

# **STEPPING MOTORS**

5-Phase High Torque Type  
0.72° Full Step Angle

# **SCHRITTMOTOREN**

*5-Phasen leistungsverstärkte Motoren  
0,72° Vollschrittwinkel*

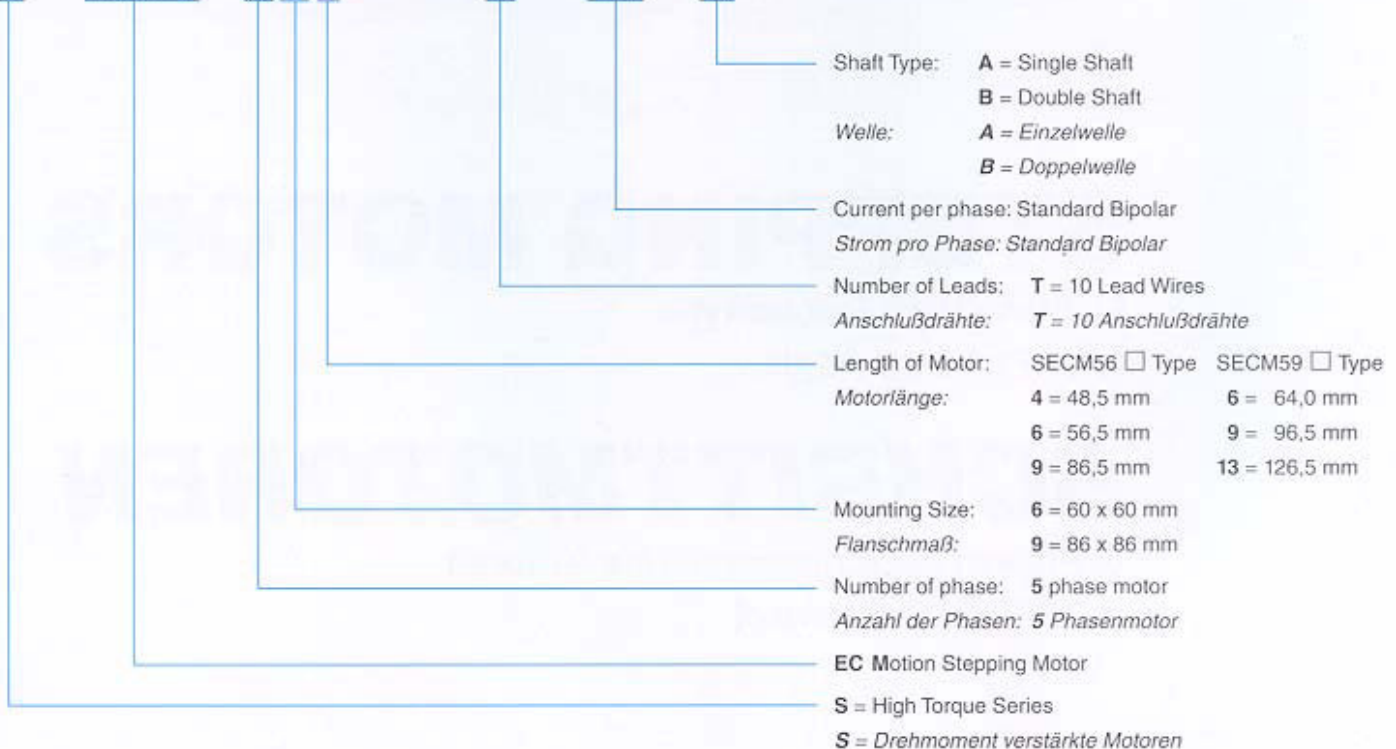
# STEPPING MOTORS

## SPECIFICATIONS

Model A = Single Shaft B = Double Shaft	Holding Torque (Ncm)	Current/Phase (A)	Resistance/Winding ( $\Omega$ )	Voltage DC (V)	Size Length (mm)	Page	
SECM 564 - T 0.8 A SECM 564 - T 0.8 B	42	0.75	2.6	2.0	60 x 60 x 48.5	3-4	
SECM 564 - T 1.4 A SECM 564 - T 1.4 B	42	1.40	0.8	1.1			
SECM 566 - T 0.8 A SECM 566 - T 0.8 B	83	0.75	3.4	2.6	60 x 60 x 56.5		
SECM 566 - T 1.4 A SECM 566 - T 1.4 B	83	1.40	1.1	1.5			
SECM 569 - T 1.4 A SECM 569 - T 1.4 B	166	1.40	1.8	2.5	60 x 60 x 86.5		
SECM 569 - T 2.8 A SECM 569 - T 2.8 B	166	2.80	0.65	1.8			
SECM 596 - T 1.4 A SECM 596 - T 1.4 B	210	1.40	1.7	2.4	86 x 86 x 64.0		5-6
SECM 596 - T 2.8 A SECM 596 - T 2.8 B	210	2.80	0.57	1.6			
SECM 599 - T 1.4 A SECM 599 - T 1.4 B	410	1.40	2.7	3.8	86 x 86 x 96.5		
SECM 599 - T 2.8 A SECM 599 - T 2.8 B	410	2.80	0.67	1.9			
SECM 5913 - T 2.8 A SECM 5913 - T 2.8 B	630	2.80	0.85	2.4	86 x 86 x 126.5		

## PRODUCT NUMBER CODE

**S E C M 5 6 4 - T 1.4 A**





Stepping Motors are motors which can be directly controlled by digital signals and rotate at constant angles according to a pulse signal. These motors specified by EC Motion have been used in various application to control angle, speed and position. A full line of various models ist available with superior features, excellent torque characteristics and high reliability in order to meet the requirements of your specific application.

*Schrittmotoren haben den Vorteil, daß sie sich direkt durch digitale Signale steuern lassen und um einen konstanten Winkel drehen. EC-Motion Schrittmotoren werden zu Geschwindigkeits- und Positionskontrolle in den unterschiedlichsten Anwendungen eingesetzt. Eine große Palette verschiedener Modelle mit hervorragenden Eigenschaften z. B. hohes Drehmoment, lange Lebensdauer, hohe Zuverlässigkeit stehen Ihnen zur Lösung Ihrer speziellen Antriebsprobleme zur Verfügung.*

## EXCELLENT CHARACTERISTICS OF 5-PHASE STEPPING MOTORS (SECM-SERIES)

### 1. High Torque

SECM 5-phase stepping motor has 50% more torque than conventional stepping motors.

### 2. High Resolution

The step angle is as small as  $0.72^\circ$  for a full step and  $0.36^\circ$  for a half step. These small step angles bring about precise positioning with optimum acceleration and deceleration.

### 3. Low Vibration and Low Noise

The 5-phase stepping motor rotates smoothly with small fluctuation at any operating torque, so it is ideal for applications where vibration and noise are problems.

### 4. No Resonance Problem

Conventional 2-phase stepping motors have resonance area at around 200 pps. The technology invented for the 5-phase stepping motor is the best method to solve the resonance problems.

### 5. Quick Response

The 5-phase stepping motor features high start/stop frequency, so it responds much faster than conventional 2-phase stepping motors.

### 1. Verstärktes Drehmoment

*5-Phasen Schrittmotoren der SECM-Serie haben gegenüber den konventionellen Schrittmotoren ein um 50% erhöhtes Drehmoment.*

### 2. Hohe Auflösung

*Durch sehr kleine Schrittwinkel ( $0,72^\circ$  im Voll- bzw.  $0,36^\circ$  im Halbschritt) wird eine präzise Positionierung bei optimaler Beschleunigung und Geschwindigkeitsverminderung erreicht.*

### 3. Vibrations- und geräuscharm

*Der EC-Motion 5-Phasen Motor ist durch sein sanftes Laufverhalten und seinem schwankungsarmen Drehmomentverlauf ideal für Anwendungen geeignet in denen Vibrationen und Geräusche ein Problem darstellen.*

### 4. Keine Resonanzprobleme

*Der Resonanzfrequenzbereich eines konventionellen 2-Phasen Schrittmotors liegt bei ca. 200 Hz. Der 5-Phasen Schrittmotor hingegen hat kaum Resonanzprobleme, da es auf Grund seiner Technologie keine besonderen Resonanzfrequenzbereiche gibt.*

### 5. Schnelle Ansprechzeiten

*Ein weiterer Vorteil des 5-Phasen Schrittmotors ist seine hohe Start/Stop Frequenz, die im Gegensatz zum 2-Phasen Schrittmotor erheblich höher liegt.*

SMD 543



5-PHASE DRIVER UNIT SMD 543

EC Motion recommends the 5-phase driver unit SMD 543 for the SECM 5-phase stepping motors. It is small in size (110 mm x 80 mm) but big in performance. The driver unit has 5 full H-bridges (20 DMOS Power Switches), supplies 0.7–2.8 A/phase in standard bipolar drive.

Supply Voltage max. 36 V.

It is also equipped with opto-coupler signal inputs/outputs and thermal-protection system.

*Zum Betrieb unserer 5-Phasen SECM-Schrittmotorenserie empfehlen wir Ihnen unsere 5-Phasen Endstufe SMD 543. Sie ist trotz ihrer kleinen Baugröße (110 mm x 80 mm) mit 5 H-Brücken (20 DMOS Leistungstransistoren) ausgestattet und stellt bei einer Eingangsspannung von max. 36 V einen Ausgangsstrom von 0,7 – 2,8 A pro Phase im standard bipolar Betrieb zu Verfügung. Die galvanische Trennung der Ein-/Ausgänge über Optokoppler gehört genau wie der Schutz gegen Übertemperatur, Überstrom und Spannungsspitzen zum Standard unserer Endstufe.*



# STEPPING MOTORS

## SPECIFICATIONS

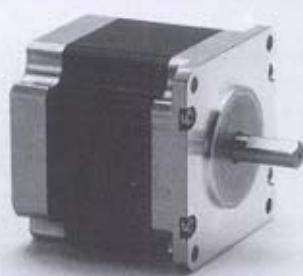
### 0.72° 5 PHASE HIGH-TORQUE STEPPING MOTOR

Model	Full Step Angle	Holding Torque (Ncm)	Current/Phase (A)	Resistance/Winding ( $\Omega$ )	Inductance/Winding (mH)	Voltage DC (V)	Torque/Speed
A = Single Shaft B = Double Shaft							
SECM 564 - T 0.8 A SECM 564 - T 0.8 B	0.72°	42	0.75	2.6	6.0	2.0	Ⓐ
SECM 564 - T 1.4 A SECM 564 - T 1.4 B	0.72°	42	1.40	0.8	2.0	1.1	Ⓑ
Number of Leads	Weight (Kg)		Size Length (mm)		Rotor Inertia (gcm <sup>2</sup> )		
10	0.5		60x60x48.5		175		

Model	Full Step Angle	Holding Torque (Ncm)	Current/Phase (A)	Resistance/Winding ( $\Omega$ )	Inductance/Winding (mH)	Voltage DC (V)	Torque/Speed
A = Single Shaft B = Double Shaft							
SECM 566 - T 0.8 A SECM 566 - T 0.8 B	0.72°	83	0.75	3.4	10.0	2.6	Ⓒ
SECM 566 - T 1.4 A SECM 566 - T 1.4 B	0.72°	83	1.40	1.1	3.8	1.5	Ⓓ
Number of Leads	Weight (Kg)		Size Length (mm)		Rotor Inertia (gcm <sup>2</sup> )		
10	0.7		60x60x56.5		220		

Model	Full Step Angle	Holding Torque (Ncm)	Current/Phase (A)	Resistance/Winding ( $\Omega$ )	Inductance/Winding (mH)	Voltage DC (V)	Torque/Speed
A = Single Shaft B = Double Shaft							
SECM 569 - T 1.4 A SECM 569 - T 1.4 B	0.72°	166	1.40	1.8	7.5	2.5	Ⓔ
SECM 569 - T 2.8 A SECM 569 - T 2.8 B	0.72°	166	2.80	0.65	2.5	1.8	Ⓕ
Number of Leads	Weight (Kg)		Size Length (mm)		Rotor Inertia (gcm <sup>2</sup> )		
10	1.2		60x60x86.5		440		

### SECM 566-



### GENERAL SPECIFICATIONS

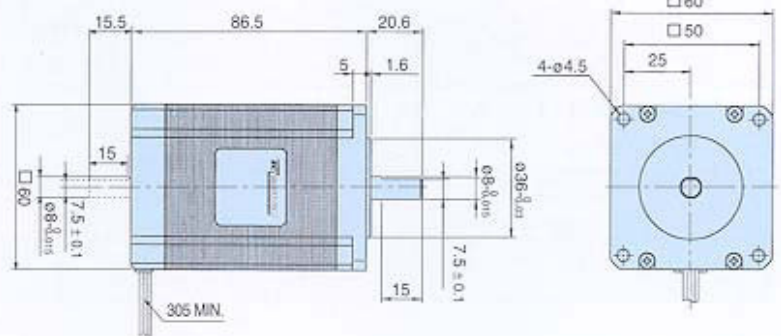
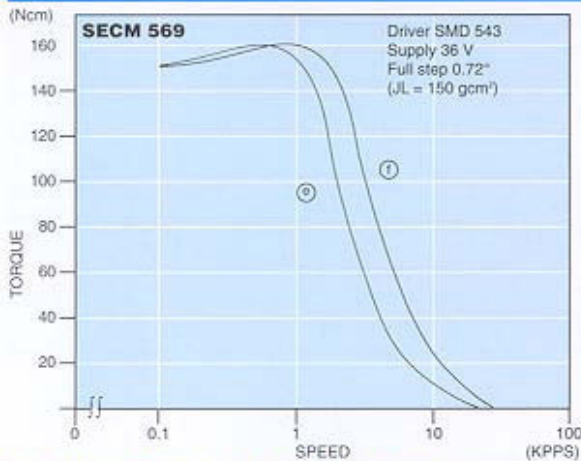
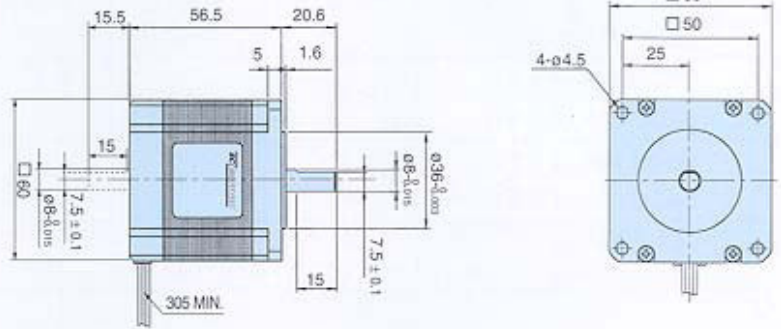
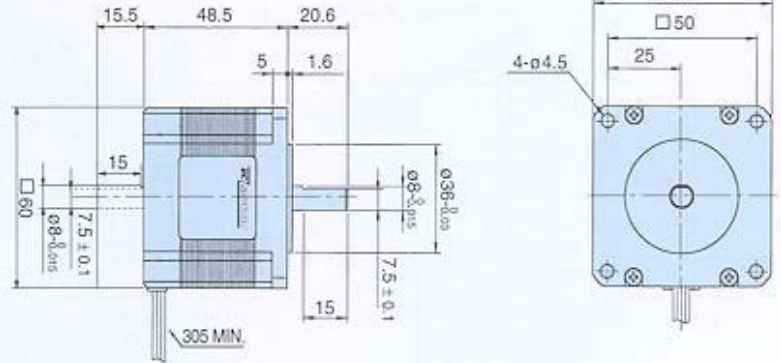
Items	Specifications
Shaft Runout	0.05 mm Max. T.I.R.
Shaft Radial Play	0.025 mm Max. (0.45 kg)
Shaft Axial Play	0.075 mm Max. (1 kg)
Insulation Resistance	100 M $\Omega$ (DC 500 V)
Dielectric Strength	500 V AC (1 Minute)
Insulation Class	CLASS B (130°)
Temperature Rise	80° C MAX. (4 PHASE ON)
Working Temperature	-20° C ~ + 50° C

## TORQUE VS. SPEED CHARACTERISTIC

Ncm/KPPS (1000 PULSE/SECOND)

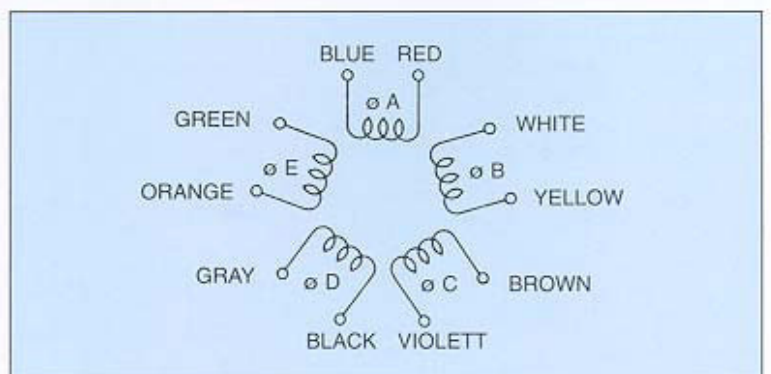
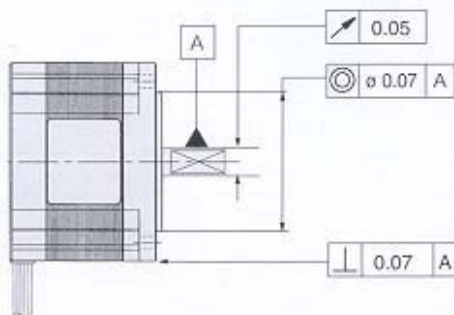
## DIMENSIONS

UNIT = mm



## GENERAL SPECIFICATIONS

## COLOR OF LEAD WIRES





# STEPPING MOTORS

## SPECIFICATIONS

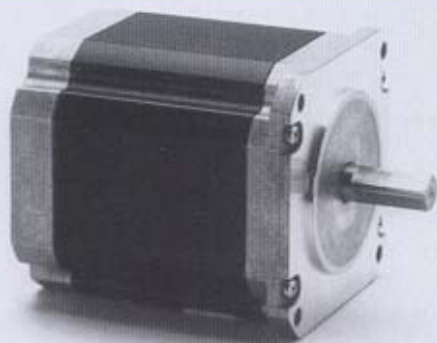
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SECM 596 - T 2.8 A SECM 596 - T 2.8 B	0.72°	210	2.80	0.57	2.7	1.6	Ⓓ
Number of Leads	Weight (Kg)		Size Length (mm)		Rotor Inertia (Kgcm <sup>2</sup> )		
10	1.8		86x86x64.0		0.9		

Model A = Single Shaft B = Double Shaft	Full Step Angle	Holding Torque (Ncm)	Current/Phase (A)	Resistance/Winding (Ω)	Inductance/Winding (mH)	Voltage DC (V)	Torque/Speed
SECM 599 - T 2.8 A SECM 599 - T 2.8 B	0.72°	410	2.80	0.67	4.3	1.9	Ⓕ
Number of Leads	Weight (Kg)		Size Length (mm)		Rotor Inertia (Kgcm <sup>2</sup> )		
10	3.0		86x86x96.5		2.0		

Model A = Single Shaft B = Double Shaft	Full Step Angle	Holding Torque (Ncm)	Current/Phase (A)	Resistance/Winding (Ω)	Inductance/Winding (mH)	Voltage DC (V)	Torque/Speed
Number of Leads	Weight (Kg)		Size Length (mm)		Rotor Inertia (Kgcm <sup>2</sup> )		
10	4.0		86x86x126.5		3.0		

SECM 599-



## GENERAL SPECIFICATIONS

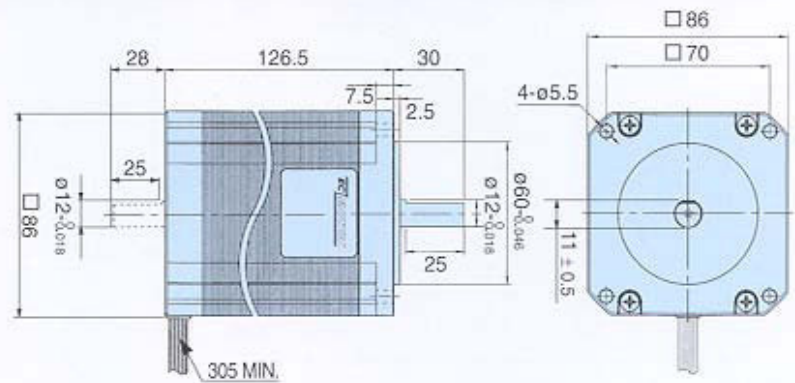
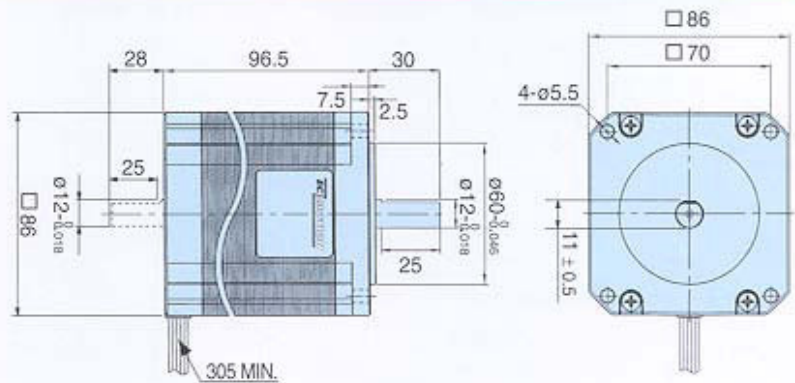
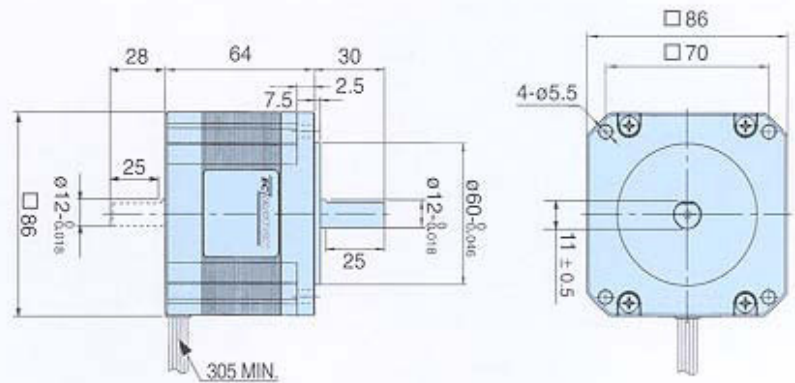
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Shaft Radial Play	0.025 mm Max. (0.45 kg)
Shaft Axial Play	0.075 mm Max. (1 kg)
Insulation Resistance	100 M Ω (DC 500 V)
Dielectric Strength	500 V AC (1 Minute)
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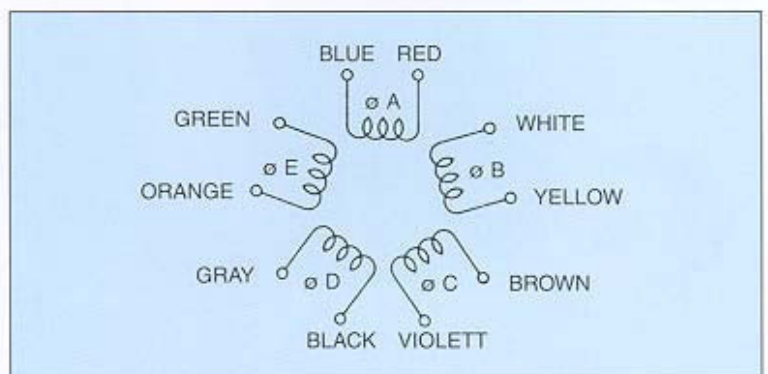
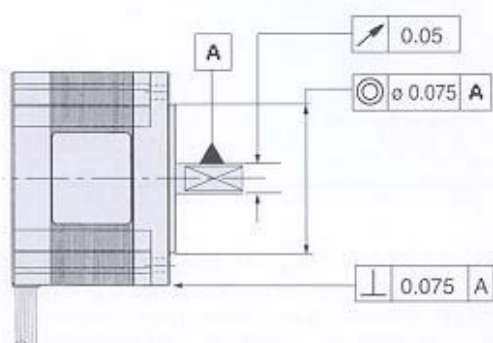
## DIMENSIONS

UNIT = mm



## GENERAL SPECIFICATIONS

## COLOR OF LEAD WIRES

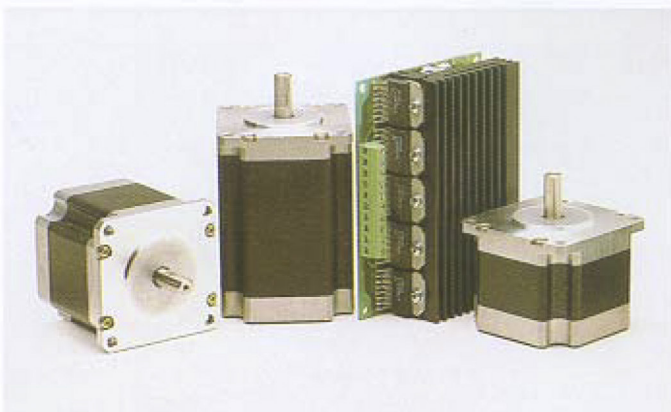
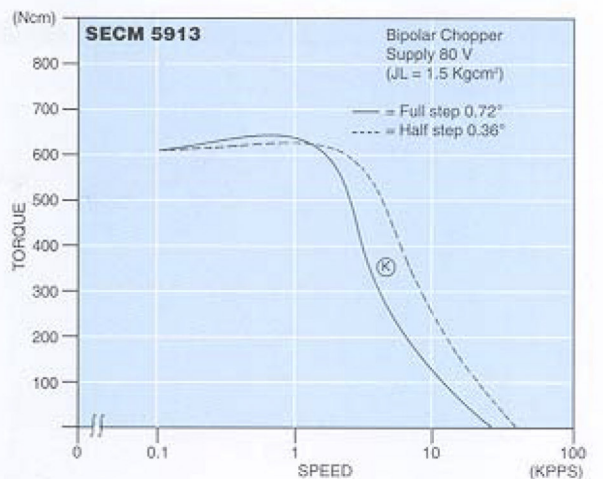
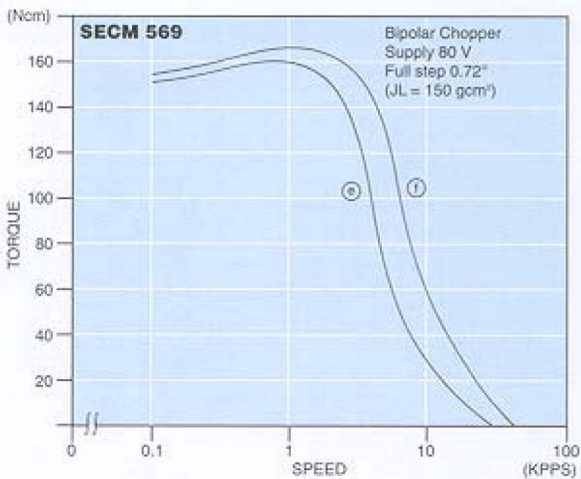
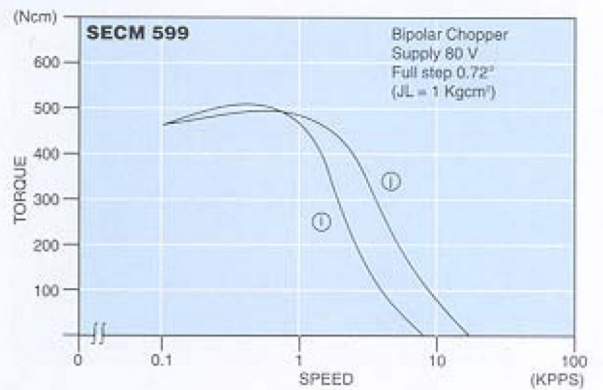
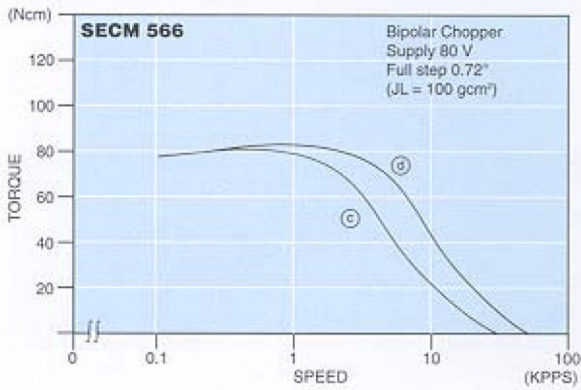
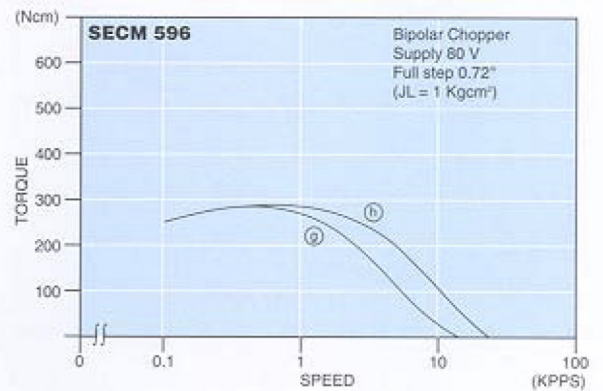
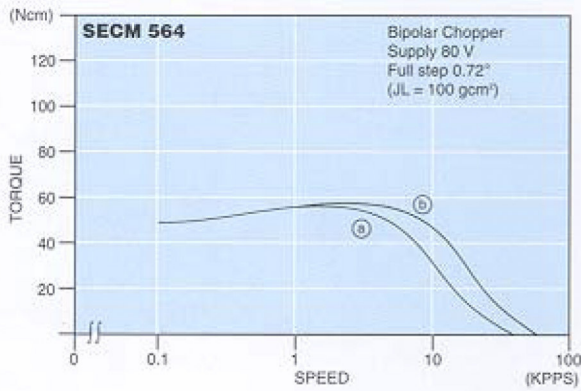




# STEPPING MOTORS

## TORQUE VS. SPEED CHARACTERISTIC

Ncm/KPPS (1000 PULSE/SECOND)



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