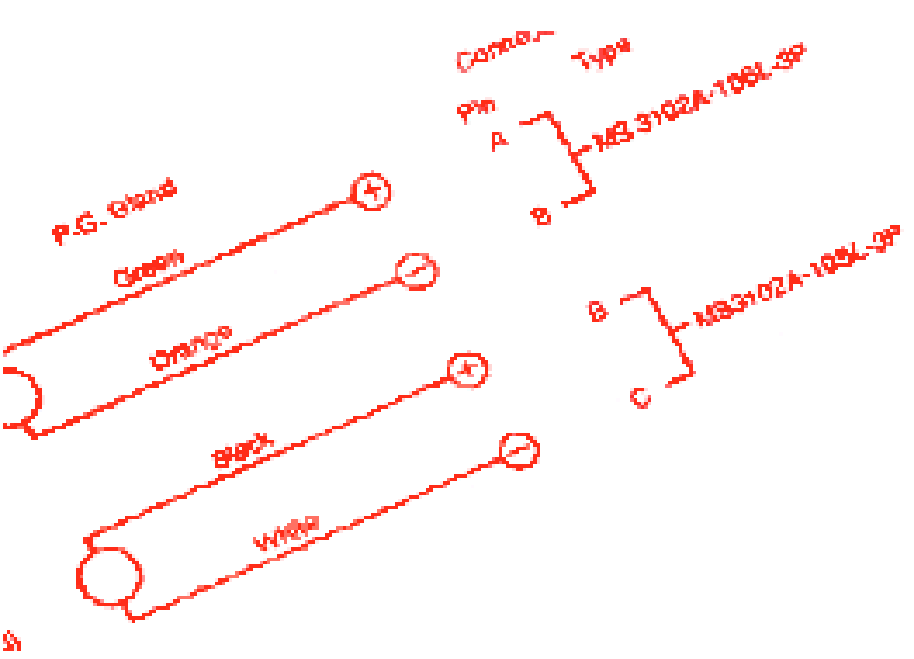


D.C. SERVO MOTORS

DC Servomotors TT 200 X

DC SERVOMOTORS

TT 200 X with Tacho

- *0,4 - 0,6 Nm Continuous*
- *90 - 300 W*
- *6,000 rpm max. Speed*
- *Compact Size*
- *High Energy Rare Earth Magnets*
- *Encoder mounting spigot provided*
- *Available with or without tach*

POWER WITH PRECISION

This range of compact servo motors has been designed specially for robotics, machine tool and automatic handling equipment as well as for mobile and general servo-drive applications where accuracy, reliability and high power/weight ratio are vitally important.

The use of rare earth magnets results in a compact motor with a very favorable power/weight ratio compared with conventional ferrite magnet or wounded field motors. Maximum terminal voltage has been kept to 90 V, but very useful performance can be obtained for lower voltages, such as 48 or 60 V, torque being maintained at reduced speeds.

Provision is made for mounting tachos, encoders, resolvers and other positional feed-back devices by means of a spigot at the non-driving end with a shaft extension. A fail-safe brake can also be incorporated as can alternative power connection by MS connectors, cable, or flying leads.

DC Servomotors TT 200 X

STANDARD FEATURES

- *Square Flange*
- *P.G. Gland*
- *IP44 Sealing*
- *Keyway*
- *Rear Shaft Extension*
- *Tacho*

OPTIONS

- *Brake*
- *Connectors*
- *Special Winding*
- *No Keyway*
- *Special Shafts*
- *Thermostat*
- *Oil Seal*
- *Special Sealing*
- *Encoder*

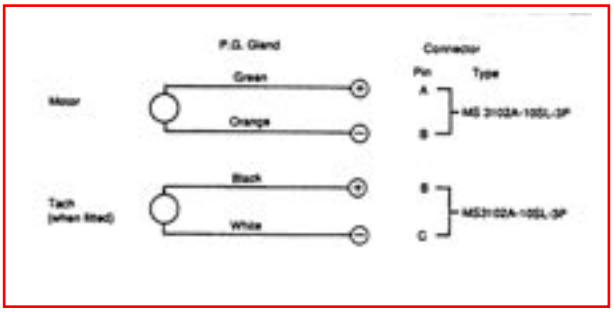
BRAKE DETAILS

Motors can be supplied with a zero backlash parking brake.

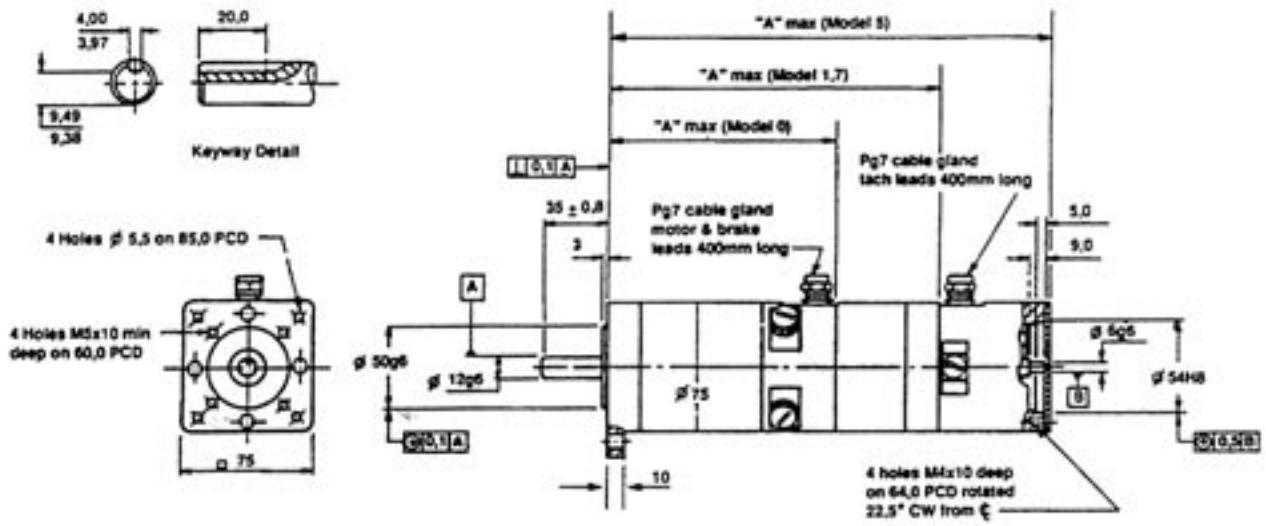
Brake	Symbol	Units	Value
Nominal Voltage	V DC	V	24
Holding Torque	M	Nm	2
Power	P	W	10
Inertia	Jm	kg m^2	2,8 x 10^{-5}
Mass	M	kg	0,8

MOTOR CONNECTIONS

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



MECHANICAL SPECIFICATIONS



ORDER CODE

M4 - 2003 - 01A - 200

Motor

Frame Size

Motor Stack Length

Note: T = Motor
TT = Motor with Tacho
BL = 24 V Brake

Mechanical Variation
200 = Standard Motor

Winding

Standard Option
0 = "T" Motor
1 = "TT" Motor
4 = "TM" Motor
5 = "TTBL" Motor
7 = "TBL" Motor

Old Part Code

Torquer	Tacho	Brake	Frame Size	Mechanical Variation	Electrical Winding
T	T	BL	200X	XXXX	A

Example

New Part Code

M4 – 2003 – 01A – 201

Old Part Code

TT – 2003 – 2001 – A

DC SERVOMOTORS

TT 295 X

- *2 - 8 Nm Continuous*
- *750 - 1500 W*
- *5,000 rpm max. Speed*
- *Small Size*
- *Exceptional Dynamic Performance*
- *High Energy Rare Earth Magnets*

POWER WITH PRECISION

Utilizing high energy rare earth magnet material, the TT 295X series DC servomotor-tach units provide precise motion control in machine tools, robotics, automatic handling, wiredrawing, paper, plastic-film and foil processing, tension controls and packaging machinery, etc.

Peak torque of 40 Nm gives ample power for fast, accurate positioning. Coupled with low motor inertia, theoretical acceleration of up to 25.000 rad/sec^2 results.

With a speed range capability in excess of 20.000:1 one motor can provide rapid traverse and feed rates for each machine axis, eliminating the complexity and compliance of multiple motors, clutches, and gear trains. Speeds as low as 6 revs. per hour may be achieved in a positioning loop without cogging.

The unique permanent-magnet structure eliminates thermal runaway and commutation problems commonly encountered in conventional ceramic-magnet motors.

DC Servomotors TT 295 X

STANDARD FEATURES

- *Round Flange*
- *P.G. Gland*
- *IP44 Sealing*
- *Keyway*
- *Tacho*

OPTIONS

- *Brake*
- *Connectors*
- *Square Flange*
- *Special Winding*
- *No Keyway*
- *Special Shafts*
- *Thermostat*
- *Special Tolerances*
- *Oil Seal*
- *Special Sealing*

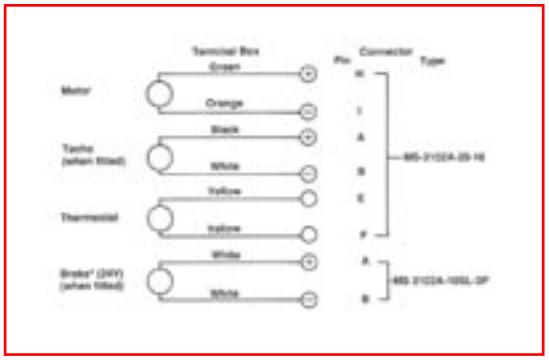
BRAKE DETAILS

Motors can be supplied with a zero backlash parking brake.

Brake	Symbol	Units	Value
Nominal Voltage	V DC	V	24
Holding Torque	M	Nm	8
Power	P	W	35
Inertia	Jm	kg m^2	2,2 x 10^{-4}
Mass	M	kg	3.6

MOTOR CONNECTIONS

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

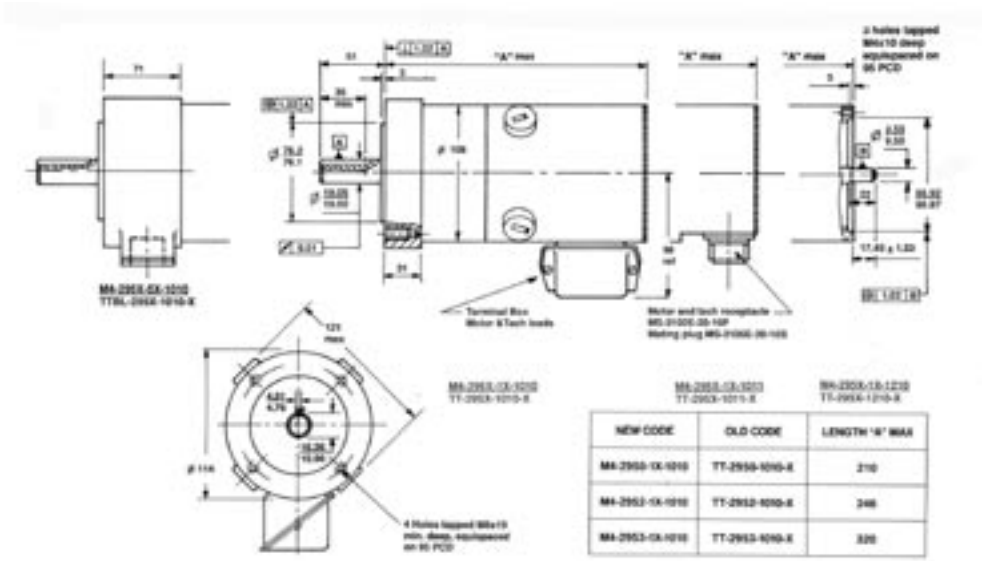


DC Servomotors TT 295 X

SPECIFICATIONS

	TT-2950			TT-2952			TT-2953	
	A	B	C	A	B	C	A	B
MOTOR								
Rated Power P [W]	746	746	746	895	895	895	1200	1500
*Max. operating speed nn [rpm]	5000	5000	4500	3000	2500	2000	2000	3000
Nom. continuous torque (stall) at 40°C ambient M_0 [Nm]	2,0			4,07			8,14	7,86
Nom Peak torque M_{max} [Nm]	12,9	14,9	16,3	27,1	29,8	33,9	40,7	29,8
Nom. theoretical acceleration αM [rad/sec²]	13,670	15,827	17,266	20,000	22,000	25,000	14,850	10,890
Rated current at cont. torque I_0 [A]	11,72	9,74	8,33	11,3	9,38	8,04	15,8	21,4
Rated current at peak torque I_P [A]								
Max. terminal voltage V_T [V]	90 115			90 115			90 115	
Torque sensitivity K_T (+/-10%) [Nm/A]	0,174	0,209	0,244	0,361	0,434	0,506	0,515	0,368
Back EMF constant K_S (+/-10%) [V/kRPM]	18,2	21,9	25,5	37,8	45,4	52,96	53,95	38,48
DC Resistance R_m at 25°C (+/-12,5%) [Ω]	0,321	0,484	0,721	0,452	0,68	1,0	0,393	0,199
Inductance L_M [mH]	0,92	1,3	1,8	1,6	2,5	3,2	1,6	0,81
Nom. time constant at 25°C Mech. T_M [ms]	8,9	9,3	10,0	5,6	5,8	6,3	4,7	4,7
Nom. time constant at 25°C Elect. T_E [ms]	2,9	2,7	2,5	3,5	3,7	3,2	4,1	4,1
Tachometer Paramet								
Voltage sensitivity Kg (+/-10%) [V/kRPM]	12,5							
Max. volt ripple Vr [%pk/pk]	2							
DC resistance R_T (+/-12,5%) [Ω]	40							
Min load resistance R_L [Ω]	3.5K							
Motor + Tacho Constants								
Rotor Inertia J_M [kg x m²]	$9,42 \times 10^{-4}$			$1,4 \times 10^{-3}$			$2,74 \times 10^{-3}$	
Mass m [kg]	7,5			9,9			14,4	
Static friction T_F [Nm]	0,145			0,30			0,43	
Thermal time constant T_{TH} [min]	35			55			75	
Viscous damping F_I ∞ Z source [Nm/kRPM]	0,030			0,075			0,152	

MECHANICAL SPECIFICATIONS



NEW CODE	OLD CODE	LENGTH "A" MAX
M4-2950-1X-1010	TT-2950-1010-X	210
M4-2952-1X-1010	TT-2952-1010-X	248
M4-2953-1X-1010	TT-2953-1010-X	320

ORDER CODE

M4 295 0 - 1 A - 1010

Motor

Frame Size

Motor Stack Length

Note: T = Motor
TT = Motor with Tach
B = 115 V Brake
BL = 24 V Brake

Mechanical Variation
1010 = Standard Motor

Winding

Standard Option
0 = "T" Motor
1 = "TT" Motor
2 = "TB" Motor
3 = "TTB" Motor
5 = "TTBL" Motor

DC TACHOGENERATOR

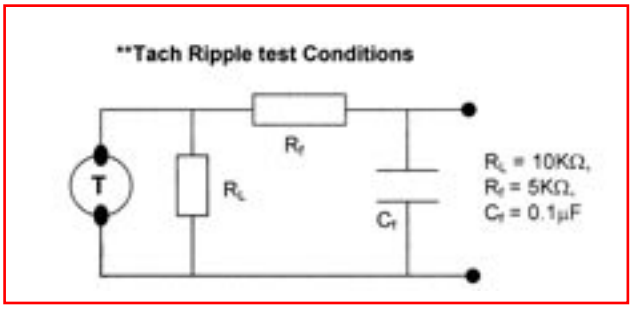
TGF1568 [Used in the TT200X, TT202X Series of D.C. Servomotor]

Tach Armature

Magnet Ring

The TGF 1568 is a frameless, 2-pole 7.0V/Krpm D.C. tachogenerator. The standard Hub is bored to fit a shaft diameter of 9.5mm (0.3745"), but different hub sizes can be catered for.

Item	Callan Technology Part Number	Equivalent Kollmorgan Part No.
TGF 1568 Armature	M35001-301	B-73854
TGF 1568 Magnet Ring	M72101-008	A-73894



STANDARD FEATURES

- *7.0v/Krpm Back EMF voltage*
- *Fits a 9.5mm (0.3745") shaft*
- *Coated with Epoxy Type 3M/262*
- *Temperature range up to 150°C*
- *Speed range up to 6,000 rpm*

OPTIONS

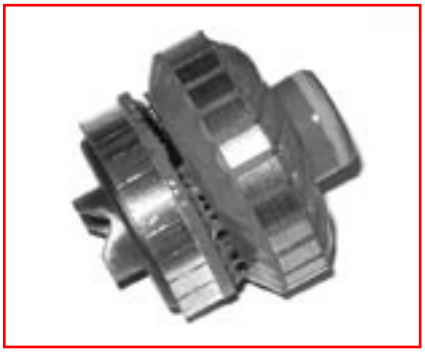
- *Special Voltage Windings*
- *Various Mechanical variations*

	SYMBOL	UNITS	TOLERANCE	VALUE
Nominal Back EMF Voltage	Kb	V/Krpm	+/- 10%	7.0
**Voltage Ripple	Vr	% peak-peak	Max	2%
Inductance	Lg	mH	+/- 30%	25
DC Resistance	R_T	Ω	Min	43
Mass	M	Grams	Nom	100

DC TACHOGENERATOR

TGF1810-147 [Used in the TT295X, TT299X Series of D.C. Servomotor]

Magnet Ring

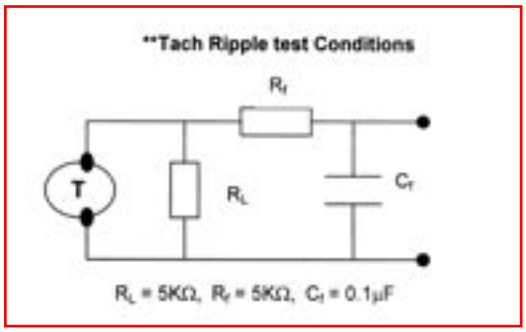


Tach Armature

Brush Ring Assembly

The TGF 1810 is a frameless 4-pole 12.5V/Krpm D.C. tachogenerator. The standard Hub is bored to fit a shaft diameter of 12mm (0.4725"), but different hub sizes can be catered for.

Item	Callan Technology Part Number	Equivalent Kollmorgan Part No.
TGF 1810 Magnet Ring Assembly	M35002-200	A-73784
TGF 1810 A Armature	M35001-301	B-73871
TGF 1810 Brush Ring Assembly	M35003-003	C-73753



STANDARD FEATURES

- *12.5v/Krpm Back EMF voltage*
- *Fits a 12mm (0.4725") shaft*
- *Coated with Epoxy Type 3M/262*
- *Temperature Range up to 150°C*
- *Speed Range up to 6,000 rpm*

OPTIONS

- *Special Voltage Windings*
- *Various Mechanical variations*

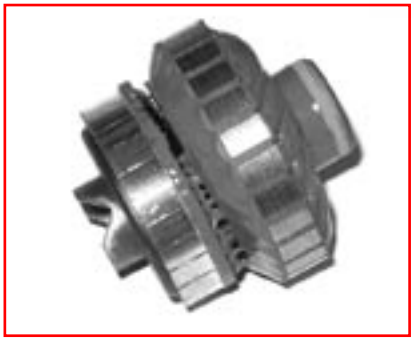
	SYMBOL	UNITS	TOLERANCE	A	B	C	D	E	G
Nominal Back EMF Voltage	Kb	V/Krpm	+/- 10%	12.5	20.0	7.0	32.5	15.7	10.0
**Voltage Ripple	Vr	% peak-peak	Max	2	2	2	2	2	2
Inductance	Lg	mH	+/- 30%	24	62	7.6	156	39	7.3
DC Resistance	R_T	Ω	Min	40	62	7.6	156	39	7.3
Mass	M	Grams	Nom	160	160	160	160	160	160

DC TACHOGENERATOR

TGF2030-147/-162

[Used in the TT4.0, TT4.2, TT4.5, TT5.3, TT5.8, Series of D.C. Servomotor]

Magnet Ring

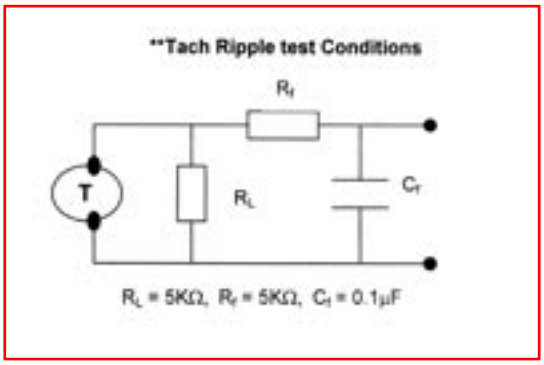


Tach Armature

Brush Ring Assembly

The TGF 2030 is a frameless 4-pole 18.9V/Krpm D.C. tachogenerator. The standard Hub is bored to fit a shaft diameter of 12mm (0.4725"), but different hub sizes can be catered for.

Item	Callan Technology Part Number	Equivalent Kollmorgan Part No.
TGF 2030 Magnet Ring Assembly	M35002-201	A-73785
TGF 2030 A Armature	M35001-304	B-73872
TGF 1810 Brush Ring Assembly	M35003-003	C-73753



STANDARD FEATURES

- *18.9v/Krpm Back EMF voltage*
- *Fits a 12mm (0.4725") shaft*
- *Coated with Epoxy Type 3M/262*
- *Temperature Range up to 150°C*
- *Speed Range up to 5,000 rpm*

OPTIONS

- *Special Voltage Windings*
- *Various Mechanical variations*

	SYMBOL	UNITS	TOLERANCE	A	B	C	D	E
Nominal Back EMF Voltage	Kb	V/Krpm	+/- 10%	18.9	57	38	3	30
**Voltage Ripple	Vr	% peak-peak	Max	2	2	2	2	2
Inductance	Lg	mH	+/- 30%	22	250	109	0.6	60
DC Resistance	R_T	Ω	Min	24.2	229	110	1.2	1.34
Mass	M	grams	Min	245	245	245	245	245