

## ED Series: High Precision High Speed Gearboxes



Ratio 3:1-100:1

Output Torque UP to 2000Nm

Backlash UP to 2arc min

Available Sizes 47-255

## Model Key

<b>MODEL</b>	<b>ED</b>	EDR
<b>SIZE</b>	<b>060</b>	047\064\090\110\140\ 200\255
<b>RATIO</b>	<b>32</b>	L1: 03\04\05\06\08\10  L2: 09\12\15\16\18 20\24\25\30\32\36 \40 48\64
<b>BACKLASH</b>	<b>P2</b>	Ultra Precision: P0 Precision: P1 StandardL P2
<b>OUTPUT TYPE</b>	<b>Z2</b>	Standard Plate: Z2 Customized: T
<b>MOTOR TYPE</b>	<b>MOTOR</b>	Motor manufacture and model number

### HOW TO ORDER

1. Select dimensions and ratio
2. Select model
3. Select motor model and installation type

## Performance Parameters

SIZE	STAGE	RATIO <sup>1</sup>	ED047	ED064	ED090	ED100	ED140	ED200	ED255		
Rated Output Torque $T_{2N}$	1	4	19	48	130	270	560	1,100	1,700		
		5	22	60	160	330	650	1,200	2,000		
		7	19	50	140	300	550	1,100	1,800		
		10	14	40	100	230	450	900	1,500		
	2	20	19	48	130	270	560	1,100	1,700		
		25	22	60	160	330	650	1,200	2,000		
		35	19	50	140	300	550	1,100	1,800		
		40	17	48	130	270	560	1,100	1,700		
		50	22	60	160	330	650	1,200	2,000		
		70	19	50	140	300	550	1,100	1,800		
		100	14	40	100	230	450	900	1,500		
		16	19	48	130	270	560	1,100	1,700		
		21	22	60	160	330	650	1,200	2,000		
		31	19	50	140	300	550	1,100	1,800		
		61	19	50	140	300	550	1,100	1,800		
		91	14	40	100	230	450	900	1,500		
		Emergency Stop Torque $T_{2NOT}$ <sup>2</sup>	Nm	1,2	3x Rated Output Torque						
		Rated Input Speed $n_{1N}$	rpm	1,2	4~100	5,000	5,000	4,000	4,000	3,000	3,000
Max Input Speed $n_{1B}$	rpm	1,2	4~100	10,000	10,000	8,000	8,000	6,000	6,000	4,000	
Ultra Precision Backlash $P0$	arcmin	1	4~10	—	—	≤1	≤1	≤1	≤1	≤1	
		2	20~100	—	—	—	≤3	≤3	≤3	≤3	
Precision Backlash $P1$	arcmin	1	4~10	≤3	≤3	≤3	≤3	≤3	≤3	≤3	
		2	20~100	≤5	≤5	≤5	≤5	≤5	≤5	≤5	
Standard Backlash $P2$	arcmin	1	4~10	≤5	≤5	≤5	≤5	≤5	≤5	≤5	
		2	20~100	≤7	≤7	≤7	≤7	≤7	≤7	≤7	
Torsional Rigidity	Nm/arcmin	1,2	4~100	7	13	31	82	151	440	1,006	
Max Bending Moment $M_{2KB}$ <sup>3</sup>	Nm	1,2	4~100	42.5	125	235	430	1,300	3,064	5,900	
Permissible Axial Force $F_{2B}$ <sup>3</sup>	N	1,2	4~100	990	1,050	2,850	2,990	10,590	16,660	29,430	
Use Life	hr	1,2	4~100	30,000*							
Efficiency $\eta$	%	1	4~10	≥97%							
		2	20~100	≥94%							
Weight	kg	1	4~10	0.7	1.2	3.0	5.6	11.9	31.6	56.1	
			20~100	1.0	1.6	3.7	7.3	15.5	36.9	70.4	
		2	16~91	1.0	1.4	3.5	6.5	15.9	34.2	67.2	
Temperature	°C	1,2	4~100	-10°C~+90°C							
Lubrication		1,2	4~100	Synthetic Lubricants (NYOGEL 792D)							
Protection Class		1,2	4~100	IP65							
Installation Direction		1,2	4~100	Any Direction							
Noise ( $n_1=3000$ rpm, w/o load)	dB(A)	1,2	4~100	≤56	≤58	≤60	≤63	≤65	≤67		

## Gearbox Moment of Inertia

SIZE	STAGE	RATIO <sup>1</sup>	ED047	ED064	ED090	ED100	ED140	ED200	ED255
Moment of Inertia $J_1$	1	4	0.03	0.14	0.51	2.87	7.54	25.03	58.31
		5	0.03	0.13	0.47	2.71	7.42	23.29	53.27
		6	0.03	0.13	0.45	2.62	7.14	22.48	50.97
		10	0.03	0.13	0.44	2.57	7.03	22.51	50.56
	2	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
		35	0.03	0.03	0.13	0.47	2.71	7.42	23.29
		40	0.03	0.03	0.13	0.44	2.57	7.03	22.51
		50	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
		16	0.03	0.03	0.13	0.47	2.71	7.03	23.29
		21	0.03	0.03	0.13	0.47	2.71	7.03	23.29
		31	0.03	0.03	0.13	0.44	2.57	7.03	22.51
		61	0.03	0.03	0.13	0.44	2.57	7.03	22.51
		91	0.03	0.03	0.13	0.44	2.57	7.03	22.51

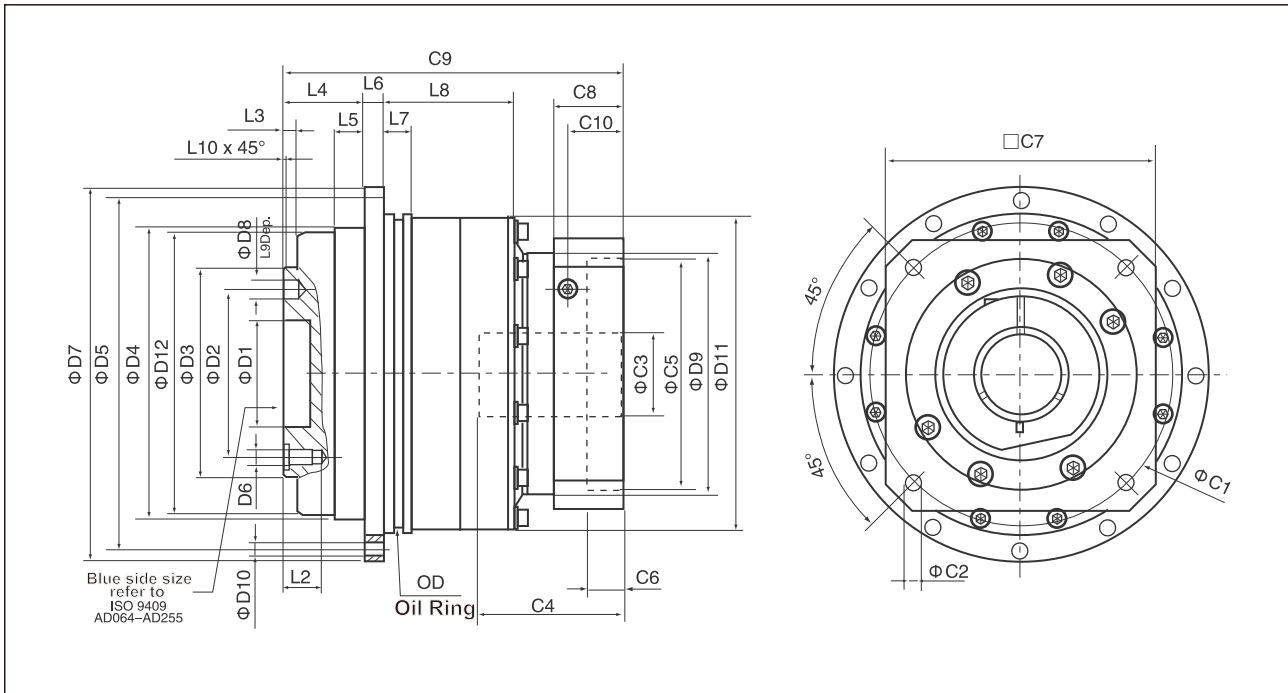
1. Ratio ( $i=N_{in} / N_{out}$ )

2. Output Speed at 100 rpm, apply on the center of the output shaft.

3. Max Acceleration Torque  $T_{2B}=60\%$  of  $T_{2NOT}$

\*Use life on continuous operation is 10,000 hours

L1= Stage 1 Ratio i=4~10



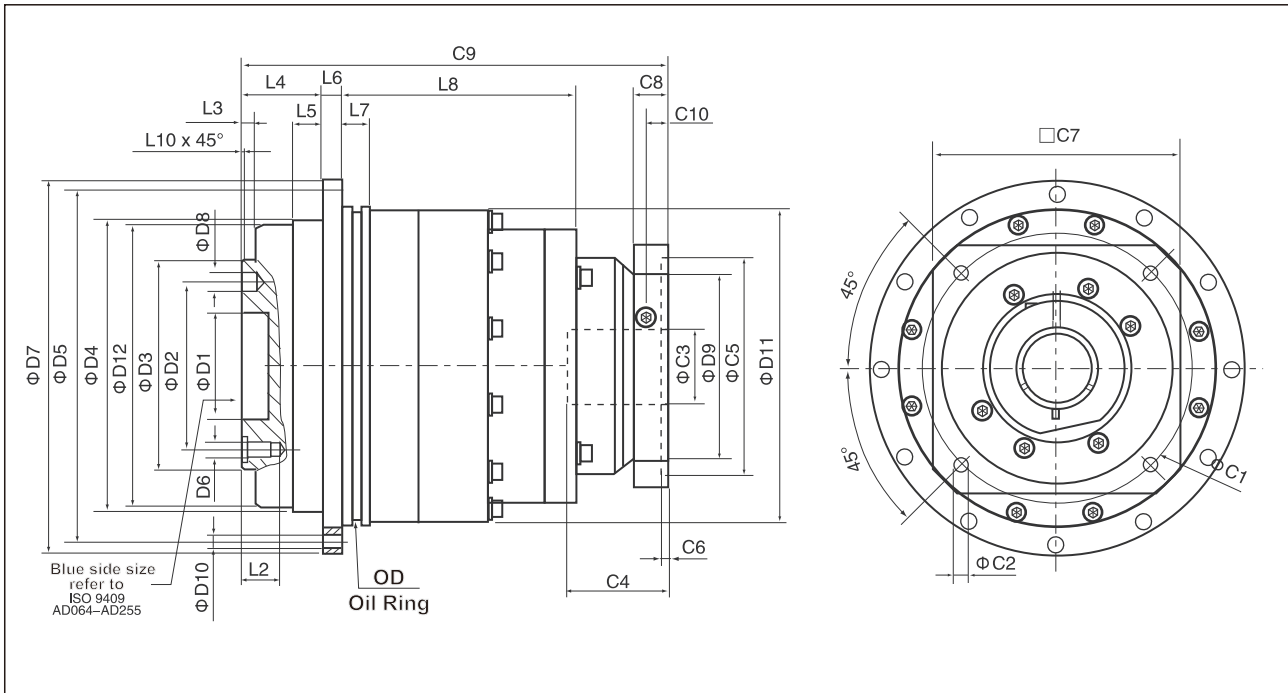
Unit: mm

SIZE	ED047	ED064	ED090	ED100	ED140	ED200	ED255
D1 <sub>H7</sub>	12	20	31.5	40	50	80	100
D2	20	31.5	50	63	80	125	140
D3 <sub>h7</sub>	28	40	60	80	100	160	180
D4 <sub>h7</sub>	47	64	90	110	140	200	255
D5	67	79	109	135	168	233	280
D6	4 × M3 × 0.5P	7 × M5 × 0.8P	7 × M6 × 1P	11 × M6 × 1P	11 × M8 × 1.25P	11 × M10 × 1.5P	12 × M16 × 2
D7	72	86	118	145	179	247	300
D8	3	5	6	6	8	10	12
D9	45.5	55	77	90	113	138	175
D10	8 × 3.4	8 × 4.5	8 × 5.5	8 × 5.5	12 × 6.6	12 × 9	16 × 13.5
D11	60	70	95	120	152	212	255
D12	46.2	63.2	89.2	109.2	139.2	199.2	254.2
L1	4	8	12	12	12	16	20
L2	6.5	8	13.5	13.5	17	22.5	30.5
L3	3	3	6	6	6	8	12
L4	19.5	19.5	30	29	38	50	66
L5	7	7	10	10	14.6	15	20
L6	4	4	7	8	10	12	18
L7	5	7.7	8	10	12	15	20
L8	18.5	28.5	27	37	62	69.5	82
L9	4	6	7	7	7	10	10
L10	0.5	0.5	1	1	1	1	1
C1 <sup>4</sup>	46	70	100	130	165	215	235
C2 <sup>4</sup>	M4 × 0.7P	M5 × 0.8P	M6 × 1P	M8 × 1.25P	M10 × 1.5P	M12 × 1.75P	M12 × 1.75P
C3 <sup>4</sup>	≤ 11	* ≤ 14/≤ 16	≤ 19/≤ 24	≤ 32	≤ 38	≤ 48	≤ 55
C4 <sup>4</sup>	30	34	40	50	60	85	116
C5 <sup>4</sup> <sub>G6</sub>	30	50	80	110	130	180	200
C6 <sup>4</sup>	3.5	8	4	5	6	6	6
C7 <sup>4</sup>	48	60	90	115	142	190	220
C8 <sup>4</sup>	19.5	19	17	19.5	22.5	29	63
C9 <sup>4</sup>	70	82.5	99.5	121.5	151	199.5	256.5
C10 <sup>4</sup>	13.25	13.5	10.75	13	15	20.75	53.5
OD	56 × 2	66 × 2	90 × 3	110 × 3	145 × 3	200 × 5	238 × 5

4. C1-C10 use the metric standard motor plate connection sizes.

\*ED064M1 ratio 5, 10 available options C3≤16 \* ED090M1 provide options C3≤24

L2= Stage 2 Ratio i=20~100



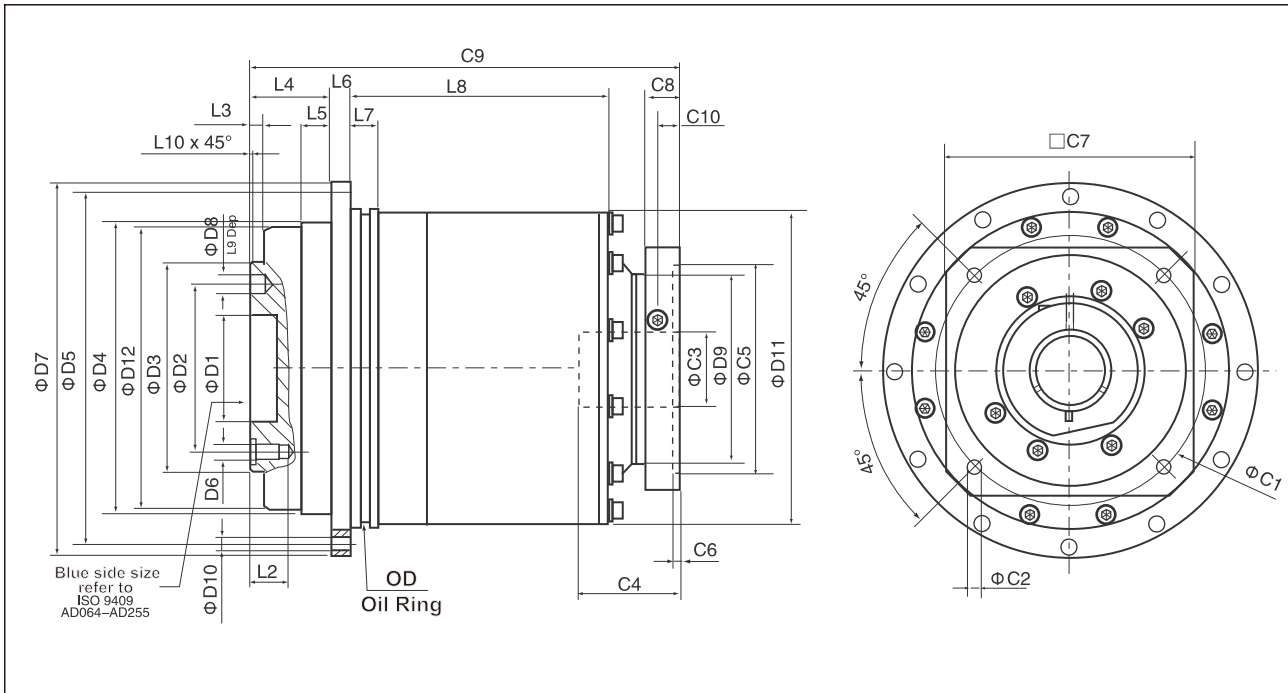
Unit: mm

SIZE	ED047	ED064	ED090	ED100	ED140	ED200	ED255
D1 <sub>h7</sub>	12	20	31.5	40	50	80	100
D2	20	31.5	50	63	80	125	140
D3 <sub>h7</sub>	28	40	60	80	100	160	180
D4 <sub>h7</sub>	47	64	90	110	140	200	255
D5	67	79	109	135	168	233	280
D6	4 × M3 × 0.5P	7 × M5 × 0.8P	7 × M6 × 1P	11 × M6 × 1P	11 × M8 × 1.25P	11 × M10 × 1.5P	12 × M16 × 2P
D7	72	86	118	145	179	247	300
D8 <sub>h7</sub>	3	5	6	6	8	10	12
D9	45.5	45.5	53.4	77	102	125	160
D10	8 × 3.4	8 × 4.5	8 × 5.5	8 × 5.5	12 × 6.6	12 × 9	16 × 13.5
D11 <sub>h7</sub>	60	70	95	120	152	212	255
D12	46.2	63.2	89.2	109.2	139.2	199.2	254.2
L1	4	8	12	12	12	16	20
L2	6.5	8	13.5	13.5	17	22.5	30.5
L3	3	3	6	6	6	8	12
L4	19.5	19.5	30	29	38	50	66
L5	7	7	10	10	14.6	15	20
L6	4	4	7	8	10	12	18
L7	5	7.7	8	10	12	15	20
L8	54.5	65.5	60	87.5	110	132.5	148
L9	4	6	7	7	7	10	10
L10	0.5	0.5	1	1	1	1	1
C1 <sup>5</sup>	46	46	70	100	130	165	200
C2 <sup>5</sup>	M4 × 0.7P	M4 × 0.7P	M5 × 0.8P	M6 × 1P	M8 × 1.25P	M10 × 1.5P	M12 × 1.75P
C3 <sup>5</sup>	≤ 11	* ≤ 11/≤ 12	* ≤ 14/≤ 15.875/≤ 16	≤ 19/≤ 24	≤ 32	≤ 38	≤ 48
C4 <sup>5</sup>	30	34	34	40	50	60	85
C5 <sup>5G6</sup>	30	50	50	80	110	130	180
C6 <sup>5</sup>	3.5	8	8	4	5	6	6
C7 <sup>5</sup>	48	48	60	90	115	142	190
C8 <sup>5</sup>	19.5	19.5	19	17	19.5	22.5	29
C9 <sup>5</sup>	97.5	108	134	160	204	248	311.5
C10 <sup>5</sup>	13.25	13.25	13.5	10.75	13	15	20.75
OD	56 × 2	66 × 2	90 × 3	110 × 3	145 × 3	200 × 5	238 × 5

5. C1~C10 use the metric standard motor plate connection sizes.

\*ED064M1 ratio 20~50 available options C3≤12 \* ID090M2 ratio 20~50 provide options C3≤15.875≤16

L2= Stage 2 Ratio  $i=16/21/31/61/91$



Unit: mm

SIZE	ED047	ED064	ED090	ED100	ED140	ED200	ED255
D1 <sub>h7</sub>	12	20	31.5	40	50	80	100
D2	20	31.5	50	63	80	125	140
D3 <sub>h7</sub>	28	40	60	80	100	160	180
D4 <sub>h7</sub>	47	64	90	110	140	200	255
D5	67	79	109	135	168	233	280
D6	4 × M3 × 0.5P	7 × M5 × 0.8P	7 × M6 × 1P	11 × M6 × 1P	11 × M8 × 1.25P	11 × M10 × 1.5P	12 × M16 × 2P
D7	72	86	118	145	179	247	300
D8 <sub>h7</sub>	3	5	6	6	8	10	12
D9	45.5	45.5	55	77	90	113	138
D10	8 × 3.4	8 × 4.5	8 × 5.5	8 × 5.5	12 × 6.6	12 × 9	16 × 13.5
D11 <sub>h7</sub>	60	70	95	120	152	212	255
D12	46.2	63.2	89.2	109.2	139.2	199.2	254.2
L1	4	8	12	12	12	16	20
L2	6.5	8	13.5	13.5	17	22.5	30.5
L3	3	3	6	6	6	8	12
L4	19.5	19.5	30	29	38	50	66
L5	7	7	10	10	14.6	15	20
L6	4	4	7	8	10	12	18
L7	5	7.7	8	10	12	15	20
L8	54.5	28.5	32	37	122	79.5	82
L9	4	6	7	7	7	10	10
L10	0.5	0.5	1	1	1	1	1
C1 <sup>6</sup>	46	46	70	100	130	165	215
C2 <sup>6</sup>	M4 × 0.7P	M4 × 0.7P	M5 × 0.8P	M6 × 1P	M8 × 1.25P	M10 × 1.5P	M12 × 1.75P
C3 <sup>6</sup>	≤ 11	* ≤ 11 / ≤ 12	* ≤ 14 / ≤ 15.875 / ≤ 16	≤ 19 ≤ 24	≤ 32	≤ 38	≤ 48
C4 <sup>6</sup>	30	34	34	40	50	60	85
C5 <sup>6</sup> <sub>G6</sub>	30	50	50	80	110	130	180
C6 <sup>6</sup>	3.5	3.5	8	4	5	6	6
C7 <sup>6</sup>	48	48	60	90	115	142	190
C8 <sup>6</sup>	19.5	19.5	19	17	19.5	22.5	29
C9 <sup>6</sup>	100	106	130.5	149	205	247.5	323
C10 <sup>6</sup>	13.25	13.25	13.5	10.75	13	15	20.75
OD	56 × 2	66 × 2	90 × 3	110 × 3	145 × 3	200 × 5	238 × 5

5. C1~C10 use the metric standard motor plate connection sizes.

\*ED064M1 ratio 16~30 available options C3≤12

\* ID090M2/M1 ratio 16~30 provide options C3≤15.875≤16