

# Kinetix TLP Multi-purpose Servo Motors



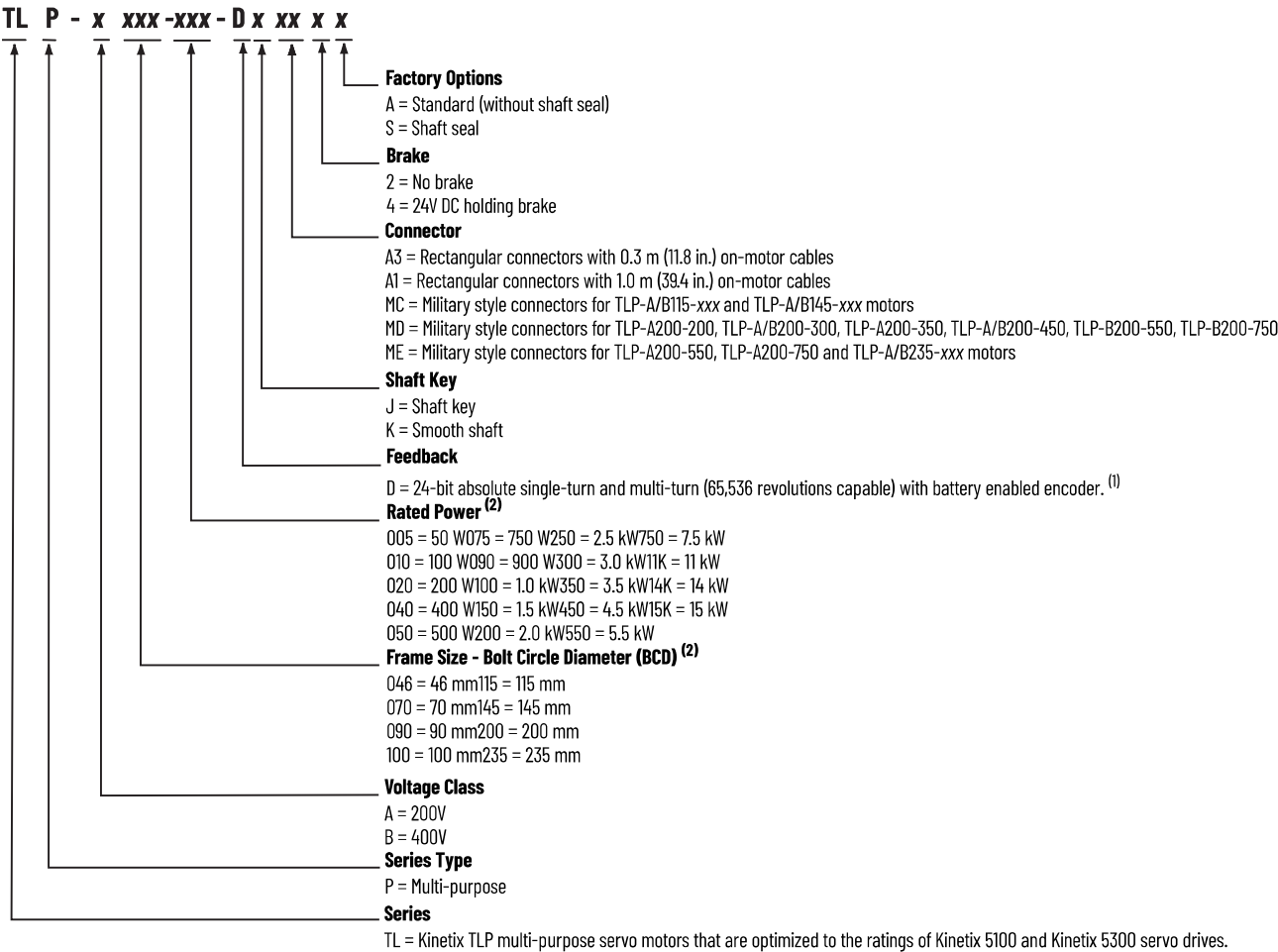
Kinetix TLP servo motors, tested and validated for optimal performance with Kinetix 5100 and Kinetix 5300 servo drives, are available with 230V or 480V windings and with or without 24V DC holding brakes. A wide-range of other economical and customizable options are also available.

## Kinetix TLP Servo Motor Features

| Attribute               | Value                                                                                                                                                                                                                                                                                                                             |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Main characteristics    | <ul style="list-style-type: none"> <li>Developed to match Kinetix 5100 and Kinetix 5300 servo drive for optimal system performance</li> <li>Metric frame sizes</li> <li>High torque to size ratio</li> </ul>                                                                                                                      |
| Features                | <ul style="list-style-type: none"> <li>200V and 400V-class windings</li> <li>24-bit high-resolution single-turn and multi-turn absolute feedback</li> <li>Shaft-end threaded hole</li> <li>Metric mounting, consistent with Kinetix TL and TLY compact servo motors</li> </ul>                                                    |
| Motor type              | Brushless AC synchronous servo motors                                                                                                                                                                                                                                                                                             |
| Cables and connectors   | <ul style="list-style-type: none"> <li>On-motor cables (TLP-x046...TLP-x100 frame sizes)</li> <li>Military style motor connectors (TLP-A/B115...TLP-A/B235 frame sizes)</li> <li>Kinetix TLP drive/motor system cables lengths up to 50 m (164 ft)</li> <li>Build your own cable options with available connector kits</li> </ul> |
| Environmental rating    | <ul style="list-style-type: none"> <li>IP30 on-motor cable connectors (TLP-x046...TLP-x100 frame sizes)</li> <li>IP40 motor without shaft seal</li> <li>IP65 motor with optional shaft seal and use of environmentally sealed cable connectors</li> </ul>                                                                         |
| Certifications          | Kinetix TLP rotary motors are UL Recognized components to applicable UL and CSA standards. CE marked for all applicable directives. Refer to <a href="http://rok.auto/certifications">rok.auto/certifications</a> 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 | <ul style="list-style-type: none"> <li>Kinetix 5100</li> <li>Kinetix 5300</li> </ul>                                                                                                                                                                                                                                              |
| Compatible servo cables | 2090-CTxx-xxxx-xxxxx Kinetix TLP motor cables                                                                                                                                                                                                                                                                                     |
| Typical applications    | <ul style="list-style-type: none"> <li>Packaging</li> <li>Converting</li> <li>Material handling</li> <li>Electronic assembly</li> <li>Automotive</li> <li>Robotics</li> <li>Medical laboratory equipment</li> </ul>                                                                                                               |

# 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.



(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 133](#) are available. Use Motion Analyzer software to size and select motors for your application.

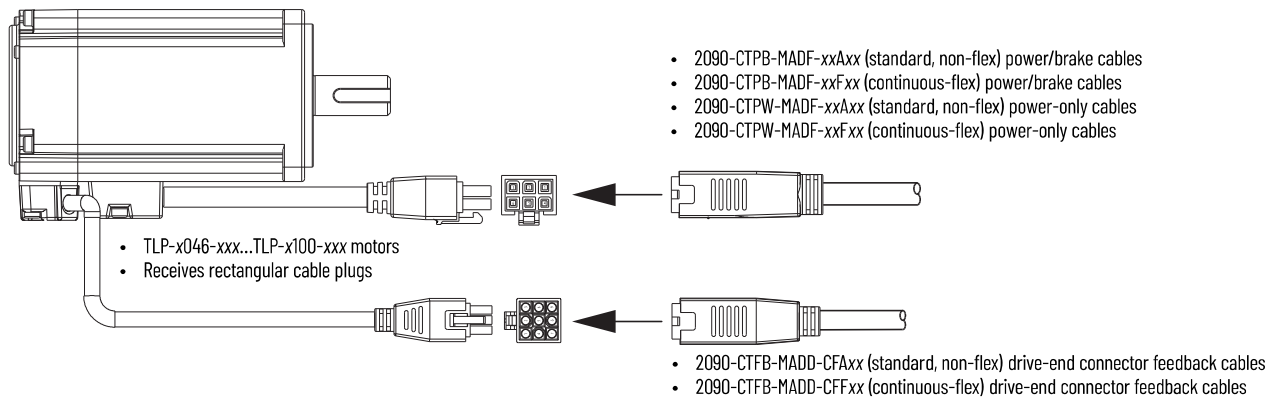
## Kinetix TLP Servo Motor High-resolution Encoders

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

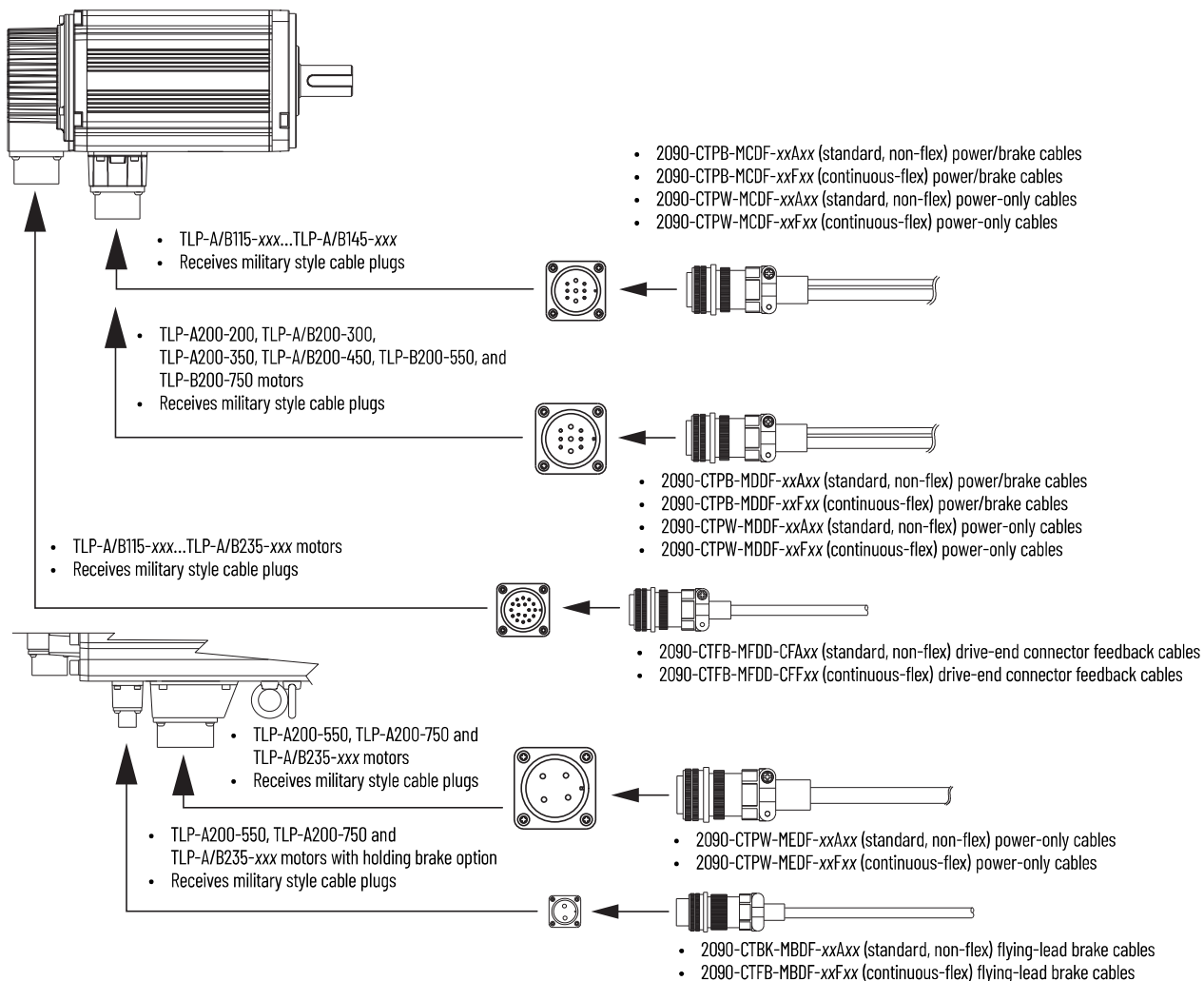
- Single-turn encoder operation (without battery backup) provides high-resolution absolute position feedback within one turn.
- Multi-turn encoder operation (battery required) provides high-resolution absolute position feedback within 65,536 turns. Actual multi-turn revolutions depend on the system settings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

## Motor Connector/Cable Compatibility

TLP-x046...TLP-x100 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 Rotary and Linear Motion Cable Specifications 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<br>rpm | Maximum<br>Speed<br>rpm | Continuous<br>Stall Torque<br>N·m (lb·in) | Peak<br>Stall Torque<br>N·m (lb·in) | Motor Rated<br>Output<br>kW (Hp) | Rotor Inertia <sup>(1)</sup><br>kg·m <sup>2</sup> (lb·in·s <sup>2</sup> ) | Motor Weight,<br>approx <sup>(1)</sup><br>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 134](#) for brake rotor inertia and brake motor weight.

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

| Motor Cat. No. | Rated Speed<br>rpm | Maximum<br>Speed<br>rpm | Continuous<br>Stall Torque<br>N·m (lb·in) | Peak<br>Stall Torque<br>N·m (lb·in) | Motor Rated<br>Output<br>kW (Hp) | Rotor Inertia <sup>(1)</sup><br>kg·m <sup>2</sup> (lb·in·s <sup>2</sup> ) | Motor Weight, <sup>(1)</sup><br>approx<br>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 134](#) for brake rotor inertia and brake motor weight.

## Kinetix TLP Servo Motor Brake Specifications

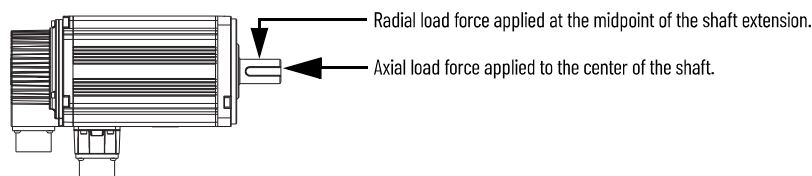
| Motor Cat. No. | Backlash, max<br>(brake engaged)<br>arc minutes | Holding Torque<br>N·m (lb·in) | Coil Current<br>at 24V DC<br>A | Brake Response Time |                             | Brake Rotor Inertia<br>kg·m <sup>2</sup> (lb·in·s <sup>2</sup> ) | Brake Motor Weight,<br>approx<br>kg (lb) |  |
|----------------|-------------------------------------------------|-------------------------------|--------------------------------|---------------------|-----------------------------|------------------------------------------------------------------|------------------------------------------|--|
|                |                                                 |                               |                                | Release<br>ms       | Engage <sup>(1)</sup><br>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)                  | 0.000028 (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. <sup>(1)</sup> | 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-Dxxx2x           | 6000              | -       | -       | -        | -        | -        | 8.8      | -        | -        | -        | 7.0      | -        | -        | 6.1      | -        | 5.6      |
| TLP-A046-010-Dxxx2x           | 6000              | -       | -       | -        | -        | -        | 9.7      | -        | -        | -        | 7.7      | -        | -        | 6.8      | -        | 6.1      |
| TLP-A070-020-Dxxx2x           | 6000              | -       | -       | -        | -        | -        | 22.4     | -        | -        | -        | 17.8     | -        | -        | 15.5     | -        | 14.1     |
| TLP-A070-040-Dxxx2x           | 6000              | -       | -       | -        | -        | -        | 25       | -        | -        | -        | 19.9     | -        | -        | 17.4     | -        | 15.8     |
| TLP-A090-075-Dxxx2x           | 6000              | -       | -       | -        | -        | -        | 35.6     | -        | -        | -        | 28.2     | -        | -        | 24.7     | -        | 22.4     |
| TLP-A100-100-Dxxx2x           | 3000              | -       | 61.8    | -        | -        | -        | 49.0     | -        | 42.8     | -        | 38.9     | -        | -        | -        | -        | -        |
| TLP-A115-100-Dxxx2x           | 5000              | -       | -       | -        | -        | 52.9     | -        | -        | -        | 42       | -        | -        | 36.7     | -        | 33.3     | -        |
| TLP-A115-200-Dxxx2x           | 5000              | -       | -       | -        | -        | 58.1     | -        | -        | -        | 46.1     | -        | -        | 10.3     | -        | 36.6     | -        |
| TLP-A145-050-Dxxx2x           | 3000              | -       | 106.8   | -        | -        | -        | 84.7     | -        | 74       | -        | 67.3     | -        | -        | -        | -        | -        |
| TLP-A145-090-Dxxx2x           | 2000              | 130.1   | -       | 103.3    | -        | -        | 90.2     | 82       | -        | -        | -        | -        | -        | -        | -        | -        |
| TLP-A145-100-Dxxx2x           | 3000              | -       | 106.8   | -        | -        | -        | 84.7     | -        | 74       | -        | 67.3     | -        | -        | -        | -        | -        |
| TLP-A145-150-Dxxx2x           | 3000              | -       | 113.6   | -        | -        | -        | 90.2     | -        | 78.8     | -        | 71.6     | -        | -        | -        | -        | -        |
| TLP-A145-250-Dxxx2x           | 4500              | -       | -       | -        | 105.1    | -        | -        | -        | 83.4     | -        | -        | 72.8     | -        | 66.2     | -        | -        |
| TLP-A200-200-Dxxx2x           | 3000              | -       | 125.9   | -        | -        | -        | 99.9     | -        | 87.3     | -        | 79.3     | -        | -        | -        | -        | -        |
| TLP-A200-300-Dxxx2x           | 2500              | -       | 140     | -        | -        | -        | 111.1    | -        | 97.1     | -        | 88.2     | -        | -        | -        | -        | -        |
| TLP-A200-350-Dxxx2x           | 3000              | -       | 140     | -        | -        | -        | 111.1    | -        | 97.1     | -        | 88.2     | -        | -        | -        | -        | -        |
| TLP-A200-450-Dxxx2x           | 3000              | -       | 149.7   | -        | -        | -        | 118.8    | -        | 103.8    | -        | 94.3     | -        | -        | -        | -        | -        |
| TLP-A200-550-Dxxx2x           | 3000              | -       | 149.2   | -        | -        | -        | 118.4    | -        | 103.4    | -        | 94       | -        | -        | -        | -        | -        |
| TLP-A200-750-Dxxx2x           | 2500              | -       | 159.3   | -        | -        | -        | 126.4    | -        | 110.4    | -        | 100.3    | -        | -        | -        | -        | -        |
| TLP-A235-11K-Dxxx2x           | 2000              | 435     | -       | 345.3    | -        | -        | 301.6    | 274      | -        | -        | -        | -        | -        | -        | -        | -        |
| TLP-A235-15K-Dxxx2x           | 2000              | 463.1   | -       | 367.6    | -        | -        | 321.1    | 291.7    | -        | -        | -        | -        | -        | -        | -        | -        |
| TLP-B070-040-Dxxx2x           | 6000              | -       | -       | -        | -        | -        | 25       | -        | -        | -        | 19.9     | -        | -        | 17.4     | -        | 15.8     |
| TLP-B090-075-Dxxx2x           | 6000              | -       | -       | -        | -        | -        | 35.6     | -        | -        | -        | 28.2     | -        | -        | 24.7     | -        | 22.4     |
| TLP-B115-100-Dxxx2x           | 5000              | -       | -       | -        | -        | 52.9     | -        | -        | -        | 42       | -        | -        | 36.7     | -        | 33.3     | -        |
| TLP-B115-200-Dxxx2x           | 5000              | -       | -       | -        | -        | 58.1     | -        | -        | -        | 46.1     | -        | -        | 10.3     | -        | 36.6     | -        |
| TLP-B145-050-Dxxx2x           | 3000              | -       | 106.8   | -        | -        | -        | 84.7     | -        | 74       | -        | 67.3     | -        | -        | -        | -        | -        |
| TLP-B145-100-Dxxx2x           | 3000              | -       | 106.8   | -        | -        | -        | 84.7     | -        | 74       | -        | 67.3     | -        | -        | -        | -        | -        |
| TLP-B145-150-Dxxx2x           | 3000              | -       | 113.6   | -        | -        | -        | 90.2     | -        | 78.8     | -        | 71.6     | -        | -        | -        | -        | -        |
| TLP-B145-200-Dxxx2x           | 3000              | -       | 120.3   | -        | -        | -        | 95.5     | -        | 83.4     | -        | 75.8     | -        | -        | -        | -        | -        |
| TLP-B145-250-Dxxx2x           | 4500              | -       | -       | -        | 105.1    | -        | -        | -        | 83.4     | -        | -        | 72.8     | -        | 66.2     | -        | -        |
| TLP-B200-300-Dxxx2x           | 2500              | -       | 140     | -        | -        | -        | 111.1    | -        | 97.1     | -        | 88.2     | -        | -        | -        | -        | -        |
| TLP-B200-450-Dxxx2x           | 3000              | -       | 149.7   | -        | -        | -        | 118.8    | -        | 103.8    | -        | 94.3     | -        | -        | -        | -        | -        |
| TLP-B200-550-Dxxx2x           | 3000              | -       | 149.2   | -        | -        | -        | 118.4    | -        | 103.4    | -        | 94       | -        | -        | -        | -        | -        |
| TLP-B200-750-Dxxx2x           | 2500              | -       | 159.3   | -        | -        | -        | 126.4    | -        | 110.4    | -        | 100.3    | -        | -        | -        | -        | -        |
| TLP-B235-11K-Dxxx2x           | 2000              | 435     | -       | 345.3    | -        | -        | 301.6    | 274      | -        | -        | -        | -        | -        | -        | -        | -        |
| TLP-B235-14K-Dxxx2x           | 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. <sup>(1)</sup> | 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-Dxxx2x           | 6000              | -       | -       | -        | -        | -        | 5.6      | -        | -        | -        | 4.1      | -        | -        | 3.4      | -        | 3.0      |
| TLP-A046-010-Dxxx2x           | 6000              | -       | -       | -        | -        | -        | 6        | -        | -        | -        | 4.4      | -        | -        | 3.7      | -        | 3.3      |
| TLP-A070-020-Dxxx2x           | 6000              | -       | -       | -        | -        | -        | 10.1     | -        | -        | -        | 7.4      | -        | -        | 6.2      | -        | 5.5      |
| TLP-A070-040-Dxxx2x           | 6000              | -       | -       | -        | -        | -        | 11.3     | -        | -        | -        | 8.3      | -        | -        | 7.0      | -        | 6.2      |
| TLP-A090-075-Dxxx2x           | 6000              | -       | -       | -        | -        | -        | 13.6     | -        | -        | -        | 10.1     | -        | -        | 8.5      | -        | 7.5      |
| TLP-A100-100-Dxxx2x           | 3000              | -       | 18.4    | -        | -        | -        | 13.6     | -        | 11.4     | -        | 10.1     | -        | -        | -        | -        | -        |
| TLP-A115-100-Dxxx2x           | 5000              | -       | -       | -        | -        | 18.1     | -        | -        | -        | 13.4     | -        | -        | 11.2     | -        | 9.9      | -        |
| TLP-A115-200-Dxxx2x           | 5000              | -       | -       | -        | -        | 20.5     | -        | -        | -        | 15.1     | -        | -        | 12.7     | -        | 11.2     | -        |
| TLP-A145-050-Dxxx2x           | 3000              | -       | 28.1    | -        | -        | -        | 20.8     | -        | 17.5     | -        | 15.4     | -        | -        | -        | -        | -        |
| TLP-A145-090-Dxxx2x           | 2000              | 37.2    | -       | 27.5     | -        | -        | 23.1     | 20.4     | -        | -        | -        | -        | -        | -        | -        | -        |
| TLP-A145-100-Dxxx2x           | 3000              | -       | 28.1    | -        | -        | -        | 20.8     | -        | 17.5     | -        | 15.4     | -        | -        | -        | -        | -        |
| TLP-A145-150-Dxxx2x           | 3000              | -       | 31.2    | -        | -        | -        | 23.1     | -        | 19.4     | -        | 17.1     | -        | -        | -        | -        | -        |
| TLP-A145-250-Dxxx2x           | 4500              | -       | -       | -        | 28.7     | -        | -        | -        | 21.1     | -        | -        | 17.8     | -        | 15.7     | -        | -        |
| TLP-A200-200-Dxxx2x           | 3000              | -       | 54.3    | -        | -        | -        | 40.2     | -        | 33.7     | -        | 29.7     | -        | -        | -        | -        | -        |
| TLP-A200-300-Dxxx2x           | 2500              | -       | 60.8    | -        | -        | -        | 45.0     | -        | 37.7     | -        | 33.3     | -        | -        | -        | -        | -        |
| TLP-A200-350-Dxxx2x           | 3000              | -       | 60.8    | -        | -        | -        | 45.0     | -        | 37.7     | -        | 33.3     | -        | -        | -        | -        | -        |
| TLP-A200-450-Dxxx2x           | 3000              | -       | 65.3    | -        | -        | -        | 48.3     | -        | 40.5     | -        | 35.8     | -        | -        | -        | -        | -        |
| TLP-A200-550-Dxxx2x           | 3000              | -       | 65.0    | -        | -        | -        | 48.1     | -        | 40.3     | -        | 35.6     | -        | -        | -        | -        | -        |
| TLP-A200-750-Dxxx2x           | 2500              | -       | 69.8    | -        | -        | -        | 51.7     | -        | 43.3     | -        | 38.2     | -        | -        | -        | -        | -        |
| TLP-A235-11K-Dxxx2x           | 2000              | 65.0    | -       | 48.1     | -        | -        | 40.3     | 35.6     | -        | -        | -        | -        | -        | -        | -        | -        |
| TLP-A235-15K-Dxxx2x           | 2000              | 77.7    | -       | 57.5     | -        | -        | 48.2     | 42.6     | -        | -        | -        | -        | -        | -        | -        | -        |
| TLP-B070-040-Dxxx2x           | 6000              | -       | -       | -        | -        | -        | 11.3     | -        | -        | -        | 8.3      | -        | -        | 7        | -        | 6.2      |
| TLP-B090-075-Dxxx2x           | 6000              | -       | -       | -        | -        | -        | 13.6     | -        | -        | -        | 10.1     | -        | -        | 8.5      | -        | 7.5      |
| TLP-B115-100-Dxxx2x           | 5000              | -       | -       | -        | -        | 18.1     | -        | -        | -        | 13.4     | -        | -        | 11.2     | -        | 9.9      | -        |
| TLP-B115-200-Dxxx2x           | 5000              | -       | -       | -        | -        | 20.5     | -        | -        | -        | 15.1     | -        | -        | 12.7     | -        | 11.2     | -        |
| TLP-B145-050-Dxxx2x           | 3000              | -       | 28.1    | -        | -        | -        | 20.8     | -        | 17.5     | -        | 15.4     | -        | -        | -        | -        | -        |
| TLP-B145-100-Dxxx2x           | 3000              | -       | 28.1    | -        | -        | -        | 20.8     | -        | 17.5     | -        | 15.4     | -        | -        | -        | -        | -        |
| TLP-B145-150-Dxxx2x           | 3000              | -       | 31.2    | -        | -        | -        | 23.1     | -        | 19.4     | -        | 17.1     | -        | -        | -        | -        | -        |
| TLP-B145-200-Dxxx2x           | 3000              | -       | 34.2    | -        | -        | -        | 25.3     | -        | 21.2     | -        | 18.7     | -        | -        | -        | -        | -        |
| TLP-B145-250-Dxxx2x           | 4500              | -       | -       | -        | 28.7     | -        | -        | -        | 21.1     | -        | -        | 17.8     | -        | 15.7     | -        | -        |
| TLP-B200-300-Dxxx2x           | 2500              | -       | 60.8    | -        | -        | -        | 45       | -        | 37.7     | -        | 33.3     | -        | -        | -        | -        | -        |
| TLP-B200-450-Dxxx2x           | 3000              | -       | 65.3    | -        | -        | -        | 48.3     | -        | 40.5     | -        | 35.8     | -        | -        | -        | -        | -        |
| TLP-B200-550-Dxxx2x           | 3000              | -       | 65      | -        | -        | -        | 48.1     | -        | 40.3     | -        | 35.6     | -        | -        | -        | -        | -        |
| TLP-B200-750-Dxxx2x           | 2500              | -       | 69.8    | -        | -        | -        | 51.7     | -        | 43.3     | -        | 38.2     | -        | -        | -        | -        | -        |
| TLP-B235-11K-Dxxx2x           | 2000              | 65      | -       | 48.1     | -        | -        | 40.3     | 35.6     | -        | -        | -        | -        | -        | -        | -        | -        |
| TLP-B235-14K-Dxxx2x           | 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. <sup>(1)</sup> | Maximum Speed<br>rpm | RPM        |            |             |             |             |             |             |             |             |             |             |             |             |             |             |
|-------------------------------|----------------------|------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|                               |                      | 500<br>kgf | 750<br>kgf | 1000<br>kgf | 1125<br>kgf | 1250<br>kgf | 1500<br>kgf | 2000<br>kgf | 2250<br>kgf | 2500<br>kgf | 3000<br>kgf | 3375<br>kgf | 3750<br>kgf | 4500<br>kgf | 5000<br>kgf | 6000<br>kgf |
| TLP-A046-005-Dxxx2x           | 6000                 | -          | -          | -           | -           | -           | 7.8         | -           | -           | -           | 5.7         | -           | -           | 4.8         | -           | 4.2         |
| TLP-A046-010-Dxxx2x           | 6000                 | -          | -          | -           | -           | -           | 7.8         | -           | -           | -           | 5.7         | -           | -           | 4.8         | -           | 4.2         |
| TLP-A070-020-Dxxx2x           | 6000                 | -          | -          | -           | -           | -           | 15.4        | -           | -           | -           | 11.4        | -           | -           | 9.5         | -           | 8.4         |
| TLP-A070-040-Dxxx2x           | 6000                 | -          | -          | -           | -           | -           | 15.4        | -           | -           | -           | 11.4        | -           | -           | 9.5         | -           | 8.4         |
| TLP-A090-075-Dxxx2x           | 6000                 | -          | -          | -           | -           | -           | 20.4        | -           | -           | -           | 15.1        | -           | -           | 12.6        | -           | 11.1        |
| TLP-A100-100-Dxxx2x           | 3000                 | -          | 27.5       | -           | -           | -           | 20.4        | -           | 17.1        | -           | 15.1        | -           | -           | -           | -           | -           |
| TLP-A115-100-Dxxx2x           | 5000                 | -          | -          | -           | -           | 27.9        | -           | -           | -           | 20.6        | -           | -           | 17.3        | -           | 15.3        | -           |
| TLP-A115-200-Dxxx2x           | 5000                 | -          | -          | -           | -           | 27.9        | -           | -           | -           | 20.6        | -           | -           | 17.3        | -           | 15.3        | -           |
| TLP-A145-050-Dxxx2x           | 3000                 | -          | 56.4       | -           | -           | -           | 41.7        | -           | 35.0        | -           | 30.9        | -           | -           | -           | -           | -           |
| TLP-A145-090-Dxxx2x           | 2000                 | 67.2       | -          | 49.7        | -           | -           | 41.7        | 36.8        | -           | -           | -           | -           | -           | -           | -           | -           |
| TLP-A145-100-Dxxx2x           | 3000                 | -          | 56.4       | -           | -           | -           | 41.7        | -           | 35.0        | -           | 30.9        | -           | -           | -           | -           | -           |
| TLP-A145-150-Dxxx2x           | 3000                 | -          | 56.4       | -           | -           | -           | 41.7        | -           | 35.0        | -           | 30.9        | -           | -           | -           | -           | -           |
| TLP-A145-250-Dxxx2x           | 4500                 | -          | -          | -           | 47.3        | -           | -           | -           | 35.0        | -           | -           | 29.3        | -           | 25.9        | -           | -           |
| TLP-A200-200-Dxxx2x           | 3000                 | -          | 91.9       | -           | -           | -           | 68.0        | -           | 57.0        | -           | 50.3        | -           | -           | -           | -           | -           |
| TLP-A200-300-Dxxx2x           | 2500                 | -          | 91.9       | -           | -           | -           | 68.0        | -           | 57.0        | -           | 50.3        | -           | -           | -           | -           | -           |
| TLP-A200-350-Dxxx2x           | 3000                 | -          | 91.9       | -           | -           | -           | 68.0        | -           | 57.0        | -           | 50.3        | -           | -           | -           | -           | -           |
| TLP-A200-450-Dxxx2x           | 3000                 | -          | 91.9       | -           | -           | -           | 68.0        | -           | 57.0        | -           | 50.3        | -           | -           | -           | -           | -           |
| TLP-A200-550-Dxxx2x           | 3000                 | -          | 91.9       | -           | -           | -           | 68.0        | -           | 57.0        | -           | 50.3        | -           | -           | -           | -           | -           |
| TLP-A200-750-Dxxx2x           | 2500                 | -          | 91.9       | -           | -           | -           | 68.0        | -           | 57.0        | -           | 50.3        | -           | -           | -           | -           | -           |
| TLP-A235-11K-Dxxx2x           | 2000                 | 136.5      | -          | 101.0       | -           | -           | 84.7        | 74.8        | -           | -           | -           | -           | -           | -           | -           | -           |
| TLP-A235-15K-Dxxx2x           | 2000                 | 136.5      | -          | 101.0       | -           | -           | 84.7        | 74.8        | -           | -           | -           | -           | -           | -           | -           | -           |
| TLP-B070-040-Dxxx2x           | 6000                 | -          | -          | -           | -           | -           | 15.4        | -           | -           | -           | 11.4        | -           | -           | 9.5         | -           | 8.4         |
| TLP-B090-075-Dxxx2x           | 6000                 | -          | -          | -           | -           | -           | 20.4        | -           | -           | -           | 15.1        | -           | -           | 12.6        | -           | 11.1        |
| TLP-B115-100-Dxxx2x           | 5000                 | -          | -          | -           | -           | 27.9        | -           | -           | -           | 20.6        | -           | -           | 17.3        | -           | 15.3        | -           |
| TLP-B115-200-Dxxx2x           | 5000                 | -          | -          | -           | -           | 27.9        | -           | -           | -           | 20.6        | -           | -           | 17.3        | -           | 15.3        | -           |
| TLP-B145-050-Dxxx2x           | 3000                 | -          | 56.4       | -           | -           | -           | 41.7        | -           | 35          | -           | 30.9        | -           | -           | -           | -           | -           |
| TLP-B145-100-Dxxx2x           | 3000                 | -          | 56.4       | -           | -           | -           | 41.7        | -           | 35          | -           | 30.9        | -           | -           | -           | -           | -           |
| TLP-B145-150-Dxxx2x           | 3000                 | -          | 56.4       | -           | -           | -           | 41.7        | -           | 35          | -           | 30.9        | -           | -           | -           | -           | -           |
| TLP-B145-200-Dxxx2x           | 3000                 | -          | 56.4       | -           | -           | -           | 41.7        | -           | 35          | -           | 30.9        | -           | -           | -           | -           | -           |
| TLP-B145-250-Dxxx2x           | 4500                 | -          | -          | -           | 47.3        | -           | -           | -           | 35          | -           | -           | 29.3        | -           | 25.9        | -           | -           |
| TLP-B200-300-Dxxx2x           | 2500                 | -          | 91.9       | -           | -           | -           | 68          | -           | 57          | -           | 50.3        | -           | -           | -           | -           | -           |
| TLP-B200-450-Dxxx2x           | 3000                 | -          | 91.9       | -           | -           | -           | 68          | -           | 57          | -           | 50.3        | -           | -           | -           | -           | -           |
| TLP-B200-550-Dxxx2x           | 3000                 | -          | 91.9       | -           | -           | -           | 68          | -           | 57          | -           | 50.3        | -           | -           | -           | -           | -           |
| TLP-B200-750-Dxxx2x           | 2500                 | -          | 91.9       | -           | -           | -           | 68          | -           | 57          | -           | 50.3        | -           | -           | -           | -           | -           |
| TLP-B235-11K-Dxxx2x           | 2000                 | 136.5      | -          | 101         | -           | -           | 84.7        | 74.8        | -           | -           | -           | -           | -           | -           | -           | -           |
| TLP-B235-14K-Dxxx2x           | 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. <sup>(1)</sup> | 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-Dxxx4x           | 6000              | -       | -       | -        | -        | -        | 10.5     | -        | -        | -        | 8.4      | -        | -        | 7.3      | -        | 6.6      |
| TLP-A046-010-Dxxx4x           | 6000              | -       | -       | -        | -        | -        | 10.9     | -        | -        | -        | 8.7      | -        | -        | 7.6      | -        | 6.9      |
| TLP-A070-020-Dxxx4x           | 6000              | -       | -       | -        | -        | -        | 26       | -        | -        | -        | 20.6     | -        | -        | 18       | -        | 16.4     |
| TLP-A070-040-Dxxx4x           | 6000              | -       | -       | -        | -        | -        | 27.3     | -        | -        | -        | 21.7     | -        | -        | 18.9     | -        | 17.2     |
| TLP-A090-075-Dxxx4x           | 6000              | -       | -       | -        | -        | -        | 39.3     | -        | -        | -        | 31.2     | -        | -        | 27.2     | -        | 24.7     |
| TLP-A100-100-Dxxx4x           | 3000              | -       | 65.3    | -        | -        | -        | 51.8     | -        | 45.3     | -        | 41.1     | -        | -        | -        | -        | -        |
| TLP-A115-100-Dxxx4x           | 5000              | -       | -       | -        | -        | 57.9     | -        | -        | -        | 45.9     | -        | -        | 40.1     | -        | 36.4     | -        |
| TLP-A115-200-Dxxx4x           | 5000              | -       | -       | -        | -        | 60.3     | -        | -        | -        | 47.8     | -        | -        | 41.8     | -        | 38       | -        |
| TLP-A145-050-Dxxx4x           | 3000              | -       | 120.3   | -        | -        | -        | 95.5     | -        | 83.4     | -        | 75.8     | -        | -        | -        | -        | -        |
| TLP-A145-090-Dxxx4x           | 2000              | 142.1   | -       | 112.8    | -        | -        | 98.5     | 89.5     | -        | -        | -        | -        | -        | -        | -        | -        |
| TLP-A145-100-Dxxx4x           | 3000              | -       | 120.3   | -        | -        | -        | 95.5     | -        | 83.4     | -        | 75.8     | -        | -        | -        | -        | -        |
| TLP-A145-150-Dxxx4x           | 3000              | -       | 124.1   | -        | -        | -        | 98.5     | -        | 86       | -        | 78.2     | -        | -        | -        | -        | -        |
| TLP-A145-250-Dxxx4x           | 4500              | -       | -       | -        | 111.2    | -        | -        | -        | 88.2     | -        | -        | 77.1     | -        | 70       | -        | -        |
| TLP-A200-200-Dxxx4x           | 3000              | -       | 140.4   | -        | -        | -        | 111.4    | -        | 97.3     | -        | 88.4     | -        | -        | -        | -        | -        |
| TLP-A200-300-Dxxx4x           | 2500              | -       | 149.7   | -        | -        | -        | 118.8    | -        | 103.8    | -        | 94.3     | -        | -        | -        | -        | -        |
| TLP-A200-350-Dxxx4x           | 3000              | -       | 149.7   | -        | -        | -        | 118.8    | -        | 103.8    | -        | 94.3     | -        | -        | -        | -        | -        |
| TLP-A200-450-Dxxx4x           | 3000              | -       | 158.8   | -        | -        | -        | 126.1    | -        | 110.1    | -        | 100.1    | -        | -        | -        | -        | -        |
| TLP-A200-550-Dxxx4x           | 3000              | -       | 154.8   | -        | -        | -        | 122.9    | -        | 107.3    | -        | 97.5     | -        | -        | -        | -        | -        |
| TLP-A200-750-Dxxx4x           | 2500              | -       | 163.3   | -        | -        | -        | 129.6    | -        | 113.2    | -        | 102.9    | -        | -        | -        | -        | -        |
| TLP-A235-11K-Dxxx4x           | 2000              | 458.3   | -       | 363.8    | -        | -        | 317.8    | 288.7    | -        | -        | -        | -        | -        | -        | -        | -        |
| TLP-A235-15K-Dxxx4x           | 2000              | 478.8   | -       | 380      | -        | -        | 332      | 301.6    | -        | -        | -        | -        | -        | -        | -        | -        |
| TLP-B070-040-Dxxx4x           | 6000              | -       | -       | -        | -        | -        | 27.3     | -        | -        | -        | 21.7     | -        | -        | 18.9     | -        | 17.2     |
| TLP-B090-075-Dxxx4x           | 6000              | -       | -       | -        | -        | -        | 39.3     | -        | -        | -        | 31.2     | -        | -        | 27.2     | -        | 24.7     |
| TLP-B115-100-Dxxx4x           | 5000              | -       | -       | -        | -        | 57.9     | -        | -        | -        | 45.9     | -        | -        | 40.1     | -        | 36.4     | -        |
| TLP-B115-200-Dxxx4x           | 5000              | -       | -       | -        | -        | 60.3     | -        | -        | -        | 47.8     | -        | -        | 41.8     | -        | 38       | -        |
| TLP-B145-050-Dxxx4x           | 3000              | -       | 120.3   | -        | -        | -        | 95.5     | -        | 83.4     | -        | 75.8     | -        | -        | -        | -        | -        |
| TLP-B145-100-Dxxx4x           | 3000              | -       | 120.3   | -        | -        | -        | 95.5     | -        | 83.4     | -        | 75.8     | -        | -        | -        | -        | -        |
| TLP-B145-150-Dxxx4x           | 3000              | -       | 124.1   | -        | -        | -        | 98.5     | -        | 86       | -        | 78.2     | -        | -        | -        | -        | -        |
| TLP-B145-200-Dxxx4x           | 3000              | -       | 127.2   | -        | -        | -        | 101      | -        | 88.2     | -        | 80.2     | -        | -        | -        | -        | -        |
| TLP-B145-250-Dxxx4x           | 4500              | -       | -       | -        | 111.2    | -        | -        | -        | 88.2     | -        | -        | 77.1     | -        | 70       | -        | -        |
| TLP-B200-300-Dxxx4x           | 2500              | -       | 149.7   | -        | -        | -        | 118.8    | -        | 103.8    | -        | 94.3     | -        | -        | -        | -        | -        |
| TLP-B200-450-Dxxx4x           | 3000              | -       | 158.8   | -        | -        | -        | 126.1    | -        | 110.1    | -        | 100.1    | -        | -        | -        | -        | -        |
| TLP-B200-550-Dxxx4x           | 3000              | -       | 154.8   | -        | -        | -        | 122.9    | -        | 107.3    | -        | 97.5     | -        | -        | -        | -        | -        |
| TLP-B200-750-Dxxx4x           | 2500              | -       | 163.3   | -        | -        | -        | 129.6    | -        | 113.2    | -        | 102.9    | -        | -        | -        | -        | -        |
| TLP-B235-11K-Dxxx4x           | 2000              | 458.3   | -       | 363.8    | -        | -        | 317.8    | 288.7    | -        | -        | -        | -        | -        | -        | -        | -        |
| TLP-B235-14K-Dxxx4x           | 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. <sup>(1)</sup> | 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-Dxxx4x           | 6000              | -       | -       | -        | -        | -        | 6.7      | -        | -        | -        | 5        | -        | -        | 4.2      | -        | 3.7      |
| TLP-A046-010-Dxxx4x           | 6000              | -       | -       | -        | -        | -        | 6.9      | -        | -        | -        | 5.1      | -        | -        | 4.3      | -        | 3.8      |
| TLP-A070-020-Dxxx4x           | 6000              | -       | -       | -        | -        | -        | 11.7     | -        | -        | -        | 8.7      | -        | -        | 7.3      | -        | 6.4      |
| TLP-A070-040-Dxxx4x           | 6000              | -       | -       | -        | -        | -        | 12.3     | -        | -        | -        | 9.1      | -        | -        | 7.6      | -        | 6.7      |
| TLP-A090-075-Dxxx4x           | 6000              | -       | -       | -        | -        | -        | 15.3     | -        | -        | -        | 11.3     | -        | -        | 9.5      | -        | 8.4      |
| TLP-A100-100-Dxxx4x           | 3000              | -       | 20.1    | -        | -        | -        | 14.9     | -        | 12.5     | -        | 11       | -        | -        | -        | -        | -        |
| TLP-A115-100-Dxxx4x           | 5000              | -       | -       | -        | -        | 20.3     | -        | -        | -        | 15       | -        | -        | 12.6     | -        | 11.1     | -        |
| TLP-A115-200-Dxxx4x           | 5000              | -       | -       | -        | -        | 21.5     | -        | -        | -        | 15.9     | -        | -        | 13.3     | -        | 11.8     | -        |
| TLP-A145-050-Dxxx4x           | 3000              | -       | 34.2    | -        | -        | -        | 25.3     | -        | 21.2     | -        | 18.7     | -        | -        | -        | -        | -        |
| TLP-A145-090-Dxxx4x           | 2000              | 42.9    | -       | 31.8     | -        | -        | 26.6     | 23.5     | -        | -        | -        | -        | -        | -        | -        | -        |
| TLP-A145-100-Dxxx4x           | 3000              | -       | 34.2    | -        | -        | -        | 25.3     | -        | 21.2     | -        | 18.7     | -        | -        | -        | -        | -        |
| TLP-A145-150-Dxxx4x           | 3000              | -       | 36      | -        | -        | -        | 26.6     | -        | 22.3     | -        | 19.7     | -        | -        | -        | -        | -        |
| TLP-A145-250-Dxxx4x           | 4500              | -       | -       | -        | 31.4     | -        | -        | -        | 23.2     | -        | -        | 19.5     | -        | 17.2     | -        | -        |
| TLP-A200-200-Dxxx4x           | 3000              | -       | 60.9    | -        | -        | -        | 45.1     | -        | 37.8     | -        | 33.4     | -        | -        | -        | -        | -        |
| TLP-A200-300-Dxxx4x           | 2500              | -       | 65.3    | -        | -        | -        | 48.3     | -        | 40.5     | -        | 35.8     | -        | -        | -        | -        | -        |
| TLP-A200-350-Dxxx4x           | 3000              | -       | 65.3    | -        | -        | -        | 48.3     | -        | 40.5     | -        | 35.8     | -        | -        | -        | -        | -        |
| TLP-A200-450-Dxxx4x           | 3000              | -       | 69.6    | -        | -        | -        | 51.5     | -        | 43.2     | -        | 38.1     | -        | -        | -        | -        | -        |
| TLP-A200-550-Dxxx4x           | 3000              | -       | 67.7    | -        | -        | -        | 50.1     | -        | 42       | -        | 37.1     | -        | -        | -        | -        | -        |
| TLP-A200-750-Dxxx4x           | 2500              | -       | 71.7    | -        | -        | -        | 53.1     | -        | 44.5     | -        | 39.3     | -        | -        | -        | -        | -        |
| TLP-A235-11K-Dxxx4x           | 2000              | 75.5    | -       | 55.9     | -        | -        | 46.8     | 41.3     | -        | -        | -        | -        | -        | -        | -        | -        |
| TLP-A235-15K-Dxxx4x           | 2000              | 85      | -       | 62.9     | -        | -        | 52.8     | 46.6     | -        | -        | -        | -        | -        | -        | -        | -        |
| TLP-B070-040-Dxxx4x           | 6000              | -       | -       | -        | -        | -        | 12.3     | -        | -        | -        | 9.1      | -        | -        | 7.6      | -        | 6.7      |
| TLP-B090-075-Dxxx4x           | 6000              | -       | -       | -        | -        | -        | 15.3     | -        | -        | -        | 11.3     | -        | -        | 9.5      | -        | 8.4      |
| TLP-B115-100-Dxxx4x           | 5000              | -       | -       | -        | -        | 20.3     | -        | -        | -        | 15       | -        | -        | 12.6     | -        | 11.1     | -        |
| TLP-B115-200-Dxxx4x           | 5000              | -       | -       | -        | -        | 21.5     | -        | -        | -        | 15.9     | -        | -        | 13.3     | -        | 11.8     | -        |
| TLP-B145-050-Dxxx4x           | 3000              | -       | 34.2    | -        | -        | -        | 25.3     | -        | 21.2     | -        | 18.7     | -        | -        | -        | -        | -        |
| TLP-B145-100-Dxxx4x           | 3000              | -       | 34.2    | -        | -        | -        | 25.3     | -        | 21.2     | -        | 18.7     | -        | -        | -        | -        | -        |
| TLP-B145-150-Dxxx4x           | 3000              | -       | 36      | -        | -        | -        | 26.6     | -        | 22.3     | -        | 19.7     | -        | -        | -        | -        | -        |
| TLP-B145-200-Dxxx4x           | 3000              | -       | 37.4    | -        | -        | -        | 27.7     | -        | 23.2     | -        | 20.5     | -        | -        | -        | -        | -        |
| TLP-B145-250-Dxxx4x           | 4500              | -       | -       | -        | 31.4     | -        | -        | -        | 23.2     | -        | -        | 19.5     | -        | 17.2     | -        | -        |
| TLP-B200-300-Dxxx4x           | 2500              | -       | 65.3    | -        | -        | -        | 48.3     | -        | 40.5     | -        | 35.8     | -        | -        | -        | -        | -        |
| TLP-B200-450-Dxxx4x           | 3000              | -       | 69.6    | -        | -        | -        | 51.5     | -        | 43.2     | -        | 38.1     | -        | -        | -        | -        | -        |
| TLP-B200-550-Dxxx4x           | 3000              | -       | 67.7    | -        | -        | -        | 50.1     | -        | 42       | -        | 37.1     | -        | -        | -        | -        | -        |
| TLP-B200-750-Dxxx4x           | 2500              | -       | 71.7    | -        | -        | -        | 53.1     | -        | 44.5     | -        | 39.3     | -        | -        | -        | -        | -        |
| TLP-B235-11K-Dxxx4x           | 2000              | 75.5    | -       | 55.9     | -        | -        | 46.8     | 41.3     | -        | -        | -        | -        | -        | -        | -        | -        |
| TLP-B235-14K-Dxxx4x           | 2000              | 85      | -       | 62.9     | -        | -        | 52.8     | 46.6     | -        | -        | -        | -        | -        | -        | -        | -        |

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

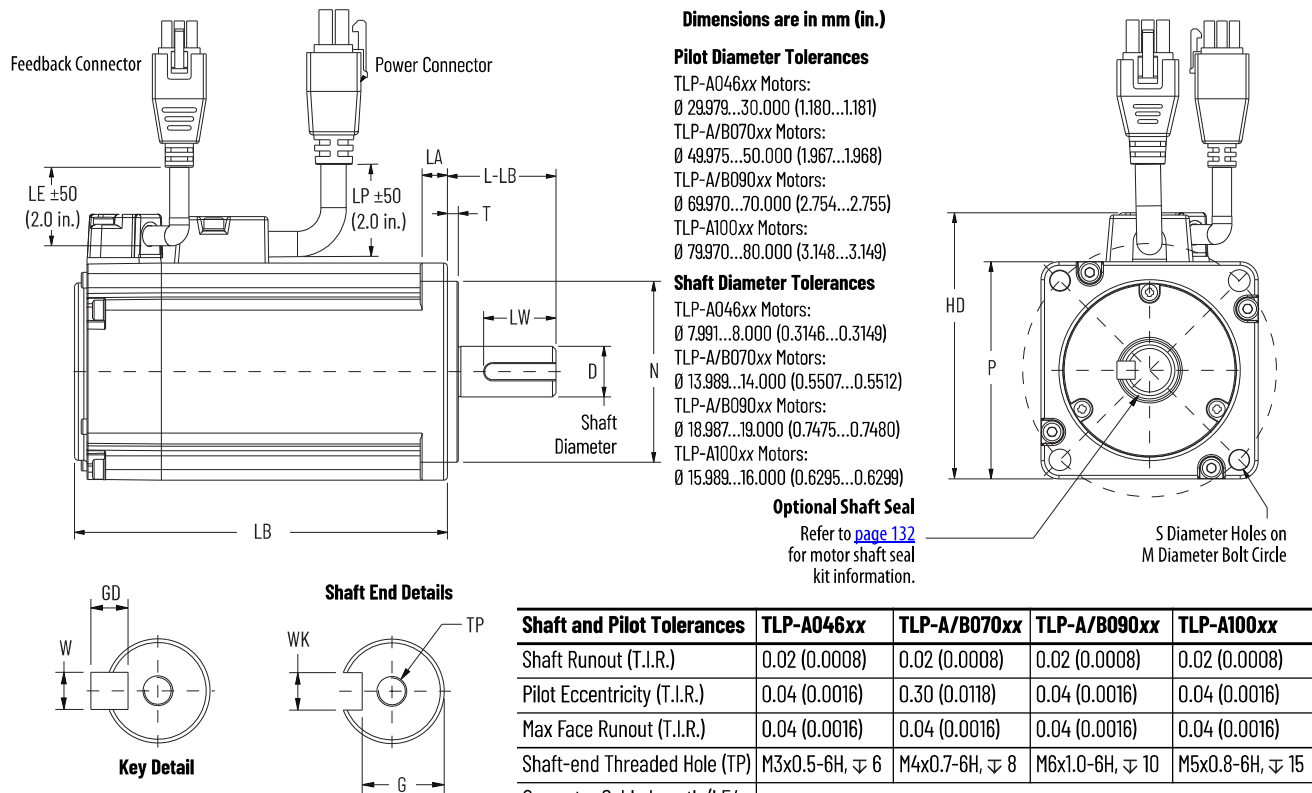
## Axial Load Force Ratings (zero radial load) for Brake Motors

| Motor<br>Cat. No. (1) | Maximum<br>Speed<br>rpm | RPM        |            |             |             |             |             |             |             |             |             |             |             |             |             |             |
|-----------------------|-------------------------|------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|                       |                         | 500<br>kgf | 750<br>kgf | 1000<br>kgf | 1125<br>kgf | 1250<br>kgf | 1500<br>kgf | 2000<br>kgf | 2250<br>kgf | 2500<br>kgf | 3000<br>kgf | 3375<br>kgf | 3750<br>kgf | 4500<br>kgf | 5000<br>kgf | 6000<br>kgf |
| TLP-A046-005-Dxxx4x   | 6000                    | -          | -          | -           | -           | -           | 8.1         | -           | -           | -           | 6           | -           | -           | 5.0         | -           | 4.4         |
| TLP-A046-010-Dxxx4x   | 6000                    | -          | -          | -           | -           | -           | 8.1         | -           | -           | -           | 6           | -           | -           | 5.0         | -           | 4.4         |
| TLP-A070-020-Dxxx4x   | 6000                    | -          | -          | -           | -           | -           | 15.4        | -           | -           | -           | 11.4        | -           | -           | 9.5         | -           | 8.4         |
| TLP-A070-040-Dxxx4x   | 6000                    | -          | -          | -           | -           | -           | 15.4        | -           | -           | -           | 11.4        | -           | -           | 9.5         | -           | 8.4         |
| TLP-A090-075-Dxxx4x   | 6000                    | -          | -          | -           | -           | -           | 20.4        | -           | -           | -           | 15.1        | -           | -           | 12.6        | -           | 11.1        |
| TLP-A100-100-Dxxx4x   | 3000                    | -          | 27.5       | -           | -           | -           | 20.4        | -           | 17.1        | -           | 15.1        | -           | -           | -           | -           | -           |
| TLP-A115-100-Dxxx4x   | 5000                    | -          | -          | -           | -           | 27.9        | -           | -           | -           | 20.6        | -           | -           | 17.3        | -           | 15.3        | -           |
| TLP-A115-200-Dxxx4x   | 5000                    | -          | -          | -           | -           | 27.9        | -           | -           | -           | 20.6        | -           | -           | 17.3        | -           | 15.3        | -           |
| TLP-A145-050-Dxxx4x   | 3000                    | -          | 56.4       | -           | -           | -           | 41.7        | -           | 35.0        | -           | 30.9        | -           | -           | -           | -           | -           |
| TLP-A145-090-Dxxx4x   | 2000                    | 67.2       | -          | 49.7        | -           | -           | 41.7        | 36.8        | -           | -           | -           | -           | -           | -           | -           | -           |
| TLP-A145-100-Dxxx4x   | 3000                    | -          | 56.4       | -           | -           | -           | 41.7        | -           | 35.0        | -           | 30.9        | -           | -           | -           | -           | -           |
| TLP-A145-150-Dxxx4x   | 3000                    | -          | 56.4       | -           | -           | -           | 41.7        | -           | 35.0        | -           | 30.9        | -           | -           | -           | -           | -           |
| TLP-A145-250-Dxxx4x   | 4500                    | -          | -          | -           | 47.3        | -           | -           | -           | 35.0        | -           | -           | 29.3        | -           | 25.9        | -           | -           |
| TLP-A200-200-Dxxx4x   | 3000                    | -          | 91.9       | -           | -           | -           | 68.0        | -           | 57.0        | -           | 50.3        | -           | -           | -           | -           | -           |
| TLP-A200-300-Dxxx4x   | 2500                    | -          | 91.9       | -           | -           | -           | 68.0        | -           | 57.0        | -           | 50.3        | -           | -           | -           | -           | -           |
| TLP-A200-350-Dxxx4x   | 3000                    | -          | 91.9       | -           | -           | -           | 68.0        | -           | 57.0        | -           | 50.3        | -           | -           | -           | -           | -           |
| TLP-A200-450-Dxxx4x   | 3000                    | -          | 91.9       | -           | -           | -           | 68.0        | -           | 57.0        | -           | 50.3        | -           | -           | -           | -           | -           |
| TLP-A200-550-Dxxx4x   | 3000                    | -          | 91.9       | -           | -           | -           | 68.0        | -           | 57.0        | -           | 50.3        | -           | -           | -           | -           | -           |
| TLP-A200-750-Dxxx4x   | 2500                    | -          | 91.9       | -           | -           | -           | 68.0        | -           | 57.0        | -           | 50.3        | -           | -           | -           | -           | -           |
| TLP-A235-11K-Dxxx4x   | 2000                    | 136.5      | -          | 101.0       | -           | -           | 84.7        | 74.8        | -           | -           | -           | -           | -           | -           | -           | -           |
| TLP-A235-15K-Dxxx4x   | 2000                    | 136.5      | -          | 101.0       | -           | -           | 84.7        | 74.8        | -           | -           | -           | -           | -           | -           | -           | -           |
| TLP-B070-040-Dxxx4x   | 6000                    | -          | -          | -           | -           | -           | 15.4        | -           | -           | -           | 11.4        | -           | -           | 9.5         | -           | 8.4         |
| TLP-B090-075-Dxxx4x   | 6000                    | -          | -          | -           | -           | -           | 20.4        | -           | -           | -           | 15.1        | -           | -           | 12.6        | -           | 11.1        |
| TLP-B115-100-Dxxx4x   | 5000                    | -          | -          | -           | -           | 27.9        | -           | -           | -           | 20.6        | -           | -           | 17.3        | -           | 15.3        | -           |
| TLP-B115-200-Dxxx4x   | 5000                    | -          | -          | -           | -           | 27.9        | -           | -           | -           | 20.6        | -           | -           | 17.3        | -           | 15.3        | -           |
| TLP-B145-050-Dxxx4x   | 3000                    | -          | 56.4       | -           | -           | -           | 41.7        | -           | 35          | -           | 30.9        | -           | -           | -           | -           | -           |
| TLP-B145-100-Dxxx4x   | 3000                    | -          | 56.4       | -           | -           | -           | 41.7        | -           | 35          | -           | 30.9        | -           | -           | -           | -           | -           |
| TLP-B145-150-Dxxx4x   | 3000                    | -          | 56.4       | -           | -           | -           | 41.7        | -           | 35          | -           | 30.9        | -           | -           | -           | -           | -           |
| TLP-B145-200-Dxxx4x   | 3000                    | -          | 56.4       | -           | -           | -           | 41.7        | -           | 35          | -           | 30.9        | -           | -           | -           | -           | -           |
| TLP-B145-250-Dxxx4x   | 4500                    | -          | -          | -           | 47.3        | -           | -           | -           | 35          | -           | -           | 29.3        | -           | 25.9        | -           | -           |
| TLP-B200-300-Dxxx4x   | 2500                    | -          | 91.9       | -           | -           | -           | 68          | -           | 57          | -           | 50.3        | -           | -           | -           | -           | -           |
| TLP-B200-450-Dxxx4x   | 3000                    | -          | 91.9       | -           | -           | -           | 68          | -           | 57          | -           | 50.3        | -           | -           | -           | -           | -           |
| TLP-B200-550-Dxxx4x   | 3000                    | -          | 91.9       | -           | -           | -           | 68          | -           | 57          | -           | 50.3        | -           | -           | -           | -           | -           |
| TLP-B200-750-Dxxx4x   | 2500                    | -          | 91.9       | -           | -           | -           | 68          | -           | 57          | -           | 50.3        | -           | -           | -           | -           | -           |
| TLP-B235-11K-Dxxx4x   | 2000                    | 136.5      | -          | 101         | -           | -           | 84.7        | 74.8        | -           | -           | -           | -           | -           | -           | -           | -           |
| TLP-B235-14K-Dxxx4x   | 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)



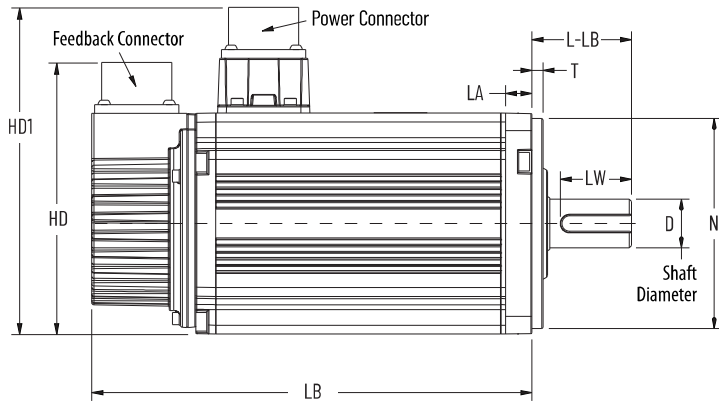
| Shaft and Pilot Tolerances    | TLP-A046xx                                                        | TLP-A/B070xx          | TLP-A/B090xx           | TLP-A100xx             |
|-------------------------------|-------------------------------------------------------------------|-----------------------|------------------------|------------------------|
| 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, $\nabla$ 6                                             | M4x0.7-6H, $\nabla$ 8 | M6x1.0-6H, $\nabla$ 10 | M5x0.8-6H, $\nabla$ 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<br>mm (in.) | T<br>mm (in.)                | LA<br>mm (in.) | LB <sup>(1)</sup><br>mm (in.) | L-LB <sup>(2)</sup><br>mm (in.) | LW<br>mm (in.)  | D<br>mm (in.)    | M<br>mm (in.)   | S<br>mm (in.)                  | N <sup>(3)</sup><br>mm (in.) | P<br>mm (in.)  | G<br>mm (in.)   | GD<br>mm (in.) | W<br>mm (in.)                 | WK<br>mm (in.)                |
|----------------|----------------|------------------------------|----------------|-------------------------------|---------------------------------|-----------------|------------------|-----------------|--------------------------------|------------------------------|----------------|-----------------|----------------|-------------------------------|-------------------------------|
| TLP-A046-005   | 53.8<br>(2.12) | 2.5 <sup>(4)</sup><br>(0.10) | 5.0<br>(0.20)  | 71.9<br>(2.83)                | 25.0<br>(0.98)                  | 16.0<br>(0.630) | 8.0<br>(0.3149)  | 46.0<br>(1.811) | 4.50 <sup>(4)</sup><br>(0.177) | 30.0<br>(1.181)              | 40.0<br>(1.57) | 6.20<br>(0.244) | 3.0<br>(0.118) | 3.0 <sup>(5)</sup><br>(0.118) | 3.0 <sup>(6)</sup><br>(0.118) |
| TLP-A046-010   |                |                              |                | 86.0<br>(3.39)                |                                 |                 |                  |                 |                                |                              |                |                 |                |                               |                               |
| TLP-A070-020   | 74.1<br>(2.92) | 3.0 <sup>(4)</sup><br>(0.12) | 7.5<br>(0.30)  | 84.7<br>(3.33)                | 30.0<br>(1.18)                  | 20.0<br>(0.787) | 14.0<br>(0.5512) | 70.0<br>(2.756) | 5.50 <sup>(7)</sup><br>(0.216) | 50.0<br>(1.968)              | 60.0<br>(2.36) | 11.0<br>(0.433) | 5.0<br>(0.197) | 5.0 <sup>(8)</sup><br>(0.197) | 5.0 <sup>(8)</sup><br>(0.197) |
| TLP-A/B070-040 |                |                              |                | 106.7<br>(4.20)               |                                 |                 |                  |                 |                                |                              |                |                 |                |                               |                               |
| TLP-A/B090-075 | 94.1<br>(3.70) | 3.0 <sup>(9)</sup><br>(0.12) | 8.0<br>(0.31)  | 116.5<br>(4.59)               | 40.0<br>(1.57)                  | 25.0<br>(0.984) | 19.0<br>(0.7480) | 90.0<br>(3.543) | 6.60 <sup>(7)</sup><br>(0.260) | 70.0<br>(2.755)              | 80.0<br>(3.15) | 15.5<br>(0.610) | 6.0<br>(0.236) | 6.0 <sup>(8)</sup><br>(0.236) | 6.0 <sup>(8)</sup><br>(0.236) |
| TLP-A100-100   | 98.8<br>(3.89) | 3.0 <sup>(4)</sup><br>(0.12) |                | 153.9<br>(6.06)               | 35.0<br>(1.38)                  | 20.0<br>(0.787) | 16.0<br>(0.6299) | 100<br>(3.937)  | 6.60 <sup>(4)</sup><br>(0.260) | 80.0<br>(3.149)              | 86.0<br>(3.38) | 13.0<br>(0.630) | 5.0<br>(0.197) | 5.0 <sup>(8)</sup><br>(0.197) | 5.0 <sup>(8)</sup><br>(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  $\pm 0.50$  mm ( $\pm 0.020$  in.).
- (3) See dimensions diagram for tolerances.
- (4) Tolerance for this dimension is  $\pm 0.10$  mm ( $\pm 0.0039$  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  $\pm 0.20$  mm ( $\pm 0.0079$  in.).
- (8) Tolerance for this dimension is  $+0$ ,  $-0.030$  mm ( $+0$ , -0.001181 in.).
- (9) Tolerance for this dimension is  $\pm 0.25$  mm ( $\pm 0.0098$  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/B115xx Motors:

Ø 94.965...95.000 (3.739...3.740)

TLP-A/B145xx Motors:

Ø 109.965...110.000 (4.329...4.330)

## Shaft Diameter Tolerances

TLP-A/B115xx Motors:

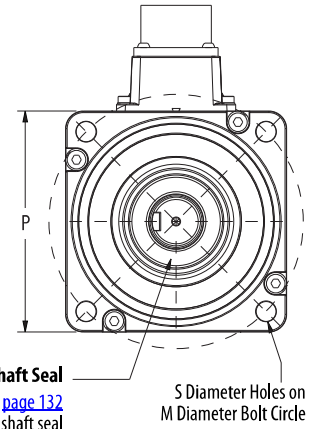
Ø 21.987...22.000 (0.8656...0.8661)

TLP-A/B145-050... TLP-B145-200 Motors:

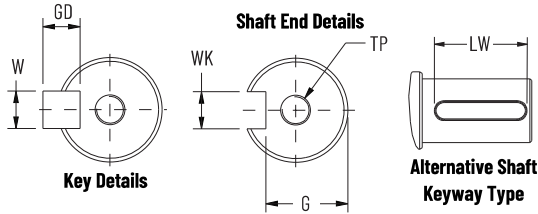
Ø 21.987...22.000 (0.8656...0.8661)

TLP-A/B145-250 Motors:

Ø 23.987...24.000 (0.9444...0.9449)



## Optional Shaft Seal

Refer to [page 132](#)  
for motor shaft seal  
kit information.

| Shaft and Pilot Tolerances   | TLP-A/B115xx                | TLP-A/B145xx                |
|------------------------------|-----------------------------|-----------------------------|
| 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, $\varnothing$ 20 | M6x1.0-6H, $\varnothing$ 20 |

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

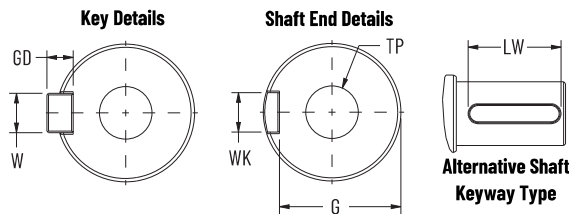
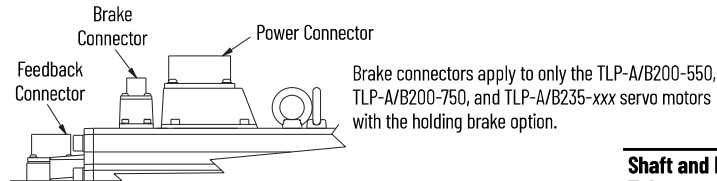
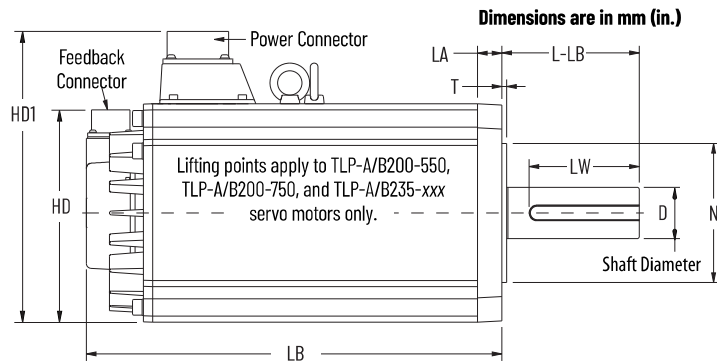
- (1) For TLP-A/B115-100 motors with brake, add 39.3 mm (1.55 in.).  
For TLP-A/B115-200 motors with brake, add 27.0 mm (1.06 in.).  
For TLP-A/B145-050 and TLP-A/B145-100 motors with brake, add 36.0 mm (1.42 in.).  
For TLP-A145-090 and TLP-A/B145-150 motors with brake, add 34.5 mm (1.36 in.).  
For 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  $\pm 0.10$  mm ( $\pm 0.0039$  in.).For TLP-A/B145 motors, the tolerance is  $\pm 0.30$  mm ( $\pm 0.0118$  in.).(4) Tolerance for this dimension is  $+0, -0.036$  mm ( $+0, -0.0147$  in.).(5) Tolerance for this dimension is  $\pm 0.10$  mm ( $\pm 0.0039$  in.).(6) Tolerance for this dimension is  $+0.38, -0.50$  mm ( $+0.015, -0.020$  in.).(7) Tolerance for this dimension is  $\pm 0.15$  mm ( $\pm 0.0059$  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)

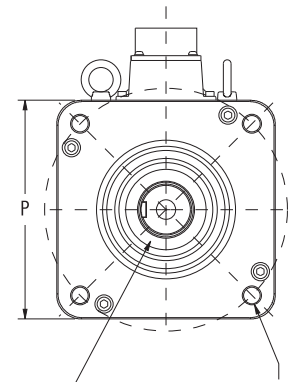


## Pilot Diameter Tolerances

TLP-A200-200...TLP-A/B200-750 Motors:  
 $\varnothing$  114.265...114.300 (4.4986...4.500)  
 TLP-A/B235-11K...TLP-A235-15K Motors:  
 $\varnothing$  199.954...200.00 (7.8722...7.8740)

## Shaft Diameter Tolerances

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



## Optional Shaft Seal

Refer to [page 132](#) for Kinetix TLP motor shaft-seal kit information.

| 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, $\varnothing$ 25 | M16x2.0-6H, $\varnothing$ 32 | M20x2.5-6H, $\varnothing$ 40 |

| Motor<br>Cat. No. | HD<br>mm (in.)  | HD1<br>mm (in.)  | T<br>mm (in.)                | LA<br>mm (in.) | LB <sup>(1)</sup><br>mm (in.) | L-LB <sup>(2)</sup><br>mm (in.) | LW<br>mm (in.) | D<br>mm (in.)  | M<br>mm (in.)   | S<br>mm (in.)                 | N <sup>(3)</sup><br>mm (in.) | P<br>mm (in.)   | G<br>mm (in.)  | GD<br>mm (in.) | W<br>mm (in.)                  | WK <sup>(3)</sup><br>mm (in.)  |                |                               |                               |
|-------------------|-----------------|------------------|------------------------------|----------------|-------------------------------|---------------------------------|----------------|----------------|-----------------|-------------------------------|------------------------------|-----------------|----------------|----------------|--------------------------------|--------------------------------|----------------|-------------------------------|-------------------------------|
| TLP-A200-200      | 174.9<br>(6.89) | 231.0<br>(9.09)  | 4.0 <sup>(4)</sup><br>(0.16) | 20.0<br>(0.79) | 169.7<br>(6.68)               | 79.0<br>(3.11)                  | 63.0<br>(2.48) | 35.0<br>(1.38) | 200.0<br>(7.87) | 13.5 <sup>(4)</sup><br>(0.53) | 114.3<br>(4.50)              | 180.0<br>(7.09) | 30.0<br>(1.18) | 8.0<br>(0.31)  | 10.0 <sup>(5)</sup><br>(0.394) | 10.0 <sup>(5)</sup><br>(0.394) |                |                               |                               |
| TLP-A/B200-300    |                 |                  |                              |                | 202.8<br>(7.98)               |                                 |                |                |                 |                               |                              |                 |                |                |                                |                                |                |                               |                               |
| TLP-A200-350      |                 |                  |                              |                | 254.0<br>(10.0)               |                                 |                |                |                 |                               |                              |                 |                |                |                                |                                |                |                               |                               |
| TLP-A/B200-450    |                 | 240.0<br>(9.45)  |                              |                | 280.4<br>(11.04)              | 113.0<br>(4.45)                 | 90.0<br>(3.54) | 42.0<br>(1.65) | 235.0<br>(9.25) | 13.5 <sup>(6)</sup><br>(0.53) | 200.0<br>(7.87)              | 220.0<br>(8.66) | 37.0<br>(1.46) |                | 12.0 <sup>(7)</sup><br>(0.47)  | 12.0 <sup>(7)</sup><br>(0.47)  |                |                               |                               |
| TLP-A/B200-550    |                 |                  |                              |                | 342.7<br>(13.49)              |                                 |                |                |                 |                               |                              |                 |                |                |                                |                                |                |                               |                               |
| TLP-A/B200-750    | 194.6<br>(7.66) | 279.1<br>(10.99) |                              |                | 372.1<br>(14.65)              | 116.0<br>(4.57)                 |                | 55.0<br>(2.17) |                 |                               |                              |                 |                | 49.0<br>(1.93) |                                |                                | 10.0<br>(0.39) | 16.0 <sup>(7)</sup><br>(0.63) | 16.0 <sup>(7)</sup><br>(0.63) |
| TLP-A/B235-11K    |                 |                  |                              |                | 451.1<br>(17.76)              |                                 |                |                |                 |                               |                              |                 |                |                |                                |                                |                |                               |                               |
| TLP-B235-14K      |                 |                  |                              |                |                               |                                 |                |                |                 |                               |                              |                 |                |                |                                |                                |                |                               |                               |
| 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  $\pm 0.10$  mm ( $\pm 0.0039$  in.).
- (5) Tolerance for this dimension is +0, -0.036 mm (+0, -0.0147 in.).
- (6) Tolerance for this dimension is  $\pm 0.20$  mm ( $\pm 0.0079$  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    | <ul style="list-style-type: none"> <li>• Compact size, high torque density</li> <li>• Metric and NEMA frame sizes</li> <li>• Smart Motor Technology</li> <li>• Low rotor inertia</li> </ul>                                                                                                                                          |
| Features                | <ul style="list-style-type: none"> <li>• 200V-class windings</li> <li>• High-energy Neodymium-Iron-Boron (NeFeB) magnets</li> <li>• Cable extensions, 1 m (3.2 ft)</li> <li>• 17-bit serial communication</li> </ul>                                                                                                                 |
| 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 <a href="http://ab.rockwellautomation.com">http://ab.rockwellautomation.com</a> 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 | <ul style="list-style-type: none"> <li>• Kinetix 5100 (Kinetix TL and TLY)</li> <li>• Kinetix 5300 (Kinetix TL and TLY)</li> <li>• Kinetix 6000 (Kinetix TLY)</li> <li>• Kinetix 300/350 (Kinetix TLY)</li> <li>• Kinetix 3 (Kinetix TL and TLY)</li> <li>• Kinetix 2000 (Kinetix TLY)</li> <li>• Ultra3000 (Kinetix TLY)</li> </ul> |
| Compatible servo cables | <ul style="list-style-type: none"> <li>• 2090-CxxM6xx cables (Kinetix TLY)</li> <li>• 2090-DANxxx cables (Kinetix TL)</li> </ul>                                                                                                                                                                                                     |
| Typical applications    | <ul style="list-style-type: none"> <li>• Robotics</li> <li>• Material handling</li> <li>• X-Y tables</li> <li>• Specialty machinery</li> <li>• Semiconductor manufacturing</li> <li>• Medical/laboratory equipment</li> <li>• Light packaging machines</li> <li>• Office machinery</li> </ul>                                        |