P5 series geared dc ironless rotor servo motors

General

The P5 series servo motors utilise precious metal commutation and skewed ironless rotor technology to provide excellent servo motor characteristics. The resultant linear torque / speed and torque/current curves combined with low internal losses enable accurate control of the motor over a wide speed range.
Furthermore, the use of an ironless rotor construction enable rapid acceleration and reversals to be obtained and contributes to the smooth low speed operation which is free from cogging.

An extensive programme of servo motors may be specified with the P5 series gearheads to match the requirements of a variety of instrumentation applications where precise control and high efficiency is a design requirement.

Geared dc servo motor performance

Geared dc Servo Motor	Ratio	Rated Speed (rpm)	Rated Torque (Ncm)	Peak Torque (Ncm)	Torque Constant (Ncm / Amp)
P522-DC012-G01....	25:6	1440	0.9	3.9	3.6
-G03	25:4	960	1.4	5.9	5.4
-G04	25:3	720	1.8	7.8	7.1
-G05	10:1	600	2.0	8.5	7.7
-G06	25:2	480	2.4	10.6	9.7
-G08	50:3	360	3.2	14.1	12.9
-G09	20:1	300	3.9	16.9	15.5
-G11	25:1	240	4.9	21.1	19.3
-G14	100:3	180	6.5	28.2	25.8
-G16	125:3	144	8.1	35.2	32.2
-G17	50:1	120	9.8	42.3	38.7
-G19	125:2	96	10.9	47.1	43.1
-G21	250:3	72	14.5	62.8	57.5
-G23	125:1	48	21.8	80.0	86.3
-G27	250:1	24	43.5	80.0	172.6
-G34	500:1	12	60.0	85.0	315.4
-G41	1250:1	4.80	70.0	90.0	788.4
-G62	15,000:1	0.40	80.0	100.0	7675.5

Voltage Options:

			Torque Constant
Standard version	: P522-DC012 Series	12 Vdc	As above. (Kt)
Versions to special order:	P522-DC006 Series	6 Vdc	0.51 Kt
	P522-DC024 Series	24 Vdc	2.0 Kt

Typical Operating Current:

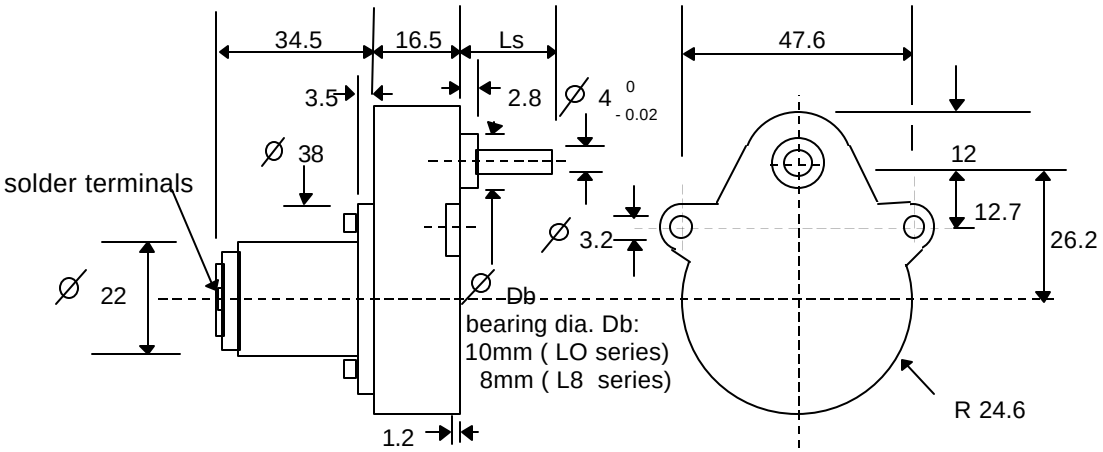
Typical Operating current = $\frac{\text{Drive torque}}{\text{Torque Constant (Kt)}}$

Example

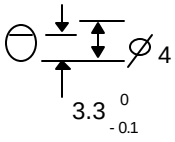
For the 120 rpm, 24 Vdc Version type P522-DC024-G17 Series,

Rated torque	= 9.75 Ncm
Torque constant	= 2 x Kt
	= 2 x 38.7 = 77.4 Ncm/A
Typical Drive current	= 9.75 / 77.4 Amps
	= 126 milli Amps

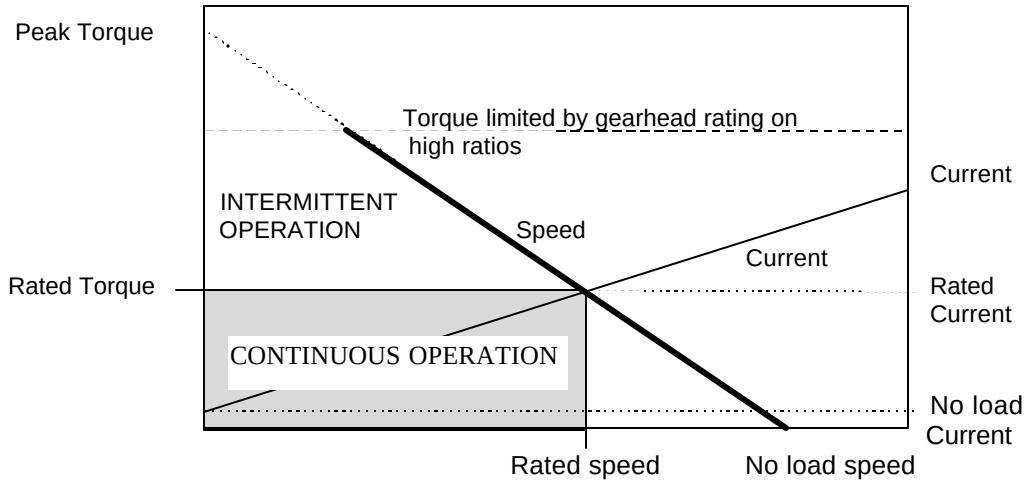
P522 compact geared dc servo motor



Shaft length Ls: plain 20 mm long (L. 1 option)
12.8 mm long with flat (L .2 option):
Flat length: 9 mm
Additional options: Integral Clutch : L 2C
Integral Freewheel, CW version : L 2F & CCW version: L 2R



Typical dc servo motor performance characteristics



As will be seen from above, the relationship between current and torque is constant throughout the entire speed range thereby enabling accurate control to be obtained. Furthermore, the low internal losses of both the motor's commutation system and the precision gear train results in low no-load operating current and high overall efficiency.

The Geared Servo motors may be operated over a wide speed range within the continuous operating zone described by the rated torque and rated speed characteristics given in the data.

The low inertia design of the motors enable rapid acceleration to be obtained and the units will provide a peak torque intermittently during acceleration and rapid reversals. Where high ratios are employed maximum allowable torque may be limited by the torque capability of the gearhead. Maximum torque may be controlled by a current limit circuit which ensures that the maximum safe torque is not exceeded.