Kollmorgen
Automation and Motion Control

AKI Touch Panels

CLASSIC DRIVE

AKM™ Servo Motors

HYGIENIC

AKMH™ Servo Motors

AKD-N™ Decentralized Servo Drive

KAS Kollmorgen Automation Suite

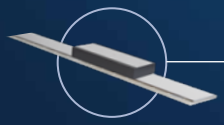
PCMM Motion Controller

DIRECT DRIVE

CDDR
Direct Drive Rotary Motors

Housed DDR Motors

KBM™
Frameless Direct Drive Motors



ICH Direct Drive Linear Motors

AKD™ Servo Drives

AKT I/O Block

KSM Safety Module

KOLLMORGEN®

Because Motion Matters™

AKMH™ Hygienic Stainless Steel Servo Motors

For more than 70 years, Kollmorgen has been developing special motors for use in difficult environments. For example, the remotely controlled submarine vehicle called the Jason Jr. discovered the wreck of the Titanic with the help of Kollmorgen motors developed especially for this purpose.

Reduced recall risk. In the food production industry extremely strict hygiene regulations apply so that public health is not compromised. The stainless-steel AKMH servo motors meet the most demanding requirements in relation to hygiene standards and reduce the risk of product contamination and costly recalls.

Faster cleaning and reduced maintenance times. The stainless steel AKMH servo motors are designed to protection class IP69K and satisfy the requirements of the EHEDG and 3A hygiene regulations. Only materials are used that are FDA-approved and suitable for use with food. These characteristics of the AKMH series enable quick, hygienic cleaning, reduce maintenance times, and therefore increase the overall equipment effectiveness of your production line.

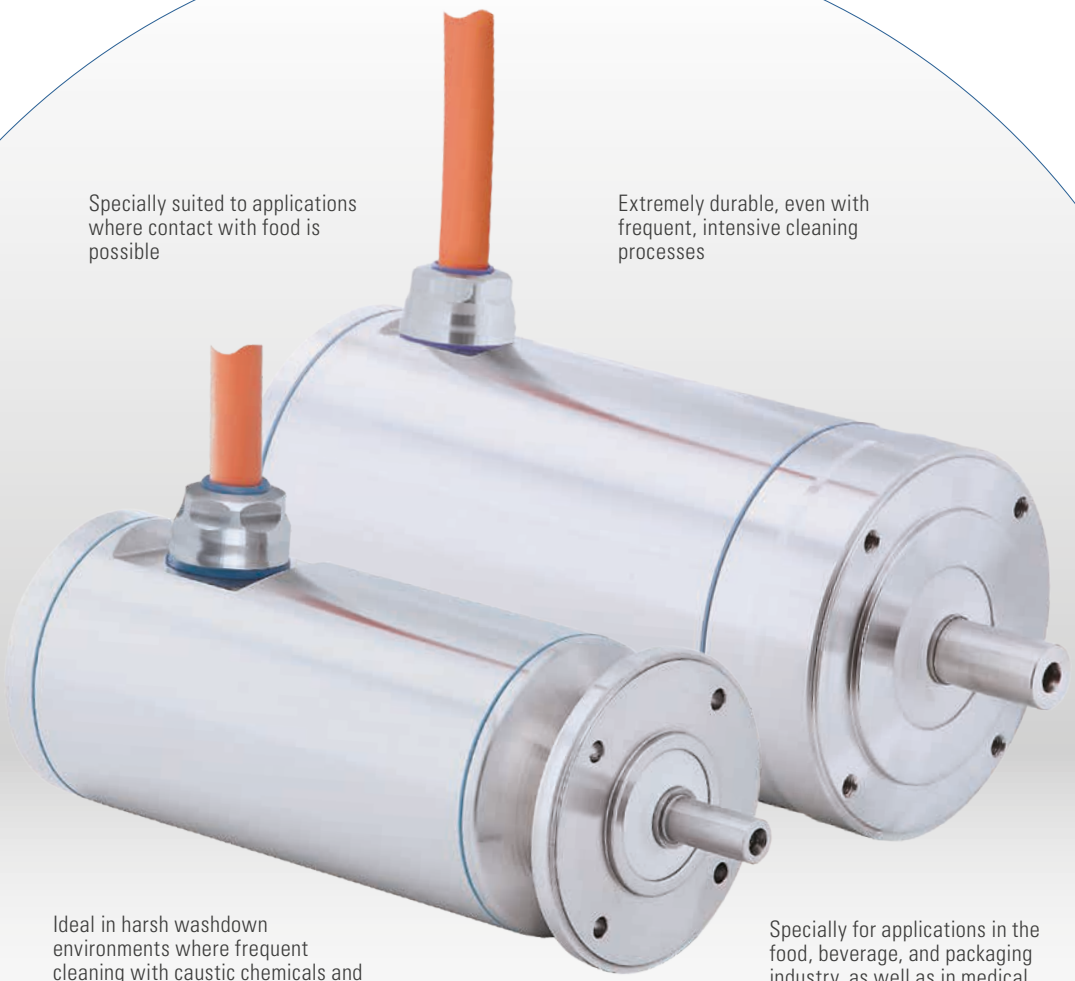
The bottom line. The stainless steel AKMH series of motors has been designed for hygienic machine applications. The large product range with 19 standard motor frame sizes, multiple standard windings, and numerous connection, brake, and cable options makes it easier to choose a motor that satisfies the requirements of the highest standards in the food, beverage, and pharmaceutical industries.

The Advantages of AKMH Hygienic Stainless Steel Servo Motors

Increase in Overall Equipment Effectiveness (OEE)	
Faster and environmentally friendly cleaning	• Open, hygienic machine design without protective housings • Considerably lower consumption of cleaning agents; less dirty water
No machine downtimes as a result of cleaning or corrosion	• Protection class IP69K for motor housing, cable gland, and shaft seal • Designed for regular high-pressure and high-temperature cleaning • Cable and sealing components are resistant to common cleaning agents • No corrosion inside the motor: Pressure compensation through the cable prevents moisture in the motor
Lower operating costs	• Higher machine availability due to quicker cleaning • Faster cleaning reduces the consumption of cleaning agents and energy • High energy efficiency due to motor / servo drive combination with a high degree of efficiency
Higher throughput	• Quick and precise drives in combination with the AKD servo drives • Process monitoring and optimization with Kollmorgen's software tools
Lower risk of recalls	
Hygiene-optimized housing design	• Housing is 1.4404 stainless steel 316L with smooth surface prevents the build-up of pathogens • Fluids drained with vertical installation thanks to convex cover • No place for pathagens to hide - no nooks and crannies in housing design • Thanks to a laser annealed nameplate, the surface finish is undisturbed
Use of approved hygienic components	• Bearing lubrication and shaft seals FDA-approved • Observance of the EHEDG and 3A Sanitary Certificate hygienic regulations
Hygienic cable technology	• Silicon tubing option provides an FDA-approved cable option suitable for use with food • Low cabling costs due to single-cable technology - no need for expensive stainless steel conduit • Non absorbant cabling prevent pathogens from hiding in the cable jacket material
Reduced development times and design freedom	
Ideal motor design	• Large selection of standard motors allowing customers to optimize their motor selection • 19 frame sizes, flange and shaft measurements as per IEC and NEMA • Continuous torques up to 22 Nm, peak torques up to 92 Nm • Speeds up to 8000 rpm^{-1} • SFD3 and Hiperface DSL digital feedback systems • Brake and cable options
Simple start-up and parameterization	• Plug-and-play connection with pre-assembled connectable cables, no screw connections • Simple machine architecture due to single-cable and decentralized connection technology • Digital nameplate for quick start-up • Software tools for parameterization and drive monitoring
Low energy consumption	• High efficiency due to permanent magnet technology • 20% less derating due to special motor design
Kollmorgen support	• Kollmorgen's global support team has wealth of industry knowledge to help optimize your machine
Co-engineering	• Kollmorgen welcomes customization to help optimize your motor/drive solution

AKMH Hygienic Stainless Steel Servo Motors

The new stainless steel AKMH motors have been designed for hygienic machine applications in wet areas with food contact in accordance with the EHEDG regulations and they comply with 3A, USDA and NFS hygiene standards. Shorter cleaning times and high reliability ensure noticeably greater overall equipment effectiveness.



Specially suited to applications where contact with food is possible

Extremely durable, even with frequent, intensive cleaning processes

Ideal in harsh washdown environments where frequent cleaning with caustic chemicals and high pressure water are required.

Specially for applications in the food, beverage, and packaging industry, as well as in medical devices

Higher Productivity Due to Quicker Cleaning

- Ideal for machines with an open design
- No costly protective equipment; no hidden spaces to trap pathogens
- Quick, easy, yet safe cleaning

Reduced Recall Risk

- Lubricants and seals meet FDA standards.
- Round, stainless steel housing with a roughness of < 0.8 µm and the design of all edges with radii of R1.5 prevent dirt deposits

Higher Machine Uptime

- IP69K: Motor is protected for water pressures up to 100 Bar
- Cable is directly mounted to motor; no connectors to fail or trap pathogens
- Single-cable technology with digital feedback (SFD3 or HIPERFACE® DSL digital resolvers); less cabling to clean

Outstanding Efficiency Thanks to Novel Motor Design

- Torque derating under 20%
- High speeds of up to 8000 RPM offer more flexibility for gearbox attachment and higher productivity due to higher output speeds with the same torque
- AKMH2 is the most compact hygienic servo motor on the market

Optimized Motion Thanks to 19 Frame Sizes

- 5 sizes each with 4 rotor lengths and winding options for perfect adaptation to servo drives
- Two housing shapes for front and flange mounting

One Source for Your Complete Automation Solution

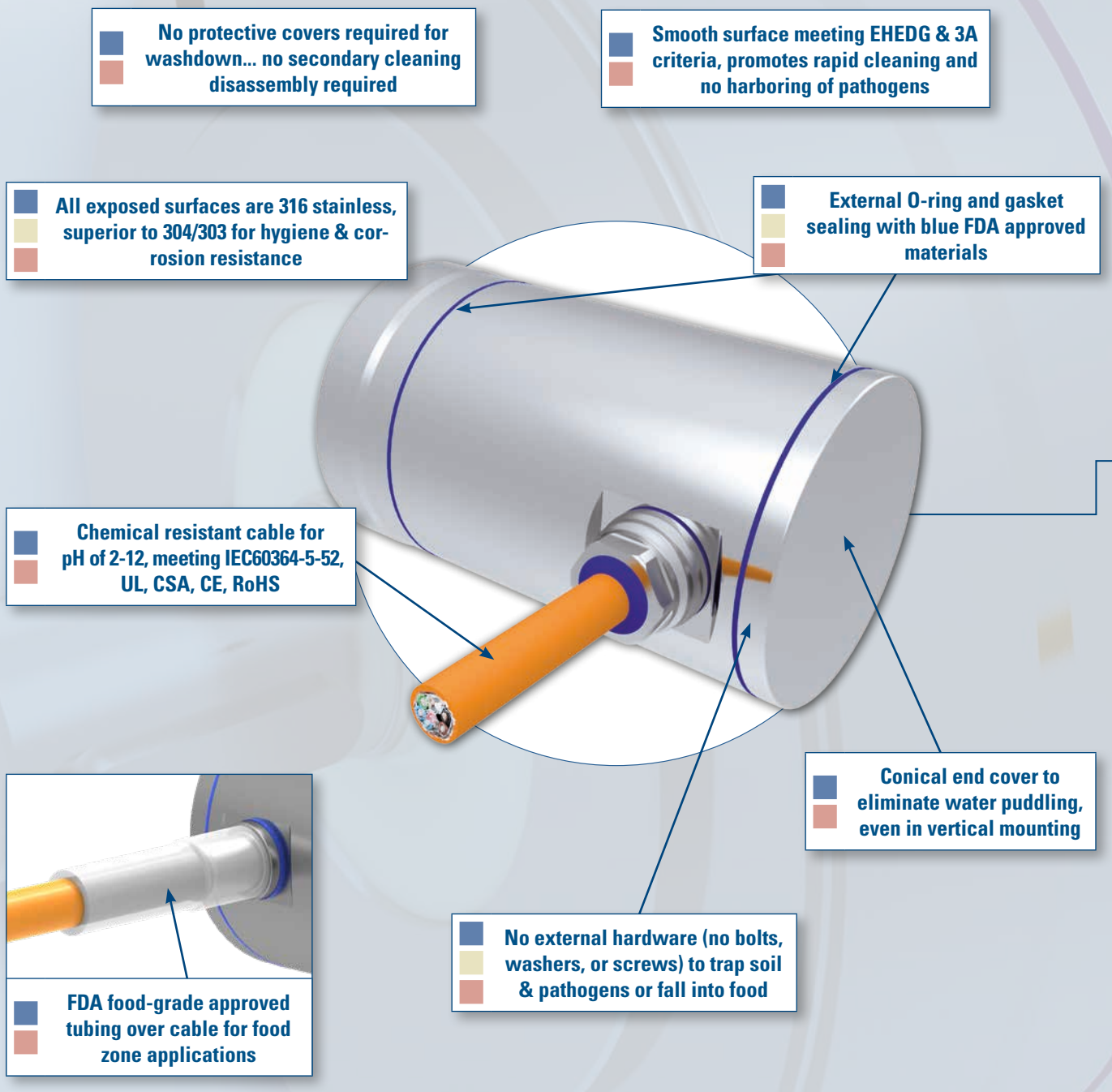
- The Kollmorgen Automation Suite provides all the tools for motion and PLC programming and for drive management in operation
- AKD-PDMM multi-axis controller: The 3-in-1 solution combines servo drive, motion controller, and PLC in one device

Thanks to the open machine design without protective housings, machines can also be cleaned quickly and safely using high-pressure and high-temperature processes.

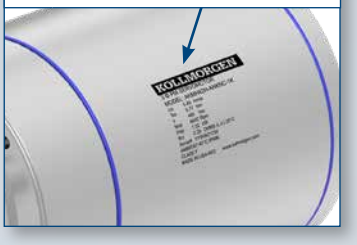
AKMH™ Design Features

The key benefits of AKMH clean design features:

- Reduces risk of food recall
- Increases reliability in wash-down application
- Reduces cleaning time: higher OEE



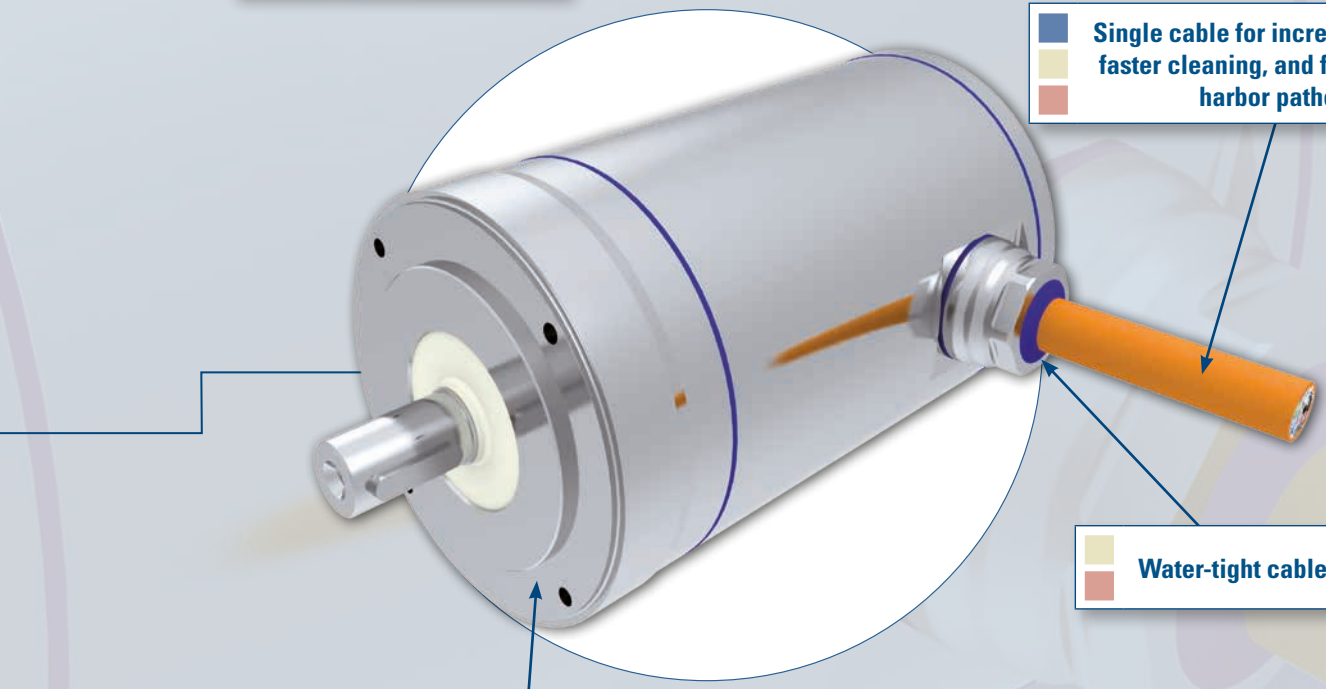
Hygienic marking method eliminates harboring of pathogens



Unique design technique to eliminate condensation

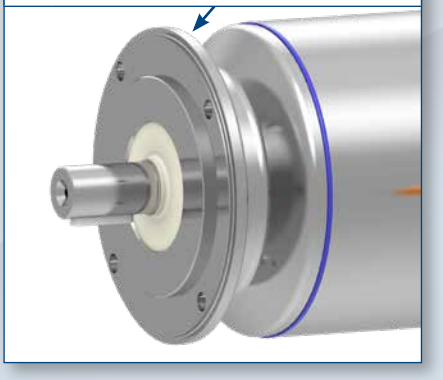
Dual cable option for use with 3rd party drives

Single cable for increased reliability, faster cleaning, and fewer places to harbor pathogens

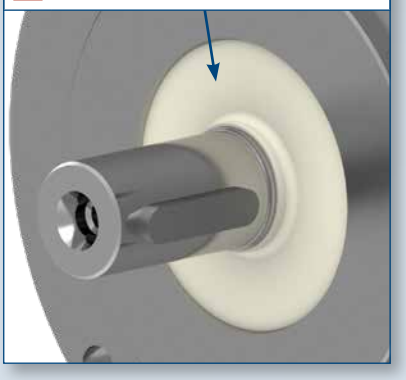


Water-tight cable exit

Face Mount for most hygienic design, Flange Mount option for easy mounting



Hygienic, IP69K shaft seal, special shaft treatment for long life



AKMH Hygienic Stainless Steel Servo Motors

Performance Data

AKMH Servo Motor	Cont. Torque at Stall Tcs [Nm] ①②③	Continuous Current I_0 [A] ①②③	Peak Torque at stall Tps [Nm] ①②③	160 V DC			320 V DC V			560 V DC			640 V DC			Inertia (Jm) [kg·cm²]	Weight [kg]
				Rated Speed Nrtd [RPM]	Rated Torque Trtd [Nm] ①②③	Rated Power Prtd [kW] ①②③	Rated Speed Nrtd [RPM]	Rated Torque Trtd [Nm] ①②③	Rated power P_n [kW] ①②③	Rated Speed Nrtd [RPM]	Rated Torque Trtd [Nm] ①②③	Rated Power Prtd [kW] ①②③	Rated Speed Nrtd [RPM]	Rated Torque Trtd [Nm] ①②③	Rated Power Prtd [kW] ①②③		
21C	0.31	1.37	1.76	2500	0.33	0.09	8000	0.22	0.18	8000	0.21	0.18	8000	0.21	0.18	0.11	3.6
21E	0.36	2.67	1.81	7000	0.26	0.19	–	–	–	–	–	–	–	–	–	0.11	3.6
21G	0.37	4.10	1.60	–	–	–	–	–	–	–	–	–	–	–	–	0.11	3.6
22C	0.61	1.19	3.16	1000	0.63	0.07	3500	0.60	0.22	8000	0.41	0.34	8000	0.40	0.34	0.16	4.1
22E	0.65	2.32	3.23	3500	0.61	0.22	8000	0.60	0.22	–	–	–	–	–	–	0.16	4.1
22G	0.64	3.98	3.27	7000	0.47	0.34	–	–	–	–	–	–	–	–	–	0.16	4.1
23D	0.83	1.88	4.37	1500	0.87	0.14	5000	0.73	0.38	8000	0.49	0.41	8000	0.46	0.39	0.22	4.6
23E	0.90	2.39	4.43	2500	0.86	0.23	6500	0.66	0.45	–	–	–	–	–	–	0.22	4.6
23F	0.88	3.63	4.46	4500	0.78	0.37	8000	0.48	0.40	–	–	–	–	–	–	0.22	4.6
24D	1.10	1.96	5.35	1500	1.10	0.17	4000	0.97	0.41	8000	0.52	0.44	8000	0.47	0.39	0.27	5.1
24E	1.15	2.52	5.36	2000	1.10	0.23	5500	0.88	0.51	–	–	–	–	–	–	0.27	5.1
24F	1.12	3.42	5.39	3000	1.04	0.33	8000	0.53	0.44	–	–	–	–	–	–	0.27	5.1
31C	0.91	1.24	3.76	–	–	–	2500	0.86	0.23	5000	0.72	0.38	6000	0.5	0.41	0.33	4.1
31E	0.96	2.64	3.88	2500	0.91	0.24	6000	0.68	0.43	–	–	–	–	–	–	0.33	4.1
31H	0.99	5.04	3.95	6000	0.71	0.45	–	–	–	–	–	–	–	–	–	0.33	4.1
32C	1.68	1.30	6.92	–	–	–	1500	1.62	0.25	3000	1.47	0.46	3500	1.41	0.52	0.59	5.0
32E	1.69	2.49	7.06	–	–	–	3500	1.53	0.53	7000	0.71	0.52	8000	0.22	0.18	0.59	5.0
32H	1.77	4.81	7.21	3000	1.61	0.51	7000	0.71	0.52	–	–	–	–	–	–	0.59	5.0
33C	2.46	1.37	9.94	–	–	–	1000	2.42	0.25	2000	2.29	0.48	2500	2.22	0.58	0.85	5.9
33E	2.51	2.34	10.19	–	–	–	2000	2.38	0.50	4500	1.85	0.87	5000	1.68	0.88	0.85	5.9
33H	2.60	5.00	10.43	2500	2.41	0.63	5500	1.56	0.90	–	–	–	–	–	–	0.85	5.9
41C	1.77	1.46	5.75	–	–	–	1500	1.73	0.27	3000	1.61	0.51	3500	1.56	0.57	0.81	6.1
41E	1.75	2.73	5.84	1500	1.77	0.28	3000	1.64	0.52	6000	1.26	0.79	6000	1.22	0.77	0.81	6.1
41H	1.83	5.34	5.92	3000	1.71	0.54	6000	1.29	0.81	–	–	–	–	–	–	0.81	6.1
42C	3.15	1.41	10.62	–	–	–	–	–	–	1500	3.02	0.47	2000	2.94	0.62	1.45	7.4
42E	3.12	2.64	10.79	–	–	–	2000	2.97	0.62	3500	2.60	0.95	4000	2.43	1.02	1.45	7.4
42H	3.15	5.64	11.04	2000	3.15	0.66	4500	2.40	1.13	6000	0.82	0.52	6000	0.46	0.29	1.45	7.4
42J	3.37	8.11	11.08	3000	3.02	0.95	6000	1.27	0.80	–	–	–	–	–	–	1.45	7.4
43E	4.38	2.61	15.50	–	–	–	1500	4.25	0.67	2500	3.89	1.02	3000	3.65	1.15	2.09	8.8
43H	4.55	5.22	15.65	–	–	–	3000	3.94	1.24	6000	0,12	0.08	6000	0.82	0.47	2.09	8.8
43L	4.02	9.92	15.58	3000	3.48	1.09	5500	0.45	0.26	–	–	–	–	–	–	2.09	8.8
44E	5.41	2.70	19.77	–	–	–	1000	5.29	0.55	2000	4.83	1.01	2500	4.56	1.19	2.73	10.2
44H	5.40	5.23	19.73	–	–	–	2500	4.72	1.24	5000	1.96	1.03	5000	1.27	0.66	2.73	10.2
44K	5.42	9.41	19.75	2000	4.96	1.04	5000	1.83	0.96	–	–	–	–	–	–	2.73	10.2
51E	3.92	2.61	10.09	–	–	–	1500	3.83	0.60	2500	3.58	0.94	3000	3.44	1.08	3.42	8.9
51H	3.80	5.45	10.17	–	–	–	3000	3.44	1.08	5500	2.20	1.27	5500	2.05	1.18	3.42	8.9
51L	3.89	10.58	10.33	3000	3.54	1.11	5500	2.16	1.24	–	–	–	–	–	–	3.42	8.9

① Motor winding excess temperature, ΔT = 100 K with ambient temperature = 40°C

②All specifications refer to sinusoidal supply

③ Rated data with reference flange (aluminum, dims (mm): AKMH2, AKMH3, AKMH4: 254 x 254 x 6.35 AKMH5: 305 x 305 x 12.7 AKMH6: 457 x 457 x 12.7)

Performance Data

AKMH Servo Motor	Cont. Torque at Stall Tcs [Nm] ①②③	Continuous Current I_0 [A] ①②③	Peak Torque at stall Tps [Nm] ①②③	160 V DC			320 V DC V			560 V DC			640 V DC			Inertia [Jm] [kg-cm²]	Weight [kg]
				Rated Speed Nrtd [RPM]	Rated Torque Trtd [Nm] ①②③	Rated Power Prtd [kW] ①②③	Rated Speed Nrtd [RPM]	Rated Torque Trtd [Nm] ①②③	Rated power P_n [kW] ①②③	Rated Speed Nrtd [RPM]	Rated Torque Trtd [Nm] ①②③	Rated Power Prtd [kW] ①②③	Rated Speed Nrtd [RPM]	Rated Torque Trtd [Nm] ①②③	Rated Power Prtd [kW] ①②③		
52E	6.69	2.68	18.79	–	–	–	–	–	–	1500	6.41	1.01	2000	6.22	1.30	6.22	11.1
52H	6.72	5.17	19.01	–	–	–	1500	6.54	1.03	3500	5.22	1.91	4000	4.54	1.90	6.22	11.1
52L	6.66	9.87	19.30	–	–	–	3500	5.30	1.94	4500	2.46	1.16	4500	1.27	0.60	6.22	11.1
52M	6.70	11.15	19.20	–	–	–	4500	3.76	1.77	–	–	–	–	–	–	6.22	11.1
53H	9.45	5.92	26.74	–	–	–	–	–	–	3000	6.82	2.14	3500	5.88	2.16	9.12	13.4
53L	8.99	10.09	26.95	–	–	–	3000	6.83	2.15	3500	3.62	1.33	3500	2.29	0.84	9.12	13.4
53P	8.30	15.66	26.56	–	–	–	3500	3.66	1.34	–	–	–	–	–	–	9.12	13.4
54H	13.21	5.30	35.62	–	–	–	1000	12.88	1.35	2000	11.45	2.40	2000	11.26	2.36	11.90	15.7
54L	12.10	11.29	35.65	–	–	–	2500	9.74	2.55	3000	6.76	2.12	–	–	–	11.90	15.7
54P	11.83	16.58	36.08	–	–	–	3000	7.19	2.26	–	–	–	–	–	–	11.90	15.7
62H	10.6	5.32	32.24	–	–	–	1000	10.14	1.06	2000	9.15	1.92	2000	9.07	1.90	16.90	19.6
62L	10.10	11.05	33.03	–	–	–	2500	8.33	2.18	4000	3.77	1.58	4000	2.94	1.23	16.90	19.6
62M	10.30	12.53	33.13	–	–	–	3000	7.82	2.46	4000	3.22	1.35	4000	2.07	0.87	16.90	19.6
63H	14.60	5.42	44.73	–	–	–	–	–	–	1500	13.30	2.09	2000	12.61	2.64	24.20	23.1
63L	14.10	10.23	45.29	–	–	–	2000	12.47	2.61	3000	9.81	3.08	3500	7.64	2.80	24.20	23.1
63M	14.20	12.59	46.02	–	–	–	2000	12.47	2.61	4000	4.76	1.99	4000	3.04	1.27	24.20	23.1
64K	18.00	8.74	55.79	–	–	–	1000	17.34	1.82	2000	15.40	3.23	2500	14.19	3.71	31.60	26.7
64L	17.90	11.87	56.46	–	–	–	1500	16.57	2.60	3000	12.19	3.83	3500	9.29	3.40	31.60	26.7
65K	21.4	9.33	65.87	–	–	–	1000	20.65	2.16	2000	18.40	3.85	2500	17.00	4.45	40.00	30.2
65L	21.50	11.44	66.72	–	–	–	1500	20.01	3.14	2500	16.97	4.44	3000	14.68	4.61	40.00	30.2
65M	21.10	12.57	66.63	–	–	–	1500	19.64	3.09	3000	14.63	4.60	3000	13.78	4.33	40.00	30.2

① Motor winding excess temperature, ΔT = 100 K with ambient temperature = 40°C

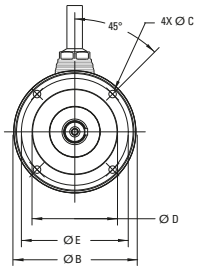
② All specifications refer to sinusoidal supply

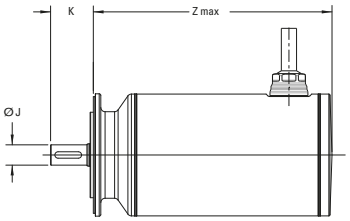
③ Rated data with reference flange (aluminum, dims (mm): AKMH2, AKMH3, AKMH4: 254 x 254 x 6.35 AKMH5: 305 x 305 x 12.7 AKMH6: 457 x 457 x 12.7)

Flange / Shaft Combinations

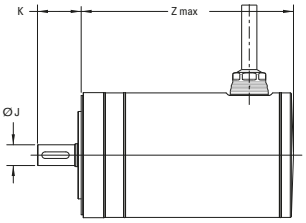
Mounting	Flange	Flange	Flange	Flange	Front	Front	Front	Front	Front	Front	Flange	Flange	Front	Front	Flange
Standard	IEC	IEC	NEMA	NEMA	IEC	IEC	NEMA	NEMA	NEMA	NEMA	IEC	IEC	IEC	IEC	NEMA
Shaft	Closed Keyway	Smooth	Open Keyway	Smooth	Closed Keyway	Smooth	Open Keyway	Smooth	Open Keyway	Smooth	Closed Keyway	Smooth	Closed Keyway	Smooth	Open Keyway
AKMH 2x	●	●	–	●	●	●	–	●	–	–	–	–	–	–	–
AKMH 3x	●	●	–	●	●	–	–	–	–	–	–	–	–	–	–
AKMH 4x	●	●	●	●	●	●	●	●	●	●	–	–	–	–	●
AKMH 5x	●	●	●	●	●	●	●	●	●	●	●	●	●	●	–
AKMH 6x	●	●	–	–	●	●	●	●	●	●	–	–	–	–	–

AKMH Hygienic Stainless Steel Servo Motors

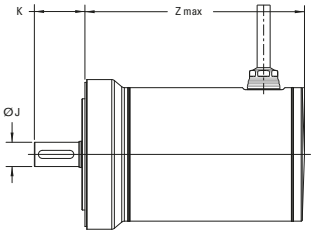




AKMH flange mounting

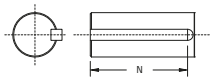


AKMH front mounting

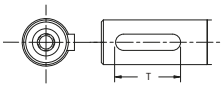


Only AKMH5x front mounting

Open keyway (BK, CN, DK versions)



Closed keyway (AC, BN, GC, HC versions)



Dimensions (mm)

Model	Z max. SFD3 digital resolver		Z max. Hiperface DSL		Flange
	without brake	with brake	without brake	with brake	ØB
AKMH21	167.2	201.2	180.2	214.2	79
AKMH22	186.2	220.2	199.2	233.2	79
AKMH23	205.2	239.2	218.2	252.2	79
AKMH24	224.2	258.2	237.2	271.2	79
AKMH31	166.5	198.0	182.5	214.0	89
AKMH32	197.5	229.0	213.5	245.0	89
AKMH33	228.5	260.0	244.5	276.0	89
AKMH41	166.7	201.0	182.7	217.0	113
AKMH42	195.7	230.0	211.7	246.0	113
AKMH43	224.7	259.0	240.7	275.0	113
AKMH44	253.7	288.0	269.7	304.0	113
AKMH51	187.4	229.4	198.4	240.4	148
AKMH52	218.4	260.4	229.4	271.4	148
AKMH53	249.4	291.4	260.4	302.4	148
AKMH54	280.4	322.4	291.4	333.4	148
AKMH61	209.9	256.5	220.9	267.5	186
AKMH62	234.9	281.5	245.9	292.5	186
AKMH63	259.9	306.5	270.9	317.5	186
AKMH64	284.9	331.5	295.9	342.5	186

Dimensions (mm)

AKMH XX-		AC	AN	BK	BN	CC	CN	DK	DN	EK	EN	GC	GN	HC	HN	LK
Mounting		Flange		Flange		Front	Front	Front	Front	Front	Front	Flange	Flange	Front	Front	Flange
Standard		IEC		NEMA		IEC	IEC	NEMA	NEMA	NEMA	NEMA	IEC	IEC	IEC	IEC	NEMA
Shaft		Closed Keyway	Smooth	Open Keyway	Smooth	Closed Keyway	Smooth	Open Keyway	Smooth	Open Keyway	Smooth	Closed Keyway	Smooth	Closed Keyway	Smooth	Open Keyway
AKMH 2x	Ø C	4.80		–	5.10	M4 x 0.7 x 8.0		–	UNF10-32	–		–		–		–
	Ø D	40		–	38.10	40		–	38.1	–		–		–		–
	Ø E	63		–	66.68	63		–	66.68	–		–		–		–
	Ø J	11		–	9.524	11		–	9.524	–		–		–		–
	K	30		–	31.8	30.0		–	31.8	–		–		–		–
	N/T	T = 16	NA	–	NA	T = 16	NA	–	NA	–		–		–		–
AKMH 3x	Ø C	5.80		–		M5 x 0.8 x 10.0		–		–		–		–		–
	Ø D	60		–		60		–		–		–		–		–
	Ø E	75		–		75		–		–		–		–		–
	Ø J	14		–		14		–		–		–		–		–
	K	30		–		30.0		–		–		–		–		–
	N/T	T = 16	NA	–		T = 16	NA	–		–		–		–		–
AKMH 4x	Ø C	7.0		6.91		M6 x 1 x 12		UNC 1/4 - 20 x 12.3		M6 x 1 x 12		–		–		UNC 3/8 - 16 x 19.1
	Ø D	80		73.025		80		73.025	73	80		–		–		114.30
	Ø E	100		98.43		100		98.43		100		–		–		149.23
	Ø J	19		15.875		19		15.875		16		–		–		15.862
	K	40.0		52.40		40.0		52.40		52.40		–		–		50.8
	N/T	T = 25	NA	N = 34.93	NA	T = 25	NA	N = 34.93	NA	N = 30.00	NA	–		–		T = 25
AKMH 5x	Ø C	9		8.33		M8 x 1.25 x 16.0		UNC 3/8 - 16 x 19.05		M8 x 1.25 x 16.0		9		M8 x 1.25 x 16.0		–
	Ø D	110		55.560		110		55.563		110		95		95		–
	Ø E	130		125.73		130		125.73		130		115		115		–
	Ø J	24		19.05		24		19.05		24		24		24		–
	K	50.0		57.15		50.0		57.15		50.0		50.0		50.0		–
	D	T = 36	NA	N = 38.1	NA	T = 36	NA	N = 38.1	NA	N = 36.00	NA	T = 36	NA	T = 36	N = 38.1	–
AKMH 6x	Ø C	11.00		–		M10 x 1.5 x 20.0		UNC 3/8 - 16 x 19.05		M10 x 1.5 x 20.0		–		–		–
	Ø D	130		–		130		114.3		130		–		–		–
	Ø E	165.0		–		165.0		149.23		165.0		–		–		–
	Ø J	32		–		32		28.580		28		–		–		–
	K	58		–		58		69.9		60.0		–		–		–
	D	40	NA	–		T = 40	NA	N = 38.10	NA	N = 45.00	NA	–		–		–