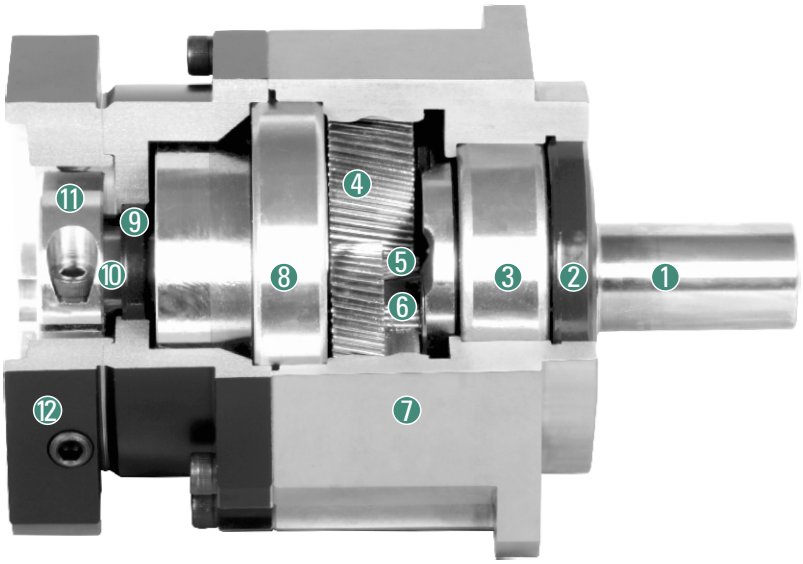
HY MOTOR

HIGH PRECISION PLANETARY GEAR BOX

HB/HBR/HE/HER/HD/HDR Series

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

HB Reducers						Servo Motor	
090	HB	20	( )	(S1)	-	750	□
①	②	③	④	⑤		⑥	⑦

①	Gearbox frame size: 090, (P04)
②	Gearbox series code: HB
③	Gear ratio: 20, (P04)
④	Precision (See P04) Precision type P1,high pricision type P0 Output shaft load is ±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)HB	090ZB	090(A)HB	115ZB	142ZB	180ZB	220ZB
Rated output torque	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
		2	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
Instant stop torque	Nm	1,2	3～100	3 times rated output torque								
Rated Input Speed	rpm	1,2	3～100	3000	3000	3000	3000	3000	3000	3000	3000	2000
Maximum input speed	rpm	1,2	3～100	6000	6000	6000	6000	6000	6000	6000	6000	4000
Ultra-Precision Return Accuracy	arcmin	1	3～10	-	-	-	-	-	≤1	≤1	≤1	≤1
		2	15～100	-	-	-	-	-	≤3	≤3	≤3	≤3
Precision Return Accuracy	arcmin	1	3～10	≤3	≤3	-	≤3	-	≤3	≤3	≤3	≤3
		2	15～100	≤5	-	≤5	≤5	≤5	≤5	≤5	≤5	≤5
Standard Return Accuracy	arcmin	1	3～10	≤5	≤5	-	≤5	-	≤5	≤5	≤5	≤5
		2	15～100	≤7	-	≤7	≤7	≤7	≤7	≤7	≤7	≤7
Torsional Rigidity	Nm/arcmin	1,2	3～100	2	7	7	14	14	25	50	145	225
Allowable radial force	N	1,2	3～100	780	1530	1530	3250	3250	6700	9400	14500	50000
Allowable axial force	N	1,2	3～100	390	765	765	1625	1625	3350	4700	7250	25000
Service life	hr	1,2	3～100	20000*								
Efficiency	%	1	3～10	≥97%								
		2	15～100	≥94%								
Weight (FH)	Kg	1	3～10	0.6	1.3	-	3.7	-	7.8	14.5	29	48
		2	15～100	0.8	1.5	1.9	4.1	5.3	9	17.5	33	60
Service temperature	℃	1,2	3～100	-10℃～+90℃								
Lubrication		1,2	3～100	Synthetic grease								
Degree of protection		1,2	3～100	IP65								
Installation direction		1,2	3～100	Any direction								
Noise value,1m (n_1=3000rpm,No load)	dB(A)	1,2	3～100	≤56	≤58	≤60	≤60	≤63	≤63	≤65	≤67	≤70

Moment Of Inertia Of The Reducer

Specifications		Node Number	Reduction Ratio	042ZB	060ZB	060(A)HB	090ZB	090(A)HB	115ZB	142ZB	180ZB	220ZB
Moment of inertia	$Kg{\cdot}cm^2$	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
		2	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

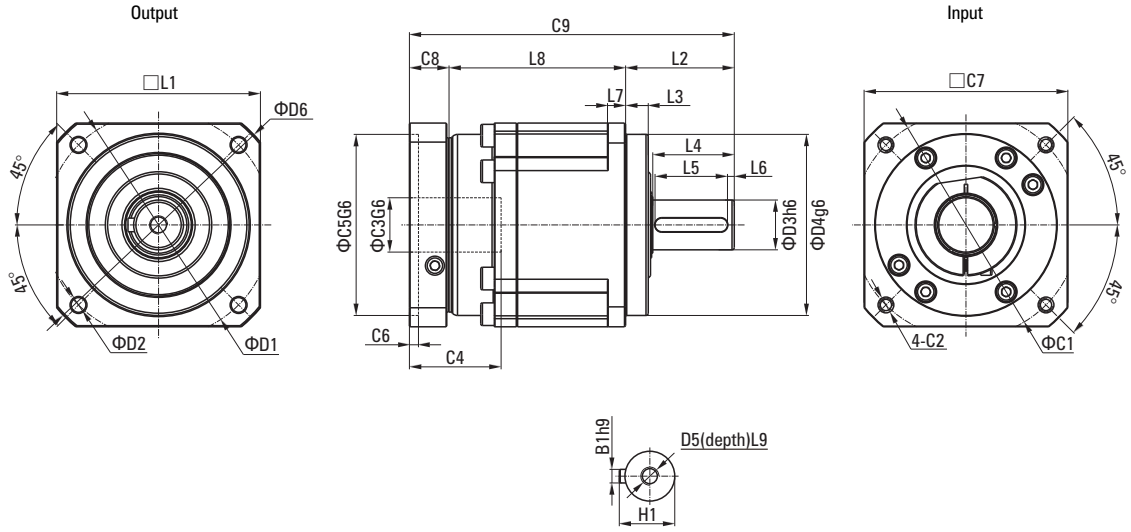
1.Reduction Ratio($i=N_{in}/N_{out}$)　　2.Maximum Acceleration Torque T_{2B}=60% of T_{2NOT}

3.When the output speed is 100rpm, it acts on the center position of the output shaft

*For continuous operation, the service life is 10000 hours

DIMENSIONS (SINGLE STAGE, REDUCTION RATIO i=3~10)

Dimensional Drawing



Dimensional Table

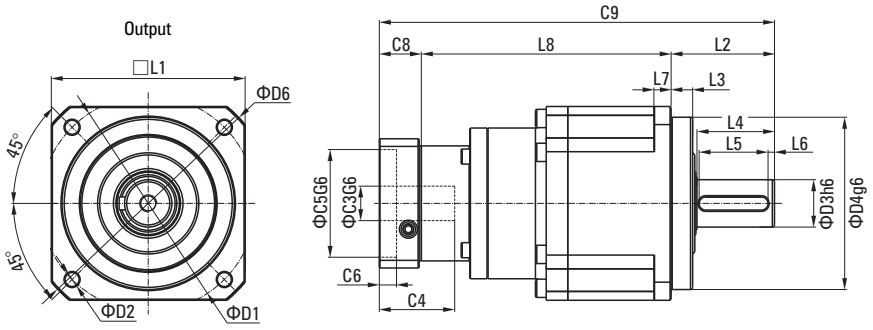
[Unit: mm]

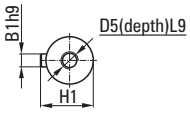
Size	042ZB	060ZB	090ZB	115ZB	142ZB	180ZB	220ZB
D1	50	70	100	130	165	215	250
D2	3.4	5.5	6.6	9	11	13	17
D3 h6	13	16	22	32	40	55	75
D4 g6	35	50	80	110	130	160	180
D5	M4×0.7P	M5×0.8P	M8×1.25P	M12×1.75P	M16×2P	M20×2.5P	M20×2.5P
D6	56	80	116	152	185	240	292
L1	42	60	90	115	142	180	220
L2	26	37	48	65	97	105	138
L3	5.5	7	10	12	15	20	30
L4	1	28	35.5	49.5	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 G6	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 h9	5	5	6	10	12	16	20
H1	15	18	24.5	35	43	59	79.5

*060ZB 5,10 reduction ratios C3≤16 (option)

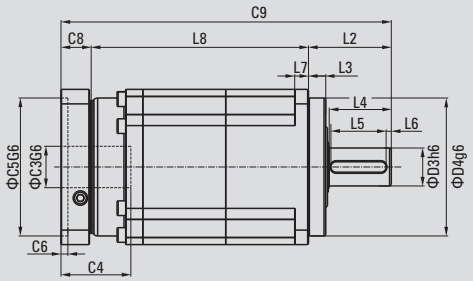
DIMENSIONS (TWO STAGE, REDUCTION RATIO i=15~100)

Dimensional Drawing





060AZB/090AZB



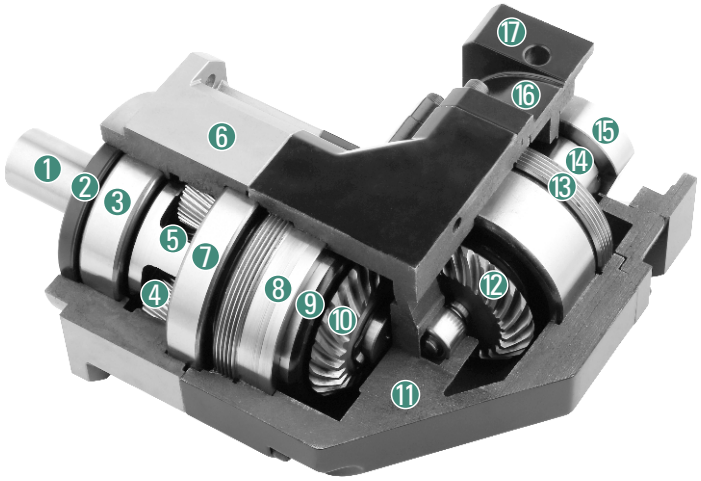
Dimensional Table

[Unit: mm]

Size	042ZB	060(A)HB	090ZB	090(A)HB	115ZB	142ZB	180ZB	220ZB
D1	50	70	100		130	165	215	250
D2	3.4	5.5	6.6		9	11	13	17
D3 $_{h6}$	13	16	22		32	40	55	75
D4 $_{g6}$	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		49.5	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 $_{G6}$	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 $_{h9}$	5	5	6		10	12	16	20
H1	15	18	24.5		35	43	59	79.5

HBR 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	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
Instant stop torque	Nm	1,2	3～200	3 times rated output torque					
Rated Input Speed	rpm	1,2	3～200	3000	3000	3000	3000	3000	2000
Maximum input speed	rpm	1,2	3～200	6000	6000	6000	6000	6000	4000
Ultra-Precision Return Accuracy	arcmin	1	3～20	-	≤2	≤2	≤2	≤2	≤2
		2	25～200	-	≤4	≤4	≤4	≤4	≤4
Precision Return Accuracy	arcmin	1	3～20	≤4	≤4	≤4	≤4	≤4	≤4
		2	25～200	-	≤7	≤7	≤7	≤7	≤7
Standard Return Accuracy	arcmin	1	3～20	≤6	≤6	≤6	≤6	≤6	≤6
		2	25～200	-	≤9	≤9	≤9	≤9	≤9
Torsional Rigidity	Nm/arcmin	1,2	3～200	7	14	25	50	145	145
Allowable radial force	N	1,2	3～200	1530	3250	6700	9400	14500	50000
Allowable axial force	N	1,2	3～200	765	1625	3350	4700	7250	25000
Service life	hr	1,2	3～200	20000*					
Efficiency	%	1	3～20	≥97%					
		2	25～200	≥94%					
Weight (FH)	Kg	1	3～20	2.1	6.4	13	24.5	51	51
		2	25～200	-	7.8	14.2	27.5	54	95
Service temperature	℃	1,2	3～200	-10℃～+90℃					
Lubrication		1,2	3～200	Synthetic grease					
Degree of protection		1,2	3～200	IP65					
Installation direction		1,2	3～200	Any direction					
Noise value,1m (n_1=3000rpm,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	Kg·cm^2	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

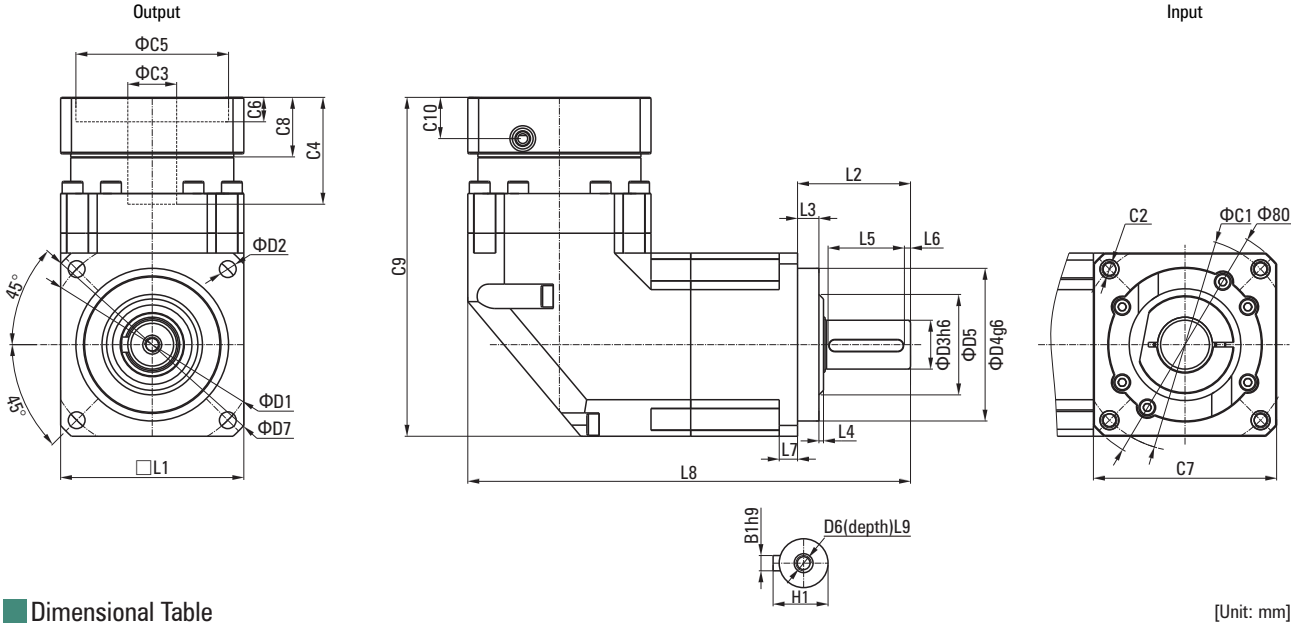
1.Reduction Ratio($i=N_{in}/N_{out}$)　　2.Maximum Acceleration Torque T_{2B}=60% of T_{2NOT}

3.When the output speed is 100rpm, it acts on the center position of the output shaft

*For continuous operation, the service life is 10000 hours

DIMENSIONS (SINGLE STAGE, REDUCTION RATIO i=3～20)

Dimensional Drawing



Dimensional Table

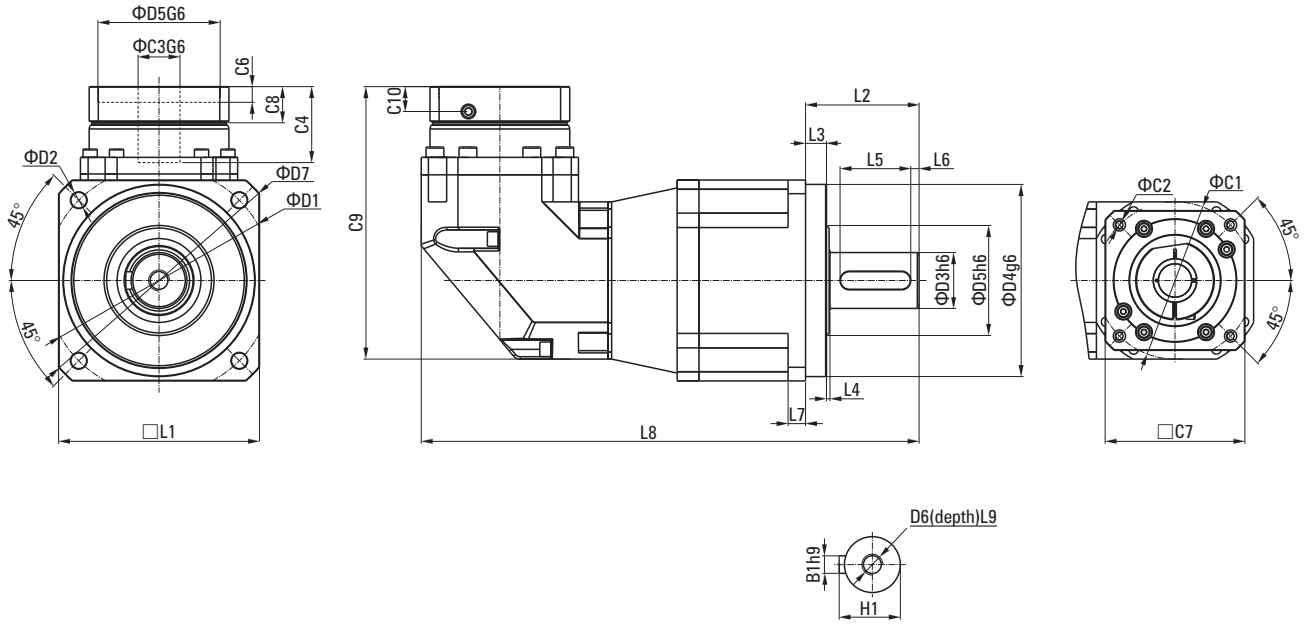
[Unit: mm]

Size	060ZBR	090ZBR	115ZBR	142ZBR	180ZBR
D1	70	100	130	165	215
D2	5.5	6.6	9	11	13
D3 $_{h6}$	16	22	32	40	55
D4 $_{g6}$	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	3.5	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
C1^4	70	100	130	165	215
C2^4	M5×0.8P	M6×1P	M8×1.25P	M10×1.5P	M12×1.75P
C3^4 $_{G6}$	*≤14/≤16	≤19/≤24	≤32	≤38	≤48
C4^4	30	40	50	60	85
C5^4 $_{G6}$	50	80	110	130	180
C6^4	8	4	5	6	6
C7^4	60	90	115	142	190
C8^4	19	17	19.5	22.5	29
C9^4	111.5	152.5	191.5	235.5	303.5
C10^4	13.5	10.75	13	15	20.75
B1 $_{h9}$	5	6	10	12	16
H1	18	24.5	35	43	59

*060ZBR 5,10 reduction ratios C3≤16 (option)

DIMENSIONS (TWO STAGE, REDUCTION RATIO i=25~200)

Dimensional Drawing



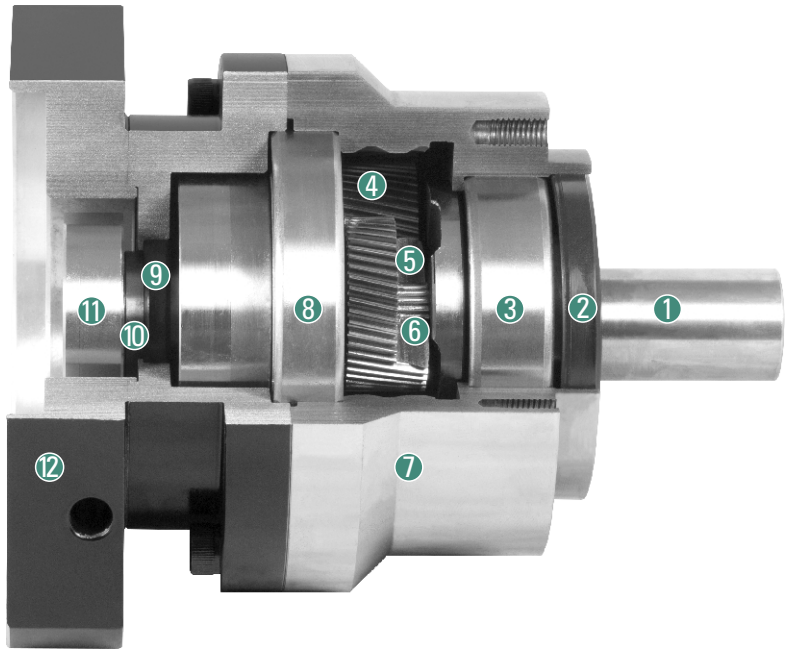
Dimensional Table

[Unit: mm]

Size	060(A)HBR	090ZBR	115ZBR	142ZBR	180ZBR	180ZBR
D1	70	100	130	165	215	250
D2	5.5	6.6	9	11	13	17
D3 $_{h6}$	16	22	32	40	55	75
D4 $_{g6}$	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	3.5	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 $_{G6}$	≤14/≤16	≤14/≤16	≤19/≤24	≤32	≤38	≤48
C4	34	34	40	50	60	85
C5 $_{G6}$	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 $_{h9}$	5	6	10	12	16	20
H1	18	24.5	35	43	59	79.5

HE 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

HE Reducers						Servo Motor	
090	HE	20	( )	(S1)	-	750	□
①	②	③	④	⑤		⑥	⑦

①	Gearbox frame size: 090 (See P11)
②	Gearboxseries code: HE
③	Gear Ratio: 20 (See P11)
④	Precision (See P11) Standard type P2 (Omission), precision type P1, high precision type P0 Precision (Output shaft load is ±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	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
		2	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
Instant stop torque	Nm	1,2	3～100	3 times rated output torque						
Rated Input Speed	rpm	1,2	3～100	3000	3000	3000	3000	3000	3000	3000
Maximum input speed	rpm	1,2	3～100	6000	6000	6000	6000	6000	6000	4000
Ultra-Precision Return Accuracy	arcmin	1	3～10	-	-	-	≤1	≤1	≤1	≤1
		2	15～100	-	-	-	≤3	≤3	≤3	≤3
Precision Return Accuracy	arcmin	1	3～10	≤3	≤3	≤3	≤3	≤3	≤3	≤3
		2	15～100	≤5	≤5	≤5	≤5	≤5	≤5	≤5
Standard Return Accuracy	arcmin	1	3～10	≤5	≤5	≤5	≤5	≤5	≤5	≤5
		2	15～100	≤7	≤7	≤7	≤7	≤7	≤7	≤7
Torsional Rigidity	Nm/arcmin	1,2	3～100	3	7	14	25	50	145	225
Allowable radial force	N	1,2	3～100	702	1377	2985	6100	8460	13050	8700
Allowable axial force	N	1,2	3～100	390	765	1625	3350	4700	7250	18000
Service life	hr	1,2	3～100	20000*						
Efficiency	%	1	3～10	≥97%						
		2	15～100	≥94%						
Weight (FH)	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
Service temperature	℃	1,2	3～100	-10℃～+90℃						
Lubrication		1,2	3～100	Synthetic grease						
Degree of protection		1,2	3～100	IP65						
Installation direction		1,2	3～100	Any direction						
Noise value,1m (n_1=3000rpm,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	$Kg{\cdot}cm^2$	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
		2	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

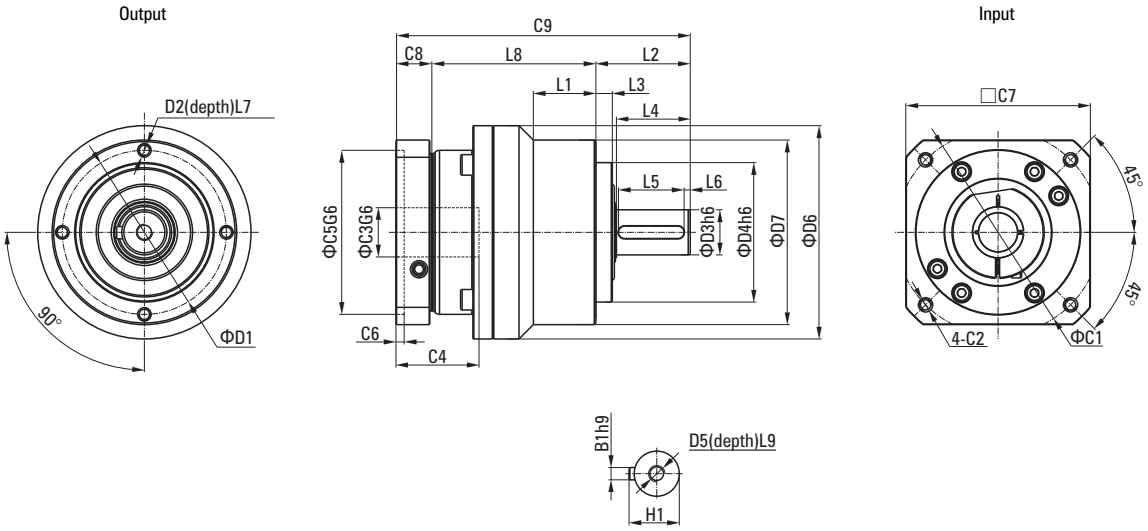
1.Reduction Ratio($i=N_{in}/N_{out}$)　　2.Maximum Acceleration Torque T_{2B}=60% of T_{2NOT}

3.When the output speed is 100rpm, it acts on the center position of the output shaft

*For continuous operation, the service life is 10000 hours

DIMENSIONS (SINGLE STAGE, REDUCTION RATIO i=3~10)

Dimensional Drawing



Dimensional Table

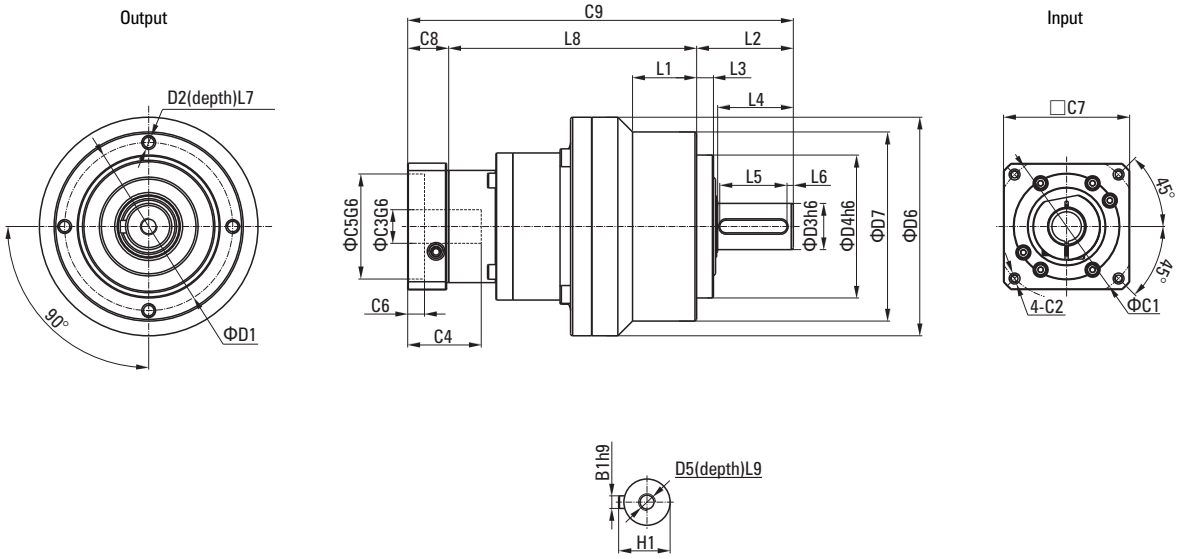
[Unit: mm]

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 $_{h6}$	12	16	22	32	40	55
D4 $_{g6}$	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	49.5	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 $_{G6}$	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 $_{h9}$	4	5	6	10	12	16
H1	14	18	24.5	35	43	59

*070ZE 5,10 reduction ratios C3≤16 (option)

DIMENSIONS (TWO STAGE, REDUCTION RATIO i=15~100)

Dimensional Drawing



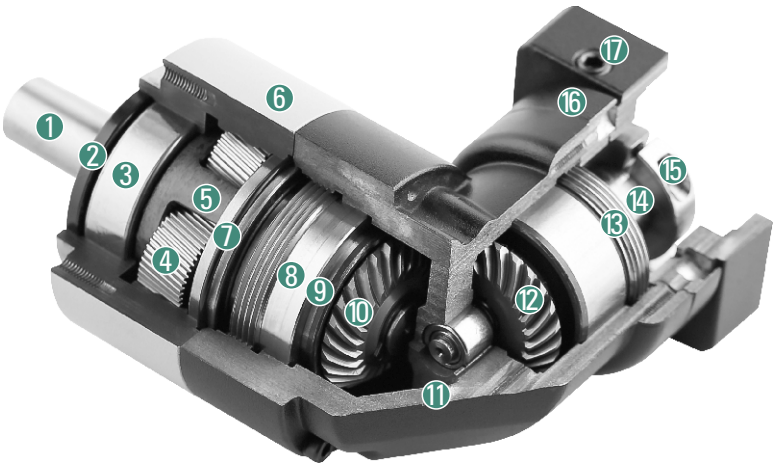
Dimensional Table

[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 $_{h6}$	12	16	22	32	40	55
D4 $_{g6}$	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	49.5	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 $_{G6}$	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 $_{h9}$	4	5	6	10	12	16
H1	14	18	24.5	35	43	59

HER 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
Rated output torque	Nm	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
Instant stop torque	Nm	1,2	3~200	3 times rated output torque			
Rated Input Speed	rpm	1,2	3~200	3000	3000	3000	3000
Maximum input speed	rpm	1,2	3~200	6000	6000	6000	6000
Ultra-Precision Return Accuracy	arcmin	1	3~20	-	≤2	≤2	≤2
		2	25~200	-	≤4	≤4	≤4
Precision Return Accuracy	arcmin	1	3~20	≤4	≤4	≤4	≤4
		2	25~200	-	≤7	≤7	≤7
Standard Return Accuracy	arcmin	1	3~20	≤6	≤6	≤6	≤6
		2	25~200	-	≤9	≤9	≤9
Torsional Rigidity	Nm/arcmin	1,2	3~200	7	14	25	50
Allowable radial force	N	1,2	3~200	1530	3250	6700	9400
Allowable axial force	N	1,2	3~200	765	1625	3350	4700
Service life	hr	1,2	3~200	20000*			
Efficiency	%	1	3~20	≥97%			
		2	25~200	≥94%			
Weight (FH)	Kg	1	3~20	2.1	6.4	13	24.5
		2	25~200	-	7.8	14.2	27.5
Service temperature	℃	1,2	3~200	-10℃~+90℃			
Lubrication		1,2	3~200	Synthetic grease			
Degree of protection		1,2	3~200	IP65			
Installation direction		1,2	3~200	Any direction			
Noise value,1m (n_1=3000rpm,No load)	dB(A)	1,2	3~200	≤63	≤65	≤68	≤70

Moment Of Inertia Of The Reducer

Specifications		Node Number	Reduction Ratio	070ZER	090ZER	120ZER	155ZER
Moment of inertia	Kg·cm^2	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	-	0.35	2.25	6.84
			120～200	-	0.31	1.87	6.25

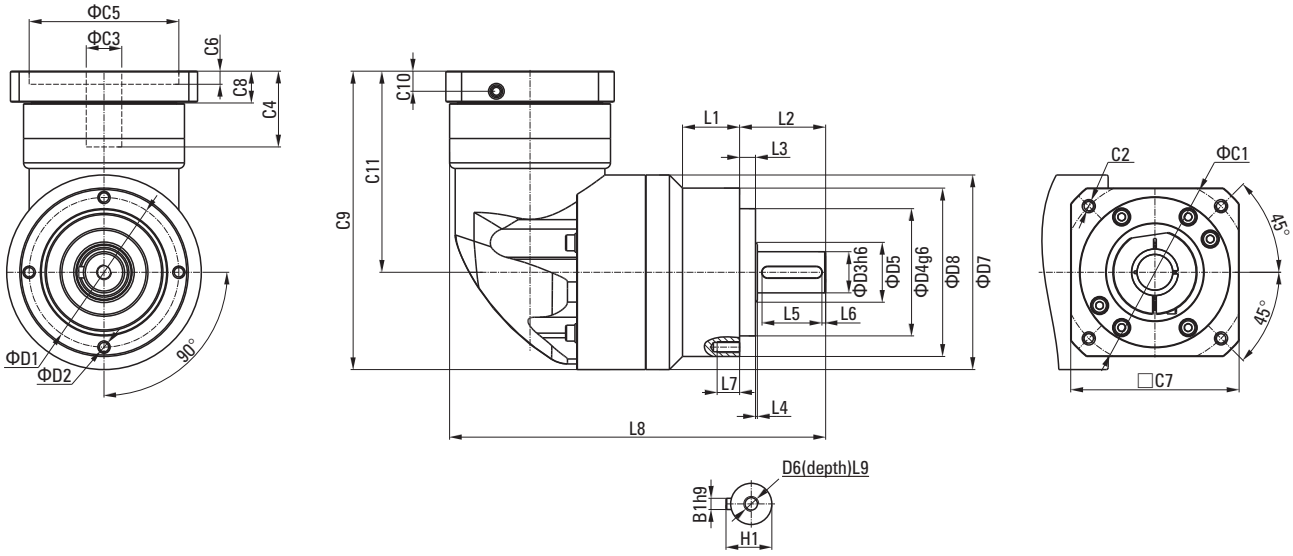
1.Reduction Ratio($i=N_{in}/N_{out}$) 2.Maximum Acceleration Torque T_{2B} =60% of T_{2NOT}

3.When the output speed is 100rpm, it acts on the center position of the output shaft

*For continuous operation, the service life is 10000 hours

DIMENSIONS (SINGLE STAGE, REDUCTION RATIO i=3～20)

Dimensional Drawing



Dimensional Table

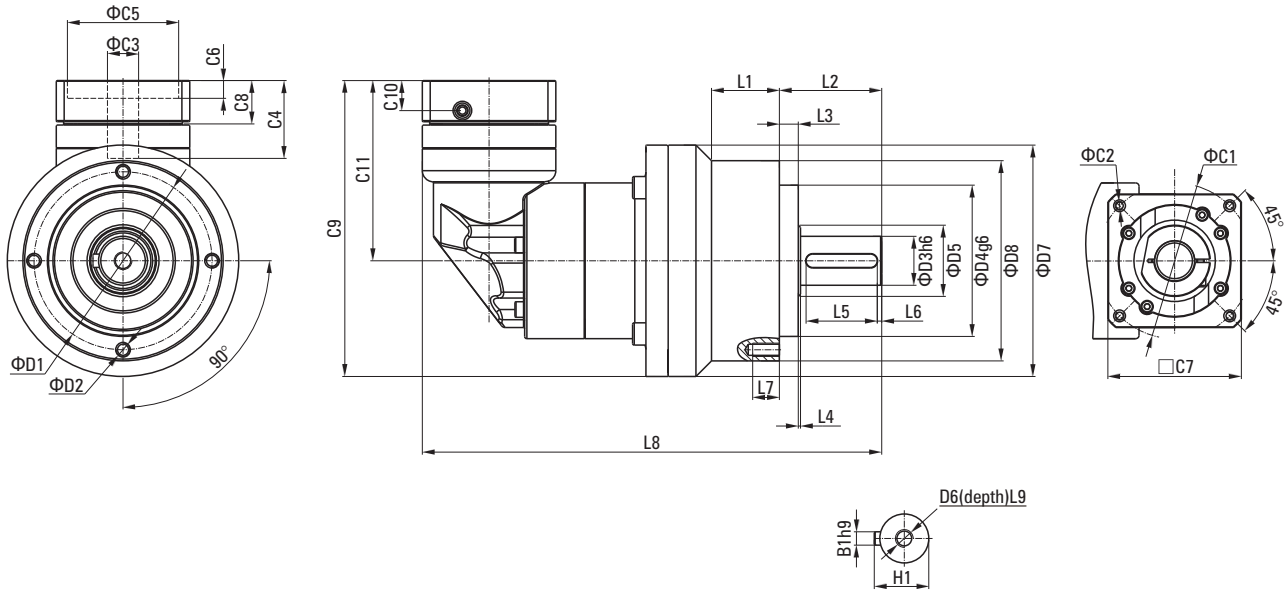
[Unit: mm]

Size	070ZER	090ZER	120ZER	155ZER
D1	62	80	108	140
D2	M5×0.8P	M6×1P	M8×1.25P	M10×1.5P
D3 $_{h6}$	16	22	32	40
D4 $_{g6}$	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	36	50
L2	36	46	70	97
L3	6	8	17	15
L4	1	1	3.5	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 $_{h9}$	5	6	10	12
H1	18	24.5	35	43

*070ZER 5,10 reduction ratios C3≤16 (option)

DIMENSIONS (TWO STAGE, REDUCTION RATIO i=25~200)

Dimensional Drawing



Dimensional Table

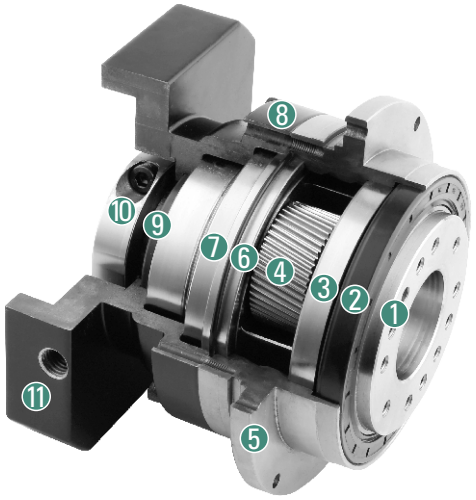
[Unit: mm]

Size	090ZER	120ZER	155ZER
D1	80	108	140
D2	M6x1P	M8x1.25P	M10x1.5P
D3 $_{h6}$	22	32	40
D4 $_{g6}$	68	90	120
D5	30	40	75
D6	M8×1.25P	M12×1.75P	M16×2P
D7	104	130	162
D8	90	120	155
L1	33.5	36	50
L2	46	70	97
L3	8	17	15
L4	1	3.5	3
L5	32	40	63
L6	3	5	5
L7	12	16	20
L8	207.5	283	358
L9	19	28	36
C1	70	100	130
C2	M5×0.8P	M6×1P	M8×1.25P
C3	≤14/≤16	≤19/≤24	≤32
C4	34	40	50
C5	50	80	110
C6	8	4	5
C7	60	90	115
C8	19	17	19.5
C9	133.5	172.5	215
C10	10.75	13	15
C11	107.5	134	164.5
B1 $_{h9}$	6	10	12
H1	24.5	35	43

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	Nm	1	4	48	-	-	-	-
			5	60	160	330	650	1200
			7	50	140	300	550	1100
			10	40	100	230	450	900
		2	20	48	-	-	-	-
			25	60	160	330	650	1200
			35	50	140	300	550	1100
			50	60	160	330	650	1200
			70	50	140	300	550	1100
			100	40	100	230	450	900
Instant stop torque	Nm	1,2	4～100	3 times rated output torque				
Rated Input Speed	rpm	1,2	4～100	3000	3000	3000	3000	3000
Maximum input speed	rpm	1,2	4～100	6000	6000	6000	6000	6000
Ultra-Precision Return Accuracy	arcmin	1	4～10	-	≤1	≤1	≤1	≤1
		2	15～100	-	-	≤3	≤3	≤3
Precision Return Accuracy	arcmin	1	4～10	≤3	≤3	≤3	≤3	≤3
		2	15～100	≤5	≤5	≤5	≤5	≤5
Standard Return Accuracy	arcmin	1	4～10	≤5	≤5	≤5	≤5	≤5
		2	15～100	≤7	≤7	≤7	≤7	≤7
Torsional Rigidity	Nm/arcmin	1,2	4～100	13	31	82	151	440
Allowable radial force	Nm	1,2	4～100	125	235	430	1300	3064
Allowable axial force	N	1,2	4～100	1050	2850	2990	10590	16660
Service life	hr	1,2	4～100	20000*				
Efficiency	%	1	4～10	≥97%				
		2	15～100	≥94%				
Weight (FH)	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
Service temperature	℃	1,2	4～100	-10℃～+90℃				
Lubrication		1,2	4～100	Synthetic grease(NYOGEL 792D)				
Degree of protection		1,2	4～100	IP65				
Installation direction		1,2	4～100	Any direction				
Noise value,1m (n_1=3000rpm,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	$Kg{\cdot}cm^2$	1	4	0.14	-	-	-	-
			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	-	-	-	-
			25	0.03	0.13	0.47	2.71	7.42
			35	0.03	0.13	0.47	2.71	7.42
			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

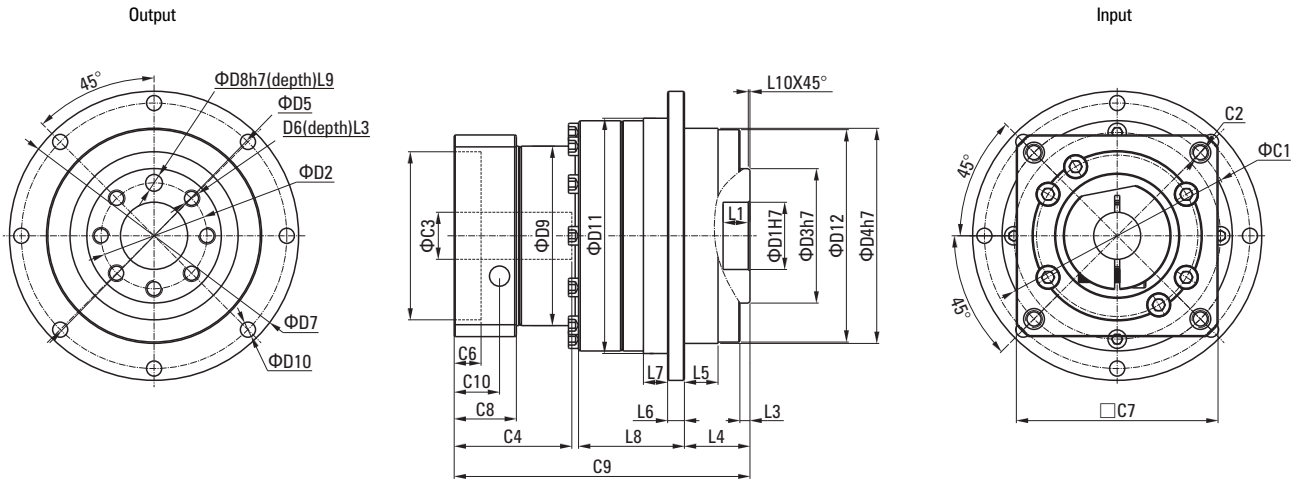
1.Reduction Ratio($i=N_{in}/N_{out}$)　　2.Maximum Acceleration Torque T_{2B}=60% of T_{2NOT}

3.When the output speed is 100rpm, it acts on the center position of the output shaft

*For continuous operation, the service life is 10000 hours

DIMENSIONS (SINGLE STAGE, REDUCTION RATIO i=4～10)

Dimensional Drawing



Dimensional Table

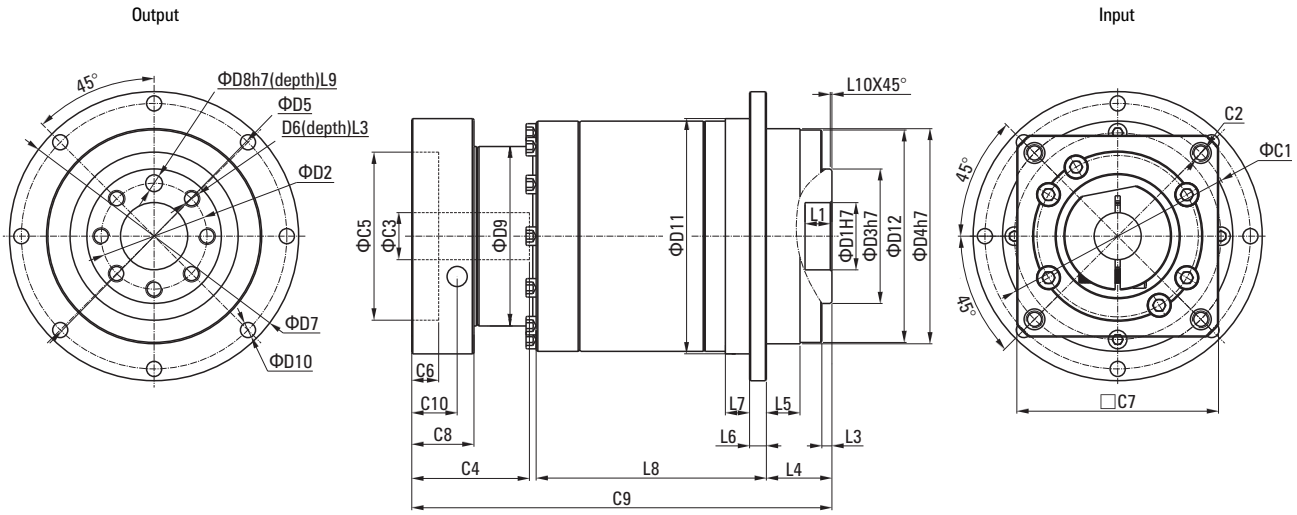
[Unit: mm]

Size	HD064	HD090	HD110	HD140	HD200
D1 H7	20	31.5	40	50	80
D2	31.5	50	63	80	125
D3 h7	40	63	80	100	160
D4 h7	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 H7	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 h7	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[4]	70	100	130	165	215
C2[4]	M5×0.8P	M6×1P	M8×1.25P	M10×1.5P	M12×1.75P
C3[4]	*≤14/≤16	≤19/≤24	≤32	≤38	≤48
C4[4]	34	40	50	60	85
C5[4] G6	50	80	110	130	180
C6[4]	8	4	5	9	6
C7[4]	60	90	115	142	190
C8[4]	19	17	19.5	22.5	29
C9[4]	82.5	99.5	121.5	151	199.5
C10[4]	13.5	10.75	13	15	20.75
OD	66×2	90×3	110×3	145×3	200×5

*HD064 5,10 reduction ratios C3≤16 (option)

DIMENSIONS (TWO STAGE, REDUCTION RATIO i=20~100)

Dimensional Drawing



Dimensional Table

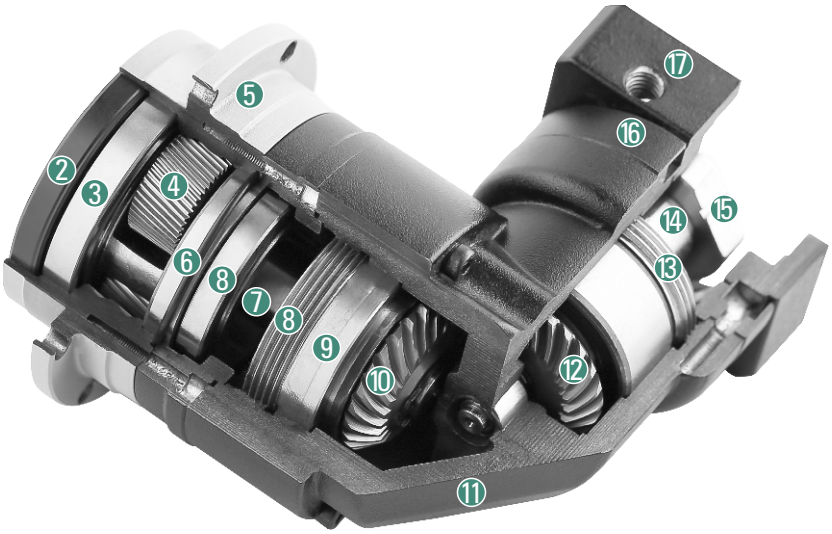
[Unit: mm]

Size	HD064	HD090	HD110	HD140	HD200
D1 H7	20	31.5	40	50	80
D2	31.5	50	63	80	125
D3 h7	40	63	80	100	160
D4 h7	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 H7	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 h7	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[5]	46	70	100	130	165
C2[5]	M4×0.7P	M5×0.8P	M6×1P	M8×1.25P	M10×1.5P
C3[5]	*≤11/≤12	≤14/≤15.875/≤16	≤19/≤24	≤32	≤38
C4[5]	30	34	40	50	60
C5[5] G6	30	50	80	110	130
C6[5]	3.5	8	4	5	6
C7[5]	48	60	90	115	142
C8[5]	19.5	19	17	19.5	22.5
C9[5]	108	134	160	204	248
C10[5]	13.25	13.5	10.75	13	15
OD	66×2	90×3	110×3	145×3	200×5

*HD060 5,10 reduction ratios C3≤16 (option)

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	Nm	1	4	48	-	-	-	-
			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	-	-	-	-
			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
Instant stop torque	Nm	1,2	3～200	3 times rated output torque				
Rated Input Speed	rpm	1,2	3～200	3000	3000	3000	3000	3000
Maximum input speed	rpm	1,2	3～200	6000	6000	6000	6000	6000
Ultra-Precision Return Accuracy	arcmin	1	3～20	-	≤2	≤2	≤2	≤2
		2	25～200	-	≤4	≤4	≤4	≤4
Precision Return Accuracy	arcmin	1	3～20	≤4	≤4	≤4	≤4	≤4
		2	25～200	-	≤7	≤7	≤7	≤7
Standard Return Accuracy	arcmin	1	3～20	≤6	≤6	≤6	≤6	≤6
		2	25～200	-	≤9	≤9	≤9	≤9
Torsional Rigidity	Nm/arcmin	1,2	3～200	13	31	82	151	440
Allowable radial force	Nm	1,2	3～200	120	235	430	1300	3064
Allowable axial force	N	1,2	3～200	1050	2850	2990	10590	16660
Service life	hr	1,2	3～200	20000*				
Efficiency	%	1	3～20	≥95%				
		2	25～200	≥92%				
Weight (FH)	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
Service temperature	℃	1,2	3～200	-10℃～+90℃				
Lubrication		1,2	3～200	Synthetic grease				
Degree of protection		1,2	3～200	IP65				
Installation direction		1,2	3～200	Any direction				
Noise value,1m (n_1=3000rpm,No load)	dB(A)	1,2	3～200	≤63	≤65	≤68	≤70	≤72

Moment Of Inertia Of The Reducer

Specifications		Node Number	Reduction Ratio	064HDR	090HDR	110HDR	140HDR	200HDR
Moment of inertia	Kg·cm^2	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

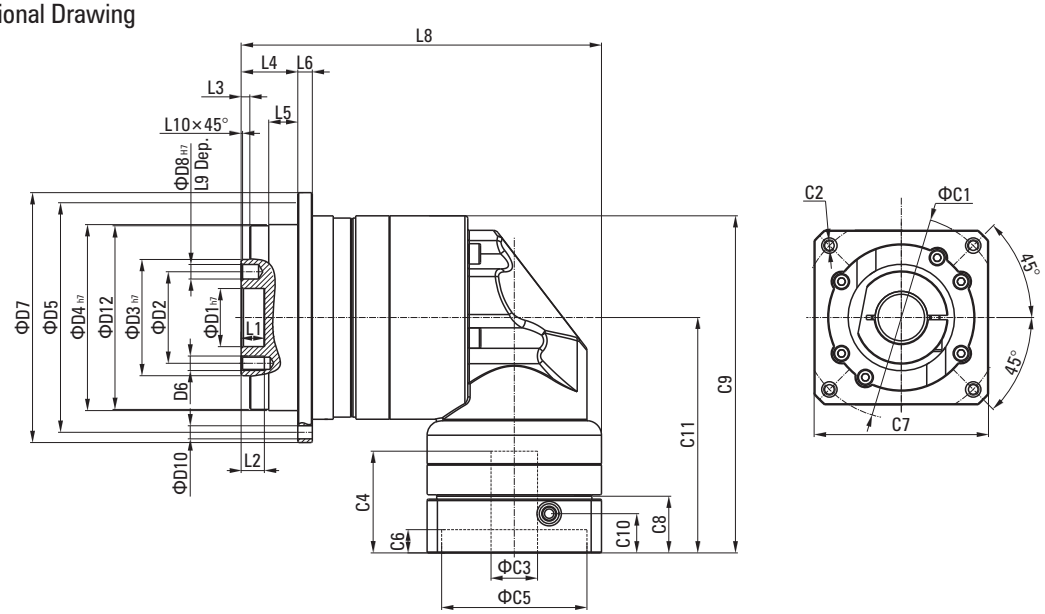
1.Reduction Ratio($i=N_{in}/N_{out}$)　　2.Maximum Acceleration Torque T_{2B}=60% of T_{2NOT}

3.When the output speed is 100rpm, it acts on the center position of the output shaft

*For continuous operation, the service life is 10000 hours

DIMENSIONS (SINGLE STAGE, REDUCTION RATIO i=3～20)

Dimensional Drawing



Dimensional Table

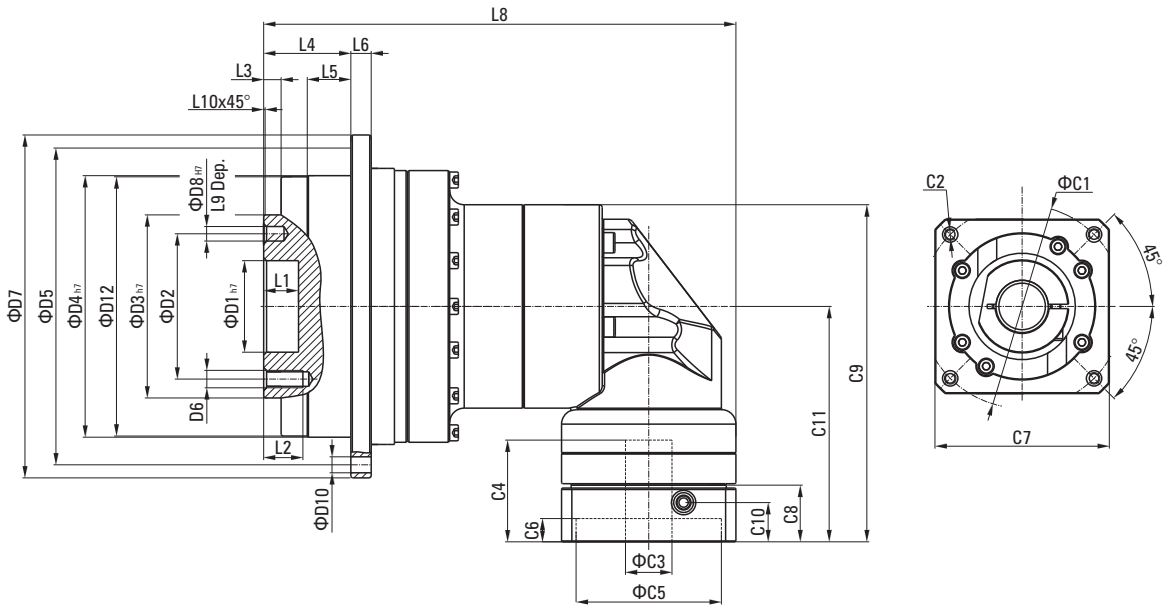
[Unit: mm]

Size	064HDR	090HDR	110HDR	140HDR	200HDR
D1 h7	20	31.5	40	50	80
D2	31.5	50	63	80	125
D3 h7	40	63	80	100	160
D4 h7	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 H7	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

*064HDR　5,10 reduction ratios C3≤16 （option）

DIMENSIONS (TWO STAGE, REDUCTION RATIO i=25~200)

Dimensional Drawing



Dimensional Table

[Unit: mm]

Size	064HDR	090HDR	110HDR	140HDR	200HDR
D1 h7	20	31.5	40	50	80
D2	31.5	50	63	80	125
D3 h7	40	63	80	100	160
D4 h7	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 H7	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

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.

Spec. In Case Of Assembling A Motor Without Key

①Take 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.

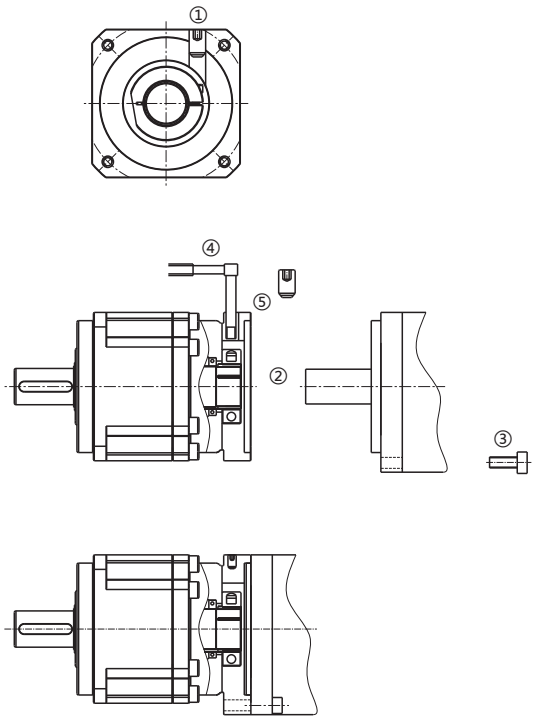
②Gradually put the motor shaft into the input shaft (Ensure that it is smoothly put in without iam.) Be careful not to be inserted with the motor tilted.

③Attach the motor to the reducer and fasten the bolt with designated fastening torque. (See table 1)

④Fasten the set bolt of the input shaft with designated fastening torque wrench, etc. (See table 2)

⑤Puton a rubber cap. It is the end of assembling.

● HB/HE Series Schematic Diagram



● 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.

ASSEMBLY

Peducer Assembly

Jointing with reducerIn 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:

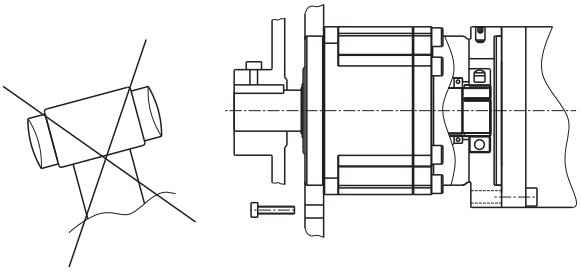
1、When assemble a coupling, pulley, etc. onto the output shaft,make sure that excessive axial load not be given to the output shaft.

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.



HIGH PRECISION PLANETARY GEAR BOX CATALOGUE

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