

SF - SERIES

Food Grade Servo Motor
4" Frame

Motor Data (230V)

Performance Data (40 °C)	Symbol	Unit	SF41-E	SF42-E	SF42-G	SF42-K	SF43-E
Continuous Rated Torque (Stall)	T_c	lb-in [Nm]	18.24 [2.06]	34.87 [3.93]	34.87 [3.93]	34.87 [3.93]	46.46 [5.24]
Continuous Rated Current (RMS)	I_c	Amps (RMS)	1.95	3.66	5.00	6.61	5.18
Max. Continuous Power	P_{max}	HP [kW]	0.65 [0.48]	1.24 [0.92]	1.71 [1.27]	1.87 [1.40]	1.50 [1.12]
Torque @ Max. Power	T_p	lb-in [Nm]	16.3 [1.84]	31.1 [3.52]	29.1 [3.29]	26.3 [2.96]	37.8 [4.28]
Current @ Maximum Power	I_p	Amps (RMS)	1.76	3.30	4.49	5.95	4.66
Speed @ Max. Power (Amp. Dependent)	N_p	RPM	2500	2500	3000	4500	2500
Max. Continuous Speed (Amp. Dependent)	N_{max}	RPM	2953	2984	3980	5714	2942
Maximum Current (RMS)	I_m	Amps (RMS)	7.31	13.73	18.74	24.79	19.43
Peak Torque	T_{pk}	lb-in [Nm]	54.72 [6.18]	104.61 [11.79]	104.61 [11.79]	104.61 [11.79]	139.38 [15.72]
Rotor Inertia	J_m	lb-in-sec ² [kg-m ²]	0.0024 [0.00027]	0.0036 [0.00041]	0.0036 [0.00041]	0.0036 [0.00041]	0.0045 [0.00051]
Torque Constant (@ Max. Winding Temp.)	K_t	lb-in/Amps [Nm/Amp]	9.37 [1.06]	9.51 [1.07]	6.97 [0.79]	5.27 [0.60]	8.97 [1.01]
Back EMF Constant (L-L RMS) @ 25°C (77°F)	K_e	V/KRPM [V*Sec/Rad]	70.4 [0.67]	69.7 [0.67]	52.3 [0.5]	36.4 [0.35]	70.7 [0.68]
Stator Resistance ±10% (L-L) @ 25°C (77°F)	R_a	Ohm	14.20	4.27	2.35	1.13	2.57
Stator Inductance ±10% (L-L) @ 25°C (77°F)	L_a	millihenry	31.60	16.00	7.70	3.40	8.70
Max. Theoretical Acceleration @ Stall [brake]	AE	Rad/sec ²	30638 [28800]	38187 [36660]	38187 [36660]	38187 [36660]	40733 [39419]
Thermal Time Constant [brake]	T_{th}	minute	30 [33]	30 [33]	35 [38]	30 [33]	35 [38]
Electrical Time Constant	T_e	msec	2.23	3.75	3.28	3.01	3.39
Mechanical Time Constant [brake]	T_m	msec	5.30 [5.64]	2.43 [2.53]	2.24 [2.30]	2.22 [2.31]	1.91 [1.97]
Static Friction	T_f	lb-in [Nm]	1.3 [0.15]	1.3 [0.15]	1.3 [0.15]	1.3 [0.15]	1.3 [0.15]
Weight	W	lb [kg]	12.6 [5.71]	16.1 [7.3]	16.1 [7.3]	16.1 [7.3]	19.6 [8.9]
Line Voltage	V	VAC	230	230	230	230	230

Performance Data (40 °C)	Symbol	Unit	SF43-K	SF44-C	SF44-E	SF44-H	SF46-B
Continuous Rated Torque (Stall)	T_c	lb-in [Nm]	46.46 [5.24]	65.17 [7.36]	65.17 [7.36]	65.17 [7.36]	92.34 [10.43]
Continuous Rated Current (RMS)	I_c	Amps (RMS)	10.18	4.67	7.32	9.82	5.32
Max. Continuous Power	P_{max}	HP [kW]	2.25 [1.68]	1.24 [0.92]	1.90 [1.42]	2.62 [1.96]	1.28 [0.96]
Torque @ Max. Power	T_p	lb-in [Nm]	28.4 [3.20]	51.9 [5.86]	47.9 [5.42]	43.5 [4.92]	64.6 [7.31]
Current @ Maximum Power	I_p	Amps (RMS)	9.16	4.18	6.58	8.84	3.71
Speed @ Max. Power (Amp. Dependent)	N_p	RPM	5000	1500	2500	3800	1250
Max. Continuous Speed (Amp. Dependent)	N_{max}	RPM	5810	1990	3052	4200	1600
Maximum Current (RMS)	I_m	Amps (RMS)	38.18	17.53	27.44	36.84	19.95
Peak Torque	T_{pk}	lb-in [Nm]	139.4 [15.72]	195.5 [22.08]	195.5 [22.08]	195.5 [22.08]	277.0 [31.29]
Rotor Inertia	J_m	lb-in-sec ² [kg-m ²]	0.0045 [0.00051]	0.0056 [0.00063]	0.0056 [0.00063]	0.0056 [0.00063]	0.0071 [0.00080]
Torque Constant (@ Max. Winding Temp.)	K_t	lb-in/Amps [Nm/Amp]	4.56 [0.52]	13.95 [1.58]	8.91 [1.01]	6.64 [0.75]	17.36 [1.96]
Back EMF Constant (L-L RMS) @ 25°C (77°F)	K_e	V/KRPM [V*Sec/Rad]	35.8 [0.34]	104.5 [1.00]	68.2 [0.65]	49.5 [0.47]	129.5 [1.24]
Stator Resistance ±10% (L-L) @ 25°C (77°F)	R_a	Ohm	0.63	3.54	1.53	0.81	3.09
Stator Inductance ±10% (L-L) @ 25°C (77°F)	L_a	millihenry	2.00	14.43	6.14	30.00	14.43
Max. Theoretical Acceleration @ Stall [brake]	AE	Rad/sec ²	40733 [39419]	45951 [44752]	45951 [44752]	45951 [44752]	51338 [49932]
Thermal Time Constant [brake]	T_{th}	minute	35 [38]	40 [43]	40 [43]	40 [43]	50 [53]
Electrical Time Constant	T_e	msec	3.17	4.08	4.01	3.70	4.67
Mechanical Time Constant [brake]	T_m	msec	1.82 [1.46]	1.42 [1.46]	1.48 [1.52]	1.45 [1.48]	1.02 [1.05]
Static Friction	T_f	lb-in [Nm]	1.3 [0.15]	1.3 [0.15]	1.3 [0.15]	1.3 [0.15]	1.3 [0.15]
Weight	W	lb [kg]	19.6 [8.9]	23.0 [10.5]	23.0 [10.5]	23.0 [10.5]	30.0 [14.0]
Line Voltage	V	VAC	230	230	230	230	230

Brake Information:		Fail safe, Electric release	
Rated Holding Torque	T_s	lb-in [Nm]	40 [4.52]
Rated voltage	V	VDC	24
Rated current	I	Amp	0.45
Inertia	J_b	lb-in-sec ² [kg-m ²]	0.00017 [0.000017]
Weight Adder	W	lb [kg]	2.6 [1.2]

SF - SERIES

Food Grade Servo Motor
4" Frame

Motor Data (460V)

Performance Data (40 °C)	Symbol	Unit	SF41-E	SF42-E	SF42-G	SF42-K	SF43-E
Continuous Rated Torque (Stall)	T _c	lb-in [Nm]	18.24 [2.06]	34.87 [3.93]	34.87 [3.93]	34.87 [3.93]	46.46 [5.24]
Continuous Rated Current (RMS)	I _c	Amps (RMS)	0.98	1.83	2.50	3.31	2.59
Max. Continuous Power	P _{max}	HP [kW]	0.65 [0.48]	1.24 [0.92]	1.71 [1.27]	1.87 [1.40]	1.50 [1.12]
Torque @ Max. Power	T _p	lb-in [Nm]	16.3 [1.84]	31.1 [3.52]	29.1 [3.29]	26.3 [2.96]	37.8 [4.28]
Current @ Maximum Power	I _p	Amps (RMS)	0.88	1.65	2.25	2.97	2.34
Speed @ Max. Power (Amp. Dependent)	N _p	RPM	2500	2500	3000	4500	2500
Max. Continuous Speed (Amp. Dependent)	N _{max}	RPM	2953	2984	3980	5714	2942
Maximum Current (RMS)	I _m	Amps (RMS)	3.66	6.87	9.36	12.40	9.72
Peak Torque	T _{pk}	lb-in [Nm]	54.72 [6.18]	104.61 [11.79]	104.61 [11.79]	104.61 [11.79]	139.38 [15.72]
Rotor Inertia	J _m	lb-in-sec ² [kg-m ²]	0.0024 [0.00027]	0.0036 [0.00041]	0.0036 [0.00041]	0.0036 [0.00041]	0.0045 [0.00051]
Torque Constant (@ Max. Winding Temp.)	K _t	lb-in/Amps [Nm/Amp]	18.74 [2.12]	19.02 [2.14]	13.94 [1.58]	10.54 [1.20]	17.94 [2.02]
Back EMF Constant (L-L RMS) @ 25°C (77°F)	K _e	V/KRPM [V*Sec/Rad]	140.8 [1.34]	139.4 [1.34]	104.6 [1.00]	72.8 [0.70]	141.4 [1.36]
Stator Resistance ±10% (L-L) @ 25°C (77°F)	R _a	Ohm	28.40	8.54	4.70	2.26	5.14
Stator Inductance ±10% (L-L) @ 25°C (77°F)	L _a	millihenry	63.20	32.00	15.40	6.80	17.40
Max. Theoretical Acceleration @ Stall [brake]	AE	Rad/sec ²	30638 [28800]	38187 [36660]	38187 [36660]	38187 [36660]	40733 [39419]
Thermal Time Constant [brake]	T _{th}	minute	30 [33]	30 [33]	30 [33]	30 [33]	35 [38]
Electrical Time Constant	T _e	msec	2.23	3.75	3.28	3.01	3.39
Mechanical Time Constant [brake]	T _m	msec	5.30 [5.64]	2.43 [2.53]	2.24 [2.30]	2.22 [2.31]	1.91 [1.97]
Static Friction	T _f	lb-in [Nm]	1.3 [0.15]	1.3 [0.15]	1.3 [0.15]	1.3 [0.15]	1.3 [0.15]
Weight	W	lb [kg]	12.6 [5.71]	16.1 [7.3]	16.1 [7.3]	16.1 [7.3]	19.6 [8.9]
Line Voltage	V	VAC	460	460	460	460	460

Performance Data (40 °C)	Symbol	Unit	SF43-K	SF44-C	SF44-E	SF44-H	SF46-B
Continuous Rated Torque (Stall)	T _c	lb-in [Nm]	46.46 [5.24]	65.17 [7.36]	65.17 [7.36]	65.17 [7.36]	92.34 [10.43]
Continuous Rated Current (RMS)	I _c	Amps (RMS)	5.09	2.34	3.66	4.91	2.66
Max. Continuous Power	P _{max}	HP [kW]	2.25 [1.68]	1.24 [0.92]	1.90 [1.42]	2.62 [1.96]	1.28 [0.96]
Torque @ Max. Power	T _p	lb-in [Nm]	28.4 [3.20]	51.9 [5.86]	47.9 [5.42]	43.5 [4.92]	64.6 [7.31]
Current @ Maximum Power	I _p	Amps (RMS)	4.58	2.09	3.30	4.43	1.85
Speed @ Max. Power (Amp. Dependent)	N _p	RPM	5000	1500	2500	3800	1250
Max. Continuous Speed (Amp. Dependent)	N _{max}	RPM	5810	1990	3052	4200	1600
Maximum Current (RMS)	I _m	Amps (RMS)	19.10	8.77	13.72	18.42	9.98
Peak Torque	T _{pk}	lb-in [Nm]	139.4 [15.72]	195.5 [22.08]	195.5 [22.08]	195.5 [22.08]	277.0 [31.29]
Rotor Inertia	J _m	lb-in-sec ² [kg-m ²]	0.0045 [0.00051]	0.0056 [0.00063]	0.0056 [0.00063]	0.0056 [0.00063]	0.0071 [0.00080]
Torque Constant (@ Max. Winding Temp.)	K _t	lb-in/Amps [Nm/Amp]	9.12 [1.04]	27.90 [3.16]	17.82 [2.02]	13.28 [1.50]	34.72 [3.92]
Back EMF Constant (L-L RMS) @ 25°C (77°F)	K _e	V/KRPM [V*Sec/Rad]	71.6 [0.68]	209.0 [2.00]	136.4 [1.30]	99.0 [0.94]	259.0 [2.48]
Stator Resistance ±10% (L-L) @ 25°C (77°F)	R _a	Ohm	1.26	7.08	3.06	1.82	6.18
Stator Inductance ±10% (L-L) @ 25°C (77°F)	L _a	millihenry	4.00	28.86	12.28	60.00	28.86
Max. Theoretical Acceleration @ Stall [brake]	AE	Rad/sec ²	40733 [39419]	45951 [44752]	45951 [44752]	45951 [44752]	51338 [49932]
Thermal Time Constant [brake]	T _{th}	minute	35 [38]	40 [43]	40 [43]	40 [43]	50 [53]
Electrical Time Constant	T _e	msec	3.17	4.08	4.01	3.70	4.67
Mechanical Time Constant [brake]	T _m	msec	1.82 [1.46]	1.42 [1.46]	1.48 [1.52]	1.45 [1.48]	1.02 [1.05]
Static Friction	T _f	lb-in [Nm]	1.3 [0.15]	1.3 [0.15]	1.3 [0.15]	1.3 [0.15]	1.3 [0.15]
Weight	W	lb [kg]	19.6 [8.9]	23.0 [10.0]	23.0 [10.0]	23.0 [10.0]	30.0 [14.0]
Line Voltage	V	VAC	460	460	460	460	460

Brake Information:		Fail safe, Electric release					
Rated Holding Torque	T _s	lb-in [Nm]	40 [4.52]				
Rated voltage	V	VDC	24				
Rated current	I	Amp	0.45				
Inertia	J _b	lb-in-sec ² [kg-m ²]	0.00017 [0.000017]				
Weight Adder	W	lb [kg]	2.6 [1.2]				

SF - SERIES

Wash Down Servo Motor
4" Frame

Connection Data

Motor Connections

WIRE COLOR	AWG	FUNCTION
BLACK	16	ØA
WHITE	16	ØB
RED	16	ØC
GREEN	16	GROUND

Incremental Encoder Connections

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

Absolute Encoder Connections

WIRE COLOR	AWG	FUNCTION
WHITE/BLUE	24	+VDC
BLUE/WHITE	24	COMMON
WHITE/ORANGE	24	+SIN
ORANGE/WHITE	24	REFSIN
WHITE/GREEN	24	+COS
GREEN/WHITE	24	REFCOS
WHITE/BROWN	24	DATA +
BROWN/WHITE	24	DATA -
DRAIN WIRE	24	SHIELD
BROWN	18	BRAKE (+) Optional
ORANGE	18	BRAKE (-) Optional
BLUE	18	OTL
BLUE	18	OTL

Resolver Connections

WIRE COLOR	AWG	FUNCTION
WHITE/BLUE	24	R1 (+REF)
BLUE/WHITE	24	R2 (-REF)
WHITE/ORANGE	24	S1 (+COSINE)
ORANGE/WHITE	24	S3 (-COSINE)
WHITE/GREEN	24	S2 (+SINE)
GREEN/WHITE	24	S4 (-SINE)
DRAIN WIRE	24	SHIELD
BROWN	18	BRAKE (+) Optional
ORANGE	18	BRAKE (-) Optional
WHITE/BROWN	18	OTL
BROWN/WHITE	18	OTL

SF - SERIES

Food Grade Servo Motor
4" Frame

Motor Dimensions

Model	"A"	"B"	"C"	"D"	"E"	"F"	"G"
SF41	Ø 0.6250 0.6245	2.06	1.375	0.517 0.502	0.1875 0.1855	0.37	0.12
	Ø 19.015 18.998	40	30 (captive)	15.5	6	9.4	3
SF42	Ø 0.6250 0.6245	2.06	1.375	0.517 0.502	0.1875 0.1855	0.37	0.12
	Ø 19.015 18.998	40	30 (captive)	15.5	6	9.4	3
SF43	Ø 0.6250 0.6245	2.06	1.375	0.517 0.502	0.1875 0.1855	0.37	0.12
	Ø 19.015 18.998	40	30 (captive)	15.5	6	9.4	3
SF44	Ø 0.6250 0.6245	2.06	1.375	0.517 0.502	0.1875 0.1855	0.37	0.12
	Ø 19.015 18.998	40	30 (captive)	15.5	6	9.4	3
SF46	Ø 0.6250 0.6245	2.06	1.375	0.517 0.502	0.1875 0.1855	0.37	0.12
	Ø 19.015 18.998	40	30 (captive)	15.5	6	9.4	3

Model	"H"	"J"	"K"	"L"	"L" w/BRAKE	M	N
SF41	Ø 2.500 2.498	Ø0.344	Ø5.000	7.35	9.27	1.38	1.45
	Ø 110.015 109.990	Ø9	Ø115	186.7	235.5	35.1	36.8
SF42	Ø 2.500 2.498	Ø0.344	Ø5.000	8.85	10.77	1.38	1.45
	Ø 110.015 109.990	Ø9	Ø115	224.8	273.6	35.1	36.8
SF43	Ø 2.500 2.498	Ø0.344	Ø5.000	10.35	12.27	1.38	1.45
	Ø 110.015 109.990	Ø9	Ø115	262.89	311.66	35.1	36.8
SF44	Ø 2.500 2.498	Ø0.344	Ø5.000	11.85	13.77	1.38	1.45
	Ø 110.015 109.990	Ø9	Ø115	301.0	349.8	35.1	36.8
SF46	Ø 2.500 2.498	Ø0.344	Ø5.000	14.85	15.27	1.38	1.45
	Ø 110.015 109.990	Ø9	Ø115	377.2	387.9	35.1	36.8

Model	"P"	"Q"	"R"	"S"	"T"
SF41	Ø4.30	2.42	1.92	R0.44	Ø5.71
	Ø109.2	61.5	48.8	R11.2	Ø145
SF42	Ø4.30	2.42	1.92	R0.44	Ø5.71
	Ø109.2	61.5	48.8	R11.2	Ø145
SF43	Ø4.30	2.42	1.92	R0.44	Ø5.71
	Ø109.2	61.5	48.8	R11.2	Ø145
SF44	Ø4.30	2.42	1.92	R0.44	Ø5.71
	Ø109.2	61.5	48.8	R11.2	Ø145
SF46	Ø4.30	2.42	1.92	R0.44	Ø5.71
	Ø109.2	61.5	48.8	R11.2	Ø145