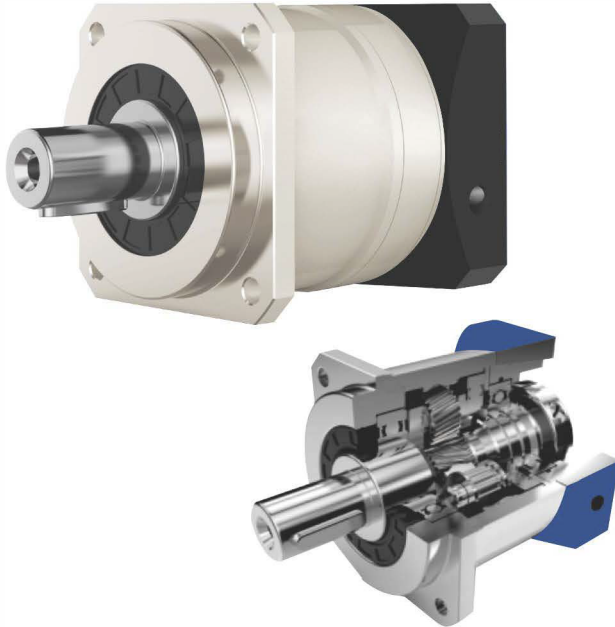


# PRECISION PLANETARY GEARBOX

## VRB



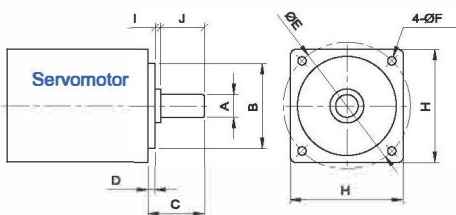
- 1. Quiet operation  
Helical gears are used to achieve smooth and quiet operation.
- 2. High precision  
The backlash is less than 3 arcmin and the positioning is accurate.
- 3. High rigidity & torque  
The use of integral ball bearings greatly improves the rigidity and torque.
- 4. Methods of flange and connector  
It can be installed on any motor in the world.
- 5. No grease leakage  
The use of grease with high viscosity which is not easy to separate effectively prevents the grease leakage.
- 6. Convenient maintenance  
No need to replace the grease in the product life period, and the installation is more convenient.

### Model Selection of Speed Reducers

#### VRB Type

VRB090	-	10	-	S1	-	P1	/	Motor
<b>Reducer Model</b> VRB042, VRB060, VRB090, VRB115 VRB142, VRB180, VRB220		<b>Output Shaft Keyway</b> S1: (Solid Output Shaft No Keyway) S2: Standard (Keyway) S3: Output for holes			<b>Motor Model</b> Motor Manufacturer & Model			
<b>Ratio</b> 1-stage: 3, 4, 5, 6, 7, 8, 9, 10 2-stage: 15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 80, 90, 100		<b>Backlash Grade</b> P0: High precision backlash P1: Precision backlash P2: Standard backlash						

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



A	B	C	D	E	F	H	I	J

Naming Scheme:

Type	Model	Ratio	Output Shaft Keyway	Backlash Class	MOTOR NO.

# VRB Reducer Specifications

Specs	Unit	Stage	Ratio	VRB042	VRB060	VRB090	VRB115	VRB142	VRB180	VRB220	
Rated Output Torque / T2N	Nm	1	3	20	45	130	230	450	900	1500	
			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	208	342	588	1140	
			2	15	20	45	130	230	450	900	1550
				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	60	160	330	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	208	342	588	1140				
Max. Output Torque / T <sub>2NOT</sub> <sup>1</sup>	Nm	1,2	3~100	3Times of Nominal Output Torque							
Rated Input Speed / Π <sub>IN</sub>	rpm	1,2	3~100	5000	5000	4000	4000	3000	3000	2000	
Max. Input Speed / Π <sub>INB</sub>	rpm	1,2	3~100	10000	10000	8000	8000	6000	6000	4000	
Micro Backlash P0	arcmin	1	3~10	≤1	≤1	≤1	≤1	≤1	≤1	≤1	
		2	12~100	≤3	≤3	≤3	≤3	≤3	≤3	≤3	
Precision Backlash P1	arcmin	1	3~10	≤3	≤3	≤3	≤3	≤3	≤3	≤3	
		2	12~100	≤5	≤5	≤5	≤5	≤5	≤5	≤5	
Precision Backlash P2	arcmin	1	3~10	≤5	≤5	≤5	≤5	≤5	≤5	≤5	
		2	12~100	≤7	≤7	≤7	≤7	≤7	≤7	≤7	
Torsional Rigidity	Nm/arcmin	1,2	3~100	3	7	14	25	50	145	225	
Max. Radial Force / F <sub>2aR</sub> <sup>2</sup>	N	1,2	3~100	780	1530	3250	6700	9400	14500	50000	
Max. Axial Force / F <sub>2aIa</sub> <sup>2</sup>	N	1,2	3~100	390	765	1625	3350	4700	7250	25000	
Service Life	hr	1,2	3~100	20000h							
		1	3~10	≥97%							
		2	15~100	≥94%							
Efficiency / η	%										
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	
Operating Temperature	°C	1,2	3~100	(-15°C ~ +90°C)							
Lubrication		1,2	3~100	(Synthetic Grease)							
Protection Class		1,2	3~100	IP65							
Mounting Position		1,2	3~100	(Any Direction)							
Noise Level (n1=3000rpm, No load)	dB(A)	1,2	3~100	≤56	≤58	≤60	≤63	≤65	≤67	≤70	

## Reducer Rotary Inertia

Specs	Unit	Stage	Ratio	VRB042	VRB060	VRB090	VRB115	VRB142	VRB180	VRB220	
Rotary Inertia	kg.cm <sup>2</sup>	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. Ratio (i=Nin/Nout) 2. When output speed is 100rpm, acting on the output shaft center position  
3. The Max. acceleration torque T2B=60% of T2NOT, continuous operation, service life is 10000hrs



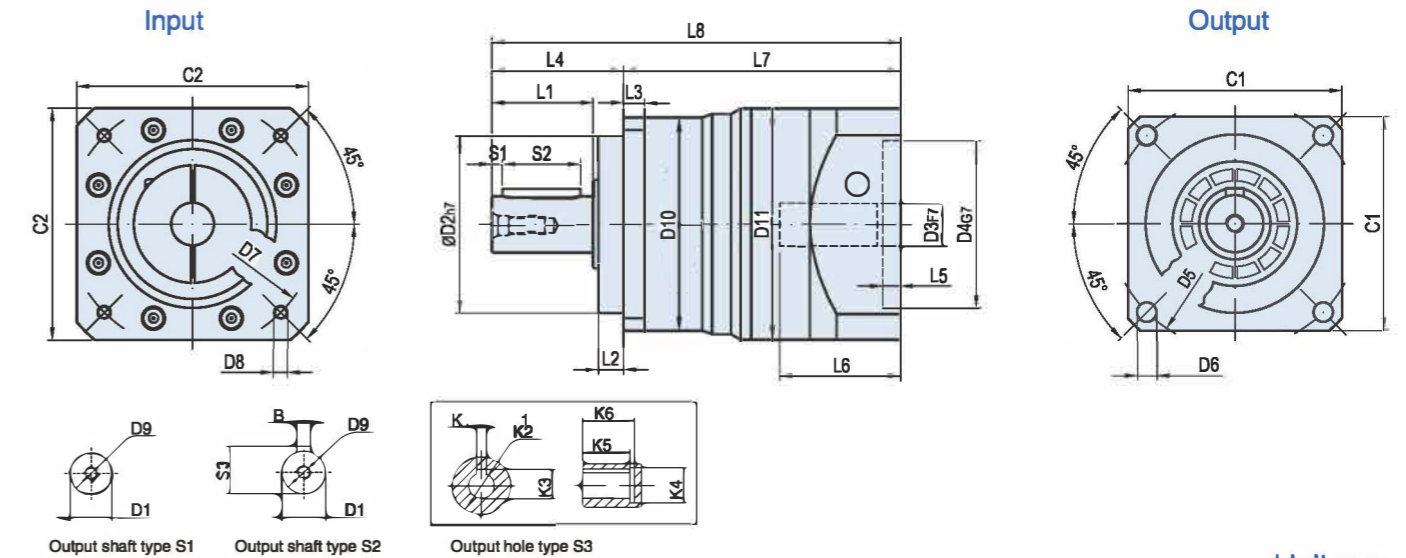
# MODEL: VRB

1-Stage

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



## Dimensions:



Unit:mm

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	φ80	φ110	φ130	φ160	φ180
D3	φ8 (φ6.35-11)	φ14 (φ11-19)	φ19 (φ16-24)	φ22 (φ19-35)	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
D9	M4X0.7P	M5X0.8P	M8X1.25P	M12X1.75P	M16X2P	M20X2.5P	M20X2.5P
D10	φ42	φ60	φ87	φ114.5	φ142	φ180	φ218
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)	7 (7-10)	8 (8-15)
L6	27.5 (≤32)	34 (≤44)	44 (≤60)	64.5 (≤81.5)	72.5 (≤82)	85 (≤120)	109 (≤119)
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 (358-368)
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	3	4	5	5	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	-	4	6	8	10	14	18
K2	-	φ11	φ22	φ28	φ38	φ50	φ60
K3	-	12.8	24.5	31.3	41.3	53.8	64.4
K4	-	φ16	φ32	φ38	φ48	φ60	φ72
K5	-	15	20	27	35	43	60
K6	-	18	24	32	40	50	65

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: The input size can be changed according to the servomotor or stepper motor of each brand.



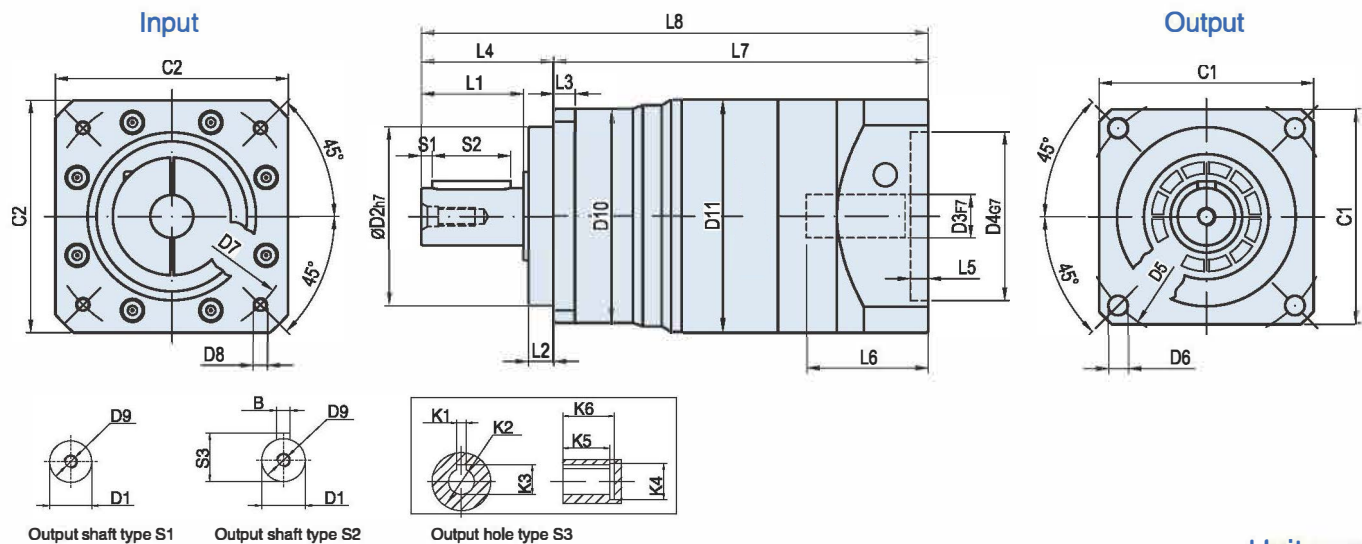
# MODEL: VRB

2-Stage

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



## Dimensions:



Unit:mm

Size	VRB042-L2	VRB060-L2	VRB090-L2	VRB115-L2	VRB142-L2	VRB180-L2	VRB220-L2
D1	φ 13	φ 16	φ 22	φ 32	φ 40	φ 55	φ 75
D2	φ 35	φ 50	φ 80	φ 110	φ 130	φ 160	φ 180
D3	φ 8 ( φ 6.35-8 )	φ 14 ( φ 11-14 )	φ 19 ( φ 11-19 )	φ 22 ( φ 16-24 )	φ 24 ( φ 19-35 )	φ 35 ( φ 22-35 )	φ 42 ( φ 35-42 )
D4	φ 30 ( φ 30-38.1 )	φ 50	φ 70 ( φ 50-φ 80 )	φ 110 ( φ 70-110 )	φ 110 ( φ 114.3 )	φ 114.3 ( φ 110-114.3 )	φ 180 ( φ 114.3-200 )
D5	φ 50	φ 70	φ 100	φ 130	φ 165	φ 215	φ 250
D6	4-φ 3.4	4-φ 5.5	4-φ 7	4-φ 9	4-φ 11	4-φ 13	4-φ 17
D7	φ 46 ( φ 45-66.67 )	φ 70	φ 90 ( φ 70-100 )	φ 145 ( φ 90-145 )	φ 145 ( φ 145-200 )	φ 200 ( φ 145-200 )	φ 215 ( φ 200-235 )
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	M4X0.7P	M5X0.8P	M8X1.25P	M12X1.75P	M16X2P	M20X2.5P	M20X2.5P
D10	φ 42	φ 60	φ 87	φ 114.5	φ 142	φ 180	φ 218
D11	φ 46	φ 65	φ 90	φ 118	φ 150	φ 184	φ 225.5
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	5	8 ( 7-8 )	11 ( 6-11 )	8 ( 8-11 )	8 ( 7-10 )
L6	27.5	34	34 ( ≤44 )	44 ( ≤60 )	64.5 ( ≤81.5 )	72.5 ( ≤82 )	85 ( ≤120 )
L7	86	105	124.5 ( 114.5-124.5 )	165.5 ( 149.5-165.5 )	206 ( 189-206 )	235 ( 225.5-235 )	269 ( 264-299 )
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	5	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	-	4	6	8	10	14	18
K2	-	φ 11	φ 22	φ 28	φ 38	φ 50	φ 60
K3	-	12.8	24.5	31.3	41.3	53.8	64.4
K4	-	φ 16	φ 32	φ 38	φ 48	φ 60	φ 72
K5	-	15	20	27	35	43	60
K6	-	18	24	32	40	50	65

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: The input size can be changed according to the servomotor or stepper motor of each brand.