PRECISION MOTORS

E N G I N E E R E D . R E L I A B L E

ISLAND COMPONENTS GROUP, INC.

TABLE OF CONTENTS

Custom Application and Design Guide

For your convenience, we have provided the guide below to better assist you with custom motor applications. Our Design Engineering Assistance Division will then configure an instrument motor that meets your specific requirements.

Application _____

_____

PHYSICAL CONFIGURATIONS

Maximum OD _____ Maximum Axial Length _____

Shaft Details Key ❑ Flat ❑ Pinion ❑

Mounting _____

Other _____

ENVIRONMENTAL

Operating Temperature Requirements:

Minimum _____ Maximum _____ Altitude _____

Shock _____ Vibration _____

Other _____

PERFORMANCE

Load Inertia _____ Duty Cycle _____

Acceleration Profile _____ Power Available _____

Peak Torque _____ Maximum Current _____

Constant Torque _____ Voltage Range _____

No-Load Speed _____ Full Load Speed _____

Other _____

MOTORS *About This Catalog*

The purpose of this catalog is to make information available to design engineers and users of Servo Components. It contains a small percentage of what we design and manufacture.

ISLAND COMPONENTS GROUP, INC. has a talented and dedicated staff which will gladly take on your special application and assist you in designing the most efficient product for the required purpose.

Besides the products that are demonstrated in this catalog, ISLAND COMPONENTS GROUP, INC. has a variety of parts that are not shown. This includes Stator Motors, Brush Electrical Contacts, Power Failure Motors, Actuators, Rotor Assemblies and Gyro parts.

While this catalog has been compiled to assist you somewhat in making your selection easier, please feel free to call and discuss your special application with our staff.

Pinion Data

SIZE	5, 8, 11	15, 18
Number of Teeth	13	15
Pitch Diameter	120	96
Pressure Angle	20°	20°
Outside Diameter	.1274 $^{+0000}_{-0010}$	.1770 $^{+0000}_{-0005}$
Material	Al, SI-416	
Hardness	Rockwell C28-38	

Polarity

PRECISION MOTOR GENERATORS AND INTEGRATING MOTOR TACHOMETERS

When the motor shaft rotates in a clockwise direction, as viewed from the shaft end, the voltage of terminal 8 (blue) shall be nominally 180° (electrical) from the voltage at terminal 7 (orange).

QUALITY CONTROL

Assuring Reliability and Dependability

- ISLAND's strict quality control, inspection, and testing procedures assure that all components and completed products, conform to the requirements requested by the customer. Each part must meet the highest standards for safety, workmanship, and functional capabilities before they leave our facility.

- A checklist that includes: stages of inspection, from receipt to manufacturing, documents product analysis and test results. This eliminates any substandard qualities or defects that could affect performance, and allows corrective action to be taken before you receive any components from us.

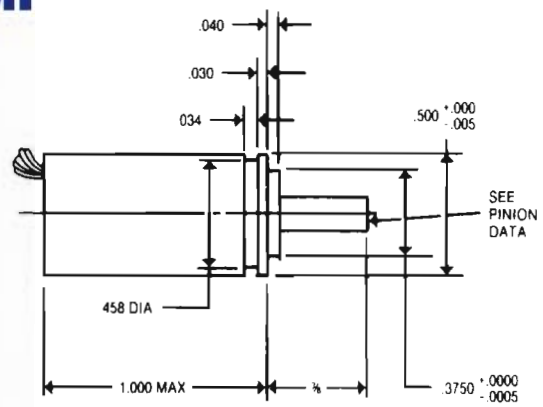
- All products manufactured at ISLAND are made in accordance to MIL-I-45208A Military Inspection specifications. Personnel are always available to answer any product conformance questions or accuracy verification requests by governmental representatives.

- From time to time, ISLAND gets requests to engineer and manufacture components with "special custom capabilities" that enhance performance beyond MIL spec guidelines or requirements. Custom testing will then be conducted.

PRECISION SERVOMOTORS

SIZE 5

IMI



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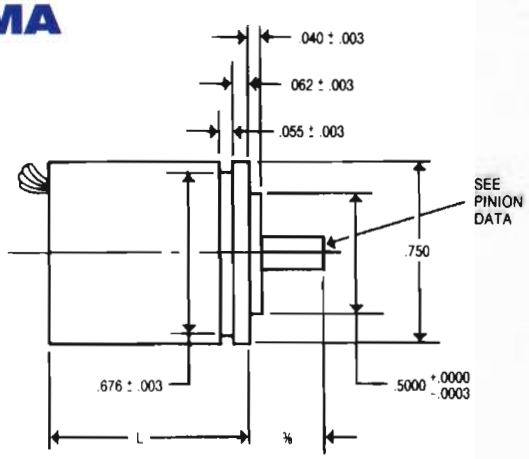

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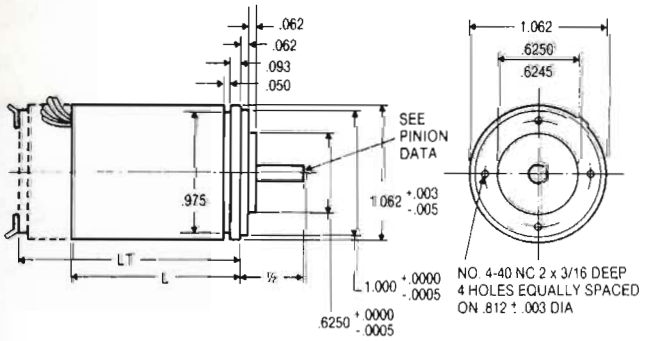

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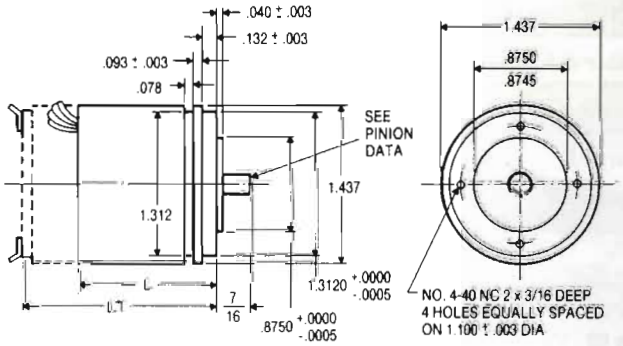

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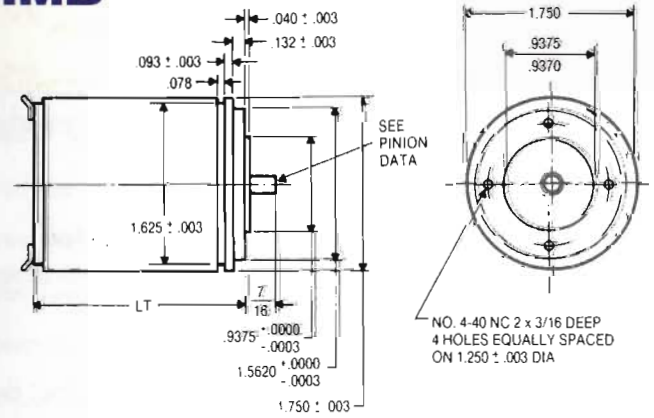

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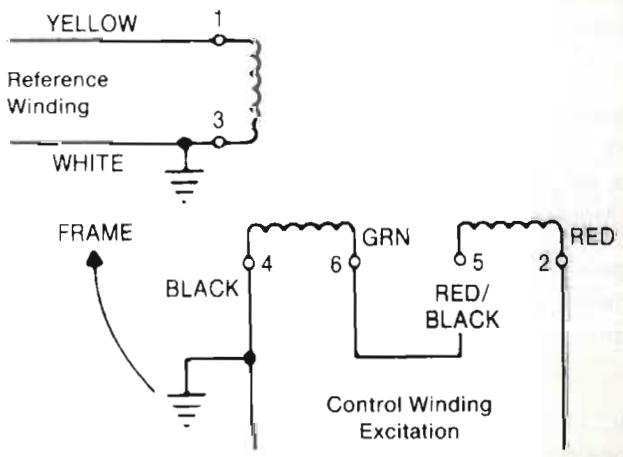


TYPE NUMBER	Units	Symbol	IMA-001	IMA-004	*IMB-001-1 **IMB-001-2	*IMB-004-1 **IMB-004-2	*IMB-020-1 **IMB-020-2	*IMB-021-1 **IMB-021-2	IMI-004
Weight	oz	—	1.1	1.5	4.0	4.0	4.6	4.6	.6
Stalled Torque	oz-in	Ts	.20	.30	.63	.80	1.0	1.0	.10
No Load Speed	rpm	R	9500	6800	6300	3100	6200	3450	9500
Frequency	cps	—	400	400	400	60	400	60	400
Rotor Inertia	gm-cm²	J	.40	.46	1.0	1.0	1.1	1.1	.05
Volts Input (Fixed Φ)	volts	V	26	26	115	115	115	115	26
Volts Input (Control Φ)	volts	V	26	33CT	115/57.5	115	115/57.5	36CT	36/18
Stalled Impedance (Fixed Φ)	ohms	—	190 + J180	146 + J133	1275 + J1800	2800 + J1900	634 + J987	1700 + J1700	230 + J200
Stalled Impedance (Control Φ)	ohms	—	190 + J180	342 + J221	1275 + J1800	2800 + J1900	634 + J987	221 + J221	440 + J380
Power Input (Fixed Φ)	watts	—	1.9	2.6	3.5	3.5	6.5	4.0	1.8
Power Input (Control Φ)	watts	—	1.9	2.0	3.5	3.5	6.5	4.0	1.8
Acceleration @ Stall	rad/sec²	Ts/J	40,000	45,000	44,000	53,000	66,000	66,000	150,000
Figure of Merit	$\frac{\text{oz-in}}{\text{sec}^2}$	Ts²/J	8,000	14.000	27,000	40,000	66,000	66,000	15,000
Motor Torque Constant	$\frac{\text{dyne cm}}{\text{volt}}$	$Ka = \frac{Ts/J}{V}$	550	640	380	450	620	2000	200
Motor Damping Factor	$\frac{\text{dyne cm sec}}{\text{radian}}$	Kf	15	30	70	165	108	216	6.9
Motor Velocity Constant	$\frac{\text{radian}}{\text{volt sec}}$	$Km = \frac{Ka}{Kf}$	36	22	5.5	2.7	5.8	9.3	29
Motor Corner Frequency	$\frac{\text{rad}}{\text{sec}}$	$w = \frac{Kf}{J}$	37	65	70	165	100	200	138
Motor Time Constant	sec	$T = \frac{i}{W}$	.027	.015	0.14	.006	.010	.005	.0072
Reversing Time	sec	t	.043	.025	.023	.010	.017	.008	.011
Length (max)	in	—	*L = .750	*L = 1.000	*L = 1.310 **Lt = 1.745	*L = 1.310 **Lt = 1.745	*L = 1.438 **Lt = 1.938	*L = 1.438 **Lt = 1.938	*L = .967

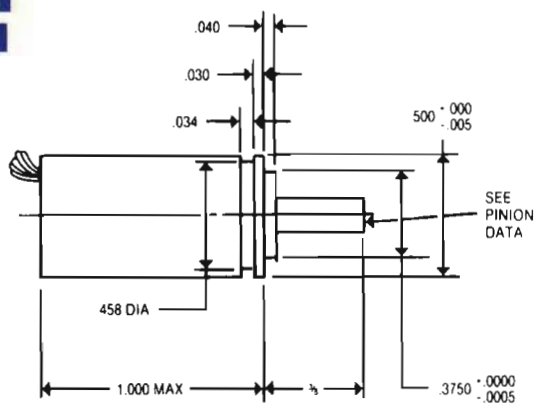
TYPE NUMBER	Units	Symbol	IMC-001	IMC-002	IMC-003	IMC-004	IMD-001	IMD-002	IMD-003	IMD-004
Weight	oz	—	8.0	8.0	8.0	8.0	12	12	14	12
Stalled Torque	oz-in	Ts	1.45	2.5	1.45	2.0	2.7	2.3	5.0	3.8
No Load Speed	rpm	R	4800	10,000	6500	3000	10,000	4800	10,000	3300
Frequency	cps	—	400	400	400	60	400	400	400	60
Rotor Inertia	gm-cm²	J	3.3	3.2	1.0	4.0	4.0	4.0	5.0	4.0
Volts Input (Fixed Φ)	volts	V	115	115	115	115	115	115	115	115
Volts Input (Control Φ)	volts	V	115/57.5	36CT	115/57.5	26CT	36/18	40/20	115/57.5	280/140
Stalled Impedance (Fixed Φ)	ohms	—	530 + J900	385 + J385	390 + J670	1165 + J1000	250 + J390	250 + J590	120 + J196	715 + J800
Stalled Impedance (Control Φ)	ohms	—	530 + J900	38 + J38	390 + J670	60 + J51	28 + J39	35 + J85	120 + J196	4650 + J4800
Power Input (Fixed Φ)	watts	—	6.5	17	8.0	6.5	16	9	30	8.0
Power Input (Control Φ)	watts	—	6.5	17	8.0	6.5	16	9	30	8.0
Acceleration @ Stall	rad/sec²	Ts/J	31,000	55,000	100,000	35,200	48,000	40,000	70,000	67,000
Figure of Merit	$\frac{\text{oz-in}}{\text{sec}^2}$	Ts²/J	45,000	140.000	145,000	70,400	130,000	96,000	350,000	256,000
Motor Torque Constant	$\frac{\text{dyne cm}}{\text{volt}}$	$Ka = \frac{Ts/J}{V}$	890	4900	890	5420	5250	4000	3000	950
Motor Damping Factor	$\frac{\text{dyne cm sec}}{\text{radian}}$	Kf	210	190	158	444	190	335	300	800
Motor Velocity Constant	$\frac{\text{radian}}{\text{volt sec}}$	$Km = \frac{Ka}{Kf}$	4.2	260	5.6	16.6	27	12	10	1.2
Motor Corner Frequency	$\frac{\text{rad}}{\text{sec}}$	$w = \frac{Kf}{J}$	63	60	158	111	48	83	60	200
Motor Time Constant	sec	$T = \frac{i}{W}$	.016	.016	.006	0.09	.021	.012	.017	.005
Reversing Time	sec	t	.027	.027	.010	0.0153	.035	.020	.028	.008
Length (max)	in	—	**L = 1.656	*L = 1.562	*L = 1.530	*L = 2.000	**L = 2.015	**L = 2.015	**L = 2.850	**L = 2.015

L (w/leads) Lt (w/terminal block)

STEPPER MOTORS

SIZE 5

IPI
IVI



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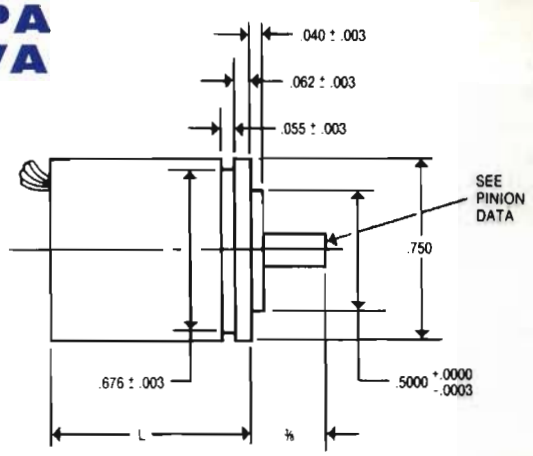

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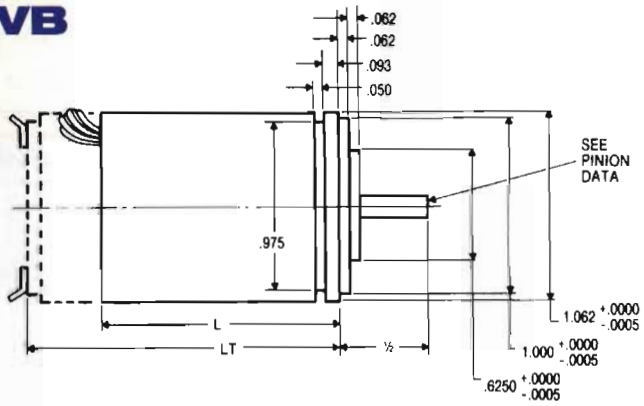

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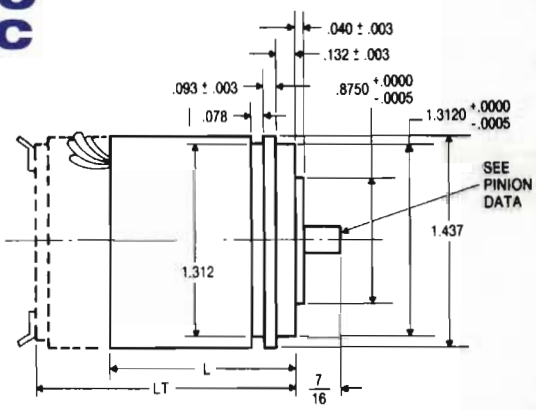

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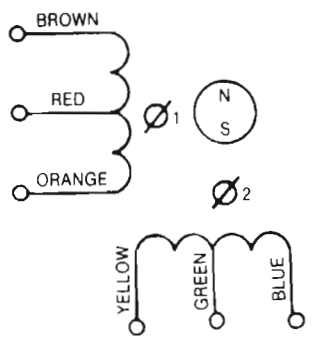
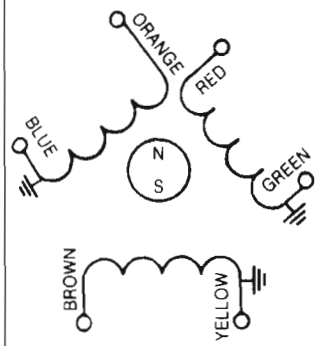
	

TYPE NUMBER		IPI-001	IVI-001	IPA-001	IPA-004	IPA-005	IPA-006	IVA-001	IVA-002	IVA-003
	Units									
Stepping Angle	deg.	90	15	90	90	90	90	15	15	15
Maximum Unloaded Stepping Rate	PPS	100	400	240	130	180	110	400	560	800
Stall Torque	oz-in	0.2	0.30	0.45	0.22	0.60	0.40	0.175	0.50	0.70
Maximum Running Torque @ (10 PPS)	oz-in	0.10	0.12	0.22	0.10	0.31	0.20	0.10	0.27	0.35
Rated Voltage	VDC	28	28	28	28	28	28	28	28	28
Current/Phase	M.A.	140	28	280	90	280	108	90	180	360
Power Input	watts	4.0	8.0	8.0	2.5	8.0	3.0	2.5	5.0	10.0
Resistance/Phase	ohms	200	100	100	325	100	260	310	155	78
No. of Phases	—	2CT	3	2CT	2CT	2CT	2CT	3	3	3
Rotor Inertia	gm-cm²	0.05	0.05	0.15	0.15	0.70	0.7	0.15	0.15	0.15
Weight	oz	0.60	0.60	1.75	1.75	1.75	1.75	1.75	1.75	1.75
Length	in	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

TYPE NUMBER		IPB-001	IPB-003	IPB-004	IPB-005	IPB-006	IVB-001	IVB-002	IVB-003	IVB-005	IVB-006	IPC-001	IPC-002	IVC-001	IVC-003
	Units														
Stepping Angle	deg.	90	90	90	90	45	15	15	15	15	15	90	90	15	15
Maximum Unloaded Stepping Rate	PPS	225	225	175	125	260	1000	800	600	400	300	100	150	725	600
Stall Torque	oz-in	1.50	1.50	1.20	0.80	1.20	4.0	3.0	2.0	0.80	0.50	2.5	4.0	4.5	3.0
Maximum Running Torque@(10 PPS)	oz-in	0.74	0.74	0.50	0.45	0.70	2.0	1.2	0.60	0.35	0.25	1.0	2.0	2.4	1.8
Rated Voltage	VDC	28	28	28	28	28	28	28	28	28	28	28	28	28	28
Current/Phase	M.A.	240	470	280	140	180	940	560	350	190	110	375	800	560	350
Power Input	watts	7.0	13.0	8.0	4.0	5.0	29.0	15.0	10.0	5.0	3.0	10.0	23.0	15.0	10.0
Resistance/Phase	ohms	120	60	100	200	155	30	50	80	155	250	75	35	50	80
No. of Phases	—	2CT	2CT	2CT	2CT	2CT	3	3	3	3	3	2CT	2CT	3	3
Rotor Inertia	gm-cm²	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	3.75	3.75	1.0	1.0
Weight	oz	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	8.0	8.0	8.0	8.0
Length	in	1.310	1.310	1.310	1.310	1.310	1.310	1.310	1.310	1.310	1.310	1.400	1.400	1.400	1.400

Instrument Stepper Motors

These compact units have a high degree of an angular accuracy. The stepper motor shaft can reach a desired position without the need for a feedback device.

Stepper motors can be used for DC, AC, digital analog and analog-to-digital conversion. ISLAND COMPONENTS GROUP, INC. manufactures two types of stepper motors:

- ***"IP" TYPE or PERMANENT MAGNET***
  These stepper motors utilize a permanent magnet rotor and two center tapped windings. Permanent magnet stepper motors normally have either 45° 0r 90° stepping angles. They can be combined with a precision gearhead for other stepping angles.

- ***"IV" TYPE or VARIABLE RELUCTANCE***
  These stepper motors utilize a soft iron salient-pole rotor. Stepping angle for variable reluctance stepper motors is 15° and can also be combined with precision gearheads.

Precision Servomotors

These two-phase squirrel cage precision servomotors are the power element of a servomechanism. They apply a corrective torque to the amplified error signal.

ISLAND COMPONENTS GROUP, INC. manufactures a wide variety of sizes from size 5 to size 40, and frequencies mainly 60Hz and 400 Hz.

Power consumption, voltage input, direction of rotation, speed, output touque and other parameters will be designed to fit the customer's requirements.

Speed can be calculated with the following formula: $N = 120F \div P$
(N = Speed in RPM, F = Frequency in Hertz, P = Number of Poles)

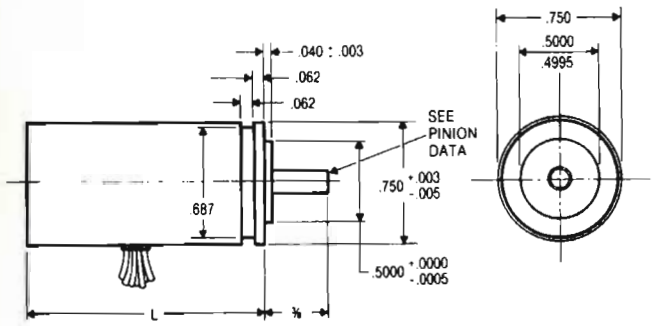
Servomotor speed is lower than the calculated speed above because of slippage.

The motor torque is proportional to the power input, but the speed is related to the frequency used and number of poles.

INERTIALLY DAMPED

SIZE 8

IDA



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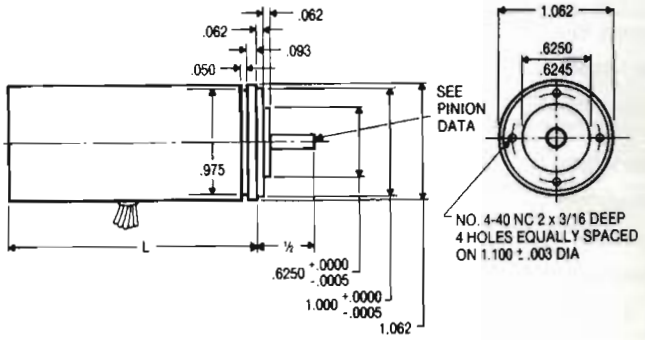

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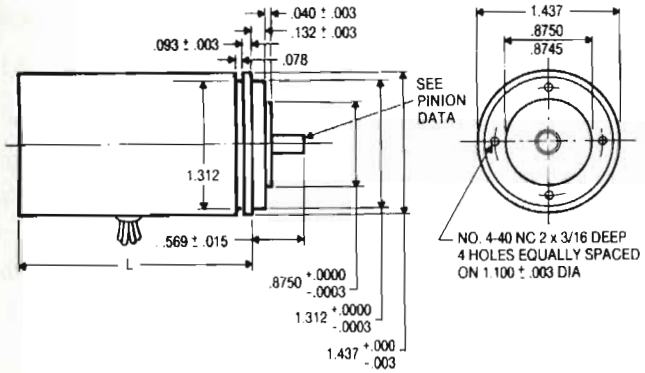

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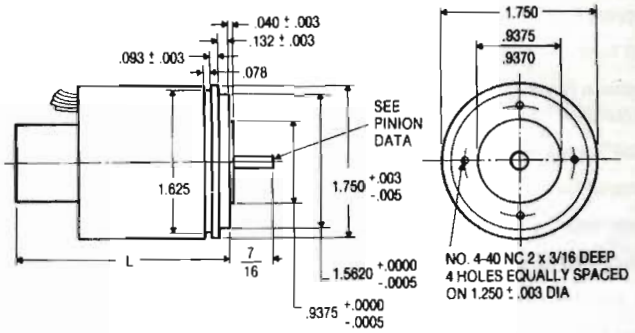

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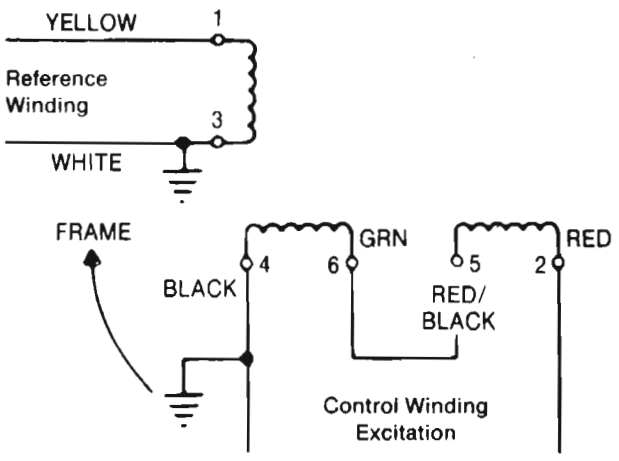

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	Units											
Weight	oz	3.0	3.0	3.0	3.0	3.0	6.0	6.0	6.0	6.0	6.0	6.0
Frequency	CPS	400	400	400	400	400	400	400	400	400	400	60
Stall Torque	oz-in	.30	.15	.25	.30	.33	.63	.35	.60	.65	.60	.80
No Load Speed	RPM	6300	8000	8500	6500	5500	6300	9000	6200	6400	6200	3100
Rotor Inertia	gm-cm²	.48	.48	.48	.48	.48	1.5	.60	1.6	2.3	1.6	1.5
Motor Fixed Φ	volts	115	38	26	26	26	115	115	115	26	115	115
Motor Control Φ	volts	40/20	33CT	33CT	30/15	33/16.5	40CT	36/18	40/20	40/20	36/18	36CT
Motor Fixed Φ Impedance	ohms	1800 + J2340	630/J530	195 + J180	90/J116	86/J111	1275 + J1800	2200 + J3100	1150/J1650	70/J89	1380/J1800	2400 + J1900
Motor Control Φ Impedance	ohms	225 + J292	485/J410	180 + J240	120/J154	143/J186	150/J215	215 + J210	150/J215	165/J210	135/J1760	240 + J190
Motor Fixed Φ Power	watts	2.8	1.3	1.9	2.8	3.3	3.5	2.0	3.8	3.7	3.5	3.5
Motor Control Φ Power	watts	2.8	1.3	3.5	2.8	3.3	3.5	2.0	3.5	3.7	3.5	3.5
Flywheel Inertia	gm-cm²	5	5	5	4.6	5	10	10	10	13.8	10	10
Flywheel Damping	dyne-cm-sec / radian	200	270	200	196	225	350	450	100	250	330	350
Corner Frequency w_1	rad/sec	6.0	1.7	3.5	6.0	7.8	4.0	2.5	4.	3.9	6	11
Corner Frequency w_2	rad/sec	40	54	40	40	53.3	35	45	10.	18	35	35
Corner Frequency w_3	rad/sec	500	580	480	500	558	300	800	106.	138	260	345
Max Kv in System	sec-'	3000	18,445	5500	3000	3800	2500	14,500	265	635	1460	1000
Length (max)	in	1.680	1.680	1.680	1.680	1.680	2.125	2.125	2.125	2.125	2.125	2.125

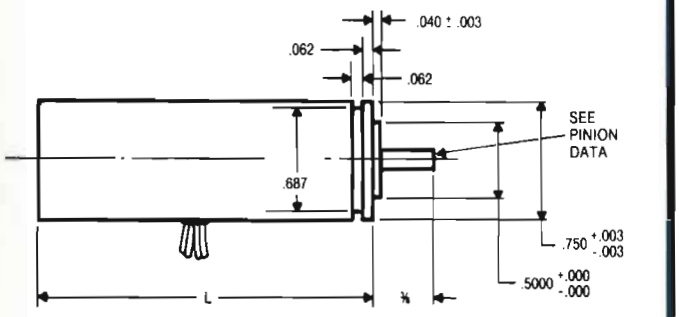
"GOOD QUALITY IS NEVER FORGOTTEN, POOR QUALITY IS NEVER FORGIVEN."

TYPE NUMBER		IDC-001	IDC-002	IDC-003	IDC-004	IDC-005	IDD-001	IDD-002	IDD-004	IDD-005	IDD-006
	Units										
Weight	oz	12	12	12	12	12	18	18	23	18	23
Frequency	CPS	400	400	400	60	60	400	400	400	60	60
Stall Torque	oz-in	1.45	1.45	.7	2.0	1.5	2.3	2.7	5.0	4.0	8.0
No Load Speed	RPM	4500	4500	9500	2700	2700	4500	8500	9300	3000	3000
Rotor Inertia	gm-cm²	6.0	6.0	6.0	6.0	7.0	6.5	6.5	10	6.5	10
Motor Fixed Φ	volts	115	115	115	115	115	115	115	115	115	115
Motor Control Φ	volts	40/20	40/20	36/18	40/20	40/20	115/57.5	115/57.5	115/57.5	40/20	115/57.5
Motor Fixed Φ Impedance	ohms	530 + J900	530 + J900	600 + J800	1450 + J1080	1800 + J880	250 + J590	250 + J390	120 + J196	750 + J750	325 + J390
Motor Control Φ Impedance	ohms	65 + J110	65 + J110	60 + J80	170 + J130	216 + J100	250 + J590	250 + J390	120 + J196	87 + J86	325 + J390
Motor Fixed Φ Power	watts	6.5	6.5	6.5	6.0	6.0	8.0	16	30	9.0	16
Motor Control Φ Power	watts	6.5	6.5	6.5	6.0	6.0	8.0	16	30	9.0	16
Flywheel Inertia	gm-cm²	100	100	100	100	100	100	100	100	100	100
Flywheel Damping	dyne-cm-sec / radian	750	1250	1500	1250	1500	1000	1000	1000	1000	1500
Corner Frequency w_1	rad/sec	1.7	1.9	0	4.2	0	2.5	1.8	2.3	4.4	7.0
Corner Frequency w_2	rad/sec	7.5	12.5	15	12.5	15	10	10	10	10	15
Corner Frequency w_3	rad/sec	160	250	250	250	215	200	185	130	282	270
Max Kv in System	sec-	700	1600	∞	750	∞	800	1000	550	670	550
Length (max)	in	2.650	2.650	2.650	2.650	2.650	3.310	3.310	4.000	3.310	4.000

MOTOR GENERATORS

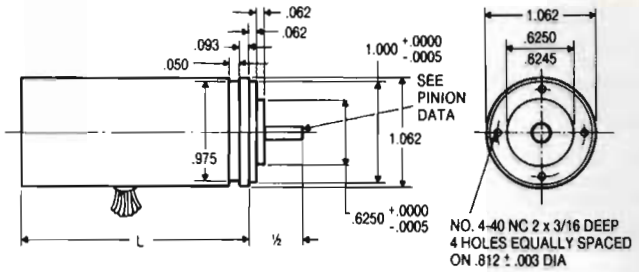
SIZE 8

IGA



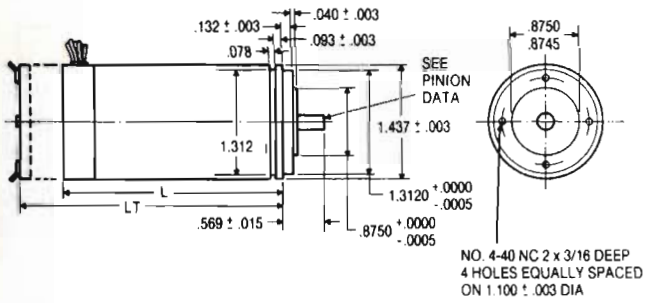
SIZE 11

IGB



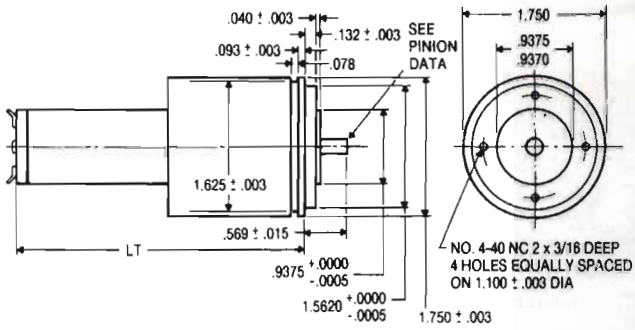
SIZE 15

IGC

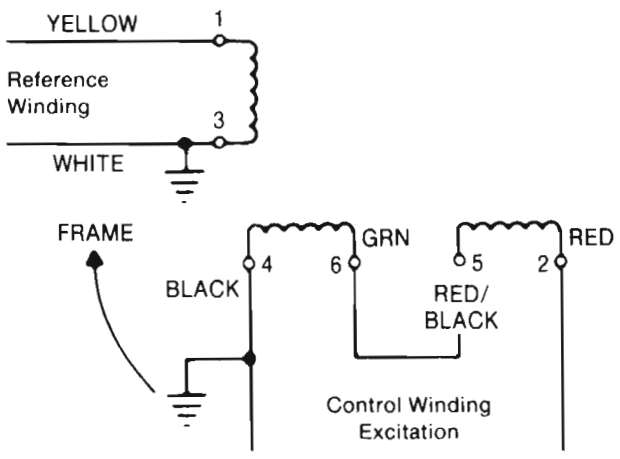


SIZE 18

IGD



CONNECTION DATA



TYPE NUMBER	IGA-001	IGA-002	IGA-003	IGA-031	IGA-032	IGA-033	IGA-034	IGB-002	IGB-003	IGB-020	IGB-021	IGB-022	IGB-023
Weight (oz)	2	2.3	2.5	2.75	2	2.5	2.3	3.5	4	3.5	4.8	7.1	3.5
Frequency (CPS)	400	400	400	400	400	400	400	400	400	400	400	400	400
Stall Torque (oz-in)	.25	.20	.33	.316	.20	.33	.20	.40	.60	.60	.60	.60	.60
No Load Speed (RPM)	6000	7300	6400	6000	9000	6400	9000	9000	6400	6400	6500	5600	6400
Rotor Inertia (gm-cm²)	.5	.6	.7	.410	.5	.7	.6	1.0	1.1	1.0	1.1	1.3	1.0
Motor Fixed Φ (Volts)	26	26	26	26	26	115	26	115	115	115	115	115	115
Motor Control Φ (Volts)	36/18	36/18	36/18	33/165	36/18	40/20	36/18	36/18	40/20	36/18	40/20	40/20	40/20
Motor Fixed Φ Impedance (Ohms)	120 + J112	204 + J185	135 + J110	66 + J95	180 + J180	2100 + J2200	180 + J180	1970 + J1660	1250 + J1780	1250 + J1780	1250 + J1780	1250 + J1780	1250 + J1780
Motor Control Φ Impedance (Ohms)	230 + J215	390 + J350	260 + J210	133 + J155	340 + J340	330 + J270	340 + J340	192 + J161	150 + J215	125 + J180	151 + J215	151 + J215	150 + J215
Motor Fixed Φ Power (Watts)	3.0	2.2	3.0	3.8	2.0	3.0	2.0	4.0	3.5	3.5	3.5	3.9	3.5
Motor Control Φ Power (Watts)	3.0	2.2	3.0	3.8	2.0	3.0	2.0	4.0	3.5	3.5	3.5	3.9	3.5
Generator Input Voltage (Volts)	26	26	26	26	26	115	26	115	115	115	115	115	115
Generator Output Voltage/1000 RPM	.35	.30	.30	.445	.30	1.0	.30	.50	.50	1.0	3.2	.34	.50
Generator Input Power (Watts)	1.5	1.5	1.5	1.1	1.0	3.0	1.5	3.1	3.1	3.1	5.0	3.9	3.1
Generator Input Impedance (Ohms)	—	—	—	—	—	—	—	1800 + J2000	—	2100 + J2300	1100 + J1150	—	—
Null Voltage (M.V.)	20	20	20	8	20	30	20	19	19	25	20	19	19
Phase Shift (Deg.)	0 ± 10°	0 ± 10°	0 ± 10°	0 ± 10°	0 ± 10°	0 ± 10°	0 ± 10°	± 10°	0 ± 10°	± 10°	± 10°	0 ± 10°	0 ± 10°
Length (in)	L=1.240	L=1.500	L=1.750	L=1.562	L=1.240	L=1.750	L=1.500	L=1.750	L=2.125	L=1.750	L=3.500	L=2.56	L=1.750

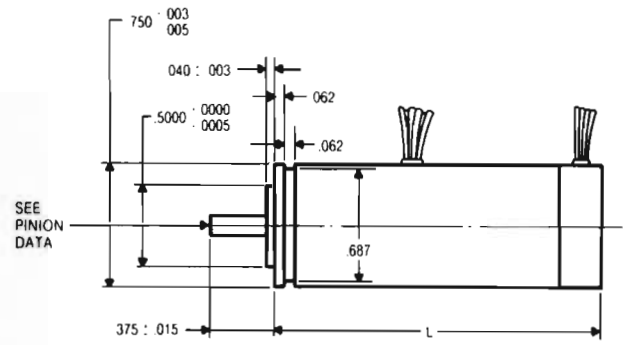
TYPE NUMBER	IGC-001	IGC-002	IGC-003	IGC-007	IGC-008	IGC-009	IGD-003	IGD-004	IGD-005	IGD-017	IGD-018	IGD-019	IGD-020
Weight (oz)	13	10	15	10	14	8.0	29	20	20	20	29	20	29
Frequency (CPS)	400	400	60	400	400	400	400	60	400	400	400	60	60
Stall Torque (oz-in)	1.45	1.45	2.0	1.45	1.5	1.2	5.0	3.8	2.3	2.7	6.5	3.8	8.0
No Load Speed (RPM)	4500	6000	3000	6500	4700	7000	10,000	3000	4500	9000	4700	3000	3000
Rotor Inertia (gm-cm²)	5.3	3.4	5.3	1.1	5.3	1.1	9.0	5.6	5.6	5.6	9.0	5.6	10.0
Motor Fixed Φ (Volts)	115	115	115	115	115	36/18	115	115	115	115	115	115	115
Motor Control Φ (Volts)	115/57.5	40/20	36CT	36/18	40CT	36/18	115/57.5	280/140	40/20	36/18	115/57.5	280/140	115/57.5
Motor Fixed Φ Impedance (Ohms)	530 + J900	385 + J670	1300 + J950	390 + J670	460 + J840	52 + J89	120 + J196	715 + J800	250 + J590	250 + J390	105 + J225	715 + J800	325 + J390
Motor Control Φ Impedance (Ohms)	530 + J900	46 + J81	130 + J95	39 + J67	58 + J105	52 + J89	120 + J196	4650 + J4800	35 + J85	28 + J39	105 + J225	4650 + J4800	325 + J390
Motor Fixed Φ Power (Watts)	6.5	8.5	6.0	8.0	6.5	7.0	30	8	8	16	22	8	16
Motor Control Φ Power (Watts)	6.5	8.5	6.0	8.0	6.5	7.0	30	8	8	16	22	8	16
Generator Input Voltage (Volts)	115	115	115	26	115	115	115	115	115	115	115	115	115
Generator Output Voltage/1000 RPM	3.1	3.1	3.0	.50	3.2	0.6	3.1	.75	3.1	3.1	3.1	3.0	3.0
Generator Input Power (Watts)	5.4	5.4	1.5	2.0	5.4	3.5	5.4	6.1	5.4	5.4	5.4	1.5	1.5
Generator Input Impedance (Ohms)	900 + J1200	890+J1180	3660 + J4200	285 + J130	1012 + J1210	1890 + J1730	900 + J1200	1900 + J650	900 + J1200	900 + J1200	900 + J1200	3600 + J4200	3600 + J4200
Null Voltage (M.V.)	13	15	50	25	13	19	.030	.010	.013	.013	.030	.050	.050
Phase Shift (Deg.)	± 10°	± 10°	± 14°	± 10°	-5°	± 15°	± 10°	+65°	± 10°	± 10°	± 10°	± 14°	± 14°
Length (in)	Lt=3.152	L=2.809	L=3.258	L=2.500 MAX	L=3.625	L=2.500 MAX	Lt=4.400	Lt=3.551	Lt=3.551	Lt=3.551	Lt=4.400	Lt=3.590	Lt=4.440

L (w/leads) Lt (w/terminal block)

MOTOR TACHOMETERS

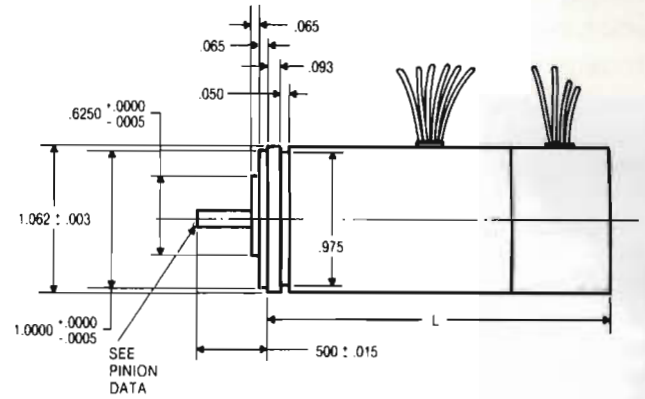
SIZE 8

IIA



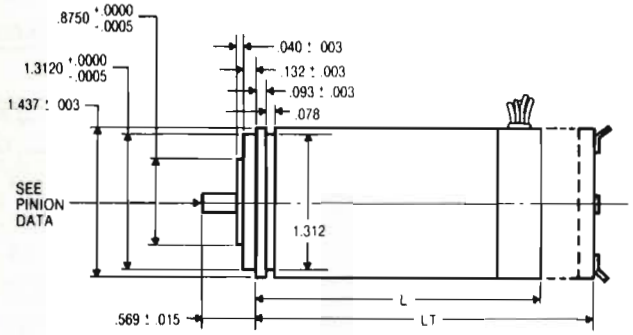
SIZE 11

IIB



SIZE 15

IIC



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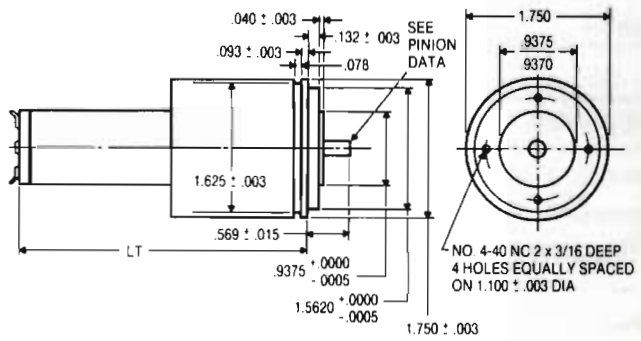

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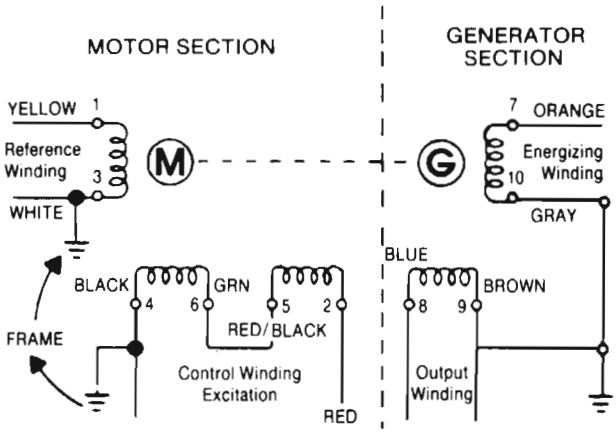


TYPE NUMBER	IIA-002	IIA-004	IIA-005	IIA-006	IIB-001	IIB-005	IIB-006	IIB-007	IIC-001	IIC-002	IIC-003	IIC-004	IID-001
Stall Torque (oz-in)	.20	.20	.30	.30	.60	.60	.6	.6	1.45	1.45	1.45	1.45	2.70
No Load Speed (RPM)	9500	9500	6800	6800	6000	6000	6000	6000	4500	4500	4800	4500	9500
Weight (oz.)	3	2.5	3	3	9	9	9	9	14	14	35	14	25
Fixed Φ Voltage (Volts)	26	26	26	26	115	115	115	115	115	115	115	115	115
Control Φ Voltage (Volts)	33CT	33CT	33CT	33CT	40/20	40/20	40/20	40/20	40/20	36/18	40/20	36/18	40/20
Fixed Φ Impedance (Ohms)	190 + J180	190 + J180	146 + J133	146 + J133	1250 + J1780	1250 + J1780	1250 + J1780	1250 + J1780	500 + J530	530 + J900	500 + J530	500 + J530	250 + J390
Control Φ Impedance (Ohms)	300 + J290	300 + J290	342 + J221	342 + J221	151 + J215	151 + J215	151 + J215	151 + J215	60 + J110	45 + J90	60 + J110	50 + J53	36 + J46
Frequency (CPS)	400	400	400	400	400	400	400	400	400	400	400	400	400
Excitation Voltage Generator (Volts)	26	26	26	26	115	115	115	115	115	115	115	115	115
Power Input Generator (Watts)	2.1	2.2	2.2	2.1	5.5	5.5	5.5	5.5	6	5.5	4	5.5	5.0
Voltage Gradient (Volts/1000 RPM)	.5	.4	.4	.5	2.75	2.75	2.75	2.75	2.75	2.75	1.0	2.75	2.75
Phase Shift (Deg.)	0°	5° LEAD	5° LEAD	0°	0°	0°	0°	0°	0°	0°	0°	0°	0°
Position Error (In Phase) (mv)	—	—	—	—	7	8	7	±6	10	8	2	—	7
Position Error (Quadrature) (mv)	—	—	—	—	11	15	11	±8	20	15	6	—	15
Axis Error In Phase (mv)	—	—	—	—	7	4	7	±3.5	5	4	5	—	4
Axis Error Quad (mv)	—	—	—	—	10	5	10	±7	10	5	5	—	7
RMS Null Voltage (mv)	0.15	.015	0.15	.015	—	—	—	—	—	—	—	.015	—
Temperature Sensitivity	±1%(-15°C to +75°C)	.1%/°C	.1%/°C	±1%(-15°C to +75°C)	±.3% (0°C to +85°C)	.05%/°C	±.3%(0°C to +85°C)	±.1%(0°C to +85°C)	±.3% (0°C to +85°C)	.05%/°C	±.05% (0°C to +125°C)	±.5% (-55°C to +100°C)	.05%/°C
Length (in)	L=2.052	L=1.750	L=2.000	L=2.200	L=3.348	L=3.438	L=2.775	L=3.238	L=3.535	L=3.152	L=3.780	L=3.680	L=3.680

INTEGRATOR NOTES: Standard load on generator is 100K ohms, except for 11A-002 which is 25K ohms and 11B-007 which is 50K ohms.

Generators/Tachometers

Generators/Tachometers can be utilized in feedback devices to perform the following functions:

- Speed Control
- Position Control by calculating the definite integral of output voltage proportional to shaft speed over a particular time interval.
- Position Stabilization in position servos by utilizing a motor generator as a damping component to compensate or absorb rapid changes in control voltage signals. Analytically, tachometer damping is equivalent to viscous damping. Full motor output torque is available for high speed slewing since there is no loss in tachometer damping.

Some servo systems require a voltage at the signal frequency, which is proportional to the rate of change of angular speed. ISLAND COMPONENTS GROUP makes three types of instruments generators/tachometers which have an output voltage proportional to speed:

- ***"IG" TYPE, DAMPING or RATE GENERATORS*** These have fairly stable but not precision output voltages throughout a wide variety of temperatures.
- ***"IC" TYPE, or COMPUTING TACHOMETERS*** These are temperature compensated for more precise output parameters.
- ***"II" TYPE, or INTEGRATING TACHOMETERS*** These provide extremely precise and stabilized output voltage throughout the required temperatures.

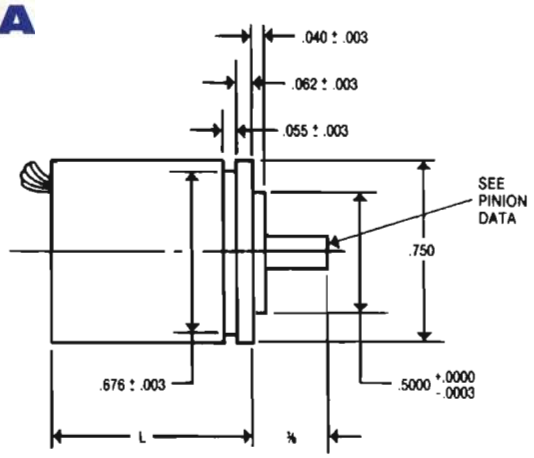
Generators can be built as just generators, or they can be combined with servomotors with a common shaft. Servomotors are squirrel cage type and consist of two separate windings which operate with two voltages, 90 electrical degrees apart.

The generator portion consists of two windings, input and output windings. A non-magnetic cup rotates and couples input and output windings. The output voltage function of the speed of the servomotor.

HYSTERESIS SYNCHRONOUS

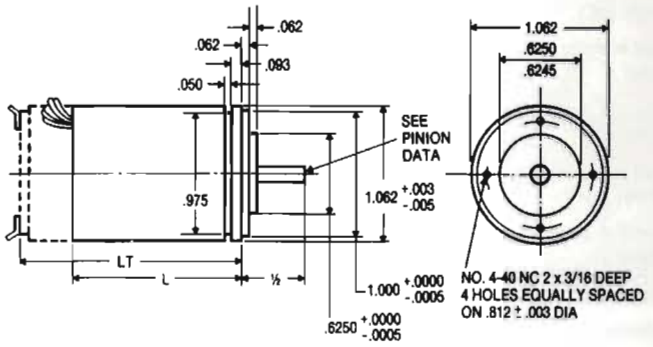
SIZE 8

IHA



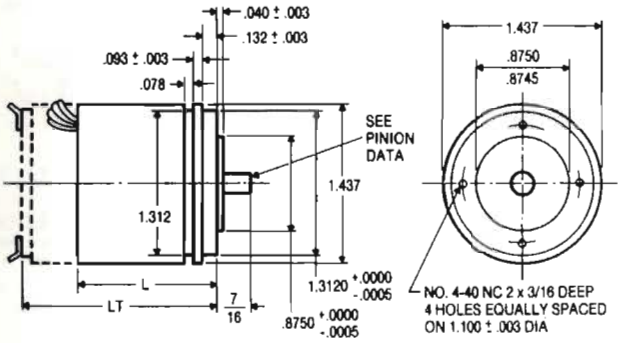
SIZE 11

IHB



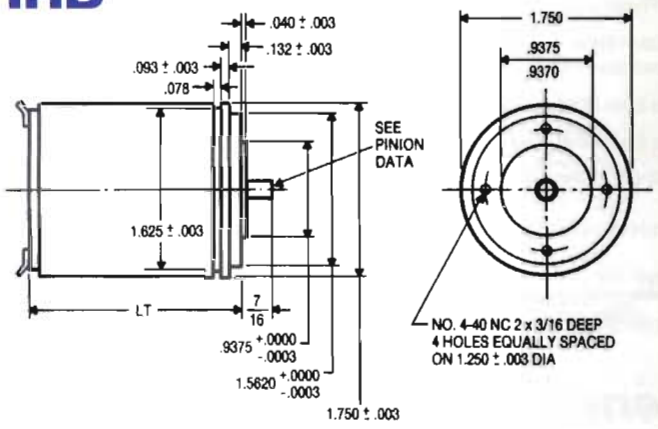
SIZE 15

IHC



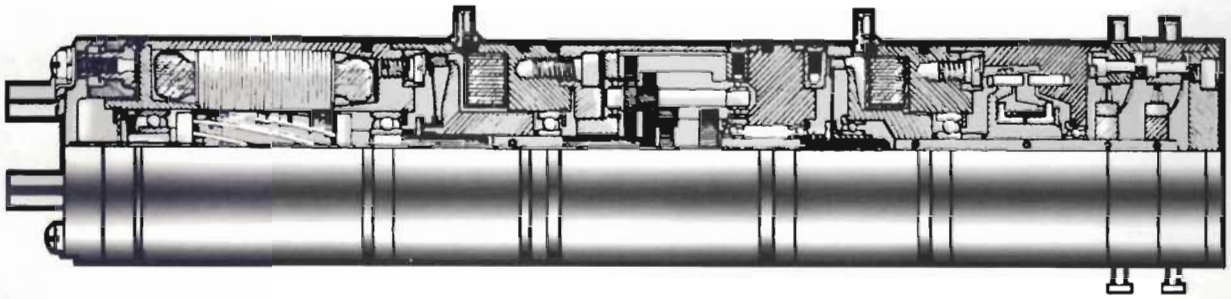
SIZE 18

IHD



TYPE NUMBER		IHA-002	IHA-003	IHB-009	IHB-010	IHB-011	IHB-012	IHC-001	IHC-002	IHC-003	IHD-005	IHD-006	IHD-007
	Units												
Weight	oz	2.0	2.0	4.5	4.5	4.5	4.5	8.0	8.0	9.0	16.0	12.0	14.0
Frequency	CPS	400	400	400	400	400	60	400	400	400	400	400	60
Synchronous Speed	RPM	8000	12000	4000	8000	12000	3600	6000	12000	8000	6000	8000	1800
No. of Poles	—	6	4	12	6	4	2	8	4	6	8	6	4
Voltage (AC)	volts	26	115	115	115	26	115	115	115	115	115	115	115
No. of Phases	—	2	2	2	2	2	2	2	2	2	2	2	2
Torque Pull-In	in-oz	0.22	0.14	0.18	0.30	0.28	0.25	0.8	0.85	0.5	2.50	2.25	1.8
Torque Pull-Out	in-oz	0.27	0.15	0.22	0.35	0.28	0.27	0.8	0.85	0.5	2.50	2.25	1.8
Torque Stall	in-oz	0.22	0.13	0.27	0.20	0.33	0.20	0.5	0.65	0.5	2.20	2.0	2.0
Power Pull-Out	watts	3.4	2.6	2.5	3.5	4.5	5.0	4.0	5.0	6.0	15	15	10
Length	in	1.187	1.187	1.375	1.375	1.375	1.375	1.435	1.435	1.500	3.400	1.900	2.100

NOTES: • *These motors can be married to our Spur or Planetary Gearheads*
• *Different motor voltages, frequencies, sizes, lead type or terminal type available*



THIS ASSEMBLY INCLUDES: SERVO MOTOR, BRAKE, GEARHEAD, CLUTCH, SPRING RETURN, AND POTENTIOMETER

■ SERVO MOTOR

ISLAND Standard Mark (MK) 14,400 cycle
FUNCTION: Main driver of united module
ADVANTAGES: Faster Response and Sensitivity due to elimination of gearing and it's related inertia and backlash

■ DC WAFER BRAKE

ISLAND Standard size 11
FUNCTION: Brake rotation of Servo Motor and Gearhead
ADVANTAGES: Longer Life - from ball bearings due to zero backlash coupling which eliminates inertial shocking of bearing during braking

■ GEARHEAD

ISLAND Standard size 11 (1000:1)
FUNCTION: Steps down R.P.M. of motor and increases output torque
ADVANTAGES: Faster Response- due to utilization of brake output shaft pinion as low inertia input pinion

■ DC WAFER CLUTCH

ISLAND Standard size 11
FUNCTION: Allows motor, brake and gearhead to override spring return; stops without damage
ADVANTAGES: Greater accuracy - full utilization of zero backlash feature of clutch allows closer "nulling" accuracies from spring return mechanism

■ NULL TYPE SPRING RETURN MECHANISM

ISLAND Standard size 11
FUNCTION: Allows potentiometer wiper element to bi-directionally return to a zero or null position
ADVANTAGES: Greater Accuracy - is possible because of the zero backlash coupling of both input and output shaft to their respective load

■ STANDARD NON-WIRE WOUND POTENTIOMETER

ISLAND Standard size 11
FUNCTION: Output voltage divider of unitized module
ADVANTAGES: Greater Accuracy - due to zero backlash coupling

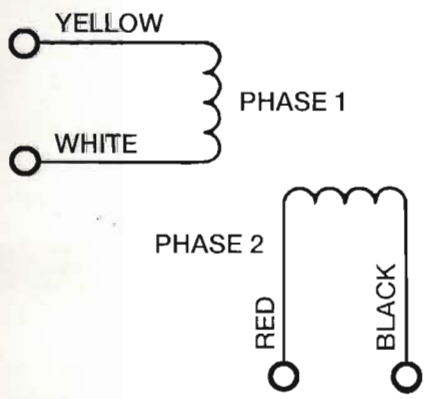
IN-LINE ASSEMBLIES CAN CONSIST OF ANY OF THE FOLLOWING

- ■ CLUTCHES and BRAKES*
- ■ MOTORS*
- ■ GEARHEADS*
- ■ SPRING RETURNS*
- ■ SYNCHROS*
- ■ COMMUTATOR SWITCHES*
- ■ POTENTIOMETERS*
- ■ ENCODERS*
- ■ TACHOMETERS*

** Manufactured by ISLAND COMPONENTS GROUP, INC.*

HYSTERESIS SYNCHRONOUS

CONNECTION DATA



Advantages of In-Line Assemblies

The packaging of several electro-mechanical components on a common shaft results in increased system accuracy at lower cost.

The groupings of components such as magnetic clutches and brakes, spring returns, motors, potentiometers, gearheads, switches, synchros, etc., into a single housing with a common shaft line provides the following features:

LESS SPACE is required for the combined assemblies, since gearing associated with coupling between components is eliminated. For example, if a potentiometer is to be mechanically connected to the output shaft of a magnetic clutch, less space will be required by using a common shaft between the components. This feature can be readily applied to many other applications utilizing the many types of unitized modules available.

SYSTEM RELIABILITY is, in effect, a function of the number of mechanical and electrical failures that can occur. By using unitized modules, the number of mechanical connections between components is reduced. This in turn lessens failure probability, and greater reliability is achieved.

ACCURACIES and sensitivity are improved with unitized modules because backlash and phasing are less critical. For example, if the output shaft of a magnetic clutch is to be connected to a spring return and single pole commutator switch, the phasing of the switch contacts to the null position of the spring return can be held to closer accuracies if assembled as an integral unit. Also, the null position will not be affected by the gearing backlash if assembled to a common shaft.

LOWER COST The reduced number and complexity of parts and the reduction in customer assembly costs combine to make ISLAND COMPONENTS GROUP, INC. packaged system an economical alternative to individual component procurement.

MOTORS
DC BRUSHLESS MOTORS
STEPPER MOTORS
SERVOMOTORS
MOTOR GENERATORS
INERTIALLY DAMPED
HYSTERESIS
SYNCHRONOUS
TACHOMETERS
INTEGRATORS

BRAKES & CLUTCHES
ELECTROMAGNETIC
BRAKES
SPRING BRAKES
ELECTROMAGNETIC
CLUTCHES
SPRING CLUTCHES

GEARHEADS
PLANETARY
SPEED REDUCERS
SPUR GEARHEADS

IN-LINE ASSEMBLIES
ACTUATORS
IN-LINE PACKAGES
STATORS
ROTORS
CUSTOM ASSEMBLIES
SPEED CONTROLS
SHAFT SPRING RETURNS

ISLAND COMPONENTS GROUP

Putting Your Ideas Into Motion

Engineering & Design Assistance

In today's modern world, electromechanical components must meet exact specifications. Highly qualified engineers on staff is essential to achieve best project results. At ISLAND, when it comes to providing the expertise to get the job done, we wrote the book. Each engineering application provides us with a new challenge, whether it's enhanced performance, or trouble-shooting an intricate in-line assembly, we're ready. Talk to us about your next project or ideas and we'll get the gears into motion right away.

Special Applications

- *Gear Ratios*
- *Bearing & Lubrication*
- *Temperature Range*
- *Mechanical Configurations (Shaft, Body Diameter or Length)*
- *Reduced Backlash*
- *Anti-Backlash Systems*
- *Slip Clutches*
- *Inline-Assemblies can be Designed to Special Requirements*
- *Parallel plate actuators can be supplied for specific applications*
- *Specialty Motors*

Customer Service

From the moment you call, the friendly professionals at ISLAND are available to work with you. It is important to us that you are kept informed of each job's status, from the moment you place your order, through manufacturing, to final test and on-time delivery. Whatever your needs are, you'll receive the courteous service that's grown to be a trademark at ISLAND COMPONENTS GROUP, Inc.

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