



▶ HIGHEST PRECISION: SPL SERIES

GAM can. Just ask!

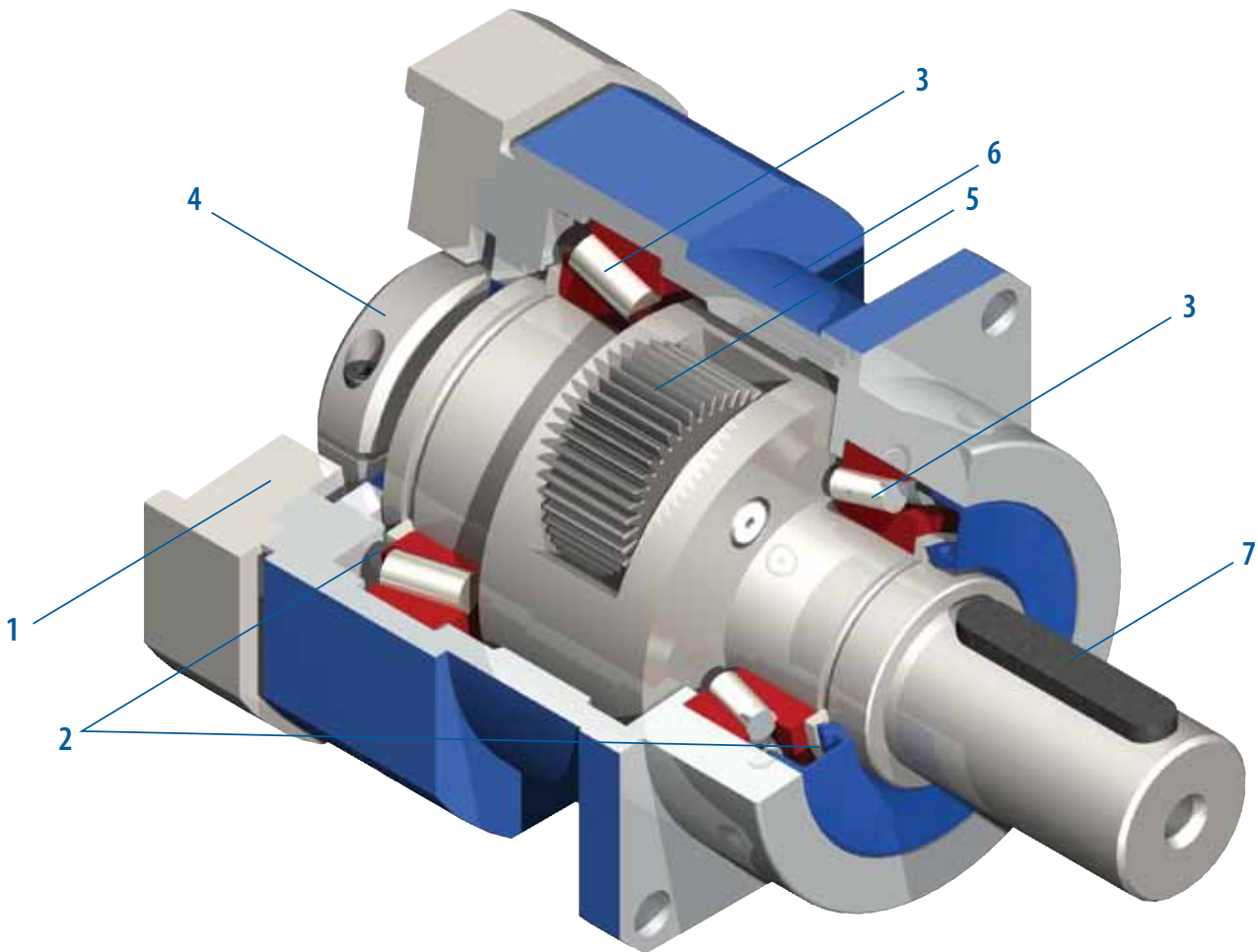
If you don't see exactly what you need, let us know. We can modify the SPL Series gearboxes to meet your needs. Page 3 provides a list of commonly requested modifications to give you a feel for our capabilities.

The SPL is the next generation of our I.M.P.A.C.T.® series. It has been designed with the latest servo motors and your most demanding motion control applications in mind. The SPL can handle oversized motor shafts, higher input speeds, and high torques. Now the SPL has been expanded to incorporate our unique Integrated Modular Planetary and Coupling Technology (I.M.P.A.C.T.®). Our planetary and coupling package increases system stiffness and reduces the overall costs of conventional packages.

The SPL gearbox performance and quality, along with GAM's manufacturing flexibility and overall service, will provide you with the best solution on the market!

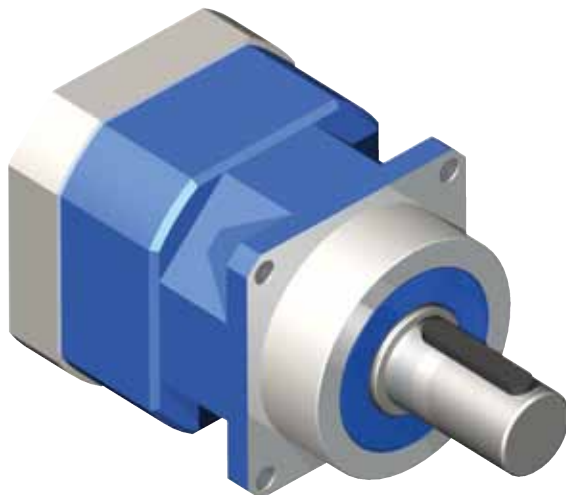
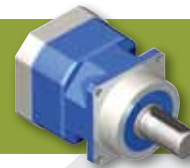
Benefits of the SPL Series include:

- Precision gears equal low backlash with quiet operation
- Long wear life: 30,000 hours
- Lubricated for life
- Ready for motor mounting
- Output dimensions match those of many conventional planetary gearboxes on the market
- Ratios from 3:1 to 100:1
- Frame sizes from 60 mm to 180 mm



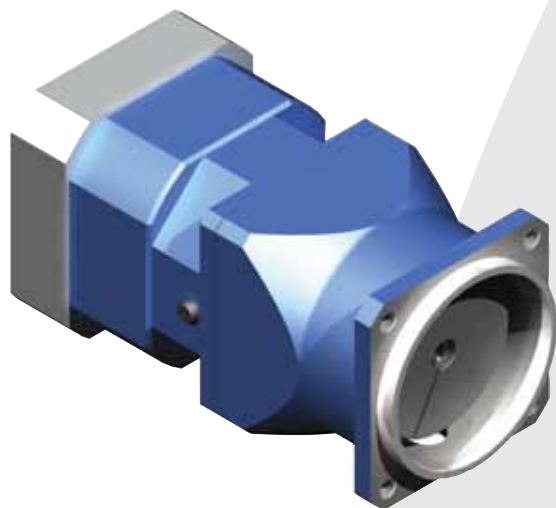
1. Adapter Flange
(Customized adapter flanges for quick and easy motor mounting)
2. Viton® Seals
(Protective seals to isolate the gearbox)
3. Bearings
(Tapered roller bearings accommodate high overhung loads)

4. Input Clamping Element
5. Planet Gears
(Extra large face width gears pack a high level of torque in a small gearbox frame)
6. Gear Housing
(Ring gear incorporated into housing)
7. Keyway
(Available with keyway on output shaft)



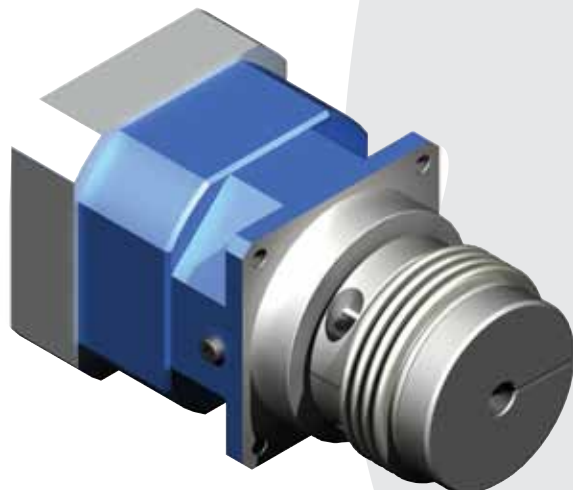
SPL-W

- Shaft output design for mounting to pulleys and rack and pinion systems
- Ratios from 3:1 to 100:1
- Frame sizes from 60 mm to 180 mm (larger sizes available by request)



SPL-K

- SPL-KB features a bellows coupling on the output
- Innovative bellow coupling on the output provides for maximum stiffness and best results in high dynamic applications
- Also available with a zero backlash elastomer-spider style coupling (SPL-KE) on the output
- Ratios from 3:1 to 100:1
- Frame sizes from 60 mm to 180 mm
- Output lantern comes standard with the SPL-K
- Custom lanterns available

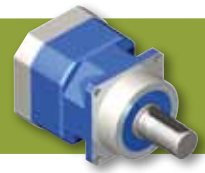


SPL-F

- Same benefits as the SPL-K models without the bell housing on the output. Plug the gearbox into your machine and achieve a more compact design
- Ratios from 3:1 to 100:1
- Frame sizes from 60 mm to 180 mm

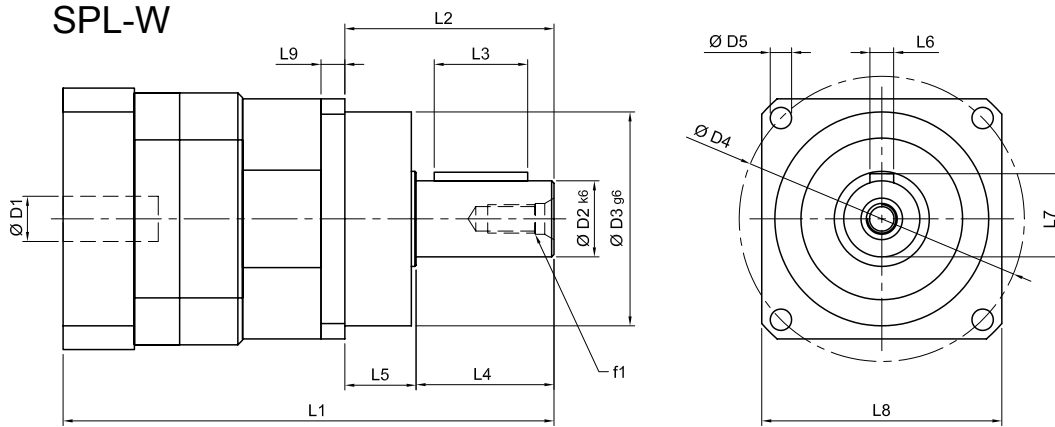


SPL SERIES - SPL-W



SPL - W		60	75	100	140	180	
Stock Ratios		5,10					
All Ratios Available		1 Stage: 3, 4, 5, 7, 10 2 Stage: 12, 16, 20, 25, 35, 40, 50, 70, 100					
Nominal Output Torque (T_{2n})	Nm (lb-in)	3:1	26 (230)	39 (345)	110 (974)	210 (1859)	600 (5310)
		4, 5, 7:1	32 (283)	65 (575)	150 (1328)	340 (3009)	600 (5310)
		10:1	24 (212)	40 (354)	115 (1018)	210 (1859)	600 (5310)
		2-Stage (except 100:1)	38 (336)	85 (752)	180 (1593)	400 (3540)	600 (5310)
		100:1	28 (248)	48 (425)	130 (1151)	250 (2213)	600 (5310)
Max Acceleration Output Torque (T_{2B})	Nm (lb-in)	3:1	36 (319)	80 (708)	180 (1593)	380 (3363)	1200 (10620)
		4, 5, 7:1	50 (443)	120 (1062)	250 (2213)	540 (4779)	1300 (11505)
		10:1	36 (319)	94 (832)	200 (1770)	440 (3894)	1200 (10620)
		2-Stage (except 100:1)	54 (478)	125 (1106)	260 (2301)	550 (4868)	1300 (11505)
		100:1	38 (336)	94 (832)	200 (1770)	440 (3894)	1200 (10620)
Emergency Output Torque (T_{2not})	Nm (lb-in)	3:1	100 (885)	200 (1770)	500 (4425)	1000 (8850)	1850 (16373)
		4, 5, 7:1	120 (1062)	240 (2124)	600 (5310)	1260 (11151)	2450 (21683)
		10:1	90 (797)	200 (1770)	500 (4425)	1000 (8850)	2800 (24780)
		2-Stage (except 100:1)	120 (1062)	240 (2124)	600 (5310)	1260 (11151)	2450 (21683)
		100:1	90 (797)	200 (1770)	500 (4425)	1000 (8850)	2800 (24780)
Nominal Speed (n_{1n})	RPM	-	4500	4500	4000	3800	2000
Max Speed (n_{1max})		-	6500	6000	6000	5500	3500
Standard Output Backlash (j)	arcmin	1-stage	< 6	< 5	< 5	< 5	< 4
		2-stage	< 7	< 6	< 6	< 6	< 6
Reduced Output Backlash (j)	arcmin	1-stage	< 4	< 3	< 3	< 3	< 2
		2-stage	< 5	< 4	< 4	< 4	< 4
Allowable Radial Load (F_{rad}) ¹⁾	N (lbs)	-	3000 (675)	4200 (945)	6300 (1418)	11000 (2475)	13000 (2925)
Allowable Axial Load (F_{axial})	N (lbs)	-	2400 (540)	3800 (855)	5600 (1260)	10600 (2385)	13500 (3038)
Torsional Stiffness (C_{t21})	Nm/arcmin (lb-in/arcmin)	1-stage	5 (44)	13 (115)	40 (354)	56 (496)	130 (1151)
		2-stage	5 (44)	13 (115)	40 (354)	56 (496)	130 (1151)
Weight (m)	kg (lbs)	1-stage	2.6 (5.7)	3.7 (8.2)	7.2 (15.9)	19.3 (42.6)	32 (71)
		2-stage	3.3 (7.3)	4.2 (9.3)	9.5 (20.9)	23.3 (51.4)	36.6 (81)
Noise Level (L_{pk})	dB(A)		< 64	< 65	< 67	< 67	< 70
Mass Moment of Inertia (J_1)	kg cm ² (lb-in ²)	3:1	0.43 (0.168)	1.15 (0.450)	6.05 (2.368)	14.25 (5.578)	53 (20.75)
		4:1	0.33 (0.129)	0.92 (0.360)	4.05 (1.585)	9.31 (3.644)	39 (15.27)
		5:1	0.27 (0.106)	0.81 (0.317)	3.17 (1.241)	6.91 (2.705)	34 (13.31)
		7:1	0.23 (0.090)	0.72 (0.282)	2.44 (0.955)	4.91 (1.922)	31 (12.14)
		10:1	0.2 (0.078)	0.67 (0.262)	2.08 (0.814)	3.89 (1.523)	29 (11.35)
Efficiency at Load		1-stage: 96% 2-stage: 94%					
Service Life		> 30,000 hours					
Lubrication		Lifetime lubrication with synthetic oil					
Protection Rating		IP65					
Operating Temperature Range		-20°C to 90°C					

SPL-W



SPL-W		60		75		100		140		180	
		mm	(in)	mm	(in)	mm	(in)	mm	(in)	mm	(in)
D1 max standard	motor shaft diameter	14	(0.551)	19	(0.748)	24	(0.945)	32	(1.260)	54	(2.126)
D1 max available*	motor shaft diameter	19	(0.748)	24	(0.945)	32	(1.26)	38	(1.496)	54	(2.126)
D1 max 2-stage	motor shaft diameter	14	(0.551)	19	(0.748)	24	(0.945)	34	(1.339)	38	(1.496)
D2 k6	output shaft diameter	16	(0.63)	22	(0.866)	32	(1.26)	40	(1.575)	55	(2.165)
D3 g6	pilot diameter	60	(2.362)	70	(2.756)	90	(3.543)	130	(5.118)	160	(6.299)
D4	bolt circle	68	(2.677)	85	(3.346)	120	(4.724)	165	(6.496)	215	(8.465)
f1	shaft thread	M5 x 12		M8 x 19		M12 x 26		M16 x 36		M20 x 42	
f2	mounting holes ø	ø5.5		ø6.6		ø9		ø11		ø13	
L1 1-STAGE**	gearbox total length	151 (5.945)		174.5 (6.87)		226.5 (8.917)		292 (11.496)		312 (12.283)	
L1 2-STAGE**		178 (7.008)		201 (7.913)		251 (9.882)		342 (13.465)		334 (13.15)	
L2	shaft length	48 (1.89)		56 (2.205)		88 (3.465)		112 (4.409)		100 (3.937)	
L3	key length	25 (0.984)		32 (1.26)		50 (1.969)		70 (2.756)		63 (2.756)	
L4	usable shaft length	28 (1.102)		36 (1.417)		58 (2.283)		82 (3.228)		82 (3.228)	
L5	pilot height	20 (0.787)		20 (0.787)		30 (1.181)		30 (1.181)		14 (0.551)	
L6	key width	5 (0.197)		6 (0.236)		10 (0.394)		12 (0.472)		16 (0.630)	
L7	key height	18 (0.709)		24.5 (0.965)		35 (1.378)		43 (1.693)		60 (2.362)	
L8**	output square	65 (2.559)		76 (2.992)		101 (3.976)		141 (5.551)		180 (7.087)	
L9	flange thickness	6 (0.236)		7 (0.276)		10 (0.394)		12 (0.472)		14 (0.551)	

TYPE CODES FOR SPL SERIES (SPL-W)

Example: SPL - W - 075 - 005 G - [115 - A01] - S111

Gearbox Series

SPL Series

Gearbox Style

W = Output Shaft

Gearbox Size

060, 075, 100, 140, 180

Ratio

3, 4, 5, 7, 10, 12, 16, 20, 25, 35, 40, 50, 70, 100

Special Options

Assigned by GAM

Motor Mount Kit

Assigned by GAM

Options Available for This Product

G = Key on output shaft per DIN6885

C = Reduced backlash and key on output shaft

H = Smooth output shaft

A = Reduced backlash and smooth shaft

Tolerances (mm)

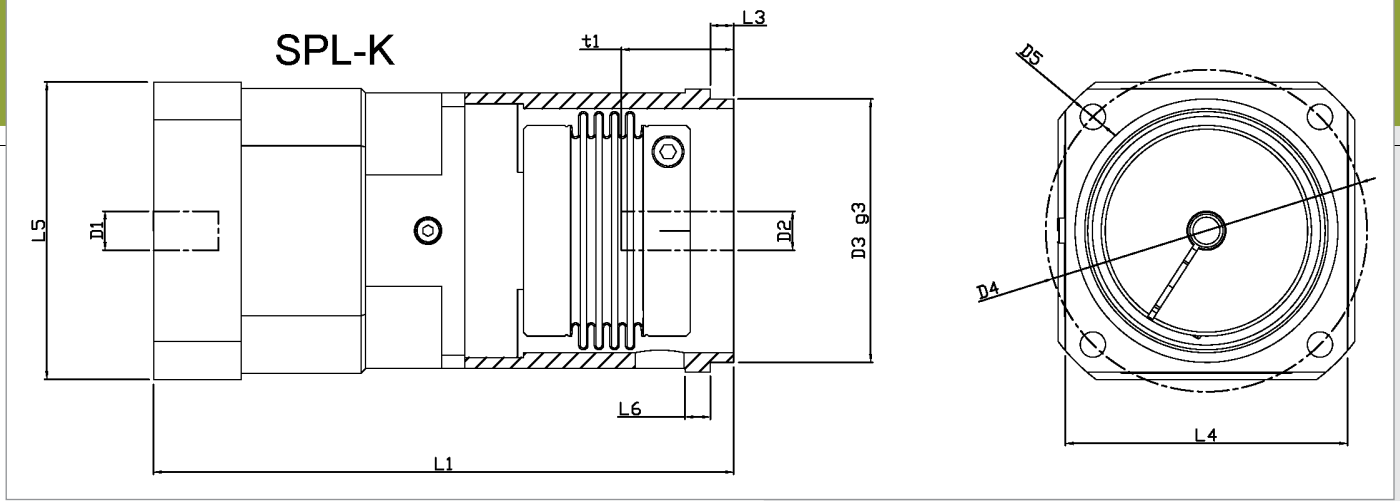
Size	k6	g6
Over 6	+0.010	-0.005
Thru 10	+0.001	-0.014
Over 10	+0.012	-0.006
Thru 18	+0.001	-0.017
Over 18	+0.015	-0.007
Thru 30	+0.002	-0.020
Over 30	+0.018	-0.009
Thru 50	+0.002	-0.025
Over 50	+0.021	-0.010
Thru 80	+0.002	-0.029
Over 80	+0.025	-0.012
Thru 120	+0.003	-0.034
Over 120	+0.028	-0.014
Thru 180	+0.003	-0.037



SPL SERIES - SPL-K



SPL-K		60	75	100	140	180	
Stock Ratios		5,10					
All Ratios Available		1 Stage: 3, 4, 5, 7, 10 2 Stage: 12, 16, 20, 25, 35, 40, 50, 70, 100					
Nominal Output Torque (T_{2n})	Nm (lb-in)	3:1	26 (230)	39 (345)	110 (974)	210 (1859)	600 (5310)
		4, 5, 7:1	32 (283)	65 (575)	150 (1328)	340 (3009)	600 (5310)
		10:1	24 (212)	40 (354)	115 (1018)	210 (1859)	600 (5310)
		2-Stage (except 100:1)	38 (336)	85 (752)	180 (1593)	400 (3540)	600 (5310)
		100:1	28 (248)	48 (425)	130 (1151)	250 (2213)	600 (5310)
Max Acceleration Output Torque (T_{2a})	Nm (lb-in)	3:1	36 (319)	80 (708)	180 (1593)	380 (3363)	1200 (10620)
		4, 5, 7:1	50 (443)	120 (1062)	250 (2213)	540 (4779)	1300 (11505)
		10:1	36 (319)	94 (832)	200 (1770)	440 (3894)	1200 (10620)
		2-Stage (except 100:1)	54 (478)	125 (1106)	260 (2301)	550 (4868)	1300 (11505)
		100:1	38 (336)	94 (832)	200 (1770)	440 (3894)	1200 (10620)
Emergency Output Torque (T_{2not})	Nm (lb-in)	3:1	100 (885)	200 (1770)	500 (4425)	1000 (8850)	1850 (16373)
		4, 5, 7:1	120 (1062)	240 (2124)	600 (5310)	1260 (11151)	2450 (21683)
		10:1	90 (797)	200 (1770)	500 (4425)	1000 (8850)	2800 (24780)
		2-Stage (except 100:1)	120 (1062)	240 (2124)	600 (5310)	1260 (11151)	2450 (21683)
		100:1	90 (797)	200 (1770)	500 (4425)	1000 (8850)	2800 (24780)
Nominal Speed (n_{1n})	RPM	-	4500	4500	4000	3800	2000
Max Speed (n_{1max})		-	6500	6000	6000	5500	3500
Standard Output Backlash (j)	arcmin	1-stage	< 6	< 5	< 5	< 5	< 4
		2-stage	< 7	< 6	< 6	< 6	< 6
Reduced Output Backlash (j)	arcmin	1-stage	< 4	< 3	< 3	< 3	< 2
		2-stage	< 5	< 4	< 4	< 4	< 4
Torsional Stiffness (C_{121})	Nm/arcmin (lb-in/arcmin)	1-stage	3.21 (28.4)	7.88 (69.7)	22.61 (200.1)	36.64 (324.3)	36.6 (324.3)
		2-stage	3.21 (28.4)	7.88 (69.7)	22.61 (200.1)	36.64 (324.3)	36.6 (324.3)
Weight (m)	kg (lbs)	1-stage	3.35 (7.39)	4.61 (10.16)	9.82 (21.65)	24.55 (54.12)	38.4 (84.7)
		2-stage	4.05 (8.93)	5.11 (11.27)	12.12 (26.72)	28.55 (62.94)	43 (94.8)
Noise Level (L_{pA})	dB(A)		< 64	< 65	< 67	< 67	< 70
Mass Moment of Inertia (J_1)	kg cm ² (lb-in ²)	3:1	0.65 (0.223)	2.82 (0.962)	10.11 (3.454)	21.31 (7.283)	53 (18.090)
		4:1	0.54 (0.185)	2.41 (0.822)	6.87 (2.346)	13.79 (4.711)	39 (13.310)
		5:1	0.49 (0.168)	2.23 (0.762)	5.41 (1.848)	10.2 (3.486)	39 (13.310)
		7:1	0.44 (0.150)	2.06 (0.704)	4.18 (1.428)	7.15 (2.444)	31 (10.580)
		10:1	0.42 (0.143)	1.98 (0.678)	3.55 (1.213)	5.59 (1.910)	31 (10.580)
Efficiency at Load		1-stage: 96% 2-stage: 94%					
Service Life		> 30,000 hours					
Lubrication		Lifetime lubrication with synthetic oil					
Protection Rating		IP65					
Operating Temperature Range		-20°C to 90°C					



SPL-K		60		75		100		140		180	
		mm	(in)	mm	(in)	mm	(in)	mm	(in)	mm	(in)
D1 max standard	motor shaft diameter	14	(0.551)	19	(0.748)	24	(0.945)	32	(1.260)	54	(2.126)
D1 max available*	motor shaft diameter	19	(0.748)	24	(0.945)	32	(1.26)	38	(1.496)	54	(2.126)
D1 max 2-stage	motor shaft diameter	14	(0.551)	19	(0.748)	24	(0.945)	34	(1.339)	38	(1.496)
D2 _{max - KB}	max output bore	28	(1.102)	38	(1.496)	50	(1.969)	64	(2.520)	85	(3.346)
D2 _{max - KE}	max output bore	26	(1.024)	38	(1.496)	46	(1.811)	56	(2.205)	-	-
D3 _{g6 - KB/E}	pilot diameter	70	(2.756)	85	(3.346)	115	(4.528)	135	(5.315)	180	(7.087)
D4 _{KB/E}	bolt circle	85	(3.346)	105	(4.134)	140	(5.512)	165	(6.496)	215	(8.465)
D5 _{KB/E}	bolt hole	6.6	(0.26)	9	(0.354)	11	(0.433)	13	(0.512)	17	(0.669)
L1 _{1-stage KB/E**}	gearbox total length	180	(7.087)	207	(8.150)	241.5	(9.508)	300	(11.811)	326	(12.835)
L1 _{2-stage KB/E**}	gearbox total length	207	(8.150)	233.5	(9.193)	266	(10.472)	350	(13.780)	340	(13.386)
L3 _{KB/E}	pilot height	6	(0.236)	8	(0.315)	10	(0.394)	12	(0.472)	15	(0.591)
L4 _{KB/E}	output flange size	70	(2.756)	95	(3.74)	120	(4.724)	145	(5.709)	190	(7.48)
L5**	gearbox thickness	70	(2.756)	81	(3.189)	106	(4.173)	146	(5.748)	200	(7.874)
L6 _{KB/E}	flange thickness	7	(0.276)	9	(0.354)	11	(0.433)	13	(0.512)	15	(0.591)
t1 _{min - KB}	min shaft engagement	21	(0.827)	26	(1.024)	32	(1.260)	33	(1.300)	59	(2.323)
t1 _{max - KB}	max shaft engagement	43	(1.693)	58.5	(2.3031)	60	(2.362)	68	(2.677)	88	(3.465)
t1 _{min - KE}	min shaft engagement	22	(0.866)	28	(1.102)	34	(1.339)	36	(1.417)	-	-
t1 _{max - KE}	max shaft engagement	31.5	(1.240)	38.5	(1.516)	45	(1.772)	48.5	(1.909)	-	-

* for larger motor shaft diameters, please contact GAM ** depending on the motor, value can vary

TYPE CODES FOR SPL-K SERIES

Example: SPL - KE - 060 - 005 G - [115-201] - S111

Gearbox Series
SPL Series

Gearbox Style
KB = Bellows coupling
KE = Elastomer coupling output

Gearbox Size
060, 075, 100, 140, 180

Ratio
3, 4, 5, 7, 10, 12, 16, 20, 25, 35, 40, 50, 70, 100

Special Options
Assigned by GAM

Motor Mount Kit
Assigned by GAM

Options Available for This Product
G = Standard backlash and keyway in output coupling
C = Reduced backlash and keyway in output coupling
H = Standard backlash and no keyway in output coupling
A = Reduced backlash and no keyway in output coupling

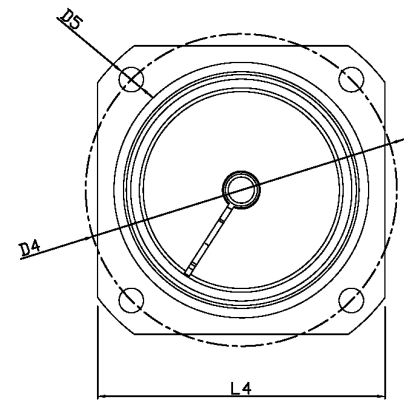
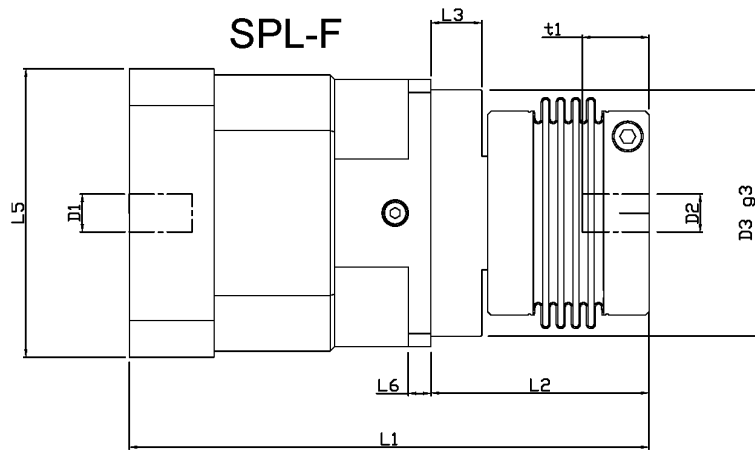
Tolerances (mm)		
Size	k6	g6
Over 6	+0.010	-0.005
Thru 10	+0.001	-0.014
Over 10	+0.012	-0.006
Thru 18	+0.001	-0.017
Over 18	+0.015	-0.007
Thru 30	+0.002	-0.020
Over 30	+0.018	-0.009
Thru 50	+0.002	-0.025
Over 50	+0.021	-0.010
Thru 80	+0.002	-0.029
Over 80	+0.025	-0.012
Thru 120	+0.003	-0.034
Over 120	+0.028	-0.014
Thru 180	+0.003	-0.037



SPL SERIES - SPL-F



SPL-F			60	75	100	140	180	
Stock Ratios			5,10					
All Ratios Available			1 Stage: 3, 4, 5, 7, 10 2 Stage: 12, 16, 20, 25, 35, 40, 50, 70, 100					
Nominal Output Torque (T_{2n})	Nm (lb-in)	3:1	26 (230)	39 (345)	110 (974)	210 (1859)	600 (5310)	
		4, 5, 7:1	32 (283)	65 (575)	150 (1328)	340 (3009)	600 (5310)	
		10:1	24 (212)	40 (354)	115 (1018)	210 (1859)	600 (5310)	
		2-Stage (except 100:1)	38 (336)	85 (752)	180 (1593)	400 (3540)	600 (5310)	
		100:1	28 (248)	48 (425)	130 (1151)	250 (2213)	600 (5310)	
Max Acceleration Output Torque (T_{2B})	Nm (lb-in)	3:1	36 (319)	80 (708)	180 (1593)	380 (3363)	1200 (10620)	
		4, 5, 7:1	50 (443)	120 (1062)	250 (2213)	540 (4779)	1300 (11505)	
		10:1	36 (319)	94 (832)	200 (1770)	440 (3894)	1200 (10620)	
		2-Stage (except 100:1)	54 (478)	125 (1106)	260 (2301)	550 (4868)	1300 (11505)	
		100:1	38 (336)	94 (832)	200 (1770)	440 (3894)	1200 (10620)	
Emergency Output Torque (T_{2not})	Nm (lb-in)	3:1	100 (885)	200 (1770)	500 (4425)	1000 (8850)	1850 (16373)	
		4, 5, 7:1	120 (1062)	240 (2124)	600 (5310)	1260 (11151)	2450 (21683)	
		10:1	90 (797)	200 (1770)	500 (4425)	1000 (8850)	2800 (24780)	
		2-Stage (except 100:1)	120 (1062)	240 (2124)	600 (5310)	1260 (11151)	2450 (21683)	
		100:1	90 (797)	200 (1770)	500 (4425)	1000 (8850)	2800 (24780)	
Nominal Speed (n_{1n})	RPM	-	4500	4500	4000	3800	2000	
Max Speed (n_{1max})		-	6500	6000	6000	5500	3500	
Standard Output Backlash (j)	arcmin	1-stage	< 6	< 5	< 5	< 5	< 4	
		2-stage	< 7	< 6	< 6	< 6	< 6	
Reduced Output Backlash (j)	arcmin	1-stage	< 4	< 3	< 3	< 3	< 2	
		2-stage	< 5	< 4	< 4	< 4	< 4	
Torsional Stiffness (C_{121})	Nm/arcmin (lb-in/arcmin)	1-stage	3.21 (28.4)	7.88 (69.7)	22.61 (200.1)	36.64 (324.3)	36.6 (324.3)	
		2-stage	3.21 (28.4)	7.88 (69.7)	22.61 (200.1)	36.64 (324.3)	36.6 (324.3)	
Weight (m)	kg (lbs)	1-stage	3.1 (6.8)	4.2 (9.3)	8.7 (19.2)	22.7 (50.1)	32.8 (72.3)	
		2-stage	3.8 (8.4)	4.7 (10.4)	11 (24.2)	26.7 (58.9)	37.4 (82.5)	
Noise Level (L_{pA})	dB(A)		< 64	< 65	< 67	< 67	< 70	
Mass Moment of Inertia (J_1)	kg cm ² (lb-in ²)	3:1	0.65 (0.223)	2.82 (0.962)	10.11 (3.454)	21.31 (7.283)	53 (18.090)	
		4:1	0.54 (0.185)	2.41 (0.822)	6.87 (2.346)	13.79 (4.711)	39 (13.310)	
		5:1	0.49 (0.168)	2.23 (0.762)	5.41 (1.848)	10.2 (3.486)	39 (13.310)	
		7:1	0.44 (0.150)	2.06 (0.704)	4.18 (1.428)	7.15 (2.444)	31 (10.580)	
		10:1	0.42 (0.143)	1.98 (0.678)	3.55 (1.213)	5.59 (1.910)	31 (10.580)	
Efficiency at Load		1-stage: 96% 2-stage: 94%						
Service Life		> 30,000 hours						
Lubrication		Lifetime lubrication with synthetic oil						
Protection Rating		IP65						
Operating Temperature Range		-20°C to 90°C						



SPL-F		60		75		100		140		180	
		mm	(in)	mm	(in)	mm	(in)	mm	(in)	mm	(in)
D1 max standard	motor shaft diameter	14	(0.551)	19	(0.748)	24	(0.945)	32	(1.260)	54	(2.126)
D1 max available*	motor shaft diameter	19	(0.748)	24	(0.945)	32	(1.26)	38	(1.496)	54	(2.126)
D1 max 2-stage	motor shaft diameter	14	(0.551)	19	(0.748)	24	(0.945)	34	(1.339)	38	(1.496)
D2 _{max-FB}	max output bore	28	(1.102)	38	(1.496)	50	(1.969)	64	(2.520)	85	(3.346)
D2 _{max-FE}	max output bore	26	(1.024)	38	(1.496)	46	(1.811)	56	(2.205)	-	-
D3 _{g6-FB/E}	pilot diameter	60	(2.362)	70	(2.756)	90	(3.543)	130	(5.118)	160	(6.299)
D4 _{FB/E}	bolt circle	68	(2.677)	85	(3.346)	120	(4.724)	165	(6.496)	215	(8.465)
D5 _{FB/E}	bolt hole	ø5.5		ø6.6		ø9		ø11		ø13	
L1 _{1-stage-FB**}	gearbox total length	169	(6.653)	196.5	(7.736)	223	(8.779)	280	(11.024)	304	(11.968)
L1 _{2-stage-FB**}	gearbox total length	196	(7.716)	223	(8.779)	247.5	(9.744)	330	(12.992)	327	(12.874)
L1 _{1-stage-FE**}	gearbox total length	171	(6.732)	196.5	(7.736)	226.5	(8.917)	290	(11.417)	-	-
L1 _{2-stage-FE**}	gearbox total length	198	(7.795)	223	(8.779)	251	(9.882)	340	(13.386)	-	-
L2 _{FB}	coupling length	76	(2.992)	83	(2.047)	105	(4.134)	117	(4.606)	112	(4.409)
L2 _{FE}	coupling length	79	(3.110)	94	(3.700)	104	(4.094)	125	(4.921)	-	-
L3 _{FB/E}	pilot height	20	(0.787)	20	(0.787)	30	(1.181)	30	(1.181)	14	(0.551)
L4 _{FB/E}	output flange size	65	(2.559)	76	(2.992)	101	(3.976)	141	(5.551)	180	(7.087)
L5**	gearbox thickness	70	(2.756)	81	(3.189)	106	(4.173)	146	(5.748)	200	(7.874)
L6 _{FB/E}	flange thickness	6	(0.236)	7	(0.276)	10	(0.394)	12	(0.472)	20	(0.787)
t1 _{min-FB}	min shaft engagement	21	(0.827)	26	(1.024)	32	(1.260)	33	(1.300)	59	(2.323)
t1 _{max-FB}	max shaft engagement	39	(1.535)	43	(1.693)	58	(2.165)	52	(2.047)	88	(3.465)
t1 _{min-FE}	min shaft engagement	22	(0.866)	28	(1.102)	34	(1.339)	36	(1.417)	-	-
t1 _{max-FE}	max shaft engagement	31.5	(1.240)	38.5	(1.516)	45	(1.772)	48.5	(1.909)	-	-

* for larger motor shaft diameters, please contact GAM ** depending on the motor, value can vary

Size	Tolerances (mm)	
	k6	g6
Over 6	+0.010	-0.005
Thru 10	+0.001	-0.014
Over 10	+0.012	-0.006
Thru 18	+0.001	-0.017
Over 18	+0.015	-0.007
Thru 30	+0.002	-0.020
Over 30	+0.018	-0.009
Thru 50	+0.002	-0.025
Over 50	+0.021	-0.010
Thru 80	+0.002	-0.029
Over 80	+0.025	-0.012
Thru 120	+0.003	-0.034
Over 120	+0.028	-0.014
Thru 180	+0.003	-0.037

TYPE CODES FOR SPL-F SERIES

Example: SPL - FE - 060 - 005 G - [115-201] - S111

Gearbox Series

SPL Series.

Gearbox Style

FB = Bellows coupling
FE = Elastomer coupling output

Gearbox Size

060, 075, 100, 140, 180

Ratio

3, 4, 5, 7, 10, 12, 16, 20, 25, 35, 40, 50, 70, 100

Special Options

Assigned by GAM

Motor Mount Kit

Assigned by GAM

Options Available for This Product

G = Standard backlash and keyway in output coupling

C = Reduced backlash and keyway in output coupling

H = Standard backlash and no keyway in output coupling

A = Reduced backlash and no keyway in output coupling



► PRECISION: EPL SERIES

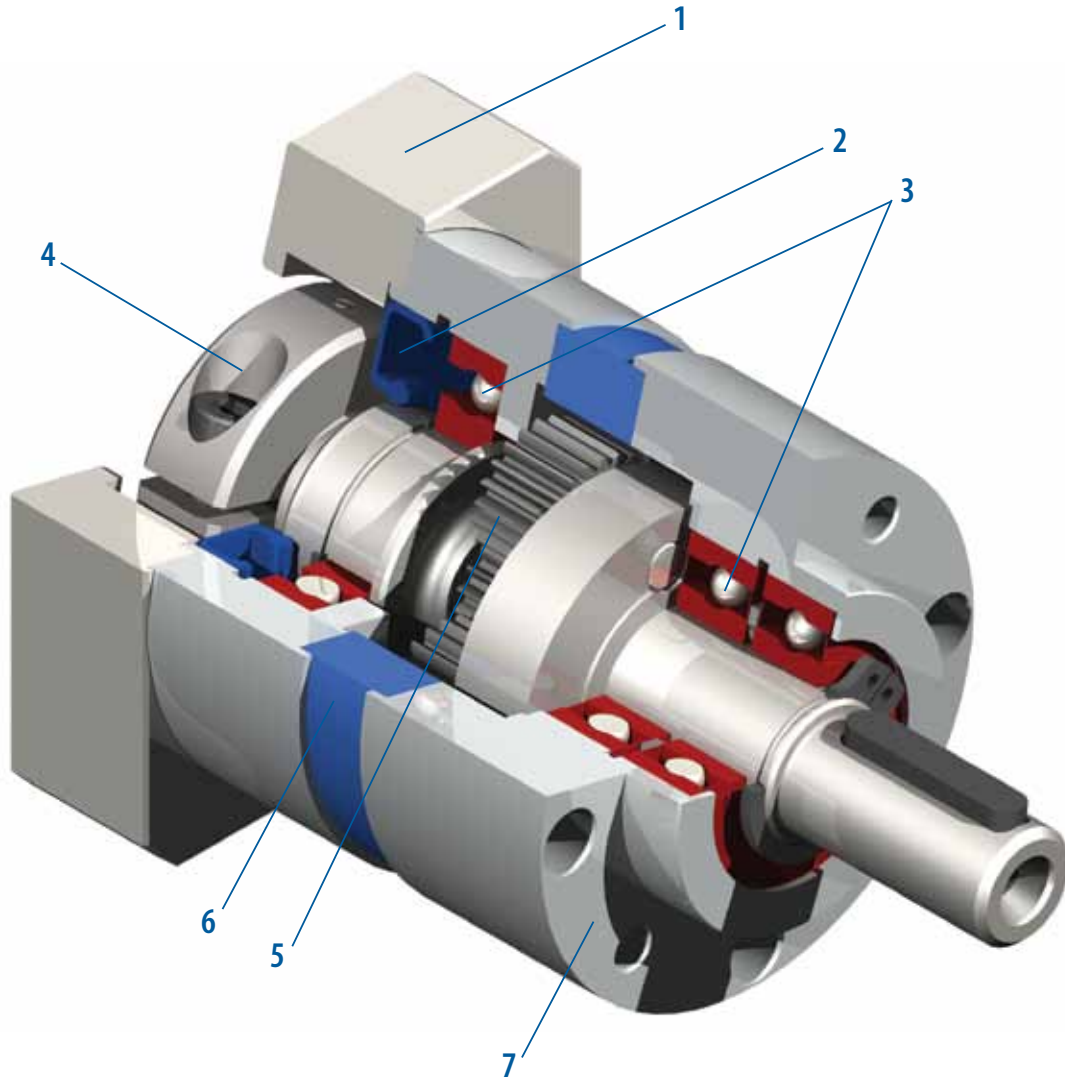
GAM can. Just ask!

If you don't see exactly what you need, let us know. We can modify the EPL Series gearboxes to meet your needs. Page 3 provides a list of commonly requested modifications to give you a feel for our capabilities.

Our EPL Series is widely known as the best value on the market- tens of thousands of EPL's installed since 1998 in North America alone. That's because it offers the best quality available for the price point. We've added some features that make it unequalled in its class and ideal for most servo applications.

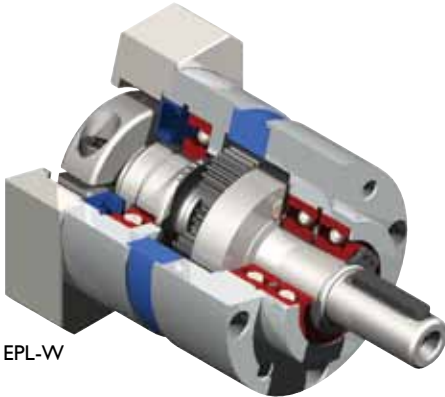
EPL Series enhancements include:

- A 50 mm frame size in our standard shaft version (-W) that is a drop-in for many gearboxes
- NEMA output version with oversized english shaft for improved performance
- Option for larger motor shafts



- | | |
|---|---|
| 1. Adapter Plate
(Customized adapter plates for quick and easy motor mounting) | 4. Input Clamping Element |
| 2. Seals
(Protective seals to isolate the gearbox) | 5. Planet Gears
(Precision honed gears) |
| 3. Angular Contact Bearings
(for high radial and axial loading) | 6. Ring Gear
(Ring gear incorporated into housing) |
| | 7. Output Face |

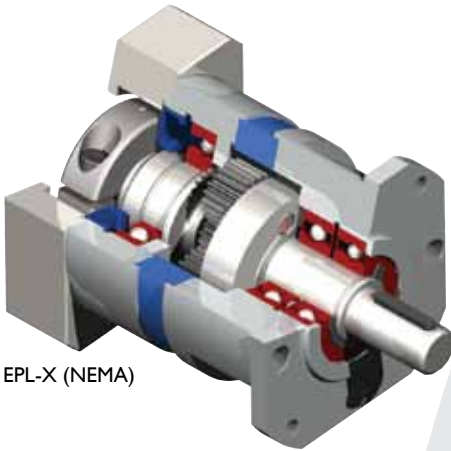
PRECISION: EPL SERIES



EPL-W

EPL-W

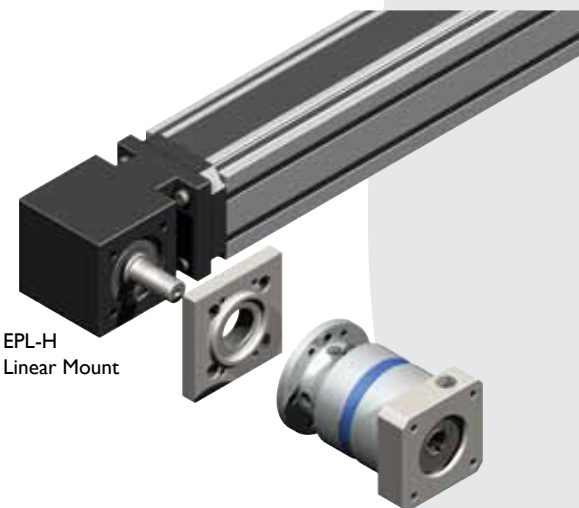
- Metric output face
- Ratios 3:1 to 1000:1
- Frame sizes from 50 mm to 150 mm
- Ready to mount to your motor



EPL-X (NEMA)

EPL-X (NEMA)

- NEMA output face with oversized english shaft
- Ratios 3:1 to 1000:1
- Frame sizes from NEMA 17 to 56
- Ready to mount to your motor



EPL-H
Linear Mount

EPL-H Linear Mount

- Hollow output with zero backlash clamping ring
- A quick, simple, low cost solution used to mount onto any “off the shelf” linear belt or ball screw module.
- Ready to mount to your motor on the input
- Ready to mount to your module on the output
- For more information on Linear Mounts, refer to page 54.



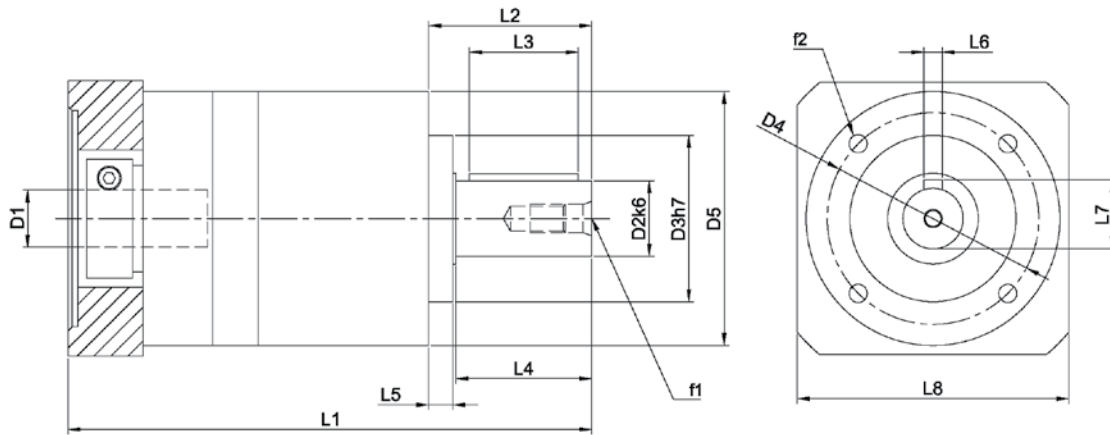
EPL SERIES - EPL-W



EPL Series		50	64	84	118	150	
Stock Ratios		3, 5, 7, 10, 25, 50, 100 (Standard Input)					N/A
All Ratios Available		1-stage: 3, 4, 5, 7, 10 2-stage: 12, 16, 20, 25, 35, 40, 50, 70, 100 3-stage: 120, 160, 200, 250, 350, 490, 700, 1000 (Consult GAM for other ratios)					
Nominal Output Torque (T_{2n})	Nm (lb-in)	3:1	5 (44)	20 (177)	40 (354)	100 (885)	230 (2036)
		4, 5, 7:1	6.5 (58)	26 (230)	54 (478)	120 (1062)	310 (2744)
		10, 100, 1000:1	5 (44)	16 (142)	40 (354)	105 (929)	180 (1593)
		12:1	14 (124)	36 (319)	80 (708)	170 (1505)	272 (2407)
		all other ratios	16 (142)	42 (372)	100 (885)	210 (1859)	340 (3009)
Max Acceleration Output Torque (T_{2b})	Nm (lb-in)	3:1	10 (89)	36 (319)	70 (620)	180 (1593)	360 (3186)
		4, 5, 7:1	13 (115)	44 (389)	100 (885)	200 (1770)	460 (4071)
		10, 100, 1000:1	10 (89)	24 (212)	75 (664)	180 (1593)	340 (3009)
		12:1	17.5 (155)	45 (398)	100 (885)	215 (1903)	360 (3186)
		all other ratios	20 (177)	52 (460)	125 (1106)	255 (2257)	460 (4071)
Emergency Output Torque (T_{2not})	Nm (lb-in)	3:1	20 (177)	72 (637)	160 (1416)	200 (1770)	860 (7612)
		4, 5, 7:1	26 (230)	84 (743)	216 (1912)	480 (4248)	1000 (8851)
		10, 100, 1000:1	20 (177)	62 (549)	160 (1416)	410 (3629)	800 (7081)
		12:1	28 (248)	72 (637)	160 (1416)	400 (3540)	860 (7612)
		all other ratios	32 (283)	84 (743)	216 (1912)	480 (4248)	1000 (8851)
Nominal Speed (n_{1n})	RPM	-	3500	3500	3000	2500	2500
Max Speed (n_{1max})		-	6000	6000	6000	5000	4500
Standard Output Backlash (j)	arcmin	1-stage	<16	<10	<10	<8	<8
		2-stage	<20	<14	<14	<12	<12
		3-stage	-	<18	<18	<16	<16
Allowable Radial Load (F_{rad}) ¹	N (lbs)	-	650 (146)	1900 (428)	2800 (630)	5000 (1125)	7500 (1688)
Allowable Axial Load (F_{axial})	N (lbs)	-	700 (158)	1500 (338)	2500 (563)	4500 (1013)	6000 (1350)
Torsional Stiffness (C_{t21})	Nm/arcmin (lb-in/arcmin)	-	Contact GAM	1.3 (11.5)	3.4 (30.1)	8.3 (73.5)	22 (194.7)
		-	Contact GAM	1.7 (15)	4.8 (42.5)	13.6 (120.4)	27 (239)
		-	Contact GAM	2.4 (21.2)	7.1 (62.8)	17.2 (152.2)	33 (292.1)
Weight (m)	kg (lbs)	1-stage	0.4 (0.9)	1.0 (2.2)	2.3 (5.1)	5.8 (12.8)	10.0 (22.1)
		2-stage	0.5 (1.1)	1.3 (2.9)	3.1 (6.8)	7.9 (17.4)	12.5 (27.6)
		-	-	1.6 (3.5)	3.9 (8.6)	10.0 (22.1)	15.0 (33.1)
Noise Level (L_{pk})	dB(A)	-	<70	<66	<68	<70	<72
Mass Moment of Inertia (J_r)	kg cm ² (lb-in ²) (lb-in ²)	3, 9:1	0.015 (0.005)	0.176 (0.06)	0.542 (0.184)	2.54 (0.864)	2.54 (0.864)
		4, 12, 16:1	0.010 (0.003)	0.173 (0.059)	0.473 (0.161)	1.86 (0.632)	1.86 (0.632)
		5, 20, 25:1	0.080 (0.027)	0.156 (0.053)	0.407 (0.138)	1.51 (0.513)	1.51 (0.513)
		7, 35, 49:1	0.065 (0.022)	0.137 (0.047)	0.328 (0.112)	1.07 (0.364)	1.07 (0.364)
Efficiency at Load	1-stage: 94% 2-stage: 92% 3-stage: 90%						
Service Life	> 30,000 hours						
Lubrication	Mineral Grease EPO						
Protection Rating	IP 64						
Operating Temperature Range	-20°C to 90°C						

1) Load applied at center of output shaft @100 RPM

EPL-W



EPL-W Series		50		64		84		118		150	
		mm	(in)	mm	(in)	mm	(in)	mm	(in)	mm	(in)
D1 _{max standard*}	motor shaft diameter	11	(0.433)	14	(0.551)	19	(0.748)	24	(0.945)	28	(1.102)
D1 _{max available*}	motor shaft diameter	14	(0.551)	16	(0.63)	24	(0.945)	32	(1.26)	38	(1.496)
D2 _{k6}	output shaft diameter	12	(0.472)	14	(0.551)	20	(0.787)	25	(0.984)	40	(1.575)
D3 _{h7}	pilot diameter	35	(1.378)	40	(1.575)	55	(2.165)	80	(3.15)	110	(4.331)
D4	bolt circle	44	(1.732)	52	(2.047)	70	(2.756)	100	(3.937)	130	(5.118)
D5	housing diameter	50	(1.969)	64	(2.52)	84	(3.307)	118	(4.646)	150	(5.906)
f1	shaft thread	M4x8		M5x12		M6x16		M10x22		M10 x 22	
f2	mounting holes	M4x6		M5x12		M6x14		M8x18		M10x20	
L1 1-STAGE**	gearbox total length	93 (3.661)		117 (4.606)		162 (6.378)		199 (7.835)		265 (10.433)	
L1 2-STAGE**		96 (3.78)		139 (5.472)		195 (7.677)		239 (9.409)		305 (12.008)	
L1 3-STAGE**		-		161 (6.339)		228 (8.976)		280 (11.024)		346 (13.622)	
L2	shaft length	24.5	(0.965)	39	(1.535)	54	(2.126)	61	(2.402)	81	(3.189)
L3	key length	16	(0.63)	25	(0.984)	36	(1.417)	45	(1.772)	60	(2.362)
L4	usable shaft length	20.5	(0.807)	30	(1.181)	45	(1.772)	50	(1.969)	70	(2.756)
L5	pilot height	4	(0.157)	8	(0.315)	8	(0.315)	10	(0.394)	10	(0.394)
L6	key width	4	(0.157)	5	(0.197)	6	(0.236)	8	(0.315)	12	(0.472)
L7	key height	13.5	(0.531)	16	(0.63)	22.5	(0.886)	28	(1.102)	43	(1.693)
L8**	adapter size	50	(1.969)	70	(2.756)	90	(3.543)	120	(4.724)	150	(5.906)

* for larger motor shaft diameters, please contact GAM ** depending on the motor, value can vary

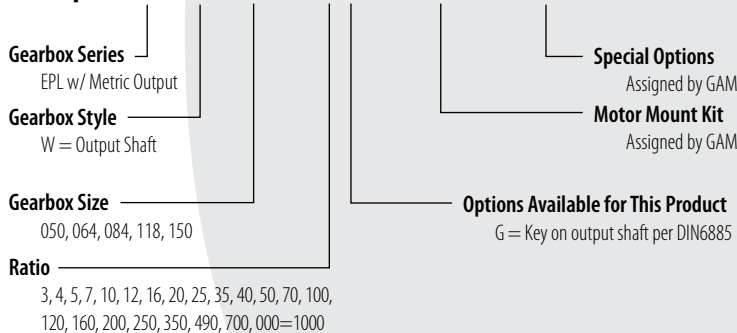


Recommended Output Coupling (if necessary)

	metal bellows	KLC-25	KLC-50	KLC-125	KM-270	KM-400
elastomer	EKM-45	EKM-60	EKM-150	EKM-300	EKM-400	

TYPE CODES FOR EPL SERIES (EPL-W)

Example: EPL - W - 084 - 005 G - [115 - A01] - S111



Tolerances (mm)		
Size	k6	h7
Over 10	+0.012	0
Thru 18	+0.001	-0.018
Over 18	+0.015	0
Thru 30	+0.002	-0.021
Over 30	+0.018	0
Thru 50	+0.002	-0.025
Over 50	+0.021	0
Thru 80	+0.002	-0.030
Over 80	+0.025	0
Thru 120	+0.003	-0.035

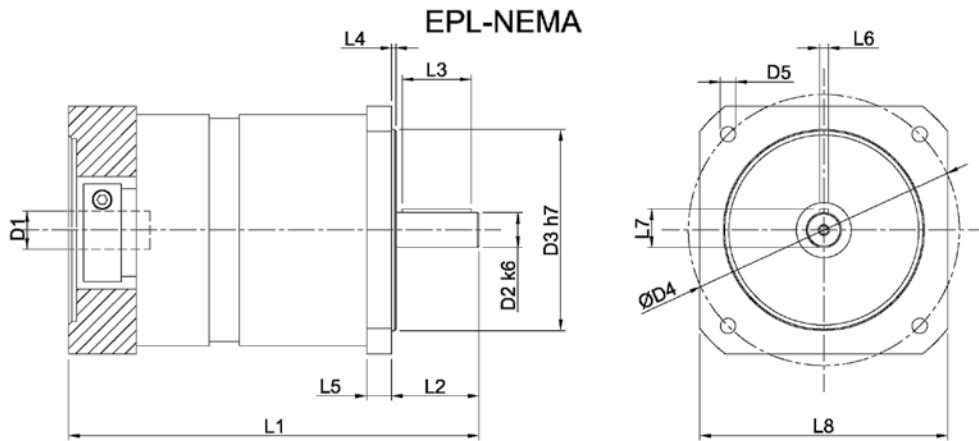


▶ EPL SERIES - EPL-X (NEMA)



NEMA-X Series		17	23	34	42	56	
Stock Ratios		N/A	3, 5, 7, 10, 25, 50, 100		N/A	N/A	
All Ratios Available		1-stage: 3, 4, 5, 7, 10 2-stage: 12, 16, 20, 25, 35, 40, 50, 70, 100 3-stage: 120, 160, 200, 250, 350, 490, 700, 1000					
Nominal Output Torque (T_{2n})	Nm (lb-in)	3:1	5 (44)	20 (177)	40 (354)	100 (885)	230 (2036)
		4, 5, 7:1	6.5 (58)	26 (230)	54 (478)	120 (1062)	310 (2744)
		10, 100, 1000:1	5 (44)	16 (142)	40 (354)	105 (929)	180 (1593)
		12:1	14 (124)	36 (319)	80 (708)	170 (1505)	272 (2407)
		all other ratios	16 (142)	42 (372)	100 (885)	210 (1859)	340 (3009)
Max Accel. Torque (T_{2b})	Nm (lb-in)	3:1	10 (89)	36 (319)	70 (620)	180 (1593)	360 (3186)
		4, 5, 7:1	13 (115)	44 (389)	100 (885)	200 (1770)	460 (4071)
		10, 100, 1000:1	10 (89)	24 (212)	75 (664)	180 (1593)	340 (3009)
		12:1	17.5 (155)	45 (398)	100 (885)	215 (1903)	360 (3186)
		all other ratios	20 (177)	52 (460)	125 (1106)	255 (2257)	460 (4071)
Emergency Output Torque (T_{2not})	Nm (lb-in)	3:1	20 (177)	72 (637)	160 (1416)	200 (1770)	860 (7612)
		4, 5, 7:1	26 (230)	84 (743)	216 (1912)	480 (4248)	1000 (8851)
		10, 100, 1000:1	20 (177)	62 (549)	160 (1416)	410 (3629)	800 (7081)
		12:1	28 (248)	72 (637)	160 (1416)	400 (3540)	860 (7612)
		all other ratios	32 (283)	84 (743)	216 (1912)	480 (4248)	1000 (8851)
Nominal Speed (n_{1n})	RPM	-	3500	3500	3000	3000	3000
Max Input Speed (n_{1max})		6000	6000	6000	5000	5000	
Standard Output Backlash (j)	arcmin	3:1 - 7:1	< 20	< 10	< 10	< 8	< 8
		9:1 - 49:1	< 25	< 14	< 14	< 12	< 12
		64:1 - 343:1	< 30	< 18	< 18	< 16	< 16
Allowable Radial Load (F_{rad}) ¹⁾	N (lbs)	-	375 (84)	450 (101)	900 (203)	2175 (489)	2175 (489)
Allowable Axial Load (F_{axial})	N (lbs)	-	300 (68)	420 (95)	650 (146)	1375 (309)	1375 (309)
Torsional Stiffness (C_{121})	Nm/arcmin (lb-in/arcmin)	-	Contact GAM	1.3 (11.5)	3.4 (30.1)	8.3 (73.5)	8.3 (73.5)
		-	Contact GAM	1.7 (15)	4.8 (42.5)	13.6 (120.4)	13.6 (120.4)
		-	Contact GAM	2.4 (21.2)	7.1 (62.8)	17.2 (152.2)	17.2 (152.2)
Weight (m)	kg (lbs)	1-stage	0.4 (0.88)	1.0 (2.2)	2.3 (5.1)	5.8 (12.8)	6.2 (13.7)
		2-stage	0.5 (1.1)	1.3 (2.9)	3.1 (6.8)	7.9 (17.4)	8.3 (18.3)
		3-stage	0.6 (1.32)	1.6 (3.5)	3.9 (8.6)	10.0 (22.1)	10.4 (22.9)
Noise Level (L_{PA})	dB(A)	-	< 60	< 66	< 68	< 70	< 72
Mass Moment of Inertia (J_1)	kg cm ² (lb-in ²)	3:1	0.0144 (0.0049)	0.176 (0.06)	0.542 (0.184)	2.54 (0.864)	2.56 (0.87)
		4:1, 5:1	0.0096 (0.0033)	0.173 (0.059)	0.473 (0.161)	1.86 (0.632)	1.88 (0.639)
		9:1	0.0152 (0.0052)	0.156 (0.053)	0.407 (0.138)	1.51 (0.513)	1.52 (0.517)
		all other ratios	0.0078 (0.0027)	0.137 (0.047)	0.328 (0.112)	1.07 (0.364)	1.07 (0.364)
Efficiency at Load	1-stage: 94% 2-stage: 92% 3-stage: 90%						
Service Life	> 30,000 hours						
Lubrication	Mineral Grease EPO						
Protection Rating	IP 64						
Operating Temperature Range	-20°C to 90°C						

1) Load applied at center of output shaft @100 RPM



NEMA-X Series		17		23		34		42		56	
		mm	(in)	mm	(in)	mm	(in)	mm	(in)	mm	(in)
D1 max standard*	motor shaft diameter	11	(0.433)	14	(0.551)	19	(0.748)	24	(0.945)	24	(0.945)
D1 max available*	motor shaft diameter	-	(-)	16	(0.63)	24	(0.945)	32	(1.26)	32	(1.26)
D2 k6	output shaft diameter	9.525	(0.375)	12.7	(0.5)	19.050	(0.75)	25	(0.984)	25	(0.984)
D3 h7	pilot diameter	21.97	(0.865)	38.1	(1.5)	73	(2.874)	55.55	(2.187)	114.300	(4.5)
D4	bolt circle	43.8	(1.724)	66.7	(2.626)	98.400	(3.874)	125.7	(4.949)	177.800	(7)
D5	mounting holes	3.25	(0.128)	5	(0.197)	5.5	(0.217)	7.1	(0.28)	10.200	(0.402)
L1 1-STAGE**	gearbox total length	108	(4.252)	111	(4.37)	147	(5.787)	199	(7.835)	199	(7.835)
L1 2-STAGE**		124	(4.882)	133	(5.236)	180	(7.087)	239	(9.409)	239	(9.409)
L1 3-STAGE**		139.5	(5.492)	155	(6.102)	213	(8.386)	280	(11.024)	280	(11.024)
L2	shaft length	25.4	(1.000)	25.3	(1.000)	31.8	(1.252)	42	(1.654)	41	(1.614)
L3	key length	-	(-)	19.05	(0.75)	25.4	(1)	38	(1.496)	32	(1.26)
L4	pilot height	1.6	(0.063)	1.6	(0.063)	1.7	(0.067)	2.4	(0.094)	4	(0.157)
L5	flange thickness	4.9	(0.193)	5	(0.197)	10	(0.394)	19	(0.748)	20	(0.7874)
L6	key width	-	(-)	3.175	(0.125)	4.78	(0.188)	8	(0.315)	8	(0.315)
L7	key height / flat height	9.14	(0.36)	14.22	(0.56)	21.290	(0.838)	28	(1.102)	28	(1.102)
L8	flange size	40	(1.575)	65	(2.559)	90	(3.543)	120	(4.724)	120	(5.000)

* for larger motor shaft diameters, please contact GAM **depending on the motor, value can vary *** long motor shafts can be accommodated, but overall gearbox length will grow



Recommended Output Coupling (if necessary)

	KLC-25	KLC-50	KLC-125	KM-270	KM-400
metal bellows	KLC-25	KLC-50	KLC-125	KM-270	KM-400
elastomer	EKM-20	EKM-60	EKM-150	EKM-300	EKM-400

TYPE CODES FOR EPL SERIES (EPL-X (NEMA))

Example: EPL - X23 - 005 G - [115 - A01] - S111

Gearbox Series
EPL w/ NEMA output

Gearbox Style

- X17 = NEMA17
- X23 = NEMA23
- X34 = NEMA34
- X42 = NEMA42
- X56 = NEMA56

Ratio

- 3, 4, 5, 7, 10, 12, 16, 20, 25, 35, 40, 50, 70, 100,
- 120, 160, 200, 250, 350, 490, 700, 000=1000

Special Options

Assigned by GAM

Motor Mount Kit

Assigned by GAM

Options Available for This Product

G = Key on output shaft per DIN6885

Tolerances (mm)

Size	k6	h7
Over 10	+0.012	0
Thru 18	+0.001	-0.018
Over 18	+0.015	0
Thru 30	+0.002	-0.021
Over 30	+0.018	0
Thru 50	+0.002	-0.025
Over 50	+0.021	0
Thru 80	+0.002	-0.030
Over 80	+0.025	0
Thru 120	+0.003	-0.035



▶ HIGH PRECISION: SSP SERIES

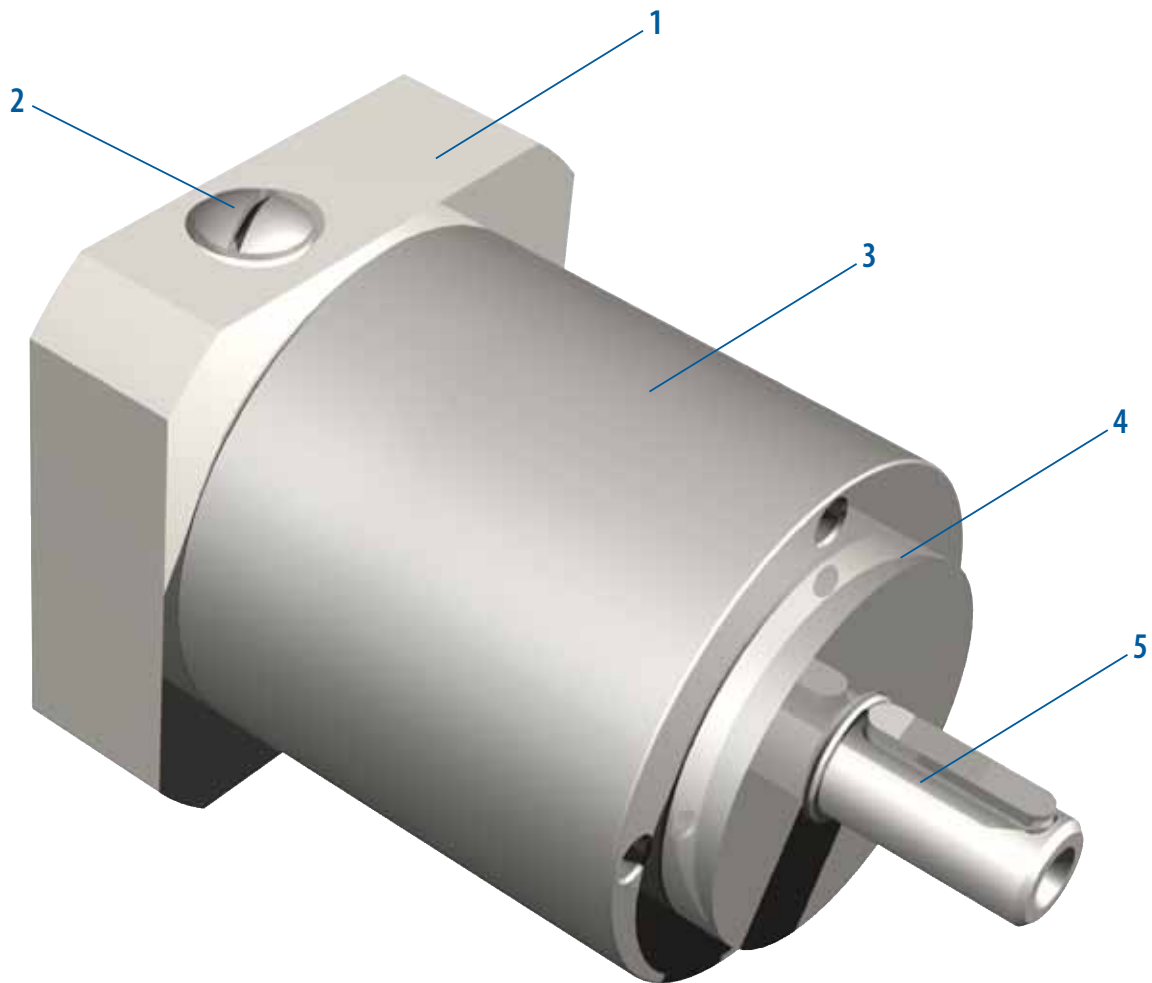
GAM can. Just ask!

If you don't see exactly what you need, let us know. We can modify the SSP Series gearboxes to meet your needs. Page 3 provides a list of commonly requested modifications to give you a feel for our capabilities.

Our Stainless Steel Planetary (SSP) Series is an innovative washdown servo gearbox solution designed for food, medical or sanitary applications. It is a precision planetary gearbox outwardly constructed of 300-series stainless steel. The motor adapter plate, housing and shaft are all stainless steel. Viton® seals, stainless steel hardware and sealed interfaces provide outstanding corrosion resistance in all types of wet and caustic washdown environments. Ideal for any light or demanding servo application where corrosion resistance is a requirement, the SSP Series offers economy, high precision, and long lasting performance.

SSP Series benefits:

- All exposed surfaces stainless steel
- Frame sizes from 70 to 120 mm
- Ratios from 3:1 to 100:1



Suitable for food or medical applications!

1. Adapter Flange

(Stainless steel adapter for quick and easy motor mounting)

2. Hole Plug

(Threaded stainless steel plug)

3. Lubrication (internal)

(Standard with food grade grease)

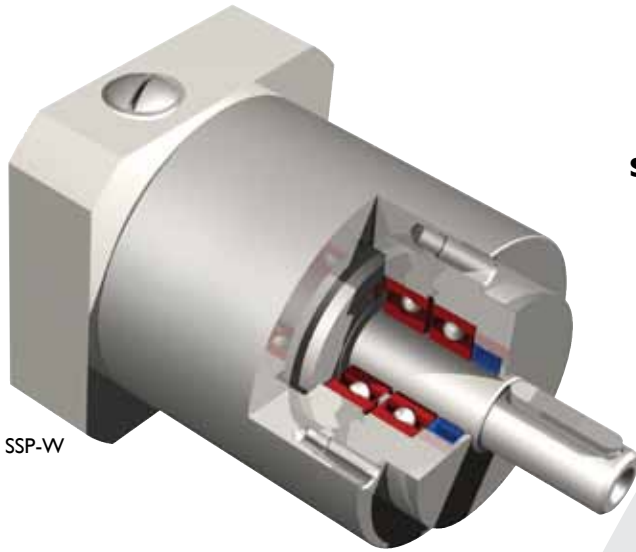
4. Seals (internal)

(Viton® seals keep contaminants out and lubricant in and achieves an IP66 rating)

5. Shaft

(Stainless steel keyed output shaft)

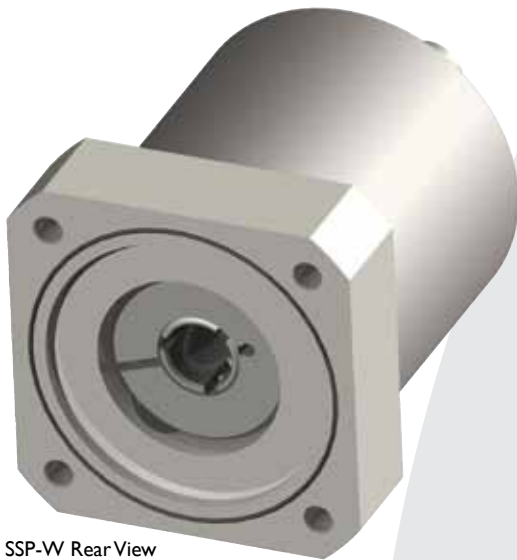
▶ HIGH PRECISION: SSP SERIES



SSP-W

SSP-W

- Dual output bearings for high radial and axial loading
- Frame sizes from 70 mm to 120 mm
- Ratios from 3:1 to 100:1



SSP-W Rear View

SSP-W

- Input clamping element for fast and easy mounting
- Optional input O-ring to keep contaminants out custom designed for your motor. (Special request at time of order)



SSP-W with Coupling

SSP-W

- Optional stainless steel output coupling KG-VA for corrosion resistant connections to other shafts
- Contact GAM for more information on these couplings



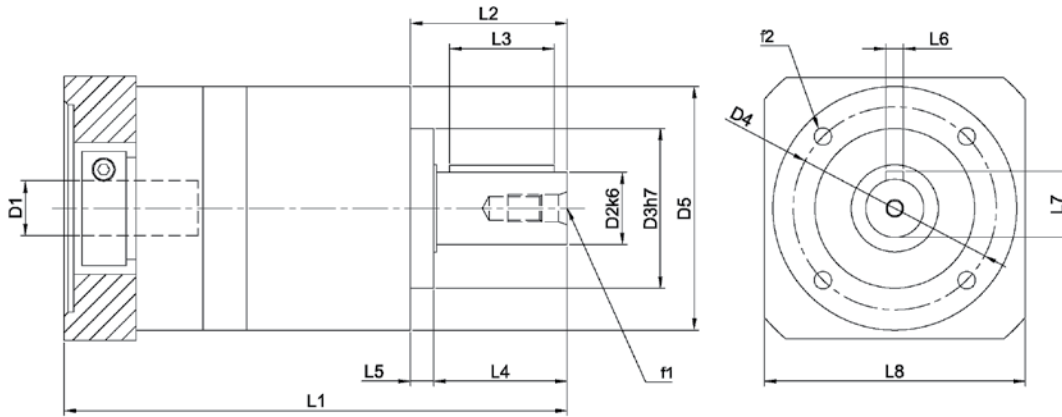
▶ SSP-SERIES - SSP



SSP Series		70	90	120	
Stock Ratios		5,10			
All Ratios Available		1-stage: 3, 4, 5, 7, 10 2-stage: 12, 16, 20, 25, 35, 40, 50, 70, 100 For other ratios, consult GAM			
Nominal Output Torque (T_{2n})	Nm (lb-in)	3:1	20 (177)	40 (354)	100 (885)
		4, 5, 7:1	26 (230)	54 (478)	120 (1062)
		10, 100, 1000:1	16 (142)	40 (354)	105 (929)
		12:1	36 (319)	80 (708)	170 (1505)
		all other ratios	42 (372)	100 (885)	210 (1859)
Max Acceleration Output Torque (T_{2b})	Nm (lb-in)	3:1	36 (319)	70 (620)	180 (1593)
		4, 5, 7:1	44 (389)	100 (885)	200 (1770)
		10, 100, 1000:1	24 (212)	75 (664)	180 (1593)
		12:1	45 (398)	100 (885)	215 (1903)
		all other ratios	52 (460)	125 (1106)	255 (2257)
Emergency Output Torque (T_{2not})	Nm (lb-in)	3:1	72 (637)	160 (1416)	200 (1770)
		4, 5, 7:1	84 (743)	216 (1912)	480 (4248)
		10, 100, 1000:1	62 (549)	160 (1416)	410 (3629)
		12:1	72 (637)	160 (1416)	400 (3540)
		all other ratios	84 (743)	216 (1912)	480 (4248)
Nominal Input Speed (n_{in})	RPM	3500	3000	2500	
Max Speed (n_{1max})	RPM	6000	6000	5000	
Standard Output Backlash (j)	arcmin	3:1 - 10:1	< 10	< 10	< 8
		12:1 - 100:1	< 14	< 14	< 12
Allowable Radial Load (F_{rad}) ¹⁾	N (lbs)	910 (205)	1500 (338)	3000 (675)	
Allowable Axial Load (F_{axial})	N (lbs)	500 (113)	1000 (225)	1500 (338)	
Torsional Stiffness (C_{t21})	Nm/arcmin (lb-in/rcmin)	10:1, 100:1	1.3 (11.5)	3.4 (30.1)	8.3 (73.5)
		7:1, 70:1	1.7 (15)	4.8 (42.5)	13.6 (120.4)
		all other ratios	2.4 (21.2)	7.1 (62.8)	17.2 (152.2)
Weight (m)	kg (lbs)	1-stage	2 (4.4)	3.9 (8.6)	8.8 (19.4)
		2-stage	2.3 (5.1)	4.7 (10.4)	10.9 (24)
Noise Level (L_{pk})	dB(A)	< 64	< 66	< 68	
Mass Moment of Inertia (J_1)	kg cm ² (lb-in ²)	3:1	0.176 (0.06)	0.542 (0.184)	2.54 (0.864)
		4:1, 12:1, 16:1	0.173 (0.059)	0.473 (0.161)	1.86 (0.632)
		5:1, 7:1, 20:1, 25:1, 35:1	0.156 (0.053)	0.407 (0.138)	1.51 (0.513)
		all other ratios	0.137 (0.047)	0.328 (0.112)	1.07 (0.364)
Efficiency at Load		1-stage: 94% 2-stage: 92%			
Service Life		> 30,000 hours			
Lubrication		Food Grade Grease: Note 1. Meets FDA 21 CFR 178.3570 requirements Note 2. USDA H1 authorized (authorized for use in federally inspected meat and poultry plants)			
Protection Rating		IP 66			
Operating Temperature Range		-20°C to 90°C			

1) Load applied at center of output shaft @100 RPM

SSP-W



SSP Series		70		90		120	
		mm	(in)	mm	(in)	mm	(in)
D1 max standard	motor shaft diameter	14	(0.551)	19	(0.748)	24	(0.945)
D1 max available*	motor shaft diameter	16	(0.63)	24	(0.945)	32	(1.26)
D2 k6	output shaft diameter	16	(0.63)	22	(0.866)	32	(1.26)
D3 h7	pilot diameter	52	(2.047)	68	(2.677)	90	(3.543)
D4	bolt circle	62	(2.441)	80	(3.15)	108	(4.252)
D5	housing diameter	70	(2.756)	92	(3.622)	122	(4.803)
f1	shaft thread	M5x12		M6x16		M10x22	
f2	mounting holes	M6x12		M6x14		M8x18	
L1 1-STAGE***	gearbox total length	131 (5.157)		174 (6.85)		232 (9.134)	
L1 2-STAGE***		153 (6.024)		207 (8.15)		271 (10.669)	
L2	shaft length	36 (1.417)		46 (1.811)		70 (2.756)	
L3	key length	25 (0.984)		30 (1.181)		50 (1.969)	
L4	usable shaft length	28 (1.102)		36 (1.417)		58 (2.283)	
L5	pilot height	7 (0.276)		9 (0.354)		11 (0.433)	
L6	key width	5 (0.197)		6 (0.236)		8 (0.315)	
L7	key height	18 (0.709)		24.600 (0.969)		34.8 (1.37)	

* for these larger motor shaft diameters, please contact GAM

** depending on the motor, value can vary



Recommended Output Coupling (if necessary)

all stainless bellows	KG-VA-80	KG-VA-220	KG-VA-350
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TYPE CODES FOR SSP SERIES (SSP-W)

Example: SSP - W - 090 - 005 G - [115 - A01] - S111

Gearbox Series

Stainless Steel
Planetary Series

Gearbox Style

W = Output Shaft

Gearbox Size

070, 090, 120

Ratio

3, 4, 5, 7, 10, 12, 16, 20, 25, 35, 40, 50, 70, 100

Special Options

Assigned by GAM

Motor Mount Kit

Assigned by GAM

Options Available for This Product

G = Key on output DIN688

Tolerances (mm)

Size	k6	h7
Over 10	+0.012	0
Thru 18	+0.001	-0.018
Over 18	+0.015	0
Thru 30	+0.002	-0.021
Over 30	+0.018	0
Thru 50	+0.002	-0.025
Over 50	+0.021	0
Thru 80	+0.002	-0.030
Over 80	+0.025	0
Thru 120	+0.003	-0.035



▶ HIGH PRECISION: FP SERIES

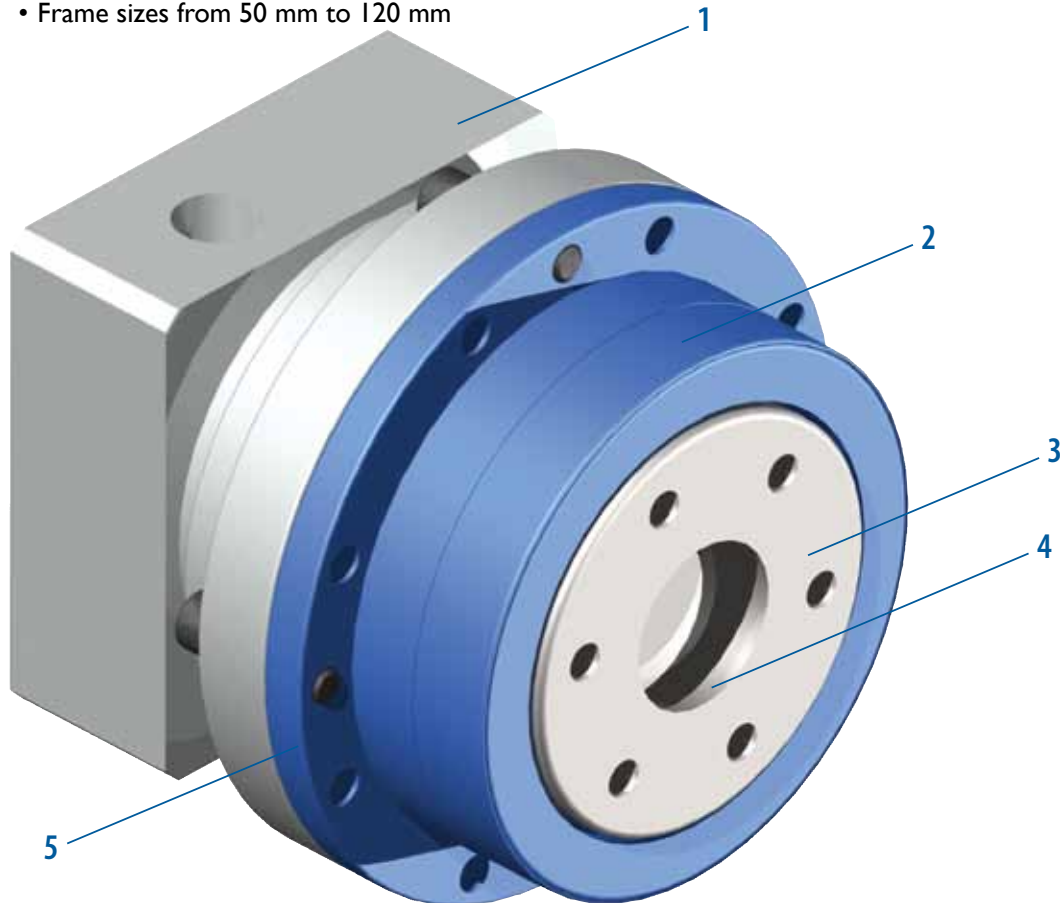
GAM can. Just ask!

If you don't see exactly what you need, let us know. We can modify the FP Series gearboxes to meet your needs. Page 3 provides a list of commonly requested modifications to give you a feel for our capabilities.

The FP Series is a “shaftless” planetary gearbox that offers advantages in space and performance. The output flange allows machine elements such as pinion gears, pulleys, rotary index tables, and transmission shafting to be easily connected directly to the output. The design also provides high torsional and tilting rigidity that improves machine performance.

Features and Benefits of the FP Series include:

- Compact design
- High tilting rigidity for high overhung loads
- Best in class performance for accuracy due to
 - High torsional stiffness
 - Low backlash
- Lightweight
- Long design life of 20,000 hours
- Lubricated for life
- Ready for motor mounting
- Ratios 3:1 - 91:1
- Frame sizes from 50 mm to 120 mm



1. Adapter Flange
(Customized adapter flanges for quick and easy motor mounting)

2. Output Bearing (internal)
(Innovative bearing arrangement for high stiffness)

3. Output Flange
(Easily mount components directly to flange)

4. Flange Pilot
(Centering pilot for machine elements)

5. Mounting Flange
(Allows for compact machine mounting)

▶ HIGH PRECISION: FP SERIES



FP-FB
Bellows output

FP-F

- Integrated coupling on output for high torsional stiffness and a zero backlash connection while compensating for misalignment
- Available with flange mounted bellows or elastomer couplings



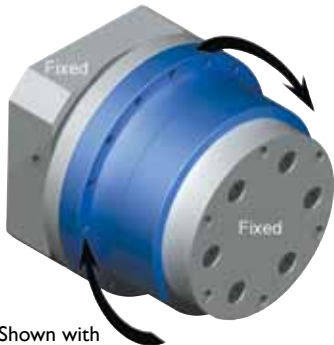
Shown with custom shaft easily bolted to gearbox.

- Simplify machine system – GAM can provide custom shafts with standard FP gearboxes
- Shafts can be easily added and removed with a few bolts when changes are required



Shown with pinion gear bolted to the output face.

- A true zero backlash connection of the pinion to the gearbox.
- Ideal for compact, rigid systems



Shown with output face fastened to stationary element. Gearbox housing will rotate.

FP-P

- Fixing output will allow rotation of housing
- A compact solution for space constraints



- Eliminate unnecessary components by fastening machine elements to the gearbox
- Gearbox housing rotates to directly drive a wheel or pulley



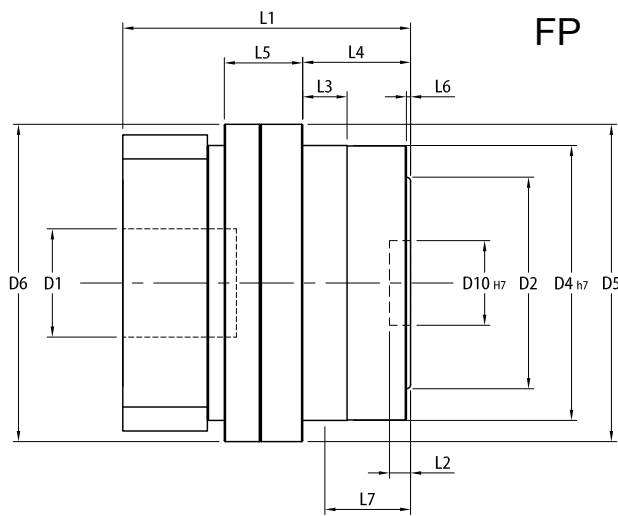
▶ FP SERIES - FP



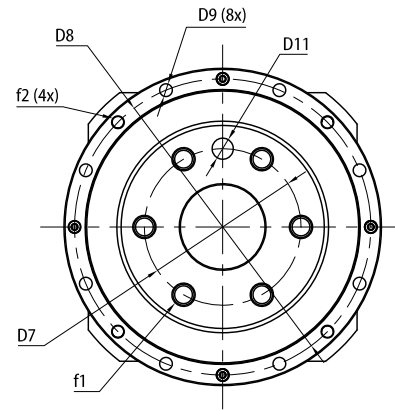
FP-F/P Series*			50		70		90		120					
Stock Ratios*			5, 10											
All Ratios Available*			4, 5, 7, 10, 16, 20, 21, 25, 28, 31, 35, 43, 49, 61, 91 (91:1 ratio not available in size 50)											
Nominal Output Torque (T_{2n})	Nm (lb-in)	4:1, 5:1, 7:1	6.5 (58)		26 (230)		54 (478)		120 (1062)					
		10:1, 91:1	5 (44)		16 (142)		40 (354)		105 (929)					
		all other ratios	16 (142)		44 (389)		100 (885)		210 (1859)					
Max Acceleration Output Torque (T_{2a})	Nm (lb-in)	4:1, 5:1, 7:1	13 (115)		36 (319)		100 (885)		200 (1770)					
		10:1, 91:1	9 (80)		24 (212)		75 (664)		180 (1593)					
		all other ratios	18 (159)		55 (487)		125 (1106)		255 (2257)					
Emergency Output Torque (T_{2not})	Nm (lb-in)	4:1, 5:1, 7:1	26 (230)		84 (743)		216 (1912)		480 (4248)					
		10:1, 91:1	20 (177)		62 (549)		110 (974)		410 (3629)					
		all other ratios	26 (230)		84 (743)		216 (1912)		480 (4248)					
Nominal Speed (n_{1n})	RPM	-	3000		3000		3000		2500					
Max Speed (n_{1max})		-	6000		6000		5000		5000					
Standard Output Backlash (j)	arcmin	1 Stage	<12		< 8		< 8		< 8					
		2 Stage	<15		<11		<11		<11					
Reduced Output Backlash (j)	arcmin	1 Stage	<8		< 5		< 5		< 5					
		2 Stage	<12		<8		<8		<8					
Radial Load (F_{rad})	N (lbs)	100rpm	1333 (300)		1932 (434)		3972 (893)		6541 (1470)					
		200rpm	1131 (254)		1389 (312)		2540 (571)		3955 (889)					
		300rpm	848 (191)		1050 (236)		1837 (413)		2696 (606)					
Axial Load (F_{axial})	N (lbs)	100rpm	359 (81)		445 (100)		795 (179)		1175 (264)					
		200rpm	243 (55)		293 (66)		508 (114)		709 (159)					
		300rpm	186 (42)		219 (49)		368 (83)		483 (109)					
Tilting Rigidity ¹	Nm/arcmin (lb-in/arcmin)	-	11 (97)		19 (168)		51 (451)		127 (1124)					
Tilting Moment Load (M_T)**	Nm (lb-in)	100rpm	33 (292)		57 (505)		147 (1301)		296 (2620)					
		200rpm	28 (248)		41 (363)		94 (832)		179 (1584)					
		300rpm	21 (186)		31 (274)		68 (602)		122 (1080)					
Torsional Stiffness	Nm/arcmin (lb-in/arcmin)	4, 16, 20, 28	0.5 (4.4)		2.4 (21.12)		7.1 (62.48)		17.2 (151.36)					
		5, 21, 25, 35	0.5 (4.4)		2.4 (21.12)		7.1 (62.48)		17.2 (151.36)					
		7, 31, 43, 49, 61	0.4 (3.52)		2.2 (19.36)		6 (52.8)		14 (123.2)					
		10, 91	0.4 (3.52)		2 (17.6)		5 (44)		10 (88)					
Weight (m)	kg (lbs)	1 Stage	0.8 (2)		1.5 (3)		3.5 (8)		7.6 (17)					
		2 Stage	1 (2.2)		1.8 (4)		3.8 (8.4)		8.4 (18.5)					
Noise Level (L_{PA})	dB	-	< 64		< 66		< 68		< 70					
Mass Moment of Inertia (J_1)	kg cm ²	all ratios	1 Stage	0.06	0.06	1 Stage	0.32	0.06	1 Stage	1.4	0.31	1 Stage	2.97	1.36
			2 Stage											
Efficiency at Load	1 stage efficiency: 94% 2 stage efficiency: 92%													
Service Life	>20,000 hours													
Lubrication	Lifetime lubricant with grease													
Protection Rating	IP 65													
Operating Temperature Range	-10°C to 90°C													

* Ratio for FP-P are (n-1) **Maximum value without axial load

1) Radial load distance shown in dimension tables (L7)



FP



FP Series		50		70		90		120	
		mm	(in)	mm	(in)	mm	(in)	mm	(in)
D1 _{max}	motor shaft diameter	14	(0.551)	14	(0.551)	22	(0.866)	28	(1.102)
D1 _{max} (2-Stage)	motor shaft diameter	14	(0.551)	14	(0.551)	19	(0.748)	22	(0.866)
D2	output flange diameter	42	(1.654)	55	(2.165)	75	(2.953)	105	(4.134)
D4 h7	pilot diameter	57	(2.244)	72	(2.835)	100	(3.937)	130	(5.118)
D5	flange diameter	69	(2.717)	84	(3.307)	118	(4.646)	150	(5.906)
D6	input housing diameter	56	(2.205)	72	(2.835)	100	(3.937)	130	(5.118)
D7	inner bolt circle	28	(1.102)	36	(1.417)	60	(2.362)	80	(3.150)
D8	outer bolt circle	63	(2.480)	78	(3.071)	109	(4.291)	140	(5.512)
D9	mounting holes	3.5	(0.138)	3.5	(0.138)	4.5	(0.177)	5.5	(0.217)
D10 H7	flange pilot	12	(0.472)	19	(0.748)	28	(1.102)	40	(1.575)
D11	dowel diameter x depth	4 x 4		5x5		6x6		8x8	
f1	flange through holes	6 x M4		6 x M5		6 x M6		6 x M8	
f2	threaded mounting holes	M3		M3		M4		M5	
L1** (1-Stage)	gearbox total length	69	(2.717)	83	(3.268)	107	(4.213)	134	(5.276)
L1** (2-Stage)	gearbox total length	100	(3.937)	95	(3.740)	120	(4.724)	147	(5.787)
L2	flange pilot depth	5	(0.197)	5	(0.197)	8	(0.315)	7	(0.276)
L3	pilot height	12	(0.472)	12	(0.472)	17	(0.669)	21	(0.827)
L4	output length	29	(1.142)	33	(1.299)	40.5	(1.594)	52.5	(2.067)
L5	flange length	15.5	(0.610)	20	(0.787)	28	(1.102)	37	(1.457)
L6	output flange height	3	(0.118)	3	(0.118)	3.5	(0.138)	3.5	(0.138)
L7	radial load distance	24.75	(0.974)	29.5	(1.161)	37	(1.457)	45.25	(1.781)

* for larger motor shaft diameters, please contact GAM ** depending on the motor, value can vary

TYPE CODES FOR FP SERIES (FP)

Example: FP - F - 070 - 005H - [115 - A01] - S111

Gearbox Series

FP = Flange Planetary

Gearbox Style

F = Output Flange Rotates
P = Gearbox Housing Rotates
FB = Bellows Coupling Output

Gearbox Size

050, 070, 090, 120

Ratio

4, 5, 7, 10, 16, 20, 21, 25, 28, 31, 35, 43, 49, 61, 91

(91:1 not available for size 50)

Ratio for FP-P is (n-1)

Special Options

Assigned by GAM

Motor Mount Kit

Assigned by GAM

Options Available for This Product

H = standard backlash

A = reduced backlash

Tolerances (mm)

Size	h7	H7
Over 10	0	+0.018
Thru 18	-0.018	0
Over 18	0	+0.021
Thru 30	-0.021	0
Over 30	0	+0.025
Thru 50	-0.025	0
Over 50	0	+0.030
Thru 80	-0.030	0
Over 80	0	+0.035
Thru 120	-0.035	0
Over 120	0	+0.040
Thru 180	-0.040	0



▶ FP SERIES - FP-FB

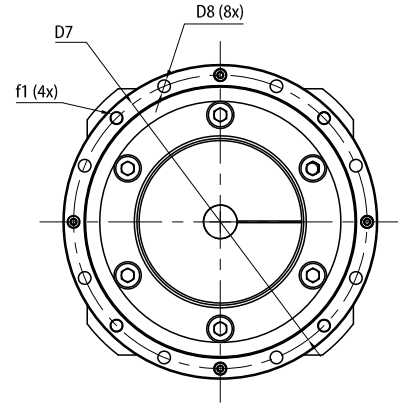
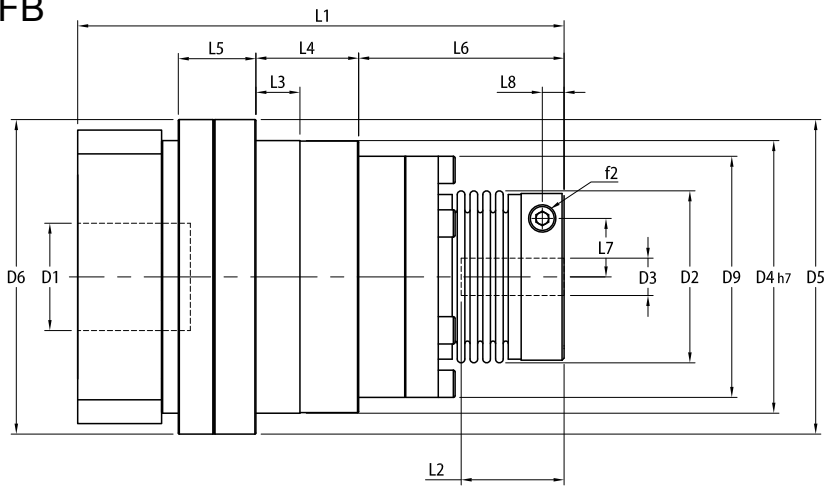


FP-F/P Series*			50		70		90		120	
Stock Ratios*			5, 10							
All Ratios Available*			4, 5, 7, 10, 16, 20, 21, 25, 28, 31, 35, 43, 49, 61, 91 (91:1 ratio not available in size 50)							
Nominal Output Torque (T_{2n})	Nm (lb-in)	4:1, 5:1, 7:1	6.5 (58)		26 (230)		54 (478)		120 (1062)	
		10:1, 91:1	5 (44)		16 (142)		40 (354)		105 (929)	
		all other ratios	16 (142)		44 (389)		100 (885)		210 (1859)	
Max Acceleration Output Torque (T_{2a})	Nm (lb-in)	4:1, 5:1, 7:1	13 (115)		36 (319)		100 (885)		200 (1770)	
		10:1, 91:1	9 (80)		24 (212)		75 (664)		180 (1593)	
		all other ratios	18 (159)		55 (487)		125 (1106)		255 (2257)	
Emergency Output Torque (T_{2not})	Nm (lb-in)	4:1, 5:1, 7:1	26 (230)		84 (743)		216 (1912)		480 (4248)	
		10:1, 91:1	20 (177)		62 (549)		110 (974)		410 (3629)	
		all other ratios	26 (230)		84 (743)		216 (1912)		480 (4248)	
Nominal Speed (n_{1n})	RPM	-	3000		3000		3000		2500	
Max Speed (n_{1max})		-	6000		6000		5000		5000	
Standard Output Backlash (j)	arcmin	1 Stage	<12		< 8		< 8		< 8	
		2 Stage	<15		<11		<11		<11	
Reduced Output Backlash (j)	arcmin	1 Stage	<8		< 5		< 5		< 5	
		2 Stage	<12		<8		<8		<8	
Torsional Stiffness	Nm/arcmin (lb-in/arcmin)	4, 16, 20, 28	.49 (4.3)		1.9 (16.8)		5.2 (46.4)		10.7 (94.3)	
		5, 21, 25, 35	.49 (4.3)		1.9 (16.8)		5.2 (46.4)		10.7 (94.3)	
		7, 31, 43, 49, 61	.39 (3.5)		1.8 (15.9)		4.6 (40.9)		9.3 (82.6)	
		10, 91	.39 (3.5)		1.6 (14.2)		4 (35.4)		7.4 (65.2)	
Weight (m)	kg (lbs)	1 Stage	1.4 (3)		2 (4.5)		4.5 (10)		8.9 (19.5)	
		2 Stage	1.5 (3.2)		2.5 (5.5)		4.8 (10.5)		9.5 (21)	
Noise Level (L_{pA})	dB	-	< 64		< 66		< 68		< 70	
Mass Moment of Inertia (J_1)	kg cm ²		1 Stage	2 Stage	1 Stage	2 Stage	1 Stage	2 Stage	1 Stage	2 Stage
		4, 16, 20, 28	0.06	0.06	0.32	0.06	1.44	0.31	2.97	1.36
		5, 21, 25, 35	0.06	0.06	0.31	0.06	1.36	0.31	2.68	1.36
		7, 31, 43, 49, 61	0.06	0.06	0.3	0.06	1.3	0.3	2.48	1.30
		10, 91	0.06	0.06	0.3	0.06	1.27	0.3	2.39	1.27
Efficiency at Load	1 stage efficiency: 94% 2 stage efficiency: 92%									
Service Life	>20,000 hours									
Lubrication	Lifetime lubricant with grease									
Protection Rating	IP 65									
Operating Temperature Range	-10°C to 90°C									

* Ratio for FP-P are (n-1)

1) Radial load distance shown in dimension tables (L7)

FP-FB



FP-FB Series		50		70		90		120	
		mm	(in)	mm	(in)	mm	(in)	mm	(in)
D1 _{max}	motor shaft diameter	14	(0.551)	14	(0.551)	22	(0.866)	28	(1.102)
D1 _{max} (2-Stage)	motor shaft diameter	14	(0.551)	14	(0.551)	19	(0.748)	22	(0.866)
D2	coupling diameter	41/44.5	(1.61/1.75)	56	(2.205)	71	(2.795)	82	(3.228)
D3 _{min}	minimum output bore	10	(0.394)	16	(0.630)	24	(0.945)	25	(0.984)
D3 _{max}	maximum output bore	21/24	(0.83/0.94)	30	(1.181)	38.1	(1.500)	43	(1.693)
D4 h7	pilot diameter	57	(2.244)	72	(2.835)	100	(3.937)	130	(5.118)
D5	flange diameter	69	(2.717)	84	(3.307)	118	(4.646)	150	(5.906)
D6	input housing diameter	56	(2.205)	72	(2.835)	100	(3.937)	130	(5.118)
D7	outer bolt circle	63	(2.480)	78	(3.071)	109	(4.291)	140	(5.512)
D8	mounting holes	3.5	(0.138)	3.5	(0.138)	4.5	(0.177)	5.5	(0.217)
D9		52.5	(2.067)	69	(2.717)	88	(3.465)	115	(4.528)
f1	threaded mounting holes	M3		M3		M4		M5	
f2		M5		M6		M8		M10	
L1** (1-Stage)	gearbox total length	128	(5.039)	152	(5.984)	183.5	(7.224)	227	(8.937)
L1** (2-Stage)	gearbox total length	159	(6.260)	164	(6.457)	196.5	(7.736)	240	(9.449)
L2	max output engagement	50	(1.969)	58	(2.283)	63.5	(2.500)	76	(2.992)
L3	pilot height	12	(0.472)	12	(0.472)	17	(0.669)	21	(0.827)
L4	output length	29	(1.142)	33	(1.299)	40.5	(1.594)	52.5	(2.067)
L5	flange length	15.5	(0.610)	20	(0.787)	28	(1.102)	37	(1.457)
L6	coupling location	62	(2.441)	72	(2.835)	80	(3.150)	96.5	(3.799)
L7	bolt hole location	13	(0.512)	19	(0.748)	25	(0.984)	28.5	(1.122)
L8	bolt hole location	6	(0.236)	7.5	(0.295)	8.5	(0.335)	10.5	(0.413)

* for larger motor shaft diameters, please contact GAM ** depending on the motor, value can vary

TYPE CODES FOR FP SERIES (FP)

Example: FP - F - 070 - 005H - [115 - A01] - S111

Gearbox Series

FP = Flange Planetary

Gearbox Style

F = Output Flange Rotates
P = Gearbox Housing Rotates
FB = Bellows Coupling Output

Gearbox Size

050, 070, 090, 120

Ratio

4, 5, 7, 10, 16, 20, 21, 25, 28, 31, 35, 43, 49, 61, 91
(91:1 not available for size 50)
Ratio for FP-P is (n-1)

Special Options

Assigned by GAM

Motor Mount Kit

Assigned by GAM

Options Available for This Product

H = standard backlash
A = reduced backlash

Tolerances (mm)

Size	h7
Over 50	0
Thru 80	-0.030
Over 80	0
Thru 120	-0.035
Over 120	0
Thru 180	-0.040



► PRECISION: PE SERIES

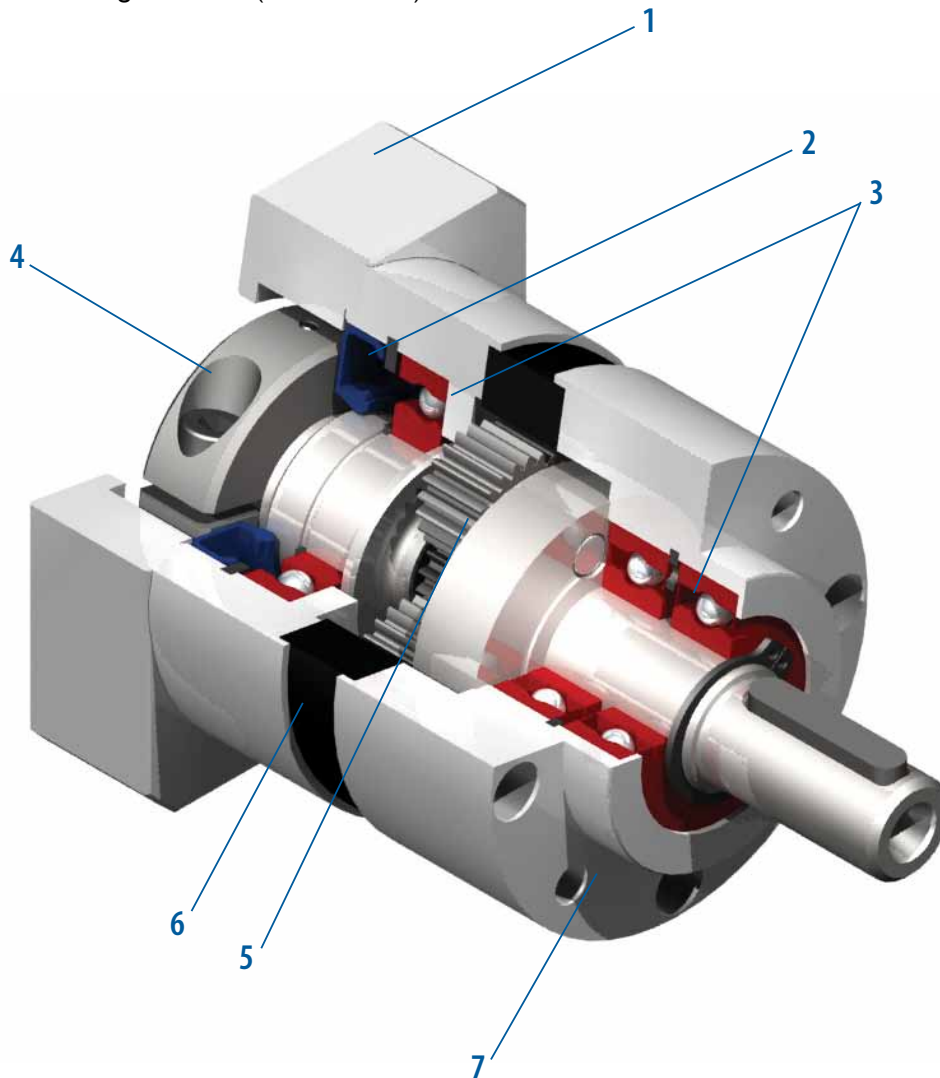
GAM can. Just ask!

If you don't see exactly what you need, let us know. We can modify the PE Series gearboxes to meet your needs. Page 3 provides a list of commonly requested modifications to give you a feel for our capabilities.

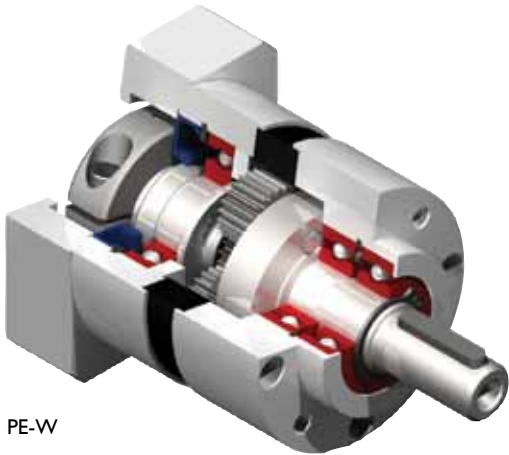
GAM introduces the PE Series as its lowest cost planetary gearbox line. The PE Series is a great value for servo, stepper, and other applications. It offers the best quality available for the price point. The PE Series has features that make it unequaled in its class and ideal for many applications.

PE Series offers:

- Metric output (4 sizes)
- NEMA output (4 sizes)
- Wide range of ratios (3:1 to 1000:1)



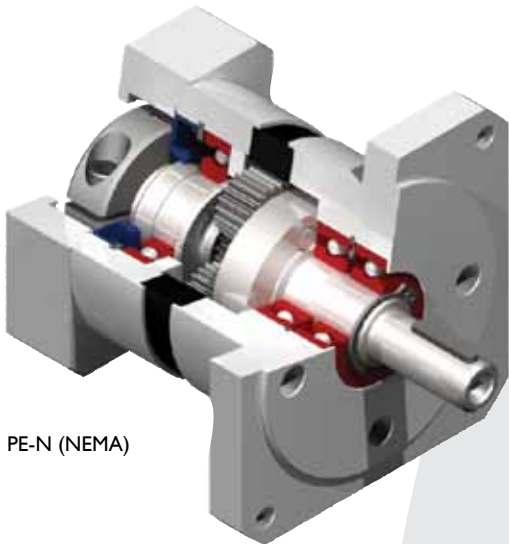
- | | |
|---|---|
| 1. Adapter Plate
(Customized adapter plates for quick and easy motor mounting) | 4. Input Clamping Element |
| 2. Seals
(Protective seals to isolate the gearbox) | 5. Planet Gears
(Precision honed gears) |
| 3. Ball Bearings
(dual ball bearings) | 6. Ring Gear
(Ring gear incorporated into housing) |
| | 7. Output Face |



PE-W

PE-W

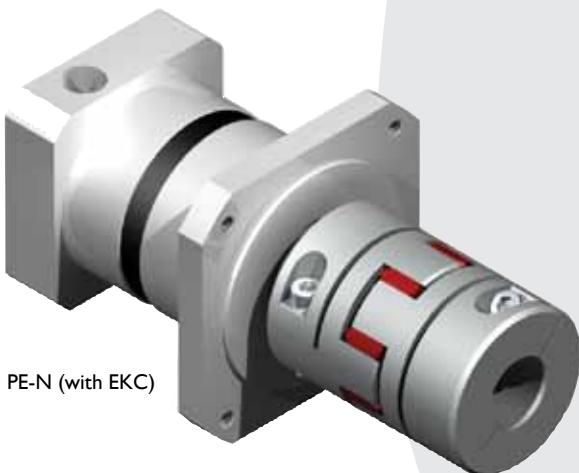
- Metric output face
- Ratios 3:1 to 1000:1
- Frame sizes from 50 mm to 118 mm
- Ready to mount to your motor



PE-N (NEMA)

PE-N (NEMA)

- NEMA output face
- Ratios 3:1 to 1000:1
- Frame sizes from NEMA 17 to 42
- Ready to mount to your motor



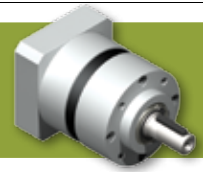
PE-N (with EKC)

PE-N (shown with GAM's new EKC coupling)

- Use the PE Series gearbox with the EKC coupling for the most cost-effective solution!



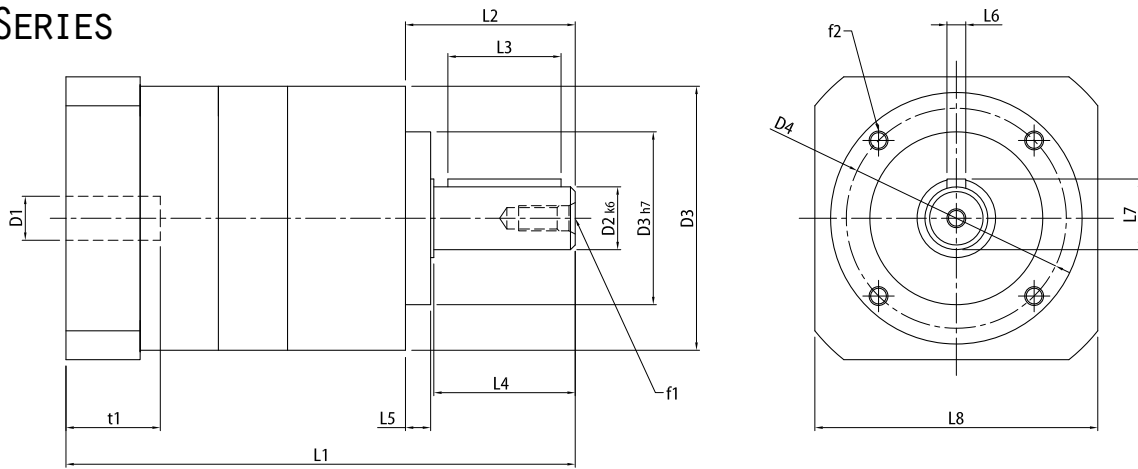
▶ PE-W SERIES - (METRIC)



PE-W Series		50	64	84	118	
Stock Ratios		5, 10, 50				
All Ratios Available		1-stage: 3, 4, 5, 7, 10 2-stage: 12, 16, 20, 25, 35, 40, 50, 70, 100 3-stage: 120, 160, 200, 250, 350, 490, 700, 1000				
Nominal Output Torque (T_{2n})	Nm (lb-in)	3:1	5 (44)	20 (177)	40 (354)	100 (885)
		4, 5, 7:1	6.5 (58)	26 (230)	54 (478)	120 (1062)
		10, 100, 1000:1	5 (44)	16 (142)	40 (354)	105 (929)
		12:1	14 (124)	36 (319)	80 (708)	170 (1505)
		all other ratios	16 (142)	42 (372)	100 (885)	210 (1859)
Max Acceleration Output Torque (T_{2b})	Nm (lb-in)	3:1	10 (89)	36 (319)	70 (620)	180 (1593)
		4, 5, 7:1	13 (115)	44 (389)	100 (885)	200 (1770)
		10, 100, 1000:1	10 (89)	24 (212)	75 (664)	180 (1593)
		12:1	17.5 (155)	45 (398)	100 (885)	215 (1903)
		all other ratios	20 (177)	52 (460)	125 (1106)	255 (2257)
Emergency Output Torque (T_{2not})	Nm (lb-in)	3:1	20 (177)	72 (637)	160 (1416)	200 (1770)
		4, 5, 7:1	26 (230)	84 (743)	216 (1912)	480 (4248)
		10, 100, 1000:1	20 (177)	62 (549)	160 (1416)	410 (3629)
		12:1	28 (248)	72 (637)	160 (1416)	400 (3540)
		all other ratios	32 (283)	84 (743)	216 (1912)	480 (4248)
Nominal Speed (n_{in})	RPM	-	3500	3500	3000	2500
Max Speed (n_{imax})		-	6000	6000	6000	5000
Standard Output Backlash (j)	arcmin	3:1 - 10:1	<18	<13	<13	<12
		12:1 - 100:1	<22	<15	<15	<14
		120:1 - 1000:1	<24	<17	<17	<16
Allowable Radial Load (F_{rad}) ¹⁾	N (lbs)	-	425 (96)	560 (126)	1300 (293)	2500 (563)
Allowable Axial Load (F_{axial})	N (lbs)	-	350 (79)	500 (113)	1000 (225)	1500 (338)
Torsional Stiffness (C_{t21})	Nm/arcmin (lb-in/arcmin)	10, 100, 1000:1	0.60 (5.3)	1.3 (11.5)	3.4 (30.1)	8.3 (73.5)
		7, 49, 70, 490, 700:1	0.78 (6.9)	1.7 (15)	4.8 (42.5)	13.6 (120.4)
		all other ratios	0.9 (8.0)	2.4 (21.2)	7.1 (62.8)	17.2 (152.2)
Weight (m)	kg (lbs)	1-stage	0.4 (0.9)	1.0 (2.2)	2.3 (5.1)	5.8 (12.8)
		2-stage	0.5 (1.1)	1.3 (2.9)	3.1 (6.8)	7.9 (17.4)
		3-stage	- (-)	1.6 (3.5)	3.9 (8.6)	10.0 (22.1)
Noise Level (L_{pk})	dB(A)	-	< 70	< 70	< 72	< 72
Mass Moment of Inertia (J_x)	kg cm ² (lb-in ²) (lb-in ²)	3:1	0.06 (0.02)	0.176 (0.06)	0.542 (0.184)	2.54 (0.864)
		4, 12, 16:1	0.04 (0.014)	0.173 (0.059)	0.473 (0.161)	1.86 (0.632)
		5, 7, 20, 25, 35:1	0.04 (0.014)	0.156 (0.053)	0.407 (0.138)	1.51 (0.513)
		all other ratios	0.04 (0.014)	0.137 (0.047)	0.328 (0.112)	1.07 (0.364)
Efficiency at Load	1-stage: 94% 2-stage: 92% 3-stage: 90%					
Service Life	> 15,000 hours					
Lubrication	Mineral Grease EPO					
Protection Rating	IP 64					
Operating Temperature Range	-20°C to 90°C					

1) Load applied at center of output shaft @100 RPM

PE-W SERIES



mm (in)		50	64	84	118
D1 _{max standard*}	motor shaft diameter	12.7 (0.500)	14 (0.551)	19 (0.748)	24 (0.945)
D2 _{k6}	output shaft diameter	12 (0.472)	14 (0.551)	20 (0.787)	25 (0.984)
D3 _{h7}	pilot diameter	35 (1.378)	40 (1.575)	55 (2.165)	80 (3.15)
D4	bolt circle	44 (1.732)	52 (2.047)	70 (2.756)	100 (3.937)
D5	housing diameter	50 (1.969)	64 (2.52)	84 (3.307)	118 (4.646)
f1	shaft thread	M4x8	M5x12	M6x16	M10x22
f2	mounting holes	M4x6	M5x12	M6x14	M8x18
L1 1-STAGE**	gearbox total length	93 (3.661)	117 (4.606)	162 (6.378)	199 (7.835)
L1 2-STAGE**		108 (4.252)	139 (5.472)	195 (7.677)	239 (9.409)
L1 3-STAGE**		- (-)	161 (6.339)	228 (8.976)	280 (11.024)
L2	shaft length	24.5 (0.965)	39 (1.535)	54 (2.126)	61 (2.402)
L3	key length	16 (0.63)	25 (0.984)	36 (1.417)	45 (1.772)
L4	usable shaft length	20.5 (0.807)	30 (1.181)	45 (1.772)	50 (1.969)
L5	pilot height	4 (0.157)	8 (0.315)	8 (0.315)	10 (0.394)
L6	key width	4 (0.157)	5 (0.197)	6 (0.236)	8 (0.315)
L7	key height	13.5 (0.531)	16 (0.63)	22.5 (0.886)	28 (1.102)
L8**	adapter size	50 (1.969)	70 (2.756)	90 (3.543)	120 (4.724)
t1***	allowable shaft length	23 (0.87)	23 (0.906)	30 (1.181)	40 (1.575)

* for larger motor shaft diameters, please contact GAM ** depending on the motor, value can vary *** long motor shafts can be accommodated, but overall gearbox length will grow



Recommended Output Coupling (if necessary)

metal bellows	KLC-25	KLC-50	KLC-125	KM-270
elastomer	EKC-25	EKC-35	EKC-80 or 110	EKM-300

TYPE CODES FOR PE-W SERIES (METRIC)

Example: PE - W - 084 - 005 G - [115 - A01] - S111

Gearbox Series

PE w/ Metric Output

Gearbox Style

W = Output Shaft

Gearbox Size

050, 064, 084, 118

Ratio

3, 4, 5, 7, 10, 12, 16, 20, 25, 35, 40, 50, 70, 100, 120, 160, 200, 250, 350, 490, 700, 000=1000

Special Options

Assigned by GAM

Motor Mount Kit

Assigned by GAM

Options Available for This Product

G = Key on output shaft per DIN6885

Tolerances (mm)

Size	k6	h7
Over 6	+0.010	0
Thru 10	+0.001	-0.015
Over 10	+0.012	0
Thru 18	+0.001	-0.018
Over 18	+0.015	0
Thru 30	+0.002	-0.021
Over 30	+0.018	0
Thru 50	+0.002	-0.025
Over 50	+0.021	0
Thru 80	+0.002	-0.030



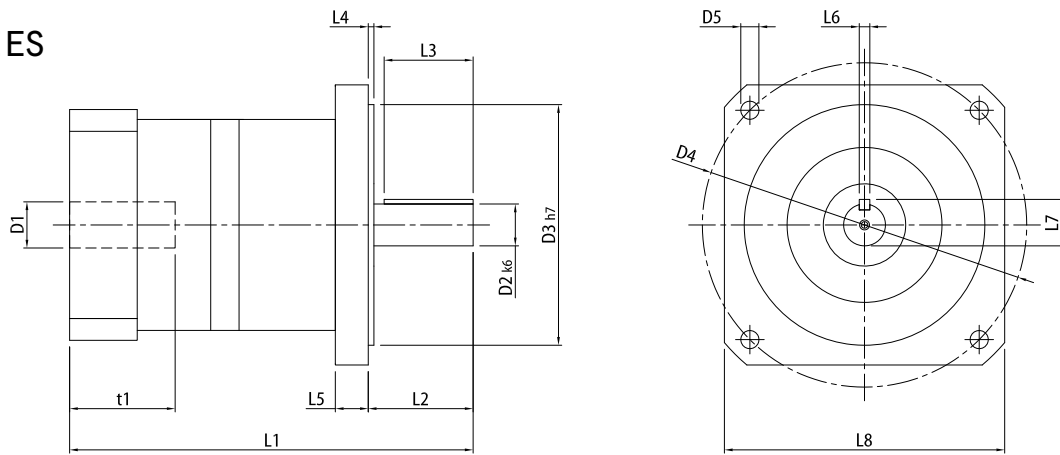
▶ PE-N SERIES - (NEMA)



PE-N Series		17	23	34	42	
Stock Ratios		5, 10, 50				
All Ratios Available		1-stage: 3, 4, 5, 7, 10 2-stage: 12, 16, 20, 25, 35, 40, 50, 70, 100 3-stage: 120, 160, 200, 250, 350, 490, 700, 1000				
Nominal Output Torque (T_{2n})	Nm (lb-in)	3:1	5 (44)	5 (44)	20 (177)	40 (354)
		4, 5, 7:1	6.5 (58)	6.5 (58)	26 (230)	54 (478)
		10, 100, 1000:1	5 (44)	5 (44)	16 (142)	40 (354)
		12:1	14 (124)	14 (124)	36 (319)	80 (708)
		all other ratios	16 (142)	16 (142)	42 (372)	100 (885)
Max Accel. Torque (T_{2B})	Nm (lb-in)	3:1	10 (89)	10 (89)	36 (319)	70 (620)
		4, 5, 7:1	13 (115)	13 (115)	44 (389)	100 (885)
		10, 100, 1000:1	10 (89)	10 (89)	24 (212)	75 (664)
		12:1	17.5 (155)	17.5 (155)	45 (398)	100 (885)
		all other ratios	20 (177)	20 (177)	52 (460)	125 (1106)
Emergency Output Torque (T_{2not})	Nm (lb-in)	3:1	20 (177)	20 (177)	72 (637)	160 (1416)
		4, 5, 7:1	26 (230)	26 (230)	84 (743)	216 (1912)
		10, 100, 1000:1	20 (177)	20 (177)	62 (549)	160 (1416)
		12:1	28 (248)	28 (248)	72 (637)	160 (1416)
		all other ratios	32 (283)	32 (283)	84 (743)	216 (1912)
Nominal Speed (n_{1n})	RPM	-	3500	3500	3500	3000
Max Input Speed (n_{1max})		-	6000	6000	6000	6000
Standard Output Backlash (j)	arcmin	3:1 - 10:1	<20	<16	<13	<13
		12:1 - 100:1	<24	<20	<15	<15
		120:1 - 1000:1	-	-	<17	<17
Allowable Radial Load (F_{rad}) ¹⁾	N (lbs)	-	361 (81)	361 (81)	476 (107)	1105 (249)
Allowable Axial Load (F_{axial})	N (lbs)	-	298 (67)	298 (67)	425 (96)	850 (191)
Torsional Stiffness (C_{21})	Nm/arcmin (lb-in/arcmin)	10, 100, 1000:1	0.50 (4.4)	0.60 (5.3)	1.3 (11.5)	3.4 (30.1)
		7, 70, 490, 700:1	0.65 (5.8)	0.78 (6.9)	1.7 (15)	4.8 (42.5)
		all other ratios	0.8 (7.5)	0.9 (8.0)	2.4 (21.2)	7.1 (62.8)
Weight (m)	kg (lbs)	1-stage	0.45 (1.0)	0.45 (1.0)	1.1 (2.4)	2.4 (5.3)
		2-stage	0.55 (1.2)	0.55 (1.2)	1.4 (3.1)	3.2 (7.1)
		3-stage	- (-)	- (-)	1.7 (3.7)	4.0 (8.8)
Noise Level (L_{pk})	dB(A)	-	<70	<70	<70	<72
Mass Moment of Inertia (J_1)	kg cm ² (lb-in ²)	3:1	0.06 (0.02)	0.06 (0.02)	0.176 (0.06)	0.542 (0.184)
		4:1, 12:1, 16:1	0.04 (0.014)	0.04 (0.014)	0.173 (0.059)	0.473 (0.161)
		5, 7, 20, 25, 35:1	0.04 (0.014)	0.04 (0.014)	0.156 (0.053)	0.407 (0.138)
		all other ratios	0.04 (0.014)	0.04 (0.014)	0.137 (0.047)	0.328 (0.112)
Efficiency at Load	1-stage: 94% 2-stage: 92% 3-stage: 90%					
Service Life	> 15,000 hours					
Lubrication	Mineral Grease EPO					
Protection Rating	IP 64					
Operating Temperature Range	-20°C to 90°C					

1) Load applied at center of output shaft @100 RPM

PE-N SERIES



PE-N Series		17		23		34		42	
		mm	(in)	mm	(in)	mm	(in)	mm	(in)
D1 max standard*	motor shaft diameter	11	(0.433)	14	(0.551)	14	(0.551)	19	(0.748)
D2 k6	output shaft diameter	9.525	(0.375)	9.525	(0.375)	12.700	(0.500)	19.05	(0.750)
D3 h7	pilot diameter	21.97	(0.865)	38.100	(1.500)	73.025	(2.875)	55.55	(2.187)
D4	bolt circle	43.8	(1.725)	66.7	(2.625)	98.400	(3.875)	125.7	(4.95)
D5	mounting holes	3.25	(0.128)	5	(0.2)	5.5	(0.22)	7.1	(0.28)
L1 1-STAGE**	gearbox total length	108	(4.252)	102	(4.016)	125	(4.921)	162	(6.378)
L1 2-STAGE**		124	(4.882)	122.5	(4.823)	147	(5.787)	194.5	(7.657)
L1 3-STAGE**		-	(-)	-	(-)	169	(6.654)	227	(8.937)
L2	shaft length	25.4	(1.00)	25.4	(1.00)	31.8	(1.25)	38.1	(1.50)
L3	key length	-	(-)	-	(-)	27	(1.06)	29	(1.14)
L4	pilot height	1.6	(0.063)	1.6	(0.06)	1.7	(0.07)	2.4	(0.09)
L5	flange thickness	4.9	(0.193)	5	(0.2)	10	(0.39)	13	(0.51)
L6	key width	-	(-)	-	(-)	3.2	(0.13)	4.8	(0.19)
L7	key height / flat height	9.14	(0.36)	9.14	(0.36)	14.3	(0.56)	18.260	(0.72)
L8	output flange size	40	(1.575)	57.14	(2.25)	82.55	(3.25)	106.68	(4.20)
t1***	allowable motor shaft	25	(0.984)	23	(0.87)	32	(1.26)	40	(1.575)

* for larger motor shaft diameters, please contact GAM **depending on the motor, value can vary *** longer motor shafts can be accommodated, but overall gearbox length will grow



Recommended Output Coupling (if necessary)

metal bellows

KLC-25

KLC-25

KLC-50

KLC-125

elastomer

EKC-25

EKC-25

EKC-80

EKC-110

TYPE CODES FOR PE-N SERIES (NEMA)

Example: PE - N23 - 005 G - [115 - A01] - S111

Gearbox Series

NPE w/ NEMA output

Gearbox Style

N17 = NEMA17
N23 = NEMA23
N34 = NEMA34
N42 = NEMA42

Ratio

3, 4, 5, 7, 10, 12, 16, 20, 25, 35, 40, 50, 70, 100,
120, 160, 200, 250, 350, 490, 700, 000=1000

Special Options

Assigned by GAM

Motor Mount Kit

Assigned by GAM

Options Available for This Product

G = Key on output shaft per DIN6885
flat on NEMA 17 and NEMA 23

Tolerances (mm)

Size	k6	h7
Over 6	+0.010	0
Thru 10	+0.001	-0.015
Over 10	+0.012	0
Thru 18	+0.001	-0.018
Over 18	+0.015	0
Thru 30	+0.002	-0.021
Over 30	+0.018	0
Thru 50	+0.002	-0.025
Over 50	+0.021	0
Thru 80	+0.002	-0.030