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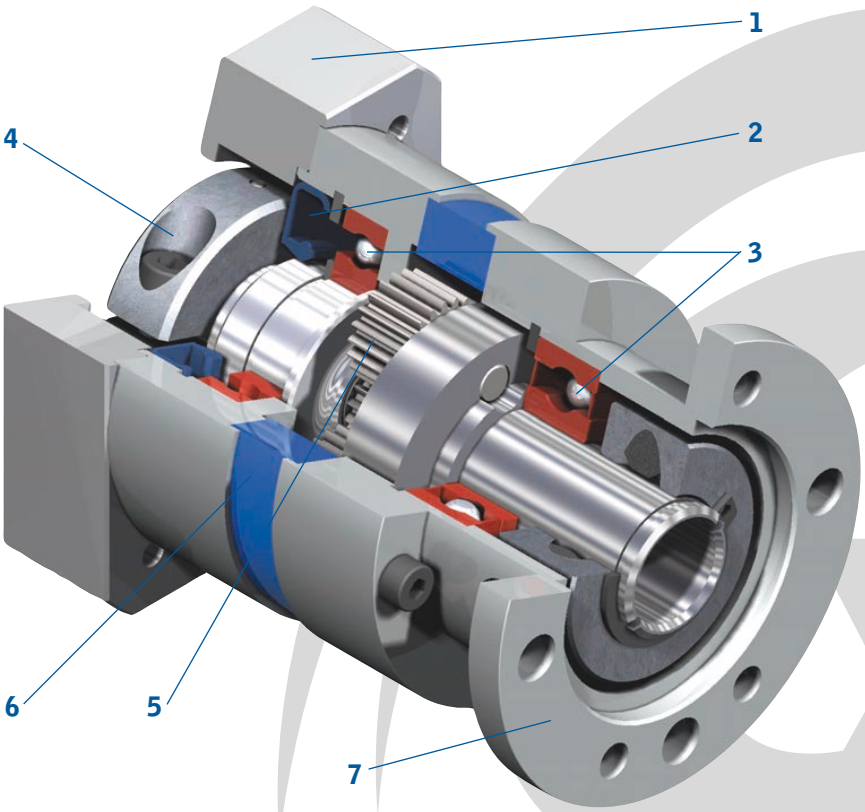
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ECONOMY SERIES

Designed to maintain the high quality associated with GAM Gear products, the Economy Series was engineered to provide a high-quality, low-cost gearing solution for less demanding servo applications. The EPL Series consists of a variety of configurations to meet the requirements of many applications.

- **Low backlash**
- **Precision gears**
- **Lightweight**
- **Lubricated for life**
- **Fixed input with radial clamping ring makes for quick and easy mounting to metric or English motors**
- **Many customizations available**



Linear Mount shown

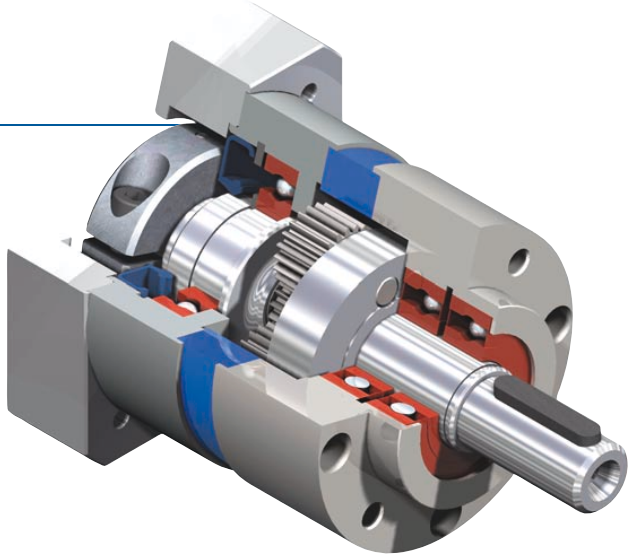
COMPONENT INDEX

1. **Adapter Plate**
   (Customized adapter plates for quick and easy motor mounting)
2. **Seals**
   (Protective seals to isolate the gearbox)
3. **Ball Bearings**
   (Single ball bearing in the EPL-H-064; dual ball bearings in all other sizes and styles)
4. **Input Clamping Element**
5. **Planet Gears**
   (Precision honed gears)
6. **Ring Gear**
   (Ring gear incorporated into housing)
7. **Output Face**
   (Ready to mount to belt or ball screw modules)

Low Cost Planetary Gear Reducer

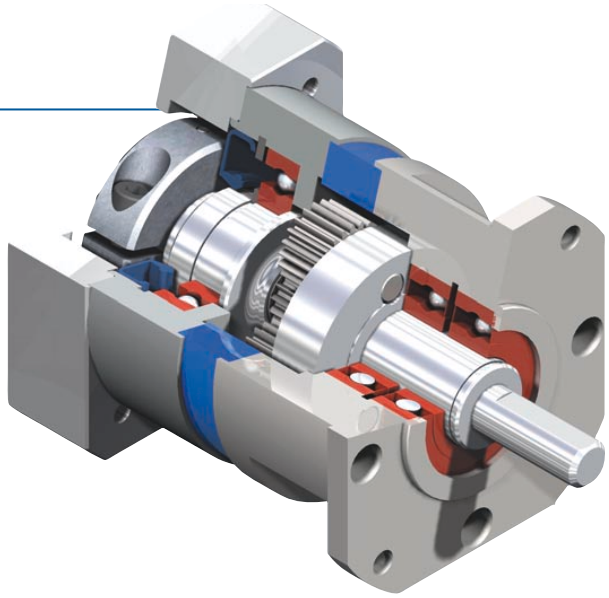
EPL-W

- Metric output face
- Ratios 3:1 to 1000:1
- Frame sizes from 40 mm to 150 mm



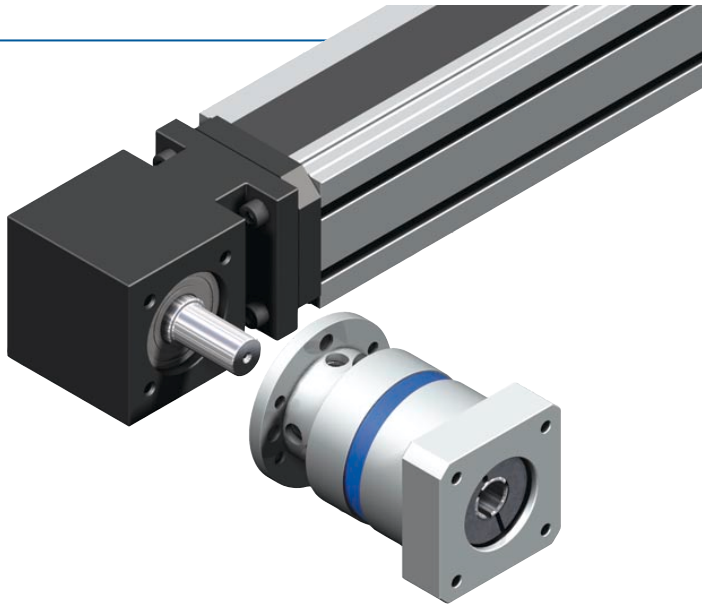
EPL-NEMA

- NEMA output face
- Ratios 3:1 to 1000:1
- Frame sizes from NEMA 17 to 56

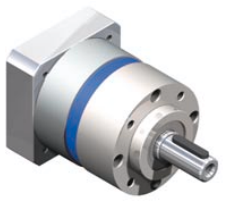


EPL-H Linear Mount

- 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.



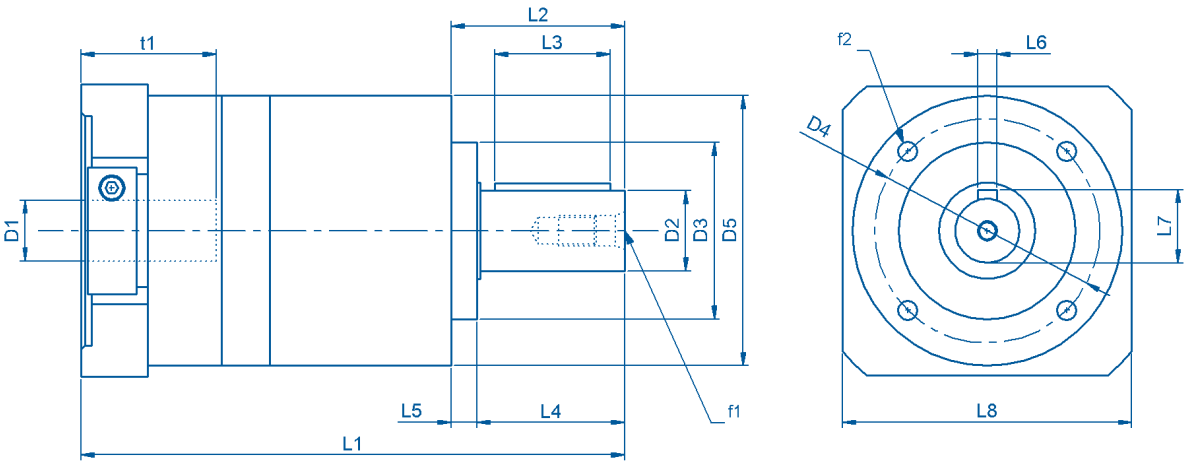
EPL-W



ECONOMY SERIES

EPL Series				40		64	84	118	150
Nominal Ouput Torque	T_{2n}	Nm (lb-in)	3:1, 4:1 5:1, 7:1	6.5 (58)	3:1, 10:1, 100:1, 1000:1	14 (124)	40 (354)	100 (885)	165 (1460)
			9:1	3.5 (31)	4:1, 5:1, 7:1	26 (230)	50 (443)	120 (1062)	210 (1859)
			all other ratios	16 (142)	all other ratios	36 (319)	64 (566)	165 (1460)	300 (2655)
Max Acceleration Torque	T_{2B}	Nm (lb-in)	3:1, 4:1 5:1, 7:1	13 (115)	3:1, 10:1, 100:1, 1000:1	25 (221)	60 (531)	150 (1328)	310 (2744)
			9:1	8 (71)	4:1, 5:1, 7:1	40 (354)	80 (708)	180 (1593)	340 (3009)
			all other ratios	25 (221)	all other ratios	55 (487)	135 (1195)	255 (2257)	410 (3629)
Emergency Output Torque	T_{2not}	Nm (lb-in)	3:1, 4:1 5:1, 7:1	21 (186)	3:1, 10:1, 100:1, 1000:1	45 (398)	120 (1062)	300 (2655)	610 (5399)
			9:1	16 (142)	4:1, 5:1, 7:1	70 (620)	150 (1328)	360 (3186)	700 (6195)
			all other ratios	40 (354)	all other ratios	75 (664)	185 (1637)	480 (4248)	820 (7257)
Nominal Speed	n_{1n}	RPM		3500		3500	3000	3000	2500
Max Input Speed	n_{1max}			6000		6000	6000	5000	4000
Standard Backlash	j	arcmin	3:1 - 7:1	< 20	3:1 - 10:1	< 10	< 10	< 8	< 8
			9:1 - 49:1	< 25	12:1 - 100:1	< 15	< 14	< 12	< 12
			64:1 - 343:1	< 30	120:1 - 1000:1	< 20	< 18	< 16	< 16
Allowable Radial Load [1]	F_{rad}	Nm (lbs)		425 (96)		1900 (428)	2800 (630)	5000 (1125)	7500 (1688)
Allowable Axial Load	F_{axial}	Nm (lbs)		500 (113)		1500 (338)	2500 (563)	4500 (1013)	6000 (1350)
Torsional Stiffness	C_{t21}	Nm/arcmin (lb-in/arcmin)			10:1, 100:1, 1000:1	1.3 (11.5)	3.4 (30.1)	8.3 (73.5)	22 (194.7)
					7:1, 49:1, 70:1, 490:1, 700:1	1.7 (15)	4.8 (42.5)	13.6 (120.4)	27 (239)
					all other ratios	2.4 (21.2)	7.1 (62.8)	17.2 (152.2)	33 (292.1)
Weight	m	kg (lbs)	1-stage	0.4 (0.88)	1-stage	1.0 (2.2)	2.3 (5.1)	5.8 (12.8)	10.0 (22.1)
			2-stage	0.5 (1.1)	2-stage	1.3 (2.9)	3.1 (6.8)	7.9 (17.4)	12.5 (27.6)
			3-stage	0.6 (1.32)	3-stage	1.6 (3.5)	3.9 (8.6)	10.0 (22.1)	15.0 (33.1)
Noise Level	L_{PA}	dB(A)		< 60		< 66	< 68	< 70	< 72
Mass Moment of Inertia	J_1	kg cm² (lb-in²)	3:1	0.0144 (0.0049)	3:1	0.176 (0.06)	0.542 (0.18)	2.54 (0.86)	2.54 (0.86)
			4:1, 5:1	0.0096 (0.0033)	4:1, 12:1, 16:1	0.173 (0.059)	0.473 (0.16)	1.86 (0.63)	1.86 (0.63)
			9:1	0.0152 (0.0052)	5:1, 7:1, 20:1, 25:1, 35:1	0.156 (0.053)	0.407 (0.14)	1.51 (0.51)	1.51 (0.51)
			all other ratios	0.0078 (0.0027)	all other ratios	0.137 (0.047)	0.328 (0.11)	1.07 (0.36)	1.07 (0.36)
Ratios Available			3, 4, 5, 7 9, 12, 16, 20, 25, 35, 49 64, 80, 100, 140, 175, 245, 343		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				
Efficiency at Load			1-stage: 90% 2-stage: 85% 3-stage: 80%						
Service Life			> 20,000 hours						
Lubrication			Mineral Grease EP0						
Protection Rating			IP 64						
Operating Temperature			-20°C to 90°C						

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



mm (in)		40	64	84	118	150
D1 $_{max}$*	motor shaft diameter	9 (0.35)	14 (0.55)	19 (0.75)	24 (0.94)	28 (1.1)
D2 $_{k6}$	output shaft diameter	10 (0.39)	14 (0.55)	20 (0.79)	25 (0.98)	40 (1.57)
D3 $_{h7}$	pilot diameter	25 (0.98)	40 (1.57)	55 (2.17)	80 (3.15)	110 (4.33)
D4	bolt circle	33 (1.3)	52 (2.05)	70 (2.76)	100 (3.94)	130 (5.12)
D5	housing diameter	40 (1.57)	64 (2.52)	84 (3.31)	118 (4.65)	150 (5.91)
f1	shaft thread	M3x9	M5x12	M6x16	M10x22	–
f2	mounting holes	M4x6	M5x12	M6x14	M8x18	M10x22
L1 $_{1\text{-stage}}$**	gearbox total length	98.5 (3.88)	117 (4.61)	162 (6.38)	199 (7.83)	265 (10.43)
L1 $_{2\text{-stage}}$**		114 (4.49)	139 (5.47)	195 (7.68)	239 (9.41)	305 (12.01)
L1 $_{3\text{-stage}}$**		129.5 (5.1)	161 (6.34)	228 (8.98)	280 (11.02)	346 (13.62)
L2	shaft length	29 (1.14)	39 (1.54)	54 (2.13)	61 (2.4)	81 (3.19)
L3	key length	20 (0.79)	25 (0.98)	36 (1.42)	45 (1.77)	60 (2.36)
L4	usable shaft length	23 (0.91)	30 (1.18)	45 (1.77)	50 (1.97)	70 (2.76)
L5	pilot height	5 (0.2)	8 (0.31)	8 (0.31)	10 (0.39)	10 (0.39)
L6	key width	3 (0.12)	5 (0.2)	6 (0.24)	8 (0.31)	10 (0.39)
L7	key height	11.2 (0.44)	16 (0.63)	22.5 (0.89)	28 (1.1)	43 (1.69)
L8**	adapter size	40 (1.57)	70 (2.76)	90 (3.54)	120 (4.72)	150 (5.91)
t1***	allowable motor shaft	25 (0.98)	23 (0.91)	30 (1.18)	40 (1.57)	40 (1.57)

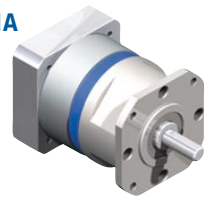
*** for larger motor shaft diameters, please contact GAM**
**** value can vary depending on the motor**
***** long motor shafts can be accommodated, but overall gearbox length will grow**



Recommended Output Coupling (if necessary)					
metal bellows elastomer	KM-20 EKM-20	KM-60 EKM-60	KM-170 EKM-150	KM-270 EKM-300	KM-500 EKM-500

Coupling specifications on pages 48-49.

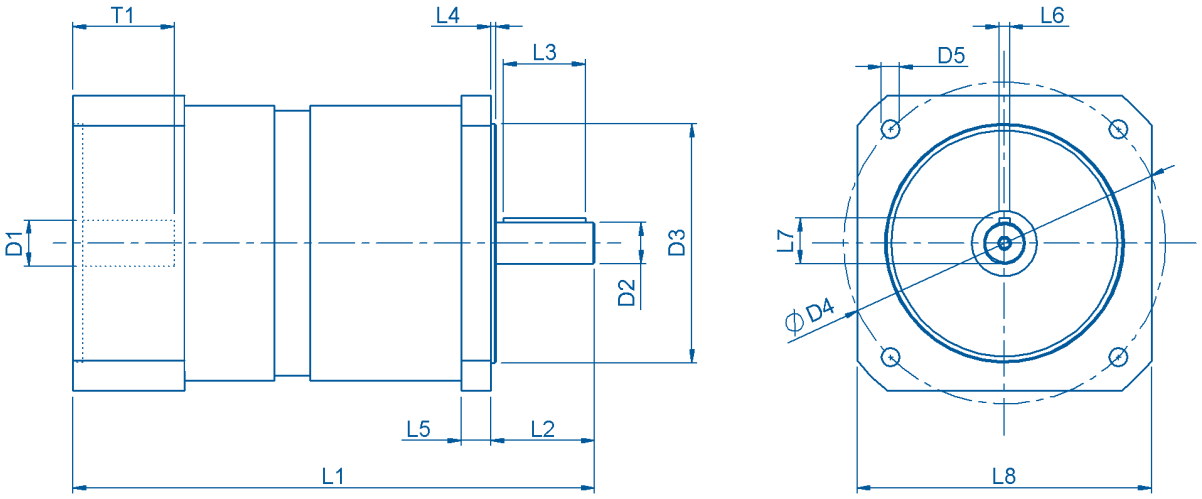
EPL-NEMA



NEMA SERIES

NEMA Series				17		23	34	42	56
Nominal Ouput Torque	T_{2n}	Nm (lb-in)	3:1, 4:1 5:1, 7:1	6.5 (58)	3:1	18 (159)	40 (354)	100 (885)	100 (885)
					4:1, 5:1, 7:1	18 (159)	54 (478)	120 (1062)	120 (1062)
			9:1	3.5 (31)	10:1	14 (124)	40 (354)	104 (920)	104 (920)
					100:1, 1000:1	16 (142)	60 (531)	120 (1062)	120 (1062)
			all other ratios	16 (142)	all other ratios	18 (159)	60 (531)	120 (1062)	120 (1062)
Max Acceleration Torque	T_{2B}	Nm (lb-in)	all other ratios	16 (142)	all ratios	18 (159)	60 (531)	120 (1062)	200 (1770)
Nominal Speed	n_{1n}	RPM		3500		3500	3000	3000	3000
Maximum Speed	n_{1max}			6000		6000	6000	5000	5000
Standard Backlash	j	arcmin	3:1 - 7:1	< 20	3:1 - 10:1	< 10	< 10	< 8	< 8
			9:1 - 49:1	< 25	12:1 - 100:1	< 15	< 14	< 12	< 12
			64:1 - 343:1	< 30	120:1 - 1000:1	< 20	< 18	< 16	< 16
Allowable Radial Load 1)	F_{rad}	N (lbs)		375 (84)		450 (101)	500 (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_{t21}	Nm/arcmin (lb-in/arcmin)			10:1, 100:1, 1000:1	0.8 (7.1)	1.8 (15.9)	3.1 (27.4)	8.3 (73.5)
					7:1, 49:1, 70:1, 490:1, 700:1	1 (8.9)	2.6 (23)	5.1 (45.1)	15.2 (134.5)
					all other ratios	1.2 (10.6)	2.8 (24.8)	6.2 (54.9)	17.2 (152.2)
Weight	m	kg (lbs)	1-stage	0.4 (0.88)	1-stage	1.0 (2.2)	2.3 (5.1)	5.8 (12.8)	6.2 (13.7)
			2-stage	0.5 (1.1)	2-stage	1.3 (2.9)	3.1 (6.8)	7.9 (17.4)	8.3 (18.3)
			3-stage	0.6 (1.32)	3-stage	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 at Input	J_1	kg cm² (lb-in²)	3:1	0.0144 (0.0049)	3:1	0.176 (0.06)	0.542 (0.18)	2.54 (0.86)	2.56 (0.87)
			4:1, 5:1	0.0096 (0.0033)	4:1, 12:1, 16:1	0.173 (0.059)	0.473 (0.16)	1.86 (0.63)	1.88 (0.64)
			9:1	0.0152 (0.0052)	5:1, 7:1, 20:1, 25:1, 35:1	0.156 (0.053)	0.407 (0.14)	1.51 (0.51)	1.52 (0.52)
			all other ratios	0.0078 (0.0027)	all other ratios	0.137 (0.047)	0.328 (0.11)	1.07 (0.36)	1.07 (0.36)
Ratios Available			3, 4, 5, 7 9, 12, 16, 20, 25, 35, 49 64, 80, 100, 140, 175, 245, 343		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				
Efficiency at Load			1-stage: 90% 2-stage: 85% 3-stage: 80%						
Service Life			> 20,000 hours						
Lubrication			Mineral Grease EP0						
Protection Rating			IP 64						
Operating Temperature			-20°C to 90°C						

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



mm (in)		17	23	34	42	56
D1 $_{max}$*	motor shaft diameter	9 (0.35)	14 (0.55)	19 (0.75)	24 (0.94)	24 (0.94)
D2 $_{k6}$	output shaft diameter	6.35 (0.250)	9.525 (0.375)	12.7 (0.500)	15.875 (0.625)	19.05 (0.750)
D3 $_{h7}$	pilot diameter	21.97 (0.865)	38.1 (1.5)	73 (2.874)	55.55 (2.187)	114.3 (4.500)
D4	bolt circle	43.8 (1.72)	66.7 (2.63)	98.4 (3.87)	125.7 (4.95)	149.2 (5.875)
D5	mounting holes	3.25 (0.13)	5 (0.2)	5.5 (0.22)	7.1 (0.28)	3/8"-16UNC
L1 $_{1\text{-stage}}$**	gearbox total length	98.5 (3.88)	111 (4.37)	147 (5.79)	185 (7.28)	185 (7.28)
L1 $_{2\text{-stage}}$**		114 (4.49)	133 (5.24)	180 (7.09)	225.5 (8.88)	225.5 (8.88)
L1 $_{3\text{-stage}}$**		129.5 (5.1)	155 (6.1)	213 (8.39)	266 (10.47)	266 (10.47)
L2	shaft length	22.2 (0.87)	25.4 (1)	31.8 (1.25)	38.1 (1.5)	50 (1.97)
L3	key length	– (–)	– (–)	27 (1.06)	29 (1.14)	40 (1.57)
L4	pilot height	1.6 (0.06)	1.6 (0.06)	1.7 (0.07)	2.4 (0.09)	3 (0.12)
L5	flange thickness	6.8 (0.27)	5 (0.2)	10 (0.39)	13 (0.51)	31 (1.22)
L6	key width	– (–)	– (-)	3.2 (0.13)	4.8 (0.19)	4.763 (0.188)
L7	key height / flat height	– (–)	9.14 (0.36)	14.3 (0.56)	18.26 (0.72)	21.97 (0.86)
L8	flange size	40 (1.57)	65 (2.56)	90 (3.54)	120 (4.72)	127 (5.00)
t1***	allowable motor shaft	25 (0.98)	23 (0.91)	30 (1.18)	40 (1.57)	40 (1.57)

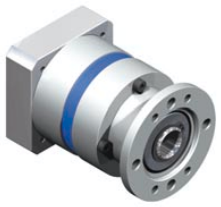
*** for larger motor shaft diameters, please contact GAM**
**** value can vary depending on the motor**
***** long motor shafts can be accommodated, but overall gearbox length will grow**



Recommended Output Coupling (if necessary)					
metal bellows elastomer	KM-12 EKM-8	KM-20 EKM-30	KM-60 EKM-60	KM-170 EKM-150	KM-270 EKM-300

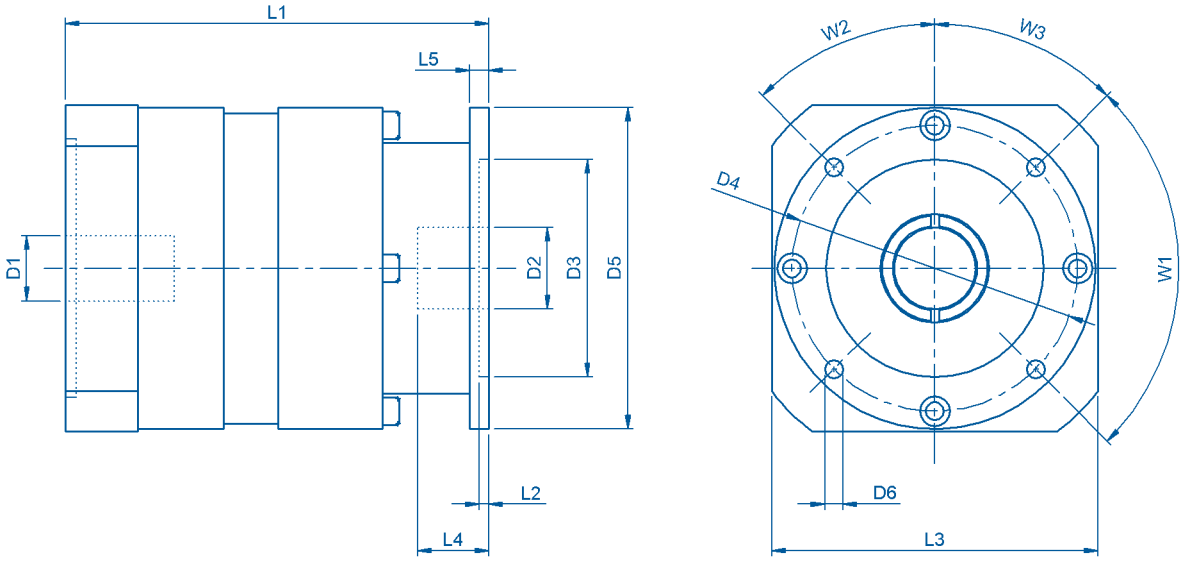
Coupling specifications on pages 48-49.

EPL-H



LINEAR MOUNT SERIES

Linear Mount Series				64	84	118
Nominal Ouput Torque	T_{2n}	Nm (lb-in)	3:1, 10:1, 100:1, 1000:1	14 (124)	40 (354)	100 (885)
			4:1, 5:1, 7:1	26 (230)	50 (443)	120 (1062)
			all other ratios	36 (319)	64 (566)	165 (1460)
Max Acceleration Torque	T_{2B}	Nm (lb-in)	3:1, 10:1, 100:1, 1000:1	25 (221)	60 (531)	150 (1328)
			4:1, 5:1, 7:1	40 (354)	75 (664)	180 (1593)
			all other ratios	44 (389)	75 (664)	180 (1593)
Nominal Speed	n_{1max}	RPM		3500	3000	3000
Maximum Speed	n_{1n}			6000	6000	5000
Standard Output Backlash	j	arcmin	3:1 - 10:1	< 10	< 10	< 8
			12:1 - 100:1	< 15	< 14	< 12
			120:1 - 1000:1	< 20	< 18	< 16
Weight	m	kg (lbs)	1-stage	1.0 (2.2)	2.3 (5.1)	5.8 (12.8)
			2-stage	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)
Mass Moment of Inertia	J_1	kg cm^2 (lb-in^2)	i=3	0.176 (0.06)	0.542 (0.185)	2.54 (0.867)
			i=4	0.159 (0.054)	0.424 (0.145)	1.76 (0.601)
			i=5	0.15 (0.051)	0.379 (0.129)	1.48 (0.505)
			i=7,10	0.138 (0.047)	0.332 (0.113)	1.14 (0.389)
			i=12-35	0.156 (0.053)	0.407 (0.139)	1.51 (0.515)
			i=40-1000	0.136 (0.046)	0.327 (0.112)	1.07 (0.365)
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			
Efficiency at Load			1-stage: 90% 2-stage: 85% 3-stage: 80%			
Service Life			> 20,000 hours			
Lubrication			Mineral Grease EP0			
Protection Rating			IP 64			
Operating Temperature			-20°C to 90°C			



mm (in)		64		84		118	
D1 $_{max}$*	motor shaft diameter	14	(0.55)	19	(0.75)	24	(0.94)
D2 $_{max}$	output shaft diameter	16	(0.63)	20	(0.79)	30	(1.18)
D3 $_{h7}$	pilot diameter	44	(1.73)	60	(2.36)	80	(3.15)
D4	bolt circle	55.5	(2.19)	73	(2.87)	105	(4.13)
D5	flange diameter	70	(2.76)	84	(3.31)	118	(4.65)
D6	mounting holes	5.5	(0.22)	5.5	(0.22)	6.6	(0.26)
L1 $_{1\text{-stager}}$**	gearbox total length	98.5	(3.88)	122	(4.8)	155.5	(6.12)
L1 $_{2\text{-stage}}$**		120.5	(4.74)	155	(6.1)	196	(7.72)
L1 $_{3\text{-stage}}$**		142.5	(5.61)	188	(7.4)	236.5	(9.31)
L2	pilot depth	3.5	(0.14)	3.5	(0.14)	3.5	(0.14)
L3	adapter size	70	(2.76)	90	(3.54)	120	(4.72)
L4	allowable shaft depth	28	(1.1)	23	(0.91)	26	(1.02)
L5	flange thickness	6	(0.24)	6	(0.24)	10	(0.39)
W1	bolt hole spacing	125°		4x 90°		4x 90°	
W2	hole angle 1	27.5°		67.5°		67.5°	
W3	hole angle 2	27.5°		22.5°		22.5°	

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

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