

Because Motion Matters™



Kollmorgen. Every solution comes from a real understanding of the challenges facing machine designers and users.

The ever-escalating demands of the marketplace mean increased pressure on machine designers and users 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 automation and 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.

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KOLLMORGEN AUTOMATION AND MOTION SOLUTIONS CATALOG

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Because Motion Matters™

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 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 components.

Global Footprint

With direct sales, engineering support, manufacturing facilities, and distributors across North America, Europe, the 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 \$14B 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.

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The Benefits of AKD Servo Drive

Optimized Performance in Seconds	 Auto-tuning is one of the best and fastest in the industry
	 Automatically adjusts all gains, including observers
	 Immediate and adaptive response to dynamic loads
	 Precise control of all motor types
	• Compensation for stiff and compliant transmission and couplings
Greater Throughput and Accuracy	 Up to 27-bit-resolution feedback yields unmatched precision and excellent repeatability
	 Very fast settling times result from a powerful dual processor system that executes industry-leading and patent pending servo algorithms with high resolution
	 Advanced servo techniques such as high-order observer and bi-quad filters yield industry-leading machine performance
	Highest bandwidth torque-and-velocity loops. Fastest digital current loop in the market
 Easy-to-Use Graphical User Interface (GUI) for Faster Commissioning and Troubleshooting 	 Six-channel real-time software oscilloscope commissions and diagnoses quickly
	 Multi-function Bode Plot allows users to quickly evaluate performance
	 Auto-complete of programmable commands saves looking up parameter names
	 One-click capture and sharing of program plots and parameter settings allow you to send machine performance data instantly
	 Widest range of programming options in the industry
Flexible and Scalable to Meet Any Application	• 3 to 24 Arms continuous current; 9 to 48 Arms peak
	 Very high power density enables an extremely small package
	 True plug-and-play with all standard Kollmorgen servomotors and positioners
	 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 without the need to add large hardware: EtherCAT[®], SynqNet[®], Modbus/TCP, EtherNet/IP, PROFINET, and CANopen[®]
	Scalable programmability from base torque-and-velocity through multi-axis master



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.



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

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AKD Servo Drive 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 servo drive 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 troubleshooting 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 while experiencing industry-leading, high-performance servo loops.

AKD Specifications						
Encoder Output or 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				

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SynoNet	Ether CAT.	Modbus/TCP
	E 150	Rons
EtherN	et/IP	Neft 1

General Specifications

120 / 240 Vac 1 & 3 Phase (85 -265 V)	Continuous Current (Arms)	Peak Current (Arms)	Drive Continuous Output Power Capacity (Watts)	Interna (Watts)	al Regen (Ohms)	Height mm (in)	Width mm (in)	Depth mm (in)	Depth with Cable Bend Radius mm (in)
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)
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Industry-leading power density

240/480 Vac 3 Phase (187-528 V)	Continuous Current (Arms)	Peak Current (Arms)	Drive Continuous Output Power Capacity (Watts)	Interna (Watts)	al Regen (Ohms)	Height mm (in)	Width mm (in)	Depth mm (in)	Depth with Cable Bend Radius mm (in)
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 2012				
AKD-■09607	96	192	64,000	800			Coming	g in 2012	

Note: For complete AKD model nomenclature, refer to page 67

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 driveIncludes 2 high-speed digital inputs
- Expandable to 31 digital I/O and 4 analog I/O

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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



BASIC Programmable 1.5 Axis Drive ("T" Option)

- Adds BASIC programmability to base AKD
- 4Khz programmable interrupt service routines
- Conditional statements, built-in math functions, user functions and subroutines
- 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

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RANGE OF KOLLMORGEN AUTOMATION SUITE CAPABILITIES





AKD PDMM used standalone as a single-axis drive with integrated controller and soft-PLC

- Includes all the capabilities of Kollmorgen Automation Suite[™] a fully integrated, truly scalable programming solution
- Choose from all five IEC 61131-3 languages (structured text, function block diagram, ladder diagram, instruction list, sequential function chart) for soft PLC process programming
- Program motion using your choice of PLCopen for motion or our innovative Pipe Network[™]
- Exclusive function blocks, such as "wait," enable your program to act as a scanning or sequential language
- Onboard I/O includes 17 digital (with 2 high-speed inputs) and 2 analog
- Controls AKT[™] remote I/O for nearly unlimited expandability
- AKD PDMM only adds 30mm width to AKD base drives



Programming

www.kollmorgen.com



Servo Drive AKD Servo Drive AKT

Seamlessly add additional axes and AKD PDMM serves as a high-performance multi-axis machine controller

- Provide true synchronized-path control of up to 8 or more axes
- Reduce cabinet size and wiring requirements with onboard motion and machine control in a single, compact package
- Easily manage remote I/O and the I/O of all attached drives via EtherCAT
- Use PLCopen for motion or Pipe Network[™] to program sophisticated camming and gearing applications in a matter of minutes
- Add 11 digital and 2 analog I/O to the system with each additional AKD Servo axis incorporated
- Includes 2 high-speed digital inputs for each additional AKD servo axis



AKD Servo Drive AKD Servo Drive AKD Servo Drive AKD Servo Drive
Kollmorgen Automation Suite

Programmable Automation Controller (PAC)

- Build EtherCAT-based systems up to 128 axes of high-performance motion using a PAC controller
- This scalable solution provides a full integrated development environment for any application, whether programming a single axis of motion, a multi-axis AKD PDMM[™] system, or a PACbased system up to 128 axes
- Panel PACs include the choice of a 10", 15" or 17" touchscreen user interface
- PAC controllers include choice of Celeron or Core2Duo processor for scalable performance
- Program camming, gearing and other motion applications using a choice of PLC open for motion or the graphical Pipe Network[™]
- Add 11 digital and 2 analog I/O to the system with each additional AKD Servo axis incorporated
- Includes 2 high-speed digital inputs for each additional AKD servo axis



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

Multi-Axis Programming



AKD BASIC Drives

High Performance Capabilities in an Integrated Drive/Control Solution

Add co-engineering to your toolbox. Save money, simplify your machine and customize performance to meet the specific needs of each customer or application – as needed, today or tomorrow.

Our new Kollmorgen AKD[™] BASIC drives add BASIC-programmable machine and motion control to the superior performance of our AKD drive platform. So engineers can quickly customize performance at the drive level without touching the PLC. In fact, for many applications you can avoid the expense, wiring and cabinet space of a PLC altogether.

Whether you rely on your own engineering expertise or Kollmorgen's, the base and Expanded I/O versions of our AKD BASIC drive give you the unprecedented machine and motion control flexibility in a compact, fully integrated drive package. It's one more example of our co-engineering mission to help you deliver exactly what your customers want – when they want it – in solutions that are more cost-effective to build, simpler in design and faster to market.

AKD BASIC Language Programmable Drive

In addition to the wide selection and key features of our proven AKD, the standard version of our AKD BASIC drive offers:

- Programmable machine control built into the drive, so you can engineer perfect axis-level performance without touching the machine controller. In fact, AKD BASIC can eliminate the need for a PLC in single and 1.5 axis applications – reducing wiring requirements, panel space, design complexity and cost.
- High performance motion control built into the drive, enabling increased speed for more complex moves in a simpler design with reduced wiring.
- BASIC Language programming, providing simple program flow control in a solution that's easy to learn, quick to master and universally accepted.
- An integrated development environment, allowing single-point programming, de-bugging, commissioning, tuning and management of your AKD BASIC drive from within AKD WorkBench. Our BASIC editor provides innovative features that speed development time and reduce coding errors.
- Source code lockout with password protection, freeing you to differentiate your product with drive-level control while safeguarding your intellectual property.

I/O Capabilities	Base Version	Expanded I/O Version
Digital Inputs	8	20
Digital Outputs	3	13
Analog Inputs	1	2
Analog Outputs	1	2

Expanded I/O AKD BASIC Programmable Drive

Building on the features of the AKD BASIC drive, we also offer an expanded I/O version that adds:

- A total of 20 digital inputs, 13 digital outputs, 2 analog inputs and 2 analog outputs, reducing or eliminating the need for remote I/O and its associated installation and wiring costs.
- An SD memory card slot for loading, and restoring programs and parameters, without the need for a PC.



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Development Tools that Speed Programming and Improve Quality

Co-engineering is a powerful tool. To make it easy for you to provide better solutions for your customers, we provide an innovative BASIC programming environment within Kollmorgen WorkBench. So there's only one software package to use for all of your drive setup, configuration, tuning and management tasks in addition to motion and machine control programming.

Pre-built code templates give your application a head-start, while automatic formatting, highlighting and other ease-of-use features increase programming speed and accuracy. Complete access to all programming capabilities and drive features within a single environment helps speed your development of complete, optimally engineered solutions.

Novice users will enjoy a short ramp-up time to productive coding, while experienced users will discover well-designed tools that take their programming skills to new levels of speed and quality.

- 1 Integrated axis setup
- 2 Code snippets simplify formatting
- 3 Auto-complete helps speed coding and reduce errors
- 4 Automatic color coding makes it easy to distinguish comments, parameters, print statements and other types of code
- 5 Full debugger accelerates development
- 6 Packaged program console provides instant program status
- 7 Menu-driven navigation provides intuitive look and feel
- 8 Window pinning maximizes workspace





AKD PDMM[™] Integrated Servo Drive and Automation Controller

Build Simpler and Better with Drive-Resident Machine and Motion Control

Extend your design options. Control as many as eight axes or more without the need for a PLC or PAC. Reduce cabinet space and wiring requirements. Program perfect machine and motion control for any project using a single, fully integrated programming environment. Build a better machine at a lower cost.

Our new addition to the AKD[™] drive family combines one servo axis, a master controller that supports multiple additional axes, and the full automation capability of Kollmorgen Automation Suite[™] (refer to page K4 for more information on Kollmorgen Automation Suite).—all in a single, compact package.

Welcome to the AKD PDMM[™] programmable drive, multi-axis master.

Performance Specifications

120/240 VAC	Continuous	Peak Current	H	W	D
1- and 3-Phase	Current (Arms)	(Arms)	(mm/inches)	(mm/inches)	(mm/inches)
AKD-M00306-MCEC-0000	3	9	168 / 6.61	89 / 3.50	156 / 6.14
AKD-M00606-MCEC-0000	6	18	168 / 6.61	89 / 3.50	156 / 6.14
AKD-M01206-MCEC-0000	12	30	196 / 7.72	107 / 4.22	187 / 7.36
240/400/480 VAC	Continuous	Peak Current	H	W	D
3-Phase	Current (Arms)	(Arms)	(mm/inches)	(mm/inches)	(mm/inches)
240/400/480 VAC	Continuous	Peak Current	H	W	D
3-Phase	Current (Arms)	(Arms)	(mm/inches)	(mm/inches)	(mm/inches)
AKD-M00307-MCEC-0000	3	9	256 / 10.08	99 / 3.90	185 / 7.28
240/400/480 VAC	Continuous	Peak Current	H	W	D
3-Phase	Current (Arms)	(Arms)	(mm/inches)	(mm/inches)	(mm/inches)
AKD-M00307-MCEC-0000	3	9	256 / 10.08	99 / 3.90	185 / 7.28
AKD-M00607-MCEC-0000	6	18	256 / 10.08	99 / 3.90	185 / 7.28



Features

- Kollmorgen Automation Suite[™] provides fully integrated programming, testing, setup and commissioning
- Embedded web server utility simplifies service
- Control 8 axes or more* while reducing machine footprint
 - EtherCAT multi-axis master motion controller integrated with a standard AKD[™] drive axis
 - Full IEC61131-3 soft PLC for machine control, with support for all 5 programming languages
 - Choice of PLCopen for motion or Pipe Network[™] for programming motion control
 - 32 kB non-volatile memory stores machine data to eliminate scrap upon restart after power failure
 - SD Card slot simplifies backup and commissioning, with no PC required
- Onboard I/O includes 13 digital inputs,
 4 digital outputs, 1 analog input, 1 analog output (expandable with AKT series of remote I/O) (refer to page K19 for information on AKT I/O)
- Works with Kollmorgen Visualization Builder for programming AKI human-machine interface panels (refer to page K10 for more information on Kollmorgen Visualization Builder)

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*Maximum axis count depends on motion/automation complexity and performance (8 axes nominal based on medium complexity at 4 kHz network update rate)



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A Single, Scalable Development Suite

Kollmorgen Automation Suite[™] simplifies and accelerates development through a unified system of software, hardware, and collaborative co-engineering. This scalable solution provides a fully integrated development environment for any application, whether you're programming a single axis of motion, a multi-axis AKD PDMM[™] system, or a PAC-based system up to 128 axes. Kollmorgen Automation Suite has been proven to: (refer to page K11 for information on AKC PAC products)

- Improve product throughput by up to 25% with industry-leading motion bandwidth
- Reduce scrap by up to 50% with world-class servo accuracy, seamless power-failure recovery and highly dynamic changeovers
- Increase precision for better quality, reduced waste and less downtime using EtherCAT—the field bus with motion bus performance
- Enable more adaptable, sustainable and innovative machines that measurably improve marketability and profitability

A Single Family of Servo Drives

Kollmorgen AKD[™] servo drives deliver cutting-edge performance in a compact footprint. From basic torque-and-velocity applications, to indexing, to multi-axis programmable motion, these feature-rich drives offer:

- Plug-and-play compatibility with your servomotor
- All the advantages of Kollmorgen's breadth of motor platforms including AKM[™], CDDR[™], and other direct-drive technologies
- · The fastest velocity and position loop updates
- Full-frequency autotuning for perfect motion across the performance spectrum
- · Real-time feedback from a wide variety of devices

Our Best Drive and Automation Solution in a Single Package

The new AKD PDMM programmable drive, multi-axis master combines our AKD drive platform with the full feature set of Kollmorgen Automation Suite in a single package —providing complete machine and motion control for up to eight axes or more.

You need only one development suite and one drive family for all your projects. And you can rely on one source for all the motion components and co-engineering expertise you need to build a better machine.

With AKD PDMM, the best in machine engineering has never been easier, faster or more cost-effective.





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Kollmorgen WorkBench

Our simple Graphical User Interface (GUI), Kollmorgen WorkBench, is designed to expedite and streamline the user's experience with the AKD servo drive. From easy application selection and reduced math, to a sleek six-channel scope; the user interface is extremely easy to use. Kollmorgen WorkBench supports intuitive access to the exclusive Performance Servo Tuner (PST) available inside AKD. The patent pending PST makes auto-tuning the AKD high-performance servo drive with world-class Kollmorgen motors very simple.

User-Friendly Environment

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



Sleek Six-Channel "Real-Time" Software Oscilloscope

The easy-to-use AKD servo drive 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.







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.

Pull Name 3	Value	Units	Parameter	Read/Write		
3 Active Disable						
Deceleration during active disable	3000.00	0 rpm/s	40 DEC	read-write		
Time-out	100	0 ma	AD DISTO	read-write		
State		0 ma	AD STATE	read-only		
Velocity window	120.00	0 rpm	AD.VELTHRESH	read-write		
Time delay after velocity window		6 ma	AD.VELTHRESHTM	read-write		
Analog Input						
Analog input low pass filter cutoff free	5,000.00	0 Hz	AIN.CUTOFF	read-writ		
Analog input signal deadband	0.00	0 V	AIN DEADBAND	read-unit	Drive Pa	arameter List - Message (Plain Text)
Analog input mode	0 - Inactive		AIN MODE	read-writ	ed e lu	
Analog input offset	0.00	0 V 0	AIN OFFSET	read-writ		<u>View Insert Format Loois Actions Heip</u>
Analog input signal	0.00	ΟV	AIN VALUE	read-only	🖃 Send 🎽	
Analog Input/Output				-		
Analog input torque scale	0.00	1 AV	AIO ISCALE	read-writ	T .	
Analog input velocity scale	0.06	0 epmW	AIO.VSCALE	read-writ	10	
Analog Output					Cc	
Analog output mode	0 - User Variable		AQUT MODE	read-writ		
Analog output value	0.00	6 V.	ADUTIVALUE	read-unit	Bcc	
Bode				- Andrewson -	Subjects	Drive Parameter Liet
Current Loop					Subject.	Drive Parameter List
Current command	0.00	0 A	CLCMD	read-only	Attach	Attachment Options.
Current command - user	0.00	A 0	CLICMDU	read-writ		
Current command - D component	0.00	0 A	CLOCMD	read-only		
Current command - user D component	0.00	0 A	CLDCMDU	read-writ	Drive H	Parameter List is attached.



AKD Connector Layout and Functionality

Ethernet Connectivity

- Ethernet-based AKD servo drive provides the user with multiple bus choices
- EtherCAT[®] (DSP402 protocol), Modbus/TCP, SynqNet[®], EtherNet/IP, PROFINET and CANopen[®]
- 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

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

Performance Servo Tuner (PST)

- Exclusive patent pending auto-tuner reaches optimized set-up in seconds
- · Handles inertia mismatches up to 1000:1
- Industry leading bandwidth under compliant and stiff load conditions, no matter the mechanical bandwidth of the machine







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

I/O (Base Drive)

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







CANOpen Modbus/TCP





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Accessories



CANopen Accessories

We offer cables, terminators and adaptors for simple integration with CANopen machine networks.



Shielding Solutions

AKD servo drive can be equipped with shielding plates.



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.



Brake Resistors

We offer a full line of brake resistors up to 6000 watts. Brake resistors are impedance matched with AKD and are available in many sizes and form factors.



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.



I/O Control Box and Breakout Adapter

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





Servo System Cables

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



Mating Connectors

AKD servo 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 Servo Drive	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, HIPERFFACE®	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 66 for matching cables by motor type and drive.

BIBUS



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.

KOLLMORGEN



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The Benefits of AKD Servo Systems

Optimized AKM and Direct Drive Motor Windings to AKD Servo Drive	 Same size AKM servomotor delivers up to 47% more shaft power than before
	Reduction in drive size and motor size
	Reduction in system cost
Plug-and-Play Motor-Recognition Drive Commissioning for AKM,	Reduction in set-up time for each servo system
Cartridge DDR, and DDR Motor Families Industry-Leading and Patent Pending Auto-Tuning Algorithms 	 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
New Lower Cost Multi-Turn Feedback Option	 Improve machine precision with high resolution and improved accuracy
	 Reduce cycle time and sensor-and-wiring costs by eliminating traditional homing methods
Industry-Leading Motor Power Density	• Don't let motor size dictate the size of your machine
	• Fit more motor into a smaller space than you thought possible
AKM Servomotor Offers 28 Frame-Stack Combinations and Nearly 120 Standard Windings in a Single Motor Line	 Over 50,000 standard motor variations including a wide range of mounting, connectivity, feedback and other options
Cartridge DDR Motor Offers 17 Frame-Stack Combinations and	• Flexibility provides choices to help you find an exact-fit solution
31 Windings	 Simplifies or eliminates mechanical modifications and
Cartridge DDR Motor Offers 12 Frame-Stack Combinations and 12 Windings	engineering adaptation
New IP67 Protection Class Option for AKM	Apply AKM servomotor into hostile industrial applications with confidence and long-term reliability

www.kollmorgen.com



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 servo drive amplifier, the 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.

AKM Features

- 0.16 to 180 Nm continuous stall torque (1.4 to 1590 lb-in)
- 8 frame sizes (40 to 260 mm)
- 28 frame-stack length combinations
- 117 'standard' windings tailored for 75 Vdc and 120/240/400/480 Vac operation
- Flexible flange mount and shaft options
- · Industry leading low-cogging contributing to extreme smoothness
- Numerous feedback options for high-performance and precision or rugged environment
- Unmatched customization special windings, special shafts, and much more

AKD Servo Drive with AKM Servomotor 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 Servomotor	Sir Accuracy (arc-min)	ngle-turn Absolute Resolution (bits)	Motor Key	M Accuracy (arc-min)	ulti-turn Absolute Resolution (bits)	Motor Key
AKM1	16	24	С	-	-	-
AKM2-3	9	24	С	8	20	LB
AKM4-8	9	24	С	4.66	21	LB
AKM2-4	1.0	27	DA	1.0	27	DB
AKM5-8	0.333	27	DA	0.333	27	DB





AKM (Exploded) 3D Model Shows Key Design Features





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AKM Servomotor

Performance Data

AKM	Servomotor	AKD Servo Drive	Frame Size NEMA/ mm	Cont.Torque at stall Tcs	Peak Torque at stall Tps	Rated Speed Nrtd	Max System Speed	Power Prtd	Inertia (Jm) Kg-cm ²
				INM (ID-IN)	INM (ID-IN)	RPIM	RPIM	vvatts	(ID-IN-S ² X I U ²)
	AKMITIB	AKD-X00306	17/40	0.18 (1.59)	0.61 (5.4)	4000	8000	80	0.017 (0.0015)
	AKM11C	AKD-X00306	1// 40	0.19 (1.68)	0.62 (5.5)	6000	8000	110	0.017 (0.0015)
	AKM12C	AKD-X00306	1//40	0.31 (2.74)	1.08 (9.56)	4000	8000	130	0.031 (0.002/4)
	AKM12E	AKD-X00306	1// 40	0.31 (2.74)	0.91 (8.05)	8000	8000	230	0.031 (0.002/4)
	AKM13C	AKD-X00306	1//40	0.41 (3.63)	1.46 (12.9)	3000	6150	130	0.045 (0.0040)
	AKM13D	AKD-X00306	1// 40	0.40 (3.54)	1.36 (12.0)	/000	8000	2/0	0.045 (0.0040)
	AKIVIZIU	AKD-X00306	23/60	0.48 (4.25)	1.48 (13.1)	2500	5620	120	0.107 (0.0095)
	AKIVIZTE	AKD-X00306	23/60	0.47 (4.16)	1.21 (10.7)	/000	8000	300	0.107 (0.0095)
	AKM22C	AKD-X00306	23/60	0.84 (7.43)	2.39 (21.2)	1000	2820	90	0.161 (0.0142)
	AKIVIZZE	AKD-X00306	Z3/ 60	0.87 (7.70)	2.42 (21.4)	3500	5410	290	0.161 (0.0142)
	AKIVI23D	AKD-X00306	23/60	1.15 (10.2)	3.89 (34.4)	1500	3270	180	0.216 (0.0191)
	AKM23F	AKD-XUU6U6	23/60	1.18 (10.4)	3.88 (34.3)	4500	6290	500	0.216 (0.0191)
0	AKIVI24D	AKD-X00306	23/60	1.40 (12.4)	4.84 (42.8)	1500	2700	210	0.270 (0.0239)
o Va	AKM24F	AKD-X00606	23/60	1.41 (12.5)	4.82 (42.7)	3000	4/20	420	0.270 (0.0239)
121	AKM31E	AKD-X00306	na/ 80	1.20 (10.6)	3.23 (28.6)	2500	4240	310	0.330 (0.0292)
	AKM32E	AKD-X00306	na/ 80	2.04 (18.1)	5.97 (52.8)	1000	2350	210	0.590 (0.0522)
	AKM32H	AKD-X00606	na/ 80	2.10 (18.6)	6.22 (55.1)	3000	4460	620	0.590 (0.0522)
	AKM33H	AKD-X00606	na/ 80	2.87 (25.4)	8.55 (75.7)	2500	3310	690	0.850 (0.0752)
	AKM41E	AKD-X00306	34/90	2.01 (17.8)	5.33 (47.2)	1200	2420	240	0.810 (0.0717)
	AKM41H	AKD-X00606	34/90	2.05 (18.1)	5.49 (48.6)	3000	4460	580	0.810 (0.0717)
	AKM43H	AKD-X00606	34/90	4.82 (42.7)	14.0 (124)	1200	1920	560	2.09 (0.185)
	AKM43L	AKD-X01206	34/90	4.73 (41.9)	11.7 (104)	3000	4020	1190	2.09 (0.185)
	AKM44H	AKD-X00606	34/90	5.89 (43.3)	17.0 (150)	1000	1620	570	2.73 (0.242)
	AKM51H	AKD-X00606	42/115	4.79 (42.4)	11.7 (104)	1200	2150	560	3.42 (0.303)
	AKM51L	AKD-X01206	42/115	4.89 (43.3)	10.6 (93.8)	3000	4150	1240	3.42 (0.303)
	AKM52L	AKD-X01206	42/115	8.67 (76.7)	19.6 (173)	1500	2290	1240	6.22 (0.551)
	AKM53L	AKD-X01206	42/115	11.6 (103)	26.5 (235)	1200	1740	1350	9.12 (0.807)
	AKM54L	AKD-X01206	42/115	13.5 (119)	31.3 (277)	1200	1510	1630	11.9 (1.06)
	AKM11B	AKD-X00306	17/40	0.18 (1.59)	0.61 (5.4)	8000	8000	140	0.017 (0.0015)
	AKM12C	AKD-X00306	17/40	0.31 (2.74)	1.08 (9.56)	8000	8000	230	0.031 (0.00274)
	AKM13C	AKD-X00306	17/40	0.41 (3.63)	1.46 (12.9)	8000	8000	300	0.045 (0.0040)
	AKM21C	AKD-X00306	23/60	0.48 (4.25)	1.48 (13.1)	8000	8000	320	0.107 (0.0095)
	AKM22C	AKD-X00306	23/60	0.84 (7.43)	2.73 (24.2)	3500	5650	290	0.161 (0.0142)
	AKM22E	AKD-X00306	23/60	0.87 (7.70)	2.42 (21.4)	8000	8000	580	0.161 (0.0142)
	AKM23D	AKD-X00306	23/60	1.15 (10.2)	3.89 (34.4)	5000	6540	530	0.216 (0.0191)
	AKM23F	AKD-X00606	23/60	1.18 (10.4)	3.88 (34.3)	8000	8000	780	0.216 (0.0191)
	AKM24D	AKD-X00306	23/60	1.40 (12.4)	4.84 (42.8)	4000	5410	540	0.270 (0.0239)
	AKM24F	AKD-X00606	23/60	1.41 (12.5)	4.82 (42.7)	8000	8000	930	0.270 (0.0239)
	AKM31C	AKD-X00306	na/ 80	1.15 (10.2)	3.87 (34.3)	2500	4050	290	0.330 (0.0292)
Vac	AKM31E	AKD-X00306	na/ 80	1.20 (10.6)	3.23 (28.6)	6000	8000	600	0.330 (0.0292)
240	AKM32E	AKD-X00306	na/ 80	2.04 (18.1)	5.97 (52.8)	3000	4710	600	0.590 (0.0522)
	AKM32H	AKD-X00606	na/ 80	2.10 (18.6)	6.22 (55.1)	7000	8000	1060	0.590 (0.0522)
	AKM33E	AKD-X00306	na/ 80	2.80 (24.8)	8.95 (79.2)	2000	3130	550	0.850 (0.0752)
	AKM33H	AKD-X00606	na/ 80	2.87 (25.4)	8.55 (75.7)	5500	6640	1300	0.850 (0.0752)
	AKM41E	AKD-X00306	34/90	2.01 (17.8)	5.33 (47.2)	3000	4850	570	0.810 (0.0717)
	AKM41H	AKD-X00606	34/90	2.05 (18.1)	5.49 (48.6)	6000	6000	1010	0.810 (0.0717)
	AKM42E	AKD-X00306	34/90	3.42 (30.3)	9.74 (86.2)	1800	2740	590	1.45 (0.128)
	AKM42G	AKD-X00606	34/90	3.51 (31.1)	11.0 (97.4)	3500	4660	1060	1.45 (0.128)
	AKM43H	AKD-X00606	34/90	4.82 (42.7)	14.0 (124)	3000	3850	1210	2.09 (0.185)
	AKM43L	AKD-X01206	34/90	4.73 (41.9)	11.7 (104)	6000	6000	1590	2.09 (0.185)
	AKM44E	AKD-X00306	34/90	5.79 (51.2)	16.5 (146)	1200	1680	660	2.73 (0.242)
	AKM44H	AKD-X00606	34/90	5.89 (43.3)	17.0 (150)	2500	3250	1220	2.73 (0.242)

Note 1: Refer to page 66 for matching cables. Note 2: For complete AKD and AKM model nomenclature, refer to pages 67 and 68 respectively. Note 3: Max mechanical speeds: 8000 RPM for AKM1, 2, 3 and 6000 RPM for AKM4, 5, 6, 7.

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Performance	Data
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AKM	Servomotor	AKD Servo Drive	Frame Size NEMA/ mm	Cont.Torque at stall Tcs Nm (Ib-in)	Peak Torque at stall Tps Nm (Ib-in)	Rated Speed Nrtd RPM	Max System Speed RPM	Power Prtd Watts	Inertia (Jm) Kg-cm ² (Ib-in-s ² x10 ⁻²)
	AKM51H	AKD-X00606	42/115	4.79 (42.4)	11.7 (104)	3000	4030	1220	3.42 (0.303)
	AKM51L	AKD-X01206	42/115	4.89 (43.3)	10.6 (93.8)	6000	6000	1260	3.42 (.0303)
	AKM52H	AKD-X00606	42/115	8.48 (75.1)	21.6 (191)	1800	2390	1420	6.22 (0.551)
	AKM52L	AKD-X01206	42/115	8.67 (76.7)	19.6 (173)	3500	4580	2350	6.22 (0.551)
	AKM53H	AKD-X00606	42/115	10.5 (92.9)	27.8 (246)	1500	1970	1650	9.12 (0.807)
	AKM53L	AKD-X01206	42/ 115	11.6 (103)	26.5 (235)	2500	3450	2510	9.12 (0.807)
	AKM54H	AKD-X00606	42/ 115	14.2 (126)	37.5 (332)	1000	1340	1400	11.9 (1.06)
	AKM54L	AKD-X01206	42/ 115	13.5 (119)	31.3 (277)	2500	3030	3010	11.9 (1.06)
	AKM62H	AKD-X00606	na/ 142	11.9 (105)	29.61 (262)	1000	1560	1170	16.9 (1.50)
/ac	AKM62L	AKD-X01206	na/ 142	12.2 (108)	26.3 (233)	2500	3380	2620	16.9 (1.50)
40 \	AKM63L	AKD-X01206	na/ 142	16.8 (149)	39.3 (348)	1500	2260	2330	24.2 (2.14)
2	AKM63N	AKD-X02406	na/ 142	17.0 (150)	40.3 (357)	3000	3450	4080	24.2 (2.14)
	AKM64L	AKD-X01206	na/ 142	19.7 (174)	44.4 (393)	1500	2070	2890	31.6 (2.80)
	AKM640	AKD-X02406	na/ 142	19.5 (173)	43.1 (381)	3000	3440	4810	31.6 (2.80)
	AKM65L	AKD-X01206	na/ 142	24.6 (218)	55.4 (490)	1300	1660	3040	40.0 (3.54)
	AKIM65P	AKD-X02406	na/ 142	24.5 (217)	53.9 (4/7)	2400	2750	4/90	40.0 (3.54)
	AKM/2P	AKD-XU2406	na/ 180	29.5 (261)	65.8 (606)	1800	2170	4500	64.5 (5.71)
	AKIVI72U	AKD-XUZ4Ub	na/ 180	24.5 (217)	56.0 (496)	2000	2/30	4860	64.5 (5.71)
	AKIVI73P		na/ 180	41.4 (300)	95.3 (828)	1300	1010	4/00	92.1 (8.15)
	AKIVI73U		na/ 180	33.0 (292)	/0.1 (0/4)	1500	2020	5250	9Z.1 (8.15) 120 (10 G)
			112/100	40.0 (414)	90.7 (003)	9000	9000	5300	120 (10.0)
		AKD-X00307	23/00	1 15 (10 2)	2.73 (24.2)	8000	8000	760	0.101 (0.0142)
		AKD-X00307	23/00	1.15(10.2)	1 84 (42 8)	8000	8000	00 020	0.210 (0.0131)
	AKM310	AKD-X00307	23/00 na/80	1.45 (10.2)	3 87 (3/ 3)	5000	7100	520	0.270 (0.0200)
	AKM32F	AKD-X00307 AKD-X00307	na/ 80	2 04 (18 1)	5.97 (52.8)	6500	8000	1020	0.590 (0.0232)
	AKM33E	AKD-X00307	na/ 80	2.80 (24.8)	8.95 (79.2)	4500	5490	1100	0.850 (0.0752)
	AKM41F	AKD-X00307	34/90	2.01 (17.8)	5.33 (47.2)	6000	6000	990	0.810 (0.0717)
	AKM42E	AKD-X00307	34/90	3.42 (30.3)	9.74 (86.2)	3500	4790	1030	1.45 (0.128)
	AKM42G	AKD-X00607	34/90	3.51 (31.1)	11.0 (97.4)	6000	6000	1470	1.45 (0.128)
	AKM43H	AKD-X00607	34/90	4.82 (42.7)	14 (124)	5500	6000	1620	2.09 (0.185)
	AKM44E	AKD-X00307	34/90	5.79 (51.2)	16.5 (146)	2000	2940	1010	2.73 (0.242)
	AKM44H	AKD-X00607	34/90	5.89 (43.3)	17.0 (150)	4500	5710	1640	2.73 (0.242)
	AKM51H	AKD-X00607	42/115	4.79 (42.4)	11.7 (104)	6000	6000	1230	3.42 (0.303)
	AKM52H	AKD-X00607	42/115	8.48 (75.1)	21.6 (191)	3500	4180	2290	6.22 (0.551)
	AKM52L	AKD-X01207	42/115	8.67 (76.7)	19.6 (173)	6000	6000	2050	6.22 (0.551)
	AKM53H	AKD-X00607	42/115	10.5 (92.9)	27.8 (246)	3000	3450	2770	9.12 (0.807)
	AKM53L	AKD-X01207	42/115	11.6 (103)	26.5 (235)	5000	6000	3140	9.12 (0.807)
) Va	AKM54H	AKD-X00607	42/115	14.2 (126)	37.5 (332)	1800	2340	2350	11.9 (1.06)
400	AKM54L	AKD-X01207	42/115	13.5 (119)	31.3 (277)	4500	5310	3830	11.9 (1.06)
	AKM62H	AKD-X00607	na/ 142	11.9 (105)	29.6 (262)	2000	2730	2140	16.9 (1.50)
	AKM62L	AKD-X01207	na/ 142	12.2 (108)	26.3 (233)	5000	5920	3880	16.9 (1.50)
	AKM63L	AKD-X01207	na/ 142	16.8 (149)	39.3 (348)	3000	3950	4040	24.2 (2.14)
	AKIM63N	AKD-X02407	na/ 142	17.0 (150)	40.3 (357)	5000	6000	4900	24.2 (2.14)
	AKIVI64L	AKD-XUIZUZ	na/ 142	19.7 (174)	44.4 (393)	3000	3640	4900	31.b (2.80)
	AKIVI64U	AKD-XU2407	na/ 142	19.5 (173)	43.1 (381)	5000	6000	5600	31.b (2.80)
	ANIVIDOL	AKD-AU1207	11d/ 142	24.0 (210)	52.0 (430)	2000	2910	5030	40.0 (3.34)
		AKD-X02407 AKD-X01207	na/ 142	24.3 (217)	70.5 (624)	4000	4020	3970	40.0 (3.34)
	ΔΚΜ72Ρ	ΔKD-X01207	na/ 180	29.5 (200)	68 5 (606)	3000	3800	6280	64.5 (5.71)
	ΔΚΜ720	ΔKD-X02407	na/ 180	24.5 (201)	56.0 (496)	4000	4780	6830	64.5 (5.71)
	AKM720	AKD-X01207	na/ 180	41 7 (369)	95.4 (844)	1400	1720	5060	92 1 (8 15)
	AKM73P	AKD-X02407	na/ 180	41.4 (366)	93.5 (828)	2400	2820	7130	92.1 (8.15)
	AKM730	AKD-X02407	na/ 180	33.0 (292)	76.1 (674)	3000	3550	7920	92.1 (8.15)
	AKM74L	AKD-X01207	na/ 180	49.7 (440)	114 (1010)	1200	1450	5470	120 (10.6)
	AKM74P	AKD-X02407	na/ 180	52.3 (463)	125 (1110)	1800	2110	7050	120 (10.6)
	AKM74Q	AKD-X02407	na/ 180	46.8 (414)	90.7 (803)	2500	3000	8250	120 (10.6)

Note 1: Refer to page 66 for matching cables. Note 2: For complete AKD and AKM model nomenclature, refer to pages 67 and 68 respectively. Note 3: Max mechanical speeds: 8000 RPM for AKM1, 2, 3 and 6000 RPM for AKM4, 5, 6, 7.



AKM Servomotor

Performance Data

AKM	Servomotor	AKD Servo Drive	Frame Size NEMA/ mm	Cont.Torque at stall Tcs Nm (Ib-in)	Peak Torque at stall Tps Nm (Ib-in)	Rated Speed Nrtd RPM	Max System Speed RPM	Power Prtd Watts	Inertia (Jm) Kg-cm² (Ib-in-s² x10²)
	AKM22C	AKD-X00307	23/60	0.84 (7.43)	2.34 (20.7)	8000	8000	570	0.161 (0.0142)
	AKM23D	AKD-X00307	23/60	1.15 (10.2)	3.89 (34.4)	8000	8000	760	0.216 (0.0191)
	AKM24D	AKD-X00307	23/60	1.40 (12.4)	4.84 (42.8)	8000	8000	920	0.270 (0.0239)
	AKM31C	AKD-X00307	na/ 80	1.15 (10.2)	3.35 (29.7)	6000	8000	570	0.330 (0.0292)
	AKM32E	AKD-X00307	na/ 80	2.04 (18.1)	5.97 (52.8)	8000	8000	1020	0.590 (0.0522)
	AKM33E	AKD-X00307	na/ 80	2.80 (24.8)	8.95 (79.2)	5000	6280	1190	0.850 (0.0752)
	AKM41E	AKD-X00307	34/ 90	2.01 (17.8)	5.33 (47.2)	6000	6000	990	0.810 (0.0717)
	AKM42E	AKD-X00307	34/90	3.42 (30.3)	9.74 (86.2)	4000	5470	1140	1.45 (0.128)
	AKM42G	AKD-X00607	34/90	3.51 (31.1)	11.0 (97.4)	6000	6000	1470	1.45 (0.128)
	AKM43H	AKD-X00607	34/90	4.82 (42.7)	14.0 (124)	6000	6000	1620	2.09 (0.185)
	AKM44E	AKD-X00307	34/90	5.79 (51.2)	16.5 (146)	2500	3370	1200	2.73 (0.242)
	AKM44H	AKD-X00607	34/90	5.89 (43.3)	17.0 (150)	5500	6000	1690	2.73 (0.242)
	AKM51H	AKD-X00607	42/115	4.79 (42.4)	11.7 (104)	6000	6000	1230	3.42 (0.303)
	AKM52H	AKD-X00607	42/115	8.48 (75.1)	21.6 (191)	4000	4780	2420	6.22 (0.551)
	AKM52L	AKD-X01207	42/115	8.67 (76.7)	19.6 (173)	6000	6000	2050	6.22 (0.551)
	AKM53H	AKD-X00607	42/115	10.5 (92.9)	27.8 (246)	3000	3940	2770	9.12 (0.807)
	AKM53L	AKD-X01207	42/115	11.6 (103)	26.5 (235)	6000	6000	2540	9.12 (0.807)
Vac	AKM54H	AKD-X00607	42/115	14.2 (126)	37.5 (332)	2000	2680	2560	11.9 (1.06)
480	AKM54L	AKD-X01207	42/115	13.5 (119)	31.3 (277)	5000	6000	3690	11.9 (1.06)
	AKM62H	AKD-X00607	na/ 142	11.9 (105)	29.6 (262)	2400	3120	2480	16.9 (1.50)
	AKM62L	AKD-X01207	na/ 142	12.2 (108)	26.3 (233)	6000	6000	3610	16.9 (1.50)
	AKM63L	AKD-X01207	na/ 142	16.8 (149)	39.3 (348)	3500	5410	4400	24.2 (2.14)
	AKM63N	AKD-X02407	na/ 142	17.0 (150)	40.3 (357)	6000	6000	4400	24.2 (2.14)
	AKM64L	AKD-X01207	na/ 142	19.7 (174)	44.4 (393)	3500	4160	5280	31.6 (2.80)
	AKM64Q	AKD-X02407	na/ 142	19.5 (173)	43.1 (381)	6000	6000	4620	31.6 (2.80)
	AKM65L	AKD-X01207	na/ 142	24.6 (218)	55.4 (490)	2800	3320	5450	40.0 (3.54)
	AKM65P	AKD-X02407	na/ 142	24.5 (217)	53.9 (477)	4500	5500	6360	40.0 (3.54)
	AKM72L	AKD-X01207	na/ 180	30.0 (266)	70.5 (624)	1800	2630	4580	64.5 (5.71)
	AKM72P	AKD-X02407	na/ 180	29.5 (261)	68.5 (606)	3000	4340	6680	64.5 (5.71)
	AKM72Q	AKD-X02407	na/ 180	24.5 (217)	56.0 (496)	4500	5460	6640	64.5 (5.71)
	AKM73L	AKD-X01207	na/ 180	41.7 (369)	95.4 (844)	1500	1970	5620	92.1 (8.15)
	AKM73P	AKD-X02407	na/ 180	41.4 (366)	93.5 (828)	2400	3220	7130	92.1 (8.15)
	AKM73Q	AKD-X02407	na/ 180	33.0 (292)	76.1 (674)	3500	4050	8060	92.1 (8.15)
	AKM74L	AKD-X01207	na/ 180	49.7 (440)	114 (1010)	1400	1660	6080	120 (10.6)
	AKM74P	AKD-X02407	na/ 180	52.3 (463)	125 (1110)	1800	2420	7050	120 (10.6)
Ak	AKM74Q	AKD-X02407	na/ 180	46.8 (414)	90.7 (803)	3000	3430	8580	120 (10.6)

Note 1: Refer to page 66 for matching cables. Note 2: For complete AKD and AKM model nomenclature, refer to pages 67 and 68 respectively. Note 3: Max mechanical speeds: 8000 RPM for AKM1, 2, 3 and 6000 RPM for AKM4, 5, 6, 7.

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Model with Power Connector

Outline indicative of AKM11 - AKM74





Model with Terminal Box Outline indicative of AKM82 - AKM84



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	171.8	n/a	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
AKM8	48	110	18.5	n/a	263.4	343.9	424.4	n/a	66	0

quare

108

138

188

260

110

130

180

250

130

165

215

300

AKM5

AKM6

AKM7

AKM8

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

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

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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



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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. Fewer parts to purchase, schedule, inventory and control, and fewer 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: <u>Frameless DDR</u>, <u>Housed</u> <u>DDR</u>, and the <u>Cartridge DDR</u>. 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 motor 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 fullframe 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 and 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

N D

SERVO

SYSTEMS

CARTRIDGE DIRECT

DRIVE

ROTARY MOTOR

- 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
- Direct load connection eliminates gearheads, belts and pulleys
- Low cogging for smooth low-speed rotation
- · Zero backlash and compliance provides more responsive system performance



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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 arcminutes. 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.

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Cartridge Direct Drive Rotary Motor (DDR)

240 Vac Performance Data

AKD

SERVO

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CARTRIDGE DIRECT DRIVE ROTARY MOTOR

Cartridge DDB	AKD Sonio	Frame Size	Continuous Torque	Peak Torque	Maximum Speed	Weight	Inertia (Jm)
Motor	Drive	mm (in)	Nm (lb-in)	Nm (lb-in)	RPM	kg (lb)	kg-cm² (Ib-in-s² x10³)
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)
C132C	AKD-X02406	350 (13.8)	362 (3200)	818 (7240)	120	101 (223)	2250 (1990)
C133C	AKD-X02406	350 (13.8)	499 (4410)	1070 (9890)	100	132 (292)	3020 (2670)

400/480 Vac Systems Performance Data

	AKD Servo Drive	Frame Size	Continuous Torque	Peak Torque	Maximum Speed		Weight	Inertia (Jm)
Motor		mm (in)	Nm (Ib-in)	Nm (lb-in)	RPM		ka (lb)	kg-cm²
					400 Vac	480 Vac	kg (ib)	(lb-in-s ² x10 ⁻³)
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)

Cartridge DDR C09 and C13 Dimensions

Note 1: Refer to page 66 for matching cables.

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

*Coming soon

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Cartridge DDR C04, C05 and C06 Dimensions

Cartridge DDR 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 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.

Housed 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
- · Repeatability better than 1 arc second

Housed DDR Motor 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 ms.

Realized Housed DDR Motor 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 motor demonstrated a repeatability better than 1 arcsecond 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.

Housed DDR 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



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 motor, 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 motor. The mechanical indexer does not support flexible motion profiles.

Better Value

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



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240 \	/ac P	Performa	ance Data
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Housed DDR Motor	AKD Servo Drive	Frame Size mm (in)	Continuous Torque Nm (Ib-in)	Peak Torque Nm (Ib-in)	Maximum Speed (RPM)	Weight kg (lb)	Inertia (Jm) cm² (Ib-in-s² 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

Housed DDR Motor	AKD Servo Drive	Frame Size mm (in)	Continuous Torque Nm (Ib-in)	Peak Torque Nm (Ib-in)	Maximum Speed RPM	Weight kg (lb)	Inertia (Jm) cm² (Ib-in-s² 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)

Flange Mount

Face Mount





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 66 for matching cables. Note 2: For complete AKD and Housed DDR motor model nomenclature, refer to pages 67 and 70 respectively.

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BIBUS

Linear Positioning System

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). Our linear positioner families leverage the breadth of our AKM servomotor product line, which provides a wide range of solutions for nearly any application.

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.

Rodless Actuators

Long travel, quiet operation, and high moment loading differentiates rodless actuators from other mechanical transmissions.

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 for Kollmorgen geometry configurations.

Direct Drive Linear (DDL) Motor

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



KOLLMORGEN



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 x 10 ⁻⁶ (3.9 x 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.



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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 Servo Drive and AKM Servomotors, 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.

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.



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



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
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

* Additional lead time applies to precision grade. Contact customer support for details.
** Additional couplings available. Contact customer support for details.

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



Limit Sensor



Linear Encoder



Toe Clamp

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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	7					
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)						0.7	'5					
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	6					
Duty cycle (%)						10	0					
Ballscrew efficiency						90)					
Max. breakaway torque (oz-in)						18	3					
Max. running torque (oz-in)						16	6					
Ballscrew lead available (mm)						5, 1	10					
Input inertia (10 ⁻⁵ kg-m²)	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)			8	0			E	0	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/sec²)							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							
Ballscrew efficiency			90								80			
Max. breakaway torque (oz-in)			18								55			
Max. running torque (oz-in)			16								48			
Ballscrew lead available (mm)			5, 1	0						5,	10, 25			
Input inertia (10 ⁻⁵ kg-m²)	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	Ę	50	60	50	40	35	24	16	13	11

*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 support 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.



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120 Vac Performance Data

	Sys #	Precision Table - AKM Servomotor	AKD Servo Drive	Stroke Length Type	Cont. T Sp (Ib @	hrust @ eed in/sec)	Peak Tl Spe (Ib @i	nrust @ eed n/sec)	Max Thrust (Ib)	Max System Speed (in/sec)	Max Stroke for Max Speed (mm)
54	1	DS4-XXX-10G-AKM23D-	AKD-X00306	≤ 600 mm	104	17.6	210	10.8	210	17.6	600
ä	2	DS4-XXX- 5G-AKM23D-	AKD-X00306	≤ 600 mm	195	8.8	210	8.4	210	8.8	600
	3	DS6-XXX-25G-AKM23D-	AKD-X00306	≤ 600 mm	37	44.0	138	8.2	138	44.0	600
DS6	4	DS6-XXX-10G-AKM23D-	AKD-X00306	≤ 600 mm	104	17.6	210	12.4	210	17.6	600
	5	DS6-XXX- 5G-AKM23D-	AKD-X00306	≤ 600 mm	195	8.8	210	8.6	210	8.8	600
	6	DS6-XXX-25G-AKM23D-	AKD-X00306	≥ 700 mm	41	44.0	138	8.2	154	44.0	800
DS6	7	DS6-XXX-10G-AKM23D-	AKD-X00306	≥ 700 mm	91	17.6	331	3.1	376	17.6	800
	8	DS6-XXX- 5G-AKM23D-	AKD-X00306	≥ 700 mm	143	8.8	440	5.0	440	8.8	800

240 Vac Performance Data

	Sys #	Precision Table - AKM Servomotor	AKD Servo Drive	Stroke Length Type	Cont. T Sp (Ib @	`hrust @ eed in/sec)	Peak Th Spe (Ib @ i	nrust @ eed n/sec)	Max Thrust (Ib)	Max System Speed (in/sec)	Max Stroke for Max Speed (mm)
54	1	DS4-XXX-10G-AKM23D-	AKD-X00306	≤ 600 mm	98	31.5	210	31.5	210	31.5	300
ä	2	DS4-XXX- 5G-AKM23D-	AKD-X00306	≤ 600 mm	184	15.7	210	15.7	210	15.7	300
	3	DS6-XXX-10G-AKM23D-	AKD-X00306	≤ 600 mm	98	31.5	210	31.5	210	31.5	300
	4	DS6-XXX- 5G-AKM23D-	AKD-X00306	≤ 600 mm	184	15.7	210	15.7	210	15.7	300
	5	DS6-XXX-25G-AKM23D-	AKD-X00306	≥ 700 mm	40	59	154	47	154	59	700
	6	DS6-XXX-10G-AKM23D-	AKD-X00306	≥ 700 mm	88	23.6	374	18	374	23.6	700
36	7	DS6-XXX- 5G-AKM23D-	AKD-X00306	≥ 700 mm	138	11.8	440	11.8	440	11.8	700
ä	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	114	59	438	35.8	438	59	700
	11	DS6-XXX-10G-AKM42G-	AKD-X00306	≥ 700 mm	272	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 66 for matching cables. Note 3: For complete AKD and DS4 / DS6 Series model nomenclature, refer to pages 67 and 71 respectively.

A K D

SERVO SYSTEMS

PRECISION TABLES DS4/DS6 SERIES



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 servo 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 servo 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



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SYSTEMS

ELECTRIC

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BBUS

SERIES

AKD

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 torgue 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



⁷ Requires dual rod-end bearing option for length over 12".

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

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Electric Cylinders N2 / EC Series





n





N2 Series Dimensions

EC MF1 Front Flange

Parallel

А		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					

н

Retract Length Mounting length 5.37 + S 5.06 + S inch inch 136.4 + S 128.5 + S mm mm

Side view

stroke

S

* Meets ISO 40mm

S = stroke

Μ

t

L -

R

Top view



Flange Dimensions

In accordance with ISO 6431 for:								
Туре	Bore Size							
EC1	30 mm							
EC2	50 mm							
EC3	63 mm							
EC4	80 mm							
EC5	100 mm							

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AKD

Parallel



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EC Series Dimensions

	А	В	С	D	E	F	G	Н
	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)

		J	К	L	М	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)	3658+S(144+S)	406.9 + S(16.02 + S)

	P Breather port Hex		۵	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 Servo Drive	Cont. Thru: (Ib @	st @ Speed in/sec)	Peak Thrust @ Speed (lb @ in/sec)		Max Thrust (lb)	Max System Speed (in/sec)	**Max Stroke for Max Speed (mm)
	1	N2-AKM23D-	AKD-X00306	190	12.0	600	11.5	600	12.0	18.0
	2	N2-AKM23D-	AKD-X00306	287	8.0	600	8.0	600	8.0	18.0
	3	N2-AKM23D-	AKD-X00306	382	6.0	600	6.0	600	6.0	18.0
	4	N2-AKM23D-	AKD-X00306	370	4.8	600	4.8	600	4.8	18.0
	5	N2-AKM23D-	AKD-X00306	600	1.0	600	1.0	600	1.0	18.0
	6	N2-AKM23D-	AKD-X00306	75	30.0	275	24.5	280	30.0	18.0
	7	N2-AKM23D-	AKD-X00306	115	20.0	412	16.4	421	20.0	18.0
N2	8	N2-AKM23D-	AKD-X00306	152	15.0	545	12.3	545	15.0	18.0
	9	N2-AKM23D-	AKD-X00306	146	12.0	534	9.8	545	12.0	18.0
	10	N2-AKM23D-	AKD-X00306	600	2.5	600	2.5	600	2.5	18.0
	11	N2-AKM23D-	AKD-X00306	86	12.0	305	9.8	312	12.0	18.0
	12	N2-AKM23D-	AKD-X00306	128	8.0	458	6.5	467	8.0	18.0
	13	N2-AKM23D-	AKD-X00306	169	6.0	600	4.9	600	6.0	18.0
	14	N2-AKM23D-	AKD-X00306	165	4.8	593	3.9	600	4.8	18.0
	15	N2-AKM23D-	AKD-X00306	600	1.0	600	1.0	600	1.0	18.0

Sys		Electric Cylinder - AKM Servomotor	AKD Servo Drive	Cont. Thrus (Ib @i	st @ Speed in/sec)	Peak Thrus (Ib @i	st @ Speed in/sec)	Max Thrust (lb)	Max System Speed (in/sec)	**Max Stroke for Max Speed (mm)
	1	EC1-AKM11B-	AKD-X00306	50	13.0	75	13.0	75	13.0	200
	2	EC1-AKM11B-	AKD-X00306	100	6.0	125	6.0	125	6.0	200
EC1	3	EC1-AKM11B-	AKD-X00306	150	3.0	150	3.0	150	3.0	200
	4	EC1-AKM13C-	AKD-X00306	75	11.5	75	13.0	75	13.0	200
	5	EC1-AKM13C-	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 (Ib @ 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 66 for matching cables. Note 2: For complete AKD, EC, and N2 Series model nomenclature, refer to pages 67, 73 and 74, 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.

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A K D

SERVO SYSTEMS

ELECTRIC CYLINDERS N2/EC SERIES

Electric Cylinders N2 / EC Series

240 Vac Performance Data

Sys	#	Electric Cylinder - AKM Servomotor	AKD Servo Drive	Cont. Thrus (Ib @i	st @ Speed n/sec)	Peak Thrus (Ib @i	st @ Speed n/sec)	Max Thrust (Ib)	Max System Speed (in/sec)	Max Stroke for Max Speed (mm)**	Cylinder Bore Size (EC)
	16	EC2-AKM23D-	AKD-X00306	108	9.2	387	7.7	396	9.2	200	50
	17	EC2-AKM23D-	AKD-X00306	160	6.2	521	5.8	582	6.2	300	50
	18	EC2-AKM23D-	AKD-X00306	216	4.6	455	4.6	622	4.6	450	50
	19	EC2-AKM23D-	AKD-X00306	517	1.8	809	1.8	809	1.8	600	50
	20	EC2-AKM23D-	AKD-X00306	809	0.9	809	0.9	809	0.9	750	50
	21	EC2-AKM23D-	AKD-X00306	60	50.5	218	30.9	223	50.5	200	50
53	22	EC2-AKM23D-	AKD-X00306	85	40.1	293	23.4	237	45.0	200	50
Ē	23	EC2-AKM23D-	AKD-X00306	116	29.5	245	24.5	350	31.0	300	50
	24	EC2-AKM23D-	AKD-X00306	292	7.3	809	7.3	809	7.3	750	50
	25	EC2-AKM23D-	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-	AKD-X00306	272	12.5	809	8.3	809	13.5	300	50
	23	EC2-AKM23D-	AKD-X00306	370	9.2	782	7.6	809	10.0	300	50
	24	EC2-AKM23D-	AKD-X00306	809	2.3	809	2.3	809	2.3	750	50
	25	EC3-AKM23D-	AKD-X00306	86	39.3	327	20.6	334	42.0	200	63
	26	EC3-AKM23D-	AKD-X00306	119	28.6	448	14.0	459	30.0	300	63
	27	EC3-AKM23D-	AKD-X00306	251	6.3	891	6.1	909	6.3	750	63
	28	EC3-AKM23D-	AKD-X00306	349	4.5	1240	4.4	1260	4.5	1000	63
	29	EC3-AKM23D-	AKD-X00306	98	21.0	349	19.3	356	21.0	300	63
	30	EC3-AKM23D-	AKD-X00306	141	21.0	523	12.9	534	21.0	300	63
	31	EC3-AKM23D-	AKD-X00306	191	17.9	716	8.9	734	20.0	300	63
	32	EC3-AKM23D-	AKD-X00306	404	3.8	1420	3.8	1450	3.8	1000	63
	33	EC3-AKM23D-	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
EC3	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-	AKD-X00606	149	45.0	601	24.4	628	45.0	200	63
	39	EC3-AKM42G-	AKD-X00606	223	30.0	510	24.0	736	30.0	300	63
	40	EC3-AKM42G-	AKD-X00606	690	6.3	1620	6.3	1620	6.3	750	63
	41	EC3-AKM42G-	AKD-X00606	965	4.5	1620	4.5	1620	4.5	1000	63
	42	EC3-AKM42G-	AKD-X00606	238	28.4	961	15.3	1010	21.0	300	63
	43	EC3-AKM42G-	AKD-X00606	357	18.9	823	14.5	1200	21.0	300	63
	44	EC3-AKM42G-	AKD-X00606	1100	3.9	1620	3.9	1620	3.9	1000	63
	45	EC3-AKM42G-	AKD-X00606	1530	2.8	1620	2.8	1620	2.8	1000	63
	46	EC3-AKM42G-	AKD-X00606	710	10.3	1620	7.7	1620	10.3	300	63

Note 1: Refer to page 66 for matching cables.

Note 2: For complete AKD and EC Series model nomenclature, refer to pages 67 and 73 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.

AKD

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240 Vac Performance Data

Sy	s #	Electric Cylinder - AKM Servomotor	AKD Servo Drive	Cont. Thru (Ib @	st @ Speed in/sec)	Peak Thru (Ib @	ist @ Speed in/sec)	Max Thrust (lb)	Max System Speed (in/sec)	**Max Stroke for Max Speed (mm)	Cylinder Bore Size (EC)
	48	EC4-AKM42G-	AKD-X00606	108	52.5	395	36.1	402	52.5	300	80
	49	EC4-AKM42G-	AKD-X00606	143	47.3	593	24.1	603	50.0	300	80
	50	EC4-AKM42G-	AKD-X00606	190	35.4	791	18.1	804	36.0	450	80
	51	EC4-AKM42G-	AKD-X00606	580	5.1	1940	5.1	1960	5.1	1500	80
	52	EC4-AKM42G-	AKD-X00606	1130	2.6	2700	2.6	2700	2.6	1500	80
	53	EC4-AKM42G-	AKD-X00606	270	21.0	989	14.4	1005	15.3	450	80
	54	EC4-AKM42G-	AKD-X00606	357	18.9	1480	9.6	1500	15.3	450	80
	55	EC4-AKM42G-	AKD-X00606	476	14.2	1980	7.2	2010	14.5	450	80
	56	EC4-AKM42G-	AKD-X00606	1440	2.1	2700	2.1	2700	2.1	1500	80
	57	EC4-AKM42G-	AKD-X00606	2700	1.0	2700	1.0	2700	1.0	1500	80
	58	EC4-AKM52H-	AKD-X00606	256	36.3	458	30.7	668	36.3	300	80
	59	EC4-AKM52H-	AKD-X00606	384	24.2	844	18.6	1200	24.2	600	80
	60	EC4-AKM52H-	AKD-X00606	512	18.1	874	16.7	1160	18.1	750	80
4	61	EC4-AKM52H-	AKD-X00606	1360	5.1	2700	5.1	2700	5.1	1500	80
Ê	62	EC4-AKM52H-	AKD-X00606	2700	2.6	2700	2.6	2700	2.6	1500	80
	63	FC4-AKM52H-	AKD-X00606	640	14.5	1120	13.1	1670	14.5	450	80
	64	FC4-AKM52H-	AKD-X00606	961	9.7	2090	8.0	2700	9.7	600	80
	65	EC4-AKM52H-	AKD-X00606	1280	7.2	2190	67	2700	7.2	750	80
	66	FC4-AKM52H-	AKD-X00606	2700	2.1	2700	2.1	2700	2.1	1500	80
	67	FC4-AKM52L-	AKD-X01206	240	52.5	422	52.5	700	52.5	300	80
	68	EC4-AKM52L-	AKD-X01206	287	48.3	741	42.9	1090	48.3	300	80
	69	EC4-AKM52L-	AKD-X01206	368	36.3	789	32.2	1040	36.3	450	80
	70	EC4-AKM52L-	ΔKD-X01206	1370	51	2370	51	2370	51	1500	80
	71	EC4-AKM52L-	AKD-X01206	2700	2.6	2700	2.6	2700	2.6	1500	80
	72	EC4-AKM52L-	AKD-X01206	650	15.3	1110	15.3	1500	15.3	300	80
	73	EC4_AKM52L_	AKD-X01206	000	15.3	1870	15.3	2700	15.3	300	80
	7/	EC4_AKM52L	AKD-X01200	956	14.5	1970	13.0	2610	14.5	300	80
	75	EC4_AKM52L		2700	2.1	2700	2 1	2700	2 1	1500	80
	76	EC5_AKM/2G_		2700	52.5	300	16.3	31/	52.5	450	100
	70	EC5-AKM/2G-	AKD-X00000	121	52.5	463	30.8	/71	52.5	450	100
	78	EC5_AKM42G		1/0	15.0	618	23.1	628	15.0	450	100
	70	EC5-AKM42G-		/38	4J.4 6.6	1530	66	1530	4J.4 6.6	1500	100
	00			400	2.4	2000	2.0	2000	2.4	1500	100
	00	EC5 AVM/2C = 10 10P *		270	15.2	000	14	1005	15.2	1500	100
	01			270	15.0	1/00	0.6	1510	15.0	450	100
	02			400	11.0	1400	3.0	2010	14.2	400	100
	00			470	14.2	1500	7.2	1520	14.2	1000	100
	04			430	0.0	2000	0.0	2000	0.0	1000	100
	00			000	3.4	3000	3.4	5000	3.4	1500	100
	80			200	40.4	303	42.9	025	40.4	450	100
EC5	0/			300	30.9	900	2.3	930	30.9	750	100
	88			400	23.2	003	Z1.U	1010	23.2	/50	100
	89		AKD-XUUDUD	1080	0.0	3000	5.9	3045	0.0	1500	100
	90	EC5-AKIVI52H-	AKD-XUUbUb	2070	3.4	3630	3.4	3630	3.4	1500	100
	91		AKD-XUU6U6	641	14.5	1130	13.1	1670	14.5	450	100
	92			901	9./	2080	8.0	3000	9.7	750	100
	93		AKD-XUU6U6	1281	7.3	2180	b./	3000	7.3	/50	100
	94		AKD-XUU6U6	3400	2.1	5620	2.1	5620	2.1	1500	100
	95	EUS-AKIVI52H-	AKD-X00606	5620	1.0	5620	1.0	5620	1.0	1500	100
	96		AKD-X01206	261	52.5	580	52.5	853	52.5	450	100
	9/		AKD-X01206	299	46.4	616	41.0	911	46.4	450	100
	98		AKD-X01206	860	15.3	1890	15.3	2/30	15.3	450	100

Note 1: Refer to page 66 for matching cables. Note 2: For complete AKD and EC Series model nomenclature, refer to pages 67 and 73 respectively. Ratings are based on the AKM servomotor and the matching AKD servo 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.

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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 servo 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 servo 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.

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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

Typical Construction

(R4 belt-driven cutaway shown)



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Rodless Actuators R-Series

R3 Screw Drive

AKD

SERVO SYSTEMS

RODLESS ACTUATORS R-SERIES

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.



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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

	А	В	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

	l I	J	К	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)

	М	N	0	Р
	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		10	108		
Cross section (in)		2 x 2			2.5 x 2.8		3.6 x 4.25			
Guide type	Roller Guides				Profile Rail		Profil	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,	n/a		
Max thrust (lb)	1	00	72	3	300		700	300		
Max velocity (in/sec)		30	80	:	30		40	120		
Max carriage load										
Normal (Ib)		50		100			300			
Roll moment (lb-in)		50			300		60	00		
Pitch moment (Ib-in)		100			500		10	00		
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 1	40 deg F (-28 deg	C to 60 deg C)				
Moisture/contamination		IP 44 rated:	Splash-proof, p	rotected against	ingress of solid pa	articles greater t	han 0.040 (1 mm) diamet	er.*		

240 Vac Performance Data

Sys		Rodless Actuator- Servomotor	AKD Servo Drive	Cont. Thrust (Ib @ in	t @ Speed /sec)	Peak Thrus (lb @ iı	t @ Speed 1/sec)	Max Thrust (lb)	Max System Speed (in/sec)	Max Stroke for Max Speed (in)
	1	R2A-AKM23D-	AKD-X00306	70	30	100	30	100	30	18
	2	R2A-AKM23D-	AKD-X00306	100	20	100	20	100	20	24
	3	R2A-AKM23D-	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-	AKD-X00306	100	8.0	100	8.0	100	8.0	24
A2	6	R2A-AKM23D-	AKD-X00306	100	6.0	100	6.0	100	6.0	30
B	7	R2A-AKM23D-■■-10-5A*	AKD-X00306	79	12	100	12	100	12	12
	8	R2A-AKM23D-	AKD-X00306	100	8.0	100	8.0	100	8.0	18
	9	R2A-AKM23D-	AKD-X00306	100	6.0	100	6.0	100	6.0	24
	10	R2A-AKM23D-	AKD-X00306	7.0	80	40	80	40	80	72
	11	R2A-AKM23D-	AKD-X00306	13	80	64	80	64	80	72
	12	R2A-AKM23D-	AKD-X00306	19	80	78	80	87	80	72
	13	R3-AKM23D-■■-10-2B*	AKD-X00306	71	30	269	25	275	30	18
	14	R3-AKM23D-	AKD-X00306	110	20	300	20	300	20	24
	15	R3-AKM23D-	AKD-X00306	148	15	300	15	300	15	30
	16	R3-AKM23D-	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	283	8.0	300	8.0	300	8.0	24
	19	R3-AKM23D-	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
R3	21	R3-AKM23D-■■-10-5A*	AKD-X00306	80	12	250	12	300	12	12
	22	R3-AKM23D-	AKD-X00306	122	8.0	300	8.0	300	8.0	18
	23	R3-AKM23D-	AKD-X00306	165	6.0	300	6.0	300	6.0	24
	24	R3-AKM23D-	AKD-X00306	300	2.4	300	2.4	300	2.4	42
	25	R3-AKM23D-■■-10-8A*	AKD-X00306	131	7.5	300	7.5	300	7.5	18
	26	R3-AKM23D-	AKD-X00306	199	5.0	300	5.0	300	5.0	30
	27	R3-AKM23D-■■-20-8A*	AKD-X00306	267	3.8	300	3.8	300	3.7	30
	28	R3-AKM23D-	AKD-X00306	300	1.5	300	1.5	300	1.5	48
	29	R3-AKM23D-■■-10-T*	AKD-X00306	1.2	110	18	110	18	110	108
Note 1:	Refer to	page 66 for matching cables. No	te 2: For complete	AKD and R-Serie	s model nome	nclature, refer to	pages 67 and 7	'5 respectively.		

AKD

SERVO SYSTEMS

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BIBUS



240 Vac Performance Data

Sys	; #	Rodless Actuators- Servomotor	AKD Servo Drive	Cont. Thrus (Ib @ii	t @ Speed n/sec)	Peak Thrus (lb @ir	t @ Speed 1/sec)	Max Thrust (lb)	Max System Speed (in/sec)	Max Stroke for Max Speed (in)
	30	R3-AKM23D-	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-	AKD-X00306	20	72	90	72	92	72	108
	33	R3-AKM23D-	AKD-X00306	30	51	128	51	131	51	108
	34	R3-AKM42G-	AKD-X00606	200	30	300	30	300	30	18
	35	R3-AKM42G-	AKD-X00606	300	20	300	20	300	20	24
	36	R3-AKM42G-	AKD-X00606	300	15	300	15	300	15	30
	37	R3-AKM42G-	AKD-X00606	300	6.0	300	6.0	300	6.0	48
	38	R3-AKM42G-	AKD-X00606	300	12	300	12	300	12	18
	39	R3-AKM42G-	AKD-X00606	300	8.0	300	8.0	300	8.0	24
	40	R3-AKM42G-	AKD-X00606	300	6.0	300	6.0	300	6.0	30
	41	R3-AKM42G-	AKD-X00606	300	2.4	300	2.4	300	2.4	48
B3	42	R3-AKM42G-	AKD-X00606	221	12	300	12	300	12	12
	43	R3-AKM42G-	AKD-X00606	300	8.0	300	8.0	300	8.0	18
	44	R3-AKM42G-	AKD-X00606	300	6.0	300	6.0	300	6.0	24
	45	R3-AKM42G-	AKD-X00606	300	2.4	300	2.4	300	2.4	42
	46	R3-AKM42G-	AKD-X00606	300	7.5	300	7.5	300	7.5	18
	47	R3-AKM42G-	AKD-X00606	300	5.0	300	5.0	300	5.0	24
	48	R3-AKM42G-	AKD-X00606	300	3.8	300	3.8	300	3.8	30
	49	R3-AKM42G-	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
	55	R4-AKM42G-	AKD-X00606	103	40	384	37	390	40	36
	56	R4-AKM42G-	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-	AKD-X00606	460	7.8	700	7.8	700	7.8	96
	59	R4-AKM42G-	AKD-X00606	700	4.0	700	4.0	700	4.0	108
	60	R4-AKM42G-	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-	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-	AKD-X00606	18	110	73	110	74	110	108
	66	R4-AKM42G-	AKD-X00606	25	110	98	110	100	110	108
	67	R4-AKM42G-	AKD-X00606	38	100	150	92	153	100	108
	68	R4-AKM42G-	AKD-X00606	56	59	215	54	219	59	108
R	69	R4-AKM42G-	AKD-X00606	118	30	300	30	300	30	108
	70	R4-AKM52H-	AKD-X00606	246	37	700	37	700	37	36
	71	R4-AKM52H-	AKD-X00606	372	25	700	25	700	25	48
	72	R4-AKM52H-	AKD-X00606	498	18	700	18	700	18	60
	73	R4-AKM52H-	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-	AKD-X00606	700	1.9	700	1.9	700	1.9	96
	78	R4-AKM52H-	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-	AKD-X00606	65	110	201	90	204	110	108
	81	R4-AKM52H-	AKD-X00606	95	92	300	60	300	95	108
	82	R4-AKM52H-	AKD-X00606	137	54	300	44	300	54	108
	83	R4-AKM52H-	AKD-X00606	275	27	300	27	300	27	108

Note 1: Refer to page 66 for matching cables. Note 2: For complete AKD and R-Series model nomenclature, refer to pages 67 and 75 respectively.

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AKD SERVO SYSTEMS

Micron[™] TRUE Planetary[™] Gearhead

Helical gears are known for their guiet 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

× D

SERVO

SYSTEMS

TRUE PLANETARY

GEARHEAD

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

Spur vs. Helical Gearing





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.										
	le line	Frame Size		Max T Peak (lb-in)			Coor Dotion Austichts	Efficiency	Backlash		
	Inline	English	Metric	1 Stage	2 Stage	All SIZES		Eniciency	(arc-min)		
Card I	Size 17	NEMA 17	42 mm	170	170	1 Store	3, 4, 5, 7, 10	93%	13 (8)*		
	Size 23 / 60	NEMA 23	60 mm	250	275	i Stage					
	Size 34 / 90	NEMA 34	90 mm	700	850	2 Stage	15 20 25 20 40 50 70 100	88%	15 (9)*		
	Size 42 / 115	NEMA 42	115 mm	1000	1600	z stage	15, 20, 25, 30, 40, 50, 70, 100				

NEMA TRUE™	True planeta	ue planetary gearhead, flange mount design with anodized aluminum housing employing RediMount [™] system.										
	Right	Frame	Size	Max	T Peak (I	Peak (lb-in)		Gear Ratios Available	Efficiency	Backlash		
	Angle	English	Metric	1 Stage	2 Stage	3 Stage			· · · · · ·	(arc-min)		
C	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.									
	le line	Frame Size	Max T P	eak (lb-in)		Coor Dotion Austichts	Efficiency	Backlash (arc-min)		
	Inline	Metric	1 Stage	2 Stage	All Sizes	Gear Ratios Available				
	XT040	40 mm	162	299	1 Stage	3, 4, 5, 7, 10	93%	13		
	XT060	60 mm	483	483						
G	XT080	80 mm	1460	1550		e 15, 20, 25, 30, 40, 50, 70, 100	D 88%			
	XT120	120 mm	2640	2640	2 Stage			15		
	XT160	160 mm	7750	7750						

EverTRUE™	EverTRUE, e 3 times (30,0	EverTRUE, employing RediMount [™] system, is specifically designed for 24/7 continuous running applications providing 3 times (30,000 hours) service life.										
174	Inline	Frame Size	Max T Pe	eak (lb-in)	All Sizes	Gear Ratios Available	Ffficiency	Backlash				
		Metric	1 Stage	2 Stage			,	(arc-min)				
1 4	ET010	101 mm	4090	4790	1 Stage	4, 5, 7, 10	95%	4				
	FT014	141 mm	9430	11 250								
- III	2.011		0.00	11,200								
	ET018	182 mm	21,600	26,280	2 Stage	16, 20, 25, 28, 35, 40, 50, 70, 100	90%	5				
A COMPANY												

* 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 76.

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Micron[™] TRUE Planetary[™] Gearhead

DuraTRUE™	True planeta	rue planetary gearhead, flange mount design with anodized aluminum housing employing RediMount [™] system.											
414	Inline	Frame Size	Max T Pe	ak (lb-in)	All Sizes	Gear Ratios Available	Efficiency	Backlash					
		wietric	T Stage	2 Stage				(arc-mm)					
	DT60	60 mm	460	460	1 Store	3, 4, 5, 7, 10	93%	9					
	DT90	90 mm	1480	1480	i oldye								
	DT115	115 mm	2510	2510	2 Cto		88%	8					
	DT142	142 mm	7380	7380	2 Stage	15, 20, 25, 30, 40, 50, 70, 100							

DuraTRUE™	True planetary right angle gearhead, flange mount design with anodized aluminum housing employing RediMount [™] system.										
	Right	Frame Size	Max T Pe	eak (Ib-in)	All Sizes	Gear Ratios Available	Efficiency	Backlash			
	Angle	weurc	1 Stage	2 Stage				(arc-mm)			
0	DT60	60 mm	460	460	1 Store	5, 6, 9, 10, 12, 15, 20, 25, 30, 40, 50 60, 75, 90, 100, 120, 125,	93%	9			
	DT90	90 mm	1480	1480	T Staye						
	DT115 1	115 mm	2510	2510	2 Store		000/	0			
	DT142	142 mm	7380	7380	2 Stage	150, 200, 250, 300, 400, 500	00 70	0			

Slimline	Slimline righ Face gear te	t angle gearhead, fla chnology for compa	inge moui ct right ar	nt design Igle cons	with ano truction.	dized alun Dual shaft	ninum housing employing Redil coutput version also available.	⁄lount [™] syste	m.
	Right Angle	Frame Size Metric	Max 1 Stage	T Peak (l 2 Stage	b-in) 3 Stage	All Sizes	Gear Ratios Available	Efficiency	Backlash (arc-min)
	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	0. Oto	60, 75, 90, 100, 120, 125,	000/	0
	DT142S	142 mm	5500	6920	7450	3 Stage	150, 200, 250, 300, 400, 500	88%	9

	Hollow shaft	t right angle gearbea	d flange	mount de	sian with	anodized	aluminum housing employing P	RediMount™ s	vstem				
Hollow Shaft	Large diame	ge diameter/ bolt circe for direct mechanical interface. Face gear technology for compact right angle construction.											
	Right	Frame Size	Max T Peak (lb-in)				Goar Batios Available	Efficiency	Backlash				
	Angle	Metric	1 Stage	2 Stage	3 Stage	All Sizes	Uear natios Available	Linciency	(arc-min)				
	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 76.



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		elical True planetary gearhead, flange mount design with stainless steel housing employing RediMount™ system.											
Inline	Frame Size	Max T Pe	ak (lb-in)		Goor Potion Available	Efficiency	Backlash						
mme	Metric	1 Stage	2 Stage	All Sizes		Eniciency	(arc-min)						
VT006	61 mm	800	910										
VT075	75 mm	1420	1630	1.0+===	4 5 7 10	050/	4						
VT090	90 mm	1420	1630	i stage	4, 5, 7, 10	33 /0	4						
VT010	101 mm	4090	4790										
VT115	115 mm	4090	4790			000/							
VT014	141 mm	9430	11,250	2 Store	16 20 25 20 25 40 50 70 100		F						
VT018	182 mm	21,600	26,280	z stage	10, 20, 20, 20, 30, 40, 50, 70, 100	33%	5						
VT022	220 mm	36,980	44,000										

ValueTRUE™

ValueTRUE™

	Right Frame Size _ Angle Metric		Max T Peak (lb-in)		Coor Potion Available	Efficiency	Backlash				
and the second s			2 Stage	All Sizes"	Gear Ratios Available	Emclency	(arc-min)				
F 103	VTR006	61 mm	870								
22	VTR075	75 mm	1570								
18	VTR090	90 mm	1570		4, 5, 8, 10, 12, 14, 15, 16, 20, 25, 28, 30, 35, 40, 50	93%	5				
Contraction of the	VTR010	101 mm	4580	2 Stage							
	VTR115	115 mm	4580		20, 30, 33, 40, 30						
	VTR014	141 mm	10,670								
	VTR018	182 mm	24,780								
	* 4 and 5:1 ratio	s not available with VTRO	06-VTR090.								
							734				

UltraTRUE™	Helical Irue Stainless ste	planetary inline gear eel housing, gear-pat	rhead, flange i h hobbed into:	mount design stainless ste	with anodi: el housing.	zed aluminum housing employ	ing KediMoui	nt''' system.
	Inline	Frame Size	Max T Pe	ak (lb-in)		Coor Potion Available	Efficiency	Backlash
	mine	Metric	1 Stage	2 Stage	All Sizes		Eniciency	(arc-min)
	UT006	61 mm	890	1010		4 5 7 10		
1.1	UT075	75 mm	1580	1810	1 Stage		95%	4
	UT090	90 mm	1580	1810		4, 5, 7, 10		
	UT010	101 mm	4540	5330				
	UT115	115 mm	4540	5330				
-	UT014	141 mm	10,480	12,500	2 Store	16 20 25 20 25 40 50 70 100	000/	5
	UT018	182 mm	24,101	29,200	z stage	10, 20, 25, 26, 35, 40, 50, 70, 100	90%	
	UT022	220 mm	41,090	48,890				

UltraTRUE™	Helical True system. Stai	Helical True planetary right angle gearhead, flange mount design with anodized aluminum housing employing RediMount [™] system. Stainless steel housing, gear-path hobbed into stainless steel housing.										
	Right	Frame Size	Max T Pe	eak (lb-in)		Gear Batios Available	Efficiency	Backlash				
	Angle	Metric	1 Stage	2 Stage	All SIZES		LINCIENCY	(arc-min)				
5.	UTR006	61 mm	450	970								
	UTR075	75 mm	1410	1740	1 Stage	1, 2, 3, 4, 5	98%	4				
	UTR090	90 mm	1410	1740								
	UTR010	101 mm	2850	5080			93%	5				
	UTR115	115 mm	2850	5080	2 Stago	8, 10, 12, 14, 15, 16,						
	UTR014	141 mm	6270	11,860	z staye	20, 25, 28, 30, 35, 40, 50						
	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 76.

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BIBUS





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.

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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

Multistepping[™]

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 lowspeed 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 77.

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Hybrid Step Motor

Our 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 (CTP High To	2 Phase, 1.8° Step Motors. Frame size: 1.7 inch, 43 mm (CTP High Torque Performance Series)									
	Series	Constructio	Holding (Motor N	Length							
		Stale	Stacks	Bipolar		in					
		Style		oz-in	Nm			 Inch or metric mounting Bear shaft option 			
	CTP10		Short	43	0.30	1.37	34.7	nour option			
	CTP11	Un-Enhanced	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 (CTM Enhar	° Step Motors. Frame iced-Max Torque and						
	Series	Constructi	Holding Torque (Motor Mounted)		Length			
		Ctulo	Stacks -	Bipolar		in		
		Style		oz-in	Nm		mm	 Captured heavy duty bearings
12	CTM21	Enhanced	1	260	1.84	2.13	54.1	High voltage insulation system
	CTM22	LIIIdiiceu	2	470	3.32	3.32	84.3	Rear shaft option
1	CTP20		Short	100	0.71	1.62	41.2	
	CTP21	Un-Enhanced	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 (CTM Enhan	Phase, 1.8° Step Motors. Frame size: 3.4 inch, 87 mm TM Enhanced-Max Torque & Efficiency, CTP High Torque Performance Series)								
and the second s	Series	Construction		Holding (Motor N	Holding Torque (Motor Mounted)		ngth			
		Ct. J.	Oteralia	Bip	olar					
		Style	Stacks	oz-in	Nm	ן ייי		 Cantured heavy duty hearings 		
	CTM31	Enhanced	1	690	4.9	2.54	64.5	High voltage insulation system		
	CTM32		2	1350	9.5	3.80	96.5	 Standard keyway front shaft Baar aboft antion 		
	CTM33		3	1930	13.6	5.06	129	Real shart option		
	CTP31		1	565	4.0	2.54	64.5			
	CTP32	Un-Enhanced	2	1100	7.8	3.80	96.5			
	CTP33		3	1580	11.2	5.06	129			
Note: For complete CT Series model nome	enclature, refer to	page 78.						(4)		

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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. Fr	ame size: 3.4	1 inch, 87 mm	1			
	Series	Construction		Holding (Motor N	Torque lounted)	Length		
-		Stulo	Stacks	Bip	olar	in	mm	
		Style	SLOCKS	oz-in	Nm			
	K31	Enhanced	1	830	5.9	3.7	94	 Captured heavy duty bearings High voltage insulation system
6	K32		2	1530	10.8	5.22	133	Options: Terminal box
	K33		3	2200	15.6	6.74	171	Rear shaft
	K34		4	2770	19.6	8.25	210	Encoder
	N31		1	650	4.6	3.7	94	Front shart sear
	N32	Up Ephanaad	2	1220	8.6	5.22	133	
	N33	Un-Enhanced	3	1760	12.4	6.74	171	
	N34		4	2170	15.3	8.25	210	

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2 Phase, 1.8° Step Motors. Frame size: 3.4 inch, 87 mm

1								
2.2	Series	Construc	tion	Holding Torque (Motor Mounted)		Length		
		Style	Stacks	Bipolar				
				oz-in	Nm	IN	mm	 Captured neavy duty bearings High voltage insulation system Options: Terminal box MS connectors Rear shaft Encoder Front shaft seal
	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 79 and 80 respectively.

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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.

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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.



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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.



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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

Motors and Electronics



200 kW electric starter/generator



4-axis stepper drive using SynqNet

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

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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

 $\label{eq:XX} XX = \text{length in meters (1, 3, 6, 9, 12) Example: VP-507BEAN-09 (9 meter cable).} \\ Other feedback choices are available. Contact customer support for details.$

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 support for details.

Note 3: Other lengths are available. Contact customer support for details. Note 4: Refer to page 19 for cable specifications.

MODEL NOMENCLATURE

AKD Servo Drive



06 = 120/240 Vac 10/30 07 = 240/480 Vac 3 phase

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

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AKM Brushless Servomotor



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Cartridge Direct Drive Rotary (DDR) Motor

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

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Housed Direct Drive Motors D(H) Series



* All models except D14x and DH14x. ** Sealed motors with encoder feedback have longer axial length. Note: Options shown in bold blue text are considered standard.

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DS Series Precision Table

** Extended lead time required.

Note 1: Options shown in bold blue text are considered standard.

Note 2: Contact customer support for price and lead time on all non-standard features

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MODEL

NOMENCLATURE



Alternate AKM Servomotor and Electric Cylinder Systems Table

For use when AKM servo motor is not included as part of electric cylinder model number.										
Electric Cylinder	AKM Frame	AKM Motor Model #	* Allowable AKM stack lengths	** Kollmorgen Motor Mount Code	Example Motor					
N2	AKM2	AKM2XX-EFXXX	AKM21, 22, 23	IDR60 (C OR X)	AKM23D-EFCNC-00					
EC1	AKM1	AKM1XX-ANXXX	AKM11, 13	IDR67 (C OR X)	AKM11B-ANCNC-00					
EC2	AKM2	AKM2XX-EFXXX	AKM21, 22, 23	IDR60 (C OR X)	AKM23D-EFCNC-00					
EC3	AKM2	AKM2XX-EFXXX	AKM21, 22, 23	IDR60 (C OR X)	AKM23D-EFCNC-00					
EC3	AKM4	AKM4XX-EKXXX	AKM41, 42	IDR61 (C OR X)	AKM42G-EKCNR-00					
EC4	AKM4	AKM4XX-EKXXX	AKM41, 42, 43, 44	IDR61 (C OR X)	AKM42G-EKCNR-00					
EC4	AKM5	AKM5XX-EKXXX	AKM51, 52	IDR62 (C OR X)	AKM52G-EKCN2-00					
EC5	AKM4	AKM4XX-EKXXX	AKM41, 42, 43, 44	IDR61 (C OR X)	AKM44G-EKCNR-00					
EC5	AKM5	AKM5XX-EKXXX	AKM51, 52	IDR62 (C OR X)	AKM52G-EKCN2-00					

* Based on maximum torque capacity, consult customer support for other combinations. Review application for inertia mismatch when considering motor options. ** We mount Kollmorgen motors without a fee. Must have "C" as motor mount code if you desire Kollmorgen to mount motor at factory. For non-Kollmorgen motors contact customer support for pricing.

NEMA Mounting Table								
Frame	Series	P/N Callout						
NEMA 17	EC	17 (X or C)						
NEMA 23	N, N2, EC2, EC3, R2A, R3	23 (X or C)						
NEMA 34	N, N2, EC2, EC3, EC4, EC5, R2A, R3, R4, DS4, DS6	34 (X or C)						
NEMA 42	EC4, EC5, R4, DS4, DS6	42 (X or C)						

Example P/N: EC2-X-rest of pn-23X

MODEL NOMENCLATURE

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CO = No cable supplied, motor includes connectors. Default for all AKM servomotors; select Kollmorgen cables based on motor/drive pairing.

* Refer to Alternate AKM servomotor and electric cylinder systems table on page 72. Contact customer support for AKM combinations outside of those listed.
** For custom lengths round up to next standard incremental plus add standard cut fee.

*** Contact customer support for non-standard pricing and lead times.

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

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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

- * Refer to Alternate AKM servomotor and electric cylinder systems table on page 72. Contact customer support for AKM combinations outside of those listed.
 ** For custom lengths round up to next standard incremental plus add standard cut fee.
 *** Contact customer support for non-standard pricing and lead times.
 Note: Options shown in bold blue text are considered standard.

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MF3 = Front & rear rectangular flange

MS6M = Side tapped holes (metric)

MS6E = Side tapped holes (English)

MS1 = Side end angle

MS2 = Side lugs

MT4 = Trunion

MP2 = Rear double clevis without pivot base

MP3 = Rear double clevis with pivot base



R Series Motor Type*	Motor Options	Linear Drive Drive Ratio Type	Stroke Length	Motor Orientation	Mounting Style Carria	ca ae Enalish O	able
			12	D	ΛС	E (חי
R Series	<u> </u>						
R2A				Uptions			- Available
K3 R4				BS24 = 24 (Screw MF3 or	Vdc brake on le option only, n/a "C" options)	ad screw with inline model	R2A, K3, K4 s,
Motor Type* AKM23C = AKM23C-EFxxx-00 brushless servo	Available R2A, R3			BS115 = 1 (Screw ME3 or	15 Vdc brake on option only, n/a	lead screw with inline mode	R2A, R3, R4 Is,
AKM23D = AKM23D-ErXX-00 brushless servo AKM42E = AKM42E-EKxxx-00 brushless servo AKM42G = AKM42G-EKxxx-00 brushless servo AKM52G = AKM52G-EKxxx-00 brushless servo	RZA, R3 R3, R4 R3, R4 R4			BS230 = 2 (Screw MF3 or	30 Vdc brake on option only, n/a "C" options)	lead screw with inline mode	R2A, R3, R4 Is,
AKM52H = AKM52H-EKxxx-00 brushless servo	R4			WR = Wat	er resistant sea	l option right	R2A
				GR = Lube	port, right side	i option ien	R3, R4
Motor Uptions	Available			GL = Lube	port, left side	oon drivon carriad	R3, R4
C = 0.5 m shielded cables w/ IP65 connectors	AKM2			and no	n-motor end	sen unven carnag	
C ■ ■ = Rotatable IP65 connectors ■ N ■ = No brake	AKM4, AKM5 AKM2, AKM4, AKM5			DC2 = Idle and mo	r carriage betwe otor end	een driven carriag	e R2A
2 = 24 Vdc power-off holding brake	AKM2, AKM4, AKM5			VR = Brea	ther vent, fitting	, tubing, right side	e R4
 R = Resolver 2 = 2048 LPR incremental comm. encoder 	AKIVIZ, AKIVI4, AKIVI5 AKM2, AKM4, AKM5			VL = Breat	ner vent, fitting, notor cable	tubing, left side	R4 R2A, R3, R4
■■C = Smart Feedback Device (SFD)	AKM2, AKM4, AKM5			S = Stub s	haft		R2A
	Available			English,	/Metric		Available
10 = 1.0:1 drive belt/pulley	R2A, R3, R4			(carriage, F – Englis	(mounting) h carriage & m	ounting dimensio	ns R2A R3 R4
15 = 1.5:1 drive belt/pulley 20 = 2.0:1 drive belt/pulley	R2A, R3, R4 R2A, R3, R4			M = Metri	c carriage & mo	unting dimension	s R2A, R3, R4
30 = 3.0.1 drive belt/pulley	R4			- Carriag	е		A
50 = 5:1 helical gear 70 = 7:1 helical gear	K3, K4 B3			(omit this	field for R2A m	iodels)	Available
100 = 10:1 helical gear	R3			S = Singl Dxx = Dua	e carriage I carriage (screv	v-drive only)	R3, R4 R3, R4
Linear Drive Type	Available			(XX = CE	nter distance be	tween dual carria	ges lengths)
5A = 5 pitch (0.2" lead) lead screw	R2A, R3						• • • • •
1B = 1 pitch (1" lead) ballscrew	R4			- Mountii	ng Style		Available
2B = 2 pitch (0.5" lead) ballscrew	R2A, R3			MS1 = Sic	nt & rear rectan le end angles	gular flanges	rza R2A
4B = 4 pitch (0.25 read) ballscrew 5B = 5 pitch (0.2" lead) ballscrew	R2A, R3			MS5 = Ad	justable feet		R2A
T = Tangential drive belt	R2A, R3, R4			MS6 = Sic A = Side a	le tapped mount Ingle brackets	ing holes	R2A R3 R4
Stroke Length**	Available			B = Adjust	able T-nuts		R3, R4
6 = 6" of total stroke	R2A, R3, R4			C = Front 8	& rear rectangul	ar flanges	R3, R4
12 = 12" of total stroke	R2A, R3, R4			– Motor (Drientation		Available
24 = 24" of total stroke	R2A, R3, R4 R2A, R3, R4			Belt optio	ns		
30 = 30" of total stroke	R2A, R3, R4			AR = Moto	or housing rotate	ed above/right	R2A, R3, R4
$36 = 36^{\circ}$ of total stroke	R2A, R3, R4			Bn = IVIOTOR NOUSING ROTATED DENIND/Right F			ΚΖΑ, Κ3, Κ4 Β2Δ Β3 Β4
$42 = 42^{\circ}$ of total stroke	R2A, R3, R4			AL = Motor housing rotated above/left			R2A, R3, R4
54 = 54" of total stroke	R2A, R3, R4			BL = Moto	r housing rotate	d behind/left	R2A, R3, R4
60 = 60" of total stroke	R2A, R3, R4			UL = Moto	r nousing rotate	a under/left	KZA, K3, K4
72 = 72" of total stroke	R2A, R3, R4	nza, nj, n4 R2a R3 R4			TONS mounted inline		824 R3 R4
84 = 84" of total stroke	R3, R4	R3, R4			P = Motor mounted parallel		
96 = 96" of total stroke	R3, R4			PR = Moto	or mounted para	llel/right	R2A, R3, R4
108 = 108" of total stroke	K3, K4			PL = Moto	r mounted paral	lel/left	R2A, R3, R4
* Refer to Alternate AKM servementer and electric outlinder su	stems table on page 72. Conta	et customar suppor	t for AKM combinet	ions outside of t	those listed		

Helfel to Anternate ANN Servinious and electric cynnol systems tools on page 7.2, or ** for custom lengths round up to next standard incremental plus add standard cut fee. *** Contact customer support if C0 is not selected. Note: Options shown in bold blue text are considered standard.

Rodless Actuators R-Series

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MODEL NOMENCLATURE

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P7000 Stepper Drive



MODEL NOMENCLATURE

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CT Series Step Motor



S = Six

KOLLM<u>ORGEN</u>



NEMA 34 K and N Series Step Motor



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NEMA 42 K and N Series Step Motor



MODEL NOMENCLATURE

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NOTES :



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MOTIONEERING® Application Engine

IntroTubiely she Mexic Generation of Grean utages its, 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 MOTIONEERING 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, contact us at: 540-633-3545, support@kollmorgen.com or visit kollmorgen.com for a global contact list.



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KOLLMORGEN

Because Motion Matters™

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