

Spindle Motor

Ratings and Specifications

Single-winding Motor

Items		Model: UAKAJ-□□C (200 V), -□□C□□□□E (400 V)									
		04	06	08	11	15	19	22	30 ^{*2}	37 ^{*2}	45 ^{*2}
50% ED Rating (S3) ^{*1}	kW	3.7	5.5	7.5	11	15	18.5	22	30	37	45
Continuous Rating (S1)	kW	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37
Continuous Rated Torque	N·m	14	24	35	48	70	96	118	183	249	307
Base Speed	min ⁻¹	1500							1150		
Maximum Speed	min ⁻¹	10000				7000			6000		5000
Moment of Inertia	× 10 ⁻³ kg·m ²	7.1	14.0	21.0	25.0	69.0	69.0	89.0	231	266	398
Vibration		V5									V10
Noise	dB (A)	75 or less							80 or less		
Cooling Method		Totally enclosed, external fan cooled									
Protection Class		IP44 (IEC34-5)									
Cooling Fan Motor		Equipped with thermostat (automatic reset) 200 V class: Three-phase 200 V 50/60 Hz, 220 V 50/60 Hz, 230 V 60 Hz 400 V class: Three-phase 400 V 50/60 Hz, 440 V 50/60 Hz, 460 V 60 Hz									
Encoder (Magnetic)		Pulse encoder (1024 p/r)									
Overheating Protection		NTC thermistor									
Installation		Flange type: IM B5, IM V1 (motor shaft from horizontal to vertically down) Foot-mounted type: IM B3 (installed on floor)									
Overload Capacity		200% of continuous rated (S1) output for 10 s (UAKAJ-08, -37: 180% of continuous rated (S1) output for 10 s)									
Thermal Class		F									
Withstand Voltage		200 V class: 1500 VAC for one minute 400 V class: 1800 VAC for one minute									
Insulation Resistance		500 VDC 10 MΩ minimum									
Surrounding Air Temperature and Surrounding Air Humidity		0°C to 40°C, 20% to 80% RH (no condensation)									
Altitude		1000 m or less									
Bearing Lubrication		Grease									
Paint Color		Munsell N1.5									
Compliant Standards		JIS, JEC									
Applicable SERVOPACK CACR-JU□□□	Three-phase 200 VAC	028A	028A	036A	065A	065A	084A	102A	125A	196A	196A
	Three-phase 400 VAC	014D	014D	018D	033D	033D	042D	051D	—	—	—

*1. The 50% ED rating (S3) is for a 10 minute cycle consisting of 5 minutes of operation and 5 minutes stopped.

*2. Available only for three-phase, 200 VAC models.

Winding Selection Motor

Items		Model: UAKBJ-□□C (200 V), -□□C□□□□E (400 V)						
		06	08	11	15	19	22	30*2
50% ED Rating (S3)*1	kW	5.5	7.5	11	15	18.5	22	30
Continuous Rating (S1)	kW	3.7	5.5	7.5	11	15	18.5	20
Continuous Rated Torque	N·m	71	105	143	263	249	307	332
Base Speed	min ⁻¹	500			400	575		
Maximum Speed	min ⁻¹	7000			6000			5000
Moment of Inertia	× 10 ⁻³ kg·m ²	69.0	69.0	89.0	231.0	231.0	266.0	398.0
Vibration		V5						V10
Noise	dB (A)	75 or less			80 or less			
Cooling Method		Totally enclosed, external fan cooled						
Protection Class		IP44 (IEC34-5)						
Cooling Fan Motor		Equipped with thermostat (automatic reset) 200 V class: Three-phase 200 V 50/60 Hz, 220 V 50/60 Hz, 230 V 60 Hz 400 V class: Three-phase 400 V 50/60 Hz, 440 V 50/60 Hz, 460 V 60 Hz						
Encoder (Magnetic)		Pulse encoder (1024 p/r)						
Overheating Protection		NTC thermistor						
Installation		Flange type: IM B5, IM V1 (motor shaft from horizontal to vertically down) Foot-mounted type: IM B3 (installed on floor)						
Overload Capacity		200% of continuous rated (S1) output for 10 s						
Thermal Class		F						
Withstand Voltage		200 V class: 1500 VAC for one minute 400 V class: 1800 VAC for one minute						
Insulation Resistance		500 VDC 10 MΩ min.						
Surrounding Air Temperature and Surrounding Air Humidity		0°C to 40°C, 20% to 80% RH (no condensation)						
Altitude		1000 m or less						
Bearing Lubrication		Grease						
Paint Color		Munsell N1.5						
Compliant Standards		JIS, JEC						
Applicable SERVOPACK CACR-JU□□□	Three-phase 200 VAC	028A	036A	065A	065A	084A	102A	125A
	Three-phase 400 VAC	014D	018D	033D	033D	042D	051D	—

*1. The 50% ED rating (S3) is for a 10 minute cycle consisting of 5 minutes of operation and 5 minutes stopped.

*2. Available only for three-phase, 200 VAC models.

Output and Torque Characteristics

Single-winding Motors

Model UAKAJ-	Output Characteristics	Torque Characteristics
04C		
06C		
08C		
11C		
15C		

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Model UAKAJ-	Output Characteristics	Torque Characteristics
19C	Output (kW) Motor speed (min⁻¹) 1500 4000 6000 7000 30 10 second rating 18.5 50%ED rating 15 Continuous rating 17.0 15.8 12.8	Torque (N·m) Motor speed (min⁻¹) 1500 4000 6000 7000 191 10 second rating 118 50%ED rating 95.5 Continuous rating
22C	Output (kW) Motor speed (min⁻¹) 1500 4000 6000 7000 37 10 second rating 22 50%ED rating 18.5 Continuous rating 21.1 18.8 15.8	Torque (N·m) Motor speed (min⁻¹) 1500 4000 6000 7000 236 10 second rating 140 50%ED rating 118 Continuous rating
30C	Output (kW) Motor speed (min⁻¹) 1150 3700 4500 6000 44 10 second rating 30 50%ED rating 22 Continuous rating 27.1 22.5 16.5	Torque (N·m) Motor speed (min⁻¹) 1150 3700 4500 6000 365 10 second rating 249 50%ED rating 183 Continuous rating
37C	Output (kW) Motor speed (min⁻¹) 1150 3700 4500 6000 54 10 second rating 37 50%ED rating 30 Continuous rating 33.3 27.7 22.5	Torque (N·m) Motor speed (min⁻¹) 1150 3700 4500 6000 449 10 second rating 307 50%ED rating 249 Continuous rating
45C	Output (kW) Motor speed (min⁻¹) 1150 2800 3300 5000 74 10 second rating 45 50%ED rating 37 Continuous rating 41.4 29.7 24.4	Torque (N·m) Motor speed (min⁻¹) 1150 2800 3300 5000 615 10 second rating 374 50%ED rating 307 Continuous rating

Winding Selection Motors

Model UAKBJ-	Output Characteristics	Torque Characteristics
06C	High-speed winding Output (kW) Motor speed (min⁻¹)	High-speed winding Torque (N·m) Motor speed (min⁻¹)
	Low-speed winding Output (kW) Motor speed (min⁻¹)	Low-speed winding Torque (N·m) Motor speed (min⁻¹)
08C	High-speed winding Output (kW) Motor speed (min⁻¹)	High-speed winding Torque (N·m) Motor speed (min⁻¹)
	Low-speed winding Output (kW) Motor speed (min⁻¹)	Low-speed winding Torque (N·m) Motor speed (min⁻¹)

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Model UAKBJ-	Output Characteristics	Torque Characteristics
11C	High-speed winding Output (kW) 15 10 second rating 11 50%ED rating 7.5 Continuous rating 1500 5000 6000 7000 Motor speed (min⁻¹)	High-speed winding Torque (N·m) 95.5 10 second rating 70.0 50%ED rating 47.8 Continuous rating 1500 5000 6000 7000 Motor speed (min⁻¹)
	Low-speed winding Output (kW) 13.2 10 second rating 11 50%ED rating 7.5 Continuous rating 500 1500 Motor speed (min⁻¹)	Low-speed winding Torque (N·m) 252 10 second rating 210 50%ED rating 143 Continuous rating 500 1500 Motor speed (min⁻¹)
15C	High-speed winding Output (kW) 22 10 second rating 15 50%ED rating 11 Continuous rating 1000 3800 4800 6000 Motor speed (min⁻¹)	High-speed winding Torque (N·m) 210 10 second rating 143 50%ED rating 105 Continuous rating 1000 3800 4800 6000 Motor speed (min⁻¹)
	Low-speed winding Output (kW) 18 10 second rating 15 50%ED rating 11 Continuous rating 400 1000 Motor speed (min⁻¹)	Low-speed winding Torque (N·m) 430 10 second rating 358 50%ED rating 263 Continuous rating 400 1000 Motor speed (min⁻¹)

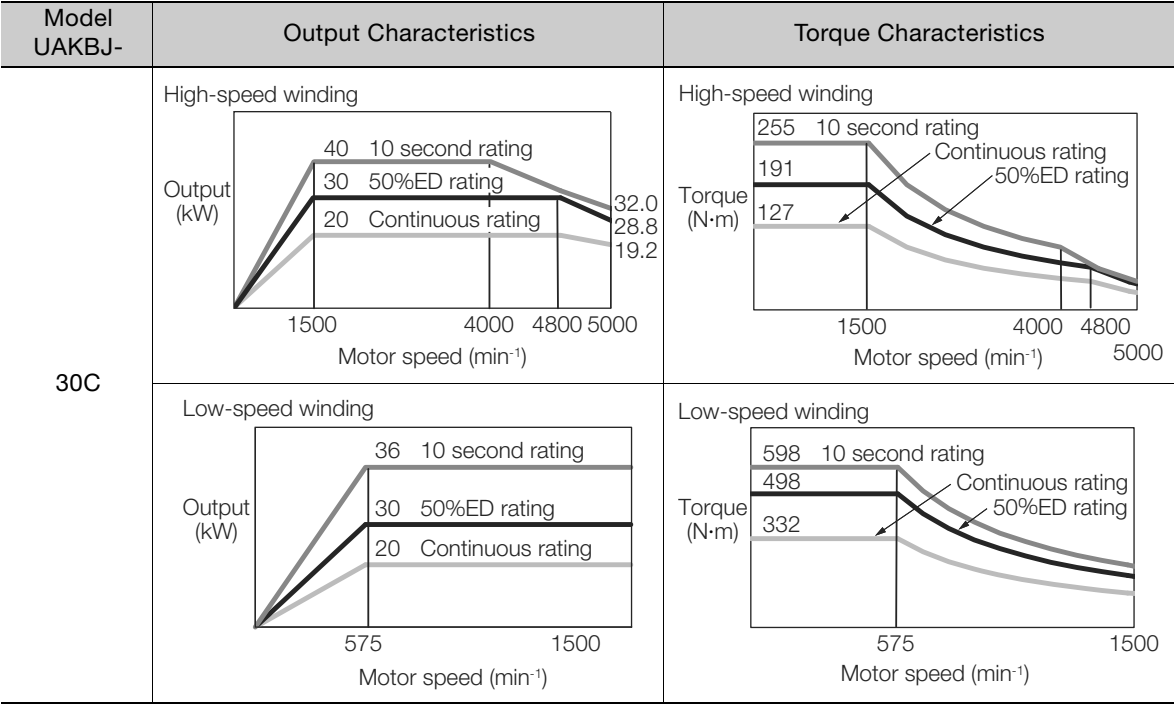
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Model UAKBJ-	Output Characteristics	Torque Characteristics
19C	High-speed winding Output (kW) 30 10 second rating 18.5 50%ED rating 15 Continuous rating 1500 3500 4800 6000 Motor speed (min⁻¹)	High-speed winding Torque (N·m) 191 10 second rating 118 50%ED rating 95.5 Continuous rating 1500 3500 4800 6000 Motor speed (min⁻¹)
	Low-speed winding Output (kW) 22.2 10 second rating 18.5 50%ED rating 15 Continuous rating 575 1500 Motor speed (min⁻¹)	Low-speed winding Torque (N·m) 369 10 second rating 307 Continuous rating 249 50%ED rating 575 1500 Motor speed (min⁻¹)
22C	High-speed winding Output (kW) 37 10 second rating 22 50%ED rating 18.5 Continuous rating 1500 3500 4800 6000 Motor speed (min⁻¹)	High-speed winding Torque (N·m) 236 10 second rating 140 50%ED rating 118 Continuous rating 1500 3500 4800 6000 Motor speed (min⁻¹)
	Low-speed winding Output (kW) 26.4 10 second rating 22 50%ED rating 18.5 Continuous rating 575 1500 Motor speed (min⁻¹)	Low-speed winding Torque (N·m) 439 10 second rating 365 50%ED rating 307 Continuous rating 575 1500 Motor speed (min⁻¹)

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Tolerance Radial Loads

Model: UAKAJ-, UAKBJ-	Rated Output (kW) 50%ED Rating/ Continuous Rating	Tolerance Radial Load (N)	
		Single-winding Motor Model: UAKAJ-□□C	Winding Selection Motor Model: UAKBJ-□□C
04	3.7/2.2	1180	–
06	5.5/3.7	1180	2940
08	7.5/5.5	1470	2940
11	11/7.5	1470	3530
15	15/11	2940	4410
19	18.5/15	2940	4410
22	22/18.5	3530	4900
30 ^{*1}	30/22 ^{*2}	4410	5200
37 ^{*1}	37/30	4900	–
45 ^{*1}	45/37	5200	–

*1. Available only for three-phase, 200 VAC models.

*2. The rated output for the winding selection motor is 30/20 kW.

Motor Total Indicator Readings

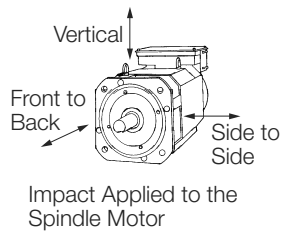
Flange Type

Item	Model		Accuracy
	Single-winding Motor: UAKAJ-□□	Winding Selection Motor: UAKBJ-□□	
Perpendicularity of the flange face to the motor shaft	04 to 22	06 to 11	0.04 mm
	30, 37	15	0.06 mm
	45	19 to 30	0.072 mm
Concentricity of the flange mating part to the motor shaft	04 to 11	–	0.04 mm
	15 to 22	06 to 11	0.046 mm
	30, 37	15	0.048 mm
	45	19 to 30	0.070 mm
Axial runout of the motor shaft	04 to 08	–	0.02 mm
	11 to 22	06 to 11	0.022 mm
	30 to 45	15 to 30	0.028 mm

Foot-mounted Type

Item	Model		Accuracy
	Single-winding Motor: UAKAJ-□□	Winding Selection Motor: UAKBJ-□□	
Shaft Parallelism	04 to 08	–	0.03 mm
	11 to 22	06 to 11	0.033 mm
	30 to 45	15 to 30	0.042 mm
Axial runout of the motor shaft	04 to 08	–	0.02 mm
	11 to 22	06 to 11	0.022 mm
	30 to 45	15 to 30	0.028 mm

Vibration Resistance



The spindle motor will withstand the following vibration acceleration in three directions: Vertical, side to side, and front to back.

Spindle Motor		Vibration Acceleration at Flange	Vibration Frequency	
Winding System	Model		Constant Amplitude	Constant Acceleration
Single Winding	UAKAJ-04 to -22	24.5 m/s ²	10 Hz to 60 Hz	6 Hz to 2500 Hz
	UAKAJ-30, -37	19.6 m/s ²		
	UAKAJ-45	4.9 m/s ²		
Winding Selection	UAKBJ-06, -08, -11	24.5 m/s ²		
	UAKBJ-15 to -22	19.6 m/s ²		
	UAKBJ-30	4.9 m/s ²		

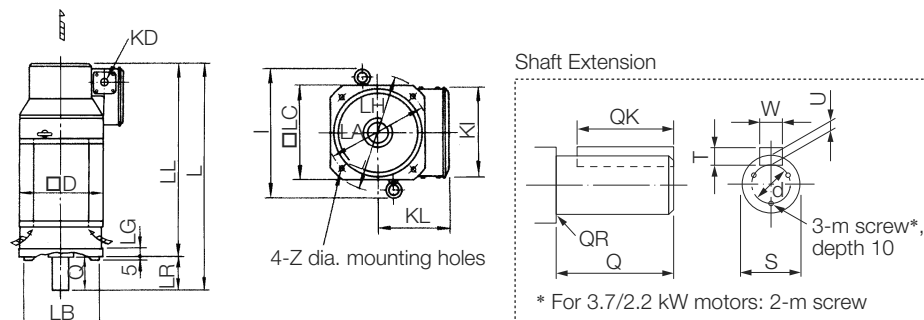


The amount of vibration the spindle motor endures will vary depending on the application. Check the vibration acceleration being applied to your motor for each application.

External Dimensions

Single-winding Motors

◆ Flange type



Unit: mm

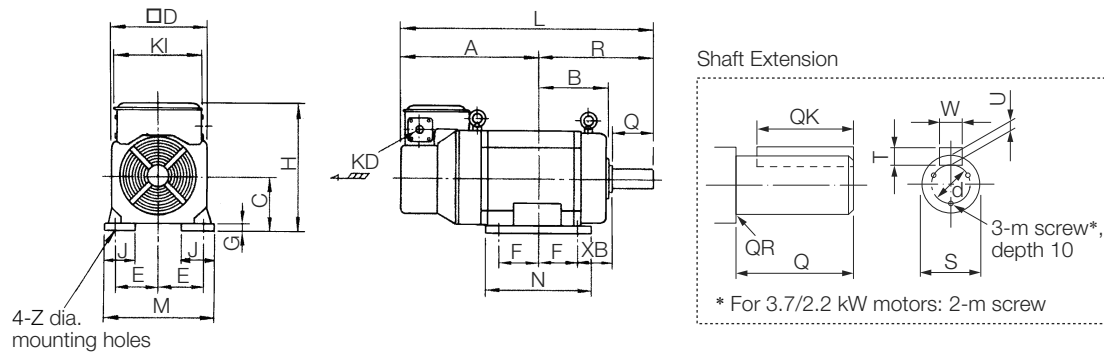
Model UAKAJ-	L	LA	LB	LC	LG	LH	LL	LR	Z	D	I	KD	KL	KI
04	375	185	150 ⁰ _{-0.04}	174	12	220	315	60	11	174	—	34	142	174
06	467	185	150 ⁰ _{-0.04}	174	12	220	407	60	11	174	—	34	142	174
08	496	215	180 ⁰ _{-0.04}	204	16	250	416	80	15	204	270	42.5	158	207
11	556	215	180 ⁰ _{-0.04}	204	16	250	446	110	15	204	270	42.5	158	207
15	568	265	230 ⁰ _{-0.046}	250	20	300	458	110	15	260	343	42.5	181	250
19	568	265	230 ⁰ _{-0.046}	250	20	300	458	110	15	260	343	42.5	181	250
22	632	265	230 ⁰ _{-0.046}	250	20	300	522	110	15	260	343	42.5	181	250
30	769	350	300 ⁰ _{-0.052}	320	20	385	629	140	19	320	440	61	227	320
37	809	350	300 ⁰ _{-0.052}	320	20	385	669	140	19	320	440	61	227	320
45	797	400	350 ⁰ _{-0.057}	370	22	450	657	140	24	380	504	61	315	388

Model UAKAJ-	Shaft End Dimensions									Approx. Mass kg
	Q	QK	QR	S	T	U	W	d	m	
04	60	45	1	28 ^{0.009} _{-0.004}	7	4	8	16	M6	29
06	60	45	1	28 ⁰ _{-0.013}	7	4	8	22	M4	47
08	80	70	2	32 ⁰ _{-0.016}	8	5	10	22	M5	52
11	110	90	0.5	48 ⁰ _{-0.016}	9	5.5	14	40	M5	59
15	110	90	1	48 ⁰ _{-0.016}	9	5.5	14	40	M5	94
19	110	90	1	48 ⁰ _{-0.016}	9	5.5	14	40	M5	94
22	110	90	1	55 ^{0.030} _{0.011}	10	6	16	45	M5	120
30	140	110	2	60 ^{0.030} _{0.011}	11	7	18	50	M6	220
37	140	110	2	60 ^{0.030} _{0.011}	11	7	18	50	M6	250
45	140	110	1	70 ^{0.030} _{0.011}	12	7.5	20	60	M6	310

Note: 1. The shaft key and the keyway are standard JIS B 1301-1996 models.

2. The figures are provided only to explain the dimensions. The actual appearance of the spindle motor may vary.

◆ Foot-mounted type



Unit: mm

Model UAKAJ-	A	B	C	D	E	F	G	H	J	KD	L	M	N	R
04	230	83	100 ⁰ _{-0.5}	174	80	40	9	242	34	34	375	188	106	145
06	292	113	100 ⁰ _{-0.5}	174	80	70	9	242	34	34	467	188	168	175
08	286	117	112 ⁰ _{-0.5}	204	95	50	10	269	75	42.5	486	220	129	200
11	296	137	112 ⁰ _{-0.5}	204	95	70	10	269	75	42.5	546	220	177	250
15	261	196	160 ⁰ _{-0.5}	260	127	89	16	341	55	42.5	568	290	223	307
19	261	196	160 ⁰ _{-0.5}	260	127	89	16	341	55	42.5	568	290	223	307
22	307	212	160 ⁰ _{-0.5}	260	127	105	16	341	55	42.5	630	290	255	323
30	381	246	180 ⁰ _{-0.5}	320	139.5	127	16	407	55	61	769	320	298	388
37	421	246	180 ⁰ _{-0.5}	320	139.5	127	16	407	55	61	809	320	298	388
45	377	273	225 ⁰ _{-0.5}	380	178	127	21	540	75	61	793	420	370	416

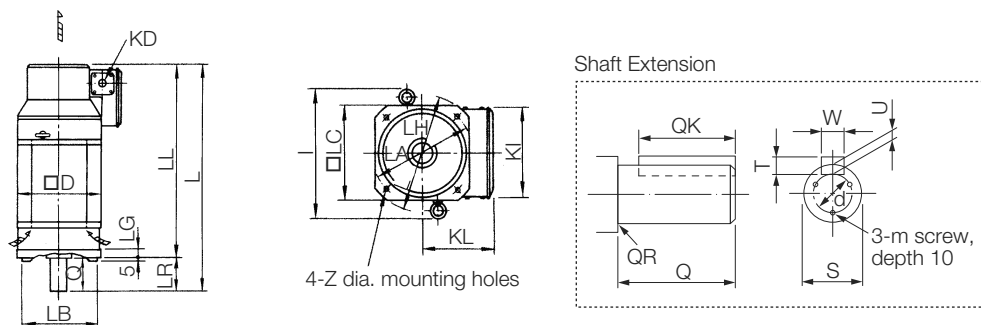
Model UAKAJ-	XB	Z	KI	Shaft End Dimensions									Approx. Mass kg
				Q	QK	QR	S	T	U	W	d	m	
04	45	12	174	60	45	1	28 ^{0.009} _{-0.004}	7	4	8	16	M6	30
06	45	12	174	60	45	1	28 ⁰ _{-0.013}	7	4	8	22	M4	49
08	70	12	207	80	70	2	32 ⁰ _{-0.016}	8	5	10	22	M5	56
11	70	12	207	110	90	0.5	48 ⁰ _{-0.016}	9	5.5	14	40	M5	64
15	108	15	250	110	90	1	48 ⁰ _{-0.016}	9	5.5	14	40	M5	110
19	108	15	250	110	90	1	48 ⁰ _{-0.016}	9	5.5	14	40	M5	110
22	108	15	250	110	90	1	55 ^{0.030} _{0.011}	10	6	16	45	M5	130
30	121	19	320	140	110	2	60 ^{0.030} _{0.011}	11	7	18	50	M6	230
37	121	19	320	140	110	2	60 ^{0.030} _{0.011}	11	7	18	50	M6	260
45	149	24	388	140	110	1	70 ^{0.030} _{0.011}	12	7.5	20	60	M6	320

Note: 1. The shaft key and the keyway are standard JIS B 1301-1996 models.

2. The figures are provided only to explain the dimensions. The actual appearance of the spindle motor may vary.

Winding Selection Motors

◆ Flange type



Unit: mm

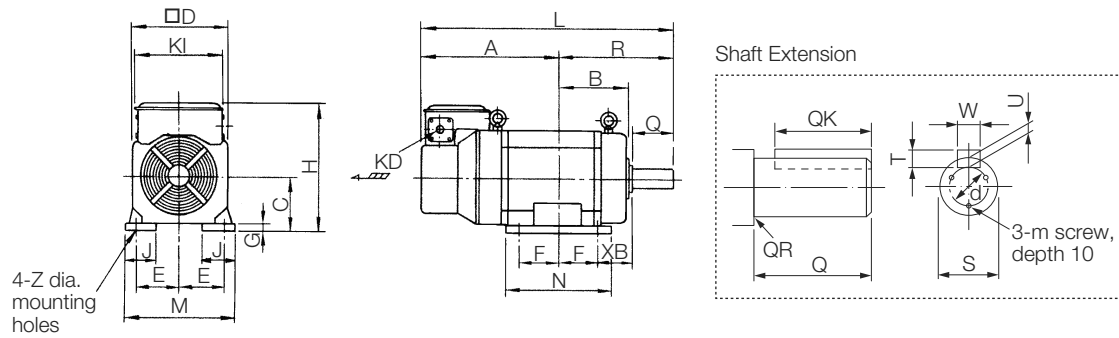
Model UAKBJ-	L	LA	LB	LC	LG	LH	LL	LR	Z	D	I	KD	KL	KI
06	568	265	230 ⁰ _{-0.046}	250	20	300	458	110	15	260	343	42.5	181	250
08	568	265	230 ⁰ _{-0.046}	250	20	300	458	110	15	260	343	42.5	181	250
11	632	265	230 ⁰ _{-0.046}	250	20	300	522	110	15	260	343	42.5	181	250
15	769	350	300 ⁰ _{-0.052}	320	20	385	629	140	19	320	440	61	227	320
19	769	350	300 ⁰ _{-0.052}	320	20	385	629	140	19	320	440	61	227	320
22	809	350	300 ⁰ _{-0.052}	320	20	385	669	140	19	320	440	61	227	320
30	797	400	350 ⁰ _{-0.057}	370	22	450	657	140	24	380	504	61	315	388

Model UAKBJ-	Shaft End Dimensions										Approx. Mass kg
	Q	QK	QR	S	T	U	W	d	m		
06	110	90	1	48 ⁰ _{-0.016}	9	5.5	14	40	M5	94	
08	110	90	1	48 ⁰ _{-0.016}	9	5.5	14	40	M5	94	
11	110	90	1	55 ^{0.030} _{0.011}	10	6	16	45	M5	120	
15	140	110	2	60 ^{0.030} _{0.011}	11	7	18	50	M6	220	
19	140	110	2	60 ^{0.030} _{0.011}	11	7	18	50	M6	220	
22	140	110	2	60 ^{0.030} _{0.011}	11	7	18	50	M6	250	
30	140	110	1	70 ^{0.030} _{0.011}	12	7.5	20	60	M6	310	

Note: 1. The shaft key and the keyway are standard JIS B 1301-1996 models.

2. The figures are provided only to explain the dimensions. The actual appearance of the spindle motor may vary.

◆ Foot-mounted type



Unit: mm

Model UAKBJ-	A	B	C	D	E	F	G	H	J	KD	L	M	N	R
06	261	196	160 ⁰ _{-0.5}	260	127	89	16	341	55	42.5	568	290	223	307
08	261	196	160 ⁰ _{-0.5}	260	127	89	16	341	55	42.5	568	290	223	307
11	307	212	160 ⁰ _{-0.5}	260	127	105	16	341	55	42.5	630	290	255	323
15	381	246	180 ⁰ _{-0.5}	320	139.5	127	16	407	55	61	769	320	298	388
19	381	246	180 ⁰ _{-0.5}	320	139.5	127	16	407	55	61	769	320	298	388
22	421	246	180 ⁰ _{-0.5}	320	139.5	127	16	407	55	61	809	320	298	388
30	376.5	273	225 ⁰ _{-0.5}	380	178	127	21	540	75	61	792.5	420	370	416

Model UAKBJ-	XB	Z	KI	Shaft End Dimensions									Approx. Mass kg
				Q	QK	QR	S	T	U	W	d	m	
06	108	15	250	110	90	1	48 ⁰ _{-0.016}	9	5.5	14	40	M5	110
08	108	15	250	110	90	1	48 ⁰ _{-0.016}	9	5.5	14	40	M5	110
11	108	15	250	110	90	1	55 ^{0.030} _{0.011}	10	6	16	45	M5	130
15	121	19	320	140	110	2	60 ^{0.030} _{0.011}	11	7	18	50	M6	230
19	121	19	320	140	110	2	60 ^{0.030} _{0.011}	11	7	18	50	M6	230
22	121	19	320	140	110	2	60 ^{0.030} _{0.011}	11	7	18	50	M6	260
30	149	24	388	140	110	1	70 ^{0.030} _{0.011}	12	7.5	20	60	M6	320

Note: 1. The shaft key and the keyway are standard JIS B 1301-1996 models.

2. The figures are provided only to explain the dimensions. The actual appearance of the spindle motor may vary.