



Precision Servo Gearboxes

SureGear® Servo Gearbox Selection													
SureServoMotor (SV and SV2)	Gear Ratio	SureGear Gearbox	Frame Size (mm)	Motor Nominal Output Torque		Combo Nominal Output Torque		Nominal Output Speed (rpm)	Max Output Speed (rpm)	Available Load Inertia @ 5:1 Mismatch *			
				N-m	lb-in	N-m	lb-in			kg-cm2	lb-in-s2		
SV2L-201(x)	5:1	PGD047-05A1	47	0.32	2.83	1.52	13.44	600	1200.00	6.76	0.006		
		PGA050-05A1	50							6.94	0.006		
		PGA070-05A1	70							5.91	0.005		
		PGB070-05A1	70							1.59**	0.001**		
	10:1	PGD047-10A1	47			3.04	26.89			300	600.00	28.15	0.025
		PGA050-10A1	50									28.35	0.025
		PGA070-10A1	70									25.75	0.023
		PGB070-10A1	70									2.98	0.007**
	15:1	PGA050-15A1	50			4.32	38.21	200	400.00			62.66	0.055
		PGA070-15A1	70									58.16	0.051
		PGB070-15A1	70									4.22	0.048
	25:1	PGD047-25A1	47			7.20	63.68					120	240.00
		PGA050-25A1	50							174.69	0.155		
		PGA070-25A1	70							162.81	0.144		
		PGB070-25A1	70					7.04	0.134				
	50:1	PGD064-50A1	64			14.40	127.35	60	120.00	661.25	0.585		
SV2L-202(x)	5:1	PGD064-05A2	64	0.64	5.7	3.04	27.08	600	1200.00	28.75	0.025		
		PGA070-05A2	70							29.33	0.026		
		PGB070-05A2	70							2.98	0.022		
	10:1	PGD064-10A2	64			6.08	54.15			300	600.00	118.80	0.105
		PGA070-10A2	70									119.40	0.106
		PGB070-10A2	70									5.95	0.090
	15:1	PGA070-15A2	70			8.64	76.95	200	400.00			268.88	0.238
		PGB070-15A2	70									264.83	0.234
		PGB090-15A2	90									204.75	0.181
	25:1	PGD064-25A2	64			14.40	128.25			120	240.00	747.50	0.662
		PGA070-25A2	70									748.13	0.662
		PGB070-25A2	70									14.08	0.652
		PGB090-25A2	90					581.25	0.514				
	50:1	PGD090-25A2	90			14.40	128.25	60	120.00			700.00	0.620
		PGD090-50A2	90			28.80	256.50					2875.00	2.544
		PGD110-50A2	110			2125.00	1.881						
5:1	PGD064-05A2	64	6.03	53.20	600	1200.00	53.75					0.048	
	PGA070-05A2	70					54.33			0.048			
	PGB070-05A2	70					5.91			0.044			
10:1	PGD064-10A2	64	12.07	106.40			300	600.00	218.80	0.194			
	PGA070-10A2	70							219.40	0.194			
	PGB070-10A2	70							11.81	0.179			
15:1	PGA070-15A2	70	17.15	151.20	200	400.00			493.88	0.437			
	PGB070-15A2	70							489.83	0.433			
	PGB090-15A2	90							16.76	0.380			
25:1	PGD064-25A2	64	28.58	252.00			120	240.00	1372.50	1.215			
	PGA070-25A2	70							1373.13	1.215			
	PGB070-25A2	70							27.94	1.205			
	PGB090-25A2	90			1206.25	1.068							
50:1	PGD090-25A2	90	28.58	252.00	60	120.00			1325.00	1.173			
	PGD090-50A2	90	57.15	504.00					5375.00	4.757			
	PGD110-50A2	110	4625.00	4.093									

* Available load inertia is calculated based on servo motor inertia using the formula: Available Inertia = (5 x Motor Inertia – Gearbox Inertia) x (Gear Ratio)2 A 5:1 inertia mismatch is a good target for design purposes. Systems with lower or higher mismatch may be possible, depending on operating conditions.

** This gearbox is NOT a suitable choice at a 5:1 mismatch. If inertia balancing is a selection criteria for your end use, please use a mismatch of 8:1 to 10:1.



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Sure Servo Motor	Gear Ratio	SureGear Gearbox	Frame Size (mm)	Motor Nominal Output Torque		Combo Nominal Output Torque		Nominal Output Speed (rpm)	Max Output Speed (rpm)	Available Load Inertia @ 5:1 Mismatch *	
				N-m	lb-in	N-m	lb-in			kg-cm2	lb-in-s2
SV2L-207(x)	5:1	PGA070-05A3	70	2.39	21.2	11.35	100.70	600	1200.00	186.83	0.165
		PGB090-05A3	90			11.11	98.58			143.75	0.127
		PGD090-05A3	90			11.35	100.70			174.25	0.154
	10:1	PGA090-10A3	90			22.71	201.40	300	600.00	726.00	0.643
		PGB090-10A3	90			22.23	197.16			586.00	0.519
		PGD090-10A3	90			22.71	201.40			722.00	0.639
	15:1	PGA090-15A3	90			32.27	286.20	200	400.00	1669.50	1.478
		PGB090-15A3	90			31.55	279.84			1622.25	1.436
		PGA090-25A3	90			53.78	477.00			4643.75	4.110
	25:1	PGB090-25A3	90			52.58	466.40	120	240.00	4518.75	3.999
		PGD110-25A3	110			53.78	477.00			4281.25	3.789
		PGD110-50A3	110			107.55	954.00			17875.00	15.819
SV2L-210(x)	5:1	PGA090-05A4	90	3.18	28.15	15.11	133.69	600	1000.00	321.25	0.284
		PGB090-05A4	90			14.79	130.88			286.25	0.253
		PGD090-05A4	90			15.11	133.69			319.25	0.283
	10:1	PGA090-10A4	90			30.21	267.38	300	500.00	1296.00	1.147
		PGB090-10A4	90			29.57	261.75			1156.00	1.023
		PGD090-10A4	90			30.21	267.38			1292.00	1.143
	15:1	PGA120-15A4	120			42.93	379.96	200	333.33	2884.50	2.553
		PGB120-15A4	120			41.98	371.52			2475.00	2.190
		PGD110-25A4	110			71.55	633.27			7843.75	6.942
	25:1	PGA120-25A4	120			69.96	619.20	120	200.00	8043.75	7.119
		PGB120-25A4	120			69.96	619.20			6918.75	6.123
		PGD110-50A4	110			143.10	1266.54			32125.00	28.431
SV2M-210(x)	5:1	PGA090-05A5	90	4.77	42.22	22.66	200.54	400.00	600.00	1041.25	0.922
		PGD090-05A5	90			22.18	196.31			1039.25	0.920
		PGB120-05A5	120			22.18	196.31			925.75	0.819
	10:1	PGA090-10A5	90			45.32	401.07	200.00	300.00	4176.00	3.696
		PGD110-10A5	110			44.36	392.63			4172.00	3.692
		PGB120-10A5	120			44.36	392.63			3759.00	3.327
	15:1	PGA120-15A5	120			64.40	569.94	133.33	200.00	9364.50	8.288
		PGB120-15A5	120			62.96	557.28			8955.00	7.925
		PGD110-25A5	110			107.33	949.91			25843.75	22.872
	25:1	PGA120-25A5	120			104.94	928.80	80.00	120.00	26043.75	23.049
		PGB120-25A5	120			104.94	928.80			24918.75	22.053
		PGD110-35A5	110			150.26	1329.87			50653.75	44.829

* Available load inertia is calculated based on servo motor inertia using the formula: Available Inertia = (5 x Motor Inertia – Gearbox Inertia) x (Gear Ratio)² A 5:1 inertia mismatch is a good target for design purposes. Systems with lower or higher mismatch may be possible, depending on operating conditions.



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Sure Servo Motor	Gear Ratio	SureGear Gearbox	Frame Size (mm)	Motor Nominal Output Torque		Combo Nominal Output Torque		Nominal Output Speed (rpm)	Max Output Speed (rpm)	Available Load Inertia @ 5:1 Mismatch *			
				N-m	lb-in	N-m	lb-in			kg-cm2	lb-in-s2		
SV2M-215(x)	5:1	PGA090-05A5	90	7.16	63.37	34.01	301.01	400.00	600.00	1390.00	1.230		
		PGD090-05A5	90							1388.00	1.228		
		PGB120-05A5	120							1274.50	1.128		
	10:1	PGA090-10A5	90			68.02	602.03	200.00	300.00	5571.00	4.930		
		PGD110-10A5	110							5567.00	4.927		
		PGB120-10A5	120							5154.00	4.561		
	15:1	PGA120-15A5	120			96.66	855.51	133.33	200.00	12503.25	11.065		
		PGB120-15A5	120							12093.75	10.703		
		PGD110-25A5	110							34562.50	30.588		
	25:1	PGA120-25A5	120			161.10	1425.86	80.00	120.00	34762.50	30.765		
		PGB120-25A5	120							33637.50	29.769		
		PGD110-35A5	110							225.54	1996.20	57.14	85.71
SV2M-220(x)	5:1	PGD110-05A6	110	9.55	84.52	45.36	401.49	400.00	600.00	4280.00	3.788		
		PGA120-05A6	120							4297.50	3.803		
		PGB120-05A6	120			44.41	393.04			4212.00	3.728		
		PGB155-05A6	155			3914.75	3.465						
	10:1	PGD110-10A6	110			90.73	802.98	200.00	300.00	17240.00	15.257		
		PGA120-10A6	120							17255.00	15.271		
		PGB120-10A6	120							88.82	786.08	16904.00	14.960
		PGB155-10A6	155							15884.00	14.057		
	15:1	PGA155-15A6	155			128.93	1141.08	133.33	200.00	38745.00	34.289		
		PGB155-15A6	155							126.06	1115.73	37597.50	33.274
	25:1	PGA155-25A6	155			214.88	1901.80	80.00	120.00	107750.00	95.359		
		PGB155-25A6	155							210.10	1859.54	104593.75	92.565
SV2M-230(x)	5:1	PGD110-05A6	110	17.55	155.33	83.36	737.80	340.00	600.00	6817.50	6.033		
		PGA120-05A6	120							6835.00	6.049		
		PGB120-05A6	120			81.61	722.31			6749.50	5.973		
		PGB155-05A6	155			6452.25	5.710						
	10:1	PGD110-10A6	110			166.73	1475.68	170.00	300.00	27390.00	24.240		
		PGA120-10A6	120							27405.00	24.253		
		PGB120-10A6	120							163.22	1444.62	27054.00	23.943
		PGB155-10A6	155							26034.00	23.040		
	15:1	PGA155-15A6	155			236.93	2097.01	113.33	200.00	61582.50	54.501		
		PGB155-15A6	155							231.66	2050.36	60435.00	53.485
	25:1	PGA155-25A6	155			394.88	3494.98	68.00	120.00	171187.50	151.501		
		PGB155-25A6	155							386.10	3417.27	168031.25	148.708

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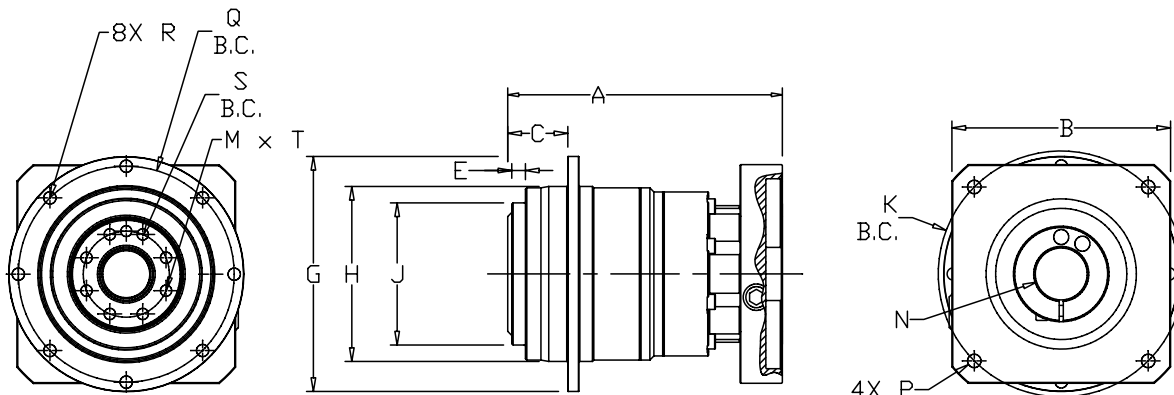
Pricing & Specifications – Hub Style In-Line PGD Series

SureGear® Precision Servo Gearboxes – Hub Style In-Line PGD Series																		
Part Number	Price	Frame Size (mm)	Ratio	Reduction	Nominal Output Torque (N·m [lb-in])	Max. Acceleration Torque (N·m [lb-in])	Emergency Stop Torque (N·m [lb-in])	Backlash (arc-min)	Nominal Input Speed (rpm)	Max. Input Speed (rpm)	Allowable Radial Load (N [lb])	Allowable Thrust Load (N [lb])	Moment of Inertia (kg-cm ²)	Efficiency (%)	Max. Housing Temperature	Approx Weight (kg [lb])	Ingress Protection (IP) Rating	Fits SureServo Servo Motor
PGD047-05A1	\$843.00	47	5:1	single	9 [80]	18 [159]	35 [310]	≤ 3	4000	8000	300 [67]	330 [74]	0.043	95		0.7 [1.5]		SV(2)L-201(B)
PGD047-10A1	\$843.00		10:1	single	6 [53]	12 [106]	30 [266]				370 [83]	450 [101]	0.032					
PGD047-25A1	\$1,056.00		25:1	double	9 [80]	18 [159]	35 [310]				510 [115]	550 [124]	0.034					
PGD064-50A1	\$1,277.00	64	50:1	double	27 [239]	50 [443]	100 [885]				850 [191]	750 [169]	0.049	90		1.6 [3.5]		SV(2)L-202(B) SV(2)L-204(B)
PGD064-05A2	\$1,090.00		5:1	single	27 [239]	50 [443]	100 [885]				400 [90]	390 [88]	0.1					
PGD064-10A2	\$1,090.00		10:1	single	18 [159]	35 [310]	80 [708]				500 [112]	530 [119]	0.062					
PGD064-25A2	\$1,277.00		25:1	double	27 [239]	50 [443]	100 [885]				680 [153]	750 [169]	0.054	90		1.6 [3.5]		
PGD090-25A2	\$1,464.00	90	25:1	double	75 [664]	125 [1106]	250 [2213]				1300 [292]	1400 [315]	0.130	90	90 °C [194 °F]	4 [8.8]	IP54	SV(2)L-207(B)
PGD090-50A2	\$1,464.00		50:1	double	75 [664]	125 [1106]	250 [2213]				1700 [382]	1700 [382]	0.099					
PGD090-05A3	\$1,277.00		5:1	single	75 [664]	125 [1106]	250 [2213]				780 [175]	680 [153]	0.580					
PGD090-10A3	\$1,277.00		10:1	single	50 [443]	80 [708]	200 [1770]				980 [220]	920 [207]	0.330	95		3.6 [7.9]		
PGD090-05A4	\$1,277.00		5:1	single	75 [664]	125 [1106]	250 [2213]				780 [175]	680 [153]	0.580	95		3.6 [7.9]		SV(2)L-210(B)
PGD090-10A4	\$1,277.00		10:1	single	50 [443]	80 [708]	200 [1770]				980 [220]	920 [207]	0.330	95		3.6 [7.9]		SV(2)L-210(B)
PGD090-05A5	\$1,277.00		5:1	single	75 [664]	125 [1106]	250 [2213]	≤ 3	3000	6000	780 [175]	680 [153]	0.580	95		3.6 [7.9]		SV(2)M-210(B)
PGD110-50A2	\$1,868.00	110	50:1	double	180 [1593]	330 [2921]	625 [5532]				10000 [2248]	6800 [1529]	0.400	90		8.6 [19]		SV(2)L-202(B) SV(2)L-204(B)
PGD110-25A3	\$1,868.00		25:1	double	180 [1593]	330 [2921]	625 [5532]				8200 [1843]	5500 [1236]	0.700					
PGD110-50A3	\$1,868.00		50:1	double	180 [1593]	330 [2921]	625 [5532]				10000 [2248]	6800 [1529]	0.400					
PGD110-25A4	\$1,868.00		25:1	double	180 [1593]	330 [2921]	625 [5532]				8200 [1843]	5500 [1236]	0.700	90		8.6 [19]		SV(2)L-207(B)
PGD110-50A4	\$1,868.00		50:1	double	180 [1593]	330 [2921]	625 [5532]				10000 [2248]	6800 [1529]	0.400	90		8.6 [19]		SV(2)L-210(B)
PGD110-10A5	\$1,588.00		10:1	single	120 [1062]	225 [1991]	500 [4425]				6200 [1394]	4200 [944]	1.100	95		7.8 [17.2]		SV(2)M-210(B)
PGD110-25A5	\$1,868.00		25:1	double	180 [1593]	330 [2921]	625 [5532]				8200 [1843]	5500 [1236]	0.700	90		8.6 [19]		SV(2)M-210(B)
PGD110-35A5	\$1,868.00		35:1	double	180 [1593]	330 [2921]	625 [5532]				9000 [2023]	6100 [1371]	0.700	90		8.6 [19]		SV(2)M-220(B) SV(2)M-230(B)
PGD110-05A6	\$1,588.00		5:1	single	180 [1593]	330 [2921]	625 [5532]				5000 [1124]	3400 [427]	2.300	95		7.8 [17.2]		
PGD110-10A6	\$1,588.00		10:1	single	120 [1062]	225 [1991]	500 [4425]				6200 [1394]	4200 [944]	1.100	95		7.8 [17.2]		



Precision Servo Gearboxes

Dimensions – Hub Style In-Line PGD Series



SureGear PGD Series Hub Style In-Line Gearboxes Dimension Drawing

SureGear® Precision Servo Gearbox Dimensions – Hub Style In-Line PGD Series (dimensions = mm [in])																
	Part Number	A*	B*	C	E	G	H	J	K	M	N**	P	Q	R	S	T
1	PGD047-05A1 PGD047-10A1	66.5 [2.62]	42.0 [1.65]	19.5 [0.7677]	3.0 [0.1181]	Ø72.0 [Ø2.83]	Ø47.0 [Ø1.85]	Ø28.0 [Ø1.102]	Ø46.0 [Ø1.811]	4	Ø8.0 [Ø0.31]	M4-0.7x9	Ø67.0 [Ø2.6378]	3.4 [0.13]	Ø20.0 [Ø0.7874]	M3-0.5x6.5
2	PGD047-25A1															
2	PGD064-50A1	98.0 [3.86]	52.0 [2.05]	19.5 [0.7677]	3.0 [0.1181]	Ø86.0 [Ø3.385]	Ø64.0 [Ø2.52]	Ø40.0 [Ø1.575]	Ø70.0 [Ø2.756]	8	Ø8.0 [Ø0.31]	M5-0.8x11	Ø79.0 [Ø3.11]	4.5 [0.18]	Ø31.5 [Ø1.24]	M5-0.8x10
1	PGD064-05A2 PGD064-10A2	82.0 [3.228]														
2	PGD064-25A2	103.0 [4.055]	65.0 [2.56]	19.5 [0.7677]	3.0 [0.1181]	Ø86.0 [Ø3.385]	Ø64.0 [Ø2.52]	Ø40.0 [Ø1.575]	Ø70.0 [Ø2.756]	8	Ø14.0 [Ø0.55]	M5-0.8x11	Ø79.0 [Ø3.11]	4.5 [0.18]	Ø31.5 [Ø1.24]	M5-0.8x10
1	PGD064-05A2 PGD064-10A2	82.0 [3.228]														
2	PGD090-25A2 PGD090-50A2	122.0 [4.803]		30.0 [1.1811]	6.0 [0.236]	Ø118.0 [Ø4.65]	Ø90.0 [Ø3.54]	Ø63.0 [Ø2.48]	Ø90.0 [Ø3.543]	8	Ø14.0 [Ø0.55]	M6-1.0x13	Ø109.0 [Ø4.30]	5.5 [0.22]	Ø50.0 [Ø1.9685]	M6-1.0x12
1	PGD090-05A3 PGD090-10A3	110.0 [4.33]	80.0 [3.15]													
1	PGD090-05A4 PGD090-10A4	127.0 [5.0]	100.0 [3.94]	30.0 [1.1811]	6.0 [0.236]	Ø118.0 [Ø4.65]	Ø90.0 [Ø3.54]	Ø63.0 [Ø2.48]	Ø115.0 ±0.2 [Ø4.528]	8	Ø28.0 [Ø1.102]	M8-1.25x17	Ø109.0 [Ø4.30]	5.5 [0.22]	Ø50.0 [Ø1.9685]	M6-1.0x12
1	PGD090-05A5		130.0 [5.12]													
2	PGD110-50A2	159.5 [6.28]	65.0 [2.56]	29.0 [1.142]	6.0 [0.236]	Ø145.0 [Ø5.70]	Ø110.0 [Ø4.33]	Ø80.0 [Ø3.15]	Ø70.0 [Ø2.756]	15	Ø14.0 [Ø0.55]	M5-0.8x11	Ø135.0 [Ø5.315]	5.5 [0.22]	Ø63.0 [Ø2.48]	M6-1.0x12
2	PGD110-25A3 PGD110-50A3	169.5 [6.673]	80.0 [3.15]													
2	PGD110-25A4 PGD110-50A4	186.5 [7.3425]	100.0 [3.94]	29.0 [1.142]	6.0 [0.236]	Ø145.0 [Ø5.70]	Ø110.0 [Ø4.33]	Ø80.0 [Ø3.15]	Ø115.0 ±0.2 [Ø4.528]	15	Ø28.0 [Ø1.102]	M8-1.25x17	Ø135.0 [Ø5.315]	5.5 [0.22]	Ø63.0 [Ø2.48]	M6-1.0x12
1	PGD110-10A5	159.0 [6.26]														
2	PGD110-25A5 PGD110-35A5	186.5 [7.3425]	130.0 [5.12]	29.0 [1.142]	6.0 [0.236]	Ø145.0 [Ø5.70]	Ø110.0 [Ø4.33]	Ø80.0 [Ø3.15]	Ø200.0 ±0.2 [Ø7.874]	15	Ø38.0 [Ø1.45]	M12-1.75x25	Ø135.0 [Ø5.315]	5.5 [0.22]	Ø63.0 [Ø2.48]	M6-1.0x12
1	PGD110-05A6 PGD110-10A6	180.0 [7.087]	180.0 [7.087]													

* Length will vary depending on motor

** Bushing will be inserted to adapt to motor shaft

NOTE: See our website: www.AutomationDirect.com for complete engineering drawings.



Precision Servo Gearboxes

SureGear® Servo Gearbox Replacement Parts



SureGear® Precision Servo Gearboxes – Replacement Parts		
Part Number	Price	Description
<u>PG050-KEY</u>	\$4.50	Output Shaft Key, replacement, 4 x 4 x 14 mm, for SureGear PGA050 series gearboxes.
<u>PG070-KEY</u>	\$4.50	Output Shaft Key, replacement, 5 x 5 x 22 mm, for SureGear PGA070 and PGB070 series gearboxes.
<u>PG090-KEY</u>	\$4.50	Output Shaft Key, replacement, 6 x 6 x 28 mm, for SureGear PGA090 and PGB090 series gearboxes.
<u>PG120-KEY</u>	\$4.50	Output Shaft Key, replacement, 10 x 8 x 45 mm, for SureGear PGA120 and PGB120 series gearboxes.
<u>PG155-KEY</u>	\$4.50	Output Shaft Key, replacement, 12 x 8 x 65 mm, for SureGear PGA155 and PGB155 series gearboxes.
<u>PGA4-A5-BUSH</u>	\$22.50	Input Shaft Bushing, replacement, 28 x 22 x 30.5 mm, for all SureGear gearboxes using SV(2)L-210(B) and SV(2)M-210(B) SureServo motors.
<u>PGA6-BUSH</u>	\$22.50	Input Shaft Bushing, replacement, 38 x 35 x 36 mm, for all SureGear gearboxes using SV(2)M-220(B) and SV(2)M-230(B) SureServo motors.