

SYNCHRONOUS MOTORS

■ Features

Synchronous motors provide rotation at a fixed speed in synchronization with the frequency of the power source, regardless of fluctuation of the load or line voltage. Synchronous speed is 1800r/min at 60Hz.



Gearheads shown in the photograph are sold separately.



■ Specifications — Continuous Rating



Model		Output Power		Voltage	Frequency	Current	Starting Torque		Rated Torque		Rated Speed	Capacitor	
Pinion Shaft Type	Round Shaft Type	HP	W	V AC	Hz	A	oz-in	mN·m	oz-in	mN·m	r/min	μF	VAC
2SK4GN-AUL	2SK4A-AULA	1/187	4	115	60	0.24	3.1	22	3.1	22	1800	1.0	400
3SK10GN-AUL	3SK10A-AULA	1/75	10	115	60	0.35	6.9	50	7.6	55	1800	1.5	400
4SK15GN-AUL	4SK15A-AULA	1/50	15	115	60	0.50	7.6	55	11.2	81	1800	1.5	400
5SK25GN-AUL	5SK25A-AULA	1/30	25	115	60	0.75	11.8	85	18.7	135	1800	3.0	400

- **2SK** type motors are impedance protected.
- **3SK, 4SK** and **5SK** type motors contain a built-in thermal protector. If a motor overheats for any reason, the thermal protector is opened and the motor stops. When the motor temperature drops, the thermal protector closes and the motor restarts. Be sure to turn the motor off before inspecting.

■ General Specifications

These specifications apply to all synchronous motors.

Item	Specifications
Insulation Resistance	100M ohms or more when 500V DC is applied between the windings and the frame after rated motor operation under normal ambient temperature and humidity.
Dielectric Strength	Sufficient to withstand 1.5kV at 50Hz and 60Hz applied between the windings and the frame after rated motor operation under normal ambient temperature and humidity.
Temperature Rise	135°F (75°C) or less measured by the resistance change method after the temperature of the coil has stabilized under normal operation at the rated voltage and frequency.
Insulation Class	UL•CSA Standard Class A, EN60950 Standard Class E.
Ambient Temperature Range	14°F ~ 104°F (-10°C ~ +40°C)
Ambient Humidity	85% maximum (noncondensing)

■ Gearmotor — Torque Table

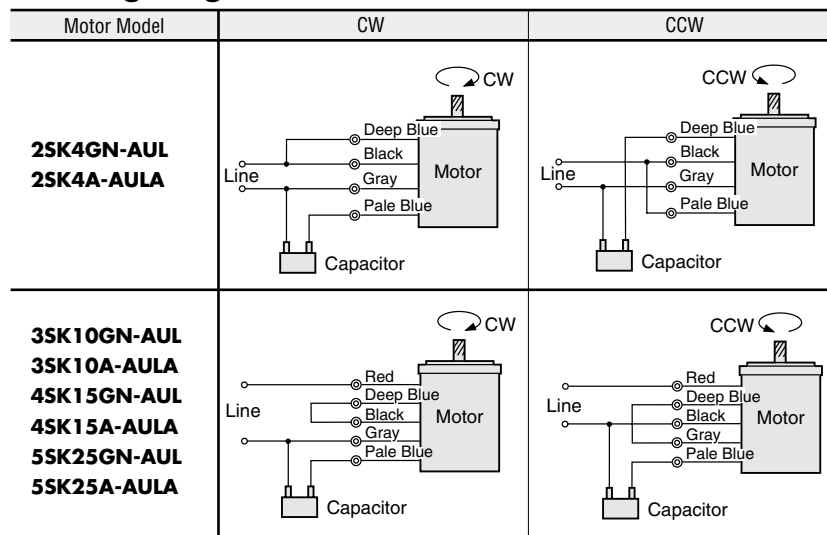
- The permissible torque with decimal gearhead with a gear ratio of 10 is : **2GN** □ **K** : 26 lb-in / 3N·m **3GN** □ **K** : 43 lb-in / 5N·m
4GN □ **K** : 69 lb-in / 8N·m (for 1/25~1/36 : 52 lb-in / 6N·m)
5GN □ **K** : 87 lb-in / 10N·m

Unit = Upper values: lb-in / Lower values: N·m

Model	Speed r/min	600	500	360	300	240	200	144	120	100	72	60	50	36	30	24	20	18	15	12	10
	Gear Ratio	3	3.6	5	6	7.5	9	12.5	15	18	25	30	36	50	60	75	90	100	120	150	180
2SK4GN-AUL / 2GN □ KA	0.47	0.56	0.78	0.94	1.2	1.4	2.0	2.4	2.8	3.5	4.2	5.1	6.4	7.7	9.6	12	13	15	19	23	
	0.053	0.064	0.089	0.11	0.13	0.16	0.22	0.27	0.32	0.40	0.48	0.58	0.73	0.87	1.1	1.3	1.5	1.7	2.2	2.6	
3SK10GN-AUL / 3GN □ KA	1.2	1.4	1.9	2.3	2.9	3.5	4.8	5.8	6.9	8.7	10	12	16	19	24	28	31	38	43	43	
	0.13	0.16	0.22	0.27	0.33	0.40	0.56	0.67	0.80	1.0	1.2	1.4	1.8	2.2	2.7	3.3	3.6	4.4	5	5	
4SK15GN-AUL / 4GN □ KA	1.7	2.0	2.8	3.4	4.3	5.1	7.1	8.5	10	13	15	18	23	28	35	42	46	55	69	69	
	0.20	0.24	0.33	0.39	0.49	0.59	0.82	0.98	1.2	1.5	1.8	2.1	2.7	3.2	4.0	4.8	5.3	6.4	8	8	
5SK25GN-AUL / 5GN □ KA	2.8	3.4	4.7	5.7	7.1	8.5	12	14	17	21	26	31	39	46	58	69	77	87	87	87	
	0.33	0.39	0.55	0.66	0.82	0.98	1.4	1.6	2.0	2.5	3.0	3.5	4.5	5.3	6.7	8.0	8.9	10	10	10	

- Gearheads are sold separately.
- Enter the gear ratio in the box within the model number. A colored background indicates gear shaft rotation in the same direction as the motor shaft; a white background indicates rotation in the opposite direction.
- The speed is calculated by dividing the motor's speed (60 Hz: 1800 r/min) by the gear ratio.

■ Wiring Diagrams



The direction of motor rotation is as viewed from the shaft end of the motor.

Change the direction of motor rotation only after bringing the motor to a stop. If an attempt is made to change the direction of rotation while the motor is rotating, the motor may ignore the reversing command or change its direction of rotation after some delay.

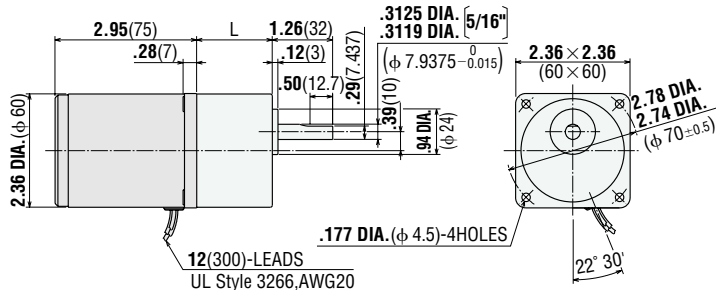
■ Dimensions Scale 1/4, Unit = inch (mm)

2SK4GN-AUL

Weight (Mass): 1.5 lb.(0.7 kg)

2GN□KA

Weight (Mass): 0.88 lb.(0.4 kg)

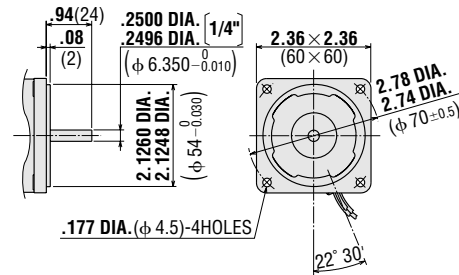


L = 1.18 (30) **2GN3KA~18KA**

L = 1.57 (40) **2GN25KA~180KA**

2SK4A-AULA Round Shaft Type

Weight (Mass): 1.5 lb.(0.7 kg)

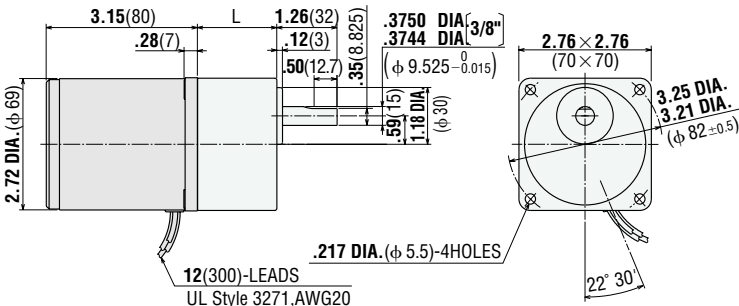


3SK10GN-AUL

Weight (Mass): 2.4 lb.(1.1 kg)

3GN□KA

Weight (Mass): 1.21 lb.(0.55 kg)

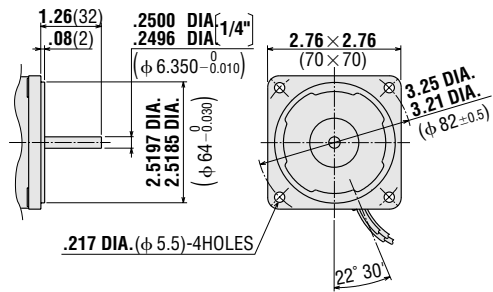


L = 1.26 (32) **3GN3KA~18KA**

L = 1.65 (42) **3GN25KA~180KA**

3SK10A-AULA Round Shaft Type

Weight (Mass): 2.4 lb.(1.1 kg)

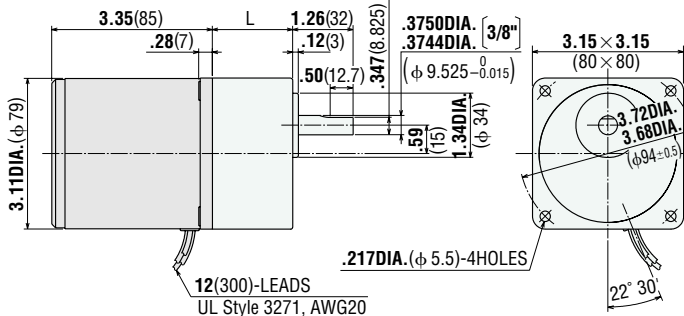


4SK15GN-AUL

Weight (Mass): 3.3 lb.(1.5 kg)

4GN□KA

Weight (Mass): 1.43 lb.(0.65 kg)

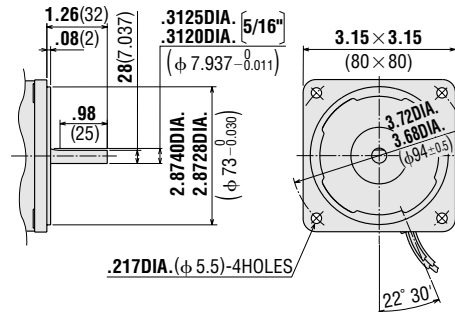


L = 1.26 (32) **4GN3KA~18KA**

L = 1.67 (42.5) **4GN25KA~180KA**

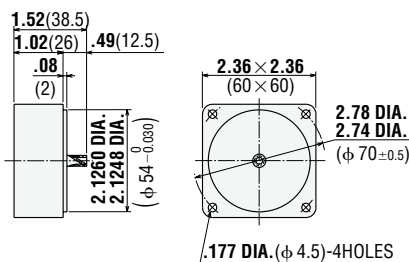
4SK15A-AULA Round Shaft Type

Weight (Mass): 3.3 lb.(1.5 kg)

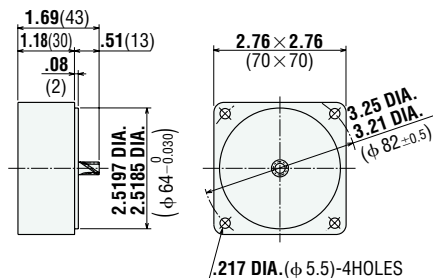


● Decimal Gearhead

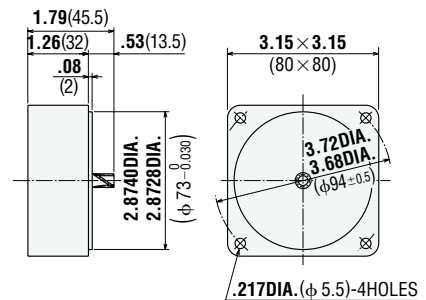
2GN10XK Weight (Mass): 0.44 lb.(0.2 kg)



3GN10XK Weight (Mass): 0.66 lb.(0.3 kg)



4GN10XK Weight (Mass): 0.88 lb.(0.4 kg)

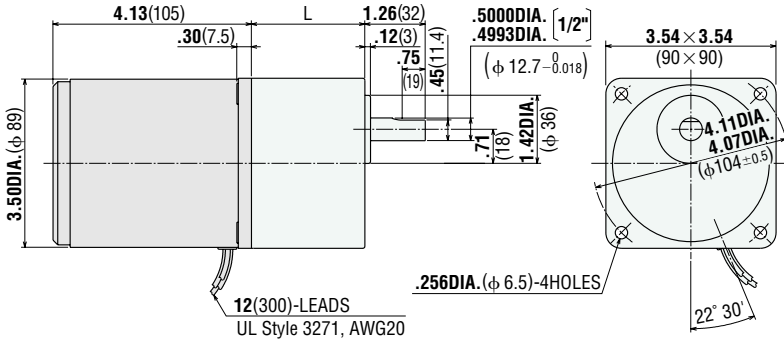


5SK25GN-AUL

Weight (Mass): 5.5 lb.(2.5 kg)

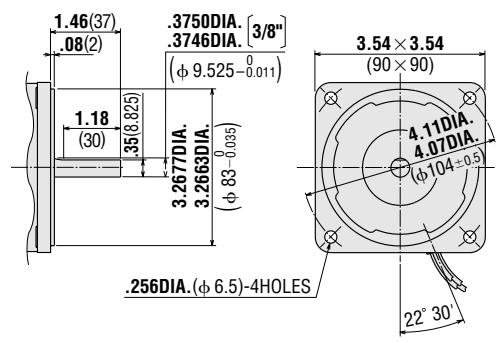
5GN□KA

Weight (Mass): 3.31 lb.(1.5 kg)



5SK25A-AULA Round Shaft Type

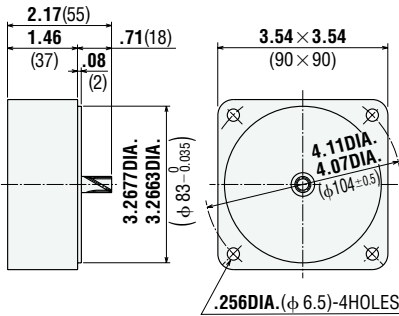
Weight (Mass): 5.5 lb.(2.5 kg)



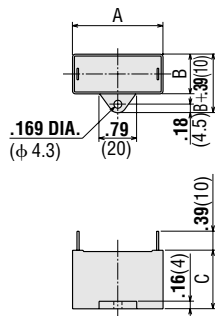
L = 1.65 (42) **5GN3KA~18KA**
L = 2.36 (60) **5GN25KA~180KA**

Decimal Gearhead

5GN10XK Weight (Mass): 1.32 lb.(0.6 kg)



Capacitor (included with the motor)



Motor Model	Capacitor Model	Dimensions inch (mm)			Weight oz (g)
		A	B	C	
2SK4GN-AUL	CH10BUL	1.22	.67	1.06	0.8 23
2SK4A-AULA		(31)	(17)	(27)	
3SK10GN-AUL	CH15BUL	1.46	.71	1.06	1.0 27
3SK10A-AULA		(37)	(18)	(27)	
4SK15GN-AUL	CH15BUL	1.46	.71	1.06	1.0 27
4SK15A-AULA		(37)	(18)	(27)	
5SK25GN-AUL	CH30BUL	2.28	.83	1.22	1.4 39
5SK25A-AULA		(48)	(21)	(31)	

Capacitor cap is provided with the capacitor.

Right-Angle Gearhead

The right-angle gearhead provides an output shaft at a right angle to the motor's output shaft. See page [A-216] for specifications and other information. (Available with **4GN□R□**, **5GN□R□** type only)

