

Kollmorgen Servo Systems Catalog



Micron™ Gearheads



AKM™ Servomotors



Cartridge Direct Drive Rotary™ Motors



Housed Direct Drive Rotary Motors



Direct Drive Linear Motors



Linear Positioners



Multi-Axis Precision Tables



AKD™ Servo Drive

KOLLMORGEN®

Because Motion Matters™

Kollmorgen. Every solution comes from a real understanding of OEM challenges.

The ever-escalating demands of the marketplace mean increased pressure on OEMs at every turn. Time constraints. Demands for better performance. Having to think about the next-generation machine even before the current one is built. While expectations are enormous, budgets are not. Kollmorgen's innovative motion solutions and broad range of quality products help engineers not only overcome these challenges but also build truly differentiated machines.

Because motion matters, it's our focus. Motion can distinctly differentiate a machine and deliver a marketplace advantage by improving its performance. This translates to overall increased efficiency on the factory floor. Perfectly deployed machine motion can make your customer's machine more reliable and efficient, enhance accuracy and improve operator safety. Motion also represents endless possibilities for innovation. We've always understood this potential, and thus, have kept motion at our core, relentlessly developing products that offer precision control of speed, accuracy and position in machines that rely on complex motion.

Removing the Barriers of Design, Sourcing, and Time

At Kollmorgen, we know that OEM engineers can achieve a lot more when obstacles aren't in the way. So, we knock them down in three important ways:

Integrating Standard and Custom Products

The optimal solution is often not clear-cut. Our application expertise allows us to modify standard products or develop totally custom solutions across our whole product portfolio so that designs can take flight.

Providing Motion Solutions, Not Just Components

As companies reduce their supplier base and have less engineering manpower, they need a total system supplier with a wide range of integrated solutions. Kollmorgen is in full response mode with complete solutions that combine programming software, engineering services and best-in-class motion components.

Global Footprint

With direct sales, engineering support, manufacturing facilities, and distributors across North America, Europe, Middle East, and Asia, we're close to OEMs worldwide. Our proximity helps speed delivery and lend support where and when they're needed.

Financial and Operational Stability

Kollmorgen is part of Danaher Corporation, our \$13B parent company. A key driver in the growth of all Danaher divisions is the Danaher Business System, which relies on the principle of "kaizen" – or continuous improvement. Using world-class tools, cross-disciplinary teams of exceptional people evaluate processes, and develop plans that result in superior performance.

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AKD™ Servo Drive

Our AKD Series is a complete range of Ethernet-based Servo Drives that are fast, feature-rich, flexible and integrate quickly and easily into any application.* AKD ensures plug-and-play commissioning for instant, seamless access to everything in your machine. And, no matter what your application demands, AKD offers industry-leading servo performance, communication options, and power levels, all in a smaller footprint.

This robust, technologically advanced family of drives delivers optimized performance when paired with our best-in-class components, producing higher quality results at greater speeds and more uptime. With Kollmorgen servo components, we can help you increase your machine's overall effectiveness by 50%.

* Patents pending.

Key Features

- Highest resolution feedback (up to 27-bit)
- High bandwidth torque-and-velocity loops – fastest digital torque loop in the market: 0.67 μ s
- Multi-function Bode Plot makes it easy to evaluate and optimize motion and machine performance
- Industry-leading and patent pending auto-tuning algorithms
- Advanced servo techniques such as high-order observer and bi-quad filters that yield industry-leading machine performance
- High resolution reference input (digital --> analog)

Benefits

- Higher machine speed/throughput

- Powerful dual processor enables fast settling times

- Reduced scrap, better quality

- Powerful dual processor to hold programs/recipes
- Six-channel “real-time” software oscilloscope for fast commissioning and diagnostics
- Auto-complete of programmable commands saves looking up parameter names
- One-click capture and sharing of program plots and parameter settings allows you to send machine performance data instantly
- Best Graphical User Interface (GUI) in the market – extremely powerful and easy to use
- Robust and dependable quality

- Quicker changeover, greater uptime

- Supports a variety of single- and multi-turn feedback devices – Smart Feedback Device (SFD), EnDat2.2, 01, BiSS, Analog Sine/Cos encoder, incremental encoder, HIPERFACE®, and resolver
- Tightly integrated Ethernet motion buses on board base drive – EtherCAT®, SynqNet®, Modbus/TCP, and CANopen®
- Runs rotary and linear motors
- Widest range of programming options in the industry
- Seamlessly compatible with a range of front-end controls
- Industry-leading power density

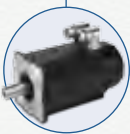
- Quicker time to market

AKD Servo Drive

The AKD Servo Drive delivers cutting-edge technology and performance with one of the most compact footprints in the industry. These feature-rich drives provide a solution for nearly any application, from basic torque-and-velocity applications, to indexing, to multi-axis programmable motion with embedded Kollmorgen Automation Suite™. The versatile AKD sets the standard for power density and performance.



Micron™ Gearheads



AKM™ Servomotors



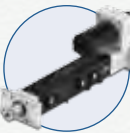
Cartridge Direct Drive Rotary™ Motors



Housed Direct Drive Rotary Motors



Direct Drive Linear Motors*



Linear Positioners



Multi-Axis Precision Tables

Best-in-Class Components

AKD works seamlessly with Kollmorgen motors and positioners—well-known for quality, reliability, and performance.

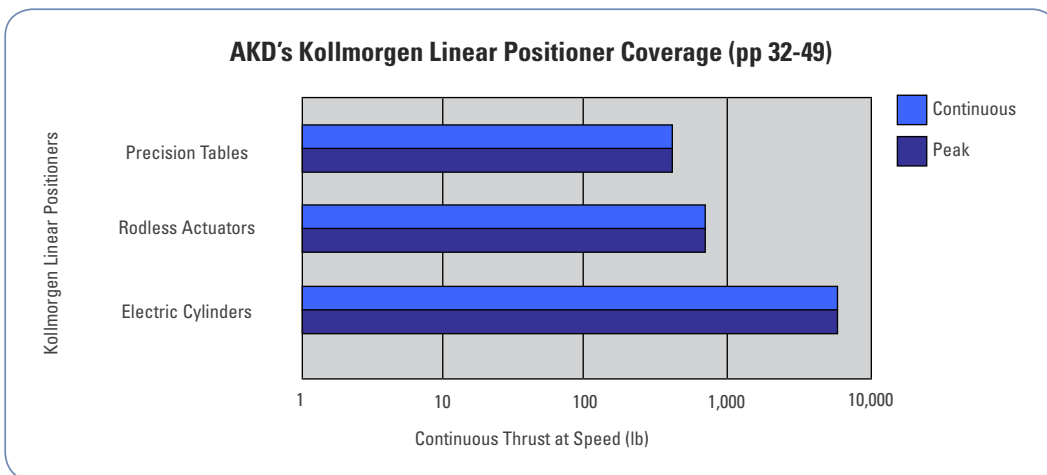
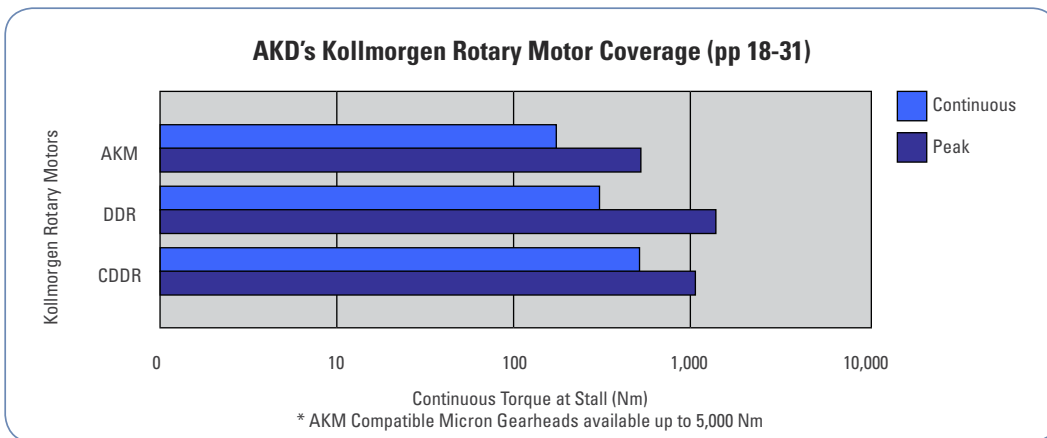
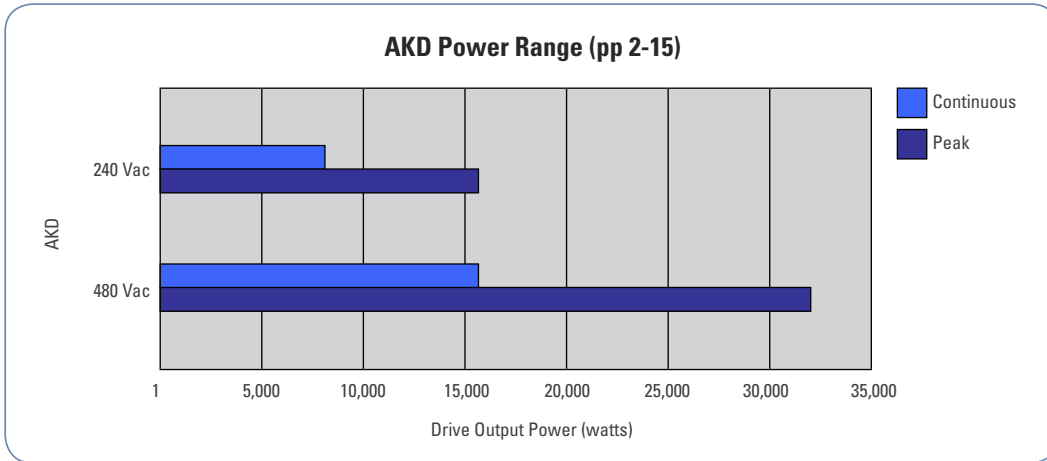


AKD™ Servo Drive

* For more information on our Direct Drive Linear Motors, visit www.kollmorgen.com/brushlessddl

AKD Range of Coverage

When you pair the AKD Servo Drive with any of our Kollmorgen motors or linear positioners, you'll achieve optimized performance. From 3 to 24 Arms continuous current and 9 to 48 Arms peak current, the feature-rich AKD provides a solution for nearly any application.



AKD Servo Drive

AKD is specifically designed with the versatility, communications, and power you need to expand machine performance and increase integration speeds. Motor set-up is plug-and-play and multiple Ethernet connectivity options provide both open and closed protocols. Online trouble-shooting and data verification enable faster, bug-proof programming. And a broad power range in a smaller, compact design allows you to use these robust drives with a single interface.

Industry-leading high performance servo loops

Performance Specifications

| Servo Loop | Update Rate | Bandwidth (Max) |
|---------------|-------------------------|-----------------|
| Current Loop | 1.5 MHz, (0.67 μ s) | 5.0 kHz |
| Velocity Loop | 16 kHz, (62.5 μ s) | 1.6 kHz |
| Position Loop | 8 kHz, (125 μ s) | 0.8 kHz |

| Inputs/Outputs | | |
|-------------------------------------|---|------------------------------------|
| Digital Input Events | 16 kHz, (62.5 μ s) Update Rate | |
| Encoder Output or AUX Encoder Input | 2.5 MHz Maximum Line Frequency | |
| Feedback | Smart Feedback Device (SFD), EnDat2.2, 01, BiSS, Analog Sine/Cos encoder, incremental encoder, HIPERFACE®, and resolver | |
| Logic Supply | 24 Vdc | |
| | Base Drive | With I/O Expansion |
| Digital Input (24 Vdc) | 8 (1 dedicated to enable) | 20 (1 dedicated to enable) |
| Digital Output (24 Vdc) | 3 (1 dedicated to fault relay) | 13 (1 dedicated to fault relay) |
| Analog Input (+/- 10 Vdc, 16-bit) | 1 | 2 |
| Analog Output (+/- 10 Vdc, 16-bit) | 1 | 2 |
| Programmable Inputs | 7 | 19 |
| Programmable Outputs | 2 | 12 |
| Sink/Source Inputs/Outputs | Yes | Yes |



Modbus/TCP



Industry-leading power density

General Specifications

| 120 / 240 Vac 1 & 3Ø (85 -265 V) | Continuous Current (Arms) | Peak Current (Arms) | Drive Continuous Output Power (watts) | Internal Regen | | Height mm (inches) | Width mm (inches) | Depth mm (inches) | Depth with Cable Bend Radius mm (inches) |
|-------------------------------------|---------------------------------|---------------------------|---|----------------|--------|--------------------------|-------------------------|-------------------------|---|
| | | | | (watts) | (ohms) | | | | |
| AKD-■00306 | 3 | 9 | 1100 | 0 | 0 | 168 (6.61) | 57 (2.24) | 153 (6.02) | 184 (7.24) |
| AKD-■00606 | 6 | 18 | 2000 | 0 | 0 | 168 (6.61) | 57 (2.24) | 153 (6.02) | 184 (7.24) |
| AKD-■01206 | 12 | 30 | 4000 | 100 | 15 | 195 (7.68) | 76 (2.99) | 186 (7.32) | 215 (8.46) |
| AKD-■02406 | 24 | 48 | 8000 | 200 | 8 | 250 (9.84) | 100 (3.94) | 230 (9.06) | 265 (10.43) |
| 480 Vac 3Ø (187 -528 V) | Continuous Current (Arms) | Peak Current (Arms) | Drive Continuous Output Power (watts) | Internal Regen | | Height mm (inches) | Width mm (inches) | Depth mm (inches) | Depth with Cable Bend Radius mm (inches) |
| | | | | (watts) | (ohms) | | | | |
| AKD-■00307 | 3 | 9 | 2000 | 100 | 33 | 256 (10.08) | 70 (2.76) | 186 (7.32) | 221 (8.70) |
| AKD-■00607 | 6 | 18 | 4000 | 100 | 33 | 256 (10.08) | 70 (2.76) | 186 (7.32) | 221 (8.70) |
| AKD-■01207 | 12 | 30 | 8000 | 100 | 33 | 256 (10.08) | 70 (2.76) | 186 (7.32) | 221 (8.70) |
| AKD-■02407 | 24 | 48 | 16,000 | 200 | 23 | 310 (12.20) | 105 (4.13) | 229 (9.02) | 264 (10.39) |
| AKD-■04807* | 48 | 96 | 32,000 | 400 | | Coming in 2010 | | | |
| AKD-■09607* | 96 | 192 | 64,000 | 800 | | Coming in 2010 | | | |

Note: For complete AKD model nomenclature, refer to page 63.
* Available 2010.

Scalable Programmability

The AKD Servo Drive delivers cutting-edge technology and performance with one of the most compact footprints in the industry. The AKD is flexible enough for virtually any application. From one axis that is as simple as analog torque and velocity, to 128 axes of fully programmable synchronized motion, AKD is the answer.

Benefits

- Optimized performance in seconds
- Greater throughput and accuracy
- Easy-to-use Graphical User Interface (GUI) for faster commissioning and troubleshooting
- Flexible and scalable to meet any application



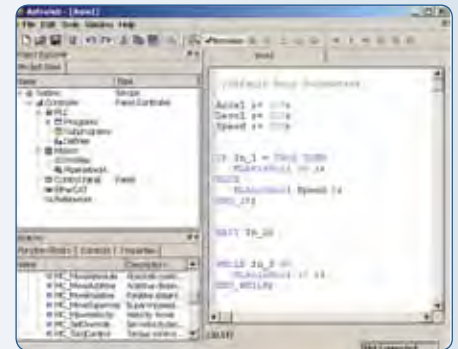
Base AKD ("B" Option)

- Controlled by analog torque-and-velocity commands
- Includes electronic gearing via X9 connector
- Includes access to 11 digital I/O and 2 analog I/O on base drive
- Includes 2 high-speed digital inputs
- Expandable to 31 digital I/O and 4 analog I/O



Motion Tasking ("P" Option)

- Adds simple point-and-click indexing to base drive
- Provides user with pre-programmed options
- Guides novice user through simplified steps to create indexing moves
- Includes access to 11 digital I/O and 2 analog I/O on base drive
- Includes 2 high-speed digital inputs
- Expandable to 31 digital I/O and 4 analog I/O
- Same package size as base drive



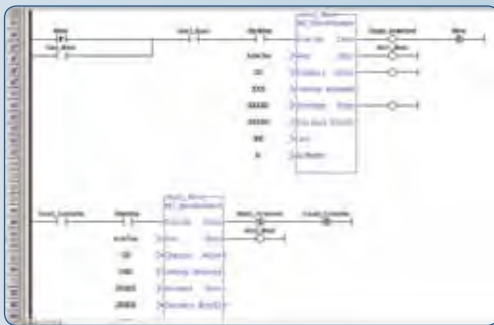
Structured Text Programmable 1.5 Axis Drive ("T" Option)

- Adds simplified "basic-like" programmability to base AKD
- Greater functionality than simple indexing
- Code is easily portable to higher levels of programmability
- Includes access to 11 digital I/O and 2 analog I/O on base drive
- Includes 2 high-speed digital inputs
- Expandable to 31 digital I/O and 4 analog I/O
- Same package size as base drive

Basic Operation

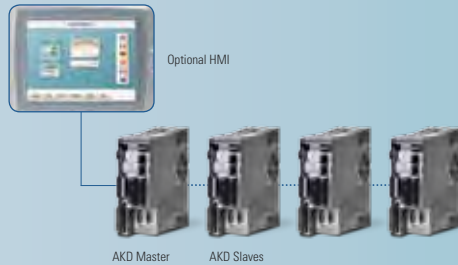
Single-Axis

RANGE OF KOLLMORGEN AUTOMATION SUITE CAPABILITIES



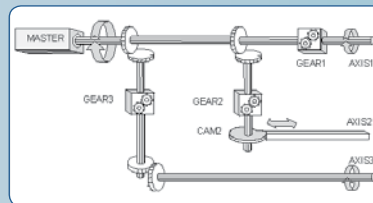
Kollmorgen Automation Suite Programmable Drive

- Powerful 1.5 axis controller: new standard for performance!
- All five IEC 61131-3 languages (Structured Text, Function Block Diagram, Ladder Diagram, Instruction List, Sequential Function Chart) for process programming (soft PLC)
- PLCopen for motion programming
- Exclusive function blocks such as “wait” and “interrupt” so your program can act as a scanning language or sequential language
- Includes access to 11 digital I/O and 2 analog I/O on base drive
- Includes 2 high-speed digital inputs
- Expandable to 31 digital I/O and 4 analog I/O
- Same package size as base drive

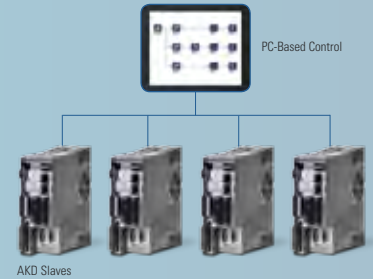


Kollmorgen Automation Suite Programmable Multi-Axis Master

- True synchronized-path control of up to 4 axes
- Sets new standards for precision and optimizes nearly any application
- Easily manages remote I/O via EtherCAT in addition to all drives' I/O
- Pipe Network™ – program sophisticated camming and gearing applications in a matter of minutes
- Adds only 30 millimeters to width of drives below 12 Amps; same size as larger base drives
- Includes 11 digital I/O and 2 analog I/O per axis
- Includes 2 high-speed digital inputs per axis



Using the exclusive Pipe Network™ provides a one-to-one translation of a mechanical system into a logical world.



Kollmorgen Automation Suite Programmable Automation Controller (PAC)

- Capable of controlling up to 128 axes using a PAC and EtherCAT-enabled base AKD
- Easily manages remote I/O via EtherCAT in addition to all drives' I/O
- Sets new standards for precision and optimizes nearly any application
- Pipe Network – program sophisticated camming and gearing applications in a matter of minutes
- Adds only 30 millimeters to width of drives below 12 Amps; same size as larger base drives
- Includes 11 digital I/O and 2 analog I/O per axis
- Includes 2 high-speed digital inputs per axis

IEC 61131-3 with five languages for process programming (soft PLC)

Choice of PLCopen or Kollmorgen *exclusive* Pipe Network for motion programming



Programming

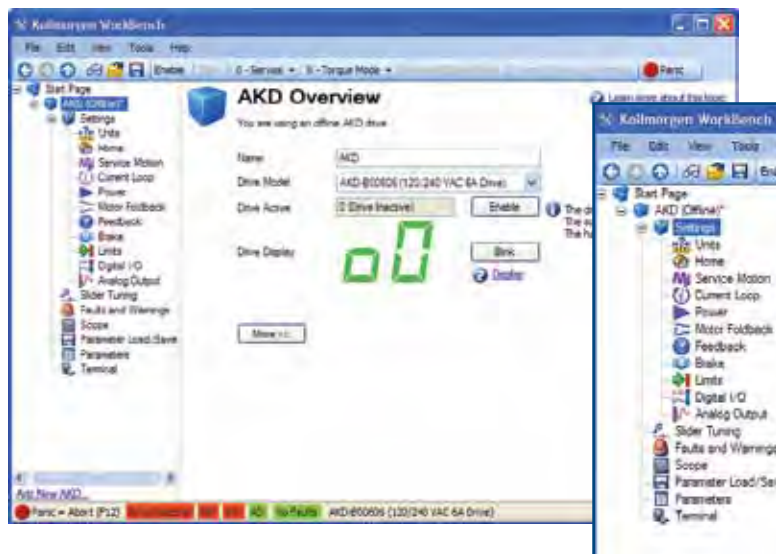
Multi-Axis Programming

Kollmorgen WorkBench

Our simple Graphical User Interface (GUI), Kollmorgen WorkBench, is designed to expedite and streamline the user's experience with AKD. From easy application selection and reduced math, to a sleek six-channel scope; the user interface is extremely easy to use. Kollmorgen WorkBench also makes auto-tuning the AKD high-performance drive with world-class Kollmorgen motors very simple.

User-Friendly Environment

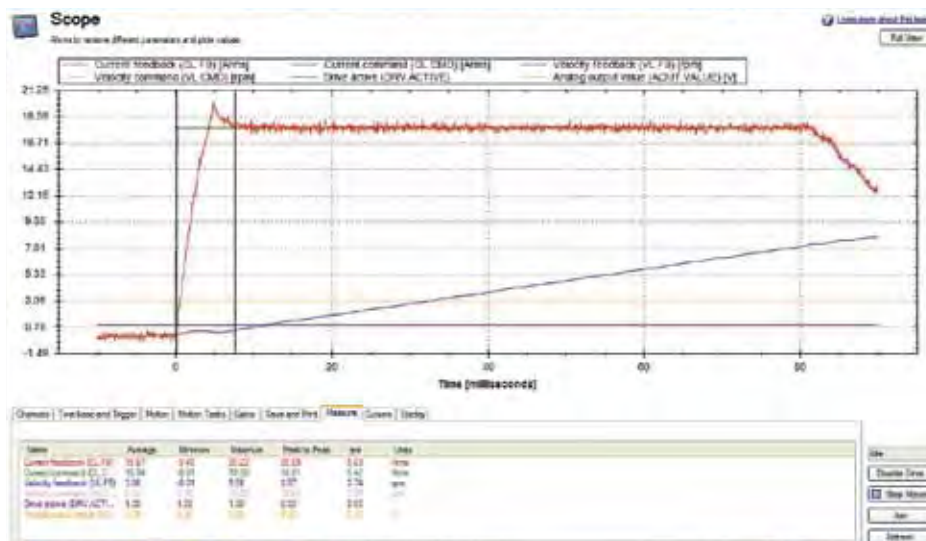
Logical flow, colorful icons and easy access simplify interactions with AKD. The folder structure allows for instant identification and easy navigation.



Sleek Six-Channel "Real-Time" Software Oscilloscope

The easy-to-use AKD interface has a sleek digital oscilloscope that provides a comfortable environment for users to monitor performance. There are multiple options to share data in the format you prefer at the click of a button.

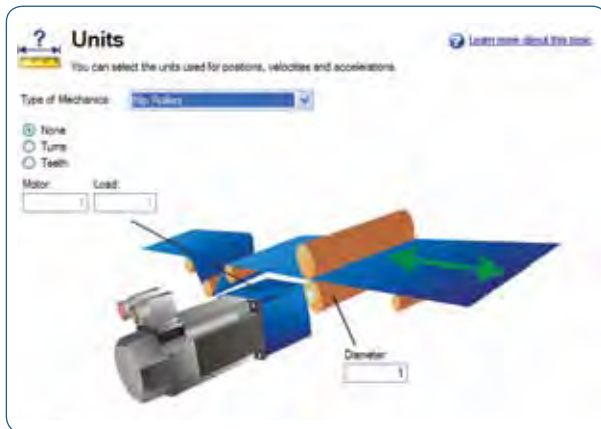
- Save as an image
- Load to an e-mail
- Print



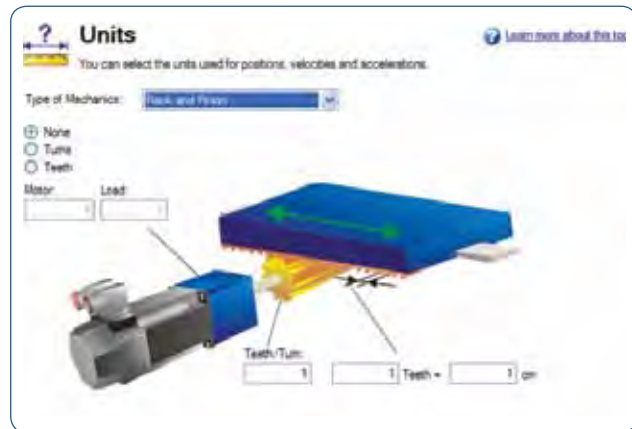
Application Selection

Simplifies set-up by allowing use of machine or application-based units. Nip Roller and Rack and Pinion set-ups shown.

Nip Roller Application Selection



Rack and Pinion Application Selection



Data-Sharing

The ease-of-sharing continues in the parameters window. Kollmorgen WorkBench provides the user the easy options of printing or emailing the parameter values at the click of a button.

The Parameters window displays the following data:

| Full Name | Value | Units | Parameter | Read/Write |
|---|-------------------|-------|----------------|------------|
| Active Disable | | | | |
| Deceleration during active disable | 3000.000 | rpm/s | AD DEC | read-write |
| Time-out | 1000 | ms | AD DISTO | read-write |
| State | 0 | ms | AD STATE | read-only |
| Velocity window | 120.000 | rpm | AD VELTHRESH | read-write |
| Time delay after velocity window | E | ms | AD VELTHRESHTM | read-write |
| Analog Input | | | | |
| Analog input low pass filter cutoff freq. | 5.000.000 | Hz | AIN CUTOFF | read-write |
| Analog input signal deadband | 0.000 | V | AIN DEADBAND | read-write |
| Analog input mode | 0 - Inactive | | AIN MODE | read-write |
| Analog input offset | 0.000 | V | AIN OFFSET | read-write |
| Analog input signal | 0.000 | V | AIN VALUE | read-only |
| Analog Input/Output | | | | |
| Analog input torque scale | 0.001 | AV | AIO.TSCALE | read-write |
| Analog input velocity scale | 0.060 | rpm/V | AIO.VSCALE | read-write |
| Analog Output | | | | |
| Analog output mode | 0 - User Variable | | AOUT MODE | read-write |
| Analog output value | 0.000 | V | AOUT VALUE | read-only |
| Mode | | | | |
| Current Loop | | | | |
| Current command | 0.000 | A | CL CMD | read-only |
| Current command - user | 0.000 | A | CL CMDU | read-write |
| Current command - D component | 0.000 | A | CL DCMD | read-only |
| Current command - user D component | 0.000 | A | CL DCMDU | read-write |

The email client window shows the following details:

- Subject: Drive Parameter List
- Attachment: DriveParameterList.csv (16 KB)
- Message body: Drive Parameter List is attached.

AKD Connector Layout and Functionality

Ethernet Connectivity

- Ethernet-based AKD provides the user with multiple bus choices
- EtherCAT® (DSP402 protocol), Modbus/TCP, SynqNet®, and CANopen®
- EtherCAT and CANopen can be run simultaneously on the same AKD Drive
- No option cards are required



Industrial Design

- Rugged circuit design and compact enclosure for space-saving, modern appearance – minimizes electrical noise emission and susceptibility
- Full fault protection
- UL, cUL listed, and CE
- No external line filters needed (480 Vac units) for CE & UL compliance
- Removable screw terminal connectors for easy connections
- DC Bus sharing



Safe-Torque-Off (STO)

(IEC 61800 SIL2)

- Switches off the power stage to ensure personnel safety and prevents an unintended restart of the drive, even in fault condition
- Allows logic and communication to remain on during power stage shut down

Plug-and-Play with Kollmorgen Motors and Positioners

- Electronic motor nameplates allow parameters to automatically load for fast commissioning
- Motion in seconds
- Custom motor parameters easily entered

Internal Regenerative Braking Resistor

(All powers except 120/240 Vac 3 Arms and 6 Arms)

- Simplifies system components
- Saves overhead of managing external regeneration when internal regeneration is sufficient

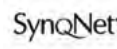
I/O (Base Drive)

- 8 digital inputs (1 dedicated to enable)
- 2 high-speed digital inputs (maximum time delay of 1.0 μ s)
- 3 digital outputs (1 dedicated to fault relay)
- 1 analog input - 16 bit
- 1 analog output - 16 bit

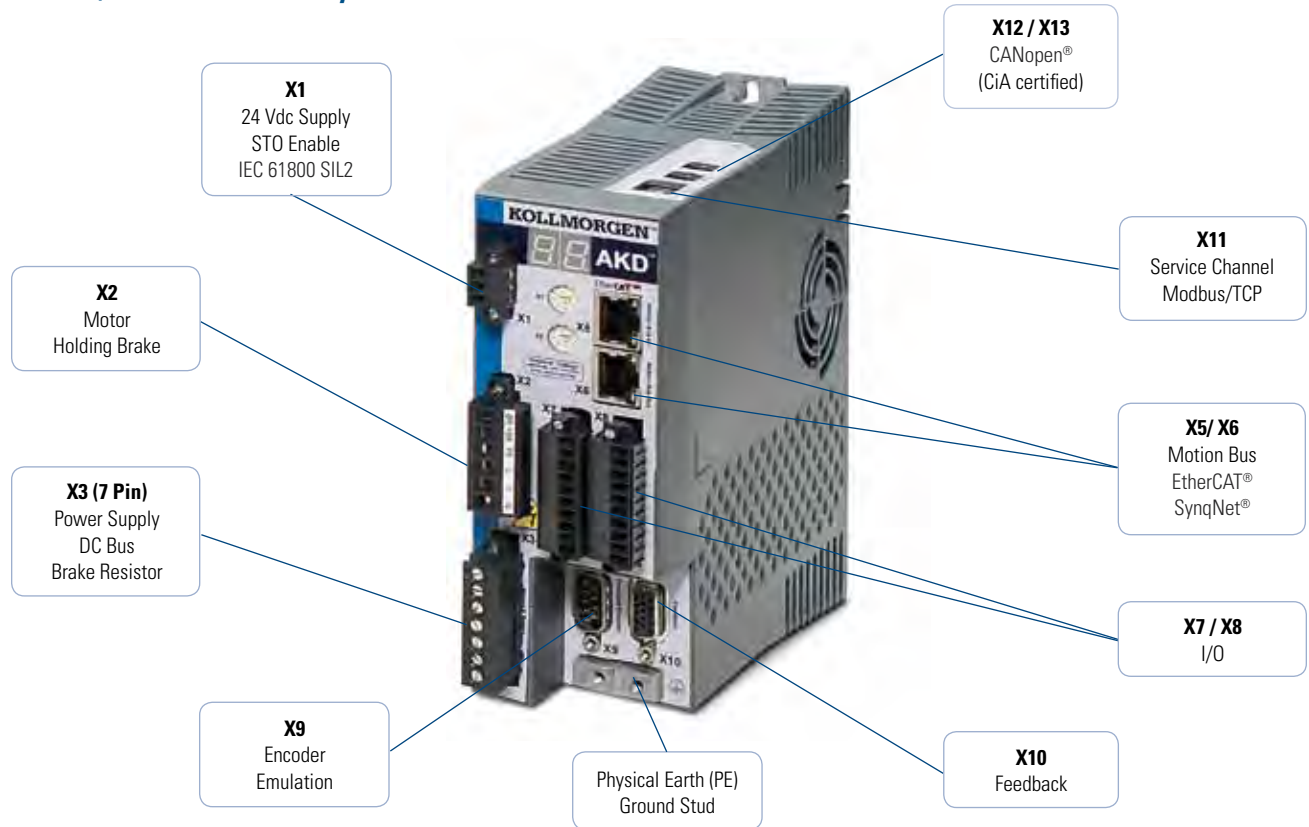


Auto-Tuning

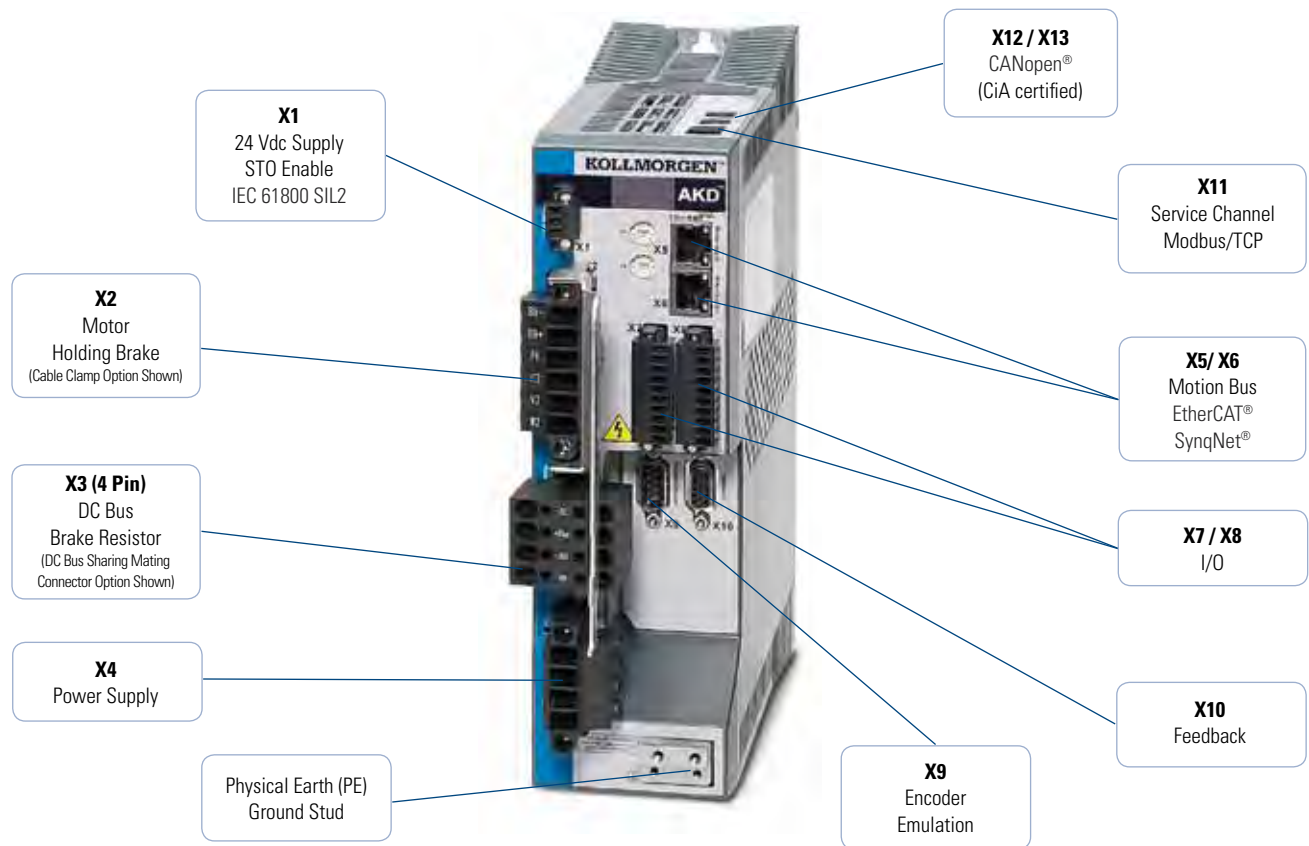
- Optimized performance with auto-tuning, guided tuning, or manual tuning
- Handles inertia mismatches up to 1000:1
- Industry leading bandwidth under compliant and stiff load conditions, no matter the mechanical bandwidth of the machine



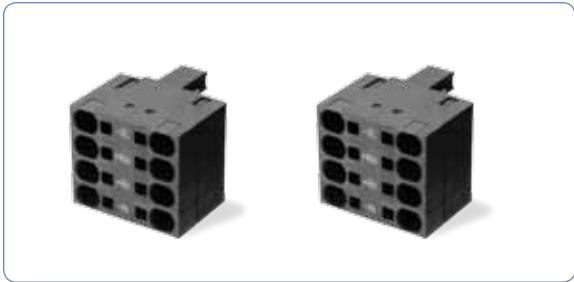
AKD 120/240 Vac Connector Layout



AKD 480 Vac Connector Layout



Accessories



Mating Connectors

The AKD series includes all screw type mating connectors. Alternative connectors for DC bus and mains sharing are available.



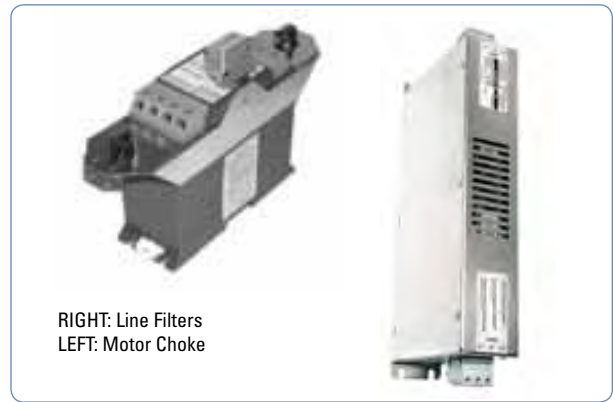
Brake Resistors

We offer a full line of brake resistors up to 2500 watts. Brake resistors are impedance matched with AKD and are available in many sizes and form factors.



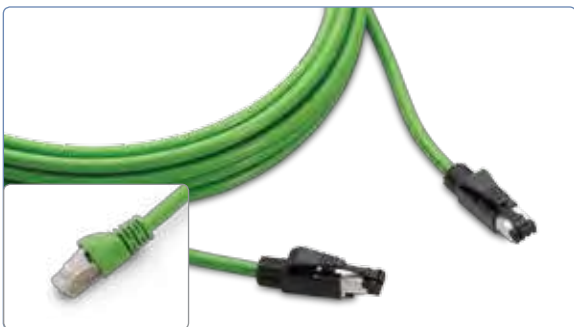
Shielding Solutions

For noisy environments, we offer shielding kits that can be applied to our Flex Line Cables.



Chokes and Filters

Line filters are offered to improve reliability and to protect the life of the machine in less stable environments. Motor chokes reduce radiated emissions and are recommended for applications with cable lengths >25 meters.



Motion Bus and Service Port Cables

We offer industrial shielded PUR cables with RJ45 connections for demanding industrial environments. These cables outperform office cables in EMC resilience, durability, and life.



I/O and Auxiliary Input Breakout Adapters

Our I/O breakout board is pre-populated with I/O switches and a power connection for quicker prototyping.

Servo System Cables

Value Line motor and power cables are suitable for most standard applications. High performance Flex Line motor and power cables are available for trailing and flexing applications or where longer lengths are required.



Mating Connectors

AKD drives include screw type mating connectors. Alternative connectors for DC bus and mains sharing are also available. D-sub and RJ-type connectors are not included.

Specification Comparison

| | Value Line | Flex Line |
|-----------------------------------|---|---|
| Lengths Offered | 1, 3, 6, 9, 12 m | 1-50 m, 1/2 m increments |
| Max Ampacity (continuous) | 12 A | 24 A |
| Static Flex Radius | 10 x Cable Outside Dimension (OD) | 10 x Cable Outside Dimension (OD) |
| Dynamic Flex (1,000,000 cycles) | Not Rated | 15 x Cable Outside Dimension (OD) |
| Motor Connectors Available | Euro Style | Euro Style |
| Maximum Motor Connector IP rating | IP67 | IP65 |
| Cable Agency Approvals | RoHS, UL, CE | UL, CSA, CE, NEC, NFPA |
| Feedback Supported | SFD, EnDat2.2, 01, BiSS, Resolver, HIPERFACE® | SFD, Sine Encoder, EnDat2.2, 01, BiSS, Resolver, HIPERFACE®, Comcoder |
| Holding Brake | Available | Available |

Power Cables

| AKD | Value Line | OD (mm) | Value Line with Brake | OD (mm) | Flex Line | OD (mm) | Flex Line with Brake | OD (mm) |
|---------|---------------|---------------|-----------------------|---------------|-----------------|---------|----------------------|---------|
| 3/6 Amp | VP-507BEAN-XX | 9.4 | VP-508CFAN-XX | 10.9 | CP-507CCAN-XX-X | 12.7 | CP-507CDAN-XX-X | 14.5 |
| 12 Amp | VP-508CEAN-XX | 10.3 | VP-508CFAN-XX | 10.9 | CP-507CCAN-XX-X | 12.7 | CP-507CDAN-XX-X | 14.5 |
| 20 Amp | VP-508DEAN-XX | 11.7 | VP-508DFAN-XX | 12.9 | CP-508DCAN-XX-X | 14.5 | CP-508DDAN-XX-X | 16.6 |
| 24 Amp | Not Available | Not Available | Not Available | Not Available | CP-508EDBN-XX-X | 18.3 | CP-508EDBN-XX-X | 18.3 |

Feedback Cables

| Feedback Type | Value Line | OD (mm) | Flex Line | OD (mm) |
|------------------------------|---------------|---------------|-----------------|---------|
| SFD | VF-DA0474N-XX | 6.7 | CF-DA0374N-XX-X | 7.5 |
| EnDat 2.1 / BiSS, HIPERFACE® | VF-SB4474N-XX | 9.7 | CF-SB7374N-XX-X | 11.2 |
| Resolver | VF-RA2474N-XX | 9.7 | CF-RA2574N-XX-X | 9.5 |
| Incremental / Comcoder | Not Available | Not Available | CF-CB7374N-XX-X | 11.2 |

Note: Refer to page 62 for matching cables by motor type and drive.

AKD Servo Systems

When you need precise position control, choose from Kollmorgen's broad portfolio of AKD Servo System components. Our unparalleled product line breadth provides great flexibility for any application. Whether it's any combination of motors and drives, cables, controller, electric cylinders or gearheads, all components are plug-and-play for easy, seamless integration. These best-in-class servo systems can be matched with single-axis or multi-axis motion controllers for a system solution that's precise, reliable and durable.

Key Features

- Optimized AKM and Direct Drive motor windings to AKD Drive
- Plug-and-play motor-recognition drive commissioning for AKM, CDDR and DDR motor families
- Industry-leading and patent pending auto-tuning algorithms
- New lower cost multi-turn feedback option
- Industry-leading motor power density
- AKM offers 25 frame-stack combinations and nearly 120 standard windings in a single motor line
- CDDR offers 17 frame-stack combinations and 31 windings
- DDR offers 12 frame-stack combinations and 12 windings
- New IP67 protection class option for AKM

Benefits

- Same size AKM delivers up to 47% more shaft power than before
- Reduction in drive size and motor size
- Reduction in system cost
- Reduction in set-up time for each servo system
- Immediate and adaptive response to dynamic loads optimizes performance in seconds
- Precise control of all motor types
- Compensation for stiff and compliant transmissions and couplings
- Improve machine precision with high resolution and improved accuracy
- Reduce cycle time and sensor-and-wiring costs by eliminating traditional homing methods
- Don't let motor size dictate the size of your machine
- Fit more motor into a smaller space than you thought possible
- Over 50,000 standard motor variations including a wide range of mounting, connectivity, feedback and other options
- Flexibility provides choices to help you find an exact-fit solution
- Simplifies or eliminates mechanical modifications and engineering adaptation
- Apply AKM into hostile industrial applications with confidence and long-term reliability

AKM Servomotor

The AKM™ Brushless Servomotor stands alone in the marketplace in terms of flexibility and performance advantages. Kollmorgen's culture of continuous improvement has paid dividends again. The AKM Servomotor's innovative design has been polished and optimized. With the new AKD amplifier, the venerable AKM Servomotor sets a new standard of refined servo performance, designed to deliver precise motion and more power for your money. Nowhere else will you find a more versatile and complete servo family to meet your needs and exceed your expectations.



Features

- 7 frame sizes (40 to 188 mm)
- 25 frame-stack length combinations
- Multiple windings for low-voltage, 120/240/400/480 Vac operation
- Flexible flange mount and shaft options
- Industry leading low-cogging contributing to extreme smoothness
- Wide feedback options for high-performance and precision or rugged environment
- Unmatched customization – special windings, special shafts, and much more

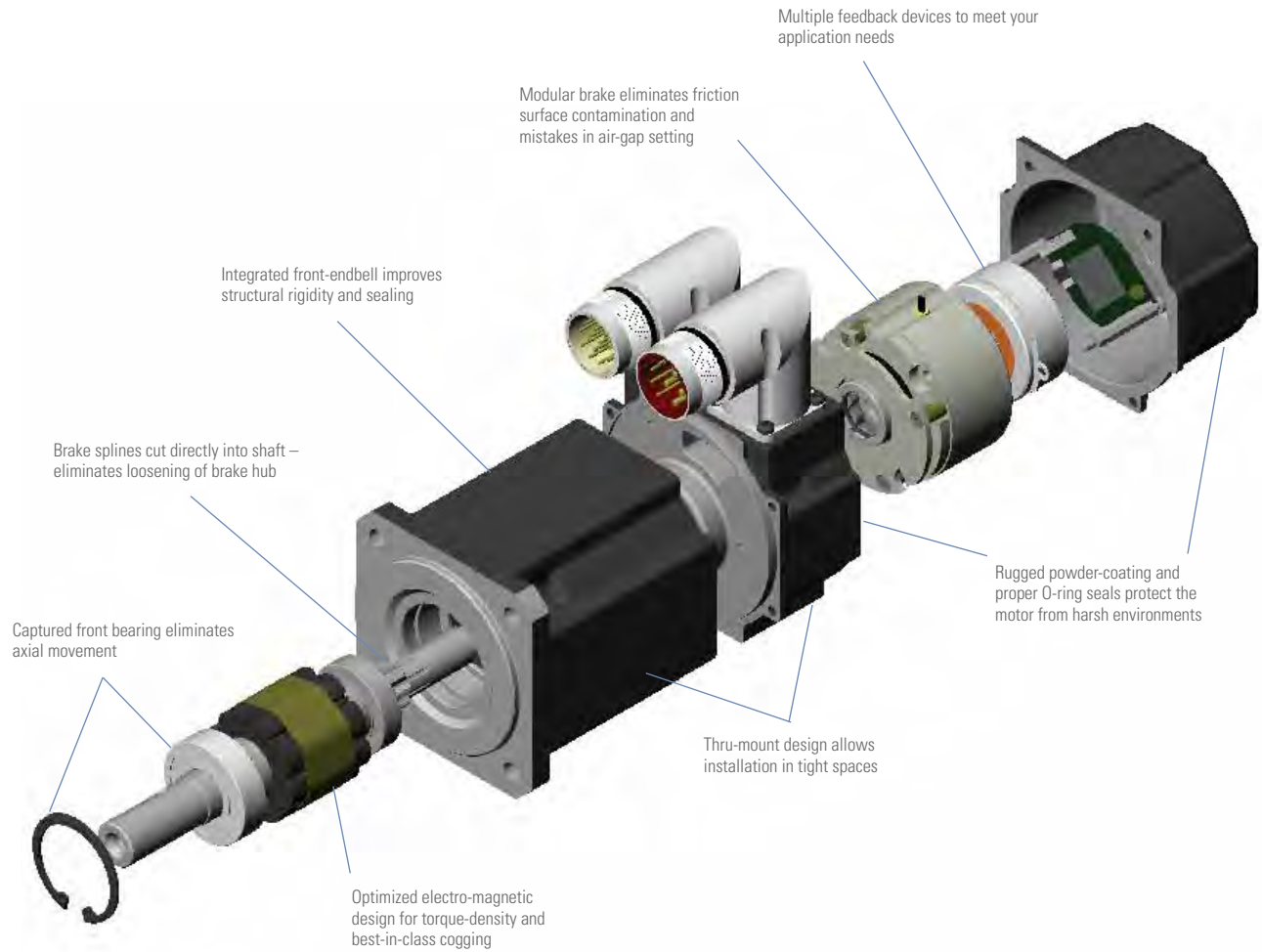
AKD with AKM Plug-and-Play Feedback

These feedback devices include electronic motor nameplates allowing plug-and-play commissioning, eliminating the need for drive parameter set-up and servo loop tuning in most applications.

Performance Data

| AKM Motor | | Single-turn Absolute | | | Multi-turn Absolute | | |
|------------------|--------|----------------------|-------------------|-----------|---------------------|-------------------|-----------|
| | | Accuracy (arc-min) | Resolution (bits) | Motor Key | Accuracy (arc-min) | Resolution (bits) | Motor Key |
| Value Line | AKM1 | 16 | 24 | C | – | – | – |
| | AKM2-3 | 9 | 24 | C | 8 | 20 | LB |
| | AKM4-7 | 9 | 24 | C | 4.66 | 20 | LB |
| Performance Line | AKM2-4 | 1.0 | 20 | DA | 1.0 | 20 | DB |
| | AKM5-7 | 0.333 | 20 | DA | 0.333 | 20 | DB |

AKM (Exploded) 3D Model Shows Key Design Features



AKM Servomotor

Performance Data

| AKM Motor | AKD Drive | Frame Size NEMA/ mm | Cont.Torque at stall Tcs Nm (lb-in) | Peak Torque at stall Tps Nm (lb-in) | Rated Speed Nrtd RPM | Power Prtd watts | Inertia (Jm) Kg-cm ² (lb-in-s ² x10 ⁻³) | |
|-----------|------------|---------------------|-------------------------------------|-------------------------------------|----------------------|------------------|---|-----------------|
| 120 Vac | AKM11B | AKD-X00306 | 17/ 40 | 0.18 (1.59) | 0.61 (5.4) | 4000 | 80 | 0.017 (0.0015) |
| | AKM11C | AKD-X00306 | 17/ 40 | 0.19 (1.68) | 0.62 (5.5) | 6000 | 110 | 0.017 (0.0015) |
| | AKM12C | AKD-X00306 | 17/ 40 | 0.31 (2.74) | 1.08 (9.56) | 4000 | 130 | 0.031 (0.00274) |
| | AKM12E | AKD-X00306 | 17/ 40 | 0.31 (2.74) | 0.91 (8.05) | 8000 | 230 | 0.031 (0.00274) |
| | AKM13C | AKD-X00306 | 17/ 40 | 0.41 (3.63) | 1.46 (12.9) | 3000 | 130 | 0.045 (0.0040) |
| | AKM13D | AKD-X00306 | 17/ 40 | 0.40 (3.54) | 1.36 (12.0) | 7000 | 270 | 0.045 (0.0040) |
| | AKM21C | AKD-X00306 | 23/ 60 | 0.48 (4.25) | 1.48 (13.1) | 2500 | 120 | 0.107 (0.0095) |
| | AKM21E | AKD-X00306 | 23/ 60 | 0.47 (4.16) | 1.21 (10.7) | 7000 | 300 | 0.107 (0.0095) |
| | AKM22C | AKD-X00306 | 23/ 60 | 0.84 (7.43) | 2.39 (21.2) | 1000 | 90 | 0.161 (0.0142) |
| | AKM22E | AKD-X00306 | 23/ 60 | 0.87 (7.70) | 2.42 (21.4) | 3500 | 290 | 0.107 (0.0095) |
| | AKM23D | AKD-X00306 | 23/ 60 | 1.15 (10.2) | 3.89 (34.4) | 1500 | 180 | 0.216 (0.0191) |
| | AKM23F | AKD-X00606 | 23/ 60 | 1.18 (10.4) | 3.88 (34.3) | 4500 | 500 | 0.216 (0.0191) |
| | AKM24D | AKD-X00306 | 23/ 60 | 1.40 (12.4) | 4.84 (42.8) | 1500 | 210 | 0.270 (0.0239) |
| | AKM24F | AKD-X00606 | 23/ 60 | 1.41 (12.5) | 4.82 (42.7) | 3000 | 420 | 0.270 (0.0239) |
| | AKM31E | AKD-X00306 | na/ 80 | 1.20 (10.6) | 3.23 (28.6) | 2500 | 310 | 0.330 (0.0292) |
| | AKM32E | AKD-X00306 | na/ 80 | 2.04 (18.1) | 5.97 (52.8) | 1000 | 210 | 0.590 (0.0522) |
| | AKM32H | AKD-X00606 | na/ 80 | 2.10 (18.6) | 6.22 (55.1) | 3000 | 620 | 0.590 (0.0522) |
| | AKM33H | AKD-X00606 | na/ 80 | 2.87 (25.4) | 8.55 (75.7) | 2500 | 690 | 0.850 (0.0752) |
| | AKM41E | AKD-X00306 | 34/ 90 | 2.01 (17.8) | 5.33 (47.2) | 1200 | 240 | 0.810 (0.0717) |
| | AKM41H | AKD-X00606 | 34/ 90 | 2.05 (18.1) | 5.49 (48.6) | 3000 | 580 | 0.810 (0.0717) |
| | AKM43H | AKD-X00606 | 34/ 90 | 4.82 (42.7) | 14.0 (124) | 1200 | 560 | 2.09 (0.185) |
| | AKM43L | AKD-X01206 | 34/ 90 | 4.73 (41.9) | 11.7 (104) | 3000 | 1190 | 2.09 (0.185) |
| | AKM44H | AKD-X00606 | 34/ 90 | 5.89 (43.3) | 17.0 (150) | 1000 | 570 | 2.73 (0.242) |
| | AKM51H | AKD-X00606 | 42/ 115 | 4.79 (42.4) | 11.7 (104) | 1200 | 560 | 3.42 (0.303) |
| AKM51L | AKD-X01206 | 42/ 115 | 4.89 (43.3) | 10.6 (93.8) | 3000 | 1240 | 3.42 (0.303) | |
| AKM52L | AKD-X01206 | 42/ 115 | 8.67 (76.7) | 19.6 (173) | 1500 | 1240 | 6.22 (0.551) | |
| AKM53L | AKD-X01206 | 42/ 115 | 11.6 (103) | 26.5 (235) | 1200 | 1350 | 9.12 (0.807) | |
| AKM54L | AKD-X01206 | 42/ 115 | 13.5 (119) | 31.3 (277) | 1200 | 1630 | 11.9 (1.06) | |
| 240 Vac | AKM11B | AKD-X00306 | 17/ 40 | 0.18 (1.59) | 0.61 (5.4) | 8000 | 140 | 0.017 (0.0015) |
| | AKM12C | AKD-X00306 | 17/ 40 | 0.31 (2.74) | 1.08 (9.56) | 8000 | 230 | 0.031 (0.00274) |
| | AKM13C | AKD-X00306 | 17/ 40 | 0.41 (3.63) | 1.46 (12.9) | 8000 | 300 | 0.045 (0.0040) |
| | AKM21C | AKD-X00306 | 23/ 60 | 0.48 (4.25) | 1.48 (13.1) | 8000 | 320 | 0.107 (0.0095) |
| | AKM22C | AKD-X00306 | 23/ 60 | 0.84 (7.43) | 2.73 (24.2) | 3500 | 290 | 0.161 (0.0142) |
| | AKM22E | AKD-X00306 | 23/ 60 | 0.87 (7.70) | 2.42 (21.4) | 8000 | 580 | 0.161 (0.0142) |
| | AKM23D | AKD-X00306 | 23/ 60 | 1.15 (10.2) | 3.89 (34.4) | 5000 | 530 | 0.216 (0.0191) |
| | AKM23F | AKD-X00606 | 23/ 60 | 1.18 (10.4) | 3.88 (34.3) | 8000 | 780 | 0.216 (0.0191) |
| | AKM24D | AKD-X00306 | 23/ 60 | 1.40 (12.4) | 4.84 (42.8) | 4000 | 540 | 0.270 (0.0239) |
| | AKM24F | AKD-X00606 | 23/ 60 | 1.41 (12.5) | 4.82 (42.7) | 8000 | 930 | 0.270 (0.0239) |
| | AKM31C | AKD-X00306 | na/ 80 | 1.15 (10.2) | 3.87 (34.3) | 2500 | 290 | 0.330 (0.0292) |
| | AKM31E | AKD-X00306 | na/ 80 | 1.20 (10.6) | 3.23 (28.6) | 6000 | 600 | 0.330 (0.0292) |
| | AKM32E | AKD-X00306 | na/ 80 | 2.04 (18.1) | 5.97 (52.8) | 3000 | 600 | 0.590 (0.0522) |
| | AKM32H | AKD-X00606 | na/ 80 | 2.10 (18.6) | 6.22 (55.1) | 7000 | 1060 | 0.590 (0.0522) |
| | AKM33E | AKD-X00306 | na/ 80 | 2.80 (24.8) | 8.95 (79.2) | 2000 | 550 | 0.850 (0.0752) |
| | AKM33H | AKD-X00606 | na/ 80 | 2.87 (25.4) | 8.55 (75.7) | 5500 | 1300 | 0.850 (0.0752) |
| | AKM41E | AKD-X00306 | 34/ 90 | 2.01 (17.8) | 5.33 (47.2) | 3000 | 570 | 0.810 (0.0717) |
| | AKM41H | AKD-X00606 | 34/ 90 | 2.05 (18.1) | 5.49 (48.6) | 6000 | 1010 | 0.810 (0.0717) |
| | AKM42E | AKD-X00306 | 34/ 90 | 3.42 (30.3) | 9.74 (86.2) | 1800 | 590 | 1.45 (0.128) |
| | AKM42G | AKD-X00606 | 34/ 90 | 3.51 (31.1) | 11.0 (97.4) | 3500 | 1060 | 1.45 (0.128) |
| | AKM43H | AKD-X00606 | 34/ 90 | 4.82 (42.7) | 14.0 (124) | 3000 | 1210 | 2.09 (0.185) |
| | AKM43L | AKD-X01206 | 34/ 90 | 4.73 (41.9) | 11.7 (104) | 6000 | 1590 | 2.09 (0.185) |
| | AKM44E | AKD-X00306 | 34/ 90 | 5.79 (51.2) | 16.5 (146) | 1200 | 660 | 2.73 (0.242) |
| | AKM44H | AKD-X00606 | 34/ 90 | 5.89 (43.3) | 17.0 (150) | 2500 | 1220 | 2.73 (0.242) |

Note 1: Refer to page 62 for matching cables.

Note 2: For complete AKD and AKM model nomenclature, refer to pages 63 and 64 respectively.

Performance Data

| | AKM Motor | AKD Drive | Frame Size NEMA/ mm | Cont.Torque at stall Tcs Nm (lb-in) | Peak Torque at stall Tps Nm (lb-in) | Rated Speed Nrtd RPM | Power Prtd watts | Inertia (Jm) Kg-cm ² (lb-in-s ² x10 ⁻³) |
|---------|------------|------------|------------------------|---|---|----------------------------|------------------------|---|
| 240 Vac | AKM51H | AKD-X00606 | 42/ 115 | 4.79 (42.4) | 11.7 (104) | 3000 | 1220 | 3.42 (0.303) |
| | AKM51L | AKD-X01206 | 42/ 115 | 4.89 (43.3) | 10.6 (93.8) | 6000 | 1260 | 3.42 (0.303) |
| | AKM52H | AKD-X00606 | 42/ 115 | 8.48 (75.1) | 21.6 (191) | 1800 | 1420 | 6.22 (0.551) |
| | AKM52L | AKD-X01206 | 42/ 115 | 8.67 (76.7) | 19.6 (173) | 3500 | 2350 | 6.22 (0.551) |
| | AKM53H | AKD-X00606 | 42/ 115 | 10.5 (92.9) | 27.8 (246) | 1500 | 1650 | 9.12 (0.807) |
| | AKM53L | AKD-X01206 | 42/ 115 | 11.6 (103) | 26.5 (235) | 2500 | 2510 | 9.12 (0.807) |
| | AKM54H | AKD-X00606 | 42/ 115 | 14.2 (126) | 37.5 (332) | 1000 | 1400 | 11.9 (1.06) |
| | AKM54L | AKD-X01206 | 42/ 115 | 13.5 (119) | 31.3 (277) | 2500 | 3010 | 11.9 (1.06) |
| | AKM62H | AKD-X00606 | na/ 142 | 11.9 (105) | 29.61 (262) | 1000 | 1170 | 16.9 (1.50) |
| | AKM62L | AKD-X01206 | na/ 142 | 12.2 (108) | 26.3 (233) | 2500 | 2620 | 16.9 (1.50) |
| | AKM63L | AKD-X01206 | na/ 142 | 16.8 (149) | 39.3 (348) | 1500 | 2330 | 24.2 (2.14) |
| | AKM63N | AKD-X02406 | na/ 142 | 17.0 (150) | 40.3 (357) | 3000 | 4080 | 24.2 (2.14) |
| | AKM64L | AKD-X01206 | na/ 142 | 19.7 (174) | 44.4 (393) | 1500 | 2890 | 31.6 (2.80) |
| | AKM64Q | AKD-X02406 | na/ 142 | 19.5 (173) | 43.1 (381) | 3000 | 4810 | 31.6 (2.80) |
| | AKM65L | AKD-X01206 | na/ 142 | 24.6 (218) | 55.4 (490) | 1300 | 3040 | 40.0 (3.54) |
| | AKM65P | AKD-X02406 | na/ 142 | 24.5 (217) | 53.9 (477) | 2400 | 4790 | 40.0 (3.54) |
| | AKM72P | AKD-X02406 | na/ 180 | 29.5 (261) | 65.8 (606) | 1800 | 4500 | 64.5 (5.71) |
| | AKM72Q | AKD-X02406 | na/ 180 | 24.5 (217) | 56.0 (496) | 2000 | 4860 | 64.5 (5.71) |
| | AKM73P | AKD-X02406 | na/ 180 | 41.4 (366) | 95.3 (828) | 1300 | 4700 | 92.1 (8.15) |
| | AKM73Q | AKD-X02406 | na/ 180 | 33.0 (292) | 76.1 (674) | 1500 | 5250 | 92.1 (8.15) |
| AKM74Q | AKD-X02406 | na/ 180 | 46.8 (414) | 90.7 (803) | 1200 | 5380 | 120 (10.6) | |
| 400 Vac | AKM22C | AKD-X00307 | 23/ 60 | 0.84 (7.43) | 2.73 (24.2) | 8000 | 570 | 0.161 (0.0142) |
| | AKM23D | AKD-X00307 | 23/ 60 | 1.15 (10.2) | 3.89 (34.4) | 8000 | 760 | 0.216 (0.0191) |
| | AKM24D | AKD-X00307 | 23/ 60 | 1.40 (12.4) | 4.84 (42.8) | 8000 | 920 | 0.270 (0.0239) |
| | AKM31C | AKD-X00307 | na/ 80 | 1.15 (10.2) | 3.87 (34.3) | 5000 | 520 | 0.330 (0.0292) |
| | AKM32E | AKD-X00307 | na/ 80 | 2.04 (18.1) | 5.97 (52.8) | 6500 | 1020 | 0.590 (0.0522) |
| | AKM33E | AKD-X00307 | na/ 80 | 2.80 (24.8) | 8.95 (79.2) | 4500 | 1100 | 0.850 (0.0752) |
| | AKM41E | AKD-X00307 | 34/ 90 | 2.01 (17.8) | 5.33 (47.2) | 6000 | 990 | 0.810 (0.0717) |
| | AKM42E | AKD-X00307 | 34/ 90 | 3.42 (30.3) | 9.74 (86.2) | 3500 | 1030 | 1.45 (0.128) |
| | AKM42G | AKD-X00607 | 34/ 90 | 3.51 (31.1) | 11.0 (97.4) | 6000 | 1470 | 1.45 (0.128) |
| | AKM43H | AKD-X00607 | 34/ 90 | 4.82 (42.7) | 14 (124) | 5500 | 1620 | 2.09 (0.185) |
| | AKM44E | AKD-X00307 | 34/ 90 | 5.79 (51.2) | 16.5 (146) | 2000 | 1010 | 2.73 (0.242) |
| | AKM44H | AKD-X00607 | 34/ 90 | 5.89 (43.3) | 17.0 (150) | 4500 | 1640 | 2.73 (0.242) |
| | AKM51H | AKD-X00607 | 42/ 115 | 4.79 (42.4) | 11.7 (104) | 6000 | 1230 | 3.42 (0.303) |
| | AKM52H | AKD-X00607 | 42/ 115 | 8.48 (75.1) | 21.6 (191) | 3500 | 2290 | 6.22 (0.551) |
| | AKM52L | AKD-X01207 | 42/ 115 | 8.67 (76.7) | 19.6 (173) | 6000 | 2050 | 6.22 (0.551) |
| | AKM53H | AKD-X00607 | 42/ 115 | 10.5 (92.9) | 27.8 (246) | 3000 | 2770 | 9.12 (0.807) |
| | AKM53L | AKD-X01207 | 42/ 115 | 11.6 (103) | 26.5 (235) | 5000 | 3140 | 9.12 (0.807) |
| | AKM54H | AKD-X00607 | 42/ 115 | 14.2 (126) | 37.5 (332) | 1800 | 2350 | 11.9 (1.06) |
| | AKM54L | AKD-X01207 | 42/ 115 | 13.5 (119) | 31.3 (277) | 4500 | 3830 | 11.9 (1.06) |
| | AKM62H | AKD-X00607 | na/ 142 | 11.9 (105) | 29.6 (262) | 2000 | 2140 | 16.9 (1.50) |
| | AKM62L | AKD-X01207 | na/ 142 | 12.2 (108) | 26.3 (233) | 5000 | 3880 | 16.9 (1.50) |
| | AKM63L | AKD-X01207 | na/ 142 | 16.8 (149) | 39.3 (348) | 3000 | 4040 | 24.2 (2.14) |
| | AKM63N | AKD-X02407 | na/ 142 | 17.0 (150) | 40.3 (357) | 5000 | 4900 | 24.2 (2.14) |
| | AKM64L | AKD-X01207 | na/ 142 | 19.7 (174) | 44.4 (393) | 3000 | 4900 | 31.6 (2.80) |
| | AKM64Q | AKD-X02407 | na/ 142 | 19.5 (173) | 43.1 (381) | 5000 | 5600 | 31.6 (2.80) |
| | AKM65L | AKD-X01207 | na/ 142 | 24.6 (218) | 55.4 (490) | 2500 | 5030 | 40.0 (3.54) |
| | AKM65P | AKD-X02407 | na/ 142 | 24.5 (217) | 53.9 (477) | 4000 | 6240 | 40.0 (3.54) |
| | AKM72L | AKD-X01207 | na/ 180 | 30.0 (266) | 70.5 (624) | 1500 | 3970 | 64.5 (5.71) |
| | AKM72P | AKD-X02407 | na/ 180 | 29.5 (261) | 68.5 (606) | 3000 | 6280 | 64.5 (5.71) |
| | AKM72Q | AKD-X02407 | na/ 180 | 24.5 (217) | 56.0 (496) | 4000 | 6830 | 64.5 (5.71) |
| | AKM73L | AKD-X01207 | na/ 180 | 41.7 (369) | 95.4 (844) | 1400 | 5060 | 92.1 (8.15) |
| | AKM73P | AKD-X02407 | na/ 180 | 41.4 (366) | 93.5 (828) | 2400 | 7130 | 92.1 (8.15) |
| AKM73Q | AKD-X02407 | na/ 180 | 33.0 (292) | 76.1 (674) | 3000 | 7920 | 92.1 (8.15) | |
| AKM74L | AKD-X01207 | na/ 180 | 49.7 (440) | 114 (1010) | 1200 | 5470 | 120 (10.6) | |
| AKM74P | AKD-X02407 | na/ 180 | 52.3 (463) | 125 (1110) | 1800 | 7050 | 120 (10.6) | |
| AKM74Q | AKD-X02407 | na/ 180 | 46.8 (414) | 90.7 (803) | 2500 | 8250 | 120 (10.6) | |

Note 1: Refer to page 62 for matching cables.

Note 2: For complete AKD and AKM model nomenclature, refer to pages 63 and 64 respectively.

AKM Servomotor

Performance Data

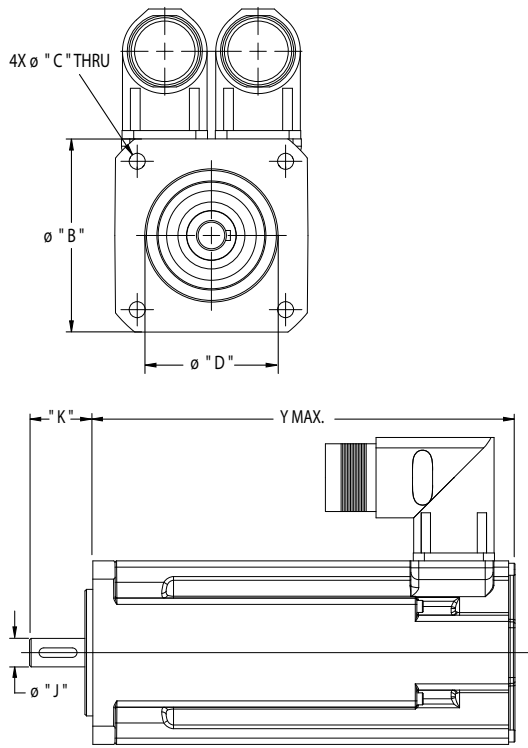
| AKM Motor | AKD Drive | Frame Size NEMA/ mm | Cont.Torque at stall Tes Nm (lb-in) | Peak Torque at stall Tps Nm (lb-in) | Rated Speed Nrt'd RPM | Power Prtd watts | Inertia (Jm) Kg-cm ² (lb-in-s ² x10 ⁻³) | |
|-----------|------------|---------------------|-------------------------------------|-------------------------------------|-----------------------|------------------|---|----------------|
| 480 Vac | AKM22C | AKD-X00307 | 23/ 60 | 0.84 (7.43) | 2.34 (20.7) | 8000 | 570 | 0.161 (0.0142) |
| | AKM23D | AKD-X00307 | 23/ 60 | 1.15 (10.2) | 3.89 (34.4) | 8000 | 760 | 0.216 (0.0191) |
| | AKM24D | AKD-X00307 | 23/ 60 | 1.40 (12.4) | 4.84 (42.8) | 8000 | 920 | 0.270 (0.0239) |
| | AKM31C | AKD-X00307 | na/ 80 | 1.15 (10.2) | 3.35 (29.7) | 6000 | 570 | 0.330 (0.0292) |
| | AKM32E | AKD-X00307 | na/ 80 | 2.04 (18.1) | 5.97 (52.8) | 8000 | 1020 | 0.590 (0.0522) |
| | AKM33E | AKD-X00307 | na/ 80 | 2.80 (24.8) | 8.95 (79.2) | 5000 | 1190 | 0.850 (0.0752) |
| | AKM41E | AKD-X00307 | 34/ 90 | 2.01 (17.8) | 5.33 (47.2) | 6000 | 990 | 0.810 (0.0717) |
| | AKM42E | AKD-X00307 | 34/ 90 | 3.42 (30.3) | 9.74 (86.2) | 4000 | 1140 | 1.45 (0.128) |
| | AKM42G | AKD-X00607 | 34/ 90 | 3.51 (31.1) | 11.0 (97.4) | 6000 | 1470 | 1.45 (0.128) |
| | AKM43H | AKD-X00607 | 34/ 90 | 4.82 (42.7) | 14.0 (124) | 6000 | 1620 | 2.09 (0.185) |
| | AKM44E | AKD-X00307 | 34/ 90 | 5.79 (51.2) | 16.5 (146) | 2500 | 1200 | 2.73 (0.242) |
| | AKM44H | AKD-X00607 | 34/ 90 | 5.89 (43.3) | 17.0 (150) | 5500 | 1690 | 2.73 (0.242) |
| | AKM51H | AKD-X00607 | 42/ 115 | 4.79 (42.4) | 11.7 (104) | 6000 | 1230 | 3.42 (0.303) |
| | AKM52H | AKD-X00607 | 42/ 115 | 8.48 (75.1) | 21.6 (191) | 4000 | 2420 | 6.22 (0.551) |
| | AKM52L | AKD-X01207 | 42/ 115 | 8.67 (76.7) | 19.6 (173) | 6000 | 2050 | 6.22 (0.551) |
| | AKM53H | AKD-X00607 | 42/ 115 | 10.5 (92.9) | 27.8 (246) | 3000 | 2770 | 9.12 (0.807) |
| | AKM53L | AKD-X01207 | 42/ 115 | 11.6 (103) | 26.5 (235) | 6000 | 2540 | 9.12 (0.807) |
| | AKM54H | AKD-X00607 | 42/ 115 | 14.2 (126) | 37.5 (332) | 2000 | 2560 | 11.9 (1.06) |
| | AKM54L | AKD-X01207 | 42/ 115 | 13.5 (119) | 31.3 (277) | 5000 | 3690 | 11.9 (1.06) |
| | AKM62H | AKD-X00607 | na/ 142 | 11.9 (105) | 29.6 (262) | 2400 | 2480 | 16.9 (1.50) |
| | AKM62L | AKD-X01207 | na/ 142 | 12.2 (108) | 26.3 (233) | 6000 | 3610 | 16.9 (1.50) |
| | AKM63L | AKD-X01207 | na/ 142 | 16.8 (149) | 39.3 (348) | 3500 | 4400 | 24.2 (2.14) |
| | AKM63N | AKD-X02407 | na/ 142 | 17.0 (150) | 40.3 (357) | 6000 | 4400 | 24.2 (2.14) |
| | AKM64L | AKD-X01207 | na/ 142 | 19.7 (174) | 44.4 (393) | 3500 | 5280 | 31.6 (2.80) |
| | AKM64Q | AKD-X02407 | na/ 142 | 19.5 (173) | 43.1 (381) | 6000 | 4620 | 31.6 (2.80) |
| | AKM65L | AKD-X01207 | na/ 142 | 24.6 (218) | 55.4 (490) | 2800 | 5450 | 40.0 (3.54) |
| | AKM65P | AKD-X02407 | na/ 142 | 24.5 (217) | 53.9 (477) | 4500 | 6360 | 40.0 (3.54) |
| | AKM72L | AKD-X01207 | na/ 180 | 30.0 (266) | 70.5 (624) | 1800 | 4580 | 64.5 (5.71) |
| | AKM72P | AKD-X02407 | na/ 180 | 29.5 (261) | 68.5 (606) | 3000 | 6680 | 64.5 (5.71) |
| | AKM72Q | AKD-X02407 | na/ 180 | 24.5 (217) | 56.0 (496) | 4500 | 6640 | 64.5 (5.71) |
| AKM73L | AKD-X01207 | na/ 180 | 41.7 (369) | 95.4 (844) | 1500 | 5620 | 92.1 (8.15) | |
| AKM73P | AKD-X02407 | na/ 180 | 41.4 (366) | 93.5 (828) | 2400 | 7130 | 92.1 (8.15) | |
| AKM73Q | AKD-X02407 | na/ 180 | 33.0 (292) | 76.1 (674) | 3500 | 8060 | 92.1 (8.15) | |
| AKM74L | AKD-X01207 | na/ 180 | 49.7 (440) | 114 (1010) | 1400 | 6080 | 120 (10.6) | |
| AKM74P | AKD-X02407 | na/ 180 | 52.3 (463) | 125 (1110) | 1800 | 7050 | 120 (10.6) | |
| AKM74Q | AKD-X02407 | na/ 180 | 46.8 (414) | 90.7 (803) | 3000 | 8580 | 120 (10.6) | |

Note 1: Refer to page 62 for matching cables.

Note 2: For complete AKD and AKM model nomenclature, refer to pages 63 and 64 respectively.

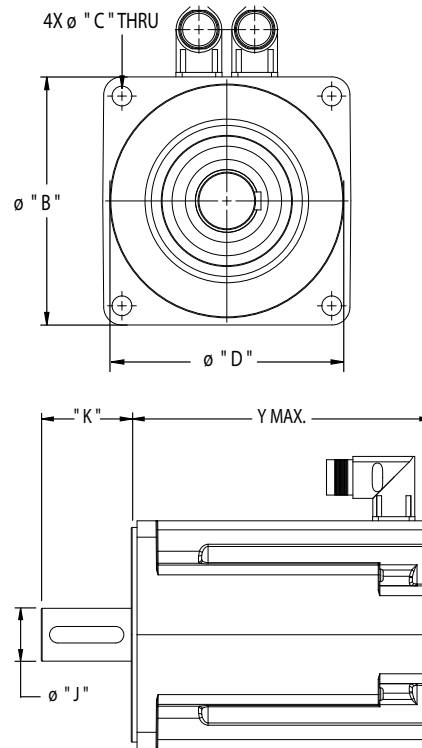
Model AKM23

Outline indicative of AKM1 – AKM4



Model AKM63

Outline indicative of AKM5 – AKM7



Dimensions (mm)

| Model | Shaft ** | Shaft Length | Mount Hole ** | Length 1 stack (AKMx1) | Length 2 stack (AKMx2) | Length 3 stack (AKMx3) | Length 4 stack (AKMx4) | Length 5 stack (AKMx5) | Brake Adder | Sine Enc. Adder * |
|-------|----------|--------------|---------------|------------------------|------------------------|------------------------|------------------------|------------------------|-------------|-------------------|
| | "J" | "K" | "C" | "Y" | "Y" | "Y" | "Y" | "Y" | | |
| AKM1 | 8 | 25 | 4.3 | 79 | 98 | 117 | n/a | n/a | n/a | n/a |
| AKM2 | 9 | 20 | 4.8 | 95.4 | 114.4 | 133.4 | 152.4 | n/a | 34.1 | 0 |
| AKM3 | 14 | 30 | 5.8 | 109.8 | 140.8 | 178.8 | 205.8 | n/a | 30.5 | 0 |
| AKM4 | 19 | 40 | 7 | 118.8 | 147.8 | 176.8 | 205.8 | n/a | 33.5 | 0 |
| AKM5 | 24 | 50 | 9 | 127.5 | 158.5 | 189.5 | 220.5 | n/a | 45 | 18.5 |
| AKM6 | 32 | 58 | 11 | n/a | 153.7 | 178.7 | 203.7 | 228.7 | 47 | 18.5 |
| AKM7 | 38 | 80 | 13.5 | n/a | 192.5 | 226.5 | 260.5 | n/a | 42 | 9.5 |

| Model | Frame Square "B" | Mount Pilot ** | Mount B.C. ** |
|-------|------------------|----------------|---------------|
| AKM1 | 40 | 30 | 36 |
| AKM2 | 58 | 40 | 63 |
| AKM3 | 70 | 60 | 75 |
| AKM4 | 84 | 80 | 100 |

| Model | Frame Square "B" | Mount Pilot ** | Mount B.C. ** |
|-------|------------------|----------------|---------------|
| AKM5 | 108 | 110 | 130 |
| AKM6 | 138 | 130 | 165 |
| AKM7 | 188 | 180 | 215 |

* AKM5x w/ Sine Enc. and brake, plus adders, -2.0 mm.
 AKM6x w/ Sine Enc. and brake, plus adders, +0.5 mm.
 AKM7x w/ Sine Enc. and brake, plus adders, +9.3 mm.

** Assumes the "A" international mount, other mounts available see AKM selection guide online.

Direct Drive Technology (DDT)

Conventional servo systems commonly have a mechanical transmission which can consist of gears, gearheads, belts/pulleys or cams connected between the motor and the load.

With Direct Drive Technology, the mechanical transmission is eliminated and the motor is coupled directly to the load.

Why Use Direct Drive Technology?

Increased Accuracy and Repeatability

A “precision” planetary gearhead could have a backlash of 1 arc-minute. This can result in the load moving by 1 arc-minute with an absolutely stationary drive motor. Kollmorgen’s standard direct drive rotary (DDR) servomotors have repeatability better than 1 arc-second. Therefore, a direct drive motor can hold a position 60 times better than a conventional motor/gearhead.

The increased accuracy of direct drive technology results in a higher quality product out of the machine:

- Print registration is more accurate
- Cut or feed lengths can be held more precisely
- Coordination with other machine axes is more accurate
- Indexing location is more exact
- Tuning issues due to backlash are eliminated

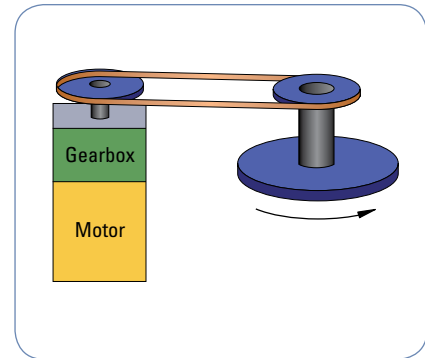
Higher Bandwidth

Mechanical transmission components impose a limit on how fast a machine can start and stop and also extend the required settling time. These factors limit the possible throughput of a machine.

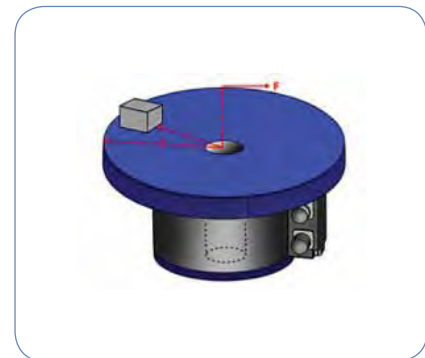
Direct drive technology removes these limitations and allows for much faster start/stop cycles and also provides greatly reduced settling time. This will allow a greater throughput from the machine. Users of direct drive systems have reported up to a 2X increase in throughput.

Improved Reliability and Zero Maintenance

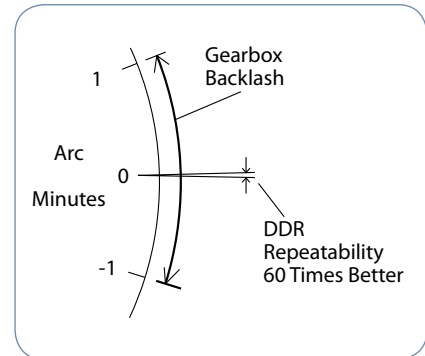
Gears, belts, and other mechanical transmission parts break. By eliminating these parts and using DDR motors, the reliability of the machine is improved. Gearheads require periodic lubrication and/or replacement in aggressive start/stop applications. Belts require periodic tightening. There are no time-wear components in a direct drive motor and consequently they require zero maintenance.



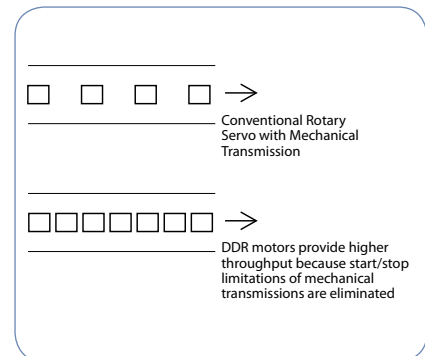
Servomotor and Gearhead



Direct Drive Motor



Improved Repeatability



Increased Throughput

Fewer Parts

With direct drive motors, all you need is the motor and the mounting bolts. This often replaces many parts including brackets, guards, belts, pulleys, tensioners, couplings, and bolts, resulting in:

- Fewer parts on the BOM. Less parts to purchase, schedule, inventory and control, and less parts to assemble.
- Assembly time of the servo drops from several hours with the mechanical transmission to several minutes with the DDR.
- Reduced cost. Although a direct drive motor may carry a small price-premium compared to a motor/gearhead with the same torque, consider that there is an overall cost reduction when eliminating the parts and labor of all the extra components required in a servo system with mechanical transmission.

No Inertia Matching

Servo systems with mechanical transmissions require inertia matching that limits the reflected load inertia at 5 to 10 times the motor inertia. If this limitation is not met, the system becomes difficult to control due to instability issues. Inertia matching limitations of mechanical transmission systems often force machine designers to use a larger motor than would otherwise be required just to satisfy the inertia matching requirement.

Such sizing conventions are not required with direct drive technology. Since the motor is directly connected to the load, the inertia of the motor and the load become a common inertia. Therefore, no inertia matching is required when using DDR. DDR applications have run with inertia ratios greater than 11,000:1.

Reduced Audible Noise

Machines with DDR motors have audible noise levels as low as 20 dB less than the same machine with a mechanical transmission.

Three DDR Product Categories to Choose From

Kollmorgen's 50 years of electromagnetic and electromechanical design experience combined with our quality and service, allowed us to refine and expand DDR technology into three product categories for easy installation, use, and short lead times: [Frameless DDR](#), [Housed DDR](#), and the [Cartridge DDR](#). This allows you to select the right DDR solution for your application.

F Series Frameless DDR

Frameless motors include a rotor and stator as separate components which are integrated into, ride on the bearings of, and become a part of the driven load. Frameless motors offer the most compact and lightweight DDR solution available. The "F" series is Kollmorgen's latest Frameless DDR product. It provides excellent torque/volume with the use of a proprietary neodymium-iron magnet rotor structure and skewed armature assembly. The F series is the first UL recognized parts set available on the market. This provides OEMs with the benefits of UL component ratings for easier agency approval on their machines.

Housed DDR

The Housed DDR is a housed motor assembly featuring a factory aligned high-resolution feedback device and precision bearings, allowing it to function as the core of rotary indexing and rate table applications. The system can also be used as a flexible indexer, providing programmable, rapid indexing far exceeding the throughput and accuracy of conventional mechanical or variable reluctance technology indexers.

Cartridge DDR

This motor is the first in the industry to combine the space-saving and performance advantages of Frameless DDR technology with the ease of installation of a full-frame motor. Consisting of a rotor, stator, and factory-aligned high-resolution feedback device, the motor uses the machine's bearings to support the rotor. An innovative compression coupling engages the rotor to the load and the frame of the mounts to the machine with a bolt circle and pilot diameter just like a conventional servomotor, saving space and design time and simplifying the overall system.

DDR Applications

| Format | Where Used |
|---------------|---|
| Frameless DDR | Application where size and weight must be absolutely minimized |
| Housed DDR | Applications where the load rides on the motor's bearings such as indexing or rate tables |
| Cartridge DDR | Any application with existing bearings |

Cartridge Direct Drive Rotary (DDR) Motor

The Cartridge Direct Drive Rotary (DDR) Motor is the first in the industry to combine the space-saving and performance advantages of frameless DDR technology with the ease of installation of a full-frame motor. Cartridge DDR motors also feature an advanced electromagnetic design that provides up to 50% more torque density than comparably sized conventional servomotors.

Consisting of a rotor, stator, factory-aligned high-resolution feedback device, the Cartridge DDR motor uses the machine's bearings to support the rotor.

An innovative compression coupling secures the Cartridge DDR's rotor to the machine shaft, and the Cartridge DDR's housing is bolted to the machine frame with a bolt circle and pilot – just like a conventional servomotor – saving space and design time and simplifying the overall system.

Conventional servo systems typically include a number of mechanical transmission components that limit the performance and reliability, and drive up cost of operation. Cartridge DDR motors eliminate all mechanical transmission parts, resulting in the following features:

Cartridge DDR Features

- Assembles as quickly as 5 minutes
- 5 frame sizes, multiple lengths
- Continuous torque range: 4.57 Nm (3.37 lb-ft) to 510 Nm (373 lb-ft), accommodates a wide range of high-power application requirements
- Optimized torque output with high-pole count efficient electromagnetic design
- Integrated high-resolution sine-encoder
- 134,217,728 counts/rev
- Speeds up to 2,500 RPM meets most medium speed and high-torque application requirements
- Meets high power demands of most frameless motor applications
- Direct load connection eliminates maintenance of gearheads, belts, or pulleys
- Low cogging for smooth low-speed rotation
- Zero backlash and compliance provides more responsive system performance



The Cartridge DDR Advantage – Press Feed Machine

Consider how Cartridge DDR technology improves a Press Feed machine:

Reduced Assembly Time

The assembly time for the original mechanical transmission system was 4 hours. In contrast, the Cartridge DDR motor is installed in less than 5 minutes, resulting in a significant cost savings in labor.

Reduced Parts Count

The original mechanical transmission system comprises 2 bracket pieces, 12 bolts, 2 pulleys, 2 set screws, 2 keys, a timing belt, a housing to protect operators from the timing belt, a tension system for the timing belt, and motor/gearhead. With the Cartridge DDR system, this is all replaced by the motor and 4 mounting bolts, resulting in fewer parts to maintain and cost savings.

Improved Accuracy

The best planetary gearheads have a backlash between 1 and 2 arc-minutes. Over the life of the gearhead, the backlash will increase. The Cartridge DDR system has an absolute accuracy of 26 arc-seconds and a repeatability of 0.7 arc-seconds. The Press Feed machine with the Cartridge DDR has a feed accuracy of +/- 0.0005 inch where the Press Feed machine with the mechanical transmission has a feed accuracy of 0.002 inch. Therefore, there was an overall four times improvement in machine accuracy with the Cartridge DDR system.

Increased Throughput

The cycle rate of the Cartridge DDR system is two times better than the mechanical transmission. This results in an increase in throughput of 100 percent.

Improved Reliability and Simplified Maintenance

The Cartridge DDR system eliminates parts that wear, change over time, or fail. Gearheads are prone to wear, and backlash increases over time. Belts and pulleys stretch and require maintenance to maintain proper belt tension. By eliminating these components, the Cartridge DDR system delivers greater system reliability.

Press Feed Example

Gearheads have a finite life span, especially in a demanding cyclic application such as a Press Feed. On this machine, the gearhead must be replaced every 10,000 hours and the belt must be tensioned every 2,000 hours. By contrast, the Cartridge DDR motor has no wear components and requires no maintenance thus simplifying the maintenance schedule for the machine, including operating costs.

Reduced Audible Noise

The Cartridge DDR system has as much as a 20 dB reduction in noise compared to a mechanical transmission servo system. This can dramatically reduce the overall noise level of the machine. A quieter machine gives the perception of quality. This is rightfully so as the noise emitted by gears and belts is caused by the wearing of the parts.

Total Reduced Cost

A Cartridge DDR motor typically costs 20 percent more than a comparable motor/gearhead combination. However, the elimination of parts and assembly time typically results in a lower total cost for the Cartridge DDR solution.



Press feed machine built with a conventional servomotor, gearhead, belt and pulleys.



Same machine with a Cartridge DDR motor installed. Here, the shaft of the driven roll is extended into the Cartridge DDR motor and the motor applies torque directly to the driven roll.

Cartridge Direct Drive Rotary Motor (DDR)

240 Vac Performance Data

| Cartridge Motor | AKD Drive | Frame Size | Continuous Torque | Peak Torque | Maximum Speed | Weight | Inertia (Jm) |
|-----------------|-------------|------------|-------------------|-------------|---------------|-------------|---|
| | | mm (in) | Nm (lb-in) | Nm (lb-in) | RPM | kg (lb) | kg-cm ² (lb-in-s ² x10 ⁻³) |
| C041A | AKD-X00306 | 108 (4.25) | 4.57 (40.4) | 12.3 (109) | 1750 | 4.08 (9.00) | 5.86 (5.19) |
| C041B | AKD-X00606 | 108 (4.25) | 4.52 (40.0) | 12.2 (108) | 2500 | 4.08 (9.00) | 5.86 (5.19) |
| C042A | AKD-X00606 | 108 (4.25) | 8.25 (73.0) | 22.2 (196) | 1700 | 5.67 (12.5) | 8.87 (7.85) |
| C042B | AKD-X01206 | 108 (4.25) | 8.45 (74.8) | 22.8 (202) | 2500 | 5.67 (12.5) | 8.87 (7.85) |
| C043A | AKD-X00606 | 108 (4.25) | 11.1 (98.2) | 30.0 (265) | 1250 | 7.26 (16.0) | 11.9 (10.5) |
| C043B | AKD-X01206 | 108 (4.25) | 11.2 (99.1) | 30.2 (267) | 2500 | 7.26 (16.0) | 11.9 (10.5) |
| C044A | AKD-X00606 | 108 (4.25) | 13.9 (123) | 37.4 (331) | 1050 | 8.84 (19.5) | 14.9 (13.2) |
| C044B | AKD-X01206 | 108 (4.25) | 14.1 (125) | 37.9 (335) | 2150 | 8.84 (19.5) | 14.9 (13.2) |
| C051A | AKD-X00606 | 138 (5.43) | 11.7 (104) | 30.2 (267) | 1200 | 8.39 (18.5) | 27.4 (24.2) |
| C051B | AKD-X01206 | 138 (5.43) | 11.9 (105) | 30.6 (271) | 2450 | 8.39 (18.5) | 27.4 (24.2) |
| C052C | AKD-X00606 | 138 (5.43) | 16.9 (150) | 43.1 (381) | 950 | 10.7 (23.5) | 35.9 (31.8) |
| C052D | AKD-X01206 | 138 (5.43) | 16.5 (146) | 42.3 (374) | 2050 | 10.7 (23.5) | 35.9 (31.8) |
| C053A | AKD-X01206 | 138 (5.43) | 21.0 (186) | 54.1 (479) | 1350 | 13.2 (29.0) | 44.3 (39.2) |
| C053B | AKD-X02406 | 138 (5.43) | 20.2 (179) | 50.1 (443) | 2500 | 13.2 (29.0) | 44.3 (39.2) |
| C054A | AKD-X01206 | 138 (5.43) | 24.9 (220) | 63.8 (565) | 1200 | 15.4 (34.0) | 52.8 (46.7) |
| C054B | AKD-X02406 | 138 (5.43) | 23.8 (211) | 61.2 (542) | 2500 | 15.4 (34.0) | 52.8 (46.7) |
| C061A | AKD-X01206 | 188 (7.40) | 33.8 (299) | 86.8 (768) | 900 | 18.6 (41.0) | 94.1 (83.2) |
| C061B | AKD-X02406 | 188 (7.40) | 32.6 (288) | 75.6 (669) | 1950 | 18.6 (41.0) | 94.1 (83.2) |
| C062C | AKD-X01206 | 188 (7.40) | 48.4 (428) | 117 (1040) | 700 | 23.6 (52.0) | 126 (112) |
| C062B | AKD-X02406 | 188 (7.40) | 44.6 (395) | 102 (900) | 1400 | 23.6 (52.0) | 126 (112) |
| C063C | AKD-X01206 | 188 (7.40) | 61.8 (547) | 157 (1380) | 550 | 29.0 (63.0) | 157 (139) |
| C063B | AKD-X02406 | 188 (7.40) | 59.0 (522) | 136 (1200) | 1050 | 29.0 (63.0) | 157 (139) |
| C091A | AKD-X02406 | 246 (9.68) | 50.2 (444) | 120 (1060) | 600 | 27.7 (61.0) | 280 (248) |
| C092C | AKD-X02406 | 246 (9.68) | 102 (900) | 231 (2050) | 450 | 41.3 (91.0) | 470 (416) |
| C093C | AKD-X02406 | 246 (9.68) | 139 (1230) | 317 (2800) | 350 | 54.4 (120) | 660 (584) |
| C131C | AKD-X02406 | 350 (13.8) | 189 (1670) | 395 (3500) | 250 | 63.5 (140) | 1240 (1100) |
| C131B | AKD-X04806* | 350 (13.8) | 190 (1680) | 396 (3500) | 450 | 63.5 (140) | 1240 (1100) |
| C132C | AKD-X02406 | 350 (13.8) | 362 (3200) | 818 (7240) | 120 | 101 (223) | 2250 (1990) |
| C132B | AKD-X04806* | 350 (13.8) | 361 (3190) | 759 (6720) | 225 | 101 (223) | 2250 (1990) |
| C133C | AKD-X02406 | 350 (13.8) | 499 (4410) | 1070 (9890) | 100 | 132 (292) | 3020 (2670) |
| C133B | AKD-X04806* | 350 (13.8) | 510 (4510) | 1090 (9700) | 175 | 132 (292) | 3020 (2670) |

400/480 Vac Systems Performance Data

| Cartridge Motor | AKD Drive | Frame Size | Continuous Torque | Peak Torque | Maximum Speed | | Weight | Inertia (Jm) |
|-----------------|-------------|------------|-------------------|-------------|---------------|---------|-------------|---|
| | | mm (in) | Nm (lb-in) | Nm (lb-in) | RPM | | kg (lb) | kg-cm ² (lb-in-s ² x10 ⁻³) |
| | | | | | 400 Vac | 480 Vac | | |
| CH041A | AKD-X00307 | 108 (4.25) | 4.56 (40.4) | 11.3 (100) | 2500 | 2500 | 4.08 (9.00) | 5.86 (5.19) |
| CH042A | AKD-X00607 | 108 (4.25) | 8.26 (73.1) | 19.0 (168) | 2500 | 2500 | 5.67 (12.5) | 8.87 (7.85) |
| CH043A | AKD-X00607 | 108 (4.25) | 11.1 (98.2) | 25.3 (224) | 2250 | 2500 | 7.26 (16.0) | 11.9 (10.5) |
| CH044A | AKD-X00607 | 108 (4.25) | 13.9 (123) | 31.6 (280) | 1850 | 2250 | 8.84 (19.5) | 14.9 (13.2) |
| CH051A | AKD-X00607 | 138 (5.43) | 11.7 (104) | 28.0 (248) | 2100 | 2500 | 8.39 (18.5) | 27.4 (24.2) |
| CH052C | AKD-X00607 | 138 (5.43) | 16.9 (150) | 43.1 (381) | 1750 | 2100 | 10.7 (23.5) | 35.9 (31.8) |
| CH053A | AKD-X01207 | 138 (5.43) | 21.0 (186) | 54.1 (479) | 2350 | 2500 | 13.2 (29.0) | 44.3 (39.2) |
| CH054A | AKD-X01207 | 138 (5.43) | 24.9 (220) | 63.8 (565) | 2100 | 2500 | 15.4 (34.0) | 52.8 (46.7) |
| CH061A | AKD-X01207 | 188 (7.40) | 33.8 (299) | 86.8 (768) | 1600 | 1900 | 18.6 (41.0) | 94.1 (83.2) |
| CH062C | AKD-X01207 | 188 (7.40) | 48.4 (428) | 117 (1040) | 1250 | 1550 | 23.6 (52.0) | 126 (112) |
| CH063C | AKD-X01207 | 188 (7.40) | 61.8 (547) | 157 (1380) | 950 | 1150 | 29.0 (63.0) | 157 (139) |
| CH063B | AKD-X02407 | 188 (7.40) | 59.0 (522) | 136 (1200) | 1850 | 2200 | 29.0 (63.0) | 157 (139) |
| CH091A | AKD-X02407 | 246 (9.68) | 50.2 (444) | 120 (1060) | 1200 | 1500 | 27.7 (61.0) | 280 (248) |
| CH092C | AKD-X02407 | 246 (9.68) | 102 (900) | 231 (2050) | 800 | 1000 | 41.3 (91.0) | 470 (416) |
| CH093C | AKD-X02407 | 246 (9.68) | 139 (1230) | 317 (2800) | 700 | 800 | 54.4 (120) | 660 (584) |
| CH131C | AKD-X02407 | 350 (13.8) | 189 (1670) | 395 (3500) | 500 | 600 | 63.5 (140) | 1240 (1100) |
| CH131B | AKD-X04807* | 350 (13.8) | 190 (1680) | 396 (3500) | 800 | 1000 | 63.5 (140) | 1240 (1100) |
| CH132C | AKD-X02407 | 350 (13.8) | 362 (3200) | 818 (7240) | 250 | 300 | 101 (223) | 2250 (1990) |
| CH132B | AKD-X04807* | 350 (13.8) | 361 (3190) | 759 (6720) | 400 | 500 | 101 (223) | 2250 (1990) |
| CH133C | AKD-X02407 | 350 (13.8) | 499 (4410) | 1070 (9480) | 200 | 250 | 132 (292) | 3020 (2670) |
| CH133B | AKD-X04807* | 350 (13.8) | 510 (4510) | 1090 (9700) | 350 | 400 | 132 (292) | 3020 (2670) |

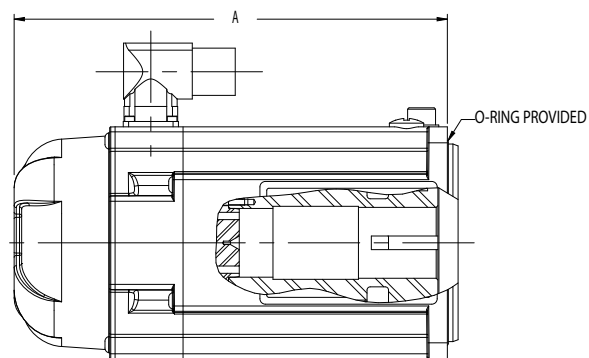
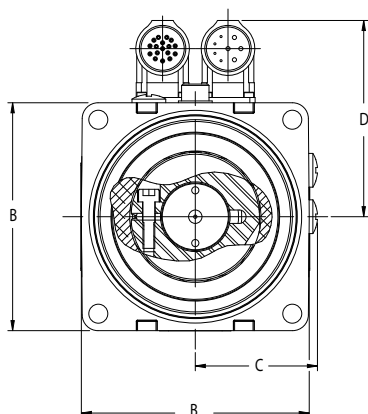
Note 1: Refer to page 62 for matching cables.

Note 2: For complete AKD and Cartridge DDR Motor model nomenclature, refer to pages 63 and 65 respectively.

*Available in 2010.

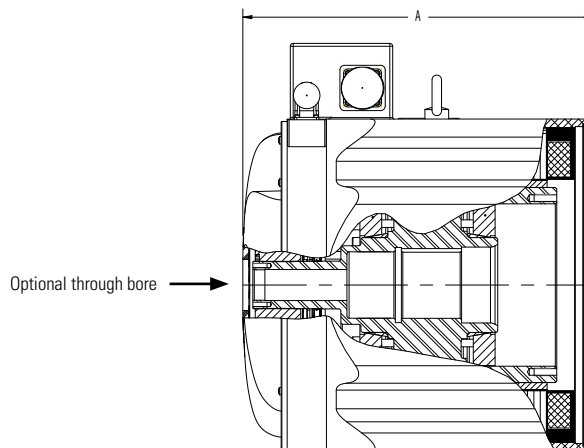
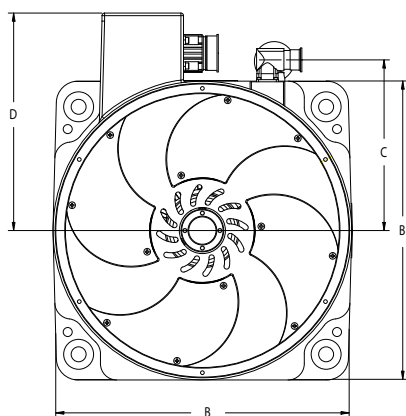
Cartridge DDR C04, C05 and C06 Dimensions

| Cartridge Motor | A mm (in) | B mm (in) | C mm (in) | D mm (in) |
|-----------------|--------------|--------------|--------------|--------------|
| C(H)041 | 171 (6.73) | 108 (4.25) | 59 (2.31) | 93 (3.67) |
| C(H)042 | 202 (7.95) | 108 (4.25) | 59 (2.31) | 93 (3.67) |
| C(H)043 | 233 (9.17) | 108 (4.25) | 59 (2.31) | 93 (3.67) |
| C(H)044 | 264 (10.4) | 108 (4.25) | 59 (2.31) | 93 (3.67) |
| C(H)051 | 195 (7.68) | 138 (5.43) | 76 (3.00) | 108 (4.25) |
| C(H)052 | 220 (8.66) | 138 (5.43) | 76 (3.00) | 108 (4.25) |
| C(H)053 | 245 (9.65) | 138 (5.43) | 76 (3.00) | 108 (4.25) |
| C(H)054 | 270 (10.6) | 138 (5.43) | 76 (3.00) | 108 (4.25) |
| C(H)061 | 226 (8.90) | 188 (7.40) | 99 (3.88) | 133 (5.25) |
| C(H)062 | 260 (10.2) | 188 (7.40) | 99 (3.88) | 133 (5.25) |
| C(H)063 | 294 (11.6) | 188 (7.40) | 99 (3.88) | 133 (5.25) |



Cartridge DDR C09 and C13 Dimensions

| Cartridge Motor | A mm (in) | B mm (in) | C mm (in) | D mm (in) |
|-----------------|--------------|--------------|--------------|--------------|
| C(H)091 | 204 (8.03) | 246 (9.68) | 149 (5.88) | 182 (7.18) |
| C(H)092 | 253 (9.96) | 246 (9.68) | 149 (5.88) | 182 (7.18) |
| C(H)093 | 302 (11.9) | 246 (9.68) | 149 (5.88) | 182 (7.18) |
| C(H)131 | 231 (9.09) | 350 (13.8) | 200 (7.87) | 256 (10.1) |
| C(H)132 | 301 (11.9) | 350 (13.8) | 200 (7.87) | 256 (10.1) |
| C(H)133 | 370 (14.6) | 350 (13.8) | 200 (7.87) | 256 (10.1) |



Housed Direct Drive Rotary (DDR) Motor

Housed DDR motors are multi-pole (16 to 32) hollow shaft motors with their own bearings and high-resolution encoder system. They are coupled directly to the load and enable very precise and repeatable systems. Housed DDR motors are maintenance free and run more quietly and with better dynamics than systems that use gears, belts, cams or other mechanical transmission components.

DDR Features

- 4 frame sizes
- Robust cross-roller bearing
- Dual bearing option
- IP67 option
- Continuous torque range: 5.8 Nm (4.3 lb-ft) to 339 Nm (250 lb-ft)
- Optimized torque output with high-pole count efficient electromagnetic design
- Integrated high-resolution sine-encoder
- 134,217,728 counts per rev resolution, 27 bits
- Feedback accuracy: +/- 26 arc-sec

Benefits

- Transmission elements such as couplings, toothed belts, spindles, and other fitted components can be eliminated
- Mechanical design is made much simpler
- Power transmission without backlash
- More compact machinery assemblies
- Increased performance for the entire system

Housed DDR Advantage

Consider how a Housed DDR motor improved a medical manufacturing machine.

Product is located at the steel pins on the outside of the machine's turret as shown. The 115 kg load wheel has an inertia of 20 kg-m². There are 96 steel pins for an index angle of 3.5 degrees to move.

The move is accomplished in less than 100 μ s.

Realized Housed DDR Benefits

The Direct Drive Advantage

The following improvements were observed compared to the previous design that used a mechanical indexer:

Improved Repeatability

The Housed DDR demonstrated a repeatability better than 1 arc-second which was substantially better than the mechanical indexer.

No Degradation

Direct Drive system performance, accuracy and repeatability do not degrade over time as they do with a mechanical indexer. With a mechanical indexer, as parts wear over time, the accuracy and repeatability degrade.

Immediate Stop

The direct drive system can immediately stop if there is a process error. The mechanical indexer required several cycles to stop which could cause tooling and machine damage.



Greatly Reduced Audible Noise

With the mechanical indexer, the noise was at a level such that two people would have to yell to hear each other. By contrast, if you turned your back to the Housed DDR, you could barely detect that it was running.

Easy Profile Change

Motion parameters such as index angle, speed, acceleration, and dwell are very simple to change with the Housed DDR. The mechanical indexer does not support flexible motion profiles.

Better Value

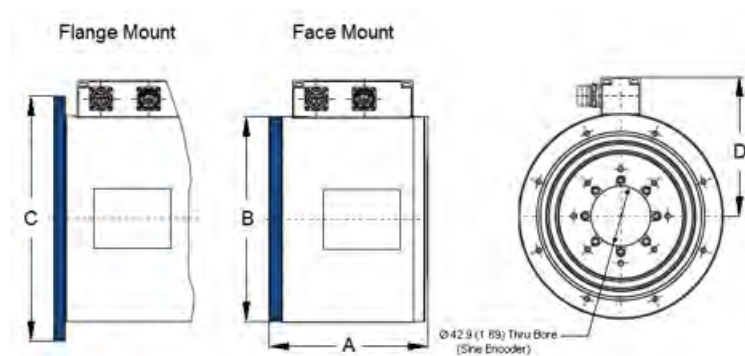
The Housed DDR is attractively priced compared to the mechanical indexer it replaced. When the other advantages listed above are also considered, the Housed DDR was the obvious choice.

240 Vac Performance Data

| DDR Motor | AKD Drive | Frame Size mm (in) | Continuous Torque Nm (lb-in) | Peak Torque Nm (lb-in) | Maximum Speed (RPM) | Weight kg (lb) | Inertia (Jm) cm ² (lb-in-s ² x10 ⁻³) |
|-----------|-------------|-----------------------|---------------------------------|---------------------------|------------------------|-------------------|--|
| D061 | AKD-X00606 | 175 (6.90) | 5.3 (46.9) | 16.9 (150) | 500 | 9.4 (20.7) | 61 (54.0) |
| D062 | AKD-X00606 | 175 (6.90) | 9.8 (86.7) | 33.5 (296) | 500 | 11.3 (24.9) | 71 (62.8) |
| D063 | AKD-X00606 | 175 (6.90) | 17.7 (157) | 64.4 (570) | 500 | 13.8 (30.4) | 86 (76.1) |
| D081 | AKD-X00606 | 217 (8.55) | 15.9 (141) | 45.0 (398) | 500 | 17.9 (39.4) | 144 (127) |
| D082 | AKD-X00606 | 217 (8.55) | 25.9 (229) | 92.2 (816) | 300 | 21.5 (47.3) | 194 (172) |
| D083 | AKD-X00606 | 217 (8.55) | 50.4 (446) | 160 (1420) | 250 | 28.8 (63.4) | 301 (266) |
| D101 | AKD-X00606 | 280 (11.0) | 34.6 (306) | 129 (1140) | 300 | 31.5 (69.3) | 693 (613) |
| D102 | AKD-X00606 | 280 (11.0) | 63.4 (561) | 227 (2010) | 200 | 43.8 (96.4) | 992 (878) |
| D103 | AKD-X01206 | 280 (11.0) | 115 (1020) | 501 (4430) | 120 | 60.8 (134) | 1750 (1550) |
| D141 | AKD-X01206 | 362 (14.2) | 108 (956) | 367 (3250) | 200 | 59.4 (131) | 1630 (1440) |
| D142 | AKD-X01206 | 362 (14.2) | 183 (1620) | 519 (4590) | 120 | 86.6 (191) | 2740 (2430) |
| D143 | AKD-X02406* | 362 (14.2) | 339 (3000) | 1340 (11,900) | 60 | 146 (321) | 5420 (4800) |

400/480 Vac Performance Data

| DDR Motor | AKD Drive | Frame Size mm (in) | Continuous Torque Nm (lb-in) | Peak Torque Nm (lb-in) | Maximum Speed RPM | Weight kg (lb) | Inertia (Jm) cm ² (lb-in-s ² x10 ⁻³) |
|-----------|-------------|-----------------------|---------------------------------|---------------------------|----------------------|-------------------|--|
| DH061 | AKD-X00607 | 175 (6.90) | 5.3 (46.9) | 16.9 (150) | 800 | 9.4 (20.7) | 61 (54.0) |
| DH062 | AKD-X00607 | 175 (6.90) | 9.8 (86.7) | 33.5 (296) | 800 | 11.3 (24.9) | 71 (62.8) |
| DH063 | AKD-X00607 | 175 (6.90) | 17.7 (157) | 64.4 (570) | 800 | 13.8 (30.4) | 86 (76.1) |
| DH081 | AKD-X00607 | 217 (8.55) | 15.9 (141) | 45.0 (398) | 500 | 17.9 (39.4) | 144 (127) |
| DH082 | AKD-X00607 | 217 (8.55) | 25.9 (229) | 92.2 (816) | 500 | 21.5 (47.3) | 194 (172) |
| DH083 | AKD-X00607 | 217 (8.55) | 50.4 (446) | 160 (1420) | 500 | 28.8 (63.4) | 301 (266) |
| DH101 | AKD-X00607 | 280 (11.0) | 34.6 (306) | 129 (1140) | 300 | 31.5 (69.3) | 693 (613) |
| DH102 | AKD-X00607 | 280 (11.0) | 63.4 (561) | 227 (2010) | 300 | 43.8 (96.4) | 992 (878) |
| DH103 | AKD-X01207 | 280 (11.0) | 115 (1020) | 501 (4430) | 250 | 60.8 (134) | 1750 (1550) |
| DH141 | AKD-X01207 | 362 (14.2) | 108 (956) | 367 (3250) | 300 | 59.4 (131) | 1630 (1440) |
| DH142 | AKD-X01207 | 362 (14.2) | 183 (1620) | 519 (4590) | 300 | 86.6 (191) | 2740 (2430) |
| DH143 | AKD-X02407* | 362 (14.2) | 339 (3000) | 1340 (11,900) | 120 | 146.0 (321) | 5420 (4800) |



Dimensions

| DDR | A mm (in) | B mm (in) | C mm (in) | D mm (in) |
|---------|--------------|--------------|--------------|--------------|
| D(H)061 | 130 (5.12) | 175 (6.90) | 220 (8.66) | 126 (4.95) |
| D(H)062 | 140 (5.55) | 175 (6.90) | 220 (8.66) | 126 (4.95) |
| D(H)063 | 164 (6.46) | 175 (6.90) | 220 (8.66) | 126 (4.95) |
| D(H)081 | 145 (5.71) | 217 (8.55) | 260 (10.2) | 147 (5.80) |
| D(H)082 | 165 (6.50) | 217 (8.55) | 260 (10.2) | 147 (5.80) |
| D(H)083 | 206 (8.11) | 217 (8.55) | 260 (10.2) | 147 (5.80) |
| D(H)101 | 153 (6.02) | 280 (11.0) | 330 (13.0) | 181 (7.11) |
| D(H)102 | 185 (7.28) | 280 (11.0) | 330 (13.0) | 181 (7.11) |
| D(H)103 | 248 (9.76) | 280 (11.0) | 330 (13.0) | 181 (7.11) |
| D(H)141 | 153 (6.02) | 362 (14.2) | 406 (16.0) | 218 (8.59) |
| D(H)142 | 217 (8.52) | 362 (14.2) | 406 (16.0) | 218 (8.59) |
| D(H)143 | 344 (13.50) | 362 (14.2) | 406 (16.0) | 218 (8.59) |

Note 1: Refer to page 62 for matching cables. * Available in 2010.

Note 2: For complete AKD and Housed DDR Motor model nomenclature, refer to pages 63 and 66 respectively.

Linear Positioning Systems

Kollmorgen is also the market leader in precise linear positioning, backed by 40 years of experience of providing innovative solutions customers can count on everyday. We offer Linear Positioners that range from 20 N (5 lb) of thrust and 100 mm (4 in) length, up to 25 kN (5600 lb) and 1.5 m length (unlimited length for linear motors) with precision better than a single thread of human hair (≤ 0.1 mm/0.004 in)

Electric Cylinders (EC)

Primarily designed to apply a force through an extendable rod, Electric Cylinders are a clean and efficient replacement for hydraulic actuators and pneumatic cylinders, and an alternative to many types of linear transmissions. A wide variety of mounting and coupling alternatives significantly increases their problem solving potential.



Electric Cylinders

Rodless Actuators

Long travel, quiet operation, and high moment loading differentiates Rodless Actuators from other mechanical transmissions.



Rodless Actuators

Precision Tables

Positioning Tables are used when accurate and repeatable motion is critical (1 part per 10,000 or better). These tables offer a wide variety of single and multi-axis configurations, open and closed frame tables, ball or lead screw driven, and overhung and constant support Kollmorgen geometry configurations.



Precision Tables

Direct Drive Linear (DDL)

Directly coupling a linear motor to the driven load offers many advantages, including eliminating all mechanical transmissions, such as ball/lead screws, rack & pinions, belts/pulleys, and eliminating gearboxes. This in turn also eliminates backlash and compliance, and other problems associated with these mechanicals transmissions.

DDL Benefits

- Zero maintenance
- No ball screws, gearboxes, rack and pinions, belts/pulleys
- Zero backlash and compliance
- High stiffness
- High positional accuracy
- Compact mechanical assembly
- Reduced parts count in machine
- Very smooth velocity
- Quiet operation



Direct Drive Linear Motors

Performance Data

| | Minimum Stroke mm (in) | Maximum Stroke mm (in) | Repeatability mm (in) | Maximum Thrust kN (lbf) | Maximum Payload kN (lbf) | Maximum Speed mm/s (in/s) |
|-----------------------------|---------------------------|---------------------------|---|----------------------------|-----------------------------|------------------------------|
| Electric Cylinders | 50 (2.0) | 1500 (60) | 0.013 (0.0005) | 25 (5620) | Designed to push and pull | 1300 (51) |
| Rodless Actuators | 150 (6.0) | 2700 (106) | 0.1 (0.004) | 3.1 (700) | 1.33 (300) | 3000 (120) |
| Precision Tables | 50 (2.0) | 1500 (60) | 0.004 (0.00016) | 2.0 (440) | 6.2 (1400) | 1300 (51) |
| Direct Drive Linear Motors* | 64 (2.5) | Unlimited | 1×10^{-6} (3.9×10^{-8}) | 15.6 (3500) | Customer design limited | 5000 (200) |

* We offer hundreds of custom and semi-custom solutions for Direct Drive Linear (DDL) applications.

Precision Tables DS4 / DS6 Series

Precision Positioning Tables are best suited for applications where the accuracy and repeatability requirements are more important than axial thrust of the drive train. Precision Positioning Tables can also be used in less precise applications where adequate moment load support is necessary, and are ideal building blocks for complete multi-axis positioning systems.

The DS4 and DS6 are Kollmorgen's most versatile and modular line of positioning tables.

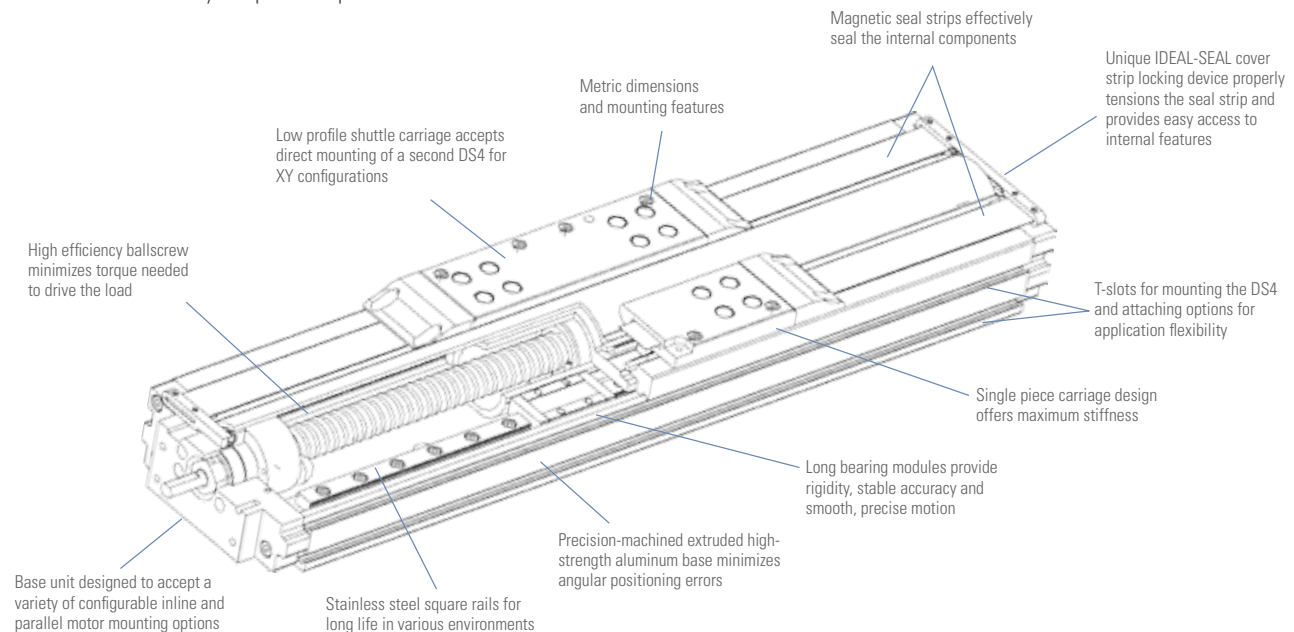
Combined with the AKD Drive and AKM Motors, DS4 and DS6 Systems Offer

- An optimized electromechanical solution suitable for demanding high precision positioning
- Performance and versatility in a compact package
- Outstanding industrial durability
- Tremendous configuration flexibility
- Industry-leading price vs. performance value

DS Series Design Features

Following are several features that make the DS Series the positioning table of choice for the most demanding applications.

- Travel lengths from 50 mm to 2 m cover a wide range of applications.
- Precision ballscrew drive, with 5 mm, 10 mm and 25 mm leads, offers high speed and efficiency, excellent repeatability and accuracy, and mechanical advantage.
- Proven magnetic stainless steel seal strip technology effectively seals the internal components of the DS Series, protecting the ballscrew and ways from contaminants. This feature also contains ballscrew and way lubrication within the DS Series.
- Easily configurable modular design and option set, including a variety of motor mounting orientations, motor sizes and type, ballscrew leads, coupling types and sizes, encoder feedback options, limit/home sensor types, and shaft brakes allow the DS Series to be customized to meet your specific requirements.



DS Series Precision Tables can be ordered in a variety of multi-axis configurations including XY, XZ, and XYZ or cartesian arrangements. Consult Kollmorgen applications engineering for standard and custom configurations.

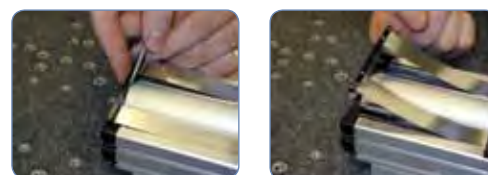
A second option is to order standard multi-axis brackets and assemble the axes yourself.



All DS4 and DS6 tables will bolt directly together in a standard XY without modification.

Unique IDEAL-SEAL Magnetic Cover Strip Locking Device

- Entire length of lead screw and linear bearing system are protected, providing both operator safety and protection from contaminants.
- Seal strips are always properly tensioned, drastically decreasing wear that requires regular field repair.
- Allows easy access to interior of DS4 for mounting and maintenance.
- No small hardware or springs to lose, and no exposure to the sharp ends of the strips, which are problems for similar seal end-cap designs.



Configurable Options

| DS Series | |
|--|--|
| Servomotor Options | AKM23D, AKM42G |
| Grades | Precision (up to 600 mm), Commercial |
| Motor Orientations | In-line, Parallel Right/Left/Under |
| Couplings Options (inline configurations) | Bellows, Oldham |
| Transmission Ratio (parallel configurations) | 1:1 |
| Limit Sensors | PNP (sinking) Inductive Proximity Sensors, 5-30 Vdc |
| Home Sensor | PNP (sinking) Inductive Proximity Sensors, 5-30 Vdc |
| Shaft Brake | Electromagnetic Power of Holding Brake, 24 Vdc |
| Linear Encoder Options | 1.0, 0.5 and 0.1 motion resolution, modular incremental type |



Limit Sensor



Linear Encoder

Accessories

| DS Series | |
|------------------------------|---|
| Toe Clamps | Provide convenient external mounting to a base plate or to riser blocks |
| Narrow Riser Blocks | Raise unit for clearance of larger motor options, utilizing internal base mounting features on the side |
| Wide Riser Blocks | Allow rising of the unit, independent of base mounting features |
| Brackets and Mounting Plates | Facilitate multi-axis configurations |
| Cable Sets | For connection to AKD and other drives |



Toe Clamp

Precision Tables DS4 / DS6 Series

DS4 General Specifications

| | | | | | | | | | | | | |
|---|---------|------|------|------|------|------|------|------|------|------|------|------|
| Travel (mm) | 50 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 550 | 600 |
| Overall Height, less motor (mm) | 47 | | | | | | | | | | | |
| Width (mm) | 95 | | | | | | | | | | | |
| System Length, Inline less motor (mm) | 317 | 367 | 417 | 467 | 517 | 567 | 617 | 667 | 717 | 767 | 817 | 867 |
| System Length, Parallel motor mounts (mm) | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 650 | 700 | 750 | 800 | 850 |
| Positional Accuracy (microns) | | | | | | | | | | | | |
| Commercial Grade | 12 | 12 | 14 | 20 | 22 | 24 | 26 | 26 | 28 | 34 | 36 | 40 |
| Precision Grade | 8 | 8 | 10 | 12 | 12 | 14 | 14 | 16 | 19 | 21 | 23 | 25 |
| Straightness & Flatness (microns) | 6 | 6 | 9 | 12 | 12 | 14 | 18 | 21 | 23 | 23 | 25 | 25 |
| Bi-directional Repeatability, open loop | | | | | | | | | | | | |
| Commercial Grade (microns) | +/- 3 | | | | | | | | | | | |
| Precision Grade (microns) | +/- 1.3 | | | | | | | | | | | |
| Load Capacity, Normal (kg) (max) | 170 | | | | | | | | | | | |
| Axial Load Capacity (kg) | 90 | | | | | | | | | | | |
| Acceleration (max) (m/sec ²) | 20 | | | | | | | | | | | |
| Moving Mass (kg) | 0.75 | | | | | | | | | | | |
| Total Mass (kg) | 2.7 | 3 | 3.3 | 3.6 | 3.9 | 4.1 | 4.4 | 4.7 | 5 | 5.3 | 5.6 | 5.9 |
| Ballscrew Diameter (mm) | 16 | | | | | | | | | | | |
| Duty Cycle (%) | 100 | | | | | | | | | | | |
| Ballscrew Efficiency | 90 | | | | | | | | | | | |
| Max. Breakaway Torque (oz-in) | 18 | | | | | | | | | | | |
| Max. Running Torque (oz-in) | 16 | | | | | | | | | | | |
| Ballscrew Lead Available (mm) | 5, 10 | | | | | | | | | | | |
| Input Inertia (10 ⁻⁵ kg-m ²) | 1.17 | 1.24 | 1.67 | 1.93 | 2.18 | 2.43 | 2.68 | 2.93 | 3.19 | 3.44 | 3.69 | 3.94 |
| Max. Ballscrew Speed (rev/sec) | 80 | | | | | | 60 | | 55 | | 50 | |

DS6 General Specifications

| | | | | | | | | | | | | | | | |
|---|---------|------|------|------|------|------|-----------|------|------|------|------|------|------|------|--|
| Travel (mm) | 100 | 200 | 300 | 400 | 500 | 600 | 700 | 800 | 900 | 1000 | 1250 | 1500 | 1750 | 2000 | |
| Overall Height (mm) | 70 | | | | | | | | | | | | | | |
| Width (mm) | 150 | | | | | | | | | | | | | | |
| System Length, Inline less motor (mm) | 465 | 565 | 665 | 765 | 865 | 965 | 1065 | 1165 | 1265 | 1365 | 1615 | 1865 | 2115 | 2365 | |
| System Length, Parallel motor mounts (mm) | 470 | 570 | 670 | 770 | 870 | 970 | 1070 | 1170 | 1270 | 1370 | 1620 | 1870 | 2120 | 2370 | |
| Positional Accuracy (microns) | | | | | | | | | | | | | | | |
| Commercial Grade | 14 | 22 | 28 | 39 | 45 | 48 | 92 | 94 | 103 | 105 | 118 | 134 | 154 | 159 | |
| Precision Grade | 12 | 14 | 15 | 20 | 25 | 50 | - | - | - | - | - | - | - | - | |
| Straightness & Flatness (microns) | 10 | 14 | 17 | 23 | 30 | 33 | 40 | 46 | 50 | 55 | 76 | 95 | 115 | 135 | |
| Bi-directional Repeatability, open loop | | | | | | | | | | | | | | | |
| Commercial Grade (microns) | +/- 3 | | | | | | +/-5 | | | | | | | | |
| Precision Grade (microns) | +/- 1.3 | | | | | | N/A | | | | | | | | |
| Load Capacity, Normal (kg) (max) | 630 | | | | | | | | | | | | | | |
| Axial Load Capacity (kg) | | | | | | | | | | | | | | | |
| Commercial Grade | 90 | | | | | | 200 | | | | | | | | |
| Precision Grade | 90 | | | | | | N/A | | | | | | | | |
| Acceleration (max) (m/sec ²) | 20 | | | | | | | | | | | | | | |
| Moving Mass (kg) | 2.8 | | | | | | | | | | | | | | |
| Total Mass (kg) | 8.9 | 10.2 | 11.5 | 12.8 | 14.0 | 15.4 | 19.4 | 20.9 | 22.4 | 23.9 | 27.8 | 31.6 | 35.4 | 40.1 | |
| Ballscrew Diameter (mm) | 16 | | | | | | | | | | 25 | | | | |
| Duty Cycle (%) | 100 | | | | | | | 80 | | | | | | | |
| Ballscrew Efficiency | 90 | | | | | | 80 | | | | | | | | |
| Max. Breakaway Torque (oz-in) | 18 | | | | | | 55 | | | | | | | | |
| Max. Running Torque (oz-in) | 16 | | | | | | 48 | | | | | | | | |
| Ballscrew Lead Available (mm) | 5, 10 | | | | | | 5, 10, 25 | | | | | | | | |
| Input Inertia (10 ⁻⁵ kg-m ²) | 3.8 | 4.4 | 5 | 5.5 | 6.1 | 6.7 | 37 | 40.4 | 43.9 | 47.3 | 56 | 64.5 | 73.2 | 81.9 | |
| Max. Ballscrew Speed (rev/sec) | 80 | | | 60 | | 50 | | 60 | | 50 | | 40 | | 35 | |

*All performance specifications are based upon proper mounting procedures, with the DS Table fully supported on a flat surface (flat within 0.008 mm/300 mm). Positional accuracy and repeatability specifications are for inline motor mount models only. Contact customer service for specifications of parallel mount configurations. Above specifications are measured 37.5 mm directly above the center of the carriage. Specifications are based upon operation at 20° C.

120 Vac Performance Data

| | Sys # | Precision Table - AKM Servomotor | AKD Drive | Stroke Length Type | Cont. Thrust @ Speed (lb @ in/sec) | | Peak Thrust @ Speed (lb @ in/sec) | | Max Thrust (lb) | Max System Speed (in/sec) | Max Stroke for Max Speed (mm) |
|-----|-------|----------------------------------|------------|--------------------|------------------------------------|------|-----------------------------------|------|-----------------|---------------------------|-------------------------------|
| | | | | | | | | | | | |
| DS4 | 1 | DS4-XXX-10G-AKM23D-■■■■ | AKD-X00306 | ≤ 600 mm | 94 | 17.6 | 210 | 10.8 | 210 | 17.6 | 600 |
| | 2 | DS4-XXX- 5G-AKM23D-■■■■ | AKD-X00306 | ≤ 600 mm | 176 | 8.8 | 210 | 8.4 | 210 | 8.8 | 600 |
| DS6 | 3 | DS6-XXX-25G-AKM23D-■■■■ | AKD-X00306 | ≤ 600 mm | 37 | 44.0 | 138 | 8.2 | 138 | 44.0 | 600 |
| | 4 | DS6-XXX-10G-AKM23D-■■■■ | AKD-X00306 | ≤ 600 mm | 94 | 17.6 | 210 | 10.8 | 210 | 17.6 | 600 |
| | 5 | DS6-XXX- 5G-AKM23D-■■■■ | AKD-X00306 | ≤ 600 mm | 176 | 8.8 | 210 | 8.4 | 210 | 8.8 | 600 |
| DS6 | 6 | DS6-XXX-25G-AKM23D-■■■■ | AKD-X00306 | ≥ 700 mm | 37 | 44.0 | 138 | 8.2 | 138 | 44.0 | 800 |
| | 7 | DS6-XXX-10G-AKM23D-■■■■ | AKD-X00306 | ≥ 700 mm | 82 | 17.6 | 331 | 3.3 | 332 | 17.6 | 800 |
| | 8 | DS6-XXX- 5G-AKM23D-■■■■ | AKD-X00306 | ≥ 700 mm | 128 | 8.8 | 440 | 4.4 | 440 | 8.8 | 800 |

240 Vac Performance Data

| | Sys # | Precision Table - AKM Servomotor | AKD Drive | Stroke Length Type | Cont. Thrust @ Speed (lb @ in/sec) | | Peak Thrust @ Speed (lb @ in/sec) | | Max Thrust (lb) | Max System Speed (in/sec) | Max Stroke for Max Speed (mm) |
|-----|-------|----------------------------------|------------|--------------------|------------------------------------|------|-----------------------------------|------|-----------------|---------------------------|-------------------------------|
| | | | | | | | | | | | |
| DS4 | 1 | DS4-XXX-10G-AKM23D-■■■■ | AKD-X00306 | ≤ 600 mm | 88 | 31.5 | 210 | 30 | 210 | 31.5 | 300 |
| | 2 | DS4-XXX- 5G-AKM23D-■■■■ | AKD-X00306 | ≤ 600 mm | 165 | 15.7 | 210 | 15.7 | 210 | 15.7 | 300 |
| DS6 | 3 | DS6-XXX-10G-AKM23D-■■■■ | AKD-X00306 | ≤ 600 mm | 90 | 31.5 | 210 | 30 | 210 | 31.5 | 300 |
| | 4 | DS6-XXX- 5G-AKM23D-■■■■ | AKD-X00306 | ≤ 600 mm | 165 | 15.7 | 210 | 15.7 | 210 | 15.7 | 300 |
| | 5 | DS6-XXX-25G-AKM23D-■■■■ | AKD-X00306 | ≥ 700 mm | 34 | 59 | 137 | 48 | 137 | 59 | 700 |
| | 6 | DS6-XXX-10G-AKM23D-■■■■ | AKD-X00306 | ≥ 700 mm | 79 | 23.6 | 331 | 19.3 | 332 | 23.6 | 700 |
| | 7 | DS6-XXX- 5G-AKM23D-■■■■ | AKD-X00306 | ≥ 700 mm | 126 | 11.8 | 440 | 11.8 | 440 | 11.8 | 700 |
| | 8 | DS6-XXX-10G-AKM42G-■■■■ | AKD-X00306 | ≤ 600 mm | 210 | 28.4 | 210 | 28.4 | 210 | 28.4 | 300 |
| | 9 | DS6-XXX- 5G-AKM42G-■■■■ | AKD-X00306 | ≤ 600 mm | 210 | 14.5 | 210 | 14.5 | 210 | 14.5 | 300 |
| | 10 | DS6-XXX-25G-AKM42G-■■■■ | AKD-X00306 | ≥ 700 mm | 102 | 59 | 393 | 36 | 399 | 59 | 700 |
| | 11 | DS6-XXX-10G-AKM42G-■■■■ | AKD-X00306 | ≥ 700 mm | 245 | 23.6 | 440 | 23.6 | 440 | 23.6 | 700 |
| | 12 | DS6-XXX- 5G-AKM42G-■■■■ | AKD-X00306 | ≥ 700 mm | 440 | 11.8 | 440 | 11.8 | 440 | 11.8 | 700 |

Note 1: Performance based on inline motor configuration.

Note 2: Refer to page 62 for matching cables.

Note 3: For complete AKD and DS4 / DS6 Series model nomenclature, refer to pages 63 and 67 respectively.

Electric Cylinders N2 / EC Series

Electric Cylinders are thrust-producing devices that are best suited for applications requiring high axial force with the moment and side loads already properly supported.

Kollmorgen has combined the broad product offering of the N2 and EC Series Electric Cylinders with the industry-leading AKM Servomotors and AKD drives. The N2 and EC Series of electric cylinders offer a wide range of available thrusts in standard units from 600 lb (N2) to 5620 lb (EC5) across 5 electric cylinder frame sizes.

- Speeds up to 52 in/sec are available and integrated geared options provide the ability to increase thrust capacity for lower speed applications, leveraging the speed capacity of servo systems.
- Multiple servomotor options are available for the product line ranging from NEMA 23 size to NEMA 42 size servos. The combination with the AKM Servomotor enables the use of various feedback devices including sine-encoder and the low-cost but high-performance Smart Feedback Device (SFD) when used with the AKD drive.
- Windings and voltage operation are not differentiated in MOTIONEERING®. All systems are offered at all voltages (240, 400, 480).
- The AKM Servomotor comes mounted on the electric cylinder as specified by the electric cylinder part number. This eliminates time to match the motor to the electric cylinder and eliminates potential mechanical incompatibility.

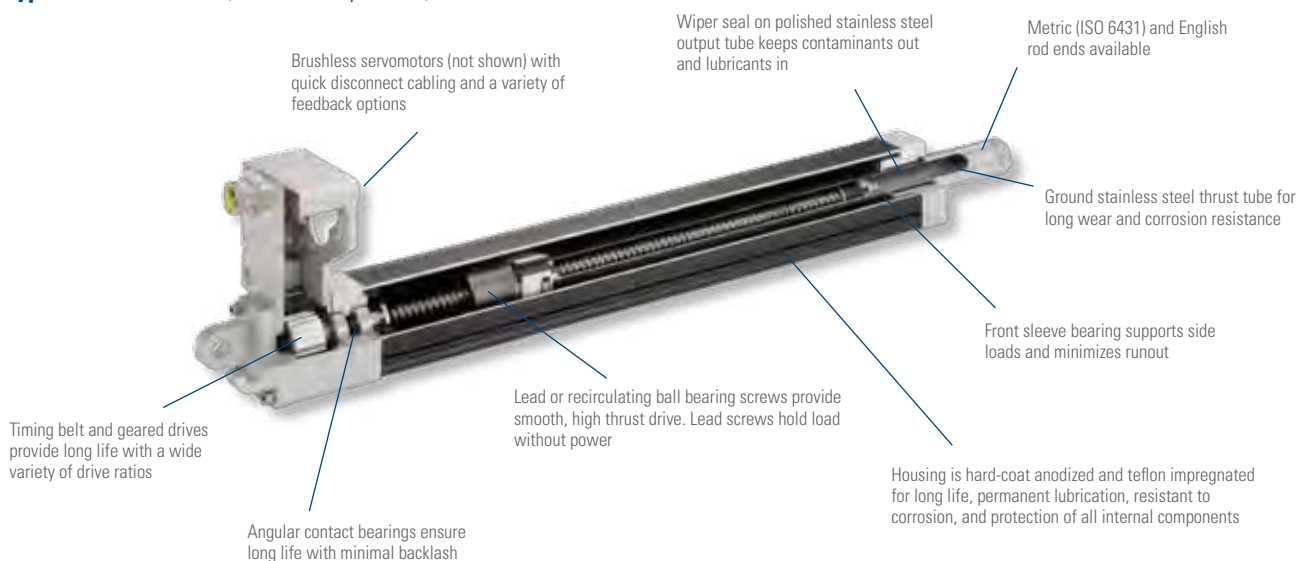
EC Servo Positioners

- Designed for performance
- Highest quality precision rolled ballscrews and Acme screws – for quiet, long-life operation
- Brushless servo with encoder, resolver or SFD feedback
- Sealed for IP54 protection. IP65 option available
- Thrust up to 25,000 N [5,620 lb]
- Speed up to 1.3 m/s [52.5 in/sec]
- Metric design (ISO 6431)
- Available in 5 power ranges – EC1, 2, 3, 4 & 5

N2 Servo Positioners

- Smallest package size
- Time-proven design
- Improved durability over previous designs
- Thrust up to 2,670 N [600 lb]
- Speed up to 0.76 m/s [30 in/sec]
- English dimensions (to NFPA standards)
- Brushless servo with encoder, resolver or SFD feedback

Typical Construction (EC2 cut-away shown)



Kollmorgen offers electric cylinder drive mechanisms designed around either lead or ballscrews. Ballscrews, being the more efficient of the two, utilize ball nuts riding on recirculating ball bearings, resulting in higher speeds, loads and cycle rates. However, the more efficient design of ballscrew technology lends it to being backdriven when power is removed if precautions are not taken (e.g., electric brakes or counter loading).

Lead screws are capable of holding the load in position when power is removed, but are less efficient in operation. Kollmorgen’s guide system prevents rotation of the drive nut, thus eliminating any torque loading to machine linkage.

Electric Cylinders Are Preferred When

- Positioning an externally guided and supported load
- Moving a load that pivots
- There is a high concentration of airborne contaminants (rodless actuators are inherently less well protected)
- Replacing a hydraulic or pneumatic cylinder with an electromechanical solution



General Specifications

| Series | N2 | | EC1 | EC2 | | EC3 | | EC4 | EC5 |
|---|-------------------------------|----------------|-------------------------|-------------------------|--------------|---|--------------|-------------------------------------|-------------------------------------|
| Std. Maximum Stroke Length inches (mm) | * 22.5 (571.5) | | 7.87 (200) | 29.53 (750) | | 39.37 (1000) | | 59.06 (1500) | 59.06 (1500) |
| Type of Screw | Lead | Ball | Ball | Lead | Ball | Lead | Ball | Ball | Ball |
| Lead | 0.2 in, 0.5 in | 0.2 in, 0.5 in | 1.025 in | 4 mm | 16, 5 mm | 4 mm | 16, 10, 5 mm | 25, 10 mm | 32, 10 mm |
| Nom. Lead Screw Diameter | 0.625 in | 0.625 in | 0.375 in | 16 mm | 16 mm | 20 mm | 20 mm | 25 mm | 32 mm |
| Backlash inches (mm) | 0.016 (0.40) | 0.015 (0.38) | 0.015 (0.30) | 0.016 (0.40) | 0.010 (0.25) | 0.016 (0.40) | 0.010 (0.25) | 0.12 (0.30) | 0.12 (0.30) |
| Dimension Std. | English NFPA Std. | | Metric ISO 6431 Std. | Metric ISO 6431 Std. | | Metric ISO 6431 Std. | | Metric ISO 6431 Std. | Metric ISO 6431 Std. |
| Bore size (mm) | | | 0.875 in | 50 | | 63 | | 80 | 100 |
| Brushless Servomotor | AKM23, NEMA 23 | | AKM1x, NEMA 17 | AKM23, NEMA 23 | | AKM23, NEMA 23 AKM42, NEMA 34 AKM52, NEMA 42 ** | | AKM42, NEMA 34 AKM52, NEMA 42 ** | AKM42, NEMA 34 AKM52, NEMA 42 ** |
| Max. Thrust lb. (N) | 600 (2670) | | 150 (667) | 810 (3600) | | 1620 (7200) | | 2700 (12,000) | 5620 (25,000) |
| Max. Velocity in/sec (m/s) | 12 (0.3) | 30 (0.76) | 13 (0.33) | 9.2 (0.23) | 50 (1.27) | 8.0 (0.20) | 50 (1.28) | 52.5 (1.33) | 52.5 (1.33) |
| Max. Rated Duty Cycle % (load, speed dependent) | 50 | 100 | 100 | 50 | 100 | 50 | 100 | 100 | 100 |
| Limit Switches | optional | | optional | optional | | optional | | optional | optional |
| Std. Operating Temperature Range C (F) | 32 to 140 (0 to 60) | | -30 to +70 (-22 to 158) | -30 to +70 (-22 to 158) | | -30 to +70 (-22 to 158) | | -30 to +70 (-22 to 158) | -30 to +70 (-22 to 158) |
| Moisture/Contaminants | Humid, but Not Direct Contact | | IP54 Std. IP65 Opt. | IP54 Std. IP65 Opt. | | IP54 Std. IP65 Opt. | | IP54 Std. IP65 Opt. | IP54 Std. IP65 Opt. |

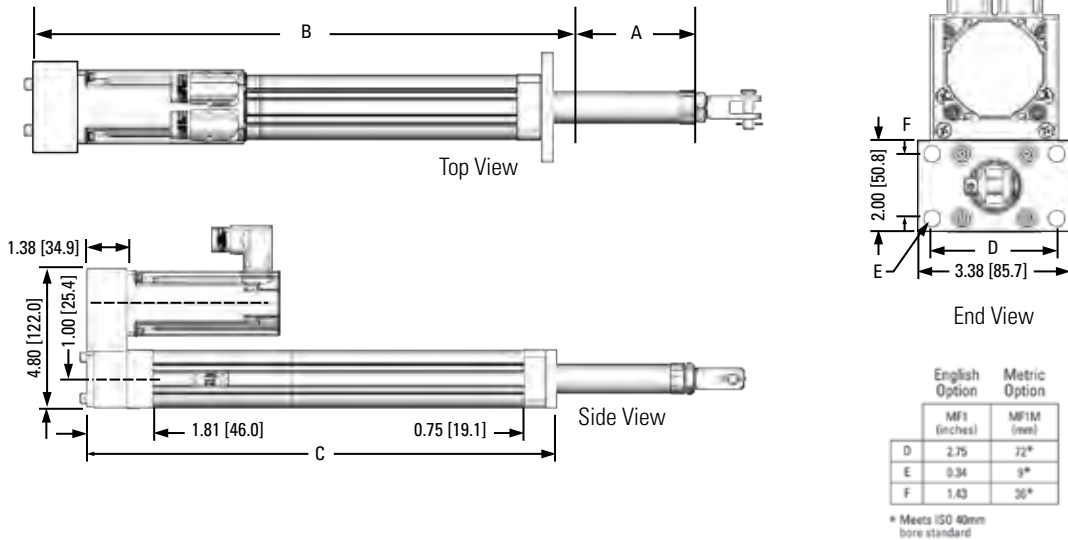
* Requires dual rod-end bearing option for length over 12".

** NEMA 42 mount, shaft does not follow a NEMA std.

Electric Cylinders N2 / EC Series

N2 MF1 Front Rectangular Flange Mount

Parallel



N2 Series Dimensions

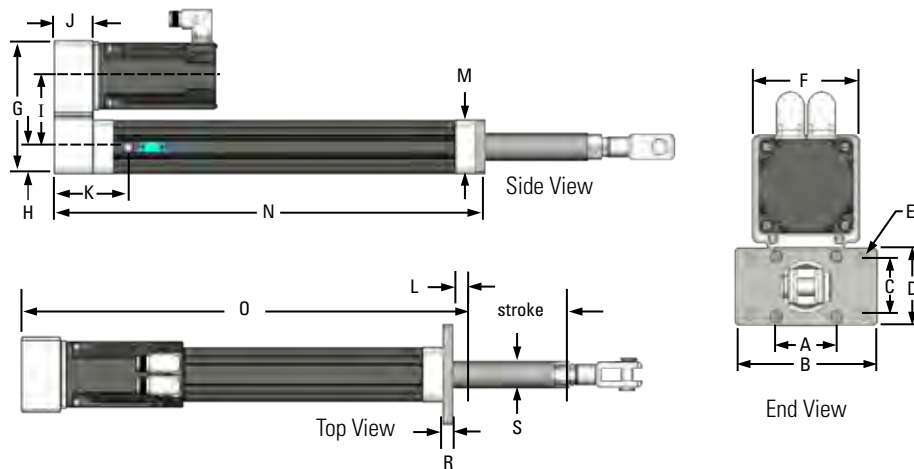
| A | Standard Stroke Lengths Available | | | | | | |
|------|-----------------------------------|-------|-------|-------|-------|-------|-------|
| inch | 2.0 | 4.0 | 6.0 | 8.0 | 12.0 | 18.0 | 24.0 |
| mm | 50.8 | 101.6 | 152.4 | 203.2 | 304.8 | 457.2 | 609.6 |

| B | Retract Length | C | Mounting length |
|------|----------------|------|-----------------|
| inch | 5.37 + S | inch | 5.06 + S |
| mm | 136.4 + S | mm | 128.5 + S |

S = stroke

EC MF1 Front Flange

Parallel



Flange Dimensions

| in accordance with ISO 6431 for: | |
|----------------------------------|-----------|
| Type | Bore Size |
| EC1 | 30 mm |
| EC2 | 50 mm |
| EC3 | 63 mm |
| EC4 | 80 mm |
| EC5 | 100 mm |

EC Series Dimensions

| | A | B | C | D | E | F | G | H |
|-----|--------------|--------------|-------------|--------------|-------------------------|--------------|-------------|-------------|
| | mm (inch) | mm (inch) | mm (inch) | mm (inch) | mm (inch) | mm (inch) | mm (inch) | mm (inch) |
| EC1 | 60.0 (2.36) | 74.0 (2.91) | 28.0 (1.10) | 40.0 (1.57) | 6.60 (0.26) | 48.0 (1.89) | 82.6 (3.25) | 19.0 (0.75) |
| EC2 | 90.0 (3.54) | 114.3 (4.50) | 45.0 (1.77) | 63.5 (2.50) | 9.0 (0.35) | 79.8 (3.14) | 144.0 (5.7) | 28.4 (1.12) |
| EC3 | 100.0 (3.94) | 127.0 (5.00) | 50.0 (1.97) | 69.1 (2.72) | 9.0 (0.35) | 95.5 (3.76) | 169.7 (6.7) | 34.8 (1.37) |
| EC4 | 127.0 (5.00) | 152.4 (6.00) | 69.9 (2.75) | 96.3 (3.79) | 13.5 (0.53) | 127.0 (5.00) | 221.0 (8.7) | 46.1 (1.81) |
| EC5 | 150.0 (5.91) | 186.9 (7.36) | 75.0 (2.95) | 114.3 (4.50) | 13.97/14.35 (.555/.565) | 127.0 (5.00) | 221.0 (8.7) | 46.1 (1.81) |

| | I | J | K | L | M | N Cyl Length | O Retract length |
|-----|-------------------------|-------------|--------------|-------------|-------------|----------------------|-----------------------|
| | mm (inch) | mm (inch) | mm (inch) | mm (inch) | mm (inch) | mm (inch) | mm (inch) |
| EC1 | 41.8 (1.65) | 31.3 (1.23) | – | 10.2 (0.40) | 38.1 (1.50) | 106.8 + S (4.2 + S) | 117.0 + S (4.60 + S) |
| EC2 | 74.7 (2.94) | 41.7 (1.64) | 88.6 (3.49) | 25.0 (0.98) | 56.9 (2.24) | 218.5 + S (8.6 + S) | 243.4 + S (9.58 + S) |
| EC3 | *87.6/89.7 (*3.45/3.53) | 49.3 (1.94) | 94.2 (3.71) | 25.0 (0.98) | 69.6 (2.74) | 246.3 + S (9.7 + S) | 271.1 + S (10.67 + S) |
| EC4 | 111.1 (4.37) | 71.9 (2.83) | 150.9 (5.94) | 41.4 (1.63) | 92.2 (3.63) | 365.8 + S (14.4 + S) | 406.9 + S (16.02 + S) |
| EC5 | 111.1 (4.37) | 71.9 (2.83) | 150.9 (5.94) | 35.0 (1.38) | 92.2 (3.63) | 365.8 + S (14.4 + S) | 406.9 + S (16.02 + S) |

| | P Breather port Hex | | Q | R | S |
|-----|---------------------|-------------|-------------|-------------|-------------|
| | type | mm (inch) | mm (inch) | mm (inch) | mm (inch) |
| EC1 | – | – | – | 10.0 (0.39) | 22.2 (0.88) |
| EC2 | 1/8 NPT | 11.1 (0.44) | 34.8 (1.37) | 9.5 (0.37) | 28.0 (1.10) |
| EC3 | 1/8 NPT | 11.1 (0.44) | 41.1 (1.62) | 12.7 (0.50) | 35.0 (1.38) |
| EC4 | 1/4 NPT | 14.0 (0.55) | 52.8 (2.08) | 12.7 (0.50) | 50.0 (1.97) |
| EC5 | 1/4 NPT | 14.0 (0.55) | 52.8 (2.08) | 19.1 (0.75) | 50.0 (1.97) |

* AKM23 / AKM24 dimension.

240 Vac Performance Data

| Sys # | Electric Cylinder - AKM Servomotor | AKD Drive | Cont. Thrust @ Speed (lb @ in/sec) | | Peak Thrust @ Speed (lb @ in/sec) | | Max Thrust (lb) | Max System Speed (in/sec) | **Max Stroke for Max Speed (mm) |
|-------|------------------------------------|------------|------------------------------------|------|-----------------------------------|------|-----------------|---------------------------|---------------------------------|
| N2 | 1 N2-AKM23D-■■■■-10-5B * | AKD-X00306 | 190 | 12.0 | 600 | 11.5 | 600 | 12.0 | 18.0 |
| | 2 N2-AKM23D-■■■■-15-5B | AKD-X00306 | 287 | 8.0 | 600 | 8.0 | 600 | 8.0 | 18.0 |
| | 3 N2-AKM23D-■■■■-20-5B | AKD-X00306 | 382 | 6.0 | 600 | 6.0 | 600 | 6.0 | 18.0 |
| | 4 N2-AKM23D-■■■■-25-5B | AKD-X00306 | 370 | 4.8 | 600 | 4.8 | 600 | 4.8 | 18.0 |
| | 5 N2-AKM23D-■■■■-120-5B | AKD-X00306 | 600 | 1.0 | 600 | 1.0 | 600 | 1.0 | 18.0 |
| | 6 N2-AKM23D-■■■■-10-2B * | AKD-X00306 | 75 | 30.0 | 275 | 24.5 | 280 | 30.0 | 18.0 |
| | 7 N2-AKM23D-■■■■-15-2B | AKD-X00306 | 115 | 20.0 | 412 | 16.4 | 421 | 20.0 | 18.0 |
| | 8 N2-AKM23D-■■■■-20-2B | AKD-X00306 | 152 | 15.0 | 545 | 12.3 | 545 | 15.0 | 18.0 |
| | 9 N2-AKM23D-■■■■-25-2B | AKD-X00306 | 146 | 12.0 | 534 | 9.8 | 545 | 12.0 | 18.0 |
| | 10 N2-AKM23D-■■■■-120-2B | AKD-X00306 | 600 | 2.5 | 600 | 2.5 | 600 | 2.5 | 18.0 |
| | 11 N2-AKM23D-■■■■-10-5A-BZ * | AKD-X00306 | 86 | 12.0 | 305 | 9.8 | 312 | 12.0 | 18.0 |
| | 12 N2-AKM23D-■■■■-15-5A-BZ | AKD-X00306 | 128 | 8.0 | 458 | 6.5 | 467 | 8.0 | 18.0 |
| | 13 N2-AKM23D-■■■■-20-5A-BZ | AKD-X00306 | 169 | 6.0 | 600 | 4.9 | 600 | 6.0 | 18.0 |
| | 14 N2-AKM23D-■■■■-25-5A-BZ | AKD-X00306 | 165 | 4.8 | 593 | 3.9 | 600 | 4.8 | 18.0 |
| | 15 N2-AKM23D-■■■■-120-5A-BZ | AKD-X00306 | 600 | 1.0 | 600 | 1.0 | 600 | 1.0 | 18.0 |

| Sys # | Electric Cylinder - AKM Servomotor | AKD Drive | Cont. Thrust @ Speed (lb @ in/sec) | | Peak Thrust @ Speed (lb @ in/sec) | | Max Thrust (lb) | Max System Speed (in/sec) | **Max Stroke for Max Speed (mm) |
|-------|------------------------------------|------------|------------------------------------|------|-----------------------------------|------|-----------------|---------------------------|---------------------------------|
| EC1 | 1 EC1-AKM11B-■■■■-10-03B * | AKD-X00306 | 50 | 13.0 | 75 | 13.0 | 75 | 13.0 | 200 |
| | 2 EC1-AKM11B-■■■■-20-03B | AKD-X00306 | 100 | 6.0 | 125 | 6.0 | 125 | 6.0 | 200 |
| | 3 EC1-AKM11B-■■■■-40-03B | AKD-X00306 | 150 | 3.0 | 150 | 3.0 | 150 | 3.0 | 200 |
| | 4 EC1-AKM13C-■■■■-10-03B* | AKD-X00306 | 75 | 11.5 | 75 | 13.0 | 75 | 13.0 | 200 |
| | 5 EC1-AKM13C-■■■■-20-03B | AKD-X00306 | 125 | 5.9 | 125 | 6.0 | 126 | 6.0 | 200 |

36 Vdc Stepper Performance Data

| Sys # | Electric Cylinder - CT Step Motor | Cont. Thrust @ Speed (lb @ in/sec) | | Max Thrust (lb) | Max System Speed (in/sec) | **Max Stroke for Max Speed (mm) |
|-------|-----------------------------------|------------------------------------|------|-----------------|---------------------------|---------------------------------|
| 1 | EC1-CTP12XLF10-10-03B | 19.7 | 5.0 | 75 | 5.0 | 200 |
| 2 | EC1-CTP12XLF10-20-03B | 35.4 | 2.5 | 125 | 2.5 | 200 |
| 3 | EC1-CTP12XLF10-40-03B | 70.8 | 1.25 | 150 | 1.25 | 200 |

Note 1: Refer to page 62 for matching cables.

Note 2: For complete AKD, EC, and N2 Series model nomenclature, refer to pages 63, 68 and 69, respectively.

* Inline type with 1-to-1 gear ratio (-10L) provide 10% additional thrust (not to exceed the Max thrust).

** Based on critical speed of screw specification.

Electric Cylinders N2 / EC Series

240 Vac Performance Data

| Sys # | Electric Cylinder - AKM Servomotor | AKD Drive | Cont. Thrust @ Speed (lb @ in/sec) | Peak Thrust @ Speed (lb @ in/sec) | Max Thrust (lb) | Max System Speed (in/sec) | Max Stroke for Max Speed (mm)** | Cylinder Bore Size (EC) | | | |
|-------|------------------------------------|--------------------------|------------------------------------|-----------------------------------|-----------------|---------------------------|---------------------------------|-------------------------|------|------|----|
| EC2 | 16 | EC2-AKM23D-■■■■-10-04A * | AKD-X00306 | 108 | 9.2 | 387 | 7.7 | 396 | 9.2 | 200 | 50 |
| | 17 | EC2-AKM23D-■■■■-15-04A | AKD-X00306 | 160 | 6.2 | 521 | 5.8 | 582 | 6.2 | 300 | 50 |
| | 18 | EC2-AKM23D-■■■■-20-04A | AKD-X00306 | 216 | 4.6 | 455 | 4.6 | 622 | 4.6 | 450 | 50 |
| | 19 | EC2-AKM23D-■■■■-50-04A | AKD-X00306 | 517 | 1.8 | 809 | 1.8 | 809 | 1.8 | 600 | 50 |
| | 20 | EC2-AKM23D-■■■■-100-04A | AKD-X00306 | 809 | 0.9 | 809 | 0.9 | 809 | 0.9 | 750 | 50 |
| | 21 | EC2-AKM23D-■■■■-10-16B * | AKD-X00306 | 60 | 50.5 | 218 | 30.9 | 223 | 50.5 | 200 | 50 |
| | 22 | EC2-AKM23D-■■■■-15-16B | AKD-X00306 | 85 | 40.1 | 293 | 23.4 | 237 | 45.0 | 200 | 50 |
| | 23 | EC2-AKM23D-■■■■-20-16B | AKD-X00306 | 116 | 29.5 | 245 | 24.5 | 350 | 31.0 | 300 | 50 |
| | 24 | EC2-AKM23D-■■■■-50-16B | AKD-X00306 | 292 | 7.3 | 809 | 7.3 | 809 | 7.3 | 750 | 50 |
| | 25 | EC2-AKM23D-■■■■-100-16B | AKD-X00306 | 581 | 3.7 | 809 | 3.7 | 809 | 3.7 | 750 | 50 |
| | 21 | EC2-AKM23D-■■■■-10-05B * | AKD-X00306 | 186 | 16.3 | 697 | 9.7 | 712 | 16.3 | 200 | 50 |
| | 22 | EC2-AKM23D-■■■■-15-05B | AKD-X00306 | 272 | 12.5 | 809 | 8.3 | 809 | 13.5 | 300 | 50 |
| | 23 | EC2-AKM23D-■■■■-20-05B | AKD-X00306 | 370 | 9.2 | 782 | 7.6 | 809 | 10.0 | 300 | 50 |
| | 24 | EC2-AKM23D-■■■■-50-05B | AKD-X00306 | 809 | 2.3 | 809 | 2.3 | 809 | 2.3 | 750 | 50 |
| EC3 | 25 | EC3-AKM23D-■■■■-15-16B | AKD-X00306 | 86 | 39.3 | 327 | 20.6 | 334 | 42.0 | 200 | 63 |
| | 26 | EC3-AKM23D-■■■■-20-16B | AKD-X00306 | 119 | 28.6 | 448 | 14.0 | 459 | 30.0 | 300 | 63 |
| | 27 | EC3-AKM23D-■■■■-50-16B | AKD-X00306 | 251 | 6.3 | 891 | 6.1 | 909 | 6.3 | 750 | 63 |
| | 28 | EC3-AKM23D-■■■■-70-16B | AKD-X00306 | 349 | 4.5 | 1240 | 4.4 | 1260 | 4.5 | 1000 | 63 |
| | 29 | EC3-AKM23D-■■■■-10-10B * | AKD-X00306 | 98 | 21.0 | 349 | 19.3 | 356 | 21.0 | 300 | 63 |
| | 30 | EC3-AKM23D-■■■■-15-10B | AKD-X00306 | 141 | 21.0 | 523 | 12.9 | 534 | 21.0 | 300 | 63 |
| | 31 | EC3-AKM23D-■■■■-20-10B | AKD-X00306 | 191 | 17.9 | 716 | 8.9 | 734 | 20.0 | 300 | 63 |
| | 32 | EC3-AKM23D-■■■■-50-10B | AKD-X00306 | 404 | 3.8 | 1420 | 3.8 | 1450 | 3.8 | 1000 | 63 |
| | 33 | EC3-AKM23D-■■■■-70-10B | AKD-X00306 | 561 | 2.8 | 1620 | 2.8 | 1620 | 2.8 | 1000 | 63 |
| | 34 | EC3-AKM23D-■■■■-10-05B * | AKD-X00306 | 196 | 10.3 | 695 | 9.7 | 712 | 10.3 | 300 | 63 |
| | 35 | EC3-AKM23D-■■■■-15-05B | AKD-X00306 | 285 | 10.3 | 1040 | 6.4 | 1070 | 10.3 | 300 | 63 |
| | 36 | EC3-AKM23D-■■■■-20-05B | AKD-X00306 | 381 | 8.9 | 1430 | 4.4 | 1470 | 10.0 | 300 | 63 |
| | 37 | EC3-AKM23D-■■■■-50-05B | AKD-X00306 | 800 | 2.0 | 1620 | 2.0 | 1620 | 2.0 | 750 | 63 |
| | 38 | EC3-AKM23D-■■■■-70-05B | AKD-X00306 | 1120 | 1.4 | 1620 | 1.4 | 1620 | 1.4 | 1000 | 63 |
| | 38 | EC3-AKM42G-■■■■-10-16B * | AKD-X00606 | 149 | 45.0 | 601 | 24.4 | 628 | 45.0 | 200 | 63 |
| | 39 | EC3-AKM42G-■■■■-15-16B | AKD-X00606 | 223 | 30.0 | 510 | 24.0 | 736 | 30.0 | 300 | 63 |
| | 40 | EC3-AKM42G-■■■■-50-16B | AKD-X00606 | 690 | 6.3 | 1620 | 6.3 | 1620 | 6.3 | 750 | 63 |
| | 41 | EC3-AKM42G-■■■■-70-16B | AKD-X00606 | 965 | 4.5 | 1620 | 4.5 | 1620 | 4.5 | 1000 | 63 |
| | 42 | EC3-AKM42G-■■■■-10-10B * | AKD-X00606 | 238 | 28.4 | 961 | 15.3 | 1010 | 21.0 | 300 | 63 |
| | 43 | EC3-AKM42G-■■■■-15-10B | AKD-X00606 | 357 | 18.9 | 823 | 14.5 | 1200 | 21.0 | 300 | 63 |
| | 44 | EC3-AKM42G-■■■■-50-10B | AKD-X00606 | 1100 | 3.9 | 1620 | 3.9 | 1620 | 3.9 | 1000 | 63 |
| | 45 | EC3-AKM42G-■■■■-70-10B | AKD-X00606 | 1530 | 2.8 | 1620 | 2.8 | 1620 | 2.8 | 1000 | 63 |
| 46 | EC3-AKM42G-■■■■-15-05B | AKD-X00606 | 710 | 10.3 | 1620 | 7.7 | 1620 | 10.3 | 300 | 63 | |

Note 1: Refer to page 62 for matching cables.

Note 2: For complete AKD and EC Series model nomenclature, refer to pages 63 and 68 respectively.

* Inline type with 1-to-1 gear ratio (-10L) provide 10% additional thrust (not to exceed the Max thrust).

** Based on critical speed of screw specification.

240 Vac Performance Data

| Sys # | Electric Cylinder - AKM Servomotor | AKD Drive | Cont. Thrust @ Speed (lb @ in/sec) | | Peak Thrust @ Speed (lb @ in/sec) | | Max Thrust (lb) | Max System Speed (in/sec) | **Max Stroke for Max Speed (mm) | Cylinder Bore Size (EC) | |
|-------|------------------------------------|--------------------------|------------------------------------|------|-----------------------------------|------|-----------------|---------------------------|---------------------------------|-------------------------|-----|
| EC4 | 48 | EC4-AKM42G-■■■■-10-25B * | AKD-X00606 | 108 | 52.5 | 395 | 36.1 | 402 | 52.5 | 300 | 80 |
| | 49 | EC4-AKM42G-■■■■-15-25B | AKD-X00606 | 143 | 47.3 | 593 | 24.1 | 603 | 50.0 | 300 | 80 |
| | 50 | EC4-AKM42G-■■■■-20-25B | AKD-X00606 | 190 | 35.4 | 791 | 18.1 | 804 | 36.0 | 450 | 80 |
| | 51 | EC4-AKM42G-■■■■-50-25B | AKD-X00606 | 580 | 5.1 | 1940 | 5.1 | 1960 | 5.1 | 1500 | 80 |
| | 52 | EC4-AKM42G-■■■■-100-25B | AKD-X00606 | 1130 | 2.6 | 2700 | 2.6 | 2700 | 2.6 | 1500 | 80 |
| | 53 | EC4-AKM42G-■■■■-10-10B * | AKD-X00606 | 270 | 21.0 | 989 | 14.4 | 1005 | 15.3 | 450 | 80 |
| | 54 | EC4-AKM42G-■■■■-15-10B | AKD-X00606 | 357 | 18.9 | 1480 | 9.6 | 1500 | 15.3 | 450 | 80 |
| | 55 | EC4-AKM42G-■■■■-20-10B | AKD-X00606 | 476 | 14.2 | 1980 | 7.2 | 2010 | 14.5 | 450 | 80 |
| | 56 | EC4-AKM42G-■■■■-50-10B | AKD-X00606 | 1440 | 2.1 | 2700 | 2.1 | 2700 | 2.1 | 1500 | 80 |
| | 57 | EC4-AKM42G-■■■■-100-10B | AKD-X00606 | 2700 | 1.0 | 2700 | 1.0 | 2700 | 1.0 | 1500 | 80 |
| | 58 | EC4-AKM52H-■■■■-10-25B * | AKD-X00606 | 256 | 36.3 | 458 | 30.7 | 668 | 36.3 | 300 | 80 |
| | 59 | EC4-AKM52H-■■■■-15-25B | AKD-X00606 | 384 | 24.2 | 844 | 18.6 | 1200 | 24.2 | 600 | 80 |
| | 60 | EC4-AKM52H-■■■■-20-25B | AKD-X00606 | 512 | 18.1 | 874 | 16.7 | 1160 | 18.1 | 750 | 80 |
| | 61 | EC4-AKM52H-■■■■-50-25B | AKD-X00606 | 1360 | 5.1 | 2700 | 5.1 | 2700 | 5.1 | 1500 | 80 |
| | 62 | EC4-AKM52H-■■■■-100-25B | AKD-X00606 | 2700 | 2.6 | 2700 | 2.6 | 2700 | 2.6 | 1500 | 80 |
| | 63 | EC4-AKM52H-■■■■-10-10B * | AKD-X00606 | 640 | 14.5 | 1120 | 13.1 | 1670 | 14.5 | 450 | 80 |
| | 64 | EC4-AKM52H-■■■■-15-10B | AKD-X00606 | 961 | 9.7 | 2090 | 8.0 | 2700 | 9.7 | 600 | 80 |
| | 65 | EC4-AKM52H-■■■■-20-10B | AKD-X00606 | 1280 | 7.2 | 2190 | 6.7 | 2700 | 7.2 | 750 | 80 |
| | 66 | EC4-AKM52H-■■■■-50-10B | AKD-X00606 | 2700 | 2.1 | 2700 | 2.1 | 2700 | 2.1 | 1500 | 80 |
| | 67 | EC4-AKM52L-■■■■-10-25B * | AKD-X01206 | 240 | 52.5 | 422 | 52.5 | 700 | 52.5 | 300 | 80 |
| | 68 | EC4-AKM52L-■■■■-15-25B | AKD-X01206 | 287 | 48.3 | 741 | 42.9 | 1090 | 48.3 | 300 | 80 |
| | 69 | EC4-AKM52L-■■■■-20-25B | AKD-X01206 | 368 | 36.3 | 789 | 32.2 | 1040 | 36.3 | 450 | 80 |
| | 70 | EC4-AKM52L-■■■■-50-25B | AKD-X01206 | 1370 | 5.1 | 2370 | 5.1 | 2370 | 5.1 | 1500 | 80 |
| | 71 | EC4-AKM52L-■■■■-100-25B | AKD-X01206 | 2700 | 2.6 | 2700 | 2.6 | 2700 | 2.6 | 1500 | 80 |
| | 72 | EC4-AKM52L-■■■■-10-10B * | AKD-X01206 | 650 | 15.3 | 1110 | 15.3 | 1500 | 15.3 | 300 | 80 |
| 73 | EC4-AKM52L-■■■■-15-10B | AKD-X01206 | 860 | 15.3 | 1870 | 15.3 | 2700 | 15.3 | 300 | 80 | |
| 74 | EC4-AKM52L-■■■■-20-10B | AKD-X01206 | 956 | 14.5 | 1970 | 13.0 | 2610 | 14.5 | 300 | 80 | |
| 75 | EC4-AKM52L-■■■■-50-10B | AKD-X01206 | 2700 | 2.1 | 2700 | 2.1 | 2700 | 2.1 | 1500 | 80 | |
| EC5 | 76 | EC5-AKM42G-■■■■-10-32B * | AKD-X00606 | 88 | 52.5 | 309 | 46.3 | 314 | 52.5 | 450 | 100 |
| | 77 | EC5-AKM42G-■■■■-15-32B | AKD-X00606 | 121 | 52.5 | 463 | 30.8 | 471 | 52.5 | 450 | 100 |
| | 78 | EC5-AKM42G-■■■■-20-32B | AKD-X00606 | 149 | 45.4 | 618 | 23.1 | 628 | 45.4 | 450 | 100 |
| | 79 | EC5-AKM42G-■■■■-50-32B | AKD-X00606 | 438 | 6.6 | 1530 | 6.6 | 1530 | 6.6 | 1500 | 100 |
| | 80 | EC5-AKM42G-■■■■-100-32B | AKD-X00606 | 880 | 3.4 | 3000 | 3.4 | 3000 | 3.4 | 1500 | 100 |
| | 81 | EC5-AKM42G-■■■■-10-10B * | AKD-X00606 | 270 | 15.3 | 989 | 14.4 | 1005 | 15.3 | 450 | 100 |
| | 82 | EC5-AKM42G-■■■■-15-10B | AKD-X00606 | 400 | 15.3 | 1480 | 9.6 | 1510 | 15.3 | 450 | 100 |
| | 83 | EC5-AKM42G-■■■■-20-10B | AKD-X00606 | 476 | 14.2 | 1980 | 7.2 | 2010 | 14.2 | 600 | 100 |
| | 84 | EC5-AKM42G-■■■■-50-10B | AKD-X00606 | 438 | 6.6 | 1530 | 6.6 | 1530 | 6.6 | 1000 | 100 |
| | 85 | EC5-AKM42G-■■■■-100-10B | AKD-X00606 | 880 | 3.4 | 3000 | 3.4 | 3000 | 3.4 | 1500 | 100 |
| | 86 | EC5-AKM52H-■■■■-10-32B * | AKD-X00606 | 200 | 46.4 | 353 | 42.9 | 522 | 46.4 | 450 | 100 |
| | 87 | EC5-AKM52H-■■■■-15-32B | AKD-X00606 | 300 | 30.9 | 935 | 2.3 | 935 | 30.9 | 750 | 100 |
| | 88 | EC5-AKM52H-■■■■-20-32B | AKD-X00606 | 400 | 23.2 | 683 | 21.0 | 1010 | 23.2 | 750 | 100 |
| | 89 | EC5-AKM52H-■■■■-50-32B | AKD-X00606 | 1080 | 6.6 | 3000 | 5.9 | 3045 | 6.6 | 1500 | 100 |
| | 90 | EC5-AKM52H-■■■■-100-32B | AKD-X00606 | 2070 | 3.4 | 3630 | 3.4 | 3630 | 3.4 | 1500 | 100 |
| | 91 | EC5-AKM52H-■■■■-10-10B * | AKD-X00606 | 641 | 14.5 | 1130 | 13.1 | 1670 | 14.5 | 450 | 100 |
| | 92 | EC5-AKM52H-■■■■-15-10B | AKD-X00606 | 961 | 9.7 | 2080 | 8.0 | 3000 | 9.7 | 750 | 100 |
| | 93 | EC5-AKM52H-■■■■-20-10B | AKD-X00606 | 1281 | 7.3 | 2180 | 6.7 | 3000 | 7.3 | 750 | 100 |
| | 94 | EC5-AKM52H-■■■■-50-10B | AKD-X00606 | 3400 | 2.1 | 5620 | 2.1 | 5620 | 2.1 | 1500 | 100 |
| | 95 | EC5-AKM52H-■■■■-100-10B | AKD-X00606 | 5620 | 1.0 | 5620 | 1.0 | 5620 | 1.0 | 1500 | 100 |
| | 96 | EC5-AKM52L-■■■■-15-32B | AKD-X01206 | 261 | 52.5 | 580 | 52.5 | 853 | 52.5 | 450 | 100 |
| | 97 | EC5-AKM52L-■■■■-20-32B | AKD-X01206 | 299 | 46.4 | 616 | 41.0 | 911 | 46.4 | 450 | 100 |
| | 98 | EC5-AKM52L-■■■■-15-10B | AKD-X01206 | 860 | 15.3 | 1890 | 15.3 | 2730 | 15.3 | 450 | 100 |
| | 99 | EC5-AKM52L-■■■■-20-10B | AKD-X01206 | 956 | 14.5 | 1970 | 12.8 | 2610 | 14.5 | 450 | 100 |

Note 1: Refer to page 62 for matching cables.

Note 2: For complete AKD and EC Series model nomenclature, refer to pages 63 and 68 respectively.

Ratings are based on the AKM servomotor and the matching AKD Drive. Specifications are based on 240 Vac, 3 phase voltage supply.

* Inline type with 1-to-1 gear ratio (-10L) provide 10% additional thrust (not to exceed the Max thrust) ** Based on critical speed of screw specification.

Rodless Actuators R-Series



The name “Rodless Actuator” comes from this technology’s close relationship to Electric Cylinders, sharing many of the same components. Rather than having a rod, Rodless Actuators incorporate a carriage supported by linear bearings. Where Electric Cylinders are designed to extend in and out of the work area delivering force or thrust, Rodless Actuators are designed to be load carrying mechanisms (up to 300 lb) incorporating ballscrews, leadscrews, or belt drive transmissions with optional integrated gearheads.

Rodless Actuators also share many of the fundamental design characteristics of Precision Positioning Tables. Precision Tables are designed to carry larger payloads and deliver superior repeatability and accuracy. Rodless Actuators offer longer travels and higher speeds at a lower price. Screw driven Rodless Actuators are also thrust-producing devices that are best for axial force applications where the space is limited and a payload must also be supported or carried. As individual components, Rodless Actuators are not well suited for moment loading; however, they can be effectively combined into complete Cartesian Systems for some multi-axis applications. For higher speed, lower thrust applications, Rodless Actuators can be repeatability-driven with a timing belt instead of a screw.

Kollmorgen has combined the broad product offering of the R-Series Rodless Actuators with the industry leading AKM servomotors and AKD drives. The R-Series of Rodless Actuators offer a wide range of available thrusts in standard units with three basic frame sizes (R2A, R3, R4).

Rodless Actuators offer longer travels (up to 108") and higher speeds (belt drives up to a maximum speed of 120 in/sec). Integrated geared options provide the ability to increase thrust capacity for lower speed applications leveraging the speed capacity of servo systems.

Multiple servomotor options are available for the product line, ranging from NEMA 23 size to NEMA 42 size servos. The combination with the AKM Servomotor enables the use of various feedback devices including sine-encoder and the low-cost but high-performance Smart Feedback Device (SFD) when used with the AKD drive.

The AKM Servomotor comes mounted on the Rodless Actuators as specified by the Rodless Actuator part number. This eliminates time to match the motor to the Electric Cylinder and eliminates potential mechanical incompatibility.

The operation of Rodless Actuators is similar to the Electric Cylinders described earlier. However, instead of an extending rod, a rodless unit features a moving carriage supported by linear bearings within an extruded aluminum chassis. This gives the rodless actuator the ability to guide and support a load, as well as position it.

Kollmorgen Rodless Actuators are designed for outstanding overall performance, value, flexibility and reliability in industrial applications.

Rodless Actuators Are Preferred When

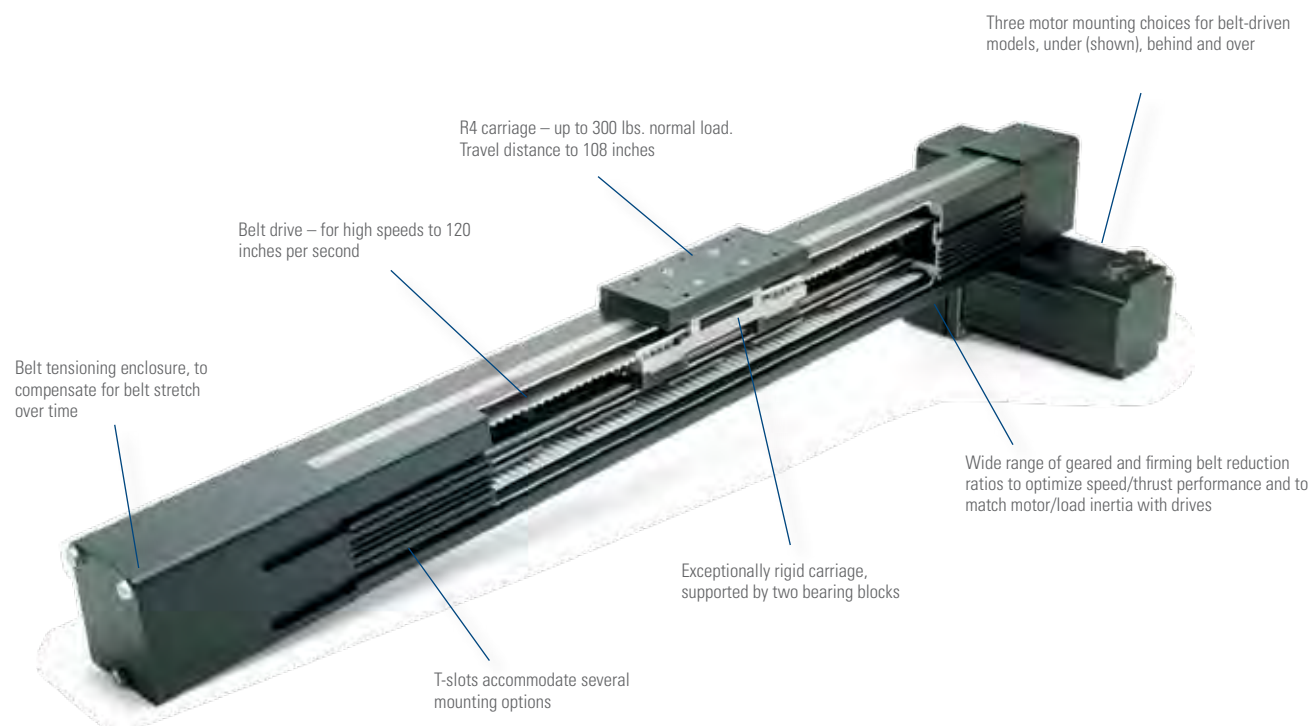
- A low cost system is needed to both position and guide a load
- It is desired to eliminate external guides and ways
- The shortest overall work envelope (extended length equals retracted length) is required
- Multiple units will be combined into Cartesian Systems
- There is a need for a compact cross-sectional linear positioning system

Common Features

- Ready to mount motor/actuator systems in choice of lengths, with one week delivery

Typical Construction

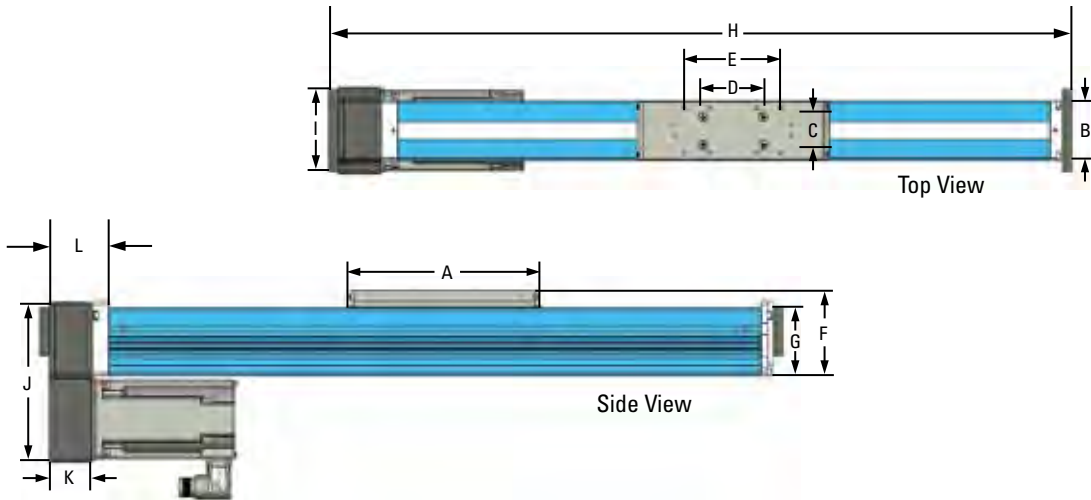
(R4 belt-driven cutaway shown)



Rodless Actuators R-Series

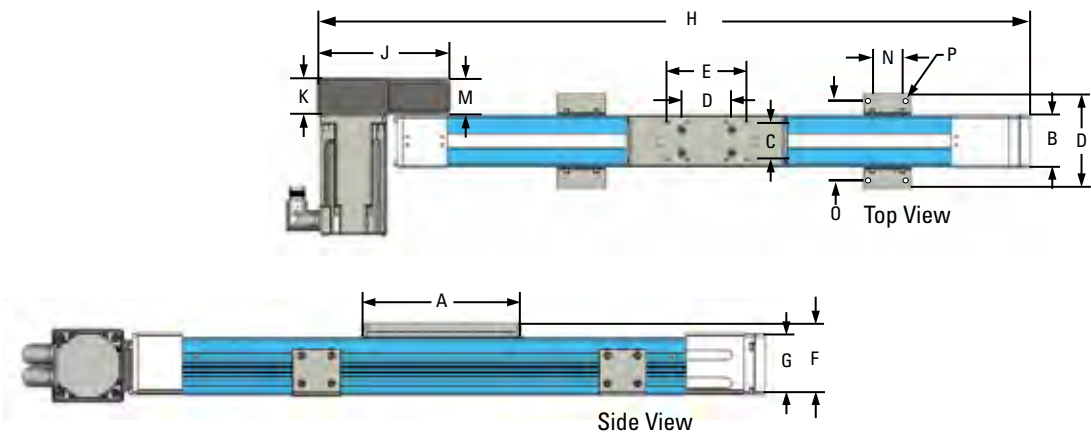
R3 Screw Drive

R3 screw drive with AKM42, parallel below motor orientation and flange mounting shown.



R3 Belt Drive

R3 belt drive with AKM42, behind left motor orientation and angle bracket feet shown.



Carriage Mounting Features

| | Metric Version (mm) | English Version (inch) |
|-----|-------------------------|---------------------------|
| RA2 | 8 x M5 x 0.8 x 8.0 deep | 8 x 10-32 UNF x 0.31 deep |
| R3 | 8 x M5 x 0.8 x 9.6 deep | 8 x 10-32 UNF x 0.38 deep |
| R4 | 4 x M6 x 1 x 12 deep | 4 x 1/4-20 x 0.50 deep |

Dimension Data

| | A | B | C | D | E |
|-----|------------|-------------|-------------|-------------|--------------|
| | mm (in) | mm (in) | mm (in) | mm (in) | mm (in) |
| RA2 | 210 (8.25) | 50.8 (2.00) | 31.8 (1.25) | 50.8 (2.00) | 101.6 (4.00) |
| R3 | 197 (7.76) | 63.5 (2.50) | 47.6 (1.88) | 50.8 (2.00) | 101.6 (4.00) |
| R4 | 197 (7.76) | 92.2 (3.63) | 63.5 (2.50) | NA | 127.0 (5.00) |

| | F | G | H (Screw) | H (Belt) |
|-----|-------------|--------------|---------------------|---------------------|
| | mm (in) | mm (in) | mm (in) | mm (in) |
| RA2 | 71.9 (2.83) | 50.8 (2.00) | "S" + 345.3 (13.59) | "S" + 378.3 (14.89) |
| R3 | 88.8 (3.50) | 71.5 (2.82) | "S" + 326.4 (12.85) | "S" + 522.0 (20.55) |
| R4 | 71.9 (2.83) | 108.0 (4.25) | "S" + 411.8 (16.21) | "S" + 578.6 (22.78) |

S = stroke

| | I | J | K | L |
|-----|--------------|--------------|-------------|--------------|
| | mm (in) | mm (in) | mm (in) | mm (in) |
| RA2 | 72.1 (2.84) | 123.2 (4.85) | 43.0 (1.69) | 90.7 (3.57) |
| R3 | 91.4 (3.60) | 168.9 (6.65) | 45.5 (1.79) | 88.1 (3.47) |
| R4 | 127.0 (5.00) | 220.7 (8.69) | 71.9 (2.83) | 147.8 (5.82) |

| | M | N | O | P |
|-----|-------------|-------------|--------------|-----------------|
| | mm (in) | mm (in) | mm (in) | mm (in) |
| RA2 | 50.1 (1.97) | NA | 88.8 (3.50) | 8.7 (0.34) thru |
| R3 | 45.5 (1.79) | 47.6 (1.88) | 101.6 (4.00) | 5.5 (0.22) thru |
| R4 | 71.9 (2.83) | 63.5 (2.50) | 127.0 (5.00) | 7.0 (0.28) thru |

Rodless Actuators R-Series

General Specifications

| Series | R2A | | | R3 | | | R4 | |
|--|--|------------|----------|--------------------------------|------------|----------|--------------|----------|
| Std Max Stroke Length (in) | 72 | | | 108 | | | 108 | |
| Cross Section (in) | 2 x 2 | | | 2.5 x 2.8 | | | 3.6 x 4.25 | |
| Guide Type | Roller Guides | | | Profile Rail | | | Profile Rail | |
| Drive Type | Ballscrew | Lead Screw | Belt | Ballscrew | Lead Screw | Belt | Ballscrew | Belt |
| Screw Leads (in/rev) | 0.5, 0.2 | 0.2, 0.125 | n/a | 0.5, 0.2 | 0.2, 0.125 | n/a | 1, 0.25 | n/a |
| Nominal Screw Diameter (in) | 0.625 | 0.625 | n/a | 0.625 | 0.625 | n/a | 1 | n/a |
| Brushless Servomotor | AKM23, NEMA 23 | | | AKM23, NEMA 23, AKM42, NEMA 34 | | | n/a | |
| Max Thrust (lb) | 100 | | 72 | 300 | | 200 | 700 | 300 |
| Max Velocity (in/sec) | 30 | | 80 | 30 | | 120 | 40 | 120 |
| Max Carriage Load | | | | | | | | |
| Normal (lb) | 5 | | | 100 | | | 300 | |
| Roll Moment (lb-in) | 50 | | | 300 | | | 600 | |
| Pitch Moment (lb-in) | 100 | | | 500 | | | 1000 | |
| Repeatability (in) | +/-0.001 | | +/-0.010 | +/-0.001 | | +/-0.010 | +/-0.001 | +/-0.010 |
| Max Duty Cycle (speed, load dependent) | 100% | 60% | 100% | 100% | 60% | 100% | 100% | 100% |
| Limit Sensors | Optional | | | | | | | |
| Std Operating Temperature Range | -20 deg F to 140 deg F (-28 deg C to 60 deg C) | | | | | | | |
| Moisture/Contamination | IP 44 rated: Splash-proof, protected against ingress of solid particles greater than 0.040 [1 mm] diameter.* | | | | | | | |

240 Vac Performance Data

| Sys # | Rodless Actuator-Servomotor | AKD Drive | Cont. Thrust @ Speed (lb @ in/sec) | | Peak Thrust @ Speed (lb @ in/sec) | | Max Thrust (lb) | Max System Speed (in/sec) | Max Stroke for Max Speed (in) | |
|-------|-----------------------------|-------------------|------------------------------------|-----|-----------------------------------|-----|-----------------|---------------------------|-------------------------------|-----|
| R2A | 1 | R2A-AKM23D-10-2B* | AKD-X00306 | 70 | 30 | 100 | 30 | 100 | 30 | 18 |
| | 2 | R2A-AKM23D-15-2B | AKD-X00306 | 100 | 20 | 100 | 20 | 100 | 20 | 24 |
| | 3 | R2A-AKM23D-20-2B | AKD-X00306 | 100 | 15 | 100 | 15 | 100 | 15 | 30 |
| | 4 | R2A-AKM23D-10-5B | AKD-X00306 | 100 | 12 | 100 | 12 | 100 | 12 | 18 |
| | 5 | R2A-AKM23D-15-5B | AKD-X00306 | 100 | 8.0 | 100 | 8.0 | 100 | 8.0 | 24 |
| | 6 | R2A-AKM23D-20-5B | AKD-X00306 | 100 | 6.0 | 100 | 6.0 | 100 | 6.0 | 30 |
| | 7 | R2A-AKM23D-10-5A* | AKD-X00306 | 78 | 12 | 100 | 12 | 100 | 12 | 12 |
| | 8 | R2A-AKM23D-15-5A | AKD-X00306 | 100 | 8.0 | 100 | 8.0 | 100 | 8.0 | 18 |
| | 9 | R2A-AKM23D-20-5A | AKD-X00306 | 100 | 6.0 | 100 | 6.0 | 100 | 6.0 | 24 |
| | 10 | R2A-AKM23D-10-T* | AKD-X00306 | 7.2 | 80 | 40 | 80 | 40 | 80 | 72 |
| | 11 | R2A-AKM23D-15-T | AKD-X00306 | 14 | 80 | 64 | 80 | 64 | 80 | 72 |
| | 12 | R2A-AKM23D-20-T | AKD-X00306 | 19 | 80 | 78 | 80 | 87 | 80 | 72 |
| R3 | 13 | R3-AKM23D-10-2B* | AKD-X00306 | 71 | 30 | 269 | 25 | 270 | 25 | 18 |
| | 14 | R3-AKM23D-15-2B | AKD-X00306 | 108 | 20 | 300 | 20 | 300 | 20 | 24 |
| | 15 | R3-AKM23D-20-2B | AKD-X00306 | 148 | 15 | 300 | 15 | 300 | 15 | 30 |
| | 16 | R3-AKM23D-50-2B | AKD-X00306 | 300 | 6.0 | 300 | 6.0 | 300 | 6.0 | 48 |
| | 17 | R3-AKM23D-10-5B* | AKD-X00306 | 186 | 12 | 300 | 12 | 300 | 12.0 | 18 |
| | 18 | R3-AKM23D-15-5B | AKD-X00306 | 270 | 8.0 | 300 | 8.0 | 300 | 8.0 | 24 |
| | 19 | R3-AKM23D-20-5B | AKD-X00306 | 300 | 6.0 | 300 | 6.0 | 300 | 6.0 | 30 |
| | 20 | R3-AKM23D-50-5B | AKD-X00306 | 300 | 2.4 | 300 | 2.4 | 300 | 2.4 | 48 |
| | 21 | R3-AKM23D-10-5A* | AKD-X00306 | 75 | 12 | 250 | 12 | 300 | 12 | 12 |
| | 22 | R3-AKM23D-15-5A | AKD-X00306 | 120 | 8.0 | 300 | 8.0 | 300 | 8.0 | 18 |
| | 23 | R3-AKM23D-20-5A | AKD-X00306 | 160 | 6.0 | 300 | 6.0 | 300 | 6.0 | 24 |
| | 24 | R3-AKM23D-50-5A | AKD-X00306 | 300 | 2.4 | 300 | 2.4 | 300 | 2.4 | 42 |
| | 25 | R3-AKM23D-10-8A* | AKD-X00306 | 128 | 7.5 | 300 | 7.5 | 300 | 7.5 | 18 |
| | 26 | R3-AKM23D-15-8A | AKD-X00306 | 200 | 5.0 | 300 | 5.0 | 300 | 5.0 | 30 |
| | 27 | R3-AKM23D-20-8A* | AKD-X00306 | 260 | 3.8 | 300 | 3.8 | 300 | 3.8 | 30 |
| | 28 | R3-AKM23D-50-8A | AKD-X00306 | 300 | 1.5 | 300 | 1.5 | 300 | 1.5 | 48 |
| | 29 | R3-AKM23D-10-T* | AKD-X00306 | 1.0 | 110 | 18 | 110 | 18 | 110 | 108 |

Note 1: Refer to page 62 for matching cables. Note 2: For complete AKD and R-Series model nomenclature, refer to pages 63 and 70 respectively.

* Inline type with 1-to-1 gear ratio (-10L) provide 10% additional thrust (not to exceed the Max thrust).

240 Vac Performance Data

| Sys # | Rodless Actuators-Servomotor | AKD Drive | Cont. Thrust @ Speed (lb @ in/sec) | | Peak Thrust @ Speed (lb @ in/sec) | | Max Thrust (lb) | Max System Speed (in/sec) | Max Stroke for Max Speed (in) | |
|-------|------------------------------|-----------------------|------------------------------------|-----|-----------------------------------|-----|-----------------|---------------------------|-------------------------------|-----|
| | | | | | | | | | | |
| R3 | 30 | R3-AKM23D-■■■■-15-T | AKD-X00306 | 4.4 | 110 | 29 | 110 | 29 | 110 | 108 |
| | 31 | R3-AKM23D-■■■■-20-T | AKD-X00306 | 8.0 | 110 | 40 | 110 | 41 | 110 | 108 |
| | 32 | R3-AKM23D-■■■■-50-T | AKD-X00306 | 20 | 72 | 90 | 72 | 92 | 72 | 108 |
| | 33 | R3-AKM23D-■■■■-70-T | AKD-X00306 | 30 | 51 | 128 | 51 | 131 | 51 | 108 |
| | 34 | R3-AKM42G-■■■■-10-2B | AKD-X00606 | 200 | 30 | 300 | 30 | 300 | 30 | 18 |
| | 35 | R3-AKM42G-■■■■-15-2B | AKD-X00606 | 300 | 20 | 300 | 20 | 300 | 20 | 24 |
| | 36 | R3-AKM42G-■■■■-20-2B | AKD-X00606 | 300 | 15 | 300 | 15 | 300 | 15 | 30 |
| | 37 | R3-AKM42G-■■■■-50-2B | AKD-X00606 | 300 | 6.0 | 300 | 6.0 | 300 | 6.0 | 48 |
| | 38 | R3-AKM42G-■■■■-10-5B | AKD-X00606 | 300 | 12 | 300 | 12 | 300 | 12 | 18 |
| | 39 | R3-AKM42G-■■■■-15-5B | AKD-X00606 | 300 | 8.0 | 300 | 8.0 | 300 | 8.0 | 24 |
| | 40 | R3-AKM42G-■■■■-20-5B | AKD-X00606 | 300 | 6.0 | 300 | 6.0 | 300 | 6.0 | 30 |
| | 41 | R3-AKM42G-■■■■-50-5B | AKD-X00606 | 300 | 2.4 | 300 | 2.4 | 300 | 2.4 | 48 |
| | 42 | R3-AKM42G-■■■■-10-5A | AKD-X00606 | 221 | 12 | 300 | 12 | 300 | 12 | 12 |
| | 43 | R3-AKM42G-■■■■-15-5A | AKD-X00606 | 300 | 8.0 | 300 | 8.0 | 300 | 8.0 | 18 |
| | 44 | R3-AKM42G-■■■■-20-5A | AKD-X00606 | 300 | 6.0 | 300 | 6.0 | 300 | 6.0 | 24 |
| | 45 | R3-AKM42G-■■■■-50-5A | AKD-X00606 | 300 | 2.4 | 300 | 2.4 | 300 | 2.4 | 42 |
| | 46 | R3-AKM42G-■■■■-10-8A | AKD-X00606 | 300 | 7.5 | 300 | 7.5 | 300 | 7.5 | 18 |
| | 47 | R3-AKM42G-■■■■-15-8A | AKD-X00606 | 300 | 5.0 | 300 | 5.0 | 300 | 5.0 | 24 |
| | 48 | R3-AKM42G-■■■■-20-8A | AKD-X00606 | 300 | 3.8 | 300 | 3.8 | 300 | 3.8 | 30 |
| | 49 | R3-AKM42G-■■■■-50-8A | AKD-X00606 | 300 | 1.5 | 300 | 1.5 | 300 | 1.5 | 60 |
| | 50 | R3-AKM42G-■■■■-10-T | AKD-X00606 | 15 | 110 | 59 | 110 | 60 | 110 | 108 |
| | 51 | R3-AKM42G-■■■■-15-T | AKD-X00606 | 25 | 110 | 92 | 110 | 93 | 110 | 108 |
| | 52 | R3-AKM42G-■■■■-20-T | AKD-X00606 | 32 | 110 | 124 | 110 | 126 | 110 | 108 |
| | 53 | R3-AKM42G-■■■■-50-T | AKD-X00606 | 66 | 72 | 200 | 72 | 200 | 72 | 108 |
| 54 | R3-AKM42G-■■■■-70-T | AKD-X00606 | 94 | 51 | 200 | 51 | 200 | 51 | 108 | |
| R4 | 55 | R4-AKM42G-■■■■-10-1B | AKD-X00606 | 103 | 40 | 384 | 37 | 390 | 40 | 36 |
| | 56 | R4-AKM42G-■■■■-15-1B | AKD-X00606 | 160 | 27 | 578 | 25 | 588 | 27 | 48 |
| | 57 | R4-AKM42G-■■■■-20-1B | AKD-X00606 | 210 | 20 | 700 | 20 | 700 | 20 | 60 |
| | 58 | R4-AKM42G-■■■■-50-1B | AKD-X00606 | 460 | 7.8 | 700 | 7.8 | 700 | 7.8 | 96 |
| | 59 | R4-AKM42G-■■■■-100-1B | AKD-X00606 | 700 | 4.0 | 700 | 4.0 | 700 | 4.0 | 108 |
| | 60 | R4-AKM42G-■■■■-10-4B | AKD-X00606 | 440 | 10.0 | 700 | 10.0 | 700 | 10 | 36 |
| | 61 | R4-AKM42G-■■■■-15-4B | AKD-X00606 | 630 | 6.7 | 700 | 6.7 | 700 | 6.7 | 48 |
| | 62 | R4-AKM42G-■■■■-20-4B | AKD-X00606 | 700 | 6.7 | 700 | 6.7 | 700 | 6.7 | 48 |
| | 63 | R4-AKM42G-■■■■-50-4B | AKD-X00606 | 700 | 6.7 | 700 | 6.7 | 700 | 6.7 | 48 |
| | 64 | R4-AKM42G-■■■■-10-T | AKD-X00606 | 11 | 110 | 47 | 110 | 47 | 110 | 108 |
| | 65 | R4-AKM42G-■■■■-15-T | AKD-X00606 | 18 | 110 | 73 | 110 | 74 | 110 | 108 |
| | 66 | R4-AKM42G-■■■■-20-T | AKD-X00606 | 25 | 110 | 98 | 110 | 100 | 110 | 108 |
| | 67 | R4-AKM42G-■■■■-30-T | AKD-X00606 | 38 | 100 | 150 | 92 | 153 | 100 | 108 |
| | 68 | R4-AKM42G-■■■■-50-T | AKD-X00606 | 56 | 59 | 215 | 54 | 219 | 59 | 108 |
| | 69 | R4-AKM42G-■■■■-100-T | AKD-X00606 | 118 | 30 | 300 | 30 | 300 | 30 | 108 |
| | 70 | R4-AKM52H-■■■■-10-1B | AKD-X00606 | 246 | 37 | 700 | 37 | 700 | 37 | 36 |
| | 71 | R4-AKM52H-■■■■-15-1B | AKD-X00606 | 372 | 25 | 700 | 25 | 700 | 25 | 48 |
| | 72 | R4-AKM52H-■■■■-20-1B | AKD-X00606 | 498 | 18 | 700 | 18 | 700 | 18 | 60 |
| | 73 | R4-AKM52H-■■■■-50-1B | AKD-X00606 | 700 | 7.8 | 700 | 7.8 | 700 | 7.8 | 96 |
| | 74 | R4-AKM52H-■■■■-10-4B | AKD-X00606 | 700 | 9.2 | 700 | 9.2 | 700 | 9.2 | 36 |
| | 75 | R4-AKM52H-■■■■-15-4B | AKD-X00606 | 700 | 6.7 | 700 | 6.7 | 700 | 6.7 | 48 |
| | 76 | R4-AKM52H-■■■■-20-4B | AKD-X00606 | 700 | 4.9 | 700 | 4.9 | 700 | 4.9 | 60 |
| | 77 | R4-AKM52H-■■■■-50-4B | AKD-X00606 | 700 | 1.9 | 700 | 1.9 | 700 | 1.9 | 96 |
| | 78 | R4-AKM52H-■■■■-10-T | AKD-X00606 | 30 | 110 | 97 | 110 | 99 | 110 | 108 |
| | 79 | R4-AKM52H-■■■■-15-T | AKD-X00606 | 51 | 110 | 149 | 110 | 152 | 110 | 108 |
| | 80 | R4-AKM52H-■■■■-20-T | AKD-X00606 | 65 | 110 | 201 | 90 | 204 | 110 | 108 |
| | 81 | R4-AKM52H-■■■■-30-T | AKD-X00606 | 95 | 92 | 300 | 60 | 300 | 95 | 108 |
| | 82 | R4-AKM52H-■■■■-50-T | AKD-X00606 | 137 | 54 | 300 | 44 | 300 | 54 | 108 |
| | 83 | R4-AKM52H-■■■■-100-T | AKD-X00606 | 275 | 27 | 300 | 27 | 300 | 27 | 108 |

Note 1: Refer to page 62 for matching cables. Note 2: For complete AKD and R-Series model nomenclature, refer to pages 63 and 70 respectively.

Micron™ TRUE Planetary™ Gearheads

Helical gears are known for their quiet and smooth operation along with their ability to transmit higher loads than spur gears. Both of these features of helical gearing result from the improved contact ratio (effective teeth in mesh) over spur gears.

A high torque, whisper quiet helical gearhead has been designed by combining the positive attributes of gear crowning and helical gearing with the planetary construction to create the smoothest operating gearhead on the market.

- Broadest product range of gearheads in the industry
- Innovative gear technology offers size and performance advantages
- RediMount™ system provides error-free and reliable installations

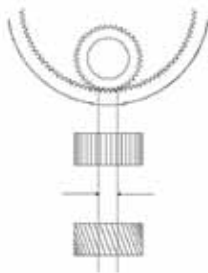
Helical Crowned TRUE Planetary™ Gearing

Features

- High torque capacity
- Low backlash
- Smooth operation
- Greater load sharing
- Whisper quiet

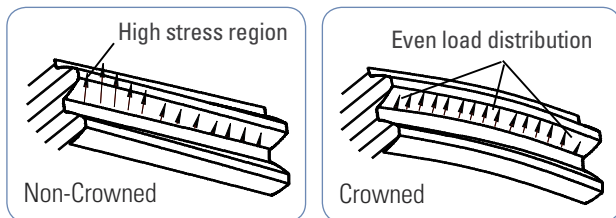
Spur vs. Helical Gearing

Typical contact ratio is 1.5 for spur gearing. Contact ratio for equivalent helical gear is 3.3 – more than double the contact ratio.



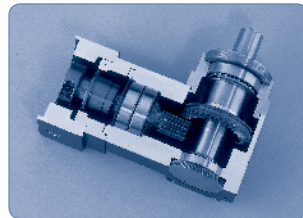
Crowned vs. Non-Crowned

Crowning optimizes the gear mesh alignment within a gear train to increase the torque capacity and reduce noise. It also enhances load distribution on the tooth flank to reduce high stress regions.

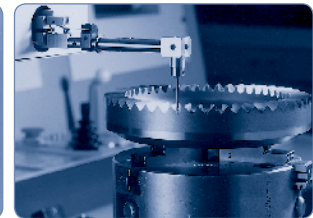


PowerTRUE™ Right Angle Gearheads

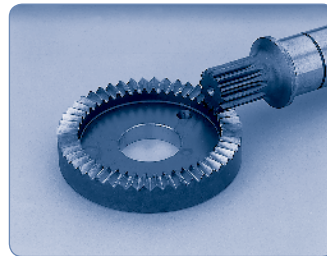
- Lower backlash from single axis mesh adjustment
- A compact design using Face Gear technology
- Whisper quiet operation due to high contact ratio
- Mesh ratios from 1:1 to 5:1
- Extremely efficient (98%)



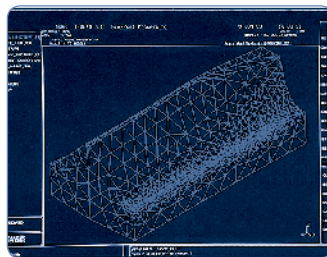
PowerTRUE™ Gear Technology



Computerized mapping of gear tooth profile



All Micron™ Right Angle Gearheads use the PowerTRUE Technology which increases the mesh ratio to 5:1 compared to a maximum of 3:1 typical in bevel gears.



Multiple teeth in the Face Gear simultaneously mesh with a standard involute pinion. The continuous tooth engagement yields a high contact ratio between the gear and the pinion, increasing torque and efficiency.

| NEMA TRUE™ | | True Planetary gearhead, flange mount design with anodized aluminum housing employing RediMount™ system. | | | | | | |
|---------------|------------|--|--------------------|---------|-----------|---------------------------------|------------|--------------------|
| Inline | Frame Size | | Max T Peak (lb-in) | | All Sizes | Gear Ratios Available | Efficiency | Backlash (arc-min) |
| | English | Metric | 1 Stage | 2 Stage | | | | |
| Size 17 | NEMA 17 | 42 mm | 170 | 170 | 1 Stage | 3, 4, 5, 7, 10 | 93% | 13 (8)* |
| Size 23 / 60 | NEMA 23 | 60 mm | 250 | 275 | | | | |
| Size 34 / 90 | NEMA 34 | 90 mm | 700 | 850 | 2 Stage | 15, 20, 25, 30, 40, 50, 70, 100 | 88% | 15 (9)* |
| Size 42 / 115 | NEMA 42 | 115 mm | 1000 | 1600 | | | | |



| NEMA TRUE™ | | True Planetary gearhead, flange mount design with anodized aluminum housing employing RediMount™ system. | | | | | | | |
|---------------|------------|--|--------------------|---------|---------|-----------|---|------------|--------------------|
| Right Angle | Frame Size | | Max T Peak (lb-in) | | | All Sizes | Gear Ratios Available | Efficiency | Backlash (arc-min) |
| | English | Metric | 1 Stage | 2 Stage | 3 Stage | | | | |
| Size 23 / 60 | NEMA 23 | 60 mm | 360 | 366 | 366 | 1 Stage | 1, 2, 3, 4, 5P | 98% | 13 |
| Size 34 / 90 | NEMA 34 | 90 mm | 1110 | 1110 | 1110 | 2 Stage | 5T, 6, 9, 10, 12, 15, 20, 25, 30, 40, 50 | 93% | 15 |
| Size 42 / 115 | NEMA 42 | 115 mm | 2250 | 2250 | 2250 | 3 Stage | 60, 75, 90, 100, 120, 125, 150, 200, 250, 300, 400, 500 | 88% | 15 |



| XTRUE™ | | The XTRUE Series is a new precision gearhead employing RediMount™ system that compliments our TRUE Planetary gearhead line – already the largest selection of planetary gearheads in the world. | | | | | | |
|--------|-------------------|---|---------|-----------|---------------------------------|------------|--------------------|--|
| Inline | Frame Size Metric | Max T Peak (lb-in) | | All Sizes | Gear Ratios Available | Efficiency | Backlash (arc-min) | |
| | | 1 Stage | 2 Stage | | | | | |
| XT040 | 40 mm | 162 | 299 | 1 Stage | 3, 4, 5, 7, 10 | 93% | 13 | |
| XT060 | 60 mm | 483 | 483 | | | | | |
| XT080 | 80 mm | 1460 | 1550 | | | | | |
| XT120 | 120 mm | 2640 | 2640 | 2 Stage | 15, 20, 25, 30, 40, 50, 70, 100 | 88% | 15 | |
| XT160 | 160 mm | 7750 | 7750 | | | | | |




| EverTRUE™ | | EverTRUE, employing RediMount™ system, is specifically designed for 24/7 continuous running applications providing 3 times (30,000 hours) service life. | | | | | | |
|-----------|-------------------|---|---------|-----------|-------------------------------------|------------|--------------------|--|
| Inline | Frame Size Metric | Max T Peak (lb-in) | | All Sizes | Gear Ratios Available | Efficiency | Backlash (arc-min) | |
| | | 1 Stage | 2 Stage | | | | | |
| ET010 | 101 mm | 4090 | 4790 | 1 Stage | 4, 5, 7, 10 | 95% | 4 | |
| ET014 | 141 mm | 9430 | 11,250 | | | | | |
| ET018 | 182 mm | 21,600 | 26,280 | 2 Stage | 16, 20, 25, 28, 35, 40, 50, 70, 100 | 90% | 5 | |





* High Precision, low backlash versions available, low backlash value in parenthesis (Not available in size 17).
 Note 1: Torque capacity is maximum of frame size stage design, not all ratios have the same rated torque capacity.
 Note 2: Torque capacity is the maximum allowable momentary torque for emergency stopping or heavy shock loading.
 Note 3: Ratio 5P is designed using the compact PowerTrue face gearing technology.
 Note 4: Ratio 5T is designed using a True Planetary gear stage for increased torque capacity.
 Note 5: For complete Gearhead model nomenclature, refer to page 71.




Micron™ TRUE Planetary™ Gearheads

| DuraTRUE™ | True Planetary gearhead, flange mount design with anodized aluminum housing employing RediMount™ system. | | | | | | | |
|---|--|-------------------|--------------------|---------|-----------|---------------------------------|------------|--------------------|
| | Inline | Frame Size Metric | Max T Peak (lb-in) | | All Sizes | Gear Ratios Available | Efficiency | Backlash (arc-min) |
| | | | 1 Stage | 2 Stage | | | | |
|  | DT60 | 60 mm | 460 | 460 | 1 Stage | 3, 4, 5, 7, 10 | 93% | 9 |
| | DT90 | 90 mm | 1480 | 1480 | | | | |
| | DT115 | 115 mm | 2510 | 2510 | 2 Stage | 15, 20, 25, 30, 40, 50, 70, 100 | 88% | 8 |
| | DT142 | 142 mm | 7380 | 7380 | | | | |


| DuraTRUE™ | True Planetary right angle gearhead, flange mount design with anodized aluminum housing employing RediMount™ system. | | | | | | | |
|---|--|-------------------|--------------------|---------|-----------|---|------------|--------------------|
| | Right Angle | Frame Size Metric | Max T Peak (lb-in) | | All Sizes | Gear Ratios Available | Efficiency | Backlash (arc-min) |
| | | | 1 Stage | 2 Stage | | | | |
|  | DT60 | 60 mm | 460 | 460 | 1 Stage | 5, 6, 9, 10, 12, 15, 20, 25, 30, 40, 50 | 93% | 9 |
| | DT90 | 90 mm | 1480 | 1480 | | | | |
| | DT115 | 115 mm | 2510 | 2510 | 2 Stage | 60, 75, 90, 100, 120, 125, 150, 200, 250, 300, 400, 500 | 88% | 8 |
| | DT142 | 142 mm | 7380 | 7380 | | | | |


| Slimline | Slimline right angle gearhead, flange mount design with anodized aluminum housing employing RediMount™ system. Face Gear technology for compact right angle construction. Dual shaft output version also available. | | | | | | | | |
|---|---|-------------------|--------------------|---------|---------|-----------|---|------------|--------------------|
| | Right Angle | Frame Size Metric | Max T Peak (lb-in) | | | All Sizes | Gear Ratios Available | Efficiency | Backlash (arc-min) |
| | | | 1 Stage | 2 Stage | 3 Stage | | | | |
|  | DT60S | 60 mm | 460 | 400 | 400 | 1 Stage | 1, 2, 3, 4, 5P | 98% | 8 |
| | DT90S | 90 mm | 1240 | 1240 | 1240 | 2 Stage | 5T, 6, 9, 10, 12, 15, 20, 25, 30, 40, 50 | 93% | 9 |
| | DT115S | 115 mm | 2260 | 2500 | 2500 | 3 Stage | 60, 75, 90, 100, 120, 125, 150, 200, 250, 300, 400, 500 | 88% | 9 |
| | DT142S | 142 mm | 5500 | 6920 | 7450 | | | | |

| Hollow Shaft | Hollow shaft right angle gearhead, flange mount design with anodized aluminum housing employing RediMount™ system. Large diameter/ bolt circle for direct mechanical interface. Face Gear technology for compact right angle construction. | | | | | | | | |
|---|--|-------------------|--------------------|---------|---------|-----------|---|------------|--------------------|
| | Right Angle | Frame Size Metric | Max T Peak (lb-in) | | | All Sizes | Gear Ratios Available | Efficiency | Backlash (arc-min) |
| | | | 1 Stage | 2 Stage | 3 Stage | | | | |
|  | DT90H | 90 mm | 1240 | 1240 | 1240 | 1 Stage | 1, 2, 3, 4, 5P | 98% | 8 |
| | DT115H | 115 mm | 2500 | 2500 | 2500 | 2 Stage | 5T, 6, 9, 10, 12, 15, 20, 25, 30, 40, 50 | 93% | 9 |
| | DT142H | 142 mm | 7660 | 7660 | 7660 | 3 Stage | 60, 75, 90, 100, 120, 125, 150, 200, 250, 300, 400, 500 | 88% | 9 |


Note 1: Torque Capacity is maximum of frame size stage design, not all ratios have the same rated torque capacity.
 Note 2: Torque Capacity is the maximum allowable momentary torque for emergency stopping or heavy shock loading.
 Note 3: Ratio 5P is designed using the compact PowerTrue face gearing technology.
 Note 4: Ratio 5T is designed using a True Planetary gear stage for increased torque capacity.
 Note 5: For complete Gearhead model nomenclature, refer to page 71.




| ValueTRUE™ | Helical True Planetary gearhead, flange mount design with stainless steel housing employing RediMount™ system. | | | | | | | |
|---|--|-------------------|--------------------|---------|-----------|-------------------------------------|------------|--------------------|
| | Inline | Frame Size Metric | Max T Peak (lb-in) | | All Sizes | Gear Ratios Available | Efficiency | Backlash (arc-min) |
| | | | 1 Stage | 2 Stage | | | | |
|  | VT006 | 61 mm | 800 | 910 | 1 Stage | 4, 5, 7, 10 | 95% | 4 |
| | VT075 | 75 mm | 1420 | 1630 | | | | |
| | VT090 | 90 mm | 1420 | 1630 | | | | |
| | VT010 | 101 mm | 4090 | 4790 | | | | |
| | VT115 | 115 mm | 4090 | 4790 | 2 Stage | 16, 20, 25, 28, 35, 40, 50, 70, 100 | 93% | 5 |
| | VT014 | 141 mm | 9430 | 11,250 | | | | |
| | VT018 | 182 mm | 21,600 | 26,280 | | | | |
| | VT022 | 220 mm | 36,980 | 44,000 | | | | |

| ValueTRUE™ | Helical True Planetary gearhead, flange mount design with stainless steel housing employing RediMount™ system. | | | | | | | |
|---|--|-------------------|--------------------|--|------------|---|------------|--------------------|
| | Right Angle | Frame Size Metric | Max T Peak (lb-in) | | All Sizes* | Gear Ratios Available | Efficiency | Backlash (arc-min) |
| | | | 2 Stage | | | | | |
|  | VTR006 | 61 mm | 870 | | 2 Stage | 4, 5, 8, 10, 12, 14, 15, 16, 20, 25, 28, 30, 35, 40, 50 | 93% | 5 |
| | VTR075 | 75 mm | 1570 | | | | | |
| | VTR090 | 90 mm | 1570 | | | | | |
| | VTR010 | 101 mm | 4580 | | | | | |
| | VTR115 | 115 mm | 4580 | | | | | |
| | VTR014 | 141 mm | 10,670 | | | | | |
| | VTR018 | 182 mm | 24,780 | | | | | |

* 4 and 5:1 ratios not available with VTR006-VTR090.

| UltraTRUE™ | Helical True Planetary inline gearhead, flange mount design with anodized aluminum housing employing RediMount™ system. Stainless steel housing, gear-path hobbled into stainless steel housing. | | | | | | | |
|---|--|-------------------|--------------------|---------|-----------|-------------------------------------|------------|--------------------|
| | Inline | Frame Size Metric | Max T Peak (lb-in) | | All Sizes | Gear Ratios Available | Efficiency | Backlash (arc-min) |
| | | | 1 Stage | 2 Stage | | | | |
|  | UT006 | 61 mm | 890 | 1010 | 1 Stage | 4, 5, 7, 10 | 95% | 4 |
| | UT075 | 75 mm | 1580 | 1810 | | | | |
| | UT090 | 90 mm | 1580 | 1810 | | | | |
| | UT010 | 101 mm | 4540 | 5330 | | | | |
| | UT115 | 115 mm | 4540 | 5330 | 2 Stage | 16, 20, 25, 28, 35, 40, 50, 70, 100 | 90% | 5 |
| | UT014 | 141 mm | 10,480 | 12,500 | | | | |
| | UT018 | 182 mm | 24,101 | 29,200 | | | | |
| | UT022 | 220 mm | 41,090 | 48,890 | | | | |

| UltraTRUE™ | Helical True Planetary right angle gearhead, flange mount design with anodized aluminum housing employing RediMount™ system. Stainless steel housing, gear-path hobbled into stainless steel housing. | | | | | | | |
|---|---|-------------------|--------------------|---------|-----------|---|------------|--------------------|
| | Right Angle | Frame Size Metric | Max T Peak (lb-in) | | All Sizes | Gear Ratios Available | Efficiency | Backlash (arc-min) |
| | | | 1 Stage | 2 Stage | | | | |
|  | UTR006 | 61 mm | 450 | 970 | 1 Stage | 1, 2, 3, 4, 5 | 98% | 4 |
| | UTR075 | 75 mm | 1410 | 1740 | | | | |
| | UTR090 | 90 mm | 1410 | 1740 | | | | |
| | UTR010 | 101 mm | 2850 | 5080 | | | | |
| | UTR115 | 115 mm | 2850 | 5080 | 2 Stage | 8, 10, 12, 14, 15, 16, 20, 25, 28, 30, 35, 40, 50 | 93% | 5 |
| | UTR014 | 141 mm | 6270 | 11,860 | | | | |
| | UTR018 | 182 mm | 16,910 | 27,530 | | | | |

Note 1: Torque capacity is maximum of frame size stage design, not all ratios have the same rated torque capacity.
 Note 2: Torque capacity is the maximum allowable momentary torque for emergency stopping or heavy shock loading.
 Note 3: Ratio 5P is designed using the compact PowerTrue face gearing technology.
 Note 4: Ratio 5T is designed using a True Planetary gear stage for increased torque capacity.
 Note 5: For complete Gearhead model nomenclature, refer to page 71.



Stepper Products

Our Stepper Motors, Drives and Controllers, which accommodate a wide range of power requirements, provide a high-performance, yet very cost-effective solution when you need precise motion control. In addition, our Stepper Motors are the highest torque-density motors in the industry, simple to control and don't require complicated, expensive feedback devices. They're available in a wide range of lengths, windings and shafts.

We also offer hybrid stepper motors that deliver more power in a smaller package. These rugged NEMA 34 and 42 (90 and 110 mm) frame motors provide among the highest torques per frame size in the industry.

Due to their ease of use, simplified control needs and freedom from expensive feedback requirements, our step motors are excellent alternatives to pneumatic, hydraulic and servomotor systems.

P7000 Stepper Drive-Controller

P7000 Stepper Drives offer a unique level of system functionality, smoothness, high-speed performance and innovation unmatched in the industry.

The compact P7000 is designed to power Kollmorgen step motors ranging from NEMA size 17 up to NEMA size 34. Two power configurations are available for operation directly from AC power, or from a DC power supply.

There are two levels of control offered. The basic drive accepts step and direction inputs. P7000 drives are also available with an integrated position controller (-PN option). The drives are configured by either on-board dip switches, or with the P7000 tools software.



Advanced P7000 Features Make it the Best Choice to Meet Your Application Requirements.

Multisteping™

Also known as auto-smoothing. The P7000 drive accepts full step pulse commands from the indexer and inserts fine micro-steps to smooth coarse low speed motion. This allows you to significantly upgrade machine performance without having to redesign machine control architecture.

Auto-Tuning

Advanced current auto-tuning techniques provide outstanding low-speed smoothness. The P7000 senses the motor's characteristics and automatically fine tunes itself to meet your high-performance needs. This reduces installation and set-up time.

Mid-Band Anti-Resonance Control

Reduces negative effects of mechanical resonance, allowing you to get more out of a smaller motor and virtually eliminating nuisance stalls and machine downtime.

Idle Current Reduction

If you do not require the motor's full torque to hold a load at rest, you can select the right amount of current (torque) to reduce motor heating and power consumption. This increases the life of the system.

Dynamic Smoothing

Quasi-S-curve algorithm reduces jerk, especially upon acceleration. Increases mechanical life of the machine and reduces energy consumption.

Intelligent Indexing Option (-PN)

Wizard-like P7000 helps you to develop and link motion tasks such as homing and conditional and unconditional indexing. You can be up-and-running quickly.

Modbus RTU Compatible

The Intelligent Indexing option (-PN) supports Modbus RTU to control motion with an external interface device. External interfaces make controlling motion simple for machine operators.

P7000 Tools

The position node option allows you to configure up to 63 absolute or relative moves. You can specify the moves' distance, acceleration, velocity, and deceleration rates, or simply specify the distance and total time for the move – P7000 will perform the calculations automatically.

| Specifications | Units | P70530 | P70360 |
|------------------------|-----------|-------------|----------------|
| Input Voltage Range | Volts | 20 - 75 Vdc | 120 or 240 Vac |
| Continuous Current | Amps rms | 5 | 2.5 |
| Microstep Peak Current | Amps peak | 7.1 | 3.5 |

Note: For complete P7000 Series model nomenclature, refer to page 72.



Hybrid Step Motors

Kollmorgen step motors have higher performance and support larger shaft loads than any other step motors. Custom motors are available to meet specific application needs including: modified shafts, connectors, lead-screws, and shaft-mounted components.

CT Series

CT Series motors include the most popular sizes, options and value suitable for most commercial and industrial applications. Enhanced motors provide the maximum performance available. This patented technology boosts torque an additional 25% to 40% across the entire speed range, and allows machines to be designed that are smaller and move faster.

CT Series Benefits

- Smaller drives result in a lower system cost
- More torque allows for smaller, faster machines
- Higher efficiency enables lower operating costs

| Size 17 CT Series | | 2 Phase, 1.8° step motors. Frame size: 1.7 inch, 43 mm (CTP High Torque Performance Series) | | | | | |
|-------------------|--------------|--|--------------------------------|------|--------|------|--|
| Series | Construction | | Holding Torque (Motor Mounted) | | Length | | <ul style="list-style-type: none"> • Inch or metric mounting • Rear shaft option |
| | Style | Stacks | Bipolar | | in | mm | |
| | | | oz-in | Nm | | | |
| CTP10 | Un-Enhanced | Short | 43 | 0.30 | 1.37 | 34.7 | |
| CTP11 | | 1 | 62 | 0.44 | 1.61 | 40.9 | |
| CTP12 | | 2 | 80 | 0.56 | 1.92 | 48.8 | |



| Size 23 CT Series | | 2 Phase, 1.8° step motors. Frame size: 2.2 inch, 57 mm (CTM Enhanced-Max Torque and Efficiency, CTP High Torque Performance Series) | | | | | |
|-------------------|--------------|--|--------------------------------|------|--------|------|---|
| Series | Construction | | Holding Torque (Motor Mounted) | | Length | | <ul style="list-style-type: none"> • Captured heavy duty bearings • High voltage insulation system • Rear shaft option |
| | Style | Stacks | Bipolar | | in | mm | |
| | | | oz-in | Nm | | | |
| CTM21 | Enhanced | 1 | 260 | 1.84 | 2.13 | 54.1 | |
| CTM22 | | 2 | 470 | 3.32 | 3.32 | 84.3 | |
| CTP20 | Un-Enhanced | Short | 100 | 0.71 | 1.62 | 41.2 | |
| CTP21 | | 1 | 200 | 1.41 | 2.13 | 54.1 | |
| CTP22 | | 2 | 360 | 2.54 | 3.32 | 84.3 | |



| Size 34 CT Series | | 2 Phase, 1.8° step motors. Frame size: 3.4 inch, 87 mm (CTM Enhanced-Max Torque & Efficiency, CTP High Torque Performance Series) | | | | | |
|-------------------|--------------|--|--------------------------------|------|--------|------|--|
| Series | Construction | | Holding Torque (Motor Mounted) | | Length | | <ul style="list-style-type: none"> • Captured heavy duty bearings • High voltage insulation system • Standard keyway front shaft • Rear shaft option |
| | Style | Stacks | Bipolar | | in | mm | |
| | | | oz-in | Nm | | | |
| CTM31 | Enhanced | 1 | 690 | 4.9 | 2.54 | 64.5 | |
| CTM32 | | 2 | 1350 | 9.5 | 3.80 | 96.5 | |
| CTM33 | | 3 | 1930 | 13.6 | 5.06 | 129 | |
| CTP31 | Un-Enhanced | 1 | 565 | 4.0 | 2.54 | 64.5 | |
| CTP32 | | 2 | 1100 | 7.8 | 3.80 | 96.5 | |
| CTP33 | | 3 | 1580 | 11.2 | 5.06 | 129 | |



Note: For complete CT Series model nomenclature, refer to page 73.





N/K Series

The N/K Series are larger step motors with the power, rugged construction, and options that make these motors ideal for heavy industrial applications. Options include: IP56, terminal boxes and MS connectors. Enhanced versions provide the maximum performance torque available. This patented technology boosts torque an additional 25% to 40%. Custom motors are available to meet specific application needs including: modified shafts, connectors, lead-screws, and components mounted to the shaft.

N/K Series Benefits

- More torque to drive heavy loads
- Smaller drives result in a lower system cost
- Higher efficiency enables lower operating costs

| Size 34 N/K | | 2 Phase, 1.8° step motors. Frame size: 3.4 inch, 87 mm | | | | | | |
|--|-------------|--|--------|--------------------------------|------|--------|----|---|
|  | Series | Construction | | Holding Torque (Motor Mounted) | | Length | | <ul style="list-style-type: none"> • Captured heavy duty bearings • High voltage insulation system • Options: Terminal Box MS Connectors Rear Shaft Encoder Front Shaft Seal |
| | | Style | Stacks | Bipolar | | in | mm | |
| | | | | oz-in | Nm | | | |
| K31 | Enhanced | 1 | 830 | 5.9 | 3.7 | 94 | | |
| K32 | | 2 | 1530 | 10.8 | 5.22 | 133 | | |
| K33 | | 3 | 2200 | 15.6 | 6.74 | 171 | | |
| K34 | | 4 | 2770 | 19.6 | 8.25 | 210 | | |
| N31 | Un-Enhanced | 1 | 650 | 4.6 | 3.7 | 94 | | |
| N32 | | 2 | 1220 | 8.6 | 5.22 | 133 | | |
| N33 | | 3 | 1760 | 12.4 | 6.74 | 171 | | |
| N34 | | 4 | 2170 | 15.3 | 8.25 | 210 | | |

| Size 42 N/K | | 2 Phase, 1.8° step motors. Frame size: 3.4 inch, 87 mm | | | | | | |
|---|-------------|--|--------|--------------------------------|------|--------|----|---|
|  | Series | Construction | | Holding Torque (Motor Mounted) | | Length | | <ul style="list-style-type: none"> • Captured heavy duty bearings • High voltage insulation system • Options: Terminal Box MS Connectors Rear Shaft Encoder Front Shaft Seal |
| | | Style | Stacks | Bipolar | | in | mm | |
| | | | | oz-in | Nm | | | |
| K41 | Enhanced | 1 | 2090 | 14.8 | 3.89 | 99 | | |
| K42 | | 2 | 4000 | 28.2 | 5.91 | 150 | | |
| K43 | | 3 | 5650 | 39.9 | 7.92 | 201 | | |
| N41 | Un-Enhanced | 1 | 1630 | 11.5 | 3.89 | 99 | | |
| N42 | | 2 | 3140 | 22.2 | 5.91 | 150 | | |
| N43 | | 3 | 4340 | 30.6 | 7.92 | 201 | | |

Note: For complete Size 34 and 42 N/K model nomenclature, refer to pages 74 and 75 respectively.



Optimized Solutions

With Kollmorgen, there's always a way. Because we have decades of experience in developing optimized solutions for motion applications, you can be confident that we can provide the answer to your motion challenges. We have a huge breadth of standard products that can be modified in varying degrees, or we can develop custom motor and electronic products for true optimization.

Working with our proven portfolio of products, we can deliver solutions quickly, often with recognized cost efficiencies and reduced lead times. That means rapid prototyping, a shorter design cycle and getting to market faster. We do it all, because motion matters.

Optimized Solutions

Whether it's modifying a product from our standard catalog or a white sheet design for a custom solution, you can rely on decades of Kollmorgen expertise to solve your motion challenges and help your machine stand out from the crowd.

Modified Standard

Because our application expertise runs deep and our product portfolio is so broad, we can take any standard product and modify it a lot or a little to suit many needs—in a very rapid time frame. This approach ensures quality, performance and reliability by leveraging our proven track record.

Kollmorgen application engineers have a great deal of experience helping OEM engineers achieve their objectives. Typical modifications include shaft alterations, feedback type, mounting dimensions, connectors, and making components more rugged, vacuum-rated, radiation- and explosion-proof.

Custom Products

With motion as our core capability, we bring a significant history of innovation to today's engineering challenges. We leverage our design and engineering excellence and technical knowledge to deliver creative new solutions for virtually any need. Our vast experience also helps us deliver a custom product in a surprisingly short time. If you can conceive it, we can make it happen.

Structured Development Process

Working from our broad standard product portfolio, we create fully optimized solutions through the combination of off-the-shelf products, modified standard products and completely custom components. Our proven components and technology are the foundation for all of our solutions, expediting the design cycle and ensuring optimum performance for any application.

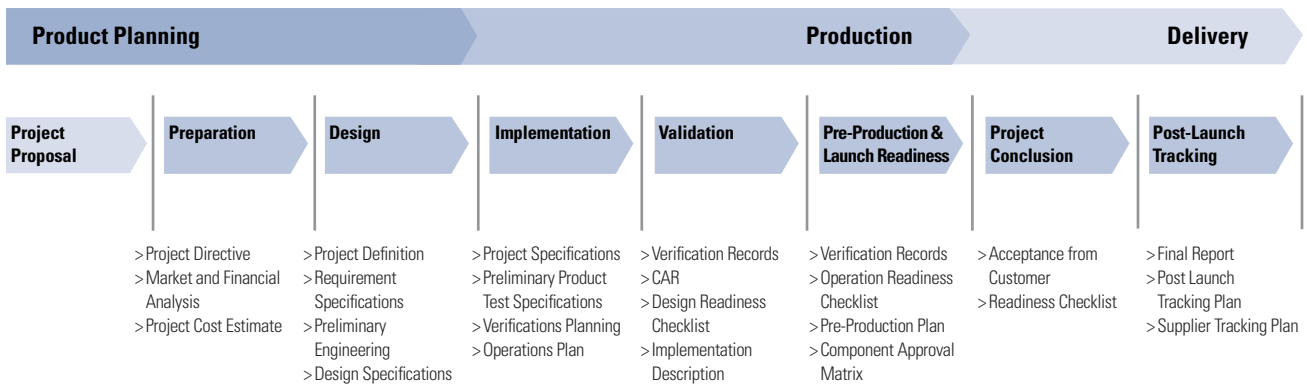
We follow a strict and efficient development process from initial concept to volume production. This ensures that products we develop meet customer needs, are cost effective to manufacture and move quickly from prototype to production. Customer involvement is key to our process, with ongoing collaboration throughout the initiative and multiple approval points to ensure a smooth, successful design cycle from beginning to end.

Why You Should Partner with Kollmorgen

- Experienced Application Engineers help define a customer’s needs and identify the optimal Kollmorgen products and technologies
- Products optimized or developed by cross-functional teams to meet customer needs
- Rapid prototyping
- Smooth transition from prototype designs to sustainable and cost effective manufacturing
- Industry-proven quality, performance, and delivery
- Proven technology building blocks mitigate risks of customization

Optimized Solutions Process

Comprehensive design, manufacture and test capabilities ensure the end product meets the customer performance specifications and quality requirements. Our skilled engineering team works directly with each customer throughout the process, quickly taking the prototype to full production.



Proven Design Capabilities

Motor Solutions

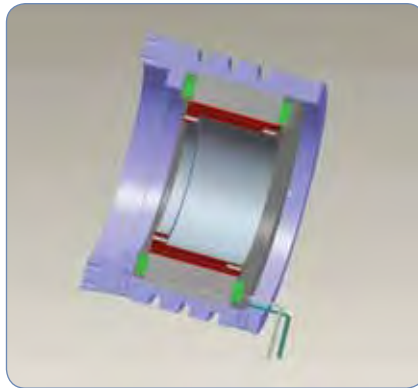
- Brushed, brushless and stepper motor building blocks used in frameless or housed configurations
- Designed for agency compliance (UL, CE)
- Voltage ratings from 48 Vdc – 600 Vdc, with capabilities in 800 Vdc and up
- Continuous torques from 0.5 Nm – 29,000 Nm
- Proven performance and reliability in a customizable package

Drive Solutions

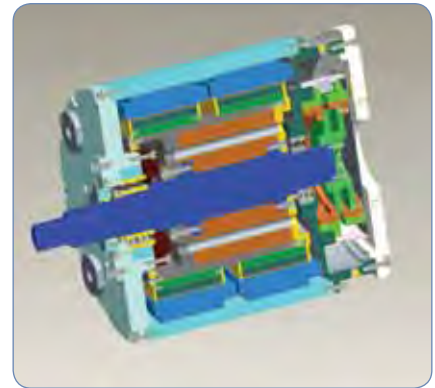
- Board-level or packaged solutions supporting single to multi-axis configurations
- Brushed or Brushless Servo Drives, Stepper, AC Induction control
- Integrated Controller and Communications options
- Designed for agency approvals (UL 508C, EN 50178, EN 61000-6-6, EN 61800-3, CISPR 14-1, and others available)
- Proprietary technology and software can be embedded into the drive



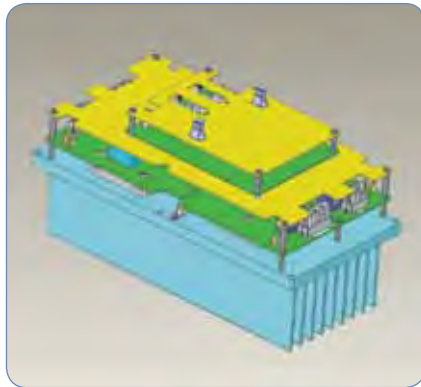
Medical diagnostics drive optimized for form-factor, I/O and EMC



Frameless direct drive rotary motor with water cooling features



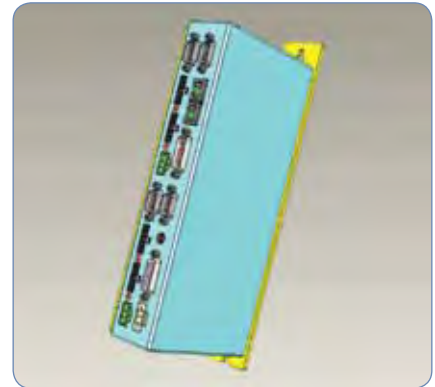
Custom submersible motor



2-axis drive for high-power robotics, optimized for form-factor and communications interface



200 kW electric starter/generator



4-axis stepper drive using SynqNet

Motors and Electronics

| Optimized for | Application |
|--------------------|---|
| Reliability | Implantable heart pumps, military, remote equipment |
| Precision | Pick and place, satellite tracking, film processing |
| Package Size | Medical imaging, ground based telescopes, aircraft instrumentation |
| Weight | Land vehicles, portable equipment, aircraft |
| Smooth Operation | Medical respirators, high precision robotics, printing and textile machines |
| Harsh Environments | Deep sea, outer space, high shock and vibration, extreme temperatures |

Cables by Motor Type

Value Line Cables by Motor Type

| Model | Power Cable | Power Cable with Brake Leads | SFD | EnDat2.2, 01 & BiSS |
|-----------------|---------------|------------------------------|---------------|---------------------|
| AKM to 6 Amps | VP-507BEAN-XX | VP-508CFAN-XX | VF-DA0474N-XX | VF-SB4474N-XX |
| AKM to 12 Amps | VP-508CEAN-XX | VP-508CFAN-XX | VF-DA0474N-XX | VF-SB4474N-XX |
| AKM to 20 Amps | VP-508DEAN-XX | VP-508DFAN-XX | VF-DA0474N-XX | VF-SB4474N-XX |
| CDDR to 6 Amps | VP-507BEAN-XX | n/a | n/a | VF-SB4474N-XX |
| CDDR to 12 Amps | VP-508CEAN-XX | n/a | n/a | VF-SB4474N-XX |
| CDDR to 20 Amps | VP-508DEAN-XX | n/a | n/a | VF-SB4474N-XX |
| DDR to 6 Amps | VP-507BEAN-XX | n/a | n/a | VF-SB4474N-XX |
| DDR to 12 Amps | VP-508CEAN-XX | n/a | n/a | VF-SB4474N-XX |
| DDR to 20 Amps | VP-508DEAN-XX | n/a | n/a | VF-SB4474N-XX |

XX = length in meters (1, 3, 6, 9, 12) Example: VP-507BEAN-09 (9 meter cable).
Other feedback choices are available. Contact customer service for details.

Flex Line Cables by Motor Type

| Model | Power Cable | Power Cable with Brake Leads | SFD | EnDat2.2, 01 & BiSS |
|-----------------|-----------------|------------------------------|-----------------|---------------------|
| AKM to 12 Amps | CP-507CCAN-XX-X | CP-507CDAN-XX-X | CF-DA0374N-XX-X | CF-SB7374N-XX-X |
| AKM to 20 Amps | CP-508DCAN-XX-X | CP-508DDAN-XX-X | CF-DA0374N-XX-X | CF-SB7374N-XX-X |
| AKM to 24 Amps | CP-508EDBN-XX-X | CP-508EDBN-XX-X | CF-DA0374N-XX-X | CF-SB7374N-XX-X |
| CDDR to 12 Amps | CP-507CCAN-XX-X | n/a | n/a | CF-SB7374N-XX-X |
| CDDR to 20 Amps | CP-508DCAN-XX-X | n/a | n/a | CF-SB7374N-XX-X |
| DDR to 12 Amps | CP-507CCAN-XX-X | n/a | n/a | CF-SB7374N-XX-X |
| DDR to 20 Amps | CP-508DCAN-XX-X | n/a | n/a | CF-SB7374N-XX-X |

Note 1: XX-X = length in half-meters up to 50 meters (1, 3, 6, 9, 12 standard) Example: CP-507CCAN-03-5 (3.5 meter cable).
Note 2: Other feedback choices are available. Contact customer service for details.
Note 3: Other lengths are available. Contact customer service for details.
Note 4: Refer to page 15 for cable specifications.

MODEL NOMENCLATURE

AKD Servo Drive

AKD – **B** **003** **06** – **NA** **AN** **0000**

AKD Series

Version

B = Base Drive

P = Position indexer (motion tasking)

Current Rating

- 003 = 3 Amp
- 006 = 6 Amp
- 012 = 12 Amp
- 024 = 24 Amp

Voltage

- 06 = 120/240 Vac 1Ø/3Ø
- 07 = 480 Vac 3Ø

Variants

0000 = Standard

Connectivity

AN = Analog command

CN = CANopen

EC = EtherCAT

Extension

NA = Without extensions

Note: Options shown in bold blue text are considered standard.

AKM Brushless Servomotors

AKM 4 2 E – E K C N C- 00

AKM Series

Motor Frame Size

1, 2, 3, 4, 5, 6, 7

Rotor Stack Length

1, 2, 3, 4, 5

Winding Type

A, B, C, D, etc.
S = Special

Mount

A = International standard mount
B = NEMA mount
C = Alternative standard mount
D = Alternative standard mount
E = NEMA mount
S = Special

Shaft

C = Closed keyway
K = Open keyway
N = Smooth shaft
S = Special

Customization/Seal

00 = Standard motor without shaft seal
01 = Standard motor with shaft seal
Other numbers will be assigned for special motors.

Feedback Device

1- = 1024 PPR digital encoder with commutation
2- = 2048 PPR digital encoder with commutation
C = Smart Feedback Device (SFD) (available across family)
R = Resolver
AA = BiSS single-turn absolute (AKM2-7)
AB = BiSS multi-turn absolute (AKM2-7)
DA = Single-turn absolute sine encoder (EnDat2.2, 01) (AKM2-7)
DB = Multi-turn absolute sine encoder (EnDat2.2, 01) (AKM2-7)
LB = Inductive multi-turn (AKM2-7)

Brake

2 = 24 Vdc brake (AKM2-7)
N = No brake
S = Special

Connectors

B = Dual motor-mounted rotatable IP65 connectors (AKM2 only)
C = 0.5 m shielded cables with IP65 connectors (AKM1, 2), motor-mounted rotatable IP65 connectors (AKM3-7)
G = Straight motor-mounted IP65 connectors (AKM2-7)
S = Special

Note: Options shown in bold blue text are considered standard.

Cartridge Direct Drive Rotary (DDR) Motors

C 09 1 A - 1 1 - 1 1 0 5 () (-)

Cartridge DDR Series

C = 230 Vac winding
CH = 400/480 Vac winding

Frame Size

04 = 4.25" square housing
05 = 5.43" square housing
06 = 7.40" square housing
09 = 9.68" square housing
13 = 13.78" square housing

Stack Length

1 = Short stack
2 = Mid stack
3 = Long stack
4 = Extra long stack
(04 and 05 frame sizes only)

Winding Type

A, B, C, D

Mount

1 = Standard flange mount

Connectors

1 = Side connector option (09 and 13 frame sizes only)
2 = Rear connector option (09 and 13 frame sizes only)
3 = 90° rotatable connectors (04, 05 and 06 frame sizes only)

XXX

Designated for specials. Omit for standard motor.

Agency Certification

Blank = UL/CE certification
S = Non-UL

Unit Sealing

5 = Sealed
(Shaft option "1" – IP64 rating when customer seals interface side)
(Shaft option "2" or "3" – IP65 rating when customer seals interface side)

Bearing Option

0 = No bearing design (integral shipping clamp provided)

Feedback Device

1 = Sine encoder (C09 and C13)
3 = Sine encoder (C04, C05 and C06)

Shaft

1 = Hollow with compression coupling and key (09 and 13 frame sizes only)
2 = Solid with compression coupling and key (09 and 13 frame sizes only)
3 = Solid with split ring coupling and no key (04, 05 and 06 frame sizes only)

Note: Options shown in bold blue text are considered standard.

Housed Direct Drive Motors D(H) Series

DH 08 1 M - 1 2 - 1 3 1 0 (-)

Housed Direct Drive Series

D = 115/230 Vac winding
DH = 400/480 Vac winding

Motor Frame Size

06 = 6.93" O.D.
08 = 8.60" O.D.
10 = 11.19" O.D.
14 = 14.25" O.D.

Rotor Stack Length

1 = Short stack
2 = Mid stack
3 = Long stack

Winding Type

A = Std. w/ resolver
(all except D14x & DH14x)
M = Std. w/ sine encoder

Mounting Option

1 = Face mount
2 = Flange mount

XXX

**Designated for specials.
Omit for standard motor.**

Unit Seal

0 = Non-sealed unit
5 = IP65 (resolver models only)
7 = IP67 (resolver models only)

Bearing Option

1 = Single bearing design
2 = Dual bearing design (standard on D143 and DH143 models)

Feedback Device

2 = Resolver ("A" winding type)
3 = Sine encoder ("M" winding type)

Shaft Option

1 = Straight thru bore w/ facing coupling

Connector Type

2 = Straight
3 = 90°, rotatable

Note: Options shown in bold blue text are considered standard.

DS Series Precision Tables

DS4 – 250 – C – 5G – AKM23D – BNC (-) – OE6 – PR6E – LN1 – H0 (-) – E0 – CLN

DS Series

DS4
DS6

Stroke Length

| | |
|-----------------------------|----------|
| 50 = 50 mm total stroke | DS4 only |
| 100 = 100 mm total stroke | DS4 only |
| 150 = 150 mm total stroke | DS4 only |
| 200 = 200 mm total stroke | DS4 only |
| 250 = 250 mm total stroke | DS4 only |
| 300 = 300 mm total stroke | DS4 only |
| 350 = 350 mm total stroke | DS4 only |
| 400 = 400 mm total stroke | DS4 only |
| 450 = 450 mm total stroke | DS4 only |
| 500 = 500 mm total stroke | DS4 only |
| 550 = 550 mm total stroke | DS4 only |
| 600 = 600 mm total stroke | DS4 only |
| 700 = 700 mm total stroke | DS6 only |
| 800 = 800 mm total stroke | DS6 only |
| 900 = 900 mm total stroke | DS6 only |
| 1000 = 1000 mm total stroke | DS6 only |
| 1250 = 1250 mm total stroke | DS6 only |
| 1500 = 1500 mm total stroke | DS6 only |
| 1750 = 1750 mm total stroke | DS6 only |
| 2000 = 2000 mm total stroke | DS6 only |

Grade

C = Commercial grade
P = Precision grade

Ballscrew Lead

| | |
|-----------------|----------|
| 5G = 5 mm/rev | |
| 10G = 10 mm/rev | |
| 25G = 25 mm/rev | DS6 only |

Motor

AKM23C = AKM23C-EFxxx-00 brushless servo
AKM23D = AKM23D-EFxxx-00 brushless servo
AKM42E = AKM42E-EKxxx-00 brushless servo
AKM42G = AKM42G-EKxxx-00 brushless servo

Motor Options

| | |
|--|-----------------|
| B ■■ = Rotatable IP65 connectors | AKM2 only |
| C ■■ = 0.5 m shielded cables w/ IP65 connectors | AKM2 only |
| C ■■ = Rotatable IP65 connectors | AKM4, AKM5 only |
| ■N ■ = No brake | |
| ■2 ■ = 24 Vdc power-off holding brake | |
| ■R = Resolver | |
| ■2 = 2048 LPR incremental comm. encoder | |
| ■C = Smart Feedback Device (SFD) | |
| ■DA = Single-turn absolute sine encoder, EnDat2.2, 01 | |
| ■DB = Multi-turn absolute sine encoder, EnDat2.2, 01 | |
| Omit if motor mount is used | |

Additional Options

P1 = Standard pinning of x-axis carriage
CLN = Cleanroom prep – class 100
Omit for no additional options

Linear Decoder

E0 = No linear encoder
E1 = 1 micron resolution linear encoder
E2 = 0.5 micron resolution linear encoder
E3 = 0.1 micron resolution linear encoder

Shaft End Options

BS = Brake on ballscrew, 24 Vdc power-off
ES = Rotary encoder on ballscrew, 1250 line
Omit for no option

Home Switch

H0 = No home sensor
HN1 = Home, NPN type normal open
HN2 = Home, NPN type normal closed
HP1 = Home, PNP type normal open
HP2 = Home, PNP type normal closed

Limit Sensors

L0 = No end-of-travel limits
LN1 = Limits, NPN type normal open
LN2 = Limits, NPN type normal closed
LP1 = Limits, PNP type normal open
LP2 = Limits, PNP type normal closed

Motor Orientation & Pulley Bore (Parallel Models)

PR6E = Parallel right
PL6E = Parallel left
PU6E = Parallel under
Omit for inline models

Couplings (Inline Models)

| | |
|--|----------|
| OE6 = Oldham style, 3/8" bore (AKM2X) | |
| OE8 = Oldham style, 1/2" bore (AKM4X) | DS6 only |
| BE6 = Bellows style, 3/8" bore (AKM2X) | |
| BE8 = Bellows style, 1/2" bore (AKM4X) | DS6 only |
| Omit for parallel models | |

Motor Mounts

| | |
|------------------------------|----------|
| X23 = NEMA 23 mount | |
| X34 = NEMA 34 mount | DS6 only |
| Omit if motor option is used | |

Note: Options shown in bold blue text are considered standard.

Electric Cylinders EC Series

EC Series **Motor Type** **Motor Options** **Drive Ratio** **Screw Lead** **Stroke Length** **Cylinder Mounting** **Rod Ends** **Options** **Cable Option**
EC2 – **AKM23D** – **BNR** – **10** – **05B** – **300** – **MP2** – **FT1M** (–) – **CO**

MODEL NOMENCLATURE

EC Series

EC1
EC2
EC3
EC4
EC5

Motor Type

CTP12 = CTP12xLF10MMA00 stepper motor
AKM11B = AKM11B-ANCxx-00 brushless servo
AKM13C = AKM13C-ANCxx-00 brushless servo
AKM23D = AKM23D-EFxxx-00 brushless servo
AKM23C = AKM23C-EFxxx-00 brushless servo
AKM42G = AKM42G-EKxxx-00 brushless servo
AKM42E = AKM42E-EKxxx-00 brushless servo
AKM52G = AKM52G-EKxxx-00 brushless servo
AKM52L = AKM52L-EKxxx-00 brushless servo
X = Customer-supplied motor
(motor described in Options element of part number)

Motor Options

B ■ ■ = Rotatable IP65 connectors
C ■ ■ = 0.5 m shielded cables w/ IP65 connectors
C ■ ■ = Rotatable IP65 connectors
■ N ■ = No brake
■ 2 ■ = 24 Vdc power-off holding brake
■ ■ R = Resolver
■ ■ 2 = 2048 LPR incremental comm. encoder
■ ■ C = Smart Feedback Device (SFD)
■ ■ ■ = Omit field for CTP12

Drive Ratio

10 = 1.0:1 drive belt/pulley (EC1 – helical)
15 = 1.5:1 drive belt/pulley
20 = 2.0:1 drive belt/pulley (EC1 – helical)
40 = 4.0:1 helical gears
50 = 5.0:1 helical gears
70 = 7.1:1 helical gears
100 = 10.0:1 helical gears
10L = 1.0:1 inline coupling (direct 1:1 coupling is the only ratio available for inline models)

Screw Lead

03B = 0.125 in/rev ballscrew
05B = 5 mm/rev ballscrew
10B = 10 mm/rev ballscrew
16B = 16 mm/rev ballscrew
25B = 25 mm/rev ballscrew
32B = 32 mm/rev ballscrew
04A = 4 mm/rev lead screw

Available

EC1
EC1
EC1
EC2, EC3
EC2, EC3
EC3, EC4, EC5
EC3, EC4, EC5
EC4, EC5
EC4, EC5
All

Available

AKM2
AKM1, AKM2
AKM4, AKM5
AKM1, AKM2, AKM4, AKM5
AKM2, AKM4, AKM5
AKM1, AKM2, AKM4, AKM5
AKM1, AKM2, AKM4, AKM5
AKM1, AKM2, AKM4, AKM5
CTP12

Available

All
EC2, EC3, EC4, EC5
Not valid for EC3-AKM42
EC1 only
EC2, EC3, EC4, EC5
EC3 only
EC2, EC4, EC5
All

Available

EC1
EC2, EC3
EC3, EC4, EC5
EC2, EC3
EC4
EC5
EC2, EC3

Stroke Length

50 = 50 mm total stroke
100 = 100 mm total stroke
150 = 150 mm total stroke
200 = 200 mm total stroke
250 = 250 mm total stroke
300 = 300 mm total stroke
450 = 450 mm total stroke
600 = 600 mm total stroke
750 = 700 mm total stroke
1000 = 1,000 mm total stroke
1250 = 1,250 mm total stroke
1500 = 1,500 mm total stroke
nnn = Custom stroke lengths available in 10 mm increments

Cylinder Mounting

MF1 = Front rectangular flange
MF1E = Front rectangular flange (English)
MF1M = Front rectangular flange (metric)
MF2 = Rear rectangular flange
MF2E = Rear rectangular flange (English)
MF2M = Rear rectangular flange (metric)
MF3 = Front & rear rectangular flange
MF3E = Front & rear rectangular flange
MF3M = Front & rear rectangular flange
MP2 = Rear double clevis without pivot base
MP3 = Rear double clevis with pivot base
MS1 = Side end angle
MS2 = Side lugs
MS6M = Side tapped holes (metric)
MS6E = Side tapped holes (English)
MT4 = Trunnion

Rod Ends

FC2 = Clevis (includes MT1M)
FS2 = Spherical joint (includes FT1M)
FT1M = Female thread (metric)
FT1E = Female thread (English)
MT1M = Male thread (metric)
MT1E = Male thread (English)
LR = Linear rod bearing

Options

(add multiple in the following sequence, omit if no options)
BA24 = 24 Vdc brake on actuator (EC1 only, not available with 10L ratio or MS1 mounting options)
BS24 = 24 Vdc brake on ballscrew (not available with EC1 or 10L ratio, or with MF2(x), MF3(x), MS1, MP2(x), MP3(x) mounting options)
BS115 = 115 Vac brake on ballscrew (not available with EC1 or 10L ratio, or with MF2(x), MF3(x), MS1, MP2(x), MP3(x) mounting options)
PB = Protective boot*
L = Linear potentiometer (only valid through 600 mm stroke, standard lengths)*
17X = NEMA 17 mountless motor (EC1 only)

Cable

CO = No cable supplies, motor includes connectors.
Default for all AKM Servomotors; select cable as an accessory.

*Contact customer service for EC1
Motor Mod codes for X (customer-supplied) motors also found in "Option" portion of part number. Contact customer service.
Motor Mod codes (customer-supplied and customer-installed)
IDR67X EC1 for AKM1XX-ANXXX
IDR60X EC2, EC3 for AKM23X-EFXXX
IDR61X EC3, EC4, EC5 for AKM42X-EKXXX
IDR62X EC4, EC5 for AKM51X-EKXXX or AKM52X-EKXXX

Available

All
All
All
All
EC2, EC3, EC4, EC5
EC2, EC3, EC4, EC5
EC2, EC3, EC4, EC5
EC2, EC3, EC4, EC5
EC2, EC3, EC4, EC5
EC3, EC4, EC5
EC4, EC5
EC4, EC5

Available

EC1, EC2, EC3, EC5
EC4 only
EC4 only
EC2, EC3, EC5
EC4 only
EC4 only
EC2, EC3, EC5
EC4 only
EC4 only
All
All
All
All
EC2, EC3, EC4, EC5
EC2, EC3, EC4, EC5

Available

All
All
All
EC2, EC3, EC4, EC5
All
EC2, EC3, EC4, EC5
EC2 only

Note: Options shown in bold blue text are considered standard.

Electric Cylinders N2 Series

N2 – AKM23D – BNR – 15 – 5B – 8 – MP2 – FT1M (-) – CO

N2 Series

Motor Type

AKM23D = AKM23D-EFxxx-00 brushless servo
 AKM23C = AKM23C-EFxxx-00 brushless servo
 X = Customer-supplied motor (motor described in 'Options' element of part number)

Stack Length

B ■ ■ = Rotatable IP65 connectors
C ■ ■ = 0.5 m shielded cables w/ IP65 connectors
■ N ■ = No brake
■ 2 ■ = 24 Vdc power-off holding brake
■ ■ R = Resolver
■ ■ 2 = 2048 LPR incremental comm. encoder
■ ■ C = Smart Feedback Device (SFD)

Drive Ratio

10 = 1.0:1 drive belt/pulley
 15 = 1.5:1 drive belt/pulley
 20 = 2.0:1 drive belt/pulley
 25 = 2.5:1 helical gears
 35 = 3.5:1 helical gears
 120 = 12.0:1 helical gears
 10L = 1.0:1 inline coupling (direct 1:1 coupling is the only ratio available for inline models)

Screw Pitch, Type

2B = 2 rev/inch ballscrew
 5B = 5 rev/inch ballscrew
 5A = 5 rev/inch lead screw
 8A = 8 rev/inch lead screw

Stroke Length

2 = 2 inch total stroke
 4 = 4 inch total stroke
 6 = 6 inch total stroke
 8 = 8 inch total stroke
 12 = 12 inch total stroke
 18 = 18 inch total stroke (requires -DB option, effective stroke is 16.5")
 24 = 24 inch total stroke (requires -DB option, effective stroke is 22.5")
 nn.n = Custom stroke lengths available in 0.1 inch increments

Cable

CO = No cable supplied, motor includes connectors. Default for all AKM Servo-motors; select cable as an accessory.

Options

(add multiple in the following sequence, omit if no options)

DB = Dual front braking
BS24 = 24 Vdc brake on lead screw (not available with 10L ratio, or with MF2, MF3, MS2, MP2, MP3 mounting options)
PB = Protective boot
W = Water resistant
F = Sub-freezing temperature
H = High temperature prep
L = Linear potentiometer (only for valid std. lengths)
 Motor Mod codes for X (customer-supplied) motors also found in "Option" portion of part number. Contact customer service.
 Motor Mod codes (customer-supplied and customer-installed)
 IDR60X N2 for AKM23X-EFXXX

Rod Ends

FC2 = Clevis (includes MT1M)
FS2 = Spherical joint (includes FT1M)
FT1M = Female thread (metric)
FT1E = Female thread (English)
MT1M = Male thread (metric)
MT1E = Male thread (English)

Cylinder Mounting

MF1 = Front rectangular flange
MF2 = Rear rectangular flange
MF3 = Front & rear rectangular flange
MP2 = Rear double clevis without pivot base
MP3 = Rear double clevis with pivot base
MS1 = Side end angle
MS2 = Side lugs
MS6M = Side tapped holes (metric)
MS6E = Side tapped holes (English)
MT4 = Trunion

Note: Options shown in bold blue text are considered standard.

Rodless Actuators R-Series

R3 – AKM42G CNC – 10 5B – 12 – P – A S E – CO

R Series

R2A
R3
R4

Motor Type

AKM23C = AKM23C-EFxxx-00 brushless servo
AKM23D = AKM23D-EFxxx-00 brushless servo
AKM42E = AKM42E-EKxxx-00 brushless servo
AKM42G = AKM42G-EKxxx-00 brushless servo
AKM52G = AKM52G-EKxxx-00 brushless servo
AKM52H = AKM52H-EKxxx-00 brushless servo
X = Customer-supplied motor

Motor Options

B ■■ = Rotatable IP65 connectors
C ■■ = 0.5 m shielded cables w/ IP65 connectors
C ■■ = Rotatable IP65 connectors
■ N ■ = No brake
■ 2 ■ = 24 Vdc power-off holding brake
■ R ■ = Resolver
■ 2 ■ = 2048 LPR incremental comm. encoder
■ C ■ = Smart Feedback Device (SFD)

Drive Ratio

10 = 1.0:1 drive belt/pulley
15 = 1.5:1 drive belt/pulley
20 = 2.0:1 drive belt/pulley
30 = 3.0:1 drive belt/pulley
50 = 5:1 helical gear
70 = 7:1 helical gear
100 = 10:1 helical gear

Linear Drive Type

5A = 5 pitch (0.2" lead) lead screw
8A = 8 pitch (0.125" lead) lead screw
1B = 1 pitch (1" lead) ballscrew
2B = 2 pitch (0.5" lead) ballscrew
4B = 4 pitch (0.25" lead) ballscrew
5B = 5 pitch (0.2" lead) ballscrew
T = Tangential drive belt

Stroke Length

6 = 6" of total stroke
12 = 12" of total stroke
18 = 18" of total stroke
24 = 24" of total stroke
30 = 30" of total stroke
36 = 36" of total stroke
42 = 42" of total stroke
48 = 48" of total stroke
54 = 54" of total stroke
60 = 60" of total stroke
66 = 66" of total stroke
72 = 72" of total stroke
84 = 84" of total stroke
96 = 96" of total stroke
108 = 108" of total stroke
Custom lengths available in the increment of 1"

Available

R2A, R3
R2A, R3
R3, R4
R3, R4
R4
R4

Available

AKM2
AKM2
AKM4, AKM5
AKM2, AKM4, AKM5
AKM2, AKM4, AKM5
AKM2, AKM4, AKM5
AKM2, AKM4, AKM5
AKM2, AKM4, AKM5

Available

R2A, R3, R4
R2A, R3, R4
R2A, R3, R4
R4
R3, R4
R3
R3

Available

R2A, R3
R2A, R3
R4
R2A, R3
R4
R2A, R3
R2A, R3, R4

Available

R2A, R3, R4
R2A, R3, R4
R2A, R3, R4
R2A, R3, R4
R2A, R3, R4
R2A, R3, R4
R2A, R3, R4
R2A, R3, R4
R2A, R3, R4
R2A, R3, R4
R2A, R3, R4
R2A, R3, R4
R3, R4
R3, R4
R3, R4

Options

BS24 = 24 Vdc brake on lead screw
(Screw option only, n/a with inline models, MF3 or "C" options) R2A, R3, R4
BS115 = 115 Vdc brake on lead screw
(Screw option only, n/a with inline models, MF3 or "C" options) R2A, R3, R4
BS230 = 230 Vdc brake on lead screw
(Screw option only, n/a with inline models, MF3 or "C" options) R2A, R3, R4
WR = Water resistant seal option right R2A
WL = Water resistant seal option left R2A
GR = Lube port, right side R3, R4
GL = Lube port, left side R3, R4
DC1 = Idler carriage between driven carriage and non-motor end R2A
DC2 = Idler carriage between driven carriage and motor end R2A
VR = Breather vent, fitting, tubing, right side R4
VL = Breather vent, fitting, tubing, left side R4
CO = No motor cable **R2A, R3, R4**
S = Stub shaft R2A

English/Metric

(carriage/mounting) Available
E = English carriage & mounting dimensions R2A, R3, R4
M = Metric carriage & mounting dimensions R2A, R3, R4

Carriage

(omit this field for R2A models) Available
S = Single carriage **R3, R4**
Dxx = Dual carriage (screw-drive only) R3, R4
(xx = center distance between dual carriages in inches – contact customer service for lengths)

Mounting Style

Available
MF3 = Front & rear rectangular flanges R2A
MS1 = Side end angles R2A
MS5 = Adjustable feet R2A
MS6 = Side tapped mounting holes R2A
A = Side angle brackets R3, R4
B = Adjustable T-nuts R3, R4
C = Front & rear rectangular flanges R3, R4

Motor Orientation

Available
Belt options
AR = Motor housing rotated above/right R2A, R3, R4
BR = Motor housing rotated behind/right R2A, R3, R4
CR = Motor housing rotated under/right R2A, R3, R4
AL = Motor housing rotated above/left R2A, R3, R4
BL = Motor housing rotated behind/left R2A, R3, R4
CL = Motor housing rotated under/left R2A, R3, R4
Screw options
I = Motor mounted inline R2A, R3, R4
P = Motor mounted parallel R2A, R3, R4
PR = Motor mounted parallel/right R2A, R3, R4
PL = Motor mounted parallel/left R2A, R3, R4

Note: Options shown in bold blue text are considered standard.

Micron™ TRUE Planetary™ Gearheads

DTR 115 - 005 - 0 - ()

Gearhead Series

- NT = NemaTRUE™
- NTP = NemaTRUE PLUS™
- NTR = NemaTRUE 90™
- XT = XTRUE™
- ET = EverTRUE™
- DT = DuraTRUE™
- DTR = DuraTRUE 90™
- DTRS = DuraTRUE™ Slimline
- DTRH = DuraTRUE™ Hollow Shaft
- DTRD = DuraTRUE™ Dual Shaft
- VT = ValueTRUE™
- VTR = ValueTRUE 90™
- UT = UltraTRUE™
- UTR = UltraTRUE 90™

Motor Model Number

RediMount number (if available)
or motor manufacturer and model number

Customer Options

- 0 = None
- S = Special
- H = High precision
(for NemaTRUE™ product line only)

Gearhead Ratio

See ratio availability in corresponding gearhead section (pp 51-53)

Gearhead Size

- NemaTRUE™**
NemaTRUE PLUS™
NemaTRUE 90™
- 17 = Size 17
 - 23 = Size 23
 - 34 = Size 34
 - 42 = Size 42
 - 60 = Size 60
 - 90 = Size 90
 - 115 = Size 115

- XTRUE™**
- 040 = Size 40
 - 060 = Size 60
 - 080 = Size 80
 - 120 = Size 120
 - 160 = Size 160

- EverTRUE™**
- 10 = Size 10
 - 14 = Size 14
 - 18 = Size 18

- DuraTRUE™**
DuraTRUE 90™
DuraTRUE™ Slimline
DuraTRUE™ Hollow Shaft
DuraTRUE™ Dual Shaft
- 60 = Size 60
 - 90 = Size 90
 - 115 = Size 115
 - 142 = Size 142

- ValueTRUE™**
ValueTRUE 90™
- 006 = Size 60
 - 075 = Size 75
 - 090 = Size 90
 - 010 = Size 10
 - 115 = Size 115
 - 014 = Size 14
 - 018 = Size 18
 - 022 = Size 22

- UltraTRUE™**
UltraTRUE 90™
- 006 = Size 60
 - 075 = Size 75
 - 090 = Size 90
 - 010 = Size 10
 - 115 = Size 115
 - 014 = Size 14
 - 018 = Size 18
 - 022 = Size 22 (UltraTRUE™ only)

Note: Options shown in bold blue text are considered standard.

P7000 Stepper Drive

P7 03 6 0 - SD N (-)

P7000 Series

Current Rating

03 = 2.5 Arms continuous, 3.5 Arms peak
(AC models only)

05 = 5 Arms continuous, 7.1 Arms peak
(DC models only)

Voltage Range

3 = 20 – 75 Vdc

6 = 120/240 Vac

Electrical Options

0 = None

Customization

Omit field for standard configurations

Feedback Device Support

N = None

Functionality

PN = Motion node indexing

SD = Step/direction base drive

R4 = RS485 (P70360 only)

Note: Options shown in bold blue text are considered standard.

CT Series Step Motors

CTM 2 1 N L F 10 N AA 00

CT Series

CTM = Cool Torque Maximum series
CTP = Cool Torque Performance series

Frame Size

1 = Size 17 / 4.2 cm (CTP only)
2 = Size 23 / 5.7 cm
3 = Size 34 / 8.5 cm

Length

0 = Short stack (CTP only)
1 = 1 stack
2 = 2 stacks
3 = 3 stacks

Mounting

N = NEMA through holes (size 23 & 34 only)
E = English tapped holes (size 17 only)
M = Metric tapped holes (size 17 only)

Construction/Connection Style

L = Leads
S = Special

Number of Connections

F = Four
S = Six

Customization

00 = Standard motor
Other numbers serially assigned for special motors

Rear Options

AA = None
EE = English rear shaft & encoder mounting holes (size 23 & 34 only)
MA = Metric rear shaft (size 17 only)
SS = Special

Front Shaft Options

N = Round smooth shaft (size 23 only)
F = Flat (size 23 only)
K = Straight keyway (size 34 only)
M = Metric (size 17 only)
S = Special

Winding Current

For 4 lead motors = bipolar current x 10
For 6 lead motors = unipolar current x 10
Examples:
05 = 0.5 Amps
10 = 1 Amp
50 = 5 Amps
00 = Special

Note: Options shown in bold blue text are considered standard.

NEMA 34 K and N Series Step Motors

N 3 3 H C H J - L E K - M2 - 01

K and N Series

K = Enhanced
N = Standard

Size

3 = NEMA 34 frame size;
3.38" width/height, square frame

Length

1 = 1 stack
2 = 2 stacks
3 = 3 stacks
4 = 4 stacks

Mounting

H = Heavy duty NEMA
S = Special, contact customer service

Construction/Connection Style

R = Regular/leadwire
C = System MS connector
L = Splashproof/to terminal board via
conduit connector: 1/2" NPSC pipe thread
M = Splashproof/to terminal board via
conduit connect: metric PG11 pipe thread
S = Special, contact customer service

Number of Connections

F = 8 lead (n/a C construction)
L = 4 lead series
H = 4 lead parallel
E = 6 lead (n/a C construction)

Special Sequence

00 = Standard motor without shaft seal
01 = Standard motor with shaft seal
Other numbers will be assigned for special motors

Encoder Option

NS = No feedback
M2 = Encoder mounting provision
(must use construction C or R and shaft configuration E)
SS = Special, contact customer service

Shaft Modifications

K = Straight key
S = Special, contact customer service

Shaft Configuration (Diameter & Length)

N = Single
D = Double (R or C construction only)
E = Double ended for encoder
(R or C construction only)

Rotor Type

L = Laminated

Winding Type

H = Standard, 1 stack only
J = Standard
K = Standard
M = Standard
(not available on 1 stack only)
S = Special, contact customer service

Note: Options shown in bold blue text are considered standard.

NEMA 42 K and N Series Step Motors

K 4 3 H C H J - L E K - M2 - 01

K and N Series

K = Enhanced
N = Standard

Size

4 = NEMA 42 frame size;
4.325" width/height, square frame

Length

1 = 1 stack
2 = 2 stack
3 = 3 stack

Mounting

H = Heavy duty NEMA
S = Special, contact customer service

Construction/Connection Style

R = Regular/leadwire
C = System MS connector
L = Splashproof/to terminal board via
conduit connector: 1/2" NPSC pipe thread
M = Splashproof/to terminal board via
conduit connect: metric PG13.5 pipe thread
S = Special, contact customer service

Number of Connections

F = 8 lead (n/a C construction)
L = 4 lead series
H = 4 lead parallel
E = 6 lead (n/a C construction)

Special Sequence

00 = Standard motor without shaft seal

01 = Standard motor with shaft seal
Other numbers will be assigned for special motors

Encoder Option

NS = No feedback

M2 = Encoder mounting provision
(must use construction C or R and shaft configuration E)

SS = Special, contact customer service

Shaft Modifications

K = Straight key

S = Special, contact customer service

Shaft Configuration (Diameter & Length)

N = Single

D = Double (R or C construction only)

E = Double ended for encoder
(R or C construction only)

S = Special, contact customer service

Rotor Type

L = Laminated

Winding Type

J = Only on 1 stack

K = N/A on 1 stack

L = N/A on 1 stack

N = N/A on 1 stack

M = Standard

S = Special, contact customer service

Note: Options shown in bold blue text are considered standard.

NOTES:

A large grid of graph paper, consisting of 20 columns and 30 rows of small squares, intended for taking notes.

MOTIONEERING® Application Engine

To help select and size Kollmorgen components, this Windows®-based motor-sizing program takes a systems approach to the selection of brushless, DC servomotors, stepper motors and drives. MOTIONEERING® Application Engine, available at www.kollmorgen.com, uses a project concept for the collection and saving of rotary and linear multi-axis load information. This provides the user the flexibility to sum the effects of multiple axes of motion for power supply and shunt regeneration sizing.

A wide variety of linear and rotary mechanisms are provided including lead screw, rack and pinion, conveyor, nip rolls, cylinder, rotary, and direct data-entry using unique sizing algorithms and product databases criteria.

The searchable database consists of hundreds of systems on product combinations including rotary housed and frameless brushless servomotors, direct drive rotary and linear brushless servomotors, linear positioners (electric cylinders, rodless actuators, and precision tables) and stepper systems.

The Application Engine also provides versatile units-of-measure selection options for mechanism and motion profile data-entry, with the ability to convert data into other available units. Online Help explains program functions and the definition of terms and equations used in the program.

Features

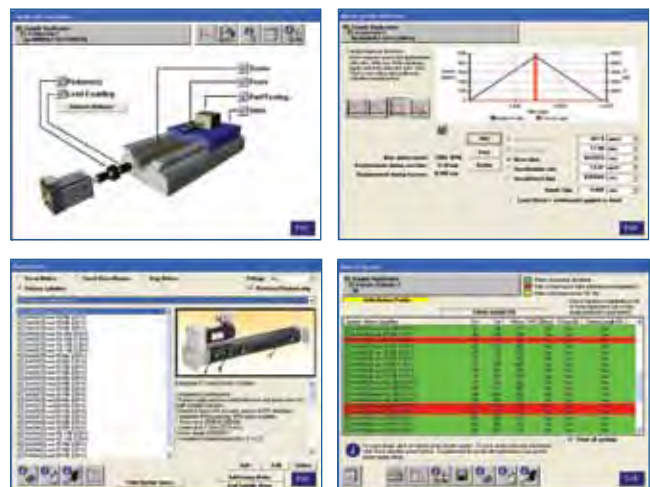
- Group multiple mechanisms within a “Project” – organize and combine data for power supply and regeneration sizing
- Types of mechanisms for analysis include lead screw, rack and pinion, conveyor, nip rolls, rotary and direct drive linear motor
- Motion profile options include simple triangle, 1/3-1/3-1/3 trapezoidal, variable traverse trapezoidal, and more
- Search results display shows color highlighted solution set of options for easy evaluation of system specifications and selection

Supported Operating Systems

- Microsoft® Windows 2000, XP, Vista

MOTIONEERING 6.0 includes

- Electric Cylinder sizing and selection with AKM Servomotor systems
- Rodless Actuator with AKM Servomotor systems (performance curves included)
- Precision Table with AKM Servomotor systems (performance curves included)
- PDF report functionality (includes application, drive, motor, positioner, and system specifications all in one easy-to-read report)



About Kollmorgen

Kollmorgen is a leading provider of motion systems and components for machine builders. Through world-class knowledge in motion, industry-leading quality and deep expertise in linking and integrating standard and custom products, Kollmorgen delivers breakthrough solutions that are unmatched in performance, reliability and ease-of-use, giving machine builders an irrefutable marketplace advantage.

For assistance with your application needs in North America, contact us at: 540-633-3545, contactus@kollmorgen.com or visit www.kollmorgen.com for a global contact list.

- Application Centers
- Global Design & Manufacturing
- Global Manufacturing



KOLLMORGEN®

Because Motion Matters™

Kollmorgen
203A West Rock Road
Radford, VA 24141 USA
Phone: 1-540-633-3545
Fax: 1-540-639-4162