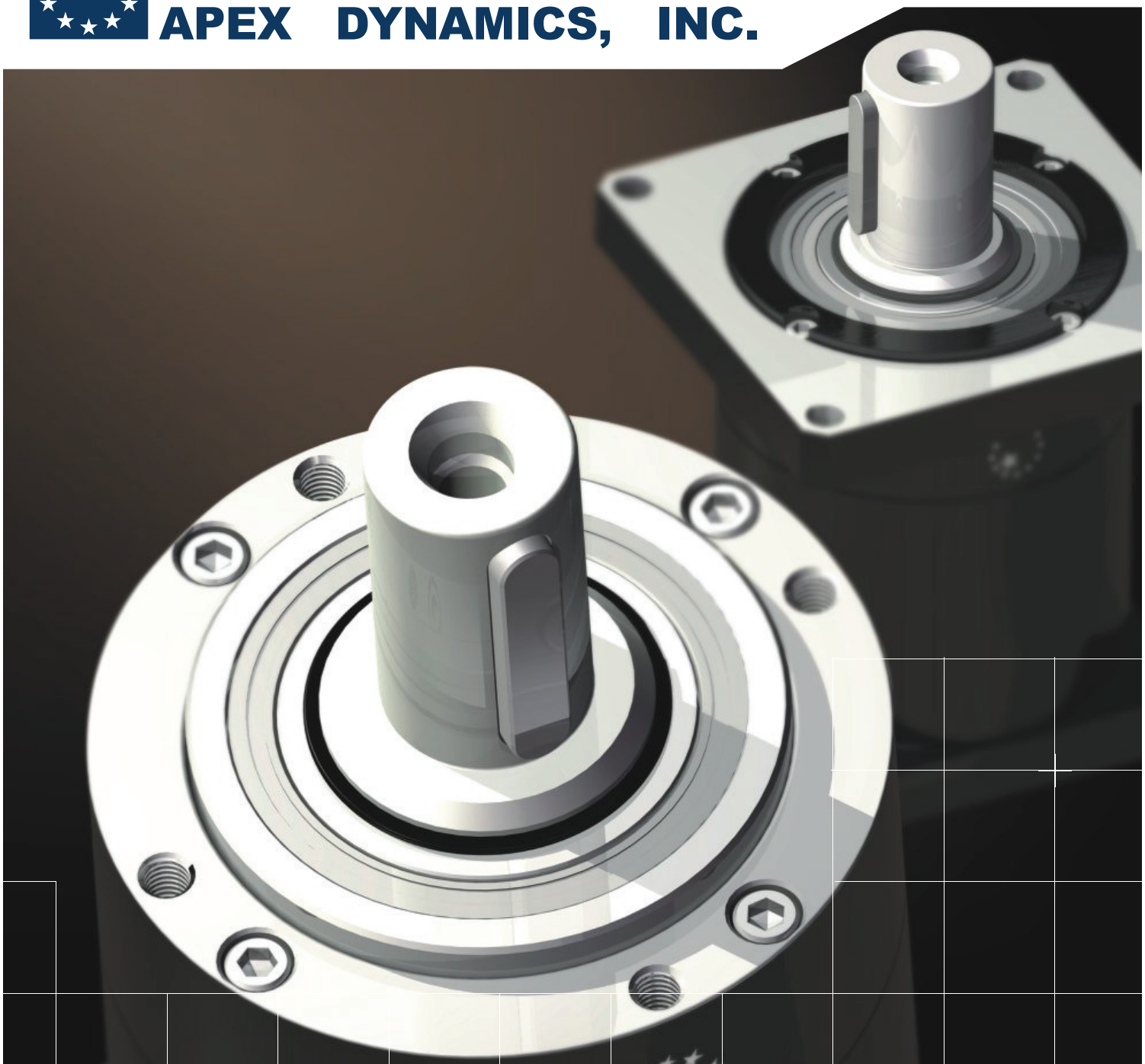
APEX DYNAMICS, INC.

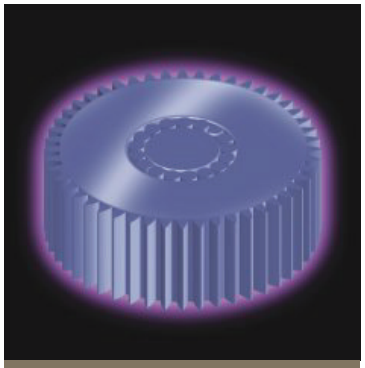


PE/PG/PN/PB SERIES

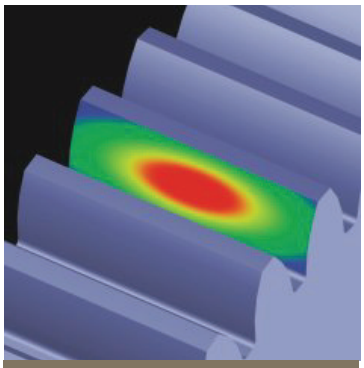
Planetary Gearboxes

PE/PG/PN/PB Series
Characteristic Highlights

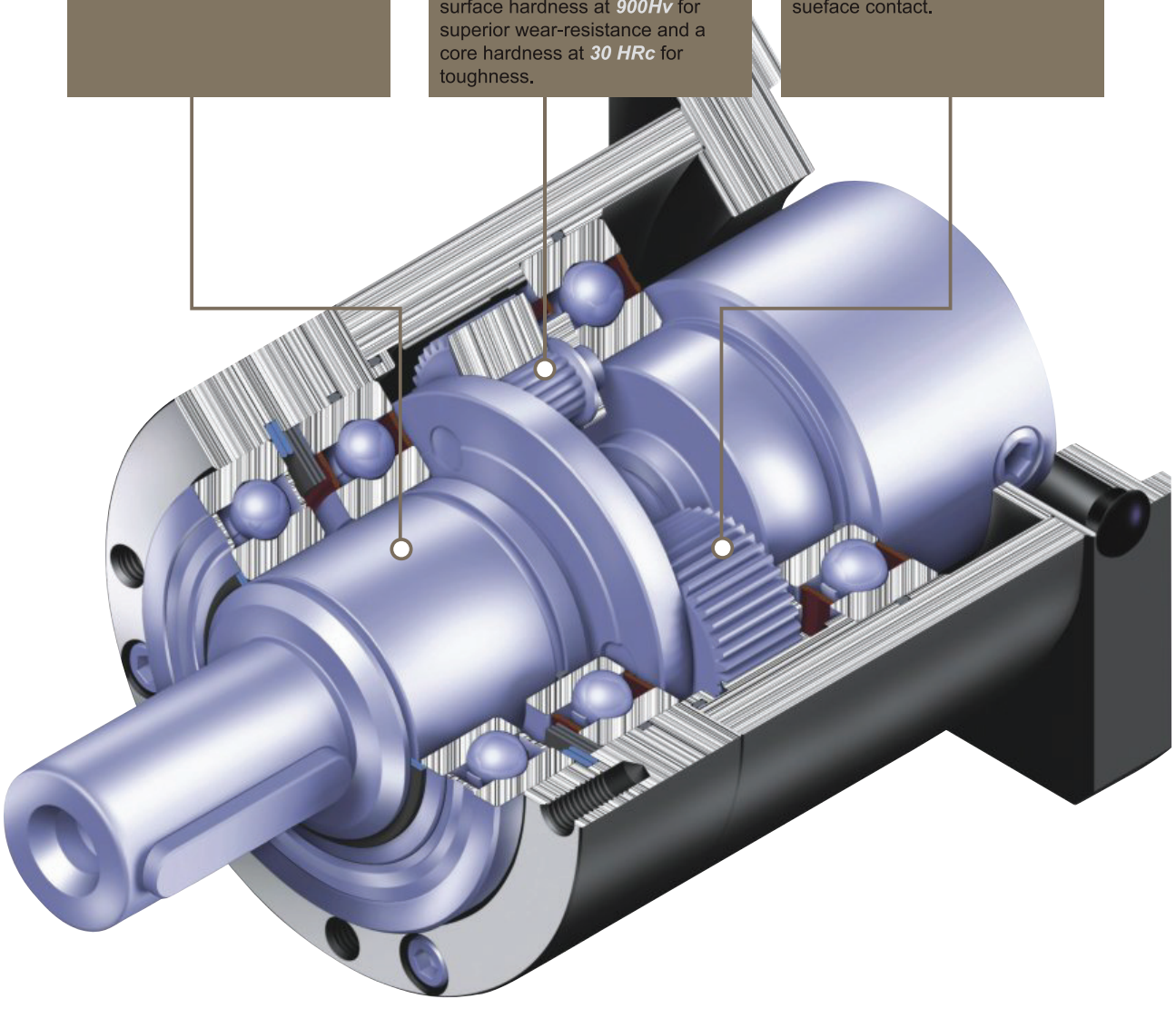
One piece planet carrier and planet gearing is supported on both sides. Provide maximum radial load capacity and increase system reliability and stiffness.



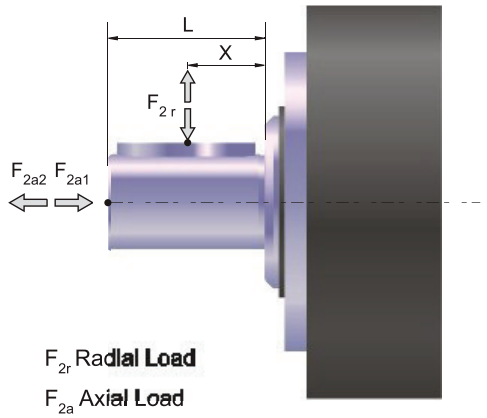
Equipped with ***solid uncaged needle roller bearings,*** provides maximum contact points to increase stiffness and generates high output torque.***Our in-house plasma nitriding*** heat treatment process maintains the tooth surface hardness at ***900Hv*** for superior wear-resistance and a core hardness at ***30 HRc*** for toughness.

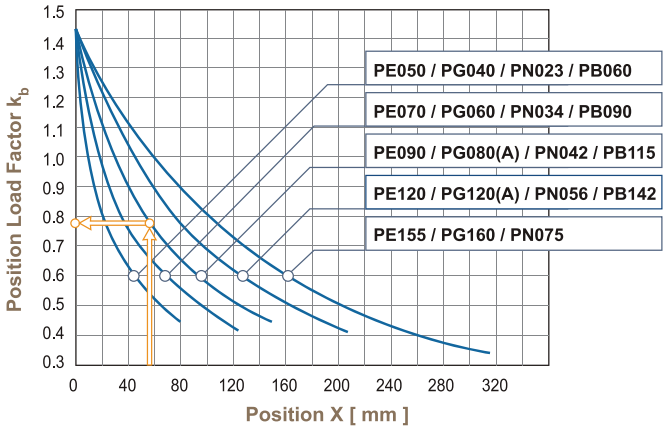


A high setting gear performance is achieved by using our ***HeliTopo technology.*** This ***eases off the tooth profile and crowns the lead of each tooth.*** This optimizes the gear mesh alignment and overlap to achieve maximum tooth sueface contact.



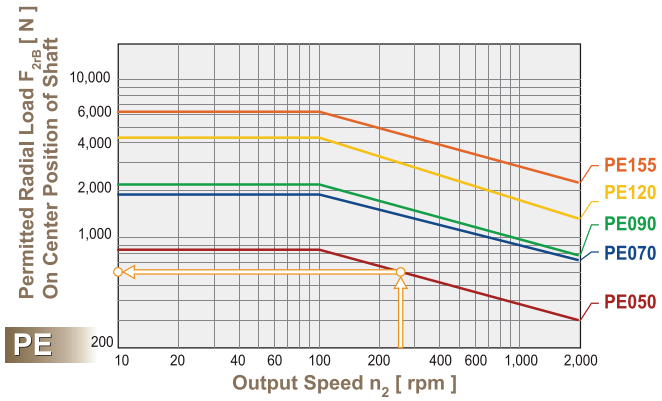
Permitted Radial and Axial Loads on Output Shaft of the Gearbox

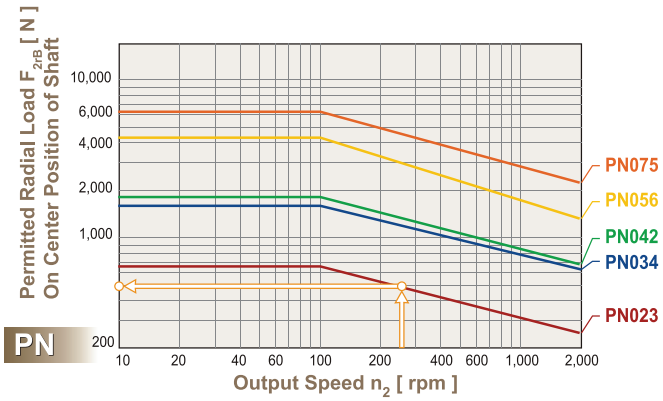


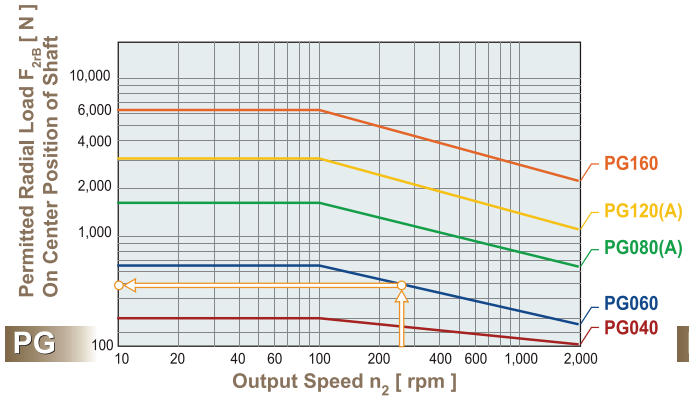


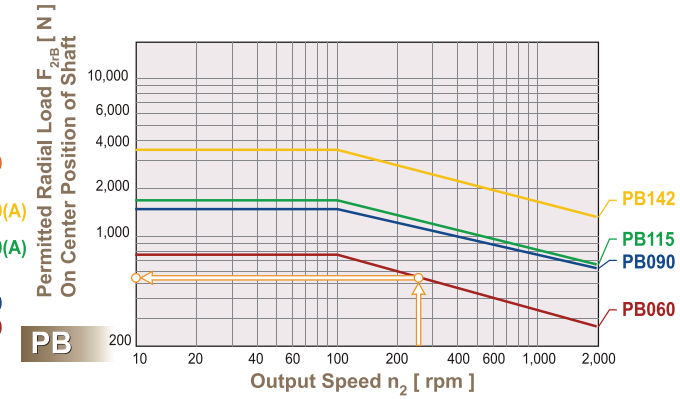
The permitted radial and axial loads on output shaft of the gearbox depend on the design of the gearbox supporting bearings.

If radial force F_{2r} is not exerted on the center of the output shaft X<1/2xL or X>1/2xL
The permitted radial and axial loads can be calculated by the position load factor K_b on the above diagram.









If radial force F_{2r} exert on the center of the output shaft X=1/2xL. Under various operating condition the lifetime is over 20,000* hours. The permitted radial load is given on the above diagram.

★ S1 service life 10,000 hrs (Consult us)

PG(PGA) Series
Specifications

Gearbox Performance

Model No.		Stages	Ratio[1]	PG040	PG060	PG080	PG080A	PG120	PG120A	PG160
Nominal Output Torque T_{2N}	Nm	1	3	14	39	104		215		423
			4	12	31	85		176		364
			5	14	39	104		215		423
			7	12	33	91		195		358
			10	9	26	65		150		293
		2	15	14	39	104		215		423
			16	12	31	85		176		364
			20	12	31	85		176		364
			25	14	39	104		215		423
			30	14	39	104		215		423
			35	12	33	91		195		358
			40	12	31	85		176		364
			50	14	39	104		215		423
			70	12	33	91		195		358
			100	9	26	65		150		293
Emergency Stop Torque T_{2NOT}[2]	Nm	1,2	3~100	3 times of Nominal Output Torque						
Nominal Input Speed n_{1N}	rpm	1,2	3~100	4500	4000	3600		3600		2500
Max. Input Speed n_{1B}	rpm	1,2	3~100	8000	6000	6000		4800		3600
Backlash*	arcmin	1	3~10	≤ 8	≤ 8	≤ 6		≤ 6		≤ 6
		2	15~100	≤ 10	≤ 10	≤ 8		≤ 8		≤ 8
Torsional Rigidity	Nm/arcmin	1,2	3~100	0.8	2.2	7.2		14.5		65.5
Max. Radial Load F_{2rB}[3]	N	1,2	3~100	300	680	1750		3080		6520
Max. Axial Load F_{2aB}[3]	N	1,2	3~100	150	340	875		1540		3260
Service Life	hr	1,2	3~100	20,000*						
Efficiency η	%	1	3~10	≥ 97%						
		2	15~100	≥ 94%						
Weight	kg	1	3~10	0.7	1.7	3.6	3.6	8.1	8.2	18.2
		2	15~100	1.0	2.4	5.0	5.0	11.3	11.4	24.9
Operating Temp	°C	1,2	3~100	-10°C~90°C						
Lubrication				Synthetic lubrication grease						
Degree of Gearbox Protection		1,2	3~100	IP64						
Mounting Position		1,2	3~100	all directions						
Noise Level (n_1=3000rpm, No Load)	dB(A)	1,2	3~100	≤ 68	≤ 70	≤ 72		≤ 74		≤ 75

Gearbox Inertia

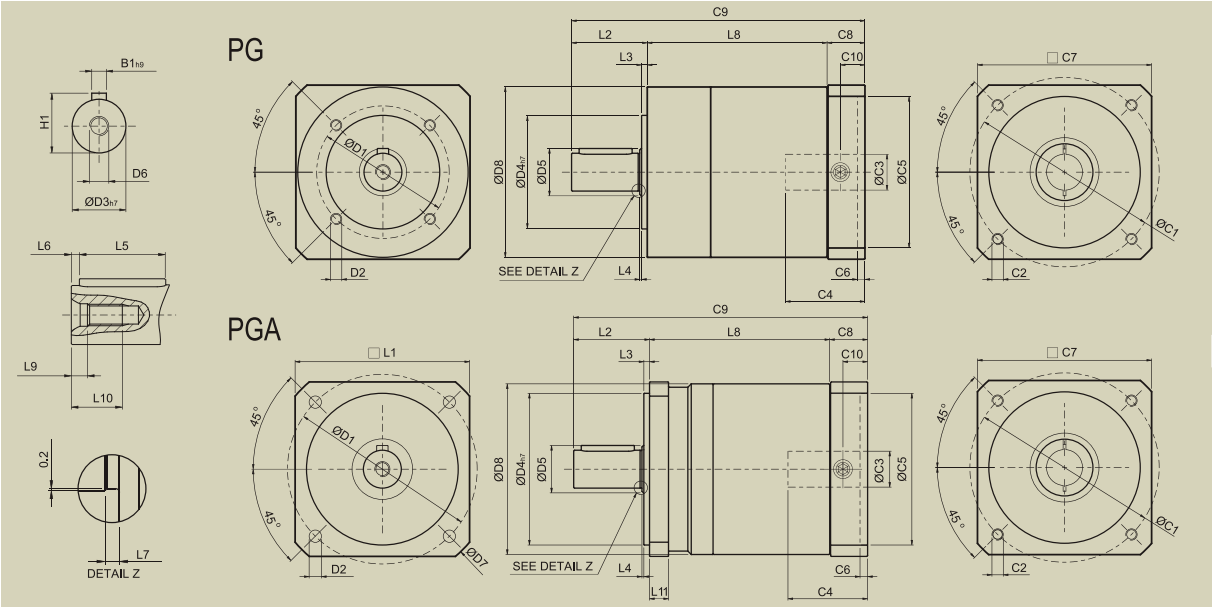
Model No.		Stages	Ratio[1]	PG040	PG060	PG080	PG080A	PG120	PG120A	PG160
Mass Moments of Inertia J_1	kg.cm²	1	3	0.15	0.53	3.00		10.69		31.86
			4	0.15	0.51	2.83		10.08		29.82
			5	0.15	0.50	2.80		9.96		29.43
			7	0.15	0.50	2.79		9.91		29.26
			10	0.15	0.50	2.79		9.89		29.20
		2	15	0.15	0.50	2.80		9.96		29.43
			16	0.15	0.51	2.83		10.08		29.82
			20	0.15	0.50	2.80		9.96		29.43
			25	0.15	0.50	2.80		9.96		29.43
			30	0.15	0.50	2.80		9.96		29.43
			35	0.15	0.50	2.80		9.96		29.43
			40	0.15	0.50	2.79		9.89		29.20
			50	0.15	0.50	2.79		9.89		29.20
			70	0.15	0.50	2.79		9.89		29.20
			100	0.15	0.50	2.79		9.89		29.20

1. Ratio ($i=N_{in} / N_{out}$)
2. T_{2B} = 60% of T_{2NOT}
3. Applied to the output shaft center @ 100 rpm

*S1 service life 10,000 hrs (Consult us)

*Backlash is measured at 2% of Nominal Output Torque T_{2N}

PG(PGA) Series Dimension



[unit: mm]

Dimension	PG040	PG060	PG080	PG080A	PG120	PG120A	PG160
D1	34	52	70	100	100	130	145
D2	M4X9	M5X10	M6X12	6.5	M10X18	8.5	M12X22
D3 h7	10	14	20		25		40
D4 h7	26	40	60	80	80	110	130
D5	12	17	25		35		65
D6	M3X0.5P	M5X0.8P	M6X1P		M10X1.5P		M16X2P
D7	-	-	-	120	-	167.5	-
D8	50	70	90		120		160
L1	-	-	-	92	-	124	-
L2	26	35	40		55		87
L3	2	3	3		4		5
L4	1	2	1		1		2
L5	18	25	28		40		65
L6	2.5	2.5	4		5		8
L7	1	1	1		1.5		2
L8 1-stage	50	68.5	95		125		153
L8 2-stage	74.5	101.5	134.5		178		213.5
L9	2.2	4.8	5		6.5		12
L10	9.5	12.5	16.5		23		36
L11	-	-	-	10	-	15	-
C1[4]	46	70	100		130		165
C2[4]	M4X0.7P	M5X0.8P	M6X1P		M8X1.25P		M10X1.5P
C3[4]	≤ 12	≤ 16	≤ 24		≤ 32		≤ 38
C4[4]	30	34	40		50		60
C5[4]	30	50	80		110		130
C6[4]	3.5	8	4		5		6
C7[4]	52	72	92		122		157
C8[4]	21.5	21.5	20		24		31
C9[4] 1-stage	97.5	125	155		204		271
C9[4] 2-stage	122	158	194.5		257		331.5
C10[4]	14.5	15.5	13		16		21
B1 h9	3	5	6		8		12
H1	11.2	16	22.5		28		43

4. C1~C10 are motor specific dimensions (metric std shown). Refer to Apexdyna.com and Design Tool to view your specific motor mounting system.

PE /PG/PN/PB SERIES

Ordering Code

PE090 — **010** / **MOTOR**

Gear Size:

- **PE**: PE050, PE070, PE090, PE120, PE155
- **PG**: PG040, PG060, PG080, PG080A, PG120, PG120A, PG160
- **PN**: PN 023, PN034, PN042, PN056, PN075
- **PB**: PB060, PB090, PB115, PB142

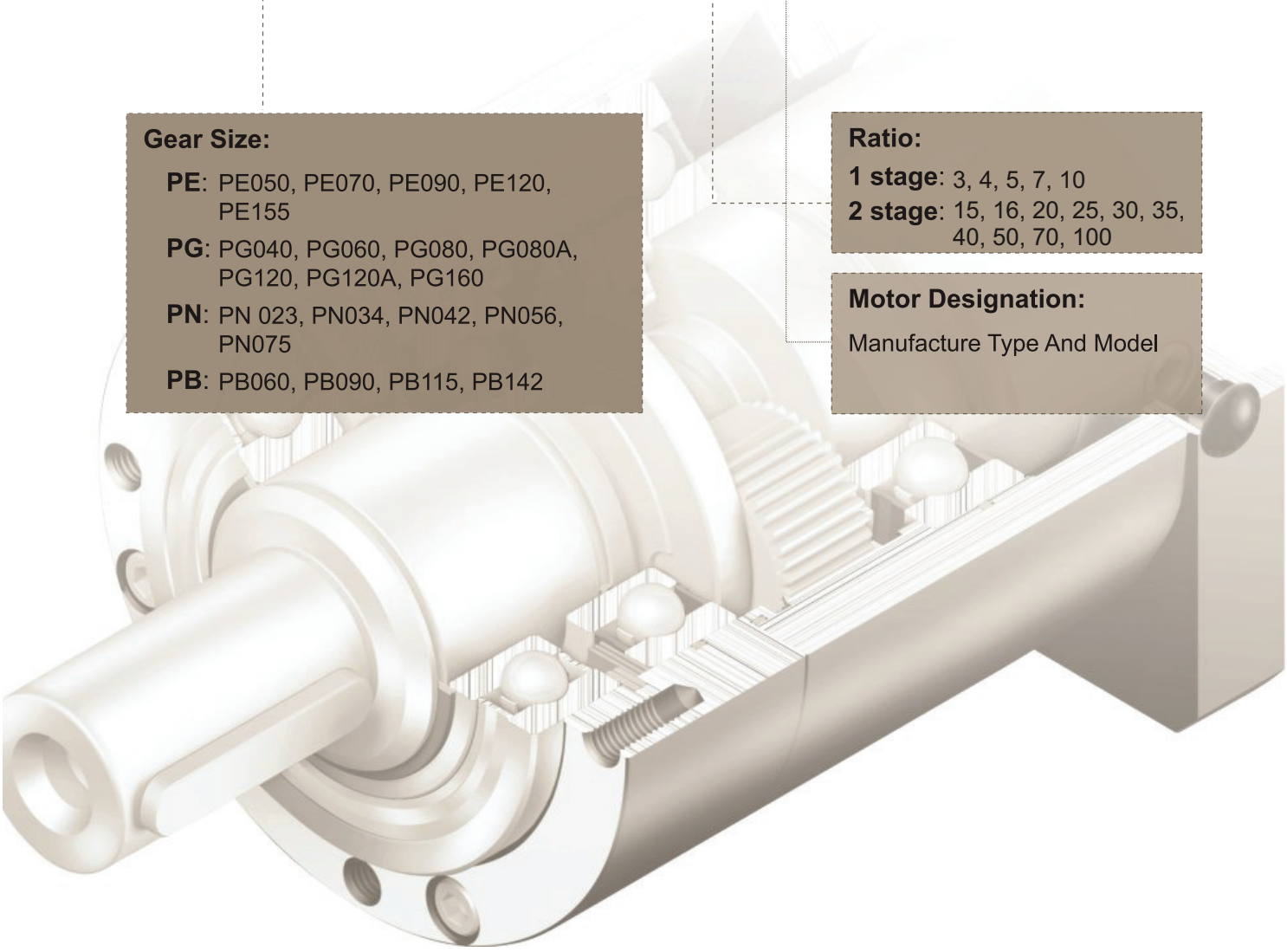
Ratio:

1 stage: 3, 4, 5, 7, 10

2 stage: 15, 16, 20, 25, 30, 35, 40, 50, 70, 100

Motor Designation:

Manufacture Type And Model



Ordering Example:PE090-010 / SIEMENS 1FT6 041-4AF71

APEX DYNAMICS, INC.

No.10, Keyuan 3rd Rd., Situn District, Taichung City 407, Taiwan (R.O.C.)

Tel: 886 4 23550219 / Fax: 886 4 23550218

E-mail: sales@apexdyna.com

Website: www.apexdyna.com