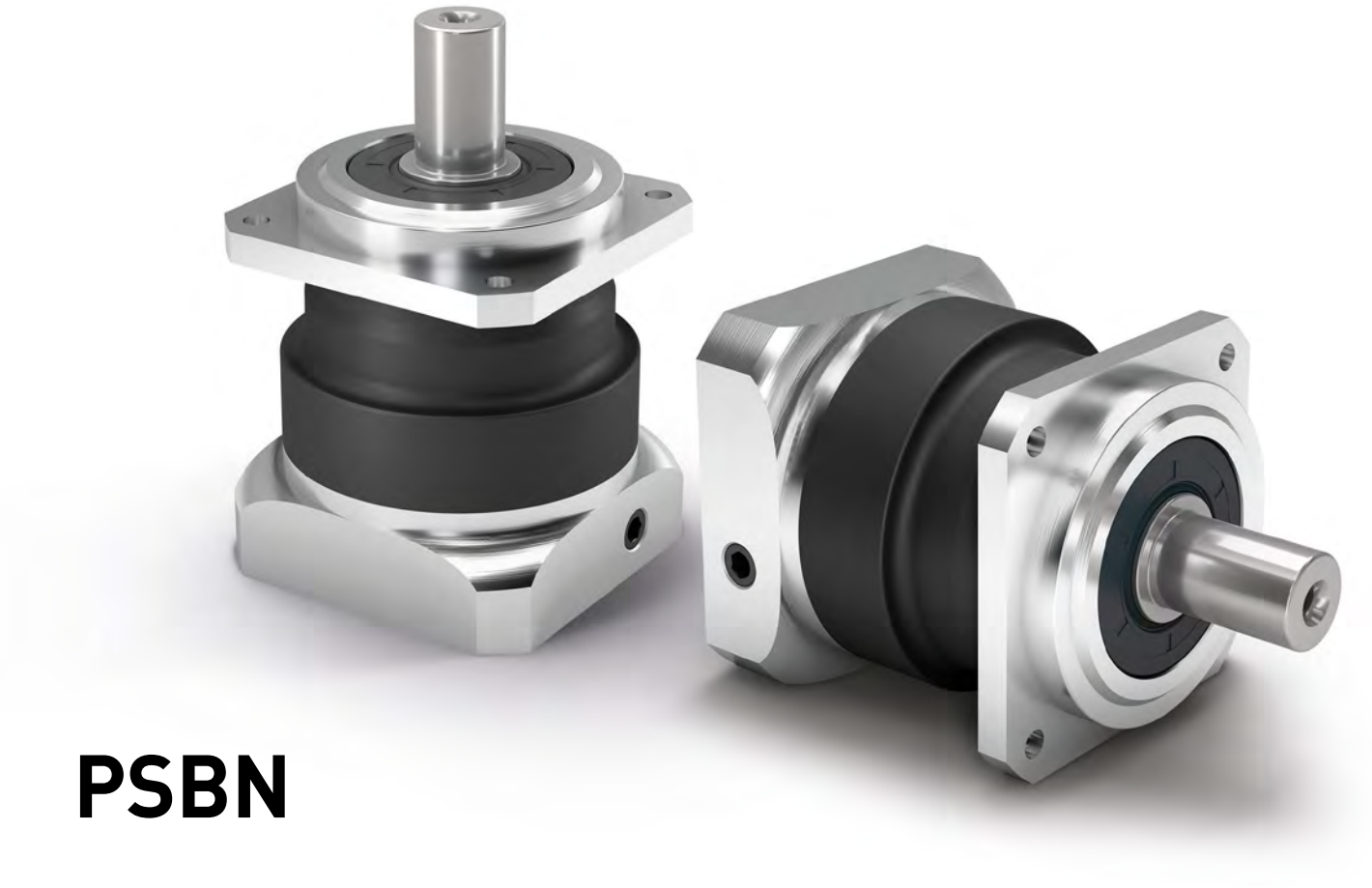


PSBN

The high-performance precision planetary gearbox with helical gearing for a particularly quiet drive

Our **PSBN** is the ideal combination of a precision planetary gearbox and efficient bearing technology. It was designed specifically to achieve maximum performance at high speed. Thanks to the helical gearing, it operates particularly smoothly - and is quieter than average.

Cyclic torque	**11 - 470 Nm**
Radial force	**830 - 9500 N**
Axial force	**800 - 9600 N**
Torsional backlash	**1 - 8 arcmin**
Protection class	**IP65**

Frame sizes

55 **70** **90** **115** **142**

- Precision Line
- Equidirectional rotation
- Square type output flange
- Rotary shaft seal
- Option: Reduced backlash
- Coaxial gearbox
- Helical gear
- Reinforced deep groove ball bearings
- Planet carrier in cage design
- Option: Painted surface – RAL 9005 Jet black

Detailed explanations of the technical features starting on page 201.

Code	Gearbox characteristics			PSBN055	PSBN070	PSBN090	PSBN115	PSBN142	p[1]
	Service life[2]	L_h	h	20,000					
	Efficiency[3]	η	%	98					1
				96					2
	Min. operating temperature	T_{min}	°C (°F)	-25 (-13)					
	Max. operating temperature	T_{max}		90 (194)					
	Protection class			IP65					
S	Standard lubrication			Oil (lifetime lubrication)					
F	Food grade lubrication			Oil (lifetime lubrication)					
	Installation position			Any					
S	Standard backlash	φ	arcmin	< 6	< 3	< 3	< 3	< 3	1
				< 8	< 5	< 5	< 5	< 5	2
R	Reduced backlash			< 4	< 2	< 1	< 1	< 1	1
				< 6	< 2	< 1	< 1	< 1	2
	Torsional stiffness[3]	C_{2t}	Nm / arcmin (lb_f.in/ arcmin)	1.4 - 2.3 (12 - 20)	4.2 - 5.6 (37 - 50)	10.7 - 13.7 (95 - 121)	29.0 - 36.5 (257 - 323)	59.5 - 76.0 (527 - 673)	1
				1.5 - 2.4 (13 - 21)	4.1 - 5.7 (36 - 50)	10.3 - 13.5 (91 - 119)	26.0 - 35.0 (230 - 310)	58.0 - 71.0 (513 - 628)	2
	Gearbox weight[3]	m	kg (lb_m)	0.8 (1.7 - 1.9)	1.6 - 1.7 (3.6 - 3.7)	3.3 - 3.4 (7.4 - 7.5)	5.6 - 6.0 (12.4 - 13.2)	1.2 - 13.5 (29.0 - 29.7)	1
				1.1 (2.5)	2.3 (5.1 - 5.2)	3.5 - 3.6 (7.8 - 7.9)	7.1 - 7.3 (15.6 - 16.0)	15.0 - 15.5 (33.2 - 34.1)	2
S	Standard surface			Housing: Steel – heat-treated and post-oxidized (black)					
B	Painted surface[4]			RAL 9005 Jet black					
	Running noise[3]	L_{pA}	dB(A)	56	57	58	63	66	

Output shaft loads			PSBN055	PSBN070	PSBN090	PSBN115	PSBN142	p[1]
Maximum radial force	$F_{r\,max}$	N (lb_f)	830 (187)	1600 (360)	3100 (697)	4500 (1012)	9500 (2136)	
Maximum axial force	$F_{a\,max}$		800 (180)	1500 (337)	2800 (629)	4500 (1012)	9600 (2158)	
Maximum tilting moment	$M_{K\,max}$	Nm (lb_f.in)	42 (373)	109 (961)	251 (2222)	442 (3916)	1314 - 1329 (11633 - 11759)	

Input characteristics			PSBN055	PSBN070	PSBN090	PSBN115	PSBN142	p[1]
Clamping system diameter input (Code)	D26	mm	11 (C)[5]	11 (C)	14 (D)	19 (E)	35 (G)[5]	1
			14 (D)	14 (D)[5]	19 (E)[5]	24 (F)[5]	42 (H)	
			-	19 (E)	24 (F)	35 (G)	-	
			11 (C)[5]	11 (C)	11 (C)	14 (D)	19 (E)	2
			14 (D)	14 (D)[5]	14 (D)[5]	19 (E)[5]	24 (F)[5]	
			-	19 (E)	19 (E)	24 (F)	35 (G)	
Mass moment of inertia input[3][5]	J_1	$kgcm^2$ (lb_f. $in.s^2 10^{-4}$)	0.096 - 0.133 (0.850 - 1.177)	0.149 - 0.283 (1.319 - 2.505)	0.436 - 0.895 (3.859 - 7.921)	1.164 - 2.941 (10.302 - 26.030)	6.539 - 14.440 (57.875 - 127.805)	1
			0.096 - 0.113 (0.850 - 1.000)	0.146 - 0.197 (1.292 - 1.744)	0.146 - 0.222 (1.292 - 1.965)	0.431 - 0.709 (3.815 - 6.275)	1.131 - 2.293 (10.010 - 20.295)	2
Average idle torque[3][5]	T_0	Nm (lb_f.in)	0.15 - 0.25 (1 - 2)	0.20 - 0.60 (2 - 5)	0.40 - 1.20 (4 - 11)	0.70 - 2.40 (6 - 21)	1.30 - 6.60 (12 - 58)	1
			0.15 - 0.25 (1 - 2)	0.20 - 0.40 (2 - 4)	0.25 - 0.60 (2 - 5)	0.45 - 1.20 (4 - 11)	0.65 - 2.70 (6 - 24)	2
Max. bending moment based on the gearbox input flange	M_{b1}		10 (89)	18 (159)	38 (336)	80 (708)	180 (1593)	1
			10 (89)	18 (159)	18 (159)	38 (336)	80 (708)	2

(1) Number of stages
(2) Application specific configuration with NCP – www.neugart.com
(3) The ratio-dependent values can be retrieved in Tec Data Finder – www.neugart.com
(4) More information on page 183
(5) Reference clamping system diameter

Output torques			PSBN055	PSBN070	PSBN090	PSBN115	PSBN142	i[1]	p[2]
Cyclic torque[3][4]	T_{2Z}	Nm (lb_f.in)	16 (142)	29 (257)	54 (478)	135 (1195)	380 (3363)	3	1
			18 (159)	39 (345)	80 (708)	180 (1593)	470 (4160)	4	
			18 (159)	40 (354)	80 (708)	175 (1549)	405 (3585)	5	
			18 (159)	37 (327)	78 (690)	170 (1505)	355 (3142)	7	
			18 (159)	39 (345)	75 (664)	155 (1372)	350 (3098)	8	
			13.5 (119)	28 (248)	59 (522)	140 (1239)	270 (2390)	10	
			16 (142)	29 (257)	54 (478)	135 (1195)	380 (3363)	12	2
			16 (142)	29 (257)	54 (478)	135 (1195)	380 (3363)	15	
			18 (159)	39 (345)	80 (708)	180 (1593)	470 (4160)	16	
			18 (159)	39 (345)	80 (708)	180 (1593)	470 (4160)	20	
			18 (159)	40 (354)	80 (708)	175 (1549)	405 (3585)	25	
			18 (159)	40 (354)	80 (708)	175 (1549)	405 (3585)	35	
			18 (159)	39 (345)	80 (708)	180 (1593)	470 (4160)	40	
			18 (159)	40 (354)	80 (708)	175 (1549)	405 (3585)	50	
			18 (159)	37 (327)	78 (690)	170 (1505)	355 (3142)	70	
			13.5 (119)	28 (248)	59 (522)	140 (1239)	270 (2390)	100	
Maximum torque[3][4]	T_{2max}	Nm (lb_f.in)	25 (221)	46 (407)	86 (761)	215 (1903)	520 (4602)	3	1
			28 (248)	62 (549)	128 (1133)	285 (2522)	700 (6196)	4	
			28 (248)	64 (566)	128 (1133)	280 (2478)	640 (5664)	5	
			28 (248)	59 (522)	124 (1097)	270 (2390)	560 (4956)	7	
			28 (248)	62 (549)	120 (1062)	245 (2168)	490 (4337)	8	
			21 (186)	44 (389)	94 (832)	220 (1947)	435 (3850)	10	
			25 (221)	46 (407)	86 (761)	215 (1903)	600 (5310)	12	2
			25 (221)	46 (407)	86 (761)	215 (1903)	600 (5310)	15	
			28 (248)	62 (549)	128 (1133)	285 (2522)	750 (6638)	16	
			28 (248)	62 (549)	128 (1133)	285 (2522)	750 (6638)	20	
			28 (248)	64 (566)	128 (1133)	280 (2478)	640 (5664)	25	
			28 (248)	64 (566)	128 (1133)	280 (2478)	640 (5664)	35	
			28 (248)	62 (549)	128 (1133)	285 (2522)	750 (6638)	40	
			28 (248)	64 (566)	128 (1133)	280 (2478)	640 (5664)	50	
			28 (248)	51 (451)	124 (1097)	270 (2390)	560 (4956)	70	
			21 (186)	44 (389)	94 (832)	220 (1947)	435 (3850)	100	

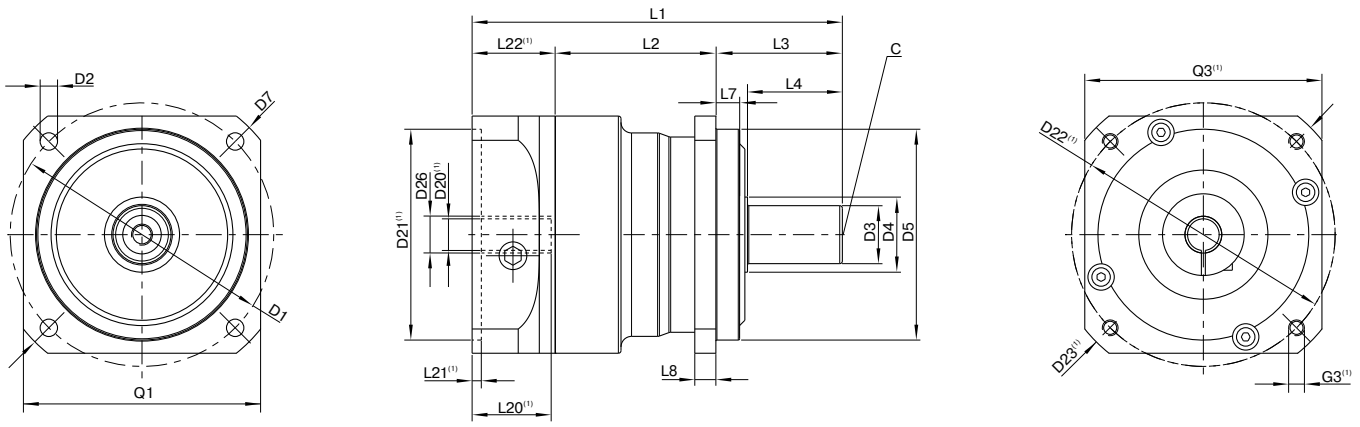
(1) Ratios ($i=n_1/n_2$)
(2) Number of stages
(3) Application specific configuration with NCP – www.neugart.com
(4) Based on reference clamping system diameter

Output torques			PSBN055	PSBN070	PSBN090	PSBN115	PSBN142	i(1)	p(2)
Continuous torque(3)	T_{2D}	Nm (lb_f.in)	11 (97)	24 (212)	45 (398)	114 (1009)	320 (2832)	3	1
			15 (133)	33 (292)	68 (602)	153 (1354)	395 (3496)	4	
			15 (133)	34 (301)	68 (602)	148 (1310)	340 (3009)	5	
			15 (133)	31 (274)	66 (584)	148 (1310)	300 (2655)	7	
			15 (133)	33 (292)	63 (558)	131 (1159)	295 (2611)	8	
			11 (97)	23 (204)	50 (443)	119 (1053)	255 (2257)	10	
			13.5 (119)	24 (212)	45 (398)	114 (1009)	320 (2832)	12	2
			13.5 (119)	24 (212)	45 (398)	114 (1009)	320 (2832)	15	
			15 (133)	33 (292)	68 (602)	153 (1354)	395 (3496)	16	
			15 (133)	33 (292)	68 (602)	153 (1354)	395 (3496)	20	
			15 (133)	34 (301)	68 (602)	148 (1310)	340 (3009)	25	
			15 (133)	34 (301)	68 (602)	148 (1310)	340 (3009)	35	
			15 (133)	33 (292)	68 (602)	153 (1354)	395 (3496)	40	
			15 (133)	34 (301)	68 (602)	148 (1310)	340 (3009)	50	
			15 (133)	31 (274)	66 (584)	148 (1310)	300 (2655)	70	
			11 (97)	23 (204)	50 (443)	119 (1053)	255 (2257)	100	

Input speeds			PSBN055	PSBN070	PSBN090	PSBN115	PSBN142	i(1)	p(2)
Continuous input speed(3)(4)	n_{1D}	rpm	4300	4500	3150	2100	1450	3	1
			4300	4450	3050	2250	1750	4	
			4850	4500	3850	3050	2400	5	
			5000	4500	4000	3500	3000	7	
			5000	4500	4000	3500	3000	8	
			5000	4500	4000	3500	3000	10	
			5000	4500	4500	3650	2550	12	2
			4900	4500	4500	4000	3200	15	
			5000	4500	4500	3600	2500	16	
			5000	4500	4500	4000	3150	20	
			5000	4500	4500	4000	3500	25	
			5000	4500	4500	4000	3500	35	
			5000	4500	4500	4000	3500	40	
			5000	4500	4500	4000	3500	50	
			5000	4500	4500	4000	3500	70	
			5000	4500	4500	4000	3500	100	
Max. mechanical input speed(3)	n_{1max}	rpm	10000	10000	10000	8500	6500		1
			10000	10000	10000	10000	8500		2

Output torques			PSBN055	PSBN070	PSBN090	PSBN115	PSBN142	i(1)	p(2)
Emergency stop torque(4)(5)	T_{2Stop}	Nm (lb_f.in)	48 (425)	90 (797)	210 (1859)	490 (4337)	1050 (9293)	3	1
			48 (425)	120 (1062)	280 (2478)	650 (5753)	1400 (12391)	4	
			48 (425)	130 (1151)	280 (2478)	650 (5753)	1650 (14604)	5	
			48 (425)	80 (708)	175 (1549)	340 (3009)	1300 (11506)	7	
			48 (425)	90 (797)	200 (1770)	380 (3363)	850 (7523)	8	
			24 (212)	52 (460)	121 (1071)	295 (2611)	600 (5310)	10	
			48 (425)	135 (1195)	220 (1947)	500 (4425)	1250 (11063)	12	2
			48 (425)	135 (1195)	220 (1947)	500 (4425)	1250 (11063)	15	
			48 (425)	150 (1328)	300 (2655)	650 (5753)	1650 (14604)	16	
			48 (425)	150 (1328)	300 (2655)	650 (5753)	1650 (14604)	20	
			48 (425)	150 (1328)	300 (2655)	650 (5753)	1650 (14604)	25	
			48 (425)	89 (788)	300 (2655)	650 (5753)	1650 (14604)	35	
			48 (425)	150 (1328)	210 (1859)	485 (4293)	1180 (10444)	40	
			48 (425)	150 (1328)	260 (2301)	600 (5310)	1480 (13099)	50	
			48 (425)	80 (708)	175 (1549)	340 (3009)	1300 (11506)	70	
			24 (212)	52 (460)	121 (1071)	295 (2611)	600 (5310)	100	

(1) Ratios ($i=n_1/n_2$)
(2) Number of stages
(3) Application specific configuration with NCP – www.neugart.com
(4) Based on reference clamping system diameter
(5) Permitted 1000 times



Drawing corresponds to a PSBN090 / 1-stage / smooth output shaft / 14 mm clamping system / motor adaptation – 2-part – round universal flange / B5 flange type motor

(1) The dimensions vary with the motor/gearbox flange. The input flange dimensions can be retrieved for each specific motor in Tec Data Finder at www.neugart.com

Geometry(1)			**PSBN055**	**PSBN070**	**PSBN090**	**PSBN115**	**PSBN142**	**p**(2)	**Code**
Pitch circle diameter output	D1		63 (2.480)	70 (2.756)	100 (3.937)	130 (5.118)	165 (6.496)		
Mounting bore output	D2	4x	5.5 (0.217)	5.5 (0.217)	6.6 (0.260)	9.0 (0.354)	11.0 (0.433)		
Shaft diameter output	D3	j6	13 (0.512)	16 (0.630)	22 (0.866)	32 (1.260)	40 (1.575)		
Shaft collar output	D4		17 (0.669)	25 (0.984)	28.5 (1.122)	38.5 (1.516)	48.5 (1.909)		
Centering diameter output	D5	g6	50 (1.969)	50 (1.969)	80 (3.150)	110 (4.331)	130 (5.118)		
Diagonal dimension output	D7		74 (2.913)	80 (3.150)	115 (4.528)	148 (5.827)	185 (7.283)		
Flange cross section output	Q1	■	55 (2.165)	60 (2.362)	90 (3.543)	115 (4.528)	140 (5.512)		
Min. total length	L1		93.5 (3.681)	116.5 (4.587)	140.5 (5.531)	182.5 (7.185)	247.5 (9.744)	1	
			117 (4.606)	145 (5.709)	162.5 (6.398)	204 (8.032)	279 (10.984)	2	
Housing length	L2		43 (1.693)	54 (2.126)	61 (2.402)	74 (2.913)	100.5 (3.957)	1	
			56.5 (2.224)	82.5 (3.248)	89 (3.504)	107.5 (4.232)	138.5 (5.453)	2	
Shaft length output	L3		26 (1.024)	37 (1.457)	48 (1.890)	65 (2.559)	97 (3.819)		
Centering depth output	L7		6 (0.217)	6 (0.236)	9 (0.354)	4 (0.157)	12 (0.472)		
Flange thickness output	L8		6 (0.236)	6 (0.236)	8 (0.315)	10 (0.394)	12 (0.472)		
Center hole (DIN 332. type DR)	C		M4x10	M5x12.5	M8x19	M12x28	M16x36		
Motor shaft diameter j6/k6	D20		More information on page 191/192						
Clamping system diameter input	D26		More information on page 124						
Output shaft with feather key (DIN 6885-1)			A 5x5x16	A 5x5x25	A 6x6x28	A 10x8x50	A 12x8x65		**A**
Feather key width (DIN 6885-1)	B1		5 (0.197)	5 (0.197)	6 (0.236)	10 (0.394)	12 (0.472)		
Shaft height including feather key (DIN 6885-1)	H1		15 (0.591)	18 (0.709)	24.5 (0.965)	35 (1.378)	43 (1.693)		
Shaft length from shoulder	L4		19 (0.748)	28 (1.102)	36 (1.417)	58 (2.283)	82 (3.228)		
Feather key length	L5		16 (0.630)	25 (0.984)	28 (1.102)	50 (1.969)	65 (2.559)		
Distance from shaft end	L6		2 (0.079)	2 (0.079)	4 (0.157)	4 (0.157)	8 (0.315)		
Smooth output shaft									**B**
Shaft length from shoulder	L4		19 (0.748)	28 (1.102)	36 (1.417)	58 (2.283)	82 (3.228)		

(1) Dimensions in mm
(2) Number of stages