Performance: PE Series

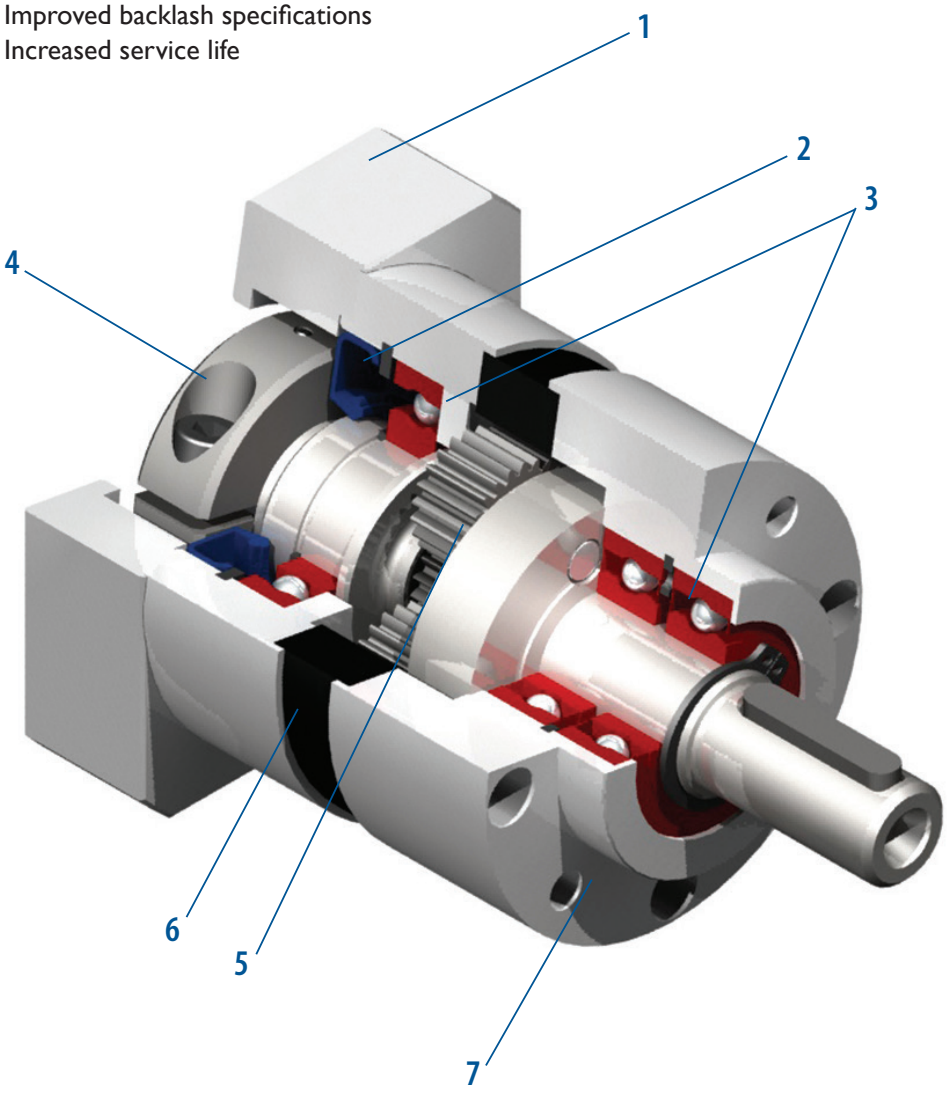
GAM can.

If you don't see exactly what you need, let us know. We can modify the PE Series gearboxes to meet your needs. Page 4 provides a list of commonly requested modifications to give you a feel for our capabilities.

The GAM PE series is a great gearbox value for servo, stepper, and other motion control applications. It offers the best quality available for the price point. Based on the design of the popular EPL series, the PE series is a reliable alternative when radial or axial loadings are minimized.

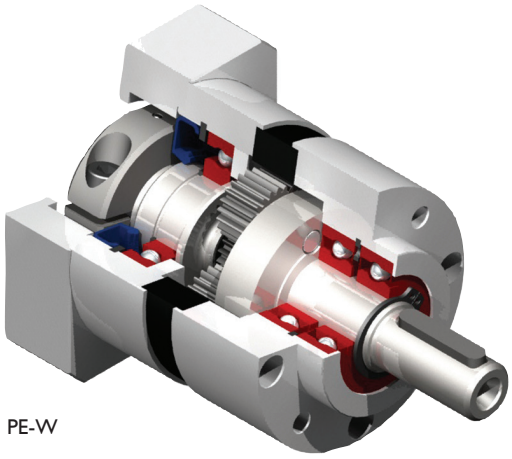
PE Series offers:

- Metric output (4 sizes)
- NEMA output (4 sizes)
- Wide range of ratios (3:1 to 1000:1)
- Available to purchase online!
- Improved backlash specifications
- Increased service life



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

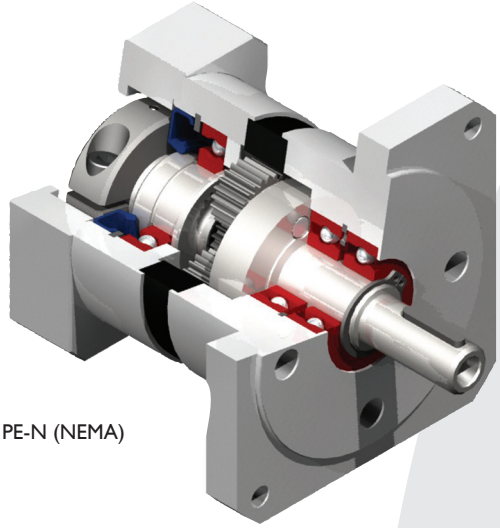
Performance: PE Series



PE-W

PE-W

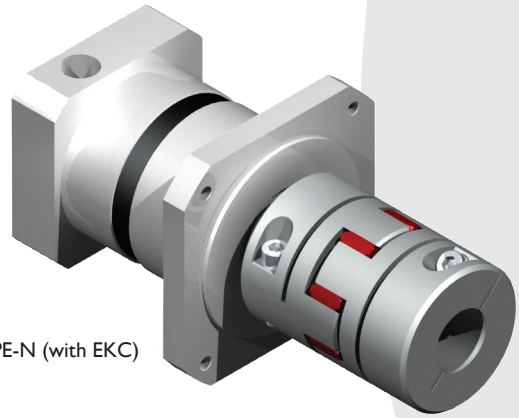
- Metric output face
- Ratios 3:1 to 1000:1
- Frame sizes from 50 mm to 118 mm
- Ready to mount to your motor



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

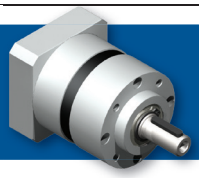


PE-N (with EKC)

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

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

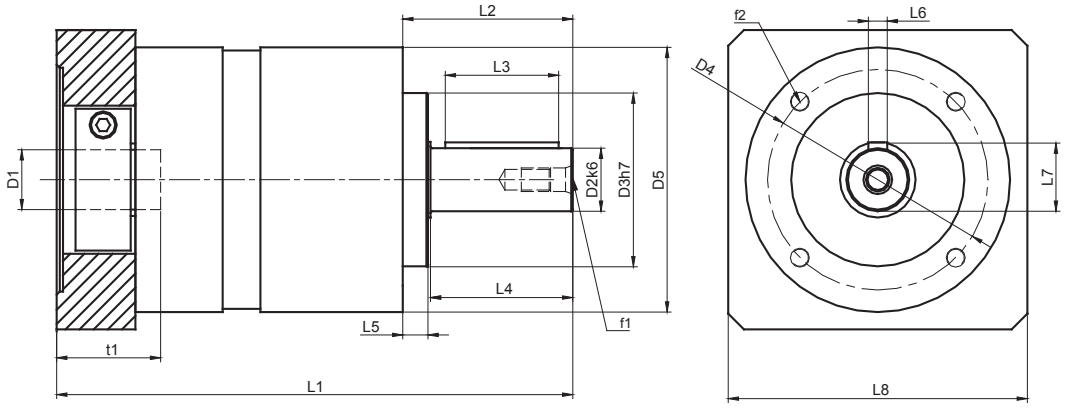
PE-W Series - (Metric)



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_{1n})	RPM	-	3500	3500	3000	2500
Max Speed (n_{1max})		-	6000	6000	6000	5000
Standard Output Backlash (j)	arcmin	3:1 - 10:1	<16	<10	<10	<8
		12:1 - 100:1	<20	<14	<14	<12
		120:1 - 1000:1	-	<18	<18	<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	0.60 (5.3)	1.3 (11.5)	3.4 (30.1)	8.3 (73.5)
		7, 70, 700	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_{PA})	dB(A)	-	< 64	< 66	< 68	< 70
Mass Moment of Inertia (J_1)	kg cm^2 (lb-in^2) (lb-in^2)	3:1	0.06 (0.021)	0.45 (0.154)	1.37 (0.468)	6.54 (2.235)
		4:1, 12:1, 16:1	0.04 (0.014)	0.38 (0.130)	1.14 (0.390)	4.8 (1.640)
		5:1, 20:1, 25:1	0.04 (0.014)	0.36 (0.123)	1.05 (0.359)	4.05 (1.384)
		7:1, 35:1	0.04 (0.014)	0.35 (0.120)	0.97 (0.331)	3.4 (1.162)
		10:1, 40:1 - 100:1	0.04 (0.014)	0.34 (0.116)	0.93 (0.318)	3.1 (1.059)
		120:1 - 1000:1	(0.000)	0.34 (0.116)	0.93 (0.318)	3.12 (1.066)
Efficiency at Load			1-stage: 94% 2-stage: 92% 3-stage: 90%			
Service Life			>20,000			
Lubrication			Mineral Grease EP0			
Protection Rating			IP 64			
Operating Temperature Range			-20°C to 90°C			

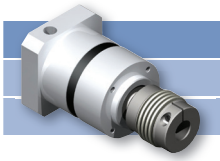
1) Load applied at center of output shaft @100 RPM

PE-W



mm (in)		50	64	84	118
D1 max standard*	motor shaft diameter	11 (0.433)	14 (0.551)	19 (0.748)	24 (0.945)
D1 max available*	motor shaft diameter	14 (0.551)	16 (0.630)	24 (0.945)	32 (1.260)
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	18 (0.709)	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
****The PE-W-050 may have a blue ring gear



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

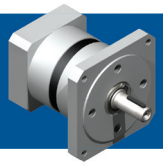
Options Available for This Product
G = Key on output shaft per DIN6885

Motor Mount Kit
Assigned by GAM

Special Options
Assigned by GAM

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

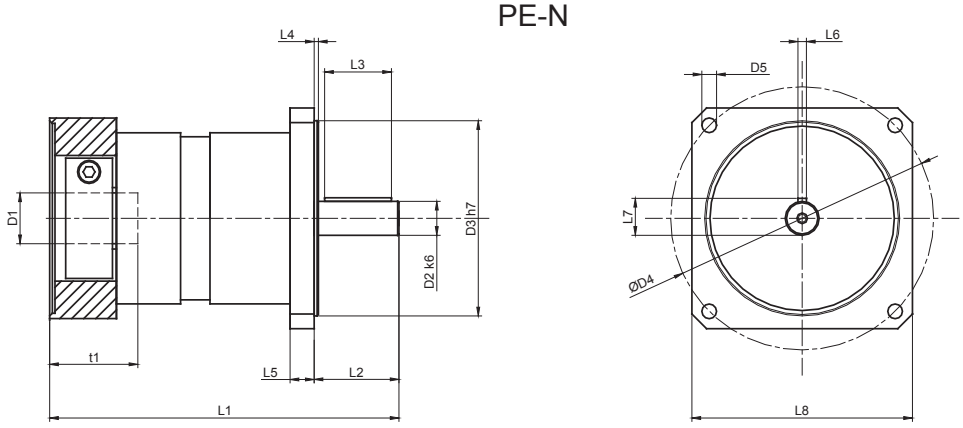
PE-N Series - (NEMA)



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		< 10		< 10	
		12:1 - 100:1	<24		<20		< 14		< 14	
		120:1 - 1000:1	-		-		< 18		< 18	
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_{t21})	Nm/arcmin (lb-in/arc-min)	10, 100, 1000	0.50	(4.4)	0.60	(5.3)	1.3	(11.5)	3.4	(30.1)
		7, 70, 700	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_{PA})	dB(A)	-	<60		<64		< 66		< 68	
Mass Moment of Inertia (J_1)	kg cm^2 (lb-in^2)	3:1	0.0144	(0.005)	0.06	(0.021)	0.45	(0.154)	1.37	(0.468)
		4:1, 12:1, 16:1	0.0096	(0.003)	0.04	(0.014)	0.38	(0.130)	1.14	(0.390)
		5:1, 20:1, 25:1	0.0096	(0.003)	0.04	(0.014)	0.36	(0.123)	1.05	(0.359)
		7:1, 35:1	0.0152	(0.005)	0.04	(0.014)	0.35	(0.120)	0.97	(0.331)
		10:1, 40:1 - 100:1	0.0078	(0.003)	0.04	(0.014)	0.34	(0.116)	0.93	(0.318)
		120:1 - 1000:1	-	(-)	-	(-)	0.34	(0.116)	0.93	(0.318)
Efficiency at Load		1-stage: 94% 2-stage: 92% 3-stage: 90%								
Service Life		>20,000								
Lubrication		Mineral Grease EP0								
Protection Rating		IP 64								
Operating Temperature Range		-20°C to 90°C								

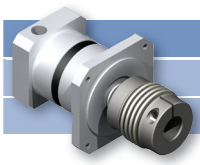
1) Load applied at center of output shaft @100 RPM

PE-N



PE-N Series		17		23		34		42	
		mm	(in)	mm	(in)	mm	(in)	mm	(in)
D1 max standard*	motor shaft diameter	11	(0.433)	11	(0.433)	14	(0.551)	19	(0.748)
D1 max available*	motor shaft diameter	11	(0.433)	14	(0.551)	16	(0.630)	24	(0.945)
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)	31.8	(1.25)
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

Options Available for This Product
G = Key on output shaft per DIN6885 flat on NEMA 17 and NEMA 23

Motor Mount Kit
Assigned by GAM

Special Options
Assigned by GAM

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