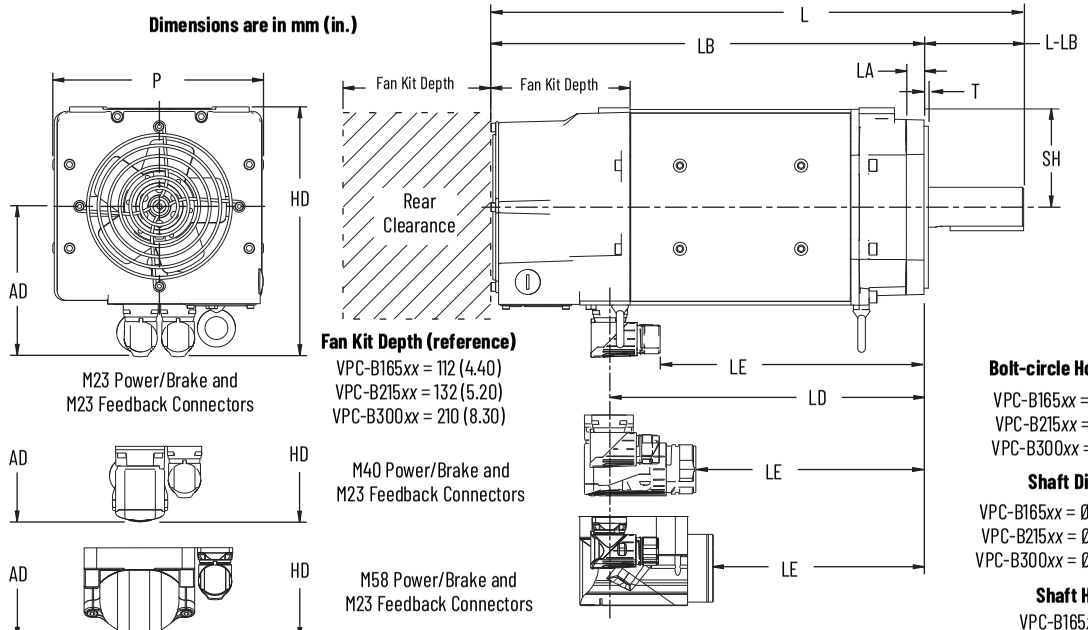
(1) Catalog numbers /B and /A represent rated speed for the fanless motor. D/ represents rated speed for the fan motor.
(2) If ordering VPC-B1652*x* motors with brake, add 55.5 mm (2.19 in.) to dimension L, LB, LE, LD and B.
If ordering VPC-B1653*x* or VPC-B1654D motors with brake, add 40.5 mm (1.59 in.) to dimension L, LB, LE, LD and B.
If ordering VPC-B2153*x*, VPC-B2154*x*, or VPC-B2156A/D motors with brake, add 81.0 mm (3.19 in.) to dimension L, LB, LE, LD and B.
If ordering VPC-B2155B/D motors with brake, add 121.5 mm (4.78 in.) to dimension L, LB, LE, LD and B.
If ordering VPC-B3002*x* motors with brake, add 47.5 mm (1.87 in.) to dimension L, LB, LE, LD and B.
If ordering VPC-B3003*x* motors with brake, add 95.0 mm (3.74 in.) to dimension L, LB, LE, LD and B.
If ordering VPC-B3004*x* motors with brake, add 142.5 mm (5.61 in.) to dimension L, LB, LE, LD and B.
(3) Tolerance for this dimension is ±0.7 mm (±0.028 in.).
(4) For shaft diameter, mounting hole diameter, pilot diameter, and keyway tolerances, see the figure on page 46.

Motors are designed to metric dimensions. Inch dimensions are approximate conversions from millimeters. Dimensions without tolerances are for reference.

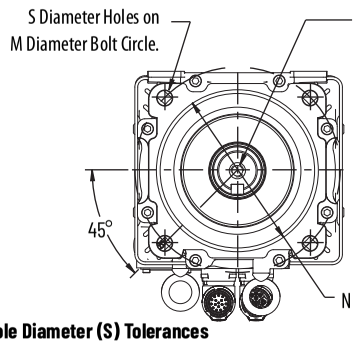
# VPC-B165*xx*, VPC-B215xx, and VPC-B300*xx* Motor Dimensions (motor power/feedback connectors, with fan)



**Dimensions are in mm (in.)**




**Fan Kit Depth (reference)**
VPC-B165*xx* = 112 (4.40)
VPC-B215*xx* = 132 (5.20)
VPC-B300*xx* = 210 (8.30)




**Shaft-end Threaded Hole**
VPC-B165*xx* Motors:
Thread - M10 x 1.5-6H
Thread Depth - 22 (0.86)
VPC-B215*xx* Motors:
Thread - M12 x 1.75-6H
Thread Depth - 28 (1.10)
VPC-B300*xx* Motors:
Thread - M16 x 2.0-6H
Thread Depth - 36 (1.42)

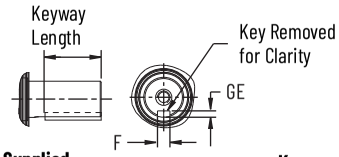
**Pilot Diameter (N) Tolerances**
VPC-B165*xx* Motors:
Ø 129.989...130.014 (5.1177...5.1187)
VPC-B215*xx* Motors:
Ø 179.989...180.014 (7.0862...7.0871)
VPC-B300*xx* Motors:
Ø 249.987...250.016 (9.8420...9.8431)

**Bolt-circle Hole Diameter (S) Tolerances**
VPC-B165*xx* = Ø 12.00...12.43 (0.472...0.489)
VPC-B215*xx* = Ø 14.50...14.93 (0.571...0.588)
VPC-B300*xx* = Ø 18.50...19.02 (0.728...0.749)

**Shaft Diameter (D) Tolerances**
VPC-B165*xx* = Ø 32.018...32.002 (1.2605...1.2599)
VPC-B215*xx* = Ø 38.018...38.002 (1.4968...1.4961)
VPC-B300*xx* = Ø 48.018...48.002 (1.8905...1.8898)

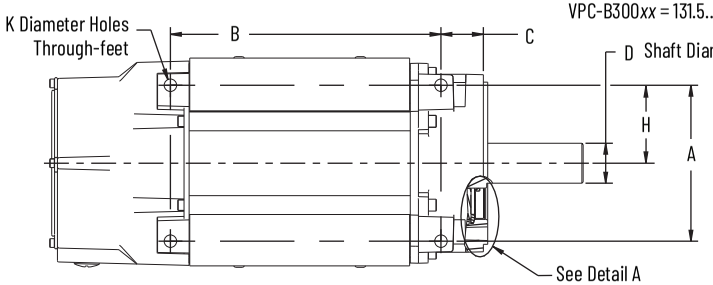
**Shaft Height (SH) Tolerances**
VPC-B165*xx* = 79.5...80.0 (3.13...3.15)
VPC-B215*xx* = 99.5...100.0 (3.92...3.94)
VPC-B300*xx* = 131.5...1.32.0 (5.18...5.20)

**Shaft Detail with Key**



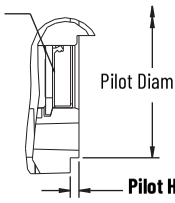

**Key Supplied**
VPC-B165*xx* = $10_{(+0,\ -0.036)}$ x $8_{(+0,\ -0.090)}$ x 59 Key
VPC-B215*xx* = $10_{(+0,\ -0.036)}$ x $8_{(+0,\ -0.090)}$ x 59 Key
VPC-B300*xx* = $14_{(+0,\ -0.043)}$ x $9_{(+0,\ -0.090)}$ x 79 Key

**Keyway Length**
VPC-B165*xx* = 60.0 (2.36)
VPC-B215*xx* = 60.0 (2.36)
VPC-B300*xx* = 81.0 (3.19)



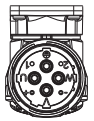
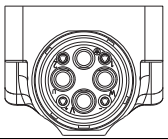

**Foot-mounting Hole Diameter (K) Tolerances**
VPC-B165*xx* = Ø 10.00...10.36 (0.394...0.408)
VPC-B215*xx* = Ø 12.00...12.43 (0.472...0.489)
VPC-B300*xx* = Ø 12.00...12.43 (0.472...0.489)

**Detail A**




**Shaft Seal**
Refer to page 6 for Kinetix VPC motor shaft-seal kit information.

**Pilot Height (T) Tolerances**
VPC-B165*xx* = 2.5...3.5 (0.098...0.138)
VPC-B215*xx* = 3.0...4.0 (0.118...0.157)
VPC-B300*xx* = 3.5...5.0 (0.138...0.197)

| Power/Brake Connectors on Kinetix VPC Servo Motors | | Motor Cat. No. (1) |
|---|---|---|
| M23 Connector | | VPC-B1652*x*<br>VPC-B1653*x*<br>VPC-B2153*x*<br>VPC-B21549 |
| M40 Connector |  | VPC-B1654D<br>VPC-B2154A<br>VPC-B2154B/D<br>VPC-B2155B/D<br>VPC-B2156A/D<br>VPC-B3002*x*<br>VPC-B3003*x*<br>VPC-B30049 |
| M58 Connector |  | VPC-B3004A<br>VPC-B3004D/B |

(1) Catalog numbers B/ and A/ represent rated speed for the fanless motor. /D represents rated speed for the fan motor.

| Shaft, Pilot, and Keyway Tolerances | VPC-B165*xx* | VPC-B215*xx* | VPC-B300*xx* |
|---|---|---|---|
| Shaft Runout (T.I.R.) | 0.05 (0.002) | | |
| Pilot Eccentricity (T.I.R.) | 0.10 (0.0039) | | |
| Max Face Runout (T.I.R.) | 0.10 (0.0039) | | 0.125 (0.0049) |
| Keyway Depth (GE) | 5.00...5.20<br>(0.197...0.205) | | 5.50...5.70<br>(0.216...0.224) |
| Keyway Width (F) | 9.964...10.000<br>(0.3927...0.3937) | | 13.957...14.000<br>(0.5495...0.5512) |

## VPC-B165*xx*, VPC-B215*xx*, and VPC-B300*xx* Motor Dimensions (motor power/feedback connectors)

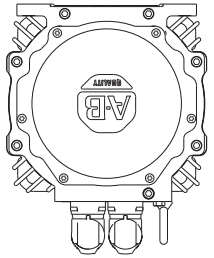
| Motor Cat. No. (1) | AD mm (in.) | HD mm (in.) | T (4) mm (in.) | LA mm (in.) | LD (2) mm (in.) | LE (2) mm (in.) | L (2) mm (in.) | LB (2) mm (in.) | L-LB (3) mm (in.) | A mm (in.) | B (2) mm (in.) | C mm (in.) | H mm (in.) | D (4) mm (in.) | M (4) mm (in.) | SH (4) mm (in.) | S (4) mm (in.) | K (4) mm (in.) | N (4) mm (in.) | P mm (in.) | GE (4) mm (in.) | F (4) mm (in.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VPC-B1652*x* | 120.5 (4.75) | 200.3 (7.89) | 3.5 (0.14) | 14.3 (0.56) | 251.9 (9.92) | 211.9 (8.34) | 427.6 (16.83) | 347.6 (13.69) | 80.0 (3.15) | 125.0 (4.92) | 216.9 (8.54) | 34.0 (1.34) | 62.5 (2.46) | 32.0 (1.260) | 165.0 (6.496) | 80.00 (3.15) | 12.00 (0.472) | 10.00 (0.394) | 130.0 (5.118) | 168.9 (6.65) | 5.00 (0.198) | 10.00 (0.394) |
| VPC-B1653*x* | | | | | 307.4 (12.10) | 267.4 (10.53) | 483.1 (19.02) | 403.1 (15.87) | | | 272.4 (10.72) | | | | | | | | | | | |
| VPC-B1654D | 140.0 (5.51) | 219.9 (8.66) | | | 352.1 (13.86) | 281.1 (11.07) | 523.6 (20.61) | 443.6 (17.46) | | | 312.9 (12.32) | | | | | | | | | | | |
| VPC-B2153*x* | 140.5 (5.53) | 240.5 (9.47) | 4.0 (0.16) | 18.4 (0.72) | 328.4 (12.93) | 288.5 (11.40) | 520.1 (20.48) | 440.1 (17.33) | 80.0 (3.15) | 160.0 (6.30) | 284.9 (11.22) | 43.0 (1.69) | 80.00 (3.15) | 38.00 (1.496) | 215.00 (8.465) | 100.00 (3.94) | 14.50 (0.571) | 12.00 (0.472) | 180.00 (7.087) | 210.9 (8.30) | 5.00 (0.198) | 10.00 (0.394) |
| VPC-B21549 | | | | | 368.9 (14.52) | 329.0 (12.95) | 560.6 (22.07) | 480.6 (18.92) | | | 325.4 (12.81) | | | | | | | | | | | |
| VPC-B2154A | 160.1 (6.30) | 260.1 (10.24) | | | | 297.9 (11.73) | | | | | | | | | | | | | | | | |
| VPC-B2154B/D | | | | | | | | | | | | | | | | | | | | | | |
| VPC-B2155B/D | | | | | 409.4 (16.12) | 338.4 (13.32) | 601.1 (23.67) | 521.1 (20.52) | | | 365.9 (14.41) | | | | | | | | | | | |
| VPC-B2156A/D | | | | | 449.9 (17.71) | 378.9 (14.92) | 641.6 (25.26) | 561.6 (22.11) | | | 406.4 (16.00) | | | | | | | | | | | |
| VPC-B3002*x* | 192.0 (7.56) | 324.0 (12.76) | 5.0 (0.20) | 22.9 (0.90) | 400.7 (15.78) | 329.7 (12.98) | 692.1 (27.23) | 582.1 (22.92) | 110.0 (4.33) | 216.0 (8.50) | 344.7 (13.57) | 53.0 (2.09) | 108.0 (4.25) | 48.00 (1.890) | 300.00 (11.811) | 132.00 (5.20) | 18.50 (0.728) | 12.00 (0.472) | 250.00 (9.843) | 275.9 (10.86) | 5.50 (0.217) | 14.00 (0.551) |
| VPC-B3003*x* | | | | | | | | | | | | | | | | | | | | | | |
| VPC-B30049 | | | | | 448.2 (17.65) | 377.2 (14.85) | 739.6 (29.12) | 629.6 (24.79) | | | 392.2 (15.44) | | | | | | | | | | | |
| VPC-B3004A | 203.3 (8.00) | 335.3 (13.20) | | | | 400.2 (15.76) | | | | | | | | | | | | | | | | |
| VPC-B3004B/D | | | | | | | | | | | | | | | | | | | | | | |

(1) Catalog numbers /B and /A represent rated speed for the fanless motor. D/ represents rated speed for the fan motor.
(2) If ordering VPC-B1652*x* motors with brake, add 55.5 mm (2.19 in.) to dimension L, LB, LE, LD and B.
If ordering VPC-B1653*x* or VPC-B1654D motors with brake, add 40.5 mm (1.59 in.) to dimension L, LB, LE, LD and B.
If ordering VPC-B2153*x*, VPC-B2154*x* or VPC-B2156A/D motors with brake, add 81.0 mm (3.19 in.) to dimension L, LB, LE, LD and B.
If ordering VPC-B2155B/D motors with brake, add 121.5 mm (4.78 in.) to dimension L, LB, LE, LD and B.
If ordering VPC-B3002*x* motors with brake, add 47.5 mm (1.87 in.) to dimension L, LB, LE, LD and B.
If ordering VPC-B3003*x* motors with brake, add 95.0 mm (3.74 in.) to dimension L, LB, LE, LD and B.
If ordering VPC-B3004*x* motors with brake, add 142.5 mm (5.61 in.) to dimension L, LB, LE, LD and B.
(3) Tolerance for this dimension is ±0.7 mm (±0.028 in.).
(4) For shaft diameter, mounting hole diameter, pilot diameter, and keyway tolerances, see the figure on page 48.

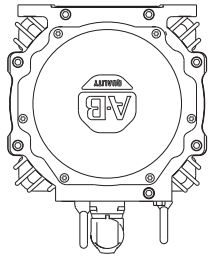
Motors are designed to metric dimensions. Inch dimensions are approximate conversions from millimeters. Dimensions without tolerances are for reference.

# VPC-B165*xx*, VPC-B215*xx*, and VPC-B300*xx* Motor Dimensions (without fan)

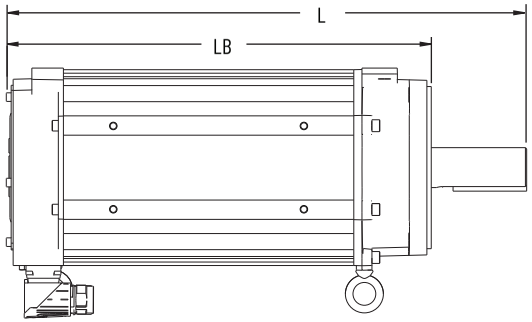


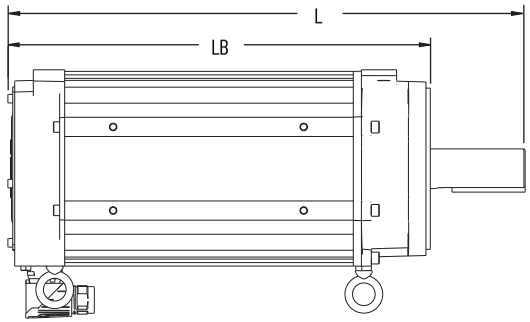


M23 Power/Brake and
M23 Feedback Connectors

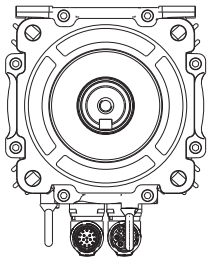


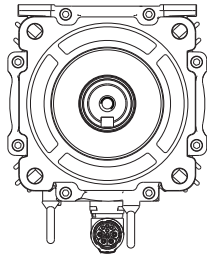
M23 Single Connector




**Dimensions are in mm (in.)**





| **Motor Cat. No.** (1) | **L** (2) mm (in.) | **LB** (2) mm (in.) |
|---|---|---|
| VPC-B1652*x* | 361.7 (14.24) | 281.7 (11.09) |
| VPC-B1653*x* | 417.2 (16.43) | 337.2 (13.27) |
| VPC-B1654D | 457.7 (18.02) | 377.7 (14.87) |
| VPC-B2153*x* | 434.0 (17.09) | 354.0 (13.93) |
| VPC-B21549 | 474.5 (18.68) | 394.5 (15.53) |
| VPC-B2154A | | |
| VPC-B2154B/D | | |

| **Motor Cat. No.** | **L** (2) mm (in.) | **LB** (2) mm (in.) |
|---|---|---|
| VPC-B2155B/D | 515.0 (20.28) | 435.0 (17.13) |
| VPC-B2156A/D | 555.5 (21.87) | 475.5 (18.72) |
| VPC-B3002*x* | 578.8 (22.79) | 468.8 (18.46) |
| VPC-B3003*x* | 578.6 (22.78) | 468.6 (18.45) |
| VPC-B30049 | 626.3 (24.66) | 516.3 (20.32) |
| VPC-B3004A | | |
| VPC-B3004D/B | | |

(1) Catalog numbers B/ and A/ represent rated speed for the fanless motor. /D represents rated speed for the fan motor.
(2) If ordering VPC-B1652*x* motors with brake, add 55.5 mm (2.19 in.) to dimension L and LB.
If ordering VPC-B1653*x* or VPC-B1654D motors with brake, add 40.5 mm (1.59 in.) to dimension L and LB.
If ordering VPC-B2153*x*, VPC-B2154*x* or VPC-B2156A/D motors with brake, add 81.0 mm (3.19 in.) to dimension L and LB.
If ordering VPC-B2155B/D motors with brake, add 121.5 mm (4.78 in.) to dimension L and LB.
If ordering VPC-B3002*x* motors with brake, add 47.5 mm (1.87 in.) to dimension L and LB.
If ordering VPC-B3003*x* motors with brake, add 95.0 mm (3.74 in.) to dimension L and LB.
If ordering VPC-B3004*x* motors with brake, add 142.5 mm (5.61 in.) to dimension L and LB.

# Kinetix VPF Food-grade Servo Motors

Kinetix VPF servo motors combine the characteristics of the Kinetix VPL servo motors with features specifically designed to meet the unique needs of many food and beverage applications. Windings are matched to the ratings of Kinetix 5500 drives and Kinetix 5700 dual-axis inverters to optimize system sizing, lower system cost, and improve energy efficiency. The Kinetix 2090-Series single cable design between motor and drive simplifies installation. These high-performance servo motors address the challenges of food environments by incorporating food-grade paint and shaft seal, along with noncorrosive fasteners and stainless steel shaft.

## Kinetix VPF Servo Motor Features

| Attribute | Value |
|---|---|
| Main characteristics | • Configurable winding options, brakes, and encoder feedback<br>• Developed to match the ratings of Kinetix 5500 drives and Kinetix 5700 dual-axis inverters<br>• 2090-Series single cable technology<br>• Hiperface DSL encoder protocol<br>• Low rotor inertia |
| Features | • Food-grade epoxy coated<br>• 200V and 400V-class windings<br>• Single-turn and multi-turn absolute feedback<br>• SIL 2 (PLd) rated encoder options<br>• High-energy rare-earth magnets<br>• Shaft end threaded hole<br>• SpeedTec DIN connector, rotates 315°<br>• Standard IEC 72-1 mounting dimensions |
| Motor type | Brushless AC synchronous servo motors |
| Environmental rating | • IP66/IP67 with shaft seal (standard) and use of environmentally sealed cable connector<br>• Food grade grease on shaft seal |
| Certifications | Kinetix VPF rotary motors are UL Recognized components to applicable UL and CSA standards. CE marked for all applicable directives. Refer to rok.auto/certifications for the Product Certifications website. |
| Continuous stall torque | 0.93…19 N•m (8…172 lb•in) |
| Peak stall torque | 2.69…49 N•m (24…430 lb•in) |
| Rated speed | Up to 8000 rpm |
| Motor rated output | 0.34…4.18 kW (0.46…5.60 Hp) |
| Compatible servo drives | • Kinetix 5700<br>• Kinetix 5500 |
| Compatible servo cables | • 2090-CS*x*M1*xx*-*xx*AA/AF*xx* (TPE) cables<br>• 2090-CS*x*M1*xx*-*xx*VA/LF*xx* (PVC and PUR) cables |
| Typical applications | • Food packaging<br>• Volumetric filling<br>• Form, fill, seal<br>• Food handling<br>• For meat and poultry applications, the Kinetix VPS stainless-steel motors are recommended |

# Catalog Numbers - Kinetix VPF Servo Motors

Catalog numbers consist of various characters, each of which identifies a specific option for that component. Use the catalog numbering table chart below to understand the configuration of your motor. For questions regarding product availability, contact your Allen-Bradley distributor.

**VP F - x xxx x x - x J 1 x A F**

**Factory Options**
F= Food-grade shaft seal

**Mounting Flange**
A = IEC metric, free mounting holes (type FF)

**Brake**
2 = No brake
4 = 24V DC holding brake

**Connector**
1 = Single SpeedTec DIN connector, right angle, 315° rotatable

**Shaft Key**
J = Shaft key

**Feedback**
C = 18-bit absolute single-turn digital encoder (Hiperface DSL protocol)
P = 18-bit absolute multi-turn digital encoder (Hiperface DSL protocol)
W = 18-bit absolute multi-turn digital encoder (Hiperface DSL protocol) SIL 2 (PLd) rated, 9-bit secondary safety channel (1)
Q = 23-bit absolute multi-turn digital encoder (Hiperface DSL protocol) SIL 2 (PLd) rated, 12-bit secondary safety channel (2)

**Rated Speed (3) (4)**

| | | |
|---|---|---|
| A = 1500 rpm | D = 3000 rpm | M= 6000 rpm |
| B = 2000 rpm | E = 3500 rpm | T = 6750 rpm |
| C = 2500 rpm | F = 4500 rpm | U = 8000 rpm |

**Magnet Stack Length (1, 2, 3, 4 stacks) (4)**

**Frame Size - Bolt Circle Diameter (BCD)**

| | |
|---|---|
| 063 = 63 mm | 115 = 115 mm |
| 075 = 75 mm | 130 = 130 mm |
| 100 = 100 mm | 165 = 165 mm |

**Voltage Class**
A = 200V
B = 400V

**Series Type**
F = Food grade enclosure (including food-grade shaft seal)

**Series**
VP = Permanent magnet rotary servo motors that are optimized to Kinetix 5500 and Kinetix 5700 drive ratings

(1) This encoder option is available with only VPF-B063*xx* and VPF-B075*xx* motor frame sizes.
(2) This encoder option is available with only VPF-A/B100*xx*, VPF-A/B115*xx*, VPF-A/B130*xx*, and VPF-B165*xx* motor frame sizes.
(3) Rated speed hierarchy is only for comparative purposes. Use Motion Analyzer software to size and select motors for your application, and/or the torque/speed curves in the Kinetix 5500 Drive System Design Guide, publication KNX-RM009, and the Kinetix 5700 Drive System Design Guide, publication KNX-RM010.
(4) Not all combinations are available. Only the configurations for rated speed and magnet stack length, as listed in Kinetix VPF Servo Motor (200V-class) Performance Specifications on page 55 and Kinetix VPF Servo Motor (400V-class) Performance Specifications on page 56, are available. Use Motion Analyzer software to size and select motors for your application.

## Kinetix VPF Servo Motor High-resolution Encoders

Kinetix VPF servo motors are available with high performance encoders with a choice of single-turn (-C), multi-turn (-P), and SIL 2 rated (-Q and -W) high-resolution feedback:

- 18-bit resolution for 262,144 counts per revolution (choice of single-turn or multi-turn)
  - Single-turn encoder (-C) provides absolute position feedback within one turn
  - Multi-turn encoder (-P) provides absolute position feedback within 4096 turns
  - Electromechanical design does not require a battery.
- SIL 2 rated absolute multi-turn digital encoder (Hiperface DSL protocol)
  - 23-bit resolution for 8,388,608 counts per revolution, multi-turn absolute position feedback within 4096 turns (-Q) option has 12-bit secondary safety channel
  - 18-bit resolution for 262,144 multi-turn absolute position feedback within 4096 turns (-W) option has 9-bit secondary safety channel

## Kinetix 2090-Series Single Cable Technology

Motor connectivity reduced to a single connector and cable

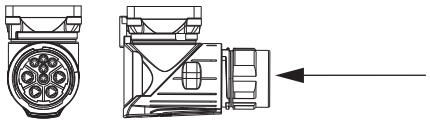
- Single cable eliminates hardware and wire terminations
- Purely digital two-wire communication integrated into the motor power cable
- TPE cable material for standard (non-flex) and continuous-flex cable
- PVC cable material for standard (non-flex) and Halogen-free PUR continuous-flex cable
- 2090-CSxM1D*x* cables are available in 1.0 m (3.2 ft) increments up to 50 m (164 ft) for Kinetix 5500 drives, 90 m (295 ft) for Kinetix 5700 drives

**IMPORTANT** Due to the unique characteristics of single cable technology, designed for and tested with Kinetix 5500 drives, Kinetix 5700 dual-axis inverters, and Kinetix VP servo motors, building your own cables or using third-party cable is not an option.

## Motor Connector/Cable Compatibility

Kinetix VPF servo motors are equipped with SpeedTec DIN connectors.

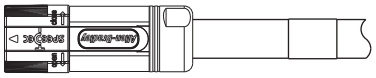
**Single SpeedTec DIN Connector**



- VPF-A/B063*xxx*...VPF-B165*xxx* motors
- Receives only single cable plugs
- Attach cable plug with one-quarter turn

- 2090-CSxM1DF cables apply to Kinetix 5500 drives
- 2090-CSxM1DE cables apply to Kinetix 5700 drives
- 2090-CSxM1DG cables apply to Kinetix 5500 or Kinetix 5700 drives

**SpeedTec DIN (M1) Single Cable Plug**



- 2090-CSBM1DF-*xx*AA*xx* (standard, non-flex) power/feedback/brake cables
- 2090-CSWM1DF-*xx*AA*xx* (standard, non-flex) power/feedback cables
- 2090-CSBM1DF-*xx*AF*xx* (continuous-flex) power/feedback/brake cables
- 2090-CSBM1DE-*xxx*A*xx* (standard, non-flex) power/feedback/brake cables
- 2090-CSWM1DE-*xxx*A*xx* (standard, non-flex) power/feedback cables
- 2090-CSBM1DE-*xxx*F*xx* (continuous-flex) power/feedback/brake cables
- 2090-CSBM1DG-*xxx*A*xx* (standard, non-flex) power/feedback/brake cables
- 2090-CSWM1DG-*xxv*A*xx* (standard, non-flex) power/feedback cables
- 2090-CSBM1DG-*xxx*F*xx* (continuous-flex) power/feedback/brake cables

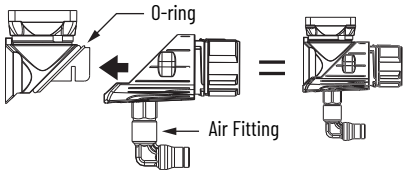
For 2090-Series single motor cable specifications, refer to Kinetix Motion Accessories Specifications Technical Data, publication KNX-TD004.

# Kinetix VPF Servo Motor Options

Kinetix VPF servo motors are available with these configurable options:

- Single-turn or multi-turn encoder.
- 24V DC holding brake.
- Positive Air Pressure kit (catalog number VPF-AIR-PURGE) is mounted on the feedback connector to provide positive air pressure to further reduce the chance of contamination inside the motor.

  Refer to the Kinetix VPF Food-grade Servo Motors Installation Instructions, publication VPF-IN001, for more information.




- Shaft seal kits are food-grade, available for field replacement, and include a food-grade lubricant to reduce wear.

**IMPORTANT** Shaft seals are subject to wear and require periodic inspection and replacement. Replacement is recommended every 3 months, not to exceed 12 months, depending on use.

**Shaft Seal Kit Catalog Numbers**

| Motor Cat. No. | Shaft Seal Kit Cat. No. | Shaft Seal Material |
|---|---|---|
| VPF-A063*xx* and VPF-B063*xx* | VPF-SSN-F063075 | Teflon |
| VPF-A075*xx* and VPF-B075*xx* | | |
| VPF-A100*xx* and VPF-B100*xx* | MPF-SST-A3B3 | PTFE |
| VPF-A115*xx* and VPF-B115*xx* | MPF-SST-A4B4 | |
| VPF-A130*xx* and VPF-B130*xx* | MPF-SST-A45B45 | |
| VPF-B165*xx* | MPF-SST-F165 | |

# Technical Specifications - Kinetix VPF Servo Motors

### Kinetix VPF Servo Motor (200V-class) Performance Specifications

| Motor Cat. No. | Rated Speed rpm | Maximum Speed rpm | Continuous Stall Torque N•m (lb•in) | Peak Stall Torque N•m (lb•in) | Motor Rated Output kW (Hp) | Rotor Inertia (1) kg-m$^2$ (lb•in•s$^2$) | Motor Weight, (1) approx kg (lb) |
|---|---|---|---|---|---|---|---|
| VPF-A0632F | 4800 | 4800 | 0.93 (8.0) | 2.69 (24.0) | 0.36 (0.48) | 0.0000170 (0.00015) | 1.36 (3.0) |
| VPF-A0633C | 3000 | 3000 | 1.27 (11.0) | 4.09 (36.0) | 0.37 (0.50) | 0.0000247 (0.00022) | 1.68 (3.70) |
| VPF-A0633F | 4500 | 4500 | 1.27 (11.0) | 4.09 (36.0) | 0.47 (0.63) | | |
| VPF-A0752C | 3300 | 3300 | 1.61 (14.0) | 4.39 (39.0) | 0.49 (0.66) | 0.0000250 (0.00022) | 2.03 (4.47) |
| VPF-A0752E | 4800 | 4800 | 1.61 (14.0) | 4.39 (39.0) | 0.63 (0.84) | | |
| VPF-A0753C | 3300 | 3300 | 2.16 (19.0) | 7.02 (62.0) | 0.59 (0.79) | 0.0000365 (0.00032) | 2.59 (5.70) |
| VPF-A0753E | 4600 | 4600 | 2.28 (20.0) | 7.35 (65.0) | 0.76 (1.02) | | |
| VPF-A1001C | 2800 | 2800 | 1.93 (17.0) | 3.78 (33.0) | 0.56 (0.75) | 0.000044 (0.00039) | 2.63 (5.80) |
| VPF-A1001M | 6500 | 6500 | 1.95 (17.0) | 3.78 (33.0) | 1.29 (1.73) | | |
| VPF-A1002C | 3000 | 3000 | 3.39 (30.0) | 7.82 (69.0) | 1.03 (1.38) | 0.000078 (0.00069) | 4.52 (9.95) |
| VPF-A1002F | 5000 | 5000 | 3.26 (29.0) | 7.82 (69.0) | 1.60 (2.14) | | |
| VPF-A1003C | 2250 | 2250 | 4.18 (37.0) | 11.15 (99.0) | 0.83 (1.11) | 0.00012 (0.0010) | 4.45 (9.80) |
| VPF-A1003E | 3750 | 3750 | 4.18 (37.0) | 11.15 (99.0) | 1.25 (1.67) | | |
| VPF-A1003F | 5500 | 5500 | 4.18 (37.0) | 11.15 (99.0) | 1.81 (2.42) | | |
| VPF-A1153C | 2300 | 2300 | 6.50 (58.0) | 20.33 (180) | 1.16 (1.56) | 0.00038 (0.0033) | 6.01 (13.23) |
| VPF-A1303B | 1950 | 1950 | 8.80 (78.0) | 20.72 (183) | 1.53 (2.05) | 0.00040 (0.0035) | 7.54 (16.60) |
| VPF-A1303F | 4000 | 4000 | 7.75 (69.0) | 20.72 (183) | 2.25 (3.02) | | |
| VPF-A1304A | 1600 | 1600 | 10.29 (91.0) | 28.45 (252) | 1.47 (1.98) | 0.00052 (0.0046) | 9.10 (20.05) |
| VPF-A1304D | 3000 | 3000 | 10.20 (90.0) | 27.10 (240) | 1.98 (2.65) | | |

(1) Refer to Kinetix VPF Servo Motor Brake Specifications on page 56 for brake rotor inertia and brake motor weight.

## Kinetix VPF Servo Motor (400V-class) Performance Specifications

| Motor Cat. No. | Rated Speed rpm | Maximum Speed rpm | Continuous Stall Torque N•m (lb•in) | Peak Stall Torque N•m (lb•in) | Motor Rated Output kW (Hp) | Rotor Inertia (1) kg-m$^2$ (lb•in•s$^2$) | Motor Weight, (1) approx kg (lb) |
|---|---|---|---|---|---|---|---|
| VPF-B0632F | 4600 | 4600 | 0.93 (8.0) | 2.69 (24.0) | 0.34 (0.46) | 0.000017 (0.00015) | 1.36 (3.00) |
| VPF-B0632T | 7200 | 8000 | 0.93 (8.0) | 2.69 (24.0) | 0.41 (0.55) | | |
| VPF-B0633M | 6700 | 6700 | 1.27 (11.0) | 4.09 (36.0) | 0.49 (0.66) | 0.0000247 (0.00022) | 1.68 (3.70) |
| VPF-B0633T | 6000 | 8000 | 1.27 (11.0) | 4.09 (36.0) | 0.48 (0.64) | | |
| VPF-B0752E | 4900 | 4900 | 1.61 (14.0) | 4.39 (39.0) | 0.64 (0.86) | 0.000025 (0.00022) | 2.03 (4.47) |
| VPF-B0752F | 7000 | 7000 | 1.61 (14.0) | 4.39 (39.0) | 0.76 (1.02) | | |
| VPF-B0752M | 8000 | 8000 | 1.61 (14.0) | 4.39 (39.0) | 0.77 (1.04) | | |
| VPF-B0753E | 4500 | 4500 | 2.28 (20.0) | 7.35 (65.0) | 0.77 (1.04) | 0.0000365 (0.00032) | 2.59 (5.70) |
| VPF-B0753F | 4500 | 6600 | 2.16 (19.0) | 7.02 (62.0) | 0.61 (0.82) | | |
| VPF-B0753M | 6000 | 8000 | 2.28 (20.0) | 7.35 (65.0) | 0.78 (1.05) | | |
| VPF-B1001M | 6000 | 6000 | 1.93 (17.0) | 3.78 (34.0) | 1.14 (1.53) | 0.000044 (0.00039) | 2.63 (5.80) |
| VPF-B1002E | 3300 | 3300 | 3.39 (30.0) | 7.82 (69.0) | 1.12 (1.50) | 0.000078 (0.00069) | 3.56 (7.85) |
| VPF-B1002M | 6000 | 6000 | 3.39 (30.0) | 7.82 (69.0) | 1.86 (2.49) | | |
| VPF-B1003C | 2500 | 2500 | 4.18 (37.0) | 11.15 (99.0) | 0.91 (1.23) | 0.00012 (0.0010) | 4.45 (9.80) |
| VPF-B1003F | 4750 | 4750 | 4.18 (37.0) | 11.15 (99.0) | 1.57 (2.10) | | |
| VPF-B1003T | 7000 | 7000 | 4.18 (37.0) | 11.15 (99.0) | 1.68 (2.25) | | |
| VPF-B1153E | 3200 | 3200 | 6.50 (58.0) | 20.33 (180) | 1.40 (1.88) | 0.00038 (0.0033) | 6.01 (13.23) |
| VPF-B1153F | 4000 | 5000 | 6.50 (58.0) | 20.33 (180) | 1.49 (2.00) | | |
| VPF-B1303C | 2250 | 2250 | 8.80 (78.0) | 20.72 (183) | 1.74 (2.33) | 0.00040 (0.0035) | 7.54 (16.60) |
| VPF-B1303F | 4000 | 4000 | 8.80 (78.0) | 20.72 (183) | 2.54 (3.40) | | |
| VPF-B1304C | 2150 | 2150 | 10.29 (91.0) | 28.45 (252) | 1.49 (2.00) | 0.00052 (0.0046) | 9.10 (20.05) |
| VPF-B1304E | 3500 | 3500 | 10.29 (91.0) | 28.45 (252) | 2.40 (3.21) | | |
| VPF-B1652C | 2700 | 2700 | 19.40 (172) | 48.60 (430) | 4.18 (5.60) | 0.00147 (0.013) | 17.80 (39.24) |

(1) Refer to Kinetix VPF Servo Motor Brake Specifications on page 56 for brake rotor inertia and brake motor weight.

## Kinetix VPF Servo Motor Brake Specifications

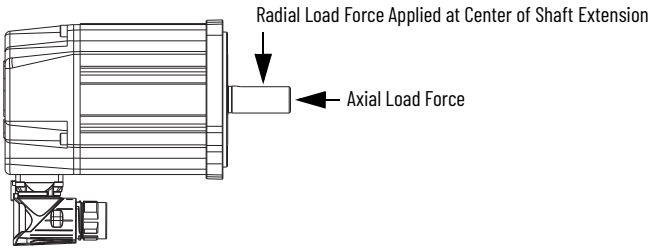
| Motor Cat. No. | Backlash, max (brake engaged) arc minutes | Holding Torque N•m (lb•in) | Coil Current at 24V DC A | Brake Response Time | | Brake Rotor Inertia kg-m$^2$ (lb•in•s$^2$) | Brake Motor Weight, approx kg (lb) |
|---|---|---|---|---|---|---|---|
| | | | | Release ms | Engage (1) ms | | |
| VPF-A/B0632 | 30 | 1.50 (13) | 0.297...0.363 | 38 | 25 | 0.0000194 (0.00017) | 1.70 (3.74) |
| VPF-A/B0633 | | | | | | 0.0000271 (0.00024) | 2.02 (4.45) |
| VPF-A/B0752 | | 3.0 (27) | 0.567...0.693 | 66 | 42 | 0.0000297 (0.00026) | 2.62 (5.77) |
| VPF-A/B0753 | | | | | | 0.0000412 (0.00036) | 3.18 (7.0) |
| VPF-A/B1001 | | 4.18 (37) | 0.45...0.55 | 90 | 65 | 0.000059 (0.00052) | 3.26 (7.19) |
| VPF-A/B1002 | | | | | | 0.000093 (0.00082) | 4.20 (9.24) |
| VPF-A/B1003 | | | | | | 0.000135 (0.0012) | 5.08 (11.19) |
| VPF-A/B1153 | | 6.55 (58) | 0.621...0.759 | 90 | 95 | 0.000409 (0.0036) | 6.88 (15.15) |
| VPF-A/B1303 | | 14.10 (125) | 0.738...0.902 | 125 | 120 | 0.000433 (0.0038) | 8.64 (19.03) |
| VPF-A/B1304 | | | | | | 0.000553 (0.0049) | 10.21 (22.48) |
| VPF-B1652 | | 32.0 (283) | 1.053...1.287 | 140 | 120 | 0.00153 (0.013) | 19.65 (43.32) |

(1) By using diode and zener diode as arc suppression device in external control circuit.

# Kinetix VPF Servo Motor Load Force Ratings

Kinetix VPF servo motors are capable of operating with the maximum radial or maximum axial shaft loads listed in the following tables. Radial loads listed are applied in the middle of the shaft extension. The tables starting below represent an $L_{10}$ bearing fatigue life of 20,000 hours. This 20,000-hour life does not account for possible application-specific life reduction that can occur due to bearing grease contamination from external sources. Maximum operating speed is limited by motor winding.

**Load Forces on Shaft**




## Kinetix VPF Servo Motors (063...075 frame size)

**Radial Load Force Ratings (maximum) for Non-brake Motors**

| Motor Cat. No. (1) | Maximum Speed rpm | Load (kgf) at Speed (rpm) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 kgf | 1000 kgf | 1500 kgf | 2000 kgf | 2500 kgf | 3000 kgf | 3500 kgf | 4000 kgf | 4500 kgf | 5000 kgf | 6000 kgf | 6500 kgf | 7000 kgf | 7500 kgf | 8000 kgf |
| VPF-A0632F | 4800 | – | 28.9 | 25.2 | – | – | 21.0 * | – | – | – | 17.1 * | – | – | – | – | – |
| VPF-A0633C | 3000 | 38.1 | 30.3 | 27.4 * | – | – | 21.0 | – | – | – | – | – | – | – | – | – |
| VPF-A0633F | 4500 | 38.1 | – | 26.4 | – | – | 21.0 | – | – | 18.3 | – | – | – | – | – | – |
| VPF-A0752C | 3300 | 36.1 | 28.6 | 25.9 * | – | – | – | 19.2 * | – | – | – | – | – | – | – | – |
| VPF-A0752E | 4800 | 36.1 | 28.6 | – | – | 21.8 * | – | – | – | – | 17.0 * | – | – | – | – | – |
| VPF-A0753C | 3300 | 37.8 | 30.0 | 27.5 * | – | – | – | 20.2 * | – | – | – | – | – | – | – | – |
| VPF-A0753E | 4600 | 37.8 | 30.0 | – | – | 23.3 * | – | – | – | – | 18.0 * | – | – | – | – | – |
| VPF-B0632F | 4600 | – | 28.9 | 25.2 | – | – | 21.0 * | – | – | – | 17.1 * | – | – | – | – | – |
| VPF-B0632T | 8000 | – | – | – | 22.9 | – | – | – | 18.2 | – | – | – | 15.6 * | – | – | 14.4 |
| VPF-B0633M | 6700 | – | 30.3 | – | 24.0 | – | – | – | 19.2 * | – | – | – | – | 15.9 * | – | – |
| VPF-B0633T | 8000 | – | – | 26.4 | – | – | 21.0 | – | – | – | – | 16.8 * | – | – | – | 15.1 |
| VPF-B0752E | 4900 | 36.1 | 28.6 | – | – | 22.0 * | – | – | – | – | 17.0 * | – | – | – | – | – |
| VPF-B0752F | 7000 | – | 28.6 | – | 22.7 | – | – | 19.3 * | – | – | – | – | – | 15.0 | – | – |
| VPF-B0752M | 8000 | – | – | 25.0 | – | – | 20.8 | – | – | – | 16.8 * | – | – | – | – | 14.3 |
| VPF-B0753E | 4500 | 37.8 | 30.0 | – | 23.8 | – | – | – | – | 18.2 | – | – | – | – | – | – |
| VPF-B0753F | 6600 | – | 30.0 | – | 23.8 | – | | 20.6 * | – | – | – | – | 16.1 | – | – | – |
| VPF-B0753M | 8000 | – | – | 26.2 | – | – | 19.8 | – | – | – | 18.0 * | – | – | – | – | 15.0 |

(1) 1.0 kgf = 2.2 lbf or 9.8 N. An asterisk (*) indicates a load rating measured at an rpm value that is less than the value listed for that column.

### Axial Load Force Ratings (maximum radial load) for Non-brake Motors

| Motor Cat. No. (1) | Maximum Speed rpm | Load (kgf) at Speed (rpm) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 kgf | 1000 kgf | 1500 kgf | 2000 kgf | 2500 kgf | 3000 kgf | 3500 kgf | 4000 kgf | 4500 kgf | 5000 kgf | 6000 kgf | 6500 kgf | 7000 kgf | 7500 kgf | 8000 kgf |
| VPF-A0632F | 4800 | – | 23.5 | 19.7 | – | – | 15.5 * | – | – | – | 11.9 * | – | – | – | – | – |
| VPF-A0633C | 3000 | 32.7 | 24.2 | 21.3 * | – | – | 15.0 | – | – | – | – | – | – | – | – | – |
| VPF-A0633F | 4500 | 32.7 | – | 20.3 | – | – | 15.0 | – | – | 12.6 | – | – | – | – | – | – |
| VPF-A0752C | 3300 | 31.5 | 23.3 | 20.5 * | – | – | – | 13.9 * | – | – | – | – | – | – | – | – |
| VPF-A0752E | 4800 | 31.5 | 23.3 | – | – | 16.4 * | – | – | – | – | 11.8 * | – | – | – | – | – |
| VPF-A0753C | 3300 | 32.5 | 24.1 | 21.5 * | – | – | – | 14.3 * | – | – | – | – | – | – | – | – |
| VPF-A0753E | 4600 | 32.5 | 24.1 | – | – | 17.3 * | – | – | – | – | 12.4 * | – | – | – | – | – |
| VPF-B0632F | 4600 | – | 23.5 | 19.7 | – | – | 15.5 * | – | – | – | 11.9 * | – | – | – | – | – |
| VPF-B0632T | 8000 | – | – | – | 17.4 | – | – | – | 12.9 | – | – | – | 10.6 | – | – | 9.5 |
| VPF-B0633M | 6700 | – | 24.2 | – | 17.9 | – | – | – | 13.4 * | – | – | – | – | 10.5 * | – | – |
| VPF-B0633T | 8000 | – | – | 20.3 | – | – | 15.0 | – | – | – | – | 11.3 * | – | – | – | 9.8 |
| VPF-B0752E | 4900 | 31.5 | 23.3 | – | – | 16.6 * | – | – | – | – | 11.8 * | – | – | – | – | – |
| VPF-B0752F | 7000 | – | 23.3 | – | 17.3 | – | – | 14.0 * | – | – | – | – | – | 10.0 | – | – |
| VPF-B0752M | 8000 | – | – | 19.6 | – | – | 14.5 | – | – | – | 11.7 * | – | – | – | – | 9.5 |
| VPF-B0753E | 4500 | 32.5 | 24.1 | – | 17.8 | – | – | – | – | 12.5 | – | – | – | – | – | – |
| VPF-B0753F | 6600 | – | 24.1 | – | 17.8 | – | – | 14.7 * | – | – | – | – | 10.7 | – | – | – |
| VPF-B0753M | 8000 | – | – | 20.2 | – | – | 14.9 | – | – | – | 12.4 * | – | – | – | – | 9.8 |

(1) 1.0 kgf = 2.2 lbf or 9.8 N. An asterisk (*) indicates a load rating measured at an rpm value that is less than the value listed for that column.

### Axial Load Force Ratings (zero radial load) for Non-brake Motors

| Motor Cat. No. (1) | Maximum Speed rpm | Load (kgf) at Speed (rpm) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 kgf | 1000 kgf | 1500 kgf | 2000 kgf | 2500 kgf | 3000 kgf | 3500 kgf | 4000 kgf | 4500 kgf | 5000 kgf | 6000 kgf | 6500 kgf | 7000 kgf | 7500 kgf | 8000 kgf |
| VPF-A0632F | 4800 | – | 27.5 | 23.0 | – | – | 18.1 * | – | – | – | 13.9 * | – | – | – | – | – |
| VPF-A0633C | 3000 | 37.1 | 27.5 | 24.1 * | – | – | 17.1 | – | – | – | – | – | – | – | – | – |
| VPF-A0633F | 4500 | 37.1 | – | 23.0 | – | – | 17.1 | – | – | 14.3 | – | – | – | – | – | – |
| VPF-A0752C | 3300 | 37.1 | 27.5 | 24.1 * | – | – | – | 16.4 * | – | – | – | – | – | – | – | – |
| VPF-A0752E | 4800 | 37.1 | 27.5 | – | – | 19.3 * | – | – | – | – | 13.9 * | – | – | – | – | – |
| VPF-A0753C | 3300 | 37.1 | 27.5 | 24.5 * | – | – | – | 16.4 * | – | – | – | – | – | – | – | – |
| VPF-A0753E | 4600 | 37.1 | 27.5 | – | – | 19.7 * | – | – | – | – | 14.2 * | – | – | – | – | – |
| VPF-B0632F | 4600 | – | 27.5 | 23.0 | – | – | 18.1 * | – | – | – | 13.9 * | – | – | – | – | – |
| VPF-B0632T | 8000 | – | – | – | 20.3 | – | – | – | 15.1 | – | – | – | 12.4 * | – | – | 11.1 |
| VPF-B0633M | 6700 | – | 27.5 | – | 20.3 | – | – | – | 15.2 * | – | – | – | – | 11.9 * | – | – |
| VPF-B0633T | 8000 | – | – | 23.0 | – | – | 17.1 | – | – | – | – | 12.8 * | – | – | – | 11.1 |
| VPF-B0752E | 4900 | 37.1 | 27.5 | – | – | 19.5 * | – | – | – | – | 13.9 * | – | – | – | – | – |
| VPF-B0752F | 7000 | – | 27.5 | – | 20.3 | – | – | 16.5 * | – | – | – | – | – | 11.8 | – | – |
| VPF-B0752M | 8000 | – | – | 23.0 | – | – | 17.1 | – | – | – | 13.8 * | – | – | – | – | 11.1 |
| VPF-B0753E | 4500 | 37.1 | 27.5 | – | 20.3 | – | – | – | – | 14.3 | – | – | – | – | – | – |
| VPF-B0753F | 6600 | – | 27.5 | – | 20.3 | – | – | 16.8 * | – | – | – | – | 12.2 | – | – | – |
| VPF-B0753M | 8000 | – | – | 23.0 | – | – | 17.1 | – | – | – | 14.2 * | – | – | – | – | 11.1 |

(1) 1.0 kgf = 2.2 lbf or 9.8 N. An asterisk (*) indicates a load rating measured at an rpm value that is less than the value listed for that column.

### Radial Load Force Ratings (maximum) for Brake Motors

| Motor Cat. No. (1) | Maximum Speed rpm | Load (kgf) at Speed (rpm) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 kgf | 1000 kgf | 1500 kgf | 2000 kgf | 2500 kgf | 3000 kgf | 3500 kgf | 4000 kgf | 4500 kgf | 5000 kgf | 6000 kgf | 6500 kgf | 7000 kgf | 7500 kgf | 8000 kgf |
| VPF-A0632F | 4800 | – | 30.5 | 26.6 | – | – | 22.2 * | – | – | – | 18.1 * | – | – | – | – | – |
| VPF-A0633C | 3000 | 39.5 | 31.4 | 28.4 * | – | – | 21.8 | – | – | – | – | – | – | – | – | – |
| VPF-A0633F | 4500 | 39.5 | – | 27.4 | – | – | 21.8 | – | – | 19.0 | – | – | – | – | – | – |
| VPF-A0752C | 3300 | 38.1 | 30.3 | 27.4 | – | – | – | 20.3 * | – | – | – | – | – | – | – | – |
| VPF-A0752E | 4800 | 38.1 | 30.3 | – | – | 23.1 * | – | – | – | – | 17.9 * | – | – | – | – | – |
| VPF-A0753C | 3300 | 39.2 | 31.2 | 28.5 * | – | – | – | 20.9 * | – | – | – | – | – | – | – | – |
| VPF-A0753E | 4600 | 39.2 | 31.2 | – | – | 24.1 * | – | – | – | – | 18.7 * | – | – | – | – | – |
| VPF-B0632F | 4600 | – | 30.5 | 26.6 | – | – | 22.2 * | – | – | – | 18.1 * | – | – | – | – | – |
| VPF-B0632T | 8000 | – | – | – | 24.2 | – | – | – | 19.2 | – | – | – | 16.5 * | – | – | 15.3 |
| VPF-B0633M | 6700 | – | 31.4 | – | 24.9 | – | – | – | 19.9 * | – | – | – | – | 16.5 * | – | – |
| VPF-B0633T | 8000 | – | – | 27.4 | – | – | 21.8 | – | – | – | – | 17.5 * | – | – | – | 15.7 |
| VPF-B0752E | 4900 | 38.1 | 30.3 | – | – | 23.3 * | – | – | – | – | 17.9 * | – | – | – | – | – |
| VPF-B0752F | 7000 | – | 30.3 | – | 24.0 | – | – | 20.4 * | – | – | – | – | – | 15.8 | – | – |
| VPF-B0752M | 8000 | – | – | 26.4 | – | – | 21.0 | – | – | – | 17.8 * | – | – | – | – | 15.1 |
| VPF-B0753E | 4500 | 39.2 | 31.2 | – | 24.7 | – | – | – | – | 18.9 | – | – | – | – | – | – |
| VPF-B0753F | 6600 | – | 31.2 | – | 24.7 | – | – | 21.4 * | – | – | – | – | 16.7 | – | – | – |
| VPF-B0753M | 8000 | – | – | 27.2 | – | – | 21.6 | – | – | – | 18.7 * | – | – | – | – | 15.6 |

(1) 1.0 kgf = 2.2 lbf or 9.8 N. An asterisk (*) indicates a load rating measured at an rpm value that is less than the value listed for that column.

### Axial Load Force Ratings (maximum radial load) for Brake Motors

| Motor Cat. No. (1) | Maximum Speed rpm | Load (kgf) at Speed (rpm) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 kgf | 1000 kgf | 1500 kgf | 2000 kgf | 2500 kgf | 3000 kgf | 3500 kgf | 4000 kgf | 4500 kgf | 5000 kgf | 6000 kgf | 6500 kgf | 7000 kgf | 7500 kgf | 8000 kgf |
| VPF-A0632F | 4800 | – | 24.3 | 20.4 | – | – | 16.1 * | – | – | – | 12.3 * | – | – | – | – | – |
| VPF-A0633C | 3000 | 33.5 | 24.8 | 21.8 * | – | – | 15.4 | – | – | – | – | – | – | – | – | – |
| VPF-A0633F | 4500 | 33.5 | – | 20.8 | – | – | 15.4 | – | – | 12.9 | – | – | – | – | – | – |
| VPF-A0752C | 3300 | 32.7 | 24.2 | 21.3 * | – | | – | 14.4 * | – | – | – | – | – | – | – | – |
| VPF-A0752E | 4800 | 32.7 | 24.2 | – | – | 17.0 * | – | – | – | – | 12.3 * | – | – | – | – | – |
| VPF-A0753C | 3300 | 33.4 | 24.7 | 22.0 * | – | | – | 14.7 * | – | – | – | – | – | – | – | – |
| VPF-A0753E | 4600 | 33.4 | 24.7 | – | – | 17.7 * | – | – | – | – | 12.7 * | – | – | – | – | – |
| VPF-B0632F | 4600 | – | 24.3 | 20.4 | – | – | 16.1 * | – | – | – | 12.3 * | – | – | – | – | – |
| VPF-B0632T | 8000 | – | – | – | 18.0 | – | – | – | 13.3 | – | – | – | 11.0 * | – | – | 9.9 |
| VPF-B0633M | 6700 | – | 24.8 | – | 18.4 | – | – | – | 13.7 * | – | – | – | – | 10.7 * | – | – |
| VPF-B0633T | 8000 | – | – | 20.8 | – | – | 15.4 | – | – | – | – | 11.6 * | – | – | – | 10.1 |
| VPF-B0752E | 4900 | 32.7 | 24.2 | – | – | 17.2 * | – | – | – | – | 12.3 * | – | – | – | – | – |
| VPF-B0752F | 7000 | – | 24.2 | – | 17.9 | – | – | 14.5 * | – | – | – | – | – | 10.4 | – | – |
| VPF-B0752M | 8000 | – | – | 20.3 | – | – | 15.0 | – | – | – | 12.1 * | – | – | – | – | 9.8 |
| VPF-B0753E | 4500 | 33.4 | 24.7 | – | 18.3 | – | – | – | – | 12.9 | – | – | – | – | – | – |
| VPF-B0753F | 6600 | – | 24.7 | – | 18.3 | – | – | 15.1 * | – | – | – | – | 11.0 | – | – | – |
| VPF-B0753M | 8000 | – | – | 20.7 | – | – | 15.3 | – | – | – | 12.7 * | – | – | – | – | 10.0 |

(1) 1.0 kgf = 2.2 lbf or 9.8 N. An asterisk (*) indicates a load rating measured at an rpm value that is less than the value listed for that column.

## Axial Load Force Ratings (zero radial load) for Brake Motors

| Motor Cat. No. (1) | Maximum Speed rpm | Load (kgf) at Speed (rpm) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 kgf | 1000 kgf | 1500 kgf | 2000 kgf | 2500 kgf | 3000 kgf | 3500 kgf | 4000 kgf | 4500 kgf | 5000 kgf | 6000 kgf | 6500 kgf | 7000 kgf | 7500 kgf | 8000 kgf |
| VPF-A0632F | 4800 | – | 27.5 | 23.0 | – | – | 18.1 * | – | – | – | 13.9 * | – | – | – | – | – |
| VPF-A0633C | 3000 | 37.1 | 27.5 | 24.1 * | – | – | 17.1 | – | – | – | – | – | – | – | – | – |
| VPF-A0633F | 4500 | 37.1 | – | 23.0 | – | – | 17.1 | – | – | 14.3 | – | – | – | – | – | – |
| VPF-A0752C | 3300 | 37.1 | 27.5 | 24.1 * | – | – | – | 16.4 * | – | – | – | – | – | – | – | – |
| VPF-A0752E | 4800 | 37.1 | 27.5 | – | – | 19.3 * | – | – | – | – | 13.9 * | – | – | – | – | – |
| VPF-A0753C | 3300 | 37.1 | 27.5 | 24.5 * | – | – | – | 16.4 * | – | – | – | – | – | – | – | – |
| VPF-A0753E | 4600 | 37.1 | 27.5 | – | – | 19.7 * | – | – | – | – | 14.2 * | – | – | – | – | – |
| VPF-B0632F | 4600 | – | 27.5 | 23.0 | – | – | 18.1 * | – | – | – | 13.9 * | – | – | – | – | – |
| VPF-B0632T | 8000 | – | – | – | 20.3 | – | – | – | 15.1 | – | – | – | 12.4 * | – | – | 11.1 |
| VPF-B0633M | 6700 | – | 27.5 | – | 20.3 | – | – | – | 15.2 * | – | – | – | – | 11.9 * | – | – |
| VPF-B0633T | 8000 | – | – | 23.0 | – | – | 17.1 | – | – | – | – | 12.8 * | – | – | – | 11.1 |
| VPF-B0752E | 4900 | 37.1 | 27.5 | – | – | 19.5 * | – | – | – | – | 13.9 * | – | – | – | – | – |
| VPF-B0752F | 7000 | – | 27.5 | – | 20.3 | – | – | 16.5 * | – | – | – | – | – | 11.8 | – | – |
| VPF-B0752M | 8000 | – | – | 23.0 | – | – | 17.1 | – | – | – | 13.8 * | – | – | – | – | 11.1 |
| VPF-B0753E | 4500 | 37.1 | 27.5 | – | 20.3 | – | – | – | – | 14.3 | – | – | – | – | – | – |
| VPF-B0753F | 6600 | – | 27.5 | – | 20.3 | – | – | 16.8 * | – | – | – | – | 12.2 | – | – | – |
| VPF-B0753M | 8000 | – | – | 23.0 | – | – | 17.1 | – | – | – | 14.2 * | – | – | – | – | 11.1 |

(1) 1.0 kgf = 2.2 lbf or 9.8 N. An asterisk (*) indicates a load rating measured at an rpm value that is less than the value listed for that column.

# Kinetix VPF Servo Motors (100...165 frame size)

### Radial Load Force Ratings (maximum) for Non-brake Motors

| Motor Cat. No. (1) | Maximum Speed rpm | Load (kgf) at Speed (rpm) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 kgf | 750 kgf | 1000 kgf | 1500 kgf | 2000 kgf | 2500 kgf | 3000 kgf | 3500 kgf | 4000 kgf | 4500 kgf | 5000 kgf | 5500 kgf | 6000 kgf | 6500 kgf | 7000 kgf |
| VPF-A1001C | 2800 | 79.1 | – | 62.8 | – | 49.8 | – | 44.6 * | – | – | – | – | – | – | – | – |
| VPF-A1001M | 6500 | – | – | – | 54.9 | – | 46.3 | – | – | – | 38.0 | – | – | – | 33.6 | – |
| VPF-A1002C | 3000 | 87.9 | – | 69.7 | – | 55.4 | – | 48.4 | – | – | – | – | – | – | – | – |
| VPF-A1002F | 5000 | – | – | 69.7 | 60.9 | – | – | 48.4 | – | – | – | 40.8 | – | – | – | – |
| VPF-A1003C | 2250 | 93.6 | – | 74.3 | 64.9 | – | 56.7 * | – | – | – | – | – | – | – | – | – |
| VPF-A1003E | 3750 | 93.6 | – | 74.3 | – | 59.0 | – | – | – | 47.8 * | – | – | – | – | – | – |
| VPF-A1003F | 5500 | – | – | – | 64.9 | – | 54.8 | – | – | 46.8 | – | – | 42.1 | – | – | – |
| VPF-A1153C | 2300 | 106.4 | – | 84.5 | 73.8 | – | 64.0 * | – | – | – | – | – | – | – | – | – |
| VPF-A1303B | 1950 | 132.9 | – | 105.5 | 92.2 | 84.4 * | – | – | – | – | – | – | – | – | – | – |
| VPF-A1303F | 4000 | – | – | 105.5 | – | 83.7 | – | 73.1 | – | 66.5 | | – | – | – | – | – |
| VPF-A1304A | 1600 | 140.2 | 122.5 | 112.2 * | – | 95.2 * | – | – | – | – | – | – | – | – | – | – |
| VPF-A1304D | 3000 | 140.2 | – | 111.3 | – | 88.3 | – | 77.2 | – | – | – | – | – | – | – | – |
| VPF-B1001M | 6000 | – | – | – | – | 49.8 | – | 43.5 | – | 39.6 | – | – | – | 34.6 | – | – |
| VPF-B1002E | 3300 | 87.9 | – | 69.7 | – | 55.4 | – | – | 46.8 * | – | – | – | – | – | – | – |
| VPF-B1002M | 6000 | – | – | – | 60.9 | – | – | 48.4 | – | – | 42.2 | – | – | 38.4 | – | – |
| VPF-B1003C | 2500 | 93.6 | – | 74.3 | 64.9 | – | 54.8 | – | – | – | – | – | – | – | – | – |
| VPF-B1003F | 4750 | – | – | 74.3 | 64.9 | – | – | 51.5 | – | – | – | 44.2 * | – | – | – | – |
| VPF-B1003T | 7000 | – | – | – | 64.9 | – | 54.8 | – | – | – | 45.0 | – | – | – | – | 38.9 |
| VPF-B1153E | 3200 | 106.4 | – | 84.5 | – | 67.0 | – | – | 57.3 * | – | – | – | – | – | – | – |
| VPF-B1153F | 5000 | – | – | 84.5 | – | 67.0 | – | 58.6 | – | – | – | 49.4 | – | – | – | – |
| VPF-B1303C | 2250 | 132.9 | – | 105.5 | 92.2 | – | 80.5 * | – | – | – | – | – | – | – | – | – |
| VPF-B1303F | 4000 | – | – | 105.5 | – | 83.7 | – | 74.0 * | – | 66.5 | – | – | – | – | – | – |
| VPF-B1304C | 2150 | 140.2 | – | 111.3 | 99.5 * | – | 86.2 * | – | – | – | – | – | – | – | – | – |
| VPF-B1304E | 3500 | – | – | 111.3 | 97.2 | – | 84.3 * | – | 73.3 | – | – | – | – | – | – | – |
| VPF-B1652C | 2700 | 180.7 | – | 143.4 | 125.3 | – | – | 103.0 * | – | – | – | – | – | – | – | – |

(1) 1.0 kgf = 2.2 lbf or 9.8 N. An asterisk (*) indicates a load rating measured at an rpm value that is less than the value listed for that column.

## Axial Load Force Ratings (maximum radial load) for Non-brake Motors

| Motor Cat. No. (1) | Maximum Speed rpm | Load (kgf) at Speed (rpm) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 kgf | 750 kgf | 1000 kgf | 1500 kgf | 2000 kgf | 2500 kgf | 3000 kgf | 3500 kgf | 4000 kgf | 4500 kgf | 5000 kgf | 5500 kgf | 6000 kgf | 6500 kgf | 7000 kgf |
| VPF-A1001C | 2800 | 25.0 | – | 19.0 | – | 10.0 | – | 10.0 * | – | – | – | – | – | – | – | – |
| VPF-A1001M | 6500 | – | – | – | 15.0 | – | 12.0 | – | – | – | 9.0 | – | – | – | 8.0 | – |
| VPF-A1002C | 3000 | 30.0 | – | 22.0 | – | 16.0 | – | 13.0 | – | – | – | – | – | – | – | – |
| VPF-A1002F | 5000 | – | – | 22.0 | 18.0 | – | – | 13.0 | – | – | – | 11.0 | – | – | – | – |
| VPF-A1003C | 2250 | 33.0 | – | 24.0 | 20.0 | – | 17.0 * | – | – | – | – | – | – | – | – | – |
| VPF-A1003E | 3750 | 33.0 | – | 24.0 | – | 18.0 | – | – | – | 13.0 * | – | – | – | – | – | – |
| VPF-A1003F | 5500 | – | – | – | 20.0 | – | 16.0 | – | – | 13.0 | – | – | 11.0 | – | – | – |
| VPF-A1153C | 2300 | 48.0 | – | 35.0 | 29.0 | – | 24.0 * | – | – | – | – | – | – | – | – | – |
| VPF-A1303B | 1950 | 39.0 | – | 29.0 | 24.0 | 22.0 * | – | – | – | – | – | – | – | – | – | – |
| VPF-A1303F | 4000 | – | – | 29.0 | – | 21.0 | – | 18.0 | – | 16.0 | – | – | – | – | – | – |
| VPF-A1304A | 1600 | 43.0 | 36.0 | 32.0 * | – | 26.0 * | – | – | – | – | – | – | – | – | – | – |
| VPF-A1304D | 3000 | 43.0 | – | 32.0 | – | 23.0 | – | 20.0 | – | – | – | – | – | – | – | – |
| VPF-B1001M | 6000 | – | – | – | – | 14.0 | – | 11.0 | – | 10.0 | – | – | – | 8.0 | – | – |
| VPF-B1002E | 3300 | 30.0 | – | 22.0 | – | 16.0 | – | – | 13.0 * | – | – | – | – | – | – | – |
| VPF-B1002M | 6000 | – | – | – | 18.0 | – | – | 13.0 | – | – | 11.0 | – | – | 10.0 | – | – |
| VPF-B1003C | 2500 | 33.0 | – | 24.0 | 20.0 | – | 16.0 | – | – | – | – | – | – | – | – | – |
| VPF-B1003F | 4750 | – | – | 24.0 | 20.0 | – | – | 15.0 | – | – | – | 12.0 * | – | – | – | – |
| VPF-B1003T | 7000 | – | – | – | 20.0 | – | 16.0 | – | – | – | 12.0 | – | – | – | – | 10.0 |
| VPF-B1153E | 3200 | 48.0 | – | 35.0 | – | 26.0 | – | – | 21.0 * | – | – | – | – | – | – | – |
| VPF-B1153F | 5000 | – | – | 35.0 | – | 26.0 | – | 22.0 | – | – | – | 17.0 | – | – | – | – |
| VPF-B1303C | 2250 | 39.0 | – | 29.0 | – | 24.0 | 20.0 * | – | – | – | – | – | – | – | – | – |
| VPF-B1303F | 4000 | – | – | 29.0 | – | 21.0 | – | 18.0 * | – | 16.0 | – | – | – | – | – | – |
| VPF-B1304C | 2150 | 43.0 | – | 32.0 | 27.0 * | – | 23.0 * | – | – | – | – | – | – | – | – | – |
| VPF-B1304E | 3500 | – | – | 32.0 | 27.0 | – | 22.0 * | – | 18.0 | – | – | – | – | – | – | – |
| VPF-B1652C | 2700 | 58.0 | – | 43.0 | 36.0 | – | – | 27.0 * | – | – | – | – | – | – | – | – |

(1) 1.0 kgf = 2.2 lbf or 9.8 N. An asterisk (*) indicates a load rating measured at an rpm value that is less than the value listed for that column.

## Axial Load Force Ratings (zero radial load) for Non-brake Motors

| Motor Cat. No. (1) | Maximum Speed rpm | Load (kgf) at Speed (rpm) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 kgf | 750 kgf | 1000 kgf | 1500 kgf | 2000 kgf | 2500 kgf | 3000 kgf | 3500 kgf | 4000 kgf | 4500 kgf | 5000 kgf | 5500 kgf | 6000 kgf | 6500 kgf | 7000 kgf |
| VPF-A1001C | 2800 | 49.4 | – | 36.5 | – | 27.0 | – | 23.4 * | – | – | – | – | – | – | – | – |
| VPF-A1001M | 6500 | – | – | – | 30.6 | – | 24.5 | – | – | – | 19.0 | – | – | – | 16.2 | – |
| VPF-A1002C | 3000 | 49.4 | – | 36.5 | – | 27.0 | – | 22.7 | – | – | – | – | – | – | – | – |
| VPF-A1002F | 5000 | – | – | 36.5 | 30.6 | – | – | 22.7 | – | – | – | 18.2 | – | – | – | – |
| VPF-A1003C | 2250 | 49.4 | – | 36.5 | 30.6 | – | 25.7 * | – | – | – | – | – | – | – | – | – |
| VPF-A1003E | 3750 | 49.4 | – | 36.5 | – | 27.0 | – | – | – | 20.6 * | – | – | – | – | – | – |
| VPF-A1003F | 5500 | – | – | – | 30.6 | – | 24.5 | – | – | 20.0 | – | – | 17.4 | – | – | – |
| VPF-A1153C | 2300 | 68.3 | – | 50.5 | 42.4 | | 35.2 * | – | – | – | – | – | – | – | – | – |
| VPF-A1303B | 1950 | 68.3 | – | 50.5 | 42.4 | 37.8 * | – | – | – | – | – | – | – | – | – | – |
| VPF-A1303F | 4000 | – | – | 50.5 | – | 37.4 | – | 31.4 | – | 27.7 | – | – | – | – | – | – |
| VPF-A1304A | 1600 | 68.3 | 57.2 | 51.1 * | – | 41.2 * | – | – | – | – | – | – | – | – | – | – |
| VPF-A1304D | 3000 | 68.3 | – | 50.5 | – | 37.4 | – | 31.4 | – | – | – | – | – | – | – | – |
| VPF-B1001M | 6000 | – | – | – | – | 27.0 | – | 22.7 | – | 20.0 | – | – | – | 16.8 | – | – |
| VPF-B1002E | 3300 | 49.4 | – | 36.5 | – | 27.0 | – | – | 21.8 * | – | – | – | – | | – | – |
| VPF-B1002M | 6000 | – | – | – | 30.6 | – | – | 22.7 | – | – | 19.0 | – | – | 16.8 | – | – |
| VPF-B1003C | 2500 | 49.4 | – | 36.5 | 30.6 | – | 24.5 | – | – | – | – | – | – | – | – | – |
| VPF-B1003F | 4750 | – | – | 36.5 | 30.6 | – | – | 22.7 | – | – | – | 18.6 * | – | – | – | – |
| VPF-B1003T | 7000 | – | – | – | 30.6 | – | 24.5 | – | – | – | 19.0 | – | – | – | – | 15.7 |
| VPF-B1153E | 3200 | 68.3 | – | 50.5 | – | 37.4 | – | – | 30.5 * | – | – | – | – | – | – | – |
| VPF-B1153F | 5000 | – | – | 50.5 | – | 37.4 | – | 31.4 | – | – | – | 25.1 | – | – | – | – |
| VPF-B1303C | 2250 | 68.3 | – | 50.5 | 42.3 | – | 35.5 * | – | – | – | – | – | – | – | – | – |
| VPF-B1303F | 4000 | – | – | 50.5 | – | 37.4 | – | 31.8 * | – | 27.7 | – | – | – | – | – | – |
| VPF-B1304C | 2150 | 68.3 | – | 50.5 | 43.6 * | – | 36.2 * | – | – | – | – | – | – | – | – | – |
| VPF-B1304E | 3500 | – | – | 50.5 | 42.4 | – | 35.2 * | – | 29.3 | – | – | – | – | – | – | – |
| VPF-B1652C | 2700 | 90.1 | – | 66.7 | 55.9 | – | – | 43.3 * | – | – | – | – | – | – | – | – |

(1) 1.0 kgf = 2.2 lbf or 9.8 N. An asterisk (*) indicates a load rating measured at an rpm value that is less than the value listed for that column.

## Radial Load Force Ratings (maximum) for Brake Motors

| Motor Cat. No. (1) | Maximum Speed rpm | Load (kgf) at Speed (rpm) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 kgf | 750 kgf | 1000 kgf | 1500 kgf | 2000 kgf | 2500 kgf | 3000 kgf | 3500 kgf | 4000 kgf | 4500 kgf | 5000 kgf | 5500 kgf | 6000 kgf | 6500 kgf | 7000 kgf |
| VPF-A1001C | 2800 | 90.2 | – | 71.6 | – | 56.8 | – | 50.8 * | – | – | – | – | – | – | – | – |
| VPF-A1001M | 6500 | – | – | – | 62.5 | – | 52.7 | – | – | – | 43.4 | – | – | – | 38.4 | – |
| VPF-A1002C | 3000 | 95.3 | – | 75.6 | – | 60.0 | – | 52.4 | – | – | – | – | – | – | – | – |
| VPF-A1002F | 5000 | – | – | 75.6 | 66.1 | – | – | 52.4 | – | – | – | 44.2 | – | – | – | – |
| VPF-A1003C | 2250 | 99.0 | – | 78.5 | 68.6 | – | 59.9 * | – | – | – | – | – | – | – | – | – |
| VPF-A1003E | 3750 | 99.0 | – | 78.5 | – | 62.3 | – | – | – | 50.6 * | – | – | – | – | – | – |
| VPF-A1003F | 5500 | – | – | – | 68.6 | – | 57.9 | – | – | 49.5 | – | – | 44.5 | – | – | – |
| VPF-A1153C | 2300 | 115.4 | – | 91.6 | 80.0 | – | 69.4 * | – | – | – | – | – | – | – | – | – |
| VPF-A1303B | 1950 | 145.3 | – | 115.3 | 100.7 | 92.3 * | – | – | – | – | – | – | – | – | – | – |
| VPF-A1303F | 4000 | – | – | 115.3 | – | 91.5 | – | 80.0 | – | 72.7 | – | – | – | – | – | – |
| VPF-A1304A | 1600 | 149.7 | 130.8 | 119.8 * | – | 101.6 * | – | – | – | – | – | – | – | – | – | – |
| VPF-A1304D | 3000 | 149.5 | – | 118.6 | – | 94.2 | – | 82.3 | – | – | – | – | – | – | – | – |
| VPF-B1001M | 6000 | – | – | – | – | 56.8 | – | 49.6 | – | 45.1 | – | – | – | 39.4 | – | – |
| VPF-B1002E | 3300 | 95.3 | – | 75.6 | – | 60.0 | – | – | 50.8 * | – | – | – | – | – | – | – |
| VPF-B1002M | 6000 | – | – | – | 66.1 | – | – | 52.4 | – | – | 45.8 | – | – | 41.6 | – | – |
| VPF-B1003C | 2500 | 99.0 | – | 78.5 | 68.6 | – | 57.9 | – | – | – | – | – | – | – | – | – |
| VPF-B1003F | 4750 | – | – | 78.5 | 68.6 | – | | 54.5 | – | – | – | 46.7 * | – | – | – | – |
| VPF-B1003T | 7000 | – | – | – | 68.6 | – | 57.9 | – | – | – | 47.6 | – | – | – | – | 41.1 |
| VPF-B1153E | 3200 | 115.4 | – | 91.6 | – | 72.7 | – | – | 62.2 * | – | – | – | – | – | – | – |
| VPF-B1153F | 5000 | – | – | 91.6 | – | 72.7 | – | 63.5 | – | – | – | 53.6 | – | – | – | – |
| VPF-B1303C | 2250 | 145.3 | – | 115.3 | 100.7 | – | 88.0 * | – | – | – | – | – | – | – | – | – |
| VPF-B1303F | 4000 | – | – | 115.3 | – | 91.5 | – | 80.9 * | – | 72.7 | – | – | – | – | – | – |
| VPF-B1304C | 2150 | 149.7 | – | 118.8 | 106.2 * | – | 92.0 * | – | – | – | – | – | – | – | – | – |
| VPF-B1304E | 3500 | – | – | 118.8 | 103.8 | – | 90.0 * | – | 78.2 | – | – | – | – | – | – | – |
| VPF-B1652C | 2700 | 192.5 | – | 152.8 | 133.5 | – | – | 109.7 * | – | – | – | – | – | – | – | – |

(1) 1.0 kgf = 2.2 lbf or 9.8 N. An asterisk (*) indicates a load rating measured at an rpm value that is less than the value listed for that column.

## Axial Load Force Ratings (maximum radial load) for Brake Motors

| Motor Cat. No. (1) | Maximum Speed rpm | Load (kgf) at Speed (rpm) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 kgf | 750 kgf | 1000 kgf | 1500 kgf | 2000 kgf | 2500 kgf | 3000 kgf | 3500 kgf | 4000 kgf | 4500 kgf | 5000 kgf | 5500 kgf | 6000 kgf | 6500 kgf | 7000 kgf |
| VPF-A1001C | 2800 | 31.0 | – | 23.0 | – | 17.0 | – | 14.0 * | – | – | – | – | – | – | – | – |
| VPF-A1001M | 6500 | – | – | – | 19.0 | – | 15.0 | – | – | – | 12.0 | – | – | – | 10.0 | – |
| VPF-A1002C | 3000 | 34.0 | – | 25.0 | – | 18.0 | – | 15.0 | – | – | – | – | – | – | – | – |
| VPF-A1002F | 5000 | – | – | 25.0 | 21.0 | – | – | 15.0 | – | – | – | 12.0 | – | – | – | – |
| VPF-A1003C | 2250 | 36.0 | – | 26.0 | 22.0 | – | 18.0 * | – | – | – | – | – | – | – | – | – |
| VPF-A1003E | 3750 | 36.0 | – | 26.0 | – | 19.0 | – | – | – | 15.0 * | – | – | – | – | – | – |
| VPF-A1003F | 5500 | – | – | – | 22.0 | – | 18.0 | – | – | 14.0 | – | – | 12.0 | – | – | – |
| VPF-A1153C | 2300 | 53.0 | – | 39.0 | 32.0 | – | 27.0 * | – | – | – | – | – | – | – | – | – |
| VPF-A1303B | 1950 | 46.0 | – | 34.0 | 28.0 | 25.0 * | – | – | – | – | – | – | – | – | – | – |
| VPF-A1303F | 4000 | – | – | 34.0 | – | 25.0 | – | 21.0 | – | 18.0 | – | – | – | – | – | – |
| VPF-A1304A | 1600 | 48.0 | 40.0 | 36.0 * | – | 29.0 * | – | – | – | – | – | – | – | – | – | – |
| VPF-A1304D | 3000 | 48.0 | – | 36.0 | – | 26.0 | – | 22.0 | – | – | – | – | – | – | – | – |
| VPF-B1001M | 6000 | – | – | – | – | 17.0 | – | 14.0 | – | 12.0 | – | – | – | 10.0 | – | – |
| VPF-B1002E | 3300 | 34.0 | – | 25.0 | – | 18.0 | – | – | 15.0 * | – | – | – | – | – | – | – |
| VPF-B1002M | 6000 | – | – | – | 21.0 | – | – | 15.0 | – | – | 13.0 | – | – | 11.0 | – | – |
| VPF-B1003C | 2500 | 36.0 | – | 26.0 | 22.0 | – | 18.0 | – | – | – | – | – | – | – | – | – |
| VPF-B1003F | 4750 | – | – | 26.0 | 22.0 | – | – | 16.0 | – | – | – | 13.0 * | – | – | – | – |
| VPF-B1003T | 7000 | – | – | – | 22.0 | – | 18.0 | – | – | – | 13.0 | – | – | – | – | 11.0 |
| VPF-B1153E | 3200 | 53.0 | – | 39.0 | – | 29.0 | – | – | 23.0* | – | – | – | – | – | – | – |
| VPF-B1153F | 5000 | – | – | 39.0 | – | 29.0 | – | 24.0 | – | – | – | 19.0 | – | – | – | – |
| VPF-B1303C | 2250 | 46.0 | – | 34.0 | 28.0 | – | 24.0 * | – | – | – | – | – | – | – | – | – |
| VPF-B1303F | 4000 | – | – | 34.0 | – | 25.0 | – | 21.0 * | – | 18.0 | – | – | – | – | – | – |
| VPF-B1304C | 2150 | 48.0 | – | 36.0 | 31.0 * | – | 25.0 * | – | – | – | – | – | – | – | – | – |
| VPF-B1304E | 3500 | – | – | 36.0 | 30.0 | – | 25.0 * | – | 20.0 | – | – | – | – | – | – | – |
| VPF-B1652C | 2700 | 64.0 | – | 47.0 | 39.0 | – | – | 30.0 * | – | – | – | – | – | – | – | – |

(1) 1.0 kgf = 2.2 lbf or 9.8 N. An asterisk (*) indicates a load rating measured at an rpm value that is less than the value listed for that column.

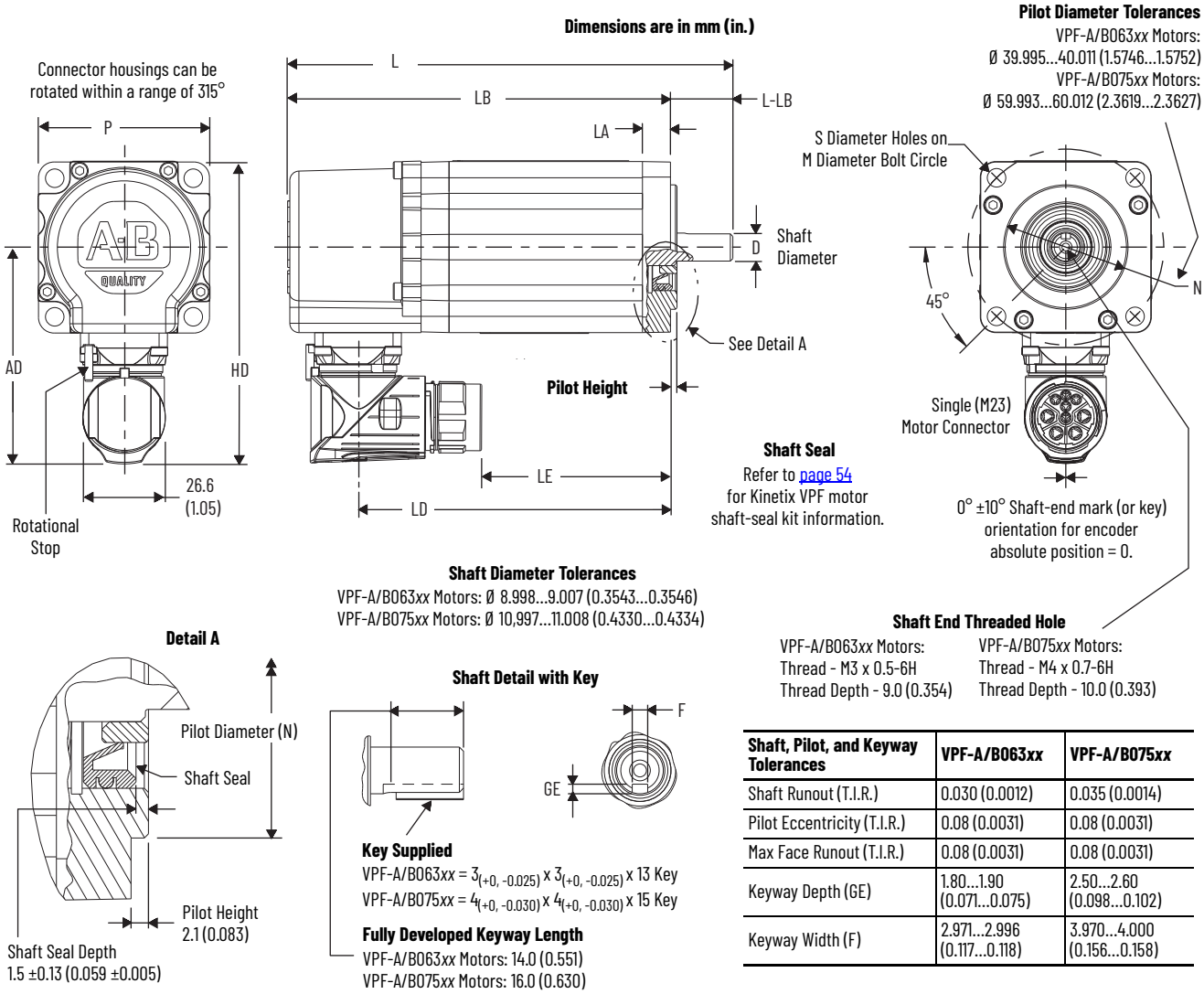
## Axial Load Force Ratings (zero radial load) for Brake Motors

| Motor Cat. No. (1) | Maximum Speed rpm | Load (kgf) at Speed (rpm) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 kgf | 750 kgf | 1000 kgf | 1500 kgf | 2000 kgf | 2500 kgf | 3000 kgf | 3500 kgf | 4000 kgf | 4500 kgf | 5000 kgf | 5500 kgf | 6000 kgf | 6500 kgf | 7000 kgf |
| VPF-A1001C | 2800 | 49.4 | – | 36.5 | – | 27.0 | – | 23.4 * | – | – | – | – | – | – | – | – |
| VPF-A1001M | 6500 | – | – | – | 30.6 | – | 24.5 | – | – | – | 19.0 | – | – | – | 16.2 | – |
| VPF-A1002C | 3000 | 49.4 | – | 36.5 | – | 27.0 | – | 22.7 | – | – | – | – | – | – | – | – |
| VPF-A1002F | 5000 | – | – | 36.5 | 30.6 | – | – | 22.7 | – | – | – | 18.2 | – | – | – | – |
| VPF-A1003C | 2250 | 49.4 | – | 36.5 | 30.6 | – | 25.7 * | – | – | – | – | – | – | – | – | – |
| VPF-A1003E | 3750 | 49.4 | – | 36.5 | – | 27.0 | – | – | – | 20.6 * | – | – | – | – | – | – |
| VPF-A1003F | 5500 | – | – | | 30.6 | – | 24.5 | – | – | 20.0 | – | – | 17.4 | – | – | – |
| VPF-A1153C | 2300 | 68.3 | – | 50.5 | 42.4 | – | 35.2 * | – | – | – | – | – | – | – | – | – |
| VPF-A1303B | 1950 | 68.3 | – | 50.5 | 42.4 | 37.8 * | – | – | – | – | – | – | – | – | – | – |
| VPF-A1303F | 4000 | – | – | 50.5 | – | 37.4 | – | 31.4 | – | 27.7 | – | – | – | – | – | – |
| VPF-A1304A | 1600 | 68.3 | 57.2 | 51.1 * | – | 41.2 * | – | – | – | – | – | – | – | – | – | – |
| VPF-A1304D | 3000 | 68.3 | – | 50.5 | – | 37.4 | – | 31.4 | – | – | – | – | – | – | – | – |
| VPF-B1001M | 6000 | – | – | – | – | 27.0 | – | 22.7 | – | 20.0 | – | – | – | 16.8 | – | – |
| VPF-B1002E | 3300 | 49.4 | – | 36.5 | – | 27.0 | – | – | 21.8 * | – | – | – | – | – | – | – |
| VPF-B1002M | 6000 | – | – | – | 30.6 | – | – | 22.7 | – | – | 19.0 | – | – | 16.8 | – | – |
| VPF-B1003C | 2500 | 49.4 | – | 36.5 | 30.6 | – | 24.5 | – | – | – | – | – | – | – | – | – |
| VPF-B1003F | 4750 | – | – | 36.5 | 30.6 | – | – | 22.7 | – | – | – | 18.6 * | – | – | – | – |
| VPF-B1003T | 7000 | – | – | – | 30.6 | – | 24.5 | – | – | – | 19.0 | – | – | – | – | 15.7 |
| VPF-B1153E | 3200 | 68.3 | – | 50.5 | – | 37.4 | – | – | 30.5 * | – | – | – | – | – | – | – |
| VPF-B1153F | 5000 | – | – | 50.5 | – | 37.4 | – | 31.4 | – | – | – | 25.1 | – | – | – | – |
| VPF-B1303C | 2250 | 68.3 | – | 50.5 | 42.4 | – | 35.5 * | – | – | – | – | – | – | – | – | – |
| VPF-B1303F | 4000 | – | – | 50.5 | – | 37.4 | – | 31.8 * | – | 27.7 | – | – | – | – | – | – |
| VPF-B1304C | 2150 | 68.3 | – | 50.5 | 43.6 * | – | 36.2 * | – | – | – | – | – | – | – | – | – |
| VPF-B1304E | 3500 | – | – | 50.5 | 42.4 | – | 35.2 * | – | 29.3 | – | – | – | – | – | – | – |
| VPF-B1652C | 2700 | 90.1 | – | 66.7 | 55.9 | – | – | 43.3 * | – | – | – | – | – | – | – | – |

(1) 1.0 kgf = 2.2 lbf or 9.8 N. An asterisk (*) indicates a load rating measured at an rpm value that is less than the value listed for that column.

# Dimensions - Kinetix VPF Servo Motors

### VPF-A/B063*xx* and VPF-A/B075*xx* Motor Dimensions




| Shaft, Pilot, and Keyway Tolerances | VPF-A/B063*xx* | VPF-A/B075*xx* |
|---|---|---|
| Shaft Runout (T.I.R.) | 0.030 (0.0012) | 0.035 (0.0014) |
| Pilot Eccentricity (T.I.R.) | 0.08 (0.0031) | 0.08 (0.0031) |
| Max Face Runout (T.I.R.) | 0.08 (0.0031) | 0.08 (0.0031) |
| Keyway Depth (GE) | 1.80...1.90 (0.071...0.075) | 2.50...2.60 (0.098...0.102) |
| Keyway Width (F) | 2.971...2.996 (0.117...0.118) | 3.970...4.000 (0.156...0.158) |

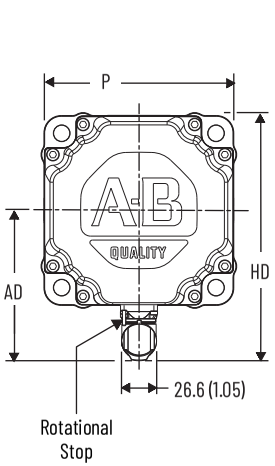
### VPF-A/B063*xx* and VPF-A/B075*xx* Motor Dimensions

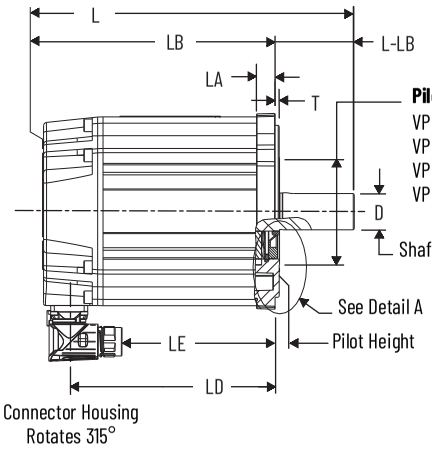
| Motor Cat. No. | AD mm (in.) | HD mm (in.) | LA mm (in.) | LD (1) mm (in.) | LE (1) mm (in.) | L (1) mm (in.) | LB (1) mm (in.) | L-LB (2) mm (in.) | D (4) mm (in.) | M mm (in.) | S (3) mm (in.) | N (4) mm (in.) | P mm (in.) | GE (4) mm (in.) | F (4) mm (in.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VPF-A/B0632 | 69.5 (2.74) | 97.0 (3.82) | 9.0 (0.35) | 125.2 (4.93) | 85.3 (3.36) | 168.1 (6.61) | 148.1 (5.83) | 20.0 (0.787) | 9.0 (0.354) | 63.0 (2.480) | 5.80 (0.234) | 40.0 (1.575) | 55.0 (2.17) | 1.90 (0.075) | 3.0 (0.118) |
| VPF-A/B0633 | | | | 150.2 (5.91) | 110.3 (4.34) | 193.1 (7.59) | 173.1 (6.81) | | | | | | | | |
| VPF-A/B0752 | 77.0 (3.03) | 112.0 (4.41) | 9.0 (0.35) | 127.0 (5.00) | 87.1 (3.43) | 172.9 (6.80) | 149.9 (5.90) | 23.0 (0.906) | 11.0 (0.433) | 75.0 (2.953) | 5.80 (0.234) | 60.0 (2.362) | 70.0 (2.76) | 2.60 (0.102) | 4.0 (0.157) |
| VPF-A/B0753 | | | | 152.0 (5.98) | 112.1 (4.41) | 197.9 (7.79) | 174.9 (6.89) | | | | | | | | |

(1) If ordering an VPF-A/B063*xx* or VPF-A/B075*xx* motor with brake, add 30.6 mm (1.20 in.) to dimension L, LB, LE, and LD.
(2) Tolerance for this dimension is ±0.7 mm (±0.028 in.).
(3) Tolerance for this dimension is 0.3, -0.0 mm (±0.006 in.).
(4) For keyway, shaft diameter, and pilot diameter tolerances, see the Shaft, Pilot, and Keyway Tolerances table above.

Motors are designed to metric dimensions. Inch dimensions are approximate conversions from millimeters. Dimensions without tolerances are for reference.

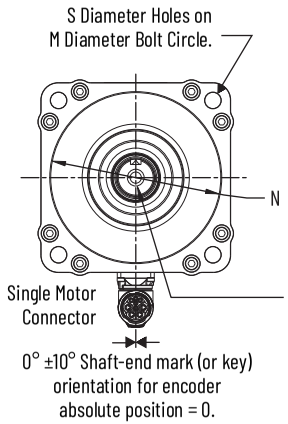
**Dimensions are in mm (in.)**



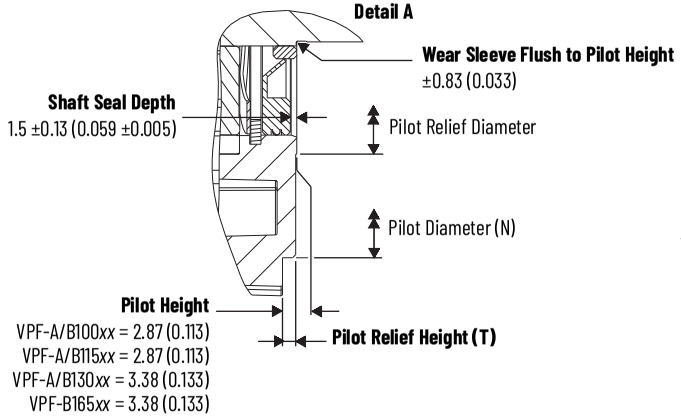

**Pilot Relief Diameter**
VPF-A/B100xx Motors = Ø 53.3 (2.10)
VPF-A/B115xx Motors = Ø 59.7 (2.35)
VPF-A/B130xx Motors = Ø 71.1 (2.80)
VPF-B165xx Motors = Ø 81.0 (3.19)

**Shaft Seal**
Refer to page 54 for Kinetix VPF motor shaft-seal kit information.




**Pilot Diameter Tolerances**
VPF-A/B100xx Motors:
Ø 79.993...80.012 (3.1493...3.1501)
VPF-A/B115xx Motors:
Ø 94.991...95.013 (3.7398...3.7407)
VPF-A/B130xx Motors:
Ø 109.991...110.013 (4.3303...4.3312)
VPF-B165xx Motors:
Ø 129.991...130.014 (5.1178...5.1187)

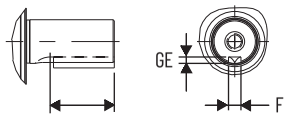
**Shaft End Threaded Hole**
VPF-A/B100xx Motors:
Thread - M5 x 0.8-6H
Thread Depth - 12.5 (0.49)
VPF-A/B115xx Motors:
Thread - M6 x 1.0-6H
Thread Depth - 16.0 (0.63)
VPF-A/B130xx Motors:
Thread - M8 x 1.25-6H
Thread Depth - 19.1 (0.75)
VPF-B165xx Motors:
Thread - M10 x 1.5-6H
Thread Depth - 22.1 (0.87)




**Shaft Diameter Tolerances**
VPF-A/B100xx = Ø 15.997...16.008 (0.6298...0.6302)
VPF-A/B115xx = Ø 18.996...19.009 (0.7479...0.7483)
VPF-A/B130xx = Ø 23.996...24.009 (0.9448...0.9451)
VPF-B165xx = Ø 27.996...28.009 (1.1022...1.1027)

**Keyway Length**
VPF-A/B100xx = 25.4 (1.00)
VPF-A/B115xx = 25.4 (1.00)
VPF-A/B130xx = 32.3 (1.27)
VPF-B165xx = 41.1 (1.62)

Shaft Detail with Key




**Key Supplied**
VPF-A/B100xx = $5_{(+0, -0.030)}$ x $5_{(+0, -0.030)}$ x 22 Key
VPF-A/B115xx = $6_{(+0, -0.030)}$ x $6_{(+0, -0.030)}$ x 24 Key
VPF-A/B130xx = $8_{(+0, -0.036)}$ x $7_{(+0, -0.090)}$ x 31 Key
VPF-B165xx = $8_{(+0, -0.036)}$ x $7_{(+0, -0.090)}$ x 39 Key

| Shaft, Pilot, and Keyway Tolerances | VPF-A/B100xx | VPF-A/B115xx | VPF-A/B130xx VPF-B165xx |
|---|---|---|---|
| Shaft Runout (T.I.R.) | 0.04 (0.0016) | | |
| Pilot Eccentricity (T.I.R.) | 0.078 (0.0031) | | |
| Max Face Runout (T.I.R.) | 0.078 (0.0031) | | |
| Keyway Depth (GE) | 3.00...3.10 (0.118...0.122) | 3.50...3.60 (0.138...0.142) | 4.00...4.20 (0.158...0.165) |
| Keyway Width (F) | 4.97...5.00 (0.196...0.197) | 5.97...6.00 (0.235...0.236) | 7.96...8.00 (0.314...0.315) |

Motors are designed to metric dimensions. Inch dimensions are approximate conversions from millimeters. Dimensions without tolerances are for reference.

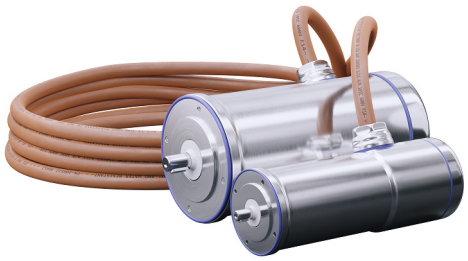
### VPF-A/B100*xx*, VPF-A/B115*xx*, VPF-A/B130*xx*, and VPF-B165*xx* Motor Dimensions (SpeedTec DIN connectors)

| Motor Cat. No. | AD mm (in.) | HD mm (in.) | T mm (in.) | LA mm (in.) | LD [1] mm (in.) | LE [1] mm (in.) | L [1] mm (in.) | LB [1] mm (in.) | L-LB [2] mm (in.) | D [3] mm (in.) | M mm (in.) | S mm (in.) | N [3] mm (in.) | P mm (in.) | GE [3] mm (in.) | F [3] mm (in.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VPF-A/B1001 | 86.5 (3.40) | 131.2 (5.17) | 2.74 (0.108) | 9.90 (0.39) | 108.7 (4.28) | 68.9 (2.71) | 169.8 (6.68) | 129.8 (5.11) | 40.0 (1.575) | 16.0 (0.630) | 100.0 (3.937) | 7.00 [4] (0.283) | 80.0 (3.15) | 89.4 (3.52) | 3.0 (0.118) | 5.0 (0.197) |
| VPF-A/B1002 | | | | | 134.1 (5.28) | 94.3 (3.71) | 195.2 (7.68) | 155.2 (6.11) | | | | | | | | |
| VPF-A/B1003 | | | | | 159.5 (6.28) | 119.7 (4.71) | 220.6 (8.68) | 180.6 (7.11) | | | | | | | | |
| VPF-A/B1153 | 90.8 (3.58) | 140.0 (5.51) | 2.74 (0.108) | 10.16 (0.40) | 156.0 (6.14) | 116.1 (4.57) | 217.0 (8.54) | 177.0 (6.97) | 40.0 (1.575) | 19.0 (0.748) | 115.0 (4.528) | 10.00 [4] (0.401) | 95.0 (3.74) | 98.3 (3.87) | 3.5 (0.138) | 6.0 (0.236) |
| VPF-A/B1303 | 98.6 (3.88) | 155.4 (6.12) | 2.74 (0.108) | 12.19 (0.48) | 159.3 (6.27) | 119.4 (4.70) | 230.3 (9.06) | 180.3 (7.10) | 50.0 (1.969) | 24.0 (0.945) | 130.0 (5.118) | 10.00 [4] (0.401) | 110.0 (4.331) | 113.7 (4.48) | 4.0 (0.158) | 8.0 (0.315) |
| VPF-A/B1304 | | | | | 184.7 (7.27) | 144.8 (5.70) | 255.7 (10.06) | 205.7 (8.10) | | | | | | | | |
| VPF-B1652 | 113.3 (4.46) | 185.0 (7.28) | 3.12 (0.123) | 14.0 (0.55) | 206.2 (8.12) | 166.4 (6.55) | 286.4 (11.27) | 226.4 (8.92) | 60.0 (2.362) | 28.0 (1.102) | 165.0 (6.496) | 12.00 [5] (0.481) | 130.0 (5.118) | 143.5 (5.65) | 4.0 (0.158) | 8.0 (0.315) |

(1) If ordering a VPF-A/B100*xx*-*xxx*4*xx* motor with brake, add 34.5 mm (1.36 in.) to dimensions L, LB, LE, and LD.
If ordering a VPF-A/B115*xx*-*xxx*4*xx* motor with brake, add 48.5 mm (1.91 in.) to dimensions L, LB, LE, and LD.
If ordering a VPF-A/B130*xx*-*xxx*4*xx* motor with brake, add 48.5 mm (1.91 in.) to dimensions L, LB, LE, and LD.
If ordering a VPF-B165*xx*-*xxx*4*xx* motor with brake, add 51.5 mm (2.03 in.) to dimensions L, LB, LE, and LD.
(2) Tolerance for this dimension is ±0.7 mm (±0.028 in.).
(3) For keyway, shaft diameter, and pilot diameter tolerances, refer to page 68.
(4) Tolerance for this dimension is +0.36, -0.0 mm (±0.007 in.).
(5) Tolerance for this dimension is +0.43 -0.0 mm (±0.008 in.).

Motors are designed to metric dimensions. Inch dimensions are approximate conversions from millimeters. Dimensions without tolerances are for reference.

# Kinetix VPH Hygienic Stainless-steel Servo Motors



Kinetix VPH servo motors are specifically designed to meet the unique needs of washdown environments such as those found in food and beverage, dairy, meat processing, and pharmaceutical manufacturing equipment. The enhanced hygienic design includes a 316-grade stainless-steel housing that provides a reliable and convenient solution to the requirements of machine cleaning and hygienic operations.

Windings are matched to the ratings of Kinetix 5500 and Kinetix 5700 drives to optimize system sizing, lower system cost, and improve energy efficiency. The Kinetix 2090-Series single cable design between motor and drive simplifies installation.

## Kinetix VPH Servo Motor Features

| Attribute | Value |
|---|---|
| Main characteristics | • Design per EHEDG guidelines for smooth surface and liquid collection. For use with high-pressure, highly-caustic washdown applications.<br>• 2090-Series single cable technology<br>• Hiperface DSL encoder protocol<br>• Low rotor inertia |
| Features | • Smooth, passivated, 316 grade stainless-steel cylindrical exterior<br>• Designed per EHEDG guidelines<br>• 3A certified<br>• Certified and listed to NSF/ANSI Standard 169<br>• 200V and 400V-class windings<br>• Single-turn and multi-turn absolute feedback<br>• SIL 2 (PLd) rated encoder options<br>• Shaft-end threaded hole<br>• On-motor cable extensions available in 1…15 m (3.2 ft…49.2 ft) lengths<br>• High-energy rare-earth magnets<br>• Standard IEC 72-1 mounting dimensions |
| Motor type | Brushless AC synchronous servo motors |
| Environmental rating | • IP66/IP67 with shaft seal (standard) and use of environmentally sealed cable connector<br>• IP69K for 1200 psi motor washdown (1) |
| Certifications | Kinetix VPH rotary motors are UL Recognized components to applicable UL and CSA standards. CE marked for all applicable directives. Refer to rok.auto/certifications for the Product Certification website. |
| Continuous stall torque | 0.80…19 N•m (7…165 lb•in) |
| Peak stall torque | 2.76…67.8 N•m (24…600 lb•in) |
| Rated speed | 2300…8000 rpm |
| Motor rated output | 0.40…3.16 kW (0.54…4.23 Hp) |
| Compatible servo drives | • Kinetix 5700<br>• Kinetix 5500 |
| Compatible servo cables | • 2090-CSxM1*xx*-*xx*AA/AF*xx* (TPE) cables<br>• 2090-CSxM1*xx*-*xx*VA/LF*xx* (PVC and PUR) cables |
| Typical applications | • Meat, poultry, dairy, food and beverage processing<br>• Food slicing and filling<br>• Raw food handling<br>• Life science<br>• Consumer products |

(1) The cable connectors are rated IP66 and IP67 and are not designed to withstand high-pressure washdown or washdown with aggressive cleaning compounds. Position connectors away from direct exposure to cleaning processes, for example, within washdown-rated conduit or junction boxes.

Refer to the Kinetix VPH Hygienic Stainless-steel Servo Motor Installation Instructions, publication VPH-IN001, for mounting and installation information.

# Catalog Numbers - Kinetix VPH Servo Motors

Catalog numbers consist of various characters, each of which identifies a specific option for that component. Use the catalog numbering table chart below to understand the configuration of your motor. For questions regarding product availability, contact your Allen-Bradley distributor.

**VP H - x xxx x x - x J x x D xx**

**On-motor Cable Length**
01 = 1 m (3.2 ft) continuous-flex rated
03 = 3 m (9.8 ft) continuous-flex rated
05 = 5 m (16.4 ft) continuous-flex rated
07 = 7 m (22.9 ft) continuous-flex rated
09 = 9 m (29.5 ft) standard, non-flex rated
12 = 12 m (39.4 ft) standard, non-flex rated
15 = 15 m (49.2 ft) standard, non-flex rated

**IEC Metric, tapped mounting hole with:**
D = Single cable

**Brake**
2 = No brake
4 = 24V DC holding brake

**Connectors** (1)
1 = Single SpeedTec DIN connector
0 = Flying leads

**Shaft Key**
J = Shaft key

**Feedback**
C = 18-bit absolute single-turn digital encoder (Hiperface DSL protocol)
W = 18-bit absolute multi-turn digital encoder (Hiperface DSL protocol) SIL 2 (PLd) rated, 9-bit secondary safety channel (2)
Q = 23-bit absolute multi-turn digital encoder (Hiperface DSL protocol) SIL 2 (PLd) rated, 12-bit secondary safety channel (3)

**Rated Speed** (4)

| | |
|---|---|
| C = 2300 rpm | F = 4500...6600 rpm |
| D = 3000 rpm | M= 6700 rpm |
| E = 3300...3900 rpm | T = 7200...8000 rpm |

**Magnet Stack Length (1, 2, 3, 4 stacks)** (5)

**Frame Size - Bolt Circle Diameter (BCD)**

| | |
|---|---|
| 063 = 63 mm | 115 = 115 mm |
| 075 = 75 mm | 130 = 130 mm |
| 100 = 100 mm | 165 = 165 mm |

**Voltage Class**
A = 200V
B = 400V

**Series Type**
H = Hygienic stainless steel

**Series**
VP = Permanent magnet rotary servo motors that are optimized to Kinetix 5500 and Kinetix 5700 drive ratings

(1) Option 1 includes nickel-plated mating on-motor cable connector to 2090-CSxM1D*x* single cable. Option 0 (flying leads) connects directly to DSL feedback connector kit and motor/brake connectors on the drive.
(2) This encoder option is available with only VPH-A/B063*xx* and VPH-A/B075*xx* motor frame sizes.
(3) This encoder option is available with only VPH-A/B100*xx*, VPH-A/B115*xx*, VPH-A/B130*xx*, and VPH-B165*xx* motor frame sizes.
(4) Rated speed hierarchy is only for comparative purposes. Use Motion Analyzer software to size and select motors for your application, and/or the torque/speed curves in the Kinetix 5500 Drive System Design Guide, publication KNX-RM009, and the Kinetix 5700 Drive System Design Guide, publication KNX-RM010.
(5) Not all combinations are available. Only the configurations for magnet stack length as listed in Technical Specifications - Kinetix VPH Servo Motors on page 74 are available.

**IMPORTANT** The connector is O-ring sealed, but not designed to withstand direct high-pressure washdown with aggressive cleaning compounds. The 1...15 m (3.2...49.2 ft) cable extensions are provided so the connector can be positioned in an area away from direct exposure to the cleaning process, such as within washdown-rated conduit or junction boxes.

# Kinetix VPH Servo Motor High-resolution Encoders

Kinetix VPH servo motors are available with high-performance encoders with a choice of single-turn (-C), and SIL 2 rated (-Q and -W) multi-turn high-resolution feedback:

- 18-bit resolution for 262,144 counts per revolution
  - Single-turn encoder (-C) provides absolute position feedback within one turn
  - Electromechanical design does not require a battery.
- SIL 2 rated absolute multi-turn digital encoder (Hiperface DSL protocol)
  - 23-bit resolution for 8,388,608 counts per revolution, multi-turn absolute position feedback within 4096 turns (-Q) option has 12-bit secondary safety channel
  - 18-bit resolution for 262,144 multi-turn absolute position feedback within 4096 turns (-W) option has 9-bit secondary safety channel

# Kinetix 2090-Series Single Cable Technology

Motor connectivity reduced to a single connector and cable.

- Single cable eliminates hardware and wire terminations
- Purely digital two-wire communication integrated into the motor power cable
- Mating 2090-Series single cables with:
  - TPE cable material for standard (non-flex) and continuous-flex cable
  - PVC cable material for standard (non-flex) and Halogen-free PUR continuous-flex cable
- Mating 2090-CSxM1D*x* cables are available in 1.0 m (3.2 ft) increments. Total cable length includes the on-motor extension cable and varies depending on cable type and drive family.

**Maximum Cable Length Including On-motor Cable Extension**

| Cable Cat. No. | Motor Cable Type | On-motor TPE Cable Extension m (ft) | Kinetix 5500 Drives (1) (2) (3) m (ft) | Kinetix 5700 Drives (1) (2) m (ft) |
|---|---|---|---|---|
| 2090-CSxM1D*x*-*xxx*F*xx* | Single, continuous-flex cable | 01 = 1 m (3.2 ft)<br>03 = 3 m (9.8 ft)<br>05 = 5 m (16.4 ft)<br>07 = 7 m (22.9 ft) | Cable length, max = 45 (148)<br>Plus extension cable + 5 (16.4)<br>Total cable length = 50 (164) | Cable length, max = 85 (279)<br>Plus extension cable + 5 (16.4)<br>Total cable length = 90 (295) |
| 2090-CSxM1D*x*-*xxx*A*xx* | Single, standard (non-flex) cable | 09 = 9 m (29.5 ft)<br>12 = 12 m (39.4 ft)<br>15 = 15 m (49.2 ft) | | |

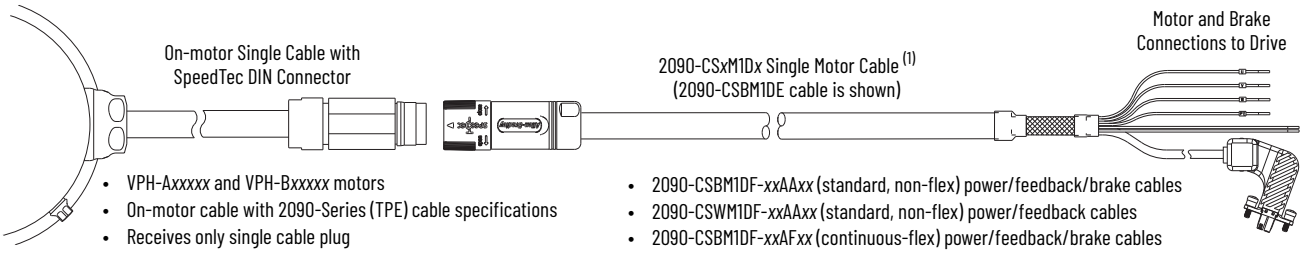
(1) This table illustrates how the motor cable extension is included in the maximum cable length calculation. However, there are other variables to consider. See Kinetix 5500 Servo Drives User Manual, publication 2198-UM001, or Kinetix 5700 Servo Drives User Manual, publication 2198-UM002, for maximum cable length specifications specific to those drive families.
(2) In this example, the motor cable extension specified in the motor catalog number is 5 m (16.4 ft).
(3) Applies to all Kinetix 5500 (frame 2 and 3) drives. For Kinetix 5500 (frame 1) drives in continuous-flex applications or Kinetix VPH on-motor cable extensions from 1...7 m (3.2...22.9 ft), 30 m (98.4 ft) is the maximum cable length.

**IMPORTANT** Because of the unique characteristics of 2090-series single cable technology, designed for and tested with Kinetix 5500 drives, Kinetix 5700 dual-axis inverters, and Kinetix VPH servo motors; building your own cables, using field modified Rockwell Automation® factory-delivered cable, or using third-party cables is not an option.

# On-motor Cable Connections-to-Drive Options

Kinetix VPH motors are available with flying leads that wire to a 2198-KITCON-DSL (feedback) connector kit and motor power and brake connectors on the drive or SpeedTec DIN connector that connects to 2090-CS*x*M1D*x* cables.

**Kinetix VPH Servo Motors with Connector Option 1 (SpeedTec DIN connectors)**




- VPH-A*xxxxx* and VPH-B*xxxxx* motors
- On-motor cable with 2090-Series (TPE) cable specifications
- Receives only single cable plug
- Attach cable connector with one-quarter turn
- 1...15 m (3.2...49.2 ft) cable extensions are available

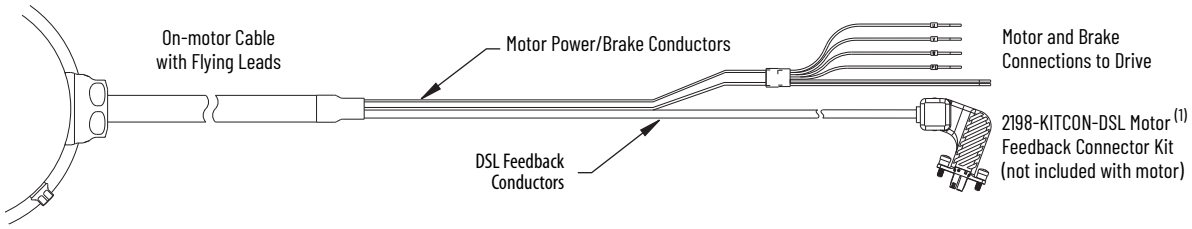
- 2090-CSxM1DF cables apply to Kinetix 5500 drives
- 2090-CSxM1DE cables apply to Kinetix 5700 drives
- 2090-CSxM1DG cables apply to Kinetix 5500 or Kinetix 5700 drives

- 2090-CSBM1DF-*xx*AA*xx* (standard, non-flex) power/feedback/brake cables
- 2090-CSWM1DF-*xx*AA*xx* (standard, non-flex) power/feedback cables
- 2090-CSBM1DF-*xx*AF*xx* (continuous-flex) power/feedback/brake cables
- 2090-CSBM1DE-*xxx*A*xx* (standard, non-flex) power/feedback/brake cables
- 2090-CSWM1DE-*xxx*A*xx* (standard, non-flex) power/feedback cables
- 2090-CSBM1DE-*xxx*F*xx* (continuous-flex) power/feedback/brake cables
- 2090-CSBM1DG-*xxx*A*xx* (standard, non-flex) power/feedback/brake cables
- 2090-CSWM1DG-*xxx*A*xx* (standard, non-flex) power/feedback cables
- 2090-CSBM1DG-*xxx*F*xx* (continuous-flex) power/feedback/brake cables

(1) The 2198-KITCON-DSL feedback connector kit is included with 2090-CSxM1DE cables.

Product specifications for Kinetix VPH on-motor cables are identical to 2090-CS*x*M1*xx* (TPE) motor cable. For 2090-Series single cable specifications, refer to Kinetix Motion Accessories Specifications Technical Data, publication KNX-TD004.

**Kinetix VPH Servo Motors with Connector Option 0 (flying leads)**




(1) The 2198-KITCON-DSL feedback connector kit is included with Kinetix 5500 drives and can be purchased separately. The kit is not included with Kinetix VPH servo motors.

# Kinetix VPH Servo Motor Options

The following motor options are available for Kinetix VPH servo motors:

- The positive air-pressure kit (catalog number MPS-AIR-PURGE) consists of a single fitting that is used to connect a positive-pressure air supply line, 0.1 bar, max (1.45 psi), to the motor interior. Positive air pressure inside the motor provides an additional level of protection against the ingress of foreign substances and moisture. No special tool is required for installation and removal.
- Shaft seal kits are available for field replacement. Shaft seals (PTFE) include a lubricant to reduce wear.

**IMPORTANT** Shaft seals are subject to wear and require periodic inspection and replacement. Replacement is recommended every 3 months, not to exceed 12 months, depending on use.

**Shaft Seal Kit Catalog Numbers**

| Motor Cat. No. | Shaft Seal Kit Cat. No. |
|---|---|
| VPH-A063*xx* and VPH-B063*xx* | VPH-SST-F063 |
| VPH-A075*xx* and VPH-B075*xx* | VPH-SST-F075 |
| VPH-A100*xx* and VPH-B100*xx* | VPH-SST-F100 |

| Motor Cat. No. | Shaft Seal Kit Cat. No. |
|---|---|
| VPH-A115*xx* and VPH-B115*xx* | VPH-SST-F115 |
| VPH-A130*xx* and VPH-B130*xx* | VPH-SST-F130 |
| VPH-B165*xx* | VPH-SST-F165 |

- The O-ring kit is designed to seal the gap between the motor front end-bell and the mounting plate. Sealing this area helps prevent the ingress of liquids onto the shaft and shaft seal.

**O-ring Kit Catalog Numbers**

| Motor Cat. No. | Shaft Seal Kit Cat. No. |
|---|---|
| VPH-A063*xx* and VPH-B063*xx* | VPH-F063-ORING |
| VPH-A075*xx* and VPH-B075*xx* | VPH-F075-ORING |
| VPH-A100*xx* and VPH-B100*xx* | VPH-F100-ORING |

| Motor Cat. No. | Shaft Seal Kit Cat. No. |
|---|---|
| VPH-A115*xx* and VPH-B115*xx* | VPH-F115-ORING |
| VPH-A130*xx* and VPH-B130*xx* | VPH-F130-ORING |
| VPH-B165*xx* | VPH-F165-ORING |

# Technical Specifications - Kinetix VPH Servo Motors

**Kinetix VPH Servo Motor (200V-class) Performance Specifications (non-brake)**

| Motor Cat. No. | Rated Speed rpm | Maximum Speed rpm | Continuous Stall Torque N•m (lb•in) | Peak Stall Torque N•m (lb•in) | Motor Rated Output kW (Hp) | Rotor Inertia kg-m$^2$ (lb•in•s$^2$) | Motor Weight, approx kg (lb) |
|---|---|---|---|---|---|---|---|
| VPH-A0633F-*xxx*2 | 4500 | 4500 | 1.09 (9.7) | 4.09 (36.0) | 0.45 (0.61) | 0.0000255 (0.00022) | 6.2 (13.67) |
| VPH-A0753F-*xxx*2 | 4600 | 4600 | 1.90 (16.8) | 7.0 (62.0) | 0.68 (0.92) | 0.0000373 (0.00033) | 8.2 (18.08) |
| VPH-A1003F-*xxx*2 | 5500 | 5500 | 3.41 (30.1) | 11.15 (99.0) | 1.32 (1.77) | 0.000114 (0.00100) | 12.7 (28.0) |
| VPH-A1152E-*xxx*2 | 3300 | 3300 | 4.04 (35.8) | 13.12 (116) | 1.07 (1.43) | 0.000268 (0.00237) | 13.3 (29.33) |
| VPH-A1153C-*xxx*2 | 2300 | 2300 | 5.17 (45.8) | 20.33 (180) | 1.11 (1.49) | 0.000391 (0.00346) | 15.3 (33.74) |
| VPH-A1304D-*xxx*2 | 3000 | 3000 | 8.44 (74.7) | 27.1 (240) | 1.79 (2.40) | 0.000533 (0.00471) | 22.9 (50.49) |

**Kinetix VPH Servo Motor (200V-class) Performance Specifications (brake)**

| Motor Cat. No. | Rated Speed rpm | Maximum Speed rpm | Continuous Stall Torque N•m (lb•in) | Peak Stall Torque N•m (lb•in) | Motor Rated Output kW (Hp) | Rotor Inertia kg-m$^2$ (lb•in•s$^2$) | Motor Weight, approx kg (lb) |
|---|---|---|---|---|---|---|---|
| VPH-A0633F-*xxx*4 | 4500 | 4500 | 1.07 (9.5) | 4.09 (36.0) | 0.43 (0.57) | 0.0000269 (0.00023) | 7.1 (15.66) |
| VPH-A0753F-*xxx*4 | 4600 | 4600 | 1.73 (15.3) | 7.0 (62.0) | 0.60 (0.80) | 0.0000386 (0.00034) | 9.2 (20.29) |
| VPH-A1003F-*xxx*4 | 5500 | 5500 | 3.18 (28.2) | 11.15 (99.0) | 1.06 (1.42) | 0.000123 (0.00108) | 14.6 (32.19) |
| VPH-A1152E-*xxx*4 | 3300 | 3300 | 4.00 (35.4) | 13.12 (116) | 1.07 (1.43) | 0.000287 (0.00254) | 15.6 (34.4) |
| VPH-A1153C-*xxx*4 | 2300 | 2300 | 5.03 (44.5) | 20.33 (180) | 1.11 (1.49) | 0.000409 (0.00361) | 17.5 (38.59) |
| VPH-A1304D-*xxx*4 | 3000 | 3000 | 8.27 (73.2) | 27.1 (240) | 1.79 (2.40) | 0.000548 (0.00485) | 26.1 (57.55) |

**Kinetix VPH Servo Motor (400V-class) Performance Specifications (non-brake)**

| Motor Cat. No. | Rated Speed rpm | Maximum Speed rpm | Continuous Stall Torque N•m (lb•in) | Peak Stall Torque N•m (lb•in) | Motor Rated Output kW (Hp) | Rotor Inertia kg-m$^2$ (lb•in•s$^2$) | Motor Weight, approx kg (lb) |
|---|---|---|---|---|---|---|---|
| VPH-B0632T-*xxx*2 | 8000 | 8000 | 0.84 (7.5) | 2.69 (24.0) | 0.52 (0.69) | 0.0000179 (0.00015) | 5.5 (12.13) |
| VPH-B0633M-*xxx*2 | 6700 | 6700 | 1.03 (9.2) | 4.09 (36.0) | 0.50 (0.67) | 0.0000255 (0.00022) | 6.2 (13.67) |
| VPH-B0753F-*xxx*2 | 6600 | 6600 | 1.87 (16.6) | 7.02 (62.2) | 0.74 (0.99) | 0.0000373 (0.00033) | 8.2 (18.08) |
| VPH-B1001F-*xxx*2 | 5000 | 5000 | 1.44 (12.8) | 3.61 (32.0) | 0.70 (0.93) | 0.0000438 (0.00038) | 9.2 (20.29) |
| VPH-B1003F-*xxx*2 | 4750 | 4750 | 3.43 (30.4) | 11.15 (99.0) | 1.36 (1.83) | 0.000114 (0.00100) | 12.7 (28.00) |
| VPH-B1152F-*xxx*2 | 4500 | 4500 | 4.03 (35.7) | 13.12 (116) | 1.37 (1.84) | 0.000268 (0.00237) | 13.3 (29.33) |
| VPH-B1153E-*xxx*2 | 3900 | 5000 | 5.13 (45.4) | 20.33 (180) | 1.27 (1.70) | 0.000391 (0.00346) | 15.3 (33.74) |
| VPH-B1304E-*xxx*2 | 3500 | 3500 | 8.41 (74.5) | 28.45 (252) | 2.15 (2.88) | 0.000533 (0.00471) | 22.9 (50.49) |
| VPH-B1653D-*xxx*2 | 3000 | 3000 | 18.67 (165) | 67.80 (600) | 3.16 (4.23) | 0.00214 (0.01894) | 37.7 (83.13) |

### Kinetix VPH Servo Motor (400V-class) Performance Specifications (brake)

| Motor Cat. No. | Rated Speed rpm | Maximum Speed rpm | Continuous Stall Torque N•m (lb•in) | Peak Stall Torque N•m (lb•in) | Motor Rated Output kW (Hp) | Rotor Inertia kg-m$^2$ (lb•in•s$^2$) | Motor Weight, approx kg (lb) |
|---|---|---|---|---|---|---|---|
| VPH-B0632T-*xxx*4 | 7200 | 8000 | 0.80 (7.1) | 2.69 (24.0) | 0.40 (0.54) | 0.0000193 (0.00017) | 6.5 (14.33) |
| VPH-B0633M-*xxx*4 | 6700 | 6700 | 1.01 (8.9) | 4.09 (36.0) | 0.50 (0.67) | 0.0000269 (0.00023) | 7.1 (15.66) |
| VPH-B0753F-*xxx*4 | 6600 | 6600 | 1.81 (16.0) | 7.02 (62.2) | 0.68 (0.92) | 0.0000386 (0.00034) | 9.2 (20.29) |
| VPH-B1001F-*xxx*4 | 5000 | 5000 | 1.42 (12.6) | 3.61 (32.0) | 0.68 (0.91) | 0.0000533 (0.00047) | 11.2 (24.70) |
| VPH-B1003F-*xxx*4 | 4750 | 4750 | 3.29 (29.1) | 11.15 (99.0) | 1.16 (1.56) | 0.000123 (0.00108) | 14.6 (32.19) |
| VPH-B1152F-*xxx*4 | 4500 | 4500 | 4.03 (35.7) | 13.12 (116) | 1.37 (1.84) | 0.000287 (0.00254) | 15.6 (34.40) |
| VPH-B1153E-*xxx*4 | 3900 | 5000 | 5.13 (45.4) | 20.33 (180) | 1.08 (1.45) | 0.000409 (0.00361) | 17.5 (38.59) |
| VPH-B1304E-*xxx*4 | 3500 | 3500 | 8.24 (73.0) | 28.45 (252) | 1.76 (2.36) | 0.000548 (0.00485) | 26.1 (57.55) |
| VPH-B1653D-*xxx*4 | 3000 | 3000 | 18.67 (165) | 67.80 (600) | 2.91 (3.91) | 0.0022 (0.01947) | 41.0 (90.41) |

### Kinetix VPH Servo Motor Brake Specifications

| Motor Cat. No. | Backlash, max (brake engaged) arc minutes | Holding Torque N•m (lb•in) | Coil Current at 24V DC A | Brake Response Time | |
|---|---|---|---|---|---|
| | | | | Release ms | Engage (1) ms |
| VPH-A/B0632 | 30 | 1.50 (13) | 0.33 | 46 | 34 |
| VPH-A/B0633 | | | | | |
| VPH-A/B0753 | | 3.00 (27) | 0.63 | 80 | 101 |
| VPH-A/B1001 | | 4.18 (37) | 0.50 | 108 | 144 |
| VPH-A/B1003 | | | | | |
| VPH-A/B1152 | | 6.55 (58) | 0.69 | 108 | 134 |
| VPH-A/B1153 | | | | | |
| VPH-A/B1304 | | 14.1 (125) | 0.82 | 150 | 208 |
| VPH-B1653 | | 32.0 (283) | 1.17 | 168 | 144 |

(1) By using diode and zener diode as arc suppression device in external control circuit.

### On-motor Cable Weight Specifications

| Motor Cat. No. | Cable Type | Cable Options | | Cable Length m (ft) | Cable Weight, approx kg (lb) | |
|---|---|---|---|---|---|---|
| | | | | | Frame 063 and 075 | Frame 100, 115, 130, 165 |
| VPH-A/B*xxxxx*-xJ0xD01 | Continuous-flex | Flying leads | 01 | 1 (3.2) | 0.3 (0.7) | 0.4 (0.9) |
| VPH-A/B*xxxxx*-xJ1xD01 | | Connector | | | 0.4 (0.9) | 0.5 (1.1) |
| VPH-A/B*xxxxx*-xJ0xD03 | | Flying leads | 03 | 3 (9.8) | 0.9 (2.0) | 1.2 (2.6) |
| VPH-A/B*xxxxx*-xJ1xD03 | | Connector | | | 1.2 (2.6) | 1.5 (3.3) |
| VPH-A/B*xxxxx*-xJ0xD05 | | Flying leads | 05 | 5 (16.4) | 1.5 (3.3) | 1.6 (3.4) |
| VPH-A/B*xxxxx*-xJ1xD05 | | Connector | | | 2.0 (4.3) | 2.5 (5.5) |
| VPH-A/B*xxxxx*-xJ0xD07 | | Flying leads | 07 | 7 (22.9) | 2.1 (4.6) | 2.7 (6.0) |
| VPH-A/B*xxxxx*-xJ1xD07 | | Connector | | | 2.7 (6.0) | 3.5 (7.7) |
| VPH-A/B*xxxxx*-xJ0xD09 | Standard (non-flex) | Flying leads | 09 | 9 (29.5) | 2.7 (5.9) | 3.5 (7.7) |
| VPH-A/B*xxxxx*-xJ1xD09 | | Connector | | | 3.5 (7.7) | 4.7 (10.3) |
| VPH-A/B*xxxxx*-xJ0xD12 | | Flying leads | 12 | 12 (39.4) | 3.6 (7.8) | 4.7 (10.2) |
| VPH-A/B*xxxxx*-xJ1xD12 | | Connector | | | 4.7 (10.2) | 5.6 (12.3) |
| VPH-A/B*xxxxx*-xJ0xD15 | | Flying leads | 15 | 15 (49.2) | 4.5 (9.8) | 5.8 (12.8) |
| VPH-A/B*xxxxx*-xJ1xD15 | | Connector | | | 5.8 (12.8) | 6.7 (14.8) |

### On-motor Cable Gauge Specifications

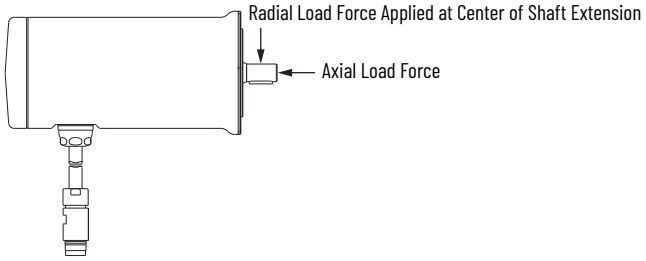
| Motor Cat. No. | Cable Gauge (1) |
|---|---|
| VPH-A/B063*xx*, VPH-A/B075*xx* | 18 |
| VPH-A/B100*xx*, VPH-A/B115*xx* | 14 |
| VPH-A/B130*xx*, VPH-A/B165*xx* | |

(1) For mating 2090-CSxM1D*x* single cable, refer to Kinetix Motion Accessories Specifications Technical Data, publication KNX-TD004.

# Kinetix VPH Servo Motor Load Force Ratings

Kinetix VPH servo motors are capable of operating with the maximum radial or maximum axial shaft loads listed in the following tables. Radial loads listed are applied in the middle of the shaft extension. The tables starting below represent an $L_{10}$ bearing fatigue life of 20,000 hours. This 20,000-hour life does not account for possible application-specific life reduction that can occur due to bearing grease contamination from external sources. Maximum operating speed is limited by motor winding.

### Load Forces on Shaft




### Radial Load Force Ratings for Non-brake Motors

| Motor Cat. No. (1) | Maximum Speed rpm | Load (kgf) at Speed (rpm) | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 kgf | 1000 kgf | 1500 kgf | 2000 kgf | 2500 kgf | 3000 kgf | 3500 kgf | 4000 kgf | 4500 kgf | 5000 kgf | 5500 kgf | 6000 kgf | 6500 kgf | 7000 kgf | 7500 kgf | 8000 kgf |
| VPH-A0633F | 4500 | 37.2 | 29.5 | 25.8 | 23.4 | 21.7 | 20.5 | 19.4 | 18.6 | 17.9 | – | – | – | – | – | – | – |
| VPH-A0753F | 4600 | 38.2 | 30.3 | 26.5 | 24.0 | 22.3 | 21.0 | 20.0 | 19.1 | 18.4 | 17.7* | – | – | – | – | – | – |
| VPH-A1003F | 5500 | 93.6 | 74.3 | 64.9 | 59.0 | 54.7 | 51.5 | 48.9 | 46.8 | 45.0 | 43.4 | 42.1 | – | – | – | – | – |
| VPH-A1152E | 3300 | 102.2 | 81.1 | 70.8 | 64.4 | 59.8 | 56.2 | 53.4* | – | – | – | – | – | – | – | – | – |
| VPH-A1153C | 2300 | 108.6 | 86.2 | 75.3 | 68.4 | 63.5* | – | – | – | – | – | – | – | – | – | – | – |
| VPH-A1304D | 3000 | 142.7 | 113.2 | 98.9 | 89.9 | 83.4 | 78.5 | – | – | – | – | – | – | – | – | – | – |
| VPH-B0632T | 8000 | 35.4 | 28.1 | 24.5 | 22.3 | 20.7 | 19.5 | 18.5 | 17.7 | 17 | 16.4 | 15.9 | 15.5 | 15.0 | 14.7 | 14.3 | 14.0 |
| VPH-B0633M | 6700 | 37.2 | 29.5 | 25.8 | 23.4 | 21.7 | 20.5 | 19.4 | 18.6 | 17.9 | 17.3 | 16.7 | 16.2 | 15.8 | 15.4* | – | – |
| VPH-B0753F | 6600 | 38.2 | 30.3 | 26.5 | 24.0 | 22.3 | 21.0 | 20.0 | 19.1 | 18.4 | 17.7 | 17.2 | 16.7 | 16.2 | 15.8* | – | – |
| VPH-B1001F | 5000 | 79.9 | 63.4 | 55.4 | 50.3 | 46.7 | 44.0 | 41.8 | 40.0 | 38.4 | 37.1 | – | – | – | – | – | – |
| VPH-B1003F | 4750 | 93.6 | 74.3 | 64.9 | 59.0 | 54.7 | 51.5 | 48.9 | 46.8 | 45.0 | 43.4* | – | – | – | – | – | – |
| VPH-B1152F | 4500 | 102.2 | 81.1 | 70.8 | 64.4 | 59.8 | 56.2 | 53.4 | 51.1 | 49.1 | – | – | – | – | – | – | – |
| VPH-B1153E | 5000 | 108.6 | 86.2 | 75.3 | 68.4 | 63.5 | 59.7 | 56.7 | 54.3 | 52.2 | 50.4 | – | – | – | – | – | – |
| VPH-B1304E | 3500 | 142.7 | 113.2 | 98.9 | 89.9 | 83.4 | 78.5 | 74.6 | – | – | – | – | – | – | – | – | – |
| VPH-B1653D | 3000 | 193.4 | 153.5 | 134.1 | 121.8 | 113.1 | 106.4 | – | – | – | – | – | – | – | – | – | – |

(1) 1.0 kgf = 2.2 lbf or 9.8 N. An asterisk (*) indicates a load rating measured at an rpm value that is less than the value listed for that column.

### Axial Load Force Ratings with Maximum Radial Load for Non-brake Motors

| Motor Cat. No. (1) | Maximum Speed rpm | Load (kgf) at Speed (rpm) | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 kgf | 1000 kgf | 1500 kgf | 2000 kgf | 2500 kgf | 3000 kgf | 3500 kgf | 4000 kgf | 4500 kgf | 5000 kgf | 5500 kgf | 6000 kgf | 6500 kgf | 7000 kgf | 7500 kgf | 8000 kgf |
| VPH-A0633F | 4500 | 12.7 | 9.4 | 7.9 | 6.9 | 6.3 | 5.8 | 5.4 | 5.1 | 4.9 | – | – | – | – | – | – | – |
| VPH-A0753F | 4600 | 12.7 | 9.4 | 7.9 | 6.9 | 6.3 | 5.8 | 5.4 | 5.1 | 4.9 | 4.7* | – | – | – | – | – | – |
| VPH-A1003F | 5500 | 33.0 | 24.4 | 20.5 | 18.0 | 16.4 | 15.1 | 14.2 | 13.4 | 12.7 | 12.1 | 11.6 | – | – | – | – | – |
| VPH-A1152E | 3300 | 38.2 | 28.2 | 23.7 | 20.9 | 19.0 | 17.5 | 16.4* | – | – | – | – | – | – | – | – | – |
| VPH-A1153C | 2300 | 38.2 | 28.2 | 23.7 | 20.9 | 19.0* | – | – | – | – | – | – | – | – | – | – | – |
| VPH-A1304D | 3000 | 48.9 | 36.2 | 30.4 | 26.8 | 24.3 | 22.5 | – | – | – | – | – | – | – | – | – | – |
| VPH-B0632T | 8000 | 12.7 | 9.4 | 7.9 | 6.9 | 6.3 | 5.8 | 5.4 | 5.1 | 4.9 | 4.7 | 4.5 | 4.3 | 4.2 | 4.0 | 3.9 | 3.8 |
| VPH-B0633M | 6700 | 12.7 | 9.4 | 7.9 | 6.9 | 6.3 | 5.8 | 5.4 | 5.1 | 4.9 | 4.7 | 4.5 | 4.3 | 4.2 | 4.0* | – | – |
| VPH-B0753F | 6600 | 12.7 | 9.4 | 7.9 | 6.9 | 6.3 | 5.8 | 5.4 | 5.1 | 4.9 | 4.7 | 4.5 | 4.3 | 4.2 | 4.0* | – | – |
| VPH-B1001F | 5000 | 33.0 | 24.4 | 20.5 | 18.0 | 16.4 | 15.1 | 14.2 | 13.4 | 12.7 | 12.1 | – | – | – | – | – | – |
| VPH-B1003F | 4750 | 33.0 | 24.4 | 20.5 | 18.0 | 16.4 | 15.1 | 14.2 | 13.4 | 12.7 | 12.1* | – | – | – | – | – | – |
| VPH-B1152F | 4500 | 38.2 | 28.2 | 23.7 | 20.9 | 19.0 | 17.5 | 16.4 | 15.5 | 14.7 | – | – | – | – | – | – | – |
| VPH-B1153E | 5000 | 38.2 | 28.2 | 23.7 | 20.9 | 19.0 | 17.5 | 16.4 | 15.5 | 14.7 | 14.0 | – | – | – | – | – | – |
| VPH-B1304E | 3500 | 48.9 | 36.2 | 30.4 | 26.8 | 24.3 | 22.5 | 21.0 | – | – | – | – | – | – | – | – | – |
| VPH-B1653D | 3000 | 63.0 | 46.6 | 39.1 | 34.5 | 34.5 | 28.9 | – | – | – | – | – | – | – | – | – | – |

(1) 1.0 kgf = 2.2 lbf or 9.8 N. An asterisk (*) indicates a load rating measured at an rpm value that is less than the value listed for that column.

### Axial Load Force Ratings with Zero Radial Load for Non-brake Motors

| Motor Cat. No. (1) | Maximum Speed rpm | Load (kgf) at Speed (rpm) | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 kgf | 1000 kgf | 1500 kgf | 2000 kgf | 2500 kgf | 3000 kgf | 3500 kgf | 4000 kgf | 4500 kgf | 5000 kgf | 5500 kgf | 6000 kgf | 6500 kgf | 7000 kgf | 7500 kgf | 8000 kgf |
| VPH-A0633F | 4500 | 17.1 | 27.5 | 23.0 | 20.3 | 18.5 | 17.1 | 16.0 | 15.1 | 15.1 | – | – | – | – | – | – | – |
| VPH-A0753F | 4600 | 37.1 | 27.5 | 23.0 | 20.3 | 18.5 | 17.1 | 16.0 | 15.1 | 15.1 | 13.7* | – | – | – | – | – | – |
| VPH-A1003F | 5500 | 96.5 | 71.4 | 71.4 | 52.8 | 52.8 | 44.3 | 41.4 | 39.1 | 37.2 | 35.5 | 34.1 | – | – | – | – | – |
| VPH-A1152E | 3300 | 39.4 | 82.6 | 82.6 | 61.2 | 55.5 | 51.3 | 48.0* | – | – | – | – | – | – | – | – | – |
| VPH-A1153C | 2300 | 111.7 | 82.6 | 82.6 | 61.2 | 55.5* | – | – | – | – | – | – | – | – | – | – | – |
| VPH-A1304D | 3000 | 71.2 | 106.0 | 88.9 | 78.5 | 71.2 | 65.8 | – | – | – | – | – | – | – | – | – | – |
| VPH-B0632T | 8000 | 17.1 | 27.5 | 23.0 | 20.3 | 18.5 | 17.1 | 17.1 | 15.1 | 14.3 | 13.7 | 13.7 | 12.6 | 12.2 | 11.8 | 11.8 | 11.1 |
| VPH-B0633M | 6700 | 11.1 | 27.5 | 27.5 | 20.3 | 18.5 | 17.1 | 16.0 | 15.1 | 14.3 | 13.7 | 13.1 | 12.6 | 12.6 | 11.8* | – | – |
| VPH-B0753F | 6600 | 11.8 | 27.5 | 23.0 | 20.3 | 18.5 | 17.1 | 16.0 | 15.1 | 14.3 | 13.7 | 13.1 | 12.6 | 12.6 | 11.8* | – | – |
| VPH-B1001F | 5000 | 96.5 | 71.4 | 59.9 | 52.8 | 48.0 | 44.3 | 41.4 | 39.1 | 37.2 | 35.5 | – | – | – | – | – | – |
| VPH-B1003F | 4750 | 96.5 | 71.4 | 71.4 | 52.8 | 52.8 | 44.3 | 41.4 | 39.1 | 37.2 | 35.5* | – | – | – | – | – | – |
| VPH-B1152F | 4500 | 41.1 | 82.6 | 69.3 | 61.2 | 55.5 | 51.3 | 48.0 | 45.3 | 43.0 | – | – | – | – | – | – | – |
| VPH-B1153E | 5000 | 43.0 | 82.6 | 69.3 | 61.2 | 55.5 | 51.3 | 48.0 | 45.3 | 45.3 | 41.1 | – | – | – | – | – | – |
| VPH-B1304E | 3500 | 65.8 | 106.0 | 88.9 | 78.5 | 71.2 | 65.8 | 61.5 | – | – | – | – | – | – | – | – | – |
| VPH-B1653D | 3000 | 184.4 | 136.5 | 114.5 | 101.0 | 91.7 | 84.7 | – | – | – | – | – | – | – | – | – | – |

(1) 1.0 kgf = 2.2 lbf or 9.8 N. An asterisk (*) indicates a load rating measured at an rpm value that is less than the value listed for that column.

### Radial Load Force Ratings for Brake Motors

| Motor Cat. No. (1) | Maximum Speed rpm | Load (kgf) at Speed (rpm) | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 kgf | 1000 kgf | 1500 kgf | 2000 kgf | 2500 kgf | 3000 kgf | 3500 kgf | 4000 kgf | 4500 kgf | 5000 kgf | 5500 kgf | 6000 kgf | 6500 kgf | 7000 kgf | 7500 kgf | 8000 kgf |
| VPH-A0633F | 4500 | 38.7 | 30.7 | 26.8 | 24.4 | 22.6 | 21.3 | 20.2 | 19.3 | 18.6 | – | – | – | – | – | – | – |
| VPH-A0753F | 4600 | 39.4 | 31.3 | 27.3 | 24.8 | 23.0 | 21.7 | 20.6 | 19.7 | 18.9 | 18.3* | – | – | – | – | – | – |
| VPH-A1003F | 5500 | 98.4 | 78.1 | 68.2 | 62 | 57.6 | 54.2 | 51.5 | 49.2 | 47.3 | 45.7 | 44.3 | – | – | – | – | – |
| VPH-A1152E | 3300 | 110.6 | 87.8 | 76.7 | 69.7 | 64.7 | 60.9 | 57.8* | – | – | – | – | – | – | – | – | – |
| VPH-A1153C | 2300 | 114.7 | 91.1 | 79.6 | 72.3 | 67.1* | – | – | – | – | – | – | – | – | – | – | – |
| VPH-A1304D | 3000 | 149.5 | 118.7 | 103.7 | 94.2 | 87.5 | 82.3 | – | – | – | – | – | – | – | – | – | – |
| VPH-B0632T | 8000 | 37.5 | 29.8 | 26.0 | 23.6 | 21.9 | 20.6 | 19.6 | 18.8 | 18.0 | 17.4 | 16.9 | 16.4 | 16.0 | 15.6 | 15.2 | 14.9 |
| VPH-B0633M | 6700 | 38.7 | 30.7 | 26.8 | 24.4 | 22.6 | 21.3 | 20.2 | 19.3 | 18.6 | 18.0 | 17.4 | 16.9 | 16.5 | 16.1* | – | – |
| VPH-B0753F | 6600 | 39.4 | 31.3 | 27.3 | 24.8 | 23.0 | 21.7 | 20.6 | 19.7 | 18.9 | 18.3 | 17.7 | 17.2 | 16.7 | 16.3* | – | – |
| VPH-B1001F | 5000 | 89.7 | 71.2 | 62.2 | 56.5 | 52.5 | 49.4 | 46.9 | 44.9 | 43.1 | 41.6 | – | – | – | – | – | – |
| VPH-B1003F | 4750 | 98.4 | 78.1 | 68.2 | 62 | 57.6 | 54.2 | 51.5 | 49.2 | 47.3 | 45.7* | – | – | – | – | – | – |
| VPH-B1152F | 4500 | 110.6 | 87.8 | 76.7 | 69.7 | 64.7 | 60.9 | 57.8 | 55.3 | 53.2 | – | – | – | – | – | – | – |
| VPH-B1153E | 5000 | 114.7 | 91.1 | 79.6 | 72.3 | 67.1 | 63.1 | 60.0 | 57.4 | 55.2 | 53.3 | – | – | – | – | – | – |
| VPH-B1304E | 3500 | 149.5 | 118.7 | 103.7 | 94.2 | 87.5 | 82.3 | 78.2 | – | – | – | – | – | – | – | – | – |
| VPH-B1653D | 3000 | 199.8 | 158.6 | 138.5 | 125.8 | 116.8 | 109.9 | – | – | – | – | – | – | – | – | – | – |

(1) 1.0 kgf = 2.2 lbf or 9.8 N. An asterisk (*) indicates a load rating measured at an rpm value that is less than the value listed for that column.

### Axial Load Force Ratings with Maximum Radial Load for Brake Motors

| Motor Cat. No. (1) | Maximum Speed rpm | Load (kgf) at Speed (rpm) | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 kgf | 1000 kgf | 1500 kgf | 2000 kgf | 2500 kgf | 3000 kgf | 3500 kgf | 4000 kgf | 4500 kgf | 5000 kgf | 5500 kgf | 6000 kgf | 6500 kgf | 7000 kgf | 7500 kgf | 8000 kgf |
| VPH-A0633F | 4500 | 12.7 | 9.4 | 7.9 | 6.9 | 6.3 | 5.8 | 5.4 | 5.1 | 4.9 | – | – | – | – | – | – | – |
| VPH-A0753F | 4600 | 12.7 | 9.4 | 7.9 | 6.9 | 6.3 | 5.8 | 5.4 | 5.1 | 4.9 | 4.7* | – | – | – | – | – | – |
| VPH-A1003F | 5500 | 33.0 | 24.4 | 20.5 | 18.0 | 16.4 | 15.1 | 14.2 | 13.4 | 12.7 | 12.1 | 11.6 | – | – | – | – | – |
| VPH-A1152E | 3300 | 38.2 | 28.2 | 23.7 | 20.9 | 19.0 | 17.5 | 16.4* | – | – | – | – | – | – | – | – | – |
| VPH-A1153C | 2300 | 38.2 | 28.2 | 23.7 | 20.9 | 19.0* | – | – | – | – | – | – | – | – | – | – | – |
| VPH-A1304D | 3000 | 48.9 | 36.2 | 30.4 | 26.8 | 24.3 | 22.5 | – | – | – | – | – | – | – | – | – | – |
| VPH-B0632T | 8000 | 12.7 | 9.4 | 7.9 | 6.9 | 6.3 | 5.8 | 5.4 | 5.1 | 4.9 | 4.7 | 4.5 | 4.3 | 4.2 | 4.0 | 3.9 | 3.8 |
| VPH-B0633M | 6700 | 12.7 | 9.4 | 7.9 | 6.9 | 6.3 | 5.8 | 5.4 | 5.1 | 4.9 | 4.7 | 4.5 | 4.3 | 4.2 | 4.0* | – | – |
| VPH-B0753F | 6600 | 12.7 | 9.4 | 7.9 | 6.9 | 6.3 | 5.8 | 5.4 | 5.1 | 4.9 | 4.7 | 4.5 | 4.3 | 4.2 | 4.0* | – | – |
| VPH-B1001F | 5000 | 33.0 | 24.4 | 20.5 | 18.0 | 16.4 | 15.1 | 14.2 | 13.4 | 12.7 | 12.1 | – | – | – | – | – | – |
| VPH-B1003F | 4750 | 33.0 | 24.4 | 20.5 | 18.0 | 16.4 | 15.1 | 14.2 | 13.4 | 12.7 | 12.1* | – | – | – | – | – | – |
| VPH-B1152F | 4500 | 38.2 | 28.2 | 23.7 | 20.9 | 19.0 | 17.5 | 16.4 | 15.5 | 14.7 | – | – | – | – | – | – | – |
| VPH-B1153E | 5000 | 38.2 | 28.2 | 23.7 | 20.9 | 19.0 | 17.5 | 16.4 | 15.5 | 14.7 | 14.0 | – | – | – | – | – | – |
| VPH-B1304E | 3500 | 48.9 | 36.2 | 30.4 | 26.8 | 24.3 | 22.5 | 21.0 | – | – | – | – | – | – | – | – | – |
| VPH-B1653D | 3000 | 28.9 | 46.6 | 39.1 | 34.5 | 31.3 | 28.9 | – | – | – | – | – | – | – | – | – | – |

(1) 1.0 kgf = 2.2 lbf or 9.8 N. An asterisk (*) indicates a load rating measured at an rpm value that is less than the value listed for that column.

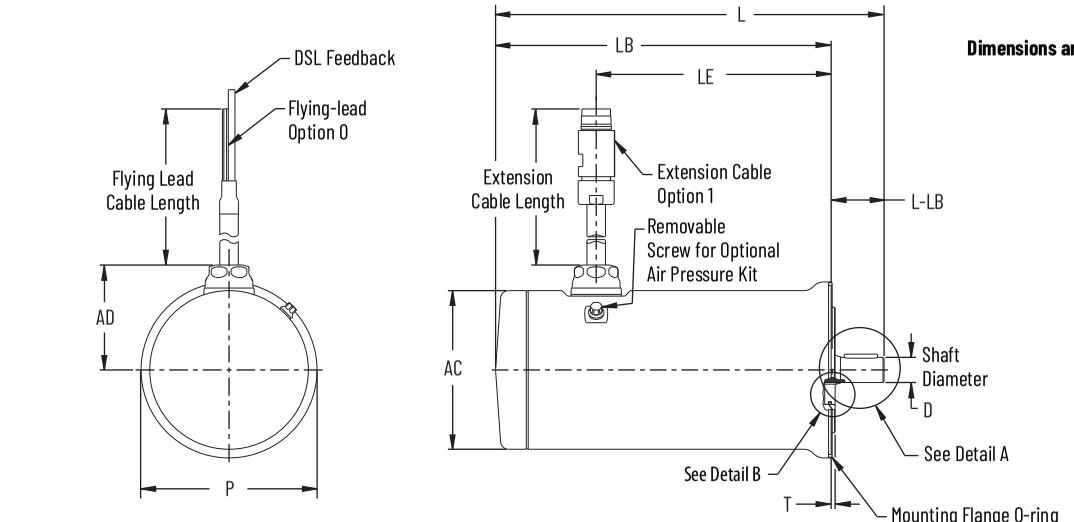
## Axial Load Force Ratings with Zero Radial Load for Brake Motors

| Motor Cat. No. (1) | Maximum Speed rpm | Load (kgf) at Speed (rpm) | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 kgf | 1000 kgf | 1500 kgf | 2000 kgf | 2500 kgf | 3000 kgf | 3500 kgf | 4000 kgf | 4500 kgf | 5000 kgf | 5500 kgf | 6000 kgf | 6500 kgf | 7000 kgf | 7500 kgf | 8000 kgf |
| VPH-A0633F | 4500 | 37.1 | 27.5 | 23.0 | 20.3 | 18.5 | 17.1 | 17.1 | 15.1 | 15.1 | – | – | – | – | – | – | – |
| VPH-A0753F | 4600 | 37.1 | 27.5 | 23.0 | 20.3 | 18.5 | 18.5 | 16.0 | 16.0 | 14.3 | 13.7* | – | – | – | – | – | – |
| VPH-A1003F | 5500 | 96.5 | 71.4 | 59.9 | 52.8 | 48.0 | 44.3 | 41.4 | 39.1 | 39.1 | 35.5 | 35.5 | – | – | – | – | – |
| VPH-A1152E | 3300 | 111.7 | 111.7 | 69.3 | 61.2 | 55.5 | 51.3 | 48.0* | – | – | – | – | – | – | – | – | – |
| VPH-A1153C | 2300 | 111.7 | 82.6 | 69.3 | 61.2 | 55.5* | – | – | – | – | – | – | – | – | – | – | – |
| VPH-A1304D | 3000 | 65.8 | 106.0 | 88.9 | 78.5 | 71.2 | 65.8 | – | – | – | – | – | – | – | – | – | – |
| VPH-B0632T | 8000 | 11.1 | 27.5 | 23.0 | 20.3 | 18.5 | 17.1 | 16.0 | 15.1 | 14.3 | 13.7 | 13.1 | 12.6 | 12.6 | 11.8 | 11.8 | 11.1 |
| VPH-B0633M | 6700 | 37.1 | 37.1 | 23.0 | 20.3 | 18.5 | 17.1 | 16.0 | 15.1 | 14.3 | 13.7 | 13.1 | 12.6 | 12.2 | 11.8* | – | – |
| VPH-B0753F | 6600 | 37.1 | 27.5 | 23.0 | 20.3 | 18.5 | 17.1 | 16.0 | 15.1 | 14.3 | 13.7 | 13.1 | 13.1 | 12.2 | 11.8* | – | – |
| VPH-B1001F | 5000 | 35.5 | 71.4 | 71.4 | 52.8 | 48.0 | 44.3 | 41.4 | 39.1 | 39.1 | 35.5 | – | – | – | – | – | – |
| VPH-B1003F | 4750 | 96.5 | 96.5 | 59.9 | 52.8 | 48.0 | 44.3 | 41.4 | 39.1 | 37.2 | 35.5* | – | – | – | – | – | – |
| VPH-B1152F | 4500 | 111.7 | 82.6 | 69.3 | 61.2 | 55.5 | 51.3 | 48.0 | 45.3 | 43.0 | – | – | – | – | – | – | – |
| VPH-B1153E | 5000 | 111.7 | 82.6 | 82.6 | 61.2 | 55.5 | 51.3 | 48.0 | 45.3 | 43.0 | 41.1 | – | – | – | – | – | – |
| VPH-B1304E | 3500 | 143.2 | 106.0 | 106 | 78.5 | 78.5 | 65.8 | 61.5 | – | – | – | – | – | – | – | – | – |
| VPH-B1653D | 3000 | 184.4 | 136.5 | 114.5 | 101.0 | 91.7 | 84.7 | – | – | – | – | – | – | – | – | – | – |

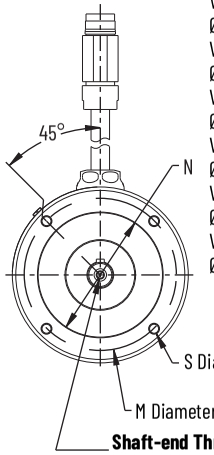
(1) 1.0 kgf = 2.2 lbf or 9.8 N. An asterisk (*) indicates a load rating measured at an rpm value that is less than the value listed for that column.

# Dimensions - Kinetix VPH Servo Motors

## VPH-A/B063*xx*, VPH-A/B075*xx*, VPH-A/B100*xx*, VPH-A/B115*xx*, VPH-A/B130*xx*, VPH-B165*xx* Motor Dimensions




**Dimensions are in mm (in.)**



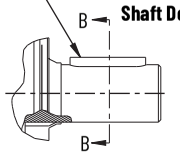

**Pilot Diameter Tolerances**

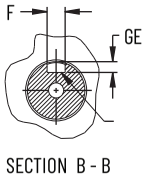
VPH-A/B063*xx* Motors:
Ø 39.995...40.011 (1.5746...1.5752)
VPH-A/B075*xx* Motors:
Ø 59.995...60.012 (2.3260...2.3627)
VPH-A/B100*xx* Motors:
Ø 79.993...80.012 (3.1493...3.1501)
VPH-A/B115*xx* Motors:
Ø 94.991...95.013 (3.7398...3.7407)
VPH-A/B130*xx* Motors:
Ø 109.991...110.013 (4.3303...4.3312)
VPH-B165*xx* Motors:
Ø 129.989...130.014 (5.1177...5.1187)

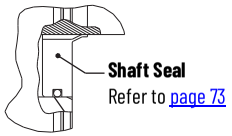
**Key Supplied**

VPH-A/B063*xx* = $3_{(+0,\ -0.025)}$ x $3_{(+0,\ -0.025)}$ x 14.0 Key
VPH-A/B075*xx* = $4_{(+0,\ -0.030)}$ x $4_{(+0,\ -0.030)}$ x 14.5 Key
VPH-A/B100*xx* = $5_{(+0,\ -0.030)}$ x $5_{(+0,\ -0.030)}$ x 25 Key
VPH-A/B115*xx* = $6_{(+0,\ -0.030)}$ x $6_{(+0,\ -0.030)}$ x 25 Key
VPH-A/B130*xx* = $8_{(+0,\ -0.036)}$ x $7_{(+0,\ -0.090)}$ x 32 Key
VPH-B165*xx* = $8_{(+0,\ -0.036)}$ x $7_{(+0,\ -0.090)}$ x 40 Key

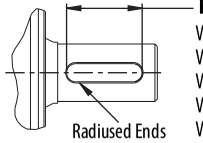
**Detail A**
**Shaft Detail with Key**




**Detail B**




**Keyway Length**

VPH-A/B063*xx* Motors: 14.0...14.5 (0.55...0.57)
VPH-A/B075*xx* Motors: 14.5...15.0 (0.57...0.59)
VPH-A/B100*xx* and
VPH-A/B115*xx* Motors: 25.0...25.5 (0.984...1.004)
VPH-A/B130*xx* Motors: 32.0...32.5 (1.260...1.280)
VPH-B165*xx* Motors: 40.0...40.5 (1.57...1.59)

**Flying Lead and Extension Cable Lengths**, m (ft):
01 (3.2), 03 (9.8), 05 (16.4), 07 (22.9), 09 (29.5), 12 (39.4), 15 (49.2)
Specifications for the flying-lead and extension cables are identical to those of the 2090-CSxM1*xx*-*xx*AA/AF*xx* single motor cables. Refer to Kinetix Motion Accessories Technical Data, publication KNX-TD004, for cable specifications.

**Shaft-end Threaded Hole**

| VPH-A/B063*xx* Motors: | VPH-A/B115*xx* Motors: |
|---|---|
| Thread - M3 x 0.5-6H | Thread - M6 x 1.0-6H |
| Thread Depth - 9.0 (0.354) | Thread Depth - 16.0 (0.63) |
| VPH-A/B075*xx* Motors: | VPH-A/B130*xx* Motors: |
| Thread - M4 x 0.7-6H | Thread - M8 x 1.25-6H |
| Thread Depth - 10.0 (0.393) | Thread Depth - 19 (0.75) |
| VPH-A/B100*xx* Motors: | VPH-B165*xx* Motors: |
| Thread - M5 x 0.8-6H | Thread - M10 x 1.5-6H |
| Thread Depth - 12.5 (0.49) | Thread Depth - 22 (0.87) |

**Shaft Diameter Tolerances**

VPH-A/B063*xx* Motors:
Ø 8.998...9.007 (0.3543...0.3546)
VPH-A/B075*xx* Motors:
Ø 10,997...11.008 (0.4330...0.4334)
VPH-A/B100*xx* Motors:
Ø 15.997...16.008 (0.6298...0.6302)
VPH-A/B115*xx* Motors:
Ø 18.996...19.009 (0.7479...0.7484)
VPH-A/B130*xx* Motors:
Ø 23.996...24.009 (0.9447...0.9452)
VPH-B165*xx* Motors:
Ø 27.996...28.009 (1.0632...1.1027)

| Runout and Pilot Tolerances | VPH-A/B063 | VPH-A/B075 | VPH-A/B100 | VPH-A/B115 | VPH-A/B130 | VPH-B165 |
|---|---|---|---|---|---|---|
| Shaft Runout (T.I.R.) | 0.03 (0.0012) | 0.035 (0.0016) | 0.035 (0.0016) | 0.04 (0.0016) | 0.04 (0.0016) | 0.04 (0.0016) |
| Pilot Eccentricity (T.I.R.) | 0.08 (0.0031) | 0.08 (0.0031) | 0.08 (0.0031) | 0.08 (0.0031) | 0.10 (0.0039) | 0.10 (0.0039) |
| Max Face Runout (T.I.R.) | 0.08 (0.0031) | 0.08 (0.0031) | 0.08 (0.0031) | 0.08 (0.0031) | 0.10 (0.0039) | 0.10 (0.0039) |

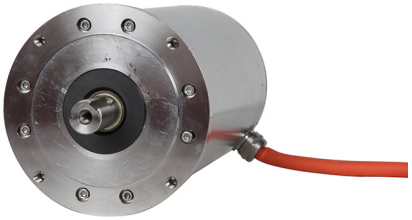
**VPH-A/B063*xx*, VPH-A/B075*xx*, VPH-A/B100*xx*, VPH-A/B115*xx*, VPH-A/B130*xx*, VPH-B165*xx* Motor Dimensions**

| Motor Cat. No. | AD mm (in.) | AC mm (in.) | T mm (in.) | LE (1) mm (in.) | L mm (in.) | LB mm (in.) | L-LB mm (in.) | D mm (in.) | M mm (in.) | S mm (in.) | N mm (in.) | P mm (in.) | GE mm (in.) | F mm (in.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VPH-A/B0632 | 58.5 (2.30) | 81.9 (3.20) | 1.30…2.50 (0.051…0.098) | 125.9 (4.96) | 230.6 (9.10) | 200.6 (7.90) | 30.0 (1.20) | 9.0 (0.354) | 63.0 (2.480) | M5x0.8-6H Depth: 11 (0.43) | 40.0 (1.57) | 81.9 (3.20) | 1.80…1.90 (0.071…0.075) | 2.969…2.994 (0.1169…0.1179) |
| VPH-A/B0633 | | | | 150.9 (5.94) | 255.6 (10.08) | 225.6 (8.88) | | | | | | | | |
| VPH-A/B0753 | 65.6 (2.60) | 94.9 (3.70) | 1.70…2.50 (0.067…0.098) | 153.7 (6.05) | 251.9 (9.91) | 288.9 (9.01) | 23.0 (0.90) | 11.0 (0.433) | 75.0 (2.953) | | 60.0 (2.36) | 94.9 (3.70) | 2.50…2.60 (0.098…0.102) | 3.958…3.988 (0.1558…0.1570) |
| VPH-A/B1001 | 74.5 (2.90) | 109.9 (4.33) | 2.20…3.00 (0.087…0.118) | 110.8 (4.36) | 223.0 (8.78) | 183.0 (7.20) | 40.0 (1.57) | 16.0 (0.630) | 100.0 (3.937) | M6x1.0-6H Depth: 11 (0.43) | 80.0 (3.15) | 119.8 (4.72) | 3.00…3.10 (0.118…0.122) | 4.958…4.988 (0.1952…0.1964) |
| VPH-A/B1003 | | | | 161.6 (6.36) | 273.8 (10.77) | 233.8 (9.20) | | | | | | | | |
| VPH-A/B1152 | 79.3 (3.10) | 119.9 (4.70) | | 141.8 (5.58) | 257.9 (10.15) | 217.9 (8.58) | 40.0 (1.57) | 19.0 (0.748) | 115.0 (4.528) | M8x1.25-6H Depth: 13 (0.51) | 95.0 (3.74) | 133.0 (5.20) | 3.50…3.60 (0.138…0.142) | 5.958…5.988 (0.2346…0.2357) |
| VPH-A/B1153 | | | | 167.2 (6.58) | 283.3 (11.15) | 243.3 (9.58) | | | | | | | | |
| VPH-A/B1304 | 87.6 (3.40) | 136.9 (5.40) | 2.42…3.50 (0.095…0.138) | 194.8 (7.67) | 321.5 (12.66) | 271.5 (10.69) | 50.0 (1.97) | 24.0 (0.945) | 130.0 (5.118) | M8x1.25-6H Depth: 16 (0.63) | 110.0 (4.33) | 155.1 (6.10) | 4.00…4.20 (0.157…0.165) | 7.949…7.985 (0.3130…0.3144) |
| VPH-B1653 | 100.1 (3.90) | 159.9 (6.30) | | 261.0 (10.28) | 398.5 (15.73) | 338.5 (13.33) | 60.0 (2.40) | 28.0 (1.103) | 165.0 (6.50) | M10x1.5-6H Depth: 15 (0.59) | 130.0 (5.12) | 186.0 (7.30) | | |

(1) If ordering a VPH-A/B063*xx*-xJx4D*xx* motor with brake, add 30.6 mm (1.21 in.) to dimensions LE, L, and LB.
If ordering a VPH-A/B075*xx*-xJx4D*xx* motor with brake, add 27.1 mm (1.07 in.) to dimensions LE, L, and LB.
If ordering a VPH-A/B100*xx*-xJx4D*xx* motor with brake, add 32.1 mm (1.27 in.) to dimensions LE, L, and LB.
If ordering a VPH-A/B115*xx*-xJx4D*xx* motor with brake, add 35.8 mm (1.41 in.) to dimensions LE, L, and LB.
If ordering a VPH-A/B130*xx*-xJx4D*xx* motor with brake, add 37.9 mm (1.49 in.) to dimensions LE, L, and LB.
If ordering a VPH-B165*xx*-xJx4D*xx* motor with brake, add 43.2 mm (1.70 in.) to dimensions LE, L, and LB.

Motors are designed to metric dimensions. Inch dimensions are approximate conversions from millimeters. Dimensions without tolerances are for reference.

# Kinetix VPS Stainless-steel Servo Motors



Kinetix VPS servo motors are specifically designed to meet the unique needs of sanitary processing environments. They also feature a digital feedback device that delivers real-time motor performance information back to the control system through a 2090-Series single cable design between motor and drive that simplifies system installation.

Windings are matched to the ratings of Kinetix 5500 and Kinetix 5700 drive to optimize system sizing, lower system cost, and improve energy efficiency.

## Kinetix VPS Servo Motor Features

| Attribute | Value |
|---|---|
| Main characteristics | • Specifically designed for sanitary environments for use with high-pressure, highly-caustic washdown applications<br>• 2090-Series single cable technology<br>• Hiperface DSL encoder protocol<br>• Low rotor inertia |
| Features | • Smooth, passivated 300 series stainless-steel cylindrical exterior<br>• Complies with NSF/ANSI Standard 169<br>• 400V-class windings<br>• Shaft-end threaded hole<br>• Cable extended 5 m (16.4 ft) from motor to protect connector<br>• Standard IEC 72-1 mounting dimensions |
| Motor type | Brushless AC synchronous servo motors |
| Environmental rating | • IP66/IP67 with shaft seal (standard) and use of environmentally sealed cable connector<br>• IP69K for 1200 psi motor washdown (1) |
| Certifications | Kinetix VPS rotary motors are UL Recognized components to applicable UL and CSA standards. CE marked for all applicable directives. Refer to rok.auto/certifications for the Product Certifications website. |
| Continuous stall torque | 8.1 and 21.0 N•m (72 and 186 lb•in) |
| Peak stall torque | 27.1 and 67.8 N•m (240 and 600 lb•in) |
| Rated speed | 3000 rpm |
| Motor rated output | 1.4 and 3.3 kW (1.9 and 4.4 Hp) |
| Compatible servo drives | • Kinetix 5700<br>• Kinetix 5500 |
| Compatible servo cables | • 2090-CSxM1*xx*-*xx*AA/AF*xx* (TPE) cables<br>• 2090-CSxM1*xx*-*xx*VA/LF*xx* (PVC and PUR) cables |
| Typical applications | • Meat and poultry<br>• Food slicing and filling<br>• Raw food handling<br>• Processing<br>• Life science<br>• Consumer products |

(1) The cable connectors are rated IP66 and IP67 and are not designed to withstand high-pressure washdown or washdown with aggressive cleaning compounds. Position connectors away from direct exposure to cleaning processes, for example, within washdown-rated conduit or junction boxes.

# Catalog Numbers - Kinetix VPS Servo Motors

Catalog numbers consist of various characters, each of which identifies a specific option for that component. Use the catalog numbering table chart below to understand the configuration of your motor. For questions regarding product availability, contact your Allen-Bradley distributor.

**VP S - B *xxx* *x* D - P J 1 2 D F**

**Factory Options**
F = 5 m (16.4 ft) TPE standard, non-flex single cable

**Mounting Flange**
D = IEC metric, tapped mounting holes (type FT)

**Brake**
2 = No brake

**Connector (1)**
1 = Single SpeedTec DIN connector

**Enclosure/Shaft Key/Shaft Seal**
J = IP66/IP67/IP69K housing/shaft key/shaft seal

**Feedback**
P = 18-bit absolute multi-turn digital encoder (Hiperface DSL protocol)

**Rated Speed (2)**
D = 3000 rpm

**Magnet Stack Length (3 or 4 stacks) (3)**

**Frame Size - Bolt Circle Diameter (BCD)**
130 = 130 mm
165 = 165 mm

**Voltage Class**
B = 400V

**Series Type**
S = Stainless steel

**Series**
VP = Permanent magnet rotary servo motors that are optimized to Kinetix 5500 and Kinetix 5700 drive ratings

(1) The motor has 5 m (16.4 ft) 2090-Series TPE cable extension with nickel-plated connector extensions.
(2) Rated speed hierarchy is only for comparative purposes. Use Motion Analyzer software to size and select motors for your application, and/or the torque/speed curves in the Kinetix 5500 Drive System Design Guide, publication KNX-RM009, and the Kinetix 5700 Drive System Design Guide, publication KNX-RM010.
(3) Not all combinations are available. Only the configurations for magnet stack length as listed in Kinetix VPS Servo Motor (400V-class) Performance Specifications on page 85 are available.

**IMPORTANT** The connectors are O-ring sealed, but not designed to withstand direct high-pressure washdown with aggressive cleaning compounds. The 5 m (16.4 ft) cables are provided so the connectors can be positioned in an area away from direct exposure to the cleaning process, such as within washdown-rated conduit or junction boxes.

# Kinetix VPS Servo Motor High-resolution Encoders

Kinetix VPS servo motors are available with high-performance encoders with multi-turn (-P) high-resolution feedback:

- 18-bit resolution for 262,144 counts per revolution, multi-turn encoder (-P) provides absolute position feedback within 4096 turns
- Electromechanical design does not require a battery.

# Kinetix 2090-Series Single Cable Technology

Motor connectivity reduced to a single connector and cable.

- Single cable eliminates hardware and wire terminations
- Purely digital two-wire communication integrated into the motor power cable
- Mating 2090-Series single cables with:
  - TPE cable material for standard (non-flex) and continuous-flex cable
  - PVC cable material for standard (non-flex) and Halogen-free PUR continuous-flex cable
- Mating 2090-CSxM1D*x* cables are available in 1.0 m (3.2 ft) increments. Total cable length includes the 5m (16.4 ft) extension cable attached to the motor and varies depending on cable type and drive family.

**Maximum Cable Length Including Cable Extension**

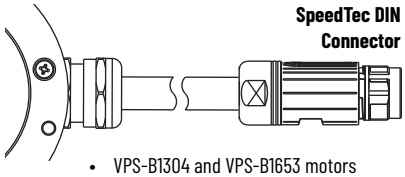
| Cable Cat. No. | Motor Cable Type | Kinetix 5500 Drives [1] m (ft) | Kinetix 5700 Drives [1] m (ft) |
|---|---|---|---|
| 2090-CSxM1D*x*-*xxx*A*xx* | Single, standard (non-flex) cable | Cable length, max = 45 (148)<br>Plus extension cable + 5 (16.4)<br>Total cable length = 50 (164) | Cable length, max = 85 (279)<br>Plus extension cable + 5 (16.4)<br>Total cable length = 90 (295) |
| 2090-CSxM1D*x*-*xxx*F*xx* | Single, continuous-flex cable | Cable length, max = 25 (82.0)<br>Plus extension cable + 5 (16.4)<br>Total cable length = 30 (98.4) | |

(1) This table illustrates how the motor cable extension is included in the maximum cable length calculation. However, there are other variables to consider. See Kinetix 5500 Servo Drives User Manual, publication 2198-UM001, or Kinetix 5700 Servo Drives User Manual, publication 2198-UM002, for maximum cable length specifications specific to those drive families.

**IMPORTANT** Due to the unique characteristics of single cable technology, designed for and tested with Kinetix 5500 drives, Kinetix 5700 dual-axis inverters, and Kinetix VPS servo motors, building your own cables or using third-party cable is not an option.

# On-Motor Cable Connector/Cable Compatibility

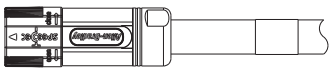
Kinetix VPS servo motors are equipped with SpeedTec DIN connectors.




- VPS-B1304 and VPS-B1653 motors
- Receives only single cable plugs
- Attach cable plug with one-quarter turn
- 5 m (16.4 ft) cable extension

- 2090-CSxM1DF cables apply to Kinetix 5500 drives
- 2090-CSxM1DE cables apply to Kinetix 5700 drives
- 2090-CSxM1DG cables apply to Kinetix 5500 or Kinetix 5700 drives

**SpeedTec DIN (M1) Single Cable Plug**



- 2090-CSBM1DF-*xx*AA*xx* (standard, non-flex) power/feedback/brake cables
- 2090-CSWM1DF-*xx*AA*xx* (standard, non-flex) power/feedback cables
- 2090-CSBM1DF-*xx*AF*xx* (continuous-flex) power/feedback/brake cables
- 2090-CSBM1DE-*xxx*A*xx* (standard, non-flex) power/feedback/brake cables
- 2090-CSWM1DE-*xxx*A*xx* (standard, non-flex) power/feedback cables
- 2090-CSBM1DE-*xxx*F*xx* (continuous-flex) power/feedback/brake cables
- 2090-CSBM1DG-*xxx*A*xx* (standard, non-flex) power/feedback/brake cables
- 2090-CSWM1DG-*xxx*A*xx* (standard, non-flex) power/feedback cables
- 2090-CSBM1DG-*xxx*F*xx* (continuous-flex) power/feedback/brake cables

Product specifications for Kinetix VPS on-motor cables are identical to 2090-CSxM1*xx* (TPE) motor cable.For 2090-Series single motor cable specifications, refer to Kinetix Motion Accessories Specifications Technical Data, publication KNX-TD004.

# Kinetix VPS Servo Motor Options

Kinetix VPS servo motors are available with these configurable options:

- The positive air pressure accessory kit (catalog number MPS-AIR-PURGE) is mounted to the rear cover of the motor to provide positive air pressure and further reduce the chance of contamination inside the motor. No special tool is required for installation and removal.
- Shaft seal kits (with slinger) are available for field replacement. Shaft seals are made of PTFE and include a lubricant to reduce wear.

**IMPORTANT** Shaft seals are subject to wear and require periodic inspection and replacement. Replacement is recommended every 3 months, not to exceed 12 months, depending on use.

**Shaft Seal Kit Catalog Numbers**

| Motor Cat. No. | Shaft Seal Kit Cat. No. |
|---|---|
| VPS-B1304D | MPS-SST-A45B45 |
| VPS-B1653D | MPS-SST-F165 |

Refer to the Kinetix VP Stainless-steel Servo Motor Installation Instructions, publication VPS-IN002, for more information.

# Technical Specifications - Kinetix VPS Servo Motors

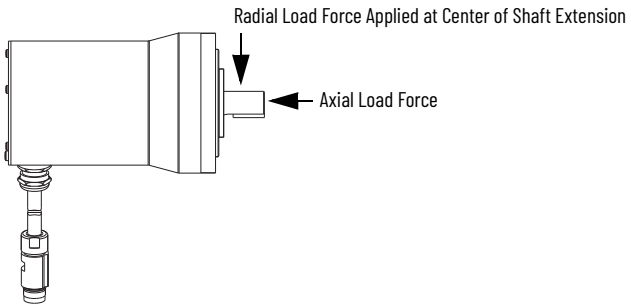
**Kinetix VPS Servo Motor (400V-class) Performance Specifications**

| Motor Cat. No. | Rated Speed rpm | Maximum Speed rpm | Continuous Stall Torque N•m (lb•in) | Peak Stall Torque N•m (lb•in) | Motor Rated Output kW (Hp) | Rotor Inertia $kg\text{-}m^2$ ($lb\text{•}in\text{•}s^2$) | Motor Weight, approx kg (lb) |
|---|---|---|---|---|---|---|---|
| VPS-B1304D | 3000 | 3000 | 8.1 (72.0) | 27.1 (240) | 1.4 (1.9) | 0.00052 (0.0046) | 13.4 (29.4) |
| VPS-B1653D | 3000 | 3000 | 21.0 (186) | 67.8 (600) | 3.3 (4.4) | 0.0023 (0.0203) | 30.4 (66.8) |

# Kinetix VPS Servo Motor Load Force Ratings

Kinetix VPS servo motors are capable of operating with the maximum radial or maximum axial shaft loads listed in the following tables. Radial loads listed are applied in the middle of the shaft extension. The tables starting below represent an $L_{10}$ bearing fatigue life of 20,000 hours. This 20,000-hour life does not account for possible application-specific life reduction that can occur due to bearing grease contamination from external sources. Maximum operating speed is limited by motor winding.

**Load Forces on Shaft**




**Radial Load Force Ratings (maximum)**

| Motor Cat. No. | Maximum Speed rpm | RPM | | | |
|---|---|---|---|---|---|
| | | **500** kgf (lbf) | **1000** kgf (lbf) | **2000** kgf (lbf) | **3000** kgf (lbf) |
| VPS-B1304D | 3000 | 140 (308) | 111 (244) | 89 (196) | 77 (169) |
| VPS-B1653D | 3000 | – | 154 (338) | 122 (268) | 106 (234) |

**Axial Load Force Ratings (maximum radial load)**

| Motor Cat. No. | Maximum Speed rpm | RPM | | | |
|---|---|---|---|---|---|
| | | **500** kgf (lbf) | **1000** kgf (lbf) | **2000** kgf (lbf) | **3000** kgf (lbf) |
| VPS-B1304D | 3000 | 49 (108) | 36 (79) | 27 (59) | 22 (48) |
| VPS-B1653D | 3000 | – | 52 (115) | 39 (85) | 32 (71) |

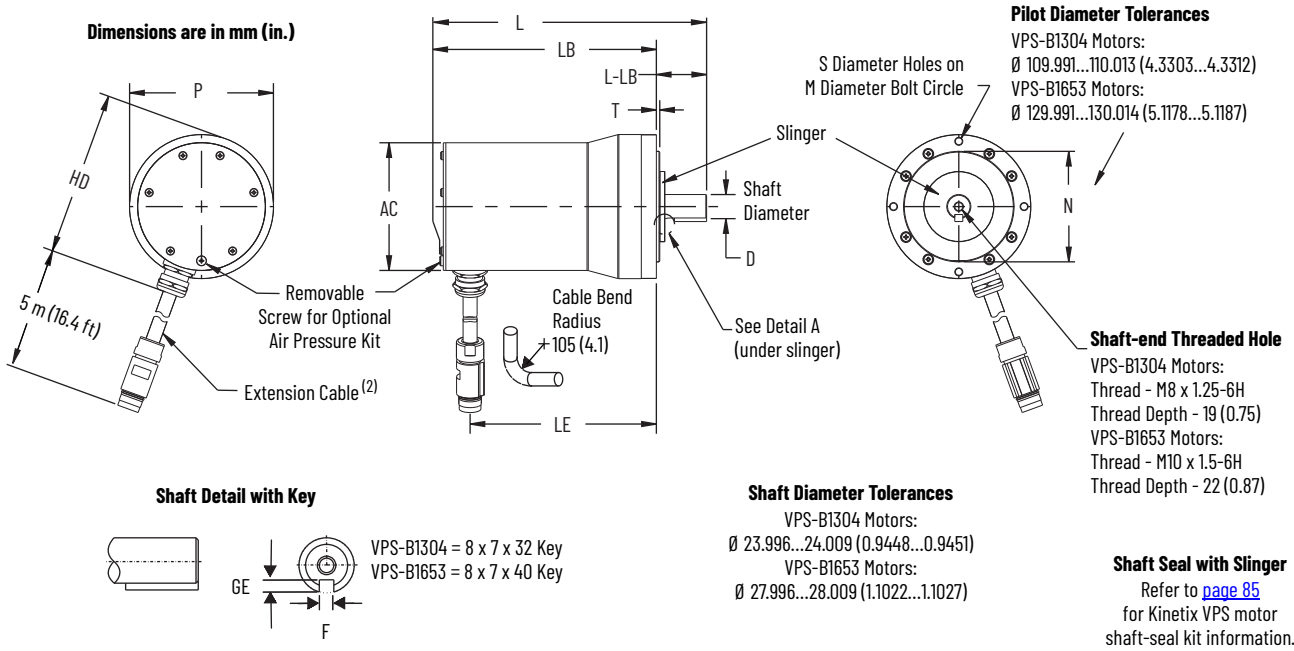
**Axial Load Force Ratings (zero radial load)**

| Motor Cat. No. | Maximum Speed rpm | RPM | | | |
|---|---|---|---|---|---|
| | | **500** kgf (lbf) | **1000** kgf (lbf) | **2000** kgf (lbf) | **3000** kgf (lbf) |
| VPS-B1304D | 3000 | 69 (152) | 51 (112) | 38 (83) | 31 (68) |
| VPS-B1653D | 3000 | – | 68 (149) | 50 (109) | 42 (92) |

Loads are measured in kilograms-force. Pound-force loads are approximate conversions from kilograms-force.

# Dimensions - Kinetix VPS Servo Motors

### VPS-B1304D and VPS-B1653D Motor Dimensions




**Shaft Detail with Key**

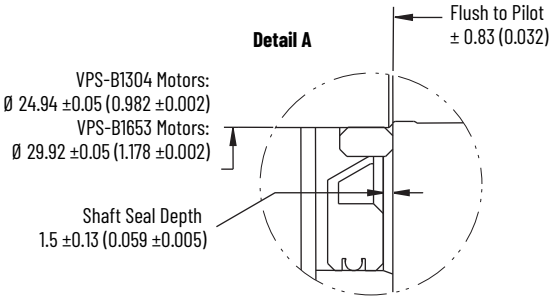



**Shaft Diameter Tolerances**

VPS-B1304 Motors:
Ø 23.996...24.009 (0.9448...0.9451)
VPS-B1653 Motors:
Ø 27.996...28.009 (1.1022...1.1027)

**Shaft Seal with Slinger**

Refer to page 85 for Kinetix VPS motor shaft-seal kit information.




| Shaft, Pilot, and Keyway Tolerances | VPS-B1304 | VPS-B1653 |
|---|---|---|
| Shaft Runout (T.I.R.) | 0.04 (0.0016) | 0.04 (0.0016) |
| Pilot Eccentricity (T.I.R.) | 0.10 (0.0039) | 0.10 (0.0039) |
| Max Face Runout (T.I.R.) | 0.10 (0.0039) | 0.10 (0.0039) |
| Keyway Depth (GE) | 4.00...4.20 (0.158...0.165) | 4.00...4.20 (0.158...0.165) |
| Keyway Width (F) | 7.96...8.00 (0.314...0.315) | 7.96...8.00 (0.314...0.315) |

| Motor Cat. No. | HD mm (in.) | AC mm (in.) | T mm (in.) | LE mm (in.) | L mm (in.) | LB mm (in.) | L-LB (1) mm (in.) | D mm (in.) | M mm (in.) | S mm (in.) | N mm (in.) | P mm (in.) | GE mm (in.) | F mm (in.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VPS-B1304 | 164.0 (6.40) | 127.1 (5.00) | 3.38 (0.133) | 185.0 (7.30) | 266.0 (10.47) | 216.0 (8.50) | 50.0 (1.97) | 24.0 (0.945) | 130.0 (5.118) | M8x1.25-6H Depth: 9.0 (0.35) | 110.0 (4.33) | 143.2 (5.64) | 4.0 (0.158) | 8.0 (0.315) |
| VPS-B1653 | 198.0 (7.80) | 168.3 (6.63) | 3.38 (0.13) | 302.0 (11.90) | 396.4 (15.60) | 336.4 (13.24) | 60.0 (2.36) | 28.0 (1.10) | 165.0 (6.49) | M10x1.50-6H Depth: 11.0 (0.43) | 130.0 (5.12) | 181.0 (7.13) | 4.0 (0.158) | 8.0 (0.315) |

(1) Tolerance for this dimension is ±0.7 mm (±0.03 in.).
(2) Specifications for the 5 m (16.4 ft) 2090-Series cable extensions are identical to those of the 2090-CSxM1*xx*-*xx*AA*xx* single motor cables. Refer to Kinetix Motion Accessories Technical Data, publication KNX-TD004, for cable specifications.

Motors are designed to metric dimensions. Inch dimensions are approximate conversions from millimeters. Dimensions without tolerances are for reference.

# Kinetix MPL Low-inertia Servo Motors

Kinetix MPL servo motors have a compact design to reduce motor size while delivering significantly higher torque. These compact and highly-dynamic brushless servo motors are designed by Allen-Bradley to meet the demanding requirements of high-performance motion systems.

## Kinetix MPL Servo Motor Features

| Attribute | Value |
|---|---|
| Main characteristics | • High torque to size ratio<br>• Smart Motor Technology<br>• Hiperface (Stegmann) encoder protocol<br>• Low rotor inertia |
| Features | • 200V and 400V-class windings<br>• Single-turn and multi-turn absolute feedback<br>• Incremental and resolver feedback options<br>• High-energy rare-earth magnets<br>• Shaft-end threaded hole<br>• DIN connectors, rotates 180°<br>• Standard IEC 72-1 mounting dimensions |
| Motor type | Brushless AC synchronous servo motors |
| Environmental rating | • IP50 minimum, without shaft seal (standard).<br>• IP66 with optional shaft seal and use of environmentally sealed cable connectors. |
| Certifications | Kinetix MPL rotary motors are UL Recognized components to applicable UL and CSA standards. CE marked for all applicable directives. Refer to rok.auto/certifications for the Product Certifications website. |
| Continuous stall torque | 0.26...163 N•m (2.3...1440 lb•in) |
| Peak stall torque | 0.74...278 N•m (6.6...2460 lb•in) |
| Rated speed | Up to 8000 rpm |
| Motor rated output | 0.16...18.6 kW |
| Compatible servo drives | • Kinetix 5500 (1)<br>• Kinetix 5700 (2)<br>• Kinetix 6200/6500<br>• Kinetix 6000<br>• Kinetix 300/350<br>• Kinetix 2000<br>• Kinetix 7000 |
| Compatible servo cables | 2090-CxxM7xx cables |
| Typical applications | • Packaging<br>• Converting<br>• Material handling<br>• Electronic assembly<br>• Automotive |

(1) Requires the 2198-H2DCK (series B or later) Hiperface-to-DSL feedback converter kit.
(2) Requires the 2198-K57CK-D15M universal feedback connector kit.

# Catalog Numbers - Kinetix MPL Servo Motors

Catalog numbers consist of various characters, each of which identifies a specific option for that component. Use the catalog numbering table chart below to understand the configuration of your motor. For questions regarding product availability, contact your Allen-Bradley distributor.

**MP L - x xx xx x - x x 7 x A A**

**Factory Options**
A = Standard

**Mounting Flange**
A = IEC metric, free mounting holes (type FF)

**Brake**
2 = No brake
4 = 24V DC holding brake

**Connectors**
7 = Circular (SpeedTec) DIN connector, right angle, 180° rotatable (7)

**Enclosure/Shaft Key/Shaft Seal**
J = Shaft key/No shaft seal
K = No shaft key/No shaft seal (3)

**Feedback**
V = 128 sin/cos, absolute multi-turn encoder (Hiperface protocol) (1)
M = 1024 sin/cos, absolute multi-turn encoder (Hiperface protocol) (2)
E = 128 sin/cos, absolute single-turn encoder (Hiperface protocol) (1)
S = 1024 sin/cos, absolute single-turn encoder (Hiperface protocol) (2)
H = 2000 lines/revolution, incremental encoder (4)
R = Resolver (5)

**Rated Speed (6)**

| | | |
|---|---|---|
| B = 1000 rpm | H = 3500 rpm | T = 6000 rpm |
| C = 1500 rpm | J = 3750 rpm | U = 7000 rpm |
| D = 2000 rpm | K = 4000 rpm | V = 8000 rpm |
| F = 3000 rpm | P = 5000 rpm | |

**Magnet Stack Length (6)**

| | |
|---|---|
| 10 = 25.4 mm (1.0 in.) | 50 = 127.0 mm (5.0 in.) |
| 20 = 50.8 mm (2.0 in.) | 60 = 152.4 mm (6.0 in.) |
| 30 = 76.2 mm (3.0 in.) | 70 = 177.8 mm (7.0 in.) |
| 40 = 101.6 mm (4.0 in.) | 80 = 203.2 mm (8.0 in.) |

**Frame Size**

| | |
|---|---|
| 15 = 63 mm | 5 = 165 mm |
| 2 = 75 mm | 6 = 215 mm |
| 3 = 100 mm | 8 = 265 mm |
| 4 = 115 mm | 9 = 300 mm |
| 45 = 130 mm | |

**Voltage Class**
A = 200V
B = 400V

**Series Type**
L = Low inertia

**Series**
MP = Premium permanent magnet rotary servo motor

(1) Applies to MPL-A/B15*xx* and MPL-A/B2*xx* motors.
(2) Applies to MPL-A/B3*xx*, MPL-A/B4*xx*, MPL-A/B45*xx*, MPL-A/B5*xx*, MPL-B6*xx*, MPL-B8*xx*, and MPL-B9*xx* motors.
(3) Requires longer lead times. Applies to only limited frame sizes.
(4) Applies to MPL-A/B15*xxx*-H, MPL-A/B2*xxx*-H, MPL-A/B3*xxx*-H, MPL-A/B4*xxx*-H, MPL-A/B45*xxx*-H motors.
(5) Applies to MPL-B3*xxx*-R, MPL-B4*xxx*-R, and MPL-B45*xxx*-R motors.
(6) Not all combinations are available. Only the configurations for rated speed and magnet stack length, as listed in Kinetix MPL Servo Motor (200V-class) Performance Specifications on page 92 and Kinetix MPL Servo Motor (400V-class) Performance Specifications on page 93, are available. Use Motion Analyzer software to size and select motors for your application.
(7) Applies to all Kinetix MPL motors with M23 and M40 cable connectors. M58 connectors (MPL-B8*xxx* and MPL-B9*xxx* motors) must be physically removed and repositioned in 90° increments.

# Kinetix MPL Servo Motor High-resolution Encoders

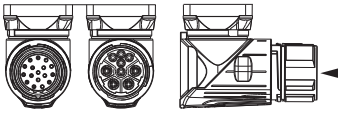
Kinetix MPL servo motors are available with high performance encoders with a choice of single-turn (-E, -S) or multi-turn (-V, -M) high resolution feedback:

- 1024 sin/cos cycles per revolution for up to 21-bit resolution (2,097,152 counts per revolution) -M and -S (MPL-A/B3*xx*, MPL-A/B4*xx*, MPL-A/B45*xx*, MPL-A/B5*xx*, MPL-B6*xx*, MPL-B8*xx*, and MPL-B9*xx* motors).
- 128 sin/cos cycles per revolution for up to 18-bit resolution (262,144 counts per revolution) -E and -V (MPL-A/B15*xx* and MPL-A/B2*xx* motors).
- Single-turn encoder provides high-resolution absolute position feedback within one turn.
- Multi-turn encoder provides high-resolution absolute position feedback within 4096 turns. The electromechanical design does not require a battery.

# Motor Connector/Cable Compatibility

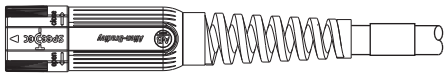
Kinetix MPL servo motors are equipped with SpeedTec DIN connectors.

**SpeedTec DIN Connectors**



- MPL-A/B15*xxx*...MPL-B9*xxx* motors
- Receives M4 and M7 cable plugs (O-ring required for M4)
- Attach M7 cable plug with one-quarter turn

**SpeedTec DIN (M7) Cable Plug**



- 2090-CFBM7DF-CEAA*xx* (standard, non-flex) flying-lead, feedback cables
- 2090-CFBM7DD-CEAA*xx* (standard, non-flex) drive-end connector, feedback cables
- 2090-CFBM7DF-CEAF*xx* (continuous-flex) flying-lead, feedback cables
- 2090-CFBM7DD-CEAF*xx* (continuous-flex) drive-end connector, feedback cables
- 2090-CFBM7DF-CDAF*xx* (continuous-flex) flying-lead, feedback cables

- 2090-CPWM7DF-*xx*AA*xx* (standard, non-flex) power-only cables
- 2090-CPBM7DF-*xx*AA*xx* (standard, non-flex) power/brake cables
- 2090-CPWM7DF-*xx*AF*xx* (continuous-flex) power-only cables
- 2090-CPBM7DF-*xx*AF*xx* (continuous-flex) power/brake cables

For information on transitioning your Kinetix MPL servo motor installation from bayonet cables to circular DIN cables, refer to Kinetix Motion Accessories Technical Data, publication KNX-TD004.

# Kinetix MPL Servo Motor Options

Kinetix MPL servo motors are available with these options:

- 24V DC holding brake.
- Optional keyless shaft available in limited frame sizes with extended lead times (MPL-A/B3*xx*, MPL-A/B4*xx*, MPL-A/B45*xx*, and MPL-A/B5*xx* motors).
- Shaft seal kits are available, as are replacement kits for field installation. Shaft seals are made of nitrile and kits include a lubricant to reduce wear.

**IMPORTANT** Shaft seals are subject to wear and require periodic inspection and replacement. Replacement is recommended every 3 months, not to exceed 12 months, depending on use.

**Shaft Seal Kit Catalog Numbers**

| Motor Cat. No. | Shaft Seal Kit Cat. No. |
|---|---|
| MPL-A15*xx* and MPL-B15*xx* | MPL-SSN-F63F75 |
| MPL-A2*xx* and MPL-B2*xx* | |
| MPL-A3*xx* and MPL-B3*xx* | MPL-SSN-A3B3 |
| MPL-A4*xx* and MPL-B4*xx* | MPL-SSN-A4B4 |
| MPL-A45*xx* and MPL-B45*xx* | MPL-SSN-A5B5 |
| MPL-A520 and MPL-B520<br>MPL-A540 and MPL-B540<br>MPL-A560 and MPL-B560 | MPL-SSN-F165 |
| MPL-B580 | MPL-SSN-F165-32MM |
| MPL-B6*xx* | MPL-SSN-A6B6 |
| MPL-B8*xx* | MPL-SSN-A8B8 |
| MPL-B9*xx* | MPL-SSN-A9B9 |

# Technical Specifications - Kinetix MPL Servo Motors

### Kinetix MPL Servo Motor (200V-class) Performance Specifications

| Motor Cat. No. | Rated Speed rpm | Maximum Speed rpm | Continuous Stall Torque N•m (lb•in) | Peak Stall Torque N•m (lb•in) | Motor Rated Output kW | Rotor Inertia (1) kg-m$^2$ (lb•in•s$^2$) | Motor Weight, approx (1) kg (lb) |
|---|---|---|---|---|---|---|---|
| MPL-A1510V | 8000 | 8000 | 0.26 (2.3) | 0.77 (6.8) | 0.16 | 0.0000074 (0.000065) | 1.0 (2.2) |
| MPL-A1520U | 7000 | 7000 | 0.49 (4.3) | 1.58 (14) | 0.27 | 0.000013 (0.00012) | 1.2 (2.6) |
| MPL-A1530U | 7000 | 7000 | 0.90 (8.0) | 2.80 (25) | 0.39 | 0.000023 (0.00020) | 1.6 (3.4) |
| MPL-A210V | 8000 | 8000 | 0.55 (4.9) | 1.50 (13.5) | 0.37 | 0.000015 (0.00013) | 1.4 (3.1) |
| MPL-A220T | 6000 | 6000 | 1.61 (14.2) | 4.74 (42) | 0.62 | 0.000039 (0.00035) | 2.0 (4.4) |
| MPL-A230P | 5000 | 5000 | 2.10 (18.6) | 8.20 (73) | 0.86 | 0.000063 (0.00056) | 2.6 (5.7) |
| MPL-A310P | 4750 | 5000 | 1.58 (14) | 3.61 (32) | 0.73 | 0.000044 (0.00039) | 2.7 (5.8) |
| MPL-A310F | 3000 | 3000 | 1.58 (14) | 3.61 (32) | 0.46 | | |
| MPL-A320P | 4750 | 5000 | 3.05 (27) | 7.91 (70) | 1.3 | 0.000078 (0.00069) | 3.7 (8.0) |
| MPL-A320H | 3350 | 3500 | 3.05 (27) | 7.91 (70) | 1.0 | | |
| MPL-A330P | 5000 | 5000 | 4.18 (37) | 11.1 (98) | 1.8 | 0.00012 (0.0010) | 4.6 (10) |
| MPL-A420P | 5000 | 5000 | 4.74 (42) | 10.2 (90) | 2.0 | 0.00026 (0.0023) | 4.3 (9.4) |
| MPL-A430P | 5000 | 5000 | 5.99 (53) | 19.8 (175) | 2.2 | 0.00038 (0.0033) | 5.5 (12) |
| MPL-A430H | 3500 | 3500 | 6.21 (55) | 19.8 (175) | 1.8 | | |
| MPL-A4530K | 4000 | 4000 | 8.13 (72) | 20.3 (180) | 2.5 | 0.00040 (0.0036) | 7.3 (16) |
| MPL-A4530F | 2800 | 2800 | 8.36 (74) | 20.3 (180) | 1.9 | | |
| MPL-A4540C | 1500 | 1500 | 10.2 (90) | 27.1 (240) | 1.5 | 0.00052 (0.0046) | 8.6 (19) |
| MPL-A4540F | 3000 | 3000 | 10.2 (90) | 27.1 (240) | 2.6 | | |
| MPL-A4560F | 3000 | 3000 | 14.1 (125) | 34.4 (305) | 3.0 | 0.00078 (0.0067) | 11.82 (26) |
| MPL-A520K | 3500 | 4000 | 10.7 (95) | 24.3 (215) | 3.5 | 0.000783 (0.0069) | 9.8 (21.5) |
| MPL-A540K | 4000 | 4000 | 19.4 (172) | 48.6 (430) | 5.5 | 0.00147 (0.013) | 15.0 (33) |
| MPL-A560F | 3000 | 3000 | 26.8 (237) | 61.0 (540) | 5.3 | 0.00213 (0.019) | 20.2 (44.5) |

(1) Refer to Kinetix MPL Servo Motor Brake Specifications on page 94 for brake rotor inertia and brake motor weight.

## Kinetix MPL Servo Motor (400V-class) Performance Specifications

| Motor Cat. No. | Rated Speed rpm | Maximum Speed rpm | Continuous Stall Torque N•m (lb•in) | Peak Stall Torque N•m (lb•in) | Motor Rated Output kW | Rotor Inertia (1) kg-m$^2$ (lb•in•s$^2$) | Motor Weight, approx (1) kg (lb) |
|---|---|---|---|---|---|---|---|
| MPL-B1510V | 8000 | 8000 | 0.26 (2.3) | 0.77 (6.8) | 0.16 | 0.0000074 (0.000065) | 1.0 (2.2) |
| MPL-B1520U | 7000 | 7000 | 0.49 (4.3) | 1.58 (14) | 0.27 | 0.000013 (0.00012) | 1.2 (2.6) |
| MPL-B1530U | 7000 | 7000 | 0.90 (8.0) | 2.80 (25) | 0.39 | 0.000023 (0.00020) | 1.6 (3.4) |
| MPL-B210V | 8000 | 8000 | 0.55 (4.9) | 1.50 (13.5) | 0.37 | 0.000015 (0.00013) | 1.4 (3.1) |
| MPL-B220T | 6000 | 6000 | 1.61 (14.2) | 4.74 (42) | 0.62 | 0.000039 (0.00035) | 2.0 (4.4) |
| MPL-B230P | 5000 | 5000 | 2.10 (18.6) | 8.20 (73) | 0.86 | 0.000063 (0.00056) | 2.6 (5.7) |
| MPL-B310P | 5000 | 5000 | 1.58 (14) | 3.61 (32) | 0.77 | 0.000044 (0.00039) (2) | 2.7 (5.8) |
| MPL-B320P | 5000 | 5000 | 3.05 (27) | 7.91 (70) | 1.5 | 0.000078 (0.00069) (2) | 3.7 (8.0) |
| MPL-B330P | 5000 | 5000 | 4.18 (37) | 11.1 (98) | 1.8 | 0.00012 (0.0010) (2) | 4.6 (10) |
| MPL-B420P | 5000 | 5000 | 4.74 (42) | 13.5 (120) | 1.9 | 0.00026 (0.0023) (2) | 4.3 (9.4) |
| MPL-B430P | 5000 | 5000 | 6.55 (58) | 19.8 (175) | 2.2 | 0.00038 (0.0033) (2) | 5.5 (12) |
| MPL-B4530F | 3000 | 3000 | 8.25 (73) | 20.3 (180) | 2.1 | 0.00040 (0.0036) (2) | 7.3 (16) |
| MPL-B4530K | 4000 | 4000 | 8.25 (73) | 20.3 (180) | 2.6 | | |
| MPL-B4540F | 3000 | 3000 | 10.2 (90) | 27.1 (240) | 2.6 | 0.00052 (0.0046) (2) | 8.6 (19) |
| MPL-B4560F | 3000 | 3000 | 14.1 (125) | 34.4 (305) | 3.2 | 0.00078 (0.0067) (2) | 11.82 (26) |
| MPL-B520K | 3500 | 4000 | 10.7 (95) | 23.2 (205) | 3.5 | 0.000783 (0.0069) | 9.8 (21.5) |
| MPL-B540D | 2000 | 2000 | 19.4 (172) | 41.0 (362) | 3.4 | 0.00147 (0.013) | 15 (33) |
| MPL-B540K | 4000 | 4000 | 19.4 (172) | 48.6 (430) | 5.4 | 0.00147 (0.013) | |
| MPL-B560F | 3000 | 3000 | 26.8 (237) | 67.8 (600) | 5.5 | 0.00213 (0.019) | 20.2 (44.5) |
| MPL-B580F | 3000 | 3000 | 34.0 (301) | 87.0 (770) | 7.1 | 0.00289 (0.023) | 25.4 (56) |
| MPL-B580J | 3800 | 3800 | 34.0 (301) | 81.0 (716) | 7.9 | | |
| MPL-B640F | 2000 | 3000 | 36.7 (325) | 72.3 (640) | 6.11 | 0.004 (0.0354) | 26.8 (59) |
| MPL-B660F | 2000 | 3000 | 48.0 (425) | 101.1 (895) | 6.15 | 0.0058 (0.051) | 35.0 (77) |
| MPL-B680D | 2000 | 2000 | 62.8 (556) | 154.2 (1365) | 9.3 | 0.00775 (0.0685) | 40.4 (89) |
| MPL-B680F | 2000 | 3000 | 60.0 (531) | 108.5 (960) | 7.5 | | |
| MPL-B680H | 2000 | 3500 | 60.0 (531) | 146.9 (1300) | 7.5 | | |
| MPL-B860D | 2000 | 2000 | 83.0 (735) | 152.5 (1350) | 12.5 | 0.0169 (0.150) | 57.3 (126) |
| MPL-B880C | 1500 | 1500 | 110.0 (973) | 203 (1800) | 12.6 | 0.0224 (0.198) | 72.7 (160) |
| MPL-B880D | 2000 | 2000 | 110.0 (973) | 147 (1300) | 12.6 | | |
| MPL-B960B | 1200 | 1200 | 130.0 (1150) | 231 (2050) | 12.7 | 0.0273 (0.242) | 76.0 (167) |
| MPL-B960C | 1500 | 1500 | 124.3 (1100) | 226 (2000) | 14.8 | | |
| MPL-B960D | 2000 | 2000 | 124.3 (1100) | 226 (2000) | 15.0 | | |
| MPL-B980B | 1000 | 1000 | 162.7 (1440) | 278 (2460) | 15.2 | 0.0354 (0.313) | 94.5 (208) |
| MPL-B980C | 1500 | 1500 | 158.2 (1400) | 271 (2400) | 16.8 | | |
| MPL-B980D | 2000 | 2000 | 158.2 (1400) | 260 (2300) | 18.6 | | |
| MPL-B980E | 1500 | 2750 | 141.0 (1250) | 237 (2100) | 13.0 | | |

(1) Refer to Kinetix MPL Servo Motor Brake Specifications on page 94 for brake rotor inertia and brake motor weight.
(2) Rotor inertia can vary slightly depending on feedback.

## Kinetix MPL Servo Motor Brake Specifications

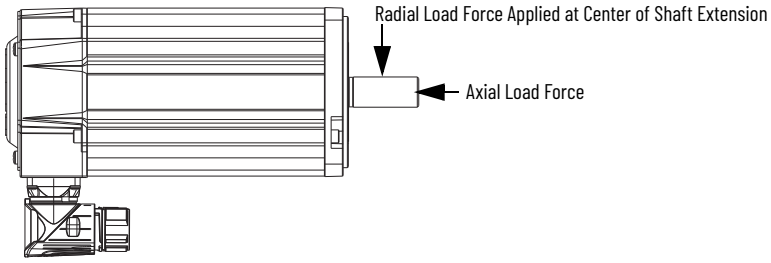
| Motor Cat. No. | Backlash, max (brake engaged) arc minutes | Holding Torque N•m (lb•in) | Coil Current at 24V DC A | Brake Response Time | | | Brake Rotor Inertia kg-m$^2$ (lb•in•s$^2$) | Brake Motor Weight, approx kg (lb) |
|---|---|---|---|---|---|---|---|---|
| | | | | Release ms | Engage (1) | | | |
| | | | | | MOV ms | Diode ms | | |
| MPL-A/B1510V | 0 | 0.9 (8.0) | 0.43…0.53 | 23 | 9 | 18 | 0.0000099 (0.000088) | 1.2 (2.6) |
| MPL-A/B1520U | | | | | | | 0.000015 (0.00013) | 1.4 (3.1) |
| MPL-A/B1530U | | | | | | | 0.000026 (0.00023) | 1.8 (3.9) |
| MPL-A/B210V | | 4.5 (40) | 0.46…0.56 | 58 | 20 | 42 | 0.000033 (0.00029) | 1.8 (4.0) |
| MPL-A/B220T | | | | | | | 0.000057 (0.00050) | 2.4 (5.4) |
| MPL-A/B230P | | | | | | | 0.000082 (0.00073) | 3.0 (6.7) |
| MPL-A/B310 | 45 | 4.18 (37) | 0.45…0.55 | 50 | 20 | 110 | 0.000057 (0.00050) | 3.7 (8) |
| MPL-A/B320 | | | | | | | 0.000092 (0.00081) | 4.6 (10) |
| MPL-A/B330 | | | | | | | 0.00013 (0.0011) | 5.6 (12.4) |
| MPL-A/B420 | 37 | 10.2 (90) | 0.576…0.704 | 110 | 25 | 160 | 0.00030 (0.0027) | 6.0 (13.2) |
| MPL-A/B430 | | | | | | | 0.00042 (0.0038) | 7.3 (16) |
| MPL-A/B4530 | | | | | | | 0.00044 (0.0039) | 9.1 (20) |
| MPL-A/B4540 | | | | | | | 0.00056 (0.0050) | 11.0 (24) |
| MPL-A/B4560 | | | | | | | 0.00084 (0.0072) | 15.1 (33.2) |
| MPL-A/B520 | 25 | 28.3 (250) | 1.05…1.28 | 70 | 50 | 250 | 0.000897 (0.0079) | 12.38 (27.25) |
| MPL-A/B540 | | | | | | | 0.00157 (0.0139) | 17.6 (38.75) |
| MPL-A/B560 | | | | | | | 0.00227 (0.020) | 22.8 (50.1) |
| MPL-B580 | | | | | | | 0.0030 (0.026) | 29.0 (63.8) |
| MPL-B640 | 25 | 70.0 (619) | 1.91…2.19 | 200 | 120 | 900 | 0.00438 (0.03863) | 37.27 (82.0) |
| MPL-B660 | | | | | | | 0.00628 (0.0555) | 42.95 (94.5) |
| MPL-B680 | | | | | | | 0.0079 (0.0698) | 50.8 (112.0) |
| MPL-B860 | | 106.0 (938) | 2.05…2.50 | 250 | 200 | 1000 | 0.0177 (0.1570) | 72.7 (160) |
| MPL-B880 | | | | | | | 0.0232 (0.205) | 87.7 (193) |
| MPL-B960 | | 153.0 (1350) | 3.85…4.70 | 300 | 200 | 1200 | 0.0290 (0.256) | 89.5 (197) |
| MPL-B980 | | | | | | | 0.0378 (0.334) | 116.5 (256) |

(1) By using an arc suppression device in external control circuit.

# Kinetix MPL Servo Motor Load Force Ratings

Kinetix MPL servo motors are capable of operating with the maximum radial or maximum axial shaft loads listed in the following tables. Radial loads listed are applied in the middle of the shaft extension. The tables starting below represent an $L_{10}$ bearing fatigue life of 20,000 hours. This 20,000-hour life does not account for possible application-specific life reduction that can occur due to bearing grease contamination from external sources. Maximum operating speed is limited by motor winding.

### Load Forces on Shaft




### Radial Load Force Ratings

| Motor Cat. No. | 500 rpm kg (lb) | 1000 rpm kg (lb) | 2000 rpm kg (lb) | 3000 rpm kg (lb) | 3500 rpm kg (lb) | 4000 rpm kg (lb) | 5000 rpm kg (lb) | 6000 rpm kg (lb) | 7000 rpm kg (lb) | 8000 rpm kg (lb) |
|---|---|---|---|---|---|---|---|---|---|---|
| MPL-A/B1510 | – | 24 (52) | 19 (41) | – | – | 15 (33) | – | – | – | 12 (26) |
| MPL-A/B1520 | – | 25 (56) | 20 (45) | – | – | 16 (36) | – | – | 14 (30) | – |
| MPL-A/B1530 | – | 28 (62) | 22 (49) | – | – | 18 (39) | – | – | 15 (33) | – |
| MPL-A/B210 | – | 24 (52) | 19 (41) | – | – | 15 (33) | – | – | – | 12 (26) |
| MPL-A/B220 | – | 27 (59) | 21 (47) | – | 18 (39) | – | – | 15 (33) | – | – |
| MPL-A/B230 | – | 29 (64) | 23 (51) | – | 19 (42) | – | 17 (37) | – | – | – |
| MPL-A/B310 | 78 (172) | 62 (137) | 49 (108) | – | 40 (88) | – | 36 (79) | – | – | – |
| MPL-A/B320 | 87 (192) | 69 (152) | 55 (121) | – | 45 (99) | – | 40 (88) | – | – | – |
| MPL-A/B330 | – | 74 (163) | 59 (130) | – | 49 (108) | – | 43 (95) | – | – | – |
| MPL-A/B420 | – | 78 (172) | 62 (137) | – | 51 (112) | – | 45 (99) | – | – | – |
| MPL-A/B430 | 106 (234) | 84 (185) | 67 (148) | – | 55 (121) | – | 49 (108) | – | – | – |
| MPL-A/B4530 | 133 (293) | 105 (232) | 84 (185) | 73 (161) | – | 66 (146) | – | – | – | – |
| MPL-A4540C | 140 ((309) | 112 (245) | 96 (211) | – | – | – | – | – | – | – |
| MPL-A/B4540 | 140 (309) | 111 (245) | 89 (196) | 77 (170) | – | – | – | – | – | – |
| MPL-A/B4560 | – | 151 (332) | 119 (263) | 95 (209) | – | – | – | – | – | – |
| MPL-A/B520 | – | 127 (280) | 100 (222) | 88 (194) | – | 80 (176) | – | – | – | – |
| MPL-A/B540 | – | 143 (316) | 114 (251) | 99 (219) | – | 90 (199) | – | – | – | – |
| MPL-A/B560 | – | 153 (338) | 121 (268) | 106 (234) | – | – | – | – | – | – |
| MPL-B580 | – | 153 (338) | 121 (268) | 106 (234) | – | – | – | – | – | – |
| MPL-B640 | 253 (557) | 200 (442) | 159 (351) | 139 (307) | – | – | – | – | – | – |
| MPL-B660 | 275 (607) | 219 (482) | 173 (382) | 151 (334) | – | – | – | – | – | – |
| MPL-B680 | 291 (641) | 230 (508) | 183 (404) | 160 (353) | – | – | – | – | – | – |
| MPL-B860 | 347 (764) | 276 (607) | 219 (481) | – | – | – | – | – | – | – |
| MPL-B880 | 368 (810) | 292 (643) | 231 (510) | – | – | – | – | – | – | – |
| MPL-B960 | 466 (1028) | 370 (816) | 323 (713) | – | – | – | – | – | – | – |
| MPL-B980 | 494 (1089) | 392 (864) | 352 (775) | – | – | – | – | – | – | – |

## Axial Load Force Ratings (maximum radial load)

| Motor Cat. No. | 500 rpm kg (lb) | 1000 rpm kg (lb) | 2000 rpm kg (lb) | 3000 rpm kg (lb) | 3500 rpm kg (lb) | 4000 rpm kg (lb) | 5000 rpm kg (lb) | 6000 rpm kg (lb) | 7000 rpm kg (lb) | 8000 rpm kg (lb) |
|---|---|---|---|---|---|---|---|---|---|---|
| MPL-A/B1510 | – | 15 (33) | 10 (22) | – | – | 7 (15) | – | – | – | 5 (11) |
| MPL-A/B1520 | – | 14 (31) | 10 (22) | – | – | 6 (13) | – | – | 4 (9) | – |
| MPL-A/B1530 | – | 13 (29) | 9 (20) | – | – | 6 (13) | – | – | 4 (8) | – |
| MPL-A/B210 | – | 15 (33) | 10 (22) | – | – | 7 (15) | – | – | – | 5 (11) |
| MPL-A/B220 | – | 14 (30) | 9 (20) | – | 7 (15) | – | – | 5 (11) | – | – |
| MPL-A/B230 | – | 13 (28) | 9 (19) | – | 6 (13) | – | 5 (11) | – | – | – |
| MPL-A/B310 | 30 (66) | 23 (51) | 16 (35) | – | 13 (29) | – | 11 (24) | – | – | – |
| MPL-A/B320 | 34 (75) | 25 (55) | 19 (42) | – | 15 (33) | – | 13 (29) | – | – | – |
| MPL-A/B330 | – | 27 (60) | 20 (44) | – | 16 (35) | – | 13 (29) | – | – | – |
| MPL-A/B420 | – | 36 (79) | 27 (60) | – | 21 (46) | – | 18 (40) | – | – | – |
| MPL-A/B430 | 52 (115) | 39 (86) | 29 (64) | – | 22 (49) | – | 19 (42) | – | – | – |
| MPL-A/B4530 | 45 (99) | 34 (75) | 25 (55) | 21 (46) | – | 19 (42) | – | – | – | – |
| MPL-A4540C | 31 (68) | 37 (81) | 49 (108) | – | – | – | – | – | – | – |
| MPL-A/B4540 | 49 (108) | 36 (79) | 27 (60) | 22 (49) | – | – | – | – | – | – |
| MPL-A/B4560 | – | 53 (117) | 40 (88) | 30 (65) | – | – | – | – | – | – |
| MPL-A/B520 | – | 42 (94) | 30 (68) | 26 (58) | – | 22 (50) | – | – | – | – |
| MPL-A/B540 | – | 48 (107) | 35 (79) | 30 (66) | – | 26 (58) | – | – | – | – |
| MPL-A/B560 | – | 52 (115) | 43 (95) | 32 (71) | – | – | – | – | – | – |
| MPL-B580 | – | 52 (115) | 43 (95) | 32 (71) | – | – | – | – | – | – |
| MPL-B640 | 89 (197) | 66 (146) | 48 (107) | 41 (90) | – | – | – | – | – | – |
| MPL-B660 | 98 (217) | 72 (159) | 53 (118) | 45 (99) | – | – | – | – | – | – |
| MPL-B680 | 104 (230) | 77 (169) | 34 (125) | 47 (104) | – | – | – | – | – | – |
| MPL-B860 | 145 (320) | 107 (237) | 79 (175) | – | – | – | – | – | – | – |
| MPL-B880 | 153 (338) | 113 (250) | 84 (185) | – | – | – | – | – | – | – |
| MPL-B960 | 142 (314) | 105 (232) | 88 (194) | – | – | – | – | – | – | – |
| MPL-B980 | 153 (338) | 113 (249) | 94 (207) | – | – | – | – | – | – | – |

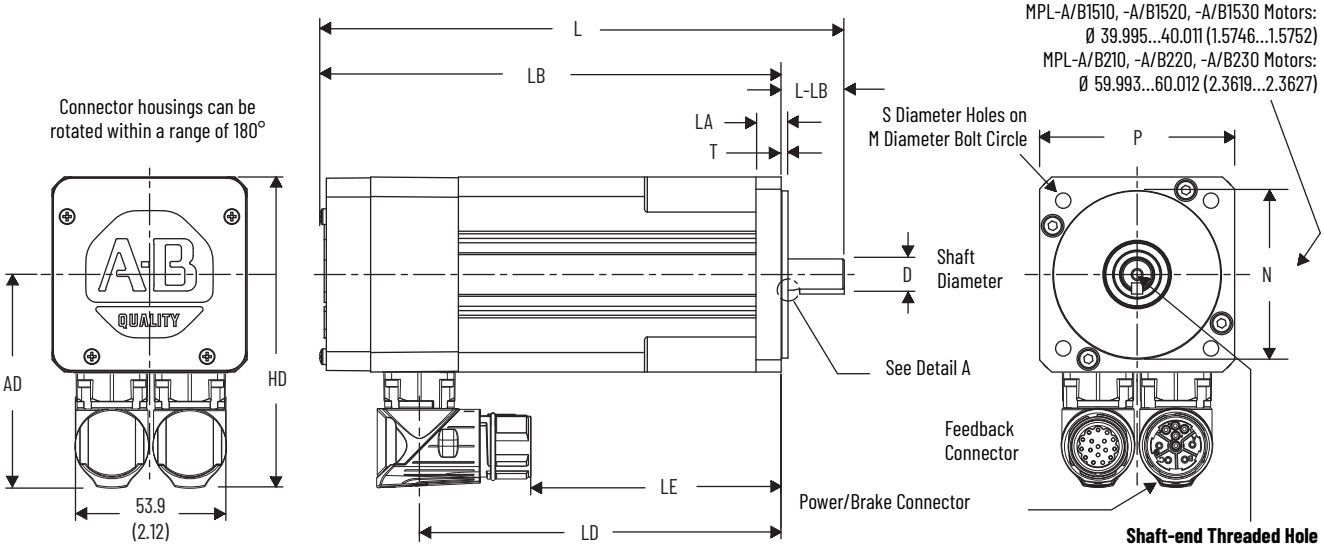
## Axial Load Force Ratings (zero radial load)

| Motor Cat. No. | 500 rpm kg (lb) | 1000 rpm kg (lb) | 2000 rpm kg (lb) | 3000 rpm kg (lb) | 3500 rpm kg (lb) | 4000 rpm kg (lb) | 5000 rpm kg (lb) | 6000 rpm kg (lb) | 7000 rpm kg (lb) | 8000 rpm kg (lb) |
|---|---|---|---|---|---|---|---|---|---|---|
| MPL-A/B1510 | – | 24 (53) | 17 (37) | – | – | 12 (26) | – | – | – | 8 (18) |
| MPL-A/B1520 | – | 24 (53) | 17 (37) | – | – | 12 (26) | – | – | 9 (19) | – |
| MPL-A/B1530 | – | 24 (53) | 17 (37) | – | – | 12 (26) | – | – | 9 (19) | – |
| MPL-A/B210 | – | 24 (53) | 17 (37) | – | – | 12 (26) | – | – | – | 8 (18) |
| MPL-A/B220 | – | 24 (53) | 17 (37) | – | 13 (28) | – | – | 10 (22) | – | – |
| MPL-A/B230 | – | 24 (53) | 17 (37) | – | 13 (28) | – | 10 (22) | – | – | – |
| MPL-A/B310 | 49 (108) | 36 (79) | 27 (60) | – | 21 (46) | – | 18 (40) | – | – | – |
| MPL-A/B320 | 49 (108) | 36 (79) | 27 (60) | – | 21 (46) | – | 18 (40) | – | – | – |
| MPL-A/B330 | – | 36 (79) | 27 (60) | – | 21 (46) | – | 18 (40) | – | – | – |
| MPL-A/B420 | – | 51 (112) | 38 (84) | – | 30 (66) | – | 25 (55) | – | – | – |
| MPL-A/B430 | 69 (152) | 51 (112) | 38 (84) | – | 30 (66) | – | 25 (55) | – | – | – |
| MPL-A/B4530 | 69 (152) | 51 (112) | 38 (84) | 31 (68) | – | 28 (62) | – | – | – | – |
| MPL-A4540C | 68 (150) | 51 (112) | 43 (95) | – | – | – | – | – | – | – |
| MPL-A/B4540 | 69 (152) | 51 (112) | 38 (84) | 31 (68) | – | – | – | – | – | – |
| MPL-A/B4560 | – | 69 (152) | 51 (112) | 38 (84) | – | – | – | – | – | – |
| MPL-A/B520 | – | 67 (149) | 49 (109) | 41 (92) | – | 36 (81) | – | – | – | – |
| MPL-A/B540 | – | 67 (149) | 49 (109) | 41 (92) | – | 36 (81) | – | – | – | – |
| MPL-A/B560 | – | 67 (149) | 49 (109) | 41 (92) | – | – | – | – | – | – |
| MPL-B580 | – | 67 (149) | 49 (109) | 41 (92) | – | – | – | – | – | – |
| MPL-B640 | 136 (300) | 99 (219) | 74 (163) | 62 (137) | – | – | – | – | – | – |
| MPL-B660 | 136 (300) | 99 (219) | 74 (163) | 62 (137) | – | – | – | – | – | – |
| MPL-B680 | 136 (300) | 99 (219) | 74 (163) | 62 (137) | – | – | – | – | – | – |
| MPL-B860 | 201 (443) | 147 (323) | 110 (242) | – | – | – | – | – | – | – |
| MPL-B880 | 201 (443) | 147 (323) | 110 (242) | – | – | – | – | – | – | – |
| MPL-B960 | 215 (473) | 159 (350) | 133 (293) | – | – | – | – | – | – | – |
| MPL-B980 | 215 (473) | 159 (350) | 133 (293) | – | – | – | – | – | – | – |

# Dimensions - Kinetix MPL Servo Motors

### MPL-A/B15*xx* and MPL-A/B2*xx* Motor Dimensions (SpeedTec DIN connectors)

**Dimensions are in mm (in.)**



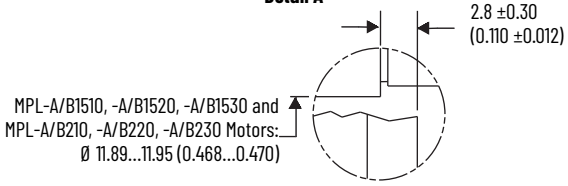

**Pilot Diameter Tolerances**

MPL-A/B1510, -A/B1520, -A/B1530 Motors:
Ø 39.995...40.011 (1.5746...1.5752)
MPL-A/B210, -A/B220, -A/B230 Motors:
Ø 59.993...60.012 (2.3619...2.3627)

**Shaft-end Threaded Hole**

MPL-A/B1510, -A/B1520, -A/B1530 Motors:
Thread - M3 x 0.5-6H
Thread Depth - 9.0 (0.35)
MPL-A/B210, -A/B220, -A/B230 Motors:
Thread - M4 x 0.7-6H
Thread Depth - 10.0 (0.39)

**Detail A**



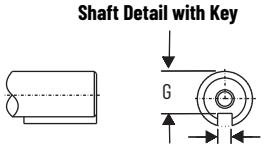

**Shaft Diameter Tolerances**

MPL-A/B1510, -A/B1520, -A/B1530 Motors:
Ø 8.998...9.007 (0.3543...0.3546)
MPL-A/B210, -A/B220, -A/B230 Motors:
Ø 10,997...11.008 (0.4330...0.4334)

**Optional Shaft Seal**

Refer to page 91 for Kinetix MPL motor shaft-seal kit information.

**Shaft Detail with Key**




MPL-A/B1510, -A/B1520, -A/B1530 = 3 x 3 x 14 Key
MPL-A/B210, -A/B220, -A/B230 = 4 x 4 x 16 Key

| Shaft, Pilot, and Keyway Tolerances | MPL-A/B15*xx* | MPL-A/B2*xx* |
|---|---|---|
| Shaft Runout (T.I.R.) | 0.030 (0.0012) | 0.035 (0.0014) |
| Pilot Eccentricity (T.I.R.) | 0.08 (0.0031) | 0.08 (0.0031) |
| Max Face Runout (T.I.R.) | 0.08 (0.0031) | 0.08 (0.0031) |
| Keyway Depth (G) | 7.10...7.20 (0.280...0.283) | 8.40...8.50 (0.331...0.335) |
| Keyway Width (F) | 2.971...2.996 (0.117...0.118) | 3.97...4.00 (0.156...0.157) |

**MPL-A/B15*xx* and MPL-A/B2*xx* Motor Dimensions (SpeedTec DIN connectors)**

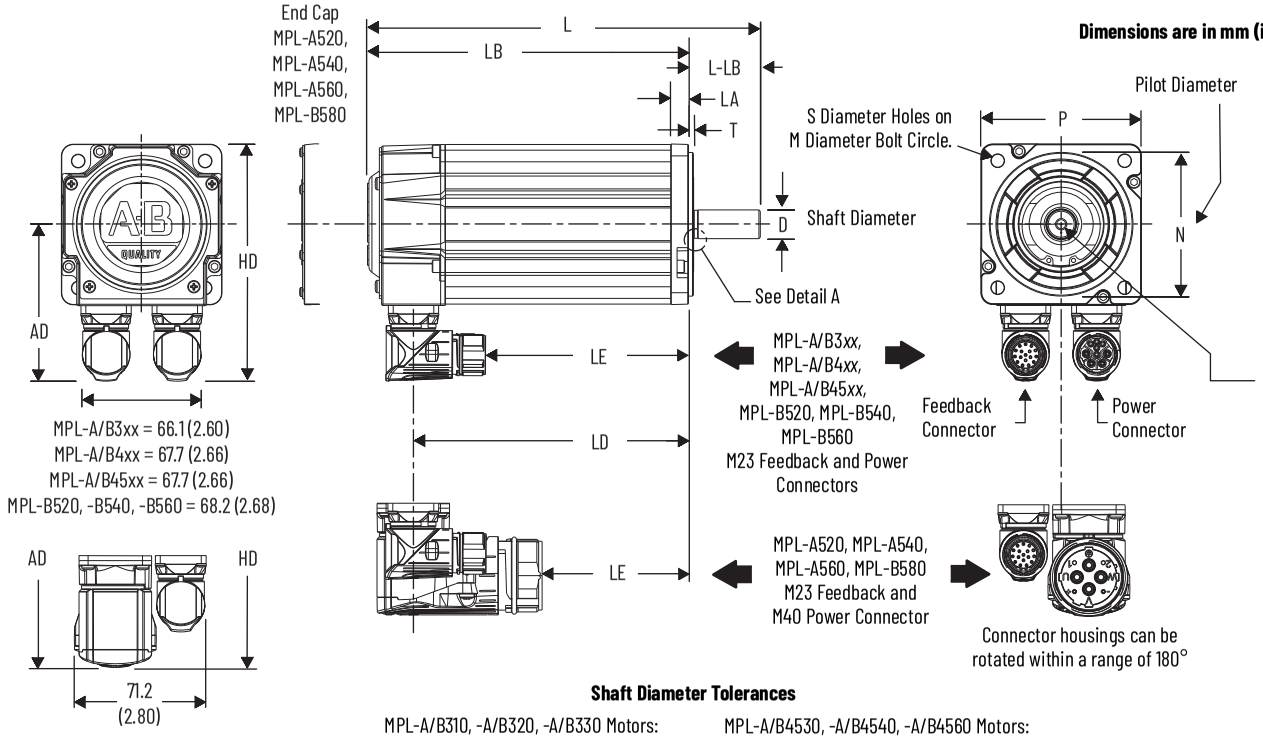
| Motor Cat. No. | AD mm (in.) | HD mm (in.) | T mm (in.) | LA mm (in.) | LD (1) mm (in.) | LE (1) mm (in.) | L (1) mm (in.) | LB (1) mm (in.) | L-LB (2) mm (in.) | D (3) mm (in.) | M mm (in.) | S (4) mm (in.) | N (3) mm (in.) | P mm (in.) | G (3) mm (in.) | F (3) mm (in.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MPL-A/B1510 | 68.9 (2.71) | 96.4 (3.80) | 2.50 (0.098) | 9.0 (0.35) | 78.3 (3.08) | 37.8 (1.49) | 133.2 (5.25) | 113.5 (4.47) | 19.7 (0.776) | 9.0 (0.35) | 63.0 (2.480) | 5.80 (0.228) | 40.0 (1.57) | 55.0 (2.17) | 7.2 (0.283) | 3.0 (0.118) |
| MPL-A/B1520 | | | | | 91.3 (3.60) | 50.9 (2.00) | 146.2 (5.76) | 126.5 (4.98) | | | | | | | | |
| MPL-A/B1530 | | | | | 116.3 (4.58) | 76.7 (2.98) | 171.2 (6.74) | 151.5 (5.96) | | | | | | | | |
| MPL-A/B210 | 76.2 (3.00) | 111.2 (4.38) | 2.50 (0.098) | 9.0 (0.35) | 78.6 (3.09) | 38.4 (1.51) | 137.3 (5.40) | 114.6 (4.51) | 22.7 (0.894) | 11.0 (0.43) | 75.0 (2.953) | 5.80 (0.228) | 60.0 (2.36) | 70.0 (2.76) | 8.5 (0.335) | 4.0 (0.157) |
| MPL-A/B220 | | | | | 104.1 (4.10) | 63.9 (2.52) | 162.8 (6.41) | 140.1 (5.52) | | | | | | | | |
| MPL-A/B230 | | | | | 129.6 (5.10) | 89.4 (3.52) | 188.3 (7.41) | 165.6 (6.52) | | | | | | | | |

(1) If ordering an MPL-A/B1510, MPL-A/B1520, or MPL-A/B1530 motor with brake, add 36.1 mm (1.421 in.) to dimension L and LB, and add 33.4 mm (1.32 in.) to LD and LE.
If ordering an MPL-A/B210, A/B220, or A/B230 motor with brake, add 39.0 mm (1.535 in.) to dimension L and LB, and add 24.7 mm (0.97 in.) to LD and LE.
(2) Tolerance for this dimension is ±0.7 mm (±0.028 in.).
(3) For keyway, shaft diameter, and pilot diameter tolerances, refer to page 98.
(4) Tolerance for this dimension is +0.3 mm (+0.012 in.).

Motors are designed to metric dimensions. Inch dimensions are approximate conversions from millimeters. Dimensions without tolerances are for reference.

# MPL-A/B3xx, MPL-A/B4xx, MPL-A/B45xx, MPL-A/B5xx Motor Dimensions (SpeedTec DIN connectors)






**Dimensions are in mm (in.)**

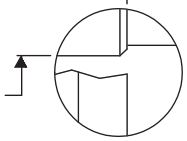
**Pilot Diameter Tolerances**

MPL-A/B310, -A/B320, -A/B330 Motors:
Ø 79.993...80.012 (3.1493...3.1501)
MPL-A/B420, -A/B430 Motors:
Ø 94.991...95.013 (3.7398...3.7407)
MPL-A/B4530, -A/B4540, -A/B4560 Motors:
Ø 109.991...110.013 (4.3303...4.3312)
MPL-A/B520, -A/B540, -A/B560, -B580 Motors:
Ø 129.989...130.014 (5.1177...5.1187)

**Shaft-end Threaded Hole**

MPL-A/B310, -A/B320, -A/B330 Motors:
Thread - M5 x 0.8-6H
Thread Depth - 12.5 (0.49)
MPL-A/B420, -A/B430 Motors:
Thread - M6 x 1.0-6H
Thread Depth - 16 (0.63)
MPL-A/B4530, -A/B4540, -A/B4560 Motors:
Thread - M8 x 1.25-6H
Thread Depth - 19 (0.75)
MPL-A/B520, -A/B540, -A/B560, -B580 Motors:
Thread - M10 x 1.5-6H
Thread Depth - 22 (0.87)
MPL-B580 Motors:
Thread - M12 x 1.75-6H
Thread Depth - 28 (1.10)

**Detail A**



MPL-A/B3xx, -A/B4xx, Motors:
Flush to 2.87 (0.113) Pilot
± 0,83 (0.032)
MPL-A/B45xx, -A/B5xx, Motors:
Flush to 3.38 (0.133) Pilot
± 0,83 (0.032)

MPL-A/B310, -A/B320, -A/B330 Motors:
Ø 16.94 ±0.05 (0.667 ±0.002)
MPL-A/B420, -A/B430 Motors:
Ø 19.94 ±0.05 (0.785 ±0.002)
MPL-A/B4530, -A/B4540, -A/B4560 Motors:
Ø 24.94 ±0.05 (0.982 ±0.002)
MPL-A/B520, -A/B540, -A/B560, -B580 Motors:
Ø 29.92 ±0.05 (1.178 ±0.002)

**Shaft Diameter Tolerances**

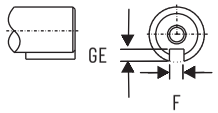
MPL-A/B310, -A/B320, -A/B330 Motors:
Ø 15,997...16,008 (0.6298...0.6301)
MPL-A/B420, -A/B430 Motors:
Ø 18,996...19,009 (0.7479...0.7483)

MPL-A/B4530, -A/B4540, -A/B4560 Motors:
Ø 23,996...24,009 (0.9448...0.9451)
MPL-A/B520, -A/B540, -A/B560 Motors:
Ø 27,996...28,009 (1.1022...1.1027)
MPL-B580 Motors:
Ø 32,018...32,002 (1.2605...1.2599)

**Optional Shaft Seal**

Refer to page 91
for Kinetix MPL motor
shaft-seal kit information.

**Shaft Detail with Key**




MPL-A/B3xx = 5 x 5 x 25 Key
MPL-A/B4xx = 6 x 6 x 25 Key
MPL-A/B45xx = 8 x 7 x 32 Key
MPL-A/B520, MPL-A/B540, and
MPL-A/B560 = 8 x 7 x 40 Key
MPL-A/B580 = 10 x 8 x 59 Key

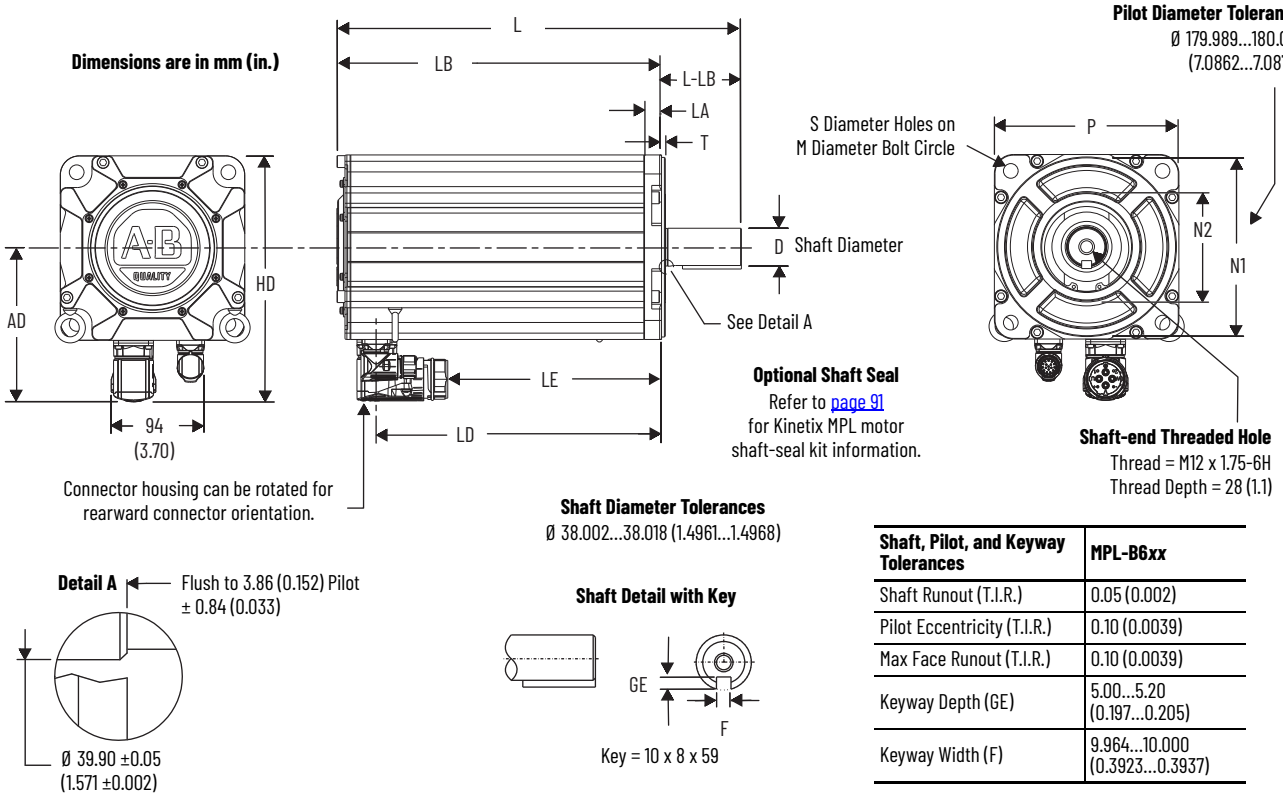
| Shaft, Pilot, and Keyway Tolerances | MPL-A/B3xx | MPL-A/B4xx | MPL-A/B45xx | MPL-A/B5xx | MPL-B580 |
|---|---|---|---|---|---|
| Shaft Runout (T.I.R.) | 0.035 (0.0014) | 0.04 (0.0016) | 0.04 (0.0016) | 0.04 (0.0016) | 0.05 (0.002) |
| Pilot Eccentricity (T.I.R.) | 0.08 (0.0031) | 0.08 (0.0031) | 0.10 (0.0039) | 0.10 (0.0039) | 0.10 (0.0039) |
| Max Face Runout (T.I.R.) | 0.08 (0.0031) | 0.08 (0.0031) | 0.10 (0.0039) | 0.10 (0.0039) | 0.10 (0.0039) |
| Keyway Depth (GE) | 3.00...3.10 (0.118...0.122) | 3.50...3.60 (0.138...0.142) | 4.00...4.20 (0.158...0.165) | 4.00...4.20 (0.158...0.165) | 5.00...5.20 (0.197...0.205) |
| Keyway Width (F) | 4.97...5.00 (0.196...0.197) | 5.97...6.00 (0.235...0.236) | 7.96...8.00 (0.314...0.315) | 7.964...8.000 (0.3135...0.3150) | 9.964...10.000 (0.3923...0.3937) |

## MPL-A/B3*xx*, MPL-A/B4*xx*, MPL-A/B45*xx*, MPL-A/B5*xx* Motor Dimensions (SpeedTec DIN connectors)

| Motor Cat. No. | AD mm (in.) | HD mm (in.) | T mm (in.) | LA mm (in.) | LD (1) mm (in.) | LE (1) mm (in.) | L (1) mm (in.) | LB (1) mm (in.) | L-LB (2) mm (in.) | D (3) mm (in.) | M mm (in.) | S (4) mm (in.) | N (3) mm (in.) | P mm (in.) | GE (3) mm (in.) | F (3) mm (in.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MPL-A/B310 | 87.2 (3.44) | 132.0 (5.20) | 2.74 (0.108) | 9.90 (0.39) | 102.0 (4.03) | 62.0 (2.45) | 168.0 (6.62) | 128.0 (5.04) | 40.0 (1.58) | 16.0 (0.629) | 100.0 (3.937) | 7.0 (0.283) | 80.0 (3.15) | 89.4 (3.52) | 3.0 (0.118) | 5.0 (0.197) |
| MPL-A/B320 | | | | | 128.0 (5.03) | 88.0 (3.45) | 193.0 (7.62) | 153.0 (6.04) | | | | | | | | |
| MPL-A/B330 | | | | | 153.0 (6.03) | 113.0 (4.45) | 219.0 (8.62) | 179.0 (7.04) | | | | | | | | |
| MPL-A/B420 | 90.9 (3.58) | 140.1 (5.52) | 2.74 (0.108) | 10.16 (0.40) | 124.0 (4.89) | 84.0 (3.31) | 190.0 (7.48) | 150.0 (5.90) | 40.0 (1.58) | 19.0 (0.748) | 115.0 (4.528) | 10.0 (0.401) | 95.0 (3.74) | 98.3 (3.87) | 3.5 (0.138) | 6.0 (0.236) |
| MPL-A/B430 | | | | | 150.0 (5.89) | 110.0 (4.31) | 215.0 (8.48) | 175.0 (6.90) | | | | | | | | |
| MPL-A/B4530 | 98.6 (3.88) | 155.4 (6.12) | 2.74 (0.108) | 12.19 (0.48) | 153.0 (6.02) | 113.0 (4.44) | 229.0 (9.0) | 179.0 (7.03) | 50.0 (1.97) | 24.0 (0.945) | 130.0 (5.118) | 10.0 (0.401) | 110.0 (4.331) | 113.7 (4.48) | 4.0 (0.158) | 8.0 (0.315) |
| MPL-A/B4540 | | | | | 178.0 (7.02) | 138.0 (5.44) | 254.0 (10.0) | 204.0 (8.03) | | | | | | | | |
| MPL-A/B4560 | | | | | 229.0 (9.02) | 189.0 (7.44) | 305.0 (12.0) | 255.0 (10.03) | | | | | | | | |
| MPL-A520 | 136.4 (5.37) | 208.1 (8.19) | 3.12 (0.123) | 14.0 (0.55) | 151.0 (5.95) | 80.0 (3.15) | 236.0 (9.28) | 176.0 (6.92) | 60.0 (2.362) | 28.0 (1.102) | 165.0 (6.496) | 12.0 (0.481) | 130.0 (5.118) | 143.5 (5.65) | 4.0 (0.158) | 8.0 (0.315) |
| MPL-A540 | | | | | 202.0 (7.95) | 131.0 (5.15) | 287.0 (11.28) | 227.0 (8.92) | | | | | | | | |
| MPL-A560 | | | | | 253.0 (9.95) | 182.0 (7.15) | 337.0 (13.28) | 277.0 (10.92) | | | | | | | | |
| MPL-B520 | 113.4 (4.47) | 185.2 (7.29) | 3.12 (0.123) | 14.0 (0.55) | 149.0 (5.88) | 109.0 (4.30) | 236.0 (9.28) | 176.0 (6.92) | 60.0 (2.38) | 28.0 (1.102) | 165.0 (6.496) | 12.0 (0.481) | 130.0 (5.118) | 143.5 (5.65) | 4.0 (0.158) | 8.0 (0.315) |
| MPL-B540 | | | | | 200.0 (7.88) | 160.0 (6.30) | 287.0 (11.28) | 227.0 (8.92) | | | | | | | | |
| MPL-B560 | | | | | 251.0 (9.88) | 211.0 (8.30) | 337.0 (13.28) | 277.0 (10.92) | | | | | | | | |
| MPL-B580 | 136.4 (5.37) | 208.1 (8.19) | 3.12 (0.123) | 14.0 (0.55) | 304.0 (11.95) | 232.0 (9.15) | 408.0 (16.07) | 328.0 (12.92) | 80.0 (3.15) | 32.0 (1.260) | | | | | 5.0 (0.198) | 10.0 (0.393) |

(1) If ordering an MPL-A/B310, MPL-A/B320, or MPL-A/B330 motor with brake, add 35.0 mm (1.38 in.) to dimensions L, LB, LE, and LD.
If ordering an MPL-A/B420, MPL-A/B430, MPL-A/B4530, MPL-A/B4540, or MPL-A/B4560 motor with brake, add 48.0 mm (1.89 in.) to dimensions L, LB, LE, and LD.
If ordering an MPL-A/B520, MPL-A/B540, MPL-A/B560, or MPL-B580 motor with brake, add 52.0 mm (2.03 in.) to dimensions L, LB, LE, and LD.
(2) Tolerance for this dimension is ±0.7 mm (±0.028 in.).
(3) For keyway, shaft diameter, and pilot diameter tolerances, refer to page 100.
(4) Tolerance for this dimension is +0.36 mm (±0.007 in.) on MPL-A/B3*xx*, MPL-A/B4*xx*, MPL-A/B45*xx*, and +0.43 mm (±0.008 in.) on MPL-A/B5*xx*.

## MPL-B6*xx* Motor Dimensions (SpeedTec DIN connectors)



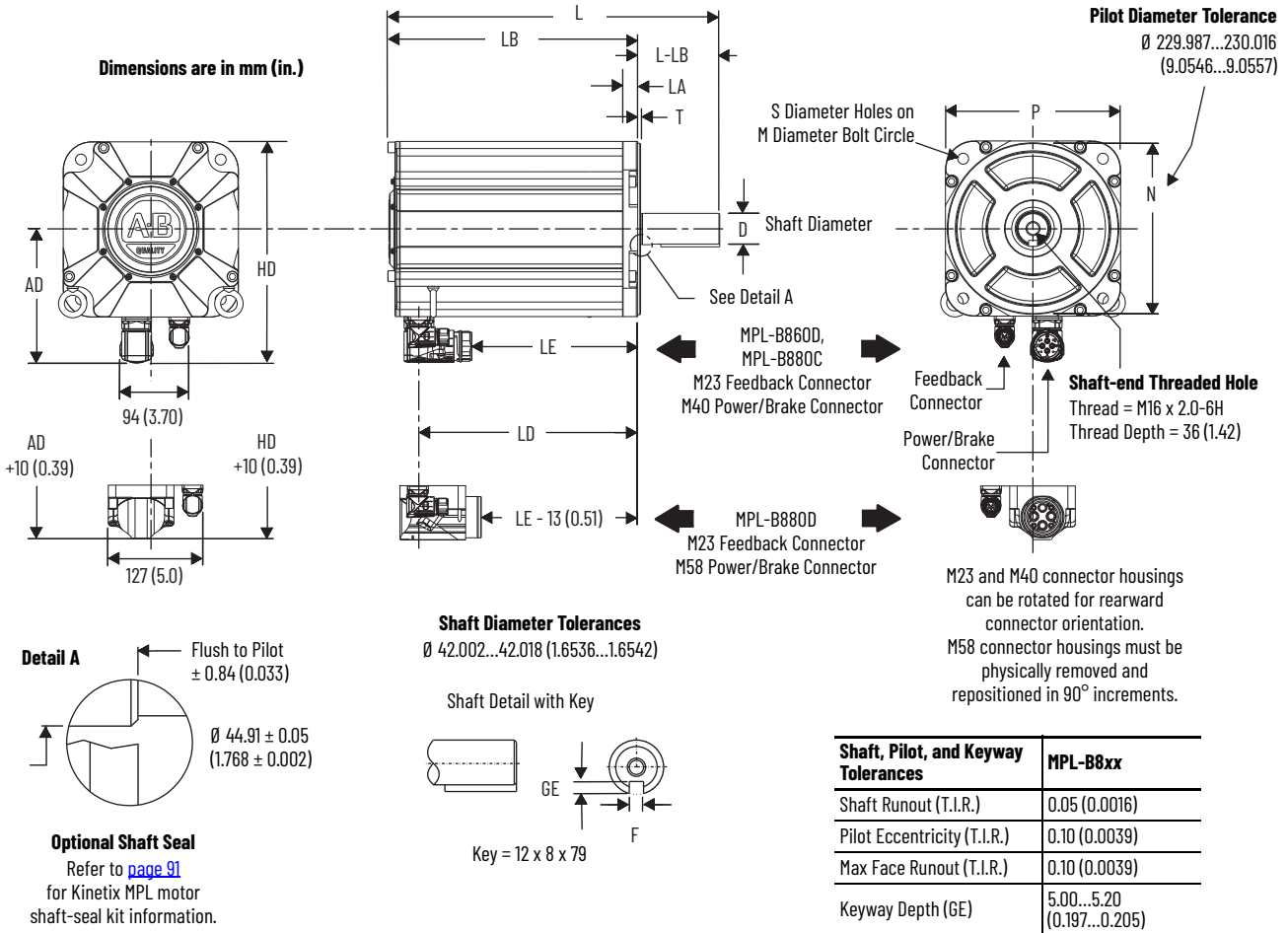

| Shaft, Pilot, and Keyway Tolerances | MPL-B6*xx* |
|---|---|
| Shaft Runout (T.I.R.) | 0.05 (0.002) |
| Pilot Eccentricity (T.I.R.) | 0.10 (0.0039) |
| Max Face Runout (T.I.R.) | 0.10 (0.0039) |
| Keyway Depth (GE) | 5.00...5.20 (0.197...0.205) |
| Keyway Width (F) | 9.964...10.000 (0.3923...0.3937) |

| Motor Cat. No. | AD mm (in.) | HD mm (in.) | T mm (in.) | LA mm (in.) | LD (1) mm (in.) | LE (1) mm (in.) | L (1) mm (in.) | LB (1) mm (in.) | L-LB (2) mm (in.) | D mm (in.) | M mm (in.) | S (3) mm (in.) | N mm (in.) | P mm (in.) | GE mm (in.) | F mm (in.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MPL-B640 | 154.0 (6.06) | 246.5 (9.70) | 3.73 (0.147) | 17.8 (0.70) | 184.0 (7.23) | 113.0 (4.43) | 304.0 (11.96) | 224.0 (8.83) | 80.0 (3.15) | 38.0 (1.5) | 215.0 (8.465) | 14.50 (0.579) | 180.0 (7.09) | 184.9 (7.28) | 5.0 (0.197) | 10.0 (0.394) |
| MPL-B660 | | | | | 234.0 (9.23) | 163.0 (6.43) | 355.0 (13.96) | 275.0 (10.83) | | | | | | | | |
| MPL-B680 | | | | | 285.0 (11.23) | 214.0 (8.43) | 405.0 (15.96) | 325.0 (12.83) | | | | | | | | |

(1) If ordering an MPL-B640, MPL-B660, or MPL-B680 motor with brake, add 89 mm (3.5 in.) to dimensions LD, LE, L, and LB.
(2) Tolerance for this dimension is ±0.7 mm (±0.028 in.).
(3) Tolerance for this dimension is ±0.215 mm (±0.008 in.).

Motors are designed to metric dimensions. Inch dimensions are approximate conversions from millimeters. Dimensions without tolerances are for reference.

## MPL-B8*xx* Motor Dimensions (SpeedTec DIN connectors)




**Optional Shaft Seal**
Refer to page 91 for Kinetix MPL motor shaft-seal kit information.

| Shaft, Pilot, and Keyway Tolerances | MPL-B8*xx* |
|---|---|
| Shaft Runout (T.I.R.) | 0.05 (0.0016) |
| Pilot Eccentricity (T.I.R.) | 0.10 (0.0039) |
| Max Face Runout (T.I.R.) | 0.10 (0.0039) |
| Keyway Depth (GE) | 5.00...5.20 (0.197...0.205) |
| Keyway Width (F) | 11.957...12.000 (0.4708...0.4724) |

| Motor Cat. No. | AD mm (in.) | HD mm (in.) | T mm (in.) | LA mm (in.) | LD (1) mm (in.) | LE (1) mm (in.) | L (1) mm (in.) | LB (1) mm (in.) | L-LB (2) mm (in.) | D mm (in.) |
|---|---|---|---|---|---|---|---|---|---|---|
| MPL-B860 | 179 (7.05) | 297 (11.67) | 3.86 (0.152) | 20.3 (0.80) | 243 (9.55) | 171 (6.75) | 394 (15.53) | 284 (11.20) | 110 (4.33) | 42.0 (1.654) |
| MPL-B880 | | | | | 293 (11.55) | 222 (8.75) | 445 (17.53) | 335 (13.20) | | |

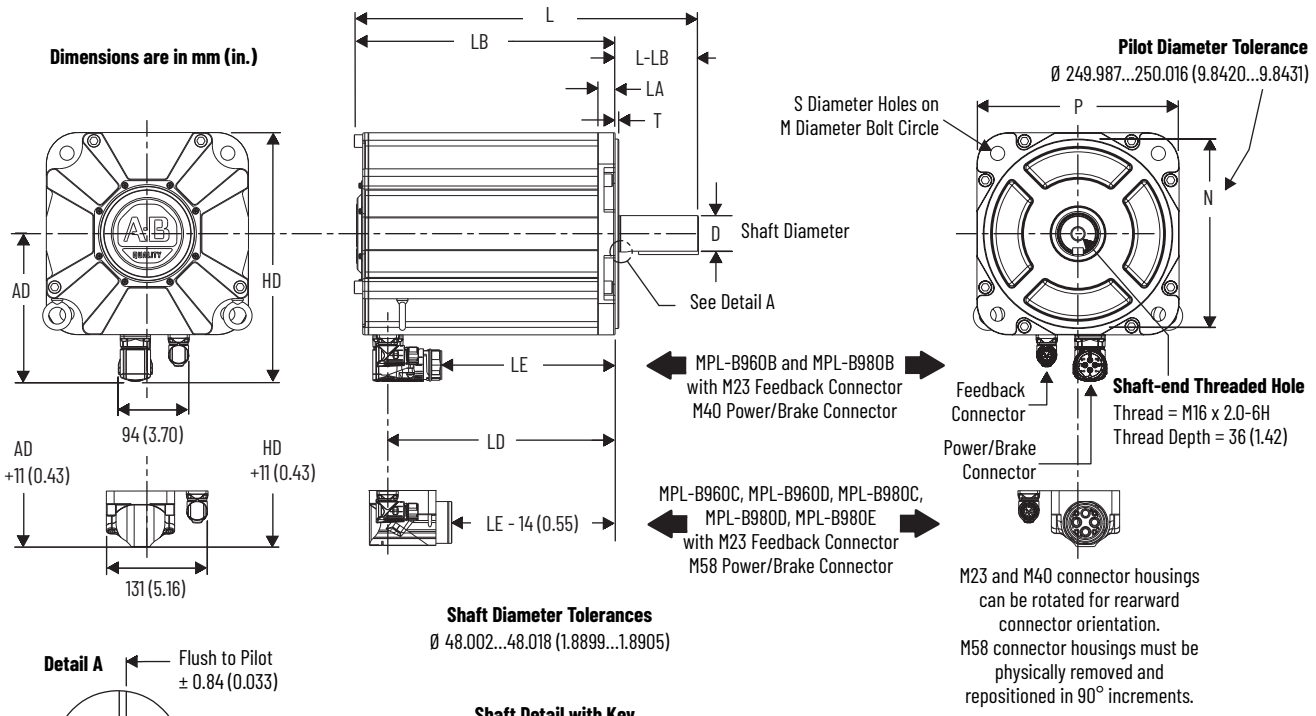
(1) If ordering an MPL-B860 or MPL-B880 motor with brake, add 108 mm (4.24 in.) to dimensions LD, LE, L, and LB.
(2) Tolerance for this dimension is ±0.7 mm (±0.028 in.).

| Motor Cat. No. | M mm (in.) | S (1) mm (in.) | N mm (in.) | P mm (in.) | GE mm (in.) | F mm (in.) |
|---|---|---|---|---|---|---|
| MPL-B860 | 265 (10.43) | 14.50 (0.579) | 230 (9.055) | 235 (9.25) | 5.0 (0.197) | 12.0 (0.4724) |
| MPL-B880 | | | | | | |

(1) Tolerance for this dimension is +0.43 mm (±0.008 in.).

Motors are designed to metric dimensions. Inch dimensions are approximate conversions from millimeters. Dimensions without tolerances are for reference.

## MPL-B9*xx* Motor Dimensions (SpeedTec DIN connectors)




**Optional Shaft Seal**
Refer to page 91 for Kinetix MPL motor shaft-seal kit information.

| Shaft, Pilot, and Keyway Tolerances | MPL-B9*xx* |
|---|---|
| Shaft Runout (T.I.R.) | 0.05 (0.002) |
| Pilot Eccentricity (T.I.R.) | 0.125 (0.005) |
| Max Face Runout (T.I.R.) | 0.125 (0.005) |
| Keyway Depth (GE) | 5.50...5.70 (0.217...0.224) |
| Keyway Width (F) | 13.957...14.000 (0.5495...0.5512) |

| Motor Cat. No. | AD mm (in.) | HD mm (in.) | T mm (in.) | LA mm (in.) | LD (1) mm (in.) | LE (1) mm (in.) | L (1) mm (in.) | LB (1) mm (in.) | L-LB (2) mm (in.) | D mm (in.) |
|---|---|---|---|---|---|---|---|---|---|---|
| MPL-B960 | 195 (7.68) | 328 (12.92) | 4.88 (0.192) | 22.9 (0.90) | 249 (9.80) | 178 (7.0) | 403 (15.87) | 293 (11.55) | 110 (4.33) | 48.0 (1.89) |
| MPL-B980 | | | | | 300 (11.80) | 229 (9.0) | 454 (17.87) | 344 (13.55) | | |

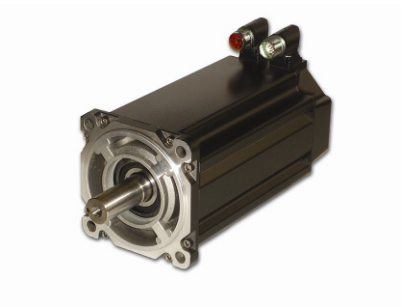
(1) If ordering an MPL-B960 or MPL-B980 motor with brake, add 127 mm (5.0 in.) to dimensions LD, LE, L, and LB.
(2) Tolerance for this dimension is ±0.7 mm (±0.028 in.).

| Motor Cat. No. | M mm (in.) | S (1) mm (in.) | N mm (in.) | P mm (in.) | GE mm (in.) | F mm (in.) |
|---|---|---|---|---|---|---|
| MPL-B960 | 300 (11.81) | 18.50 (0.738) | 250 (9.84) | 267 (10.50) | 5.50 (0.217) | 14.0 (0.5512) |
| MPL-B980 | | | | | | |

(1) Tolerance for this dimension is +0.52 mm (±0.010 in.).

Motors are designed to metric dimensions. Inch dimensions are approximate conversions from millimeters. Dimensions without tolerances are for reference.

# Kinetix MPM Medium-inertia Servo Motors



Kinetix MPM servo motors offer a compact, power dense, feature-rich solution for applications with heavier loads and greater inertia. Leveraging the proven Kinetix MPL servo motor technology and quality standards, these servo motors are ideal for print, converting, web handling, automotive, and other applications with high inertias and heavy payloads.

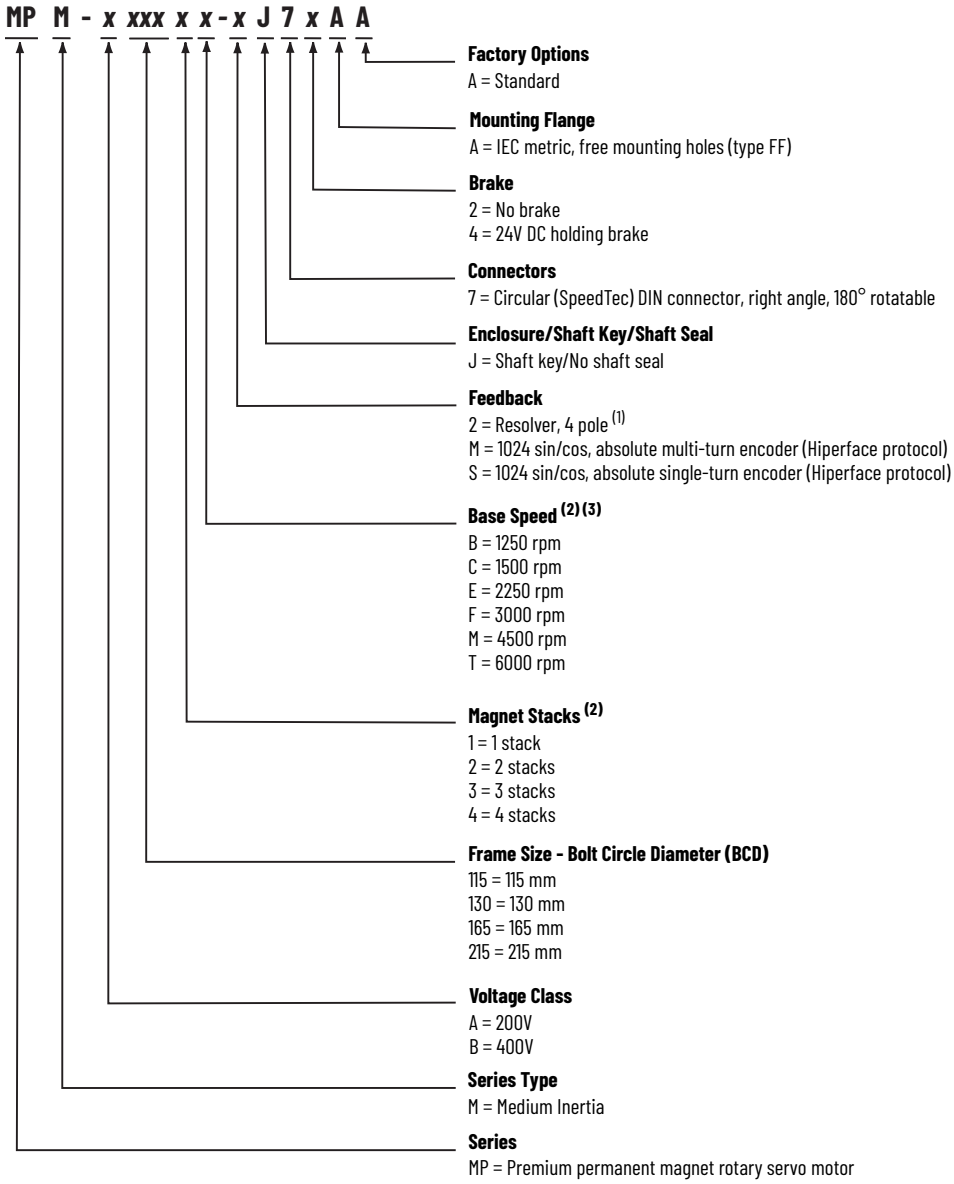
## Kinetix MPM Servo Motor Features

| Attribute | Value |
|---|---|
| Main characteristics | • High torque to size ratio<br>• Smart Motor Technology<br>• Hiperface encoder protocol<br>• Medium rotor inertia<br>• Easy migration from 1326AB motors |
| Features | • 200V and 400V-class windings<br>• Single-turn and multi-turn absolute feedback<br>• Resolver feedback option<br>• Multiple winding speed options<br>• High-energy rare-earth magnets<br>• Shaft-end threaded hole<br>• SpeedTec DIN connectors, rotates 180°<br>• Standard IEC 72-1 mounting dimensions |
| Motor type | Brushless AC synchronous servo motors |
| Environmental rating | • IP50 minimum, without shaft seal (standard).<br>• IP66 with optional shaft seal and use of environmentally sealed cable connectors. |
| Certifications | Kinetix MPM rotary motors are UL Recognized components to applicable UL and CSA standards. CE marked for all applicable directives. Refer to rok.auto/certifications for the Product Certifications website. |
| Continuous stall torque | 2.18…62.8 N•m (19.3…556 lb•in) |
| Peak stall torque | 6.6…154.2 N•m (58…1365 lb•in) |
| Rated speed | Up to 7000 rpm |
| Motor rated output | 0.75…7.50 kW |
| Compatible servo drives | • Kinetix 5500 (1)<br>• Kinetix 5700<br>• Kinetix 6200/6500<br>• Kinetix 6000<br>• Kinetix 300/350<br>• Kinetix 2000<br>• Kinetix 7000 |
| Compatible servo cables | 2090-C*xx*M7*xx* cables |
| Typical applications | • Printing<br>• Web handling<br>• Converting<br>• Automotive |

(1) Requires the 2198-H2DCK Hiperface-to-DSL feedback converter kit. Kinetix MPM (200V-class) motors require the 2198-H2DCK (series B or later) converter kit.

# Catalog Numbers - Kinetix MPM Servo Motors

Catalog numbers consist of various characters, each of which identifies a specific option for that component. Use the catalog numbering table chart below to understand the configuration of your motor. For questions regarding product availability, contact your Allen-Bradley distributor.




(1) Resolver feedback is not available on all models.
(2) Not all combinations are available. Only the configurations for rated speed and magnet stacks, as listed in Kinetix MPM Servo Motor (200V-class) Performance Specifications on page 108 and on page 108, are available. Use Motion Analyzer software to size and select motors for your application.
(3) Base speed equals maximum speed at peak torque. Maximum speed is servo drive dependent.

# Kinetix MPM Servo Motor High-resolution Encoders

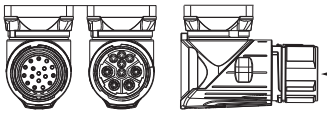
Kinetix MPM servo motors are available with high performance encoders with a choice of single-turn (-S) or multi-turn (-M) high-resolution feedback:

- 1024 sin/cos cycles per revolution for up to 21-bit resolution (2,097,152 counts per revolution) -M and -S (MPM-A/B115*x*, MPM-A/B130*x*, MPM-A/B165*x*, and MPM-A/B215*x* motors.
- Single-turn encoder provides high-resolution absolute position feedback within one turn.
- Multi-turn encoder provides high-resolution absolute position feedback within 4096 turns. The electromechanical design does not require a battery.

# Motor Connector/Cable Compatibility

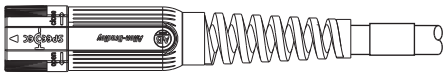
Kinetix MPM servo motors are equipped with SpeedTec DIN connectors.

**SpeedTec DIN Connectors**



- MPM-A/B*xxx* motors
- Receives M4 and M7 cable plugs (O-ring required for M4)
- Attach M7 cable plug with one-quarter turn

**SpeedTec DIN (M7) Cable Plug**



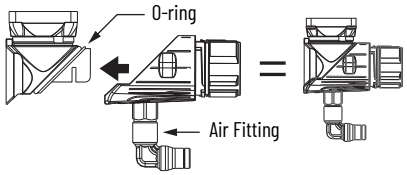
- 2090-CFBM7DF-CEAA*xx* (standard, non-flex) flying-lead, feedback cables
- 2090-CFBM7DD-CEAA*xx* (standard, non-flex) drive-end connector, feedback cables
- 2090-CFBM7DF-CEAF*xx* (continuous-flex) flying-lead, feedback cables
- 2090-CFBM7DD-CEAF*xx* (continuous-flex) drive-end connector, feedback cables
- 2090-CFBM7DF-CDAF*xx* (continuous-flex) flying-lead, feedback cables

- 2090-CPWM7DF-*xx*AA*xx* (standard, non-flex) power-only cables
- 2090-CPBM7DF-*xx*AA*xx* (standard, non-flex) power/brake cables
- 2090-CPWM7DF-*xx*AF*xx* (continuous-flex) power-only cables
- 2090-CPBM7DF-*xx*AF*xx* (continuous-flex) power/brake cables

# Kinetix MPM Servo Motor Options

Kinetix MPM servo motors are available with these options:

- 24V DC holding brake.
- The positive air-pressure kit (catalog number MPF-7-AIR-PURGE) is mounted on the feedback connector to provide positive air pressure to further reduce the chance of contamination inside the motor.
- Shaft seal kits are available, as are replacement kits for field installation. Shaft seals are made of nitrile and kits include a lubricant to reduce wear.




**IMPORTANT** Shaft seals are subject to wear and require periodic inspection and replacement. Replacement is recommended every 3 months, not to exceed 12 months, depending on use.

**Shaft Seal Kit Catalog Numbers**

| Motor Cat. No. | Shaft Seal Kit Cat. No. |
|---|---|
| MPM-A115*xx* and MPL-B115*xx* | MPL-SSN-A4B4 |
| MPM-A130*xx* and MPL-B130*xx* | MPL-SSN-A5B5 |
| MPM-A165*xx* and MPM-B165*xx* | MPL-SSN-F165 |
| MPM-A215*xx* and MPL-B215*xx* | MPL-SSN-A6B6 |

Refer to the Kinetix MPM Medium-inertia Servo Motor Installation Instructions, publication MPM-IN001, for more information on motor accessories.

# Technical Specifications - Kinetix MPM Servo Motors

### Kinetix MPM Servo Motor (200V-class) Performance Specifications

| Motor Cat. No. | Base Speed rpm | Rated Speed rpm | Maximum Speed rpm | Continuous Stall Torque N•m (lb•in) | Peak Stall Torque N•m (lb•in) | Motor Rated Output kW | Rotor Inertia (1) kg-m$^2$ (lb•in•s$^2$) | Motor Weight, (1) approx kg (lb) |
|---|---|---|---|---|---|---|---|---|
| MPM-A1151M | 4500 | 5000 | 6000 | 2.18 (19.3) | 6.60 (58.0) | 0.90 | 0.00065 (0.00575) | 3.45 (7.6) |
| MPM-A1152F | 3000 | 4000 | 5000 | 4.74 (42.0) | 13.5 (119) | 1.40 | 0.00077 (0.00682) | 5.20 (11.4) |
| MPM-A1153F | 3000 | 4000 | 5000 | 6.55 (58.0) | 19.8 (175) | 1.45 | 0.00089 (0.00784) | 6.4 (14.0) |
| MPM-A1302F | 3000 | 4000 | 4500 | 5.99 (53.0) | 13.5 (119) | 1.65 | 0.000983 (0.00870) | 6.8 (15.0) |
| MPM-A1304F | 3000 | 3500 | 4000 | 9.30 (82.0) | 19.3 (171) | 2.20 | 0.001223 (0.01082) | 9.6 (21.2) |
| MPM-A1651F | 3000 | 3000 | 5000 | 10.7 (95.0) | 20.5 (181) | 2.50 | 0.006605 (0.05846) | 15.3 (33.8) |
| MPM-A1652F | 3000 | 3500 | 4000 | 13.5 (119) | 36.0 (319) | 4.03 | 0.007265 (0.06430) | 20.6 (45.4) |
| MPM-A1653F | 3000 | 3000 | 4000 | 18.6 (165) | 42.0 (372) | 5.10 | 0.008025 (0.07103) | 25.6 (56.4) |
| MPM-A2152F | 3000 | 2000 | 4000 | 27.0 (239) | 56.0 (496) | 5.20 | 0.02059 (0.18223) | 35.8 (79.0) |
| MPM-A2153F | 3000 | 2000 | 3600 | 34.0 (301) | 58.0 (513) | 5.80 | 0.02254 (0.19950) | 44.6 (98.3) |
| MPM-A2154C | 1500 | 1750 | 2000 | 55.0 (487) | 106 (938) | 6.50 | 0.02449 (0.21675) | 53.6 (118) |
| MPM-A2154E | 2250 | 2000 | 2650 | 44.0 (389) | 84.0 (743) | 7.00 | | |

(1) Refer to Kinetix MPM Servo Motor Brake Specifications on page 109 for brake rotor inertia and brake motor weight.

### Kinetix MPM Servo Motor (400V-class) Performance Specifications

| Motor Cat. No. | Base Speed rpm | Rated Speed rpm | Maximum Speed rpm | Continuous Stall Torque N•m (lb•in) | Peak Stall Torque N•m (lb•in) | Motor Rated Output kW | Rotor Inertia (1) kg-m$^2$ (lb•in•s$^2$) | Motor Weight, (1) approx kg (lb) |
|---|---|---|---|---|---|---|---|---|
| MPM-B1151F | 3000 | 4000 | 5000 | 2.18 (19.3) | 6.6 (58.0) | 0.75 | 0.00065 (0.00575) | 3.45 (7.6) |
| MPM-B1151T | 6000 | 5000 | 7000 | | | 0.90 | | |
| MPM-B1152C | 1500 | 2500 | 3000 | 4.74 (42.0) | 13.5 (119) | 1.20 | 0.00077 (0.00681) | 5.20 (11.4) |
| MPM-B1152F | 3000 | 4000 | 5200 | | | 1.40 | | |
| MPM-B1152T | 6000 | | 7000 | | | | | |
| MPM-B1153E | 2250 | 3000 | 3500 | 6.55 (58.0) | 19.8 (175) | 1.40 | 0.00089 (0.00788) | 6.40 (14.0) |
| MPM-B1153F | 3000 | 4000 | 5500 | | | 1.45 | | |
| MPM-B1153T | 6000 | | 7000 | | | | | |
| MPM-B1302F | 3000 | 4000 | 4500 | 5.99 (53.0) | 13.5 (119) | 1.65 | 0.000983 (0.00870) | 6.80 (15.0) |
| MPM-B1302M | 4500 | | 6000 | | | | | |
| MPM-B1302T | 6000 | | 7000 | | | | | |
| MPM-B1304C | 1500 | 1870 | 2750 | 10.2 (90.0) | 27.1 (240) | 2.00 | 0.001223 (0.01082) | 9.60 (21.2) |
| MPM-B1304E | 2250 | 3500 | 4000 | | | 2.20 | | |
| MPM-B1304M | 4500 | | 6000 | | | | | |
| MPM-B1651C | 1500 | 3000 | 3500 | 10.7 (95.0) | 23.2 (205) | 2.50 | 0.006605 (0.05846) | 15.3 (33.8) |
| MPM-B1651F | 3000 | | 5000 | | | | | |
| MPM-B1651M | 4500 | | 5000 | | | | | |
| MPM-B1652C | 1500 | 2500 | 2500 | 16.0 (142) | 40.0 (354) | 3.80 | 0.007265 (0.06430) | 20.6 (45.4) |
| MPM-B1652E | 2250 | 3500 | 3500 | 19.4 (172) | 48.0 (425) | 4.30 | | |
| MPM-B1652F | 3000 | | 4500 | | | | | |
| MPM-B1653C | 1500 | 2000 | 2500 | 26.8 (237) | 67.8 (600) | 4.60 | 0.008025 (0.07103) | 25.6 (56.4) |
| MPM-B1653E | 2250 | 3000 | 3500 | | 62.0 (549) | 5.10 | | |
| MPM-B1653F | 3000 | | 4000 | | 56.0 (496) | | | |
| MPM-B2152C | 1500 | 2000 | 2500 | 36.7 (325) | 72.3 (640) | 5.60 | 0.02059 (0.18224) | 35.8 (79.0) |
| MPM-B2152F | 3000 | 2500 | 4500 | 33.0 (292) | | 5.90 | | |
| MPM-B2152M | 4500 | | 5000 | 30.0 (266) | 50.0 (443) | | | |
| MPM-B2153B | 1250 | 1750 | 2000 | 48.0 (425) | 101.1 (895) | 6.80 | 0.02254 (0.19949) | 44.6 (98.3) |
| MPM-B2153E | 2250 | 2000 | 3000 | | | 7.20 | | |
| MPM-B2153F | 3000 | | 3800 | 45.0 (398) | 99.0 (876) | | | |

### Kinetix MPM Servo Motor (400V-class) Performance Specifications (continued)

| Motor Cat. No. | Base Speed rpm | Rated Speed rpm | Maximum Speed rpm | Continuous Stall Torque N•m (lb•in) | Peak Stall Torque N•m (lb•in) | Motor Rated Output kW | Rotor Inertia (1) kg-m$^2$ (lb•in•s$^2$) | Motor Weight, (1) approx kg (lb) |
|---|---|---|---|---|---|---|---|---|
| MPM-B2154B | 1250 | 1750 | 2000 | 62.8 (556) | 154.2 (1365) | 6.90 | 0.02449 (0.21675) | 53.6 (118.2) |
| MPM-B2154E | 2250 | 2000 | 3000 | 56.0 (496) | 112.0 (991) | 7.50 | | |
| MPM-B2154F | 3000 | | 3300 | | 88.0 (779) | | | |

(1) Refer to Kinetix MPM Servo Motor Brake Specifications on page 109 for brake rotor inertia and brake motor weight.

### Kinetix MPM Servo Motor Brake Specifications

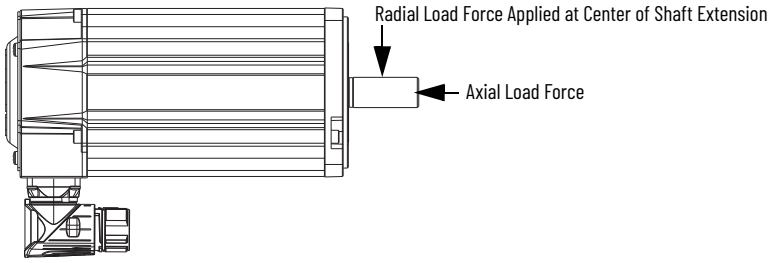
| Motor Cat. No. | Backlash, max (brake engaged) arc minutes | Holding Torque N•m (lb•in) | Coil Current at 24V DC A | Brake Response Time | | | Brake Rotor Inertia kg-m$^2$ (lb•in•s$^2$) | Brake Motor Weight, approx kg (lb) |
|---|---|---|---|---|---|---|---|---|
| | | | | Release ms | Engage (1) | | | |
| | | | | | MOV ms | Diode ms | | |
| MPM-A/B1151 | 45 | 4.18 (37) | 0.45…0.55 | 50 | 20 | 110 | 0.00065 (0.00575) | 5.2 (11.4) |
| MPM-A/B1152 | | | | | | | 0.00077 (0.00681) | 6.9 (15.2) |
| MPM-A/B1153 | | | | | | | 0.00089 (0.00788) | 8.1 (17.8) |
| MPM-A/B1302 | 48 | 10.2 (90) | 0.576…0.704 | 110 | 25 | 160 | 0.000983 (0.00870) | 8.6 (19.0) |
| MPM-A/B1304 | | | | | | | 0.001223 (0.01082) | 11.7 (25.7) |
| MPM-A/B1651 | 25 | 28.3 (250) | 1.05…1.28 | 70 | 50 | 250 | 0.006605 (0.05846) | 17.9 (39.5) |
| MPM-A/B1652 | | | | | | | 0.007265 (0.06430) | 23.2 (51.1) |
| MPM-A/B1653 | | | | | | | 0.008025 (0.07103) | 28.2 (62.1) |
| MPM-A/B2152 | 25 | 70 (619) | 1.84…2.25 | 200 | 120 | 900 | 0.02059 (0.18224) | 43.8 (96.5) |
| MPM-A/B2153 | | | | | | | 0.02254 (0.19949) | 53.6 (115.8) |
| MPM-A/B2154 | | | | | | | 0.02449 (0.21675) | 61.6 (135.7) |

(1) By using an arc suppression device in external control circuit.

# Kinetix MPM Servo Motor Load Force Ratings

Kinetix MPM servo motors are capable of operating with the maximum radial or maximum axial shaft loads listed in the following tables. Radial loads listed are applied in the middle of the shaft extension. The tables starting below represent an $L_{10}$ bearing fatigue life of 20,000 hours. This 20,000-hour life does not account for possible application-specific life reduction that can occur due to bearing grease contamination from external sources. Maximum operating speed is limited by motor winding.

### Load Forces on Shaft




### Radial Load Force Ratings

| Motor Cat. No. | 1000 rpm kg (lb) | 2000 rpm kg (lb) | 3000 rpm kg (lb) | 5000 rpm kg (lb) | 7000 rpm kg (lb) |
|---|---|---|---|---|---|
| MPM-A/B1151 | 77 (170) | 61 (134) | 54 (119) | 45 (99) | 40 (88) |
| MPM-A/B1152 | 84 (185) | 66 (145) | 58 (128) | 49 (108) | 43 (95) |
| MPM-A/B1153 | 88 (194) | 70 (154) | 61 (134) | 51 (112) | 46 (101) |
| MPM-A/B1302 | 105 (231) | 83 (183) | 72 (159) | 61 (134) | 54 (119) |
| MPM-A/B1304 | 115 (253) | 91 (200) | 80 (176) | 67 (148) | – |
| MPM-A/B1651 | 141 (311) | 112 (247) | 97 (214) | 82 (181) | – |
| MPM-A/B1652 | 151 (333) | 119 (262) | 104 (229) | – | – |
| MPM-A/B1653 | 156 (344) | 123 (271) | 107 (236) | – | – |
| MPM-A/B2152 | 216 (476) | 171 (377) | 149 (328) | – | – |
| MPM-A/B2153 | 228 (502) | 180 (396) | 156 (344) | – | – |
| MPM-A/B2154 | 235 (518) | 185 (407) | 161 (355) | – | – |

### Axial Load Force Ratings (maximum radial load)

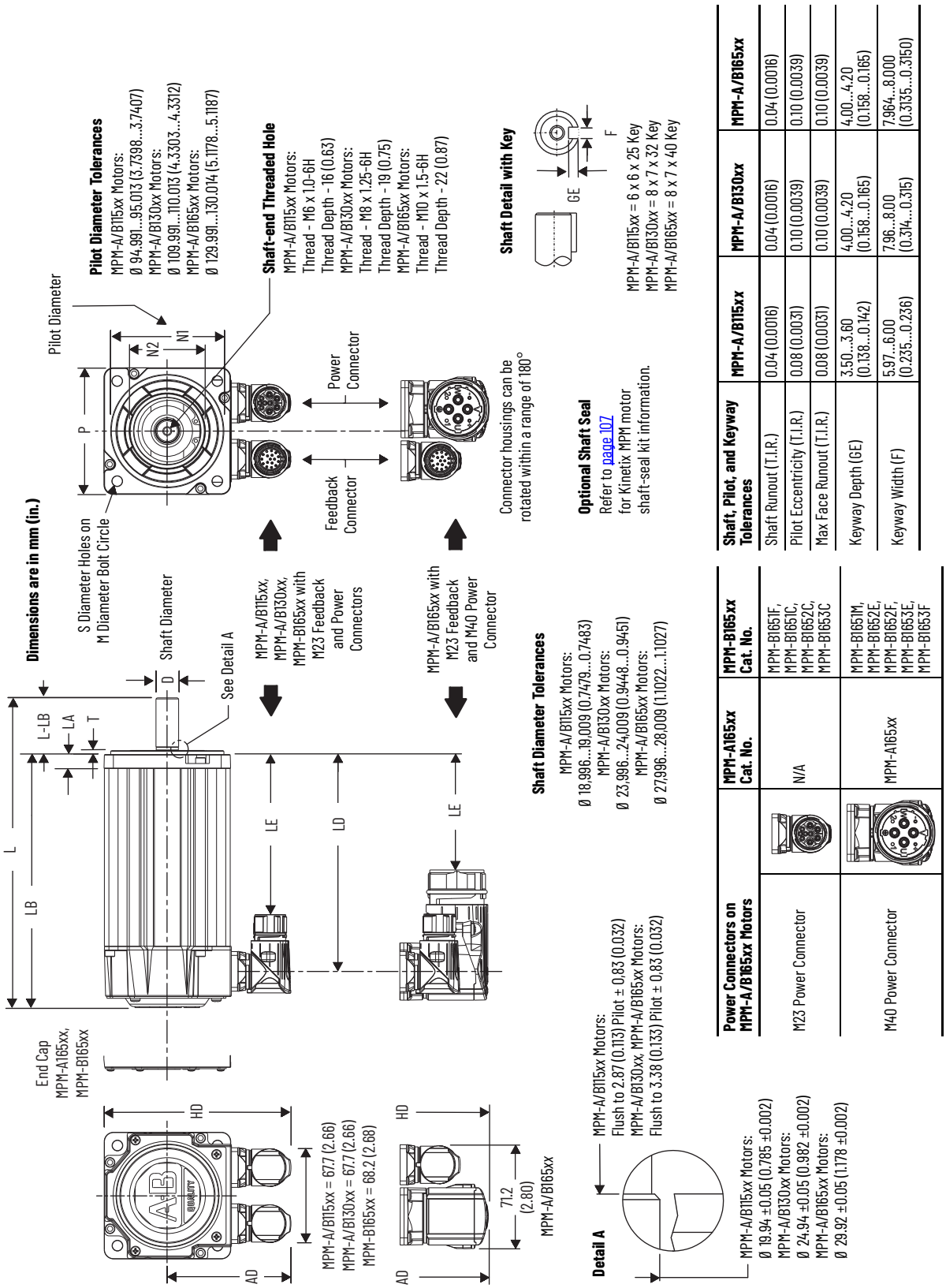
| Motor Cat. No. | 1000 rpm kg (lb) | 2000 rpm kg (lb) | 3000 rpm kg (lb) | 5000 rpm kg (lb) | 7000 rpm kg (lb) |
|---|---|---|---|---|---|
| MPM-A/B1151 | 29 (64) | 22 (48) | 18 (40) | 14 (31) | 12 (26) |
| MPM-A/B1152 | 31 (68) | 23 (51) | 19 (42) | 15 (33) | 13 (29) |
| MPM-A/B1153 | 33 (73) | 24 (53) | 20 (44) | 16 (35) | 14 (31) |
| MPM-A/B1302 | 26 (57) | 19 (42) | 16 (35) | 13 (29) | 11 (24) |
| MPM-A/B1304 | 30 (66) | 22 (48) | 18 (40) | 15 (33) | – |
| MPM-A/B1651 | 37 (81) | 28 (62) | 23 (51) | 18 (40) | – |
| MPM-A/B1652 | 41 (90) | 30 (66) | 25 (55) | – | – |
| MPM-A/B1653 | 43 (95) | 32 (70) | 27 (59) | – | – |
| MPM-A/B2152 | 55 (121) | 40 (88) | 34 (75) | – | – |
| MPM-A/B2153 | 60 (132) | 44 (97) | 36 (79) | – | – |
| MPM-A/B2154 | 63 (139) | 46 (101) | 38 (84) | – | – |

### Axial Load Force Ratings (zero radial load)

| Motor Cat. No. | 1000 rpm kg (lb) | 2000 rpm kg (lb) | 3000 rpm kg (lb) | 5000 rpm kg (lb) | 7000 rpm kg (lb) |
|---|---|---|---|---|---|
| MPM-A/B1151 | 46 (101) | 34 (75) | 28 (62) | 23 (51) | 19 (42) |
| MPM-A/B1152 | 46 (101) | 34 (75) | 28 (62) | 23 (51) | 19 (42) |
| MPM-A/B1153 | 46 (101) | 34 (75) | 28 (62) | 23 (51) | 19 (42) |
| MPM-A/B1302 | 46 (101) | 34 (75) | 28 (62) | 23 (51) | 19 (42) |
| MPM-A/B1304 | 46 (101) | 34 (75) | 28 (62) | 23 (51) | – |
| MPM-A/B1651 | 61 (134) | 44 (97) | 38 (84) | 30 (66) | – |
| MPM-A/B1652 | 61 (134) | 44 (97) | 38 (84) | – | – |
| MPM-A/B1653 | 61 (134) | 44 (97) | 38 (84) | – | – |
| MPM-A/B2152 | 90 (198) | 65 (143) | 54 (119) | – | – |
| MPM-A/B2153 | 90 (198) | 65 (143) | 54 (119) | – | – |
| MPM-A/B2154 | 90 (198) | 65 (143) | 54 (119) | – | – |

# Dimensions - Kinetix MPM Servo Motors

### MPM-A/B115*xx*, MPM-A/B130*xx*, MPM-A/B165*xx* Motor Dimensions




| Power Connectors on MPM-A/B165xx Motors | | MPM-A165xx Cat. No. | MPM-B165xx Cat. No. |
|---|---|---|---|
| M23 Power Connector | | N/A | MPM-B1651F, MPM-B1651C, MPM-B1652C, MPM-B1653C |
| M40 Power Connector | | MPM-A165xx | MPM-B1651M, MPM-B1652E, MPM-B1652F, MPM-B1653E, MPM-B1653F |

| Shaft, Pilot, and Keyway Tolerances | MPM-A/B115xx | MPM-A/B130xx | MPM-A/B165xx |
|---|---|---|---|
| Shaft Runout (T.I.R.) | 0.04 (0.0016) | 0.04 (0.0016) | 0.04 (0.0016) |
| Pilot Eccentricity (T.I.R.) | 0.08 (0.0031) | 0.10 (0.0039) | 0.10 (0.0039) |
| Max Face Runout (T.I.R.) | 0.08 (0.0031) | 0.10 (0.0039) | 0.10 (0.0039) |
| Keyway Depth (GE) | 3.50...3.60 (0.138...0.142) | 4.00...4.20 (0.158...0.165) | 4.00...4.20 (0.158...0.165) |
| Keyway Width (F) | 5.97...6.00 (0.235...0.236) | 7.96...8.00 (0.314...0.315) | 7.964...8.000 (0.3135...0.3150) |

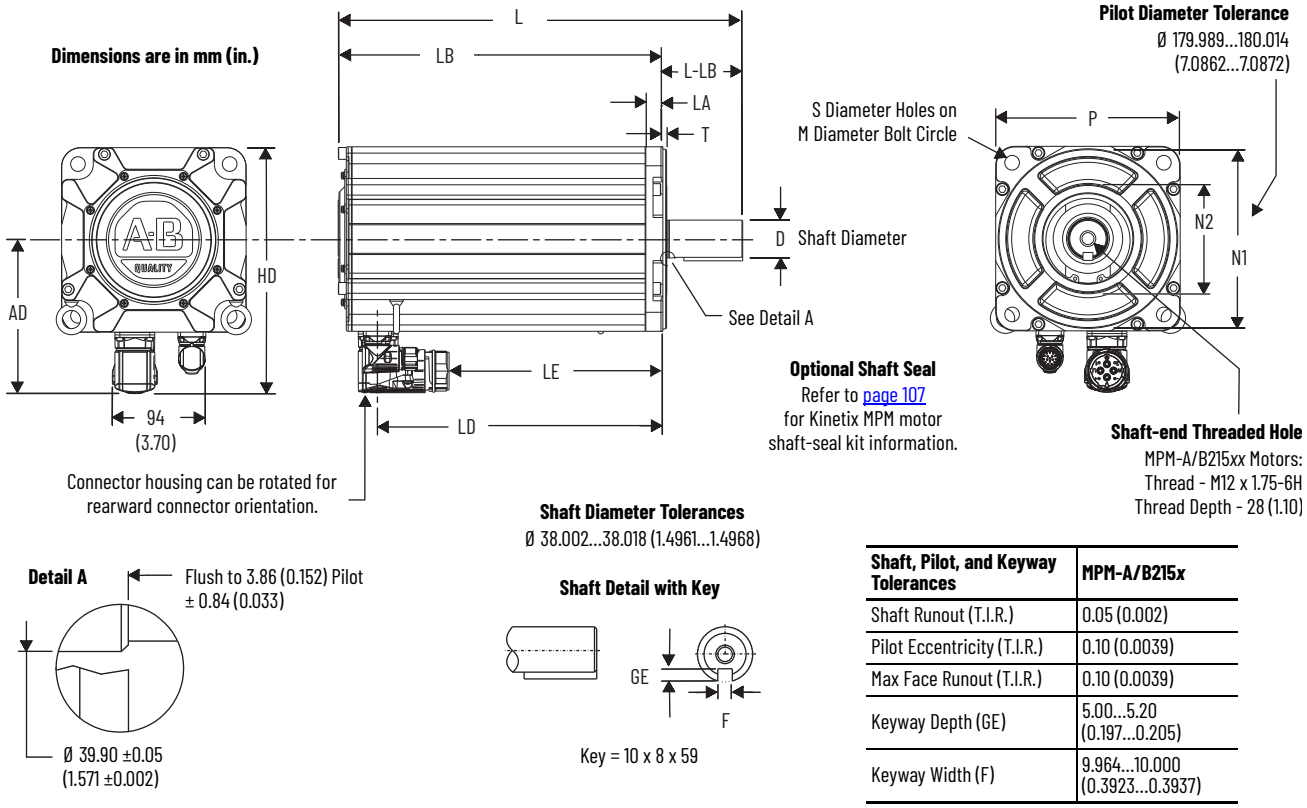
### MPM-A/B115x, MPM-A/B130x, MPM-A/B165x Motor Dimensions

| Motor Cat. No. | AD (1) mm (in.) | HD (1) mm (in.) | T mm (in.) | LA mm (in.) | LD (2)(3) mm (in.) | LE (2)(4) mm (in.) | L (2) mm (in.) | LB (2) mm (in.) | L-LB (5) mm (in.) | D (6) mm (in.) | M mm (in.) | S (7) mm (in.) | N1 (6) mm (in.) | N2 mm (in.) | P mm (in.) | GE (6) mm (in.) | F (6) mm (in.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MPM-A/B1151 | 90.9 (3.58) | 140.1 (5.52) | 2.74 (0.108) | 10.16 (0.40) | 124 (4.89) | 84.1 (3.31) | 190 (7.48) | 150 (5.90) | 40.0 (1.58) | 19.0 (0.748) | 115.0 (4.528) | 10.0 (0.401) | 95.0 (3.74) | 59.0 (2.32) | 98.3 (3.87) | 3.5 (0.138) | 6.0 (0.236) |
| MPM-A/B1152 | | | | | 150 (5.89) | 110 (4.31) | 215 (8.48) | 175 (6.90) | | | | | | | | | |
| MPM-A/B1153 | | | | | 175 (6.89) | 135 (5.31) | 241 (9.48) | 201 (7.90) | | | | | | | | | |
| MPM-A/B1302 | 98.6 (3.88) | 155.4 (6.12) | 2.74 (0.108) | 12.19 (0.48) | 153 (6.02) | 113 (4.44) | 229 (9.0) | 179 (7.03) | 50.0 (1.97) | 24.0 (0.945) | 130.0 (5.118) | 10.0 (0.401) | 110.0 (4.331) | 70.3 (2.77) | 113.7 (4.48) | 4.0 (0.158) | 8.0 (0.315) |
| MPM-A/B1304 | | | | | 204 (8.02) | 164 (6.44) | 279 (11.0) | 229 (9.03) | | | | | | | | | |
| MPM-A/B1651 | 113.4 (4.47) | 185.2 (7.29) | 3.12 (0.123) | 14.0 (0.55) | 200 (7.88) | 160 (6.30) | 287 (11.28) | 227 (8.92) | 60.0 (2.36) | 28.0 (1.102) | 165.0 (6.496) | 12.0 (0.481) | 130.0 (5.118) | 81.0 (3.19) | 143.5 (5.65) | 4.0 (0.158) | 8.0 (0.315) |
| MPM-A/B1652 | | | | | 251 (9.88) | 211 (8.30) | 337 (13.28) | 277 (10.92) | | | | | | | | | |
| MPM-A/B1653 | | | | | 302 (11.88) | 262 (10.30) | 388 (15.28) | 328 (12.92) | | | | | | | | | |

(1) This dimension applies to MPM-B165x motors with M23 connectors. For MPM-A/B165x motors with M40 connectors, add 23 mm (0.91 in.).
(2) If ordering an MPM-A/B115x or MPM-A/B130x motor with brake, add 48.5 mm (1.91 in.) to dimensions L, LB, LE, and LD.
If ordering an MPM-A/B165x, motor with brake, add 51.5 mm (2.03 in.) to dimensions L, LB, LE, and LD.
(3) This dimension applies to MPM-B165x motors with M23 connectors. For MPM-A/B165x motors with M40 connectors, add 2.0 mm (0.07 in.).
(4) This dimension applies to MPM-B165x motors with M23 connectors. For MPM-A/B165x motors with M40 connectors, subtract 29.0 mm (1.15 in.).
(5) The tolerance for this dimension is ±0.7 mm (±0.028 in.).
(6) For keyway, shaft diameter, and pilot diameter tolerances, refer to page 112.
(7) For MPM-A/B115x and MPM-A/B130x motors, the tolerance for this dimension is +0.36 mm (±0.007 in.).
For MPM-A/B165x motors, the tolerance is +0.43 mm (±0.008 in.).

Motors are designed to metric dimensions. Inch dimensions are approximate conversions from millimeters. Dimensions without tolerances are for reference.

## MPM-A/B215x Motor Dimensions




| Shaft, Pilot, and Keyway Tolerances | MPM-A/B215x |
|---|---|
| Shaft Runout (T.I.R.) | 0.05 (0.002) |
| Pilot Eccentricity (T.I.R.) | 0.10 (0.0039) |
| Max Face Runout (T.I.R.) | 0.10 (0.0039) |
| Keyway Depth (GE) | 5.00...5.20<br>(0.197...0.205) |
| Keyway Width (F) | 9.964...10.000<br>(0.3923...0.3937) |

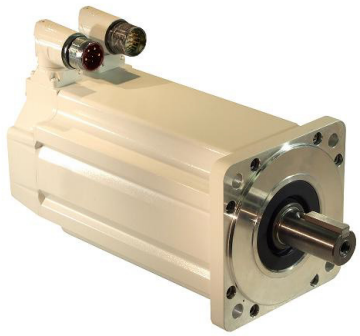
| Motor Cat. No. | AD mm (in.) | HD mm (in.) | T mm (in.) | LA mm (in.) | LD (1) mm (in.) | LE (1) mm (in.) | L (1) mm (in.) | LB (1) mm (in.) | L-LB (2) mm (in.) | D mm (in.) | M mm (in.) | S (3) mm (in.) | N1 mm (in.) | N2 mm (in.) | P mm (in.) | GE mm (in.) | F mm (in.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MPM-A/B2152 | 154 (6.06) | 247 (9.70) | 3.73 (0.147) | 17.8 (0.70) | 234 (9.23) | 163 (6.43) | 355 (13.96) | 275 (10.81) | 80.0 (3.150) | 38.0 (1.50) | 215 (8.465) | 14.50 (0.579) | 180 (7.09) | 108 (4.25) | 185 (7.28) | 5.0 (0.197) | 10.0 (0.394) |
| MPM-A/B2153 | | | | | 285 (11.23) | 214 (8.43) | 405 (15.96) | 325 (12.81) | | | | | | | | | |
| MPM-A/B2154 | | | | | 336 (13.23) | 265 (10.43) | 456 (17.96) | 376 (14.81) | | | | | | | | | |

(1) If ordering an MPM-A/B215x motor with brake, add 88.9 mm (3.5 in.) to dimensions LD, LE, L, and LB.
(2) Tolerance for this dimension is ±0.7 mm (±0.028 in.).
(3) Tolerance for this dimension is +0.43 mm (±0.008 in.).

Motors are designed to metric dimensions. Inch dimensions are approximate conversions from millimeters. Dimensions without tolerances are for reference.

## Notes:

# Kinetix MPF Food-grade Servo Motors



Kinetix MPF servo motors combine the characteristics of the Kinetix MPL servo motors with features specifically designed to meet the unique needs of many food and beverage applications. These high-performance servo motors address the challenges of food environments by incorporating food-grade paint and shaft seal, along with noncorrosive fasteners and stainless steel shaft. For meat and poultry applications, and for applications with high pressure wash and caustic chemicals, the Kinetix MPS stainless-steel servo motors are recommended.

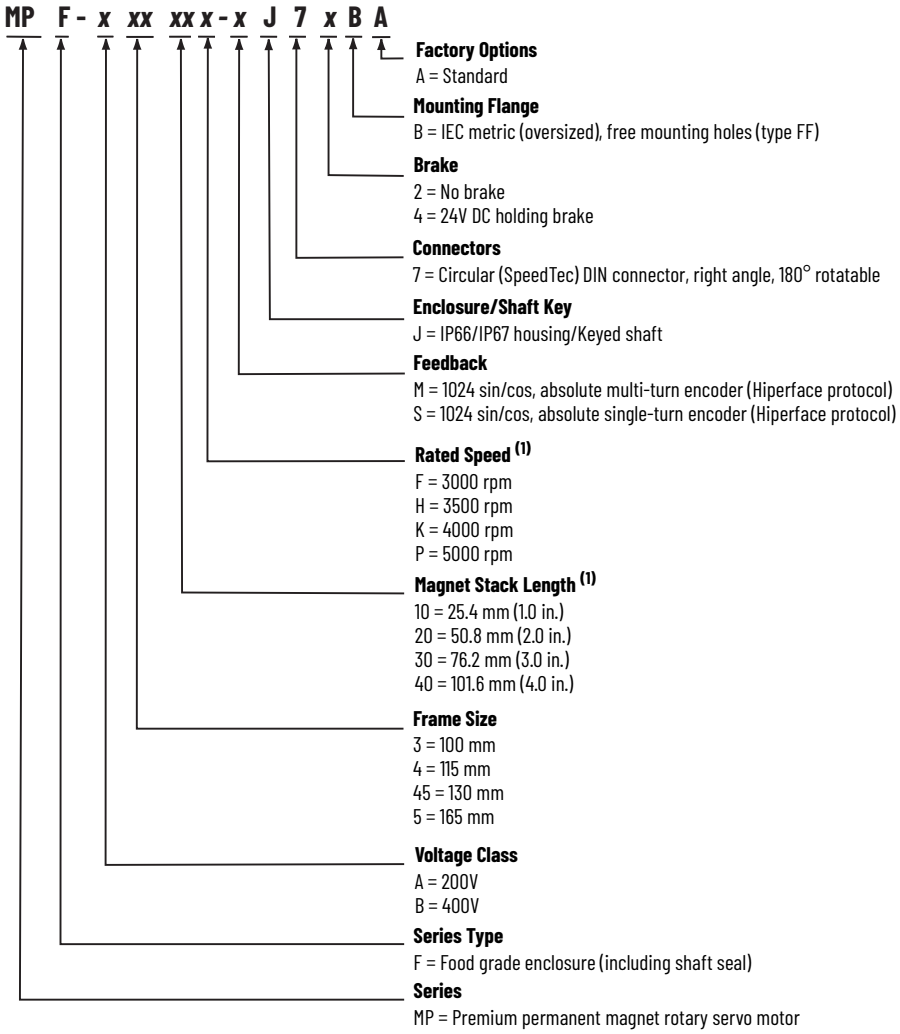
## Kinetix MPF Servo Motor Features

| Attribute | Value |
|---|---|
| Main characteristics | • Configurable winding options, brakes, and encoder feedback<br>• Hiperface encoder protocol<br>• Low rotor inertia |
| Features | • Food-grade epoxy coated<br>• 200V and 400V-class windings<br>• Single-turn and multi-turn absolute feedback<br>• Shaft-end threaded hole<br>• SpeedTec DIN connectors, rotates 180°<br>• Standard IEC 72-1 mounting dimensions |
| Motor type | Brushless AC synchronous servo motors |
| Environmental rating | • IP66/IP67 with shaft seal (standard) and use of environmentally sealed cable connectors<br>• Food grade grease on shaft seal |
| Certifications | Kinetix MPF rotary motors are UL Recognized components to applicable UL and CSA standards. CE marked for all applicable directives. Refer to rok.auto/certifications for the Product Certifications website. |
| Continuous stall torque | 1.6…19.4 N•m (14…172 lb•in) |
| Peak stall torque | 3.61…48.6 N•m (32…430 lb•in) |
| Rated speed | Up to 5000 rpm |
| Motor rated output | 0.73…4.1 kW |
| Compatible servo drives | • Kinetix 5500 (1)<br>• Kinetix 5700<br>• Kinetix 6200/6500<br>• Kinetix 6000<br>• Kinetix 300/350<br>• Kinetix 2000 |
| Compatible servo cables | 2090-C*xx*M7*xx* cables |
| Typical applications | • Food packaging<br>• Volumetric filling<br>• Form, fill, seal<br>• Food handling<br>• For meat and poultry applications, the Kinetix MPS stainless-steel motors are recommended |

(1) Requires the 2198-H2DCK Hiperface-to-DSL feedback converter kit. Kinetix MPF (200V-class) servo motors require the 2198-H2DCK (series B or later) converter kit.

# Catalog Numbers - Kinetix MPF Servo Motors

Catalog numbers consist of various characters, each of which identifies a specific option for that component. Use the catalog numbering table chart below to understand the configuration of your motor. For questions regarding product availability, contact your Allen-Bradley distributor.




(1) Not all combinations are available. Only the configurations for rated speed and magnet stack length, as listed in Kinetix MPF Servo Motor (200V-class) Performance Specifications on page 119 and Kinetix MPF Servo Motor (400V-class) Performance Specifications on page 120, are available. Use Motion Analyzer software to size and select motors for your application.

# Kinetix MPF Servo Motor High-resolution Encoders

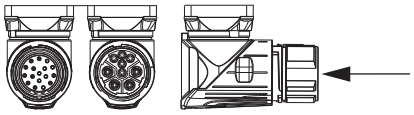
Kinetix MPF servo motors are available with high performance encoders with a choice of single-turn (-S) or multi-turn (-M) high resolution feedback:

- 1024 sin/cos cycles per revolution for up to 21-bit resolution (2,097,152 counts per revolution) -M and -S (MPF-A/B3*xx*, MPF-A/B4*xx*, MPF-A/B45*xx*, and MPF-A/B5*xx* motors).
- Single-turn encoder provides high-resolution absolute position feedback within one turn.
- Multi-turn encoder provides high-resolution absolute position feedback within 4096 turns. The electromechanical design does not require a battery.

# Motor Connector/Cable Compatibility

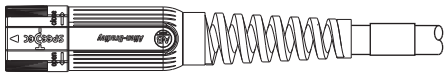
Kinetix MPF servo motors are equipped with SpeedTec DIN connectors.

**SpeedTec DIN Connectors**



- MPF-A/B*xxx* motors
- Receives M4 and M7 cable plugs (O-ring required for M4)
- Attach M7 cable plug with one-quarter turn

**SpeedTec DIN (M7) Cable Plug**



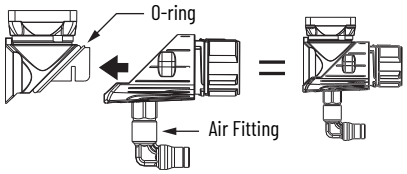
- 2090-CFBM7DF-CEAA*xx* (standard, non-flex) flying-lead, feedback cables
- 2090-CFBM7DD-CEAA*xx* (standard, non-flex) drive-end connector, feedback cables
- 2090-CFBM7DF-CEAF*xx* (continuous-flex) flying-lead, feedback cables
- 2090-CFBM7DD-CEAF*xx* (continuous-flex) drive-end connector, feedback cables
- 2090-CFBM7DF-CDAF*xx* (continuous-flex) flying-lead, feedback cables

- 2090-CPWM7DF-*xx*AA*xx* (standard, non-flex) power-only cables
- 2090-CPBM7DF-*xx*AA*xx* (standard, non-flex) power/brake cables
- 2090-CPWM7DF-*xx*AF*xx* (continuous-flex) power-only cables
- 2090-CPBM7DF-*xx*AF*xx* (continuous-flex) power/brake cables

# Kinetix MPF Servo Motor Options

Kinetix MPF servo motors are available with these options:

- 24V DC holding brake.
- The positive air-pressure kit (catalog number MPF-7-AIR-PURGE) is mounted on the feedback connector to provide positive air pressure to further reduce the chance of contamination inside the motor.




- Shaft seal kits are available for field replacement. Shaft seals are made of PTFE and the kit includes a lubricant to reduce wear.

**IMPORTANT** Shaft seals are subject to wear and require periodic inspection and replacement. Replacement is recommended every 3 months, not to exceed 12 months, depending on use.

**Shaft Seal Kit Catalog Numbers**

| Motor Cat. No. | Shaft Seal Kit Cat. No. |
|---|---|
| MPF-A3*xx* and MPF-B3*xx* | MPF-SST-A3B3 |
| MPF-A4*xx* and MPF-B4*xx* | MPF-SST-A4B4 |
| MPF-A45*xx* and MPF-B45*xx* | MPF-SST-A45B45 |
| MPF-A5*xx* and MPF-B5*xx* | MPF-SST-F165 |

Refer to the Kinetix MPF Food-grade Servo Motor Installation Instructions, publication MP-IN004, for motor accessory information.

# Technical Specifications - Kinetix MPF Servo Motors

**Kinetix MPF Servo Motor (200V-class) Performance Specifications**

| Motor Cat. No. | Rated Speed rpm | Maximum Speed rpm | Continuous Stall Torque N•m (lb•in) | Peak Stall Torque N•m (lb•in) | Motor Rated Output kW | Rotor Inertia (1) kg-m$^2$ (lb•in•s$^2$) | Motor Weight, approx (1) kg (lb) |
|---|---|---|---|---|---|---|---|
| MPF-A310P | 4750 | 5000 | 1.58 (14) | 3.61 (32) | 0.73 | 0.000044 (0.00039) | 2.8 (6.1) |
| MPF-A320P | 4750 | 5000 | 3.05 (27) | 7.91 (70) | 1.3 | 0.000078 (0.00069) | 3.8 (8.3) |
| MPF-A320H | 3350 | 3500 | 3.05 (27) | 7.91 (70) | 1.0 | | |
| MPF-A330P | 5000 | 5000 | 4.18 (37) | 11.1 (98) | 1.6 | 0.00012 (0.0010) | 4.7 (10) |
| MPF-A430P | 5000 | 5000 | 5.99 (53) | 19.8 (175) | 1.9 | 0.00038 (0.0033) | 5.6 (12) |
| MPF-A430H | 3500 | 3500 | 6.21 (55) | 19.8 (175) | 1.8 | | |
| MPF-A4530K | 4000 | 4000 | 8.13 (72) | 20.3 (180) | 2.3 | 0.00040 (0.0036) | 7.4 (16) |
| MPF-A4540F | 3000 | 3000 | 10.2 (90) | 27.1 (240) | 2.5 | 0.00052 (0.0046) | 8.7 (19) |
| MPF-A540K | 4000 | 4000 | 19.4 (172) | 48.6 (430) | 4.1 | 0.00147 (0.013) | 16 (35) |

(1) Refer to Kinetix MPF Servo Motor Brake Specifications on page 120 for brake rotor inertia and brake motor weight.

### Kinetix MPF Servo Motor (400V-class) Performance Specifications

| Motor Cat. No. | Rated Speed rpm | Maximum Speed rpm | Continuous Stall Torque N•m (lb•in) | Peak Stall Torque N•m (lb•in) | Motor Rated Output kW | Rotor Inertia (1) kg-m$^2$ (lb•in•s$^2$) | Motor Weight, approx (1) kg (lb) |
|---|---|---|---|---|---|---|---|
| MPF-B310P | 5000 | 5000 | 1.58 (14) | 3.61 (32) | 0.77 | 0.000044 (0.00039) | 2.8 (6.1) |
| MPF-B320P | 5000 | 5000 | 3.05 (27) | 7.91 (70) | 1.5 | 0.000078 (0.00069) | 3.8 (8.3) |
| MPF-B330P | 5000 | 5000 | 4.18 (37) | 11.1 (98) | 1.6 | 0.00012 (0.0010) | 4.7 (10) |
| MPF-B430P | 5000 | 5000 | 6.55 (58) | 19.8 (175) | 2.0 | 0.00038 (0.0033) | 5.6 (12) |
| MPF-B4530K | 4000 | 4000 | 8.25 (73) | 20.3 (180) | 2.4 | 0.00040 (0.0036) | 7.4 (16) |
| MPF-B4540F | 3000 | 3000 | 10.2 (90) | 27.1 (240) | 2.5 | 0.00052 (0.0046) | 8.7 (19) |
| MPF-B540K | 4000 | 4000 | 19.4 (172) | 48.6 (430) | 4.1 | 0.00147 (0.013) | 16 (35) |

(1) Refer to Kinetix MPF Servo Motor Brake Specifications on page 120 for brake rotor inertia and brake motor weight.

### Kinetix MPF Servo Motor Brake Specifications

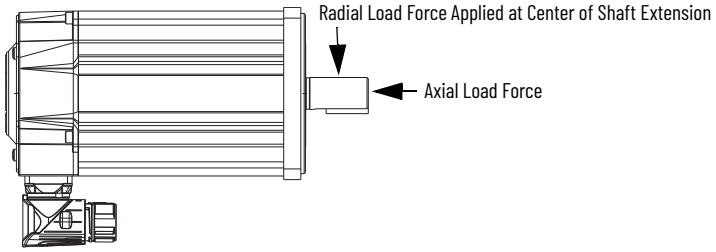
| Motor Cat. No. | Backlash, max (brake engaged) arc minutes | Holding Torque N•m (lb•in) | Coil Current at 24V DC A | Brake Response Time | | | Brake Rotor Inertia kg-m$^2$ (lb•in•s$^2$) | Brake Motor Weight, approx kg (lb) |
|---|---|---|---|---|---|---|---|---|
| | | | | Release ms | Engage (1) | | | |
| | | | | | MOV ms | Diode ms | | |
| MPF-A/B310 | 45 | 4.18 (37) | 0.45…0.55 | 50 | 20 | 110 | 0.000057 (0.00050) | 3.8 (8.3) |
| MPF-A/B320 | | | | | | | 0.000092 (0.00081) | 4.7 (10) |
| MPF-A/B330 | | | | | | | 0.00013 (0.0011) | 5.7 (13) |
| MPF-A/B430 | 37 | 10.2 (90) | 0.576…0.704 | 110 | 25 | 160 | 0.00042 (0.0038) | 7.4 (16) |
| MPF-A/B4530 | | | | | | | 0.00044 (0.0039) | 9.2 (20) |
| MPF-A/B4540 | | | | | | | 0.00056 (0.0050) | 11 (24) |
| MPF-A/B540 | 25 | 28.3 (250) | 1.05…1.28 | 70 | 50 | 250 | 0.00157 (0.0139) | 19 (41) |

(1) By using an arc suppression device in external control circuit.

## Kinetix MPF Servo Motor Load Force Ratings

Kinetix MPF servo motors are capable of operating with the maximum radial or maximum axial shaft loads listed in the following tables. Radial loads listed are applied in the middle of the shaft extension. The tables below represent an $L_{10}$ bearing fatigue life of 20,000 hours. This 20,000-hour life does not account for possible application-specific life reduction that can occur due to bearing grease contamination from external sources. Maximum operating speed is limited by motor winding.

### Load Forces on Shaft



### Radial Load Force Ratings

| Motor Cat. No. | 500 rpm kg (lb) | 1000 rpm kg (lb) | 2000 rpm kg (lb) | 3000 rpm kg (lb) | 3500 rpm kg (lb) | 4000 rpm kg (lb) | 5000 rpm kg (lb) |
|---|---|---|---|---|---|---|---|
| MPF-A/B310 | 78 (172) | 62 (137) | 49 (108) | – | 40 (88) | – | 36 (79) |
| MPF-A/B320 | 87 (192) | 69 (152) | 55 (121) | – | 45 (99) | – | 40 (88) |
| MPF-A/B330 | – | 74 (163) | 59 (130) | – | 49 (108) | – | 43 (95) |
| MPF-A/B430 | 106 (234) | 84 (185) | 67 (148) | – | 55 (121) | – | 49 (108) |
| MPF-A/B4530 | 133 (293) | 105 (232) | 84 (185) | 73 (161) | – | 66 (146) | – |
| MPF-A/B4540 | 140 (309) | 111 (245) | 89 (196) | 77 (170) | – | – | – |
| MPF-A/B540 | – | 143 (316) | 114 (251) | 99 (219) | – | 90 (199) | – |

### Axial Load Force Ratings (maximum radial load)

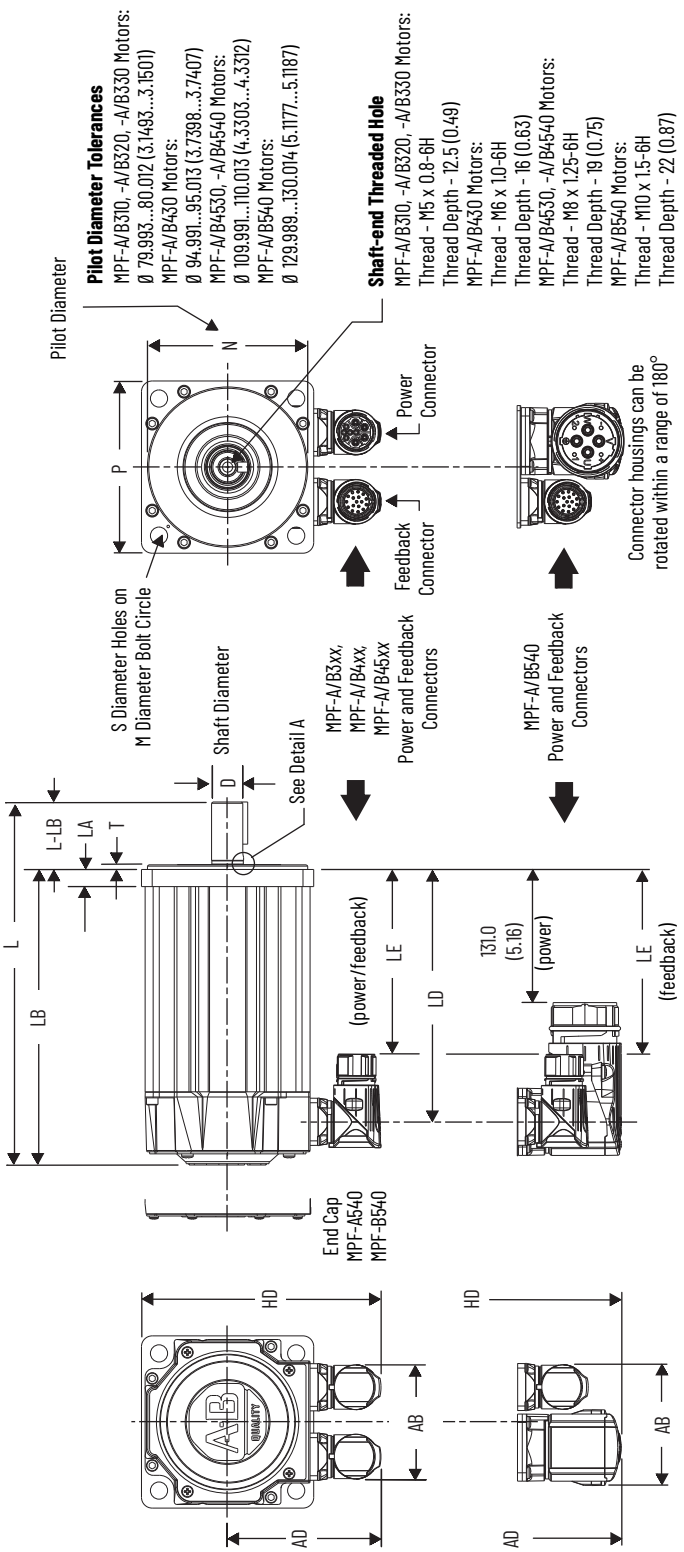
| Motor Cat. No. | 500 rpm kg (lb) | 1000 rpm kg (lb) | 2000 rpm kg (lb) | 3000 rpm kg (lb) | 3500 rpm kg (lb) | 4000 rpm kg (lb) | 5000 rpm kg (lb) |
|---|---|---|---|---|---|---|---|
| MPF-A/B310 | 30 (66) | 23 (51) | 16 (35) | – | 13 (29) | – | 11 (24) |
| MPF-A/B320 | 34 (75) | 25 (55) | 19 (42) | – | 15 (33) | – | 13 (29) |
| MPF-A/B330 | – | 27 (60) | 20 (44) | – | 16 (35) | – | 13 (29) |
| MPF-A/B430 | 52 (115) | 39 (86) | 29 (64) | – | 22 (49) | – | 19 (42) |
| MPF-A/B4530 | 45 (99) | 34 (75) | 25 (55) | 21 (46) | – | 19 (42) | – |
| MPF-A/B4540 | 49 (108) | 36 (79) | 27 (60) | 22 (49) | – | – | – |
| MPF-A/B540 | – | 48 (107) | 35 (79) | 30 (66) | – | 26 (58) | – |

### Axial Load Force Ratings (zero radial load)

| Motor Cat. No. | 500 rpm kg (lb) | 1000 rpm kg (lb) | 2000 rpm kg (lb) | 3000 rpm kg (lb) | 3500 rpm kg (lb) | 4000 rpm kg (lb) | 5000 rpm kg (lb) |
|---|---|---|---|---|---|---|---|
| MPF-A/B310 | 49 (108) | 36 (79) | 27 (60) | – | 21 (46) | – | 18 (40) |
| MPF-A/B320 | 49 (108) | 36 (79) | 27 (60) | – | 21 (46) | – | 18 (40) |
| MPF-A/B330 | – | 36 (79) | 27 (60) | – | 21 (46) | – | 18 (40) |
| MPF-A/B430 | 69 (152) | 51 (112) | 38 (84) | – | 30 (66) | – | 25 (55) |
| MPF-A/B4530 | 69 (152) | 51 (112) | 38 (84) | 31 (68) | – | 28 (62) | – |
| MPF-A/B4540 | 69 (152) | 51 (112) | 38 (84) | 31 (68) | – | – | – |
| MPF-A/B540 | – | 67 (149) | 49 (109) | 41 (92) | – | 36 (81) | – |

# Dimensions - Kinetix MPF Servo Motors

### MPF-A/B3*xx*, MPF-A/B4*xx*, MPF-A/B45*xx*, MPF-A/B5*xx* Motor Dimensions




| Shaft, Pilot, and Keyway Tolerances | MPF-A/B3xx | MPF-A/B4xx | MPF-A/B45xx | MPF-A/B540 |
|---|---|---|---|---|
| Shaft Runout (T.I.R.) | 0.035 (0.0014) | 0.04 (0.0016) | 0.04 (0.0016) | 0.04 (0.0016) |
| Pilot Eccentricity (T.I.R.) | 0.08 (0.0031) | 0.08 (0.0031) | 0.10 (0.0039) | 0.10 (0.0039) |
| Max Face Runout (T.I.R.) | 0.08 (0.0031) | 0.08 (0.0031) | 0.10 (0.0039) | 0.10 (0.0039) |
| Keyway Depth (GE) | 3.00...3.10 (0.118...0.122) | 3.50...3.60 (0.138...0.142) | 4.00...4.20 (0.158...0.165) | 4.00...4.20 (0.158...0.165) |
| Keyway Width (F) | 4.97...5.00 (0.196...0.197) | 5.97...6.00 (0.235...0.236) | 7.96...8.00 (0.314...0.315) | 7.964...8.000 (0.3135...0.3150) |

## MPF-A/B3*xx*, MPF-A/B4*xx*, MPF-A/B45*xx*, MPF-A/B5*xx* Motor Dimensions

| Motor Cat. No. | AB mm (in.) | AD mm (in.) | HD mm (in.) | T mm (in.) | LA mm (in.) | LD (1) mm (in.) | LE (1) mm (in.) | L (1) mm (in.) | LB (1) mm (in.) | L-LB (2) mm (in.) | D (3) mm (in.) | M mm (in.) | S (4) mm (in.) | N (3) mm (in.) | P mm (in.) | GE (3) mm (in.) | F (3) mm (in.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MPF-A/B310 | 66.0 (2.60) | 87.25 (3.43) | 133.4 (5.25) | 2.74 (0.11) | 9.91 (0.39) | 102.0 (4.03) | 62.0 (2.45) | 168.0 (6.62) | 128.0 (5.04) | 40.0 (1.57) | 16.0 (0.629) | 100.0 (3.94) | 7.0 (0.283) | 80.0 (3.15) | 92.39 (3.64) | 3.0 (0.118) | 5.0 (0.197) |
| MPF-A/B320 | | | | | | 128.0 (5.03) | 88.0 (3.45) | 193.0 (7.62) | 153.0 (6.04) | | | | | | | | |
| MPF-A/B330 | | | | | | 153.0 (6.03) | 113.0 (4.45) | 219.0 (8.62) | 179.0 (7.04) | | | | | | | | |
| MPF-A/B430 | 67.7 (2.66) | 90.9 (3.58) | 142.0 (5.59) | 2.74 (0.11) | 10.16 (0.40) | 150.0 (5.89) | 110.0 (4.31) | 215.0 (8.48) | 175.0 (6.90) | 40.0 (1.57) | 19.0 (0.748) | 115.0 (4.53) | 10.0 (0.401) | 95.0 (3.74) | 102.1 (4.02) | 3.5 (0.138) | 6.0 (0.236) |
| MPF-A/B4530 | 67.7 (2.66) | 98.6 (3.88) | 157.6 (6.20) | 2.74 (0.11) | 12.19 (0.48) | 153.0 (6.02) | 113.0 (4.44) | 229.0 (9.0) | 179.0 (7.03) | 50.0 (1.97) | 24.0 (0.945) | 130.0 (5.12) | 10.0 (0.401) | 110.0 (4.33) | 118.1 (4.65) | 4.0 (0.158) | 8.0 (0.315) |
| MPF-A/B4540 | | | | | | 178.0 (7.02) | 138.0 (5.44) | 254.0 (10.0) | 204.0 (8.03) | | | | | | | | |
| MPF-A/B540 | 71.2 (2.80) | 136.4 (5.37) | 209.0 (8.23) | 3.12 (0.12) | 13.97 (0.55) | 202.0 (7.95) | 162.0 (6.38) | 287.0 (11.30) | 227.0 (8.92) | 60.0 (2.36) | 28.0 (1.102) | 165.0 (6.50) | 12.0 (0.481) | 130.0 (5.12) | 145.3 (5.72) | 4.0 (0.158) | 8.0 (0.315) |

(1) If ordering an MPF-A/B310, MPF-A/B320, or MPF-A/B330 motor with brake, add 35 mm (1.38 in.) to dimensions L, LB, LD, and LE.
If ordering an MPF-A/B430 motor with brake, add 48 mm (1.89 in.) to dimensions L, LB, LD, and LE.
If ordering an MPF-A/B4530 or MPF-A/B4540 motor with brake, add 23 mm (0.90 in.) to dimensions L, LB, LD, and LE.
If ordering an MPF-A/B540 motor with brake, add 51 mm (2.0 in.) to dimensions L, LB, LD, and LE.
(2) Tolerance for this dimension is ±0.7 mm (±0.028 in.).
(3) For keyway, shaft diameter, and pilot diameter tolerances, refer to page 122.
(4) Tolerance for this dimension is: MPF-A/B3*xx*, MPF-A/B4*xx*, or MPF-A/B45*xx* +0.36 mm (±0.007 in.) and MPF-A/B5*xx* +0.43 mm (±0.008 in.).

Motors are designed to metric dimensions. Inch dimensions are approximate conversions from millimeters. Dimensions without tolerances are for reference.

# Kinetix MPS Stainless-steel Servo Motors

Kinetix MPS servo motors are specifically designed to meet the unique needs of washdown environments. These motors are specifically designed for high-pressure, highly caustic washdown environments. The Kinetix MPS servo motors extend the wide range of Allen-Bradley servo motors into new applications on food, beverage, brewing, dairy, pharmaceutical, and health and beauty manufacturing equipment. For EHEDG type of hygienic requirements, we recommend the Kinetix VPH hygienic stainless-steel servo motors.

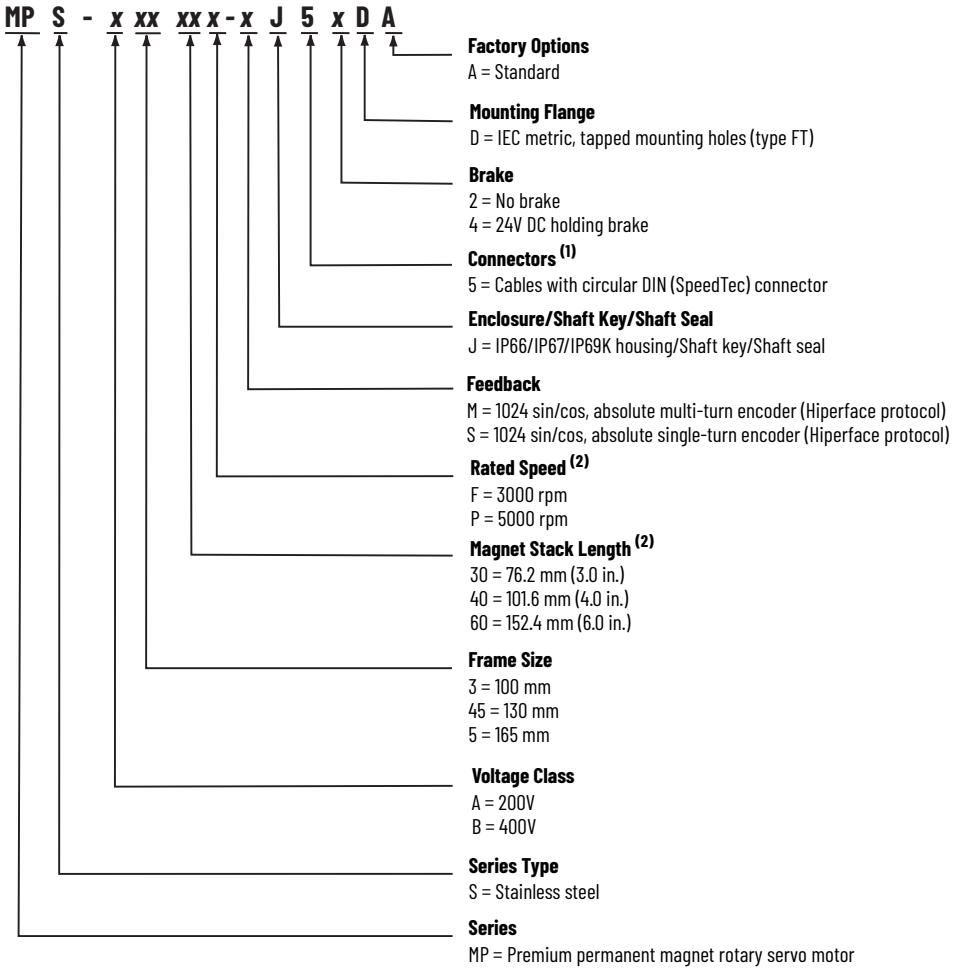
## Kinetix MPS Stainless-steel Motor Features

| Attribute | Value |
|---|---|
| Main characteristics | • Specifically designed for hygienic environments for use with high pressure, highly caustic washdown applications<br>• Hiperface encoder protocol<br>• Low rotor inertia |
| Features | • Smooth, passivated 300 series stainless-steel cylindrical exterior<br>• Certified and listed to NSF/ANSI Standard 169<br>• 200V and 400V-class windings<br>• Single-turn and multi-turn absolute feedback options<br>• Shaft-end threaded hole<br>• Cable extensions, 3 m (9.8 ft)<br>• Standard IEC 72-1 mounting dimensions |
| Motor type | Brushless AC synchronous servo motors |
| Environmental rating | • IP66/IP67 with shaft seal (standard) and use of environmentally sealed cable connectors<br>• IP69K for 1200 psi washdown (1) |
| Certifications | Kinetix MPS rotary motors are UL Recognized components to applicable UL and CSA standards. CE marked for all applicable directives. Refer to rok.auto/certifications for the Product Certifications website. |
| Continuous stall torque | 3.6...21.5 N•m (32...190 lb•in) |
| Peak stall torque | 11.1...98 N•m (67.8...600 lb•in) |
| Rated speed | 3000 and 5000 rpm |
| Motor rated output | 1.3...3.5 kW |
| Compatible servo drives | • Kinetix 5500 (2)<br>• Kinetix 5700<br>• Kinetix 6200/6500<br>• Kinetix 6000<br>• Kinetix 300/350<br>• Kinetix 2000 |
| Compatible servo cables | 2090-C*xx*M7*xx* cables |
| Typical applications | • Meat and poultry<br>• Food slicing and filling<br>• Raw food handling<br>• Processing<br>• Life science<br>• Consumer products |

(1) The cable connectors are rated IP66 and IP67 and are not designed to withstand high-pressure washdown or washdown with aggressive cleaning compounds. Position connectors away from direct exposure to cleaning processes, for example, within washdown-rated conduit or junction boxes.
(2) Requires the 2198-H2DCK Hiperface-to-DSL feedback converter kit. Kinetix MPS (200V-class) servo motors require the 2198-H2DCK (series B or later) converter kit.

# Catalog Numbers - Kinetix MPS Stainless-steel Servo Motors

Catalog numbers consist of various characters, each of which identifies a specific option for that component. Use the catalog numbering table chart below to understand the configuration of your motor. For questions regarding product availability, contact your Allen-Bradley distributor.




(1) The motor has 3 m (9.8 ft) cables with nickel-plated connector extensions.

**IMPORTANT** The connectors are O-ring sealed, but not designed to withstand direct high-pressure washdown with aggressive cleaning compounds. The 3 m (9.8 ft) cables are provided so the connectors can be positioned in an area away from direct exposure to the cleaning process, such as within washdown-rated conduit or junction boxes.

(2) Not all combinations are available. Only the configurations for rated speed and magnet stack length, as listed in Kinetix MPS Servo Motor (200V-class) Performance Specifications on page 127 and Kinetix MPS Servo Motor (400V-class) Performance Specifications on page 127, are available. Use Motion Analyzer software to size and select motors for your application.

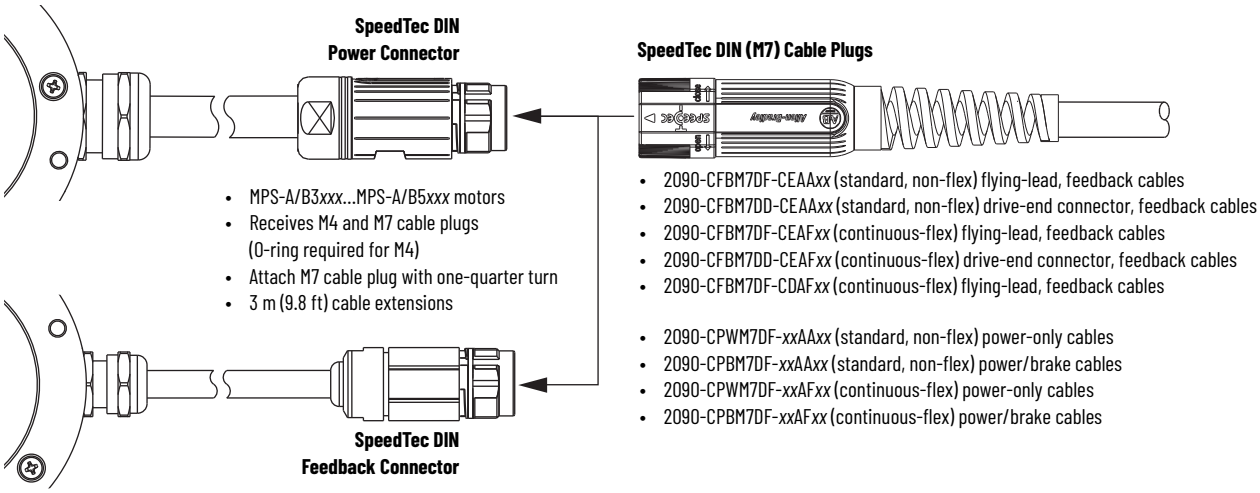
# Kinetix MPS Stainless-steel Motor High-resolution Encoders

Kinetix MPS servo motors are available with high-performance encoders with a choice of single-turn (-S) or multi-turn (-M) high-resolution feedback:

- 1024 sin/cos cycles per revolution for up to 21-bit resolution (2,097,152 counts per revolution) -M and -S (MPS-A/B3*xx*, MPS-A/B45*xx*, and MPS-B5*xx* motors).
- Single-turn encoder provides high-resolution absolute position feedback within one turn.
- Multi-turn encoder provides high-resolution absolute position feedback within 4096 turns. The electromechanical design does not require a battery.

# Motor Connector/Cable Compatibility

Kinetix MPS servo motors are equipped with SpeedTec DIN connectors.




- 2090-CFBM7DF-CEAA*xx* (standard, non-flex) flying-lead, feedback cables
- 2090-CFBM7DD-CEAA*xx* (standard, non-flex) drive-end connector, feedback cables
- 2090-CFBM7DF-CEAF*xx* (continuous-flex) flying-lead, feedback cables
- 2090-CFBM7DD-CEAF*xx* (continuous-flex) drive-end connector, feedback cables
- 2090-CFBM7DF-CDAF*xx* (continuous-flex) flying-lead, feedback cables

- 2090-CPWM7DF-*xx*AA*xx* (standard, non-flex) power-only cables
- 2090-CPBM7DF-*xx*AA*xx* (standard, non-flex) power/brake cables
- 2090-CPWM7DF-*xx*AF*xx* (continuous-flex) power-only cables
- 2090-CPBM7DF-*xx*AF*xx* (continuous-flex) power/brake cables

# Kinetix MPS Stainless-steel Motor Options

Kinetix MPS servo motors are available with these options:

- 24V DC holding brake.
- The positive air-pressure accessory kit (catalog number MPS-AIR-PURGE) is mounted to the rear cover of the motor to provide positive air pressure and further reduce the chance of contamination inside the motor. No special tool is required for installation and removal.
- Shaft seal kits (with slinger) are available for field replacement. Shaft seals are made of PTFE and kits include a lubricant to reduce wear.

**IMPORTANT** Shaft seals are subject to wear and require periodic inspection and replacement. Replacement is recommended every 3 months, not to exceed 12 months, depending on use.

**Shaft Seal Kit Catalog Numbers**

| Motor Cat. No. | Shaft Seal Kit Cat. No. |
|---|---|
| MPS-A3*xx* and MPS-B3*xx* | MPS-SST-A3B3 |
| MPS-A45*xx* and MPS-B45*xx* | MPS-SST-A45B45 |
| MPS-B5*xx* | MPS-SST-F165 |

Refer to the Kinetix MPS Stainless-steel Servo Motor Installation Instructions, publication MP-IN005, for more information.

# Technical Specifications - Kinetix MPS Stainless-steel Servo Motors

### Kinetix MPS Servo Motor (200V-class) Performance Specifications

| Motor Cat. No. | Rated Speed rpm | Maximum Speed rpm | Continuous Stall Torque N•m (lb•in) | Peak Stall Torque N•m (lb•in) | Motor Rated Output kW | Rotor Inertia (1) kg-m$^2$ (lb•in•s$^2$) | Motor Weight, approx (1) kg (lb) |
|---|---|---|---|---|---|---|---|
| MPS-A330P | 5000 | 5000 | 3.6 (32) | 11.1 (98) | 1.3 | 0.00012 (0.0010) | 7.4 (16.2) |
| MPS-A4540F | 3000 | 3000 | 8.1 (72) | 27.1 (240) | 1.4 | 0.00052 (0.0046) | 13 (28.5) |

(1) Refer to Kinetix MPS Servo Motor Brake Specifications on page 127 for brake rotor inertia and brake motor weight.

### Kinetix MPS Servo Motor (400V-class) Performance Specifications

| Motor Cat. No. | Rated Speed rpm | Maximum Speed rpm | Continuous Stall Torque N•m (lb•in) | Peak Stall Torque N•m (lb•in) | Motor Rated Output kW | Rotor Inertia (1) (2) kg-m$^2$ (lb•in•s$^2$) | Motor Weight, approx (1) kg (lb) |
|---|---|---|---|---|---|---|---|
| MPS-B330P | 5000 | 5000 | 3.6 (32) | 11.1 (98) | 1.3 | 0.00012 (0.0010) | 7.4 (16.2) |
| MPS-B4540F | 3000 | 3000 | 8.1 (72) | 27.1 (240) | 1.4 | 0.00052 (0.0046) | 13 (28.5) |
| MPS-B560F | 3000 | 3000 | 21.5 (190) | 67.8 (600) | 3.5 | 0.00227 (0.0200) | 30 (66) |

(1) Refer to Kinetix MPS Servo Motor Brake Specifications on page 127 for brake rotor inertia and brake motor weight.
(2) Rotor inertia can vary slightly depending on feedback.

### Kinetix MPS Servo Motor Brake Specifications

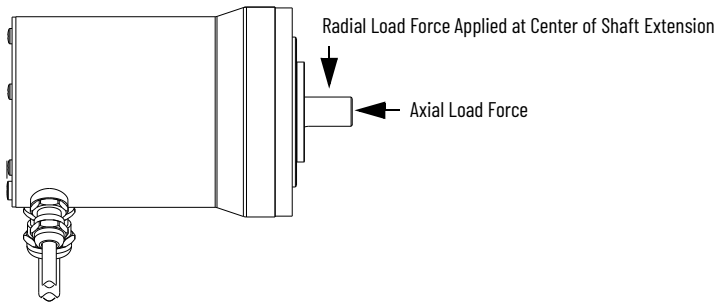
| Motor Cat. No. | Backlash, max (brake engaged) arc minutes | Holding Torque N•m (lb•in) | Coil Current at 24V DC A | Brake Response Time | | | Brake Rotor Inertia kg-m$^2$ (lb•in•s$^2$) | Brake Motor Weight, approx kg (lb) |
|---|---|---|---|---|---|---|---|---|
| | | | | Release ms | Engage (1) | | | |
| | | | | | MOV ms | Diode ms | | |
| MPS-A/B330 | 45 | 4.18 (37) | 0.45…0.55 | 50 | 20 | 110 | 0.00013 (0.0011) | 8.8 (19.3) |
| MPS-A/B4540 | 48 | 10.2 (90) | 0.576…0.704 | 110 | 25 | 160 | 0.00052 (0.0046) | 15.4 (34.0) |
| MPS-B560 | 25 | 28.3 (250) | 1.05…1.28 | 70 | 50 | 250 | 0.00227 (0.0200) | 32.2 (70.8) |

(1) By using an arc suppression device in external control circuit.

## Kinetix MPS Stainless-steel Motor Load Force Ratings

Kinetix MPS servo motors are capable of operating with the maximum radial or maximum axial shaft loads listed in the following tables. Radial loads listed are applied in the middle of the shaft extension. The tables starting below represent an $L_{10}$ bearing fatigue life of 20,000 hours. This 20,000-hour life does not account for possible application-specific life reduction that can occur due to bearing grease contamination from external sources. Maximum operating speed is limited by motor winding.

### Load Forces on Shaft



### Radial Load Force Ratings

| Motor Cat. No. | 500 rpm kg (lb) | 1000 rpm kg (lb) | 2000 rpm kg (lb) | 3000 rpm kg (lb) | 3500 rpm kg (lb) | 4000 rpm kg (lb) | 5000 rpm kg (lb) |
|---|---|---|---|---|---|---|---|
| MPS-A/B330 | – | 74 (163) | 59 (130) | – | 49 (108) | – | 43 (95) |
| MPS-A/B4540 | 140 (309) | 111 (245) | 89 (195) | 77 (170) | – | – | – |
| MPS-B560 | – | 154 (338) | 122 (268) | 106 (234) | – | – | – |

### Axial Load Force Ratings (maximum radial load)

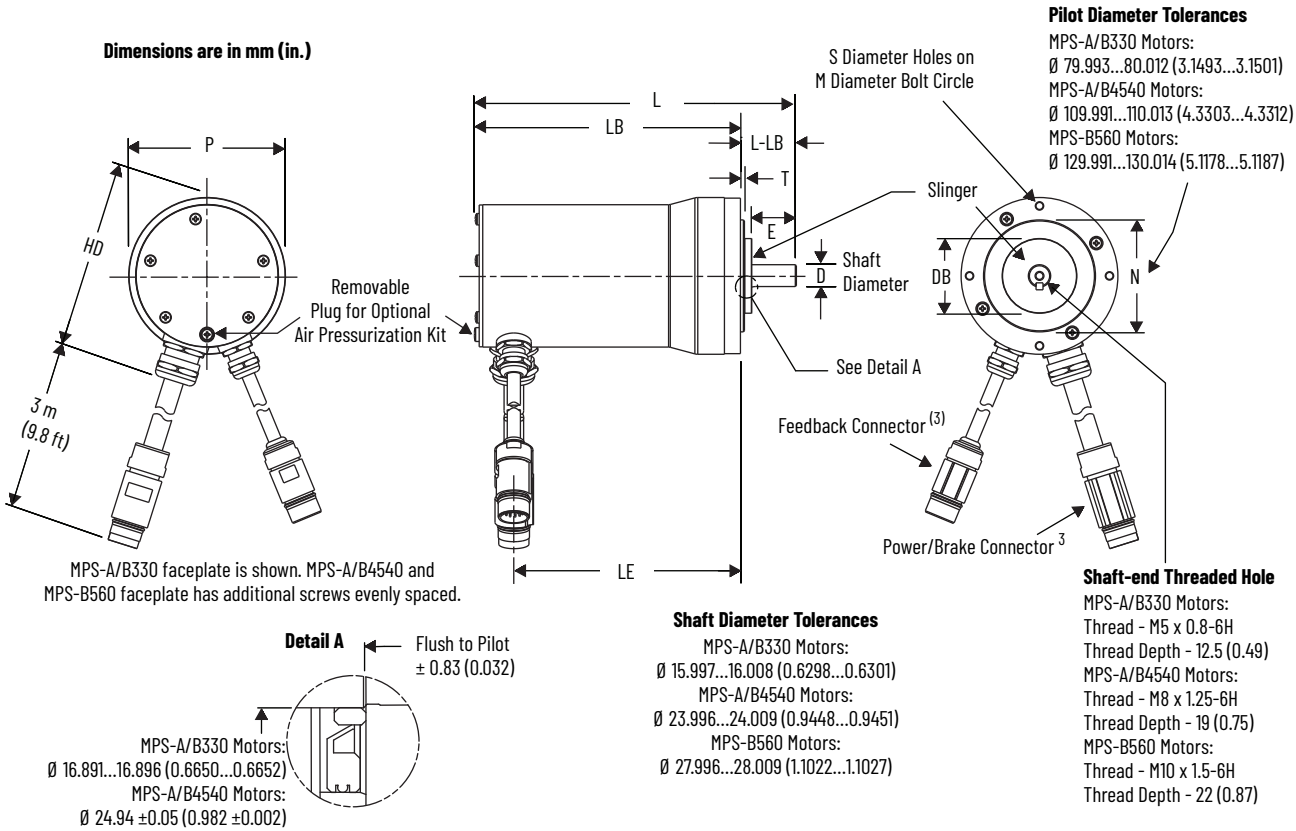
| Motor Cat. No. | 500 rpm kg (lb) | 1000 rpm kg (lb) | 2000 rpm kg (lb) | 3000 rpm kg (lb) | 3500 rpm kg (lb) | 4000 rpm kg (lb) | 5000 rpm kg (lb) |
|---|---|---|---|---|---|---|---|
| MPS-A/B330 | – | 27 (59) | 20 (44) | – | 16 (35) | – | 13 (29) |
| MPS-A/B4540 | 49 (107) | 36 (80) | 27 (59) | 22 (49) | – | – | – |
| MPS-B560 | – | 52 (115) | 39 (85) | 32 (71) | – | – | – |

### Axial Load Force Ratings (zero radial load)

| Motor Cat. No. | 500 rpm kg (lb) | 1000 rpm kg (lb) | 2000 rpm kg (lb) | 3000 rpm kg (lb) | 3500 rpm kg (lb) | 4000 rpm kg (lb) | 5000 rpm kg (lb) |
|---|---|---|---|---|---|---|---|
| MPS-A/B330 | – | 36 (79) | 27 (59) | – | 21 (46) | – | 18 (40) |
| MPS-A/B4540 | 69 (152) | 51 (112) | 38 (83) | 31 (69) | – | – | – |
| MPS-B560 | – | 68 (149) | 50 (109) | 42 (92) | – | – | – |

# Dimensions - Kinetix MPS Stainless-steel Servo Motors

### MPS-A/B330, MPS-A/B4540, MPS-B560 Motor Dimensions




| Shaft, Pilot, and Keyway Tolerances | MPS-A/B330 | MPS-A/B4540 | MPS-B560 |
|---|---|---|---|
| Shaft Runout (T.I.R.) | 0.035 (0.0014) | 0.04 (0.0016) | 0.04 (0.0016) |
| Pilot Eccentricity (T.I.R.) | 0.08 (0.0031) | 0.10 (0.0039) | 0.10 (0.0039) |
| Max Face Runout (T.I.R.) | 0.08 (0.0031) | 0.10 (0.0039) | 0.10 (0.0039) |
| Keyway Depth (GE) | 3.00...3.10 (0.118...0.122) | 4.00...4.20 (0.158...0.165) | 4.00...4.20 (0.158...0.165) |
| Keyway Width (F) | 4.97...5.00 (0.196...0.197) | 7.96...8.00 (0.314...0.315) | 7.96...8.00 (0.314...0.315) |

| Motor Cat. No. | HD mm (in.) | T mm (in.) | E mm (in.) | LE (1) mm (in.) | L (1) mm (in.) | LB (1) mm (in.) | L-LB (2) mm (in.) | D mm (in.) | DB mm (in.) | M mm (in.) | S mm (in.) | N mm (in.) | P mm (in.) | GE mm (in.) | F mm (in.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MPS-A/B330 | 135 (5.31) | 2.87 (0.113) | 32.1 (1.26) | 162 (6.38) | 230 (9.05) | 190 (7.49) | 40.0 (1.57) | 16.0 (0.63) | 50.8 (2.0) | 100 (3.94) | M6x1.0-6H Depth: 7.0 (0.28) | 80.0 (3.15) | 112 (4.41) | 3.0 (0.118) | 5.0 (0.197) |
| MPS-A/B4540 | 164 (6.46) | 3.38 (0.133) | 41.4 (1.63) | 185 (7.30) | 266 (10.45) | 216 (8.48) | 50.0 (1.97) | 24.0 (0.945) | 70.0 (2.75) | 130 (5.12) | M8x1.25-6H Depth: 9.0 (0.35) | 110 (4.33) | 143.2 (5.64) | 4.0 (0.158) | 8.0 (0.315) |
| MPS-B560 | 198 (7.79) | 3.38 (0.13) | 51.52 (2.03) | 302 (11.90) | 396 (15.60) | 336 (13.24) | 60.0 (2.36) | 28.0 (1.10) | 82.6 (3.25) | 165 (6.49) | M10x1.5-6H Depth: 11.0 (0.43) | 130 (5.12) | 181 (7.13) | 4.0 (0.158) | 8.0 (0.315) |

(1) If ordering an MPS-A/B330 motor with brake, add 35 mm (1.38 in.) to dimensions L and LB, and 34 mm (1.34 in.) to dimension LE.
If ordering an MPS-A/B4540 motor with brake add 48.5 mm (1.91 in.) to dimensions L, LB, and LE.
(2) Tolerance for this dimension is ±0.7 mm (±0.028 in.).
(3) Specifications for the 3 m (9.8 ft) power and feedback cable leads are identical to those of the 2090-XXNPMF-xxSxx (power) and 2090-XXNFMF-Sxx (feedback) cables. Refer to Kinetix Motion Accessories Technical Data, publication KNX-TD004, for more information.

Motors are designed to metric dimensions. Inch dimensions are approximate conversions from millimeters. Dimensions without tolerances are for reference.

# Kinetix TLP Multi-purpose Servo Motors

Kinetix TLP servo motors, tested and validated for optimal performance with Kinetix 5100 and Kinetix 5300 servo drives, are available with 230V or 480V windings and with or without 24V DC holding brakes. A wide-range of other economical and customizable options are also available.

## Kinetix TLP Servo Motor Features

| Attribute | Value |
|---|---|
| Main characteristics | • Developed to match Kinetix 5100 and Kinetix 5300 servo drive for optimal system performance<br>• Metric frame sizes<br>• High torque to size ratio |
| Features | • 200V and 400V-class windings<br>• 24-bit high-resolution single-turn and multi-turn absolute feedback<br>• Shaft-end threaded hole<br>• Metric mounting, consistent with Kinetix TL and TLY compact servo motors |
| Motor type | Brushless AC synchronous servo motors |
| Cables and connectors | • On-motor cables (TLP-x046…TLP-x100 frame sizes)<br>• Military style motor connectors (TLP-A/B115…TLP-A/B235 frame sizes)<br>• Kinetix TLP drive/motor system cables lengths up to 50 m (164 ft)<br>• Build your own cable options with available connector kits |
| Environmental rating | • IP30 on-motor cable connectors (TLP-x046…TLP-x100 frame sizes)<br>• IP40 motor without shaft seal<br>• IP65 motor with optional shaft seal and use of environmentally sealed cable connectors |
| Certifications | Kinetix TLP rotary motors are UL Recognized components to applicable UL and CSA standards. CE marked for all applicable directives. Refer to rok.auto/certifications for the Product Certifications website. |
| Continuous stall torque | 0.160…95.4 N•m (1.42…884 lb•in) |
| Peak stall torque | 0.447…185 N•m (3.96…1634 lb•in) |
| Rated speed | Up to 3000 rpm |
| Motor rated output | 0.05…15.0 kW (0.067…20.1 Hp) |
| Compatible servo drives | • Kinetix 5100<br>• Kinetix 5300 |
| Compatible servo cables | 2090-CT*xx-xxxx-xxxxx* Kinetix TLP motor cables |
| Typical applications | • Packaging<br>• Converting<br>• Material handling<br>• Electronic assembly<br>• Automotive<br>• Robotics<br>• Medical laboratory equipment |

# Catalog Numbers - Kinetix TLP Servo Motors

Catalog numbers consist of various characters, each of which identifies a specific option for that component. Use the catalog numbering table chart below to understand the configuration of your motor. For questions regarding product availability, contact your Allen-Bradley distributor.

**TL P - x xxx -xxx - D x xx x x**

**Factory Options**
A = Standard (without shaft seal)
S = Shaft seal

**Brake**
2 = No brake
4 = 24V DC holding brake

**Connector**
A3 = Rectangular connectors with 0.3 m (11.8 in.) on-motor cables
A1 = Rectangular connectors with 1.0 m (39.4 in.) on-motor cables
MC = Military style connectors for TLP-A/B115-*xxx* and TLP-A/B145-*xxx* motors
MD = Military style connectors for TLP-A200-200, TLP-A/B200-300, TLP-A200-350, TLP-A/B200-450, TLP-B200-550, TLP-B200-750
ME = Military style connectors for TLP-A200-550, TLP-A200-750 and TLP-A/B235-*xxx* motors

**Shaft Key**
J = Shaft key
K = Smooth shaft

**Feedback**
D = 24-bit absolute single-turn and multi-turn (65,536 revolutions capable) with battery enabled encoder. (1)

**Rated Power (2)**

| | | | |
|---|---|---|---|
| 005 = 50 W | 075 = 750 W | 250 = 2.5 kW | 750 = 7.5 kW |
| 010 = 100 W | 090 = 900 W | 300 = 3.0 kW | 11K = 11 kW |
| 020 = 200 W | 100 = 1.0 kW | 350 = 3.5 kW | 14K = 14 kW |
| 040 = 400 W | 150 = 1.5 kW | 450 = 4.5 kW | 15K = 15 kW |
| 050 = 500 W | 200 = 2.0 kW | 550 = 5.5 kW | |

**Frame Size - Bolt Circle Diameter (BCD) (2)**

| | |
|---|---|
| 046 = 46 mm | 115 = 115 mm |
| 070 = 70 mm | 145 = 145 mm |
| 090 = 90 mm | 200 = 200 mm |
| 100 = 100 mm | 235 = 235 mm |

**Voltage Class**
A = 200V
B = 400V

**Series Type**
P = Multi-purpose

**Series**
TL = Kinetix TLP multi-purpose servo motors that are optimized to the ratings of Kinetix 5100 and Kinetix 5300 servo drives.

(1) Multi-turn revolution depends on the system settings and configuration.
(2) Not all combinations are available. Only the configurations for rated power and frame size, as listed in Kinetix TLP Servo Motor (200V-class) Performance Specifications on page 134 are available. Use Motion Analyzer software to size and select motors for your application.

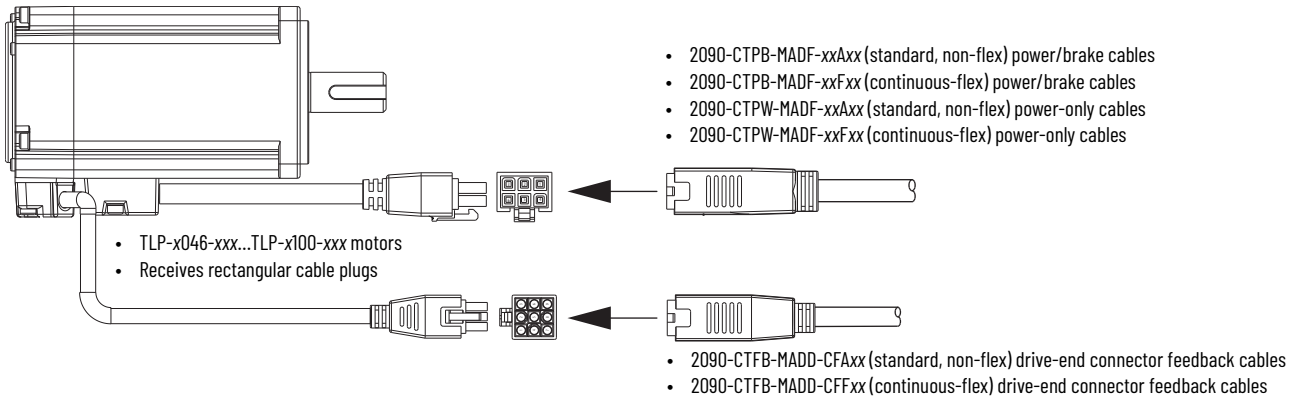
# Kinetix TLP Servo Motor High-resolution Encoders

Kinetix TLP servo motors are equipped with 24-bit high-resolution serial encoders that are capable of single-turn and multi-turn operation:

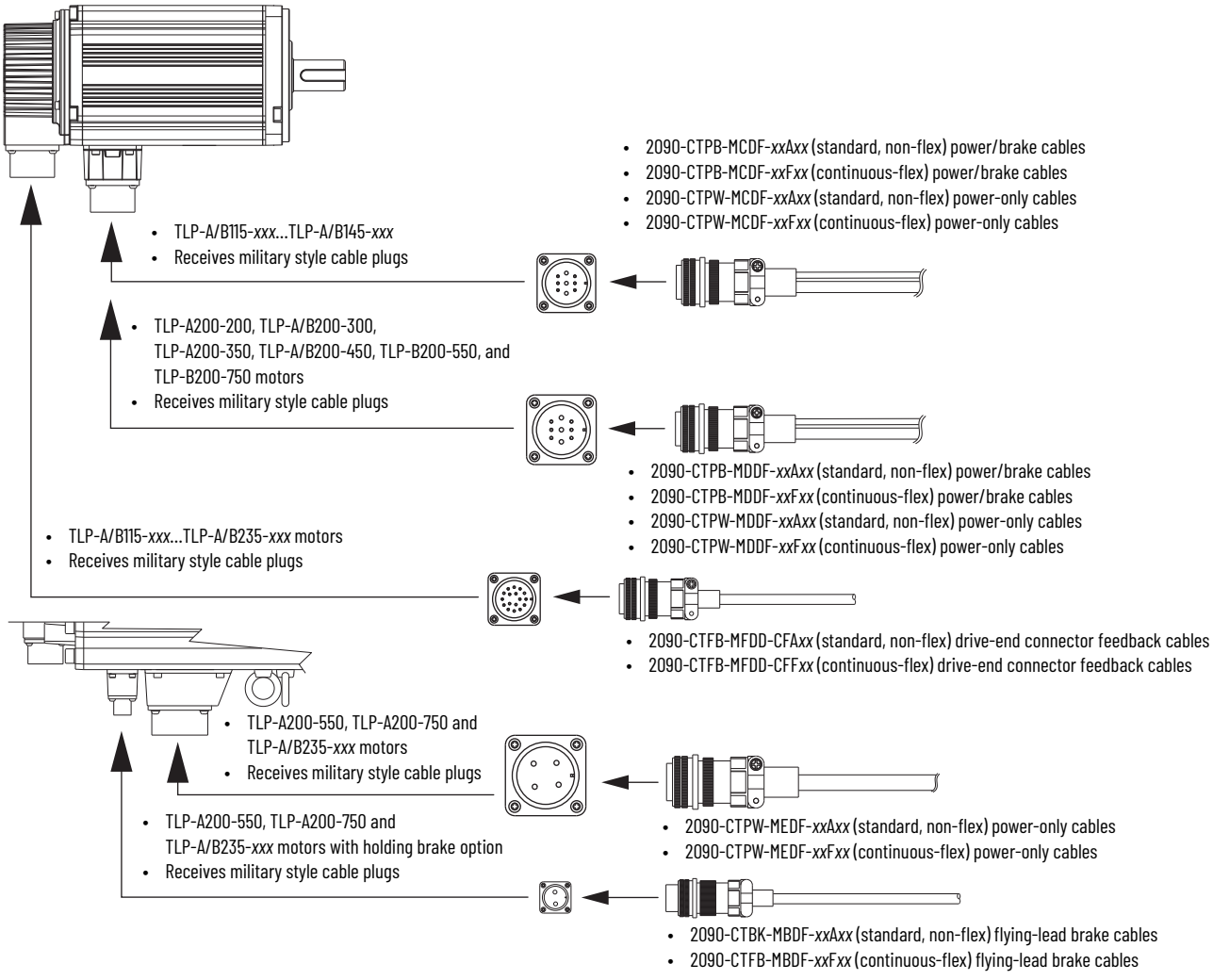
- Single-turn encoder operation (without battery backup) provides high-resolution absolute position feedback within one turn.
- Multi-turn encoder operation (battery required) provides high-resolution absolute position feedback within 65,536 turns. Actual multi-turn revolutions depend on the system settings and configuration.

# Motor Connector/Cable Compatibility

TLP-*x*046...TLP-*x*100 servo motors are equipped with rectangular connectors.




TLP-A/B115...TLP-A/B235 servo motors are equipped with military style connectors.




For cable specifications, refer to Kinetix Motion Accessories Technical Data, publication KNX-TD004.

# Kinetix TLP Servo Motor Options

Kinetix TLP servo motors are available with these options:

- 24V DC holding brake
- Keyed or keyless shaft
- Shaft seal kits are available, as are replacement kits for field installation. A shaft seal provides a barrier that prevents moisture and particles from entering the motor bearings. Shaft seals are made of nitrile and kits and require lubrication to reduce wear.

**IMPORTANT** Shaft seals are subject to wear and require periodic inspection and replacement. Replacement is recommended every 3 months, not to exceed 12 months, depending on use.

**Shaft Seal Kit Selection**

| Motor Cat. No. | Shaft Seal Kit Cat. No. |
|---|---|
| TLP-A046 | TLP-SSN-F046 |
| TLP-A/B070 | TLP-SSN-F070 |
| TLP-A/B090 | TLP-SSN-F090 |
| TLP-A100 | TLP-SSN-F100 |
| TLP-A/B115 | TLP-SSN-F115 |
| TLP-A/B145 | TLP-SSN-F145 |
| TLP-A/B200 | TLP-SSN-F200 |
| TLP-A/B235 | TLP-SSN-F235 |

See Shaft Seal Kits for Kinetix TLP Servo Motors Installation Instructions, publication 2090-IN044, for instructions on how to install a shaft seal.

# Technical Specifications - Kinetix TLP Servo Motors

### Kinetix TLP Servo Motor (200V-class) Performance Specifications

| Motor Cat. No. | Rated Speed rpm | Maximum Speed rpm | Continuous Stall Torque N•m (lb•in) | Peak Stall Torque N•m (lb•in) | Motor Rated Output kW (Hp) | Rotor Inertia (1) kg-m$^2$ (lb•in•s$^2$) | Motor Weight, approx (1) kg (lb) |
|---|---|---|---|---|---|---|---|
| TLP-A046-005 | 3000 | 6000 | 0.16 (1.42) | 0.447 (3.96) | 0.05 (0.067) | 0.00000384 (0.00003398) | 0.45 (0.99) |
| TLP-A046-010 | 3000 | 6000 | 0.32 (2.83) | 1.034 (9.15) | 0.10 (0.134) | 0.00000627 (0.00005549) | 0.60 (1.32) |
| TLP-A070-020 | 3000 | 6000 | 0.64 (5.66) | 2.160 (19.12) | 0.20 (0.268) | 0.000025 (0.0002212) | 1.1 (2.43) |
| TLP-A070-040 | 3000 | 6000 | 1.27 (11.2) | 4.275 (37.84) | 0.40 (0.536) | 0.000045 (0.0003982) | 1.5 (3.31) |
| TLP-A090-075 | 3000 | 6000 | 2.39 (21.2) | 7.505 (66.42) | 0.75 (1.005) | 0.000151 (0.001336) | 3.0 (6.61) |
| TLP-A100-100 | 3000 | 3000 | 3.18 (28.2) | 8.740 (77.36) | 1.0 (1.34) | 0.000262 (0.002319) | 3.8 (8.38) |
| TLP-A115-100 | 3000 | 5000 | 3.18 (28.2) | 8.455 (74.83) | 1.0 (1.34) | 0.000265 (0.002345) | 4.3 (9.48) |
| TLP-A115-200 | 3000 | 5000 | 6.37 (56.4) | 17.48 (154.7) | 2.0 (2.68) | 0.000445 (0.003938) | 6.2 (13.7) |
| TLP-A145-050 | 2000 | 3000 | 2.39 (21.6) | 6.81 (60.27) | 0.50 (0.670) | 0.000817 (0.00723) | 6.8 (15.0) |
| TLP-A145-090 | 1000 | 2000 | 8.59 (76.0) | 20.52 (181.6) | 0.90 (1.206) | 0.001118 (0.009894) | 7.5 (16.5) |
| TLP-A145-100 | 2000 | 3000 | 4.77 (42.2) | 13.30 (117.7) | 1.0 (1.34) | 0.000841 (0.007442) | 7.0 (15.4) |
| TLP-A145-150 | 2000 | 3000 | 7.16 (63.4) | 19.66 (174.0) | 1.5 (2.01) | 0.001118 (0.009894) | 7.5 (16.5) |
| TLP-A145-250 | 3000 | 4500 | 7.96 (70.5) | 24.51 (216.9) | 2.5 (3.35) | 0.00127 (0.01124) | 7.8 (17.2) |
| TLP-A200-200 | 2000 | 3000 | 9.55 (84.5) | 21.85 (193.4) | 2.0 (2.68) | 0.003468 (0.03069) | 13.5 (29.8) |
| TLP-A200-300 | 1500 | 2500 | 19.10 (169.1) | 47.03 (416.3) | 3.0 (4.02) | 0.005495 (0.04863) | 18.5 (40.8) |
| TLP-A200-350 | 2000 | 3000 | 16.71 (147.9) | 43.23 (382.6) | 3.5 (4.69) | 0.005495 (0.04863) | 18.5 (40.8) |
| TLP-A200-450 | 1500 | 3000 | 28.65 (253.6) | 64.04 (566.8) | 4.5 (6.03) | 0.007775 (0.06881) | 23.5 (51.8) |
| TLP-A200-550 | 1500 | 3000 | 35.01 (309.9) | 79.96 (707.7) | 5.5 (7.37) | 0.009978 (0.0883) | 30.5 (67.2) |
| TLP-A200-750 | 1500 | 2500 | 47.74 (422.5) | 104.30 (923.1) | 7.5 (10.1) | 0.01427 (0.12628) | 40.5 (89.3) |
| TLP-A235-11K | 1500 | 2000 | 70.0 (619.6) | 144.30 (1277) | 11.0 (14.7) | 0.0338 (0.2991) | 56.7 (125) |
| TLP-A235-15K | 1500 | 2000 | 95.40 (844.4) | 184.57 (1634) | 15.0 (20.1) | 0.0451 (0.3991) | 74.0 (163) |

(1) Refer to Kinetix TLP Servo Motor Brake Specifications on page 135 for brake rotor inertia and brake motor weight.

### Kinetix TLP Servo Motor (400V-class) Performance Specifications

| Motor Cat. No. | Rated Speed rpm | Maximum Speed rpm | Continuous Stall Torque N•m (lb•in) | Peak Stall Torque N•m (lb•in) | Motor Rated Output kW (Hp) | Rotor Inertia (1) kg-m$^2$ (lb•in•s$^2$) | Motor Weight, (1) approx kg (lb) |
|---|---|---|---|---|---|---|---|
| TLP-B070-040 | 3000 | 6000 | 1.27 (11.2) | 4.25 (37.6) | 0.40 (0.54) | 0.000045 (0.0003982) | 1.5 (3.3) |
| TLP-B090-075 | 3000 | 6000 | 2.39 (21.2) | 8.05 (71.2) | 0.75 (1.01) | 0.000151 (0.001336) | 3.0 (6.6) |
| TLP-B115-100 | 3000 | 5000 | 3.18 (28.1) | 9.34 (82.6) | 1.0 (1.34) | 0.000262 (0.002318) | 4.3 (9.5) |
| TLP-B115-200 | 3000 | 5000 | 6.37 (56.4) | 19.10 (169.0) | 2.0 (2.68) | 0.000445 (0.003938) | 6.2 (13.7) |
| TLP-B145-050 | 2000 | 3000 | 2.39 (21.2) | 6.93 (61.3) | 0.50 (0.67) | 0.000817 (0.00723) | 6.8 (15.0) |
| TLP-B145-100 | 2000 | 3000 | 4.77 (42.4) | 13.03 (115.3) | 1.0 (1.34) | 0.000841 (0.007442) | 7.0 (15.4) |
| TLP-B145-150 | 2000 | 3000 | 7.16 (63.4) | 20.54 (181.8) | 1.5 (2.01) | 0.001118 (0.009894) | 7.5 (16.5) |
| TLP-B145-200 | 2000 | 3000 | 9.55 (84.5) | 24.40 (216.0) | 2.0 (2.68) | 0.001459 (0.012911) | 7.8 (17.2) |
| TLP-B145-250 | 3000 | 4500 | 7.96 (70.5) | 26.30 (232.8) | 2.5 (3.35) | 0.00127 (0.01124) | 7.8 (17.2) |
| TLP-B200-300 | 1500 | 2500 | 19.1 (169.0) | 47.8 (423.0) | 3.0 (4.02) | 0.005495 (0.04863) | 18.5 (40.7) |
| TLP-B200-450 | 1500 | 3000 | 28.7 (254.0) | 67.6 (598.0) | 4.5 (6.03) | 0.007775 (0.06881) | 23.5 (51.7) |
| TLP-B200-550 | 1500 | 3000 | 35.0 (310.0) | 83.8 (742.0) | 5.5 (7.38) | 0.009978 (0.0883) | 30.5 (67.1) |
| TLP-B200-750 | 1500 | 2500 | 47.7 (422.0) | 101.3 (896.0) | 7.5 (10.1) | 0.01427 (0.12628) | 40.5 (89.1) |
| TLP-B235-11K | 1500 | 2000 | 70.0 (620.0) | 158.5 (1403) | 11.0 (14.8) | 0.0338 (0.2991) | 56.7 (125) |
| TLP-B235-14K | 1500 | 2000 | 89.1 (789.0) | 143.6 (1271) | 14.0 (18.8) | 0.0451 (0.3991) | 74.0 (163) |

(1) Refer to Kinetix TLP Servo Motor Brake Specifications on page 135 for brake rotor inertia and brake motor weight.

**Kinetix TLP Servo Motor Brake Specifications**

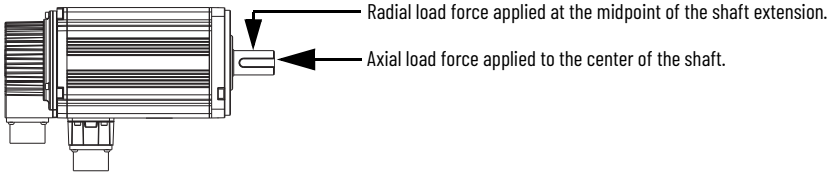
| Motor Cat. No. | Backlash, max (brake engaged) arc minutes | Holding Torque N•m (lb•in) | Coil Current at 24V DC A | Brake Response Time | | Brake Rotor Inertia kg-m$^2$ (lb•in•s$^2$) | Brake Motor Weight, approx kg (lb) |
|---|---|---|---|---|---|---|---|
| | | | | Release ms | Engage (1) ms | | |
| TLP-A046-005 | 180 | 0.32 (2.83) | 0.25 | 40 | 80 | 0.00000446 (0.00003947) | 0.65 (1.43) |
| TLP-A046-010 | | | | | | 0.00000689 (0.00006097) | 0.80 (1.76) |
| TLP-A070-020 | 96 | 1.27 (11.24) | 0.30 | | | 0.000028 (0.0002478) | 1.5 (3.31) |
| TLP-A/B070-040 | | | | | | 0.000048 (0.0004248) | 1.9 (4.19) |
| TLP-A/B090-075 | 72 | 2.39 (21.15) | 0.33 | | | 0.000166 (0.001469) | 3.8 (8.38) |
| TLP-A100-100 | | 3.18 (28.15) | 0.35 | | | 0.000267 (0.002363) | 5.5 (12.1) |
| TLP-A/B115-100 | | 6.37 (56.38) | 0.81 | | | 0.000333 (0.002947) | 4.7 (10.4) |
| TLP-A/B115-200 | | | | | | 0.000495 (0.004381) | 7.2 (15.9) |
| TLP-A/B145-050 | 54 | 9.55 (84.53) | 0.90 | 50 | 110 | 0.000894 (0.007912) | 8.2 (18.1) |
| TLP-A145-090 | | | | | | 0.00119 (0.01053) | 8.9 (19.6) |
| TLP-A/B145-100 | | | | | | 0.000914 (0.008088) | 8.4 (18.5) |
| TLP-A/B145-150 | | | | | | 0.00119 (0.01053) | 8.9 (19.6) |
| TLP-B145-200 | | | | | | 0.001588 (0.014053) | 9.2 (20.3) |
| TLP-A/B145-250 | | | | | | 0.0014 (0.01239) | 9.2 (20.3) |
| TLP-A200-200 | 30 | 16.71 (147.9) | 1.3 | 60 | 120 | 0.003786 (0.0335) | 17.5 (38.6) |
| TLP-A/B200-300 | | | | | | 0.005706 (0.0505) | 22.5 (49.6) |
| TLP-A200-350 | | | | | | 0.005706 (0.0505) | 22.5 (49.6) |
| TLP-A/B200-450 | | 47.74 (422.5) | | 100 | 150 | 0.008065 (0.07137) | 29.0 (63.9) |
| TLP-A/B200-550 | | | | | | 0.01027 (0.09088) | 36.0 (79.4) |
| TLP-A/B200-750 | | | | | | 0.014555 (0.1288) | 46.0 (101) |
| TLP-A/B235-11K | | 95.4 (844.4) | | 150 | 300 | 0.03465 (0.3066) | 66.2 (146) |
| TLP-B235-14K | | | | | | 0.04618 (0.4087) | 83.0 (183) |
| TLP-A235-15K | | | | | | | |

(1) By using diode and zener diode as arc suppression device in external control circuit.

## Kinetix TLP Servo Motor Load Force Ratings

Kinetix TLP servo motors are capable of operating with the maximum radial or maximum axial shaft loads listed in the following tables. Radial loads listed are applied in the middle of the shaft extension. The tables starting below represent an $L_{10}$ bearing fatigue life of 40,000 hours. This 40,000-hour life does not account for possible application-specific life reduction that can occur due to bearing grease contamination from external sources. Maximum operating speed is limited by motor winding.

**Load Forces on Shaft**



## Radial Load Force Ratings (maximum) for Non-brake Motors

| Motor Cat. No. (1) | Maximum Speed rpm | RPM | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 kgf | 750 kgf | 1000 kgf | 1125 kgf | 1250 kgf | 1500 kgf | 2000 kgf | 2250 kgf | 2500 kgf | 3000 kgf | 3375 kgf | 3750 kgf | 4500 kgf | 5000 kgf | 6000 kgf |
| TLP-A046-005-D*xxx*2*x* | 6000 | – | – | – | – | – | 8.8 | – | – | – | 7.0 | – | – | 6.1 | – | 5.6 |
| TLP-A046-010-D*xxx*2*x* | 6000 | – | – | – | – | – | 9.7 | – | – | – | 7.7 | – | – | 6.8 | – | 6.1 |
| TLP-A070-020-D*xxx*2*x* | 6000 | – | – | – | – | – | 22.4 | – | – | – | 17.8 | – | – | 15.5 | – | 14.1 |
| TLP-A070-040-D*xxx*2*x* | 6000 | – | – | – | – | – | 25 | – | – | – | 19.9 | – | – | 17.4 | – | 15.8 |
| TLP-A090-075-D*xxx*2*x* | 6000 | – | – | – | – | – | 35.6 | – | – | – | 28.2 | – | – | 24.7 | – | 22.4 |
| TLP-A100-100-D*xxx*2*x* | 3000 | – | 61.8 | – | – | – | 49.0 | – | 42.8 | – | 38.9 | – | – | – | – | – |
| TLP-A115-100-D*xxx*2*x* | 5000 | – | – | – | – | 52.9 | – | – | – | 42 | – | – | 36.7 | – | 33.3 | – |
| TLP-A115-200-D*xxx*2*x* | 5000 | – | – | – | – | 58.1 | – | – | – | 46.1 | – | – | 10.3 | – | 36.6 | – |
| TLP-A145-050-D*xxx*2*x* | 3000 | – | 106.8 | – | – | – | 84.7 | – | 74 | – | 67.3 | – | – | – | – | – |
| TLP-A145-090-D*xxx*2*x* | 2000 | 130.1 | – | 103.3 | – | – | 90.2 | 82 | – | – | – | – | – | – | – | – |
| TLP-A145-100-D*xxx*2*x* | 3000 | – | 106.8 | – | – | – | 84.7 | – | 74 | – | 67.3 | – | – | – | – | – |
| TLP-A145-150-D*xxx*2*x* | 3000 | – | 113.6 | – | – | – | 90.2 | – | 78.8 | – | 71.6 | – | – | – | – | – |
| TLP-A145-250-D*xxx*2*x* | 4500 | – | – | – | 105.1 | – | – | – | 83.4 | – | – | 72.8 | – | 66.2 | – | – |
| TLP-A200-200-D*xxx*2*x* | 3000 | – | 125.9 | – | – | – | 99.9 | – | 87.3 | – | 79.3 | – | – | – | – | – |
| TLP-A200-300-D*xxx*2*x* | 2500 | – | 140 | – | – | – | 111.1 | – | 97.1 | – | 88.2 | – | – | – | – | – |
| TLP-A200-350-D*xxx*2*x* | 3000 | – | 140 | – | – | – | 111.1 | – | 97.1 | – | 88.2 | – | – | – | – | – |
| TLP-A200-450-D*xxx*2*x* | 3000 | – | 149.7 | – | – | – | 118.8 | – | 103.8 | – | 94.3 | – | – | – | – | – |
| TLP-A200-550-D*xxx*2*x* | 3000 | – | 149.2 | – | – | – | 118.4 | – | 103.4 | – | 94 | – | – | – | – | – |
| TLP-A200-750-D*xxx*2*x* | 2500 | – | 159.3 | – | – | – | 126.4 | – | 110.4 | – | 100.3 | – | – | – | – | – |
| TLP-A235-11K-D*xxx*2*x* | 2000 | 435 | – | 345.3 | – | – | 301.6 | 274 | – | – | – | – | – | – | – | – |
| TLP-A235-15K-D*xxx*2*x* | 2000 | 463.1 | – | 367.6 | – | – | 321.1 | 291.7 | – | – | – | – | – | – | – | – |
| TLP-B070-040-D*xxx*2*x* | 6000 | – | – | – | – | – | 25 | – | – | – | 19.9 | – | – | 17.4 | – | 15.8 |
| TLP-B090-075-D*xxx*2*x* | 6000 | – | – | – | – | – | 35.6 | – | – | – | 28.2 | – | – | 24.7 | – | 22.4 |
| TLP-B115-100-D*xxx*2*x* | 5000 | – | – | – | – | 52.9 | – | – | – | 42 | – | – | 36.7 | | 33.3 | – |
| TLP-B115-200-D*xxx*2*x* | 5000 | – | – | – | – | 58.1 | – | – | – | 46.1 | – | – | 10.3 | | 36.6 | – |
| TLP-B145-050-D*xxx*2*x* | 3000 | – | 106.8 | – | – | – | 84.7 | – | 74 | – | 67.3 | – | – | – | – | – |
| TLP-B145-100-D*xxx*2*x* | 3000 | – | 106.8 | – | – | – | 84.7 | – | 74 | – | 67.3 | – | – | – | – | – |
| TLP-B145-150-D*xxx*2*x* | 3000 | – | 113.6 | – | – | – | 90.2 | – | 78.8 | – | 71.6 | – | – | – | – | – |
| TLP-B145-200-D*xxx*2*x* | 3000 | – | 120.3 | – | – | – | 95.5 | – | 83.4 | – | 75.8 | – | – | – | – | – |
| TLP-B145-250-D*xxx*2*x* | 4500 | – | – | – | 105.1 | – | – | – | 83.4 | – | – | 72.8 | – | 66.2 | – | – |
| TLP-B200-300-D*xxx*2*x* | 2500 | – | 140 | – | – | – | 111.1 | – | 97.1 | – | 88.2 | – | – | – | – | – |
| TLP-B200-450-D*xxx*2*x* | 3000 | – | 149.7 | – | – | – | 118.8 | – | 103.8 | – | 94.3 | – | – | – | – | – |
| TLP-B200-550-D*xxx*2*x* | 3000 | – | 149.2 | – | – | – | 118.4 | – | 103.4 | – | 94 | – | – | – | – | – |
| TLP-B200-750-D*xxx*2*x* | 2500 | – | 159.3 | – | – | – | 126.4 | – | 110.4 | – | 100.3 | – | – | – | – | – |
| TLP-B235-11K-D*xxx*2*x* | 2000 | 435 | | 345.3 | – | – | 301.6 | 274 | – | – | – | – | – | – | – | – |
| TLP-B235-14K-D*xxx*2*x* | 2000 | 463.1 | | 367.6 | – | – | 321.1 | 291.7 | – | – | – | – | – | – | – | – |

(1) 1.0 kgf = 2.2 lbf or 9.8 N.

## Axial Load Force Ratings (maximum radial load) for Non-brake Motors

| Motor Cat. No. (1) | Maximum Speed rpm | RPM | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 kgf | 750 kgf | 1000 kgf | 1125 kgf | 1250 kgf | 1500 kgf | 2000 kgf | 2250 kgf | 2500 kgf | 3000 kgf | 3375 kgf | 3750 kgf | 4500 kgf | 5000 kgf | 6000 kgf |
| TLP-A046-005-D*xxx2x* | 6000 | – | – | – | – | – | 5.6 | – | – | – | 4.1 | – | – | 3.4 | – | 3.0 |
| TLP-A046-010-D*xxx2x* | 6000 | – | – | – | – | – | 6 | – | – | – | 4.4 | – | – | 3.7 | – | 3.3 |
| TLP-A070-020-D*xxx2x* | 6000 | – | – | – | – | – | 10.1 | – | – | – | 7.4 | – | – | 6.2 | – | 5.5 |
| TLP-A070-040-D*xxx2x* | 6000 | – | – | – | – | – | 11.3 | – | – | – | 8.3 | – | – | 7.0 | – | 6.2 |
| TLP-A090-075-D*xxx2x* | 6000 | – | – | – | – | – | 13.6 | – | – | – | 10.1 | – | – | 8.5 | – | 7.5 |
| TLP-A100-100-D*xxx2x* | 3000 | – | 18.4 | – | – | – | 13.6 | – | 11.4 | – | 10.1 | – | – | – | – | – |
| TLP-A115-100-D*xxx2x* | 5000 | – | – | – | – | 18.1 | – | – | – | 13.4 | – | – | 11.2 | – | 9.9 | – |
| TLP-A115-200-D*xxx2x* | 5000 | – | – | – | – | 20.5 | – | – | – | 15.1 | – | – | 12.7 | – | 11.2 | – |
| TLP-A145-050-D*xxx2x* | 3000 | – | 28.1 | – | – | – | 20.8 | – | 17.5 | – | 15.4 | – | – | – | – | – |
| TLP-A145-090-D*xxx2x* | 2000 | 37.2 | – | 27.5 | – | – | 23.1 | 20.4 | – | – | – | – | – | – | – | – |
| TLP-A145-100-D*xxx2x* | 3000 | – | 28.1 | – | – | – | 20.8 | – | 17.5 | – | 15.4 | – | – | – | – | – |
| TLP-A145-150-D*xxx2x* | 3000 | – | 31.2 | – | – | – | 23.1 | – | 19.4 | – | 17.1 | – | – | – | – | – |
| TLP-A145-250-D*xxx2x* | 4500 | – | – | – | 28.7 | – | – | – | 21.1 | – | – | 17.8 | – | 15.7 | – | – |
| TLP-A200-200-D*xxx2x* | 3000 | – | 54.3 | – | – | – | 40.2 | – | 33.7 | – | 29.7 | – | – | – | – | – |
| TLP-A200-300-D*xxx2x* | 2500 | – | 60.8 | – | – | – | 45.0 | – | 37.7 | – | 33.3 | – | – | – | – | – |
| TLP-A200-350-D*xxx2x* | 3000 | – | 60.8 | – | – | – | 45.0 | – | 37.7 | – | 33.3 | – | – | – | – | – |
| TLP-A200-450-D*xxx2x* | 3000 | – | 65.3 | – | – | – | 48.3 | – | 40.5 | – | 35.8 | – | – | – | – | – |
| TLP-A200-550-D*xxx2x* | 3000 | – | 65.0 | – | – | – | 48.1 | – | 40.3 | – | 35.6 | – | – | – | – | – |
| TLP-A200-750-D*xxx2x* | 2500 | – | 69.8 | – | – | – | 51.7 | – | 43.3 | – | 38.2 | – | – | – | – | – |
| TLP-A235-11K-D*xxx2x* | 2000 | 65.0 | – | 48.1 | – | – | 40.3 | 35.6 | – | – | – | – | – | – | – | – |
| TLP-A235-15K-D*xxx2x* | 2000 | 77.7 | – | 57.5 | – | – | 48.2 | 42.6 | – | – | – | – | – | – | – | – |
| TLP-B070-040-D*xxx2x* | 6000 | – | – | – | – | – | 11.3 | – | – | – | 8.3 | – | – | 7 | – | 6.2 |
| TLP-B090-075-D*xxx2x* | 6000 | – | – | – | – | – | 13.6 | – | – | – | 10.1 | – | – | 8.5 | – | 7.5 |
| TLP-B115-100-D*xxx2x* | 5000 | – | – | – | – | 18.1 | – | – | – | 13.4 | – | – | 11.2 | | 9.9 | – |
| TLP-B115-200-D*xxx2x* | 5000 | – | – | – | – | 20.5 | – | – | – | 15.1 | – | – | 12.7 | | 11.2 | – |
| TLP-B145-050-D*xxx2x* | 3000 | – | 28.1 | – | – | – | 20.8 | – | 17.5 | – | 15.4 | – | – | – | – | – |
| TLP-B145-100-D*xxx2x* | 3000 | – | 28.1 | – | – | – | 20.8 | – | 17.5 | – | 15.4 | – | – | – | – | – |
| TLP-B145-150-D*xxx2x* | 3000 | – | 31.2 | – | – | – | 23.1 | – | 19.4 | – | 17.1 | – | – | – | – | – |
| TLP-B145-200-D*xxx2x* | 3000 | – | 34.2 | – | – | – | 25.3 | – | 21.2 | – | 18.7 | – | – | – | – | – |
| TLP-B145-250-D*xxx2x* | 4500 | – | – | – | 28.7 | – | – | – | 21.1 | – | – | 17.8 | – | 15.7 | – | – |
| TLP-B200-300-D*xxx2x* | 2500 | – | 60.8 | – | – | – | 45 | – | 37.7 | – | 33.3 | – | – | – | – | – |
| TLP-B200-450-D*xxx2x* | 3000 | – | 65.3 | – | – | – | 48.3 | – | 40.5 | – | 35.8 | – | – | – | – | – |
| TLP-B200-550-D*xxx2x* | 3000 | – | 65 | – | – | – | 48.1 | – | 40.3 | – | 35.6 | – | – | – | – | – |
| TLP-B200-750-D*xxx2x* | 2500 | – | 69.8 | – | – | – | 51.7 | – | 43.3 | – | 38.2 | – | – | – | – | – |
| TLP-B235-11K-D*xxx2x* | 2000 | 65 | – | 48.1 | – | – | 40.3 | 35.6 | – | – | – | – | – | – | – | – |
| TLP-B235-14K-D*xxx2x* | 2000 | 77.7 | – | 57.5 | – | – | 48.2 | 42.6 | – | – | – | – | – | – | – | – |

(1) 1.0 kgf = 2.2 lbf or 9.8 N.

## Axial Load Force Ratings (zero radial load) for Non-brake Motors

| Motor Cat. No. (1) | Maximum Speed rpm | RPM | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 kgf | 750 kgf | 1000 kgf | 1125 kgf | 1250 kgf | 1500 kgf | 2000 kgf | 2250 kgf | 2500 kgf | 3000 kgf | 3375 kgf | 3750 kgf | 4500 kgf | 5000 kgf | 6000 kgf |
| TLP-A046-005-D*xxx2x* | 6000 | – | – | – | – | – | 7.8 | – | – | – | 5.7 | – | – | 4.8 | – | 4.2 |
| TLP-A046-010-D*xxx2x* | 6000 | – | – | – | – | – | 7.8 | – | – | – | 5.7 | – | – | 4.8 | – | 4.2 |
| TLP-A070-020-D*xxx2x* | 6000 | – | – | – | – | – | 15.4 | – | – | – | 11.4 | – | – | 9.5 | – | 8.4 |
| TLP-A070-040-D*xxx2x* | 6000 | – | – | – | – | – | 15.4 | – | – | – | 11.4 | – | – | 9.5 | – | 8.4 |
| TLP-A090-075-D*xxx2x* | 6000 | – | – | – | – | – | 20.4 | – | – | – | 15.1 | – | – | 12.6 | – | 11.1 |
| TLP-A100-100-D*xxx2x* | 3000 | – | 27.5 | – | – | – | 20.4 | – | 17.1 | – | 15.1 | – | – | – | – | – |
| TLP-A115-100-D*xxx2x* | 5000 | – | – | – | – | 27.9 | – | – | – | 20.6 | – | – | 17.3 | – | 15.3 | – |
| TLP-A115-200-D*xxx2x* | 5000 | – | – | – | – | 27.9 | – | – | – | 20.6 | – | – | 17.3 | – | 15.3 | – |
| TLP-A145-050-D*xxx2x* | 3000 | – | 56.4 | – | – | – | 41.7 | – | 35.0 | – | 30.9 | – | – | – | – | – |
| TLP-A145-090-D*xxx2x* | 2000 | 67.2 | – | 49.7 | – | – | 41.7 | 36.8 | – | – | – | – | – | – | – | – |
| TLP-A145-100-D*xxx2x* | 3000 | – | 56.4 | – | – | – | 41.7 | – | 35.0 | – | 30.9 | – | – | – | – | – |
| TLP-A145-150-D*xxx2x* | 3000 | – | 56.4 | – | – | – | 41.7 | – | 35.0 | – | 30.9 | – | – | – | – | – |
| TLP-A145-250-D*xxx2x* | 4500 | – | – | – | 47.3 | – | – | – | 35.0 | – | – | 29.3 | – | 25.9 | – | – |
| TLP-A200-200-D*xxx2x* | 3000 | – | 91.9 | – | – | – | 68.0 | – | 57.0 | – | 50.3 | – | – | – | – | – |
| TLP-A200-300-D*xxx2x* | 2500 | – | 91.9 | – | – | – | 68.0 | – | 57.0 | – | 50.3 | – | – | – | – | – |
| TLP-A200-350-D*xxx2x* | 3000 | – | 91.9 | – | – | – | 68.0 | – | 57.0 | – | 50.3 | – | – | – | – | – |
| TLP-A200-450-D*xxx2x* | 3000 | – | 91.9 | – | – | – | 68.0 | – | 57.0 | – | 50.3 | – | – | – | – | – |
| TLP-A200-550-D*xxx2x* | 3000 | – | 91.9 | – | – | – | 68.0 | – | 57.0 | – | 50.3 | – | – | – | – | – |
| TLP-A200-750-D*xxx2x* | 2500 | – | 91.9 | – | – | – | 68.0 | – | 57.0 | – | 50.3 | – | – | – | – | – |
| TLP-A235-11K-D*xxx2x* | 2000 | 136.5 | – | 101.0 | – | – | 84.7 | 74.8 | – | – | – | – | – | – | – | – |
| TLP-A235-15K-D*xxx2x* | 2000 | 136.5 | – | 101.0 | – | – | 84.7 | 74.8 | – | – | – | – | – | – | – | – |
| TLP-B070-040-D*xxx2x* | 6000 | – | – | – | – | – | 15.4 | – | – | – | 11.4 | – | – | 9.5 | – | 8.4 |
| TLP-B090-075-D*xxx2x* | 6000 | – | – | – | – | – | 20.4 | – | – | – | 15.1 | – | – | 12.6 | – | 11.1 |
| TLP-B115-100-D*xxx2x* | 5000 | – | – | – | – | 27.9 | – | – | – | 20.6 | – | – | 17.3 | – | 15.3 | – |
| TLP-B115-200-D*xxx2x* | 5000 | – | – | – | – | 27.9 | – | – | – | 20.6 | – | – | 17.3 | – | 15.3 | – |
| TLP-B145-050-D*xxx2x* | 3000 | – | 56.4 | – | – | – | 41.7 | | 35 | – | 30.9 | – | – | – | – | – |
| TLP-B145-100-D*xxx2x* | 3000 | – | 56.4 | – | – | – | 41.7 | | 35 | – | 30.9 | – | – | – | – | – |
| TLP-B145-150-D*xxx2x* | 3000 | – | 56.4 | – | – | – | 41.7 | | 35 | – | 30.9 | – | – | – | – | – |
| TLP-B145-200-D*xxx2x* | 3000 | – | 56.4 | – | – | – | 41.7 | | 35 | – | 30.9 | – | – | – | – | – |
| TLP-B145-250-D*xxx2x* | 4500 | – | – | – | 47.3 | – | – | – | 35 | – | – | 29.3 | | 25.9 | – | – |
| TLP-B200-300-D*xxx2x* | 2500 | – | 91.9 | – | – | – | 68 | – | 57 | – | 50.3 | – | – | – | – | – |
| TLP-B200-450-D*xxx2x* | 3000 | – | 91.9 | – | – | – | 68 | – | 57 | – | 50.3 | – | – | – | – | – |
| TLP-B200-550-D*xxx2x* | 3000 | – | 91.9 | – | – | – | 68 | – | 57 | – | 50.3 | – | – | – | – | – |
| TLP-B200-750-D*xxx2x* | 2500 | – | 91.9 | – | – | – | 68 | – | 57 | – | 50.3 | – | – | – | – | – |
| TLP-B235-11K-D*xxx2x* | 2000 | 136.5 | – | 101 | – | – | 84.7 | 74.8 | – | – | – | – | – | – | – | – |
| TLP-B235-14K-D*xxx2x* | 2000 | 136.5 | – | 101 | – | – | 84.7 | 74.8 | – | – | – | – | – | – | – | – |

(1) 1.0 kgf = 2.2 lbf or 9.8 N.

## Radial Load Force Ratings (maximum) for Brake Motors

| Motor Cat. No. (1) | Maximum Speed rpm | RPM | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 kgf | 750 kgf | 1000 kgf | 1125 kgf | 1250 kgf | 1500 kgf | 2000 kgf | 2250 kgf | 2500 kgf | 3000 kgf | 3375 kgf | 3750 kgf | 4500 kgf | 5000 kgf | 6000 kgf |
| TLP-A046-005-D*xxx*4*x* | 6000 | – | – | – | – | – | 10.5 | – | – | – | 8.4 | – | – | 7.3 | – | 6.6 |
| TLP-A046-010-D*xxx*4*x* | 6000 | – | – | – | – | – | 10.9 | – | – | – | 8.7 | – | – | 7.6 | – | 6.9 |
| TLP-A070-020-D*xxx*4*x* | 6000 | – | – | – | – | – | 26 | – | – | – | 20.6 | – | – | 18 | – | 16.4 |
| TLP-A070-040-D*xxx*4*x* | 6000 | – | – | – | – | – | 27.3 | – | – | – | 21.7 | – | – | 18.9 | – | 17.2 |
| TLP-A090-075-D*xxx*4*x* | 6000 | – | – | – | – | – | 39.3 | – | – | – | 31.2 | – | – | 27.2 | – | 24.7 |
| TLP-A100-100-D*xxx*4*x* | 3000 | – | 65.3 | – | – | – | 51.8 | – | 45.3 | – | 41.1 | – | – | – | – | – |
| TLP-A115-100-D*xxx*4*x* | 5000 | – | – | – | – | 57.9 | – | – | – | 45.9 | – | – | 40.1 | – | 36.4 | – |
| TLP-A115-200-D*xxx*4*x* | 5000 | – | – | – | – | 60.3 | – | – | – | 47.8 | – | – | 41.8 | – | 38 | – |
| TLP-A145-050-D*xxx*4*x* | 3000 | – | 120.3 | – | – | – | 95.5 | – | 83.4 | – | 75.8 | – | – | – | – | – |
| TLP-A145-090-D*xxx*4*x* | 2000 | 142.1 | – | 112.8 | – | – | 98.5 | 89.5 | – | – | – | – | – | – | – | – |
| TLP-A145-100-D*xxx*4*x* | 3000 | – | 120.3 | – | – | – | 95.5 | – | 83.4 | – | 75.8 | – | – | – | – | – |
| TLP-A145-150-D*xxx*4*x* | 3000 | – | 124.1 | – | – | – | 98.5 | – | 86 | – | 78.2 | – | – | – | – | – |
| TLP-A145-250-D*xxx*4*x* | 4500 | – | – | – | 111.2 | – | – | – | 88.2 | – | – | 77.1 | – | 70 | – | – |
| TLP-A200-200-D*xxx*4*x* | 3000 | – | 140.4 | – | – | – | 111.4 | – | 97.3 | – | 88.4 | – | – | – | – | – |
| TLP-A200-300-D*xxx*4*x* | 2500 | – | 149.7 | – | – | – | 118.8 | – | 103.8 | – | 94.3 | – | – | – | – | – |
| TLP-A200-350-D*xxx*4*x* | 3000 | – | 149.7 | – | – | – | 118.8 | – | 103.8 | – | 94.3 | – | – | – | – | – |
| TLP-A200-450-D*xxx*4*x* | 3000 | – | 158.8 | – | – | – | 126.1 | – | 110.1 | – | 100.1 | – | – | – | – | – |
| TLP-A200-550-D*xxx*4*x* | 3000 | – | 154.8 | – | – | – | 122.9 | – | 107.3 | – | 97.5 | – | – | – | – | – |
| TLP-A200-750-D*xxx*4*x* | 2500 | – | 163.3 | – | – | – | 129.6 | – | 113.2 | – | 102.9 | – | – | – | – | – |
| TLP-A235-11K-D*xxx*4*x* | 2000 | 458.3 | – | 363.8 | – | – | 317.8 | 288.7 | – | – | – | – | – | – | – | – |
| TLP-A235-15K-D*xxx*4*x* | 2000 | 478.8 | – | 380 | – | – | 332 | 301.6 | – | – | – | – | – | – | – | – |
| TLP-B070-040-D*xxx*4*x* | 6000 | – | – | – | – | – | 27.3 | – | – | – | 21.7 | – | – | 18.9 | – | 17.2 |
| TLP-B090-075-D*xxx*4*x* | 6000 | – | – | – | – | – | 39.3 | – | – | – | 31.2 | – | – | 27.2 | – | 24.7 |
| TLP-B115-100-D*xxx*4*x* | 5000 | – | – | – | – | 57.9 | – | – | – | 45.9 | – | – | 40.1 | – | 36.4 | – |
| TLP-B115-200-D*xxx*4*x* | 5000 | – | – | – | – | 60.3 | – | – | – | 47.8 | – | – | 41.8 | – | 38 | – |
| TLP-B145-050-D*xxx*4*x* | 3000 | – | 120.3 | – | – | – | 95.5 | – | 83.4 | – | 75.8 | – | – | – | – | – |
| TLP-B145-100-D*xxx*4*x* | 3000 | – | 120.3 | – | – | – | 95.5 | – | 83.4 | – | 75.8 | – | – | – | – | – |
| TLP-B145-150-D*xxx*4*x* | 3000 | – | 124.1 | – | – | – | 98.5 | – | 86 | – | 78.2 | – | – | – | – | – |
| TLP-B145-200-D*xxx*4*x* | 3000 | – | 127.2 | – | – | – | 101 | – | 88.2 | – | 80.2 | – | – | – | – | – |
| TLP-B145-250-D*xxx*4*x* | 4500 | – | | – | 111.2 | – | – | – | 88.2 | – | | 77.1 | – | 70 | – | – |
| TLP-B200-300-D*xxx*4*x* | 2500 | – | 149.7 | – | – | – | 118.8 | – | 103.8 | – | 94.3 | – | – | – | – | – |
| TLP-B200-450-D*xxx*4*x* | 3000 | – | 158.8 | – | – | – | 126.1 | – | 110.1 | – | 100.1 | – | – | – | – | – |
| TLP-B200-550-D*xxx*4*x* | 3000 | – | 154.8 | – | – | – | 122.9 | – | 107.3 | – | 97.5 | – | – | – | – | – |
| TLP-B200-750-D*xxx*4*x* | 2500 | – | 163.3 | – | – | – | 129.6 | – | 113.2 | – | 102.9 | – | – | – | – | – |
| TLP-B235-11K-D*xxx*4*x* | 2000 | 458.3 | – | 363.8 | – | – | 317.8 | 288.7 | – | – | – | – | – | – | – | – |
| TLP-B235-14K-D*xxx*4*x* | 2000 | 478.8 | – | 380 | – | – | 332 | 301.6 | – | – | – | – | – | – | – | – |

(1) 1.0 kgf = 2.2 lbf or 9.8 N.

## Axial Load Force Ratings (maximum radial load) for Brake Motors

| Motor Cat. No. (1) | Maximum Speed rpm | RPM | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 kgf | 750 kgf | 1000 kgf | 1125 kgf | 1250 kgf | 1500 kgf | 2000 kgf | 2250 kgf | 2500 kgf | 3000 kgf | 3375 kgf | 3750 kgf | 4500 kgf | 5000 kgf | 6000 kgf |
| TLP-A046-005-D*xxx*4*x* | 6000 | – | – | – | – | – | 6.7 | – | – | – | 5 | – | – | 4.2 | – | 3.7 |
| TLP-A046-010-D*xxx*4*x* | 6000 | – | – | – | – | – | 6.9 | – | – | – | 5.1 | – | – | 4.3 | – | 3.8 |
| TLP-A070-020-D*xxx*4*x* | 6000 | – | – | – | – | – | 11.7 | – | – | – | 8.7 | – | – | 7.3 | – | 6.4 |
| TLP-A070-040-D*xxx*4*x* | 6000 | – | – | – | – | – | 12.3 | – | – | – | 9.1 | – | – | 7.6 | – | 6.7 |
| TLP-A090-075-D*xxx*4*x* | 6000 | – | – | – | – | – | 15.3 | – | – | – | 11.3 | – | – | 9.5 | – | 8.4 |
| TLP-A100-100-D*xxx*4*x* | 3000 | – | 20.1 | – | – | – | 14.9 | – | 12.5 | – | 11 | – | – | – | – | – |
| TLP-A115-100-D*xxx*4*x* | 5000 | – | – | – | – | 20.3 | – | – | – | 15 | – | – | 12.6 | – | 11.1 | – |
| TLP-A115-200-D*xxx*4*x* | 5000 | – | – | – | – | 21.5 | – | – | – | 15.9 | – | – | 13.3 | – | 11.8 | – |
| TLP-A145-050-D*xxx*4*x* | 3000 | – | 34.2 | – | – | – | 25.3 | – | 21.2 | – | 18.7 | – | – | – | – | – |
| TLP-A145-090-D*xxx*4*x* | 2000 | 42.9 | – | 31.8 | – | – | 26.6 | 23.5 | – | – | – | – | – | – | – | – |
| TLP-A145-100-D*xxx*4*x* | 3000 | – | 34.2 | – | – | – | 25.3 | – | 21.2 | – | 18.7 | – | – | – | – | – |
| TLP-A145-150-D*xxx*4*x* | 3000 | – | 36 | – | – | – | 26.6 | – | 22.3 | – | 19.7 | – | – | – | – | – |
| TLP-A145-250-D*xxx*4*x* | 4500 | – | – | – | 31.4 | – | – | – | 23.2 | – | – | 19.5 | – | 17.2 | – | – |
| TLP-A200-200-D*xxx*4*x* | 3000 | – | 60.9 | – | – | – | 45.1 | – | 37.8 | – | 33.4 | – | – | – | – | – |
| TLP-A200-300-D*xxx*4*x* | 2500 | – | 65.3 | – | – | – | 48.3 | – | 40.5 | – | 35.8 | – | – | – | – | – |
| TLP-A200-350-D*xxx*4*x* | 3000 | – | 65.3 | – | – | – | 48.3 | – | 40.5 | – | 35.8 | – | – | – | – | – |
| TLP-A200-450-D*xxx*4*x* | 3000 | – | 69.6 | – | – | – | 51.5 | – | 43.2 | – | 38.1 | – | – | – | – | – |
| TLP-A200-550-D*xxx*4*x* | 3000 | – | 67.7 | – | – | – | 50.1 | – | 42 | – | 37.1 | – | – | – | – | – |
| TLP-A200-750-D*xxx*4*x* | 2500 | – | 71.7 | – | – | – | 53.1 | – | 44.5 | – | 39.3 | – | – | – | – | – |
| TLP-A235-11K-D*xxx*4*x* | 2000 | 75.5 | – | 55.9 | – | – | 46.8 | 41.3 | – | – | – | – | – | – | – | – |
| TLP-A235-15K-D*xxx*4*x* | 2000 | 85 | – | 62.9 | – | – | 52.8 | 46.6 | – | – | – | – | – | – | – | – |
| TLP-B070-040-D*xxx*4*x* | 6000 | – | – | – | – | – | 12.3 | – | – | – | 9.1 | | | 7.6 | | 6.7 |
| TLP-B090-075-D*xxx*4*x* | 6000 | – | – | – | – | – | 15.3 | – | – | – | 11.3 | | | 9.5 | | 8.4 |
| TLP-B115-100-D*xxx*4*x* | 5000 | – | – | – | – | 20.3 | – | – | – | 15 | – | – | 12.6 | – | 11.1 | – |
| TLP-B115-200-D*xxx*4*x* | 5000 | – | – | – | – | 21.5 | – | – | – | 15.9 | – | – | 13.3 | – | 11.8 | – |
| TLP-B145-050-D*xxx*4*x* | 3000 | – | 34.2 | – | – | – | 25.3 | – | 21.2 | – | 18.7 | – | – | – | – | – |
| TLP-B145-100-D*xxx*4*x* | 3000 | – | 34.2 | – | – | – | 25.3 | – | 21.2 | – | 18.7 | – | – | – | – | – |
| TLP-B145-150-D*xxx*4*x* | 3000 | – | 36 | – | – | – | 26.6 | – | 22.3 | – | 19.7 | – | – | – | – | – |
| TLP-B145-200-D*xxx*4*x* | 3000 | – | 37.4 | – | – | – | 27.7 | – | 23.2 | – | 20.5 | – | – | – | – | – |
| TLP-B145-250-D*xxx*4*x* | 4500 | – | | – | 31.4 | – | – | – | 23.2 | – | – | 19.5 | – | 17.2 | – | – |
| TLP-B200-300-D*xxx*4*x* | 2500 | – | 65.3 | – | – | – | 48.3 | – | 40.5 | – | 35.8 | – | – | – | – | – |
| TLP-B200-450-D*xxx*4*x* | 3000 | – | 69.6 | – | – | – | 51.5 | – | 43.2 | – | 38.1 | – | – | – | – | – |
| TLP-B200-550-D*xxx*4*x* | 3000 | – | 67.7 | – | – | – | 50.1 | – | 42 | – | 37.1 | – | – | – | – | – |
| TLP-B200-750-D*xxx*4*x* | 2500 | – | 71.7 | – | – | – | 53.1 | – | 44.5 | – | 39.3 | – | – | – | – | – |
| TLP-B235-11K-D*xxx*4*x* | 2000 | 75.5 | – | 55.9 | – | – | 46.8 | 41.3 | – | – | – | – | – | – | – | – |
| TLP-B235-14K-D*xxx*4*x* | 2000 | 85 | – | 62.9 | – | – | 52.8 | 46.6 | – | – | – | – | – | – | – | – |

(1) 1.0 kgf = 2.2 lbf or 9.8 N.

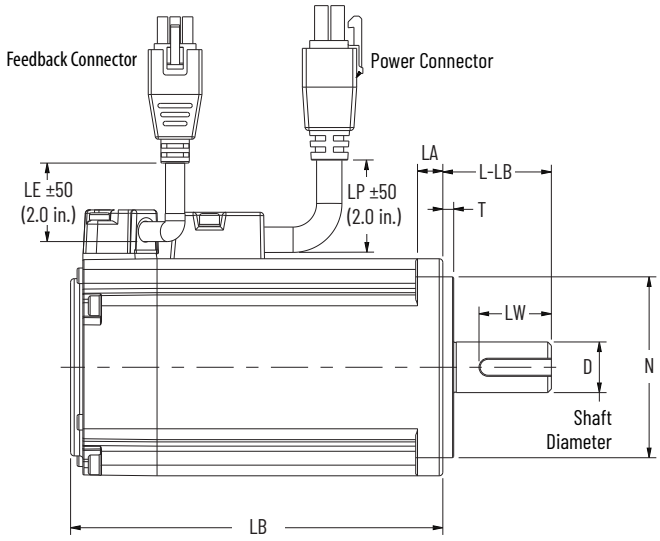
## Axial Load Force Ratings (zero radial load) for Brake Motors

| Motor Cat. No. (1) | Maximum Speed rpm | RPM | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 kgf | 750 kgf | 1000 kgf | 1125 kgf | 1250 kgf | 1500 kgf | 2000 kgf | 2250 kgf | 2500 kgf | 3000 kgf | 3375 kgf | 3750 kgf | 4500 kgf | 5000 kgf | 6000 kgf |
| TLP-A046-005-D*xxx*4*x* | 6000 | – | – | – | – | – | 8.1 | – | – | – | 6 | – | – | 5.0 | – | 4.4 |
| TLP-A046-010-D*xxx*4*x* | 6000 | – | – | – | – | – | 8.1 | – | – | – | 6 | – | – | 5.0 | – | 4.4 |
| TLP-A070-020-D*xxx*4*x* | 6000 | – | – | – | – | – | 15.4 | – | – | – | 11.4 | – | – | 9.5 | – | 8.4 |
| TLP-A070-040-D*xxx*4*x* | 6000 | – | – | – | – | – | 15.4 | – | – | – | 11.4 | – | – | 9.5 | – | 8.4 |
| TLP-A090-075-D*xxx*4*x* | 6000 | – | – | – | – | – | 20.4 | – | – | – | 15.1 | – | – | 12.6 | – | 11.1 |
| TLP-A100-100-D*xxx*4*x* | 3000 | – | 27.5 | – | – | – | 20.4 | – | 17.1 | – | 15.1 | – | – | – | – | – |
| TLP-A115-100-D*xxx*4*x* | 5000 | – | – | – | – | 27.9 | – | – | – | 20.6 | – | – | 17.3 | – | 15.3 | – |
| TLP-A115-200-D*xxx*4*x* | 5000 | – | – | – | – | 27.9 | – | – | – | 20.6 | – | – | 17.3 | – | 15.3 | – |
| TLP-A145-050-D*xxx*4*x* | 3000 | – | 56.4 | – | – | – | 41.7 | – | 35.0 | – | 30.9 | – | – | – | – | – |
| TLP-A145-090-D*xxx*4*x* | 2000 | 67.2 | – | 49.7 | – | – | 41.7 | 36.8 | – | – | – | – | – | – | – | – |
| TLP-A145-100-D*xxx*4*x* | 3000 | – | 56.4 | – | – | – | 41.7 | – | 35.0 | – | 30.9 | – | – | – | – | – |
| TLP-A145-150-D*xxx*4*x* | 3000 | – | 56.4 | – | – | – | 41.7 | – | 35.0 | – | 30.9 | – | – | – | – | – |
| TLP-A145-250-D*xxx*4*x* | 4500 | – | – | – | 47.3 | – | – | – | 35.0 | – | – | 29.3 | – | 25.9 | – | – |
| TLP-A200-200-D*xxx*4*x* | 3000 | – | 91.9 | – | – | – | 68.0 | – | 57.0 | – | 50.3 | – | – | – | – | – |
| TLP-A200-300-D*xxx*4*x* | 2500 | – | 91.9 | – | – | – | 68.0 | – | 57.0 | – | 50.3 | – | – | – | – | – |
| TLP-A200-350-D*xxx*4*x* | 3000 | – | 91.9 | – | – | – | 68.0 | – | 57.0 | – | 50.3 | – | – | – | – | – |
| TLP-A200-450-D*xxx*4*x* | 3000 | – | 91.9 | – | – | – | 68.0 | – | 57.0 | – | 50.3 | – | – | – | – | – |
| TLP-A200-550-D*xxx*4*x* | 3000 | – | 91.9 | – | – | – | 68.0 | – | 57.0 | – | 50.3 | – | – | – | – | – |
| TLP-A200-750-D*xxx*4*x* | 2500 | – | 91.9 | – | – | – | 68.0 | – | 57.0 | – | 50.3 | – | – | – | – | – |
| TLP-A235-11K-D*xxx*4*x* | 2000 | 136.5 | – | 101.0 | – | – | 84.7 | 74.8 | – | – | – | – | – | – | – | – |
| TLP-A235-15K-D*xxx*4*x* | 2000 | 136.5 | – | 101.0 | – | – | 84.7 | 74.8 | – | – | – | – | – | – | – | – |
| TLP-B070-040-D*xxx*4*x* | 6000 | – | – | – | – | – | 15.4 | – | – | – | 11.4 | – | – | 9.5 | – | 8.4 |
| TLP-B090-075-D*xxx*4*x* | 6000 | – | – | – | – | – | 20.4 | – | – | – | 15.1 | – | – | 12.6 | – | 11.1 |
| TLP-B115-100-D*xxx*4*x* | 5000 | – | – | – | – | 27.9 | – | – | – | 20.6 | – | – | 17.3 | – | 15.3 | – |
| TLP-B115-200-D*xxx*4*x* | 5000 | – | – | – | – | 27.9 | – | – | – | 20.6 | – | – | 17.3 | – | 15.3 | – |
| TLP-B145-050-D*xxx*4*x* | 3000 | – | 56.4 | – | – | – | 41.7 | – | 35 | – | 30.9 | – | – | – | – | – |
| TLP-B145-100-D*xxx*4*x* | 3000 | – | 56.4 | – | – | – | 41.7 | – | 35 | – | 30.9 | – | – | – | – | – |
| TLP-B145-150-D*xxx*4*x* | 3000 | – | 56.4 | – | – | – | 41.7 | – | 35 | – | 30.9 | – | – | – | – | – |
| TLP-B145-200-D*xxx*4*x* | 3000 | – | 56.4 | – | – | – | 41.7 | – | 35 | – | 30.9 | – | – | – | – | – |
| TLP-B145-250-D*xxx*4*x* | 4500 | – | – | – | 47.3 | – | – | – | 35 | – | – | 29.3 | – | 25.9 | – | – |
| TLP-B200-300-D*xxx*4*x* | 2500 | – | 91.9 | – | – | – | 68 | – | 57 | – | 50.3 | – | – | – | – | – |
| TLP-B200-450-D*xxx*4*x* | 3000 | – | 91.9 | – | – | – | 68 | – | 57 | – | 50.3 | – | – | – | – | – |
| TLP-B200-550-D*xxx*4*x* | 3000 | – | 91.9 | – | – | – | 68 | – | 57 | – | 50.3 | – | – | – | – | – |
| TLP-B200-750-D*xxx*4*x* | 2500 | – | 91.9 | – | – | – | 68 | – | 57 | – | 50.3 | – | – | – | – | – |
| TLP-B235-11K-D*xxx*4*x* | 2000 | 136.5 | – | 101 | – | – | 84.7 | 74.8 | – | – | – | – | – | – | – | – |
| TLP-B235-14K-D*xxx*4*x* | 2000 | 136.5 | – | 101 | – | – | 84.7 | 74.8 | – | – | – | – | – | – | – | – |

(1) 1.0 kgf = 2.2 lbf or 9.8 N.

# Dimensions - Kinetix TLP Servo Motors

### Motor Dimensions (frame sizes 046, 070, 090, and 100 mm)

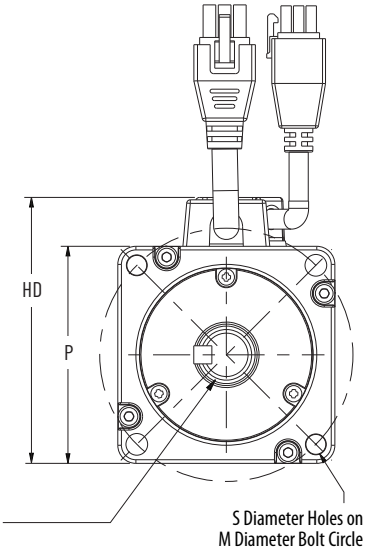


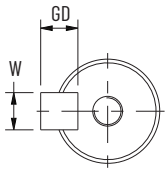

**Dimensions are in mm (in.)**

**Pilot Diameter Tolerances**
TLP-A046*xx* Motors:
Ø 29.979…30.000 (1.180…1.181)
TLP-A/B070*xx* Motors:
Ø 49.975…50.000 (1.967…1.968)
TLP-A/B090*xx* Motors:
Ø 69.970…70.000 (2.754…2.755)
TLP-A100*xx* Motors:
Ø 79.970…80.000 (3.148…3.149)

**Shaft Diameter Tolerances**
TLP-A046*xx* Motors:
Ø 7.991…8.000 (0.3146…0.3149)
TLP-A/B070*xx* Motors:
Ø 13.989…14.000 (0.5507…0.5512)
TLP-A/B090*xx* Motors:
Ø 18.987…19.000 (0.7475…0.7480)
TLP-A100*xx* Motors:
Ø 15.989…16.000 (0.6295…0.6299)

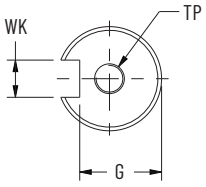
**Optional Shaft Seal**
Refer to page 133 for motor shaft seal kit information.




**Key Detail**

**Shaft End Details**



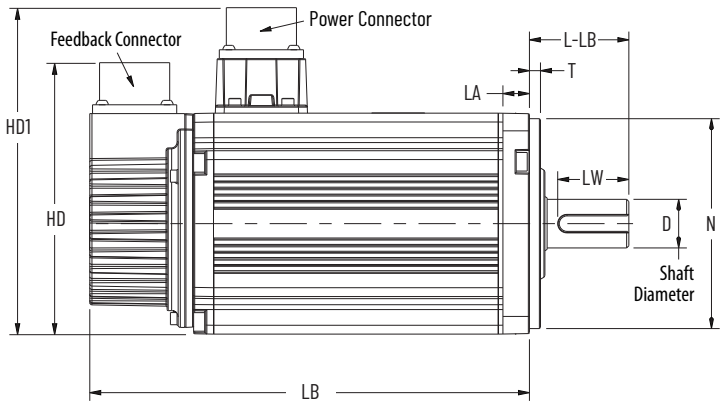

| Shaft and Pilot Tolerances | TLP-A046*xx* | TLP-A/B070*xx* | TLP-A/B090*xx* | TLP-A100*xx* |
|---|---|---|---|---|
| Shaft Runout (T.I.R.) | 0.02 (0.0008) | 0.02 (0.0008) | 0.02 (0.0008) | 0.02 (0.0008) |
| Pilot Eccentricity (T.I.R.) | 0.04 (0.0016) | 0.30 (0.0118) | 0.04 (0.0016) | 0.04 (0.0016) |
| Max Face Runout (T.I.R.) | 0.04 (0.0016) | 0.04 (0.0016) | 0.04 (0.0016) | 0.04 (0.0016) |
| Shaft-end Threaded Hole (TP) | M3x0.5-6H, ↧ 6 | M4x0.7-6H, ↧ 8 | M6x1.0-6H, ↧ 10 | M5x0.8-6H, ↧ 15 |
| On-motor Cable Length (LE/LP) | A1 Connector = 1.0 m (39.4 in.), A3 Connector = 300 mm (11.8 in.) | | | |

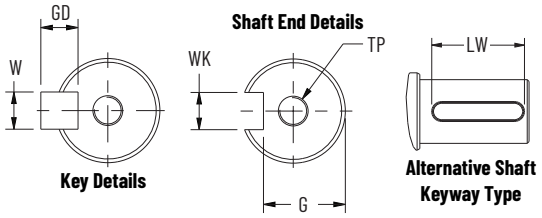
| Motor Cat. No. | HD mm (in.) | T mm (in.) | LA mm (in.) | LB (1) mm (in.) | L-LB (2) mm (in.) | LW mm (in.) | D mm (in.) | M mm (in.) | S mm (in.) | N (3) mm (in.) | P mm (in.) | G mm (in.) | GD mm (in.) | W mm (in.) | WK mm (in.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TLP-A046-005 | 53.8 (2.12) | 2.5 (4) (0.10) | 5.0 (0.20) | 71.9 (2.83) | 25.0 (0.98) | 16.0 (0.630) | 8.0 (0.3149) | 46.0 (1.811) | 4.50 (4) (0.177) | 30.0 (1.181) | 40.0 (1.57) | 6.20 (0.244) | 3.0 (0.118) | 3.0 (5) (0.118) | 3.0 (6) (0.118) |
| TLP-A046-010 | | | | 86.0 (3.39) | | | | | | | | | | | |
| TLP-A070-020 | 74.1 (2.92) | 3.0 (4) (0.12) | 7.5 (0.30) | 84.7 (3.33) | 30.0 (1.18) | 20.0 (0.787) | 14.0 (0.5512) | 70.0 (2.756) | 5.50 (7) (0.216) | 50.0 (1.968) | 60.0 (2.36) | 11.0 (0.433) | 5.0 (0.197) | 5.0 (8) (0.197) | 5.0 (8) (0.197) |
| TLP-A/B070-040 | | | | 106.7 (4.20) | | | | | | | | | | | |
| TLP-A/B090-075 | 94.1 (3.70) | 3.0 (9) (0.12) | 8.0 (0.31) | 116.5 (4.59) | 40.0 (1.57) | 25.0 (0.984) | 19.0 (0.7480) | 90.0 (3.543) | 6.60 (7) (0.260) | 70.0 (2.755) | 80.0 (3.15) | 15.5 (0.610) | 6.0 (0.236) | 6.0 (8) (0.236) | 6.0 (8) (0.236) |
| TLP-A100-100 | 98.8 (3.89) | 3.0 (4) (0.12) | | 153.9 (6.06) | 35.0 (1.38) | 20.0 (0.787) | 16.0 (0.6299) | 100 (3.937) | 6.60 (4) (0.260) | 80.0 (3.149) | 86.0 (3.38) | 13.0 (0.630) | 5.0 (0.197) | 5.0 (8) (0.197) | 5.0 (8) (0.197) |

(1) For TLP-A046-005 motors with brake, add 34.2 mm (1.35 in.). For TLP-A046-010 motors with brake, add 34.8 mm (1.37 in.).
For TLP-A070-020 motors with brake, add 33.6 mm (1.32 in.). For TLP-A/B070-040 motors with brake, add 33.7 mm (1.33 in.).
For TLP-A/B090-075 motors with brake, add 37.4 mm (1.47 in.).
For TLP-A100-100 motors with brake, add 31.1 mm (1.22 in.).
(2) Tolerance for this dimension is ±0.50 mm (±0.020 in.).
(3) See dimensions diagram for tolerances.
(4) Tolerance for this dimension is ±0.10 mm (±0.0039 in.).
(5) Tolerance for this dimension is -0.004, -0.029 mm (0.000157, -0.001141 in.).
(6) Tolerance for this dimension is +0, -0.025 mm (+0, -0.000984 in.).
(7) Tolerance for this dimension is ±0.20 mm (±0.0079 in.).
(8) Tolerance for this dimension is +0, -0.030 mm (+0, -0.001181 in.).
(9) Tolerance for this dimension is ±0.25 mm (±0.0098 in.).

Motors are designed to metric dimensions. Inch dimensions are approximate conversions from millimeters. Dimensions without tolerances are for reference.

## Motor Dimensions (frame sizes 115 and 145 mm)

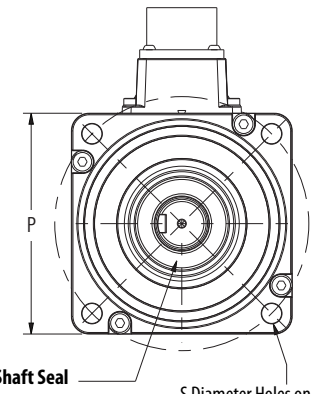



**Dimensions are in mm (in.)**

**Pilot Diameter Tolerances**
TLP-A/B115*xx* Motors:
Ø 94.965...95.000 (3.739...3.740)
TLP-A/B145*xx* Motors:
Ø 109.965...110.000 (4.329...4.330)

**Shaft Diameter Tolerances**
TLP-A/B115*xx* Motors:
Ø 21.987...22.000 (0.8656...0.8661)
TLP-A/B145-050... TLP-B145-200 Motors:
Ø 21.987...22.000 (0.8656...0.8661)
TLP-A/B145-250 Motors:
Ø 23.987...24.000 (0.9444...0.9449)




| Shaft and Pilot Tolerances | TLP-A/B115*xx* | TLP-A/B145*xx* |
|---|---|---|
| Shaft Runout (T.I.R.) | 0.02 (0.0008) | 0.02 (0.0008) |
| Pilot Eccentricity (T.I.R.) | 0.04 (0.0016) | 0.04 (0.0016) |
| Max Face Runout (T.I.R.) | 0.02 (0.0008) | 0.04 (0.0016) |
| Shaft-end Threaded Hole (TP) | M6x1.0-6H, ↧ 20 | M6x1.0-6H, ↧ 20 |

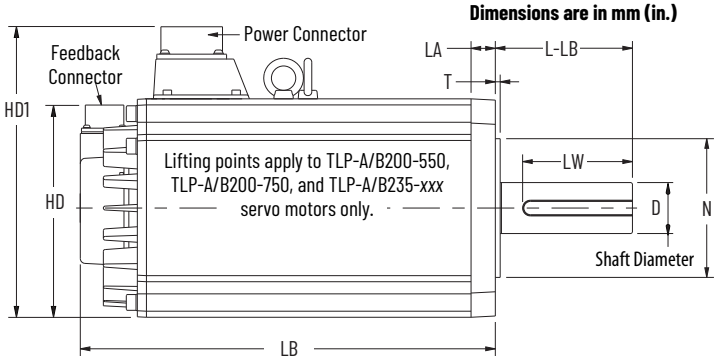
| Motor Cat. No. | HD mm (in.) | HD1 mm (in.) | T mm (in.) | LA mm (in.) | LB (1) mm (in.) | L-LB mm (in.) | LW mm (in.) | D (2) mm (in.) | M mm (in.) | S (3) mm (in.) | N (2) mm (in.) | P mm (in.) | G mm (in.) | GD mm (in.) | W (4) mm (in.) | WK (4) mm (in.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TLP-A/B115-100 | 122.9 (4.84) | 148.1 (5.83) | 5.0 (5) (0.20) | 12.0 (0.47) | 154.0 (6.06) | 45.0 (6) (1.77) | 36.0 (1.42) | 22.0 (0.87) | 115 (4.53) | 9.0 (0.354) | 95.0 (3.74) | 100 (3.94) | 18.0 (0.71) | 7.0 (0.28) | 8.0 (0.315) | 8.0 (0.315) |
| TLP-A/B115-200 | | | | | 199.7 (7.86) | | | | | | | | | | | |
| TLP-A/B145-050 | 138.6 (5.46) | 176.4 (6.94) | 6.0 (7) (0.24) | 11.5 (0.45) | 148.2 (5.83) | 55.0 (2.17) | | | 145 (5.71) | | 110 (4.33) | 130 (5.12) | | | | |
| TLP-A145-090 | | | | | 164.2 (6.46) | | | | | | | | | | | |
| TLP-A/B145-100 | | | | | 148.2 (5.83) | | | | | | | | | | | |
| TLP-A/B145-150 | | | | | 168.2 (6.62) | | | | | | | | | | | |
| TLP-B145-200 | | | | | 188.2 (7.41) | | | | | | | | | | | |
| TLP-A/B145-250 | | | | | | | | 24.0 (0.94) | | | | | 20.0 (0.79) | | | |

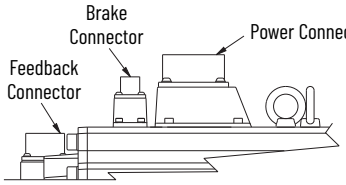
(1) For TLP-A/B115-100 motors with brake, add 39.3 mm (1.55 in.).
For TLP-A/B115-200 motors with brake, add 27.0 mm (1.06 in.).
For TLP-A/B145-050 and TLP-A/B145-100 motors with brake, add 36.0 mm (1.42 in.).
For TLP-A145-090 and TLP-A/B145-150 motors with brake, add 34.5 mm (1.36 in.).
For TLP-B145-200 and TLP-A/B145-250 motors with brake, add 28.5 mm (1.22 in.).
(2) See dimensions diagram for tolerances.
(3) For TLP-A/B115 motors, the tolerance is ±0.10 mm (±0.0039 in.).
For TLP-A/B145 motors, the tolerance is ±0.30 mm (±0.0118 in.).
(4) Tolerance for this dimension is +0, -0.036 mm (+0, -0.01417 in.).
(5) Tolerance for this dimension is ±0.10 mm (±0.0039 in.).
(6) Tolerance for this dimension is +0.38, -0.50 mm (+0.015, -0.020 in.).
(7) Tolerance for this dimension is ±0.15 mm (±0.0059 in.).

Motors are designed to metric dimensions. Inch dimensions are approximate conversions from millimeters. Dimensions without tolerances are for reference.

## Motor Dimensions (frame sizes 200 and 235 mm)

**Dimensions are in mm (in.)**

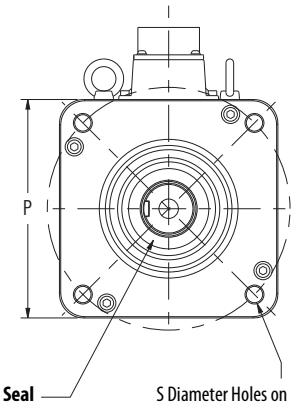



Brake connectors apply to only the TLP-A/B200-550, TLP-A/B200-750, and TLP-A/B235-*xxx* servo motors with the holding brake option.

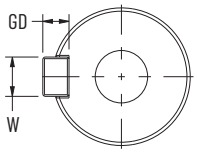
**Pilot Diameter Tolerances**
TLP-A200-200...TLP-A/B200-750 Motors:
Ø 114.265...114.300 (4.4986...4.500)
TLP-A/B235-11K...TLP-A235-15K Motors:
Ø 199.954...200.00 (7.8722...7.8740)

**Shaft Diameter Tolerances**
TLP-A200-200...TLP-A/B200-450 Motors:
Ø 34.984...35.000 (1.3773...1.3779)
TLP-A/B200-550...TLP-A/B200-750 Motors:
Ø 41.984...42.000 (1.6529...1.6535)
TLP-A/B235-11K Motors:
Ø 41.984...42.000 (1.6529...1.6535)
TLP-B235-14K and TLP-A235-15K Motors:
Ø 54.989...55.030 (2.1649...2.1665)

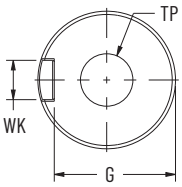


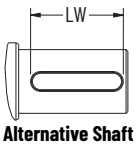

Refer to page 133 for Kinetix TLP motor shaft-seal kit information.

**Key Details**




**Shaft End Details**




**Alternative Shaft Keyway Type**

| Shaft and Pilot Tolerances | TLP-A/B200-*xxx* | TLP-A/B235-11K | TLP-B235-14K<br>TLP-A235-15K |
|---|---|---|---|
| Shaft Runout (T.I.R.) | 0.02 (0.0008) | 0.04 (0.0016) | 0.04 (0.0016) |
| Pilot Eccentricity (T.I.R.) | 0.04 (0.0016) | 0.04 (0.0016) | 0.04 (0.0016) |
| Max Face Runout (T.I.R.) | 0.04 (0.0016) | 0.06 (0.0024) | 0.06 (0.0024) |
| Shaft-end Threaded Hole (TP) | M12x1.75-6H, ↧ 25 | M16x2.0-6H, ↧ 32 | M20x2.5-6H, ↧ 40 |

| Motor Cat. No. | HD mm (in.) | HD1 mm (in.) | T mm (in.) | LA mm (in.) | LB (1) mm (in.) | L-LB (2) mm (in.) | LW mm (in.) | D mm (in.) | M mm (in.) | S mm (in.) | N (3) mm (in.) | P mm (in.) | G mm (in.) | GD mm (in.) | W mm (in.) | WK (3) mm (in.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TLP-A200-200 | 174.9 (6.89) | 231.0 (9.09) | 4.0 (4) (0.16) | 20.0 (0.79) | 169.7 (6.68) | 79.0 (3.11) | 63.0 (2.48) | 35.0 (1.38) | 200.0 (7.87) | 13.5 (4) (0.53) | 114.3 (4.50) | 180.0 (7.09) | 30.0 (1.18) | 8.0 (0.31) | 10.0 (5) (0.394) | 10.0 (5) (0.394) |
| TLP-A/B200-300 | | | | | 202.8 (7.98) | | | | | | | | | | | |
| TLP-A200-350 | | | | | | | | | | | | | | | | |
| TLP-A/B200-450 | | | | | 254.0 (10.0) | | | | | | | | | | | |
| TLP-A/B200-550 | | 240.0 (9.45) | | | 280.4 (11.04) | 113.0 (4.45) | 90.0 (3.54) | 42.0 (1.65) | | 13.5 (6) (0.53) | | | 37.0 (1.46) | | 12.0 (7) (0.47) | 12.0 (7) (0.47) |
| TLP-A/B200-750 | | | | | 342.7 (13.49) | | | | | | | | | | | |
| TLP-A/B235-11K | 194.6 (7.66) | 279.1 (10.99) | | | 372.1 (14.65) | 116.0 (4.57) | | | 235.0 (9.25) | | 200.0 (7.87) | 220.0 (8.66) | 49.0 (1.93) | 10.0 (0.39) | 16.0 (7) (0.63) | 16.0 (7) (0.63) |
| TLP-B235-14K | | | | | 451.1 (17.76) | | | 55.0 (2.17) | | | | | | | | |
| TLP-A235-15K | | | | | | | | | | | | | | | | |

(1) For TLP-A200-200 and TLP-A/B200-750 motors with brake, add 34.1 mm (1.34 in.).
For TLP-A/B200-300 and TLP-A/B200-350 motors with brake, add 33.2 mm (1.31 in.).
For TLP-A/B200-450 motors with brake, add 44.0 mm (1.73 in.).
For TLP-A/B200-550 motors with brake, add 32.0 mm (1.26 in.).
For TLP-A/B235-11K, TLP-B235-14K, and TLP-A235-15K motors with brake, add 63.0 mm (2.48 in.).
(2) Tolerance for this dimension is +0.38, -0.50 mm (+0.015, -0.020 in.).
(3) See dimensions diagram for tolerances.
(4) Tolerance for this dimension is ±0.10 mm (±0.0039 in.).
(5) Tolerance for this dimension is +0, -0.036 mm (+0, -0.01417 in.).
(6) Tolerance for this dimension is ±0.20 mm (±0.0079 in.).
(7) Tolerance for this dimension is +0, -0.043 mm (+0, -0.00169 in.).

Motors are designed to metric dimensions. Inch dimensions are approximate conversions from millimeters. Dimensions without tolerances are for reference.

# Kinetix TL and TLY Compact Servo Motors

The Kinetix TL and TLY servo motors are low-inertia high-performance servo motors featuring metric and NEMA frame sizes. They combine a compact size with a high torque density afforded by their superior stator design. The result is a package that provides substantial power in a small footprint.

## Kinetix TL Servo Motors

Kinetix TL compact motor performance specifications match the Kinetix TLY motor specifications identically, but are available in only metric frame sizes and with high-resolution absolute position encoders. Similar to the Kinetix TLY motors, Kinetix TL compact motors support frame sizes TL-A110, TL-A120, TL-A130, TL-A220, TL-A230, TL-A2530, TL-A2540, and TL-A410 (TL-A310 is not supported).

The Kinetix TL compact motors are equipped with rectangular plastic connectors and are intended for use with Kinetix 3 servo drives.

## Kinetix TLY Servo Motors

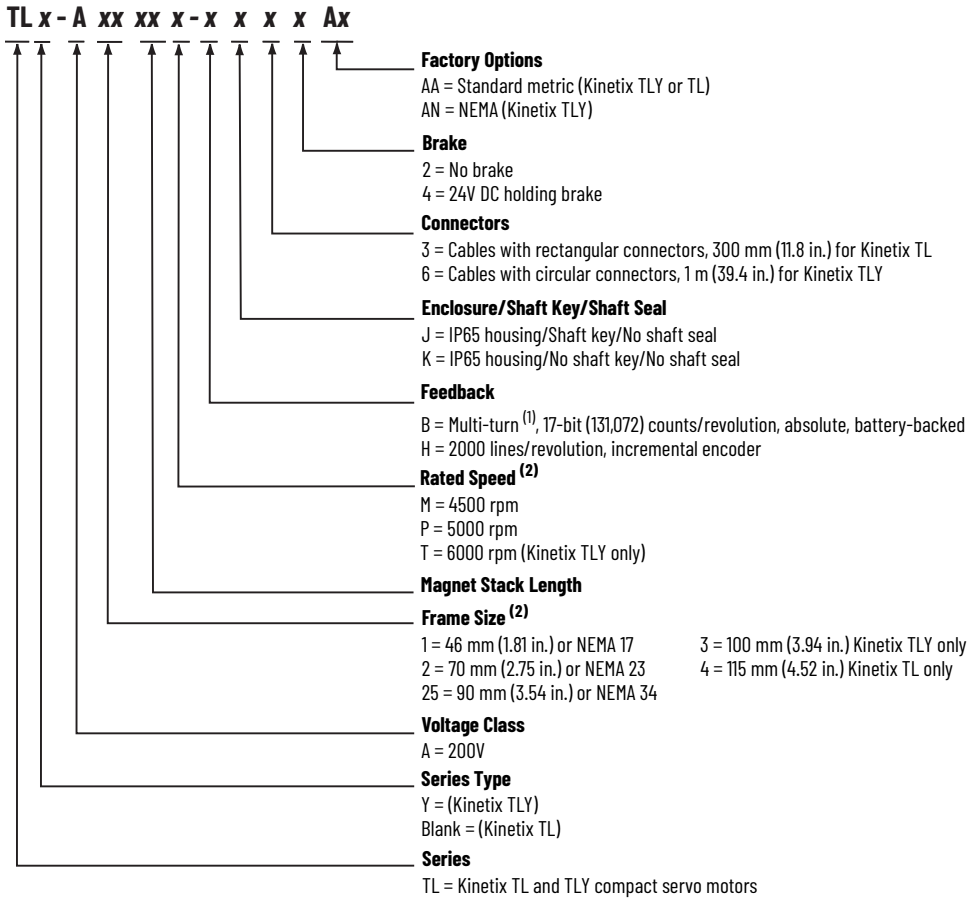
Kinetix TLY motors are equipped with circular plastic connectors and when used with the Kinetix 2000, Kinetix 6000, or Ultra3000 drives, the Kinetix TLY motors are able to offer the benefits of Kinetix Integrated Motion.

## Kinetix TL and TLY Servo Motor Features

| Attribute | Value |
|---|---|
| Main characteristics | • Compact size, high torque density<br>• Metric and NEMA frame sizes<br>• Smart Motor Technology<br>• Low rotor inertia |
| Features | • 200V-class windings<br>• High-energy Neodymium-Iron-Boron (NeFeB) magnets<br>• Cable extensions, 1 m (3.2 ft)<br>• 17-bit serial communication |
| Motor type | Brushless AC Synchronous Servo Motors |
| Environmental rating | IP65 with optional shaft seal |
| Certifications | Kinetix TL and TLY rotary motors are CE marked for all applicable directives. Refer to http://ab.rockwellautomation.com for more information. |
| Continuous stall torque | 0.086…5.42 N•m (0.76…48 lb•in) |
| Peak stall torque | 0.22…13 N•m (1.94…115 lb•in) |
| Rated speed | 4500, 5000, and 6000 rpm |
| Motor rated output | 0.037…2.0 kW |
| Compatible servo drives | • Kinetix 5100 (Kinetix TL and TLY)<br>• Kinetix 5300 (Kinetix TL and TLY)<br>• Kinetix 6000 (Kinetix TLY)<br>• Kinetix 300/350 (Kinetix TLY)<br>• Kinetix 3 (Kinetix TL and TLY)<br>• Kinetix 2000 (Kinetix TLY)<br>• Ultra3000 (Kinetix TLY) |
| Compatible servo cables | • 2090-C*xx*M6*xx* cables (Kinetix TLY)<br>• 2090-DAN*xxx* cables (Kinetix TL) |
| Typical applications | • Robotics<br>• Material handling<br>• X-Y tables<br>• Specialty machinery<br>• Semiconductor manufacturing<br>• Medical/laboratory equipment<br>• Light packaging machines<br>• Office machinery |

# Catalog Numbers - Kinetix TL and TLY Servo Motors

Catalog numbers consist of various characters, each of which identifies a specific option for that component. Use the catalog numbering table chart below to understand the configuration of your motor. For questions regarding product availability, contact your Allen-Bradley distributor.




(1) Single-turn if used without battery backup.
(2) Not all combinations are available. Only the configurations for rated speed, as listed in Technical Specifications - Kinetix TL and TLY Servo Motors on page 150, are available. Use Motion Analyzer software to size and select motors for your application.

For Kinetix TL and TLY connector kit catalog numbers, refer to Kinetix Motion Accessories Specifications Technical Data, publication KNX-TD004.

# Kinetix TL and TLY Servo Motor Encoders

Kinetix TL and TLY motors are available with high-resolution or industry standard incremental encoder feedback:

- High-resolution, high performance encoders providing multi-turn absolute position feedback (131,072 counts/revolution) for smooth performance.

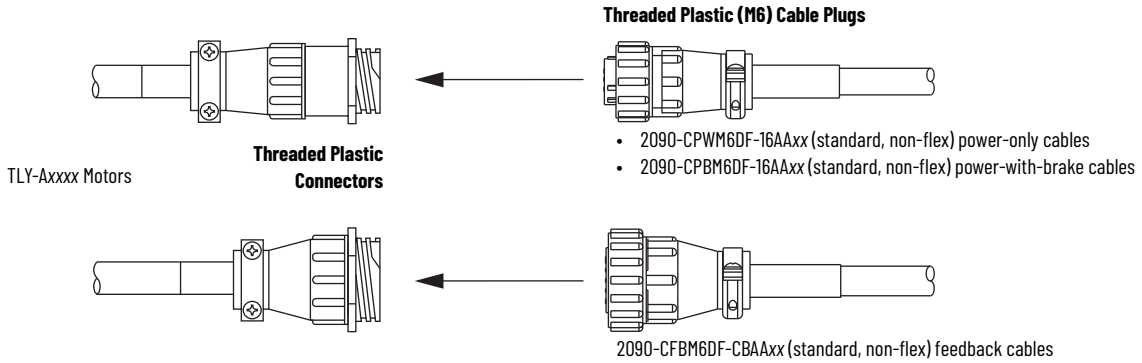
  Servo drives compatible with multi-turn absolute position feedback require the appropriate connector kit, with battery, for absolute position backup in the event of a power loss.

- Industry standard incremental encoder feedback (2000 counts/revolution) applies to Kinetix TLY motors.

# Motor Connector/Cable Compatibility

Kinetix TL and TLY motors are equipped with either threaded or rectangular plastic connectors.

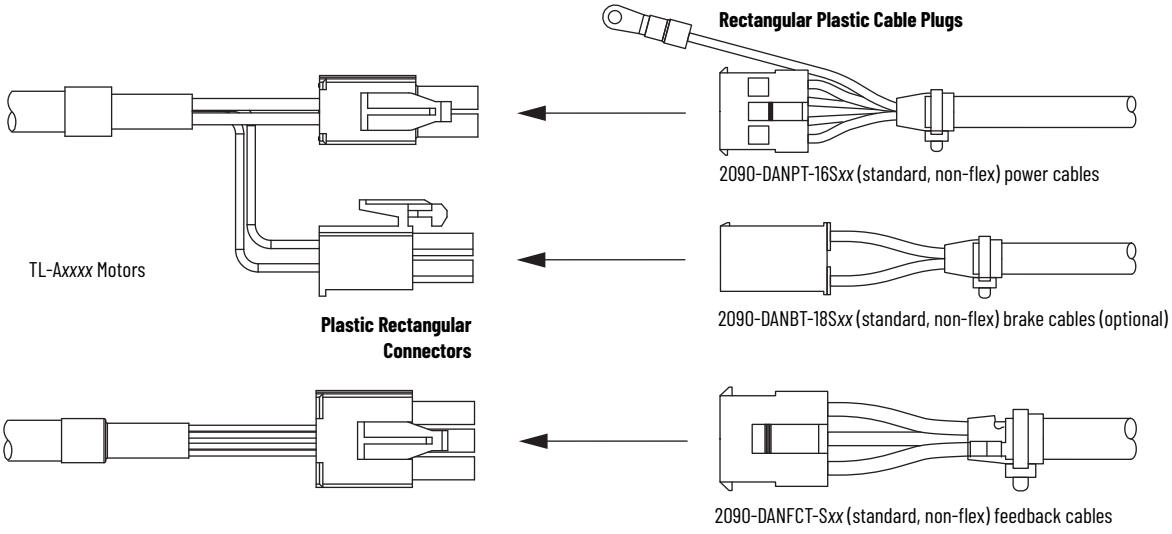
### Kinetix TLY Motor Connectors




- 2090-CPWM6DF-16AA*xx* (standard, non-flex) power-only cables
- 2090-CPBM6DF-16AA*xx* (standard, non-flex) power-with-brake cables

2090-CFBM6DF-CBAA*xx* (standard, non-flex) feedback cables

### Kinetix TL Motor Connectors




2090-DANPT-16S*xx* (standard, non-flex) power cables

2090-DANBT-18S*xx* (standard, non-flex) brake cables (optional)

2090-DANFCT-S*xx* (standard, non-flex) feedback cables

# Kinetix TL and TLY Servo Motor Options

Kinetix TL and TLY servo motors are available with these options:

- 24V DC holding brake.
- Shaft seal kits are available, as are replacement kits for field installation. Lubricant is provided with each kit to reduce wear.

**IMPORTANT** Shaft seals are subject to wear and require periodic inspection and replacement. Replacement is recommended every 3 months, not to exceed 12 months, depending on use.

**Shaft Seal Kit Catalog Numbers**

| Motor Cat. No. | Shaft Seal Kit Cat. No. |
|---|---|
| TLY-A1*xx*<br>TL-A1*xx* | TL-SSN-1 |
| TLY-A2*xx*<br>TL-A2*xx* | TL-SSN-2 |
| TLY-A25*xx*<br>TL-A25*xx* | TL-SSN-3 |
| TLY-A3*xx* | |
| TL-A4*xx* | TL-SSN-4 |

# Transition Plates for N-Series Retrofit

Transition plates provide a means of retrofitting an existing N-Series motor with a Kinetix TLY NEMA motor. In most applications, the Kinetix TLY NEMA motors are physically smaller, but deliver the same torque rating as the N-Series motor it is replacing. Transition plates are not available for the N-56*xx* motors. Select your transition plate catalog number from the table below.

**N-Series to Kinetix TLY Transition Plates**

| Transition Plate Cat. No. | Description | Converts from This N-Series Motor | To This Kinetix TLY NEMA Motor |
|---|---|---|---|
| TL-TRPLAT-17-23 | Kinetix TLY Transition Plate, NEMA 17 to 23 | N-23*xx* | TLY-A1*xxx*-H*xxx*AN |
| TL-TRPLAT-23-34 | Kinetix TLY Transition Plate, NEMA 23 to 34 | N-34*xx* | TLY-A2*xxx*-H*xxx*AN |
| TL-TRPLAT-34-42 | Kinetix TLY Transition Plate, NEMA 34 to 42 | N-42*xx* | TLY-A25*xxx*-H*xxx*AN |

# Technical Specifications - Kinetix TL and TLY Servo Motors

### Kinetix TL and TLY (non-brake) Motor Performance Specifications

| Motor Cat. No. | Rated Speed rpm | Maximum Speed rpm | Continuous Stall Torque N•m (lb•in) | Peak Stall Torque N•m (lb•in) | Motor Rated Output kW | Rotor Inertia (1) kg-m$^2$ (lb•in•s$^2$) |
|---|---|---|---|---|---|---|
| TLY-A110 (2) | 5000 | 6000 (3) | 0.096 (0.85) | 0.20 (1.75) | 0.041 | 0.000001 (0.0000089) |
| TL-A110 (2) | | | | 0.22 (1.94) | | |
| TLY-A120<br>TL-A120 | 5000 | | 0.181 (1.60) | 0.36 (3.20) | 0.086 | 0.000002 (0.000018) |
| TLY-A130<br>TL-A130 | 5000 | | 0.325 (2.88) | 0.76 (6.70) | 0.14 | 0.000003 (0.000027) |
| TLY-A220<br>TL-A220 | 5000 | | 0.836 (7.40) | 1.48 (13.1) | 0.35 | 0.000018 (0.00016) |
| TLY-A230<br>TL-A230 | 5000 | | 1.30 (11.50) | 3.05 (27.0) | 0.44 | 0.000034 (0.00030) |
| TLY-A2530<br>TL-A2530 | 4400 | 5000 | 2.60 (23.0) | 5.20 (46.0) | 0.69 | 0.000098 (0.00087) |
| TLY-A2540<br>TL-A2540 | 4575 | | 2.94 (26.0) | 7.10 (63.0) | 0.86 | 0.00011 (0.00096) |
| TLY-A310 | 4000 | 4500 | 3.61 (32.0) | 9.0 (80.0) | 0.95 | 0.00015 (0.0013) |
| TL-A410 (2) | 4500 | | 5.42 (48.0) | 13.00 (115) | 2.0 | 0.00036 (0.0032) |

(1) Refer to Kinetix TL and TLY Motor Weight Specifications on page 151 for brake motor weight.
(2) The TLY/TL-A110 and TL-A410 motors are available in only metric frame sizes. All other motors are available in metric and NEMA frame sizes.
(3) Applies to TLY-A*xxx*T-H motors with incremental feedback. The TLY/TL-A*xxx*P-B motors with absolute high-resolution encoders are rated at 5000 rpm.

### Kinetix TL and TLY (brake) Motor Performance Specifications

| Motor Cat. No. | Rated Speed rpm | Maximum Speed rpm | Continuous Stall Torque N•m (lb•in) | Peak Stall Torque N•m (lb•in) | Motor Rated Output kW | Rotor Inertia (1) kg-m$^2$ (lb•in•s$^2$) |
|---|---|---|---|---|---|---|
| TLY-A110 (2) | 5000 | 6000 (3) | 0.086 (0.76) | 0.20 (1.75) | 0.037 | 0.000004 (0.000035) |
| TL-A110 (2) | | | | 0.22 (1.94) | | |
| TLY-A120<br>TL-A120 | 5000 | | 0.163 (1.44) | 0.36 (3.20) | 0.077 | 0.000005 (0.000044) |
| TLY-A130<br>TL-A130 | 5000 | | 0.293 (2.59) | 0.76 (6.70) | 0.13 | 0.000006 (0.000053) |
| TLY-A220<br>TL-A220 | 5000 | | 0.757 (6.70) | 1.48 (13.1) | 0.24 | 0.000028 (0.00025) |
| TLY-A230<br>TL-A230 | 4250 | | 1.16 (10.3) | 3.05 (27.0) | 0.32 | 0.000044 (0.00039) |
| TLY-A2530<br>TL-A2530 | 3650 | 5000 | 2.60 (23.0) | 5.20 (46.0) | 0.55 | 0.00012 (0.0011) |
| TLY-A2540<br>TL-A2540 | 3750 | | 2.94 (26.0) | 7.10 (63.0) | 0.66 | 0.00013 (0.0012) |
| TLY-A310 | 3900 | 4500 | 3.61 (32.0) | 9.0 (80.0) | 0.90 | 0.00017 (0.0017) |
| TL-A410 (2) | 4500 | | 4.86 (43.0) | 13.0 (115) | 1.80 | 0.00041 (0.0036) |

(1) Refer to Kinetix TL and TLY Motor Weight Specifications on page 151 for brake motor weight.
(2) The TLY/TL-A110 and TL-A410 motors are available in only metric frame sizes. All other motors are available in metric and NEMA frame sizes.
(3) Applies to TLY-A*xxx*T-H motors with incremental feedback. The TLY/TL-A*xxx*P-B motors with absolute high-resolution encoders are rated at 5000 rpm.

### Kinetix TL and TLY Motor Weight Specifications

| Motor Cat. No. | High Resolution Feedback Option Kinetix TLY/TL-A*xxxx*-B Motors | | Incremental Feedback Option Kinetix TLY-A*xxxx*-H Motors | |
|---|---|---|---|---|
| | **Motor Weight, approx** kg (lb) | **Brake Motor Weight, approx** kg (lb) | **Motor Weight, approx** kg (lb) | **Brake Motor Weight, approx** kg (lb) |
| TLY-A110<br>TL-A110 | 0.29 (0.64) | 0.55 (1.2) | 0.29 (0.64) | 0.55 (1.2) |
| TLY-A120<br>TL-A120 | 0.34 (0.75) | 0.59 (1.3) | 0.35 (0.78) | 0.59 (1.3) |
| TLY-A130<br>TL-A130 | 0.46 (1.0) | 0.68 (1.5) | 0.50 (1.1) | 0.68 (1.5) |
| TLY-A220<br>TL-A220 | 0.95 (2.1) | 1.4 (3.0) | 1.1 (2.4) | 1.5 (3.4) |
| TLY-A230<br>TL-A230 | 1.4 (3.0) | 1.8 (4.0) | 1.5 (3.3) | 2.0 (4.4) |
| TLY-A2530<br>TL-A2530 | 2.3 (5.0) | 3.2 (7.0) | 2.3 (5.1) | 3.2 (7.0) |
| TLY-A2540<br>TL-A2540 | 2.6 (5.7) | 3.5 (7.7) | 2.6 (5.8) | 3.5 (7.7) |
| TLY-A310 | 3.9 (8.6) | 4.5 (10.0) | 3.9 (8.6) | 4.5 (10.0) |
| TL-A410 | 5.5 (12.0) | 6.80 (15.0) | 5.5 (12.0) | 6.80 (15.0) |

### Kinetix TL and TLY Motor Brake Specifications

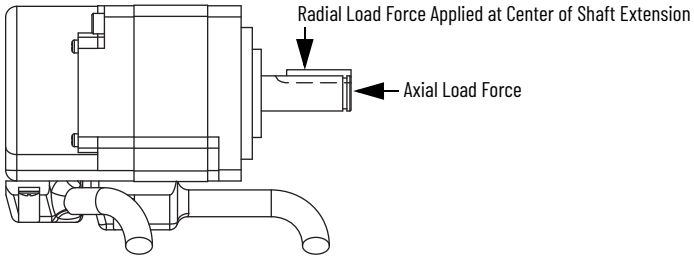
| Motor Cat. No. | Backlash, max (brake engaged) arc minutes | Holding Torque N•m (lb•in) | Coil Current at 24V DC A | Brake Response Time | | |
|---|---|---|---|---|---|---|
| | | | | Release ms | Engage (1) | |
| | | | | | **MOV** ms | **Diode** ms |
| TLY-A110<br>TL-A110 | 60 | 0.32 (2.8) | 0.18…0.22 | 21 | 7 | 40 |
| TLY-A120<br>TL-A120 | | | | | | |
| TLY-A130<br>TL-A130 | | | | | | |
| TLY-A220<br>TL-A220 | | 1.24 (11.0) | 0.333…0.407 | 22 | 13 | 73 |
| TLY-A230<br>TL-A230 | | | | | | |
| TLY-A2530<br>TL-A2530 | | 2.5 (22.0) | 0.351…0.429 | 42 | 14 | 86 |
| TLY-A2540<br>TL-A2540 | | | | | | |
| TLY-A310 | | | | | | |
| TL-A410 | | 9.3 (82.0) | 0.648…0.792 | 69 | 20 | 84 |

(1) By using an arc suppression device in external control circuit.

# Kinetix TL and TLY Motor Load Force Ratings

Kinetix TL and TLY servo motors are capable of operating with the maximum radial or maximum axial shaft loads listed in the following tables. Radial loads listed are applied in the middle of the shaft extension. The tables below represent an $L_{10}$ bearing fatigue life of 20,000 hours. This 20,000-hour life does not account for possible application-specific life reduction that can occur due to bearing grease contamination from external sources. Maximum operating speed is limited by motor winding.

### Load Forces on Shaft




### Radial Load Force Ratings

| **Motor Cat. No.** | **1000 rpm** kg (lb) | **2000 rpm** kg (lb) | **3000 rpm** kg (lb) | **4000 rpm** kg (lb) | **4500 rpm** kg (lb) | **5000 rpm** kg (lb) | **6000 rpm** kg (lb) |
|---|---|---|---|---|---|---|---|
| TLY-A110<br>TL-A110 | 11 (24) | 9 (19) | 7 (16) | 7 (16) | – | 6 (13) | 6 (13) |
| TLY-A120<br>TL-A120 | 12 (26) | 10 (21) | 8 (18) | 7 (16) | – | 7 (15) | 6 (13) |
| TLY-A130<br>TL-A130 | 13 (29) | 10 (23) | 9 (20) | 8 (18) | – | 8 (17) | 7 (15) |
| TLY-A220<br>TL-A220 | 27 (60) | 22 (48) | 19 (42) | 17 (37) | – | 16 (35) | 15 (33) |
| TLY-A230<br>TL-A230 | 31 (68) | 24 (54) | 21 (47) | 19 (42) | – | 18 (40) | 17 (37) |
| TLY-A2530<br>TL-A2530 | 48 (106) | 38 (84) | 34 (74) | – | – | 28 (62) | – |
| TLY-A2540<br>TL-A2540 | 50 (110) | 39 (87) | 34 (76) | – | – | 29 (64) | – |
| TLY-A310 | 80 (177) | 63 (139) | 56 (123) | – | 48 (106) | – | – |
| TL-A410 | 76 (168) | 60 (133) | 53 (117) | – | 44 (98) | – | – |

### Axial Load Force Ratings (maximum radial load)

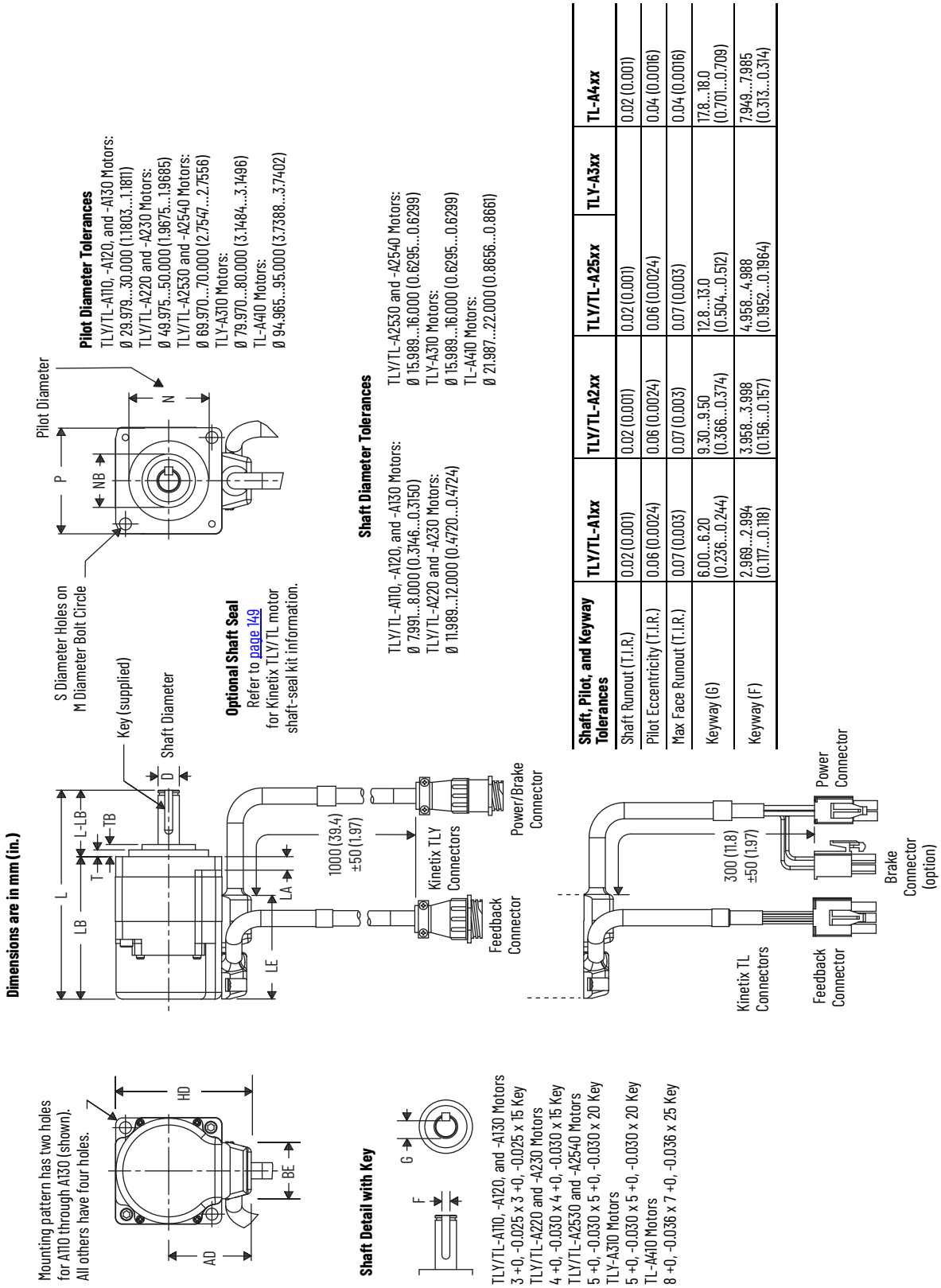
| Motor Cat. No. | 1000 rpm kg (lb) | 2000 rpm kg (lb) | 3000 rpm kg (lb) | 4000 rpm kg (lb) | 4500 rpm kg (lb) | 5000 rpm kg (lb) | 6000 rpm kg (lb) |
|---|---|---|---|---|---|---|---|
| TLY-A110<br>TL-A110 | 8 (18) | 6 (13) | 5 (11) | 4 (9) | – | 4 (9) | 3 (7) |
| TLY-A120<br>TL-A120 | 9 (20) | 7 (16) | 5 (11) | 4 (9) | – | 4 (9) | 3 (7) |
| TLY-A130<br>TL-A130 | 10 (22) | 8 (17) | 6 (13) | 5 (12) | – | 5 (11) | 4 (9) |
| TLY-A220<br>TL-A220 | 15 (33) | 11 (24) | 9 (20) | 8 (17) | – | 7 (16) | 5 (11) |
| TLY-A230<br>TL-A230 | 15 (33) | 12 (26) | 10 (21) | 9 (20) | – | 8 (17) | 6 (13) |
| TLY-A2530<br>TL-A2530 | 18 (39) | 13 (29) | 11 (24) | – | – | 9 (19) | – |
| TLY-A2540<br>TL-A2540 | 18 (39) | 13 (29) | 11 (25) | – | – | 9 (20) | – |
| TLY-A310 | 19 (42) | 14 (31) | 11 (25) | – | 10 (21) | – | – |
| TL-A410 | 29 (64) | 21 (47) | 18 (40) | – | 14 (31) | – | – |

### Axial Load Force Ratings (zero radial load)

| Motor Cat. No. | 1000 rpm kg (lb) | 2000 rpm kg (lb) | 3000 rpm kg (lb) | 4000 rpm kg (lb) | 4500 rpm kg (lb) | 5000 rpm kg (lb) | 6000 rpm kg (lb) |
|---|---|---|---|---|---|---|---|
| TLY-A110<br>TL-A110 | 12 (26) | 9 (20) | 7 (16) | 6 (13) | – | 6 (13) | 5 (11) |
| TLY-A120<br>TL-A120 | 12 (26) | 9 (20) | 7 (16) | 6 (13) | – | 6 (13) | 5 (11) |
| TLY-A130<br>TL-A130 | 12 (26) | 9 (20) | 7 (16) | 6 (13) | – | 6 (13) | 5 (11) |
| TLY-A220<br>TL-A220 | 19 (41) | 14 (30) | 11 (25) | 10 (21) | – | 9 (20) | 8 (17) |
| TLY-A230<br>TL-A230 | 19 (41) | 14 (30) | 11 (25) | 10 (21) | – | 9 (20) | 8 (17) |
| TLY-A2530<br>TL-A2530 | 23 (50) | 17 (37) | 14 (31) | – | – | 11 (25) | – |
| TLY-A2540<br>TL-A2540 | 23 (50) | 17 (37) | 14 (31) | – | – | 11 (25) | – |
| TLY-A310 | 26 (57) | 19 (42) | 16 (35) | – | 14 (31) | – | – |
| TL-A410 | 34 (75) | 25 (55) | 21 (47) | – | 17 (37) | – | – |

# Dimensions - Kinetix TL and TLY Servo Motors

## TLY-Axxxxx-xx6xAA or TL-Axxxxx-Bx3xAA Motor Dimensions




| Shaft, Pilot, and Keyway Tolerances | TLY/TL-A1xx | TLY/TL-A2xx | TLY/TL-A25xx | TLY-A3xx | TL-A4xx |
|---|---|---|---|---|---|
| Shaft Runout (T.I.R.) | 0.02 (0.001) | 0.02 (0.001) | 0.02 (0.001) | | 0.02 (0.001) |
| Pilot Eccentricity (T.I.R.) | 0.06 (0.0024) | 0.06 (0.0024) | 0.06 (0.0024) | | 0.04 (0.0016) |
| Max Face Runout (T..I.R.) | 0.07 (0.003) | 0.07 (0.003) | 0.07 (0.003) | | 0.04 (0.0016) |
| Keyway (G) | 6.00...6.20 (0.236...0.244) | 9.30...9.50 (0.366...0.374) | 12.8...13.0 (0.504...0.512) | | 17.8...18.0 (0.701...0.709) |
| Keyway (F) | 2.969...2.994 (0.117...0.118) | 3.958...3.998 (0.156...0.157) | 4.958...4.988 (0.1952...0.1964) | | 7.948...7.985 (0.313...0.314) |

### TLY-A*xxxxx*-*xx*6xAA or TL-A*xxxxx*-B*x*3*x*AA Motor Dimensions

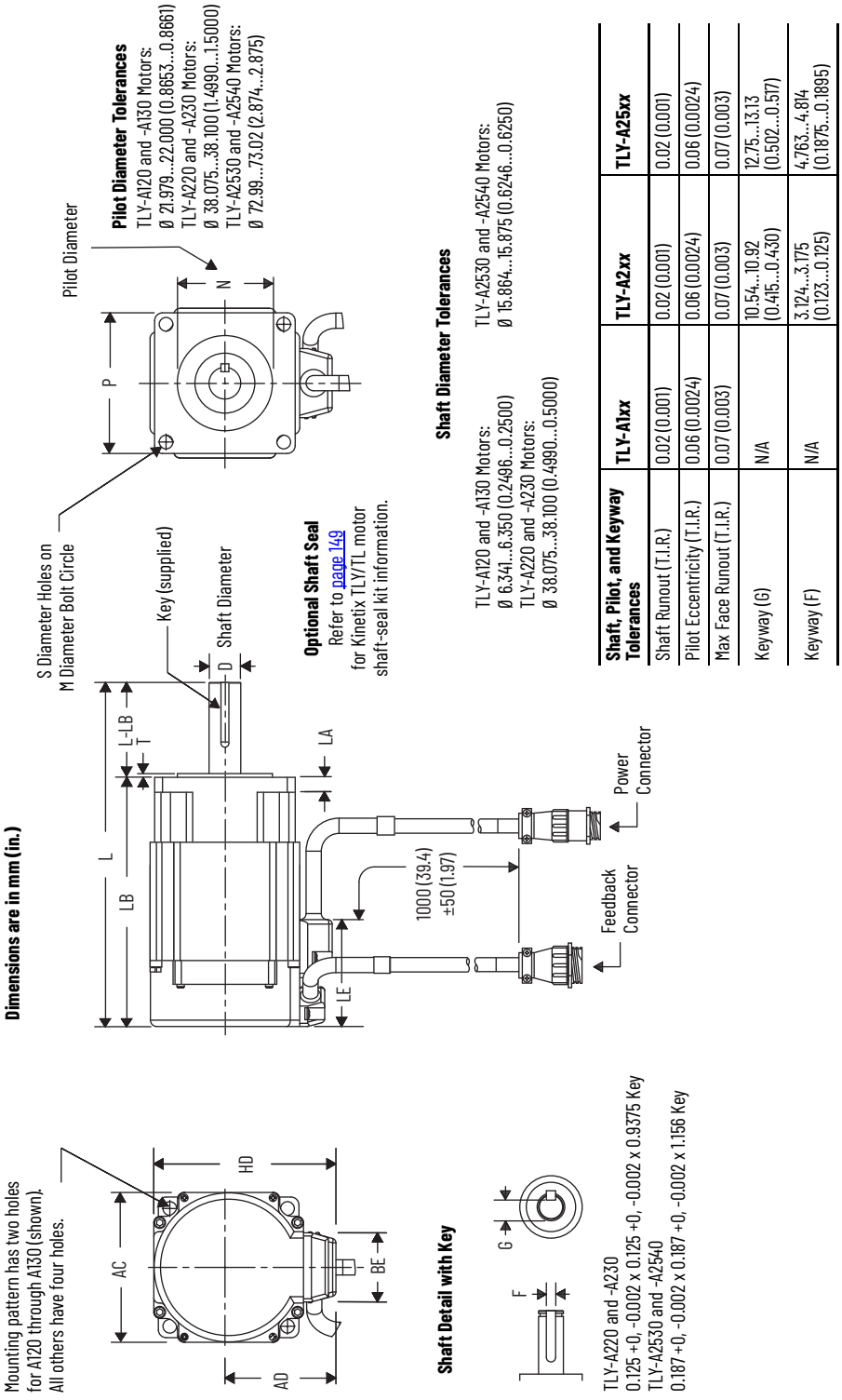
| Motor Cat. No. | AD mm (in.) | BE mm (in.) | D (1) mm (in.) | HD mm (in.) | L (2) mm (in.) | L-LB (3) mm (in.) | LA mm (in.) | LB (2) mm (in.) | LE (2) mm (in.) | M mm (in.) | N (1) mm (in.) | NB mm (in.) | P mm (in.) | S mm (in.) | T mm (in.) | TB mm (in.) | G (1) mm (in.) | F (1) mm (in.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TLY/TL-A110 | 31.1 (1.22) | 21.0 (0.83) | 8.0 (0.31) | 51.1 (2.01) | 78.5 (3.09) | 25.0 (0.98) | 5.0 (0.20) | 53.5 (2.11) | 39.1 (1.54) | 46.0 (1.81) | 30.0 (1.18) | 20.0 (0.79) | 40.0 (1.57) | 4.5 (0.18) | 2.5 (0.10) | 4.5 (0.18) | 6.2 (0.24) | 3.0 (0.12) |
| TLY/TL-A120 | | | | | 84.5 (3.33) | | | 59.5 (2.34) | | | | | | | | | | |
| TLY/TL-A130 | | | | | 98.5 (3.88) | | | 73.5 (2.89) | | | | | | | | | | |
| TLY/TL-A220 | 43.0 (1.69) | 27.6 (1.09) | 12.0 (0.47) | 73.0 (2.87) | 106.1 (4.18) | 30.0 (1.18) | 6.0 (0.24) | 76.1 (3.00) | 42.8 (1.69) | 70.0 (2.76) | 50.0 (1.97) | 27.0 (1.06) | 60.0 (2.36) | 5.5 (0.22) | 3.0 (0.12) | 7.0 (0.28) | 9.5 (0.37) | 4.0 (0.16) |
| TLY/TL-A230 | | | | | 128.0 (5.04) | | | 98.1 (3.86) | | | | | | | | | | |
| TLY/TL-A2530 | 53.0 (2.09) | 27.6 (1.09) | 16.0 (0.63) | 93.0 (3.66) | 134.7 (5.30) | 35.0 (1.38) | 8.0 (0.32) | 99.7 (3.93) | 43.8 (1.72) | 90.0 (3.54) | 70.0 (2.76) | 34.0 (1.34) | 80.0 (3.15) | 6.6 (0.26) | 3.0 (0.12) | 7.0 (0.28) | 13.0 (0.51) | 5.0 (0.20) |
| TLY/TL-A2540 | | | | | 143.7 (5.66) | | | 108.7 (4.28) | | | | | | | | | | |
| TLY-A310 | 56.0 (2.20) | | | 99.0 (3.90) | 179.2 (7.06) | | | 144.2 (5.68) | 57.1 (2.24) | 100.0 (3.94) | 80.0 (3.15) | | 86.0 (3.39) | | | | | |
| TL-A410 | 67.0 (2.64) | 38.4 (1.51) | 22.0 (0.87) | 117.0 (4.61) | 216.0 (8.50) | 40.0 (1.57) | 17.0 (0.67) | 176.0 (6.93) | 102.0 (4.02) | 115.0 (4.53) | 95.0 (3.74) | N/A | 100.0 (3.94) | 9.0 (0.35) | 7.0 (0.28) | N/A | 18.0 (0.71) | 8.0 (0.32) |

(1) For keyway, shaft diameter, and pilot diameter tolerances, refer to page 154.
(2) If ordering an TLY/TL-A110, TLY/TL-A120 or TLY/TL-A130 motor with brake, add 35.6 mm (1.40 in.) to dimensions L, LB, and LE.
If ordering an TLY/TL-A220 or TLY/TL-A230 motor with brake, add 34.6 mm (1.36 in.) to dimensions L, LB, and LE.
If ordering an TLY/TL-A2530 or TLY/TL-A2540 motor with brake, add 36.6 mm (1.44 in.) to dimensions L, LB, and LE.
If ordering an TLY-A310 motor with brake, add 23.0 mm (0.90 in.) to dimensions L, LB, and LE.
If ordering an TL-A410 motor with brake, add 32.0 mm (1.26 in.) to dimensions L, LB, and LE.
(3) Tolerance for this dimension is ±1.0 mm (±0.039 in.).

Motors are designed to metric dimensions. Inch dimensions are approximate conversions from millimeters. Dimensions without tolerances are for reference.

# Kinetix TLY NEMA Servo Motor Dimensions

## TLY-A*xxxxx*-Hx6xAN NEMA Motor Dimensions




| Shaft, Pilot, and Keyway Tolerances | TLY-A1xx | TLY-A2xx | TLY-A25xx |
|---|---|---|---|
| Shaft Runout (T.I.R.) | 0.02 (0.001) | 0.02 (0.001) | 0.02 (0.001) |
| Pilot Eccentricity (T.I.R.) | 0.06 (0.0024) | 0.06 (0.0024) | 0.06 (0.0024) |
| Max Face Runout (T.I.R.) | 0.07 (0.003) | 0.07 (0.003) | 0.07 (0.003) |
| Keyway (G) | N/A | 10.54...10.92<br>(0.415...0.430) | 12.75...13.13<br>(0.502...0.517) |
| Keyway (F) | N/A | 3.124...3.175<br>(0.123...0.125) | 4.763...4.814<br>(0.1875...0.1895) |

### TLY-A*xxxxx*-Hx6xAN NEMA Motor Dimensions

| Motor Cat. No. | AC mm (in.) | AD mm (in.) | BE mm (in.) | D (1) mm (in.) | HD mm (in.) | L (2) mm (in.) | L-LB (3) mm (in.) | LA mm (in.) | LB (2) mm (in.) | LE (2) mm (in.) | M mm (in.) | N (1) mm (in.) | P mm (in.) | S mm (in.) | T mm (in.) | G (1) mm (in.) | F (1) mm (in.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TLY-A120 | N/A | 31.10 (1.22) | 21.0 (0.83) | 6.35 (0.25) | 52.0 (2.05) | 91.5 (3.603) | 27.0 (1.06) | 5.0 (0.20) | 64.5 (2.54) | 39.1 (1.54) | 43.8 (1.725) | 22.0 (0.86) | 42.0 (1.65) | 8-32 Thread | 2.0 (0.08) | N/A | N/A |
| TLY-A130 | | | | | | 105.5 (4.153) | | | 78.5 (3.09) | | | | | | | | |
| TLY-A220 | 60 (2.36) | 43.0 (1.69) | 27.6 (1.09) | 12.70 (0.50) | 73.0 (2.87) | 137.9 (5.43) | 38.1 (1.50) | 6.0 (0.24) | 99.8 (3.93) | 43.3 (1.70) | 66.7 (2.625) | 38.1 (1.50) | 56.4 (2.22) | 5.5 (0.217) | 1.5 (0.06) | 10.92 (0.43) | 3.175 (0.125) |
| TLY-A230 | | | | | | 159.9 (6.30) | | | 121.8 (4.80) | | | | | | | | |
| TLY-A2530 | N/A | 53.0 (2.09) | | 15.875 (0.625) | 96.0 (3.78) | 149.2 (5.872) | 44.5 (1.752) | 8.0 (0.32) | 104.7 (4.12) | 43.8 (1.72) | 98.4 (3.875) | 73.02 (2.87) | 86.0 (3.39) | 5.5 (0.217) | 1.5 (0.06) | 13.13 (0.517) | 4.814 (0.189) |
| TLY-A2540 | | | | | | 158.2 (6.205) | | | 113.7 (4.48) | | | | | | | | |

(1) For keyway, shaft diameter, and pilot diameter tolerances, refer to page 156.
(2) If ordering an TLY-A120 or TLY-A130 motor with brake, add 35.6 mm (1.40 in.) to dimensions L, LB, and LE.
If ordering an TLY-A220 or TLY-A230 motor with brake, add 34.6 mm (1.36 in.) to dimensions L, LB, and LE.
If ordering an TLY-A2530 or TLY-A2540 motor with brake, add 36.6 mm (1.44 in.) to dimensions L, LB, and LE.
(3) Tolerance for this dimension is ±1.0 mm (±0.039 in.).

NEMA motor flanges and shafts are designed to inch dimensions. Other frame areas are designed to metric dimensions. Conversions are approximate values.

# Kinetix RDB Direct-drive Servo Motors

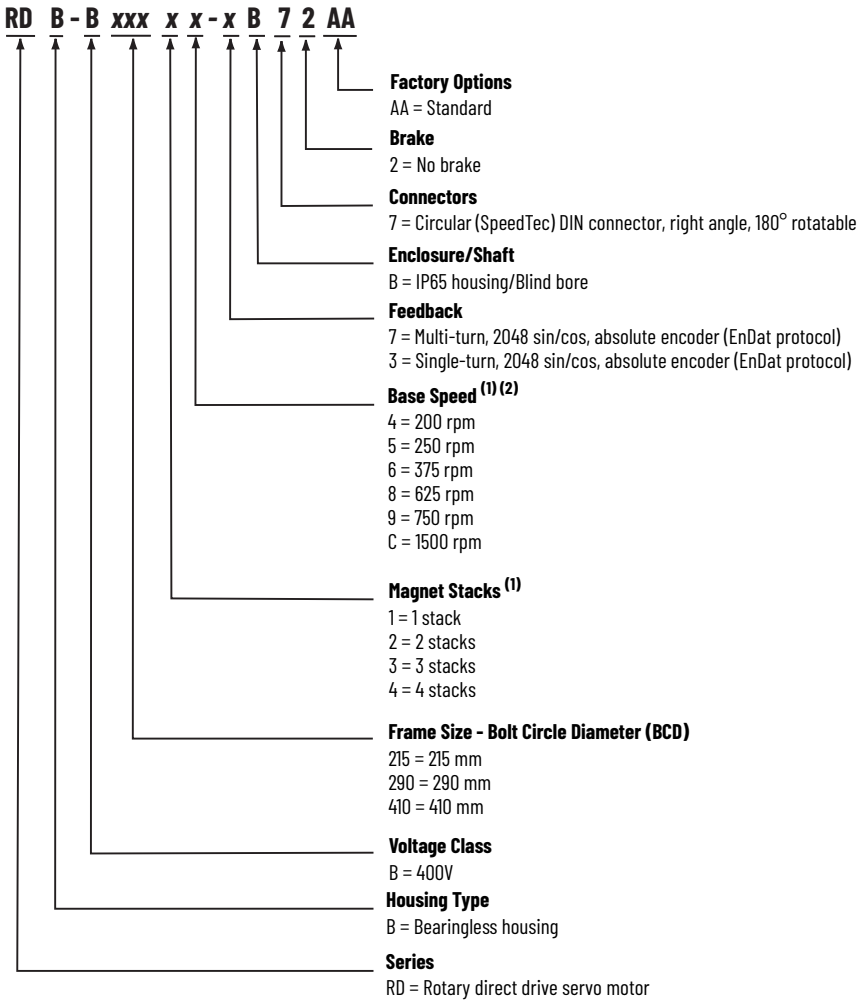
Kinetix RDB servo motor design provides direct-coupling to the load, thus improving system performance and efficiency by eliminating the need for inefficient mechanical power transmission devices, such as gearboxes, timing belts and pulleys. The Kinetix RDB servo motors incorporate a bearingless housed configuration designed for applications where the load is already supported by its own bearings.

## Kinetix RDB Servo Motor Features

| Attribute | Value |
|---|---|
| Main characteristics | • Direct coupling to the load<br>• Smart Motor Technology<br>• Heidenhain (EnDat analog) encoder protocol<br>• Bearingless housed configuration |
| Features | • 400V-class windings<br>• Single-turn and multi-turn absolute feedback<br>• Multiple winding speed options<br>• SpeedTec DIN connectors, rotates 180°<br>• Standard IEC 72-1 mounting dimensions |
| Motor type | Direct-drive rotary servo motor |
| Environmental rating | IP65 with use of environmentally sealed cable connectors |
| Certifications | Kinetix RDB rotary motors are UL Recognized components to applicable UL and CSA standards. CE marked for all applicable directives. Refer to rok.auto/certifications for the Product Certifications website. |
| Continuous stall torque | 32.7…426 N•m (289…3770 lb•in) |
| Peak stall torque | 86.5…1050 N•m (766…9293 lb•in) |
| Rated speed | Rated speeds between 177…1836 rpm |
| Motor rated output | 1.97…8.69 kW |
| Compatible servo drives | • Kinetix 5700<br>• Kinetix 6200/6500<br>• Kinetix 6000<br>• Kinetix 7000 |
| Compatible servo cables | 2090-CxxM7*xx* cables |
| Typical applications | • Use to replace mechanical gear reduction (gear boxes, belts, pulleys)<br>• Tight space constraints<br>• Axes with high-power and high-performance requirements |

# Catalog Numbers - Kinetix RDB Servo Motors

Catalog numbers consist of various characters, each of which identifies a specific option for that component. Use the catalog numbering table chart below to understand the configuration of your motor. For questions regarding product availability, contact your Allen-Bradley distributor.




(1) Not all combinations are available. Only the configurations for rated speed and magnet stacks, as listed in Kinetix RDB Servo motor Performance Specifications on page 161, are available. Use Motion Analyzer software to size and select motors for your application.
(2) Base speed equals maximum speed at peak torque. Maximum speed is servo drive dependent.

# Kinetix RDB Servo Motor High-resolution Encoders

Kinetix RDB servo motors are available with high performance encoders with a choice of single-turn (-3) or multi-turn (-7) high-resolution feedback:

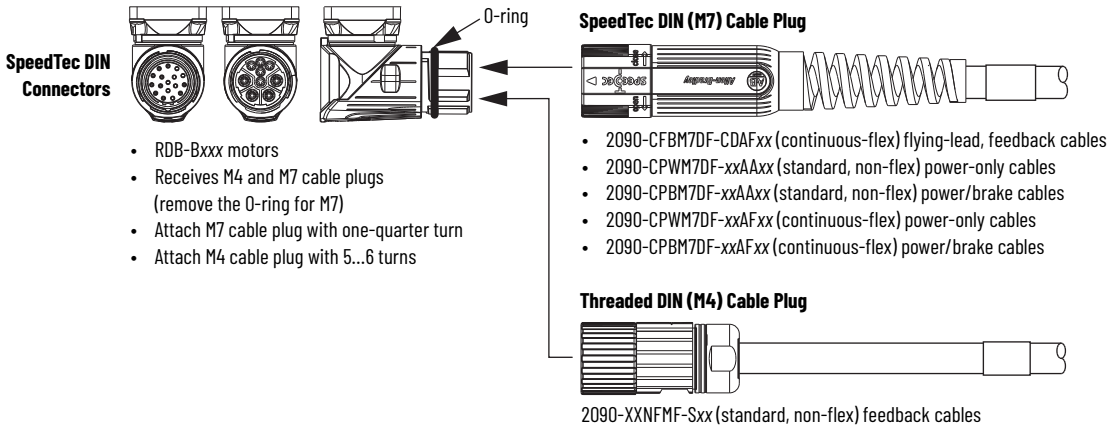
- Up to 4 million counts per revolution (-3 and -7) for smooth performance.
- Single-turn encoder provides high-resolution absolute position feedback within one turn.
- Multi-turn encoder provides high-resolution absolute position feedback within 4096 turns. The electromechanical design does not require a battery.

**Feedback Connector Kit Compatibility**

| Servo Drive System | Connector Kit Cat. No. |
|---|---|
| Kinetix 5700 | 2198-K57CK-D15M |
| • Kinetix 6200<br>• Kinetix 6500 | 2090-K6CK-D15M |
| Kinetix 6000 | 2090-K6CK-KENDAT |
| Kinetix 7000 | 2090-K7CK-KENDAT |

# Motor Connector/Cable Compatibility

Kinetix RDB servo motors are equipped with SpeedTec DIN connectors, however, EnDat encoder feedback requires the additional conductors included in the cables listed.




- RDB-B*xxx* motors
- Receives M4 and M7 cable plugs (remove the O-ring for M7)
- Attach M7 cable plug with one-quarter turn
- Attach M4 cable plug with 5…6 turns

- 2090-CFBM7DF-CDAF*xx* (continuous-flex) flying-lead, feedback cables
- 2090-CPWM7DF-*xx*AA*xx* (standard, non-flex) power-only cables
- 2090-CPBM7DF-*xx*AA*xx* (standard, non-flex) power/brake cables
- 2090-CPWM7DF-*xx*AF*xx* (continuous-flex) power-only cables
- 2090-CPBM7DF-*xx*AF*xx* (continuous-flex) power/brake cables

2090-XXNFMF-S*xx* (standard, non-flex) feedback cables

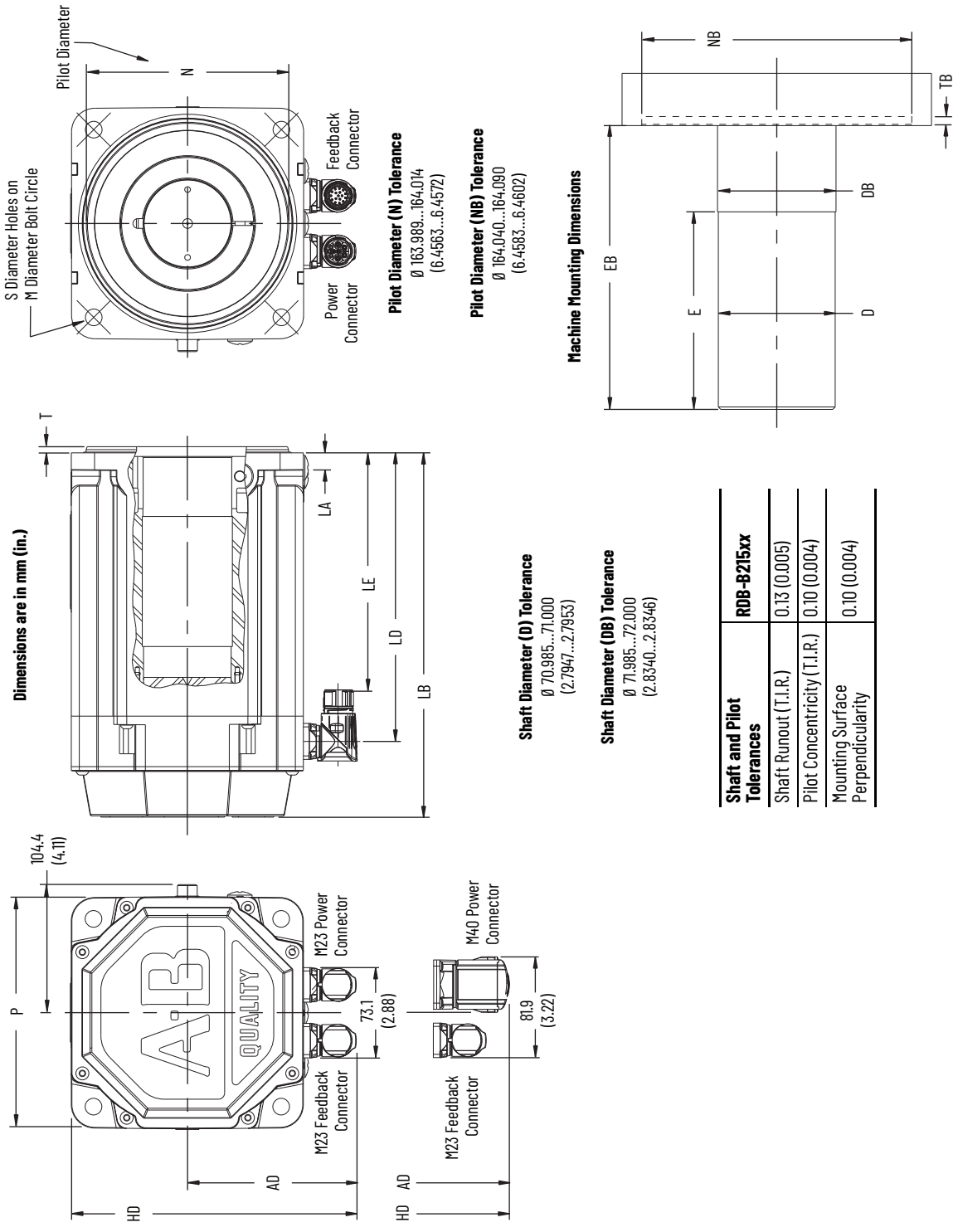
# Technical Specifications - Kinetix RDB Servo Motors

**Kinetix RDB Servo motor Performance Specifications**

| **Motor Cat. No.** | **Base Speed** rpm | **Rated Speed** rpm | **Maximum Speed** rpm | **Continuous Stall Torque** N•m (lb•in) | **Peak Stall Torque** N•m (lb•in) | **Motor Rated Output** kW | **Rotor Inertia** kg-$m^2$ (lb•in•$s^2$) | **Motor Weight, approx** kg (lb) |
|---|---|---|---|---|---|---|---|---|
| RDB-B21519 | 750 | 1235 | 1235 | 32.7 (289) | 86.5 (766) | 3.64 | 0.0094 (0.083) | 19.1 (42) |
| RDB-B2151C | 1500 | 2125 | 2125 | | | 5.23 | | |
| RDB-B21529 | 750 | 1035 | 1035 | 45.4 (402) | 116 (1027) | 4.33 | 0.0126 (0.112) | 24.5 (54) |
| RDB-B2152C | 1500 | 2125 | 2125 | | | 6.41 | | |
| RDB-B21539 | 750 | 1250 | 1250 | 53.7 (475) | 143 (1266) | 5.34 | 0.0157 (0.139) | 29.5 (65) |
| RDB-B2153C | 1500 | 1772 | 2250 | | | 5.87 | | |
| RDB-B29014 | 200 | 391 | 450 | 49.2 (435) | 110 (974) | 1.97 | 0.028 (0.25) | 28.6 (63) |
| RDB-B29016 | 375 | 729 | 785 | | | 3.18 | | |
| RDB-B29019 | 750 | 1128 | 1500 | | | 3.63 | | |
| RDB-B29024 | 200 | 413 | 435 | 98.0 (867) | 214 (1894) | 3.33 | 0.047 (0.42) | 42.7 (94) |
| RDB-B29026 | 375 | 632 | 885 | | | 4.05 | | |
| RDB-B29029 | 750 | | 1200 | | | | | |
| RDB-B29034 | 200 | 493 | 500 | 140 (1239) | 318 (2815) | 5.16 | 0.066 (0.58) | 55.4 (122) |
| RDB-B29036 | 375 | 646 | 750 | | | 5.49 | | |
| RDB-B29039 | 750 | 578 | 1000 | 122 (1080) | 318 (2815) | 4.41 | | |
| RDB-B41014 | 200 | 360 | 385 | 183 (1620) | 340 (3009) | 5.20 | 0.123 (1.09) | 67.6 (149) |
| RDB-B41016 | 375 | 440 | 700 | | | 4.83 | | |
| RDB-B41018 | 625 | | 700 | | | | | |
| RDB-B41024 | 200 | 350 | 365 | 332 (2938) | 690 (6107) | 7.29 | 0.225 (1.99) | 108 (238) |
| RDB-B41026 | 375 | | 600 | 308 (2726) | | | | |
| RDB-B41035 | 250 | 361 | 490 | 426 (3770) | 1050 (9293) | 8.69 | 0.302 (2.67) | 136 (300) |

# Dimensions - Kinetix RDB Servo Motors

### RDB-B215*xx* Motor Dimensions




| Shaft and Pilot Tolerances | RDB-B215xx |
|---|---|
| Shaft Runout (T.I.R.) | 0.13 (0.005) |
| Pilot Concentricity (T.I.R.) | 0.10 (0.004) |
| Mounting Surface Perpendicularity | 0.10 (0.004) |

### RDB-B215*xx* Motor Dimensions

| Motor Cat. No. | AD [1] mm (in.) | HD [1] mm (in.) | T mm (in.) | LA mm (in.) | LD mm (in.) | LE mm (in.) | LB [2] mm (in.) | D mm (in.) | DB mm (in.) | E [3] mm (in.) | EB [4] mm (in.) | TB mm (in.) | M mm (in.) | S [5] mm (in.) | N mm (in.) | NB mm (in.) | P mm (in.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RDB-B2151 | 136.7 (5.38) | 230.9 (9.09) | 5.0 (0.197) | 14.0 (0.55) | 166 (6.52) | 124 (4.90) | 226 (8.90) | 71.0 (2.795) | 72.0 (2.834) | 49.0 (1.93) | 104 (4.09) | 5.5 (0.22) | 215 (8.465) | 13.50 (0.5315) | 164 (6.456) | 164 (6.459) | 189 (7.44) |
| RDB-B2152 | | | | | 200 (7.86) | 158 (6.24) | 260 (10.24) | | | 83.0 (3.27) | 138 (5.43) | | | | | | |
| RDB-B2153 | | | | | 234 (9.20) | 192 (7.58) | 294 (11.58) | | | 117 (4.61) | 172 (6.77) | | | | | | |

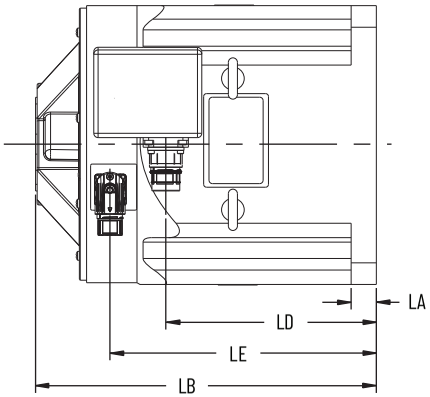
(1) Dimension is for motor with M23 power connector. For motor with M40 power connector, add 18.6 (0.73 in.).
(2) Tolerance for this dimension is ±0.52 mm (±0.02 in.).
(3) Tolerance for this dimension is ±0.40 mm (±0.015 in.).
(4) Tolerance for this dimension is ±1.50 mm (±0.06 in.) static, ±0.13 mm (±0.005 in.) dynamic.
(5) Tolerance for this dimension is +0.430, -0.000 mm (+0.0169, -0.0000 in.).

| Power Connectors on Kinetix RDB Servo Motors | | Motor Cat. No. |
|---|---|---|
| M23 Power Connector | | RDB-B21519, RDB-B21529, RDB-B2151C, RDB-B21539, RDB-B2152C |
| M40 Power Connector | | RDB-B2153C |

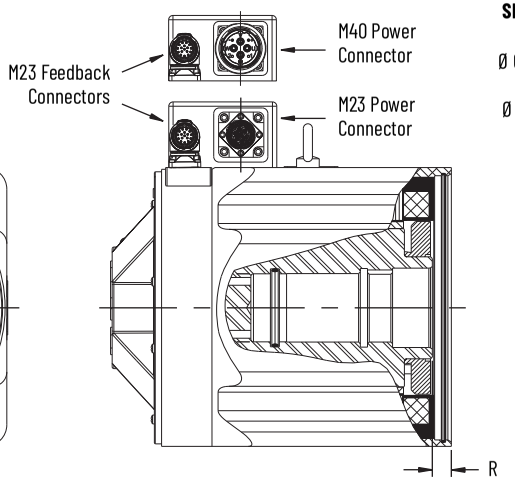
Motors are designed to metric dimensions. Inch dimensions are approximate conversions from millimeters. Dimensions without tolerances are for reference.

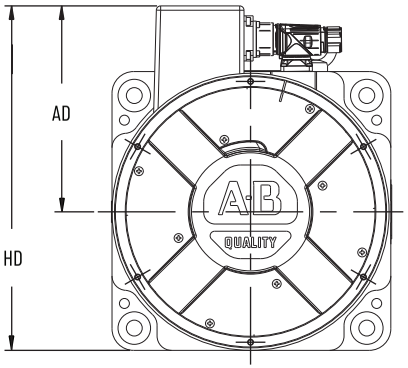
| Shaft, Pilot, and Keyway Tolerances | RDB-B290xx | RDB-B410xx |
|---|---|---|
| Shaft Runout (T.I.R.) | 0.038 (0.0015) | |
| Pilot Concentricity (T.I.R.) | 0.05 (0.002) | |
| Mounting Surface Perpendicularity | 0.05 (0.002) | |
| Keyway Depth (G) | 24.80…24.99 (0.976…0.984) | 29.80…29.99 (1.173…1.181) |
| Keyway Depth (GD) | 7.90…8.00 (0.311…0.315) | |
| Keyway Width (F) | 11.957…12.000 (0.4707…0.4724) | |

**Dimensions are in mm (in.)**

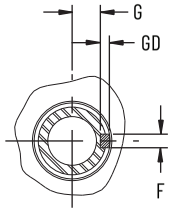



RDB-B290xx and RDB-B410xx motors have either M23 or M40 power connectors, with no significant difference in dimensions.

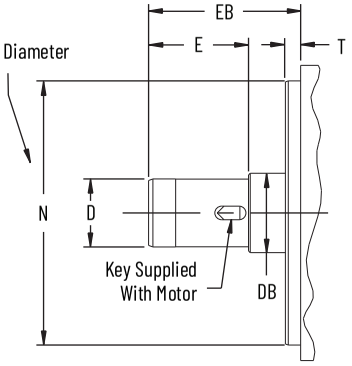



**Machine Mounting Dimensions**




**Shaft Key Detail**




**Shaft Diameter (D) Tolerance**

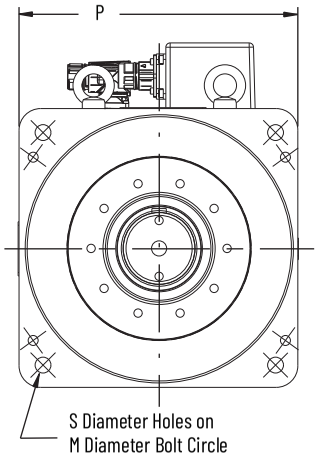
RDB-B290xx Motors:
Ø 59.988…59.999 (2.3617…2.3622)
RDB-B410xx Motors:
Ø 69.988…69.999 (2.7554…2.7559)

**Shaft Diameter (DB) Tolerance**

RDB-B290xx Motors:
Ø 69.988…69.999 (2.7554…2.7559)
RDB-B410xx Motors:
Ø 79.988…79.999 (3.1491…3.1496)

**Pilot Diameter Tolerance**

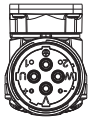
RDB-B290xx Motors:
Ø 232.92…232.96 (9.170…9.172)
RDB-B410xx Motors:
Ø 333.94…333.98 (13.147…13.149)



### RDB-B290*xx* and RDB-B410*xx* Motor Dimensions

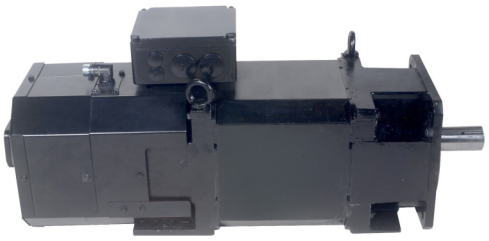
| Motor Cat. No. | AD mm (in.) | HD mm (in.) | T mm (in.) | LA (1) mm (in.) | LD mm (in.) | LE mm (in.) | LB (2) mm (in.) | D mm (in.) | DB mm (in.) | E (3) mm (in.) | EB (4) mm (in.) | M mm (in.) | S mm (in.) | N mm (in.) | P (5) mm (in.) | G mm (in.) | GD mm (in.) | F mm (in.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RDB-B2901 | 182.3 (7.18) | 305.9 (12.05) | 13.5 (0.53) | 22.2 (0.88) | 86.5 (3.40) | 136 (5.34) | 201 (7.92) | 59.9 (2.362) | 69.9 (2.755) | 43.94 (1.730) | 88.92 (3.540) | 290 (11.417) | 14.0 (0.551) | 232.9 (9.17) | 245.9 (9.68) | 24.99 (0.984) | 8.00 (0.315) | 12.0 (0.472) |
| RDB-B2902 | | | | | 136 (5.36) | 185 (7.30) | 251 (9.90) | | | 88.14 (3.470) | 134.11 (5.280) | | | | | | | |
| RDB-B2903 | | | | | 186 (7.31) | 235 (9.25) | 301 (11.83) | | | 124.7 (4.910) | 170.69 (6.720) | | | | | | | |
| RDB-B4101 | 256.3 (10.09) | 432.1 (17.01) | 17.8 (0.70) | 25.4 (1.00) | 105 (4.14) | 164 (6.46) | 230 (9.05) | 69.9 (2.755) | 79.9 (3.149) | 40.39 (1.590) | 114.05 (4.490) | 410 (16.142) | 17.5 (0.689) | 333.9 (13.14) | 350.0 (13.78) | 29.99 (1.181) | 8.00 (0.315) | 12.0 (0.472) |
| RDB-B4102 | | | | | 174 (6.86) | 233 (9.18) | 300 (11.77) | | | 83.82 (3.300) | 167.89 (6.610) | | | | | | | |
| RDB-B4103 | | | | | 243 (9.58) | 302 (11.90) | 368 (14.49) | | | 118.62 (4.670) | 253.49 (9.980) | | | | | | | |

(1) Tolerance for this dimension is ±2.15 mm (±0.085 in.).
(2) Tolerance for this dimension is ±2.30 mm (±0.09 in.).
(3) Tolerance for this dimension is ±0.13 mm (±0.005 in.).
(4) Tolerance for this dimension is ±1.50 mm (±0.060 in.) static, ±0.05 mm (±0.002 in.) dynamic.
(5) Tolerance for this dimension is ±1.52 mm (±0.06 in.).

| Power Connectors on Kinetix RDB Servo Motors | | RDB-B290*xx* Cat. No. | RDB-B410*xx* Cat. No. |
|---|---|---|---|
| M23 Power Connector | | RDB-B29014, RDB-B29016, RDB-B29024, RDB-B29019, RDB-B29034, RDB-B29026 | N/A |
| M40 Power Connector |  | RDB-B29036, RDB-B29029, RDB-B29039 | RDB-B410*xx* |

Motors are designed to metric dimensions. Inch dimensions are approximate conversions from millimeters. Dimensions without tolerances are for reference.

# Kinetix HPK Asynchronous Servo Motors



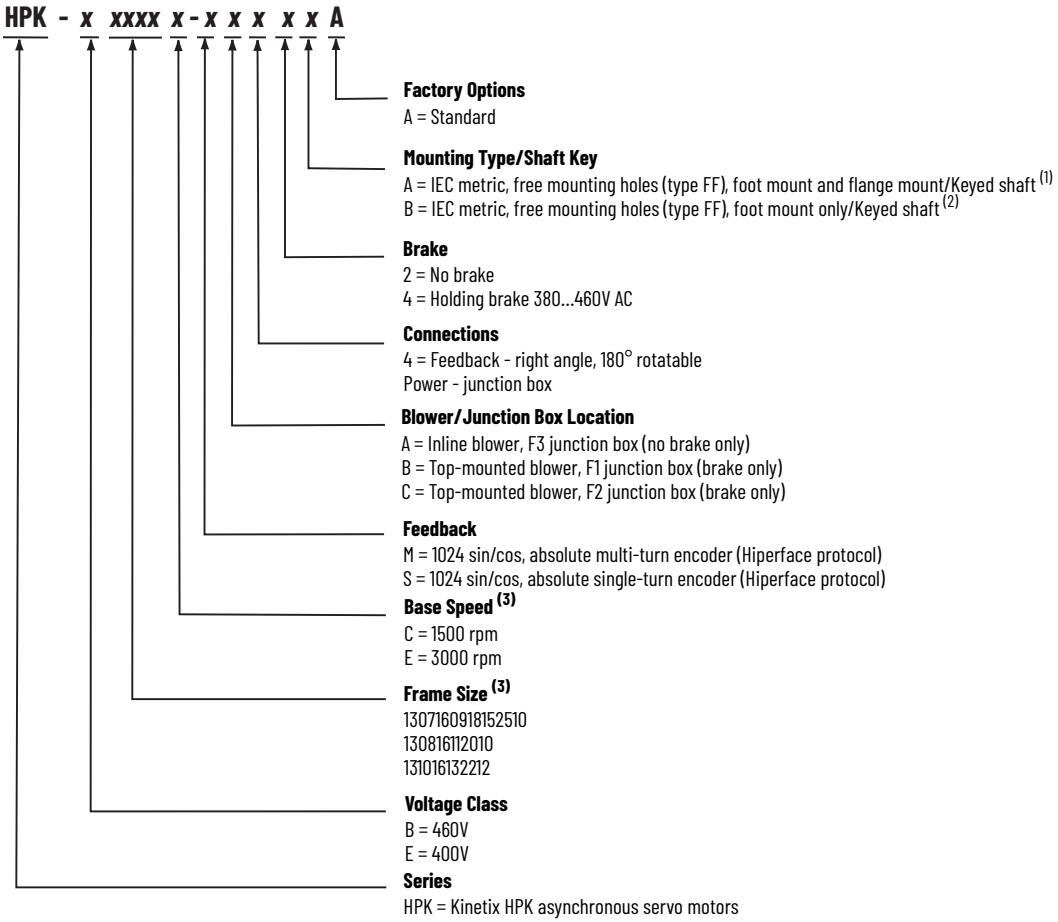
Kinetix HPK servo motors employ proven induction motor technology optimized for servo system performance. These high horsepower motors offer exceptional performance for rapid acceleration and deceleration. These motor pair with the Kinetix 5700 single-axis inverters or Kinetix 7000 servo drives to extend the range of Kinetix Integrated Motion solutions up to 150 kW.

## Kinetix HPK Servo Motor Features

| Attribute | Value |
|---|---|
| Main characteristics | • High-power<br>• Hiperface encoder protocol<br>• Large load inertia |
| Features | • 400V and 460V windings<br>• Single-turn and multi-turn absolute feedback<br>• DIN connectors, rotates 180°<br>• Blower cooled<br>• IEC flange or foot mount |
| Motor type | Asynchronous servo motors |
| Environmental rating | IP54 |
| Certifications | Kinetix HPK rotary motors are UL Recognized components to applicable UL and CSA standards. CE marked for all applicable directives. Refer to rok.auto/certifications for the Product Certifications website. |
| Continuous stall torque | 96…955 N•m (849…8452 lb•in) |
| Peak stall torque | 165…1927 N•m (1460…17,054 lb•in) |
| Rated speed | Rated speeds of 1500 and 3000 rpm |
| Motor rated output | 17.1…150 kW |
| Compatible servo drives | • Kinetix 5700<br>• Kinetix 7000 |
| Compatible servo cables | 2090-C*xx*M7*xx* feedback cables |
| Typical applications | • High power packaging<br>• Converting<br>• Wind/unwind/rewind<br>• Sheeters<br>• Flying knife<br>• Material handling |

# Catalog Numbers - Kinetix HPK Servo Motors

Catalog numbers consist of various characters, each of which identifies a specific option for that component. Use the catalog numbering table chart below to understand the configuration of your motor. For questions regarding product availability, contact your Allen-Bradley distributor.




(1) Applies to only HPK-B/E13*xx* and HPK-B/E16*xx* motors.
(2) Applies to only HPK-B/E18*xx*, HPK-B/E20*xx*, HPK-B22*xx*, and HPK-B25*xx* motors.
(3) Not all combinations are available. Only the configurations for rated speed and frame size, as listed in Kinetix HPK Servo Motor (460V) Performance Specifications on page 168 and Kinetix HPK Servo Motor (400V) Performance Specifications on page 169, are available. Use Motion Analyzer software to size and select motors for your application.

# Kinetix HPK Servo Motor Encoders

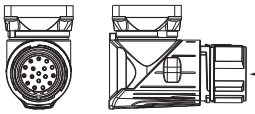
Kinetix HPK servo motors are available with high performance encoders with a choice of single-turn (-S) or multi-turn (-M) high-resolution feedback:

- 1024 sin/cos cycles per revolution for up to 21-bit resolution (2,097,152 counts per revolution) -M and -S (HPK-B*xxxx* and HPK-E*xxxx* motors).
- Single-turn encoder provides high-resolution absolute position feedback within one turn.
- Multi-turn encoder provides high-resolution absolute position feedback within 4096 turns. The electromechanical design does not require a battery.

# Motor Connector/Cable Compatibility

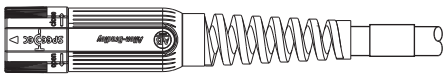
Kinetix HPK servo motors are equipped with SpeedTec DIN connectors.

**SpeedTec DIN Connector**



- HPK-B/E*xxxx* motors
- Receives M4 and M7 cable plugs (O-ring required for M4)
- Attach M7 cable plug with one-quarter turn

**SpeedTec DIN (M7) Cable Plug**

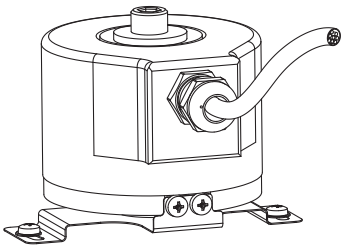


- 2090-CFBM7DF-CEAA*xx* (standard, non-flex) flying-lead, feedback cables
- 2090-CFBM7DD-CEAA*xx* (standard, non-flex) drive-end connector, feedback cables
- 2090-CFBM7DF-CEAF*xx* (continuous-flex) flying-lead, feedback cables
- 2090-CFBM7DD-CEAF*xx* (continuous-flex) drive-end connector, feedback cables
- 2090-CFBM7DF-CDAF*xx* (continuous-flex) flying-lead, feedback cables

# Kinetix HPK Servo Motor Options

- Multiple junction box mounting locations (F1, F2, and F3).
- Holding brake, 380V...460V AC.
- 460V and 400V windings.
- Encoder kit (catalog number HPK-*xxxxxx*-ENC-*xx*) available for field replacement. Kits are pre-programmed for a specific motor catalog number. Kit includes cable and DIN connector.

HPK-*xxxxxx*-ENC-*xx*
Encoder Kit



# Technical Specifications - Kinetix HPK Servo Motors

**Kinetix HPK Servo Motor (460V) Performance Specifications**

| Motor Cat. No. | Base Speed rpm | Maximum Speed rpm | Continuous Stall Torque N•m (lb•in) | Peak Stall Torque N•m (lb•in) | Motor Rated Output kW (Hp) | Rotor Inertia (1) kg-m$^2$ (lb•in•s$^2$) | Motor Weight, approx kg (lb) |
|---|---|---|---|---|---|---|---|
| HPK-B1307C | 1500 | 3000 | 112 (991) | 257 (2274) | 17.1 (22.9) | 0.081 (0.7168) | 135 (297) |
| HPK-B1308C | | | 141 (1247) | 262 (2319) | 21.6 (28.9) | 0.098 (0.8673) | 152 (335) |
| HPK-B1310C | | | 155 (1372) | 325 (2876) | 23.8 (31.9) | 0.111 (0.9823) | 166 (366) |
| HPK-B1613C | | | 271 (2398) | 542 (4797) | 41.7 (55.9) | 0.206 (1.8231) | 275 (606) |
| HPK-B1815C | | | 360 (3186) | 850 (7523) | 55.9 (74.9) | 0.468 (4.1418) | 474 (1045) |
| HPK-B2010C | | | 482 (4266) | 970 (8585) | 75.0 (100.5) | 0.885 (7.8322) | 531 (1170) |
| HPK-B2212C | | | 607 (5371) | 1105 (9780) | 94.0 (127) | 1.900 (16.829) | 847 (1867) |
| HPK-B2510C | | 2000 | 955 (8452) | 1927 (17,054) | 150 (200) | 3.070 (27.192) | 1005 (2216) |
| HPK-B1307E | 3000 | 5000 | 96 (849) | 165 (1460) | 29.8 (39.9) | 0.081 (0.7168) | 135 (297) |
| HPK-B1308E | | | 115 (1018) | 230 (2035) | 35.7 (47.8) | 0.098 (0.8673) | 152 (335) |
| HPK-B1609E | | | 156 (1381) | 270 (2390) | 48.4 (64.8) | 0.147 (1.3009) | 231 (469) |
| HPK-B1611E | | | 183 (1619) | 400 (3540) | 57.0 (76.4) | 0.177 (1.5664) | 244 (538) |
| HPK-B1613E | | | 237 (2097) | 459 (4062) | 73.7 (98.8) | 0.206 (1.8231) | 275 (606) |
| HPK-B2010E | | | 295 (2610) | 500 (4425) | 92.0 (125) | 0.885 (7.8322) | 576 (1270) |

(1) Rotor inertia can vary slightly depending on feedback.

### Kinetix HPK Servo Motor (400V) Performance Specifications

| Motor Cat. No. | Base Speed rpm | Maximum Speed rpm | Continuous Stall Torque N•m (lb•in) | Peak Stall Torque N•m (lb•in) | Motor Rated Output kW (Hp) | Rotor Inertia (1) kg-m$^2$ (lb•in•s$^2$) | Motor Weight, approx kg (lb) |
|---|---|---|---|---|---|---|---|
| HPK-E1307C | 1500 | 3000 | 112 (991) | 263 (2327) | 17.1 (22.9) | 0.081 (0.7168) | 135 (297) |
| HPK-E1310C | | | 155 (1372) | 380 (3363) | 23.8 (32.4) | 0.111 (0.9823) | 166 (366) |
| HPK-E1613C | | | 271 (2398) | 625 (5531) | 41.7 (55.9) | 0.206 (1.8231) | 275 (606) |
| HPK-E1815C | | | 360 (3186) | 840 (7434) | 55.9 (74.9) | 0.468 (4.1418) | 474 (1045) |
| HPK-E2010C | | | 482 (4266) | 870 (7700) | 75.0 (100.5) | 0.885 (7.8322) | 531 (1170) |
| HPK-E1307E | 3000 | 5000 | 96.0 (849) | 202 (1788) | 29.8 (39.9) | 0.081 (0.7168) | 135 (297) |
| HPK-E1308E | | | 107 (947) | 200 (1770) | 33.2 (45.0) | 0.098 (0.8673) | 152 (335) |
| HPK-E1609E | | | 156 (1381) | 359 (3176) | 48.4 (64.9) | 0.147 (1.3009) | 213 (469) |
| HPK-E1611E | | | 183 (1619) | 430 (3805) | 57.0 (76.4) | 0.177 (1.5664) | 244 (538) |
| HPK-E1613E | | | 237 (2097) | 430 (3805) | 73.7 (98.8) | 0.206 (1.8231) | 275 (606) |

(1) Rotor inertia can vary slightly depending on feedback.

### Kinetix HPK Servo Motor Brake Specifications

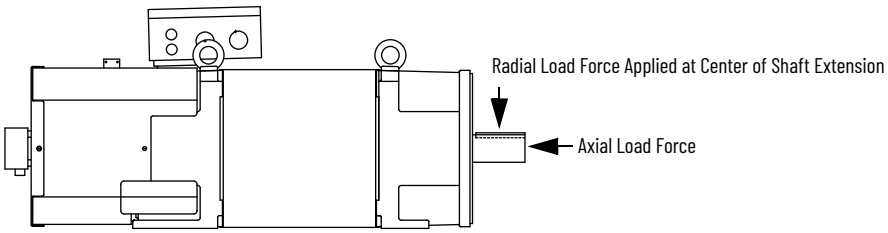
| Motor Cat. No. | Holding Torque N•m (lb•in) |
|---|---|
| HPK-B/E1307C | 20 (177) |
| HPK-B/E1308C | |
| HPK-B/E1310C | |
| HPK-B/E1613C | |
| HPK-B/E1815C | 48 (425) |
| HPK-B/E2010C | |
| HPK-B2212C | 102 (903) |

| Motor Cat. No. | Holding Torque N•m (lb•in) |
|---|---|
| HPK-B/E1307E | 20 (177) |
| HPK-B/E1308E | |
| HPK-B/E1609E | |
| HPK-B/E1611E | |
| HPK-B/E1613E | |
| HPK-B/E2010E | 48 (425) |

# Kinetix HPK Servo Motor Load Force Ratings

Kinetix HPK servo motors are capable of operating with the maximum radial or maximum axial shaft loads listed in the following tables. Radial loads listed are applied in the middle of the shaft extension. The tables starting below represent an $L_{10}$ bearing fatigue life of 10,000 hours. This 10,000-hour life does not account for possible application-specific life reduction that can occur due to bearing grease contamination from external sources. Maximum operating speed is limited by motor winding.

**Load Forces on Shaft**




**Radial Load Force Ratings (zero axial load)**

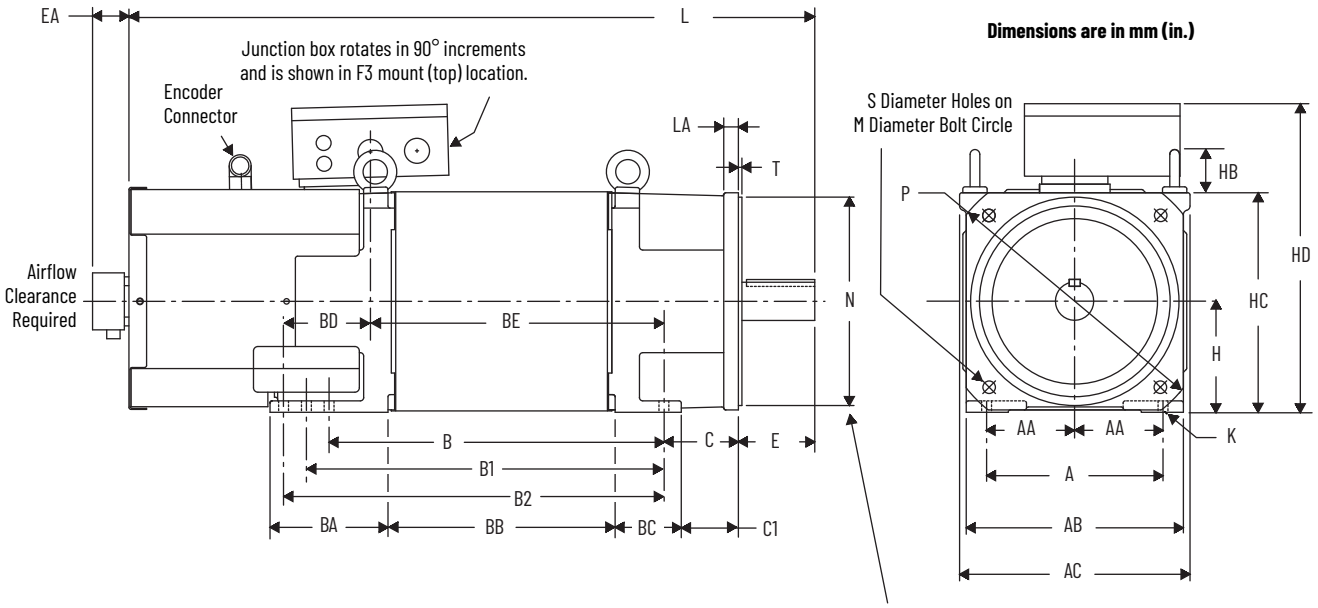
| Motor Cat. No. | 850 rpm kg (lb) | 1150 rpm kg (lb) | 1750 rpm kg (lb) | 2500 rpm kg (lb) |
|---|---|---|---|---|
| HPK-B/E1307 | 320 (704) | 290 (638) | 250 (550) | 220 (485) |
| HPK-B/E1308 | 320 (704) | 290 (638) | 250 (550) | 220 (485) |
| HPK-B/E1310 | 320 (704) | 290 (638) | 250 (550) | 220 (485) |
| HPK-B/E1609 | 500 (1100) | 450 (990) | 390 (858) | 350 (770) |
| HPK-B/E1611 | 500 (1100) | 450 (990) | 390 (858) | 350 (770) |
| HPK-B/E1613 | 500 (1100) | 450 (990) | 390 (858) | 350 (770) |
| HPK-B/E1815 | 530 (1166) | 530 (1166) | 530 (1166) | 450 (990) |
| HPK-B/E2010 | 660 (1452) | 660 (1452) | 660 (1452) | 580 (1276) |
| HPK-B2212 | 730 (1609) | 690 (1521) | 600 (1323) | 530 (1168) |
| HPK-B2510 | | | | |

**Axial Load Force Ratings (zero radial load)**

| Motor Cat. No. | 850 rpm kg (lb) | 1150 rpm kg (lb) | 1750 rpm kg (lb) | 2500 rpm kg (lb) |
|---|---|---|---|---|
| HPK-B/E1307 | 260 (572) | 240 (528) | 210 (462) | 180 (396) |
| HPK-B/E1308 | 260 (572) | 240 (528) | 210 (462) | 180 (396) |
| HPK-B/E1310 | 260 (572) | 240 (528) | 210 (462) | 180 (396) |
| HPK-B/E1609 | 360 (796) | 330 (726) | 290 (638) | 250 (550) |
| HPK-B/E1611 | 360 (796) | 330 (726) | 290 (638) | 250 (550) |
| HPK-B/E1613 | 360 (796) | 330 (726) | 290 (638) | 250 (550) |
| HPK-B/E1815 | 440 (970) | 380 (838) | 310 (682) | 260 (572) |
| HPK-B/E2010 | 530 (1166) | 460 (1012) | 370 (814) | 310 (682) |
| HPK-B2212 | 800 (1764) | 730 (1609) | 630 (1389) | 560 (1235) |
| HPK-B2510 | | | | |

# Dimensions - Kinetix HPK Servo Motors

### HPK-B/E13*xx* and HPK-B/E16*xx* Motor (non-brake) Dimensions

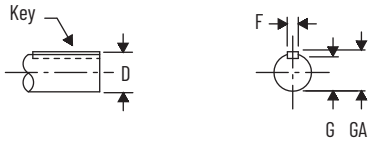



**Dimensions are in mm (in.)**

**Shaft Diameter Tolerances**
HPK-B/E1307, 1308, 1310
Ø 48.003...48.016 (1.8899...1.8904)
HPK-B/E1609, 1611, 1613
Ø 55.011...55.030 (2.1658...2.1665)

**Pilot Diameter Tolerances**
HPK-B/E1307, 1308, 1310
Ø 249.99...250.02 (9.842...9.844)
HPK-B/E1609, 1611, 1613
Ø 299.99...300.02 (11.809...11.811)

**Shaft Detail with Key**




HPK-B/E1307, 1308, 1310 = 14 x 9 x 80 Key
HPK-B/E1609, 1611, 1613 = 16 x 10 x 90 Key

| Shaft, Pilot, and Keyway Tolerances | HPK-B/E13*xx* | HPK-B/E16*xx* |
|---|---|---|
| Shaft Runout (T.I.R.) | 0.06 (0.002) | 0.06 (0.002) |
| Max Face Runout (T.I.R.) | 0.13 (0.005) | 0.13 (0.005) |
| Keyway Depth (GA) | 51.30...51.9<br>(2.02...2.04) | 58.67...58.92<br>(2.31...2.32) |
| Keyway Depth (G) | 42.42...42.92<br>(1.67...1.69) | 48.50...49.00<br>(1.91...1.93) |
| Keyway Width (F) | 13.94...13.99<br>(0.549...0.551) | 15.95...16.00<br>(0.628...0.630) |

### HPK-B/E13*xx* and HPK-B/E16*xx* Motor (non-brake) Dimensions

| Motor Cat. No. | H mm (in.) | HC mm (in.) | HD mm (in.) | HB mm (in.) | L mm (in.) | EA mm (in.) | LA mm (in.) | T mm (in.) | P mm (in.) | M mm (in.) | S (1) mm (in.) | N (2) mm (in.) | D (2) mm (in.) | G (2) mm (in.) | GA (2) mm (in.) | F (2) mm (in.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HPK-B/E1307 | 132 (5.20) | 262 (10.3) | 366 (14.4) | 53.0 (2.09) | 806 (31.7) | 52.0 (2.05) | 17.0 (0.67) | 5.0 (0.20) | 350 (13.7) | 300 (11.8) | 18.5 (0.73) | 250 (9.84) | 48.0 (1.89) | 42.4 (1.67) | 51.3 (2.02) | 13.9 (0.55) |
| HPK-B/E1308 | | | | | 845 (33.2) | | | | | | | | | | | |
| HPK-B/E1310 | | | | | 876 (34.4) | | | | | | | | | | | |
| HPK-B/E1609 | 160 (6.30) | 316 (12.4) | 444 (17.4) | 62.0 (2.44) | 886 (34.8) | 52.0 (2.05) | 21.0 (0.83) | 5.0 (0.20) | 400 (15.7) | 350 (13.7) | 18.5 (0.73) | 300 (11.8) | 55.0 (2.16) | 48.5 (1.91) | 58.7 (2.31) | 16.0 (0.63) |
| HPK-B/E1611 | | | 450 (17.7) | | 937 (36.8) | | | | | | | | | | | |
| HPK-B/E1613 | | | | | 987 (38.8) | | | | | | | | | | | |

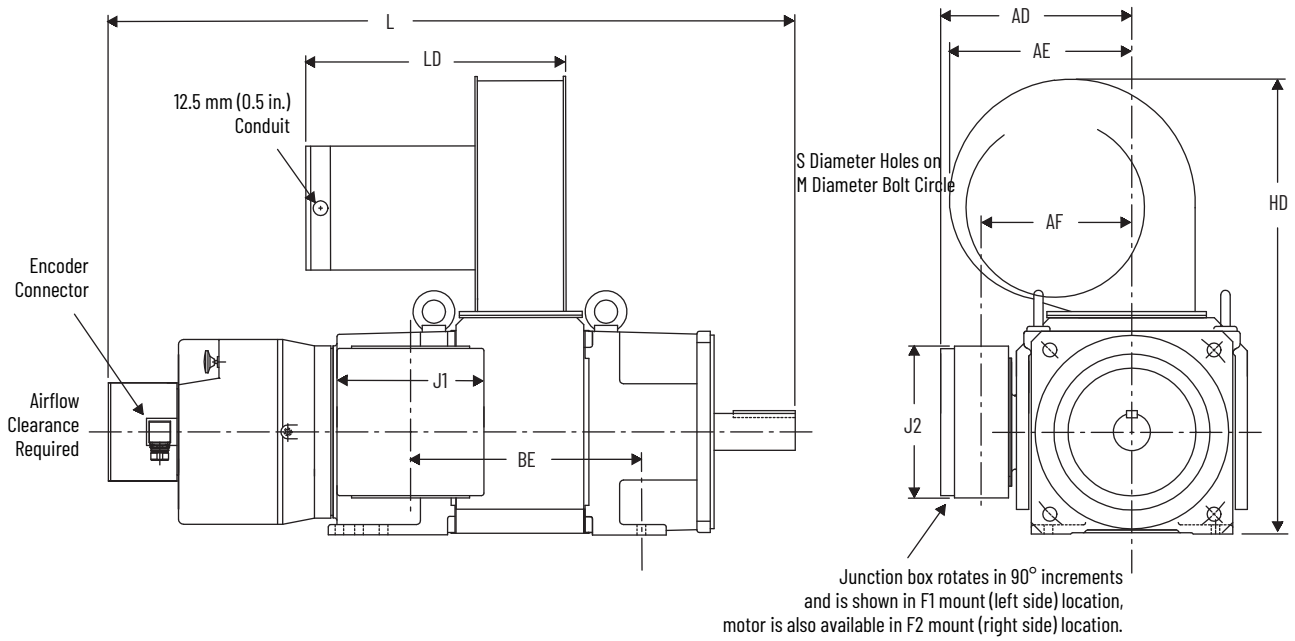
(1) Tolerance for this dimension is +0.52, -0.0 mm (+0.02, -0.0 in.).
(2) For keyway, shaft diameter, and pilot diameter tolerances, refer to page 171.

| Motor Cat. No. | K mm (in.) | A mm (in.) | AA mm (in.) | AB mm (in.) | AC mm (in.) | B mm (in.) | B1 mm (in.) | B2 mm (in.) | BA mm (in.) | BB mm (in.) | BC mm (in.) | C mm (in.) | C1 mm (in.) | E mm (in.) | BD mm (in.) | BE mm (in.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HPK-B/E1307 | 12.0 (0.47) | 216 (8.50) | 108 (4.25) | 260 (10.2) | 279 (10.9) | 333 (13.1) | 365 (14.3) | 390 (15.3) | 154 (6.06) | 187 (7.36) | 95.0 (3.74) | 89.0 (3.50) | 57.0 (2.24) | 110 (4.33) | 91.0 (3.58) | 300 (11.8) |
| HPK-B/E1308 | | | | | | 371 (14.6) | 403 (15.8) | 428 (16.8) | | 226 (8.90) | | | | | | 338 (13.3) |
| HPK-B/E1310 | | | | | | 403 (15.8) | 435 (17.1) | 462 (18.1) | | 257 (10.1) | | | | | | 369 (14.5) |
| HPK-B/E1609 | 14.0 (0.55) | 254 (10.0) | 127 (5.0) | 313 (12.3) | 332 (13.0) | N/A | 414 (16.3) | 452 (17.8) | 170 (6.69) | 225 (8.86) | 95.0 (3.74) | 108 (4.25) | 82.0 (3.23) | 110 (4.33) | 130 (5.12) | 321 (12.6) |
| HPK-B/E1611 | | | | | | N/A | 464 (18.2) | 502 (19.7) | | 276 (10.8) | | | | | | 372 (14.6) |
| HPK-B/E1613 | | | | | | N/A | 515 (20.2) | 548 (21.5) | | 327 (12.8) | | | | | 125 (4.92) | 423 (16.6) |

Motors are designed to metric dimensions. Inch dimensions are approximate conversions from millimeters. Dimensions without tolerances are for reference.

### HPK-B/E13*xx* and HPK-B/E16*xx* Motor (brake) Dimensions

**Dimensions are in mm (in.)**

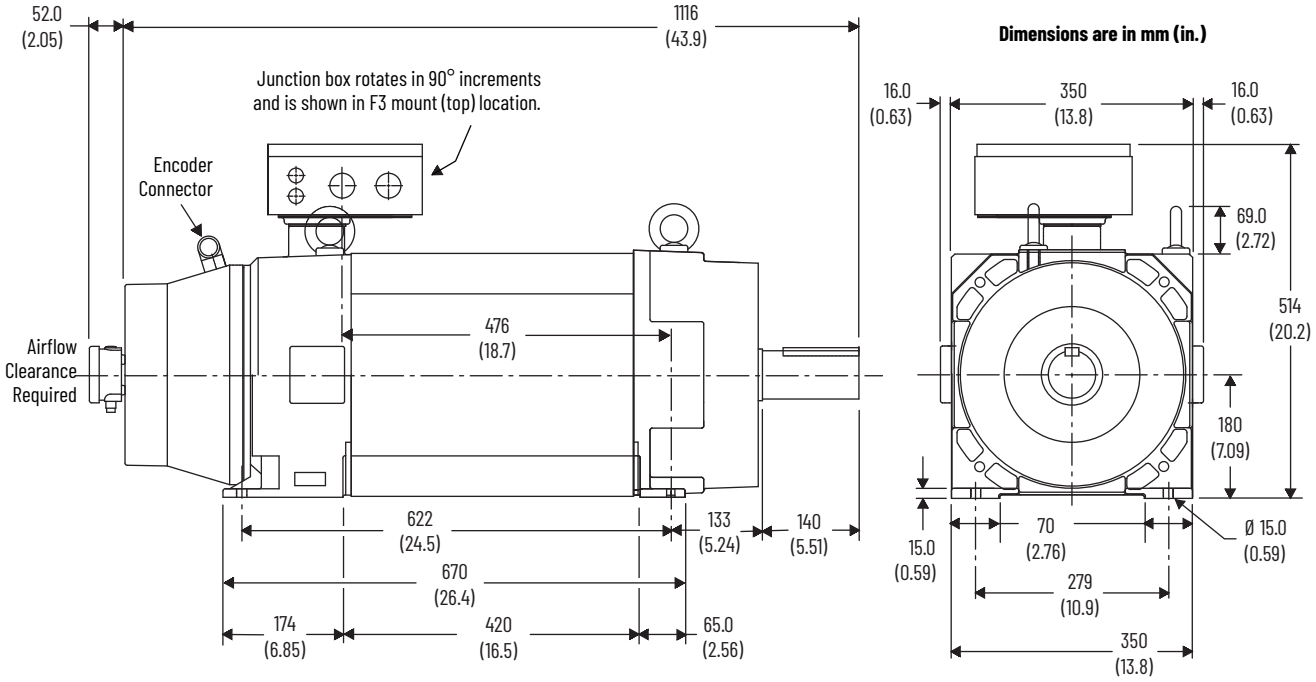


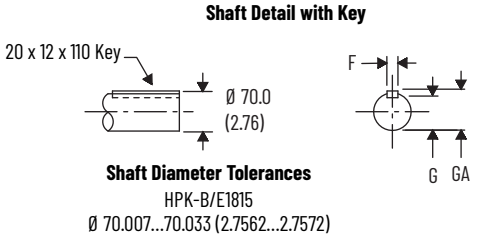

### HPK-B/E13*xx* and HPK-B/E16*xx* Motor (brake) Dimensions

| **Motor Cat. No.** | **L** mm (in.) | **LD** mm (in.) | **BE** mm (in.) | **AD** mm (in.) | **AE** mm (in.) | **AF** mm (in.) | **HD** mm (in.) | **J1** mm (in.) | **J2** mm (in.) |
|---|---|---|---|---|---|---|---|---|---|
| HPK-B/E1307 | 888 (34.9) | 336 (13.2) | 298 (11.7) | 247 (9.72) | 236 (9.29) | 195 (7.68) | 588 (23.1) | 190 (7.48) | 196 (7.72) |
| HPK-B/E1308 | 926 (36.4) | | 336 (13.2) | | | | | | |
| HPK-B/E1310 | 957 (37.7) | | 368 (14.5) | | | | | | |
| HPK-B/E1609 | 967 (38.0) | 332 (13.0) | 328 (12.9) | 285 (11.2) | 236 (9.29) | 225 (8.86) | 670 (26.3) | 224 (8.82) | 228 (8.98) |
| HPK-B/E1611 | 1018 (40.1) | | 379 (14.9) | | | | | | |
| HPK-B/E1613 | 1069 (42.1) | | 430 (16.9) | | | | | | |

Motors are designed to metric dimensions. Inch dimensions are approximate conversions from millimeters. Dimensions without tolerances are for reference.

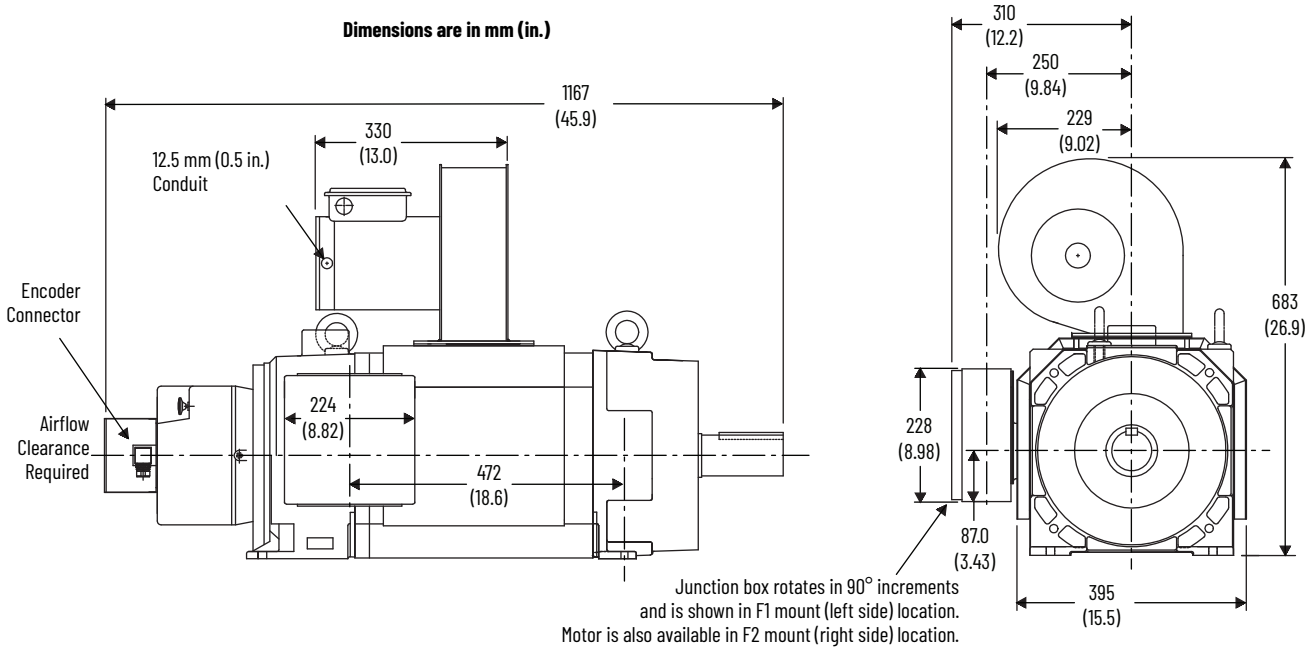
## HPK-B/E1815 Motor (non-brake) Dimensions



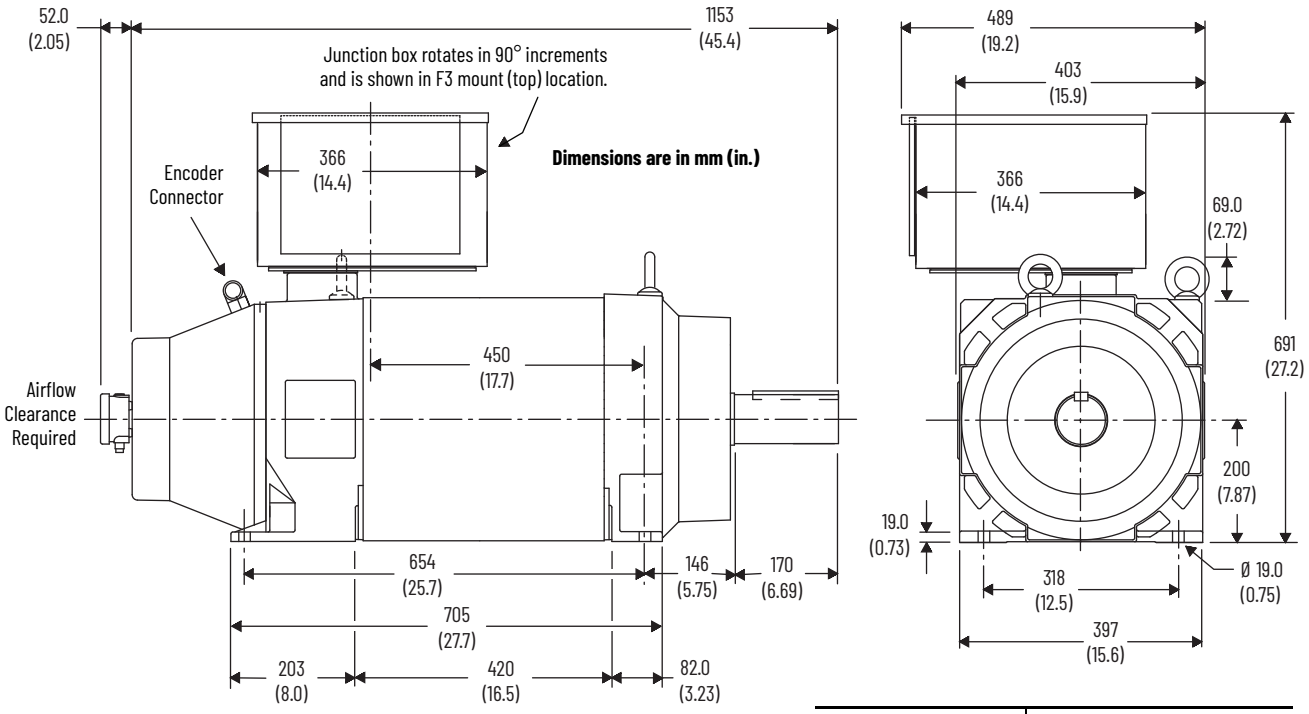




| Shaft, Pilot, and Keyway Tolerances | HPK-B/E1815 |
|---|---|
| Shaft Runout (T.I.R.) | 0.06 (0.002) |
| Max Face Runout (T.I.R.) | 0.13 (0.005) |
| Keyway Depth (GA) | 73.90...74.50 (2.91...2.93) |
| Keyway Depth (G) | 62.00...62.50 (2.44...2.46) |
| Keyway Width (F) | 19.94...19.99 (0.785...0.787) |

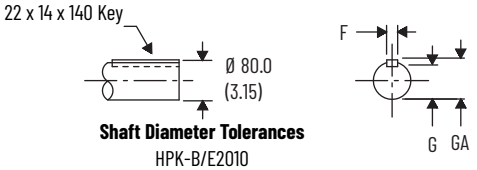
## HPK-B/E1815 Motor (brake) Dimensions



## HPK-B/E2010 Motor (non-brake) Dimensions




**Shaft Detail with Key**

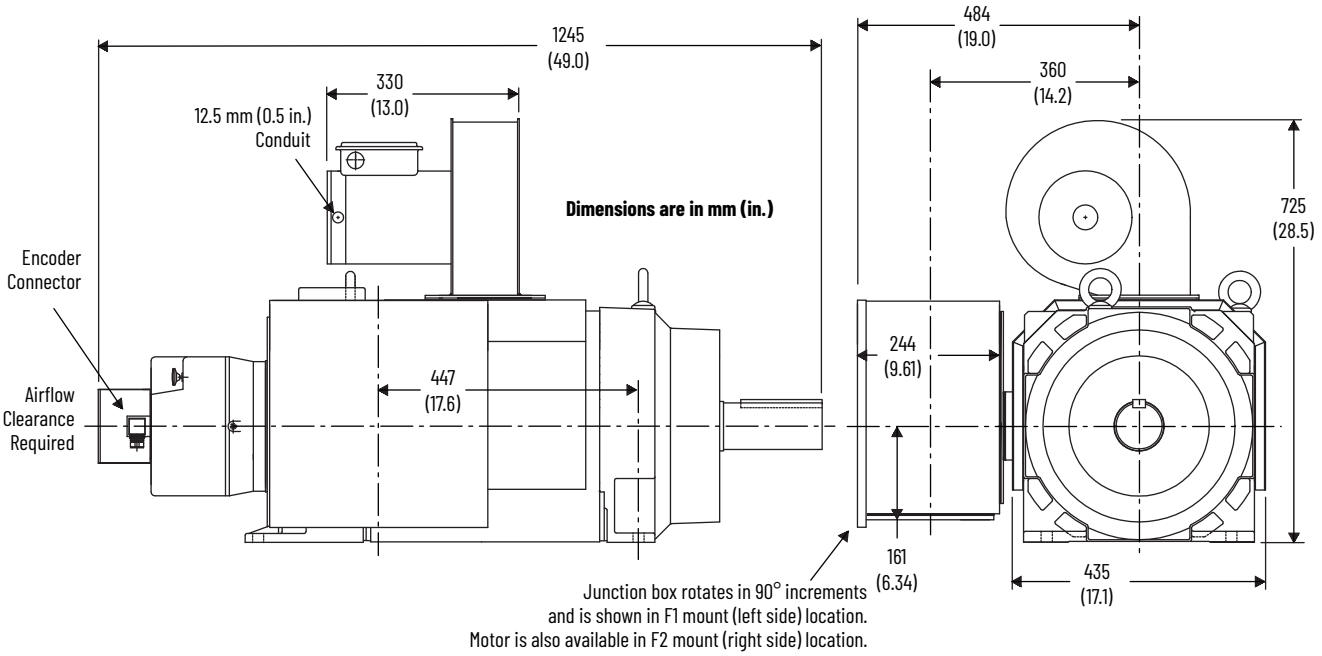



**Shaft Diameter Tolerances**

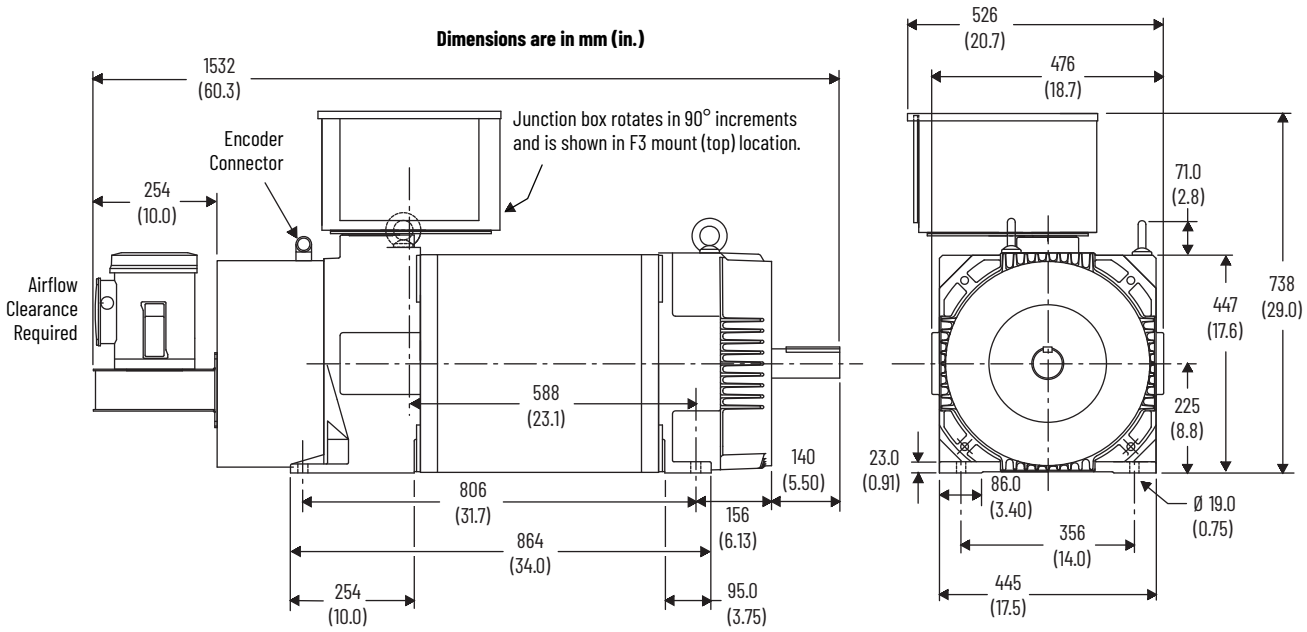
HPK-B/E2010
Ø 80.010...80.028 (3.1500...3.1507)

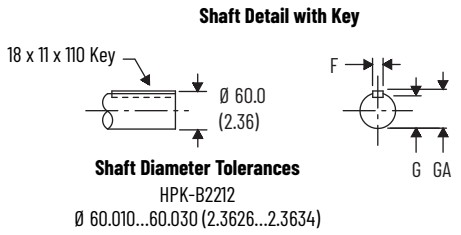
| Shaft, Pilot, and Keyway Tolerances | HPK-B/E2010 |
|---|---|
| Shaft Runout (T.I.R.) | 0.06 (0.002) |
| Max Face Runout (T.I.R.) | 0.13 (0.005) |
| Keyway Depth (GA) | 84.50...85.10 (3.33...3.35) |
| Keyway Depth (G) | 70.60...71.10 (2.78...2.80) |
| Keyway Width (F) | 21.95...22.00 (0.864...0.866) |

## HPK-B/E2010 Motor (brake) Dimensions



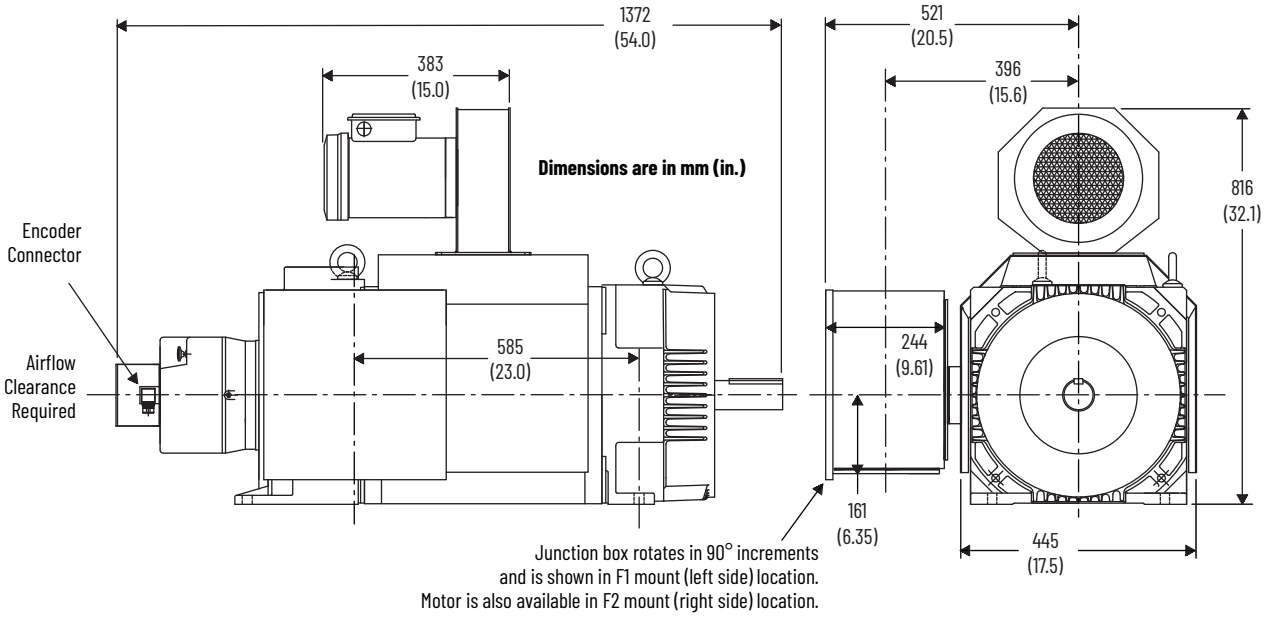
## HPK-B2212 Motor (non-brake) Dimensions



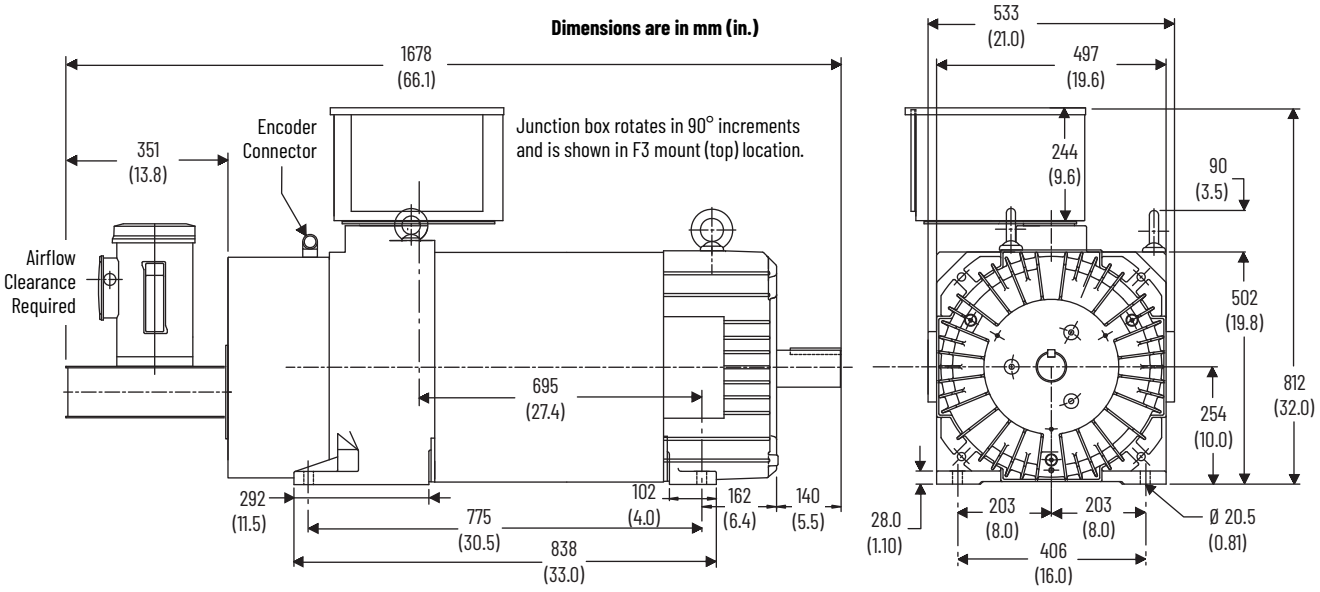

| Shaft, Pilot, and Keyway Tolerances | HPK-B2212 |
|---|---|
| Shaft Runout (T.I.R.) | 0.06 (0.002) |
| Max Face Runout (T.I.R.) | 0.13 (0.005) |
| Keyway Depth (GA) | 63.08...64.08 (2.48...2.59) |
| Keyway Depth (G) | 52.57...53.08 (2.07...2.09) |
| Keyway Width (F) | 21.95...22.00 (0.864...0.866) |

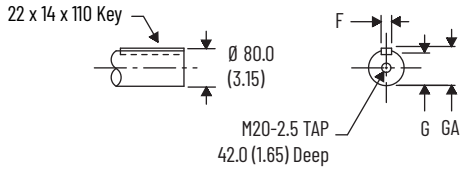
## HPK-B2212 Motor (brake) Dimensions




Motors are designed to metric dimensions. Inch dimensions are approximate conversions from millimeters. Dimensions without tolerances are for reference.

### HPK-B2510 Motor (non-brake) Dimensions




**Shaft Diameter Tolerances**
HPK-B2510
Ø 80.028...80.010 (3.1507...3.1500)

| Shaft, Pilot, and Keyway Tolerances | HPK-B2510 |
|---|---|
| Shaft Runout (T.I.R.) | 0.06 (0.002) |
| Max Face Runout (T.I.R.) | 0.13 (0.005) |
| Keyway Depth (GA) | 85.1...84.5 (3.35...3.33) |
| Keyway Depth (G) | 71.1...70.6 (2.80...2.78) |
| Keyway Width (F) | 22.0...21.95 (0.866...0.864) |

Motors are designed to metric dimensions. Inch dimensions are approximate conversions from millimeters. Dimensions without tolerances are for reference.

# Common Rotary Motor Specifications

These specifications are common to all Kinetix rotary motor families.

## Environmental Specifications - Kinetix Rotary Motion

| Attribute | Kinetix VPL and VPF | Kinetix VPC | Kinetix VPH | Kinetix VPS | Kinetix TLP | Kinetix MP | Kinetix RDB | Kinetix TL and TLY | Kinetix HPK |
|---|---|---|---|---|---|---|---|---|---|
| Temperature, ambient | 0...40 °C (32...104 °F) | -20...+40 °C (-4...+104 °F) | | 0...40 °C (32...104 °F) | | | | | |
| Temperature, storage | -30...+40 °C (-22...+104 °F) | | -30...+70 °C (-22...+158 °F) | | -10...+80 °C (+14...+176 °F) | -30...+70 °C (-22...+158 °F) | | | |
| Relative humidity (noncondensing) | 5...90% | | 5...95% | | 20...90% | 5...95% | | | |
| Shock (1) | 20 g peak, 6 ms duration | | | | | | | | 10 g peak, 6 ms duration |
| Vibration (1) | 2.5 g peak @ 30...2000 Hz | | | | | | | | |

(1) Any shock and vibration application exceeding these specifications can result in premature motor failure. Repetitive acceleration is considered vibration, not intermittent shock.

## Thermal Ratings - Kinetix Rotary Motion

To obtain the specified motor thermal rating do not mount the motor in an area with restricted airflow. Keep other heat producing devices away from the motor and mount the motor on a surface with heat dissipation equivalent to an aluminum heatsink attached as specified in the following table.

| **Heatsink Size** mm (in.) / **Motor Cat. No.** | 203 x 203 x 6.35 (8 x 8 x 0.25) | 254 x 254 x 6.35 (10 x 10 x 0.25) | 305 x 305 x 12.7 (12 x 12 x 0.50) | 305 x 305 x 25.4 (12 x 12 x 1.0) | 407 x 407 x 19.1 (16 x 16 x 0.75) | 457 x 457 x 12.7 (18 x 18 x 0.50) | 508 x 508 x 19.1 (20 x 20 x 0.75) | 533 x 533 x 25.4 (21 x 21 x 1.0) |
|---|---|---|---|---|---|---|---|---|
| VPL-x063*xx*, VPF-x063*xx*, VPH-x063*xx* | X | – | – | – | – | – | – | – |
| VPL-x075*xx*, VPF-x075*xx*, VPH-x075*xx* | – | X | – | – | – | – | – | – |
| VPL-x100*xx*, VPL-x115*xx*, VPL-x130*xx*, VPL-B165*xx*<br>VPF-x100*xx*, VPF-x115*xx*, VPF-x130*xx*, VPF-B165*xx*<br>VPH-x100*xx*, VPH-x115*xx*, VPH-x130*xx*, VPH-B165*xx*<br>VPS-B1304, VPS-B1653 | – | – | X | – | – | – | – | – |
| VPC-B165*xx* | – | – | X | – | – | – | – | – |
| VPC-B215*xx* | – | – | – | X | – | – | – | – |
| VPC-B300*xx* | – | – | – | – | – | – | – | X |
| MPL-x15*xx* | X | – | – | – | – | – | – | – |
| MPL-x2*xx* | – | X | – | – | – | – | – | – |
| MPL-x3*xx*, MPL-x4*xx*, MPL-x45*xx*, MPL-x5*xx*<br>MPM-*xxxx*, MPF-*xxxx*, MPS-*xxxx*, MDF-SB*xxxx* | – | – | X | – | – | – | – | – |
| MPL-B6*xx* | – | – | – | X | – | – | – | – |
| MPL-B8*xx*, MPL-B9*xx* | – | – | – | – | – | – | – | X |
| RDB-B215*x* | – | – | – | – | – | X | – | – |
| RDB-B290*x* | – | – | – | – | X | – | – | – |
| RDB-B410*x* | – | – | – | – | – | – | X | – |
| TL-A1*xx*, TLY-A1*xx* | X | – | – | – | – | – | – | – |
| TL-A2*xx*, TLY-A2*xx* | – | X | – | – | – | – | – | – |
| TL-A25*xx*, TLY-A25*xx*, TL-A3*xx*, TLY-A3*xx* | – | – | X | – | – | – | – | – |

**Kinetix TLP Servo Motor Thermal Ratings**

| Motor Cat. No. | Heatsink Size mm (in.) |
|---|---|
| TLP-A046-*xxx* | 250 x 250 x 6 (9.8 x 9.8 x 0.24) |
| TLP-A/B070-*xxx* | |
| TLP-A/B090-*xxx* | |
| TLP-A100-*xxx* | |
| TLP-A/B115-*xxx* | 300 x 300 x 12 (11.8 x 11.8 x 0.47) |
| TLP-A/B145-*xxx* | 400 x 400 x 20 (15.7 x 15.7 x 0.79) |
| TLP-A/B200-*xxx* | 550 x 550 x 30 (21.6 x 21.6 x 1.2) |
| TLP-A/B235-*xxx* | 650 x 650 x 35 (25.6 x 25.6 x 1.4) |

# Environmental Ratings - Kinetix Rotary Motion

| IP Rating (1) | Dust Protection | Liquid Protection | Shaft Seal/On-motor Connectors | Servo Motors |
|---|---|---|---|---|
| IP30 | Protection from objects with a diameter of 2.5 mm (0.098 in.) or more | No protection from liquids. | On-motor cable connectors. | Kinetix TLP-x046...TLP-x100 |
| IP40 | Protection from objects with a diameter of 1.0 mm (0.039 in.) or more | | Motor without shaft seal. | Kinetix TLP-x046...TLP-x235 (3) |
| IP50 | Limited protection from dust (no harmful deposit). | | | • Kinetix VPL<br>• Kinetix MPL and MPM |
| IP54 | | Protected against sprays from all directions. | | • Kinetix TL and TLY<br>• Kinetix HPK |
| IP65 | Total protection from dust. | Protected against low-pressure jets of water from all directions. | Motor with shaft seal (on-motor cable connectors rated IP54). | Kinetix TL and TLY |
| | | | Motor with shaft seal and Bulletin 2090 (2) environmentally sealed cable connectors. | • Kinetix TLP-x046...TLP-x235 (3)<br>• Kinetix VPC<br>• Kinetix RDB (4) |
| IP66 | | Protected against strong jets of water. | | • Kinetix VPL, VPF, VPH, and VPS<br>• Kinetix MPL, MPM, MPF, and MPS |
| IP67 | | Protected against the effects of temporary liquid immersion. | | • Kinetix VPF, VPH, and VPS<br>• Kinetix MPF and MPS |
| IP69K | | Protected against the effects of water/stream jets up to 100 bar (1200 psi) with nozzle temperature at approximately 80 °C (176 °F). | | • Kinetix VPH and VPS<br>• Kinetix MPS |

(1) IP rating descriptions are for reference only. Refer to the international standards for more complete rating descriptions.
(2) The cable connectors are rated IP66 and IP67 and are not designed to withstand high-pressure washdown or washdown with aggressive cleaning compounds. Position connectors away from direct exposure to cleaning processes, for example, within washdown-rated conduit or junction boxes.
(3) Does not include on-motor cable connectors for TLP-x046...TLP-x100 servo motors.
(4) Environmental rating applies from mounting face to rear of motor. Customer is responsible for providing environmental protection to mounting face of motor.

# Certifications - Kinetix Rotary Motion

| Rotary Motor Family | cULus [1] | CE [2] |
|---|---|---|
| Kinetix VPL, VPC, VPF, VPH, VPS | X | X |
| Kinetix MPL, MPM, MPF, MPS | X | X |
| Kinetix TLP | X | X |
| Kinetix TL and TLY | – | X |
| Kinetix RDB | X | X |
| Kinetix HPK | X | X |

(1) UL recognized components to applicable UL and CSA standards.
(2) When product is marked, see the Product Certifications website at rok.auto/certifications for Declarations of Conformity, certificates, and other certification details.

# Motor Brake Application Guidelines

The brake option offered on these servo motors are holding brakes designed to hold the motor shaft at 0 rpm up to the rated brake holding torque. The brakes release when voltage is applied to the brake coil. Voltage and polarity supplied to the brake must be as specified to be sure of proper brake performance.

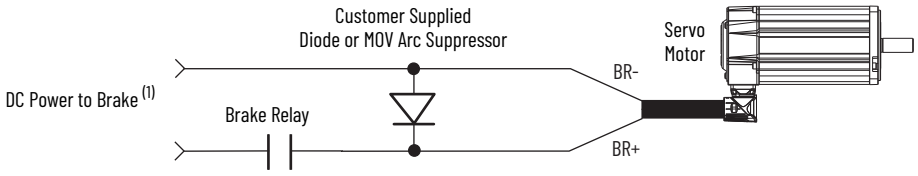
The brakes are not designed for stopping the rotation of the motor shaft. Use servo drive inputs to stop motor shaft rotation. The recommended method to stop the motor shaft from rotating is to command the servo drive to decelerate the motor to 0 rpm and engage the holding brake only after the motor has decelerated to 0 rpm.

If system mains power fails, the brakes can withstand use as stopping brakes. However, use of the brakes as stopping brakes creates rotational mechanical backlash that can damage the system, increase brake pad wear, and reduce brake life. The brakes are not designed, nor are they intended, to be used as a safety device.

A separate power source is required to disengage the brake. This power source can be controlled by the servo motor controls, in addition to manual operator controls. Electrical arcing can occur at the relay contacts until the brake power dissipates. A customer supplied diode or metal oxide varistor (MOV) is recommended to prevent arcing. Use of an MOV can also reduce the time to mechanically engage the brake. For brake response time specifications, refer to the motor brake specification tables.

For more information on the use of holding brakes, see the Vertical Load and Holding Brake Management Application Technique, publication MOTION-AT003.

**Suppression Device for Brake Relay Contacts**




(1) Kinetix 2000, Kinetix 5500, Kinetix 5700, Kinetix 6000, Kinetix 6200, Kinetix 6500, and Kinetix 7000 servo drives provide motor brake relay outputs and supply an MOV arc suppressor. Customer supplied arc suppressor is not required unless the coil current of motor brake is greater than the maximum brake current rating of the drive relay output.

# Additional Resources

These documents contain additional information concerning related products from Rockwell Automation.

| Resource | Description |
|---|---|
| Kinetix Linear Motion Specifications, publication KNX-TD002 | Provides product specifications for Kinetix MPAS and MPMA linear stages, Kinetix VPAR, MPAR, and MPAI electric cylinders, and LDC-Series™ and LDL-Series™ linear motors. |
| Kinetix Servo Drives Specifications, publication KNX-TD003 | Provides product specifications for Kinetix Integrated Motion over EtherNet/IP™, Integrated Motion over sercos interface, EtherNet/IP networking, and component servo drive families. |
| Kinetix Motion Accessories Specifications, publication KNX-TD004 | Provides product specifications for Bulletin 2090 motor and interface cables, low-profile connector kits, drive power components, and other servo drive accessory items. |
| Kinetix Motion Control Selection Guide, publication KNX-SG001 | Provides an overview of Kinetix servo drives, motors, actuators, and motion accessories designed to help make initial decisions for the motion control products best suited for your system requirements. |
| Kinetix 5500 Drive Systems Design Guide, publication KNX-RM009 | Provides information to determine and select the required (drive specific) drive module, power accessory, connector kit, motor cable, and interface cable catalog numbers for your drive and motor/actuator motion control system. Includes system performance specifications and torque/speed curves (rotary motion) and force/velocity curves (linear motion) for your motion application. |
| Kinetix 5700 Drive Systems Design Guide, publication KNX-RM010 | |
| Kinetix 5100 Drive Systems Design Guide, publication KNX-RM011 | |
| Kinetix 5300 Drive Systems Design Guide, publication KNX-RM012 | |
| Kinetix 6000 and Kinetix 6200/6500 Drive Systems Design Guide, publication KNX-RM003 | |
| Kinetix 300/350 Drive Systems Design Guide, publication KNX-RM004 | |
| Kinetix 3 Drive Systems Design Guide, publication KNX-RM005 | |
| Kinetix 2000 Drive Systems Design Guide, publication KNX-RM006 | |
| Kinetix 7000 Drive Systems Design Guide, publication GMC-RM007 | |
| Vertical Load and Holding Brake Management Application Technique, publication MOTION-AT003 | Provides information on vertical loads and how the servo motor holding-brake option can be used to help keep a load from falling. |
| Motor Nameplate Datasheet Entry for Custom Motor Applications Application Technique, publication 2198-AT002 | Provides information on the use of nameplate data entry for custom induction motors and permanent-magnet motors that are used in applications with Kinetix 5700 servo drives. |
| Kinetix 6200 and Kinetix 6500 Safe Speed Monitoring Servo Drives Safety Reference Manual, publication 2094-RM001 | Provides information on wiring, configuring, and troubleshooting the safe-speed features of your Kinetix 6200 and Kinetix 6500 drives. |
| Kinetix 6200 and Kinetix 6500 Safe Torque-off Servo Drives Safety Reference Manual, publication 2094-RM002 | Provides information on wiring, configuring, and troubleshooting the safe torque-off features of your Kinetix 6200 and Kinetix 6500 drives. |
| Kinetix Safe-off Feature Safety Reference Manual, publication GMC-RM002 | Provides information on wiring and troubleshooting your Kinetix 6000 and Kinetix 7000 servo drives with the safe-off feature. |
| System Design for Control of Electrical Noise Reference Manual, publication GMC-RM001 | Provides information, examples, and techniques designed to minimize system failures caused by electrical noise. |
| ControlLogix Selection Guide, publication 1756-SG001 | Provides information to determine which ControlLogix® controller fits your application and the product specifications to help design a ControlLogix system and select the appropriate components. |
| CompactLogix Selection Guide, publication 1769-SG001 | Provides information to determine which CompactLogix™ controller fits your application and the product specifications to help design a CompactLogix system and select the appropriate components. |
| Kinetix Halogen-free PUR and PVC Single Motor Cables Quick Reference, publication 2090-QR002 | Provides product specifications comparing 2090-CSBM1*xx*-*xx*LF*xx* (Halogen-free PUR) and 2090-CSxM1*xx*-*xx*VA*xx* (PVC) single motor cables. |
| Industrial Ethernet Media Brochure, publication 1585-BR001 | Provides information to determine which Bulletin 1585 Ethernet cable fits your application and the product specifications to help select the appropriate components. |
| Motion Analyzer System Sizing and Selection Tool https://motionanalyzer.rockwellautomation.com/ | Provides comprehensive motion application sizing tool used for analysis, optimization, selection, and validation of your Kinetix Motion Control system. |
| Rockwell Automation Product Selection https://www.rockwellautomation.com/en-us/support/product/product-selection-configuration.html | Provides online product selection and system configuration tools, including AutoCAD (DXF) drawings. |
| Ethernet Reference Manual, ENET-RM002 | Describes basic Ethernet concepts, infrastructure components, and infrastructure features. |
| Safety Guidelines for the Application, Installation, and Maintenance of Solid-state Control, publication SGI-1.1 | Designed to harmonize with NEMA Standards Publication No. ICS 1.1-1987 and provides general guidelines for the application, installation, and maintenance of solid-state control in the form of individual devices or packaged assemblies incorporating solid-state components. |
| Product Certifications website, rok.auto/certifications. | Provides declarations of conformity, certificates, and other certification details. |

You can view or download publications at rok.auto/literature.

## Rockwell Automation Support

Use these resources to access support information.

| | | |
|---|---|---|
| **Technical Support Center** | Find help with how-to videos, FAQs, chat, user forums, and product notification updates. | rok.auto/support |
| **Knowledgebase** | Access Knowledgebase articles. | rok.auto/knowledgebase |
| **Local Technical Support Phone Numbers** | Locate the telephone number for your country. | rok.auto/phonesupport |
| **Literature Library** | Find installation instructions, manuals, brochures, and technical data publications. | rok.auto/literature |
| **Product Compatibility and Download Center (PCDC)** | Download firmware, associated files (such as AOP, EDS, and DTM), and access product release notes. | rok.auto/pcdc |

## Documentation Feedback

Your comments help us serve your documentation needs better. If you have any suggestions on how to improve our content, complete the form at rok.auto/docfeedback.

Allen-Bradley, CompactLogix, ControlLogix, expanding human possibility, Kinetix, LDC-Series, LDL-Series, Logix 5000, Rockwell Automation, and Studio 5000 Logix Designer are trademarks of Rockwell Automation, Inc.

EtherNet/IP is a trademark of ODVA, Inc.
Trademarks not belonging to Rockwell Automation are property of their respective companies.

Rockwell Automation maintains current product environmental compliance information on its website at rok.auto/pec.

Rockwell Otomasyon Ticaret A.Ş. Kar Plaza İş Merkezi E Blok Kat:6 34752, İçerenköy, İstanbul, Tel: +90 (216) 5698400 EEE Yönetmeliğine Uygundur

Connect with us.



AMERICAS: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000, Fax: (1) 414.382.4444
EUROPE/MIDDLE EAST/AFRICA: Rockwell Automation NV, Pegasus Park, De Kleetlaan 12a, 1831 Diegem, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640
ASIA PACIFIC: Rockwell Automation, Level 14, Core F, Cyberport 3, 100 Cyberport Road, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846

Publication KNX-TD001G-EN-P - October 2020
Supersedes Publication KNX-TD001F-EN-P - February 2020

Copyright © 2020 Rockwell Automation, Inc. All rights reserved. Printed in the U.S.A.