



## 12, 24, 90, and 180VDC Permanent Magnet Motors

- Rotation: CW/CCW
- Service factor: 1.0
- Bearings: ball
- Max. ambient temp.: 40°C

Designed for use with speed controls or NEMA Type K DC power supplies on constant or diminishing torque applications. Performance matched with Dayton® and Dart Speed Controls listed on pages 158 and 159. 90V and 180V models feature a tapped hole on the fan end shaft to mount a No. 6Z392 or No. 5JJ65 pulse generator (see page 159). 56C frame models have a removable base. Find replacement brushes on Grainger.com®. 12V and 24V units are UL Recognized (E57948) and CSA Certified (LR33543); 90V and 180V units are UL Recognized (E47479).

HP	Nameplate RPM	Frame	Enclosure	Full Load Amps	Ins. Class	Overall Length	Item No.
<b>12VDC</b>							
1/4	1800	56C	TENV	21.0	F	10 1/4"	6MK98
1/2	1800	56C	TENV	27.0	F	10 3/4"	6MK99
3/4	1800	56C	TENV	39.0	H	11 3/4"	6ML02
1	1800	56C	TEFC	58.0	F	13 3/4"	6ML04
1	1800	56C	TEFC	80.0	H	13 3/4"	6ML06
<b>24VDC</b>							
1/2	1800	56C	TENV	13.5	F	10 3/4"	6ML01
3/4	1800	56C	TENV	20.0	F	11 3/4"	6ML03
1	1800	56C	TEFC	29.0	F	12 3/4"	6ML05
1	1800	56C	TEFC	39.0	H	13 3/4"	6ML07
<b>90VDC</b>							
1/4	1750	56C	TEFC	2.5	F	10 1/4"	2M167
1/2	1750	56C	TEFC	3.5	F	11 3/4"	2M509
3/4	1750	56C	TEFC	5.0	F	11 3/4"	2M168
1	1750	56C	TEFC	7.6	F	13 3/4"	2M169
1	1750	56C	TEFC	10.0	F	14 3/4"	2M170
<b>180VDC</b>							
1/2	1725	56C	TEFC	2.5	F	11 3/4"	4Z524
3/4	1750	56C	TEFC	3.8	F	13 3/4"	4Z525
1	1750	56C	TEFC	5.0	F	14 3/4"	4Z378
1 1/2	1750	143/5TC	TEFC	7.5	H	18 3/4"	4Z379
3	1750	143/5TC	TEFC	15.0	H	22 3/4"	6Z791

HP	Nameplate RPM	Full Load Torque	Full Load Amps	Ins. Class	Shaft Dia.	Overall Length	Base Mounting O.C.	Face Mounting O.C.	Item No.
<b>12/24VDC</b>									
1/8, 1/4	1800/4300	0.81 in.-lb.	2.4	B	1/4"	5 1/4"	3 1/4 x 1 1/4"	1 3/4 x 1 3/4"	3XE19
1/8, 1/2	1725/4000	1.81 in.-lb.	5.1	B	3/16"	6 7/16"	4 1/16 x 1 1/4"	1 3/4 x 1 3/4"	3XE20
1/4, 1/2	1750/3900	5.63 in.-lb.	14.0	B	1/2"	8 3/4"	6 1/8 x 2"	2 5/8 x 2 5/8"	4Z143
1/4, 1/4	1750/4200	2.56 in.-lb.	6.9	B	1/2"	6 3/4"	4 1/8 x 2"	2 5/8 x 2 5/8"	4Z144
1/4, 1/4	1800/4200	6.38 in.-lb.	16.2	B	1/2"	9 3/4"	7 1/8 x 2"	2 5/8 x 2 5/8"	4Z529
<b>90VDC</b>									
1/3	2500	0.5 in.-lb.	0.3	B	1/4"	5 1/4"	3 1/2 x 1 1/4"	1 3/4 x 1 3/4"	3XE21
1/2	1800	1.3 in.-lb.	0.5	B	3/16"	6 1/8"	4 1/16 x 1 1/4"	1 3/4 x 1 3/4"	3XE22
1/4	1800	1.95 in.-lb.	0.8	B	1/2"	6 3/4"	4 1/8 x 2"	2 5/8 x 2 5/8"	4Z141
1/8	1800	4.38 in.-lb.	1.5	B	1/2"	8 3/4"	6 1/8 x 2"	2 5/8 x 2 5/8"	4Z140
1/4	1800	5.63 in.-lb.	1.8	B	1/2"	9 3/4"	7 1/8 x 2"	2 5/8 x 2 5/8"	4Z528
<b>180VDC</b>									
1/8	1800	5.63 in.-lb.	0.9	—	1/2"	9 3/4"	7 1/8 x 2"	2 5/8 x 2 5/8"	1Z851

1-800-GRAINGER (472-4643)

**IMPORTANT MOTOR INFORMATION:** Refer to pages 3-7 for selection guidelines, standardized dimensions, thermal protection information, UL 507 Standard location information, NEMA & IEC guidelines, energy legislation information, and terminology.



## 90 and 180VDC Permanent Magnet Motors with Control

- Enclosure: totally enclosed fan-cooled, NEMA 1 control
- Rotation: CW/CCW
- Insulation: Class F
- Mounting: C-face with removable rigid base
- Bearings: ball
- Max. ambient temp.: 40°C
- Input: 115 or 230VAC, 60/50 Hz (No. 4Z226 requires 250V, 20A receptacle)
- 50:1 control speed range

Control regulates speeds within 1% of nameplate rpm and provides full-wave rectification with adjustable min./max. speed, current/torque limit, IR compensation, fixed acceleration, transient and surge protection, and front-panel fuse protection. No. 41D720 has adjustable min./max. speed and IR compensation. Speed regulation: ±1%. Motors are UL Recognized and CSA Certified; Speed Control is UL and C-UL Listed.

HP	Nameplate RPM	Frame	Full Load Amps	Max. Torque	Overall Length	Item No.		
<b>115VAC Input, 90VDC Armature</b>								
¼	1750	56C	2.5	9.1 in.-lb.	15½"	4Z248		
½	1750	56C	5.0	18.2 in.-lb.	16½"	1F800		
¾	2500	56C	7.6	18.9 in.-lb.	16½"	2Z846		
¾	1750	56C	7.6	27 in.-lb.	18½"	1F796		
1	1750	56C	10.0	36.6 in.-lb.	20½"	1F798		
<b>230VAC Input, 180VDC Armature</b>								
1½	2500	56C	7.5	37.8 in.-lb.	19½"	4Z226		
Enclosure	AC Input Voltage	HP @ 90VDC	HP @ 180VDC	External Switches	W	H	D	Item No.
<b>Replacement Speed Control</b>								
NEMA 1	120/240VAC	¼ to 1	½ to 2	FWD/OFF/REV	6"	5.13"	6.5"	41D720 *
<b>* Fuse protected.</b>								

\* Fuse protected.

## 12VDC Permanent Magnet Motor

- Enclosure: totally enclosed nonventilated
- Rotation: CW/CCW
- Insulation: Class A
- Bearings: sleeve
- Max. ambient temp.: 40°C

Shaft is 1/4" x 1" with flat. 3 1/8"-dia. body mounts with 1/2"-long studs, 2 5/16" on center.

HP	Nameplate RPM	Voltage	Full Load Amps	Overall Length	Item No.
1/8	2350	12VDC	3.8	4 1/8"	3LCH7



## 12/24, 90, and 180VDC Permanent Magnet Motors

- Enclosure: totally enclosed nonventilated
- Rotation: CW/CCW
- Bearings: ball
- Max. ambient temp.: 40°C

Use with Type K DC rectified power sources matched to voltage (providing form factor does not exceed 1.3); see pages 158 and 159. For adjustable speed controls for 12/24V models, see page 159; for 90V and 180V models, see page 158. UL Recognized.



No. 3XE19