

經濟型 行星式減速機

Economic Planetary Gear
Reducers

產品特點

Characteristics

- ▶ 箱體及行星托架為一體結構，且輸出軸之軸承採大跨距設計。採用優質人工合成潤滑油及高品質、耐熱、耐磨之油封，密封性佳。適用於高轉速，高精度之自動化機械。
- ▶ The housing and the carrier are designed in one-piece structure. Inner bearings carry the characteristics of the long span. Premium synthetic lubricant and high-quality, heat-resistant and wear-resistant seals are chosen. Suitable for high-speed and high-precision automation machinery.

效率高

High efficiency

單段 97%

雙段 94%

One-stage 97%

Two-stage 94%

體積小

Small volume

行星式運轉平順，結構緊湊，體積小，輸出扭力大，在有限空間限制下，極有優勢。

Smooth operation, compact structure, small volume, high output torque and excellent performance under limited space.

易安裝

Easy installation

聯接板與軸套採用模組化設計，適合各式馬達組裝。

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

長壽命、免保養

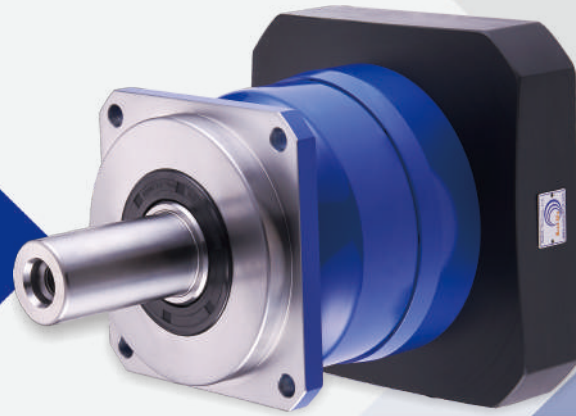
Long service life and maintenance-free

採用優質人工合成潤滑油，流動性佳，齒箱內各零件間充分得潤滑及保護，可免換油。採用高品質、耐熱、耐磨之油封，密封性佳。

Premium synthetic oil is used to boost the circulation. Components in the gearbox are thoroughly lubricated and protected. No oil change is required. High-quality, heat-resistant and wear-resistant seals are in use to secure airtightness.

內環齒與箱體為一體式結構，且軸承配置採大跨距設計。採用優質人工合成潤滑油及高品質、耐熱、耐磨之油封，密封性佳。適用於高轉速，高精度之自動化機械

Ring gear is designed with one-piece structure. Span is carefully calculated and designed among the bearings. Premium synthetic lubricants are in use. The seals are prominent in terms of its high-quality, heat resistance, wear resistance and airtightness. AG series is an excellent choice for fast-moving and high-accuracy automation industry.



AG

▶ 自動化產線
Automatic production line

▶ 自動倉儲運搬系統
Warehouse automation system

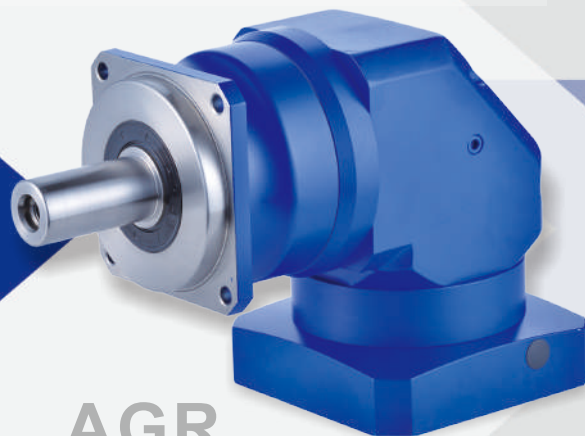
▶ 醫療產業
Medical industry

▶ 機械手臂
Traveling gantry Robot

▶ 半導體機械設備 / 光電面板
TFT-LCD & semi-conductor
mechanical equipment

螺旋傘齒輪設計，精密 Lapping 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，使輕量化。

Spiral bevel gear is designed with lapping gears with its characteristics of smoothness on its surface and high input speed. Right-angle case is designed and made of highly-strengthened aluminum alloy aiming to decrease its weight.



AGR

▶ 精度高&低背隙
High precision & low backlash

▶ 單段齒背隙 $\leq 2 \sim \leq 6$ 弧分
Stage one backlash $\leq 2-6$ arcmins

▶ 製作嚴謹 穩定性高
Rigorous approach to production.
High stability

▶ 雙段齒背隙 $\leq 4 \sim \leq 8$ 弧分
Stage two backlash $\leq 4-8$ arcmins

規 格 Size			AG042	AG060	AG090	AG115	AG142	AG160	AG180	AG220
最大加速扭矩 $T_{2B}^{(1)}$ Output Torque	Nm	減速比 i								
		3	-	45	113	222	440	770	1165	1960
		4	18	55	130	300	560	880	1450	2400
		5	18	55	130	278	560	880	1450	2400
		6	15	45	115	267	480	800	1220	2020
		7	13	40	110	240	425	760	1085	1800
		8	10	38	103	222	410	700	1045	1740
緊急停止扭矩 $T_{2Not}^{(2)}$ Emergency Stop Torque	Nm	3~10	2.5倍輸出扭矩 2.5 Times Output Torque							
額定輸入轉速 n_{1N} Nominal Input Speed	rpm	3~10	5000	4000	3000	3000	2000	2000	1500	1500
最大輸入轉速 n_{1Max} Max. Input Speed	rpm	3~10	10000	8000	6000	6000	4000	3500	3000	3000
徑向負荷力 $F_{rMax}^{(3)}$ Radial Load	N	3~10	560	1000	3200	5800	7000	9400	12000	20000
軸向負荷力 $F_{aMax}^{(3)}$ Axial Load	N	3~10	280	500	1600	2900	3500	4700	6000	10000
超精密背隙 Micro Backlash	arcmin	3~10	-	-	≤1	≤1	≤1	≤1	≤1	≤1
精密背隙 Reduced Backlash	arcmin	3~10	≤3	≤3	≤3	≤3	≤3	≤3	≤3	≤3
標準背隙 Standard Backlash	arcmin	3~10	≤5	≤5	≤5	≤5	≤5	≤5	≤5	≤5
扭轉剛性 Torsional Rigidity	Nm/ arcmin	3~10	2	5	10	24	50	95	150	220
滿載時使用效率 Efficiency with Full Load	%	3~10	≥97							
使用壽命 L_{h2} Service Life	h	3~10	20000							
重量 Weight	kg	3~10	0.7	2.0	4.3	8.5	15.5	22.5	32	55
噪音值 $^{(4)}$ Noise Level	dB	3~10	≤56	≤58	≤60	≤63	≤65	≤65	≤66	≤68
使用溫度範圍. Permissible Gear Reducer Temp	°C	3~10	- 10°C ~ + 90°C							
防護等級 Protection Class		3~10	IP 64							
潤滑油 Lubrication		3~10	人工合成潤滑油 Synthetic oil viscosity				ISO VG220			
安裝方向 Mounting Position		3~10	任意方向 Tilt							
轉動慣量 J_1 Mass Moments of Inertia	kg · cm ²	3	-	0.29	1.76	4.70	10.00	15.98	37.15	62.90
		4	0.10	0.28	1.61	4.15	8.60	12.72	29.55	41.30
		5	0.09	0.27	1.60	4.05	8.35	12.15	28.17	35.97
		6	0.09	0.26	1.59	4.00	8.10	11.32	27.95	35.62
		7	0.09	0.26	1.59	3.97	8.00	11.17	27.30	33.40
		8	0.09	0.26	1.59	3.97	7.98	11.14	27.10	33.00
		10	0.09	0.25	1.58	3.96	7.96	11.12	27.00	32.68

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. Contact us if your data are beyond the presented table above.

註(2)堪用期內可作1000次之動作。 Note (2) Operation can be up 1000 times in product life.

註(3)輸出轉速100rpm作用於輸出軸中心。 Note (3) Act at the center of output shaft in 100 rpm.

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

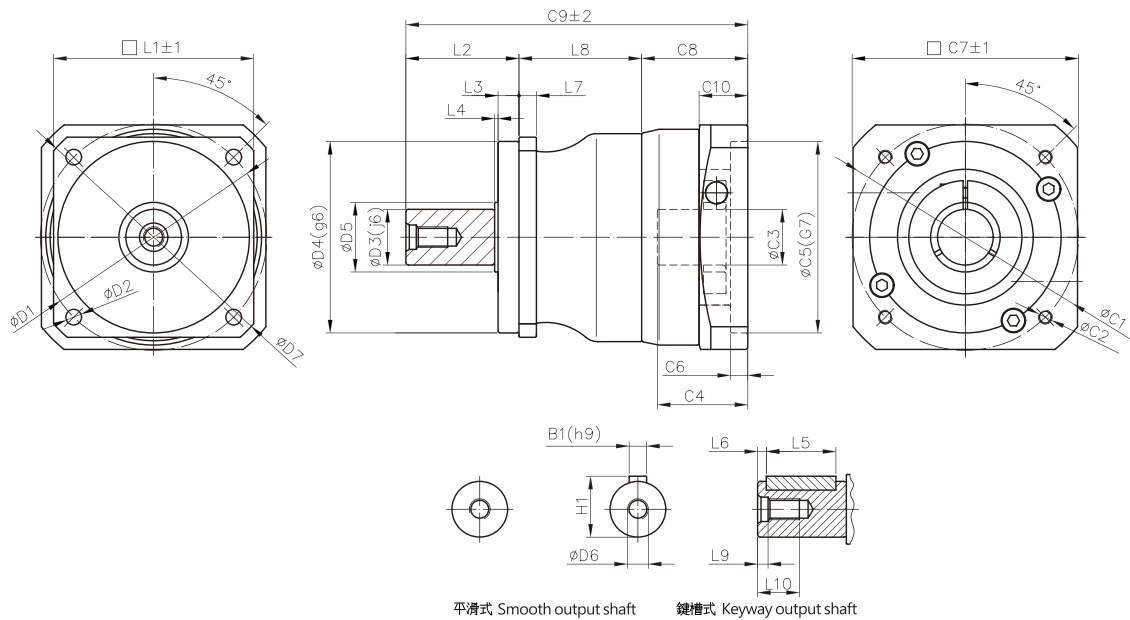
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· 若為連續運轉使用，請與本公司洽詢。

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

· Consult us if your mode is continuous operation.

AG 尺寸 [mm] Dimensions [mm]



平滑式 Smooth output shaft 鍵槽式 Keyway output shaft

規格 Size	AG042	AG060	AG090	AG115	AG142	AG160	AG180	AG220
D1	50	70	100	130	165	190	215	250
D2	3.4	5.5	6.6	9	11	13	13	17
D3(j6)	13	16	22	32	40	50	55	75
D4(g6)	35	50	80	110	130	145	160	180
D5	15	20	35	40	50	60	65	85
D6	M4*0.7P	M8*0.8P	M8*1.25P	M12*1.75P	M16*2P	M16*2P	M20*2.5P	M20*2.5P
D7	56	80	116	152	185	215	240	292
L1	42	60	90	115	142	160	180	220
L2	26	37	48	65	97	97	105	138
L3	5.5	7	10	12	15	15	20	30
L4	1	1.5	1.5	2	3	3	3	3
L5	16	25	32	40	63	70	70	90
L6	2	2	3	5	5	5	6	7
L7	4	6	8	10	12	13.5	15	20
L8	34.5	44.5	52.5	70.5	78	90	93	108
L9	3	4	4	6	14	10	12	12
L10	10	12.5	19	24	36	36	42	42
C1(*)	46	70	90	145	165	200	215	215
C2(*)	M4*0.7P	M5*0.8P	M6*1P	M8*1.25P	M10*1.5P	M12*1.75P	M12*1.75P	M12*1.75P
C3(*)	≤ 11	≤ 14	≤ 24	≤ 32	≤ 38	≤ 42	≤ 48	≤ 55
C4(*)	28.5	31.5	44	58	66.5	82	82	81
C5(G7)(*)	30	50	70	110	130	114.3	180	114.3
C6(*)	4	5	10	16	10	20	15	15
C7(*)	57	67	101.6	129	152.4	178	203	242
C8(*)	31.5	35.5	55	67	75	88	87.5	83
C9(*)	92	117	155.5	202.5	250	275	285.5	329
C10(*)	12	20	25	34	35	45	43	42
B1(h9)	5	5	6	10	12	14	16	20
H1	15	18	24.5	35	43	53.5	59	79.5

· ※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.

規 格 Size			AG042	AG060	AG090	AG115	AG142	AG160	AG180	AG220
最大加速扭矩 $T_{2B}^{(1)}$ Output Torque	Nm	減 速 比 i								
		12/15	-	45	113	222	440	770	1165	1960
		20/25	18	55	130	300	560	880	1450	2400
		30	15	45	113	222	440	800	1165	1960
		35/40/50	18	55	130	300	560	880	1450	2400
		60	15	45	115	278	480	800	1220	2020
		70	13	40	110	267	425	760	1085	1800
		80	10	38	103	240	410	700	1045	1740
100	7	35	90	210	350	520	1000	1635		
緊急停止扭矩 $T_{2NoT}^{(2)}$ Emergency Stop Torque	Nm	12~100	2.5倍輸出扭矩 2.5 Times Output Torque							
額定輸入轉速 n_{1N} Nominal Input Speed	rpm	12~100	5000	4000	3000	3000	2000	2000	1500	1500
最大輸入轉速 n_{1Max} Max. Input Speed	rpm	12~100	10000	8000	6000	6000	4000	3500	3000	3000
徑向負荷力 $Fr_{Max}^{(3)}$ Radial Load	N	12~100	560	1000	3200	5800	7000	9400	12000	20000
軸向負荷力 $Fa_{Max}^{(3)}$ Axial Load	N	12~100	280	500	1600	2900	3500	4700	6000	10000
超精密背隙 Micro Backlash	arcmin	12~100	-	-	≤3	≤3	≤3	≤3	≤3	≤3
精密背隙 Reduced Backlash	arcmin	12~100	≤5	≤5	≤5	≤5	≤5	≤5	≤5	≤5
標準背隙 Standard Backlash	arcmin	12~100	≤7	≤7	≤7	≤7	≤7	≤7	≤7	≤7
扭轉剛性 Torsional Rigidity	Nm/ arcmin	12~100	2	5	10	24	50	95	150	220
滿載時使用效率 Efficiency with Full Load	%	12~100	≥94							
使用壽命 L_{h2} Service Life	h	12~100	20000							
重量 Weight	kg	12~100	1.7	2.7	5.0	10.0	19.5	24.5	34.5	58.5
噪音值 $^{(4)}$ Noise Level	dB	12~100	≤56	≤58	≤60	≤63	≤65	≤65	≤66	≤68
使用溫度範圍 Permissible Gear Reducer Temp	°C	12~100	- 10°C ~ + 90°C							
防護等級 Protection Class		12~100	IP 64							
潤滑油 Lubrication		12~100	人工合成潤滑油 Synthetic oil viscosity				ISO VG220			
安裝方向 Mounting Position		12~100	任意方向 Tilt							
轉動慣量 J_1 Mass Moments of Inertia	kg · cm ²	12	-	0.29	1.76	4.70	10.00	13.25	15.10	37.00
		15	-	0.29	1.76	4.70	10.00	13.25	15.10	37.00
		20	0.10	0.28	1.61	4.15	8.60	11.86	11.90	29.40
		25	0.10	0.27	1.60	4.05	8.35	11.60	11.75	28.05
		30	-	0.27	1.60	4.05	8.35	11.60	11.75	28.05
		35	0.10	0.26	1.59	3.97	8.00	10.20	10.25	27.30
		40	0.09	0.25	1.58	3.96	7.96	10.14	10.05	27.00
		50	0.09	0.25	1.58	3.96	7.96	10.14	10.05	27.00
		60	0.09	0.25	1.58	3.96	7.96	10.14	10.05	27.00
		70	0.09	0.25	1.58	3.96	7.96	10.14	10.05	27.00
80	0.09	0.25	1.58	3.96	7.96	10.14	10.05	27.00		
100	0.09	0.25	1.58	3.96	7.96	10.14	10.05	27.00		

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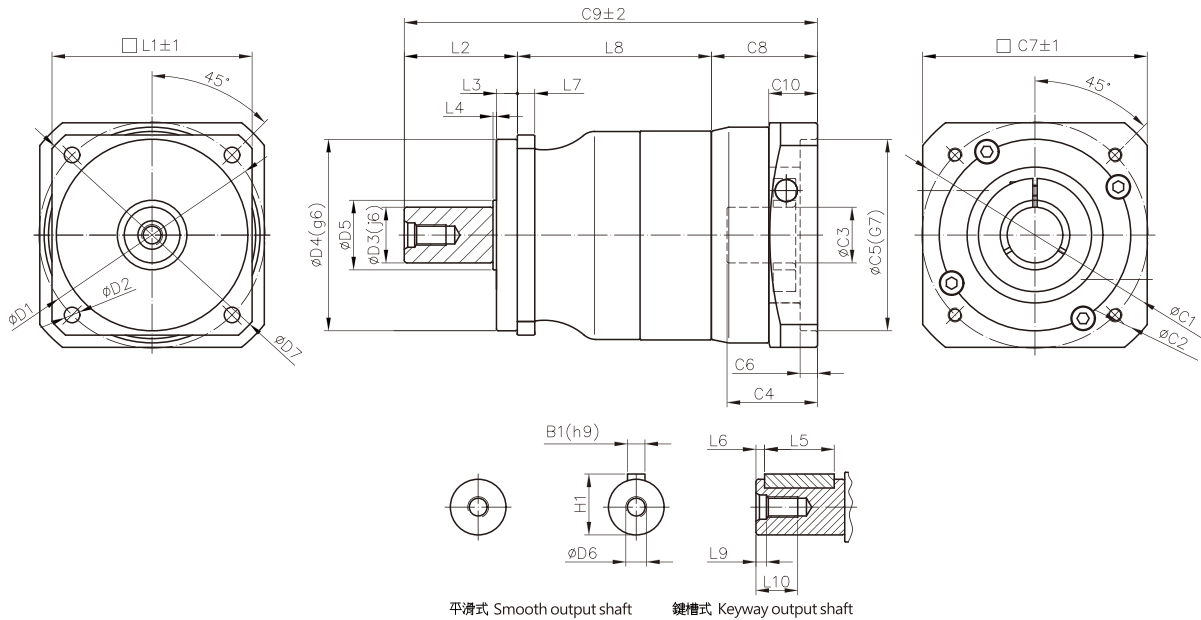
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AG 尺寸 [mm] Dimensions [mm]



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D1	50	70	100	130	165	190	215	250
D2	3.4	5.5	6.6	9	11	13	13	17
D3(j6)	13	16	22	32	40	50	55	75
D4(g6)	35	50	80	110	130	145	160	180
D5	15	20	35	40	50	60	65	85
D6	M4*0.7P	M8*0.8P	M8*1.25P	M12*1.75P	M16*2P	M16*2P	M20*2.5P	M20*2.5P
D7	56	80	116	152	185	215	240	292
L1	42	60	90	115	142	160	180	220
L2	26	37	48	65	97	97	105	138
L3	5.5	7	10	12	15	15	20	30
L4	1	1.5	1.5	2	3	3	3	3
L5	16	25	32	40	63	70	70	90
L6	2	2	3	5	5	5	6	7
L7	4	6	8	10	12	13.5	15	20
L8	57	67.5	84.5	111.5	125.5	138	156	178
L9	3	4	4	6	14	10	12	12
L10	10	12.5	19	28	36	36	42	42
C1(※)	46	70	90	145	145	200	145	200
C2(※)	M4*0.7P	M5*0.8P	M6*1P	M8*1.25P	M8*1.25P	M12*1.75P	M8*1.25P	M12*1.75P
C3(F7) max.	≤ 11	≤ 14	≤ 24	≤ 32	≤ 38	≤ 38	≤ 38	≤ 48
C4(※)	28.5	31.5	44	58	66.5	67.5	81	116
C5(G7)(※)	30	50	70	110	130	114.3	114.3	114.3
C6(※)	4	5	10	16	10	20	25	30
C7(※)	57	67	101.6	129	152.4	178	178	203
C8(※)	31.5	35.5	55	67	75	90	96	137.5
C9(※)	114.5	140	187.5	243.5	297.5	325	351	446
C10(※)	12	20	25	34	35	50	58	78
B1(h9)	5	5	6	10	12	14	16	20
H1	15	18	24.5	35	43	53.5	59	79.5

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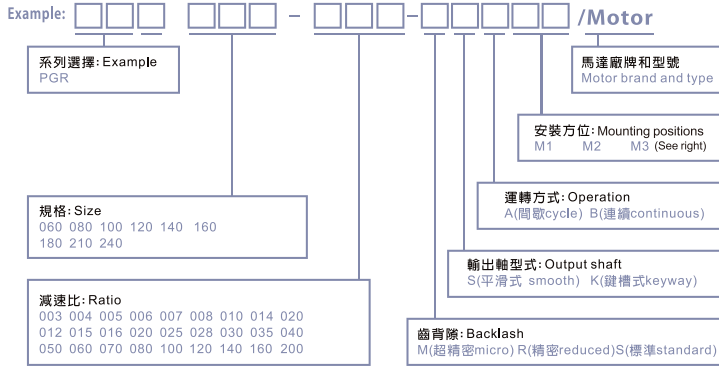
AG

直角型行星式減速機

Right-angle Planetary Gear Reducers

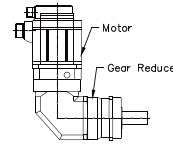


選用範列: **PGR 060 - 005 - R SAM 1** /MITSUBISHI-HC-KFS43

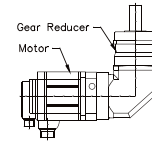


安裝方位

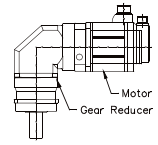
Mounting positions



M1 水平
Horizontal

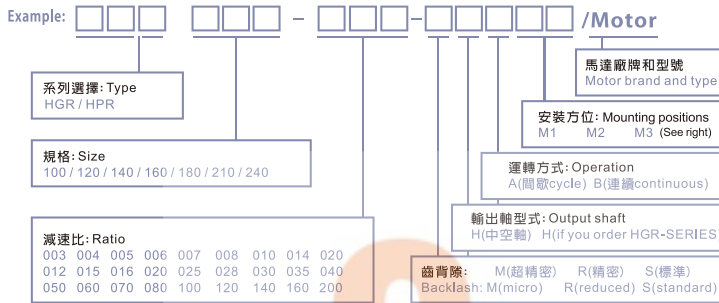


M2 垂直朝上
Upwards



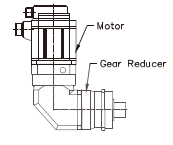
M3 垂直朝下
Downwards

選用範列: **HGR 100 - 005 - R HAM 1** /MITSUBISHI/HCKFS102

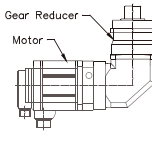


安裝方位

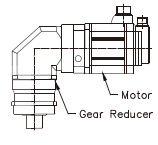
Mounting positions



M1 水平
Horizontal



M2 垂直朝上
Upwards

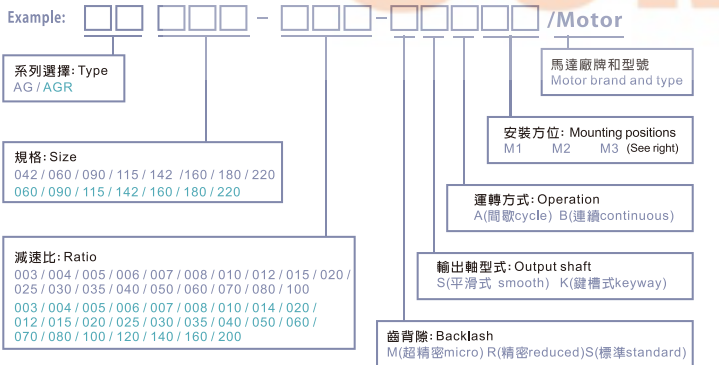


M3 垂直朝下
Downwards

經濟型行星式減速機

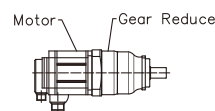
Economic Planetary Gear Reducers

選用範列: **AG 142 - 005 - R SAM 1** /MITSUBISHI-HC-KFS43

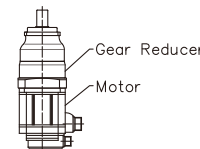


安裝方位

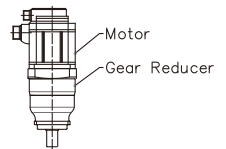
Mounting positions



M1 水平
Horizontal



M2 垂直朝上
Upwards

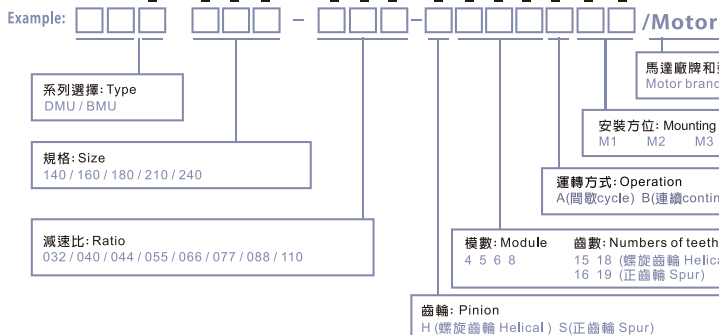


M3 垂直朝下
Downwards

機械消隙行星式減速機

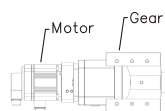
Mechanical Backlash-free Planetary Gear Reducers

選用範列: **DMU 210 - 110 - H 618 AM 1** /MITSUBISHI-HC-KFS43

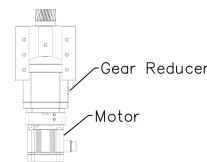


安裝方位

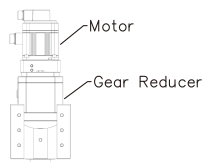
Mounting positions



M1 水平
Horizontal



M2 垂直朝上
Upwards



M3 垂直朝下
Downwards