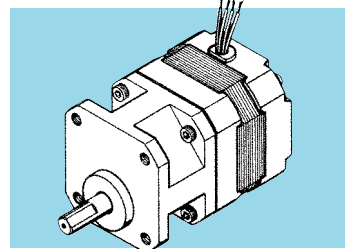
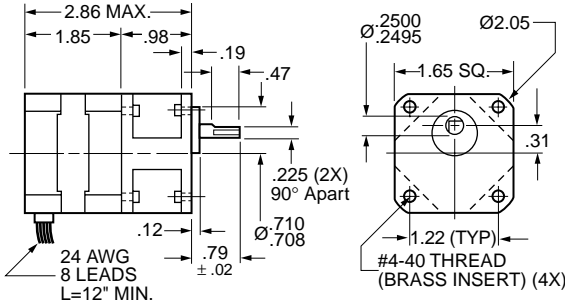


■ 1.8° NOMINAL MOTOR STEP ANGLE

■ 5:1, 10:1, 18:1 GEAR RATIOS



### MATERIAL:

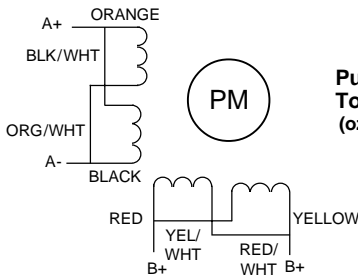
- Housing** – Molded Composite, Black
- Gears** – Steel, Precision Hobbed
- Bearings** – Composite
- Shaft** – Stainless Steel Heat-Treated

### SPECIFICATIONS:

- Max. Input Speed:** 1000 rpm
- Shaft Loading:** Radial – 4 lbs.  
Axial – 4 lbs.
- Shaft Play Max.:** Radial – .002  
End – .010
- Phase Resistance:** 3.3 ohms ± 10% @ 25°C
- Winding Inductance:** 3 mH ± 20%
- Rated Current:** 1.25 Amp. / Phase
- Minimum Efficiency:** 80%
- Maximum Backlash:** 45 minutes
- Operating Temperature:** -65°F to +250°F
- Max. Weight:** 45 oz.

Catalog Number	Gear Ratio	Step Angle per step	Torque Rating oz. in.		Maximum Inertia oz. in. sec. <sup>2</sup>
			Cont.	Holding	
S9117C-S18GM005	5:1	.36°	see curve	222	2.67 x 10 <sup>-5</sup>
S9117C-S18GM010	10:1	.18°	see curve	444	1.82 x 10 <sup>-6</sup>
S9117C-S18GM018	18:1	.10°	see curve	799	2.97 x 10 <sup>-4</sup>

### SCHEMATIC

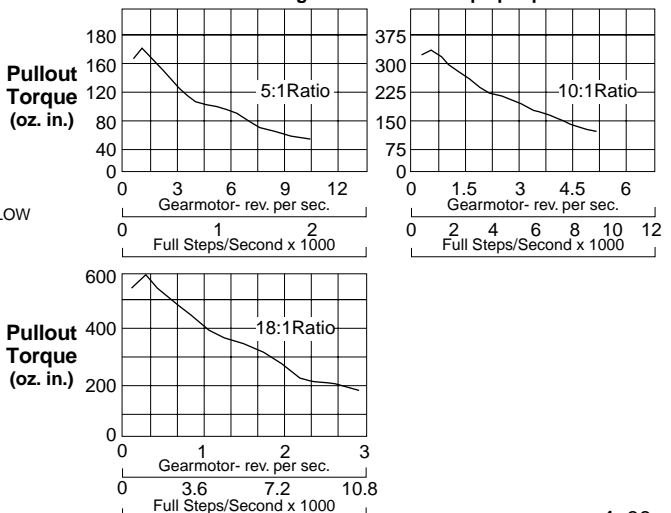


### Bipolar Chopper Drive Switching Sequence for CW Rotation Facing Mounting End

Step	Org	Blk	Red	Yel
0	+	-	+	-
1	-	+	+	-
2	-	+	-	+
3	+	-	-	+
4	+	-	+	-

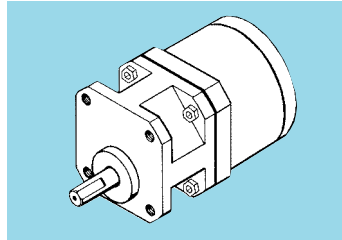
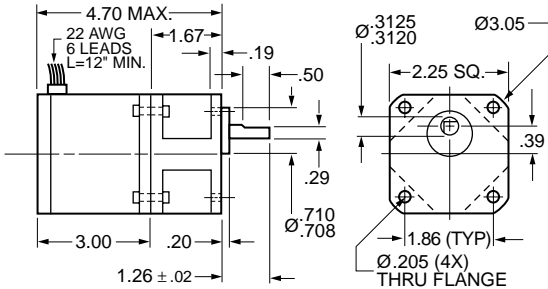
### SPEED vs. TORQUE CHARACTERISTICS

Drive Setting 35V DC – 1.25 Amps per phase



■ 1.8° NOMINAL MOTOR STEP ANGLE

■ 5:1, 10:1, 18:1 GEAR RATIOS



### MATERIAL:

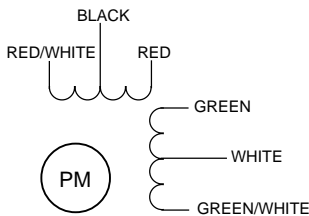
- Housing** – Molded Composite, Black
- Gears** – Steel, Precision Hobbed
- Bearings** – Composite
- Shaft** – Stainless Steel Heat-Treated

### SPECIFICATIONS:

- Max. Input Speed:** 1000 rpm
- Shaft Loading:** Radial – 15 lbs.  
Axial – 15 lbs.
- Shaft Play Max.:** Radial – .002  
End – .010
- Phase Resistance:** .37 ohms ± 10% @ 25°C
- Winding Inductance:** .6 mH ± 20%
- Rated Current:** 4.70 Amp. / Phase
- Minimum Efficiency:** 80%
- Maximum Backlash:** 30 minutes
- Operating Temperature:** -65°F to +250°F
- Weight:** 57 oz.

Catalog Number	Gear Ratio	Step Angle per step	Torque Rating oz. in.		Maximum Inertia oz. in. sec. <sup>2</sup>
			Cont.	Holding	
S9123C-S18GM005	5:1	.36°	see curve	500	1.471 x 10 <sup>-5</sup>
S9123C-S18GM010	10:1	.18°		1000	9.57 x 10 <sup>-6</sup>
S9123C-S18GM018	18:1	.10°		1800	1.986 x 10 <sup>-5</sup>

### SCHEMATIC



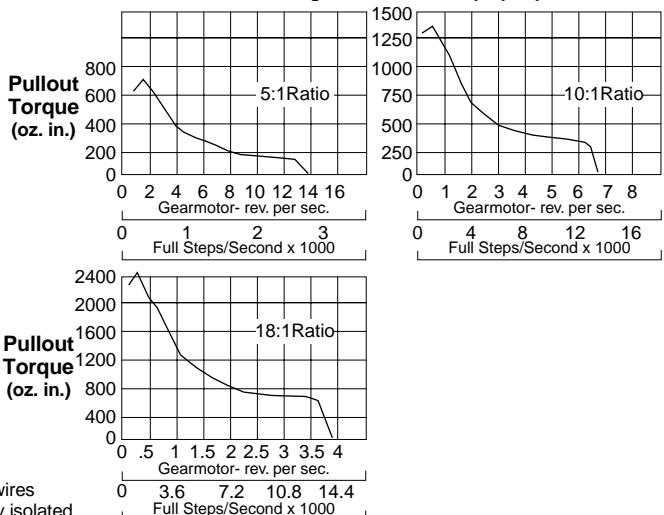
### Bipolar Chopper Drive Switching Sequence for CW Rotation Facing Mounting End

Step	Red	Black	Green	White
0	+	-	+	-
1	-	+	+	-
2	-	+	-	+
3	+	-	-	+
4	+	-	+	-

**NOTE:** Red/White and Green/White wires are not used. They must be electrically isolated.

### SPEED vs. TORQUE CHARACTERISTICS

Drive Setting 35V DC – 3.3 Amps per phase



## STANDARD DESIGN FEATURES

### Mechanical, Electrical and Environmental Specifications

	SIZE 11	SIZE 14	SIZE 17	SIZE HT17	SIZE 23	SIZE HT23	SIZE 34	SIZE HT34	SIZE 42
Shaft Run-Out (inches)	.001	.0005	.0005	.0005	.001	.002	.002	.002	.002
Radial Play (inch/lb.)	.001 max. @ 1.1 lb.	.0004 max. @ 1 lb.	.001 max. @ 4.4 lbs.	.0008 max. @ 1 lb.	.001 max. @ 1 lb.	.001 max. @ 1 lb.	.001 max. @ 1 lb.	.001 max. @ 1.1 lb.	.001 max. @ 5 lb.
End Play (inch/lb.)	.003 max. @ 2.2 lbs.	.0004 max. @ 2 lbs.	.001 max. @ 6.6 lbs.	.003 max. @ 2.2 lbs.	.001 max. @ 9 lbs.	.003 max. @ 2.2 lbs.	.001 max. @ 15 lbs.	.003 max. @ 2.2 lbs.	.001 max. @ 15 lbs.
Perpendicularity	.002	.003	.003	.003	.003	.003	.003	.003	.003
Concentricity (inches)	.002	.002	.002	.002	.002	.003	.002	.003	.003
Operating Temp. Range	-20°C to 40°C	-20°C to 50°C	-20°C to 50°C	-20°C to 50°C	-20°C to 50°C	-20°C to 50°C	-20°C to 50°C	-20°C to 50°C	-70°C to 40°C
Insulation Class	130°C Class B	130°C Class B	130°C Class B	130°C Class B	130°C Class B	130°C Class B	130°C Class B	130°C Class B	130°C Class B
Lead Wire Gauge	26 AWG	26 AWG	26 AWG	26 AWG	26 AWG	22 AWG	18 AWG	22 AWG	—
Max. Radial Load (lbs.)	1.1	5	5	5	15	15	25	96	25
Max. Trust Load (lbs.)	2.2	3	3	3	25	25	50	180	50

#### DESIGN TIPS:

- Series-connect lead wires for best torque at low speeds.
- Center tap to end or parallel-connect lead wires for best torque at higher speeds.
- Keep motor case temperature below 100°C. This can be achieved by lowering the motor current or limiting the duty cycle.
- Allow sufficient time to accelerate load.
- Size motor with 100% safety factor for required torque and speed.
- Do not disassemble motors. A significant reduction in motor performance will result.
- Do not machine shafts without consulting Sterling Instrument.
- Do not disconnect motor from drive while in operation.
- Do not use holding torque/detent torque of motor as fail-safe brake.

#### MOTOR INSTALLATION TIPS:

- Mount the motor securely against a surface with good thermal conductivity such as steel or aluminum.
- Properly align the motor with the load using a flexible coupling.
- Protect the motor shaft from excessive thrust, overhung and shock loads.

**INERTIA CONVERSION TABLE**

B A	lb-ft <sup>2</sup>	lb-ft-s <sup>2</sup> or slug-ft <sup>2</sup>	lb-in <sup>2</sup>	lb-in-s <sup>2</sup>	oz-in <sup>2</sup>	oz-in-s <sup>2</sup>	kg-cm <sup>2</sup>	kg-cm-s <sup>2</sup>	g-cm <sup>2</sup>	g-cm-s <sup>2</sup>
lb-ft <sup>2</sup>	1	3.108 x 10 <sup>-2</sup>	144	.373	2.304 x 10 <sup>3</sup>	5.968	421.40	0.4297	4.214 x 10 <sup>5</sup>	429.71
lb-ft-s <sup>2</sup>	32.174	1	4.633 x 10 <sup>3</sup>	12	7.413 x 10 <sup>4</sup>	192	1.356 x 10 <sup>4</sup>	13.825	1.356 x 10 <sup>7</sup>	1.383 x 10 <sup>4</sup>
lb-in <sup>2</sup>	6.944 x 10 <sup>-3</sup>	2.158 x 10 <sup>-4</sup>	1	2.590 x 10 <sup>-3</sup>	16	4.144 x 10 <sup>-2</sup>	2.926	2.984 x 10 <sup>-3</sup>	2.926 x 10 <sup>3</sup>	2.984
lb-in-s <sup>2</sup>	2.681	8.333 x 10 <sup>-2</sup>	386.1	1	6.177 x 10 <sup>3</sup>	16	1.130 x 10 <sup>3</sup>	1.152	1.130 x 10 <sup>6</sup>	1.152 x 10 <sup>3</sup>
oz-in <sup>2</sup>	4.34 x 10 <sup>-4</sup>	1.349 x 10 <sup>-5</sup>	6.25 x 10 <sup>-2</sup>	1.619 x 10 <sup>-4</sup>	1	2.59 x 10 <sup>-3</sup>	0.183	1.865 x 10 <sup>-4</sup>	182.901	0.186
oz-in-s <sup>2</sup>	0.168	5.208 x 10 <sup>-3</sup>	24.13	6.25 x 10 <sup>-2</sup>	386.088	1	70.616	7.201 x 10 <sup>-2</sup>	7.0616 x 10 <sup>4</sup>	72.008
kg-cm <sup>2</sup>	2.373 x 10 <sup>-3</sup>	7.376 x 10 <sup>-5</sup>	0.3417	8.851 x 10 <sup>-4</sup>	5.467	1.416 x 10 <sup>-2</sup>	1	1.0197 x 10 <sup>-3</sup>	1000	1.0197
kg-cm-s <sup>2</sup>	2.327	7.233 x 10 <sup>-2</sup>	335.109	0.8679	5.362 x 10 <sup>3</sup>	13.887	980.665	1	9.807 x 10 <sup>5</sup>	1000
g-cm <sup>2</sup>	2.373 x 10 <sup>-6</sup>	7.376 x 10 <sup>-8</sup>	3.417 x 10 <sup>-4</sup>	8.851 x 10 <sup>-7</sup>	5.467 x 10 <sup>-3</sup>	1.416 x 10 <sup>-5</sup>	10 <sup>-3</sup>	1.0197 x 10 <sup>-6</sup>	1	1.0197 x 10 <sup>-3</sup>
g-cm-s <sup>2</sup>	2.327 x 10 <sup>-3</sup>	7.233 x 10 <sup>-5</sup>	0.3351	8.680 x 10 <sup>-4</sup>	5.362	1.389 x 10 <sup>-2</sup>	.9807	10 <sup>-3</sup>	980.667	1

**NOTE:** To convert from A to B multiply by entry in table.

**Example:** Convert a rotor inertia of 90 g-cm<sup>2</sup> to oz-in-sec<sup>2</sup>

The multiplier from the table above is 1.416 x 10<sup>-5</sup>

The new inertia = 90 x 1.416 x 10<sup>-5</sup> = 1.27 x 10<sup>3</sup> oz-in-sec<sup>2</sup>