

SF - SERIES

Food Grade Servo Motor
2" Frame

Motor Data (115V)

Performance Data (40 °C)	Symbol	Unit	SF21-E	SF21-L	SF21-S	SF22-E	SF22-L
Continuous Rated Torque (Stall)	T_c	lb-in [Nm]	4.38 [0.49]	4.38 [0.49]	4.38 [0.49]	6.44 [0.73]	6.44 [0.73]
Continuous Rated Current (RMS)	I_c	Amps (RMS)					3.40
Max. Continuous Power	P_{max}	HP [kW]					0.49 [0.36]
Torque @ Max. Power	T_p	lb-in [Nm]					5.5 [0.62]
Current @ Maximum Power	I_p	Amps (RMS)					3.08
Speed @ Max. Power (Amp. Dependent)	N_p	RPM	3000	6000	9000	3000	6000
Max. Continuous Speed (Amp. Dependent)	N_{max}	RPM	4000	8000	11000	4000	8000
Maximum Current (RMS)	I_m	Amps (RMS)					10.20
Peak Torque	T_{pk}	lb-in [Nm]	13.14 [1.47]	13.14 [1.47]	13.14 [1.47]	19.2 [2.19]	19.2 [2.19]
Rotor Inertia	J_m	lb-in-sec ² [kg-m ²]				7.37E-5 [8.31E-6]	7.37E-5 [8.31E-6]
Torque Constant (@ Max. Winding Temp.)	K_t	lb-in/Amps [Nm/Amp]					1.93 [0.22]
Back EMF Constant (L-L RMS) @ 25°C (77°F)	K_e	V/KRPM [V°Sec/Rad]					13.9 [0.14]
Stator Resistance ±10% (L-L) @ 25°C (77°F)	R_a	Ohm					6.3
Stator Inductance ±10% (L-L) @ 25°C (77°F)	L_a	millihenry					9.0
Max. Theoretical Acceleration @ Stall [brake]	$\dot{A}E$	Rad/sec ²					
Thermal Time Constant [brake]	T_{th}	minute					12 [XX]
Electrical Time Constant	T_e	msec					
Mechanical Time Constant [brake]	T_m	msec					
Static Friction	T_f	lb-in [Nm]				0.188 [0.03]	0.188 [0.03]
Weight	W	lb [kg]				3.5 [1.6]	3.5 [1.6]
Line Voltage	V	VAC	115	115	115	115	115

Performance Data (40 °C)	Symbol	Unit	SF22-S	SF23-E	SF23-L	SF23-S
Continuous Rated Torque (Stall)	T_c	lb-in [Nm]	6.44 [0.73]	8.75 [0.98]	8.75 [0.98]	8.75 [0.98]
Continuous Rated Current (RMS)	I_c	Amps (RMS)				
Max. Continuous Power	P_{max}	HP [kW]				
Torque @ Max. Power	T_p	lb-in [Nm]				
Current @ Maximum Power	I_p	Amps (RMS)				
Speed @ Max. Power (Amp. Dependent)	N_p	RPM	9000	3000	6000	9000
Max. Continuous Speed (Amp. Dependent)	N_{max}	RPM	11000	4000	8000	11000
Maximum Current (RMS)	I_m	Amps (RMS)				
Peak Torque	T_{pk}	lb-in [Nm]	19.2 [2.19]	26.25 [2.94]	26.25 [2.94]	26.25 [2.94]
Rotor Inertia	J_m	lb-in-sec ² [kg-m ²]	7.37E-5 [8.31E-6]			
Torque Constant (@ Max. Winding Temp.)	K_t	lb-in/Amps [Nm/Amp]				
Back EMF Constant (L-L RMS) @ 25°C (77°F)	K_e	V/KRPM [V°Sec/Rad]				
Stator Resistance ±10% (L-L) @ 25°C (77°F)	R_a	Ohm				
Stator Inductance ±10% (L-L) @ 25°C (77°F)	L_a	millihenry				
Max. Theoretical Acceleration @ Stall [brake]	$\dot{A}E$	Rad/sec ²				
Thermal Time Constant [brake]	T_{th}	minute				
Electrical Time Constant	T_e	msec				
Mechanical Time Constant [brake]	T_m	msec				
Static Friction	T_f	lb-in [Nm]	0.188 [0.03]			
Weight	W	lb [kg]	3.5 [1.6]			
Line Voltage	V	VAC	115	115	115	115

Brake Information:

Rated Holding Torque	T_z	lb-in [Nm]	8 [0.9]
Rated voltage	V	VDC	24
Rated current	I	Amp	0.54
Inertia	J_b	lb-in-sec ² [kg-m ²]	1.726E-5 [1.950E-6]
Weight Adder	W	lb [kg]	0.5 [0.23]

Fail safe, Electric release

SF - SERIES

Food Grade Servo Motor
2" Frame

Motor Data (230V)

Performance Data (40 °C)	Symbol	Unit	SF21-E	SF21-L	SF21-S	SF22-E	SF22-L
Continuous Rated Torque (Stall)	T_c	lb-in [Nm]	4.38 [0.49]	4.38 [0.49]	4.38 [0.49]	6.44 [0.73]	6.44 [0.73]
Continuous Rated Current (RMS)	I_c	Amps (RMS)					1.70
Max. Continuous Power	P_{max}	HP [kW]					0.49 [0.36]
Torque @ Max. Power	T_p	lb-in [Nm]					5.5 [0.62]
Current @ Maximum Power	I_p	Amps (RMS)					1.54
Speed @ Max. Power (Amp. Dependent)	N_p	RPM	3000	6000	9000	3000	6000
Max. Continuous Speed (Amp. Dependent)	N_{max}	RPM	4000	8000	11000	4000	8000
Maximum Current (RMS)	I_m	Amps (RMS)					5.10
Peak Torque	T_{pk}	lb-in [Nm]	13.14 [1.47]	13.14 [1.47]	13.14 [1.47]	19.2 [2.19]	19.2 [2.19]
Rotor Inertia	J_m	lb-in-sec ² [kg-m ²]				7.37E-5 [8.31E-6]	7.37E-5 [8.31E-6]
Torque Constant (@ Max. Winding Temp.)	K_t	lb-in/Amps [Nm/Amp]					3.85 [0.43]
Back EMF Constant (L-L RMS) @ 25°C (77°F)	K_e	V/KRPM [V*Sec/Rad]					27.9 [0.27]
Stator Resistance ±10% (L-L) @ 25°C (77°F)	R_a	Ohm					12.5
Stator Inductance ±10% (L-L) @ 25°C (77°F)	L_a	millihenry					17.9
Max. Theoretical Acceleration @ Stall [brake]	\ddot{A}	Rad/sec ²					
Thermal Time Constant [brake]	T_{th}	minute					12 [13]
Electrical Time Constant	T_e	msec					
Mechanical Time Constant [brake]	T_m	msec					
Static Friction	T_f	lb-in [Nm]				0.188 [0.03]	0.188 [0.03]
Weight	W	lb [kg]				3.5 [1.6]	3.5 [1.6]
Line Voltage	V	VAC	230	230	230	230	230

Performance Data (40 °C)	Symbol	Unit	SF22-S	SF23-E	SF23-L	SF23-
Continuous Rated Torque (Stall)	T_c	lb-in [Nm]	6.44 [0.73]	8.75 [0.98]	8.75 [0.98]	8.75 [0.98]
Continuous Rated Current (RMS)	I_c	Amps (RMS)				
Max. Continuous Power	P_{max}	HP [kW]				
Torque @ Max. Power	T_p	lb-in [Nm]				
Current @ Maximum Power	I_p	Amps (RMS)				
Speed @ Max. Power (Amp. Dependent)	N_p	RPM	9000	3000	6000	9000
Max. Continuous Speed (Amp. Dependent)	N_{max}	RPM	11000	4000	8000	11000
Maximum Current (RMS)	I_m	Amps (RMS)				
Peak Torque	T_{pk}	lb-in [Nm]	19.2 [2.19]	26.25 [2.94]	26.25 [2.94]	26.25 [2.94]
Rotor Inertia	J_m	lb-in-sec ² [kg-m ²]	7.37E-5 [8.31E-6]			
Torque Constant (@ Max. Winding Temp.)	K_t	lb-in/Amps [Nm/Amp]				
Back EMF Constant (L-L RMS) @ 25°C (77°F)	K_e	V/KRPM [V*Sec/Rad]				
Stator Resistance ±10% (L-L) @ 25°C (77°F)	R_a	Ohm				
Stator Inductance ±10% (L-L) @ 25°C (77°F)	L_a	millihenry				
Max. Theoretical Acceleration @ Stall [brake]	\ddot{A}	Rad/sec ²				
Thermal Time Constant [brake]	T_{th}	minute				
Electrical Time Constant	T_e	msec				
Mechanical Time Constant [brake]	T_m	msec				
Static Friction	T_f	lb-in [Nm]	0.188 [0.03]			
Weight	W	lb [kg]	3.5 [1.6]			
Line Voltage	V	VAC	230	230	230	230

Brake Information:

	Symbol	Unit	Value
Rated Holding Torque	T_s	lb-in [Nm]	8 [0.9]
Rated voltage	V	VDC	24
Rated current	I	Amp	0.54
Inertia	J_b	lb-in-sec ² [kg-m ²]	1.726E-5 [1.950E-6]
Weight Adder	W	lb [kg]	0.5 [0.23]

Fail safe, Electric release

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2" Frame

Connection Data

Motor Connection

WIRE COLOR	AWG	FUNCTION
BLACK	20	ØA
RED	20	ØB
WHITE	20	ØC
GREEN	20	GROUND

Inc. Encoder Connection

WIRE COLOR	AWG	FUNCTION
RED	24	+VDC
BLACK	24	COMMON
BROWN	24	OUTPUT A
WHITE	24	OUTPUT A'
BLUE	24	OUTPUT B
GREEN	24	OUTPUT B'
ORANGE	24	OUTPUT Z
YELLOW	24	OUTPUT Z'
VIOLET	24	OUTPUT U
BROWN/WHITE	24	OUTPUT V
ORANGE/WHITE	24	OUTPUT W
BLACK/WHITE	24	CASE GND (NOT USED)
DRAIN WIRE	24	SHIELD
X	18	BRAKE (+) Optional
X	18	BRAKE (-) Optional
RED/WHITE	18	OTL
YELLOW/WHITE	18	OTL

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Food Grade Servo Motor
2" Frame

Motor Dimensions

Model	"A"	"B"	"C"	"D"	"E"	"F"	"G"
SF21	∅ 0.3750 0.3745	1.25	N.A.	N.A.	N.A.	0.25	0.06
	∅ 9.010 8.999	20	N.A.	N.A.	N.A.	6	1.5
SF22	∅ 0.3750 0.3745	1.25	N.A.	N.A.	N.A.	0.25	0.06
	∅ 9.010 8.999	20	N.A.	N.A.	N.A.	6	1.5
SF23	∅ 0.3750 0.3745	1.25	N.A.	N.A.	N.A.	0.25	0.06
	∅ 9.010 8.999	20	N.A.	N.A.	N.A.	6	1.5

Model	"H"	"J"	"K"	"L"	"L" w/BRAKE	"M"	"N"
SF21	∅ 1.502 1.498	0.201	∅2.625	3.68		0.94	0.58
	∅ 40.011 39.995	4.80	63	93.5		23.8	14.7
SF22	∅ 1.502 1.498	0.201	∅2.625	4.65		0.94	0.58
	∅ 40.011 39.995	4.80	63	118.10		23.8	14.7
SF23	∅ 1.502 1.498	0.201	∅2.625	5.62		0.94	0.58
	∅ 40.011 39.995	4.80	63	142.8		23.8	14.7

Model	"P"	"Q"	"R"	"S"	"T"
SF21	∅2.25		1.13	R0.20	∅3.05
	∅57.2		28.6	R5.1	∅74
SF22	∅2.25		1.13	R0.20	∅3.05
	∅57.2		28.6	R5.1	∅74
SF23	∅2.25		1.13	R0.20	∅3.05
	∅57.2		28.6	R5.1	∅74