

轉角標準型行星減速機

Standard Type Right Angle Planetary Gearbox

PFR



1. 省空間

直交型減速機使用螺旋式傘齒輪，馬達的安裝可實現90度彎曲，節省了安裝空間

2. 高剛性、高扭矩

使用整體式滾珠軸承，大大提高了剛性和扭矩。

3. 連接器，軸套方式

可以安裝到馬達上。

4. 無潤滑脂泄漏

使用高粘度、不易分離的潤滑脂，有效防止潤滑脂泄漏。

5. 維護方便

在產品壽命期內無需更換潤滑脂，安裝更便捷。

1. Space-saving

The straight cross reducer uses spiral bevel gear. The installation of the motor can achieve 90 degree bending and save the installation space.

2. High rigidity & torque

The use of integral ball bearings greatly improves the rigidity and torque.

3. Connector and shaft sleeve mode

It can be installed on any motor in the world.

4. No grease leakage

The use of grease with high viscosity which is not easy to separate effectively prevents the grease leakage.

5. Convenient maintenance

No need to replace the grease in the product life period, and the installation is more convenient.

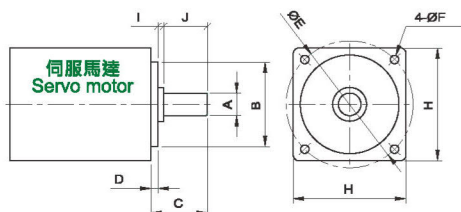
減速機的選型 Model Selection of Speed Reducers

PFR 系列 Type

PFR090	—	10	—	S1	—	P1	/	馬達
減速機型式 Reducer Model PFR040, PFR060, PFR090 PFR120, PFR160			出力軸鍵槽 Output Shaft Keyway S1: 實心軸，無鍵槽 (Solid Output Shaft No Keyway) S2: 標準品，有鍵槽 Standard (Keyway) S3: 輸出為孔 Output for holes			馬達型號 Motor Model 馬達製造商及型號 Motor Manufacturer & Model		
減速比 Ratio 單節 1-stage: 3,4,5,6,7,8,9,10 雙節 2-stage: 12,15,16,20,25,28,30,35,40,50,70,80,100 雙節 3-stage: 60,64,72,80,90,100,120,144,150,160,180,200 240,258,288,320,384,512,600,800,1000			背隙等級 Backlash Grade P0: 高精密背隙 High precision backlash P1: 精密背隙 Precision backlash P2: 標準背隙 Standard backlash					

減速器匹配电机需要确认下列尺寸：

The gearbox matching motor needs to be confirmed with following dimensions :



A	B	C	D	E	F	H	I	J

行星減速機訂購編號

減速機型 Type	型號 Model	速比 Ratio	出力軸鍵槽 Output Shaft Keyway	背隙等級 Backlash Class	馬達型號 MOTOR NO.	

PFR 減速機性能資料 Reducer Specifications

規格 Specs	單位 Unit	節數 Stage	減速比 Ratio	PFR040	PFR060	PFR090	PFR120	PFR160
額定輸出力矩 T_{2N} Rated Output Torque	Nm	1	3	14	28	113	161	323
			4	15	38	115	210	364
			5	17	40	118	210	423
			7	13	35	110	170	358
			10	12	16	56	86	293
		2	15	14	28	113	161	323
			20	15	38	120	210	364
			25	17	40	118	210	423
			30	13	28	113	210	323
			35	17	35	118	210	358
			40	12	38	115	210	364
			50	15	40	118	210	423
			70	13	35	110	170	358
			100	12	16	56	86	293
最大輸出扭矩 T_{2NOT} / Max. Output Torque	Nm	1,2	3~100	3倍額定輸出力矩/3Times of Nominal Output Torque				
額定輸入轉速 n_1 / Rated Input Speed	rpm	1,2	3~100	3000	3000	3000	3000	2500
最大輸入轉速 n_1 / Max. Input Speed	rpm	1,2	3~100	5000	5000	5000	5000	3600
精密背隙 P1 / Precision Backlash P1	arcmin	1	3~10	≤10	≤10	≤10	≤10	≤10
		2	12~100	≤12	≤12	≤12	≤12	≤12
標準背隙 P2 / Standard Backlash P2	arcmin	1	3~10	≤12	≤12	≤12	≤12	≤12
		2	12~100	≤14	≤14	≤14	≤14	≤14
扭轉剛性 / Torsional Rigidity	Nm/arcmin	1,2	3~100	3	6	12	22	50
容許徑向力 F_{2r} / Max. Radial Force	N	1,2	3~100	320	460	1300	3200	6520
容許軸向力 F_{2a} / Max. Axial Force	N	1,2	3~100	160	230	660	1600	3260
使用壽命 / Service Life	hr	1,2	3~100	20000 h				
效率 η / Efficiency	%	1	3~10	≥97%				
		2	15~100	≥94%				
重量 / Weight	kg	1	3~10	0.73	0.99	2.1	4.98	18.2
		2	15~100	1.05	1.46	3.2	6.92	24.9
使用溫度 / Operating Temperature	℃	1,2	3~100	-25℃~+90℃				
潤滑 / Lubrication		1,2	3~100	全合成潤滑油脂 Synthetic Grease				
防護等級 / Protection Class		1,2	3~100	IP65				
安裝方向 / Mounting Position		1,2	3~100	任意方向 Any Direction				
噪音值 ($n_1=3000$ rpm, 無負載) / Noise Level	dB(A)	1,2	3~100	≤62	≤63	≤65	≤67	≤68

減速機轉動慣量 Reducer Rotary Inertia

規格 Specs	單位 Unit	節數 Stage	減速比 Ratio	PFR040	PFR060	PFR090	PFR120	PFR160
轉動慣量 J_1 Moment of Inertia	kg.cm ²		3	0.03	0.16	0.61	3.25	9.21
			4	0.03	0.14	0.48	2.74	7.54
		1	5	0.03	0.13	0.47	2.71	7.42
			7	0.03	0.13	0.45	2.65	7.25
			10	0.03	0.13	0.45	2.62	7.14
		2	12~40	0.03	0.13	0.44	2.58	7.07
			50~100	0.03	0.13	0.44	2.57	7.04

1. 最大加速力矩 $T_{2B}=60\%$ of T_{2NOT} 2. 輸出轉數 100rpm 時，作用于輸出軸中心位置。

3. 三段大減速比不在上表中，有軸加長和加大設計，需要用到請告知銷售人員。

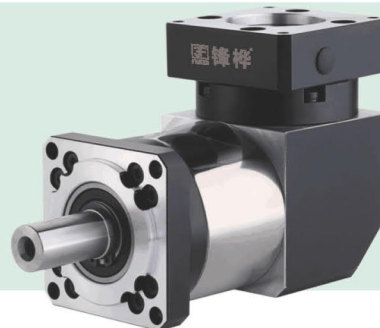
1. The Max. acceleration torque $T_{2B}=60\%$ 2. When output speed is 100rpm, acting on the output shaft center position

3. 3-stage big ratios are not in the above table. There is shaft lengthening and enlarging design. Please tell sales person if you need it.

MODEL: PFR

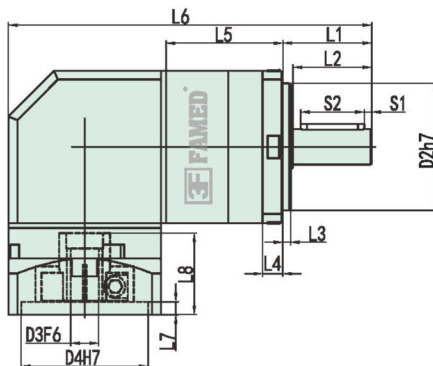
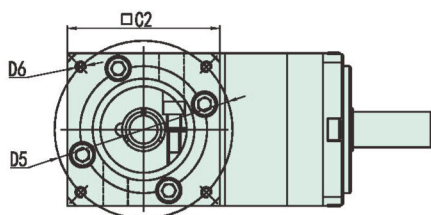
單段 1-Stage

速比 Ratio: 3, 4, 5, 6, 7, 8, 9, 10

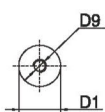
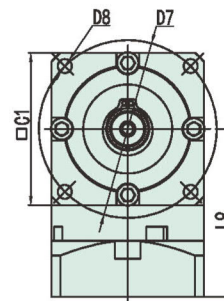


外形尺寸圖 Dimensions:

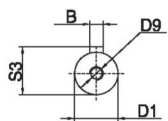
輸入端 Input



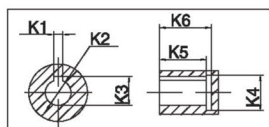
輸出端 Output



出力軸形式 S1
Output shaft type S1



出力軸形式 S2
Output shaft type S2



輸出孔形式 S3
Output hole type S3

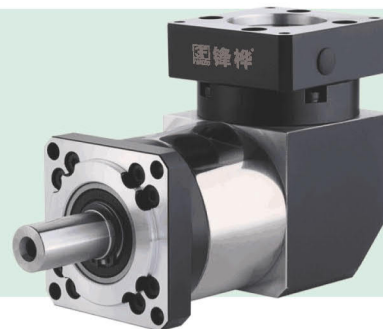
Unit:mm

尺寸 Size	PFR060-L1	PFR090-L1	PFR120-L1	PFR160-L1
D1	φ 14(16)	φ 20 (22)	φ 25 (32)	φ 40
D2	φ 50	φ 80	φ 110	φ 130
D3	φ 14 (φ 6.35-19)	φ 19 (φ 11-24)	φ 22 (φ 16-24)	φ 35 (φ 22-38)
D4	φ 50 (φ 30-70)	φ 70 (φ 50-110)	φ 110 (φ 55.5-110)	φ 114.3 (φ 110-114.3)
D5	φ 70 (φ 45-90)	φ 90 (φ 70-145)	φ 145 (φ 90-155)	φ 200 (φ 145-200)
D6	4-M4 (M3-M6)	4-M5 (M4-M8)	4-M8 (M6-M12)	4-M12 (M8-M12)
D7	φ 70	φ 100	φ 130	φ 185
D8	4-φ 5.5	4-φ 6.5	4-φ 8.5	4-φ 11
D9	M5X0.8P	M8X1.25P	M10X1.5P	M16X2P
L1	35	40	55	87
L2	31	35	49	78
L3	3	3	4	5
L4	8	12	15	20
L5	46	55	80	111
L6	143	190	273	295
L7	5(4-6)	8(5-8)	8(5-8)	5 (5-7)
L8	32(32-44)	42(42-60)	70 (59-70)	86 (62-86)
L9	66(66-88)	95.5(95.5-113.5)	130 (119-130)	165.5 (165.5-189.5)
C1	60	90	120	160
C2	60(60-90)	90(90-130)	130 (120)	175 (142)
S1	3	3	5	5
S2	25	30	40	70
S3	16	22.5	28	43
B	5	6	8	12
K1	4	6	8	10
K2	φ 11	φ 22	φ 28	φ 38
K3	12.8	24.5	31.3	41.3
K4	φ 16	φ 32	φ 38	φ 48
K5	15	20	27	35
K6	18	24	32	40

MODEL: PFR

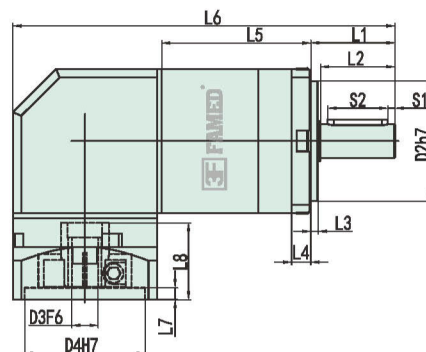
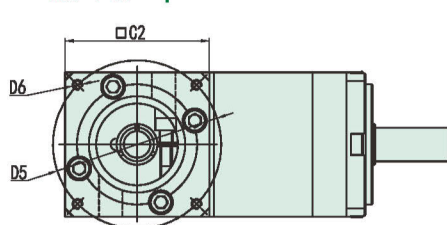
雙段 2-Stage

速比 Ratio: 12, 15, 16, 20, 25, 28, 30, 35
40, 50, 70, 80, 100

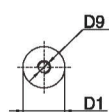
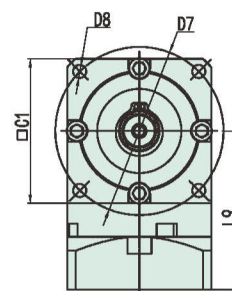


外形尺寸圖 Dimensions:

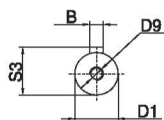
輸入端 Input



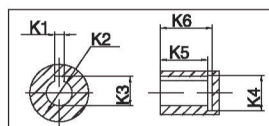
輸出端 Output



出力軸形式 S1
Output shaft type S1



出力軸形式 S2
Output shaft type S2



輸出孔形式 S3
Output hole type S3

Unit:mm

尺寸 Size	PFR060-L2	PFR090-L2	PFR120-L2	PFR160-L2
D1	φ 14(16)	φ 20 (22)	φ 25 (32)	φ 40
D2	φ 50	φ 80	φ 110	φ 130
D3	φ 14 (φ 6.35-19)	φ 19 (φ 11-24)	φ 22 (φ 16-24)	φ 35 (φ 22-38)
D4	φ 50 (φ 30-70)	φ 70 (φ 50-110)	φ 110 (φ 55.5-110)	φ 114.3 (φ 110-114.3)
D5	φ 70 (φ 45-90)	φ 90 (φ 70-145)	φ 145 (φ 90-155)	φ 200 (φ 145-200)
D6	4-M4 (M3-M6)	4-M5 (M4-M8)	4-M8 (M6-M12)	4-M12 (M8-M12)
D7	φ 70	φ 100	φ 130	φ 185
D8	4- φ 5.5	4- φ 6.5	4- φ 8.5	4- φ 11
D9	M5X0.8P	M8X1.25P	M10X1.5P	M16X2P
L1	35	40	55	87
L2	31	35	49	78
L3	3	3	4	5
L4	8	12	15	20
L5	62	78.5	110	149
L6	159	213.5	303	333
L7	5(4-6)	8(5-8)	8(5-8)	5 (5-7)
L8	32(32-44)	42(42-60)	70 (59-70)	86 (62-86)
L9	66(66-88)	95.5(95.5-113.5)	130 (119-130)	165.5 (165.5-189.5)
C1	60	90	120	160
C2	60(60-90)	90(90-130)	130 (120)	175 (142)
S1	3	3	5	5
S2	25	30	40	70
S3	16	22.5	28	43
B	5	6	8	12
K1	4	6	8	10
K2	φ 11	φ 22	φ 28	φ 38
K3	12.8	24.5	31.3	41.3
K4	φ 16	φ 32	φ 38	φ 48
K5	15	20	27	35
K6	18	24	32	40