

PNS

The PNS Primary Series round mounting flange, caged standard class planetary gears in an in-line housing through sizes 160. High torque capacity, quiet operation with backlash levels as low as <5 arc-min. Maximum ratio 1000:1. Right angle model (PNSR) is available with frame size up to 120 mm.

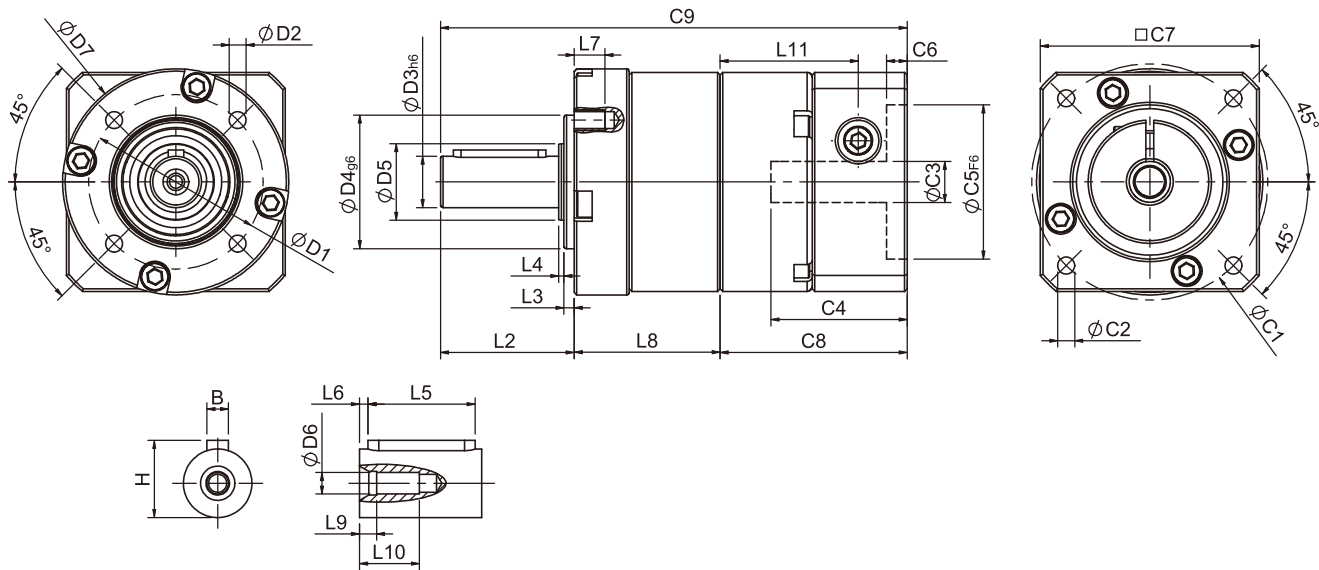


Frame Size (mm)	40, 60, 80, 120, 160
Ratio	3:1 - 1000:1
Nominal Input Speed (rpm)	2,500 - 4,000
Max Input Speed (rpm)	4,000 - 6,000
Backlash (arc-min)	1 Stage: 5 - 9 2 Stages: 7 - 12 3 Stages: 10 - 15
Noise Level (dBA / 1m)	60 - 68

Features

- ▶ In-line Configuration.
- ▶ Output shaft, 10 mm through 40 mm diameter.
- ▶ Torque Capacity Range: 8 Nm through 490 Nm.
- ▶ Caged Planet Carrier: with standard planet gear set.
- ▶ High performance, efficiencies and low acoustics.
- ▶ Wide Range of Ratios: 6 single stage ratios, 10 two-stage ratios and up to 9 three-stage ratios.
- ▶ Output Bearings deliver radial load capacity as high as 6720 N, and axial capacities up to 4200 N.
- ▶ Square Servo and Step Motor input: accommodates 40 mm through 140 mm, with optional sizes available.

PNS Single Stage Dimensions



Specifications

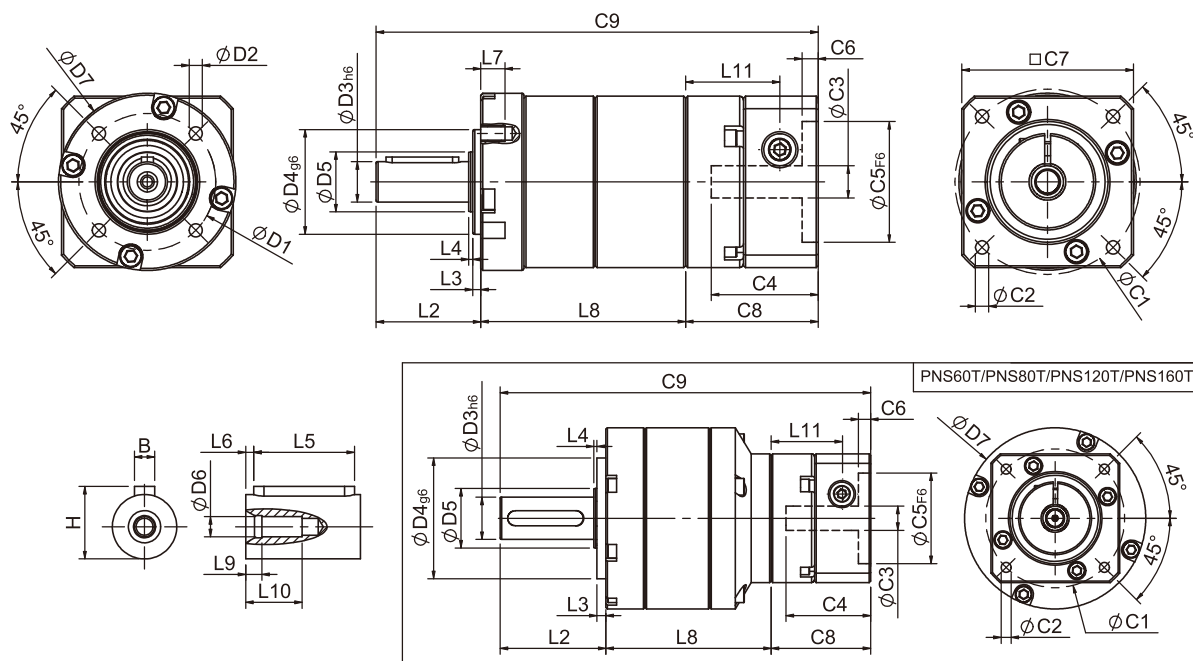
Unit:mm

Dimensions	PNS40	PNS60	PNS80	PNS120	PNS160
D1	34	52	70	100	145
D2	M4x0.7P	M5x0.8P	M6x1.0P	M10x1.5P	M12x1.75P
D3 _{h6}	10	14	20	25	40
D4 _{g6}	26	40	60	80	130
D5	15	20	35	40	50
D6	M3x0.5P	M5x0.8P	M6x1.0P	M10x1.5P	M16x2.0P
D7	44	60	90	116	160
L2	26	35	40	55	87
L3	2	3	3	4	5
L4	1	1	1	1	2
L5	18	25	28	40	65
L6	2.5	2.5	4	5	8
L7	6	8	10	15	20
L8	28.4	34.4	42.2	68.8	81
L9	3	4	4.5	6	6
L10	9	16.5	16.5	26	38
L11	26.9	31.6	37.3	51.8	63
C1 ²	46	70	90	145	130
C2 ²	M4x0.7P	M5x0.8P	M6x1.0P	M8x1.25P	M8x1.25P
C3 ²	≤8/≤11	≤14/≤19	≤19/≤24/≤28	≤24/≤32/≤38	≤35/≤38
C4 ²	26.5	33.5	41	51.5	66.5
C5 ^{2F6}	30	50	70	110	110
C6 ²	4	4	6	6	5.5
C7 ²	42.6	60	90	130	140
C8 ²	36.4	42.1	51.5	68	80
C9 ²	90.8	111.5	133.7	191.8	248
B	3	5	6	8	12
H	11.2	16	22.5	28	43

★ C1~C9 are motor specific dimensions (metric std shown). Size may vary according to motor flange.

★ Specification subject to change without notice.

PNS Double Stage Dimensions



Specifications

Unit:mm

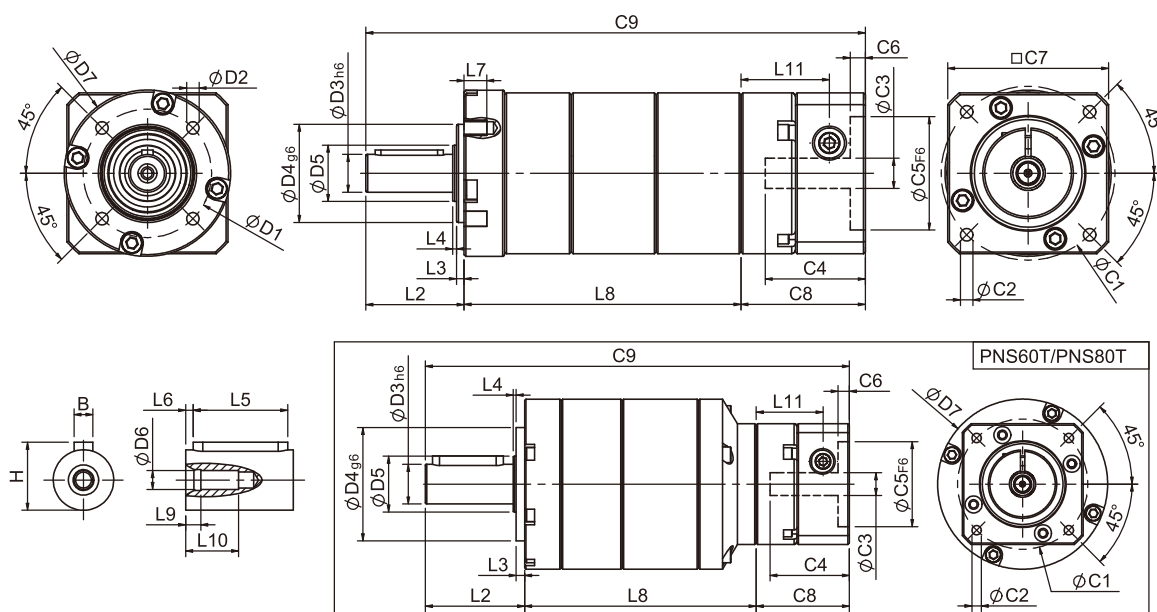
Dimensions	PNS40	PNS60	PNS60T	PNS80	PNS80T	PNS120T	PNS160	PNS160T
D1	34	52		70		100	145	
D2	M4x0.7P	M5x0.8P		M6x1.0P		M10x1.5P	M12x1.75P	
D3h6	10	14		20		25	40	
D4g6	26	40		60		80	130	
D5	15	20		35		40	50	
D6	M3x0.5P	M5x0.8P		M6x1.0P		M10x1.5P	M16x2.0P	
D7	44	60		90		116	160	
L2	26	35		40		55	87	
L3	2	3		3		4	5	
L4	1	1		1		1	2	
L5	18	25		28		40	65	
L6	2.5	2.5		4		5	8	
L7	6	8		10		15	20	
L8	50.85	61.4	54.7	76	71.5	106.9	142	129
L9	3	4		4.5		6	6	
L10	9	16.5		16.5		26	38	
L11	23.4	31	23.4	37.3	31	37.3	63	42
C1 ²	46	70	46	90	70	90	130	115
C2 ²	M4x0.7P	M5x0.8P	M4x0.7P	M6x1.0P	M5x0.8P	M6x1.0P	M8x1.25P	M8x1.25P
C3 ²	≤8/≤11	≤14/≤19	≤8/≤11	≤19/≤24/≤28	≤14/≤19	≤19/≤24/≤28	≤35/≤38	≤24/≤28
C4 ²	26.5	33.5	26.5	41	33.5	41	66.5	53.5
C5 ² F6	30	50	30	70	50	70	110	95
C6 ²	4	4	4	6	4	6	5.5	5.5
C7 ²	42.6	60	42.6	90	60	90	140	120
C8 ²	32.9	41.5	32.9	51.5	41.5	51.5	80	58
C9 ²	109.75	137.9	122.6	167.5	153	213.4	309	274
B	3	5		6		8	12	
H	11.2	16		22.5		28	43	

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PNS Triple Stage Dimensions-1



Specifications

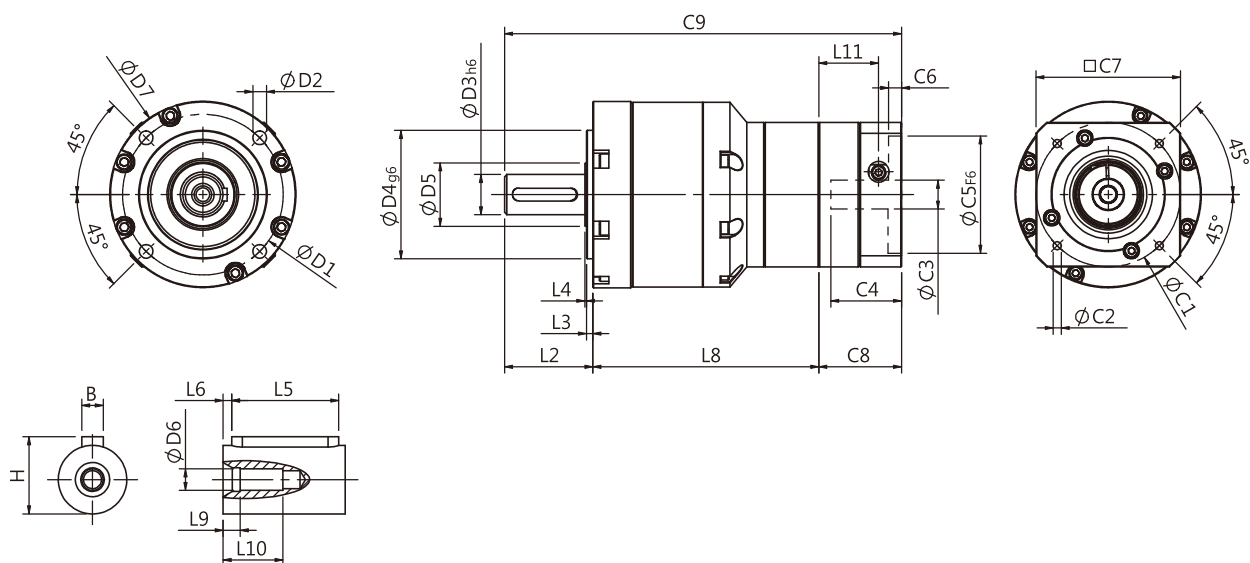
Unit:mm

Dimensions	PNS40	PNS60T	PNS80T
D1	34	52	70
D2	M4x0.7P	M5x0.8P	M6x1.0P
D3 _{h6}	10	14	20
D4 _{g6}	26	40	60
D5	15	20	35
D6	M3x0.5P	M5x0.8P	M6x1.0P
D7	44	60	90
L2	26	35	40
L3	2	3	3
L4	1	1	1
L5	18	25	28
L6	2.5	2.5	4
L7	6	8	10
L8	73.3	81.7	105.3
L9	3	4	4.5
L10	9	16.5	16.5
L11	23.4	23.4	31
C1 ²	46	46	70
C2 ²	M4x0.7P	M4x0.7P	M5x0.8P
C3 ²	≤8/≤11	≤8/≤11	≤14/≤19
C4 ²	26.5	26.5	33.5
C5 ^{2F6}	30	30	50
C6 ²	4	4	4
C7 ²	42.6	42.6	60
C8 ²	32.9	32.9	41.5
C9 ²	132.2	149.6	186.8
B	3	5	6
H	11.2	16	22.5

★ C1~C9 are motor specific dimensions (metric std shown). Size may vary according to motor flange.

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PNS Triple Stage Dimensions-2



Specifications

Unit:mm

Dimensions	PNS120T	PNS160T
D1	100	145
D2	M10x1.5P	M12x1.75P
D3 _{h6}	25	40
D4 _{g6}	80	130
D5	40	50
D6	M10x1.5P	M16x2.0P
D7	116	160
L2	55	87
L3	4	5
L4	1	2
L5	40	65
L6	5	8
L7	15	20
L8	140.7	177
L9	6	6
L10	26	38
L11	37.3	42
C1 ²	90	115
C2 ²	M6x1.0P	M8x1.25P
C3 ²	≤19/≤24/≤28	24/≤28
C4 ²	41	53.5
C5 ^{2F6}	70	95
C6 ²	6	5.5
C7 ²	90	120
C8 ²	51.5	58
C9 ²	247.2	322
B	8	12
H	28	43

★ C1~C9 are motor specific dimensions (metric std shown). Size may vary according to motor flange.

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PNS Specifications

Specifications		Stage	Ratio	PNS40	PNS60	PNS-80	PNS-120	PNS-160		
Nominal Output Torque T_{2N}	N•m	1	3	9	28	85	200	420		
			4	10	32	80	215	490		
			5	11	35	95	215	473		
			7	10	28	85	200	400		
			9	8	23	75	195	320		
		10	8	21	65	180	320			
		Stage	Ratio	PNS40	PNS60/ PNS60T	PNS80/ PNS80T	PNS-120T	PNS160/ PNS160T		
		2	15	11	35/24	95/68	168	420		
			20	11	35/31	95/95	215	490		
			25	11	35/30	95/95	215	473		
			35	11	35/28	95/95	215	473		
			45	11	35/27	95/92	215	473		
			50	(Ratio 49) : 10	35/27	95/82	205	473		
			70	(Ratio 63) : 10	28/28	85/85	200	400		
			90	(Ratio 81) : 8	23/23	75/75	195	320		
			100	8	21/21	65/65	180	320		
		Stage	Ratio	PNS40	PNS60T	PNS80T	PNS120T	PNS160T		
		3	125	11	35	95	215	473		
			175	11	35	95	215	473		
			225	11	35	95	215	473		
			245	11	35	95	215	(Ratio 250) : 473		
			315	11	35	95	215	(Ratio 350) : 473		
			405	11	35	95	215	(Ratio 400) : 473		
			567	10	28	85	200	(Ratio 500) : 473		
			729	8	23	75	195	(Ratio 700) : 400		
			1000	8	21	65	180	320		
Emergency Stop Torque T_{2NOT}	N•m	(2.5 times of Nominal Output Torque) (*Max. Output Torque T_{2B} = 60% of Emergency Stop Torque)								
Nominal Input Speed n_{1N}	rpm	1,2,3	3-1000	4000	4000	3000	2500	2500		
Max. Input Speed n_{1max}	rpm	1,2,3	3-1000	6000	6000	6000	5000	4000		
Standard Backlash P2	arcmin	1	3-10	≤ 9	≤ 8	≤ 7	≤ 6	≤ 5		
		2	15-100	≤12	≤10	≤ 9	≤ 8	≤ 7		
		3	125~1000	≤15	≤12	≤12	≤12	≤10		
Torsional Rigidity	N•m /arcmin	1,2,3	3-1000	1.2	3.5	8.5	17	30		
Max. Radial Load F_{2rB}^{-1}	N	1,2,3	3-1000	580	890	2050	4370	6720		
Max. Axial Load F_{2aB}^{-1}	N	1,2,3	3-1000	410	430	1100	2630	4200		
Operating Temp.	°C	1,2,3	3-1000	-10°C ~ +90°C						
Service Life	hr	1,2,3	3-1000	20,000 (10,000 Continuous Operation)						
Efficiency	%	1	3-10	≥ 95%						
		2	15-100	≥ 90%						
		3	125~1000	≥ 85%						
Weight	kg	1	3-10	0.5	1.1	2.8	6.3	6.6		
		2	15-100	0.7	1.5/1.3	4.2/3.1	7.9	20.7/11.2		
		3	125~1000	0.8	1.7	4.5	9.3	22.4		
Mounting Position	-	1,2,3	3-1000	Any Direction						
Noise Level ²	dBA/1m	1,2,3	3-1000	60	63	66	67	68		
Protection Class	-	1,2,3	3-1000	IP65						
Lubrication	-	1,2,3	3-1000	Synthetic Lubricant						
Inertia (J1)										
Stage	Ratio	unit		PNS40(φ8)	PNS60(φ14)	PNS80(φ19)	PNS120(φ24)	PNS160(φ35)		
1	3	kg•cm ²		0.04	0.23	0.77	2.30	7.89		
	4			0.03	0.21	0.67	1.92	5.83		
	5~10			0.03	0.21	0.61	1.71	5.38		
Stage	Ratio			PNS40(φ8)	PNS60(φ14) PNS60T(φ8)	PNS80(φ19) PNS80T(φ14)	PNS120T(φ19)	PNS160(φ35) PNS160T(φ24)		
2	15			0.04	0.23/(0.04)	0.77/(0.23)	0.77	5.38/(1.61)		
	Other Ratios			0.03	0.21/(0.03)	0.61/(0.21)	0.61	5.38/(1.61)		
Stage	Ratio			PNS40(φ8)	PNS60T(φ8)	PNS-80T(φ14)	PNS120T(φ19)	PNS160T(φ24)		
3	All Ratios			0.03	0.03	0.21	0.61	1.61		
* 1. Applied to the output shaft center at 100 rpm.										
* 2. Environment noise level 30 dB; distance 1m; measured under free loading with input speed 3000 rpm; ratio = 10 (1-stage) or ratio = 100 (2-stage).										
※The above figures/specifications are subject to change without prior notice.										

Products due to human error, natural disasters or other factors lead to poor or damaged, will not be covered under warranty.