

FABGEAR[®]

精密伺服用行星減速機

Characteristic of FABGEAR Series

FABGEAR 系列產品特性

標準型減速機

背 隙

全系列單段背隙 ≤ 8 弧分
全系列雙段背隙 ≤ 10 弧分

靜 音

使用高精度斜齒輪實現順暢安靜地運轉。

高 扭 矩

比一般正齒輪行星減速機扭矩高。

高 效 率

單段式在 97% 以上，雙段式在 94% 以上。

Inline Reducer

Low Backlash

1-Stage Backlash ≤ 8 arcmin
2-Stage Backlash ≤ 10 arcmin

Quiet operation

Helical gears contribute to reduce vibration and noise.

High Torque

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

High Efficiency

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

直交軸減速機

背 隙

全系列單段背隙 ≤ 10 弧分
全系列雙段背隙 ≤ 12 弧分

靜 音

使用研磨等級螺旋傘齒輪及螺旋齒輪實現順暢安靜地運轉。

高剛性、高扭矩

使用整體式滿針滾針軸承，一體式內齒箱及螺旋齒輪，提高了剛性和扭矩。

高 效 率

單段式在 95% 以上，雙段式在 92% 以上。

Right Angle Reducer

Low Backlash

1-Stage Backlash ≤ 10 arcmin
2-Stage Backlash ≤ 12 arcmin

Quiet operation

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

High Rigidity & High Torque

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

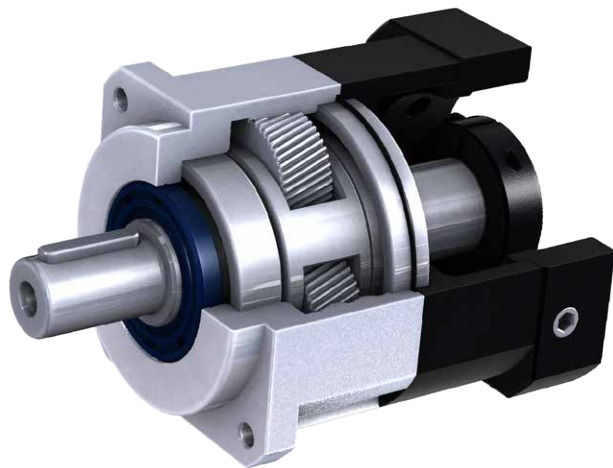
High Efficiency

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



Features of FABGEAR Series

FABGEAR 系列產品特點



PBL

螺旋傘齒輪

研磨等級螺旋傘齒輪傳動效率高，傳動比穩定，圓弧重疊係數大，承載能力高，傳動平穩平順，工作可靠，結構緊湊，耐磨損，壽命長。

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.

螺旋齒輪設計

減速機構採用螺旋齒輪設計，齒形嚙合率為一般正齒輪的二倍以上，具有運轉平順、低噪音、高輸出扭矩和低背隙的特性。

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.

筒夾式連結機構

輸入端與馬達的連結採用筒夾式的鎖緊機構，並經動力平衡分析，以確保在高輸入轉速下結合介面的同心度和平衡度，及零背隙的動力傳遞。

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.



滿針滾針軸承設計

行星齒輪的傳動介面採用不含保持器之滿針滾針軸承，增加接觸面積以提高結構剛性及使用壽命。

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.



一體式行星臂架及雙懸臂設計

行星臂架與輸出軸採一體式的結構設計，以確保提高扭轉剛性及精確度。

Integrated Planetary Arm Bracket

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

全合成潤滑油脂

採 IP65 防護等級的密封設計，潤滑油脂不洩漏免保養。

Synthetic Lubrication Grease

The protective class IP65 seals design avoids leakage problem. It features no maintenance.

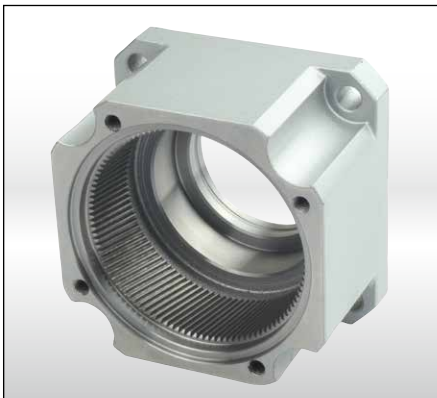


高精度齒輪加工

行星齒輪及太陽齒輪材料採用高級之鎳鉻鉬合金鋼 (SNCM220)，切削加工後，經滲碳熱處理至硬度 57~60HRC，再進行齒面研磨，確保齒輪精度在 DIN6 級以內，比只有表面的氮化處理，獲得最佳的耐磨耗和耐衝擊韌性，壽命更長。

High Precision Gear Machining

The planetary gear and sun gear are made by high quality Ni-Cr-Mo alloy steel (SNCM220), precision machined and carburized to hardness 57-60 HRC. Precision teeth grinding assures gear accuracy reaches DIN6 class. It provides better wear resistance, impact resistance and longer service life than gears with only surface nitrided.

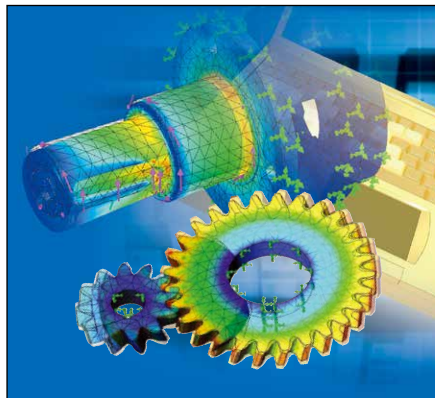


一體式螺旋內齒輪箱

齒輪箱和內環齒輪採一體式的設計，減速機構採用螺旋齒輪設計，齒形嚙合率為一般正齒輪的二倍以上，具有運轉平順、低噪音、高輸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.

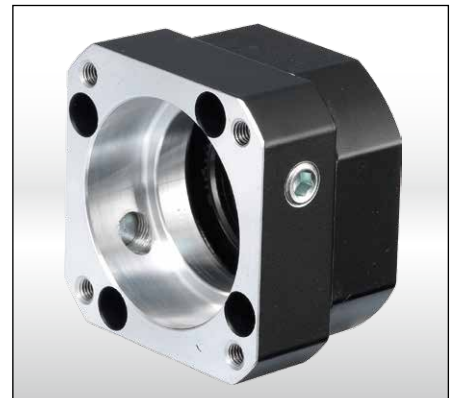


CAE 設計分析技術

利用 3D-CAE 軟體的設計分析技術，對減速機整體強度進行分析及螺旋齒面作齒形及導程修整，以降低齒輪對啮入及啮出的衝擊和噪音，增加齒輪系及減速機的使用壽命。

CAE Design and Analysis

Employs 3D-CAE software for analysis and design, the software allows for analyzing the strength of the entire gear reducer and modifying the helical teeth profile and lead. This reduces the impact and noise during teeth engage and disengage, while increasing the service life of gears and the gear reducer.



模組化馬達連接板設計

獨特的馬達連接板模組化設計，適用於任何廠牌和型式的伺服馬達，材質採用鋁合金，表面經由防氧化處理，提高環境的耐受性和抗腐蝕能力。

Modular Design of Motor Connection Plate

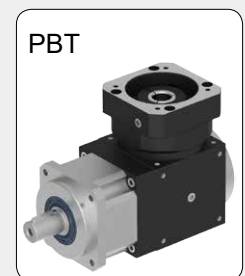
The special modular design of motor connection plate is suitable for any brand and any type of servomotor. It is made by aluminum alloy. Its surface is anti-oxidant treated for upgrading environmental-resistant and corrosion-resistant capability.



Indication of Model Numbers

機種型號表示

PB 90		10			MOTOR
減速機型 Type	型號 Model	速比 Ratio	出力軸鍵槽 Output Shaft	入力軸鍵槽 Input Shaft	馬達型號 Motor Type
PB	44	單段 1-Stage 3, 4, 5, 6, 7, 8, 9, 10	<input type="checkbox"/> 標準品，有鍵槽 Standard (Keyway)	<input type="checkbox"/> 無鍵槽 No Keyway	
PB-A	62				
PBL	90	雙段 2-Stage 15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 90, 100	N: 實心軸，無鍵槽 Solid Output Shaft (No Keyway)	K: 有鍵槽 Keyway (142#~220#)	
PBL-A	120				
PBT	142	單段 1-Stage (PBL) 3, 4, 5, 6, 7, 8, 9, 10, 12, 14, 16, 18, 20			
	180	雙段 2-Stage (PBL) 15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 90, 100, 120, 140, 160, 180, 200			
	220	單段 1-Stage (PBT) 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 25, 30, 35, 40, 45, 50			



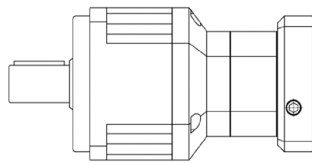
Description of Standard and A-Type

標準型及 A-Type 說明

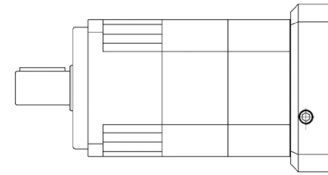
在 2 段或 3 段減速時，減速比高，輸出扭矩大，標準型的 2 段或 3 段齒箱為大齒箱接小齒箱，可限制入力馬力，以符合額定輸出扭矩。
A-Type 為二個相同框號齒箱的連結。

The features of 2-stage or 3-stage gearbox are high gear ratio and large output torque. The standard type of 2-stage or 3-stage gearbox are combined by big and small gearboxes to have a limit to input power and then to meet rated output torque. A-Type has a combination of 2 gearboxes with same frame.

Standard



A-Type



例如：

使用伺服馬達，功率 0.5kW，額定輸出扭矩 2.39Nm，馬達軸心為 Ø24mm

1. 假設減速比為 1/50 時：

輸出扭矩為 2.39Nm x 50 x 94%(效率) = 112Nm

(1) 可選擇 SB-120-50

額定輸出扭矩 333Nm S.F.=2.6(安全系數)

(2) 亦可選擇 SB-90A-50

額定輸出扭矩 141Nm S.F.=1.25(降框號使用)

2. 假設減速比為 1/100 時：

輸出扭矩為 2.39 x 100 x 94%(效率) = 224Nm

可選用 SB-120-100 S.F.=1.3

選用 SB-90A-100 時 S.F.=0.62 安全系數不足，不建議使用

Example:

Servo motor 0.5 kW, rated output torque 2.39 Nm, motor shaft Ø24 mm.

1. Suppose the speed reduction ratio is 1/50:

Output torque is 2.39 Nm x 50 x 94% (efficiency) = 112 Nm.

(1) You can select SB-120-50 with rated output torque of

333 Nm and S.F. = 2.6

(2) You can select SB-90A-50 with rated output torque of

141 Nm and S.F. = 1.25

2. Suppose the speed reduction ratio is 1/100:

Output torque is 2.39 x 100 x 94% (efficiency) = 224 Nm.

You can select SB-120-100 and S.F. = 1.3. You are not suggested to choose SB-90A-100 because of low S.F. = 0.62.

Description Right Angle of L-Type and T-Type

直交軸 L-Type / L-Type 說明

PBL：螺旋傘齒輪段減速比 1:1、1:2

優點：總長度較短

缺點：減速比較少

PBT：螺旋傘齒輪段減速比 1:1、1:2、1:3、1:4、1:5

優點：減速比較多

缺點：總長度較長

9BL: Spiral Bevel Gear Ratio 1:1, 1:2

Pros: Shorter overall length.

Cons: Ratio less.

PBT: Spiral Bevel Gear Ratio 1:1, 1:2, 1:3, 1:4, 1:5

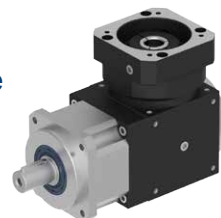
Pros: Ratio more.

Cons: Overall length is longer.

L-Type



T-Type

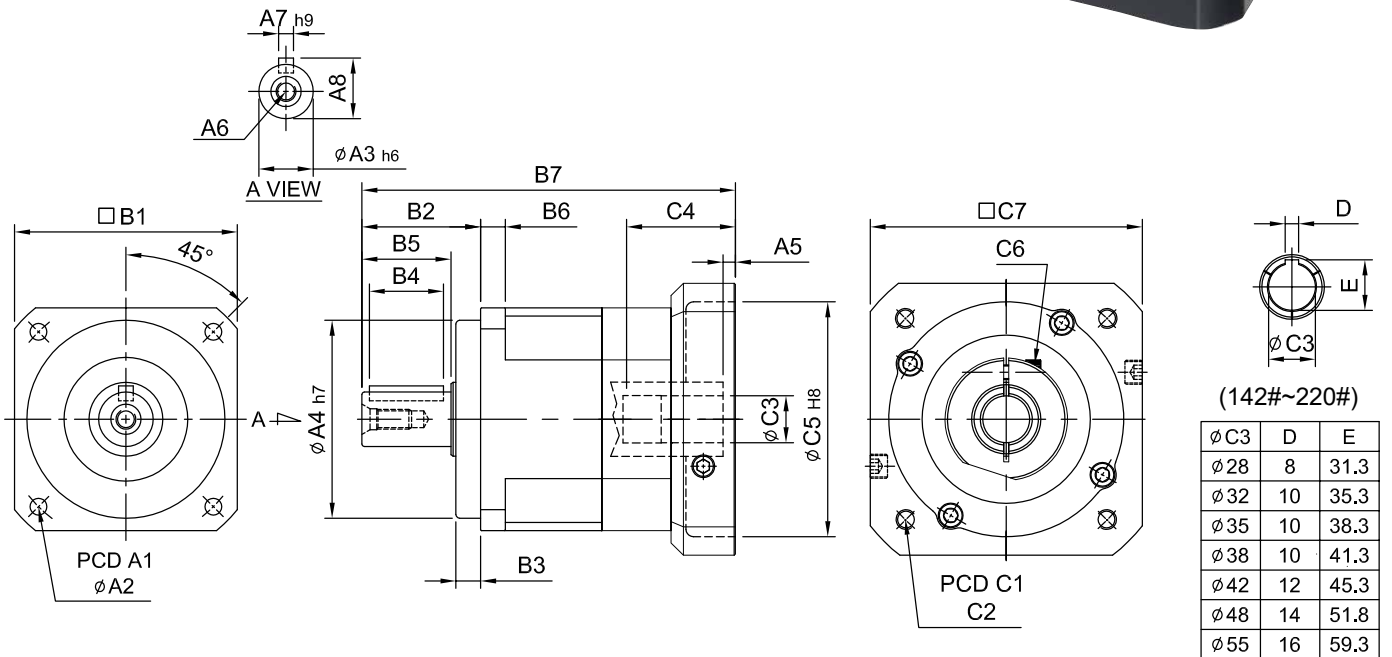


FABGEAR Planetary Reducers

MODEL : PB

單段 1-Stage

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



unit: mm

Model Code	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

Precision Planetary Reducer

規格 Parameter	代號	單位 Unit	速比 Ratio	44	62	90	120	142	180	220
額定輸出扭矩 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 倍額定輸出力矩 1.8 Times of Rated Output Torque						
最大輸出扭矩 Max. Output Torque 急停扭矩 Emergency Stop Torque	T_{2NOT}	Nm	3 ~ 10	3 倍額定輸出力矩 3 Times of Rated Output Torque						
額定輸入轉速 Rated Input Speed	n_{1N}	rpm	3 ~ 10	3,000	3,000	3,000	3,000	3,000	3,000	2,000
最大輸入轉速 Max. Input Speed	n_{1B}	rpm	3 ~ 10	6,000	6,000	6,000	5,000	5,000	4,000	3,000
背隙 Backlash		arcmin	3 ~ 10	≤ 8	≤ 8	≤ 8	≤ 8	≤ 8	≤ 8	≤ 8
扭轉剛性 Torsional Rigidity		Nm/arcmin	3 ~ 10	3	6	14	27	60	140	240
容許徑向力 Max. Radial Force	F_{2rB}	N	3 ~ 10	360	1,120	3,040	6,460	8,830	14,820	48,450
容許軸向力 Max. Axial Force	F_{2aB}	N	3 ~ 10	180	560	1,520	3,230	4,410	7,410	24,225
使用壽命 Service Life	L_H	hr	3 ~ 10	S5 周期運轉 : >30,000 (S1 連續運轉 : >15,000 hrs) S5 Cycle Operation : >30,000 (S1 Continuous Operation : >15,000 hrs)						
效率 Efficiency	η	%	3 ~ 10	≥ 97%						
使用溫度 Operating Temperature		°C	3 ~ 10	- 25° C ~ + 90° C						
潤滑 Lubrication			3 ~ 10	全合成潤滑油脂 Synthetic Grease						
防護等級 Protection Class			3 ~ 10	IP65						
安裝方向 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 ±3%		Kg	3 ~ 10	0.58	1.35	3.69	8.63	14.55	28.3	42.5

■ 轉動慣量 Mass Moments of Inertia (kg.cm²)

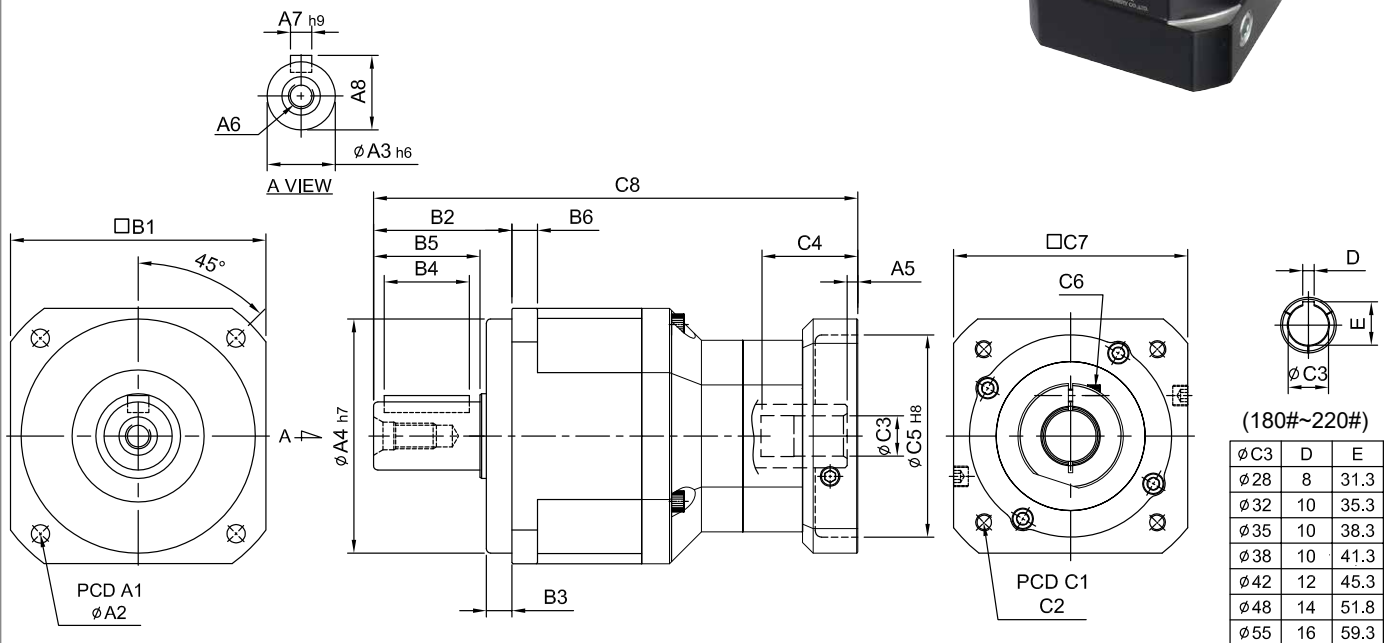
Ratio	44	62	90	120	142	180	220
3	0.03	0.16	0.61	3.25	9.21	28.98	59.61
4	0.03	0.14	0.48	2.74	7.54	23.67	54.37
5	0.03	0.13	0.47	2.74	7.42	23.29	53.27
6	0.03	0.13	0.45	2.65	7.25	22.75	51.72
7	0.03	0.13	0.45	2.62	7.14	22.48	50.97
8	0.03	0.13	0.44	2.58	7.07	22.59	50.84
9	0.03	0.13	0.44	2.57	7.04	22.53	50.63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

FABGEAR Planetary Reducers

MODEL : PB

雙段 2-Stage

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



unit: mm

Model Code	62	90	120	142	180	220
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
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
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

Precision Planetary Reducer

規格 Parameter	代號	單位 Unit	速比 Ratio	62	90	120	142	180	220
額定輸出扭矩 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 倍額定輸出扭矩 1.8 Times of Rated Output Torque					
最大輸出扭矩 Max. Output Torque 急停扭矩 Emergency Stop Torque	T_{2NOT}	Nm	15 ~ 100	3 倍額定輸出扭矩 3 Times of Rated Output Torque					
額定輸入轉速 Rated Input Speed	n_{IN}	rpm	15 ~ 100	3,000	3,000	3,000	3,000	3,000	3,000
最大輸入轉速 Max. Input Speed	n_{IB}	rpm	15 ~ 100	6,000	6,000	5,000	5,000	4,000	4,000
背隙 Backlash		arcmin	15 ~ 100	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10
扭轉剛性 Torsional Rigidity		Nm/arcmin	15 ~ 100	6	14	27	60	140	240
容許徑向力 Max. Radial Force	F_{2rB}	N	15 ~ 100	1,120	3,040	6,460	8,830	14,820	48,450
容許軸向力 Max. Axial Force	F_{2aB}	N	15 ~ 100	560	1,520	3,230	4,410	7,410	24,225
使用壽命 Service Life	L_H	hr	15 ~ 100	S5 周期運轉 : >30,000 (S1 連續運轉 : >15,000 hrs) S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)					
效率 Efficiency	η	%	15 ~ 100	≥ 94%					
使用溫度 Operating Temperature		°C	15 ~ 100	-25° C ~ +90° C					
潤滑 Lubrication			15 ~ 100	全合成潤滑油脂 Synthetic Grease					
防護等級 Protection Class			15 ~ 100	IP65					
安裝方向 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 ±3%		Kg	15 ~ 100	1.6	4.04	9.49	17	34.1	57.3

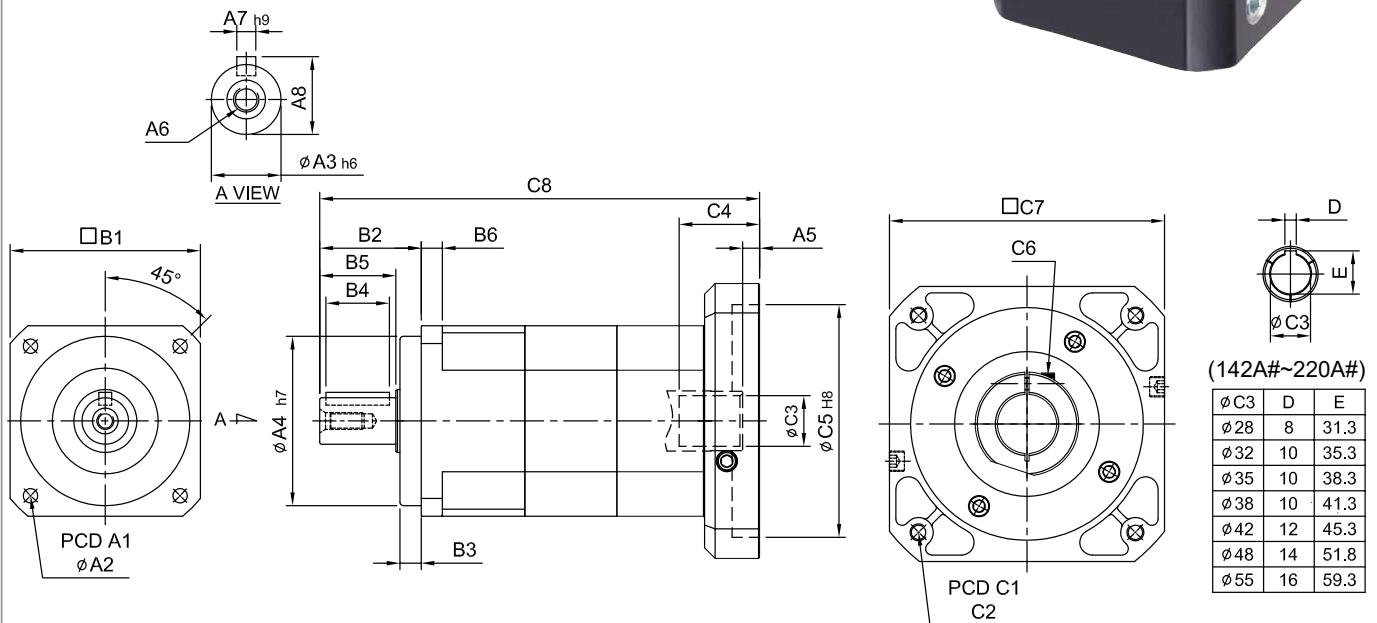
■ 轉動慣量 Mass Moments of Inertia (kg.cm²)

Ratio	62	90	120	142	180	220
15	0.03	0.14	0.46	2.63	7.30	22.79
20	0.03	0.14	0.46	2.63	7.30	22.79
25	0.03	0.14	0.46	2.63	7.10	22.79
30	0.03	0.14	0.46	2.43	7.10	22.59
35	0.03	0.14	0.44	2.43	7.10	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

雙段 2-Stage

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



(142A#~220A#)

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

unit: mm

Model Code	44A	62A	90A	120A	142A	180A	220A	
A	A1	50	70	100	130	165	215	
	A2	4.5	5.5	6.8	9	11	13	
	A3	13	16	22	32	40	55	
	A4	35	50	80	110	130	160	
	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	
	B2	26	36	48	65	92	106	
	B3	5	7	10	12	15	20	
	B4	15	20	30	40	65	70	
	B5	20	28	36	50	74	82	
	B6	5	8	10	12	15	16	
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



規格 Parameter	代號	單位 Unit	速比 Ratio	44A	62A	90A	120A	142A	180A	220A
額定輸出扭矩 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 倍額定輸出扭矩 1.8 Times of Rated Output Torque						
最大輸出扭矩 Max. Output Torque 急停扭矩 Emergency Stop Torque	T_{2NOT}	Nm	15 ~ 100	3 倍額定輸出扭矩 3 Times of Rated Output Torque						
額定輸入轉速 Rated Input Speed	n_{IN}	rpm	15 ~ 100	3,000	3,000	3,000	3,000	3,000	3,000	3,000
最大輸入轉速 Max. Input Speed	n_{IB}	rpm	15 ~ 100	6,000	6,000	6,000	5,000	5,000	4,000	4,000
背隙 Backlash		arcmin	15 ~ 100	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10
扭轉剛性 Torsional Rigidity		Nm/arcmin	15 ~ 100	3	6	14	27	60	140	240
容許徑向力 Max. Radial Force	F_{2rB}	N	15 ~ 100	360	1,120	3,040	6,460	8,830	14,820	48,450
容許軸向力 Max. Axial Force	F_{2aB}	N	15 ~ 100	180	560	1,520	3,230	4,410	7,410	24,225
使用壽命 Service Life	L_H	hr	15 ~ 100	S5 周期運轉 : >30,000 (S1 連續運轉 : >15,000 hrs) S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)						
效率 Efficiency	η	%	15 ~ 100	≥ 94%						
使用溫度 Operating Temperature		°C	15 ~ 100	-25° C ~ +90° C						
潤滑 Lubrication			15 ~ 100	全合成潤滑油脂 Synthetic Grease						
防護等級 Protection Class			15 ~ 100	IP65						
安裝方向 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 ±3%		Kg	15 ~ 100	0.86	2	5.48	10	21.4	42	59

■ 轉動慣量 Mass Moments of Inertia (kg.cm²)

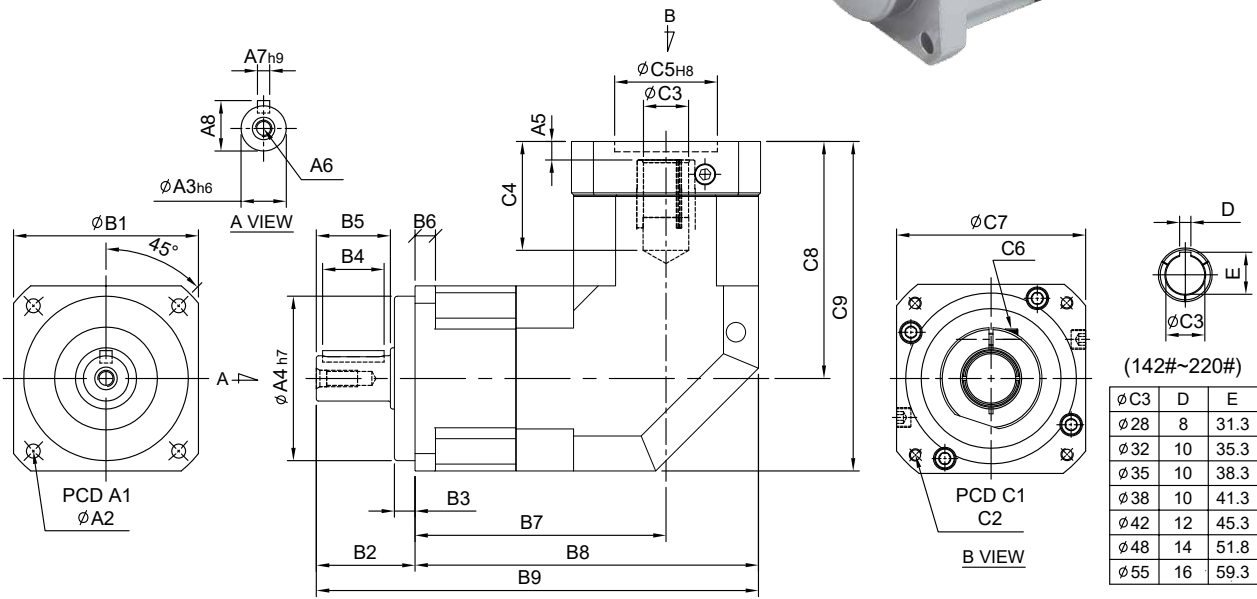
Ratio	44A	62A	90A	120A	142A	180A	220A
15	0.03	0.14	0.46	2.63	7.30	22.79	56.98
20	0.03	0.14	0.46	2.63	7.30	22.79	56.98
25	0.03	0.14	0.46	2.63	7.10	22.79	56.98
30	0.03	0.14	0.46	2.43	7.10	22.59	56.48
35	0.03	0.14	0.44	2.43	7.10	22.59	56.48
40	0.03	0.14	0.44	2.43	6.92	22.59	56.48
50	0.03	0.14	0.44	2.43	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

FABGEAR Planetary Reducers

MODEL : PBL

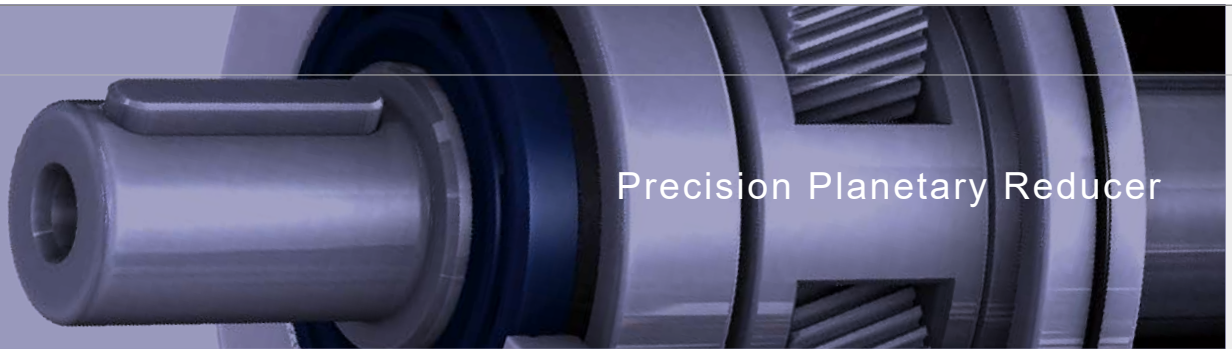
單段 1-Stage

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



unit: mm

Model Code	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 · 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



規格 Parameter	代號	單位 Unit	速比 Ratio	44	62	90	120	142	180	220
額定輸出扭矩 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 倍額定輸出扭矩 1.8 Times of Rated Output Torque						
最大輸出扭矩 Max. Output Torque 急停扭矩 Emergency Stop Torque	T_{2NOT}	Nm	3 ~ 20	3 倍額定輸出扭矩 3 Times of Rated Output Torque						
額定輸入轉速 Rated Input Speed	n_{IN}	rpm	3 ~ 20	3,000	3,000	3,000	3,000	3,000	3,000	2,000
最大輸入轉速 Max. Input Speed	n_{IB}	rpm	3 ~ 20	6,000	6,000	6,000	5,000	5,000	4,000	3,000
背隙 Backlash		arcmin	3 ~ 20	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10
扭轉剛性 Torsional Rigidity		Nm/arcmin	3 ~ 20	3	6	14	27	60	140	240
容許徑向力 Max. Radial Force	F_{2rB}	N	3 ~ 20	360	1,120	3,040	6,460	8,830	14,820	48,450
容許軸向力 Max. Axial Force	F_{2aB}	N	3 ~ 20	180	560	1,520	3,230	4,410	7,410	24,225
使用壽命 Service Life	L_H	hr	3 ~ 20	S5 周期運轉 : >30,000 (S1 連續運轉 : >15,000 hrs) S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)						
效率 Efficiency	η	%	3 ~ 20	≥ 95%						
使用溫度 Operating Temperature		°C	3 ~ 20	-25° C ~ +90° C						
潤滑 Lubrication			3 ~ 20	全合成潤滑油脂 Synthetic Grease						
防護等級 Protection Class			3 ~ 20	IP65						
安裝方向 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 ±3%		Kg	3 ~ 20	0.99	2.1	6.88	12.5	23.16	51	75.2

■ 轉動慣量 Mass Moments of Inertia (kg.cm²)

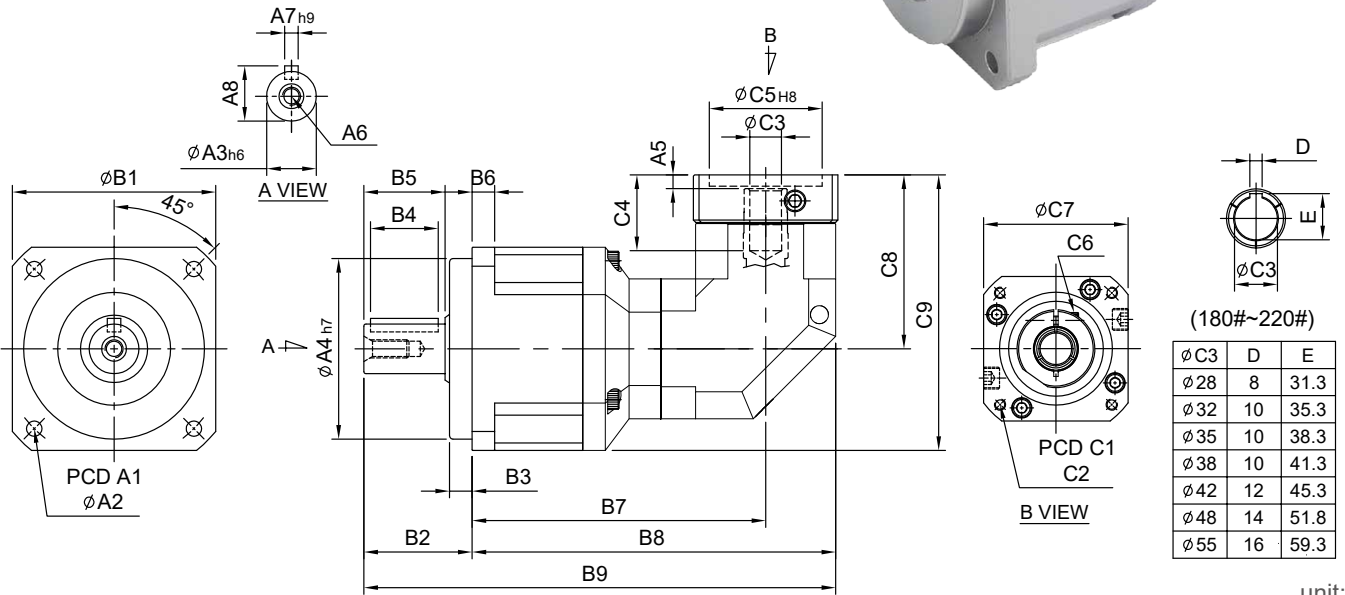
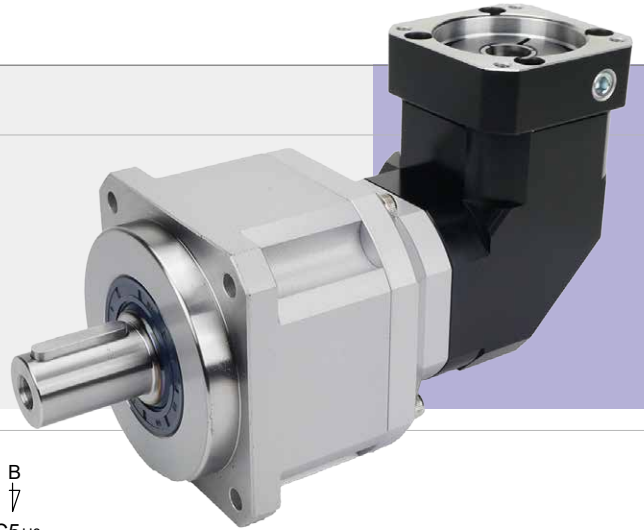
Ratio	44	62	90	120	142	180	220
3	0.09	0.36	2.28	6.85	23.5	68.2	135.0
4	0.09	0.36	2.28	6.85	23.5	68.2	135.0
5	0.09	0.36	2.28	6.85	23.5	68.2	135.0
6	0.09	0.36	2.28	6.85	23.5	68.2	135.0
7	0.09	0.36	2.28	6.85	23.5	68.2	135.0
8	0.09	0.36	2.28	6.85	23.5	68.2	135.0
9	0.09	0.36	2.28	6.85	23.5	68.2	135.0
10	0.09	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

FABGEAR Planetary Reducers

MODEL : PBL

雙段 2-Stage

RATIO : 15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 90, 100, 120, 140, 160, 180, 200



unit: mm

Model Code	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 · 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

Precision Planetary Reducer

規格 Parameter	代號	單位 Unit	速比 Ratio	62	90	120	142	180	220
額定輸出扭矩 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 倍額定輸出扭矩 1.8 Times of Rated Output Torque					
最大輸出扭矩 Max. Output Torque 急停扭矩 Emergency Stop Torque	T_{2NOT}	Nm	15 ~ 200	3 倍額定輸出扭矩 3 Times of Rated Output Torque					
額定輸入轉速 Rated Input Speed	n_{1N}	rpm	15 ~ 200	3,000	3,000	3,000	3,000	3,000	2,000
最大輸入轉速 Max. Input Speed	n_{1B}	rpm	15 ~ 200	6,000	6,000	5,000	5,000	4,000	3,000
背隙 Backlash		arcmin	15 ~ 200	≤ 12	≤ 12	≤ 12	≤ 12	≤ 12	≤ 12
扭轉剛性 Torsional Rigidity		Nm/arcmin	15 ~ 200	6	14	27	60	140	240
容許徑向力 Max. Radial Force	F_{2rB}	N	15 ~ 200	1,120	3,040	6,460	8,830	14,820	48,450
容許軸向力 Max. Axial Force	F_{2aB}	N	15 ~ 200	560	1,520	3,230	4,410	7,410	24,225
使用壽命 Service Life	L_H	hr	15 ~ 200	S5 周期運轉 : >30,000 (S1 連續運轉 : >15,000 hrs) S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)					
效率 Efficiency	η	%	15 ~ 200	≥ 92%					
使用溫度 Operating Temperature		°C	15 ~ 200	-25 °C ~ +90 °C					
潤滑 Lubrication			15 ~ 200	全合成潤滑油脂 Synthetic Grease					
防護等級 Protection Class			15 ~ 200	IP65					
安裝方向 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 ±3%		Kg	15 ~ 200	2	6.1	12.5	23.2	41.4	73

■ 轉動慣量 Mass Moments of Inertia (kg.cm²)

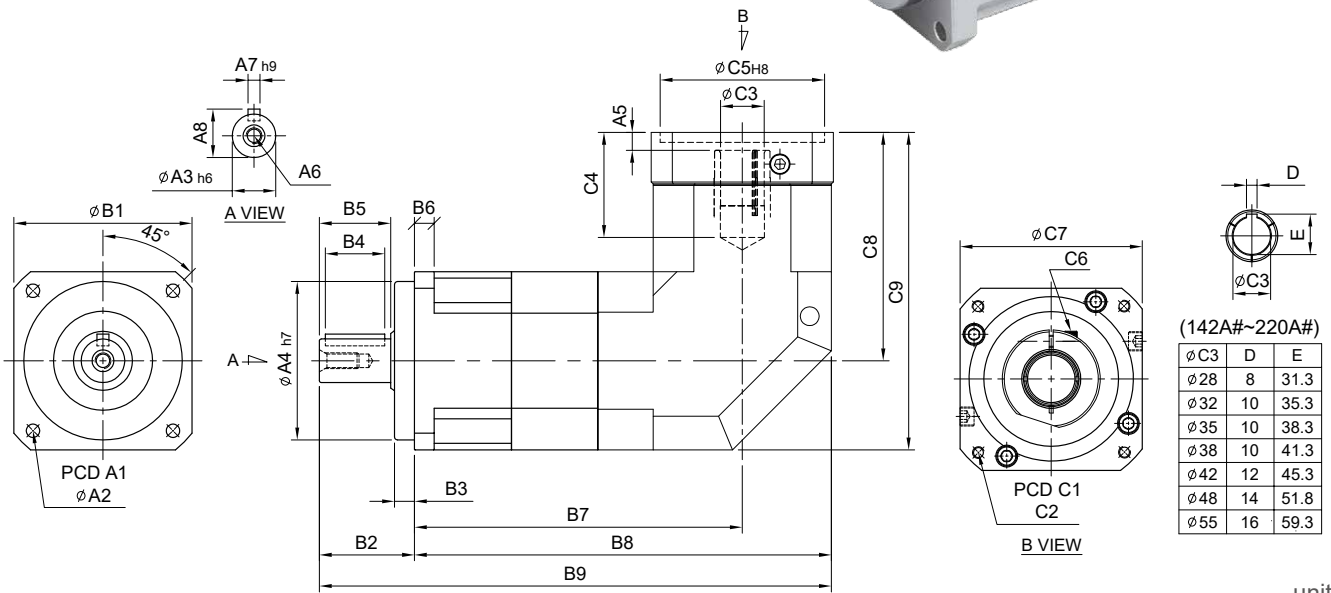
Ratio	62	90	120	142	180	220
15	0.09	0.36	2.28	6.85	26.2	70.1
20	0.09	0.36	2.28	6.85	26.2	70.1
25	0.09	0.36	2.28	6.85	23.1	68.2
30	0.09	0.36	2.28	6.85	23.1	68.2
35	0.09	0.36	2.28	6.85	23.1	68.2
40	0.09	0.36	2.28	6.85	23.1	68.2
50	0.09	0.36	2.28	6.85	23.1	68.2
60	0.09	0.36	2.28	6.85	23.1	68.2
70	0.09	0.36	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

FABGEAR Planetary Reducers

MODEL : PBL-A

雙段 2-Stage

RATIO : 15, 20, 25, 30, 35, 40, 50, 60, 70, 80, 90, 100, 120, 140, 160, 180, 200



unit: mm

Model Code	44A	62A	90A	120A	142A	180A	220A
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
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
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 · 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

Precision Planetary Reducer

規格 Parameter	代號	單位 Unit	速比 Ratio	44A	62A	90A	120A	142A	180A	220A
額定輸出扭矩 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 倍額定輸出扭矩 1.8 Times of Rated Output Torque						
最大輸出扭矩 Max. Output Torque 急停扭矩 Emergency Stop Torque	T_{2NOT}	Nm	15 ~ 200	3 倍額定輸出扭矩 3 Times of Rated Output Torque						
額定輸入轉速 Rated Input Speed	n_{1N}	rpm	15 ~ 200		3,000	3,000	3,000	3,000	3,000	2,000
最大輸入轉速 Max. Input Speed	n_{1B}	rpm	15 ~ 200		6,000	6,000	5,000	5,000	4,000	3,000
背隙 Backlash		arcmin	15 ~ 200		≤ 12	≤ 12	≤ 12	≤ 12	≤ 12	≤ 12
扭轉剛性 Torsional Rigidity		Nm/arcmin	15 ~ 200		6	14	27	60	140	240
容許徑向力 Max. Radial Force	F_{2rB}	N	15 ~ 200		1,120	3,040	6,460	8,830	14,820	48,450
容許軸向力 Max. Axial Force	F_{2aB}	N	15 ~ 200		560	1,520	3,230	4,410	7,410	24,225
使用壽命 Service Life	L_H	hr	15 ~ 200	S5 周期運轉 : >30,000 (S1 連續運轉 : >15,000 hrs) S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)						
效率 Efficiency	η	%	15 ~ 200	≥ 92%						
使用溫度 Operating Temperature		°C	15 ~ 200	-25° C ~ +90° C						
潤滑 Lubrication			15 ~ 200	全合成潤滑油脂 Synthetic Grease						
防護等級 Protection Class			15 ~ 200	IP65						
安裝方向 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 ±3%		Kg	15 ~ 200	1.5	3	8.15	13.9	29.4	52.4	94.5

■ 轉動慣量 Mass Moments of Inertia (kg.cm²)

Ratio	44A	62A	90A	120A	142A	180A	220A
15	0.09	0.36	2.28	6.85	23.5	55.2	80.2
20	0.09	0.36	2.28	6.85	23.5	55.2	80.2
25	0.09	0.36	2.28	6.85	23.5	50.4	76.5
30	0.09	0.36	2.28	6.85	23.5	50.4	76.5
35	0.09	0.36	2.28	6.85	23.5	50.4	76.5
40	0.09	0.36	2.28	6.85	23.5	50.4	76.5
50	0.09	0.36	2.28	6.85	23.5	50.4	76.5
60	0.09	0.36	2.28	6.85	23.5	50.4	76.5
70	0.09	0.36	2.28	6.85	23.5	50.4	76.5
80	0.09	0.36	2.28	6.85	23.5	50.4	76.5
90	0.09	0.36	2.28	6.85	23.5	50.4	76.5
100	0.09	0.36	2.28	6.85	23.5	50.4	76.5
120	0.03	0.08	1.88	6.20	21.8	48.7	74.2
140	0.03	0.08	1.88	6.20	21.8	48.7	74.2
160	0.03	0.08	1.88	6.20	21.8	48.7	74.2
180	0.03	0.08	1.88	6.20	21.8	48.7	74.2
200	0.03	0.08	1.88	6.20	21.8	48.7	74.2

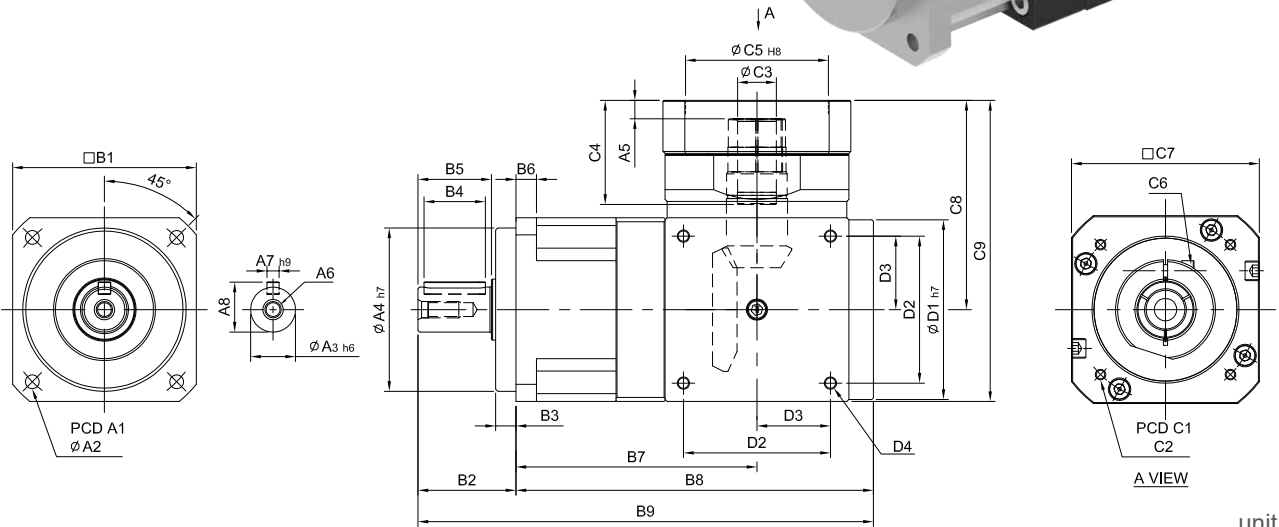
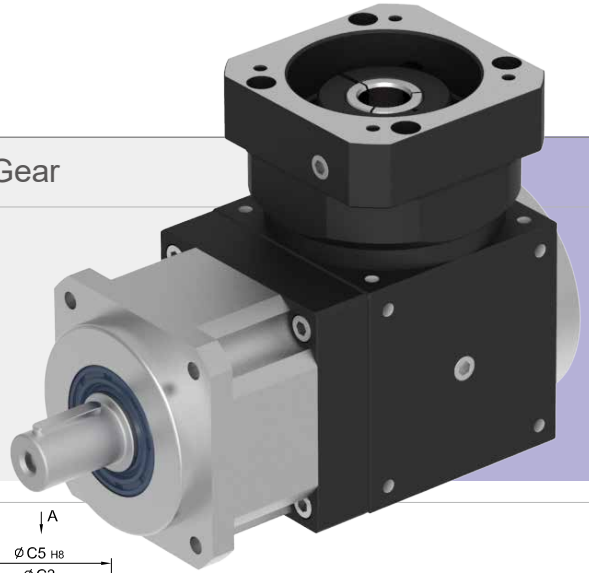
FABGEAR Planetary Reducers

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

MODEL : PBT

單段 1-Stage

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



unit: mm

Model Code	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	M16 x 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
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	70 · 75 · 90	90 · 100 · 115 · 145	90 · 100 · 115 · 145	115 · 145 · 165	145 · 165 · 215	200 · 215 · 265
	C2	M4	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	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	M10 x P1.5
	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	M16 x P2.0

Precision Planetary Reducer

規格 Parameter	代號	單位 Unit	速比 Ratio	44	62	90	120	142	180	220
額定輸出扭矩 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 倍額定輸出扭矩 1.8 Times of Rated Output Torque						
最大輸出扭矩 Max. Output Torque 急停扭矩 Emergency Stop Torque	T_{2NOT}	Nm	3 ~ 50	3 倍額定輸出扭矩 3 Times of Rated Output Torque						
額定輸入轉速 Rated Input Speed	n_{1N}	rpm	3 ~ 50	3,000	3,000	3,000	2,500	2,500	2,000	2,000
最大輸入轉速 Max. Input Speed	n_{1B}	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
扭轉剛性 Torsional Rigidity		Nm/arcmin	3 ~ 50	3	6	14	27	60	140	240
容許徑向力 Max. Radial Force	F_{2rB}	N	3 ~ 50	360	1,120	3,040	6,460	8,830	14,820	48,450
容許軸向力 Max. Axial Force	F_{2aB}	N	3 ~ 50	180	560	1,520	3,230	4,410	7,410	24,225
使用壽命 Service Life	L_H	hr	3 ~ 50	S5 周期運轉 : >30,000 (S1 連續運轉 : >15,000 hrs) S5 Cycle Operation : >30,000 (S1 Continuous Operation : >15,000 hrs)						
效率 Efficiency	η	%	3 ~ 50	≥ 95%						
使用溫度 Operating Temperature		°C	3 ~ 50	-25° C ~ +90° C						
潤滑 Lubrication			3 ~ 50	全合成潤滑油脂 Synthetic Grease						
防護等級 Protection Class			3 ~ 50	IP65						
安裝方向 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

■ 轉動慣量 Mass Moments of Inertia (kg.cm²)

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

■ 行星減速機搭配傘齒輪減速機型號及速比一覽表


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

型號 Model	減速比 Ratio	法蘭盤框號 Flange Model	傘齒輪減速機 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



Indication of Model Numbers

機種型號表示

SN	80	10		MOTOR
減速機型 Type	型號 Model	速比 Ratio	出力軸鍵槽 Output Shaft	馬達型號 Motor Type
SN	50	單段 1-Stage	<input type="checkbox"/> 標準品，有鍵槽 Standard (Keyway)	
SNL	60	3, 4, 5, 7, 10		
	70	雙段 2-Stage	<input type="checkbox"/> N: 實心軸，無鍵槽 Solid Output Shaft (No Keyway)	
	80	15, 20, 25, 30, 35, 40,		
	90	50, 70, 100		
	115			
	120	單段 1-Stage (SNL)		
	155	3, 4, 5, 6, 7, 8, 9, 10, 15, 20,		
	160	25, 30, 35, 40, 50		

SN

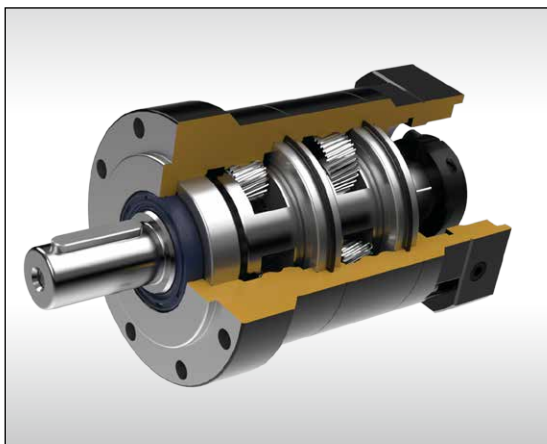


SNL



Features of SN Series

SN 系列產品特點



螺旋齒輪設計及高精度齒輪加工

減速機構採用螺旋齒輪設計，齒形嚙合率為一般正齒輪的二倍以上，具有運轉平順、低噪音、高輸出扭矩和低背隙的特性。

材料採用高級鎳鉻鉬合金鋼 (SNM220)，切削加工後，經滲碳熱處理至硬度 57~60HRC，再進行齒面研磨，確保齒輪精度 DIN6 級以內。

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 (SNM220), precision achined and carburized to hardness 57-60 HRC. Precision teeth grinding sure gear accuracy reaches DIN6 class.



一體式行星臂架

行星臂架與輸出軸採一體式的結構設計，以確保提高扭轉剛性及精確度。

Integrated Planetary Arm Bracket

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



滿針滾針軸承設計

行星齒輪的傳動介面採用不含保持器之滿針滾針軸承，增加接觸面積以提高結構剛性及使用壽命。

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.



一體式齒輪箱本體

齒輪箱和內環齒輪採一體式的設計。提高結構剛性及輸出扭矩。

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.



筒夾式連結機構

輸入端與馬達的連結採用筒夾式的鎖緊機構，並經動平衡分析，以確保在高輸入轉速下結合介面的同心度和平衡度，及零背隙的動力傳遞。

Collet Locking Mechanism

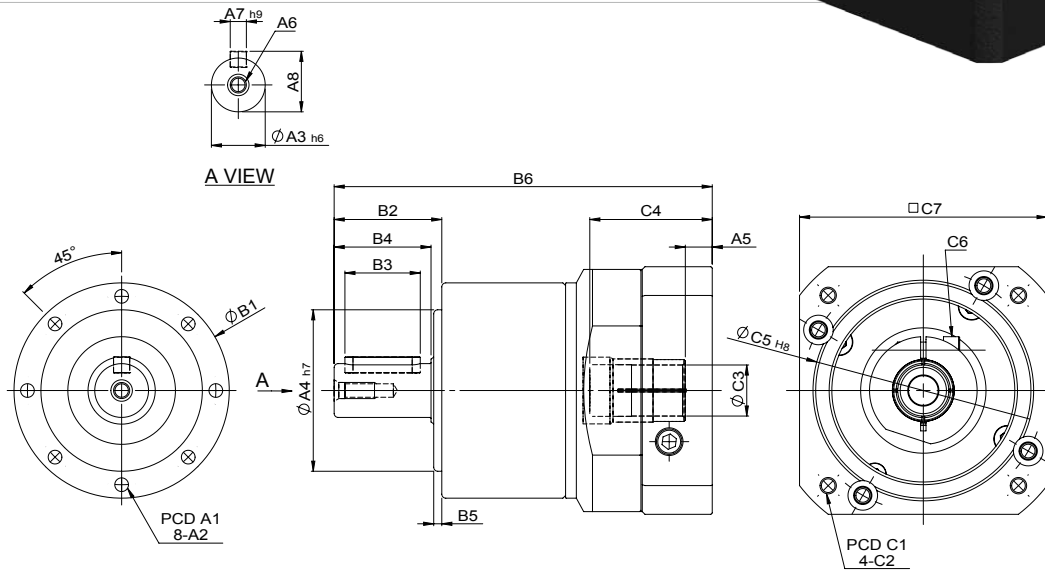
The input-end and the motor are coupled through a collet locking mechanism. It has passed dynamical balance analysis to assure concentricity and balance on the connection and no backlash for power transmission while running at high speed.

FABGEAR Planetary Reducers

MODEL : SN

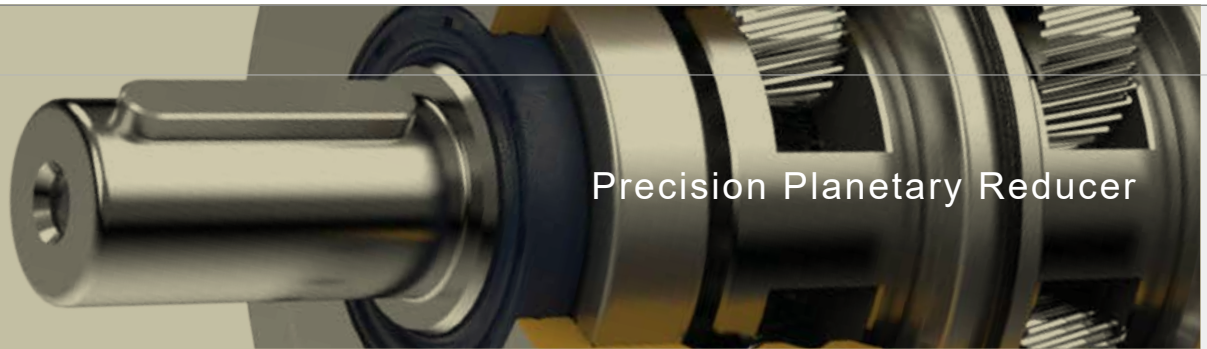
單段 1-Stage

RATIO : 3, 4, 5, 7, 10



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	M8 x P1.25	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	238.5 260.5	238.5 260.5
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	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 M8 · M10 · M12	M6 · M8 · M10 M8 · M10 · M12
	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 35 · 38	24 · 28 · 32 35 · 38
	C4	32	32	33.5	45.5	51 · 65.5	51 · 65.5	67 · 77	63 84.5	63 84.5
	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 · 130 110 · 130 · 180	95 · 110 · 130 110 · 130 · 180
	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 M10 x P1.5	M8 x P1.25 M10 x P1.5
	C7	46 · 55 · 60	46 · 55 · 60	70 · 75 · 80	92 · 110 · 130	92 · 110 · 130	92 · 110 · 130	122 · 130 · 150	122 · 130 · 150 146 · 150 · 190	122 · 130 · 150 146 · 150 · 190



規格 Parameter	代號	單位 Unit	速比 Ratio	50	60	70	80	90	115	120	155	160
額定輸出扭矩 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 倍額定輸出力矩 1.8 Times of Rated Output Torque								
最大輸出扭矩 Max. Output Torque 急停扭矩 Emergency Stop Torque	T_{2NOT}	Nm	3 ~ 10	3 倍額定輸出力矩 3 Times of Rated Output Torque								
額定輸入轉速 Rated Input Speed	n_{1N}	rpm	3 ~ 10	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
最大輸入轉速 Max. Input Speed	n_{1B}	rpm	3 ~ 10	6,000	6,000	6,000	6,000	6,000	6,000	5,000	5,000	5,000
背隙 Backlash		arcmin	3 ~ 10	≤ 8	≤ 8	≤ 8	≤ 8	≤ 8	≤ 8	≤ 8	≤ 8	≤ 8
扭轉剛性 Torsional Rigidity		Nm/arcmin	3 ~ 10	3	4	5	12	13	14	27	49	60
容許徑向力 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
容許軸向力 Max. Axial Force	F_{2aB}	N	3 ~ 10	335	515	880	1,175	1,460	1,750	3,050	4,415	4,600
使用壽命 Service Life	L_H	hr	3 ~ 10	S5 周期運轉 : >30,000 (S1 連續運轉 : >15,000 hrs) S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)								
效率 Efficiency	η	%	3 ~ 10	≥ 97%								
使用溫度 Operating Temperature		°C	3 ~ 10	- 25° C ~ + 90° C								
潤滑 Lubrication			3 ~ 10	全合成潤滑油脂 Synthetic Grease								
防護等級 Protection Class			3 ~ 10	IP65								
安裝方向 Mounting Position			3 ~ 10	任意方向 Any								
噪音值 Noise Level		dB	3 ~ 10	≤ 58	≤ 58	≤ 58	≤ 60	≤ 60	≤ 63	≤ 63	≤ 65	≤ 65
重量 Weight ±2%		Kg	3 ~ 10	0.73	0.99	1.25	2.1	2.8	4.98	6.7	13.6	15

■ 轉動慣量 Mass Moments of Inertia (kg.cm²)

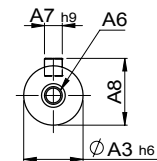
Ratio	50	60	70	80	90	115	120	155	160
3	0.03	0.06	0.15	0.48	0.55	0.60	3.01	8.14	9.21
4	0.03	0.06	0.15	0.38	0.42	0.45	2.52	6.63	7.42
5	0.03	0.06	0.13	0.38	0.42	0.45	2.52	6.63	7.42
7	0.03	0.06	0.13	0.38	0.42	0.45	2.31	6.55	7.14
10	0.03	0.06	0.13	0.35	0.38	0.41	2.3	6.46	7.03

FABGEAR Planetary Reducers

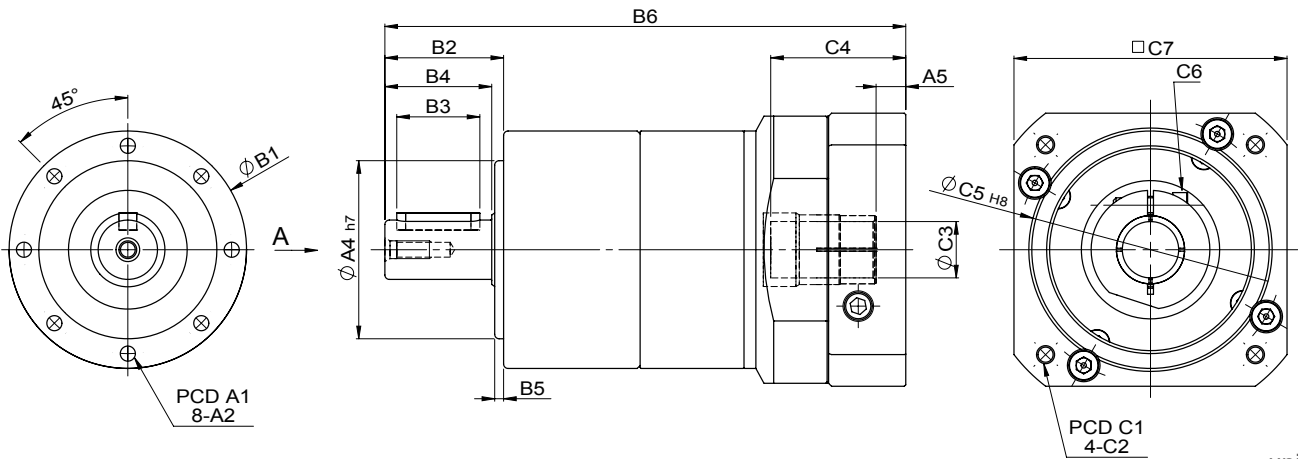
MODEL : SN

雙段 2-Stage

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

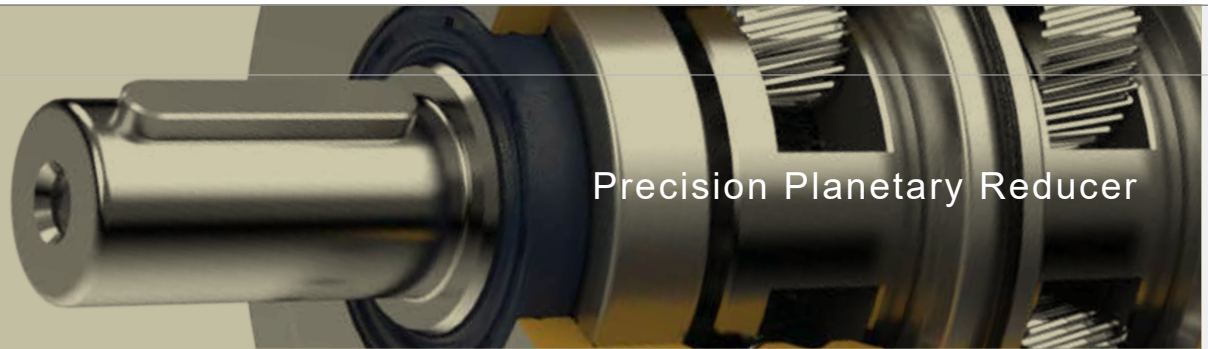


A VIEW



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	M8 x P1.25	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



規格 Parameter	代號	單位 Unit	速比 Ratio	50	60	70	80	90	115	120	155	160
額定輸出扭矩 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 倍額定輸出力矩 1.8 Times of Rated Output Torque								
最大輸出扭矩 Max. Output Torque 急停扭矩 Emergency Stop Torque	T_{2NOT}	Nm	15 ~ 100	3 倍額定輸出力矩 3 Times of Rated Output Torque								
額定輸入轉速 Rated Input Speed	n_{1N}	rpm	15 ~ 100	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
最大輸入轉速 Max. Input Speed	n_{1B}	rpm	15 ~ 100	6,000	6,000	6,000	6,000	6,000	6,000	5,000	5,000	5,000
背隙 Backlash		arcmin	15 ~ 100	≤ 12	≤ 12	≤ 12	≤ 12	≤ 12	≤ 12	≤ 12	≤ 12	≤ 12
扭轉剛性 Torsional Rigidity		Nm/arcmin	15 ~ 100	3	4	5	12	13	14	27	49	60
容許徑向力 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
容許軸向力 Max. Axial Force	F_{2aB}	N	15 ~ 100	335	515	880	1,175	1,460	1,750	3,050	4,415	4,600
使用壽命 Service Life	L_H	hr	15 ~ 100	S5 周期運轉 : >30,000 (S1 連續運轉 : >15,000 hrs) S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)								
效率 Efficiency	η	%	15 ~ 100	≥ 94%								
使用溫度 Operating Temperature		°C	15 ~ 100	- 25° C ~ + 90° C								
潤滑 Lubrication			15 ~ 100	全合成潤滑油脂 Synthetic Grease								
防護等級 Protection Class			15 ~ 100	IP65								
安裝方向 Mounting Position			15 ~ 100	任意方向 Any								
噪音值 Noise Level		dB	15 ~ 100	≤ 60	≤ 60	≤ 60	≤ 62	≤ 62	≤ 65	≤ 65	≤ 67	≤ 67
重量 Weight ±2%		Kg	15 ~ 100	1.05	1.46	1.9	3.2	4.48	6.92	9.84	17	18.5

■ 轉動慣量 Mass Moments of Inertia (kg.cm²)

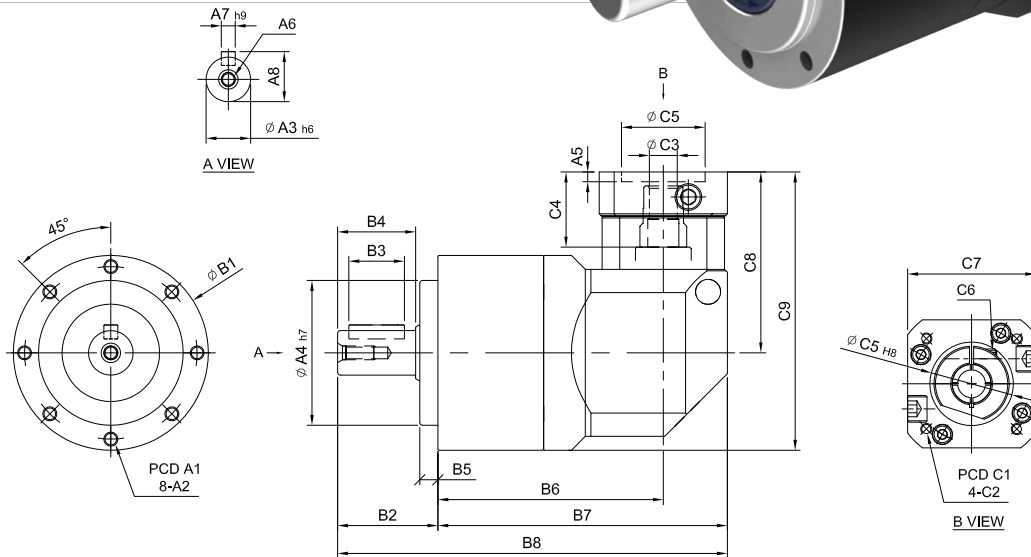
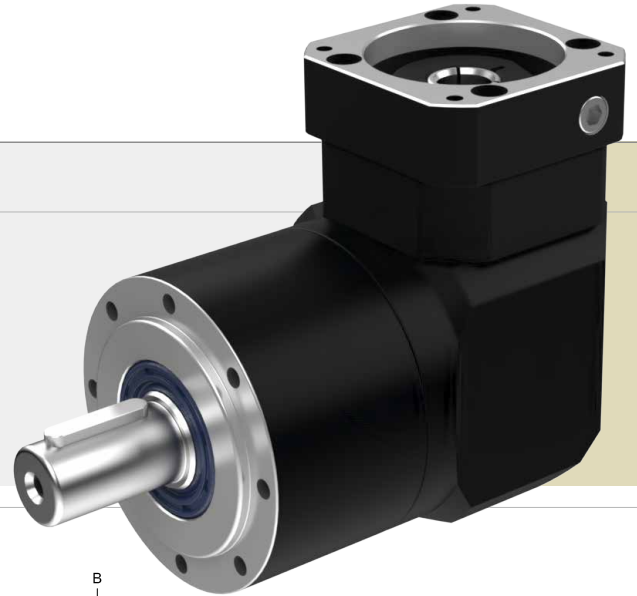
Ratio	50	60	70	80	90	115	120	155	160
15	0.025	0.05	0.11	0.29	0.38	0.40	2.71	7.81	8.68
20	0.025	0.05	0.11	0.29	0.38	0.40	2.29	6.27	7.08
25	0.025	0.05	0.11	0.29	0.38	0.40	2.29	6.01	6.97
30	0.025	0.05	0.11	0.29	0.38	0.40	2.71	7.81	8.65
35	0.025	0.05	0.11	0.29	0.38	0.40	2.17	5.92	6.71
40	0.025	0.05	0.11	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

FABGEAR Planetary Reducers

MODEL : SNL

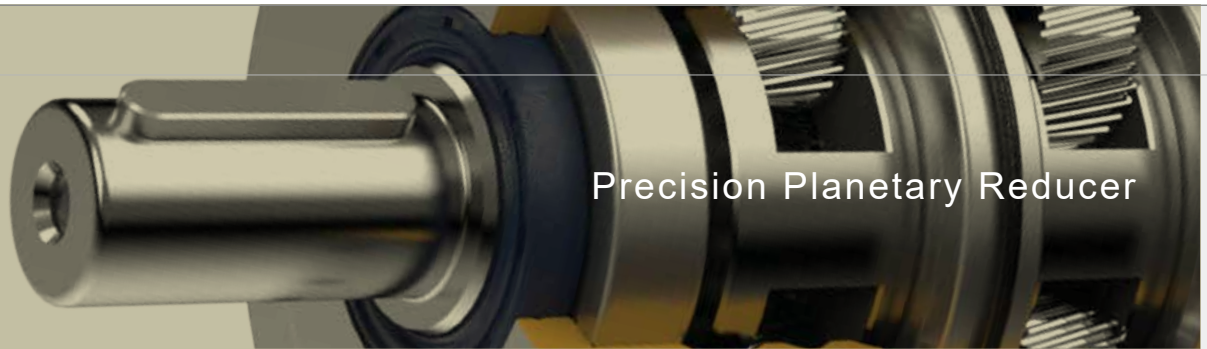
單段 1-Stage

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



unit: mm

Model Code	50	60	70		80		90		120		155		160	
A	A1	44	52	62		70		80		108		140		145
	A2	M4xP0.7	M5xP0.8	M5xP0.8		M6xP1.0		M6xP1.0		M8xP1.25		M10xP1.5		M12xP1.75
	A3	12	14	16		20		22		32		40		40
	A4	35	40	52		60		68		90		120		130
	A5	6	6	5	3.5	6	7	9	7	9	9 · 23.5	10 · 20	10	10
	A6	M4xP0.7	M4xP0.7	M5xP0.8		M6xP1.0		M8xP1.25		M12xP1.75		M12xP1.75		M12xP1.75
	A7	4	5	5		6		6		10		12		12
	A8	13.5	16	18		22.5		24.5		35		43		43
B	B1	51	60	70		80		90		122		155		160
	B2	25.5	34	36		40		46		70		88		88
	B3	15	25	20		28		30		50		65		65
	B4	20	30	28		36		36		58		78		78
	B5	4	3	6.5		3		8		9		8		8
	B6	68.5	72	81		92		95.5		128		180		180
	B7	90.5	94	104		123.5		127		173		242.5		242.5
	B8	116	128	140		163.5		173		243		330.5		330.5
C	C1	46 · 63	46 · 63	70	90	70	90 · 100 · 145	70	90 · 100 · 145	90 · 100 · 145	145 · 165	165 · 200	165 · 200	
	C2	M4 · M5	M4 · M5	M4 · M5	M5 · M6	M4 · M5	M6 · M8	M4 · M5	M6 · M8	M6 · M8	M8 · M10	M10 · M12	M8 · M10 · M12	
	C3	8 · 11	8 · 11	11	14	19	14	19 · 22 · 24	14	19 · 22 · 24	19 · 22 · 24	28 · 32	35 · 38	35 · 38
	C4	26	26	27	32	42	36	53	36	51 · 65.5	51 · 65.5	67 · 77	81.5	81.5
	C5	30 · 40	30 · 40	50	70	50	70 · 80 · 110	50	70 · 80 · 110	70 · 80 · 110	110 · 130	114.3 · 130	114.3 · 130	
	C6	M4xP0.7	M4xP0.7	M4xP0.7	M5xP0.8	M5xP0.8	M6xP1.0	M5xP0.8	M6xP1.0	M6xP1.0	M8xP1.25	M8xP1.25	M8xP1.25	
	C7	46 · 55	46 · 55	60	80	60	92 · 110 · 130	60	92 · 110 · 130	92 · 110 · 130	130 · 150	150 · 180	150 · 180	
	C8	59	59	65	70	80	77	97	77	97	102.5	123.5	168	168
	C9	84.5	89	100	105	115	117	137	122	142	163.5	184.5	248	248



規格 Parameter	代號	單位 Unit	速比 Ratio	50	60	70	80	90	120	155	160
額定輸出扭矩 Rated Output Torque (Nominal output torque)	T_{2N}	Nm	3	17	28	54	112	146	301	553	625
			4	15	38	48	110	144	269	491	555
			5	14	40	45	108	140	278	510	618
			6	17	28	54	112	146	301	553	625
			7	13	35	41	105	128	258	473	573
			8	15	38	48	110	144	269	491	555
			9	17	28	54	112	146	301	553	625
			10	14	40	45	108	140	278	510	618
			15	14	40	45	108	140	278	510	618
			20	14	40	45	108	140	278	510	618
			25	14	40	45	108	140	278	510	618
			30	12	25	40	100	123	246	452	549
			35	13	35	41	105	128	258	473	573
			40	12	25	40	100	123	246	452	549
50	12	25	40	100	123	246	452	549			
最大加速扭矩 Max. Acceleration Torque	T_{2B}	Nm	3 ~ 50	1.8 倍額定輸出力矩 1.8 Times of Rated Output Torque							
最大輸出扭矩 Max. Output Torque 急停扭矩 Emergency Stop Torque	T_{2NOT}	Nm	3 ~ 50	3 倍額定輸出力矩 3 Times of Rated Output Torque							
額定輸入轉速 Rated Input Speed	n_{1N}	rpm	3 ~ 50	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
最大輸入轉速 Max. Input Speed	n_{1B}	rpm	3 ~ 50	6,000	6,000	6,000	6,000	6,000	6,000	5,000	5,000
背隙 Backlash		arcmin	3 ~ 50	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10
扭轉剛性 Torsional Rigidity		Nm/arcmin	3 ~ 50	3	4	5	12	14	27	49	60
容許徑向力 Max. Radial Force	F_{2rB}	N	3 ~ 50	670	1,030	1,760	2,350	2,920	6,100	8,830	9,200
容許軸向力 Max. Axial Force	F_{2aB}	N	3 ~ 50	335	515	880	1,175	1,460	3,050	4,415	4,600
使用壽命 Service Life	L_H	hr	3 ~ 50	S5 周期運轉 : >30,000 (S1 連續運轉 : >15,000 hrs) S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
效率 Efficiency	η	%	3 ~ 50	≥ 94%							
使用溫度 Operating Temperature		°C	3 ~ 50	- 25° C ~ + 90° C							
潤滑 Lubrication			3 ~ 50	全合成潤滑油脂 Synthetic Grease							
防護等級 Protection Class			3 ~ 50	IP65							
安裝方向 Mounting Position			3 ~ 50	任意方向 Any							
噪音值 Noise Level		dB	3 ~ 50	≤ 65	≤ 66	≤ 68	≤ 70	≤ 71	≤ 72	≤ 74	≤ 74
重量 Weight ±2%		Kg	3 ~ 50	1.0	1.3	1.9	3	3.6	8.6	22	23

■ 轉動慣量 Mass Moments of Inertia (kg.cm²)

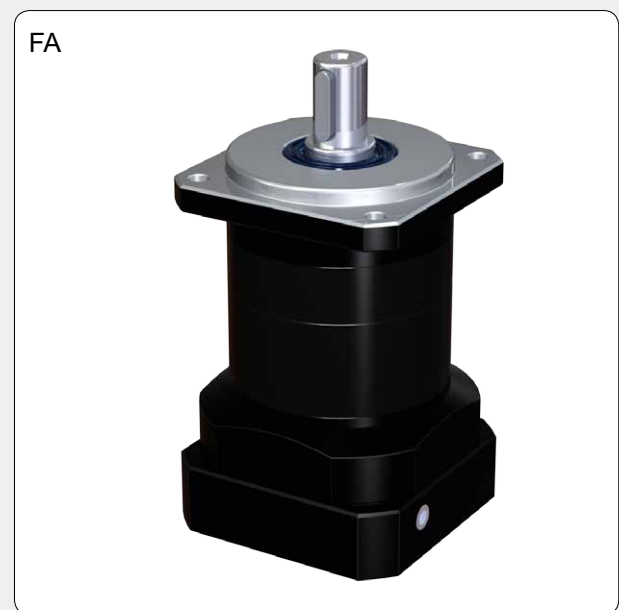
Ratio	50	60	70	80	90	120	155	160
3~50	0.09	0.11	0.83	1.19	1.37	5.49	20.32	25.76



Indication of Model Numbers

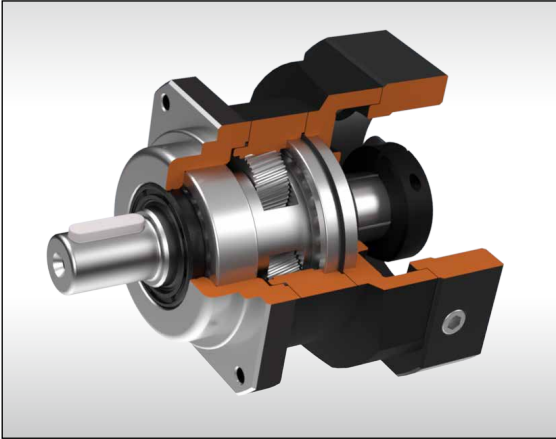
機種型號表示

FA	80	10			MOTOR
減速機型 Type	型號 Model	速比 Ratio	出力軸鍵槽 Output Shaft	入力軸鍵槽 Input Shaft	馬達型號 Motor Type
FA	50 70 80 90 100 120 142 180	單段 1-Stage 3, 4, 5, 7, 10 雙段 2-Stage 15, 20, 25, 30, 35, 40, 50, 70, 100	<input type="checkbox"/> 標準品，有鍵槽 Standard (Keyway) <input type="checkbox"/> N: 實心軸，無鍵槽 Solid Output Shaft (No Keyway)	<input type="checkbox"/> 無鍵槽 No Keyway <input type="checkbox"/> K: 有鍵槽 Keyway (142#~180#)	



Features of FA Series

FA 系列產品特點



螺旋齒輪設計及高精度齒輪加工

減速機構採用螺旋齒輪設計，齒形嚙合率為一般正齒輪的二倍以上，具有運轉平順、低噪音、高輸出扭矩和低背隙的特性。

材料採用高級鎳鉻鉬合金鋼 (SNM220)，切削加工後，經滲碳熱處理至硬度 57~60HRC，再進行齒面研磨，確保齒輪精度 DIN6 級以內。

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 (SNM220), precision achined and carburized to hardness 57-60 HRC. Precision teeth grinding sure gear accuracy reaches DIN6 class.

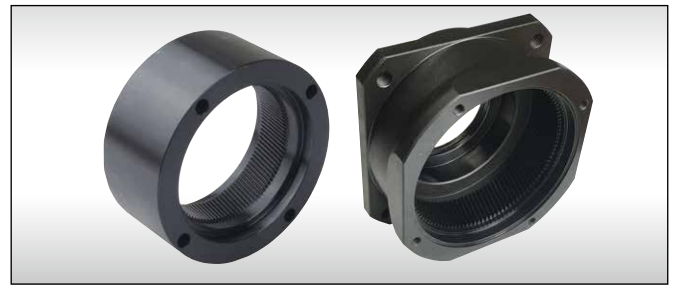


一體式行星臂架

行星臂架與輸出軸採一體式的結構設計，以確保提高扭轉剛性及精確度。

Integrated Planetary Arm Bracket

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



一體式齒輪箱本體

齒輪箱和內環齒輪採一體式的設計。提高結構剛性及輸出扭矩。

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.



滿針滾針軸承設計

行星齒輪的傳動介面採用不含保持器之滿針滾針軸承，增加接觸面積以提高結構剛性及使用壽命。

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.



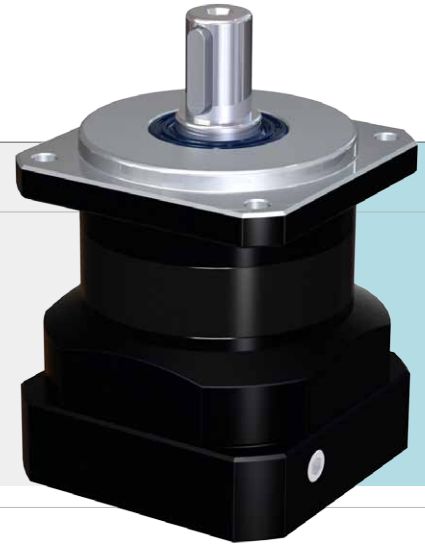
筒夾式連結機構

輸入端與馬達的連結採用筒夾式的鎖緊機構，並經動平衡分析，以確保在高輸入轉速下結合介面的同心度和平衡度，及零背隙的動力傳遞。

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.

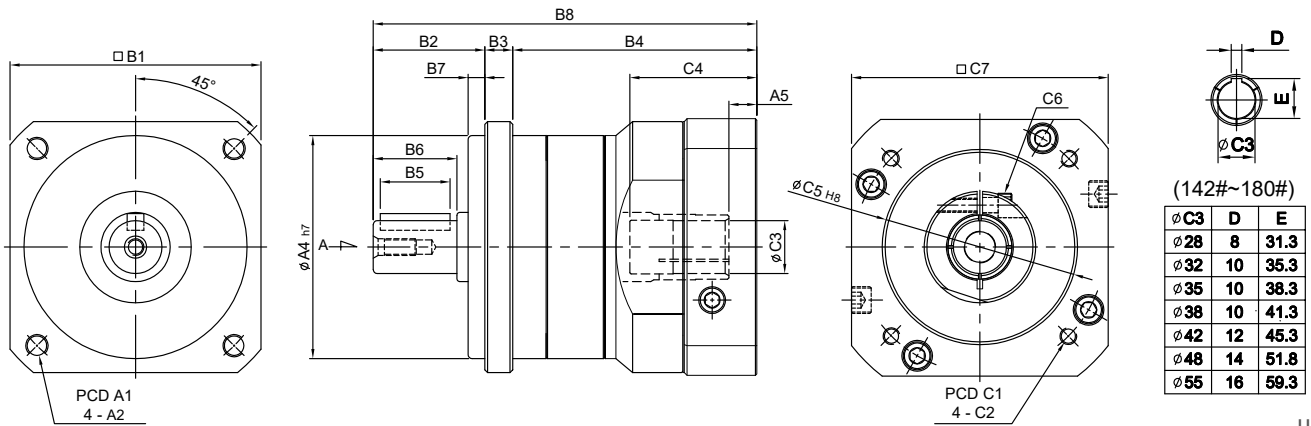
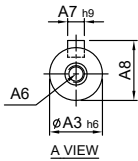
FABGEAR Planetary Reducers



MODEL : FA

單段 1-Stage

RATIO : 3, 4, 5, 7, 10

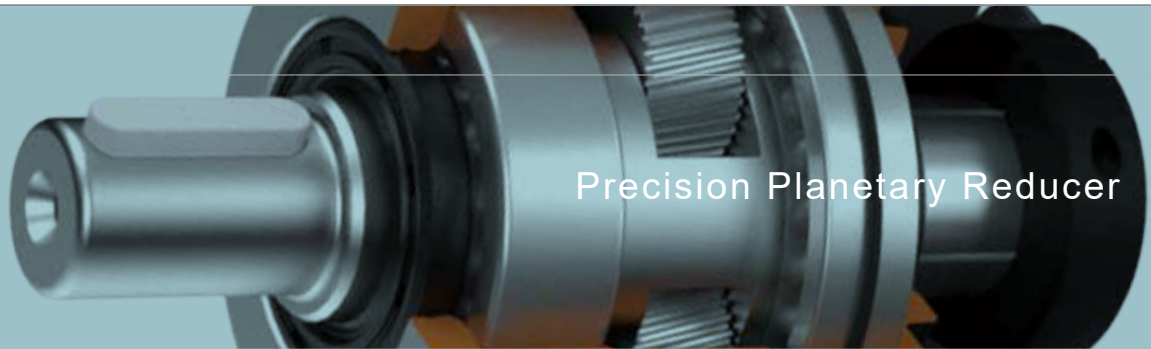


(142#~180#)

∅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	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 · 22.5	10	10	11.5
	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	M14 x P2.0 deep 32
	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	180	
	B2	32	36	50	40	61	72	106	
	B3	6	7	11	10	13	10	16	
	B4	58.5	72/80	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	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	16 · 19	16 · 19	19 · 22 · 24	22 · 24 · 28 · 32	28 · 32 · 35 · 38	35 · 38 · 42 · 48 · 55
	C4	32	33.5 · 41.5	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



規格 Parameter	代號	單位 Unit	速比 Ratio	50	70	80	90	100	120	142	180
額定輸出扭矩 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 ~ 10	1.8 倍額定輸出力矩 1.8 Times of Rated Output Torque							
最大輸出扭矩 Max. Output Torque 急停扭矩 Emergency Stop Torque	T_{2NOT}	Nm	3 ~ 10	3 倍額定輸出力矩 3 Times of Rated Output Torque							
額定輸入轉速 Rated Input Speed	n_{1N}	rpm	3 ~ 10	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
最大輸入轉速 Max. Input Speed	n_{1B}	rpm	3 ~ 10	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000
背隙 Backlash		arcmin	3 ~ 10	≤ 8	≤ 8	≤ 8	≤ 8	≤ 8	≤ 8	≤ 8	≤ 8
扭轉剛性 Torsional Rigidity		Nm/arcmin	3 ~ 10	3	5	12	12	14	23	60	140
容許徑向力 Max. Radial Force	F_{2rB}	N	3 ~ 10	350	800	1,200	1,200	3,200	5,220	8,800	14,800
容許軸向力 Max. Axial Force	F_{2aB}	N	3 ~ 10	180	400	600	600	1,600	2,600	4,400	7,400
使用壽命 Service Life	L_H	hr	3 ~ 10	S5 周期運轉 : >30,000 (S1 連續運轉 : >15,000 hrs) S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
效率 Efficiency	η	%	3 ~ 10	≥ 97%							
使用溫度 Operating Temperature		°C	3 ~ 10	- 25° C ~ + 90° C							
潤滑 Lubrication			3 ~ 10	全合成潤滑油脂 Synthetic Grease							
防護等級 Protection Class			3 ~ 10	IP65							
安裝方向 Mounting Position			3 ~ 10	任意方向 Any							
噪音值 Noise Level		dB	3 ~ 10	≤ 58	≤ 58	≤ 60	≤ 60	≤ 65	≤ 67	≤ 69	≤ 70
重量 Weight ±2%		Kg	3 ~ 10	0.64	1	1.6	1.96	3.76	7.43	16.7	33

■ 轉動慣量 Mass Moments of Inertia (kg.cm²)

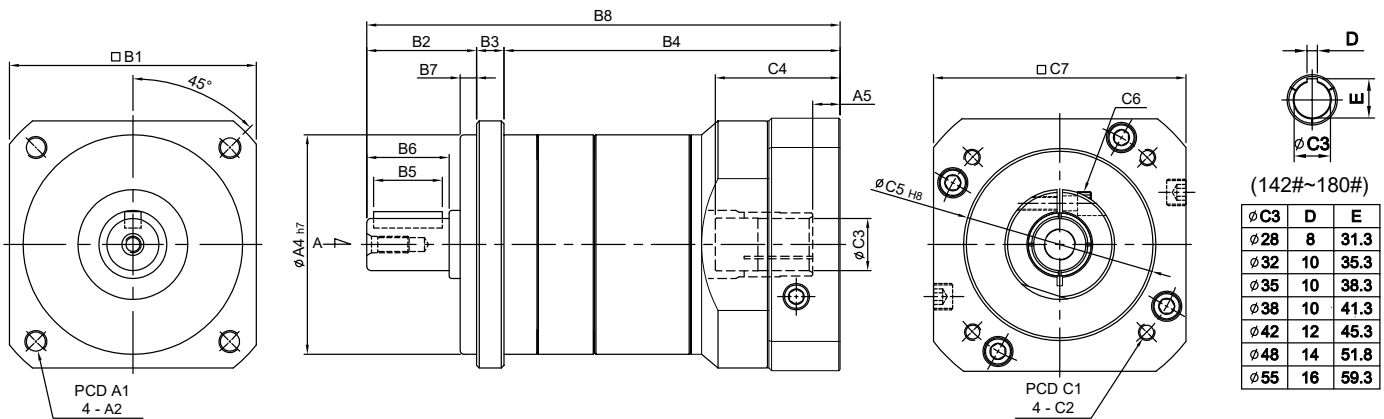
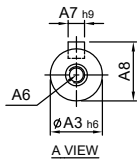
Ratio	50	70	80	90	100	120	142	180
3	0.03	0.16	0.48	0.48	0.60	3.21	9.2	29.0
4	0.03	0.14	0.38	0.38	0.45	2.64	7.5	23.7
5	0.03	0.13	0.38	0.38	0.45	2.64	7.4	23.3
7	0.03	0.13	0.38	0.38	0.45	2.62	7.1	22.5
10	0.03	0.13	0.35	0.35	0.41	2.51	7.0	22.5

FABGEAR Planetary Reducers

MODEL : FA

雙段 2-Stage

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



Model Code	unit: mm								
	50	70	80	90	100	120	142	180	
A	A1	60	76	90	100	115	135	165	215
	A2	M5 x P0.8	$\Phi 5.5$	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 · 22.5	10	10	11.5
	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	M14 x P2.0 deep 32
	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	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
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 M12 · M16
	C3	8 · 10 · 11 · 14	11 · 14 · 16 · 19	16 · 19	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

Precision Planetary Reducer

規格 Parameter	代號	單位 Unit	速比 Ratio	50	70	80	90	100	120	142	180
額定輸出扭矩 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 倍額定輸出力矩 1.8 Times of Rated Output Torque							
最大輸出扭矩 Max. Output Torque 急停扭矩 Emergency Stop Torque	T_{2NOT}	Nm	15 ~ 100	3 倍額定輸出力矩 3 Times of Rated Output Torque							
額定輸入轉速 Rated Input Speed	n_{1N}	rpm	15 ~ 100	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
最大輸入轉速 Max. Input Speed	n_{1B}	rpm	15 ~ 100	5,000	5,000	5,000	5,000	5,000	5,000	5,000	4,000
背隙 Backlash		arcmin	15 ~ 100	≤ 12	≤ 12	≤ 12	≤ 12	≤ 12	≤ 12	≤ 12	≤ 12
扭轉剛性 Torsional Rigidity		Nm/arcmin	15 ~ 100	3	5	12	12	14	23	60	140
容許徑向力 Max. Radial Force	F_{2rB}	N	15 ~ 100	350	800	1,200	1,200	3,200	5,220	8,800	14,800
容許軸向力 Max. Axial Force	F_{2aB}	N	15 ~ 100	180	400	600	600	1,600	2,600	4,400	7,400
使用壽命 Service Life	L_H	hr	15 ~ 100	S5 周期運轉 : >30,000 (S1 連續運轉 : >15,000 hrs) S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)							
效率 Efficiency	η	%	15 ~ 100	≥ 94%							
使用溫度 Operating Temperature		°C	15 ~ 100	- 25° C ~ + 90° C							
潤滑 Lubrication			15 ~ 100	全合成潤滑油脂 Synthetic Grease							
防護等級 Protection Class			15 ~ 100	IP65							
安裝方向 Mounting Position			15 ~ 100	任意方向 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

■ 轉動慣量 Mass Moments of Inertia (kg.cm²)

Ratio	50	70	80	90	100	120	142	180
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



Indication of Model Numbers

機種型號表示

FB		90	10			MOTOR
減速機型 Type	型號 Model	速比 Ratio		出力軸鍵槽 Output Shaft	入力軸鍵槽 Input Shaft	馬達型號 Motor Type
FB	50	單段 1-Stage 3, 4, 5, 7, 10		<input type="checkbox"/> 標準品，有鍵槽 Standard (Keyway)	<input type="checkbox"/> 無鍵槽 No Keyway	
FE	70	雙段 2-Stage 15, 20, 25, 30, 35, 40, 50, 70, 100		N: 實心軸，無鍵槽 Solid Output Shaft (No Keyway)	K: 有鍵槽 Keyway (145#~220#)	
	90					
	120					
	145					
	180					
	220					

FB

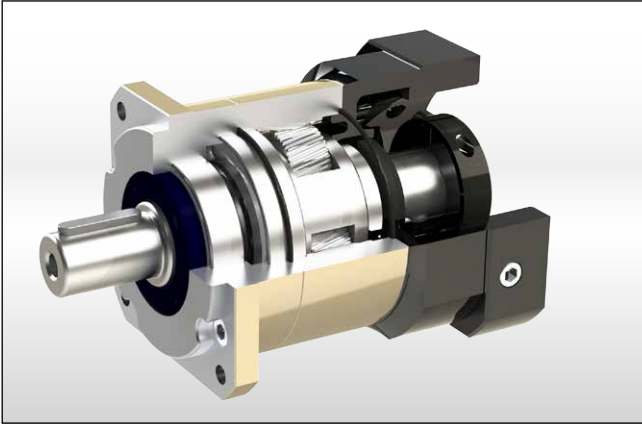


FE



Features of FB / FE Series

FB / FE 系列產品特點



螺旋齒輪設計及高精度齒輪加工

減速機構採用螺旋齒輪設計，齒形嚙合率為一般正齒輪的二倍以上，具有運轉平順、低噪音、高輸出扭矩和低背隙的特性。材料採用高級鎳鉻鉬合金鋼 (SNM220)，切削加工後，經滲碳熱處理至硬度 57~60HRC，再進行齒面研磨，確保齒輪精度 DIN6 級以內。

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 (SNM220), precision achined and carburized to hardness 57-60 HRC. Precision teeth grinding sure gear accuracy reaches DIN6 class.



滿針滾針軸承設計

行星齒輪的傳動介面採用不含保持器之滿針滾針軸承，增加接觸面積以提高結構剛性及使用壽命。

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.



一體式行星臂架及雙軸承加大跨距設計

行星臂架與輸出軸採一體式的結構設計，以確保提高扭轉剛性及精確度。並採用滾珠軸承大跨距配置設計，增加輸出軸之徑向負載。

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.



一體式齒輪箱本體

齒輪箱和內環齒輪採一體式的設計，經調質後加工，輸出扭矩大，齒輪精度達 DIN6 級，精密度高。

One-piece Gearbox Housing

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

FABGEAR Planetary Reducers

MODEL : FB

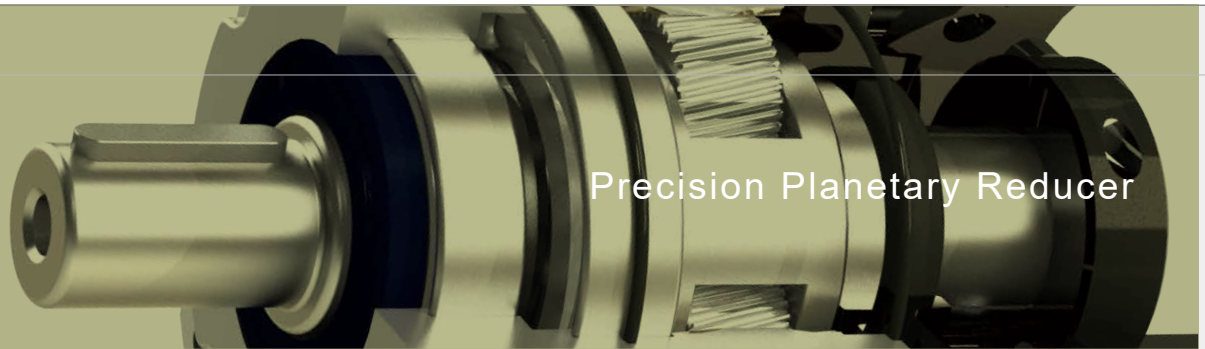
單段 1-Stage

RATIO : 3, 4, 5, 7, 10



unit: mm

Model Code	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 · 16.5
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	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	100.5	132.5 · 140.5	170.5 · 185	227.5	284	325 · 327	377 · 380
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	22 · 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 · 121
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



規格 Parameter	代號	單位 Unit	速比 Ratio	50	70	90	120	145	180	220
額定輸出扭矩 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 倍額定輸出扭矩 1.8 Times of Rated Output Torque						
最大輸出扭矩 Max. Output Torque 急停扭矩 Emergency Stop Torque	T_{2NOT}	Nm	3 ~ 10	3 倍額定輸出力矩 3 Times of Rated Output Torque						
額定輸入轉速 Rated Input Speed	n_{1N}	rpm	3 ~ 10	3,000	3,000	3,000	3,000	3,000	2,000	2,000
最大輸入轉速 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
扭轉剛性 Torsional Rigidity		Nm/arcmin	3 ~ 10	2.3	5	15	45	69	140	220
容許徑向力 Max. Radial Force	F_{2rB}	N	3 ~ 10	750	1,180	3,000	6,500	9,100	11,150	35,000
容許軸向力 Max. Axial Force	F_{2aB}	N	3 ~ 10	325	590	1,500	3,250	4,550	5,575	17,500
使用壽命 Service Life	L_H	hr	3 ~ 10	S5 周期運轉 : >30,000 (S1 連續運轉 : >15,000 hrs) S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)						
效率 Efficiency	η	%	3 ~ 10	≥ 97%						
使用溫度 Operating Temperature		°C	3 ~ 10	- 25° C ~ + 90° C						
潤滑 Lubrication			3 ~ 10	全合成潤滑油脂 Synthetic Grease						
防護等級 Protection Class			3 ~ 10	IP65						
安裝方向 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

■ 轉動慣量 Mass Moments of Inertia (kg.cm²)

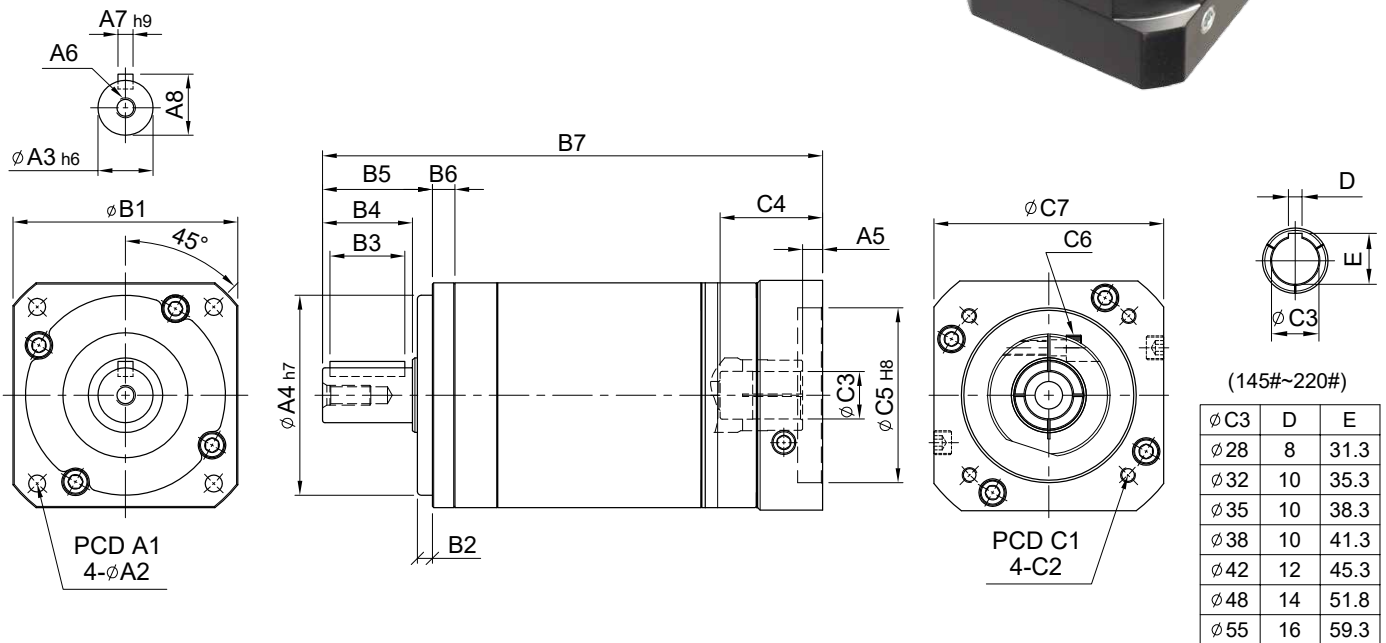
Ratio	50	70	90	120	145	180	220
3	0.04	0.14	0.61	3.25	8.75	24.63	50.67
4	0.04	0.13	0.48	2.74	7.16	20.12	46.21
5	0.04	0.11	0.47	2.74	6.84	19.80	45.28
7	0.04	0.11	0.44	2.58	6.78	19.21	43.32
10	0.04	0.11	0.44	2.57	6.68	19.13	42.98

FABGEAR Planetary Reducers

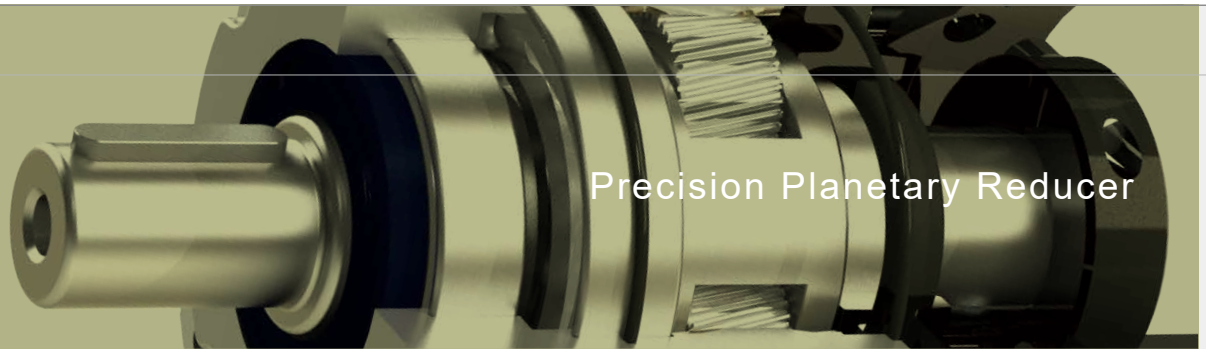
MODEL : FB

雙段 2-Stage

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



		unit: mm						
Model Code	Model	50	70	90	120	145	180	220
	A	A1	50	70	100	130	165	215
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 · 16.5
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	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 · 467
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	22 · 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 · 121
	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



規格 Parameter	代號	單位 Unit	速比 Ratio	50	70	90	120	145	180	220
額定輸出扭矩 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 倍額定輸出扭矩 1.8 Times of Rated Output Torque						
最大輸出扭矩 Max. Output Torque 急停扭矩 Emergency Stop Torque	T_{2NOT}	Nm	15 ~ 100	3 倍額定輸出力矩 3 Times of Rated Output Torque						
額定輸入轉速 Rated Input Speed	n_{1N}	rpm	15 ~ 100	3,000	3,000	3,000	3,000	3,000	2,000	2,000
最大輸入轉速 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
扭轉剛性 Torsional Rigidity		Nm/arcmin	15 ~ 100	2.3	5	15	45	69	140	220
容許徑向力 Max. Radial Force	F_{2rB}	N	15 ~ 100	750	1,180	3,000	6,500	9,100	11,150	35,000
容許軸向力 Max. Axial Force	F_{2aB}	N	15 ~ 100	325	590	1,500	3,250	4,550	5,575	17,500
使用壽命 Service Life	L_H	hr	15 ~ 100	S5 周期運轉 : >30,000 (S1 連續運轉 : >15,000 hrs) S5 Cycle Operation : >30,000 (S1 Continuous Operation : >15,000 hrs)						
效率 Efficiency	η	%	15 ~ 100	≥ 94%						
使用溫度 Operating Temperature		°C	15 ~ 100	- 25° C ~ + 90° C						
潤滑 Lubrication			15 ~ 100	全合成潤滑油脂 Synthetic Grease						
防護等級 Protection Class			15 ~ 100	IP65						
安裝方向 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	46.6	75

■ 轉動慣量 Mass Moments of Inertia (kg.cm²)

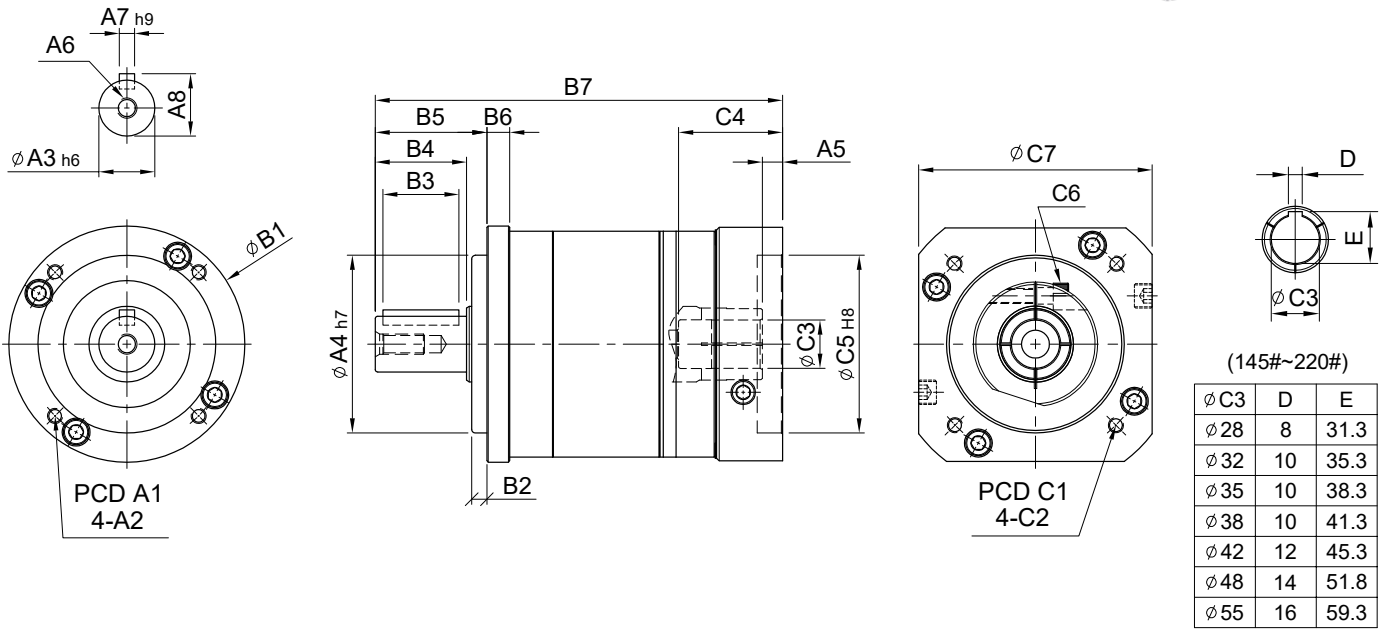
Ratio	50	70	90	120	145	180	220
15	0.04	0.14	0.61	3.25	8.75	24.63	50.67
20	0.04	0.13	0.48	2.74	7.16	20.12	46.21
25	0.04	0.11	0.47	2.74	6.84	19.80	45.28
30	0.04	0.14	0.61	3.25	8.75	24.63	50.67
35	0.04	0.11	0.44	2.58	6.78	19.21	43.32
40	0.04	0.11	0.48	2.74	7.16	20.12	46.21
50	0.04	0.11	0.47	2.74	6.84	19.80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

FABGEAR Planetary Reducers

MODEL : FE

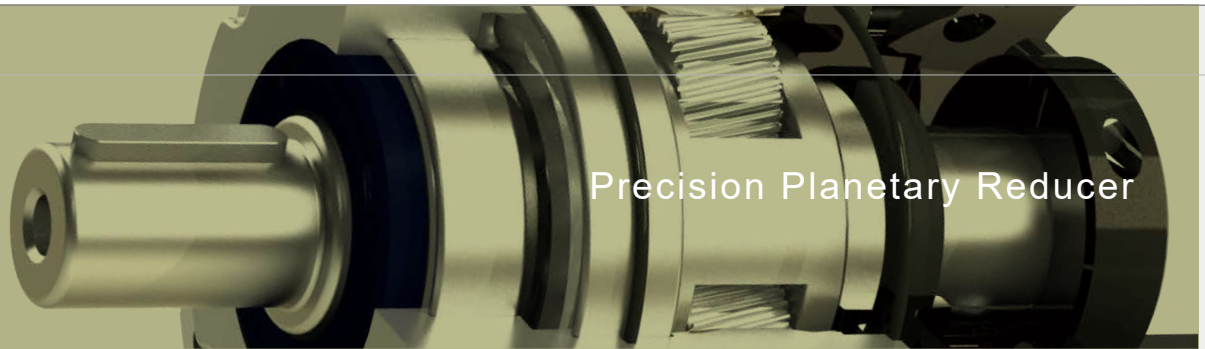
單段 1-Stage

RATIO : 3, 4, 5, 7, 10



unit: mm

Model Code	50	70	90	120	145	180	220	
A	A1	42	60	80	105	130	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 · 16.5
	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	φ50	φ70	φ93	φ122	φ148	φ205	φ242
	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	377 · 380
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 · 16
	C3	8 · 9 · 11	11 · 14	16 · 19 · 22 · 24	22 · 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	77 · 81.5	115 · 117	118 · 121
	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



規格 Parameter	代號	單位 Unit	速比 Ratio	50	70	90	120	145	180	220
額定輸出扭矩 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 倍額定輸出扭矩 1.8 Times of Rated Output Torque						
最大輸出扭矩 Max. Output Torque 急停扭矩 Emergency Stop Torque	T_{2NOT}	Nm	3 ~ 10	3 倍額定輸出力矩 3 Times of Rated Output Torque						
額定輸入轉速 Rated Input Speed	n_{1N}	rpm	3 ~ 10	3,000	3,000	3,000	3,000	3,000	2,000	2,000
最大輸入轉速 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
扭轉剛性 Torsional Rigidity		Nm/arcmin	3 ~ 10	2.3	5	15	45	69	140	220
容許徑向力 Max. Radial Force	F_{2rB}	N	3 ~ 10	750	1,180	3,000	6,500	9,100	11,150	35,000
容許軸向力 Max. Axial Force	F_{2aB}	N	3 ~ 10	325	590	1,500	3,250	4,550	5,575	17,500
使用壽命 Service Life	L_H	hr	3 ~ 10	S5 周期運轉 : >30,000 (S1 連續運轉 : >15,000 hrs) S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)						
效率 Efficiency	η	%	3 ~ 10	≥ 97%						
使用溫度 Operating Temperature		°C	3 ~ 10	- 25° C ~ + 90° C						
潤滑 Lubrication			3 ~ 10	全合成潤滑油脂 Synthetic Grease						
防護等級 Protection Class			3 ~ 10	IP65						
安裝方向 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

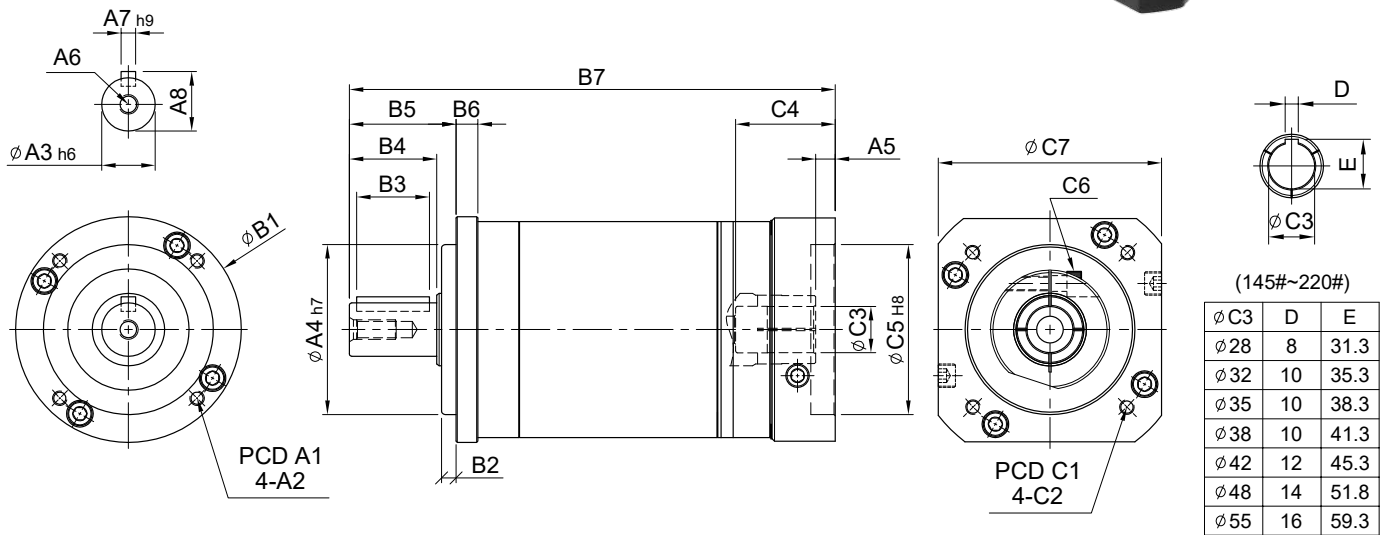
■ 轉動慣量 Mass Moments of Inertia (kg.cm²)

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

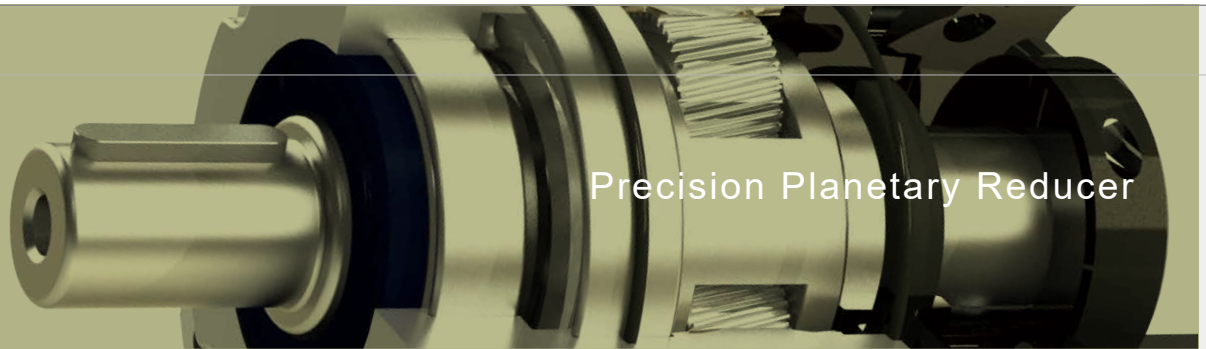
雙段 2-Stage

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



unit: mm

Model Code	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 · 16.5
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	126.7	166.5	206.5 · 221	281.5 · 291.5	340.5	394.5 · 396.5	464 · 467
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	22 · 24 · 28 · 32	28 · 32 · 35 · 38	35 · 38 · 42 · 48	42 · 48 · 55
C4	26	33.5	51 · 65.5	63 · 73	77 · 81.5	115 · 117	118 · 121
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



規格 Parameter	代號	單位 Unit	速比 Ratio	50	70	90	120	145	180	220
額定輸出扭矩 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 倍額定輸出扭矩 1.8 Times of Rated Output Torque						
最大輸出扭矩 Max. Output Torque 急停扭矩 Emergency Stop Torque	T_{2NOT}	Nm	15 ~ 100	3 倍額定輸出力矩 3 Times of Rated Output Torque						
額定輸入轉速 Rated Input Speed	n_{1N}	rpm	15 ~ 100	3,000	3,000	3,000	3,000	3,000	2,000	2,000
最大輸入轉速 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
扭轉剛性 Torsional Rigidity		Nm/arcmin	15 ~ 100	2.3	5	15	45	69	140	220
容許徑向力 Max. Radial Force	F_{2rB}	N	15 ~ 100	750	1,180	3,000	6,500	9,100	11,150	35,000
容許軸向力 Max. Axial Force	F_{2aB}	N	15 ~ 100	325	590	1,500	3,250	4,550	5,575	17,500
使用壽命 Service Life	L_H	hr	15 ~ 100	S5 周期運轉 : >30,000 (S1 連續運轉 : >15,000 hrs) S5 Cycle Operation : >30,000 (S1 Continuous Operation : >15,000 hrs)						
效率 Efficiency	η	%	15 ~ 100	≥ 94%						
使用溫度 Operating Temperature		°C	15 ~ 100	- 25° C ~ + 90° C						
潤滑 Lubrication			15 ~ 100	全合成潤滑油脂 Synthetic Grease						
防護等級 Protection Class			15 ~ 100	IP65						
安裝方向 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

■ 轉動慣量 Mass Moments of Inertia (kg.cm²)

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



Indication of Model Numbers

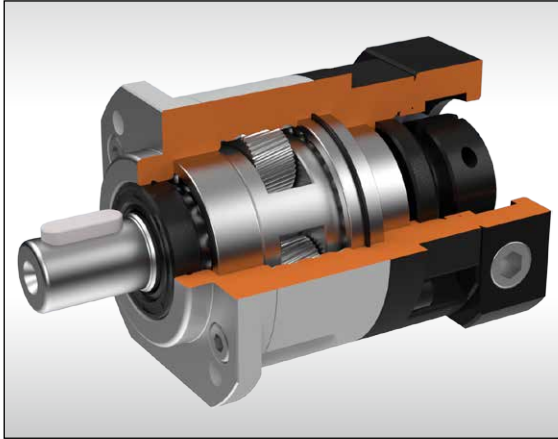
機種型號表示

FC	90	10			MOTOR
減速機型 Type	型號 Model	速比 Ratio	出力軸鍵槽 Output Shaft	入力軸鍵槽 Input Shaft	馬達型號 Motor Type
FC	50	單段 1-Stage 3, 4, 5, 7, 10	<input type="checkbox"/> 標準品，有鍵槽 Standard (Keyway)	<input type="checkbox"/> 無鍵槽 No Keyway	
FCL	70				
FN	90	雙段 2-Stage 15, 20, 25, 30, 35, 40, 50, 70, 100	N: 實心軸，無鍵槽 Solid Output Shaft (No Keyway)	K: 有鍵槽 Keyway (145#)	
FNL	120 145 (FC) 155 (FN)	單段 1-Stage (FCL) 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 30, 40, 50			



Features of FC / FN Series

FC / FN 系列產品特點



螺旋齒輪設計及高精度齒輪加工

減速機構採用螺旋齒輪設計，齒形嚙合率為一般正齒輪的二倍以上，具有運轉平順、高輸出扭矩和低背隙的特性。

材料採用高級鎳鉻鉬合金鋼 (SNCM220)，切削加工後，經滲碳熱處理至硬度 57~60HRC，再進行齒面研磨，確保齒輪精度 DIN6 級以內。

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, 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.



滿針滾針軸承設計

行星齒輪的傳動介面採用不含保持器之滿針滾針軸承，增加接觸面積以提高結構剛性及使用壽命。

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.



螺旋傘齒輪

研磨等級螺旋傘齒輪傳動效率高，傳動比穩定，圓弧重疊係數大，承載能力高，傳動平穩平順，工作可靠，結構緊湊，耐磨損，壽命長。

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.

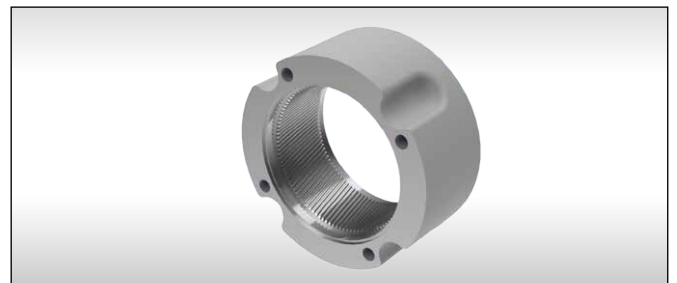


一體式行星臂架

行星臂架與輸出軸採一體式的結構設計，以確保提高扭轉剛性及精確度。

Integrated Planetary Arm Bracket

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



一體式螺旋內齒輪箱

齒輪箱和內環齒輪採一體式的設計，減速機構採用螺旋齒輪設計，齒形嚙合率為一般正齒輪的二倍以上，具有運轉平順、低噪音、高輸出扭矩和低背隙的特性。

One-piece Helical Gear Box

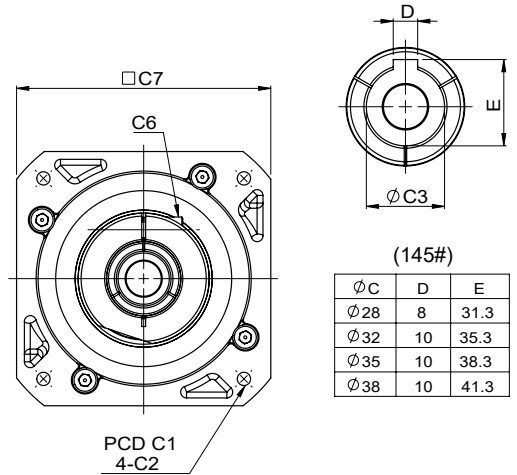
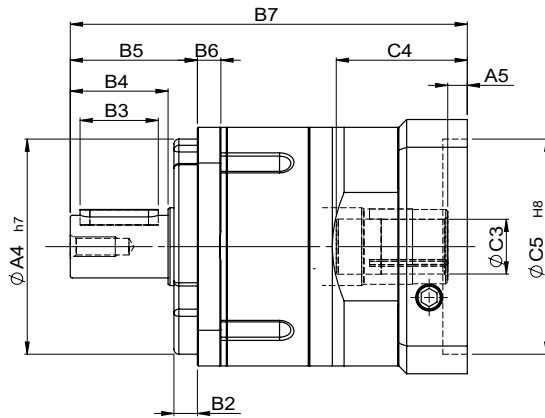
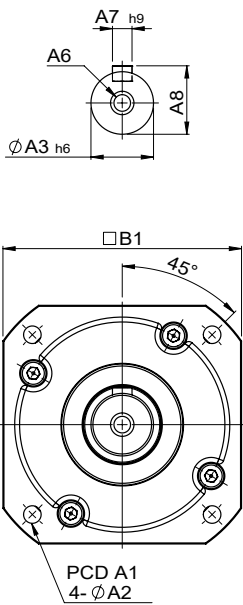
The gear box and internal ring gear are one-piece constructed. The speed reduction mechanism employs helical gears, which provides two times meshing rate of teeth when comparing with regular spur gears. In addition, it also has features of extremely smooth running, low noise, high output torque and low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

FABGEAR Planetary Reducers

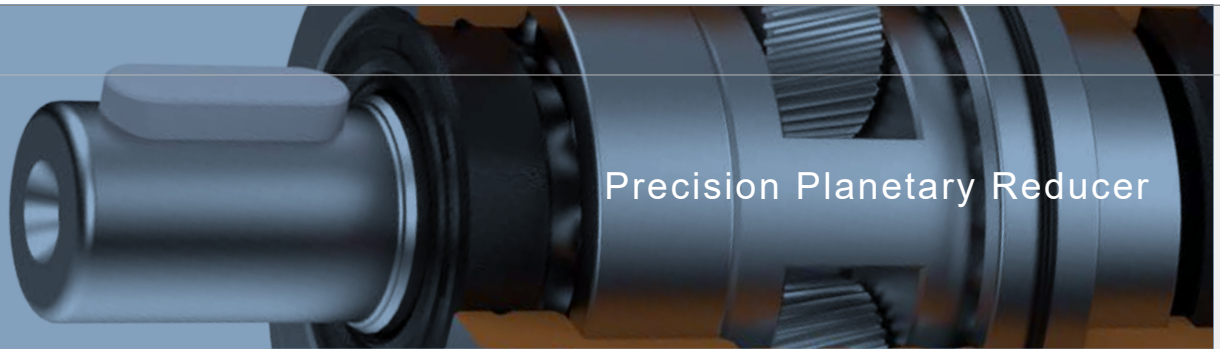
MODEL : FC

單段 1-Stage

RATIO : 3, 4, 5, 7, 10



		unit: mm				
Model Code	Model	50	70	90	120	145
	A	A1	50	70	100	130
A2		4.5	5.5	6.8	9	11
A3		13	16	22	32	40
A4		35	50	80	110	130
A5		4.5	6	9 · 23.5	10 · 20	11.5
A6		M4 x P0.7	M5 x P0.8	M8 x P1.25	M10 x P1.5	M12 x P1.75
A7		5	5	6	10	12
A8		15	18	24.5	35	43
B	B1	51	69	90	122	145
	B2	5	7	10	12	12
	B3	15	20	30	40	65
	B4	20	28	36	50	74
	B5	26	36	48	65	92
	B6	5	7	9	12	14
	B7	95	115 · 123	155.5 · 170	203 · 213	253.5
C	C1	46 · 60 · 63	70 · 75 · 90	90 · 100 · 115 · 145	115 · 145 · 165	145 · 165 · 165
	C2	M3 · M4 · M5	M4 · M5 · M6	M5 · M6 · M8	M6 · M8 · M10	M8 · M10 · M12
	C3	8 · 11	11 · 14 · 16 · 19	19 · 24	24 · 28 · 32	28 · 32 · 35 · 38
	C4	32	33.5 · 41.5	51 · 65.5	67 · 77	83
	C5	30 · 40 · 50	50 · 60 · 70	70 · 80 · 95 · 110	95 · 110 · 130	110 · 130 · 180
	C6	M4 x P0.7	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5
	C7	46 · 55	64 · 70 · 80	92 · 110 · 130	122 · 130 · 150	146 · 150 · 190



規格 Parameter	代號	單位 Unit	速比 Ratio	50	70	90	120	145
額定輸出扭矩 Rated Output Torque (Nominal output torque)	T_{2N}	Nm	3	16	50	135	276	496
			4	14	45	120	245	432
			5	15	42	118	230	423
			7	12	40	114	215	393
			10	11	37	108	204	375
最大加速扭矩 Max. Acceleration Torque	T_{2B}	Nm	3 ~ 10	1.8 倍額定輸出扭矩 1.8 Times of Rated Output Torque				
最大輸出扭矩 Max. Output Torque 急停扭矩 Emergency Stop Torque	T_{2NOT}	Nm	3 ~ 10	3 倍額定輸出力矩 3 Times of Rated Output Torque				
額定輸入轉速 Rated Input Speed	n_{1N}	rpm	3 ~ 10	3,000	3,000	3,000	3,000	3,000
最大輸入轉速 Max. Input Speed	n_{1B}	rpm	3 ~ 10	5,000	5,000	5,000	5,000	5,000
背隙 Backlash		arcmin	3 ~ 10	≤ 8	≤ 8	≤ 8	≤ 8	≤ 8
扭轉剛性 Torsional Rigidity		Nm/arcmin	3 ~ 10	2.5	5	12	26	58
容許徑向力 Max. Radial Force	F_{2rB}	N	3 ~ 10	750	1,196	2,850	6,100	8,600
容許軸向力 Max. Axial Force	F_{2aB}	N	3 ~ 10	375	598	1,425	3,050	4,300
使用壽命 Service Life	L_H	hr	3 ~ 10	S5 周期運轉 : >30,000 (S1 連續運轉 : >15,000 hrs) S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)				
效率 Efficiency	η	%	3 ~ 10	≥ 97%				
使用溫度 Operating Temperature		°C	3 ~ 10	- 25° C ~ + 90° C				
潤滑 Lubrication			3 ~ 10	全合成潤滑油脂 Synthetic Grease				
防護等級 Protection Class			3 ~ 10	IP65				
安裝方向 Mounting Position			3 ~ 10	任意方向 Any				
噪音值 Noise Level		dB	3 ~ 10	≤ 58	≤ 60	≤ 62	≤ 65	≤ 66
重量 Weight ±3%		Kg	3 ~ 10	0.53	1.12	2.6	6.2	9.83

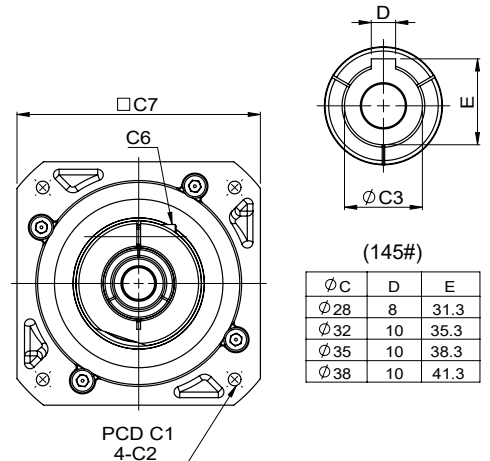
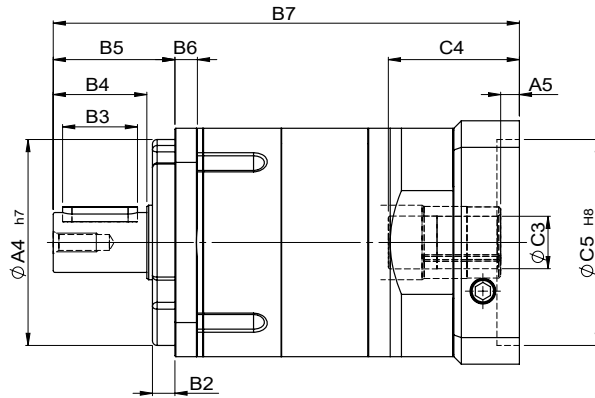
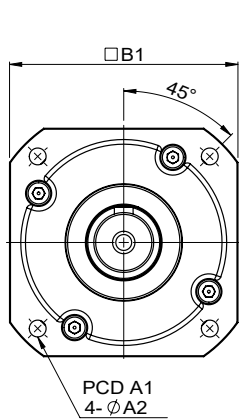
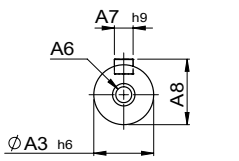
■ 轉動慣量 Mass Moments of Inertia (kg.cm²)

Ratio	50	70	90	120	145
3	0.03	0.16	0.51	3.02	8.31
4	0.03	0.14	0.42	2.55	6.80
5	0.03	0.13	0.41	2.54	6.50
7	0.03	0.13	0.35	2.40	6.44
10	0.03	0.13	0.35	2.39	6.37

MODEL : FC

雙段 2-Stage

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



unit: mm

Model Code	50	70	90	120	145	
A	A1	50	70	100	130	165
	A2	4.5	5.5	6.8	9	11
	A3	13	16	22	32	40
	A4	35	50	80	110	130
	A5	4.5	6	9·23.5	10·20	11.5
	A6	M4 x P0.7	M5 x P0.8	M8 x P1.25	M10 x P1.5	M12 x P1.75
	A7	5	5	6	10	12
	A8	15	18	24.5	35	43
B	B1	51	69	90	122	145
	B2	5	7	10	12	12
	B3	15	20	30	40	65
	B4	20	28	36	50	74
	B5	26	36	48	65	92
	B6	5	7	9	12	14
	B7	121	148.8·156.8	190.5·205	249·259	310
C	C1	46·60·63	70·75·90	90·100·115·145	115·145·165	145·165·215
	C2	M3·M4·M5	M4·M5·M6	M5·M6·M8	M6·M8·M10	M8·M10·M12
	C3	8·11	11·14·16·19	19·24	24·28·32	28·32·35·38
	C4	32	33.5·41.5	51·65.5	70·80	83
	C5	30·40·50	50·60·70	70·80·95·110	95·110·130	110·130·180
	C6	M4 x P0.7	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5
	C7	46·55	64·70·80	92·110·130	122·130·150	146·150·190



規格 Parameter	代號	單位 Unit	速比 Ratio	50	70	90	120	145
額定輸出扭矩 Rated Output Torque (Nominal output torque)	T_{2N}	Nm	15	16	50	135	276	496
			20	14	45	120	245	432
			25	15	42	118	230	423
			30	16	50	135	275	496
			35	12	40	114	215	393
			40	14	45	120	245	432
			50	15	42	118	230	423
			70	12	40	114	215	393
100	11	37	108	204	375			
最大加速扭矩 Max. Acceleration Torque	T_{2B}	Nm	15 ~ 100	1.8 倍額定輸出扭矩 1.8 Times of Rated Output Torque				
最大輸出扭矩 Max. Output Torque 急停扭矩 Emergency Stop Torque	T_{2NOT}	Nm	15 ~ 100	3 倍額定輸出力矩 3 Times of Rated Output Torque				
額定輸入轉速 Rated Input Speed	n_{1N}	rpm	15 ~ 100	3,000	3,000	3,000	3,000	3,000
最大輸入轉速 Max. Input Speed	n_{1B}	rpm	15 ~ 100	5,000	5,000	5,000	5,000	5,000
背隙 Backlash		arcmin	15 ~ 100	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10
扭轉剛性 Torsional Rigidity		Nm/arcmin	15 ~ 100	2.5	5	12	26	58
容許徑向力 Max. Radial Force	F_{2rB}	N	15 ~ 100	750	1,196	2,850	6,100	8,600
容許軸向力 Max. Axial Force	F_{2aB}	N	15 ~ 100	375	598	1,425	3,050	4,300
使用壽命 Service Life	L_H	hr	15 ~ 100	S5 周期運轉 : >30,000 (S1 連續運轉 : >15,000 hrs) S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)				
效率 Efficiency	η	%	15 ~ 100	≥ 94%				
使用溫度 Operating Temperature		°C	15 ~ 100	- 25° C ~ + 90° C				
潤滑 Lubrication			15 ~ 100	全合成潤滑油脂 Synthetic Grease				
防護等級 Protection Class			15 ~ 100	IP65				
安裝方向 Mounting Position			15 ~ 100	任意方向 Any				
噪音值 Noise Level		dB	15 ~ 100	≤ 60	≤ 62	≤ 64	≤ 66	≤ 68
重量 Weight ±3%		Kg	15 ~ 100	0.86	1.85	3.9	9.35	15.725

■ 轉動慣量 Mass Moments of Inertia (kg.cm²)

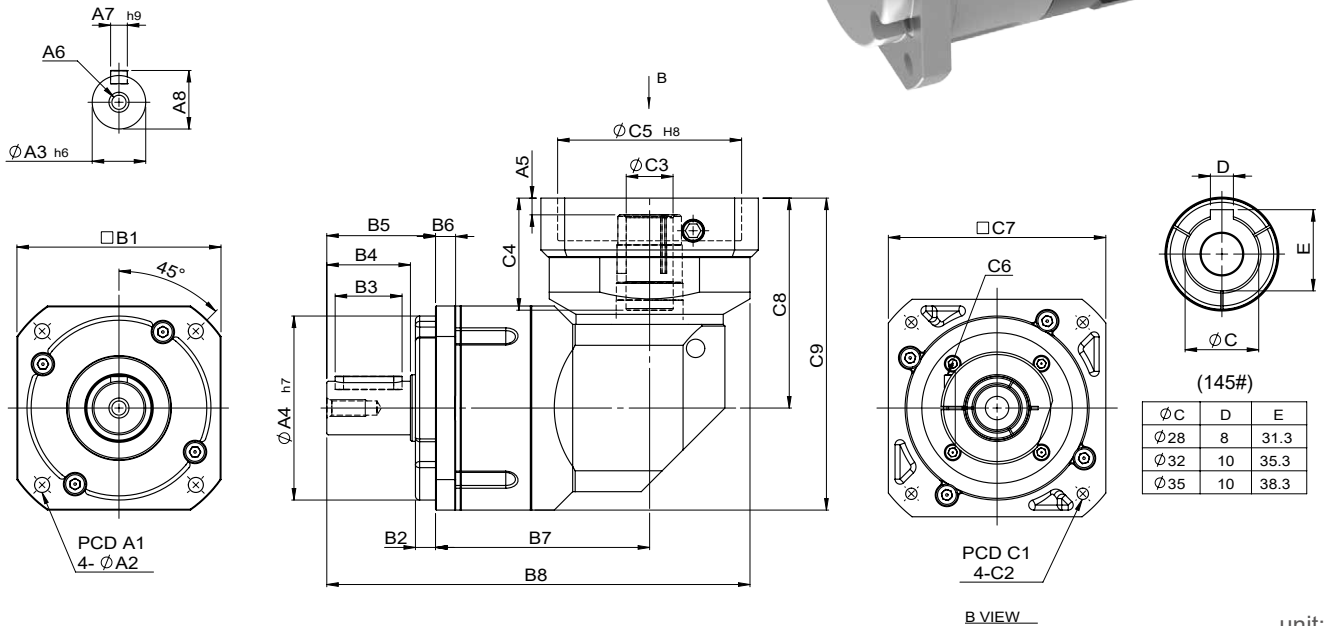
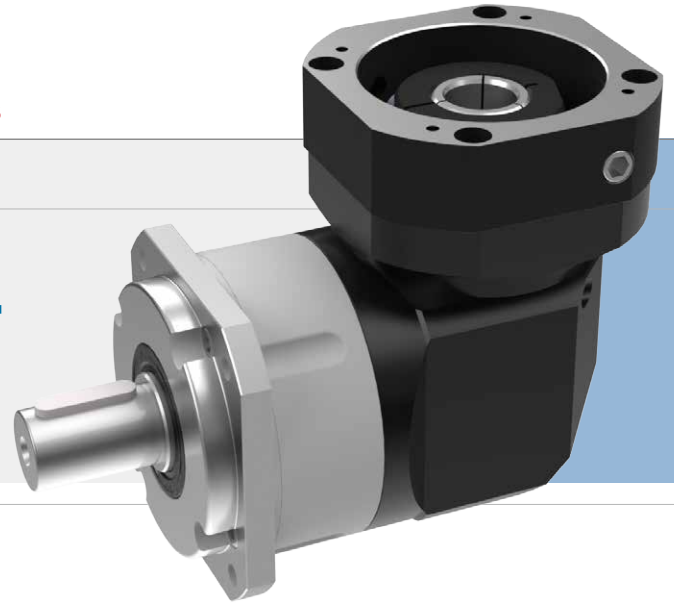
Ratio	50	70	90	120	145
15	0.03	0.13	0.41	2.54	6.50
20	0.03	0.14	0.42	2.55	6.80
25	0.03	0.13	0.41	2.54	6.50
30	0.03	0.16	0.51	3.02	8.31
35	0.03	0.13	0.35	2.40	6.44
40	0.03	0.14	0.42	2.55	6.80
50	0.03	0.13	0.41	2.54	6.50
70	0.03	0.13	0.35	2.40	6.44
100	0.03	0.13	0.35	2.39	6.37

FABGEAR Planetary Reducers

MODEL : FCL

單段 1-Stage

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



(145#)

∅C	D	E
∅28	8	31.3
∅32	10	35.3
∅35	10	38.3

B VIEW

unit: mm

Model Code	50	70	90	120	145	
A	A1	50	70	100	165	
	A2	4.5	5.5	6.8	9	11
	A3	13	16	22	32	40
	A4	35	50	80	110	130
	A5	6	6	9	10	11.5
	A6	M4 x P0.7	M5 x P0.8	M8 x P1.25	M10 x P1.5	M12 x P1.75
	A7	5	5	6	10	12
	A8	15	18	24.5	35	43
B	B1	51	69	90	122	145
	B2	5	7	10	12	12
	B3	15	20	30	40	65
	B4	20	28	36	50	74
	B5	26	36	48	65	92
	B6	5	7	9	12	14
	B7	63.5	77	95.5	128	151.5
	B8	111.5	144	188.5	253	314.5
C	C1	46 · 60 · 63	70 · 75 · 90	90 · 100 · 115 · 145	115 · 145 · 165	145 · 165 · 215
	C2	M3 · M4 · M5	M4 · M5 · M6	M5 · M6 · M8	M6 · M8 · M10	M8 · M10 · M12
	C3	8 · 11	14 · 19	19 · 24	24 · 28 · 32	28 · 32 · 35
	C4	26	42	53	67	81.5
	C5	30 · 40 · 50	50 · 60 · 70	70 · 80 · 95 · 110	95 · 110 · 130	110 · 130 · 180
	C6	M4 x P0.7	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5
	C7	46 · 55	64 · 70 · 80	92 · 110 · 130	122 · 130 · 150	146 · 150 · 190
	C8	59	83.5	97	125.5	165
	C9	84.5	118.5	142	186.5	237.5



Precision Planetary Reducer

規格 Parameter	代號	單位 Unit	速比 Ratio	50	70	90	120	145
額定輸出扭矩 Rated Output Torque (Nominal output torque)	T_{2N}	Nm	3	16	50	135	276	496
			4	14	45	120	245	432
			5	15	42	118	230	423
			6	16	50	135	276	496
			7	12	40	114	215	393
			8	14	45	120	245	432
			9	16	50	135	276	496
			10	15	42	118	230	423
			15	15	42	118	230	423
			20	15	42	118	230	423
			30	11	37	108	204	375
			40	11	37	108	204	375
50	11	37	108	204	375			
最大加速扭矩 Max. Acceleration Torque	T_{2B}	Nm	3 ~ 50	1.8 倍額定輸出扭矩 1.8 Times of Rated Output Torque				
最大輸出扭矩 Max. Output Torque 急停扭矩 Emergency Stop Torque	T_{2NOT}	Nm	3 ~ 50	3 倍額定輸出力矩 3 Times of Rated Output Torque				
額定輸入轉速 Rated Input Speed	n_{1N}	rpm	3 ~ 50	3,000	3,000	3,000	3,000	3,000
最大輸入轉速 Max. Input Speed	n_{1B}	rpm	3 ~ 50	5,000	5,000	5,000	5,000	5,000
背隙 Backlash		arcmin	3 ~ 50	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10
扭轉剛性 Torsional Rigidity		Nm/arcmin	3 ~ 50	2.5	5	12	26	58
容許徑向力 Max. Radial Force	F_{2rB}	N	3 ~ 50	750	1,196	2,650	6,100	8,600
容許軸向力 Max. Axial Force	F_{2aB}	N	3 ~ 50	375	598	1,425	3,050	4,300
使用壽命 Service Life	L_H	hr	3 ~ 50	S5 周期運轉 : >30,000 (S1 連續運轉 : >15,000 hrs) S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)				
效率 Efficiency	η	%	3 ~ 50	≥ 94%				
使用溫度 Operating Temperature		°C	3 ~ 50	- 25° C ~ + 90° C				
潤滑 Lubrication			3 ~ 50	全合成潤滑油脂 Synthetic Grease				
防護等級 Protection Class			3 ~ 50	IP65				
安裝方向 Mounting Position			3 ~ 50	任意方向 Any				
噪音值 Noise Level		dB	3 ~ 50	≤ 68	≤ 70	≤ 72	≤ 74	≤ 76
重量 Weight ±3%		Kg	3 ~ 50	0.87	1.86	3.7	9.45	15.3

■ 轉動慣量 Mass Moments of Inertia (kg.cm²)

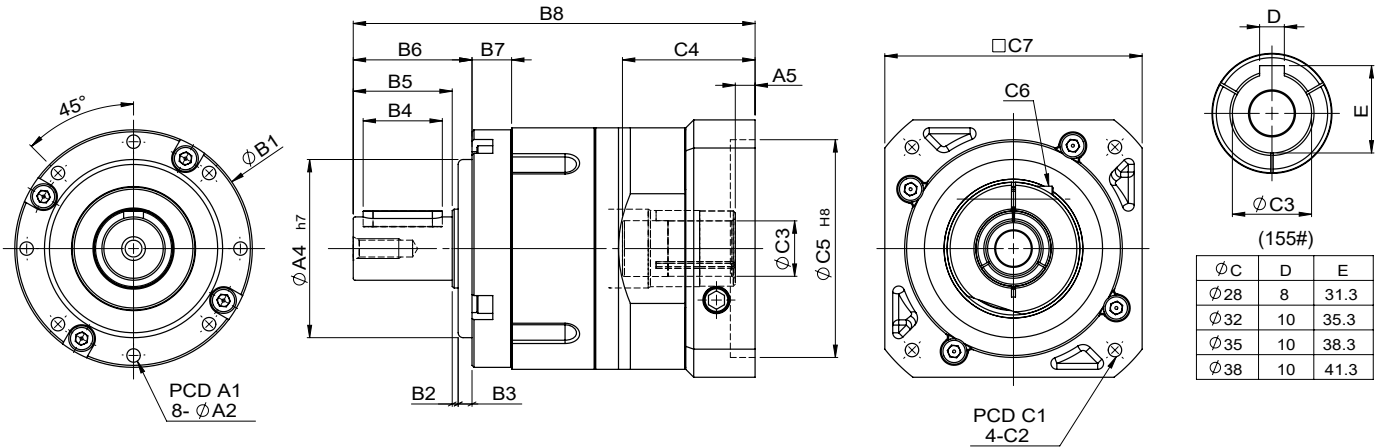
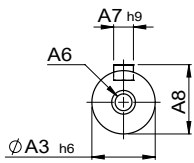
Ratio	50	70	90	120	145
3 ~ 50	0.09	0.36	1.8	4.93	12.5

FABGEAR Planetary Reducers

MODEL : FN

單段 1-Stage

RATIO : 3, 4, 5, 7, 10



unit: mm

Model Code	50	70	90	120	155	
A	A1	44	62	80	108	140
	A2	M4 x P0.7	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5
	A3	12	16	22	32	40
	A4	35	52	68	90	120
	A5	4.5	6	9 · 23.5	10 · 20	11.5
	A6	M4 x P0.7	M5 x P0.8	M8 x P1.25	M10 x P1.5	M12 x P1.75
	A7	4	5	6	10	12
	A8	13.5	18	24.5	35	43
B	B1	51	70	91	120	155
	B2	1.5	3	2	3	6
	B3	3	5	6	7	9.5
	B4	15	20	30	40	65
	B5	20	28	36	50	74
	B6	24.5	36	44	60	89.5
	B7	11	10	14.5	20	24
	B8	96.5	115 · 123	155.5 · 167	203 · 213	253.5
C	C1	46 · 60 · 63	70 · 75 · 90	90 · 100 · 115 · 145	115 · 145 · 165	145 · 165 · 215
	C2	M3 · M4 · M5	M4 · M5 · M6	M5 · M6 · M8	M6 · M8 · M10	M8 · M10 · M12
	C3	8 · 11	11 · 14 · 16 · 19	19 · 24	24 · 28 · 32	28 · 32 · 35 · 38
	C4	32	33.5 · 41.5	51 · 65.5	67 · 77	83
	C5	30 · 40 · 50	50 · 60 · 70	70 · 80 · 95 · 110	95 · 110 · 130	110 · 130 · 180
	C6	M4 x P0.7	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5
	C7	46 · 55	64 · 70 · 80	92 · 110 · 130	122 · 130 · 150	146 · 150 · 190



規格 Parameter	代號	單位 Unit	速比 Ratio	50	70	90	120	155
額定輸出扭矩 Rated Output Torque (Nominal output torque)	T_{2N}	Nm	3	16	50	135	276	496
			4	14	45	120	245	432
			5	15	42	118	230	423
			7	12	40	114	215	393
			10	11	37	108	204	375
最大加速扭矩 Max. Acceleration Torque	T_{2B}	Nm	3 ~ 10	1.8 倍額定輸出扭矩 1.8 Times of Rated Output Torque				
最大輸出扭矩 Max. Output Torque 急停扭矩 Emergency Stop Torque	T_{2NOT}	Nm	3 ~ 10	3 倍額定輸出力矩 3 Times of Rated Output Torque				
額定輸入轉速 Rated Input Speed	n_{1N}	rpm	3 ~ 10	3,000	3,000	3,000	3,000	3,000
最大輸入轉速 Max. Input Speed	n_{1B}	rpm	3 ~ 10	5,000	5,000	5,000	5,000	5,000
背隙 Backlash		arcmin	3 ~ 10	≤ 8	≤ 8	≤ 8	≤ 8	≤ 8
扭轉剛性 Torsional Rigidity		Nm/arcmin	3 ~ 10	2.5	5	12	26	58
容許徑向力 Max. Radial Force	F_{2rB}	N	3 ~ 10	750	1,196	2,850	6,100	8,600
容許軸向力 Max. Axial Force	F_{2aB}	N	3 ~ 10	375	598	1,425	3,050	4,300
使用壽命 Service Life	L_H	hr	3 ~ 10	S5 周期運轉 : >30,000 (S1 連續運轉 : >15,000 hrs) S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)				
效率 Efficiency	η	%	3 ~ 10	≥ 97%				
使用溫度 Operating Temperature		°C	3 ~ 10	- 25° C ~ + 90° C				
潤滑 Lubrication			3 ~ 10	全合成潤滑油脂 Synthetic Grease				
防護等級 Protection Class			3 ~ 10	IP65				
安裝方向 Mounting Position			3 ~ 10	任意方向 Any				
噪音值 Noise Level		dB	3 ~ 10	≤ 58	≤ 60	≤ 62	≤ 65	≤ 66
重量 Weight ±3%		Kg	3 ~ 10	0.53	1.12	2.6	6.2	9.83

■ 轉動慣量 Mass Moments of Inertia (kg.cm²)

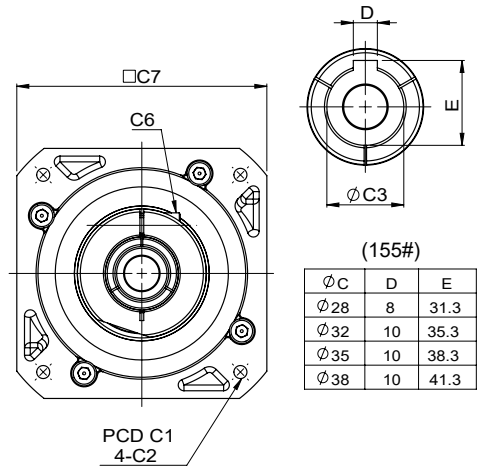
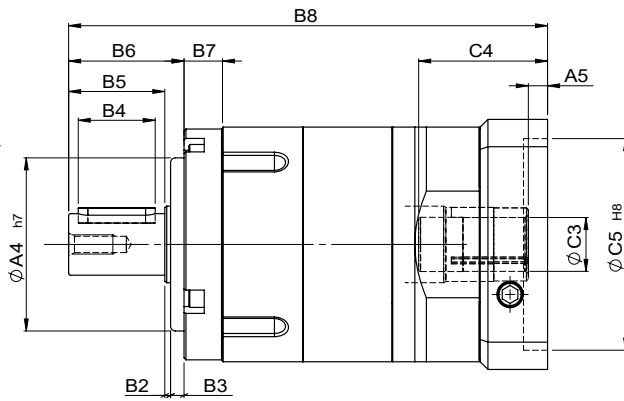
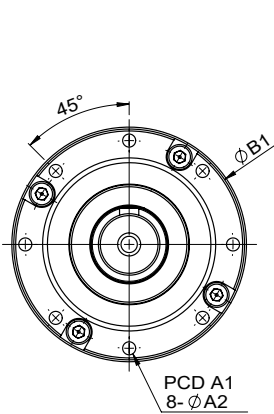
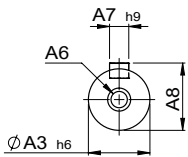
Ratio	50	70	90	120	155
3	0.03	0.16	0.51	3.02	8.31
4	0.03	0.14	0.42	2.55	6.80
5	0.03	0.13	0.41	2.54	6.50
7	0.03	0.13	0.35	2.40	6.44
10	0.03	0.13	0.35	2.39	6.37

FABGEAR Planetary Reducers

MODEL : FN

雙段 2-Stage

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



PCD C1
4-C2

unit: mm

Model Code	50	70	90	120	155	
A	A1	44	62	80	108	140
	A2	M4 x P0.7	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5
	A3	12	16	22	32	40
	A4	35	52	68	90	120
	A5	4.5	6	9 · 23.5	10 · 20	11.5
	A6	M4 x P0.7	M5 x P0.8	M8 x P1.25	M10 x P1.5	M12 x P1.75
	A7	4	5	6	10	12
	A8	13.5	18	24.5	35	43
B	B1	51	70	91	120	155
	B2	1.5	3	2	3	6
	B3	3	5	6	7	9.5
	B4	15	20	30	40	65
	B5	20	28	36	50	74
	B6	24.5	36	44	60	89.5
	B7	11	10	14.5	20	24
	B8	122.5	148.8 · 156.8	190.5 · 205	249 · 259	310
C	C1	46 · 60 · 63	70 · 75 · 90	90 · 100 · 115 · 145	115 · 145 · 165	145 · 165 · 215
	C2	M3 · M4 · M5	M4 · M5 · M6	M5 · M6 · M8	M6 · M8 · M10	M8 · M10 · M12
	C3	8 · 11	11 · 14 · 16 · 19	19 · 24	24 · 28 · 32	28 · 32 · 35 · 38
	C4	32	33.5 · 41.5	51 · 65.5	67 · 77	83
	C5	30 · 40 · 50	50 · 60 · 70	70 · 80 · 95 · 110	95 · 110 · 130	110 · 130 · 180
	C6	M4 x P0.7	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5
	C7	46 · 55	64 · 70 · 80	92 · 110 · 130	122 · 130 · 150	146 · 150 · 190

Precision Planetary Reducer

規格 Parameter	代號	單位 Unit	速比 Ratio	50	70	90	120	155
額定輸出扭矩 Rated Output Torque (Nominal output torque)	T_{2N}	Nm	15	16	50	135	276	496
			20	14	45	120	245	432
			25	15	42	118	230	423
			30	16	50	135	275	496
			35	12	40	114	215	393
			40	14	45	120	245	432
			50	15	42	118	230	423
			70	12	40	114	215	393
100	11	37	108	204	375			
最大加速扭矩 Max. Acceleration Torque	T_{2B}	Nm	15 ~ 100	1.8 倍額定輸出扭矩 1.8 Times of Rated Output Torque				
最大輸出扭矩 Max. Output Torque 急停扭矩 Emergency Stop Torque	T_{2NOT}	Nm	15 ~ 100	3 倍額定輸出力矩 3 Times of Rated Output Torque				
額定輸入轉速 Rated Input Speed	n_{1N}	rpm	15 ~ 100	3,000	3,000	3,000	3,000	3,000
最大輸入轉速 Max. Input Speed	n_{1B}	rpm	15 ~ 100	5,000	5,000	5,000	5,000	5,000
背隙 Backlash		arcmin	15 ~ 100	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10
扭轉剛性 Torsional Rigidity		Nm/arcmin	15 ~ 100	2.5	5	12	26	58
容許徑向力 Max. Radial Force	F_{2rB}	N	15 ~ 100	750	1,196	2,850	6,100	8,600
容許軸向力 Max. Axial Force	F_{2aB}	N	15 ~ 100	375	598	1,425	3,050	4,300
使用壽命 Service Life	L_H	hr	15 ~ 100	S5 周期運轉 : >30,000 (S1 連續運轉 : >15,000 hrs) S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)				
效率 Efficiency	η	%	15 ~ 100	≥ 94%				
使用溫度 Operating Temperature		°C	15 ~ 100	- 25° C ~ + 90° C				
潤滑 Lubrication			15 ~ 100	全合成潤滑油脂 Synthetic Grease				
防護等級 Protection Class			15 ~ 100	IP65				
安裝方向 Mounting Position			15 ~ 100	任意方向 Any				
噪音值 Noise Level		dB	15 ~ 100	≤ 60	≤ 62	≤ 64	≤ 66	≤ 68
重量 Weight ±3%		Kg	15 ~ 100	0.86	1.85	3.9	9.35	15.725

■ 轉動慣量 Mass Moments of Inertia (kg.cm²)

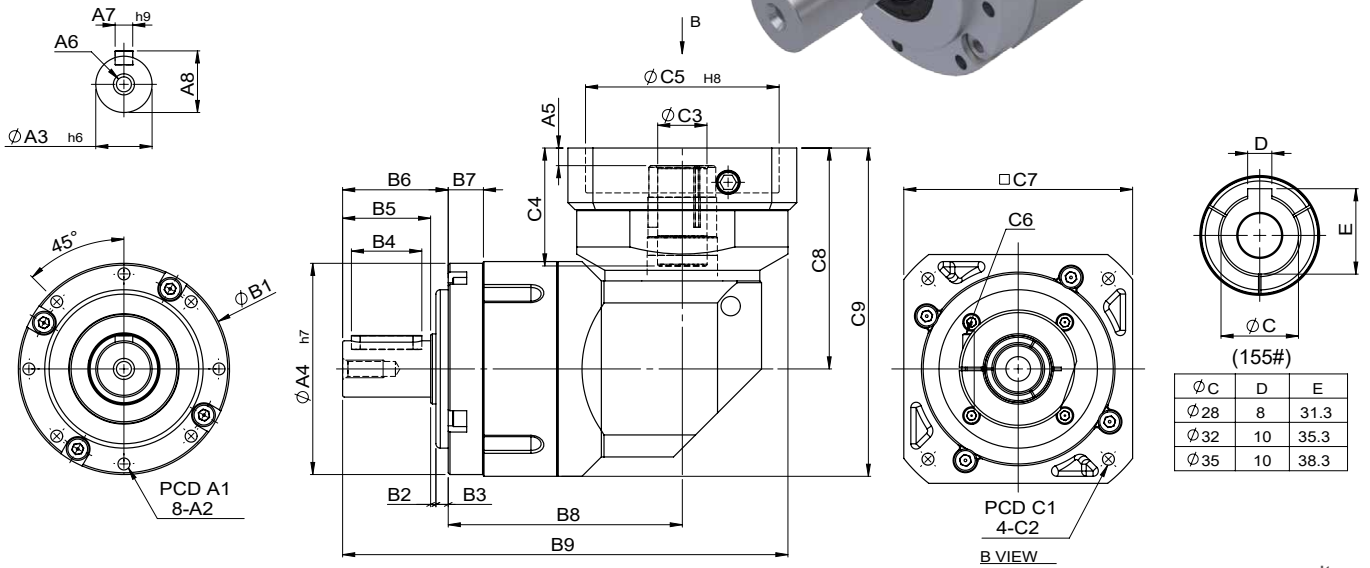
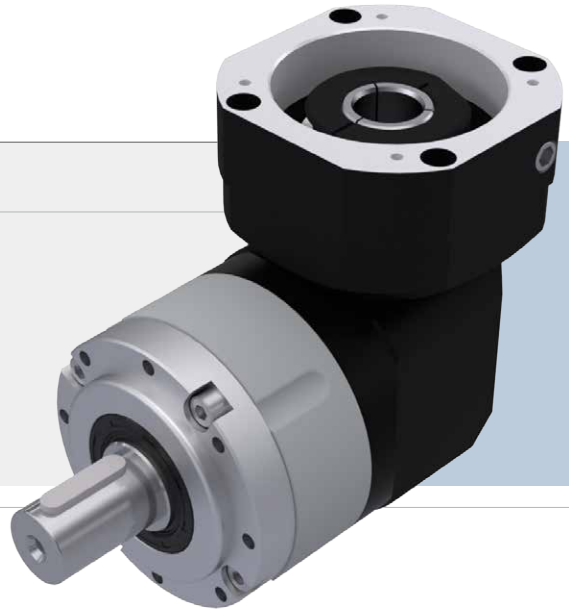
Ratio	50	70	90	120	155
15	0.03	0.13	0.41	2.54	6.50
20	0.03	0.14	0.42	2.55	6.80
25	0.03	0.13	0.41	2.54	6.50
30	0.03	0.16	0.51	3.02	8.31
35	0.03	0.13	0.35	2.40	6.44
40	0.03	0.14	0.42	2.55	6.80
50	0.03	0.13	0.41	2.54	6.50
70	0.03	0.13	0.35	2.40	6.44
100	0.03	0.13	0.35	2.39	6.37

FABGEAR Planetary Reducers

MODEL : FNL

單段 1-Stage

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



unit: mm

Model Code	50	70	90	120	155	
A	A1	44	62	80	108	140
	A2	M4 x P0.7	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5
	A3	12	16	22	32	40
	A4	35	52	68	90	120
	A5	6	6	9	10	11.5
	A6	M4 x P0.7	M5 x P0.8	M8 x P1.25	M10 x P1.5	M12 x P1.75
	A7	4	5	6	10	12
	A8	13.5	18	24.5	35	43
B	B1	51	70	91	120	155
	B2	1.5	3	2	3	6
	B3	3	5	6	7	9.5
	B4	15	20	30	40	65
	B5	20	28	36	50	74
	B6	24.5	36	44	60	89.5
	B7	11	10	14.5	20	24
	B8	66.5	77	95.5	128	151.5
	B9	113	144	188.5	253	314.5
C	C1	46 · 60 · 63	70 · 75 · 90	90 · 100 · 115 · 145	115 · 145 · 165	145 · 165 · 215
	C2	M3 · M4 · M5	M4 · M5 · M6	M5 · M6 · M8	M6 · M8 · M10	M8 · M10 · M12
	C3	8 · 11	14 · 19	19 · 24	24 · 28 · 32	28 · 32 · 35
	C4	26	42	53	67	81.5
	C5	30 · 40 · 50	50 · 60 · 70	70 · 80 · 95 · 110	95 · 110 · 130	110 · 130 · 180
	C6	M4 x P0.7	M5 x P0.8	M6 x P1.0	M8 x P1.25	M10 x P1.5
	C7	46 · 55	64 · 70 · 80	92 · 110 · 130	122 · 130 · 150	146 · 150 · 190
	C8	59	83.5	97	125.5	165
	C9	84.5	118.5	142	186.5	237.5



規格 Parameter	代號	單位 Unit	速比 Ratio	50	70	90	120	155
額定輸出扭矩 Rated Output Torque (Nominal output torque)	T_{2N}	Nm	3	16	50	135	276	496
			4	14	45	120	245	432
			5	15	42	118	230	423
			6	16	50	135	276	496
			7	12	40	114	215	393
			8	14	45	120	245	432
			9	16	50	135	276	496
			10	15	42	118	230	423
			15	15	42	118	230	423
			20	15	42	118	230	423
			30	11	37	108	204	375
			40	11	37	108	204	375
50	11	37	108	204	375			
最大加速扭矩 Max. Acceleration Torque	T_{2B}	Nm	3 ~ 50	1.8 倍額定輸出扭矩 1.8 Times of Rated Output Torque				
最大輸出扭矩 Max. Output Torque 急停扭矩 Emergency Stop Torque	T_{2NOT}	Nm	3 ~ 50	3 倍額定輸出力矩 3 Times of Rated Output Torque				
額定輸入轉速 Rated Input Speed	n_{IN}	rpm	3 ~ 50	3,000	3,000	3,000	3,000	3,000
最大輸入轉速 Max. Input Speed	n_{IB}	rpm	3 ~ 50	5,000	5,000	5,000	5,000	5,000
背隙 Backlash		arcmin	3 ~ 50	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10
扭轉剛性 Torsional Rigidity		Nm/arcmin	3 ~ 50	2.5	5	12	26	58
容許徑向力 Max. Radial Force	F_{2rB}	N	3 ~ 50	750	1,196	2,650	6,100	8,600
容許軸向力 Max. Axial Force	F_{2aB}	N	3 ~ 50	375	598	1,425	3,050	4,300
使用壽命 Service Life	L_H	hr	3 ~ 50	S5 周期運轉 : >30,000 (S1 連續運轉 : >15,000 hrs) S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)				
效率 Efficiency	η	%	3 ~ 50	≥ 94%				
使用溫度 Operating Temperature		°C	3 ~ 50	- 25° C ~ + 90° C				
潤滑 Lubrication			3 ~ 50	全合成潤滑油脂 Synthetic Grease				
防護等級 Protection Class			3 ~ 50	IP65				
安裝方向 Mounting Position			3 ~ 50	任意方向 Any				
噪音值 Noise Level		dB	3 ~ 50	≤ 68	≤ 70	≤ 72	≤ 74	≤ 76
重量 Weight ±3%		Kg	3 ~ 50	0.87	1.86	3.7	9.322	15.256

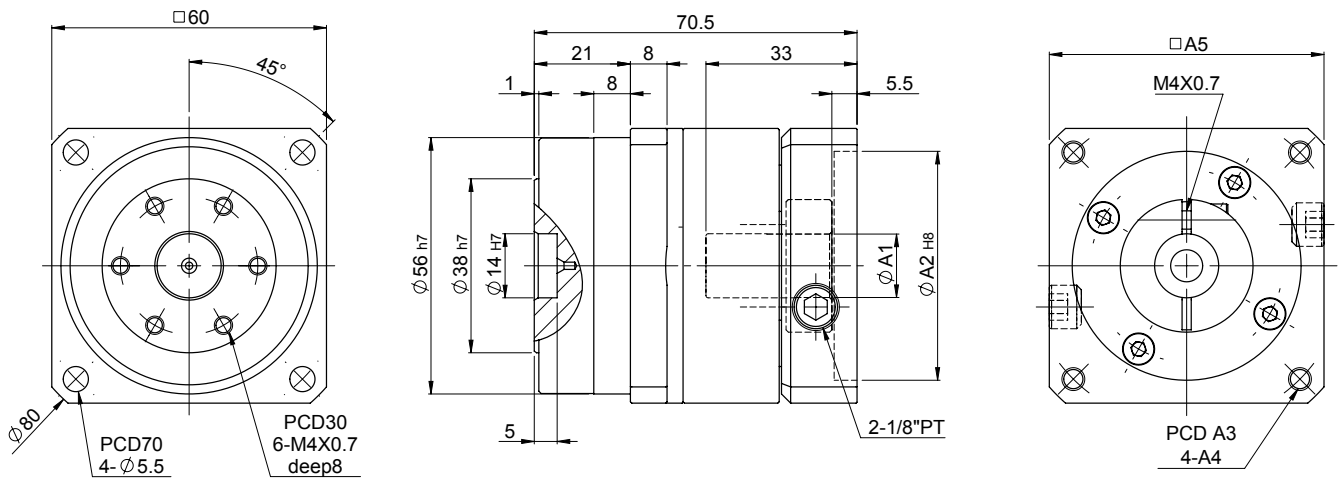
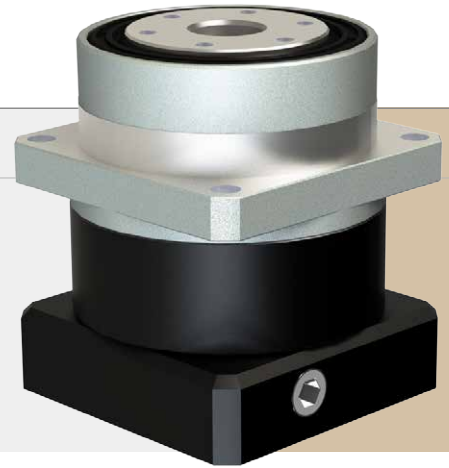
■ 轉動慣量 Mass Moments of Inertia (kg.cm²)

Ratio	50	70	90	120	155
3 ~ 50	0.09	0.36	1.8	4.93	12.5

MODEL : FD60

單段 1-Stage

RATIO : 3, 4, 5, 7, 10



入力法蘭尺寸表 Dimension of Input Flange

unit: mm

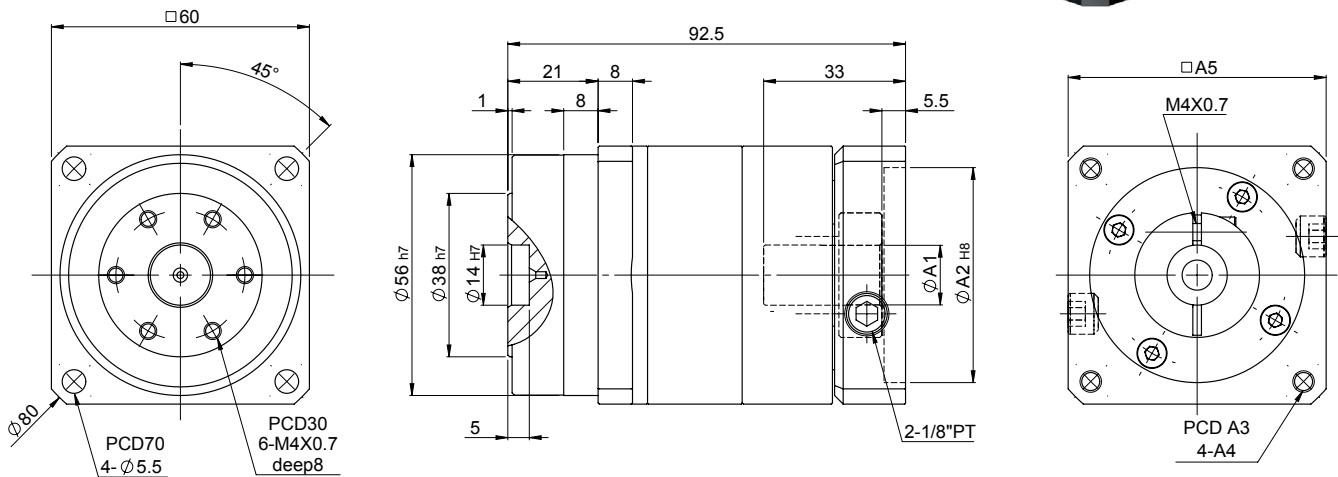
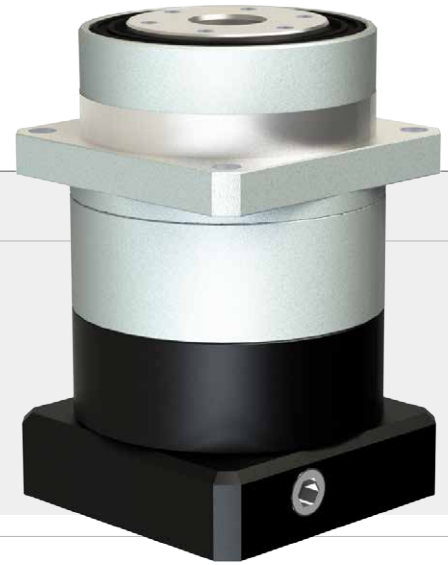
No.	ØA1	ØA2	A3	A4	A5
1	8 · 9 · 10 · 12.7 · 14	30	45	M3	46
2		30	46	M4	46
3		30	48.5	M3	55
4		40	63	M5	55
5		50	70	M5	60

規格 Parameter	代號	單位 Unit	3	4	5	7	10
額定輸出扭矩 Rated Output Torque (Nominal output torque)	T_{2N}	Nm	28	38	40	35	25
轉動慣量 Mass Moments of Inertia		kg.cm ²	0.16	0.12	0.10	0.08	0.06
最大加速扭矩 Max. Acceleration Torque	T_{2B}	Nm	1.8 倍額定輸出扭矩 1.8 Times of Rated Output Torque				
最大輸出扭矩 Max. Output Torque	T_{2NOT}	Nm	3 倍額定輸出力矩 3 Times of Rated Output Torque				
急停扭矩 Emergency Stop Torque							
額定輸入轉速 Rated Input Speed	n_{1N}	rpm	3,000				
最大輸入轉速 Max. Input Speed	n_{1B}	rpm	5,000				
扭轉剛性 Torsional Rigidity		Nm/arcmin	4				
容許徑向力 Max. Radial Force	F_{2rB}	N	460				
容許軸向力 Max. Axial Force	F_{2aB}	N	230				
使用壽命 Service Life	L_{H1}	hr	S5 周期運轉 : >30,000 (S1 連續運轉 : >15,000 hrs) S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)				
效率 Efficiency	η	%	≥ 97%				
使用溫度 Operating Temperature		°C	- 25° C ~ + 90° C				
潤滑 Lubrication			全合成潤滑油脂 Synthetic Grease				
防護等級 Protection Class			IP 65				
安裝方向 Mounting Position			任意 Any				
噪音值 Noise Level		dB	≤ 58 dB				
重量 Weight ±2%		Kg	0.88				

MODEL : FD60

雙段 2-Stage

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



入力法蘭尺寸表 Dimension of Input Flange

unit: mm

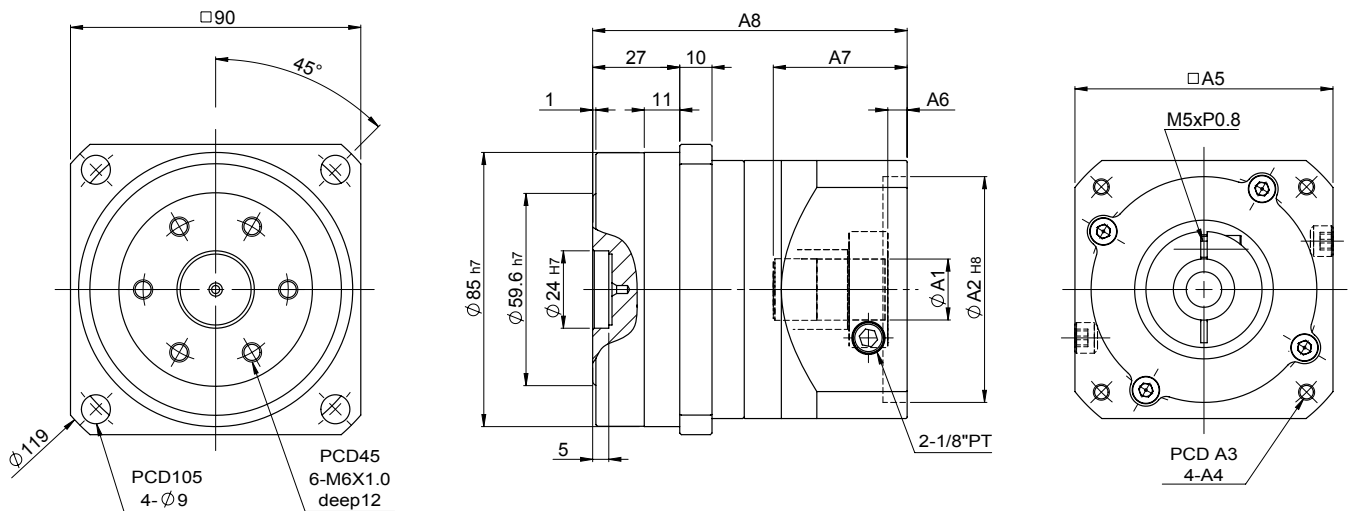
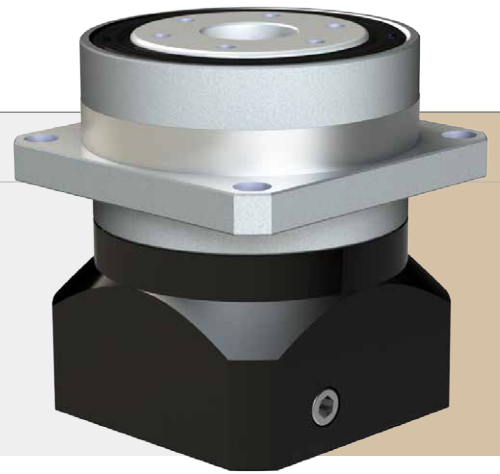
No.	ØA1	ØA2	A3	A4	A5
1	8・9・10・12.7・14	30	45	M3	46
2		30	46	M4	46
3		30	48.5	M3	55
4		40	63	M5	55
5		50	70	M5	60

規格 Parameter	代號	單位 Unit	15	20	25	30	35	40	50	70	100
額定輸出扭矩 Rated Output Torque (Nominal output torque)	T_{2N}	Nm	15	20	25	30	35	40	50	70	100
轉動慣量 Mass Moments of Inertia		kg.cm ²	50	68	22	50	63	68	72	63	45
最大加速扭矩 Max. Acceleration Torque	T_{2B}	Nm	1.8 倍額定輸出扭矩 1.8 Times of Rated Output Torque								
最大輸出扭矩 Max. Output Torque 急停扭矩 Emergency Stop Torque	T_{2NOT}	Nm	3 倍額定輸出力矩 3 Times of Rated Output Torque								
額定輸入轉速 Rated Input Speed	n_{IN}	rpm	3,000								
最大輸入轉速 Max. Input Speed	n_{IB}	rpm	5,000								
扭轉剛性 Torsional Rigidity		Nm/arcmin	4								
容許徑向力 Max. Radial Force	F_{2rB}	N	460								
容許軸向力 Max. Axial Force	F_{2aB}	N	230								
使用壽命 Service Life	L_H	hr	S5 周期運轉 : >30,000 (S1 連續運轉 : >15,000 hrs) S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)								
效率 Efficiency	η	%	$\geq 97\%$								
使用溫度 Operating Temperature		°C	- 25° C ~ + 90° C								
潤滑 Lubrication			全合成潤滑油脂 Synthetic Grease								
防護等級 Protection Class			IP 65								
安裝方向 Mounting Position			任意 Any								
噪音值 Noise Level		dB	≤ 58 dB								
重量 Weight $\pm 2\%$		Kg	1.24								

MODEL : FD90

單段 1-Stage

RATIO : 3, 4, 5, 7, 10



入力法蘭尺寸表 Dimension of Input Flange

unit: mm

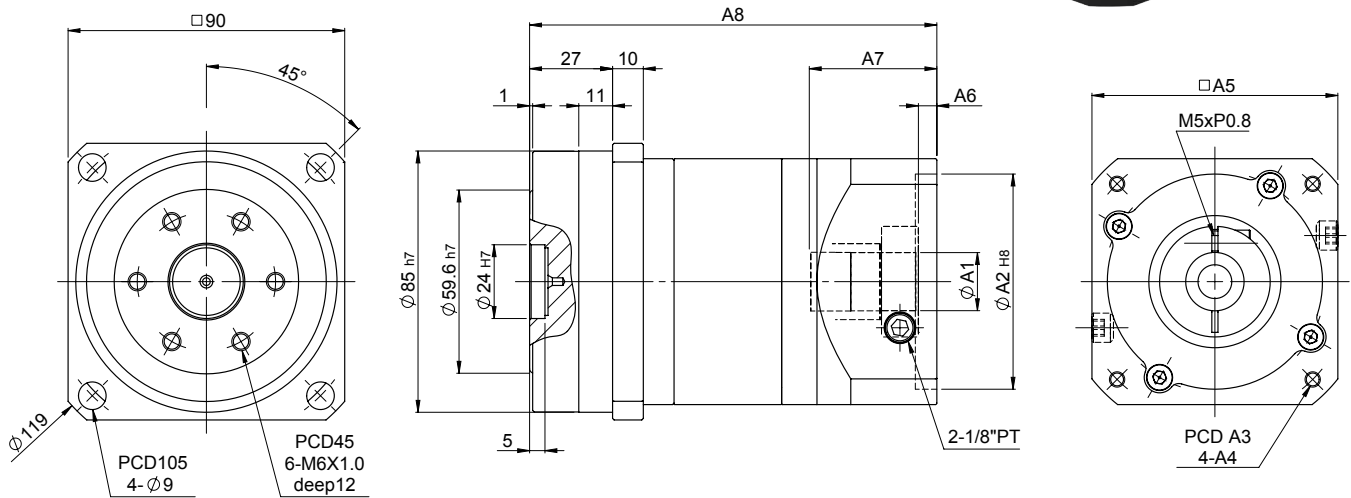
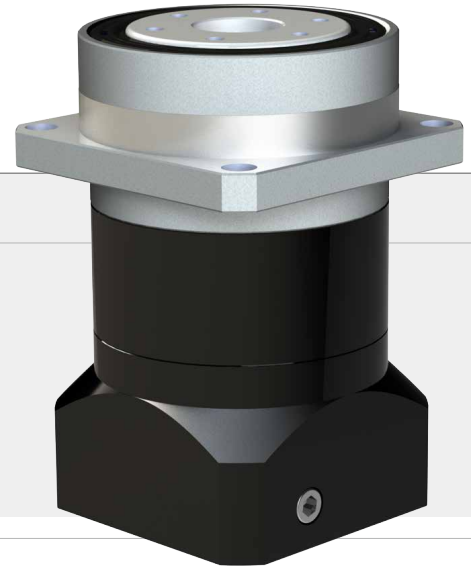
No.	ØA1	ØA2	A3	A4	A5	A6	A7	A8
1	14 · 19	50	70	M5	80	5.5	33.5	89.5
2		70	90	M6	80	6	41.5	97.5

規格 Parameter	代號	單位 Unit	3	4	5	7	10
額定輸出扭矩 Rated Output Torque (Nominal output torque)	T_{2N}	Nm	112	110	108	105	100
轉動慣量 Mass Moments of Inertia		kg.cm ²	0.48	0.45	0.40	0.35	0.32
最大加速扭矩 Max. Acceleration Torque	T_{2B}	Nm	1.8 倍額定輸出扭矩 1.8 Times of Rated Output Torque				
最大輸出扭矩 Max. Output Torque	T_{2NOT}	Nm	3 倍額定輸出力矩 3 Times of Rated Output Torque				
急停扭矩 Emergency Stop Torque							
額定輸入轉速 Rated Input Speed	n_{1N}	rpm	3,000				
最大輸入轉速 Max. Input Speed	n_{1B}	rpm	5,000				
扭轉剛性 Torsional Rigidity		Nm/arcmin	12				
容許徑向力 Max. Radial Force	F_{2rB}	N	1,400				
容許軸向力 Max. Axial Force	F_{2aB}	N	660				
使用壽命 Service Life	L_{H1}	hr	S5 周期運轉 : >30,000 (S1 連續運轉 : >15,000 hrs) S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)				
效率 Efficiency	η	%	≥ 97%				
使用溫度 Operating Temperature		°C	- 25° C ~ + 90° C				
潤滑 Lubrication			全合成潤滑油脂 Synthetic Grease				
防護等級 Protection Class			IP 65				
安裝方向 Mounting Position			任意 Any				
噪音值 Noise Level		dB	≤ 60 dB				
重量 Weight ±2%		Kg	2.3				

MODEL : FD90

雙段 2-Stage

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



入力法蘭尺寸表 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

規格 Parameter	代號	單位 Unit	15	20	25	30	35	40	50	70	100
額定輸出扭矩 Rated Output Torque (Nominal output torque)	T_{2N}	Nm	112	110	108	112	105	110	108	105	100
轉動慣量 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
最大加速扭矩 Max. Acceleration Torque	T_{2B}	Nm	1.8 倍額定輸出扭矩 1.8 Times of Rated Output Torque								
最大輸出扭矩 Max. Output Torque	T_{2NOT}	Nm	3 倍額定輸出扭矩 3 Times of Rated Output Torque								
急停扭矩 Emergency Stop Torque											
額定輸入轉速 Rated Input Speed	n_{IN}	rpm	3,000								
最大輸入轉速 Max. Input Speed	n_{IB}	rpm	5,000								
扭轉剛性 Torsional Rigidity		Nm/arcmin	12								
容許徑向力 Max. Radial Force	F_{2rB}	N	1,400								
容許軸向力 Max. Axial Force	F_{2aB}	N	660								
使用壽命 Service Life	L_H	hr	S5 周期運轉 : >30,000 (S1 連續運轉 : >15,000 hrs) S5 Cycle Operation: >30,000 (S1 Continuous Operation: >15,000 hrs)								
效率 Efficiency	η	%	≥ 95%								
使用溫度 Operating Temperature		°C	- 25° C ~ + 90° C								
潤滑 Lubrication			全合成潤滑油脂 Synthetic Grease								
防護等級 Protection Class			IP 65								
安裝方向 Mounting Position			任意 Any								
噪音值 Noise Level		dB	≤ 62 dB								
重量 Weight ±2%		Kg	3.3								