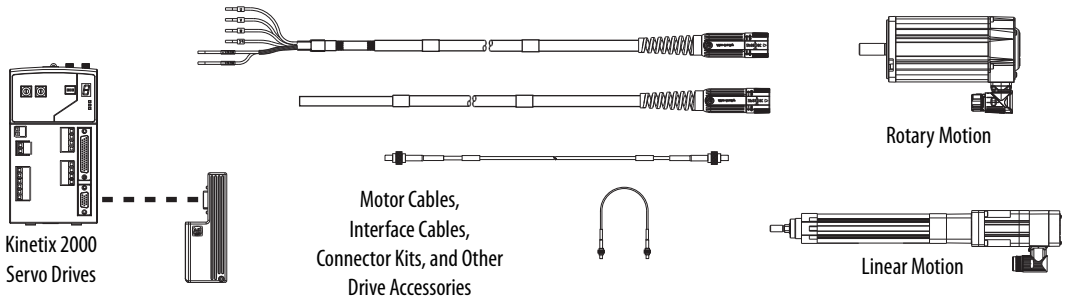
Design Guide

Allen-Bradley

Kinetix 2000 Drive Systems

Catalog Numbers 2093-AC05-MP1, 2093-AC05-MP2, 2093-AC05-MP5, 2093-AMP1, 2093-AMP2, 2093-AMP5, 2093-AM01, 2093-AM02



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Summary of Changes

This publication contains new and updated information as indicated in the following table.

Topic	Page
Moved TL-Series™ Electric Cylinders and Kinetix® 2000 drives performance specifications to TL-Series Electric Cylinders Installation Instructions, publication TLAR-IN001.	–
Updated external auxiliary encoder catalog numbers in Optional Drive Accessories table.	4

Introduction

Use this publication if your application includes the Kinetix 2000 drive family with any of the compatible Allen-Bradley® motors and actuators. For more Kinetix drive and motor information, see the Kinetix Motion Control Selection Guide, publication KNX-SG001 or the Motion Analyzer system sizing and selection tool.

The purpose of this publication is to assist you in identifying the drive system components and accessory items you'll need for your Kinetix 2000 drive/motor or actuator combination. Diagrams in this publication illustrate how many of the common drive accessory items are used in a typical system, but refer to the Kinetix Motion Accessories Technical Data, publication KNX-TD004, for detailed accessory descriptions and specifications.

Also provided are drive/motor or drive/actuator system combinations that include the following:

- Motor/cable combinations table
- Drive and motor/actuator performance specification table
- Torque/speed curves with each motor matched to the drive with optimum performance

Performance specification data and curves reflect nominal system performance of a typical system with motor/drive at rated ambient temperature and line voltage. For additional information on ambients, line conditions, and valid combinations not shown in this publication, refer to Motion Analyzer software.

IMPORTANT These system combinations do not include all possible motor/drive combinations. See the Motion Analyzer system sizing and selection tool to verify compatibility. Access the tool from: https://motionanalyzer.rockwellautomation.com/.

Determine What You Need

For each Kinetix 2000 drive system, you need to know the drive and motor/actuator catalog numbers to determine the motor power and feedback cable catalog numbers. Interface cables, connector kits, and a Bulletin 2093 power rail are also required. Optional equipment includes the 2093 shunt module, slot-filler modules, line interface module, AC line filter, and others. Example diagrams of the required equipment listed on this page are shown on page 4.

Required Drive Modules

Drive Module	Drive Cat. No.	Converter	Inverter	Slot Usage	Quantity
Integrated axis module (IAM) 200V class	2093-AC05-MP1	3 kW, 9.67 A (three-phase) 3 kW, 6.42 A (single-phase)	0.3 kW, 1.41 A	Single wide	1 for each power rail
	2093-AC05-MP2		0.6 kW. 2.83 A		
	2093-AC05-MP5		0.9 kW, 4.24 A		
Axis module (AM) 200V class	2093-AMP1	N/A	0.3 kW, 1.41 A		Up to 7 for each 8-axis power rail
	2093-AMP2		0.6 kW. 2.83 A		
	2093-AMP5		0.9 kW, 4.24 A		
	2093-AM01		1.9 kW, 8.48 A	Double wide	Up to 3 for each 8-axis power rail
	2093-AM02		3.0 kW, 13.4 A		

Refer to the Kinetix Servo Drives Technical Data Specifications, publication KNX-TD003, for detailed descriptions and specifications for the Kinetix 2000 drive family.

Required Drive Accessories

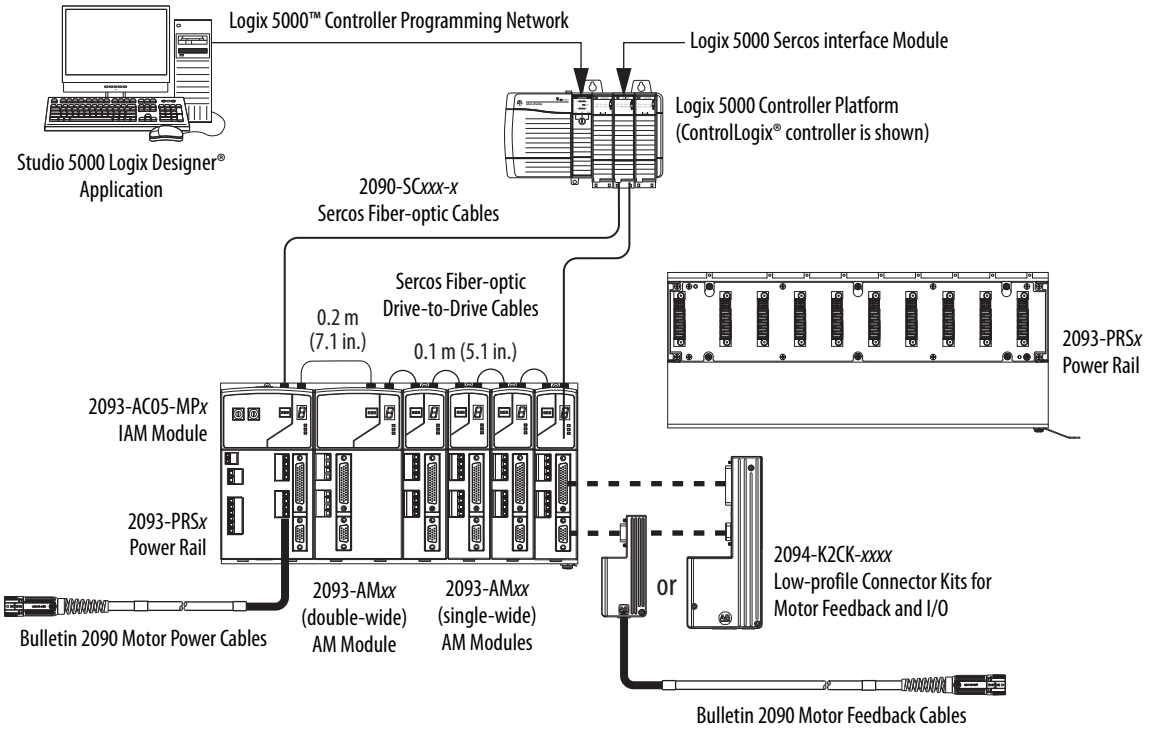
Drive Accessory	Description	Cat. No.
2093 power rail	Backplane and mounting fixture for Bulletin 2093 drive modules: available for 1, 2, 3, 4, 5, 7, and 8-axis systems	2093-PRS*x*
Low-profile connector kits (required for flying-lead cables)	Motor feedback connections (15-pin male, D-sub)	2090-K2CK-D15M
	Motor feedback (15-pin male, D-sub) and I/O (44-pin male, D-sub)	2090-K2CK-COMBO
Backup battery (required to maintain absolute position reference)	Installs in the Bulletin 2090 low-profile connector kits listed above and applies to drive systems that include TLY-A*xxxx*-B rotary motors	2090-DA-BAT2
Sercos fiber-optic cables (required as needed)	Plastic, in-cabinet duty	2090-SCEP*x-x*
	Plastic, on-machine duty	2090-SCNP*x-x*
	Plastic, outdoor, and conduit duty	2090-SCVP*x-x*
	Glass, outdoor, and conduit duty	2090-SCVG*x-x*
Motor power and feedback cables	Refer to the specific drive/motor combination for the motor cables required for your system	

Refer to the Kinetix Motion Accessories Technical Data, publication KNX-TD004, for detailed descriptions and specifications of these servo drive accessories.

Kinetix 2000 System Examples

This system example illustrates how the required drive modules and accessories are used in a typical system.

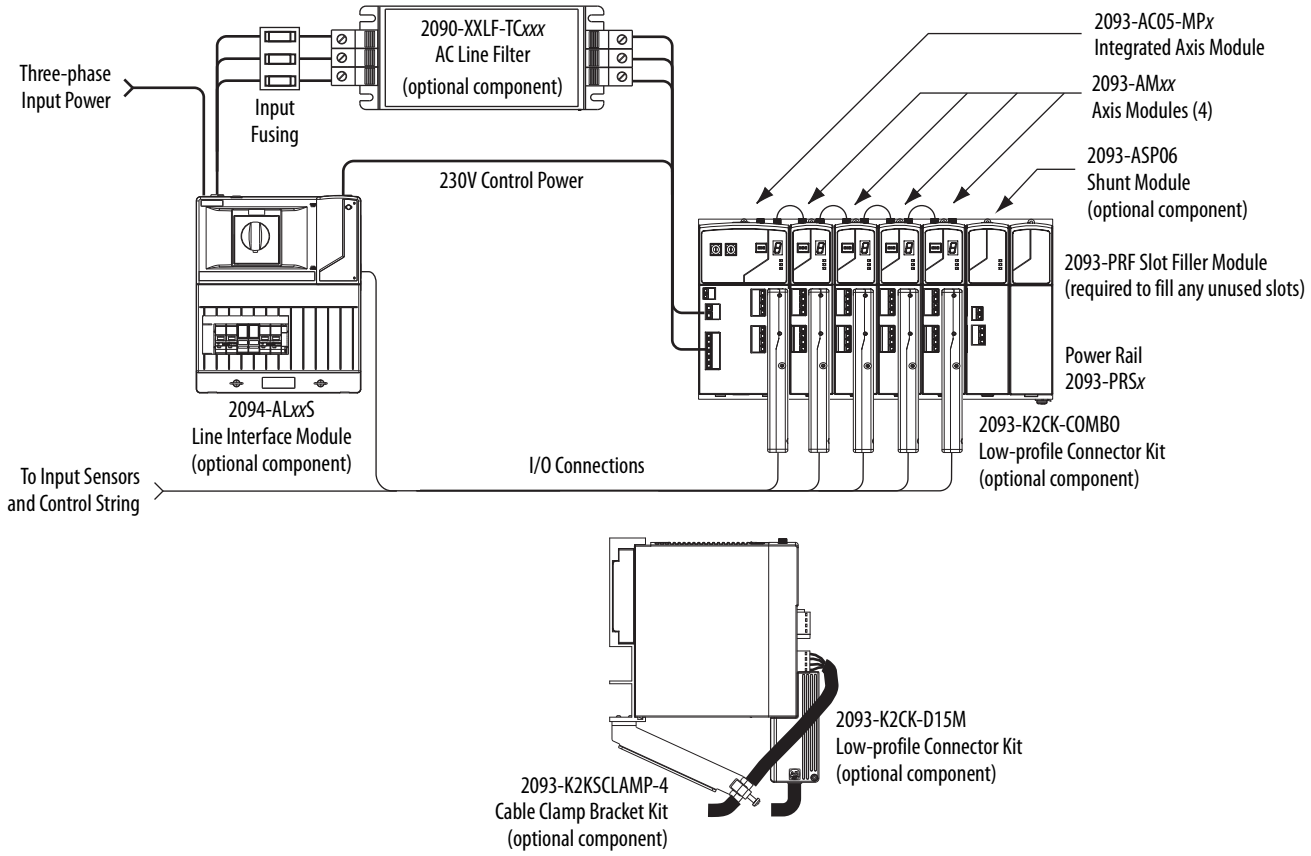
Kinetix 2000 Drive System Example (Sercos interface)



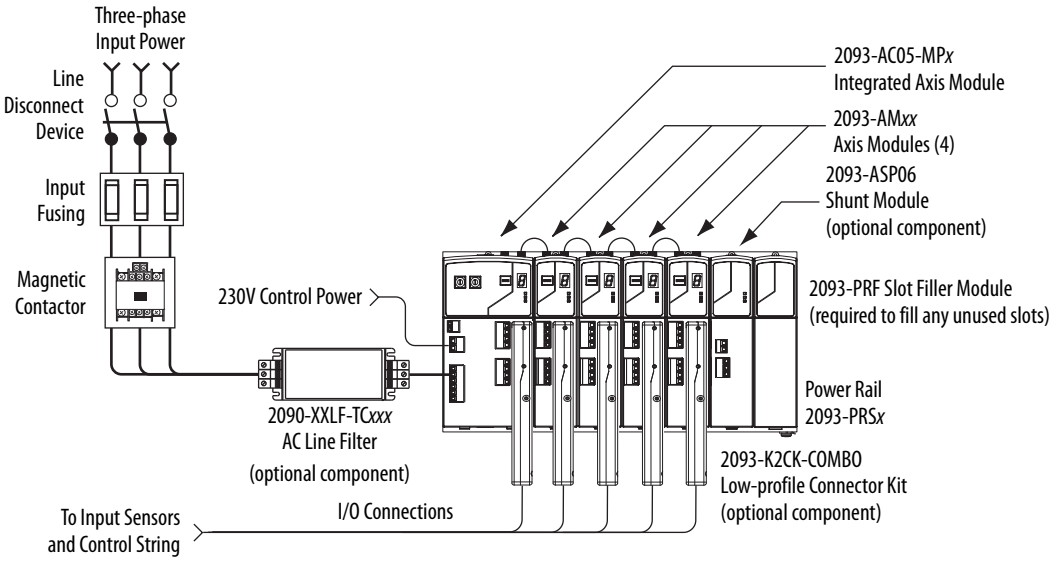
Optional Drive Accessories

Drive Accessory	Description	Cat. No.
2094 shunt module	50 W continuous shunt power (mounts on power rail)	2093-ASP06
2094 slot-filler module	Fills unused slots on the 2094 power rail	2093-PRF
Bulletin 2094 line interface module (LIM)	Replaces many of the common input power devices for your drive system	2094-AL*xx*S
		2094-AL09
		2094-XL75S-C2
2090 AC line filters	250V AC, 50/60 Hz, single-phase, EMC	2090-XXLF-TC116
	520V AC, 50/60 Hz, three-phase, EMC	2090-XXLF-TC316
Bulletin 2090 cable clamp bracket kit	Provides stress relief for motor power cable and electrical path from cable shield to machine ground	2090-K2KSCLAMP-4
External auxiliary encoders	Allen-Bradley sine/cosine and incremental external encoders	Bulletin 842A, 844D, 847H, and 847T

Kinetix 2000 Input Power Example (with LIM module)



Kinetix 2000 Input Power Example (without LIM module)

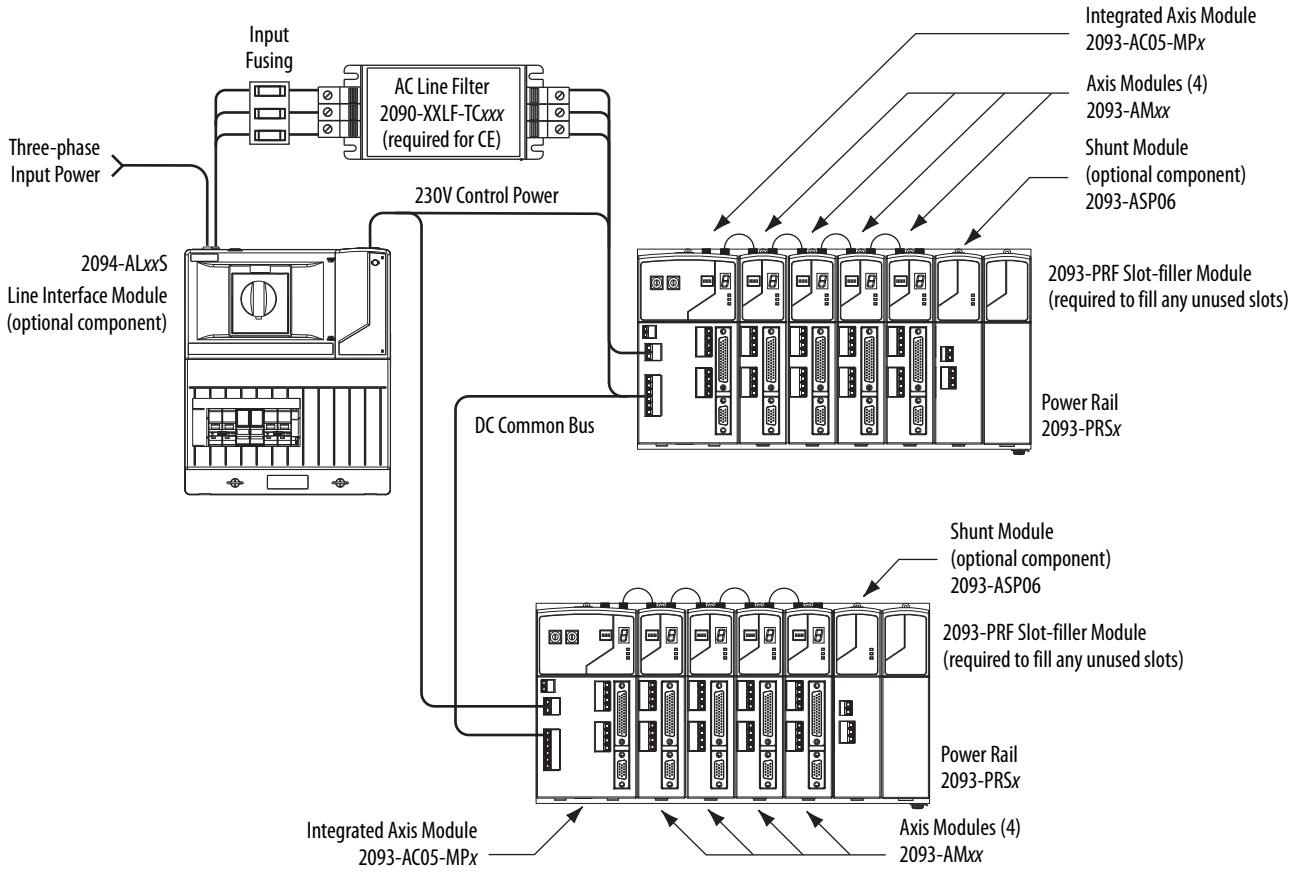


In this example, the leader IAM is connected to the follower IAM via the DC common bus. When planning your panel layout, you must calculate the total bus capacitance of your DC common bus system to make sure that the leader IAM is sized sufficiently to pre-charge the entire system. Refer to the Kinetix 2000 Servo Drive User Manual, publication 2093-UM001, when making this calculation.

IMPORTANT If total bus capacitance of your system exceeds the leader IAM pre-charge rating, the IAM seven-segment status indicator displays error code E90 (pre-charge timeout fault) if input power is applied.

To correct this condition, you must remove axis modules from the power rail to decrease the total bus capacitance.

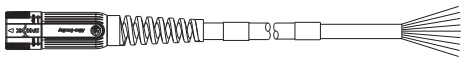
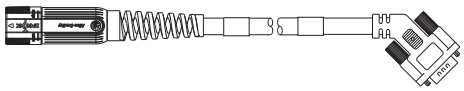
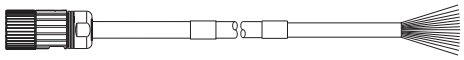
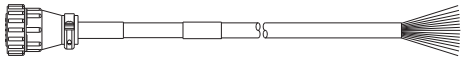
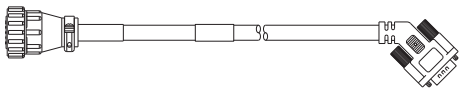
Kinetix 2000 Input Power Example (DC common bus)



Motor-end cable connector kits, for use when building your own cables, and panel-mounted breakout components are also available. Refer to the Kinetix Motion Accessories Technical Data, publication KNX-TD004, for detailed descriptions and specifications of servo drive accessories.

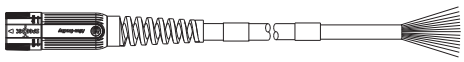
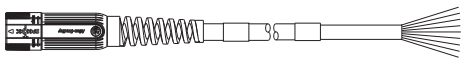
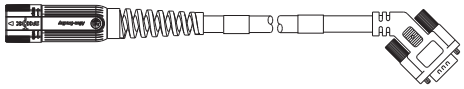
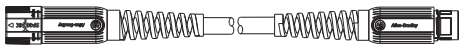
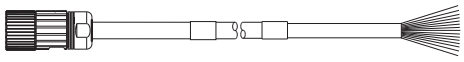
2090-Series Motor/Actuator Cables Overview

Feedback Cable Descriptions (standard, non-flex)

Standard Cable Cat. No.	Description	Cable Configuration Motor/Actuator End — Drive End	Motor/Actuator Connector
2090-CFBM7DF-CEAA*xx*	• Drive-end flying-leads (DF) • High-resolution or resolver applications (CE)		SpeedTec DIN (M7)
2090-CFBM7DD-CEAA*xx*	• Drive-end 15-pin connector (DD) • High-resolution or resolver applications (CE)		
2090-XXNFMF-S*xx*	• Drive-end flying-leads • High-resolution or incremental applications		Threaded DIN (M4)
2090-CFBM4E2-CATR	• Drive-end bayonet (E2), transition (TR) cable (1) • Motor-end threaded DIN (M4) • All feedback types (CA)		
2090-CFBM6DF-CBAA*xx*	• Drive-end flying-leads (DF) • High-resolution, battery backup or Incremental applications (CB)		Circular Plastic (M6)
2090-CFBM6DD-CCAA*xx*	• Drive-end 15-pin connector (DD) • Incremental applications only (CC)		

(1) Threaded DIN connector (motor end) and bayonet connector for 2090-XXNFMP-S*xx* cable.

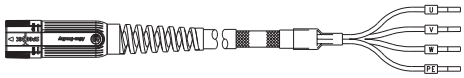
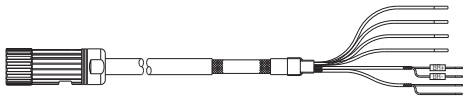
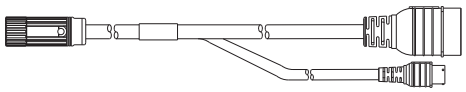
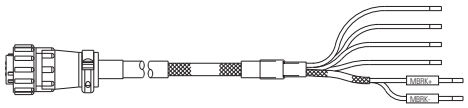
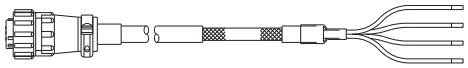
Feedback Cable Descriptions (continuous-flex)

Continuous-flex Cable Cat. No.	Description	Cable Configuration Motor/Actuator End — Drive End	Motor/Actuator Connector
2090-CFBM7DF-CDAF*xx*	• Drive-end flying-leads (DF) • High-resolution or incremental applications (CD)		SpeedTec DIN (M7)
2090-CFBM7DF-CEAF*xx*	• Drive-end flying-leads (DF) • High-resolution or resolver applications (CE)		
2090-CFBM7DD-CEAF*xx*	• Drive-end 15-pin connector (DD) • High-resolution or resolver applications (CE)		
2090-CFBM7E7-CDAF*xx* 2090-CFBM7E7-CEAF*xx*	• Drive-end (male) connector, extension (E7) (1) • Motor-end SpeedTec DIN cable plug (M7)		
2090-CFBM4DF-CDAF*xx*	• Drive-end flying-leads • High-resolution or incremental applications		Threaded DIN (M4)

(1) SpeedTec DIN connector (motor end) and male connector for extending SpeedTec or threaded DIN cable.

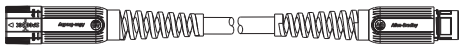
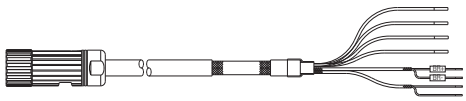
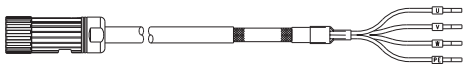
IMPORTANT Feedback cables with the CE designation, for example 2090-CFBM7DF-CEAA*xx*, are intended for high-resolution encoder or resolver applications and have fewer conductors than feedback cables with the CD designation, for example 2090-CFBM7DF-CDAF*xx*, which are intended for high-resolution or incremental encoder applications.

Power/Brake Cable Descriptions (standard, non-flex)

Standard Cable Cat. No.	Description	Cable Configuration Motor/Actuator End — Drive End	Motor/Actuator Connector
2090-CPBM7DF-*xx*AA*xx*	• Drive-end flying-leads (DF) • Power/brake wires (PB)		SpeedTec DIN (M7)
2090-CPWM7DF-*xx*AA*xx*	• Drive-end flying-leads (DF) • Power wires only (PW)		
2090-XXNPMF-*xx*S*xx*	• Drive-end flying-leads • Power/brake wires		Threaded DIN (M4)
2090-CPBM4E2-*xx*TR	• Drive-end bayonet (E2), transition (TR) cable (1) • Motor-end threaded DIN (M4) • Power/brake wires (PB)		
2090-CPWM4E2-*xx*TR	• Drive-end bayonet (E2), transition (TR) cable (1) • Motor-end threaded DIN (M4) • Power wires only (PW)		
2090-CPBM6DF-16AA*xx*	• Drive-end flying-leads (DF) • Power/brake wires (PB)		Circular Plastic (M6)
2090-CPWM6DF-16AA*xx*	• Drive-end flying-leads (DF) • Power wires only (PW)		

(1) Threaded DIN connector (motor end) and bayonet connector for 2090-XXNFMP-S*xx* cable.

Power/Brake Cable Descriptions (continuous-flex)

Continuous-flex Cable Cat. No.	Description	Cable Configuration Motor/Actuator End — Drive End	Motor/Actuator Connector
2090-CPBM7DF-*xx*AF*xx*	• Drive-end flying-leads (DF) • Power/brake wires (PB)		SpeedTec DIN (M7)
2090-CPWM7DF-*xx*AF*xx*	• Drive-end flying-leads (DF) • Power wires only (PW)		
2090-CPBM7E7-*xx*AF*xx*	• Drive-end (male) connector, extension (E7) (1) • Motor-end SpeedTec DIN cable plug (M7)		
2090-CPBM4DF-*xx*AF*xx*	• Drive-end flying-leads (DF) • Power/brake wires (PB)		Threaded DIN (M4)
2090-CPWM4DF-*xx*AF*xx*	• Drive-end flying-leads (DF) • Power wires only (PW)		

(1) SpeedTec DIN connector (motor end) and male connector for extending SpeedTec or threaded DIN cable.

Kinetix 2000 Drives with MP-Series Low Inertia Motors

This section provides system combination information for the Kinetix 2000 (200V class) drives when matched with MP-Series™ (200V class) low-inertia motors. Included are motor power/brake and feedback cable catalog numbers, system performance specifications, and the optimum torque/speed curves.

IMPORTANT The MP-Series low-inertia motors on this page are equipped with DIN connectors (specified by 7 in the catalog number) and are not compatible with cables designed for motors equipped with bayonet connectors (specified by 2 in the catalog number). The motors with bayonet connectors (for example, MPL-A310P-*xx*2*x*AA) are being discontinued and require 2090-XXN*x*MP (bayonet) cables. For help with migration or to select bayonet cables, contact your Rockwell Automation sales representative.

Bulletin MPL Motor Cable Combinations

Motor Cat. No.	Motor Power/Brake Cable	Motor Feedback Cable (1)
MPL-A1510V-*xx*7*x*AA, MPL-A1520U-*xx*7*x*AA, MPL-A1530U-*xx*7*x*AA	2090-CP*x*M7DF-16AA*xx* (standard, non-flex) 2090-CP*x*M7DF-16AF*xx* (continuous-flex)	2090-CFBM7DF-CEAA*xx* or (2) (3) 2090-CFBM7DD-CEAA*xx* (standard, non-flex) 2090-CFBM7DF-CEAF*xx* or 2090-CFBM7DD-CEAF*xx* (continuous-flex) Absolute High-resolution Feedback 2090-XXNFMF-S*xx* (standard, non-flex) (4) 2090-CFBM7DF-CDAF*xx* (continuous-flex) Incremental Feedback
MPL-A210V-*xx*7*x*AA, MPL-A220T-*xx*7*x*AA, MPL-A230P-*xx*7*x*AA		
MPL-A310F-*xx*7*x*AA, MPL-A310P-*xx*7*x*AA MPL-A320H-*xx*7*x*AA, MPL-A320P-*xx*7*x*AA MPL-A330P-*xx*7*x*AA		
MPL-A420P-*xx*7*x*AA, MPL-A430H-*xx*7*x*AA		
MPL-A4530F-*xx*7*x*AA, MPL-A4540C-*xx*7*x*AA		

(1) Use low-profile connector kit (catalog number 2090-K2CK-D15M) with flying-lead cables on the drive end. Refer to Required Drive Accessories on page 3.
(2) Applies to Kinetix 2000 drives and MPL-A3*xxx*-M/S…MPL-A45*xxx*-M/S motors with absolute high-resolution feedback.
(3) Applies to Kinetix 2000 drives and MPL-A15*xxx*-V/E…MPL-A2*xxx*-V/E motors with absolute high-resolution feedback.
(4) Applies to Kinetix 2000 drives and MPL-A15*xxx*-H…MPL-A45*xxx*-H motors with incremental feedback.

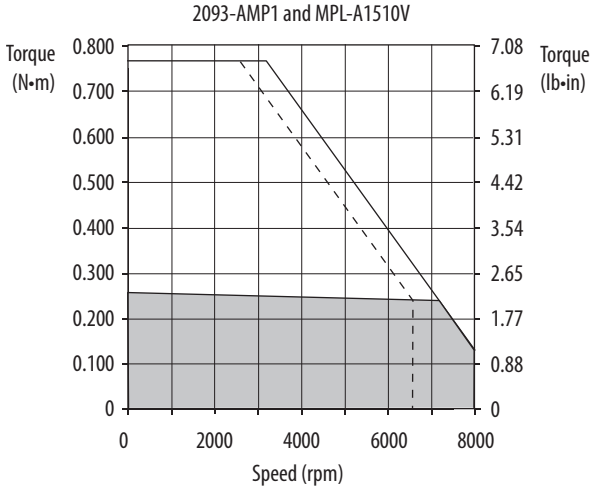
For cable configuration illustrations and feature descriptions, by catalog number, refer to 2090-Series Motor/Actuator Cables Overview beginning on page 7.
Motor-end connector kits, and panel-mounted breakout components (drive end), are available for motor power/brake and feedback cables. Refer to Optional Drive Accessories on page 4.
Cable length *xx* is in meters. Refer to the Kinetix Motion Accessories Technical Data, publication KNX-TD004, for standard cable lengths.

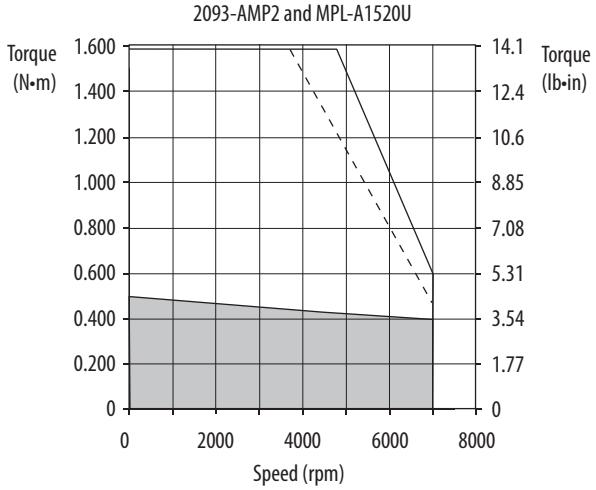
Bulletin MPL Motor Performance Specifications with Kinetix 2000 Drives

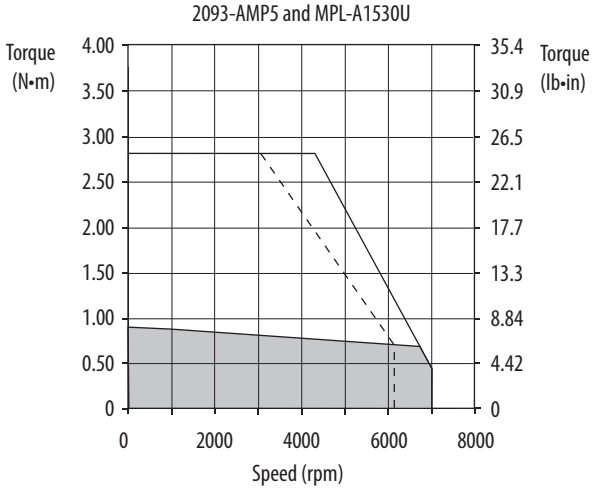
Rotary Motor	Speed, max rpm	System Continuous Stall Current A 0-pk	System Continuous Stall Torque N•m (lb•in)	System Peak Stall Current A 0-pk	System Peak Stall Torque N•m (lb•in)	Motor Rated Output kW	Kinetix 2000 200V-class Drives
MPL-A1510V	8000	1.05	0.26 (2.3)	3.40	0.77 (6.8)	0.16	2093-AMP1
MPL-A1520U	7000	1.80	0.49 (4.3)	6.10	1.58 (13.9)	0.27	2093-AMP2
MPL-A1530U	7000	2.82	0.90 (8.0)	10.1	2.82 (24.9)	0.39	2093-AMP5
MPL-A210V	8000	3.09	0.55 (4.8)	10.2	1.52 (13.4)	0.37	2093-AMP5
MPL-A220T	6000	4.54	1.61 (14.2)	15.5	4.74 (41.9)	0.62	2093-AM01
MPL-A230P	5000	5.40	2.10 (18.6)	23.0	8.2 (73.0)	0.86	2093-AM01
MPL-A310F	3000	3.24	1.58 (14.0)	9.30	3.61 (31.9)	0.46	2093-AMP5
MPL-A310P	5000	4.91	1.58 (14.0)	14.0	3.61 (31.9)	0.73	2093-AM01
MPL-A320H	3500	6.10	3.05 (27.0)	19.3	7.91 (70.0)	1.0	2093-AM01
MPL-A320P	5000	9.00	3.05 (27.0)	29.5	7.91 (70.0)	1.3	2093-AM02
MPL-A330P	5000	12.0	4.18 (37.0)	38.0	11.1 (98.2)	1.8	2093-AM02
MPL-A420P	5000	12.9	4.79 (42.3)	46.0	12.3 (109)	2.0	2093-AM02
MPL-A430H	3500	12.2	6.21 (55.0)	45.0	18.7 (165)	1.8	2093-AM02
MPL-A4530F	2800	13.40	8.36 (74.0)	42.0	19.7 (174)	1.9	2093-AM02
MPL-A4540C	1500	9.55	10.30 (91.1)	29.0	27.1 (239)	1.5	2093-AM02

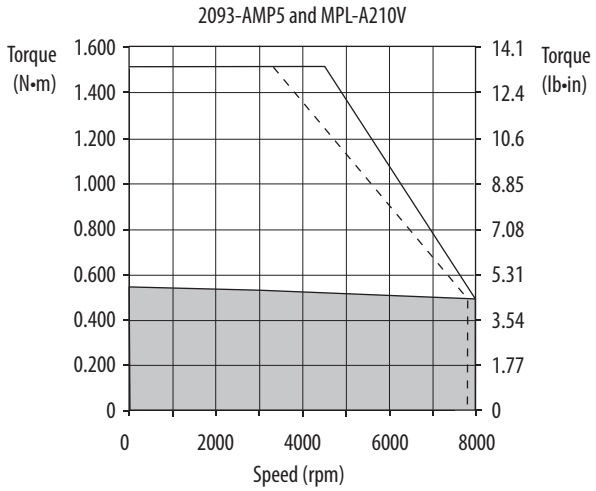
Performance specification data and curves reflect nominal system performance of a typical system with motor at 40 °C (104 °F) and drive at 50 °C (122 °F) ambient and rated line voltage. For additional information on ambient and line conditions, refer to Motion Analyzer software, version 4.7 or later.

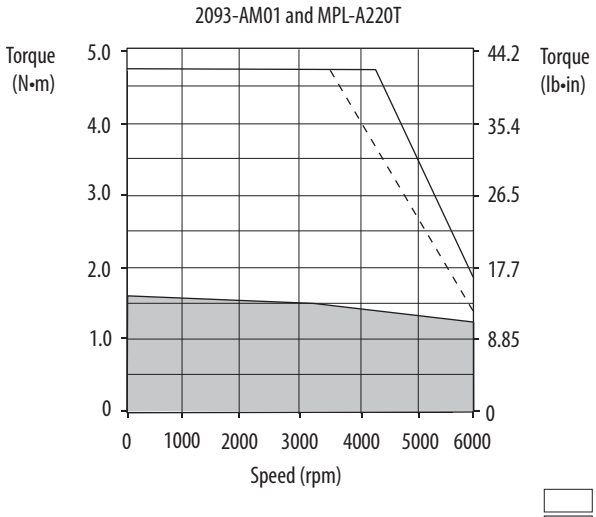
Kinetix 2000 Drives with MP-Series Low Inertia Motor Curves

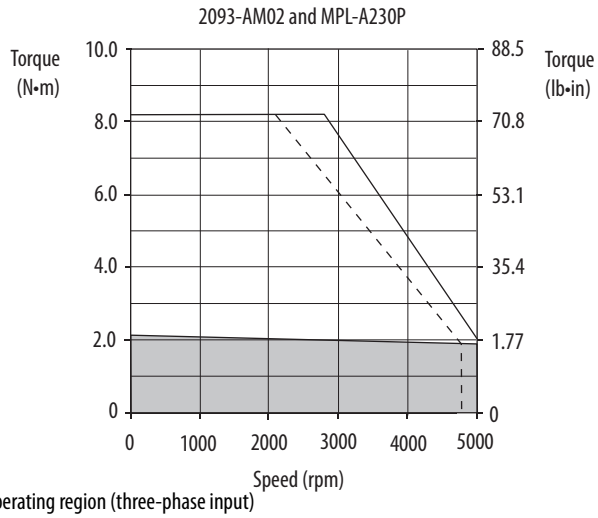






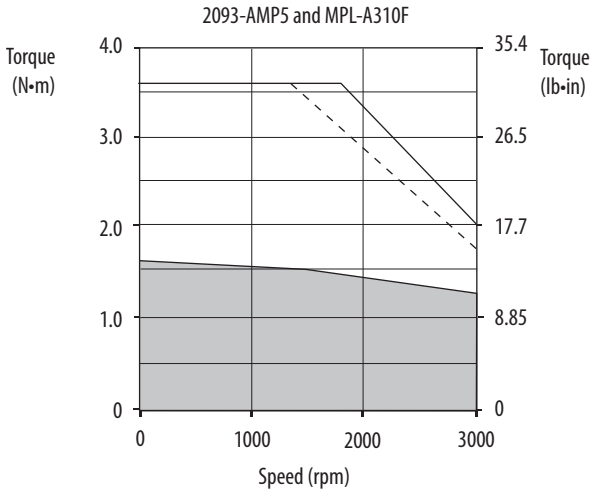


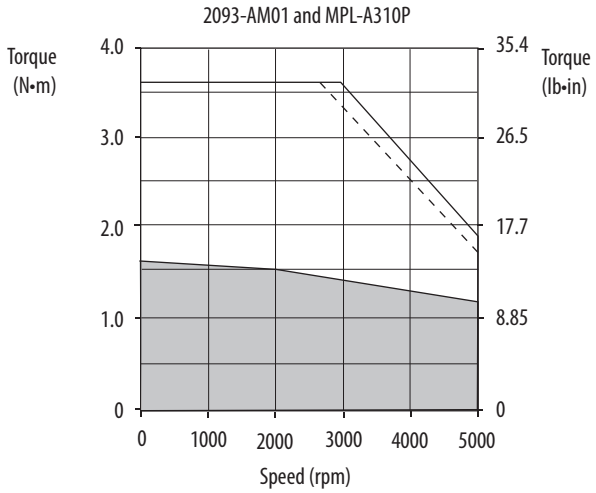


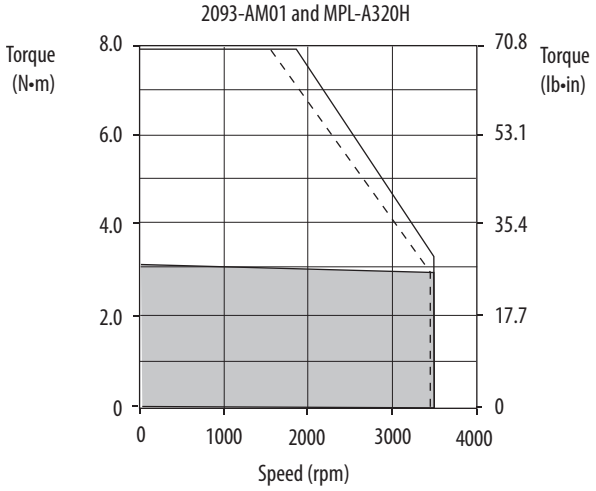


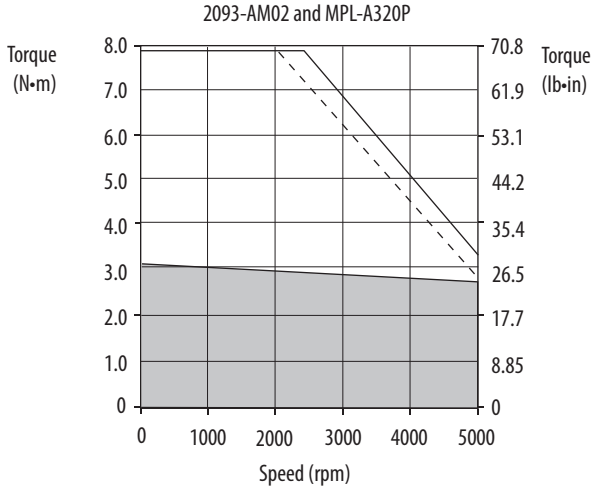
= Intermittent operating region (three-phase input)
= Continuous operating region
= Drive operation (single-phase input)

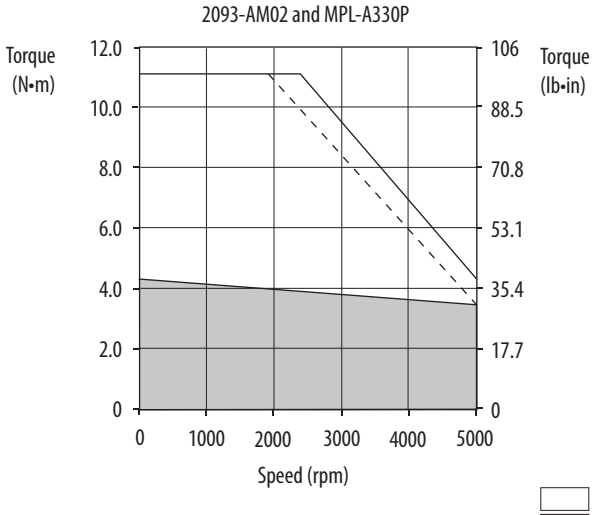
Kinetix 2000 Drives with MP-Series Low Inertia Motor Curves (continued)

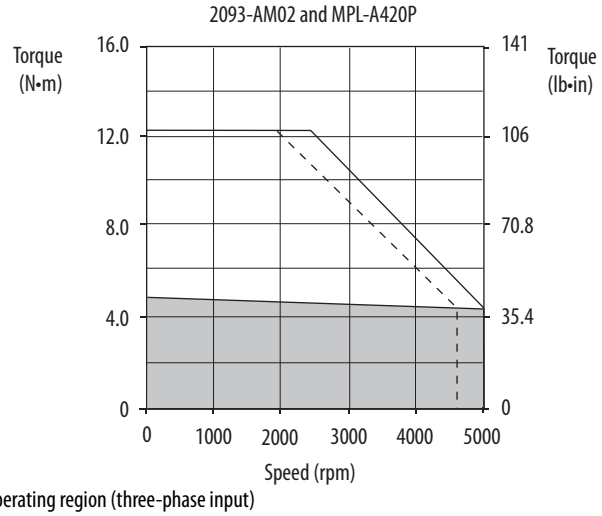






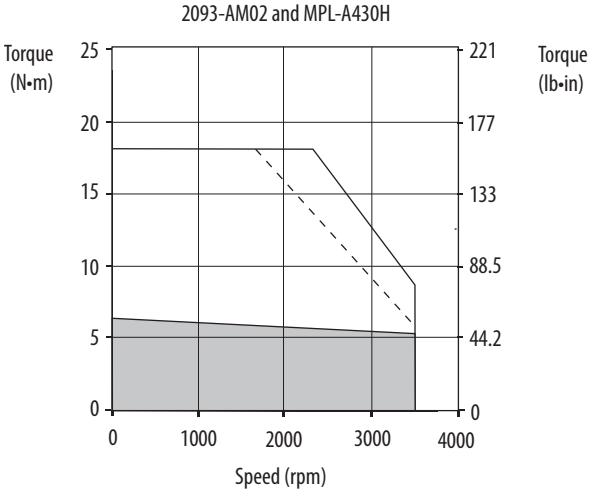


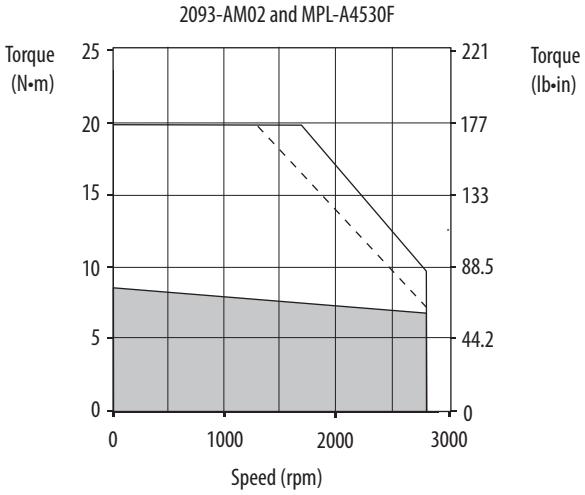


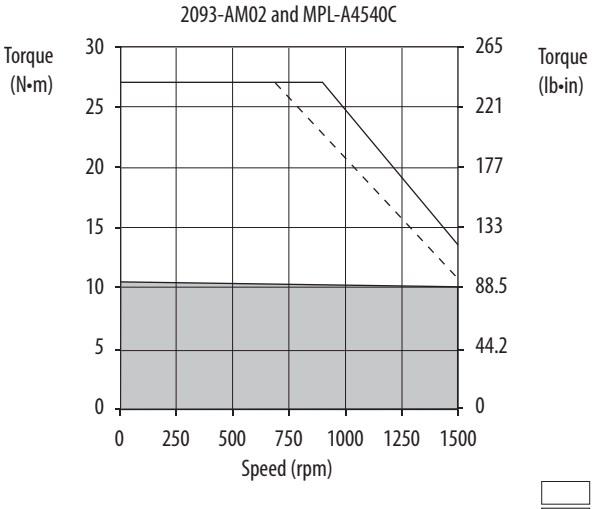


= Intermittent operating region (three-phase input)
= Continuous operating region
= Drive operation (single-phase input)

Kinetix 2000 Drives with MP-Series Low Inertia Motor Curves (continued)







= Intermittent operating region (three-phase input)
= Continuous operating region
= Drive operation (single-phase input)

Kinetix 2000 Drives with MP-Series Medium Inertia Motors

This section provides system combination information for the Kinetix 2000 (200V class) drives when matched with MP-Series medium-inertia motors. Included are motor power/brake and feedback cable catalog numbers, system performance specifications, and the optimum torque/speed curves.

Bulletin MPM Motor Cable Combinations

Motor Cat. No. (200V class)	Motor Power/Brake Cable	Motor Feedback Cable (1)
MPM-A1151M, MPM-A1152F	2090-CP*x*M7DF-16AA*xx* (standard, non-flex) 2090-CP*x*M7DF-16AF*xx* (continuous-flex)	2090-CFBM7DF-CEAA*xx* or 2090-CFBM7DD-CEAA*xx* (standard, non-flex) 2090-CFBM7DF-CEAF*xx* or 2090-CFBM7DD-CEAF*xx* (continuous-flex) Absolute High-resolution Feedback

(1) Use low-profile connector kit (catalog number 2090-K2CK-D15M) with flying-lead cables on the drive end. Refer to Required Drive Accessories on page 3.

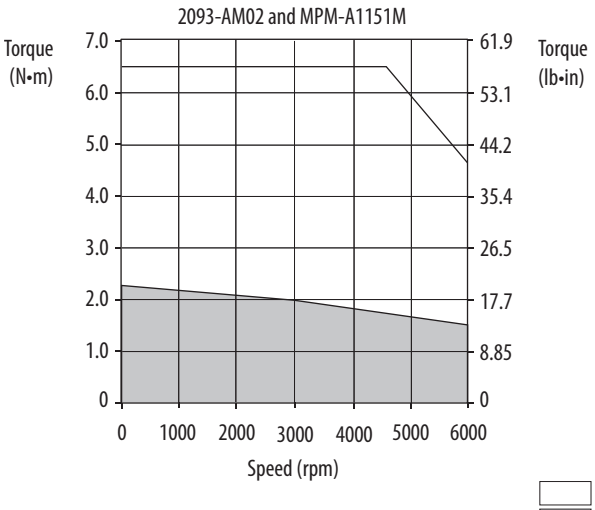
For cable configuration illustrations and feature descriptions, by catalog number, refer to 2090-Series Motor/Actuator Cables Overview beginning on page 7.
Motor-end connector kits, and panel-mounted breakout components (drive end), are available for motor power/brake and feedback cables. Refer to Optional Drive Accessories on page 4.
Cable length *xx* is in meters. Refer to the Kinetix Motion Accessories Technical Data, publication KNX-TD004, for standard cable lengths.

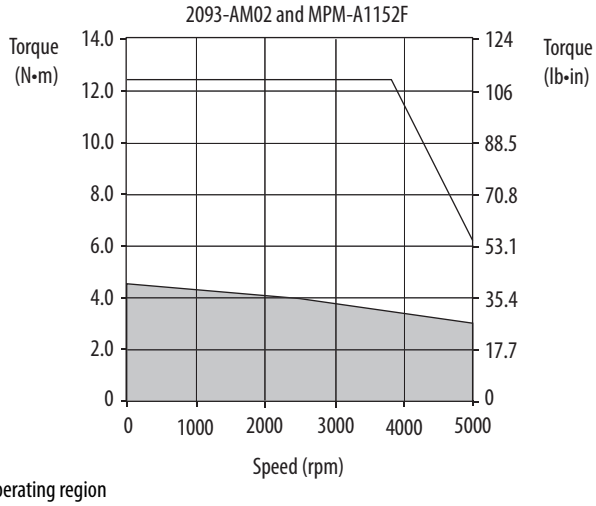
Bulletin MPM Motor Performance Specifications with Kinetix 2000 Drives

Rotary Motor	Speed, base rpm	Speed, max rpm	System Continuous Stall Current A 0-pk	System Continuous Stall Torque N•m (lb•in)	System Peak Stall Current A 0-pk	System Peak Stall Torque N•m (lb•in)	Motor Rated Output kW	Kinetix 2000 200V-class Drives
MPM-A1151M	4500	6000	7.65	2.3 (20.3)	30.5	6.6 (58.4)	0.90	2093-AM02
MPM-A1152F	3000	5000	11.93	4.7 (41.6)	40.3	12.4 (110)	1.40	2093-AM02

Performance specification data and curves reflect nominal system performance of a typical system with motor at 40 °C (104 °F) and drive at 50 °C (122 °F) ambient and rated line voltage. For additional information on ambient and line conditions, refer to Motion Analyzer software, version 4.7 or later.

Kinetix 2000 Drives with MP-Series Medium Inertia Motor Curves





= Intermittent operating region
= Continuous operating region

Kinetix 2000 Drives with MP-Series Food Grade Motors

This section provides system combination information for the Kinetix 2000 (200V class) drives when matched with MP-Series (200V class) food-grade motors. Included are motor power/brake and feedback cable catalog numbers, system performance specifications, and the optimum torque/speed curves.

Bulletin MPF Motor Cable Combinations

Motor Cat. No.	Motor Power/Brake Cable	Motor Feedback Cable (1)
MPF-A310P, MPF-320H, MPF-A320P, MPF-A330P	2090-CP*x*M7DF-16AA*xx* (standard, non-flex) 2090-CP*x*M7DF-16AF*xx* (continuous-flex)	2090-CFBM7DF-CEAA*xx* or 2090-CFBM7DD-CEAA*xx* (standard, non-flex) 2090-CFBM7DF-CEAF*xx* or 2090-CFBM7DD-CEAF*xx* (continuous-flex) Absolute High-resolution Feedback
MPF-A430H		

(1) Use low-profile connector kit (catalog number 2090-K2CK-D15M) with flying-lead cables on the drive end. Refer to Required Drive Accessories on page 3.

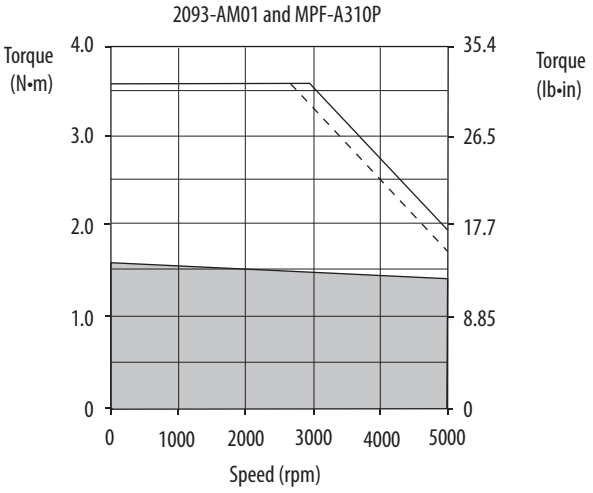
For cable configuration illustrations and feature descriptions, by catalog number, refer to 2090-Series Motor/Actuator Cables Overview beginning on page 7.
Motor-end connector kits, and panel-mounted breakout components (drive end), are available for motor power/brake and feedback cables. Refer to Optional Drive Accessories on page 4.
Cable length *xx* is in meters. Refer to the Kinetix Motion Accessories Technical Data, publication KNX-TD004, for standard cable lengths.

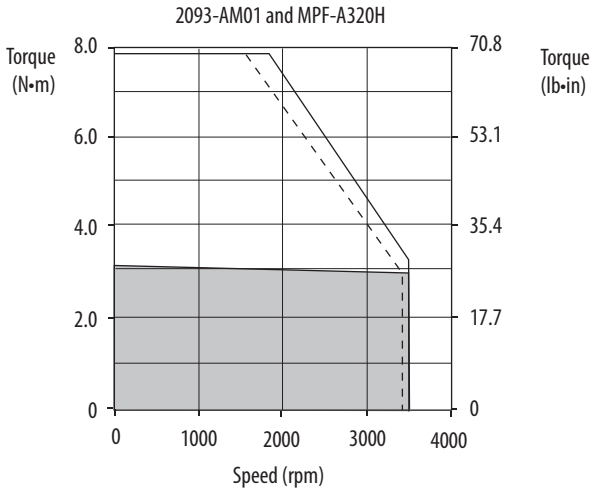
Bulletin MPF Motor Performance Specifications with Kinetix 2000 Drives

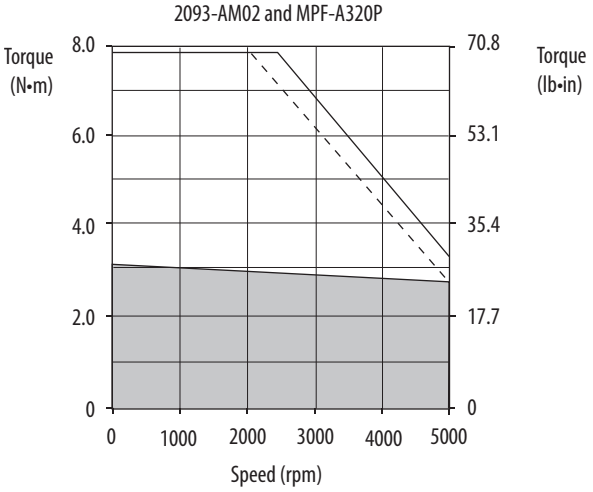
Rotary Motor	Speed, max rpm	System Continuous Stall Current A 0-pk	System Continuous Stall Torque N•m (lb•in)	System Peak Stall Current A 0-pk	System Peak Stall Torque N•m (lb•in)	Motor Rated Output kW	Kinetix 2000 200V-class Drives
MPF-A310P	5000	4.91	1.58 (14.0)	14.0	3.61 (31.9)	0.73	2093-AM01
MPF-A320H	3500	6.10	3.05 (27.0)	19.3	7.91 (70.0)	1.0	2093-AM01
MPF-A320P	5000	9.00	3.05 (27.0)	29.5	7.91 (70.0)	1.3	2093-AM02
MPF-A330P	5000	12.0	4.18 (37.0)	38.0	10.32 (91.2)	1.6	2093-AM02
MPF-A430H	3500	12.2	6.21 (55.0)	45.0	18.0 (159)	1.8	2093-AM02

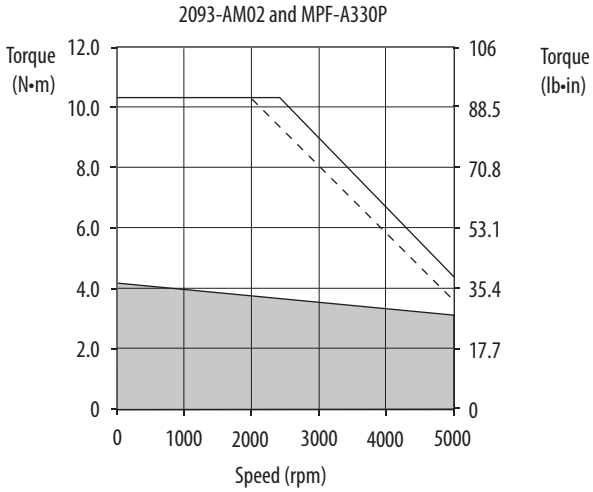
Performance specification data and curves reflect nominal system performance of a typical system with motor at 40 °C (104 °F) and drive at 50 °C (122 °F) ambient and rated line voltage. For additional information on ambient and line conditions, refer to Motion Analyzer software, version 4.7 or later.

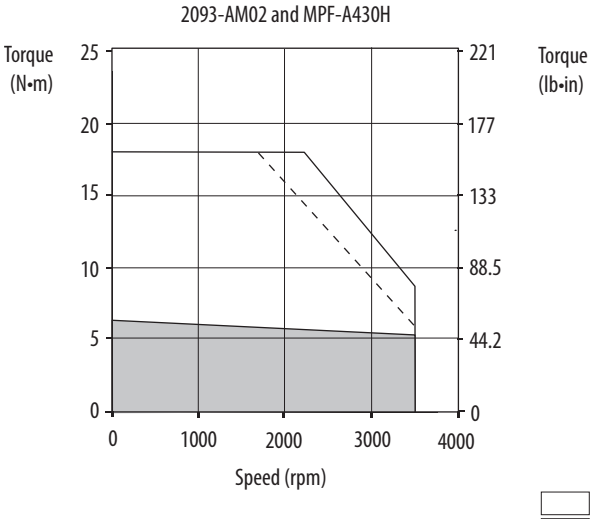
Kinetix 2000 Drives/MP-Series Food Grade Motor Curves











= Intermittent operating region (three-phase input)
= Continuous operating region
= Drive operation (single-phase input)

Kinetix 2000 Drives with MP-Series Stainless Steel Motors

This section provides system combination information for the Kinetix 2000 (200V class) drives when matched with MP-Series (200V class) stainless-steel motors. Included are motor power/brake and feedback cable catalog numbers, system performance specifications, and the optimum torque/speed curves.

Bulletin MPS Motor Cable Combinations

Motor Cat. No. (200V class)	Motor Power/Brake Cable	Motor Feedback Cable (1)
MPS-A330P	2090-XXNPMF-16S*xx* (standard, non-flex) 2090-CP*x*M4DF-16AF*xx* (continuous-flex)	2090-XXNFMF-S*xx* (standard, non-flex) 2090-CFBM4DF-CDAF*xx* (continuous-flex) Absolute High-resolution Feedback

(1) Use low-profile connector kit (catalog number 2090-K2CK-D15M) on the drive end. Refer to Required Drive Accessories on page 3.

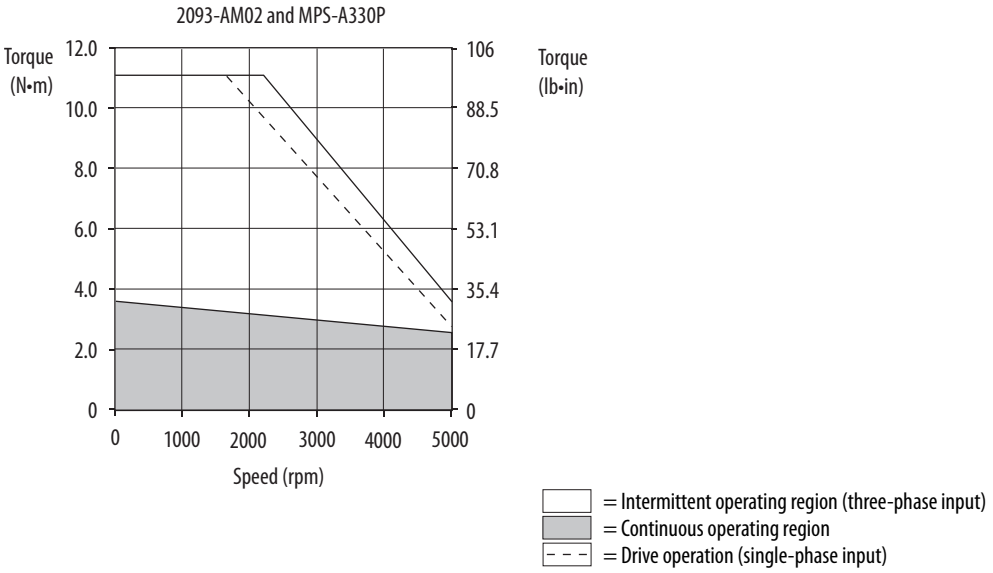
For cable configuration illustrations and feature descriptions, by catalog number, refer to 2090-Series Motor/Actuator Cables Overview beginning on page 7.
Motor-end connector kits, and panel-mounted breakout components (drive end), are available for motor power/brake and feedback cables. Refer to Optional Drive Accessories on page 4.
Cable length *xx* is in meters. Refer to the Kinetix Motion Accessories Technical Data, publication KNX-TD004, for standard cable lengths.

Bulletin MPS Motor Performance Specifications with Kinetix 2000 Drives

Rotary Motor	Speed, max rpm	System Continuous Stall Current A 0-pk	System Continuous Stall Torque N•m (lb•in)	System Peak Stall Current A 0-pk	System Peak Stall Torque N•m (lb•in)	Motor Rated Output kW	Kinetix 2000 200V-class Drives
MPS-A330P	5000	9.80	3.60 (32.0)	38.0	11.10 (98)	1.3	2093-AM02

Performance specification data and curves reflect nominal system performance of a typical system with motor at 40 °C (104 °F) and drive at 50 °C (122 °F) ambient and rated line voltage. For additional information on ambient and line conditions, refer to Motion Analyzer software, version 4.7 or later.

Kinetix 2000 Drives with MP-Series Stainless Steel Motor Curves



Kinetix 2000 Drives with TL-Series Low Inertia Motors

This section provides system combination information for the Kinetix 2000 (200V class) drives when matched with TL-Series (200V class, Bulletin TLY) low-inertia motors. Compatible TL-Series motors are equipped with absolute high-resolution or incremental encoder feedback. Included are motor power/brake and feedback cable catalog numbers, system performance specifications, and the optimum torque/speed curves.

Bulletin TLY Motor Cable Combinations

Motor Cat. No.	Motor Power/Brake Cable	Motor Feedback Cable (1)
TLY-A110*x*, TLY-A120*x*, TLY-A130*x*	2090-CPWM6DF-16AA*xx* (standard, non-flex) (without brake) 2090-CPBM6DF-16AA*xx* (standard, non-flex) (with brake)	2090-CFBM6DF-CBAA*xx* or 2090-CFBM6DD-CCAA*xx* (standard, non-flex) Absolute High-resolution or Incremental Feedback
TLY-A220*x*, TLY-A230*x*		
TLY-A2530P, TLY-A2540P		
TLY-A310M		

(1) For TLY-A*xxxx*-H motors with incremental encoder feedback, use 2090-CFBM6DF-CBAA*xx* flying-lead cables and 2090-K2CK-D15M connector kit (battery not required) or use 2090-CFBM6DD-CCAA*xx* (15-pin connector) cable on the drive end. Refer to Required Drive Accessories on page 3.
TLY-A*xxxx*-B motors with 17-bit high resolution encoder feedback require the 2090-CFBM6DF-CBAA*xx* flying-lead feedback cable and 2090-K2CK-D15M connector kit with 2090-DA-BAT2 battery.

TL-Series (Bulletin TLY) motors are characterized as having 1000 mm (39.4 in.) cable extensions with circular plastic connectors and TLY-A*xxx* catalog numbers.
For cable configuration illustrations and feature descriptions, by catalog number, refer to 2090-Series Motor/Actuator Cables Overview beginning on page 7.
Motor-end connector kits, and panel-mounted breakout components (drive end), are available for motor power/brake and feedback cables. Refer to Optional Drive Accessories on page 4.
Cable length *xx* is in meters. Refer to the Kinetix Motion Accessories Technical Data, publication KNX-TD004, for standard cable lengths.

Bulletin TLY (non-brake) Motor Performance Specifications with Kinetix 2000 Drives

Rotary Motor	Speed, max rpm	System Continuous Stall Current A 0-pk	System Continuous Stall Torque N•m (lb•in)	System Peak Stall Current A 0-pk	System Peak Torque N•m (lb•in)	Motor Rated Output kW	Kinetix 2000 200V-class Drives
TLY-A110*x*	6000 (1)	0.55	0.096 (0.85)	1.50	0.20 (1.75)	0.041	2093-AMP1
TLY-A120*x*		1.03	0.181 (1.60)	2.50	0.36 (3.20)	0.086	2093-AMP1
TLY-A130*x*		1.85	0.325 (2.88)	4.90	0.76 (6.70)	0.14	2093-AMP2
TLY-A220*x*		3.50	0.836 (7.40)	7.90	1.48 (13.1)	0.35	2093-AMP5
TLY-A230*x*		5.50	1.30 (11.5)	15.5	3.05 (27.0)	0.44	2093-AM01
TLY-A2530P	5000	10.0	2.60 (23.0)	21.0	5.20 (46.0)	0.69	2093-AM02
TLY-A2540P		10.0	2.94 (26.0)	24.8	7.10 (63.0)	0.86	2093-AM02
TLY-A310M	4500	10.0	3.61 (31.9)	30.0	9.0 (79.6)	0.95	2093-AM02

(1) Applies to TLY-A*xxx*T-H motors with incremental feedback. The TLY-A*xxx*P-B motors with absolute high-resolution encoders are rated at 5000 rpm.

Performance specification data and curves reflect nominal system performance of a typical system with motor at 40 °C (104 °F) and drive at 50 °C (122 °F) ambient and rated line voltage. For additional information on ambient and line conditions, refer to Motion Analyzer software, version 4.7 or later.

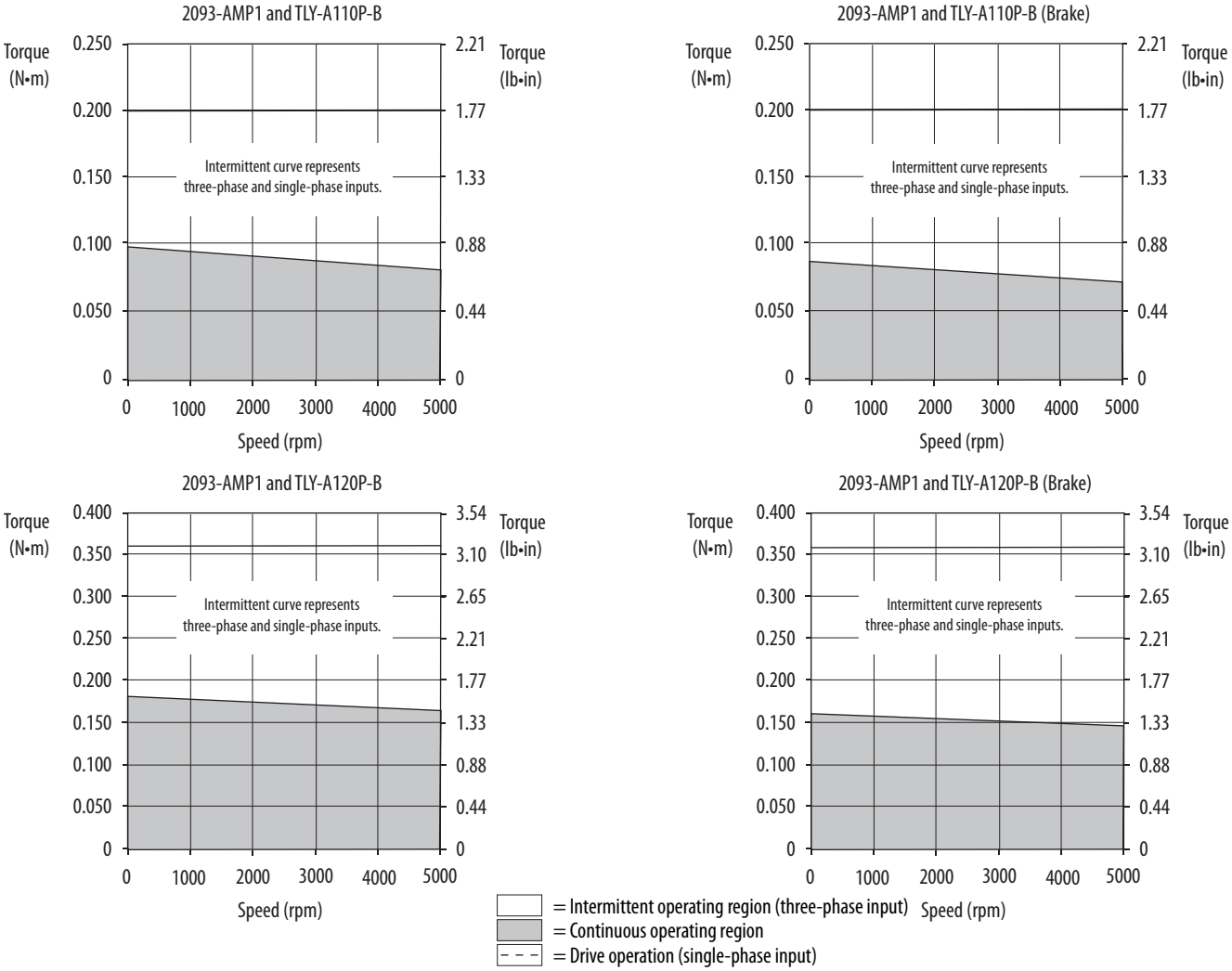
Bulletin TLY (brake) Motor Performance Specifications with Kinetix 2000 Drives

Rotary Motor	Speed, max rpm	System Continuous Stall Current A 0-pk	System Continuous Stall Torque N•m (lb•in)	System Peak Stall Current A 0-pk	System Peak Torque N•m (lb•in)	Motor Rated Output kW	Kinetix 2000 200V-class Drives
TLY-A110*x*	6000 (1)	0.50	0.086 (0.76)	1.50	0.20 (1.75)	0.037	2093-AMP1
TLY-A120*x*		0.93	0.163 (1.44)	2.50	0.36 (3.20)	0.077	2093-AMP1
TLY-A130*x*		1.67	0.293 (2.59)	4.90	0.76 (6.70)	0.13	2093-AMP2
TLY-A220*x*		3.15	0.757 (6.70)	7.90	1.48 (13.1)	0.24	2093-AMP5
TLY-A230*x*		4.95	1.16 (10.3)	15.5	3.05 (27.0)	0.32	2093-AM01
TLY-A2530P	5000	10.0	2.60 (23.0)	21.0	5.20 (46.0)	0.55	2093-AM02
TLY-A2540P		10.0	2.94 (26.0)	24.8	7.10 (63.0)	0.66	2093-AM02
TLY-A310M	4500	10.0	3.61 (31.9)	30.0	9.0 (79.6)	0.90	2093-AM02

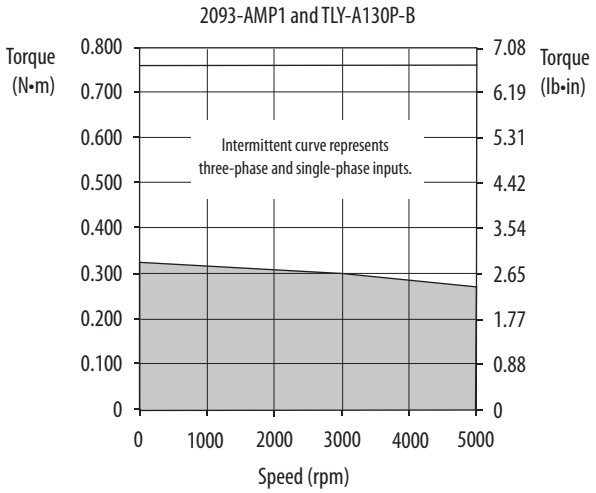
(1) Applies to TLY-A*xxx*T-H motors with incremental feedback. The TLY-A*xxx*P-B motors with absolute high-resolution encoders are rated at 5000 rpm.

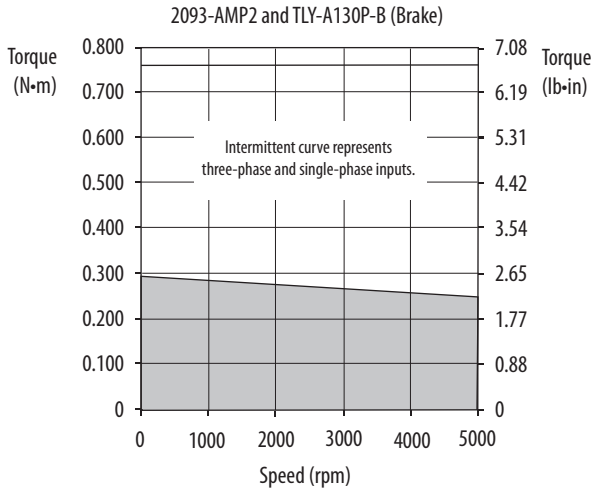
Performance specification data and curves reflect nominal system performance of a typical system with motor at 40 °C (104 °F) and drive at 50 °C (122 °F) ambient and rated line voltage. For additional information on ambient and line conditions, refer to Motion Analyzer software, version 4.7 or later.

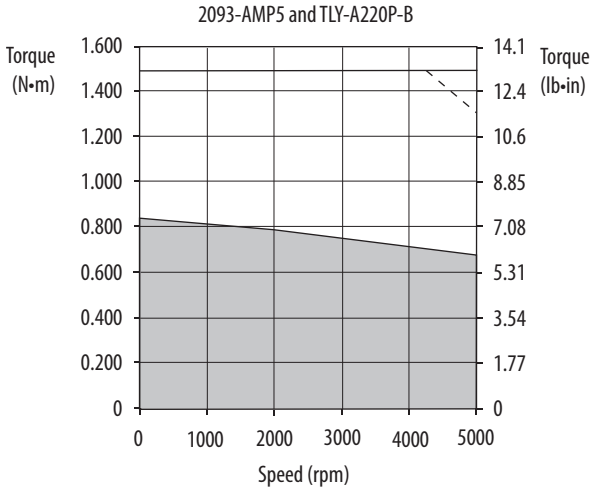
Kinetix 2000 Drives/TLY-A*xxx*P-B (absolute high-resolution) Motor Curves

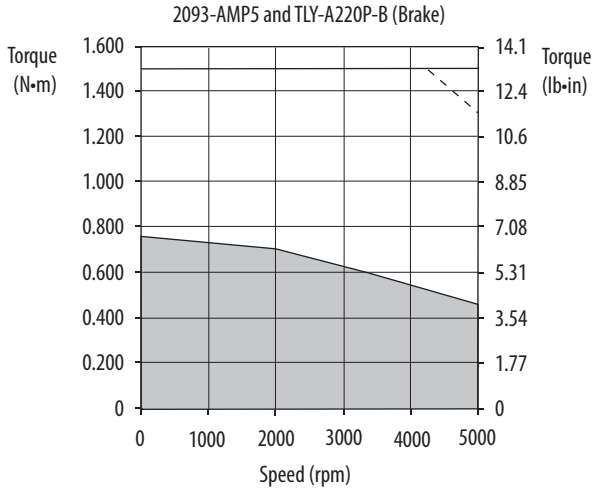


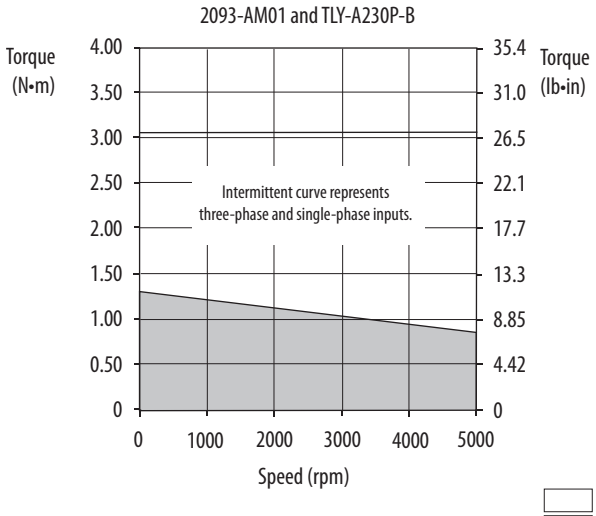
Kinetix 2000 Drives/TLY-A*xxx*P-B (absolute high-resolution) Motor Curves (continued)

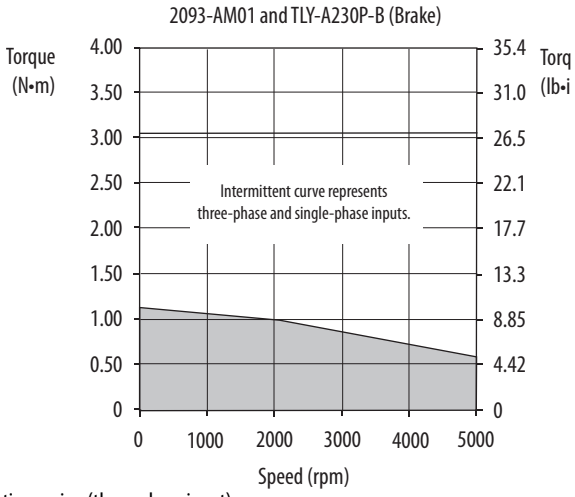






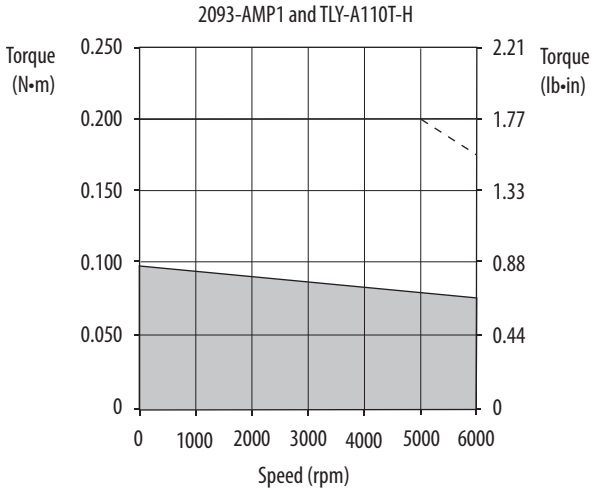


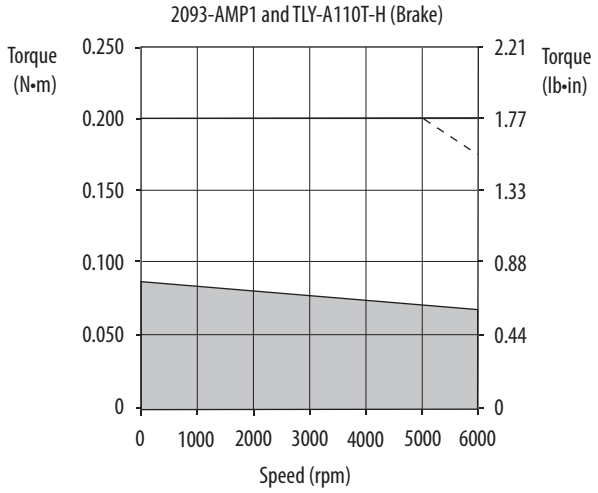


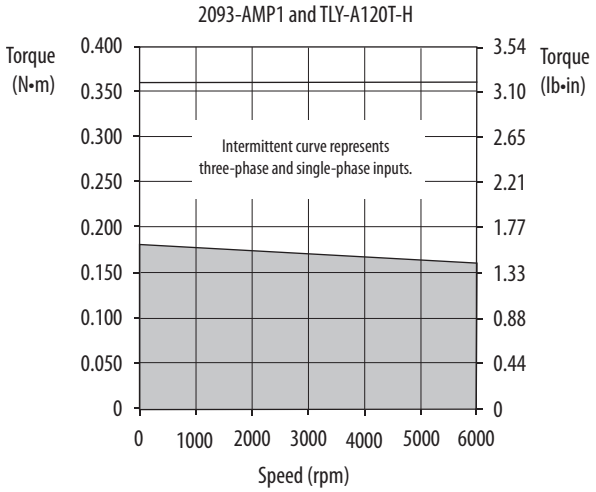


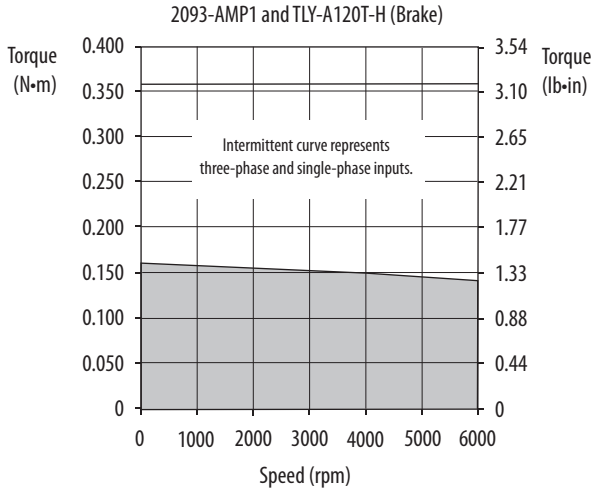
= Intermittent operating region (three-phase input)
= Continuous operating region
= Drive operation (single-phase input)

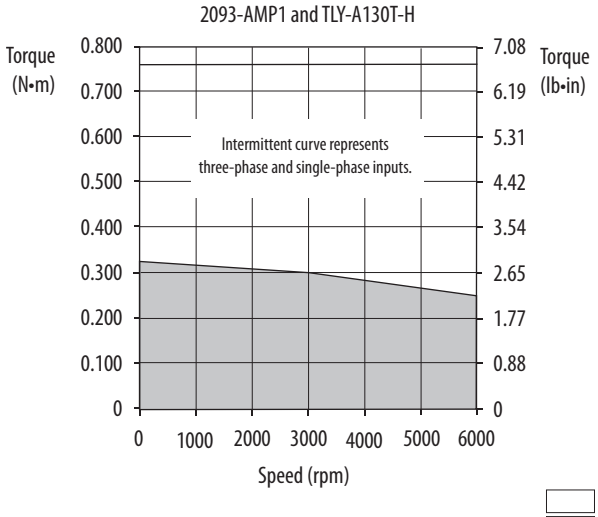
Kinetix 2000 Drives/TLY-A*xxx*T-H (incremental) Motor Curves

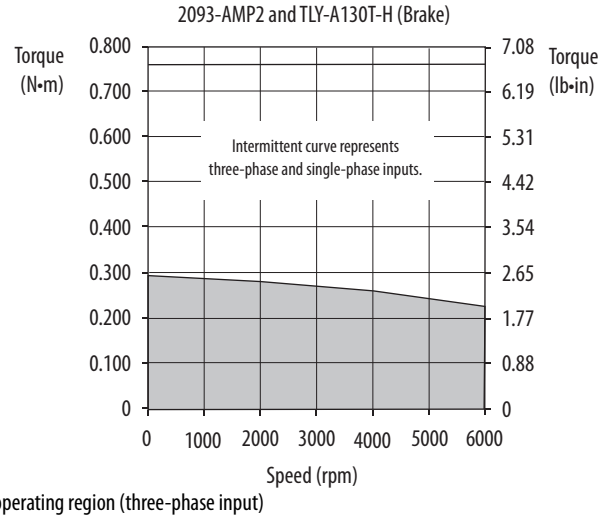






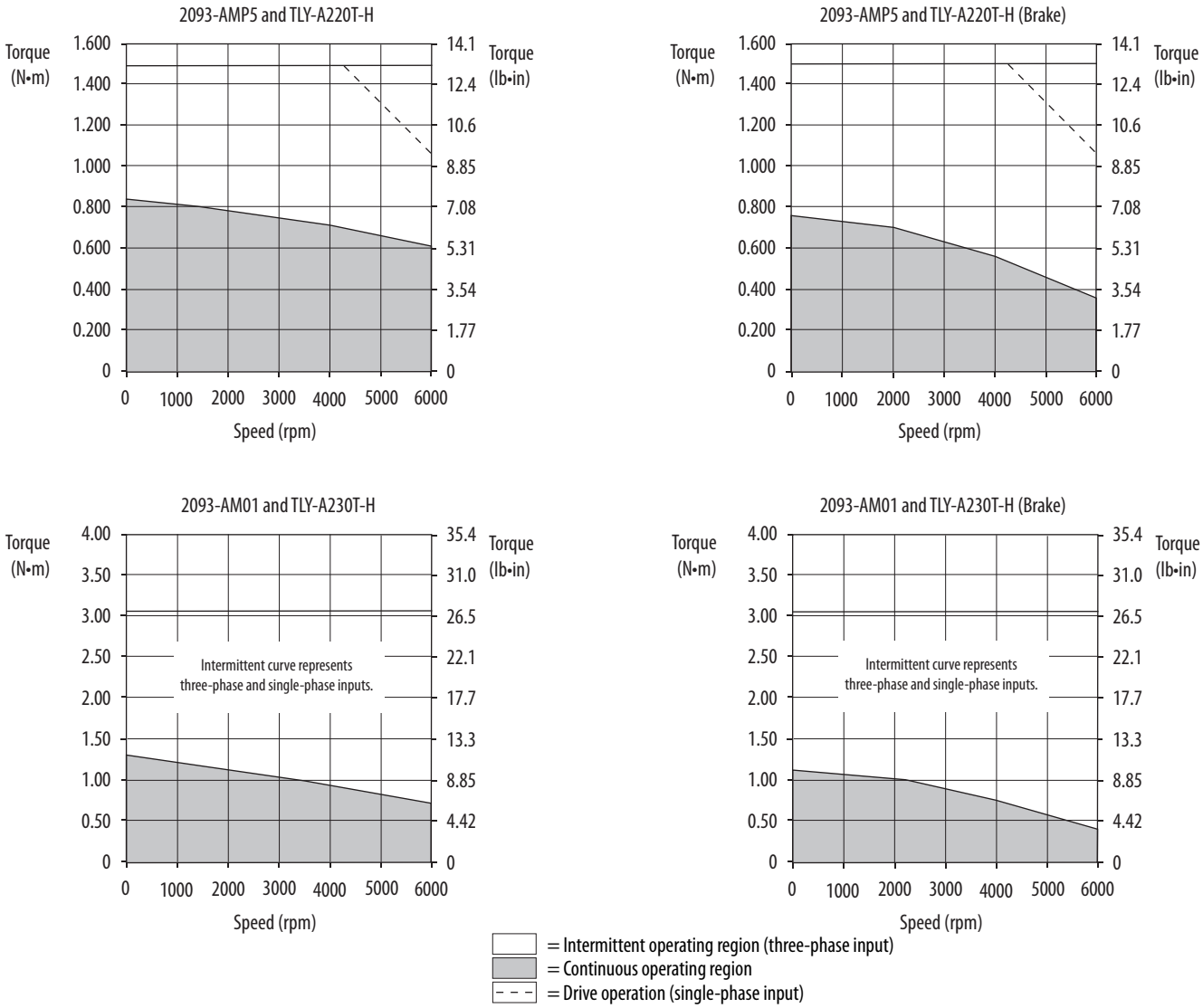




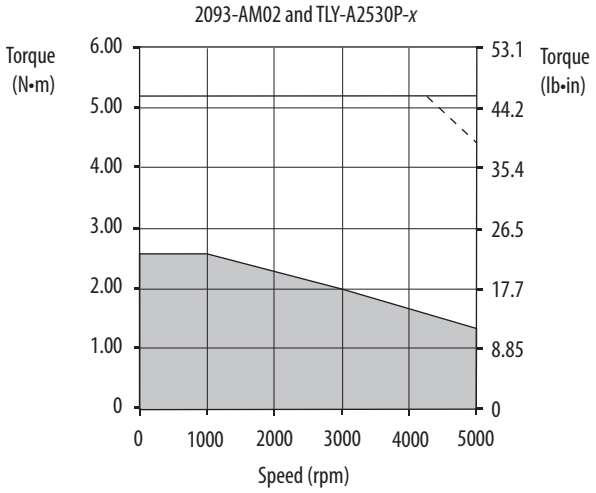


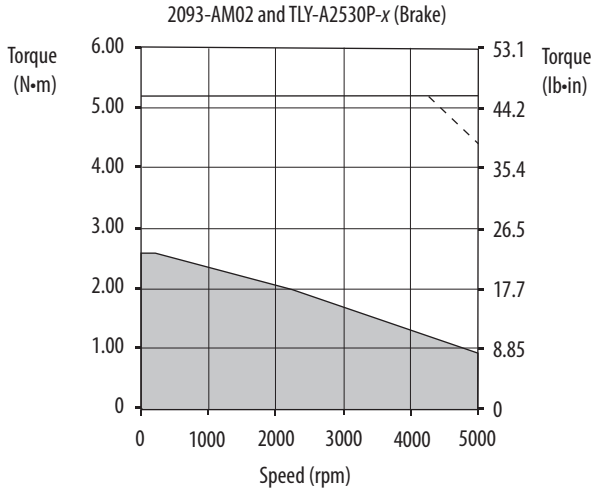
= Intermittent operating region (three-phase input)
= Continuous operating region
= Drive operation (single-phase input)

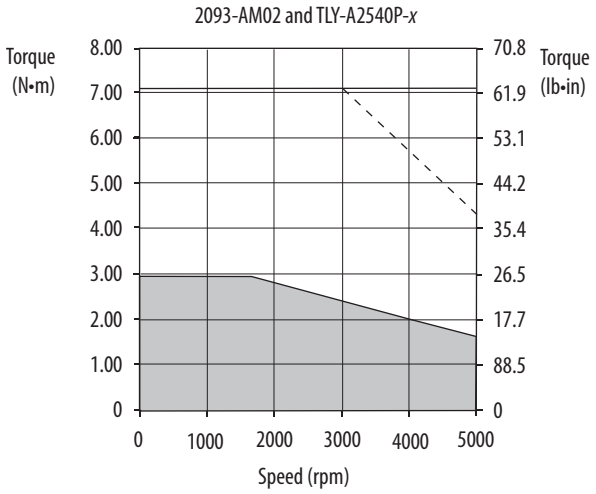
Kinetix 2000 Drives/TLY-A*xxx*T-H (incremental) Motor Curves (continued)

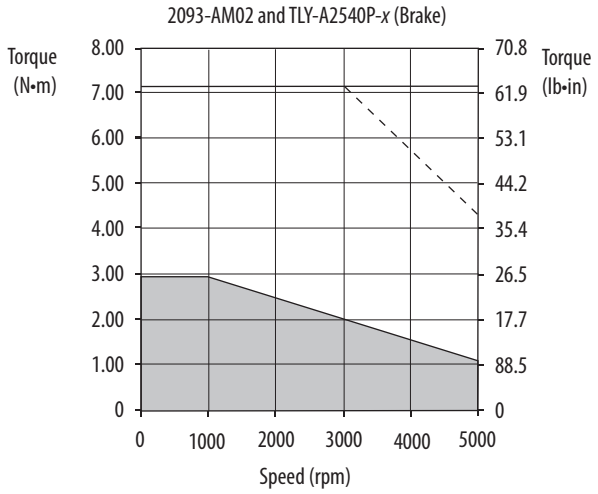


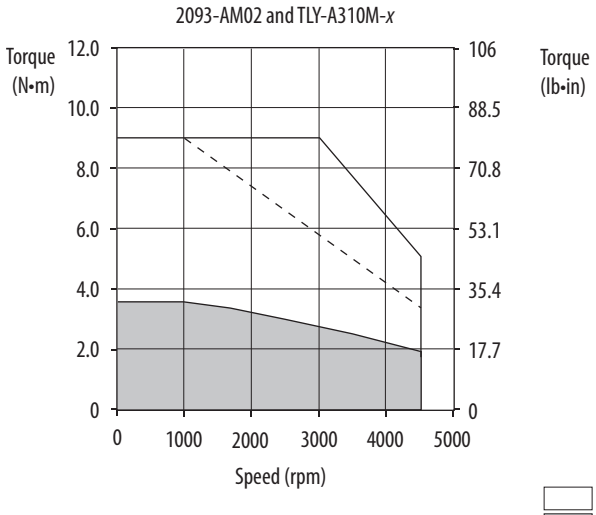
Kinetix 2000 Drives/TLY-A*xxxx-x* Motor Curves

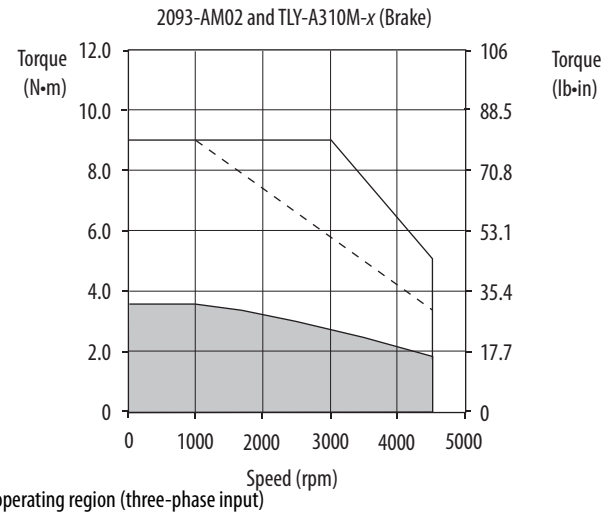












= Intermittent operating region (three-phase input)
= Continuous operating region
= Drive operation (single-phase input)

Kinetix 2000 Drives with MP-Series Integrated Linear Stages

This section provides system combination information for the Kinetix 2000 (200V class) drives when matched with MP-Series (200V class) integrated direct-drive or ballscrew linear stages. Included are power/brake and feedback cable catalog numbers, system performance specifications, and the optimum force/velocity curves.

Linear Stage Cable Combinations

Linear Stage	Motor Power/Brake Cable	Motor Feedback Cable (1)
MPAS-A*xxxx*1-V05S*x*A MPAS-A*xxxx*2-V20S*x*A	2090-XXNPMF-16S*xx* (standard, non-flex) 2090-CP*x*M4DF-16AF*xx* (continuous-flex)	2090-XXNFMF-S*xx* (standard, non-flex) 2090-CFBM4DF-CDAF*xx* (continuous-flex) Absolute High-resolution Feedback
MPAS-A6*xxx*B-ALM*x*2C, MPAS-A8*xxx*E-ALM*x*2C, MPAS-A9*xxx*K-ALM*x*2C		2090-XXNFMF-S*xx* (standard, non-flex) 2090-CFBM4DF-CDAF*xx* (continuous-flex) Incremental Feedback

(1) Use low-profile connector kit (catalog number 2090-K2CK-D15M) on the drive end. Refer to Required Drive Accessories on page 3.

For cable configuration illustrations and feature descriptions, by catalog number, refer to 2090-Series Motor/Actuator Cables Overview beginning on page 7.
Motor-end connector kits, and panel-mounted breakout components (drive end), are available for motor power/brake and feedback cables. Refer to Optional Drive Accessories on page 4.
Cable length *xx* is in meters. Refer to the Kinetix Motion Accessories Technical Data, publication KNX-TD004, for standard cable lengths.

Linear Stage Performance Specifications with Kinetix 2000 Drives

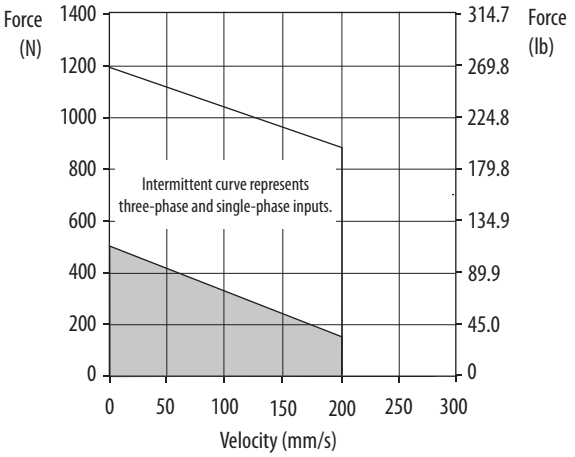
Linear Stage	Speed, max mm/s (in/s)	System Continuous Stall Current Amps 0-pk	System Continuous Stall Force N (lb)	System Peak Stall Current Amps 0-pk	System Peak Stall Force N (lb)	Linear Stage Rated Output kW	Kinetix 2000 200V-class Drives
MPAS-A*xxxx*1-V05SxA	200 (7.9) (1)	2.83	477 (100)	6.10	1212 (272)	0.37	2093-AMP2
		3.09	521 (117)				2093-AMP5
MPAS-A*xxxx*2-V20SxA	1124 (44.3) (2)	4.24	432 (97.1)	9.10	968 (218)	0.62	2093-AMP5
		4.54	462 (104)				2093-AM01
MPAS-A6*xxx*B-ALMO2C	5000 (200)	4.2	79.6 (17.9)	12.7	284 (63.8)	0.32	2093-AMP5
		5.3	105 (23.6)	15.8	359 (80.7)		2093-AM01
MPAS-A6*xxx*B-ALMS2C		4.2	71.8 (16.1)	12.7	275 (61.8)	0.29	2093-AMP5
		4.7	83.0 (18.6)	14.2	312 (70.1)		2093-AM01
MPAS-A8*xxx*E-ALMO2C		4.2	106 (23.8)	12.7	306 (68.8)	0.53	2093-AMP5
		7.0	189 (42.5)	18.5	456 (103)		2093-AM01
MPAS-A8*xxx*E-ALMS2C		4.2	96.8 (21.8)	12.7	297 (66.8)	0.48	2093-AMP5
		6.3	159 (35.7)	16.7	399 (89.7)		2093-AM01
MPAS-A9*xxx*K-ALMO2C		4.2	172 (38.7)	12.7	465 (105)	0.77	2093-AMP5
		6.7	285 (64.1)	18.3	680 (153)		2093-AM01
MPAS-A9*xxx*K-ALMS2C		4.2	161 (36.2)	12.7	456 (103)	0.69	2093-AMP5
		6.1	245 (55.1)	16.5	601 (135)		2093-AM01

(1) For 900 mm stroke length, maximum speed is 176 mm/s (6.9 in/s). For 1020 mm stroke length, maximum speed is 143 mm/s (5.6 in/s).
(2) For 780 mm stroke length, maximum speed is 889 mm/s (35.0 in/s). For 900 mm stroke length, maximum speed is 715 mm/s (28.2 in/s). For 1020 mm stroke length, maximum speed is 582 mm/s (22.9 in/s).

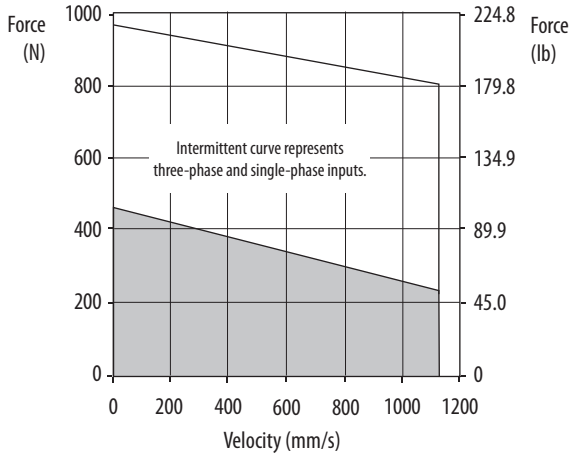
Performance specification data and curves reflect nominal system performance of a typical system with motor at 40 °C (104 °F) and drive at 50 °C (122 °F) ambient and rated line voltage. For additional information on ambient and line conditions, refer to Motion Analyzer software, version 4.7 or later.

Kinetix 2000 Drives/MP-Series Integrated Linear Stage Curves

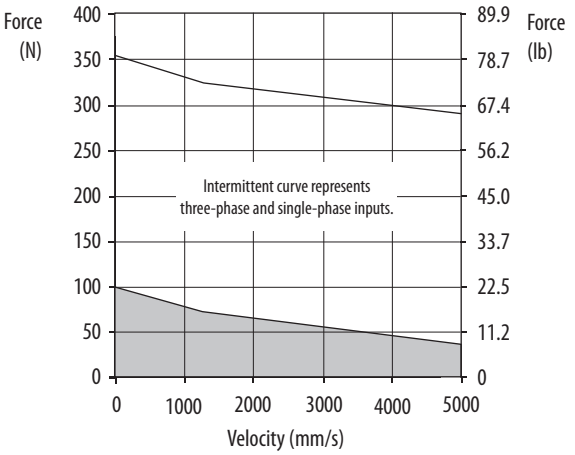
2093-AMP5 and MPAS-A6*xxx*1-V05S*x*A



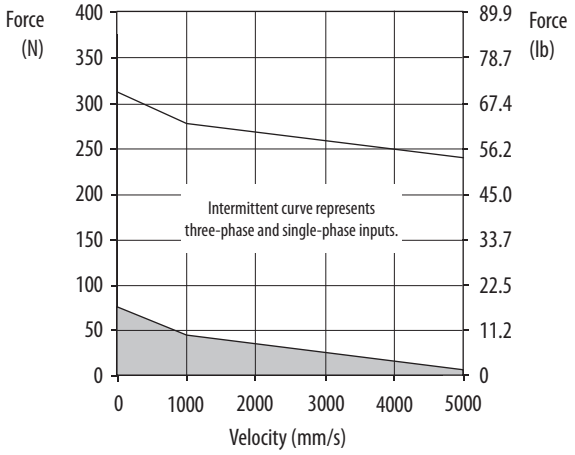
2093-AM01 and MPAS-A6*xxx*2-V20S*x*A



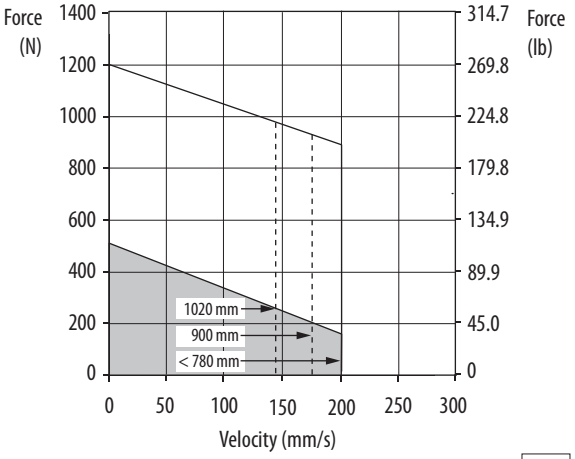
2093-AM01 and MPAS-A6*xxx*B-ALM02C



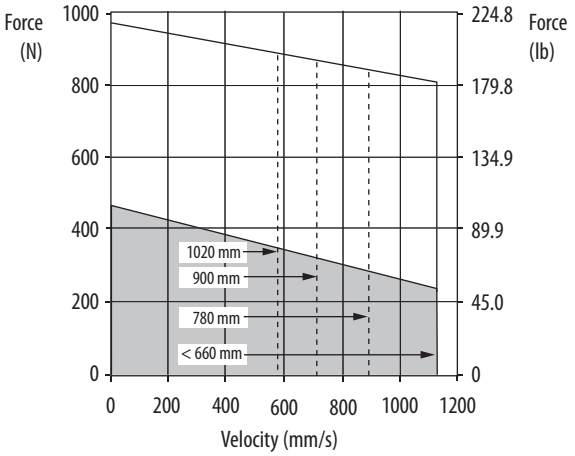
2093-AM01 and MPAS-A6*xxx*B-ALMS2C



2093-AMP5 and MPAS-A8*xxx*1-V05S*x*A



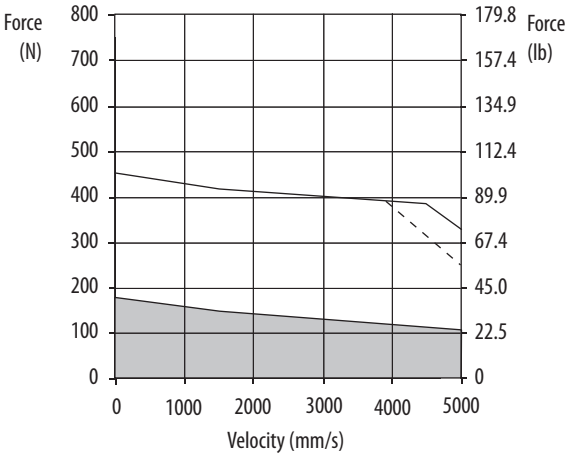
2093-AM01 and MPAS-A8*xxx*2-V20S*x*A



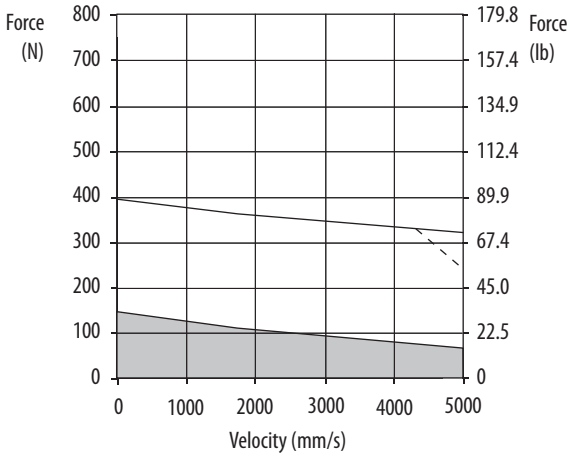
= Intermittent operating region
= Continuous operating region
= System operation for specified stroke length

Kinetix 2000 Drives/MP-Series Integrated Linear Stage Curves (continued)

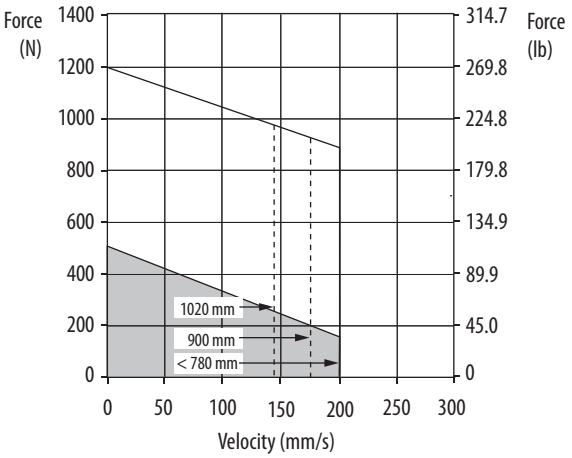
2093-AM01 and MPAS-A8*xxx*E-ALM02C



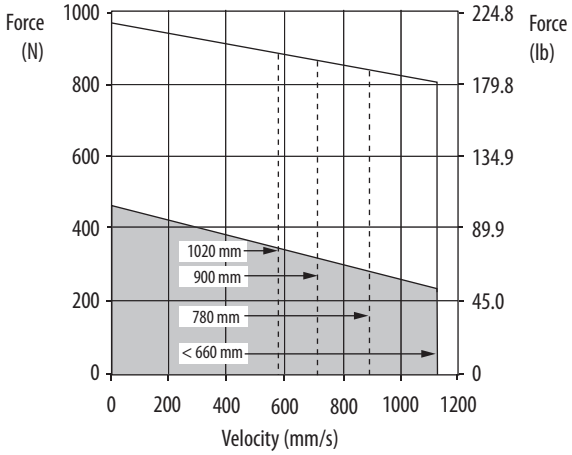
2093-AM01 and MPAS-A8*xxx*E-ALMS2C



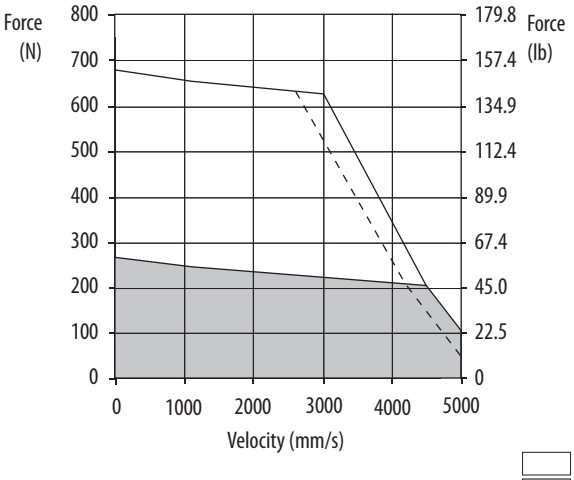
2093-AMP5 and MPAS-A9*xxx*1-V05S*x*A



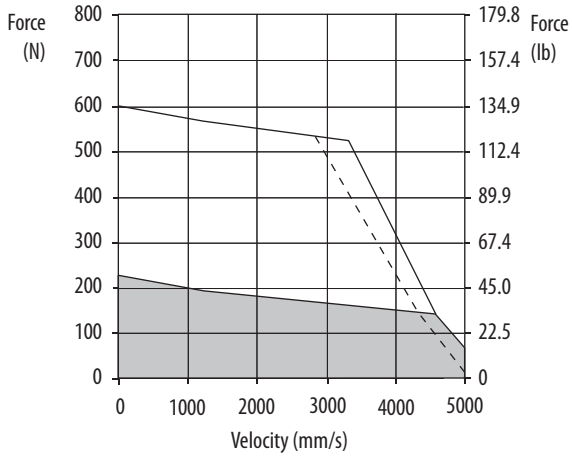
2093-AM01 and MPAS-A9*xxx*2-V20S*x*A



2093-AM01 and MPAS-A9*xxx*K-ALM02C



2093-AM01 and MPAS-A9*xxx*K-ALMS2C



= Intermittent operating region
= Continuous operating region
= System operation (single-phase input)
= System operation for specified stroke length

Kinetix 2000 Drives with MP-Series Electric Cylinders

This section provides system combination information for the Kinetix 2000 (200V class) drives when matched with MP-Series (200V class) electric cylinders. Included are power/brake and feedback cable catalog numbers, system performance specifications, and the optimum force/velocity curves.

Electric Cylinder Cable Combinations

Electric Cylinder	Motor Power/Brake Cable	Motor Feedback Cable (1)
MPAR-A1*xxx*B MPAR-A1*xxx*E MPAR-A2*xxx*C MPAR-A2*xxx*F	2090-XXNPMF-16S*xx* (standard, non-flex) 2090-CP*x*M4DF-16AF*xx* (continuous-flex)	2090-XXNFMF-S*xx* (standard, non-flex) 2090-CFBM4DF-CDAF*xx* (continuous-flex) Absolute High-resolution Feedback
MPAR-A3*xxx*E MPAR-A3*xxx*H	2090-CP*x*M7DF-16AA*xx* (standard, non-flex) 2090-CP*x*M7DF-16AF*xx* (continuous-flex)	2090-CFBM7DF-CEAA*xx* or 2090-CFBM7DD-CEAA*xx* (standard, non-flex) 2090-CFBM7DF-CEAF*xx* or 2090-CFBM7DD-CEAF*xx* (continuous-flex) Absolute High-resolution Feedback

(1) Use low-profile connector kit (catalog number 2090-K2CK-D15M) with flying-lead cables on the drive end. Refer to Required Drive Accessories on page 3.

For cable configuration illustrations and feature descriptions, by catalog number, refer to 2090-Series Motor/Actuator Cables Overview beginning on page 7.
Motor-end connector kits, and panel-mounted breakout components (drive end), are available for motor power/brake and feedback cables. Refer to Optional Drive Accessories on page 4.
Cable length *xx* is in meters. Refer to the Kinetix Motion Accessories Technical Data, publication KNX-TD004, for standard cable lengths.

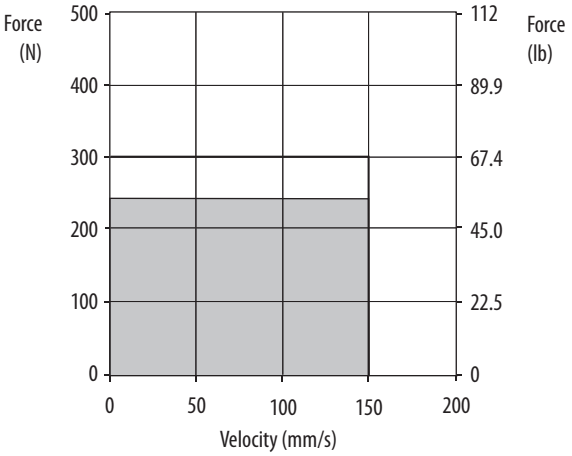
Electric Cylinder Performance Specifications with Kinetix 2000 Drives

Electric Cylinder	Speed, max mm/s (in/s)	System Continuous Stall Current Amps 0-pk	System Continuous Stall Force N (lb)	System Peak Stall Current Amps 0-pk	System Peak Stall Force N (lb)	Rated Output kW	Kinetix 2000 200V-class Drives
MPAR-A1*xxx*B	150	1.15	240 (53.9)	1.34	300 (67.4)	0.036	2093-AMP2
MPAR-A1*xxx*E	500	2.15	280 (62.9)	2.48	350 (78.7)	0.140	2093-AMP5
MPAR-A2*xxx*C	250	2.41	420 (94.4)	2.71	525 (118)	0.105	
MPAR-A2*xxx*F	640	4.54	640 (144)	5.41	800 (180)	0.409	2093-AM01
MPAR-A3*xxx*E	500	10.33	2000 (450)	12.34	2500 (562)	1.000	2093-AM02
MPAR-A3*xxx*H	1000	12.2	1300 (292)	16.4	1625 (365)	1.300	

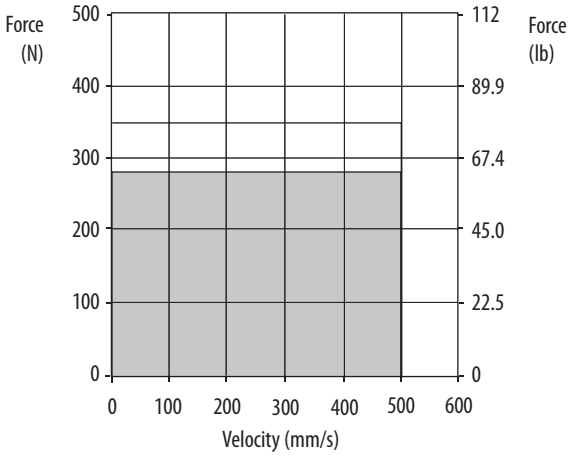
Performance specification data and curves reflect nominal system performance of a typical system with motor at 40 °C (104 °F) and drive at 50 °C (122 °F) ambient and rated line voltage. For additional information on ambient and line conditions, refer to Motion Analyzer software, version 4.7 or later.

Kinetix 2000 Drives/MP-Series Electric Cylinder Curves

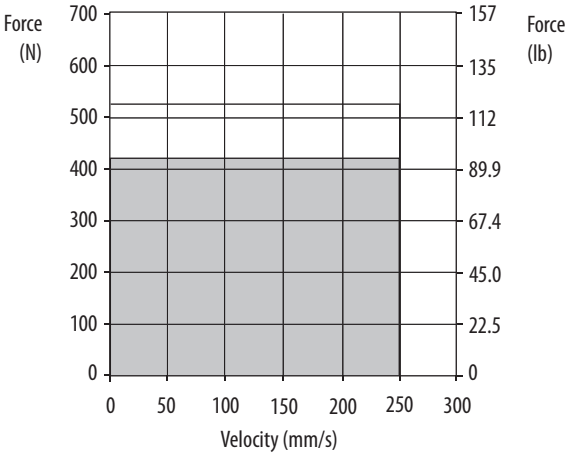
2093-AMP2 and MPAR-A1*xxx*B-V*x*A



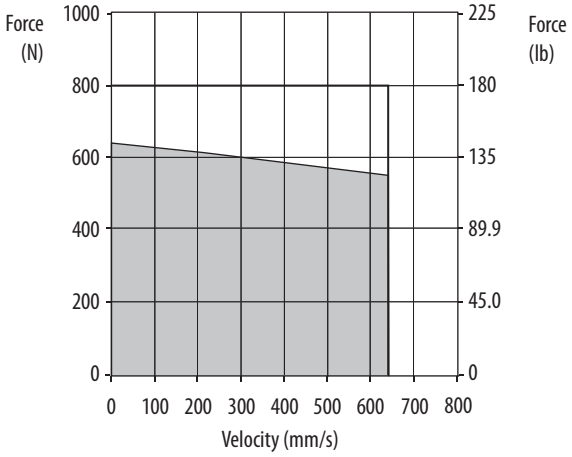
2093-AMP5 and MPAR-A1*xxx*E-V*x*A



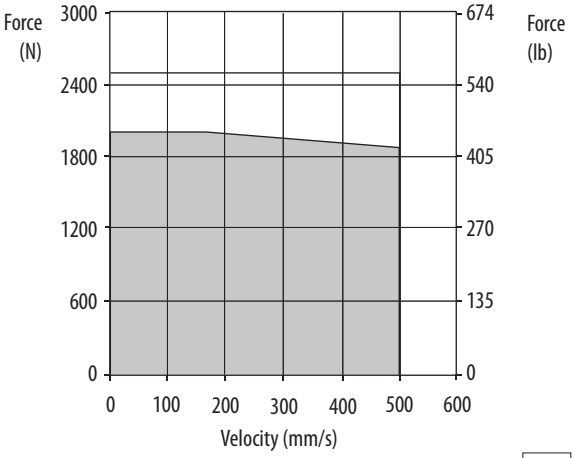
2093-AMP5 and MPAR-A2*xxx*C-V*x*A



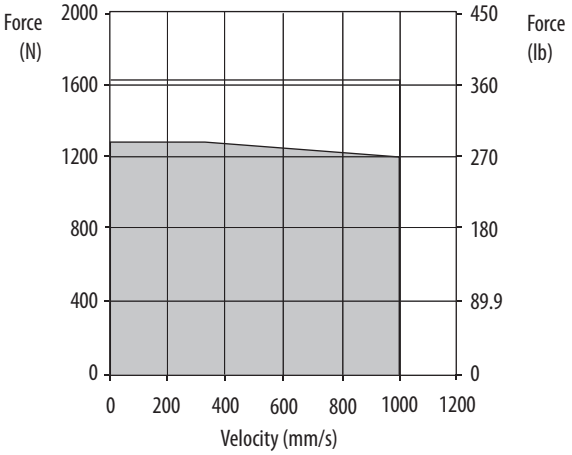
2093-AM01 and MPAR-A2*xxx*F-V*x*A



2093-AM02 and MPAR-A3*xxx*E-M*x*A



2093-AM02 and MPAR-A3*xxx*H-M*x*A



= Intermittent operating region
= Continuous operating region

Kinetix 2000 Drives with MP-Series Heavy Duty Electric Cylinders

This section provides system combination information for the Kinetix 2000 (200V class) drives when matched with MP-Series (200V class) heavy-duty electric cylinders. Included are power/brake and feedback cable catalog numbers, system performance specifications, and the optimum force/velocity curves.

Electric Cylinder Cable Combinations

Electric Cylinder	Motor Power/Brake Cable	Motor Feedback Cable (1)
MPAI-A/B3*xxx*C, MPAI-A/B3*xxx*E MPAI-A/B3*xxx*R, MPAI-A/B3*xxx*S	2090-CPWM7DF-16AA*xx* (standard, non-flex) 2090-CPWM7DF-16AF*xx* (continuous-flex)	2090-CFBM7DF-CEAA*xx* or 2090-CFBM7DD-CEAA*xx* (standard, non-flex) 2090-CFBM7DF-CEAF*xx* or 2090-CFBM7DD-CEAF*xx* (continuous-flex) Absolute High-resolution Feedback
MPAI-A/B4*xxx*C, MPAI-A/B4*xxx*E MPAI-A/B4*xxx*R, MPAI-A/B4*xxx*S		
MPAI-B5*xxx*C, MPAI-B5*xxx*E		
MPAI-A5*xxx*C, MPAI-A5*xxx*E	2090-CPWM7DF-14AA*xx* (standard, non-flex) 2090-CPWM7DF-14AF*xx* (continuous-flex)	

(1) Use low-profile connector kit (catalog number 2090-K2CK-D15M) with flying-lead cables on the drive end. Refer to Required Drive Accessories on page 3.

For cable configuration illustrations and feature descriptions, by catalog number, refer to 2090-Series Motor/Actuator Cables Overview beginning on page 7.
Motor-end connector kits, and panel-mounted breakout components (drive end), are available for motor power/brake and feedback cables. Refer to Optional Drive Accessories on page 4.
Cable length *xx* is in meters. Refer to the Kinetix Motion Accessories Technical Data, publication KNX-TD004, for standard cable lengths.

Electric Cylinder Performance Specifications with Kinetix 2000 Drives

Performance Specifications with Ball Screw Electric Cylinders

Electric Cylinder	Speed, max mm/s (in/s)	System Continuous Stall Current Amps 0-pk	System Continuous Stall Force N (lb)		System Peak Stall Current Amps 0-pk	System Peak Stall Force N (lb)	Rated Output kW	Kinetix 2000 200V-class Drives
			25 °C (77 °F)	40 °C (104 °F)				
MPAI-A3076CM1	305 (12)	2.68	1624 (365)	1290 (290)	8.90	4448 (1000)	0.27	2093-AMP5
MPAI-A3076EM1	610 (24)		814 (183)	645 (145)		2570 (578)		
MPAI-A3150CM3	279 (11)	5.61	4003 (900)	3176 (714)	8.40	4448 (1000)	0.39	2093-AM01
MPAI-A3300CM3								
MPAI-A3450CM3	188 (7.3)							
MPAI-A3150EM3	559 (22)		2002 (450)	1588 (357)	14.14	4003 (900)		
MPAI-A3300EM3								
MPAI-A3450EM3	376 (15)							
MPAI-A4150CM3	279 (11)	10.89	7784 (1750)	6179 (1389)	17.07	8896 (2000)	0.43	2093-AM02
MPAI-A4300CM3								
MPAI-A4450CM3	245 (9.5)							
MPAI-A4150EM3	559 (22)		3892 (875)	3092 (695)	27.44	7784 (1750)		
MPAI-A4300EM3								
MPAI-A4450EM3	491 (19)							
MPAI-A5*xxx*CM3	200 (7.8)	13.25	13,123 (2950)	10,415 (2341)	16.70	13,345 (3000)	0.55	2093-AM02
MPAI-A5*xxx*EM3	400 (15.6)		6562 (1475)	5208 (1171)	33.40	13,122 (2950)		

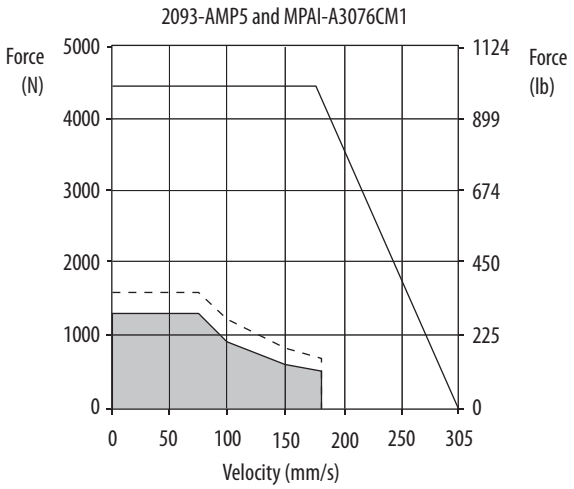
Performance specification data and curves reflect nominal system performance of a typical system with actuator at 40 °C (104 °F) and drive at 50 °C (122 °F) ambient and rated line voltage. For additional information on ambient and line conditions, refer to Motion Analyzer software, version 4.8 or later.

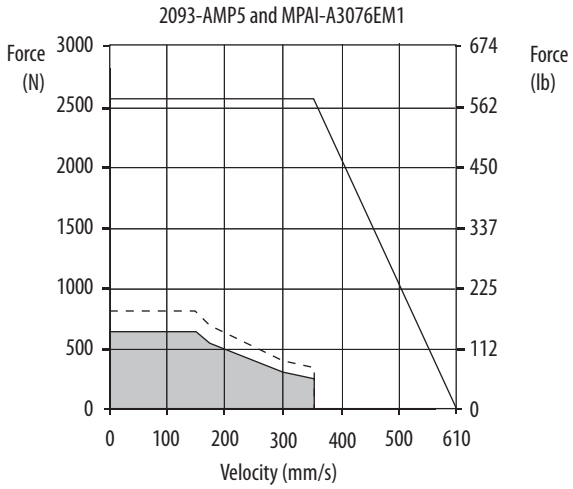
Performance Specifications with Roller Screw Electric Cylinders

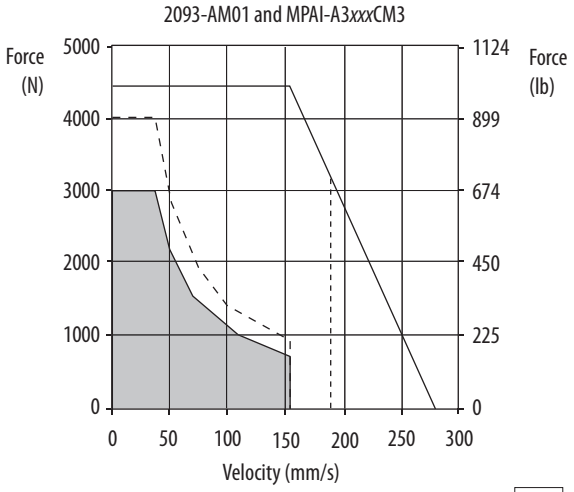
Electric Cylinder	Speed, max mm/s (in/s)	System Continuous Stall Current Amps 0-pk	System Continuous Stall Force N (lb)		System Peak Stall Current Amps 0-pk	System Peak Stall Force N (lb)	Rated Output kW	Kinetix 6000 200V-class Drives
			25 °C (77 °F)	40 °C (104 °F)				
MPAI-A3076RM1	305 (12)	2.87	1557 (350)	1237 (278)	8.90	4862 (1093)	0.27	2093-AMP5
MPAI-A3076SM1	610 (24)		778 (175)	618 (139)		2431 (547)		
MPAI-A3150RM3	279 (11)	5.61	3781 (850)	3003 (675)	14.14	7562 (1700)	0.39	2093-AM01
MPAI-A3300RM3								
MPAI-A3450RM3	176 (6.9)							
MPAI-A3150SM3	559 (22)		1891 (425)	1499 (337)		3781 (850)		
MPAI-A3300SM3								
MPAI-A3450SM3	353 (14)							
MPAI-A4150RM3	279 (11)	10.89	7340 (1650)	5827 (1310)	27.44	14,679 (3300)	0.43	2093-AM02
MPAI-A4300RM3								
MPAI-A4450RM3	196 (7.6)							
MPAI-A4150SM3	559 (22)		3670 (825)	2914 (655)		7340 (1650)		
MPAI-A4300SM3								
MPAI-A4450SM3	393 (15)							

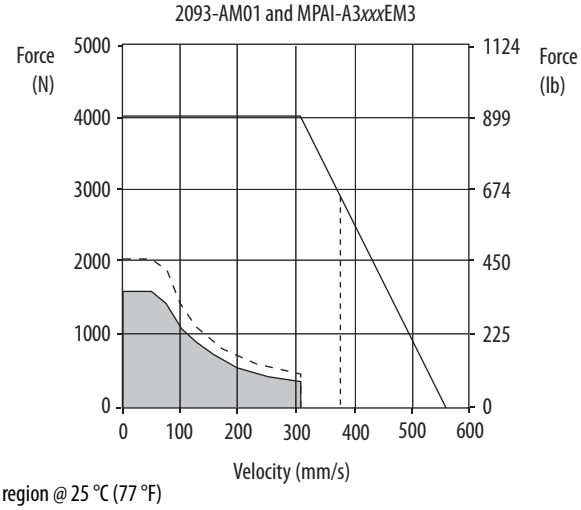
Performance specification data and curves reflect nominal system performance of a typical system with actuator at 40 °C (104 °F) and drive at 50 °C (122 °F) ambient and rated line voltage. For additional information on ambient and line conditions, refer to Motion Analyzer software, version 4.8 or later.

Kinetix 2000 Drives/MP-Series Heavy Duty (ball screw) Electric Cylinder Curves



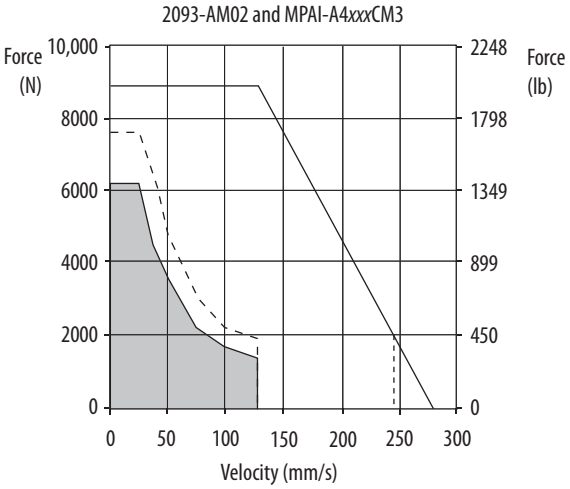


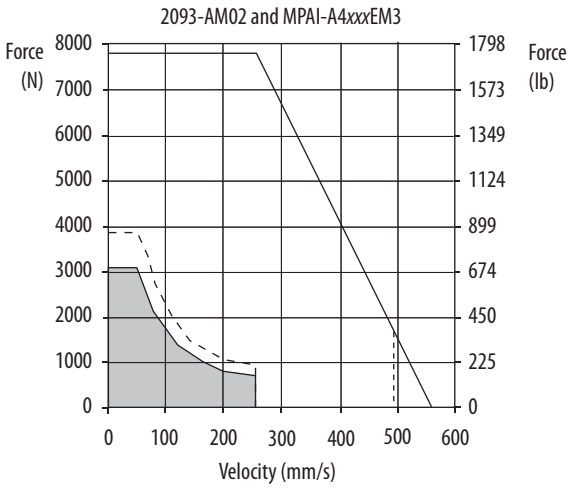


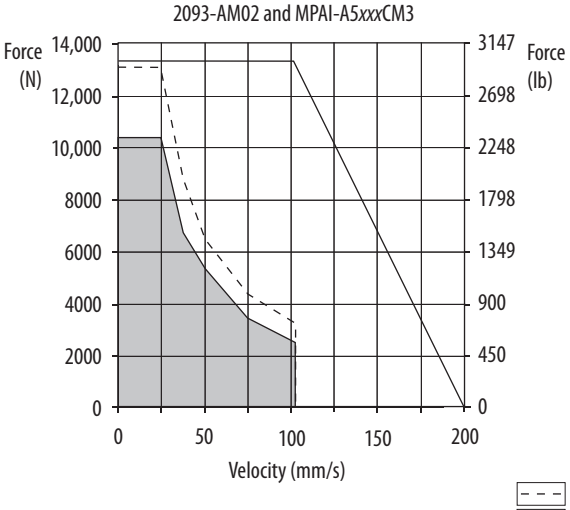


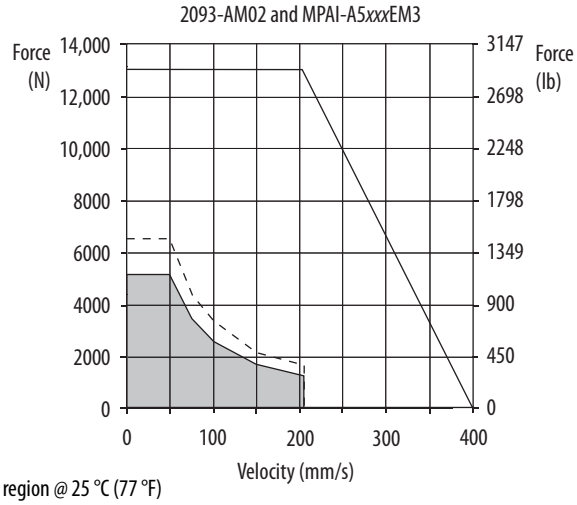
= Continuous operating region @ 25 °C (77 °F)
= Continuous operating region @ 40 °C (104 °F)
= Intermittent operating region, 450 mm (18 in.) stroke length only
= Intermittent operating region, 076…300 mm (3…12 in.) stroke lengths

Kinetix 2000 Drives/MP-Series Heavy Duty (ball screw) Electric Cylinder Curves (continued)





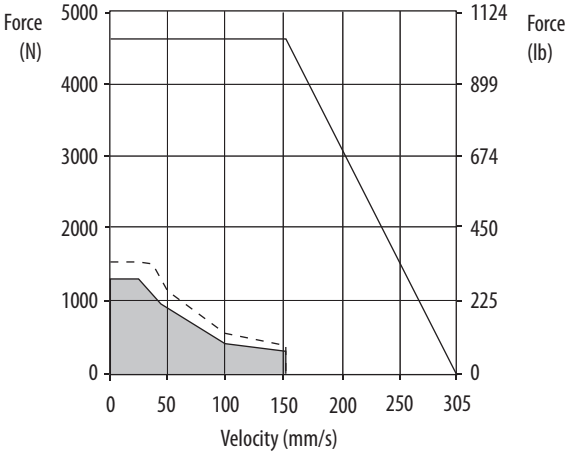




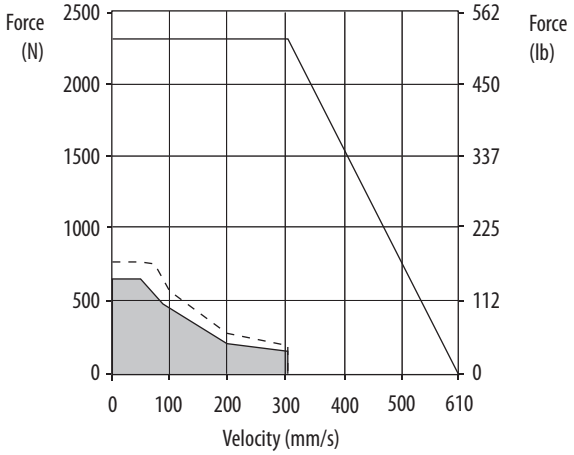
= Continuous operating region @ 25 °C (77 °F)
= Continuous operating region @ 40 °C (104 °F)
= Intermittent operating region, 450 mm (18 in.) stroke length only
= Intermittent operating region, 076…300 mm (3…12 in.) stroke lengths

Kinetix 2000 Drives/MP-Series Heavy Duty (roller screw) Electric Cylinder Curves

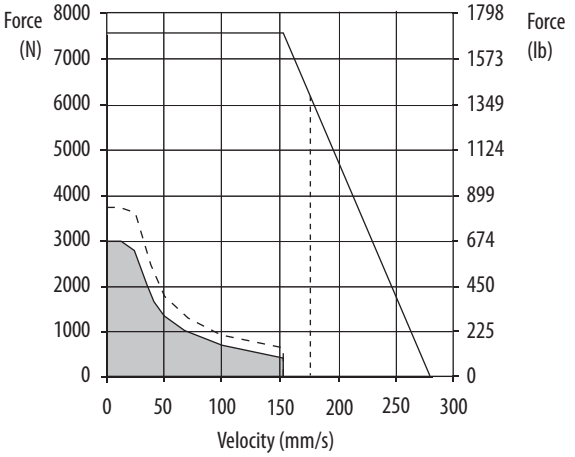
2093-AMP5 and MPAI-A3*xxx*RM1



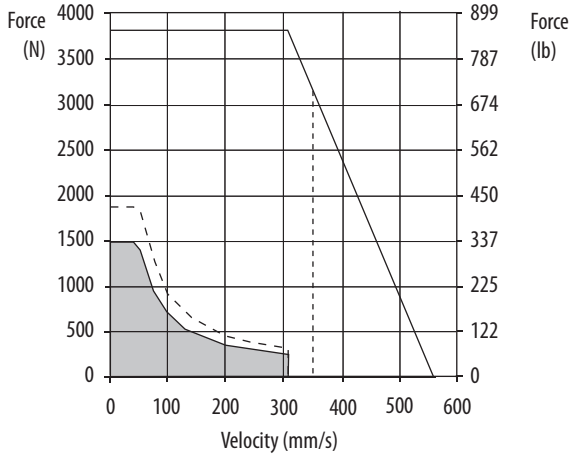
2093-AMP5 and MPAI-A3*xxx*SM1



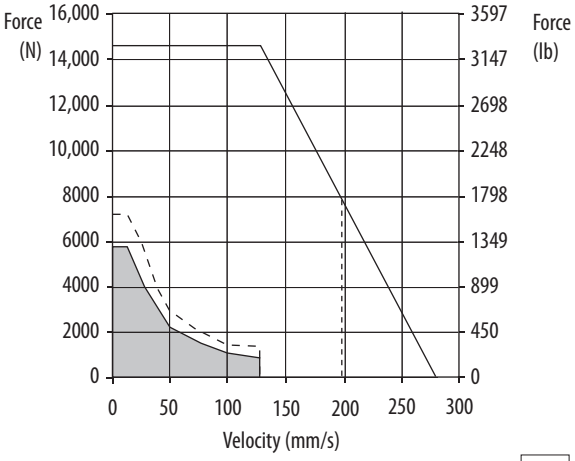
2093-AM01 and MPAI-A3*xxx*RM3



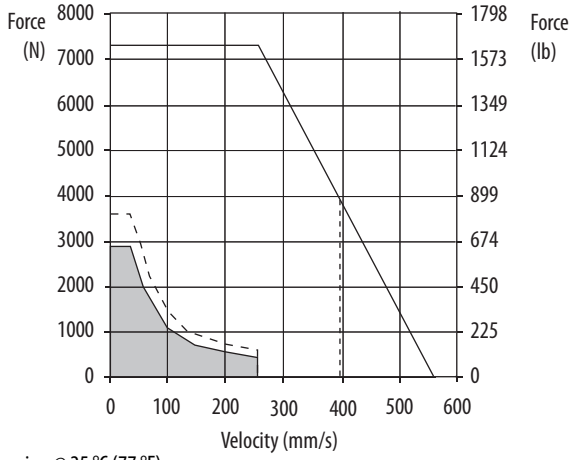
2093-AM01 and MPAI-A3*xxx*SM3



2093-AM02 and MPAI-A4*xxx*RM3



2093-AM02 and MPAI-A4*xxx*SM3



= Continuous operating region @ 25 °C (77 °F)
= Continuous operating region @ 40 °C (104 °F)
= Intermittent operating region, 450 mm (18 in.) stroke length only
= Intermittent operating region, 076…300 mm (3…12 in.) stroke lengths

Kinetix 2000 Drives with LDC-Series Linear Motors

This section provides system combination information for the Kinetix 2000 (200V class) drives when matched with LDC-Series™ iron-core linear motors. Included are power and feedback cable catalog numbers, system performance specifications, and the optimum force/velocity curves.

Linear Motor Cable Combinations

Linear Motor	Motor Power Cable	Motor Feedback Cable (1)
LDC-C030100-DHT, LDC-C030200-DHT, LDC-C030200-EHT	2090-CP*x*M7DF-16AA*xx* (standard, non-flex) 2090-CP*x*M7DF-16AF*xx* (continuous-flex)	2090-XXNFMF-S*xx* (standard, non-flex) 2090-CFBM7DF-CDAF*xx* (continuous-flex) Sin/Cos or TTL Encoder Feedback
LDC-C050100-DHT, LDC-C050200-DHT, LDC-C050200-EHT, LDC-C050300-DHT, LDC-C050300-EHT		
LDC-C075200-DHT, LDC-C075200-EHT, LDC-C075300-DHT, LDC-C075300-EHT, LDC-C075400-DHT, LDC-C075400-EHT		
LDC-C100300-DHT, LDC-C100300-EHT, LDC-C100400-DHT, LDC-C100400-EHT, LDC-C100600-DHT		
LDC-C150400-DHT, LDC-C150600-DHT		

(1) Use low-profile connector kit (catalog number 2090-K2CK-D15M) on the drive end. Refer to Required Drive Accessories on page 3.

For cable configuration illustrations and feature descriptions, by catalog number, refer to 2090-Series Motor/Actuator Cables Overview beginning on page 7.
Motor-end connector kits, and panel-mounted breakout components (drive end), are available for motor power/brake and feedback cables. Refer to Optional Drive Accessories on page 4.
Cable length *xx* is in meters. Refer to the Kinetix Motion Accessories Technical Data, publication KNX-TD004, for standard cable lengths.

LDC-Series Performance Specifications with Kinetix 2000 Drives

Linear Motor	Speed, max m/s (ft/s)	System Continuous Stall Current (1) Amps 0-pk	System Continuous Stall Force (1) N (lb)	System Peak Stall Current Amps 0-pk	System Peak Stall Force N (lb)	Linear Motor Rated Output kW	Kinetix 2000 200V-class Drives
LDC-C030100-DHT	10.0 (32.8)	4.1…6.1	74…111 (17…25)	12.1	188 (42)	0.37…0.55	2093-AMP5
LDC-C030200-DHT		8.1…12.2	148…222 (33…50)	24.3	375 (84)	0.74…1.11	2093-AM01
LDC-C030200-EHT		4.1…6.1		12.1			2093-AMP5
LDC-C050100-DHT	10.0 (32.8)	3.9…5.9	119…179 (27…40)	11.7	302 (68)	0.59…0.89	2093-AMP5
LDC-C050200-DHT		7.9…11.8	240…359 (54…81)	23.3	600 (135)	1.20…1.79	2093-AM01
LDC-C050200-EHT		3.9…5.9		11.6			2093-AMP5
LDC-C050300-DHT		11.8…17.7	363…544 (82…122)	35.9	941 (212)	1.81…2.72	2093-AM02
LDC-C050300-EHT		3.9…5.9		12.0			2093-AMP5

(1) Values represent the range between no cooling (low value) and water cooling (high value).

Performance specification data and curves reflect nominal system performance of a typical system with motor at 40 °C (104 °F) and drive at 50 °C (122 °F) ambient and rated line voltage. For additional information on ambient and line conditions, refer to Motion Analyzer software, version 4.7 or later.

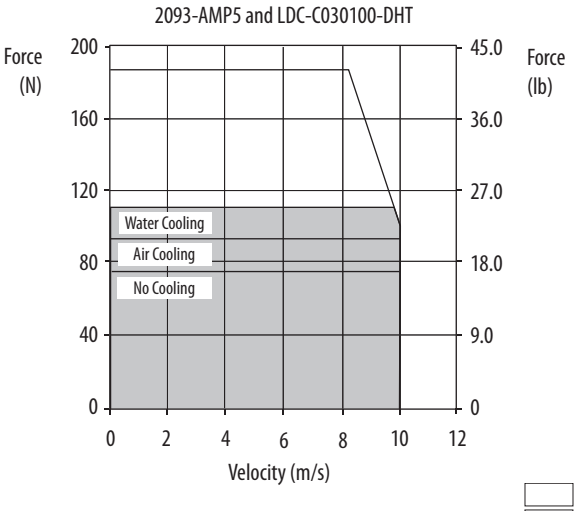
LDC-Series Performance Specifications with Kinetix 2000 Drives (continued)

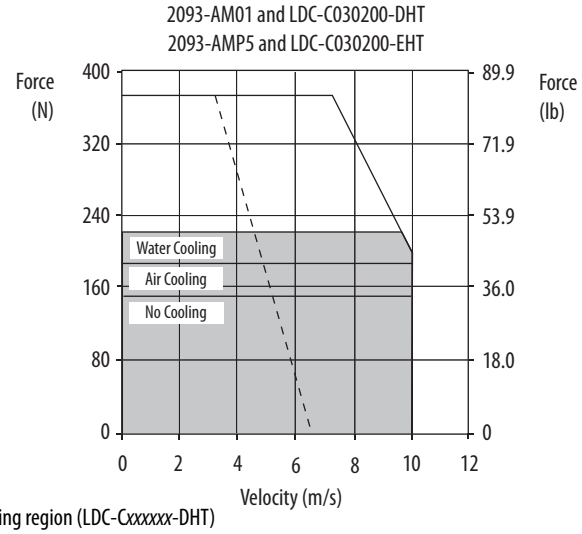
Linear Motor	Speed, max m/s (ft/s)	System Continuous Stall Current (1) Amps 0-pk	System Continuous Stall Force (1) N (lb)	System Peak Stall Current Amps 0-pk	System Peak Stall Force N (lb)	Linear Motor Rated Output kW	Kinetix 2000 200V-class Drives
LDC-C075200-DHT	10.0 (32.8)	7.7…11.5	348…523 (78…117)	22.9	882 (198)	1.74…2.61	2093-AM01
LDC-C075200-EHT		3.8…5.7		11.5			2093-AMP5
LDC-C075300-DHT		11.5…17.2	523…784 (117…176)	35.6	1368 (308)	2.61…3.92	2093-AM02
LDC-C075300-EHT		3.8…5.7		11.9			2093-AMP5
LDC-C075400-DHT		15.3…23.0	697…1045 (157…235)	47.4	1824 (410)	3.48…5.22	2093-AM02
LDC-C075400-EHT		7.7…11.5		23.7			2093-AM01
LDC-C100300-DHT	10.0 (32.8)	11.1…16.7	674…1012 (152…227)	34.3	1767 (397)	3.37…5.06	2093-AM02
LDC-C100300-EHT		3.7…5.6		11.4			2093-AMP5
LDC-C100400-DHT		14.8…22.2	899…1349 (202…303)	45.7	2356 (530)	4.49…6.74	2093-AM02
LDC-C100400-EHT		7.4…11.1		22.8			2093-AM01
LDC-C100600-DHT		22.2…33.3	1349…2023 (303…455)	68.5	3534 (794)	6.74…10.11	2093-AM02
LDC-C150400-DHT	10.0 (32.8)	14.1…21.1	1281…1922 (288…432)	45.2	3498 (786)	6.40…9.61	2093-AM02
LDC-C150600-DHT		21.1…31.7	1922…2882 (432…648)	67.8	5246 (1179)	9.61…14.41	2093-AM02

(1) Values represent the range between no cooling (low value) and water cooling (high value).

Performance specification data and curves reflect nominal system performance of a typical system with motor at 40 °C (104 °F) and drive at 50 °C (122 °F) ambient and rated line voltage. For additional information on ambient and line conditions, refer to Motion Analyzer software, version 4.7 or later.

Kinetix 2000 Drives/LDC-Series Linear Motor Curves

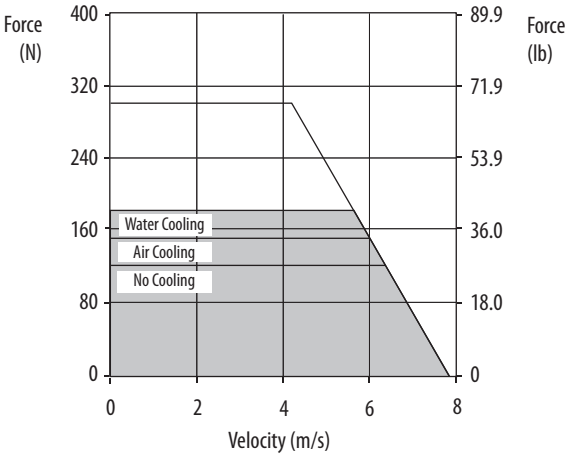




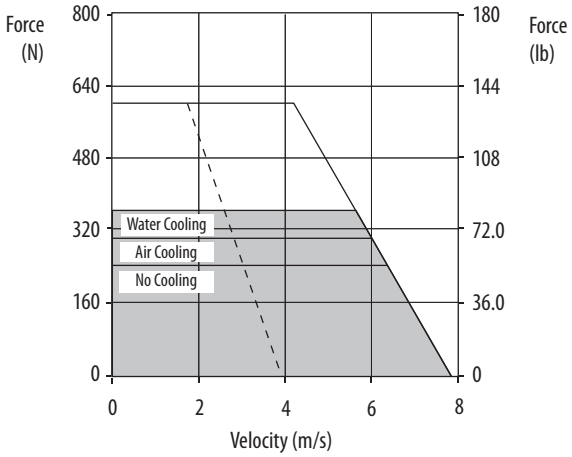
= Intermittent operating region (LDC-C*xxxxxx*-DHT)
= Intermittent operating region (LDC-C*xxxxxx*-EHT)
= Continuous operating region

Kinetix 2000 Drives/LDC-Series Linear Motor Curves (continued)

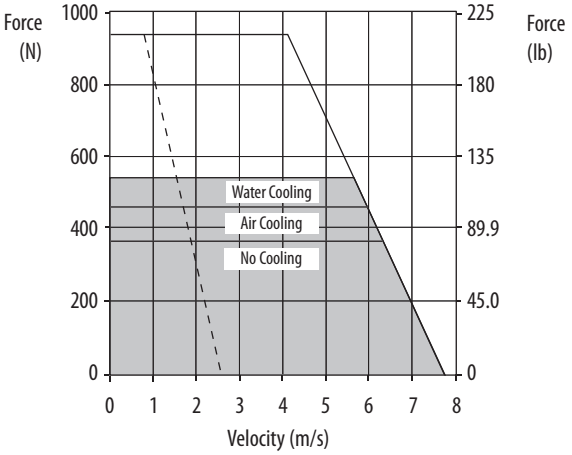
2093-AMP5 and LDC-C050100-DHT



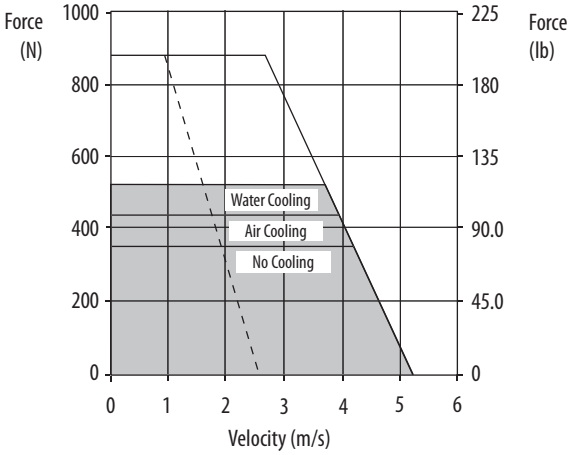
2093-AM01 and LDC-C050200-DHT
2093-AMP5 and LDC-C050200-EHT



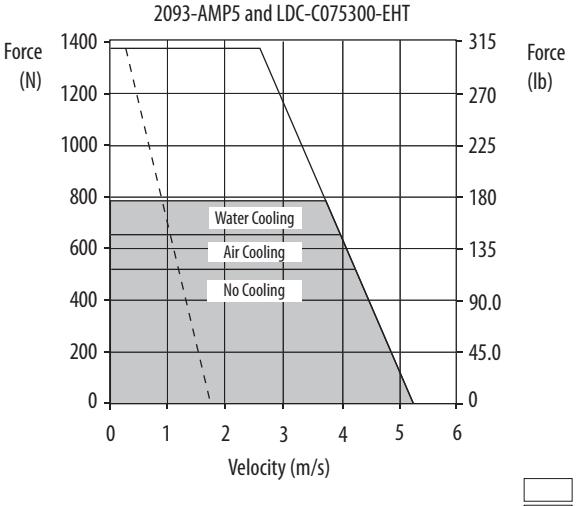
2093-AM02 and LDC-C050300-DHT
2093-AMP5 and LDC-C050300-EHT



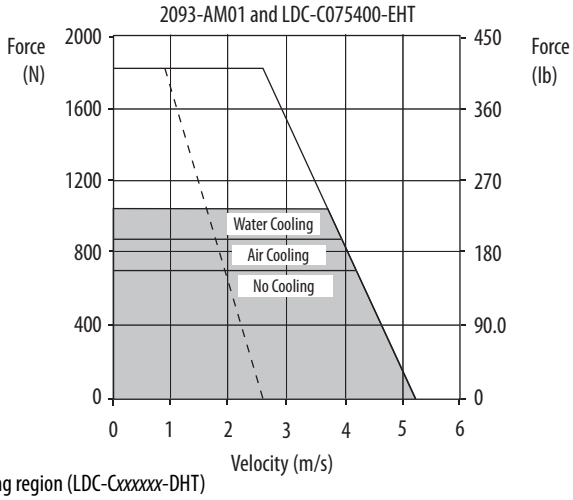
2093-AM01 and LDC-C075200-DHT
2093-AMP5 and LDC-C075200-EHT



2093-AM02 and LDC-C075300-DHT
2093-AMP5 and LDC-C075300-EHT



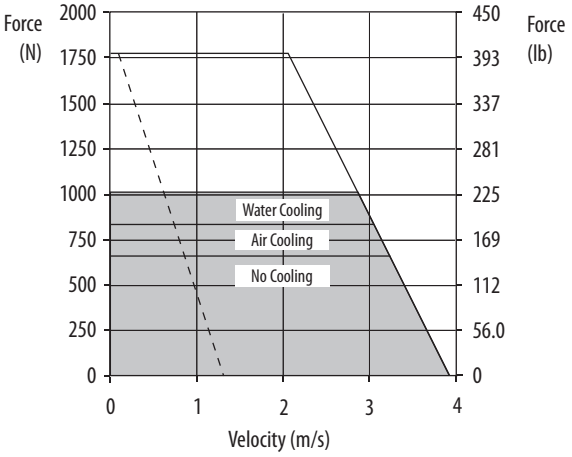
2093-AM02 and LDC-C075400-DHT
2093-AM01 and LDC-C075400-EHT



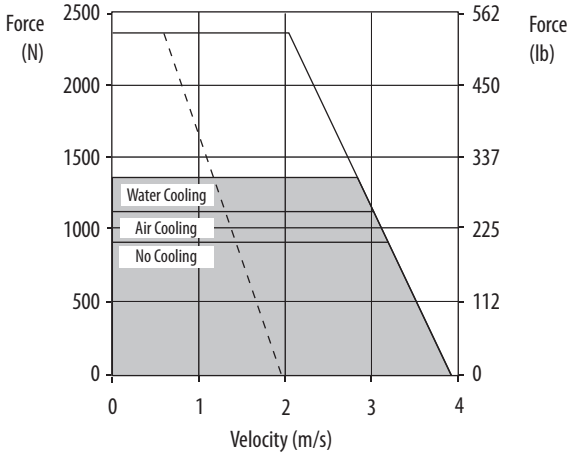
= Intermittent operating region (LDC-C*xxxxxx*-DHT)
= Intermittent operating region (LDC-C*xxxxxx*-EHT)
= Continuous operating region

Kinetix 2000 Drives/LDC-Series Linear Motor Curves (continued)

2093-AM02 and LDC-C100300-DHT
2093-AMP5 and LDC-C100300-EHT



2093-AM02 and LDC-C100400-DHT
2093-AM01 and LDC-C100400-EHT



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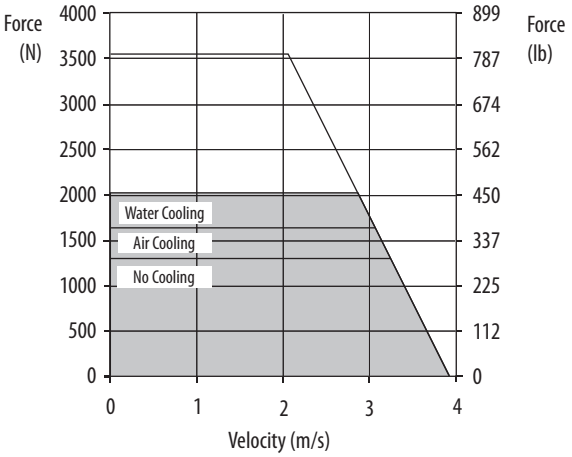

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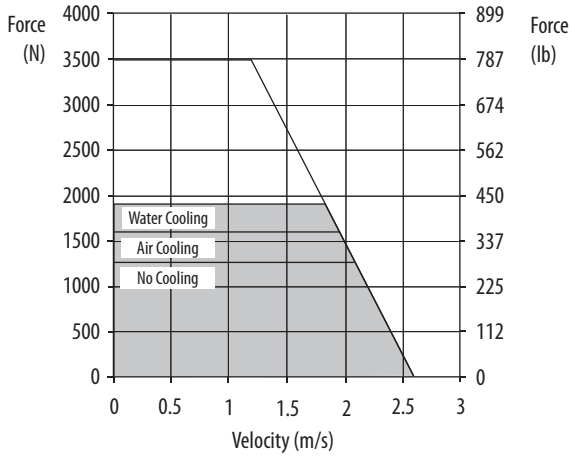
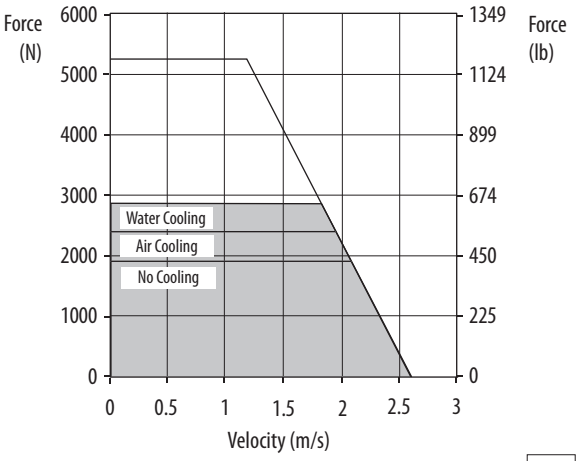


2093-AM02 and LDC-C150600-DHT



= Intermittent operating region (LDC-C*xxxxxx*-DHT)
= Intermittent operating region (LDC-C*xxxxxx*-EHT)
= Continuous operating region

Kinetix 2000 Drives with LDL-Series Linear Motors

This section provides system combination information for the Kinetix 2000 (200V class) drives when matched with LDL-Series™ ironless linear motors. Included are power and feedback cable catalog numbers, system performance specifications, and the optimum force/velocity curves.

Linear Motor Cable Combinations

Linear Motors	Motor Power Cable	Motor Feedback Cable (1)
LDL-N030120-DHT, LDL-N030240-DHT, LDL-N030240-EHT	2090-CP*x*M7DF-16AA*xx* (standard, non-flex) 2090-CP*x*M7DF-16AF*xx* (continuous-flex)	2090-XXNFMF-S*xx* (standard, non-flex) 2090-CFBM7DF-CDAF*xx* (continuous-flex) Sin/Cos or TTL Encoder Feedback
LDL-N050120-DHT, LDL-N050240-DHT, LDL-N050240-EHT, LDL-N050360-DHT, LDL-N050360-EHT, LDL-N050480-DHT, LDL-N050480-EHT		
LDL-N075480-DHT, LDL-N075480-EHT		
LDL-T030120-DHT, LDL-T030240-DHT, LDL-T030240-EHT		
LDL-T050120-DHT, LDL-T050240-DHT, LDL-T050240-EHT, LDL-T050360-DHT, LDL-T050480-DHT, LDL-T050480-EHT		
LDL-T075480-EHT, LDL-T075480-EHT		

(1) Use low-profile connector kit (catalog number 2090-K2CK-D15M) on the drive end. Refer to Required Drive Accessories on page 3.

For cable configuration illustrations and feature descriptions, by catalog number, refer to 2090-Series Motor/Actuator Cables Overview beginning on page 7.
Motor-end connector kits, and panel-mounted breakout components (drive end), are available for motor power/brake and feedback cables. Refer to Optional Drive Accessories on page 4.
Cable length *xx* is in meters. Refer to the Kinetix Motion Accessories Technical Data, publication KNX-TD004, for standard cable lengths.

LDL-Series Performance Specifications with Kinetix 2000 Drives

Linear Motor	Speed, max m/s (ft/s)	System Continuous Stall Current Amps 0-pk	System Continuous Stall Force N (lb)	System Peak Stall Current Amps 0-pk	System Peak Stall Force N (lb)	Linear Motor Rated Output kW	Kinetix 2000 200V-class Drives
LDL-N030120-DHT	10.0 (32.8)	3.0	63 (14)	9.9	209 (47)	0.31	2093-AMP5
LDL-N030240-DHT		6.0	126 (28)	19.9	417 (94)	0.63	2093-AM01
LDL-N030240-EHT		3.0		9.9			2093-AMP5
LDL-T030120-DHT		3.0	72 (16)	9.9	239 (54)	0.36	2093-AMP5
LDL-T030240-DHT		6.0	144 (32)	19.9	479 (108)	0.72	2093-AM01
LDL-T030240-EHT		3.0		9.9			2093-AMP5

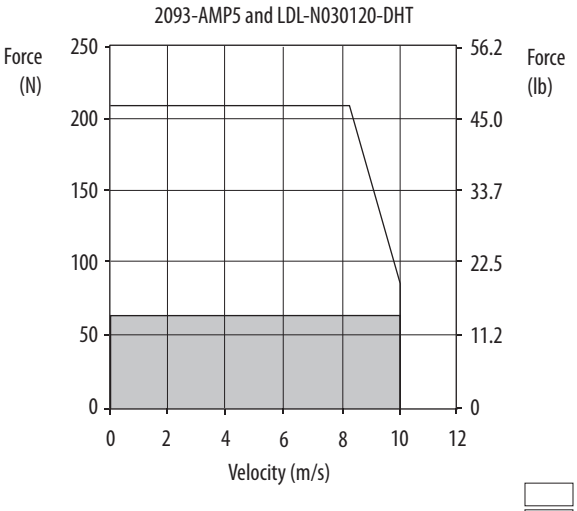
Performance specification data and curves reflect nominal system performance of a typical system with motor at 40 °C (104 °F) and drive at 50 °C (122 °F) ambient and rated line voltage. For additional information on ambient and line conditions, refer to Motion Analyzer software, version 4.7 or later.

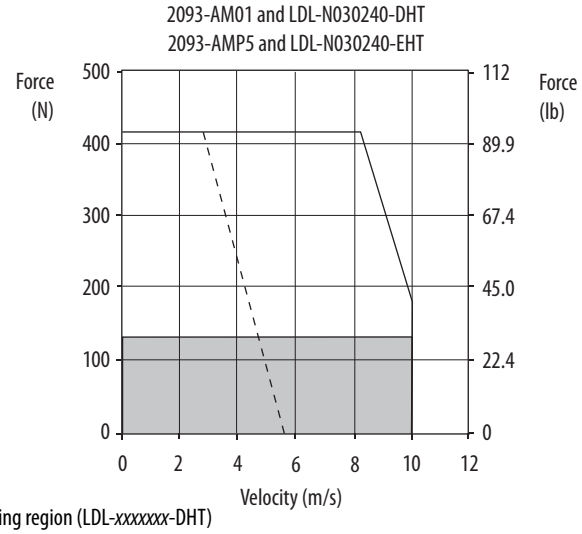
LDL-Series Performance Specifications with Kinetix 2000 Drives (continued)

Linear Motor	Speed, max m/s (ft/s)	System Continuous Stall Current Amps 0-pk	System Continuous Stall Force N (lb)	System Peak Stall Current Amps 0-pk	System Peak Stall Force N (lb)	Linear Motor Rated Output kW	Kinetix 2000 200V-class Drives
LDL-N050120-DHT	10.0 (32.8)	2.7	96 (22)	9.1	317 (71)	0.48	2093-AMP5
LDL-N050240-DHT		5.5	191 (43)	18.1	635 (143)	0.95	2093-AM01
LDL-N050240-EHT		2.7		9.1			2093-AMP5
LDL-N050360-DHT		8.2	287 (65)	27.2	952 (214)	1.43	2093-AM02
LDL-N050360-EHT		2.7		9.1			2093-AMP5
LDL-N050480-DHT		10.9	383 (86)	36.3	1269 (285)	1.91	2093-AM02
LDL-N050480-EHT		5.5		18.1			2093-AM01
LDL-T050120-DHT		2.7	110 (25)	9.1	364 (82)	0.55	2093-AMP5
LDL-T050240-DHT		5.5	220 (49)	18.1	728 (164)	1.10	2093-AM01
LDL-T050240-EHT		2.7		9.1			2093-AMP5
LDL-T050360-DHT		8.2	329 (74)	27.2	1093 (246)	1.64	2093-AM02
LDL-T050480-DHT		10.9	439 (99)	36.3	1457 (327)	2.19	2093-AM02
LDL-T050480-EHT		5.5		18.1			2093-AM01
LDL-N075480-DHT	10.0 (32.8)	9.9	519 (117)	32.8	1723 (387)	2.59	2093-AM02
LDL-N075480-EHT		4.9		16.4			2093-AM01
LDL-T075480-DHT		9.9	596 (134)	32.8	1977 (444)	2.98	2093-AM02
LDL-T075480-EHT		4.9		16.4			2093-AM01

Performance specification data and curves reflect nominal system performance of a typical system with motor at 40 °C (104 °F) and drive at 50 °C (122 °F) ambient and rated line voltage. For additional information on ambient and line conditions, refer to Motion Analyzer software, version 4.7 or later.

Kinetix 2000 Drives/LDL-Series Linear Motor Curves

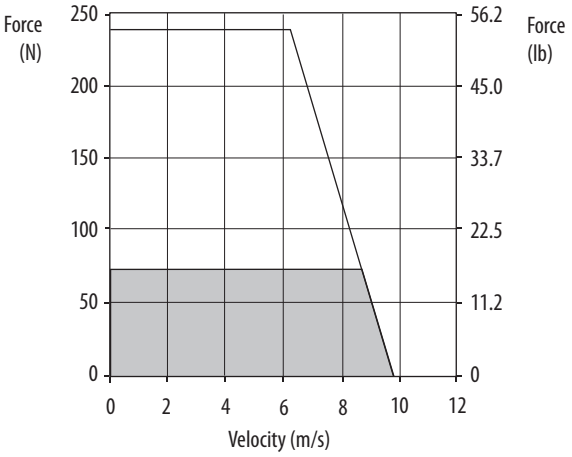




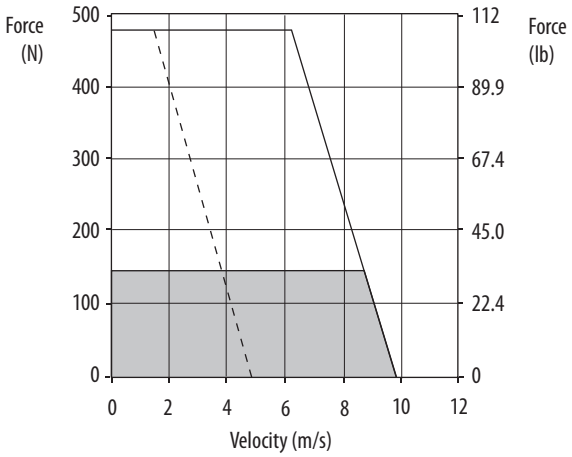
= Intermittent operating region (LDL-*xxxxxx*-DHT)
= Intermittent operating region (LDL-*xxxxxx*-EHT)
= Continuous operating region

Kinetix 2000 Drives/LDL-Series Linear Motor Curves (continued)

2093-AMP5 and LDL-T030120-DHT



2093-AM01 and LDL-T030240-DHT
2093-AMP5 and LDL-T030240-EHT



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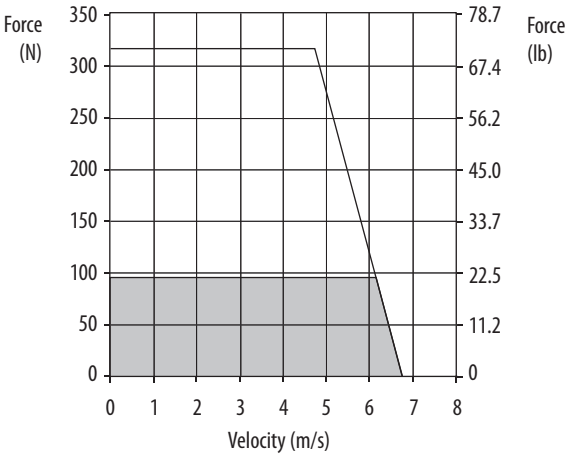
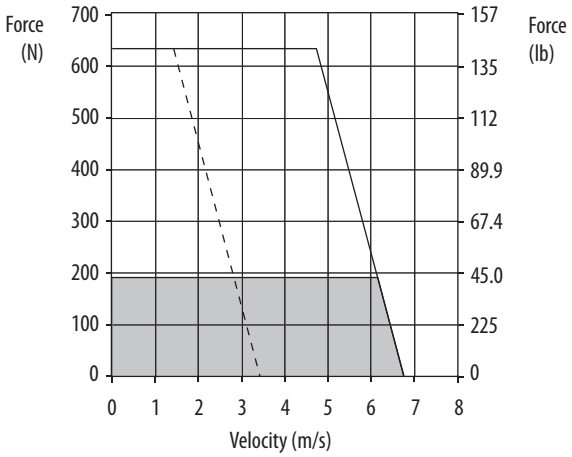
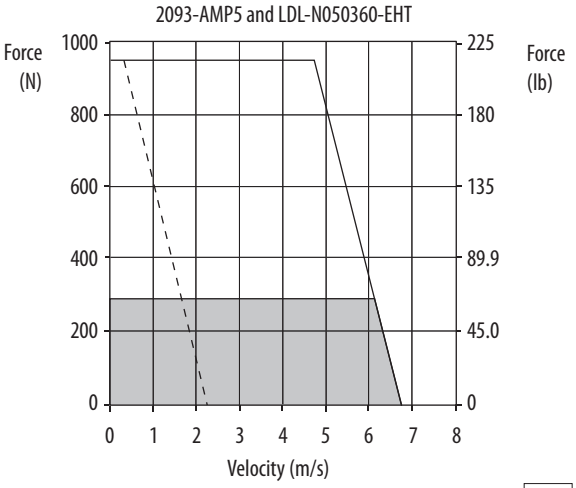


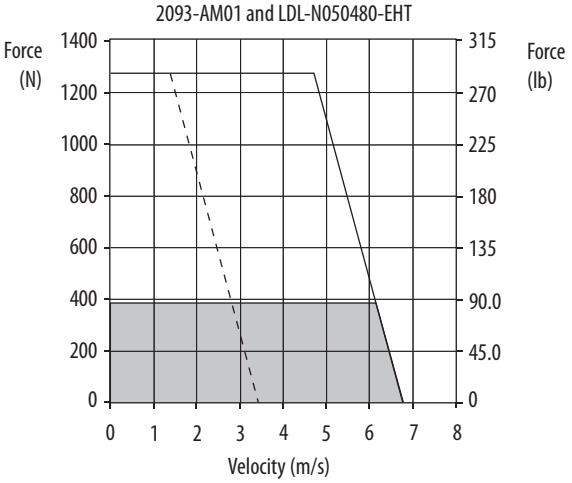
2093-AM01 and LDL-N050240-DHT,
2093-AMP5 and LDL-N050240-EHT



2093-AM02 and LDL-N050360-DHT
2093-AMP5 and LDL-N050360-EHT



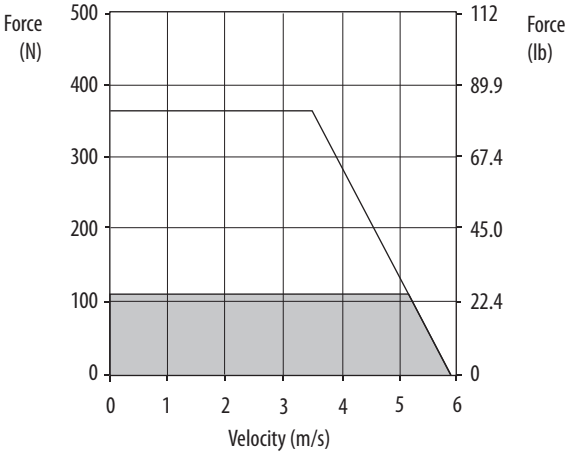
2093-AM02 and LDL-N050480-DHT
2093-AM01 and LDL-N050480-EHT



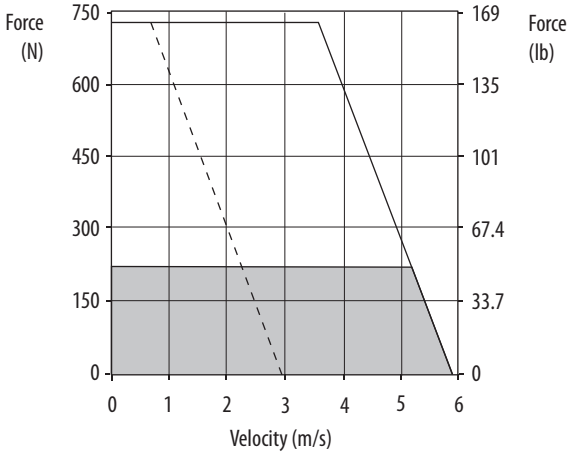
= Intermittent operating region (LDL-*xxxxxxx*-DHT)
= Intermittent operating region (LDL-*xxxxxxx*-EHT)
= Continuous operating region

Kinetix 2000 Drives/LDL-Series Linear Motor Curves (continued)

2093-AMP5 and LDL-T050120-DHT



2093-AM01 and LDL-T050240-DHT
2093-AMP5 and LDL-T050240-EHT



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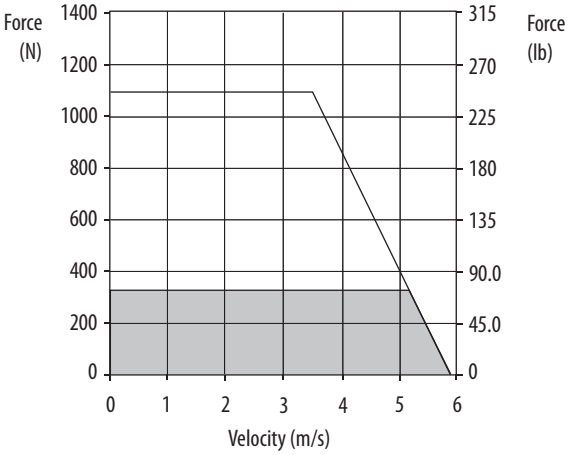

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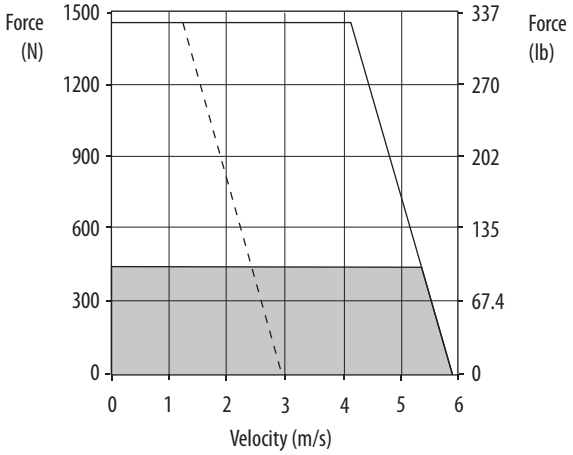
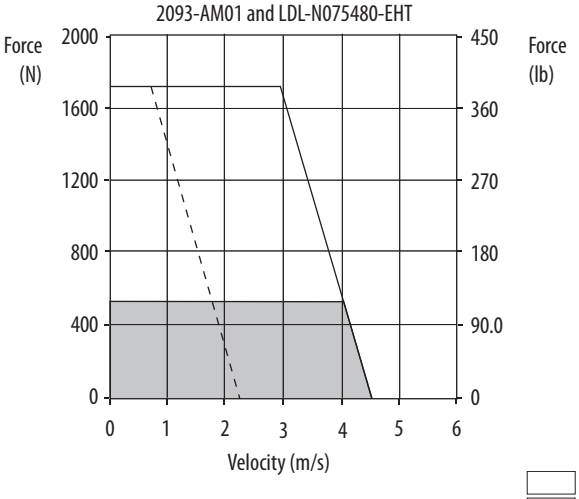
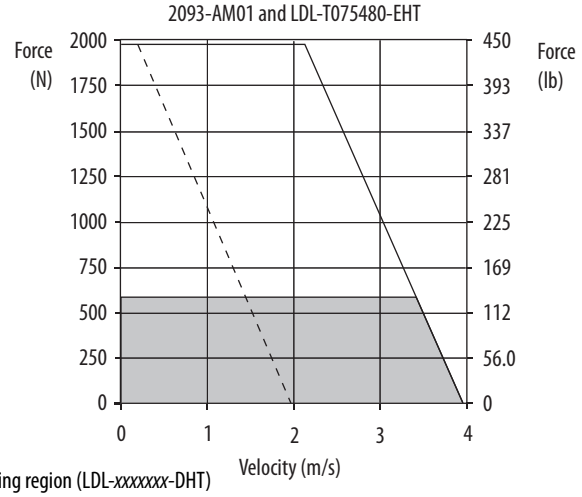


2093-AM02 and LDL-N075480-DHT
2093-AM01 and LDL-N075480-EHT



2093-AM02 and LDL-T075480-DHT
2093-AM01 and LDL-T075480-EHT



= Intermittent operating region (LDL-*xxxxxxx*-DHT)
= Intermittent operating region (LDL-*xxxxxxx*-EHT)
= Continuous operating region

Additional Resources

These documents contain additional information concerning related products from Rockwell Automation.

Resource	Description
Kinetix Rotary Motion Specifications, publication KNX-TD001	Provides product specifications for MP-Series (Bulletin MPL, MPM, MPF, MPS), TL-Series, and HPK-Series™ rotary motors.
Kinetix Linear Motion Specifications, publication KNX-TD002	Provides product specifications for Bulletin MPAS and MPMA linear stages, Bulletin MPAR and MPAI electric cylinders, and LDC-Series and LDL-Series linear motors.
Kinetix Servo Drives Specifications, publication KNX-TD003	Provides product specifications for Kinetix Integrated Motion over the EtherNet/IP™ network, Integrated Motion over Sercos interface, EtherNet/IP networking, and component servo drive families.
Kinetix Motion Accessories Specifications, publication KNX-TD004	Provides product specifications for Bulletin 2090 motor and interface cables, low-profile connector kits, drive power components, and other servo drive accessory items.
Kinetix Motion Control Selection Guide, publication KNX-SG001	Provides an overview of Kinetix servo drives, motors, actuators, and motion accessories designed to help make initial decisions for the motion control products best suited for your system requirements.
Kinetix 5500 Drive Systems Design Guide, publication KNX-RM009	System design guide to determine and select the required (drive specific) drive module, power accessory, connector kit, motor cable, and interface cable catalog numbers for your drive and motor/actuator motion control system. Included are system performance specifications and torque/speed curves (rotary motion) and force/velocity curves (linear motion) for your motion application.
Kinetix 5700 Drive Systems, publication KNX-RM010	
Kinetix 6000 and Kinetix 6200/6500 Drive Systems Design Guide, publication KNX-RM003	
Kinetix 300/350 Drive Systems Design Guide, publication KNX-RM004	
Kinetix 3 Drive Systems Design Guide, publication KNX-RM005	
Kinetix 7000 Drive Systems Design Guide, publication GMC-RM007	
Kinetix 2000 Multi-axis Servo Drives User Manual, publication 2093-UM001	Provides information on installing, configuring, startup, troubleshooting, and applications for your Kinetix 2000 servo drive system.
System Design for Control of Electrical Noise Reference Manual, publication GMC-RM001	Information, examples, and techniques designed to minimize system failures caused by electrical noise.
ControlLogix Selection Guide, publication 1756-SG001	Information to determine which ControlLogix controller fits your application and the product specifications to help design a ControlLogix system and select the appropriate components.
CompactLogix Selection Guide, publication 1769-SG001	Information to determine which CompactLogix™ controller fits your application and the product specifications to help design a CompactLogix system and select the appropriate components.
Industrial Ethernet Media Brochure, publication 1585-BR001	Information to determine which Bulletin 1585 Ethernet cable fits your application and the product specifications to help select the appropriate components.
Motion Analyzer System Sizing and Selection Tool https://motionanalyzer.rockwellautomation.com/	Comprehensive motion application sizing tool used for analysis, optimization, selection, and validation of your Kinetix Motion Control system.
Rockwell Automation Product Selection website http://www.rockwellautomation.com/global/support/selection.page	Provides online product selection and system configuration tools, including AutoCad (DXF) drawings.

You can view or download publications at http://www.rockwellautomation.com/global/literature-library/overview.page.

Notes:

Rockwell Automation Support

Use the following resources to access support information.

Technical Support Center	Knowledgebase Articles, How-to Videos, FAQs, Chat, User Forums, and Product Notification Updates.	www.rockwellautomation.com/knowledgebase
Local Technical Support Phone Numbers	Locate the phone number for your country.	www.rockwellautomation.com/global/support/get-support-now.page
Direct Dial Codes	Find the Direct Dial Code for your product. Use the code to route your call directly to a technical support engineer.	www.rockwellautomation.com/global/support/direct-dial.page
Literature Library	Installation Instructions, Manuals, Brochures, and Technical Data.	www.rockwellautomation.com/literature
Product Compatibility and Download Center (PCDC)	Get help determining how products interact, check features and capabilities, and find associated firmware.	www.rockwellautomation.com/global/support/pcdc.page

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Publication KNX-RM006A-EN-P - February 2019
Supersedes Publication GMC-RM006A-EN-P - September 2011

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