

HIGH TORQUE-HIGH PRECISION

PLANETARY GEARBOX



AH - AHK Series

► Ordering Code - AH / AHK Gearbox

AH090	—	005⁽¹⁾	/	MOTOR
AHK090	—	005⁽¹⁾	/	MOTOR
AHKA285⁽³⁾				Motor Type
AHKB090⁽³⁾				Ratio
				Gearbox Size

Gearbox Size

AH 064 / 090 / 110 / 140 / 200 / 255 / 285 / 355 / 450

AHK 064 / 090 / 110 / 140 / 200 / 255 / 285 / 355 / 450

Ratio⁽²⁾

AH 4 / 5 / 7 / 10

16 / 20 / 21 / 25 / 28 / 31 / 35 / 40 / 46 / 50 / 61 / 70 / 91 / 100

AHK (2 Stg.) 12 / 15 / 16 / 20 / 25 / 28 / 35 / 40 / 49 / 50 / 70 / 100

AHKA (3 Stg.) 100 / 125 / 140 / 175 / 200 / 250 / 350 / 500 / 700 / 1,000

AHKB (3 Stg.) 64 / 84 / 100 / 125 / 140 / 175 / 200 / 250 / 280 / 350 / 400 / 500 / 700 / 1,000

AHK (4 Stg.) 1,225 / 1,400 / 1,750 / 2,000 / 2,800 / 3,500 / 5,000 / 7,000 / 10,000

AHKC 4 / 5 / 7 / 8 / 10 / 21 / 31 / 46 / 61 / 91

Motor Type

Manufacturer and Model

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

(2) Please refer to the specifications for the ratios provided in each series.

(3) Please refer to page 06.



► Performance - AH Gearbox

Model No.		Stage	Ratio ⁽¹⁾	AH064	AH090	AH110	AH140	AH200	AH255	AH285	AH355	AH450
Nominal Output Torque T_{2N}	Nm	1	4	95	195	350	600	1,290	-	-	-	-
			5	80	165	305	525	1,145	1,745	3,285	-	-
			7	60	130	250	435	980	1,495	2,525	-	-
			10	24	55	160	305	700	1,070	1,810	-	-
		2	16	95	195	360	615	1,320	-	-	-	-
			20	95	200	360	615	1,320	1,770	3,325	-	-
			21	80	165	310	535	1,165	1,770	3,330	5,595	10,915
			25	80	165	310	535	1,165	1,770	3,330	-	-
			28	60	200	360	615	1,325	-	-	-	-
			31	60	130	250	440	990	1,510	2,550	4,810	9,565
			35	70	170	310	535	1,165	1,775	3,335	-	-
			40	40	96	220	615	1,215	-	-	-	-
			46	24	55	160	295	660	1,005	1,700	3,400	7,125
			50	50	120	275	535	1,170	1,775	3,340	-	-
			61	60	130	250	440	990	1,510	2,550	4,820	9,585
			70	60	130	250	440	990	1,510	2,550	-	-
			91	24	55	160	295	660	1,005	1,700	3,345	7,000
100	24	55	160	295	660	1,005	1,700	-	-			
Emergency Stop Torque T_{2NOT}	Nm	1,2	4~100	3 times T_{2N}								
Max. Acceleration Torque T_{2B}	Nm	1,2	4~100	1.5 times T_{2N}								
No Load Running Torque ⁽³⁾	Nm	1	4~10	0.45	0.7	1.4	3.5	7	11	14	-	-
		2	16~100	0.2	0.3	0.6	1.3	2.2	3.5	4.5	13	21
Backlash ⁽²⁾	arcmin	1	4~10	≤ 2	≤ 1	≤ 1	≤ 1	≤ 1	≤ 1	≤ 1	-	-
		2	16~100	≤ 3	≤ 2	≤ 2	≤ 2	≤ 2	≤ 2	≤ 2	≤ 2	≤ 2
Torsional Rigidity	Nm/arcmin	1,2	4~100	8	22	60	115	395	650	1,050	2,850	5,700
Nominal Input Speed n_{1N}	rpm	1	4~10	5,000	3,600	3,600	3,000	2,700	2,400	2,100	-	-
		2	16~100	5,000	4,600	4,600	4,000	3,700	3,400	3,100	2,500	2,000
Max. Input Speed n_{1B}	rpm	1	4~10	7,000	6,000	6,000	5,000	4,500	4,000	3,500	-	-
		2	16~100	7,000	7,000	7,000	6,000	5,500	5,000	4,500	4,000	3,500
Max. Axial Load F_{2a} ⁽⁴⁾	N	1,2	4~100	1,690	2,220	4,070	8,530	17,000	26,900	39,200	101,500	143,700
Max. Tilting Moment M_{2K} ⁽⁴⁾	Nm	1,2	4~100	120	280	480	1,310	3,530	5,920	9,230	29,100	63,300
Operating Temp	°C	1,2	4~100	-10° C ~ 90° C								
Degree of Gearbox Protection		1,2	4~100	IP65								
Lubrication		1,2	4~100	Synthetic lubrication grease								
Mounting Position		1,2	4~100	All directions								
Running Noise ⁽³⁾	dB(A)	1	4~10	≤ 58	≤ 59	≤ 64	≤ 65	≤ 66	≤ 66	≤ 66	-	-
		2	16~100	≤ 58	≤ 59	≤ 60	≤ 63	≤ 66	≤ 66	≤ 66	≤ 68	≤ 70
Efficiency η	%	1	4~10	≥ 97%								
		2	16~100	≥ 94%								

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

(2) Backlash is measured at 2% of Nominal Output Torque T_{2N} .

(3) The dB values are measured by gearbox with ratio 10 (1-stage) or ratio 100 (2-stage), no loading at 3,000 RPM or at the respective Nominal Input Speed by bigger model size.

By lower ratio and/or higher RPM, the noise level could be 3 to 5 dB higher.

(4) Applied to the output flange center at 100 rpm.

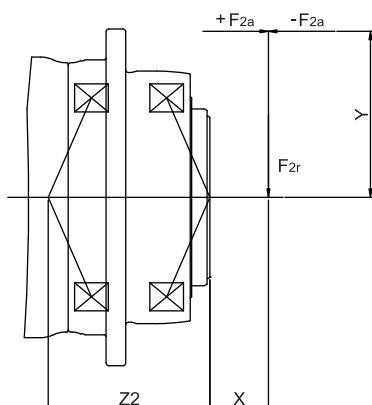
(5) Continuous operation is not recommended.

► Inertia - AH Gearbox

Model No.	AH064		AH090		AH110		AH140		AH200		AH255		AH285		AH355	AH450	
	1-st.	2-st.	1-st.	2-st.	1-st.	2-st.	1-st.	2-st.	1-st.	2-st.	1-st.	2-st.	1-st.	2-st.	2-st.	2-st.	
$\emptyset^{(A)}$ (C3)																	
8	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	0.17	0.16	-	0.17	-	-	-	-	-	-	-	-	-	-	-	-	-
14	0.21	0.2	0.53	0.21	-	0.53	-	-	-	-	-	-	-	-	-	-	-
19	0.63	-	0.68	0.63	1.83	0.68	-	1.83	-	-	-	-	-	-	-	-	-
24	-	-	4.52	-	5.04	4.52	5.63	5.04	-	5.63	-	-	-	-	-	-	-
28	-	-	-	-	6.33	-	7.18	6.33	-	7.18	-	-	-	-	-	-	-
32	-	-	-	-	8.73	-	10.1	8.73	12.63	10.1	-	12.63	-	-	-	-	-
35	-	-	-	-	14.04	-	15.54	14.04	17.75	15.54	17.35	17.75	28.18	20.8	-	-	-
38	-	-	-	-	19.05	-	21.32	19.05	23.26	21.32	23.61	23.26	28.18	27.05	23.6	-	-
42	-	-	-	-	-	-	23.2	-	25.4	23.2	25.5	25.4	30.52	28.95	25.37	30.37	-
48	-	-	-	-	-	-	56.07	-	61.02	56.07	61.22	61.02	66.85	64.66	89.35	96.45	-
55	-	-	-	-	-	-	-	-	-	-	88.86	-	94.91	-	102	109.06	-
60	-	-	-	-	-	-	-	-	-	-	-	-	117.73	-	-	117.75	-

(A) \emptyset = Input shaft diameter.

► Max. Tilting Moment M_{2K}



$$M_{2K} = \frac{F_{2a} * Y + F_{2r} * (X + Z2)}{1000}$$

$$M_{2K} : [\text{Nm}]$$

$$F_{2a}, F_{2r} : [\text{N}]$$

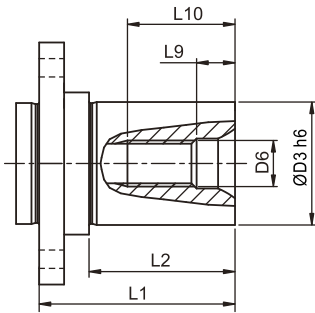
$$X, Y, Z2 : [\text{mm}]$$

M2K

AH / AHK	064	090	110	140	200	255	285	355	450
Z2 [mm]	63.7	84.5	106.2	90	122.8	133.2	175.5	220.6	275.3

Note : Applied to the output flange center at 100 rpm

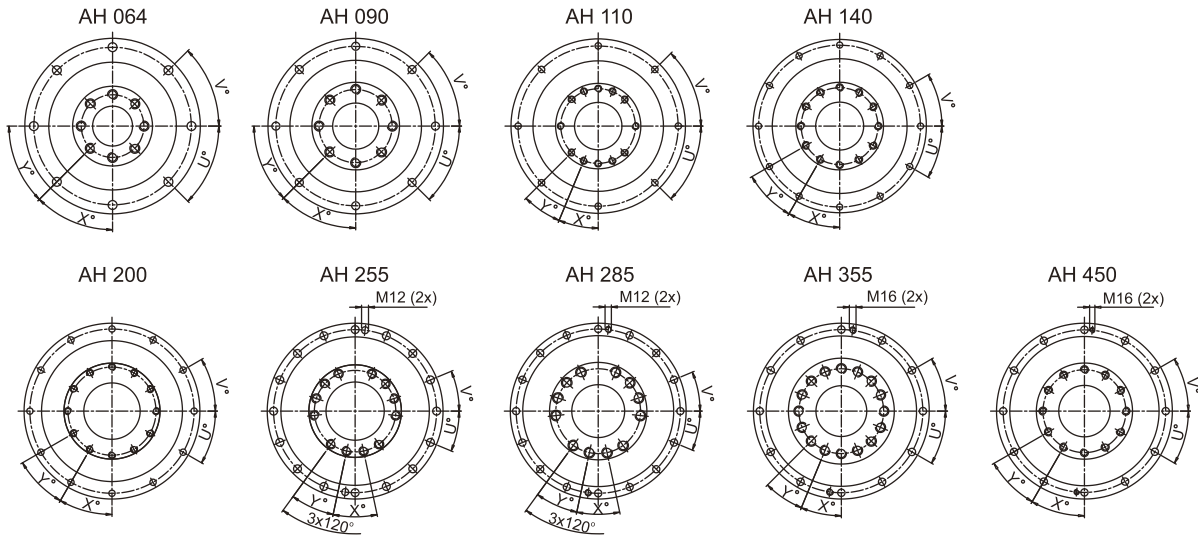
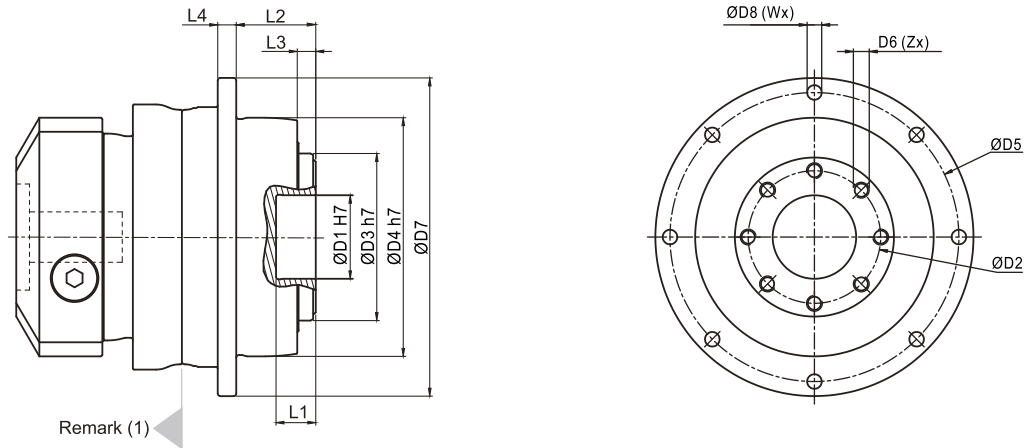
► Flange Shaft - AH



Dimension	L1	L2	D3 h6	D6	L9	L10	Order Code
AH064	33	23	16	M5	4.8	12.5	FLS-AH064-S16
			22	M8	7.2	19	FLS-AH064-S22
AH090	41	30	22	M8	7.2	19	FLS-AH090-S22
			32	M12	10	28	FLS-AH090-S32
AH110	51	38	32	M12	10	28	FLS-AH110-S32
			40	M16	12	36	FLS-AH110-S40
AH140	54	38	40	M16	12	36	FLS-AH140-S40
			55	M20	15	42	FLS-AH140-S55
AH200	73	52	55	M20	15	42	FLS-AH200-S55
			75	M20	15	42	FLS-AH200-S75
AH255	150	123	90	M24	18	50	FLS-AH255-S90

Note: Dimensions are related to gearbox flange interface.

► Dimensions - AH Gearbox

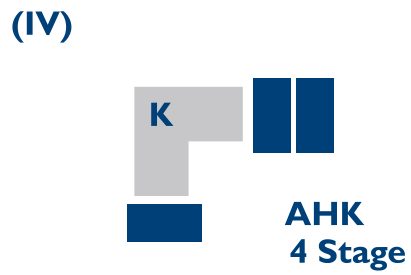
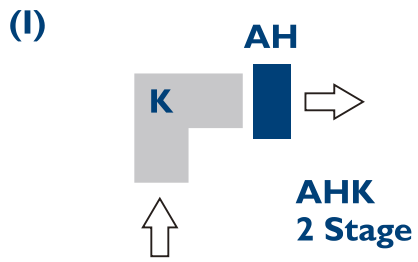


Dimension	AH064	AH090	AH110	AH140	AH200	AH255	AH285	AH355	AH450
D1 H7	20	31.5	40	50	80	100	100	120	155
D2	31.5	50	63	80	125	140	160	200	250
D3 h7	40	63	80	100	160	180	200	250	315
D4 h7	64	90	110	140	200	255	285	355	450
D5	79	109	135	168	233	280	310	385	490
D6 x Pitch x Deep	M5x0.8Px8	M6x1Px10	M6x1Px11	M8x1.25Px15	M10x1.5Px20	M16x2Px25	M20x2.5Px31	M24x3Px32	M30x3.5Px40
D7	88	120	147	180	249.5	302	332	415	530
D8	4.5	5.5	5.5	6.6	9	13.5	13.5	17.5	22
L1	8	15	15	15	16	16	16	35	24
L2	19.5	30	29	38	50	66	75	80	85
L3	4	7	7	7.5	8.5	13.5	16.5	20	20
L4	5	7	8	10	12	18	20	45	60
X in Degree	45	45	22.5	30	30	24	24	22.5	30
Y in Degree	45	45	22.5	30	30	24	24	22.5	30
Z	8	8	12	12	12	12	12	16	12
U in Degree	45	45	45	30	30	22.5	22.5	30	30
V in Degree	45	45	45	30	30	22.5	22.5	30	30
W	8	8	8	12	12	16	16	12	12

Note: Dimensions are related to motor interface. Please contact APEX for details.



▶ AHK Gearbox Structure



► Performance - AHK (2 stage) Gearbox

Model No.		Stage	Ratio ⁽¹⁾	AHK064	AHK090	AHK110	AHK140	AHK200	AHK255	AHK285	AHK355
Nominal Output Torque T_{2N}	Nm	2	12	95	195	360	615	1,315	-	-	-
			15	-	-	-	-	-	1,770	3,330	5,595
			16	95	200	360	615	1,320	-	-	-
			20	95	200	360	615	1,320	1,775	3,335	5,605
			25	80	170	310	535	1,165	1,775	3,335	5,610
			28	92	200	360	615	1,325	-	-	-
			35	80	170	310	535	1,170	1,775	3,340	5,615
			40	60	160	340	615	1,325	-	-	-
			49	60	130	250	440	990	1,510	2,550	4,820
			50	50	170	310	535	1,170	1,775	3,000	5,500
			70	60	130	250	440	990	1,510	2,550	4,820
100	24	55	160	290	655	1,005	1,685	3,315			
Emergency Stop Torque T_{2NOT}	Nm	2	12~100	2 times T_{2N}							
Max. Acceleration Torque T_{2B}	Nm	2	12~100	1.5 times T_{2N}							
No Load Running Torque ⁽³⁾	Nm	2	12~100	1	1.3	2	3.1	6	13	16	20
Backlash ⁽²⁾	arcmin	2	12~100	≤ 3	≤ 2	≤ 2	≤ 2	≤ 2	≤ 2	≤ 2	≤ 2
Torsional Rigidity	Nm/arcmin	2	12~100	12	27	56	112	389	642	1,275	2,500
Nominal Input Speed n_{1N}	rpm	2	12~100	3,000	3,000	2,800	2,700	2,200	2,100	2,000	1,600
Max. Input Speed n_{1B}	rpm	2	12~100	6,000	6,000	6,000	4,500	4,500	4,000	3,000	2,500
Max. Axial Load F_{2a} ⁽⁴⁾	N	2	12~100	1,690	2,220	4,070	8,530	17,000	26,900	39,200	101,500
Max. Tilting Moment M_{2k} ⁽⁴⁾	Nm	2	12~100	120	280	480	1,310	3,530	5,920	9,230	29,100
Operating Temp	°C	2	12~100	-10° C ~ 90° C							
Degree of Gearbox Protection		2	12~100	IP65							
Lubrication		2	12~100	Synthetic lubrication grease							
Mounting Position		2	12~100	All directions							
Running Noise ⁽³⁾	dB(A)	2	12~100	≤ 64	≤ 66	≤ 68	≤ 68	≤ 70	≤ 70	≤ 72	≤ 74
Efficiency η	%	2	12~100	≥ 94%							

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

(2) Backlash is measured at 2% of Nominal Output Torque T_{2N} .

(3) The dB values are measured by gearbox with ratio 100 (2-stage), no loading at 3,000 RPM or at the respective Nominal Input Speed by bigger model size.

By lower ratio and/or higher RPM, the noise level could be 3 to 5 dB higher.

(4) Applied to the output flange center at 100 rpm.

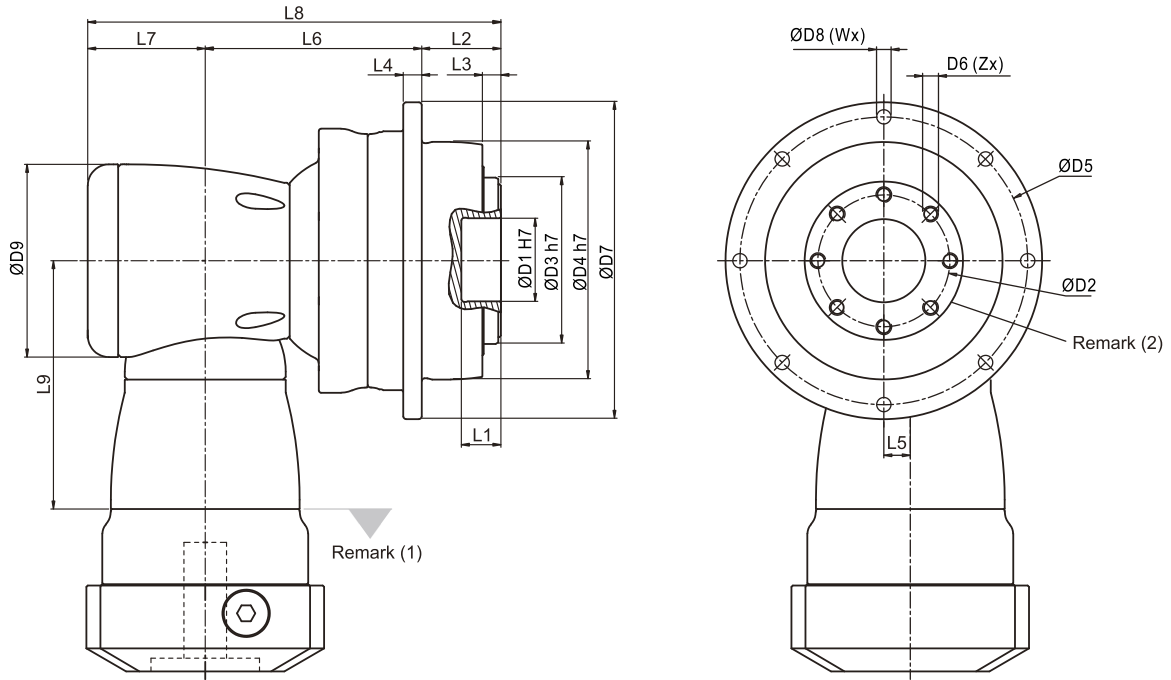
(5) Continuous operation is not recommended.

► Inertia - AHK (2 stage) Gearbox

Model No.		AHK064	AHK090	AHK110	AHK140	AHK200	AHK255	AHK285	AHK355
Input Shaft (C3) \varnothing ^(A)	8	0.1	-	-	-	-	-	-	-
	11	0.17	0.18	-	-	-	-	-	-
	14	0.21	0.5	0.52	-	-	-	-	-
	19	-	0.65	1.69	1.71	-	-	-	-
	24	-	-	4.89	5.05	6.92	-	-	-
	28	-	-	-	6.55	6.98	-	-	-
	32	-	-	-	9.47	10.18	10.18	-	-
	35	-	-	-	14.91	15.21	15.21	15.68	-
	38	-	-	-	20.69	20.7	20.7	21.69	23.46
	42	-	-	-	-	22.83	22.83	23.59	25.28
	48	-	-	-	-	58.45	58.45	59.3	61.61
	55	-	-	-	-	-	-	-	89.67

(A) \varnothing = Input shaft diameter.

► Dimensions - AHK (2 stage) Gearbox (Ratio $i = 12\sim 100$)



Dimension	AHK064	AHK090	AHK110	AHK140	AHK200	AHK255	AHK285	AHK355
D1 H7	20	31.5	40	50	80	100	100	120
D2	31.5	50	63	80	125	140	160	200
D3 h7	40	63	80	100	160	180	200	250
D4 h7	64	90	110	140	200	255	285	355
D5	79	109	135	168	233	280	310	385
D6 x Pitch x Deep	M5x0.8Px8	M6x1Px10	M6x1Px11	M8x1.25Px15	M10x1.5Px20	M16x2Px25	M20x2.5Px31	M24x3Px32
D7	88	120	147	180	249.5	302	332	415
D8	4.5	5.5	5.5	6.6	9	13.5	13.5	17.5
D9	73	94	116	163	210	210	255	300
L1	8	15	15	15	16	16	16	35
L2	19.5	30	29	38	50	66	75	80
L3	4	7	7	7.5	8.5	13.5	16.5	20
L4	5	7	8	10	12	18	20	45
L5	10	13	17	25	31	31	36	43
L6	87	90.5	114	147.5	175	191.5	249.5	290
L7	44.5	53	68.3	89	115	115	131	165
L8	151	173.5	211.3	274.5	340	372.5	455.5	535
L9	94	114.5	129	173.5	228	228	265.5	294.5
X in Degree	45	45	22.5	30	30	24	24	22.5
Y in Degree	45	45	22.5	30	30	24	24	22.5
Z	8	8	12	12	12	12	12	16
U in Degree	45	45	45	30	30	22.5	22.5	30
V in Degree	45	45	45	30	30	22.5	22.5	30
W	8	8	8	12	12	16	16	12

(1) Dimensions are related to motor interface. Please contact APEX for details.

(2) Refer to the AH series (Page 05) for flange interface.

► Performance - AHKA (3 stage) Gearbox

Model No.		Stage	Ratio ⁽¹⁾	AHKA285	AHKA355	AHKA450
Nominal Output Torque T_{2N}	Nm	3	100	3,345	5,620	10,965
			125	3,345	5,625	10,970
			140	3,345	5,625	10,970
			175	3,345	5,625	10,970
			200	3,345	5,625	10,975
			250	3,345	5,625	10,975
			350	3,345	5,630	10,975
			500	3,345	5,350	9,050
			700	2,555	4,825	9,600
			1,000	1,650	3,250	6,785
Emergency Stop Torque T_{2NOT}	Nm	3	100~1,000	2 times T_{2N}		
Max. Acceleration Torque T_{2B}	Nm	3	100~1,000	1.5 times T_{2N}		
No Load Running Torque ⁽³⁾	Nm	3	100~1,000	6	6	13
Backlash ⁽²⁾	arcmin	3	100~1,000	≤ 2	≤ 2	≤ 2
Torsional Rigidity	Nm/arcmin	3	100~1,000	1,275	2,500	5,100
Nominal Input Speed n_{IN}	rpm	3	100~1,000	2,100	2,100	2,000
Max. Input Speed n_{IB}	rpm	3	100~1,000	4,000	4,000	3,000
Max. Axial Load F_{2a} ⁽⁴⁾	N	3	100~1,000	39,200	101,500	143,700
Max. Tilting Moment M_{2K} ⁽⁴⁾	Nm	3	100~1,000	9,230	29,100	63,300
Operating Temp	°C	3	100~1,000	-10° C ~ 90° C		
Degree of Gearbox Protection		3	100~1,000	IP65		
Lubrication		3	100~1,000	Synthetic lubrication grease		
Mounting Position		3	100~1,000	All directions		
Running Noise ⁽³⁾	dB(A)	3	100~1,000	≤ 72	≤ 74	≤ 76
Efficiency η	%	3	100~1,000	$\geq 92\%$		

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

(2) Backlash is measured at 2% of Nominal Output Torque T_{2N} .

(3) The dB values are measured by gearbox with ratio 1,000 (3-stage), no loading at 3,000 RPM or at the respective Nominal Input Speed by bigger model size.

By lower ratio and/or higher RPM, the noise level could be 3 to 5 dB higher.

(4) Applied to the output flange center at 100 rpm.

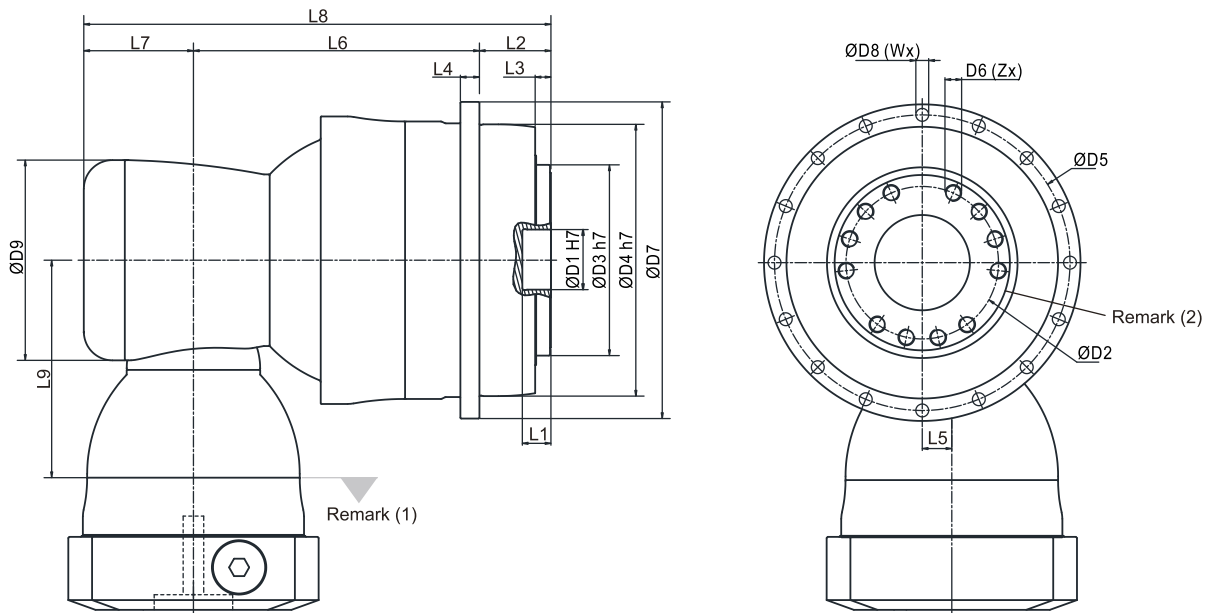
(5) Continuous operation is not recommended.

► Inertia - AHKA (3 stage) Gearbox

Model No.		AHKA285	AHKA355	AHKA450
Input Shaft (C3) $\varnothing^{(A)}$				
32	kg.cm ²	10.18	10.18	-
35		15.21	15.21	15.68
38		20.7	20.7	21.69
42		22.83	22.83	23.59
48		58.45	58.45	59.3
55		-	-	86.95

(A) \varnothing = Input shaft diameter.

► Dimensions - AHKA (3 stage) Gearbox (Ratio $i = 100\sim 1000$)



Dimension	AHKA285	AHKA355	AHKA450
D1 H7	100	120	155
D2	160	200	250
D3 h7	200	250	315
D4 h7	285	355	450
D5	310	385	490
D6 x Pitch x Deep	M20x2.5Px31	M24x3Px32	M30x3.5Px40
D7	332	415	530
D8	13.5	17.5	22
D9	210	210	255
L1	16	35	24
L2	75	80	85
L3	16.5	20	20
L4	20	45	60
L5	31	31	36
L6	300	332	447.5
L7	115	115	131
L8	490	527	663.5
L9	228	228	265.5
X in Degree	24	22.5	30
Y in Degree	24	22.5	30
Z	12	16	12
U in Degree	22.5	30	30
V in Degree	22.5	30	30
W	16	12	12

(1) Dimensions are related to motor interface. Please contact APEX for details.

(2) Refer to the AH series (Page 05) for flange interface.

► Performance - AHKB (3 stage) Gearbox

Model No.		Stage	Ratio ⁽¹⁾	AHKB090	AHKB110	AHKB140	AHKB200	AHKB255	AHKB285	AHKB355
Nominal Output Torque T_{2N}	Nm	3	64	200	360	615	1,325	-	-	-
			84	200	360	620	1,325	-	-	-
			100	200	360	620	1,330	1,780	3,345	5,620
			125	170	310	535	1,170	1,780	3,345	5,625
			140	200	360	620	1,330	1,780	3,345	5,625
			175	170	310	535	1,170	1,780	3,345	5,625
			200	200	360	620	1,330	1,780	3,345	5,625
			250	170	310	535	1,170	1,780	3,345	5,625
			280	200	360	620	1,330	1,510	-	-
			350	170	310	535	1,170	1,775	3,345	5,630
			400	160	340	620	1,330	-	-	-
			500	170	310	535	1,170	1,780	3,000	5,500
			700	130	250	440	990	1,510	2,555	4,825
			1,000	55	160	290	640	980	1,655	3,250
Emergency Stop Torque T_{2NOT}	Nm	3	64~1,000	2 times T_{2N}						
Max. Acceleration Torque T_{2B}	Nm	3	64~1,000	1.5 times T_{2N}						
No Load Running Torque ⁽³⁾	Nm	3	64~1,000	0.2	0.2	0.3	0.4	I	1.2	1.5
Backlash ⁽²⁾	arcmin	3	64~1,000	≤ 2	≤ 2	≤ 2	≤ 2	≤ 2	≤ 2	≤ 2
Torsional Rigidity	Nm/arcmin	3	64~1,000	27	56	112	389	642	1,275	2,500
Nominal Input Speed n_{1N}	rpm	3	64~1,000	5,500	4,600	4,600	4,000	3,700	3,400	3,100
Max. Input Speed n_{1B}	rpm	3	64~1,000	7,000	7,000	7,000	6,000	5,500	5,000	4,500
Max. Axial Load F_{2a} ⁽⁴⁾	N	3	64~1,000	2,220	4,070	8,530	17,000	26,900	39,200	101,500
Max. Tilting Moment M_{2K} ⁽⁴⁾	Nm	3	64~1,000	280	480	1,310	3,530	5,920	9,230	29,100
Operating Temp	°C	3	64~1,000	-10° C ~ 90° C						
Degree of Gearbox Protection		3	64~1,000	IP65						
Lubrication		3	64~1,000	Synthetic lubrication grease						
Mounting Position		3	64~1,000	All directions						
Running Noise ⁽³⁾	dB(A)	3	64~1,000	≤ 66	≤ 68	≤ 68	≤ 70	≤ 70	≤ 72	≤ 74
Efficiency η	%	3	64~1,000	≥ 92%						

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

(2) Backlash is measured at 2% of Nominal Output Torque T_{2N} .

(3) The dB values are measured by gearbox with ratio 1,000 (3-stage), no loading at 3,000 RPM or at the respective Nominal Input Speed by bigger model size.

By lower ratio and/or higher RPM, the noise level could be 3 to 5 dB higher.

(4) Applied to the output flange center at 100 rpm.

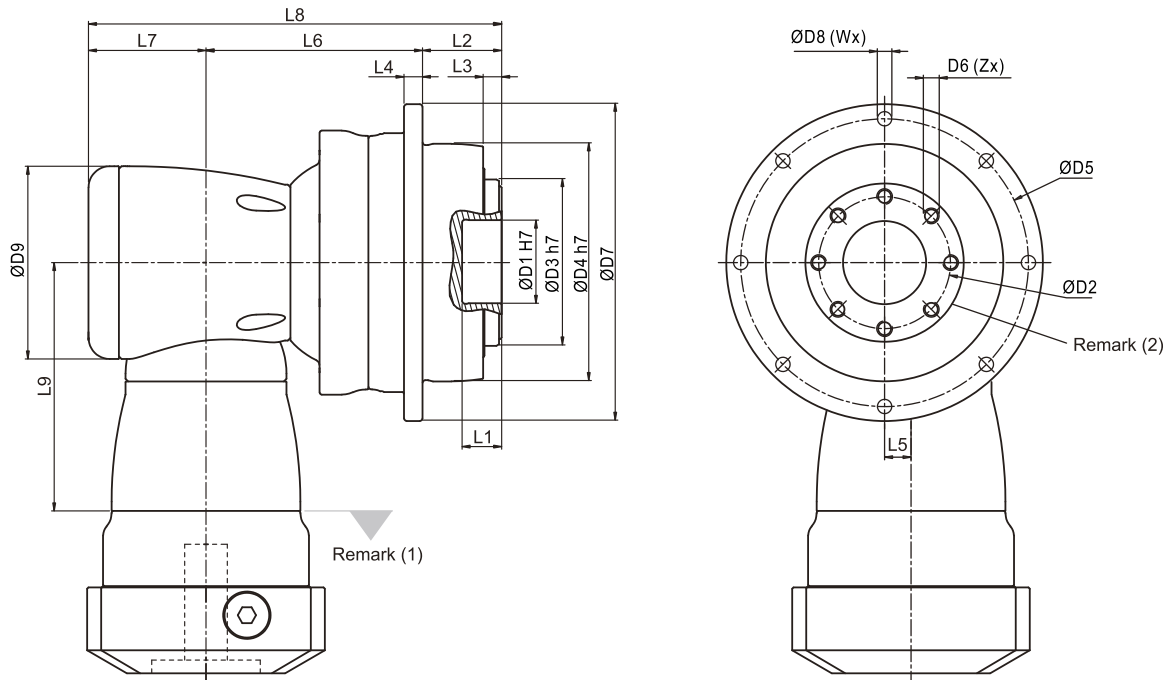
(5) Continuous operation is not recommended.

► Inertia - AHKB (3 stage) Gearbox

Model No.		AHKB090	AHKB110	AHKB140	AHKB200	AHKB255	AHKB285	AHKB355
Input Shaft (C3) $\varnothing^{(A)}$								
8	kg.cm ²	0.17	-	-	-	-	-	-
11		0.17	0.52	-	-	-	-	-
14		0.21	0.53	1.83	-	-	-	-
19		-	0.68	1.83	5.6	-	-	-
24		-	-	5.04	5.63	5.63	-	-
28		-	-	-	7.18	7.18	-	-
32		-	-	-	10.1	10.1	12.63	-
35		-	-	-	15.54	15.54	17.75	17.35
38		-	-	-	21.32	21.32	23.26	23.61
42		-	-	-	-	23.2	25.4	25.5
48	-	-	-	-	56.07	61.02	61.22	

(A) \varnothing = Input shaft diameter.

► Dimensions - AHKB (3 stage) Gearbox (Ratio $i = 64 \sim 1000$)



Dimension	AHKB090	AHKB110	AHKB140	AHKB200	AHKB255	AHKB285	AHKB355
D1 H7	31.5	40	50	80	100	100	120
D2	50	63	80	125	140	160	200
D3 h7	63	80	100	160	180	200	250
D4 h7	90	110	140	200	255	285	355
D5	109	135	168	233	280	310	385
D6 x Pitch x Deep	M6x1Px10	M6x1Px11	M8x1.25Px15	M10x1.5Px20	M16x2Px25	M20x2.5Px31	M24x3Px32
D7	120	147	180	249.5	302	332	415
D8	5.5	5.5	6.6	9	13.5	13.5	17.5
D9	94	116	163	210	210	255	300
L1	15	15	15	16	16	16	35
L2	30	29	38	50	66	75	80
L3	7	7	7.5	8.5	13.5	16.5	20
L4	7	8	10	12	18	20	45
L5	13	17	25	31	31	36	43
L6	90.5	114	147.5	175	191.5	249.5	290
L7	53	68.3	89	115	115	131	165
L8	173.5	211.3	274.5	340	372.5	455.5	535
L9	114.5	129	173.5	228	228	265.5	294.5
X in Degree	45	22.5	30	30	24	24	22.5
Y in Degree	45	22.5	30	30	24	24	22.5
Z	8	12	12	12	12	12	16
U in Degree	45	45	30	30	22.5	22.5	30
V in Degree	45	45	30	30	22.5	22.5	30
W	8	8	12	12	16	16	12

(1) Dimensions are related to motor interface. Please contact APEX for details.

(2) Refer to the AH series (Page 05) for flange interface.

► Performance - AHK (4 stage) Gearbox

Model No.		Stage	Ratio ⁽¹⁾	AHK285	AHK355	AHK450
Nominal Output Torque T_{2N}	Nm	4	1,225	3,350	5,630	10,980
			1,400	3,350	5,630	10,980
			1,750	3,350	5,630	10,980
			2,000	3,350	5,630	10,980
			2,800	2,555	4,825	9,600
			3,500	3,350	5,630	10,980
			5,000	3,350	5,350	9,050
			7,000	2,625	4,960	10,115
			10,000	1,975	3,870	8,325
Emergency Stop Torque T_{2NOT}	Nm	4	1,225~10,000	2 times T_{2N}		
Max. Acceleration Torque T_{2B}	Nm	4	1,225~10,000	1.5 times T_{2N}		
No Load Running Torque ⁽³⁾	Nm	4	1,225~10,000	0.4	0.4	1
Backlash ⁽²⁾	arcmin	4	1,225~10,000	≤ 2	≤ 2	≤ 2
Torsional Rigidity	Nm/arcmin	4	1,225~10,000	1,275	2,500	5,100
Nominal Input Speed n_{IN}	rpm	4	1,225~10,000	3,700	3,700	3,400
Max. Input Speed n_{IB}	rpm	4	1,225~10,000	5,500	5,500	5,000
Max. Axial Load F_{2a} ⁽⁴⁾	N	4	1,225~10,000	39,200	101,500	143,700
Max. Tilting Moment M_{2k} ⁽⁴⁾	Nm	4	1,225~10,000	9,230	29,100	63,300
Operating Temp	°C	4	1,225~10,000	-10° C ~ 90° C		
Degree of Gearbox Protection		4	1,225~10,000	IP65		
Lubrication		4	1,225~10,000	Synthetic lubrication grease		
Mounting Position		4	1,225~10,000	All directions		
Running Noise ⁽³⁾	dB(A)	4	1,225~10,000	≤ 72	≤ 74	≤ 76
Efficiency η	%	4	1,225~10,000	≥ 90%		

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

(2) Backlash is measured at 2% of Nominal Output Torque T_{2N} .

(3) The dB values are measured by gearbox with ratio 10,000 (4-stage), no loading at 3,000 RPM or at the respective Nominal Input Speed by bigger model size.

By lower ratio and/or higher RPM, the noise level could be 3 to 5 dB higher.

(4) Applied to the output flange center at 100 rpm.

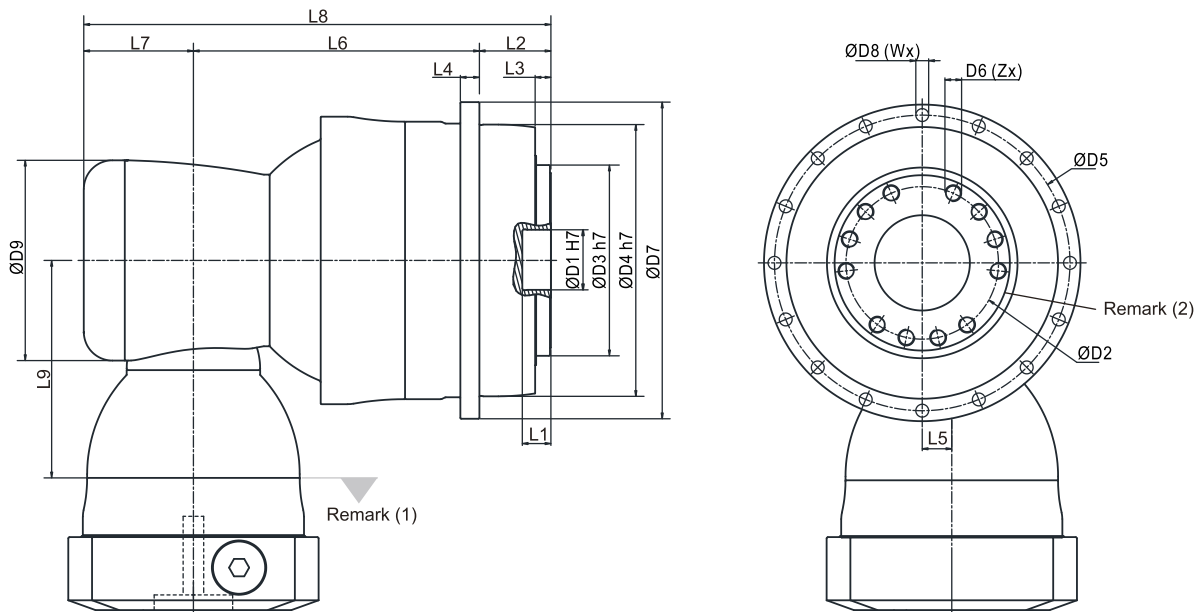
(5) Continuous operation is not recommended.

► Inertia - AHK (4 stage) Gearbox

Model No.		AHK285	AHK355	AHK450
Input Shaft (C3) $\varnothing^{(A)}$				
24	kg.cm ²	5.63	5.63	-
28		7.18	7.18	-
32		10.1	10.1	12.63
35		15.54	15.54	17.75
38		21.32	21.32	23.26

(A) \varnothing = Input shaft diameter.

► Dimensions - AHK (4 stage) Gearbox (Ratio $i = 1,225 \sim 10,000$)



Dimension		AHK285	AHK355	AHK450
D1	H7	100	120	155
D2		160	200	250
D3	h7	200	250	315
D4	h7	285	355	450
D5		310	385	490
D6 x Pitch x Deep		M20x2.5Px31	M24x3Px32	M30x3.5Px40
D7		332	415	530
D8		13.5	17.5	22
D9		210	210	255
L1		16	35	24
L2		75	80	85
L3		16.5	20	20
L4		20	45	60
L5		31	31	36
L6		300	332	447.5
L7		115	115	131
L8		490	527	663.5
L9		228	228	265.5
X in Degree		24	22.5	30
Y in Degree		24	22.5	30
Z		12	16	12
U in Degree		22.5	30	30
V in Degree		22.5	30	30
W		16	12	12

(1) Dimensions are related to motor interface. Please contact APEX for details.

(2) Refer to the AH series (Page 05) for flange interface.

► Performance - AHKC Gearbox

Model No.		Stage	Ratio ⁽¹⁾	AHKC064	AHKC090	AHKC110	AHKC140	AHKC200	AHKC255	AHKC285	AHKC355	AHKC450
Nominal Output Torque T_{2N}	Nm	2	4	35	80	210	415	1,005	-	-	-	-
			5	35	80	210	415	1,005	2,050	3,250	-	-
			7	30	70	180	350	820	1,750	2,410	-	-
			8	35	80	210	415	1,005	-	-	-	-
			10	35	80	210	415	1,005	2,050	3,250	-	-
		3	21	-	85	220	430	1,065	2,100	3,340	5,320	10,750
			31	-	70	185	365	860	1,790	2,470	5,720	9,100
			46	-	60	155	305	675	1,080	1,890	3,460	7,800
			61	-	70	185	365	860	1,790	2,470	5,720	9,100
			91	-	60	155	305	675	1,080	1,890	3,460	7,800
Emergency Stop Torque T_{2NOT}	Nm	2,3	4~91	2 times T_{2N}								
Max. Acceleration Torque T_{2B}	Nm	2,3	4~91	1.5 times T_{2N}								
No Load Running Torque ⁽³⁾	Nm	2	4~10	2	2.5	5.8	12	25	48	95	-	-
		3	21~91	1	1.5	2.5	4	9	18.5	35	75	148
Backlash ⁽²⁾	arcmin	2	4~10	≤ 3	≤ 2	≤ 2	≤ 2	≤ 2	≤ 2	≤ 2	-	-
		3	21~91	-	≤ 2	≤ 2	≤ 2	≤ 2	≤ 2	≤ 2	≤ 2	≤ 2
Torsional Rigidity	Nm/arcmin	2,3	4~91	12	27	56	112	389	642	1,275	2,500	5,100
Nominal Input Speed n_{iN}	rpm	2	4~10	5,000	3,600	3,000	2,300	1,800	1,500	1,100	-	-
		3	21~91	-	4,600	4,000	3,000	2,300	1,800	1,500	1,500	1,100
Max. Input Speed n_{iB}	rpm	2	4~10	7,000	6,000	5,500	4,500	3,500	3,000	2,200	-	-
		3	21~91	-	7,000	6,500	5,500	4,500	3,500	3,000	3,000	2,200
Max. Axial Load F_{2a} ⁽⁴⁾	N	2,3	4~91	1,690	2,220	4,070	8,530	17,000	26,900	39,200	101,500	143,700
Max. Tilting Moment M_{2K} ⁽⁴⁾	Nm	2,3	4~91	120	280	480	1,310	3,530	5,920	9,230	29,100	63,300
Operating Temp	°C	2,3	4~91	-10° C ~ 90° C								
Degree of Gearbox Protection		2,3	4~91	IP65								
Lubrication		2,3	4~91	Synthetic lubrication grease								
Mounting Position		2,3	4~91	All directions								
Running Noise ⁽³⁾	dB(A)	2	4~10	≤ 68	≤ 68	≤ 68	≤ 70	≤ 70	≤ 72	≤ 74	-	-
		3	21~91	-	≤ 68	≤ 68	≤ 70	≤ 70	≤ 72	≤ 74	≤ 74	≤ 76
Efficiency η	%	2	4~10	≥ 95%								
		3	21~91	≥ 93%								

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

(2) Backlash is measured at 2% of Nominal Output Torque T_{2N} .

(3) The dB values are measured by gearbox with ratio 10 (2-stage) or ratio 91 (3-stage), no loading at 3,000 RPM or at the respective Nominal Input Speed by bigger model size.

By lower ratio and/or higher RPM, the noise level could be 3 to 5 dB higher.

(4) Applied to the output flange center at 100 rpm.

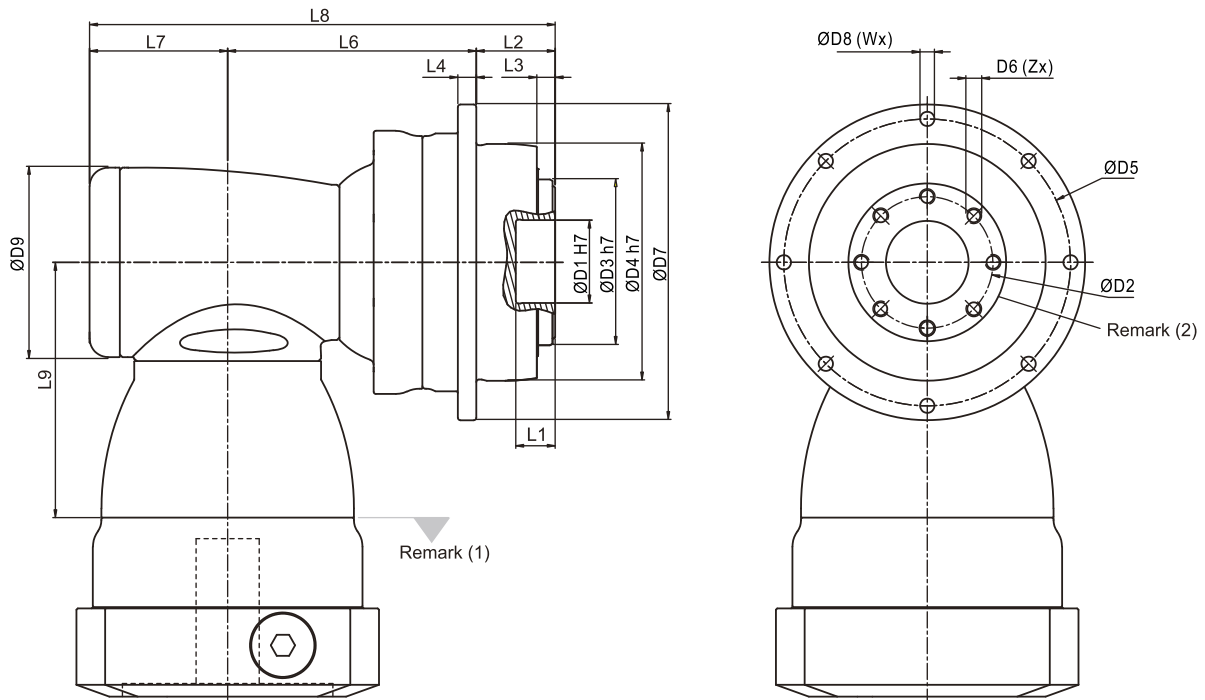
(5) Continuous operation is not recommended.

► Inertia - AHKC Gearbox (Ratio $i = 4~10 / 21~91$)

Model No.		AHKC064	AHKC090	AHKC110	AHKC140	AHKC200	AHKC255	AHKC285	AHKC355	AHKC450							
$\emptyset^{(A)}$ (C3)		2-st.	2-st.	3-st.	2-st.	3-st.	2-st.	3-st.	2-st.	3-st.	2-st.	3-st.	2-st.	3-st.	3-st.	3-st.	
8	kg.cm ²	0.1	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	
11		0.17	0.52	0.17	-	-	-	-	-	-	-	-	-	-	-	-	-
14		0.21	0.52	0.21	-	0.52	-	-	-	-	-	-	-	-	-	-	-
19		0.62	1.69	0.62	1.71	1.69	-	1.71	-	-	-	-	-	-	-	-	-
24		-	4.89	-	5.05	4.89	6.92	5.05	-	6.92	-	-	-	-	-	-	-
28		-	-	-	6.55	-	6.98	6.55	-	6.98	-	-	-	-	-	-	-
32		-	-	-	9.47	-	10.18	9.47	10.18	10.18	-	10.18	-	-	-	-	-
35		-	-	-	14.91	-	15.21	14.91	15.21	15.21	15.68	15.21	23.46	15.68	-	-	-
38		-	-	-	20.69	-	20.7	20.69	20.7	20.7	21.69	20.7	23.46	21.69	21.69	-	-
42		-	-	-	-	-	22.83	-	22.83	22.83	23.59	22.83	25.28	23.59	23.59	25.28	25.28
48		-	-	-	-	-	58.45	-	58.45	58.45	59.3	58.45	61.61	59.3	59.3	61.61	61.61
55		-	-	-	-	-	-	-	-	86.95	-	89.67	-	86.95	86.95	89.67	89.67
60	-	-	-	-	-	-	-	-	-	-	112.49	-	-	-	-	112.49	

(A) \emptyset = Input shaft diameter.

► Dimensions - AHKC Gearbox (Ratio $i = 4\sim 10 / 21\sim 91$)



Dimension	AHKC064		AHKC090		AHKC110		AHKC140		AHKC200		AHKC255		AHKC285		AHKC355	AHKC450
	2-st.	3-st.	2-st.	3-st.	2-st.	3-st.	2-st.	3-st.	2-st.	3-st.	2-st.	3-st.	2-st.	3-st.	3-st.	3-st.
D1 H7	20	31.5	40		50		80		100		100		120		155	
D2	31.5	50	63		80		125		140		160		200		250	
D3 h7	40	63	80		100		160		180		200		250		315	
D4 h7	64	90	110		140		200		255		285		355		450	
D5	79	109	135		168		233		280		310		385		490	
D6 x Pitch x Deep	M5x0.8Px8	M6x1Px10	M6x1Px11		M8x1.25Px15		M10x1.5Px20		M16x2Px25		M20x2.5Px31		M24x3Px32		M30x3.5Px40	
D7	88	120	147		180		249.5		302		332		415		530	
D8	4.5	5.5	5.5		6.6		9		13.5		13.5		17.5		22	
D9	64	92	64	116	92	156	116	156	156	195	156	240	195	195	240	
L1	8	15	15		15		16		16		16		35		24	
L2	19.5	30	29		38		50		66		75		80		85	
L3	4	7	7		7.5		8.5		13.5		16.5		20		20	
L4	5	7	8		10		12		18		20		45		60	
L6	92	100.5	121.5	124.5	142	175.5	174.5	185	244.5	199	264.5	265.5	307.5	339.5	463.5	
L7	46.5	61.5	46.5	76	61.5	97.5	76	97.5	97.5	105.5	97.5	141	105.5	105.5	141	
L8	158	192	198	229.5	232.5	311	288.5	332.5	392	370.5	428	481.5	488	525	689.5	
L9	81.5	113.5	81.5	147.5	113.5	196.5	147.5	196.5	196.5	229	196.5	260	229	229	260	
X in Degree	45	45	22.5		30		30		24		24		22.5		30	
Y in Degree	45	45	22.5		30		30		24		24		22.5		30	
Z	8	8	12		12		12		12		12		16		12	
U in Degree	45	45	45		30		30		22.5		22.5		30		30	
V in Degree	45	45	45		30		30		22.5		22.5		30		30	
W	8	8	8		12		12		16		16		12		12	

(1) Dimensions are related to motor interface. Please contact APEX for details.

(2) Refer to the AH series (Page 05) for flange interface.

