

# PRECISION PLANETARY GEARBOX

## EVL



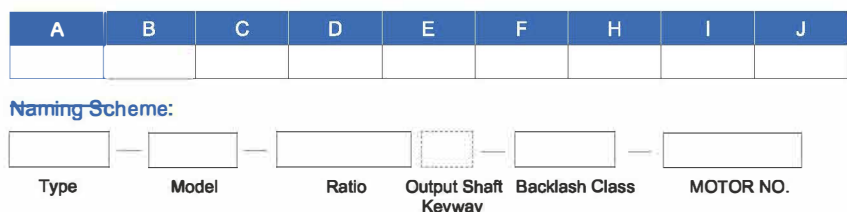
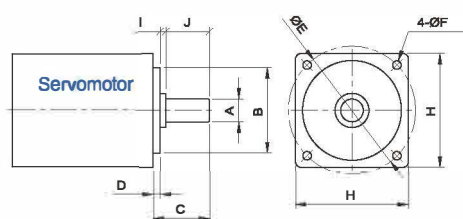
- **1. Quiet operation**  
Helical gears are used to achieve smooth and quiet operation.
- **2. High precision**  
The backlash is less than 3 arcmin and the positioning is accurate.
- **3. High rigidity & torque**  
The use of integral ball bearings greatly improves the rigidity and torque.
- **4. Methods 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

### EVL Type

<b>EVL090</b>	-	<b>10</b>	-	<b>S1</b>	-	<b>P1</b>	/	<b>Motor</b>
<b>Reducer Model</b> EVL070, EVL090, EVL120 EVL145, EVL180		<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 :



# EVL Reducer Specifications

Specs	Unit	Stage	Ratio	EVL070	EVL090	EVL120	EVL145	EVL180
Rated Output Torque / T2N	Nm	1	3	45	130	230	450	900
			4	50	140	290	542	1050
			5	60	160	330	650	1200
			6	55	150	310	600	1100
			7	50	140	300	550	1100
			8	45	120	260	500	1000
			9	40	100	230	450	900
			10	40	100	208	342	588
			14	45	130	230	450	900
			20	50	140	290	542	1050
		2	15	60	160	330	650	1200
			20	55	150	310	600	1100
			25	60	160	330	550	1100
			30	45	120	260	500	1000
			35	40	100	230	450	900
			40	60	160	330	650	1200
			50	50	140	300	550	1100
			70	45	120	260	500	1000
			80	40	100	230	450	900
			100	40	100	208	342	588
120	—	128	305	495	1095			
140	—	128	295	525	1095			
160	—	118	255	515	995			
180	—	98	225	445	895			
200	—	98	225	445	895			
Max. Output Torque / T2NOT <sup>1</sup>	Nm	1,2	3~200	3Times of Nominal Output Torque				
Rated Input Speed / Π <sub>IN</sub>	rpm	1,2	3~200	3000	3000	3000	2500	2000
Max. Input Speed / Π <sub>IS</sub>	rpm	1,2	3~200	6000	6000	5500	4500	4500
Precision Backlash P0	arcmin	1	3~20	≤2	≤2	≤2	≤2	≤2
		2	15~200	≤4	≤4	≤4	≤4	≤4
Precision Backlash P1	arcmin	1	3~20	≤4	≤4	≤4	≤4	≤4
		2	15~200	≤6	≤6	≤6	≤6	≤6
Standard Backlash P2	arcmin	1	3~20	≤6	≤6	≤6	≤6	≤6
		2	15~200	≤8	≤8	≤8	≤8	≤8
Torsional Rigidity	Nm/arcmin	1,2	3~200	6	14	25	56	140
Max. Radial Force / F <sub>2B</sub> <sup>2</sup>	N	1,2	3~200	1300	3200	6750	9400	14500
Max. Axial Force / F <sub>2A</sub> <sup>2</sup>	N	1,2	3~200	700	1580	3300	4700	7200
Service Life	hr	1,2	3~200	21000 h				
Efficiency / η	%	1	3~20	≥93%				
		2	25~200	≥90%				
Weight	kg	1	3~20	1.5	6.4	13	24.5	51
		2	25~200	2.1	7.8	14.2	27.5	54
Operating Temperature	°C	1,2	3~200	(-15°C ~ +90°C)				
Lubrication		1,2	3~200	(Synthetic Grease)				
Protection Class		1,2	3~200	IP65				
Mounting Position		1,2	3~200	(Any Direction)				
Noise Level (n1=3000rpm, No load)	dB(A)	1,2	3~200	≤65	≤68	≤68	≤70	≤72

## Reducer Rotary Inertia

Specs	Unit	Stage	Ratio	EVL070	EVL090	EVL120	EVL145	EVL180
Moment of Inertia	kg.cm <sup>2</sup>	1	3~10	0.35	2.25	6.84	23.4	68.9
			14~20	0.07	1.87	6.25	21.8	65.6
		2	15~100	0.09	0.35	2.25	6.84	23.4
			120~200	—	0.31	1.87	6.25	21.8

1. The Max. acceleration torque T2B=60% of T2NOT 2. When output speed is 100rpm, inertia acts 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.



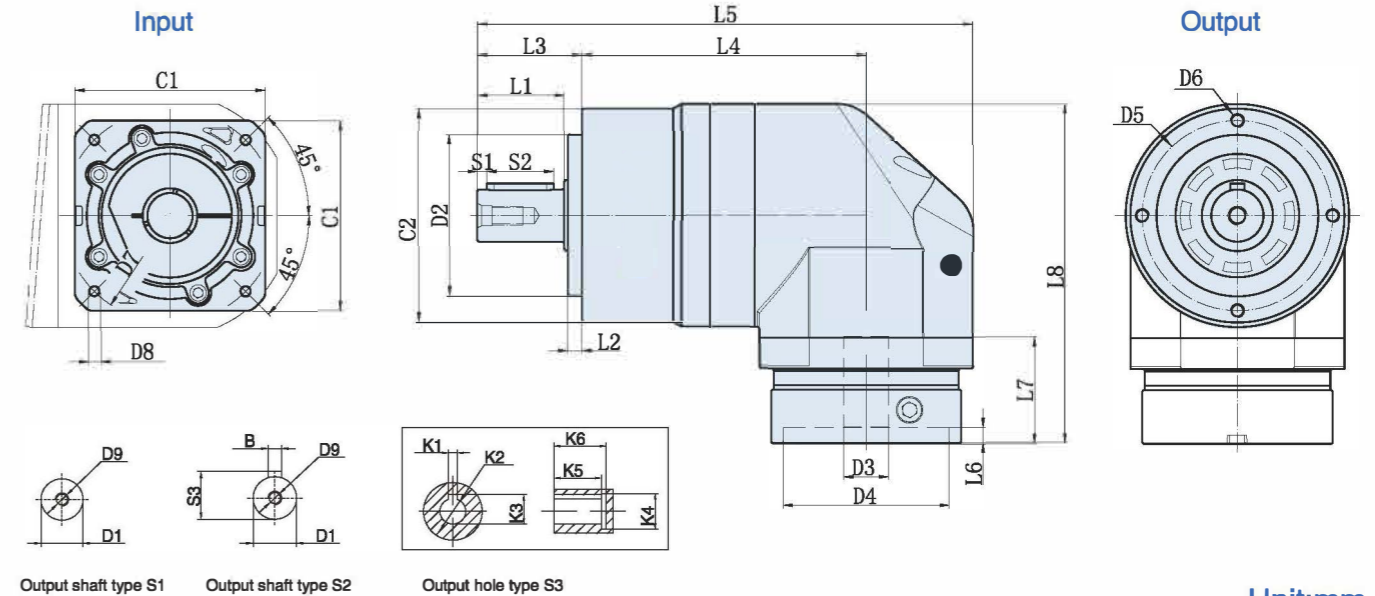
# MODEL: EVL

1-Stage

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



## Dimensions:



Unit:mm

Size	EVL070-L1	EVL090-L1	EVL120-L1	EVL145-L1	EVL180-L1
D1	φ 16	φ 22	φ 32	φ 40	φ 55
D2	φ 52	φ 68	φ 90	φ 120	φ 160
D3	φ 14 ( ≤19 )	φ 19(11-24)	φ 24(16-24)	φ 24 ( ≤42 )	φ 35 ( ≤55 )
D4	φ 50 ( 50-70 )	φ 70 ( 50-110 )	φ 110 ( 50-110 )	φ 110 ( ≤180 )	φ 114.3 ( ≤180 )
D5	φ 62	φ 80	φ 108	φ 140	φ 184
D6	4-M5*10	4-M6*12	4-M8*16	4-M10*20L	4-M12*30L
D7	φ 70 ( 70-130 )	φ 90 ( 70-145 )	φ 145 ( 90-155 )	φ 145 ( ≤215 )	φ 200 ( ≤300 )
D8	( 4-M4*10L )	( 4-M5*12L )	( 4-M8*20L )	( 4-M12*30L )	( 4-M12*30L )
D9	M5*0.8P*15L	M6*1.25P*19L	M12*1.75P*28L	M16*36L	M20*42L
L1	28.5	36.5	51	97	100
L2	5	6	9	79	84
L3	35	44	62	15	15
L4	88	120	140.5	172	294
L5	153	209	260	340	365
L6	(5)	(6.5)	(10)	(10)	(19)
L7	(33)	(45)	(64)	(84)	(81)
L8	(112.50)	(143)	(195.5)	(238)	(278)
C1	( □60 )	( □80 )	( □130 )	( □130 )	( □180 )
C2	φ 70	φ 90	φ 120	φ 155	φ 205
S1	3	4	5	5	6
S2	22	28	40	63	70
S3	18	24.5	35	43	59
B	5	6	10	12	16
K1	4	6	8	10	14
K2	φ 11	φ 22	φ 28	φ 38	φ 50
K3	12.8	24.5	31.3	42	53.8
K4	φ 16	φ 32	φ 38	φ 48	φ 60
K5	15	20	27	35	43
K6	18	24	32	40	50

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.



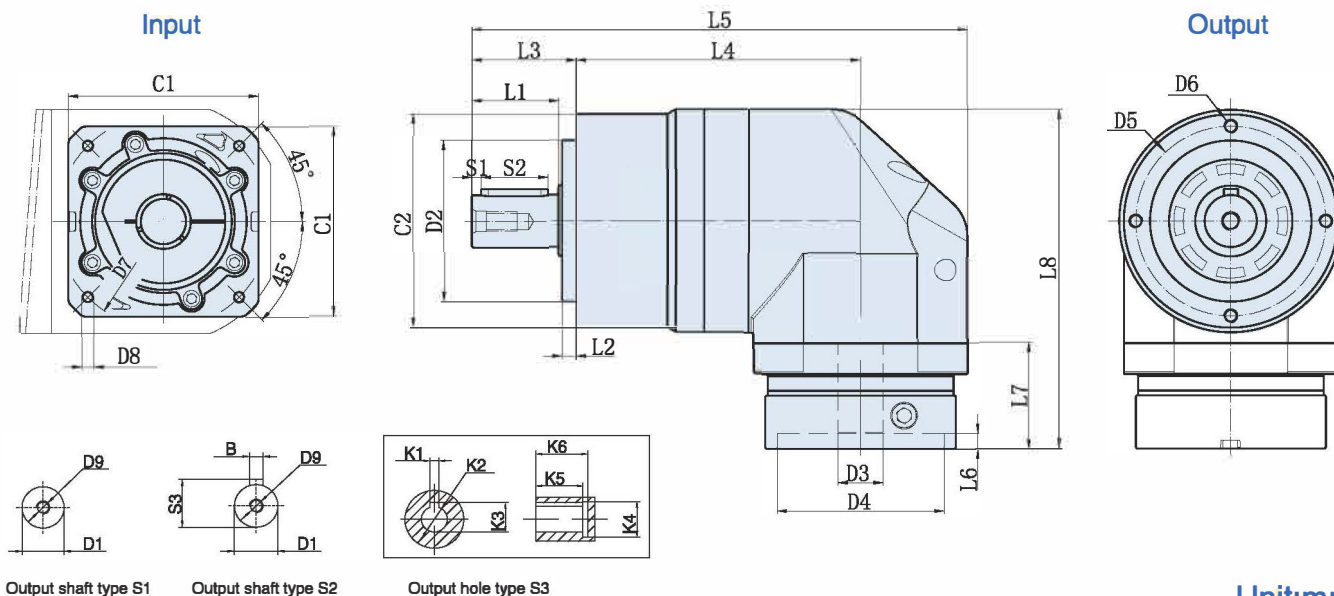
# MODEL: EVL

2-Stage

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



## Dimensions:



Unit:mm

Size	EVL070-L2	EVL090-L2	EVL120-L2	EVL145-L2	EVL180-L2
D1	φ 16	φ 22	φ 32	φ 40	φ 55
D2	φ 52	φ 68	φ 90	φ 120	φ 160
D3	φ 14 ( ≤19 )	φ 19(11-24)	φ 24(16-24)	φ 24 ( ≤42 )	φ 35 ( ≤55 )
D4	φ 50 ( 50-70 )	φ 70 ( 50-110 )	φ 110 ( 50-110 )	φ 110 ( ≤180 )	φ 114.3 ( ≤180 )
D5	φ 62	φ 80	φ 108	φ 140	φ 184
D6	4-M5*10	4-M6*12	4-M8*16	4-M10*20L	4-M12*30L
D7	φ 70 ( 70-130 )	φ 90 ( 70-145 )	φ 145 ( 90-155 )	φ 145 ( ≤215 )	φ 200 ( ≤300 )
D8	( 4-M4*10L)	( 4-M5*12L)	( 4-M8*20L)	( 4-M12*30L)	( 4-M12*30L)
D9	M5*0.8P*15L	M6*1.25P*19L	M12*1.75P*28L	M16*36L	M20*42L
L1	28.5	36.5	51	97	100
L2	5	6	9	79	84
L3	35	44	62	15	15
L4	117	134.5	170.5	233	362.5
L5	182	208.5	277.5	401	433.5
L6	(5)	(6.5)	(10)	(10)	(19)
L7	(33)	(42.5)	(59)	(84)	(81)
L8	(112.50)	(134)	(180)	(238)	(278)
C1	( □60 )	( □80)	( □130)	( □130 )	( □180 )
C2	φ 70	φ 90	φ 120	φ 155	φ 205
S1	3	4	5	5	6
S2	22	28	40	63	70
S3	18	24.5	35	43	59
B	5	6	10	12	16
K1	4	6	8	10	14
K2	φ 11	φ 22	φ 28	φ 38	φ 50
K3	12.8	24.5	31.3	42	53.8
K4	φ 16	φ 32	φ 38	φ 48	φ 60
K5	15	20	27	35	43
K6	18	24	32	40	50

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.