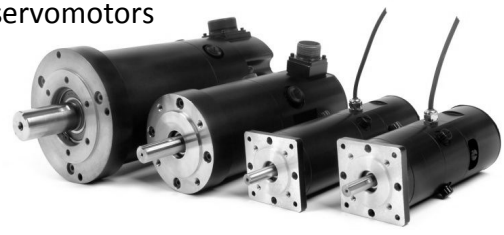
M4-200X DC Servomotors

Direct Replacement of SEM MT22* motors

- Identical motor shaft and mount dimensions (IEC & NEMA options)
- Matched motor windings
- Compatible torque/speed performance
- Matched connection options
- 24V DC brake option
- Matched tachogenerator output
- Encoder options available
- Rare Earth magnets
- Rugged mechanical design

* MT is a tradename of SEM Ltd, UK, brush DC servomotors

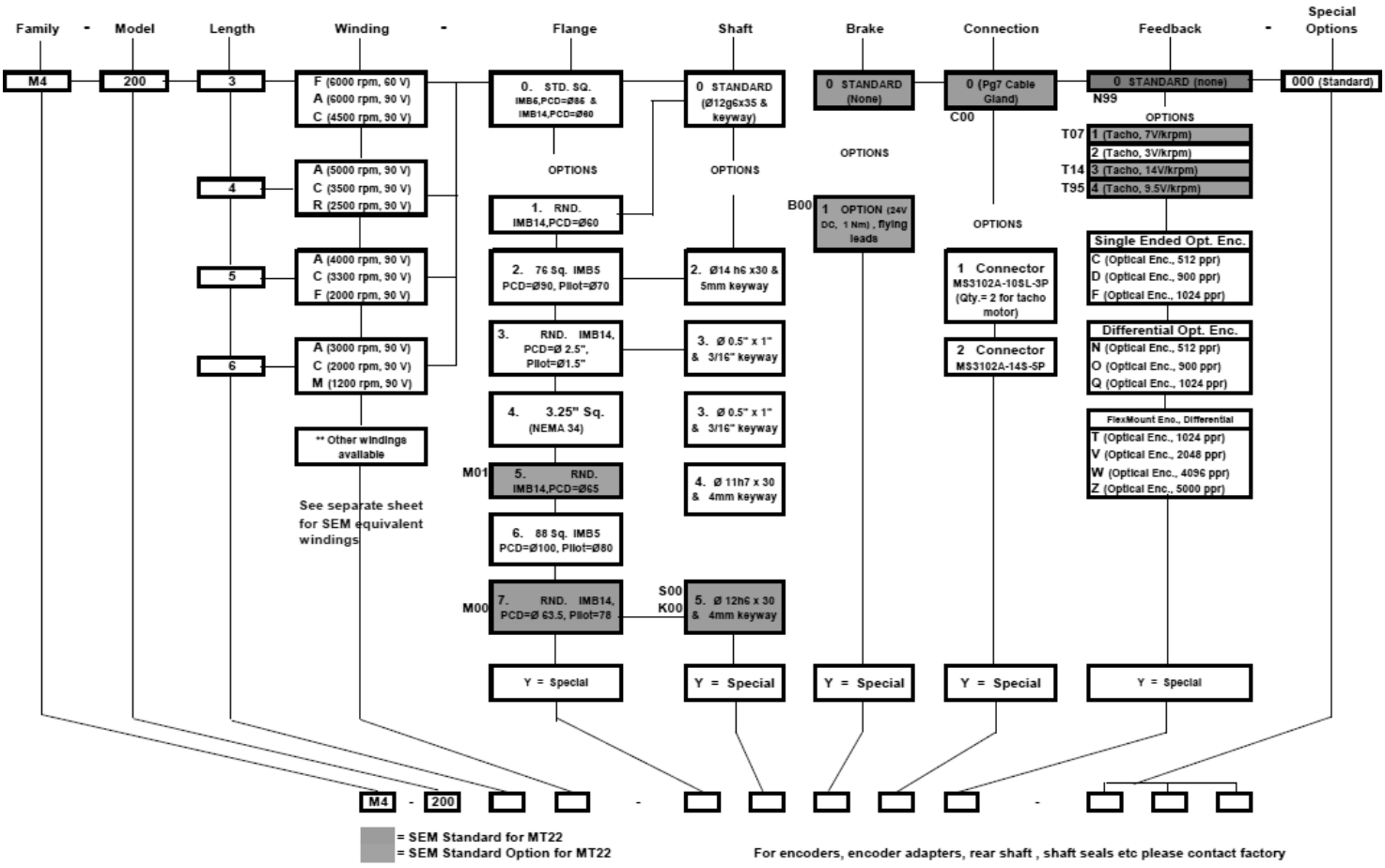


Callan Technology Replacements

for SEM MT22 servomotors

SEM	Callan Technology
MT22D2-19	M4-2004V
MT22D2-10	M4-2004S
MT22D2-5	M4-2004B
MT22G2-19	M4-2005A
MT22G2-10	M4-2005M
MT22R2-24	M4-2006A
MT22R2-19	M4-2006T
MT22R2-12	M4-2006P
MT22R2-10	M4-2006N

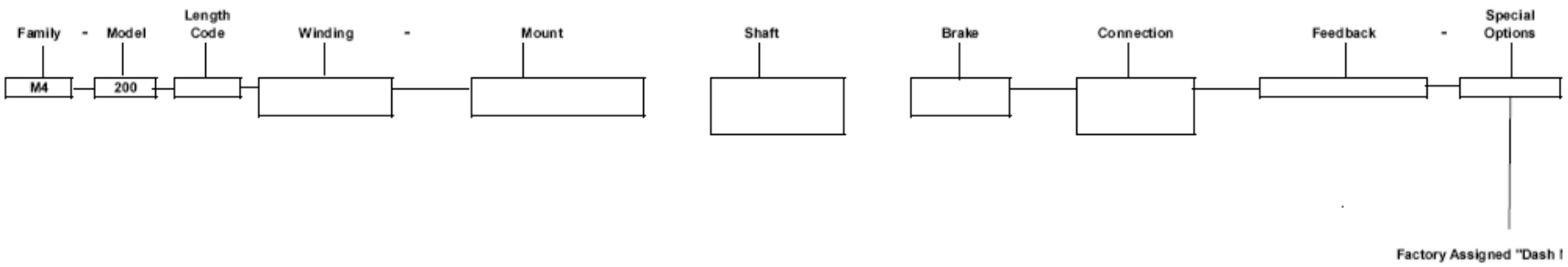
M4-200X Code Table (Replacements for SEM MT22)



For encoders, encoder adapters, rear shaft , shaft seals etc please contact factory

Example : M4 - 200 6 A - 0 0 0 0 1 - 0 0 0

M4-200X Code Table (Replacements for SEM MT22)



Dash No. List (as of 1/2/13

-000	Standard motor as specified by order code, no thermostat, no rear shaft ext (plain endcover
-167	Standard motor with Ø6mm non-drive end shaft & encoder adapter plat
-168	Standard motor with Ø0.25 inch non-drive end shaft & encoder adapter plat

Accessories (must be specified and ordered separately

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Motor	M4-2004			M4-2005		M4-2006			
Winding	V	S	B	A	M	A	T	P	N
replaces :-	*(MT22D2-19)*	*(MT22D2-10)*	*(MT22D2-5)*	*(MT22G2-19)*	*(MT22G2-10)*	*(MT22R2-24)*	*(MT22R2-19)*	*(MT22R2-12)*	*(MT22R2-10)*
Power, P (W) (Brush cont. Limit)	200	200	250	300	350	300	400	400	500
Max Speed, Nmax (rpm)	5,000	4,800	4,800	4,800	4,500	4,400	4,800	4,800	5,000
Cont. Torque Mo (Nm)	**0.85**	**0.72**	**0.5**	**1**	**0.78**	**1.5**	**1.2**	**1.2**	**1.0**
Current @ Cont. Torque, Io (A)	5.1	8	11	5.7	8	6.5	7	10.5	11
Peak Torque, Mmax (Nm)	3.1	1.9	1.9	3.6	4.0	8.2	7.2	4.6	3.7
Current @ Peak Torque, Ip (A)	18	20	40	20	40	35	40	40	40
Max Terminal Voltage, V_T (V)	95	50	25	95	50	110	95	60	75
Back EMF Const, Ke (V/krpm)	18.7	10.4	5.2	19.5	10.9	25.2	18.9	12.4	10
Torque Const., K_T (Nm/A)	0.177	0.098	0.049	0.184	0.103	0.238	0.179	0.117	0.095
DC Resistance, R (Ω)	2.2	0.7	0.17	1.1	0.42	1.3	0.81	0.35	0.24
Inductance, L (mH)	2.4	0.72	0.18	1.35	0.47	1.6	0.95	0.45	0.31
Weight, M (kg)	2.3			2.9		3.4			
Inertia, J_M (kgm^2)	$1.6x10^{-4}$			$2.2x10^{-4}$		$2.8x10^{-4}$			
Static Friction, T_F (Nm)	0.04			0.045		0.05			
Viscous Damping, F1 (Nm/krpm)	0.01			0.015		0.02			
Tachogenerator Option									
Tachogenerator Model	TGF 1568			TGF 1568		TGF 1568			
Voltage, K_G (V/krpm)	7.0 / 9.5 / 14.0			7.0 / 9.5 / 14.0		7.0 / 9.5 / 14.0			
Ripple (pk-pk/avg)	3%			3%		3%			
Inertia, J_T (kgm^2)	$0.14x10^{-4}$			$0.14x10^{-4}$		$0.14x10^{-4}$			
Weight, M_T (kg)	0.6			0.6		0.6			
Encoder Option- Flexmount Encoder with internal bearing									
Encoder Type	Incremental (A quad B with index Z & complements)								
Power Supply	5V DC ±5%, 200mA max								
Output	Line Driver, 20mA max source/sink								
Resolution (ppr)	1024 / 2048 / 4096			1024 / 2048 / 4096		1024 / 2048 / 4096			
Frequency Response	200 kHz max								
Encoder Option- Single Ended Modular Encoder									
Encoder Type	Incremental (A quad B with index Z)								
Power Supply	5V, 85mA max								
Output	TTL Squarewave Outputs								
Resolution (ppr)	512 / 900/ 1024			512 / 900/ 1024		512 / 900/ 1024			
Frequency Response	100 kHz max								
Encoder Option- Differential Modular Encoder									
Encoder Type	Incremental (A quad B with index Z & complements)								
Power Supply	5V, 85mA max								
Output	Internal Line Driver								
Resolution (ppr)	512 / 900/ 1024			512 / 900/ 1024		512 / 900/ 1024			
Frequency Response	100 kHz max								
Brake Option									
Brake Open Voltage (Volts D.C.)	24								
Power (Watts)	10								
Brake Static Torque (Nm)	2.0								
Weight (brake + housing) Kg	0.8								

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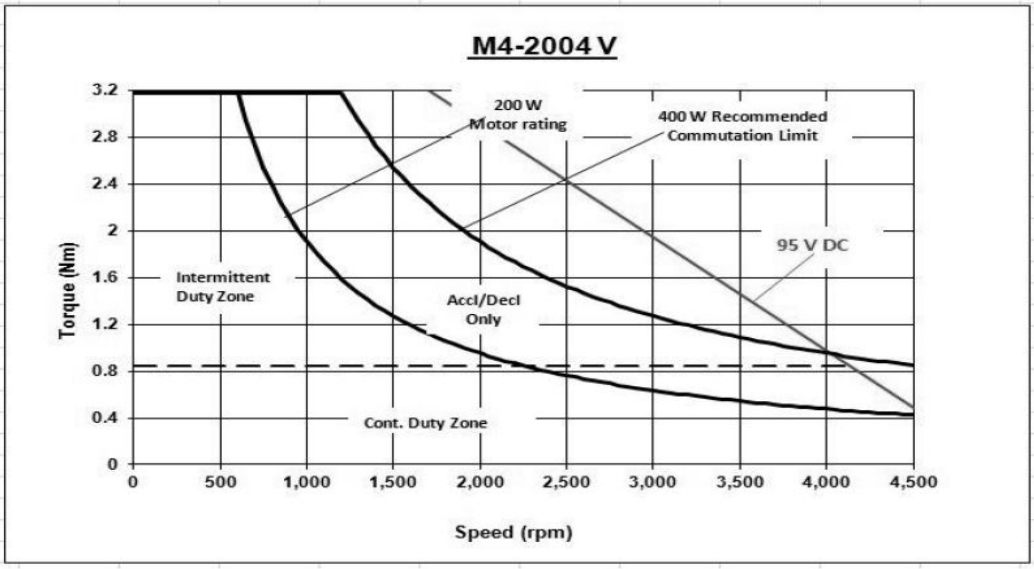
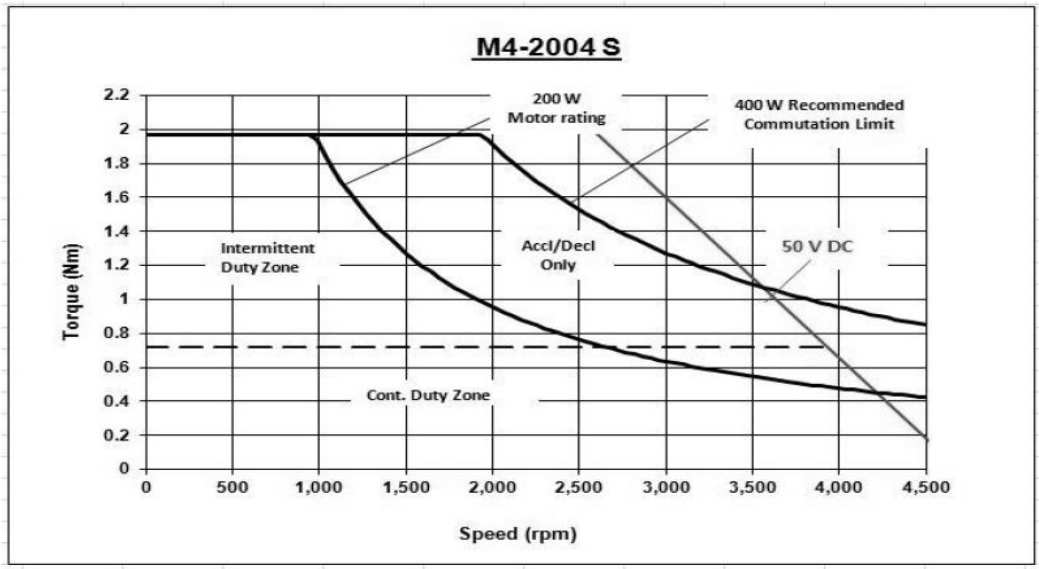
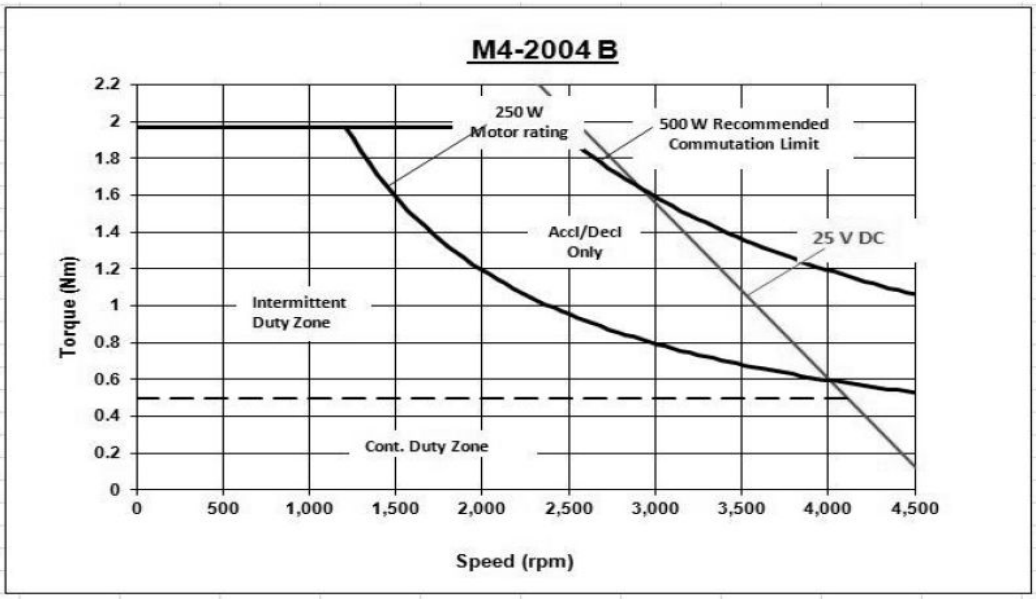
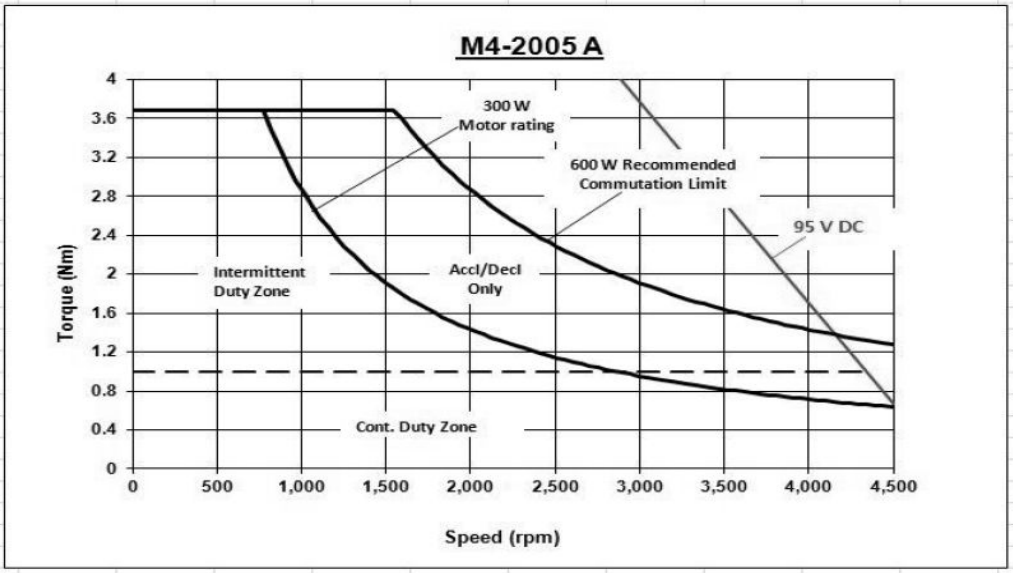
Performance Curves

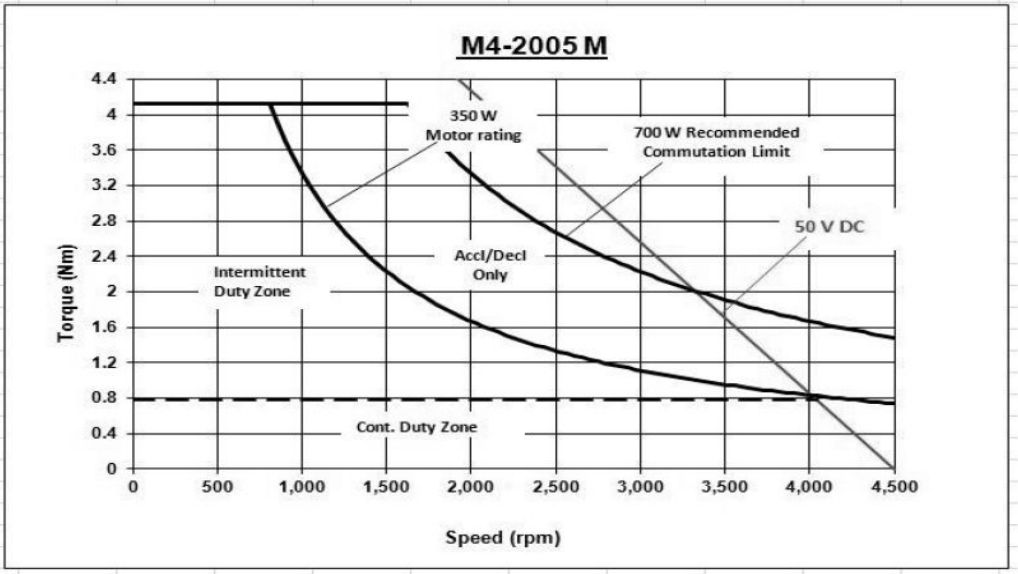


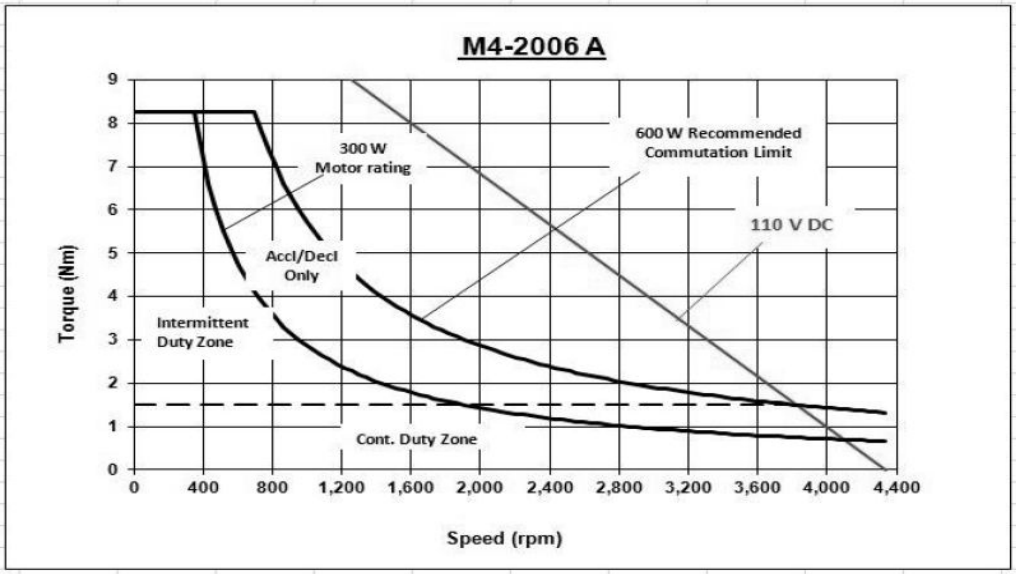




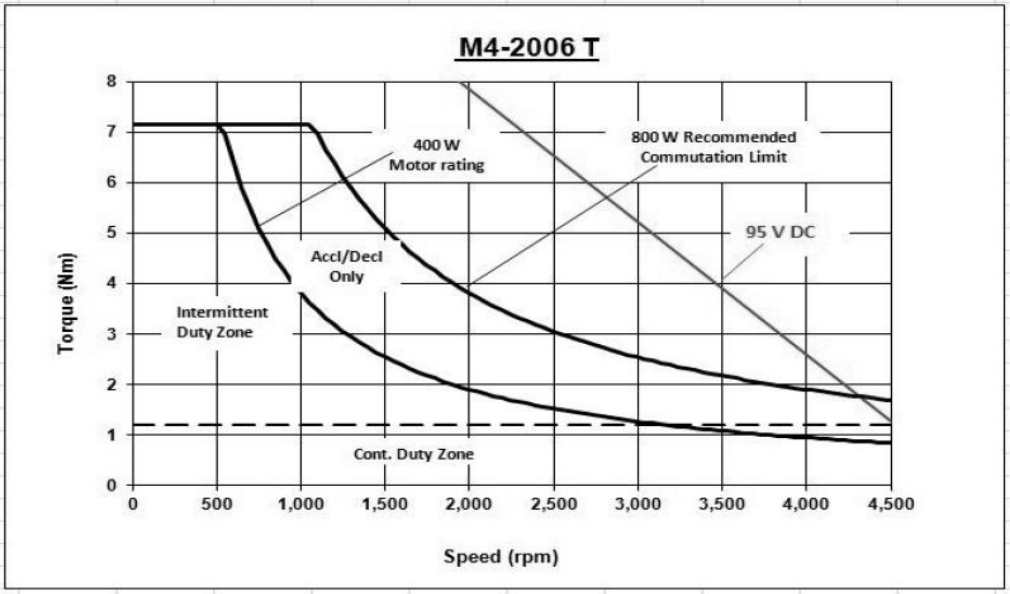
Performance Curves

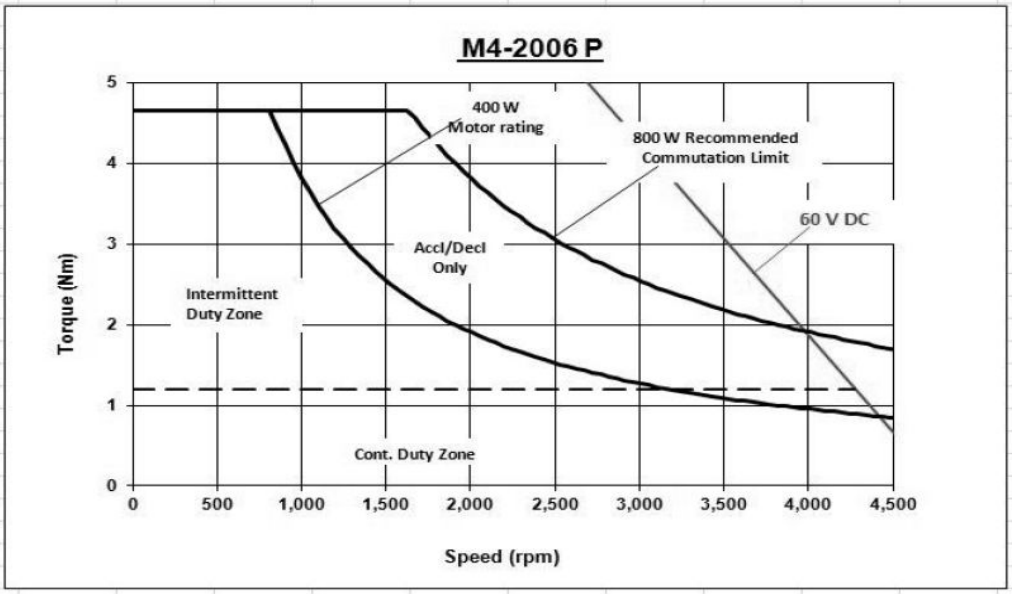


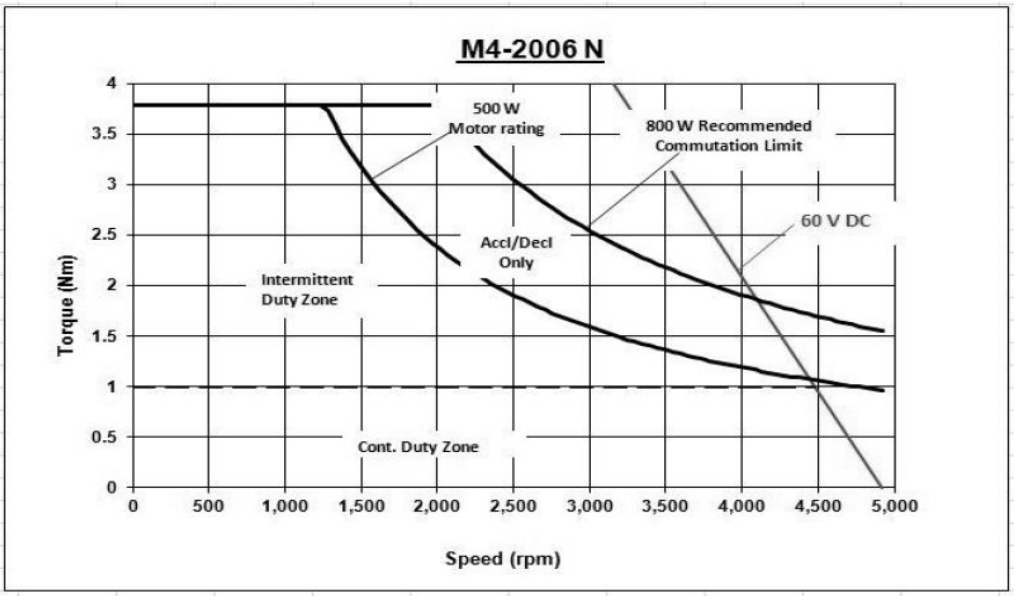


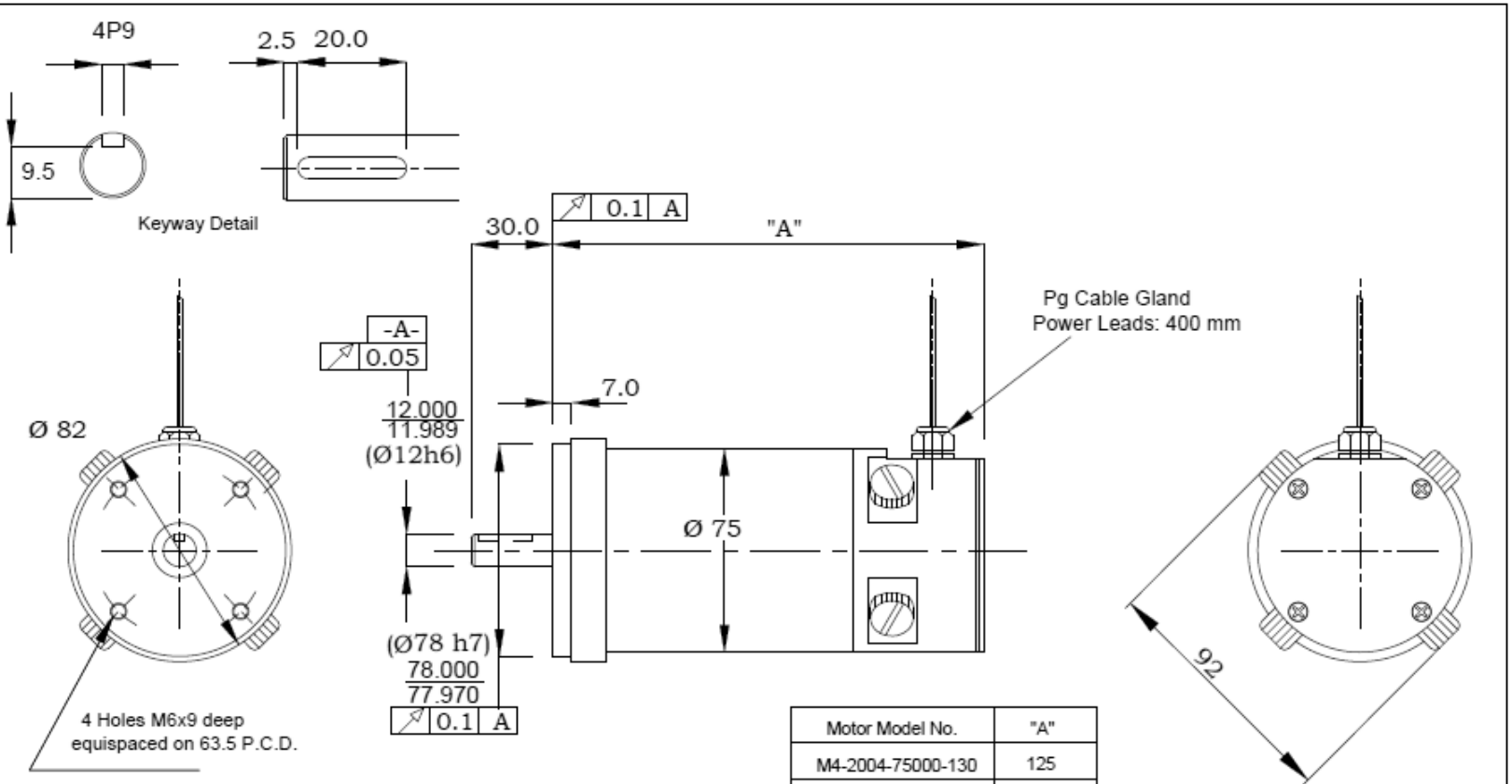


Performance Curves









Motor Model No.	"A"
M4-2004-75000-130	125
M4-2005-75000-130	144
M4-2006-75000-130	162

Notes:-

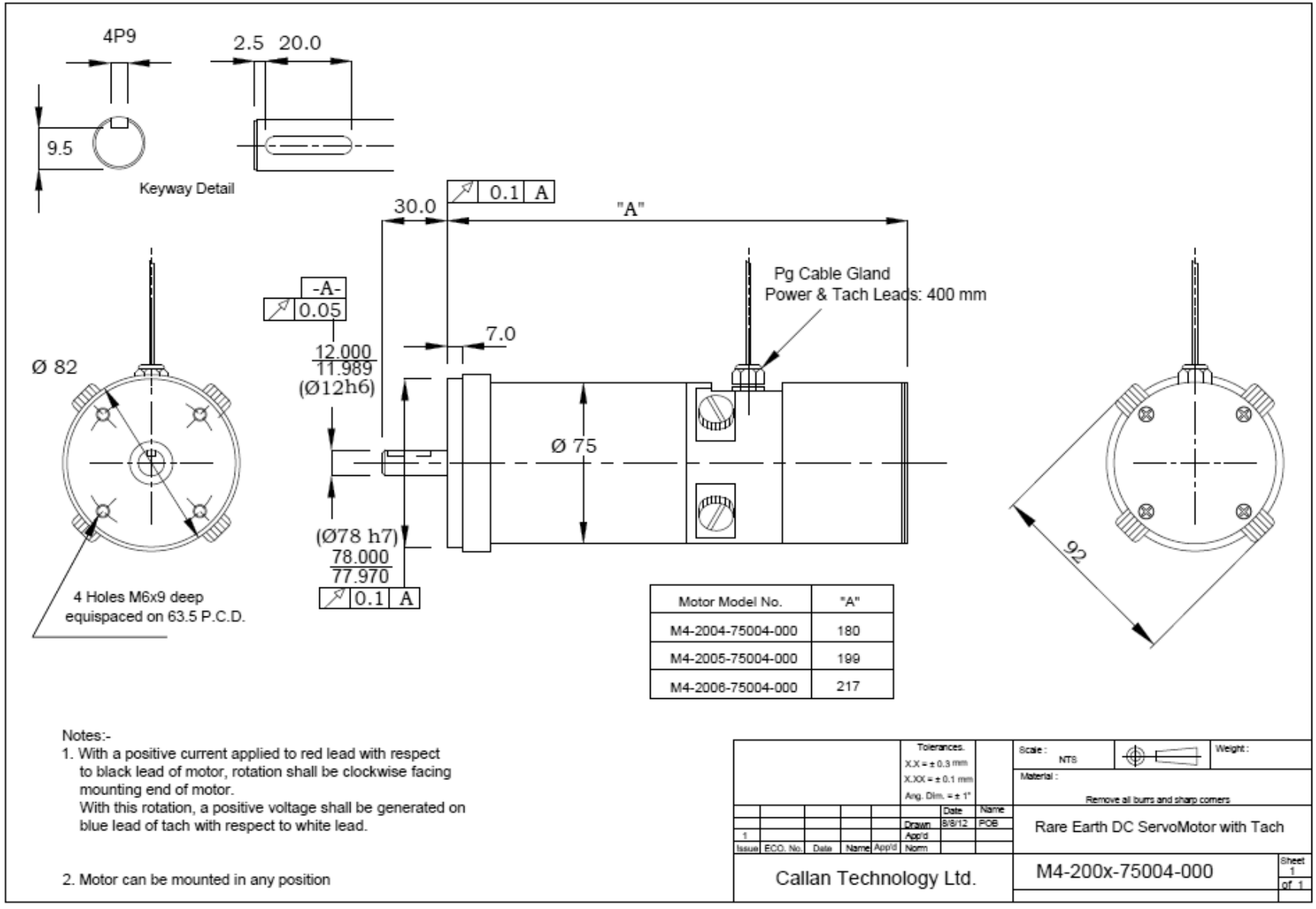
1. With a positive current applied to red lead with respect to black lead of motor, rotation shall be clockwise facing mounting end of motor.

2. Motor can be mounted in any position

						Tolerances. X.X = ± 0.3 mm X.XX = ± 0.1 mm Ang. Dim. = ± 1°			Scale : NTS
							Date	Name	Material : Remove all burns and sharp corners
						Drawn	8/8/12	POB	Rare Earth DC ServoMotor
1						App'd			
Issue	ECO. No.	Date	Name	App'd		Norm			
Callan Technology Ltd.									M4-200x-75000-000

Weight :

Sheet 1 of 1



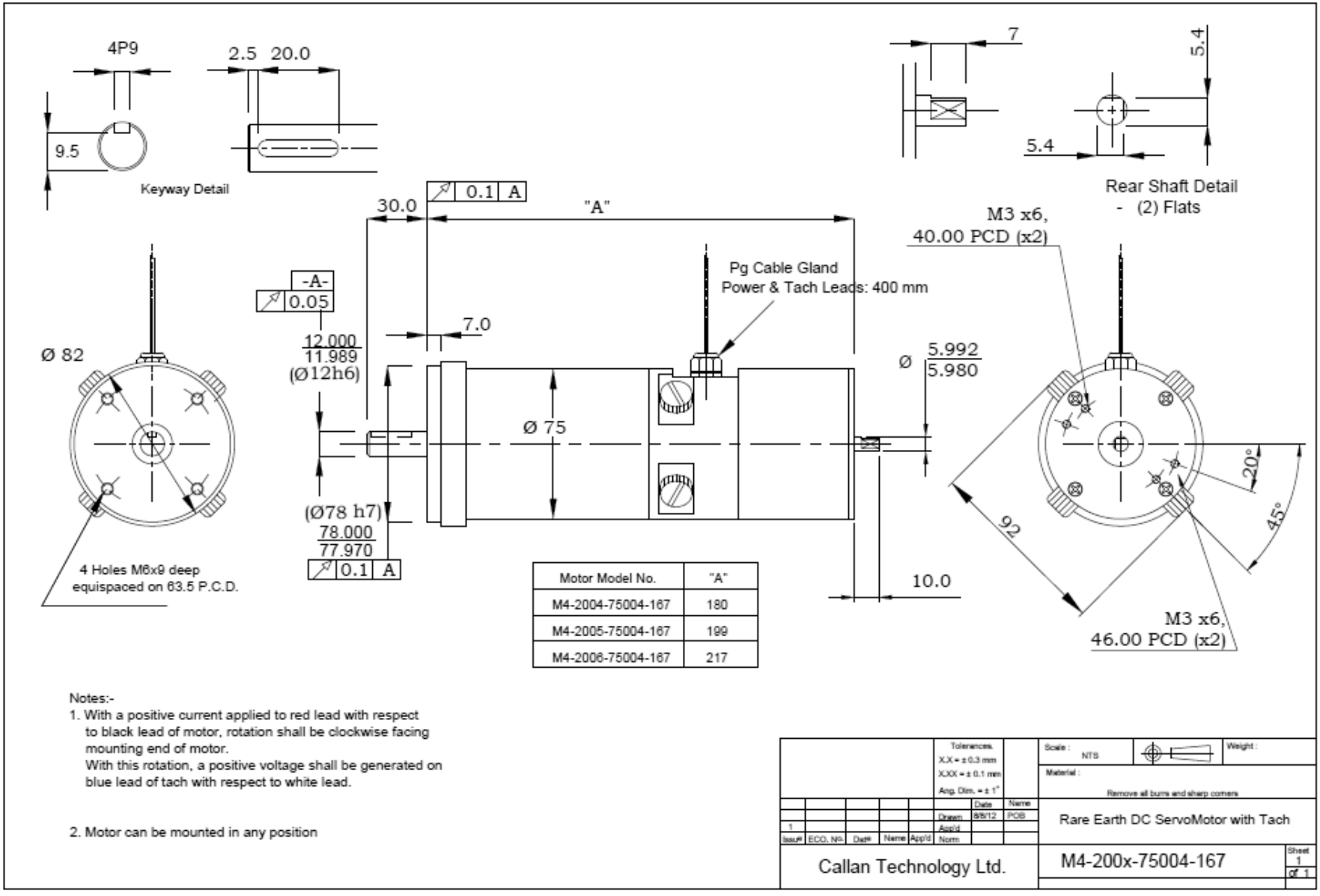
Motor Model No.	"A"
M4-2004-75004-000	180
M4-2005-75004-000	199
M4-2006-75004-000	217

Notes:-

1. With a positive current applied to red lead with respect to black lead of motor, rotation shall be clockwise facing mounting end of motor.
   With this rotation, a positive voltage shall be generated on blue lead of tach with respect to white lead.

2. Motor can be mounted in any position

						Tolerances. X.X = ± 0.3 mm X.XX = ± 0.1 mm Ang. Dim. = ± 1°		Scale : NTS	Weight :
								Material : Remove all burrs and sharp corners	
							Date	Name	Rare Earth DC ServoMotor with Tach
						Drawn	8/8/12	POB	
1						App'd			
Issue	ECO. No.	Date	Name	App'd		Norm			
Callan Technology Ltd.								M4-200x-75004-000	Sheet 1 of 1



Motor Model No.	"A"
M4-2004-75004-167	180
M4-2005-75004-167	199
M4-2006-75004-167	217

Notes:-
1. With a positive current applied to red lead with respect to black lead of motor, rotation shall be clockwise facing mounting end of motor.
With this rotation, a positive voltage shall be generated on blue lead of tach with respect to white lead.

2. Motor can be mounted in any position

Tolerances
X.X = ± 0.3 mm
X.XX = ± 0.1 mm
Ang. Dim. = ± 1°

Scale : NTS
Weight :
Material :
Remove all burrs and sharp corners

						Date	Name
					Drawn	9/8/12	POB
1					Appr'd		
Issue	ECO. No.	Date	Name	Appr'd	Norm		

Rare Earth DC ServoMotor with Tach

Callan Technology Ltd.

M4-200x-75004-167

Sheet 1 of 1

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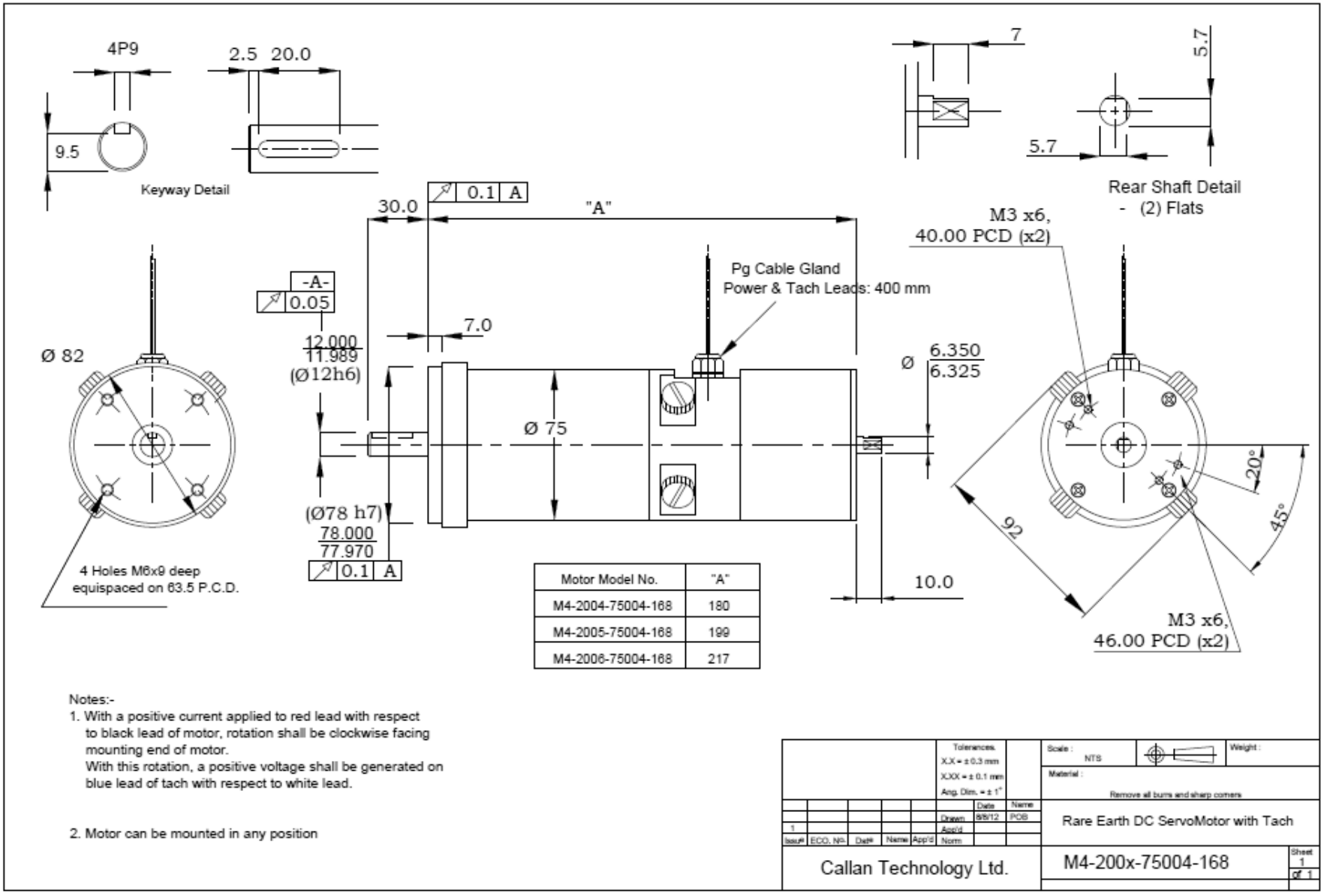


Motor Model No.	"A"
M4-2004-75004-168	180
M4-2005-75004-168	199
M4-2006-75004-168	217

Notes:-
1. With a positive current applied to red lead with respect to black lead of motor, rotation shall be clockwise facing mounting end of motor.
With this rotation, a positive voltage shall be generated on blue lead of tach with respect to white lead.

2. Motor can be mounted in any position

										Tolerances. X.X = ± 0.3 mm X.XX = ± 0.1 mm Ang. Dim. = ± 1°	
										Date	Name
										Drawn	8/8/12 POB
1										Appr'd	
Issue#	ECO. No.		Date		Name		App'd			Norm	

Scale : NTS | Weight :

Material :

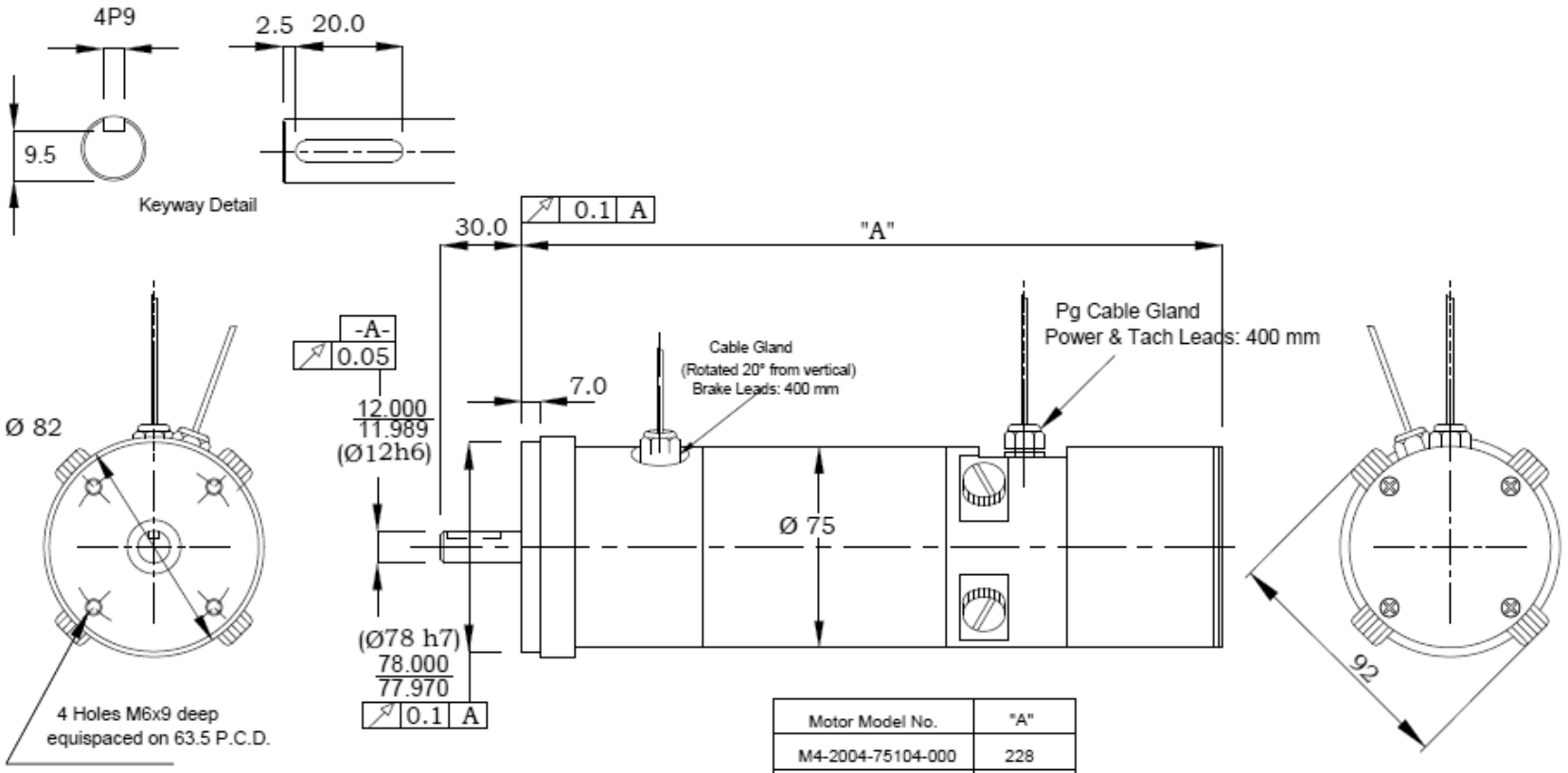
Remove all burrs and sharp corners

Rare Earth DC ServoMotor with Tach

Callan Technology Ltd.

M4-200x-75004-168

Sheet 1 of 1



Motor Model No.	"A"
M4-2004-75104-000	228
M4-2005-75104-000	247
M4-2006-75104-000	265

Notes:-
1. With a positive current applied to red lead with respect to black lead of motor, rotation shall be clockwise facing mounting end of motor.
   With this rotation, a positive voltage shall be generated on blue lead of tach with respect to white lead.
2. Brake Data:- 24V DC, 2Nm, 0.26 A, (2 white leads)
   Power to Release (Brake has no polarity)
3. Motor can be mounted in any position

					Tolerances. X.X = ± 0.3 mm X.XX = ± 0.1 mm Ang. Dim. = ± 1°			Scale : NTS; Weight :
						Date	Name	Material : Remove all burrs and sharp corners
					Drawn	8/8/12	POB	Rare Earth DC ServoMotor with Tach & Brake
1					App'd			
Issue	ECO. No.	Date	Name	App'd	Norm			
Callan Technology Ltd.								M4-200x-75104-000; Sheet 1 of 1