

MP-Series Low Inertia Motors



MP-Series (Bulletin MPL) low-inertia high-output brushless servo motors use innovative design characteristics to reduce motor size while delivering significantly higher torque. These compact and highly-dynamic brushless servo motors are designed by Allen-Bradley to meet the demanding requirements of high performance motion systems.

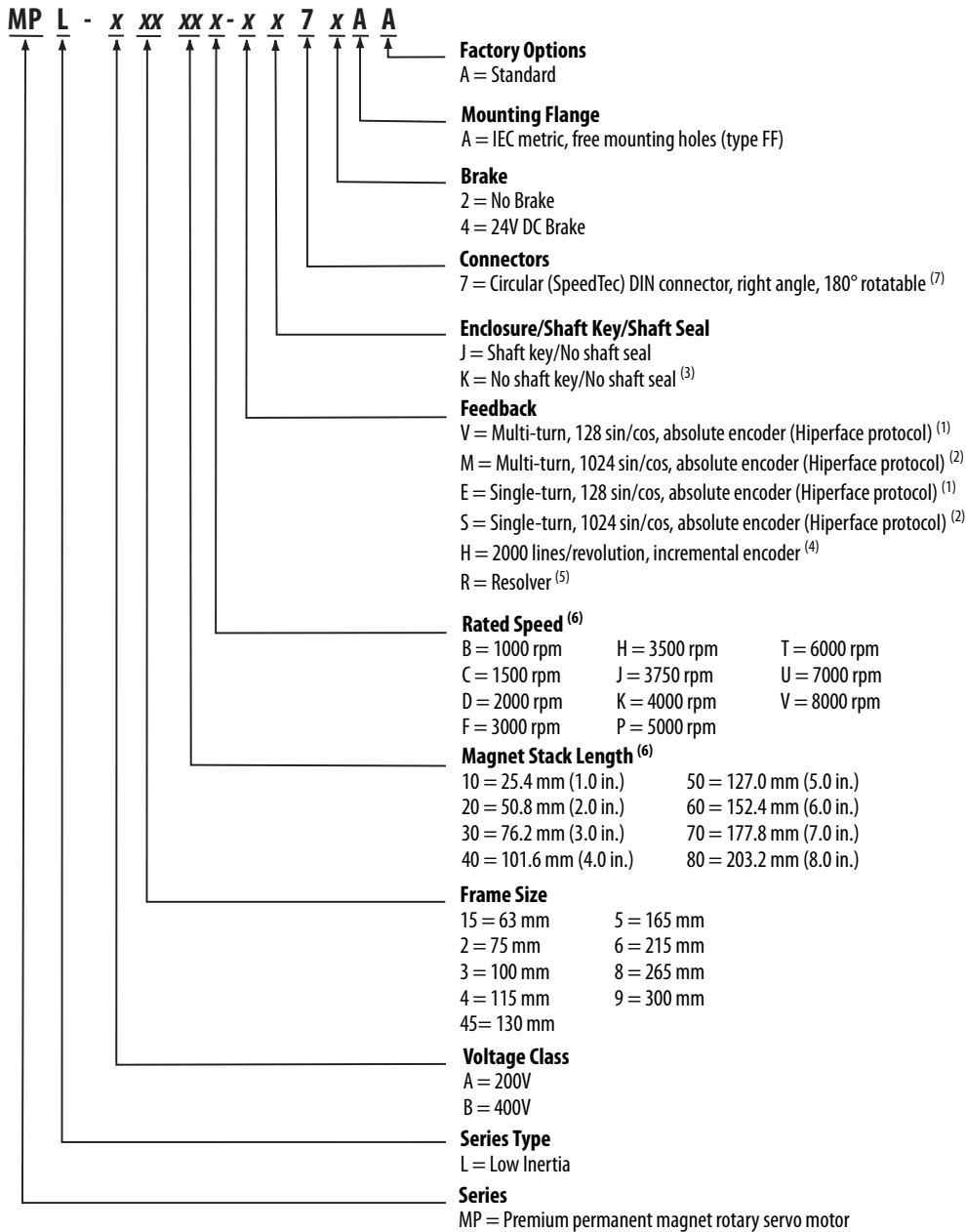
MP-Series Low Inertia Motor Features

Attribute	Value
Main characteristics	<ul style="list-style-type: none"> • High torque to size ratio • Smart Motor Technology • Low rotor inertia
Features	<ul style="list-style-type: none"> • 200V and 400V-class windings • High-energy rare-earth magnets • Shaft-end threaded hole • DIN connectors, rotates 180° • Standard IEC 72-1 mounting dimensions
Motor type	Brushless AC synchronous servo motors
Environmental rating	<ul style="list-style-type: none"> • IP50 minimum, without shaft seal (standard). • IP66 with optional shaft seal and use of environmentally sealed cable connectors.
Certifications	Bulletin MPL rotary motors are UL Recognized components to applicable UL and CSA standards. CE marked for all applicable directives. Refer to http://www.ab.com for more information.
Continuous stall torque	0.26...163 N•m (2.3...1440 lb•in)
Peak stall torque	0.74...278 N•m (6.6...2460 lb•in)
Speed	Up to 8000 rpm
Motor rated output	0.16...18.6 kW
Compatible servo drives	<ul style="list-style-type: none"> • Kinetix 5500⁽¹⁾ • Kinetix 6200/6500 • Kinetix 6000 • Kinetix 300/350 • Kinetix 2000 • Kinetix 7000 • Ultra3000
Typical applications	<ul style="list-style-type: none"> • Packaging • Converting • Material handling • Electronic assembly • Automotive • Metal forming

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

Catalog Numbers - MP-Series Low Inertia Motors

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



- (1) Applies to MPL-A/B15xx and MPL-A/B2xx motors.
- (2) Applies to MPL-A/B3xx, MPL-A/B4xx, MPL-A/B45xx, MPL-A/B5xx, MPL-B6xx, MPL-B8xx, and MPL-B9xx motors.
- (3) Requires longer lead times. Applies to only limited frame sizes.
- (4) Applies to MPL-A/B15xxx-H, MPL-A/B2xxx-H, MPL-A/B3xxx-H, MPL-A/B4xxx-H, MPL-A/B45xxx-H motors.
- (5) Applies to MPL-B3xxx-R, MPL-B4xxx-R, and MPL-B45xxx-R motors.
- (6) Not all combinations are available. Only the configurations for rated speed and magnet stack length, as listed in MP-Series Low Inertia Motor (200V-class) Performance Specifications on [page 54](#) and MP-Series Low Inertia Motor (400V-class) Performance Specifications on [page 55](#), are available. Use Motion Analyzer software to size and select motors for your application.
- (7) Applies to all Bulletin MPL motors with M23 and M40 cable connectors. M58 connectors (MPL-B8xx and MPL-B9xx motors) must be physically removed and repositioned in 90° increments.

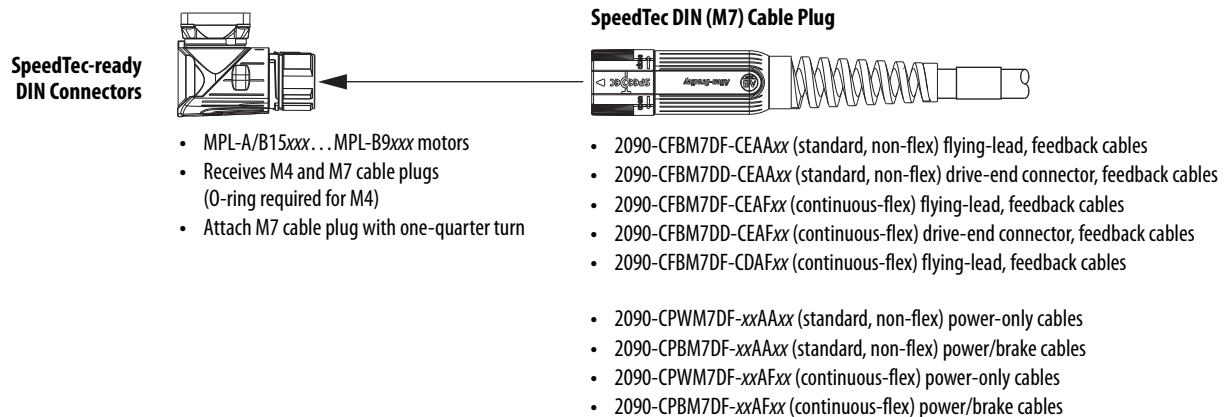
MP-Series Low Inertia Motor High Resolution Encoders

MP-Series low-inertia motors are available with high performance encoders with a choice of single-turn (-E, -S) or multi-turn (-V, -M) high resolution feedback:

- Up to 2 million counts per revolution (-M and -S) for smooth performance (MPL-A/B3xx, MPL-A/B4xx, MPL-A/B45xx, MPL-A/B5xx, MPL-B6xx, MPL-B8xx, and MPL-B9xx motors).
- Up to 260 thousand counts per revolution (-E and -V) for smooth performance (MPL-A/B15xx and MPL-A/B2xx motors).
- Single-turn encoder provides high-resolution absolute position feedback within one turn.
- Multi-turn encoder provides high-resolution absolute position feedback within 4096 turns. The electromechanical design does not require a battery.

Motor Connector/Cable Compatibility

MP-Series (Bulletin MPL) motors are equipped with SpeedTec-ready DIN connectors.



For information on transitioning your Bulletin MPL motor installation from bayonet cables to circular DIN cables, refer to Kinetix Motion Accessories Technical Data, publication [GMC-TD004](#).

MP-Series Low Inertia Motor Options

MP-Series low-inertia motors are available with these options:

- 24V DC brake.
- Optional keyless shaft available in limited frame sizes with extended lead times (MPL-A/B3xx, MPL-A/B4xx, MPL-A/B45xx, and MPL-A/B5xx motors).
- Shaft seal kits are available, as are replacement kits for field installation. Shaft seals are made of nitrile and kits include a lubricant to reduce wear.

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

Shaft Seal Kit Catalog Numbers

Motor Cat. No.	Shaft Seal Kit Cat. No.
MPL-A15xx and MPL-B15xx	MPL-SSN-F63F75
MPL-A2xx and MPL-B2xx	
MPL-A3xx and MPL-B3xx	MPL-SSN-A3B3
MPL-A4xx and MPL-B4xx	MPL-SSN-A4B4
MPL-A45xx and MPL-B45xx	MPL-SSN-A5B5
MPL-A520 and MPL-B520 MPL-A540 and MPL-B540 MPL-A560 and MPL-B560	MPL-SSN-F165
MPL-B580	MPL-SSN-F165-32MM
MPL-B6xx	MPL-SSN-A6B6
MPL-B8xx	MPL-SSN-A8B8
MPL-B9xx	MPL-SSN-A9B9

Technical Specifications - MP-Series Low Inertia Motors

MP-Series Low Inertia Motor (200V-class) Performance Specifications

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

(1) Refer to MP-Series Low Inertia Motor Brake Specifications on [page 56](#) for brake rotor inertia and brake motor weight.

MP-Series Low Inertia Motor (400V-class) Performance Specifications

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

(1) Refer to MP-Series Low Inertia Motor Brake Specifications on [page 56](#) for brake rotor inertia and brake motor weight.

(2) Rotor inertia can vary slightly depending on feedback.

MP-Series Low Inertia Motor Brake Specifications

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

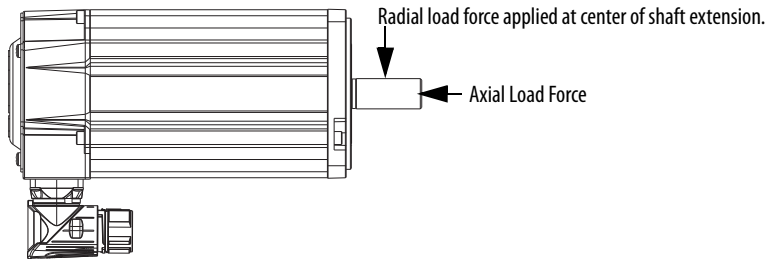
MP-Series Low Inertia Motor Load Force Ratings

Bulletin MPL 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 L₁₀ bearing fatigue life of 20,000 hours. This 20,000-hour life does not account for possible application-specific life reduction that can occur due to bearing grease contamination from external sources. Maximum operating speed is limited by motor winding.

Radial Load Force Ratings

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

MPL-xxxx-xxxxAA Load Forces



Axial Load Force Ratings (maximum radial load)

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