

# APCK series

## Overview

- Heavy Duty right-angle hypoid gearbox
- Black coated steel housing and output flange, aluminum motor adapter
- Steel output shaft, with Curvic Plate flange
- Helical gear technology
- Nominal Torques:
  - $T_{2N}$  : 95 Nm – 13.875 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 :  $\leq 2$  arcmin
  - 3-stage :  $\leq 2$  arcmin
  - 4-stage :  $\leq 2$  arcmin
- High Efficiency
  - 2-stage :  $\geq 94\%$
  - 3-stage :  $\geq 92\%$
  - 4-stage :  $\geq 90\%$
- Easy mount
- Low noise
- Compact structure
- Sizes available: APCK090 / APCK110 / APCK140 / APCK200 / APCK255 / APCK285 / APCK355 / APCK450



# Specifications

Model No.	Stage	Ratio <sup>(1)</sup>	APCK090	APCK110	APCK140	APCK200	APCK225	APCK285	APCK355	APCK450	
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	-	
	3	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	-	-	
		4	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 $T_{2b}$	Nm	2,3,4	16~5,500			1.5 times $T_{2N}$					
No Load Running Torque <sup>(2)</sup>	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 <sup>(3)</sup>	arcmin	2,3,4	16~5,500			$\leq 2$					
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 $n_{1N}$	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 $F_{2a}^{(4)}$	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	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 <sup>(2)</sup>	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 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.

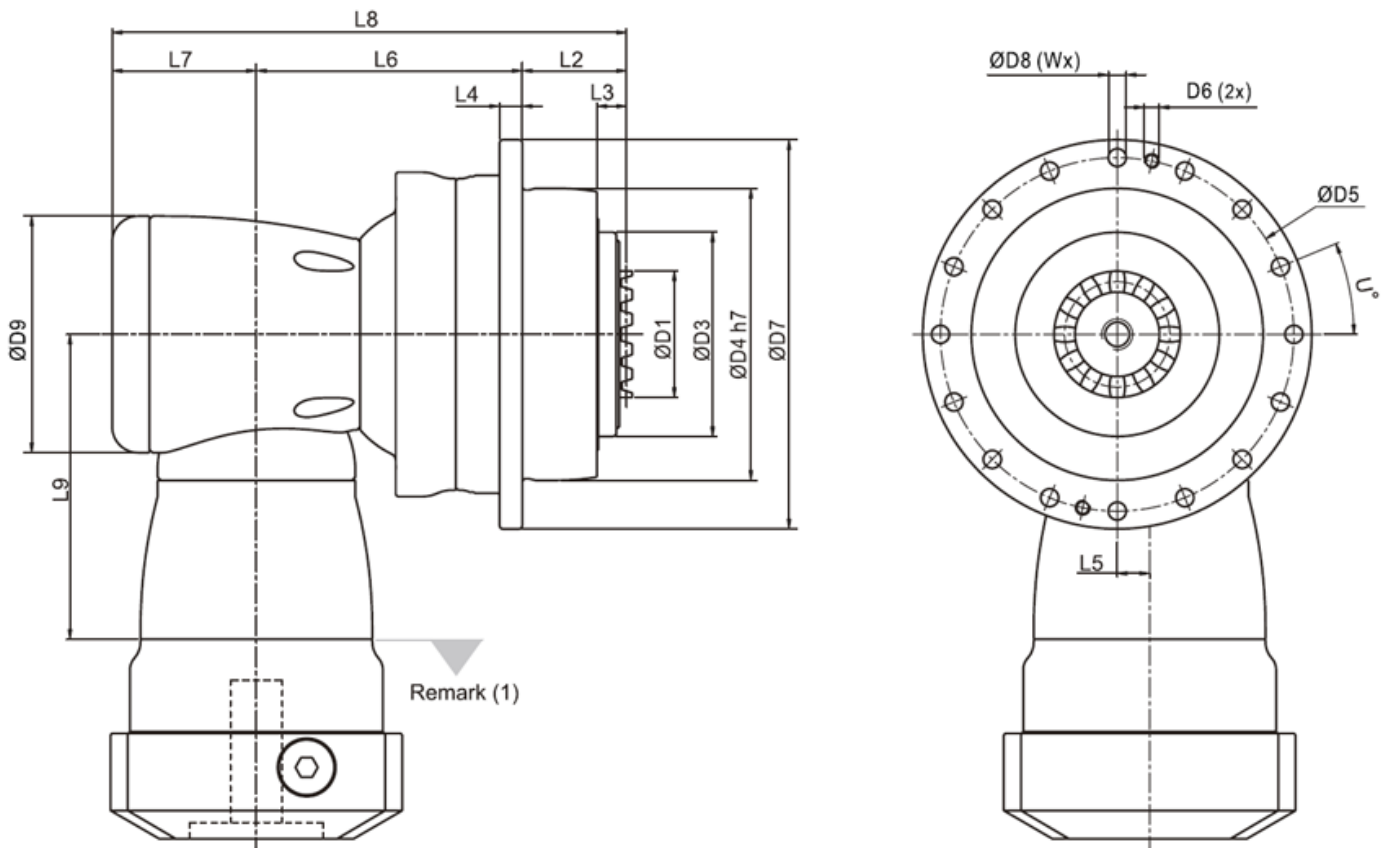
# Inertia

Model No.	APCK090	APCK110			APCK140			APCK200			APCK255			APCK285			APCK355			APCK450		
Ø <sup>(A)</sup> 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	<sup>1.6</sup> <sub>1</sub>	0.6	-	-	-	1.610.66	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24	-	3.9	-	-	4.01	3.9	3.94	-	-	4.61	-	-	4.61	-	-	-	-	-	-	-	-	-
28	kg·cm <sup>2</sup>	-	-	-	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	15.54	-	-	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

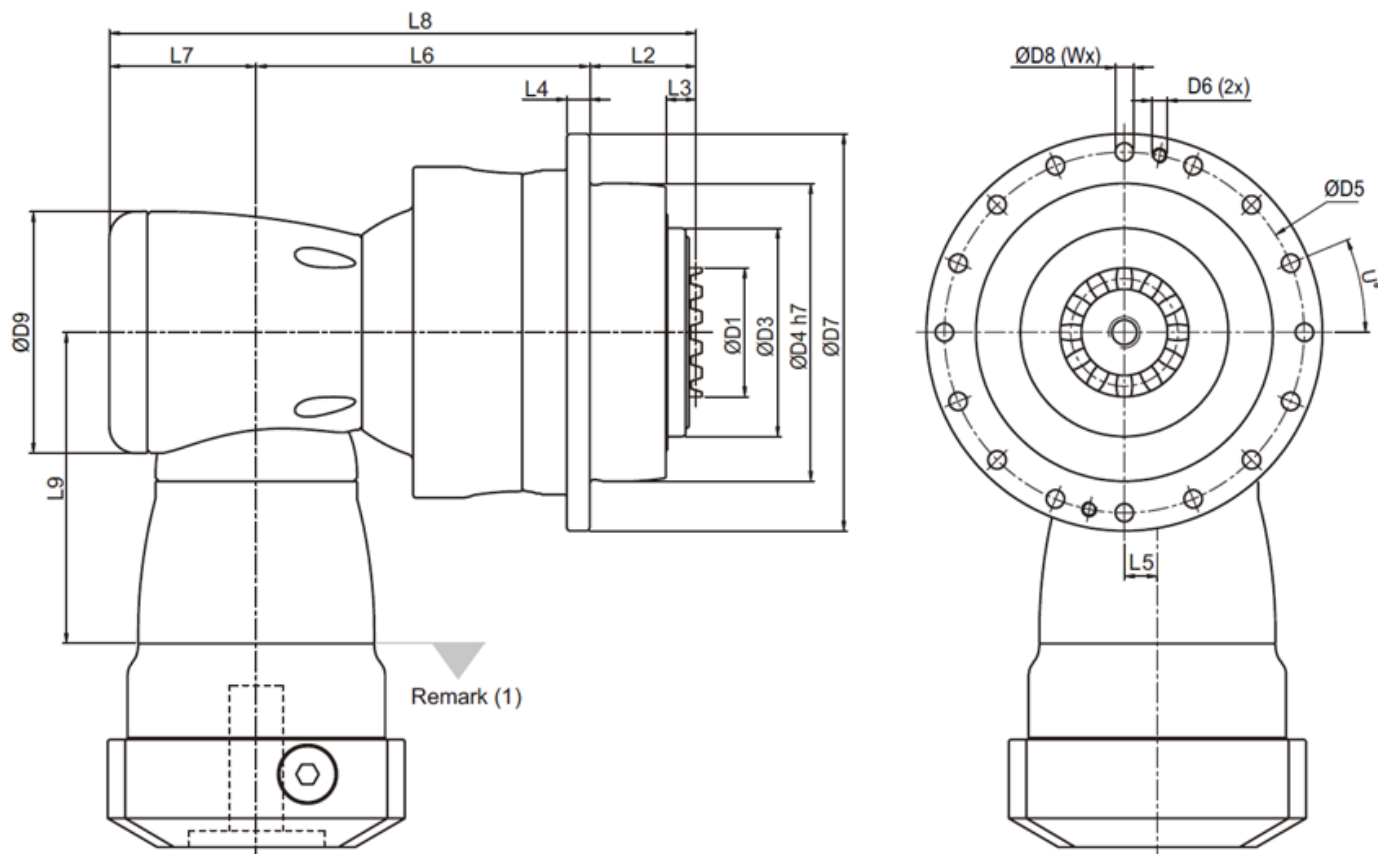
APCK series 2-stage, ratio  $i=16\sim55$



	APCK090	APCK110	APCK140	APCK220	APCK255	APCK285	APCK355
D1	36	46	60	80	90	120	120
D3	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	-	-	-	-	M12	M12	M16
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
L2	32.5	31.5	40.5	52.5	68.5	77.5	82.5
L3	9.5	9.5	10	11	16	19	22.5
L4	7	8	100	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	176	213.8	277	342.5	375	458	537.5
L9	114.5	129	173.5	228	228	265.5	294.5
U in degree	22.5	22.5	15	15	11.25	11.25	15

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

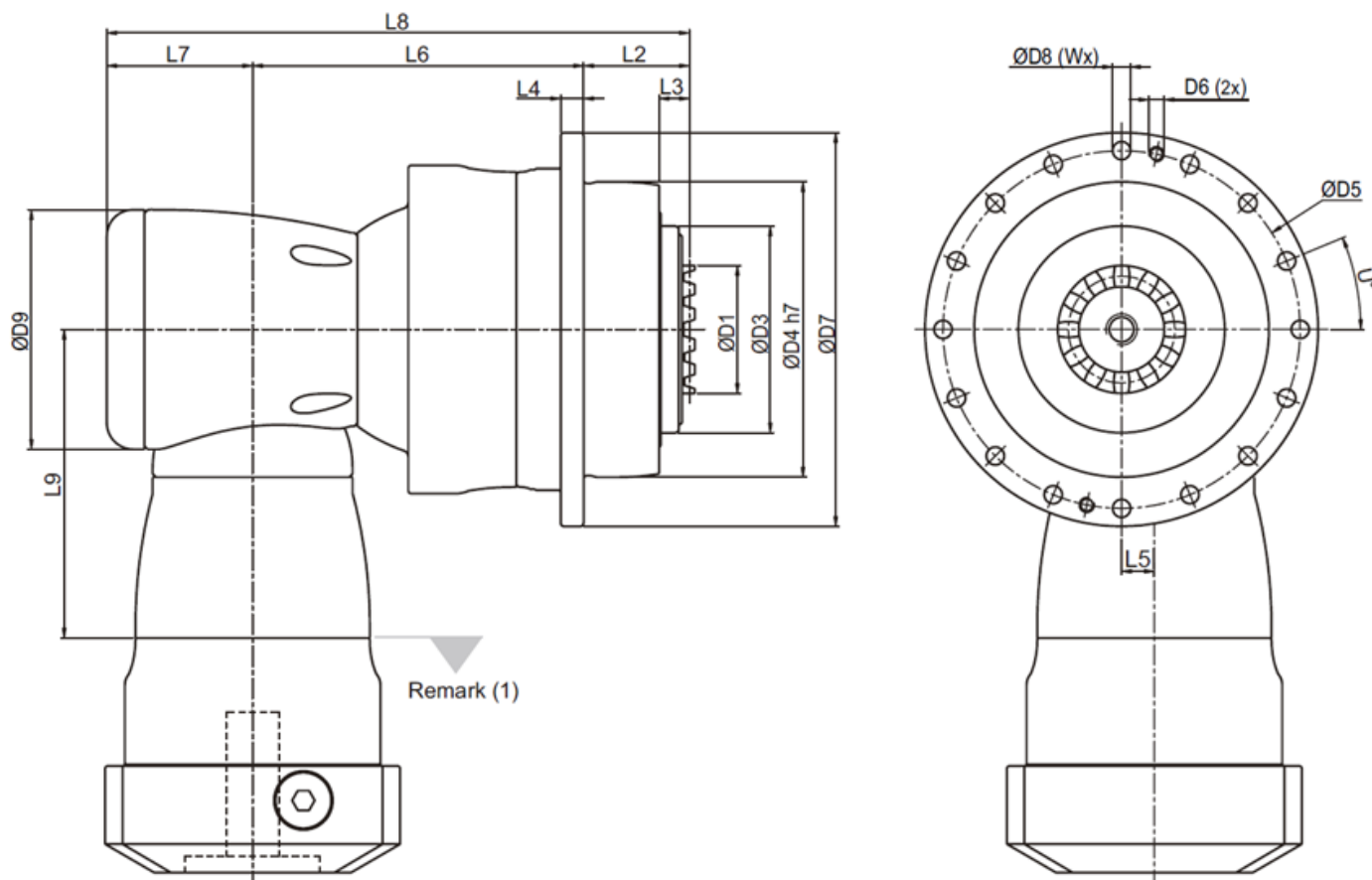
**APCK series 3-stage, ratio i=64~385**



	APCK110	APCK140	APCK200	APCK255	APCK285	APCK355	APCK450
D1	46	60	80	90	120	120	132
D3	80	100	160	180	200	250	315
D4 h7	110	140	200	255	285	355	450
D5	135	168	233	280	310	385	490
D6	-	-	-	M12	M12	M16	M16
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
L2	31.5	40.5	52.5	68.5	77.5	82.5	87.5
L3	9.5	10	11	16	19	22.5	22.5
L4	8	10	12	18	20	45	60
L5	13	17	25	31	31	31	36
L6	132	164	216.5	254.5	30	332	447.5
L7	53	68.3	89	115	115	115	131
L8	216.5	272.8	358	428	492.5	529.5	666
L9	114.5	129	173.5	228	228	228	265.5
U in degree	22.5	15	15	11.25	11.25	15	15

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

**APCK series 4-stage, ratio i=400~5,500**



	APCK110	APCK140	APCK200	APCK255	APCK285	APCK355	APCK450
D1	46	60	80	90	120	120	132
D3	80	100	160	180	200	250	315
D4 h7	110	140	200	255	285	355	450
D5	135	168	233	280	310	385	490
D6	-	-	-	M12	M12	M16	M16
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
L2	31.5	40.5	52.5	68.5	77.5	82.5	87.5
L3	9.5	10	11	16	19	22.5	22.5
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	216.5	272.8	358	438	492.5	529.5	666
L9	114.5	129	173.5	228	228	228	265.5
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.