

# ***SERVO-TEK***®

SERVO-TEK PRODUCTS COMPANY, INC.

## ***DC Tachometer Generators***



## Technical Data

### *An Industry Standard for over fifty years.*

A Servo-Tek DC tachometer generator provides a convenient and economical means of converting rotational speed into an isolated analog voltage signal suitable for remote indication and control. While this catalog contains information on our most popular models, we also manufacture countless special tach generators.

### *Construction*

Most of our DC tach generators are housed in aluminum casings protected in accordance with Mil-C-5541 or Mil-A-8625 or high performance plastics. Alnico permanent magnets are used. Armature shafts are stainless-steel, and rotate on fully shielded stainless-steel ball bearings. Commutators are manufactured from an alloy containing at least 90% silver. Armature laminations are wound with Isomid insulated wire, over Teflon slot insulation. The entire armature is then baked, resulting in a NEMA Class H insulation system.



DA-7533A-2

### *Ripple*

The ripple RMS value will not exceed 3% of the DC value at any speed in excess of 40 RPM on standard units. On the low ripple units, the ripple RMS value will not exceed 1.5% of the DC value. A peak to peak ripple of 1.5% is available on some models.

### *Linearity*

Linearity at any speed is better than 0.1% of the output at that RPM.

### *Bidirectional Operation*

All Servo-Tek tachometer generators operate in either rotational direction. That direction can be determined by output voltage polarity. Output (in either direction) is held to a tolerance of 0.25% of the average output.



SB-740A-2

### *Stability*

Optimum brush and commutator combination gives 0.1% stability. Highly stable output gives no evidence of long-term drift.

### *Breakdown Voltage*

Servo-Tek DC tachometer generators are factory tested with an AC potential of 1250 volts RMS applied for one second between (either) terminal and shaft. E-Series units are tested with 500 volts.

### *Temperature Range*

Most of our DC tachometer generators are designed for continuous operation in ambient temperatures ranging from -55°C to +100°C. Voltage output at 25°C will not deviate by more than 0.01% per degree of change within the range of -20°C to +75°C. All units are temperature compensated, with the exception of D-Series and E-Series tach generators.

## D-Series 25 to 50 volts/1000 RPM



SU-780D-1

### D-Series Tachometer Generators

With rugged construction and high output voltages, the D-Series tach generator is ideally suited to a variety of industrial applications.

The flange mounting arrangement provides a convenient assembly method, and the sturdy .187 shaft diameter permits the heavier loading frequently encountered where pulleys or belt drives are employed. The output bearing is fitted with a seal to help prevent the contamination that can occur in industrial applications.

With output up to 50V/1000 RPM, D-Series generators are ideal for applications where high output voltages are required. Typically, these are slow speed applications.

## E-Series (Subminiature) .7 to 3 volts/1000 RPM



SS-779E-1

### E-Series Tachometer Generators

The E-Series DC tachometer generator is the smallest tach generator among those offering similar technical characteristics. Many outstanding features make it particularly suitable for use in all types of servo systems. Although the diameter is only 0.760" the E-Series provides up to 3 V/1000 RPM output.

Almost any Servo-Tek DC tachometer generator can be manufactured with special configurations, various electrical specs and shaft modifications such as flats, pinions, holes, etc. Consult sales department regarding your special requirements.

### D-Series and E-Series Specifications

Model Number	Mounting	Weight (Approx.)	Inertia (Approx.) oz-in-sec <sup>2</sup>	V/1000 RPM	RPM (max)	Armature Resistance (dynamic)	Armature Inductance (henrys)	Outline Dimensions	Mounting Dimensions	Shaft Size (in.)
SU-780D-1	Flange	8.5 oz	4.54 x 10 <sup>-4</sup>	45v	5,000	1750Ω	1.00h	Fig. 10	Fig. 5	.187
SU-7114D-1	Flange	8.5 oz	4.54 x 10 <sup>-4</sup>	45v	5,000	1750Ω	1.00h	Fig. 10	Fig. 5	.187
SU-780D-2	Flange	8.5 oz	4.54 x 10 <sup>-4</sup>	33v	5,000	950Ω	0.54h	Fig. 10	Fig. 5	.187
SS-779E-1	Synchro	1.25 oz	0.25 x 10 <sup>-4</sup>	3v	12,000	180Ω	0.061h	Fig. 12	Fig. 6	.120

Maximum Driving Torque for D-Series and E-Series is 0.25 oz-in  
 Most units listed above are normally in stock

## Overhung Tachometer 1 to 24 volts/1000 RPM

### ST-7565 Series

Introducing Servo-Tek's new low-cost overhung tachometer. This bearingless tach-generator is small in size and has a black delrin housing and end plate. Because the Servo-Tek overhung unit is self-generating and provides an analog output, it makes for an excellent alternative to the encoder. No D-A conversion will be necessary! Mounts easily using a 10-32 threaded shaft. No coupling or mounting brackets will be required.



ST-7565A-2

### Part Number: ST-7565A-2

Output Voltage: 7 VDC  $\pm$  5%, no load, per 1000 RPM at 25°C

Internal Resistance: 270 Ohms typical at 25°C

Ripple: 5% RMS of DC output voltage at speeds over 40 RPM

Linearity: 0.1% max., 0 to 4000 RPM

Bidirectional Output: 0.5% of nominal output in both CW and CCW directions

Polarity: Red wire positive with CCW rotation viewing shaft end

Temperature Coefficient: 0.05% per °C of nominal output at 25°C from -20°C to 50°C

## Accessories



ST-9502

### Rubber Couplings

ST-9502-1 fits .120 shafts and ST-9502-2 fits .187 shafts. The tapered tang is molded to fit a straight slot 0.167"  $\pm$  0.005" wide and 3/16" deep.



ST-9776

### Flexible Couplings

ST-9776 fits shaft diameters of up to .375 shafts. They may be ordered in any mixed or matched configuration. **When ordering, please specify both hole sizes.**

## Other Products



ST50

### ST50 Optical Encoder

The ST50, a 2 inch hollow shaft encoder, accepts motor shafts from .236 to .625 inches OD. It combines 3 phase brushless commutation pulses, 2 data channels and reference index pulse in a single package.



ST20

### ST20 Optical Encoder

The ST20, a 2 inch shaft encoder, is a low cost, heavy duty solution to digital feedback. This unit is available in single or dual channel with nearly unlimited mounting patterns.

# Mounting and Outline Dimensions

Figure 1 SA Face Mount

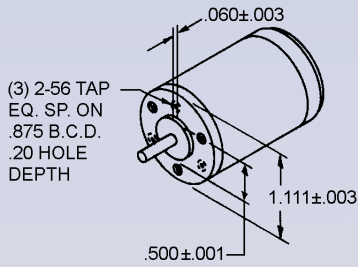


Figure 2 SB Flange Mount

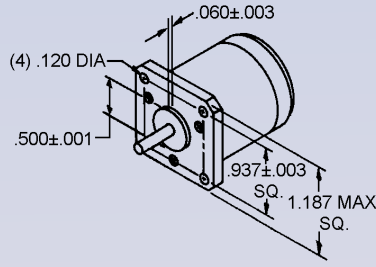


Figure 3 SD Modified Synchro

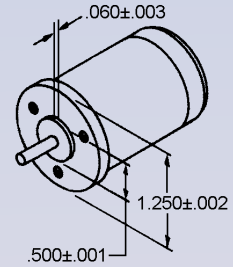


Figure 4 SM Aircraft Mount

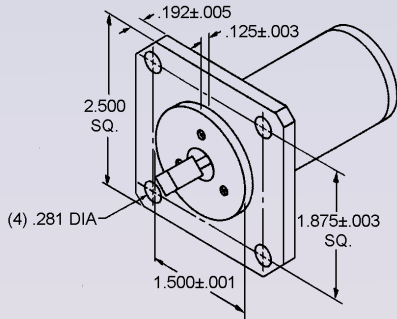


Figure 5 SU Large Flange Mount

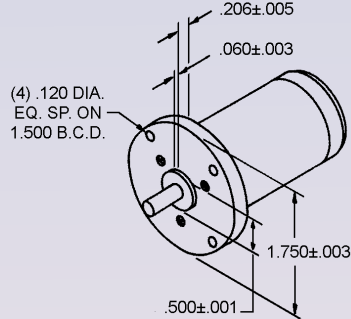


Figure 6 SS Synchro Mount

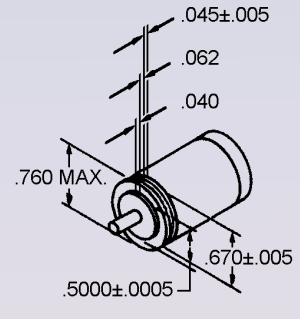
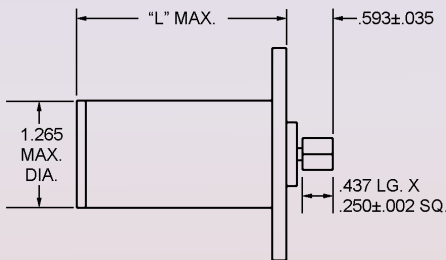
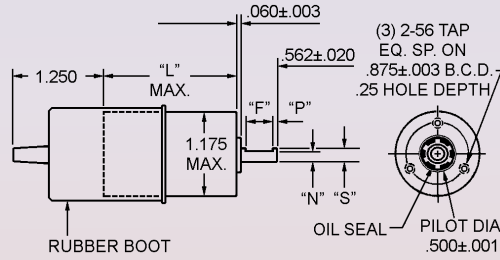


Figure 7 Aircraft Configuration



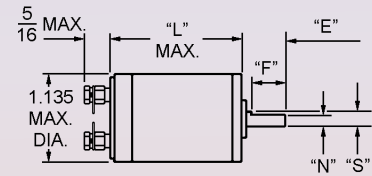
Model #	"L"
SM-762A	2.520
SM-762B	2.957

Figure 8 Sealed Configuration



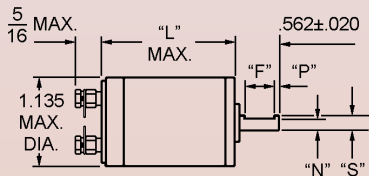
Model	"L"	"F"	"P"	"N"	"S"
ST-7336A	1.867	OMIT	OMIT	OMIT	0.120 ± .001
ST-7336B	2.304	OMIT	OMIT	OMIT	0.120 ± .001
ST-7337A	1.875	0.375	0.062	0.157	0.187 ± .001
ST-7337B	2.312	0.375	0.062	0.157	0.187 ± .001
XX-7346D	3.633	0.375	0.062	0.157	0.187 ± .001

Figure 9 Flat Shaft Configuration



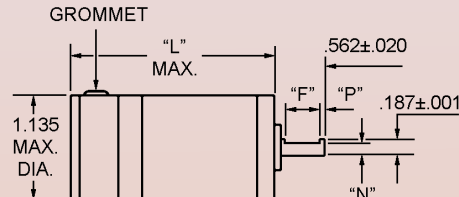
Model	"L"	"E"	"F"	"N"	"S"
XX-7114B	2.193	0.562	0.437	0.157	0.187 ± .001
XX-7114D	3.253	0.562	0.437	0.157	0.187 ± .001
XX-7146A	1.701	0.562	0.437	0.110	0.120 ± .001

Figure 10 Instrument/Industrial Configuration



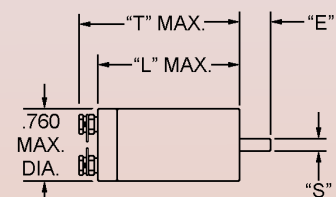
Model #	"L"	"F"	"P"	"N"	"S"
XX-740A	1.701	OMIT	OMIT	OMIT	0.120 ± .001
XX-740B	2.138	OMIT	OMIT	OMIT	0.120 ± .001
XX-780B	2.193	0.375	0.062	0.157	0.187 ± .001
XX-780D	3.253	0.375	0.062	0.157	0.187 ± .001
XX-797A	1.701	0.187	0.187	0.110	0.120 ± .001
XX-7103A	1.756	0.375	0.062	0.157	0.187 ± .001
XX-7107D	3.253	OMIT	OMIT	OMIT	0.187 ± .001
XX-7123A	1.756	OMIT	OMIT	OMIT	0.187 ± .001
XX-7123B	2.193	OMIT	OMIT	OMIT	0.187 ± .001
XX-7356F	1.701	OMIT	OMIT	OMIT	0.120 ± .001
XX-7360F	1.756	0.375	0.062	0.157	0.187 ± .001

Figure 11 Industrial Configuration



Model #	"L"	"F"	"P"	"N"
XX-757A	2.240	0.375	0.062	0.157
XX-757B	2.677	0.375	0.062	0.157
XX-796B	2.677	OMIT	OMIT	OMIT
XX-7483H	2.677	0.375	0.062	0.157

Figure 12 E-Series Tachometers



Model #	"T"	"L"	"E"	"S"
SS-779E	1.687	1.479	0.375 ± .015	0.1200 ± .0005
SS-7251E	1.687	1.479	0.562 ± .015	0.1870 ± .0002

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