

# SERVOFLEX™

**3" Frame Brushless Servo Motor**



**SPEED/TORQUE**

**RANGE:**

**8.4-40.9 IN/LBS**

When you need maximum performance in a small motor for light duty applications we've got the power for you.

The ServoFlex Series of brushless servo motors gives you high torque in a small package, at a competitive price. This allows ServoFlex motors to be used in applications previously not considered.

ServoFlex motors utilize high performance neodymium magnets made of Magnequench® MQ3 magnet material. The result? You get more performance for every dollar you spend. Custom Servo Motors Inc. is the only manufacturer who can offer you this revolutionary technology in a servo motor.

Whether you are designing new systems or upgrading existing installations, Custom Servo Motors Inc. offers a family of 3 inch ServoFlex brushless servo motors to meet the requirements of your application. ServoFlex motors are available in four stack lengths to meet and exceed all your performance needs. They are available in four configurations:

- Resolver
  - Commutating Encoder
  - Hall Switching
  - Optical Encoder
- ...or any combination of the above.

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**Custom Servo Motors Inc.**

A Subsidiary of MTS Systems Corporation

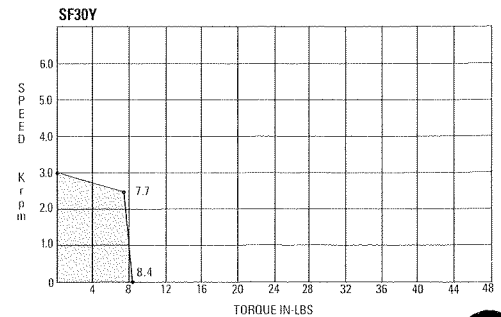
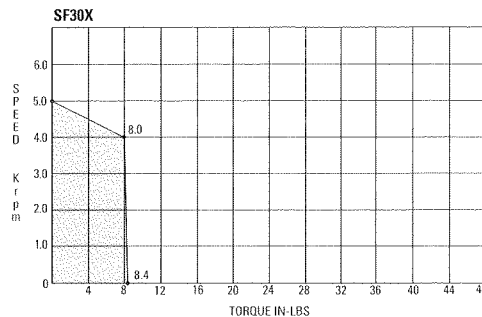
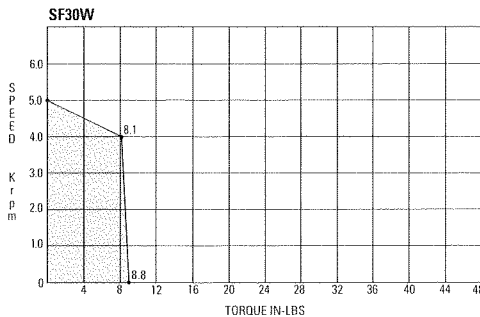
## 3" Frame Brushless Servo Motor

Motor Data-Table 1

Motor Parameters	Units	SF30W	SF30X	SF30Y
Horsepower	HP	0.52	0.51	0.29
Kilowatts	KW	0.38	0.38	0.22
Max. Operating Speed	RPM	5000	5000	3000
Speed At Rated Torque	RPM	4000	4000	2400
*Continuous Rated Torque	IN-LBS	8.1	8.0	7.7
at rated speed	Nm	0.92	0.90	0.87
*Continuous Stall Torque	IN-LBS	8.8	8.4	8.4
	Nm	1.00	0.94	0.95
Continuous Line Current	AMPS	4.4	2.0	1.0
Peak Torque	IN-LBS	31.0	29.2	29.3
	Nm	3.50	3.31	3.31
Peak Current	AMPS	15.3	7.0	3.5
Max. Theoretical Accel.	RAD/SEC <sup>2</sup>	130,096	122,885	122,931
Torque Sensitivity	IN-LBS/AMP	2.0	4.2	8.3
	Nm/AMP	0.23	0.47	0.94
Back EMF-Line to Line	VRMS/K	18.0	37.0	74.0
D.C. Resistance	OHMS	2.8	13.3	53.0
Inductance	MILLIHENRIES	5.7	0.0	0.0
Rotor Inertia	IN-LBS-SEC <sup>2</sup>	0.00024	0.00024	0.00024
	Kg-m <sup>2</sup>	0.000027	0.000027	0.000027
Static Friction	IN-LBS	0.2	0.2	0.2
	Nm	0.02	0.02	0.02
Motor Weight	LBS	6.1	6.1	6.1
	Kg	2.8	2.8	2.8

\*25°C Ambient with a maximum case temperature of 85°C on motor mounted on a 10" x 10" x 1/4" aluminum heat sink.

### Torque Charts

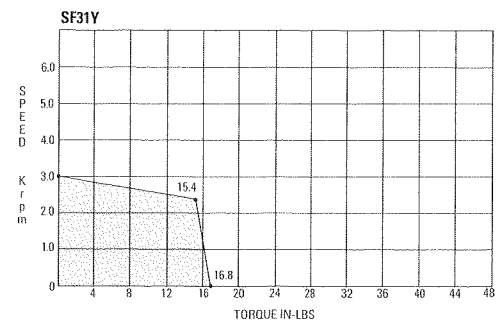
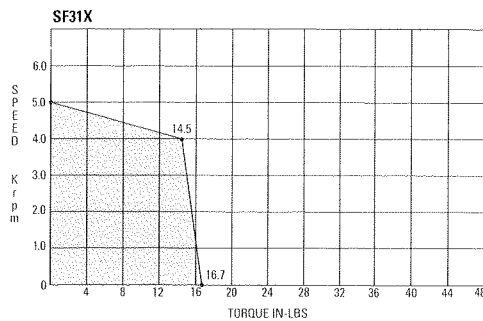
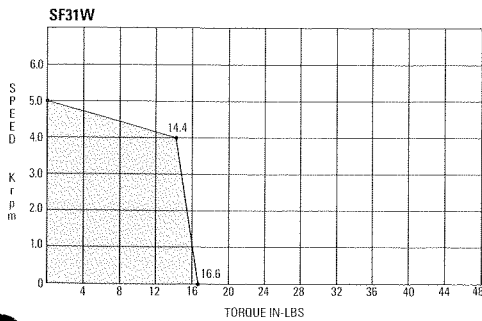


**Motor Data-Table 2**

Motor Parameters	Units	SF31W	SF31X	SF31Y
Horsepower	HP	0.91	0.92	0.59
Kilowatts	KW	0.68	0.69	0.44
Max. Operating Speed	RPM	5000	5000	3000
Speed At Rated Torque	RPM	4000	4000	2400
*Continuous Rated Torque	IN-LBS	14.4	14.5	15.4
at rated speed	Nm	1.63	1.64	1.74
*Continuous Stall Torque	IN-LBS	16.6	16.7	16.8
	Nm	1.87	1.89	1.90
Continuous Line Current	AMPS	7.9	4.0	2.0
Peak Torque	IN-LBS	57.9	58.4	58.7
	Nm	6.55	6.60	6.64
Peak Current	AMPS	27.7	13.9	7.0
Max. Theoretical Accel.	RAD/SEC <sup>2</sup>	130,472	131,510	132,275
Torque Sensitivity	IN-LBS/AMP	2.1	4.2	8.4
	Nm/AMP	0.24	0.48	0.95
Back EMF-Line to Line	VRMS/K	18.6	37.4	74.8
D.C. Resistance	OHMS	1.0	3.9	15.4
Inductance	MILLIHENRIES	2.6	9.4	39.6
Rotor Inertia	IN-LBS-SEC <sup>2</sup>	0.00044	0.00044	0.00044
	Kg-m <sup>2</sup>	0.000051	0.000051	0.000051
Static Friction	IN-LBS	0.4	0.4	0.4
	Nm	0.05	0.05	0.05
Motor Weight	LBS	6.1	6.1	6.1
	Kg	2.8	2.8	2.8

\*25°C Ambient with a maximum case temperature of 85°C on motor mounted on a 10" x 10" x 1/4" aluminum heat sink.

**Torque Charts**

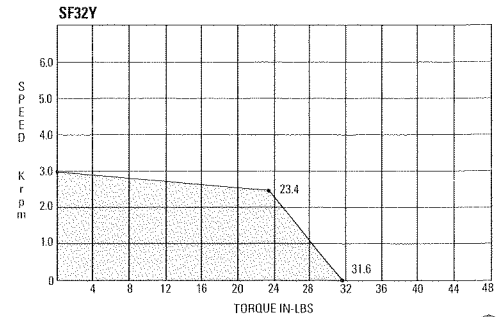
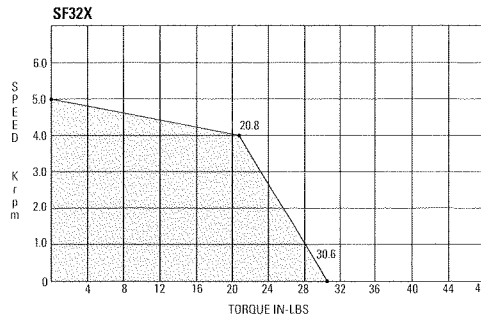
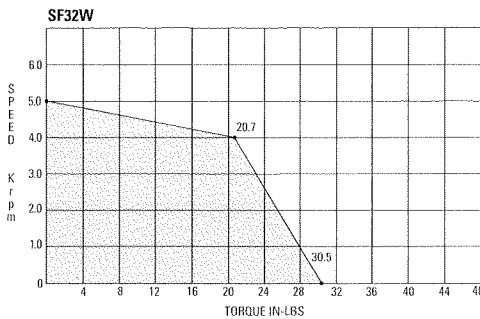


**Motor Data-Table 3**

Motor Parameters	Units	SF32W	SF32X	SF32Y
Horsepower	HP	1.31	1.32	0.89
Kilowatts	KW	0.98	0.98	0.66
Max. Operating Speed	RPM	5000	5000	3000
Speed At Rated Torque	RPM	4000	4000	2400
*Continuous Rated Torque	IN-LBS	20.7	20.8	23.4
at rated speed	Nm	2.34	2.35	2.65
*Continuous Stall Torque	IN-LBS	30.5	30.6	31.6
	Nm	3.45	3.46	3.58
Continuous Line Current	AMPS	14.6	6.9	3.6
Peak Torque	IN-LBS	106.7	107.2	110.7
	Nm	12.07	12.12	12.52
Peak Current	AMPS	51.1	24.2	12.5
Max. Theoretical Accel.	RAD/SEC <sup>2</sup>	126,284	126,889	131,050
Torque Sensitivity	IN-LBS/AMP	2.1	4.4	8.9
	Nm/AMP	0.24	0.50	1.00
Back EMF-Line to Line	VRMS/K	18.6	39.4	78.8
D.C. Resistance	OHMS	0.4	1.6	6.0
Inductance	MILLIHENRIES	1.2	5.1	20.2
Rotor Inertia	IN-LBS-SEC <sup>2</sup>	0.00085	0.00085	0.00085
	Kg-m <sup>2</sup>	0.000097	0.000097	0.000097
Static Friction	In. Lbs	0.6	0.6	0.6
	Nm	0.07	0.07	0.07
Motor Weight	LBS	9.0	9.0	9.0
	Kg	4.1	4.1	4.1

\*25°C Ambient with a maximum case temperature of 85°C on motor mounted on a 10" x 10" x 1/4" aluminum heat sink.

## Torque Charts

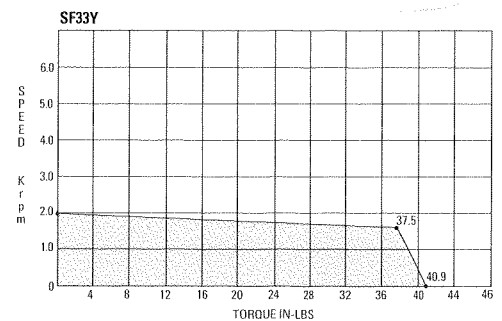
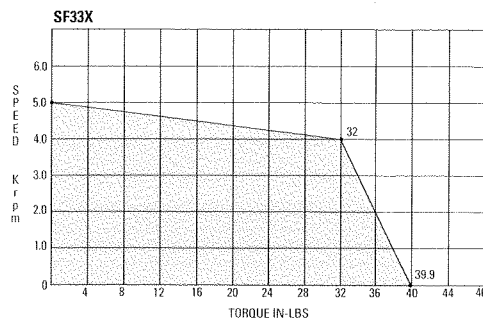
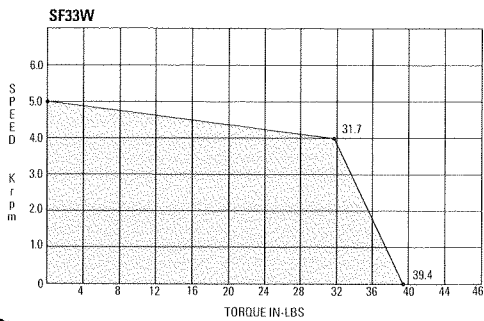


**Motor Data-Table 4**

Motor Parameters	Units	SF33W	SF33X	SF33Y
Horsepower	HP	1.81	1.83	0.89
Kilowatts	KW	1.35	1.36	0.67
Max. Operating Speed	RPM	4100	4100	2000
Speed At Rated Torque	RPM	3600	3600	1500
*Continuous Rated Torque	IN-LBS	31.7	32.0	37.5
at rated speed	Nm	3.58	3.62	4.24
*Continuous Stall Torque	IN-LBS	39.4	39.9	40.9
	Nm	4.46	4.51	4.62
Continuous Line Current	AMPS	12.7	6.1	3.1
Peak Torque	IN-LBS	137.9	139.6	143.0
	Nm	15.60	15.78	16.17
Peak Current	AMPS	44.5	21.5	11.0
Max. Theoretical Accel.	RAD/SEC <sup>2</sup>	119,528	120,952	123,900
Torque Sensitivity	IN-LBS/AMP	3.1	6.5	13.0
	Nm/AMP	0.35	0.74	1.47
Back EMF-Line to Line	VRMS/K	27.6	57.9	115.8
D.C. Resistance	OHMS	0.5	2.0	7.7
Inductance	MILLIHENRIES	1.7	7.2	29.1
Rotor Inertia	IN-LBS-SEC <sup>2</sup>	0.00115	0.00115	0.00115
	Kg-m <sup>2</sup>	0.000133	0.000133	.000133
Static Friction	IN-LBS	0.7	0.7	0.7
	Nm	0.08	0.08	0.08
Motor Weight	LBS	11.5	11.5	11.5
	Kg	5.2	5.2	5.2

\*25°C Ambient with a maximum case temperature of 85°C on motor mounted on a 10" x 10" x 1/4" aluminum heat sink.

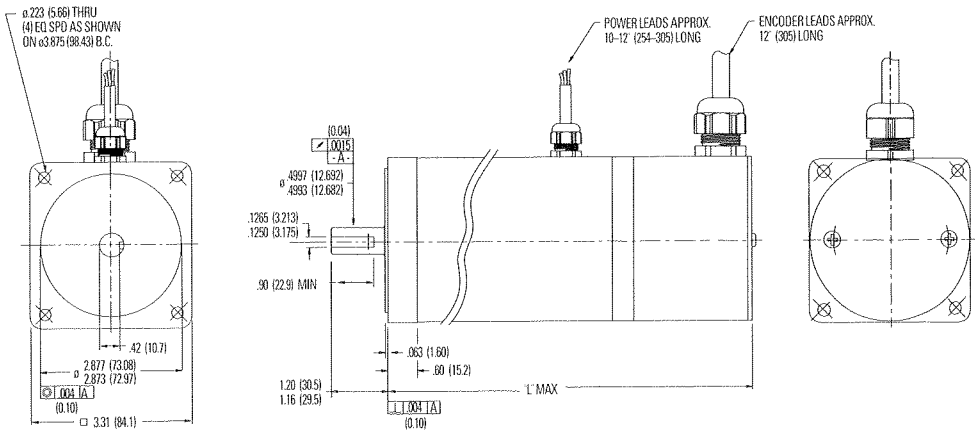
### Torque Charts



### 3" English Motor with Encoder

Model	"L" Max	"L" Max (Brake Option)**
SF30*E*	6.83 (173.5)	8.33 (211.6)
SF31*E*	7.58 (192.5)	9.08 (230.6)
SF32*E*	9.08 (230.6)	10.58 (268.7)
SF33*E*	10.58 (268.7)	12.08 (306.8)

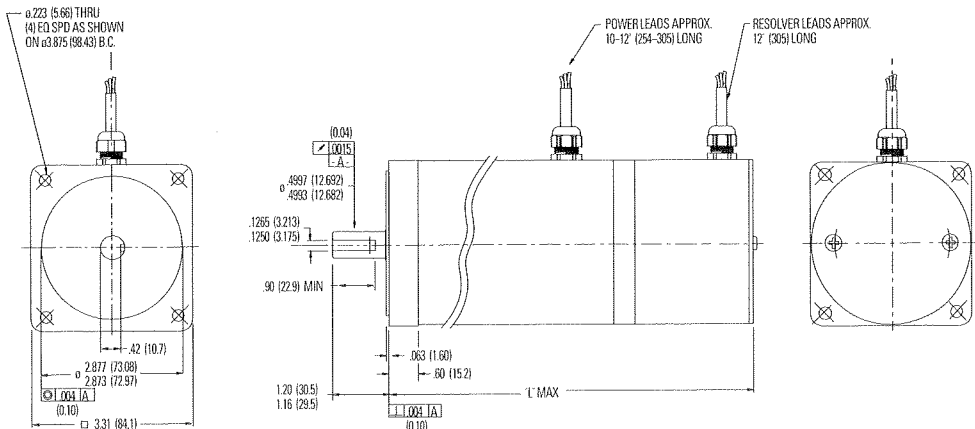
\*\*Brake Leads to Exit with Power Leads



### 3" English Motor with Resolver

Model	"L" Max	"L" Max (Brake Option)**
SF30*ER	6.83 (173.5)	8.33 (211.6)
SF31*ER	7.58 (192.5)	9.08 (230.6)
SF32*ER	9.08 (230.6)	10.58 (268.7)
SF33*ER	10.58 (268.7)	12.08 (306.8)

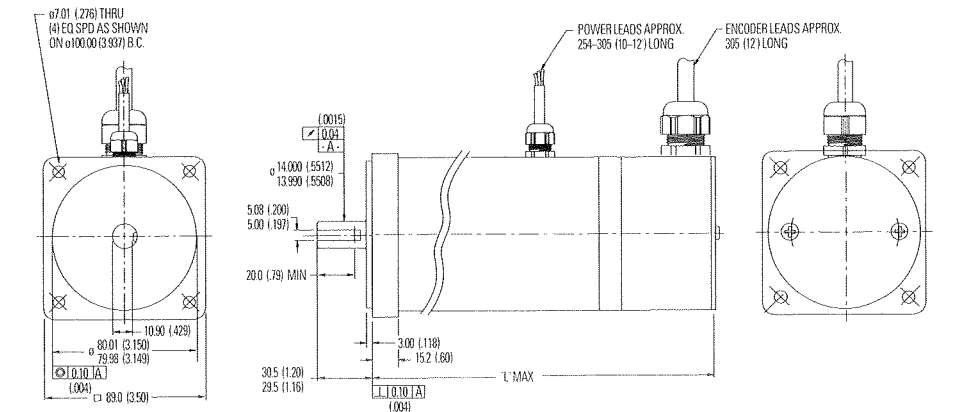
\*\*Brake Leads to Exit with Power Leads



### 3" Metric Motor with Encoder

Model	"L" Max	"L" Max (Brake Option)**
SF30*M*	173.5 (6.83)	211.6 (8.33)
SF31*M*	192.5 (7.58)	230.6 (9.08)
SF32*M*	230.6 (9.08)	268.7 (10.58)
SF33*M*	268.7 (10.58)	306.6 (12.08)

\*\*Brake Leads to Exit with Power Leads



### 3" Metric Motor with Resolver

Model	"L" Max	"L" Max (Brake Option)**
SF30*MR	173.5 (6.83)	211.6 (8.33)
SF31*MR	192.5 (7.58)	230.6 (9.08)
SF32*MR	230.6 (9.08)	268.7 (10.58)
SF33*MR	268.7 (10.58)	306.5 (12.08)

\*\*Brake Leads to Exit with Power Leads

