

## Ordering Code

### AN Series

**AN023** - **025** - **P2** / **MOTOR**

Ratio:	1 Stage:	2 Stage:
AN023:	5, 10	25, 50, 100
AN023A:		25, 50, 100
AN023B:	5, 10	25, 50, 100
AN023C:		25, 50, 100
AN034:	5, 10	25, 50, 100
AN034A:		25, 50, 100
AN034B:	5, 10	25, 50, 100
AN034C:		25, 50, 100

Backlash:	Motor Designation:
P0: Micro Backlash	Manufacturer Type
P1: Reduced Backlash	And Model
P2: Standard Backlash	

**OUTPUT SHAFT DIMENSIONS:**  
 All 3/8" Diameter are 1" Long with FLAT  
 All 1/2" Diameter are 1.25" Long with Key  
 All 3/4" Diameter are 1.5" Long with Key

**Gearbox Size / Shaft / Input Option:**

AN023 : 1/2" output, 14/16mm input single, 11/12mm Double Stage  
 AN023A : 1/2" output, 14/16mm Double Stage  
 AN023B : 3/8" output w / flat, 14/16mm input single, 11/12mm Double Stage  
 AN023C : 3/8" output w / flat, 14/16mm Double Stage  
 AN034 : 3/4" output 19/24mm input single, 14/16mm Double Stage  
 AN034A : 3/4" output, 19/24mm Double Stage  
 AN034B : 1/2" output 19/24mm input single, 14/16mm Double Stage  
 AN034C : 1/2" output, 19/24mm input Double

### ANR Series

**ANR023** - **025** - **P2** / **MOTOR**

Ratio:	1 Stage:	2 Stage:
ANR023:	5, 10, 20	25, 50, 100
ANR023A:		25, 50, 100, 200
ANR023B:	5, 10, 20	25, 50, 100
ANR023C:		25, 50, 100, 200
ANR034:	5, 10, 20	25, 50, 100, 200
ANR034A:		25, 50, 100, 200
ANR034B:	5, 10, 20	25, 50, 100, 200
ANR034C:		25, 50, 100, 200

Backlash:	Motor Designation:
P0: Micro Backlash	Manufacturer Type
P1: Reduced Backlash	And Model
P2: Standard Backlash	

**OUTPUT SHAFT DIMENSIONS:**  
 All 3/8" Diameter are 1" Long with FLAT  
 All 1/2" Diameter are 1.25" Long with Key  
 All 3/4" Diameter are 1.5" Long with Key

**Gearbox Size / Shaft / Input Option:**

ANR023 : 1/2" output, 14/16mm input single, 11/12mm Double Stage  
 ANR023A : 1/2" output, 14/16mm Double Stage  
 ANR023B : 3/8" output w / flat, 14/16mm input single, 11/12mm Double Stage  
 ANR023C : 3/8" output w / flat, 14/16mm Double Stage  
 ANR034 : 3/4" output 19/24mm input single, 14/16mm Double Stage  
 ANR034A : 3/4" output, 19/24mm Double Stage  
 ANR034B : 1/2" output 19/24mm input single, 14/16mm Double Stage  
 ANR034C : 1/2" output, 19/24mm input Double

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No. 6, 20th Rd., Taichung Industrial Park, Taichung, Taiwan, R.O.C.  
 Tel : +886-4-23550219 / Fax : +886-4-23550218  
 Email : sales@apexdyna.com  
 Website : www.apexdyna.com

APEX-2007-03-AN / ANR-4.0E-1.1V



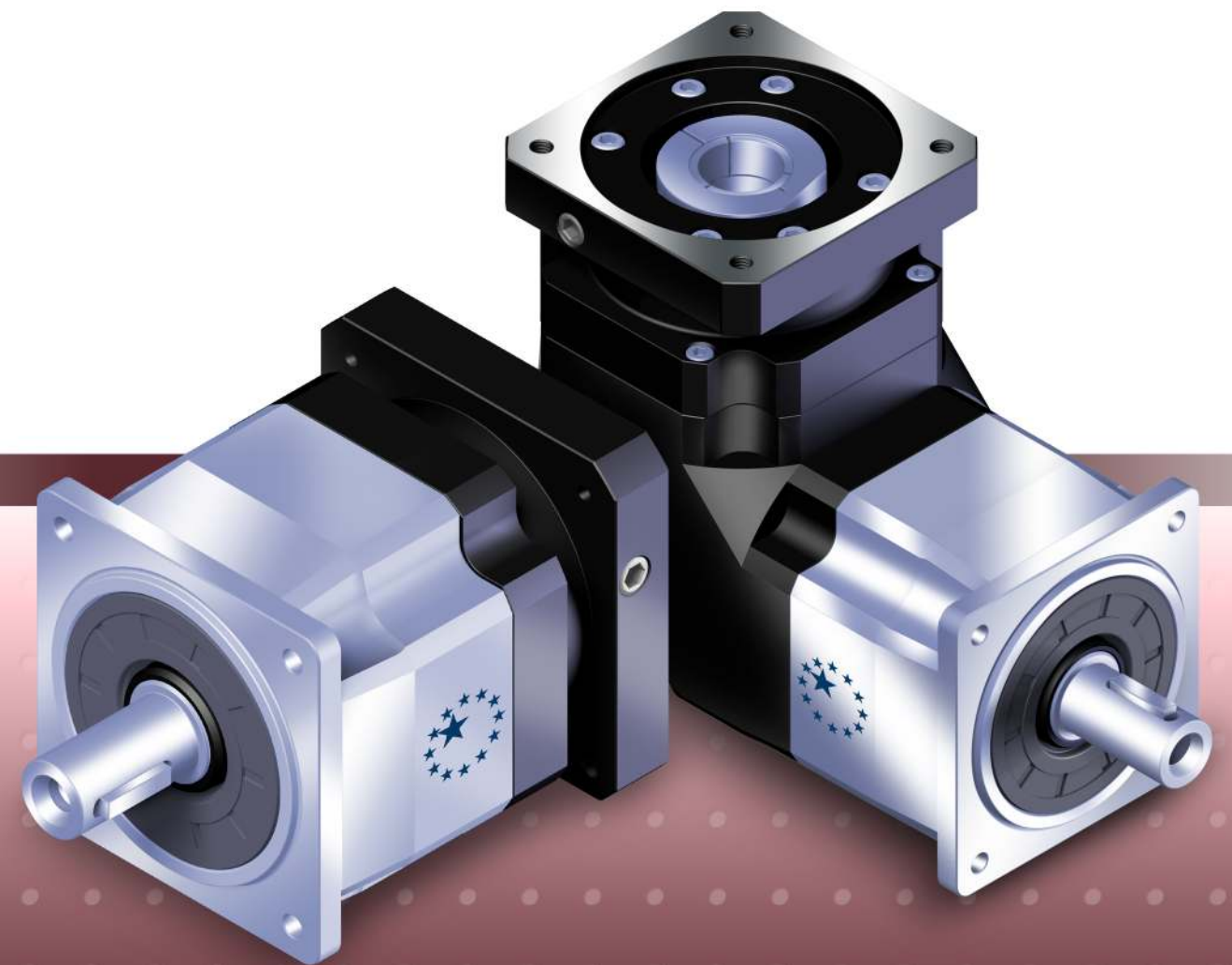
**APEX DYNAMICSUSA, INC.**

1363-10 Lincoln Avenue Holbrook, NY 11741 U.S.A.  
 TEL : 631-244-9040 / FAX : 631-244-9030  
 Email : sales@apexdynamicsusa.com  
 Website : www.apexdynamicsusa.com



# AN / ANR Series

*Nema Planetary Gearboxes  
 High Precision  
 High Speed*



**Stainless**

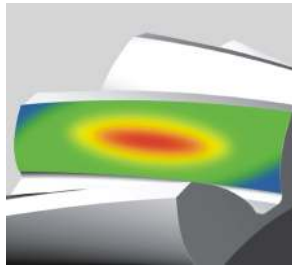


# AN / ANR Series

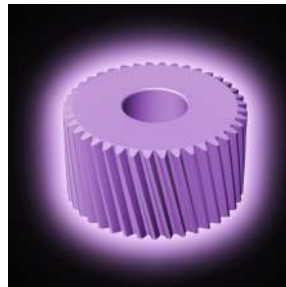
## Characteristic Highlights



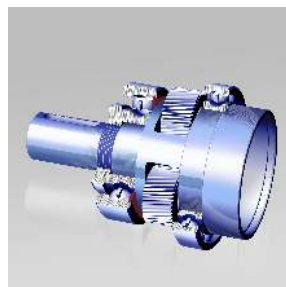
Planet gears rotate on **solid uncaged needle roller bearings** for increased stiffness and the maximum number of contact points. Hardened thrust washers allow the precise control of clearances in order to eliminate backlash.



Industry-leading gear performance is attained with our **HeliTopo technology**. **Ease off of the tooth profile and lead crowning** optimizes the gear mesh under load and achieves maximum tooth surface contact.



Our **In-house plasma nitriding** treatment process allows the hardness of the gear flanks to reach over 900Hv for superior wear resistance and still maintain a core hardness of 30HRc for toughness and resistance to shock loading.



**One-piece carrier** and output housing ensure 100% concentricity and alignment of all the rotating components. One-piece construction increases strength, rigidity and system reliability.



**Helical gear design.** Helical gearing increases the tooth to tooth contact ratio by as much as 33%. Benefits include increased torque capacity, ultimate smoothness, lower backlash and decreased noise. The helix angle is carefully chosen to gain these advantages while not producing excessive axial forces.

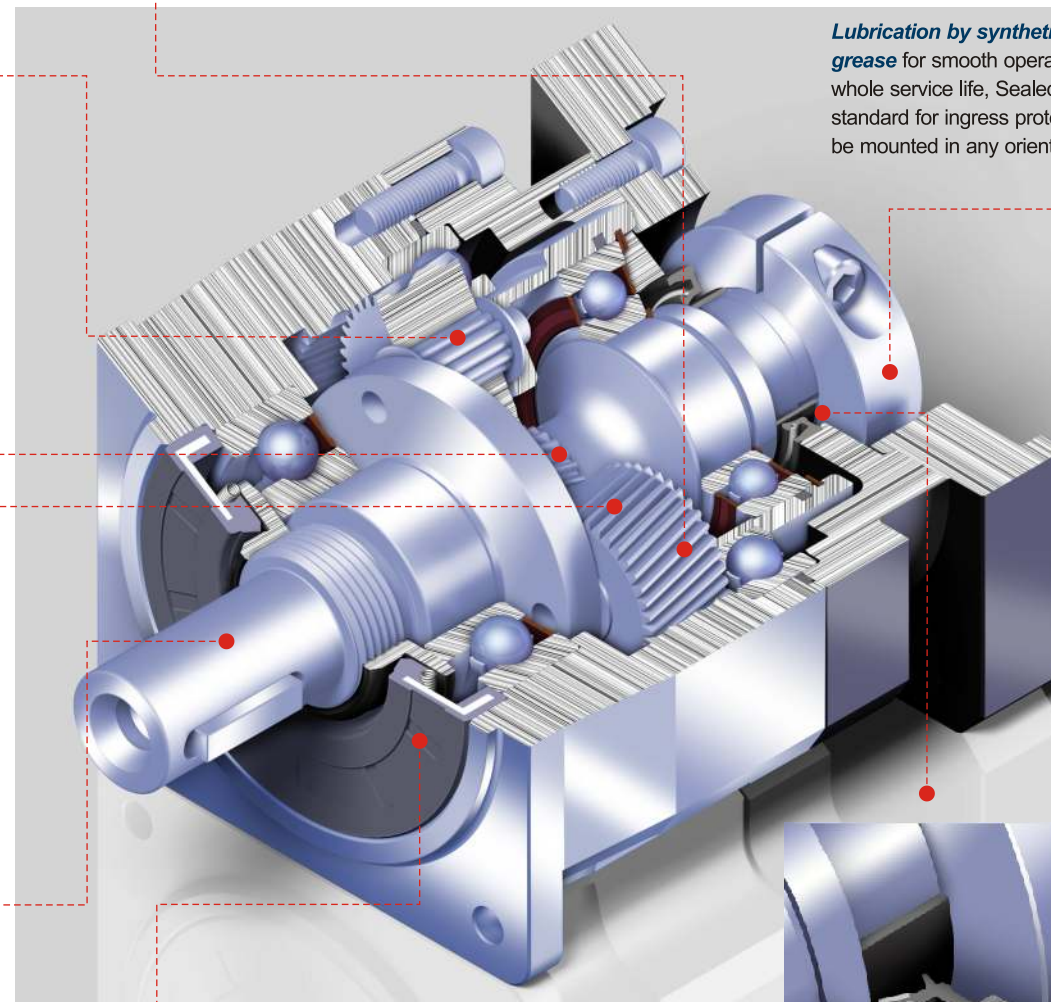


**Patented planet carrier design** mounts the sun gear bearing directly into the planet carrier in order to eliminate misalignment. This exclusive design offers great advantages in decreased noise, vibration and transmission errors and losses.

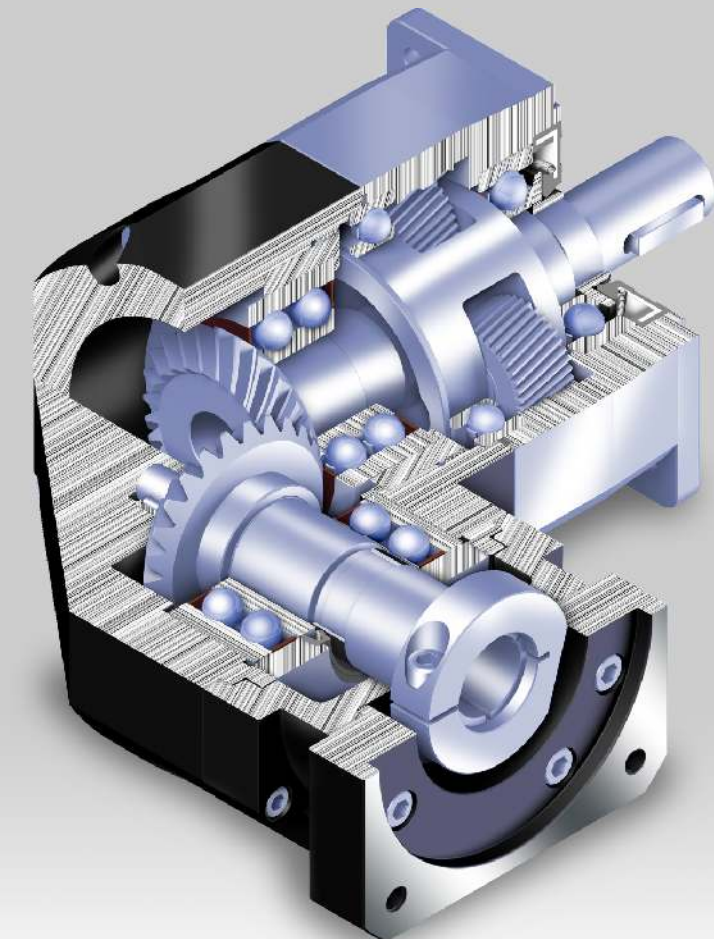


**Triple split collet with dynamic balanced set collar clamping system** provides backlash free power transmission and eliminates slippage. 100% concentricity allows for smooth rotation and higher input speed capability.

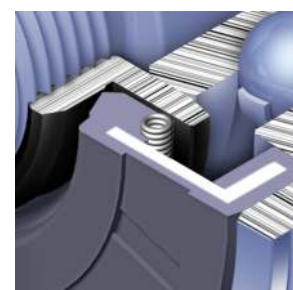
**Lubrication by synthetic Nyogel 792D grease** for smooth operation over the whole service life, Sealed to **IP65** standard for ingress protection and can be mounted in any orientation.



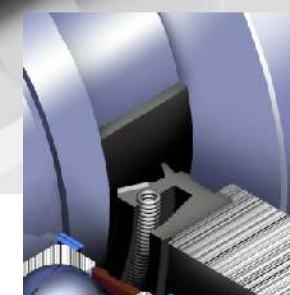
## ANR Series



**ANR version** with 90° input via spiral bevel gear. Featuring an extremely short, rigid housing with full compatibility to any motor.



**NEW - Patented output sealing systems design** eliminates friction and heat generation which is accomplished by applying our hi-tech coating to all output contact surfaces. This coating reaches a hardness of **3700Hv** and is ground to  $R_a 0.2 \mu m$  finish to ensure sealing.



**NEW - Patented input sealing system design** eliminates break away torque and decreases friction/heat. The hi-tech coating bushing (**3700 Hv**,  $R_a 0.2 \mu m$  finish) interfaces with our proprietary seal which decreases wear and erosion of both sealing surfaces. This new patent prevents leakage and has a service life of over 20,000 hours.



# AN Series Specifications

## Dimensions (1-stage, Ratio i=5~10)

### Gearbox Performance

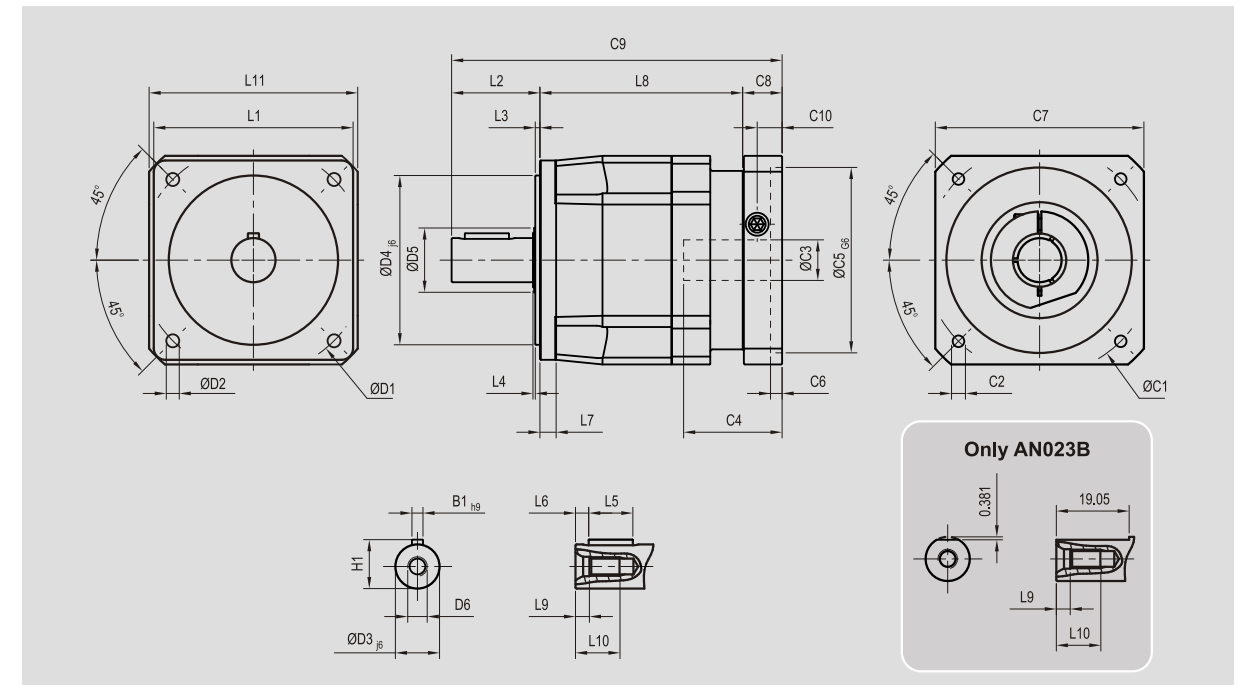
Model No.	Stage	Ratio	AN023	AN023A	AN023B	AN023C	AN034	AN034A	AN034B	AN034C	
Nominal Output Torque $T_{2N}$	1	5	60	-	60	-	160	-	160	-	
		10	40	-	40	-	100	-	100	-	
	2	25	60	60	60	60	160	160	160	160	
		100	40	40	40	40	100	100	100	100	
Max. Output Torque $T_{2B}$	Nm	1,2	3 times of Nominal Output Torque								
Nominal Input Speed $n_{1N}$	rpm	1,2	5~100	5,000	5,000	5,000	5,000	4,000	4,000	4,000	
Max. Input Speed $n_{1B}$	rpm	1,2	5~100	10,000	10,000	10,000	10,000	8,000	8,000	8,000	
Micro Backlash $P_0$	arcmin	1	5~100	-	-	-	-	≤1	-	≤1	-
		2	25~100	-	-	-	-	-	-	-	-
Reduced Backlash $P_1$	arcmin	1	5~10	≤3	-	≤3	-	≤3	-	≤3	-
		2	25~100	≤5	≤5	≤5	≤5	≤5	≤5	≤5	≤5
Standard Backlash $P_2$	arcmin	1	5~10	≤5	-	≤5	-	≤5	-	≤5	-
		2	25~100	≤7	≤7	≤7	≤7	≤7	≤7	≤7	≤7
Torsional Rigidity	Nm/arcmin	1,2	5~100	2.6	1.7	2.6	1.7	9.5	3.2	9.5	3.2
Max. Radial Load $F_{2B}^2$	N	1,2	5~100	950	950	1,000	1,000	2,450	2,450	2,550	2,550
Max. Axial Load $F_{2aB}^2$	N	1,2	5~100	475	475	500	500	1,225	1,225	1,275	1,275
Service Life	hr	1,2	5~100	20,000*							
Efficiency $\eta$	%	1	5~10	≥97%							
		2	25~100	≥94%							
Weight	kg	1	5~10	1.21	-	1.19	-	3.46	-	3.41	-
		2	25~100	1.42	1.88	1.41	1.86	4.01	5.34	3.97	5.29
Operating Temperature	°C	1,2	5~100	-10°C~+90°C							
Lubrication		1,2	5~100	synthetic gear grease (NYOGEL 792D)							
Degree of Gearbox Protection		1,2	5~100	IP65							
Mounting Position		1,2	5~100	all directions							
Noise Level ( $n_1=3000$ rpm)	dB	1,2	5~100	≤58	≤58	≤58	≤58	≤60	≤60	≤60	≤60

### Gearbox Inertia

Model No.	Stage	Ratio	AN023	AN023A	AN023B	AN023C	AN034	AN034A	AN034B	AN034C
Mass Moments of Inertia $J_1$	1	5	0.13	-	0.13	-	0.47	-	0.47	-
		10	0.13	-	0.13	-	0.44	-	0.44	-
	2	25	0.03	0.13	0.03	0.13	0.13	0.47	0.13	0.47
		100	0.03	0.13	0.03	0.13	0.13	0.44	0.13	0.44

1. Ratio ( $i=N_{in}/N_{out}$ )  
\*S1 service life 10,000 hrs

2. Applied to the output shaft center @ 100 rpm



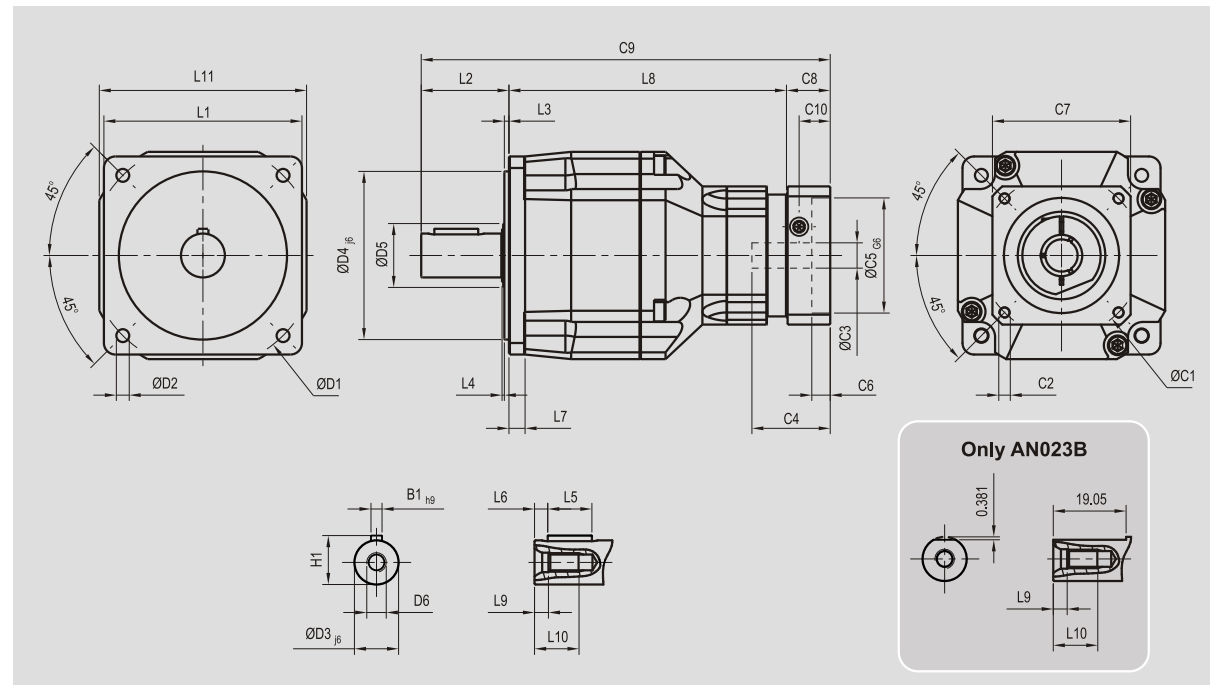
[unit: mm]

Dimension	AN023	AN023B	AN034	AN034B
D1	66.675	66.675	98.425	98.425
D2	5.6	5.6	5.6	5.6
D3 <sub>je</sub>	12.7	9.525	19.05	12.7
D4 <sub>je</sub>	38.1	38.1	73.025	73.025
D5	22	22	30	30
D6	M5 x 0.8P	M4 x 0.7P	M8 x 1.25P	M5 x 0.8P
L1	60	60	86	86
L2	31.8	25.4	38.1	31.8
L3	2	2	2	2
L4	1	1	1	1
L5	19.05	-	19.05	19.05
L6	3.8	-	3.8	5.7
L7	6	6	7	7
L8	64.5	64.5	87.5	87.5
L9	4	3.2	6	4
L10	12.5	10	19	12.5
L11	60	60	90	90
C1 <sup>3</sup>	66.675	66.675	98.425	98.425
C2 <sup>3</sup>	M5 x 0.8P	M5 x 0.8P	M5 x 0.8P	M5 x 0.8P
C3 <sup>3</sup>	≤14 / ≤16	≤14 / ≤16	≤19 / ≤24	≤19 / ≤24
C4 <sup>3</sup>	40	40	40	40
C5 <sup>3</sup> <sub>G6</sub>	38.15	38.15	73.08	73.08
C6 <sup>3</sup>	4	4	4	4
C7 <sup>3</sup>	58	58	85	85
C8 <sup>3</sup>	25	25	17	17
C9 <sup>3</sup>	121.3	114.9	142.6	136.3
C10 <sup>3</sup>	19.5	19.5	10.75	10.75
B1 <sub>hg</sub>	3.175	-	4.763	3.175
H1	14.125	-	21.113	14.125

3. C1~C10 are motor specific dimensions (nema std shown). Refer to apexdyna.com and design tool to view your specific motor mounting system.

# AN Series

Dimensions (2-stage, Ratio i=25,50,100)



[unit: mm]

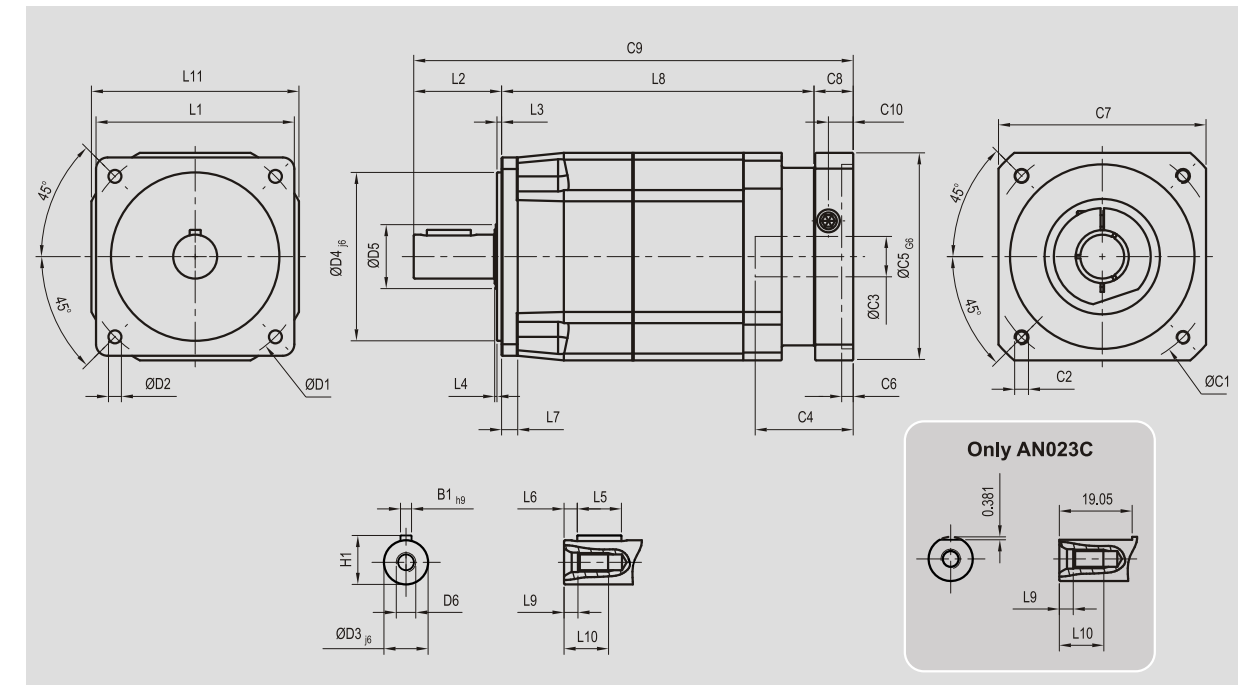
Dimension	AN023	AN023B	AN034	AN034B
D1	66.675	66.675	98.425	98.425
D2	5.6	5.6	5.6	5.6
D3 <sub>je</sub>	12.7	9.525	19.05	12.7
D4 <sub>je</sub>	38.1	38.1	73.025	73.025
D5	22	22	30	30
D6	M5 x 0.8P	M4 x 0.7P	M8 x 1.25P	M5 x 0.8P
L1	60	60	86	86
L2	31.8	25.4	38.1	31.8
L3	2	2	2	2
L4	1	1	1	1
L5	19.05	-	19.05	19.05
L6	3.8	-	3.8	3.8
L7	6	6	7	7
L8	75.5	75.5	120.5	120.5
L9	4	3.2	6	4
L10	12.5	10	19	12.5
L11	60	60	90	90
C1 <sup>4</sup>	66.675	66.675	66.675	66.675
C2 <sup>4</sup>	M5 x 0.8P	M5 x 0.8P	M5 x 0.8P	M5 x 0.8P
C3 <sup>4</sup>	≤11 / ≤12	≤11 / ≤12	≤14 / ≤16	≤14 / ≤16
C4 <sup>4</sup>	32	32	40	40
C5 <sup>4</sup> G6	38.15	38.15	38.15	38.15
C6 <sup>4</sup>	3.5	3.5	4	4
C7 <sup>4</sup>	55	55	58	58
C8 <sup>4</sup>	36.5	36.5	25	25
C9 <sup>4</sup>	143.8	137.4	183.6	177.3
C10 <sup>4</sup>	15.75	15.75	19.5	19.5
B1 <sub>hg</sub>	3.175	-	4.763	3.175
H1	14.125	-	21.113	14.125

4. C1-C10 are motor specific dimensions (nema std shown). Refer to apexdyna.com and design tool to view your specific motor mounting system.

# AN Series

Dimensions (2-stage, Ratio i=25,50,100)

For motor with large shaft diameters



[unit: mm]

Dimension	AN023A	AN023C	AN034A	AN034C
D1	66.675	66.675	98.425	98.425
D2	5.6	5.6	5.6	5.6
D3 <sub>je</sub>	12.7	9.525	19.05	12.7
D4 <sub>je</sub>	38.1	38.1	73.025	73.025
D5	22	22	30	30
D6	M5 x 0.8P	M4 x 0.7P	M8 x 1.25P	M5 x 0.8P
L1	60	60	86	86
L2	31.8	25.4	38.1	31.8
L3	2	2	2	2
L4	1	1	1	1
L5	19.05	-	19.05	19.05
L6	3.8	-	3.8	3.8
L7	6	6	7	7
L8	101.5	101.5	135.5	135.5
L9	4	3.2	6	4
L10	12.5	10	19	12.5
L11	60	60	90	90
C1 <sup>4</sup>	66.675	66.675	98.425	98.425
C2 <sup>4</sup>	M5 x 0.8P	M5 x 0.8P	M5 x 0.8P	M5 x 0.8P
C3 <sup>4</sup>	≤14 / ≤16	≤14 / ≤16	≤19 / ≤24	≤19 / ≤24
C4 <sup>4</sup>	40	40	40	40
C5 <sup>4</sup> G6	38.15	38.15	73.08	73.08
C6 <sup>4</sup>	4	4	4	4
C7 <sup>4</sup>	58	58	85	85
C8 <sup>4</sup>	25	25	17	17
C9 <sup>4</sup>	158.3	151.9	190.6	184.3
C10 <sup>4</sup>	19.5	19.5	10.75	10.75
B1 <sub>hg</sub>	3.175	-	4.763	3.175
H1	14.125	-	21.113	14.125

4. C1-C10 are motor specific dimensions (nema std shown). Refer to apexdyna.com and design tool to view your specific motor mounting system.

# ANR Series

## Specifications

## Dimensions (1-stage, Ratio i=5~20)

### Gearbox Performance

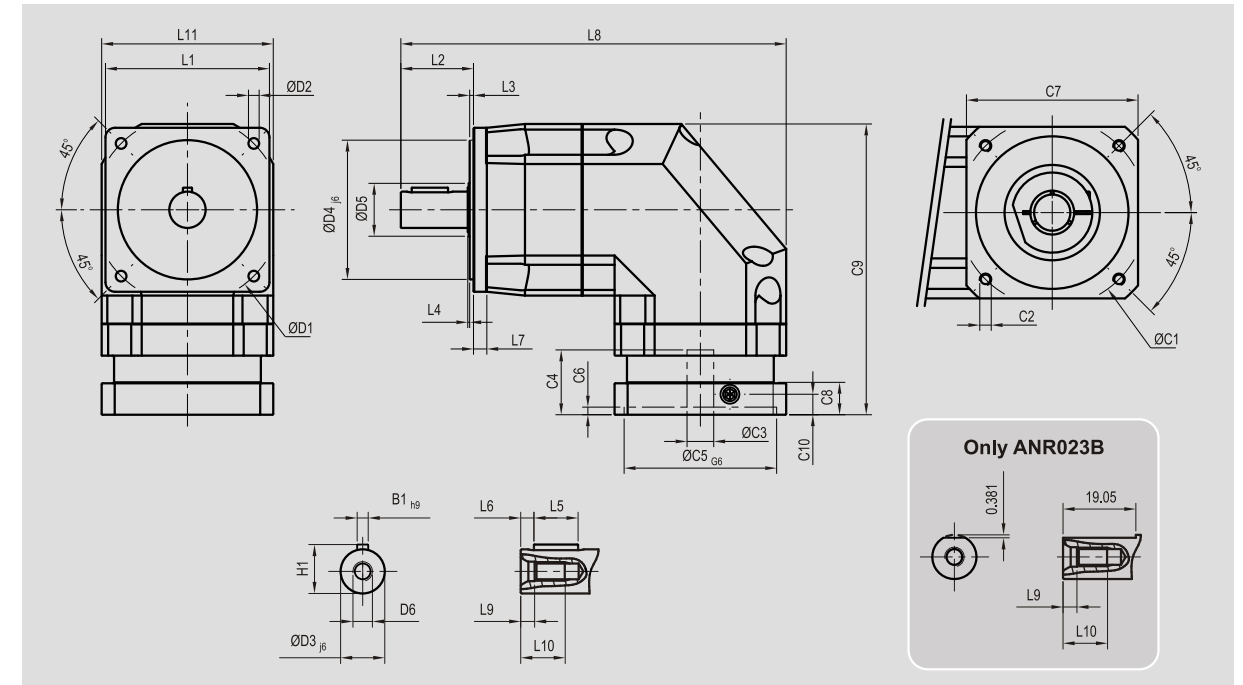
Model No.	Stage	Ratio	ANR023	ANR023A	ANR023B	ANR023C	ANR034	ANR034A	ANR034B	ANR034C	
Nominal Output Torque $T_{2N}$	1	5	60	-	60	-	150	-	150	-	
		10	40	-	40	-	100	-	100	-	
		20	40	-	40	-	100	-	100	-	
	2	25	60	60	60	60	150	150	150	150	
		50	60	60	60	60	100	100	100	100	
		100	40	40	40	40	100	100	100	100	
		200	-	40	-	40	100	100	100	100	
Max. Output Torque $T_{2B}$	Nm	1,2	3 times of Nominal Output Torque								
Nominal Input Speed $n_{1N}$	rpm	1,2	5,000								
Max. Input Speed $n_{1B}$	rpm	1,2	10,000								
Micro Backlash $P_0$		1	5~200								
		2	25~200								
Reduced Backlash $P_1$	arcmin	1	5~20								
		2	25~200								
Standard Backlash $P_2$	arcmin	1	5~20								
		2	25~200								
Torsional Rigidity	Nm/arcmin	1,2	5~200								
Max. Radial Load $F_{2B}^2$	N	1,2	5~200								
Max. Axial Load $F_{2B}^2$	N	1,2	5~200								
Service Life	hr	1,2	5~200								
Efficiency $\eta$	%	1	5~20								
		2	25~200								
Weight	kg	1	5~20								
		2	25~200								
Operating Temperature	°C	1,2	5~200								
Lubrication		1,2	5~200								
Degree of Gearbox Protection		1,2	5~200								
Mounting Position		1,2	5~200								
Noise Level ( $n_1=3000$ rpm)	dB	1,2	5~200								

### Gearbox Inertia

Model No.	Stage	Ratio	ANR023	ANR023A	ANR023B	ANR023C	ANR034	ANR034A	ANR034B	ANR034C
Mass Moments of Inertia $J_1$	1	5~10	0.35	-	0.13	-	2.25	-	2.25	-
		20	0.07	-	0.07	-	1.87	-	1.87	-
	2	25~100	0.09	0.35	0.09	0.35	0.35	2.25	0.35	2.25
		120~200	-	0.07	-	0.07	0.31	1.87	0.31	1.87

1. Ratio ( $i=N_{in}/N_{out}$ )  
\*S1 service life 10,000 hrs

2. Applied to the output shaft center @ 100 rpm



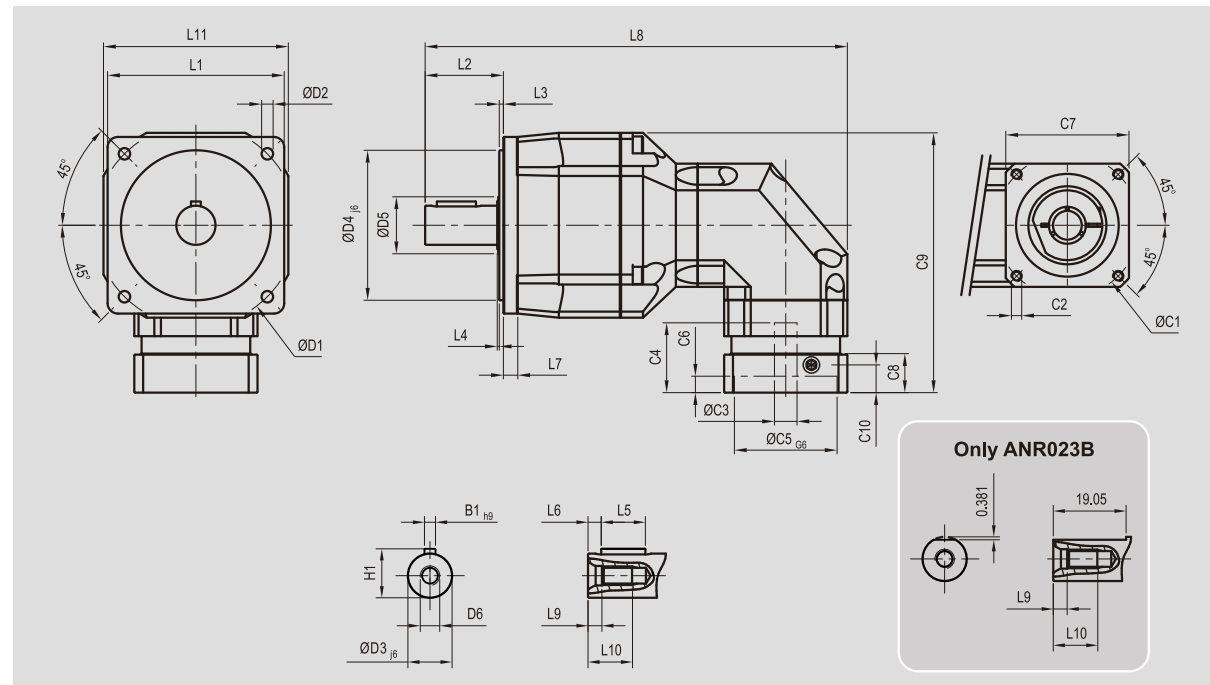
[unit: mm]

Dimension	ANR023	ANR023B	ANR034	ANR034B
D1	66.675	66.675	98.425	98.425
D2	5.6	5.6	5.6	5.6
D3 <sub>je</sub>	12.7	9.525	19.05	12.7
D4 <sub>je</sub>	38.1	38.1	73.025	73.025
D5	22	22	30	30
D6	M5 x 0.8P	M4 x 0.7P	M8 x 1.25P	M5 x 0.8P
L1	60	60	86	86
L2	31.8	25.4	38.1	31.8
L3	2	2	2	2
L4	1	1	1	1
L5	19.05	-	19.05	19.05
L6	3.8	-	3.8	3.8
L7	6	6	7	7
L8	143.3	136.9	202.1	195.8
L9	4	3.2	6	4
L10	12.5	10	19	12.5
L11	60	60	90	90
C1 <sup>3</sup>	66.675	66.675	98.425	98.425
C2 <sup>3</sup>	M5 x 0.8P	M5 x 0.8P	M5 x 0.8P	M5 x 0.8P
C3 <sup>3</sup>	≤14 / ≤16	≤14 / ≤16	≤19 / ≤24	≤19 / ≤24
C4 <sup>3</sup>	40	40	40	40
C5 <sup>3</sup> <sub>G6</sub>	38.15	38.15	73.08	73.08
C6 <sup>3</sup>	4	4	4	4
C7 <sup>3</sup>	58	58	85	85
C8 <sup>3</sup>	25	25	17	17
C9 <sup>3</sup>	117.5	117.5	152.5	152.5
C10 <sup>3</sup>	19.5	19.5	10.75	10.75
B1 <sub>hb</sub>	3.175	-	4.763	3.175
H1	14.125	-	21.113	14.125

3. C1~C10 are motor specific dimensions (nema std shown). Refer to apexdyna.com and design tool to view your specific motor mounting system.

# ANR Series

## Dimensions (2-stage, Ratio i=25,50,100,200)

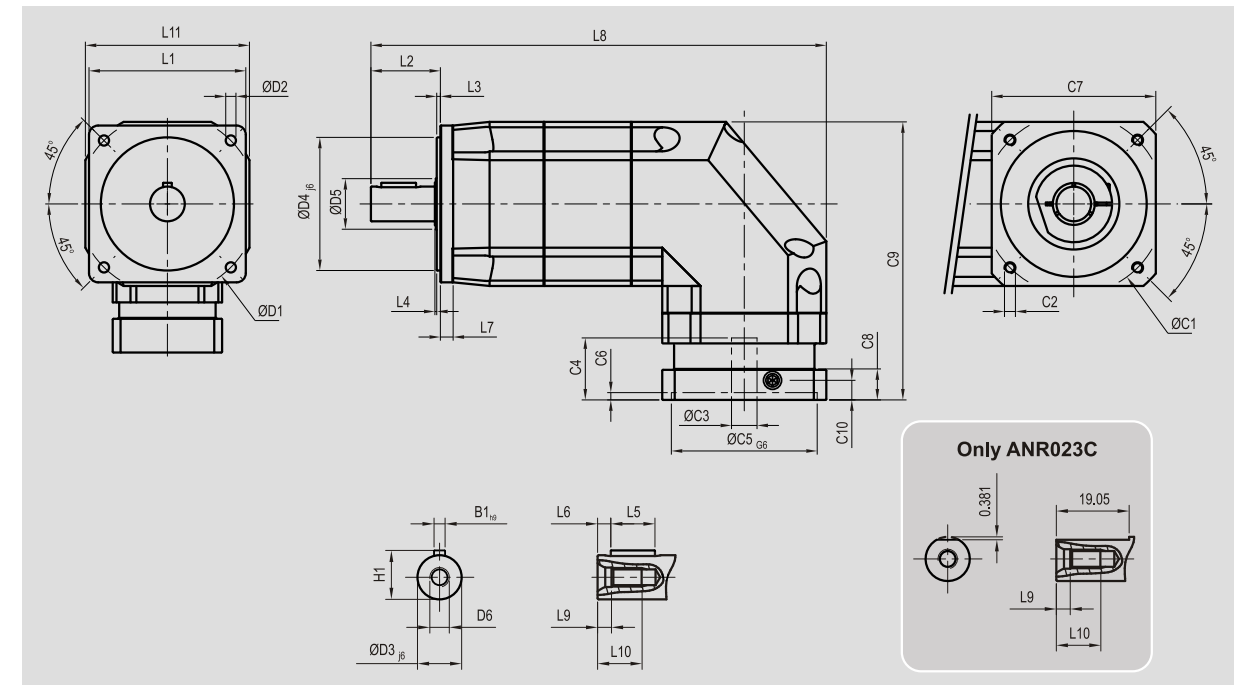


[unit: mm]

Dimension	ANR023	ANR023B	ANR034	ANR034B
D1	66.675	66.675	98.425	98.425
D2	5.6	5.6	5.6	5.6
D3 <sub>je</sub>	12.7	9.525	19.05	12.7
D4 <sub>je</sub>	38.1	38.1	73.025	73.025
D5	22	22	30	30
D6	M5 x 0.8P	M4 x 0.7P	M8 x 1.25P	M5 x 0.8P
L1	60	60	86	86
L2	31.8	25.4	38.1	31.8
L3	2	2	2	2
L4	1	1	1	1
L5	19.05	-	19.05	19.05
L6	3.8	-	3.8	3.8
L7	6	6	7	7
L8	161.8	155.4	205.6	199.3
L9	4	3.2	6	4
L10	12.5	10	19	12.5
L11	60	60	90	90
C1 <sup>4</sup>	66.675	66.675	66.675	66.675
C2 <sup>4</sup>	M5 x 0.8P	M5 x 0.8P	M5 x 0.8P	M5 x 0.8P
C3 <sup>4</sup>	≤11 / ≤12	≤11 / ≤12	≤14 / ≤16	≤14 / ≤16
C4 <sup>4</sup>	32	32	40	40
C5 <sup>4 G6</sup>	38.15	38.15	38.15	38.15
C6 <sup>4</sup>	3.5	3.5	4	4
C7 <sup>4</sup>	55	55	58	58
C8 <sup>4</sup>	36.5	36.5	25	25
C9 <sup>4</sup>	106.5	106.5	132.5	132.5
C10 <sup>4</sup>	15.75	15.75	19.5	19.5
B1 <sub>h9</sub>	3.175	-	4.763	3.175
H1	14.125	-	21.113	14.125

4. C1-C10 are motor specific dimensions (nema std shown). Refer to apexdyna.com and design tool to view your specific motor mounting system.

## Dimensions (2-stage, Ratio i=25,50,100,200)



[unit: mm]

Dimension	ANR023A	ANR023C	ANR034A	ANR034C
D1	66.675	66.675	98.425	98.425
D2	5.6	5.6	5.6	5.6
D3 <sub>je</sub>	12.7	9.525	19.05	12.7
D4 <sub>je</sub>	38.1	38.1	73.025	73.025
D5	22	22	30	30
D6	M5 x 0.8P	M4 x 0.7P	M8 x 1.25P	M5 x 0.8P
L1	60	60	86	86
L2	31.8	25.4	38.1	31.8
L3	2	2	2	2
L4	1	1	1	1
L5	19.05	-	19.05	19.05
L6	3.8	-	3.8	3.8
L7	6	6	7	7
L8	180.3	173.9	205.1	243.8
L9	4	3.2	6	4
L10	12.5	10	19	12.5
L11	60	60	90	90
C1 <sup>4</sup>	66.675	66.675	98.425	98.425
C2 <sup>4</sup>	M5 x 0.8P	M5 x 0.8P	M5 x 0.8P	M5 x 0.8P
C3 <sup>4</sup>	≤14 / ≤16	≤14 / ≤16	≤19 / ≤24	≤19 / ≤24
C4 <sup>4</sup>	40	40	40	40
C5 <sup>4 G6</sup>	38.15	38.15	73.08	73.08
C6 <sup>4</sup>	4	4	4	4
C7 <sup>4</sup>	58	58	85	85
C8 <sup>4</sup>	25	25	17	17
C9 <sup>4</sup>	117.5	117.5	152.5	152.5
C10 <sup>4</sup>	19.5	19.5	10.75	10.75
B1 <sub>h9</sub>	3.175	-	4.763	3.175
H1	14.125	-	21.113	14.125

4. C1-C10 are motor specific dimensions (nema std shown). Refer to apexdyna.com and design tool to view your specific motor mounting system.