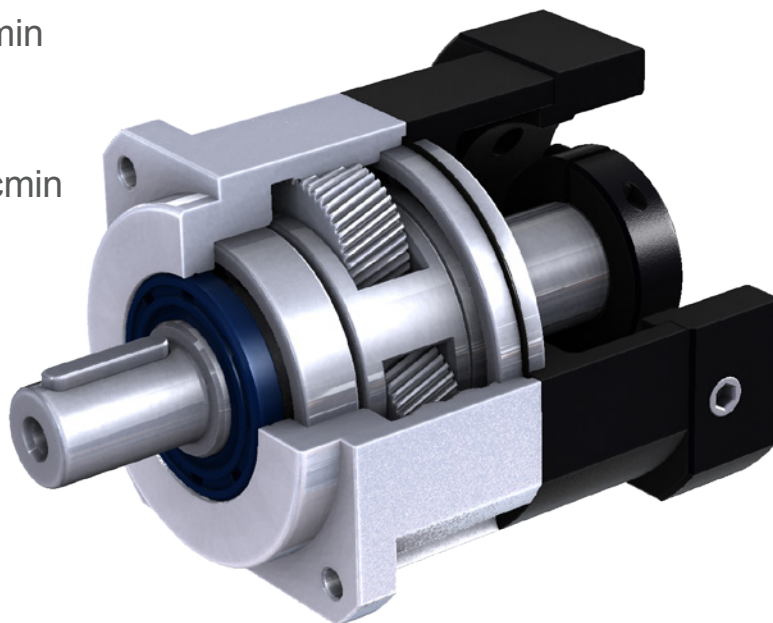



PB series

- 全系列单段背隙 ≤ 8 弧分
1-Stage Backlash ≤ 8 arcmin
- 全系列双段背隙 ≤ 10 弧分
2-Stage Backlash ≤ 10 arcmin



Indication of Model Numbers

机种型号表示

PB	90	—	10		—	MOTOR
减速机机型 Type	型号 Model		速比 Ratio	出力轴键槽 Output Shaft Keyway		马达型号 Motor Type
PB PB-A	44 62 90 120 142 180 220		单段 1-Stage 3, 4, 5, 6, 7, 8, 9, 10 双段 2-Stage 15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 90, 100	<input type="checkbox"/> 标准品, 有键槽 Standard (Keyway) N: 实心轴, 无键槽 Solid Output Shaft (No Keyway)		

静音

使用高精度斜齿轮实现顺畅安静地运转。

Quiet operation

Helical gears contribute to reduce vibration and noise.

高扭矩

比一般正齿轮行星减速机扭矩高。

High Torque

High output torque is in comparison with spur gear planetary gear reducers.

高效率

单段式在 97% 以上, 双段式在 94% 以上。

High Efficiency

Efficiency for 1-stage model exceeds 97%; 2-stage model exceeds 94%.

Features of PB Series

PB 系列产品特点

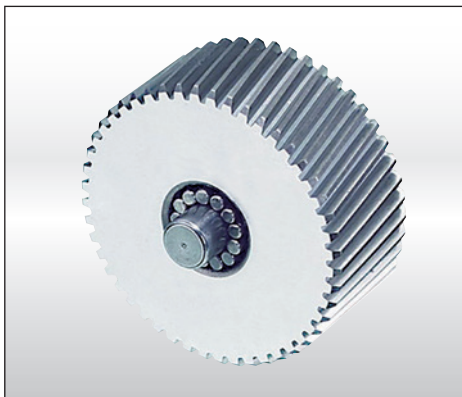


一体式行星臂架及双悬臂设计

行星臂架与输出轴探一体式的结构设计,以确保提高扭转刚性及精确度。

Integrated Planetary Arm Bracket

The planetary arm bracket and the output shaft are one-piece constructed to increase torsional rigidity and accuracy.



满针滚针轴承设计

行星齿轮的传动介面採用不含保持器之满针滚针轴承,增加接触面积以提高结构刚性及使用寿命。

Full Needle Roller Bearings Design

The planetary gear transmission employs full needle roller bearings without retainer to increase the contact surface, which greatly upgrades structural rigidity and service life.

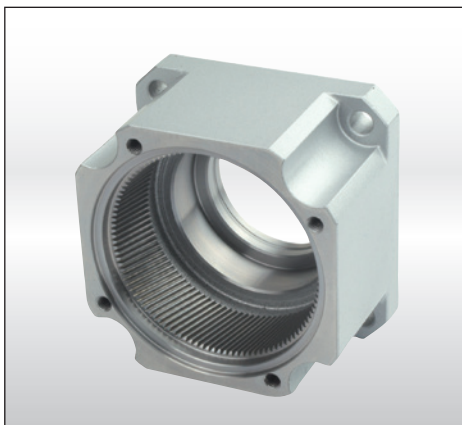


筒夹式连结机构

输入端与马达的连结採用筒夹式的锁紧机构,并经动平衡分析,以确保在高输入转速下结合介面的同心度和平衡度,及零背隙的动力传递。

Collet Locking Mechanism

The input-end and the motor are coupled through a collet locking mechanism. It has passed dynamical balance analysis to assure concentricity and balance on the connection and no backlash for power transmission while running at high speed.



一体式螺旋内齿轮箱

齿轮箱和内环齿轮探一体式的设计,减速机构採用螺旋齿轮设计,齿形啮合率为一般正齿轮的二倍以上,具有运转平顺、低噪音、高输出扭矩和低背隙的特性。

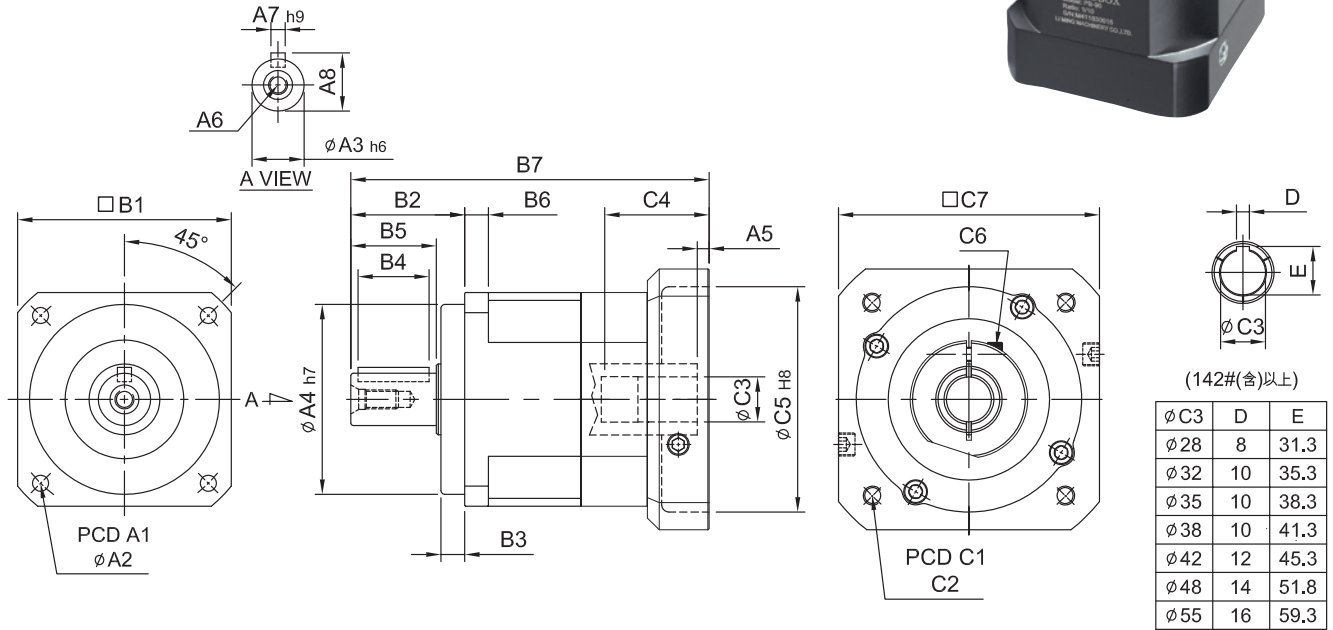
One-piece Helical Gear Box

The gear box and internal ring gear are one-piece constructed. The speed reduction mechanism employs helical gears, which provides two times meshing rate of teeth when comparing with regular spur gears. In addition, it also has features of extremely smooth running, low noise, high output torque and low backlash.

MODEL : PB

单段 1-Stage

RATIO : 3, 4, 5, 6, 7, 8, 9, 10



unit: mm

Code	Model	44	62	90	120	142	180	220
A	A1	50	70	100	130	165	215	250
	A2	4.5	5.5	6.8	9	11	13	17
	A3	13	16	22	32	40	55	75
	A4	35	50	80	110	130	160	180
	A5	5	6	9, 23.5	10, 20	10	11.5, 13.5	12.5, 14.5
	A6	M4 × P0.7	M5 × P0.8	M8 × P1.25	M10 × P1.5	M12 × P1.75	M14 × P2.0	M16 × P2.0
	A7	5	5	6	10	12	16	20
	A8	15	18	24.5	35	43	59	79.5
B	B1	44	62	90	120	142	180	220
	B2	26	36	48	65	92	106	139
	B3	5	7	10	12	15	20	30
	B4	15	20	30	40	65	70	90
	B5	20	28	36	50	74	82	104
	B6	5	8	10	12	15	16	20
	B7	95	115, 123	164.5, 179	205, 215	260.5	323.5, 325.5	367.5, 369.5
C	C1	46, 60, 63	70, 75, 90	90, 100, 115, 145	115, 145, 165	145, 165, 215	200, 215, 265	200, 265, 300
	C2	M3, M4, M5	M4, M5, M6	M5, M6, M8	M6, M8, M10	M8, M10, M12	M10, M12, M16	M12, M16
	C3	8, 9, 11	11, 14, 16, 19	16, 19, 22, 24	22, 24, 28, 32	28, 32, 35, 38	35, 38, 42, 48, 55	38, 42, 48, 55
	C4	26, 30.5	33.5, 41.5	59, 73.5	67, 77	84.5	116.5, 118.5	117.5, 119.5
	C5	30, 40, 50	50, 60, 70	70, 80, 95, 110	95, 110, 130	110, 130, 180	114.3, 180, 230	114.3, 230, 250
	C6	M4 × P0.7	M5 × P0.8	M6 × P1.0	M8 × P1.25	M10 × P1.5	M10 × P1.5	M10 × P1.5
	C7	46, 55	64, 70, 80	92, 110, 130	122, 130, 150	146, 150, 190	182, 200, 250	222, 250, 265

Characteristic of PB 1-Stage

PB 单段特性

规格 Model No.	代号	单位 Unit	速比 Ratio	44	62	90	120	142	180	220
额定输出扭矩 / Rated Output Torque (Nominal output torque)	T_{2N}	Nm	3	17	54	145	301	553	1,067	1,786
			4	15	48	128	269	491	940	1,587
			5	14	45	132	278	510	1,050	1,770
			6	13	41	125	252	466	985	1,680
			7	13	41	123	258	473	975	1,645
			8	12	39	115	241	442	942	1,605
			9	11	40	120	227	412	875	1,490
			10	12	40	116	246	452	930	1,565
最大加速扭矩 / Max. Acceleration Torque	T_{2B}	Nm	3~10	1.8 倍额定输出扭矩 1.8 Times of Rated Output Torque						
最大输出扭矩 / Max. Output Torque 急停扭矩 / Emergency Stop Torque	T_{2NOT}	Nm	3~10	3 倍额定输出扭矩 3 Times of Rated Output Torque						
额定输入转速 / Rated Input Speed	n_{1N}	rpm	3~10	3,000	3,000	3,000	3,000	3,000	3,000	2,000
最大输入转速 / Max. Input Speed	n_{1B}	rpm	3~10	6,000	6,000	6,000	5,000	5,000	4,000	3,000
扭转刚性 / Torsional Rigidity		Nm/arcmin	3~10	3	6	14	27	60	140	240
容许径向力 / Max. Radial Force	F_{2rB}	N	3~10	360	1,120	3,040	6,460	8,830	14,820	48,450
容许轴向力 / Max. Axial Force	F_{2aB}	N	3~10	180	560	1,520	3,230	4,410	7,410	24,225
使用寿命 / Service Life	L_{H1}	hr	3~10	S5 周期运转 : >30,000 (S1 连续运转 : >15,000 hrs) S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)						
效率 / Efficiency	η	%	3~10	$\geq 97\%$						
使用温度 / Operating Temperature		°C	3~10	-25° C ~ +90° C						
润 滑 / Lubrication			3~10	全合成润滑油脂 Synthetic Grease						
防护等级 / Protection Class			3~10	IP65						
安装方向 / Mounting Position			3~10	任意方向 Any						
噪 音 值 / Noise Level		dB	3~10	≤ 56	≤ 58	≤ 60	≤ 63	≤ 65	≤ 67	≤ 70
重 量 / Weight $\pm 3\%$		Kg	3~10	0.58	1.35	3.69	8.63	14.55	28.3	42.5

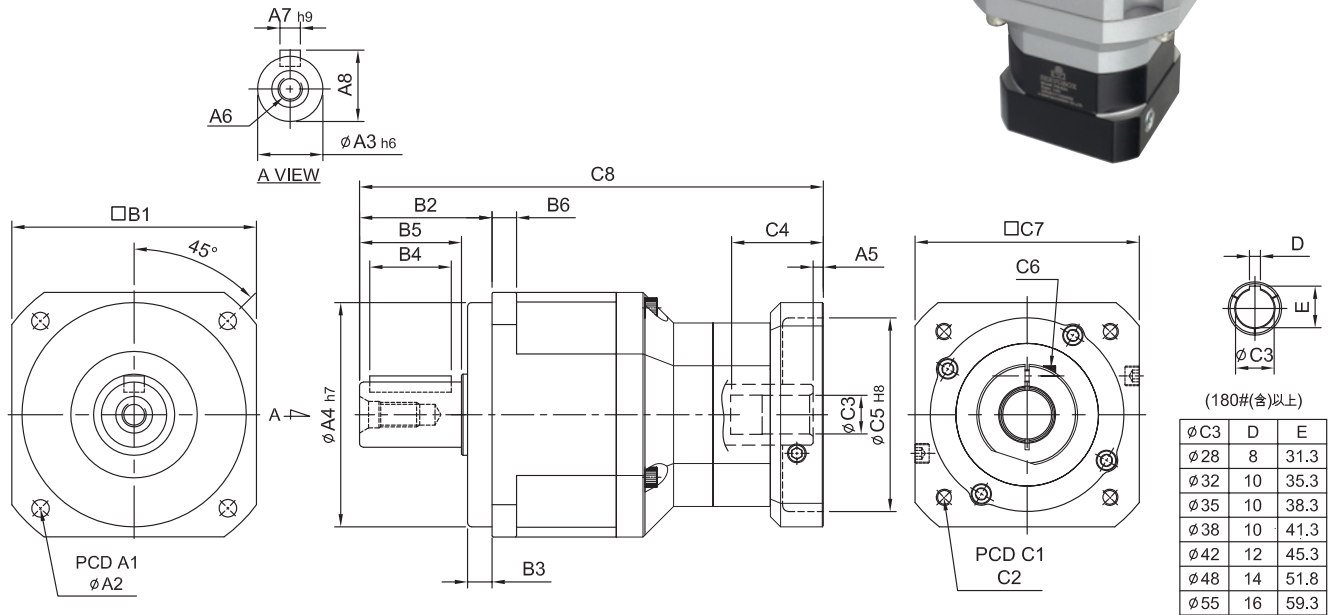
Mass Moments of Inertia (kg.cm²)

速比 Ratio	44	62	90	120	142	180	220
3	0.03	0.16	0.61	3.25	9.21	28.98	59.61
4	0.03	0.14	0.48	2.74	7.54	23.67	54.37
5	0.03	0.13	0.47	2.74	7.42	23.29	53.27
6	0.03	0.13	0.45	2.65	7.25	22.75	51.72
7	0.03	0.13	0.45	2.62	7.14	22.48	50.97
8	0.03	0.13	0.44	2.58	7.07	22.59	50.84
9	0.03	0.13	0.44	2.57	7.04	22.53	50.63
10	0.03	0.13	0.44	2.57	7.03	22.51	50.56

MODEL : PB

双段 2-Stage

RATIO : 15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 90, 100



unit: mm

Code	Model	62	90	120	142	180	220
A	A1	70	100	130	165	215	250
	A2	5.5	6.8	9	11	13	17
	A3	16	22	32	40	55	75
	A4	50	80	110	130	160	180
	A5	5	6	9, 23.5	10, 20	10	11.5, 13.5
	A6	M5 × P0.8	M8 × P1.25	M10 × P1.5	M12 × P1.75	M14 × P2.0	M16 × P2.0
	A7	5	6	10	12	16	20
	A8	18	24.5	35	43	59	79.5
B	B1	62	90	120	142	180	220
	B2	36	48	65	92	106	139
	B3	7	10	12	15	20	30
	B4	20	30	40	65	70	90
	B5	28	36	50	74	82	104
	B6	8	10	12	15	16	20
C	C1	46, 60, 63	70, 75, 90	90, 100, 115, 145	115, 145, 165	145, 165, 215	200, 215, 265
	C2	M3, M4, M5	M4, M5, M6	M5, M6, M8	M6, M8, M10	M8, M10, M12	M10, M12
	C3	8, 9, 11	11, 14, 16, 19	16, 19, 22, 24	22, 24, 28, 32	28, 32, 35, 38	35, 38, 42, 48, 55
	C4	26, 30.5	33.5, 41.5	59, 73.5	67, 77	84.5	116.5, 118.5
	C5	30, 40, 50	50, 60, 70	70, 80, 95, 110	70, 95, 110, 130	110, 130, 180	114.3, 180, 230
	C6	M4 × P0.7	M5 × P0.8	M6 × P1.0	M8 × P1.25	M10 × P1.5	M10 × P1.5
	C7	46, 55	64, 70, 80	92, 110, 130	122, 130, 150	146, 180, 190	182, 200, 250
	C8	139.5	172.5, 180.5	241, 255.5	298.5, 308.5	358.5	446.5, 448.5

Characteristic of PB 2-Stage

PB 双段特性

规格 Model No.	代号	单位 Unit	速比 Ratio	62	90	120	142	180	220
额定输出扭矩 / Rated Output Torque (Nominal output torque)	T_{2N}	Nm	15	54	145	301	553	1,067	1,786
			20	48	128	269	491	940	1,587
			25	45	132	278	510	1,050	1,770
			30	41	125	252	466	985	1,680
			35	41	123	258	473	975	1,645
			40	39	115	241	442	942	1,605
			50	45	132	278	510	1,050	1,770
			60	41	125	252	466	985	1,680
			70	41	123	258	473	975	1,645
			80	40	115	241	442	942	1,605
			90	40	120	227	412	875	1,490
100	40	116	246	452	930	1,565			
最大加速扭矩 / Max. Acceleration Torque	T_{2B}	Nm	15~100	1.8 倍额定输出扭矩 1.8 Times of Rated Output Torque					
最大输出扭矩 / Max. Output Torque 急停扭矩 / Emergency Stop Torque	T_{2NOT}	Nm	15~100	3 倍额定输出扭矩 3 Times of Rated Output Torque					
额定输入转速 / Rated Input Speed	n_{1N}	rpm	15~100	3,000	3,000	3,000	3,000	3,000	3,000
最大输入转速 / Max. Input Speed	n_{1B}	rpm	15~100	6,000	6,000	5,000	5,000	4,000	4,000
扭转刚性 / Torsional Rigidity		Nm/arcmin	15~100	6	14	27	60	140	240
容许径向力 / Max. Radial Force	F_{2rB}	N	15~100	1,120	3,040	6,460	8,830	14,820	48,450
容许轴向力 / Max. Axial Force	F_{2aB}	N	15~100	560	1,520	3,230	4,410	7,410	24,225
使用寿命 / Service Life	L_{H1}	hr	15~100	S5 周期运转 : >30,000 (S1 连续运转 : >15,000 hrs) S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)					
效率 / Efficiency	η	%	15~100	$\geq 94\%$					
使用温度 / Operating Temperature		°C	15~100	-25° C ~ +90° C					
润滑 / Lubrication			15~100	全合成润滑油脂 Synthetic Grease					
防护等级 / Protection Class			15~100	IP65					
安装方向 / Mounting Position			15~100	任意方向 Any					
噪音值 / Noise Level		dB	15~100	≤ 58	≤ 60	≤ 63	≤ 65	≤ 67	≤ 70
重量 / Weight $\pm 3\%$		Kg	15~100	1.6	4.04	9.49	17	34.1	57.3

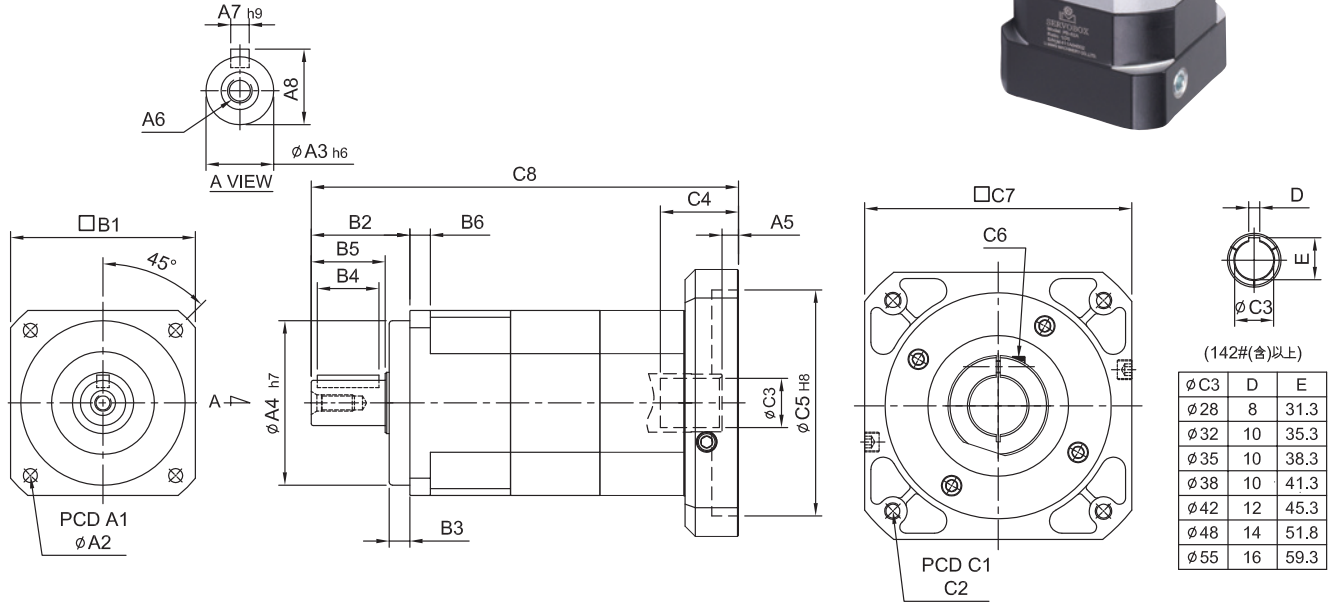
Mass Moments of Inertia (kg.cm²)

速比 Ratio	62	90	120	142	180	220
15	0.03	0.14	0.46	2.63	7.3	22.79
20	0.03	0.14	0.46	2.63	7.3	22.79
25	0.03	0.14	0.46	2.63	7.1	22.79
30	0.03	0.14	0.46	2.43	7.1	22.59
35	0.03	0.14	0.44	2.43	7.1	22.59
40	0.03	0.14	0.44	2.43	6.92	22.59
50	0.03	0.14	0.44	2.43	6.92	22.59
60	0.03	0.14	0.43	2.39	6.72	21.83
70	0.03	0.14	0.43	2.39	6.72	21.83
80	0.03	0.14	0.43	2.39	6.72	21.83
90	0.03	0.14	0.40	2.39	6.72	21.60
100	0.03	0.14	0.40	2.39	6.72	21.60

MODEL : PB-A

双段 2-Stage

RATIO : 15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 90, 100



unit: mm

Code	Model	44A	62A	90A	120A	142A	180A	220A
A	A1	50	70	100	130	165	215	250
	A2	4.5	5.5	6.8	9	11	13	17
	A3	13	16	22	32	40	55	75
	A4	35	50	80	110	130	160	180
	A5	5	6	9、23.5	10、20	10	11.5、13.5	12.5、14.5
	A6	M4 × P0.7	M5 × P0.8	M8 × P1.25	M10 × P1.5	M12 × P1.75	M14 × P2.0	M16 × P2.0
	A7	5	5	6	10	12	16	20
	A8	15	18	24.5	35	43	59	79.5
B	B1	44	62	90	120	142	180	220
	B2	26	36	48	65	92	106	139
	B3	5	7	10	12	15	20	30
	B4	15	20	30	40	65	70	90
	B5	20	28	36	50	74	82	104
	B6	5	8	10	12	15	16	20
C	C1	46、60、63	70、75、90	90、100、115、145	115、145、165	145、165、215	200、215、265	200、265、300
	C2	M3、M4、M5	M4、M5、M6	M5、M6、M8	M6、M8、M10	M8、M10、M12	M10、M12	M12、M16
	C3	8、9、11	11、14、16、19	16、19、22、24	22、24、28、32	28、32、35、38	35、38、42、48、55	38、42、48、55
	C4	26	33.5、41.5	59、73.5	67、77	84.5	114.5、116.5	117.5、119.5
	C5	30、40、50	50、60、70	70、80、95、110	95、110、130	110、130、180	114.3、180、230	114.3、230、250
	C6	M4 × P0.7	M5 × P0.8	M6 × P1.0	M8 × P1.25	M10 × P1.5	M10 × P1.5	M10 × P1.5
	C7	46、55	64、70、80	92、110、130	122、130、150	146、150、190	182、200、250	222、250、265
	C8	121	148.8、156.8	208、222.5	261、271	327	404.5、406.5	460.5、462.5

Characteristic of PB-A 2-Stage

PB-A 双段特性

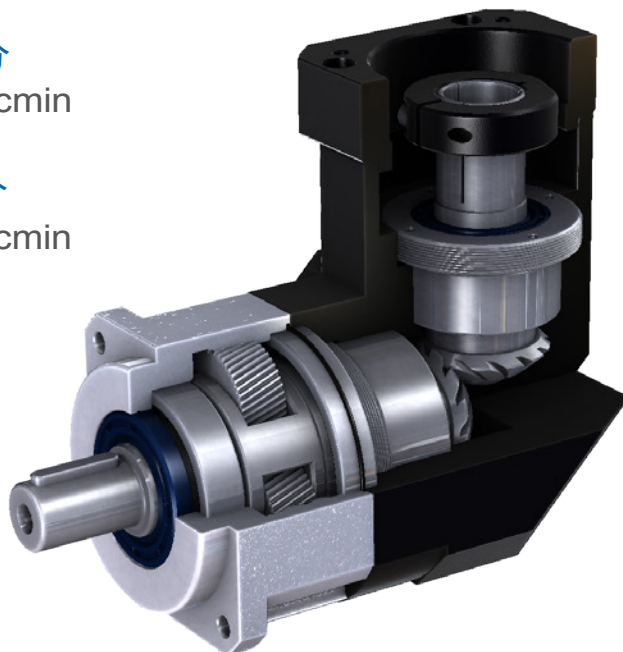
规格 Model No.	代号	单位 Unit	速比 Ratio	44A	62A	90A	120A	142A	180A	220A
额定输出扭矩 / Rated Output Torque (Nominal output torque)	T_{2N}	Nm	15	17	54	145	301	553	1,067	1,786
			20	15	48	128	269	491	940	1,587
			25	14	45	132	278	510	1,050	1,770
			30	13	41	125	252	466	985	1,680
			35	13	41	123	258	473	975	1,645
			40	12	39	115	241	442	942	1,605
			50	14	45	132	278	510	1,050	1,770
			60	13	41	125	252	466	985	1,680
			70	13	41	123	258	473	975	1,645
			80	12	40	115	241	442	942	1,605
90	11	40	120	227	412	875	1,490			
100	12	40	116	246	452	930	1,565			
最大加速扭矩 / Max. Acceleration Torque	T_{2B}	Nm	15~100	1.8 倍额定输出扭矩 1.8 Times of Rated Output Torque						
最大输出扭矩 / Max. Output Torque 急停扭矩 / Emergency Stop Torque	T_{2NOT}	Nm	15~100	3 倍额定输出扭矩 3 Times of Rated Output Torque						
额定输入转速 / Rated Input Speed	n_{1N}	rpm	15~100	3,000	3,000	3,000	3,000	3,000	3,000	3,000
最大输入转速 / Max. Input Speed	n_{1B}	rpm	15~100	6,000	6,000	6,000	5,000	5,000	4,000	4,000
扭转刚性 / Torsional Rigidity		Nm/arcmin	15~100	3	6	14	27	60	140	240
容许径向力 / Max. Radial Force	F_{2rB}	N	15~100	360	1,120	3,040	6,460	8,830	14,820	48,450
容许轴向力 / Max. Axial Force	F_{2aB}	N	15~100	180	560	1,520	3,230	4,410	7,410	24,225
使用寿命 / Service Life	L_H	hr	15~100	S5 周期运转 : >30,000 (S1 连续运转 : >15,000 hrs) S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)						
效率 / Efficiency	η	%	15~100	$\geq 94\%$						
使用温度 / Operating Temperature		°C	15~100	-25° C ~ +90° C						
润滑 / Lubrication			15~100	全合成润滑油脂 Synthetic Grease						
防护等级 / Protection Class			15~100	IP65						
安装方向 / Mounting Position			15~100	任意方向 Any						
噪音值 / Noise Level		dB	15~100	≤ 56	≤ 58	≤ 60	≤ 63	≤ 65	≤ 67	≤ 70
重量 / Weight $\pm 3\%$		Kg	15~100	0.86	2	5.48	10	21.4	42	59

Mass Moments of Inertia (kg.cm²)

速比 Ratio	44A	62A	90A	120A	142A	180A	220A
15	0.03	0.14	0.46	2.63	7.3	22.79	56.98
20	0.03	0.14	0.46	2.63	7.3	22.79	56.98
25	0.03	0.14	0.46	2.63	7.1	22.79	56.98
30	0.03	0.14	0.46	2.43	7.1	22.59	56.48
35	0.03	0.14	0.44	2.43	7.1	22.59	56.48
40	0.03	0.14	0.44	2.43	6.92	22.59	56.48
50	0.03	0.14	0.44	2.43	6.92	22.59	56.48
60	0.03	0.14	0.43	2.39	6.72	21.83	54.58
70	0.03	0.14	0.43	2.39	6.72	21.83	54.58
80	0.03	0.14	0.43	2.39	6.72	21.83	54.58
90	0.03	0.14	0.40	2.39	6.72	21.60	54.00
100	0.03	0.14	0.43	2.39	6.72	21.83	54.58


PBL series

- 全系列单段背隙 ≤ 10 弧分
1-Stage Backlash ≤ 10 arcmin
- 全系列双段背隙 ≤ 12 弧分
2-Stage Backlash ≤ 12 arcmin



Indication of Model Numbers

机种型号表示

PBL	90	—	10		—	MOTOR
减速机机型 Type	型号 Model		速比 Ratio	出力轴键槽 Output Shaft Keyway		马达型号 Motor Type
PBL	44 62 90 120 142 180 220		单段 1-Stage 3, 4, 5, 6, 7, 8, 9, 10, 12, 14, 16, 18, 20 双段 2-Stage 15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 90, 100, 120, 140, 160, 180, 200	<input type="checkbox"/> 标准品, 有键槽 Standard (Keyway) N: 实心轴, 无键槽 Solid Output Shaft (No Keyway)		

静音

使用研磨等级螺旋伞齿轮及螺旋齿轮实现顺畅安静地运转。

Quiet operation

Grinding spiral bevel gear & Helical gears contribute to reduce vibration and noise.

高刚性、高扭矩

使用整体式满针滚针轴承, 一体式内齿箱及螺旋齿轮, 提高了刚性和扭矩。

High Rigidity & High Torque

High rigidity & high torque are achieved by integrant needle roller bearings and one-piece constructed.

高效率

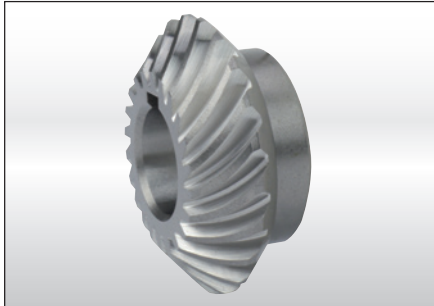
单段式在 95% 以上, 双段式在 92% 以上。

High Efficiency

Efficiency for 1-stage model exceeds 95%; 2-stage model exceeds 92%.

Features of PBL Series

PBL 系列产品特点



螺旋伞齿轮

研磨等级螺旋伞齿轮传动效率高,传动比稳定,圆弧重叠系数大,承载能力高,传动平稳平顺,工作可靠,结构紧凑,耐磨损,寿命长。

Spiral Bevel Gear

Grinding spiral bevel gear is excellent in transmission efficiency, stability, durability, large arc overlapping factor, heavy loading, compact structure, wear-resisting and long service life.

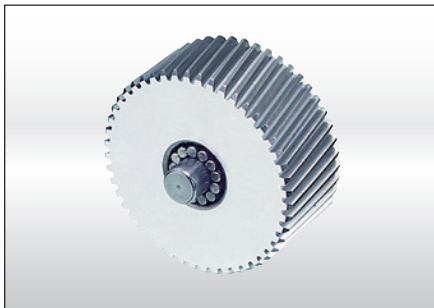


一体式行星臂架及双悬臂设计

行星臂架与输出轴采一体式的结构设计,以确保提高扭转刚性及精确度。

Integrated Planetary Arm Bracket

The planetary arm bracket and the output shaft are one-piece constructed to increase torsional rigidity and accuracy.



满针滚针轴承设计

行星齿轮的传动介面采用不含保持器之满针滚针轴承,增加接触面积以提高结构刚性及使用寿命。

Full Needle Roller Bearings Design

The planetary gear transmission employs full needle roller bearings without retainer to increase the contact surface, which greatly upgrades structural rigidity and service life.

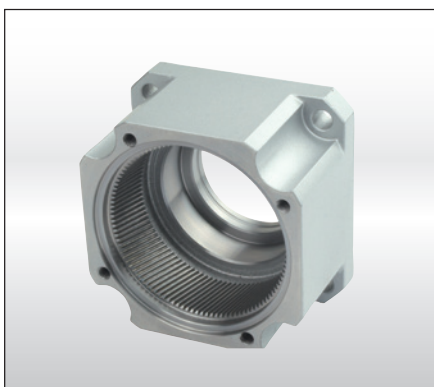


筒夹式连结机构

输入端与马达的连结采用筒夹式的锁紧机构,并经动平衡分析,以确保在高输入转速下结合介面的同心度和平衡度,及零背隙的动力传递。

Collet Locking Mechanism

The input-end and the motor are coupled through a collet locking mechanism. It has passed dynamical balance analysis to assure concentricity and balance on the connection and no backlash for power transmission while running at high speed.



一体式螺旋内齿轮箱

齿轮箱和内环齿轮采一体式设计,减速机构采用螺旋齿轮设计,齿形啮合率为一般正齿轮的二倍以上,具有运转平顺、低噪音、高输出扭矩和低背隙的特性。

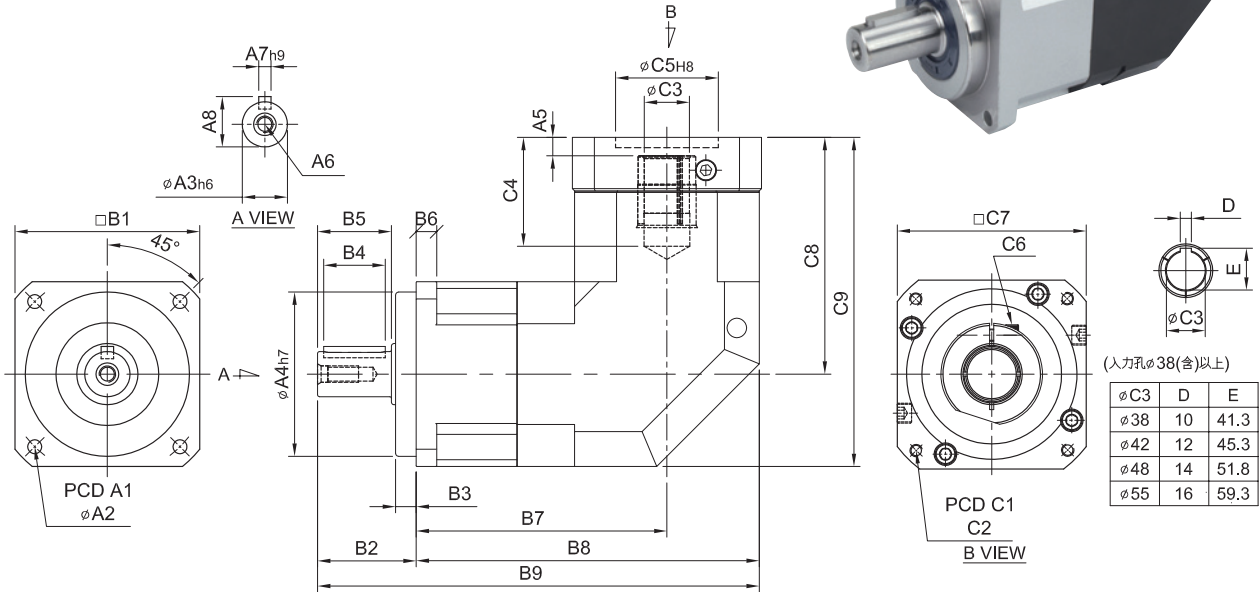
One-piece Helical Gear Box

The gear box and internal ring gear are one-piece constructed. The speed reduction mechanism employs helical gears, which provides two times meshing rate of teeth when comparing with regular spur gears. In addition, it also has features of extremely smooth running, low noise, high output torque and low backlash.

MODEL : PBL

单段 1-Stage

RATIO : 3, 4, 5, 6, 7, 8, 9, 10, 12, 14, 16, 18, 20



unit: mm

Code	Model	44	62	90	120	142	180	220
A	A1	50	70	100	130	165	215	250
	A2	4.5	5.5	6.8	9	11	13	17
	A3	13	16	22	32	40	55	75
	A4	35	50	80	110	130	160	180
	A5	6	6	9、23.5	10、20	10	12.5、14.5	12.5、14.5
	A6	M4 × P0.7	M5 × P0.8	M8 × P1.25	M10 × P1.5	M12 × P1.75	M14 × P2.0	M16 × P2.0
	A7	5	5	6	10	12	16	20
	A8	15	18	24.5	35	43	59	79.5
B	B1	44	62	90	120	142	180	220
	B2	26	36	48	65	92	106	139
	B3	5	7	10	12	15	20	30
	B4	15	20	30	40	65	70	90
	B5	20	28	36	50	74	82	104
	B6	5	8	10	12	15	16	20
	B7	76	84.5	122.1	148	165.5	223.6	231.6
	B8	98	115.5	167.1	208	236.5	313.6	341.6
	B9	124	151.5	215.1	273	328.5	419.6	480.6
C	C1	46、60、63	70、75、90	90、100、115、145	115、145、165	145、165、215	200、215、265	200、265、300
	C2	M3、M4、M5	M4、M5、M6	M5、M6、M8	M6、M8、M10	M8、M10、M12	M10、M12、M16	M12、M16
	C3	8、9、11	11、14、16、19	16、19、22、24	24、28、32	28、32、35、38	35、38、42、48、55	38、42、48、55
	C4	27	33.5、42	53、67.5	67、77	85	117、119	117、119
	C5	30、40、50	50、60、70	70、80、95、110	95、110、130	110、130、180	114.3、180、230	114.3、230、250
	C6	M4 × P0.7	M5 × P0.8	M6 × P1.0	M8 × P1.25	M10 × P1.5	M10 × P1.5	M10 × P1.5
	C7	46、55	64、70、80	92、110、130	122、130、150	146、150、190	182、200、250	222、250、265
	C8	61	77、85	115.3、129.8	141、151	165.7	235、237	235、237
	C9	83	108、116	160.3、174.8	201、211	236.7	325、327	345、347

Characteristic of PBL 1-Stage

PBL 单段特性

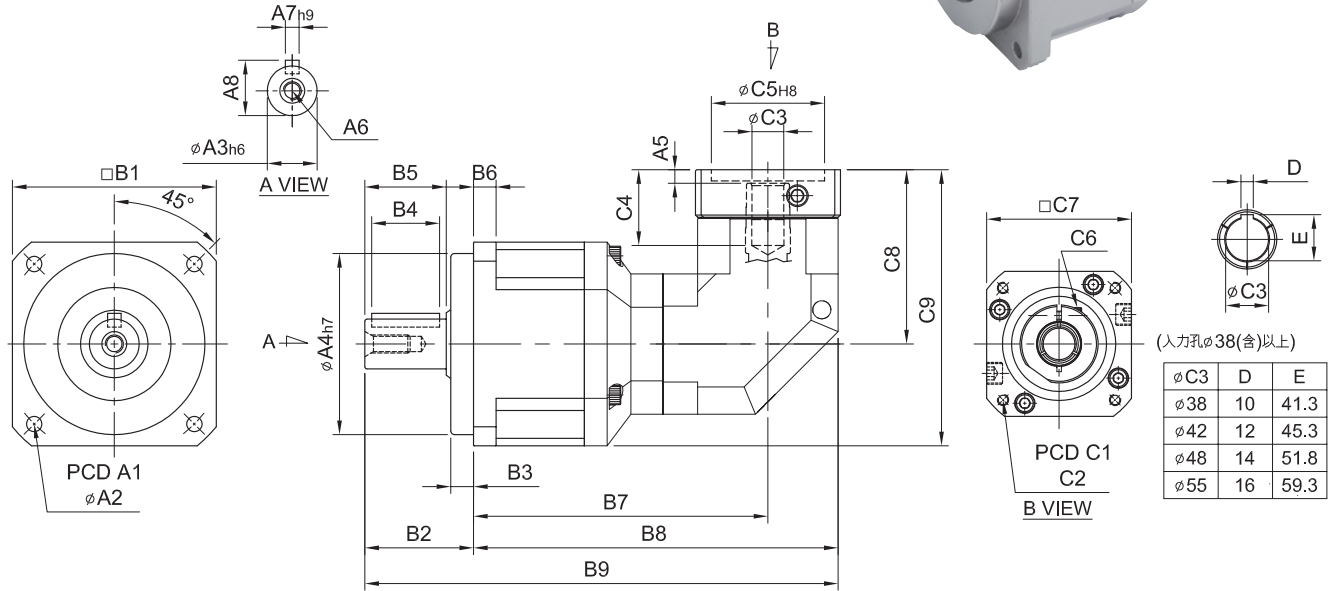
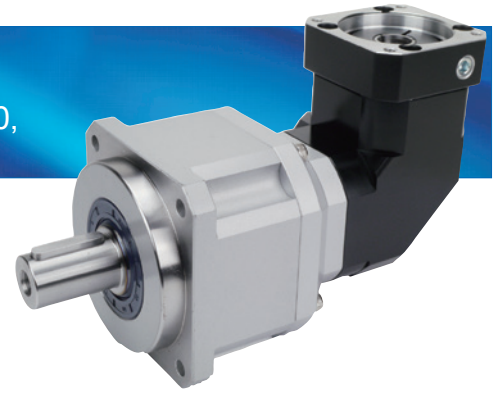
规格 Model No.	代号	单位 Unit	速比 Ratio	44	62	90	120	142	180	220
额定输出扭矩 / Rated Output Torque (Nominal output torque)	T_{2N}	Nm	3	17	54	145	301	553	1,067	1,786
			4	15	48	128	269	491	940	1,587
			5	14	45	132	278	510	1,050	1,770
			6	13	41	125	252	466	985	1,680
			7	13	41	123	258	473	975	1,645
			8	12	39	115	241	442	942	1,605
			9	11	40	120	227	412	875	1,490
			10	12	40	116	246	452	930	1,565
			12	13	41	125	252	466	985	1,680
			14	13	41	123	258	473	975	1,645
			16	12	39	115	241	442	942	1,605
			18	11	40	120	227	412	875	1,490
20	12	40	116	246	452	930	1,565			
最大加速扭矩 / Max. Acceleration Torque	T_{2B}	Nm	3~20	1.8 倍额定输出扭矩 1.8 Times of Rated Output Torque						
最大输出扭矩 / Max. Output Torque 急停扭矩 / Emergency Stop Torque	T_{2NOT}	Nm	3~20	3 倍额定输出扭矩 3 Times of Rated Output Torque						
额定输入转速 / Rated Input Speed	n_{1N}	rpm	3~20	3,000	3,000	3,000	3,000	3,000	3,000	2,000
最大输入转速 / Max. Input Speed	n_{1B}	rpm	3~20	6,000	6,000	6,000	5,000	5,000	4,000	3,000
扭转刚性 / Torsional Rigidity		Nm/arcmin	3~20	3	6	14	27	60	140	240
容许径向力 / Max. Radial Force	F_{2rB}	N	3~20	360	1,120	3,040	6,460	8,830	14,820	48,450
容许轴向力 / Max. Axial Force	F_{2aB}	N	3~20	180	560	1,520	3,230	4,410	7,410	24,225
使用寿命 / Service Life	L_{H1}	hr	3~20	S5 周期运转 : >30,000 (S1 连续运转 : >15,000 hrs) S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)						
效率 / Efficiency	η	%	3~20	$\geq 95\%$						
使用温度 / Operating Temperature		$^{\circ}\text{C}$	3~20	$-25^{\circ}\text{C} \sim +90^{\circ}\text{C}$						
润滑 / Lubrication			3~20	全合成润滑油脂 Synthetic Grease						
防护等级 / Protection Class			3~20	IP65						
安装方向 / Mounting Position			3~20	任意方向 Any						
噪音值 / Noise Level		dB	3~20	≤ 65	≤ 68	≤ 70	≤ 72	≤ 74	≤ 76	≤ 78
重量 / Weight $\pm 3\%$		Kg	3~20	0.99	2.1	6.88	12.5	23.16	51	75.2

Mass Moments of Inertia (kg.cm²)

速比 Ratio	44	62	90	120	142	180	220
3	0.09	0.36	2.28	6.85	23.5	68.2	135.0
4	0.09	0.36	2.28	6.85	23.5	68.2	135.0
5	0.09	0.36	2.28	6.85	23.5	68.2	135.0
6	0.09	0.36	2.28	6.85	23.5	68.2	135.0
7	0.09	0.36	2.28	6.85	23.5	68.2	135.0
8	0.09	0.36	2.28	6.85	23.5	68.2	135.0
9	0.09	0.36	2.28	6.85	23.5	68.2	135.0
10	0.09	0.36	2.28	6.85	23.5	68.2	135.0
12	0.03	0.08	1.88	6.20	21.8	65.5	119.2
14	0.03	0.08	1.88	6.20	21.8	65.5	119.2
16	0.03	0.08	1.88	6.20	21.8	65.5	119.2
18	0.03	0.08	1.88	6.20	21.8	65.5	119.2
20	0.03	0.08	1.88	6.20	21.8	65.5	119.2

MODEL : PBL

RATIO : 15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 90, 100, 120, 140, 160, 180, 200 (双段 2-Stage)



unit: mm

Code	Model	62	90	120	142	180	220
A	A1	70	100	130	165	215	250
	A2	5.5	6.8	9	11	13	17
	A3	16	22	32	40	55	75
	A4	50	80	110	130	160	180
	A5	6	6	9、23.5	10、20	10	12.5、14.5
	A6	M5 × P0.8	M8 × P1.25	M10 × P1.5	M12 × P1.75	M14 × P2.0	M16 × P2.0
	A7	5	6	10	12	16	20
	A8	18	24.5	35	43	59	79.5
B	B1	62	90	120	142	180	220
	B2	36	48	65	92	106	139
	B3	7	10	12	15	20	30
	B4	20	30	40	65	70	90
	B5	28	36	50	74	82	104
	B6	8	10	12	15	16	20
	B7	110.5	130	181.6	214.5	249.5	313.6
	B8	132.5	161	266.6	274.5	320.5	403.6
	B9	168.5	209	291.6	366.5	426.5	542.6
C	C1	46、60、63	70、75、90	90、110、115、145	115、145、165	145、165、215	200、215、265
	C2	M3、M4、M5	M4、M5、M6	M5、M6、M8、M10	M6、M8、M10	M8、M10、M12	M10、M12、M16
	C3	8、9、11	11、14、16、19	16、19、22、24	24、28、32	28、32、35、38	35、38、42、48、55
	C4	27	33.5、42	53、67.5	67、77	85	117、119
	C5	30、40、50	50、60、70	70、80、95、110	70、95、110、130	110、130、180	114.3、180、230
	C6	M4 × P0.7	M5 × P0.8	M6 × P1.0	M8 × P1.25	M10 × P1.5	M10 × P1.5
	C7	46、55	64、70、80	92、110、130	122、130、150	146、150、190	182、200、250
	C8	61	77、85	115.3、129.8	141、151	165.7	235、237
	C9	92	122、130	175.3、189.8	212、222	255.7	345、347

Characteristic of PBL 2-Stage

PBL 双段特性

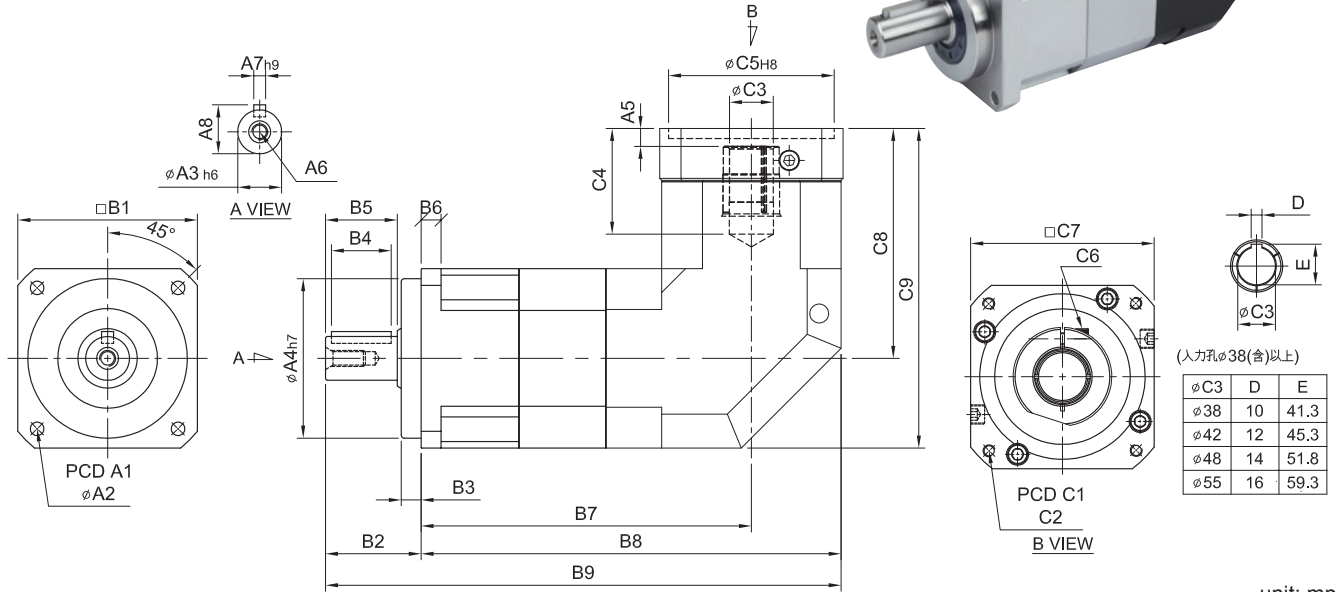
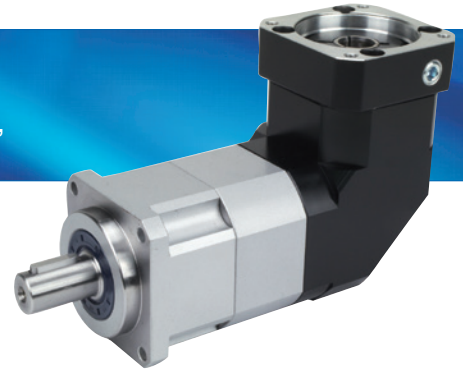
规格 Model No.	代号	单位 Unit	速比 Ratio	62	90	120	142	180	220
额定输出扭矩 / Rated Output Torque (Nominal output torque)	T_{2N}	Nm	15	54	145	301	553	1,067	1,786
			20	48	128	269	491	940	1,587
			25	45	132	278	510	1,050	1,770
			30	41	125	252	466	985	1,680
			35	41	123	258	473	975	1,645
			40	39	115	241	442	942	1,605
			50	45	132	278	510	1,050	1,770
			60	41	125	252	466	985	1,680
			70	41	123	258	473	975	1,645
			80	40	115	241	442	942	1,605
			90	40	120	227	412	875	1,490
			100	40	116	246	452	930	1,565
			120	41	125	252	466	985	1,680
			140	41	123	258	473	975	1,645
			160	40	115	241	442	942	1,605
180	40	120	227	412	875	1,490			
200	40	116	246	452	930	1,565			
最大加速扭矩 / Max. Acceleration Torque	T_{2B}	Nm	15~200	1.8 倍额定输出扭矩 1.8 Times of Rated Output Torque					
最大输出扭矩 / Max. Output Torque 急停扭矩 / Emergency Stop Torque	T_{2NOT}	Nm	15~200	3 倍额定输出扭矩 3 Times of Rated Output Torque					
额定输入转速 / Rated Input Speed	n_{1N}	rpm	15~200	3,000	3,000	3,000	3,000	3,000	2,000
最大输入转速 / Max. Input Speed	n_{1B}	rpm	15~200	6,000	6,000	5,000	5,000	4,000	3,000
扭转刚性 / Torsional Rigidity		Nm/arcmin	15~200	6	14	27	60	140	240
容许径向力 / Max. Radial Force	F_{2rB}	N	15~200	1,120	3,040	6,460	8,830	14,820	48,450
容许轴向力 / Max. Axial Force	F_{2aB}	N	15~200	560	1,520	3,230	4,410	7,410	24,225
使用寿命 / Service Life	L_H	hr	15~200	S5 周期运转 : >30,000 (S1 连续运转 : >15,000 hrs) S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)					
效率 / Efficiency	η	%	15~200	$\geq 92\%$					
使用温度 / Operating Temperature		°C	15~200	-25° C ~ +90° C					
润滑 / Lubrication			15~200	全合成润滑油脂 Synthetic Grease					
防护等级 / Protection Class			15~200	IP65					
安装方向 / Mounting Position			15~200	任意方向 Any					
噪音值 / Noise Level		dB	15~200	≤ 68	≤ 70	≤ 72	≤ 74	≤ 76	≤ 78
重量 / Weight $\pm 3\%$		Kg	15~200	2	6.1	12.5	23.2	41.4	73

Mass Moments of Inertia (kg.cm²)

速比 Ratio	62	90	120	142	180	220
15	0.09	0.36	2.28	6.85	26.2	70.1
20	0.09	0.36	2.28	6.85	26.2	70.1
25	0.09	0.36	2.28	6.85	23.1	68.2
30	0.09	0.36	2.28	6.85	23.1	68.2
35	0.09	0.36	2.28	6.85	23.1	68.2
40	0.09	0.36	2.28	6.85	23.1	68.2
50	0.09	0.36	2.28	6.85	23.1	68.2
60	0.09	0.36	2.28	6.85	23.1	68.2
70	0.09	0.36	2.28	6.85	23.1	68.2
80	0.09	0.36	2.28	6.85	23.1	68.2
90	0.09	0.36	2.28	6.85	23.1	68.2
100	0.09	0.36	2.28	6.85	23.1	68.2
120	0.03	0.10	1.88	6.20	21.2	65.1
140	0.03	0.10	1.88	6.20	21.2	65.1
160	0.03	0.10	1.88	6.20	21.2	65.1
180	0.03	0.10	1.88	6.20	21.2	65.1
200	0.03	0.10	1.88	6.20	21.2	65.1

MODEL : PBL-A

RATIO : 15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 90, 100, 120, 140, 160, 180, 200 (双段 2-Stage)



unit: mm

Code	Model	44A	62A	90A	120A	142A	180A	220A
A	A1	50	70	100	130	165	215	250
	A2	4.5	5.5	6.8	9	11	13	17
	A3	13	16	22	32	40	55	75
	A4	35	50	80	110	130	160	180
	A5	6	6	9, 23.5	10, 20	10	12.5, 14.5	12.5, 14.5
	A6	M4 × P0.7	M5 × P0.8	M8 × P1.25	M10 × P1.5	M12 × P1.75	M14 × P2.0	M16, P2.0
	A7	5	5	6	10	12	16	20
	A8	15	18	24.5	35	43	59	79.5
B	B1	44	62	90	120	142	180	220
	B2	26	36	48	65	92	106	139
	B3	5	7	10	12	15	20	30
	B4	15	20	30	40	65	70	90
	B5	20	28	36	50	74	82	104
	B6	5	8	10	12	15	16	20
	B7	102	118.3	165.6	204	232	304.6	324.6
	B8	124	149.3	210.6	264	303	394.6	434.6
	B9	150	185.3	258.6	329	395	500.6	573.6
C	C1	46, 60, 63	70, 75, 90	90, 100, 115, 145	115, 145, 165	145, 165, 215	200, 215, 265	200, 265, 300
	C2	M3, M4, M5	M4, M5, M6	M5, M6, M8	M6, M8, M10	M8, M10, M12	M10, M12, M16	M12, M16
	C3	8, 9, 11	11, 14, 16, 19	16, 19, 22, 24	24, 28, 32	28, 32, 35, 38	35, 38, 42, 48, 55	38, 42, 48, 55
	C4	27	33.5, 42	53, 67.5	67, 77	85	117, 119	117, 119
	C5	30, 40, 50	50, 60, 70	70, 80, 95, 110	95, 110, 130	110, 130, 180	114.3, 180, 230	114.3, 230, 250
	C6	M4 × P0.7	M5 × P0.8	M6 × P1.0	M8 × P1.25	M10 × P1.5	M10 × P1.5	M10, P1.5
	C7	46, 55	64, 70, 80	92, 110, 130	122, 130, 150	146, 150, 190	182, 200, 250	220, 250, 265
	C8	61	77, 85	115.3, 129.8	141, 151	165.7	235, 237	235, 237
	C9	83	108, 116	160.3, 174.8	201, 211	236.7	325, 327	345, 347

PBL

SB

SBL

SBT

SE

SEL

SD

SDL

SDD

SDH

SF

SFL

SA

PB

PBL

PBT

FA

SN

FB

FE

AD

PE

ST

Characteristic of PBL-A 2-Stage

PBL-A 双段特性

规格 Model No.	代号	单位 Unit	速比 Ratio	44A	62A	90A	120A	142A	180A	220A
额定输出扭矩 / Rated Output Torque (Nominal output torque)	T_{2N}	Nm	15	17	54	145	301	553	1,067	1,786
			20	15	48	128	269	491	940	1,587
			25	14	45	132	278	510	1,050	1,770
			30	13	41	125	252	466	985	1,680
			35	13	41	123	258	473	975	1,645
			40	12	39	115	241	442	942	1,605
			50	11	45	132	278	510	1,050	1,770
			60	12	41	125	252	466	985	1,680
			70	13	41	123	258	473	975	1,645
			80	13	40	115	241	442	942	1,605
			90	12	40	120	227	412	875	1,490
			100	11	40	116	246	452	930	1,565
			120	12	41	125	252	466	985	1,680
			140	13	41	123	258	473	975	1,645
			160	13	39	115	241	442	942	1,605
			180	12	40	120	227	412	875	1,490
200	11	40	116	246	452	930	1,565			
最大加速扭矩 / Max. Acceleration Torque	T_{2B}	Nm	15~200	1.8 倍额定输出扭矩 1.8 Times of Rated Output Torque						
最大输出扭矩 / Max. Output Torque 急停扭矩 / Emergency Stop Torque	T_{2NOT}	Nm	15~200	3 倍额定输出扭矩 3 Times of Rated Output Torque						
额定输入转速 / Rated Input Speed	n_{1N}	rpm	15~200		3,000	3,000	3,000	3,000	3,000	2,000
最大输入转速 / Max. Input Speed	n_{1B}	rpm	15~200		6,000	6,000	5,000	5,000	4,000	3,000
扭转刚性 / Torsional Rigidity		Nm/arcmin	15~200		6	14	27	60	140	240
容许径向力 / Max. Radial Force	F_{2rB}	N	15~200		1,120	3,040	6,460	8,830	14,820	48,450
容许轴向力 / Max. Axial Force	F_{2aB}	N	15~200		560	1,520	3,230	4,410	7,410	24,225
使用寿命 / Service Life	L_H	hr	15~200	S5 周期运转 : >30,000 (S1 连续运转 : >15,000 hrs) S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)						
效率 / Efficiency	η	%	15~200	$\geq 92\%$						
使用温度 / Operating Temperature		°C	15~200	-25° C ~ +90° C						
润滑 / Lubrication			15~200	全合成润滑油脂 Synthetic Grease						
防护等级 / Protection Class			15~200	IP65						
安装方向 / Mounting Position			15~200	任意方向 Any						
噪音值 / Noise Level		dB	15~200	≤ 65	≤ 68	≤ 70	≤ 72	≤ 74	≤ 76	≤ 78
重量 / Weight $\pm 3\%$		Kg	15~200	1.5	3	8.15	13.9	29.4	52.4	94.5

Mass Moments of Inertia (kg.cm²)

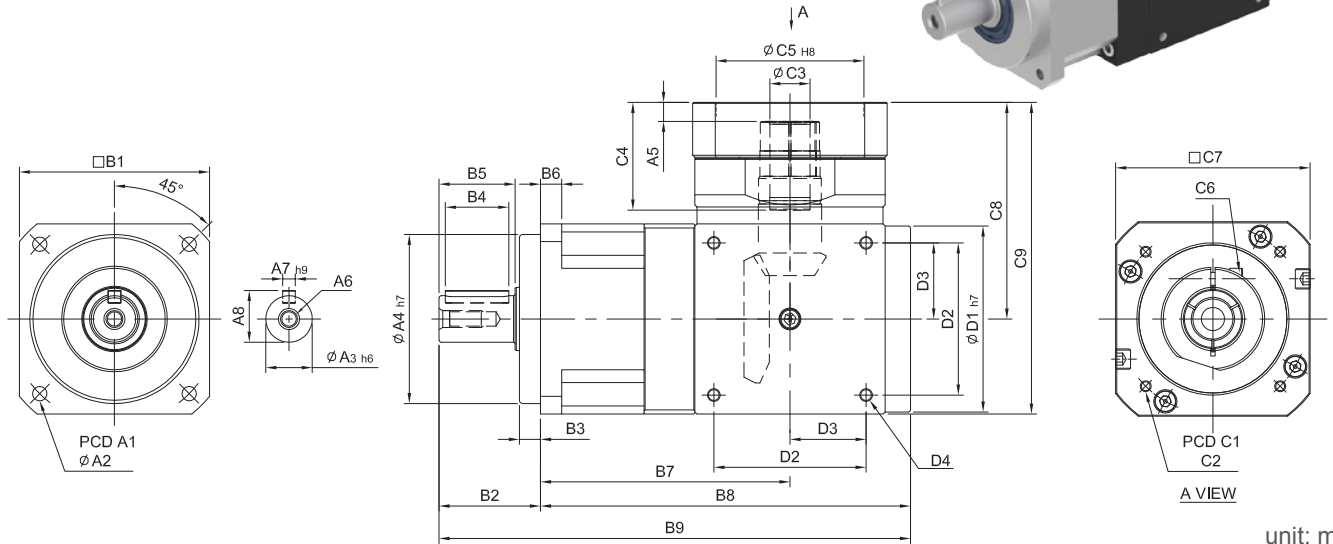
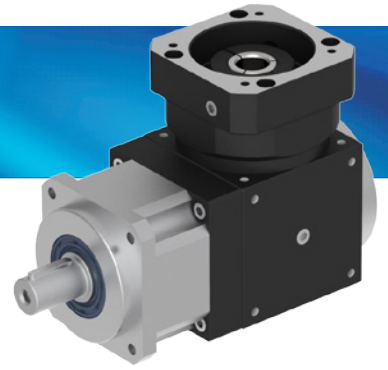
速比 Ratio	44A	62A	90A	120A	142A	180A	220A
15	0.09	0.36	2.28	6.85	23.50	55.2	80.2
20	0.09	0.36	2.28	6.85	23.50	55.2	80.2
25	0.09	0.36	2.28	6.85	23.50	50.4	76.5
30	0.09	0.36	2.28	6.85	23.50	50.4	76.5
35	0.09	0.36	2.28	6.85	23.50	50.4	76.5
40	0.09	0.36	2.28	6.85	23.50	50.4	76.5
50	0.09	0.36	2.28	6.85	23.50	50.4	76.5
60	0.09	0.36	2.28	6.85	23.50	50.4	76.5
70	0.09	0.36	2.28	6.85	23.50	50.4	76.5
80	0.09	0.36	2.28	6.85	23.50	50.4	76.5
90	0.09	0.36	2.28	6.85	23.50	50.4	76.5
100	0.09	0.36	2.28	6.85	23.50	50.4	76.5
120	0.03	0.08	1.88	6.20	21.80	48.7	74.2
140	0.03	0.08	1.88	6.20	21.80	48.7	74.2
160	0.03	0.08	1.88	6.20	21.80	48.7	74.2
180	0.03	0.08	1.88	6.20	21.80	48.7	74.2
200	0.03	0.08	1.88	6.20	21.80	48.7	74.2

MODEL : PBT

单段 1-Stage

RATIO : 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 25, 30, 35, 40, 45, 50

螺旋齒輪 Helical Gear & 螺旋傘齒輪 Spiral Bevel Gear



unit: mm

Code	Model	44	62	90	120	142	180	220
A	A1	50	70	100	130	165	215	250
	A2	4.5	5.5	6.8	9	11	13	17
	A3	13	16	22	32	40	55	75
	A4	35	50	80	110	130	160	180
	A5	5	7	9, 23.5	9, 23.5	10	9.5	14, 16
	A6	M4 x P0.7	M5 x P0.8	M8 x P1.25	M10 x P1.5	M12 x P1.75	M14 x P2.0	M16xP2.0
	A7	5	5	6	10	12	16	20
	A8	15	18	24.5	35	43	59	79.5
B	B1	44	62	90	120	142	180	220
	B2	26	36	48	65	92	106	139
	B3	5	7	10	12	15	20	30
	B4	15	20	30	40	65	70	90
	B5	20	28	36	50	74	82	104
	B6	5	8	10	12	15	16	20
	B7	67.5	87.5	118	145	175	207	237
	B8	99.5	128	175	215	260	307	360
	B9	125.5	164	223	280	352	413	499
C	C1	46, 60, 63	70, 75, 90	90, 100, 115, 145	90, 100, 115, 145	115, 145, 165	145, 165, 215	200, 215, 265
	C2	M3, M4, M5	M4, M5, M6	M5, M6, M8	M5, M6, M8	M6, M8, M10	M8, M10, M12	M10, M12, M16
	C3	8, 11	14	19, 24	22, 24	28, 32, 35	35, 38	42, 48, 55
	C4	26	36	51, 65.5	51, 65.5	68	84.5	117, 119
	C5	30, 40, 50	50, 60, 70	70, 80, 95, 110	70, 80, 95, 110	95, 110, 130	110, 130, 180	114.3, 180, 230
	C6	M4 x P0.7	M5 x P0.8	M6 x P1.0	M6 x P1.0	M8 x P1.25	M10 x P1.5	M10xP1.5
	C7	42	64, 70, 80	92, 110, 130	92, 110, 130	122, 130, 150	146, 150, 190	182, 200, 250
	C8	57	77	103, 117	122, 136	154	189	252, 254
	C9	82	110	148, 162	182, 196	225	279	362, 364
D	D1	48	62	88	106	135	164	205
	D2	-	52	72	88	110	134	170
	D3	-	26	36	44	55	67	85
	D4	-	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5	M12 x P1.75	M16xP2.0

Characteristic of PBT 1-Stage

PBT 单段特性

规格 Model No.	代号	单位 Unit	速比 Ratio	44	62	90	120	142	180	220
额定输出扭矩 / Rated Output Torque (Nominal output torque)	T_{2N}	Nm	3	17	54	145	301	553	1,067	1,786
			4	15	48	128	269	491	940	1,587
			5	14	45	132	278	510	1,050	1,770
			6	13	41	125	252	466	985	1,680
			7	13	41	123	258	473	975	1,645
			8	12	39	115	241	442	942	1,605
			9	11	40	120	227	412	875	1,490
			10	14	45	132	278	510	1,050	1,565
			15	14	45	132	278	510	1,050	1,786
			20	14	45	132	278	510	1,050	1,587
			25	14	45	132	278	510	1,050	1,770
			30	13	41	125	252	466	985	1,680
			35	13	41	123	258	473	975	1,645
			40	12	39	115	241	442	942	1,605
45	11	40	120	227	412	875	1,490			
50	12	40	116	246	452	930	1,565			
最大加速扭矩 / Max. Acceleration Torque	T_{2B}	Nm	3~50	1.8 倍额定输出扭矩 1.8 Times of Rated Output Torque						
最大输出扭矩 / Max. Output Torque 急停扭矩 / Emergency Stop Torque	T_{2NOT}	Nm	3~50	3 倍额定输出扭矩 3 Times of Rated Output Torque						
额定输入转速 / Rated Input Speed	n_{IN}	rpm	3~50	3,000	3,000	3,000	2,500	2,500	2,000	2,000
最大输入转速 / Max. Input Speed	n_{IB}	rpm	3~50	6,000	6,000	5,500	4,500	3,500	3,000	3,000
背隙 / Backlash		arcmin	3~50	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10
扭转刚性 / Torsional Rigidity		Nm/arcmin	3~50	3	6	14	27	60	140	240
容许径向力 / Max. Radial Force	F_{2rB}	N	3~50	360	1,120	3,040	6,460	8,830	14,820	48,450
容许轴向力 / Max. Axial Force	F_{2aB}	N	3~50	180	560	1,520	3,230	4,410	7,410	24,225
使用寿命 / Service Life	L_H	hr	3~50	S5 周期运转 : >30,000 (S1 连续运转 : >15,000 hrs) S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)						
效率 / Efficiency	η	%	3~50	≥ 95%						
使用温度 / Operating Temperature		°C	3~50	-25° C ~ +90° C						
润滑 / Lubrication			3~50	全合成润滑油脂 Synthetic Grease						
防护等级 / Protection Class			3~50	IP65						
安装方向 / Mounting Position			3~50	任意方向 Any						
噪音值 / Noise Level		dB	3~50	≤ 65	≤ 68	≤ 70	≤ 72	≤ 74	≤ 76	≤ 76
重量 / Weight ±3%		Kg	3~50	1.2	2	7	13	24	48	78

Mass Moments of Inertia (kg.cm²)

速比 Ratio	44	62	90	120	142	180	220
3	0.09	0.36	2.28	6.85	23.5	68	135
4	0.09	0.36	2.28	6.85	23.5	68	135
5	0.09	0.36	2.28	6.85	23.5	68	135
6	0.09	0.36	2.28	6.85	23.5	68	135
7	0.09	0.36	2.28	6.85	23.5	68	135
8	0.09	0.36	2.28	6.85	23.5	68	135
9	0.09	0.36	2.28	6.85	23.5	68	135
10	0.09	0.36	2.28	6.85	23.5	68	135
15	0.06	0.22	2.05	6.21	21.2	61	135
20	0.06	0.22	2.05	6.21	21.2	61	135
25	0.06	0.22	2.05	6.21	21.2	61	135
30	0.06	0.22	2.05	6.21	21.2	61	135
35	0.06	0.22	2.05	6.21	21.2	61	135
40	0.06	0.22	2.05	6.21	21.2	61	135
45	0.06	0.22	2.05	6.21	21.2	61.3	135
50	0.06	0.22	2.05	6.21	21.2	61	135

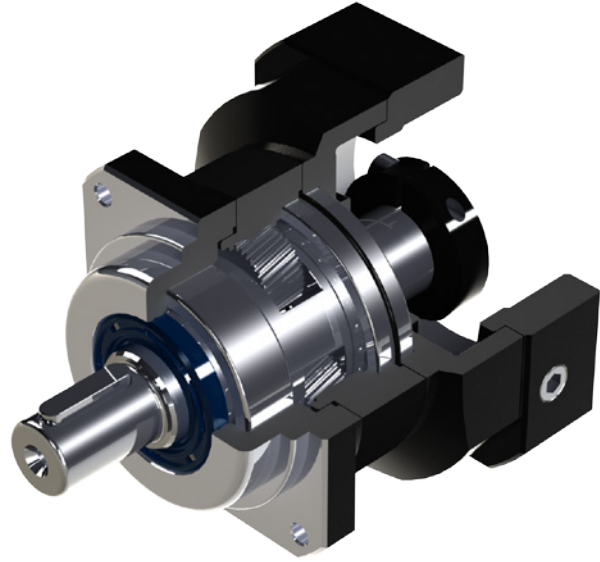
行星减速机搭配伞齿轮减速 机型号及速比一览表

The Model & Ratio Table of Precision Planetary Reducer Assembly Bevel Gear Reducer

型号 Model	减速比 Ratio	法兰盘框号 Flange Model	伞齿轮减速机 Bevel Gear Reducer Model
44	3、4、5、6 7、8、9、10 15、20、25 30、35、40 45、50	44	
62		62	ST65
90		90	ST90
120		90	ST110
142		120	ST140
180		142	ST170
220		180	ST210

FA series

- 全系列单段背隙 ≤ 8 弧分
1-Stage Backlash ≤ 8 arcmin
- 全系列双段背隙 ≤ 12 弧分
2-Stage Backlash ≤ 12 arcmin



Indication of Model Numbers 机种型号表示

FA	80	10		MOTOR
减速机机型 Type	型号 Model	速比 Ratio	出力轴键槽 Output Shaft Keyway	马达型号 Motor Type
FA	50	单段 1-Stage 3, 4, 5, 7, 10	<input type="checkbox"/> 标准品, 有键槽 Standard (Keyway)	
	70			
	80	双段 2-Stage 15, 20, 25, 30, 35, 40, 50, 70, 100	<input type="checkbox"/> N: 实心轴, 无键槽 Solid Output Shaft (No Keyway)	
	90			
	100			
	120			
	142			
	180			

静音

使用研磨等级螺旋伞齿轮及螺旋齿轮实现顺畅安静地运转。

Quiet operation

Grinding spiral bevel gear & Helical gears contribute to reduce vibration and noise.

高刚性、高扭矩

使用整体式满针滚针轴承, 一体式内齿箱及螺旋齿轮, 提高了刚性和扭矩。

High Rigidity & High Torque

High rigidity & high torque are achieved by integrant needle roller bearings and one-piece constructed.

Features of FA Series

FA 系列产品特点



螺旋齿轮设计及高精度齿轮加工

减速机构采用螺旋齿轮设计,齿形啮合率为一般正齿轮的二倍以上,具有运转平顺、低噪音、高输出扭矩和低背隙的特性。

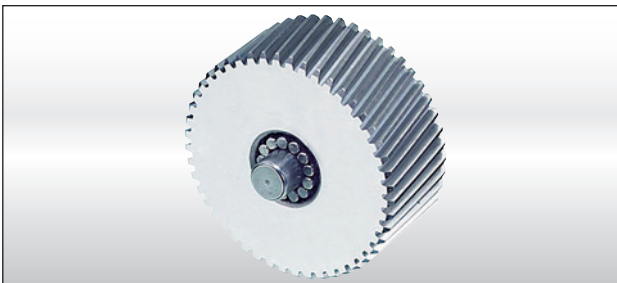
材料采用高级镍铬钼合金钢 (SNCM220),切削加工后,经渗碳热处理至硬度 57~60HRC,再进行齿面研磨,确保齿轮精度 DIN6 级以内。

Helical Gear Design

The speed reduction mechanism employs helical gears, which provides two times meshing rate of teeth when comparing with regular spur gears. In addition, it also features extremely smooth running, low noise, high torque output and low backlash.

High Precision Gear Machining

Manufactured from high quality Ni-Cr-Mo alloy steel (SNCM220), precision achined and carburized to hardness 57-60 HRC. Precision teeth grinding sure gear accuracy reaches DIN6 class.

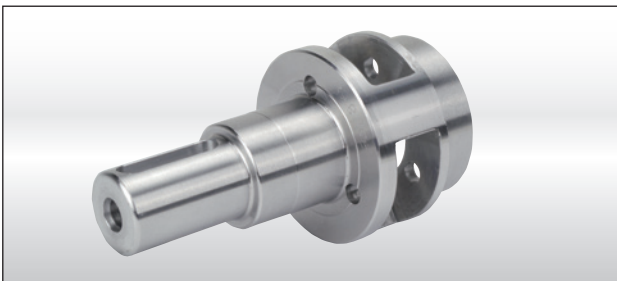


满针滚针轴承设计

行星齿轮的传动介面采用不含保持器之满针滚针轴承,增加接触面积以提高结构刚性及使用寿命。

Full Needle Roller Bearings Design

The planetary gear transmission employs full needle roller bearings without retainer to increase the contact surface, which greatly upgrades structural rigidity and service life.

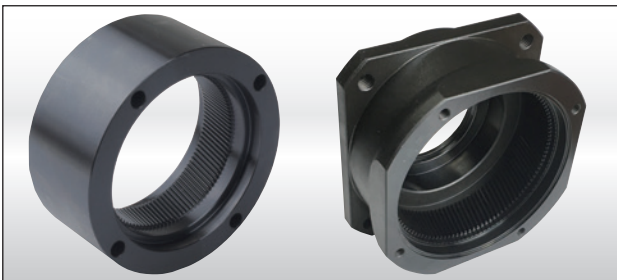


一体式行星臂架

行星臂架与输出轴採一体式的结构设计,以确保提高扭转刚性及精确度。

Integrated Planetary Arm Bracket

The planetary arm bracket and the output shaft are one-piece constructed to increase torsional rigidity and accuracy.



一体式齿轮箱本体

齿轮箱和內环齿轮採一体式的设计。提高结构刚性及输出扭矩。

One-piece Gear Box & Advanced Surface Treatment

The gear box and internal ring gear are one-piece constructed to achieve high rigidity and high torque.



筒夹式连结机构

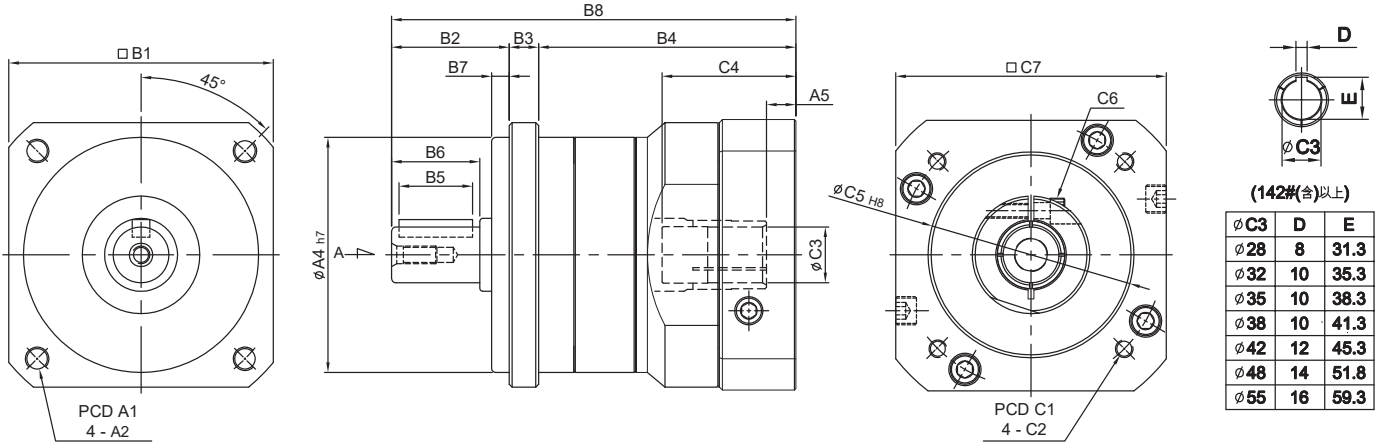
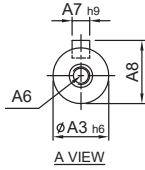
输入端与马达的连结採用筒夹式的锁紧机构,并经动平衡分析,以确保在高输入转速下结合介面的同心度和平衡度,及零背隙的动力传递。

Collet Locking Mechanism

The input-end and the motor are coupled through a collet locking mechanism. It has passed dynamical balance analysis to assure concentricity and balance on the connection and no backlash for power transmission while running at high speed.

MODEL : FA

RATIO : 3, 4, 5, 7, 10 (单段 1-Stage)



(142#以上)

∅C3	D	E
∅28	8	31.3
∅32	10	35.3
∅35	10	38.3
∅38	10	41.3
∅42	12	45.3
∅48	14	51.8
∅55	16	59.3

unit: mm

Model Code	50	70	80	90	100	120	142	180
A								
A1	60	76	90	100	115	135	165	215
A2	M5 x P0.8	∅5.5	M6 x P1.0	M8 x P1.25	M8 x P1.25	M10 x P1.5	M12 x P1.75	M14 x P2.0
A3	12	16	19	19	24	32	40	55
A4	50	60	70	80	90	110	130	160
A5	4.5	6	10	10	8	10	10	9.5
A6	M4 x P0.7 deep 11	M5 x P0.8 deep 14	M6 x P1.0 deep 15	M6 x P1.0 deep 15	M8 x P1.25 deep 20	M10 x P1.5 deep 23	M10 x P1.5 deep 23	M10 x P1.5 deep 23
A7	4	5	6	6	8	10	12	16
A8	13.5	18	21.5	21.5	27	35	43	59
B								
B1	52	70	80	90	102	120	142	180
B2	32	36	50	40	61	72	87	106
B3	6	7	11	10	13	10	15	16
B4	58.5	72/80	64.5/76.5	87.5	89.5/104	123/133	158.5	201.5/204.5
B5	15	20	25	25	30	40	65	70
B6	20	28	30	30	40	50	74	82
B7	4.5	7	5	6	5	10	10	20
B8	96.5	115, 123	125.5, 137.5	137.5	163.5, 178	205, 215	260.5	323.5, 326.5
C								
C1	45, 46, 48.5, 63, 70	70, 75, 85	70, 90, 100, 115	90, 100, 115, 145	90, 100, 115, 145	115, 145, 165	130, 145, 165, 175, 215	149, 200, 215, 265, 300
C2	M3, M4, M5	M5, M6	M5, M6	M6, M8	M6, M8	M6, M8, M10	M8, M10, M12	M8, M12, M16
C3	8, 10, 11, 14	11, 14, 16, 19	14, 16, 19	14, 16, 19	19, 22, 24	22, 24, 28, 32	28, 32, 35, 38	35, 38, 42, 48, 55
C4	32	33.5, 41.5	33.5, 45.5	45.5	51, 65.5	67, 77	84.5	114.5, 117.5
C5	30, 40, 50	50, 60, 70	50, 70, 80, 95	70, 80, 95, 110	70, 80, 95, 110	95, 110, 130	110, 130, 180	114.3, 180, 230, 250
C6	M4 x P0.7	M5 x P0.8	M5 x P0.8	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5	M10 x P1.5
C7	46, 55, 60	64, 70, 80	80, 92, 110	92, 110, 130	92, 110, 130	122, 130, 150	146, 150, 190	182, 200, 250, 265

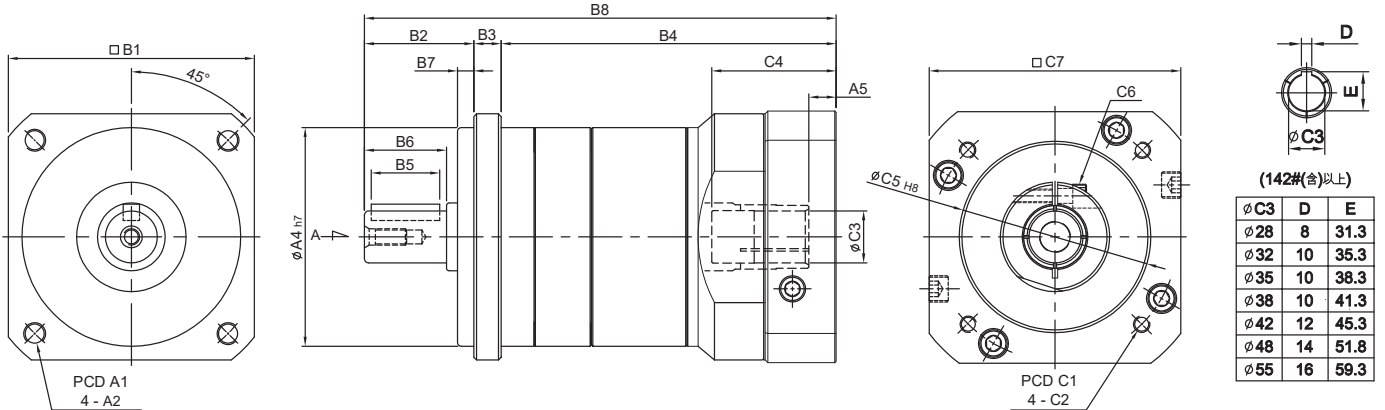
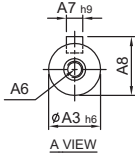
Characteristic of FA-1-Stage

FA 单段特性

规格 Model No.	代号	单位 Unit	速比 Ratio	50	70	80	90	100	120	142	180
额定输出扭矩 / Rated Output Torque (Nominal Output Torque)	T_{2N}	Nm	3	19	54	112	112	165	286	550	1,060
			4	16	48	110	110	146	255	490	940
			5	16	45	108	108	160	264	510	1,050
			7	15	41	105	105	149	245	470	970
			10	14	40	100	100	141	234	450	930
最大加速扭矩 / Max. Acceleration Torque	T_{2B}	Nm	3	34	97	202	202	297	515	990	1,900
			4	29	86	198	198	263	459	880	1,690
			5	29	81	194	194	288	475	910	1,890
			7	27	74	189	189	268	441	840	1,740
			10	25	72	180	180	254	421	810	1,670
转动惯量 / Mass Moments of Inertia		kg.cm ²	3	0.03	0.16	0.48	0.48	0.6	3.21	9.2	29
			4	0.03	0.14	0.38	0.38	0.45	2.64	7.5	23.7
			5	0.03	0.13	0.38	0.38	0.45	2.64	7.4	23.3
			7	0.03	0.13	0.38	0.38	0.45	2.62	7.1	22.5
			10	0.03	0.13	0.35	0.35	0.41	2.51	7.0	22.5
最大输出扭矩 / Max. Output Torque 急停扭矩 / Emergency Stop Torque	T_{2NOT}	Nm	3~10	3 倍额定输出扭矩 3 Times of Rated Output Torque							
额定输入转速 / Rated Input Speed	n_{1N}	rpm	3~10	3,000							
最大输入转速 / Max. Input Speed	n_{1B}	rpm	3~10	5,000							
扭转刚性 / Torsional Rigidity		Nm/arcmin	3~10	3	5	12	12	14	23	60	140
容许径向力 / Max. Radial Force	F_{2rB}	N	3~10	350	800	1,200	1,200	3,200	5,220	8,800	14,800
容许轴向力 / Max. Axial Force	F_{2aB}	N	3~10	180	400	600	600	1,600	2,600	4,400	7,400
使用寿命 / Service Life	L_{H1}	hr	3~10	S5 周期运转 : >30,000 (S1 连续运转 : >15,000 hrs) S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
效率 / Efficiency	η	%	3~10	$\geq 97\%$							
使用温度 / Operating Temperature		°C	3~10	-25°C ~ +90°C							
润滑 / Lubrication			3~10	全合成润滑油脂 Synthetic Grease							
防护等级 / Protection Class			3~10	IP 65							
安装方向 / Mounting Position			3~10	任意 Any							
噪音值 / Noise Level		dB	3~10	≤ 58	≤ 58	≤ 60	≤ 60	≤ 65	≤ 67	≤ 69	≤ 70
重量 / Weight $\pm 2\%$		Kg	3~10	0.64	1	1.6	1.96	3.76	7.43	16.7	33

MODEL : FA

RATIO : 15, 20, 25, 30, 35, 40, 50, 70, 100 (双段 2-Stage)



unit: mm

Model Code	50	70	80	90	100	120	142	180
A1	60	76	90	100	115	135	165	215
A2	M5 x P0.8	Φ5.5	M6 x P1.0	M8 x P1.25	M8 x P1.25	M10 x P1.5	M12 x P1.75	M14 x P2.0
A3	12	16	19	19	24	32	40	55
A4	50	60	70	80	90	110	130	160
A5	4.5	6	10	10	8	10	10	9.5
A6	M4 x P0.7 deep 11	M5 x P0.8 deep 14	M6 x P1.0 deep 15	M6 x P1.0 deep 15	M8 x P1.25 deep 20	M10 x P1.5 deep 23	M10 x P1.5 deep 23	M10 x P1.5 deep 23
A7	4	5	6	6	8	10	12	16
A8	13.5	18	21.5	21.5	27	35	43	59
B1	52	70	80	90	102	120	142	180
B2	32	36	50	40	61	72	87	106
B3	6	7	11	10	13	10	15	16
B4	84.5	105.8/113.8	99.5/111.5	122.5	133/147.5	179/189	158.5	282.5/285.5
B5	15	20	25	25	30	40	65	70
B6	20	28	30	30	40	50	74	82
B7	4.5	7	5	6	5	10	10	20
B8	122.5	148.8, 156.8	160.5, 172.5	172.5	207, 221.5	261, 271	260.5	404.5, 407.5
C1	45, 46, 48.5, 63, 70	70, 75, 85	70, 90, 100, 115	90, 100, 115, 145	90, 100, 115, 145	115, 145, 165	130, 145, 165, 175, 215	149, 200, 215, 265, 300
C2	M3, M4, M5	M5, M6	M5, M6	M6, M8	M6, M8	M6, M8, M10	M8, M10, M12	M8, M12, M16 M12, M16
C3	8, 10, 11, 14	11, 14, 16, 19	14, 16, 19	14, 16, 19	19, 22, 24	22, 24, 28, 32	28, 32, 35, 38	35, 38, 42, 48, 55
C4	32	33.5, 41.5	33.5, 45.5	45.5	51, 65.5	67, 77	84.5	114.5, 117.5
C5	30, 40, 50	50, 60, 70	50, 70, 80, 95	70, 80, 95, 110	70, 80, 95, 110	95, 110, 130	110, 130, 180	114.3, 180, 230, 250
C6	M4 x P0.7	M5 x P0.8	M5 x P0.8	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5	M10 x P1.5
C7	46, 55, 60	64, 70, 80	80, 92, 110	92, 110, 130	92, 110, 130	122, 130, 150	146, 150, 190	182, 200, 250, 265

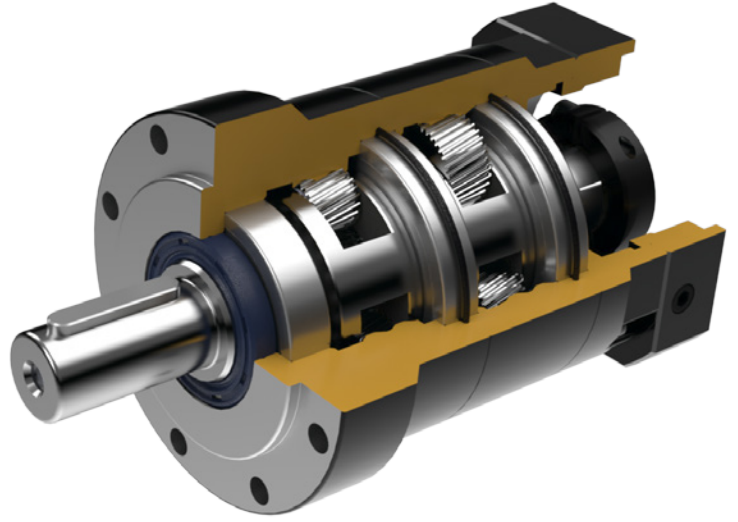
Characteristic of FA-2-Stage

FA 双段特性

规格 Model No.	代号	单位 Unit	速比 Ratio	50	70	80	90	100	120	142	180
额定输出扭矩 / Rated Output Torque (Nominal Output Torque)	T_{2N}	Nm	15	19	54	112	112	165	286	550	1,060
			20	16	48	110	110	146	255	490	940
			25	16	45	108	108	160	264	510	1,050
			30	19	41	112	112	165	286	550	1,060
			35	15	41	105	105	149	245	470	970
			40	16	39	110	110	146	255	490	940
			50	16	45	108	108	160	264	510	1,050
			70	15	41	105	105	149	245	470	970
			100	14	40	100	100	141	234	450	930
最大加速扭矩 / Max. Acceleration Torque	T_{2B}	Nm	15~100	1.8 倍额定输出力矩 1.8 Times of Rated Output Torque							
转动惯量 / Mass Moments of Inertia		kg.cm ²	15	0.03	0.13	0.41	0.41	0.45	2.64	7.3	22.8
			20	0.03	0.13	0.38	0.38	0.45	2.64	7.3	22.8
			25	0.03	0.13	0.38	0.38	0.45	2.64	7.1	22.8
			30	0.03	0.13	0.38	0.38	0.45	2.64	7.3	22.6
			35	0.03	0.13	0.38	0.38	0.45	2.64	6.7	22.6
			40	0.03	0.13	0.38	0.38	0.45	2.64	7.3	22.6
			50	0.03	0.13	0.38	0.38	0.45	2.51	7.1	22.6
			70	0.03	0.13	0.38	0.38	0.45	2.51	6.7	21.9
			100	0.03	0.13	0.38	0.38	0.45	2.51	6.7	21.9
最大输出扭矩 / Max. Output Torque 急停扭矩 / Emergency Stop Torque	T_{2NOT}	Nm	15~100	3 倍额定输出扭矩 3 Times of Rated Output Torque							
额定输入转速 / Rated Input Speed	n_{1N}	rpm	15~100	3,000							
最大输入转速 / Max. Input Speed	n_{1B}	rpm	15~100	5,000							
扭转刚性 / Torsional Rigidity		Nm/arcmin	15~100	3	5	12	12	14	23	60	140
容许径向力 / Max. Radial Force	F_{2rB}	N	15~100	350	800	1,200	1,200	3,200	5,220	8,800	14,800
容许轴向力 / Max. Axial Force	F_{2aB}	N	15~100	180	400	600	600	1,600	2,600	4,400	7,400
使用寿命 / Service Life	L_H	hr	15~100	S5 周期运转 : >30,000 (S1 连续运转 : >15,000 hrs) S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
效率 / Efficiency	η	%	15~100	≥ 94%							
使用温度 / Operating Temperature		°C	15~100	-25°C ~ +90°C							
润滑 / Lubrication			15~100	全合成润滑油脂 Synthetic Grease							
防护等级 / Protection Class			15~100	IP 65							
安装方向 / Mounting Position			15~100	任意 Any							
噪音值 / Noise Level		dB	15~100	≤ 60	≤ 60	≤ 62	≤ 62	≤ 67	≤ 69	≤ 70	≤ 72
重量 / Weight ±2%		Kg	15~100	0.96	2.1	2.8	3.06	5.92	10.3	20.5	41

SN series

- 全系列单段背隙 ≤ 8 弧分
1-Stage Backlash ≤ 8 arcmin
- 全系列双段背隙 ≤ 12 弧分
2-Stage Backlash ≤ 12 arcmin



Indication of Model Numbers

机种型号表示

SN	80	10		MOTOR
减速机机型 Type	型号 Model	速比 Ratio	出力轴键槽 Output Shaft Keyway	马达型号 Motor Type
SN	40 50 60 70 80 90 115 120 155 160	单段 1-Stage 3, 4, 5, 7, 10 双段 2-Stage 15, 20, 25, 30, 35, 40, 50, 70, 100	<input type="checkbox"/> 标准品, 有键槽 Standard (Keyway) N: 实心轴, 无键槽 Solid Output Shaft (No Keyway)	

静音

使用研磨等级螺旋伞齿轮及螺旋齿轮实现顺畅安静地运转。

Quiet operation

Grinding spiral bevel gear & Helical gears contribute to reduce vibration and noise.

高刚性、高扭矩

使用整体式满针滚针轴承, 一体式内齿箱及螺旋齿轮, 提高了刚性和扭矩。

High Rigidity & High Torque

High rigidity & high torque are achieved by integrant needle roller bearings and one-piece constructed.

高效率

单段式在 95% 以上, 双段式在 92% 以上。

High Efficiency

Efficiency for 1-stage model exceeds 95%; 2-stage model exceeds 92%.

Features of SN Series

SN 系列产品特点



螺旋齿轮设计及高精度齿轮加工

减速机构采用螺旋齿轮设计, 齿形啮合率为一般正齿轮的二倍以上, 具有运转平顺、低噪音、高输出扭矩和低背隙的特性。

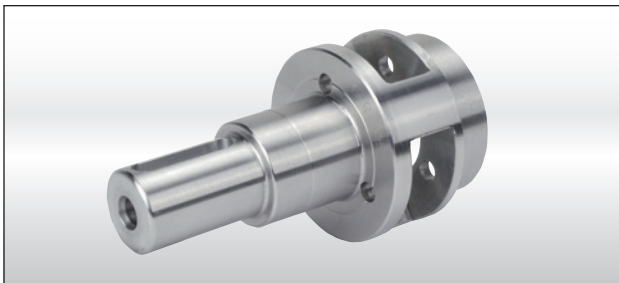
材料采用高级镍铬钼合金钢 (SNCM220), 切削加工后, 经渗碳热处理至硬度 57~60HRC, 再进行齿面研磨, 确保齿轮精度 DIN6 级以内。

Helical Gear Design

The speed reduction mechanism employs helical gears, which provides two times meshing rate of teeth when comparing with regular spur gears. In addition, it also features extremely smooth running, low noise, high torque output and low backlash.

High Precision Gear Machining

Manufactured from high quality Ni-Cr-Mo alloy steel (SNCM220), precision achined and carburized to hardness 57-60 HRC. Precision teeth grinding sure gear accuracy reaches DIN6 class.

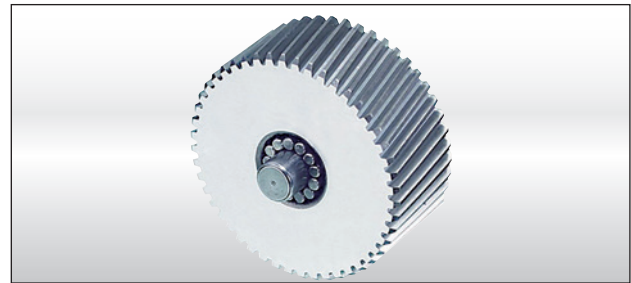


一体式行星臂架

行星臂架与输出轴採一体式的结构设计, 以确保提高扭转刚性及精确度。

Integrated Planetary Arm Bracket

The planetary arm bracket and the output shaft are one-piece constructed to increase torsional rigidity and accuracy.

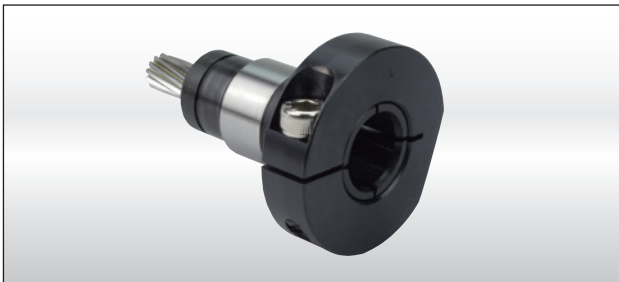


满针滚针轴承设计

行星齿轮的传动介面採用不含保持器之满针滚针轴承, 增加接触面积以提高结构刚性及使用寿命。

Full Needle Roller Bearings Design

The planetary gear transmission employs full needle roller bearings without retainer to increase the contact surface, which greatly upgrades structural rigidity and service life.

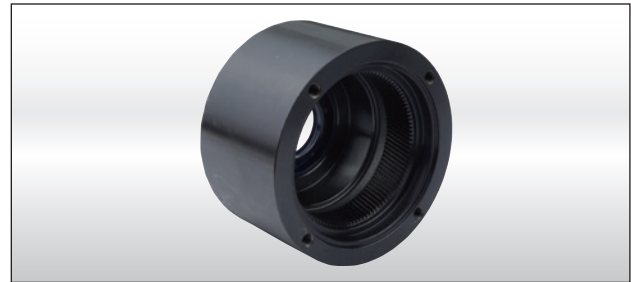


筒夹式连结机构

输入端与马达的连结採用筒夹式的锁紧机构, 并经动平衡分析, 以确保在高输入转速下结合介面的同心度和平衡度, 及零背隙的动力传递。

Collet Locking Mechanism

The input-end and the motor are coupled through a collet locking mechanism. It has passed dynamical balance analysis to assure concentricity and balance on the connection and no backlash for power transmission while running at high speed.



一体式齿轮箱本体

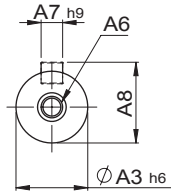
齿轮箱和内环齿轮採一体式的设计。提高结构刚性及输出扭矩。

One-piece Gear Box & Advanced Surface Treatment

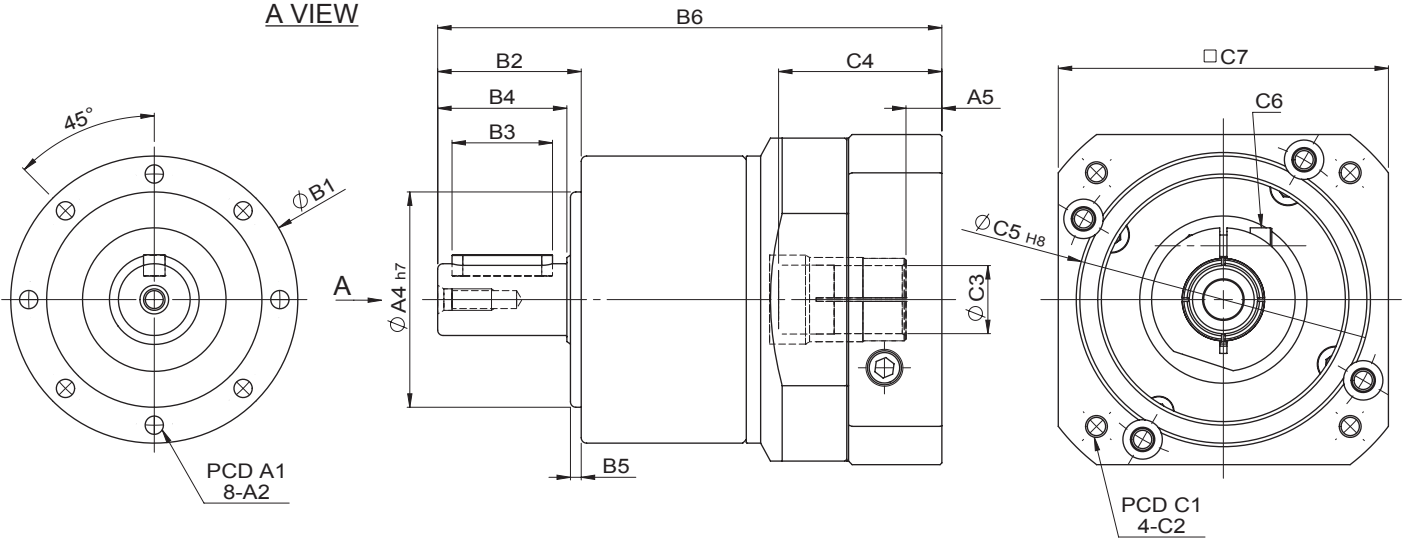
The gear box and internal ring gear are one-piece constructed to achieve high rigidity and high torque.

MODEL : SN

RATIO : 3, 4, 5, 7, 10 (单段 1-Stage)



A VIEW



unit: mm

Model Code	50	60	70	80	90	115	120	155	160	
A	A1	44	52	62	70	80	100	108	140	145
	A2	M4 x P0.7	M5 x P0.8	M5 x P0.8	M6 x P1.0	M6 x P1.0	M10 x P1.5	M8 x P1.25	M10 x P1.5	M12 x P1.75
	A3	12	14	16	20	22	25	32	40	40
	A4	35	40	52	60	68	80	90	120	130
	A5	4.5	4.5	6	10	9, 23.5	8, 22.5	10	10	10
	A6	M4 x P0.7	M4 x P0.7	M5 x P0.8	M6 x P1.0	M6 x P1.0	M8 x P1.25	M12 x P1.75	M12 x P1.75	M12 x P1.75
	A7	4	5	5	6	6	8	10	12	12
	A8	13.5	16	18	22.5	24.5	28	35	43	43
B	B1	51	60	70	80	90	115	122	155	160
	B2	25.5	34	36	40	46	56	70	88	88
	B3	15	25	20	28	30	40	50	65	65
	B4	20	30	28	36	36	50	58	78	78
	B5	4	3	6.5	3	8	4	9	8	8
	B6	96.5	108	115	140.5	155.5, 170	173.5, 188	211, 221	238.5	238.5
C	C1	45, 46, 48.5, 63, 70	45, 46, 48.5, 63, 70	70, 75, 90	90, 100, 115, 145	90, 100, 115, 145	90, 100, 115, 145	115, 145, 165	115, 145, 165	145, 165, 200
	C2	M3, M4, M5	M3, M4, M5	M5, M6	M6, M8	M6, M8	M6, M8	M6, M8, M10	M6, M8, M10	M6, M8, M10
	C3	8, 10, 11, 14	8, 9, 10, 12.7, 14	11, 14, 16, 19	14, 16, 19	19, 24	19, 22, 24	24, 28, 32	24, 28, 32	24, 28, 32
	C4	32	32	33.5	45.5	51, 65.5	51, 65.5	67, 77	63	63
	C5	30, 40, 50	30, 40, 50	50, 60, 70	70, 80, 95, 110	70, 80, 95, 110	70, 80, 95, 110	95, 110, 130	95, 110, 130	95, 110, 130
	C6	M4 x P0.7	M4 x P0.7	M5 x P0.8	M5 x P0.8	M6 x P1.0	M6 x P1.0	M8 x P1.25	M8 x P1.25	M8 x P1.25
	C7	46, 55, 60	46, 55, 60	70, 75, 80	92, 110, 130	92, 110, 130	92, 110, 130	122, 130, 150	122, 130, 150	122, 130, 150

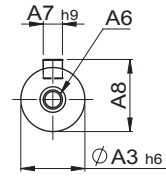
Characteristic of SN-1-Stage

SN 单段特性

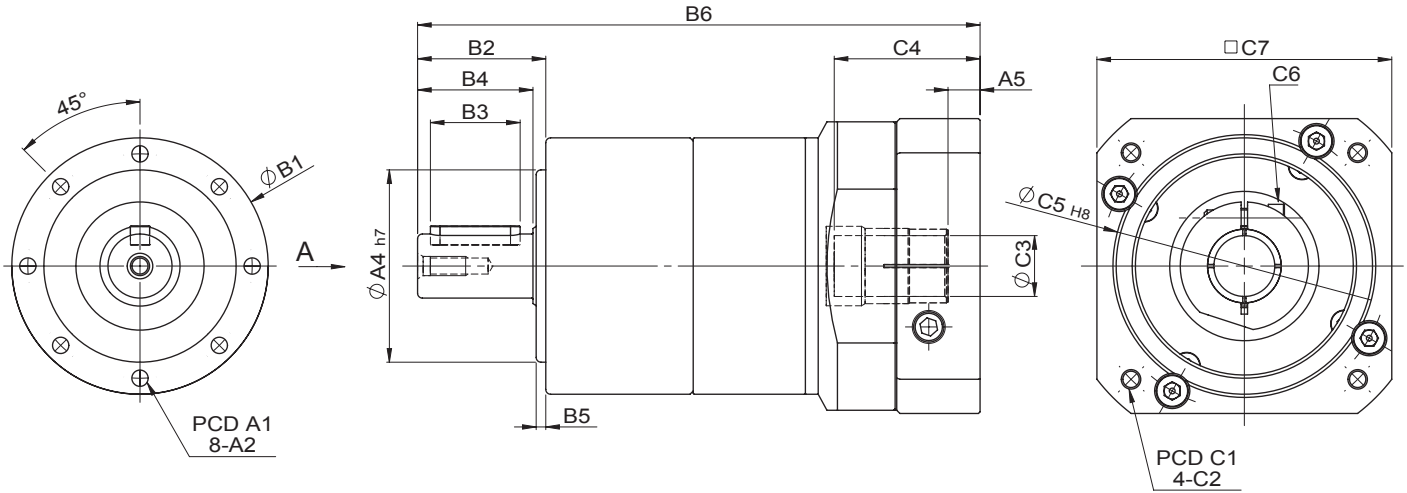
规格 Model No.	代号	单位 Unit	速比 Ratio	50	60	70	80	90	115	120	155	160		
额定输出扭矩 / Rated Output Torque (Nominal Output Torque)	T_{2N}	Nm	3	17	28	54	112	146	165	301	553	625		
			4	15	38	48	110	144	146	269	491	555		
			5	14	40	45	108	140	160	278	510	618		
			7	13	35	41	105	128	149	258	473	573		
			10	12	25	40	100	123	141	246	452	549		
最大加速扭矩 / Max. Acceleration Torque	T_{2B}	Nm	3~10	1.8 倍额定输出扭矩 1.8 Times of Rated Output Torque										
转动惯量 / Mass Moments of Inertia		kg.cm ²	3	0.03	0.06	0.15	0.48	0.55	0.60	3.01	8.14	9.21		
			4	0.03	0.06	0.15	0.38	0.42	0.45	2.52	6.63	7.42		
			5	0.03	0.06	0.13	0.38	0.42	0.45	2.52	6.63	7.42		
			7	0.03	0.06	0.13	0.38	0.42	0.45	2.31	6.55	7.14		
			10	0.03	0.06	0.13	0.35	0.38	0.41	2.30	6.46	7.03		
最大输出扭矩 / Max. Output Torque 急停扭矩 / Emergency Stop Torque	T_{2NOT}	Nm	3~10	3 倍额定输出扭矩 3 Times of Rated Output Torque										
额定输入转速 / Rated Input Speed	n_{1N}	rpm	3~10	3,000										
最大输入转速 / Max. Input Speed	n_{1B}	rpm	3~10	6,000						5,000				
扭转刚性 / Torsional Rigidity		Nm/arcmin	3~10	3	4	5	12	13	14	27	49	60		
容许径向力 / Max. Radial Force	F_{2rB}	N	3~10	670	1,030	1,760	2,350	2,920	3,500	6,100	8,830	9,200		
容许轴向力 / Max. Axial Force	F_{2aB}	N	3~10	335	515	880	1,175	1,460	1,750	3,050	4,415	4,600		
使用寿命 / Service Life	L_{H1}	hr	3~10	S5 周期运转 : >30,000 (S1 连续运转 : >15,000 hrs) S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)										
效率 / Efficiency	η	%	3~10	$\geq 97\%$										
使用温度 / Operating Temperature		°C	3~10	-25° C ~ +90° C										
润滑 / Lubrication			3~10	全合成润滑油脂 Synthetic Grease										
防护等级 / Protection Class			3~10	IP65										
安装方向 / Mounting Position			3~10	任意 Any										
噪音值 / Noise Level		dB	3~10	≤ 58	≤ 58	≤ 58	≤ 60	≤ 60	≤ 63	≤ 63	≤ 65	≤ 65		
重量 / Weight $\pm 2\%$		Kg	3~10	0.73	0.99	1.25	2.1	2.8	4.98	6.7	13.6	15		

MODEL : SN

RATIO : 15, 20, 25, 30, 35, 40, 50, 70, 100 (双段 2-Stage)



A VIEW



unit: mm

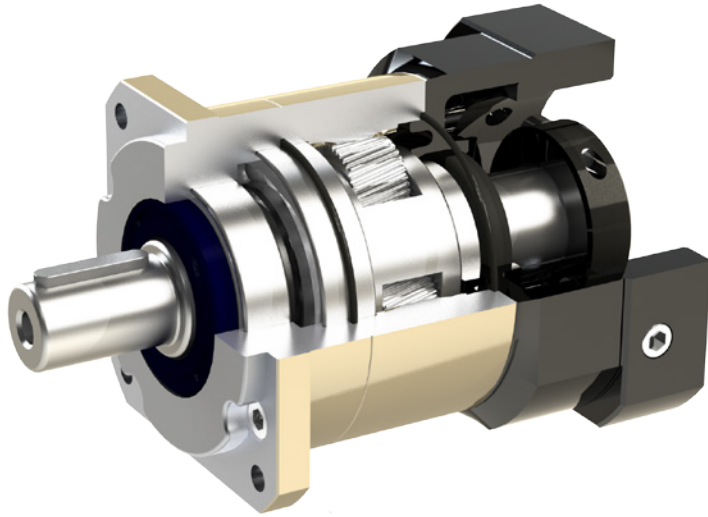
Model Code	50	60	70	80	90	115	120	155	160	
A	A1	44	52	62	70	80	100	108	140	145
	A2	M4 x P0.7	M5 x P0.8	M5 x P0.8	M6 x P1.0	M6 x P1.0	M10 x P1.5	M8 x P1.25	M10 x P1.5	M12 x P1.75
	A3	12	14	16	20	22	25	32	40	40
	A4	35	40	52	60	68	80	90	120	130
	A5	4.5	4.5	6	10	8.5	8, 22.5	10	10	10
	A6	M4 x P0.7	M4 x P0.7	M5 x P0.8	M6 x P1.0	M6 x P1.0	M8 x P1.25	M12 x P1.75	M12 x P1.75	M12 x P1.75
	A7	4	5	5	6	6	8	10	12	12
	A8	13.5	16	18	22.5	24.5	28	35	43	43
B	B1	51	60	70	80	90	115	122	155	160
	B2	25.5	34	36	40	46	56	70	88	88
	B3	15	25	20	28	30	40	50	65	65
	B4	20	30	28	36	36	50	58	78	80
	B5	4	3	6.5	3	8	4	9	8	8
	B6	122.5	134	148.8	175.5	190.5, 205	217, 231.5	257, 267	298.5	298.5
C	C1	45, 46, 48.5, 63, 70	45, 46, 48.5, 63, 70	70, 75, 90	90, 100, 115, 145	90, 100, 115, 145	90, 100, 115, 145	115, 145, 165	115, 145, 165	115, 145, 165
	C2	M3, M4, M5	M3, M4, M5	M5, M6	M6, M8	M6, M8	M6, M8	M6, M8, M10	M6, M8, M10	M6, M8, M10
	C3	8, 10, 11, 14	8, 9, 10, 12.7, 14	11, 14, 16, 19	14, 16, 19	19, 24	19, 22, 24	24, 28, 32	24, 28, 32	24, 28, 32
	C4	32	32	33.5	45.5	51, 65.5	51, 65.5	67, 77	67	67
	C5	30, 40, 50	30, 40, 50	50, 60, 70	70, 80, 95, 110	70, 80, 95, 110	70, 80, 95, 110	95, 110, 130	95, 110, 130	95, 110, 130
	C6	M4 x P0.7	M4 x P0.7	M5 x P0.8	M5 x P0.8	M6 x P1.0	M6 x P1.0	M8 x P1.25	M8 x P1.25	M8 x P1.25
	C7	46, 55, 60	46, 55, 60	70, 75, 80	92, 110, 130	92, 110, 130	92, 110, 130	122, 130, 150	122, 130, 150	122, 130, 150

Characteristic of SN-2-Stage

SN 双段特性

规格 Model No.	代号	单位 Unit	速比 Ratio	50	60	70	80	90	115	120	155	160
额定输出扭矩 / Rated Output Torque (Nominal Output Torque)	T_{2N}	Nm	15	17	28	54	112	146	165	301	553	625
			20	15	38	48	110	144	146	269	491	555
			25	14	40	45	108	140	160	278	510	618
			30	17	28	54	112	146	165	301	553	625
			35	13	35	41	105	128	149	258	473	618
			40	15	38	48	110	144	146	269	491	555
			50	14	40	45	108	140	160	278	510	618
			70	13	35	41	105	128	149	258	473	573
			100	12	25	40	100	123	141	246	452	549
最大加速扭矩 / Max. Acceleration Torque	T_{2B}	Nm	15~100	1.8 倍额定输出扭矩 1.8 Times of Rated Output Torque								
转动惯量 / Mass Moments of Inertia		kg.cm ²	15	0.025	0.05	0.11	0.29	0.38	0.40	2.71	7.81	8.68
			20	0.025	0.05	0.11	0.29	0.38	0.40	2.29	6.27	7.08
			25	0.025	0.05	0.11	0.29	0.38	0.40	2.29	6.01	6.97
			30	0.025	0.05	0.11	0.29	0.38	0.40	2.71	7.81	8.65
			35	0.025	0.05	0.11	0.29	0.38	0.40	2.17	5.92	6.71
			40	0.025	0.05	0.11	0.29	0.38	0.40	2.29	6.27	7.08
			50	0.025	0.05	0.11	0.29	0.38	0.40	2.29	6.01	6.97
			70	0.025	0.05	0.11	0.29	0.38	0.40	2.17	5.92	6.71
			100	0.025	0.05	0.11	0.26	0.32	0.38	2.11	5.80	6.61
最大输出扭矩 / Max. Output Torque 急停扭矩 / Emergency Stop Torque	T_{2NOT}	Nm	15~100	3 倍额定输出扭矩 3 Times of Rated Output Torque								
额定输入转速 / Rated Input Speed	n_{1N}	rpm	15~100	3,000								
最大输入转速 / Max. Input Speed	n_{1B}	rpm	15~100	6,000						5,000		
扭转刚性 / Torsional Rigidity		Nm/arcmin	15~100	3	4	5	12	13	14	27	49	60
容许径向力 / Max. Radial Force	F_{2rB}	N	15~100	670	1,030	1,760	2,350	2,920	3,500	6,100	8,830	9,200
容许轴向力 / Max. Axial Force	F_{2aB}	N	15~100	335	515	880	1,175	1,460	1,750	3,050	4,415	4,600
使用寿命 / Service Life	L_H	hr	15~100	S5 周期运转 : >30,000 (S1 连续运转 : >15,000 hrs) S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)								
效率 / Efficiency	η	%	15~100	$\geq 94\%$								
使用温度 / Operating Temperature		°C	15~100	-25° C ~ +90° C								
润滑 / Lubrication			15~100	全合成润滑油脂 Synthetic Grease								
防护等级 / Protection Class			15~100	IP65								
安装方向 / Mounting Position			15~100	任意 Any								
噪音值 / Noise Level		dB	15~100	≤ 60	≤ 60	≤ 60	≤ 62	≤ 62	≤ 65	≤ 65	≤ 67	≤ 67
重量 / Weight $\pm 2\%$		Kg	15~100	1.05	1.46	1.9	3.2	4.48	6.92	9.84	17	18.5

FB series



- 全系列单段背隙 ≤ 8 弧分
1-Stage Backlash ≤ 8 arcmin
- 全系列双段背隙 ≤ 12 弧分
2-Stage Backlash ≤ 12 arcmin

Indication of Model Numbers

机种型号表示

FB	90	-	10	<input type="checkbox"/>	-	MOTOR
减速机机型 Type	型号 Model		速比 Ratio	出力轴键槽 Output Shaft Keyway		马达型号 Motor Type
FB FE	50 70 90 120 145 180 220		单段 1-Stage 3, 4, 5, 7, 10 双段 2-Stage 15, 20, 25, 30, 35, 40, 50, 70, 100	<input type="checkbox"/> 标准品, 有键槽 Standard (Keyway) N: 实心轴, 无键槽 Solid Output Shaft (No Keyway)		

FB

SB

SBL

SBT

SE

SEL

SD

SDL

SDD

SDH

SF

SFL

SA

PB

PBL

PBT

FA

SN

FB

FE

AD

PE

ST

Features of FB Series

FB 系列产品特点

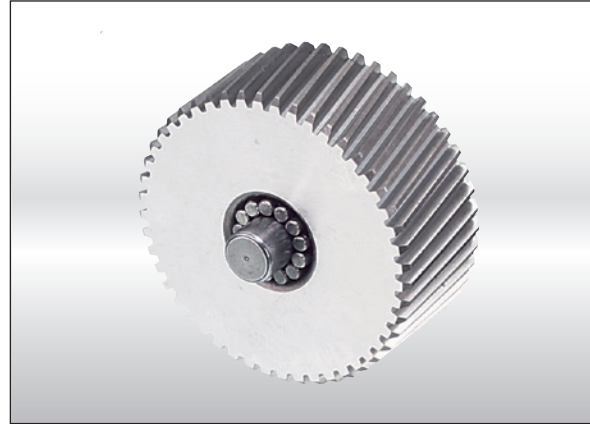


一体式行星臂架及双轴承加大跨距设计

行星臂架与输出轴採一体式的结构设计, 以确保提高扭转刚性及精确度。并採用滚珠轴承大跨距配置设计, 增加输出轴之径向负载。

Integrated Planetary Arm Bracket

The planetary arm bracket and the output shaft are one-piece constructed to increase torsional rigidity and accuracy. The entire structure is integrated machined for controlling accuracy in the specified tolerance.

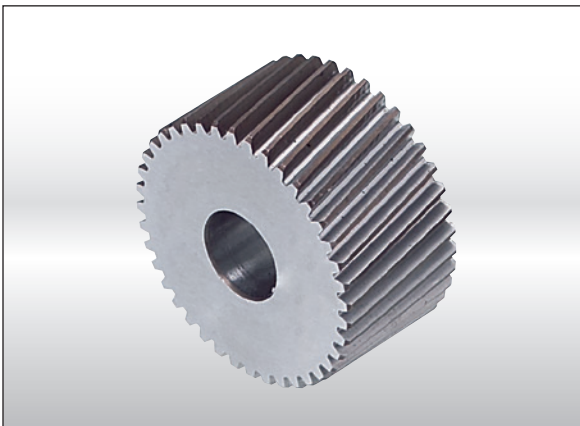


满针滚针轴承设计

行星齿轮的传动介面採用不含保持器之满针滚针轴承, 增加接触面积以提高结构刚性及使用寿命。

Full Needle Roller Bearings Design

The planetary gear transmission employs full needle roller bearings without retainer to increase the contact surface, which greatly upgrades structural rigidity and service life.

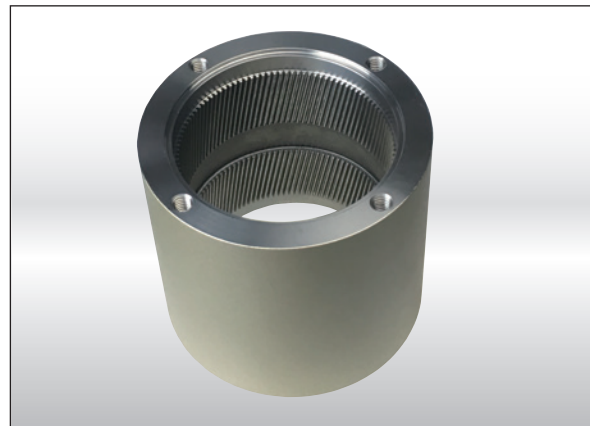


高精度齿轮加工

行星齿轮及太阳齿齿轮材料採用高级之镍铬钼合金钢 (SNCM220), 切削加工后, 经渗碳热处理至硬度 57~62HRC, 再进行 2 次加工 (Skiving), 或经研磨加工, 确保齿轮精度在 DIN6 级以内。

High Precision Gear Machining

The planetary gear and sun gear are manufactured from high quality Ni-Cr-Mo alloy steel (SNCM220), precision machined and carburizing heat treatment to hardness 57-60 HRC. Precision teeth grinding or skiving assures gear accuracy reaches DIN6 class.



一体式齿轮箱本体

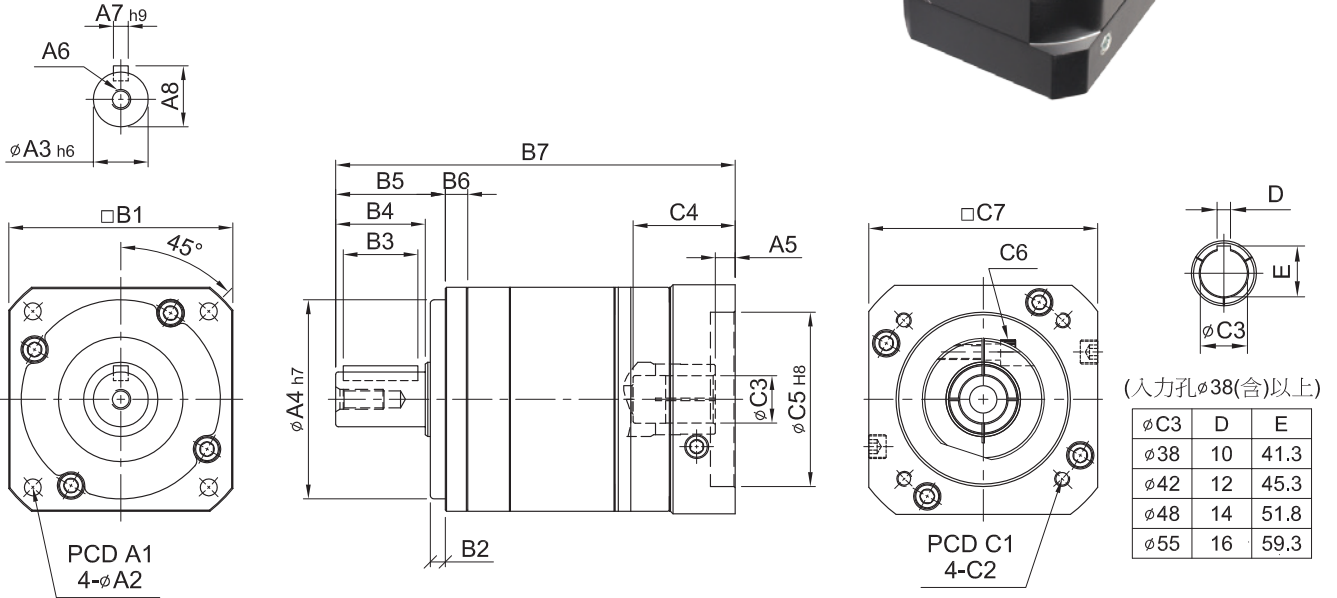
齿轮箱和内环齿轮採一体式的设计, 经调质后加工, 输出扭矩大, 齿轮精度达 DIN6 级, 精密度高。

One-piece Gearbox Housing

The gearbox and internal ring gear are one-piece constructed. High gear accuracy meets DIN6 class.

MODEL : FB

RATIO : 3, 4, 5, 7, 10 (单段 1-Stage)



unit: mm

Code	Model	50	70	90	120	145	180	220
A	A1	50	70	100	130	165	215	250
	A2	4.5	6	6.8	9	11	13	17
	A3	13	16	22	32	40	55	75
	A4	35	50	80	110	130	160	180
	A5	5	6	9、23.5	10、20	10	13、15	13.5、15.5
	A6	M4 x P0.7	M5 x P0.8	M8 x P1.25	M10 x P1.5	M12 x P1.75	M14 x P2.0	M16 x P2.0
	A7	5	5	6	10	12	16	20
	A8	15	18	24.5	35	43	59	81
B	B1	50	70	90	120	145	180	220
	B2	4	5	8	8	10	20	20
	B3	15	20	30	40	65	70	90
	B4	20	28	36	50	74	82	104
	B5	25	34	44	60	87	106	129
	B6	6	8	9	12	15	16	24
	B7	100.5	132.5、140.5	170.5、185	227.5	284	325、327	377、379
C	C1	46、60、63	70、75、90	90、100、115、145	115、145、165	145、165、215	200、215、265	200、265、300
	C2	M3	M4	M5	M6	M8	M10	M12
		M4	M5	M6	M8	M10	M12	M16
		M5	M6	M8	M10	M12	M16	
	C3	8、9、11	14、16、19	16、19、22、24	24、28、32	28、32、35、38	35、38、42、48	42、48、55
	C4	26	33.5、41.5	51、65.5	63、73	81.5	115、117	118、120
	C5	30、40、50	40、50、60	70、80、95、110	95、110、130	110、130、180	114.3、180、230	114.3、230、250
C6	M4 x P0.7	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5	M10 x P1.5	M10 x P1.5	
C7	46、55	64、70、80	92、110、130	122、130、150	146、150、190	182、200、250	222、250、265	

Characteristic of FB 1-Stage

FB 单段特性

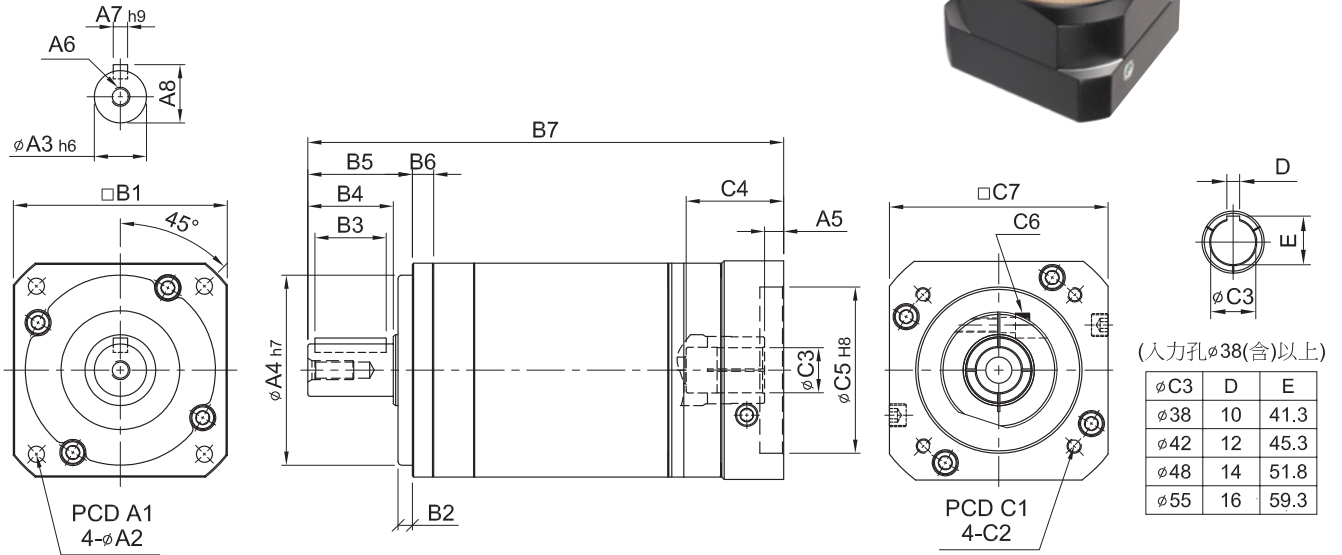
规格 Model No.	代号	单位 Unit	速比 Ratio	50	70	90	120	145	180	220
额定输出扭矩 / Rated Output Torque (Nominal output torque)	T_{2N}	Nm	3	17	50	125	268	482	940	1,420
			4	15	45	111	238	426	860	1,300
			5	14	42	104	223	401	835	1,270
			7	13	39	98	208	373	790	1,180
			10	12	37	92	198	356	760	1,140
最大加速扭矩 / Max. Acceleration Torque	T_{2B}	Nm	3~10	1.8 倍额定输出扭矩 1.8 Times of Rated Output Torque						
最大输出扭矩 / Max. Output Torque 急停扭矩 / Emergency Stop Torque	T_{2NOT}	Nm	3~10	3 倍额定输出扭矩 3 Times of Rated Output Torque						
额定输入转速 / Rated Input Speed	n_{1N}	rpm	3~10	3,000	3,000	3,000	3,000	3,000	2,000	2,000
最大输入转速 / Max. Input Speed	n_{1B}	rpm	3~10	5,000	5,000	5,000	5,000	5,000	3,000	3,000
背隙 / Backlash		arcmin	3~10	≤ 8	≤ 8	≤ 8	≤ 8	≤ 8	≤ 8	≤ 8
扭转刚性 / Torsional Rigidity		Nm/arcmin	3~10	2.3	5	15	45	69	140	220
容许径向力 / Max. Radial Force	F_{2rB}	N	3~10	750	1,180	3,000	6,500	9,100	11,150	35,000
容许轴向力 / Max. Axial Force	F_{2aB}	N	3~10	325	590	1,500	3,250	4,550	5,575	17,500
使用寿命 / Service Life	L_{11}	hr	3~10	S5 周期运转 : >30,000 (S1 连续运转 : >15,000 hrs) S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)						
效率 / Efficiency	η	%	3~10	≥ 97%						
使用温度 / Operating Temperature		°C	3~10	-25° C ~ +90° C						
润滑 / Lubrication			3~10	全合成润滑油脂 Synthetic Grease						
防护等级 / Protection Class			3~10	IP65						
安装方向 / Mounting Position			3~10	任意方向 Any						
噪音值 / Noise Level		dB	3~10	≤ 62	≤ 62	≤ 65	≤ 68	≤ 70	≤ 70	≤ 70
重量 / Weight ±3%		Kg	3~10	0.63	1.57	3.22	8	16	33	54

Mass Moments of Inertia (kg.cm²)

速比 Ratio	50	70	90	120	145	180	220
3	0.04	0.14	0.61	3.25	8.75	24.63	50.67
4	0.04	0.13	0.48	2.74	7.16	20.12	46.21
5	0.04	0.11	0.47	2.74	6.84	19.80	45.28
7	0.04	0.11	0.44	2.58	6.78	19.21	43.32
10	0.04	0.11	0.44	2.57	6.68	19.13	42.98

MODEL : FB

RATIO : 15, 20, 25, 30, 35, 40, 50, 70, 100 (双段 2-Stage)



unit: mm

Code	Model	50	70	90	120	145	180	220
A	A1	50	70	100	130	165	215	250
	A2	4.5	6	6.8	9	11	13	17
	A3	13	16	22	32	40	55	75
	A4	35	50	80	110	130	160	180
	A5	5	6	9, 23.5	10, 20	10	13, 15	13.5, 15.5
	A6	M4 x P0.7	M5 x P0.8	M8 x P1.25	M10 x P1.5	M12 x P1.75	M14 x P2.0	M16 x P2.0
	A7	5	5	6	10	12	16	20
	A8	15	18	24.5	35	43	59	81
B	B1	50	70	90	120	145	180	220
	B2	4	5	6	8	10	20	20
	B3	15	20	30	40	65	70	90
	B4	20	28	36	50	74	82	104
	B5	25	34	44	60	87	106	129
	B6	6	8	9	12	15	16	24
	B7	126.7	166.5	206.5, 221	281.5, 291.5	340.5	394.5, 396.5	464
C	C1	46, 60, 63	70, 75, 90	90, 100, 115, 145	115, 145, 165	145, 165, 215	200, 215, 265	200, 265, 300
	C2	M3 M4 M5	M4 M5 M6	M5 M6 M8	M6 M8 M10	M8 M10 M12	M10 M12	M12 M16
	C3	8, 9, 11	11, 14	16, 19, 22, 24	24, 28, 32	28, 32, 35, 38	35, 38, 42, 48	42, 48, 55
	C4	26	33.5	51, 65.5	63, 73	81.5	115, 117	118, 120
	C5	30, 40, 50	40, 50, 60	70, 80, 95, 110	95, 110, 130	110, 130, 180	114.3, 180, 230	114.3, 230, 250
	C6	M4 x P0.7	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5	M10 x P1.5	M10 x P1.5
	C7	46, 55	64, 70, 80	92, 110, 130	122, 130, 150	146, 150, 190	182, 200, 250	222, 250, 265

Characteristic of FB 2-Stage

FB 双段特性

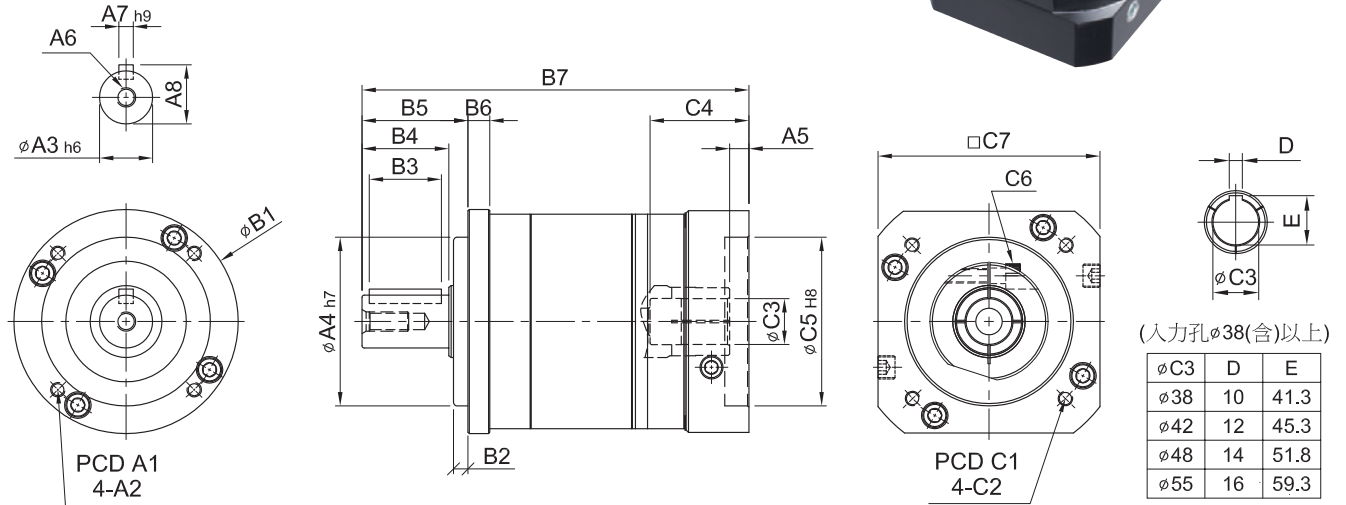
规格 Model No.	代号	单位 Unit	速比 Ratio	50	70	90	120	145	180	220
额定输出扭矩 / Rated Output Torque (Nominal output torque)	T_{2N}	Nm	15	17	50	125	268	482	940	1,420
			20	15	45	111	238	426	860	1,300
			25	14	42	104	223	401	835	1,270
			30	17	50	125	268	482	940	1,420
			35	13	39	98	208	373	790	1,180
			40	15	45	111	238	427	860	1,300
			50	14	42	104	223	402	835	1,270
			70	13	40	98	208	373	790	1,180
			100	12	37	92	198	357	760	1,100
最大加速扭矩 / Max. Acceleration Torque	T_{2B}	Nm	15~100	1.8 倍额定输出扭矩 1.8 Times of Rated Output Torque						
最大输出扭矩 / Max. Output Torque 急停扭矩 / Emergency Stop Torque	T_{2NOT}	Nm	15~100	3 倍额定输出扭矩 3 Times of Rated Output Torque						
额定输入转速 / Rated Input Speed	n_{1N}	rpm	15~100	3,000	3,000	3,000	3,000	3,000	2,000	2,000
最大输入转速 / Max. Input Speed	n_{1B}	rpm	15~100	5,000	5,000	5,000	5,000	5,000	3,000	3,000
背隙 / Backlash		arcmin	15~100	≤ 12	≤ 12	≤ 12	≤ 12	≤ 12	≤ 12	≤ 12
扭转刚性 / Torsional Rigidity		Nm/arcmin	15~100	2.3	5	15	45	69	140	220
容许径向力 / Max. Radial Force	F_{2rB}	N	15~100	750	1,180	3,000	6,500	9,100	11,150	35,000
容许轴向力 / Max. Axial Force	F_{2aB}	N	15~100	325	590	1,500	3,250	4,550	5,575	17,500
使用寿命 / Service Life	L_H	hr	15~100	S5 周期运转 : >30,000 (S1 连续运转 : >15,000 hrs) S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)						
效率 / Efficiency	η	%	15~100	≥ 94%						
使用温度 / Operating Temperature		°C	15~100	-25° C ~ +90° C						
润滑 / Lubrication			15~100	全合成润滑油脂 Synthetic Grease						
防护等级 / Protection Class			15~100	IP65						
安装方向 / Mounting Position			15~100	任意方向 Any						
噪音值 / Noise Level		dB	15~100	≤ 65	≤ 65	≤ 68	≤ 70	≤ 72	≤ 72	≤ 72
重量 / Weight ±3%		Kg	15~100	0.9	2.24	4.59	11.22	22.5	46.4	75

Mass Moments of Inertia (kg.cm²)

速比 Ratio	50	70	90	120	145	180	220
15	0.04	0.14	0.61	3.25	8.75	24.63	50.67
20	0.04	0.13	0.48	2.74	7.16	20.12	46.21
25	0.04	0.11	0.47	2.74	6.84	19.80	45.28
30	0.04	0.14	0.61	3.25	8.75	24.63	50.67
35	0.04	0.11	0.44	2.58	6.78	19.21	43.32
40	0.04	0.11	0.48	2.74	7.16	20.12	46.21
50	0.04	0.11	0.47	2.74	6.84	19.80	45.28
70	0.04	0.11	0.44	2.58	6.78	19.21	43.32
100	0.04	0.11	0.44	2.57	6.68	19.13	42.98

MODEL : FE

RATIO : 3, 4, 5, 7, 10 (单段 1-Stage)



unit: mm

Code	Model	50	70	90	120	145	180	220
A	A1	42	60	80	105	130	184	218
	A2	M4 x P0.7	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5	M12 x P1.75	M16 x P2.0
	A3	13	16	22	32	40	55	75
	A4	35	50	70	90	110	160	180
	A5	5	6	9, 23.5	10, 20	10	13, 15	13.5, 15.5
	A6	M4 x P0.7	M5 x P0.8	M8 x P1.25	M10 x P1.5	M12 x P1.75	M14 x P2.0	M16 x P2.0
	A7	5	5	6	10	12	16	20
	A8	15	18	24.5	35	43	59	79.5
B	B1	Ø50	Ø70	Ø93	Ø122	Ø148	Ø205	Ø242
	B2	4	5	6	8	10	20	20
	B3	15	20	30	40	65	70	90
	B4	20	28	36	50	74	82	104
	B5	25	34	44	60	87	106	129
	B6	6	8	9	12	15	21.5	30
	B7	100.5	132.5, 140.5	170.5, 185	227.5, 237.5	284	325, 327	376.5, 378.5
C	C1	46, 60, 63	70, 75, 90	90, 100, 115, 145	115, 145, 165	145, 165, 215	200, 215, 265	200, 265, 300
	C2	M3 M4 M5	M4 M5 M6	M5 M6 M8	M6 M8 M10	M8 M10 M12	M10 M12	M12 M16
	C3	8, 9, 11	11, 14	16, 19, 22, 24	24, 28, 32	28, 32, 35, 38	35, 38, 42, 48	42, 48, 55
	C4	26	33.5, 41.5	51, 65.5	63, 73	81.5	115, 117	118, 120
	C5	30, 40, 50	40, 50, 60	70, 80, 95, 110	95, 110, 130	110, 130, 180	114.3, 180, 230	114.3, 230, 250
	C6	M4 x P0.7	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5	M10 x P1.5	M10 x P1.5
	C7	46, 55	64, 70, 80	92, 110, 130	122, 130, 150	146, 150, 190	182, 200, 250	222, 250, 265

Characteristic of FE 1-Stage

FE 单段特性

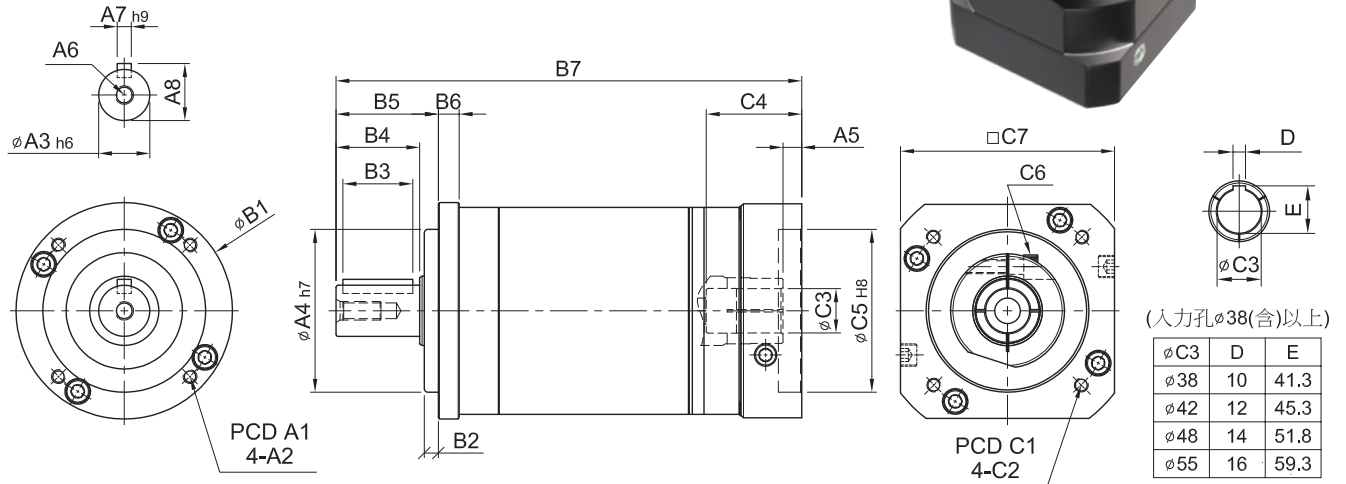
规格 Model No.	代号	单位 Unit	速比 Ratio	50	70	90	120	145	180	220
额定输出扭矩 / Rated Output Torque (Nominal output torque)	T_{2N}	Nm	3	17	50	125	268	482	940	1,420
			4	15	45	111	238	426	860	1,300
			5	14	42	104	223	401	835	1,270
			7	13	39	98	208	373	790	1,180
			10	12	37	92	198	356	760	1,140
最大加速扭矩 / Max. Acceleration Torque	T_{2B}	Nm	3~10	1.8 倍额定输出扭矩 1.8 Times of Rated Output Torque						
最大输出扭矩 / Max. Output Torque 急停扭矩 / Emergency Stop Torque	T_{2NOT}	Nm	3~10	3 倍额定输出扭矩 3 Times of Rated Output Torque						
额定输入转速 / Rated Input Speed	n_{1N}	rpm	3~10	3,000	3,000	3,000	3,000	3,000	2,000	2,000
最大输入转速 / Max. Input Speed	n_{1B}	rpm	3~10	5,000	5,000	5,000	5,000	5,000	3,000	3,000
背隙 / Backlash		arcmin	3~10	≤ 8	≤ 8	≤ 8	≤ 8	≤ 8	≤ 8	≤ 8
扭转刚性 / Torsional Rigidity		Nm/arcmin	3~10	2.3	5	15	45	69	140	220
容许径向力 / Max. Radial Force	F_{2rB}	N	3~10	750	1,180	3,000	6,500	9,100	11,150	35,000
容许轴向力 / Max. Axial Force	F_{2aB}	N	3~10	325	590	1,500	3,250	4,550	5,575	17,500
使用寿命 / Service Life	L_{11}	hr	3~10	S5 周期运转 : >30,000 (S1 连续运转 : >15,000 hrs) S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)						
效率 / Efficiency	η	%	3~10	≥ 97%						
使用温度 / Operating Temperature		°C	3~10	-25° C ~ +90° C						
润滑 / Lubrication			3~10	全合成润滑油脂 Synthetic Grease						
防护等级 / Protection Class			3~10	IP65						
安装方向 / Mounting Position			3~10	任意方向 Any						
噪音值 / Noise Level		dB	3~10	≤ 62	≤ 62	≤ 65	≤ 68	≤ 70	≤ 70	≤ 70
重量 / Weight ±3%		Kg	3~10	0.63	1.57	3.22	8	16	33	54

Mass Moments of Inertia (kg.cm²)

速比 Ratio	50	70	90	120	145	180	220
3	0.04	0.14	0.61	3.25	8.75	24.63	50.67
4	0.04	0.13	0.48	2.74	7.16	20.12	46.21
5	0.04	0.11	0.47	2.74	6.84	19.80	45.28
7	0.04	0.11	0.44	2.58	6.78	19.21	43.32
10	0.04	0.11	0.44	2.57	6.68	19.13	42.98

MODEL : FE

RATIO : 15, 20, 25, 30, 35, 40, 50, 70, 100 (双段 2-Stage)



unit: mm

Code	Model	50	70	90	120	145	180	220
A	A1	42	60	80	105	130	184	218
	A2	M4 x P0.7	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5	M12 x P1.75	M16 x P2.0
	A3	13	16	22	32	40	55	75
	A4	35	50	70	90	110	160	180
	A5	5	6	9, 23.5	10, 20	10	13, 15	13.5, 15.5
	A6	M4 x P0.7	M5 x P0.8	M8 x P1.25	M10 x P1.5	M12 x P1.75	M14 x P2.0	M16 x P2.0
	A7	5	5	6	10	12	16	20
	A8	15	18	24.5	35	43	59	79.5
B	B1	∅50	∅70	∅93	∅122	∅148	∅205	∅242
	B2	4	5	6	8	10	20	20
	B3	15	20	30	40	65	70	90
	B4	20	28	36	50	74	82	104
	B5	25	34	44	60	87	106	129
	B6	6	8	9	12	15	21.5	30
	B7	126.7	166.5	206.5, 221	281.5, 291.5	340.5	394.5, 396.5	463.5, 465.5
C	C1	46, 60, 63	70, 75, 90	90, 100, 115, 145	115, 145, 165	145, 165, 215	200, 215, 265	200, 265, 300
	C2	M3 M4 M5	M4 M5 M6	M5 M6 M8	M6 M8 M10	M8 M10 M12	M10 M12	M12 M16
	C3	8, 9, 11	11, 14	16, 19, 22, 24	24, 28, 32	28, 32, 35, 38	35, 38, 42, 48	42, 48, 55
	C4	26	33.5	51, 65.5	63, 73	81.5	115, 117	118, 120
	C5	30, 40, 50	40, 50, 60	70, 80, 95, 110	95, 110, 130	110, 130, 180	114.3, 180, 230	114.3, 230, 250
	C6	M4 x P0.7	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5	M10 x P1.5	M10 x P1.5
	C7	46, 55	64, 70, 80	92, 110, 130	122, 130, 150	146, 150, 190	182, 200, 250	222, 250, 265

Characteristic of FE 2-Stage

FE 双段特性

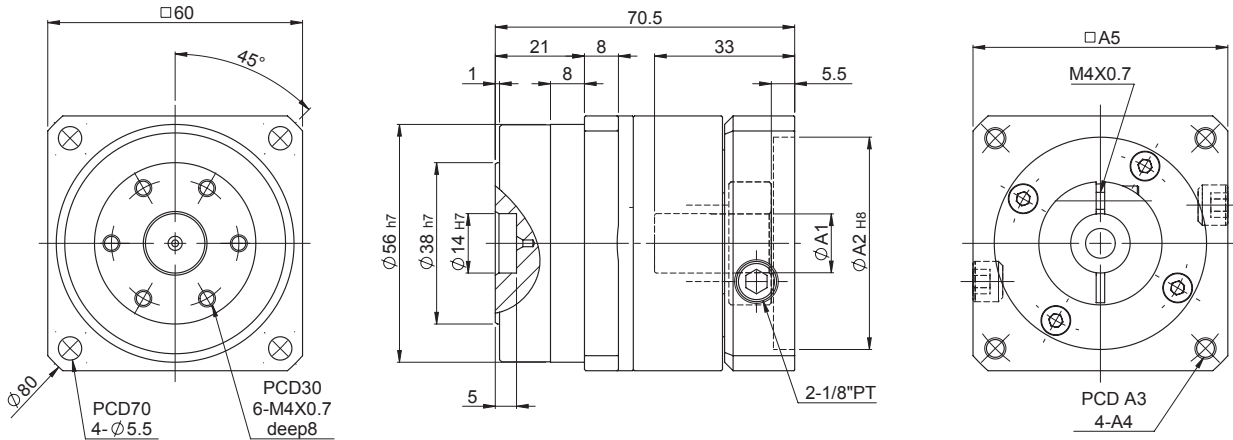
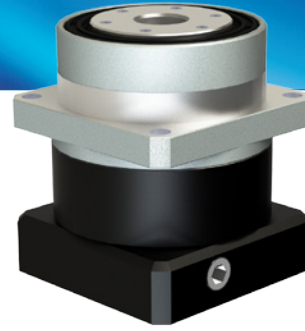
规格 Model No.	代号	单位 Unit	速比 Ratio	50	70	90	120	145	180	220
额定输出扭矩 / Rated Output Torque (Nominal output torque)	T_{2N}	Nm	15	17	50	125	268	482	940	1,420
			20	15	45	111	238	426	860	1,300
			25	14	42	104	223	401	835	1,270
			30	17	50	125	268	482	940	1,420
			35	13	39	98	208	373	790	1,180
			40	15	45	111	238	427	860	1,300
			50	14	42	104	223	402	835	1,270
			70	13	40	98	208	373	790	1,180
100	12	37	92	198	357	760	1,100			
最大加速扭矩 / Max. Acceleration Torque	T_{2B}	Nm	15~100	1.8 倍额定输出扭矩 1.8 Times of Rated Output Torque						
最大输出扭矩 / Max. Output Torque 急停扭矩 / Emergency Stop Torque	T_{2NOT}	Nm	15~100	3 倍额定输出扭矩 3 Times of Rated Output Torque						
额定输入转速 / Rated Input Speed	n_{1N}	rpm	15~100	3,000	3,000	3,000	3,000	3,000	2,000	2,000
最大输入转速 / Max. Input Speed	n_{1B}	rpm	15~100	5,000	5,000	5,000	5,000	5,000	3,000	3,000
背隙 / Backlash		arcmin	15~100	≤ 12	≤ 12	≤ 12	≤ 12	≤ 12	≤ 12	≤ 12
扭转刚性 / Torsional Rigidity		Nm/arcmin	15~100	2.3	5	15	45	69	140	220
容许径向力 / Max. Radial Force	F_{2rB}	N	15~100	750	1,180	3,000	6,500	9,100	11,150	35,000
容许轴向力 / Max. Axial Force	F_{2aB}	N	15~100	325	590	1,500	3,250	4,550	5,575	17,500
使用寿命 / Service Life	L_{H1}	hr	15~100	S5 周期运转 : >30,000 (S1 连续运转 : >15,000 hrs) S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)						
效率 / Efficiency	η	%	15~100	≥ 94%						
使用温度 / Operating Temperature		°C	15~100	-25° C ~ +90° C						
润滑 / Lubrication			15~100	全合成润滑油脂 Synthetic Grease						
防护等级 / Protection Class			15~100	IP65						
安装方向 / Mounting Position			15~100	任意方向 Any						
噪音值 / Noise Level		dB	15~100	≤ 65	≤ 65	≤ 68	≤ 70	≤ 72	≤ 72	≤ 72
重量 / Weight ±3%		Kg	15~100	0.9	2.24	4.59	11.22	22.5	46.4	75

Mass Moments of Inertia (kg.cm²)

速比 Ratio	50	70	90	120	142	180	220
15	0.04	0.14	0.61	3.25	8.75	24.63	50.67
20	0.04	0.13	0.48	2.74	7.16	20.12	46.21
25	0.04	0.11	0.47	2.74	6.84	19.80	45.28
30	0.04	0.14	0.61	3.25	8.75	24.63	50.67
35	0.04	0.11	0.44	2.58	6.78	19.21	43.32
40	0.04	0.11	0.48	2.74	7.16	20.12	46.21
50	0.04	0.11	0.47	2.74	6.84	19.80	45.28
70	0.04	0.11	0.44	2.58	6.78	19.21	43.32
100	0.04	0.11	0.44	2.57	6.68	19.13	42.98

MODEL : AD60

RATIO : 3, 4, 5, 7, 10 (单段 1-Stage)



入力法兰尺寸表 Dimension of Input Flange

unit: mm

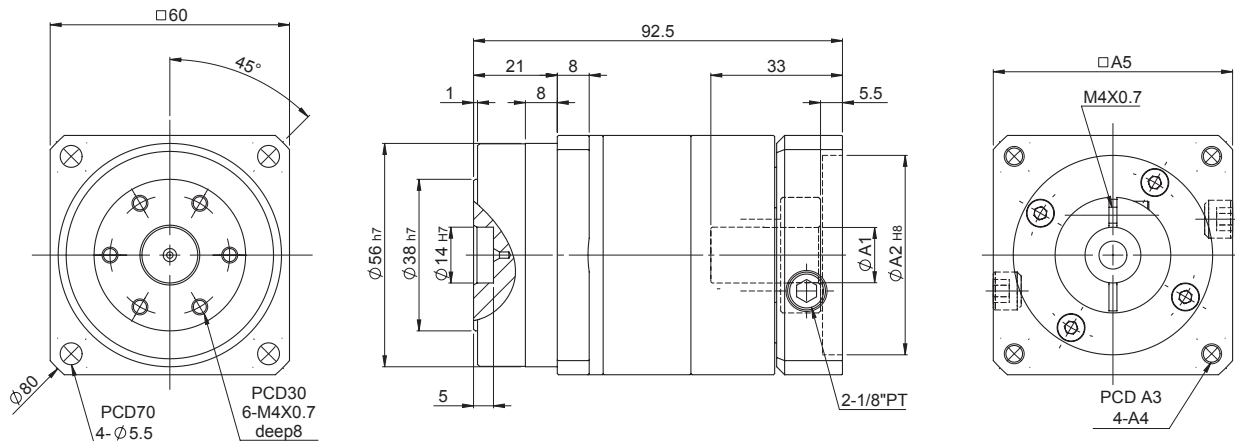
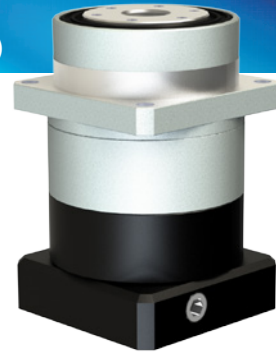
NO.	ØA1	ØA2	A3	A4	A5
1		30	45	M3	46
2		30	46	M4	46
3	8, 9, 10, 12.7, 14	30	48.5	M3	55
4		40	63	M5	55
5		50	70	M5	60

AD60-1 特性表

减速比 Ratio	代号	单位 Unit	3	4	5	7	10	
额定输出扭矩 / Rated Output Torque (Nominal Output Torque)	T_{2N}	Nm	28	38	40	35	25	
最大加速扭矩 / Max. Acceleration Torque	T_{2B}	Nm	50	68	22	63	45	
转动惯量 / Mass Moments of Inertia		kg.cm ²	0.16	0.12	0.10	0.08	0.06	
最大输出扭矩 / Max. Output Torque 急停扭矩 / Emergency Stop Torque	T_{2NOT}	Nm	2 倍额定输出扭矩 2 Times of Rated Output Torque					
额定输入转速 / Rated Input Speed	n_{1N}	rpm	3,000					
最大输入转速 / Max. Input Speed	n_{1B}	rpm	5,000					
扭转刚性 / Torsional Rigidity		Nm/arcmin	4					
容许径向力 / Max. Radial Force	F_{2rB}	N	460					
容许轴向力 / Max. Axial Force	F_{2aB}	N	230					
使用寿命 / Service Life	L_H	hr	S5 周期运转 : >30,000 (S1 连续运转 : >15,000 hrs) S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)					
效率 / Efficiency	η	%	$\geq 97\%$					
使用温度 / Operating Temperature		°C	- 25° C ~ + 90° C					
润滑 / Lubrication			全合成润滑油脂 Synthetic Grease					
防护等级 / Protection Class			IP 65					
安装方向 / Mounting Position			任意 Any					
噪音值 / Noise Level		dB	≤ 58 dB					
重量 / Weight $\pm 2\%$		Kg	0.88					

MODEL : AD60

RATIO : 15, 20, 25, 30, 35, 40, 50, 70, 100 (双段 2-Stage)



入力法兰尺寸表 Dimension of Input Flange

unit: mm

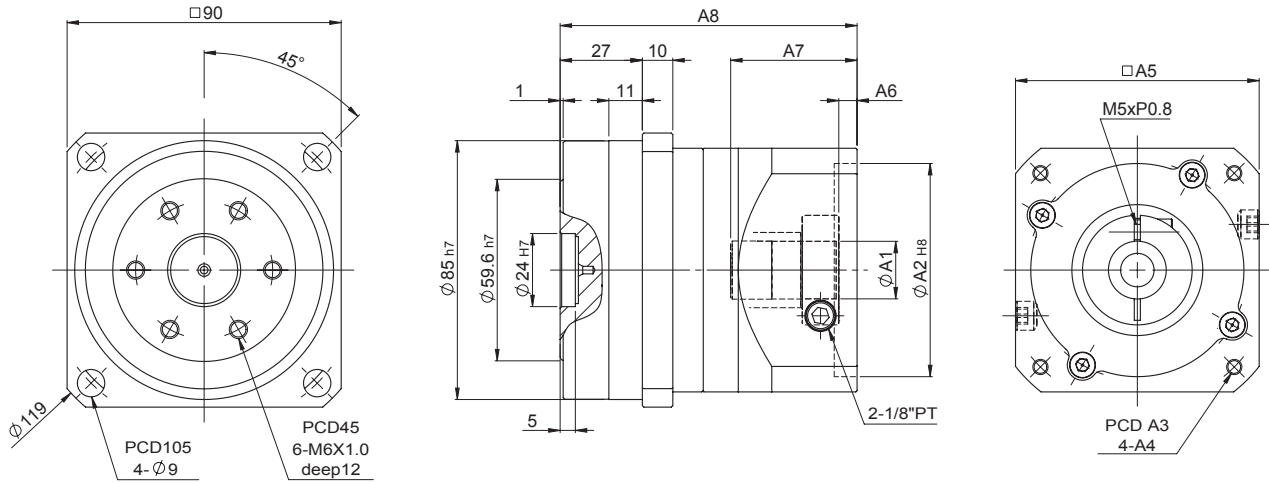
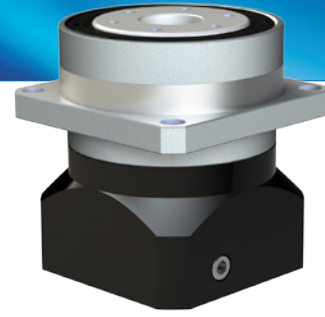
NO.	ØA1	ØA2	A3	A4	A5
1		30	45	M3	46
2		30	46	M4	46
3	8, 9, 10, 12.7, 14	30	48.5	M3	55
4		40	63	M5	55
5		50	70	M5	60

AD60-2 特性表

减速比 Ratio	代号	单位 Unit	3	4	5	3	7	4	5	7	10
额定输出扭矩 / Rated Output Torque (Nominal Output Torque)	T_{2N}	Nm	15	20	25	30	35	40	50	70	100
最大加速扭矩 / Max. Acceleration Torque	T_{2B}	Nm	28	38	40	28	35	38	40	35	25
转动惯量 / Mass Moments of Inertia		kg.cm ²	50	68	22	50	63	68	72	63	45
最大输出扭矩 / Max. Output Torque 急停扭矩 / Emergency Stop Torque	T_{2NOT}	Nm	2 倍额定输出扭矩 2 Times of Rated Output Torque								
额定输入转速 / Rated Input Speed	n_{1N}	rpm	3,000								
最大输入转速 / Max. Input Speed	n_{1B}	rpm	5,000								
扭转刚性 / Torsional Rigidity		Nm/arcmin	4								
容许径向力 / Max. Radial Force	F_{2rB}	N	460								
容许轴向力 / Max. Axial Force	F_{2aB}	N	230								
使用寿命 / Service Life	L_{H1}	hr	S5 周期运转 : >30,000 (S1 连续运转 : >15,000 hrs) S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)								
效率 / Efficiency	η	%	≥ 97%								
使用温度 / Operating Temperature		°C	- 25° C ~ + 90° C								
润滑 / Lubrication			全合成润滑油脂 Synthetic Grease								
防护等级 / Protection Class			IP 65								
安装方向 / Mounting Position			任意 Any								
噪音值 / Noise Level		dB	≤ 58 dB								
重量 / Weight ±2%		Kg	1.24								

MODEL : AD90

RATIO : 3, 4, 5, 7, 10 (单段 1-Stage)



入力法兰尺寸表 Dimension of Input Flange

unit: mm

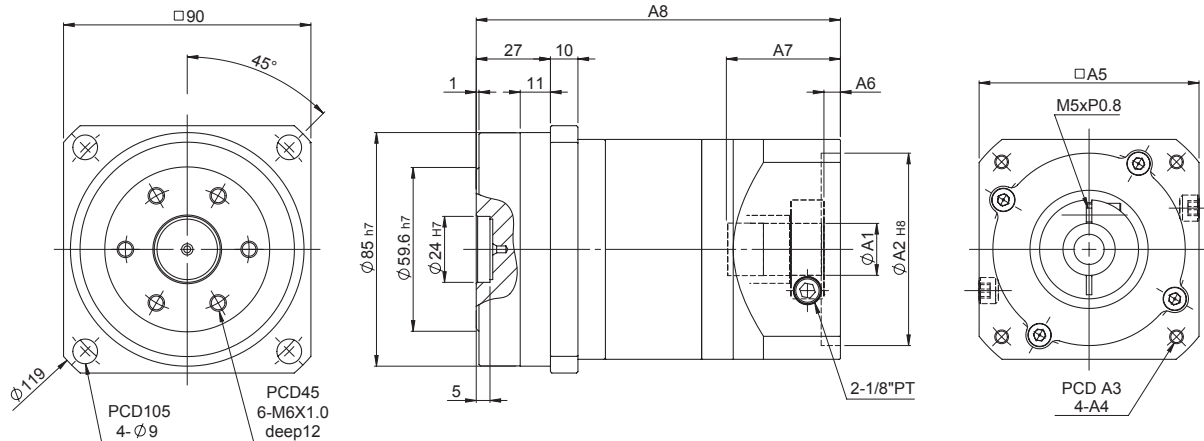
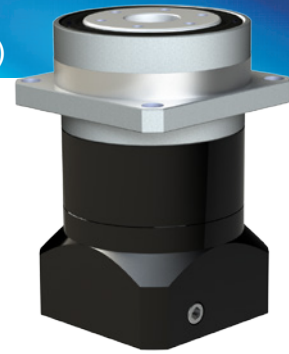
NO.	ØA1	ØA2	A3	A4	A5	A6	A7	A8
1	14, 19	50	70	M5	80	5.5	33.5	89.5
2		70	90	M6	80	6	41.5	97.5

AD90-1 特性表

减速比 Ratio	代号	单位 Unit	3	4	5	7	10	
额定输出扭矩 / Rated Output Torque (Nominal Output Torque)	T_{2N}	Nm	112	110	108	105	100	
最大加速扭矩 / Max. Acceleration Torque	T_{2B}	Nm	168	165	162	158	150	
转动惯量 / Mass Moments of Inertia		kg.cm ²	0.48	0.45	0.40	0.35	0.32	
最大输出扭矩 / Max. Output Torque 急停扭矩 / Emergency Stop Torque	T_{2NOT}	Nm	2 倍额定输出扭矩 2 Times of Rated Output Torque					
额定输入转速 / Rated Input Speed	n_{1N}	rpm	3,000					
最大输入转速 / Max. Input Speed	n_{1B}	rpm	5,000					
扭转刚性 / Torsional Rigidity		Nm/arcmin	12					
容许径向力 / Max. Radial Force	F_{2rB}	N	1,400					
容许轴向力 / Max. Axial Force	F_{2aB}	N	660					
使用寿命 / Service Life	L_H	hr	S5 周期运转 : >20,000 (S1 连续运转 : >10,000 hrs) S5 Cycle Operation: >20,000 (S1 Continuous Operation: >10,000 hrs)					
效率 / Efficiency	η	%	≥ 97%					
使用温度 / Operating Temperature		°C	- 20° C ~ + 90° C					
润滑 / Lubrication			全合成润滑油脂 Synthetic Grease					
防护等级 / Protection Class			IP 65					
安装方向 / Mounting Position			任意 Any					
噪音值 / Noise Level		dB	≤ 60 dB					
重量 / Weight ±2%		Kg	2.3					

MODEL : AD90

RATIO : 15, 20, 25, 30, 35, 40, 50, 70, 100 (双段 2-Stage)



入力法兰尺寸表 Dimension of Input Flange

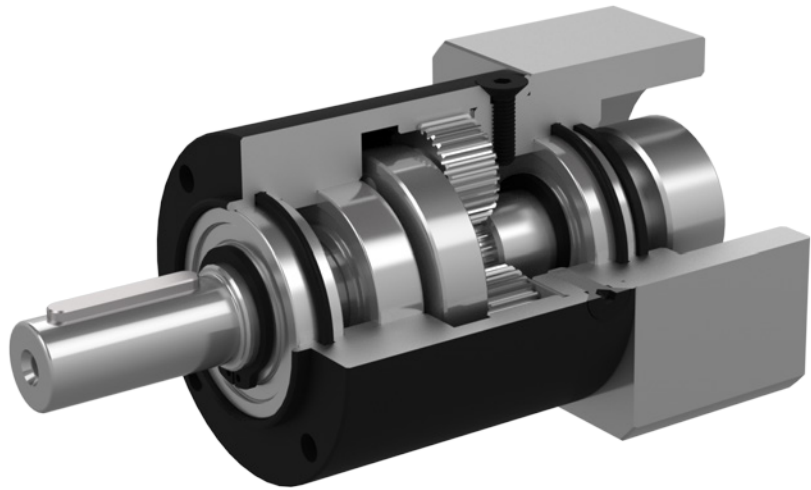
unit: mm

NO.	ØA1	ØA2	A3	A4	A5	A6	A7	A8
1	14, 19	50	70	M5	80	5.5	33.5	124.5
2	14, 19	70	90	M6	80	6	41.5	132.5

AD90-2 特性表


减速比 Ratio	代号	单位 Unit	15	20	25	30	35	40	50	70	100
额定输出扭矩 / Rated Output Torque (Nominal Output Torque)	T_{2N}	Nm	112	110	108	112	105	110	108	105	100
最大加速扭矩 / Max. Acceleration Torque	T_{2B}	Nm	168	165	162	202	158	165	162	158	150
转动惯量 / Mass Moments of Inertia		kg.cm ²	0.45	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42
最大输出扭矩 / Max. Output Torque 急停扭矩 / Emergency Stop Torque	T_{2NOT}	Nm	2 倍额定输出扭矩 2 Times of Rated Output Torque								
额定输入转速 / Rated Input Speed	n_{1N}	rpm	3,000								
最大输入转速 / Max. Input Speed	n_{1B}	rpm	5,000								
扭转刚性 / Torsional Rigidity		Nm/arcmin	12								
容许径向力 / Max. Radial Force	F_{2rB}	N	1,400								
容许轴向力 / Max. Axial Force	F_{2aB}	N	660								
使用寿命 / Service Life	L_{H1}	hr	S5 周期运转 : >20,000 (S1 连续运转 : >10,000 hrs) S5 Cycle Operation : >20,000 (S1 Continuous Operation : >10,000 hrs)								
效率 / Efficiency	η	%	≥ 95%								
使用温度 / Operating Temperature		°C	- 25° C ~ + 90° C								
润滑 / Lubrication			全合成润滑油脂 Synthetic Grease								
防护等级 / Protection Class			IP 65								
安装方向 / Mounting Position			任意 Any								
噪音值 / Noise Level		dB	≤ 62 dB								
重量 / Weight ±2%		Kg	3.3								

PE series



Indication of Model Numbers

机种型号表示

PE	60	—	10		—	MOTOR
减速机机型 Type	型号 Model		速比 Ratio	出力轴键槽 Output Shaft Keyway		马达型号 Motor Type
PE	32 40 60 80		单段 1-Stage 3 ~ 10 双段 2-Stage 12 ~ 64	<input type="checkbox"/> 标准品，有键槽 Standard (Keyway) N: 实心轴，无键槽 Solid Output Shaft (No Keyway)		

PE

SB

SBL

SBT

SE

SEL

SD

SDL

SDD

SDH

SF

SFL

SA

PB

PBL

PBT

FA

SN

FB

FE

AD

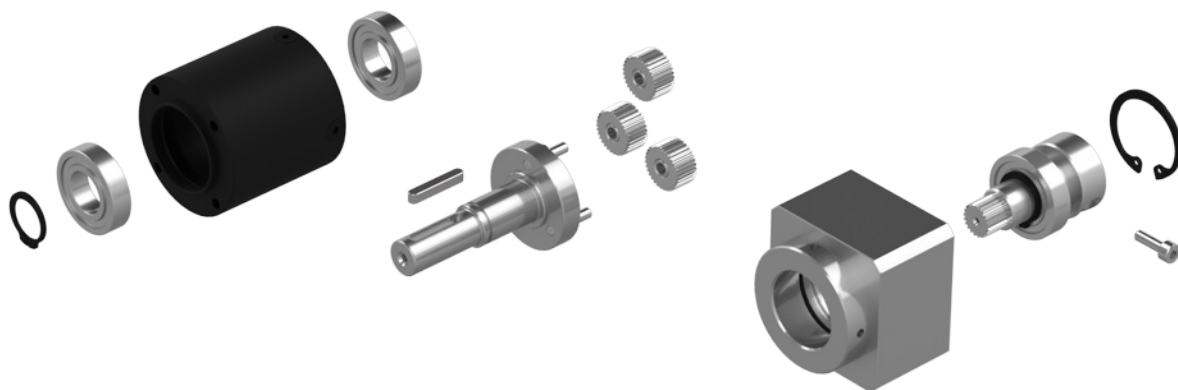
PE

ST

Features of PE Series

PE 系列产品特点

- 经济型
- 高效率
- 低噪音
- 低背隙
- 低温升
- 使用寿命长
- 尺寸与重量极小化
- 适用于多种尺寸的马达轴径



MODEL : PE

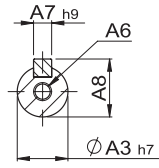
RATIO : 3, 4, 5, 7, 8, 9, 10 (单段 1-Stage)



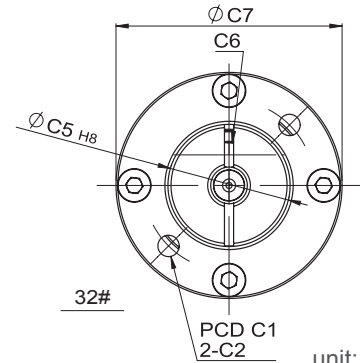
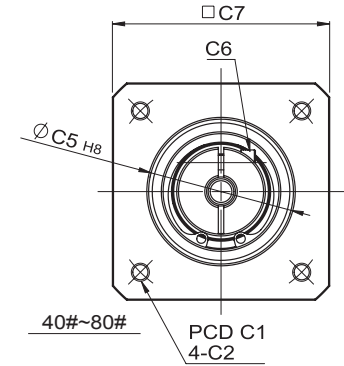
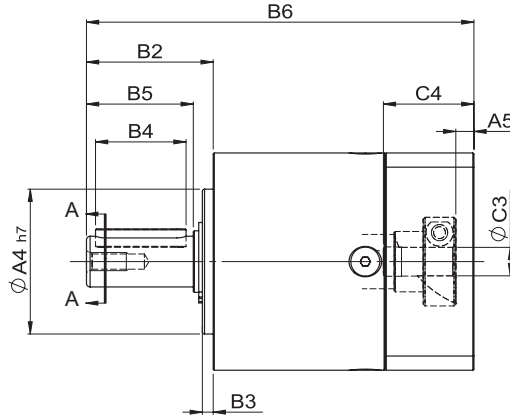
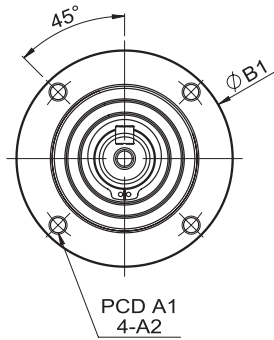
▲ 32#



▲ 40#~80#



A-A SECTION



unit: mm

Code	Model	32	40	60	80
A	A1	26	34	52	70
	A2	M3 x 0.5	M4 x 0.7	M5 x 0.8	M6 x 1.0
	A3	8	10	14	20
	A4	20	26	40	60
	A5	5.5	5	5	5
	A6	/	M3 x 0.5	M5 x 0.8	M6 x 1.0
	A7	3	3	5	6
	A8	9	11	16	22.5
B	B1	32	40	60	80
	B2	20.5	26.5	35	40
	B3	2	2	3	3
	B4	12	18	25	28
	B5	16	23	29.5	35.5
	B6	71	92	107	134
C	C1	28	46	63	100
	C2	3.5	M4 x 0.7	M5 x 0.8	M6 x 1.0
	C3	6	8	8, 11	14
	C4	19.5	26	25	32
	C5	20	30	40	80
	C6	M4 x 0.7	M4 x 0.7	M4 x 0.7	M5 x 0.8
	C7	37	40	60	90

PE

SB

SBL

SBT

SE

SEL

SD

SDL

SDD

SDH

SF

SFL

SA

PB

PBL

PBT

FA

SN

FB

FE

AD

PE

ST

Characteristic of PE 1-Stage

PE 单段特性

规格 Model No.	代号	单位 Unit	速比 Ratio	32	40	60	80
额定输出扭矩 / Rated Output Torque (Nominal Output Torque)	T_{2N}	Nm	3	8	12	30	90
			4	10	16	38	120
			5	11	17	41	130
			7	9	-	32	110
			8	-	12	-	-
			9	7	-	-	-
			10	-	10	25	80
最大加速扭矩 / Max. Acceleration Torque	T_{2B}	Nm	3~10	1.8 倍额定输出扭矩 1.8 Times of Rated Output Torque			
转动惯量 / Mass Moments of Inertia		kg.cm ²	3	0.012	0.031	0.135	0.77
			4	0.012	0.022	0.093	0.52
			5	0.010	0.019	0.078	0.45
			7	0.010	-	0.072	0.42
			8	-	0.017	-	-
			9	7	-	-	-
			10	-	0.016	0.064	0.39
最大输出扭矩 / Max. Output Torque 急停扭矩 / Emergency Stop Torque	T_{2NOT}	Nm	3~10	3 倍额定输出扭矩 3 Times of Rated Output Torque			
额定输入转速 / Rated Input Speed	n_{1N}	rpm	3~10	3,000			
最大输入转速 / Max. Input Speed	n_{1B}	rpm	3~10	5,000			
背隙 / Backlash		arcmin	3~10	< 12			
扭转刚性 / Torsional Rigidity		Nm/arcmin	3~10	0.8	1	2.3	6
容许径向力 / Max. Radial Force	F_{2rB}	N	3~10	130	300	680	1,750
容许轴向力 / Max. Axial Force	F_{2aB}	N	3~10	65	150	340	875
使用寿命 / Service Life	L_{H1}	hr	3~10	S5 周期运转 : >20,000 (S1 连续运转 : >10,000 hrs) S5 Cycle Operation: >20,000 (S1 Continuous Operation: >10,000 hrs)			
效率 / Efficiency	η	%	3~10	$\geq 96\%$			
使用温度 / Operating Temperature		°C	3~10	-25°C ~ +90°C			
润滑 / Lubrication			3~10	全合成润滑油脂 Synthetic Grease			
安装方向 / Mounting Position			3~10	任意 Any			
噪音值 / Noise Level		dB	3~10	≤ 56	≤ 58	≤ 58	≤ 60
重量 / Weight $\pm 2\%$		Kg	3~10	0.2	0.35	0.9	2.1

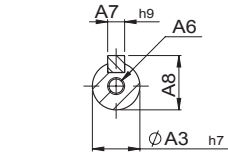
MODEL : PE

RATIO : 12, 15, 20, 25, 32, 35, 40, 45, 50, 63, 64 (双段 2-Stage)

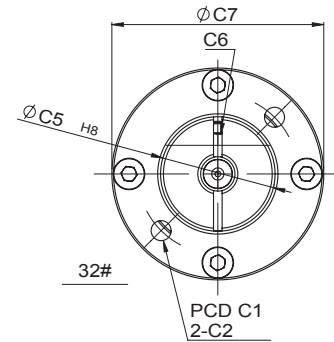
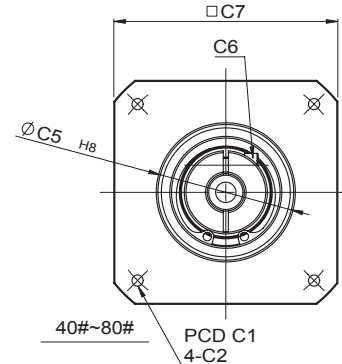
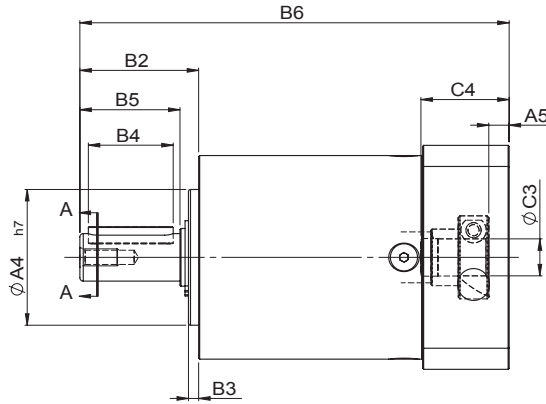
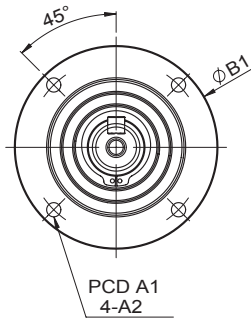


▲ 32#

▲ 40#~80#



A-A SECTION



unit: mm

Model Code	32	40	60	80	
A	A1	26	34	52	70
	A2	M3 x 0.5	M4 x 0.7	M5c0.8	M6 x 1.0
	A3	8	10	14	20
	A4	20	26	40	60
	A5	5.5	5	5	5
	A6	-	M3 x 0.5	M5 x 0.8	M6 x 1.0
	A7	3	3	5	6
	A8	16	11	16	22.5
B	B1	32	40	60	80
	B2	20.5	26.5	35	40
	B3	2	2	3	3
	B4	12	18	25	28
	B5	16	23	29.5	35.5
	B6	86	110	125.5	155.5
C	C1	28	46	63	100
	C2	3.5	M4 x 0.7	M5 x 0.8	M6 x 1.0
	C3	6	8	8, 11	14
	C4	19.5	26	25	32
	C5	20	40	40	80
	C6	M4 x 0.7	M4 x 0.7	M4 x 0.7	M5 x 0.8
	C7	37	40	60	90

PE

SB

SBL

SBT

SE

SEL

SD

SDL

SDD

SDH

SF

SFL

SA

PB

PBL

PBT

FA

SN

FB

FE

AD

PE

ST

Characteristic of PE 2-Stage

PE 双段特性

规格 Model No.	代号	单位 Unit	速比 Ratio	32	40	60	80
额定输出扭矩 / Rated Output Torque (Nominal Output Torque)	T_{2N}	Nm	12	-	-	30	90
			15	8	11	30	90
			20	10	-	38	120
			25	11	17	41	130
			32	-	-	-	-
			35	9	-	32	110
			40	-	16	38	120
			45	7	-	-	-
			50	-	-	41	130
			63	9	-	-	-
			64	-	17	-	-
最大加速扭矩 / Max. Acceleration Torque	T_{2B}	Nm	12~64	1.8 倍额定输出扭矩 1.8 Times of Rated Output Torque			
转动惯量 / Mass Moments of Inertia		kg.cm ²	12	-	0.029	0.127	0.72
			15	0.01	0.023	0.077	0.71
			20	0.01	0.019	0.075	0.44
			25	0.01	0.019	0.075	0.44
			32	-	0.017	-	-
			35	0.01	-	0.075	0.42
			40	-	0.016	0.064	0.39
			45	0.01	-	-	-
			50	-	-	0.075	0.36
			63	0.01	-	-	-
			64	-	0.016	-	-
最大输出扭矩 / Max. Output Torque 急停扭矩 / Emergency Stop Torque	T_{2NOT}	Nm	12~64	3 倍额定输出扭矩 3 Times of Rated Output Torque			
额定输入转速 / Rated Input Speed	n_{1N}	rpm	12~64	3,000			
最大输入转速 / Max. Input Speed	n_{1B}	rpm	12~64	5,000			
背隙 / Backlash		arcmin	12~64	< 20			
扭转刚性 / Torsional Rigidity		Nm/arcmin	12~64	0.8	1.1	2.5	6.5
容许径向力 / Max. Radial Force	F_{2rB}	N	12~64	130	300	680	1,750
容许轴向力 / Max. Axial Force	F_{2aB}	N	12~64	65	150	340	875
使用寿命 / Service Life	L_H	hr	12~64	S5 周期运转 : >20,000 (S1 连续运转 : >10,000 hrs) S5 Cycle Operation: >20,000 (S1 Continuous Operation: >10,000 hrs)			
效率 / Efficiency	η	%	12~64	$\geq 94\%$			
使用温度 / Operating Temperature		°C	12~64	-25°C ~+90°C			
润滑 / Lubrication			12~64	全合成润滑油脂 Synthetic Grease			
安装方向 / Mounting Position			12~64	任意 Any			
噪音值 / Noise Level		dB	12~64	≤ 58 dB	≤ 60 dB	≤ 60 dB	≤ 62 dB
重量 / Weight $\pm 2\%$		Kg	12~64	0.3	0.45	1.1	2.6