

APK series

Overview

- Heavy Duty right angel Hypoid gearbox
- Black coated steel housing, aluminum output and motor adapter flange
- Steel output shaft, flange ISO 9409
- Helical gear technology
- Nominal Torques:
 - T_{2N} : 95 Nm – 14.010 Nm
- Ratios
 - 2-stage : 16 / 20 / 22 / 27.5 / 28 / 38.5 / 40 / 55
 - 3-stage : 64 / 88 / 100 / 110 / 137.5 / 140 / 154 / 160 / 200 / 220 / 280 / 385
 - 4-stage : 400 / 440 / 500 / 550 / 700 / 770 / 1000 / 1078 / 1400 / 1540 / 1600 / 2000 / 2695 / 2800 / 3850 / 4000 / 5500
- Low Backlash
 - 2-stage : ≤ 2 arcmin
 - 3-stage : ≤ 2 arcmin
 - 4-stage : ≤ 2 arcmin
- High Efficiency
 - 2-stage : $\geq 94\%$
 - 3-stage : $\geq 92\%$
 - 4-stage : $\geq 90\%$
- Easy mount
- Low noise
- Compact structure
- Sizes available: APK090 / APK110 / APK140 / APK200 / APK255 / APK285 / APK355 / APK450



Specifications

Model No.	Stage	Ratio ⁽¹⁾	APK090	APK110	APK140	APK200	APK225	APK285	APK355	APK450	
Nominal Output Torque T_{2N}	2	16	255	470	805	1,735	2,015	3,935	-	-	
		20	255	470	805	1,735	2,015	3,935	-	-	
		22	200	375	655	1,445	2,200	4,110	7,010	-	
		27.5	200	375	655	1,445	2,200	4,110	7,015	-	
		28	240	470	805	1,740	1,870	3,600	-	-	
		38.5	200	375	655	1,450	2,200	4,110	7,020	-	
		40	95	225	650	1,610	1,725	2,880	-	-	
		55	130	315	655	1,450	2,205	3,960	7,025	-	
		64	-	470	805	1,740	2,640	4,985	-	-	
		88	-	380	655	1,450	2,205	4,115	7,025	13,870	
	100	-	470	810	1,745	2,645	4,990	-	-		
	110	-	380	655	1,450	2,205	4,115	7,025	13,870		
	137.5	-	380	655	1,450	2,205	4,120	7,030	13,875		
	140	-	470	810	1,745	2,645	4,990	-	-		
	154	-	380	655	1,450	2,205	4,120	7,030	13,875		
	160	-	475	810	1,745	2,645	4,990	-	-		
	200	-	475	810	1,745	2,645	4,990	-	-		
	220	-	380	655	1,450	2,205	4,120	7,030	13,200		
	280	-	475	810	1,745	2,645	4,995	-	-		
	385	-	380	655	1,450	2,205	4,120	7,030	13,880		
	400	-	475	810	1,745	2,645	4,995	-	-		
	440	-	380	655	1,450	2,205	4,120	7,030	13,880		
	500	-	475	810	1,745	2,645	4,995	-	-		
	550	-	380	655	1,450	2,210	4,120	7,030	13,880		
	700	-	475	810	1,745	2,645	4,995	-	-		
	770	-	380	655	1,450	2,210	4,120	7,030	13,880		
	1,000	-	475	810	1,745	2,645	4,995	-	-		
	1,078	-	380	655	1,450	2,210	4,120	7,035	13,880		
	1,400	-	475	810	1,745	2,645	4,995	-	-		
	1,540	-	380	655	1,450	2,210	4,120	7,035	13,200		
	1,600	-	475	810	1,745	2,645	4,995	-	-		
	2,000	-	475	810	1,745	2,645	4,995	-	-		
	2,695	-	380	655	1,450	2,210	4,120	7,035	13,885		
	2,800	-	475	810	1,745	2,645	4,995	-	-		
	3,850	-	380	655	1,450	2,210	4,120	7,035	13,885		
	4,000	-	225	650	1,610	2,645	4,995	-	-		
	5,500	-	315	655	1,450	2,210	4,120	7,035	14,010		
	Emergency Stop Torque T_{2Not}	Nm	2,3,4	16~5,500		2 times T_{2N}					
	Max. Acceleration Torque T_{2a}	Nm	2,3,4	16~5,500		1.5 times T_{2N}					
	No Load Running Torque ⁽²⁾	NM	2	16~55	1.3	2	3.1	6	13	16	20
3			64~385	-	1.4	2.4	4.6	7	8.5	10.5	13
4			400~5,500	-	0.2	0.3	0.6	0.9	1.2	1.8	2.5
Backlash ⁽³⁾	arcmin	2,3,4	16~5,500		≤2						
Torsional Rigidity	Nm/arcmin	2	16~55	27	56	112	389	642	1,275	2,500	-
		3	64~385	-	56	112	389	642	1,275	2,500	5,100
		4	400~5,500	-	45	85	310	535	1,050	1,700	2,700

Nominal Input Speed n_{IN}	rpm	2	16~55	3,000	2,800	2,700	2,200	2,100	2,000	1,600	-
		3	64~385	3,000	3,000	2,800	2,700	2,200	2,100	2,100	2,000
		4	400~5,500	5,500	5,500	4,600	4,600	4,000	3,700	3,700	3,400
Max. Input Speed	rpm	2	16~55	6,000	6,000	4,500	4,500	4,000	3,000	2,500	-
		3	64~385	6,000	6,000	6,000	4,500	4,500	4,000	4,000	3,000
		4	400~5,500	7,000	7,000	7,000	7,000	6,000	5,500	5,500	5,000
Max. Axial Load $F_{23}^{(4)}$	N	2,3,4	16~5,500	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	16~5,500	280	480	1,310	3,530	5,920	9,230	29,100	63,300
Service Life ⁽⁵⁾	hr	2,3,4	16~5,500	20,000							
Operating Temp.	°C	2,3,4	16~5,500	-10°C ~ 90° C							
Degree of Gearbox Protection		2,3,4	16~5,500	IP65							
Lubrication		2,3,4	16~5,500	synthetic lubrication grease							
Mounting Position		2,3,4	16~5,500	All directions							
Running Noise ⁽²⁾	dB(A)	2,3,4	16~5,500	≤68	≤68	≤68	≤70	≤70	≤72	≤74	≤76
Efficiency	%	2	16~55	≥94%							
		3	64~385	≥92%							
		4	400~5,500	≥90%							

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

(2) These values are measured by gearbox with ratio 55 (2-stage), ratio 385 (3-stage) or ratio 5,500 (4-stage) at 3,000 rpm no loading.

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

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

(5) Continuous operation is not recommended.

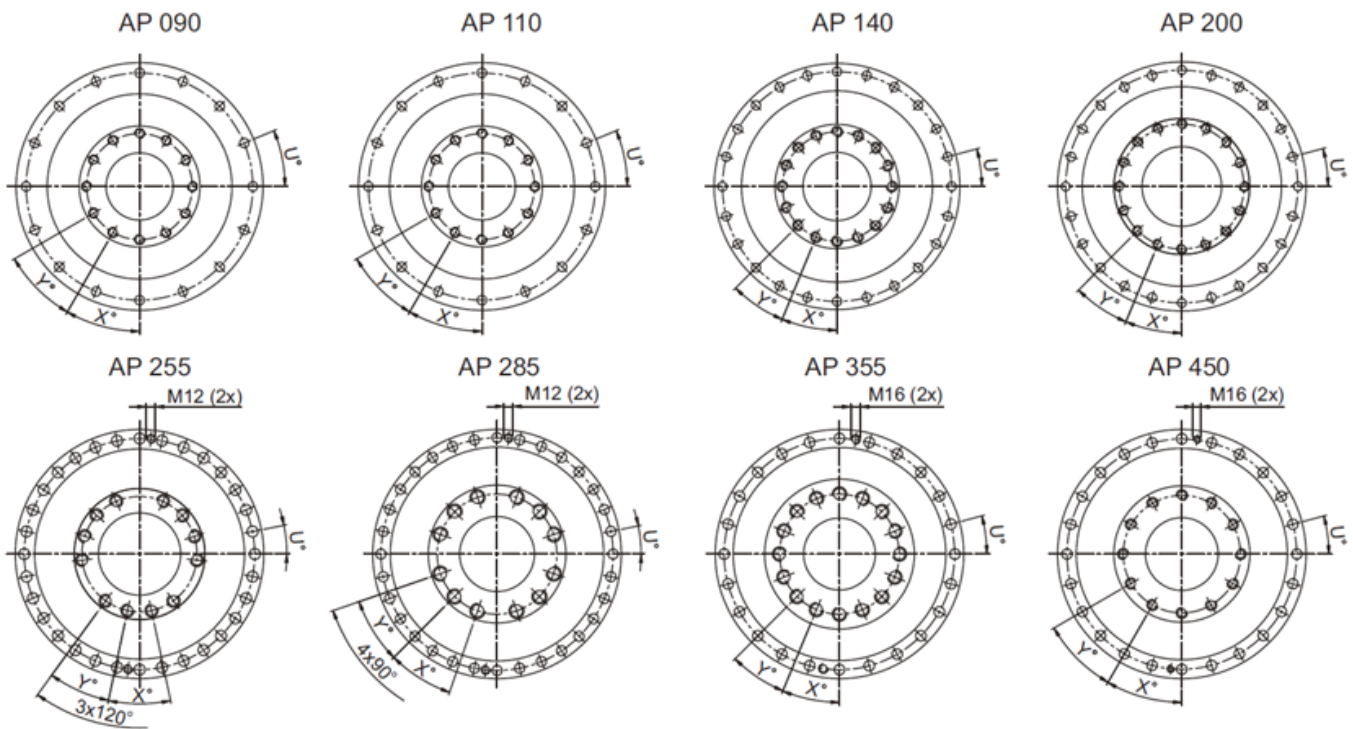
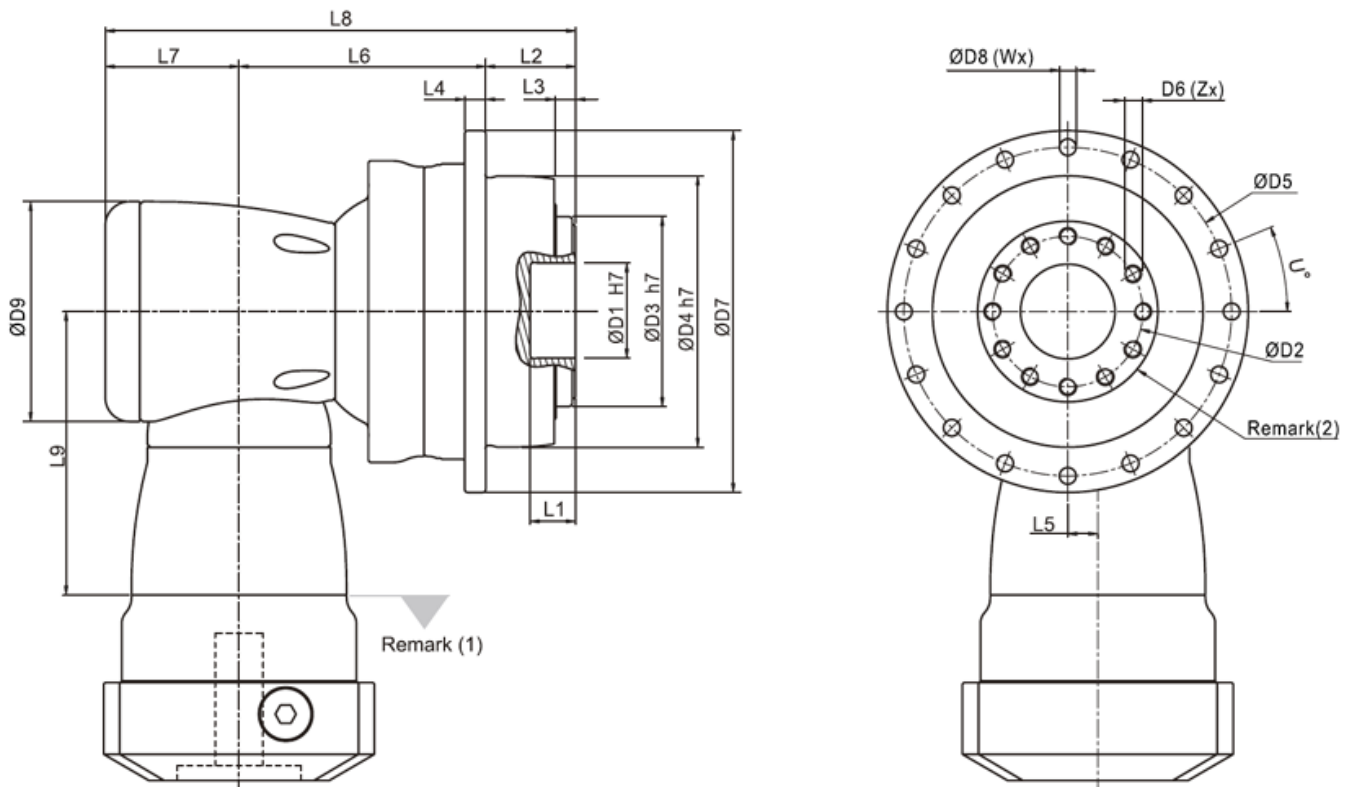
Inertia

Model No.	APK090	APK110			APK140			APK200			APK255			APK285			APK355			APK450		
Ø ^(A) Stage	2	2	3	4	2	3	4	2	3	4	2	3	4	2	3	4	2	3	4	3	4	
8	-	-	-	0.17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	-	-	-	0.17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	0.37	-	0.37	-	-	-	0.42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19	0.6	1.6 1	0.6	-	-	-	1.610.66	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24	-	3.9	-	-	4.01	3.9	3.94	-	-	4.61	-	-	4.61	-	-	-	-	-	-	-	-	-
28	kg- cm ²	-	-	-	5.53	5.15	-	-	5.61	6.14	-	5.61	8.14	-	-	-	-	-	-	-	-	-
32	-	-	-	-	7.57	-	-	8.11	8.11	8.17	-	8.11	8.17	-	-	-	-	-	-	-	-	-
35	-	-	-	-	14.95	-	-	15.32	15.32	15.54	15.32	15.32	15.54	-	15.32	15.554	-	-	15.54	-	-	17.76
38	-	-	-	-	17.58	-	-	17.72	17.72	18.19	17.72	17.72	18.19	18.52	17.72	18.19	-	17.72	18.19	18.52	-	20.17
42	-	-	-	-	-	-	-	22.95	-	-	22.95	-	-	23.74	22.95	23.2	25.5	22.95	23.2	23.74	-	25.4
48	-	-	-	-	-	-	-	52.74	-	-	52.74	-	-	53.49	52.74	52.42	55.14	52.74	54.42	53.49	-	55.18
55	-	-	-	-	-	-	-	-	-	-	-	-	-	87.34	-	-	89.59	-	-	-	-	-

(A) Ø = Input shaft diameter.

Sizes

APK series 2-stage, ratio $i=16\sim 55$

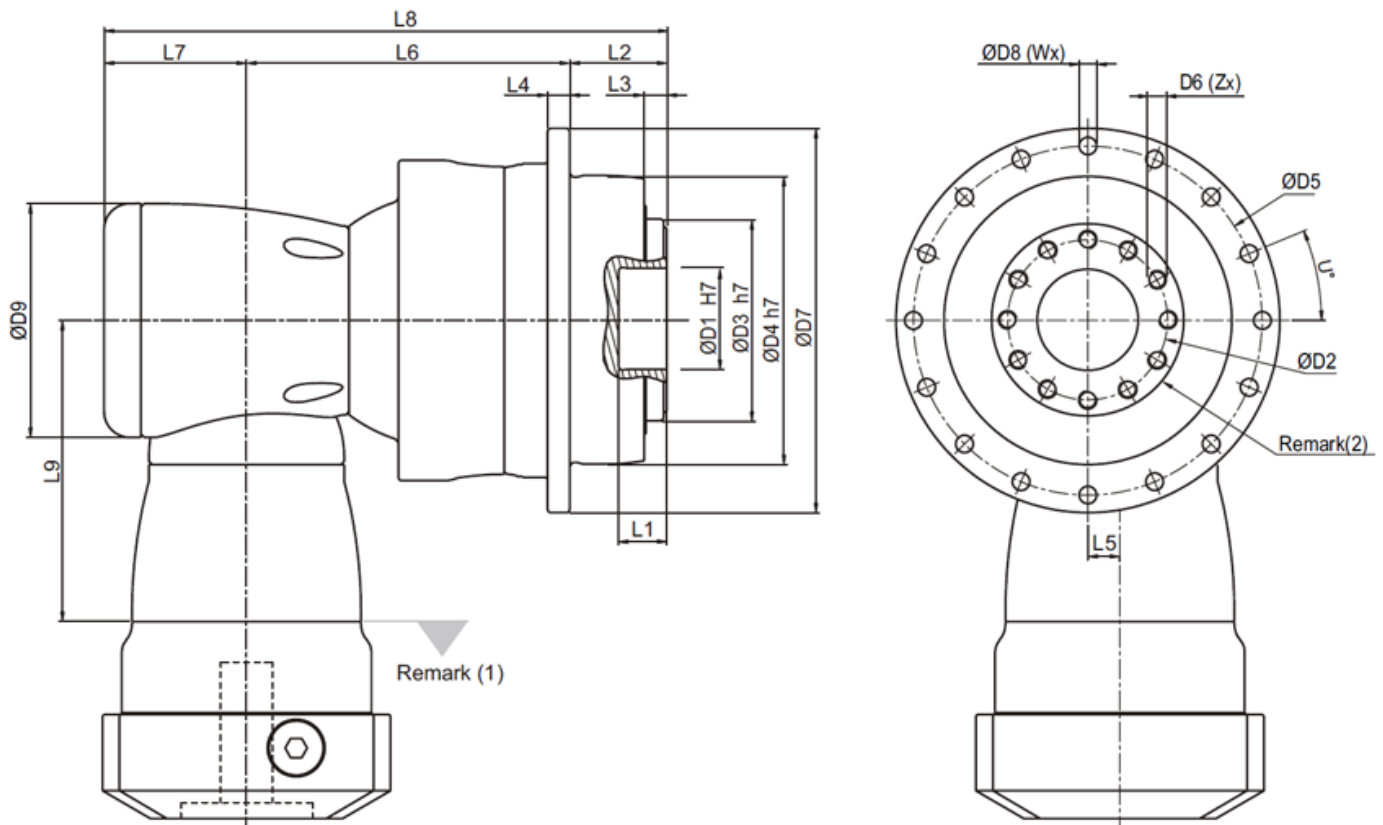


	APK090	APK110	APK140	APK220	APK255	APK285	APK355
D1 H7	31.5	40	50	80	100	100	120
D2	50	63	80	125	140	160	200
D3 h7	63	80	100	160	180	200	250
D4 h7	90	110	140	200	255	285	355

D5	109	135	168	233	280	310	385
D6xPitchxDeep	M6x1Px11	M8x1.25Px12	M8x1.25Px15	M10x1.5Px20	M16x2Px25	M24x3Px37	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	30	30	22.5	22.5	24	26	22.5
Y in degree	30	30	22.5	22.5	24	26	22.5
Z	12	12	16	16	12	12	16
U in degree	22.5	22.5	15	15	11.25	11.25	15
W	16	16	24	24	32	32	24

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

APK series 3-stage, ratio i=64~385

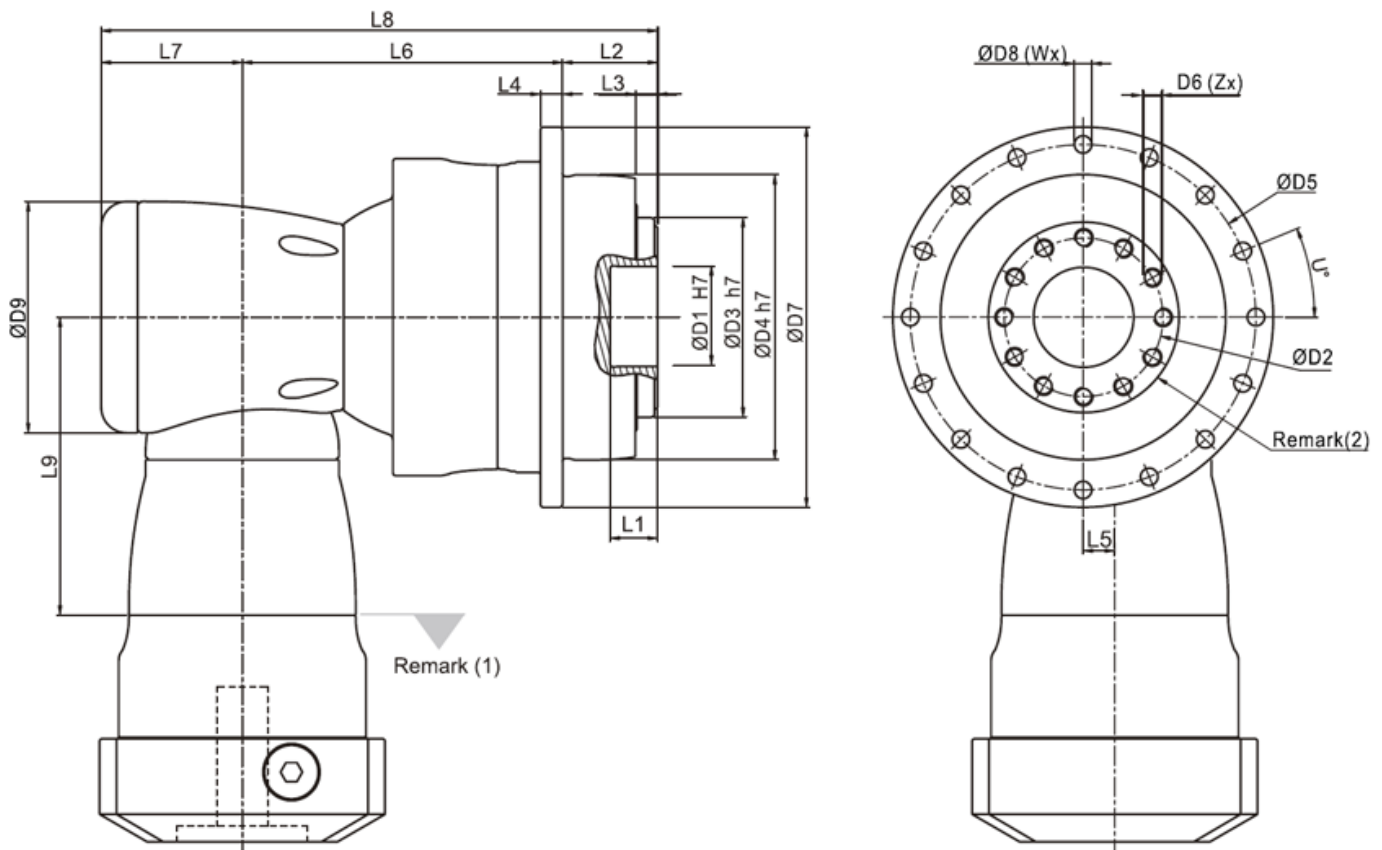


	APK110	APK140	APK200	APK255	APK285	APK355	APK450
D1 H7	40	50	80	100	100	120	155
D2	63	80	125	140	160	200	250

D3 h7	80	100	160	180	200	250	315
D4 h7	110	140	200	255	285	355	450
D5	135	168	233	280	310	385	490
D6xPitchxDeep	M8x1.25Px12	M8x1.25Px15	M10x1.5Px20	M16x2Px25	M24x3Px37	M24x3Px32	M30x3.5Px40
D7	147	180	249.5	302	332	415	530
D8	5.5	6.6	9	13.5	13.5	17.5	22
D9	94	116	163	210	210	210	255
L1	15	15	16	16	16	35	24
L2	29	38	50	66	75	80	85
L3	7	7.5	8.5	13.5	16.5	20	20
L4	8	10	12	18	20	45	60
L5	13	17	25	31	31	31	36
L6	132	164	216.5	254.5	300	332	447.5
L7	53	68.3	89	115	115	115	131
L8	214	270.3	355.5	435.5	490	527	663.5
L9	114.5	129	173.5	228	228	228	265.5
X in degree	30	22.5	22.5	24	26	22.5	30
Y in degree	30	22.5	22.5	24	26	22.5	30
Z	12	16	16	12	12	16	12
U in degree	22.5	15	15	11.25	11.25	15	15
W	16	24	24	32	32	24	24

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

APK series 4-stage, ratio $i=400\sim 5,500$



	APK110	APK140	APK200	APK255	APK285	APK355	APK450
D1 H7	40	50	80	100	100	120	155
D2	63	80	125	140	160	200	250
D3 h7	80	100	160	180	200	250	315
D4 h7	110	140	200	255	285	355	450
D5	135	168	233	280	310	385	490

D6xPitchxDeep	M8x1.25Px12	M8x1.25Px15	M10x1.5Px20	M16x2Px25	M24x3Px37	M24x3Px32	M30x3.5Px40
D7	147	180	249.5	302	332	415	530
D8	5.5	6.6	9	13.5	13.5	17.5	22
D9	94	116	163	210	210	210	255
L1	15	15	16	16	16	35	24
L2	29	38	50	66	75	80	85
L3	7	7.5	8.5	13.5	16.5	20	20
L4	8	10	12	18	20	45	60
L5	13	17	25	31	31	31	36
L6	132	164	216.5	254.5	300	332	447.5
L7	53	68.3	89	115	115	115	131
L8	214	270.3	355.5	435.5	490	527	663.5
L9	114.5	129	173.5	228	228	228	265.5
X in degree	30	22.5	22.5	24	26	22.5	30
Y in degree	30	22.5	22.5	24	26	22.5	30
Z	12	16	16	12	12	16	12
U in degree	22.5	15	15	11.25	11.25	15	15
W	16	24	24	32	32	24	24

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