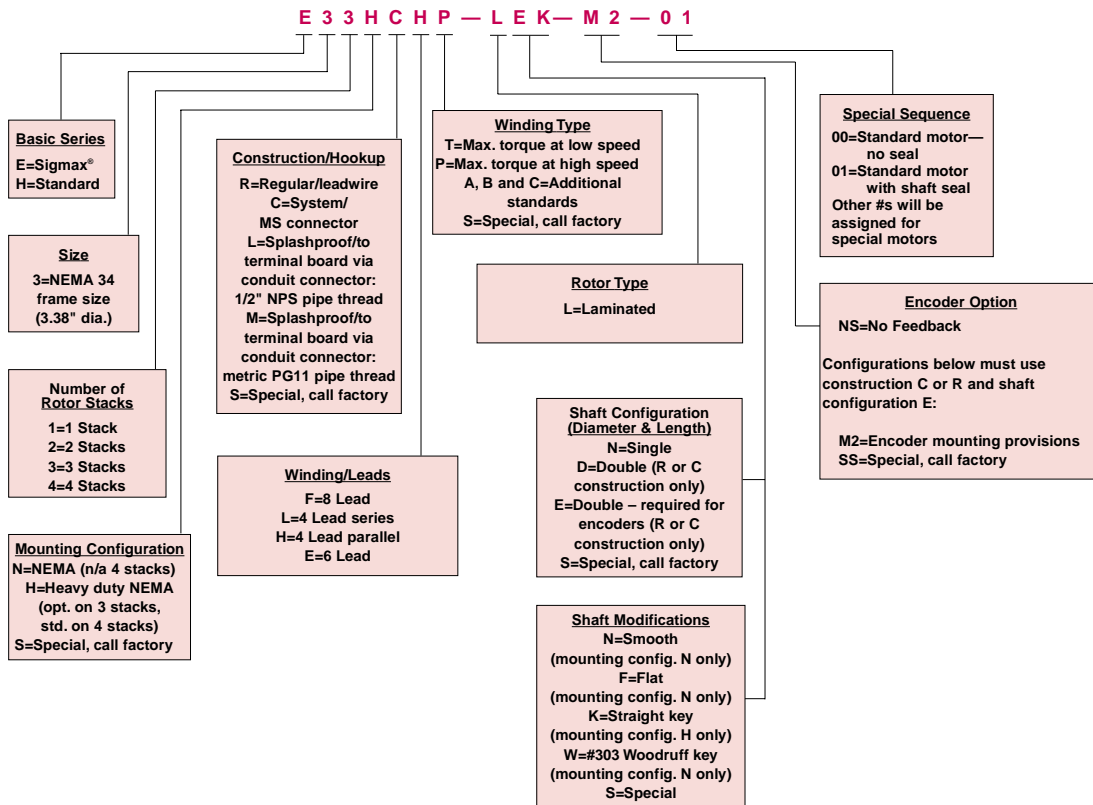


# GENERAL PURPOSE— CONVENTIONAL HYBRIDS NEMA 34 FRAME (3.4" Dia.)

## MODEL NUMBER CODE



The example model number above indicates an E series (Sigmax®) NEMA 34 frame motor with a three stack rotor. This motor is equipped with heavy duty front end bell and shaft, and sealed system rear end bell with MS connectors. It also has a bipolar parallel connection, a maximum torque at high speed winding, a straight keyway, encoder mounting provisions and a shaft seal.

## HOW TO ORDER

Review the Motor Model Number Code above to assure that all options are designated. Connections, encoders and phasing diagrams start on page 76. Motor dimensions start on page 65.

# GENERAL PURPOSE—CONVENTIONAL HYBRIDS

## NEMA 34 FRAME (3.4" Dia.)—Ratings and Characteristics

Review the Model Number Code, page 61, to assure that all options are designated. Connections, encoders and phasing diagrams start on page 76. Motor dimensions start on page 65. In addition to those below, motors with characteristics for specific performance requirements are offered. Contact factory for more details.

Rated currents are in descending order	Motor Model Number $\Delta$	Connection $\Delta$		Holding Torque $\Delta$ (2 phases on) oz-in (Nm) $\pm 10\%$	Rated Current/ Phase $\Delta$ (amps DC)	Phase Resistance (ohms) $\pm 10\%$	Phase Inductance $\Delta$ (mH) Typical	Detent Torque oz-in (Nm)	Thermal Resistance $\Delta$ (°C/watt)	Rotor Inertia oz-in-S <sup>2</sup> (kgm <sup>2</sup> x 10 <sup>-3</sup> )	Weight lbs (kg)						
		Parallel	Series									Unipolar					
<b>Torque range:</b> 223-349 oz-in. 1.58-1.90 Nm	E31NXHP-LXX-XX-00	•		344 (2.43)	8.4	0.13	1.1	↑	↑	↑	↑						
	E31NXLP-LXX-XX-00	•		344 (2.43)	4.2	0.52	4.4										
	E31NXEP-LXX-XX-00		•	243 (1.72)	5.9	0.27	1.1										
	<b>SIGMAX®</b>																
	<b>E31 Series</b> 1 rotor stack	E31NXHA-LXX-XX-00	•		349 (2.47)	8.2	0.14					1.2					
		E31NXLA-LXX-XX-00	•		349 (2.47)	4.1	0.55					4.9					
		E31NXEA-LXX-XX-00		•	247 (1.74)	5.8	0.28					1.2					
		<b>1 rotor stack</b>															
		E31NXHB-LXX-XX-00	•		316 (2.23)	5.9	0.24					1.7	22 (0.16)	3.9	0.0083 (0.059)	3.2 (1.45)	
E31NXLB-LXX-XX-00		•		316 (2.23)	3.0	0.94	6.9										
E31NXEB-LXX-XX-00		•		224 (1.58)	4.2	0.50	1.7										
E31NXHT-LXX-XX-00		•		337 (2.38)	5.4	0.29	2.5	↓	↓	↓	↓						
E31NXLT-LXX-XX-00		•		337 (2.38)	2.7	1.12	10.0										
E31NXET-LXX-XX-00			•	238 (1.68)	3.8	0.59	2.5										
E31NXHC-LXX-XX-00		•		316 (2.23)	3.0	0.94	6.9	↓	↓	↓	↓						
E31NXLC-LXX-XX-00		•		316 (2.23)	1.48	3.73	27.6										
E31NXEC-LXX-XX-00			•	223 (1.58)	2.1	1.89	6.9										
<b>Torque range:</b> 158-186 oz-in. 1.12-1.71 Nm		H31NXHP-LXX-XX-00	•		239 (1.69)	8.4	0.13	1.0	↑	↑	↑	↑					
		H31NXLP-LXX-XX-00	•		239 (1.69)	4.2	0.52	4.0									
	H31NXEP-LXX-XX-00		•	169 (1.20)	5.9	0.27	1.0										
	<b>STANDARD</b>																
	<b>H31 Series</b> 1 rotor stack	H31NXHA-LXX-XX-00	•		242 (1.71)	8.2	0.14	1.1									
		H31NXLA-LXX-XX-00	•		242 (1.71)	4.1	0.50	4.5									
		H31NXEA-LXX-XX-00		•	171 (1.21)	5.8	0.28	1.1									
		<b>1 rotor stack</b>															
		H31NXHB-LXX-XX-00	•		224 (1.58)	5.9	0.24	1.6					8.8 (0.062)	3.9	0.0083 (0.059)	3.2 (1.45)	
		H31NXLB-LXX-XX-00	•		224 (1.58)	3.0	0.94	6.4									
		H31NXEB-LXX-XX-00	•		158 (1.12)	4.2	0.50	1.6									
		H31NXHT-LXX-XX-00	•		236 (1.66)	5.4	0.29	2.3					↓	↓	↓	↓	
		H31NXLT-LXX-XX-00	•		236 (1.66)	2.7	1.12	9.3									
		H31NXET-LXX-XX-00		•	167 (1.18)	3.8	0.59	2.3									
		H31NXHC-LXX-XX-00	•		224 (1.58)	3.0	0.94	6.4					↓	↓	↓	↓	
H31NXLC-LXX-XX-00		•		224 (1.58)	1.48	3.73	25.8										
H31NXEC-LXX-XX-00			•	158 (1.12)	2.1	1.89	6.4										

All ratings typical and at 25°C unless otherwise noted.

$\Delta$  An "X" in the Model Number Code indicates an undefined option. Colored letter indicates winding. See How to Order and Model Number Code on page 61.

$\Delta$  Motor connections are determined by the Windings/Leads designation in the Model Number Code on page 61. Note that the F designation, although not shown in the above tables, is an 8-lead option...see Terminations, page 76. In addition to the lead wire termination, terminal board and MS connector hookup for parallel, series or unipolar operation is also available.

$\Delta$  With rated current applied. Windings at 130°C and motor unmounted and in still air at 40°C (without heat sink).

$\Delta$  Windings at 130°C and motor in still air at 40°C (without heat sink). Operation of these motors above rated current may cause demagnetization. Contact factory.

$\Delta$  Small signal inductance as measured with impedance bridge at 1kHz, 1 amp.

$\Delta$  Thermal resistance measured with motor hanging in still air (unmounted).

# GENERAL PURPOSE—CONVENTIONAL HYBRIDS

## NEMA 34 FRAME (3.4" Dia.)—Ratings and Characteristics (Con't)

Review the Model Number Code, page 61, to assure that all options are designated. Connections, encoders and phasing diagrams start on page 76. Motor dimensions start on page 65. In addition to those below, motors with characteristics for specific performance requirements are offered. Contact factory for more details.

Rated currents are in descending order	Motor Model Number $\Delta$	Connection $\Delta$		Holding Torque $\Delta$ (2 phases on oz-in (Nm) $\pm 10\%$ )	Rated Current/Phase $\Delta$ (amps DC)	Phase Resistance (ohms) $\pm 10\%$	Phase Inductance $\Delta$ (mH) Typical	Detent Torque oz-in (Nm)	Thermal Resistance $\Delta$ (°C/watt)	Rotor Inertia oz-in-S <sup>2</sup> (kgm <sup>2</sup> x 10 <sup>-3</sup> )	Weight lbs (kg)
		Parallel Series	Unipolar								
<b>Torque range:</b> 443-673 oz-in. 3.13-4.75 Nm	E32NXHP-LXX-XX-00	•		673 (4.75)	8.1	0.19	2.2	↑	↑	↑	↑
	E32NXLP-LXX-XX-00	•		673 (4.75)	4.1	0.74	8.9	↑	↑	↑	↑
	E32NXEP-LXX-XX-00		•	476 (3.36)	5.7	0.39	2.2	↑	↑	↑	↑
<b>SIGMAX® E32 Series 2 rotor stacks</b>	E32NXHA-LXX-XX-00	•		627 (4.43)	5.6	0.39	3.7	↑	↑	↑	↑
	E32NXLA-LXX-XX-00	•		627 (4.43)	2.8	1.51	15.0	↑	↑	↑	↑
	E32NXEA-LXX-XX-00		•	443 (3.13)	4.0	0.78	3.7	↑	↑	↑	↑
	E32NXHT-LXX-XX-00	•		659 (4.66)	5.2	0.44	5.0	↓	↓	↓	↓
	E32NXLT-LXX-XX-00	•		659 (4.66)	2.6	1.74	19.9	↓	↓	↓	↓
	E32NXET-LXX-XX-00		•	466 (3.29)	3.7	0.89	5.0	↓	↓	↓	↓
<b>Torque range:</b> 314-471 oz-in. 2.22-3.32 Nm	H32NXHP-LXX-XX-00	•		471 (3.32)	8.1	0.19	2.4	↑	↑	↑	↑
	H32NXLP-LXX-XX-00	•		471 (3.32)	4.1	0.74	9.6	↑	↑	↑	↑
	H32NXEP-LXX-XX-00		•	333 (2.35)	5.7	0.39	2.4	↑	↑	↑	↑
	H32NXHA-LXX-XX-00	•		445 (3.14)	5.6	0.39	4.1	↑	↑	↑	↑
	H32NXLA-LXX-XX-00	•		445 (3.14)	2.8	1.51	16.2	↑	↑	↑	↑
	H32NXEA-LXX-XX-00		•	314 (2.22)	4.0	0.78	4.1	↑	↑	↑	↑
<b>STANDARD H32 Series 2 rotor stacks</b>	H32NXHT-LXX-XX-00	•		463 (3.27)	5.2	0.44	5.4	↓	↓	↓	↓
	H32NXLT-LXX-XX-00	•		463 (3.27)	2.6	1.74	21.6	↓	↓	↓	↓
	H32NXET-LXX-XX-00		•	328 (2.31)	3.7	0.89	5.4	↓	↓	↓	↓
	E33NXHC-LXX-XX-00	•		927 (6.55)	11.1	0.15	1.3	↑	↑	↑	↑
	E33NXLC-LXX-XX-00	•		927 (6.55)	5.5	0.59	5.3	↑	↑	↑	↑
	E33NXEC-LXX-XX-00		•	656 (4.63)	7.8	0.29	1.3	↑	↑	↑	↑
<b>SIGMAX® E33 Series 3 rotor stacks</b>	E33NXHA-LXX-XX-00	•		940 (6.64)	8.6	0.23	2.3	↑	↑	↑	↑
	E33NXLA-LXX-XX-00	•		940 (6.64)	4.3	0.87	9.1	↑	↑	↑	↑
	E33NXEA-LXX-XX-00		•	664 (4.69)	6.1	0.46	2.3	↑	↑	↑	↑
	E33NXHP-LXX-XX-00	•		995 (7.02)	7.9	0.26	3.1	↑	↑	↑	↑
	E33NXLP-LXX-XX-00	•		995 (7.02)	4.0	1.02	12.6	↑	↑	↑	↑
	E33NXEP-LXX-XX-00		•	703 (4.97)	5.6	0.54	3.1	↑	↑	↑	↑
	E33NXHB-LXX-XX-00	•		939 (6.63)	5.4	0.55	5.7	↓	↓	↓	↓
	E33NXLB-LXX-XX-00	•		939 (6.63)	2.7	2.17	22.9	↓	↓	↓	↓
	E33NXEB-LXX-XX-00		•	664 (4.69)	3.8	1.11	5.7	↓	↓	↓	↓
	E33NXHT-LXX-XX-00	•		975 (6.88)	5.1	0.61	7.1	↓	↓	↓	↓
	E33NXLT-LXX-XX-00	•		975 (6.88)	2.6	2.41	28.2	↓	↓	↓	↓
	E33NXET-LXX-XX-00		•	689 (4.87)	3.6	1.23	7.1	↓	↓	↓	↓

All ratings typical and at 25°C unless otherwise noted.

$\Delta$  An "X" in the Model Number Code indicates an undefined option. Colored letter indicates winding. See How to Order and Model Number Code on page 61.

$\Delta$  Motor connections are determined by the Windings/Leads designation in the Model Number Code on page 61. Note that the F designation, although not shown in the above tables, is an 8-lead option...see Terminations, page 76. In addition to the lead wire termination, terminal board and MS connector hookup for parallel, series or unipolar operation is also available.

$\Delta$  With rated current applied. Windings at 130°C and motor unmounted and in still air at 40°C (without heat sink).

$\Delta$  Windings at 130°C and motor in still air at 40°C (without heat sink). Operation of these motors above rated current may cause demagnetization. Contact factory.

$\Delta$  Small signal inductance as measured with impedance bridge at 1kHz, 1 amp.

$\Delta$  Thermal resistance measured with motor hanging in still air (unmounted).

# GENERAL PURPOSE—CONVENTIONAL HYBRIDS

## NEMA 34 FRAME (3.4" Dia.)—Ratings and Characteristics (Con't.)

Review the Model Number Code, page 61, to assure that all options are designated. Connections, encoders and phasing diagrams start on page 76. Motor dimensions start on page 65. In addition to those below, motors with characteristics for specific performance requirements are offered. Contact factory for more details.

Rated currents are in descending order	Motor Model Number $\Delta$	Connection $\Delta$		Holding Torque $\Delta$ (2 phases on) oz-in (Nm) $\pm 10\%$	Rated Current/ Phase $\Delta$ (amps DC)	Phase Resistance (ohms) $\pm 10\%$	Phase Inductance $\Delta$ (mH) Typical	Detent Torque oz-in (Nm)	Thermal Resistance $\Delta$ (°C/watt)	Rotor Inertia oz-in-S <sup>2</sup> (kgm <sup>2</sup> x 10 <sup>-3</sup> )	Weight lbs (kg)					
		Parallel	Series Unipolar													
<b>Torque range:</b> 466-698 oz-in. 3.29-4.93 Nm	H33XXHC-LXX-XX-00	•		659 (4.65)	11.1	0.15	1.6	↑	↑	↑	↑					
	H33XXLC-LXX-XX-00	•		659 (4.65)	5.5	0.59	6.3									
	H33XXEC-LXX-XX-00		•	466 (3.29)	7.8	0.29	1.6									
	<b>STANDARD H33 Series 3 rotor stacks</b>															
	H33XXHA-LXX-XX-00	•		666 (4.70)	8.6	0.23	2.7									
	H33XXLA-LXX-XX-00	•		666 (4.70)	4.3	0.87	10.8									
	H33XXEA-LXX-XX-00		•	471 (3.33)	6.1	0.46	2.7									
	H33XXHB-LXX-XX-00	•		666 (4.70)	5.4	0.55	6.8									
	H33XXLB-LXX-XX-00	•		666 (4.70)	2.7	2.17	27.2									
H33XXEB-LXX-XX-00		•	471 (3.33)	3.8	1.11	6.8										
H33XXHT-LXX-XX-00	•		687 (4.85)	5.1	0.61	8.4										
H33XXLT-LXX-XX-00	•		687 (4.85)	2.6	2.41	33.6										
H33XXET-LXX-XX-00		•	468 (3.43)	3.6	1.23	8.4										
H33XXHP-LXX-XX-00	•		698 (4.93)	7.9	0.26	3.7										
H33XXLP-LXX-XX-00	•		698 (4.93)	4.0	1.02	14.9										
H33XXEP-LXX-XX-00		•	494 (3.49)	5.6	0.54	3.7										
<b>Torque range:</b> 879-1300 oz-in. 6.21-9.18 Nm	E34HXHA-LXX-XX-00	•		1253 (8.85)	8.1	0.29	3.6	↑	↑	↑	↑					
	E34HXLA-LXX-XX-00	•		1253 (8.85)	4.1	1.14	13.7									
	E34HXEA-LXX-XX-00		•	886 (6.26)	5.7	0.60	3.6									
	<b>SIGMAX® E34 Series 4 rotor stacks</b>															
	E34HXHP-LXX-XX-00	•		1300 (9.18)	7.7	0.33	4.4									
	E34HXLP-LXX-XX-00	•		1300 (9.18)	3.9	1.27	17.8									
	E34HXEP-LXX-XX-00		•	920 (6.49)	5.5	0.66	4.4									
	E34HXHT-LXX-XX-00	•		1243 (8.78)	5.2	0.71	8.7									
	E34HXLT-LXX-XX-00	•		1243 (8.78)	2.6	2.8	34.8									
E34HXET-LXX-XX-00		•	879 (6.21)	3.7	1.43	8.7										
<b>Torque range:</b> 624-916 oz-in. 4.41-6.47 Nm	H34HXHA-LXX-XX-00	•		888 (6.27)	8.1	0.29	3.8	↑	↑	↑	↑					
	H34HXLA-LXX-XX-00	•		888 (6.27)	4.1	1.14	15.1									
	H34HXEA-LXX-XX-00		•	628 (4.44)	5.7	0.60	3.8									
	<b>STANDARD H34 Series 4 rotor stacks</b>															
	H34HXHP-LXX-XX-00	•		916 (6.47)	7.7	0.33	4.7									
	H34HXLP-LXX-XX-00	•		916 (6.47)	3.9	1.27	18.6									
	H34HXEP-LXX-XX-00		•	648 (4.57)	5.5	0.66	4.7									
	H34HXHT-LXX-XX-00	•		882 (6.23)	5.2	0.71	9.1									
	H34HXLT-LXX-XX-00	•		882 (6.23)	2.6	2.8	36.5									
H34HXET-LXX-XX-00		•	624 (4.41)	3.7	1.43	9.1										

All ratings typical and at 25°C unless otherwise noted.

$\Delta$  An "X" in the Model Number Code indicates an undefined option. Colored letter indicates winding. See How to Order and Model Number Code on page 61.

$\Delta$  Motor connections are determined by the Windings/Leads designation in the Model Number Code on page 61. Note that the F designation, although not shown in the above tables, is an 8-lead option...see Terminations, page 76. In addition to the lead wire termination, terminal board and MS connector hookup for parallel, series or unipolar operation is also available.

$\Delta$  With rated current applied. Windings at 130°C and motor unmounted and in still air at 40°C (without heat sink).

$\Delta$  Windings at 130°C and motor in still air at 40°C (without heat sink). Operation of these motors above rated current may cause demagnetization. Contact factory.

$\Delta$  Small signal inductance as measured with impedance bridge at 1kHz, 1 amp.

$\Delta$  Thermal resistance measured with motor hanging in still air (unmounted).

# DIMENSIONS . . . GENERAL PURPOSE—CONVENTIONAL HYBRIDS

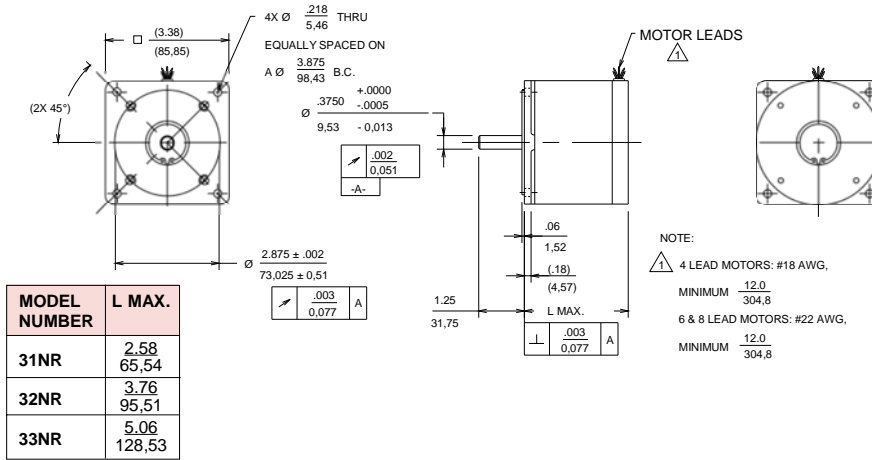
.in. (metric dimensions for ref. only)  
mm

## NEMA 34 FRAME

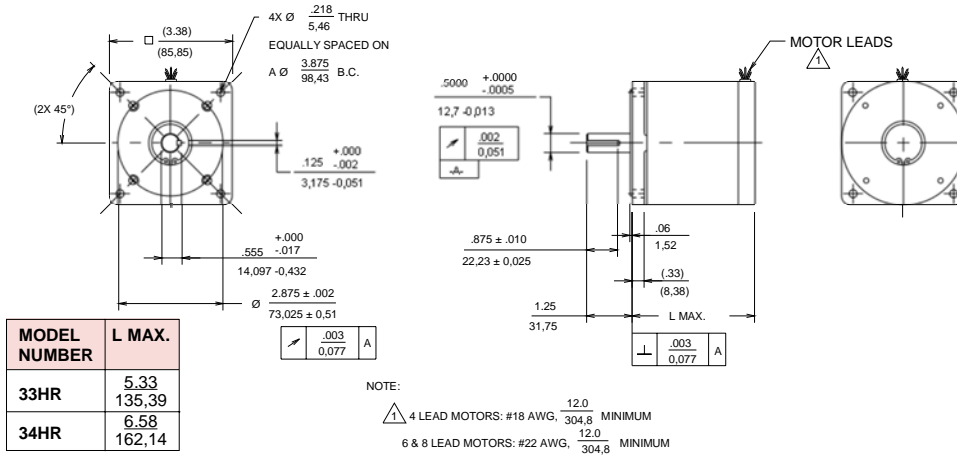
(See page 76 for Technical Data)

### REGULAR CONSTRUCTION/LEADWIRE HOOKUP = R

#### STANDARD NEMA FRONT END BELL = N

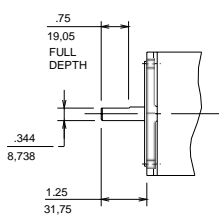


#### HEAVY DUTY NEMA FRONT END BELL = H

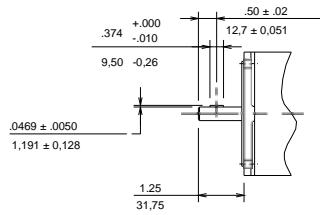


#### STANDARD FRONT SHAFT CONFIGURATIONS

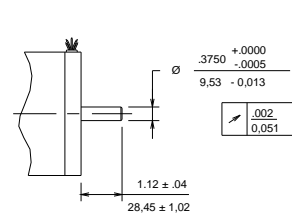
NOTE: Not available with heavy duty



FLAT CONFIGURATION = F



#303 WOODRUFF KEY CONFIGURATION = W



REAR SHAFT CONFIGURATION = D

#### STANDARD DOUBLE SHAFT CONFIGURATION

NOTE: Not available with splashproof

# DIMENSIONS . . . GENERAL PURPOSE—CONVENTIONAL HYBRIDS

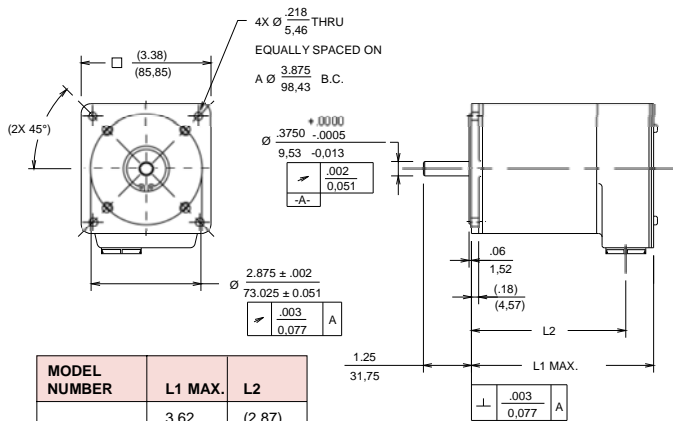
$\frac{in.}{mm}$  (metric dimensions for ref. only)

## NEMA 34 FRAME (Con't.)

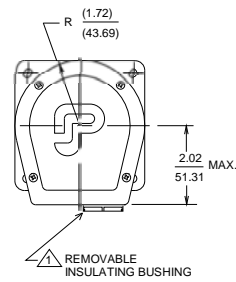
(See page 76 for Technical Data)

### SPLASHPROOF CONSTRUCTION/TERMINAL BOARD CONNECTIONS = L or M

#### STANDARD NEMA FRONT END BELL = N



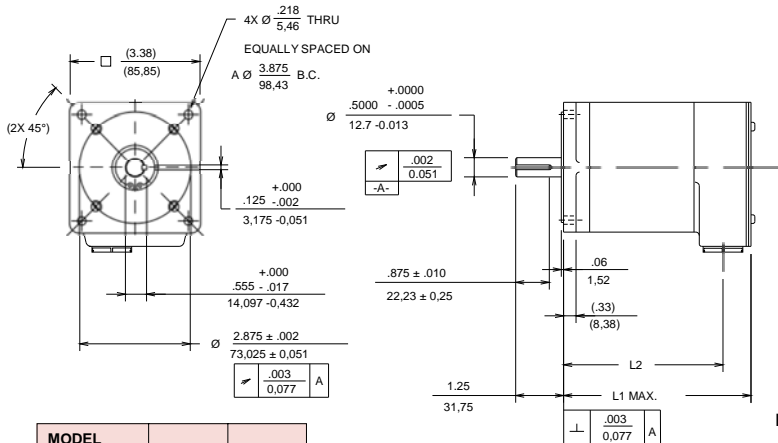
MODEL NUMBER	L1 MAX.	L2
31N(L OR M)	3.62 (91.95)	(2.87) (72.9)
32N(L OR M)	4.77 (121.16)	(4.02) (102.11)
33N(L OR M)	6.05 (153.67)	(5.30) (134.62)



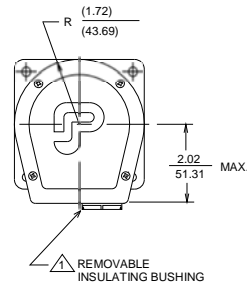
#### NOTE:

- △ L Construction = Conduit connection (1/2 NPSC TAP) with .56 I.D. removable insulating bushing
- M Construction = Conduit connection (PG 11 TAP). (No insulating bushing supplied)
- 2 Standard front shaft configuration options, refer to page 65.

#### HEAVY DUTY NEMA FRONT END BELL = H



MODEL NUMBER	L1 MAX.	L2
33H(L OR M)	6.73 (170.94)	(5.61) (142.49)
34H(L OR M)	7.62 (193.55)	(6.86) (174.24)



#### NOTE:

- △ L Construction = Conduit connection (1/2 NPSC TAP) with .56 I.D. removable insulating bushing
- M Construction = Conduit connection (PG 11 TAP). (No insulating bushing supplied)

# DIMENSIONS . . . GENERAL PURPOSE—CONVENTIONAL HYBRIDS

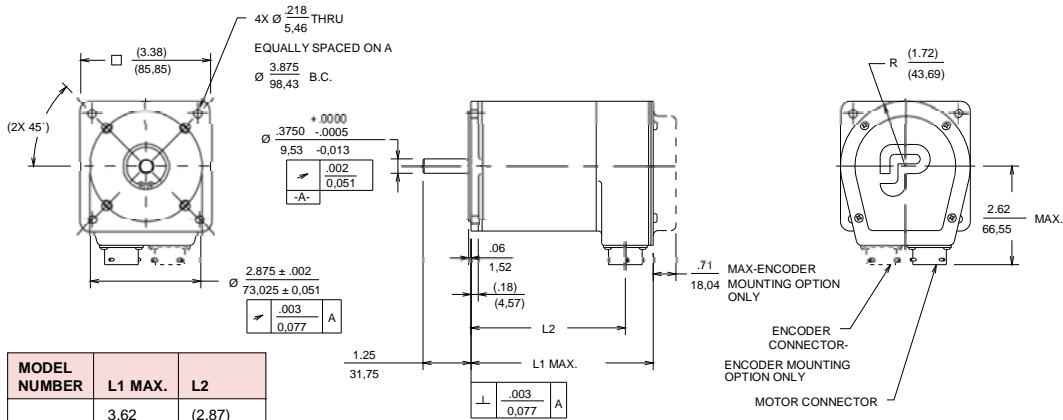
$\frac{\text{in.}}{\text{mm}}$  (metric dimensions for ref. only)

## NEMA 34 FRAME (Con't.)

(See page 76 for Technical Data)

### SYSTEM CONSTRUCTION/MS CONNECTOR = C ENCODER OPTION

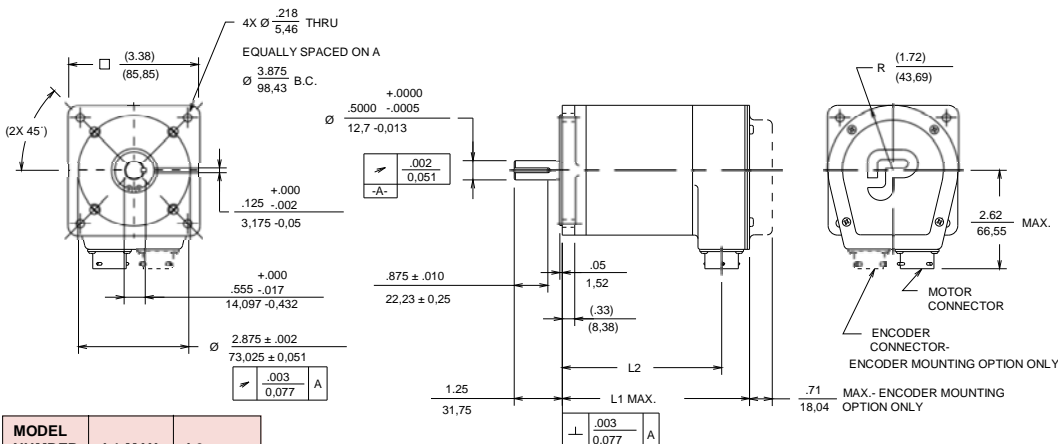
#### STANDARD NEMA FRONT END BELL = N



MODEL NUMBER	L1 MAX.	L2
31NC	3.62 91,95	(2.87) (72,9)
32NC	4.77 121,16	(4.02) (102,11)
33NC	6.05 153,67	(5.30) (134,62)

**NOTE:** Standard front shaft configuration options, refer to page 65.

#### HEAVY DUTY NEMA FRONT END BELL = H



MODEL NUMBER	L1 MAX.	L2
33HC	6.73 170,94	(5.61) (142,49)
34HC	7.62 193,55	(6.86) (174,24)