

系列 Model	定位精度 Positioning accuracy	徑向力 Radial forces	扭轉剛性 Torsional stiffness	背隙 Backlash	規格多樣性 Wide range of size	功率密度 Power density	傳動多樣性 Wide range of ratios
PAF							
PAE							
PAB							
PAR							
VRB							
VRL							
VRS							
PAD							
PFR							
PER							
PADR							
PLF							
PLE							
VRSF							
ZR							
ZK							

標準 STANDARD
 強勁 STRONG
 最佳 BEST

減速機選用參考表 Reducer Selection Table

減速機選用參考表依據伺服馬達輸出功率選擇
Selection Table Of Reducer (By power of servo-motor)

容量	型號	1/3	1/4	1/5	1/7	1/10	1/12	1/15	1/16	1/20	1/25	1/28	1/30	1/35	1/40	1/50	1/70	1/100
100w	042	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	060	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
200w	060	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	090	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
400w	060	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	090	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
500w	090	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	120	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
750w	090	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	120	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
1.0kw	090	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	120	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
1.5kw	150	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	120	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
2.0kw	150	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	180	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
3.5kw	120	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	150	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
3.5kw	180	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	220	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
5.0kw	120	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	150	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
5.0kw	180	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	220	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
7.0kw	180	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	220	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
11.0kw	180	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	220	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
15.0kw	220	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

P.S: 此“●”記號為可選用之減速比。

注1.三段減速比不在上表中，若需用到請告知銷售人員。

注2.慣性距較大的場合減速機型號需大一級使用。

功率等級 Performance classes

快速找到目标： 程序概览

您今后不再需要花费大量时间通过给出详细数值进行搜索；只需要使用我公司一目了然的搜索程序就能快速选到您所需的产品。在此概览中您可以找到产品的重要规格特性。

Achieve your goal faster: Our programme at a glance.

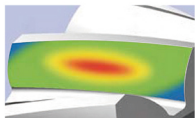
You no longer need to perform time-consuming searches of detailed information: Utilise our easy-to-use quick selection to select the products you need. In this overview you will find a direct comparison of the key features of our products.

产品技术 Product Technology

FHT系列行星减速机拥有二项多国专利之润滑结构，适用在内建旋齿轴结构，确保最高效率输出。FHT series planetary reducers to ensure the highest output value.

专利 1: 降低行星齿轮运转所产生的轴向推力。Patent 1: To reduce axial thrust bearing from the running of gears.

专利 2: 增加润滑，降低摩擦阻力与噪音。Patent 2: To reduce frictional resistance and noise level

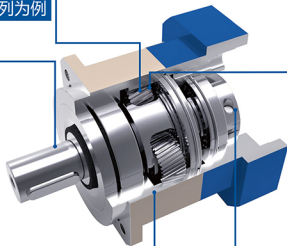


利用ANSYS技术对齿轮强度进行有限元分析，同时对齿面作齿形及导程修整，以降低齿轮啮合的冲击和噪音，增加齿轮系的使用寿命。



齿轮材料采用优质合金钢，经碳-氮共渗处理，从而获得最佳的耐磨性和耐冲击韧性。

PAB系列为例



输出星架采用一体式（双支撑）的结构设计，前后轴承大跨距分布于箱体内部，形成稳定的一体式结构，以确保较高的扭转刚性和精度。

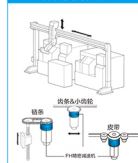
齿圈与输出壳体采用一体化设计，采用优质钢材，经热锻成形，从而获得较高的材料密度。一体化设计能保证所有几何尺寸一次性加工完成，与其它内嵌式、夹装式等结构相比具有更高的精度和强度。

输入轴与锁紧装置采用一体化设计，双螺栓对称分布，达到动平衡的同时，通过双螺栓的强力锁死，有效防止电机轴转动打滑，实现高精度零背隙的动力传递。

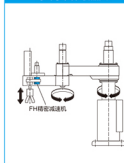
机器人的行走轴 (齿条&小齿轮)



机床的龙门机器人



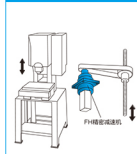
水平多关节机器人



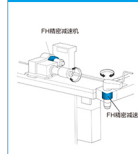
晶圆搬运机器人



冲压设备 (铆接)



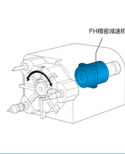
弯管机



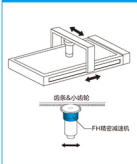
注塑成型取出机器人



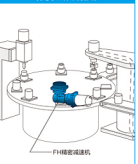
机床的转塔刀架旋转



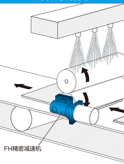
机床的XYZ轴



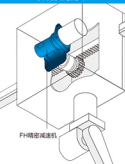
分度工作台驱动



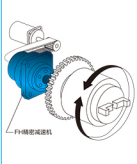
涂膜用铝驱动



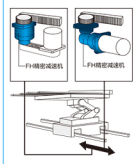
装板机用滑车



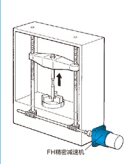
轴输入型皮带驱动



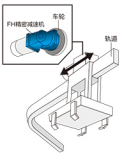
液晶玻璃基板搬运机器人



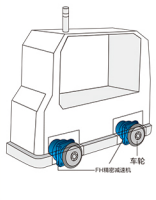
拉力试验机



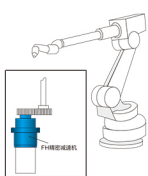
顶棚行走式搬运车



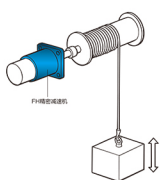
无人搬运车



高速工作用机器人



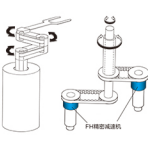
卷取



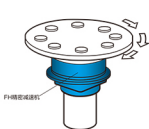
旋转



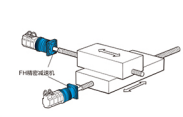
搬送



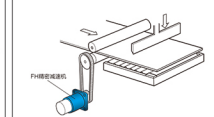
角度(定位)控制



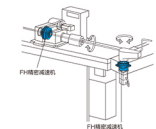
两轴控制(XY工作台)



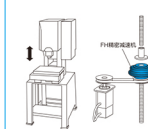
辊驱动



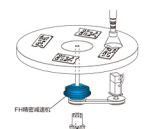
弯管机



冲压(铆接)



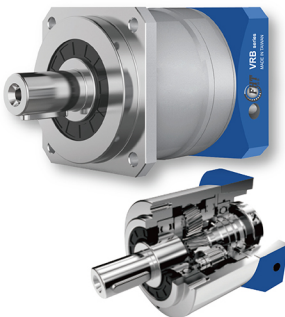
印刷电路板检查装置



PRECISION PLANETARY REDUCERS

精密行星减速机

VRB



- 1. 静音**
使用斜齿啮合实现原轴安静地运转。
- 2. 高精度**
背隙低于3分、定位精确。
- 3. 高刚性、高扭矩**
使用整体式滚珠轴承，大大提高了刚性和扭矩。
- 4. 法兰、连接器方式**
可以安装到世界上任何一台马达上。
- 5. 无润滑脂泄漏**
使用高粘度、不易分离的润滑脂，有效防止润滑脂泄漏。
- 6. 维护方便**
在产品寿命期内无需更换润滑脂，安装更便捷。

- 1. Quiet operation**
Helical gears contribute to reduce vibration and noise.
- 2. High precision**
Standard backlash is 3 arc-min, ideal for precision control.
- 3. High rigidity & torque**
High rigidity & high torque were achieved by uncaged needle roller bearings.
- 4. Adapter-bushing connection**
Can be attached to any motor all over the world.
- 5. No grease leakage**
Perfect solution using high viscosity anti-separation grease.
- 6. Maintenance-free**
No need to replace the grease for the life of the unit. Can be attached in any position.

减速机的选型/Indication of Model Numbers

VRB 系列/VRB Type

VRB090 - 10 - S1 - P1 / 马达

减速机型式/Type

VRB042, VRB060, VRB090, VRB115
VRB142, VRB180, VRB220

出力轴键槽 Output Shaft Keyway

S1: 空心轴, 无键槽
(Solid Output Shaft No Keyway)
S2: 标准品, 有键槽
(Standard (Keyway))
S3: 输出高孔
Output for holes

马达型号/Motor Type

马达制造商及型号

减速比 Ratio

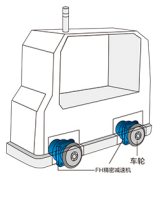
单级: 3, 4, 5, 6, 7, 8, 9, 10
二级: 15, 20, 25, 30, 35, 40, 45, 50,
60, 70, 80, 90, 100

背隙等级Backlash Class

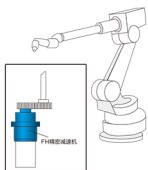
P0: 高精度背隙/Micro Backlash P0
P1: 精密背隙/Precision Backlash P1
P2: 标准背隙/Standard Backlash P2

型號範圍: VRB090-100-S2-P1/Panasonic MSMJ 082S1A

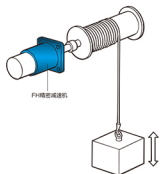
无人搬运车



高速工作用机器人



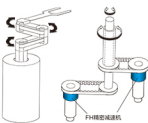
卷取



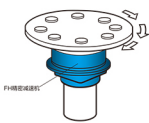
旋转



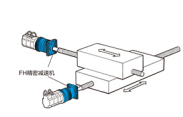
搬送



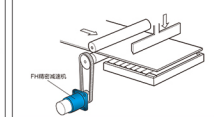
角度(定位)控制



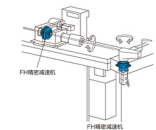
两轴控制(XY工作台)



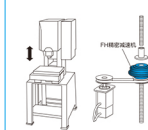
辊驱动



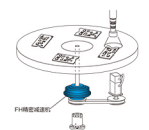
弯管机



冲压(铆接)



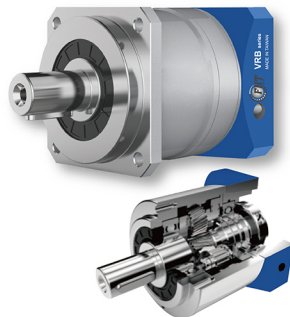
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马达型号/Motor Type

马达制造商及型号

减速比 Ratio

单级: 3, 4, 5, 6, 7, 8, 9, 10
二级: 15, 20, 25, 30, 35, 40, 45, 50,
60, 70, 80, 90, 100

背隙等级Backlash Class

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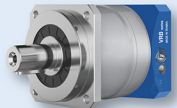
型號範圍: VRB090-100-S2-P1/Panasonic MSMJ 082S1A

VRB 減速機性能資料 Specification Table

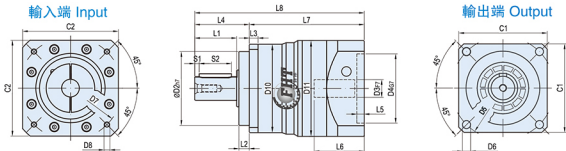
規格 Model No.	單位 Unit	級數 Stage	減速比 Ratio	VRB042	VRB060	VRB090	VRB115	VRB142	VRB180	VRB220
最大輸出力矩 T _{out} Rated Output Torque	Nm	1	3	20	55	130	208	342	588	1140
			4	19	50	140	290	542	1050	1700
			5	22	60	160	330	650	1200	2000
			6	20	55	150	310	600	1100	1900
			7	19	50	140	300	550	1100	1800
			8	17	45	120	260	500	1000	1600
			9	14	40	100	230	450	900	1500
			10	14	40	100	230	450	900	1500
			15	20	55	130	208	342	588	1140
		20	19	50	140	290	542	1050	1700	
		25	22	60	160	330	650	1200	2000	
		30	20	55	150	310	600	1100	1900	
		35	19	50	140	300	550	1100	1800	
		40	17	45	120	260	500	1000	1600	
		45	14	40	100	230	450	900	1500	
		50	22	60	160	330	650	1200	2000	
		60	20	55	150	310	600	1100	1900	
		70	19	50	140	300	550	1100	1800	
80	17	45	120	260	500	1000	1600			
90	14	40	100	230	450	900	1500			
100	14	40	100	230	450	900	1500			
最大輸出扭矩 T _{out} 1/3 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 F _{in} Rated Input Speed	rpm	1,2	3-100	5000	4000	4000	4000	3000	3000	2000
最大輸入轉速 F _{in} Max Input Speed	rpm	1,2	3-100	10000	10000	8000	8000	6000	6000	4000
超程背隙 PO / Micro Backlash PO	arcmin	1	3-10	≤2	≤2	≤2	≤2	≤2	≤2	≤2
超程背隙 P0 / Micro Backlash P1	arcmin	2	12-100	≤4	≤4	≤4	≤4	≤4	≤4	≤4
精密背隙 P1 / Precision Backlash P1	arcmin	1	3-10	≤4	≤4	≤4	≤4	≤4	≤4	≤4
精密背隙 P1 / Precision Backlash P1	arcmin	2	12-100	≤6	≤6	≤6	≤6	≤6	≤6	≤6
結構剛性 / Torsional Rigidity	Nm/rad	1,2	3-10	3	7	14	25	50	145	225
容許徑向力 F _{rad} / Max.Radial Force	N	1,2	3-10	780	1530	3250	6700	9400	14500	25000
容許軸向力 F _{ax} / Max.Axial Force	N	1,2	3-10	350	630	1300	3000	4000	6200	30000
容許轉力矩 F _{tw} / Max.Axial Force	N	1,2	3-10	390	765	1625	3350	4700	7250	25000
使用壽命 / Service Life	hr	1,2	3-10	20000h						
效率 η Efficiency	%	1	3-10	≥97%						
效率 η Efficiency	%	2	15-100	≥94%						
重量 Weight	kg	1	3-10	0.5	1.3	3.3	7.8	15	28	52
重量 Weight	kg	2	15-100	0.8	1.8	3.9	9.6	18.9	33	66
使用溫度 / Operating Temperature	°C	1,2	3-10	(-15°C ~ +90°C)						
潤滑 / Lubrication		1,2	3-10	全合成潤滑油(Synthetic Grease)						
防護等級 / Protection Class		1,2	3-10	IP65						
安裝方向 / Mounting Position		1,2	3-10	任意方向(Any Direction)						
噪音值 L ₁ = 3000rpm, 離散值 / Noise Level	dB(A)	1,2	3-10	≤56	≤58	≤60	≤63	≤65	≤67	≤70

MODEL: VRB

單段 1-Stage
速比: 3, 4, 5, 6, 7, 8, 9, 10



外形尺寸圖 Dimensions:



Unit:mm

尺寸 Size	VRB042-L1	VRB060-L1	VRB090-L1	VRB115-L1	VRB142-L1	VRB180-L1	VRB220-L1
D1	φ13	φ16	φ22	φ32	φ40	φ55	φ75
D2	φ35	φ50	φ60	φ80	φ130	φ160	φ180
D3	φ8 (φ3.25-11)	φ14 (φ11-19)	φ19 (φ19-24)	φ22 (φ22-35)	φ24 (φ22-35)	φ35 (φ35-42)	φ42 (φ35-55)
D4	φ30 (φ30-50)	φ50 (φ50-70)	φ70 (φ70-110)	φ110 (φ114.3)	φ110 (φ114.3)	φ114.3 (φ114.3-200)	φ180 (φ114.3-200)
D5	φ50	φ70	φ100	φ130	φ165	φ215	φ250
D6	4-φ3.4	4-φ5.5	4-φ7	4-φ9	4-φ11	4-φ13	4-φ17
D7	φ46 (φ45-70)	φ70 (φ70-90)	φ90 (φ90-145)	φ145 (φ145-200)	φ145 (φ145-200)	φ200 (φ200-235)	φ215 (φ200-235)
D8	4-M4(M3-M5)	4-M5 (M4-M6)	4-M6 (M5-M8)	4-M8 (M8-M12)	4-M8 (M8-M12)	4-M12	4-M12
DP	M4X0.7P	M5X0.8P	M8X1.25P	M12X1.75P	M16X2P	M20X2.5P	M20X2.5P
D10	φ42	φ60	φ87	φ114.5	φ142	φ180	φ210
D11	φ46	φ65	φ90	φ118	φ150	φ184	φ225.5
L1	19.5	28.5	36.5	51	79	82	105
L2	5.5	7	10	12	15	20	30
L3	4	6	8	10	12	15	20
L4	26	37	48	65	97	105	138
L5	5	5	7 (7-8)	6 (6-11)	8 (8-11)	8 (8-15)	8 (8-15)
L6	27.5 (±0.2)	34 (±0.4)	44 (±0.6)	64.5 (±0.15)	72.5 (±0.2)	85 (±0.1)	109 (±0.1)
L7	65.5 (65.5-70)	78 (78-88)	98 (98-114)	135 (135-151)	154.5 (154.5-164)	179 (179-214)	220 (220-230)
L8	91.5 (91.5-96)	115 (115-125)	146 (146-162)	201 (201-218)	251.5 (251.5-261)	284 (284-319)	358 (358-368)
C1	42	60	90	115	142	180	220
C2	46(46-60)	65(65-80)	90 (90-130)	130 (130-180)	130 (130-180)	180 (180-220)	200 (200-220)
S1	3	2	2	4	5	6	7
S2	14	22	28	40	65	70	90
S3	15	16	24.5	35	43	59	79.5
B	5	5	6	10	12	16	20
K1	3	4	6	8	10	14	18
K2	φ8	φ11	φ22	φ28	φ38	φ50	φ60
K3	9.4	12.8	24.5	31.3	41.3	53.8	64.4
K4	φ13	φ16	φ32	φ38	φ48	φ60	φ72
K5	15	15	20	27	35	43	60
K6	18	18	24	32	40	50	65

注1: () 括號內為選擇範圍尺寸, () 括號外為標準尺寸。 Note 1: Inside of () is the optional range of sizes, outside of () is the standard sizes.
 注2: 減速機出力軸可以為客戶定制大小和長短。 Note 2: The reducer output shaft size and length can be customized for customers.
 注3: 輸入尺寸依據各品牌伺服馬達或步進馬達可以有所變動。 Note 3: Input sizes can be subject to change according to the brand servo motors or stepper motors sizes.

減速機轉動慣量/Moment of Inertia

規格 Model No.	單位 Unit	級數 Stage	減速 Ratio	VRB042	VRB060	VRB090	VRB115	VRB142	VRB180	VRB220	
轉動慣量 J ₁ Moment of Inertia	kg·cm ²	1	3	0.03	0.16	0.61	3.25	9.21	28.98	69.61	
			4	0.03	0.14	0.48	2.74	7.54	23.67	54.37	
			5	0.03	0.13	0.47	2.71	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	
			2	12-40	0.03	0.03	0.13	0.47	2.71	7.42	23.29
				50-100	0.03	0.03	0.13	0.44	2.57	7.03	22.51

1.減速比(i=Nm/No)
 2.輸出轉數100rpm時, 作用於輸出軸中心位置。
 3.最大加速力矩T_{2s}=60%of T_{20T}, 連續運轉, 使用壽命為10000hrs.

VRB 減速機性能資料 Specification Table

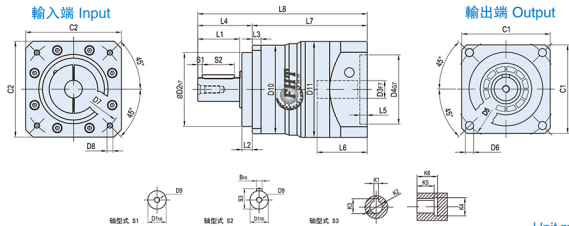
規格 Model No.	單位 Unit	級數 Stage	減速比 Ratio	VRB042	VRB060	VRB090	VRB115	VRB142	VRB180	VRB220
額定輸出力矩 T ₂ Rated Output Torque	Nm	1	3	20	55	130	208	342	588	1140
			4	19	50	140	290	542	1050	1700
			5	22	60	160	330	650	1200	2000
			6	20	55	150	310	600	1100	1900
			7	19	50	140	300	550	1100	1800
			8	17	45	120	260	500	1000	1600
			9	14	40	100	230	450	900	1500
			10	14	40	100	230	450	900	1500
			15	20	55	130	208	342	588	1140
		20	19	50	140	290	542	1050	1700	
		25	22	60	160	330	650	1200	2000	
		30	20	55	150	310	600	1100	1900	
		35	19	50	140	300	550	1100	1800	
		40	17	45	120	260	500	1000	1600	
		45	14	40	100	230	450	900	1500	
		50	22	60	160	330	650	1200	2000	
		60	20	55	150	310	600	1100	1900	
		70	19	50	140	300	550	1100	1800	
80	17	45	120	260	500	1000	1600			
90	14	40	100	230	450	900	1500			
100	14	40	100	230	450	900	1500			
最大輸出扭矩 T _{200%} 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 F _{IN} Rated Input Speed	rpm	1,2	3-100	5000	4000	4000	3000	3000	3000	2000
最大輸入轉速 F _{IN} Max. Input Speed	rpm	1,2	3-100	10000	10000	8000	8000	6000	6000	4000
超程背隙 Backlash PO	arcmin	1	3-10	≤2	≤2	≤2	≤2	≤2	≤2	≤2
超程背隙 Micro Backlash P0	arcmin	2	12-100	≤4	≤4	≤4	≤4	≤4	≤4	≤4
精密背隙 P1	arcmin	1	3-10	≤4	≤4	≤4	≤4	≤4	≤4	≤4
精密背隙 Precision Backlash P1	arcmin	2	12-100	≤6	≤6	≤6	≤6	≤6	≤6	≤6
結構剛性/ Torsional Rigidity	Nm/radarcmin	1,2	3-10	3	7	14	25	50	145	225
容許徑向力 F _{rad} ¹⁾ Max. Radial Force	N	1,2	3-10	780	1530	3250	6700	9400	14500	25000
容許軸向力 F _{ax} ²⁾ Max. Axial Force	N	1,2	3-10	350	630	1300	3000	4000	6200	50000
容許彎矩力矩 M _{ax} ²⁾ Max. Axial Force	N	1,2	3-10	390	765	1625	3350	4700	7250	25000
使用壽命 / Service Life	hr	1,2	3-10	20000h						
效率 η Efficiency	%	1	3-10	≥97%						
1	2	15-100	≥94%							
重量 Weight	kg	1	3-10	0.5	1.3	3.3	7.8	15	28	52
2	15-100	0.8	1.48	3.9	9.6	18.9	33	66		
使用溫度 / Operating Temperature	°C	1,2	3-10	(-15°C ~ +90°C)						
潤滑 / Lubrication	1,2	3-10	全合成潤滑油 (Synthetic Grease)							
防護等級 / Protection Class	1,2	3-10	IP65							
安裝方位 / Mounting Position	1,2	3-10	任意方向 (Any Direction)							
噪音值 L ₁ @ 1000rpm, 離軸 1m / Noise Level	dB(A)	1,2	3-10	≤56	≤58	≤60	≤63	≤65	≤67	≤70

MODEL: VRB



單段 1-Stage
速比: 3, 4, 5, 6, 7, 8, 9, 10

外形尺寸圖 Dimensions:



Unit:mm

尺寸 Size	VRB042-L1	VRB060-L1	VRB090-L1	VRB115-L1	VRB142-L1	VRB180-L1	VRB220-L1
D1	φ13	φ16	φ22	φ32	φ40	φ55	φ75
D2	φ35	φ50	φ60	φ90	φ130	φ160	φ180
D3	φ8 (φ8.25-11)	φ14 (φ11-19)	φ19 (φ19-24)	φ22 (φ22-35)	φ24 (φ24-35)	φ35 (φ35-42)	φ42 (φ42-55)
D4	φ30 (φ30-50)	φ50 (φ50-70)	φ70 (φ70-110)	φ110 (φ114.3)	φ110 (φ114.3)	φ114.3 (φ114.3-200)	φ180 (φ114.3-200)
D5	φ50	φ70	φ100	φ130	φ165	φ215	φ250
D6	4-φ3.4	4-φ5.5	4-φ7	4-φ9	4-φ11	4-φ13	4-φ17
D7	φ46 (φ45-70)	φ70 (φ70-90)	φ90 (φ90-145)	φ145 (φ145-200)	φ145 (φ145-200)	φ200 (φ200-235)	φ215 (φ200-235)
D8	4-M4(M3-M5)	4-M5 (M4-M6)	4-M6 (M5-M8)	4-M8 (M8-M12)	4-M8 (M8-M12)	4-M12	4-M12
DP	M4X0.7P	M5X0.8P	M8X1.25P	M12X1.75P	M16X2P	M20X2.5P	M20X2.5P
D10	φ42	φ60	φ87	φ114.5	φ142	φ180	φ210
D11	φ46	φ65	φ90	φ118	φ150	φ184	φ225.5
L1	19.5	28.5	36.5	51	79	82	105
L2	5.5	7	10	12	15	20	30
L3	4	6	8	10	12	15	20
L4	26	37	48	65	97	105	138
L5	5	5	7 (7-8)	6 (8-11)	8 (8-11)	7 (7-10)	8 (8-15)
L6	27.5 (±0.2)	34 (±0.4)	44 (±0.6)	64.5 (±0.15)	72.5 (±0.2)	85 (±0.1)	109 (±1.9)
L7	65.5 (65.5-70)	78 (78-88)	98 (98-114)	135 (135-153)	154.5 (154.5-164)	179 (179-214)	220 (220-230)
L8	91.5 (91.5-96)	115 (115-125)	146 (146-162)	201 (201-218)	251.5 (251.5-261)	284 (284-319)	358 (358-366)
C1	42	60	90	115	142	180	220
C2	46(46-60)	65(65-80)	90 (90-130)	130 (130-180)	130 (130-180)	180 (180-220)	200 (200-220)
S1	3	2	2	4	5	6	7
S2	14	22	28	40	65	70	90
S3	15	16	24.5	35	43	59	79.5
B	5	5	6	10	12	16	20
K1	3	4	6	8	10	14	18
K2	φ8	φ11	φ22	φ28	φ38	φ50	φ60
K3	9.4	12.8	24.5	31.3	41.3	53.8	64.4
K4	φ13	φ16	φ32	φ38	φ48	φ60	φ72
K5	15	15	20	27	35	45	60
K6	18	18	24	32	40	50	65

注1: () 括號內為選擇範圍尺寸, () 括號外為標準尺寸。 Note 1: Inside of () is the optional range of sizes, outside of () is the standard sizes.
 注2: 減速輸出力矩可以為客戶定制大小和長度。 Note 2: The reducer output shaft size and length can be customized for customers.
 注3: 輸入尺寸依據各品牌伺服馬達或步進馬達可以有所變動。 Note 3: Input sizes are subject to change according to the brand servo motors or stepper motors sizes.

減速機轉動慣量/Moment of Inertia

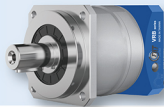
規格 Model No.	單位 Unit	級數 Stage	減速 Ratio	VRB042	VRB060	VRB090	VRB115	VRB142	VRB180	VRB220
轉動慣量 J ₁ Moment of Inertia	kg.cm ²	1	3	0.03	0.16	0.61	3.25	9.21	28.98	69.61
			4	0.03	0.14	0.48	2.74	7.54	23.67	54.37
			5	0.03	0.13	0.47	2.71	7.42	23.29	53.27
			6	0.03	0.13	0.45	2.65	7.25	22.75	51.72
			7	0.03	0.13	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
			2	12-40	0.03	0.03	0.13	0.47	2.71	7.42
		50-100		0.03	0.03	0.13	0.44	2.57	7.03	22.51

1. 減速比 (i=Nm/Nout) 2. 輸出轉數 100rpm 時, 作用於輸出軸中心位置。
 3. 最大加速力矩 T_{2a} = 60% of T_{20T}, 連續運轉, 使用壽命為 10000hrs.

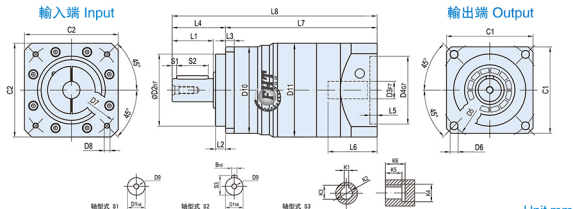
MODEL: VRB

雙段 2-Stage

速比: 15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 80, 90, 100



外形尺寸圖 Dimensions:



Unit:mm

尺寸 Size	VRB042-L2	VRB060-L2	VRB090-L2	VRB115-L2	VRB142-L2	VRB180-L2	VRB220-L2
D1	φ13	φ16	φ22	φ32	φ40	φ55	φ75
D2	φ35	φ50	φ80	φ110	φ130	φ180	φ180
D3	φ8 (φ35-8)	φ14 (φ11-14)	φ19 (φ11-19)	φ22 (φ16-24)	φ24 (φ19-35)	φ35 (φ22-35)	φ42 (φ35-42)
D4	φ30 (φ30-38.1)	φ50	φ70 (φ50-80)	φ110 (φ70-110)	φ110 (φ114.3)	φ114.3 (φ110-114.3)	φ180 (φ114.3-200)
D5	φ50	φ70	φ100	φ130	φ165	φ215	φ250
D6	4-φ3.4	4-φ5.5	4-φ7	4-φ9	4-φ11	4-φ13	4-φ17
D7	φ46 (φ45-66.7)	φ70	φ90 (φ70-100)	φ145 (φ90-145)	φ145 (φ145-200)	φ200 (φ145-200)	φ215 (φ210-235)
D8	4-M4(M3)	4-M5 (M4)	4-M6 (M4-M6)	4-M8 (M5-M8)	4-M8 (M8-M12)	4-M12 (M8-M12)	4-M12
D9	MX07P	MX08P	MX12.5P	M12X1.75P	M16X2P	M20X2.5P	M20X2.5P
D10	φ42	φ60	φ87	φ114.5	φ142	φ180	φ216
D11	φ46	φ65	φ90	φ118	φ150	φ184	φ225.5
L1	19.5	28.5	38.5	51	79	92	105
L2	5.5	7	10	12	15	20	30
L3	4	6	8	10	12	15	20
L4	26	37	48	65	97	105	138
L5	5	5	8 (7-8)	11 (6-11)	8 (8-11)	8 (7-10)	8 (7-10)
L6	27.5	34	24 (≦44)	44 (≦60)	64.5 (≦81.5)	72.5 (≦85)	85 (≦100)
L7	86	105	124.5 (114.5-124.5)	165.5 (145.5-165.5)	226 (189-226)	225 (225-225)	289 (254-299)
L8	112	142	172.5 (162.5-172.5)	230.5 (214.5-230.5)	303 (286-303)	340 (330.5-340)	407 (402-437)
C1	42	60	90	115	142	180	220
C2	46 (46-57)	65	65 (65-86)	90 (90-130)	130 (130-180)	150 (150-180)	200 (180-220)
S1	3	3	4	5	6	6	7
S2	14	22	28	40	65	70	90
S3	15	18	24.5	35	43	59	79.5
B	5	5	6	10	12	16	20
K1	3	4	6	8	10	14	18
K2	φ8	φ11	φ22	φ28	φ38	φ50	φ60
K3	9.4	12.8	24.5	31.3	41.3	53.8	64.4
K4	φ13	φ16	φ32	φ38	φ48	φ60	φ72
K5	15	15	20	27	35	43	60
K6	18	18	24	32	40	50	65

注1: () 括號內為可選擇範圍尺寸, () 括號外為標準尺寸。

注2: 減速機出力軸可以為客戶定製大小長短。

注3: 輸入尺寸依據各品牌伺服馬達或步進馬達可以有所變動。

Note 1: Inside of () is the optional range of sizes, outside of () is the standard sizes.

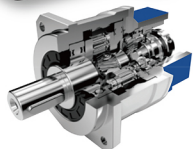
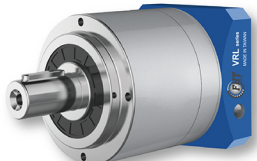
Note 2: The reducer output shaft size and length can be customized for customers.

Note 3: Input sizes can be subject to changed according to the brand servo motors or stepper motors sizes.

PRECISION PLANETARY REDUCERS

精密行星減速機

VRL

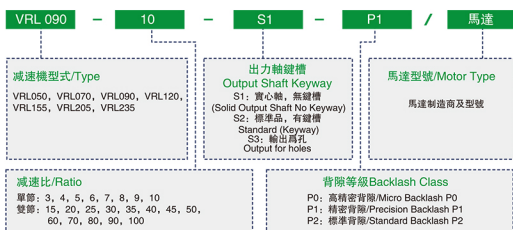


- 靜音**
使用斜齒輪實現順暢安靜地運轉。
- 高精度**
背隙低於3分、定位精準。
- 高剛性、高扭矩**
使用整體式滾珠軸承, 大大提高了剛性和扭矩。
- 法蘭、連接器方式**
可以安裝到世界上任何一臺馬達上。
- 無須滑脂潤滑**
使用高精度、不易分離的潤滑脂, 有效防止潤滑脂滲漏。
- 維護方便**
在產品壽命期內無需更換潤滑脂, 安裝更便捷。

- Quiet operation**
Helical gears contribute to reduce vibration and noise.
- High precision**
Standard backlash is 3 arc-min, ideal for precision control.
- High rigidity & torque**
High rigidity & high torque were achieved by uncaged needle roller bearings.
- Adapter-bushing connection**
Can be attached to any motor all over the world.
- No grease leakage**
Perfect solution using high viscosity anti-separation grease.
- Maintenance-free**
No need to replace the grease for the life of the unit. Can be attached in any position.

減速機的選型/Indication of Model Numbers

VRL 系列/VRL Series



選型範例: VRL090-100-S2-P1/Panasonic MSMJ 082S1A