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APEX10/20/40 & APEX6151, 6152, & 6154 USER GUIDE ADDENDUM

This addendum is valid for APEX10 and APEX6151 units with serial numbers greater than: 97052700070.

It is also valid for APEX20/40 and APEX6152/6154 units with serial numbers greater than: 97073000109.

Information contained in this addendum covers recent changes not included in the most current User Guides for

- APEX10 APEX20 APEX40 Analog Servo Drive (user guide: 88-013904-02 A)
- APEX615n Servo Controller/Drive (user guide: 88-016148-01 A)

Topics covered in this addendum are:

APEX10, APEX6151 DIP Switch Changes:

DIP switch functions have been changed for:

Current Loop Compensation

Motor Thermal Time Constant

APEX20/40, APEX6152/6154 DIP Switch Changes:

DIP switch functions have been changed for:

Current Loop Compensation

New Motor Information:

Eight new Compumotor 70mm NeoMetric Series motors have been released with another eight 92mm motors pending release, all of which are for use with the APEX10/20/40 and APEX 6151/6152/6154. This addendum contains the following information for these motors:

DIP Switch Settings

Speed/Torque Curves

Motor Specifications

Motor Dimensions



Automation

Compumotor Division

88-016237-01 D

12/98

APEX10 Dip Switch Changes

New DIP switch functions are shown below for the APEX10 Drive. DIP switch settings incorporating these changes for Compumotor’s APEX Series, SM Series, and NeoMetric Series motors are shown on the following pages.

**APEX10
DIPs**

↑ OFF

SW 1

SW 2

SW 3

REGEN FAULT							
Enable							1
Disable							OFF
HALL DEGREES							
120° Hall motor							2
60° Hall motor							OFF
RESERVED							
Off							3
							OFF
POLE PAIR NUMBER							
2							4
3							5
Reserved							OFF
Reserved							ON
RESOLVER SPEED							
1							6
2							OFF
CURRENT LOOP COMPENSATION (motor inductance)							
with 120VAC Input:		with 240VAC Input:					7
1 – 2 mH			Not Applicable				8
2 – 5 mH			5 – 10 mH				OFF
5 – 60 mH			10 – 60 mH				ON
Reserved							ON
CONTINUOUS CURRENT (peak of sine wave)							
1.8 amps							1
2.6							2
3.5							3
4.5							OFF
5.0							ON
6.5							OFF
7.0							ON
8.0							ON
PEAK CURRENT							
6.5 amps							4
7.5							5
9.5							6
11.0							OFF
12.5							ON
14.0							OFF
15.0							ON
16.0							ON
MOTOR THERMAL TIME CONSTANT							
2 minutes							7
4							8
8							OFF
10							ON
VELOCITY INTEGRATOR							
No							1
Yes							OFF
ALIGNMENT MODE							
No							2
Yes							ON
COMMUTATION TEST MODE							
No							3
Yes							OFF
HALL SELECT							
Resolver Mode							4
Hall Mode							ON
TACH SCALING							
One speed resolver (1V = 1,000 RPM with a one speed resolver)							5
Two speed resolver (1V = 1,000 RPM with a two speed resolver)							OFF
COMMAND INPUT SCALING							
10V = 16.0 amps							6
10V = 12.0 amps							7
10V = 8.0 amps							OFF
10V = 7.0 amps							ON
COLLECTIVE GAIN							
Off							8
On							OFF
							ON

APEX20 Dip Switch Changes

New DIP switch functions are shown below for the APEX6152 Controller/Drive. DIP switch settings incorporating these changes for Compumotor's APEX Series, SM Series, and NeoMetric Series motors are shown on the following pages.

**APEX20
DIPs**

OFF ↑

SW 1

SW 2

SW 3

REGEN FAULT		1	
Enable		OFF	
Disable		ON	
HALL DEGREES		2	
120° Hall motor		OFF	
60° Hall motor		ON	
RESERVED		3	
Off		OFF	
POLE PAIR NUMBER		4 5	
2		OFF	OFF
3		OFF	ON
Reserved		ON	OFF
Reserved		ON	ON
RESOLVER SPEED		6	
1		OFF	
2		ON	
CURRENT LOOP COMPENSATION		7 8	
NEW → 20 – 50 mH		OFF	OFF
NEW → 4 – 10 mH		OFF	ON
NEW → 10 – 20 mH		ON	OFF
Reserved		ON	ON
CONTINUOUS CURRENT (peak of sine wave)		1 2 3	
3.0 amps		OFF	OFF
4.2		OFF	OFF
5.4		OFF	ON
6.6		OFF	ON
7.8		ON	OFF
9.0		ON	ON
10.2		ON	ON
12.0		ON	ON
PEAK CURRENT		4 5 6	
9.0 amps		OFF	OFF
10.8		OFF	OFF
13.2		OFF	ON
15.0		OFF	ON
17.4		ON	OFF
19.2		ON	OFF
21.6		ON	ON
24.0		ON	ON
MOTOR THERMAL TIME CONSTANT		7 8	
10 minutes		OFF	OFF
20		OFF	ON
30		ON	OFF
40		ON	ON
VELOCITY INTEGRATOR		1	
No		OFF	
Yes		ON	
ALIGNMENT MODE		2	
No		OFF	
Yes		ON	
COMMUTATION TEST MODE		3	
No		OFF	
Yes		ON	
HALL SELECT		4	
Resolver Mode		OFF	
Hall Mode		ON	
TACH SCALING		5	
One speed resolver (1V = 1,000 RPM with a one speed resolver)		OFF	
Two speed resolver (1V = 1,000 RPM with a two speed resolver)		ON	
COMMAND INPUT SCALING		6 7	
10V = 24.0 amps		OFF	OFF
10V = 19.2 amps		OFF	ON
10V = 14.4 amps		ON	OFF
10V = 13.2 amps		ON	ON
COLLECTIVE GAIN		8	
Off		OFF	
On		ON	

APEX40 Dip Switch Changes

New DIP switch functions are shown below for the APEX6152 Controller/Drive. DIP switch settings incorporating these changes for Compumotor's APEX Series, SM Series, and NeoMetric Series motors are shown on the following pages.

**APEX40
DIPS**

OFF ↑

SW 1

SW 2

SW 3

REGEN FAULT	1								
Enable		OFF							
Disable		ON							
HALL DEGREES	2								
120° Hall motor			OFF						
60° Hall motor			ON						
RESERVED	3								
Off							OFF		
POLE PAIR NUMBER	4	5							
2			OFF	OFF					
3			OFF	ON					
Reserved			ON	OFF					
Reserved			ON	ON					
RESOLVER SPEED	6								
1							OFF		
2							ON		
CURRENT LOOP COMPENSATION	7	8							
20 – 50 mH							OFF	OFF	
4 – 10 mH							OFF	ON	
10 – 20 mH							ON	OFF	
Reserved							ON	ON	
CONTINUOUS CURRENT (peak of sine wave)	1	2	3						
5.0 amps		OFF	OFF	OFF					
7.0		OFF	OFF	ON					
9.0		OFF	ON	OFF					
11.0		OFF	ON	ON					
13.0		ON	OFF	OFF					
15.0		ON	OFF	ON					
17.0		ON	ON	OFF					
PEAK CURRENT	4	5	6						
15.0 amps		OFF	OFF	OFF					
18.0		OFF	OFF	ON					
22.0		OFF	ON	OFF					
25.0		OFF	ON	ON					
29.0		ON	OFF	OFF					
32.0		ON	OFF	ON					
36.0		ON	ON	OFF					
40.0		ON	ON	ON					
MOTOR THERMAL TIME CONSTANT	7	8							
10 minutes							OFF	OFF	
20							OFF	ON	
30							ON	OFF	
40							ON	ON	
VELOCITY INTEGRATOR	1								
No							OFF		
Yes							ON		
ALIGNMENT MODE	2								
No							OFF		
Yes							ON		
COMMUTATION TEST MODE	3								
No							OFF		
Yes							ON		
HALL SELECT	4								
Resolver Mode									
Hall Mode							OFF		
TACH SCALING	5								
One speed resolver (1V = 1,000 RPM with a one speed resolver)								OFF	
Two speed resolver (1V = 1,000 RPM with a two speed resolver)								ON	
COMMAND INPUT SCALING	6	7							
10V = 40.0 amps							OFF	OFF	
10V = 32.0 amps							OFF	ON	
10V = 24.0 amps							ON	OFF	
10V = 22.0 amps							ON	ON	
COLLECTIVE GAIN	8								
Off									OFF
On									ON

APEX6151 Dip Switch Changes

New DIP switch functions are shown below for the APEX6154 Controller/Drive. DIP switch settings incorporating these changes for Compumotor's APEX Series, SM Series, and NeoMetric Series motors are shown on the following pages.

OFF ↑

APEX6151 DIPs		SW 1		SW 2		SW 3			
		1	2	3	4	5	6	7	8
REGEN FAULT									
Enable	1	OFF							
Disable		ON							
HALL DEGREES									
120° Hall motor	2		OFF						
60° Hall motor			ON						
RESERVED									
Off	3						OFF		
POLE PAIR NUMBER									
2	4				OFF	OFF			
3	5				OFF	ON			
Reserved					ON	OFF			
Reserved					ON	ON			
RESOLVER SPEED									
1	6						OFF		
2							ON		
CURRENT LOOP COMPENSATION (motor inductance)									
with 120VAC Input:		with 240VAC Input:							
1 – 2 mH		Not Applicable		7	8	OFF	OFF		
2 – 5 mH						OFF	ON		
5 – 60 mH						ON	OFF		
Reserved						ON	ON		
CONTINUOUS CURRENT (peak of sine wave)									
1.8 amps	1	2	3						
2.6		OFF	OFF	OFF					
3.5		OFF	ON	OFF					
4.5		OFF	ON	ON					
5.0		ON	OFF	OFF					
6.5		ON	OFF	ON					
7.0		ON	ON	OFF					
8.0		ON	ON	ON					
PEAK CURRENT									
6.5 amps	4	5	6						
7.5		OFF	OFF	OFF					
9.5		OFF	ON	OFF					
11.0		OFF	ON	ON					
12.5		ON	OFF	OFF					
14.0		ON	OFF	ON					
15.0		ON	ON	OFF					
16.0		ON	ON	ON					
MOTOR THERMAL TIME CONSTANT									
2 minutes	7	8							
4		OFF	OFF						
8		OFF	ON						
10		ON	OFF						
10		ON	ON						
RESERVED									
Off	1	OFF							
ALIGNMENT MODE									
No	2	OFF							
Yes		ON							
COMMUTATION TEST MODE									
No	3	OFF							
Yes		ON							
HALL SELECT									
Resolver Mode	4	OFF							
Hall Mode		ON							
TACH SCALING									
One speed resolver (1V = 1,000 RPM with a one speed resolver)	5	OFF							
Two speed resolver (1V = 1,000 RPM with a two speed resolver)		ON							
RESERVED									
All Off	6	7	8						
		OFF	OFF	OFF					

APEX6152 Dip Switch Changes

New DIP switch functions are shown below for the APEX6152 Controller/Drive. DIP switch settings incorporating these changes for Compumotor's APEX Series, SM Series, and NeoMetric Series motors are shown on the following pages.

OFF ↑

APEX6152 DIPS

	1	2	3														
RESERVED																	
All Off	OFF	OFF	OFF														
POLE PAIR NUMBER				4	5												
2				OFF	OFF												
3				OFF	ON												
Reserved				ON	OFF												
Reserved				ON	ON												
RESOLVER SPEED						6											
1						OFF											
2						ON											
CURRENT LOOP COMPENSATION							7	8									
NEW → 20 mH – 50 mH							OFF	OFF									
NEW → 4 mH – 10 mH							OFF	ON									
NEW → 10 mH – 20 mH							ON	OFF									
Reserved							ON	ON									
CONTINUOUS CURRENT (peak of sine wave)							1	2	3								
3.0 amps							OFF	OFF	OFF								
4.2							OFF	OFF	ON								
5.4							OFF	ON	OFF								
6.6							OFF	ON	ON								
7.8							ON	OFF	OFF								
9.0							ON	OFF	ON								
10.2							ON	ON	OFF								
12.0							ON	ON	ON								
PEAK CURRENT								4	5	6							
9.0 amps								OFF	OFF	OFF							
10.8								OFF	OFF	ON							
13.2								OFF	ON	OFF							
15.0								OFF	ON	ON							
17.4								ON	OFF	OFF							
19.2								ON	OFF	ON							
21.6								ON	ON	OFF							
24.0								ON	ON	ON							
MOTOR THERMAL TIME CONSTANT										7	8						
10 minutes										OFF	OFF						
20										OFF	ON						
30										ON	OFF						
40										ON	ON						
RESERVED										1							
Off										OFF							
ALIGNMENT MODE											2						
No											OFF						
Yes											ON						
COMMUTATION TEST MODE												3					
No												OFF					
Yes												ON					
HALL SELECT													4				
Resolver Mode													OFF				
Hall Mode													ON				
TACH SCALING														5			
One speed resolver (1V = 1,000 RPM with a one speed resolver)														OFF			
Two speed resolver (1V = 1,000 RPM with a two speed resolver)														ON			
RESERVED															6	7	8
All Off															OFF	OFF	OFF

APEX6154 Dip Switch Changes

New DIP switch functions are shown below for the APEX6154 Controller/Drive. DIP switch settings incorporating these changes for Compumotor's APEX Series, SM Series, and NeoMetric Series motors are shown on the following pages.

APEX6154
DIPs

OFF ↑

SW 1

SW 2

SW 3

RESERVED	1	2	3						
	All Off	OFF	OFF	OFF					
POLE PAIR NUMBER				4	5				
	2			OFF	OFF				
	3			OFF	ON				
	Reserved			ON	OFF				
RESOLVER SPEED				6					
	1			OFF					
CURRENT LOOP COMPENSATION				7	8				
	20 mH – 50 mH			OFF	OFF				
NEW →	4 mH – 10 mH			OFF	ON				
NEW →	10 mH – 20 mH			ON	OFF				
	Reserved			ON	ON				
CONTINUOUS CURRENT (peak of sine wave)				1	2	3			
	5 amps			OFF	OFF	OFF			
	7			OFF	OFF	ON			
	9			OFF	ON	OFF			
	11			OFF	ON	ON			
	13			ON	OFF	OFF			
	15			ON	OFF	ON			
	17			ON	ON	OFF			
20			ON	ON	ON				
PEAK CURRENT				4	5	6			
	15 amps			OFF	OFF	OFF			
	18			OFF	OFF	ON			
	22			OFF	ON	OFF			
	25			OFF	ON	ON			
	29			ON	OFF	OFF			
	32			ON	OFF	ON			
	36			ON	ON	OFF			
40			ON	ON	ON				
MOTOR THERMAL TIME CONSTANT				7	8				
	10 minutes			OFF	OFF				
	20			OFF	ON				
	30			ON	OFF				
40			ON	ON					
RESERVED				1					
Off				OFF					
ALIGNMENT MODE				2					
	No			OFF					
Yes			ON						
COMMUTATION TEST MODE				3					
	No			OFF					
Yes			ON						
HALL SELECT				4					
	Resolver Mode			OFF					
Hall Mode			ON						
TACH SCALING				5					
	One speed resolver (1V = 1,000 RPM with a one speed resolver)			OFF					
Two speed resolver (1V = 1,000 RPM with a two speed resolver)			ON						
RESERVED				6	7	8			
All Off				OFF	OFF	OFF			

APEX10 and 6151 Dip Switch Settings

New DIP switch functions are shown below for the APEX6151 Controller/Drive. DIP switch settings incorporating these changes for Compumotor's APEX Series, SM Series, and NeoMetric Series motors are shown on the following pages.

APEX10 & APEX6151 DIP SWITCH SETTINGS

OFF ↑

Initial Values for Tuning

<p>SM231AR</p>		
<p>SM232AR</p>	<p>SM233BR</p>	
<p>SM231AR</p>		
<p>SM232AR</p>	<p>SM233BR</p>	
<p>602</p>	<p>603</p>	
<p>N0701D</p>	<p>N0701F</p>	
<p>N0702E</p>	<p>N0702F</p>	
<p>N0703F</p>	<p>N0703G</p>	
<p>N0704F</p>	<p>N0704G</p>	
<p>N0921F</p>	<p>N0921G</p>	
<p>N0922G</p>		

APEX20 and 6152 Dip Switch Settings

New DIP switch functions are shown below for the APEX20 and 6152 Controller/ Drive. DIP switch settings incorporating these changes for Compumotor's APEX Series, SM Series, and NeoMetric Series motors are shown on the following pages.

APEX20 & APEX6152 DIP SWITCH SETTINGS

OFF ↑

Use these settings for your final configuration

<p>N0703G</p>	
<p>N0704G</p>	<p>N0921G</p>
<p>N0922G</p>	<p>N0922J</p>
<p>N0923H</p>	<p>N0924J</p>
<p>604</p>	<p>605</p>
<p>606</p>	<p>615</p>

APEX40 and 6154 Dip Switch Settings

New DIP switch functions are shown below for the APEX40 and 6154 Controller/Drive. DIP switch settings incorporating these changes for Compumotor's APEX Series, SM Series, and NeoMetric Series motors are shown on the following pages.

APEX40 & APEX6154 DIP SWITCH SETTINGS

OFF ↑

Use these settings for your final configuration

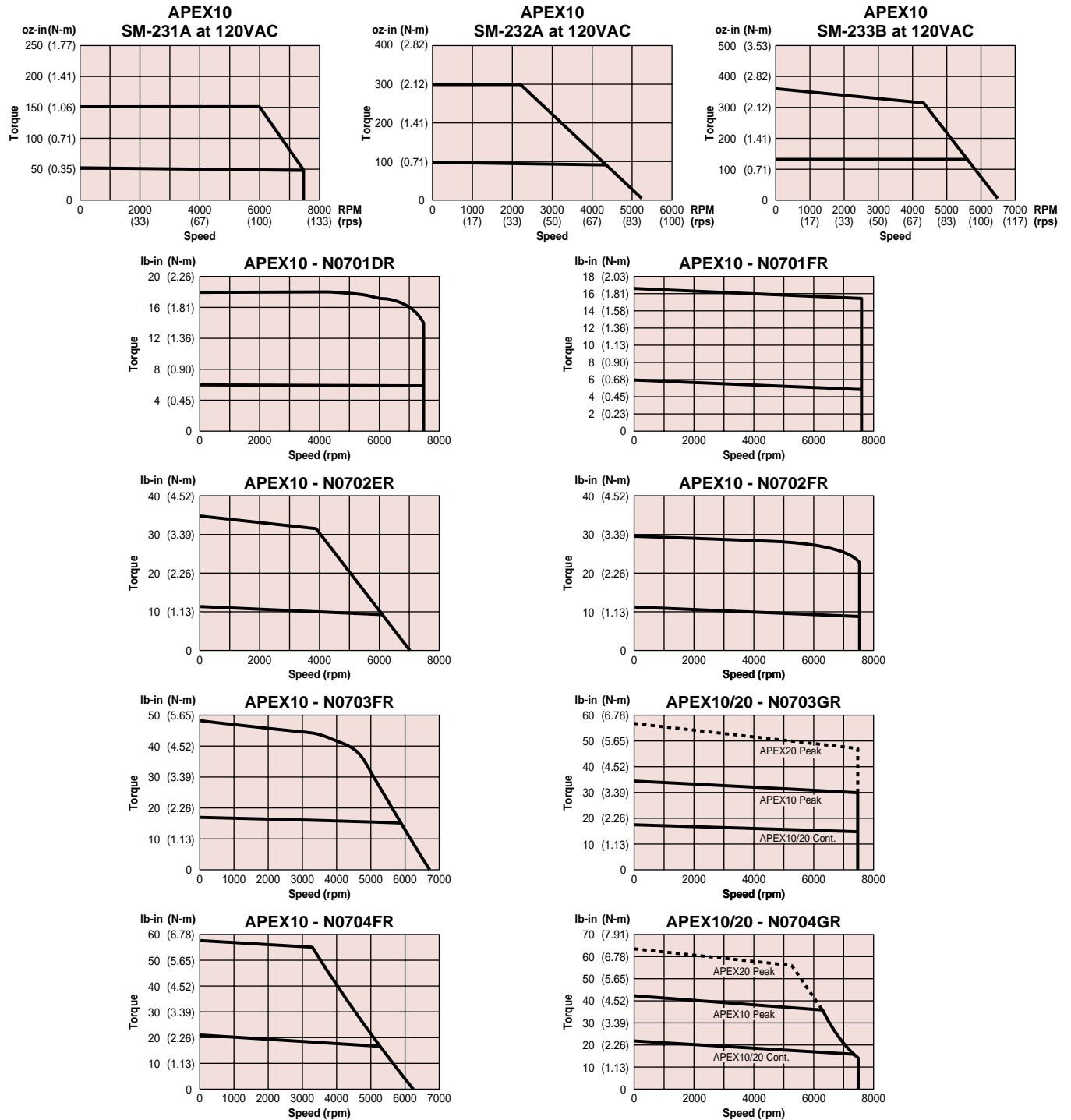
<p>N0922J</p>	<p>610</p>
<p>N0923H</p>	<p>620</p>
<p>N0923K</p>	<p>630</p>
<p>N0924J</p>	<p>635</p>
<p>N0924K</p>	<p>640</p>

Speed/Torque Curves – Compumotor SM and N Series Motors

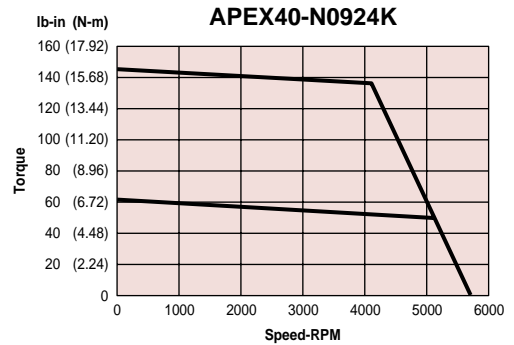
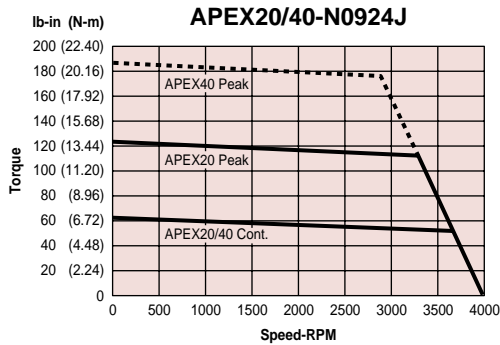
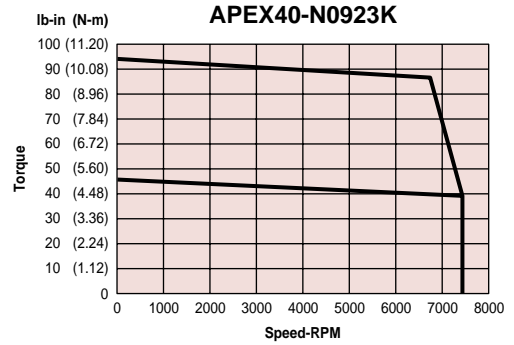
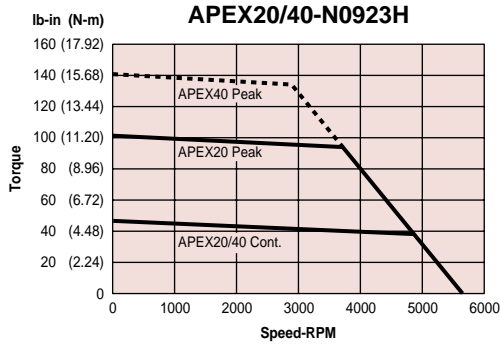
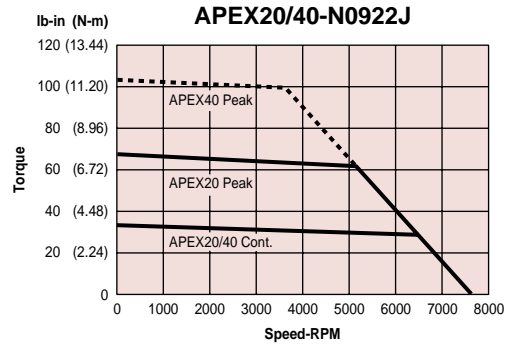
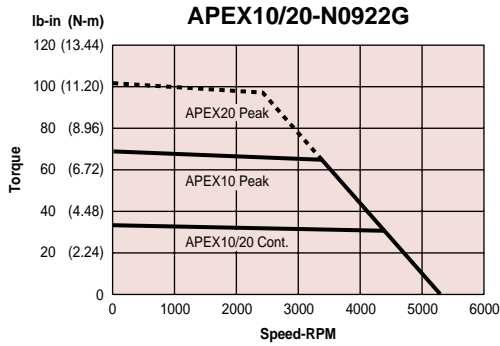
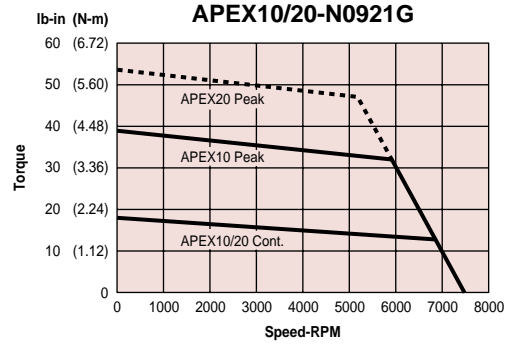
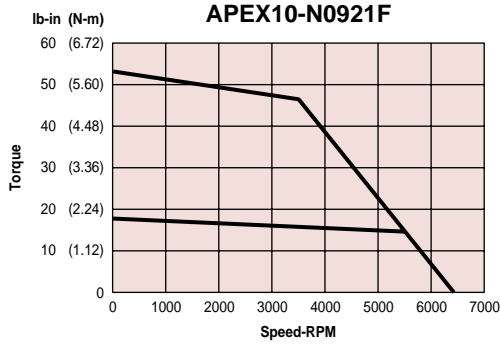
The following speed/torque curves represent the available shaft torque at different operating speeds, under the following conditions. The performance of APEX 10 = APEX6151; APEX20 = APEX6152; and APEX40 = APEX6154.

- 25°C (77°F) ambient temperature
- Nominal torque constant K_t
- Motor mounted to heatsink: 10" x 10" x 0.25" aluminum

Actual motor torque may vary $\pm 10\%$ due to motor manufacturing variances. All SM motor speed/torque data obtained with APEX10 or APEX6151 at 120VAC. All NeoMetric motor speed/torque data obtained with indicated drive at 240VAC.



Speed/Torque Curves – Compumotor NeoMetric Series Motors



Motor Specifications – Compumotor 70mm NeoMetric Series Motors

The specifications table shows motor characteristics. Torque specifications are with rated and peak current for the *motors*. Rated and peak current for the *drive* may be lower — thus, torque may be lower. Consult the specifications table for *motor* capabilities. Consult the speed/torque curves for APEX10/20 system capabilities.

Parameter	Symbol	Units	N0701DR	N0701FR	N0702ER	N0702FR	N0703FR	N0703GR	N0704FR	N0704GR
Stall Torque Continuous ^{1,2}	T _{CS}	lb-in	6.40	6.40	11.90	11.90	18.00	18.00	22.20	22.20
		N-m	0.72	0.72	1.34	1.34	2.03	2.03	2.50	2.50
Continuous Stall Current ¹	I _{CS}	amperes-rms	2.65	4.14	3.05	4.24	4.17	5.79	4.30	5.96
Rated Speed	ω _r	rpm	7,500	7,500	6,480	7,500	5,800	7,500	4,900	7,000
		rps	125	125	108	125	98	125	82	117
Peak Torque ¹	T _{pk}	lb-in	19.20	19.20	35.60	35.60	54.00	54.00	66.60	66.60
		N-m	2.17	2.17	4.02	4.02	6.10	6.10	7.50	7.50
Peak Current, rms ^{1,6}	I _{pk}	amperes	7.90	12.40	9.10	12.70	12.50	17.40	12.90	17.90
Torque @ Rated Speed ¹	T _c	lb-in	5.80	5.80	9.40	10.40	14.50	15.40	17.50	17.50
		N-m	0.66	0.66	1.06	1.18	1.64	1.74	1.98	1.98
Rated Power-Output Shaft ¹	P _o	watts	510	515	718	919	1,004	1,367	1,014	1,450
Voltage Constant ^{3,4}	K _b	volts/radian/sec	0.221	0.14	0.353	0.253	0.392	0.282	0.468	0.338
Voltage Constant ^{3,4}	K _v	volts/KRPM	23.11	14.67	36.97	26.52	40.99	29.54	49.02	35.36
Torque Constant ^{3,4}	K _t	lb-in/amp rms	2.43	1.55	3.89	2.80	4.32	3.11	5.17	3.73
Resistance ³	R	ohms	5.52	2.27	5.22	2.70	3.36	1.74	3.47	1.80
Inductance ³	L	millihenries	12.98	5.23	15.86	8.16	12.13	6.30	14.50	7.55
Thermal Resistance ¹	R _{th}	°C/watt	1.44	1.44	1.15	1.15	0.96	0.96	0.87	0.87
Motor Constant	K _m	lb-in/√watt	0.83	1.03	1.70	1.70	2.36	2.36	2.77	2.78
Viscous Damping	B	lb-in/Krpm	0.0438	0.0438	0.050	0.050	0.0563	0.0563	0.0625	0.0625
Torque - Static Friction	T _f	oz.in.	1.40	2.10	2.10	2.80	2.80	2.80	3.50	3.50
Thermal Time Constant ⁷	τ _{th}	minutes	45	45	45	45	45	45	45	45
Electrical Time Constant	τ _e	milliseconds	2.35	2.35	3.03	3.03	3.61	3.61	4.19	4.19
Mechanical Time Constant	τ _m	milliseconds	1.60	1.60	0.88	0.88	0.62	0.62	0.56	0.56
Rotor Inertia	J	lb.in.sec ²	0.000128	0.000128	0.000196	0.000196	0.000262	0.000262	0.000329	0.000329
Weight	#	pounds	3.54	3.54	4.53	4.53	6.04	6.04	7.28	7.28
Winding Class			H	H	H	H	H	H	H	H

¹ @25°C ambient with 10 x 10 x 0.25 in. mounting plate, 150°C winding temperature. For 40°C ambient operation, reduce values by 12%

² RMS current through a single phase of a sinusoidally driven motor

³ ±10%, line-to-line, inductance bridge measurement method @ 1 kHz

⁴ Peak value

⁵ +/-30% line-to-line, inductance bridge measurement @ 1KHz

⁶ Peak current for 2 seconds maximum with initial winding temperature of 40° C.

⁷ Per NEMA specifications. For I²t considerations, use 10 minutes.

All specifications are subject to engineering change

Motor Specifications – Compumotor 92mm NeoMetric Series Motors

The specifications table shows motor characteristics. Torque specifications are with rated and peak current for the *motors*. Rated and peak current for the *drive* may be lower — thus, torque may be lower. Consult the specifications table for *motor* capabilities. Consult the speed/torque curves for APEX10/20/40 system capabilities.

Parameter	Symbol	Units	N0921F	N0921G	N0922G	N0922J	N0923H	N0923K	N0924J	N0924K
Stall Torque Continuous ^{1,4}	T_{CS}	lb-in	17.7	17.7	34.3	34.3	46.6	46.6	62.5	62.5
		N-m	2.0	2.0	3.88	3.88	5.26	5.26	7.06	7.06
Continuous Stall Current ^{1,2}	I_{CS}	amperes-rms	3.77	5.22	5.6	8.67	7.89	13.85	8.64	12.07
Rated Speed	ω_r	rpm	5,700	7,500	4,375	6,975	4,350	7,500	3,325	4,825
		rps	95	125	72.9	116.2	72.5	125	55.4	80.4
Peak Torque ¹	T_{pk}	lb-in	53	53	103	103	140	140	188	188
		N-m	5.99	5.99	11.6	11.6	15.8	15.8	21.2	21.2
Peak Current, rms ^{1,6}	I_{pk}	amperes	11.3	15.7	16.8	26	23.7	41.6	25.9	36.2
Torque @ Rated Speed ¹	T_c	lb-in	14.0	14.7	27.0	27.0	36.2	36.3	49	47.7
		N-m	1.58	1.66	3.05	3.05	4.09	4.1	5.5	5.39
Rated Power-Output Shaft ¹	P_o	watts	946	1,305	1,397	2,231	1,864	3,222	1,930	2,731
Voltage Constant ^{3,4}	K_b	volts/radian/sec	0.427	0.309	0.556	0.360	0.540	0.305	0.657	0.470
Voltage Constant ^{3,4}	K_v	volts/KRPM	44.66	32.27	58.18	37.69	56.54	31.96	68.83	49.17
Torque Constant ^{3,4}	K_t	lb-in/amp rms	4.71	3.41	6.13	3.97	5.96	3.37	7.25	5.18
Resistance ³	R	ohms	3.72	1.94	2.32	0.96	1.28	0.42	1.22	0.62
Inductance ³	L	millihenries	17.11	8.99	14.72	6.18	14.95	4.78	20.60	10.51
Thermal Resistance ¹	R_{th}	°C/watt	1.06	1.06	0.77	0.77	0.70	0.70	0.62	0.62
Motor Constant	K_m	lb-in/√watt	1.96	2.45	4.03	4.04	5.26	5.22	6.58	6.57
Viscous Damping	B	lb-in/Krpm	0.075	0.075	0.087	0.087	0.100	0.100	0.1125	0.1125
Torque - Static Friction	T_f	oz.in.	4	4	6	6	8	8	10	10
Thermal Time Constant ⁷	τ_{th}	minutes	60	60	60	60	60	60	60	60
Electrical Time Constant	τ_e	milliseconds	4.6	4.6	6.4	6.4	11.5	11.5	16.9	16.9
Mechanical Time Constant	τ_m	milliseconds	1.13	1.13	0.64	0.64	0.5	0.5	0.41	0.41
Rotor Inertia	J	lb.in.sec ²	0.000532	0.000532	0.000792	0.000792	0.00106	0.00106	0.00132	0.00132
Weight	#	pounds	8.1	8.1	11.7	11.7	15.1	15.1	18.0	18.0
Winding Class			H	H	H	H	H	H	H	H

¹ @25°C ambient with 10 x 10 x 0.25 in. mounting plate, 150°C winding temperature.

² RMS current through a single phase of a sinusoidally driven motor

³ ±10% line-to-line

⁴ Peak value

⁵ +/-30% line-to-line, inductance bridge measurement @ 1KHz

⁶ Peak current for 2 seconds maximum with initial winding temperature of 40° C.

All specifications are subject to engineering change

Connecting NeoMetric Motors

Motor Power

Connector Terminal	NeoMetric Motor Cable Color Code
Phase A	Red/Yellow
Phase B	White/Yellow
Phase C	Black/Yellow
Motor Ground *	Green/Yellow
Shield *	Unshielded

* **Motor Ground** and **Shield** are connected internally to the **Earth** terminal on the AC power connector

Motor Feedback

		NeoMetric Resolver & Cable Color Code		
Shield	Cos	Uninsulated		
		Red		
		Black		
		Sin	Green	
			Blue	
			Ref	Brown
		White		
		Yellow		
			MT+	Yellow
			MT-	Yellow
			Flt Relay+	
			Flt Relay-	
	NC			
	NC			

NeoMetric Motors — Electrically Released Brakes

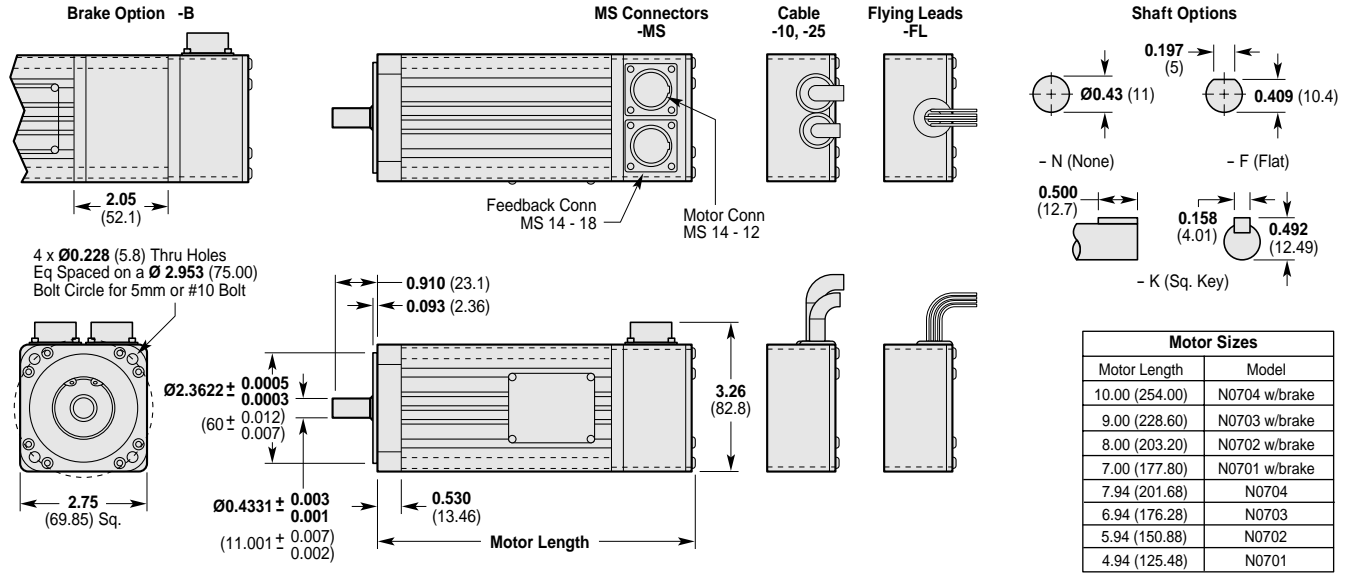
Motor brakes are mounted internal to the motor. When ordering the brake option, specify the motor type.

Brakes	70mm or 34 frame	92mm
Static rated torque	24 in-lb	72 in-lb
Coil voltage	24 VDC	24 VDC
Coil current	0.8 amps	0.52 amps
Weight	1.0 lbbs	2.51 lbs
Inertia	0.000038 lbs-in-sec ²	0.00015 lb-in-sec ²

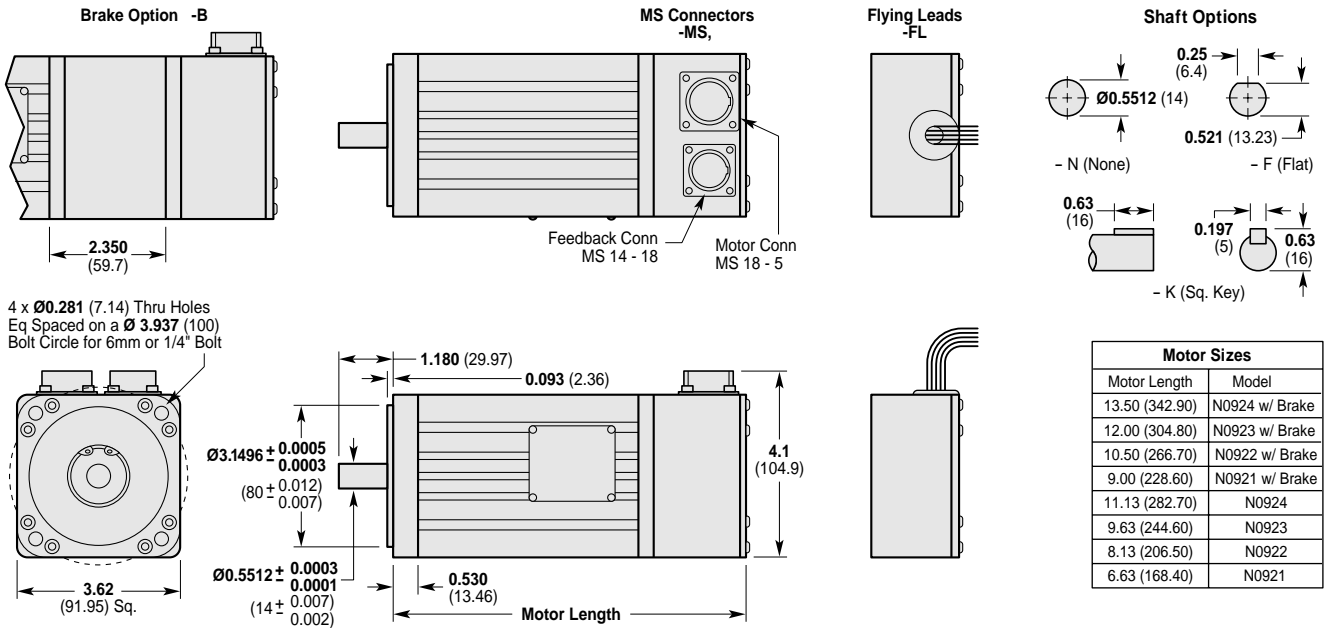
APEX, SM and NeoMetric Motor Resolver Specifications

Parameter	Value
Input voltage @ 7000 Hz	4.25 volts
Input current, max.	55 ma
Input power, nominal	0.12 watts
Impedance ZSO (@90°)	58+j145 ohms
Impedance ZRO	53 +j72 ohms
Impedance ZRS	42 +j55 ohms
Transformation ratio	0.470 ±5%
Output voltage	2.0 ±5% volts
D.C. rotor resistance	23 ±10% ohms
D.C. stator resistance	19 ±10% ohms
Sensitivity	35mV/Degree
Max. Error from EZ	±10 minutes
Phase shift, open circuit	5° leading ±3"
Null voltage (total)	20 mV rms
Impedance ZSS	50 +j128 ohms
Inertia	included in motor specification

Dimensions — Compumotor NeoMetric Series Motors, 70mm



Dimensions — Compumotor NeoMetric Series Motors, 92mm





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