



## 2-phase Stepping Motor

**56mm sq.** 103H712 □  
(2.20inch sq.) 1.8°/step

Recommendable Driver  
Refer to the page 7,17,27 and 45.

### Specifications

#### Unipolar winding

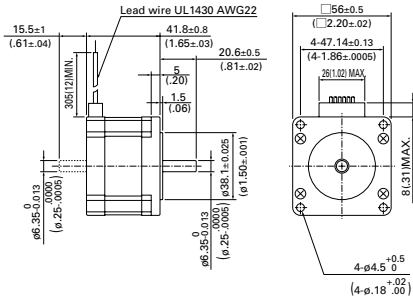
Model		Holding torque at 2-phase energization	Rated current	Resistance	Inductance	Rotor inertia	Mass(Weight)
Single shaft	Double shaft	N·m (oz·in) MIN.	A/phase	Ω/phase	mH/phase	$\times 10^{-4}$ kg·m <sup>2</sup> (oz·in <sup>2</sup> )	kg(lbs)
103H7121-0140	-0110	0.39(55.2)	1	4.8	8	0.1(0.55)	0.47(1.04)
103H7121-0440	-0410	0.39(55.2)	2	1.25	1.9	0.1(0.55)	0.47(1.04)
103H7121-0740	-0710	0.39(55.2)	3	0.6	0.8	0.1(0.55)	0.47(1.04)
103H7123-0140	-0110	0.83(117.)	1	6.7	15	0.21(1.15)	0.65(1.43)
103H7123-0440	-0410	0.83(117.5)	2	1.6	3.8	0.21(1.15)	0.65(1.43)
103H7123-0740	-0710	0.78(110.5)	3	0.77	1.58	0.21(1.15)	0.65(1.43)
103H7124-0140	-0110	0.98(138.8)	1	7	12.5	0.245(1.34)	0.8(1.76)
103H7124-0440	-0410	0.98(138.8)	2	1.7	3.1	0.245(1.34)	0.8(1.76)
103H7124-0740	-0710	0.98(138.8)	3	0.74	1.4	0.245(1.34)	0.8(1.76)
103H7126-0140	-0110	1.27(179.8)	1	8.6	19	0.36(1.97)	0.98(2.16)
103H7126-0440	-0410	1.27(179.8)	2	2	4.5	0.36(1.97)	0.98(2.16)
103H7126-0740	-0710	1.27(179.8)	3	0.9	2.2	0.36(1.97)	0.98(2.16)

#### Bipolar winding

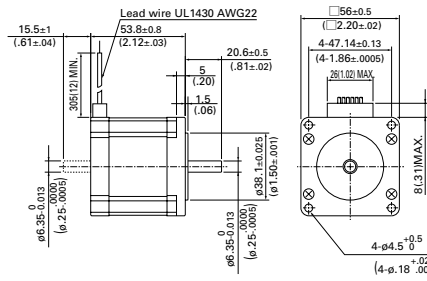
Model		Holding torque at 2-phase energization	Rated current	Resistance	Inductance	Rotor inertia	Mass(Weight)
Single shaft	Double shaft	N·m (oz·in) MIN.	A/phase	Ω/phase	mH/phase	$\times 10^{-4}$ kg·m <sup>2</sup> (oz·in <sup>2</sup> )	kg(lbs)
103H7121-5040	-5010	0.39(55.2)	2	0.65	1.9	0.1(0.55)	0.47(1.04)
103H7121-5640	-5610	0.55(77.9)	1	4.3	14.5	0.1(0.55)	0.47(1.04)
103H7121-5740	-5710	0.55(77.9)	2	1.1	3.7	0.1(0.55)	0.47(1.04)
103H7121-5840	-5810	0.55(77.9)	3	0.54	1.74	0.1(0.55)	0.47(1.04)
103H7123-5040	-5010	0.83(117.5)	2	0.8	3.8	0.21(1.15)	0.65(1.43)
103H7123-5640	-5610	1.0(141.6)	1	5.7	29.4	0.21(1.15)	0.65(1.43)
103H7123-5740	-5710	1.0(141.6)	2	1.5	7.5	0.21(1.15)	0.65(1.43)
103H7123-5840	-5810	1.0(141.6)	3	0.7	3.5	0.21(1.15)	0.65(1.43)
103H7126-5040	-5010	1.27(179.8)	2	1.05	4.5	0.36(1.97)	0.98(2.16)
103H7126-5640	-5610	1.6(226.6)	1	7.7	34.6	0.36(1.97)	0.98(2.16)
103H7126-5740	-5710	1.6(226.6)	2	2	9.1	0.36(1.97)	0.98(2.16)
103H7126-5840	-5810	1.6(226.6)	3	0.94	4	0.36(1.97)	0.98(2.16)
103H7128-5640	-5610	2(283.2)	1	8.9	40.1	0.49(2.68)	1.3(2.87)
103H7128-5740	-5710	2(283.2)	2	2.3	10.4	0.49(2.68)	1.3(2.87)
103H7128-5840	-5810	2(283.2)	3	1.03	4.3	0.49(2.68)	1.3(2.87)

**Dimensions** [Unit:mm(inch)]

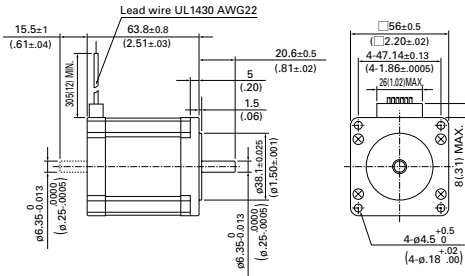
**103H7121-0140/0440/0740/5040 (Single shaft)**  
**103H7121-0110/0410/0710/5010 (Double shaft)**



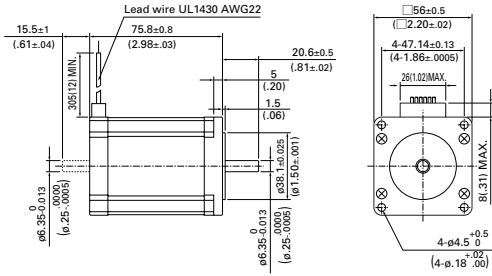
**103H7123-0140/0440/0740/5040 (Single shaft)**  
**103H7123-0110/0410/0710/5010 (Double shaft)**



**103H7124-0140/0440/0740 (Single shaft)**  
**103H7124-0110/0410/0710 (Double shaft)**

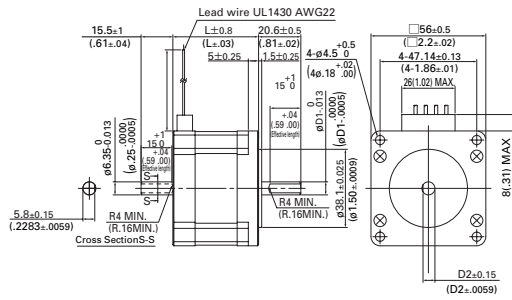


**103H7126-0140/0440/0740/5040 (Single shaft)**  
**103H7126-0110/0410/0710/5010 (Double shaft)**



**Bipolar winding**

**103H712 □-5 □ 40 (Single shaft)**  
**103H712 □-5 □ 10 (Double shaft)**

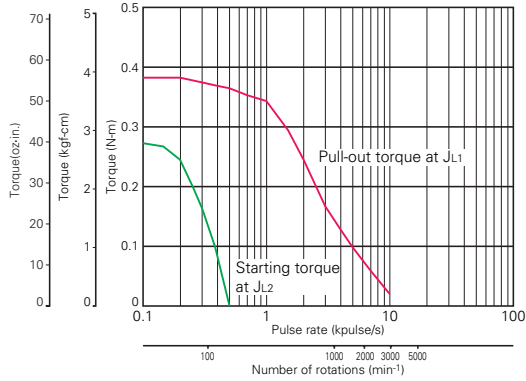


Model	L	D1	D2
103H7121-□□□□	41.8 (1.65)	6.35 (.25)	5.8 (.23)
103H7123-□□□□	53.8 (2.12)		
103H7126-□□□□	75.8 (2.98)	8 (.3149)	7.5 (.30)
103H7128-□□□□	94.8 (3.73)		

39mm(1.54)/0.9  
42mm(1.65)/0.9  
28mm(1.10)/1.8  
35mm(1.38)/1.8  
50mm(1.97)/1.8  
42mm(1.65)/1.8  
56mm(2.20)/1.8  
60mm(2.36)/1.8  
86mm(3.39)/1.8  
106mm(4.17)/1.8  
56mm(2.20)/CE  
86mm(3.39)/CE  
106mm(4.17)/CE  
Specifications of 2-phase stepping motor  
In-vacuum stepping motor  
2-phase synchronous motor

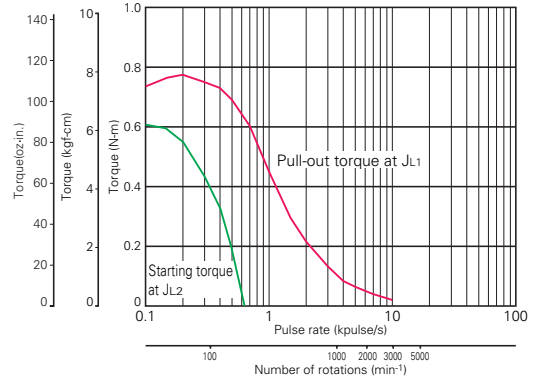
## Pulse Rate - Torque Characteristics

### ● 103H7121-0140



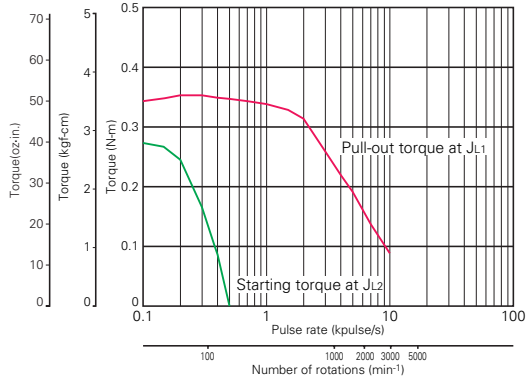
Sanyo constant current circuit  
 Source voltage: DC24V Operating current : 1A/phase, 2-phase energization (full-step)  
 $J_{L1}=[0.94 \times 10^{-4} \text{kg} \cdot \text{m}^2 (5.14 \text{ oz} \cdot \text{in}^2)]$  Use the rubber coupling  
 $J_{L2}=[0.8 \times 10^{-4} \text{kg} \cdot \text{m}^2 (4.37 \text{ oz} \cdot \text{in}^2)]$  Use the direct coupling

### ● 103H7123-0140



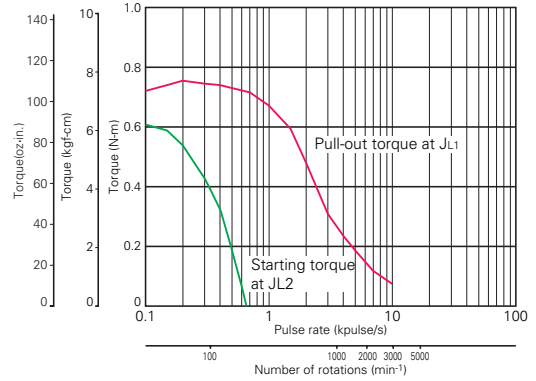
Sanyo constant current circuit  
 Source voltage: DC24V Operating current : 1A/phase, 2-phase energization (full-step)  
 $J_{L1}=[0.94 \times 10^{-4} \text{kg} \cdot \text{m}^2 (5.14 \text{ oz} \cdot \text{in}^2)]$  Use the rubber coupling  
 $J_{L2}=[0.8 \times 10^{-4} \text{kg} \cdot \text{m}^2 (4.37 \text{ oz} \cdot \text{in}^2)]$  Use the direct coupling

### ● 103H7121-0440



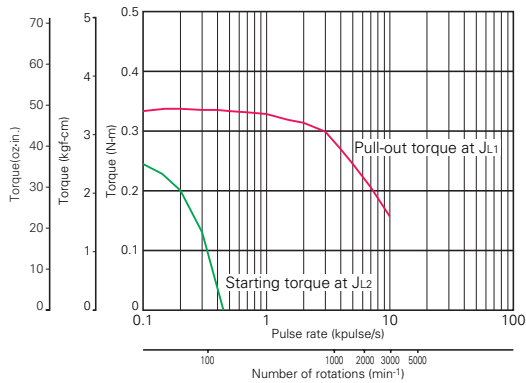
Sanyo constant current circuit  
 Source voltage: DC24V Operating current : 2A/phase, 2-phase energization (full-step)  
 $J_{L1}=[0.94 \times 10^{-4} \text{kg} \cdot \text{m}^2 (5.14 \text{ oz} \cdot \text{in}^2)]$  Use the rubber coupling  
 $J_{L2}=[0.8 \times 10^{-4} \text{kg} \cdot \text{m}^2 (4.37 \text{ oz} \cdot \text{in}^2)]$  Use the direct coupling

### ● 103H7123-0440



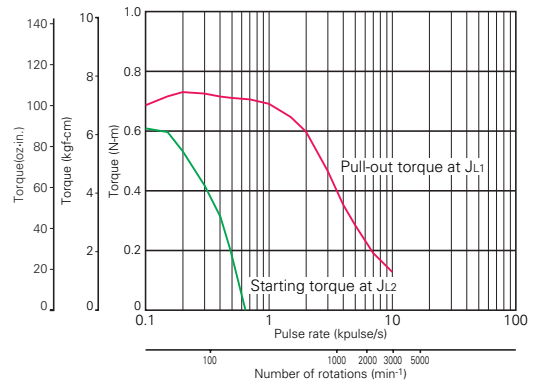
Sanyo constant current circuit  
 Source voltage: DC24V Operating current : 2A/phase, 2-phase energization (full-step)  
 $J_{L1}=[0.94 \times 10^{-4} \text{kg} \cdot \text{m}^2 (5.14 \text{ oz} \cdot \text{in}^2)]$  Use the rubber coupling  
 $J_{L2}=[0.8 \times 10^{-4} \text{kg} \cdot \text{m}^2 (4.37 \text{ oz} \cdot \text{in}^2)]$  Use the direct coupling

### ● 103H7121-0740



Sanyo constant current circuit  
 Source voltage: DC24V Operating current : 3A/phase, 2-phase energization (full-step)  
 $J_{L1}=[0.94 \times 10^{-4} \text{kg} \cdot \text{m}^2 (5.14 \text{ oz} \cdot \text{in}^2)]$  Use the rubber coupling  
 $J_{L2}=[0.8 \times 10^{-4} \text{kg} \cdot \text{m}^2 (4.37 \text{ oz} \cdot \text{in}^2)]$  Use the direct coupling

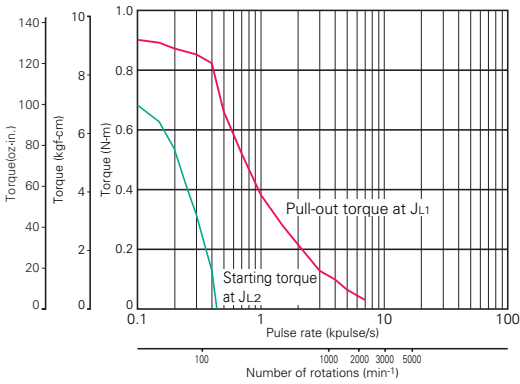
### ● 103H7123-0740



Sanyo constant current circuit  
 Source voltage: DC24V Operating current : 3A/phase, 2-phase energization (full-step)  
 $J_{L1}=[0.94 \times 10^{-4} \text{kg} \cdot \text{m}^2 (5.14 \text{ oz} \cdot \text{in}^2)]$  Use the rubber coupling  
 $J_{L2}=[0.8 \times 10^{-4} \text{kg} \cdot \text{m}^2 (4.37 \text{ oz} \cdot \text{in}^2)]$  Use the direct coupling

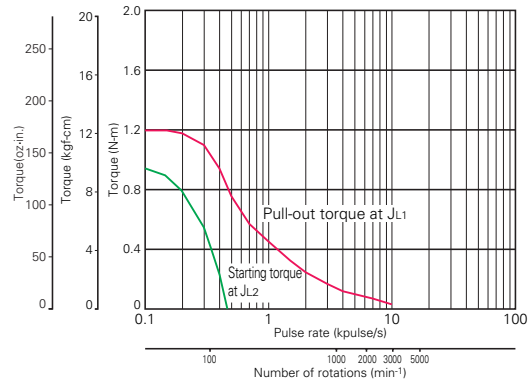
Pulse Rate - Torque Characteristics

● 103H7124-0140



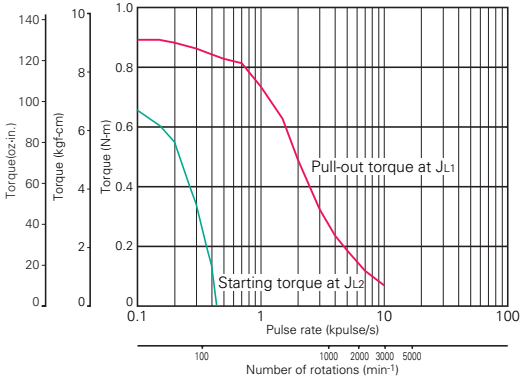
Sanyo constant current circuit  
 Source voltage: DC24V Operating current : 1A/phase, 2-phase energization (full-step)  
 J<sub>L1</sub>=[2.6x10<sup>-4</sup>kg·m<sup>2</sup> (14.22 oz-in<sup>2</sup>) Use the rubber coupling]  
 J<sub>L2</sub>=[2.6x10<sup>-4</sup>kg·m<sup>2</sup> (14.22 oz-in<sup>2</sup>) Use the direct coupling]

● 103H7126-0140



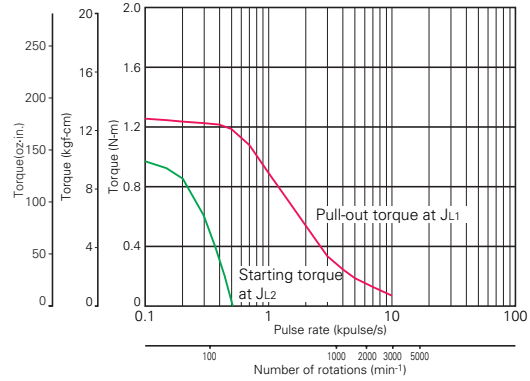
Sanyo constant current circuit  
 Source voltage: DC24V Operating current : 1A/phase, 2-phase energization (full-step)  
 J<sub>L1</sub>=[2.6x10<sup>-4</sup>kg·m<sup>2</sup> (14.22 oz-in<sup>2</sup>) Use the rubber coupling]  
 J<sub>L2</sub>=[2.6x10<sup>-4</sup>kg·m<sup>2</sup> (14.22 oz-in<sup>2</sup>) Use the direct coupling]

● 103H7124-0440



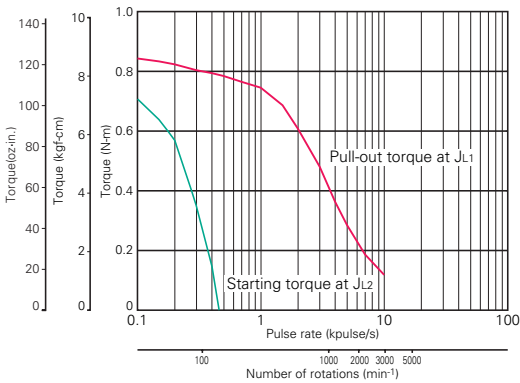
Sanyo constant current circuit  
 Source voltage: DC24V Operating current : 2A/phase, 2-phase energization (full-step)  
 J<sub>L1</sub>=[2.6x10<sup>-4</sup>kg·m<sup>2</sup> (14.22 oz-in<sup>2</sup>) Use the rubber coupling]  
 J<sub>L2</sub>=[2.6x10<sup>-4</sup>kg·m<sup>2</sup> (14.22 oz-in<sup>2</sup>) Use the direct coupling]

● 103H7126-0440



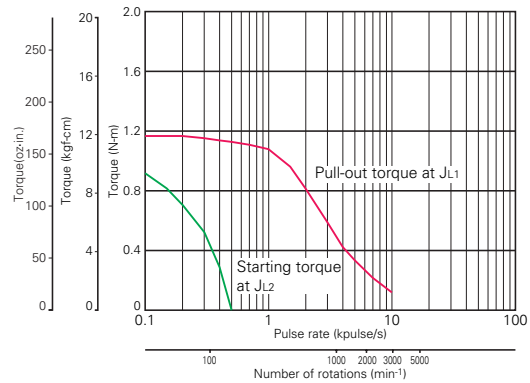
Sanyo constant current circuit  
 Source voltage: DC24V Operating current : 2A/phase, 2-phase energization (full-step)  
 J<sub>L1</sub>=[2.6x10<sup>-4</sup>kg·m<sup>2</sup> (14.22 oz-in<sup>2</sup>) Use the rubber coupling]  
 J<sub>L2</sub>=[2.6x10<sup>-4</sup>kg·m<sup>2</sup> (14.22 oz-in<sup>2</sup>) Use the direct coupling]

● 103H7124-0740



Sanyo constant current circuit  
 Source voltage: DC24V Operating current : 3A/phase, 2-phase energization (full-step)  
 J<sub>L1</sub>=[2.6x10<sup>-4</sup>kg·m<sup>2</sup> (14.22 oz-in<sup>2</sup>) Use the rubber coupling]  
 J<sub>L2</sub>=[2.6x10<sup>-4</sup>kg·m<sup>2</sup> (14.22 oz-in<sup>2</sup>) Use the direct coupling]

● 103H7126-0740

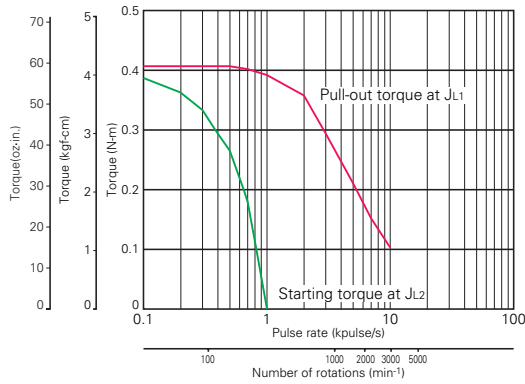


Sanyo constant current circuit  
 Source voltage: DC24V Operating current : 3A/phase, 2-phase energization (full-step)  
 J<sub>L1</sub>=[2.6x10<sup>-4</sup>kg·m<sup>2</sup> (14.22 oz-in<sup>2</sup>) Use the rubber coupling]  
 J<sub>L2</sub>=[2.6x10<sup>-4</sup>kg·m<sup>2</sup> (14.22 oz-in<sup>2</sup>) Use the direct coupling]

● 39mm(1.54)/0.9  
 ● 42mm(1.65)/0.9  
 ● 28mm(1.10)/1.8  
 ● 35mm(1.38)/1.8  
 ● 42mm(1.65)/1.8  
 ● 50mm(1.97)/1.8  
 ● 56mm(2.20)/1.8  
 ● 60mm(2.36)/1.8  
 ● 86mm(3.39)/1.8  
 ● 106mm(4.17)/1.8  
 ● 56mm(2.20)/CE  
 ● 86mm(3.39)/CE  
 ● 106mm(4.17)/CE  
 Specifications of 2-phase stepping motor  
 In-vacuum stepping motor  
 2-phase synchronous motor

## Pulse Rate - Torque Characteristics

### ● 103H7121-5040



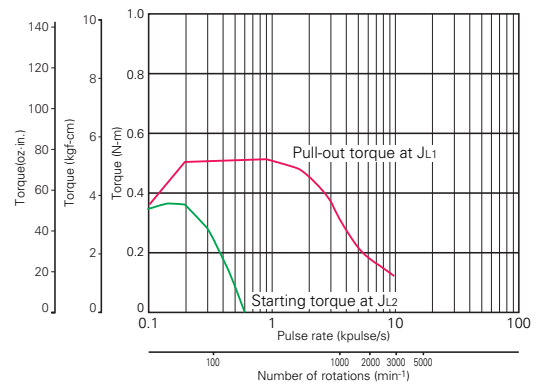
Sanyo constant current circuit

Source voltage: DC24V Operating current: 2A/phase, 2-phase energization (full-step)

J<sub>L1</sub>=[0.94x10<sup>-4</sup>kg·m<sup>2</sup> (5.14 oz-in<sup>2</sup>) Use the rubber coupling]

J<sub>L2</sub>=[0.8x10<sup>-4</sup>kg·m<sup>2</sup> (4.37 oz-in<sup>2</sup>) Use the direct coupling]

### ● 103H7121-5840



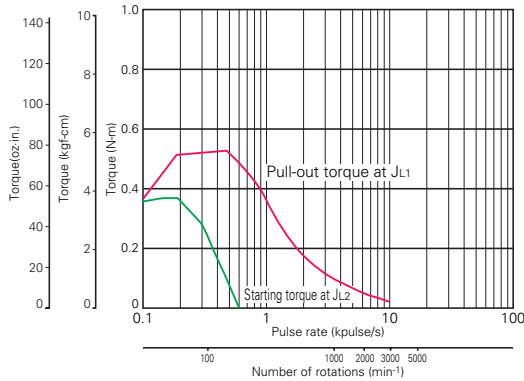
Sanyo constant current circuit

Source voltage: DC24V Operating current: 3A/phase, 2-phase energization (full-step)

J<sub>L1</sub>=[0.94x10<sup>-4</sup>kg·m<sup>2</sup> (5.14 oz-in<sup>2</sup>) Use the rubber coupling]

J<sub>L2</sub>=[0.8x10<sup>-4</sup>kg·m<sup>2</sup> (4.37 oz-in<sup>2</sup>) Use the direct coupling]

### ● 103H7121-5640



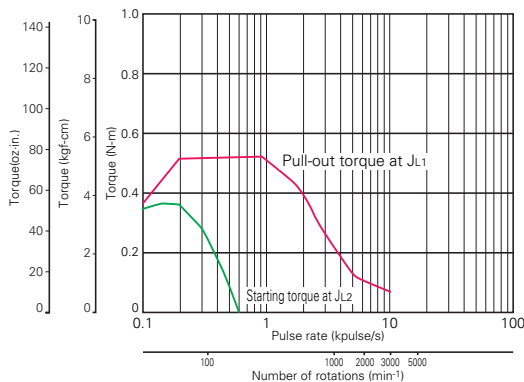
Sanyo constant current circuit

Source voltage: DC24V Operating current: 1A/phase, 2-phase energization (full-step)

J<sub>L1</sub>=[0.94x10<sup>-4</sup>kg·m<sup>2</sup> (5.14 oz-in<sup>2</sup>) Use the rubber coupling]

J<sub>L2</sub>=[0.8x10<sup>-4</sup>kg·m<sup>2</sup> (4.37 oz-in<sup>2</sup>) Use the direct coupling]

### ● 103H7121-5740



Sanyo constant current circuit

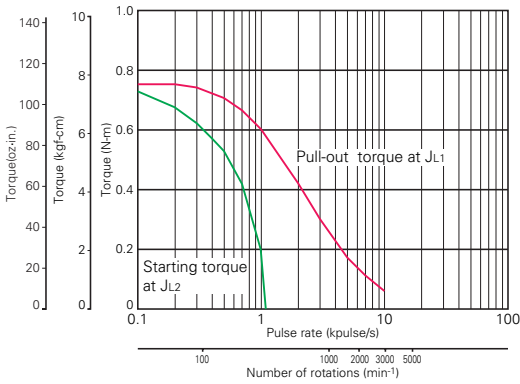
Source voltage: DC24V Operating current: 2A/phase, 2-phase energization (full-step)

J<sub>L1</sub>=[0.94x10<sup>-4</sup>kg·m<sup>2</sup> (5.14 oz-in<sup>2</sup>) Use the rubber coupling]

J<sub>L2</sub>=[0.8x10<sup>-4</sup>kg·m<sup>2</sup> (4.37 oz-in<sup>2</sup>) Use the direct coupling]

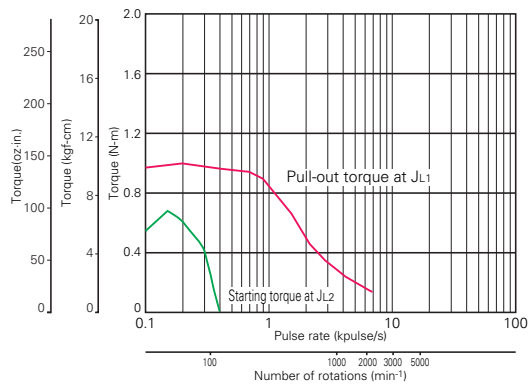
Pulse Rate - Torque Characteristics

● 103H7123-5040



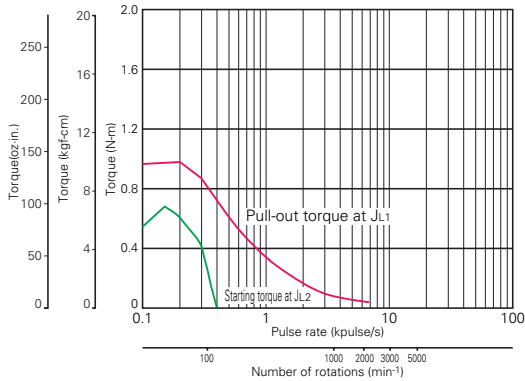
Sanyo constant current circuit  
 Source voltage: DC24V Operating current: 2A/phase, 2-phase energization (full-step)  
 $J_{L1}=[0.94 \times 10^{-4} \text{kg}\cdot\text{m}^2 (5.14 \text{oz}\cdot\text{in}^2)]$  Use the rubber coupling)  
 $J_{L2}=[0.8 \times 10^{-4} \text{kg}\cdot\text{m}^2 (4.37 \text{oz}\cdot\text{in}^2)]$  Use the direct coupling)

● 103H7123-5840



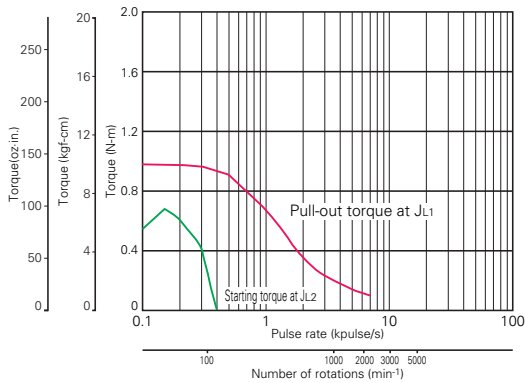
Sanyo constant current circuit  
 Source voltage: DC24V Operating current: 3A/phase, 2-phase energization (full-step)  
 $J_{L1}=[2.6 \times 10^{-4} \text{kg}\cdot\text{m}^2 (14.22 \text{oz}\cdot\text{in}^2)]$  Use the rubber coupling)  
 $J_{L2}=[2.6 \times 10^{-4} \text{kg}\cdot\text{m}^2 (14.22 \text{oz}\cdot\text{in}^2)]$  Use the direct coupling)

● 103H7123-5640



Sanyo constant current circuit  
 Source voltage: DC24V Operating current: 1A/phase, 2-phase energization (full-step)  
 $J_{L1}=[2.6 \times 10^{-4} \text{kg}\cdot\text{m}^2 (14.22 \text{oz}\cdot\text{in}^2)]$  Use the rubber coupling)  
 $J_{L2}=[2.6 \times 10^{-4} \text{kg}\cdot\text{m}^2 (14.22 \text{oz}\cdot\text{in}^2)]$  Use the direct coupling)

● 103H7123-5740

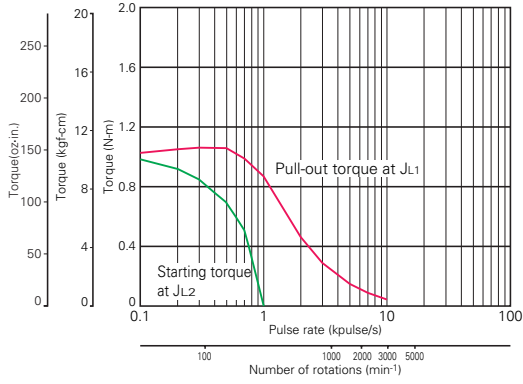


Sanyo constant current circuit  
 Source voltage: DC24V Operating current: 2A/phase, 2-phase energization (full-step)  
 $J_{L1}=[2.6 \times 10^{-4} \text{kg}\cdot\text{m}^2 (14.22 \text{oz}\cdot\text{in}^2)]$  Use the rubber coupling)  
 $J_{L2}=[2.6 \times 10^{-4} \text{kg}\cdot\text{m}^2 (14.22 \text{oz}\cdot\text{in}^2)]$  Use the direct coupling)

- 39mm(1.54)/0.9
- 42mm(1.65)/0.9
- 28mm(1.10)/1.8
- 35mm(1.38)/1.8
- 42mm(1.65)/1.8
- 50mm(1.97)/1.8
- 56mm(2.20)/1.8
- 60mm(2.36)/1.8
- 86mm(3.39)/1.8
- 106mm(4.17)/1.8
- 56mm(2.20)/CE
- 86mm(3.39)/CE
- 106mm(4.17)/CE
- 2-phase synchronous motor
- In-vacuum stepping motor

## Pulse Rate - Torque Characteristics

### ● 103H7126-5040



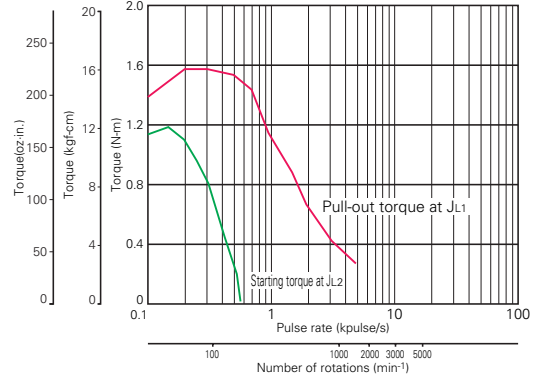
Sanyo constant current circuit

Source voltage: DC24V Operating current: 2A/phase, 2-phase energization (full-step)

J<sub>L1</sub>=[2.6x10<sup>-4</sup>kg·m<sup>2</sup> (14.22 oz-in<sup>2</sup>) Use the rubber coupling]

J<sub>L2</sub>=[2.6x10<sup>-4</sup>kg·m<sup>2</sup> (14.22 oz-in<sup>2</sup>) Use the direct coupling]

### ● 103H7126-5840



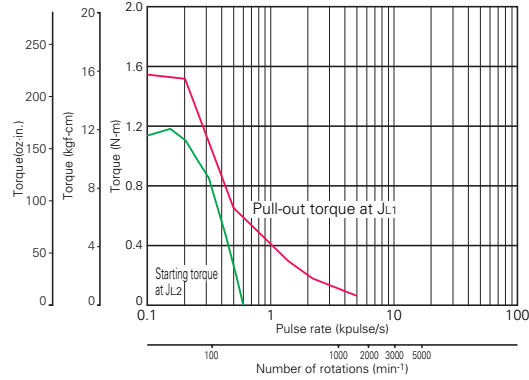
Sanyo constant current circuit

Source voltage: DC24V Operating current: 3A/phase, 2-phase energization (full-step)

J<sub>L1</sub>=[2.6x10<sup>-4</sup>kg·m<sup>2</sup> (14.22 oz-in<sup>2</sup>) Use the rubber coupling]

J<sub>L2</sub>=[2.6x10<sup>-4</sup>kg·m<sup>2</sup> (14.22 oz-in<sup>2</sup>) Use the direct coupling]

### ● 103H7126-5640



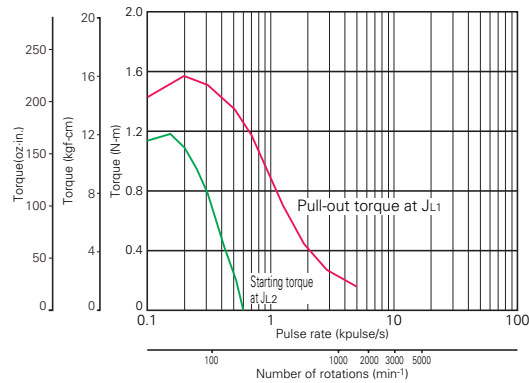
Sanyo constant current circuit

Source voltage: DC24V Operating current: 1A/phase, 2-phase energization (full-step)

J<sub>L1</sub>=[2.6x10<sup>-4</sup>kg·m<sup>2</sup> (14.22 oz-in<sup>2</sup>) Use the rubber coupling]

J<sub>L2</sub>=[2.6x10<sup>-4</sup>kg·m<sup>2</sup> (14.22 oz-in<sup>2</sup>) Use the direct coupling]

### ● 103H7126-5740



Sanyo constant current circuit

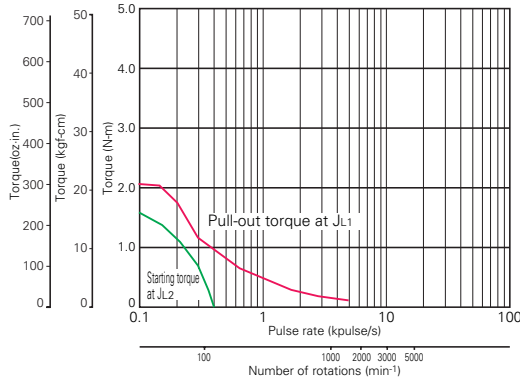
Source voltage: DC24V Operating current: 2A/phase, 2-phase energization (full-step)

J<sub>L1</sub>=[2.6x10<sup>-4</sup>kg·m<sup>2</sup> (14.22 oz-in<sup>2</sup>) Use the rubber coupling]

J<sub>L2</sub>=[2.6x10<sup>-4</sup>kg·m<sup>2</sup> (14.22 oz-in<sup>2</sup>) Use the direct coupling]

Pulse Rate - Torque Characteristics

● 103H7128-5640



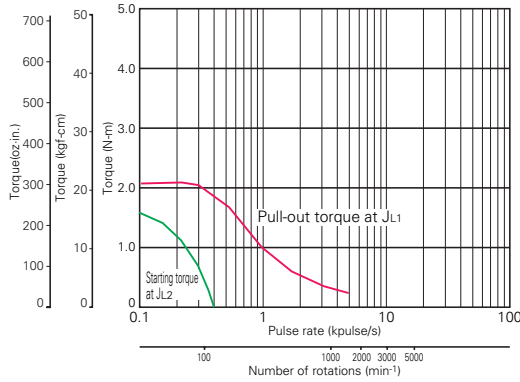
Sanyo constant current circuit

Source voltage: DC24V Operating current: 1A/phase, 2-phase energization (full-step)

JL1=[7.4x10<sup>-4</sup>kg-m<sup>2</sup> (40.46 oz-in<sup>2</sup>) Use the rubber coupling]

JL2=[7.4x10<sup>-4</sup>kg-m<sup>2</sup> (40.46 oz-in<sup>2</sup>) Use the direct coupling]

● 103H7128-5740



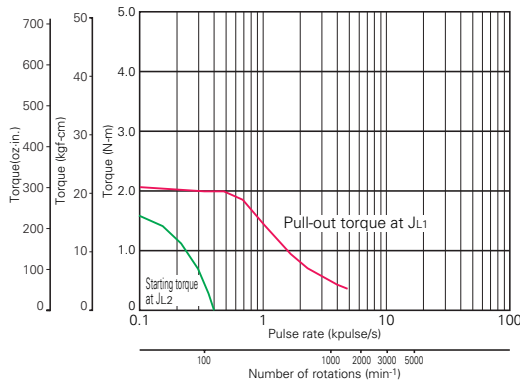
Sanyo constant current circuit

Source voltage: DC24V Operating current: 2A/phase, 2-phase energization (full-step)

JL1=[7.4x10<sup>-4</sup>kg-m<sup>2</sup> (40.46 oz-in<sup>2</sup>) Use the rubber coupling]

JL2=[7.4x10<sup>-4</sup>kg-m<sup>2</sup> (40.46 oz-in<sup>2</sup>) Use the direct coupling]

● 103H7128-5840



Sanyo constant current circuit

Source voltage: DC24V Operating current: 3A/phase, 2-phase energization (full-step)

JL1=[7.4x10<sup>-4</sup>kg-m<sup>2</sup> (40.46 oz-in<sup>2</sup>) Use the rubber coupling]

JL2=[7.4x10<sup>-4</sup>kg-m<sup>2</sup> (40.46 oz-in<sup>2</sup>) Use the direct coupling]

- 39mm(1.54)/0.9
- 42mm(1.65)/0.9
- 28mm(1.10)/1.8
- 85mm(3.39)/1.8
- 42mm(1.65)/1.8
- 50mm(1.97)/1.8
- 56mm(2.20)/1.8
- 60mm(2.36)/1.8
- 86mm(3.39)/1.8
- 106mm(4.17)/1.8
- 56mm(2.20)/CE
- 86mm(3.39)/CE
- 106mm(4.17)/CE
- Specifications of 2-phase stepping motor
- In-vacuum stepping motor
- 2-phase synchronous motor