

SureGear® Precision Servo Gearboxes

SureGear® Servo Gearbox Overview

PGA In-line Series

The SureGear PGA series of high-precision servo gear reducers is an excellent choice for applications that require good accuracy and reliability at an exceptional value. This in-line planetary gear reducer has a thread-in mounting style, along with a level of precision and torque capacity that is best in its class. Offered in a concentric shaft design with a maximum seven arc-min backlash rating, the SureGear PGA series is an accurate, high-performance, and cost effective solution for any OEM.

The machining quality of the SureGear PGA helical planetary gears provides a very quiet and more efficient reducer than other competitive products that are similarly priced. The SureGear PGA series easily mates to SureServo motors, and is the perfect solution for applications such as gantries, injection-molding machines, pick-and-place automation, and linear slides.

PGB Right-angle Series

The SureGear PGB series of high-precision right-angle servo gear reducers is an excellent choice for applications that require a more compact footprint.

The PGB right-angle planetary gear reducers offer similar technical specifications to the PGA series in-line gear reducers, and provides the customer with an excellent solution when space and clearance requirements are limited.

Offered with a six arc-min backlash rating for 2-stage and nine arc-min backlash for 3-stage, the SureGear PGB series performs to OEMs' demanding expectations.

PGD Hub Style In-line Series

The SureGear PGD series sets a new standard in applications requiring extremely high-torque ratings and rigidity. The compact design and hub-style output is ideal for equipment that requires high-speed, high-precision indexing movement. The remarkable torsion stiffness and the low backlash of the planetary gearing combine to provide outstanding positioning accuracy.

With a backlash rating less than 3 arc-minutes and exceptional torque handling capabilities, the PGD series offers a high performance robust planetary solution for OEM customers. The PGD reducer is often used for larger indexing applications and dial tables commonly found in packaging and filling equipment and assembly automation systems.

Features

- Thread-in mounting style
- Best-in-class backlash
- Four gear ratios available (5:1, 10:1, 15:1, 25:1), Two additional for PGD models (35:1 and 50:1)
- Mounting hardware included for attaching to SureServo motors
- Helical-cut planetary gears for quiet operation and reduced vibration
- Right-angle reducer utilizes a spiral bevel gear; motor can be located at a 90° position from the reducer, providing a more compact footprint
- Uncaged needle roller bearings for high rigidity and torque
- Adapter bushing connection for simple and effective attachment to most servo motors
- High-viscosity, anti-separation grease does not migrate away from the gears; no leakage through the seal
- Maintenance free: No need to replace the grease for the life of the unit
- At nominal speed, service life is 20,000 hours
- Can be positioned in any orientation
- IP55 environmental rating
- 5-year warranty



**SureGear
PGA Gearbox**



SureGear PGB Gearbox



**SureGear
Hub Style PGD Gearbox**



**SureGear
2-Stage Cutaway View**

Applications

- Gantries
- Injection-molding machines
- Pick-and-place automation
- Linear slides
- Packaging machines
- Conveyors



Suregear® Precision Servo Gearboxes

SureGear® Servo Gearbox Selection

Company Information

Drives

Soft Starters

Motors

Power Transmission

Motion: Servos and Steppers

Motor Controls

Sensors: Proximity

Sensors: Photoelectric

Sensors: Encoders

Sensors: Limit Switches

Sensors: Current

Sensors: Pressure

Sensors: Temperature

Sensors: Level

Sensors: Flow

Pushbuttons and Lights

Stacklights

Signal Devices

Process

Relays and Timers

Pneumatics: Air Prep

Pneumatics: Directional Control Valves

Pneumatics: Cylinders

Pneumatics: Tubing

Pneumatics: Air Fittings

Appendix Book 2

Terms and Conditions

SureGear® Servo Gearbox Selection														
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-cm ²	lb-in-s ²			
SVL-201(B)	5:1	PGD047-05A1	47	0.32	2.83	1.52	13.44	600	1,000	2.68	0.002			
		PGA050-05A1	50							2.85	0.003			
		PGA070-05A1	70							1.83	0.002			
		PGB070-05A1	70							-2.50**	-0.002**			
	10:1	PGD047-10A1	47			3.04	26.89	300	500	11.80	0.010			
		PGA050-10A1	50							12.00	0.011			
		PGA070-10A1	70							9.40	0.008			
		PGB070-10A1	70							-8.00**	-0.007**			
	15:1	PGA050-15A1	50			4.32	38.21	200	333	25.88	0.023			
		PGA070-15A1	70							21.38	0.019			
		PGB070-15A1	70							17.33	0.015			
		PGD047-25A1	47							72.50	0.064			
	25:1	PGA050-25A1	50			7.20	63.68	120	200	72.50	0.064			
		PGA070-25A1	70							60.63	0.054			
		PGB070-25A1	70							49.38	0.044			
		PGD064-50A1	64							14.40	0.223			
SVL-202(B)	5:1	PGD064-05A2	64	0.64	5.7	3.04	27.08	600	1,000	20.00	0.018			
		PGA070-05A2	70							20.58	0.018			
		PGB070-05A2	70							16.25	0.014			
		PGD064-10A2	64							83.80	0.074			
	10:1	PGA070-10A2	70			6.08	54.15	300	500	84.40	0.075			
		PGB070-10A2	70							5.95	0.059			
		PGA070-15A2	70							8.64	0.168			
		PGB070-15A2	70							8.45	0.165			
	15:1	PGA090-15A2	90			8.45	75.24	200	333	126.00	0.112			
		PGD064-25A2	64							14.40	0.468			
		PGA070-25A2	70							529.38	0.468			
		PGB070-25A2	70							14.08	0.459			
	25:1	PGB090-25A2	90			14.08	125.40	120	200	362.50	0.321			
		PGD090-25A2	90							14.40	0.426			
		PGD090-50A2	90							28.80	1.770			
		PGD110-50A2	110							1250.00	1.106			
	SVL-204(B)	5:1	PGD064-05A2			64	1.27	11.2	6.03	53.20	600	1,000	40.00	0.035
			PGA070-05A2			70							40.58	0.036
			PGB070-05A2			70							5.91	0.032
			PGD064-10A2			64							12.07	0.145
10:1		PGA070-10A2	70	12.07	106.40	300			500	163.80	0.145			
		PGB070-10A2	70							11.81	0.130			
		PGA070-15A2	70							17.15	0.328			
		PGB070-15A2	70							16.76	0.324			
15:1		PGB090-15A2	90	16.76	147.84	200			333	306.00	0.271			
		PGD064-25A2	64							28.58	0.910			
		PGA070-25A2	70							1029.38	0.911			
		PGB070-25A2	70							27.94	0.901			
25:1		PGB090-25A2	90	27.94	246.40	120			200	862.50	0.763			
		PGD090-25A2	90							28.58	0.868			
		PGD090-50A2	90							57.15	3.540			
		PGD110-50A2	110							3250.00	2.876			
SVL-207(B)	5:1	PGA070-05A3	70	2.39	21.2	11.35	100.70	600	1000	133.08	0.118			
		PGB090-05A3	90							11.11	0.080			
		PGD090-05A3	90							11.35	0.107			
		PGA090-10A3	90							22.71	0.452			
	10:1	PGB090-10A3	90			22.23	197.16	300	500	371.00	0.328			
		PGD090-10A3	90							22.71	0.449			
		PGA090-15A3	90							32.27	1.049			
		PGB090-15A3	90							31.55	1.008			
	15:1	PGA090-25A3	90			53.78	477.00	200	333	1138.50	1.008			
		PGB090-25A3	90							53.78	2.921			
		PGD110-25A3	110							52.58	2.810			
		PGD110-50A3	110							53.78	2.600			
	25:1	PGD110-50A3	110			107.55	954.00	60	100	12500.00	11.063			

* 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.

Suregear® Precision Servo Gearboxes

SureGear® Servo Gearbox Selection (continued)

SureGear® Servo Gearbox Selection														
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-cm ²	lb-in-s ²			
SVL-210(B)	5:1	PGA090-05A4	90	3.3	29.2	15.68	138.70	600	1000	315.00	0.279			
		PGB090-05A4	90			15.35	135.78			280.00	0.248			
		PGD090-05A4	90			15.68	138.70			313.00	0.277			
	10:1	PGA090-10A4	90			31.45	277.40	300	500	1271.00	1.125			
		PGB090-10A4	90			30.69	271.56			1131.00	1.001			
		PGD090-10A4	90			31.35	277.40			1267.00	1.121			
	15:1	PGA120-15A4	120			44.55	394.20	200	333	2828.25	2.503			
		PGB120-15A4	120			43.56	385.44			2418.75	2.141			
	25:1	PGD110-25A4	110			74.25	657.00	120	200	7687.50	6.803			
		PGA120-25A4	120			72.60	642.40			7887.50	6.980			
		PGB120-25A4	120			72.60	642.40			6762.50	5.985			
	50:1	PGD110-50A4	110			148.50	1314.00	60	100	31500.00	27.878			
SVM-210(B)	5:1	PGA090-05A5	90	4.8	42.5	22.80	201.88	600	1000	737.50	0.653			
		PGD090-05A5	90			22.32	197.63			735.50	0.651			
		PGB120-05A5	120			22.32	197.63			622.00	0.550			
	10:1	PGA090-10A5	90			45.60	403.75	300	500	2961.00	2.620			
		PGD110-10A5	110			44.64	395.25			2957.00	2.617			
		PGB120-10A5	120			44.64	395.25			2544.00	2.251			
	15:1	PGA120-15A5	120			64.80	573.75	200	333	6630.75	58.68			
		PGB120-15A5	120			63.36	561.00			6221.25	5.506			
	25:1	PGD110-25A5	110			108.00	956.25	120	200	18250.00	16.151			
		PGA120-25A5	120			105.60	935.00			18450.00	16.328			
		PGB120-25A5	120			105.60	935.00			17325.00	15.333			
	35:1	PGD110-35A5	110			151.20	1338.75	86	143	35770.00	31.656			
	SVM-220(B)	5:1	PGD110-05A6			110	9.4	83.2	44.65	395.20	600	1000	5355.00	4.739
			PGA120-05A6			120			43.71	386.88			5372.50	4.755
PGB120-05A6			120	43.71	386.88	5287.00			4.679					
PGB155-05A6			155	43.71	386.88	4989.75			4.416					
10:1		PGD110-10A6	110	89.30	790.40	300			500	21540.00	19.063			
		PGA120-10A6	120	87.42	773.76					21555.00	19.076			
		PGB120-10A6	120	87.42	773.76					21204.00	18.766			
15:1		PGB155-10A6	155	126.90	1123.20	200			333	20184.00	17.863			
		PGA155-15A6	155	124.08	1098.24					48420.00	42.852			
25:1		PGB155-15A6	155	211.50	1872.00	120			200	47272.50	41.836			
		PGA155-25A6	155	206.80	1830.40					134625.00	119.143			
SVM-230(B)		5:1	PGB155-25A6	155	14.3	12.6			211.50	1872.00	600	1000	131468.75	116.350
			PGA155-25A6	155					206.80	1830.40			134625.00	119.143
			PGD110-05A6	110					67.93	601.35			5355.00	4.739
	10:1	PGA120-05A6	120	66.50			588.69	300	500	5372.50	4.755			
		PGB120-05A6	120	66.50			588.69			5287.00	4.679			
		PGD110-10A6	110	135.85			1202.70			21540.00	19.063			
	15:1	PGA120-10A6	120	132.99			1177.38	200	333	21555.00	19.076			
		PGB120-10A6	120	132.99			1177.38			21204.00	18.766			
		PGB155-10A6	155	132.99			1177.38			20184.00	17.863			
	25:1	PGA155-15A6	155	193.05			1709.10	120	200	48420.00	42.852			
		PGB155-15A6	155	188.76			1671.12			47272.50	41.836			
	25:1	PGA155-25A6	155	321.75			2848.50	120	200	134625.00	119.143			
		PGB155-25A6	155	314.60			2785.20			131468.75	116.350			

* Available load inertia is calculated based on servo motor inertia using the formula: $Available\ Inertia = (5 \times Motor\ Inertia - Gearbox\ Inertia) \times (Gear\ Ratio)^2$
 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.



Suregear® Precision Servo Gearboxes

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])	Environmental Rating	Fits SureServo Servo Motor	
PGD047-05A1	\$722.00	47	5:1	single	9 [80]	18 [159]	35 [310]	≤ 3	4000	8000	300 [67]	330 [74]	0.043	95	90 °C [194 °F]	0.7 [1.5]	IP54 (IP65)	SVL-201(B)	
PGD047-10A1	\$722.00		10:1	single	6 [53]	12 [106]	30 [266]				≤ 5	370 [83]							450 [101]
PGD047-25A1	\$902.00		25:1	double	9 [80]	18 [159]	35 [310]	510 [115]				550 [124]	0.034						90
PGD064-50A1	\$1,092.00	64	50:1	double	27 [239]	50 [443]	100 [885]	≤ 3	3000	6000	850 [191]	750 [169]	0.049	90	90 °C [194 °F]	1.6 [3.5]	IP54 (IP65)	SVL-202(B) SVL-204(B)	
PGD064-05A2	\$932.00		5:1	single	27 [239]	50 [443]	100 [885]				400 [90]	390 [88]	0.1	95					1.4 [3.1]
PGD064-10A2	\$932.00		10:1	single	18 [159]	35 [310]	80 [708]				500 [112]	530 [119]	0.062	95					1.4 [3.1]
PGD064-25A2	\$1,092.00	25:1	double	27 [239]	50 [443]	100 [885]	680 [153]	750 [169]	0.054	90	1.6 [3.5]								
PGD090-25A2	\$1,252.00	90	25:1	double	75 [664]	125 [1106]	250 [2213]	≤ 3	3000	6000	1300 [292]	1400 [315]	0.130	90	90 °C [194 °F]	4 [8.8]	IP54 (IP65)	SVL-207(B)	
PGD090-50A2	\$1,252.00		50:1	double	75 [664]	125 [1106]	250 [2213]				1700 [382]	1700 [382]	0.099	90					4 [8.8]
PGD090-05A3	\$1,092.00		5:1	single	75 [664]	125 [1106]	250 [2213]				780 [175]	680 [153]	0.580	95					3.6 [7.9]
PGD090-10A3	\$1,092.00	10:1	single	50 [443]	80 [708]	200 [1770]	980 [220]	920 [207]	0.330	95	3.6 [7.9]								
PGD090-05A4	\$1,092.00	5:1	single	75 [664]	125 [1106]	250 [2213]	780 [175]	680 [153]	0.580	95	3.6 [7.9]								
PGD090-10A4	\$1,092.00	10:1	single	50 [443]	80 [708]	200 [1770]	980 [220]	920 [207]	0.330	95	3.6 [7.9]								
PGD090-05A5	\$1,092.00	5:1	single	75 [664]	125 [1106]	250 [2213]	780 [175]	680 [153]	0.580	95	3.6 [7.9]								
PGD110-50A2	\$1,598.00	110	50:1	double	180 [1593]	330 [2921]	625 [5532]	≤ 3	3000	6000	10000 [2248]	6800 [1529]	0.400	90	90 °C [194 °F]	8.6 [19]	IP54 (IP65)	SVL-202(B) SVL-204(B)	
PGD110-25A3	\$1,598.00		25:1	double	180 [1593]	330 [2921]	625 [5532]				8200 [1843]	5500 [1236]	0.700	90					8.6 [19]
PGD110-50A3	\$1,598.00		50:1	double	180 [1593]	330 [2921]	625 [5532]				10000 [2248]	6800 [1529]	0.400	90					8.6 [19]
PGD110-25A4	\$1,598.00	25:1	double	180 [1593]	330 [2921]	625 [5532]	8200 [1843]	5500 [1236]	0.700	90	8.6 [19]								
PGD110-50A4	\$1,598.00	50:1	double	180 [1593]	330 [2921]	625 [5532]	10000 [2248]	6800 [1529]	0.400	90	8.6 [19]								
PGD110-10A5	\$1,358.00	10:1	single	120 [1062]	225 [1991]	500 [4425]	6200 [1394]	4200 [944]	1.100	95	7.8 [17.2]								
PGD110-25A5	\$1,598.00	25:1	double	180 [1593]	330 [2921]	625 [5532]	8200 [1843]	5500 [1236]	0.700	90	8.6 [19]								
PGD110-35A5	\$1,598.00	35:1	double	180 [1593]	330 [2921]	625 [5532]	9000 [2023]	6100 [1371]	0.700	90	8.6 [19]								
PGD110-05A6	\$1,358.00	5:1	single	180 [1593]	330 [2921]	625 [5532]	5000 [1124]	3400 [427]	2.300	95	7.8 [17.2]								
PGD110-10A6	\$1,358.00	10:1	single	120 [1062]	225 [1991]	500 [4425]	6200 [1394]	4200 [944]	1.100	95	7.8 [17.2]								

Company Information

Drives

Soft Starters

Motors

Power Transmission

Motion: Servos and Steppers

Motor Controls

Sensors: Proximity

Sensors: Photoelectric

Sensors: Encoders

Sensors: Limit Switches

Sensors: Current

Sensors: Pressure

Sensors: Temperature

Sensors: Level

Sensors: Flow

Pushbuttons and Lights

Stacklights

Signal Devices

Process

Relays and Timers

Pneumatics: Air Prep

Pneumatics: Directional Control Valves

Pneumatics: Cylinders

Pneumatics: Tubing

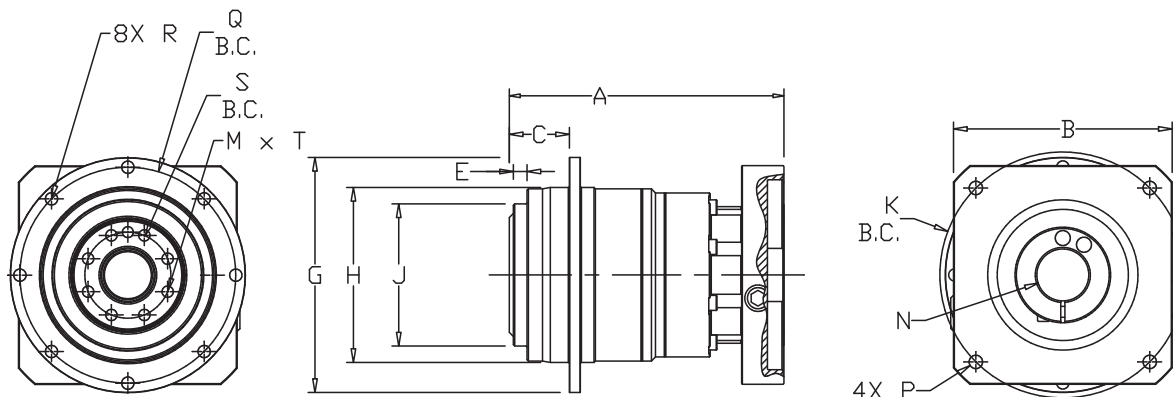
Pneumatics: Air Fittings

Appendix Book 2

Terms and Conditions

Suregear® 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]			Ø72.0 [Ø2.83]	Ø47.0 [Ø1.85]	Ø28.0 [Ø1.102]		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								Ø46.0 [Ø1.811]							
2	PGD064-50A1	98.0 [3.86]	52.0 [2.05]	19.5 [0.7677]	3.0 [0.1181]						Ø8.0 [Ø0.31]					M5-0.8x10
1	PGD064-05A2 PGD064-10A2	82.0 [3.228]				Ø86.0 [Ø3.385]	Ø64.0 [Ø2.52]	Ø40.0 [Ø1.575]		8	Ø14.0 [Ø0.55]		Ø79.0 [Ø3.11]	4.5 [0.18]	Ø31.5 [Ø1.24]	M5-0.8x4
2	PGD064-25A2	103.0 [4.055]	65.0 [2.56]						Ø70.0 [Ø2.756]		Ø14.0 [Ø0.55]	M5-0.8x11				M5-0.8x10
2	PGD090-25A2 PGD090-50A2	122.0 [4.803]									Ø14.0 [Ø0.55]					
1	PGD090-05A3 PGD090-10A3	110.0 [4.33]	80.0 [3.15]						Ø90.0 [Ø3.543]	8	Ø19.0 [Ø0.75]	M6-1.0x13	Ø109.0 [Ø4.30]		Ø50.0 [Ø1.9685]	
1	PGD090-05A4 PGD090-10A4	127.0 [5.0]	130.0 [5.12]	30.0 [1.1811]		Ø118.0 [Ø4.65]	Ø90.0 [Ø3.54]	Ø63.0 [Ø2.48]	Ø145.0 ±0.2 [Ø5.709]		Ø28.0 [Ø1.102]	M8-1.25x17				
1	PGD090-05A5								Ø115.0 ±0.2 [Ø4.528]							
2	PGD110-50A2	159.5 [6.28]	65.0 [2.56]		6.0 [0.236]				Ø70.0 [Ø2.756]		Ø14.0 [Ø0.55]	M5-0.8x11				
2	PGD110-25A3 PGD110-50A3	169.5 [6.673]	80.0 [3.15]						Ø90.0 [Ø3.543]		Ø19.0 [Ø0.75]	M6-1.0x13		5.5 [0.22]		M6-1.0x12
2	PGD110-25A4 PGD110-50A4	186.5 [7.3425]		29.0 [1.142]		Ø145.0 [Ø5.70]	Ø110.0 [Ø4.33]	Ø80.0 [Ø3.15]	Ø145.0 ±0.2 [Ø5.709]	15			Ø135.0 [Ø5.315]		Ø63.0 [Ø2.48]	
1	PGD110-10A5	159.0 [6.26]	130.0 [5.12]						Ø115.0 ±0.2 [Ø4.528]		Ø28.0 [Ø1.102]	M8-1.25x17				
2	PGD110-25A5 PGD110-35A5	186.5 [7.3425]														
1	PGD110-05A6 PGD110-10A6	180.0 [7.087]	180.0 [7.087]	130.0 [5.12]					Ø200.0 ±0.2 [Ø7.874]		Ø38.0 [Ø1.45]	M12-1.75x25				
* 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.																

Suregear® Precision Servo Gearboxes

SureGear® Servo Gearbox Replacement Parts



SureGear® Precision Servo Gearboxes – Replacement Parts		
Part Number	Price	Description
PG050-KEY	\$4.00	Output Shaft Key, replacement, 4 x 4 x 14 mm, for SureGear PGA050 series gearboxes.
PG070-KEY	\$4.00	Output Shaft Key, replacement, 5 x 5 x 22 mm, for SureGear PGA070 and PGB070 series gearboxes.
PG090-KEY	\$4.00	Output Shaft Key, replacement, 6 x 6 x 28 mm, for SureGear PGA090 and PGB090 series gearboxes.
PG120-KEY	\$4.00	Output Shaft Key, replacement, 10 x 8 x 45 mm, for SureGear PGA120 and PGB120 series gearboxes.
PG155-KEY	\$4.00	Output Shaft Key, replacement, 12 x 8 x 65 mm, for SureGear PGA155 and PGB155 series gearboxes.
PGA4-A5-BUSH	\$19.00	Input Shaft Bushing, replacement, 28 x 22 x 30.5 mm, for all SureGear gearboxes using SVL-210(B) and SVM-210(B) SureServo motors.
PGA6-BUSH	\$19.00	Input Shaft Bushing, replacement, 38 x 35 x 36 mm, for all SureGear gearboxes using SVM-220(B) and SVM-230(B) SureServo motors.

Company Information

Drives

Soft Starters

Motors

Power Transmission

Motion: Servos and Steppers

Motor Controls

Sensors: Proximity

Sensors: Photoelectric

Sensors: Encoders

Sensors: Limit Switches

Sensors: Current

Sensors: Pressure

Sensors: Temperature

Sensors: Level

Sensors: Flow

Pushbuttons and Lights

Stacklights

Signal Devices

Process

Relays and Timers

Pneumatics: Air Prep

Pneumatics: Directional Control Valves

Pneumatics: Cylinders

Pneumatics: Tubing

Pneumatics: Air Fittings

Appendix Book 2

Terms and Conditions