

# DS4 / DS6 Series Precision Tables



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® Servo Motors, DS4 and DS6 Systems Offer

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



## DS Series Design Features

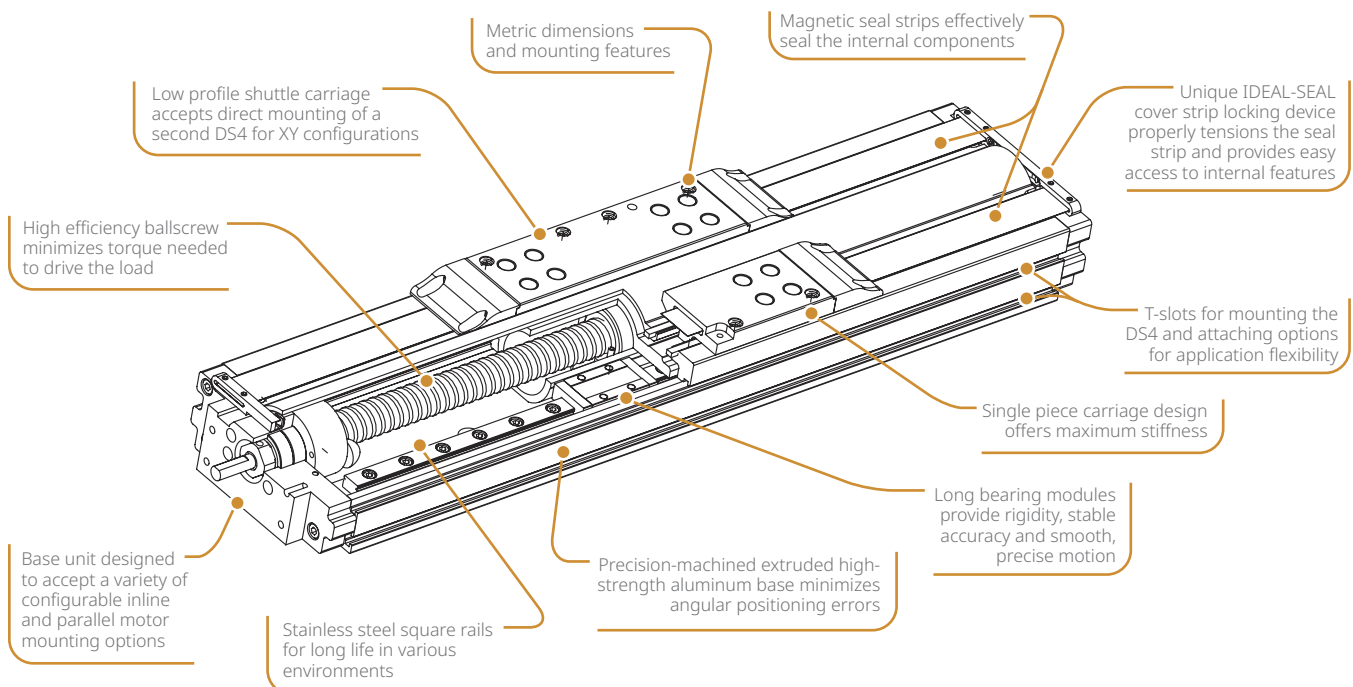
Following are several features that make the DS Series the positioning table of choice for the most demanding applications:

Travel lengths from 50 mm to 2 m cover a wide range of applications.

Precision ballscrew drive, with 5 mm, 10 mm and 25 mm leads, offers high speed and efficiency, excellent repeatability and accuracy, and mechanical advantage.

Proven magnetic stainless steel seal strip technology effectively seals the internal components of the DS Series, protecting the ballscrew and ways from contaminants. This feature also contains ballscrew and way lubrication within the DS Series.

Easily configurable modular design and option set, including a variety of motor mounting orientations, motor sizes and type, ballscrew leads, coupling types and sizes, encoder feedback options, limit/home sensor types, and shaft brakes allow the DS Series to be customized to meet your specific requirements.



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

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

#### Unique IDEAL-SEAL Magnetic Cover Strip Locking Device

Entire length of lead screw and linear bearing system are protected, providing both operator safety and protection from contaminants.

Seal strips are always properly tensioned, drastically decreasing wear that requires regular field repair.

Allows easy access to interior of DS4 for mounting and maintenance.

No small hardware or springs to lose, and no exposure to the sharp ends of the strips, which are problems for similar seal end-cap designs.

#### Configurable Options

DS Series	
Servo motor 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



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



Seal Strips



Limit Sensor



Linear Encoder



Toe Clamp

# DS4 / DS6 Series Precision Tables

## DS4 General Specifications

Travel (mm)	50	100	150	200	250	300	350	400	450	500	550	600
Overall height, less motor (mm)	47											
Width (mm)	95											
System length, Inline less motor (mm)	317	367	417	467	517	567	617	667	717	767	817	867
System length, parallel motor mounts (mm)	300	350	400	450	500	550	600	650	700	750	800	850
Positional accuracy (microns)												
Commercial grade	12	12	14	20	22	24	26	26	28	34	36	40
Precision grade	8	8	10	12	12	14	14	16	19	21	23	25
Straightness & flatness (microns)	6	6	9	12	12	14	18	21	23	23	25	25
Bi-directional repeatability, open loop												
Commercial grade (microns)	+/- 3											
Precision grade (microns)	+/- 1.3											
Load capacity, normal (kg) (max)	170											
Axial load capacity (kg)	90											
Acceleration (max) (m/sec <sup>2</sup> )	20											
Moving mass (kg)	0.75											
Total mass (kg)	2.7	3	3.3	3.6	3.9	4.1	4.4	4.7	5	5.3	5.6	5.9
Ballscrew diameter (mm)	16											
Duty cycle (%)	100											
Ballscrew efficiency	90											
Max. breakaway torque (oz-in)	18											
Max. running torque (oz-in)	16											
Ballscrew lead available (mm)	5, 10											
Input inertia (10 <sup>-5</sup> kg-m <sup>2</sup> )	1.17	1.24	1.67	1.93	2.18	2.43	2.68	2.93	3.19	3.44	3.69	3.94
Max. ballscrew speed (rev/sec)	80				60				55		50	

## DS6 General Specifications

Travel (mm)	100	200	300	400	500	600	700	800	900	1000	1250	1500	1750	2000	
Overall height (mm)	70														
Width (mm)	150														
System length, inline less motor (mm)	465	565	665	765	865	965	1065	1165	1265	1365	1615	1865	2115	2365	
System length, parallel motor mounts (mm)	470	570	670	770	870	970	1070	1170	1270	1370	1620	1870	2120	2370	
Positional accuracy (microns)															
Commercial grade	14	22	28	39	45	48	92	94	103	105	118	134	154	159	
Precision grade	12	14	15	20	25	50	-	-	-	-	-	-	-	-	
Straightness & flatness (microns)	10	14	17	23	30	33	40	46	50	55	76	95	115	135	
Bi-directional repeatability, open loop															
Commercial grade (microns)	+/- 3							+/-5							
Precision grade (microns)	+/- 1.3							N/A							
Load capacity, normal (kg) (max)	630														
Axial load capacity (kg)															
Commercial grade	90							200							
Precision grade	90							N/A							
Acceleration (max) (m/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, 10							5, 10, 25							
Input inertia (10 <sup>-5</sup> 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			50			60			50		

\*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.

## 120 Vac Performance Data

	Sys #	Precision Table - AKM Servo Motor	AKD Servo Drive	Stroke Length Type	Cont. Thrust @ Speed (lb @ in/sec)		Peak Thrust @ Speed (lb @ in/sec)		Max Thrust (lb)	Max System Speed (in/sec)	Max Stroke for Max Speed (mm)
DS4	1	DS4-XXX-10G-AKM23D-■■■■	AKD-X00306	≤ 600 mm	104	17.6	210	10.8	210	17.6	600
	2	DS4-XXX- 5G-AKM23D-■■■■	AKD-X00306	≤ 600 mm	195	8.8	210	8.4	210	8.8	600
DS6	3	DS6-XXX-25G-AKM23D-■■■■	AKD-X00306	≤ 600 mm	37	44.0	138	8.2	138	44.0	600
	4	DS6-XXX-10G-AKM23D-■■■■	AKD-X00306	≤ 600 mm	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
DS6	6	DS6-XXX-25G-AKM23D-■■■■	AKD-X00306	≥ 700 mm	41	44.0	138	8.2	154	44.0	800
	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 Servo Motor	AKD Servo Drive	Stroke Length Type	Cont. Thrust @ Speed (lb @ in/sec)		Peak Thrust @ Speed (lb @ in/sec)		Max Thrust (lb)	Max System Speed (in/sec)	Max Stroke for Max Speed (mm)
DS4	1	DS4-XXX-10G-AKM23D-■■■■	AKD-X00306	≤ 600 mm	98	31.5	210	31.5	210	31.5	300
	2	DS4-XXX- 5G-AKM23D-■■■■	AKD-X00306	≤ 600 mm	184	15.7	210	15.7	210	15.7	300
DS6	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
	7	DS6-XXX- 5G-AKM23D-■■■■	AKD-X00306	≥ 700 mm	138	11.8	440	11.8	440	11.8	700
	8	DS6-XXX-10G-AKM42G-■■■■	AKD-X00306	≤ 600 mm	210	28.4	210	28.4	210	28.4	300
	9	DS6-XXX- 5G-AKM42G-■■■■	AKD-X00306	≤ 600 mm	210	14.5	210	14.5	210	14.5	300
	10	DS6-XXX-25G-AKM42G-■■■■	AKD-X00306	≥ 700 mm	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

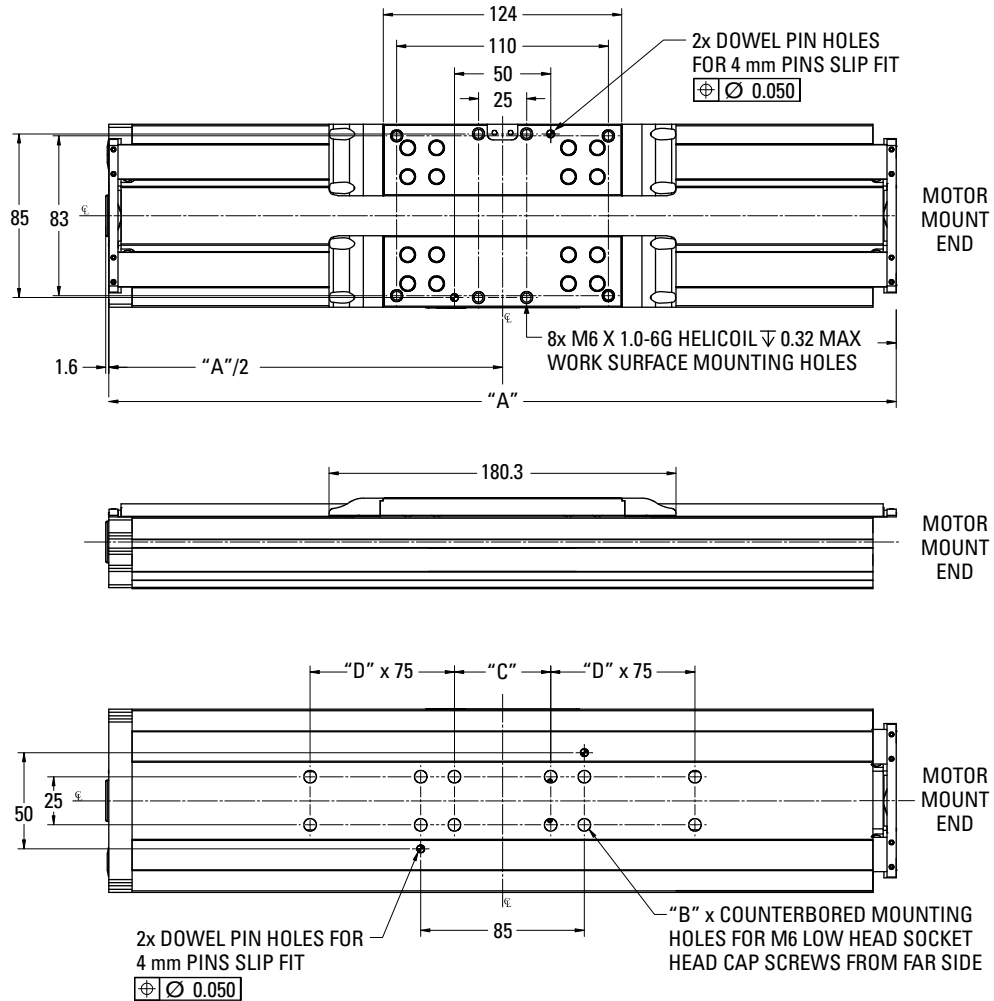
Note 1: Performance based on in-line motor configuration.

Note 2: Contact customer support for matching cables.

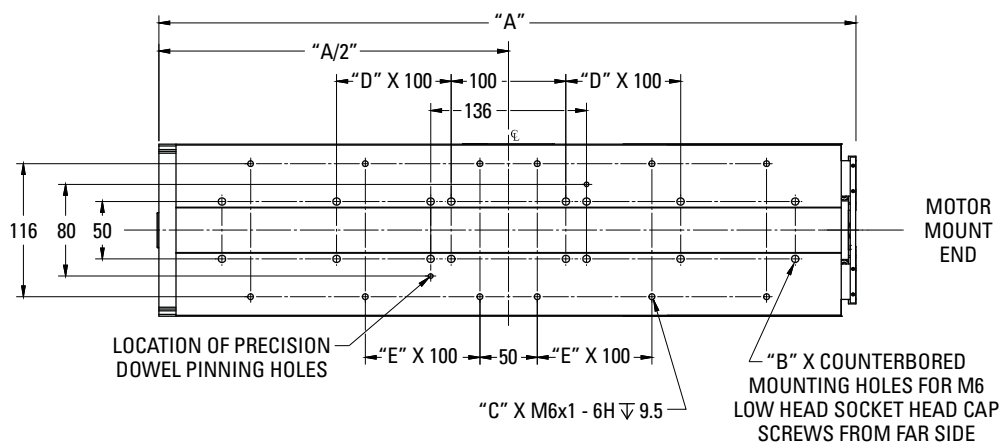
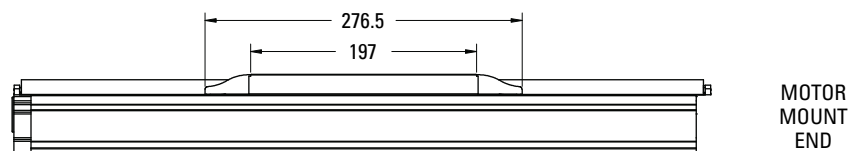
Note 3: For complete AKD and DS4 / DS6 Series model nomenclature, refer to pages 175 and 201 respectively.

# DS4 / DS6 Series Precision Tables

## DS4 Precision Tables Dimensional Data



Model	Travel	"A"	"B"	"C"	"D"
DS4-50	50 mm	259.1	8	150	0
DS4-100	100 mm	309.1	12	50	1
DS4-150	150 mm	359.1	12	50	1
DS4-200	200 mm	409.1	12	50	1
DS4-250	150 mm	459.1	16	50	2
DS4-300	300 mm	509.1	16	50	2
DS4-350	350 mm	559.1	16	50	2
DS4-400	400 mm	609.1	20	50	3
DS4-450	450 mm	659.1	20	50	3
DS4-500	500 mm	709.1	20	50	3
DS4-550	550 mm	759.1	24	50	4
DS4-600	600 mm	809.1	24	50	4



Model	Travel	"A"	"B"	"C"	"D"	"E"
DS6-100	100 mm	408	12	8	1	1
DS6-200	200 mm	508	12	8	1	1
DS6-300	300 mm	608	16	12	2	2
DS6-400	400 mm	708	16	12	2	2
DS6-500	500 mm	808	20	16	3	3
DS6-600	600 mm	908	20	16	3	3
DS6-700	700 mm	1008	24	20	4	4
DS6-800	800 mm	1108	24	20	4	4
DS6-900	900 mm	1208	28	24	5	5
DS6-1000	1000 mm	1308	28	24	5	5
DS6-1250	1250 mm	1558	32	32	6	7
DS6-1500	1500 mm	1808	40	36	8	8
DS6-1750	1750 mm	2058	44	40	9	9
DS6-2000	2000 mm	2308	48	44	10	10