



# ZB/ZBR/ZE/ZER/HD/HDR SERIES HIGH PRECISION PLANETARY GEAR BOX



Zhongda Leader Realizes Infinite Possibility In Automation Application

# Motor Drivers Micro Motors Precision Reducers



**Headquarters** Ningbo Zhongda Leader Intelligent Transmission Co., Ltd.



**Subsidiary**  
Ningbo Zhongda Chuangyuan Precision Equipment Co., Ltd.



**Subsidiary**  
Foshan Zhongda Leader Drive Technology Co., Ltd.

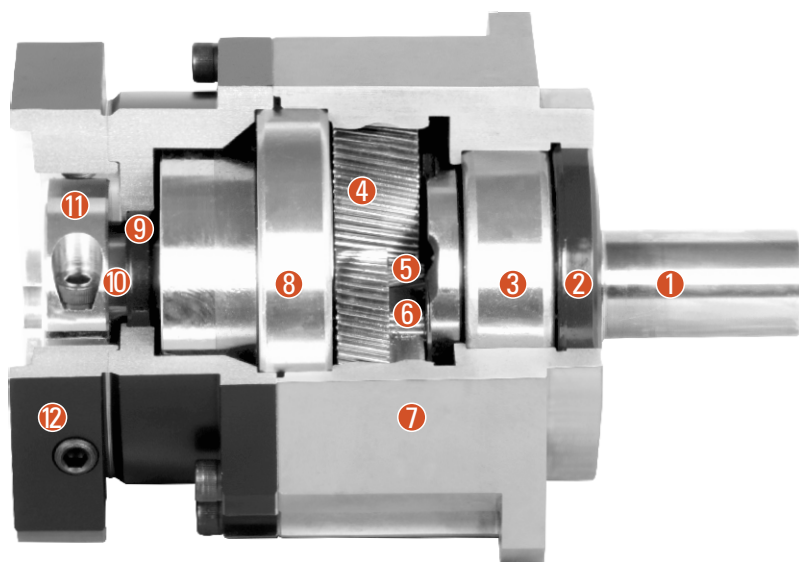
Ningbo Zhongda Leader Intelligent Transmission Co., Ltd. was founded in 1998. It is an electromechanical automation enterprise integrating R&D, manufacturing, sales and service of motor drives, micro motors, precision reducers and integrated products. It has 9 branches and subsidiaries, over 1,800 employees, and a registered capital of 151.17 million yuan. In August 2017, it was listed on the A-shares of the Shenzhen Stock Exchange (stock code 002896).

The company is a national-level high-tech enterprise, leading and participating in the drafting of 10 national standards and 5 industry standards, maintaining 107 patents and 11 invention patents. It's owning a Zhejiang-level enterprise R&D center.

The company is based on intelligent and automation equipment core component manufacturers and design solution providers. With its differentiated and cost-effective advantages, the company's products are widely used in industrial robots, intelligent logistics, new energy, machine tools and other fields, as well as special machinery and equipment for food, packaging, textiles, electronics, and medical treatment. On the basis of realizing domestic substitution of imported products, gradually participate in international competition.

# ZB SERIES GEARBOX

## Sectional View



- ① Output shaft
- ② Oil seal
- ③ Output shaft front bearing
- ④ Planetary gear
- ⑤ Solar wheel
- ⑥ Full needle bearing
- ⑦ Front cover
- ⑧ Output shaft rear bearing
- ⑨ Oil seal
- ⑩ Coupling
- ⑪ Lock ring
- ⑫ Rear cover

## Type and Model Number Explanation

ZB Reducers				Servo Motor		
090	ZB	20	( )	(S1)	- 750	<input type="text"/>
①	②	③	④	⑤	⑥	⑦
① Gearbox frame size: 090 (See P04)						
② Gearbox series code: ZB						
③ Gear ratio: 20, (See P04)						
④ Precision (See P04) Precision type P1, high precision type P0 Output shaft load is $\pm 5\%$ of allowable output torque						
⑤ Input shaft type S1: Locking with locking ring (Omission) (Can be used regardless whether the motor has a keyway, but "D" type is not applicable) S2: Locking with keyway (Input shaft with key) A: Other adapters (Please contact our company)						
⑥ Applicable servo motor power (W)						
⑦ Servo motor model						

# PRODUCT SPECIFICATIONS

## Reducer Performance Data

Specifications		Node Number	Reduction Ratio	042ZB	060ZB	060(A)ZB	090ZB	090(A)ZB	115ZB	142ZB	180ZB	220ZB
Rated Output Torque $T_{2N}$	Nm	1	3	-	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	-	55	55	130	130	208	342	588	1140
			20	19	50	50	140	140	290	542	1050	1700
		25	22	60	60	160	160	330	650	1200	2000	
		30	20	55	55	150	150	310	600	1100	1900	
		35	19	50	50	140	140	300	550	1100	1800	
		40	17	45	45	120	120	260	500	1000	1600	
		45	14	40	40	100	100	230	450	900	1500	
		50	22	60	60	160	160	330	650	1200	2000	
		60	20	55	55	150	150	310	600	1100	1900	
		70	19	50	50	140	140	300	550	1100	1800	
		80	17	45	45	120	120	260	500	1000	1600	
		90	14	40	40	100	100	230	450	900	1500	
100	14	40	40	100	100	230	450	900	1500			
Emergency Stop Torque $T_{2NOT}^2$	Nm	1,2	3~100									
Rated Input Speed $n_{1H}$	rpm	1,2	3~100									
Rated Input Speed $n_{1B}$	rpm	1,2	3~100									
Super Precision Backlash P0	arcmin	1	3~10									
		2	15~100									
Precision Backlash P1	arcmin	1	3~10									
		2	15~100									
Standard Backlash P2	arcmin	1	3~10									
		2	15~100									
Torsional Stiffness	Nm/arcmin	1,2	3~100									
Allowable Radial Force $F_{2RB}^3$	N	1,2	3~100									
Allowable Axial Force $F_{2RB}^3$	N	1,2	3~100									
Service Life	hr	1,2	3~100									
Efficiency $\eta$	%	1	3~10									
		2	15~100									
Weight	Kg	1	3~10									
		2	15~100									
Operating Temperature	°C	1,2	3~100									
Lubrication		1,2	3~100									
Protection Class		1,2	3~100									
Mounting Position		1,2	3~100									
Noise Level at 1m Distance ( $n_1=3000$ rpm, No Load)	dB(A)	1,2	3~100									

## Moment of Inertia of The Reducer

Specifications		Node Number	Reduction Ratio	042ZB	060ZB	060(A)ZB	090ZB	090(A)ZB	115ZB	142ZB	180ZB	220ZB
Moment Of Inertia $J_1$	Kg·cm <sup>2</sup>	1	3	-	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
			15	-	0.03	0.13	0.13	0.47	0.47	2.71	7.42	23.29
			20	0.03	0.03	0.13	0.13	0.47	0.47	2.71	7.42	23.29
		25	0.03	0.03	0.13	0.13	0.47	0.47	2.71	7.42	23.29	
		30	0.03	0.03	0.13	0.13	0.47	0.47	2.71	7.42	23.29	
		35	0.03	0.03	0.13	0.13	0.47	0.47	2.71	7.42	23.29	
		40	0.03	0.03	0.13	0.13	0.47	0.47	2.71	7.42	23.29	
		45	0.03	0.03	0.13	0.13	0.47	0.47	2.71	7.42	23.29	
		50	0.03	0.03	0.13	0.13	0.44	0.44	2.57	7.03	22.51	
		60	0.03	0.03	0.13	0.13	0.44	0.44	2.57	7.03	22.51	
		70	0.03	0.03	0.13	0.13	0.44	0.44	2.57	7.03	22.51	
		80	0.03	0.03	0.13	0.13	0.44	0.44	2.57	7.03	22.51	
		90	0.03	0.03	0.13	0.13	0.44	0.44	2.57	7.03	22.51	
100	0.03	0.03	0.13	0.13	0.44	0.44	2.57	7.03	22.51			

1. Gear ratio ( $i=N_1/N_{out}$ )

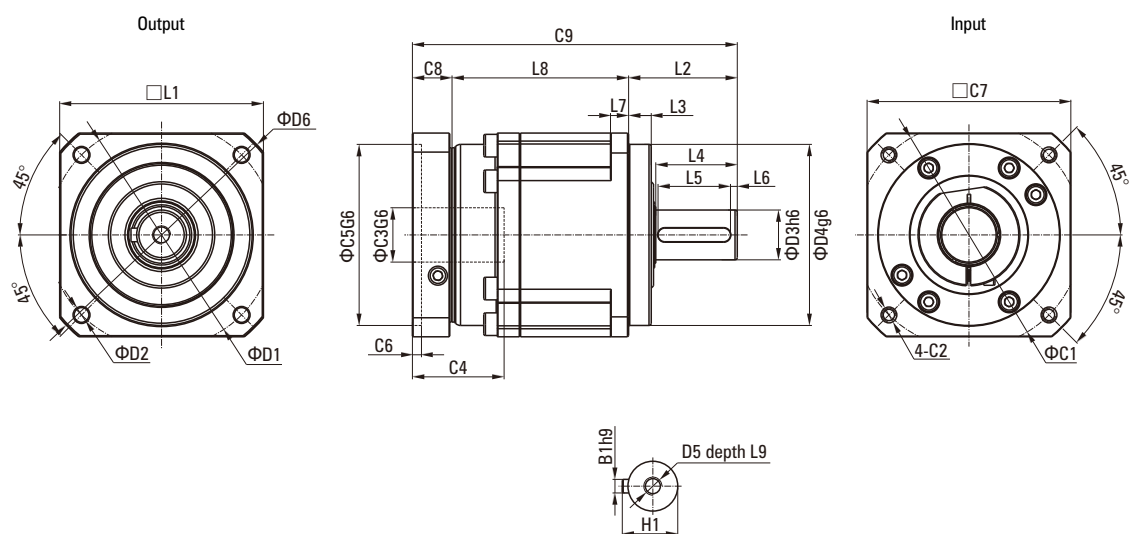
2. Maximum acceleration torque  $T_{2B}=60\%$  of  $T_{2NOT}$

3. When the output speed is 100rpm, it will act on the central position of the output shaft.

\*Continuous operation, service life is 10000hrs

# DIMENSIONS (SINGLE STAGE, REDUCTION RATIO $i=3\sim 10$ )

## Dimensional Drawing



## Dimensional Table

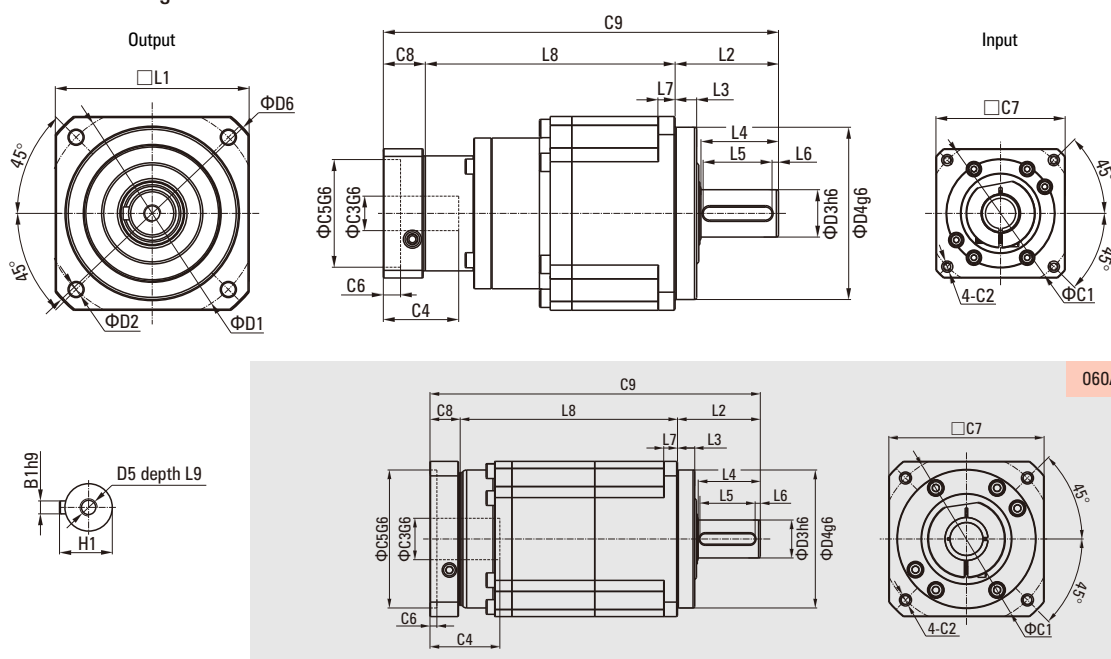
Unit: mm

Size	042ZB	060ZB	090ZB	115ZB	142ZB	180ZB	220ZB
D1	50	70	100	130	165	215	250
D2	3.4	5.5	6.6	9	11	13	17
D3 <sup>h6</sup>	13	16	22	32	40	55	75
D4 <sup>g6</sup>	35	50	80	110	130	160	180
D5	M4×0.7P	M5×0.8P	M8×1.25P	M12×1.75P	M16×2P	M20×2.5P	M20×2.5P
D6	56	80	116	152	185	240	292
L1	42	60	90	115	142	180	220
L2	26	37	48	65	97	105	138
L3	5.5	7	10	12	15	20	30
L4	1	28	35.5	51	79	82	105
L5	16	25	32	40	70	70	90
L6	2	2	2	5	4	6	7
L7	4	6	8	10	15	20	25
L8	31	65.5	78	101.5	119.5	154	163.5
L9	4.8	12.5	19	28	36	42	42
C1	46	70	100	130	165	215	235
C2	M4×0.7P	M5×0.8P	M6×1P	M8×1.25P	M10×1.5P	M12×1.75P	M12×1.75P
C3	*≤11/≤12	*≤14/≤16	≤19/≤24	≤32	≤35/≤38	≤42/≤48	≤55
C4	25	35	40.5	51	60	85	116
C5 <sup>g6</sup>	30	50	80	110	130	180	200
C6	3.5	8	4	5	6	6	6
C7	42	60	90	115	142	190	220
C8	29.5	19.5	17.5	20	22.5	29	63
C9	114	122	143.5	186.5	239	288	364.5
B1 <sup>h9</sup>	5	5	6	10	12	16	20
H1	15	18	24.5	35	43	59	79.5

\*060ZB 5,10 Reduction ratio provides C3≤16 to choose from.

# DIMENSIONS (TWO STAGE, REDUCTION RATIO $i=15\sim 100$ )

## Dimensional Drawing



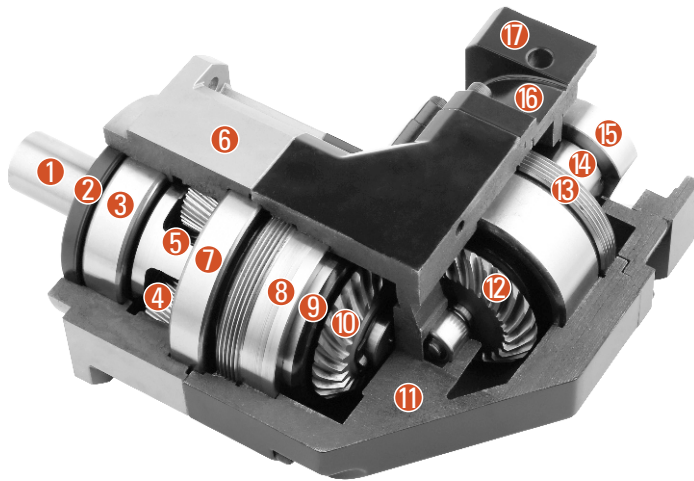
## Dimensional Table

Unit: mm

Size	042ZB	060(A)ZB	090ZB	090(A)ZB	115ZB	142ZB	180ZB	220ZB
D1	50	70	100		130	165	215	250
D2	3.4	5.5	6.6		9	11	13	17
D3 <sup>h6</sup>	13	16	22		32	40	55	75
D4 <sup>g6</sup>	35	50	80		110	130	160	180
D5	M4×0.7P	M5×0.8P	M8×1.25P		M12×1.75P	M16×2P	M20×2.5P	M20×2.5P
D6	56	80	116		152	185	240	292
L1	42	60	90		115	142	180	220
L2	26	37	48		65	97	105	138
L3	5.5	7	10		12	15	20	30
L4	1	28	36		51	79	82	105
L5	16	25	32		40	70	70	90
L6	2	2	3		5	4	6	7
L7	4	6	8		10	15	20	25
L8	58.5	102.5	116	126	143	169.5	207.5	246
L9	10	12.5	19		28	36	42	42
C1	46	70	70	100	100	130	165	215
C2	M4×0.7P	M5×0.8P	M5×0.8P	M6×1P	M6×1P	M8×1.25P	M10×1.5P	M12×1.75P
C3	≤11/≤12	≤14/≤16	≤14/≤15.875/≤16	≤19/≤24	≤19/≤24	≤32	≤35/≤38	≤42/≤48
C4	25	35	35	40.5	40	50	60	85
C5 <sup>g6</sup>	30	50	50	80	80	110	130	180
C6	3.5	8	8	4	4	5	6	6
C7	42	60	60	90	90	115	142	190
C8	29.5	19.5	19.5	17.5	17.5	12.5	22.5	29
C9	114	159	183.5	191.5	225.5	283.5	335	409
B1 <sup>h9</sup>	5	5	6		10	12	16	20
H1	15	18	24.5		35	43	59	79.5

# ZBR SERIES GEARBOX - PRODUCT SPECIFICATIONS

## Sectional View



- ① Output shaft
- ② Oil seal
- ③ Output shaft front bearing
- ④ Planetary gear
- ⑤ Solar wheel
- ⑥ Front cover
- ⑦ Output shaft rear bearing
- ⑧ Adjusting nut
- ⑨ Double row angular contact bearing
- ⑩ Output bevel gear
- ⑪ Right angle box
- ⑫ Input bevel gear
- ⑬ Lock nut
- ⑭ Input coupling
- ⑮ Locking device
- ⑯ Rear cover
- ⑰ Rear cover gasket

## Reducer Performance Data

Specifications		Node Number	Reduction Ratio	060ZBR	090ZBR	115ZBR	142ZBR	180ZBR	220ZBR
Rated Output Torque $T_{2N}$	Nm	1	3	36	90	195	342	588	1140
			4	48	120	260	520	1040	1680
			5	60	150	325	650	1200	2000
			6	55	150	310	600	1100	1900
			7	50	140	300	550	1100	1800
			8	45	120	260	500	1000	1600
			9	40	100	230	450	900	1500
			10	40	100	230	450	900	1500
			14	42	140	300	550	1100	1800
			20	40	100	230	450	900	1500
		2	25	-	150	325	650	1200	2000
			30	-	150	310	600	1100	1900
			35	-	140	300	550	1100	1800
			40	-	120	260	500	1000	1600
			45	-	100	230	450	900	1500
			50	-	100	230	650	1200	2000
			60	-	150	310	600	1100	1900
			70	-	140	300	550	1100	1800
			80	-	120	260	500	1000	1600
			90	-	100	230	450	900	1500
100	-	100	230	450	900	1500			
120	-	150	310	600	1100	1900			
140	-	140	300	550	1100	1800			
160	-	120	260	550	1000	1600			
180	-	100	230	450	900	1500			
200	-	100	230	450	900	1500			
Emergency Stop Torque $T_{2NOT}^2$	Nm	1,2	3~200	3 Times of Output Rated Torque					
Rated Input Speed $n_{1N}$	rpm	1,2	3~200	3000	3000	3000	3000	3000	2000
Rated Input Speed $n_{1B}$	rpm	1,2	3~200	6000	6000	6000	6000	6000	4000
Super Precision Backlash P0	arcmin	1	3~20	-	≤2	≤2	≤2	≤2	≤2
		2	25~200	-	≤4	≤4	≤4	≤4	≤4
Precision Backlash P1	arcmin	1	3~20	≤4	≤4	≤4	≤4	≤4	≤4
		2	25~200	-	≤7	≤7	≤7	≤7	≤7
Standard Backlash P2	arcmin	1	3~20	≤6	≤6	≤6	≤6	≤6	≤6
		2	25~200	-	≤9	≤9	≤9	≤9	≤9
Torsional Stiffness	Nm/arcmin	1,2	3~200	7	14	25	50	145	145
Allowable Radial Force $F_{zR}^3$	N	1,2	3~200	1530	3250	6700	9400	14500	50000
Allowable Axial Force $F_{zAB}^3$	N	1,2	3~200	765	1625	3350	4700	7250	25000
Service Life	hr	1,2	3~200	20000*					
Efficiency $\eta$	%	1	3~20	≥97%					
		2	25~200	≥94%					
Weight	Kg	1	3~20	2.1	6.4	13	24.5	51	51
		2	25~200	-	7.8	14.2	27.5	54	95
Operating Temperature	°C	1,2	3~200	-10°C ~ +90°C					
Lubrication		1,2	3~200	Synthetic Lubricating Grease					
Protection Class		1,2	3~200	IP65					
Mounting Position		1,2	3~200	Any Direction					
Noise Level at 1m Distance ( $n_1=3000$ rpm, No Load)	dB(A)	1,2	3~200	≤63	≤65	≤68	≤70	≤72	≤72

## Moment Of Inertia Of The Reducer

Specifications		Node Number	Reduction Ratio	060ZBR	090ZBR	115ZBR	142ZBR	180ZBR	220ZBR
Moment Of Inertia $J_1$	Kg·cm <sup>2</sup>	1	3~10	0.35	2.25	6.84	23.4	68.9	68.9
			14	0.07	1.87	6.25	21.8	65.6	65.6
			20	0.07	1.87	6.25	21.8	65.6	65.6
		2	25~100	-	0.35	6.25	21.8	65.6	65.6
120~200	-		0.31	6.25	21.8	65.6	65.6		

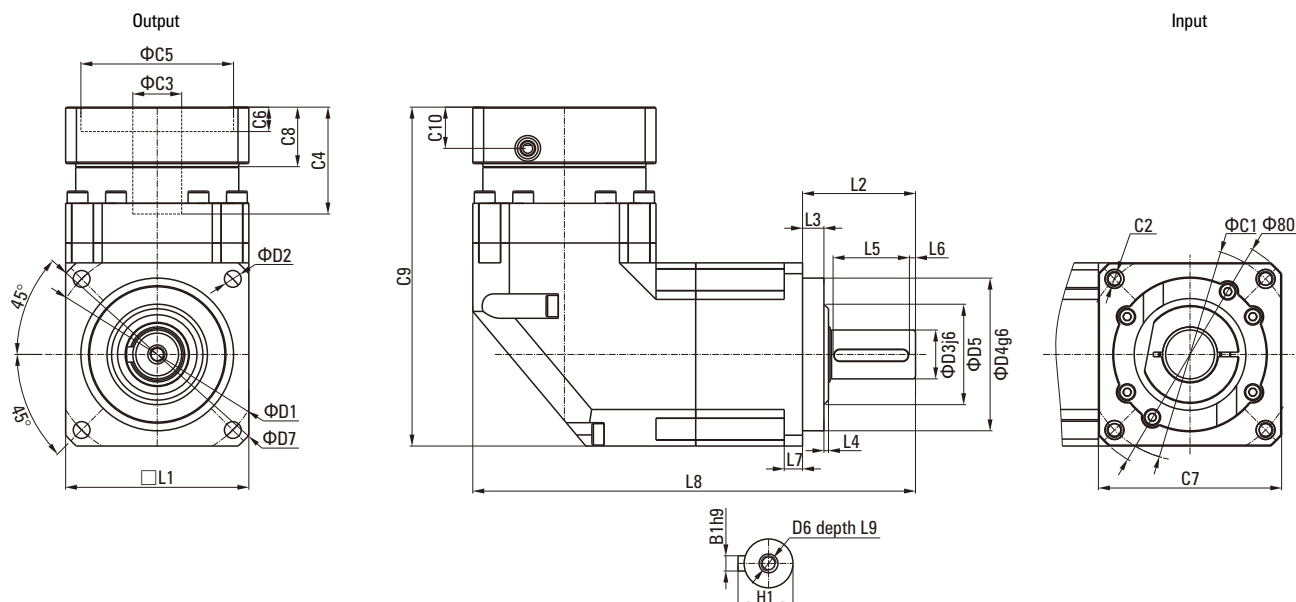
1. Gear ratio ( $i = N_{in}/N_{out}$ )2. Maximum acceleration torque  $T_{25} = 60\%$  of  $T_{2N0T}$ 

3. When the output speed is 100rpm, it will act on the central position of the output shaft.

\*Continuous operation, service life is 10000hrs

## DIMENSIONS (SINGLE STAGE, REDUCTION RATIO $i = 3 \sim 20$ )

### Dimensional Drawing



### Dimensional Table

Unit: mm

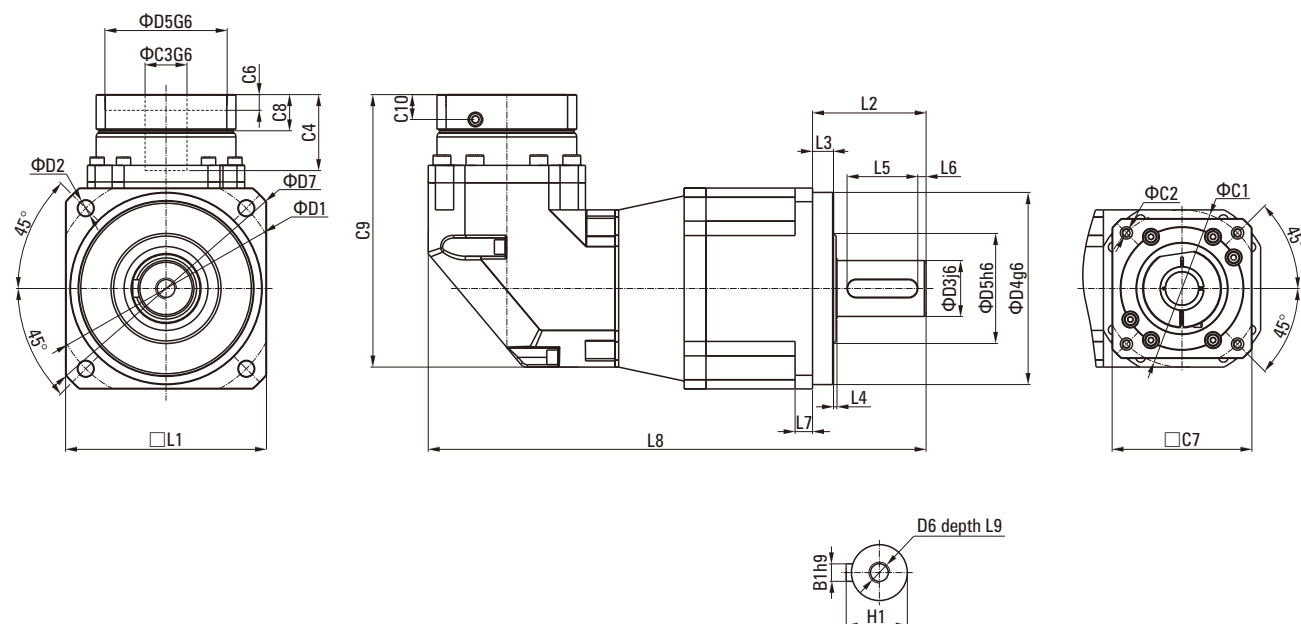
Size	060ZBR	090ZBR	115ZBR	142ZBR	180ZBR
D1	70	100	130	165	215
D2	5.5	6.6	9	11	13
D3 <sub>HS</sub>	16	22	32	40	55
D4 <sub>GS</sub>	50	80	110	130	160
D5	45	65	95	75	95
D6	M5×0.8P	M8×1.25P	M12×1.75P	M16×2P	M20×2.5P
D7	80	116	152	185	240
L1	60	90	115	142	180
L2	37	48	65	97	105
L3	7	10	12	15	20
L4	1.5	1.5	2	3	3
L5	25	32	40	63	70
L6	2	3	5	5	6
L7	6	8	10	12	15
L8	145	203	259	333	394
L9	12.5	19	28	36	42
C1 <sup>4</sup>	70	100	130	165	215
C2 <sup>4</sup>	M5×0.8P	M6×1P	M8×1.25P	M10×1.5P	M12×1.75P
C3 <sup>4</sup>	*≤14/≤16	≤19/≤24	≤32	≤38	≤48
C4 <sup>4</sup>	30	40	50	60	85
C5 <sup>4</sup> <sub>GS</sub>	50	80	110	130	180
C6 <sup>4</sup>	8	4	5	6	6
C7 <sup>4</sup>	60	90	115	142	190
C8 <sup>4</sup>	19	17	19.5	22.5	29
C9 <sup>4</sup>	111.5	152.5	191.5	235.5	303.5
C10 <sup>4</sup>	13.5	10.75	13	15	20.75
B1 <sub>HS</sub>	5	6	10	12	16
H1	18	24.5	35	43	59

\*070ZBR 5,10 Reduction ratio provides C3≤16 to choose from.



# DIMENSIONS (TWO STAGE, REDUCTION RATIO $i=25\sim 200$ )

## Dimensional Drawing



## Dimensional Table

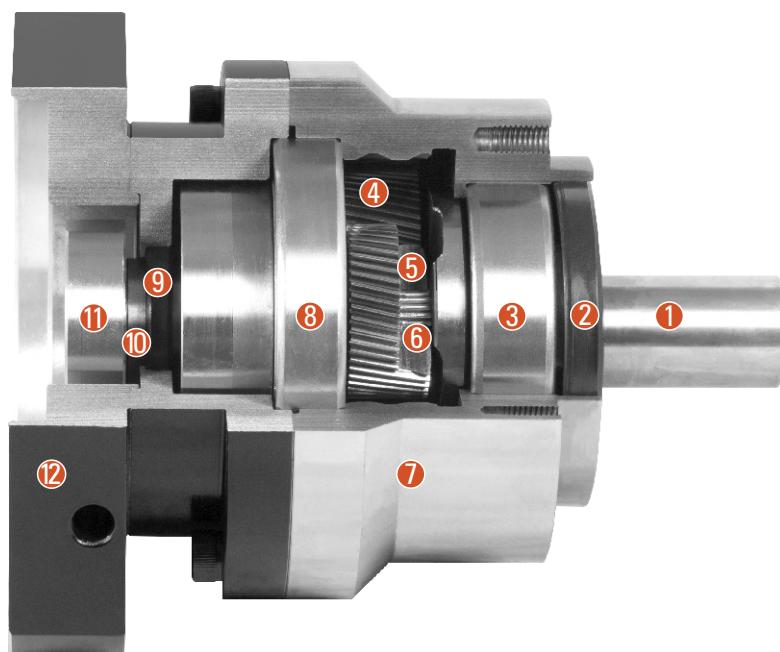
Unit: mm

Size	060(A)ZBR	090ZBR	115ZBR	142ZBR	180ZBR	180ZBR
D1	70	100	130	165	215	250
D2	5.5	6.6	9	11	13	17
D3 <sup>h6</sup>	16	22	32	40	55	75
D4 <sup>g6</sup>	50	80	110	130	160	180
D5	45	65	95	75	95	115
D6	M5×0.8P	M8×1.25P	M12×1.75P	M16×2P	M20×2.5P	M20×2.5P
D7	80	116	152	185	240	292
L1	60	90	115	142	180	220
L2	37	48	65	97	105	138
L3	7	10	12	15	20	30
L4	1.5	1.5	2	3	3	3
L5	25	32	40	63	70	90
L6	2	3	5	5	6	7
L7	6	8	10	12	15	20
L8	170	206.5	285	365	394	521
L9	12.5	19	28	36	42	42
C1	70	70	100	130	165	215
C2	M5×0.8P	M5×0.8P	M6×1P	M8×1.25P	M10×1.5P	M12×1.75P
C3 <sup>g6</sup>	≤14/≤16	≤14/≤16	≤19/≤24	≤32	≤38	≤48
C4	34	34	40	50	60	85
C5 <sup>g6</sup>	50	50	80	110	130	180
C6	8	8	4	5	6	6
C7	60	60	90	115	142	190
C8	19	19	17	19.5	22.5	29
C9	111	126.5	165	205	254.5	323.5
C10	13.5	13.5	10.75	13	15	20.75
B1 <sup>h9</sup>	5	6	10	12	16	20
H1	18	24.5	35	43	59	79.5

\*070ZBR 5,10 Reduction ratio provides C3≤16 to choose from.

# ZE SERIES GEARBOX

## Sectional View



- ① Output shaft
- ② Oil seal
- ③ Output shaft front bearing
- ④ Planetary gear
- ⑤ Solar wheel
- ⑥ Full needle bearing
- ⑦ Front cover
- ⑧ Output shaft rear bearing
- ⑨ Oil seal
- ⑩ Coupling
- ⑪ Lock ring
- ⑫ Rear cover

## Type and Model Number

ZE Reducers				Servo Motor			
090	ZE	20	( )	(S1)	-	750	<input type="text"/>
①	②	③	④	⑤		⑥	⑦
① Gearbox frame size: 090 (See P10)							
② Gearbox series code: ZE							
③ Gear Ratio: 20 (See P10)							
④ Precision (See P10) Standard type P2 (Omission), precision type P1, high precision type P0 Precision (Output shaft load is $\pm 5\%$ of allowable output torque)							
⑤ Input shaft type S1: Locking with locking ring (Omission) (Can be used regardless whether the motor has a keyway, but "D" type is not applicable) S2: Locking with keyway (Input shaft with key) A: Other adapters (Please contact our company)							
⑥ Applicable servo motor power (W)							
⑦ Servo motor model							

# PRODUCT SPECIFICATIONS

## Reducer Performance Data

Specifications	Node Number	Reduction Ratio	050ZE	070ZE	090ZE	120ZE	155ZE	205ZE	235ZE	
Rated Output Torque $T_{2N}$	Nm	1	3	-	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	-	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			
Emergency Stop Torque $T_{2NOT}^2$	Nm	1,2	3 Times of Output Rated Torque							
Rated Input Speed $n_{1N}$	rpm	1,2	3~100	3000	3000	3000	3000	3000	3000	
Rated Input Speed $n_{1B}$	rpm	1,2	3~100	6000	6000	6000	6000	6000	4000	
Super Precision Backlash P0	arcmin	1	3~10	-	-	-	≤1	≤1	≤1	
		2	15~100	-	-	-	≤3	≤3	≤3	
Precision Backlash P1	arcmin	1	3~10	≤3	≤3	≤3	≤3	≤3	≤3	
		2	15~100	≤5	≤5	≤5	≤5	≤5	≤5	
Standard Backlash P2	arcmin	1	3~10	≤5	≤5	≤5	≤5	≤5	≤5	
		2	15~100	≤7	≤7	≤7	≤7	≤7	≤7	
Torsional Stiffness	Nm/arcmin	1,2	3~100	3	7	14	25	50	145	
Allowable Radial Force $F_{zB}^3$	N	1,2	3~100	702	1377	2985	6100	8460	13050	
Allowable Axial Force $F_{xB}^3$	N	1,2	3~100	390	765	1625	3350	4700	7250	
Service Life	hr	1,2	3~100	20000*						
Efficiency $\eta$	%	1	3~10	≥97%						
		2	15~100	≥94%						
Weight	Kg	1	3~10	0.6	1.4	3.3	6.9	13	31	53
		2	15~100	0.9	1.6	4.7	8.7	17	35	66
Operating Temperature	°C	1,2	3~100	-10°C~+90°C						
Lubrication		1,2	3~100	Synthetic Lubricating Grease						
Protection Class		1,2	3~100	IP65						
Mounting Position		1,2	3~100	Any Direction						
Noise Level at 1m Distance ( $n_1=3000$ rpm, No Load)	dB(A)	1,2	3~100	≤56	≤58	≤60	≤63	≤65	≤67	≤70

## Moment of Inertia of The Reducer

Specifications	Node Number	Reduction Ratio	050ZE	070ZE	090ZE	120ZE	155ZE	205ZE	235ZE	
Moment Of Inertia $J_1$		1	3	-	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
			15	-	0.03	0.13	0.47	2.71	7.42	23.29
			20	0.03	0.03	0.13	0.47	2.71	7.42	23.29
	25	0.03	0.03	0.13	0.47	2.71	7.42	23.29		
	30	0.03	0.03	0.13	0.47	2.71	7.42	23.29		
	35	0.03	0.03	0.13	0.47	2.71	7.42	23.29		
	40	0.03	0.03	0.13	0.47	2.71	7.42	23.29		
	45	0.03	0.03	0.13	0.47	2.71	7.42	23.29		
	50	0.03	0.03	0.13	0.44	2.57	7.03	22.51		
	60	0.03	0.03	0.13	0.44	2.57	7.03	22.51		
	70	0.03	0.03	0.13	0.44	2.57	7.03	22.51		
	80	0.03	0.03	0.13	0.44	2.57	7.03	22.51		
	90	0.03	0.03	0.13	0.44	2.57	7.03	22.51		
100	0.03	0.03	0.13	0.44	2.57	7.03	22.51			

1.Gear ratio( $i=N_1/N_{out}$ )

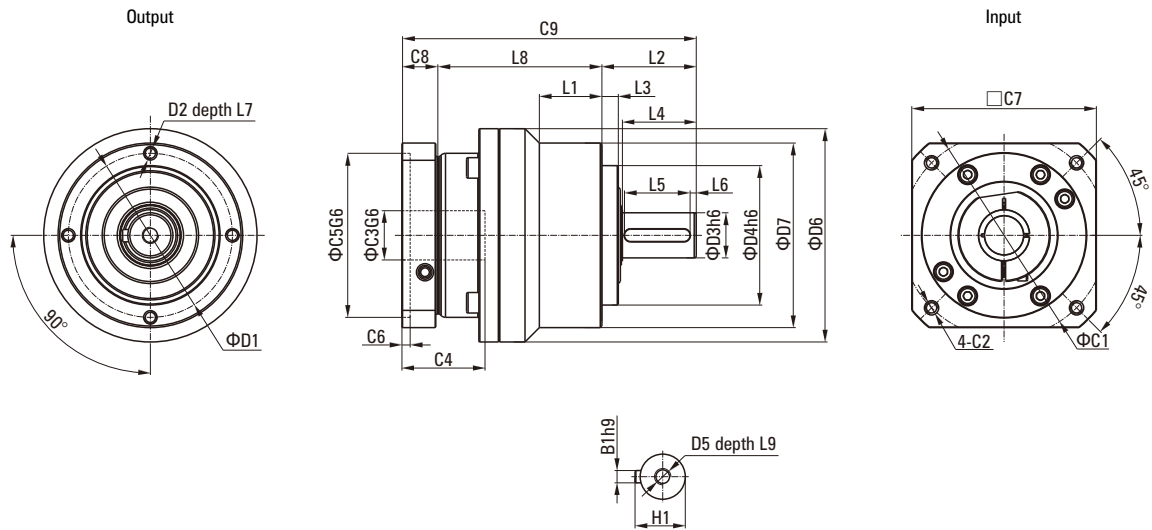
2.Maximum acceleration torque  $T_{zB}=60\%$  of  $T_{2NOT}$

3.When the output speed is 100rpm, it will act on the central position of the output shaft.

\*Continuous operation, service life is 10000hrs

# DIMENSIONS (SINGLE STAGE, REDUCTION RATIO $i=3\sim 10$ )

## Dimensional Drawing



## Dimensional Table

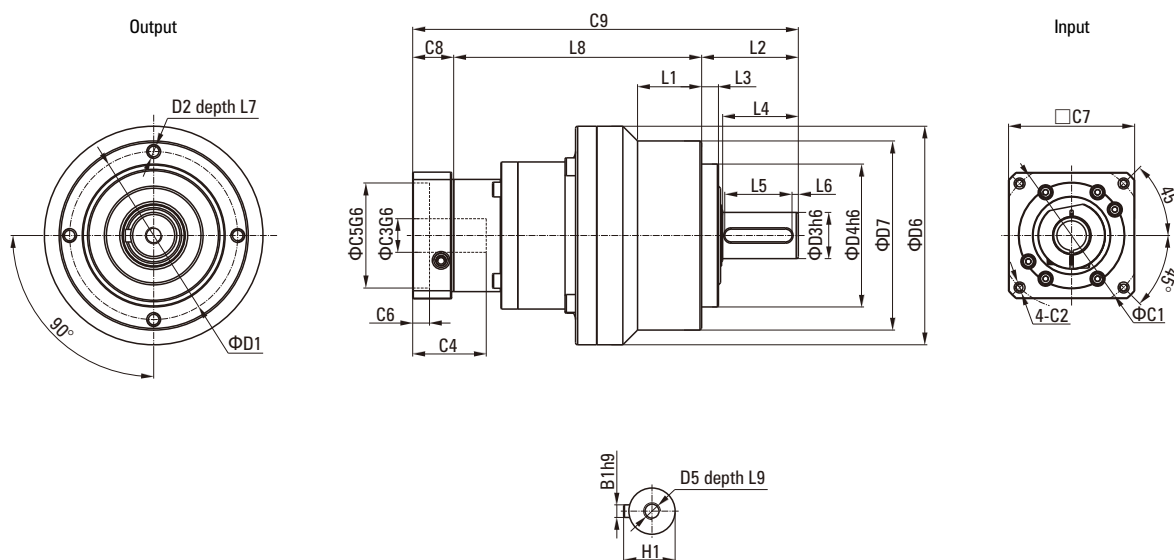
Unit: mm

Size	050ZE	070ZE	090ZE	120ZE	155ZE	205ZE
D1	44	62	80	108	140	184
D2	M5×0.7P	M5×0.8P	M6×1P	M8×1.25P	M10×1.5P	M12×1.75P
D3 <sup>h6</sup>	12	16	22	32	40	55
D4 <sup>g6</sup>	35	52	68	90	120	160
D5	M4×0.7P	M5×0.8P	M8×1.25P	M12×1.75P	M16×2P	M20×2.5P
D6	53	70	104	130	162	205
D7	50	70	90	120	155	205
L1	-	-	31.5	36	50	-
L2	24.5	36	46	70	97	100
L3	4	6	8	17	15	15
L4	1	28	36	51	79	82
L5	14	25	32	40	70	70
L6	2	2	3	5	4	6
L7	8	10	12	16	20	22
L8	47	66.5	80	96.5	119.5	154
L9	4.5	12.5	19	28	36	42
C1	10	70	100	130	165	215
C2	M4×0.7P	M5×0.8P	M6×1P	M8×1.25P	M10×1.5P	M12×1.75P
C3	*≤11/≤12	*≤14/≤16	≤19/≤24	≤32	≤35/≤38	≤42/≤48
C4	30	35	40.5	51	60	85
C5 <sup>g6</sup>	30	50	80	110	130	180
C6	3.5	8	4	5	6	6
C7	48	60	90	115	142	190
C8	19.5	19.5	17.5	20	22.5	29
C9	91	117	143.5	186.5	239	288
B1 <sup>h9</sup>	4	5	6	10	12	16
H1	14	18	24.5	35	43	59

\*070ZE 5,10 Reduction ratio provides C3≤16 to choose from.

# DIMENSIONS (TWO STAGE, REDUCTION RATIO $i=15\sim 100$ )

## Dimensional Drawing



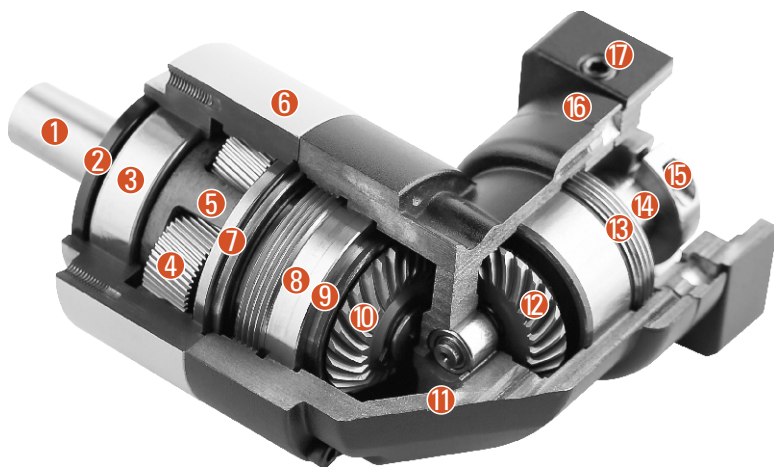
## Dimensional Table

Unit: mm

Size	050ZE	070ZE	090ZE	120ZE	155ZE	205ZE
D1	44	62	80	108	140	184
D2	M4×0.7P	M5×0.8P	M6×1P	M8×1.25P	M10×1.5P	M12×1.75P
D3 <sup>h6</sup>	12	16	22	32	40	55
D4 <sup>g6</sup>	35	52	68	90	120	160
D5	M4×0.7P	M5×0.8P	M8×1.25P	M12×1.75P	M16×2P	M20×2.5P
D6	53	70	104	130	162	205
D7	50	70	90	120	155	205
L1	-	-	31.5	36	50	-
L2	24.5	36	46	70	97	100
L3	4	6.5	8	17	15	15
L4	1	1	36	51	79	82
L5	14	25	32	40	63	70
L6	2	2	3	5	5	6
L7	8	10	12	16	20	22
L8	74	87.8	118	138	169.5	207.5
L9	4.5	4.8	19	28	36	42
C1	46	46	70	100	130	165
C2	M4×0.7P	M4×0.7P	M5×0.8P	M6×1P	M8×1.25P	M10×1.5P
C3	≤11/≤12	≤11/≤12	≤14/≤15.875/≤16	≤19/≤24	≤32	≤35/≤38
C4	30	30	35	40.5	50	60
C5 <sup>g6</sup>	30	30	50	80	110	130
C6	3.5	3.5	8	4	5	6
C7	48	48	60	90	115	142
C8	19.5	19.5	19.5	17.5	12.5	22.5
C9	118	143	183.5	225.5	283.5	335
B1 <sup>h9</sup>	4	5	6	10	12	16
H1	14	18	24.5	35	43	59

# ZER SERIES GEARBOX - PRODUCT SPECIFICATIONS

## Sectional View



- ① Output shaft
- ② Oil seal
- ③ Output shaft front bearing
- ④ Planetary gear
- ⑤ Solar wheel
- ⑥ Front cover
- ⑦ Output shaft rear bearing
- ⑧ Adjusting nut
- ⑨ Double row angular contact bearing
- ⑩ Output bevel gear
- ⑪ Right angle box
- ⑫ Input bevel gear
- ⑬ Lock nut
- ⑭ Input coupling
- ⑮ Locking device
- ⑯ Rear cover
- ⑰ Rear cover gasket

## Reducer Performance Data

Specifications	Node Number	Reduction Ratio	070ZER	090ZER	120ZER	155ZER
额定输出力矩 $T_{2N}$	1	3	36	90	195	342
		4	48	120	260	520
		5	60	150	325	650
		6	55	150	310	600
		7	50	140	300	550
		8	45	120	260	500
		9	40	100	230	450
		10	40	100	230	450
		14	42	140	300	550
		20	40	100	230	450
	2	25	-	150	325	650
		30	-	150	310	600
		35	-	140	300	550
		40	-	120	260	500
		45	-	100	230	450
		50	-	100	230	650
		60	-	150	310	600
		70	-	140	300	550
		80	-	120	260	500
		90	-	100	230	450
100	-	100	230	450		
120	-	150	310	600		
140	-	140	300	550		
160	-	120	260	550		
180	-	100	230	450		
200	-	100	230	450		
急停扭矩 $T_{2NGT}^2$	Nm	1,2	3倍额定输出力矩			
额定输入转速 $n_{1N}$	rpm	1,2	3000	3000	3000	3000
最大输入转速 $n_{1B}$	rpm	1,2	6000	6000	6000	6000
超精密背隙 P0	arcmin	1	3~20	≤2	≤2	≤2
		2	25~200	-	≤4	≤4
精密背隙 P1	arcmin	1	3~20	≤4	≤4	≤4
		2	25~200	-	≤7	≤7
标准背隙 P2	arcmin	1	3~20	≤6	≤6	≤6
		2	25~200	-	≤9	≤9
扭转刚性	Nm/arcmin	1,2	3~200	7	14	50
容许径向力 $F_{2R}^3$	N	1,2	3~200	1530	3250	6700
容许轴向力 $F_{2AB}^3$	N	1,2	3~200	765	1625	3350
使用寿命	hr	1,2	3~200	20000*		
效率 $\eta$	%	1	3~20	≥97%		
		2	25~200	≥94%		
重量	Kg	1	3~20	2.1	6.4	13
		2	25~200	-	7.8	14.2
使用温度	°C	1,2	3~200	-10°C~+90°C		
润滑		1,2	3~200	合成润滑油脂		
防护等级		1,2	3~200	IP65		
安装方向		1,2	3~200	任意方向		
噪音值 距离1m ( $n_1=3000$ rpm, 无负载)	dB(A)	1,2	3~200	≤63	≤65	≤68
						≤70

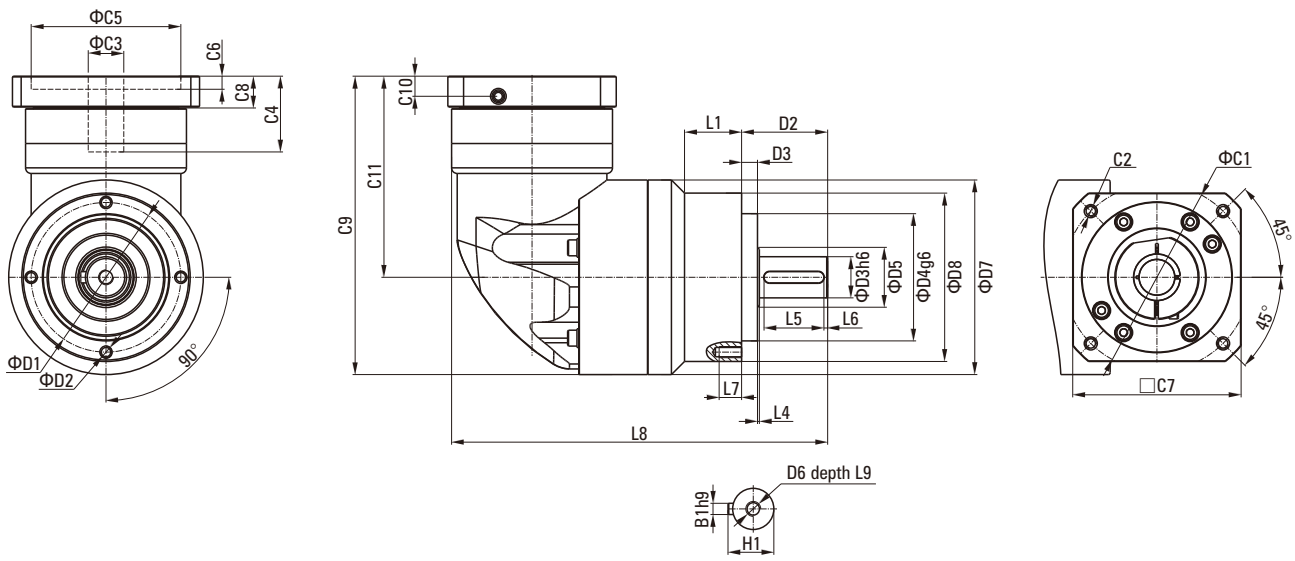
**Moment Of Inertia Of The Reducer**

Specifications		Node Number	Reduction Ratio	060ZBR	090ZBR	115ZBR	142ZBR
Moment Of Inertia $J_1$	Kg-cm <sup>2</sup>	1	3~10	0.35	2.25	6.84	23.4
			14	0.07	1.87	6.25	21.8
			20	0.07	1.87	6.25	21.8
		2	25~100	0.09	0.35	2.25	6.84
			120~200	-	0.31	1.87	6.25

1. Gear ratio ( $i=N_{in}/N_{out}$ )      2. Maximum acceleration torque  $T_{z8}=60\%$  of  $T_{2N0T}$       3. When the output speed is 100rpm, it will act on the central position of the output shaft.  
 \*Continuous operation, service life is 10000hrs

**DIMENSIONS (SINGLE STAGE, REDUCTION RATIO  $i=3\sim 20$ )**

**Dimensional Drawing**



**Dimensional Table**

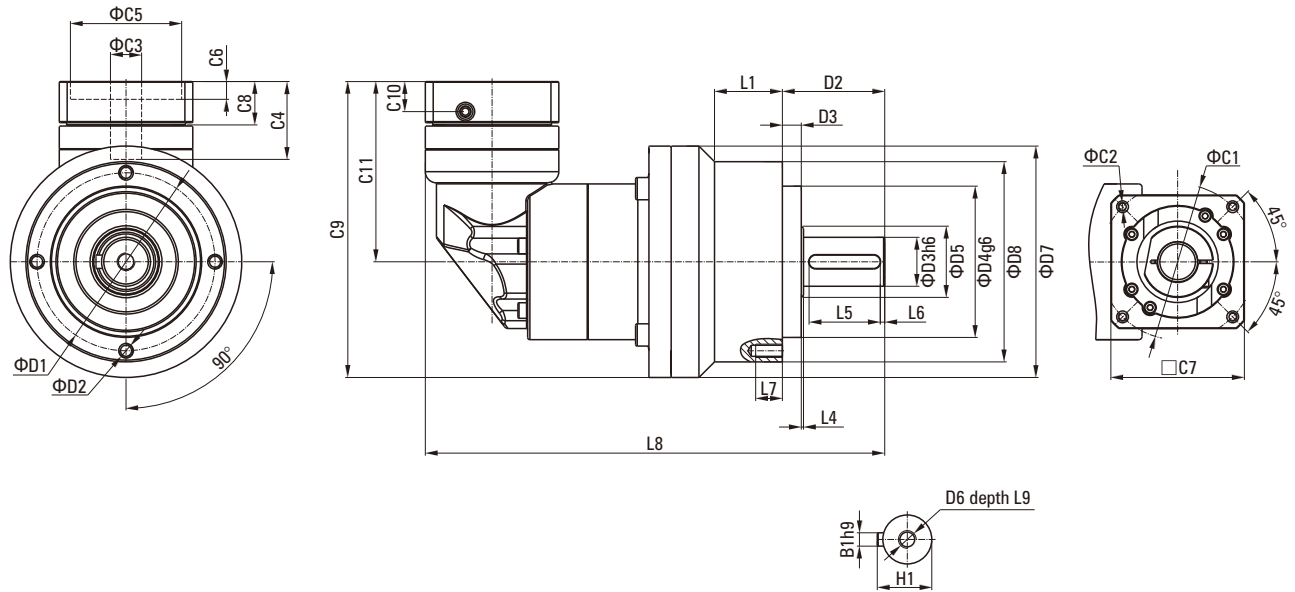
Unit: mm

Size	070ZER	090ZER	120ZER	155ZER
D1	62	80	108	140
D2	M5×0.8P	M6×1P	M8×1.25P	M10×1.5P
D3 <sub>h6</sub>	16	22	32	40
D4 <sub>g6</sub>	52	68	90	120
D5	22	30	40	75
D6	M5×0.8P	M8×1.25P	M12×1.75P	M16×2P
D7	70	104	130	162
D8	70	90	120	155
L1	-	33.5	38	50
L2	36	46	70	97
L3	6.5	8.5	17.5	15
L4	1	1	1.5	3
L5	25	32	40	63
L6	2	3	5	5
L7	10	12	16	20
L8	146	201	252	324.5
L9	12.5	19	28	36
C1	70	100	130	165
C2	M5×0.8P	M6×1P	M8×1.25P	M10×1.5P
C3	≤14/≤16	≤19/≤24	≤32	≤38
C4	34	40	50	60
C5	50	80	110	130
C6	8	4	5	6
C7	60	90	115	142
C8	19	17	19.5	22.5
C9	116.5	159.5	199	254.5
C10	13.5	10.75	13	15
C11	81.5	107.5	134	164.5
B1 <sub>h9</sub>	5	6	10	12
H1	18	24.5	35	43

\*070ZBR 5,10 Reduction ratio provides C3 ≤ 16 to choose from.

# DIMENSIONS (TWO STAGE, REDUCTION RATIO $i=25\sim 200$ )

## Dimensional Drawing



## Dimensional Table

Unit: mm

Size	070ZER	090ZER	120ZER	155ZER
D1	62	80	108	140
D2	M5×0.8P	M6×1P	M8×1.25P	M10×1.5P
D3 <sub>h6</sub>	16	22	32	40
D4 <sub>g6</sub>	52	68	90	120
D5	22	30	40	75
D6	M5×0.8P	M8×1.25P	M12×1.75P	M16×2P
D7	70	104	130	162
D8	70	90	120	155
L1	-	33.5	38	50
L2	36	46	70	97
L3	6.5	8.5	17.5	15
L4	1	1	1.5	3
L5	25	32	40	63
L6	2	3	5	5
L7	10	12	16	20
L8	167.5	207.5	283	358
L9	12.5	19	28	36
C1	46	70	100	130
C2	M4×0.7P	M5×0.8P	M6×1P	M8×1.25P
C3	≤11/≤12	≤14/≤16	≤19/≤24	≤32
C4	30	34	40	50
C5	30	50	80	110
C6	3.5	8	4	5
C7	48	60	90	115
C8	19.5	19	17	19.5
C9	109	133.5	172.5	215
C10	13.5	10.75	13	15
C11	81.5	107.5	134	164.5
B1 <sub>h9</sub>	5	6	10	12
H1	18	24.5	35	43

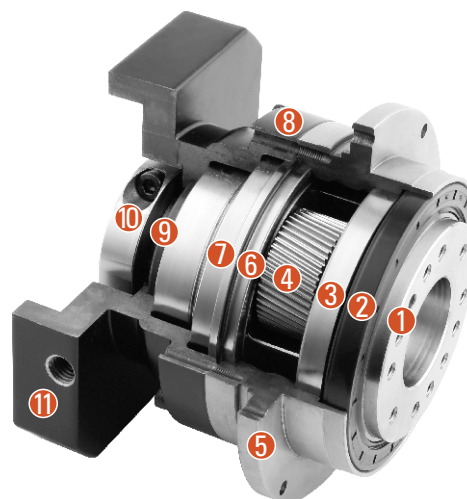
\*070ZBR 5,10 Reduction ratio provides C3≤16 to choose from.



# HD SERIES GEARBOX - PRODUCT SPECIFICATIONS

## Sectional View

- ① Output shaft
- ② Oil seal
- ③ Output shaft front bearing
- ④ Planetary gear
- ⑤ Flange inner tooth
- ⑥ Output shaft rear bearing
- ⑦ Lock nut
- ⑧ Rear cover
- ⑨ Solar wheel
- ⑩ Locking device
- ⑪ Rear cover gasket



## Reducer Performance Data

Specifications		Node Number	Reduction Ratio	HD064	HD090	HD110	HD140	HD200		
Rated Output Torque $T_{2N}$	Nm	1	4	48	-	-	560	1100		
			5	60	160	330	650	1200		
			7	50	140	300	550	1100		
			10	40	100	230	450	900		
		2	20	48	-	-	560	1100		
			25	60	160	330	650	1200		
			35	50	140	300	550	1100		
			40	48	130	270	560	1100		
			50	60	160	330	650	1200		
			70	50	140	300	550	1100		
			100	40	100	230	450	900		
			Emergency Stop Torque $T_{2NOT}^2$	Nm	1,2	4~100 3 Times of Output Rated Torque				
		Rated Input Speed $n_{1IN}$	rpm	1,2	4~100 3000 3000 3000 3000 3000					
		Rated Input Speed $n_{1B}$	rpm	1,2	4~100 6000 6000 6000 6000 6000					
Super Precision Backlash P0	arcmin	1	4~10 ≤1 ≤1 ≤1 ≤1							
		2	15~100 - ≤3 ≤3 ≤3 ≤3							
Precision Backlash P1	arcmin	1	4~10 ≤3 ≤3 ≤3 ≤3							
		2	15~100 ≤5 ≤5 ≤5 ≤5							
Standard Backlash P2	arcmin	1	4~10 ≤5 ≤5 ≤5 ≤5							
		2	15~100 ≤7 ≤7 ≤7 ≤7							
Torsional Stiffness	Nm/arcmin	1,2	4~100 13 31 82 151 440							
Maximum bending moment $M_{2B}^3$	Nm	1,2	4~100 125 235 430 1300 3064							
Allowable Radial Force $F_{2B}^3$	N	1,2	4~100 1050 2850 2990 10590 16660							
Service Life	hr	1,2	4~100 20000*							
Efficiency $\eta$	%	1	4~10 ≥97%							
		2	15~100 ≥94%							
Weight	Kg	1	4~10 1.2 3.0 5.6 11.9 31.6							
		2	15~100 1.6 3.7 7.3 15.9 36.9							
Operating Temperature	°C	1,2	4~100 -10°C~+90°C							
Lubrication		1,2	4~100 Synthetic Lubricating Grease (NYOGEL 792D)							
Protection Class		1,2	4~100 IP65							
Mounting Position		1,2	4~100 Any Direction							
Noise Level at 1m Distance ( $n_1=3000$ rpm, No Load)	dB(A)	1,2	4~100 ≤58 ≤60 ≤63 ≤65 ≤67							

## Moment Of Inertia Of The Reducer

Specifications		Node Number	Reduction Ratio	HD064	HD090	HD110	HD140	HD200
Moment Of Inertia $J_1$	Kg·cm <sup>2</sup>	1	4	0.14	-	-	7.54	25.03
			5	0.13	0.47	2.71	7.42	23.29
			7	0.13	0.45	2.62	7.14	22.48
			10	0.13	0.44	2.57	7.03	22.51
		2	20	0.03	-	-	2.71	7.42
			25	0.03	0.13	0.47	2.71	7.42
			35	0.03	0.13	0.47	2.71	7.42
			40	0.03	0.13	0.44	2.57	7.03
			50	0.03	0.13	0.44	2.57	7.03
			70	0.03	0.13	0.44	2.57	7.03
			100	0.03	0.13	0.44	2.57	7.03

1. Gear ratio ( $i=N_1/N_{out}$ )

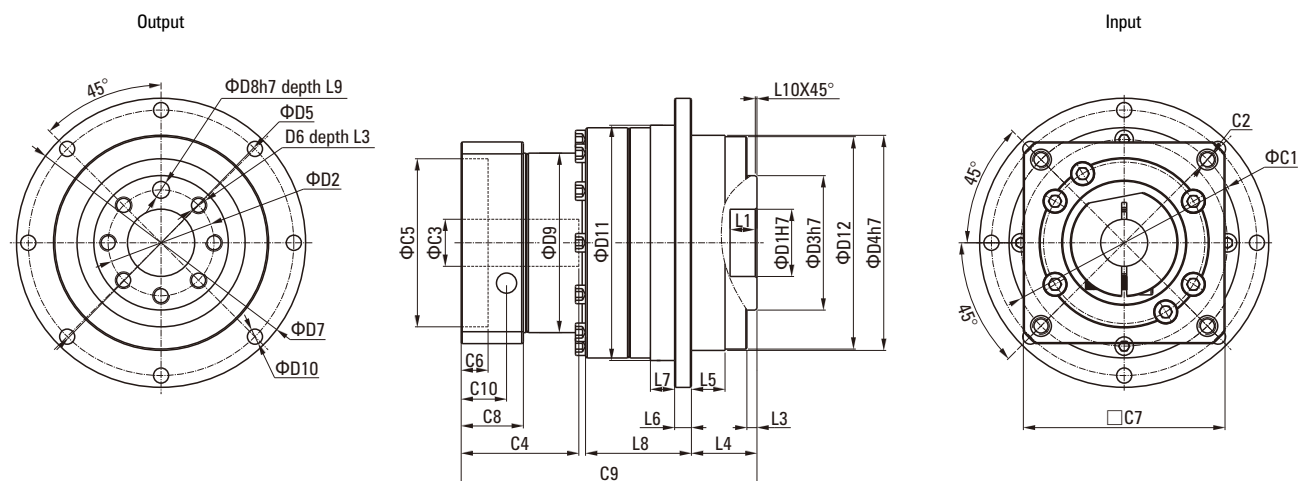
2. Maximum acceleration torque  $T_{2B}=60\%$  of  $T_{2NOT}$

3. When the output speed is 100rpm, it will act on the central position of the output shaft.

\*Continuous operation, service life is 10000hrs

# DIMENSIONS (SINGLE STAGE, REDUCTION RATIO $i=4\sim 10$ )

## Dimensional Drawing



## Dimensional Table

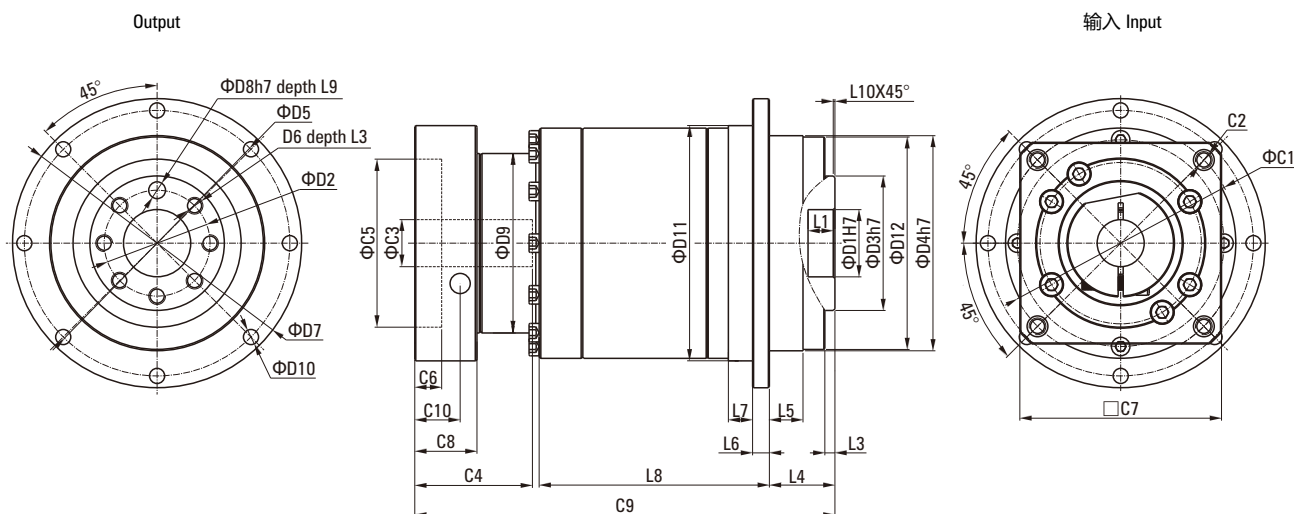
Unit: mm

Size	HD064	HD090	HD110	HD140	HD200
D1 <sub>h7</sub>	20	31.5	40	50	80
D2	31.5	50	63	80	125
D3 <sub>h7</sub>	40	63	80	100	160
D4 <sub>h7</sub>	64	90	110	140	200
D5	79	109	135	168	233
D6	7×M5×0.8P	7×M6×1P	11×M6×1P	11×M8×1.25P	11×M10×1.5P
D7	86	118	145	179	247
D8 <sub>h7</sub>	5	6	6	8	10
D9	55	77	90	113	138
D10	8×4.5	8×5.5	8×5.5	12×6.6	12×9
D11 <sub>h7</sub>	70	95	120	152	212
D12	63.2	89.2	109.2	139.2	199.2
L1	8	12	12	12	16
L2	8	13.5	13.5	17	22.5
L3	3	6	6	9	8
L4	19.5	30	29	38	50
L5	7	10	10	14.6	15
L6	4	7	8	10	12
L7	7.7	8	10	12	15
L8	28.5	27	37	62	69.5
L9	6	7	7	7	10
L10	0.5	1	1	1	1
C1 <sup>†</sup>	70	100	130	165	215
C2 <sup>†</sup>	M5×0.8P	M6×1P	M8×1.25P	M10×1.5P	M12×1.75P
C3 <sup>†</sup>	*≤14/≤16	≤19/≤24	≤32	≤38	≤48
C4 <sup>†</sup>	34	40	50	60	85
C5 <sup>†</sup> <sub>06</sub>	50	80	110	130	180
C6 <sup>†</sup>	8	4	5	9	6
C7 <sup>†</sup>	60	90	115	142	190
C8 <sup>†</sup>	19	17	19.5	22.5	29
C9 <sup>†</sup>	82.5	99.5	121.5	151	199.5
C10 <sup>†</sup>	13.5	10.75	13	15	20.75
OD	66×2	90×3	110×3	145×3	200×5

\*060HD 5,10 Reduction ratio provides C3≤16 to choose from.

# DIMENSIONS (TWO STAGE, REDUCTION RATIO $i=20\sim 100$ )

## Dimensional Drawing



## Dimensional Table

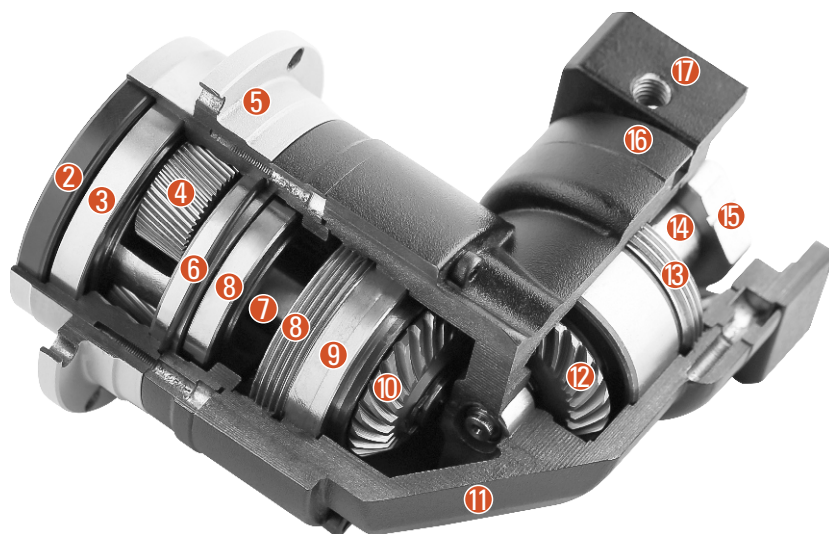
Unit: mm

Size	HD064	HD090	HD110	HD140	HD200
D1 <sub>h7</sub>	20	31.5	40	50	80
D2	31.5	50	63	80	125
D3 <sub>h7</sub>	40	63	80	100	160
D4 <sub>h7</sub>	64	90	110	140	200
D5	79	109	135	168	233
D6	7×M5×0.8P	7×M6×1P	11×M6×1P	11×M8×1.25P	11×M10×1.5P
D7	86	118	145	179	247
D8 <sub>h7</sub>	5	6	6	8	10
D9	45.5	53.4	77	102	125
D10	8×4.5	8×5.5	8×5.5	12×6.6	12×9
D11 <sub>h7</sub>	70	95	120	152	212
D12	63.2	89.2	109.2	139.2	199.2
L1	8	12	12	12	16
L2	8	13.5	13.5	17	22.5
L3	3	6	6	6	8
L4	19.5	30	29	38	50
L5	7	10	10	14.6	15
L6	4	7	8	10	12
L7	7.7	8	10	12	15
L8	65	60	87.5	110	132.5
L9	6	7	7	7	10
L10	0.5	1	1	1	1
C1 <sup>5</sup>	46	70	100	130	165
C2 <sup>5</sup>	M4×0.7P	M5×0.8P	M6×1P	M8×1.25P	M10×1.5P
C3 <sup>5</sup>	*≤11/≤12	≤14/≤15.875/≤16	≤19/≤24	≤32	≤38
C4 <sup>5</sup>	30	34	40	50	60
C5 <sup>5</sup> <sub>GS</sub>	30	50	80	110	130
C6 <sup>5</sup>	3.5	8	4	5	6
C7 <sup>5</sup>	48	60	90	115	142
C8 <sup>5</sup>	19.5	19	17	19.5	22.5
C9 <sup>5</sup>	108	134	160	204	248
C10 <sup>5</sup>	13.25	13.5	10.75	13	15
OD	66×2	90×3	110×3	145×3	200×5

\*060HD 5,10 Reduction ratio provides C3≤16 to choose from.

# HDR SERIES GEARBOX - PRODUCT SPECIFICATIONS

## Sectional View



- ① Output shaft
- ② Oil seal
- ③ Output shaft front bearing
- ④ Planetary gear
- ⑤ Front cover
- ⑥ Output shaft rear bearing
- ⑦ Solar wheel
- ⑧ Adjusting nut
- ⑨ Double row angular contact bearing
- ⑩ Output bevel gear
- ⑪ Right angle box
- ⑫ Input bevel gear
- ⑬ Lock nut
- ⑭ Input coupling
- ⑮ Locking device
- ⑯ Rear cover
- ⑰ Rear cover gasket

## Reducer Performance Data

Specifications		Node Number	Reduction Ratio	064HDR	090HDR	110HDR	140HDR	200HDR
Rated Output Torque $T_{2N}$	Nm	1	4	48	-	-	560	1100
			5	60	160	330	650	1200
			7	50	140	300	550	1100
			10	40	100	230	450	900
			14	42	140	300	550	1100
			20	40	100	230	450	900
		2	25	60	160	330	650	1200
			35	50	140	300	550	1100
			40	48	-	-	560	1100
			50	60	160	330	650	1200
			70	50	140	300	550	1100
			100	40	100	230	450	900
			140	-	140	300	550	1100
			200	-	100	230	450	900
Emergency Stop Torque $T_{2NCT}^2$	Nm	1,2	3~200	3 Times of Output Rated Torque				
Rated Input Speed $n_{1H}$	rpm	1,2	3~200	3000	3000	3000	3000	3000
Rated Input Speed $n_{1B}$	rpm	1,2	3~200	6000	6000	6000	6000	6000
Super Precision Backlash P0	arcmin	1	3~20	-	≤2	≤2	≤2	≤2
		2	25~200	-	≤4	≤4	≤4	≤4
Precision Backlash P1	arcmin	1	3~20	≤4	≤4	≤4	≤4	≤4
		2	25~200	-	≤7	≤7	≤7	≤7
Standard Backlash P2	arcmin	1	3~20	≤6	≤6	≤6	≤6	≤6
		2	25~200	-	≤9	≤9	≤9	≤9
Torsional Stiffness	Nm/arcmin	1,2	3~200	13	31	82	151	440
Maximum bending moment $M_{2KB}^3$	Nm	1,2	3~200	120	235	430	1300	3064
Allowable Axial Force $F_{2aB}^3$	N	1,2	3~200	1050	2850	2990	10590	16660
Service Life	hr	1,2	3~200	20000 <sup>4</sup>				
Efficiency $\eta$	%	1	3~20	≥95%				
		2	25~200	≥92%				
Weight	Kg	1	3~20	2.1	5.9	10.5	21.9	50.9
		2	25~200	1.9	4.5	9.8	20.1	45.4
Operating Temperature	°C	1,2	3~200	-10°C~+90°C				
Lubrication		1,2	3~200	Synthetic Lubricating Grease				
Protection Class		1,2	3~200	IP65				
Mounting Position		1,2	3~200	Any Direction				
Noise Level at 1m Distance ( $n_1=3000\text{rpm}$ , No Load)	dB(A)	1,2	3~200	≤63	≤65	≤68	≤70	≤72

## 减速机转动惯量 Moment Of Inertia Of The Reducer

Specifications		Node Number	Reduction Ratio	064HDR	090HDR	110HDR	140HDR	200HDR
Moment Of Inertia $J_1$	Kg-cm <sup>2</sup>	1	4~10	0.35	2.25	6.84	23.4	68.9
			14	0.07	1.87	6.25	21.8	65.6
			20	0.07	1.87	6.25	21.8	65.6
		2	25~100	0.09	0.35	2.25	6.84	23.4
			140~200	-	0.31	1.87	6.25	21.8

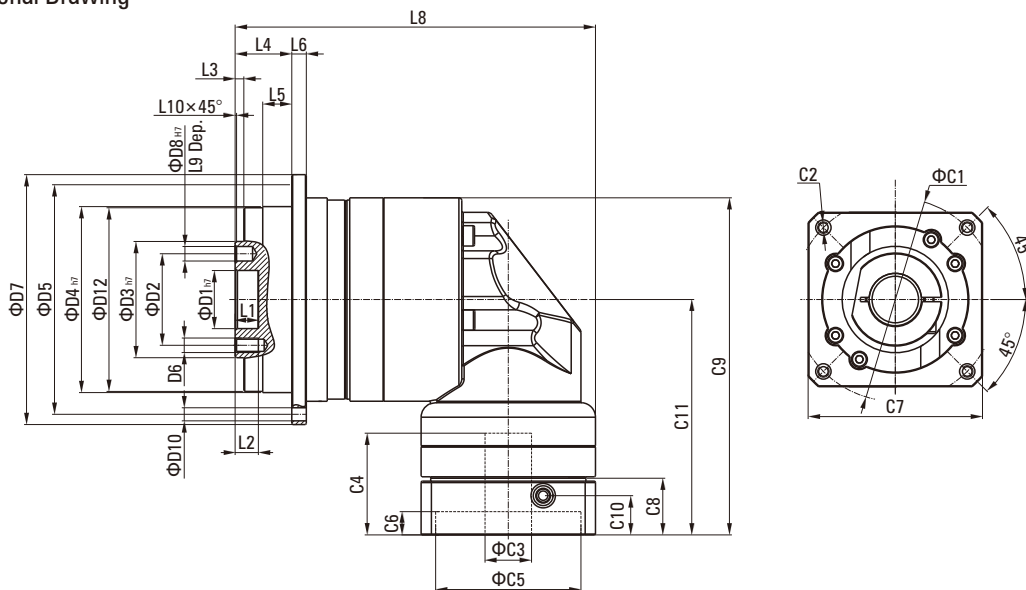
1. Gear ratio ( $i=N_p/N_{out}$ )2. Maximum acceleration torque  $T_{26}=60\%$  of  $T_{2N0T}$ 

3. When the output speed is 100rpm, it will act on the central position of the output shaft.

\*Continuous operation, service life is 10000hrs

## DIMENSIONS (SINGLE STAGE, REDUCTION RATIO $i=3\sim 20$ )

### Dimensional Drawing



### Dimensional Table

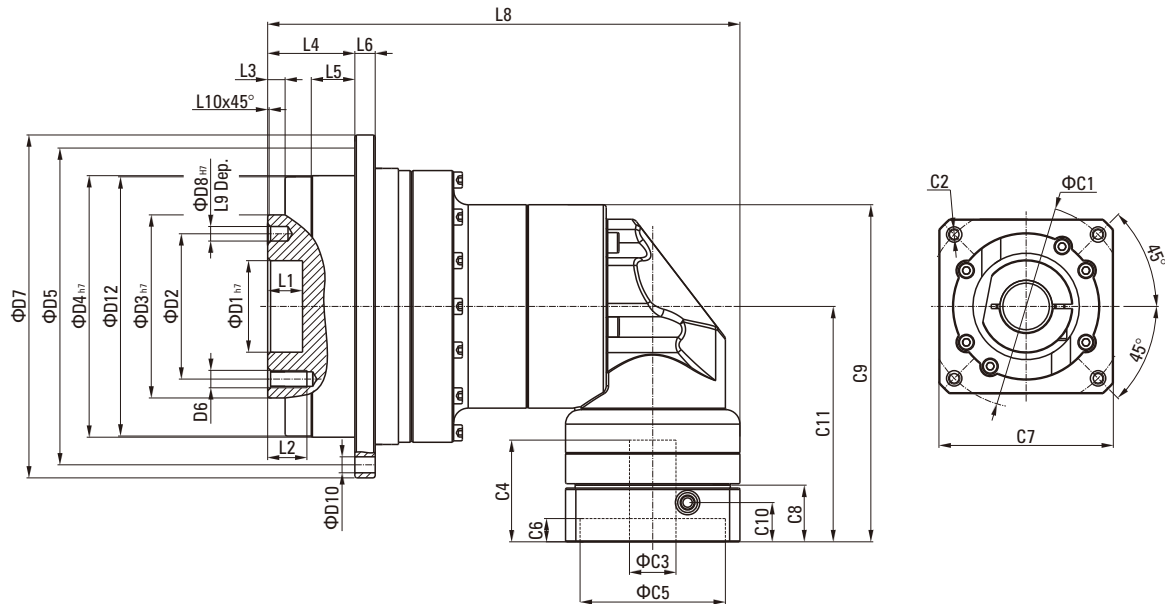
Unit: mm

Size	064HDR	090HDR	110HDR	140HDR	200HDR
D1 <sub>H7</sub>	20	31.5	40	50	80
D2	31.5	50	63	80	125
D3 <sub>H7</sub>	40	63	80	100	160
D4 <sub>H7</sub>	54	80	110	140	200
D5	79	109	135	168	233
D6	7×M5×0.8P	7×M6×1P	11×M6×1P	11×M8×1.25P	11×M10×1.5P
D7	86	118	145	179	247
D8 <sub>H7</sub>	5	6	6	8	10
D10	8×4.5	8×5.5	8×5.5	12×6.6	12×9
D12	63.2	89.2	109.2	139.2	199.2
L1	8	12	12	12	16
L2	8	13.5	13.5	17	22.5
L3	3	6	6	6	8
L4	19.5	30	29	38	50
L5	7	10	10	14.6	15
L6	4	7	8	10	12
L8	126	172.5	201	263.5	334.5
L9	6	7	7	7	10
L10	0.5	1	1	1	1
C1	70	100	130	165	215
C2	M5×0.8P	M6×1P	M8×1.25P	M10×1.5P	M12×1.75P
C3	≤14/≤16	≤19/≤24	≤32	≤38	≤48
C4	34	40	50	60	85
C5	50	80	110	130	180
C6	8	4	5	6	6
C7	60	90	115	142	190
C8	19	17	19.5	22.5	29
C9	116.5	159.5	199	254.5	316
C10	13.5	10.75	13	15	20.75
C11	81.5	107.5	134	164.5	213.5

\*070ZBR 5,10 Reduction ratio provides C3≤16 to choose from.

# DIMENSIONS (TWO STAGE, REDUCTION RATIO $i=25\sim 200$ )

## Dimensional Drawing



## Dimensional Table

Unit: mm

尺寸Size	064HDR	090HDR	110HDR	140HDR	200HDR
D1 <sub>h7</sub>	20	31.5	40	50	80
D2	31.5	50	63	80	125
D3 <sub>h7</sub>	40	63	80	100	160
D4 <sub>h7</sub>	54	80	110	140	200
D5	79	109	135	168	233
D6	7×M5×0.8P	7×M6×1P	11×M6×1P	11×M8×1.25P	11×M10×1.5P
D7	86	118	145	179	247
D8 <sub>h7</sub>	5	6	6	8	10
D10	8×4.5	8×5.5	8×5.5	12×6.6	12×9
D12	63.2	89.2	109.2	139.2	199.2
L1	8	12	12	12	16
L2	8	13.5	13.5	17	22.5
L3	3	6	6	6	8
L4	19.5	30	29	38	50
L5	7	10	10	14.6	15
L6	4	7	8	10	12
L8	132.5	163	217.5	269.5	333.5
L9	6	7	7	7	10
L10	0.5	1	1	1	1
C1	46	70	100	130	165
C2	M4×0.7P	M5×0.8P	M6×1P	M8×1.25P	M10×1.5P
C3	≤11/≤12	≤14/≤16	≤19/≤24	≤32	≤38
C4	30	34	40	50	60
C5	30	50	80	110	130
C6	3.5	8	4	5	6
C7	48	60	90	115	142
C8	19.5	19	17	19.5	22.5
C9	108.25	128.25	166.5	209	269.5
C10	13.25	13.5	10.75	13	15
C11	74	81.5	107.5	134	164.5

\*070ZBR 5,10 Reduction ratio provides C3≤16 to choose from.

# ASSEMBLY

## Assembly Procedure

If a customer personally assembles the servo motor and reducer please use the following tip. The reducer flange to which the servo motor is attached has different dimensions based on the motor specified. Therefore, assembly may be impossible for some motor. Make sure the correct motor is specified before ordering the reducer.

### 1. Spec. In Case Of Assembling A Motor Without Key

- ① Take off the rubber cap, turn the input shaft, and match the head of the bolt to the hole of the rubber cap. Make sure that the set bolt is loosened.
- ② Gradually put the motor shaft into the input shaft (Ensure that it is smoothly put in without iam.) Be careful not to be inserted with the motor tilted.
- ③ Attach the motor to the reducer and fasten the bolt with designated fastening torque. (See table 1)
- ④ Fasten the set bolt of the input shaft with designated fastening torque wrench, etc. (See table 2)
- ⑤ Put on a rubber cap. It is the end of assembling.

● Table1

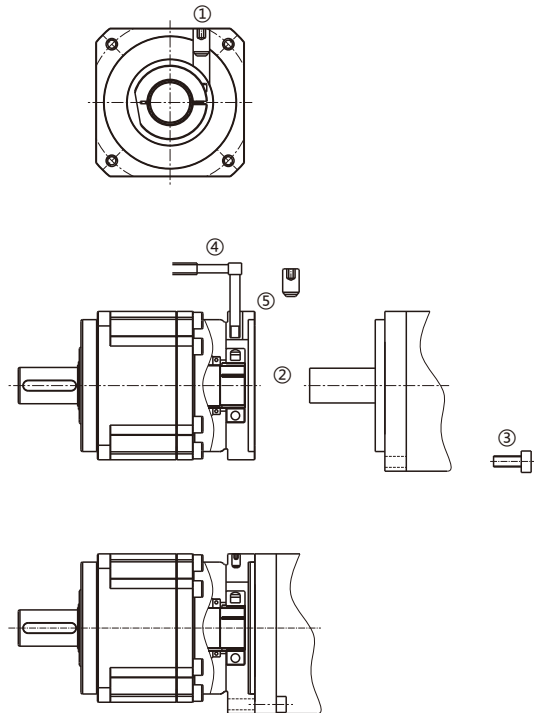
Motor Combination Bolt	Fastening Torque	
	(N·m)	(kgf·cm)
M3	1.0	10
M4	3.0	30
M5	5.8	60
M6	9.8	100
M8	19.6	200
M10	39.2	400
M12	68.6	700
M16	168	1650

● Table2

Combination Bolt	Fastening Torque	
	(N·m)	(kgf·cm)
M3	1.5	15
M4	3.5	35
M5	7.1	71
M6	12	120
M8	30	300
M10	60	612

You can assemble the motor with keyway like above when take off the key.  
There is no risk of dislocation.

● ZB/ZE Series Schematic Diagram



# ASSEMBLY

## Reducer Assembly

Jointing with reducer In case of jointing a reducer with the device, make sure that the combining side is plane without inconsistency, and when assemble reducer outo equipment, ensuring assembly surface smooth and without burr. (See table 3)

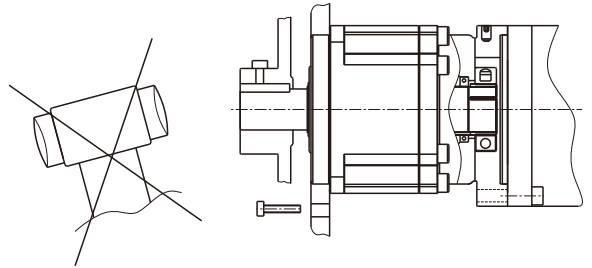
● Table 3

Reducer Combination Bolt	Fastening Torque	
	(N·m)	(kgf·cm)
M5	5.80	60
M6	9.80	100
M8	19.6	200
M10	39.2	400
M12	68.6	700
M16	16.8	1650

## Connection to the Output Shaft

Cautions:

- 1、 When assemble a coupling, pulley, etc. onto the output shaft, make sure that excessive axial load not be given to the output shaft.
- 2、 In case of strongly hitting the shaft with a hammer, the shaft inlet or the inside of the reducer may be damaged, therefore it shall be prohibited.
- 3、 If the shaft or key of a coupling assembled is loosed, it may cause carbonization, so be careful when assembling.
- 4、 For assembling of a coupling, fix the key with a set bolt.
- 5、 Please adjust shaft centre carefully in connecting.





# CATALOGUE



PRECISION HARMONIC REDUCER



CYCLOIDAL PIN WHEEL  
PRECISION REDUCER



TRANSMISSION PLANETARY  
GEAR MOTOR



SERVO DRIVER  
BRUSHLESS DRIVER  
INDUSTRIAL VEHICLE DRIVER  
AC SPEED CONTROLLER



DC BRUSHLESS GEAR MOTOR



MOTOR ROLLER





# HIGH PRECISION PLANETARY GEAR BOX CATALOGUE

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