

直角型 行星式減速機

Right-angle Planetary Gear
Reducers

產品特點

Characteristics

- ▶ 螺旋傘齒輪設計，精密研磨齒輪，齒面平滑精度高。
- ▶ 高容許輸入轉速。
- ▶ 直角齒輪箱採用高強度鋁合金設計，使其輕量化。
- ▶ Spiral bevel gear and precision grinding gears, smooth teeth surface and high accuracy.
- ▶ High input speed.
- ▶ High strength and light-weight aluminum casing.

高定位精度

High positioning accuracy

精密齒輪研磨，齒面光滑，齒形精準。齒輪箱和內環齒採整體結構設計，特殊合金鋼材，穩定性高。

High-precision gears are thoroughly ground with the characteristics of smooth teeth surface and high accuracy. Gearbox and ring gear are one-piece structured design. High-reliability special alloy steel is used.

高扭力

High torsional rigidity

高品質滾錐軸承，輸出軸能承受更大的軸向和徑向的負荷，超大扭力，應用範圍廣。

Premium taper rollers bearings are in use and output shaft sustains higher axial and radial loads. Massive application.

高起動性

High dynamics

行星式結構平衡特性及高精度，低慣性矩，配合伺服馬達具有高起動特性。

Good balance between the high accuracy and the low moments of inertia is highlighted in the planetary gear structure. High dynamics are achievable in coordination with the transmission of servo motors.

低噪音

Low noise

採用精密研磨齒輪，齒面平滑，精度高，齒輪運轉平順而噪音小。

採用德製精選人工合成潤滑油，非一般減速機使用油脂潤滑，流動性佳，齒輪能在充分油膜保護下運轉，降低噪音。

High-precision gears are in use. Smooth operation and low noise result from their smooth tooth surface and high accuracy. Carefully-chosen German synthetic oil instead of common grease is selected. Gears under full lubrication are of excellent fluidity and effectively reduce the noise.

易安裝

Easy installation

減速機聯接板及輸入軸孔尺寸採彈性設計，能與各廠牌的伺服馬達相結合。

Input bushings and changeable connecting plates are designed with the modular structure and applicable to the installation of various servo motors.

低齒背隙

Low gear backlash

精密加工和嚴格品質管制：

超精密齒背隙在一段2弧分；兩段為4弧分。

精密齒背隙在一段為3~4弧分；兩段為5~6弧分。

標準齒背隙在一段為5~6弧分；兩段為7~8弧分。

Precision process and strict quality control:

Micro backlash one stage ≤ 2 arcmin, two stage ≤ 4 arcmin

Reduced backlash one stage ≤ 4 arcmin, two stage ≤ 6 arcmin

Standard backlash one stage ≤ 6 arcmin, two stage ≤ 8 arcmin

長壽命，免保養

Long life and maintenance free

採用高級鎳鉻鋁合金鋼材，經深層的滲碳硬化處理後，再經精密齒面研磨，使得齒輪剛性大，且齒面光滑耐磨性佳，可延長使用壽命。

採用德製優質人工合成潤滑油，流動性佳，富含極壓抗壓劑，齒箱內各零件間充分得到潤滑及保護，可免換機油。採用特製高品質、耐熱、耐磨不易變質之油封，使得密封性佳。

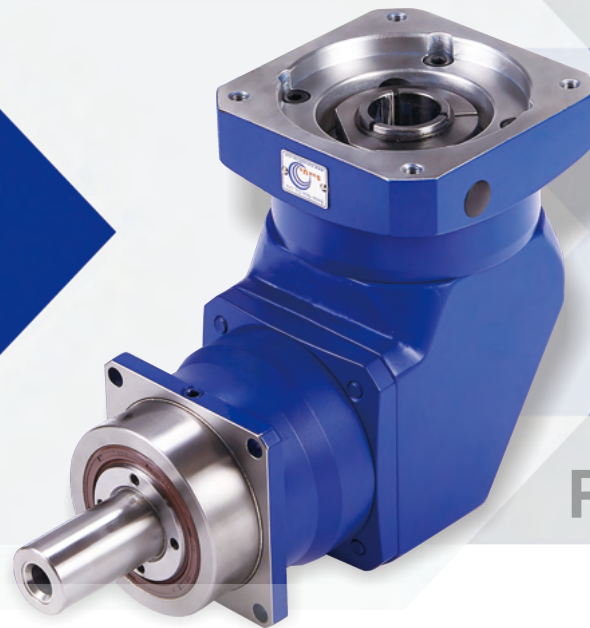
Gears are made of quality alloy of nickel, chrome, and molybdenum steel, and produced with deep carburizing and hardening treatment. Gear surface after grinding possesses better rigidity, smoothness and wear-resistance.

Premium Germany-made synthetic oil, is adopted with high circulation and anti-ultra-pressure additive.

Components are thoroughly protected and lubricated in the gearbox. No oil change is required. Stable, high-quality, heat-resistant and wear-resistant seals are in use to secure airtightness.

實心輸出軸，輸出端採用歐製雙滾錐軸承，內環齒及行星托架皆為一體結構。齒輪經深層滲碳硬化處理，再經精密齒面研磨。泛用於CNC機械之減速機

Solid output shaft is supported with double-row European-made tapered roller bearings. Ring gear and carrier are one-piece structure. Gear is treated with hardening and ground on surface. Universally applicable to CNC machine tools.



PGR

中空輸出軸設計，可搭接較少齒數的齒輪，伺服馬達可選用較小規格，獲得最小起動扭矩，達到高經濟效益。此外，也可將滾珠螺桿直接與減速機連接，獲得更加精度

Hollow output shaft is designed with the installation of fewer teeth and compatible with a smaller servo motor. Less torque is required to start operation and produce higher economical benefits. Ball screws can be directly installed with planetary gear reducers to reach higher accuracy.



HGR



HPR



PGR 技術資料 Technical Data(單段1-Stage)

規 格 Size			PGR060	PGR080	PGR100	PGR120	PGR140	PGR160	PGR180	PGR210
最大加速扭矩 $T_{2B(1)}$ Output Torque	Nm	減速比 i								
		3	25	90	202	330	440	735	1055	1750
		4/5	47	115	270	350	510	810	1300	2600
		6	40	103	250	340	445	730	1180	2150
		7	40	100	240	310	440	700	1130	1680
		8	33	91	215	285	410	650	1040	1600
		10	32	77	190	245	340	500	900	1500
		14	40	100	240	310	440	700	1130	1680
緊急停止扭矩 $T_{2Not(2)}$ Emergency Stop Torque	Nm	3	60	240	630	800	1100	1700	3000	6200
		4/5	100	310	710	900	1260	1850	3250	6480
		6	85	280	650	800	1120	1700	2880	5500
		7	85	270	625	780	1100	1600	2800	5000
		8	77	250	550	690	1025	1470	2560	4600
		10	75	200	500	650	900	1250	2220	3900
		14	85	270	625	780	1100	1600	2800	5000
		20	75	200	500	650	900	1250	2220	3900
額定輸出扭矩 T_{2N} Nominal output Torque	Nm	3	15	60	135	195	315	500	880	1200
		4/5	26	78	185	240	340	550	1100	1900
		6	23	70	155	210	320	460	845	1580
		7	23	65	125	180	315	430	820	1050
		8	18	64	120	175	293	410	755	1000
		10	15	43	115	160	220	350	650	950
		14	23	65	125	180	315	430	820	1050
		20	15	43	115	160	220	350	650	950
減速比 i		單段 1-Stage	3/4/5/6/7/8/10/14/20							
額定輸入轉速 n_{1N} Nominal Input Speed	rpm		4000	3000	3000	3000	2000	2000	1500	1500
最大輸入轉速 n_{1Max} Max. Input Speed	rpm	3~20	6000	5000	4500	4000	3500	3000	2500	2000
徑向負荷力 $F_{rMax(3)}$ Radial Load	N	3~20	2600	3800	6000	7500	9000	11500	14000	18000
軸向負荷力 $F_{aMax(3)}$ Axial Load	N	3~20	2300	3200	5400	6700	9000	11300	14000	18000
超精密背隙 Micro Backlash	arcmin	3~20	-	≤2	≤2	≤2	≤2	≤2	≤2	≤2
精密背隙 Reduced Backlash	arcmin	3~20	≤4	≤4	≤4	≤4	≤4	≤4	≤3	≤3
標準背隙 Standard Backlash	arcmin	3~20	≤6	≤6	≤6	≤6	≤6	≤6	≤5	≤5
扭轉剛性 Torsional Rigidity	Nm/ arcmin	3~20	3	8.5	23	35	50	95	150	220
滿載時使用效率 Efficiency with Full Load	%	3~20	≥97							
使用壽命 L_{h2} Service Life	h	3~20	20000							
重量 Weight	kg	3~20	3.8	6.2	11.5	18.5	24	35	50	82
噪音值 (4) Noise Level	dB		≤65	≤67		≤70			≤71	≤73
使用溫度範圍 Permissible Gear Reducer Temp	°C		- 10°C ~ + 90°C							
防護等級 Protection Class			IP 64							
潤滑油 Lubrication			人工合成潤滑油 Synthetic oil viscosity				ISO VG220			
轉動慣量 J_1 Mass Moments of Inertia	kg · cm ²	3~10	0.93	3.45	10.60	14.75	22.95	43.40	77.30	166.70
		14/20	0.77	2.90	9.15	12.30	18.10	30.60	59.10	102.40

註(1)本表適用於起動頻率1000次/小時以內，若超出時，請與本公司洽詢。

註(2)堪用期內可作1000次之動作。

註(3)輸出轉速100rpm作用於輸出軸中心。

註(4)噪音值測量於5比/輸入轉速3000rpm/距離1公尺/無負載運轉。

- 如您所需之減速比，非表內所有，請與本公司洽詢。
- 若為連續運轉使用，請與本公司洽詢。

Note (1) Data are measured at the frequency under 1000 times per hour. Contact us if your data are beyond the presented table above.

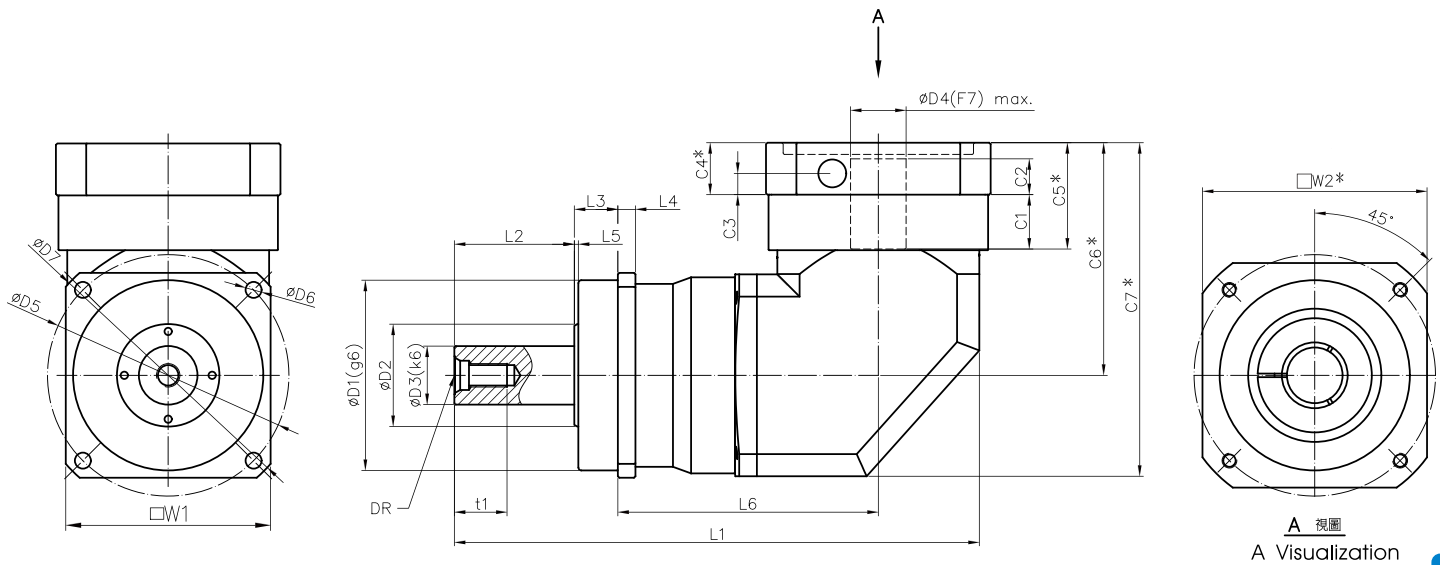
Note (2) Operation can be up 1000 times in product life.

Note (3) Act at the center of output shaft in 100 rpm.

Note (4) Noise is inspected under the condition of ratio 5; input speed 3000 rpm; 1-meter distance and free load operation.

- If any customized ratios are unavailable from above, please contact us for more.
- Consult us if your mode is continuous operation.

PGR 尺寸 [mm] Dimensions [mm]



A 視圖
A Visualization

規格 Size	PGR060	PGR080	PGR100	PGR120	PGR140	PGR160	PGR180	PGR210
W1	62	80	100	120	140	160	182	210
※ W2 min.	76.2	95	118	145	153.5	176	176	190
DR	M5	M8	M12	M12	M16	M16	M20	M20
t1	12.5	19	28	28	36	36	42	42
D1(g6)	60	70	90	110	130	145	160	180
D2	30	40	55	60	70	85	95	125
D3(k6)	16	22	32	35	40	50	55	75
D4(F7) max.	14	24	32	35	38	42	48	55
D5	68	85	120	130	165	190	215	250
D6	5.5	6.6	9	9	11	13	13	17
D7	79	103	135	155	185	215	240	279
L1	182.5	217.5	282	319.3	358.8	393.8	432.3	517
L2	28	36	58	70	82	82	82	105
L3	20	20	30	29.8	29.8	29.8	29.8	38
L4	6	7	10	11	12	13.5	15	17
L5	2	2	2	2.75	2.75	2.75	2.75	3
L6	101	120	142	158	178	200	223.5	263
C1	12	21.7	29	27.2	37.2	39.3	44	46.5
C2	18	22.5	24.2	25.3	26.8	28	34	38.5
C3	10.5	12.8	13.2	13.8	14.8	15.5	18.5	20.5
※ C4 min.	24	28	31	32	35	36	42	47
※ C5 min.	36	49.7	60	59.2	72.2	75.2	86	93.5
※ C6 min.	87.5	107.5	129.5	138.7	158.5	176.5	201	226
※ C7 min.	122.5	149	181.5	200.2	227.5	258.5	298	337

· ※此記號表示之尺寸視聯結之伺服馬達不同而有所變動。
· 本公司的產品不斷的研究、發展。上表所示之尺寸力求精準，若有不符，仍以實物為準，如需確實之尺寸，可洽本公司。

· ※ Actual dimension marked above may vary from different servo motors.
· We have persistently invested time in R&D and make every effort to maintain the correctness of the specification above. If there is any discrepancy between the data and real dimensions, please refer to our actual products and contact us for specific dimensions.

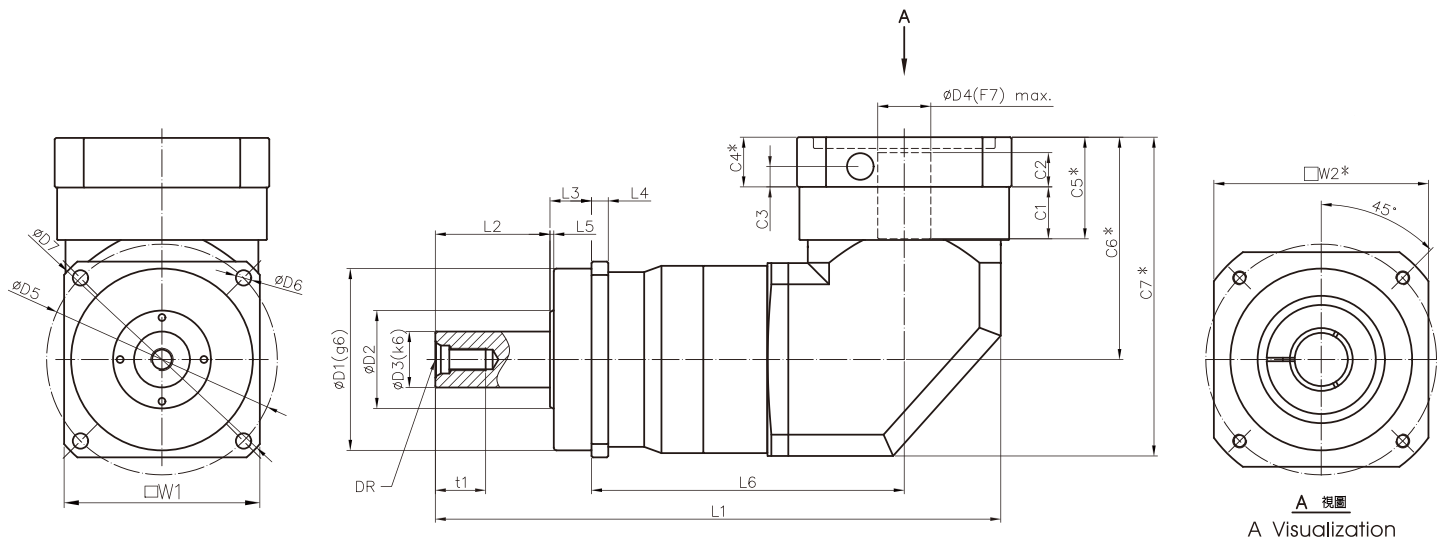
PGR

PGR 技術資料 Technical Data(雙段2-Stage)

規 格		Size	PGR060	PGR080	PGR100	PGR120	PGR140	PGR160	PGR180	PGR210	PGR240	
最大加速扭矩 $T_{2B}^{(1)}$ Output Torque	Nm	減速比 i										
		12/15/16/20/25/28/35/40/50	47	115	270	350	510	810	1300	2600	4100	
		30/60/120	40	103	250	340	445	730	1180	2150	3780	
		70/140	40	100	240	310	440	700	1130	1680	3500	
		80/160	33	91	215	285	410	650	1040	1600	3300	
100/200	32	77	190	245	340	500	900	1500	2700			
緊急停止扭矩 $T_{2Not}^{(2)}$ Emergency Stop Torque	Nm	12/15/16/20/25/28/35/40/50	100	310	710	900	1260	1850	3250	6480	9500	
		30/60/120	85	280	650	800	1120	1700	2880	5500	8950	
		70/140	85	270	625	780	1100	1600	2800	5000	8650	
		80/160	77	250	550	690	1025	1470	2560	4600	7200	
		100/200	75	200	500	650	900	1250	2220	3900	6800	
額定輸出扭矩 T_{2N} Nominal output Torque	Nm	12/15/16/20/25/28/35/40/50	26	78	185	240	340	550	1100	1900	2600	
		30/60/120	23	70	155	210	320	460	845	1580	2250	
		70/140	23	65	125	180	315	430	820	1050	1700	
		80/160	18	64	120	175	293	410	755	1000	1660	
		100/200	15	43	115	160	220	350	650	950	1550	
減速比 i	雙段 2-Stage	12/15/16/20/25/28/30/35/40/50/60/70/80/100/120/140/160/200										
額定輸入轉速 n_{1N} Nominal Input Speed	rpm	12~200	4000	3000	3000	3000	2000	2000	2000	1500	1500	
最大輸入轉速 n_{1Max} Max. Input Speed	rpm	12~200	6000	5000	4500	4000	3500	3500	3500	2500	2500	
徑向負荷力 $F_{rMax}^{(3)}$ Radial Load	N	12~200	2600	3800	6000	7500	9000	11500	14000	18000	27000	
軸向負荷力 $F_{aMax}^{(3)}$ Axial Load	N	12~200	2300	3200	5400	6700	9000	11300	14000	18000	27000	
超精密背隙 Micro Backlash	arcmin	12~200	-	-	≤4	≤4	≤4	≤4	≤4	≤4	≤4	
精密背隙 Reduced Backlash	arcmin	12~200	≤6	≤6	≤6	≤6	≤6	≤6	≤5	≤5	≤5	
標準背隙 Standard Backlash	arcmin	12~200	≤8	≤8	≤8	≤8	≤8	≤8	≤7	≤7	≤7	
扭轉剛性 Torsional Rigidity	Nm/ arcmin	12~200	3	8.5	23	35	50	95	150	220	355	
滿載時使用效率 Efficiency with Full Load	%	12~200	≥94									
使用壽命 L_{h2} Service Life	h	12~200	20000									
重量 Weight	kg	12~200	4.3	6.8	12.7	21.7	28.5	32	44	76	104	
噪音值 $^{(4)}$ Noise Level	dB		≤65	≤67		≤70			≤71	≤73		
使用溫度範圍 Permissible Gear Reducer Temp	°C		- 10°C ~ + 90°C									
防護等級 Protection Class			IP 64									
潤滑油 Lubrication			人工合成潤滑油 Synthetic oil viscosity						ISO VG220			
轉動慣量 J_1 Mass Moments of Inertia	kg cm ²	12~100	0.93	3.45	10.60	14.75	22.95	22.95	22.95	77.30	77.30	
		120~200	0.77	2.87	9.15	12.30	18.10	18.10	18.10	59.10	59.10	

- 註(1)本表適用於起動頻率1000次/小時以內，若超出時，請與本公司洽詢。
 註(2)堪用期內可作1000次之動作。
 註(3)輸出轉速100rpm作用於輸出軸中心。
 註(4)噪音值測量於5比/輸入轉速3000rpm/距離1公尺/無負載運轉。
 · 如您所需之減速比，非表內所有，請與本公司洽詢。
 · 若為連續運轉使用，請與本公司洽詢。
- Note (1) Data are measured at the frequency under 1000 times per hour. Contact us if your data are beyond the presented table above.
 Note (2) Operation can be up 1000 times in product life.
 Note (3) Act at the center of output shaft in 100 rpm.
 Note (4) Noise is inspected under the condition of ratio 5; input speed 3000 rpm; 1-meter distance and free load operation.
 · If any customized ratios are unavailable from above, please contact us for more.
 · Consult us if your mode is continuous operation.

PGR 尺寸 [mm] Dimensions [mm]



A 視圖
A Visualization

規格 Size	PGR060	PGR080	PGR100	PGR120	PGR140	PGR160	PGR180	PGR210	PGR240
W1	62	80	100	120	140	160	182	210	240
※ W2 min.	76.2	95	122	145	153.5	153.5	153.5	176	176
DR	M5	M8	M12	M12	M16	M16	M20	M20	M20
t1	12.5	19	28	28	36	36	42	42	42
D1(g6)	60	70	90	110	130	145	160	180	200
D2	30	40	55	60	70	85	95	125	140
D3(k6)	16	22	32	35	40	50	55	75	85
D4(F7) max.	14	24	32	35	38	38	38	48	48
D5	68	85	120	130	165	190	215	250	290
D6	5.5	6.6	9	9	11	13	13	17	17
D7	79	103	135	155	185	215	240	279	320
L1	207	250.5	322.5	359.3	404.5	405.8	414.3	532.8	576.3
L2	28	36	58	70	82	82	82	105	130
L3	20	20	30	30	30	30	30	38	40
L4	6	7	10	11	12	13.5	15	17	20
L5	2	2	2	2.75	2.75	2.75	2.75	3	3
L6	124	153	180.5	198	223.8	225	233.5	292.3	308.8
C1	12	21.7	29	27.2	37.2	37.2	37.2	44	44
C2	18	22.5	24.2	25.3	26.8	26.8	26.8	34	34
C3	10.5	12.8	13.2	13.8	14.8	14.8	14.8	18.5	18.5
※ C4 min.	24	28	31	32	35	35	35	42	42
※ C5 min.	36	49.7	60	59.2	72.2	72.2	72.2	86	86
※ C6 min.	89	107.5	129.5	138.7	158.5	158.5	158.5	201	201
※ C7 min.	124	149	183.5	200.2	227.5	227.5	227.5	298.5	298.5

· ※此記號表示之尺寸視聯結之伺服馬達不同而有所變動。
· 本公司的產品不斷的研究、發展。上表所示之尺寸力求精準，若有不符，仍以實物為準，如需確實之尺寸，可洽本公司。

· ※ Actual dimension marked above may vary from different servo motors.
· We have persistently invested time in R&D and make every effort to maintain the correctness of the specification above. If there is any discrepancy between the data and real dimensions, please refer to our actual products and contact us for specific dimensions.

PGR

HGR 技術資料 Technical Data(單段1-Stage)

規 格 Size			HGR100	HGR120	HGR140	HGR160	HGR180	HGR210	
最大加速扭矩 $T_{2B(1)}$ Output Torque	Nm	減速比 i							
		3	202	330	440	735	1055	1750	
		4/5	270	350	510	810	1300	2600	
		6	250	340	445	730	1180	2150	
		7	240	310	440	700	1130	1680	
		8	215	285	410	650	1040	1600	
		10	190	245	340	500	900	1500	
		14	240	310	440	700	1130	1680	
緊急停止扭矩 $T_{2Not(2)}$ Emergency Stop Torque	Nm	3	630	800	1100	1700	3000	6200	
		4/5	710	900	1260	1850	3250	6480	
		6	650	800	1120	1700	2880	5500	
		7	625	780	1100	1600	2800	5000	
		8	550	690	1025	1470	2560	4600	
		10	500	650	900	1250	2220	3900	
		14	625	780	1100	1600	2800	5000	
		20	500	650	900	1250	2220	3900	
額定輸出扭矩 T_{2N} Nominal output Torque	Nm	3	135	195	315	500	880	1200	
		4/5	185	240	340	550	1100	1900	
		6	155	210	320	460	845	1580	
		7	125	180	315	430	820	1050	
		8	120	175	293	410	755	1000	
		10	115	160	220	350	650	950	
		14	125	180	315	430	820	1050	
		20	115	160	220	350	650	950	
減速比 i		單段 1-Stage	3/4/5/6/7/8/10/14/20						
額定輸入轉速 n_{1N} Nominal Input Speed	rpm		3000	3000	2000	2000	1500	1500	
最大輸入轉速 n_{1Max} Max. Input Speed	rpm	3~20	4500	4000	3500	3000	2500	2000	
徑向負荷力 $F_{rMax(3)}$ Radial Load	N	3~20	6000	7500	9000	11500	14000	18000	
軸向負荷力 $F_{aMax(3)}$ Axial Load	N	3~20	5400	6700	9000	11300	14000	18000	
超精密背隙 Micro Backlash	arcmin	3~20	≤2	≤2	≤2	≤2	≤2	≤2	
精密背隙 Reduced Backlash	arcmin	3~20	≤4	≤4	≤4	≤4	≤3	≤3	
標準背隙 Standard Backlash	arcmin	3~20	≤6	≤6	≤6	≤6	≤5	≤5	
扭轉剛性 Torsional Rigidity	Nm/ arcmin	3~20	23	35	50	95	150	220	
滿載時使用效率 Efficiency with Full Load	%	3~20	≥97						
使用壽命 L_{h2} Service Life	h	3~20	20000						
重量 Weight	kg	3~20	15.5	23	32	47	72.5	113	
噪音值 (4) Noise Level	dB		≤67	≤70			≤71	≤73	
使用溫度範圍 Permissible Gear Reducer Temp	°C		- 10°C ~ + 90°C						
防護等級 Protection Class			IP 64						
潤滑油 Lubrication			人工合成潤滑油 Synthetic oil viscosity				ISO VG220		
轉動慣量 J_1 Mass Moments of Inertia	kg · cm ²	3~10	10.60	14.75	22.94	43.40	77.30	166.70	
		14/20	9.15	12.30	18.10	30.60	59.10	102.40	

註(1)本表適用於起動頻率1000次/小時以內，若超出時，請與本公司洽詢。 Note (1) Data are measured at the frequency under 1000 times per hour.

註(2)堪用期內可作1000次之動作。 Contact us if your data are beyond the presented table above.

註(3)輸出轉速100rpm作用於輸出軸中心。 Note (2) Operation can be up 1000 times in product life.

註(4)噪音值測量於5比/輸入轉速3000rpm/距離1公尺/無負載運轉。 Note (3) Act at the center of output shaft in 100 rpm.

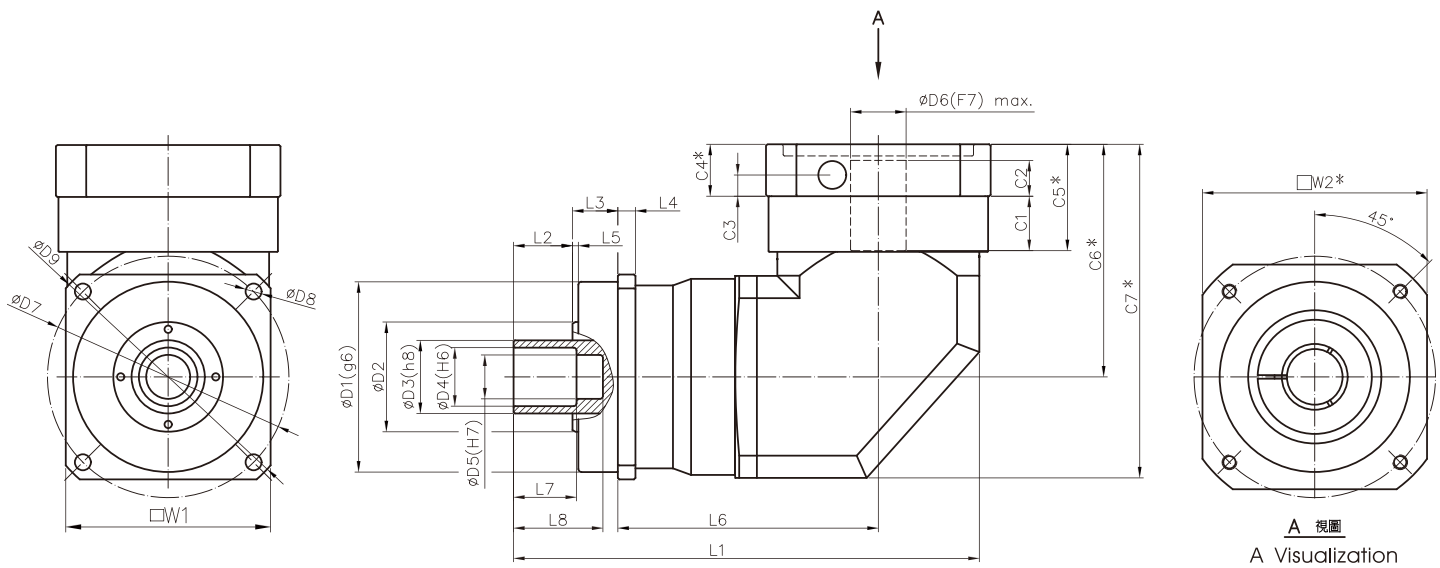
· 如您所需之減速比，非表內所有，請與本公司洽詢。 Note (4) Noise is inspected under the condition of ratio 5; input speed 3000 rpm;

· 若為連續運轉使用，請與本公司洽詢。 1-meter distance and free load operation.

· If any customized ratios are unavailable from above, please contact us for more.

· Consult us if your mode is continuous operation.

HGR 尺寸 [mm] Dimensions [mm]



A 視圖
A Visualization

規格 Size	HGR100	HGR120	HGR140	HGR160	HGR180	HGR210
W1	100	120	140	160	182	210
※ W2 min.	118	145	153.5	176	176	190
D1(g6)	90	110	130	145	160	180
D2	55	65	75	85	95	125
D3(h8)	30	44	50	55	62	75
D4(H6)	25	35	40	45	50	60
D5(H7)	20	30	30	36	40	50
D6(F7)max.	32	35	38	42	48	55
D7	120	130	165	190	215	250
D8	9	9	11	13	13	17
D9	135	155	185	215	240	279
L1	252	284.3	318	353.8	395.3	460
L2	28	34	40	42	45	48
L3	30	30	31	29.8	29.8	38
L4	10	11	12	13.5	15	17
L5	2	3	4	2.75	2.75	3
L6	142	158	178	200	223.5	263
L7	30	50	43	50	55	66
L8	45	70	63	75	85	100
C1	29	27.2	37.2	39.3	44	46.5
C2	24.2	25.3	26.8	28	34	38.5
C3	13.2	13.8	14.8	15.5	18.5	20.5
※ C4 min.	31	32	35	36	42	47
※ C5 min.	60	59.2	72.2	75.2	86	93.5
※ C6 min.	129.5	138.7	158.5	176.5	201	226
※ C7 min.	181.5	200.2	227.5	258.5	298	337

· ※此記號表示之尺寸視聯結之伺服馬達不同而有所變動。
· 本公司的產品不斷的研究、發展。上表所示之尺寸力求精準，若有不符，仍以實物為準，如需確實之尺寸，可洽本公司。

· ※ Actual dimension marked above may vary from different servo motors.
· We have persistently invested time in R&D and make every effort to maintain the correctness of the specification above. If there is any discrepancy between the data and real dimensions, please refer to our actual products and contact us for specific dimensions.

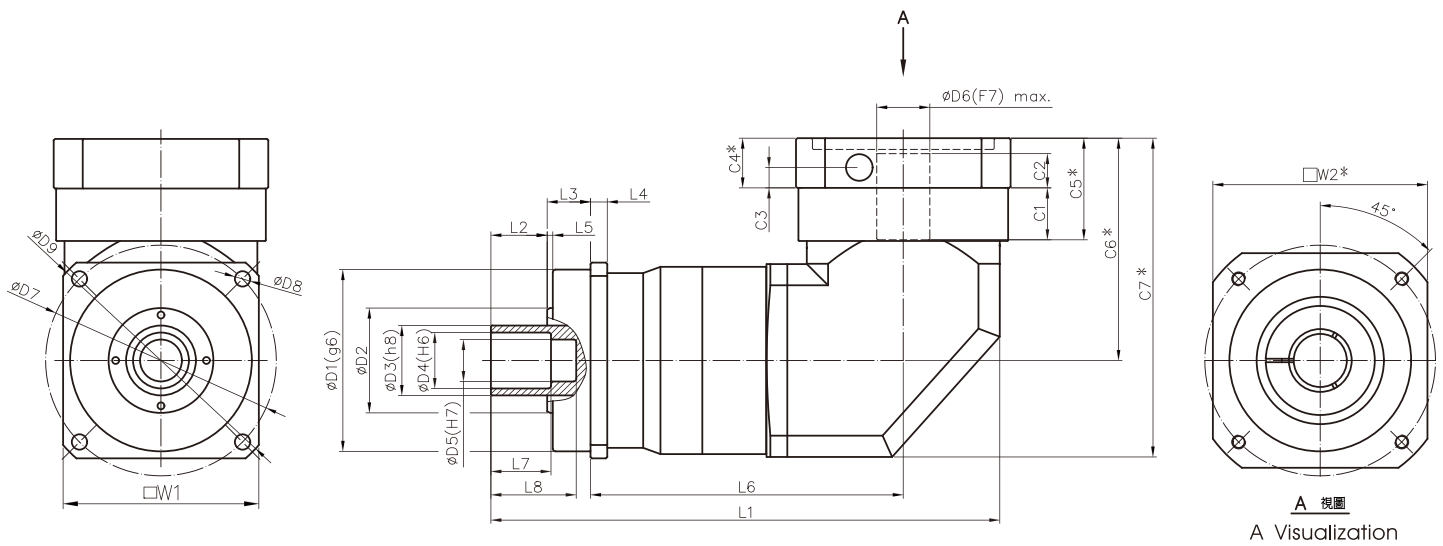
HGR

HGR 技術資料 Technical Data(雙段2-Stage)

規 格 Size			HGR100	HGR120	HGR140	HGR160	HGR180	HGR210	HGR240	
最大加速扭矩 $T_{2B}^{(1)}$ Output Torque	Nm	減速比 i								
		12/15/16/20/25/28/35/40/50	270	350	510	810	1300	2600	4100	
		30/60/120	250	340	445	730	1180	2150	3780	
		70/140	240	310	440	700	1130	1680	3500	
		80/160	215	285	410	650	1040	1600	3300	
100/200	190	245	340	500	900	1500	2700			
緊急停止扭矩 $T_{2Not}^{(2)}$ Emergency Stop Torque	Nm	12/15/16/20/25/28/35/40/50	710	900	1260	1850	3250	6480	9500	
		30/60/120	650	800	1120	1700	2880	5500	8950	
		70/140	625	780	1100	1600	2800	5000	8650	
		80/160	550	690	1025	1470	2560	4600	7200	
		100/200	500	650	900	1250	2220	3900	6800	
額定輸出扭矩 T_{2N} Nominal output Torque	Nm	12/15/16/20/25/28/35/40/50	185	240	340	550	1100	1900	2600	
		30/60/120	155	210	320	460	845	1580	2250	
		70/140	125	180	315	430	820	1050	1700	
		80/160	120	175	293	410	755	1000	1660	
		100/200	115	160	220	350	650	950	1550	
減速比 i	雙段 2-Stage		12/15/16/20/25/28/30/35/40/50/60/70/80/100/120/140/160/200							
額定輸入轉速 n_{1N} Nominal Input Speed	rpm	12~200	3000	3000	2000	2000	2000	1500	1500	
最大輸入轉速 n_{1Max} Max. Input Speed	rpm	12~200	4500	4000	3500	3500	3500	2500	2500	
徑向負荷力 $F_{rMax}^{(3)}$ Radial Load	N	12~200	6000	7500	9000	11500	14000	18000	27000	
軸向負荷力 $F_{aMax}^{(3)}$ Axial Load	N	12~200	5400	6700	9000	11300	14000	18000	27000	
超精密背隙 Micro Backlash	arcmin	12~200	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	
精密背隙 Reduced Backlash	arcmin	12~200	≤ 6	≤ 6	≤ 6	≤ 6	≤ 5	≤ 5	≤ 5	
標準背隙 Standard Backlash	arcmin	12~200	≤ 8	≤ 8	≤ 8	≤ 8	≤ 7	≤ 7	≤ 7	
扭轉剛性 Torsional Rigidity	Nm/ arcmin	12~200	23	35	50	95	150	220	355	
滿載時使用效率 Efficiency with Full Load	%	12~200	≥ 94							
使用壽命 L_{h2} Service Life	h	12~200	20000							
重量 Weight	kg	12~200	16.7	26.2	36	40	51.5	99	128	
噪音值 $^{(4)}$ Noise Level	dB		≤ 60	≤ 70			≤ 71	≤ 73		
使用溫度範圍 Permissible Gear Reducer Temp	°C		- 10°C ~ + 90°C							
防護等級 Protection Class			IP 64							
潤滑油 Lubrication			人工合成潤滑油 Synthetic oil viscosity				ISO VG220			
轉動慣量 J_1 Mass Moments of Inertia	kg cm ²	12~100	10.60	14.75	22.95	22.95	22.95	77.30	77.30	
		120~200	9.15	12.30	18.10	18.10	18.10	59.00	59.00	

- 註(1)本表適用於起動頻率1000次/小時以內，若超出時，請與本公司洽詢。
 註(2)堪用期內可作1000次之動作。
 註(3)輸出轉速100rpm作用於輸出軸中心。
 註(4)噪音值測量於5比/輸入轉速3000rpm/距離1公尺/無負載運轉。
- Note (1) Data are measured at the frequency under 1000 times per hour. Contact us if your data are beyond the presented table above.
 Note (2) Operation can be up 1000 times in product life.
 Note (3) Act at the center of output shaft in 100 rpm.
 Note (4) Noise is inspected under the condition of ratio 5; input speed 3000 rpm; 1-meter distance and free load operation.
- 如您所需之減速比，非表內所有，請與本公司洽詢。
 - 若為連續運轉使用，請與本公司洽詢。
 - If any customized ratios are unavailable from above, please contact us for more.
 - Consult us if your mode is continuous operation.

HGR 尺寸 [mm] Dimensions [mm]



A 視圖
A Visualization

規格 Size	HGR100	HGR120	HGR140	HGR160	HGR180	HGR210	HGR240
W1	100	120	140	160	182	210	240
※ W2 min.	118	145	153.5	153.5	153.5	176	176
D1(g6)	90	110	130	145	160	180	200
D2	55	65	75	85	95	125	140
D3(h8)	30	44	50	55	62	75	90
D4(H6)	25	35	40	45	50	60	70
D5(H7)	20	30	30	36	40	50	60
D6(F7)max.	32	35	38	38	38	48	48
D7	120	130	165	190	215	250	290
D8	9	9	11	13	13	17	17
D9	135	155	185	215	240	279	320
L1	290.5	324.3	363.8	380.3	377.3	475.3	501.8
L2	28	34	40	42	45	48	56
L3	30	30	31	29.8	29.8	38	40
L4	10	11	12	13.5	15	17	20
L5	2	3	4	2.75	2.75	3	3
L6	180.5	198	223.8	225	233.5	292.3	308.8
L7	30	50	43	50	55	66	76
L8	45	70	63	75	85	100	112
C1	29	27.2	37.2	37.2	37.2	44	44
C2	24.2	25.3	26.8	26.8	26.8	34	34
C3	13.2	13.8	14.8	14.8	14.8	18.5	18.5
※C4 min.	31	32	35	35	35	42	42
※C5 min.	60	59.2	72.2	72.2	72.2	86	86
※C6 min.	129.5	138.7	158.5	158.5	158.5	201	201
※C7 min.	181.5	200.2	227.5	227.5	227.5	298	298

· ※此記號表示之尺寸視聯結之伺服馬達不同而有所變動。
· 本公司的產品不斷的研究、發展。上表所示之尺寸力求精準，若有不符，仍以實物為準，如需確實之尺寸，可洽本公司。

· ※ Actual dimension marked above may vary from different servo motors.
· We have persistently invested time in R&D and make every effort to maintain the correctness of the specification above. If there is any discrepancy between the data and real dimensions, please refer to our actual products and contact us for specific dimensions.

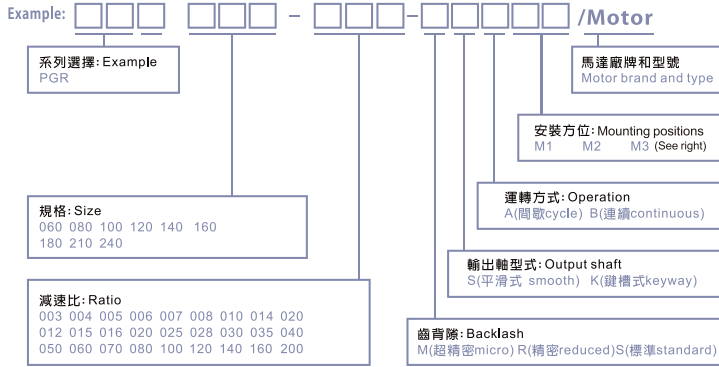
HGR

直角型行星式減速機

Right-angle Planetary Gear Reducers

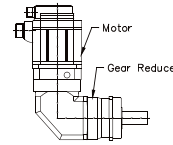


選用範列: **PGR 060 - 005-RSAM1** /MITSUBISHI-HC-KFS43

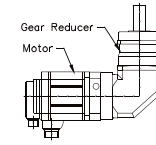


安裝方位

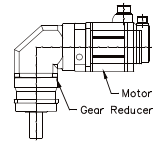
Mounting positions



M1 水平
Horizontal

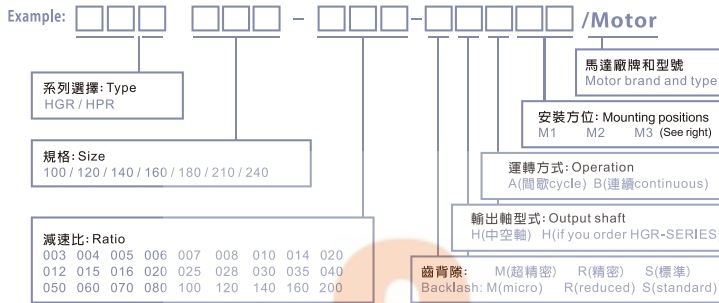


M2 垂直朝上
Upwards



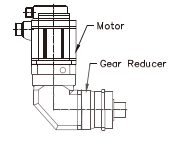
M3 垂直朝下
Downwards

選用範列: **HGR 100 - 005-RHAM1** /MITSUBISHI/HCKFS102

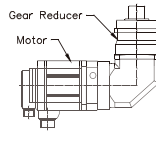


安裝方位

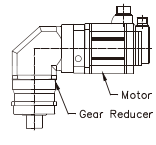
Mounting positions



M1 水平
Horizontal



M2 垂直朝上
Upwards

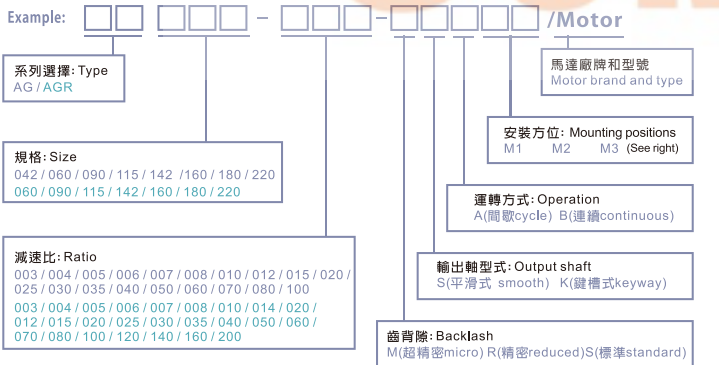


M3 垂直朝下
Downwards

經濟型行星式減速機

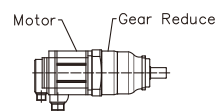
Economic Planetary Gear Reducers

選用範列: **AG 142 - 005-RSAM1** /MITSUBISHI-HC-KFS43

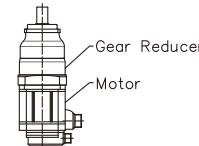


安裝方位

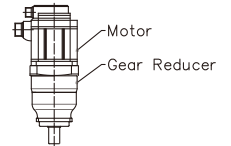
Mounting positions



M1 水平
Horizontal



M2 垂直朝上
Upwards

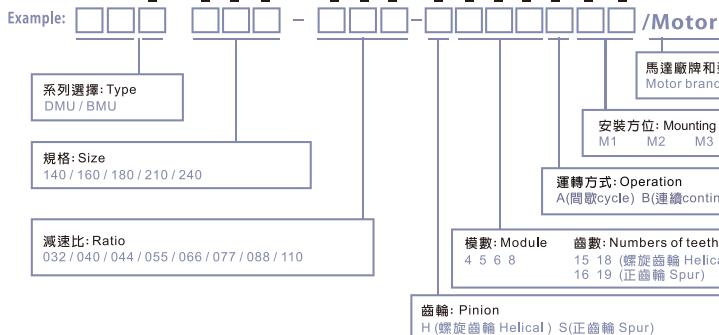


M3 垂直朝下
Downwards

機械消隙行星式減速機

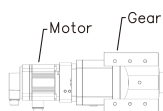
Mechanical Backlash-free Planetary Gear Reducers

選用範列: **DMU 210 - 110-H618AM1** /MITSUBISHI-HC-KFS43

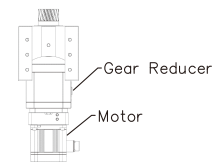


安裝方位

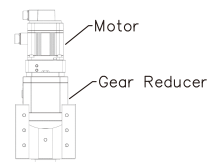
Mounting positions



M1 水平
Horizontal



M2 垂直朝上
Upwards



M3 垂直朝下
Downwards